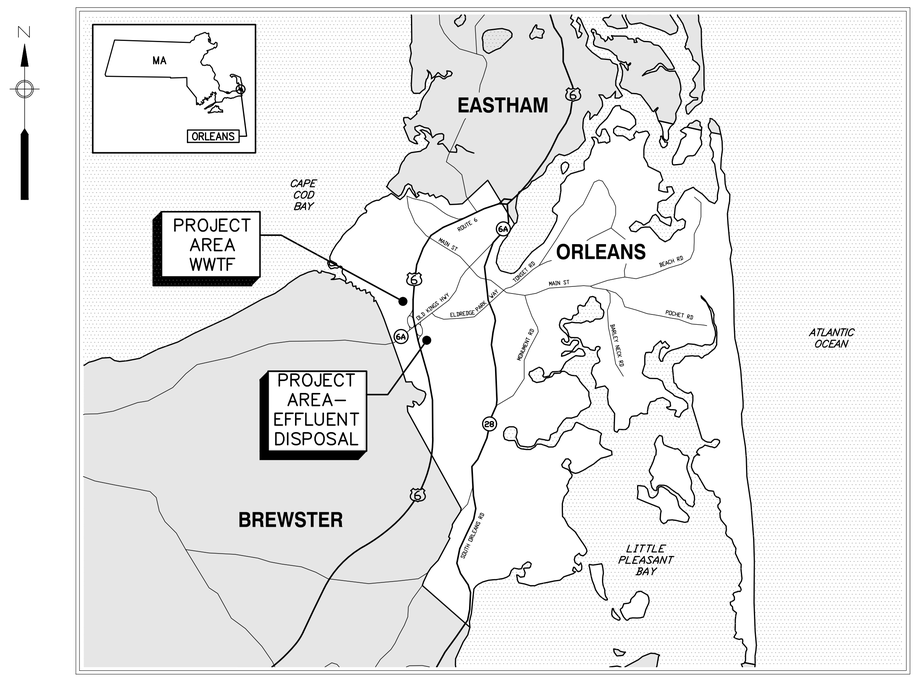
TOWN OF ORLEANS, MA
WASTEWATER TREATMENT FACILITY AND EFFLUENT DISPOSAL

CONTRACT NO. 2019-01
SRF NO. 4486

JANUARY 2020



LOCATION PLAN

0 5000 10,000 15,000

SCALE: 1"=5000'

UPDATED 10-12-20 -AEH

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

GENERAL

SHEET TITLE

COVER SHEET AND LOCATION PLAN

SHEET NUMBER

00 G-001

INDEX OF DRAWINGS

GENERAL

SHEET NO.	TITLE
00 G–001	COVER SHEET AND LOCATION PLAN
00 G–002	INDEX OF DRAWINGS
00 G–003	STRUCTURE DESIGNATION KEY PLAN
00 G–004	HYDRAULIC PROFILE

CIVIL

SHEET NO.	TITLE
00 C–001	LEGEND, ABBREVIATIONS AND GENERAL NOTES
00 C–100	CIVIL KEY PLAN
00 C–101	EXISTING CONDITIONS AND DEMOLITION PLAN I – WWTF
00 C–102	EXISTING CONDITIONS AND DEMOLITION PLAN II – WWTF
00 C–103	EXISTING CONDITIONS AND DEMOLITION PLAN III – WWTF
00 C–104	SITE LAYOUT PLAN – WWTF
00 C–105	YARD PIPING PLAN I – WWTF
00 C–106	YARD PIPING PLAN II & PROFILE – WWTF
00 C–107	EXISTING FENCE DEMO., REPAIR AND NEW FENCE LOCATION PLAN
00 C–108	PAVEMENT PLAN AND ZONING COMPLIANCE
00 C–109	DRAIN PROFILES
00 C–110	SANITARY PROFILES
00 C–201	EXIST. COND., DEMO. AND EROS. CONTROL PLAN – EFFLUENT DISPOSAL
00 C–202	SITE PLAN – EFFLUENT DISPOSAL
00 C–203	YARD PIPING PLAN – EFFLUENT DISPOSAL
99 C–501	DETAILS I
99 C–502	DETAILS II
99 C–503	DETAILS III
99 C–504	DETAILS IV
99 C–505	DETAILS V
99 C–506	DETAILS VI
99 C–507	DETAILS VII
99 C–508	DETAILS VIII

ARCHITECTURAL

SHEET NO.	TITLE
00 A–001	ARCHITECTURAL SYMBOLS, NOTES AND ABBREVIATIONS
10 A–001	LIFE SAFETY PLANS
10 A–101	BASEMENT PLAN
10 A–102	GRADE LEVEL PLAN
10 A–103	ROOF PLAN
10 A–104	REFLECTED CEILING PLAN
10 A–201	ELEVATIONS I
10 A–202	ELEVATIONS II
10 A–301	BUILDING SECTIONS
10 A–302	SECTIONS – STAIRS
10 A–303	SECTIONS – WALLS
10 A–304	EXTERIOR WALL DETAILS
10 A–305	ENLARGED EXTERIOR ELEVATIONS AND DETAILS
10 A–401	ENLARGED PLANS, ELEVATIONS, SCHED. – CONTROL ROOM
10 A–402	ENLARGED PLANS, ELEVATIONS, SCHED. – LAB ROOM
10 A–403	ENLARGED PLANS, ELEVATIONS, SCHED. – BREAK ROOM
10 A–404	ENLARGED PLANS, ELEVATIONS, SCHED. – OFFICE/COPIER ROOM
10 A–405	ENLARGED PLANS, ELEVATIONS, SCHED. – CONFERENCE ROOM
10 A–406	ENLARGED STAIR 1 PLANS
10 A–407	ENLARGED STAIR 2 PLANS
10 A–408	ENLARGED BATHROOM PLAN
10 A–409	BATHROOM DETAILS
10 A–501	DETAILS – STAIR & RAILING
10 A–502	SBR STAIR PLAN AND RAILING DETAILS
10 A–503	DETAILS – MISC. I
10 A–504	DETAILS – MISC. II
10 A–505	EXTERIOR SECTION DETAILS
10 A–601	ROOM FINISH SCHEDULE
10 A–602	DOOR SCHEDULE AND LEGEND
10 A–603	WINDOW AND LOUVER SCHEDULES
10 A–604	EXTERIOR DOOR DETAILS
10 A–605	LOUVER AND OVERHEAD DOOR DETAILS
10 A–606	INTERIOR DOOR DETAILS
10 A–607	WINDOW DETAILS
10 A–608	SIGNAGE
20 A–001	EQUIPMENT STORAGE FACILITY – LIFE SAFETY PLAN
20 A–101	EQUIPMENT STORAGE FACILITY – FLOOR PLAN
20 A–102	EQUIPMENT STORAGE FACILITY – ROOF PLAN
20 A–201	EQUIPMENT STORAGE FACILITY – ELEVATIONS I
20 A–202	EQUIPMENT STORAGE FACILITY – ELEVATIONS II
20 A–301	EQUIPMENT STORAGE FACILITY – SECTIONS
20 A–302	EQUIPMENT STORAGE FACILITY – WALL SECTIONS
20 A–401	EQUIPMENT STORAGE FACILITY – INTERIOR ELEVATIONS & SCHED.
20 A–501	EQUIPMENT STORAGE FACILITY – DETAILS
20 A–601	EQUIPMENT STORAGE FACILITY – DOOR SCHEDULE AND DETAILS
20 A–602	EQUIPMENT STORAGE FACILITY – DOOR DETAILS CONT.
20 A–603	EQUIPMENT STORAGE FACILITY – WINDOW/LOUVER SCHEDULE AND DETAILS
99 A–607	PARTITION TYPES

STRUCTURAL

SHEET NO.	TITLE
00 S–001	STRUCTURAL NOTES I
00 S–002	STRUCTURAL NOTES II
10 S–101	FOUNDATION PLAN I
10 S–102	FOUNDATION PLAN II
10 S–103	GRADE LEVEL PLAN I
10 S–104	GRADE LEVEL PLAN II
10 S–105	ROOF LEVEL PLAN
10 S–106	PLANT WATER STORAGE TANK PLANS AND SECTIONS
10 S–107	SLUDGE LOADING PAD
10 S–301	SECTIONS I
10 S–302	SECTIONS II
10 S–303	SECTIONS III
10 S–501	SCHEDULES I
15 S–101	SBR TANK PLANS
15 S–301	SECTIONS I
20 S–101	STORAGE FACILITY GRADE LEVEL PLAN
20 S–102	STORAGE FACILITY ROOF LEVEL PLAN
30 S–101	WICK DISTRIBUTION VAULT PLANS AND SECTIONS
99 S–501	STRUCTURAL STANDARD DETAILS I
99 S–502	STRUCTURAL STANDARD DETAILS II
99 S–503	STRUCTURAL STANDARD DETAILS III
99 S–504	STRUCTURAL STANDARD DETAILS IV
99 S–505	STRUCTURAL STANDARD DETAILS V
99 S–506	STRUCTURAL STANDARD DETAILS VI

MECHANICAL PROCESS

SHEET NO.	TITLE
00 D–001	PROCESS LEGEND
00 D–002	GENERAL NOTES AND ABBREVIATIONS
00 D–003	PROCESS PIPING SCHEDULE
00 D–004	SCHEDULES I
00 D–005	SCHEDULES II
00 D–006	PROCESS FLOW DIAGRAM I
00 D–007	PROCESS FLOW DIAGRAM II
00 D–008	PROCESS FLOW DIAGRAM III
00 D–009	ODOR CONTROL AIR FLOW DIAGRAM
10 D–100	OVERALL PLAN
10 D–101	FACILITY LOWER PLAN I
10 D–102	FACILITY LOWER PLAN II
10 D–103	FACILITY LOWER PLAN III
10 D–104	FACILITY UPPER PLAN I
10 D–105	FACILITY UPPER PLAN II
10 D–106	PLANT WATER STORAGE TANK PLANS AND SECTIONS
~~10 D–107~~	~~IN–PLANT PUMP STATION TYPICAL SECTION~~ Add. 1
10 D–301	SECTIONS I
10 D–302	SECTIONS II
10 D–303	SECTIONS III
10 D–304	SECTIONS IV
10 D–305	SECTIONS V
10 D–306	SECTIONS VI
10 D–307	SECTIONS VII
10 D–308	SECTIONS VIII
10 D–601	CHEMICAL SYSTEM SCHEMATIC I
10 D–602	CHEMICAL SYSTEM SCHEMATIC II
15 D–101	SBR LOWER PLAN I
15 D–102	SBR LOWER PLAN II
15 D–103	SBR UPPER PLAN I
15 D–104	SBR UPPER PLAN II
15 D–301	SBR SECTIONS
30 D–101	WICK DISTRIBUTION VAULT PLAN AND SECTIONS
99 D–501	DETAILS I
99 D–502	DETAILS II
99 D–503	DETAILS III
99 D–504	DETAILS IV

10 D-309 Add.1

HVAC

SHEET NO.	TITLE
00 M–001	LEGEND, ABBREVIATIONS AND GENERAL NOTES
00 M–002	SCHEDULES I
00 M–003	SCHEDULES II
00 M–004	SCHEDULES III
00 M–005	SCHEDULES IV
00 M–006	SEQUENCES I
00 M–007	SEQUENCES II
00 M–008	SEQUENCES III
00 M–009	SEQUENCES IV
10 M–101	WWTF LOWER PLAN I – DUCTWORK
10 M–102	WWTF LOWER PLAN II – DUCTWORK
10 M–103	WWTF UPPER PLAN I – DUCTWORK
10 M–104	WWTF UPPER PLAN II – DUCTWORK
10 M–105	WWTF LOWER PLAN – PIPING
10 M–106	WWTF UPPER PLAN I – PIPING
10 M–107	WWTF UPPER PLAN II – PIPING
10 M–108	WWTF MECHANICAL ROOM – PART PLAN
20 M–101	EQUIPMENT STORAGE FACILITY – GRADE LEVEL PLAN
30 M–101	WICK DISTRIBUTION VAULT – PLAN
99 M–501	DETAILS I
99 M–502	DETAILS II
99 M–503	DETAILS III

PLUMBING

SHEET NO.	TITLE
00 P–001	LEGENDS, GENERAL NOTES AND ABBREVIATIONS
00 P–002	SCHEDULES AND CONTROLS
10 P–101	FACILITY LOWER PLAN I WATER AND GAS
10 P–102	FACILITY LOWER PLAN II WATER AND GAS
10 P–103	FACILITY LOWER PLAN I SANITARY DRAIN–WASTE–VENT
10 P–104	FACILITY LOWER PLAN II SANITARY DRAIN–WASTE–VENT
10 P–105	FACILITY UPPER PLAN I WATER AND GAS
10 P–106	FACILITY UPPER PLAN II WATER AND GAS
10 P–107	FACILITY UPPER PLAN I SANITARY DRAIN–WASTE–VENT
10 P–108	FACILITY UPPER PLAN II SANITARY DRAIN–WASTE–VENT
10 P–109	MECHANICAL ROOM PART PLAN
20 P–101	EQUIPMENT STORAGE FACILITY PLAN
99 P–501	DETAILS I
99 P–502	DETAILS II

FIRE PROTECTION

SHEET NO.	TITLE
00 F–001	NOTES, LEGENDS AND ABBREVIATIONS
10 F–101	FACILITY LOWER LEVEL PLAN
10 F–102	FACILITY UPPER PLAN
99 F–501	DETAILS I
99 F–502	DETAILS II

INSTRUMENTATION

SHEET NO.	TITLE
00 DI–001	INSTRUMENTATION LEGEND, ABBREVIATIONS AND GENERAL NOTES
00 DI–601	SYSTEM ARCHITECTURE 1
00 DI–602	SYSTEM ARCHITECTURE 2
00 DI–603	SYSTEM ARCHITECTURE 3
10 DI–601	INFLUENT SCREENING P&ID
10 DI–602	PRE–EQUALIZATION TANKS P&ID
10 DI–603	SBR TRANSFER PUMPS P&ID
10 DI–604	DISK FILTERS P&ID
10 DI–605	POST EQUALIZATION TANK P&ID
10 DI–606	EFFLUENT PUMPS P&ID
10 DI–607	UV TREATMENT P&ID
10 DI–608	PLANT WATER SYSTEM P&ID
10 DI–609	MIXING BLOWERS P&ID
10 DI–610	SBR BLOWERS P&ID
10 DI–611	SEPTAGE RECEIVING P&ID
10 DI–612	WASTE SLUDGE STORAGE TANKS P&ID
10 DI–613	SLUDGE TRANSFER PUMPS P&ID
10 DI–614	ROTARY DRUM THICKENERS P&ID
10 DI–615	THICKENED SLUDGE STORAGE TANK AND PUMPS P&ID
10 DI–616	SODIUM HYPOCHLORITE P&ID
10 DI–617	POLYALUMINUM CHLORIDE P&ID
10 DI–618	POLYMER P&ID
10 DI–619	WWTF ODOR CONTROL SYSTEM P&ID
15 DI–601	SBRS P&ID
25 DI–601	IN PLANT PUMP STATION P&ID
30 DI–601	WICK DISTRIBUTION VAULT P&ID
30 DI–602	WICK DISTRIBUTION P&ID
99 DI–601	MISCELLANEOUS SIGNALS
99 DI-602	MISCELLANEUS SIGNALS II AND TABLE OF RESPONSIBILITIES (ADD .2)

10 E-617 WWTF-ELECTRICAL, WIRING SCHEMATICS VI Add .1

ELECTRICAL

SHEET NO.	TITLE
00 E–001	ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES
00 E–601	ELECTRICAL SCHEDULES I
00 E–602	ELECTRICAL SCHEDULES II
10 ED–001	WWTF – ELECTRICAL SITE PLAN – DEMOLITION I
10 ED–002	WWTF – ELECTRICAL SITE PLAN – DEMOLITION II
10 ED–003	WWTF – ELECTRICAL SITE PLAN – DEMOLITION III
10 E–001	WWTF – ELECTRICAL SITE PLAN – POWER
10 E–002	WWTF – ELECTRICAL SITE PLAN – SYSTEMS
10 E–003	WWTF – ELECTRICAL SITE PLAN – FIBER NETWORK I
10 E–004	WWTF – ELECTRICAL SITE PLAN – FIBER NETWORK II
10 E–005	WWTF – ELECTRICAL SINGLE LINE DIAGRAM I – SWBD.10–1
10 E–006	WWTF – ELECTRICAL SINGLE LINE DIAGRAM II – MCC.10–1
10 E–007	WWTF – ELECTRICAL SINGLE LINE DIAGRAM III – MCC.10–2
10 E–101	WWTF – LOWER LEVEL – POWER PLAN I
10 E–102	WWTF – LOWER LEVEL – POWER PLAN II
10 E–103	WWTF – LOWER LEVEL – SYSTEMS PLAN I
10 E–104	WWTF – LOWER LEVEL – SYSTEMS PLAN II
10 E–201	WWTF – GRADE LEVEL – POWER PLAN I
10 E–202	WWTF – GRADE LEVEL – POWER PLAN II
10 E–203	WWTF – GRADE LEVEL – POWER PLAN III (PW STORAGE TANK)
10 E–204	WWTF – GRADE LEVEL – SYSTEMS PLAN I
10 E–205	WWTF – GRADE LEVEL – SYSTEMS PLAN II
10 E–206	WWTF – GRADE LEVEL – SYSTEMS PLAN III
10 E–301	WWTF – LOWER LEVEL – SECURITY PLAN I
10 E–302	WWTF – GRADE LEVEL – SECURITY PLAN I
10 E–303	WWTF – GENERATOR AND UTILITY TRANSFORMER GROUNDING PLAN
10 E–601	WWTF – PANELBOARD SCHEDULES I
10 E–602	WWTF – PANELBOARD SCHEDULES II
10 E–603	WWTF – PANELBOARD SCHEDULES III
10 E–604	WWTF – ELECTRICAL RISER DIAGRAMS I
10 E–605	WWTF – ELECTRICAL RISER DIAGRAMS II
10 E–606	WWTF – ELECTRICAL RISER DIAGRAMS III
10 E–607	WWTF – ELECTRICAL RISER DIAGRAMS IV
10 E–608	WWTF – ELECTRICAL RISER DIAGRAMS V
10 E–609	WWTF – ELECTRICAL RISER DIAGRAMS VI
10 E–610	WWTF – ELECTRICAL RISER DIAGRAMS VII
10 E–611	WWTF – ELECTRICAL RISER DIAGRAMS VIII
10 E–612	WWTF – ELECTRICAL WIRING SCHEMATICS I
10 E–613	WWTF – ELECTRICAL WIRING SCHEMATICS II
10 E–614	WWTF – ELECTRICAL WIRING SCHEMATICS III
10 E–615	WWTF – ELECTRICAL WIRING SCHEMATICS IV
10 E–616	WWTF – ELECTRICAL WIRING SCHEMATICS V
15 E–101	SBRS – POWER PLAN
15 E–102	SBRS – UPPER LEVEL – SYSTEMS PLAN
15 E–601	SBRS – ELECTRICAL RISER DIAGRAMS
15 E–602	SBRS – ELECTRICAL RISER DIAGRAMS II
20 E–101	EQUIPMENT STORAGE FACILITY – POWER PLAN
20 E–102	EQUIPMENT STORAGE FACILITY – SYSTEMS PLAN
20 E–601	EQUIPMENT STORAGE FACILITY – PANELBOARD SCHEDULES
20 E–602	EQUIPMENT STORAGE FACILITY – WIRING SCHEMATICS
25 E–101	SANITARY PUMP STATION – POWER PLAN
30 E–001	WICK DISTRIBUTION VAULT – ELECTRICAL SITE PLAN
30 E–101	WICK DISTRIBUTION VAULT – POWER AND SYSTEM PLANS
30 E–002	WICK DISTRIBUTION VAULT – SINGLE LINE DIAGRAM
30 E–601	WICK DISTRIBUTION VAULT – ELECTRICAL RISER DIAGRAM
99 E–501	ELECTRICAL DETAILS I
99 E–502	ELECTRICAL DETAILS II
99 E–503	ELECTRICAL DETAILS III
00 FA–001	FIRE ALARM LEGEND, ABBREVIATIONS, AND GENERAL NOTES
10 FA–101	WWTF – LOWER LEVEL – FIRE ALARM SYSTEM PLAN I
10 FA–102	WWTF – LOWER LEVEL – FIRE ALARM SYSTEM PLAN II
10 FA–201	WWTF – GRADE LEVEL – FIRE ALARM SYSTEM PLAN I
10 FA–202	WWTF – GRADE LEVEL – FIRE ALARM SYSTEM PLAN II
20 FA–101	EQUIPMENT STORAGE FACILITY – FIRE ALARM SYSTEM PLAN

SHEET DESIGNATION LEGEND

STRUCTURE NUMBER
DISCIPLINE
SHEET NUMBER
00 G–001

STRUCTURE NUMBER:

10	WASTEWATER TREATMENT FACILITY
15	SBR No. 1 & SBR No. 2
20	EQUIPMENT STORAGE FACILITY
25	IN–PLANT PUMP STATION
30	WICK DISTRIBUTION VAULT

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

GENERAL

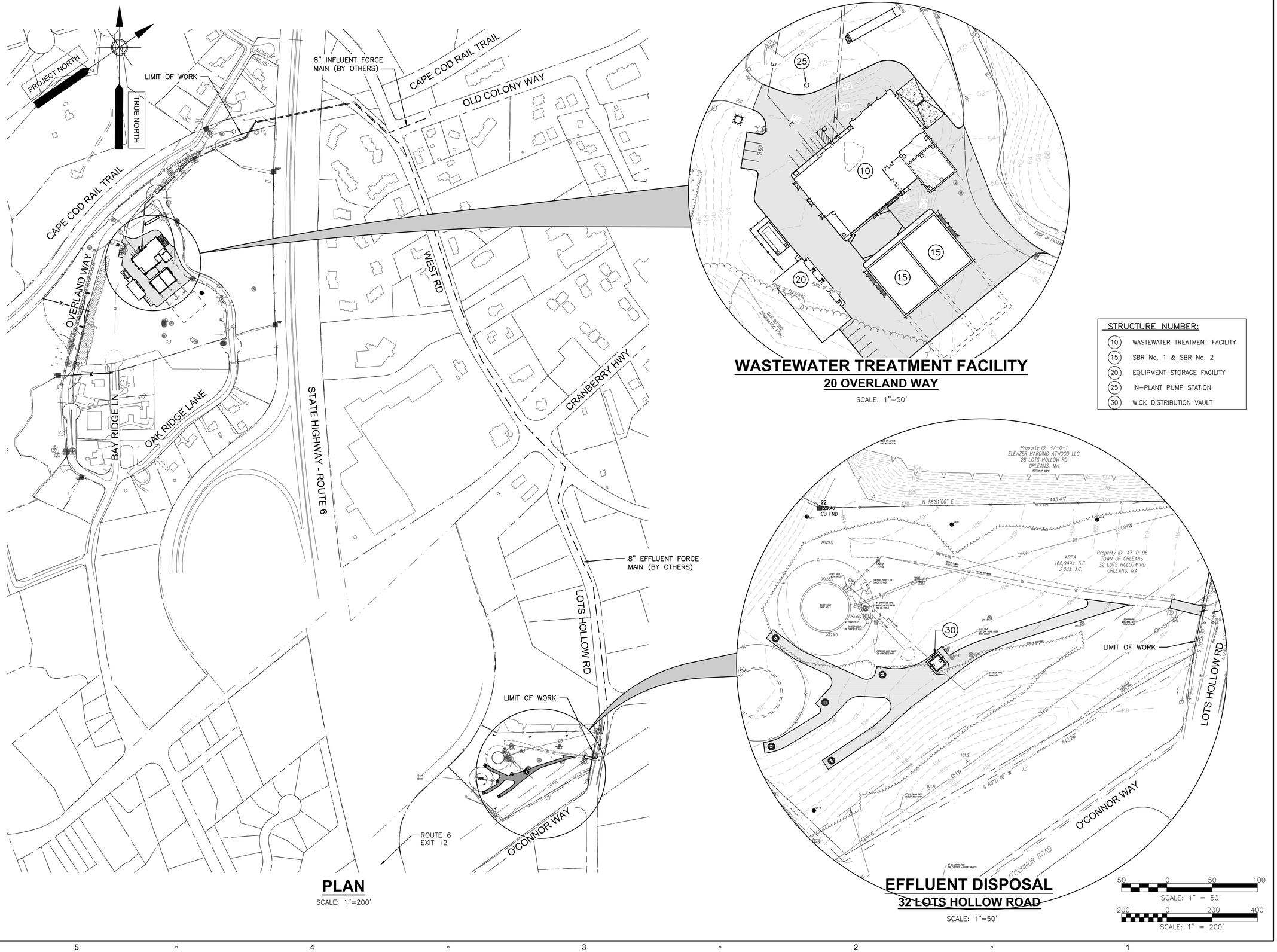
SHEET TITLE

INDEX OF DRAWINGS

SHEET NUMBER

00 G-002

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\G\00 G-002.DWG
LAST UPDATE: Tuesday, January 28, 2020 2:01:04 PM
PLOT DATE: Wednesday, February 05, 2020 2:01:06 PM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\00\00 G-003.DWG
LAST UPDATE: Wednesday, October 2, 2019 1:59:16 PM
PLOT DATE: Thursday, January 16, 2020 12:26:57 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

GENERAL

SHEET TITLE

STRUCTURE DESIGNATION KEY PLAN

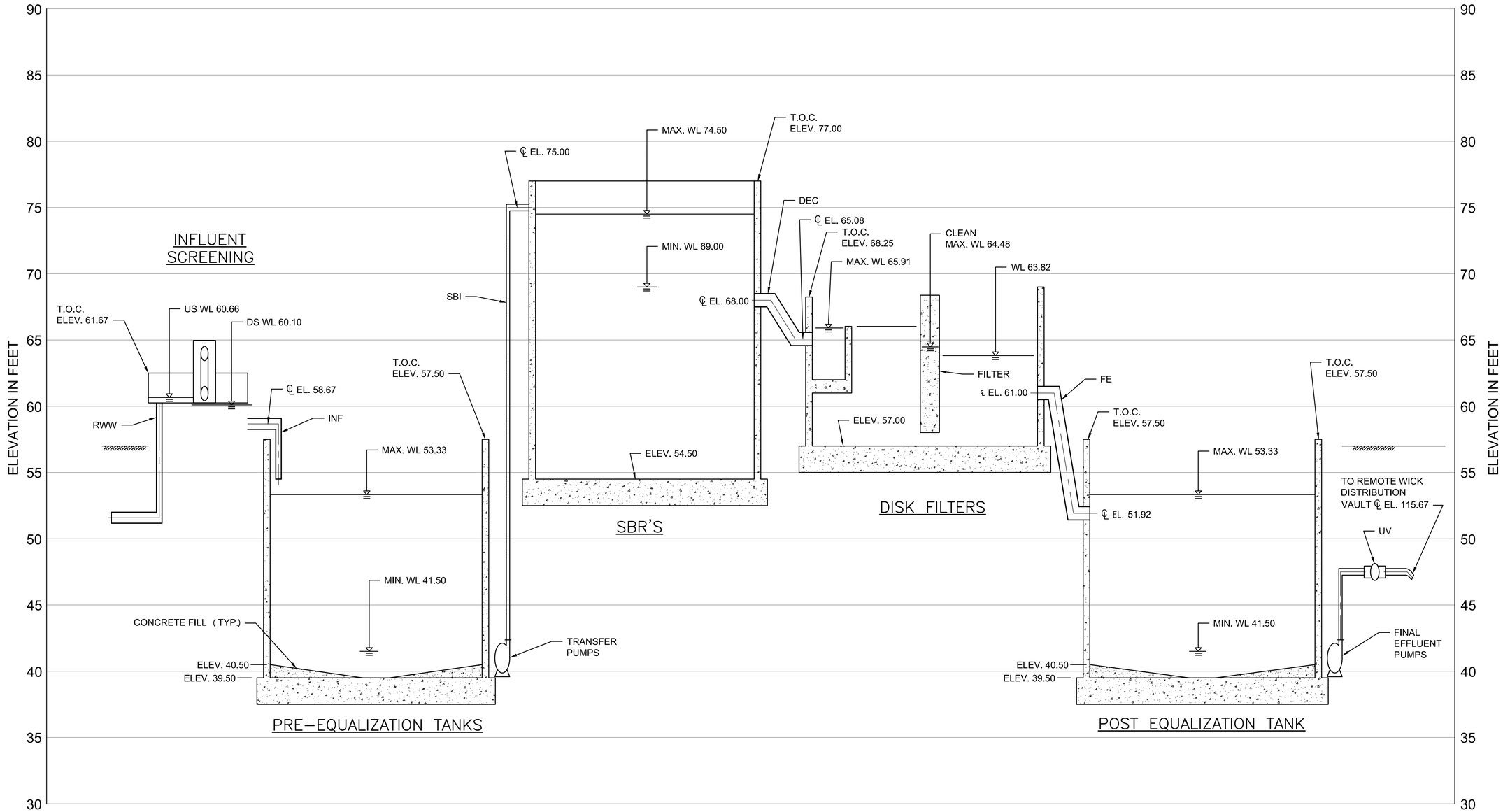
SHEET NUMBER

00 G-003

WASTEWATER DESIGN FLOWS (GPD)

PHASE #	MIN. MONTH	AVERAGE ANNUAL	MAX. MONTH	MAX. DAY	PEAK HOUR
1	194,600	228,900	320,500	595,100	1,098,720
1 & 2	283,500	333,500	466,900	833,800	1,500,750

NOTE: MAX. WATER ELEVATIONS BASED ON PEAK HOUR FLOW OF 1,500,750 GPD.



NOTE:
1. VERTICAL DATUM IN U.S. SURVEY FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED UPON SMARTNET RTK NETWORK.

HYDRAULIC PROFILE

HORIZONTAL: NTS
VERTICAL: 1" = 4'-0"

1"=4'-0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\G\00 G-004.DWG
LAST UPDATE: Tuesday, January 14, 2020 6:25:53 AM
PLOT DATE: Thursday, January 16, 2020 12:27:13 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER
1/16/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

GENERAL

SHEET TITLE

HYDRAULIC PROFILE

SHEET NUMBER

00 G-004

GENERAL NOTES

1. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PRESCRIBE A COMPLETE WORK OR IMPROVEMENT. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND ANY REQUIREMENTS INDICATED IN ONE OF THE DOCUMENTS IS AS BINDING AS HAVING BEEN INDICATED IN ALL.
2. HORIZONTAL DATUM IN U.S. SURVEY FEET IS REFERENCED TO THE MASSACHUSETTS STATE PLANE MAINLAND COORDINATE SYSTEM (NAD83) BASED UPON SMARTNET RTK NETWORK.
3. VERTICAL DATUM IN U.S. SURVEY FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED UPON SMARTNET RTK NETWORK.
4. TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT OF A SURVEY MADE IN SEPTEMBER 2018 BY COASTAL ENGINEERING CO., 260 CRANBERRY HIGHWAY, ORLEANS, MA 02653. SIDELINES OF RIGHTS OF WAY AND PROPERTY LINES ARE AS SHOWN ON RECORD PLANS RECORDED WITH THE BARNSTABLE COUNTY REGISTRY OF DEEDS. BUILDING LOCATIONS SHOWN HEREON ARE BASED ON PLANIMETRICS FROM JW SEWALL AERIAL SURVEY OF FEBRUARY 27, 2017. POST DEMOLITION SITE SURVEY BY SCHOFIELD BROTHERS OF CAPE COD, PLAN DATE APRIL 12, 2019.
5. LOCATION OF WATER, SEWER, DRAINS, TELEPHONE, ELECTRIC, AND GAS LINES ARE APPROXIMATE, BASED UPON RECORD LOCATION INFORMATION PROVIDED TO CEC, AND ARE FOR REFERENCE ONLY. EXISTING UTILITIES, UNDERGROUND AND OVERHEAD, MAY EXIST IN ADDITION TO THE UTILITY INFORMATION SHOWN ON THESE PLANS. CONTRACTOR SHALL FOLLOW ALL DIG SAFE MARKINGS. CONTRACTOR SHALL NOTIFY DIGSAFE (1-888-344-7233) AND ALL UTILITY COMPANIES PRIOR TO EXCAVATION.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AT THE SITE.
7. THE CONTRACTOR SHALL ERECT EROSION CONTROL MEASURES PRIOR TO COMMENCING ANY CLEARING, EXCAVATION OR STORAGE OF BACKFILL MATERIAL ON-SITE. REFER TO SPECIFICATION SECTION 01568 AND DETAILS.
8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAYS WORK. REFER TO SPECIFICATION SECTION 01046 FOR ADDITIONAL REQUIREMENTS
10. INTERRUPTION TO WATER AND OTHER EXISTING UTILITIES SHALL BE REQUESTED IN WRITING BY THE CONTRACTOR 3 DAYS IN ADVANCE OF THE WORK AND REVIEWED BY THE ENGINEER.
11. NOT USED.
12. NOT USED.
13. EXISTING UTILITIES INTERFERING WITH THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
14. PIPE SHALL BE AS INDICATED IN THE PIPING SCHEDULE AND SPECIFICATIONS. PROVIDE RESTRAINED MECHANICAL JOINT FITTINGS FOR ALL PRESSURE PIPE BENDS.
15. PIPING WHICH IS EXPOSED DURING EXCAVATION, INCLUDING TEE'S, VALVES, AND FITTINGS, AND IS NOT TO BE DEMOLISHED, SHALL BE SUPPORTED, BRACED OR OTHERWISE PROTECTED DURING CONSTRUCTION ACTIVITIES.
16. ALL PIPING, EXCEPT FORCE MAINS, SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET OF COVER. FORCE MAINS SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET COVER IN CROSS-COUNTRY AREAS, 5 FEET COVER IN PAVED AREAS.
17. ALL PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS SHOWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER. NO SAGS OR CRESTS IN PIPING WILL BE PERMITTED.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE WHICH MAY NOT BE SHOWN IN DETAILS (REQUIRED AS A RESULT OF CUTTING THE EXISTING PIPE BACK) IN ORDER TO COMPLETE THE CONNECTION AS REQUIRED.
19. ALL WALL AND SLAB PENETRATIONS SHALL BE SEALED WATERTIGHT.
20. ALL WALL CASTINGS SHALL HAVE WATER STOPS.
21. JOINTS SHALL BE PROVIDED AT THE WALL OF STRUCTURES ON ALL PIPELINES, EXCEPT WHERE SLEEVES ARE INDICATED. THIS SHALL BE ACCOMPLISHED BY CASTING A BELL WALL FITTING, BELL END STUB, OR WALL CASTING INTO THE STRUCTURE.
22. ALL LAYOUT DIMENSIONS REFER TO OUTSIDE EDGE OF WALL AT GRADE LINE, UNLESS OTHERWISE INDICATED.
23. LOCATION COORDINATES TO PROPOSED STRUCTURES ARE TO EXTERIOR WALLS AND CENTER OF TANKS.
24. ALL SIGNAGE, HEADWALLS, GUARD RAILS, GUARD POSTS, FENCES, CURBS, ROADWAYS, SIDEWALKS AND ANY OTHER OBJECTS DISTURBED BY CONTRACTOR ACTIVITIES SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION OR BETTER AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
25. ALL AREAS OF EXCAVATION, BACKFILL, FILL AND GRADING SHALL BE RETURNED TO THE ORIGINAL GRADE UNLESS SHOWN ON THE DRAWINGS.
26. ALL UTILITY BOXES, FRAMES, GRATES, ETC. DISTURBED BY CONTRACTOR AND NOT TO BE ABANDONED SHALL BE RESET TO THE PROPER GRADE AT NO ADDITIONAL COST TO THE OWNER.
27. UNPAVED AREAS DISTURBED BY THE CONTRACTOR SHALL BE CLEARED AND GRUBBED IF REQUIRED, AND RESTORED WITH LOAM AND SEED.
28. FOR BURIED PIPE MATERIALS, SEE PIPING SCHEDULE ON SHEET 00 D-003.
29. ALL EXISTING PIPES TO BE ABANDONED SHALL BE PLUGGED AT OPEN ENDS. SEE PIPE PLUGGING DETAIL ON SHEET 99 C-501.

qweq

GWE

GEOTECHNICAL NOTES

1. FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING SEE SPECIFICATION 02210.
2. FOR DEWATERING SEE SPECIFICATION 02140.
3. FOR EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
4. BORING LOCATIONS ARE SHOWN ON THE PLANS AND BORING LOGS ARE BOUND IN THE SPECIFICATIONS.
5. BORINGS WERE TAKEN FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
6. IN ALL AREAS WHERE DEWATERING IS NECESSARY, MEASURES SHALL BE TAKEN TO ENSURE THE PRESERVATION OF WATERCOURSES AND COMPLIANCE WITH ALL REGULATIONS AND LAWS. ALL DEWATERING MUST BE DISCHARGED INTO SEDIMENT TRAPS AS INDICATED IN THE DETAILS AND AS SPECIFIED IN SPECIFICATION SECTION 01568.
7. FOR THE GROUND IMPROVEMENT BY VIBRO-COMPACTION AND/OR VIBRO-REPLACEMENT OF THE SUBSURFACE SOILS BELOW THE PROPOSED SBR TANKS, SEE SPECIFICATION SECTION 02351.

ABBREVIATIONS

ACU	AIR CONDITIONER UNIT	MHW	MEAN HIGH WATER
ALP	AIR LOW PRESSURE	MLW	MEAN LOW WATER
APPROX.	APPROXIMATE	MJ	MECHANICAL JOINT
B&B	BALL AND BURLAP	MSL	MEAN SEA LEVEL
BAF	BIOLOGICAL AERATED FILTER	N.C.	NORMALLY CLOSED
B.H.	BUILDING HEIGHT	N.O.	NORMALLY OPEN
BIT. CONC.	BITUMINOUS CONCRETE	NE	NITRIFIED EFFLUENT
BLDG.	BUILDING	OC	ODOR CONTROL
BPF	BELT PRESS FEED	OV	OVERFLOW
BW	BACKWASH OR BARBED WIRE	PBS	PRINTED BOTH SIDES
CA	COMPRESSED AIR	PCE	PRIMARY CLARIFIER EFFLUENT
CB	CATCH BASIN	PCI	PRIMARY CLARIFIER INFLUENT
CD	CHEMICAL DRAIN	PCW	PROTECTED CITY WATER
CONC.	CONCRETE	PD	PLANT DRAIN
C.I.	CAST IRON	POL	POLYMER
CLF	CHAIN LINK FENCE	PP	POTASSIUM PERMANGANATE
C.O. OR CO	CLEANOUT	PR	PRESSATE
COV	CHEMICAL OVERFLOW	PSL	PRIMARY SLUDGE
CS	CAUSTIC SODA	PVC	POLYVINYL CHLORIDE
CV	CHEMICAL VENT	PW	PLANT WATER
CW	CITY WATER OR CROSS WALK	RCP	REINFORCED CONCRETE PIPE
D	DRAIN	RDT	ROTARY DRUM THICKENER
DI	DUCTILE IRON	RED.	REDUCER
DIA.	DIAMETER	RET.	RETAIN OR RETAINING
DIM.	DIMENSION	RU	ROLLUP (DOOR)
DNE	DENITRIFIED EFFLUENT	RWW	RAW WASTE WATER
DMH	DRAIN MANHOLE	SAM	SAMPLE
DWGS	DRAWINGS	SAN	SANITARY DRAIN
DYL OR DYCL	DOUBLE YELLOW CENTER LINE	SB	SODIUM BISULFITE
E	ELECTRICAL	SBR	SEQUENCING BATCH REACTOR
ECC.	ECCENTRIC	SC	SCUM
EL. OR ELEV.	ELEVATION	SD	STORM DRAIN
EMERG.	EMERGENCY	SEP	SEPTAGE
EOP	EDGE OF PAVEMENT	SH	SODIUM HYPOCHLORITE
EQ	FLOW EQUALIZATION	SL	SLUDGE OR STOP LINE
EXIST.	EXISTING	SMH	SEWER MANHOLE
FCL	FERRIC CHLORIDE	SPD	SUMP PUMP DISCHARGE
FE	FINAL EFFLUENT	SWL	SINGLE WHITE LINE
FES	FLARED END SECTION	SYL	SINGLE YELLOW LINE
FF OR F.F.E.	FINISHED FLOOR ELEVATION	TBM	TEMPORARY BENCHMARK
FM	FORCE MAIN	TDW	THICKENER DILUTION WATER
GAL.	GALLON	TP	TEST PIT
GP	GUARD POST	TSL	THICKENED SLUDGE
GRAN.	GRANITE	TS&V	TAPPING SLEEVE AND VALVE
GR	GRIT	TRANS	TRANSFORMER
GTO	GRAVITY THICKENER OVERFLOW	TWAS	THICKENED WASTE ACTIVATED SLUDGE
GV	GATE VALVE	TYP.	TYPICAL
HORZ.	HORIZONTAL	U	PERF. UNDERDRAIN
HOTL	HIGHEST OBSERVABLE TIDE LINE	UE	UNDERGROUND ELECTRIC
HWS/R	HOT WATER SUPPLY/RETURN	UV	ULTRAVIOLET
INV.	INVERT	V	VENT
LF	LINEAR FOOT	VERT.	VERTICAL
L.O.W.	LIMIT OF WORK	VGC	VERTICAL GRANITE CURB
LPG	LIQUEFIED PETROLEUM GAS (PROPANE)	WAS	WASTE ACTIVATED SLUDGE
MC	MICRO-C	WSO	WATER SHUT OFF
MECH.	MECHANICAL	WQI	WATER QUALITY INLET
MH	MANHOLE	WV	WATER VALVE
		YH	YARD HYDRANT

LEGEND

EXISTING

- UTILITY POLE & GUY WIRE
- UTILITY POLE W/ LIGHT
- LIGHTPOST
- SIGN
- YARD HYDRANT
- UNIDENTIFIED PIPE
- WOODEN POST
- FIRE HYDRANT
- WM — WATER METER
- WV — WATER GATE VALVE
- VENT PIPE
- WATER SHUTOFF VALVE
- CO — CLEANOUT
- TRAFFIC DIRECTION ARROW
- ELECTRIC BOX
- CATCH BASIN (ROUND)
- CATCH BASIN
- (D) DRAIN MANHOLE
- (E) ELECTRIC MANHOLE
- (C) CHEMICAL MANHOLE
- (W) WATER MANHOLE
- (S) SEWER MANHOLE
- (U) UNIDENTIFIED MANHOLE
- JURISDICTIONAL WETLAND SYMBOL
- FLAG POLE
- CONIFEROUS TREE
- DECIDUOUS TREE
- SHRUB
- CONCRETE
- BOULDER
- ROW OF BOULDERS
- LANDSCAPED AREA
- GRAVEL
- LEDGE OUTCROP
- BOLLARD
- DRAINAGE FLOW DIRECTION ARROW
- PROPERTY LINE
- X — X — CHAINLINK FENCE
- OHW — OVERHEAD WIRES
- D — DRAIN LINE
- G — GAS LINE
- W — WATER LINE
- TREE LINE
- SHRUB LINE
- GUARDRAIL
- EDGE OF JURISDICTIONAL WETLAND
- 24 — CONTOUR LINE
- X 75.4 — SPOT GRADE
- P48 — ROCK PROBE
- B13-1 — BORING OR MONITORING WELL
- (W) — MONITORING WELL
- TP#2 — TEST PIT
- BOUND

NEW

- LIMIT OF WORK
- STRUCTURE
- PIPE PLUG OR CAP
- DEMOLITION
- TREE REMOVAL
- GATE VALVE
- PIPE
- PRESSURE PIPE
- DIRECTION OF FLOW
- MANHOLE
- CLEANOUT (C.O.)
- GUARD POST
- BOLLARD
- TREE
- CHAIN LINK FENCE
- PRIVACY FENCE
- SILT FENCE AND STRAW BALE EROSION CONTROL
- COMPOST SILT SOCK
- CONTOUR — 55
- SPOT ELEVATION — × 55.50
- CRUSHED STONE MOWING STRIP
- CONCRETE
- CURB
- BIT. CONC. PAVEMENT
- MILL AND OVERLAY PAVEMENT
- GRAVEL ROAD
- CRUSHED STONE CONSTRUCTION ENTRANCE

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

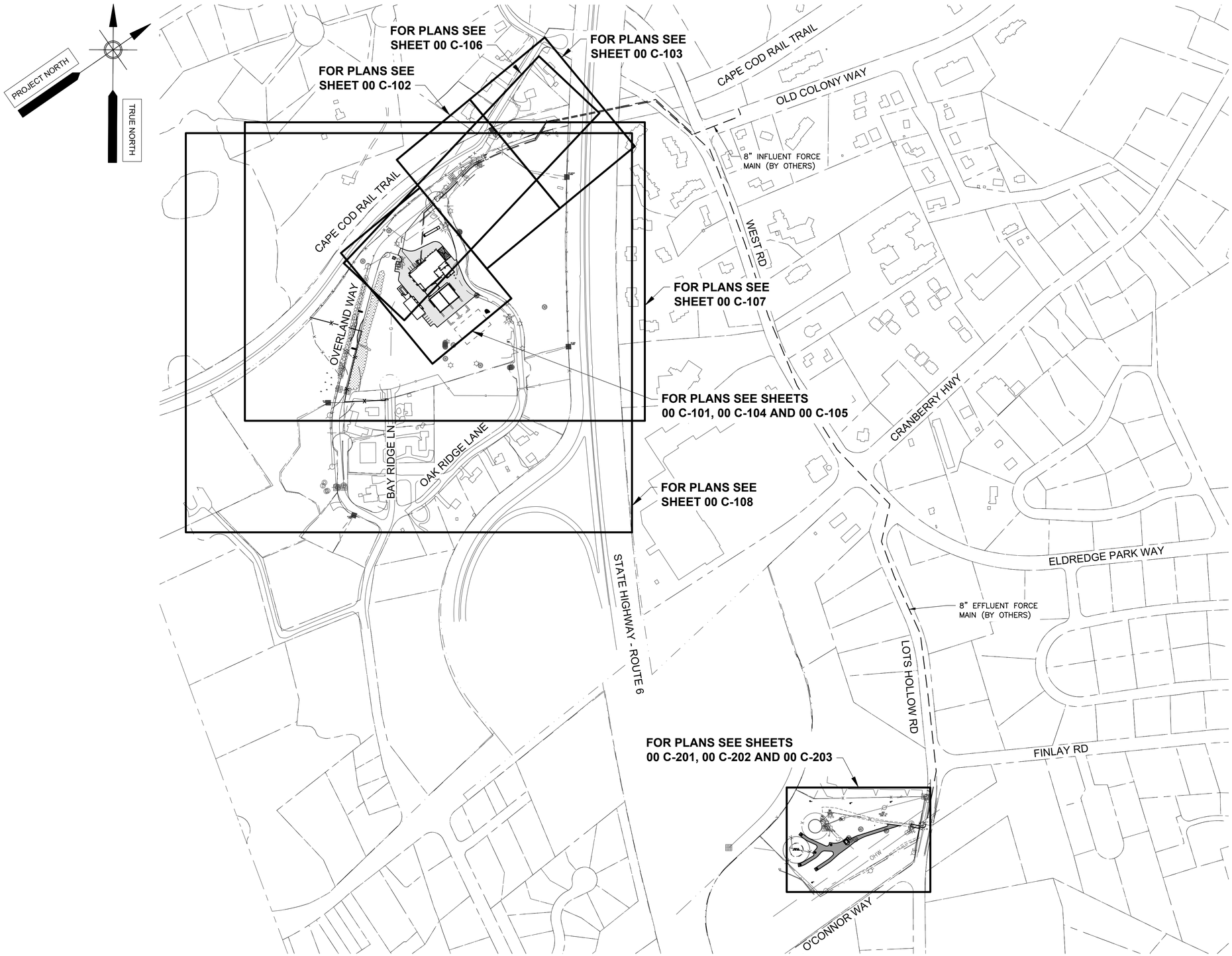
SHEET TITLE

LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NUMBER

00 C-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-001.DWG
LAST UPDATE: Tuesday, February 04, 2020 1:37:09 PM
PLOT DATE: Wednesday, February 05, 2020 2:08:48 PM



PLAN

SCALE: 1"=200'

200 0 200 400

SCALE: 1" = 200'

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C#00 C-100.DWG
LAST UPDATE: Tuesday, January 14, 2020 12:52:01 PM
PLOT DATE: Thursday, January 16, 2020 12:48:21 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

SHEET TITLE

CIVIL KEY PLAN

SHEET NUMBER

00 C-100

FOR CONTINUATION, SEE SHEET 00 C-102

PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. PROTECT EXISTING MONITORING WELLS TO REMAIN.
4. FOR EXISTING UNDERGROUND ELECTRIC CONDUITS AND SITE LIGHTING DEMOLITION, SEE SHEETS 10 ED-001 THRU 10 ED-003.

0 20 40 60
1" = 20' SCALE FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

THOMAS E. PARECE CIVIL No. 34463 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

SHEET TITLE

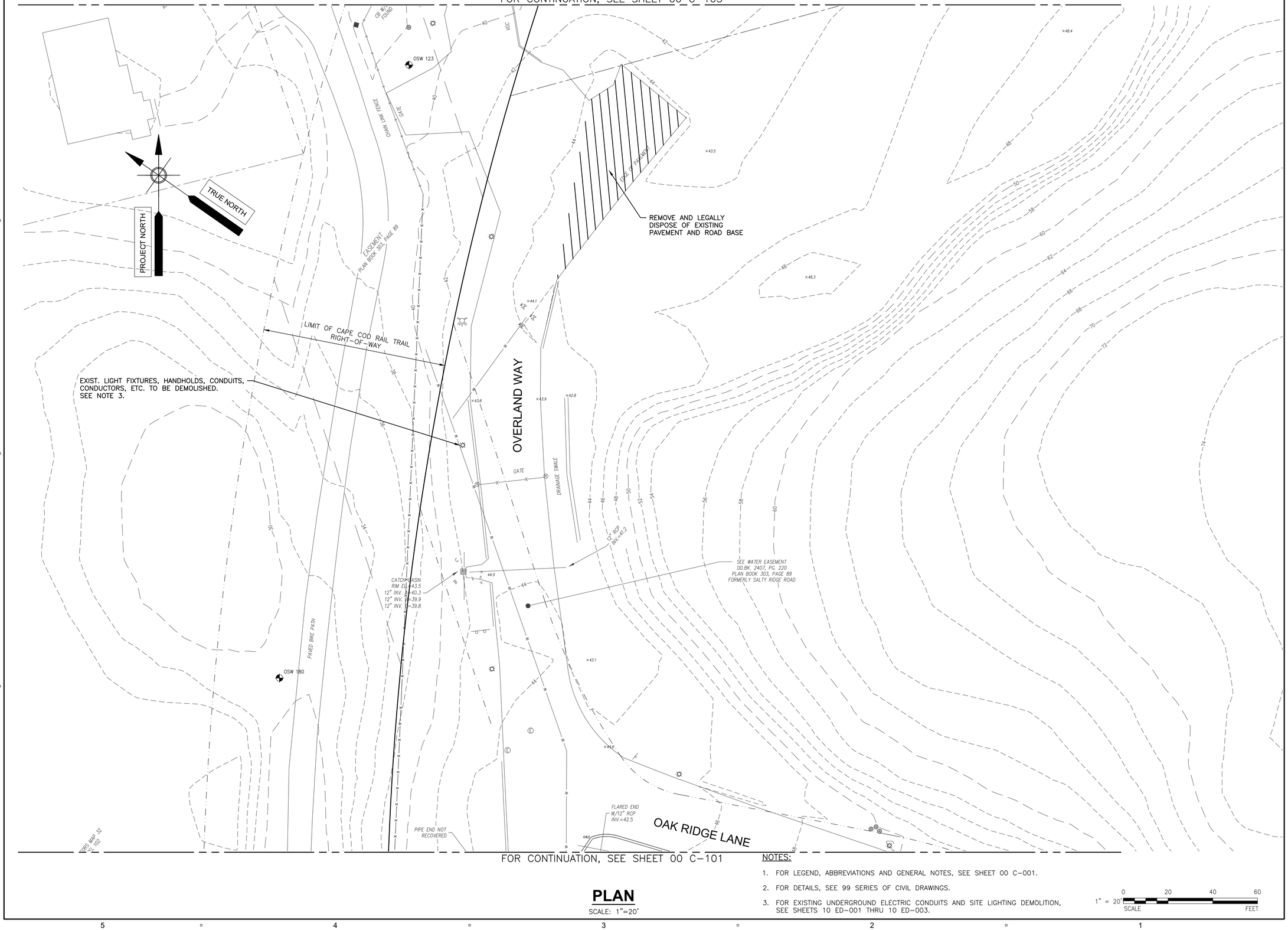
EXIST. CONDITIONS AND DEMOLITION PLAN I - WWTF

SHEET NUMBER

00 C-101

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\00 C-101.DWG
LAST UPDATE: Tuesday, January 14, 2020 11:26:20 AM
PLOT DATE: Thursday, January 16, 2020 12:49:51 PM

FOR CONTINUATION, SEE SHEET 00 C–103



FOR CONTINUATION, SEE SHEET 00 C–101

PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C–001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. FOR EXISTING UNDERGROUND ELECTRIC CONDUITS AND SITE LIGHTING DEMOLITION, SEE SHEETS 10 ED–001 THRU 10 ED–003.

1" = 20' SCALE — 0 20 40 60 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\00 C-102.DWG
LAST UPDATE: Monday, December 2, 2019 11:26:06 AM
PLOT DATE: Thursday, January 16, 2020 12:50:42 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

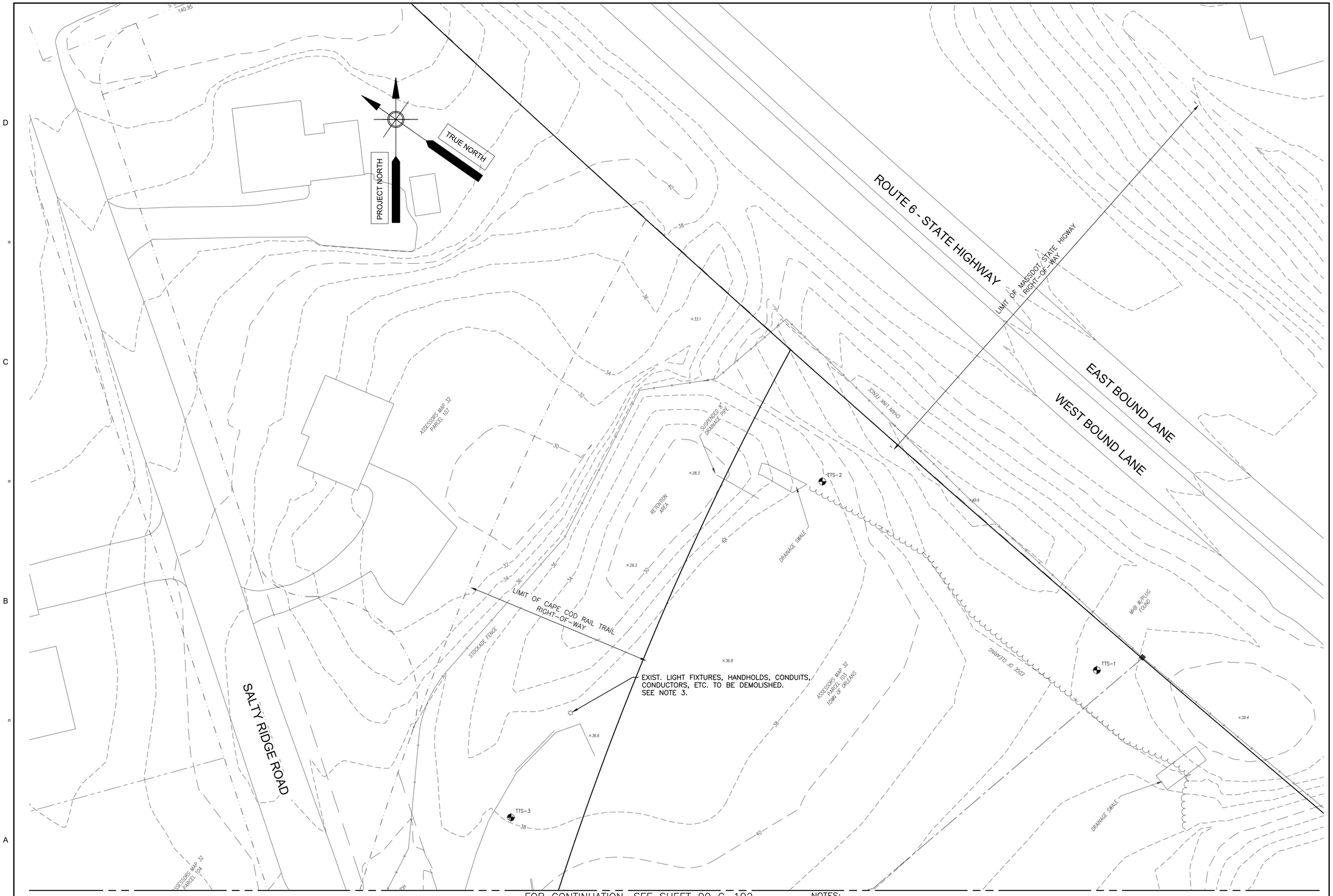
CIVIL

SHEET TITLE

EXIST. CONDITIONS AND DEMOLITION PLAN II - WWTF

SHEET NUMBER

00 C-102



PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. FOR EXISTING UNDERGROUND ELECTRIC CONDUITS AND SITE LIGHTING DEMOLITION, SEE SHEETS 10 ED-001 THRU 10 ED-003.

1" = 20' SCALE (0, 20, 40, 60 FEET)

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\CI00 C-103.DWG
LAST UPDATE: Monday, December 2, 2019 11:36:35 AM
PLOT DATE: Thursday, January 16, 2020 12:51:50 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

THOMAS E. PARECE CIVIL No. 34463 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

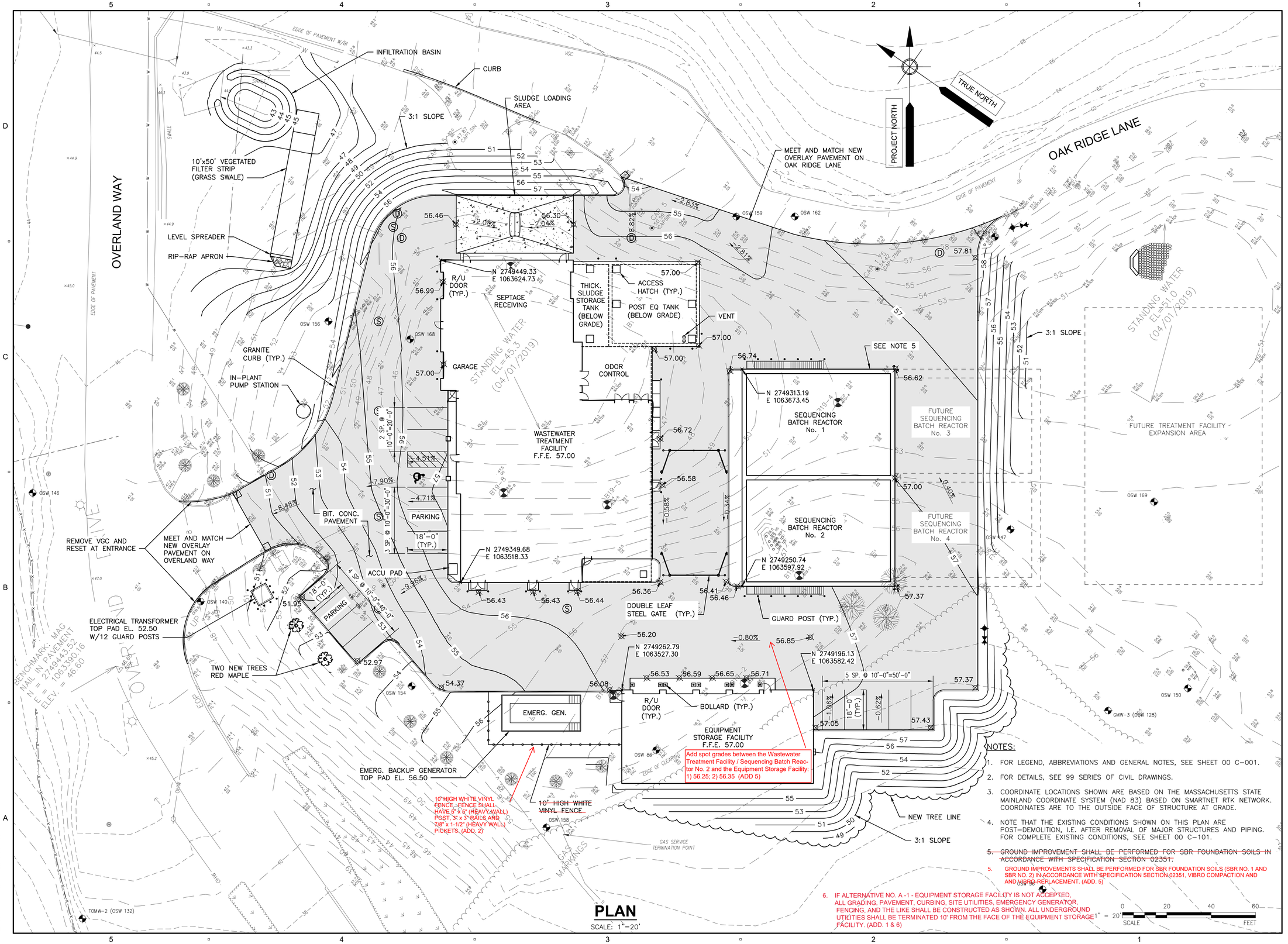
CIVIL

SHEET TITLE

EXIST. CONDITIONS AND DEMOLITION PLAN III - WWTF

SHEET NUMBER

00 C-103



PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. COORDINATE LOCATIONS SHOWN ARE BASED ON THE MASSACHUSETTS STATE MAINLAND COORDINATE SYSTEM (NAD 83) BASED ON SMARTNET RTK NETWORK. COORDINATES ARE TO THE OUTSIDE FACE OF STRUCTURE AT GRADE.
4. NOTE THAT THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE POST-DEMOLITION, I.E. AFTER REMOVAL OF MAJOR STRUCTURES AND PIPING. FOR COMPLETE EXISTING CONDITIONS, SEE SHEET 00 C-101.
5. ~~GROUND IMPROVEMENT SHALL BE PERFORMED FOR SBR FOUNDATION SOILS IN ACCORDANCE WITH SPECIFICATION SECTION 02351.~~
   GROUND IMPROVEMENTS SHALL BE PERFORMED FOR SBR FOUNDATION SOILS (SBR NO. 1 AND SBR NO. 2) IN ACCORDANCE WITH SPECIFICATION SECTION 02351, VIBRO COMPACTION AND AND VIBRO REPLACEMENT. (ADD. 5)
6. IF ALTERNATIVE NO. A -1 - EQUIPMENT STORAGE FACILITY IS NOT ACCEPTED, ALL GRADING, PAVEMENT, CURBING, SITE UTILITIES, EMERGENCY GENERATOR, FENCING, AND THE LIKE SHALL BE CONSTRUCTED AS SHOWN. ALL UNDERGROUND UTILITIES SHALL BE TERMINATED 10' FROM THE FACE OF THE EQUIPMENT STORAGE FACILITY. (ADD. 1 & 6)

1" = 20'
SCALE
0 20 40 60
FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-104 WITH NEWER SURVEY 2-28-20 CHK 1.DWG
LAST UPDATE: Wednesday, March 04, 2020 12:51:49 PM
PLOT DATE: Thursday, March 05, 2020 9:41:08 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-13-20	ADDENDUM 1
A	03-10-20	ADDENDUM 5
A	02-28-20	ADDENDUM 2

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

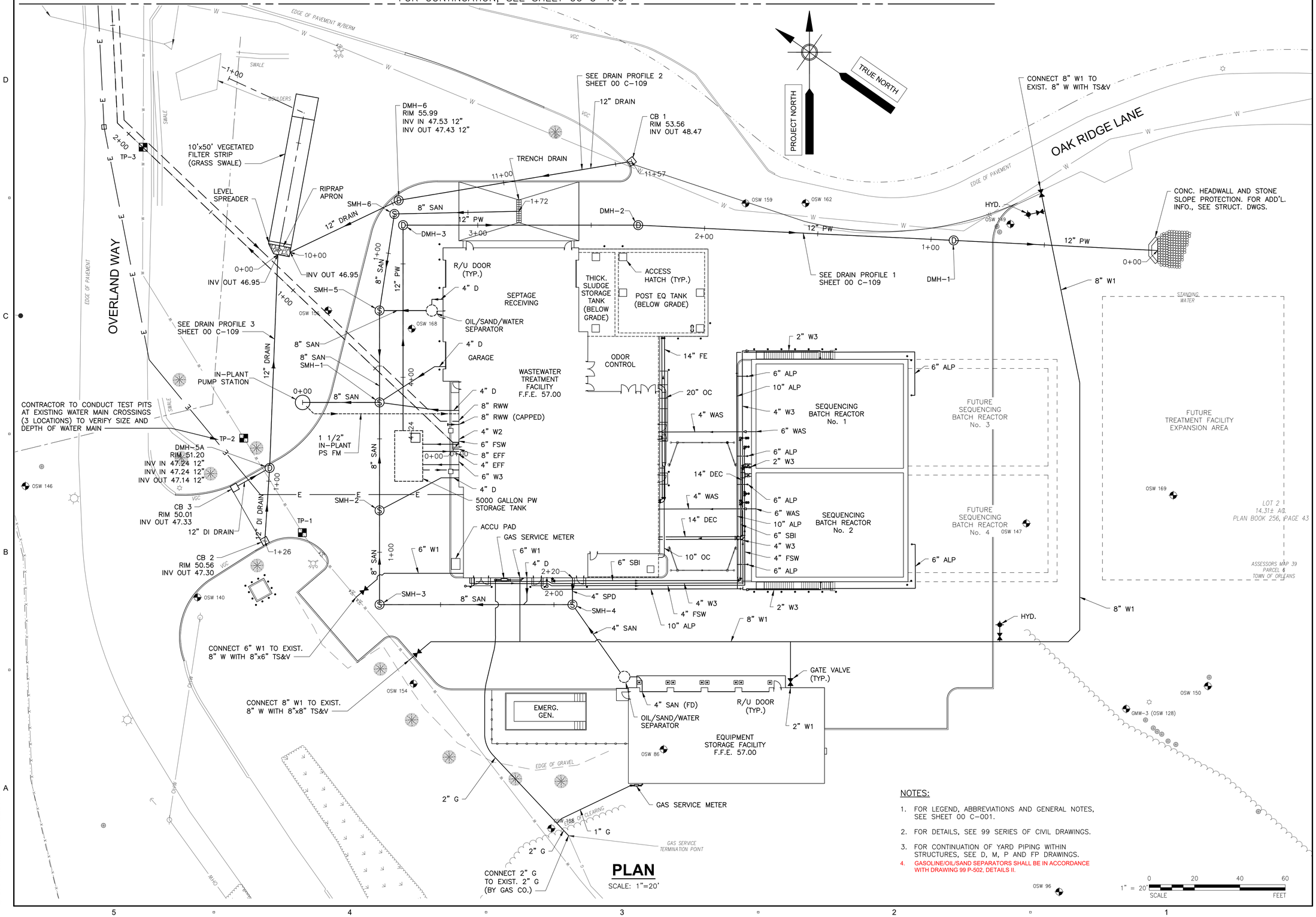
SHEET TITLE

SITE LAYOUT PLAN - WWTF

SHEET NUMBER

00 C-104

FOR CONTINUATION, SEE SHEET 00 C-106



PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. FOR CONTINUATION OF YARD PIPING WITHIN STRUCTURES, SEE D, M, P AND FP DRAWINGS.
4. GASOLINE/OIL/SAND SEPARATORS SHALL BE IN ACCORDANCE WITH DRAWING 99 P-502, DETAILS II.

1" = 20' SCALE 0 20 40 60 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\00 C-105.DWG
LAST UPDATE: Wednesday, February 05, 2020 2:13:14 PM
PLOT DATE: Wednesday, February 05, 2020 2:47:06 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	4-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

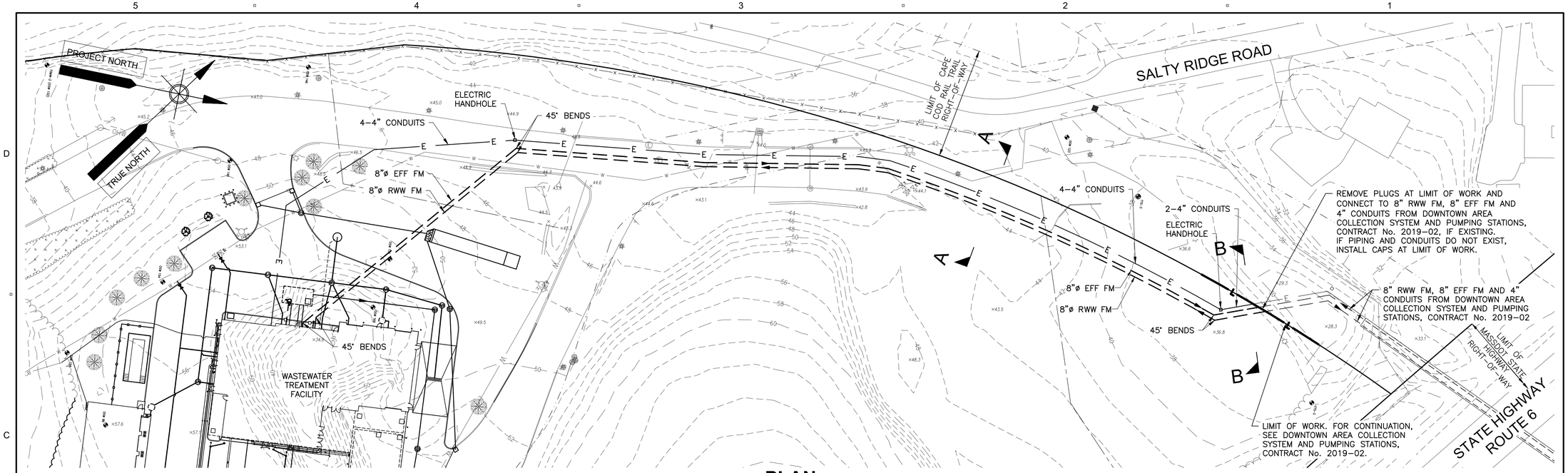
CIVIL

SHEET TITLE

YARD PIPING PLAN I - WWTF

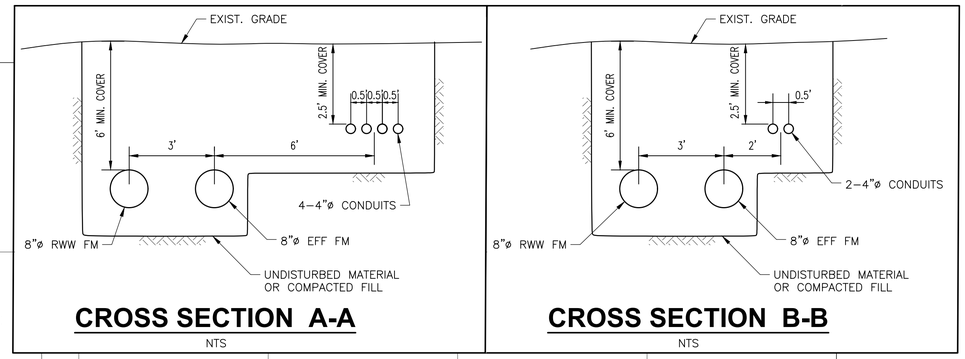
SHEET NUMBER

00 C-105



PLAN

SCALE: 1"=40'

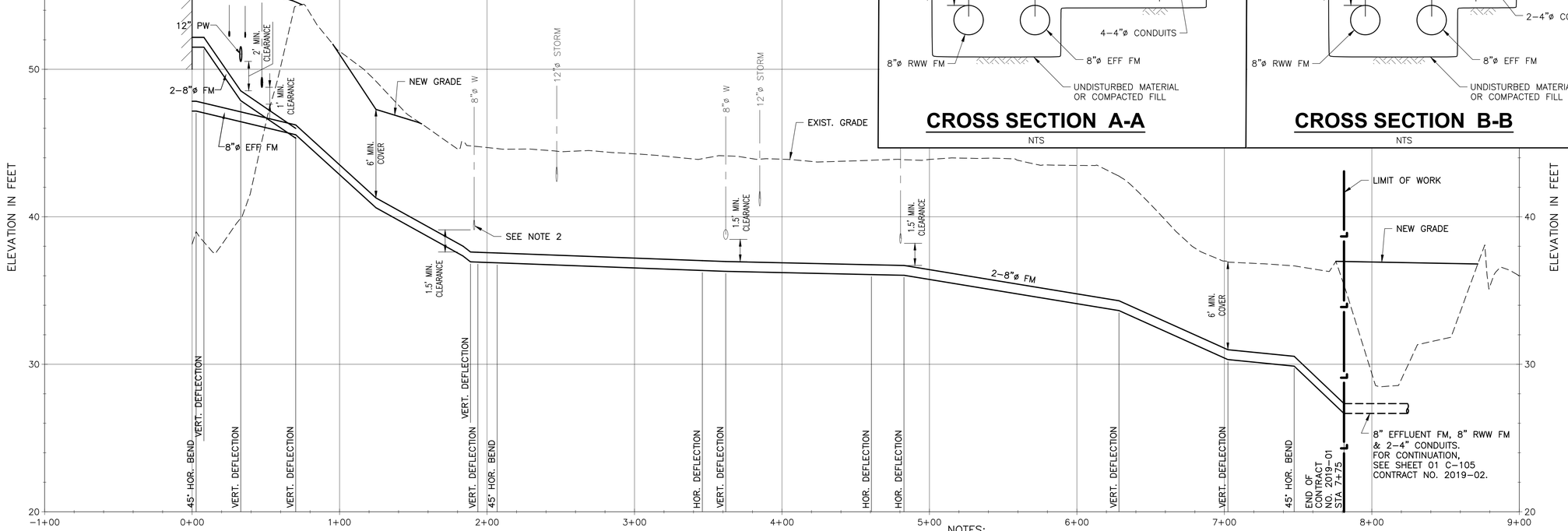


CROSS SECTION A-A

NTS

CROSS SECTION B-B

NTS



RWW PROFILE

SCALE: 1"=40' HORZ.
1"= 4' VERT.

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C–001.
2. WATER MAIN DEPTH SHOWN IS APPROXIMATE AND SHALL BE CONFIRMED BY TEST PIT.
3. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.

HORZ. SCALE IN FEET
40 0 40 80
4 0 4 8
VERT. SCALE IN FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-106.DWG
LAST UPDATE: Wednesday, February 05, 2020 9:06:58 AM
PLOT DATE: Wednesday, February 05, 2020 2:50:29 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER
3/4/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

SHEET TITLE

YARD PIPING PLAN II & PROFILE - WWTF

SHEET NUMBER

00 C-106

PROJECT NORTH

TRUE NORTH

REPAIR APPROX. 30 L.F. OF CHAIN LINK FENCE DAMAGED BY TREE

REPAIR APPROX. 10 L.F. OF CHAIN LINK FENCE DAMAGED BY TREE

REPAIR APPROX. 10 L.F. OF CHAIN LINK FENCE DAMAGED AT BOTTOM. FENCE FABRIC TO BE REATTACHED BY THE CONTRACTOR.

PERMANENTLY CLOSE APPROX. 10 L.F. OF PEDESTRIAN GATE

LIMIT OF CAPE COD RAIL TRAIL RIGHT-OF-WAY

LIMIT OF MADOT STATE HIGHWAY RIGHT-OF-WAY

RTE. 6 (STATE HIGHWAY)

WEST BOUND LANE

EAST BOUND LANE

OVERLAND WAY

OAK RIDGE LANE

BAY RIDGE LANE

WWTF FENCE AND STATE HIGHWAY FENCE

REPAIR APPROX. 20 L.F. OF FENCE DAMAGED BY TREE

BEGIN CHAIN LINK FENCE AT EXIST. STATE HIGHWAY FENCE

STOP LINE

REMOVE GUARDRAIL AS NECESSARY TO INSTALL MOTOR OPERATED GATE

INSTALL 20' WIDE MOTOR OPERATED CHAIN LINK FENCE GATE. GATE OPENS TOWARDS WEST (DOWN SLOPE).

END CHAIN LINK FENCE AT EXIST. FENCE CORNER. CONNECT TO EXIST. FENCE.

SEE NOTE 3

END CHAIN LINK FENCE

STOP LINE

INSTALL 6' HIGH CHAIN LINK FENCE

INSTALL 6' HIGH CHAIN LINK FENCE

REMOVE FENCE FABRIC ONLY

CHAIN LINK FENCE CONFIGURATION AROUND LANDSCAPE FEATURE TO FACILITATE ACCESS TO FIRE HYDRANT

INSTALL 12' WIDE (2-6' LEAFS) MANUALLY OPERATED CHAIN LINK FENCE GATE

INSTALL 6' HIGH CHAIN LINK FENCE APPROX. 1 FOOT INSIDE PROPERTY LINE

COMPOST SILT SOCK

INSTALL 12' WIDE (2-6' LEAFS) MANUALLY OPERATED CHAIN LINK FENCE GATE

REMOVE AND LEGALLY DISPOSE OF EXIST. STOCKADE FENCE

LOT 1
6.23± AC.
PLAN BOOK 256, PAGE 43
ASSESSORS MAP 39
PARCEL 7
TOWN OF ORLEANS
SEPTIC SITE

ASSESSORS MAP 39
PARCEL 9
JANE ELISABETH BERRY
C/O JANE E. LANCASTER

ASSESSORS MAP 39
PARCEL 31
TOWN OF ORLEANS

ASSESSORS MAP 39
PARCEL 8
TOWN OF ORLEANS

ASSESSORS MAP 39
PARCEL 14
RUSSEL CABRAL &
ITSYEMEI CABRAL

LAND COURT PLAN
31048-B

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. FOR DETAIL PLAN OF ROAD LAYOUT AT NEW WWTF GATE, SEE SHEET 99 C-503.
4. NO CUTTING OF TREES IS ALLOWED DURING THE REMOVAL AND LEGAL DISPOSAL OF EXISTING STOCKADE FENCE AND REPAIRS TO EXISTING CHAINLINK FENCE.
5. INSTALLATION OF THE NEW CHAINLINK FENCE SHALL OCCUR FROM THE WWTF PROJECT SITE.

0 60 120 180
1" = 60' SCALE FEET

PLAN

SCALE: 1"=60'

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-107.DWG
LAST UPDATE: Wednesday, February 05, 2020 8:20:41 AM
PLOT DATE: Wednesday, February 05, 2020 2:54:48 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

THOMAS E. PARECE CIVIL No. 34463 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
01/31/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

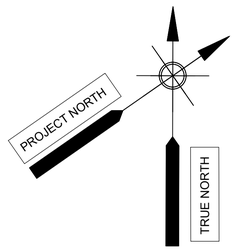
CIVIL

SHEET TITLE

EXISTING FENCE DEMO., REPAIR AND NEW FENCE LOCATION PLAN

SHEET NUMBER

00 C-107



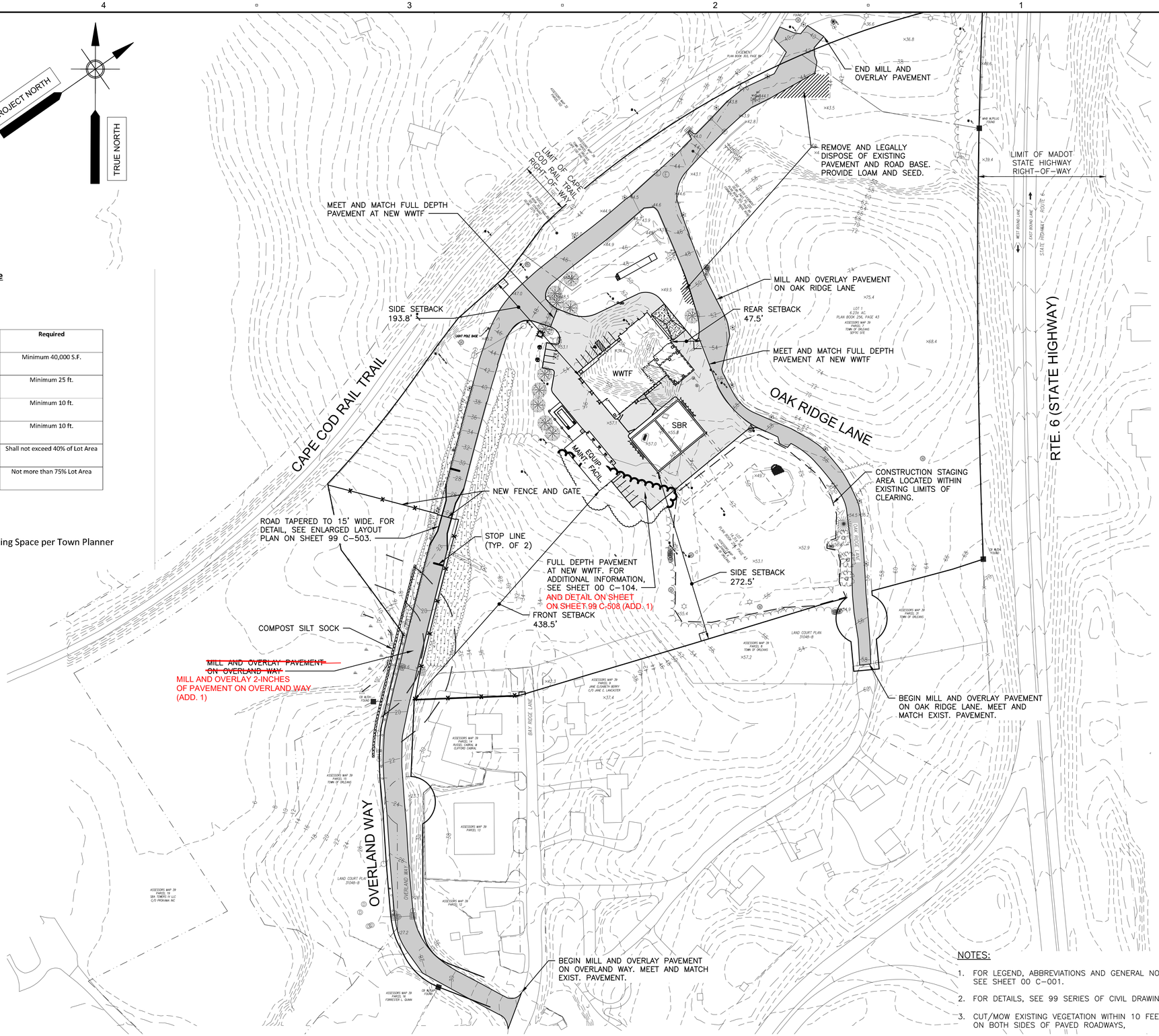
Zoning Compliance Table

Zoning District: GB
Use: Municipal

	Proposed	Required
Lot Area (Upland)	158,919 S.F.	Minimum 40,000 S.F.
Setback - Front Yard	438.5 ft.	Minimum 25 ft.
Setback - Side Yard	193.8 ft.	Minimum 10 ft.
Setback - Rear Yard	47.5 ft.	Minimum 10 ft.
Floor Area Ratio	14,363 S.F./617,681 S.F. *100 = 2.3%	Shall not exceed 40% of Lot Area
Impervious Surface	95,615 S.F./617,681 S.F. *100 = 15.5%	Not more than 75% Lot Area

Parking Requirements:

Employees Maximum Shift: 6
15 Parking Spaces Provided Including One Van Accessible Parking Space per Town Planner Direction.



PLAN
SCALE: 1"=80'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. CUT/MOW EXISTING VEGETATION WITHIN 10 FEET ON BOTH SIDES OF PAVED ROADWAYS,

1" = 80' SCALE: 0, 80, 160, 240 FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

THOMAS E. PARECE CIVIL No. 34463 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-13-20	ADD SHEET TO SET

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

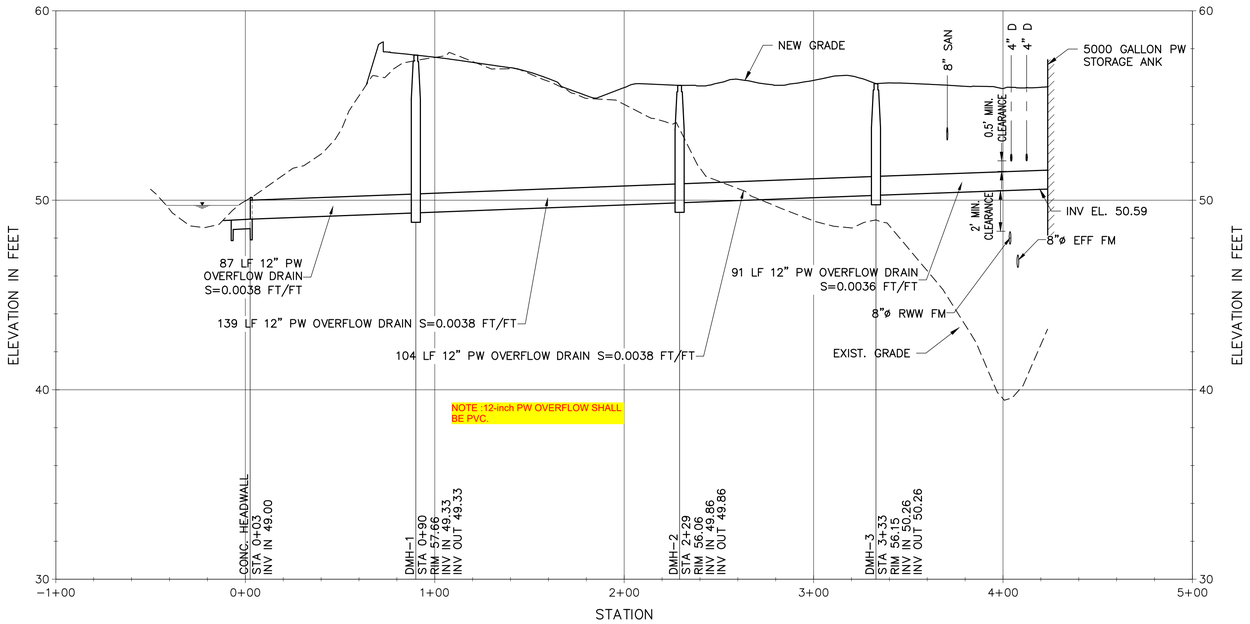
SHEET TITLE

PAVEMENT PLAN AND ZONING COMPLIANCE

SHEET NUMBER

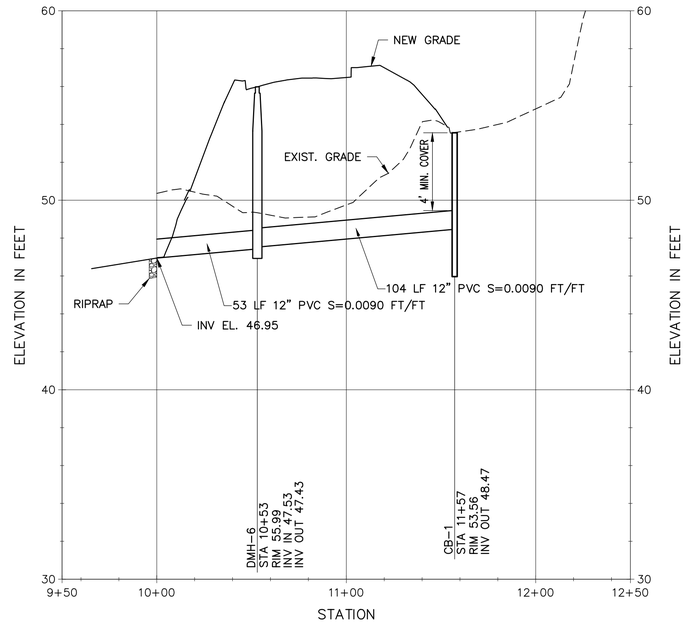
00 C-108

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-108.DWG
LAST UPDATE: Tuesday, January 28, 2020 1:50:43 PM
PLOT DATE: Wednesday, February 12, 2020 6:39:23 AM



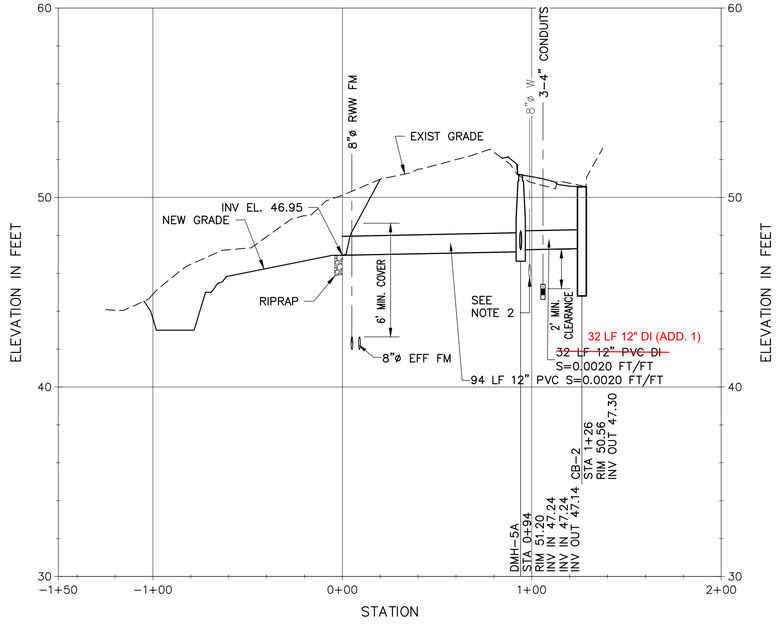
DRAIN PROFILE 1

SCALE: 1"=40' HORZ.
1"= 4' VERT.



DRAIN PROFILE 2

SCALE: 1"=40' HORZ.
1"= 4' VERT.



DRAIN PROFILE 3

SCALE: 1"=40' HORZ.
1"= 4' VERT.

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. WATER MAIN DEPTH SHOWN IS APPROXIMATE AND SHALL BE CONFIRMED BY TEST PIT.
3. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.

HORZ. SCALE IN FEET
40 0 40 80
4 0 4 8
VERT. SCALE IN FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER
9/30/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	4-30-20	ADDENDUM 9
A1		ADDEDNUM 1

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

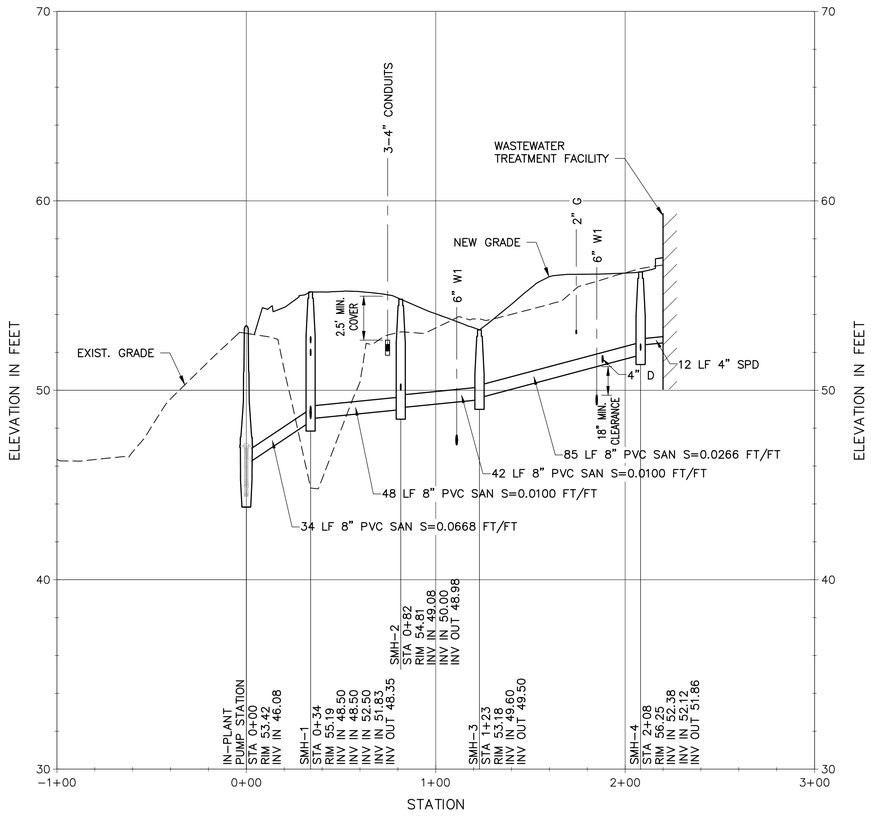
SHEET TITLE

DRAIN PROFILES

SHEET NUMBER

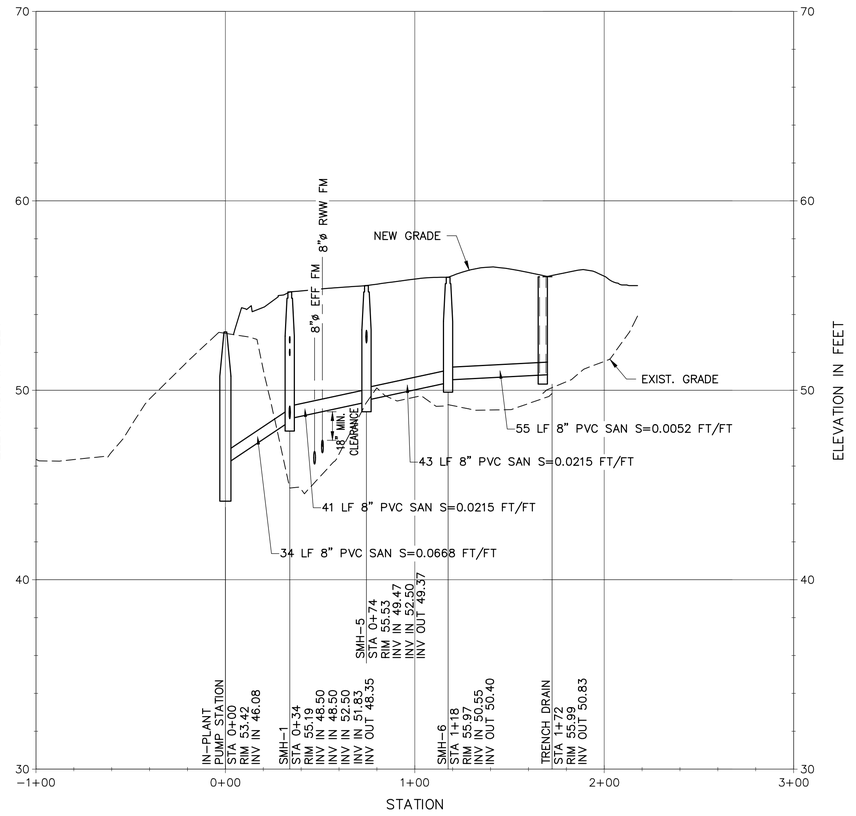
00 C-109

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-109.DWG
LAST UPDATE: Tuesday, January 14, 2020 2:02:52 PM
PLOT DATE: Wednesday, February 05, 2020 2:53:49 PM



SANITARY PROFILE 1

SCALE: 1"=40' HORZ.
1"= 4' VERT.



SANITARY PROFILE 2

SCALE: 1"=40' HORZ.
1"= 4' VERT.

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C–001.
2. WATER MAIN DEPTH SHOWN IS APPROXIMATE AND SHALL BE CONFIRMED BY TEST PIT.
3. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.

HORZ. SCALE IN FEET
40 0 40 80
4 0 4 8
VERT. SCALE IN FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34683
REGISTERED PROFESSIONAL ENGINEER
01/31/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	Z. BANKOVIC
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

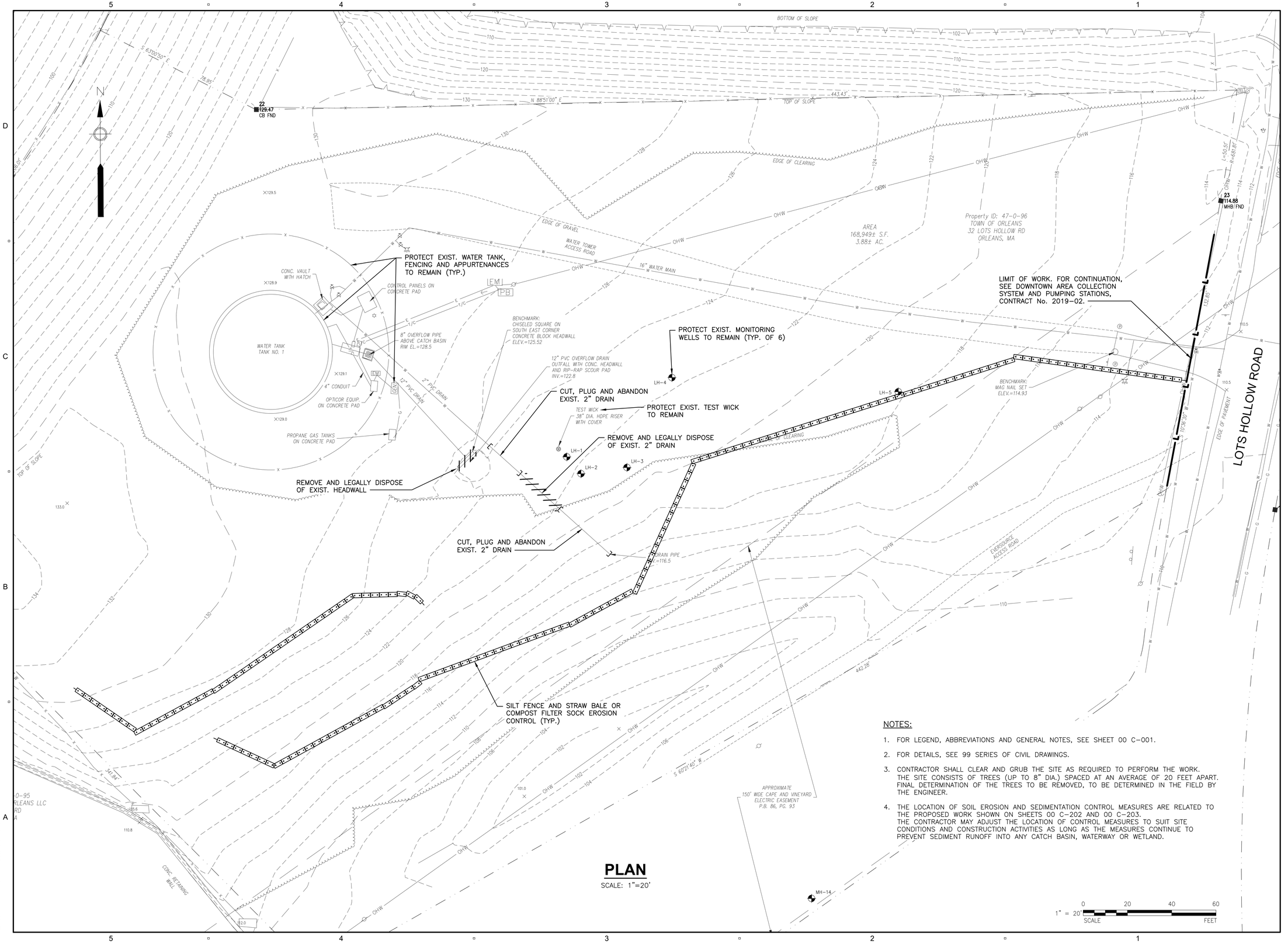
SHEET TITLE

SANITARY PROFILES

SHEET NUMBER

00 C-110

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\00 C-110.DWG
LAST UPDATE: Wednesday, February 05, 2020 10:39:53 AM
PLOT DATE: Wednesday, February 05, 2020 2:53:25 PM



PLAN

SCALE: 1"=20'

1" = 20' SCALE 0 20 40 60 FEET

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. CONTRACTOR SHALL CLEAR AND GRUB THE SITE AS REQUIRED TO PERFORM THE WORK. THE SITE CONSISTS OF TREES (UP TO 8" DIA.) SPACED AT AN AVERAGE OF 20 FEET APART. FINAL DETERMINATION OF THE TREES TO BE REMOVED, TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
4. THE LOCATION OF SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE RELATED TO THE PROPOSED WORK SHOWN ON SHEETS 00 C-202 AND 00 C-203. THE CONTRACTOR MAY ADJUST THE LOCATION OF CONTROL MEASURES TO SUIT SITE CONDITIONS AND CONSTRUCTION ACTIVITIES AS LONG AS THE MEASURES CONTINUE TO PREVENT SEDIMENT RUNOFF INTO ANY CATCH BASIN, WATERWAY OR WETLAND.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. OWEN
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

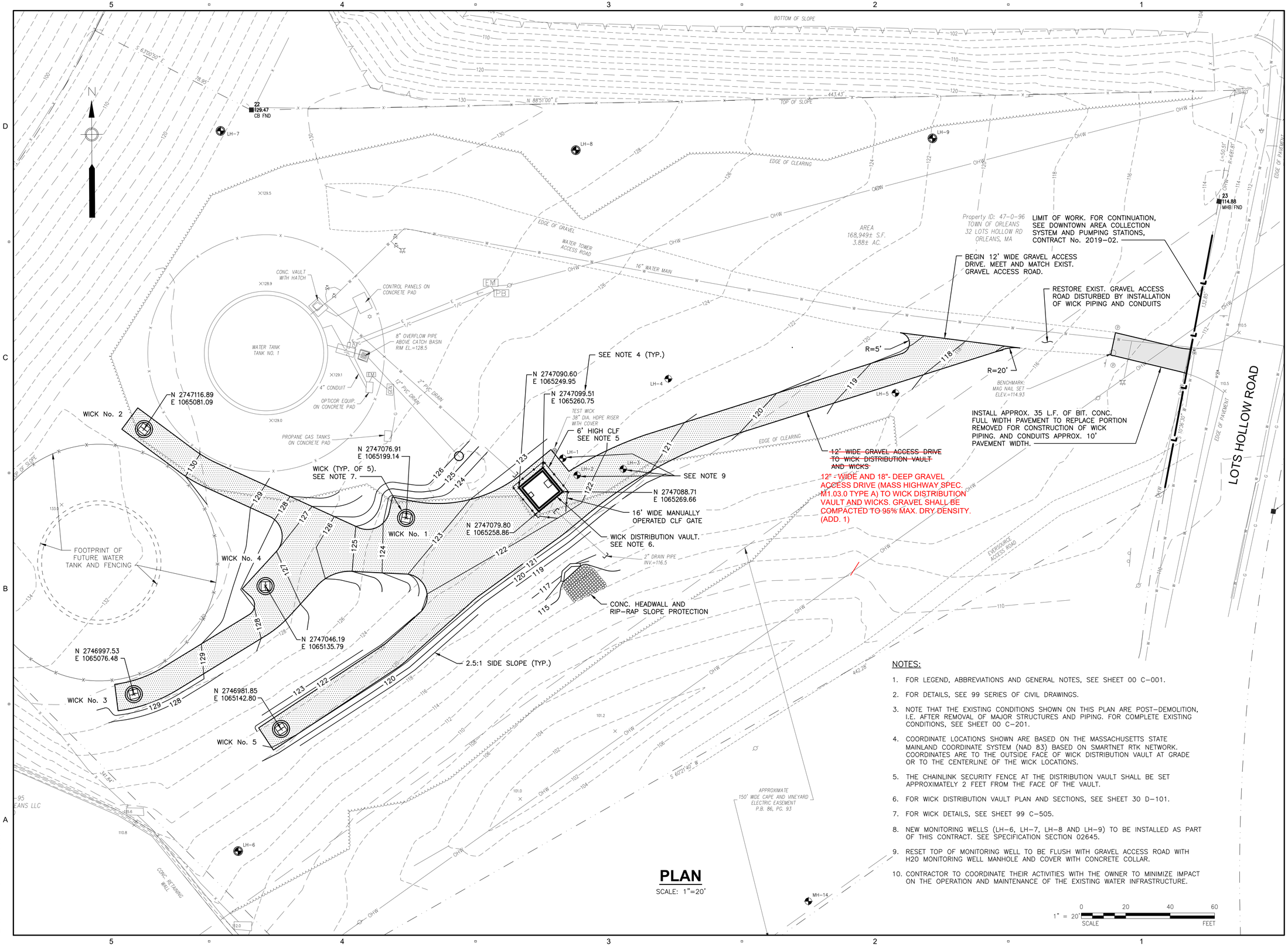
SHEET TITLE

EXIST. COND., DEMO. AND EROS. CONTROL PLAN - EFFLUENT DISPOSAL

SHEET NUMBER

00 C-201

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-201.DWG
LAST UPDATE: Tuesday, December 03, 2019 12:42:31 PM
PLOT DATE: Wednesday, February 05, 2020 3:05:20 PM



PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. NOTE THAT THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE POST-DEMOLITION, I.E. AFTER REMOVAL OF MAJOR STRUCTURES AND PIPING. FOR COMPLETE EXISTING CONDITIONS, SEE SHEET 00 C-201.
4. COORDINATE LOCATIONS SHOWN ARE BASED ON THE MASSACHUSETTS STATE MAINLAND COORDINATE SYSTEM (NAD 83) BASED ON SMARTNET RTK NETWORK. COORDINATES ARE TO THE OUTSIDE FACE OF WICK DISTRIBUTION VAULT AT GRADE OR TO THE CENTERLINE OF THE WICK LOCATIONS.
5. THE CHAINLINK SECURITY FENCE AT THE DISTRIBUTION VAULT SHALL BE SET APPROXIMATELY 2 FEET FROM THE FACE OF THE VAULT.
6. FOR WICK DISTRIBUTION VAULT PLAN AND SECTIONS, SEE SHEET 30 D-101.
7. FOR WICK DETAILS, SEE SHEET 99 C-505.
8. NEW MONITORING WELLS (LH-6, LH-7, LH-8 AND LH-9) TO BE INSTALLED AS PART OF THIS CONTRACT. SEE SPECIFICATION SECTION 02645.
9. RESET TOP OF MONITORING WELL TO BE FLUSH WITH GRAVEL ACCESS ROAD WITH H20 MONITORING WELL MANHOLE AND COVER WITH CONCRETE COLLAR.
10. CONTRACTOR TO COORDINATE THEIR ACTIVITIES WITH THE OWNER TO MINIMIZE IMPACT ON THE OPERATION AND MAINTENANCE OF THE EXISTING WATER INFRASTRUCTURE.

1" = 20' SCALE 0 20 40 60 FEET

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\00 C-202.DWG
LAST UPDATE: Tuesday, February 04, 2020 13:52:45 PM
PLOT DATE: Wednesday, February 05, 2020 3:06:10 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34483
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. OWEN
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

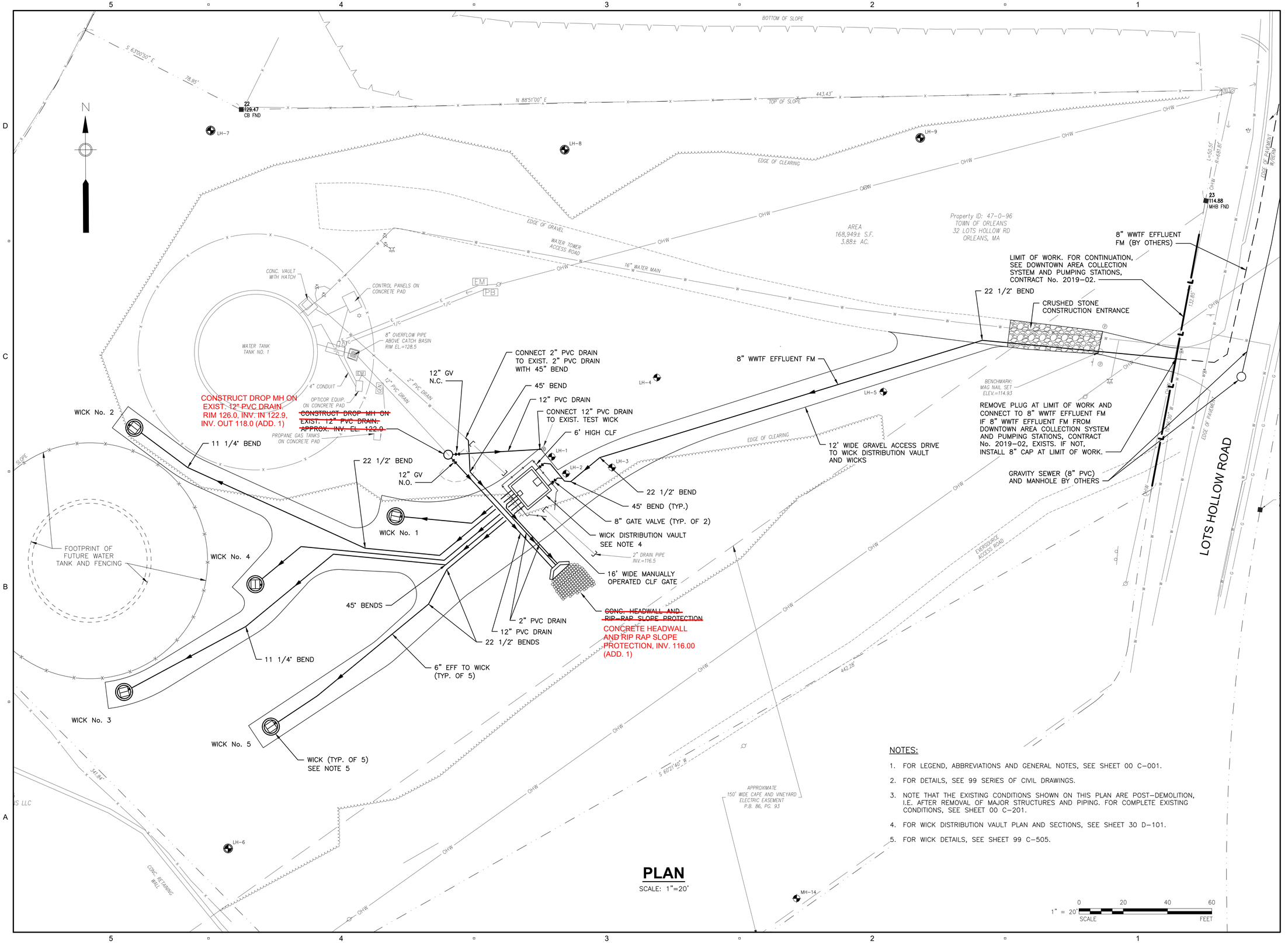
CIVIL

SHEET TITLE

SITE PLAN - EFFLUENT DISPOSAL

SHEET NUMBER

00 C-202



PLAN

SCALE: 1"=20'

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR DETAILS, SEE 99 SERIES OF CIVIL DRAWINGS.
3. NOTE THAT THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE POST-DEMOLITION, I.E. AFTER REMOVAL OF MAJOR STRUCTURES AND PIPING. FOR COMPLETE EXISTING CONDITIONS, SEE SHEET 00 C-201.
4. FOR WICK DISTRIBUTION VAULT PLAN AND SECTIONS, SEE SHEET 30 D-101.
5. FOR WICK DETAILS, SEE SHEET 99 C-505.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C00 C-203.DWG
LAST UPDATE: Tuesday, February 04, 2020 2:42:06 PM
PLOT DATE: Wednesday, February 05, 2020 3:07:12 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. OWEN
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

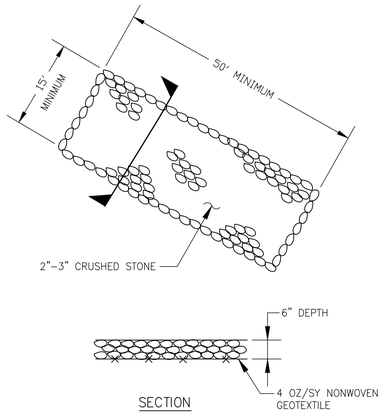
CIVIL

SHEET TITLE

YARD PIPING PLAN - EFFLUENT DISPOSAL

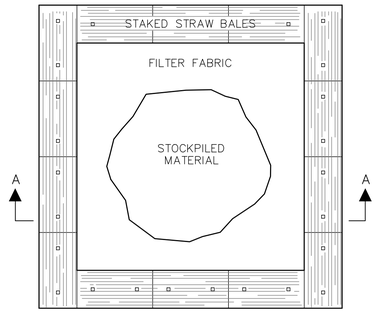
SHEET NUMBER

00 C-203

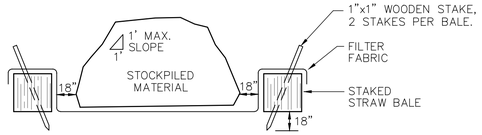


CRUSHED STONE CONSTRUCTION ENTRANCE

NTS



PLAN

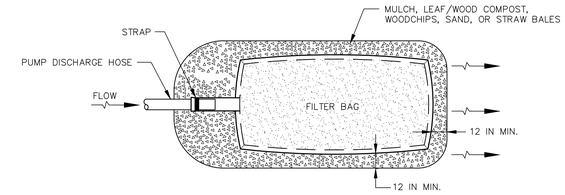


SECTION A–A

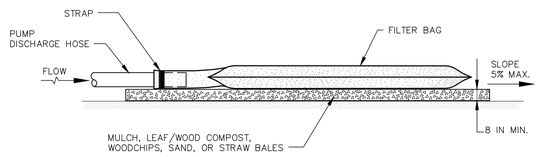
NOTE:
DIMENSIONS OF STOCKPILE AREA MAY VARY DEPENDING ON QUANTITY OF EXCAVATION. AVOID OVERTOPPING OR SLOPES IN EXCESS OF 1:1

TEMPORARY STOCKPILE AREA

NOT TO SCALE



PLAN VIEW



ELEVATION

CONSTRUCTION SPECIFICATIONS

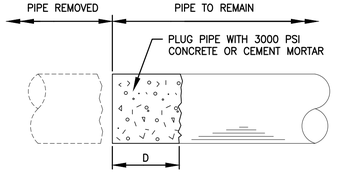
1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D–4632
PUNCTURE	150 LB	ASTM D–4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D–4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D–4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D–4355
APPARENT OPENING SIZE (AOS)	0.15–0.18 MM	ASTM D–4751
SEAM STRENGTH	90%	ASTM D–4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

SEDIMENTATION FILTER BAG

NOT TO SCALE

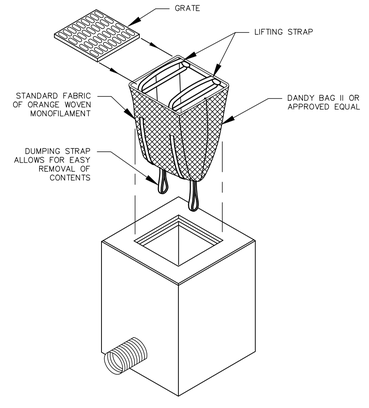


NOTES:

1. PLUG ALL ABANDONED PIPES AT THEIR TERMINATIONS.
2. DEPTH OF PLUG (D) SHALL BE EQUAL TO DIAMETER OF PIPE (12" MIN.).

TYPICAL PIPE PLUGGING DETAIL

NTS



INSTALLATION AND MAINTENANCE:

LOCATION: PROVIDE IN ALL EXIST. AND NEW CATCH BASINS.

INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

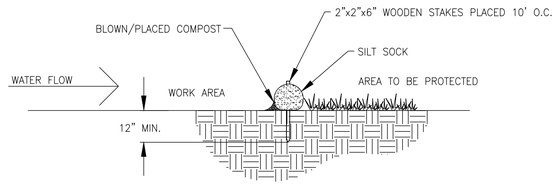
MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

UNACCEPTABLE INLET PROTECTION METHOD:

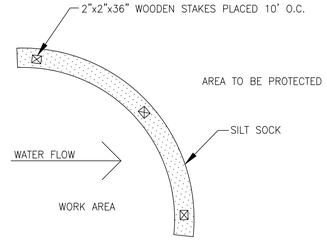
A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

SEDIMENT CONTROL AT CATCH BASINS

NOT TO SCALE



SECTION



PLAN

NOTES:

1. SEE SPECIFICATIONS FOR SILT SOCK AND COMPOST FILL MATERIAL REQUIREMENTS.

COMPOST SILT SOCK

NOT TO SCALE

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

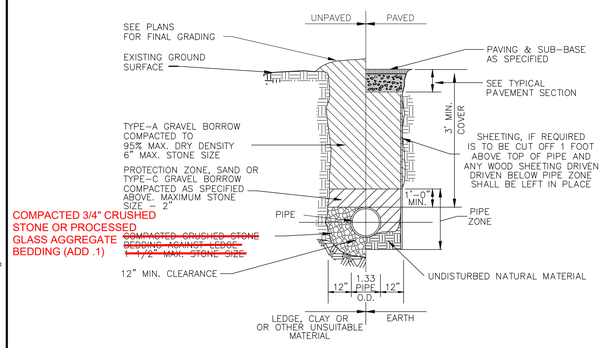
SHEET TITLE

DETAILS I

SHEET NUMBER

99 C-501

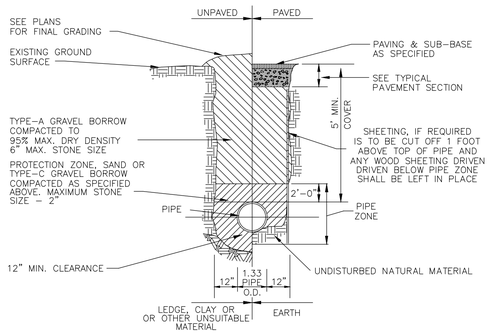
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\99 C-501.DWG
LAST UPDATE: Wednesday, January 15, 2020 2:09:22 PM
PLOT DATE: Thursday, January 16, 2020 1:02:14 PM



1. GRAVEL BORROW SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M1.03.0
2. CRUSHED STONE BEDDING SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M2.01.1

TYPICAL DRAIN TRENCH DETAIL

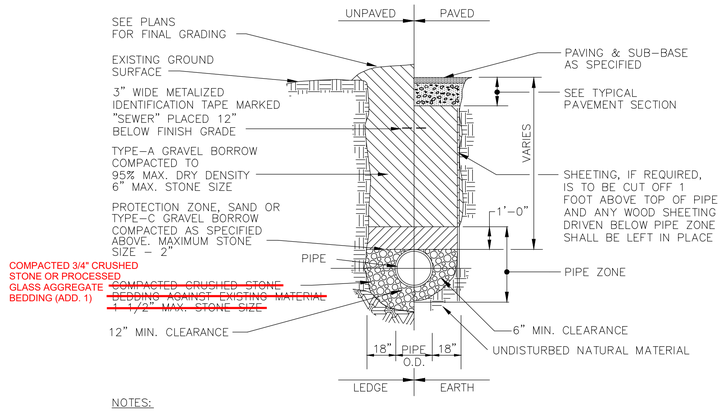
NOT TO SCALE



1. GRAVEL BORROW SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M1.03.0
2. CRUSHED STONE BEDDING SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M2.01.1
3. IN LIEU OF CRUSHED STONE BEDDING THE CONTRACTOR MAY UTLIZE PGA FOR BEDDING (ADD. 1)

TYPICAL WATER TRENCH DETAIL

NOT TO SCALE

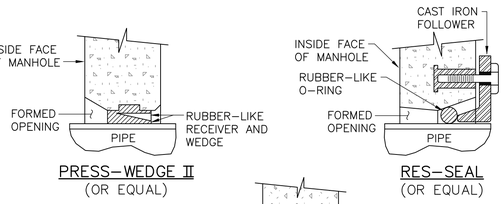


NOTES:

1. GRAVEL BORROW SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M1.03.0
2. CRUSHED STONE BEDDING SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M2.01.1

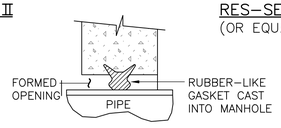
GRAVITY SEWER/FORCE MAIN TRENCH DETAIL

NOT TO SCALE

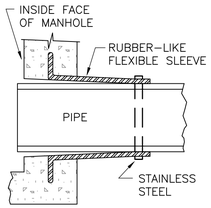


PRESS-WEDGE II (OR EQUAL)

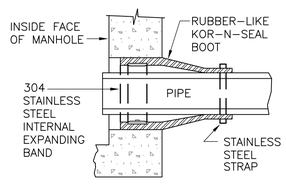
RES-SEAL (OR EQUAL)



A-LOK (OR EQUAL)



LOCK-JOINT FLEXIBLE MANHOLE SLEEVE (OR EQUAL)

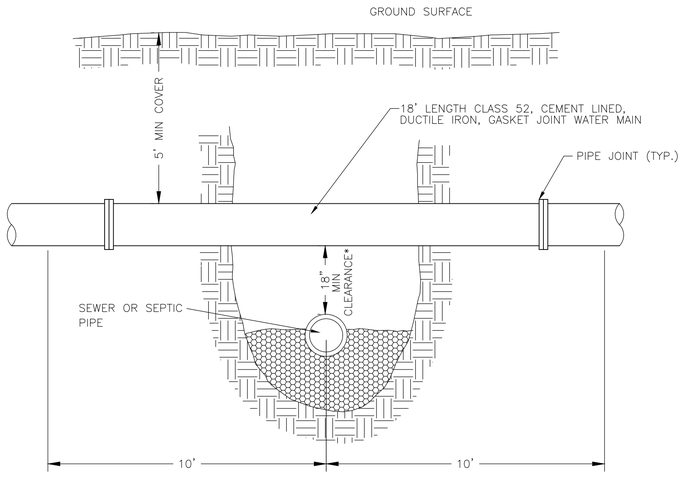


KOR-N-SEAL JOINT SLEEVE (OR EQUAL)

NOTE:
ALL GASKETS, SEALANTS, MORTAR ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

TYPICAL SLEEVE DETAILS

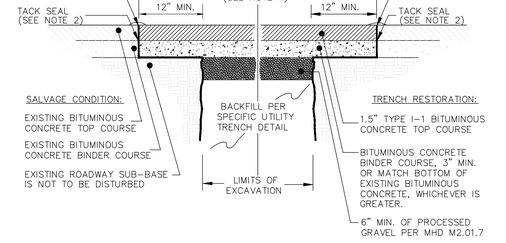
NOT TO SCALE



* WHEN THE CROSSING AS SHOWN IS LESS THAN 18" VERTICAL CLEARANCE THE UTILITY BEING INSTALLED MUST BE SLEEVED 10' ON BOTH SIDES OF THE CROSSING WITH SDR35 PVC PIPE. IF THE SEWER MAIN OR SERVICE CROSSES ABOVE THE WATERMAIN OR SERVICE, AGAIN THE UTILITY BEING INSTALLED MUST BE SLEEVED 10' ON BOTH SIDES OF THE CROSSING WITH SDR35 PVC PIPE. SEAL ENDS OF SER35 PVC WITH CONCRETE.

TYPICAL WATER CROSSING

NOT TO SCALE



1. ALL INSTALLATION AND MATERIAL SPECIFICATIONS PER MASS. HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1988 AS AMENDED.
2. ALL EXPOSED BITUMINOUS CONCRETE IS TO BE TACKED PER MHD PRIOR TO NEW BITUMINOUS CONCRETE INSTALLATION.
3. ALL EXPOSED JOINTS ARE TO BE SEALED WITH TACK AND STONE DUST.
4. ANY TOP COURSE APPLIED AT A WIDTH OF 6' WIDE OR GREATER IS TO BE PLACED BY MACHINE/BOX SPREADER WHEN & AS DIRECTED BY THE TOWN OF ORLEANS.

TYPICAL TRENCH REPAIR & PAVEMENT SECTION DETAIL

NOT TO SCALE

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

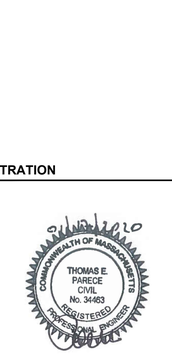
OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

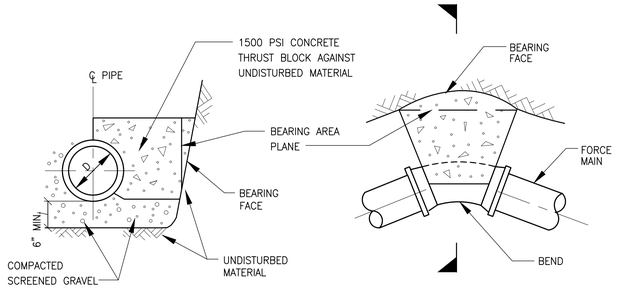
SHEET TITLE

DETAILS II

SHEET NUMBER

99 C-502

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C099 C-502.DWG
LAST UPDATE: Wednesday, February 05, 2020 1:53:12 PM
PLOT DATE: Wednesday, February 05, 2020 2:03:46 PM



SECTION PLAN

NOTES:
1. WHERE SO INDICATED ON PLANS, THE FORCE MAIN BENDS SHALL BE BACKED UP WITH A CONCRETE THRUST BLOCK BETWEEN THE PIPE AND UNDISTURBED MATERIAL.
2. REQUIRED BEARING AREA TO BE CALCULATED ON VERTICAL PLANE 90 DEG. TO RADIAL PLANE PASSING THROUGH MIDPOINT OF BEND.
3. MINIMUM BEARING AREA: 2.0 SQ.FT.
4. SEE PLANS FOR REQUIRED BEARING AREAS GREATER THAN MINIMUM.

~~FORCE MAIN THRUST BLOCK~~
NOT TO SCALE

SEWER FORCE MAIN THRUST BLOCK
(ADD. 1)

TABLE OF MINIMUM BEARING AREAS IN SQ. FT. AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

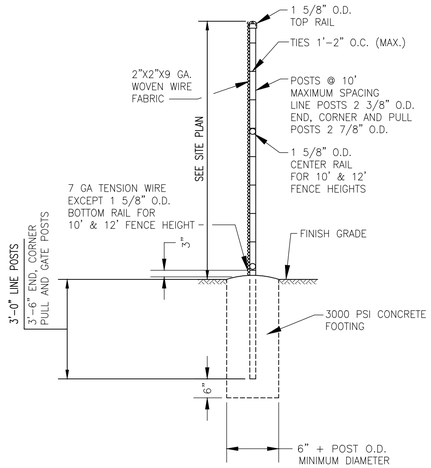
PIPE SIZE	BEND	PRESSURE 150 PSI TYPE OF SOIL CONDITION A	B	C	D	E	F	G
6"	TEES & PLUGS	8.5	4.5	3	2.5	1.5	1.5	1
	90	12	6	4	3	2	1.5	1.5
	45	6.5	3.5	2.5	2	1.5	1	1
	22 1/2	3.5	2	1.5	1	1	0.5	0.5
8"	TEES & PLUGS	15.5	8	5.5	4	3	2	1.5
	90	21.5	11	7.5	5.5	4	3	2.5
	45	12	6	4	3	2	1.5	1.5
	22 1/2	6	3	2	1.5	1	1	1
12"	TEES & PLUGS	34	17	11.5	8.5	6	4.5	3.5
	90	48	24	16	12	8	6	5
	45	26	13	9	6.5	4.5	3.5	3
	22 1/2	13.5	7	4.5	3.5	2.5	2	1.5
16"	TEES & PLUGS	60.5	30.5	20.5	15.5	10.5	8	6.5
	90	85.5	43	28.5	21.5	14.5	11	9
	45	46.5	23.5	15.5	12	8	6	5
	22 1/2	23.5	12	8	6	4	3	2.5

TYPE OF SOIL CONDITION (ADD. 1) — LATERAL BEARING PRESSURE (LBS PER SQ. FT.)

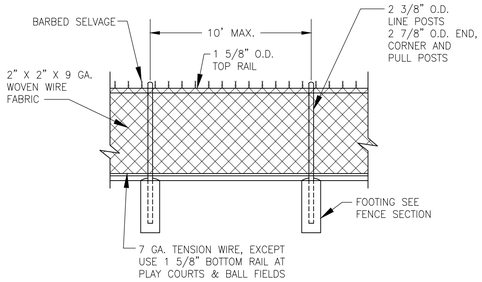
A	SOFT CLAY; FINE LOOSE SAND	500
B	SAND & CLAY MIXED OR IN LAYERS; FINE CONFINED SAND	1000
C	HARD DRY CLAY	1500
D	COARSE SAND	2000
E	GRAVEL	3000
F	SOFT ROCK	4000
G	HARD PAN	5000

NOTES:
1. FOR FITTINGS WITH LESS THAN 22 1/2° DEFLECTION USE BEARING AREAS FOR 22 1/2 BEND.
2. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND ROCK FACE.
3. THE CONTRACTOR SHALL SUBMIT, 2-WEEKS IN ADVANCE OF PLACEMENT, WORKING DRAWINGS FOR EACH THRUST BLOCK, TO THE ENGINEER, FOR APPROVAL PRIOR TO INSTALLATION.
4. BEARING AREAS FOR THRUST BLOCKS FOR PIPE LARGER THAN 24 IN. SHALL BE DESIGNED BASED ON SOIL BORING DATA.
5. ACTUAL FIELD CONDITIONS SHALL BE VERIFIED DURING INSTALLATION.

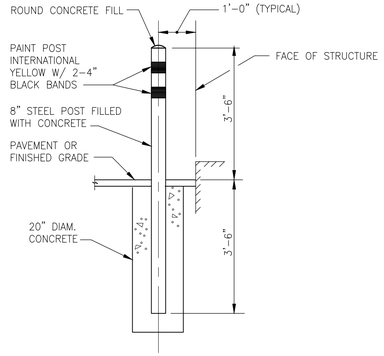
CONCRETE THRUST BLOCK BEARING AREAS FOR WATER MAIN
NOT TO SCALE



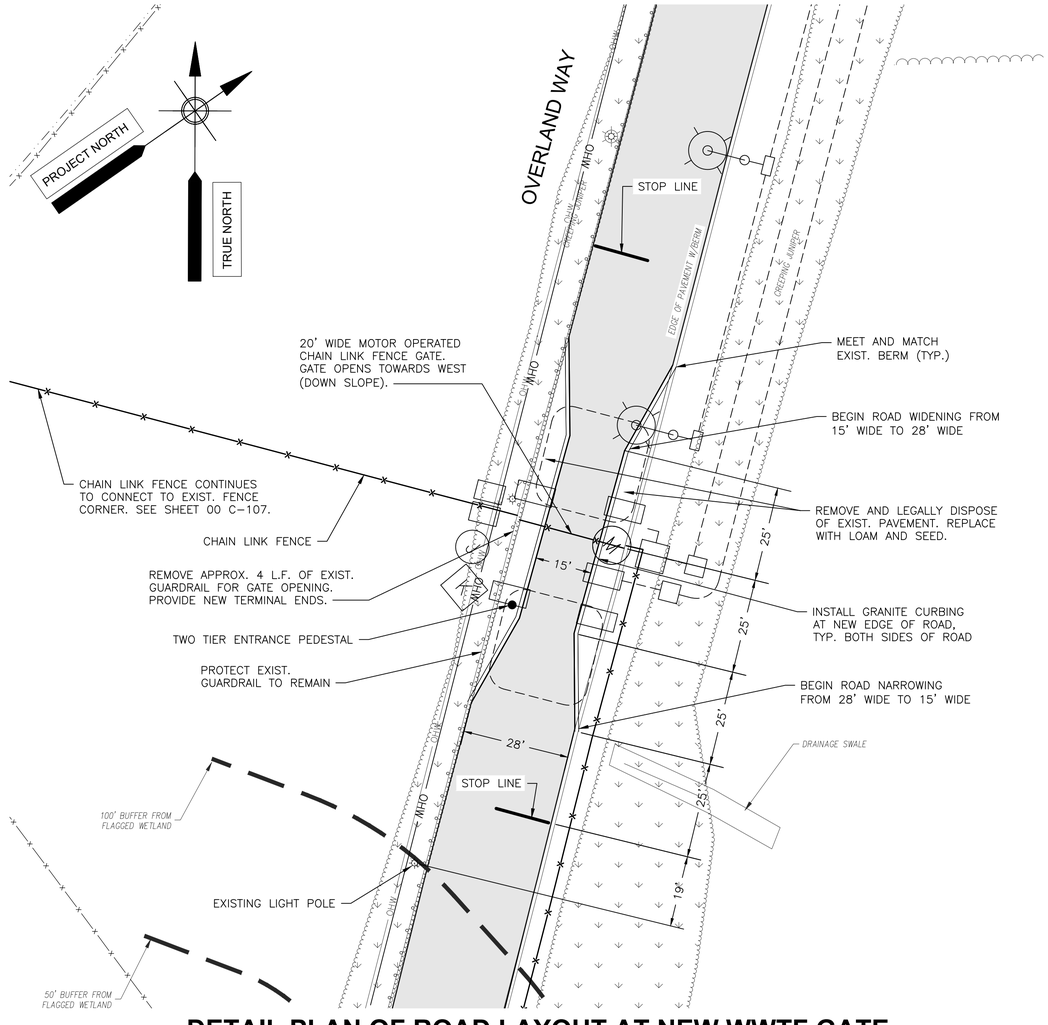
CHAIN LINK FENCE SECTION
NOT TO SCALE
2-1.45.2.1 (REV. 12-15-94)



6' HEIGHT CHAIN LINK FENCE
NOT TO SCALE
2-1.45.1.2 (REV. 12-15-94)



GUARD POST
NOT TO SCALE
2-1.44.1 (REV. 12-22-05)



DETAIL PLAN OF ROAD LAYOUT AT NEW WWTF GATE
SCALE: 1"=20'

1" = 20' SCALE 0 20 40 60 FEET

NOTES:
1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR ELECTRICAL, SEE SHEET 10 E-002.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS THOMAS E. PARECE CIVIL No. 34463 REGISTERED PROFESSIONAL ENGINEER 1/31/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

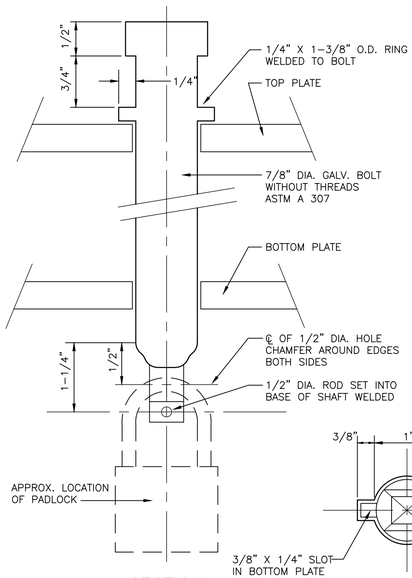
SHEET TITLE

DETAILS III

SHEET NUMBER

99 C-503

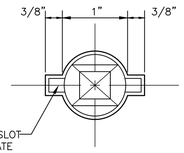
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C099 C-503.DWG
LAST UPDATE: Wednesday, February 05, 2020 12:56:52 PM
PLOT DATE: Wednesday, February 05, 2020 2:04:16 PM



SECTION

LOCK PIN DETAIL

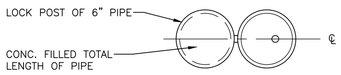
NOT TO SCALE



PLAN

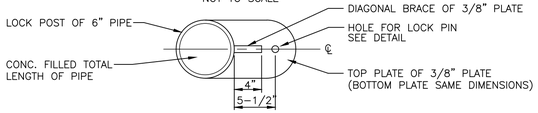
LOCK PIN DETAIL

NOT TO SCALE



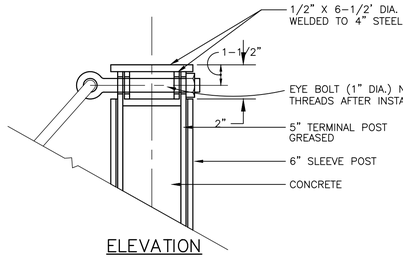
CROSS SECTION THRU CAN LOCK POST

NOT TO SCALE



CROSS SECTION ABOVE TOP PLATE

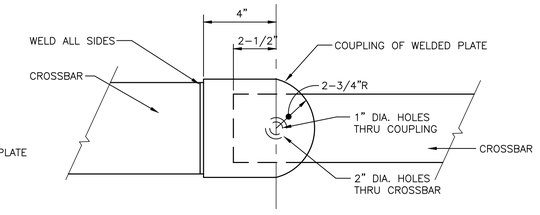
NO TO SCALE



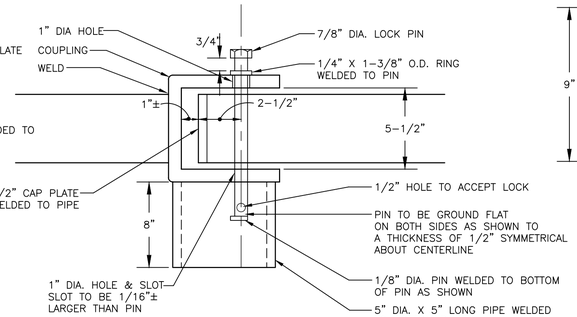
ELEVATION

CAP DETAIL

SCALE: 3" = 1'-0"



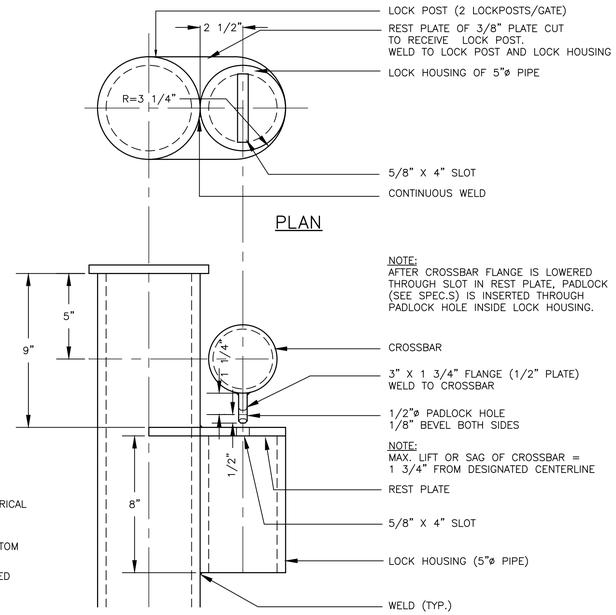
PLAN



ELEVATION

COUPLING AND LOCK DETAIL

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

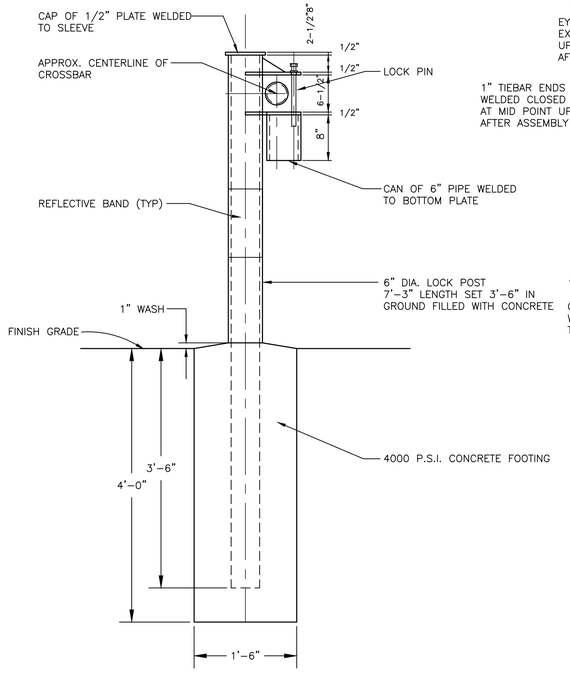


PLAN

ELEVATION

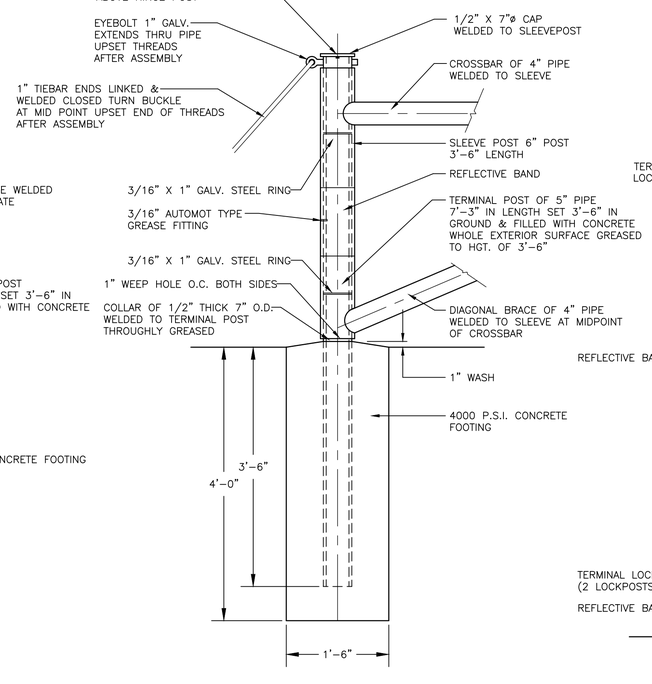
FLANGE, REST PLATE AND LOCK HOUSING DETAILS

SCALE: 3" = 1'-0"



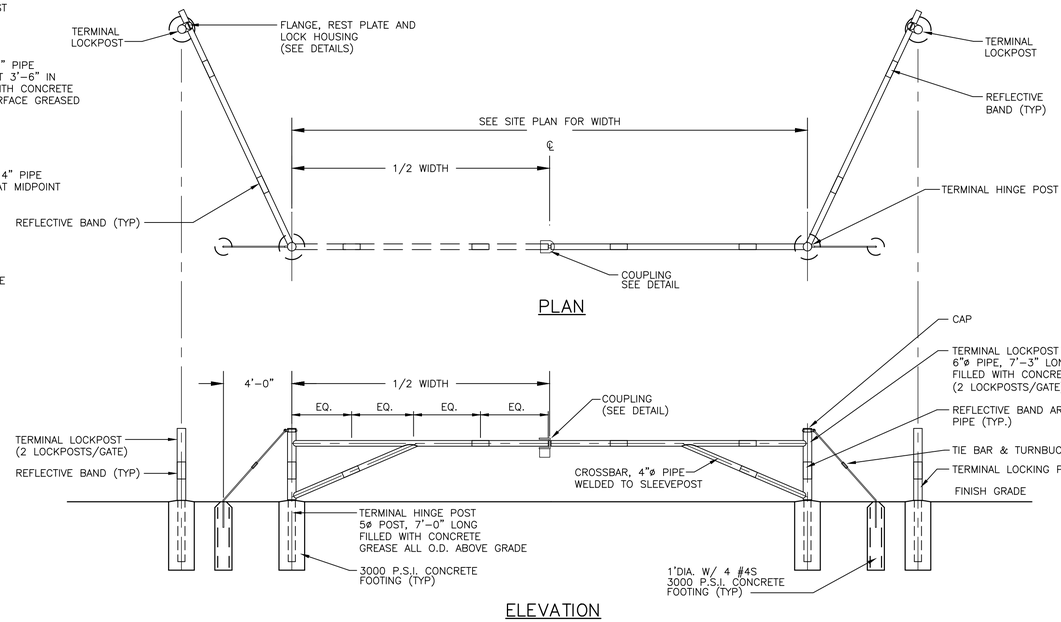
TERMINAL LOCKING POST

SCALE: 1" = 1'-0"



TERMINAL HINGE POST

SCALE: 1" = 1'-0"



ELEVATION

DOUBLE LEAF STEEL GATE

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

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. THE DOUBLE LEAF STEEL GATE SHALL BE PROVIDED UNDER SECTION 05500, MISCELLANEOUS METAL. (ADD. 7)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34483
REGISTERED PROFESSIONAL ENGINEER
07/10/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDEDNUM 7

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

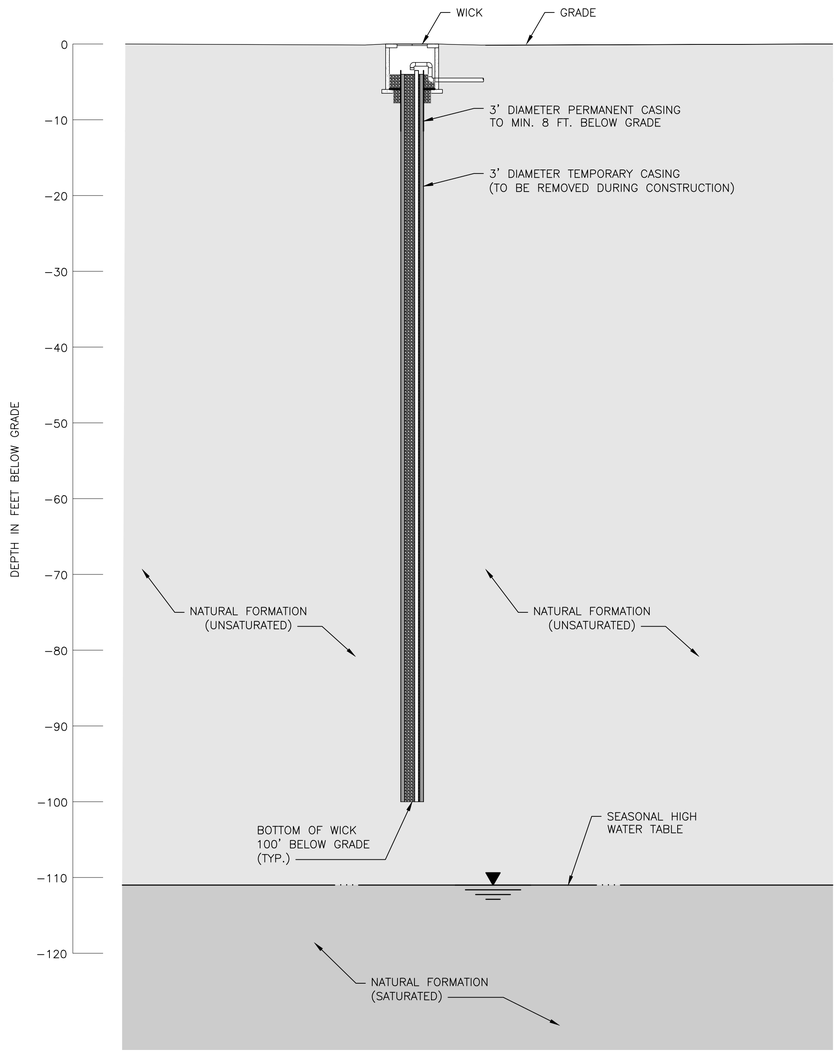
SHEET TITLE

DETAILS IV

SHEET NUMBER

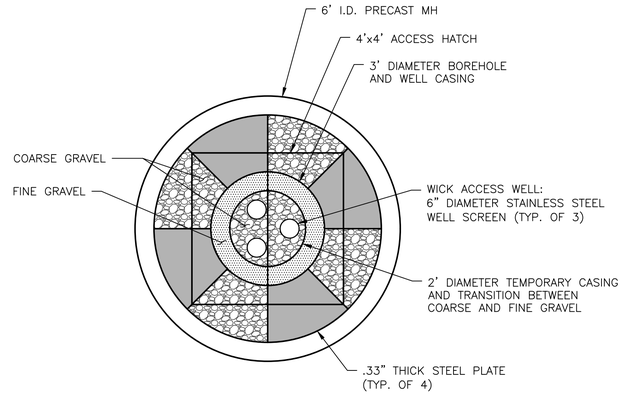
99 C-504

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\99 C-504.DWG
LAST UPDATE: Wednesday, October 2, 2019 1:40:27 PM
PLOT DATE: Thursday, January 16, 2020 1:03:56 PM

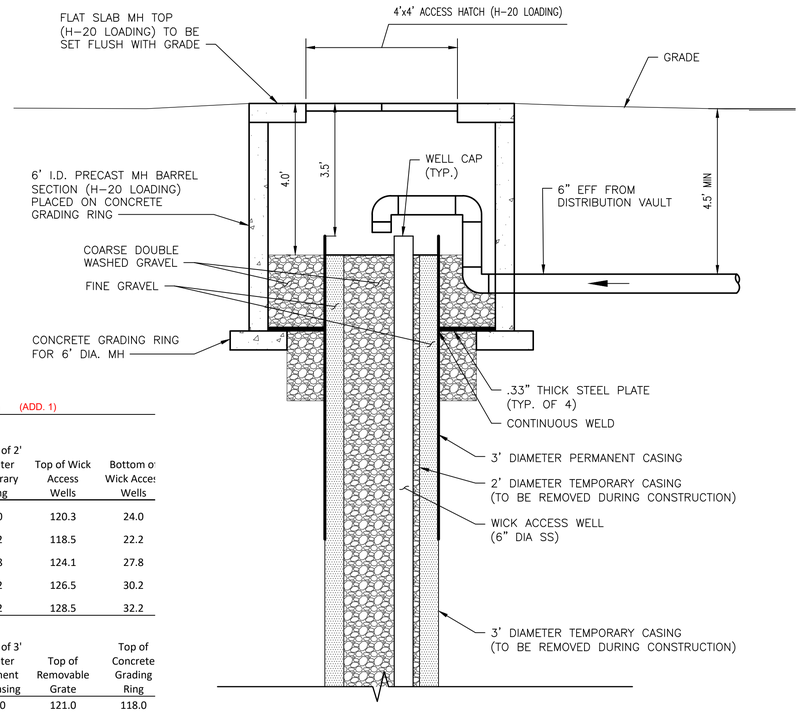


TYPICAL WICK SECTION

SCALE: 1"=10'



PLAN



SECTION

TYPICAL WICK DETAIL

SCALE: 1"=2'

WICK ELEVATIONS (ft., NGVD) (ADD. 1)

Wick ID	Approximate Ground	Approximate Water Table	Bottom of 3' Diameter Temporary Casing for Wick Borehole	Bottom of 2' Diameter Temporary Casing	Top of Wick Access Wells	Bottom o Wick Acce Wells
1	124.0	14.0	24.0	24.0	120.3	24.0
2	122.2	14.0	22.2	22.2	118.5	22.2
3	127.8	14.0	27.8	27.8	124.1	27.8
4	130.2	14.0	30.2	30.2	126.5	30.2
5	132.2	14.0	32.2	32.2	128.5	32.2

Wick ID	Top of Fine and Course Gravel Packs	Bottom of Fine and Course Gravel	Top of 3' Diameter Permanent Steel Casing	Bottom of 3' Diameter Permanent Steel Casing	Top of Removable Grate	Top of Concrete Grading Ring
1	120.0	24.0	121.0	113.0	121.0	118.0
2	118.2	22.2	119.2	111.2	119.2	116.2
3	123.8	27.8	124.8	116.8	124.8	121.8
4	126.2	30.2	127.2	119.2	127.2	124.2
5	128.2	32.2	129.2	121.2	129.2	126.2

Wick ID	Bottom of Coarse Gravel Outside Permanent Casing	Bottom of 0.33" Thick Steel Plates	Top of Access Hatch	Invert of Force Main Access to Vault (max. elev)	Invert of Force Main Inside Vault	Invert of Force Mai Discharge
1	116.0	118.0	124.2	119.5	122.0	121.5
2	114.2	116.2	122.4	117.7	120.2	119.7
3	119.8	121.8	128.0	123.3	125.8	125.3
4	122.2	124.2	130.4	125.7	128.2	127.7
5	124.2	126.2	132.4	127.7	130.2	129.7

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
2. FOR PLAN, SEE SHEET 00 C-203.

1" = 2' SCALE: 0 2 4 6 FEET

1" = 10' SCALE: 0 10 20 30 FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED PROFESSIONAL ENGINEER
9/16/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. OWEN
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

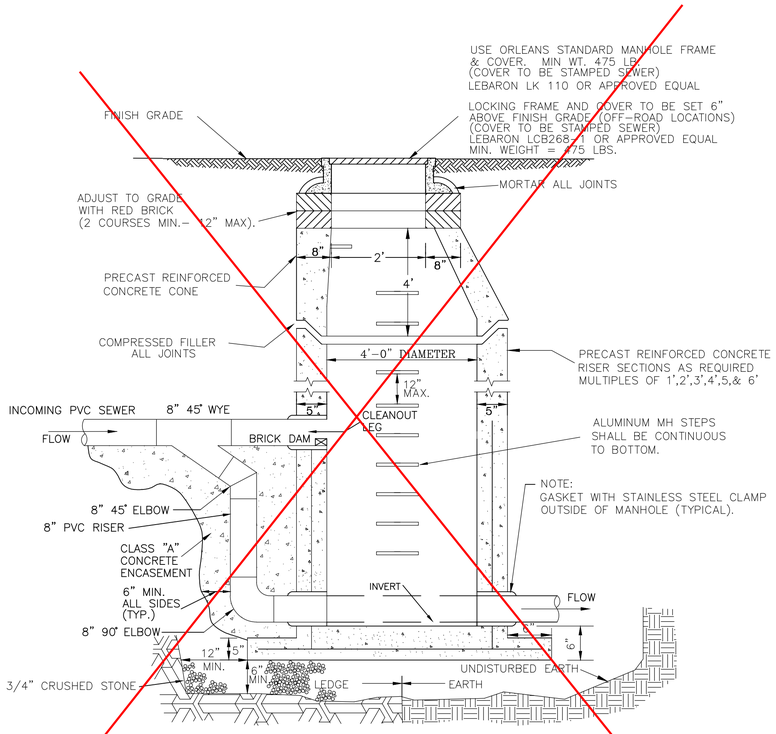
SHEET TITLE

DETAILS V

SHEET NUMBER

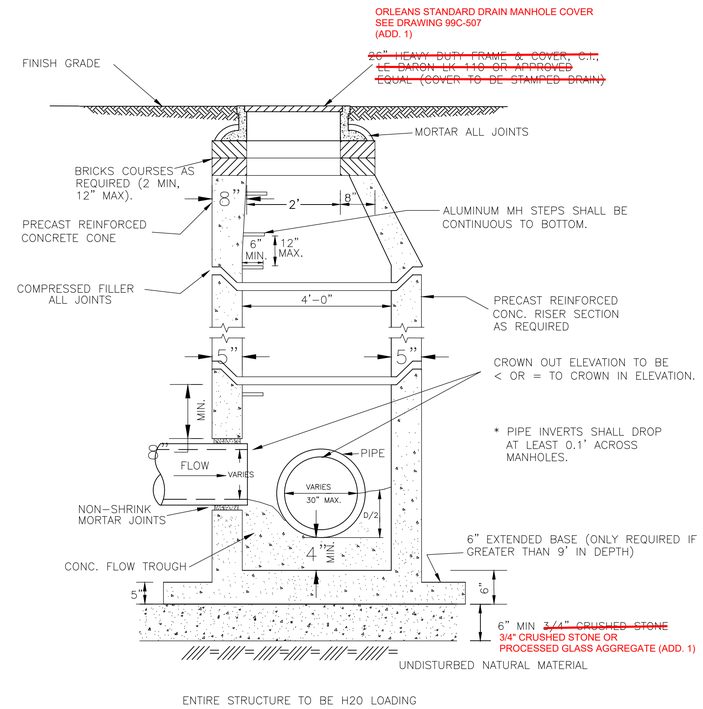
99 C-505

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\99 C-505.DWG
LAST UPDATE: Tuesday, December 3, 2019 2:14:01 PM
PLOT DATE: Thursday, January 16, 2020 1:04:15 PM



~~TYPICAL OUTSIDE DROP MANHOLE CONNECTION~~

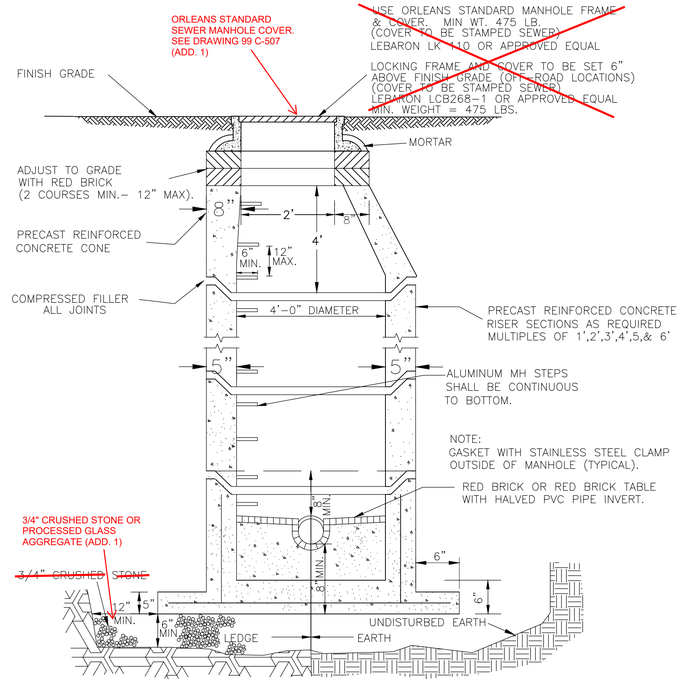
(NOT TO SCALE) (ADD. 1)



ENTIRE STRUCTURE TO BE H20 LOADING

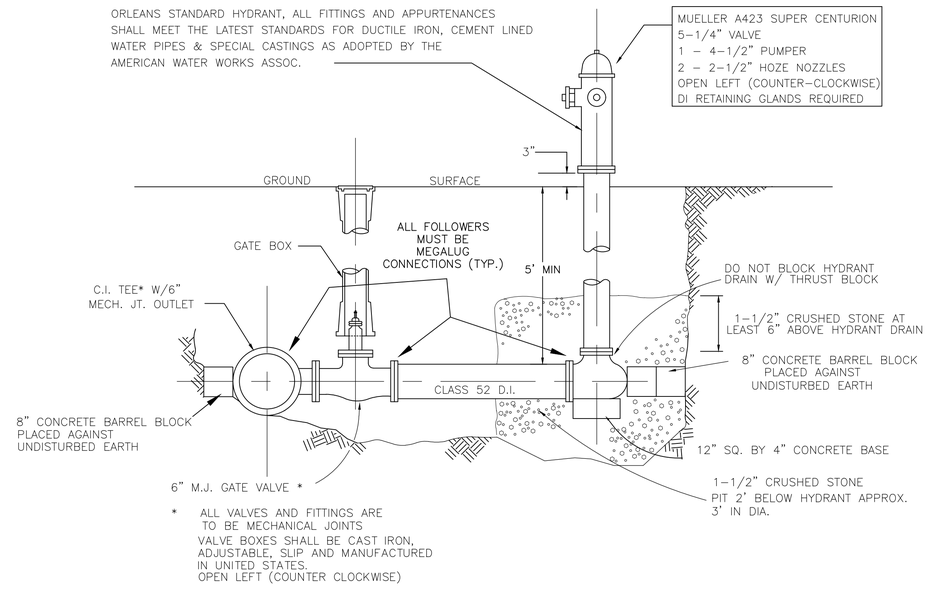
TYPICAL PRECAST CONCRETE DRAIN MANHOLE

(NOT TO SCALE)



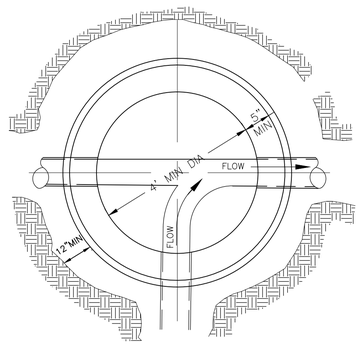
TYPICAL PRECAST CONCRETE SEWER MANHOLE

(NOT TO SCALE)



STANDARD HYDRANT DETAIL

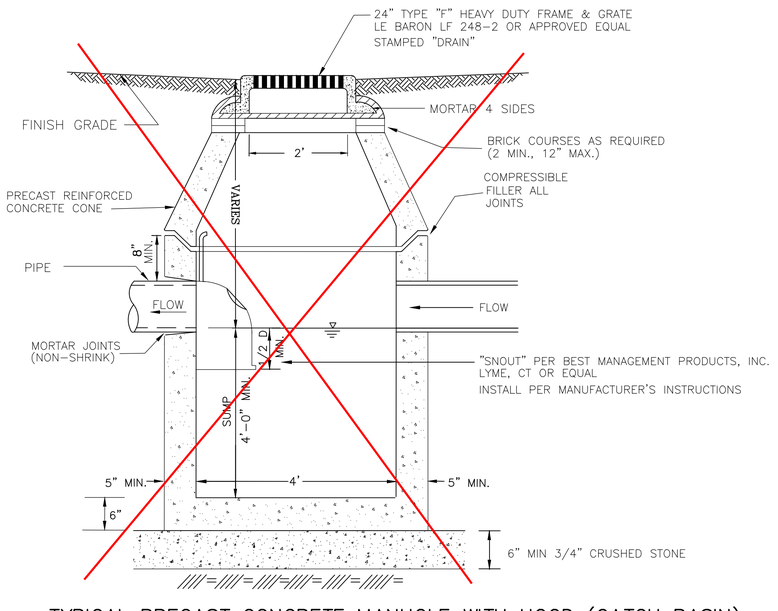
(NOT TO SCALE)



TOP VIEW

INVERT TABLE PLAN

(NOT TO SCALE)



~~TYPICAL PRECAST CONCRETE MANHOLE WITH HOOD (CATCH BASIN)~~

(NOT TO SCALE) (ADD. 1)

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34453
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-13-20	ADDENDUM 1

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

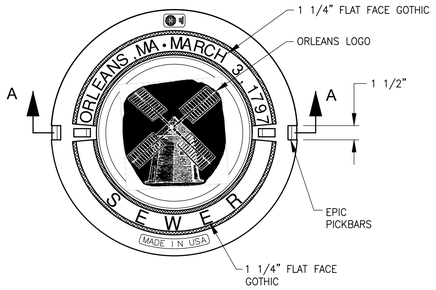
SHEET TITLE

DETAILS VI

SHEET NUMBER

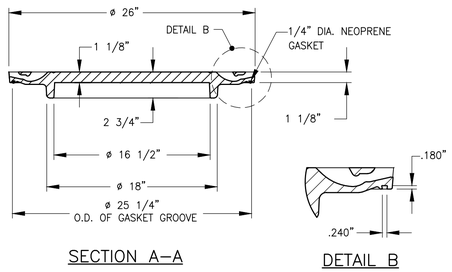
99 C-506

PATH/FILENAME: P:\60587515 - ORLEANS DOVNTOWN AREA WWTF\SHEETS\C99 C-506.DWG
LAST UPDATE: Wednesday, February 05, 2020 11:00:33 AM
PLOT DATE: Wednesday, February 05, 2020 2:05:52 PM



PLAN–SEWER COVER

MFR: EJUSA
PART NO. 00211186
OR APPROVED EQUAL

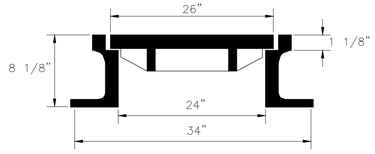


SECTION A–A

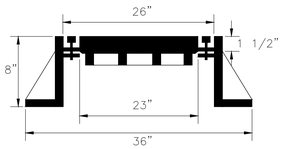
DETAIL B

ORLEANS STANDARD SEWER MANHOLE COVER

(NOT TO SCALE)



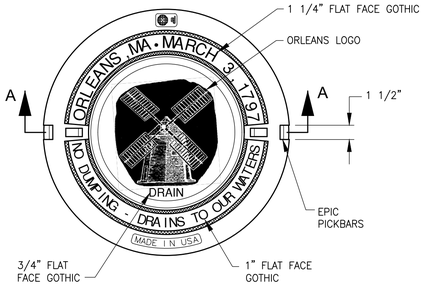
ORLEANS STANDARD MANHOLE FRAME, AND COVER MIN. WT. 475 LB. CLEARLY MARKED (DRAIN) ON COVER.
LEBARON LK 110 OR APPROVED EQUAL



ORLEANS STANDARD BOLTED MANHOLE FRAME & COVER MIN. WT. 475 LB. AND CLEARLY MARKED (DRAIN) ON COVER.
(USE ON ALL OFF–ROAD INSTALLATIONS)
LEBARON LCB 268–1 OR APPROVED EQUAL.

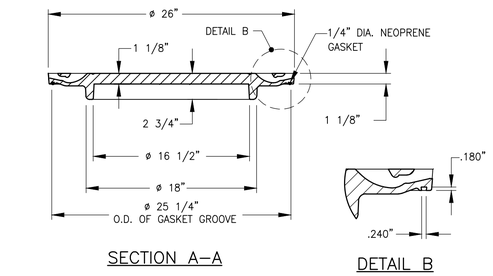
STANDARD DRAIN MANHOLE FRAMES & COVERS

(NOT TO SCALE)



PLAN–DRAIN COVER

MFR: EJUSA
PART NO. 00211185
OR APPROVED EQUAL

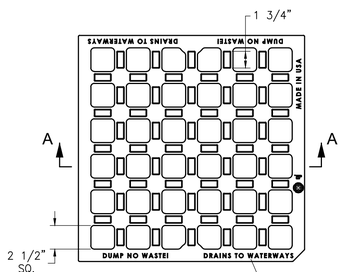


SECTION A–A

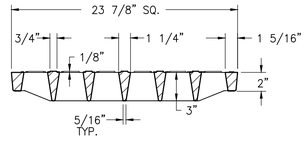
DETAIL B

ORLEANS STANDARD DRAIN MANHOLE COVER

(NOT TO SCALE)



PLAN

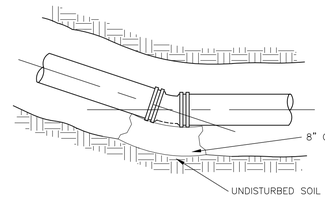


SECTION A–A

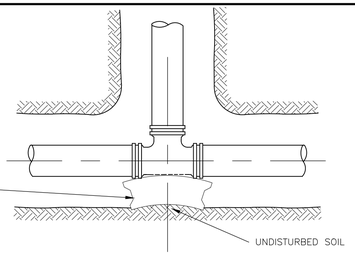
MFR: EJUSA
PART NO. 00552060
OR APPROVED EQUAL

ORLEANS STANDARD HEAVY CATCH BASIN GRATE

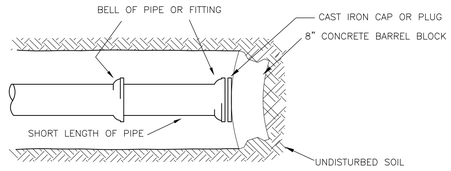
(NOT TO SCALE)



PLAN HORIZONTAL BEND

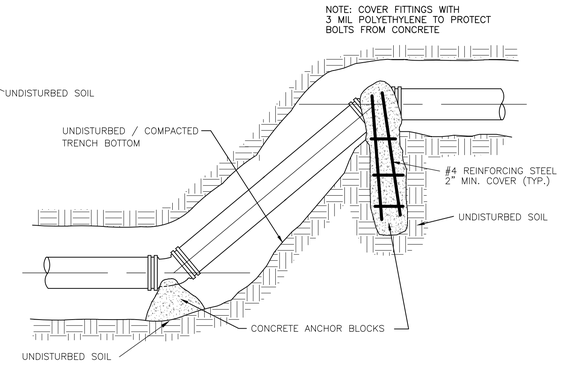


PLAN TEE



PLAN PLUG END OF LINE

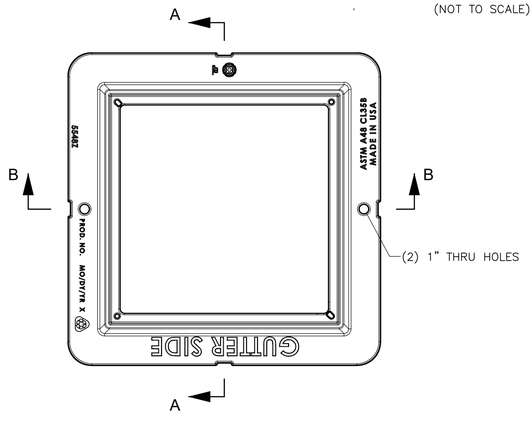
THRUST BLOCK REQUIREMENTS	
FITTING	MIN BEARING AREA (SF)
8"X 1/8 BEND	12
12"X 8" TEE	12
10"X 8" TEE	10
8"X 8" TEE	9
8"X 6" TEE	5
8" CAP / PLUG	12
12"X 8" REDUCER	8
10"X 8" REDUCER	6
8" X 6" REDUCER	4
8" 22 1/2"& 45° BENDS	8
ALL TEES AND VALVES	10
HYDRANTS	9



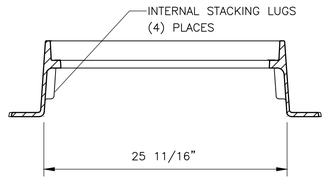
ELEVATION – VERTICAL BENDS

ANCHORAGE DETAILS

(NOT TO SCALE)

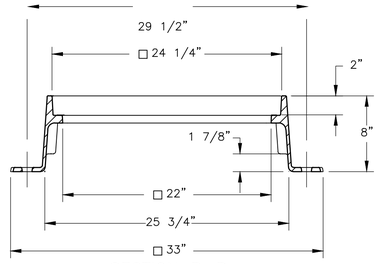


TOP PLAN



SECTION A–A

MFR: EJUSA
PART NO. 00554811
OR APPROVED EQUAL.



SECTION B–B

ORLEANS STANDARD 4–FLANGE CATCH BASIN FRAME

(NOT TO SCALE)

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C–001.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

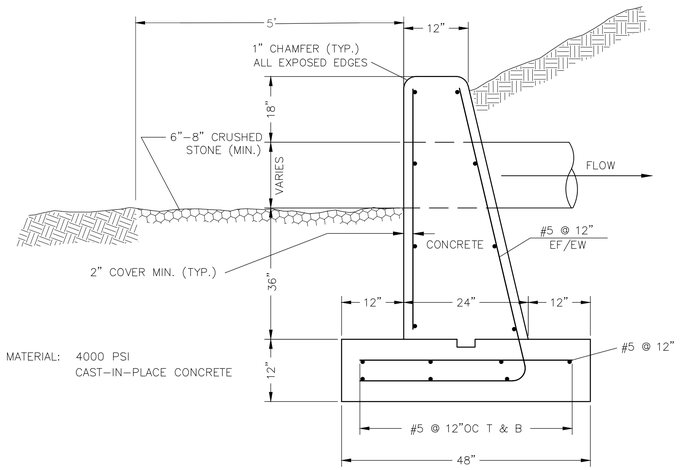
SHEET TITLE

DETAILS VII

SHEET NUMBER

99 C-507

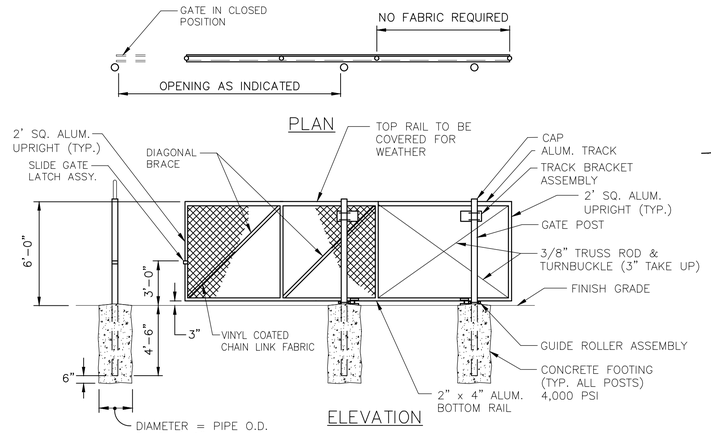
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C\99 C-507.DWG
LAST UPDATE: Wednesday, February 05, 2020 1:34:05 PM
PLOT DATE: Wednesday, February 05, 2020 2:08:40 PM



MATERIAL: 4000 PSI
CAST–IN–PLACE CONCRETE

LENGTH OF HEADWALLS						
DIA.	12"	15"	18"	24"	30"	36"
L	7'–6"	8'–9"	10'–0"	12'–6"	15'–0"	17'–6"

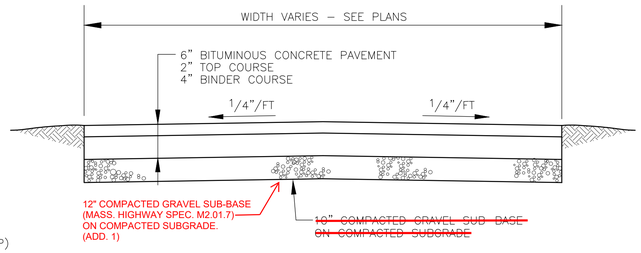
TYPICAL HEADWALL
NOT TO SCALE



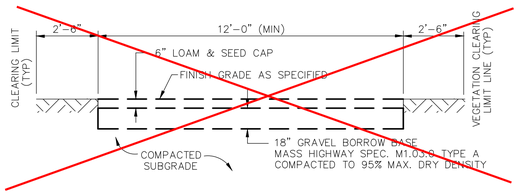
NOTES:

1. REFER TO SECTION 02444 AND DIVISION 16.
2. GATE OPERATOR SHALL BE MOUNTED ON A CONCRETE PAD PER MANUFACTURER'S INSTRUCTIONS.

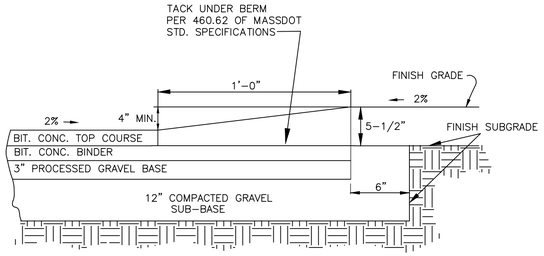
CANTILEVER SLIDING GATE
NOT TO SCALE



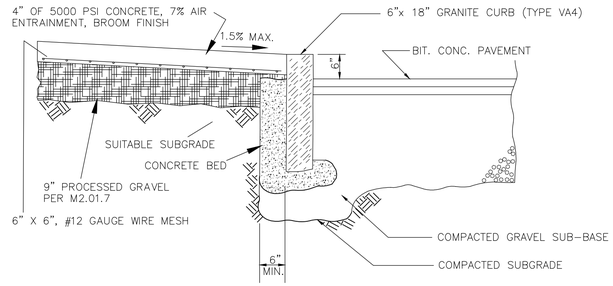
BIT. CONC. PAVEMENT SECTION
NOT TO SCALE



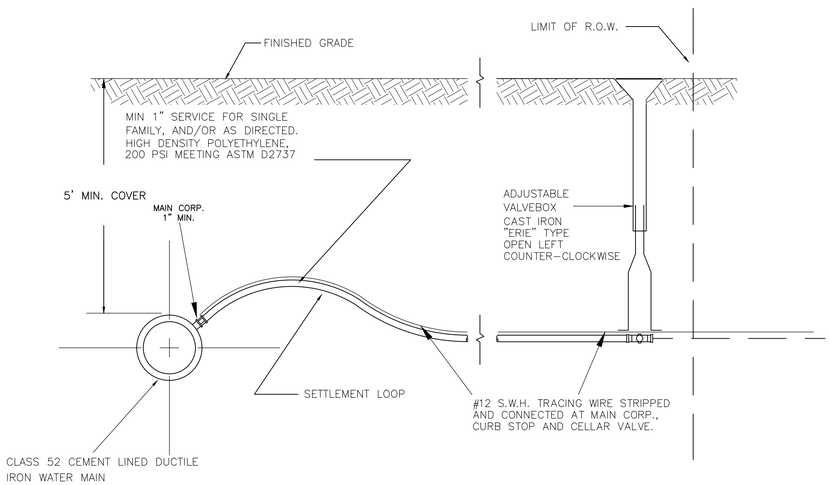
GRAVEL ROAD SECTION – EFFLUENT DISPOSAL ACCESS DRIVE
NOT TO SCALE
(ADD. 1)



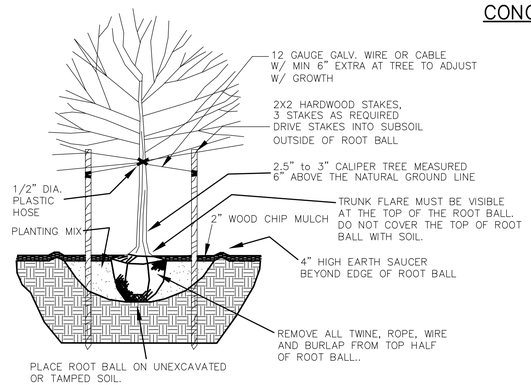
CAPE COD BERM
(NOT TO SCALE)



CONCRETE SIDEWALK & GRANITE CURB DETAIL
NOT TO SCALE



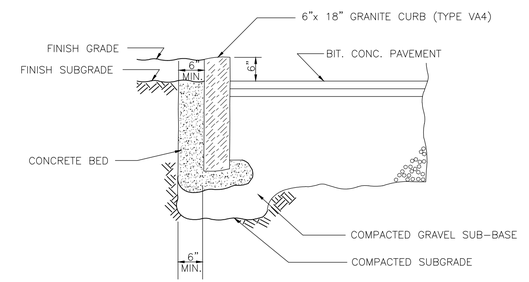
TYPICAL PERMANENT SERVICE CONNECTION
(NOT TO SCALE)



TREE PLANTING & STAKING
NOT TO SCALE

NOTES:

1. SET TOP OF ROOT BALL FLUSH TO GRADE OR 1" TO 2" HIGHER IN SLOW DRAINING SOILS.
2. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK.
3. DETAIL INTENDED TO BE IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS, PART 6, PLANTING AND TRANSPLANTING.



GRANITE CURB DETAIL
NOT TO SCALE

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C–001.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
THOMAS E. PARECE
CIVIL
No. 34463
REGISTERED
PROFESSIONAL ENGINEER
9/11/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. LAFFER
Drawn By:	S. NAPOLITANO
Dept Check:	C. BENZIGER
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

CIVIL

SHEET TITLE

DETAILS VIII

SHEET NUMBER

99 C-508

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\C099 C-508.DWG
LAST UPDATE: Wednesday, February 05, 2020 1:21:08 PM
PLOT DATE: Wednesday, February 05, 2020 2:07:27 PM

DIMENSIONS

I.
A. DIMENSIONS AND "WORK POINTS" GIVEN ON DRAWING SHALL BE FIELD VERIFIED BY THE CONTRACTOR. FIELD VERIFIED DIMENSIONS SHALL BE USED ON ALL SHOP DRAWINGS.

B. MASONRY DIMENSIONS, INCLUDING BRICK MASONRY AND CONCRETE MASONRY UNIT (CMU), ARE CALLED OUT AS NOMINAL UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL DETERMINE AND COORDINATE ALL MASONRY OPENINGS AND DIMENSIONS. THE NOMINAL BRICK COURSING ILLUSTRATED APPLIES TO NEW CONSTRUCTION ONLY.

C. DIMENSIONS FROM THE STRUCTURAL COLUMN LINE TO THE EXTERIOR FACE OF WALL ARE CALLED OUT AS ACTUAL. OVERALL BUILDING DIMENSIONS ARE CALLED OUT AS ACTUAL. SEE THE ILLUSTRATIONS ON THIS SHEET FOR MORE INFORMATION.

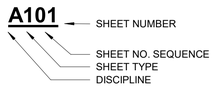
D. ALL DIMENSIONS REQUIRED TO ACCURATELY COORDINATE AND SEQUENCE THE WORK SHALL BE FIELD VERIFIED PRIOR TO THE FABRICATION OF ANY WORK.

II.
WHERE THE EXTENT OF A MATERIAL OR FINISH IS INDICATED BY ARROWS ON AN ELEVATION, IT IS INTENDED THAT THE MATERIAL OR FINISH CONTINUE UNINTERRUPTED UNTIL A CHANGE OF MATERIAL IS CALLED OUT. THE EXTENT OF A MATERIAL OR FINISH SHALL INCLUDE HIDDEN VIEWS CREATED BY CHANGES IN PLANE (SUCH AS WALL RETURNS) ALONG AND ELEVATED WALL SURFACE.

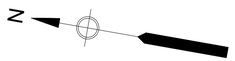
III.
THE CONTRACT DOCUMENTS DESCRIBE THE TECHNICAL REQUIREMENTS AND FINISHED APPEARANCE OF THIS PROJECT WITHOUT DESCRIBING ALL OF THE CONDITIONS OR REQUIREMENTS WHICH ARE NECESSARY TO PROVIDE COMPLETE BUILDING SYSTEMS AND ASSEMBLIES. STANDARD DETAILS SHALL APPLY AT SIMILAR CONDITIONS.

SYMBOLOGY LEGEND

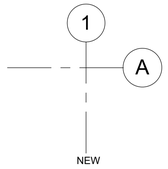
SEE SHEETS FOR SPECIFIC SYMBOLS



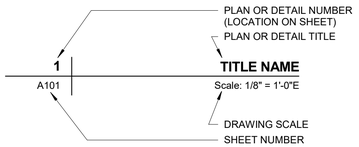
SHEET NUMBER



NORTH ARROW



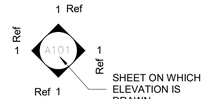
GRID BUBBLES



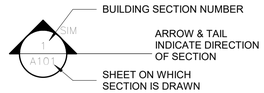
PLAN OR DETAIL TITLE

REVISION CALLOUT AND CLOUD

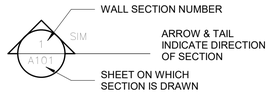
SHEET ON WHICH ELEVATION IS DRAWN
EXTERIOR ELEVATION REFERENCE



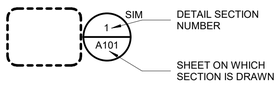
INTERIOR ELEVATION REFERENCE



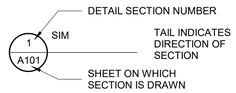
BUILDING SECTION REFERENCE



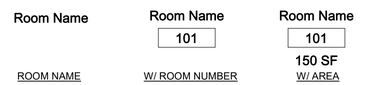
WALL SECTION REFERENCE



DETAIL CALLOUT REFERENCE



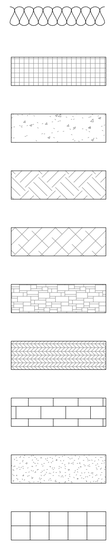
WALL SECTION REFERENCE



ABBREVIATIONS

@	AT
A/C	AIR CONDITIONING
AB	ANCHOR BOLT
ABV	ABOVE
AC	ACOUSTICAL
ACMU	ACOUSTICAL MASONRY UNIT
ACP	ACOUSTICAL CEILING PANELS
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
ADD	ADDENDUM
ADJ	ADJUSTABLE
AED	AUTOMATED EXTERNAL DEFRIBILLATOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
ANC	ANCHOR(AGE)
ANOD	ANODIZED
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AVB	AIR VAPOR BARRIER
BB	BOND BEAM
BD	BOARD
BIT	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BPL	BEARING PLATE
BR	BRICK
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BUR	BUILT UP ROOF
BW	BOTH WAYS
℄	CENTERLINE
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CF	CUBIC FOOT
CFL	COUNTER FLASHING
CHAM	CHAMFER
CHEM	CHEMICAL
CHKD	CHECKERED
CHT	CEILING HEIGHT
CJT	CONTROL JOINT
CLG	CEILING
CLK	CAULK
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CONCRETE OPENING
COL	COLUMN
COMP	COMPRESS(ED)(ION)(IBLE)
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPG	COPING
CPT	CARPET
CPTT	CARPET TILE
CRS	COURSE(S)
CS	COUNTERSINK
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	COUNTER
CTSK	COUNTERSUNK
D	DRAIN
DB	DARK BRONZE
DEMO	DEMOLISH, DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DOUBLE HUNG
DIA, ø	DIAMETER
DIM	DIMENSION
DK	DARK
DMPR	DAMPER
DN	DOWN
DO	DOOR OPENING
DP	DAMPPROOFING
DPR	DISPENSER
DR	DOOR
DS	DOWNSPOUT
DTA	DOVETAIL ANCHOR
DTS	DOVETAIL ANCHOR SLOT
DWG(S)	DRAWING(S)
E	EAST
EA	EACH
EB	EXPANSION BOLT
ED	EXIT DEVICE
EF	EXHAUST FAN
EFC	EPOXY FLOOR COATING
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EJT	EXPANSION JOINT
EL	ELEVATION
EFC	EPOXY FLOOR COATING
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EMBMT	EMBEDMENT
EMER	EMERGENCY
ENG	ENGINEERING
EPDM	ETHYLENE-PROPYLENE-DIENE-MONOMER
EQ	EQUAL
EQUIP	EQUIPMENT
ESTM	ESTIMATE
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FA	FIRE ALARM
FACT	FACTORY
FAK	FIRST AID KIT
FAF	FLUID APPLIED FLOORING
FB	FACE BRICK
FBO	FURNISHED BY OTHERS
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
FFE	FINISHED FLOOR ELEVATION
FG	FIXED GLASS
FGL	FIBERGLASS
FIN	FINISH(ED)
FL	FOUNDATION LEVEL
FLG	FLASHING
FLR	FLOOR
FM	FLOOR MAT
FND	FOUNDATION
FNV	FEMININE NAPKIN VENDOR
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FPG	FIREPROOFING
FR	FRAME
FRP	FIBER REINFORCED POLYMER
FRT	FIRE RETARDANT TREATED
FTG	FOOTING
FUT	FUTURE
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GFMU	GROUND FACE MASONRY UNIT
GHM	GALVANIZED HOLLOW METAL
GKT	GASKET
GL	GLASS, GLAZING
GLB	GLASS BLOCK
GMU	GLAZED MASONRY UNIT
GPM	GALVANIZED PRESSED METAL
GRB	GRANITE BASE
GRD	GRADE, GRADING
GRT	GRANITE TILE
GSD	GALVANIZED SECURITY DOOR
GSF	GALVANIZED SECURITY FRAME
GT	GROUT
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
H	HIGH
HC	HANDICAP(PED)
HD	HEAVY DUTY
HDWR	HARDWARE
HGT	HEIGHT
HK	HOOK
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HPC	HIGH PERFORMANCE COATING
HR	HOUR
HT, HGT	HEIGHT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HWC	HANDICAPPED WATER CLOSET
HWH	HOT WATER HEATER
HYDR	HYDRAULIC
ID	INSIDE DIAMETER
IL	INTERMEDIATE LEVEL
INSUL	INSULATION
INT	INTERIOR
JC	JANITOR'S CLOSET
JF	JOINT FILLER
JS	JANITOR'S SINK
JST	JOIST
JT	JOINT
KPL	KICK PLATE
L	LENGTH
LAB	LABORATORY
LAD	LADDER
LAV	LAVATORY
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LL	LOWER LEVEL
LMSD	LAVATORY MOUNTED SOAP DISPENSER
LOC	LOCATION
LP	LOW POINT
LQH	LIQUID HARDENER
LTL	LINTEL
LVR	LOUVER
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MET	METAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MR	MOP RECEPTOR
MTD	MOUNTED
MTL	MATERIAL
N	NORTH
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NSA	NON-SLIP SHAKE-ON AGGREGATE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OL	OPERATING LEVEL
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
P	PAINT
PASS	PASSENGER
PB	PANIC BAR
PC	PROTECTIVE COATING
PCC	PRECAST CONCRETE
PERIM	PERIMETER
PFB	PREFABRICATE(D)
PG	PLATE GLASS
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PM	PRESSED METAL
PNL	PANEL
PR	PAIR
PS	PLASTIC SHEATHING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RISER
RAD	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REINF	REINFORCE(D), REINFORCING
REM	REMOVE
REQD	REQUIRED
RES	RESILIENT
RET	RETURN
REV	REVISION
RFG	ROOFING
RFH	ROOF HATCH
RFL	REFLECT(ED)(IVE)(OR)
RFM	RECESSED FLOOR MAT
RFS	RAISED FLOOR SYSTEM
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
RL	RAILING
RM	ROOM
RMKS	REMARKS
RMTF	RESINOUS MATRIX TERRAZZO FLOORING
RO	ROUGH OPENING
RS	RISER(S)
RTG	RATING
RU	ROLL UP
RV	ROOF VENT
S	SOUTH
SAAT	SPRAY APPLIED ACOUSTICAL TREATMENT
SCD	SEAT COVER DISPENSER
SCH	SCHEDULE
SDPR	SOAP DISPENSER
SECT	SECTION
SF	SQUARE FOOT
SFGL	SAFETY GLASS
SFT	STRUCTURAL FACING TILE
SH	SHELF, SHELVING
SHT	SHEET
SHTH	SHEATHING
SIM	SIMILAR
SK	SINK
SKLT	SKYLIGHT
SLNT	SEALANT
SP	SOUNDPROOF
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
SSSD	STAINLESS STEEL SECURITY DOOR
STA	STAIN
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRU	STRUCTURAL
SUS	SUSPEND(ED)
SV	SHEET VINYL
SYS	SYSTEM
T&B	TOP AND BOTTOM
TBS	TO BE SELECTED
TEMP	TEMPORARY
THK	THICK(NESS)
TO	TOP OF
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOSL	TOP OF SLAB
TPL	TOP OF PLATE
TPTN	TOILET PARTITION
TR	TREAD(S)
TTD	TOILET TISSUE DISPENSER
TYP	TYPICAL
UC	UNDERCOUNTER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
UV	ULTRA VIOLET
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VIN	VINYL
VNB	VINYL BASE
VR	VAPOR RETARDER
VT	VINYL TILE
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WG	WIRE GLASS
WH	WATER HEATER
WIN	WINDOW
WM	WIRE MESH
WP	WATERPROOFING
WPL	WALL PANEL
WPT	WORKING POINT
WR	WASTE RECEPTACLE
WWF	WELDED WIRE FABRIC

PATTERN LEGEND


BATT INSULATION
RIGID INSULATION
CONCRETE
EARTH
METAL
STONE VENEER
PLYWOOD
CONCRETE MASONRY UNIT
MORTAR
CERAMIC TILES

0 4' 8' 16'

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
DONALD A. PETTERS
No. 32400
OBELISK LTD.
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

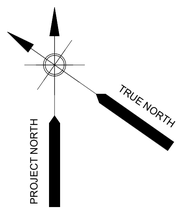
SHEET TITLE

ARCHITECTURAL SYMBOLS, NOTES, AND ABBREVIATIONS

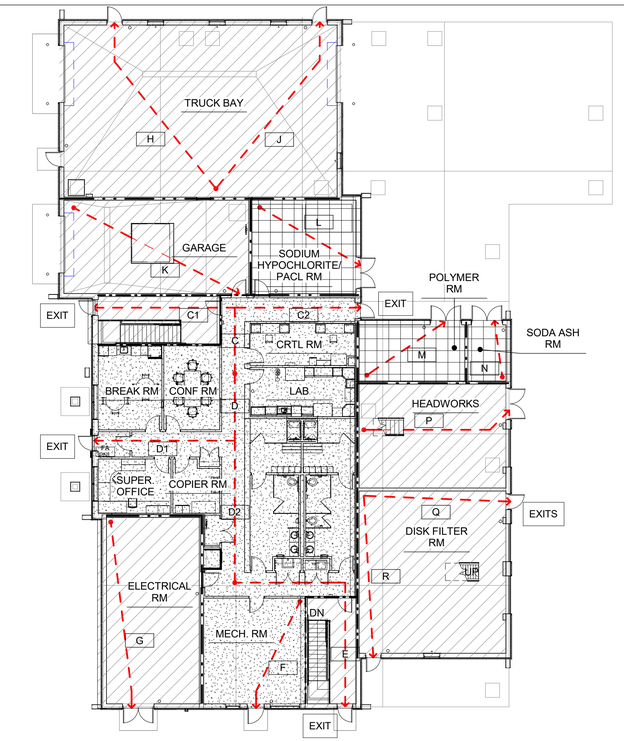
SHEET NUMBER

00 A-001

PATHFILENAME: C:\Users\picone\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:11:59 PM

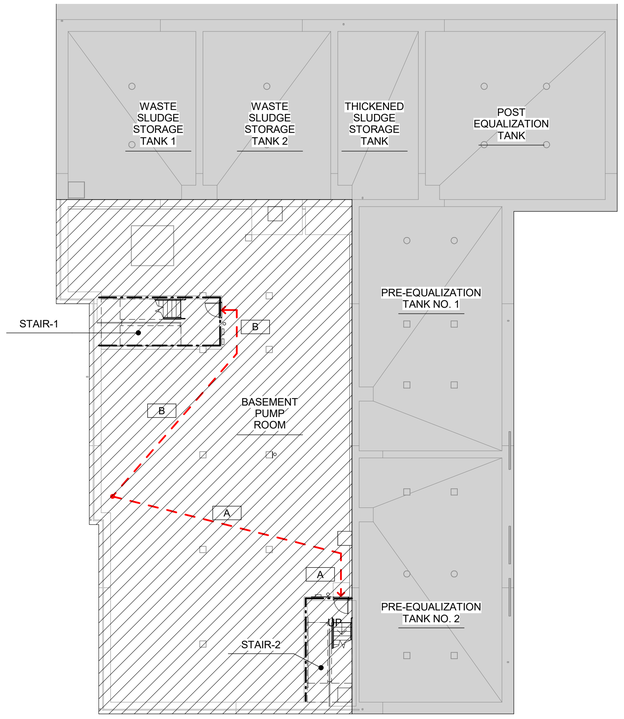


EGRESS PATH/DISTANCES	
EGRESS PATH ID	**EGRESS TRAVEL DISTANCE**
A	58' - 9"
B	52' - 4"
C	13' - 11"
C1	29' - 9"
C2	26' - 7"
D	14' - 2"
D1	29' - 8"
D2	30' - 0"
E	49' - 6"
F	24' - 7"
G	39' - 6"
H	42' - 5"
J	42' - 11"
K	39' - 4"
L	24' - 6"
M	19' - 11"
N	12' - 0"
P	32' - 5"
Q	31' - 0"
R	34' - 3"



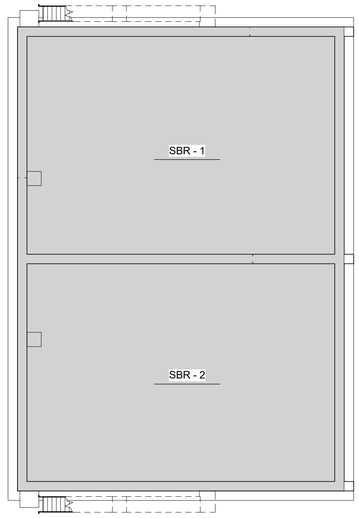
1 / 10 A-201 **LIFE SAFETY PLAN - GRADE LEVEL**

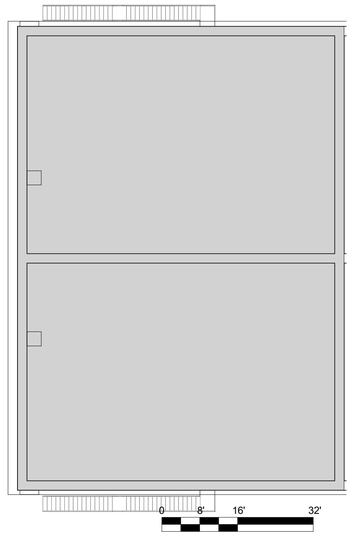
Scale: 1/16" = 1'-0"



2 / 10 A-301 **LIFE SAFETY PLAN - BASEMENT LEVEL**

Scale: 1/16" = 1'-0"





BUILDING CODE ANALYSIS

APPLICABLE BUILDING CODE:
BUILDING CODE:
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 MASSACHUSETTS STATE BUILDING CODE
2016 NFPA 13 – STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
ENERGY CODE:
2015 INTERNATIONAL ENERGY CONSERVATION CODE (MEETS 780 CMR – APPEDIX AA: STRETCH ENERGY CODE)

BUILDING DESCRIPTION
WASTE WATER TREATMENT PLANT:
TWO STORY BUILDING: BASEMENT LEVEL AND GRADE LEVEL
CONCRETE MASONRY UNIT BEARING WALL WITH WOOD TRUSS ROOF FRAME.

AREA
BUILDING FOORPRINT:
BASEMENT FLOOR (BELOW GRADE) – 6,103 SF
FIRST FLOOR (GRADE FLOOR LEVEL) – 10,669 SF
TOTAL AREA – 16,772 SF

BUILDING REVIEW:
1. SEPARATED MIXED USE (CHAPTER 3):
USE CLASSIFICATION: GROUP F-2 (LOW-HAZARD FACTORY INDUSTRIAL SECTION 306.3)
USE CLASSIFICATION: GROUP B (BUSINESS SECTION 304)
USE CLASSIFICATION: GROUP H-4 (HIGH HAZARD SECTION 307.6)

2. CONSTRUCTION TYPE: TYPE 2B – UNPROTECTED NON-COMBUSTIBLE (SECTION 602)
FIRE-RETARDANT-TREATED WOOD TRUSSES WILL BE PROVIDED (603.1).

3. BUILDING HEIGHTS AND AREAS:

ALLOWABLE STORIES ABOVE GRADE:		4 (TABLE 503) ALLOWED
ACTUAL STORIES ABOVE GRADE:		1
WITH BASEMENT LEVEL		2
ALLOWABLE HEIGHT:		75' (TABLE 503)
ACTUAL HEIGHT:		34'-6"
ALLOWABLE AREA	B:	69,000 (TABLE 506.2)
	F-2:	69,000 (TABLE 506.2)
	H-4:	52,500 (TABLE 506.2)
ACTUAL AREA		
BASEMENT LEVEL:		
	F-2:	6,103 SF
GRADE LEVEL:		
	B:	3,356 SF
	F-2:	6,413 SF
	H-4:	900 SF
SUB TOTAL:		10,669 SF
TOTAL:		16,772 SF

4. FIRE RESISTANCE RATING REQUIREMENTS: (TABLE 601)

PRIMARY STRUCTURAL FRAME:	0 HRS
EXTERIOR BEARING WALLS:	0 HRS
INTERIOR BEARING WALLS:	0 HRS
NON BEARING WALLS:	0 HRS
FLOOR CONSTRUCTION:	1 HR (TABLE 508.4)
ROOF CONSTRUCTION:	0 HR
STAIR ENCLOSURE:	1 HR (SECTION 1022.2)
CORRIDOR WALL (F-2 & B):	0 HR (TABLE 1020.1)
(H-4)	1 HR (TABLE 1020.1)
ELECTRICAL ROOMS:	2 HR (NFPA 13-8.15.11.2)

5. SPRINKLERED:
FULL FIRE SUPPRESSION PROVIDED FOR ENTIRE TREATMENT PLANT

REQUIRED AREA SEPARATION OF OCCUPANCIES (TABLE 508.4) REQUIRED SEPARATION OF OCCUPANCIES:
H-4 TO F-2 = 2 HR
F-2 TO B = 1 HR
H-4 TO B = 1 HR

6. MANUAL FIRE ALARM SYSTEM: NO (SECTION 907.2.4)

7. MEANS OF EGRESS:

MIN. STAIR WIDTH:	44" (SECTION 1009.4)
ACTUAL STAIR WIDTH:	44"
ACCESSIBLE STAIR WIDTH:	NOT REQUIRED (SECTION 1009.3 EXCEPTION 2)
AREA OF REFUGE:	NOT REQUIRED (SECTION 1009.3 EXCEPTION 2)
MIN. DOOR CLEAR OPENING:	32" (SECTION 1008.1.1)
ACTUAL DOOR WIDTH:	36"

8. OCCUPANT LOAD AND TRAVEL DISTANCES (TABLE 1004.1.2, 1017.2)
BASEMENT:
F-2 BASEMENT LEVEL: 6,103/100 62

GRADE LEVEL:

F-2:	6,413/100	65
B:	3,356/100	34
H-4:	900/300	3
TOTAL		164

MAX. COMMON PATH OF EGRESS (410.6.3.3, 1006.3.2):
B 100 FEET
F 100 FEET
H-4 75 FEET

MAX. TRAVEL DISTANCE (TABLE 1017.2 WITH SPRINKLER):
B 300 FEET
F-2 400 FEET
H-4 175 FEET

NUMBER OF EXITS REQUIRED:	2
NUMBER OF EXITS PROVIDED (BSMNT):	2
(GRADE):	4

9. EXTERIOR WALL OPENINGS: NO LIMIT (TABLE 705.8)

10. CHEMICALS STORED:
POLYMER – 110 GAL. (TWO 55 GAL. DRUMS)
POLYALUMINUM CHLORIDE – 550 GAL. (TWO 275 GAL. TOTES)
SODIUM HYPOCHLORITE – 550 GAL. (TWO 275 GAL. TOTES)
SODA ASH – 7,400 LBS (SODIUM CARBONATE) (TWO 3,700 LBS PALLETS)

11. ACCESSIBILITY:
WASTEWATER TREATMENT FACILITY WILL BE ACCESSIBLE. AN ACCESSIBLE ROUTE HAS BEEN PROVIDED. ADMINISTRATIVE, BUSINESS, LAB, CONTROL ROOM AND CORRIDORS AREAS WILL COMPLY WITH ALL ACCESSIBILITY REQUIREMENTS (CHAPTER 11). THE PUMP ROOM AREAS ARE NOT ACCESSIBLE TO THE GENERAL PUBLIC.

ENERGY CODE ANALYSIS

APPLICABLE ENERGY CODE:
ENERGY CODE: 2015 INTERNATIONAL ENERGY CONSERVATION CODE - MASSACHUSETTS STATE

CLIMATE ZONE: 5A

BUILDING ENVELOPE - TABLE C402.2 & TABLE C402.3:

1. ROOF:	
- ATTIC	R-38 (REQUIRED) R-38 MIN.(PROVIDED)
2. WALLS ABOVE GRADE:	
- MASS WALLS (GRADE LEVEL)	R-11.4 ci (REQUIRED) R-15 ci (PROVIDED)
3. WALLS BELOW GRADE:	
- MASS WALLS (BELOW GRADE)	R-7.5 ci (REQUIRED) R-10 ci (PROVIDED)
4. SLAB ON GRADE:	
- UNHEATED SLAB	R-10 FOR 24" BELOW (REQUIRED)
- SLAB ON GRADE	R-10 FOR 24" BELOW (PROVIDED)
5. DOORS:	
INSULATED	0.6 U-VALUE (REQUIRED) (PROVIDED)
6. WINDOWS:	
METAL FRAME / DOUBLE GLAZED	0.8 U-VALUE (REQUIRED) (PROVIDED)

LIFE SAFETY LEGEND

1 - HOUR FIRE BARRIER
2 - HOUR FIRE BARRIER
A
TRAVEL PATH
EXIT
LOCATION OF EXIT
B BUSINESS USE GROUP
F-2 FACTORY USE GROUP
H-4 HIGH HAZARD USE GROUP
NOT USED SPACE

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

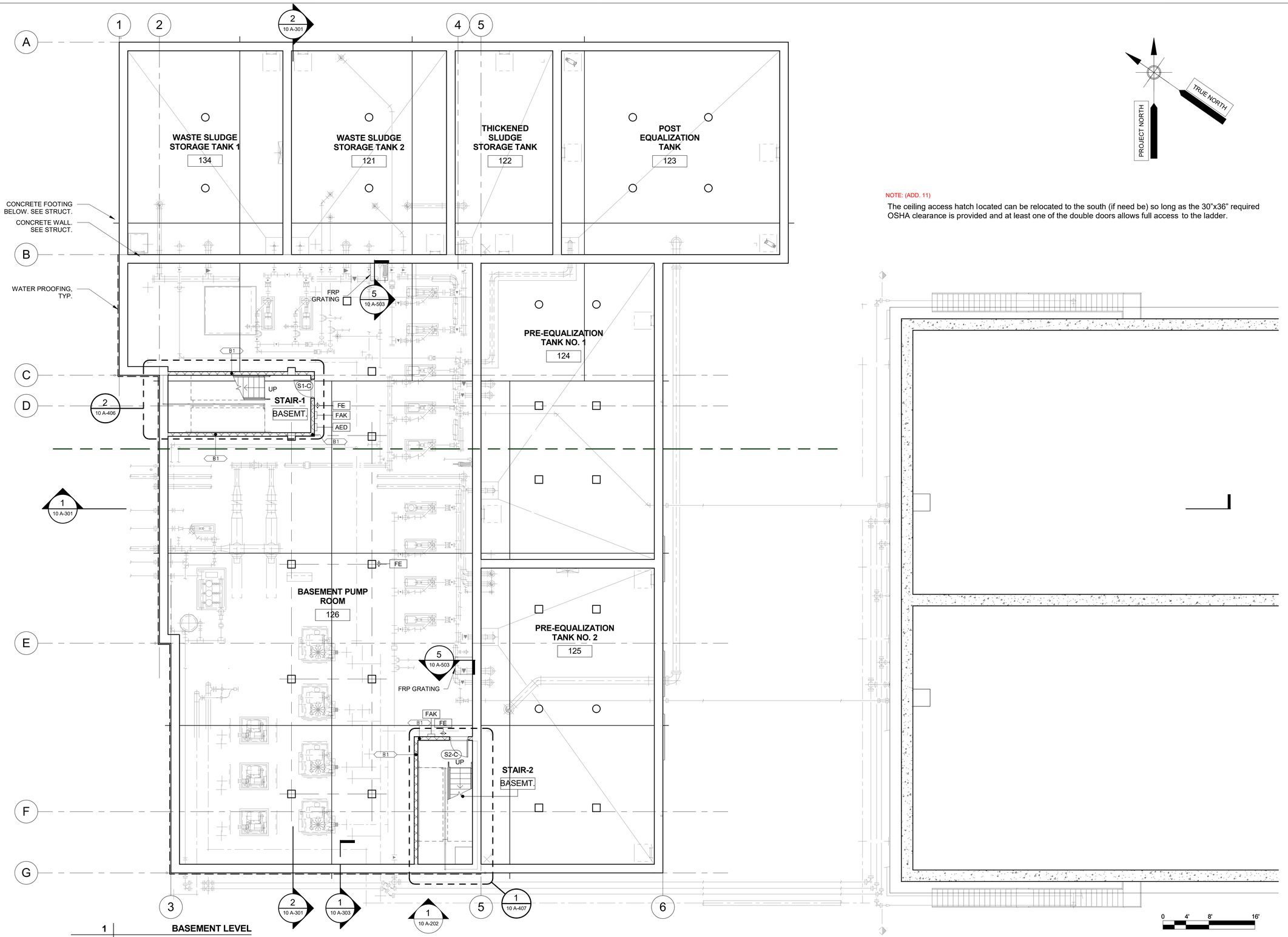
LIFE SAFETY PLANS

SHEET NUMBER

10 A-001

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:07 PM

60587515



NOTE: (ADD. 11)

The ceiling access hatch located can be relocated to the south (if need be) so long as the 30"x36" required OSHA clearance is provided and at least one of the double doors allows full access to the ladder.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A11	05-08-20	ADDENDUM 11

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

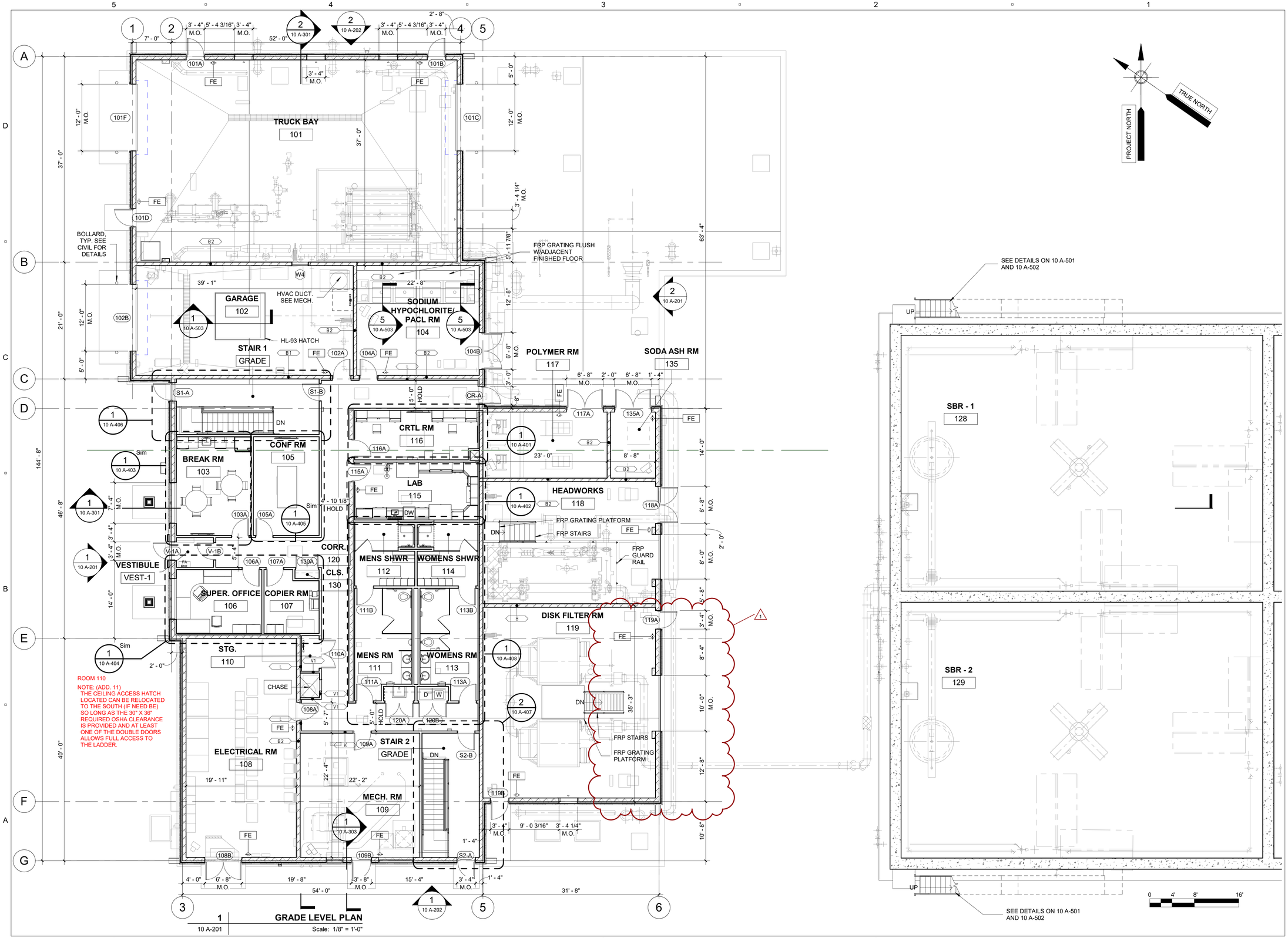
BASEMENT PLAN

SHEET NUMBER

10 A-101

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:08 PM

60587515



PATH/FILENAME: BIM 360://CI-AMER (USA) 60587515-Orleans Downtown Area WWTF/10 Admin Building.rvt
PLOT DATE: 4/28/2020 1:27:55 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

A11	05-08-20	ADDENDUM 11
1	4/27/2020	FILTER WALL REV.
I/R	Date	Description

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

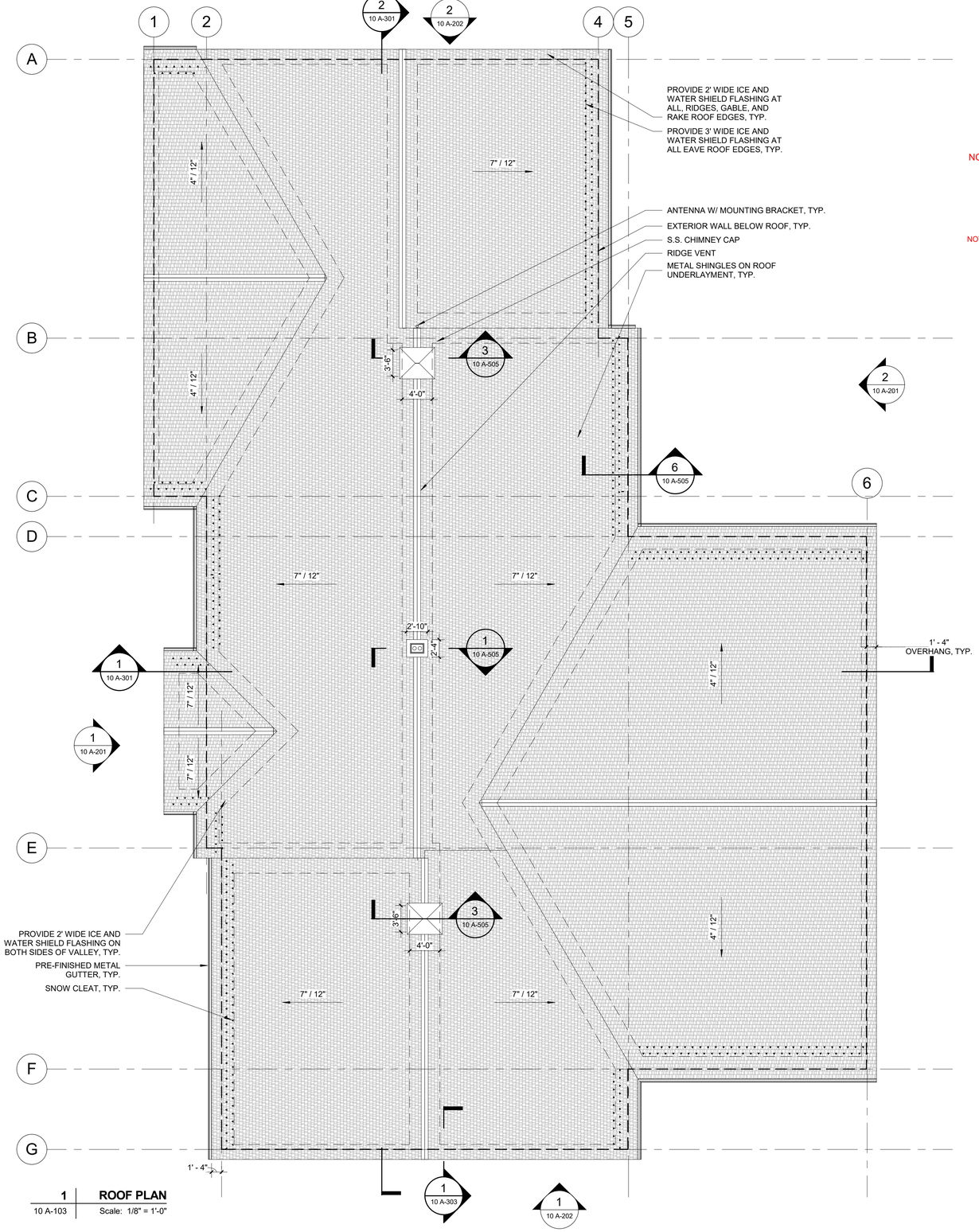
ARCHITECTURAL

SHEET TITLE

GRADE LEVEL PLAN

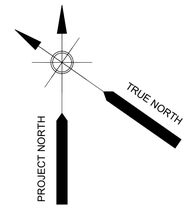
SHEET NUMBER

10 A-102



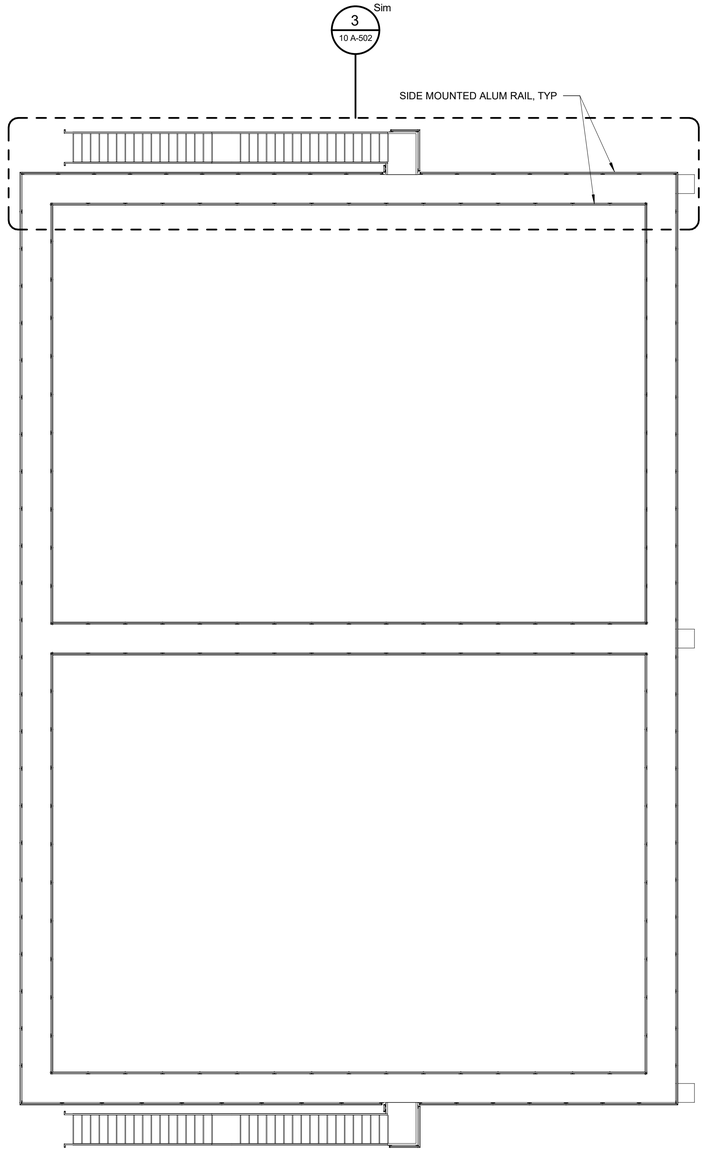
1 | ROOF PLAN
10 A-103 | Scale: 1/8" = 1'-0"

NOTE: TRUSS MANUFACTURER TO PROVIDE GABLE END TRUSSES AT ALL GABLE ROOFS FLUSH WITH EXTERIOR FACE OF CMU. EXTERIOR WALL CONSTRUCTION AT THE GABLES ABOVE THE MASONRY CONSTRUCTION IS SIMILAR. (ADD. 7)



NOTE: (ADD. 11)

The location of the south chimney shall be in accordance with this Drawing. The location of the south chimney shown on DRAWING 10 S-105, ROOF LEVEL PLAN, shall be revised in accordance with this Drawing.



AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDA OTTERSON
32200
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A11	05-08-20	ADDENDUM 11

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

ROOF PLAN

SHEET NUMBER

10 A-103

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:18 PM

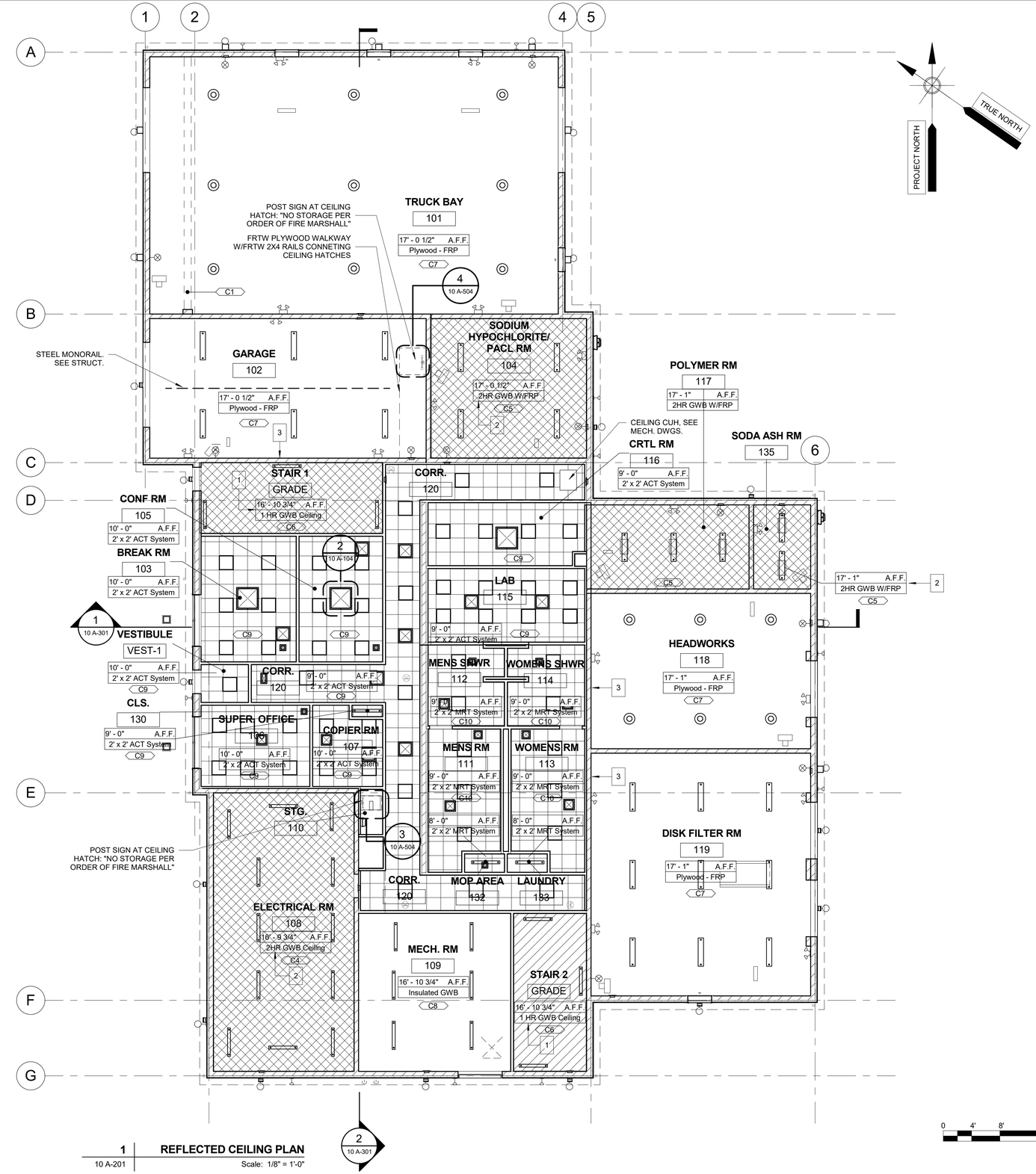
60587515

KEY NOTES:

1. 1 HR RATED HORIZONTAL SHAFT WALL AT BOTTOM OF FRT ROOF TRUSS FRAMING. EXTEND TO VERTICAL FIRE BARRIER OR EXTERIOR WALL AT PERIMETER.
2. 2 HR RATED HORIZONTAL SHAFT WALL AT BOTTOM OF FRT ROOF TRUSS FRAMING. EXTEND TO VERTICAL FIRE BARRIER OR EXTERIOR WALL AT PERIMTER.
3. PROVIDE 1 HR RATED VERTICAL SHAFT WALL FROM TOP OF PARTITON TO UNDERSIDE OF ROOF DECK.

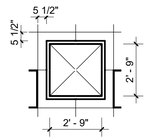
- 2 x 4 ACCOUSTICAL CEILING GRID AND TILE C9 UNO
- 1 HR HORIZONTAL SHAFT WALL
- 2 HR HORIZONTAL SHAFT WALL
- EMERGENCY LIGHTS
- EXIT LIGHTS
- WALL MOUNT EXTERIOR LIGHT
- ROUND HANGING LIGHT
- LINEAR 2 LAMP HANGING LIGHT
- LINEAR 1 LAMP HANGING LIGHT
- 2'x2' LINEAR BOX LIGHT
- 6"x6" SQUARE DIFFUSER
- 8"x8" SQUARE DIFFUSER
- 6"x18" DIFFUSER
- 10"x10" SQUARE DIFFUSER
- 1'-6"x1'-6" SQUARE DIFFUSER
- 2'x2' SQUARE DIFFUSER
- 3'-1"x3'-1" DAC UNIT

RCP LEGEND
Scale: 1/4" = 1'-0"



0 4' 8' 16'

1 | REFLECTED CEILING PLAN
10 A-201 | Scale: 1/8" = 1'-0"



2 | DAC UNIT CEILING DETAIL, TYP
10 A-104 | Scale: 1/4" = 1'-0"

PATH/FILENAME: C:\Users\picone\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:20 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

GERALDA OTTERSON
No. 32120
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
REGISTERED ARCHITECT
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

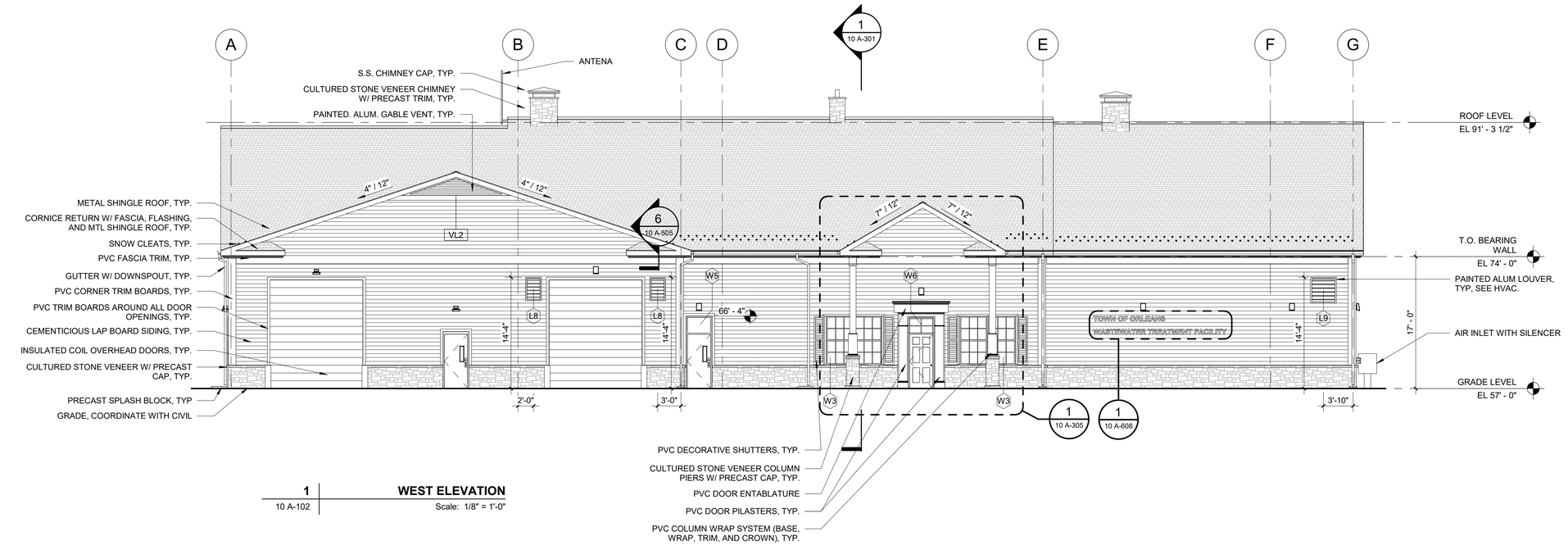
ARCHITECTURAL

SHEET TITLE

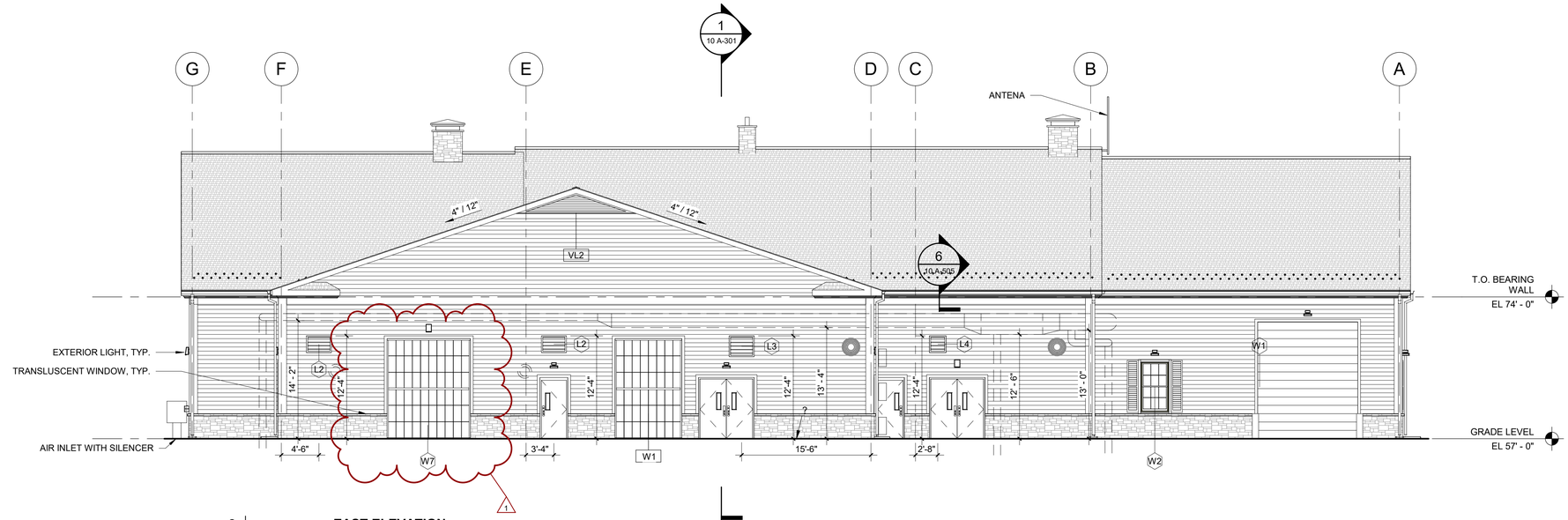
REFLECTED CEILING PLAN

SHEET NUMBER

10 A-104



1 | **WEST ELEVATION**
10 A-102 | Scale: 1/8" = 1'-0"



2 | **EAST ELEVATION**
10 A-102 | Scale: 1/8" = 1'-0"

FOR TYPICAL NOTES SEE ELEVATION 1/10 A-201

0 4' 8' 16'

PATH/FILENAME: BIM 360://CI-AMER (USA) 60587515-Orleans Downtown Area WWTF/10 Admin Building.rvt
PLOT DATE: 4/28/2020 1:27:59 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
RALPH A. RITTER
No. 32200
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	Date	Description
1	4/27/2020	FILTER WALL REV.

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

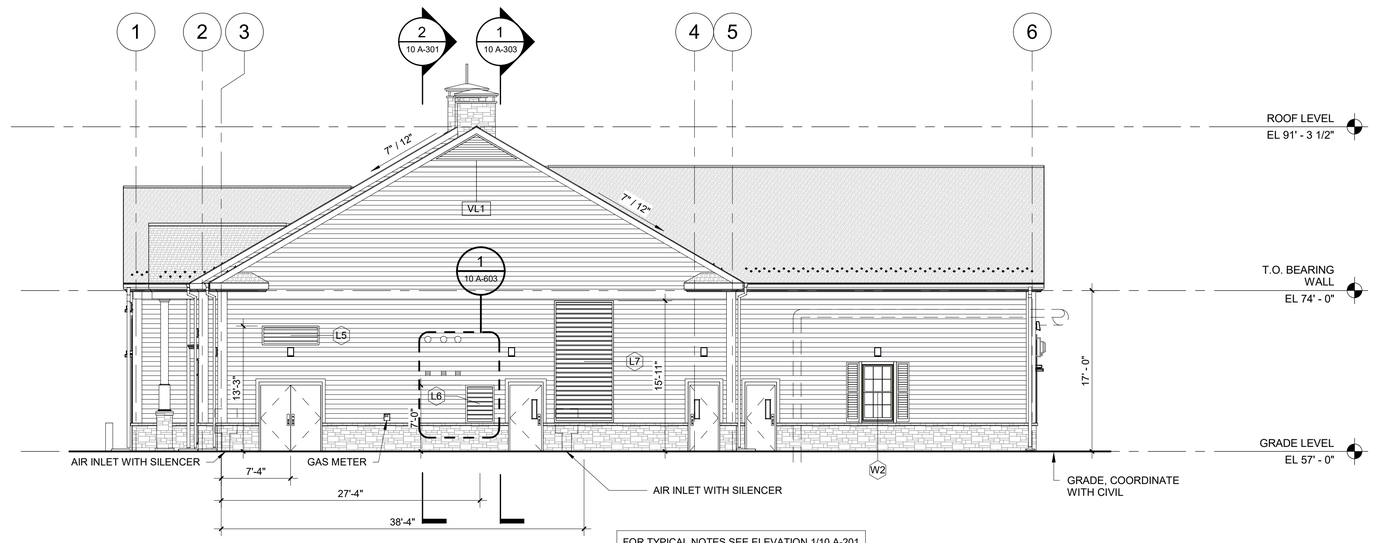
ARCHITECTURAL

SHEET TITLE

ELEVATIONS I

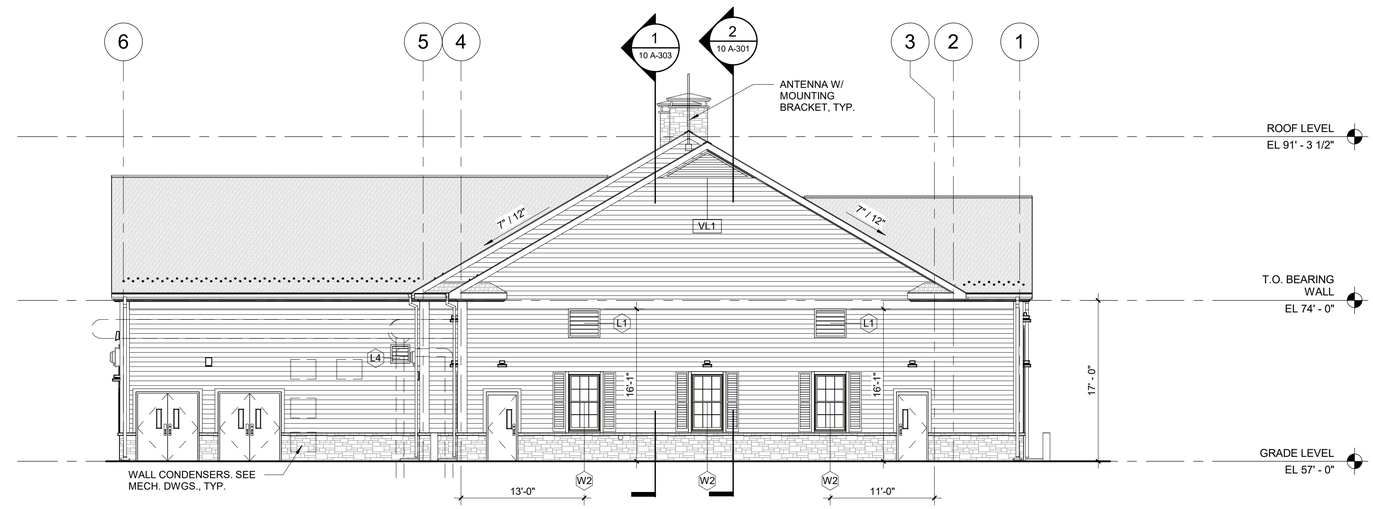
SHEET NUMBER

10 A-201



FOR TYPICAL NOTES SEE ELEVATION 1/10 A-201

1 | **SOUTH ELEVATION**
10 A-101 | Scale: 1/8" = 1'-0"



FOR TYPICAL NOTES SEE ELEVATION 1/10 A-201

2 | **NORTH ELEVATION**
10 A-102 | Scale: 1/8" = 1'-0"

0 4' 8' 16'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:28 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
THERALDA BITTER
32200
ORLEANS, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

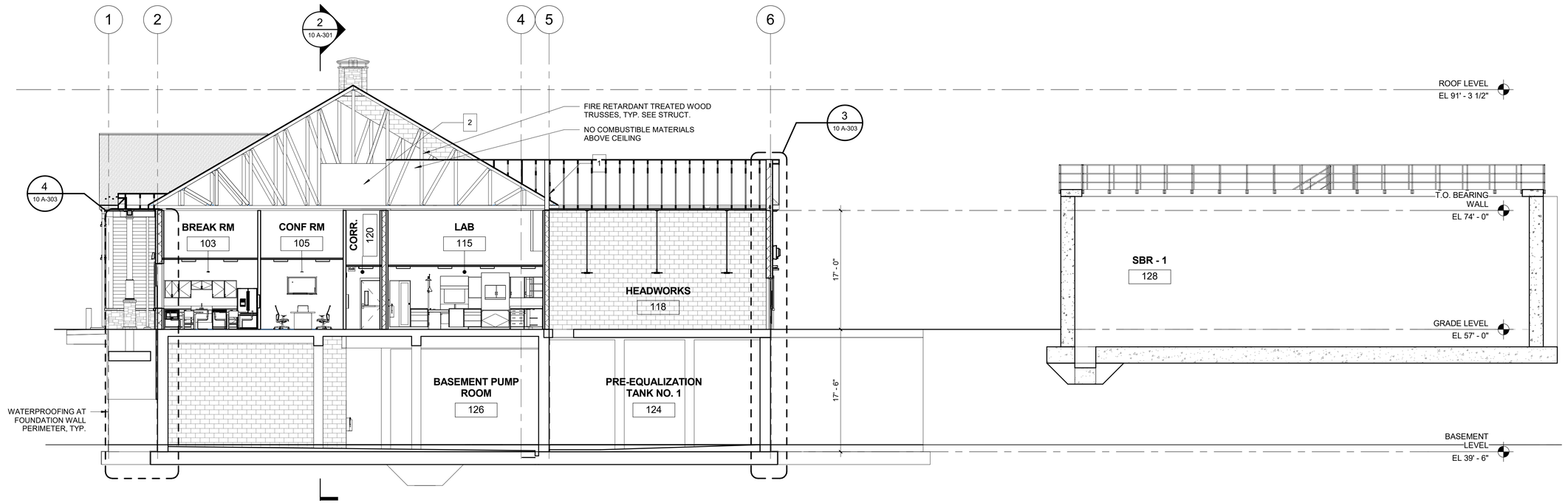
ARCHITECTURAL

SHEET TITLE

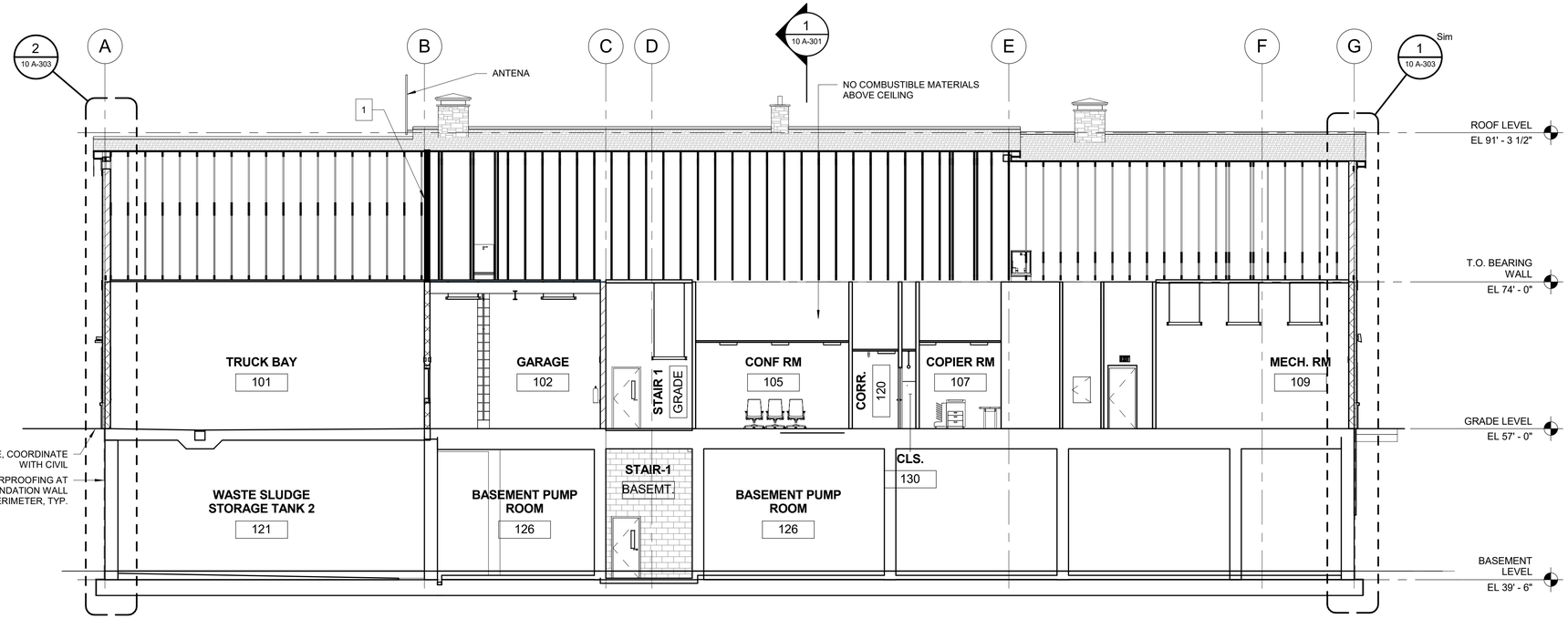
ELEVATIONS II

SHEET NUMBER

10 A-202



1 | **CROSS SECTION**
10 A-101 | Scale: 1/8" = 1'-0"



2 | **LONGITUDINAL SECTION**
10 A-101 | Scale: 1/8" = 1'-0"

KEY NOTES

1 PROVIDE 2 HR RATED VERTICAL SHAFT WALL CLOSURE THROUGH ATTIC FROM TOP OF PARTITION TO ROOF DECK.

2 STORAGE TRUSS SPACE. SEE STRUCT. FOR EXACT OPENING SIZE. PROVIDE FIRE ~~RETARDANT TREATED 2 x 4 HANDRAILS~~ @ 36" A.F.F. FOR ENTIRE LENGTH OF ATTIC SPACE, BOTH SIDES. PROVIDE 3/4" FIRE RETARDANT TREATED PLYWOOD FLOORING FOR OPEN ATTIC SPACE.

REPLACE WITH:
RETARDANT TREATED 2" x 4" TOE PLATES @ 6" A.F.F. FOR THE ENTIRE LENGTH OF ATTIC SPACE AND 2" x 4" HANDRAILS (ADD. 4)

0 4' 8' 16"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDINE B. TERESA
No. 32209
ORLEANS, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/8" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

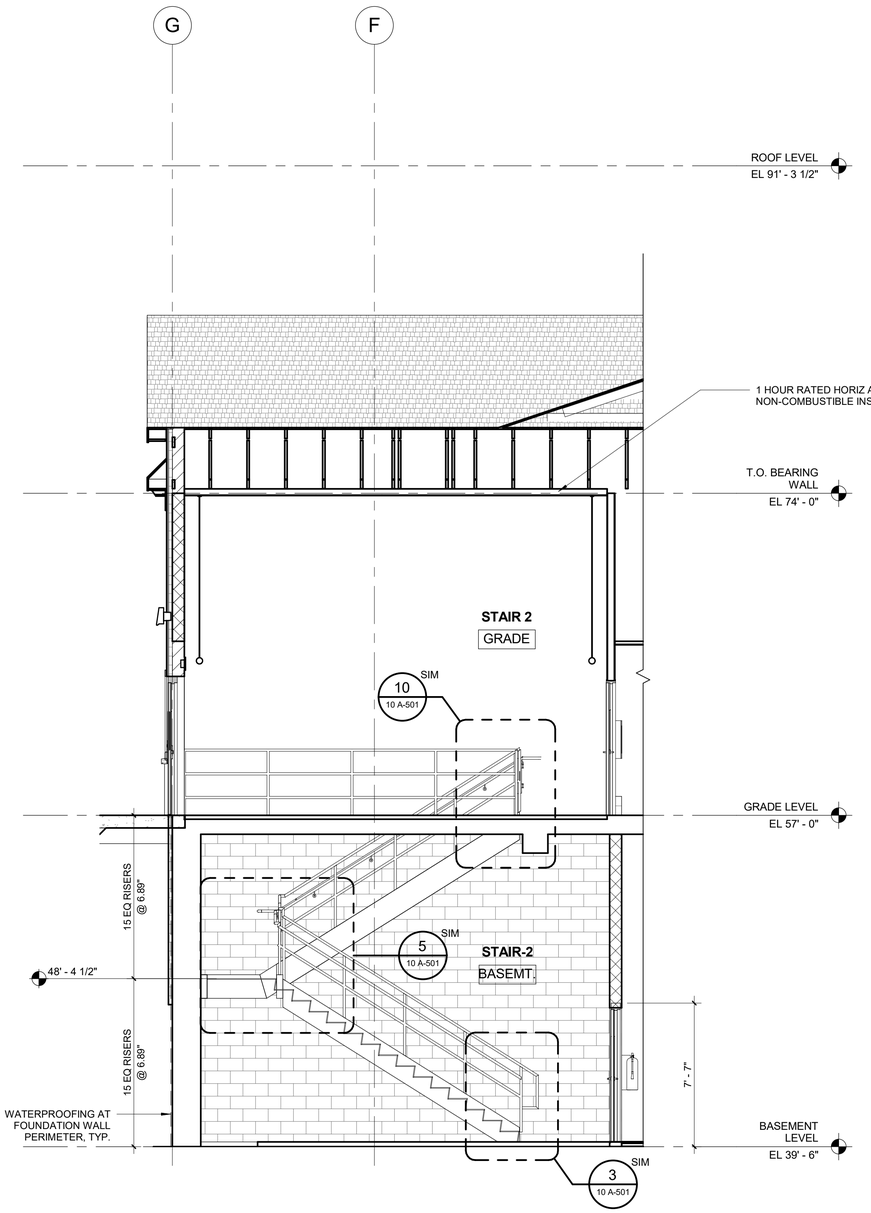
BUILDING SECTIONS

SHEET NUMBER

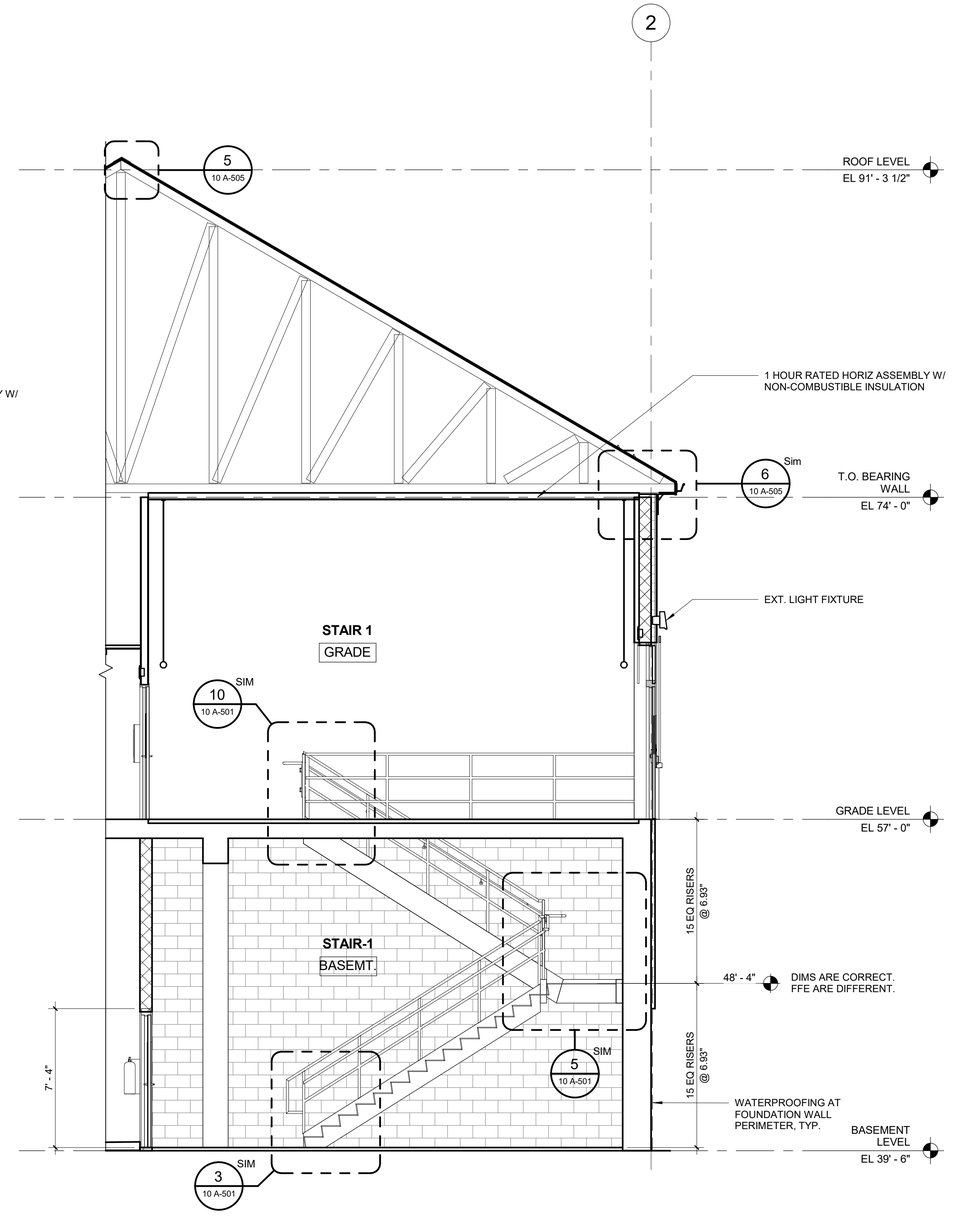
10 A-301

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:34 PM

60587515



2 | **STAIR 2 - SECTION**
10 A-407 | Scale: 1/4" = 1'-0"



1 | **STAIR 1 - SECTION**
10 A-406 | Scale: 1/4" = 1'-0"

0 2' 4' 8'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.piconе@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:36 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
VERALDA OTTERSON
No. 32700
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

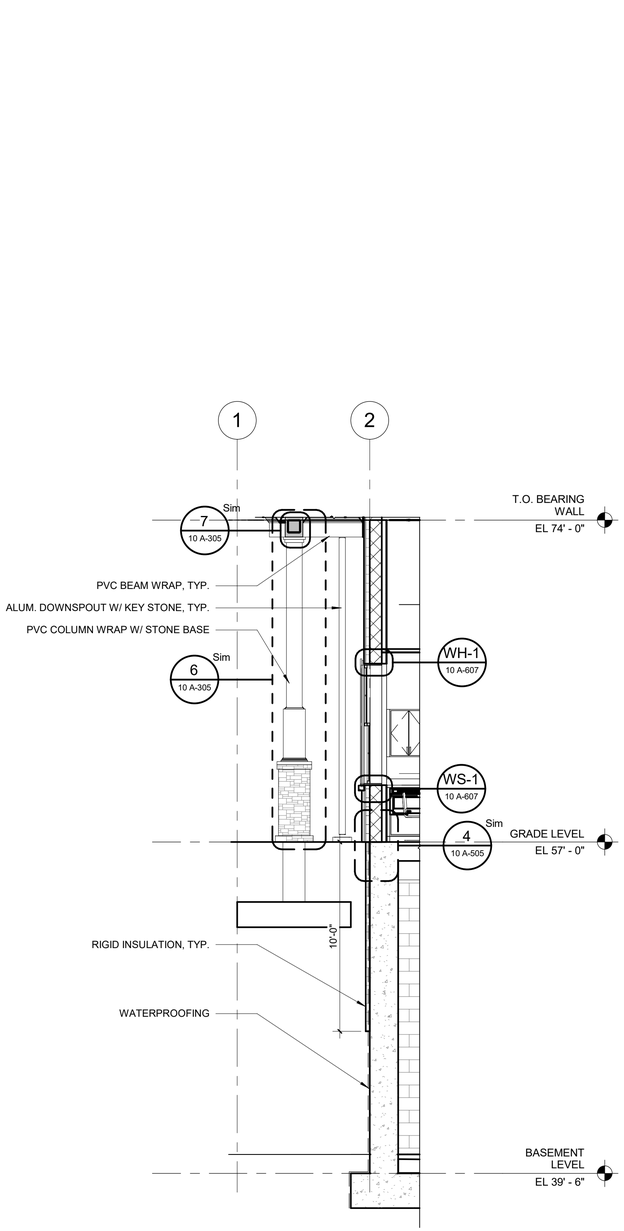
ARCHITECTURAL

SHEET TITLE

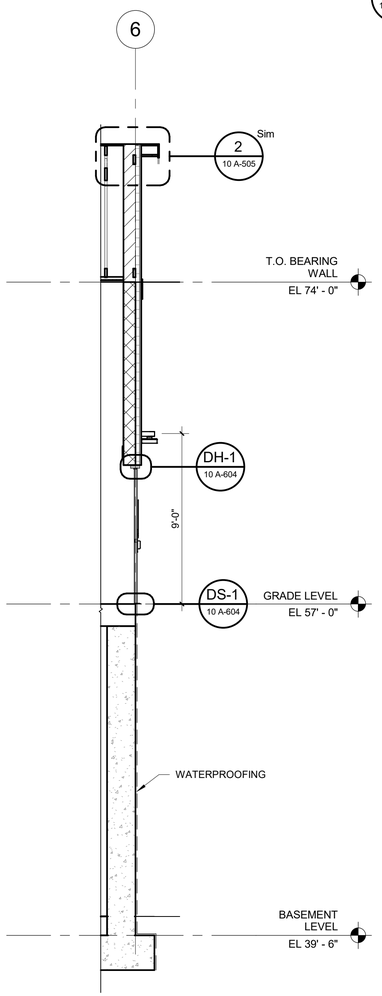
SECTIONS - STAIRS

SHEET NUMBER

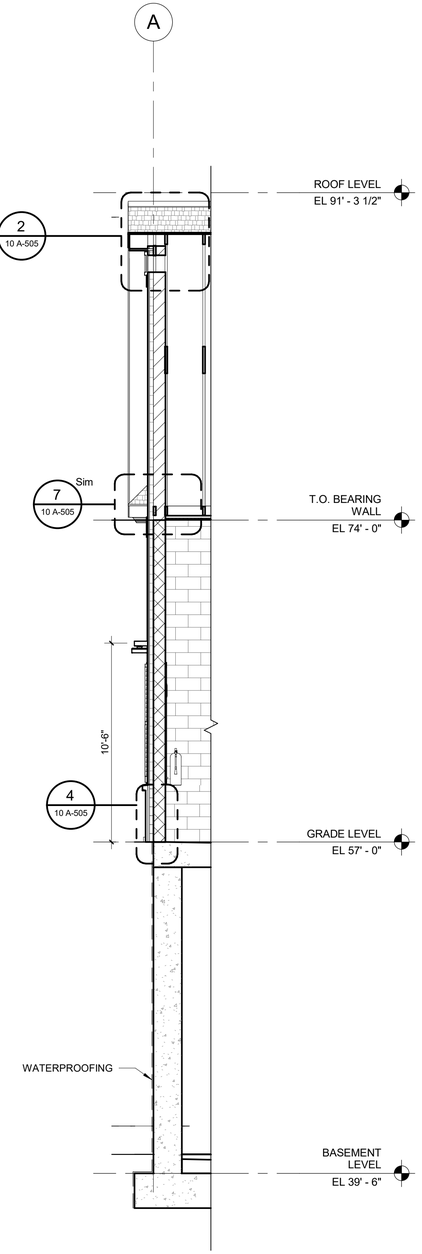
10 A-302



4 | 10 A-301 — **WEST WALL SECTION** — Scale: 1/4" = 1'-0"

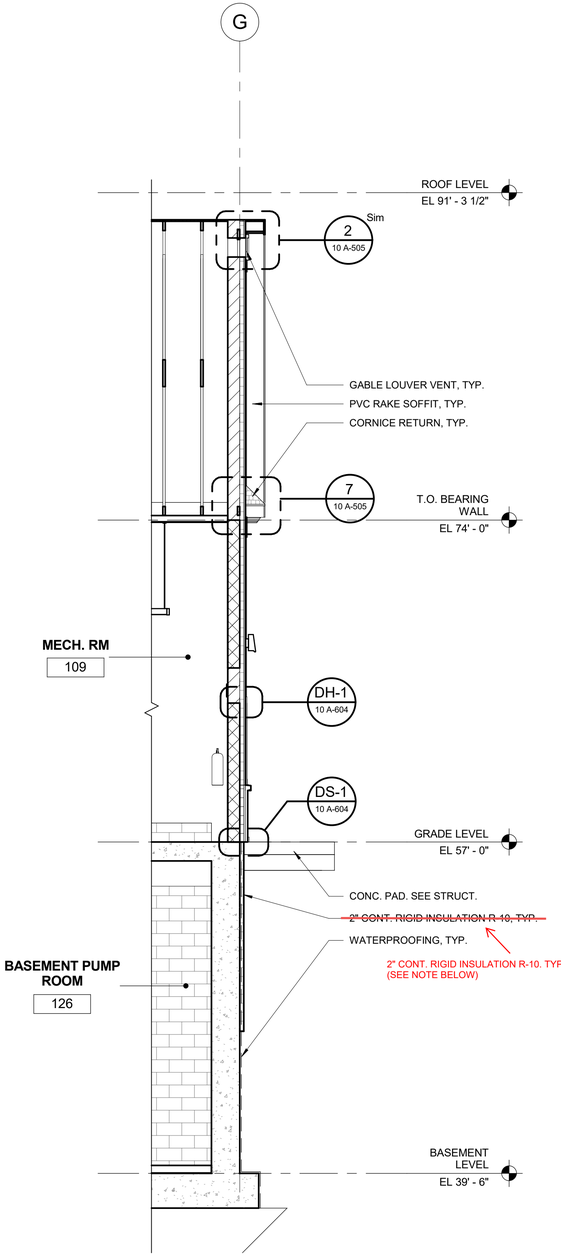


3 | 10 A-301 — **EAST WALL SECTION** — Scale: 1/4" = 1'-0"



2 | 10 A-301 — **NORTH WALL SECTION** — Scale: 1/4" = 1'-0"

FOR TYPICAL NOTES SEE WALL SECTION 1/10 A-303



NOTE : 2" RIGID INSULATION THICKNESS IS REQUIRED TO MEET THE MINIMUM R-VALUE REQUIREMENTS LISTED FOR MASS WALLS BELOW GRADE.

1 | 10 A-101 — **SOUTH WALL SECTION** — Scale: 1/4" = 1'-0"

Note:
2" rigid insulation thickness is required to meet the minimum R-value requirements listed for mass walls below grade.

0 2' 4' 8'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:41 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
MATTHEW J. PICONE
32260
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

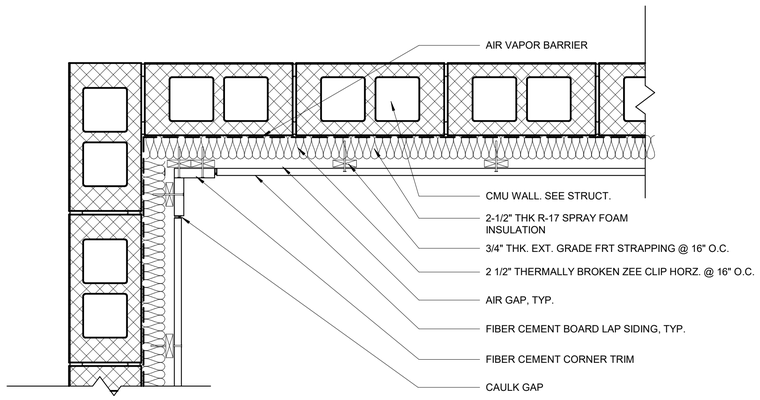
ARCHITECTURAL

SHEET TITLE

SECTIONS - WALLS

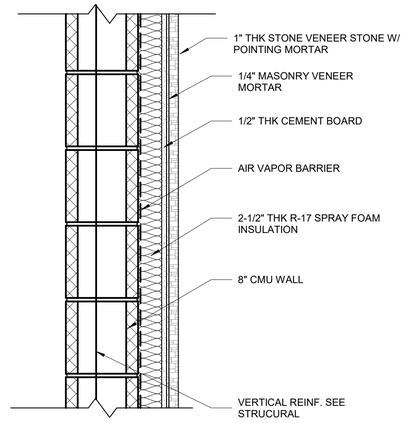
SHEET NUMBER

10 A-303



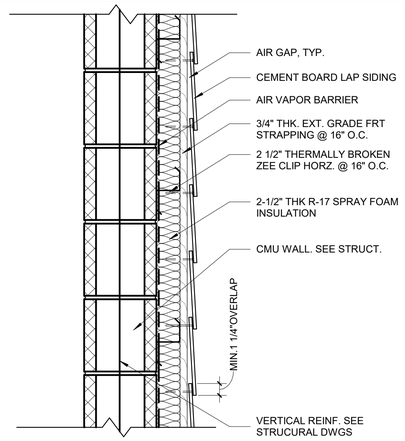
5 INSIDE WALL CORNER PLAN DETAIL

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



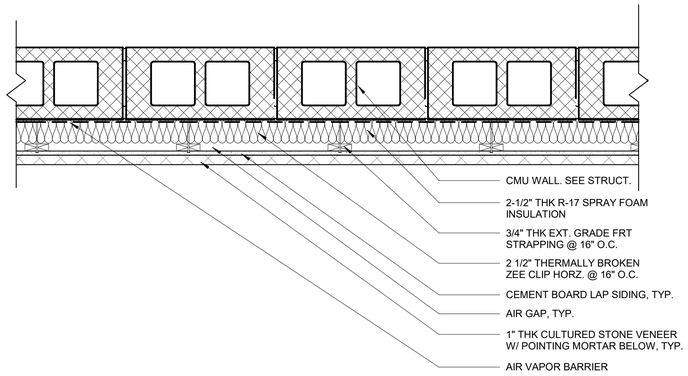
2 STONE VENEER ON CMU WALL SECTION

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



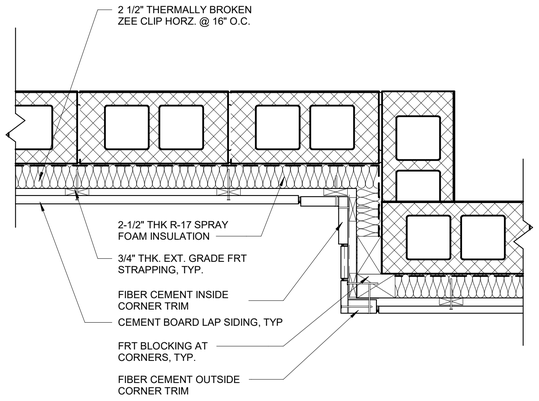
1 CEMENT BOARD SIDING ON CMU WALL SECTION

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



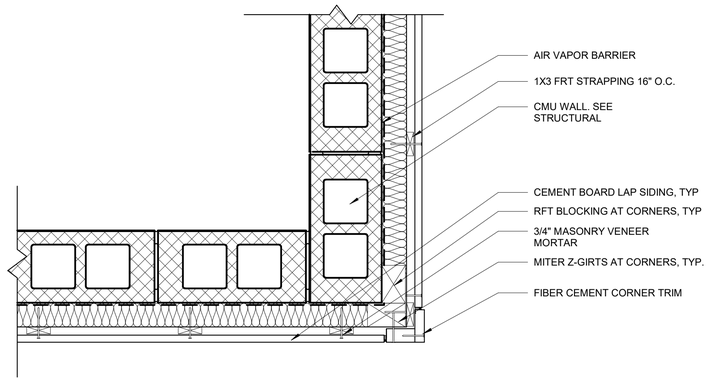
6 TYPICAL CMU WALL PLAN DETAIL - SIDING

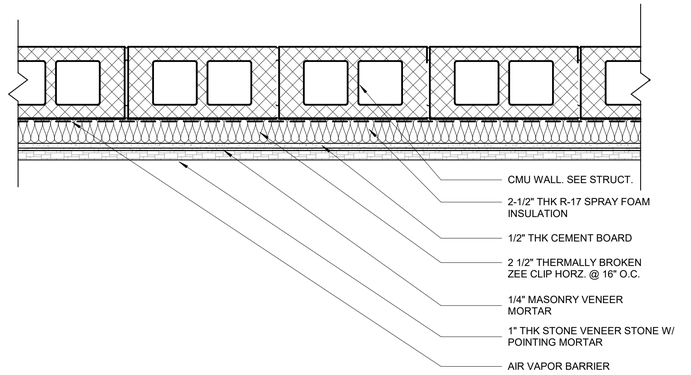
Scale: 1 1/2" = 1'-0"



3 TYPICAL INSIDE/OUTSIDE CORNER PLAN DETAIL - SIDING

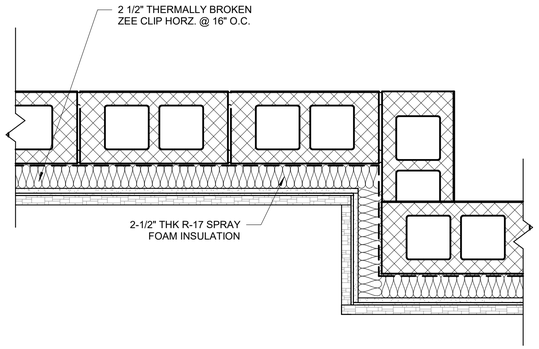
Scale: 1 1/2" = 1'-0"





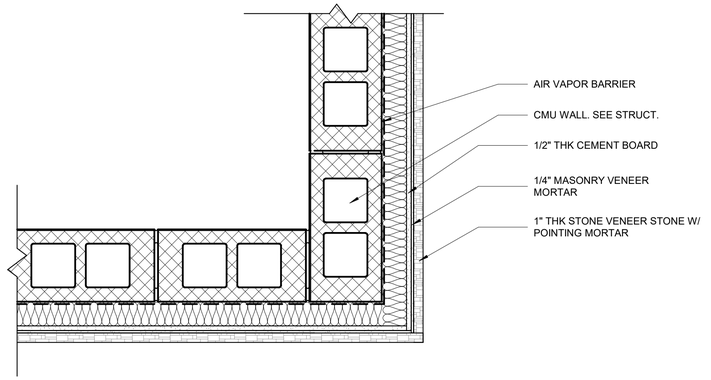
7 TYPICAL CMU WALL PLAN DETAIL - STONE VENEER

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



4 TYPICAL INSIDE/OUTSIDE CORNER PLAN DETAIL - STONE VENEER

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



NOTE: REINFORCING IN VERTICAL CELLS ARE NOT SHOWN. SEE STRUCTURAL DRAWINGS FOR LOCATIONS OF VERTICALLY REINFORCED GROUTED CELLS

1/4 0 1/4 1/2 1 2

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

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	C. LI
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

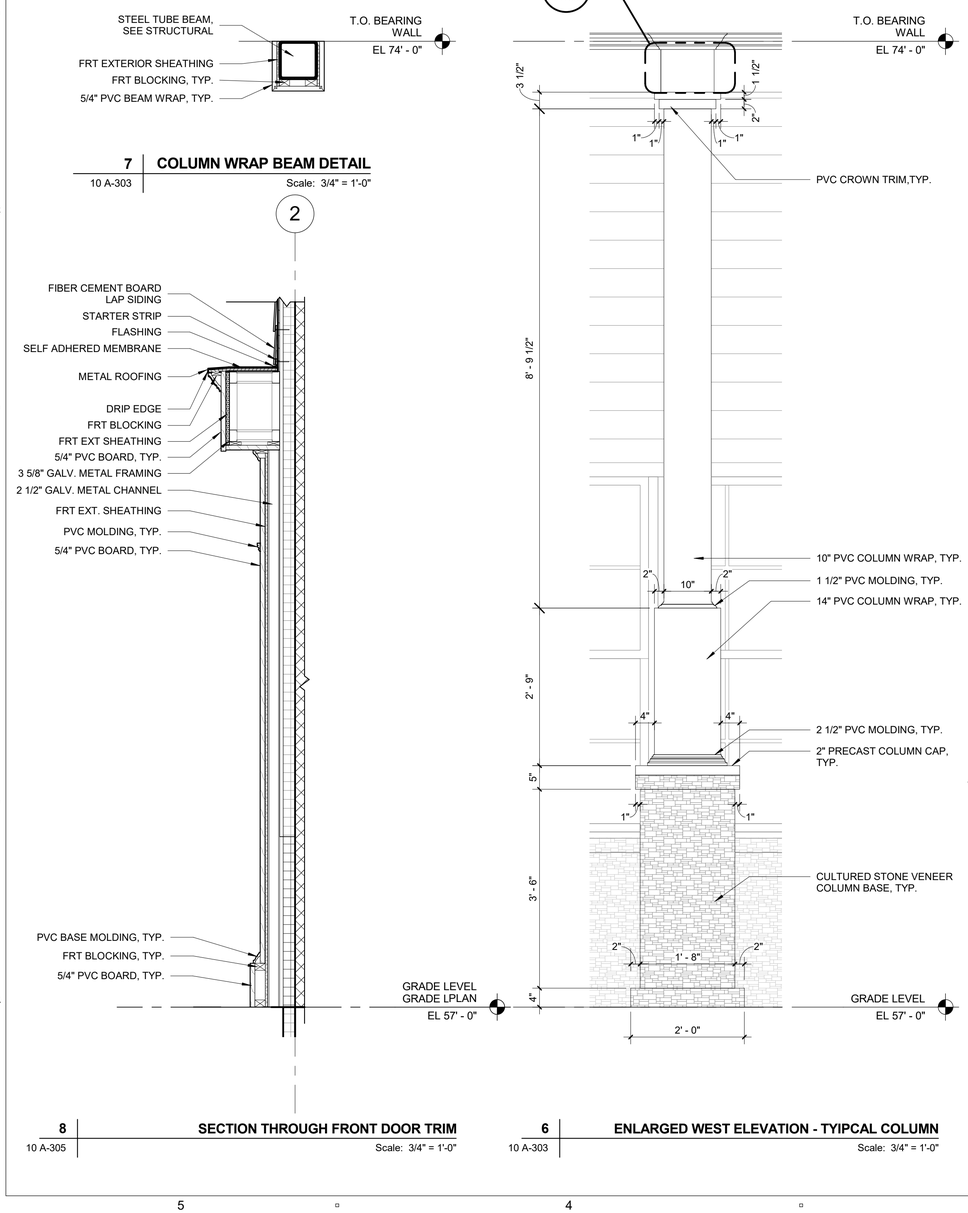
EXTERIOR WALL DETAILS

SHEET NUMBER

10 A-304

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:42 PM

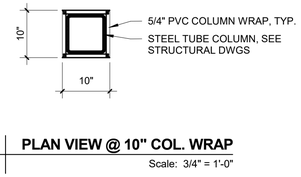
60587515



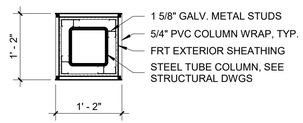
7 | COLUMN WRAP BEAM DETAIL
10 A-303 | Scale: 3/4" = 1'-0"

8 | SECTION THROUGH FRONT DOOR TRIM
10 A-305 | Scale: 3/4" = 1'-0"

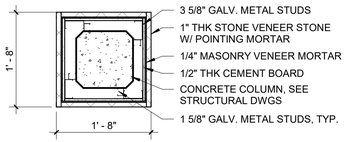
6 | ENLARGED WEST ELEVATION - TYIPCAL COLUMN
10 A-303 | Scale: 3/4" = 1'-0"



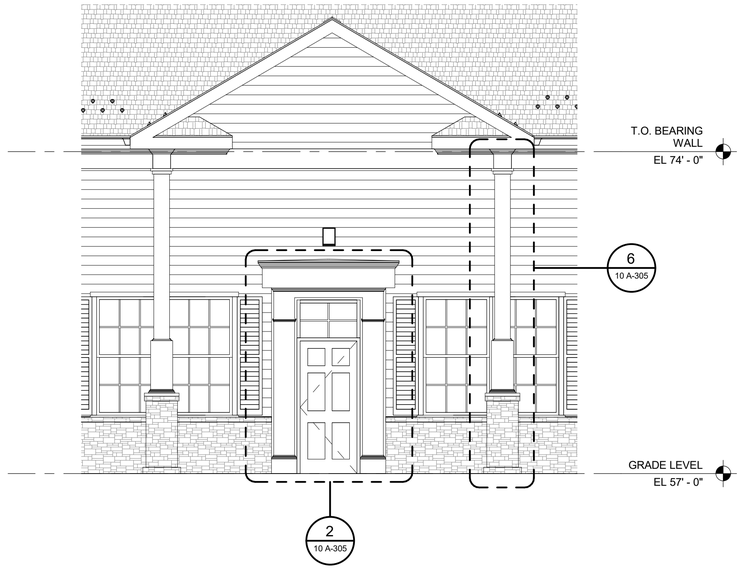
3 | PLAN VIEW @ 10" COL. WRAP
10 A-201 | Scale: 3/4" = 1'-0"



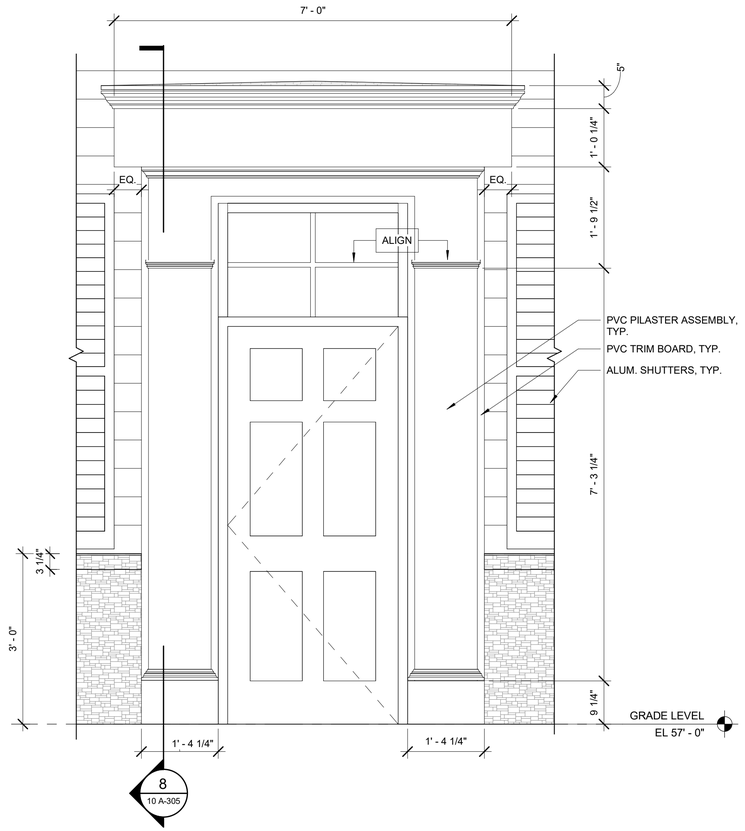
4 | PLAN VIEW @ 14" COL. WRAP
10 A-201 | Scale: 3/4" = 1'-0"



5 | PLAN VIEW @ COL. STONE VENEER
10 A-201 | Scale: 3/4" = 1'-0"



1 | ENLARGED WEST ELEVATION - ENTRANCE
10 A-201 | Scale: 1/4" = 1'-0"



2 | ENLARGED ELEVATION - ENTRANCE DOOR
10 A-305 | Scale: 3/4" = 1'-0"

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:47 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDINE BITTERS
No. 32200
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

ENLARGED EXTERIOR ELEVATIONS AND DETAILS

SHEET NUMBER

10 A-305

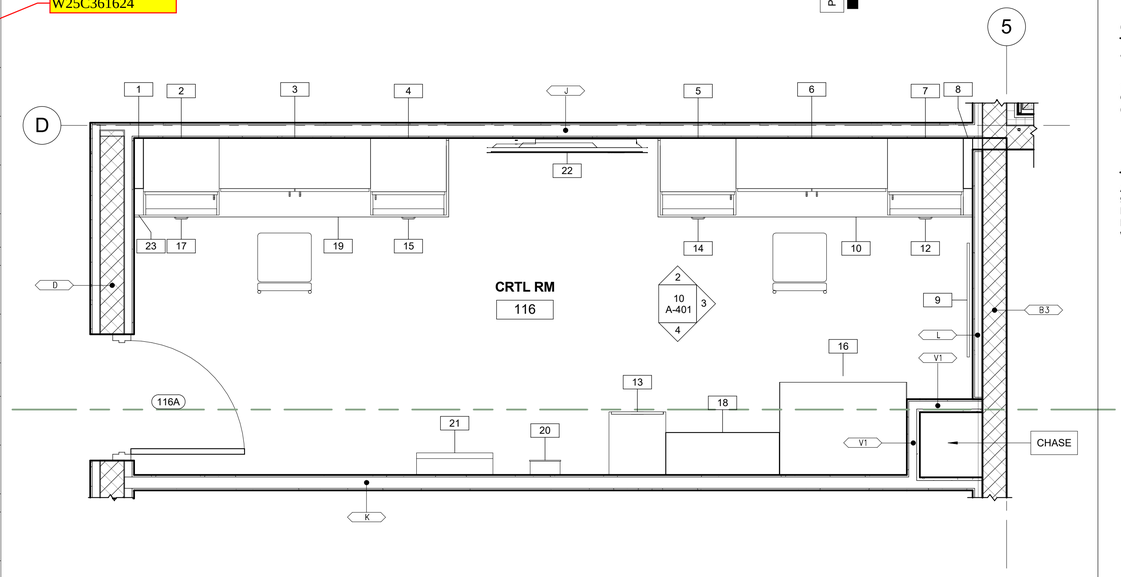
CONTROL ROOM ACCESSORY SCHEDULE

Item Number	Generic Name	Room	Count	Width	Height	Depth	Family	Model	Manufacturer	Comments
1	PANEL	CRTL RM	1	1' - 4"	3' - 0"	0' - 3"	Wall Cabinet Filler Panel - Left2			
2	CABINET	CRTL RM	1	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Left Pull)	~~W25W361624L~~ W25C361624L	Kewaunee Scientific Corporation	
3	CABINET	CRTL RM	1	4' - 0"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Double)	~~W25W361648~~ W25C361648	Kewaunee Scientific Corporation	
4	CABINET	CRTL RM	1	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Right Pull)	~~W25W241624~~ W25C241624	Kewaunee Scientific Corporation	
5	CABINET	CRTL RM	1	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Left Pull)	~~W25W361624L~~ W25C361624L	Kewaunee Scientific Corporation	
6	CABINET	CRTL RM	1	4' - 0"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Double)	~~W25W361648~~ W25C361648	Kewaunee Scientific Corporation	
7	CABINET	CRTL RM	1	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Right Pull)	W25W241624 ~~W25C361624~~	Kewaunee Scientific Corporation	
8	PANEL	CRTL RM	1	1' - 4"	3' - 0"	0' - 3"	Wall Cabinet Filler Panel - Right2		Kewaunee Scientific Corporation	
9	MARKER BOARD	CRTL RM	1	3' - 0"	3' - 0"		Markerboard-Glass-Egan_Visual-GlassWrite_MAG_Boxcore	DGMB2418WHCA	Egan Visual	
10	COUNTER	CRTL RM	1	8' - 4"	3' - 0"	2' - 1"	Counter Top			
11	PANEL	CRTL RM	1	2' - 0"	2' - 3"	0' - 3"	Filler Panel - Right2		Kewaunee Scientific Corporation	
12	DRAWER	CRTL RM	1	2' - 0"	2' - 5 1/4"	1' - 10"	D85C292218-	D85C292224-	Kewaunee Scientific Corporation	
13	FILE	CRTL RM	1	1' - 6"	4' - 0"	1' - 8"	Lateral_4_Drawer_Cabinet_File_1019	H-3705	Uline	
14	DRAWER	CRTL RM	1	2' - 0"	2' - 5 1/4"	1' - 10"	D85C292218-	D85C292224-	Kewaunee Scientific Corporation	
15	DRAWER	CRTL RM	1	2' - 0"	2' - 5"	1' - 10"	D81C292218-	D81C292224-	Kewaunee Scientific Corporation	
16	CABINET	CRTL RM	1	3' - 4"	1' - 4 1/2"	2' - 5 1/2"	Flat_File_Cabinet_1012	2GTG3	Grainger	
17	DRAWER	CRTL RM	1	2' - 0"	2' - 5"	1' - 10"	D81C292218-	D81C292224-	Kewaunee Scientific Corporation	
18	BOOKCASE	CRTL RM	1	3' - 0"	5' - 6"	1' - 2"	Commercial_steel_bookcase_-_Parametric_18268	H-3611	Uline	
19	COUNTER	CRTL RM	1	8' - 4"	3' - 0"	2' - 1"	Counter Top			
20	CABINET	CRTL RM	1	0' - 10"	1' - 3 3/4"	0' - 4 3/4"	Cabinet-Medicine-Ketcham-Lockable_Series-Single_Door-Side_Keyed	715SK	Ketcham	Key Control Cabinet
21	CABINET	CRTL RM	1	2' - 0 1/4"	2' - 8"	0' - 7"	Data_Device-Remote_Equipment_Cabinet-Hubbell-ReBox	RE2	Hubbell Premise Wiring	Lockout Tagout Cabinet
22	TV	CRTL RM	1	4' - 2"	2' - 6"		Electronics_Visual-TVs_ViewSonic_The-ViewSonicR-IFP5550-ViewBoard-Interac	viewsonic_ifp5550	ViewSonic	
23	PANEL	CRTL RM	1	2' - 0"	2' - 3"	0' - 3"	Filler Panel - Left2		Kewaunee Scientfic Corporation	
24	FILE BASE	CRTL RM	1	3' - 4"	1' - 0"	2' - 5 1/2"	Flat File Base2			Width and depth dimensions to match Flat File
Grand total: 24 ~~24~~ 26										

SEE NO. 25 AT RIGHT (ADD. 5)

W25C361624

W25C361624



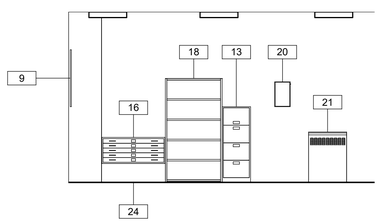
1 ENLARGED CONTROL ROOM PLAN
10 A-102 Scale: 1/2" = 1'-0"

0 1' 2' 4'

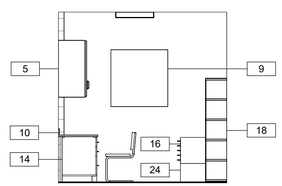
ADD NO. 25 TO TABLE AT LEFT. (ADD. 5)

Item Number	Generic Name	Room	Count	Width	Height
25	Chair	Crtl Rm	2	2' – 3'1/2"	3' – 11"

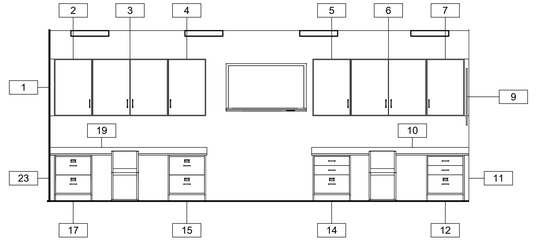
Depth	Family	Model	Manufacturer	Comments
3' – 5"	Executive High-Back Chair	HIEH2	The Hon Company	---



4 CONTROL ROOM INTERIOR ELEVATION - SOUTH
10 A-401 Scale: 1/4" = 1'-0"



3 CONTROL ROOM INTERIOR ELEVATION - EAST
10 A-401 Scale: 1/4" = 1'-0"



2 CONTROL ROOM INTERIOR ELEVATION - NORTH
10 A-401 Scale: 1/4" = 1'-0"

0 2' 4' 8'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:50 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
No. 32340
CHELSEA, MA.
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	04-10-20	ADDENDUM 8
A	03-10-20	ADENDUM 5

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

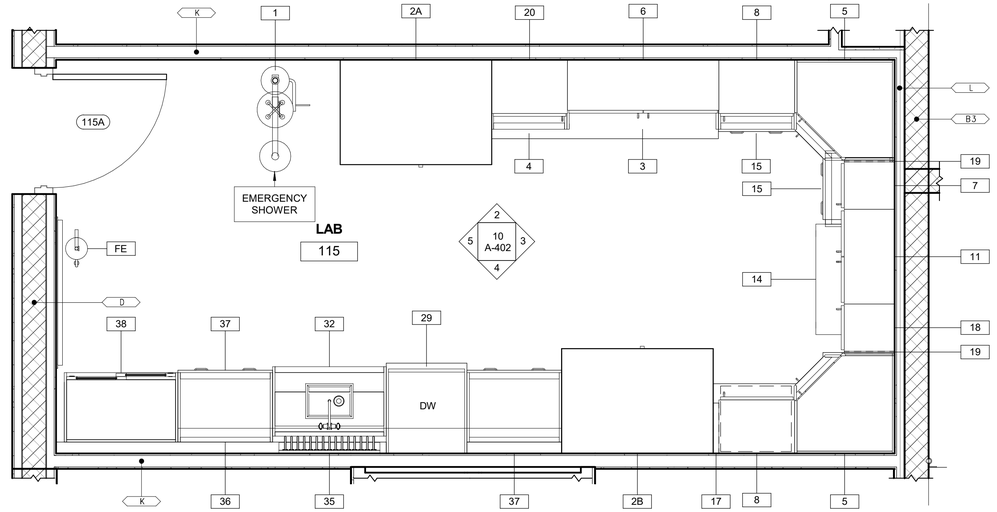
ENLARGED PLANS, ELEVATIONS, SCHED. - CONTROL ROOM

SHEET NUMBER

10 A-401

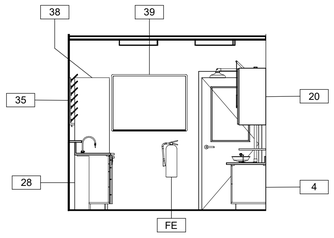
LABORATORY ROOM ACCESSORY SCHEDULE

Item Number	Generic Name	Room	Count	Width	Height	Depth	Family	Model	Manufacturer	Comments
		LAB	43							
1	EYE WASH STATION	LAB	1				Emergency_Shower-Eyewash-Guardian_Equipment-Safety_Station-G1991	G1991	Guardian Equipment	
2A	FUME HOOD - ADA	LAB	1	4' - 0"	5' - 6"	2' - 10"	L2250 - Hood, Fume, Bench	H08K5448-00 M7	Kewaunee Scientfic Corporation	Open Bypass w/ Constant Volume.
2B	FUME HOOD	LAB	1	4' - 0"	5' - 6"	2' - 10"	L2250 - Hood, Fume, Bench	H05K5448-00 M7	Kewaunee Scientfic Corporation	Open Bypass w/ Constant Volume.
3	~~FILE~~	~~LAB~~	~~1~~	~~4' - 0"~~	~~2' - 5"~~	~~1' - 10"~~	~~G07C322236~~	~~G07C322248~~	~~Kewaunee Scientific~~ Corporation	NOT USED
4	DRAWER	LAB	1	2' - 0"	2' - 5"	1' - 10"	D81C292218-	D81C292224-	Kewaunee Scientific Corporation	
5	CABINET	LAB	2	0' - 0"	3' - 0"	2' - 6 1/4"	~~W21W361623-~~	~~W21W361623-~~ W21C361615	Kewaunee Scientific Corporation	
6	CABINET	LAB	1	4' - 0"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Double)	W25W361648 W25C361648	Kewaunee Scientific Corporation	
7	CABINET	LAB	1	1' - 3"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Left Pull)	W25W361615L W25C361615L	KEWAUNEE SCIENTIFIC CORPORATION	
8	CABINET	LAB	2	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Right Pull)	W25W241624 W25C361624	Kewaunee Scientific Corporation	
9	ADA SINK SKIRT	LAB	1	4' - 0"	2' - 8"	1' - 10"	G07C322236-	G07C322248-	Kewaunee Scientific Corporation	
10	COUNTER	LAB	2		3' - 0"	1' - 10 3/4"	Counter Top-L Shaped 2			
11	CABINET	LAB	1	2' - 6"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Double)	~~W25W361630~~ W25C361630	KEWAUNEE SCIENTIFIC CORPORATION	
12	COUNTER	LAB	1	8' - 4"	3' - 0"	2' - 1"	Counter Top			
13	COUNTER	LAB	2	2' - 0"	3' - 0"	1' - 5"	Counter Top No Back Splash			
14	Table	LAB	1	2' - 11"	2' - 6"	2' - 0"	K7-302435			
15	DRAWER	LAB	2	2' - 0"	2' - 11"	1' - 10"	~~D08C352230-~~	~~D08C352230-~~ D08C352224	Kewaunee Scientific Corporation	
16	~~DRAWER~~ CORNER CABINET	LAB	2	2' - 8"	2' - 11"	1' - 10"	G15C352214-	G15C352214-	Kewaunee Scientific Corporation	
17	PANEL	LAB	1	0' - 1 3/4"	3' - 0"	1' - 4"	Upper Cabinet-Filler-Wall			
18	CABINET	LAB	1	1' - 3"	3' - 0"	1' - 4"	W25W - Swinging Panel Doors(Left Pull)	~~W25W361615L~~ ~~W25C361615L~~	KEWAUNEE SCIENTIFIC CORPORATION	
19	PANEL	LAB	2	0' - 0 1/2"	3' - 0"	1' - 4"	Upper Cabinet-Filler-Wall			W25C361615L
20	CABINET	LAB	1	2' - 0"	3' - 0"	1' - 5"	W25W - Swinging Panel Doors(Left Pull)	~~W25W361624L~~	Kewaunee Scientific Corporation	
22	CABINET	LAB	1	4' - 0"	2' - 8"	2' - 0"	Base Cabinet-Double Door & 2 Drawer	E41C292248	KEWAUNEE SCIENTIFIC CORPORATION	W25C361624L
28	DRAWER	LAB	1	2' - 6"	2' - 11"	1' - 10"	D08C352230-	~~D08C352236-~~ D08C352230	Kewaunee Scientific Corporation	
29	DISHWASHER	LAB	1	2' - 0"	2' - 11"	2' - 3 1/2"	Dishwasher	10-359-100	Labconca	
32	ADA SINK SKIRT	LAB	1	3' - 0"	2' - 10"	1' - 10"	G07C322236-	G07C322236-	Kewaunee Scientific Corporation	
34	FAUCET	LAB	1				W-0340-00	W-0340-00	Kewaunee Scientific Corporation / WaterSaver Faucet	
35	RACK	LAB	1	2' - 8"	2' - 8"		X-020017	X-020017	Kewaunee Scientific Corporation	
36	DRAWER	LAB	1	2' - 6"	2' - 11"	1' - 10"	D08C352230-	~~D08C352236-~~ D08C352230	Kewaunee Scientific Corporation	
37	COUNTER	LAB	3		3' - 0"		Counter Top with Shelf			D08C352230
38	CASE	LAB	1	3' - 0"	7' - 0"	1' - 10"	~~S11W84xxxx~~ S41C842236	~~S11W842236~~	KEWAUNEE SCIENTIFIC CORPORATION	S41C842236
39	MARKER BOARD	LAB	1	4' - 0"	3' - 0"	0' - 1"	F3050 - Whiteboard, Dry Erase			
Grand total: 83										

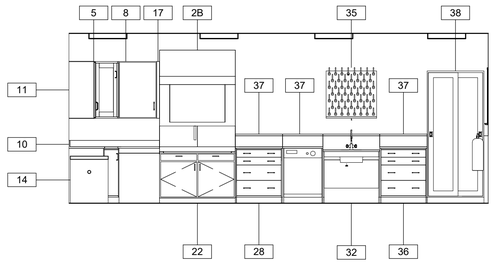


1 ENLARGED LAB ROOM PLAN
10 A-102 Scale: 1/2" = 1'-0"

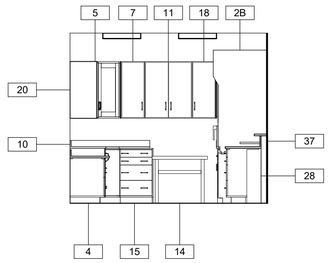
0 1' 2' 4'



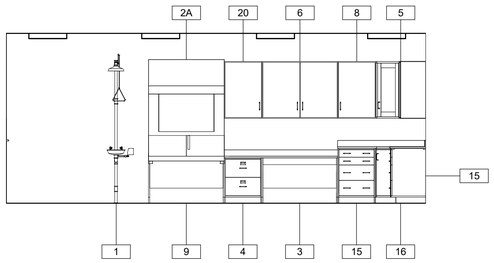
5 ENLARGED LAB ROOM - WEST
10 A-401 Scale: 1/4" = 1'-0"



4 ENLARGED LAB ROOM - SOUTH
10 A-402 Scale: 1/4" = 1'-0"



3 ENLARGED LAB ROOM - EAST
10 A-401 Scale: 1/4" = 1'-0"

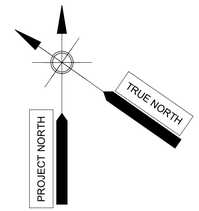


2 ENLARGED LAB ROOM - NORTH
10 A-402 Scale: 1/4" = 1'-0"

0 2' 4' 8'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:12:55 PM

60587515



AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	4-10-20	ADDENDUM 8

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

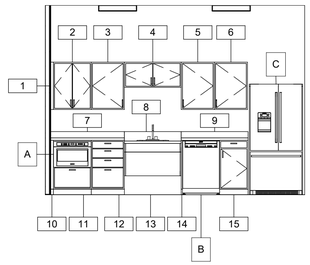
ENLARGED PLANS, ELEVATIONS, SCHED. - LAB ROOM

SHEET NUMBER

10 A-402

BREAK ROOM ACCESSORY SCHEDULE

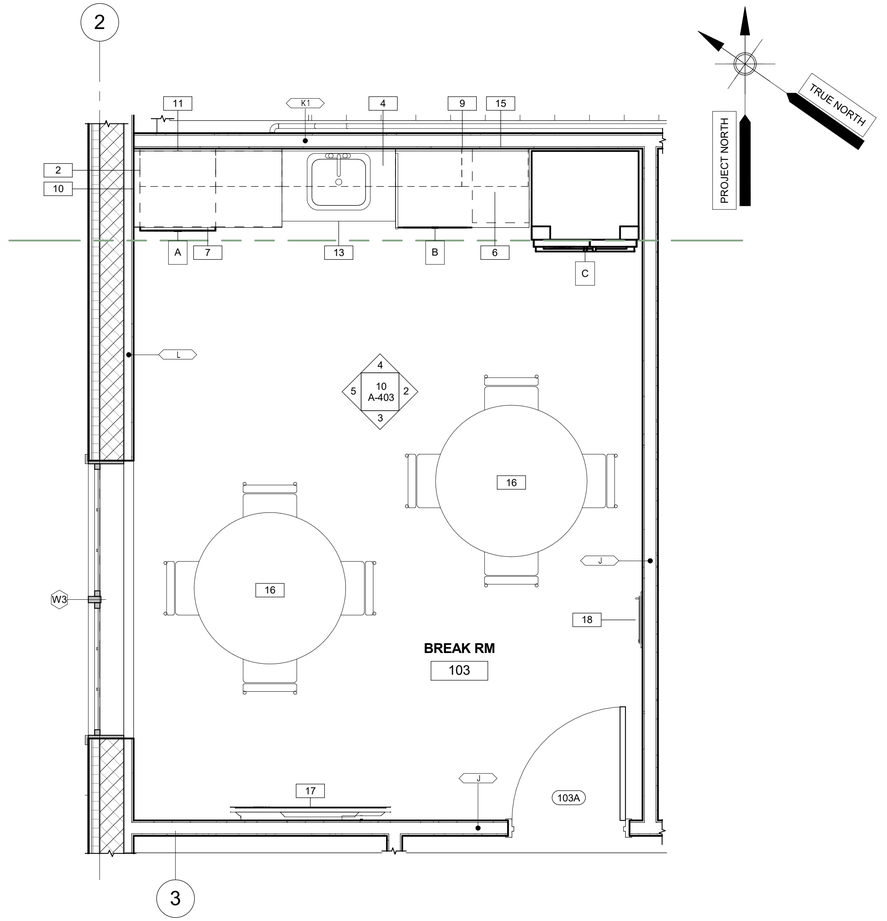
ITEM NUMBER	GENERIC NAME	ROOM	COUNT	WIDTH	HEIGHT	DEPTH	FAMILY	MODEL	MANUFACTURER	COMMENTS
1	CABINET	BREAK RM	1	0' - 2"	2' - 6"	0' - 0"	Upper Cabinet-Filler-Wall			
2	CABINET	BREAK RM	1	2' - 0"	2' - 6"	1' - 0"	Upper Cabinet-Double Door-Wall			
3	CABINET	BREAK RM	1	1' - 9"	2' - 6"	1' - 0"	Upper Cabinet-Single Door-Wall			
4	CABINET	BREAK RM	1	3' - 0"	1' - 4"	1' - 0"	Upper Cabinet-Double Door-Wall			
5	CABINET	BREAK RM	1	1' - 9"	2' - 6"	1' - 0"	Upper Cabinet-Single Door-Wall			
6	CABINET	BREAK RM	1	1' - 9"	2' - 6"	1' - 0"	Upper Cabinet-Single Door-Wall			
7	COUNTER	BREAK RM	1		3' - 0"	2' - 1"	Counter Top			
8	BACKSPLASH	BREAK RM	1				Backsplash filler			
9	COUNTER	BREAK RM	1		3' - 0"	2' - 1"	Counter Top			
10	CABINET	BREAK RM	1	0' - 2"	2' - 10 1/2"	2' - 0"	Base Cabinet-Filler			
11	CABINET	BREAK RM	1	2' - 0"	2' - 10 1/2"	2' - 0"	Base Cabinet-1 Drawer Microwave			
12	CABINET	BREAK RM	1	1' - 9"	2' - 10 1/2"	2' - 0"	Base Cabinet-4 Drawers			
13	SINK SKIRT	BREAK RM	1	3' - 0"	2' - 10"	1' - 10"	ADA_Sink_Skirt_14605		Steelcase Nurture	
14	PANEL	BREAK RM	1				Dishwasher end panel			
15	CABINET	BREAK RM	1	1' - 6"	2' - 10 1/2"	2' - 0"	Base Cabinet-Single Door & Drawer			
16	TABLE/CHAIRS	BREAK RM	2		2' - 6"		Table-Dining Round w Chairs			48" DIA
17	TV	BREAK RM	1	4' - 2"	2' - 6"		Electronics_Visual-TVs_ViewSonic_The-ViewSonicR-IFP5550-ViewBoard-Interac	viewsonic_ifp5550	ViewSonic	
18	AED	BREAK RM	1				Automated_external_defibrillator_6040			
Grand total: 19										



4 BREAK ROOM INTERIOR ELEVATION - NORTH
10 A-403 Scale: 1/4" = 1'-0"

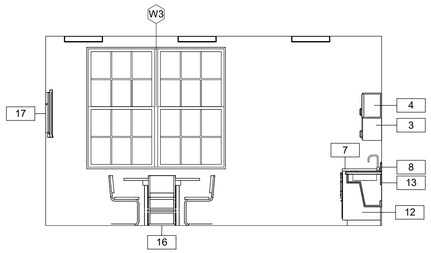
BREAK ROOM EQUIPMENT SCHEDULE

MARK	FAMILY	MODEL	Manufacturer	COMMENTS
A	Bosch Microwaves HMD8451UC	HMD8451UC	Bosch	
B	Bosch Dishwasher SHE4AV55UC	Bosch dishwasher SHE4AV55UC	Bosch Appliances	
C	Bosch Refrigeration B22FT80SNS	B22FT80SNS	Bosch	

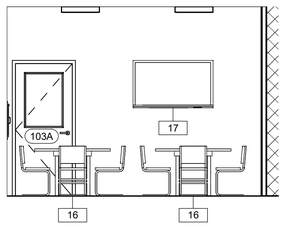


1 ENLARGED BREAK ROOM PLAN
10 A-102 Scale: 1/2" = 1'-0"

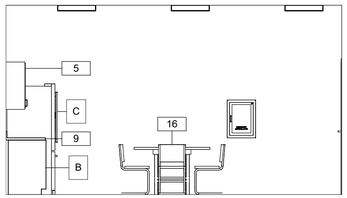
0 1' 2' 4'



5 BREAK ROOM INTERIOR ELEVATION - WEST
10 A-403 Scale: 1/4" = 1'-0"



3 BREAK ROOM INTERIOR ELEVATION - SOUTH
10 A-403 Scale: 1/4" = 1'-0"



2 BREAK ROOM INTERIOR ELEVATION - EAST
10 A-403 Scale: 1/4" = 1'-0"

0 2' 4' 8'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:00 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
32
CHELMSFORD, MA
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

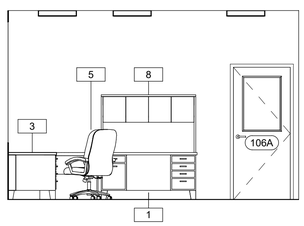
SHEET TITLE

ENLARGED PLANS, ELEVATIONS, SCHED. - BREAK ROOM

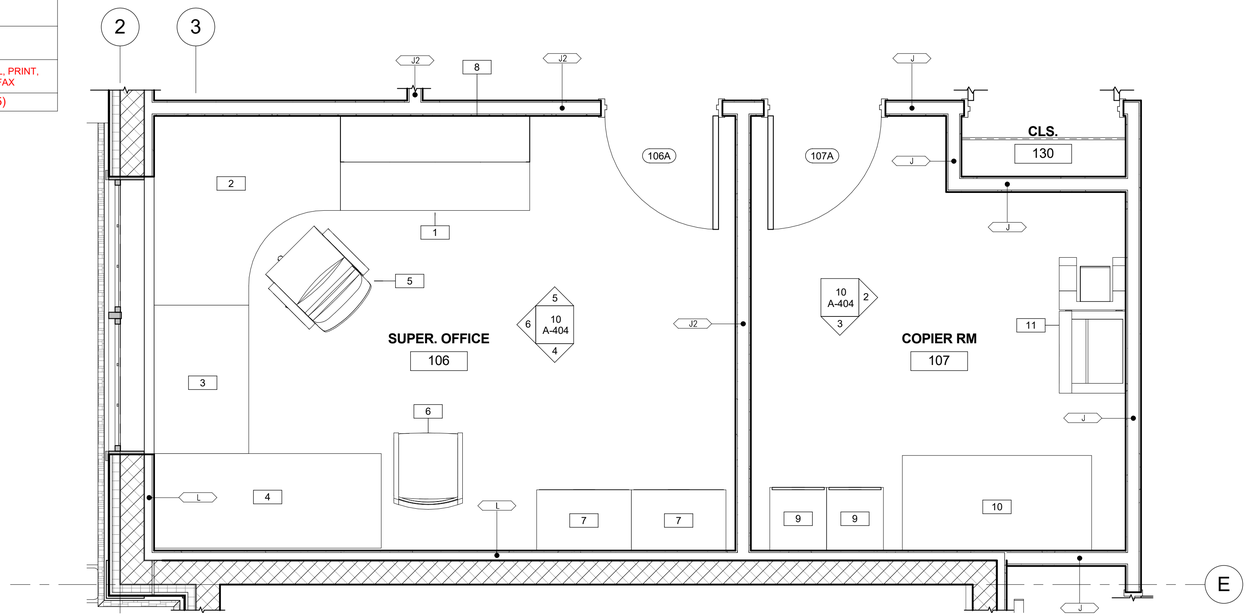
SHEET NUMBER

10 A-403

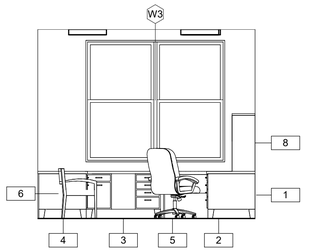
OFFICE/COPIER ROOM ACCESSORY SCHEDULE										
Cabinet Number	Generic Name	Room	Count	Width	Height	Depth	Family	Model	Manufacturer	Comments
1	Desk	SUPER. OFFICE	1	5' - 0"	2' - 6"	2' - 6"	Desk	HP3262	The HON Company	
2	Desk	SUPER. OFFICE	1	5' - 0"	2' - 6"	2' - 6"	Desk_with_return_10554	H105810	The HON Company	
3	Desk	SUPER. OFFICE	1	3' - 11"	2' - 6"	2' - 6"	Desk	H882 (SEE COMMENT)	THE HON COMPANY	COUNTER-TOP TO MATCH OTHER FURNITURE
4	Desk	SUPER. OFFICE	1	6' - 0"	2' - 6"	2' - 6"	Desk	H105810	The HON Company	
5	Chair	SUPER. OFFICE	1	2' - 3 1/2"	3' - 11"	3' - 5"	Executive High-Back Chair	HIEH2	The HON Company	
6	Chair	SUPER. OFFICE	1	1' - 9 3/4"	2' - 7 3/4"	2' - 0 1/4"	HON - Cambia - 2160 Series - Guest Chair - Upholstered Back	H2164	The HON Company	
7	Filer	SUPER. OFFICE	2	2' - 6"	4' - 5 1/4"	1' - 7 1/4"	HON - 500 Series - Lateral File - 4 Drawer	H574	The HON Company	
8	Cabinet	SUPER. OFFICE	1	5' - 0"	3' - 0"	1' - 3"	HON - 10500 Series - Stack-on Storage	H105323	The HON Company	
9	Table	COPIER RM	2	1' - 6"	4' - 0"	1' - 8"	Lateral_4_Drawer_Cabinet_File_1019	H-3705	Uline	
10	Table	COPIER RM	1	5' - 0"	2' - 6"	2' - 6"	Table-Rectangular	HETR-3072E-4L	The HON Company	
11	Copier	COPIER RM	1	3' - 7"	3' - 4"	1' - 9"	Copier_309	WC7855	XEROX	COPY, EMAIL, PRINT, SCAN, AND FAX
Grand total: 13										(ADD. 5)



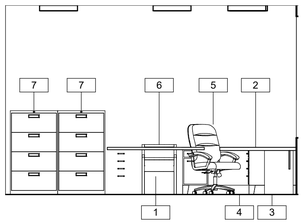
5 | **OFFICE INTERIOR ELEVATION - NORTH**
10 A-404 | Scale: 1/4" = 1'-0"



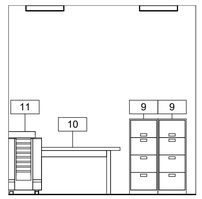
1 | **ENLARGED OFFICE/COPIER ROOM**
10 A-102 | Scale: 1/2" = 1'-0"



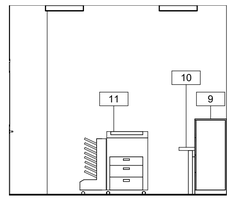
6 | **OFFICE INTERIOR ELEVATION - WEST**
10 A-404 | Scale: 1/4" = 1'-0"



4 | **OFFICE INTERIOR ELEVATION - SOUTH**
10 A-404 | Scale: 1/4" = 1'-0"



3 | **COPIER ROOM INTERIOR ELEVATION - SOUTH**
10 A-404 | Scale: 1/4" = 1'-0"



2 | **COPIER ROOM INTERIOR ELEVATION - EAST**
10 A-404 | Scale: 1/4" = 1'-0"

0 1' 2' 4'

0 2' 4' 8'

PATH/FILENAME: C:\Users\picone\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:04 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALD A. OTTERSON
No. 9270
ORLEANS, MA.
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9
A9	03-10-20	ADDENDUM 5

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

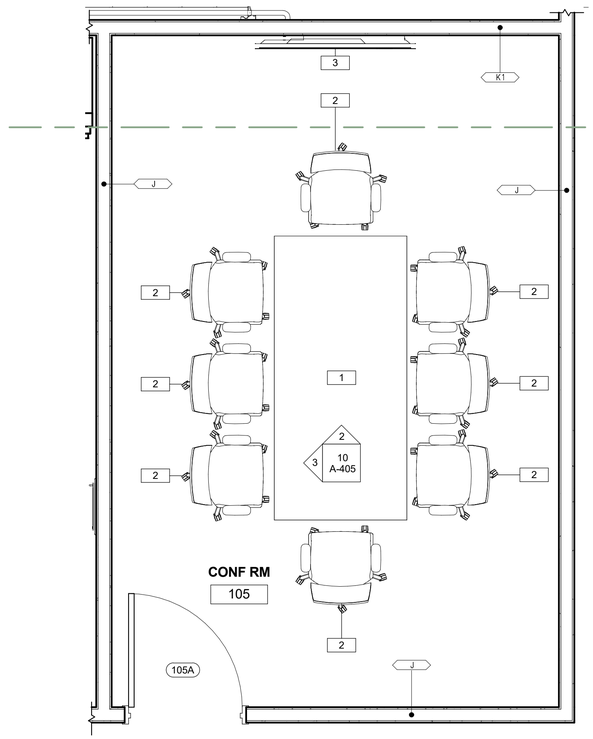
SHEET TITLE

ENLARGED PLANS, ELEVATIONS, SCHED. - OFFICE/COPIER ROOM

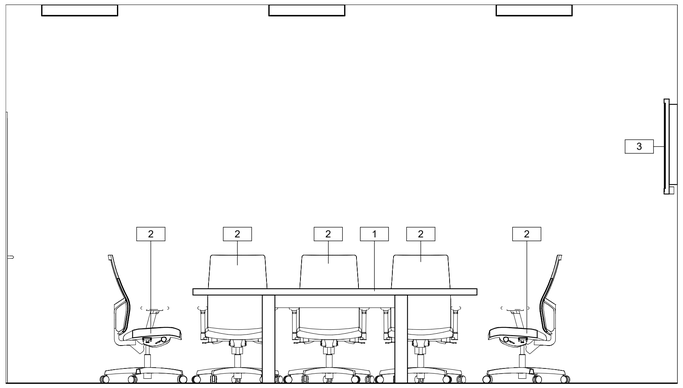
SHEET NUMBER

10 A-404

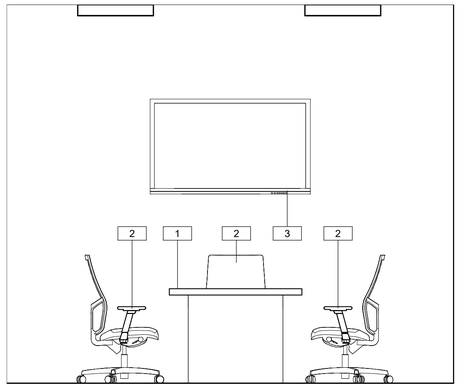
CONFERENCE ROOM ACCESSORY SCHEDULE										
Item Number	Generic Name	Room	Count	Width	Height	Depth	Family	Model	Manufacturer	Comments
1	Table	CONF RM	1	3' - 6"	2' - 6"	3' - 6"	Variable_Size_Conference_Table	HLMC72R	The HON Company	Modify to fit dimensions specified in sched.
2	Chair	CONF RM	8	2' - 3"	3' - 8 1/2"	2' - 4 1/2"	HON - Ignition 2 - Task Mid-back	HIWM2	The HON Company	
3	TV Monitor	CONF RM	1	4' - 2"	2' - 6"		Electronics_Visual-TVs_ViewSonic_The-View SonicR-IFP5550-ViewBoard-Interac	viewsonic_ifp5550	ViewSonic	



1 | 10 A-102 — ENLARGED CONFERENCE ROOM PLAN
Scale: 1/2" = 1'-0"



3 | 10 A-405 — CONFERENCE ROOM INTERIOR ELEVATION - WEST
Scale: 1/2" = 1'-0"



2 | 10 A-403 — CONFERENCE ROOM INTERIOR ELEVATION - NORTH
Scale: 1/2" = 1'-0"

0 1' 2' 4'

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
RALPH A. OTTERSON
No. 32200
ORLEANS, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/2" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

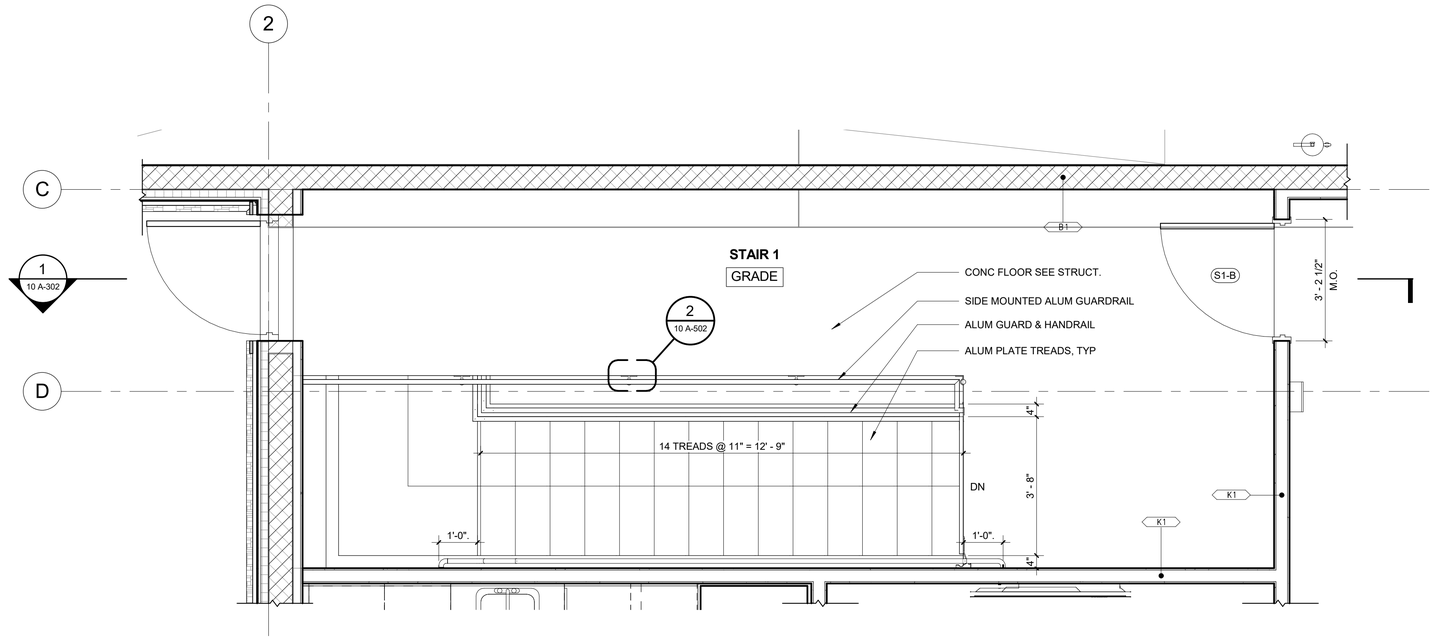
ENLARGED PLANS, ELEVATIONS, SCHED. - CONFERENCE ROOM

SHEET NUMBER

10 A-405

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:09 PM

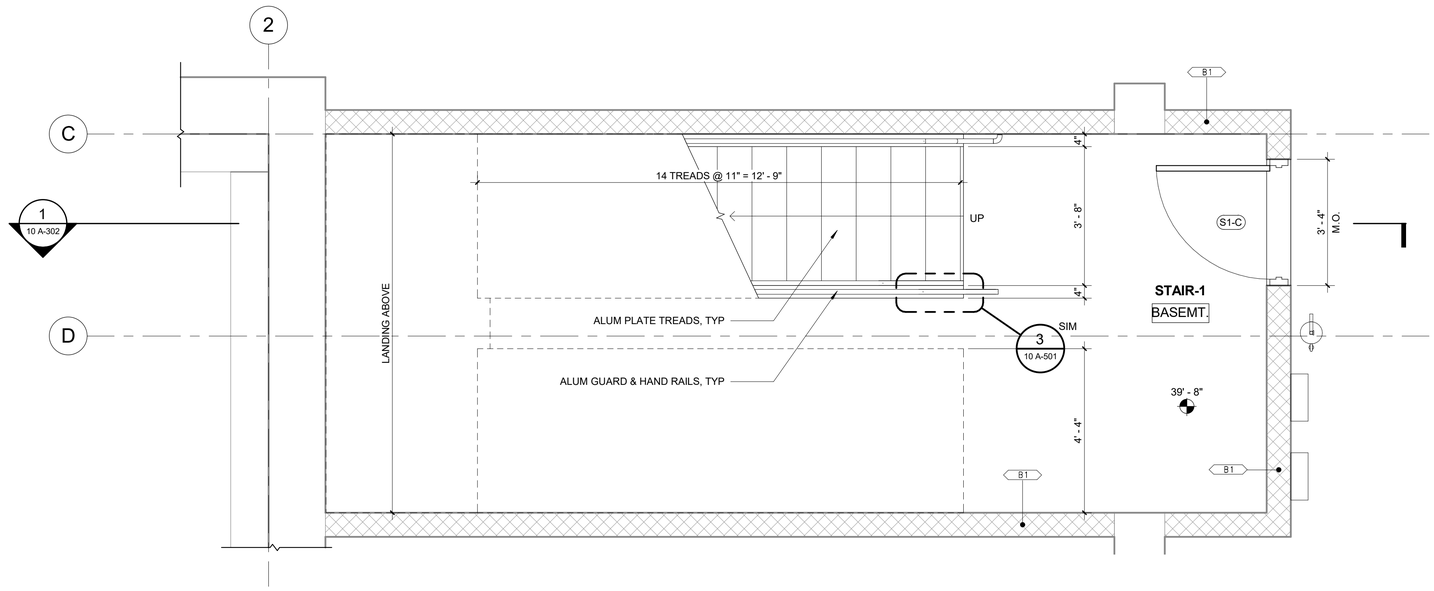
60587515



SEE STANDARD DETAILS ON SHEETS 10 A-501, 10 A-502

1 STAIR 1 - GRADE LEVEL
10 A-102 Scale: 1/2" = 1'-0"

NOTE: SAFETY GATE SHALL BE PROVIDED AT THE TOP OF THE STAIRS. REFER TO SAFETY GATE DETAIL ON DRAWING 10 A-503, DETAILS MISC .1



SEE STANDARD DETAILS ON SHEETS 10 A-501, 10 A-502

2 STAIR 1 - BASEMENT LEVEL
10 A-101 Scale: 1/2" = 1'-0"

0 1' 2' 4'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:10 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
MATTHEW PICONE
No. 32200
CHELSEA, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	4-10-20	ADDENDUM 8

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/2" = 1'-0"

DISCIPLINE

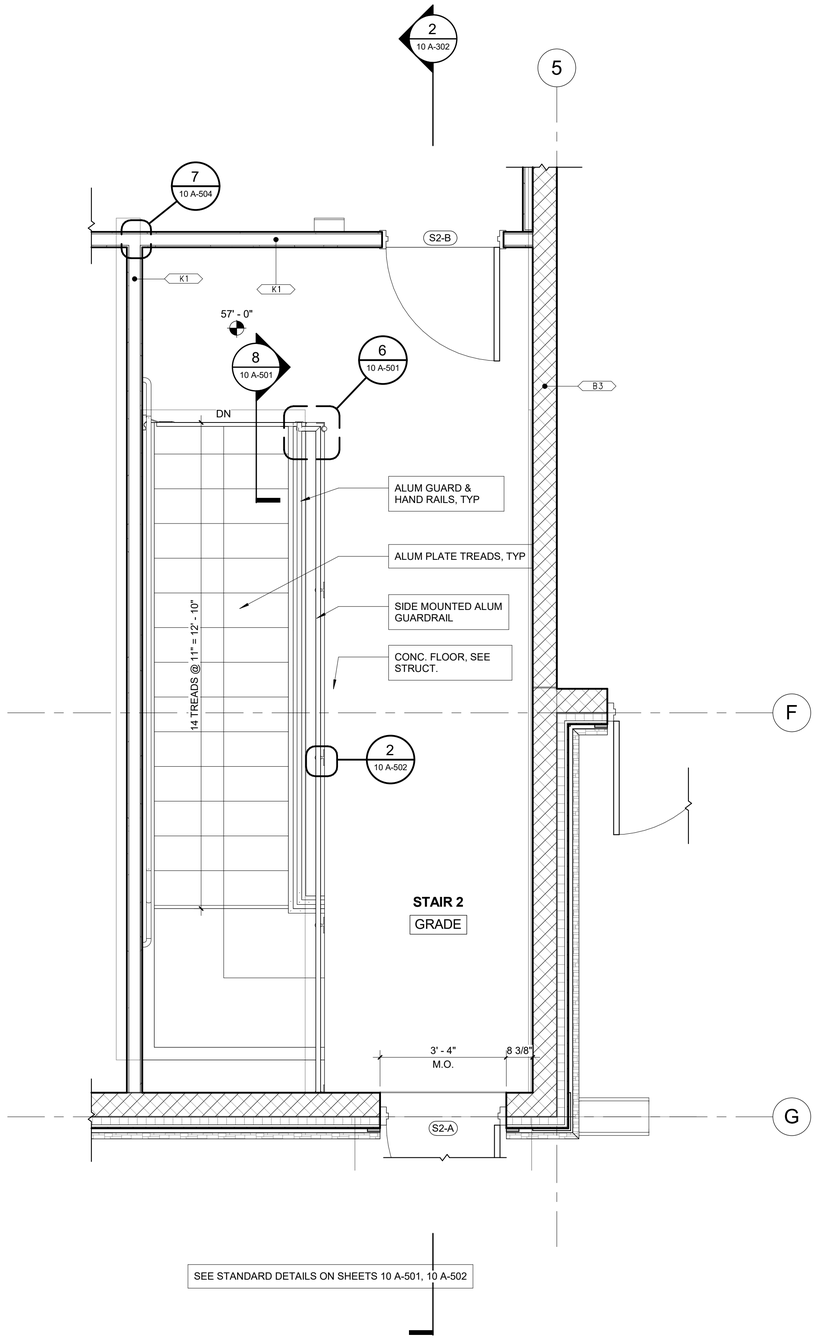
ARCHITECTURAL

SHEET TITLE

ENLARGED STAIR 1 PLANS

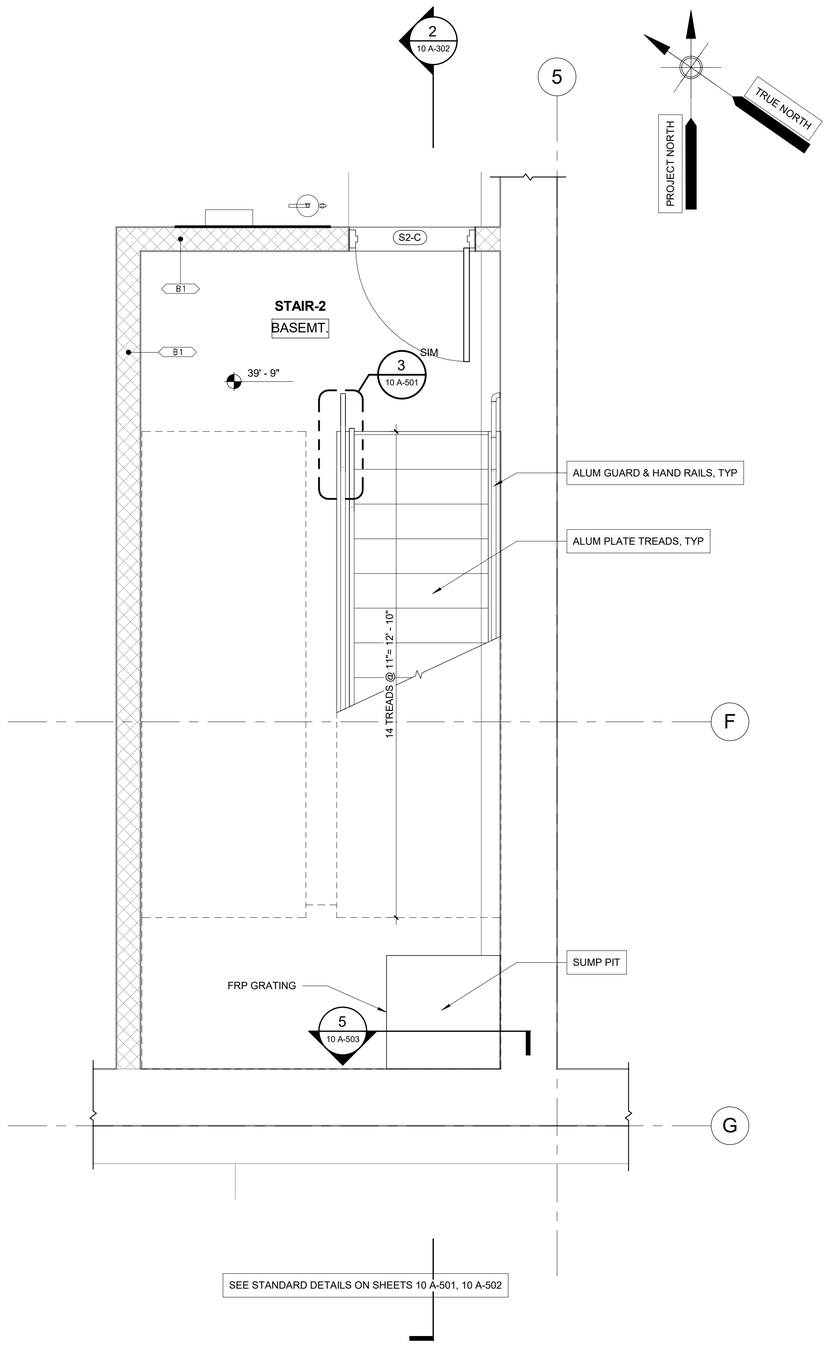
SHEET NUMBER

10 A-406



SEE STANDARD DETAILS ON SHEETS 10 A-501, 10 A-502

2 | STAIR 2 - GRADE LEVEL
10 A-102 | Scale: 1/2" = 1'-0"



SEE STANDARD DETAILS ON SHEETS 10 A-501, 10 A-502

1 | STAIR 2 - BASEMENT LEVEL
10 A-101 | Scale: 1/2" = 1'-0"

NOTE: SAFETY GATE SHALL BE PROVIDED AT THE TOP OF THE STAIRS. REFER TO SAFETY GATE DETAIL ON DRAWING 10 A-503, DETAILS MISC .1

0 1' 2' 4'

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:11 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALD A. OTTERSON
No. 32
ORLEANS, MASS.
U.S.A.
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	4-10-20	ADDENDUM 8

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/2" = 1'-0"

DISCIPLINE

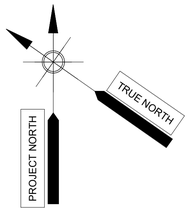
ARCHITECTURAL

SHEET TITLE

ENLARGED STAIR 2 PLANS

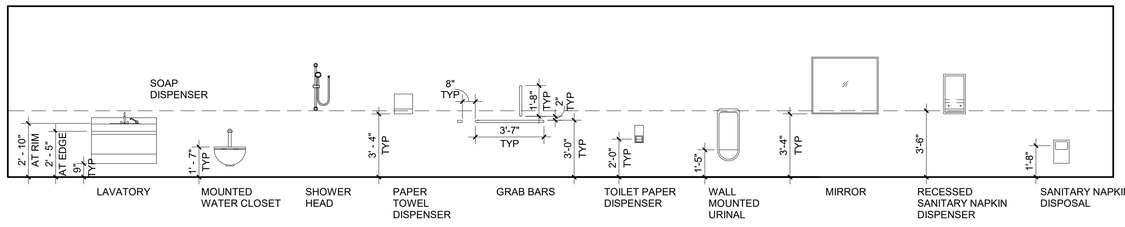
SHEET NUMBER

10 A-407

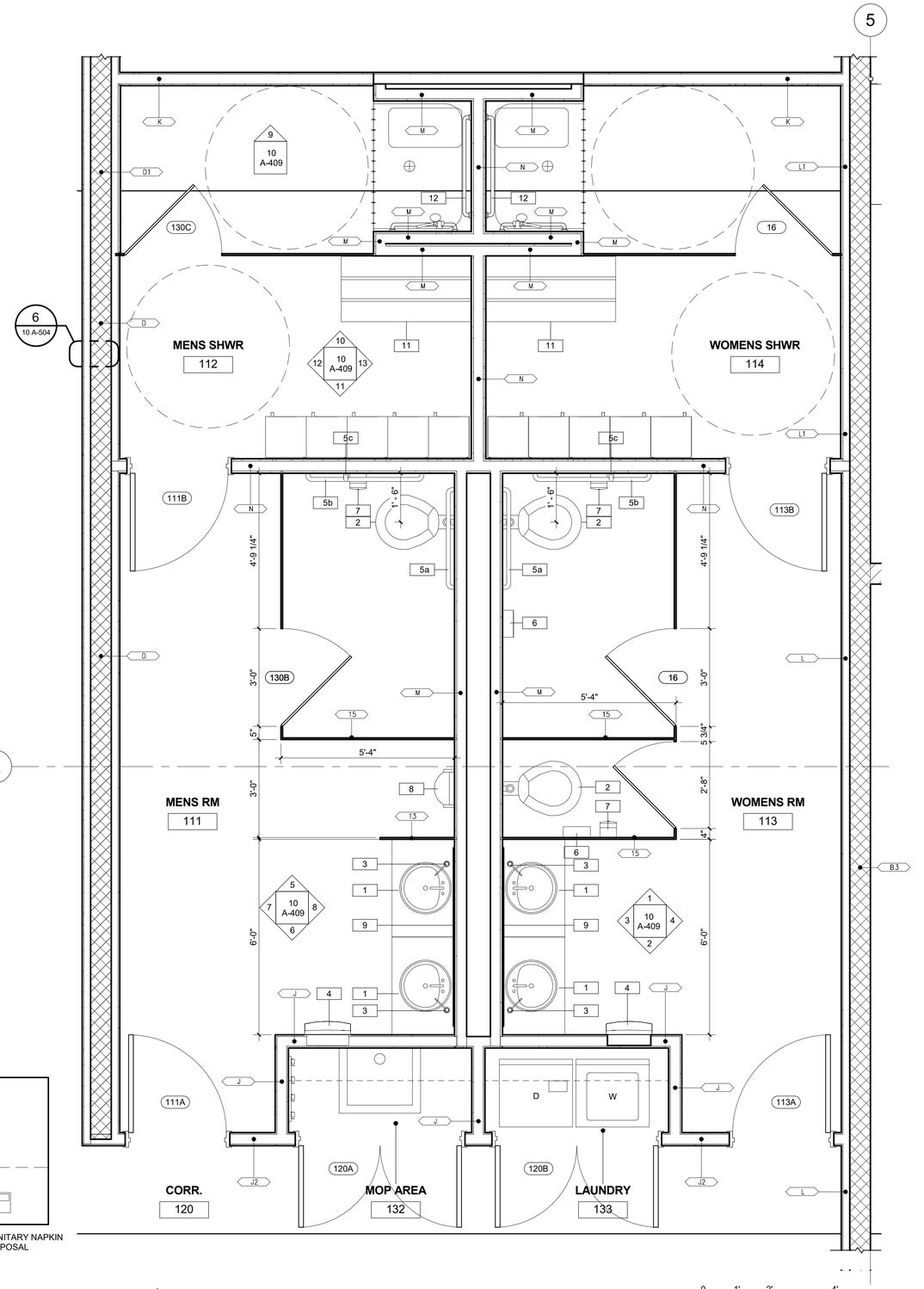


LAUNDRY ROOM EQUIPMENT SCHEDULE			
Family	Model	Manufacturer	Comments
Washer	Maytag	MVWB865GW	
Dryer	Maytag	MEDB835DW	

TOILET ACCESSORY SCHEDULE	
NO.	FIXTURE
1	LAVATORY
2	WALL MOUNTED WATER CLOSET
3	SOAP DISPENSER
4	AUTOMATIC PAPER TOWEL DISPENSER
5a	36" STAINLESS STEEL HORIZONTAL GRAB BAR
5b	42" STAINLESS STEEL HORIZONTAL GRAB BAR
5c	18" STAINLESS STEEL VERTICAL GRAB BAR
6	SANITARY NAPKIN DISPOSAL
7	TOILET PAPER DISPENSER
8	WALL MOUNTED URINAL
9	WALL MOUNTED MIRROR
10	LOCKER (TYP FOR ALL)
11	CHANGING BENCH
12	SHOWER W/ ADA SEAT & GRAD BARS
13	PRIVACY SCREEN
14	ADA TOILET PARTITION
15	TOILET PARTITION
16	36" TOILET STALL DOOR
17	32" TOILET STALL DOOR



2 **TYPICAL TOILET ACCESSORY MOUNTING HEIGHTS**
Scale: 1/4" = 1'-0"



1 **ENLARGED BATHROOM PLAN**
10 A-102
Scale: 1/2" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

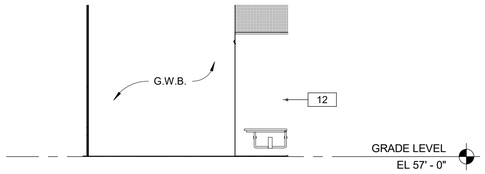
SHEET TITLE

ENLARGED BATHROOM PLAN

SHEET NUMBER

10 A-408

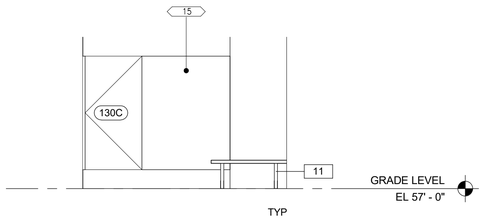
PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthrew.picone@aecom.com.rvt
PLOT DATE: 1/28/2020 9:59:51 AM



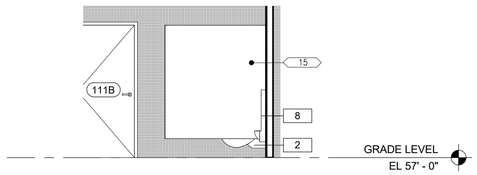
9 MENS SHOWER STALL - NORTH
10 A-408 | Scale: 1/4" = 1'-0"

NOTE:

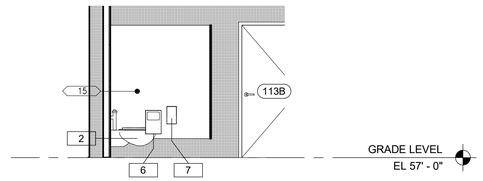
WOMEN'S SHOWER ROOM SIMILAR ELEVATIONS



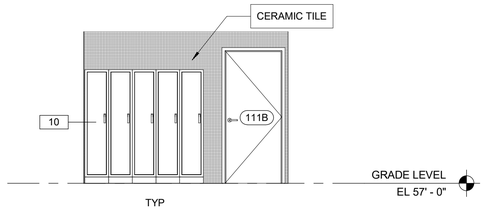
10 MENS SHOWER - NORTH
10 A-408 | Scale: 1/4" = 1'-0"



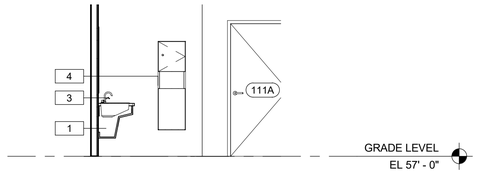
5 MENS ROOM - NORTH
10 A-408 | Scale: 1/4" = 1'-0"



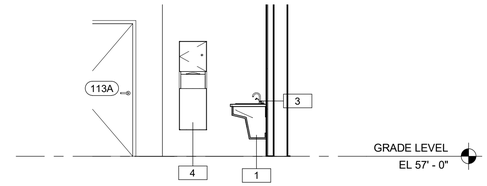
1 WOMENS ROOM - NORTH
10 A-408 | Scale: 1/4" = 1'-0"



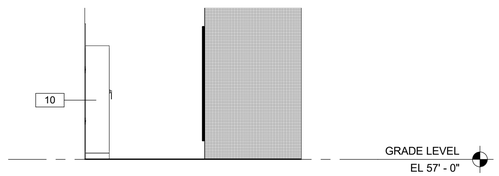
11 MENS SHOWER - SOUTH
10 A-408 | Scale: 1/4" = 1'-0"



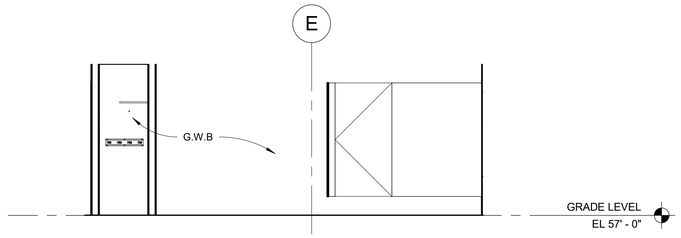
6 MENS ROOM - SOUTH
10 A-408 | Scale: 1/4" = 1'-0"



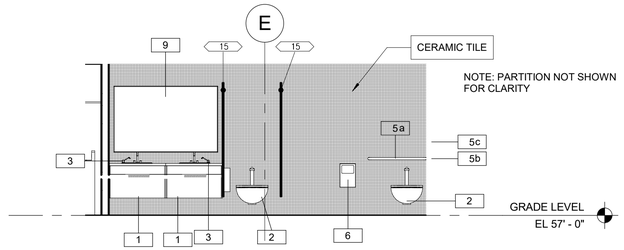
2 WOMENS ROOM - SOUTH
10 A-408 | Scale: 1/4" = 1'-0"



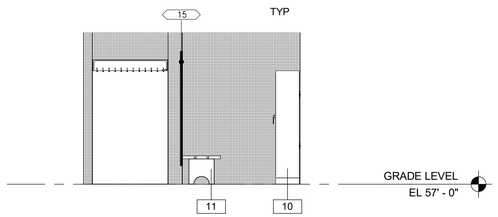
12 MENS SHOWER - WEST
10 A-402 | Scale: 1/4" = 1'-0"



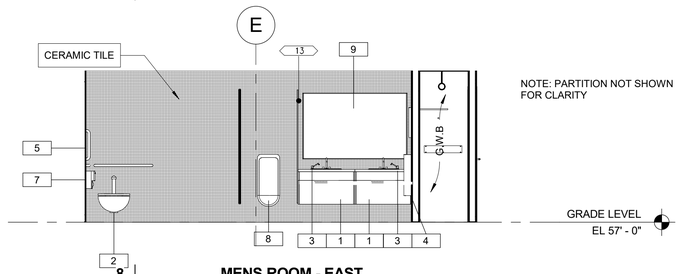
7 MENS ROOM - WEST
10 A-408 | Scale: 1/4" = 1'-0"



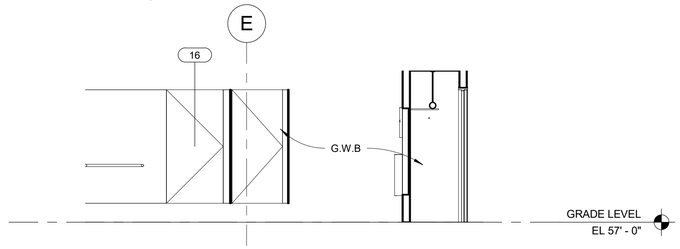
3 WOMENS ROOM - WEST
10 A-408 | Scale: 1/4" = 1'-0"



13 MENS SHOWER - EAST
10 A-402 | Scale: 1/4" = 1'-0"



8 MENS ROOM - EAST
10 A-408 | Scale: 1/4" = 1'-0"



4 WOMENS ROOM - EAST
10 A-408 | Scale: 1/4" = 1'-0"

0 2' 4' 8'

PATH/FILENAME: C:\Users\picionm\Documents\10 Admin Building_matthew.picione@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:21 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
MATTHEW PICIONE
32210
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

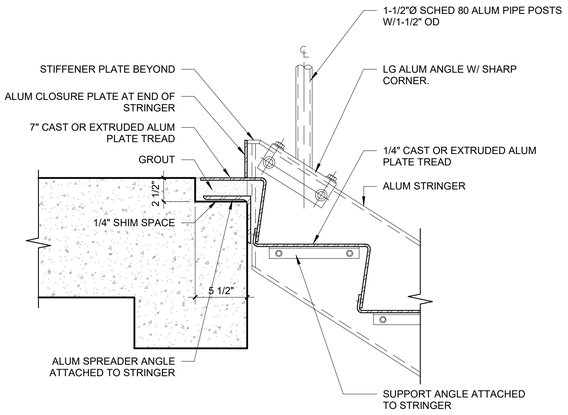
ARCHITECTURAL

SHEET TITLE

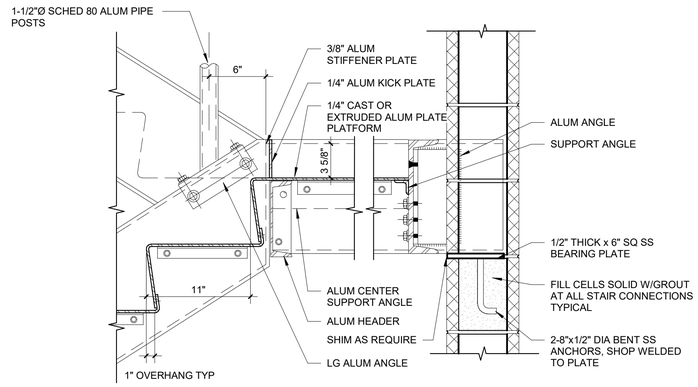
BATHROOM DETAILS

SHEET NUMBER

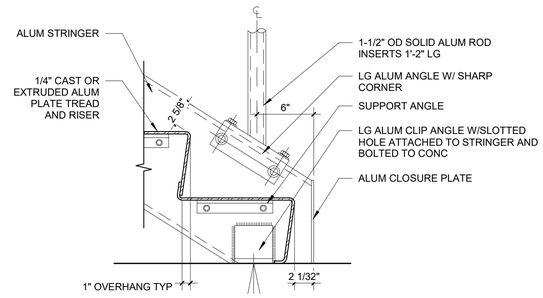
10 A-409



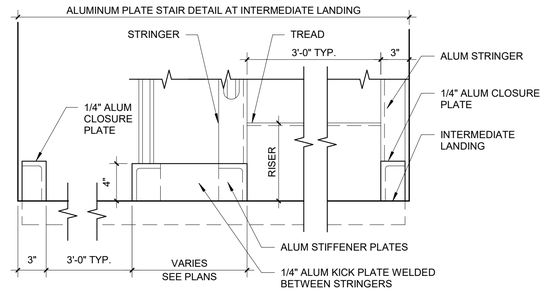
8 | **STAIR TOP SECTION**
10 A-407 | Scale: 1 1/2" = 1'-0"



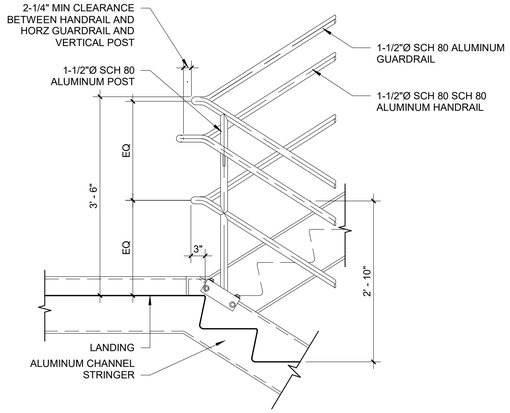
4 | **INTERMEDIATE STAIR LANDING SECTION**
10 A-502 | Scale: 1 1/2" = 1'-0"



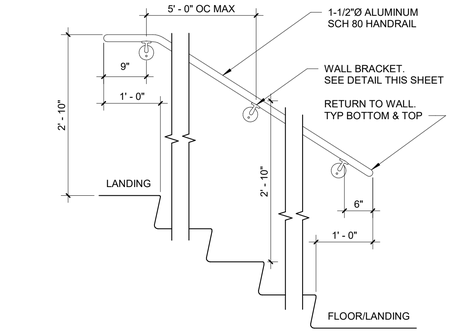
1 | **STAIR BOTTOM SECTION**
10 A-501 | Scale: 1 1/2" = 1'-0"



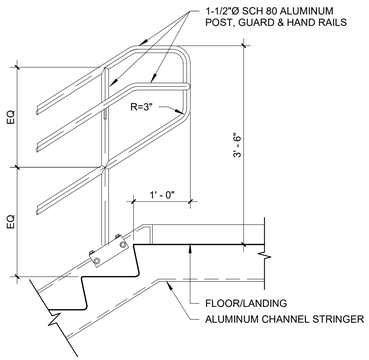
9 | **INTERMEDIATE STAIR LANDING DETAIL**
Scale: 1 1/2" = 1'-0"



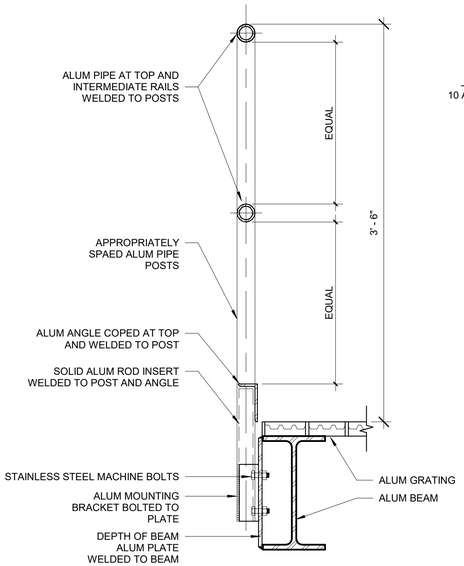
5 | **RAILING AT STAIR LANDING**
10 A-302 | Scale: 3/4" = 1'-0"



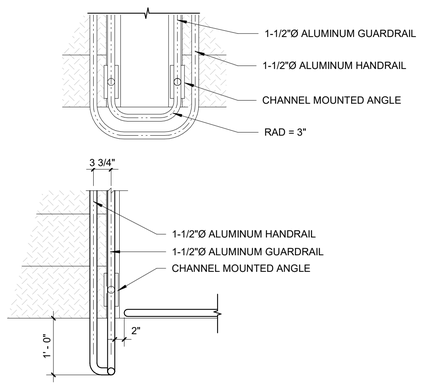
2 | **STAIR RAILING ELEVATION**
Scale: 3/4" = 1'-0"



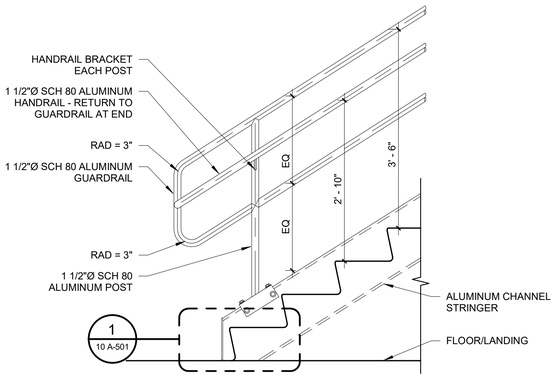
10 | **RAILING AT STAIR TOP**
10 A-302 | Scale: 3/4" = 1'-0"



7 | **ALUMINUM GUARDRAIL AT GRATING FLOOR**
10 A-502 | Scale: 1 1/2" = 1'-0"



6 | **RAILING PLAN DETAIL**
10 A-407 | Scale: 3/4" = 1'-0"



3 | **RAILING AT STAIR BOTTOM**
10 A-302 | Scale: 3/4" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
MATTHEW R. PICONE
No. 32
CHELSEA, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	C. LI
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

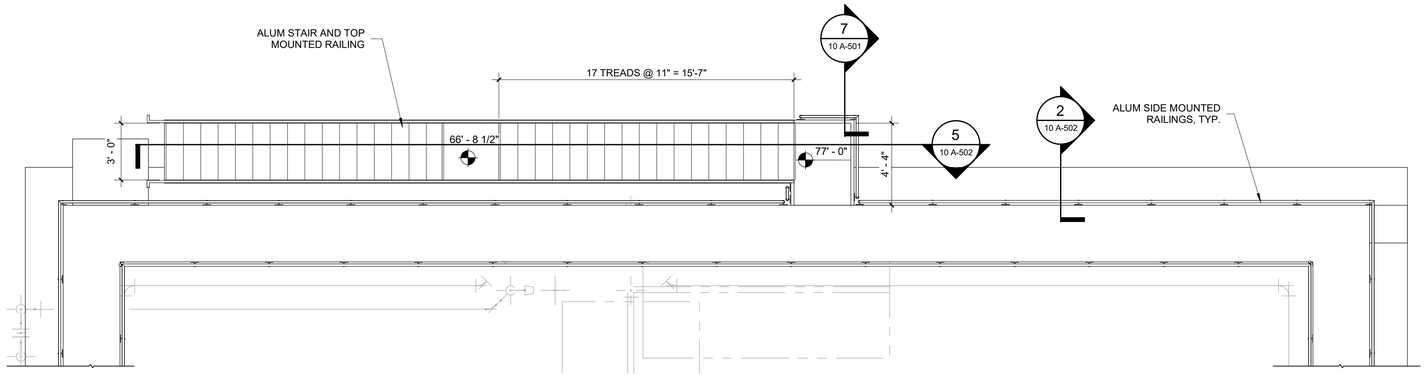
DETAILS - STAIR & RAILING

SHEET NUMBER

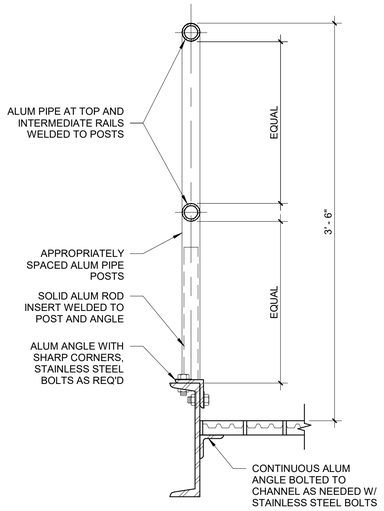
10 A-501

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:22 PM

60587515

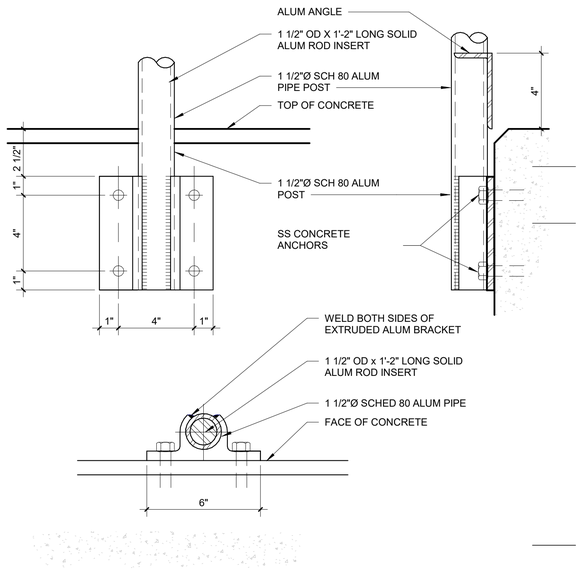


3 | **SBR STAIR PLAN**
10 A-103 | Scale: 1/4" = 1'-0"

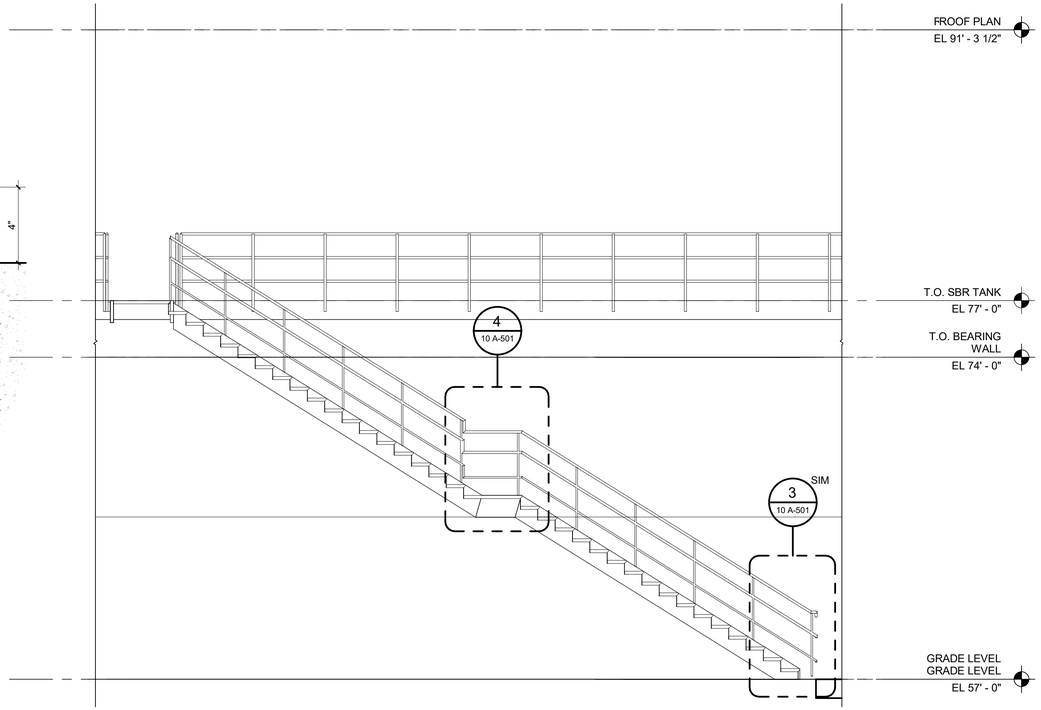


1 | **TOP MOUNTED ALUMINUM GUARDRAIL WITH CHANNEL**
Scale: 1 1/2" = 1'-0"

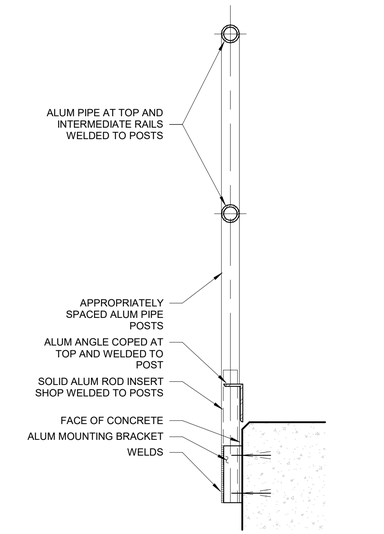
NOTE: ALUMINUM GRATING SHALL BE USED FOR STAIR TREADS AND STAIR LANDINGS ON THE EXTERIOR ACCESS STAIRS TO SBR TANKS.



4 | **SIDE MOUNTED RAILING MOUNTING BRACKET**
Scale: 3" = 1'-0"



5 | **STAIR SECTION**
10 A-502 | Scale: 1/4" = 1'-0"



2 | **SIDE MOUNTED RAILING**
10 A-406 | Scale: 1 1/2" = 1'-0"

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:25 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
No. 32
CHELSEA, MASS.
U.S.A.
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A8	4-10-20	ADDENDUM 8

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

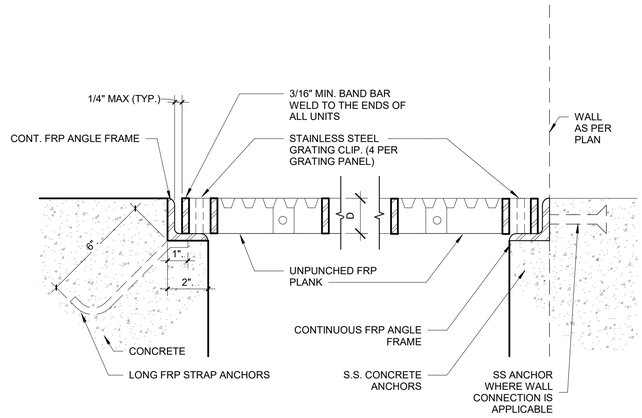
ARCHITECTURAL

SHEET TITLE

SBR PLAN AND RAILING DETAILS

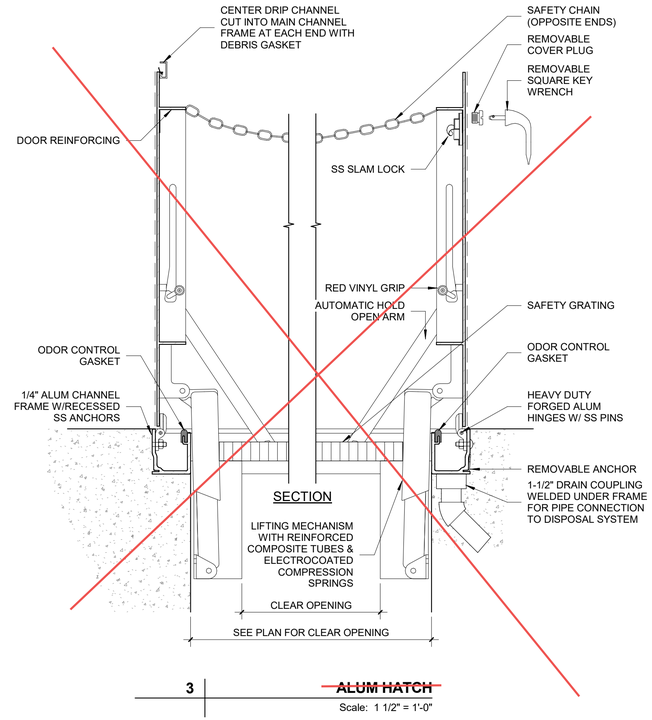
SHEET NUMBER

10 A-502



5 | 10 A-101 — **REMOVABLE FRP GRATING DETAIL**

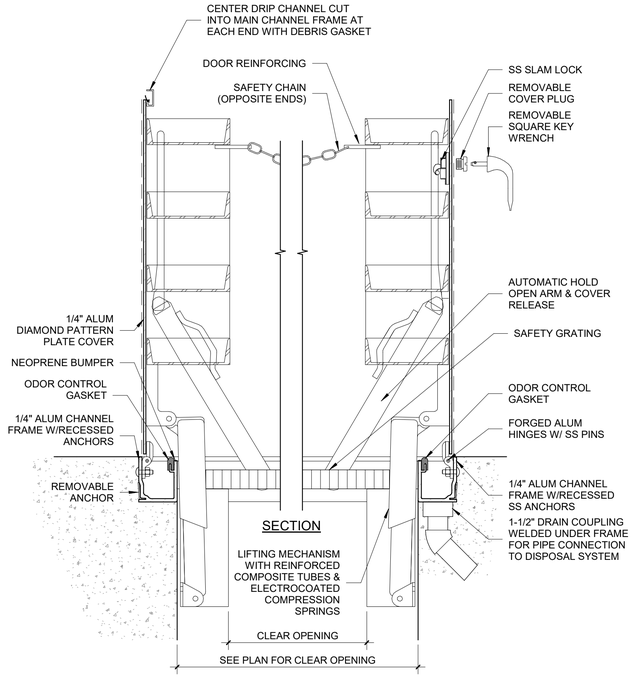
Scale: 3" = 1'-0"



3 | 10 A-102 — ~~**ALUM HATCH**~~

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

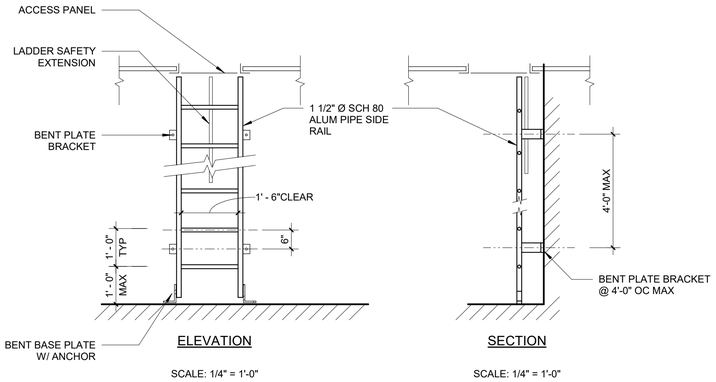
ADDENDUM 9: DELETE DETAIL 3



1 | 10 A-102 — ALUM HATCH HEAVY DUTY ~~**ALUM HATCH HL-93**~~

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

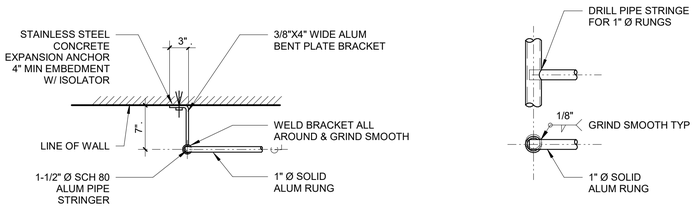
NOTES:
1. ALL INTERIOR HATCHES SHALL BE HEAVY DUTY
2. HEAVY DUTY HATCHES SHALL BE INTENDED FOR VEHICLE LOADINGS AND CAPABLE OF WITHSTANDING HL-93, HS-20 WITH 30PERCENT IMPACT OR M306 LOADINGS.



NOTE:

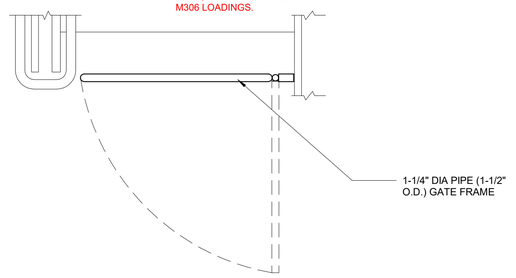
- ALL ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMASTIC COATING.

- DETAILS ARE NOTATIONAL. SEE SPECIFCATIONS DESCRIBING DELEGATED DESIGN.



6 — **LADDER DETAIL**

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



2 — **SAFETY GATE DETAIL**

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

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:26 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT — COMMONWEALTH OF MASSACHUSETTS — 32010 — CHELSEA, MA. — USA — 1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	4-30-20	ADDENDUM 9
A	03-12-20	ADDENDUM 6

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	C. LI
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

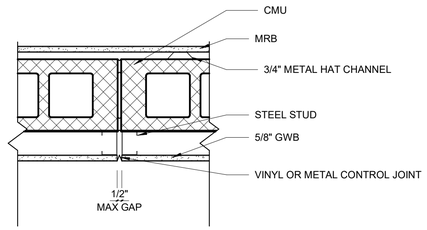
ARCHITECTURAL

SHEET TITLE

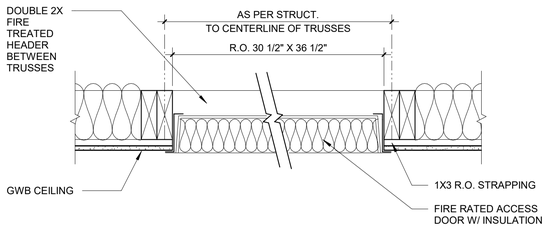
DETAILS - MISC. I

SHEET NUMBER

10 A-503



6 GWB STUD ON CMU CONTROL JOINT
10 A-408 Scale: 1 1/2" = 1'-0"

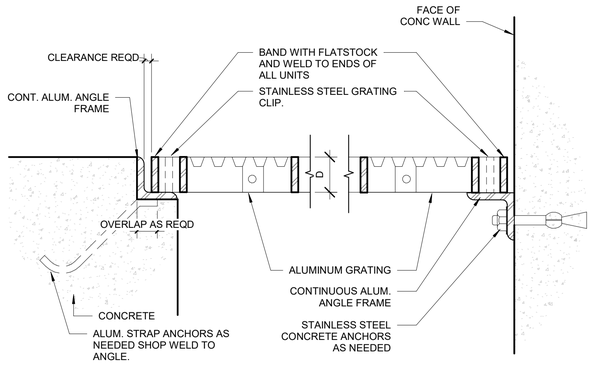


3 MECHANICAL ROOM CEILING ACCESS PANEL
10 A-104 Scale: 1 1/2" = 1'-0"

NOTE:

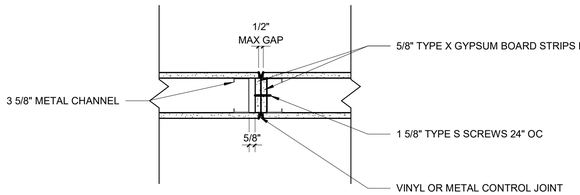
- ALL ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMASTIC COATING.

- DETAILS ARE NOTATIONAL. SEE SPECIFCATIONS DESCRIBING DELEGATED DESIGN.

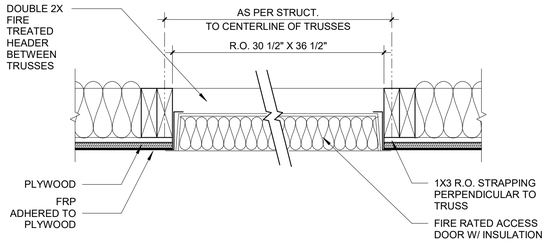


SECTION AT FLOOR SECTION AT WALL

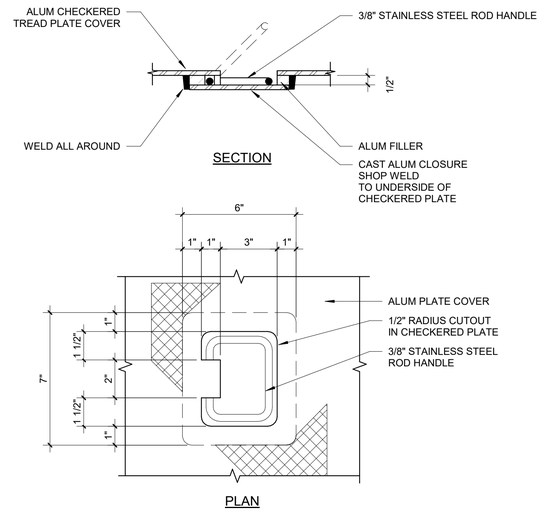
1 REMOVABLE ALUMINUM GRATING DETAIL
Scale: 3" = 1'-0"



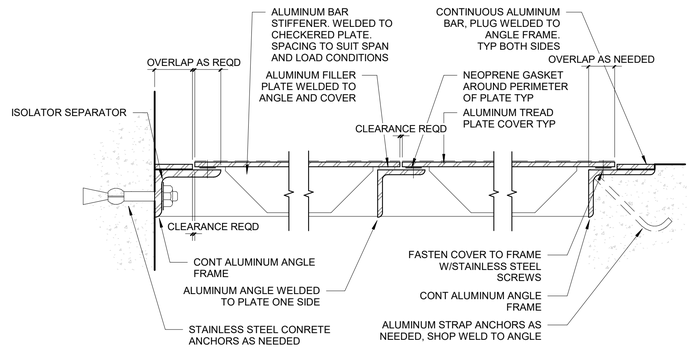
7 GWB 1-HOUR STUD WALL CONTROL JOINT
10 A-407 Scale: 1 1/2" = 1'-0"



4 GARAGE CEILING ACCESS PANEL
10 A-104 Scale: 1 1/2" = 1'-0"



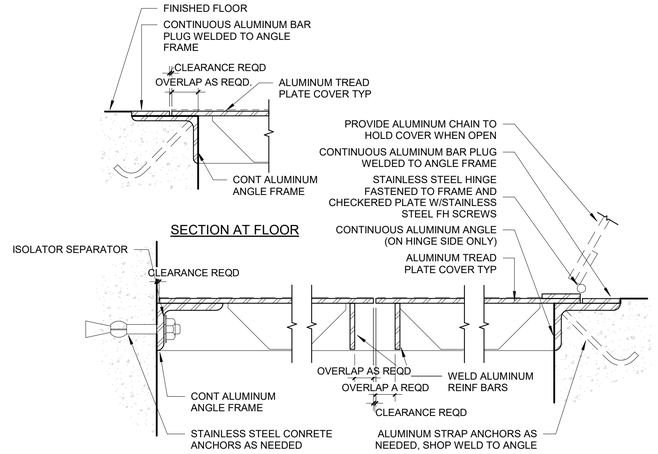
8 PLATE COVER LIFT HANDLE
Scale: 3" = 1'-0"



SECTION AT WALL SECTION AT JOINT SECTION AT FLOOR

NOTES:
1. PROVIDE STAINLESS STEEL BOLTS, NUTS AND WASHERS
2. PROTECT ALUMINUM FROM ELECTROLYSIS. SEE SPECIFICATION.

5 GASKETED PLATE COVER
Scale: 3" = 1'-0"



SECTION AT WALL SECTION AT JOINT SECTION AT HINGE

NOTES:
1. PROVIDE FLUSH LIFT HANDLE.
2. PROVIDE STAINLESS STEEL BOLTS, NUTS, WASHERS, HINGES AND SCREWS
3. PROTECT ALUMINUM FROM ELECTROLYSIS. SEE SPECIFICATION.

2 HINGED PLATE COVER
Scale: 3" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

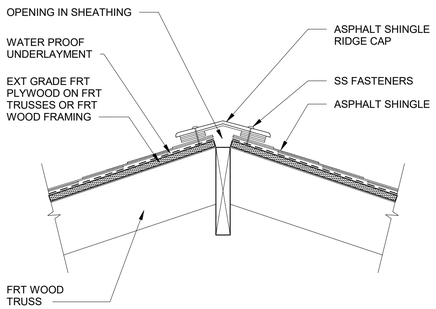
DETAILS - MISC. II

SHEET NUMBER

10 A-504

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:28 PM

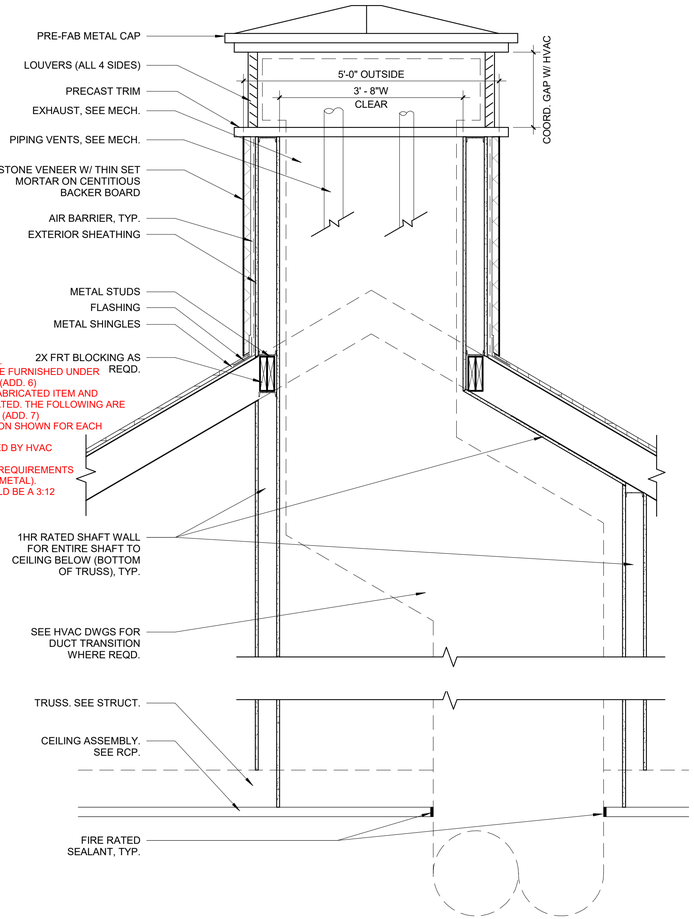
60587515



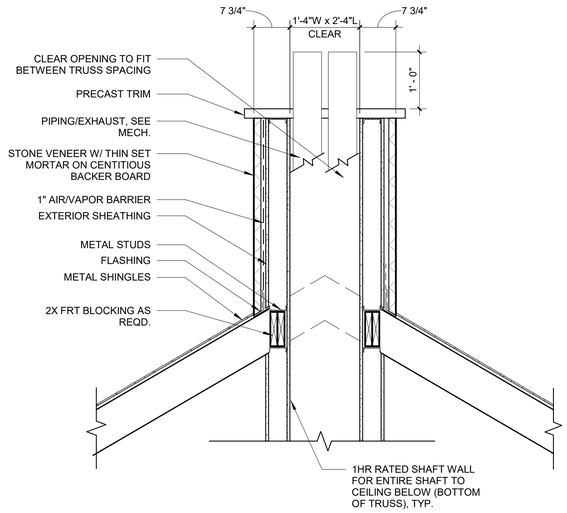
5 | TYP. ROOF RIDGE VENT
10 A-302 | Scale: 1 1/2" = 1'-0"

NOTES: (ADD. 6 & 7)

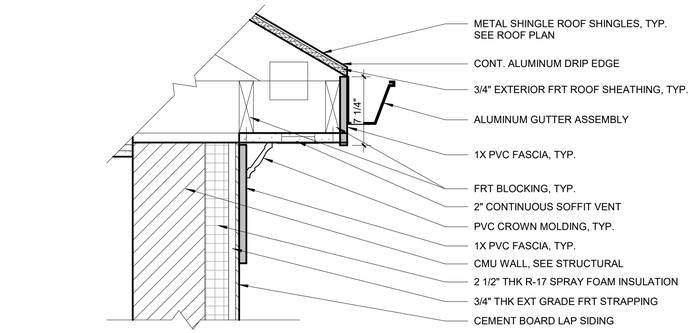
1. PRECAST TRIM SHALL BE 2-INCHES THICK.
2. PREFABRICATED CHIMNEY CAPS SHALL BE FURNISHED UNDER SECTION 05500, MISCELLANEOUS METAL. (ADD. 6)
3. THE METAL CHIMNEY CAP IS NOT A PREFABRICATED ITEM AND THEREFORE IS REQUIRED TO BE FABRICATED. THE FOLLOWING ARE DESIGN CRITERIA FOR THE FABRICATION: (ADD. 7)
   A. SIZE: MATCH THE EXTERIOR DIMENSION SHOWN FOR EACH RESPECTIVE CHIMNEY.
   B. HEIGHT OF OPENING ARE DETERMINED BY HVAC DRAWINGS AND LOUVER OPENINGS.
   C. MATERIAL: PAINTED ALUMINUM (SEE REQUIREMENTS IN SECTION 05500 - MISCELLANEOUS METAL).
   D. THE CAP SLOPE FOR THE TOP SHOULD BE A 3:12 SO AS TO SHED WATER AND SNOW



3 | TYPICAL CHIMNEY DETAIL
10 A-103 | Scale: 3/4" = 1'-0"

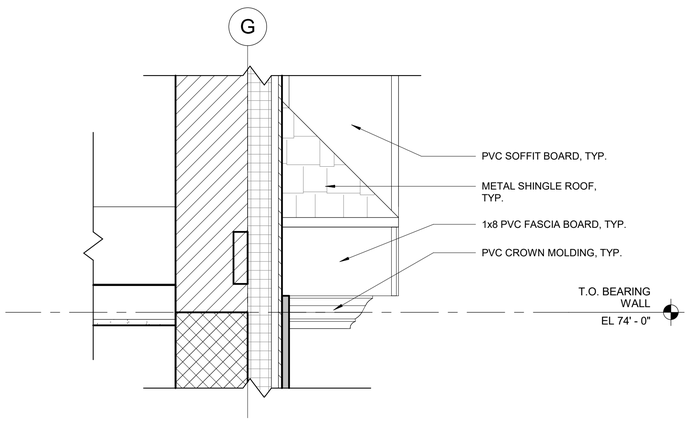


1 | FUME HOOD CHIMNEY DETAIL
10 A-103 | Scale: 3/4" = 1'-0"



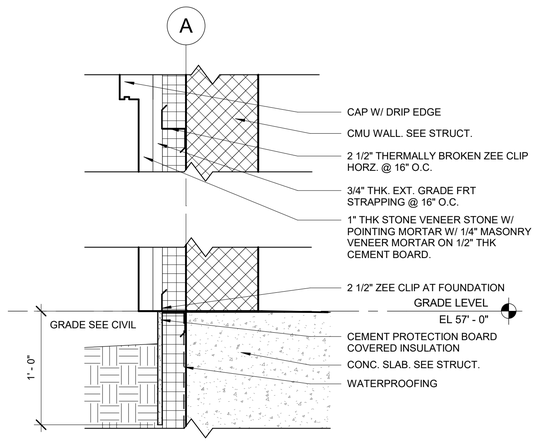
SEE DETAIL 2/10 A-505 FOR TYPICAL WALL SECTION NOTATION

6 | TYP. EAVE DETAIL
10 A-103 | Scale: 1 1/2" = 1'-0"



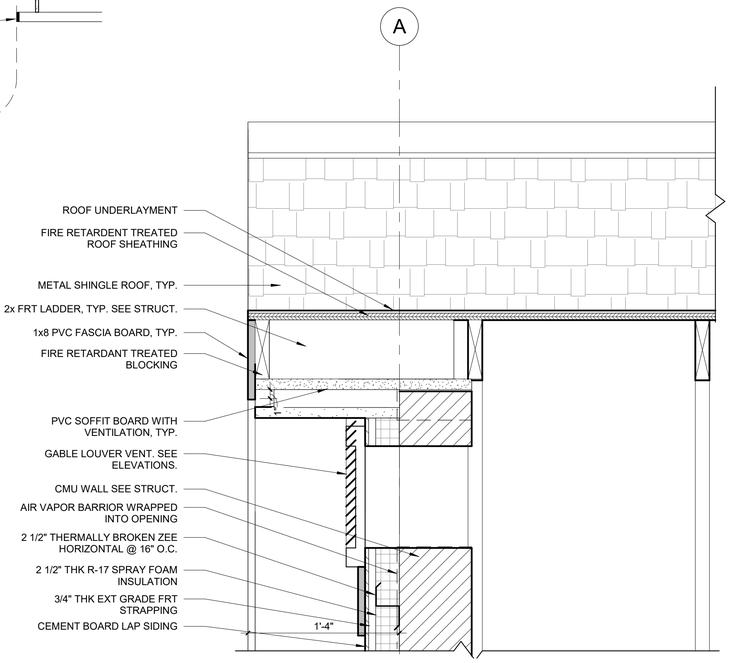
SEE DETAIL 2/10 A-505 FOR TYPICAL WALL SECTION NOTATION

7 | TYP. EXTERIOR DETAIL CORNICE RETURN
10 A-303 | Scale: 1 1/2" = 1'-0"



SEE DETAIL 2/10 A-505 FOR TYPICAL WALL SECTION NOTATION

4 | TYP. EXTERIOR WALL DETAIL @ BASE
10 A-303 | Scale: 1 1/2" = 1'-0"



2 | TYP. EXTERIOR RAKE DETAIL
10 A-303 | Scale: 1 1/2" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. PHELPS
No. 32301
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDENDUM 7
A	03-12-20	ADDENDUM 6

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

EXTERIOR SECTION DETAILS

SHEET NUMBER

10 A-505

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.piconm@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:32 PM

60587515

DELETE ROOM 104 AND VEST-1 IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING NEW INFORMATION: (ADD. 7)

Room Number	Room Name	Floor		Wall		Ceiling		Base		Notes
		Material	Finish	Material	Finish	Material	Finish	Material	Finish	
104	Sodium Hypochlorite / PACL Room	EFC	---	PT	---	FRP	---	---	---	
VEST-1	Vestibule	VF	TBD	PT	TBD	ACT	TBD	PVC	TBD	Surface Entry Mat

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR		WALL		CEILING		BASE		NOTES
		MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	
101	TRUCK BAY	PC	-	PC	TBD	FRP	TBD	VB	TBD	
102	GARAGE	PC	-	PC	TBD	FRP	TBD	VB	TBD	
103	BREAK RM	VF	TBD	PT	TBD	ACT		PVC	TBD	
~~104~~	~~SODIUM HYPOCHLORITE/ PACL RM~~	~~PC/C~~		~~PT~~	~~TBD~~	~~FRP~~	~~TBD~~	~~VB~~	~~TBD~~	
105	CONF RM	VF	TBD	PT	TBD	ACT	TBD	PVC	TBD	
106	SUPER. OFFICE	VF	TBD	PT	TBD	ACT	TBD	PVC	TBD	
107	COPIER RM	VF	TBD	PT	TBD	ACT	TBD	PVC	TBD	
108	ELECTRICAL RM	SC	-	PT	TBD	GWB	TBD	RB	TBD	
~~109~~	~~MECH. RM~~	~~SC~~	-	~~SC~~	-	~~MRB~~	~~TBD~~	~~RB~~	~~TBD~~	
110	STG.	VCT	TBD	PT	TBD	ETA		VB	TBD	
111	MENS RM	CT	TBD	CT/PT	TBD	MRT	-	CB	TBD	
112	MENS SHWR	CT	TBD	CT/PT	TBD	MRT	TBD	CB	TBD	
113	WOMENS RM	CT	TBD	CT/PT	TBD	MRT	TBD	CB	TBD	
114	WOMENS SHWR	CT	TBD	CT/PT	TBD	MRT	TBD	CB	TBD	
115	LAB	VCT	TBD	PT	TBD	ACT	TBD	RB	TBD	
116	CRTL RM	VCT	TBD	PT	TBD	ACT	TBD	RB	TBD	
117	POLYMER RM	PC	TBD	PC	TBD	FRP	TBD	VB	TBD	
118	HEADWORKS	PC	TBD	PC	TBD	FRP	TBD	VB	TBD	
119	DISK FILTER RM	PC	TBD	PC	TBD	FRP	TBD	VB	TBD	
120	CORR.	VF	TBD	PT	TBD	ACT	TBD	PVC	TBD	SURFACE ENTRY MAT
121	WASTE SLUDGE STORAGE TANK 2	PC	TBD	PC	II	SC	PC	-	-	
122	THICKENED SLUDGE STORAGE TANK	PC	II	PC	II	SC	PC	-	-	
123	POST EQUALIZATION TANK	PC	II	PC	II	SC	PC	-	-	
124	PRE-EQUALIZATION TANK NO. 1	PC	II	PC	II	SC	PC	-	-	
125	PRE-EQUALIZATION TANK NO. 2	PC	II	PC	II	SC	PC	-	-	
~~126~~	~~BASEMENT PUMP ROOM~~	~~SC~~	-	~~SC~~		~~SC~~	-	-	-	
128	SBR - 1	PC	TBD	PC	TBD	ETA	-	PC	TBD	
129	SBR - 2	PC	TBD	PC	TBD	ETA	-	PC	TBD	
130	CLS.	VCT	TBD	PT	TBD	ACT	TBD	VB	TBD	
132	MOP AREA	VCT	TBD	CT/PT	TBD	MRT	TBD	VB	TBD	
133	LAUNDRY	VCT	TBD	CT/PT	TBD	MRT	TBD	VB	TBD	
134	WASTE SLUDGE STORAGE TANK 1	PC	TBD	PC	TBD	PC	TBD	-	-	
135	SODA ASH RM	PC/G	-	PC	TBD	FRP	TBD	VB	TBD	
BASEMT.	STAIR-1	SC	-	PT	TBD	GWB/PT	TBD	-	-	
BASEMT.	STAIR-2	SC	-	PT	TBD	GWB/PT	TBD	-	-	
GRADE	STAIR 1	SC	-	PT	TBD	GWB/PT	TBD	RB	TBD	
GRADE	STAIR 2	SC	-	PT	TBD	GWB/PT	TBD	RB	TBD	
~~VEST-1~~	~~VESTIBULE~~	~~VF~~	~~TBD~~	~~PT~~	~~TBD~~	~~MRT~~	~~TBD~~	~~PVC~~	~~TBD~~	~~SURFACE ENTRY MAT~~

(ADD. 6)

Room Number	Room Name	Floor		Wall		Ceiling		Base		Notes
		Material	Finish	Material	Finish	Material	Finish	Material	Finish	
109	Mech. Rm	SC	---	PT	TBD	MRB	TBD	RB	TBD	
126	Basement Pump Room	SC	---	---	---	---	---	---	---	

ABBREVIATION	MATERIAL
ACT	ACOUSTICAL CEILING TILE
CB	CERAMIC TILE BASE
CT	CERAMIC TILE
ETA	EXPOSED TO ABOVE
FRP	FIBER REINFORCED PANEL
G	GRATING (ALUM/FRP)
GWB	GYPSUM WALL BOARD
HPC	HIGH PERFORMANCE COATING
MRB	MOISTURE RESISTANT BOARD
MRT	MOISTURE RESISTANT TILE
PC	PROTECTIVE COATINGS
PT	PAINT
PVC	PVC BASE TRIM
RB	RUBBER BASE
SC	SEALED CONCRETE
VB	VINYL BASE
VCT	VINYL COMPOSITION TILE
VF	VINYL FLOORING
EFC	EPOXY FLOOR COATING

NOTE: TBD (TO BE DETERMINED) IN THE ROOM FINISH SCHEDULE INDICATES THAT THE SELECTION OF COLORS WILL BE DETERMINED DURING THE SHOP DRAWING REVIEW PROCESS. (ADD. 1)

NOTE: FLOORS IDENTIFIED WITH SC SHALL BE PROVIDED WITH A DUST PROOF SEALER IN ACCORDANCE WITH SECTION 03345, CONCRETE FLOOR TREATMENT (ADD 9)

Room Finish Schedule, modify the Room Finish Schedule as follows (ADD. 6)

Room Number	Room Name	Floor		Wall	
		Material	Finish	Material	Finish
101	Truck Bay	EFC	TBD	PC	TBD
102	Garage	EFC	TBD	PC	TBD
117	Polymer Rm	EFC	TBD	PC	TBD
118	Headworks	EFC	TBD	PC	TBD
119	Disk Filter Rm	EFC	TBD	PC	TBD
128	SBR – 1	---	---	---	---
129	SBR – 2	---	---	---	---
135	Soda Ash Rm	EFC	TBD	PC	TBD

Room Number	Ceiling		Base		Notes
	Material	Finish	Material	Finish	
101	FRP	TBD	---	---	---
102	FRP	TBD	---	---	---
117	FRP	TBD	---	---	---
118	FRP	TBD	---	---	---
119	FRP	TBD	---	---	---
128	---	---	---	---	---
129	---	---	---	---	---
135	FRP	TBD	---	---	---

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
RAYMOND J. PETERS
No. 32420
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDEDNDUM 9
A7	03-24-20	ADDENDUM 7
A8	03-12-20	ADDENDUM 6
A1	02-13-20	ADDENDUM 1

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	M.PICONE
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

ROOM FINISH SCHEDULE

SHEET NUMBER

10 A-601

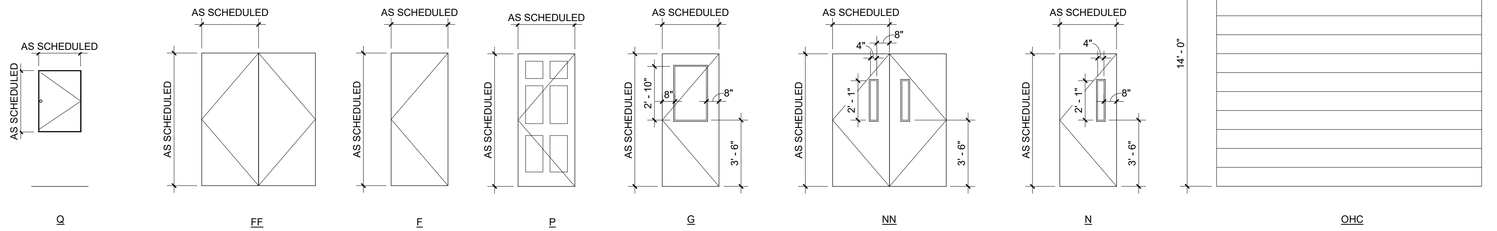
PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:33 PM

60587515

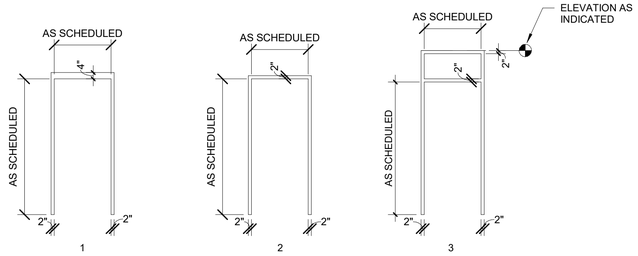
DOOR SCHEDULE

DOOR NUMBER	COUNT	ROOM INFORMATION				SIZE		DOOR		FRAME		DETAIL			DOOR FIRE RATING	HDW GROUP	NOTES
		FROM ROOM	NUMBER	TO ROOM	NUMBER	WIDTH	HEIGHT	TYPE	MATERIAL	TYPE	MATERIAL	HEAD	JAMB	SILL			
BASEMENT LEVEL																	
S1-C	1	BASEMENT PUMP ROOM	126	STAIR-1	BASEMT.	3' - 0"	7' - 0"	N	HM	2	HM	DH-4	DJ-4	DS-2	60 min	165	3/4" FIRE RATED GLASS (45 MIN)
S2-C	1	BASEMENT PUMP ROOM	126	STAIR-2	BASEMT.	3' - 0"	7' - 0"	N	HM	2	HM	DH-4	DJ-4	DS-2	60 min	165	3/4" FIRE RATED GLASS (45 MIN)
GRADE LEVEL																	
101A	1	TRUCK BAY	101	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		10	1" EXT INSULATED TEMPERED GLASS
101B	1	TRUCK BAY	101	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		10	1" EXT INSULATED TEMPERED GLASS
101C	1	EXTERIOR	131	TRUCK BAY	101	12' - 0"	14' - 0"	OHC	ALUM	-	ALUM	OHH-1	OHJ-1A/B	OHS-1		200	
101D	1	TRUCK BAY	101	EXTERIOR	131	3' - 0"	7' - 0"	N	HM	1	HM	DH-4	DJ-4	DS-2		10	1" EXT INSULATED TEMPERED GLASS
101F	1	EXTERIOR	131	TRUCK BAY	101	12' - 0"	14' - 0"	OHC	ALUM	-	ALUM	OHH-1	OHJ-1A/B	OHS-1		200	
102A	1	CORR.	120	GARAGE	102	3' - 0"	7' - 0"	N	HM	1	HM	DH-5	DJ-5	DS-2		135	1" EXT INSULATED TEMPERED GLASS
102B	1	EXTERIOR	131	GARAGE	102	12' - 0"	14' - 0"	OHC	ALUM	-	ALUM	OHH-1	OHJ-1A/B	OHS-1		200	
103A	1	CORR.	120	BREAK RM	103	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-3	DJ-3	DS-2		160	1/4" INTERIOR TEMPERED GLASS
104A	1	CORR.	120	SODIUM HYPOCHLORITE/ PACL RM	104	3' - 0"	7' - 0"	N	FRP	1	FRP	DH-5	DJ-5	DS-2	90 min	145	3/4" FIRE RATED GLASS (90 MIN)
104B	1	SODIUM HYPOCHLORITE/ PACL RM	104	EXTERIOR	131	6' - 4"	7' - 0"	NN	FRP	1	FRP	DH-1	DJ-1A/B	DS-1		90	1" EXT INSULATED TEMPERED GLASS
105A	1	CORR.	120	CONF RM	105	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-3	DJ-3	DS-2		160	1/4" INTERIOR TEMPERED GLASS
106A	1	CORR.	120	SUPER. OFFICE	106	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-3	DJ-3	DS-2		160	1/4" INTERIOR TEMPERED GLASS
107A	1	CORR.	120	COPIER RM	107	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-3	DJ-3	DS-2		160	1/4" INTERIOR TEMPERED GLASS
108A	1	ELECTRICAL RM	108	CORR.	120	3' - 0"	7' - 0"	~~F~~ FF	HM	1	HM	DH-5	DJ-5	DS-2	90 min	165	
108B	1	ELECTRICAL RM	108	EXTERIOR	131	6' - 4"	7' - 0"	FF	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		90	
109A	1	CORR.	120	MECH. RM	109	3' - 0"	7' - 0"	F	HM	2	HM	DH-3	DJ-3	DS-2		170	
109B	1	MECH. RM	109	EXTERIOR	131	3' - 4"	7' - 0"	~~F~~ FF	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		50	
110A	1	CORR.	120	STG.	110	5' - 0"	7' - 0"	FF	WOOD	2	HM	DH-3	DJ-3	DS-2		180	
111A	1	CORR.	120	MENS RM	111	3' - 0"	7' - 0"	F	WOOD	1	HM	DH-3	DJ-3	DS-2		120	
111B	1	MENS RM	111	MENS SHWR	112	3' - 0"	7' - 0"	F	WOOD	1	HM	DH-3	DJ-3	DS-2		120	
113A	1	CORR.	120	WOMENS RM	113	3' - 0"	7' - 0"	F	WOOD	1	HM	DH-3	DJ-3	DS-2		120	
113B	1	WOMENS RM	113	WOMENS SHWR	114	3' - 0"	7' - 0"	F	WOOD	1	HM	DH-3	DJ-3	DS-2		120	
115A	1	CORR.	120	LAB	115	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-6	DJ-6	DS-2		130	1/4" INTERIOR TEMPERED GLASS
116A	1	CORR.	120	CRTL RM	116	3' - 0"	7' - 0"	G	WOOD	2	HM	DH-6	DJ-6	DS-2		130	1/4" INTERIOR TEMPERED GLASS
117A	1	POLYMER RM	117	EXTERIOR	131	6' - 4"	7' - 0"	NN	FRP	1	FRP	DH-1	DJ-1A/B	DS-1		90	1" EXT INSULATED TEMPERED GLASS
118A	1	HEADWORKS	118	EXTERIOR	131	6' - 4"	7' - 0"	NN	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		90	1" EXT INSULATED TEMPERED GLASS
119A	1	DISK FILTER RM	119	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		50	1" EXT INSULATED TEMPERED GLASS
119B	1	DISK FILTER RM	119	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		50	1" EXT INSULATED TEMPERED GLASS
120A	1	MOP AREA	132	CORR.	120	5' - 0"	7' - 0"	FF	WOOD	2	HM	DH-3	DJ-3	DS-2		180	
120B	1	LAUNDRY	133	CORR.	120	5' - 0"	7' - 0"	F	WOOD	2	HM	DH-3	DJ-3	DS-2		180	
130A	1	CLS.	130	CORR.	120	4' - 0"	7' - 0"	FF	WOOD	2	HM	DH-3	DJ-3	DS-2		180	
135A	1	SODA ASH RM	135	EXTERIOR	131	6' - 4"	7' - 0"	NN	FRP	1	FRP	DH-1	DJ-1A/B	DS-1		90	1" EXT INSULATED TEMPERED GLASS
CR-A	1	CORR.	120	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-2	DJ-2A/B	DS-1		50	1" EXT INSULATED TEMPERED GLASS
S1-A	1	STAIR 1	GRADE	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	3	ALUM	DH-W	DJ-2A/B	DS-1		40	1" EXT INSULATED TEMPERED GLASS
S1-B	1	CORR.	120	STAIR 1	GRADE	3' - 0"	7' - 0"	N	HM	2	HM	DH-3	DJ-3	DS-2	60 min	165	3/4" FIRE RATED GLASS (45 MIN)
S2-A	1	STAIR 2	GRADE	EXTERIOR	131	3' - 0"	7' - 0"	N	ALUM	1	ALUM	DH-1	DJ-1A/B	DS-1		40	1" EXT INSULATED TEMPERED GLASS
S2-B	1	CORR.	120	STAIR 2	GRADE	3' - 0"	7' - 0"	N	HM	2	HM	DH-3	DJ-3	DS-2	60 min	165	3/4" FIRE RATED GLASS (45 MIN)
V-1A	1	VESTIBULE	VEST-1	EXTERIOR	131	3' - 0"	7' - 0"	P	ALUM	3	ALUM	DH-W	DJ-2A/B	DS-1		20	
V-1B	1	CORR.	120	VESTIBULE	VEST-1	3' - 0"	7' - 0"	P ~~N~~	ALUM	1	ALUM	DH-3	DJ-3	DS-2		105	1" EXT INSULATED TEMPERED GLASS

(ADD. 1)



DOOR TYPE LEGEND
Scale: 1/4" = 1'-0"



FRAME TYPE LEGEND
Scale: 1/4" = 1'-0"

No.	TYPE
1	1/4" INTERIOR TEMPERED GLASS
2	1" EXTERIOR INSULATED TEMPERED GLASS
3	FIRE RATED GLASS (45 MIN)
4	FIRE RATED GLASS (90 MIN)

DOOR GLASS SCHEDULE
Scale: 1/4" = 1'-0"

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:36 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
MATTHEW A. PARECE
No. 32360
CHELMSFORD, MA
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

ARCHITECTURAL

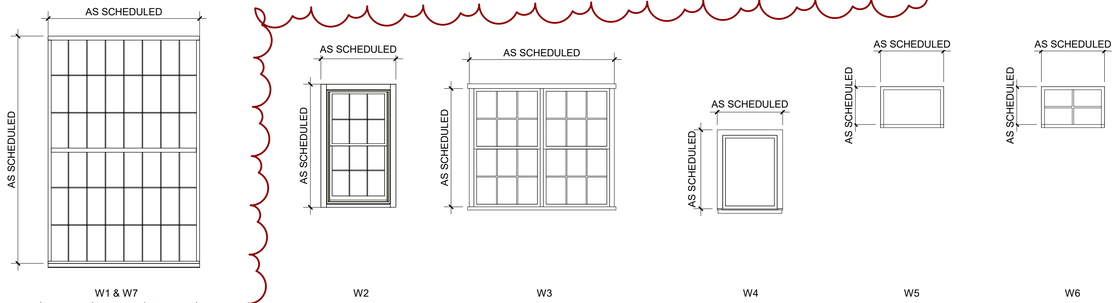
SHEET TITLE

DOOR SCHEDULE AND LEGEND

SHEET NUMBER

10 A-602

WINDOW SCHEDULE									
						GROUP			
TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	GLAZING	HEAD	JAMB	SILL	COUNT
W1	8' - 0"	12' - 0"	ALUM	ANOD	FIBERGLASS	TWH	TWJ-A/B	TWS	1
W2	3' - 4"	6' - 0"	ALUM	ANOD	INSULATED	WH-1	WJ-1	WS-1	5
W3	7' - 4"	6' - 4"	ALUM	ANOD	INSULATED	WH-2	WJ-2	WS-2	2
W4	3' - 0"	4' - 0"	ALUM	ANOD	3/4" FIRE RATED GLASS (90 MIN)	WH-3	WJ-3	WS-3	1
W5	3' - 0"	2' - 0"	ALUM	ANOD	INSULATED	DH-W1	WJ-4	DH-W1	1
W6	3' - 0"	2' - 0"	ALUM	ANOD	INSULATED	DH-W2	WJ-5	DH-W2	1
W7	10' - 0"	12' - 0"	ALUM	ANOD	FIBERGLASS	TWH	TWJ-A/B	TWS	1



WINDOW LEGEND
Scale: 1/4" = 1'-0"

No.	TYPE
1	1/4" INTERIOR TEMPERED GLASS
2	1" EXT INSULATED TEMPERED GLASS
3	3/4" FIRE RATED GLASS (45 MIN)
4	3/4" FIRE RATED GLASS (90 MIN)

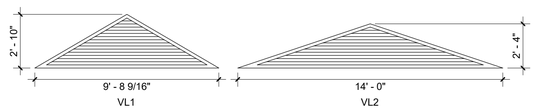
GLASS SCHEDULE
Scale: 1/4" = 1'-0"

HVAC LOUVER SCHEDULE						
			GROUP			
TYPE	WIDTH	HEIGHT	HEAD	JAMB	SILL	COUNT
L1	3' - 4"	3' - 0"	LH-1	LJ-1	LS-1	2
L2	3' - 0"	2' - 0"	LH-1	LJ-1	LS-1	2
L3	3' - 0"	2' - 6"	LH-1	LJ-1	LS-1	1
L4	2' - 0"	2' - 0"	LH-1	LJ-1	LS-1	2
L5	6' - 0"	2' - 0"	LH-1	LJ-1	LS-1	1
L6	3' - 0"	4' - 0"	LH-1	LJ-1	LS-1	1
L7	6' - 3"	12' - 10"	LH-1	LJ-1	LS-1	1
L8	2' - 0"	3' - 0"	LH-1	LJ-1	LS-1	2
L9	3' - 4"	3' - 4"	LH-1	LJ-1	LS-1	1

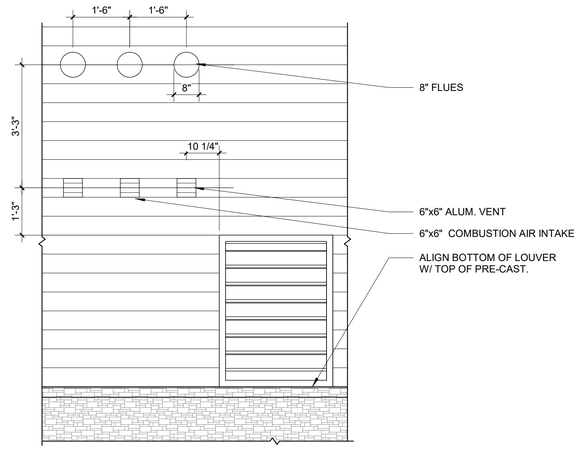
ADD. 6 10/6/20

			Group			
Type	Width	Height	Head	Jamb	Sill	Count
L10	4' – 0"	2' – 0"	LH-1	LJ-1	LS-1	4

GABLE LOUVER SCHEDULE			
Family	Volume	Type Mark	Count
Gable_Louver_Vent	1.41 CF	VL1	2
Gable_Louver_Vent	1.73 CF	VL2	2



GABLE LOUVER LEGEND
Scale: 1/4" = 1'-0"



NOTE: SEE HVAC DRAWINGS

1 | 10 A-202 — **MECH. RM. INTAKES, FLUES**
Scale: 1/2" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	Date	Description
1	4/27/2020	FILTER WALL REV.

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

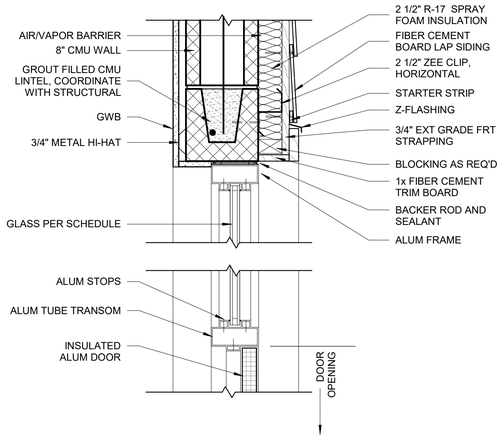
WINDOW AND LOUVER SCHEDULES

SHEET NUMBER

10 A-603

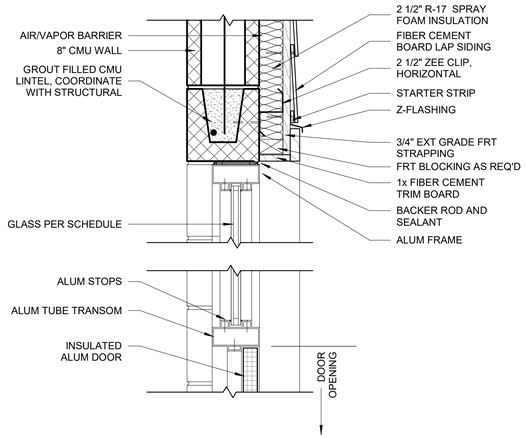
PATH/FILENAME: BIM 360://CI-AMER (USA) /60587515-Orleans Downtown Area WWTF/10 Admin Building.rvt
PLOT DATE: 4/28/2020 1:27:59 PM

60587515



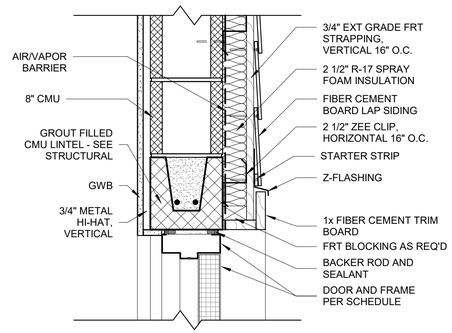
DH-W2 | **EXT. DOOR - HEAD W/ WINDOW - SIDING, GWB INTERIOR**

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



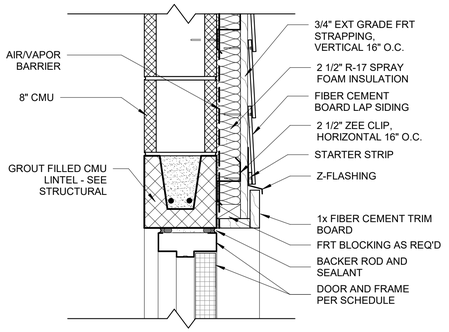
DH-W1 | **EXT. DOOR - HEAD W/ WINDOW - SIDING**

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



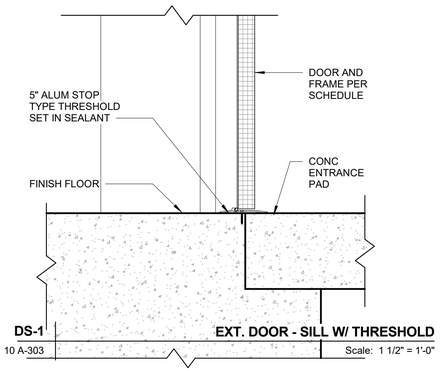
DH-2 | **EXT. DOOR - HEAD - SIDING, GWB INTERIOR**

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



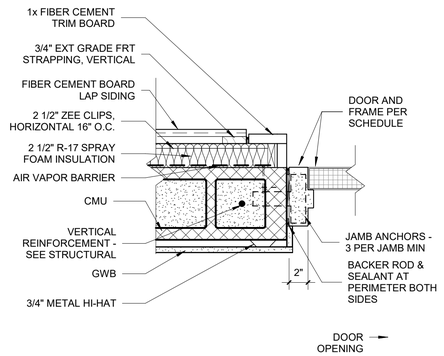
DH-1 10 A-303 | **EXT. DOOR - HEAD - SIDING**

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



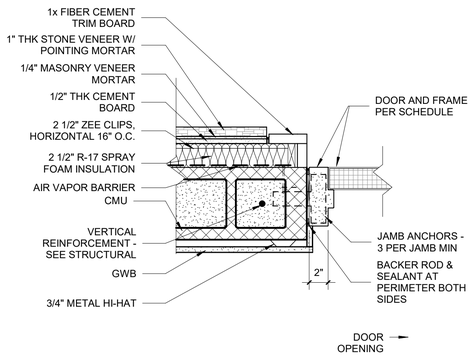
DS-1 10 A-303 | **EXT. DOOR - SILL W/ THRESHOLD**

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



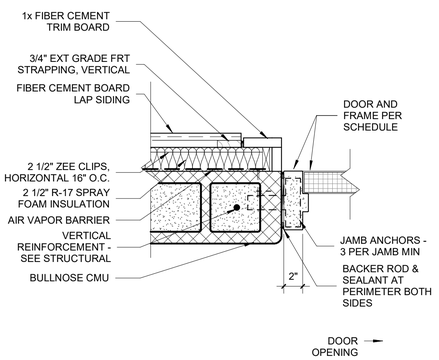
DJ-2B | **EXT. DOOR - JAMB - SIDING, GWB INTERIOR**

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



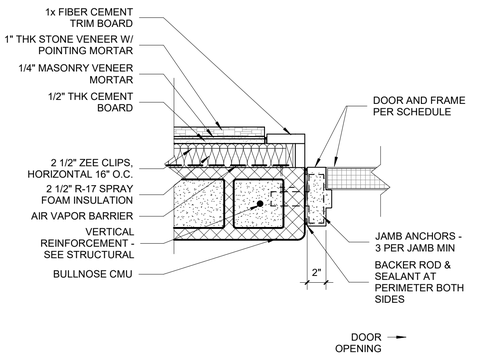
DJ-2A | **EXT. DOOR - JAMB - STONE VENEER, GWB INTERIOR**

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



DJ-1B | **EXT. DOOR - JAMB - SIDING**

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



DJ-1A | **EXT. DOOR - JAMB - STONE VENEER**

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

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt

PLOT DATE: 1/24/2020 4:13:42 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDA BITTERS
No. 32206
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS

1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

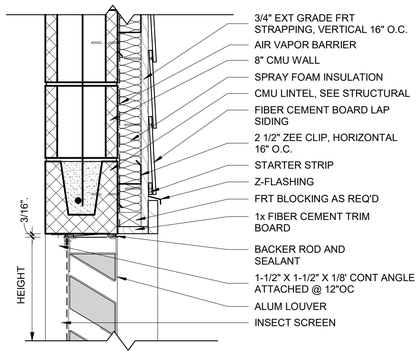
ARCHITECTURAL

SHEET TITLE

EXTERIOR DOOR DETAILS

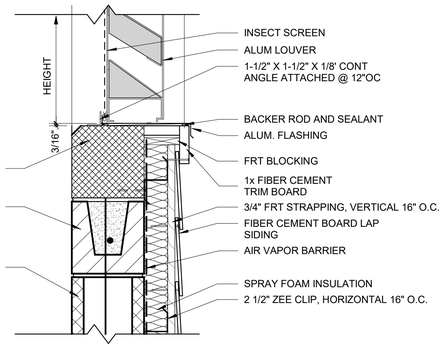
SHEET NUMBER

10 A-604



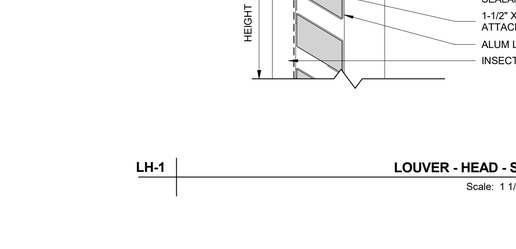
LH-1 LOUVER - HEAD - SIDING

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



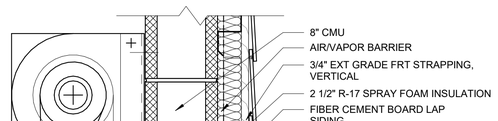
LS-1 LOUVER - SILL - SIDING

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



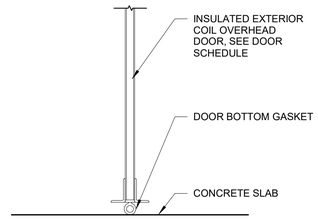
LJ-1 LOUVER - JAMB - SIDING

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



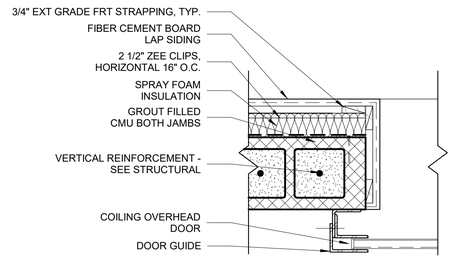
OHH-1 OH DOOR - HEAD - SIDING

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



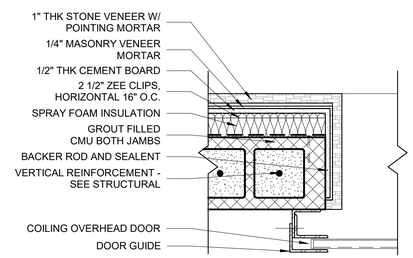
OHS-1 OH DOOR - SILL

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



OHJ-1B OH DOOR - JAMB - SIDING

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



OHJ-1A OH DOOR - JAMB - STONE VENEER

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

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt

PLOT DATE: 1/24/2020 4:13:44 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
CHELSEA, MA
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

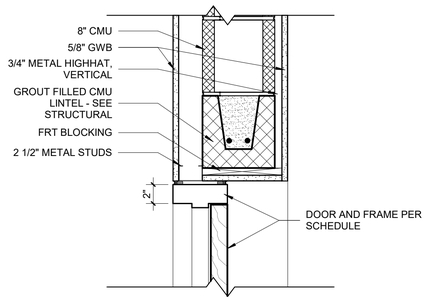
ARCHITECTURAL

SHEET TITLE

LOUVER AND OVERHEAD DOOR DETAILS

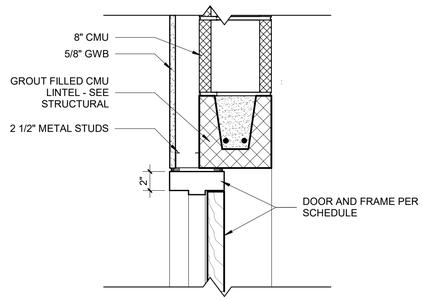
SHEET NUMBER

10 A-605



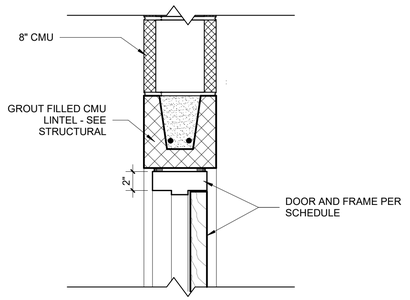
DH-6 **DOOR - HEAD - CMU, GWB 2 SIDES**

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



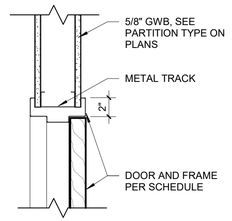
DH-5 **DOOR - HEAD - CMU, GWB 1 SIDE**

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



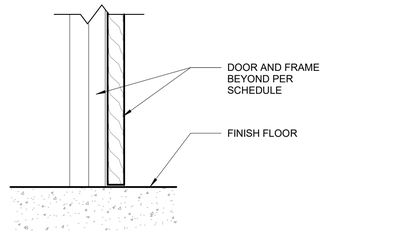
DH-4 **DOOR - HEAD - CMU**

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



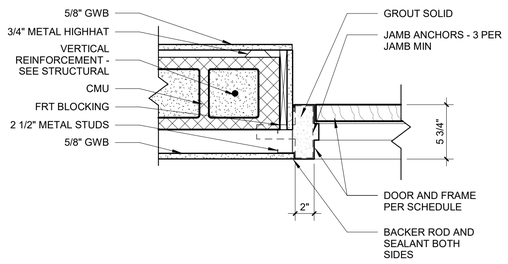
DH-3 **DOOR - HEAD - METAL STUD WALL**

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



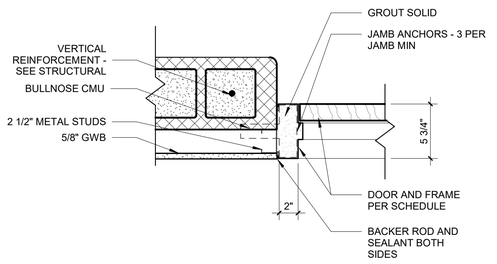
DS-2 **DOOR - SILL**

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



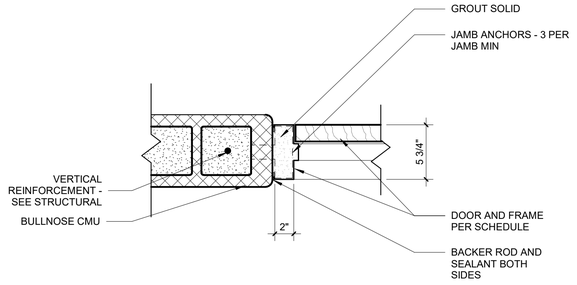
DJ-6 **DOOR - JAMB - CMU, GWB 2 SIDES**

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



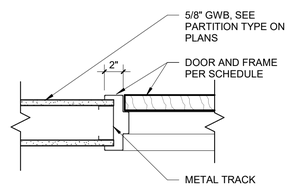
DJ-5 **DOOR - JAMB - CMU, GWB 1 SIDE**

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



DJ-4 **DOOR - JAMB - CMU**

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



DJ-3 **DOOR - JAMB - METAL STUD WALL**

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

PATH/FILENAME: C:\Users\picone\Documents\10 Admin Building_mattmww.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:45 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
No. 32307
CHELSEA, MA
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

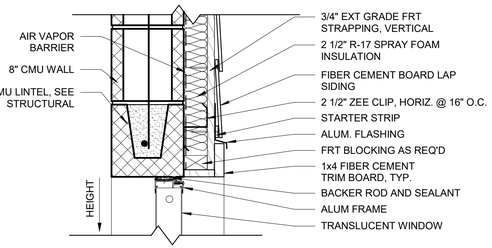
ARCHITECTURAL

SHEET TITLE

INTERIOR DOOR DETAILS

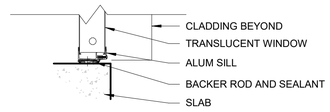
SHEET NUMBER

10 A-606



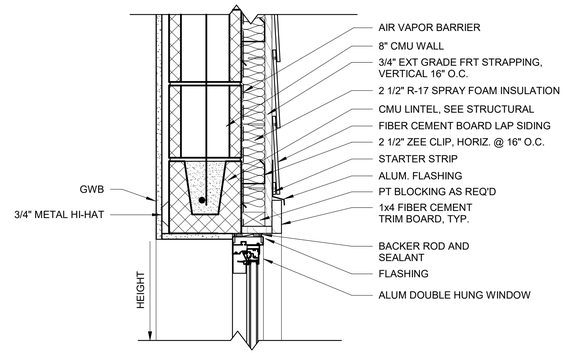
TWH **TRANSLUCENT WINDOW - HEAD**

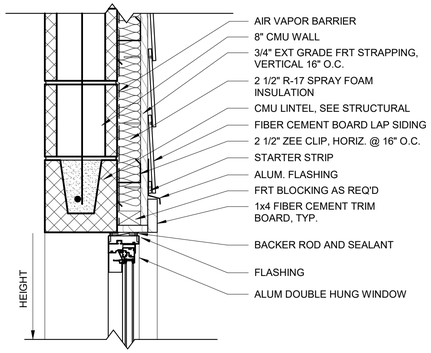
Scale: 1 1/2" = 1'-0"

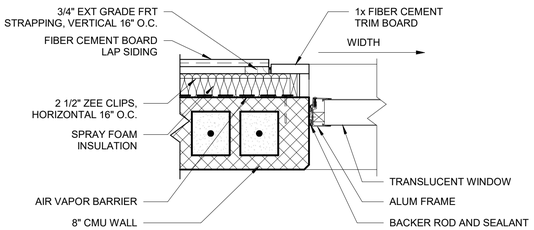


TWS **TRANSLUCENT WINDOW - SILL**

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

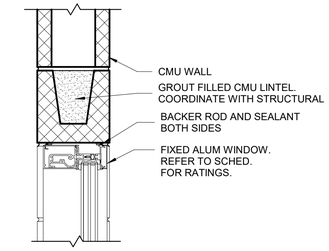






TWJ-B **TRANSLUCENT WINDOW - JAMB - SIDING**

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



WH-3 **FIXED WINDOW - HEAD - INTERIOR WALL**

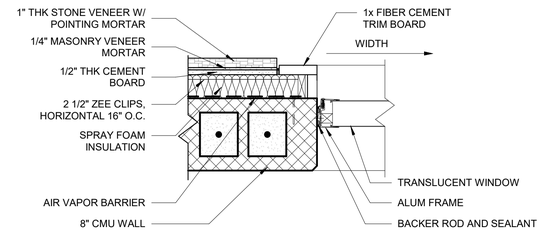
Scale: 1 1/2" = 1'-0"

WH-2 **DH WINDOW - HEAD - SIDING, GWB INTERIOR**

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

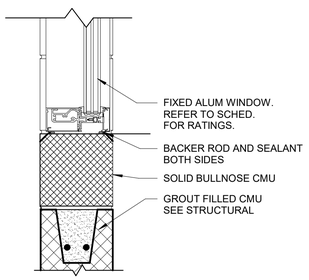
WH-1 10 A-303 **DH WINDOW - HEAD - SIDING**

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



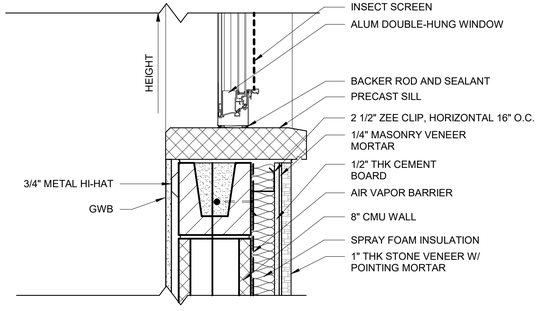
TWJ-A **TRANSLUCENT WINDOW - JAMB - STONE VENEER**

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



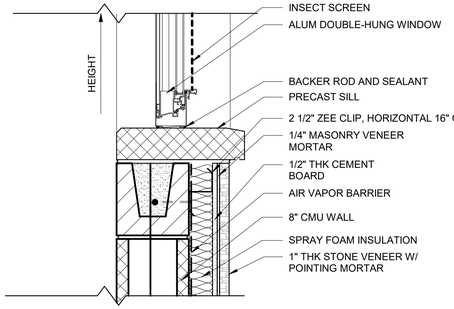
WS-3 **FIXED WINDOW - SILL - INTERIOR WALL**

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



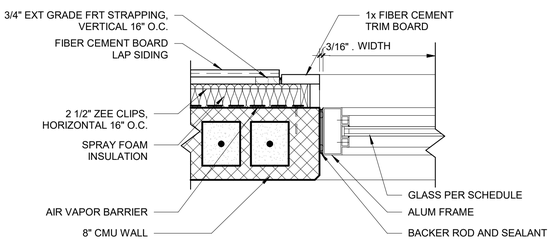
WS-2 **DH WINDOW - SILL - STONE VENEER, GWB INTERIOR**

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



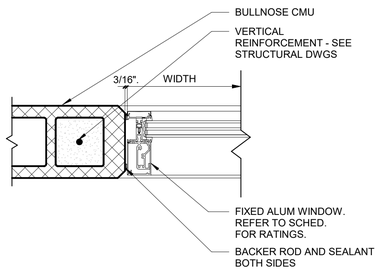
WS-1 10 A-303 **DH WINDOW - SILL - STONE VENEER**

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



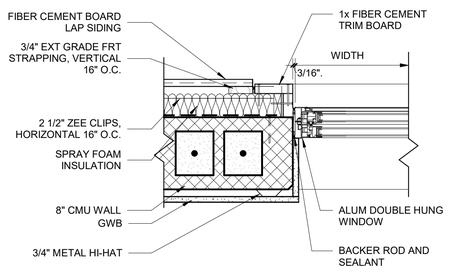
WJ-4 **FIXED WINDOW - JAMB - SIDING**

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



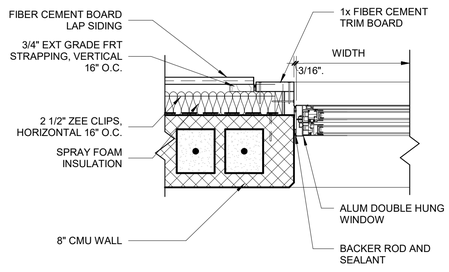
WJ-3 **FIXED WINDOW - JAMB - INTERIOR WALL**

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



WJ-2 **DH WINDOW - JAMB - SIDING, GWB INTERIOR**

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



WJ-1 **DH WINDOW - JAMB - SIDING**

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

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
LAURA A. BITTERS
No. 32
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

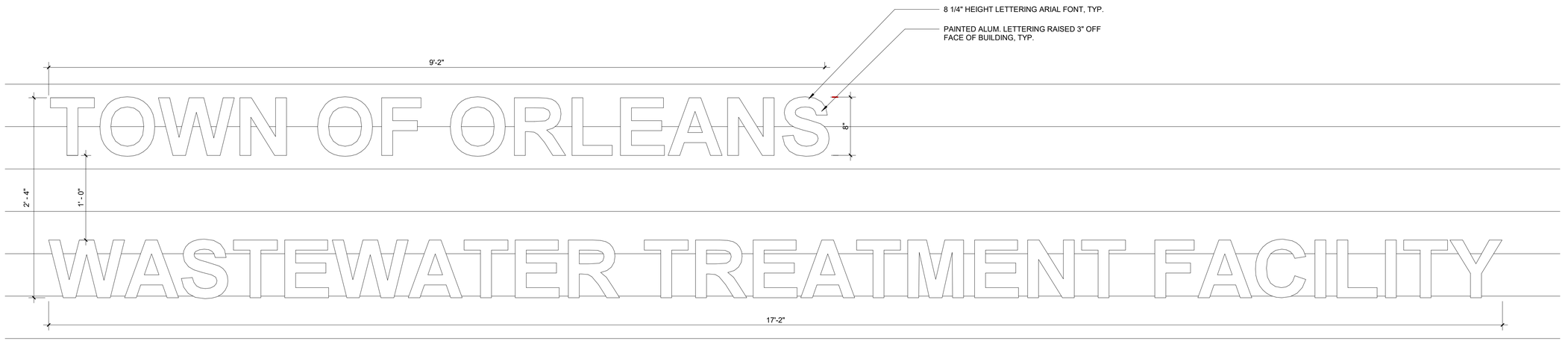
WINDOW DETAILS

SHEET NUMBER

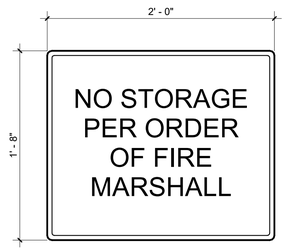
10 A-607

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:49 PM

60587515



1 **EXTERIOR BUILDING SIGNAGE**
10 A-201 Scale: 1 1/2" = 1'-0"



2 **NO STORAGE SIGN**
Scale: 1 1/2" = 1'-0"

ADDENDUM 9

Notes:

1. Signs shall be made of 1/8-inch thick aluminum with stainless steel mounting hardware.
2. Signs shall be mounted at the base and top of each ladder that accesses the attic.
3. Four (4) signs shall be provided.

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:50 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
LEAH M. BUTTERS
No. 32420
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L.TIBBITTS
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

SIGNAGE

SHEET NUMBER

10 A-608

ENERGY CODE ANALYSIS

APPLICABLE ENERGY CODE:
ENERGY CODE: 2015 INTERNATIONAL ENERGY CONSERVATION CODE - MASSACHUSETTS STATE

CLIMATE ZONE: 5A

BUILDING ENVELOPE - TABLE C402.2 & TABLE C402.3:

1. ROOF:
   - ATTIC — R-38 (REQUIRED) R-38 MIN.(PROVIDED)
2. WALLS ABOVE GRADE:
   - MASS WALLS (GRADE LEVEL) — R-11.4 ci (REQUIRED) R-15 ci (PROVIDED)
3. WALLS BELOW GRADE:
   - MASS WALLS (BELOW GRADE) — R-7.5 ci (REQUIRED) R-10 ci (PROVIDED)
4. SLAB ON GRADE:
   - UNHEATED SLAB — R-10 FOR 24" BELOW (REQUIRED)
   - SLAB ON GRADE — R-10 FOR 24" BELOW (PROVIDED)
5. DOORS:
   - INSULATED — 0.6 U-VALUE (REQUIRED) (PROVIDED)
6. WINDOWS:
   - METAL FRAME / DOUBLE GLAZED — 0.8 U-VALUE (REQUIRED) (PROVIDED)

LIFE SAFETY LEGEND

- 1 - HOUR FIRE BARRIER
- 2 - HOUR FIRE BARRIER
- TRAVEL PATH (A)
- EXIT — LOCATION OF EXIT
- F-2 FACTORY USE GROUP

BUILDING CODE ANALYSIS

APPLICABLE BUILDING CODE:
BUILDING CODE:
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 MASSACHUSETTS STATE BUILDING CODE
2016 NFPA 13 - STANDARD FOR THE INSTALLATION OF SRINKLER SYSTEMS
ENERGY CODE:
2015 INTERNATIONAL ENERGY CONSERVATION CODE (MEETS 780 CMR - APPEDIX AA: STRETCH ENERGY CODE)

BUILDING DESCRIPTION
WASTE WATER TREATMENT PLANT:
ONE STORY BUILDING: GRADE LEVEL CONCRETE MASONRY UNIT BEARING WALL WITH FIRE RETARDANT TREATED WOOD TRUSS ROOF FRAME.

AREA
BUILDING FOOTPRINT:
FIRST FLOOR (GRADE FLOOR LEVEL) - 3,694 SF
TOTAL AREA - 3,694 SF

BUILDING REVIEW:
1. USE CLASSIFICATION (CHAPTER 3: GROUP F-2 (LOW-HAZARD FACTORY INDUSTRIAL SECTION 306.3)
2. CONSTRUCTION TYPE: TYPE 2B - UNPROTECTED NON-COMBUSTIBLE (SECTION 602)
   FIRE-RETARDANT-TREATED WOOD TRUSSES WILL BE PROVIDED (603.1).

3. BUILDING HEIGHTS AND AREAS:
ALLOWABLE STORIES ABOVE GRADE: 4 (TABLE 503) ALLOWED — ACTUAL STORIES ABOVE GRADE: 1
ALLOWABLE HEIGHT: 75' (TABLE 503) — ACTUAL HEIGHT: 30'-2"
ALLOWABLE AREA F: F-2: 69,000 (TABLE 506.2)
ACTUAL AREA F GRADE LEVEL: F-2: 3,694 SF

4. FIRE RESISTANCE RATING REQUIREMENTS: (TABLE 601)
PRIMARY STRUCTURAL FRAME: 0 HRS
EXTERIOR BEARING WALLS: 0 HRS
INTERIOR BEARING WALLS: 0 HRS
NON BEARING WALLS: 0 HRS
FLOOR CONSTRUCTION: 0 HR (TABLE 508.4)
ROOF CONSTRUCTION: 0 HR

5. SPRINKLERED:
FULL FIRE SUPPRESSION PROVIDED FOR ENTIRE TREATMENT PLANT

6. MANUAL FIRE ALARM SYSTEM: NO (SECTION 907.2.4)

7. MEANS OF EGRESS:
MIN. STAIR WIDTH: 44" (SECTION 1009.4)
ACTUAL STAIR WIDTH: 44"
ACCESSIBLE STAIR WIDTH: NOT REQUIRED (SECTION 1009.3 EXCEPTION 2)
AREA OF REFUGE: NOT REQUIRED (SECTION 1009.3 EXCEPTION 2)
MIN. DOOR CLEAR OPENING: 32" (SECTION 1008.1.1)
ACTUAL DOOR WIDTH: 36'

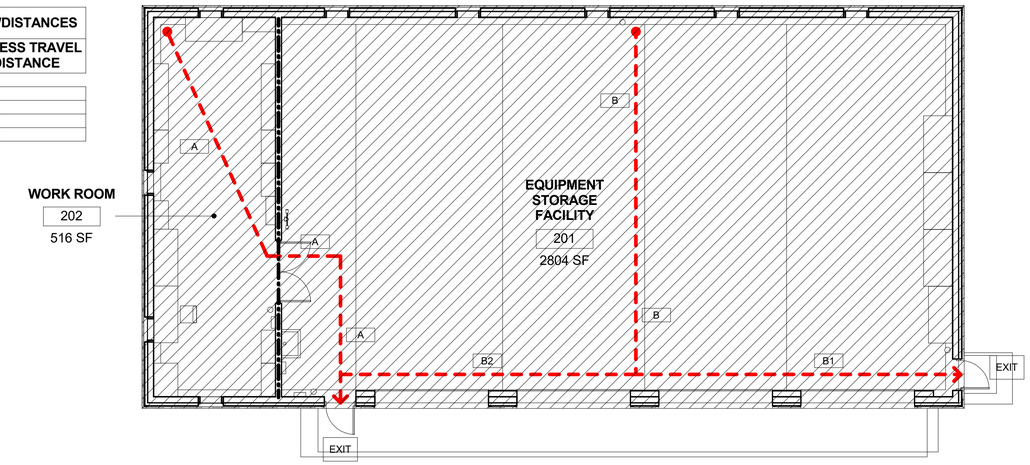
8. OCCUPANT LOAD AND TRAVEL DISTANCES (TABLE 1004.1.2, 1017.2)
GRADE LEVEL:
F-2: 3,694/100 — 37
MAX. COMMON PATH OF EGRESS (410.6.3.3, 1006.3.2): F 100 FEET
MAX. TRAVEL DISTANCE (TABLE 1017.2 WITH SPRINKLER): F-2 400 FEET
NUMBER OF EXITS REQUIRED: 2
NUMBER OF EXITS PROVIDED: 2

9. EXTERIOR WALL OPENINGS: NO LIMIT (TABLE 705.8)

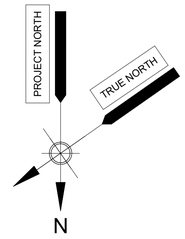
10. CHEMICALS STORED: N/A

11. ACCESSIBILITY:
EQUIPMENT STORAGE FACILITY BE ACCESSIBLE. ACCESSIBLE ROUTES HAVE BEEN PROVIDED.

EGRESS PATH/DISTANCES	
EGRESS PATH ID	EGRESS TRAVEL DISTANCE
A	49' - 2"
B	36' - 2"
B1	34' - 4"
B2	34' - 2"



1 — LIFE SAFETY PLAN (20 A-201)
Scale: 1/8" = 1'-0"



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT — GERALDINE BITTEL — 32300 — CHELSEA, MA — COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	S.MCFADDEN
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

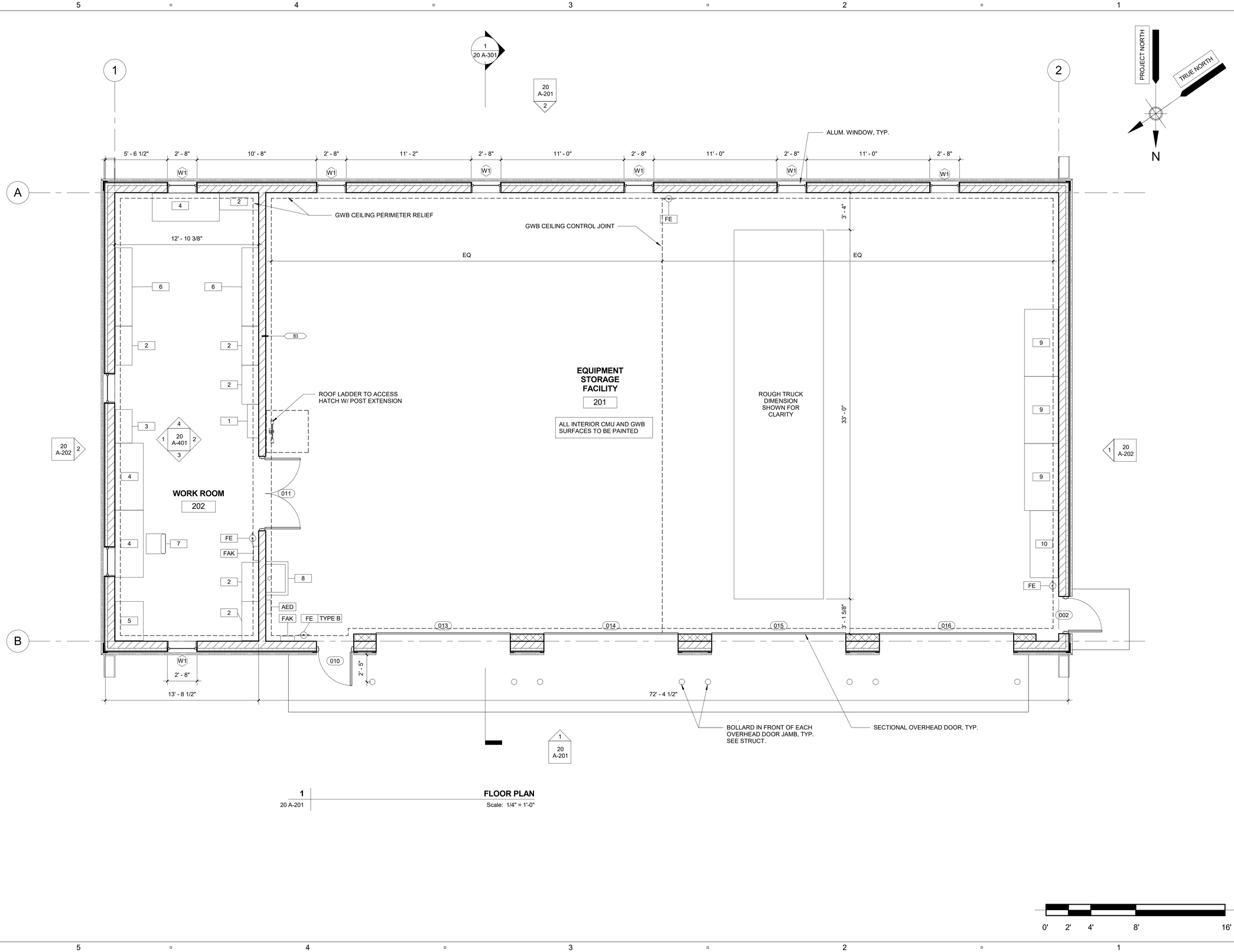
EQUIPMENT STORAGE FACILITY - LIFE SAFETY PLAN

SHEET NUMBER

20 A-001

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:05 PM

60587515



1 FLOOR PLAN
20 A-201 Scale: 1/4" = 1'-0"

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:07 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GEORGE A. OTTERSON
No. 32
CHELSEA, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	C.LI
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

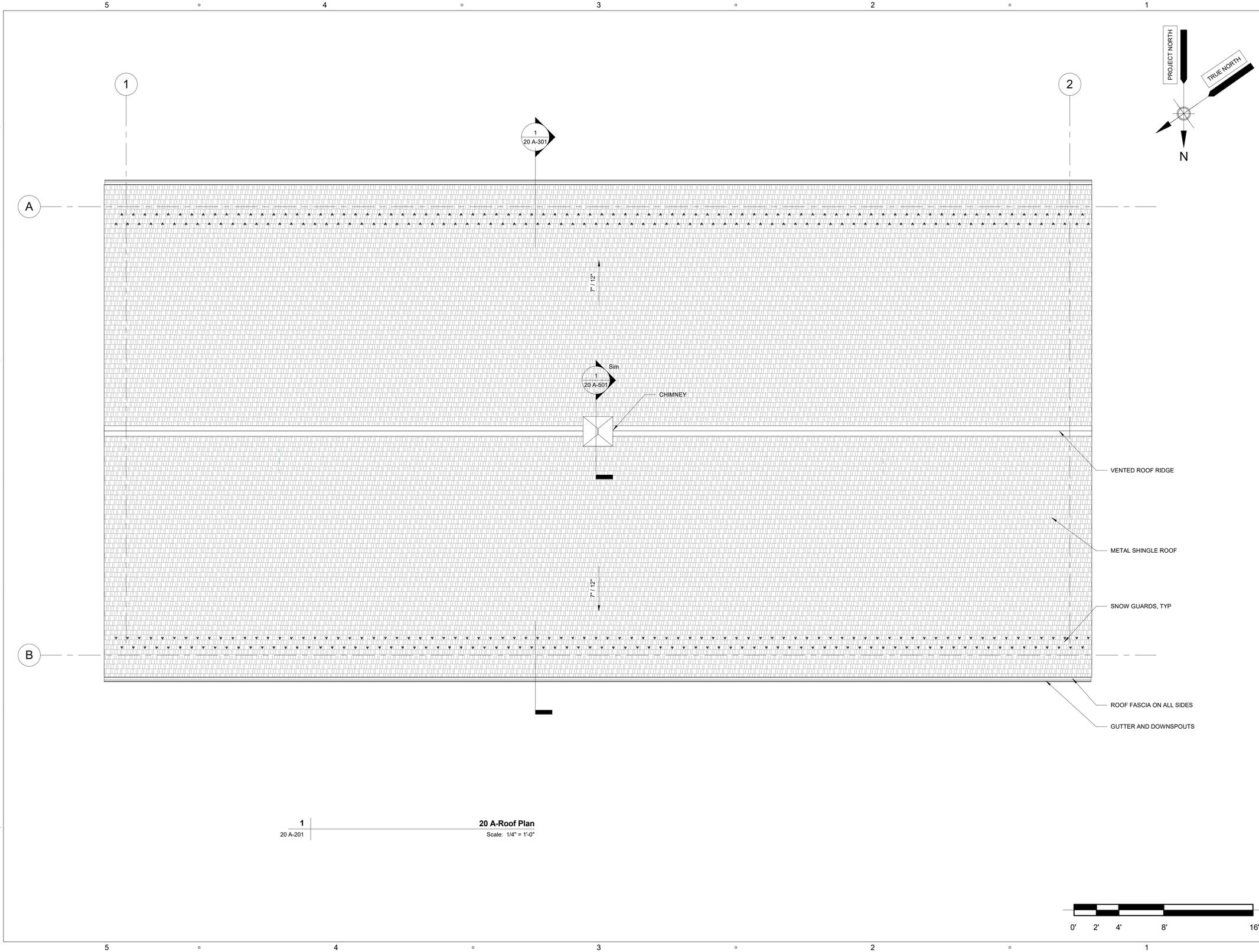
ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - FLOOR PLAN

SHEET NUMBER

20 A-101



1 20 A-201 — **20 A-Roof Plan** Scale: 1/4" = 1'-0"

PATH/FILENAME: C:\Users\jpicone\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:09 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDA BUTLER
32220
OHELN STATE
MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	C.LI
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

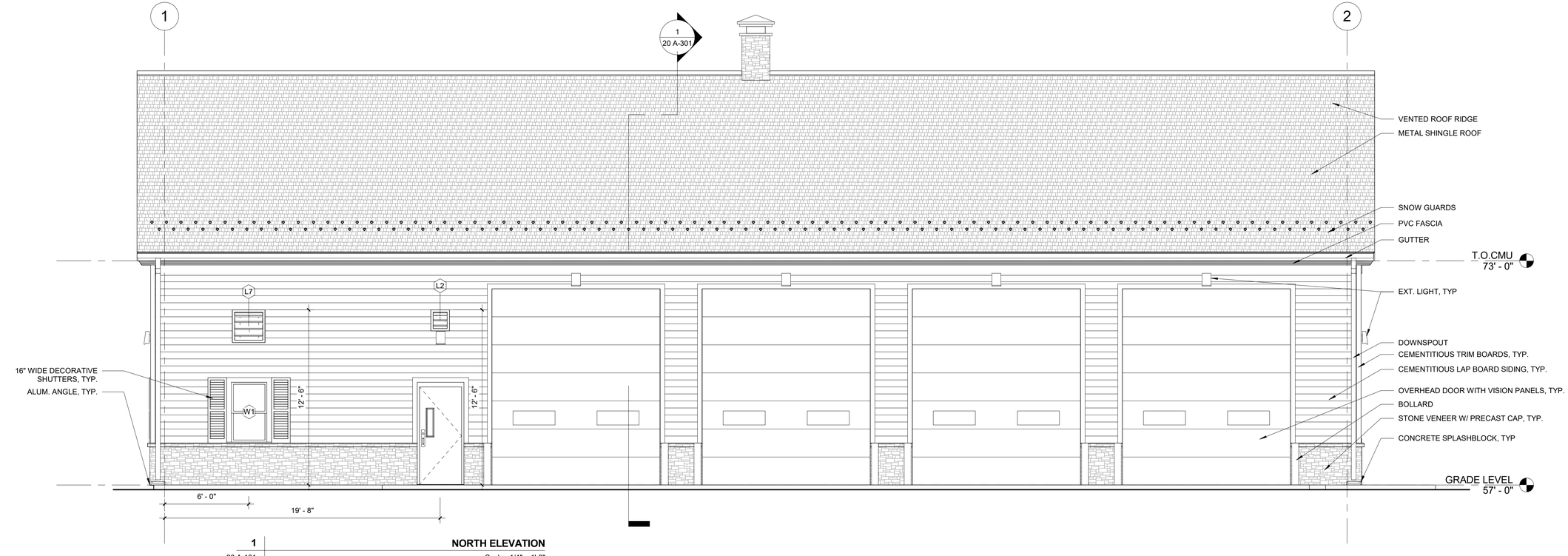
ARCHITECTURAL

SHEET TITLE

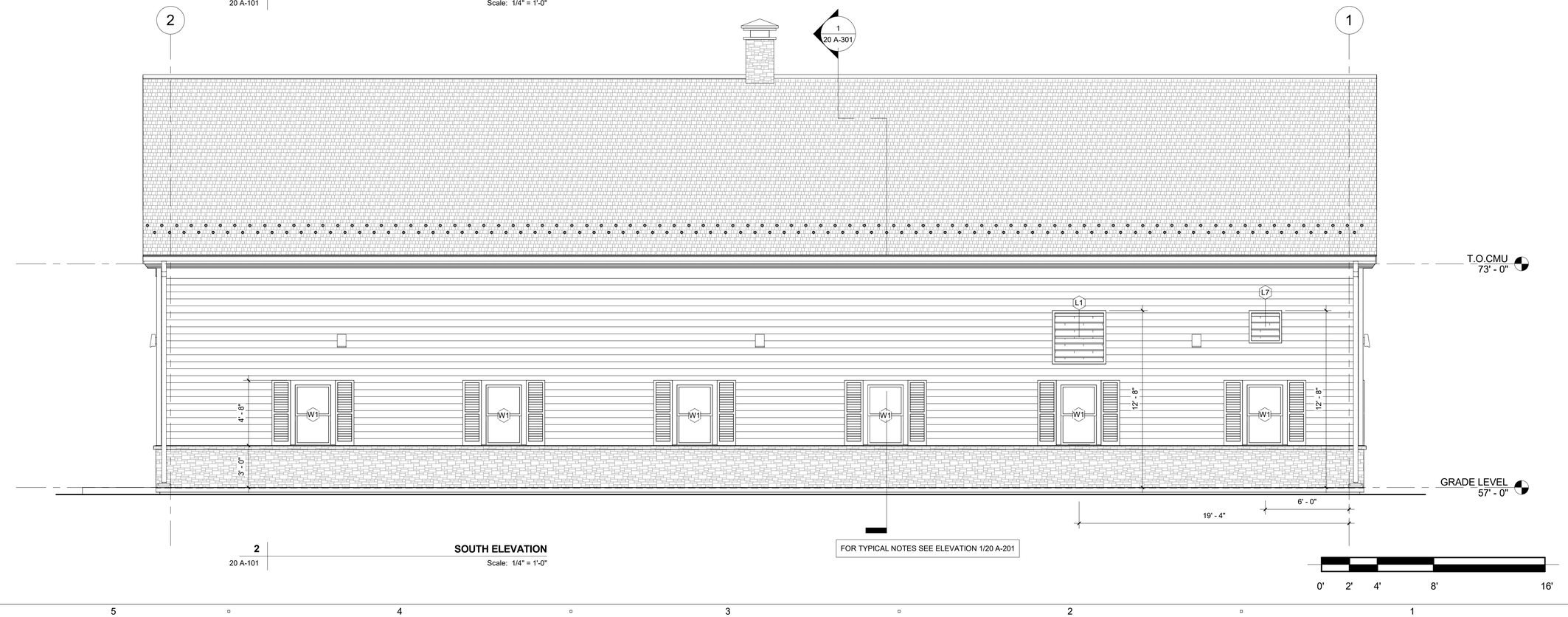
EQUIPMENT STORAGE FACILITY - ROOF PLAN

SHEET NUMBER

20 A-102



1 | **NORTH ELEVATION**
20 A-101 | Scale: 1/4" = 1'-0"



2 | **SOUTH ELEVATION**
20 A-101 | Scale: 1/4" = 1'-0"

FOR TYPICAL NOTES SEE ELEVATION 1/20 A-201

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:13 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDINE BITTER STEVENS
32200
ORLEANS, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	C.LI
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

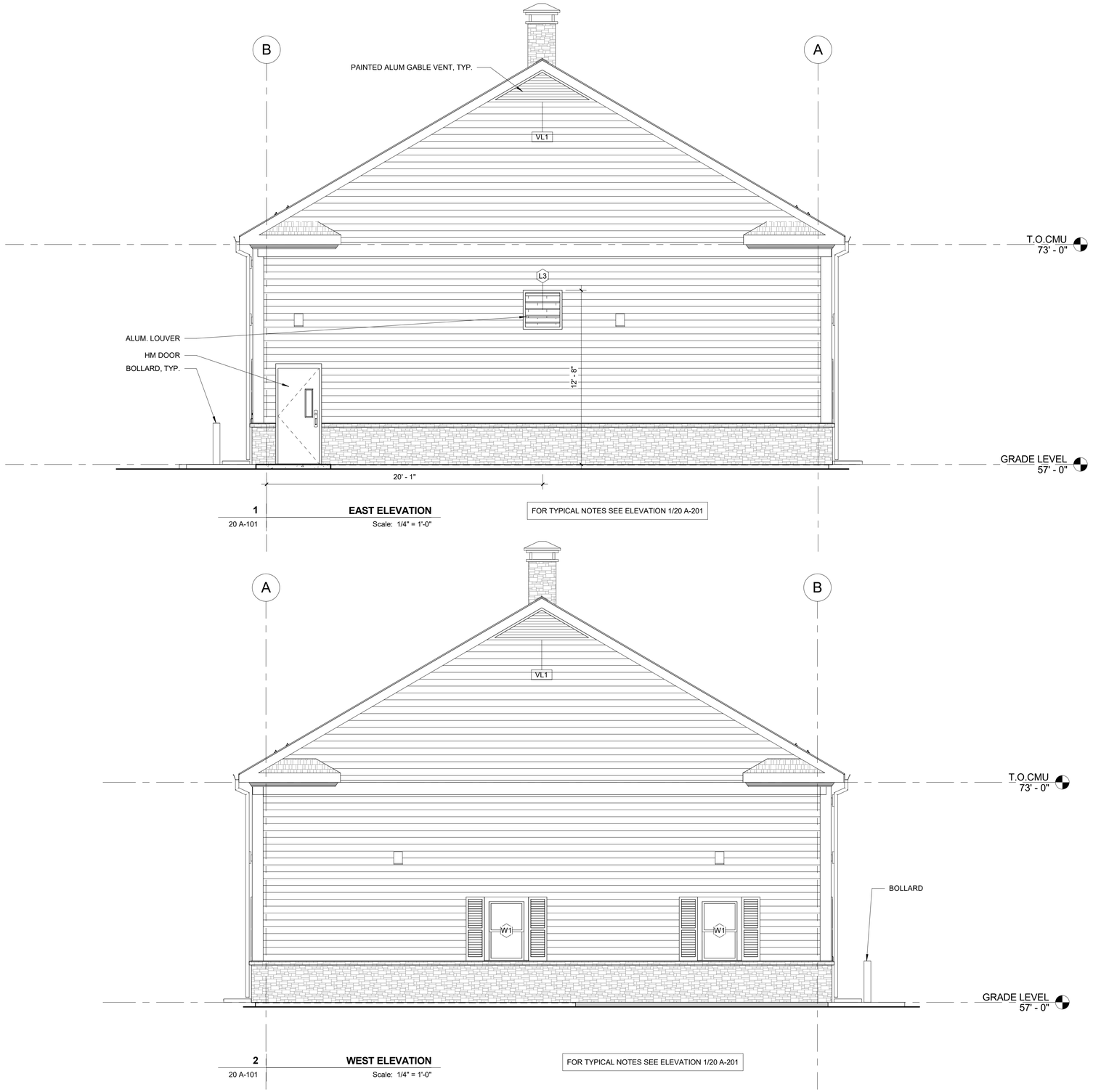
ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - ELEVATIONS I

SHEET NUMBER

20 A-201



1 **EAST ELEVATION**
20 A-101 Scale: 1/4" = 1'-0"

FOR TYPICAL NOTES SEE ELEVATION 1/20 A-201

2 **WEST ELEVATION**
20 A-101 Scale: 1/4" = 1'-0"

FOR TYPICAL NOTES SEE ELEVATION 1/20 A-201

0' 2' 4' 8' 16'

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:13 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
MATTHEW R. PICONE
32101
CHELSEA, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	C.LI
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

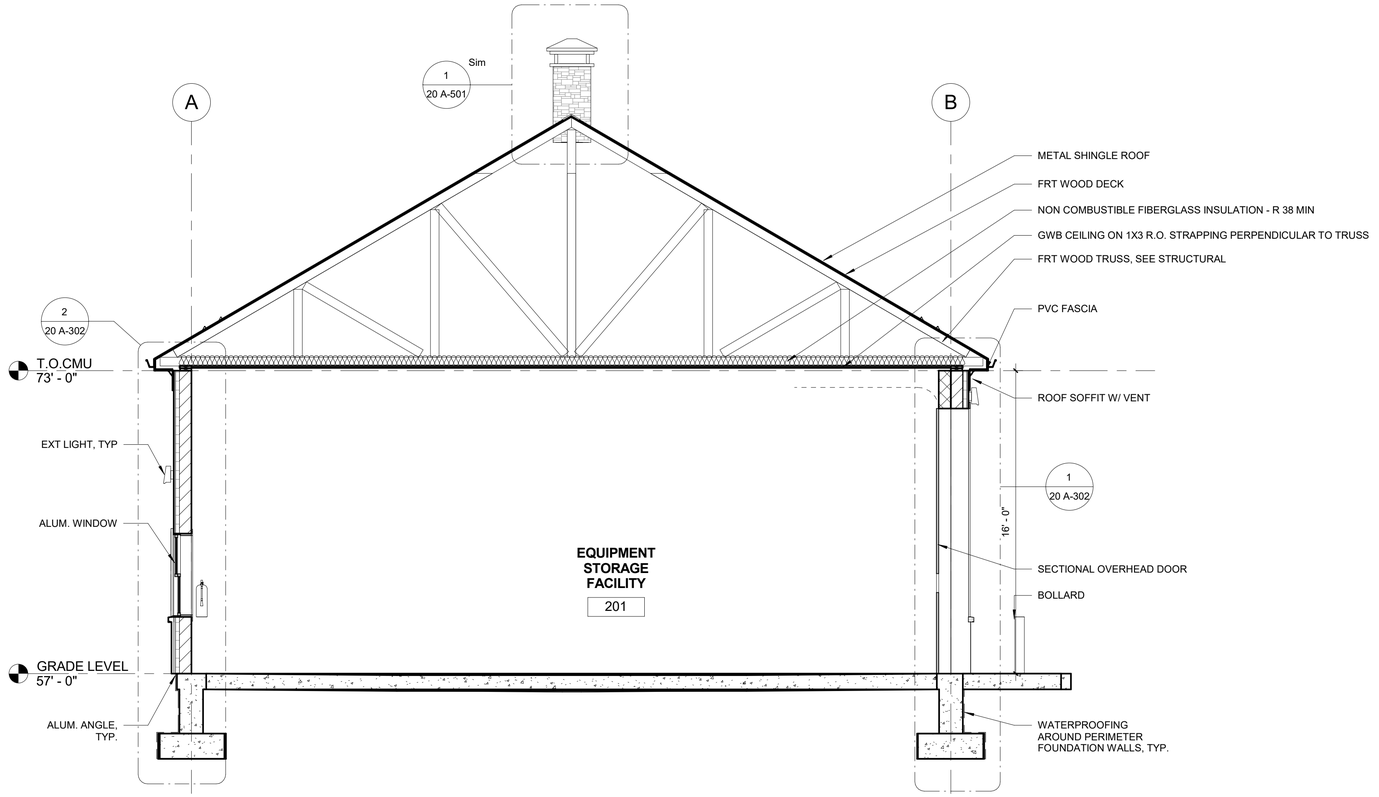
ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - ELEVATIONS II

SHEET NUMBER

20 A-202



1 — **BUILDING SECTION**
20 A-101 — Scale: 1/4" = 1'-0"

0' 2' 4' 8' 16'

PATH/FILENAME: C:\Users\picone\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:14 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
CHELSEA, MA
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	C.LI
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

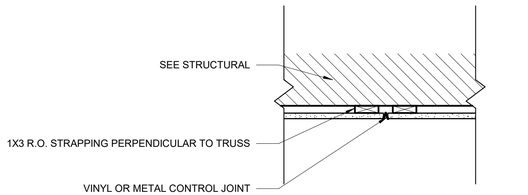
ARCHITECTURAL

SHEET TITLE

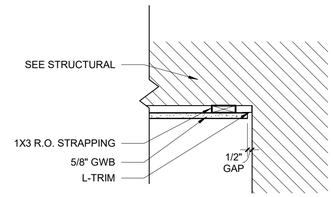
EQUIPMENT STORAGE FACILITY - SECTIONS

SHEET NUMBER

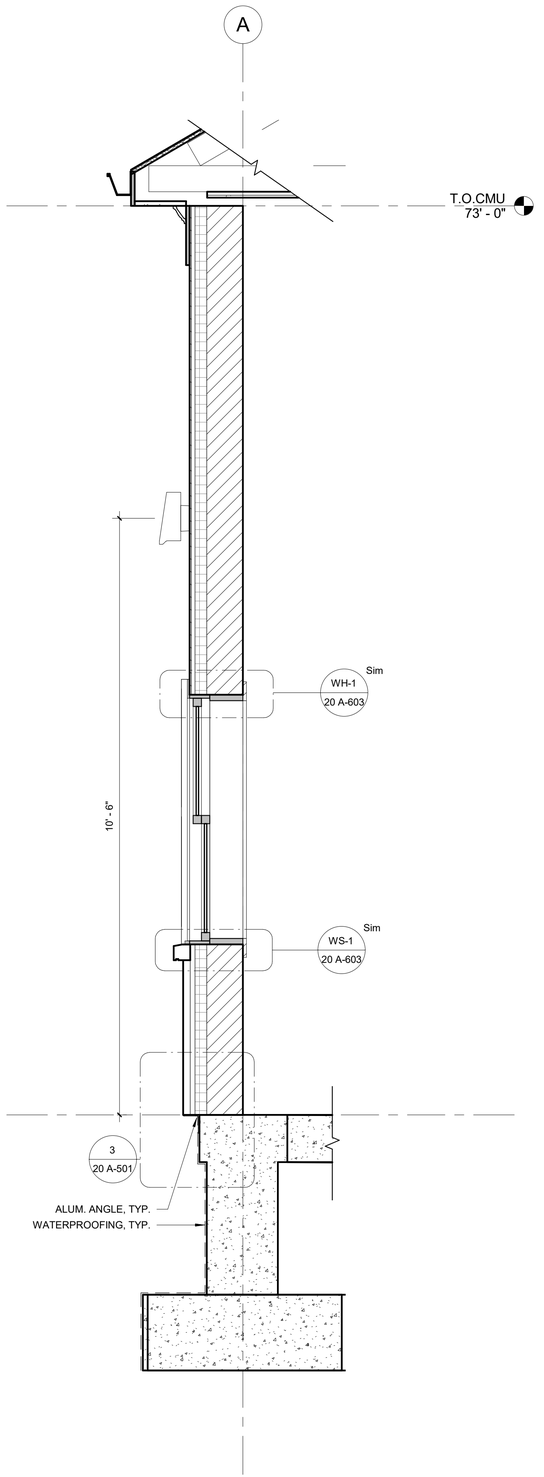
20 A-301



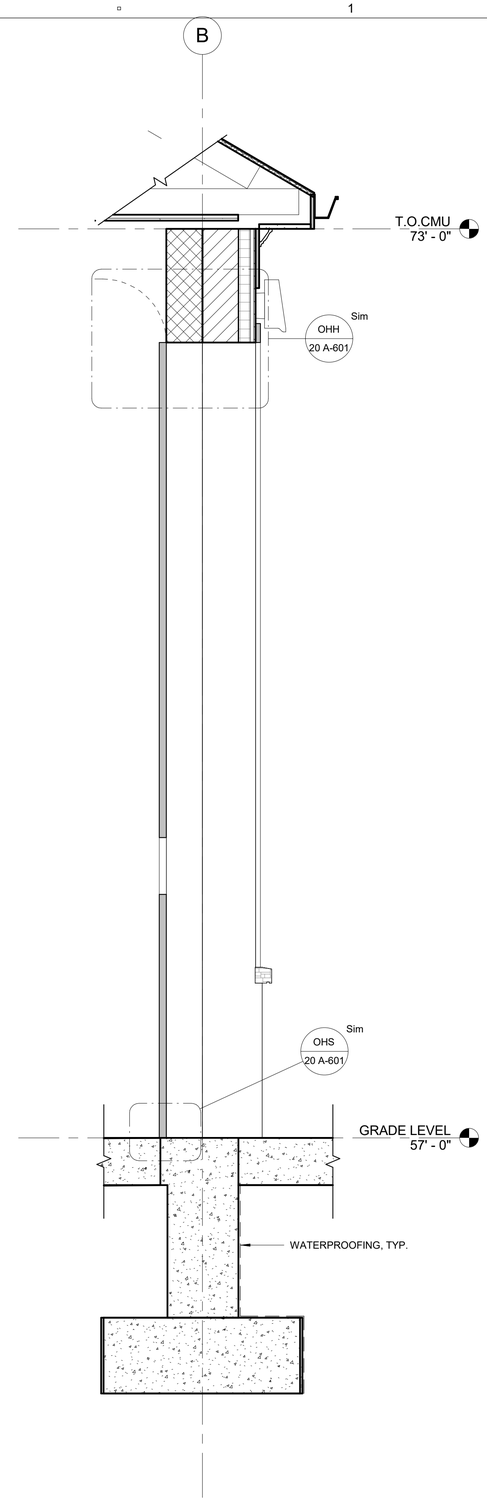
3 **GWB CEILING CONTROL JOINT**
Scale: 1 1/2" = 1'-0"



4 **PERIMETER RELIEF GWB CEILING**
Scale: 1 1/2" = 1'-0"



2 20 A-301 **WALL SECTION @ MAIN WALL**
Scale: 3/4" = 1'-0"



1 20 A-301 **WALL SECTION @ O.H. DOOR**
Scale: 3/4" = 1'-0"

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:15 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDA OTTERSON
NO. 32100
CHELMSFORD, MA
COMMONWEALTH OF MASSACHUSETTS
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**M.PICONE**
Drawn By:	**C.LI**
Dept Check:	**G.OTTERSON**
Proj Check:	**T.PARECE**
Date:	**JANUARY, 2020**
Scale:	**As indicated**

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - WALL SECTIONS

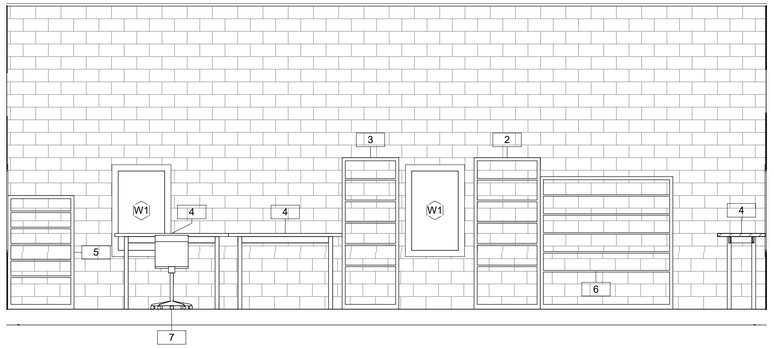
SHEET NUMBER

20 A-302

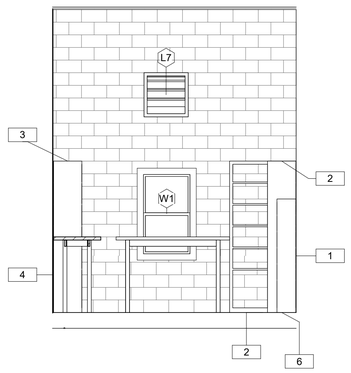
ACCESSORY SCHEDULE

Item Number	Generic Name	Room	Count	Width	Height	Depth	Family	Model	Manufacturer	Comments
		EQUIPMENT STORAGE FACILITY	2							
1	SHELF	WORK ROOM	1	3' - 0"	6' - 0"	1' - 0"	Shelving			
2	SHELF	WORK ROOM	6	3' - 6"	8' - 0"	1' - 6"	Shelving			
3	SHELF	WORK ROOM	1	3' - 0"	8' - 0"	1' - 6"	Shelving			
4	TABLE	WORK ROOM	3	6' - 0"	4' - 0"	2' - 6"	Table-Rectangular			
5	SHELF	WORK ROOM	1	3' - 6"	6' - 0"	2' - 6"	Shelving			
6	SHELF	WORK ROOM	2	7' - 0"	7' - 0"	1' - 6"	Shelving			
7	CHAIR	WORK ROOM	1	2' - 1"	4' - 4"	1' - 11"	high_stool_2600			
8	SINK	EQUIPMENT STORAGE FACILITY	1	3' - 0"	3' - 6"	2' - 0"	Sink-Mop-2D			
9	SHELF	EQUIPMENT STORAGE FACILITY	3	6' - 0"	8' - 0"	3' - 0"	Shelving			
10	SHELF	EQUIPMENT STORAGE FACILITY	1	6' - 0"	8' - 0"	2' - 6"	Shelving			

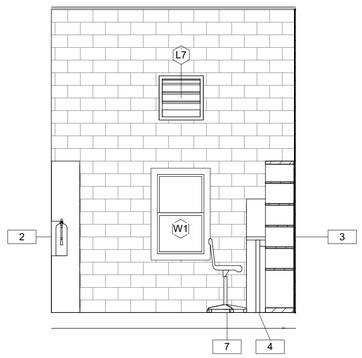
Grand total: 22



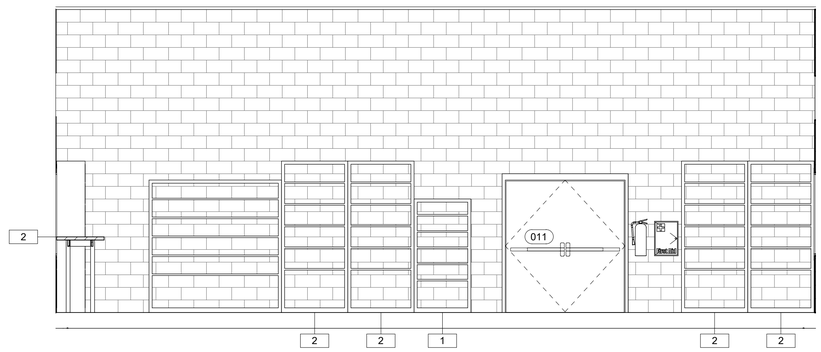
1 — **EAST**
20 A-101 — Scale: 1/4" = 1'-0"



4 — **SOUTH**
20 A-101 — Scale: 1/4" = 1'-0"



3 — **NORTH**
20 A-101 — Scale: 1/4" = 1'-0"



2 — **WEST**
20 A-101 — Scale: 1/4" = 1'-0"

0' 2' 4' 8' 16'

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:16 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
GERALDINE A. PARECE
No. 32200
CHELSEA, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	S.MCFADDEN
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1/4" = 1'-0"

DISCIPLINE

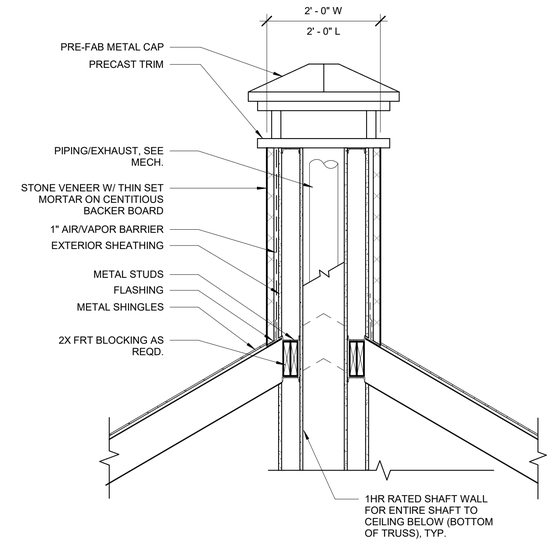
ARCHITECTURAL

SHEET TITLE

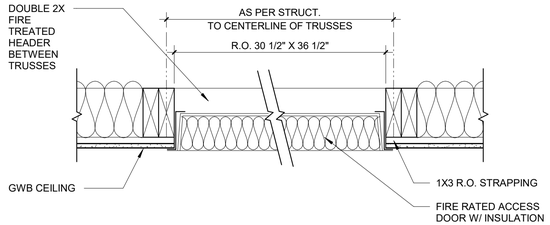
EQUIPMENT STORAGE FACILITY - INTERIOR ELEVATIONS & SCHED.

SHEET NUMBER

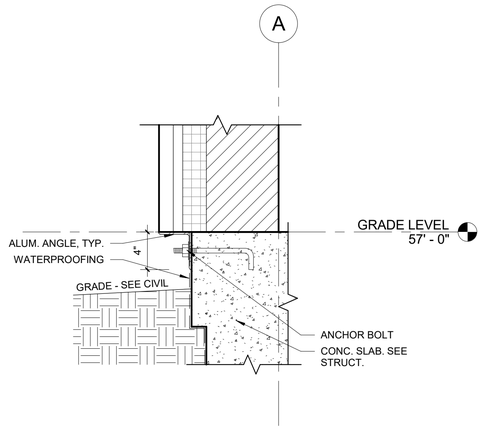
20 A-401



1 — **CHIMNEY DETAIL**
20 A-102 — Scale: 3/4" = 1'-0"



2 — **CEILING ACCESS PANEL**
Scale: 1 1/2" = 1'-0"



3 — **TYP. EXTERIOR WALL DETAIL @ BASE**
20 A-302 — Scale: 1 1/2" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT — GREGORY S. OTTERSON — No. 32,201 — COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	L. TIBBITTS
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

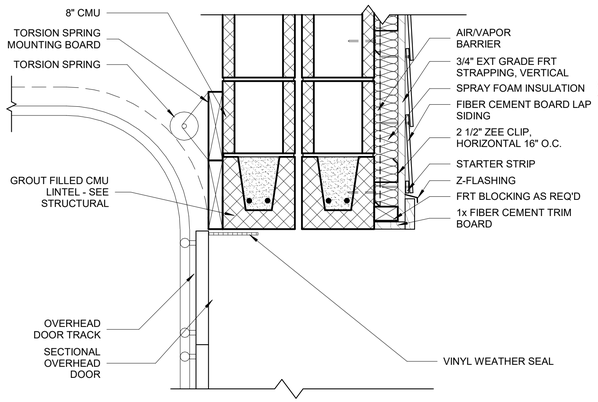
EQUIPMENT STORAGE FACILITY - DETAILS

SHEET NUMBER

20 A-501

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:17 PM

60587515



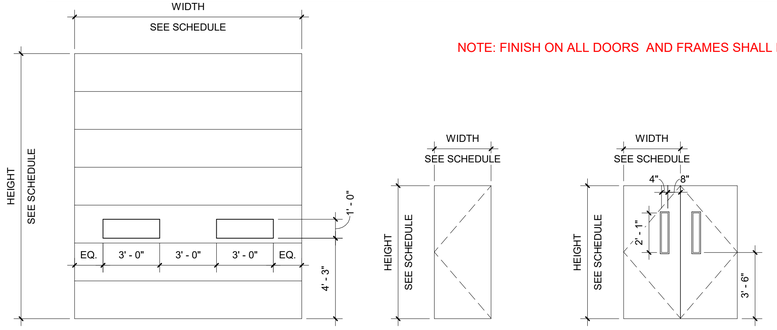
OHH — **OVERHEAD DOOR - HEAD - SIDING**
20 A-302 — Scale: 1 1/2" = 1'-0"

DOOR SCHEDULE

DOOR NUMBER	SIZE WIDTH	SIZE HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	FIRE RATING	HDW GROUP	NOTES
~~002~~	~~3' - 0"~~	~~7' - 0"~~	~~F~~	~~ALUM~~		~~1~~	~~ALUM~~		~~DH-2~~	~~DJ-2A/B~~	~~DS-2~~	~~-~~	~~30~~	
~~010~~	~~3' - 0"~~	~~7' - 0"~~	~~F~~	~~ALUM~~		~~1~~	~~ALUM~~		~~DH-2~~	~~DJ-2A/B / DJ-3A/B~~	~~DS-2~~		~~30~~	
~~011~~	~~6' - 4"~~	~~7' - 0"~~	~~FF~~			~~1~~			~~DH-1~~	~~DJ-1~~	~~DS-1~~	~~60 MIN.~~	~~80~~	
013	12' - 0"	14' - 0"	OH						OHH	OHJ-1A/B	OHS		200	
014	12' - 0"	14' - 0"	OH						OHH	OHJ-1A/B	OHS		200	
015	12' - 0"	14' - 0"	OH						OHH	OHJ-1A/B	OHS		200	
016	12' - 0"	14' - 0"	OH						OHH	OHJ-1A/B	OHS		200	

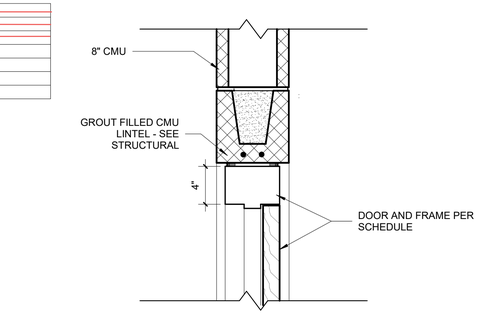
(ADD. 6) SEE BELOW

NOTE: FINISH ON ALL DOORS AND FRAMES SHALL BE 'PT" (ADD. 6)



OH **F** **FF**

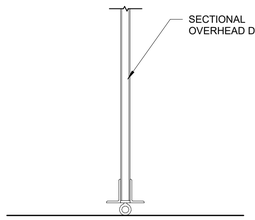
DOOR LEGEND
Scale: 1/4" = 1'-0"



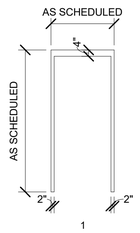
DH-1 — **DOOR - HEAD - CMU**
Scale: 1 1/2" = 1'-0"

(ADD. 6)

Door Number	Size Width	Size Height	Door Type	Door Material	Door Finish	Frame Type	Frame Material	Frame Finish	Door Number	Detail Head	Detail Jamb	Detail Sill	Fire Rating	HDW Group	Notes
002	3" – 0"	7" – 0"	F	Alum	PT	1	Alum	PT	002	DH-2	DJ-2A/B	DS-2	---	30	---
010	3" – 0"	7" – 0"	F	Alum	PT	1	Alum	PT	010	DH-2	DJ-SA/B / DJ-3A/B	DS-2	---	30	---
011	6" – 4"	7" – 0"	FF	HM	PT	1	HM	PT	011	DH-1	DJ-1	DS-1	60 MIN.	80	---

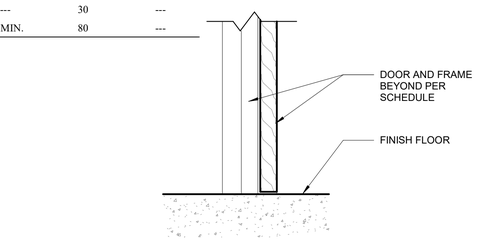


OHS — **OVERHEAD DOOR - SILL**
20 A-302 — Scale: 1 1/2" = 1'-0"

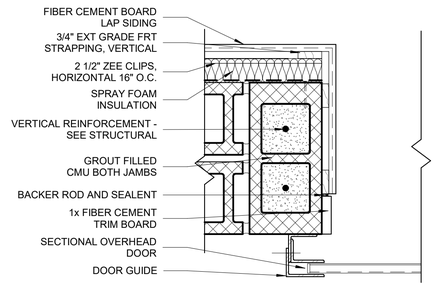


1

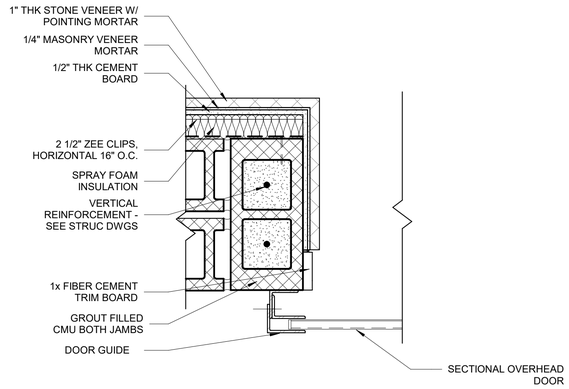
FRAME LEGEND
Scale: 1/4" = 1'-0"



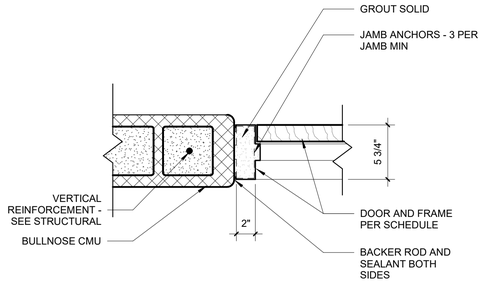
DS-1 — **DOOR - SILL - INTERIOR**
Scale: 1 1/2" = 1'-0"



OHJ-1B — **OVERHEAD DOOR - JAMB - SIDING**
Scale: 1 1/2" = 1'-0"



OHJ-1A — **OVERHEAD DOOR - JAMB - STONE VENEER**
Scale: 1 1/2" = 1'-0"



DJ-1 — **DOOR - JAMB - CMU**
Scale: 1 1/2" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT — GERALDA A. TITTERTON — NO. 32200 — CHELMSFORD, MA — COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-12-20	ADDENDUM 6

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	L. TIBBITTS
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	As indicated

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

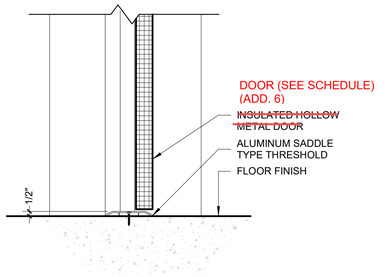
EQUIPMENT STORAGE FACILITY - DOOR SCHEDULE AND DETAILS

SHEET NUMBER

20 A-601

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:18 PM

60587515

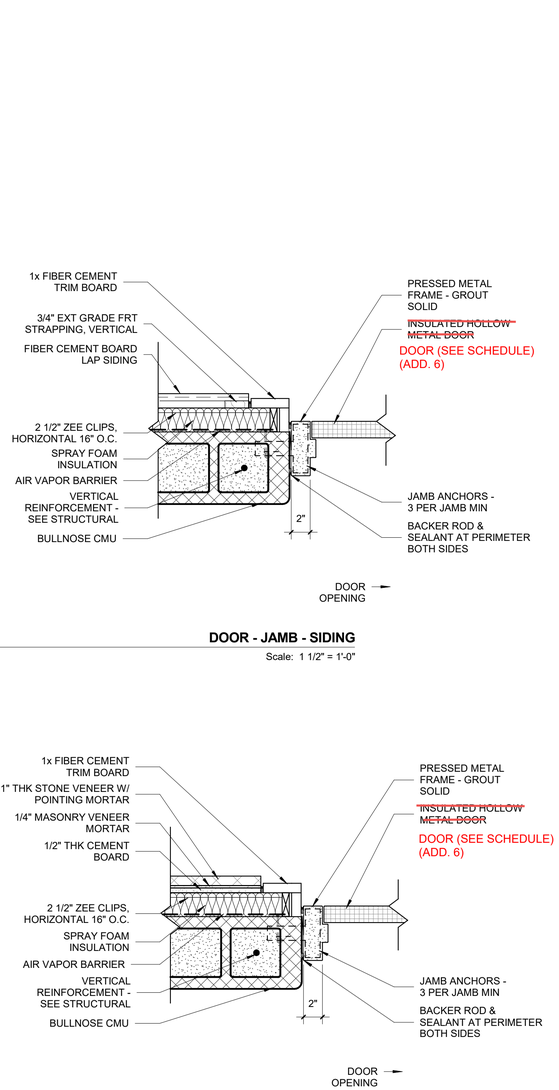


DS-2 DOOR - SILL - EXTERIOR

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

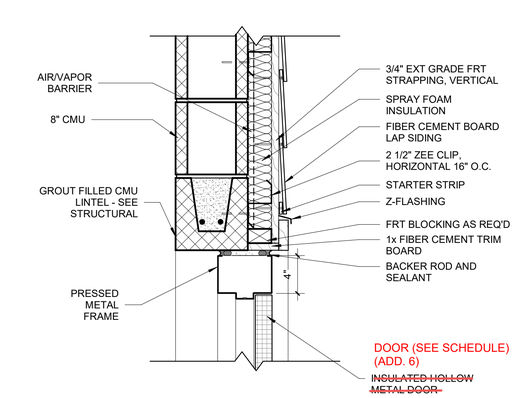
DJ-2B DOOR - JAMB - SIDING

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



DJ-2A DOOR - JAMB - STONE VENEER

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

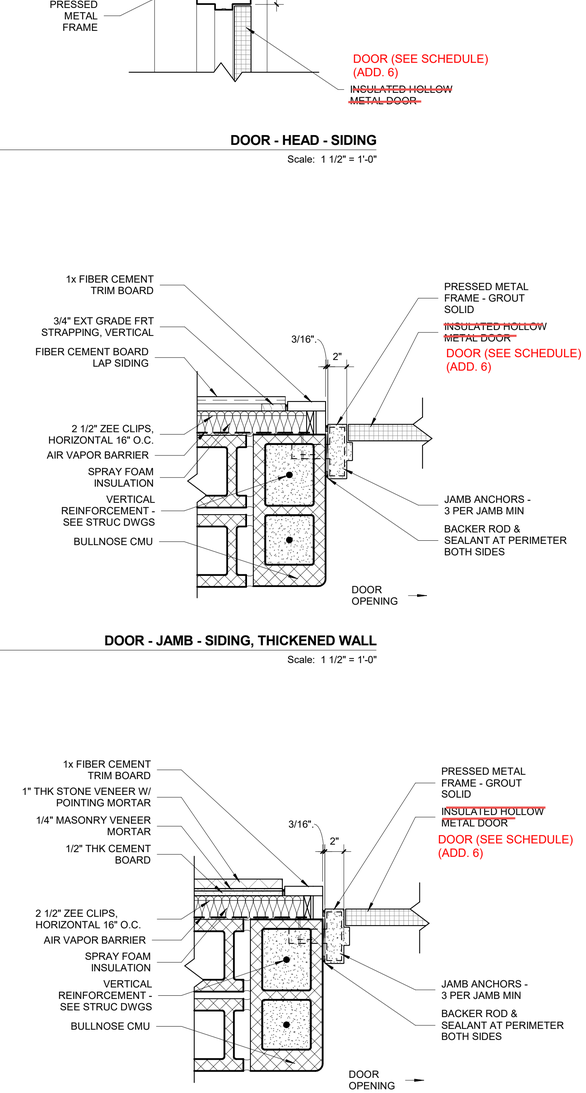


DH-2 DOOR - HEAD - SIDING

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

DJ-3B DOOR - JAMB - SIDING, THICKENED WALL

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



DJ-3A DOOR - JAMB - STONE VENEER, THICKENED WALL

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

PATH/FILENAME: C:\Users\piconem\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt

PLOT DATE: 1/24/2020 4:26:19 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
LAURA A. BITTERS
32
ORLEANS, MA
COMMONWEALTH OF MASSACHUSETTS
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	L. TIBBITTS
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	1 1/2" = 1'-0"

DISCIPLINE

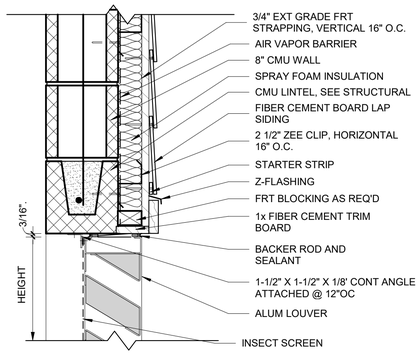
ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - DOOR DETAILS CONT.

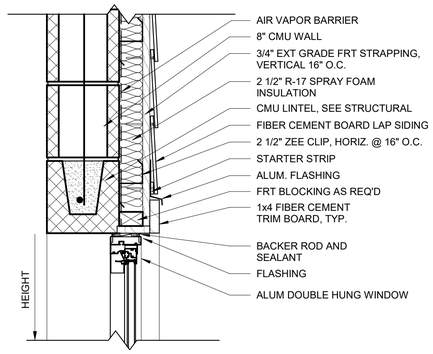
SHEET NUMBER

20 A-602



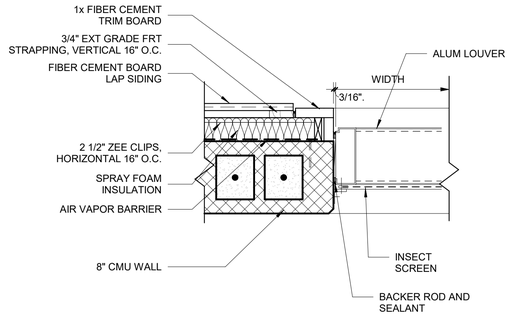
LH-1 — **LOUVER - HEAD - SIDING**

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



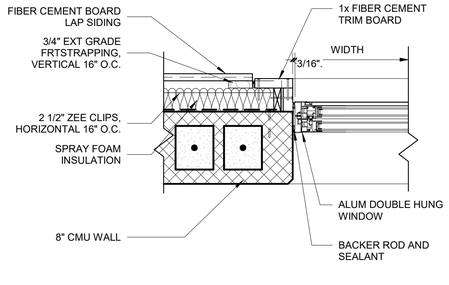
WH-1 (20 A-302) — **DH WINDOW - HEAD - SIDING**

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



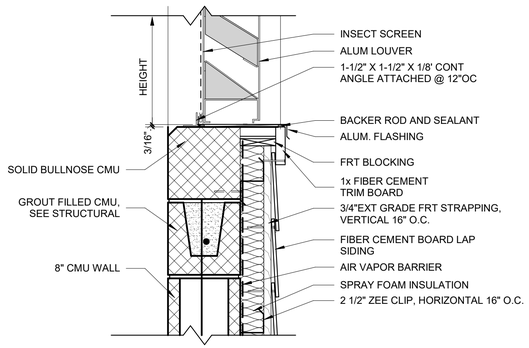
LJ-1 — **LOUVER - JAMB - SIDING**

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



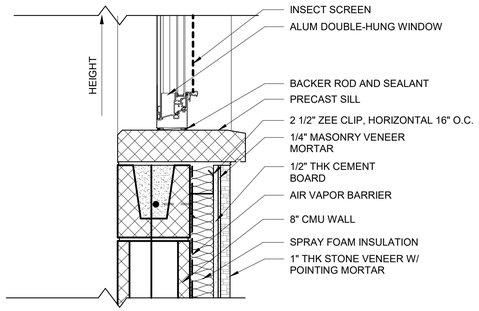
WJ-1 — **DH WINDOW - JAMB - SIDING**

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



LS-1 — **LOUVER - SILL - SIDING**

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

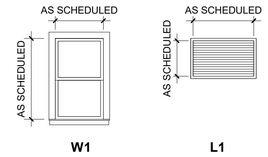


WS-1 (20 A-302) — **DH WINDOW - SILL - STONE VENEER**

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

LOUVER/WINDOW SCHEDULE

TYPE	COUNT	WIDTH	HEIGHT	MATERIAL	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	NOTES
L1	1	3' - 10"	3' - 10"	ALUM	LH-1	LJ-1	LS-1	
L2	1	1' - 4"	1' - 6"	ALUM	LH-1	LJ-1	LS-1	
L3	1	2' - 10"	2' - 10"	ALUM	LH-1	LJ-1	LS-1	
L7	2	2' - 4"	2' - 4"	ALUM	LH-1	LJ-1	LS-1	
W1	9	2' - 8"	4' - 4 3/4"	ALUM	WH-1	WJ-1	WS-1	



WINDOW / LOUVER TYPES

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

STORAGE FACILITY ROOM FINISH SCHEDULE

NUMBER	NAME	FLOOR MAT	FLOOR FIN	BASE FIN	WALL MAT	WALL FIN	CEILING MAT	CEILING FIN
201	EQUIPMENT STORAGE FACILITY	CONC	SC	-	CMU	PT	GWB	TBD

FINISHES:

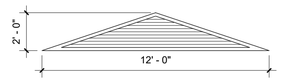
P-3: TNEMEC MILKY WAY 15GR
P-4: TNEMEC WHITE 11WH

GENERAL NOTES:

1. FOR ABBREVIATIONS, SEE SHEET 00 A-001.
2. CODED PAINTED AND MARKED PIPING SHALL BE FINISHED IN ACCORDANCE WITH SPECIFICATIONS.
3. ALL ELECTRICAL CONDUITS AND NON-CODED PIPING AND DUCTS TO MATCH FINISH OF WALL AND/OR CEILING SURFACES.
4. ALL INTERIOR MASONRY SURFACES TO RECEIVE PAINT FINISH TO BE GLOSS AND ALL GWB SURFACES TO RECEIVE PAINT FINISH TO BE EGGSHELL.
5. THE NAME OF MANUFACTURERS OF MATERIALS SHOWN ARE USED TO ESTABLISH THE MINIMUM TYPES OF FINISH AND COLOR ONLY. SIMILAR AND EQUAL PRODUCTS BY OTHER MANUFACTURERS ARE ACCEPTABLE UPON APPROVAL.

GABLE LOUVER SCHEDULE

Family	Comments	Volume	Type Mark	Count
Gable_Louver_Vent	Gable Vent	1 CF	VL1	2



GABLE LOUVER LEGEND

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

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT — GERARD A. OTTERSON — 32 — ORLEANS, MA — COMMONWEALTH OF MASSACHUSETTS

1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M.PICONE
Drawn By:	L. TIBBITTS
Dept Check:	G.OTTERSON
Proj Check:	T.PARECE
Date:	JANUARY, 2020
Scale:	As indicated

DISCIPLINE

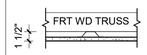
ARCHITECTURAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - WINDOW/LOUVER SCHEDULE AND DETAILS.

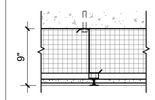
20 A-603

PATH/FILENAME: C:\Users\jpicone\Documents\20_Orleans Garage_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:26:21 PM



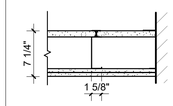
C1 NON-RATED SOFFIT

- 7/8" FURRING HAT CHANNELS
- MOISTURE RESISTANT GYPSUM BOARD CEILING



C2 INSULATED SOFFIT

- 7" RIGID INSULATION
- 7"X1-1/2" LIGHT GAUGE Z CHANNEL w/ THERMAL BREAK
- (1) LAYER 5/8" MOISTURE RESISTANT GYPSUM PANEL
- FIBERGLASS REINFORCED PLASTIC



C4 2-HR FIRE RATED SOFFIT/CEILING

- 1" MOISTURE RESISTANT GYPSUM LINER PANELS
- (2) LAYERS 5/8" MOISTURE RESISTANT FIRECODE C CORE GYPSUM PANELS
- 6" 18 GA C-H STUD SPANNING HORIZONTALLY 24" O.C.
- STEEL J-RUNNER
- JOINTS FINISHED

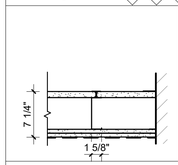
REMARKS

- FULLY ENCLOSED STEEL BEAM AT TYPE "C1".
  * SEE REMARK AT RIGHT

CEILING TYPE C1 C2 C4

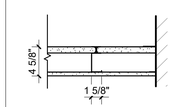
*REMARK: (C4)
No hat channels are required. The C-H stud can be installed directly to the underside of the truss. Since these are rated ceiling assemblies, the GWB is attached directly to the C-H studs and 1-inch liner panel is installed like a shaft wall assembly.

**REMARK: (C5 & C6)
No hat channels are required. The C-H stud can be installed directly to the underside of the truss. Since these are rated ceiling assemblies, the GWB is attached directly to the C-H studs and 1-inch liner panel is installed like a shaft wall assembly.



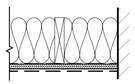
C5 2-HR FIRE RATED SOFFIT/CEILING W/ FRP PANEL

- 1" MOISTURE RESISTANT GYPSUM LINER PANELS
- (2) LAYERS 5/8" MOISTURE RESISTANT TYPE X GYPSUM BOARD
- FRP PANEL
- 6" 18 GA C-H STUD SPANNING HORIZONTALLY 24" O.C.
- STEEL J-RUNNER
- JOINTS FINISHED



C6 1-HR FIRE RATED SOFFIT/CEILING

- 1" MOISTURE RESISTANT GYPSUM LINER PANELS
- (1) LAYER 5/8" MOISTURE RESISTANT TYPE X GYPSUM BOARD
- 4" 20GA C-H STUD SPANNING HORIZONTALLY 24" O.C.



C7 PLYWOOD-FRP SOFFIT/CEILING

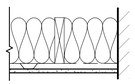
- FRT WOOD TRUSS/FRAMING
- R38 BATT INSULATION
- AIR/VAPOR BARRIER
- 3/4" FRT PLYWOOD
- FRP PANEL

REMARKS

-

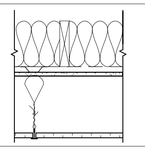
** SEE REMARK ABOVE RIGHT

CEILING TYPE C5 C6 C7



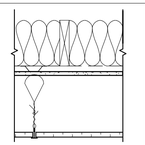
C8 GWB SOFFIT/CEILING

- FRT WOOD TRUSS/FRAMING
- R38 BATT INSULATION
- AIR/VAPOR BARRIER
- 7/8" METAL FURRING HAT CHANNELS @ 16" O.C.
- 5/8" MOISTURE RESISTANT GYPSUM BOARD



C9 2X2 ACOUSTICAL CEILING & GRID BELOW GWB SUBCEILING

- FRT WOOD TRUSS/FRAMING
- R38 BATT INSULATION
- AIR/VAPOR BARRIER
- 7/8" METAL FURRING HAT CHANNELS @ 16" O.C.
- 5/8" MOISTURE RESISTANT GYPSUM BOARD
- 2' x 2' ACCOUSTICAL LAY IN CEILING TILE GRID
- 2' x 2' ACCOUSTICAL LAY IN CEILING TILE



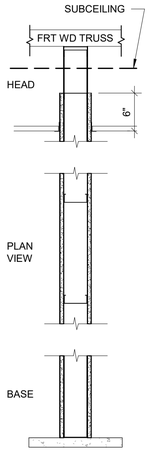
C10 2X2 RESILIENT FACED TILES CEILING & GRID BELOW GWB SUBCEILING

- FRT WOOD TRUSS/FRAMING
- R38 BATT INSULATION
- AIR/VAPOR BARRIER
- 7/8" METAL FURRING HAT CHANNELS @ 16" O.C.
- 5/8" MOISTURE RESISTANT GYPSUM BOARD
- 2' x 2' LAY IN CEILING TILE GRID
- 2' x 2' RESILIENT FACED LAY IN CEILING TILE

REMARKS

-

CEILING TYPE C8 C9 C10



J METAL STUD PARTITION

- 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD BOTH SIDES TO 6" ABOVE CEILING
- 3-5/8" 20 GA METAL STUDS 16" OC
- CHANNEL RECEPTOR AT HEAD

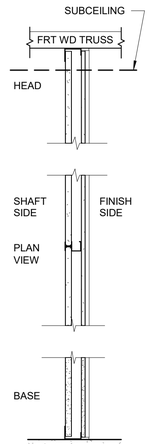
J2 METAL STUD PARTITION W/ INSULATION

- 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD BOTH SIDES TO 6" ABOVE CEILING
- 3-5/8" 20 GA METAL STUDS 16" OC
- CHANNEL RECEPTOR AT HEAD
- SOUND ATTENUATION BATTS

REMARKS

- HORIZONTAL BRIDGING AT 8'-0" O.C

PARTITION TYPE J J2



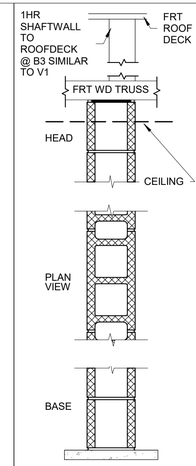
V1 1 HR PARTITION - SHAFT WALL SYSTEM

- 1 LAYER 1" FIRE CODE MOISTURE RESISTANT GYPSUM LINER PANEL
- 2-1/2" 20 GA C-H METAL STUDS @ 24" OC
- 1 LAYER 5/8" FIRE CODE MOISTURE RESISTANT GYPSUM WALL BOARD
- FIRE RATED SEALANT AT PERIMETER
- UL #U469

REMARKS

- PARTITION TYPE VI IS A SHAFT WALL ASSEMBALLY WITH STUB SPACING AT 24" ON CENTER.

PARTITION TYPE V1



B 8" CMU PARTITION

- 8" CONCRETE MASONRY UNITS TO SUBSTRATE ABOVE
- SEALANT PERIMETER

B1 1 HR CMU PARTITION

- 8" CONCRETE MASONRY UNITS - 1 HR RATED FROM FLOOR TO SUBSTRATE ABOVE
-FIRE SEALANT AT TOP AND BOTTOM

B2 2 HR CMU PARTITION

- 8" CONCRETE MASONRY UNITS - 2 HR RATED FROM FLOOR TO BOTTOM OF FRT WOOD TRUSS
- PROVIDE FIRE RATED SEALANT AS REQUIRED FOR CONTINUITY TO HORIZONTAL FIRE RATED ASSEMBLY AT BOTTOM OF FRT WOOD TRUSS FRAMING

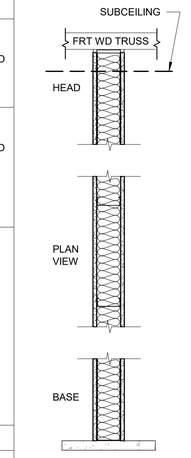
B3 1 HR CMU PARTITION

- 8" CONCRETE MASONRY UNITS - 1 HR RATED FROM FLOOR TO SUBSTRATE ABOVE
- 1 HR SHAFTWALL FROM BOTTOM OF FRT WOOD TRUSS/ FRAMING TO FRT WOOD ROOF DECK
-FIRE SEALANT AT TOP AND BOTTOM

REMARKS

- SEE STRUCTURAL DRAWINGS FOR REINFORCING

PARTITION TYPE B B1 B2 B3



K METAL STUD PARTITION

- 1 LAYER 5/8" MOISTURE RESISTANT GYPSUM WALL BOARD EXTENDED TO UNDERSIDE OF WOOD TRUSS
- 3-5/8" 20 GA METAL STUDS @ 16" OC
- CHANNEL RECEPTOR AT HEAD
- SEALANT AT PERIMETER
- SOUND ATTENUATION BATTS

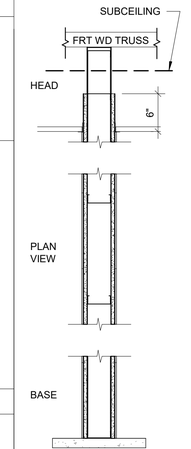
K1 1 HR METAL STUD PARTITION

- 1 LAYER 1 HR FIRE RATED 5/8" MOISTURE RESISTANT GYPSUM WALL BOARD TO UNDERSIDE OF WOOD TRUSS.
- 3-5/8" 20 GA METAL STUDS @ 16" OC
- CHANNEL RECEPTOR AT HEAD
- FIRE RATED SEALANT AT PERIMETER WITH FIRE SAFING AT WALL HEAD
- EXTEND GYPSUM TO SUBCEILING

REMARKS

- HORIZONTAL BRIDGING AT 8'-0" O.C

PARTITION TYPE K K1



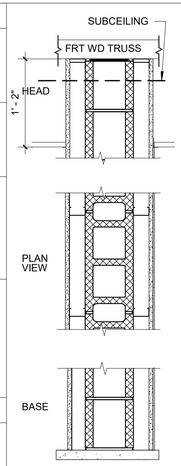
N METAL STUD PARTITION

- 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD BOTH SIDES TO 6" ABOVE CEILING
- 3-5/8" 20 GA METAL STUDS 16" OC
- CHANNEL RECEPTOR AT HEAD
- 1/4" TILE BOTH SIDES
- EXTEND GYPSUM TO SUBCEILING

REMARKS

-

PARTITION TYPE N



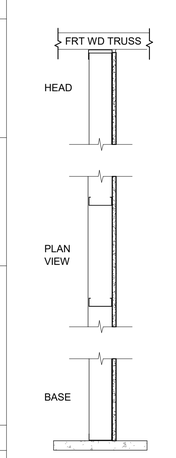
D 8" CMU PARTITION W/ METAL STUD & GWB

- 8" CONCRETE MASONRY UNITS
- SEALANT PERIMETER
- 2-1/2" 20 GA METAL STUDS BOTH SIDES 16" OC EXTEND GYPSUM TO SUBCEILING
- CHANNEL RECEPTOR AT HEAD
- 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD BOTH SIDES TO UNDER SIDE OF TRUSS ABOVE

REMARKS

- SEE STRUCTURAL DRAWINGS FOR REINFORCING

PARTITION TYPE D



L PILASTER & CHASE PARTITION

- 1 LAYER 5/8" MOISTURE RESISTANT GYPSUM WALL BOARD
- 2-1/2" 20 GA METAL STUDS @ 16" OC
- CHANNEL RECEPTOR AT HEAD
- SEALANT AT PERIMETER

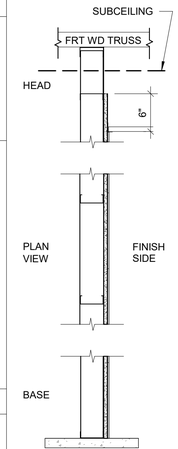
L1 PILASTER & CHASE PARTITION - W/ TILE

- 1 LAYER 5/8" MOISTURE RESISTANT GYPSUM WALL BOARD
- 2-1/2" 20 GA METAL STUDS @ 16" OC
- CHANNEL RECEPTOR AT HEAD
- SEALANT AT PERIMETER
- FULL HEIGHT TILE. SEE FINISH SCHEDULE

REMARKS

- HORIZONTAL BRIDGING AT 8'-0" O.C.

PARTITION TYPE L L1



M METAL STUD PARTITION

- 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD ON FINISH SIDE TO 6" ABOVE CEILING
- 3-5/8" 20 GA METAL STUDS 16" OC
- CHANNEL RECEPTOR AT HEAD
-TILE ON FINISH SIDE. SEE FINISH SCHEDULE
- EXTEND GYPSUM TO SUBCEILING

REMARKS

-

PARTITION TYPE M

PATH/FILENAME: C:\Users\piconem\Documents\10 Admin Building_matthew.picone@aecom.com.rvt
PLOT DATE: 1/24/2020 4:13:53 PM

60587515

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-01
SRF No. 4486

OWNER

TOWN OF ORLEANS

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

REGISTERED ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
MATTHEW J. PICONE
No. 32120
CHELMSFORD, MA
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A11	05-08-20	ADDENDUM 11
A9	04-30-2020	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	M. PICONE
Drawn By:	S. MCFADDEN
Dept Check:	G. OTTERSON
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1" = 1'-0"

DISCIPLINE

ARCHITECTURAL

SHEET TITLE

PARTITION TYPES

SHEET NUMBER

99 A-607

GENERAL

1. ALL WORK SHALL CONFORM TO 780 CMR, NINTH EDITION MASSACHUSETTS AMMENDMENTS TO THE 2015 INTERNATIONAL BUILDING CODE AND TO OTHER CODES AND REFERENCES INDICATED OR SPECIFIED. IN CASE OF CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

2. DESIGN LOADS:

   A. FLOOR LIVE LOAD: INDICATED ON PLANS
   B. ROOF LIVE LOAD: INDICATED ON PLANS
   C. SNOW LOAD:
      - GROUND SNOW LOAD (PG): 25 PSF
      - FLAT ROOF SNOW LOAD (PF): 25 PSF
      - SNOW EXPOSURE FACTOR (CE): 1.00
      - SNOW LOAD IMPORTANCE FACTOR (IS): 1.1
      - SNOW THERMAL FACTOR (CT): 1.20
   D. WIND LOAD:
      - ULTIMATE DESIGN WIND SPEED: 152 MPH
      - RISK CATEGORY: III
      - BASIC BUILDING SYSTEM: ENCLOSED BUILDING
      - EXPOSURE CATEGORY: C
      - INTERNAL PRESSURE COEFFICIENT: ±0.18
      - COMPONENTS AND CLADDING DESIGN WIND PRESSURE: SEE DIAGRAM
   E. SEISMIC LOAD:
      - SEISMIC IMPORTANCE FACTOR (IE): 1.25
      - RISK CATEGORY: III
      - MAPPED SPECTRAL RESPONSE COEFFICIENTS
      - S(S): 0.144 S(1): 0.053
      - SPECTRAL RESPONSE COEFFICIENTS
      - S(DS): 0.15 S(D1): 0.08
      - SITE CLASS: CLASS D
      - SEISMIC DESIGN CATEGORY: B

      10 - WASTEWATER TREATMENT FACILITY
      BASIC FORCE, RESISTING SYSTEM: INTERMEDIATE REINFORCED MASONRY SHEAR WALL SYSTEM
      DESIGN BASE SHEAR: 150 KIP
      SEISMIC RESPONSE COEFFICIENT, C(S): 0.05
      RESPONSE MODIFICATION FACTOR, R: 3.5
      ANALYSIS PROCEDURE: EQUIVILANT LATERAL FORCE ANALYSIS

      20 - EQUIPMENT STORAGE FACILITY
      BASIC FORCE, RESISTING SYSTEM: INTERMEDIATE REINFORCED MASONRY SHEAR WALL SYSTEM
      DESIGN BASE SHEAR: 40 KIP
      SEISMIC RESPONSE COEFFICIENT, C(S): 0.05
      RESPONSE MODIFICATION FACTOR, R: 3.5
      ANALYSIS PROCEDURE: EQUIVILANT LATERAL FORCE ANALYSIS

3. PROTECT ALL STRUCTURES AGAINST HYDRAULIC UPLIFT UNTIL STRUCTURES ARE COMPLETED AND BACKFILLED. OBSERVED GROUNDWATER AT THE SITE IS 80 FEET BELOW GRADE.

4. FROST DEPTH AT THE SITE IS 4'-0" BELOW FINISHED GRADE.

5. DO NOT SCALE DRAWINGS TO OBTAIN DIMENSIONAL INFORMATION. MISSING OR CONFLICTING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

6. DIMENSIONS AND ELEVATIONS INDICATED ON EXISTING STRUCTURES HAVE BEEN OBTAINED FROM DRAWINGS OR FIELD SURVEYS. VERIFY ALL DIMENSIONS AND ELEVATIONS THAT ARE REQUIRED FOR FABRICATION AND INSTALLATION OF ADDITIONS TO EXISTING STRUCTURES WITH FIELD MEASUREMENTS.

7. REFER TO CIVIL, ARCHITECTURAL, PROCESS, MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND DIMENSIONS OF CHASES, SLOTS, INSERTS, CURBS, OPENINGS, SLEEVES, ANCHOR BOLTS, FLOOR PITCHES, ANGLE FRAMES, GATE FRAMES, AND OTHER PROJECT REQUIREMENTS NOT INDICATED ON STRUCTURAL DRAWINGS.

8. COORDINATE DIMENSIONS AND VERIFY LOCATION OF STRUCTURAL ELEMENTS WITH PURCHASED EQUIPMENT. ANCHOR BOLTS SHALL BE SIZED AND FURNISHED BY THE EQUIPMENT SUPPLIER UNLESS OTHERWISE INDICATED.

9. PROVIDE OPENINGS REQUIRED FOR PURCHASED EQUIPMENT. PROVIDE ANCHOR BOLTS, NUTS, NON-SHRINK NON-METALLIC GROUT, CONCRETE PADS AND REINFORCING STEEL REQUIRED FOR THE INSTALLATION OF EQUIPMENT.

10. STANDARD DETAILS AS SHOWN ON THE STRUCTURAL STANDARD DETAIL SHEETS ARE APPLICABLE TO ALL STRUCTURAL WORK EXCEPT WHERE A SPECIFIC SECTION OR DETAIL IS SHOWN OTHERWISE

CONTROLLED LOW STRENGTH MATERIAL

1. PROVIDE CONTROLLED LOW STRENGTH MATERIAL (CLSM) HAVING A MAXIMUM 56-DAY COMPRESSIVE STRENGTH OF 200 PSI.

2. UNIT WEIGHT OF CLSM SHALL NOT EXCEED 120 POUNDS PER CUBIC FOOT.

3. PROVIDE STABLE AIR ADMIXTURE DESIGNED FOR USE WITH CLSM TO LOWER UNIT WEIGHT; REDUCE SEGREGATION AND BUOYANCY AND CONTROL COMPRESSIVE STRENGTH.

4. SECURE PIPES, CONDUIT AND EQUIPMENT TO BE ENCASED IN CLSM TO PREVENT DISLODGING DURING PLACEMENT.

5. PROVIDE BRACING OF CONTAINMENT ELEMENTS DURING PLACEMENT OF CLSM SO AS NOT TO INDUCE RESIDUAL STRESSES IN THE STRUCTURE.

CONCRETE

1. CONCRETE WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE (ACI 301) AND THE CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350).

2. USE NORMAL WEIGHT CAST-IN-PLACE CONCRETE WITH ASTM C 150, TYPE II CEMENT FOR ALL CONCRETE WORK.

3. PROVIDE CONCRETE HAVING A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI AND A MAXIMUM WATER-CEMENT RATIO OF 0.45 UNLESS OTHERWISE INDICATED OR SPECIFIED.

4. CONCRETE FOR LIQUID CONTAINING STRUCTURES SHALL HAVE
   A. A 28-DAY COMPRESSIVE STRENGTH OF 4,500 PSI;
   B. A MAXIMUM WATER-CEMENT RATIO OF 0.42;
   C. CONTAIN A SHRINKAGE REDUCING ADMIXTURE OR USE SHRINKAGE COMPENSATING CEMENT;
   D. A 21-DAY DRYING SHRINKAGE OF 0.028 PERCENT OR LESS AND A 28-DAY DRYING SHRINKAGE OF 0.032 PERCENT OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM C 157 AS MODIFIED BY THE PROJECT SPECIFICATIONS.
   E. SEE BELOW

5. ~~PROVIDE FIBER REINFORCED CONCRETE HAVING A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI FOR ALL CONCRETE FILLS AND TOPPINGS~~.
   SEE BELOW

6. PROVIDE CONCRETE UNDER FOUNDATIONS HAVING A 28-DAY COMPRESSIVE STRENGTH OF 1,500 PSI WHEN INDICATED OR REQUIRED.

7. AIR-ENTRAIN ALL CONCRETE EXCEPT INTERIOR SLABS AND SLABS ON GRADE.

8. REINFORCING BARS SHALL CONFORM TO ASTM A 615, GRADE-60.

9. WELDING REINFORCING BARS IS PROHIBITED EXCEPT WHERE SPECIFICALLY INDICATED ON THE DRAWINGS. REINFORCING BARS INDICATED TO BE WELDED SHALL CONFORM TO ASTM A 706, GRADE-60.

10. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 1064. PROVIDE WELDED WIRE FABRIC IN FLAT SHEETS. STAGGER SPLICES AND LAP AT LEAST TWO FULL MESHES.

11. REINFORCE CONCRETE FILL AND TOPPING SLABS THAT ARE TWO INCHES OR MORE IN THICKNESS WITH WELDED WIRE FABRIC SIZED IN CONFORMANCE WITH THE STANDARD DETAIL UNLESS OTHERWISE INDICATED OR SPECIFIED. PROVIDE ADEQUATE SUPPORT TO MAINTAIN FABRIC IN POSITION DURING CONCRETE PLACEMENT AND FINISHING OPERATIONS.

12. LAP CONTINUOUS BOTTOM REINFORCEMENT AT SUPPORTS AND CONTINUOUS TOP REINFORCEMENT AT THE CENTER OF A SPAN IN ELEVATED SLABS AND BEAMS, UNLESS OTHERWISE INDICATED.

13. LAP CONTINUOUS BOTTOM REINFORCEMENT AT THE CENTER OF A SPAN AND CONTINUOUS TOP REINFORCEMENT AT SUPPORTS IN FOUNDATION MATS AND BASE SLABS, UNLESS OTHERWISE INDICATED.

14. PROVIDE REINFORCING BAR SUPPORTS, SPACERS, AND ACCESSORIES AS RECOMMENDED IN ACI 315. PROVIDE PLASTIC BOOTED ACCESSORIES IN CONTACT WITH EXPOSED SURFACES. PROVIDE MINIMUM #5 SUPPORT BARS.

15. CAST FOUNDATION MATS, BASE SLABS, SLABS ON GRADE, WALLS AND ELEVATED SLABS IN ALTERNATE CONCRETE PLACEMENTS. WAIT A MINIMUM OF 72 HOURS BEFORE PLACING ADJACENT CONCRETE SECTIONS.

16. DO NOT PLACE CONCRETE IN BEAMS, GIRDERS OR SLABS UNTIL THE CONCRETE IN THE SUPPORTING COLUMNS AND WALLS HAVE OBTAINED INITIAL SET.

17. PLACE SLABS AND BEAMS MONOLITHICALLY UNLESS OTHERWISE INDICATED.

18. FLOOR AND ROOF SLOPES SHALL BE AN INTEGRAL PART OF FRAMED SLABS. SEPARATE CONCRETE FILL OR TOPPING SLABS ARE NOT PERMITTED UNLESS SPECIFICALLY INDICATED.

19. BEAM SOFFITS SHALL BE AT CONSTANT ELEVATION. SCHEDULED BEAM DEPTHS ARE MEASURED FROM THE SLAB LOW POINT. ACTUAL BEAM DEPTH VARIES WITH SLAB SURFACE SLOPES.

20. PROVIDE CONTINUOUS #5 HORIZONTAL BARS AT 12 INCH MAXIMUM SPACING ON EACH SIDE OF CONCRETE BEAMS AND GIRDERS.

21. SET AND MAINTAIN REINFORCEMENT AT THE CLEAR DISTANCES FROM THE SURFACE OF CONCRETE AS SHOWN IN THE STANDARD DETAIL UNLESS OTHERWISE INDICATED.

22. PROVIDE EMBEDMENT AND SPLICES OF REINFORCEMENT AS SHOWN IN THE STANDARD DETAILS UNLESS OTHERWISE INDICATED.

23. PROVIDE ADDITIONAL REINFORCEMENT ALONG EACH SIDE OF OPENINGS AS INDICATED IN THE STANDARD DETAILS UNLESS OTHERWISE INDICATED.

24. PROVIDE CONSTRUCTION AND EXPANSION JOINTS WHERE INDICATED. DO NOT OMIT OR ADD JOINTS.

25. INTENTIONALLY ROUGHEN SURFACE OF HORIZONTAL CONSTRUCTION JOINTS IN WALLS AND AT BASE OF WALL TO 1/4" AMPLITUDE.

26. PROVIDE CONSTRUCTION AND EXPANSION JOINTS IN CONCRETE FILL AND TOPPING SLABS AT THE SAME LOCATION AS THE CONSTRUCTION AND EXPANSION JOINTS IN THE SUPPORTING CONCRETE.

27. PROVIDE 3/4-INCH CHAMFER ON ALL EXPOSED CORNERS OF CONCRETE ELEMENTS.

28. STEEL TROWEL FINISH THE TOP OF ALL TANK WALLS, FLOORS, ROOFS, CONCRETE FILL AND TOPPING SLABS UNLESS OTHERWISE INDICATED OR SPECIFIED. BROOM FINISH EXTERIOR CONCRETE PLATFORMS, STAIRS AND LOADING DOCKS UNLESS OTHERWISE INDICATED OR SPECIFIED.

29. FILL POCKETS IN CONCRETE FOR GATE FRAMES WITH CONCRETE AFTER GATE INSTALLATION.

ADD. 8 A. Concrete, add the following to the end of Note 4:

E. The following are the locations that qualify as a "Liquid Containing Structure":

- WWTF Tank Covers
- WWTF Basement Columns
- Containment Curbs and Equipment Pads
- SBR Tank Walkways
- Plant Water Storage Tank Cover Slab
- Sludge Loading Pad
- Wick Distribution Box Cover Slab

5. PROVIDE FIBER REINFORCED CONCRETE HAVING A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI FOR ALL CONCRETE INFILLS AN TOPPINGS. ALL FILL SHALL BE FIBER REINFORCED UNLESS REINFORCEMENT IS INDICATED OTHERWISE ON THE DRAWINGS.

FOUNDATION

1. FOUNDATION DESIGNS ARE BASED UPON THE ALLOWABLE SOIL BEARING CAPACITIES INDICATED ON THE FOUNDATION PLANS.

2. PERCENT COMPACTION IS DEFINED AS THE RATIO OF THE FIELD DRY DENSITY, DETERMINED BY ASTM D-1556, TO THE MAXIMUM DRY DENSITY, DETERMINED BY ASTM-D 1557 (MODIFIED PROCTOR).

3. COMPACT BACKFILL UNDER FOUNDATION MATS, BASE SLABS, FOOTINGS, AND SLABS ON GRADE TO A MINIMUM OF 95 PERCENT. COMPACT EMBANKMENTS AND BACKFILL NOT SUPPORTING STRUCTURES TO A MINIMUM OF 90 PERCENT. PLACE AND COMPACT ALL BACKFILL IN 8-INCH MAXIMUM LAYERS.

4. COMPACT THE BOTTOM SURFACE OF EXPOSED EXCAVATIONS WITH A VIBRATORY STEEL DRUM ROLLER OR VIBRATORY PLATE TO ACHIEVE A NEAR SURFACE DENSITY OF AT LEAST 95 PERCENT.

5. PROVIDE FOUNDATION PREPARATION AS INDICATED ON THE STANDARD DETAIL UNDER ALL FOUNDATION SLABS, MATS AND FOOTINGS.

6. DO NOT PLACE FOUNDATION CONCRETE IN WATER OR ON FROZEN OR DISTURBED GROUND.

7. A UNIT WEIGHT OF SOIL OF 120 PCF WAS USED IN THE DESIGN.

8. FOUNDATION WALLS HAVE BEEN DESIGNED FOR AN EQUIVALENT FLUID LATERAL EARTH PRESSURE OF 65 PCF ABOVE THE MAXIMUM GROUNDWATER ELEVATION AND AN EQUIVALENT FLUID LATERAL EARTH PRESSURE OF 95 PCF BELOW THE MAXIMUM GROUNDWATER ELEVATION PLUS A UNIFORM LATERAL PRESSURE OF 150 PSF TO ACCOUNT FOR A 300 PSF SURFACE SURCHARGE ADJACENT TO THE STRUCTURES.

9. DO NOT BACKFILL AGAINST CONCRETE WALLS UNTIL WALLS AND ALL SLABS AT AND BELOW THE FIRST FLOOR LEVEL HAVE REACHED THE SPECIFIED DESIGN STRENGTH. THE FIRST FLOOR LEVEL IS DEFINED AS THE LEVEL AT FINISHED GRADE OR THE FIRST LEVEL ABOVE FINISHED GRADE.

10. DO NOT LEAK TEST TANKS OR CHANNELS UNTIL WALLS AND ALL TOP SLABS HAVE REACHED THE SPECIFIED DESIGN STRENGTH.

11. PLACE EXTERIOR SLABS, PLATFORMS AND WALKS ON 8-INCH LAYERS OF NON-FROST SUSCEPTIBLE MATERIAL (SELECT BORROW, SCREENED GRAVEL OR CRUSHED STONE BACKFILL HAVING NOT MORE THAN 5 PERCENT BY WEIGHT PASSING A NO. 200 SIEVE). THE LIMITS OF BACKFILL ARE DEFINED BY AN OUTWARD SLOPE OF 1:1 FROM THE PERIMETER OF THE SLAB TO A DEPTH OF FOUR FEET BELOW FINISH GRADE UNLESS OTHERWISE INDICATED OR SPECIFIED. PLACE MATERIAL IN 8-INCH LIFTS. COMPACT SELECT BORROW TO 95 PERCENT. COMPACT SCREENED GRAVEL AND CRUSHED STONE USING A SELF-PROPELLED VIBRATORY STEEL DRUM ROLLER OR RUBBER TIRE ROLLERS WITH A MINIMUM OF FOUR PASSES IN DIRECTIONS PERPENDICULAR TO ONE ANOTHER IN OPEN AREAS. IN SMALL AREAS, USE MANUALLY OPERATED VIBRATORY PLATE COMPACTORS WITH A MINIMUM OF FOUR PASSES.

CONTAINMENT CURBS

1. ALLOW NEW CONCRETE SURFACES TO CURE FOR AT LEAST 28 DAYS BEFORE STARTING COATING PROCESS.

2. CLEAN SURFACES AS RECOMMENDED BY THE COATING MANUFACTURER PRIOR TO APPLICATION OF COATING PRODUCTS.

3. OPEN UP CONCRETE BLOW HOLES BY MECHANICAL MEANS TO REVEAL ANY UNDERLYING CAVITIES.

4. SANDBLAST CONCRETE TO REMOVE LAITANCE. REMOVE LOOSE MATERIALS, DIRT AND DUST FROM THE AREAS TO BE COATED BY VACUUM CLEANING. PROVIDE APPROXIMATE, A TEXTURE OF MEDIUM SAND-PAPER FOR BLAST-CLEANED CONCRETE. DO NOT USE ACID ETCHING.

5. APPLY A COMPATIBLE FILLER-SEALER AS A SCRATCH COAT TO FILL BUG HOLES AND VOIDS AS RECOMMENDED BY THE COATING MANUFACTURER.

6. APPLY A CONCRETE PRIMER TO THE AREA AFTER THE FILLER HAS CURED FOR THE PRESCRIBED NUMBER OF DAYS.

7. APPLY TWO TOPCOATS OF PROTECTIVE COATING PER MANUFACTURER'S INSTRUCTIONS AT 10-15 MILLS DRY FILM THICKNESS PER COAT.

WATERSTOPS

1. PROVIDE WATERSTOPS IN ALL JOINTS BETWEEN DRY AREAS AND SOURCES OF LIQUID, BETWEEN DRY AREAS AND THE GROUND, AND BETWEEN SOURCES OF LIQUID AND THE GROUND. WATERSTOPS SHALL ALSO BE PROVIDED BETWEEN ADJACENT SOURCES OF LIQUID IN WATER TREATMENT FACILITIES.

2. WATERSTOPS SHALL FORM A CONTINUOUS WATERTIGHT DIAPHRAGM TO PREVENT LEAKAGE.

3. TERMINATE VERTICAL WATERSTOPS THREE INCHES BELOW TOP OF CONCRETE WALLS IN OPEN TANKS, AT THE UNDERSIDE OF ELEVATED FRAMED SLABS THAT ARE ABOVE MAXIMUM PROCESS LIQUID LEVELS AND ABOVE FINISH GRADE IN EXTERIOR FOUNDATION WALLS.

4. PROVIDE 9" BULBED WATERSTOPS IN CONTRACTION AND EXPANSION JOINTS AND 6" RIBBED WATERSTOPS IN CONSTRUCTION JOINTS. PROVIDE 4" RIBBED WATERSTOPS BETWEEN CONTAINMENT CURBS AND SUPPORTING SLABS.

5. USE FACTORY MADE CROSSES, TEES AND ELLS AT ALL CORNERS AND INTERSECTIONS.

6. INSTALL WATERSTOPS IN CONTINUOUS LENGTHS TO MINIMIZE FIELD SPLICES.

7. PROVIDE 1-INCH MINIMUM CLEARANCE BETWEEN WATERSTOPS AND REINFORCING STEEL OR OTHER EMBEDDED ITEMS.

8. SECURE WATERSTOPS IN POSITION WITH TIE WIRE FROM LOOPS OR GROMMETS TO ADJACENT REINFORCEMENT ON BOTH SIDES AT 12 INCHES MAXIMUM SPACING ALONG EACH EDGE.

9. PROTECT EXPOSED WATERSTOP FROM DAMAGE.

10. PROVIDE HYDROPHILIC WATERSTOPS ONLY WHERE INDICATED ON THE DRAWINGS.

11. PROTECT HYDROPHILIC WATERSTOPS FROM BECOMING WET PRIOR TO CONCRETE PLACEMENT. HYDROPHILIC WATERSTOPS THAT HAVE BECOME WET PRIOR TO CONCRETE PLACEMENT SHALL BE REMOVED AND DISCARDED.

MASONRY

1. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C 90, TYPE I HOLLOW LOAD BEARING UNITS. SPECIFIED COMPRESSIVE STRENGTH OF MASONRY (F'M) SHALL BE A MINIMUM OF 1,500 PSI.

2. JOINT REINFORCEMENT SHALL BE PREFABRICATED DEFORMED WIRE CONFORMING TO ASTM A 951. REINFORCING SHALL BE OF LADDER DESIGN CONSISTING OF TWO DEFORMED 3/16" (W2.8) LONGITUDINAL WIRES WELDED AT NOT MORE THAN 16" ON CENTER TO 9 GAGE (W1.7) CROSS WIRES. OUT-TO-OUT SPACING OF LONGITUDINAL WIRES SHALL BE APPROXIMATELY 2" LESS THAN THE NOMINAL WALL THICKNESS.

3. JOINT REINFORCEMENT SHALL BE HOT-DIP GALVANIZED IN CONFORMANCE WITH ASTM A 153, CLASS B-2, WITH A MINIMUM COATING OF 1.5 OUNCES PER SQUARE FOOT.

4. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.

5. MORTAR SHALL BE ASTM C270, TYPE S HIGH STRENGTH PORTLAND CEMENT MORTAR.

6. MASONRY SHALL BE SET ON FULL MORTAR BED.

7. GROUT FILL FOR MASONRY CELLS, LINTELS AND BOND BEAMS SHALL BE COARSE GROUT CONFORMING TO ASTM C476 AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.

8. FULLY GROUT ALL CELLS AND COURSES WITH VERTICAL OR HORIZONTAL REINFORCING. PROVIDE 2" MINIMUM CLEAR COVER TO THE REINFORCING.

9. GROUT SHALL BE PLACED IN FOUR FOOT MAXIMUM LIFTS.

10. PROVIDE HORIZONTAL JOINT REINFORCING AT 16" ON CENTER. PROVIDE CAVITY HOOKS AND EYES 16" ON CENTER EACH WAY. INTERRUPT ALL REINFORCING AT CONTROL JOINTS.

11. HORIZONTAL BAR REINFORCING, EXCEPT IN THE LINTELS, SHALL BE PLACED IN CMU BOND BEAM BLOCKS. PROVIDE GALVANIZED METAL LATH IN THE HORIZONTAL JOINT BELOW THE BOND BEAM BLOCKS TO RETAIN THE GROUT.

12. PROVIDE A CONTINUOUS BOND BEAM WITH 2-#5 CONTINUOUS HORIZONTAL BARS AT THE TOP OF ALL WALLS AND AT ALL FLOOR AND ROOF LEVELS. PROVIDE BOND BEAMS BELOW ALL OPENINGS. PROVIDE BOND BEAMS AT 4'-0" MAXIMUM VERTICAL SPACING FOR WALLS GREATER THAN 16 FEET IN HEIGHT.

13. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS.

14. VERTICAL REINFORCING SHALL BE AS INDICATED, BUT IN NO CASE LESS THAN ONE #5 BAR AT 32" ON CENTER.

15. PROVIDE TWO FULL HEIGHT VERTICAL BARS AT EACH SIDE OF WALL OPENINGS. BAR SIZE SHALL MATCH VERTICAL WALL REINFORCING.

16. PROVIDE ONE FULL HEIGHT VERTICAL BAR AT CORNERS AND ENDS OF WALLS. BAR SIZE SHALL MATCH VERTICAL WALL REINFORCING.

17. LINTEL REINFORCING OVER OPENINGS SHALL BE EXTENDED A MINIMUM OF 1'-4" BEYOND EACH SIDE OF THE OPENING.

CONCRETE ANCHORS

1. EXPANSION TYPE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM E 488, 'STANDARD TEST METHODS FOR STRENGTH OF ANCHORS IN CONCRETE AND MASONRY ELEMENTS' AND ICBO ES AC-193, 'ACCEPTANCE CRITERIA FOR MECHANICAL ANCHORS IN CONCRETE AND ELEMENTS'.

2. ADHESIVE TYPE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM E 488, 'STANDARD TEST METHODS FOR STRENGTH OF ANCHORS IN CONCRETE AND MASONRY ELEMENTS', ASTM 1512, 'STANDARD TEST METHODS FOR TESTING BOND PERFORMANCE OF ADHESIVE-BONDED ANCHORS', ICBO ES AC-308, 'ACCEPTANCE CRITERIA FOR POST-INSTALLED ADHESIVE ANCHORS' AND ACI 355.4 'QUALIFICATION OF POST-INSTALLED ANCHORS IN CONCRETE'.

3. PROVIDE SIZE, TYPE AND EMBEDMENT OF ANCHOR INDICATED INSTALLED TO DEVELOP THE MAXIMUM CAPACITY FOR THE EMBEDMENT, TYPE AND ANCHOR SIZE WITH A MINIMUM SAFETY FACTOR OF FOUR.

4. ANCHORS SHALL HAVE STANDARD UNC THREADS, UNLESS OTHERWISE INDICATED.

5. ANCHOR INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S CURRENT PRINTED INSTRUCTIONS.

6. REMOVE DUST AND DEBRIS FROM DRILLED HOLES USING COMPRESSED AIR OR VACUUM AT BOTTOM OF HOLE. IMMEDIATELY REMOVE STANDING WATER AND THOROUGHLY DRY HOLES TO RECEIVE ADHESIVE ANCHORS.

7. DO NOT HAMMER IN ANCHORS. INSTALL ANCHORS USING A ROTARY HAMMER DRILL AS RECOMMENDED BY ANCHOR MANUFACTURER. THE USE OF HAMMER IN TYPE ADHESIVE CAPSULES IS PROHIBITED.

8. PROVIDE EXPANSION TYPE ANCHORS WITH NUT AND WASHER. EXPANSION TYPE ANCHORS SHALL BE:

   A. HILTI: KWIK-BOLT TZ;
   B. ITW REDHEAD/RAMSET: TRUBOLT+;
   C. POWERS FASTENERS: POWERSTUD+ SD1;
   D. SIMPSON: STRONG BOLT 2;
   E. OR APPROVED EQUAL.

9. PROVIDE ADHESIVE TYPE ANCHORS CONSISTING INJECTABLE ADHESIVE CARTRIDGES AND THREADED ANCHOR BOLTS SUPPLIED AS A SYSTEM BY ONE MANUFACTURER. PROVIDE EACH ANCHOR WITH NUT AND WASHER. AFTER INSTALLATION, DO NOT DISTURB OR LOAD ANCHORS BEFORE THE SPECIFIED CURING TIME ELAPSES (MAY VARY WITH TEMPERATURE). ADHESIVE ANCHORING SYSTEM SHALL BE:

   A. HILTI: HIT-HY 200R;
   B. ITW REDHEAD/RAMSET: EPCON G5;
   C. POWERS FASTENERS: PE1000+;
   D. SIMPSON: STRONG-TIE SET-XP;
   E. OR APPROVED EQUAL.

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:16 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9
A8	04-10-20	ADDENDUM 8

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

SHEET TITLE

STRUCTURAL NOTES I

SHEET NUMBER

00 S-001

STRUCTURAL STEEL

1. W SHAPES SHALL CONFORM TO ASTM A 992 UNLESS OTHERWISE INDICATED OR SPECIFIED.
2. C, M, S AND HP SHAPES SHALL CONFORM TO ASTM A 572, GRADE 50, UNLESS OTHERWISE INDICATED OR SPECIFIED.
3. ANGLES, PLATES AND BARS SHALL CONFORM TO ASTM A 36.
4. ROUND, SQUARE AND RECTANGULAR STRUCTURAL TUBE MEMBERS (HSS) SHALL CONFORM TO ASTM A 500, GRADE B.
5. STEEL PIPE SHALL CONFORM TO ASTM A 53, GRADE B.
6. DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL COMPLY WITH ALL APPLICABLE OSHA REGULATIONS.
7. WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE, AWS D1.1. USE E70XX WELDING ELECTRODES.
8. FIELD WELDING OF STRUCTURAL MEMBERS IS NOT PERMITTED UNLESS SPECIFICALLY INDICATED.
9. SHOP CONNECTIONS MAY BE BOLTED OR WELDED UNLESS THE CONNECTION METHOD IS INDICATED.
10. FIELD CONNECTIONS SHALL BE BOLTED UNLESS WELDING IS INDICATED.
11. PROVIDE 3/4" DIAMETER ASTM A 325X HIGH STRENGTH BOLTS FOR BOLTED CONNECTIONS. PROVIDE 13/16" DIAMETER HOLES UNLESS OTHERWISE INDICATED. PROVIDE ONE HARDENED WASHER UNDER THE ELEMENT TURNED IN TIGHTENING. PROVIDE PLATE WASHERS IN BOTH OUTER PLIES WHEN OVERSIZE OR SLOTTED HOLES ARE INDICATED.
12. TIGHTEN HIGH STRENGTH BOLTS TO THE SNUG-TIGHT CONDITION IN ACCORDANCE WITH AISC SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS, EXCEPT WHEN SLIP-CRITICAL JOINTS OR CONNECTIONS SUBJECTED TO DIRECT TENSION ARE INDICATED OR SPECIFIED.
13. TIGHTEN HIGH STRENGTH BOLTS FOR SLIP-CRITICAL JOINTS OR CONNECTIONS SUBJECTED TO DIRECT TENSION IN CONFORMANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS. TENSION CONTROL BOLTING MAY NOT BE SUBSTITUTED FOR CALIBRATED WRENCH BOLTING WHEN USING HOT-DIP GALVANIZED BOLTS.
14. SIMPLY SUPPORTED BEAM-TO-COLUMN AND BEAM-TO-BEAM CONNECTIONS SHALL BE MADE WITH DOUBLE ANGLES IN CONFORMANCE WITH THE AISC MANUAL UNLESS OTHERWISE INDICATED.
15. PROVIDE MAXIMUM NUMBER OF BOLTS POSSIBLE FOR THE PARTICULAR MEMBER DEPTH IN ACCORDANCE WITH THE AISC MANUAL.
16. DETAIL BRACING MEMBERS TO AVOID ECCENTRIC CONNECTIONS.
17. PROVIDE TEMPORARY BRACING AND STAYS DURING STEEL ERECTION TO RESIST VERTICAL AND LATERAL LOADS UNTIL MEMBERS ARE PERMANENTLY FASTENED AND FLOORS AND ROOFS COMPLETED.
18. PROVIDE 1/16" MINIMUM CONTINUOUS FILLET SEAL WELDS FOR ALL WELDED CONNECTIONS TO MEMBERS THAT ARE EXTERIOR OR ARE TO BE EXPOSED TO WET OR DAMP SERVICE CONDITIONS AND TO ALL WELDED CONNECTIONS THAT WILL BE GALVANIZED.
19. APPLY 1/8" THICK TROWEL GRADE BITUMINOUS MASTIC DAMPPROOFING TO STEEL MEMBERS TO BE ENCASED IN EXTERIOR MASONRY WALLS UNLESS DIRECT CONTACT SPRAY-ON OR TROWEL-ON FIREPROOFING IS INDICATED OR SPECIFIED.
20. PROVIDE 3/16" X 1" LONG FILLET WELD FOR ELECTRICAL CONTINUITY BETWEEN MEMBERS AT CONNECTIONS.
21. SPLICE COLUMNS 4 FEET ABOVE FLOORS UNLESS OTHERWISE INDICATED. DEVELOP 100% PERCENT OF THE SECTION MOMENT CAPACITY IN THE FLANGE AND 100% PERCENT OF THE SECTION SHEAR CAPACITY IN THE WEB.
22. SHEAR STUDS SHALL CONFORM TO ASTM A 108. INSTALL IN ACCORDANCE WITH AWS D1.1.
23. PROVIDE 13/16" DIAMETER DRAIN HOLES THROUGH MEMBERS AT LOW POINTS OR AS REQUIRED TO PREVENT ACCUMULATION OF WATER.
24. PROVIDE 1/8" LEVELING PLATES THE SAME SIZE AS THE BASE PLATES FOR STRUCTURAL STEEL COLUMNS.
25. USE NON-SHRINK, NON-METALLIC GROUT UNDER BASE AND BEARING PLATES.
26. PROVIDE F 1554 ANCHOR BOLTS FOR ANCHORAGE TO CONCRETE AND MASONRY AS INDICATED. FURNISH AND INSTALL ONE WASHER AND ONE HEAVY HEX NUT WITH ASTM F 1554 ANCHOR BOLTS UNLESS OTHERWISE INDICATED.
27. PROVIDE HOT-DIP GALVANIZING IN CONFORMANCE WITH ASTM A 123, GRADE 100 TO ALL STEEL UNLESS SPECIFIED TO BE PAINTED.
28. PROVIDE HOT-DIP GALVANIZING, IN CONFORMANCE WITH ASTM A 153, TO ALL BOLTS, NUTS AND WASHERS THAT WILL BE USED WITH GALVANIZED STEEL.
29. PROVIDE A PAINTING SYSTEM FOR ALL STEEL INDICATED TO BE PAINTED AS PER SPECIFICATION SECTIONS 09940 & 09941.

DEMOLITION

1. TAKE MEASURES TO PREVENT DAMAGE TO EXISTING STRUCTURES TO REMAIN DURING DEMOLITION. DAMAGE THAT DOES OCCUR SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
2. SHORE EXISTING STRUCTURES TO UNLOAD MEMBERS BEFORE REMOVING STRUCTURAL ELEMENTS.
3. DO NOT OVER CUT CORNERS WHEN USING A ROTARY SAW. CORE HOLES AT CORNERS PRIOR TO SAW CUTTING AND CHIP FLUSH AS INDICATED IN THE STANDARD DETAIL.
4. DO NOT CUT EXISTING REINFORCING BARS AT INTERFACES WITH NEW WORK. INCORPORATE EXISTING BARS INTO NEW WORK INSOFAR AS PRACTICABLE. REMOVE THOSE REINFORCING BARS WHICH CANNOT BE BENT INTO AREAS OF NEW CONCRETE WORK.
5. INSURE ADJACENT CONCRETE WILL NOT BE FRACTURED WHEN THE CONCRETE TO BE REMOVED IS BROKEN OUT. REMOVE CONCRETE ANCHORS USED TO SECURE CORING EQUIPMENT, AND FILL HOLES WITH NON-SHRINK, NON-METALLIC GROUT.
6. DAMAGE DUE TO DEMOLITION OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. FRACTURED CONCRETE AND MASONRY SHALL BE REPAIRED WITH A PRESSURE INJECTED EPOXY SYSTEM APPROVED BY THE ENGINEER.
7. PATCH AND FINISH EXPOSED SURFACES TO MATCH THE ADJACENT AREA UNLESS OTHERWISE INDICATED OR SPECIFIED.

WOOD TRUSSES

1. DESIGN, FABRICATION AND ERECTION OF TRUSSES TO BE IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE GOVERNING BUILDING CODE.
2. DETAILING, FABRICATION AND ERECTION OF TRUSSES SHALL COMPLY WITH ALL APPLICABLE OSHA REGULATIONS.
3. WOOD TRUSSES SHALL HAVE MAXIMUM SPACING OF 2'-0" UNLESS OTHERWISE INDICATED.
4. WOOD TRUSSES SHALL BE DESIGNED FOR THE LOADS INDICATED ON THE STRUCTURAL DRAWINGS COMBINED WITH THE DEAD LOAD OF THE ROOFING COMPONENTS AND TRUSS ITSELF.
5. ROOF FRAMING SHALL BE NO.2 DENSE SOUTHERN PINE OR BETTER, HAVING A MINIMUM ALLOWABLE EXTREME FIBER BENDING STRESS (FB) OF 1200 PSI.
6. COORDINATE WITH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR LOCATIONS OF OPENINGS AND WEIGHTS OF ROOF MOUNTED EQUIPMENT. MINIMUM DESIGN LOAD FOR EACH ROOF MOUNTED EQUIPMENT SHALL BE 200 POUNDS.
7. PROVIDE FRAMING MEMBERS AT ALL UNSUPPORTED DECKING EDGES.
8. TRUSSES SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE JURISDICTION WHERE THE TRUSSES ARE TO BE INSTALLED.
9. CALCULATIONS, FABRICATION AND ERECTION DRAWINGS FOR THE TRUSSES SHALL BEAR THE SIGNATURE AND SEAL OF THE DELEGATED REGISTERED PROFESSIONAL ENGINEER.
10. TRUSS SHOP DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF THE DELEGATED PROFESSIONAL ENGINEER (TRUSS COMPANY ENGINEER). THE ENGINEER OF RECORD WILL REVIEW THE SEALED SHOP DRAWINGS FOR COMPLIANCE WITH OVERALL DESIGN INTENT AND INDICATE ACCEPTANCE BY AFFIXING A SHOP DRAWING REVIEW STAMP TO THE DRAWINGS. THIS ACCEPTANCE DOES NOT TRANSFER RESPONSIBILITY TO THE ENGINEER OF RECORD. THE DELEGATED TRUSS ENGINEER SHALL REMAIN SOLELY AND WHOLLY RESPONSIBLE FOR THE TRUSSES.

EMBEDDED PIPES AND CONDUIT:

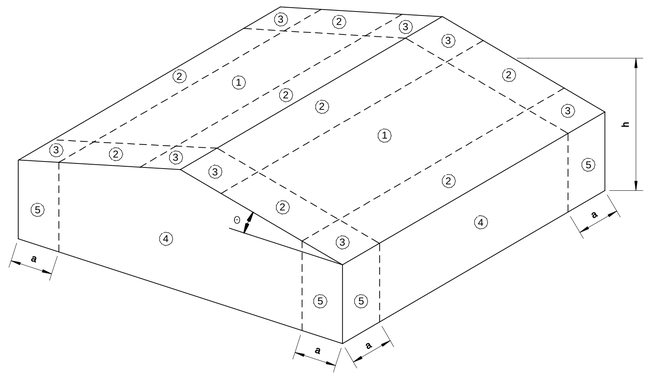
1. CONDUITS, PIPES, AND SLEEVES OF ANY MATERIAL NOT HARMFUL TO CONCRETE AND WITHIN THE LIMITATIONS SPECIFIED MAY BE PERMITTED TO BE EMBEDDED IN CONCRETE ONLY WITH THE SPECIFIC APPROVAL OF THE ENGINEER.
2. SUBMIT PLAN OF EMBEDMENTS TO THE ENGINEER FOR REVIEW AND APPROVAL.
3. CONDUITS, PIPES AND SLEEVES OF ALUMINUM SHALL NOT BE EMBEDDED IN CONCRETE.
4. PIPES PASSING THROUGH WALLS OF A LIQUID-CONTAINING STRUCTURE SHALL INCLUDE AN INTEGRAL WATERSTOP.
5. CONDUITS, PIPES, AND SLEEVES PASSING THROUGH A SLAB, WALL, OR BEAM SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF THE CONSTRUCTION.
6. CONDUITS AND PIPES, WITH THEIR FITTINGS, EMBEDDED WITHIN A COLUMN SHALL NOT DISPLACE MORE THAN 4 PERCENT OF THE AREA OF CROSS SECTION.
7. EXCEPT WHEN DRAWINGS FOR CONDUITS AND PIPES ARE APPROVED BY THE STRUCTURAL ENGINEER, CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM (OTHER THAN THOSE MERELY PASSING THROUGH) SHALL SATISFY THE FOLLOWING:
   A. CONDUITS AND PIPES SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL, OR BEAM IN WHICH THEY ARE EMBEDDED.
   B. CONDUITS AND PIPES SHALL NOT BE SPACED CLOSER THAN 3 TIMES THE OUTSIDE DIAMETERS OF THE CONDUIT OR PIPE ON CENTER.
   C. CONDUITS AND PIPES SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE ELEMENT AND BETWEEN REINFORCEMENT LAYERS. DO NOT INSTALL RUNS OF PIPING OR CONDUIT BETWEEN FORMWORK AND REINFORCEMENT.
   D. DO NOT CROSS PIPES AND CONDUIT IN CONCRETE.
8. PIPES AND FITTINGS SHALL BE DESIGNED TO RESIST THE EFFECTS OF THE MATERIAL, PRESSURE, AND TEMPERATURE TO WHICH THEY WILL BE SUBJECTED.
9. NO LIQUID, GAS, OR VAPOR, EXCEPT WATER NOT EXCEEDING 90 DEGREES F OR 50 PSI PRESSURE, SHALL BE PLACED IN THE PIPES UNTIL THE CONCRETE HAS ATTAINED ITS DESIGN STRENGTH.
10. ADDITIONAL REINFORCEMENT WITH AN AREA NOT LESS THAN 0.002 TIMES AREA OF CONCRETE SECTION SHALL BE PROVIDED PERPENDICULAR TO PIPING OR CONDUIT AT A MAXIMUM SPACING OF 12 INCHES.
11. PIPING AND CONDUIT SHALL BE SO FABRICATED AND INSTALLED THAT CUTTING, BENDING, OR DISPLACEMENT OF REINFORCEMENT FROM ITS PROPER LOCATION WILL NOT BE REQUIRED.
12. CLOSE ENDS OF CONDUITS, PIPING AND SLEEVES EMBEDDED IN CONCRETE WITH CAPS OR PLUGS PRIOR TO CONCRETE PLACEMENT.

ALUMINUM

1. STRUCTURAL ALUMINUM TO CONFORM TO ALLOY 6061-T6. DETAILING, FABRICATION AND ERECTION OF STRUCTURAL ALUMINUM SHALL COMPLY WITH ALL APPLICABLE OSHA REGULATIONS. DETAIL AND FABRICATE IN CONFORMANCE WITH THE LATEST ALUMINUM ASSOCIATION DESIGN MANUAL AND THE SPECIFICATIONS AND GUIDELINES FOR STRUCTURES OF ALUMINUM.
2. WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE, AWS D1.2.
3. WELDING SHALL BE BY THE METAL INERT GAS (MIG) OR THE TUNGSTEN INERT GAS (TIG) PROCESS USING 5356 FILLER ALLOY.
4. FIELD CONNECTIONS SHALL BE BOLTED UNLESS WELDING IS INDICATED. FIELD WELDING OF STRUCTURAL MEMBERS IS NOT PERMITTED UNLESS SPECIFICALLY INDICATED.
5. SHOP CONNECTIONS MAY BE BOLTED OR WELDED UNLESS THE CONNECTION METHOD IS INDICATED.
6. PROVIDE ASTM F 593 TYPE 316 STAINLESS STEEL BOLTS FOR BOLTED CONNECTIONS. PROVIDE DRILLED HOLES 1/16" LARGER THAN THE BOLT DIAMETER UNLESS OTHERWISE INDICATED. PROVIDE ASTM F 594 STAINLESS STEEL NUTS WITH STAINLESS STEEL WASHERS IN BOTH OUTER PLIES.
7. SIMPLY SUPPORTED BEAM-TO-COLUMN AND BEAM-TO-BEAM CONNECTIONS SHALL BE MADE WITH DOUBLE ANGLES IN CONFORMANCE WITH THE ALUMINUM ASSOCIATION DESIGN MANUAL UNLESS OTHERWISE INDICATED.
8. DETAIL BRACING MEMBERS TO AVOID ECCENTRIC CONNECTIONS.
9. PROVIDE TEMPORARY BRACING AND STAYS DURING ERECTION TO RESIST VERTICAL AND LATERAL LOADS UNTIL MEMBERS ARE PERMANENTLY FASTENED.
10. PAINT ALUMINUM IN CONTACT WITH CONCRETE WITH ASPHALTIC PAINT OR PROVIDE SHEET NEOPRENE BARRIER.
11. PROVIDE DISSIMILAR METAL PROTECTION AT LOCATIONS WHERE DISSIMILAR METALS ARE IN CONTACT. PROTECT WITH A MINIMUM 4-MIL DRY THICKNESS COAT OF ZINC CHROMATE PRIMER ON THE ALUMINUM SURFACES AND A MINIMUM 2-MIL DRY THICKNESS COAT OF ALL-METAL PRIMER FOLLOWED BY ONE COAT OF MINIMUM 3-MIL DRY THICKNESS ALUMINUM PAINT TO THE DISSIMILAR METAL.
12. USE NON-SHRINK, NON-METALLIC GROUT UNDER BASE AND BEARING PLATES.

ALUMINUM RAILINGS AND GUARDRAILS

1. PROVIDE ALUMINUM RAILING WHERE INDICATED.
2. PROVIDE MOUNTINGS FOR REMOVABLE ALUMINUM RAILING AROUND OPENINGS WHERE INDICATED, COMPLETE WITH CAPS.
3. DESIGN CRITERIA
   A. RAILINGS AND GUARDRAILS SHALL BE DESIGNED FOR A LINE LOAD OF 100 PLF [1.5 KN/M] VERTICAL PLUS 50 PLF [.75 KN/M] HORIZONTAL APPLIED CONCURRENTLY OR A CONCENTRATED LOAD OF 200 POUNDS [0.88 KN] APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE RAIL, WHICHEVER PRODUCES THE MOST EXTREME CONDITION.
   B. INTERMEDIATE RAILS, BALUSTERS AND PANELS OR FILLERS SHALL BE DESIGNED FOR A UNIFORM LOAD OF 25 PSF [1.2 KPA] OVER THE GROSS AREA OF THE GUARD OF WHICH THEY ARE A PART. THIS LOADING NEED NOT BE ADDED TO THE LOADING OF THE MAIN MEMBERS PRESCRIBED ABOVE.
   C. HANDRAILS SHALL BE DESIGNED FOR A LINE LOAD OF 50 PLF [.75 KN/M] APPLIED IN ANY DIRECTION OR A CONCENTRATED LOAD OF 200 POUNDS [0.88 KN] APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE HANDRAIL, WHICHEVER PRODUCES THE MOST EXTREME CONDITION.
4. ALUMINUM RAILING AND GUARDRAILS SHALL CONFORM TO ALLOY 6061-T6.
5. WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE, AWS D1.2.
6. WELDING SHALL BE BY THE METAL INERT GAS (MIG) OR THE TUNGSTEN INERT GAS (TIG) PROCESS USING 5356 FILLER ALLOY.
7. FIELD WELDING OF ALUMINUM RAILING AND GUARDRAILS IS NOT PERMITTED UNLESS SPECIFICALLY INDICATED.
8. PROVIDE ASTM F 593 TYPE 316 STAINLESS STEEL BOLTS FOR BOLTED CONNECTIONS. PROVIDE DRILLED HOLES 1/16" LARGER THAN THE BOLT DIAMETER UNLESS OTHERWISE INDICATED. PROVIDE ASTM F 594 STAINLESS STEEL NUTS WITH STAINLESS STEEL WASHERS.
9. PAINT ALUMINUM IN CONTACT WITH CONCRETE WITH ASPHALTIC PAINT OR PROVIDE SHEET NEOPRENE BARRIER.
10. PROVIDE DISSIMILAR METAL PROTECTION AT LOCATIONS WHERE DISSIMILAR METALS ARE IN CONTACT. PROTECT WITH A MINIMUM 4-MIL DRY THICKNESS COAT OF ZINC CHROMATE PRIMER ON THE ALUMINUM SURFACES AND A MINIMUM 2-MIL DRY THICKNESS COAT OF ALL-METAL PRIMER FOLLOWED BY ONE COAT OF MINIMUM 3-MIL DRY THICKNESS ALUMINUM PAINT TO THE DISSIMILAR METAL.
11. USE NON-SHRINK, NON-METALLIC GROUT UNDER BASE PLATES.



WIND PRESSURES: COMPONENTS & CLADDING			
	ZONE	POSITIVE PRESSURE (PSF)	NEGATIVE PRESSURE (PSF)
10 - WASTEWATER TREATMENT FACILITY	1	54.3	49.27
	2	54.3	66.9
	3	54.3	59.3
	4	44.2	69.4
	5	51.8	110
20 - EQUIPMENT STORAGE FACILITY	1	30.8	48.9
	2	30.8	85.1
	3	30.8	126
	4	39.8	44.3
	5	46.6	60.2

NOTATION:

a = 10% OF LEAST HORIZONTAL DIMENSION OR 0.4H WHICHEVER IS SMALLER, BUT NOT LESS THAN EITHER 4% OF LEAST HORIZONTAL DIMENSION OR 3.0 FEET.

h = MEAN ROOF HEIGHT OR EAVE HEIGHT FOR SLOPES LESS THAN 10 DEGREES.

COMPONENTS AND CLADDING WIND PRESSURES

PRESSURES ARE BASED UPON ASCE/SEI 7-10
(FACTORED LOADS)

ABBREVIATIONS:

AB	ANCHOR BOLT
ADDL	ADDITIONAL
ALT	ALTERNATE
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	ASTM INTERNATIONAL
BM	BEAM
BOT, B	BOTTOM
CJ	CONSTRUCTION JOINT
CL, CLR	CLEAR
CL, ℄	CENTERLINE
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
DEG	DEGREE
DET	DETAIL
DIA,Ø	DIAMETER
DIR	DIRECTION
DN	DOWN
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
EW	EACH WAY
EXIST	EXISTING
FD	FLOOR DRAIN
FF	FAR FACE
FIN	FINISH
FL	FLOOR
FTG	FOOTING
GALV	GALVANIZE (HOT-DIP)
HORIZ, H	HORIZONTAL
HP	HIGH POINT
IF	INSIDE FACE
LG	LONG
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
NTS	NOT TO SCALE
OC	ON CENTER
OF	OUTSIDE FACE
OPNG	OPENING
PC	PIECE
PCF	POUNDS PER CUBIC FEET
PJF	PREMOLDED JOINT FILLER
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FEET
PSI	POUNDS PER SQUARE INCH
SECT	SECTION
SPECS	SPECIFICATIONS
SQ	SQUARE
SSPC	STEEL STRUCTURES PAINTING COUNCIL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
T	TOP
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TR	TREADS
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT, V	VERTICAL
WS	WATERSTOP, WATER SURFACE
WWF	WELDED WIRE FABRIC
⟷	DIRECTION IN WHICH BARS EXTEND

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2019

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

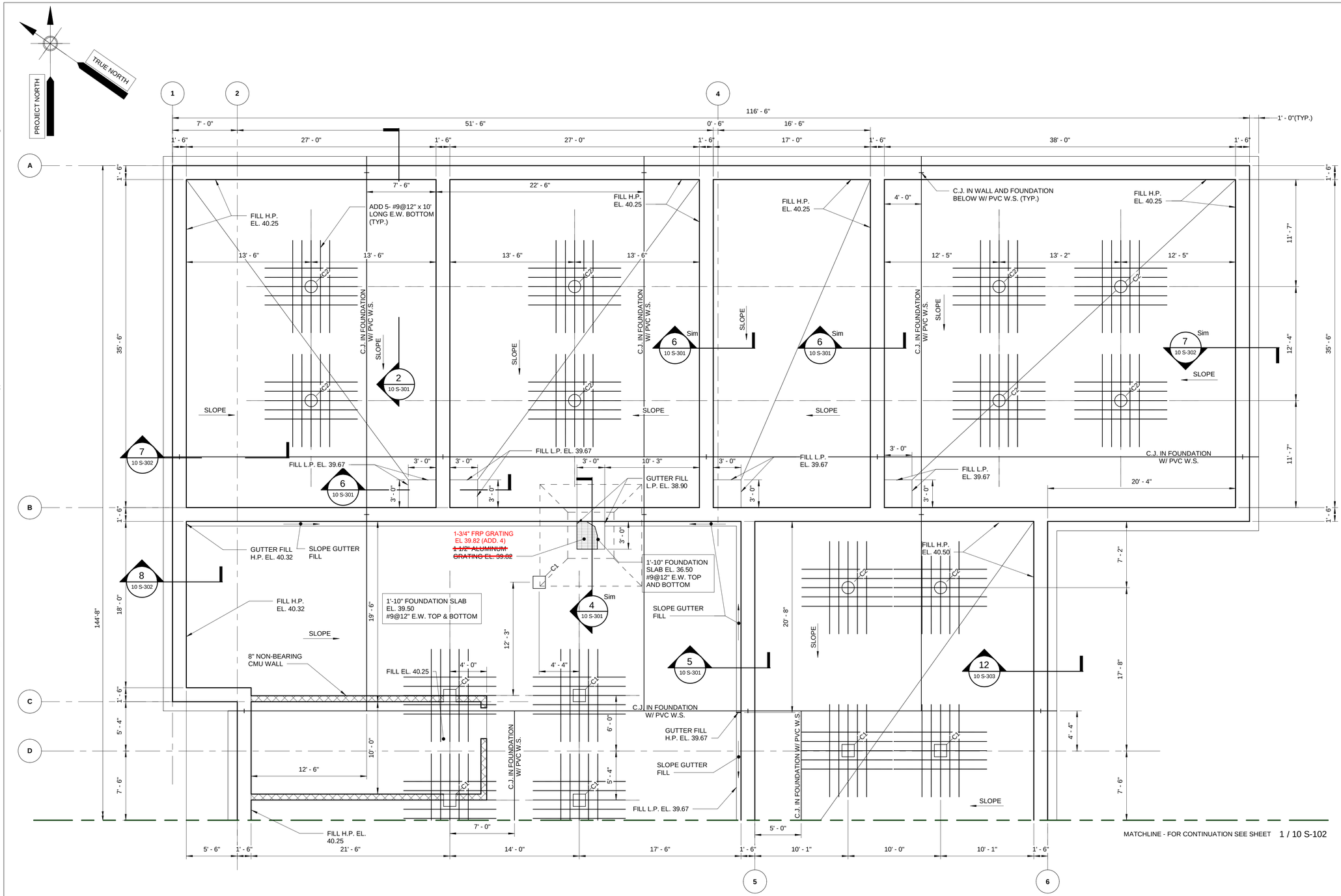
SHEET TITLE

STRUCTURAL NOTES II

SHEET NUMBER

00 S-002

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:20 PM



FOUNDATION LEVEL PLAN I

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

NOTES:

1. FOUNDATION DESIGN BASED ON GROSS ALLOWABLE SOIL BEARING PRESSURE = 4000PSF
2. SEE SHEET 10 S-501 FOR COLUMN SCHEDULE

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

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\OrleansRevit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 2:19:16 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

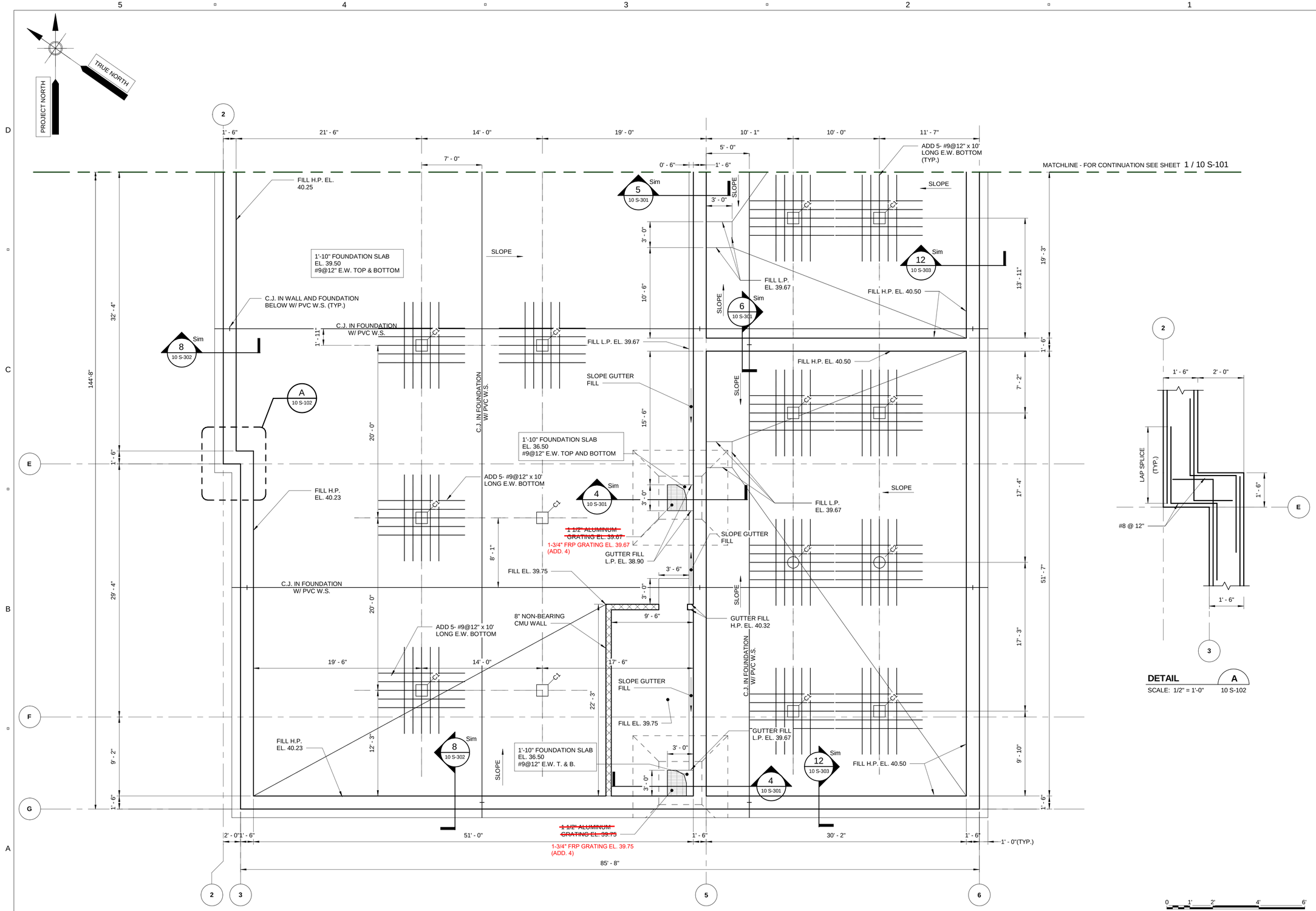
STRUCTURAL

SHEET TITLE

FOUNDATION PLAN I

SHEET NUMBER

10 S-101



FOUNDATION LEVEL PLAN II

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

NOTES:
1. FOUNDATION DESIGN BASED ON GROSS ALLOWABLE SOIL BEARING PRESSURE = 4000PSF
2. SEE SHEET 10 S-501 FOR COLUMN SCHEDULE

DETAIL A

SCALE: 1/2" = 1'-0" 10 S-102

0 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

0 1' 2' 4' 8' 16'
SCALE: 3/16" = 1'-0"

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 2:57:49 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45449
REGISTERED PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

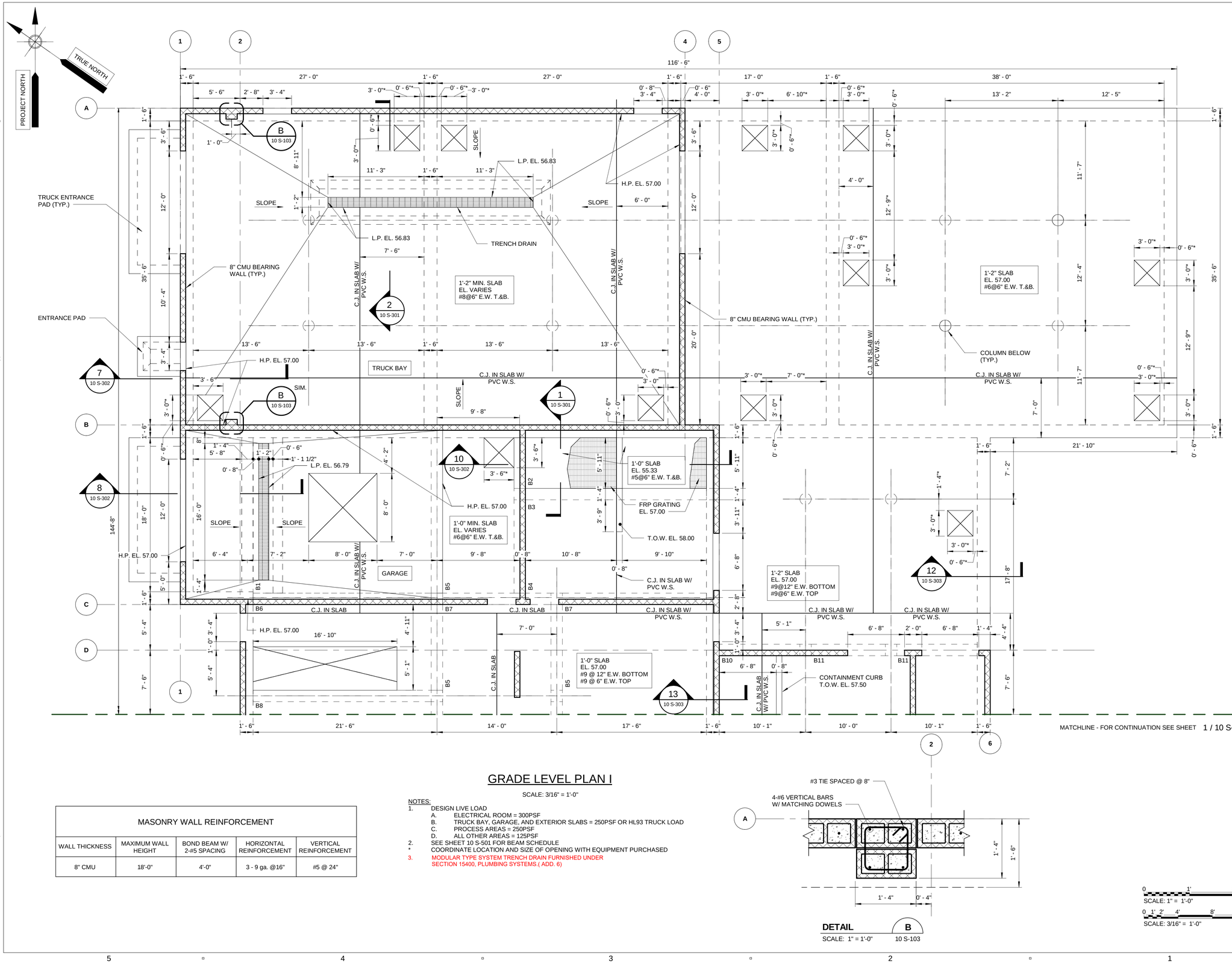
STRUCTURAL

SHEET TITLE

FOUNDATION PLAN II

SHEET NUMBER

10 S-102



GRADE LEVEL PLAN I

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

NOTES:
1. DESIGN LIVE LOAD
   - A. ELECTRICAL ROOM = 300PSF
   - B. TRUCK BAY, GARAGE, AND EXTERIOR SLABS = 250PSF OR HL93 TRUCK LOAD
   - C. PROCESS AREAS = 250PSF
   - D. ALL OTHER AREAS = 125PSF
2. SEE SHEET 10 S-501 FOR BEAM SCHEDULE

* COORDINATE LOCATION AND SIZE OF OPENING WITH EQUIPMENT PURCHASED

3. MODULAR TYPE SYSTEM TRENCH DRAIN FURNISHED UNDER SECTION 15400, PLUMBING SYSTEMS.(ADD. 6)

MASONRY WALL REINFORCEMENT				
WALL THICKNESS	MAXIMUM WALL HEIGHT	BOND BEAM W/ 2-#5 SPACING	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
8" CMU	18'-0"	4'-0"	3 - 9 ga. @16"	#5 @ 24"

DETAIL B
SCALE: 1" = 1'-0" 10 S-103

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

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\OrleansRevit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:24 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45449
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

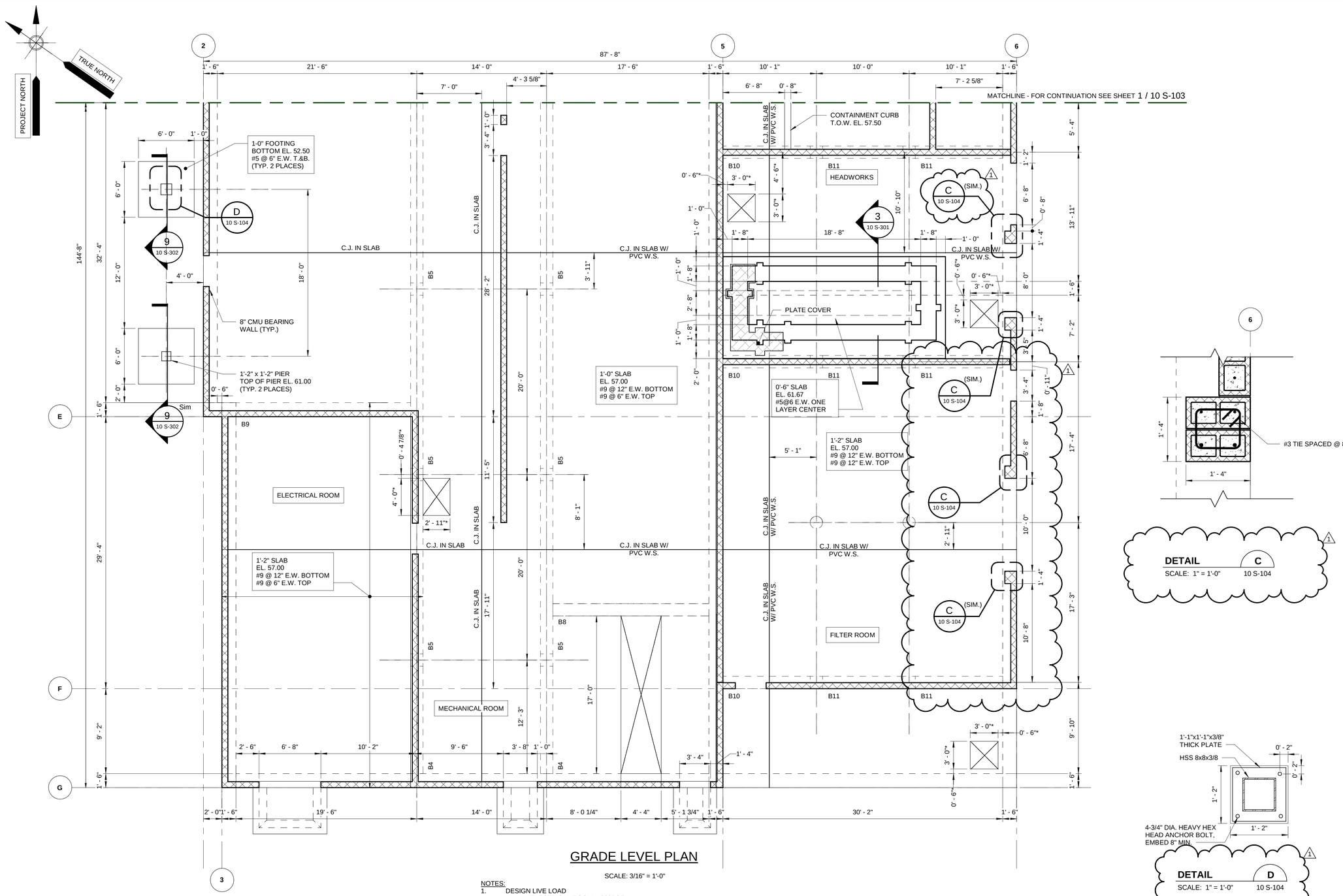
STRUCTURAL

SHEET TITLE

GRADE LEVEL PLAN I

SHEET NUMBER

10 S-103



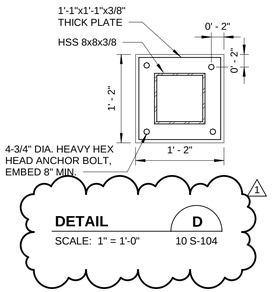
GRADE LEVEL PLAN

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

NOTES:
1. DESIGN LIVE LOAD
   - A. ELECTRICAL ROOM = 300PSF
   - B. TRUCK BAY, GARAGE, AND EXTERIOR SLABS = 250PSF OR HL93 TRUCK LOAD
   - C. PROCESS AREAS = 250PSF
2. ALL OTHER AREAS = 125PSF
3. SEE SHEET 10 S-501 FOR BEAM SCHEDULE

* COORDINATE LOCATION AND SIZE OF OPENING WITH EQUIPMENT PURCHASED

MASONRY WALL REINFORCEMENT				
WALL THICKNESS	MAXIMUM WALL HEIGHT	BOND BEAM W/ 2-#5 SPACING	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
8" CMU	18'-0"	4'-0"	3 - 9 ga. @16"	#5 @ 24"



SCALE: 1" = 1'-0"

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

PATH/FILENAME: BIM 360://CI-AMER (USA) 60587315-Orleans Downtown Area WWTF/10 S-WWTF.rvt
PLOT DATE: 4/27/2020 10:47:54 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	4/27/2020	FILTER WALL REV.

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

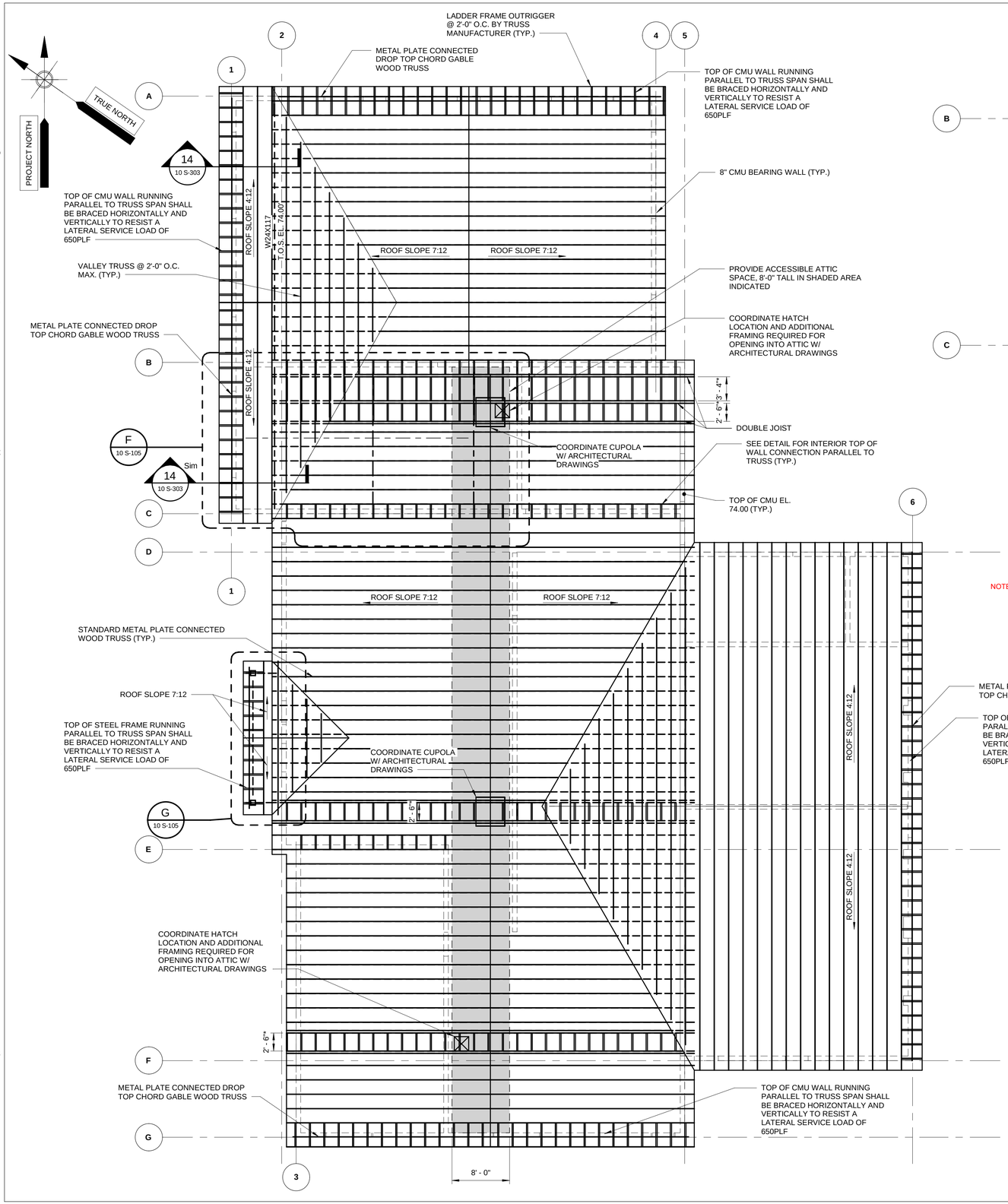
STRUCTURAL

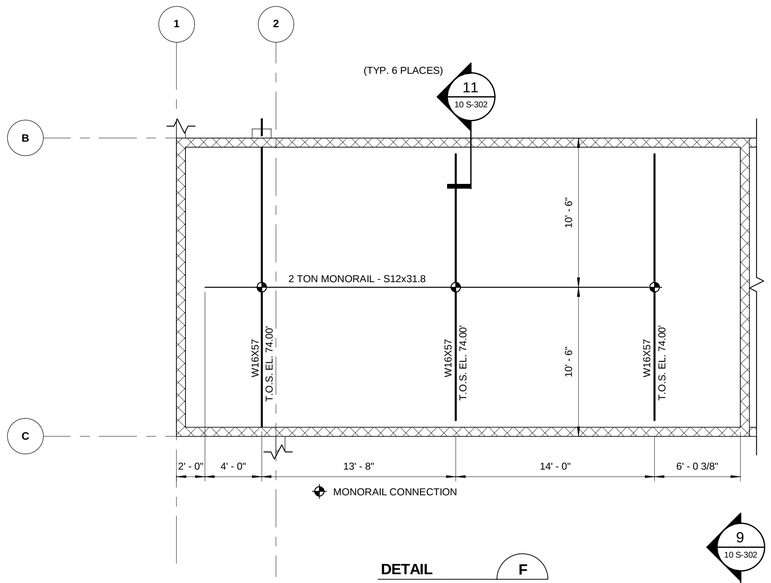
SHEET TITLE

GRADE LEVEL PLAN II

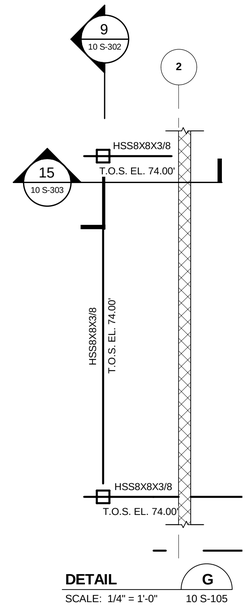
SHEET NUMBER

10 S-104





DETAIL F
SCALE: 3/16" = 1'-0" 10 S-105



DETAIL G
SCALE: 1/4" = 1'-0" 10 S-105

NOTE: (ADD. 11)

THE LOCATION OF THE SOUTH CHIMNEY SHALL BE REVISED IN ACCORDANCE WITH DRAWING 10 A-103, ROOF PLAN.

NOTE: W12 x 117 BEARING DETAIL SIMILAR TO SECTION 11 SHOWN ON DRAWING 10 S-302. (ADD. 4)

ROOF LEVEL PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. ROOF FRAMING PLAN SHOWN FOR GEOMETRIC PURPOSES ONLY. METAL PLATE CONNECTED WOOD TRUSS MANUFACTURER IS RESPONSIBLE FOR FRAMING LAYOUT TO ACCOMMODATE OPENINGS IN ROOF AND TO TRANSFER DESIGN LOADS TO EXTERIOR CMU WALLS. SEE ARHCITECTURAL DRAWINGS FOR ANY ADDITIONAL FRAMING REQUIRED.

* COORDINATE JOIST SPACING WITH EQUIPMENT PURCHASED.

DESIGN ROOF LOADS:

- ROOF SNOW LOAD = 35 PSF
- TOP CHORD LIVE LOAD = 35 PSF
- BOTTOM CHORD LIVE LOAD = 10 PSF
- BOTTOM CHORD COLLATERAL DEAD LOAD = 15 PSF
- COORDINATE WEIGHT OF EQUIPMENT OR PIPING HANGING FROM OR SUPPORTED ON TRUSSES WITH EQUIPMENT MANUFACTURER OR EQUIPMENT PURCHASED
- SEE SHEET 00 S-002 FOR COMPONENTS AND CLADDING LOADS TO DETERMINE NET WIND UPLIFT ON ROOF

WOOD TRUSSES DESIGN LOADS

1. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A UPLIFT SERVICE LOAD OF 550 POUNDS AT EACH END.
2. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A LATERAL SERVICE LEVEL LOAD PARALLEL TO TRUSS SPAN OF 500 POUNDS AT EACH END.
3. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A LATERAL SERVICE LEVEL LOAD PERPENDICULAR TO TRUSS SPAN OF 400 POUNDS AT EACH END.
4. ROOF SHEATHING SHALL BE 5 PLY 5/8" EXTERIOR GRADE. ORIENT FACE GRAIN PERPENDICULAR TO ROOF TRUSSES. FASTEN SHEATHING TO EACH FRAMING MEMBER USING 10d PENNYWEIGHT COMMON NAILS WITH A 1.5" MINIMUM PENETRATION AT A MAXIMUM SPACING OF 4 INCHES ALONG THE EDGES OF THE SHEATHING AND AT A MAXIMUM OF 4 INCHES ALONG INTERMEDIATE SUPPORTS. PROVIDE WOOD BLOCKING AT SHEATHING EDGES PERPENDICULAR TO TRUSS SPAN. FASTEN SHEATHING TO WOOD BLOCKING USING 10d PENNYWEIGHT COMMON NAILS WITH A 1.5" MINIMUM PENETRATION AT A MAXIMUM SPACING OF 4 INCHES.

0 1' 2' 4' 8' 12'
SCALE: 1/4" = 1'-0"

0 1' 2' 4' 8' 16'
SCALE: 3/16" = 1'-0"

0 2' 4' 8' 16' 24'
SCALE: 1/8" = 1'-0"

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:27 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

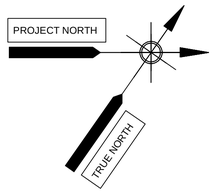
STRUCTURAL

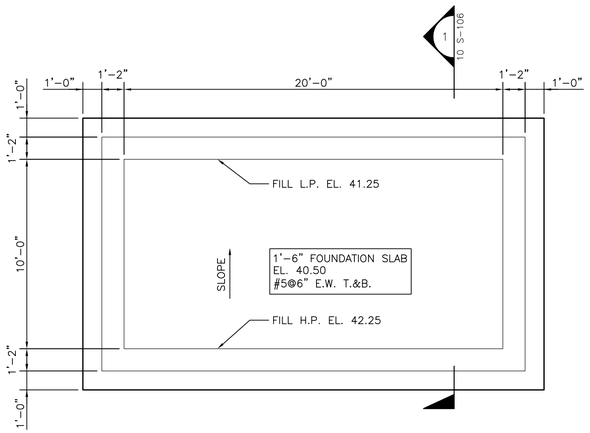
SHEET TITLE

ROOF LEVEL PLAN

SHEET NUMBER

10 S-105

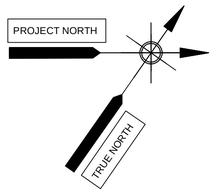


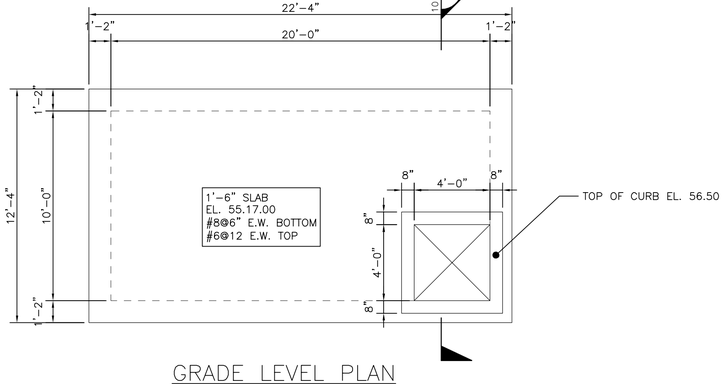


FOUNDATION PLAN

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

NOTE:
1. FOUNDATION DESIGN BASED ON ALLOWABLE GROSS BEARING PRESSURE = 3500 PSF

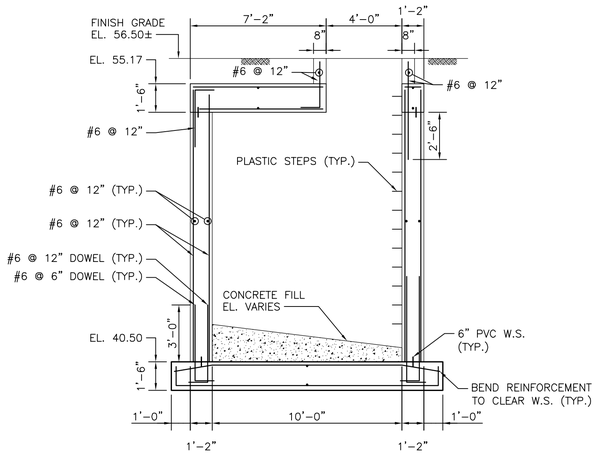




GRADE LEVEL PLAN

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

NOTE:
1. DESIGN LIVE LOAD = HL 93 TRUCK LOAD + 1'-4" SOIL



SECTION 1 (10 S-106)

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

1/4"=1'-0 SCALE: 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S\S10 S-106.DWG
LAST UPDATE: Thursday, January 16, 2020 2:57:36 PM
PLOT DATE: Friday, January 17, 2020 2:44:03 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**J. WELCH**
Drawn By:	**J. WELCH**
Dept Check:	**M. MALENFANT**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

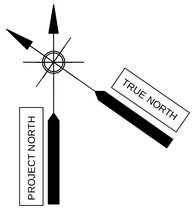
STRUCTURAL

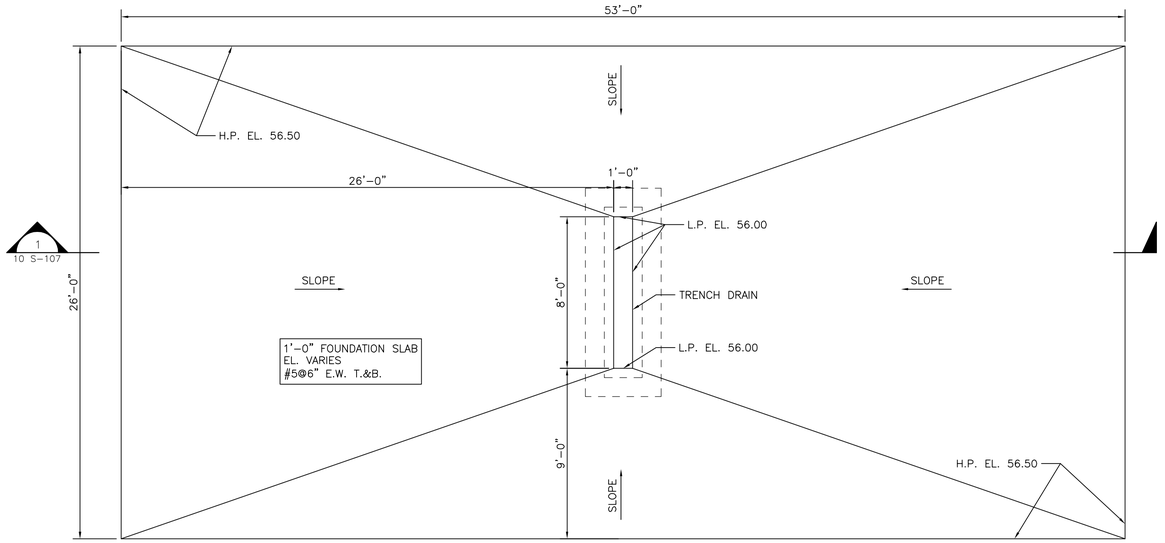
SHEET TITLE

PLANT WATER STORAGE TANK PLANS AND SECTIONS

SHEET NUMBER

10 S-106

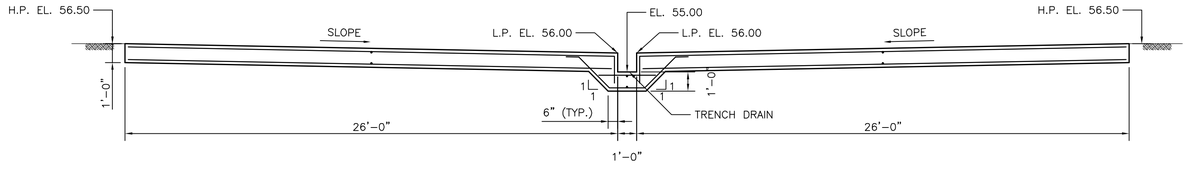




GRADE LEVEL PLAN

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

NOTE:
1. SLAB DESIGN BASED ON HL-93 LOADING.
2. FOUNDATION DESIGN BASED ON ALLOWABLE BEARING PRESSURE = 4000 PSF
3. MODULAR TYPE SYSTEM TRENCH DRAIN FURNISHED UNDER SECTION 15400, PLUMBING SYSTEMS.(ADD. 6)



SECTION 1 / 10 S-107

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

0 4 8 12
1/4"=1'-0
SCALE FEET

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S10 S-107.DWG
LAST UPDATE: Thursday, January 16, 2020 3:41:08 PM
PLOT DATE: Friday, January 17, 2020 2:44:13 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

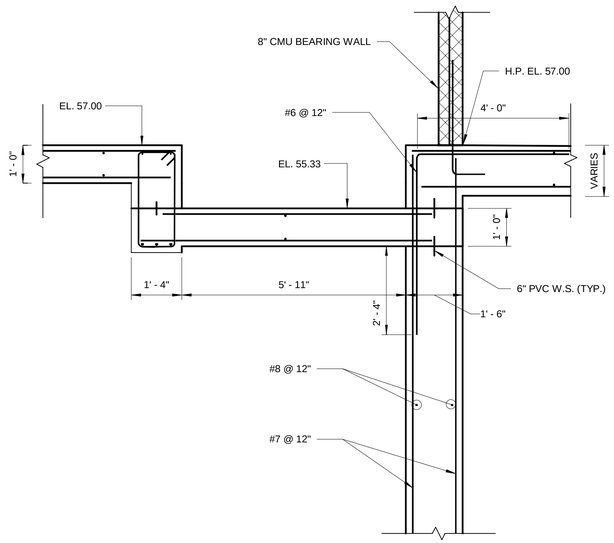
STRUCTURAL

SHEET TITLE

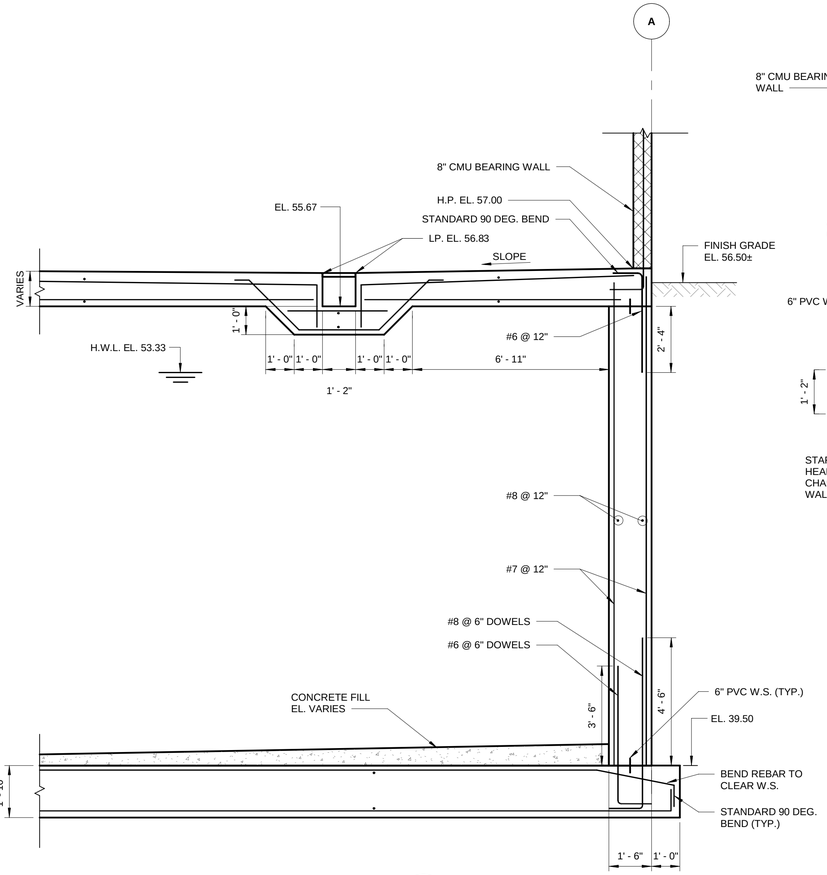
SLUDGE LOADING PAD

SHEET NUMBER

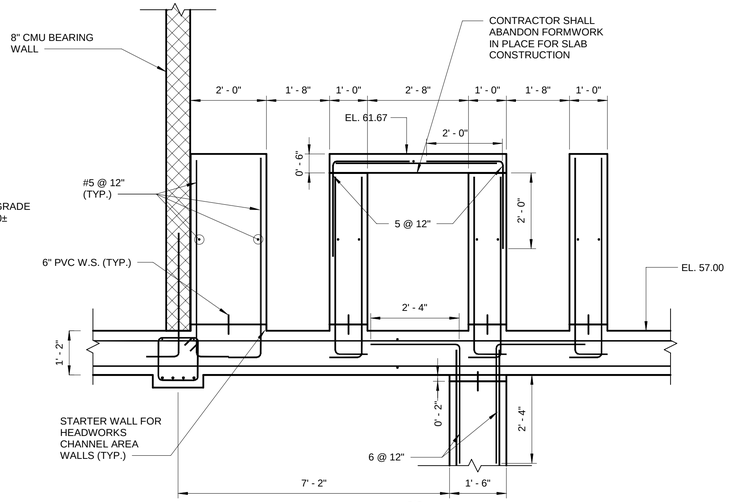
10 S-107



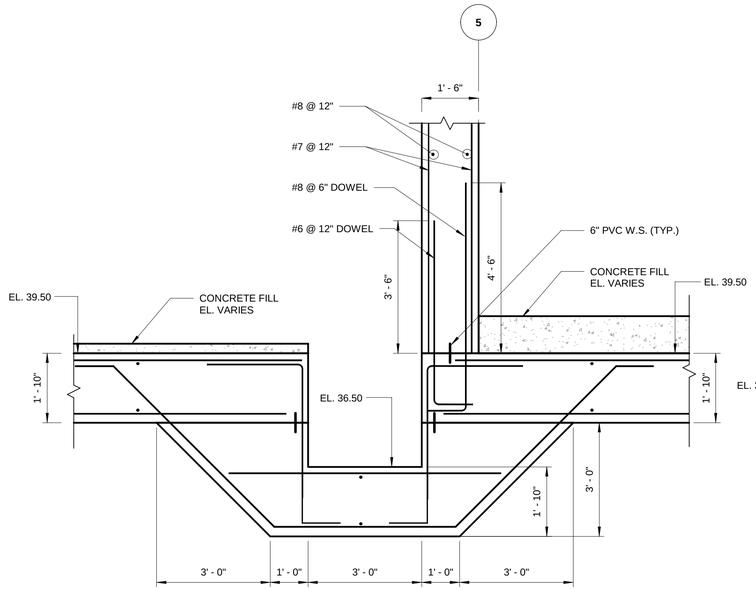
SECTION 1
SCALE: 1/2" = 1'-0" 10 S-103



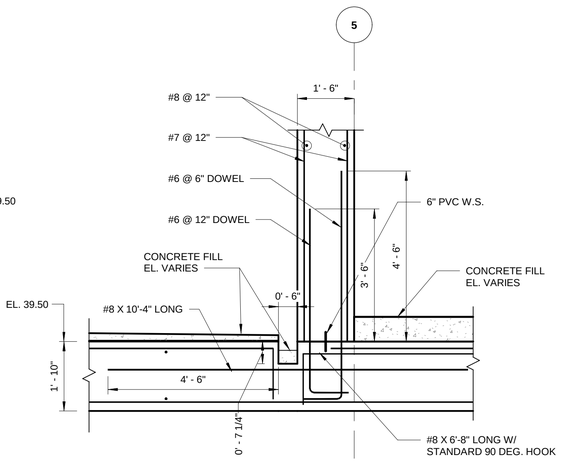
SECTION 2
SCALE: 3/8" = 1'-0" 10 S-101



SECTION 3
SCALE: 1/2" = 1'-0" 10 S-104

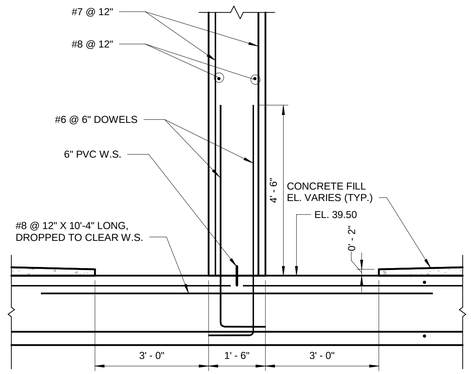


SECTION 4
SCALE: 1/2" = 1'-0" 10 S-101



NOTE: TYPICAL GUTTER AT WALL DETAIL

SECTION 5
SCALE: 1/2" = 1'-0" 10 S-101



SECTION 6
SCALE: 1/2" = 1'-0" 10 S-101

0 1' 2' 4' 8'
SCALE: 3/8" = 1'-0"

0 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

PATH/FILENAME: C:\Users\welchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:28 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

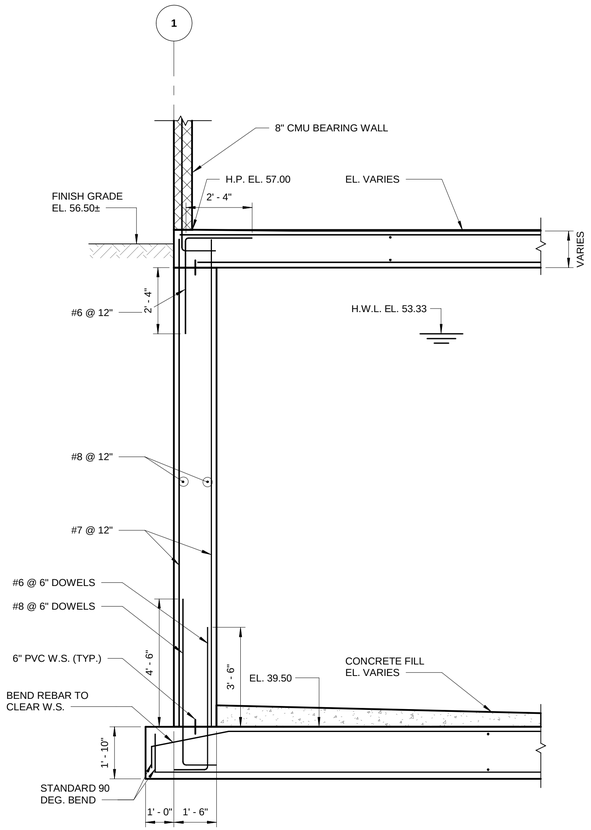
STRUCTURAL

SHEET TITLE

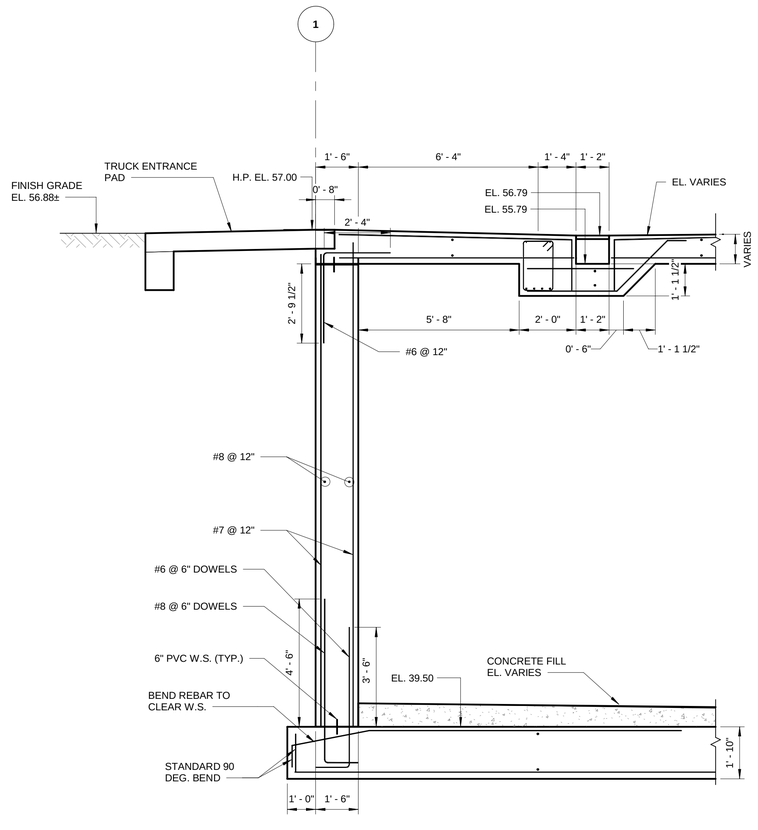
SECTIONS I

SHEET NUMBER

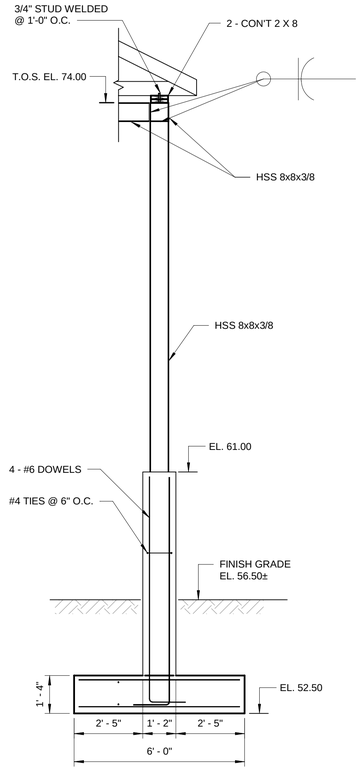
10 S-301



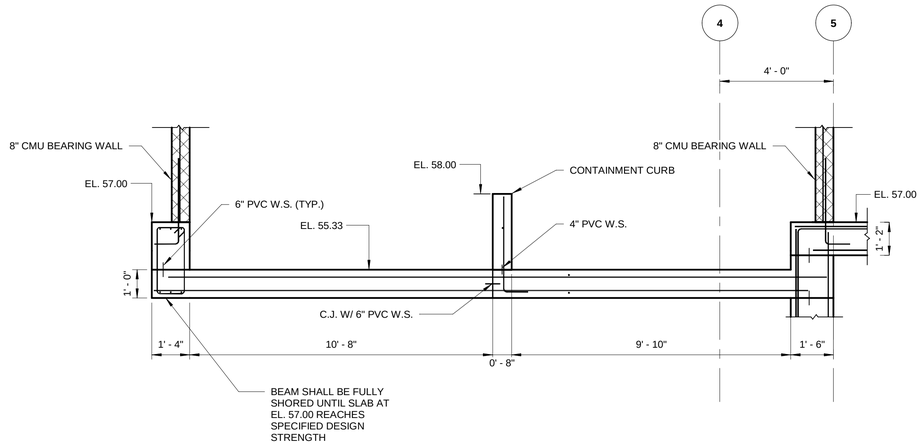
SECTION 7
SCALE: 3/8" = 1'-0" 10 S-101



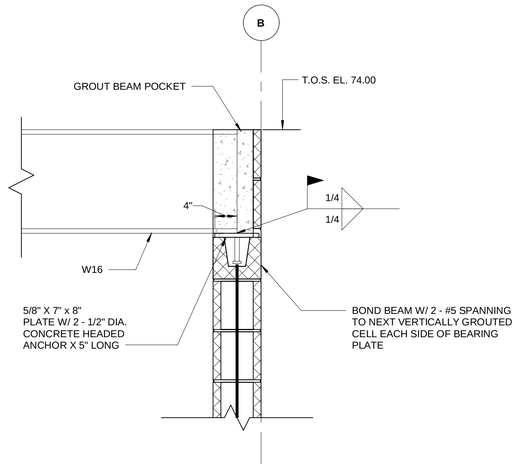
SECTION 8
SCALE: 3/8" = 1'-0" 10 S-101



SECTION 9
SCALE: 3/8" = 1'-0" 10 S-104



SECTION 10
SCALE: 3/8" = 1'-0" 10 S-103



SECTION 11
SCALE: 1" = 1'-0" 10 S-105

0 1' 2' 4' 8'
SCALE: 3/8" = 1'-0"

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

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
1/7/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

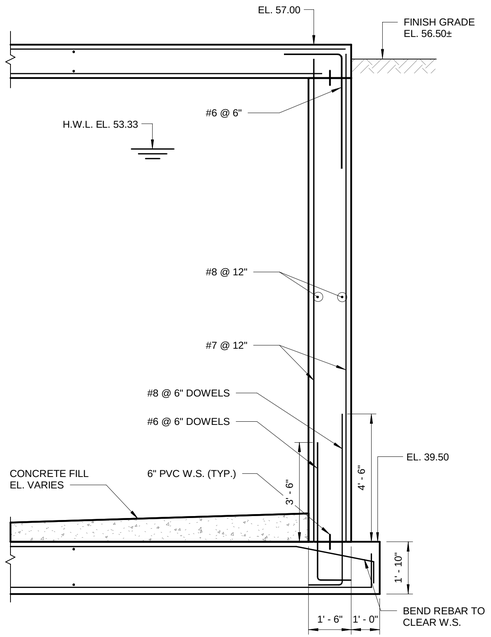
SHEET TITLE

SECTIONS II

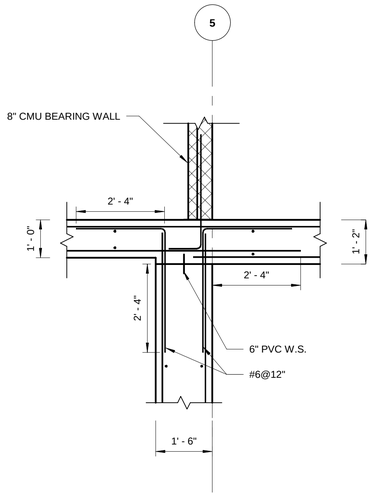
SHEET NUMBER

10 S-302

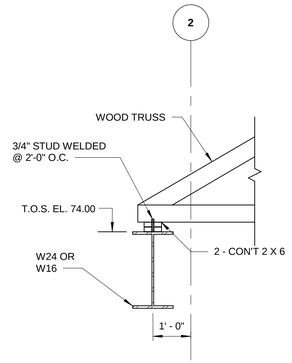
PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:29 PM



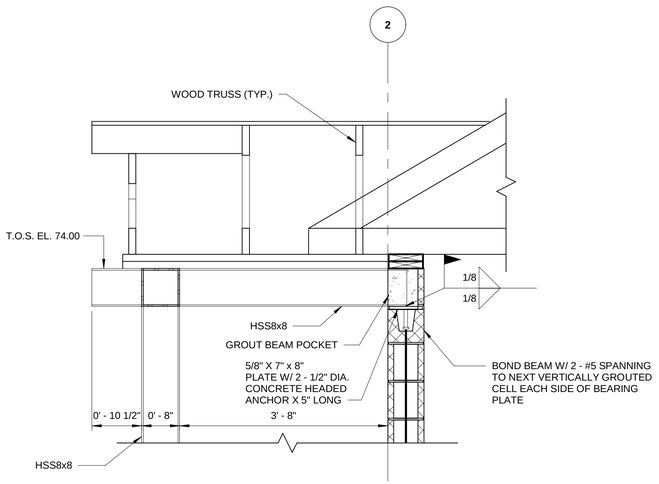
SECTION 12
SCALE: 3/8" = 1'-0" 10 S-101



SECTION 13
SCALE: 1/2" = 1'-0" 10 S-103



SECTION 14
SCALE: 1/2" = 1'-0" 10 S-105



SECTION 15
SCALE: 3/4" = 1'-0" 10 S-105

0 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

0 1' 2' 4' 8'
SCALE: 3/8" = 1'-0"

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:30 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

SHEET TITLE

SECTIONS III

SHEET NUMBER

10 S-303

BEAM SCHEDULE

BEAM MARK IS SHOWN ON LEFT END OF BEAM IN PLAN.

MARK	SIZE WIDTH X DEPTH	REINFORCEMENT					STIRRUPS			NOTES
		BOTTOM		TOP						
		CONT.	ADD.	ADD. LEFT	CONT.	ADD. RIGHT	TYPE	SIZE	SPACING EACH END	
B1	16 x 22	3 - #8	-	-	2 - #8	-		#4	1 @ 2, BAL. @ 12	MAINTAIN CONSTANT BEAM HEIGHT FOR REBAR W/ SLOPED SLAB
B2	16 x 32	3 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	HORIZONTAL CONSTRUCTION JOINT IN BEAM
B3	16 x 34	3 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	HORIZONTAL CONSTRUCTION JOINT IN BEAM
B4	16 x 28	3 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	HORIZONTAL CONSTRUCTION JOINT IN BEAM
B5	16 x 28	4 - #6	-	2 - #6	3 - #6	-		#4	1 @ 2, BAL. @ 12	
B6	16 x 32	3 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	
B7	16 x 32	3 - #6	-	2 - #6	3 - #6	-		#4	1 @ 2, BAL. @ 12	
B8	16 x 24	3 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	
B9	18 x 24	4 - #6	-	-	3 - #6	-		#4	1 @ 2, BAL. @ 12	
B10	16 x 18	3 - #6	-	-	3 - #8	-		#4	1 @ 2, 6 @ 4, BAL. @ 12	
B11	16 x 18	3 - #6	-	2 - #8	3 - #8	-		#4	1 @ 2, 6 @ 4, BAL. @ 12	

COLUMN SCHEDULE

MARK	SIZE	REINFORCEMENT		TYPE	NOTES
		VERTICAL	TIES		
C1	16 x 16	8 - #8	#4 @ 12 MAX.	1	--
C2	16 DIA.	6 - #8	#4 @ 12 MAX.	2	--

NOTE: COLUMN DOWELS TO MATCH VERTICAL BARS

TYPE 1

TYPE 2

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**J. WELCH**
Drawn By:	**J. WELCH**
Dept Check:	**M. MALENFANT**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2019**
Scale:	**AS NOTED**

DISCIPLINE

STRUCTURAL

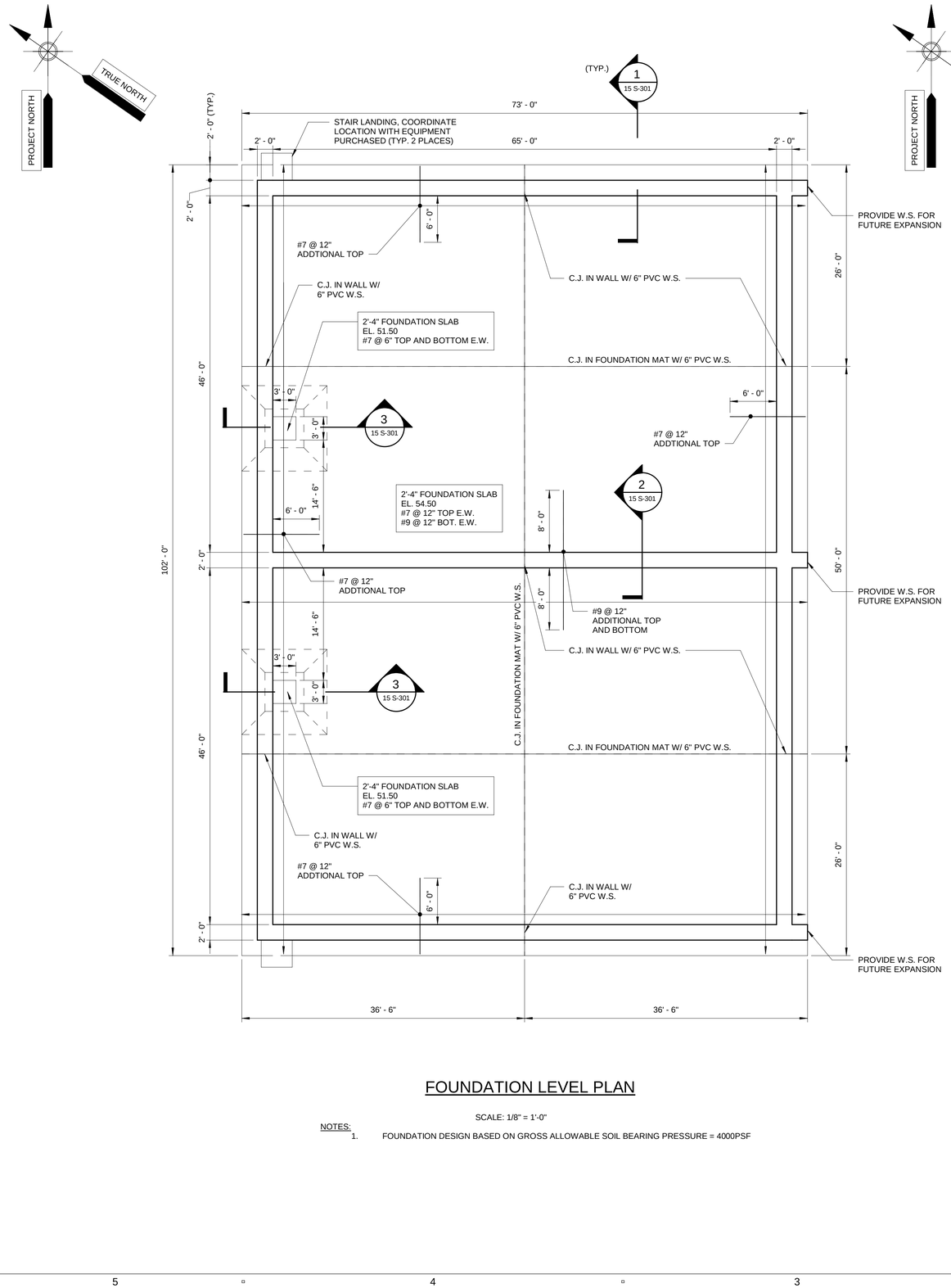
SHEET TITLE

SCHEDULES I

SHEET NUMBER

10 S-501

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 1:27:31 PM

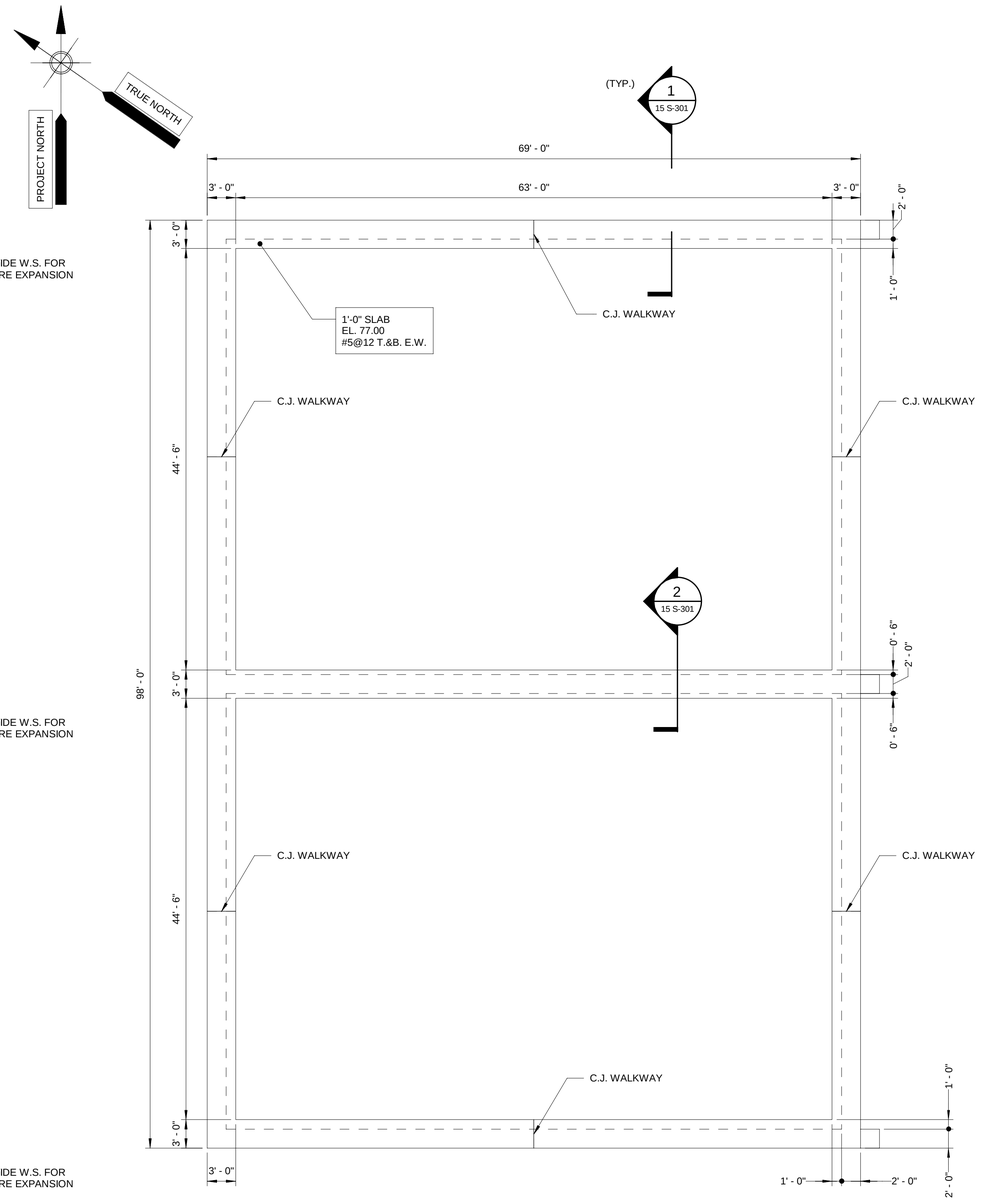


FOUNDATION LEVEL PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. FOUNDATION DESIGN BASED ON GROSS ALLOWABLE SOIL BEARING PRESSURE = 4000PSF



TOP OF WALKWAY LEVEL PLAN

SCALE: 1/8" = 1'-0"

NOTES: DESIGN LIVE LOAD = 100PSF

0 2' 4' 8' 16' 24'

SCALE: 1/8" = 1'-0"

PATH/FILENAME: C:\Users\WMitch.JA\Documents\Projects\Orleans\Revit\15 S-SBR_WMitchJA.rvt

PLOT DATE: 1/17/2020 2:03:53 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

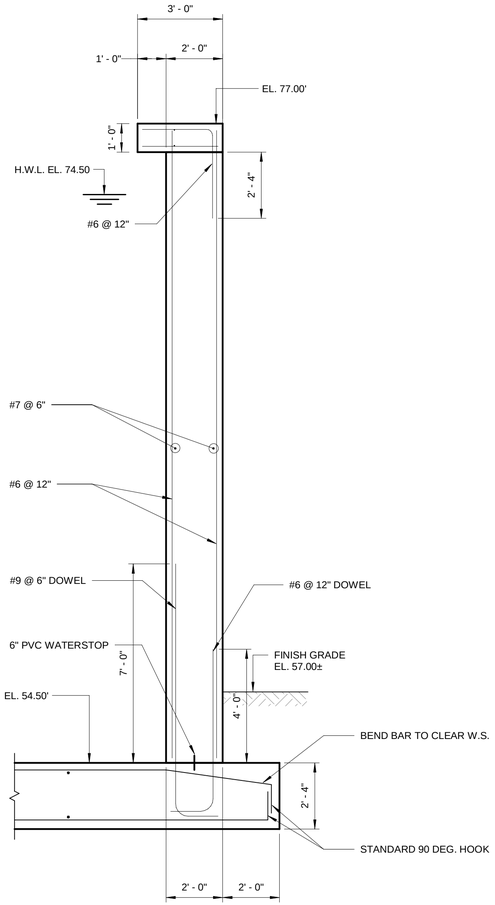
STRUCTURAL

SHEET TITLE

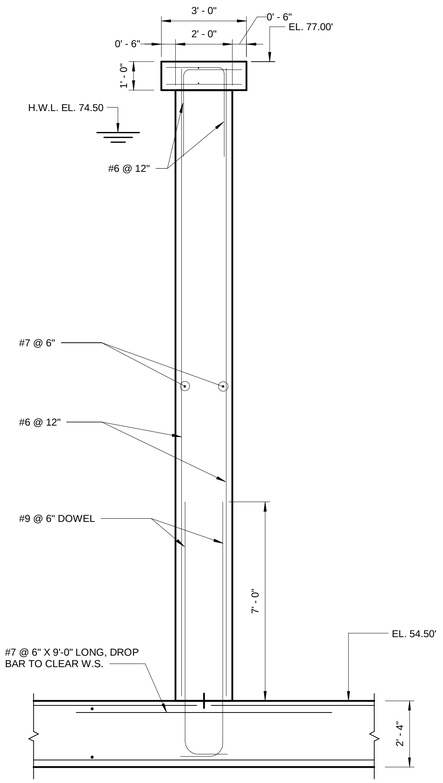
SBR TANK PLANS

SHEET NUMBER

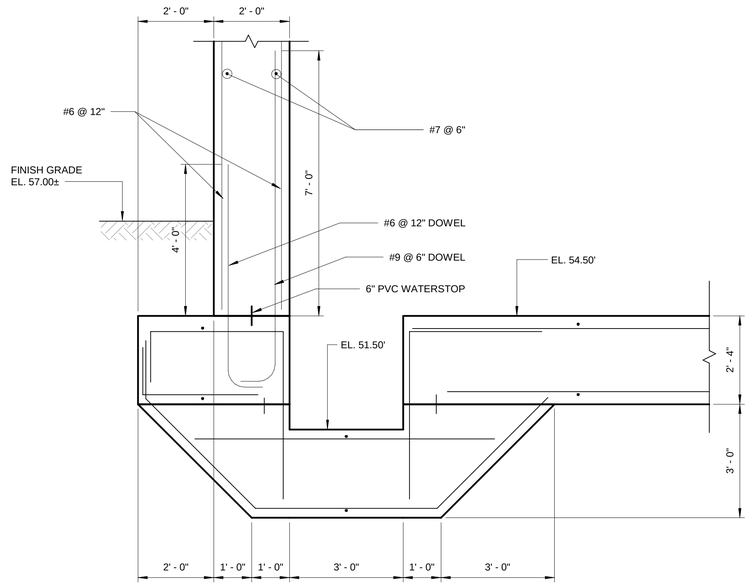
15 S-101



SECTION 1
SCALE: 3/8" = 1'-0" 15 S-101



SECTION 2
SCALE: 3/8" = 1'-0" 15 S-101



SECTION 3
SCALE: 1/2" = 1'-0" 15 S-101

SCALE: 3/8" = 1'-0"

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

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\15 S-SBR_WelchJA.rvt
PLOT DATE: 1/17/2020 2:03:54 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JAN 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

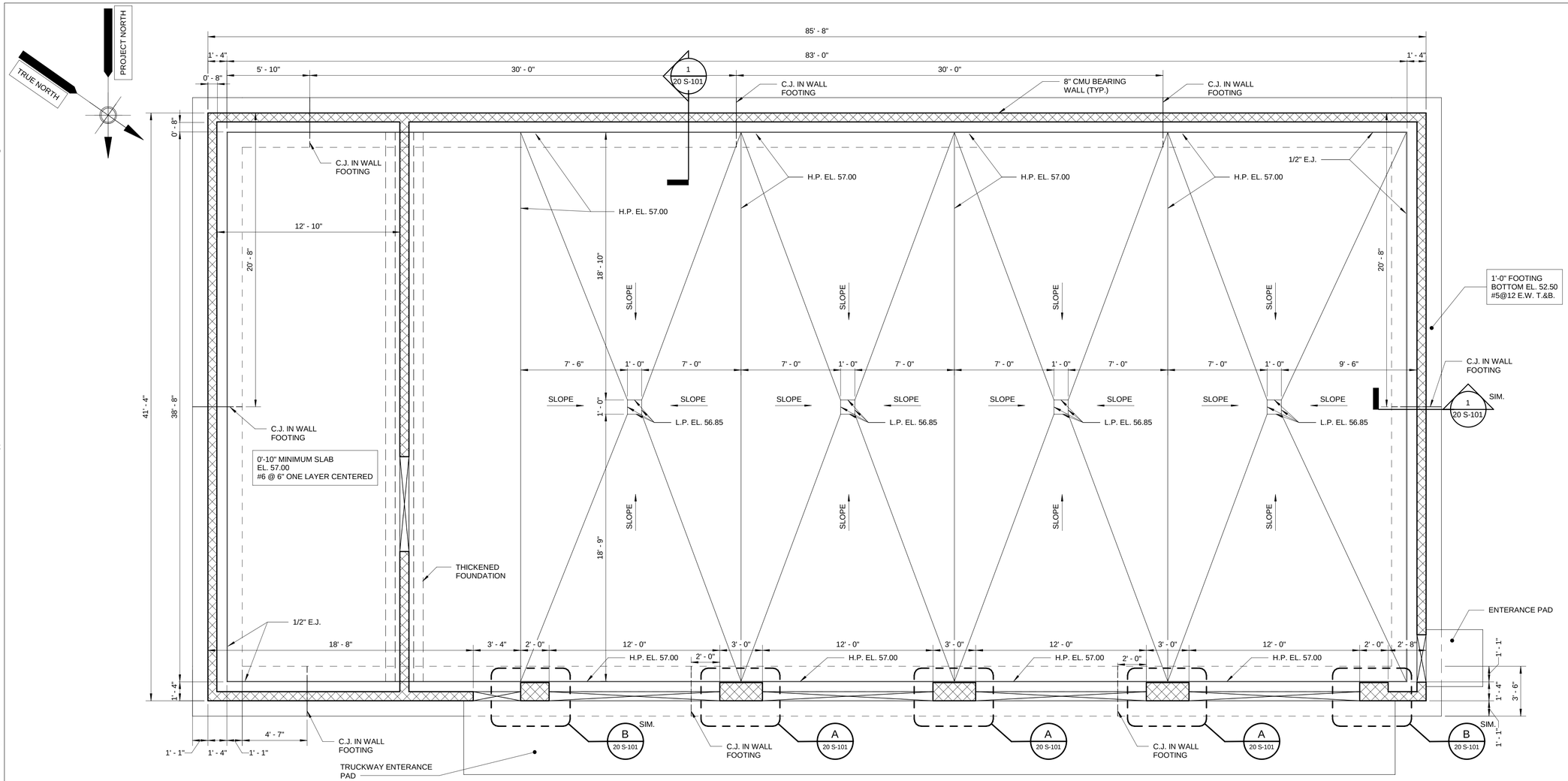
STRUCTURAL

SHEET TITLE

SECTIONS I

SHEET NUMBER

15 S-301

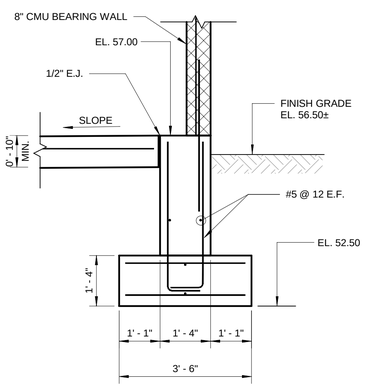


FOUNDATION/GRADE LEVEL PLAN

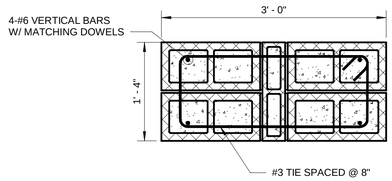
SCALE: 1/4" = 1'-0"

NOTES:

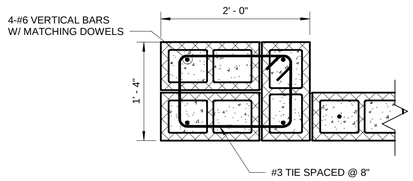
1. FOUNDATION DESIGN BASED ON A GROSS ALLOWABLE BEARING PRESSURE OF 1500PSF
2. DESIGN LIVE LOAD = HL-93 TRUCK LOAD OR 250PSF
3. NO GRADING OR SUMPS ARE REQUIRED AT THE FOUR L.P. EL 56.85 LOCATIONS. THE FLAT SPOTS ARE THE LOCATION OF THE 4" FLOOR DRAINS SHOWN ON DRAWING 20 P-101, EQUIPMENT STORAGE FACILITY PLAN. (ADD. 4)



SECTION 1 — SCALE: 1/2" = 1'-0" — 20 S-101



DETAIL A — SCALE: 1" = 1'-0" — 20 S-101



DETAIL B — SCALE: 1" = 1'-0" — 20 S-101

EXTERIOR MASONRY WALL REINFORCEMENT				
WALL THICKNESS	MAXIMUM WALL HEIGHT	BOND BEAM W/ 2-#5 SPACING	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
8" CMU	18'-0"	4'-0"	3 - 9 ga. @16"	#5 @ 24"

0 1' 2' 4' 6' — SCALE: 1/2" = 1'-0"

0 1' 2' 4' 8' 12' — SCALE: 1/4" = 1'-0"

PATH/FILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\20 S-Garage_WelchJA.rvt

PLOT DATE: 1/17/2020 2:09:37 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

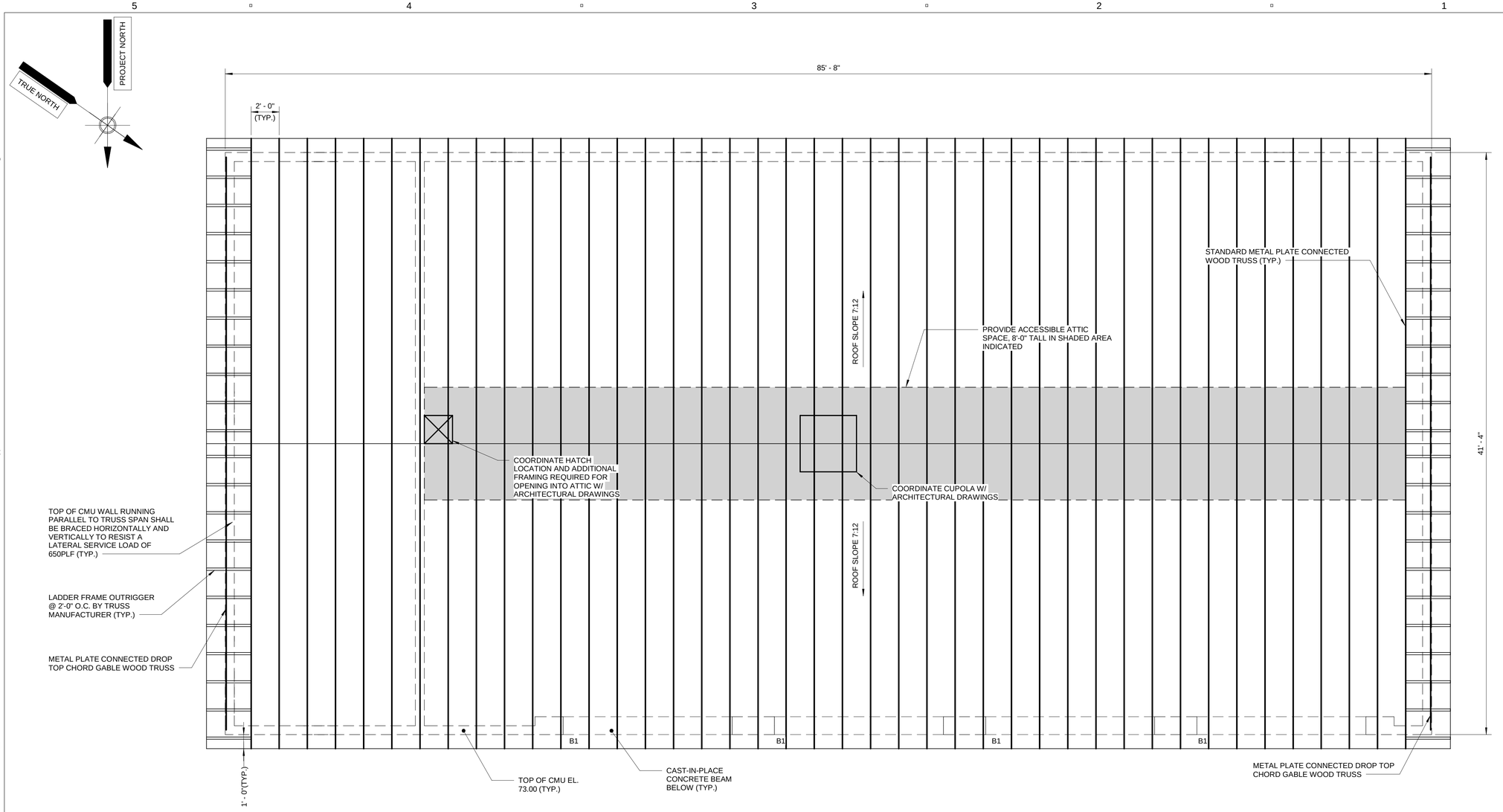
STRUCTURAL

SHEET TITLE

STORAGE FACILITY GRADE LEVEL PLAN

SHEET NUMBER

20 S-101



ROOF LEVEL PLAN

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

NOTES:

1. ROOF FRAMING PLAN SHOWN FOR GEOMETRIC PURPOSES ONLY. METAL PLATE CONNECTED WOOD TRUSS MANUFACTURER IS RESPONSIBLE FOR FRAMING LAYOUT TO ACCOMMODATE OPENINGS IN ROOF AND TO TRANSFER DESIGN LOADS TO EXTERIOR CMU WALLS. SEE ARHCITECTURAL DRAWINGS FOR ANY ADDITIONAL FRAMING REQUIRED.

DESIGN ROOF LOADS:

- ROOF SNOW LOAD = 35 PSF
- TOP CHORD LIVE LOAD = 35 PSF
- BOTTOM CHORD LIVE LOAD = 10 PSF
- BOTTOM CHORD COLLATERAL DEAD LOAD = 15 PSF
- COORDINATE WEIGHT OF EQUIPMENT OR PIPING HANGING FROM OR SUPPORTED ON TRUSSES WITH EQUIPMENT MANUFACTURER OR EQUIPMENT PURCHASED
- SEE SHEET 00 S-002 FOR COMPONENTS AND CLADDING LOADS TO DETERMINE NET WIND UPLIFT ON ROOF

WOOD TRUSSES DESIGN LOADS

1. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A UPLIFT SERVICE LOAD OF 550 POUNDS AT EACH END.
2. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A LATERAL SERVICE LEVEL LOAD PARALLEL TO TRUSS SPAN OF 500 POUNDS AT EACH END.
3. EACH TRUSS SHALL BE ANCHORED TO SUPPORTS FOR A LATERAL SERVICE LEVEL LOAD PERPENDICULAR TO TRUSS SPAN OF 400 POUNDS AT EACH END.
4. ROOF SHEATHING SHALL BE 5 PLY 5/8" EXTERIOR GRADE. ORIENT FACE GRAIN PERPENDICULAR TO ROOF TRUSSES. FASTEN SHEATHING TO EACH FRAMING MEMBER USING 10d PENNYWEIGHT COMMON NAILS WITH A 1.5" MINIMUM PENETRATION AT A MAXIMUM SPACING OF 4 INCHES ALONG THE EDGES OF THE SHEATHING AND AT A MAXIMUM OF 4 INCHES ALONG INTERMEDIATE SUPPORTS. PROVIDE WOOD BLOCKING AT SHEATHING EDGES PERPENDICULAR TO TRUSS SPAN. FASTEN SHEATHING TO WOOD BLOCKING USING 10d PENNYWEIGHT COMMON NAILS WITH A 1.5" MINIMUM PENETRATION AT A MAXIMUM SPACING OF 4 INCHES.

BEAM SCHEDULE — BEAM MARK IS SHOWN ON LEFT END OF BEAM IN PLAN.

MARK	SIZE WIDTH X DEPTH	REINFORCEMENT					STIRRUPS		
		BOTTOM		TOP					
		CONT.	ADD.	ADD. LEFT	CONT.	ADD. RIGHT	TYPE	SIZE	SPACING EACH END
B1	16 x 24	3-#7	-	-	2-#5	-		#4	1 @ 2, BAL. @ 12

0 1' 2' 4' 8' 12'
SCALE: 1/4" = 1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

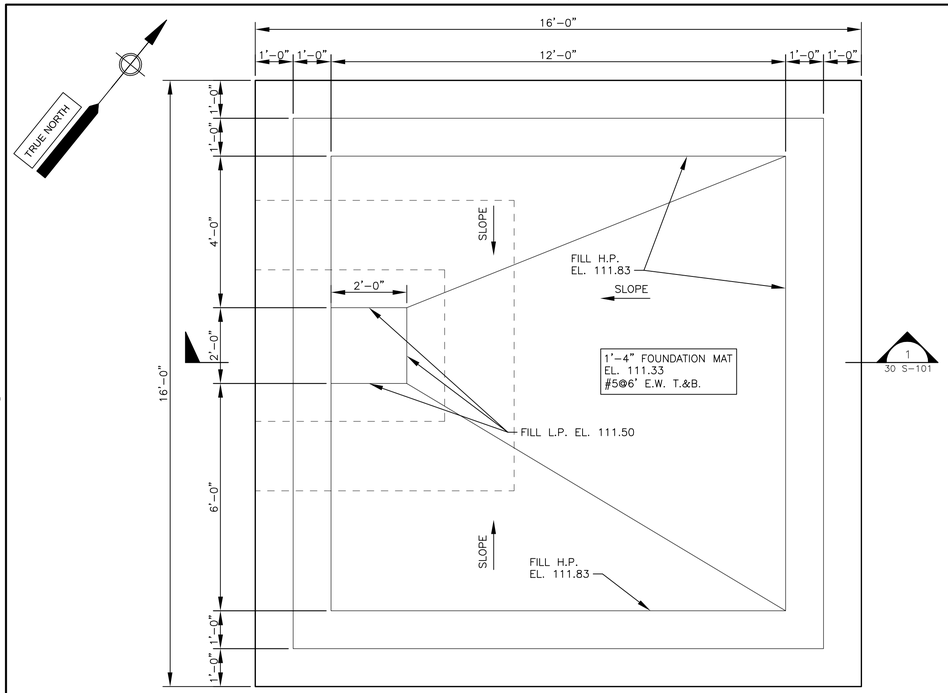
SHEET TITLE

STORAGE FACILITY ROOF LEVEL PLAN

SHEET NUMBER

20 S-102

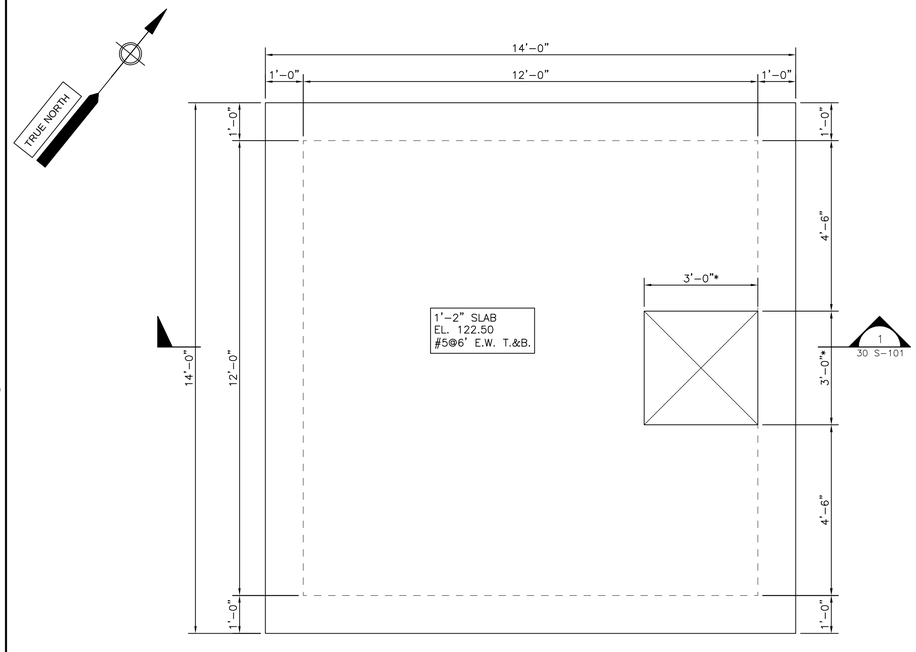
PATH/FILENAME: C:\Users\welchJA\Documents\Projects\Orleans\Revit\20 S-Garage_WelchJA.rvt
PLOT DATE: 1/17/2020 2:09:38 PM



FOUNDATION LEVEL PLAN

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

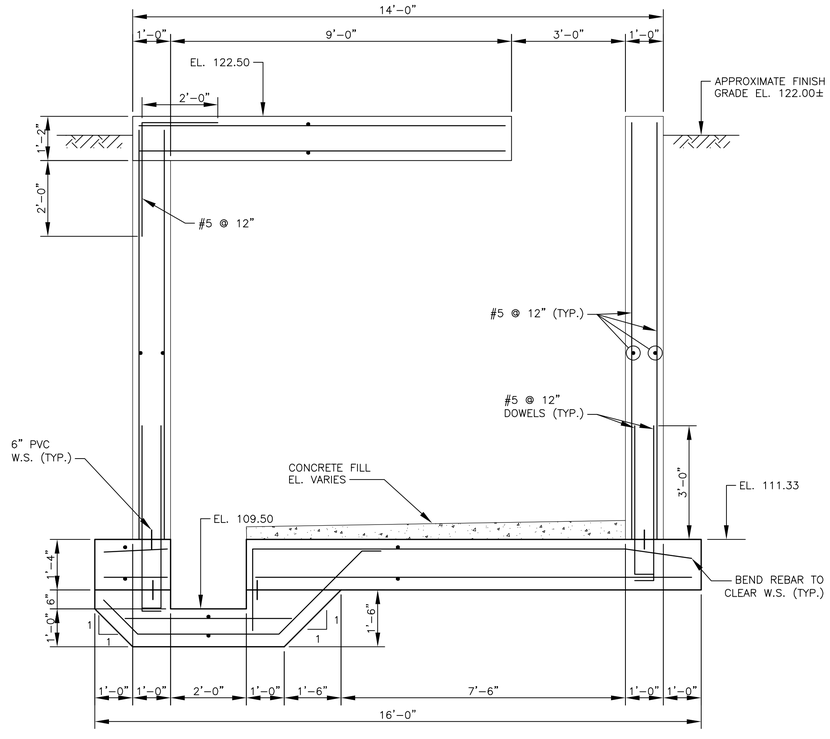
NOTE:
1. FOUNDATION DESIGN BASED ON ALLOWABLE BEARING PRESSURE = 2000 PSF



GRADE LEVEL PLAN

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

NOTE:
1. SLAB DESIGN LIVE LOAD = 250PSF
* COORDINATE DIMENSION WITH EQUIPMENT PURCHASED



SECTION 1

SCALE: 1/2" = 1'-0" 30 S-101

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

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

SHEET TITLE

WICK DISTRIBUTION VAULT PLANS AND SECTIONS

SHEET NUMBER

30 S-101

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S\30 S-101.DWG
LAST UPDATE: Thursday, January 16, 2020 3:24:58 PM
PLOT DATE: Friday, January 17, 2020 2:44:18 PM

CLEAR CONCRETE COVER OVER REINFORCEMENT FOR CAST-IN-PLACE CONCRETE (INCHES)					
MEMBER	EXPOSURE CONDITIONS				
	AIR	WEATHER	AIR OVER LIQUID	EARTH OR STONE	LIQUIDS
FOOTINGS AND FOUNDATIONS	2"*	2"*	-	2" * 3" o	2"*
WALLS	2"	2"	2"	2"	2"
JOISTS, BEAM STRIRRUPS AND COLUMN TIES	1 1/2"	2"	2"	2" * 3" o	2"
FRAMED SLABS-EACH FACE	1"	2"	2"	2" ▲	2"
SLABS ON GROUND	1"	2"	-	2" ▲	2"

NOTES:

* TOP FACE AND SIDES

o BOTTOM FACE

▲ WHEN PLACED ON SAND-GRAVEL, WELL DRAINED COMPACTED FILL

CLEAR CONCRETE COVER OVER REINFORCEMENT FOR CAST-IN-PLACE CONCETE

N.T.S.
(REV. 12-18-13)

REINFORCING BAR DEVELOPMENT PER ACI 318 f'c=4,000psi f'c=4,500psi fy=60,000psi				
BAR SIZE	BASIC TENSION DEVELOPMENT	TOP BAR DEVELOPMENT	COMPRESSION DEVELOPMENT	STANDARD HOOK DEVELOPMENT
#3 (10)	1'-2"	1'-6"	0'-8"	0'-7"
#4 (13)	1'-6"	1'-10"	0'-9"	0'-9"
#5 (16)	1'-10"	2'-5"	0'-11"	0'-11"
#6 (19)	2'-3"	2'-10"	1'-2"	1'-1"
#7 (22)	3'-3"	4'-3"	1'-4"	1'-4"
#8 (25)	3'-9"	4'-10"	1'-6"	1'-6"
#9 (29)	4'-3"	5'-6"	1'-8"	1'-8"
#10 (32)	4'-9"	6'-2"	1'-11"	1'-11"
#11 (36)	5'-3"	6'-10"	2'-1"	2'-1"

NOTE:

1. TABULATED VALUES ARE FOR UNCOATED BARS AND NORMAL WEIGHT CONCRETE.
2. TOP BARS ARE HORIZONTAL REINOFRCEMENT PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS PLACED BELOW THE BAR.
3. TABULATED VALUES ARE FOR BARS WHICH HAVE AT LEAST 1 1/2" OF CLEAR CONCRETE COVER AND ARE SPACED AT LEAST 3" ON CENTER. SPLICE LENGTHS FOR BARS NOT CONFORMING TO EITHER OF THESE CONDITIONS SHALL BE INCREASED 50%.

REINFORCING BAR DEVELOPMENT

N.T.S.
(REV. 07-17-12)

REINFORCING BAR SPLICES PER ACI 318 f'c=4,000psi f'c=4,500psi fy=60,000psi			
BAR SIZE	CLASS "B" SPLICE		COMPRESSION SPLICE
	TOP BARS	OTHER BARS	
#3 (10)	1'-11"	1'-5"	1'-0"
#4 (13)	2'-6"	1'-10"	1'-3"
#5 (16)	3'-2"	2'-5"	1'-7"
#6 (19)	3'-9"	2'-10"	1'-11"
#7 (22)	5'-6"	4'-3"	2'-2"
#8 (25)	6'-4"	4'-10"	2'-6"
#9 (29)	7'-2"	5'-6"	2'-10"
#10 (32)	8'-0"	6'-2"	3'-2"
#11 (36)	8'-11"	6'-10"	3'-6"

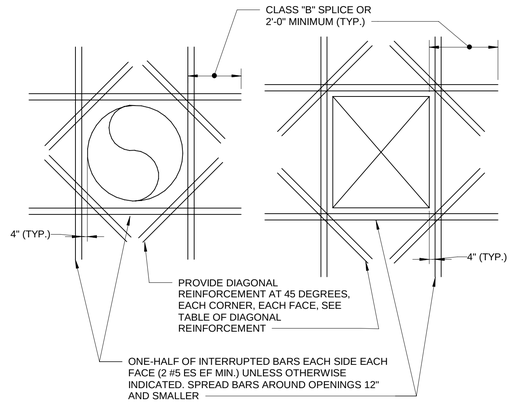
NOTES:

1. TABULATED VALUES ARE FOR NORMAL WEIGHT CONCRETE AND UNCOATED BARS THAT HAVE AT LEAST 1 1/2" OF CLEAR CONCRETE COVER AND ARE SPACED AT LEAST 3" ON CENTER.
2. TOP BARS ARE HORIZONTAL REINOFRCEMENT PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS PLACED BELOW THE BAR.

REINFORCING BAR SPLICES

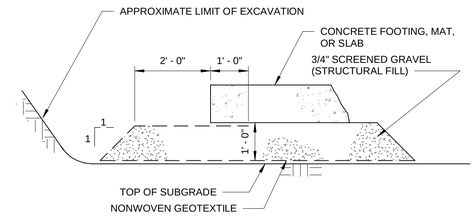
N.T.S.
(REV. 07-18-12)

TABLE OF DIAGONAL REINFORCEMENT					
MEMBER THICKNESS IN INCHES	LARGEST OPENING DIMENSION IN INCHES				
	LESS THAN 12	12 TO 36	36 TO 48	48 TO 60	60 AND LARGER
LESS THAN 16	NONE	2-#5 X 4'-0"	2-#5 X 4'-0"	2-#6 X 4'-0"	2-#6 X 4'-0"
16 TO 32	NONE	2-#6 X 4'-0"	2-#6 X 4'-0"	2-#7 X 4'-6"	2-#7 X 4'-6"
32 TO 48	NONE	2-#6 X 4'-0"	2-#7 X 4'-6"	2-#7 X 4'-6"	2-#8 X 5'-0"
48 TO 60	NONE	2-#7 X 4'-6"	2-#7 X 4'-6"	2-#8 X 5'-0"	2-#8 X 5'-0"
60 AND LARGER	NONE	2-#7 X 4'-6"	2-#8 X 5'-0"	2-#8 X 5'-0"	2-#9 X 6'-0"



ADDITIONAL REINFORCEMENT FOR ROUND AND RECTANGULAR OPENINGS

N.T.S.
(REV. 06-22-11)

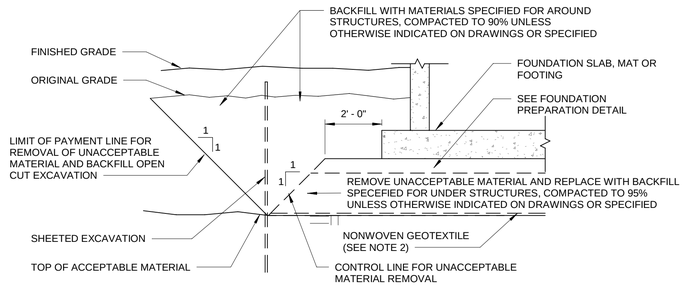


SIEVE SIZE	PERCENTAGE BY WEIGHT PASSING 3/4" SCREENED GRAVEL
1"	100
3/4"	90-100
3/8"	20-55
#4	0-10
#8	0-5

NOTE: CONFORM TO GEOTEXTILE SPECFICATIONS

FOUNDATION PREPARATION WITH GEOTEXTILE

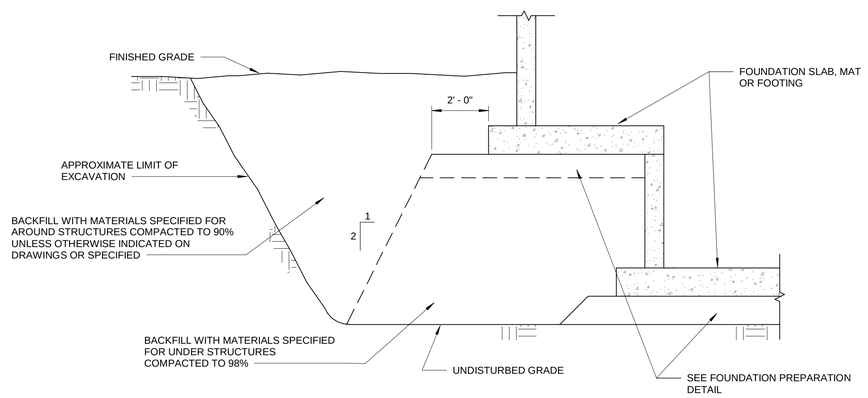
N.T.S.



NOTES:
1. PERCENT COMPACTION IS THE RATIO OF FIELD DRY DENSITY DETERMINED BY ASTM D-1557 MULTIPLIED BY 100.
2. NONWOVEN GEOTEXTILE SHALL BE PLACED AT UNDISTURBED SUBGRADE WHEN SCREENED GRAVEL OR CRUSHED STONE IS USED AS BACKFILL BENEATH STRUCTURES.

REMOVAL OF UNACCEPTABLE MATERIAL FROM BENEATH STRUCTURES

N.T.S.



NOTES:
1. PERCENT COMPACTION IS THE RATIO OF FIELD DRY DENSITY DETERMINED BY ASTM D-6938 OR TO MAXIMUM DRY DENSITY DETERMINED BY ASTM D-1557 MULTIPLIED BY 100.

BACKFILL AROUND AND BENEATH STRUCTURES

N.T.S.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED PROFESSIONAL ENGINEER

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

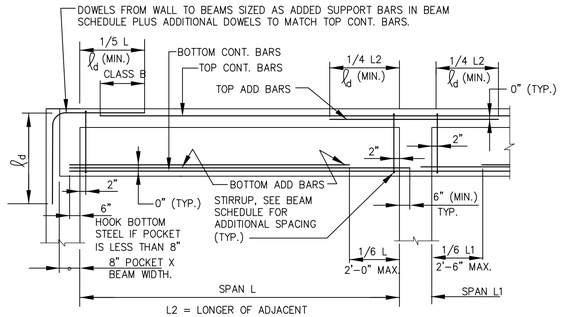
SHEET TITLE

STRUCTURAL STANDARD DETAILS I

SHEET NUMBER

99 S-501

PATH/FILENAME: C:\Users\WMitch.JA\Documents\Projects\Orleans\Revit\10 S-WWTF_WMitchJA.rvt
PLOT DATE: 1/17/2020 1:27:33 PM

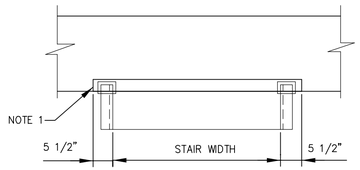


BEAM ELEVATION

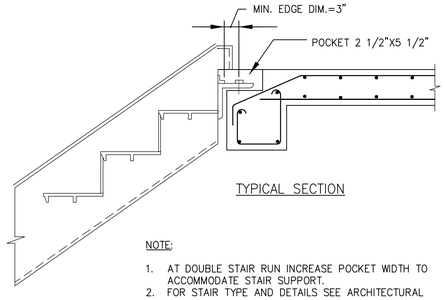
NOTE: FOR ADDITIONAL BEAM INFORMATION SEE BEAM AND COLUMN JOINTS DETAIL

BEAM SET INTO WALL POCKET

NTS



PLAN



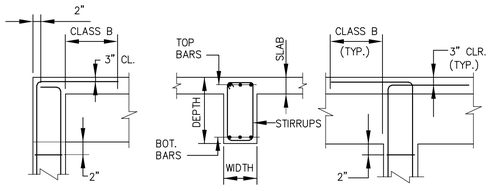
TYPICAL SECTION

NOTE:

1. AT DOUBLE STAIR RUN INCREASE POCKET WIDTH TO ACCOMMODATE STAIR SUPPORT.
2. FOR STAIR TYPE AND DETAILS SEE ARCHITECTURAL DRAWINGS.

CONCRETE BEAM POCKET FOR STAIR SUPPORT

NTS
(REV. 06–27–11)

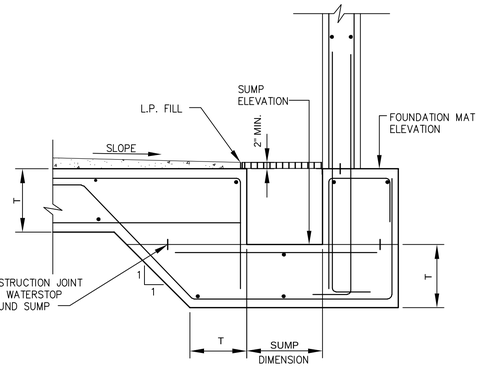


DISCONTINUOUS END | TYPICAL BEAM SECTION | CONTINUOUS END

NOTE: WORK THIS DETAIL WITH BEAM AND COLUMN JOINTS DETAIL

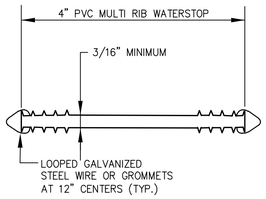
BEAM AND COLUMN DETAILS

NTS
(REV. 06–25–11)



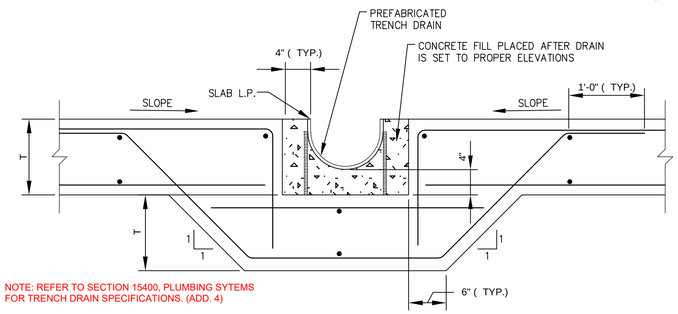
SUMP IN FOUNDATION MAT AT WALL

NTS
(REV. 10–17–11)



FOUR INCH WATERSTOP

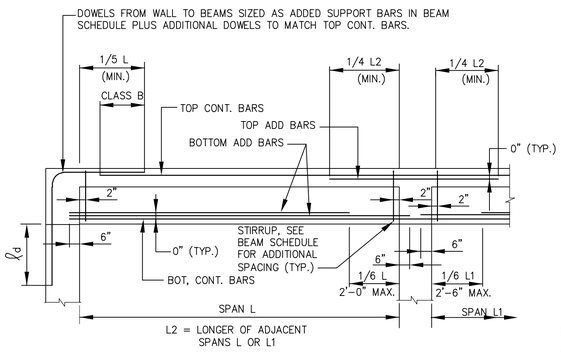
NTS
(REV. 06–27–11)



NOTE: REFER TO SECTION 15400, PLUMBING SYTEMS FOR TRENCH DRAIN SPECIFICATIONS. (ADD. 4)

TRENCH DRAIN IN SLAB WITH SLAB BLOCKOUT

NTS
(REV. 10–25–11)

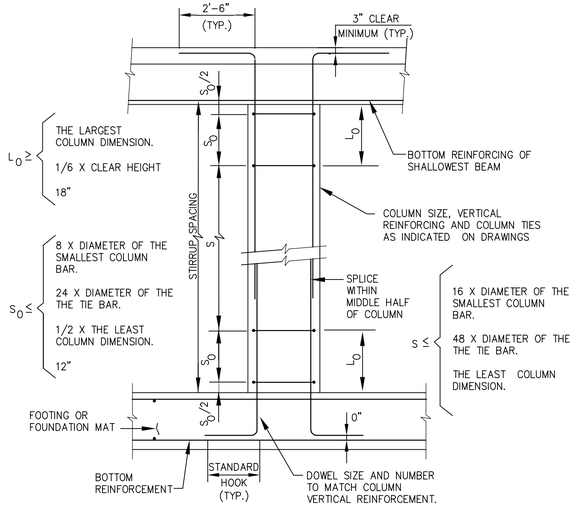


BEAM ELEVATION

NOTE: FOR ADDITIONAL BEAM INFORMATION SEE BEAM AND COLUMN JOINTS DETAIL

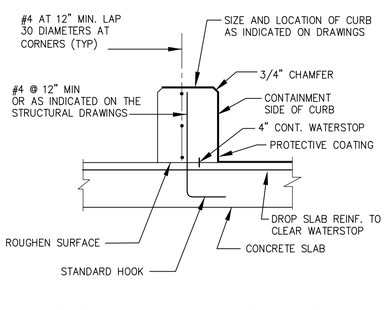
BEAM OVER WALL

NTS
(REV. 06–25–11)



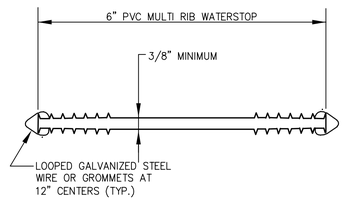
ONE–STORY COLUMN ELEVATION

(MODERATE SEISMIC RISK)
NTS
(REV. 06–24–11)



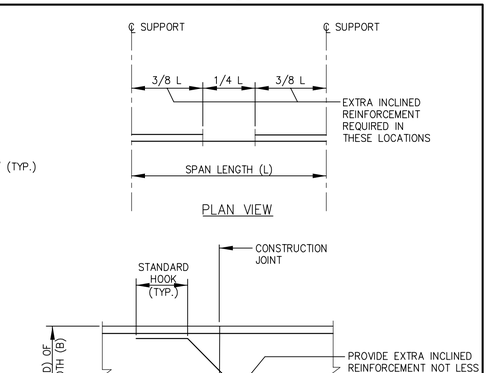
CONTAINMENT CURB FOR NEW CONSTRUCTION WITH PVC WATERSTOP

NTS
(REV. 06–24–11)

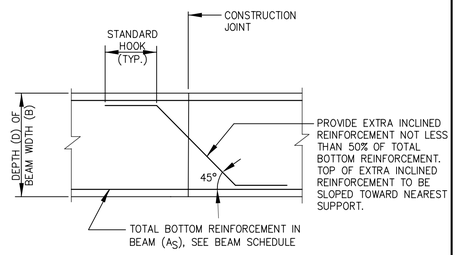


SIX INCH WATERSTOP

NTS
(REV. 06–27–11)



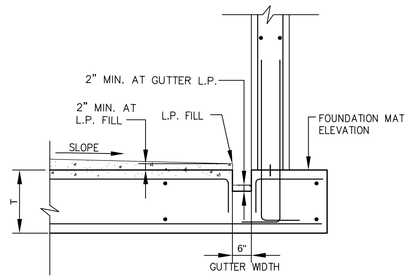
PLAN VIEW



BEAM ELEVATION

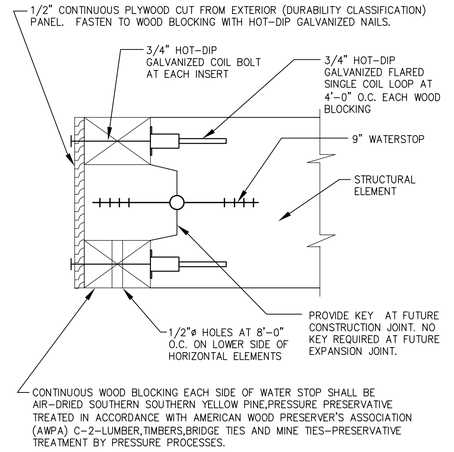
CONSTRUCTION JOINT IN BEAM

NTS
(REV. 06–26–11)



GUTTER AT WALL

NTS
(REV. 3–16–12)



COVER FOR WATERSTOP AT FUTURE CONSTRUCTION JOINT

NTS
(REV. 06–27–11)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

MICHAEL E. MALENFANT STRUCTURAL No. 45440 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
17 JAN 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	2-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

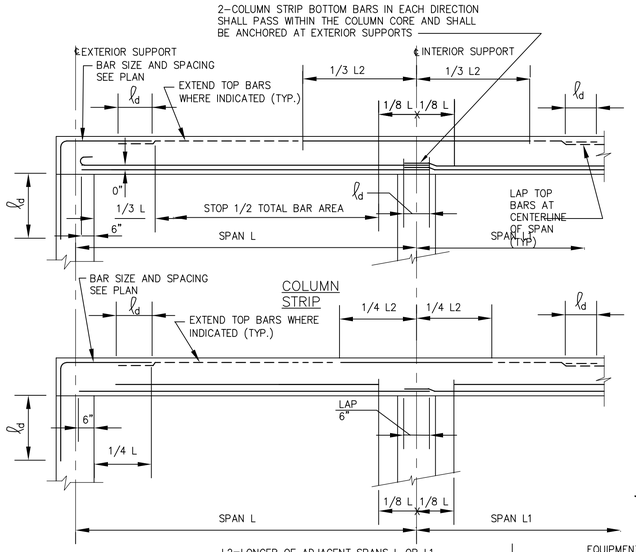
SHEET TITLE

STRUCTURAL STANDARD DETAILS II

SHEET NUMBER

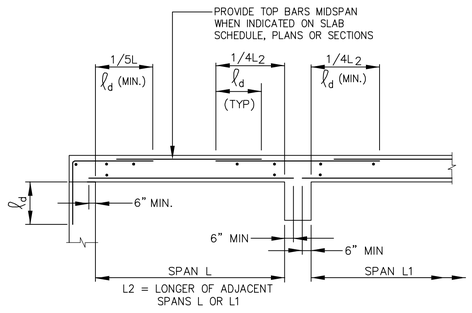
99 S-502

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S99 S-502.DWG
LAST UPDATE: Thursday, January 16, 2020 1:16:17 PM
PLOT DATE: Friday, January 17, 2020 2:43:38 PM



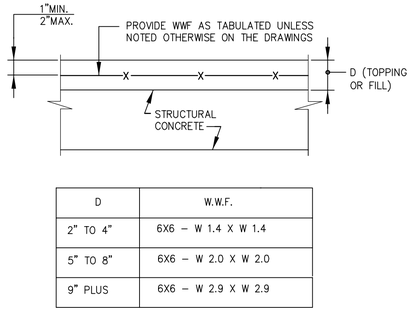
FLAT SLAB DETAILS

NTS
(REV. 06-27-11)



SLAB OVER WALL

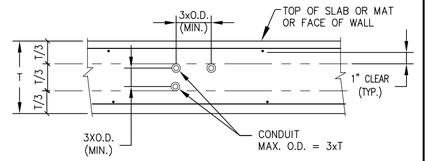
NTS
(REV. 06-27-11)



D	W.W.F.
2" TO 4"	6X6 - W 1.4 X W 1.4
5" TO 8"	6X6 - W 2.0 X W 2.0
9" PLUS	6X6 - W 2.9 X W 2.9

REINFORCEMENT FOR CONCRETE TOPPING AND FILL

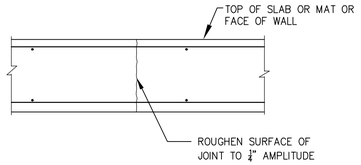
NTS
(REV. 08-03-97)



1. CONDUITS AND PIPES SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL, OR BEAM IN WHICH THEY ARE EMBEDDED.
2. CONDUITS AND PIPES SHALL NOT BE SPACED CLOSER THAN 3 TIMES THE OUTSIDE DIAMETERS OF THE CONDUIT OR PIPE ON CENTER.
3. CONDUITS AND PIPES SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE ELEMENT AND BETWEEN REINFORCEMENT LAYERS. DO NOT INSTALL RUNS OF PIPING OR CONDUIT BETWEEN FORMWORK AND REINFORCEMENT.
4. DO NOT TIE PIPES AND CONDUIT AGAINST REINFORCEMENT.
5. DO NOT CROSS PIPES AND CONDUIT IN CONCRETE UNLESS BOTH CAN BE MAINTAINED WITHIN THE MIDDLE THIRD OF THE SECTION.

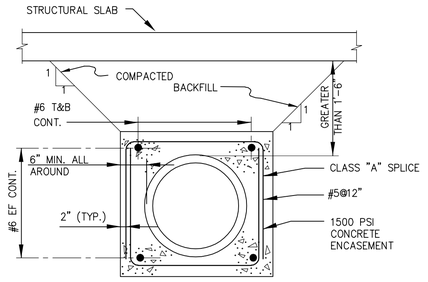
PIPE OR CONDUIT WITHIN STRUCTURAL ELEMENT

NTS
(REV. 9-19-14)



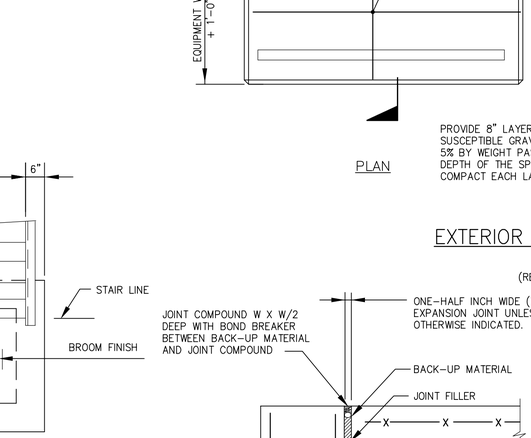
CONSTRUCTION JOINT WITHOUT WATERSTOP

NTS
(REV. 4-19-13)



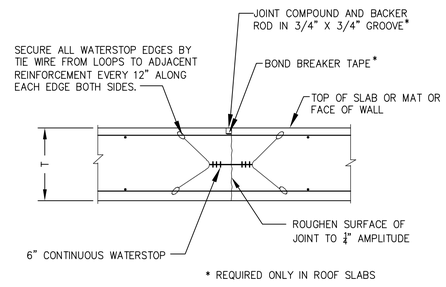
ENCASEMENT FOR PIPE DEEPER THAN 1'-6" BELOW SLAB

NTS
(REV. 06-26-11)



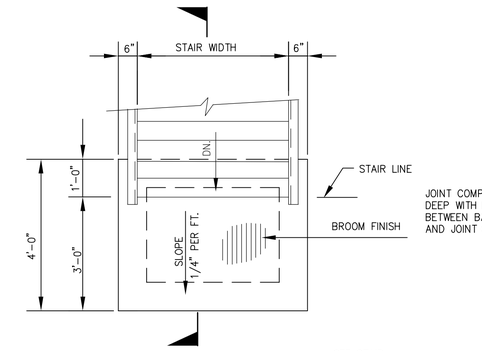
EXTERIOR EQUIPMENT PAD

NTS
(REV. 06-28-11)



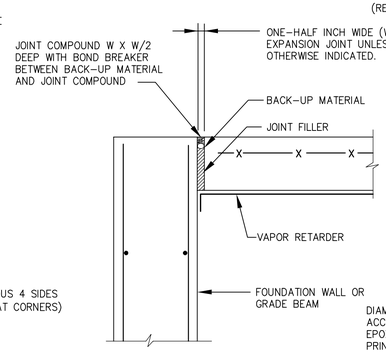
CONSTRUCTION JOINT WITH WATERSTOP

NTS
(REV. 4-19-13)



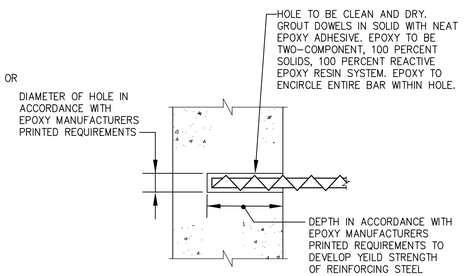
EXTERIOR STAIR LANDING

NTS
(REV. 06-28-11)



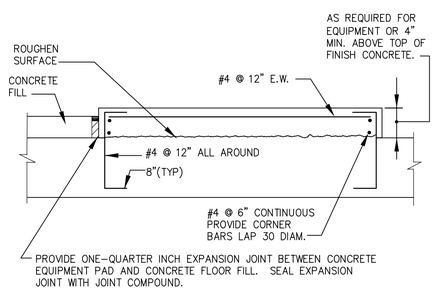
PERIMETER EXPANSION JOINT IN SLAB ON GRADE

NTS
(REV. 06-22-11)



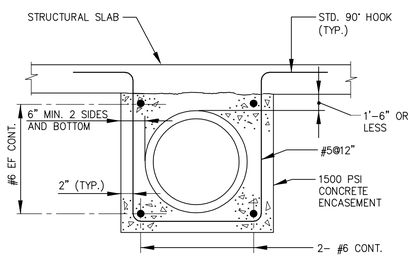
DOWEL ANCHORAGE INTO EXISTING CONCRETE

NTS
(REV. 05-07-12)



CONCRETE EQUIPMENT PAD FOR NEW CONSTRUCTION

NTS
(REV. 06-27-11)



ENCASEMENT FOR PIPE 1'-6" OR LESS BELOW SLAB

NTS
(REV. 06-24-11)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

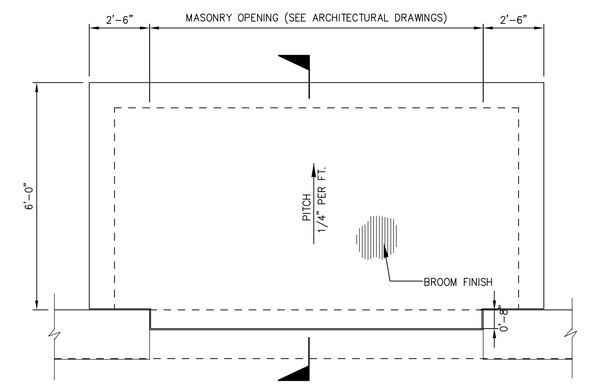
SHEET TITLE

STRUCTURAL STANDARD DETAILS III

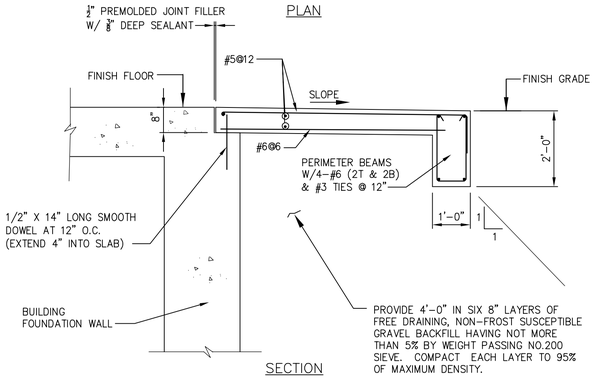
SHEET NUMBER

99 S-503

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WW\TF\SHEETS\S99 S-503.DWG
LAST UPDATE: Thursday, January 16, 2020 1:15:10 PM
PLOT DATE: Friday, January 17, 2020 2:43:47 PM



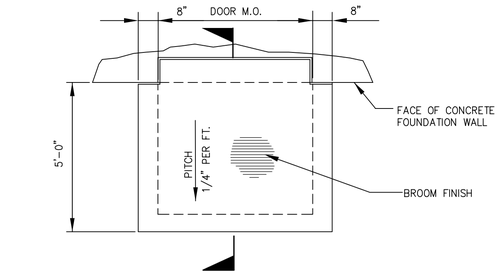
PLAN



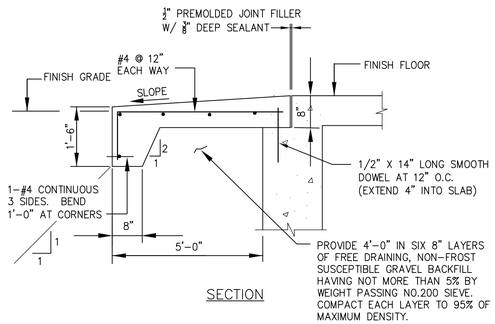
SECTION

TRUCKWAY ENTRANCE PAD

NTS
(REV. 06-28-11)



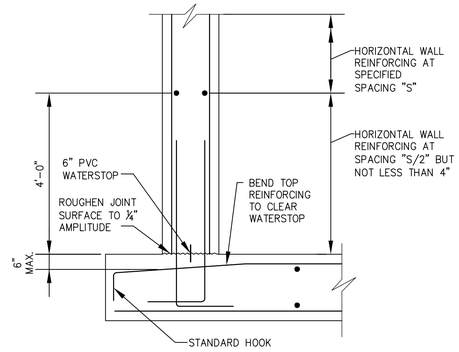
PLAN



SECTION

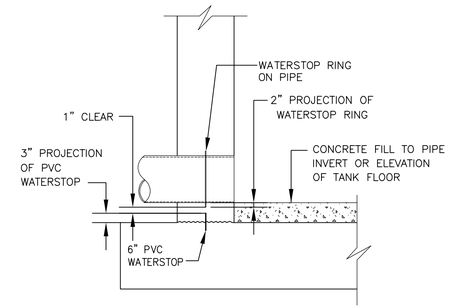
CONCRETE ENTRANCE PAD

NTS
(REV. 06-28-11)



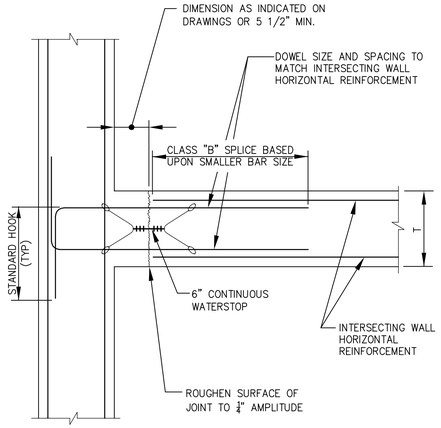
DETAIL AT BASE OF EXTERIOR WALLS

NTS
(REV. 01-22-15)



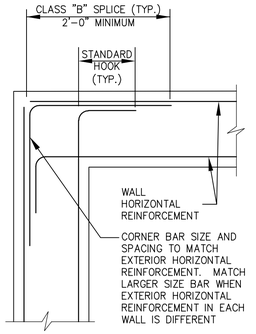
PIPE PENETRATION AT BASE OF WALLS WITH WATERSTOP

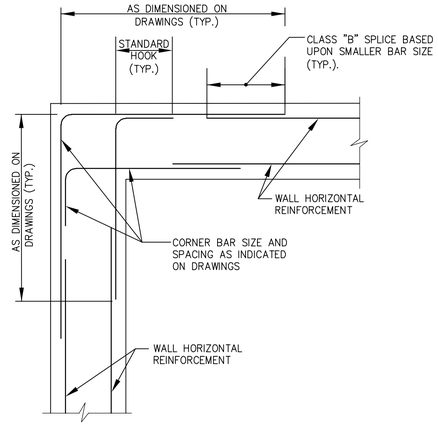
NTS
(REV. 10-10-14)



INTERSECTION OF TWO WALLS WITH CONSTRUCTION JOINT AND WATERSTOP

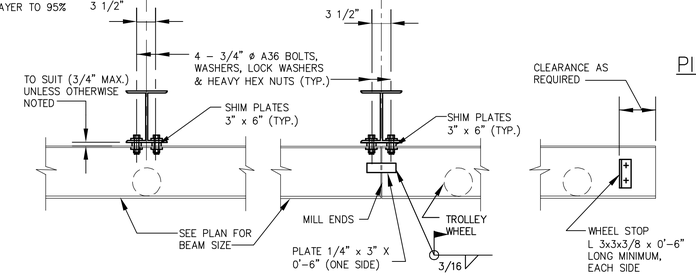
NTS
(REV. 01-20-15)





WALL CORNER WITH ADDITIONAL CORNER BARS

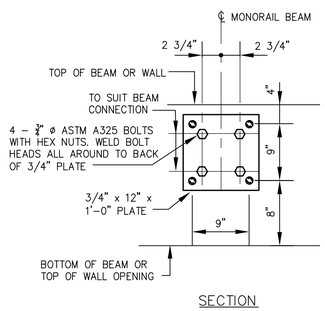
NTS
(REV. 06-20-11)



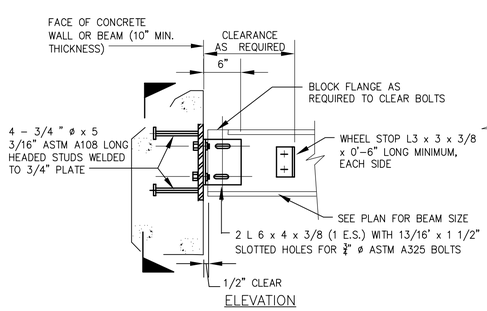
INTERIOR AT SPLICE END STOP

MONORAIL CONNECTIONS TO STEEL FRAMING

(3 TON CAPACITY)
NTS



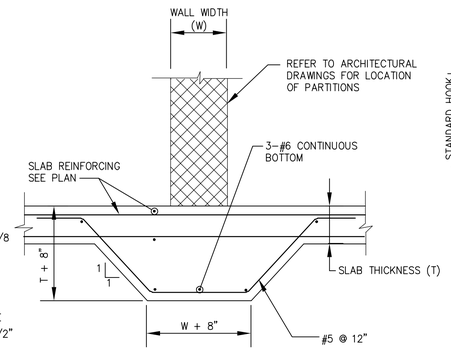
SECTION



ELEVATION

MONORAIL END PLATE CONNECTION

(5 TON CAPACITY)
NTS
(REV. 06-30-11)

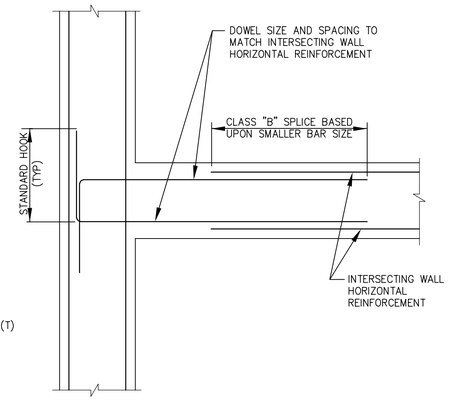


BEAM IN SLAB ON GRADE BELOW MASONRY WALL

NTS
(REV. 12-29-11)

WALL CORNER REINFORCEMENT

NTS
(REV. 06-20-11)



INTERSECTION OF TWO WALLS WITHOUT CONSTRUCTION JOINT

NTS
(REV. 01-20-15)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45448
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

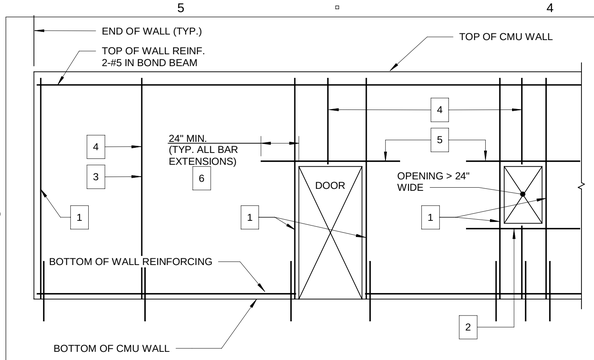
SHEET TITLE

STRUCTURAL STANDARD DEATILS IV

SHEET NUMBER

99 S-504

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S99 S-504.DWG
LAST UPDATE: Thursday, January 16, 2020 11:42 PM
PLOT DATE: Friday, January 17, 2020 2:43:51 PM

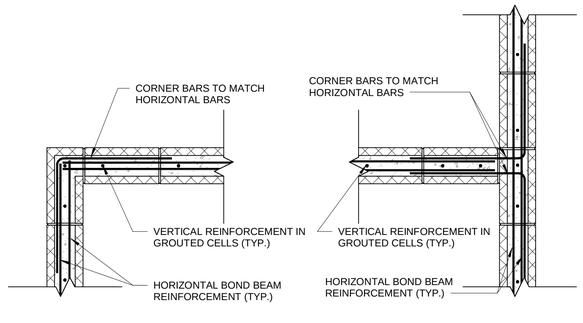


LEGEND:

1	2-#5 ADDITIONAL. SEE "VERTICAL REINFORCEMENT FOR MASONRY WALL" DETAIL
2	SILL BARS: 2-#5 IN BOND BEAM
3	SEE TYPICAL 8" CMU WALL REINFORCING DETAIL ON THIS SHEET.
4	PROVIDE TYPICAL WALL REINFORCING BETWEEN BARS SHOWN PER APPLICABLE MASONRY WALL REINFORCING SCHEDULE.
5	SEE APPLICABLE "MASONRY LINTEL" DETAIL
6	EXTEND AS FAR AS POSSIBLE AND HOOK 90° IF FULL LENGTH IS NOT AVAILABLE

MASONRY WALL REINFORCEMENT ELEVATION

N.T.S.



AT CORNER

AT INTERSECTION

BOND BEAM REINFORCING

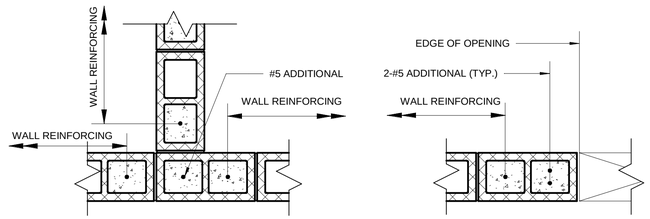
N.T.S.

MASONRY REINFORCING SPLICES	
BAR SIZE	SPLICE*
#3 (10)	1'-4"
#4 (13)	1'-4"
#5 (16)	2'-0"
#6 (19)	2'-4"

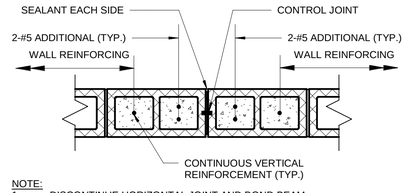
NOTE: * BASE ON 2,500 PSI GROUT

MASONRY REINFORCING BAR SPLICES

N.T.S.

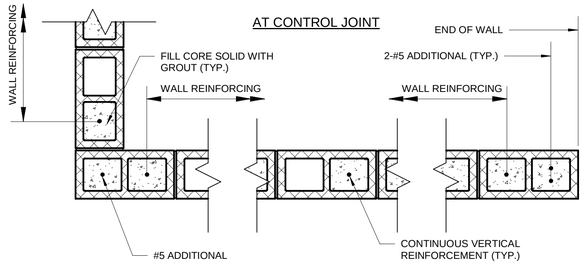


AT INTERSECTION AT OPENING



NOTE:
1. DISCONTINUE HORIZONTAL JOINT AND BOND BEAM REINFORCING AT CONTROL JOINTS. CONTINUE TIE BEAM AND TOP BOND BEAM REINFORCING THROUGH JOINT.

AT CONTROL JOINT



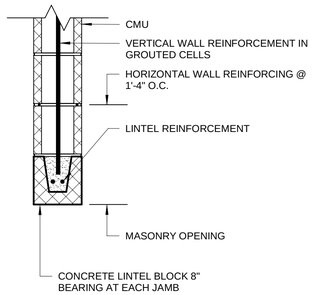
AT CORNER TYPICAL AT END

VERTICAL REINFORCEMENT FOR MASONRY WALL

N.T.S.

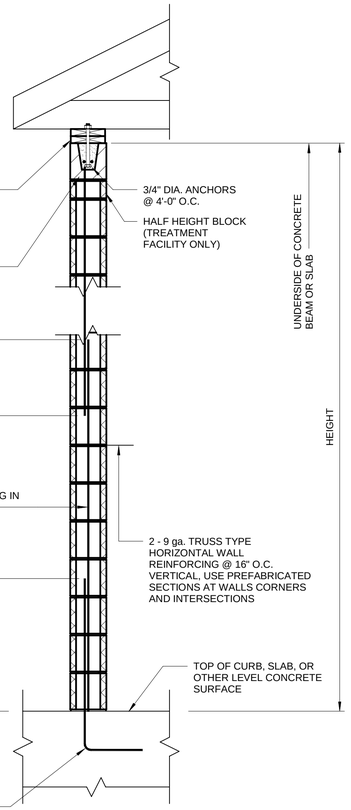
NOTE:
1. ALL VERTICAL REINFORCING SHALL HAVE MATCHING DOWELS.

MASONRY LINTELS			
WALL THICKNESS	MAXIMUM OPENING WIDTH	LINTEL BLOCK SIZE (WIDTH X HEIGHT)	LINTEL REINFORCEMENT
8" CMU	6' - 4"	8" X 16"	2 - #5
	10' - 0"	8" X 24"	2 - #5
	12' - 0"	8" X 32"	2 - #6



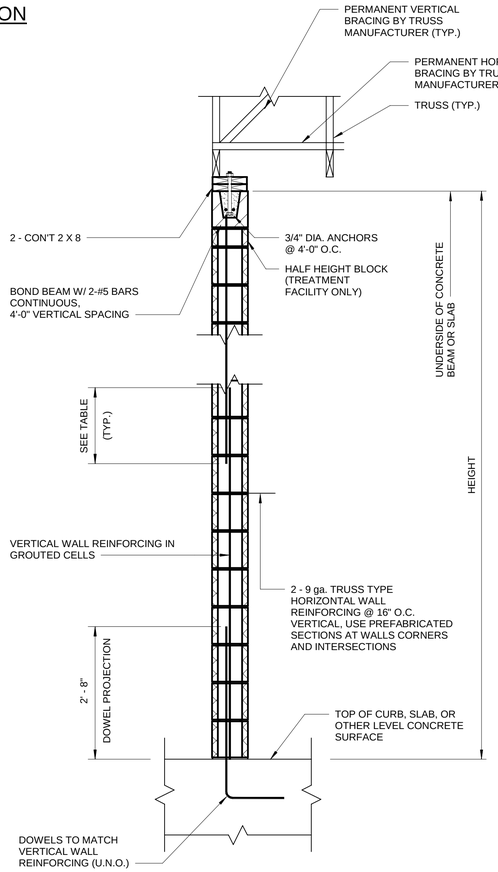
MASONRY LINTEL

N.T.S.



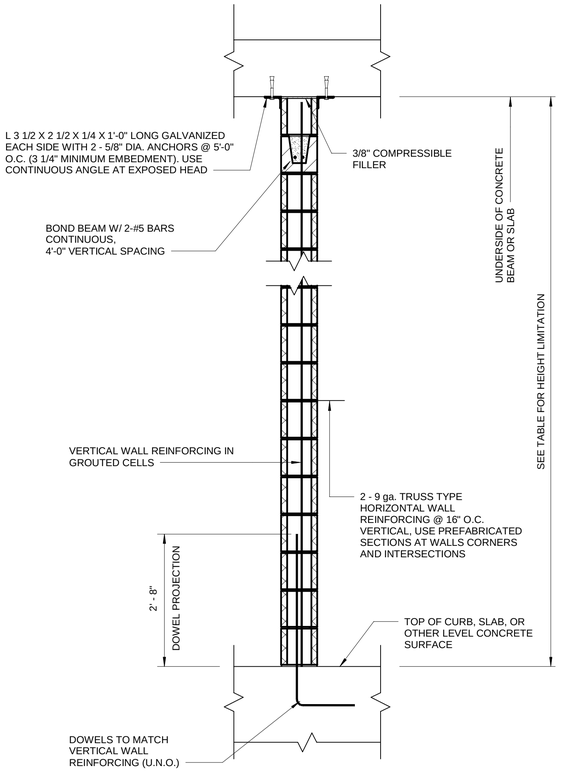
MASONRY BEARING WALL PERPENDICULAR TO TRUSS SPAN

N.T.S.



MASONRY BEARING WALL PARALLEL TO TRUSS SPAN

N.T.S.



MASONRY NON-BEARING WALL

N.T.S.

PATHFILENAME: C:\Users\WelchJA\Documents\Projects\Orleans\Revit\10 S-WWTF_WelchJA.rvt
PLOT DATE: 1/17/2020 2:53:25 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND EFFLUENT
DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
MICHAEL E. MALENFANT
STRUCTURAL
No. 45440
REGISTERED
PROFESSIONAL ENGINEER
17 JANUARY 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2019
Scale:	AS NOTED

DISCIPLINE

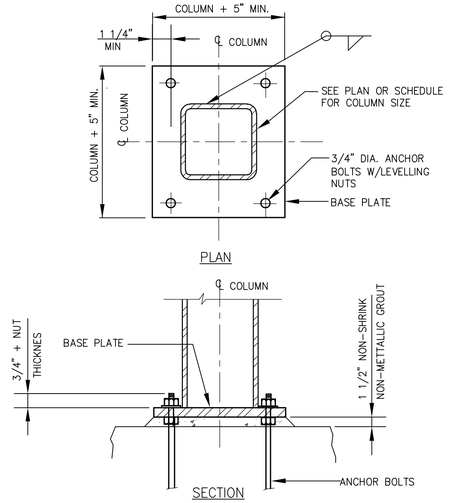
STRUCTURAL

SHEET TITLE

STRUCTURAL STANDARD DETAILS V

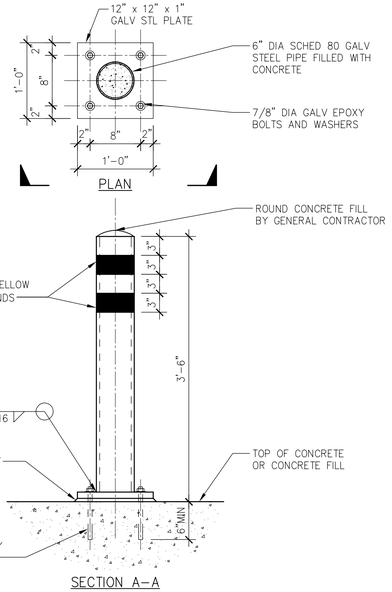
SHEET NUMBER

99 S-505



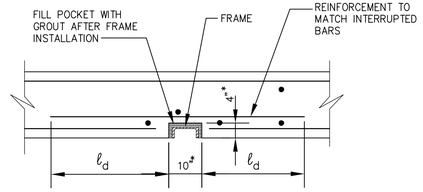
STRUCTURAL TUBE COLUMN BASE PLATE WITH 4 ANCHOR BOLTS

NTS



BOLLARD DETAIL

N.T.S.

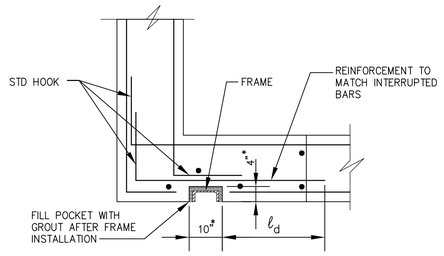


NOTE:

* = DIMENSIONS TO BE ADJUSTED BASE UPON EQUIPMENT FURNISHED.

WALL POCKET FOR GATE FRAME OR STOP LOG FRAME

NTS
(REV. 07-24-12)

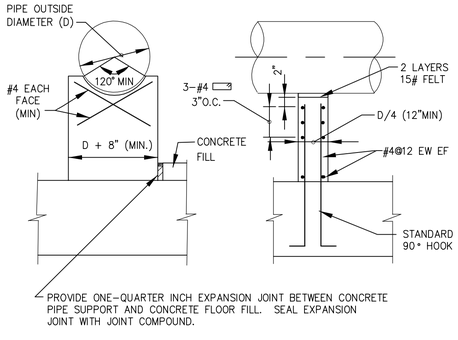


NOTE:

* = DIMENSIONS TO BE ADJUSTED BASE UPON EQUIPMENT FURNISHED.

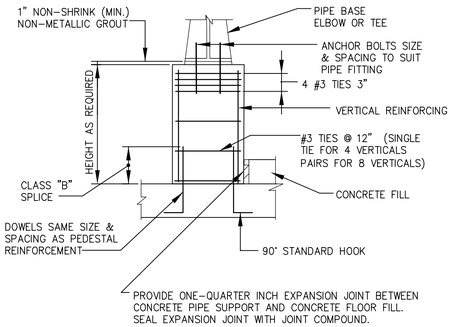
WALL CORNER POCKET FOR GATE FRAME OR STOP LOG FRAME

NTS
(REV. 09-12-16)



CONCRETE PIPE SUPPORT FOR NEW CONSTRUCTION

NTS
(REV. 06-27-11)

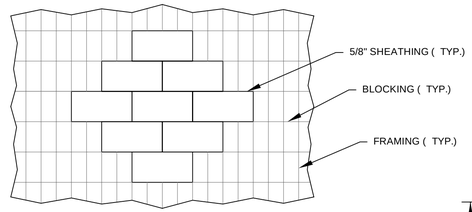


SUPPORTED PIPE SIZE INCHES	ANCHOR BOLT CIRCLE INCHES	MINIMUM PEDESTAL SIZE INCHES	MINIMUM VERTICAL REINFORCEMENT
2	3.50	12X12	4#6
3	3.88	12X12	4#6
4	4.75	12X12	4#6
6	5.50	16X16	4#8
8	7.50	16X16	4#8
10	7.50	16X16	4#8
12	9.50	18X18	4#9
14	9.50	18X18	4#9
16	9.50	18X18	4#9
18	11.75	18X18	4#9
20	11.75	18X18	4#9
24	11.75	18X18	4#9
30	14.25	22X22	8#7
36	17.00	25X25	8#8
42	21.25	30X30	8#10
48	22.75	30X30	8#10

PEDESTAL SIZE BASED UPON TABULATED BOLT CIRCLE. PEDESTAL SIZE SHALL BE NOT LESS THAN 6 INCHES LARGER THAN THE ACTUAL BOLT CIRCLE.

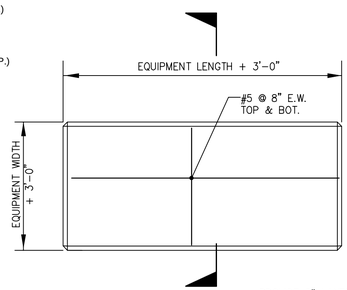
CONCRETE PIPE BASE SUPPORT FOR NEW CONSTRUCTION

NTS
(REV. 06-27-11)



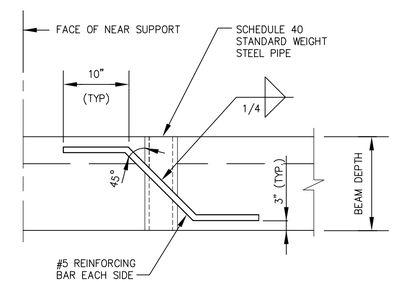
TYPICAL PLYWOOD ORIENTATION PLAN

NTS



GENERATOR PAD

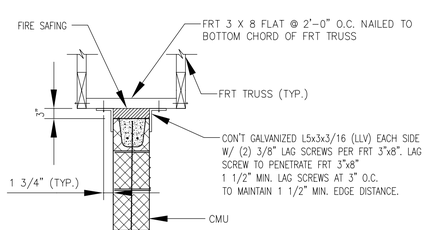
NTS



SLEEVE FOR VERTICAL CONDUIT THROUGH BEAM

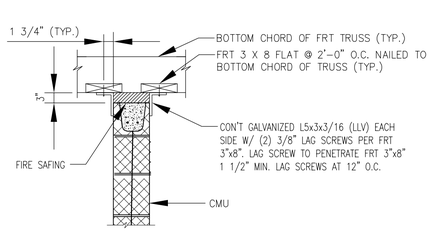
NTS
(REV. 06-27-11)

NOTE: THE CONTINUOS L5 x 3 x 3/16 IS TYPICAL FOR ALL INTERIOR NON BEARING WALLS. THE ANGLES DO NOT HAVE ATTACHMENT TO THE CMU. (ADD. 4)



INTERIOR TOP OF WALL CONNECTION PARALLEL TO TRUSSES

NTS



INTERIOR TOP OF WALL CONNECTION PERPENDICULAR TO TRUSSES

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	2-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	J. WELCH
Drawn By:	J. WELCH
Dept Check:	M. MALENFANT
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

STRUCTURAL

SHEET TITLE

STRUCTURAL STANDARD DETAILS VI

SHEET NUMBER

99 S-506

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\S99 S-506.DWG
LAST UPDATE: Thursday, January 16, 2020 12:41:58 PM
PLOT DATE: Friday, January 17, 2020 2:43:56 PM

DWG. ABBREV.	ITEM	SYMBOL
	GATE VALVE	
	KNIFE VALVE	K
	PLUG VALVE	
	CONE VALVE	
	3-WAY PLUG VALVE	
	BUTTERFLY VALVE	
	BALL VALVE	
	3-WAY BALL VALVE	
	CHECK VALVE	
	COMBINED FUNCTION VALVE	
	WAFER CHECK VALVE	W
	SPLIT DISC CHECK VALVE	
	BALL CHECK VALVE	
	DIAPHRAGM VALVE	
HG	HOSE GATE	HG
	GLOBE VALVE	
	PINCH VALVE	
	NEEDLE VALVE	
	ANGLE VALVE	
	RELIEF VALVE	
	PRESSURE REGULATING VALVE	
	PRESSURE REDUCING VALVE	
	BACK PRESSURE VALVE	
	IRIS VALVE	
	MULTI ORIFICE VALVE	
	DUCK BILL CHECK VALVE	
	SPECTACLE FLANGE	
	UNION	
	FLAP VALVE *	
	MUD VALVE *	
	TELESCOPING VALVE *	T
	INSECT SCREEN	
	QUICK DISCONNECT COUPLING	
	FLEXIBLE HOSE	
	PULSATION DAMPENER	
	CALIBRATION STANDPIPE (COLUMN)	

*FLOW DIAGRAM ONLY

DWG. ABBREV.	ITEM	SYMBOL
	STATIC MIXER	
SG	SLIDE GATE	
SL	STOP LOG	
W	WEIR	W
VD	VOLUME DAMPER	VD
	EXISTING PIPE & FACILITIES	
	PROPOSED PIPE & FACILITIES	
	PIPE: 6" & SMALLER	
	PIPE: 8" & LARGER	
	FLANGE	
BF	BLIND FLANGE	BF
	WELDED	
PO	MECHANICAL JOINT	
PO	RESTRAINED PUSH ON JOINT	
	GROOVED COUPLING (PIPE 6" & SMALLER)	
	GROOVED COUPLING (PIPE 8" & LARGER)	
	SLEEVE COUPLING	
	RESTRAINED SLEEVE COUPLING	
	FLANGE ADAPTER	
	RESTRAINED FLANGE ADAPTER	
	BOLTED SPLIT SLEEVE COUPLING (PIPE 6" & SMALLER)	
	BOLTED SPLIT SLEEVE COUPLING (PIPE 8" & LARGER)	
	EXPANSION JOINT W/CONTROL RODS	
	CONCENTRIC REDUCER	
	ECCENTRIC REDUCER FLAT ON TOP	F.O.T.
	ECCENTRIC REDUCER FLAT ON BOTTOM	F.O.B.
	WYE STRAINER	
	INSULATION (PIPE 6" & SMALLER)	
	INSULATION (PIPE 8" & LARGER)	
	EXISTING PIPE TO BE REMOVED	

DWG. ABBREV.	ITEM	SYMBOL
FE	FLOW RATE CONTROLLER	
FE	VENTURI FLOW METER	
FE	MAGNETIC FLOW METER	
	ORIFICE PLATE	
	ROTAMETER	
G	GAUGE	
	RUPTURE DISC	
WS	WATER SURFACE	
	DIRECTION OF FLOW	
	END CAP	
	PITCH PIPE DOWN IN DIRECTION OF ARROW	
	LIMITS OF WORK (TRADE, CONTRACT, ETC.)	
	POINT OF CONNECTION NEW WORK TO EXISTING WORK	
	LIMITS (MATERIAL, FURNISHED BY, ETC.)	
	SAMPLE TO LAB	LAB 2
	CHEMICAL DIFFUSER AT PIPE	
	CHANNEL *	
ACTUATORS		
	MOTOR OPERATED	M
	SOLENOID OPERATED	S
	DIAPHRAGM	D
	CYLINDER – HYDRAULIC	H
	CYLINDER – PNEUMATIC	P
	ELECTRO – HYDRAULIC	EH
	EQUIPMENT MOTOR	M
WALL / FLOOR CASTINGS		
FLG x PO	FLANGE AND PUSH ON JOINT	WATERSTOP
PO x PO	PUSH ON JOINT AND PUSH ON JOINT	
PO x PE	PUSH ON JOINT AND PLAIN END	
FLG x FLG	FLANGE AND FLANGE	
FLG x PE	FLANGE AND PLAIN END	

*FLOW DIAGRAM ONLY

DWG. ABBREV.	ITEM	SYMBOL
EQUIPMENT		
	POSITIVE DISPLACEMENT BLOWER *	
	CENTRIFUGAL BLOWER *	
	AXIAL FLOW PUMP *	
	VERTICAL WET PIT PUMP *	
	VERTICAL TURBINE CAN PUMP *	
	CENTRIFUGAL PUMP *	
	SUBMERSIBLE CENTRIFUGAL PUMP *	
	DIAPHRAGM PUMP *	
	HOSE OR TUBING PUMP *	
	METERING PUMP *	
	PLUNGER PUMP *	
	ROTARY LOBE PUMP *	
	PROGRESSIVE CAVITY PUMP *	
	GRINDER *	G
	SCREW CONVEYOR *	
	HYDROCYCLONE *	
	MECHANICALLY CLEANED SCREEN *	

*FLOW DIAGRAM ONLY

DWG. ABBREV.	ITEM	SYMBOL
EQUIPMENT		
	STATIC INTAKE SCREEN *	
	INLINE STRAINER *	M M
	DUPLEX BASKET STRAINER *	
	SUBMERSIBLE MIXER *	M
	MIXER *	M

*FLOW DIAGRAM ONLY

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER A. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

PROCESS LEGEND

SHEET NUMBER

00 D-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\00 D-001.DWG
LAST UPDATE: Wednesday, September 11, 2019 2:03:07 PM
PLOT DATE: Friday, January 17, 2020 9:04:37 AM

GENERAL NOTES:

1. EQUIPMENT AND SYSTEMS DIMENSIONS, LOCATIONS AND PIPING SYSTEM LAYOUTS ARE BASED ON EQUIPMENT SELECTED BY THE ENGINEER. IF CONTRACTOR PROPOSES TO PROVIDE EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACING DIFFERING FROM THAT INDICATED OR SPECIFIED, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR REVIEW DETAILED ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, INSTRUMENTATION HVAC AND ELECTRICAL DRAWINGS AND EQUIPMENT LISTS SHOWING ALL NECESSARY CHANGES AND EMBODYING ALL FEATURES OF THE EQUIPMENT AND/OR PROCESS SYSTEMS PROPOSED. THIS INFORMATION SHALL INCLUDE BUT NOT BE LIMITED TO PLANS, SECTIONS DETAILS AND SCHEMATICS OF ALL PIPING SYSTEMS AND APPURTENANCES REQUIRED, ELECTRICAL CONTROLS, CHEMICAL FEED SYSTEMS ETC.. SUCH CHANGES IF APPROVED BY THE ENGINEER SHALL BE AT NO ADDITIONAL COST TO THE OWNER AND NO TIME EXTENSION TO THE CONTRACT TIME TO COMPLETION. THE CONTRACTOR SHALL ASSUME THE COST OF AND THE RESPONSIBILITY FOR ACCOMPLISHING ALL THE NECESSARY CHANGES CORRESPONDING TO THE DIMENSIONS AND CHARACTERISTICS OF THE EQUIPMENT SUBMITTED AND APPROVED BY THE ENGINEER. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
2. THE CONTRACTOR SHALL MAKE ALL REQUIRED FIELD MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
3. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR COVER PLATES, HATCHES, GRATING, AND RAILING DETAILS.
4. ALL PIPING UNDER CONCRETE SLABS OR STRUCTURES SHALL BE ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED, REFER TO STRUCTURAL DRAWINGS.
5. ALL PIPING ENCASED IN CONCRETE SHALL HAVE PUSH-ON JOINTS AT ALL STRUCTURAL EXPANSION JOINTS.
6. PROVIDE EXPANSION JOINTS WITH CONTROL RODS FOR ALL EXPOSED PIPING CROSSING STRUCTURAL EXPANSION JOINTS.
7. ALL DIMENSIONS LOCATING EQUIPMENT ARE FROM FINISHED WALL SURFACES OR COLUMN CENTERLINES.
8. PROVIDE LIFTING HOOKS ABOVE ALL VALVES 8-INCH AND LARGER WHERE VALVES ARE LOCATED 8 FT. AND HIGHER ABOVE OPERATING FLOOR. FOR DETAILS REFER TO STRUCTURAL DRAWINGS.
9. REFER TO INSTRUMENTATION DRAWINGS FOR INSTRUMENTATION AND CONTROL SYSTEMS. INSTRUMENT LOCATIONS ARE INDICATED ON MECHANICAL-PROCESS DRAWINGS IN APPROXIMATE LOCATION ONLY.
10. IN-LINE INSTRUMENTATION SHALL BE PROVIDED WITH ISOLATED PRESSURE TAPS, SEE INSTRUMENTATION DRAWINGS.
11. FOR CONTINUATION OF PIPING OUTSIDE STRUCTURES, SEE CIVIL DRAWINGS.
12. WALL AND FLOOR SLEEVES SHALL BE LARGE ENOUGH TO ACCOMMODATE FLANGES IF REQUIRED. FLOOR SLEEVES SHALL PROJECT AT LEAST 4-IN. ABOVE FINISHED FLOOR UNLESS OTHERWISE SHOWN, REFER TO DETAILS. IF SLEEVES ARE TO BE SEALED, PROVIDE GROOVED COUPLING PIPING CONNECTION TO FACILITATE INSTALLATION AND REMOVAL OF PIPING.
13. PROVIDE WALL CASTINGS WITH WATERSTOP FOR ALL BURIED AND SUBMERGED PIPELINES AND FOR PIPING LOCATED WITHIN 2 FT. OF MAXIMUM WATER SURFACE. WALL CASTINGS 4-IN AND LARGER - DUCTILE IRON, 3-IN AND SMALLER - SCH. 40 316L STAINLESS STEEL. SEE BELOW FOR CONTINUENCE OF NOTE 13.
14. ALL PIPE PENETRATIONS THROUGH INTERIOR AND EXTERIOR WALLS AND FLOORS SHALL BE SEALED WATERTIGHT. ROOF PENETRATIONS SHALL BE SEALED IN ACCORDANCE WITH ARCHITECTURAL DETAILS.
15. SLEEVE OR GROOVED COUPLINGS MAY BE USED WHERE NECESSARY, AND AS APPROVED, TO FACILITATE PIPING INSTALLATION.
16. FOR FLANGED SYSTEMS PROVIDE FLEXIBLE CONNECTORS WHERE NECESSARY, AND AS APPROVED TO FACILITATE PIPING INSTALLATION AND VALVE AND EQUIPMENT REMOVAL.
17. ALL FLEXIBLE CONNECTORS, INCLUDING EXPANSION JOINTS AND SLEEVE COUPLINGS SHALL BE RESTRAINED AS INDICATED OR AS REQUIRED FOR EXPANSION AND FOR FLEXIBILITY.
18. PROVIDE ALL LIQUID PIPING 24" AND SMALLER WITH 3/4" LOW POINT DRAINS AND 3/4" HIGH POINT VENTS. PROVIDE ALL LIQUID PIPING 30" AND LARGER WITH 1 1/2" LOW POINT DRAINS AND 1 1/2" HIGH POINT VENTS. DRAINS AND VENTS TO INCLUDE BALL VALVE AND CAP, UNLESS OTHERWISE SPECIFIED OR INDICATED.
19. PROVIDE 1-1/4" HG AT INVERT OF ALL BLIND FLANGES AND AS INDICATED ON SCUM AND SLUDGE LINES.
20. ALL HOSE GATES SHALL BE CLEARLY LABELED INDICATING TYPE OF SERVICE (SW, ETC.). SEE SPECIFICATIONS.
21. SMALL PIPING (SAMPLE, SERVICE WATER, ETC.) IS SHOWN DIAGRAMMATICALLY: FIELD-ROUTING SUBJECT TO APPROVAL OF THE ENGINEER. SMALL PIPE ROUTING MUST NOT INTERFERE WITH ACCESS TO OR OPERATION OF ANY OTHER PIPE, VALVE, OR EQUIPMENT.
22. PORTIONS OF NON-PROCESS PIPING (PLUMBING, HVAC, CIVIL) ARE SHOWN FOR CLARITY OF DESIGN ONLY: REFER TO APPROPRIATE DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
23. ALL PROCESS EQUIPMENT, INCLUDING BLOWERS, PUMPS AND COMPRESSORS, SHALL BE ISOLATED FROM PIPING LOADS AND DYNAMICS BY FLEXIBLE CONNECTORS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND AS SPECIFIED.
24. CONTRACTOR SHALL PROTECT ALL EQUIPMENT, PIPING, AND VALVES FROM DAMAGE DURING DEMOLITION. ALL REPAIRS TO DAMAGED EQUIPMENT, PIPE, AND VALVES SHALL BE PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
25. BASE ELBOWS AND PIPE BRACES ARE SHOWN FOR PURPOSES OF ILLUSTRATION ONLY.
26. PROVIDE WALL MOUNTED SIGNS, IN ACCORDANCE WITH SPECIFIED ARCHITECTURAL REQUIREMENTS FOR ALL EXTERIOR WALL PENETRATIONS, INDICATING PIPE ORIGIN OR DESTINATION AND PIPE LABEL.
27. FOR PUMP SEAL WATER, VENT, DRAIN, PRESSURE GAUGE, VALVING AND PIPING SEE DETAILS.
28. PROVIDE CONCRETE PADS FOR ALL FLOOR MOUNTED PROCESS EQUIPMENT, REFER TO STRUCTURAL DRAWINGS FOR DETAILS.
29. VENTS AND DRAINS:
    - A. INSTALL VENT AND DRAIN PIPING AND VALVES SO THERE IS NO INTERFERENCE WITH ACCESS TO OR OPERATION OF ANY EQUIPMENT, VALVES, PIPING OR PANELS.
    - B. PROVIDE ISOLATION VALVES FOR ALL VENTS AND DRAINS AS SPECIFIED AND INDICATED.
    - C. LOCATE VALVES SO THAT THEY ARE ACCESSIBLE AND OPERABLE.
    - D. PIPE ALL VENTS AND DRAINS SLOPED TO DRAIN TO THE NEAREST GUTTER, SUMP, TRENCH OR DRAIN OR AS INDICATED.
    - E. WHERE PIPING RUNS ACROSS A FLOOR, INSTALL 2 INCHES MAXIMUM ABOVE FLOOR.
31. ALL PIPE PENETRATIONS INTO THE FOLLOWING AREAS SHALL BE SEALED GASTIGHT:
    - A. WETWELLS
    - B. PRE-EQUALIZATION TANKS
    - C. WASTE SLUDGE TANKS
    - D. THICKENED SLUDGE TANK
    - E. POST-EQUALIZATION TANK
32. SPOOL PIECES OR FILLER PIECES SHALL BE USED ADJACENT TO BUTTERFLY VALVES TO GIVE LAYING LENGTH OF AN ECCENTRIC PLUG VALVE (FOR RS PIPING) UNLESS OTHERWISE SHOWN.
33. ALL FOAM SPRAY HEADER PIPING SHALL BE CONNECTED WITH GROOVED COUPLINGS LOCATED 10 FT. ON CENTER, EXCEPT WHERE FLANGED FITTINGS ARE REQUIRED. ALL FOAM SPRAY HEADERS SHALL BE CAPABLE OF ROTATION SO THAT THE SPRAY NOZZLE ANGLE CAN BE VARIED.
34. ALL PIPE SUPPORT QUANTITIES, TYPES, ANCHORAGE AND THE LIKE SHALL BE IN ACCORDANCE WITH SECTION 15056, PIPE SUPPORTS.

13. (CONTINUED) ALL WALL CASTINGS WITH WATER STOPS FOR ALL BURIED AND SUBMERGED PIPELINES SHALL BE PROVIDED IN ACCORDANCE WITH THE WALL PENETRATION (NEW CONSTRUCTION) DETAILS SHOWN ON DRAWING 99 S-501, DETALS I.

CHEMICAL NOTES:

1. REFER TO PIPING AND EQUIPMENT SCHEDULES FOR SYSTEM REQUIREMENTS.
2. ALL PIPE ELEVATIONS ARE TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. INSTALL HORIZONTAL PIPE RUNS WITH MIN. 8'-0" HEAD ROOM CLEARANCE UNLESS OTHERWISE INDICATED.
3. PIPE ROUTING IS TO BE DETERMINED BY THE CONTRACTOR EXCEPT AS SHOWN ON SYSTEM SCHEMATICS, AND SUBJECT TO APPROVAL BY THE ENGINEER. SMALL PIPE ROUTING MUST NOT INTERFERE WITH ACCESS TO OR OPERATION OF ANY OTHER PIPE, VALVE, OR EQUIPMENT.
4. FLANGES SHALL BE PROVIDED AT ALL PIPING CONNECTIONS TO AND FROM EQUIPMENT AND AS SHOWN ON SYSTEM SCHEMATIC. FOR ADDITIONAL INFORMATION REFER TO PIPING SCHEDULE.
5. INSTALL BACKPRESSURE VALVES, PULSATION DAMPENERS, VENT VALVES AND ASSOCIATED ITEMS NO HIGHER THAN 6 FT. ABOVE THE OPERATING FLOOR.
6. ALL VENTS TO HAVE FIBERGLASS 24 MESH SCREEN. INSTALL BY STRETCHING THE SCREEN BETWEEN TWO FLANGES. BOLTING HARDWARE SHALL BE COMPATIBLE WITH CHEMICAL SERVICE INDICATED.
7. HORIZONTAL RUNS OF 2" AND SMALLER NON-METALLIC PIPE SHALL BE SUPPORTED PVC ANGLE, WITH A MAXIMUM HANGER SPACING OF 4.5 FT. SUPPORT HORIZONTAL RUNS OF 2.5" AND LARGER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. VERTICAL RUNS WITH CLAMPS AT A MAXIMUM SPACING OF 3 FT. ON CENTERS.
8. ALL EQUIPMENT REQUIRING VENTING TO ATMOSPHERE SHALL HAVE VENTS LOCATED AWAY FROM ANY BUILDING OPENINGS.

MECHANICAL PROCESS EQUIPMENT ABBREVIATIONS

AC	AIR COMPRESSOR	JCR	JIB CRANE
ACC	ACCUMULATOR	LE	LEVEL ELEMENT
ACL	AFTERCOOLER	MIX	MIXER
ASEP	AIR SEPERATION UNIT	MP	METERING PUMP
AU	COMPOSITE SAMPLER	OCF	ODOR CONTROL FAN
BLW	BLOWER	P	PUMP
BU	BLENDING UNIT	PD	PULSATION DAMPENER
CAD	CARBON ADSORBER	POLBU	PLOYMER BLEND UNIT
CNT	CONTAINER	PRS	WASH PRESS
DIF	DIFFUSER	SCR	SCREEN
DP	DIFFERENTIAL PRESSURE	SG	SLIDE GATE
F	FAN	SIL	SILENCER
FIL	FILTER	SL	STOP LOG
FLR	FLARE	ST	STORAGE TANK
HST	HOIST	STRN	STRAINER
IBC	INTERMEDIATE BULK CONTAINER ("TOTE")	TK	TANK
		UV	ULTRAVIOLET
		W	WELL

MECHANICAL PROCESS GENERAL ABBREVIATIONS

ACFM	ACTUAL CUBIC FEET PER MINUTE	LG.	LONG
AFF	ABOVE FINISHED FLOOR	L.P.	LOW POINT
ANCH.	ANCHOR	L.R.	LONG RADIUS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	L/S	LITERS PER SECOND
APPROX.	APPROXIMATE	LSH	PRESSURE SWITCH LOW
ARCH.	ARCHITECTURAL	LSP	LIQUID SAMPLE PORT
ARV	AIR RELEASE VALVE	LXW	LENGTH X WIDTH
AVV	AIR VACUUM VALVE	L.W.L.	LOW WATER LEVEL
B.O.D.	BOTTOM OF DUCT	M	METER
CFM	CUBIC FEET PER MINUTE	MAX.	MAXIMUM
CHEM.	CHEMICAL	MATL.	MATERIAL
CI	CAST IRON	MCC	MOTOR CONTROL CENTER
℄	CENTERLINE	MECH.	MECHANICAL
CL	CLASS	MGD	MILLION GALLONS PER DAY
CMU	CONCRETE MASONARY UNIT	MH	MANHOLE
C.O.	CLEANOUT	MIN.	MINIMUM
CONC.	CONCRETE	MM	MILLIMETERS
CONN.	CONNECTION	NAVD	NORTH AMERICAN VERTICAL DATUM
CONT.	CONTINUATION	N.C.	NORMALLY CLOSED
CPVC	CHLORINATED POLYVINYLCHLORIDE	NGVD	NATIONAL GEODETIC VERTICAL DATUM
CS	CARBON STEEL	N.O.	NORMALLY OPEN
CV	CONTROL VALVE	NO.	NUMBER
DEG. C.	DEGREES CELSIUS	NOM.	NOMINAL
DEG. F.	DEGREES FAHRENHEIT	NPSH	NET POSITIVE SUCTION HEAD
DET.	DETAIL	NPSHR	NET POSITIVE HEAD REQUIRED
D.I.	DUCTILE IRON	NPT	NATIONAL PIPE THREAD
DIA.	DIAMETER	NRS	NON-RISING STEM
DISCH.	DISCHARGE	NTS	NOT TO SCALE
DN	DOWN	O.C.	ON CENTER
DWG'S.	DRAWINGS	O.D.	OUTSIDE DIAMETER
ExE	FLEXIBLE COUPLING (EXPANSION x EXPANSION)	ODP	OPEN DRIP PROOF
		OPER.	OPERATING
ECC. RED.	ECCENTRIC REDUCER	P	PRESSURE GAUGE
EFF.	EFFLUENT	PE	PLAIN END
EFF. %	% EFFICIENCY	PI	PRESSURE INDICATOR
ELEC.	ELECTRICAL	PIT	PRESSURE INDICATOR TRANSMITTER
EL.	ELEVATION	PLMB.	PLUMBING
ELL.	ELBOW	PRI.	PRIMARY
ENCL.	ENCLOSURE	PS	PRESSURE SWITCH
EQUIP.	EQUIPMENT	PSH	PRESSURE SWITCH HIGH
EXIST.	EXISTING	PSI	POUNDS PER SQUARE INCH
FxE	EXPANSION COUPLING (FIXED x EXPANSION)	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
		PSIG	POUNDS PER SQUARE INCH GAGE
FxF	RESTRAINED COUPLING (FIXED x FIXED)	PSV	PRESSURE SAFETY SWITCH
		PVC	POLYVINYLCHLORIDE
FE	FLOW ELEMENT	PVDF	POLYVINYLIDENE FLOURIDE
F.F.	FLAT FACE	R	RADIUS
FHMB	FLAT HEAD MACHINE BOLT	RED.	REDUCER / REDUCING
FIN. FL.	FINISHED FLOOR	RED. FLG.	REDUCING FLANGE
FIN. GR.	FINISHED GRADE	REF.	REFERENCE
FIT	FLOW INDICATING TRANSMITTER	REINF.	REINFORCING
FLEX.	FLEXIBLE	REQ'D.	REQUIRED
FLG.	FLANGE	RPM	REVOLUTIONS PER MINUTE
F.O.B.	FLAT ON BOTTOM	SCH.	SCHEDULE
F.O.S.	FLAT ON SIDE	SH.	SHEET
F.O.T.	FLAT ON TOP	SPD	SUMP PUMP DISCHARGE
FT. / MIN	FEET PER MINUTE	SPECS.	SPECIFICATIONS
FPS	FEET PER SECOND	SQ.	SQUARE
FS	FLOW SWITCH	S.R.	SHORT RADIUS
FSI	FORMED SUCTION INTAKE	S.S	STAINLESS STEEL
FT.	FEET	STD.	STANDARD
GAL.	GALLONS	STR.	STRUCTURAL
GALV.	GALVANIZED	TEFC	TOTALLY ENCLOSED FAN COOLED
GPM	GALLONS PER MINUTE	TEMP.	TEMPERATURE
HDPE	HIGH DENSITY POLYETHYLEYNE	TENV	TOTALLY ENCLOSED NON VENTILATED
HG	HOSE GATE	THK.	THICK
HHMB	HEXAGONAL HEAD MACHINE BOLT	T.O.C.	TOP OF CONCRETE
Hg	MERCURY	T.O.D.	TOP OF DUCT
H.P.	HIGH POINT	T.O.S.	TOP OF STEEL
HP	HORSE POWER	TSH	TEMPERATURE SWITCH HIGH
HPT	HOSE PIPE THREAD	TYP.	TYPICAL
HVAC	HEATING VENTILATION	VD	VOLUME DAMPER
H.W.L.	HIGH WATER LEVEL	W/	WITH
I.D.	INSIDE DIAMETER	WxH	WIDTH x HEIGHT
IN.	INCHES	WC	WATER COLUMN
INSUL.	INSULATION	WORK.	WORKING
INV.	INVERT	WP	WEATHER PROTECTED
IPT	IRON PIPE THREAD	WPI	WEATHER PROTECTED TYPE I
KG	KILOGRAM	WPII	WEATHER PROTECTED TYPE II
KW	KILOWATT	W.S.	WATER SURFACE
LB.	POUND	XPROOF	EXPLOSION PROOF

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS — CHRISTOPHER J. GALLIGAN — No.40563 — REGISTERED PROFESSIONAL ENGINEER — 1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

GENERAL NOTES AND ABBREVIATIONS

SHEET NUMBER

00 D-002

PATH/FILENAME: P:\60597515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\00\00 D-002.DWG
LAST UPDATE: Wednesday, September 11, 2019 2:03:10 PM
PLOT DATE: Friday, January 17, 2020 9:04:40 AM

PROCESS PIPING SCHEDULE

LEGEND	SERVICE	SYSTEM DESIGN CONDITIONS				PIPING					INSULATION		VALVING			TEST REQUIREMENTS				SPECS. SECTION NUMBER	REMARKS
		TEMP. (DEG. F)		PRESSURE (PSI)		MATERIAL	DIAMETER RANGE	SCH./ CLASS	LINING/COATING	JOINT TYPE	TYPE	THICKNESS (IN.)	BLOCK	CHECK	THROTTLING	PRESSURE (PSI)	MEDIUM	TEST DURATION (MIN.)	LEAKAGE ALLOWANCE (SEE NOTES)		
		OPER.	MAX.	WORK.	MAX.																
ALP	AIR LOW PRESSURE	---	---	---	---	TYPE 316L STAINLESS STEEL	ALL	SEE SPECS.	---	WELDED/FLANGED	FIBERGLASS	1	BUTTERFLY	SPLIT DISK	BUTTERFLY	---	AIR	60	ZERO	15066	SEE NOTE 7
D	DRAIN	SAME AS SYSTEM				DUCTILE IRON PVC	4" AND LARGER 3" AND SMALLER	SEE SPECS. SCH. 80	CEMENT ---	FLANGED/PUSH-ON FLANGED/SOCKET WELDED/PRESS-FIT	---	---	PLUG BALL	---	---	---	WATER	60	ZERO	02615 15370	SEE NOTE 8
DEC	DECANT	40	80	5	10	DUCTILE IRON	4" AND LARGER	SEE SPECS.	CEMENT	FLANGED	FIBERGLASS	2	PLUG	---	---	---	WATER	60	ZERO	02615	SEE NOTE 8
EFF	EFFLUENT	40	80	60	75	DUCTILE IRON	4" AND LARGER	SEE SPECS.	CEMENT	FLANGED RESTRAINED MECHANICAL JOINT	---	---	BUTTERFLY GATE	RUBBER FLAPPER	BUTTERFLY	100	WATER	60	ZERO	02615	
FE	FILTER EFFLUENT	40	80	5	10	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER 3" AND SMALLER	SEE SPECS.	CEMENT ---	FLANGED/PUSH-ON FLANGED/SOCKET WELDED/PRESS-FIT	---	---	BUTTERFLY	---	BUTTERFLY	15	WATER	60	ZERO	02615 15370	
FIL	FILTRATE	40	80	5	10	DUCTILE IRON	4" AND LARGER	SEE SPECS.	CEMENT	FLANGED/PUSH-ON	---	---	PLUG	---	---	15	WATER	60	ZERO	02615	
FSW	FOAM SPRAY WATER	40	80	25	30	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER 3" AND SMALLER	SEE SPECS.	CEMENT ---	FLANGED/RESTRAINED MECHANICAL JOINT FLANGED/SOCKET WELDED/PRESS-FIT	FIBERGLASS	2	---	---	---	45	WATER	60	ZERO	02615 15370	SEE NOTE 8
OC	ODOR CONTROL	0	100	---	14" WC	FRP	ALL	SEE SPECS.	---	FLANGED/BUTT WELDED	---	---	BUTTERFLY DAMPER	---	BUTTERFLY DAMPER	---	AIR	60	ZERO	15855	
OV	OVERFLOW	SAME AS SYSTEM				SAME AS SYSTEM	SAME AS SYSTEM	SAME AS SYSTEM	SAME AS SYSTEM	SAME AS SYSTEM	SAME AS SYSTEM	---	SAME AS SYSTEM	SAME AS SYSTEM	SAME AS SYSTEM	---	SAME AS SYSTEM	SAME AS SYSTEM	ZERO	SAME AS SYSTEM	
PACL	POLYALUMINUM CHLORIDE	0	80	35	45	PVC FLEXIBLE TUBING	ALL	SCH. 80	---	FLANGED/SOLVENT WELD/ BARBED	---	---	BALL	BALL	---	70	WATER	60	ZERO	15370	
POL	POLYMER	40	80	30	45	PVC FLEXIBLE TUBING	ALL	SCH. 80	---	FLANGED/SOLVENT WELD/ BARBED	---	---	BALL	BALL	---	70	WATER	60	ZERO	15370	
RWW	RAW WASTEWATER	40	80	---	---	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER 3" AND SMALLER	SEE SPECS.	CEMENT ---	FLANGED/RESTRAINED MECHANICAL JOINT FLANGED/SOCKET WELDED/PRESS-FIT	---	---	PLUG	RUBBER FLAPPER	---	---	WATER	60	ZERO	02615 15066	
SAM	SAMPLE	40	80	---	---	PVC	ALL	SCH. 80	---	FLANGED/SOLVENT WELDED	---	---	PLUG	BALL	---	---	WATER	60	ZERO	15370	
SBI	SBR INFLUENT	40	80	25	35	DUCTILE IRON	4" AND LARGER	SEE SPECS.	CEMENT	FLANGED RESTRAINED MECHANICAL JOINT	FIBERGLASS	2	PLUG	RUBBER FLAPPER	---	60	WATER	60	ZERO	02615	SEE NOTE 8
SBW	SPENT BACKWASH	40	80	---	---	TYPE 316L STAINLESS STEEL	3" AND SMALLER	SEE SPECS.	---	FLANGED/SOCKET WELDED/PRESS-FIT	---	---	GATE	---	---	---	WATER	60	ZERO	15066	
SEP	SEPTAGE	40	100	5	15	DUCTILE IRON	4" AND LARGER	SEE SPECS.	GLASS	FLANGED/PUSH-ON	---	---	PLUG	---	---	30	WATER	60	ZERO	02615	
SH	SODIUM HYPOCHLORITE	0	80	35	45	PVC FLEXIBLE TUBING	ALL	SCH. 80	---	FLANGED/SOLVENT WELD/ BARBED	---	---	VENTED BALL	BALL	---	70	WATER	60	ZERO	15370	
SL	SLUDGE	40	80	15	20	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER	SEE SPECS.	GLASS	FLANGED/RESTRAINED MECHANICAL JOINT FLANGED/WELDED	---	---	PLUG	RUBBER FLAPPER	---	30	WATER	60	ZERO	02615 15370	
TSL	THICKENED SLUDGE	40	80	30	35	DUCTILE IRON	4" AND LARGER	SEE SPECS.	GLASS	FLANGED RESTRAINED MECHANICAL JOINT	---	---	PLUG	RUBBER FLAPPER	---	60	WATER	60	ZERO	02615	
V	VENT	SAME AS SYSTEM				DUCTILE IRON	4" AND LARGER	SEE SPECS.	CEMENT	FLANGED/PUSH-ON	---	---	---	---	---	---	WATER	60	ZERO	02615	
W2	SERVICE WATER	40	80	---	---	TYPE 316L STAINLESS STEEL	3" AND SMALLER	SEE SPECS.	---	FLANGED/SOCKET WELDED/PRESS-FIT	---	---	BALL	---	---	---	WATER	60	ZERO	02615 15370	
W3	PLANT WATER	40	80	75	100	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER 3" AND SMALLER	SEE SPECS.	CEMENT ---	FLANGED/RESTRAINED MECHANICAL JOINT FLANGED/SOCKET WELDED/PRESS-FIT	FIBERGLASS	2	BUTTERFLY BALL	RUBBER FLAPPER	---	150	WATER	60	ZERO	02615 15370	SEE NOTE 8
WAS	WASTE ACTIVATED SLUDGE	40	80	10	20	DUCTILE IRON TYPE 316L STAINLESS STEEL	4" AND LARGER 3" AND SMALLER	SEE SPECS.	GLASS ---	FLANGED/RESTRAINED MECHANICAL JOINT FLANGED/SOCKET WELDED/PRESS-FIT	---	---	PLUG	RUBBER FLAPPER	PINCH	30	WATER	60	ZERO	02615 15370	

PROCESS PIPING NOTES:

1. PIPING SCHEDULE ABOVE REFERS TO MECHANICAL PROCESS PIPING ONLY. REFER TO OTHER DISCIPLINES FOR ANY NON-PROCESS PIPING SHOWN AS BACKGROUND INFORMATION ON THE MECHANICAL DRAWINGS AND FOR CONTINUATION OF PIPING BEYOND MECHANICAL DISCIPLINE LIMITS OF WORK.
2. TEST VENTS AND DRAINS TO SAME PRESSURE AS SYSTEM.
3. FOR OPEN VENTS, FILL VENT WITH WATER AND TEST FOR LEAKS.
4. FOR DRAINS 3" AND SMALLER, USE TYPE 316L S.S. PIPE FOR DRAINS FROM DUCTILE IRON SERVICE.

PROCESS PIPING NOTES CONT.

5. PROVIDE FLANGES AT EQUIPMENT, VALVES AND AS INDICATED ON THE DRAWINGS.
6. ALL PIPING THAT IS NOT BURIED SHALL BE CONSIDERED EXPOSED.
7. PROVIDE INSULATION AND PROTECTIVE INSULATION JACKET AS SPECIFIED FOR ALL EXTERIOR INSULATED PIPING AND FOR ALL INTERIOR INSULATED PIPING 6'-6" OR LOWER TO THE FLOOR.
8. HEAT TRACE AND INSULATE WITH 2 INCHES (OR AS INDICATED) OF INSULATION AND JACKET AS SPECIFIED FOR ALL EXTERIOR EXPOSED PIPING TO 4 FEET BELOW GRADE.

ADD THE FOLLOWING NEW PIPE TO THE SCHEDULE: (ADD. 2)

Legend	Service	System Design Conditions				Piping				
		Temp. (Deg. F)		Pressure (PSI)		Material	Diameter Range	Sch./Class	Lining/Coating	Joint Type
		Oper.	Max.	Work.	Max					
W1	Municipal Water	40	80	60	150	Ductile Iron	All	See Specs.	Cement	Flanges/Restrained Mechanical Joint

Insultation		Valving			Test Requirements					
Type	Thickness (In.)	Block	Check	Throttling	Pressure (PSI)	Medium	Test Duration (Min.)	Leakage Allowance (See Notes)	Specs. Section Number	Remarks
---	---	Gate	---	---	150	Water	60	Zero	02600	---

ADD THE FOLLOWING NEW PIPE TO THE SCHEDULE ABOVE: (ADD. 7)

Legend	Service	System Design Conditions				Piping					Insultation		Valving			Test Requirements					
		Temp. (Deg. F)		Pressure (PSI)		Material	Diameter Range	Sch./Class	Lining/Coating	Joint Type	Type	Thickness (In.)	Block	Check	Throttling	Pressure (PSI)	Medium	Test Duration (Min.)	Leakage Allowance (See Notes)	Specs. Section Number	Remarks
		Oper.	Max.	Work.	Max																
INF	Raw Wastewater	40	80	---	---	Ductile Iron	All	See Specs.	Cement	Flanges/Restrained Mechanical Joint	---	---	---	---	---	150	Water	60	Zero	02615	---

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 43563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDENDUM 7
A	02-28-20	ADDENDUM 2

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

PROCESS PIPING SCHEDULE

SHEET NUMBER

00 D-003

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\00 D-003.DWG
LAST UPDATE: Friday, January 10, 2020 9:56:12 AM
PLOT DATE: Friday, January 17, 2020 9:04:45 AM

PROCESS PUMP SCHEDULE

TAG NO.	NO. OF UNITS	NAME	LOCATION	PUMP TYPE AND CONFIGURATION	RATING POINT				MIN. SUCTION/ DISCHARGE SIZE (IN.)	NOMINAL MAX. PUMP SPEED (RPM)	SEAL TYPE	MOTOR				SPEC. SECTION	SUCTION GAUGE TYPE	DISCHARGE GAUGE TYPE	BASIS OF DESIGN AND MODEL	REMARKS
					CAPACITY (GPM)	HEAD (FEET)	MIN. EFF. %	MINIMUM SHUTOFF HEAD (FT.)				HP	RPM	ENCL.	DRIVE TYPE					
FS.P-1	1	FOAM SPRAY PUMP	BASEMENT PUMP ROOM	DRY PIT END SUCTION CENTRIFUGAL	140	63	55	69	3/2	1750	SPLIT MECH W/ SPIRALTRACK	5	1800	TEFC	DIRECT	11316	IX	IX	FLOWSERVE D814	
EFF.P-1, THRU 3	3	EFFLUENT PUMPS	BASEMENT PUMP ROOM	DRY PIT END SUCTION CENTRIFUGAL	340	139	62	143	4/3	1784	SPLIT MECH W/ SPIRALTRACK	30	1800	TEFC	DIRECT	11316	IX	IX	GOULDS MODEL 3756	
SAN.P-1, 2	2	SANITARY PUMPS	IN-PLANT PUMP STATION	SUBMERSIBLE SOLIDS HANDLING PROGRESSIVE CAVITY	11	92	---	---	6/1.25	1725	MECH	1	1800	TEFC	DIRECT	11306	---	---	---	
SBR. TP-1 THRU 3	3	SBR TRANSFER PUMPS	BASEMENT PUMP ROOM	DRY PIT RECESSED VORTEX	255	53	35	59	4/3	1750	SPLIT MECH	25	1800	TEFC	DIRECT	11308	I	I	EGGER TV 51-80	
SBW.P-1, 2	2	SPENT BACKWASH PUMPS	DISK FILTER ROOM	END SUCTION CENTRIFUGAL	130	23	---	---	2/2	1750	---	2	1800	TEFC	DIRECT	---	---	---	---	SEE NOTES
SL.TP-1, 2	2	SLUDGE TRANSFER PUMPS	BASEMENT PUMP ROOM	DRY PIT RECESSED VORTEX	200	30	39	34	4/3	1180	SPLIT MECH W/ SPIRALTRACK	10	1200	TEFC	DIRECT	11308	I	I	KSB SEWATEC F100-254	
TSL.P-1, 2	2	THICKENED SLUDGE PUMPS	BASEMENT PUMP ROOM	DRY PIT CHOPPER	450	58	58	62	6/4	1170	SPLIT MECH	20	1200	TEFC	DIRECT	11309	III	III	VAUGHAN	
W3.P-1 THRU 3	3	PLANT WATER PUMPS	BASEMENT PUMP ROOM	VERTICAL MULTI-STAGE CENTRIFUGAL	125	227	72	262	3/3	3500	SPLIT MECH W/ SPIRALTRACK	30	3600	TEFC	DIRECT	11316	---	---	GRUNDFOS CRN45	

NOTES:

FOAM SPRAY PUMP:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. FULL SPEED SECONDARY RATING POINT: 175 GPM AT 57 FEET WITH NO MORE THAN 5 FEET OF NPSH3.
3. MINIMUM SPEED RATING POINT: 150 GPM AT 67 FEET
4. PROVIDE PUMPS CAPABLE OF PASSING A MINIMUM 0.5-INCH DIAMETER SPHERE.

EFFLUENT PUMPS:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. FULL SPEED SECONDARY RATING POINT: 550 GPM AT 120 FEET WITH NO MORE THAN 19 FEET OF NPSH3.
3. MINIMUM SPEED RATING POINT: 150 GPM AT 67 FEET
4. PROVIDE PUMPS CAPABLE OF PASSING A MINIMUM 0.5-INCH DIAMETER SPHERE.

SBR TRANSFER PUMPS:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. FULL SPEED SECONDARY RATING POINT: 500 GPM AT 54 FEET WITH NO MORE THAN 14 FEET OF NPSH3.
3. MINIMUM SPEED RATING POINT: 50 GPM AT 15 FEET
4. PROVIDE PUMPS CAPABLE OF PASSING A MINIMUM 3-INCH DIAMETER SPHERE.

SPENT BACKWASH PUMPS
1. THE BACKWASH PUMP SHALL BE PROVIDED BY THE DISK FILTER MANUFACTURER.
2. BACKWASH PUMP CONNECTIONS ARE 2" NPT. BACKWASH PIPING IS 3" DIAMETER. CONTRACTOR TO PROVIDE 3" X 2" REDUCER FITTINGS AT EACH PUMP PORT.

SLUDGE TRANSFER PUMPS:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. FULL SPEED SECONDARY RATING POINT: 400 GPM AT 25 FEET WITH NO MORE THAN 17 FEET OF NPSH3.
3. MINIMUM SPEED RATING POINT: 50 GPM AT 10 FEET
4. PROVIDE PUMPS CAPABLE OF PASSING A MINIMUM 4-INCH DIAMETER SPHERE.

THICKENED SLUDGE PUMPS:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. ~~FULL SPEED SECONDARY RATING POINT: 975 GPM AT 75 FEET WITH NO MORE THAN 8 FEET OF NPSH3.~~
3. MINIMUM SPEED RATING POINT: 250 GPM AT 11 FEET

2. FULL SPEED SECONDARY RATING POINT: 975 GPM AT 47 FEET WITH NO MORE THAN 8 FEET HPSH3 (ADD 11)

PLANT WATER PUMPS:
1. VARIABLE FREQUENCY MOTOR CONTROLLER
2. SKID MOUNTED SYSTEM WITH BLADDER TANK
3. MINIMUM SPEED RATING POINT: 75 GPM AT 210 FEET

SANITARY PUMPS:
1. SECONDARY RATING POINT: 15 GPM AT 0 FEET.
2. MINIMUM RATING POINT: 8 GPM AT 185 FEET.

BLOWER AND COMPRESSOR SCHEDULE

TAG NO.	NUMBER OF UNITS	NAME	LOCATION	TYPE	CAPACITY (SCFM)	PRESSURE (PSIG)	INLET LOSSES IN H_2O	INLET TEMP. (DEG. F)	BAROMETRIC PRESSURE (PSIA)	BLOWER SPEED (RPM)	MOTOR DATA			DRIVE TYPE	SPEC. SECTION	BASIS OF DESIGN	REMARKS
											HP	RPM (MAX.)	ENCL. TYPE				
MIX.BLW-1, 2	2	MIXING BLOWERS	BASEMENT PUMP ROOM	ROTARY LOBE	1019	8	---	100	14.5	3170	50	1800	TEFC	BELT	11377	AERZEN	
MIX.BLW-3	1	MIXING BLOWER	BASEMENT PUMP ROOM	ROTARY LOBE	607	7	---	100	14.5	3310	30	1800	TEFC	BELT	11377	AERZEN	
MIX.BLW-4	1	MIXING BLOWER	BASEMENT PUMP ROOM	ROTARY LOBE	806	8	---	100	14.5	3720	40	1800	TEFC	BELT	11377	AERZEN	
SBR.BLW-1 THRU 3	3	SBR BLOWERS	BASEMENT PUMP ROOM	ROTARY LOBE	530	10.5	---	100	14.5	3762	50	1800	TEFC	BELT	11377	AERZEN	

SLIDE GATE SCHEDULE

TAG NO.	NUMBER OF UNITS	LOCATION	GATE TYPE	GATE SIZE W(IN.) X H(IN.)	CONFIGURATION	HEAD TYPE	OPERATING HEAD (MAX. WATER TO GATE ℄) (FT.)	GATE DESIGN HEAD (FT.)	OPERATING LEVEL TO GATE INVERT (FT.)	FRAME TYPE	THIMBLE TYPE	CLOSURE TYPE	OPERATOR TYPE	MOTOR DATA			SPEC. SECTION	REMARKS
														HP	RPM (MAX.)	ENCL. TYPE		
RWW.SG-1 THRU 4	4	HEADWORKS	FABRICATED	20 X 40	SELF CONTAINED	SEATING/UNSEATING	1.5	3.5	3.5	EMBEDDED	---	FLUSH	MOTOR	0.5	1800	XPROOF	15103	
RWW.SG-5, 6	2	HEADWORKS	FABRICATED	10 X 10	SELF CONTAINED	SEATING	3	3.5	3.5	WALL MOUNT	---	FLUSH	CRANK	---	---	---	15103	* SEE REMARK BELOW
EQ.SG-1	1	PRE-EQUALIZATION TANK NO. 2	FABRICATED	36 X 36	CONVENTIONAL	SEATING/UNSEATING	12.33	14	22.17	WALL MOUNT	---	FLUSH	FLOOR BOX	---	---	---	15103	
SL.SG-1	1	WASTE SLUDGE TANK NO. 1	FABRICATED	36 X 36	CONVENTIONAL	SEATING/UNSEATING	14.33	16	19.5	WALL MOUNT	---	FLUSH	FLOOR BOX	---	---	---	15103	
SBR.SG-1, 2	2	SBR TANKS NO. 1 & 2	STANDARD	6 X 6	CONVENTIONAL	SEATING	22	22.33	24.83	WALL MOUNT	F	FLUSH	CRANK	---	---	---	15103	** SEE REMARK BELOW

* SLIDE GATES ARE WALL MOUNTED AGAINST A PLAIN END PIPE WALL CASTING IN THE HEADWORKS CHANNEL AS SHOWN IN DRAWING 10 D-105, FACILITY UPPER PLAN II.

** SLIDE GATES ARE TO BE THIMBLE MOUNTED WITH A TYPE "F" THIMBLE.

STOP LOG SCHEDULE

TAG NO.	NUMBER OF UNITS	LOCATION	CHANNEL WIDTH (IN.)	CHANNEL GROOVE DEPTH (IN.)	TOTAL NUMBER OF SECTIONS	SECTION HEIGHT (FT.)	HEAD TYPE	MAX. HEAD (FT.)	SPEC. SECTION	REMARKS
RWW.SL-1 THRU 3	3	HEADWORKS	20	6.33	12	1	SEATING/UNSEATING	3.5	15113	---

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A11	05-08-20	ADDENDUM 11
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

SCHEDULES I

SHEET NUMBER

00 D-004

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D00 D-004.DWG
LAST UPDATE: Friday, January 10, 2020 10:45:14 AM
PLOT DATE: Friday, January 17, 2020 9:04:50 AM

HOIST SCHEDULE

TAG NO.	NUMBER OF UNITS	NAME	LOCATION	TYPE/CLASS	HOIST DATA			TROLLEY SPEED (FPM)	BOTTOM OF BEAM TO FIN. FL. (FT.)	MOTOR DATA				CONTROLS	REMARKS
					CAPACITY (TONS)	LIFT (FT.)	SPEED (FPM)			HOIST HP	TROLLEY HP	RPM MAX.	ENCL. TYPE		
HST-1	1	GARAGE HOIST	GARAGE	ELECTRIC WIRE ROPE	2	36	14/4	50/17	14.96	2	1/2	1800	TEFC	PUSH BUTTON	PENDANT
DAV.HST-1	1	PORTABLE DAVIT HOIST	POST EQ TANK	PORTABLE DAVIT CRANE	0.25	20	---	---	---	---	---	---	---	MANUAL WINCH	SEE NOTES

PORTABLE DAVIT CRANE (DAV.HST-1) NOTES:
1. PROVIDE (2) FLUSH MOUNT BASES FOR POST EQUALIZATION TANK MIXERS, EQ.MIX-1, 2

MIXING EQUIPMENT SCHEDULE

TAG NO.	NUMBER OF UNITS	NAME	LOCATION	TYPE	VOLUME (GAL.)	DEPTH (FEET)	DIA. WIDTH OR L X W (FEET)	MIXER TO TANK BOTTOM (FEET)	NUMBER OF IMPELLER	MAX. MIXER SPEED (RPM)	IMPELLER DIAMETER (INCHES)	MOTOR DATA			DRIVE TYPE	SPEC SECTION	BASIS OF DESIGN	REMARKS
												HP	RPM (MAX.)	ENCL. TYPE				
EQ.MIX-1, 2	2	POST-EQ TANK MIXER	POST EQ-TANK	SUBMERSIBLE	126,200	13.83	40 X 30.50	0.17	1	1800	8.3	5	1800	SUBM.	DIRECT	11339	SULZER	CONSTANT SPEED

FAN SCHEDULE

TAG NO.	NUMBER OF UNITS	NAME	LOCATION	TYPE	RATING		MOTOR DATA			DRIVE TYPE	SPEC SECTION	REMARKS
					CFM	S.P. IN H2O	HP	RPM (MAX.)	ENCL. TYPE			
OC.F-1	1	ODOR CONTROL FAN	WASTEWATER TREATMENT FACILITY	FRP CENTRIFUGAL	15,000	10	30	1800	TEFC	BELT	15857	

CHEMICAL METERING PUMP SCHEDULE

TAG NO.	NO. OF UNITS	NAME	LOCATION	PUMP TYPE	RATING POINT					MOTOR DATA					BASIS OF DESIGN	SERVICE CONDITIONS (CHEMICAL DATA)	SPEC. SECTION	REMARKS
					RATED CAPACITY (GPH)	MIN. CAPACITY (GPH)	HEAD (PSI)	PUMP SPEED MAX.		POWER			RPM (MAX.)	ENCL. TYPE				
								SPM	RPM	HP	VA	VOLTAGE						
PACL.MP-1, 2	2	POLYALUMINUM CHLORIDE METERING PUMPS	CHEMICAL ROOM NO. 1	PERISTALTIC	0.60	0.03	35	---	220	0.3	---	115	220	CHEM. DUTY	WATSON-MARLOW	100% POLYALUMINUM CHLORIDE	11324	
SH.MP-1	2	SODIUM HYPOCHLORITE METERING PUMPS	CHEMICAL ROOM NO. 1	PERISTALTIC	1.30	0.07	35	---	220	0.3	---	115	220	CHEM. DUTY	WATSON-MARLOW	15% SODIUM HYPOCHLORITE	11324	1 SHELF SPARE
SH.MP-2	2	SODIUM HYPOCHLORITE METERING PUMPS	CHEMICAL ROOM NO. 1	PERISTALTIC	15.00	0.75	35	---	220	0.3	---	115	220	CHEM. DUTY	WATSON-MARLOW	15% SODIUM HYPOCHLORITE	11324	1 SHELF SPARE

POLYMER BLEND UNIT SCHEDULE

TAG NO.	NUMBER OF UNITS	NAME	LOCATION	DISCHARGES TO	NEAT POLYMER (GPH)	DILUTION WATER	POLYMER TYPE	% ACTIVE	% SOLUTION STRENGTH	DILUTION WATER TYPE	WATER PRESSURE AT INLET (PSIG)	MINIMUM PRESSURE REQUIRED AT OUTLET (PSIG)	MAXIMUM PRESSURE LOSS THRU UNIT (PSIG)	PUMP TYPE	POWER	SPEC. SECTION	REMARKS
POL.BU-1, 2	2	ROTARY DRUM THICKENER POLYMER BLEND UNIT	CHEMICAL ROOM NO. 2	ROTARY DRUM THICKENER	0.03-0.60	0-600	LIQUID EMULSION	40	0.20-0.25	W2/W3	70	5	30	PERISTALTIC	---	11345	---

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T.WASSELL/C.MINI
Drawn By:	N.RUBINI
Dept Check:	C.GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

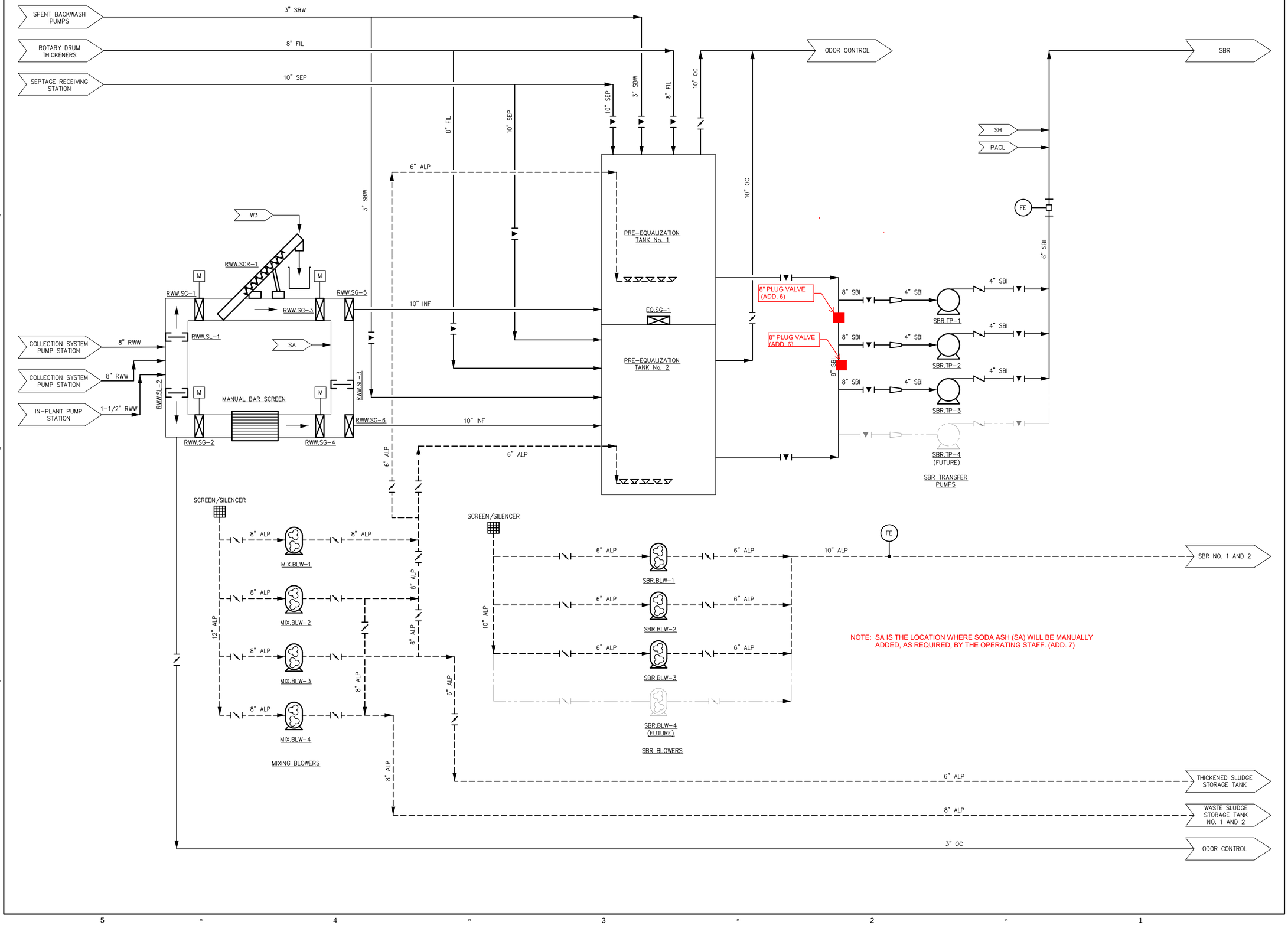
SHEET TITLE

SCHEDULES II

SHEET NUMBER

00 D-005

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D00 D-005.DWG
LAST UPDATE: Thursday, October 03, 2019 7:53:55 AM
PLOT DATE: Friday, January 17, 2020 9:04:55 AM



NOTE: SA IS THE LOCATION WHERE SODA ASH (SA) WILL BE MANUALLY ADDED, AS REQUIRED, BY THE OPERATING STAFF. (ADD. 7)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDENDUM 7
A	03-12-20	ADDENDUM 6

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

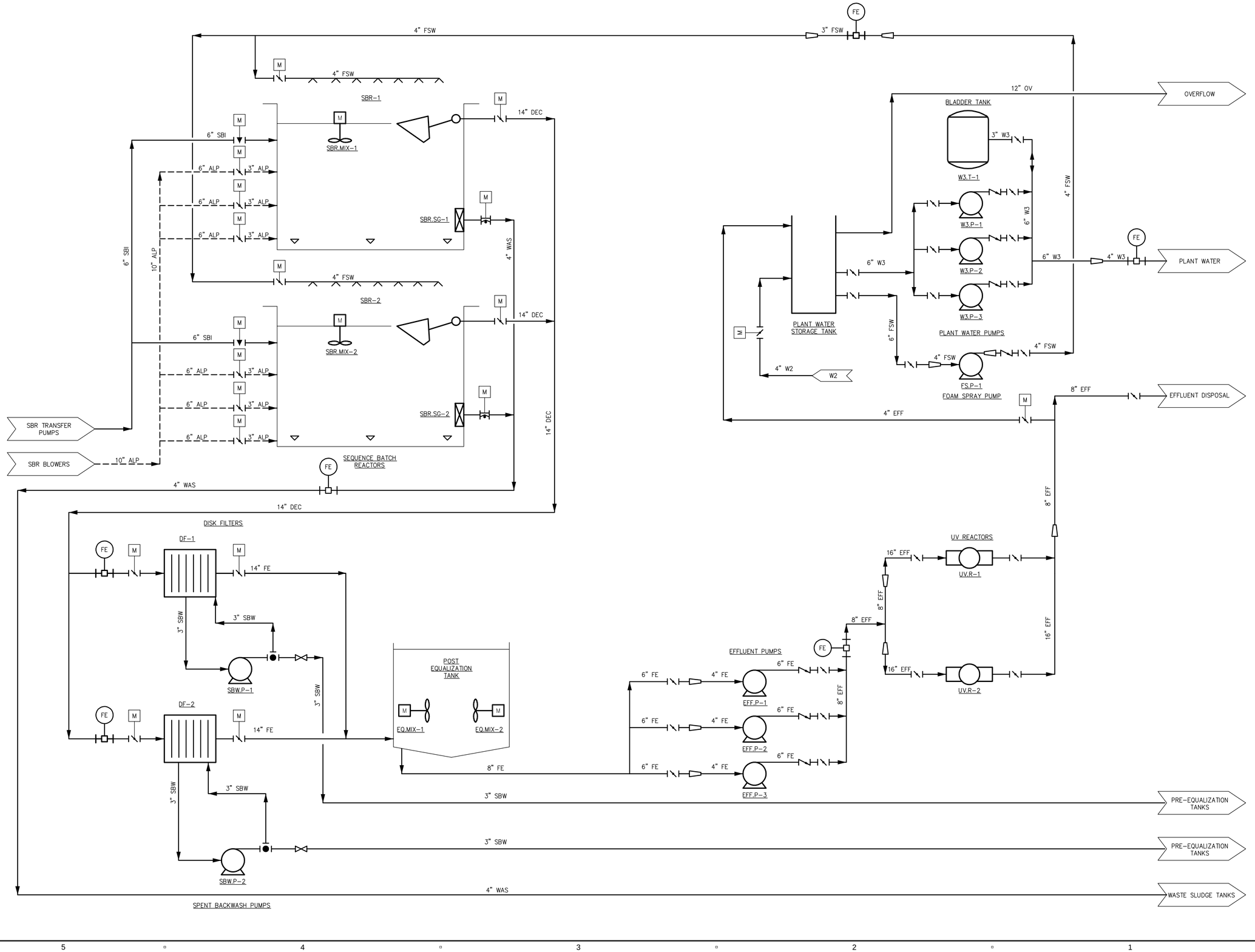
SHEET TITLE

PROCESS FLOW DIAGRAM I

SHEET NUMBER

00 D-006

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D00 D-006.DWG
LAST UPDATE: Friday, January 10, 2020 12:04:27 PM
PLOT DATE: Friday, January 17, 2020 9:05:00 AM



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D000 D-007.DWG
LAST UPDATE: Friday, January 10, 2020 12:09:49 PM
PLOT DATE: Friday, January 17, 2020 9:05:05 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	C. MINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

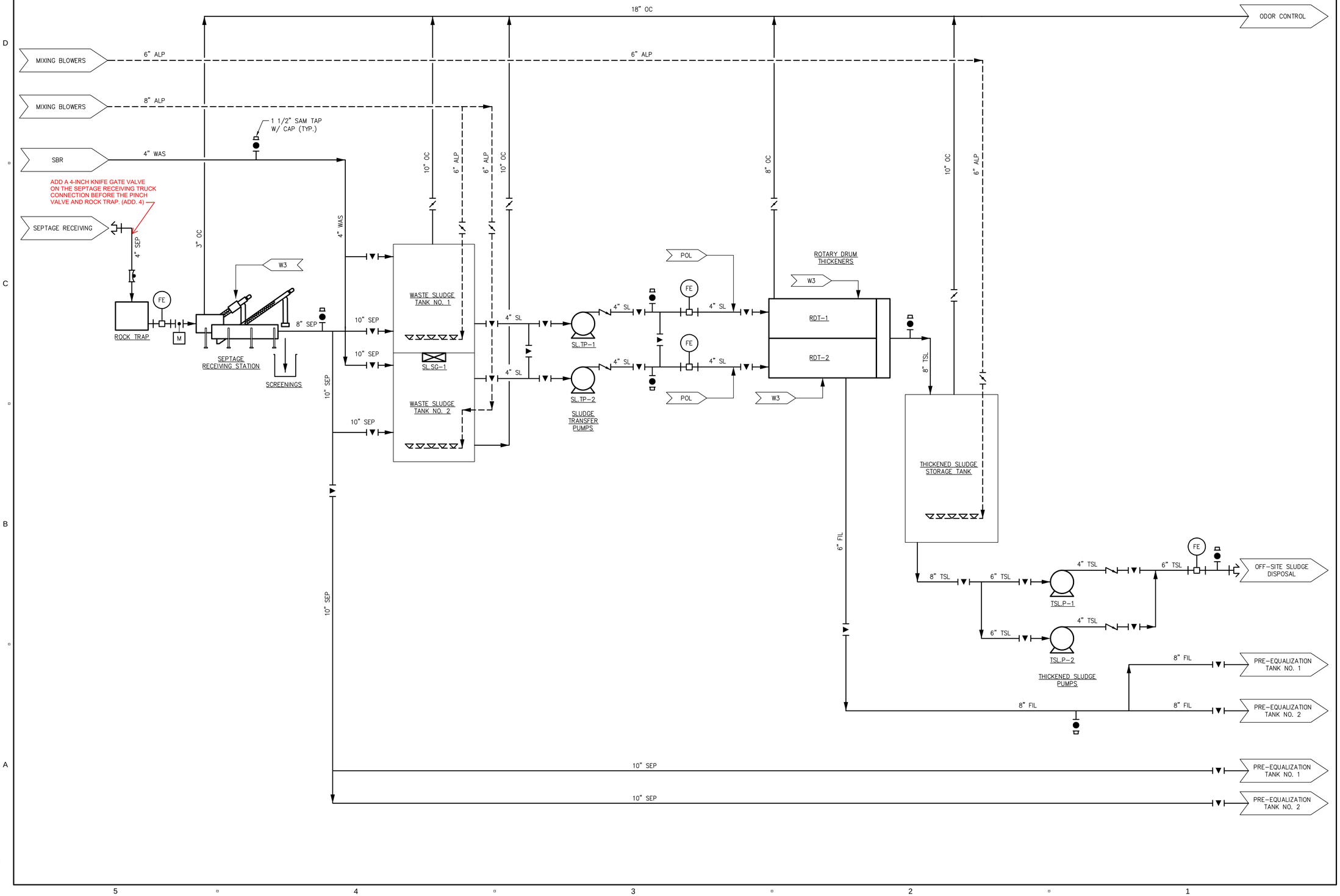
MECHANICAL PROCESS

SHEET TITLE

PROCESS FLOW DIAGRAM II

SHEET NUMBER

00 D-007



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	2-28-20	ADENDUM 4

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

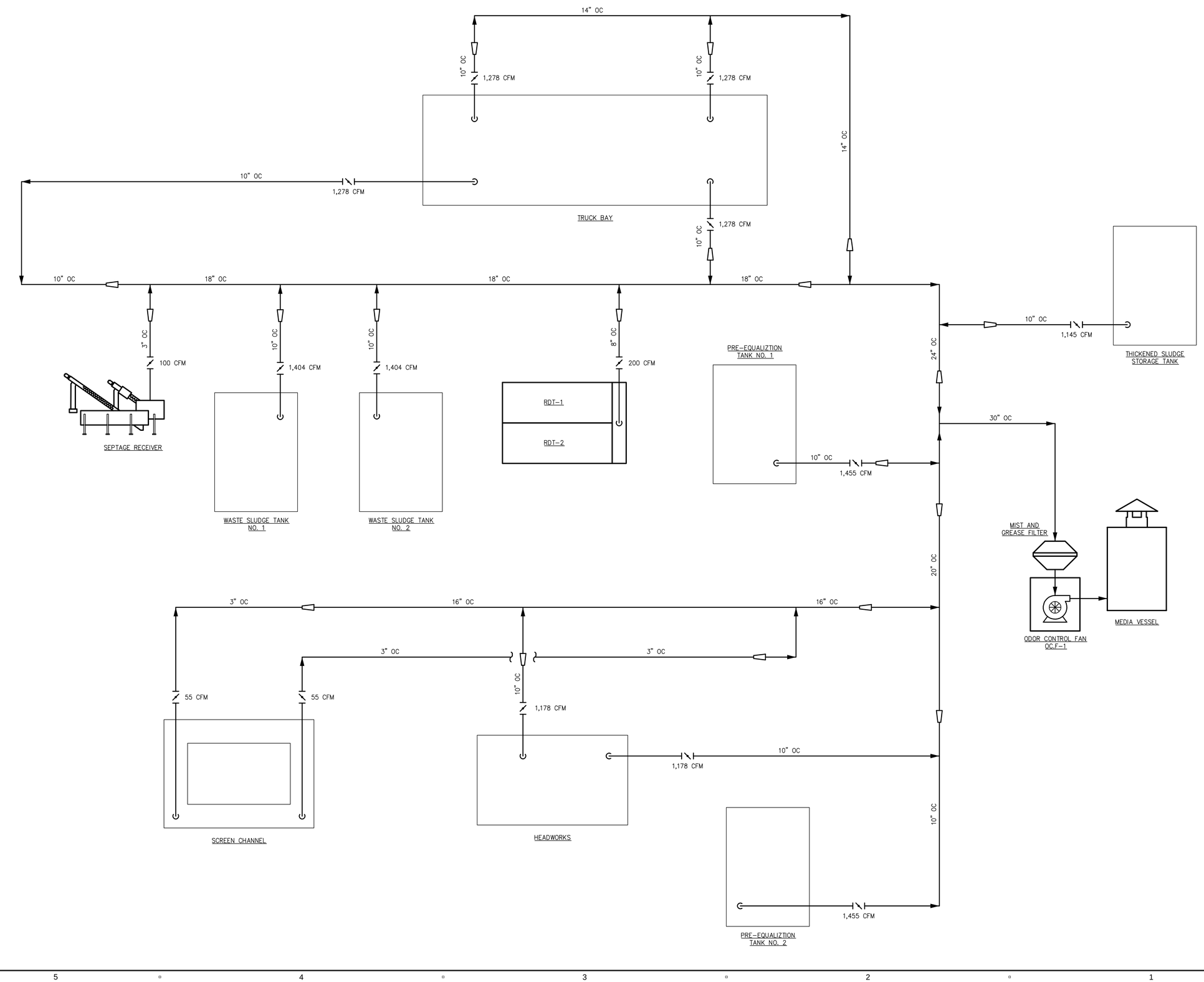
SHEET TITLE

PROCESS FLOW DIAGRAM III

SHEET NUMBER

00 D-008

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\000 D-008.DWG
LAST UPDATE: Monday, January 13, 2020 7:42:59 AM
PLOT DATE: Friday, January 17, 2020 9:05:10 AM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\00 D-009.DWG
LAST UPDATE: Tuesday, January 14, 2020 10:44:50 AM
PLOT DATE: Friday, January 17, 2020 9:05:15 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. MINI
NO. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	C. MINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

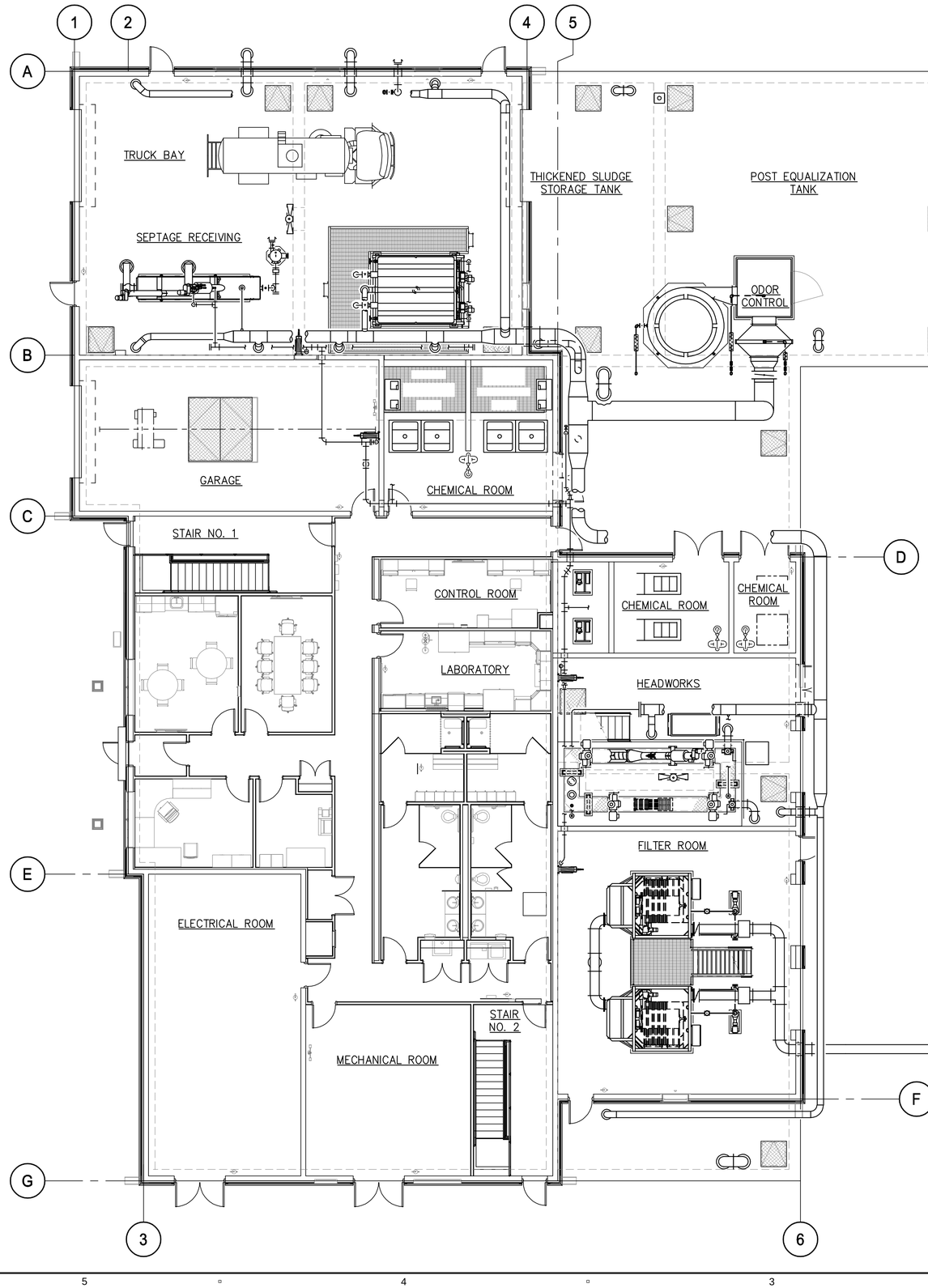
MECHANICAL PROCESS

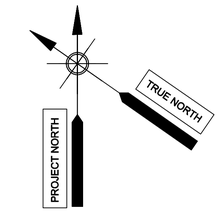
SHEET TITLE

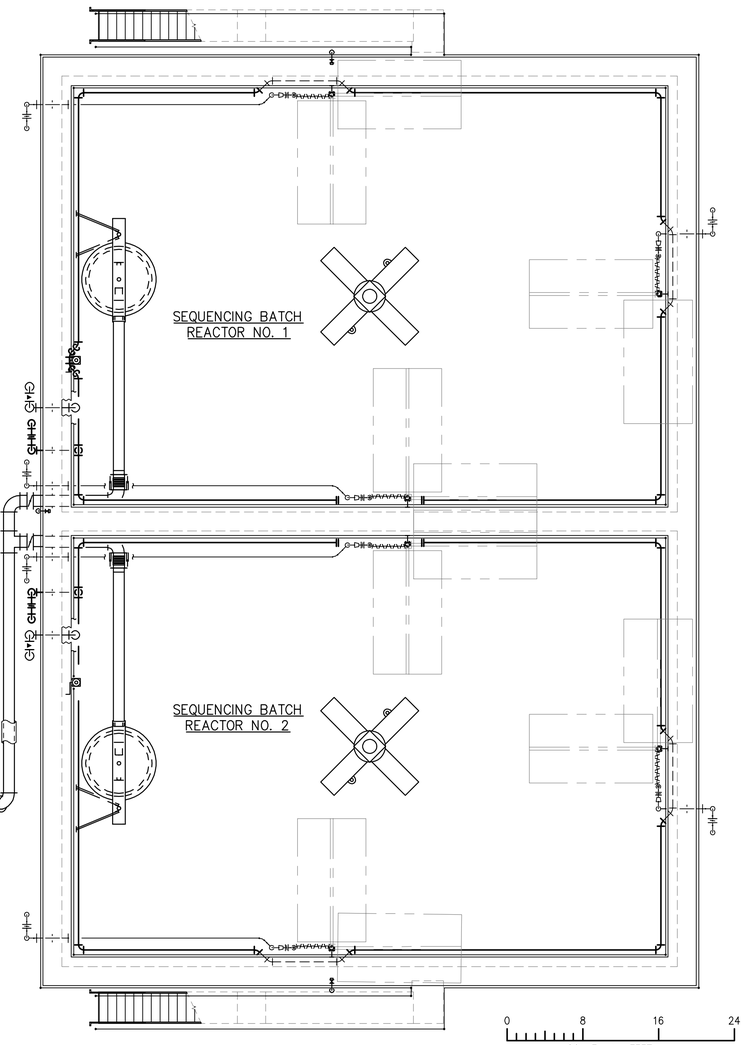
ODOR CONTROL AIR FLOW DIAGRAM

SHEET NUMBER

00 D-009







AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

OVERALL PLAN

SHEET NUMBER

10 D-100

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-100.DWG
LAST UPDATE: Friday, December 13, 2019 9:39:40 AM
PLOT DATE: Friday, January 17, 2020 9:05:21 AM

NOTE: THE 1" POLYMER LINES SHALL BE RUN IN THE BASEMENT PUMP ROOM (ROOM 126) UP TO THE POLYMER ROOM (ROOM 117) THROUGH THE PIPE CHASE LOCATED AT COLUMN LINE 5 AND ABOUT 9' SOUTH OF COLUMN LINE D. THE POLYMER PIPING SHALL NOT RUN THROUGH THE PRE-EQUALIZATION TANK NO. 1. (ADD. 7)

PROJECT NORTH

TRUE NORTH

9 / 10 D-308

8 / 10 D-307

7 / 10 D-307

ACCESS LADDER (TYP.)

LE 1141A

WASTE SLUDGE TANK NO. 1

LE 1141B

COARSE BUBBLE DIFFUSER (TYP.)

4" ALP (TYP.)

8" SEP

8'-9"

1'-6" (TYP.)

4" SL (TYP.)

SL.SG-1

LE 1142A

WASTE SLUDGE TANK NO. 2

6" 90 DEG. L.R. ELL

6" TSL

6" 45 DEG. L.R. ELL

LE 1142B

6'-9" (TYP.)

4" 45 DEG. L.R. ELL

4" SL

9'-6"

6" FIL

4" WAS

HOSE REEL SEE DETAIL

2" W3

LE 1170A

THICKENED SLUDGE STORAGE TANK

LE 1170B

COARSE BUBBLE DIFFUSER (TYP.)

4" ALP (TYP.)

8" TSL

3'-0" X 3'-0" ACCESS HATCH (ABOVE) (TYP.)

1'-6"

6" ALP

LADDER (TYP.)

1'-6"

3'-0" X 3'-0" EQUIPMENT REMOVAL HATCH (ABOVE) (TYP.)

EQ.MIX-1

LSLL 1070

LSHH 1070

LE 1070

POST-EQUALIZATION TANK

3'-0" X 3'-0" ACCESS HATCH (ABOVE) (TYP.)

20'-0"

1'-6"

EQ.MIX-2

1'-6"

14" FE

1 / 10 D-301

B

10" SEP

6'-6"

5'-6"

8'-6"

4" 45 DEG. L.R. ELL (TYP.)

8'-0" X 8'-0" EQUIPMENT REMOVAL HATCH (ABOVE)

1 1/2" SAM (TYP.)

PI 1151A

PI 1151B

PI 1152A

PI 1152B

SLUDGE TRANSFER PUMPS

SL.TP-1

SL.TP-2

BF

4" SL (TYP.)

6" ALP

10" SEP

FE 1173

CHEMICAL DIFFUSER SEE DETAIL (TYP.)

1" POL (TYP.)

6" TSL

4" W3

4" WAS

8" FIL

10" SEP

TSL.P-1

TSL.P-2

PI 1171A

PI 1171B

PI 1172A

PI 1172B

THICKENED SLUDGE PUMPS

4" TSL (TYP.)

5'-1"

6'-6"

8" TSL

8" EFF

6" ALP

CONC. ENCASEMENT

PRE-EQUALIZATION TANK NO. 1

LE 1005A

3'-0" X 3'-0" ACCESS HATCH (ABOVE) (TYP.)

AE 1005A

AE 1005B

ACCESS LADDER (TYP.)

2 / 10 D-302

6" ALP

4" WAS

4" 90 DEG. L.R. ELL (TYP.)

FE 1160

FE 1170

MATCH LINE A - A (FOR CONTINUATION SEE SHEET 10 D-102)

1

5

6

0 4 8 12

SCALE IN FEET

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

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-101.DWG

LAST UPDATE: Thursday, October 03, 2019 7:49:27 AM

PLOT DATE: Friday, January 17, 2020 9:05:27 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 45563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDEDNUM 7

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

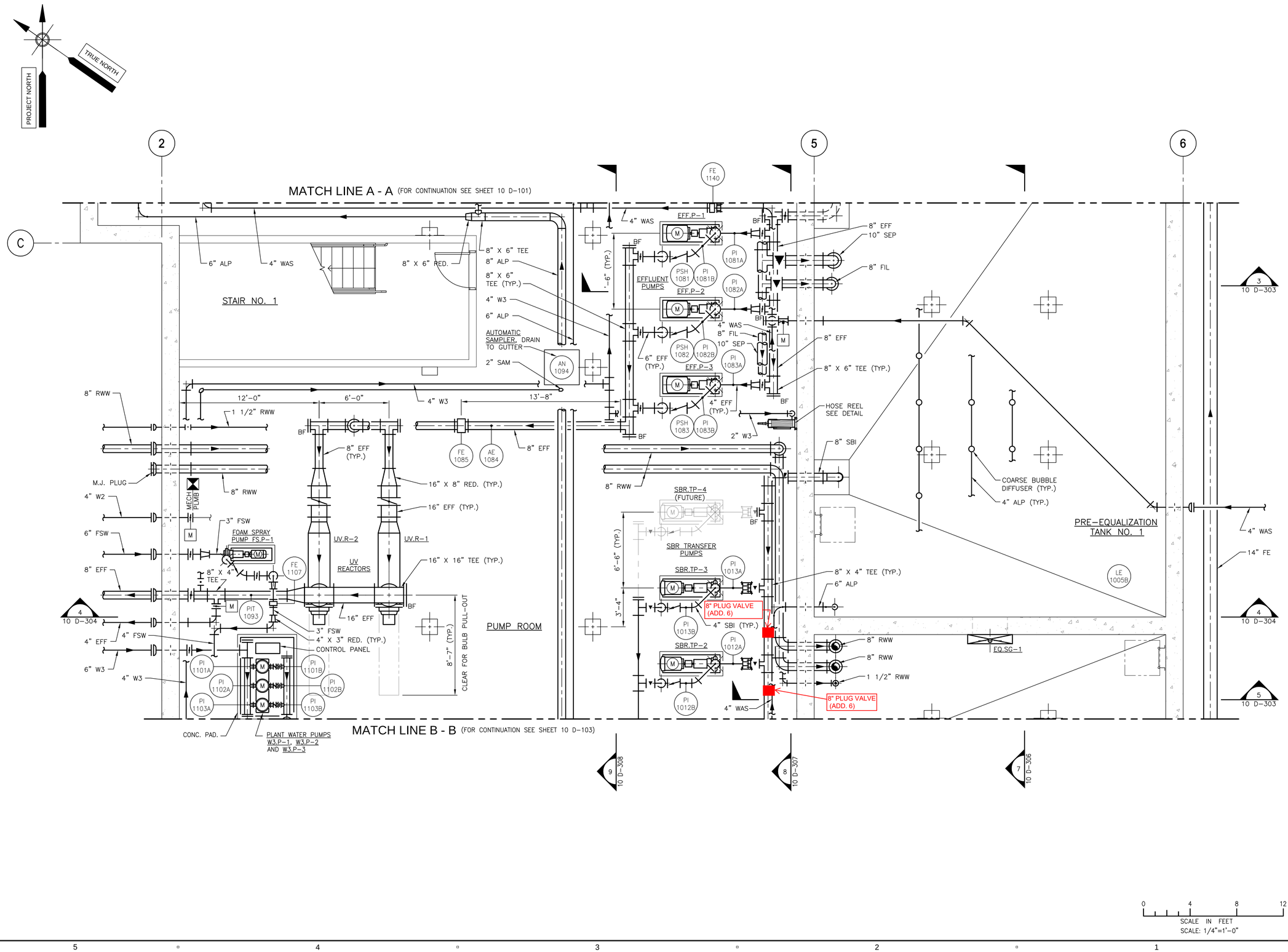
MECHANICAL PROCESS

SHEET TITLE

FACILITY LOWER PLAN I

SHEET NUMBER

10 D-101



AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

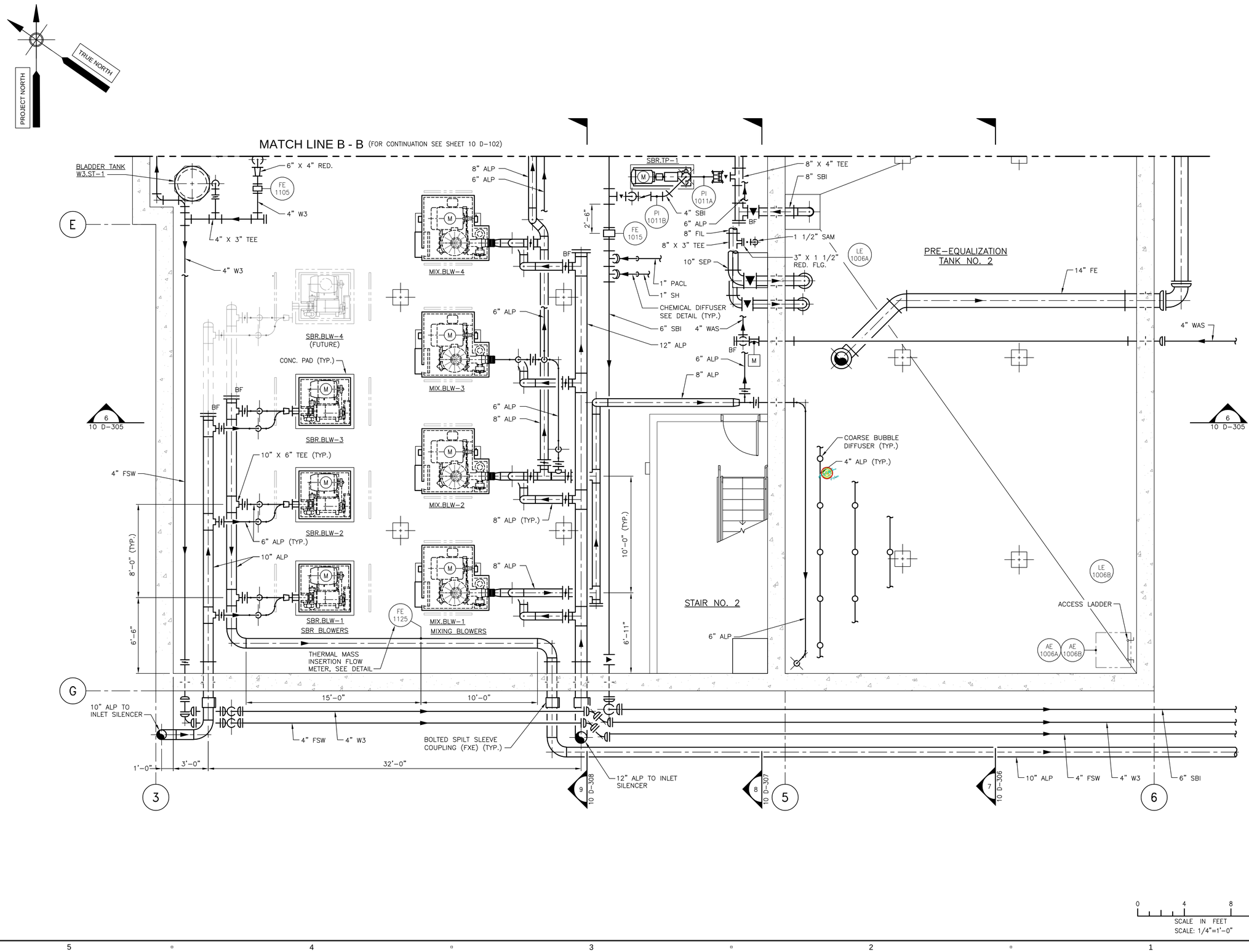
SHEET TITLE

FACILITY
LOWER PLAN II

SHEET NUMBER

10 D-102

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-102.DWG
LAST UPDATE: Friday, October 04, 2019 10:27:02 AM
PLOT DATE: Friday, January 17, 2020 9:05:37 AM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-103.DWG
LAST UPDATE: Wednesday, September 11, 2019 6:47:08 AM
PLOT DATE: Friday, January 17, 2020 11:28:22 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

FACILITY LOWER PLAN III

SHEET NUMBER

10 D-103

Notes: (ADD. 4)

1. The framing, grating, supports, ladders, railing and the like located around the Rotary Drum Thickeners shall be designed by the fabricator and constructed of FRP. The ladders shall be integral with the railing system. Refer to Section 06610 - Fiberglass Reinforced Products and Fabrications.
2. The hatches in the following locations shall be HL-93 rated:
   a. Truck Bay
   b. Thickened Sludge Storage Tank
   c. Post Equalization Tank
   d. Pre-Equalization Tanks

TRUE NORTH

PROJECT NORTH

12" V W/ INSECT SCREEN (TYP.)

6" QUICK DISCONNECT

9 / 10 D-308

8 / 10 D-307

7 / 10 D-307

10" V W/ INSECT SCREEN

FLUSH MOUNT BASE FOR PORTABLE DAVIT CRANE (TYP.)

3'-0" X 3'-0" ~~EQUIPMENT REMOVAL HATCH (TYP.)~~

3-0" X 3'-0" HEAVY-DUTY EQUIPMENT REMOVAL/ACCES HATCH (TYP.)

10" OC

1 1/2" SAM

2" X 1 1/2" RED. FLG.

6" TSL

TRUCK BAY

3' 0" X 3' 0" ~~ACCESS HATCH (TYP.)~~

3-0" X 3'-0" HEAVY-DUTY EQUIPMENT REMOVAL/ACCES HATCH (TYP.)

14" OC

2" SQUARE OPERATING NUT IN FLOOR BOX

Add a 4-inch knife gate valve on the septage receiving truck connection before the pinch valve and rock trap (ADD. 4)

SL.SG-1 (BELOW)

ACCESS LADDER (TYP.)

18'-3"

THICKENED SLUDGE STORAGE TANK (BELOW)

POST-EQUALIZATION TANK (BELOW)

4" QUICK DISCONNECT

CONC. PAD

ROCK TRAP

CONTINUOUS BAGGER (TYP.)

4" 90 DEG. L.R. ELL (TYP.)

6" FIL (BELOW)

3'-6"

4" SEP

FE 1130

1'-0"

1'-8"

SEPTAGE RECEIVER

8" SEP (BELOW)

RDT-1

2" W3

8" TSL (BELOW)

4" SL (TYP.)

ROTARY DRUM THICKENERS

16'-6"

RDT-2

8" OC

CONC. PAD

8'-9"

2" W3

3" OC

10" OC

BF

4" X 2" TEE

18" OC

4" W3

1 / 10 D-301

B

GARAGE

**SEE BELOW

FIN. FL. EL. 55.33

**SEE BELOW

FIN. FL. EL. 55.33

6'-0"

METERING PUMP SHELF, SEE DETAIL (TYP.)

*SCALE MOUNTED ON RFP GRATING (TYP.) ~~SCALE (TYP.)~~

*SCALE MOUNTED ON RFP GRATING (TYP.) ~~SCALE (TYP.)~~

PACL TOTE (TYP.)

SH TOTE (TYP.)

PACL METERING PUMPS PACL.MP-1 AND PACL.MP-2

SH METERING PUMPS SH.MP-1 AND SH.MP-2

MONORAIL (ABOVE)

HOSE REEL SEE DETAIL (TYP.)

PACL AREA

2'-0" HIGH CONC. CONTAINMENT CURB

SODIUM HYPOCHLORITE AREA

EMERGENCY SHOWER/EYEWASH

2 TON HOIST HST-1 (ABOVE)

4" X 2" RED. FLG.

~~8'-0" X 6'-0" EQUIPMENT REMOVAL HATCH (TYP.)~~

6'-0" X 6'-0" HEAVY-DUTY EQUIPMENT REMOVAL/ACCES HATCH

4" W3

3/4" W3

SODIUM HYPOCHLORITE/ PACL ROOM

SEE SHT. 10 D-601 FOR CHEMICAL SYSTEM SCHEMATICS

FIN. FL. EL. 57.00

CONC. PAD

ODOR CONTROL UNIT

ODOR CONTROL FAN OC.F-1

1" D

10" V W/ INSECT SCREEN

CONC. PAD

MEDIA VESSEL

HEAT TRACE AND INSULATE (TYP.)

FRP GRATING (TYP.) EL. 56.70, SEE ARCH. DWG'S FOR DETAILS

2" D

24" X 10" TEE

30" X 24" RED.

BLOW-THRU TRAP, SEE DETAIL

MIST AND GREASE FILTER

2" D

DRAW-THRU TRAP, SEE DETAIL

H.G.

16" V W/ INSECT SCREEN

30" OC

30" X 10" TEE

2" W3

2 / 10 D-302

4" X 2" RED.

20" OC

MATCH LINE A - A

(FOR CONTINUATION SEE SHEET 10 D-105)

* SCALES TO BE SET ON THE FRP GRATING. PROVIDE TYPE 316L STAINLESS STEEL ANCHORAGE CONNECTIONS TO THE GRATING IN ACCORDANCE WITH THE SCALE'S MANUFACTURER REQUIREMENTS.

** FRP GRATING (TYP.) EL = 57.00. SEE ARCH. DWG'S FOR DETAILS.

6

0 4 8 12

SCALE IN FEET

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

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-104.DWG

LAST UPDATE: Friday, January 17, 2020 11:26:27 AM

PLOT DATE: Friday, January 17, 2020 11:26:49 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

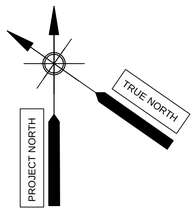
MECHANICAL PROCESS

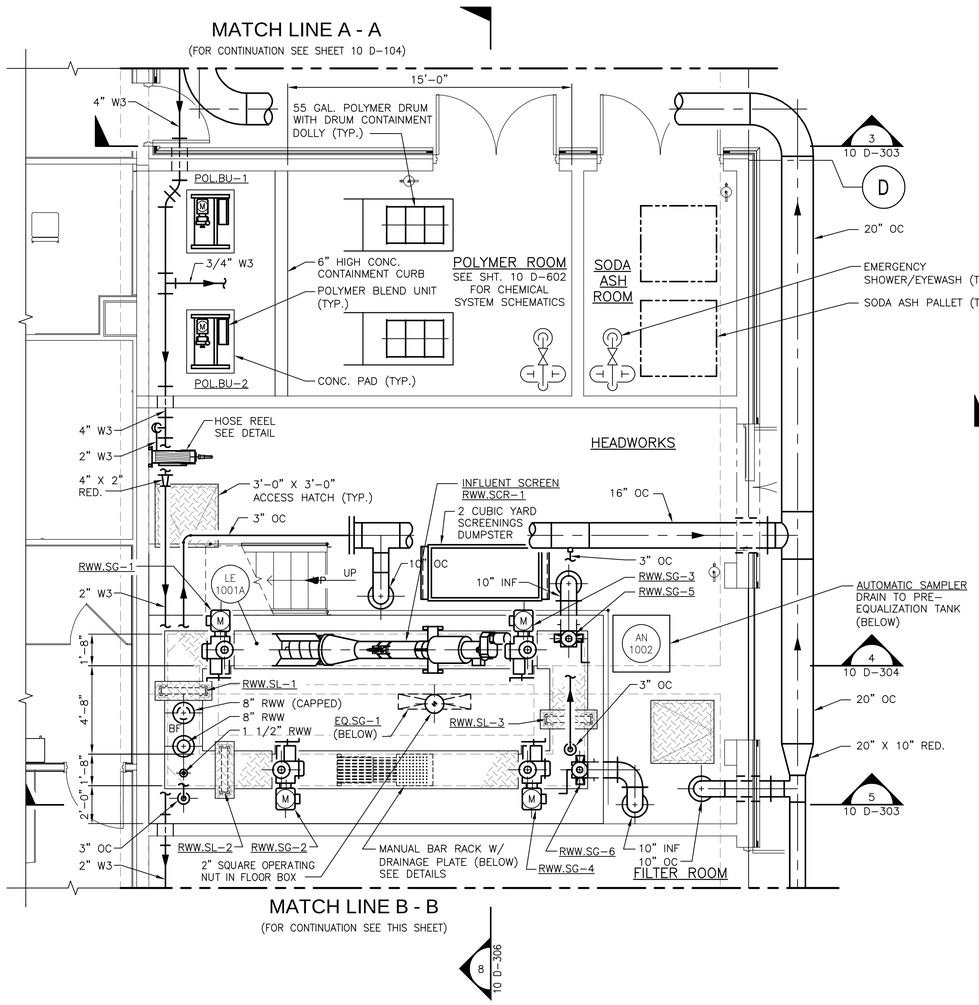
SHEET TITLE

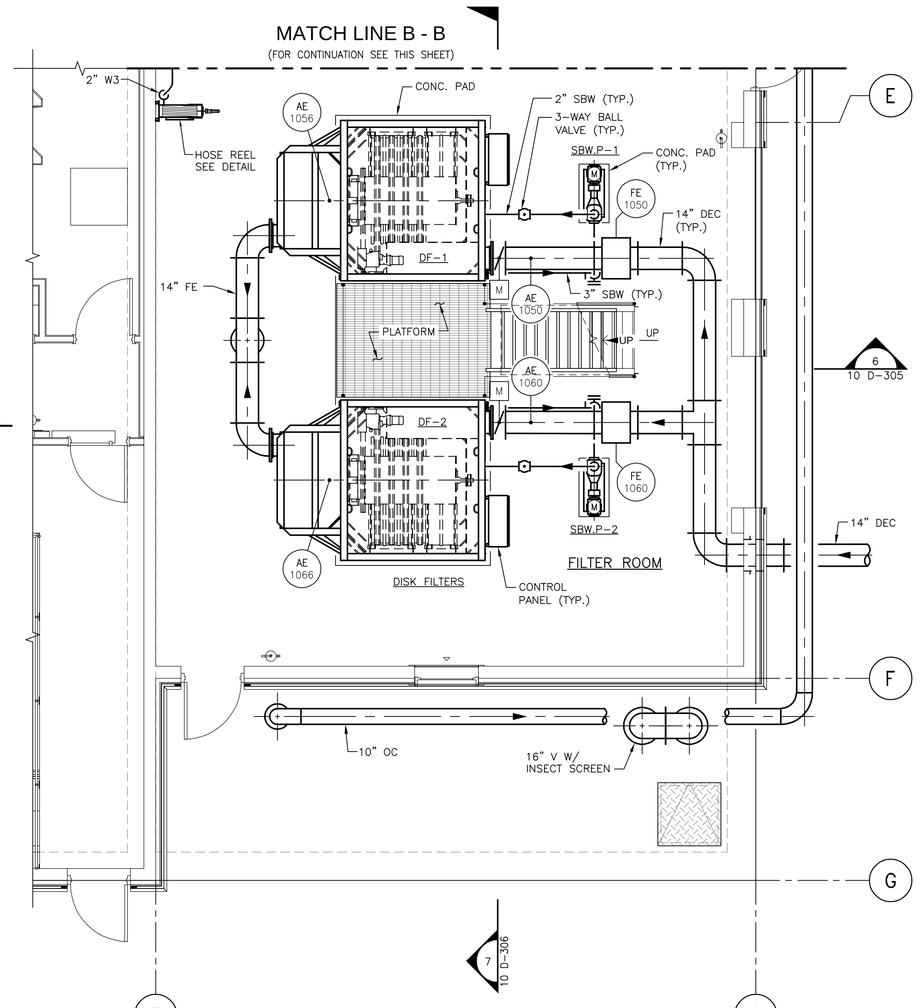
FACILITY UPPER PLAN I

SHEET NUMBER

10 D-104







Note: The framing, grating, supports, stair, railing and the like located around the Effluent Disk Filters shall be designed by the fabricator and constructed of FRP. The stair shall be integral with the railing system. Refer to Section 06610 - Fiberglass Reinforced Products and Fabrications. (ADD. 4)

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

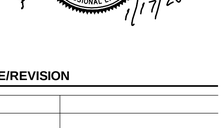
OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

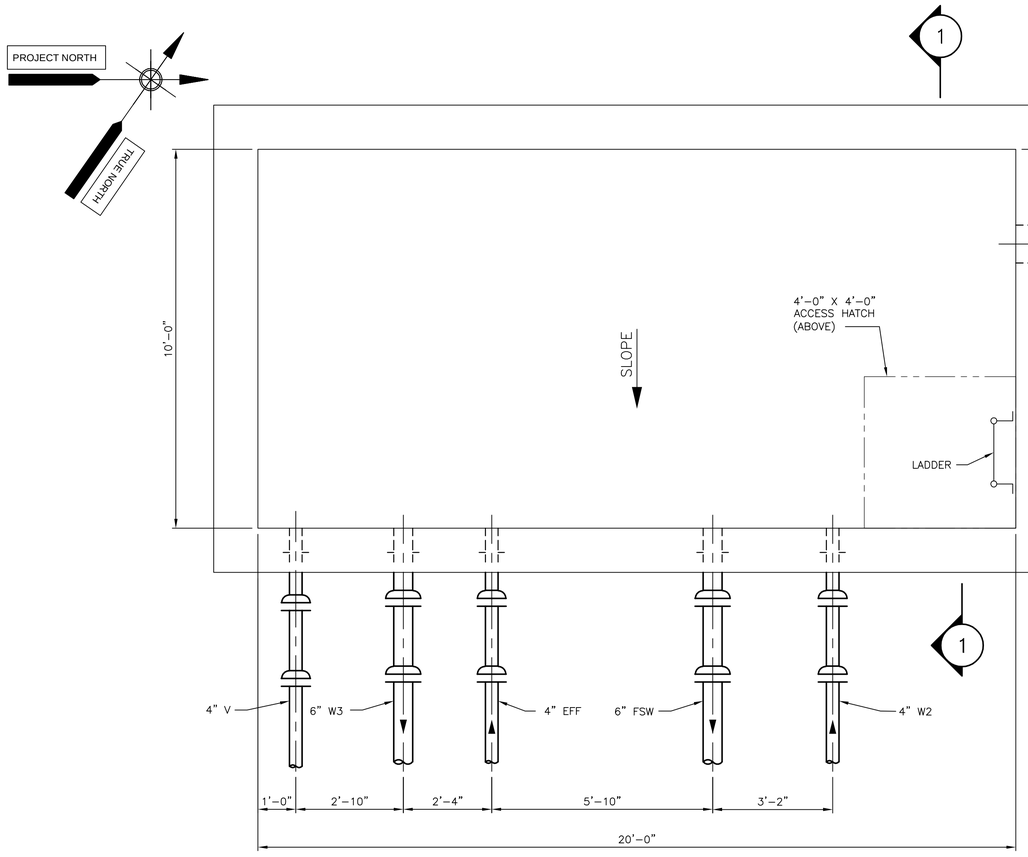
SHEET TITLE

FACILITY UPPER PLAN II

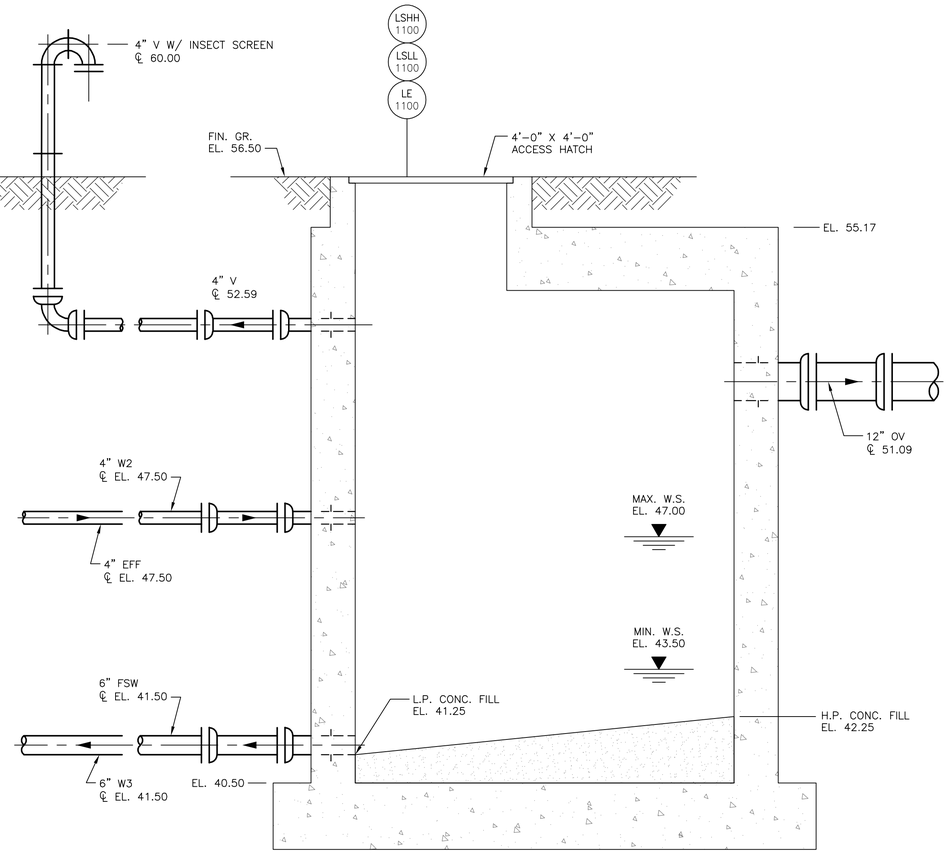
SHEET NUMBER

10 D-105

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\0\10 D-105.DWG
LAST UPDATE: Friday, January 17, 2020 11:29:45 AM
PLOT DATE: Friday, January 17, 2020 11:30:00 AM



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



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

PLANT WATER STORAGE TANK LEVEL SETPOINTS

HWL EL. – 47.00
LWL EL. – 43.50
LWL ALARM – 43.00 OPEN VALVE FOR CITY WATER SERVICE.

NOTES:

1. FOR CONTINUATION OF OUTSIDE PIPING SEE CIVIL DRAWINGS.

0 2 4 6
SCALE IN FEET
SCALE: 1/2"=1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
NO. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C.MINI
Drawn By:	N. RUBINI
Dept Check:	C.GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

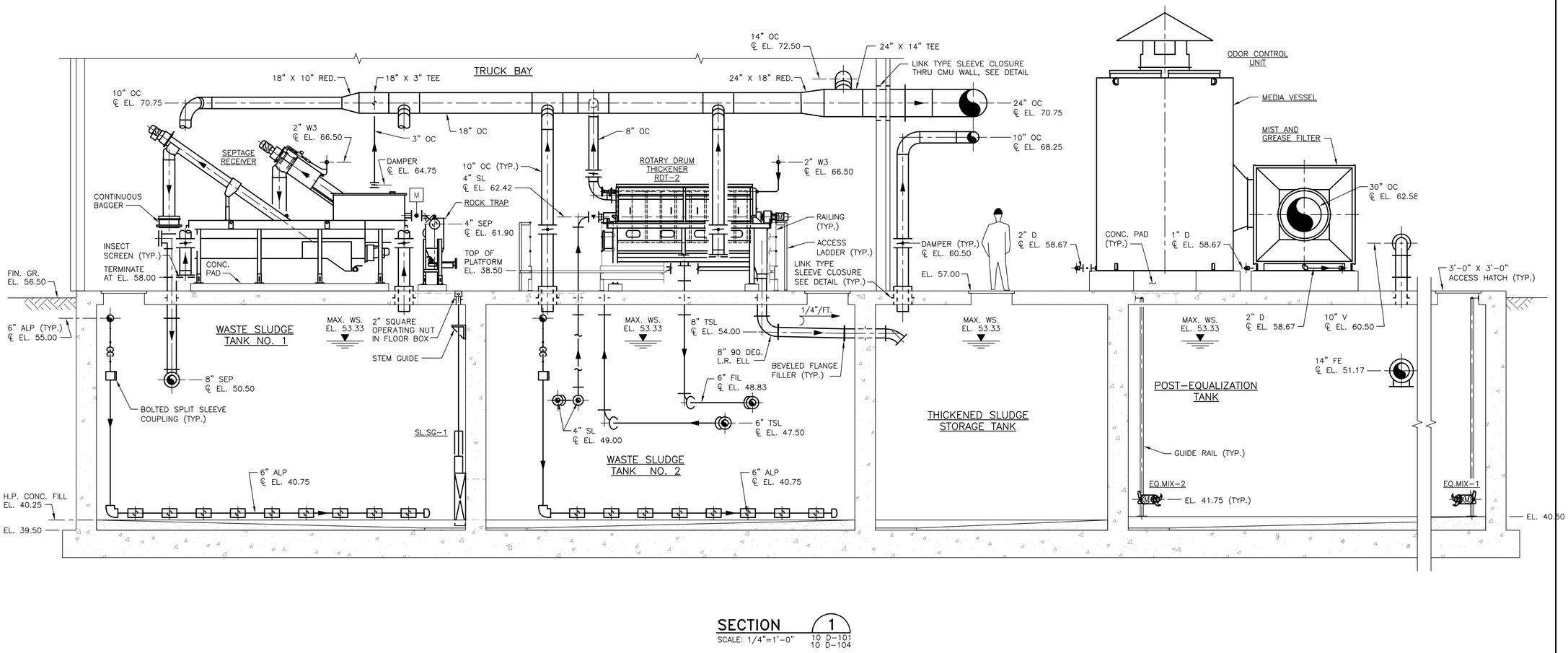
SHEET TITLE

PLANT WATER STORAGE TANK PLANS AND SECTIONS

SHEET NUMBER

10 D-106

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-106.DWG
LAST UPDATE: Wednesday, January 08, 2020 1:57:39 PM
PLOT DATE: Friday, January 17, 2020 9:06:06 AM



SECTION 1

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

10 D-101
10 D-104

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

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

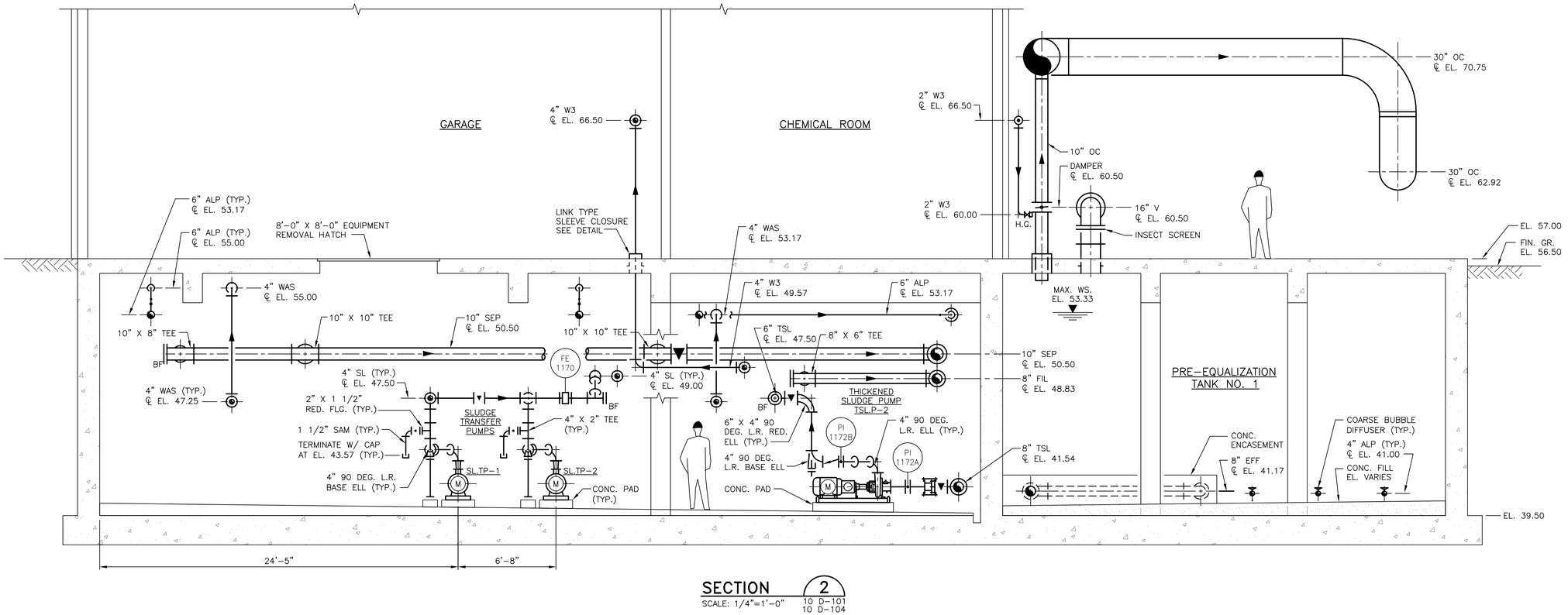
SHEET TITLE

SECTIONS I

SHEET NUMBER

10 D-301

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-301.DWG
LAST UPDATE: Wednesday, September 11, 2019 2:55:12 PM
PLOT DATE: Friday, January 17, 2020 9:06:14 AM



SECTION 2
SCALE: 1/4"=1'-0"
10 D-101
10 D-104

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-302.DWG
LAST UPDATE: Wednesday, September 11, 2019 3:02:02 PM
PLOT DATE: Friday, January 17, 2020 9:06:22 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

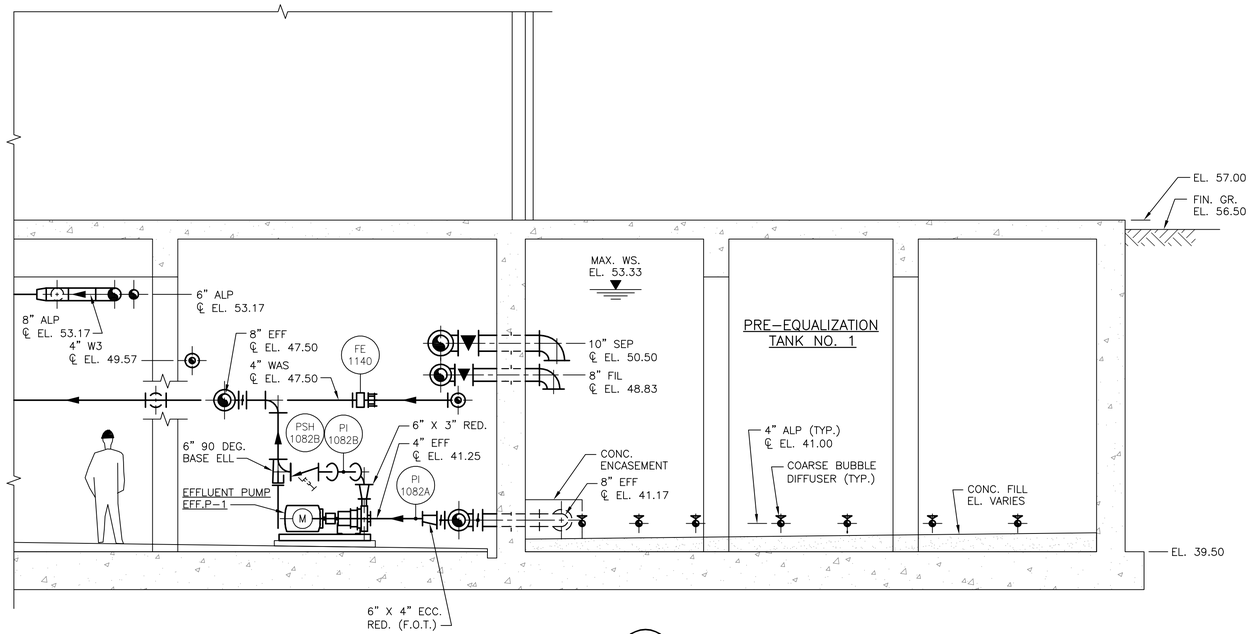
MECHANICAL PROCESS

SHEET TITLE

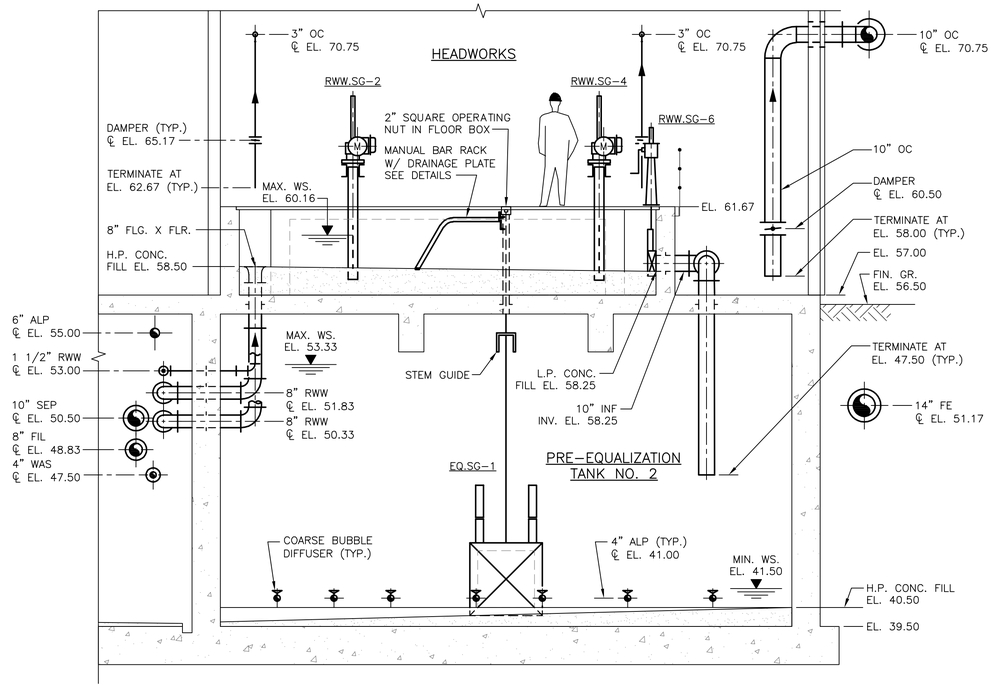
SECTIONS II

SHEET NUMBER

10 D-302



SECTION 3
SCALE: 1/4"=1'-0"
10 D-102
10 D-105



SECTION 5
SCALE: 1/4"=1'-0"
10 D-102
10 D-105

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 42963
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

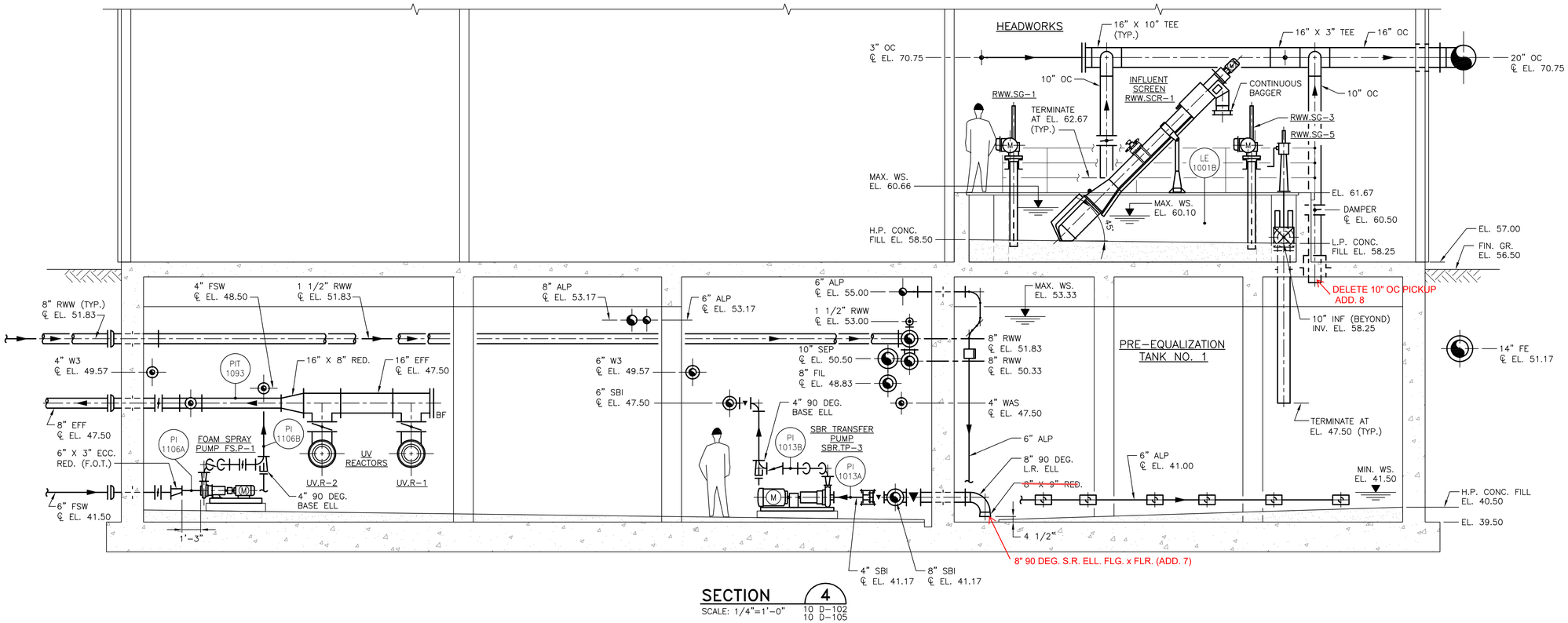
SHEET TITLE

SECTIONS III

SHEET NUMBER

10 D-303

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-303.DWG
LAST UPDATE: Wednesday, September 11, 2019 12:45:08 PM
PLOT DATE: Friday, January 17, 2020 9:06:28 AM



SECTION 4
SCALE: 1/4"=1'-0"
10 D-102
10 D-105

NOTE: REFER TO PLAN DRAWING 10 D-105 FOR SECTION NO. 4 AND SECTION NO. 5. SECTION NO. 4 SHOWS THE 10" OC PIPING PENETRATING THE FLOOR AS INTENDED. SECTION NO. 5 IS CUT BEHIND SECTION NO. 4 SHOWING THE 10" OC PICKUP, IN THE FOREGROUND, TERMINATING ABOVE THE FINISHED FLOOR OF THE HEADWORKS ROOM. (ADD. 7)

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-304.DWG
LAST UPDATE: Wednesday, September 11, 2019 10:03:18 AM
PLOT DATE: Friday, January 17, 2020 9:06:37 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	3-24-20	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

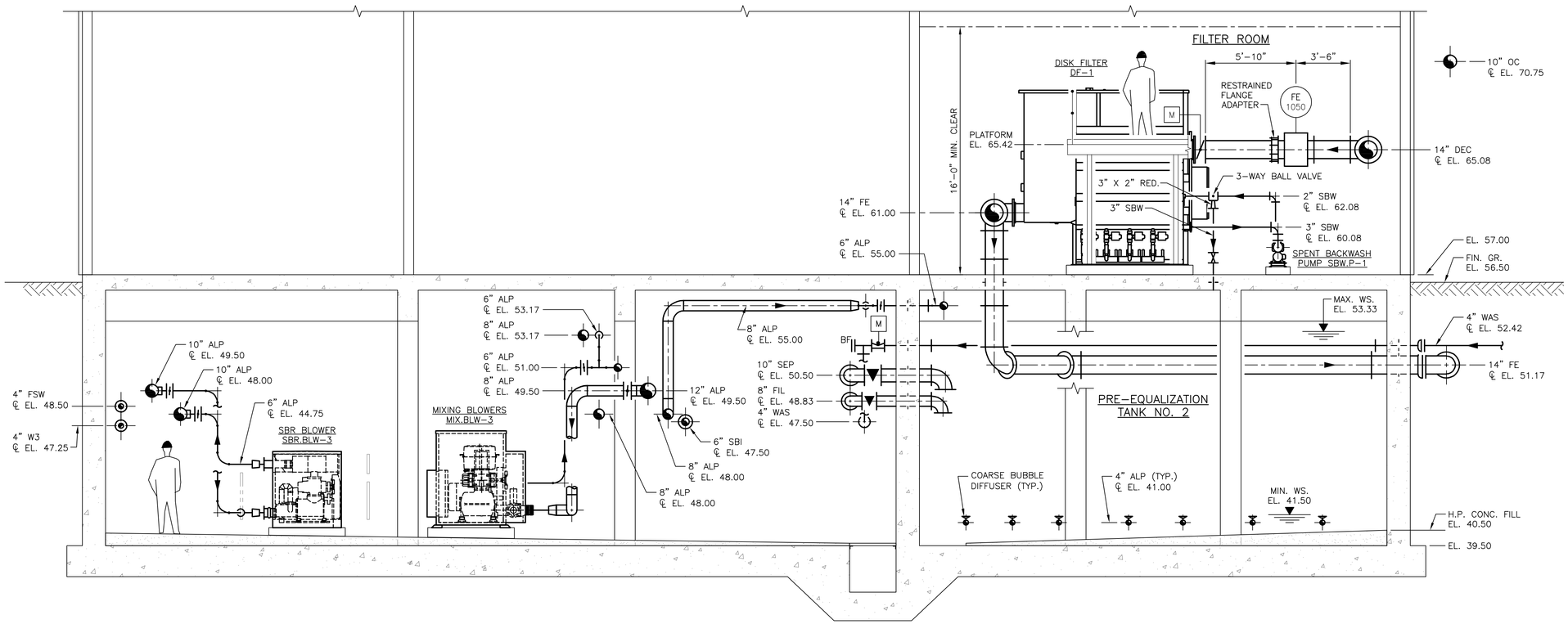
MECHANICAL PROCESS

SHEET TITLE

SECTIONS IV

SHEET NUMBER

10 D-304



SECTION 6
SCALE: 1/4"=1'-0"
10 D-103
10 D-105

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-305.DWG
LAST UPDATE: Thursday, October 03, 2019 2:47:37 PM
PLOT DATE: Friday, January 17, 2020 9:06:43 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

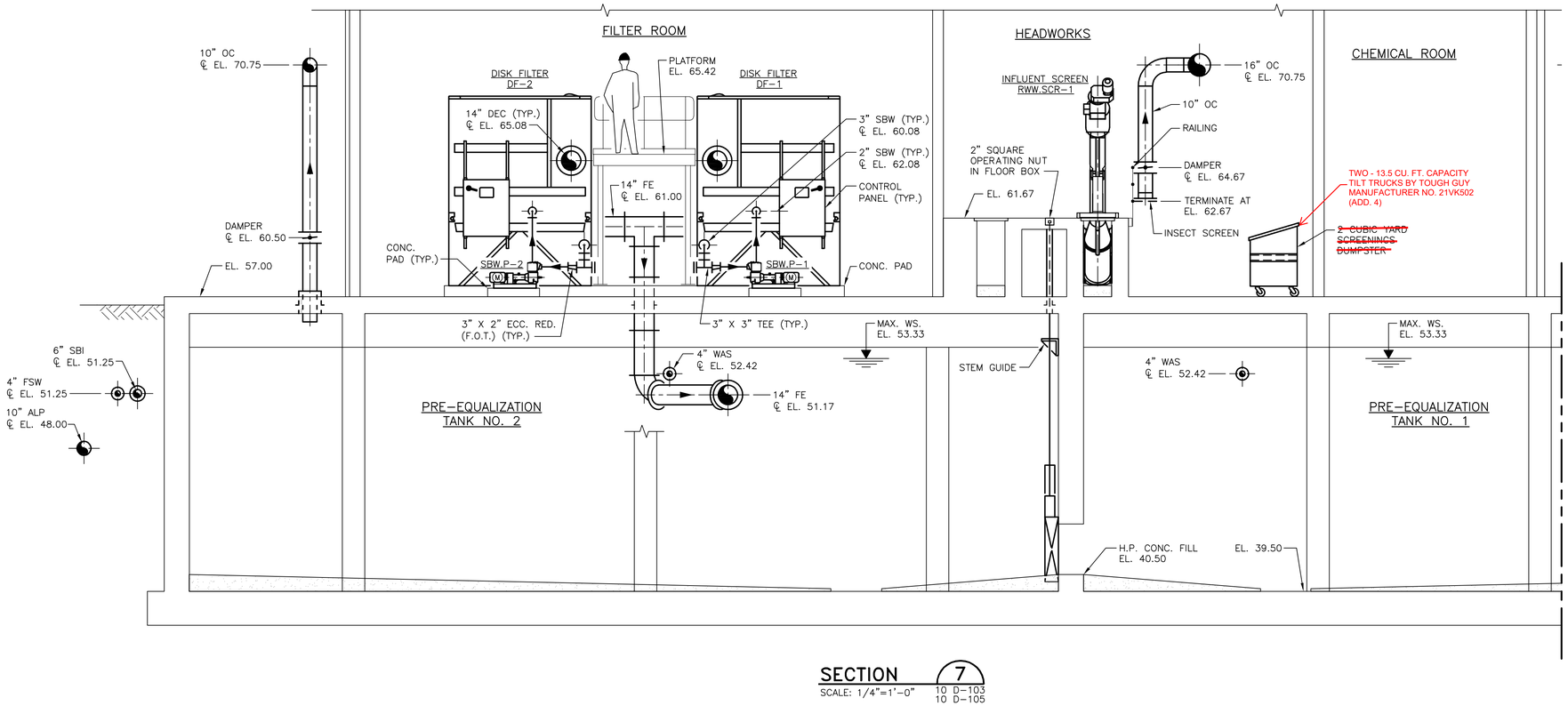
MECHANICAL PROCESS

SHEET TITLE

SECTIONS V

SHEET NUMBER

10 D-305



SECTION 7
SCALE: 1/4"=1'-0"
10 D-103
10 D-105

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-306.DWG
LAST UPDATE: Wednesday, September 11, 2019 10:59:59 AM
PLOT DATE: Friday, January 17, 2020 9:06:52 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

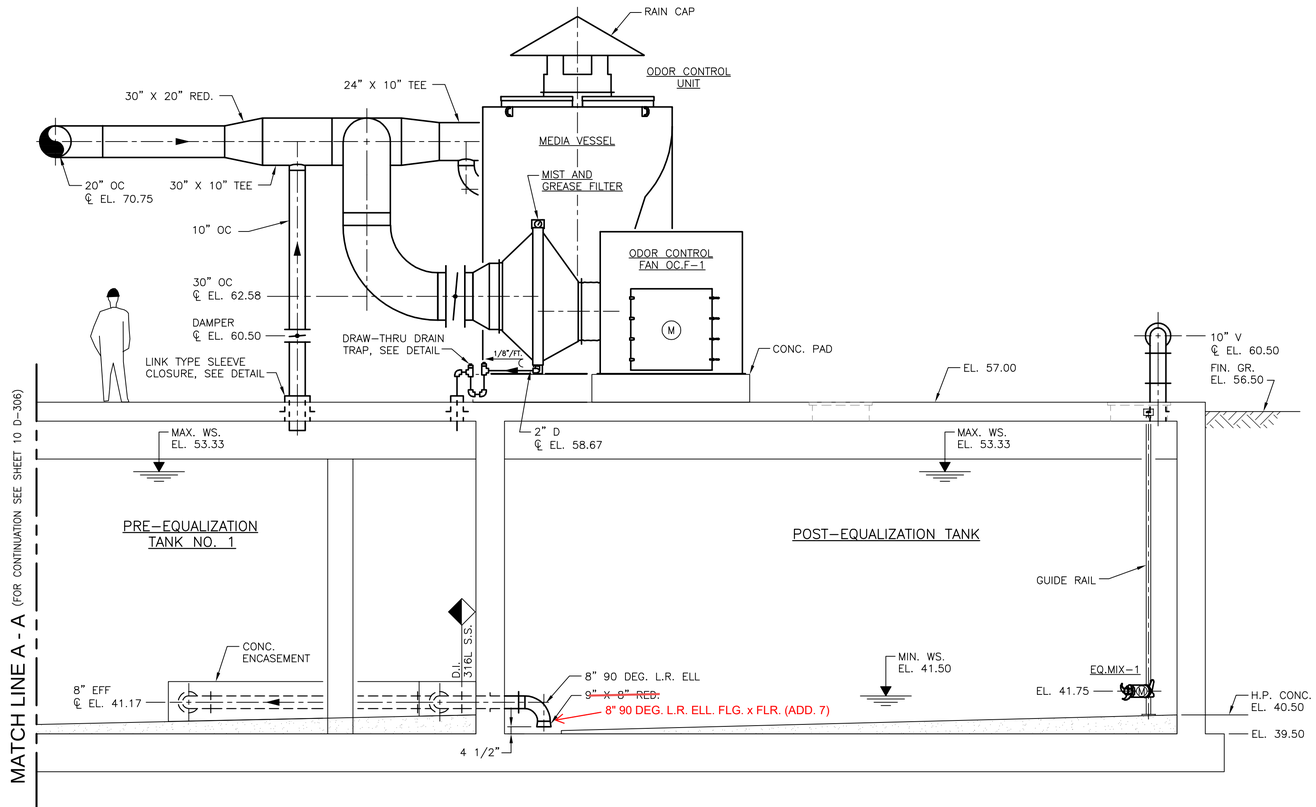
MECHANICAL PROCESS

SHEET TITLE

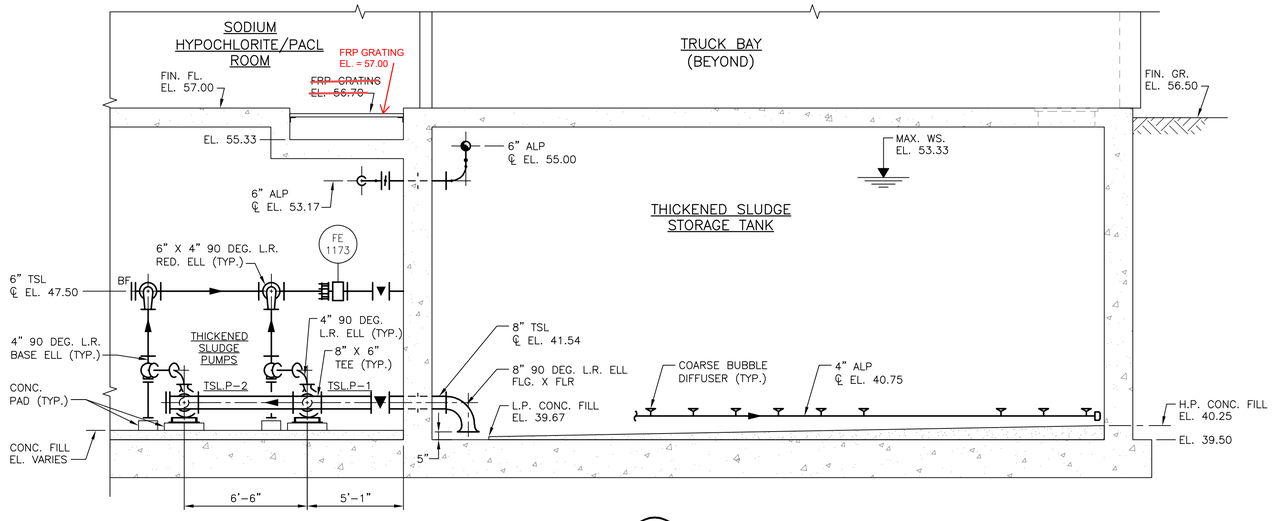
SECTIONS VI

SHEET NUMBER

10 D-306



SECTION 7
SCALE: 1/4"=1'-0"
10 D-101
10 D-104



SECTION 8
SCALE: 1/4"=1'-0"
10 D-101
10 D-104

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-307.DWG
LAST UPDATE: Thursday, October 03, 2019 2:45:55 PM
PLOT DATE: Friday, January 17, 2020 11:35:58 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9
A7	03-24-20	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

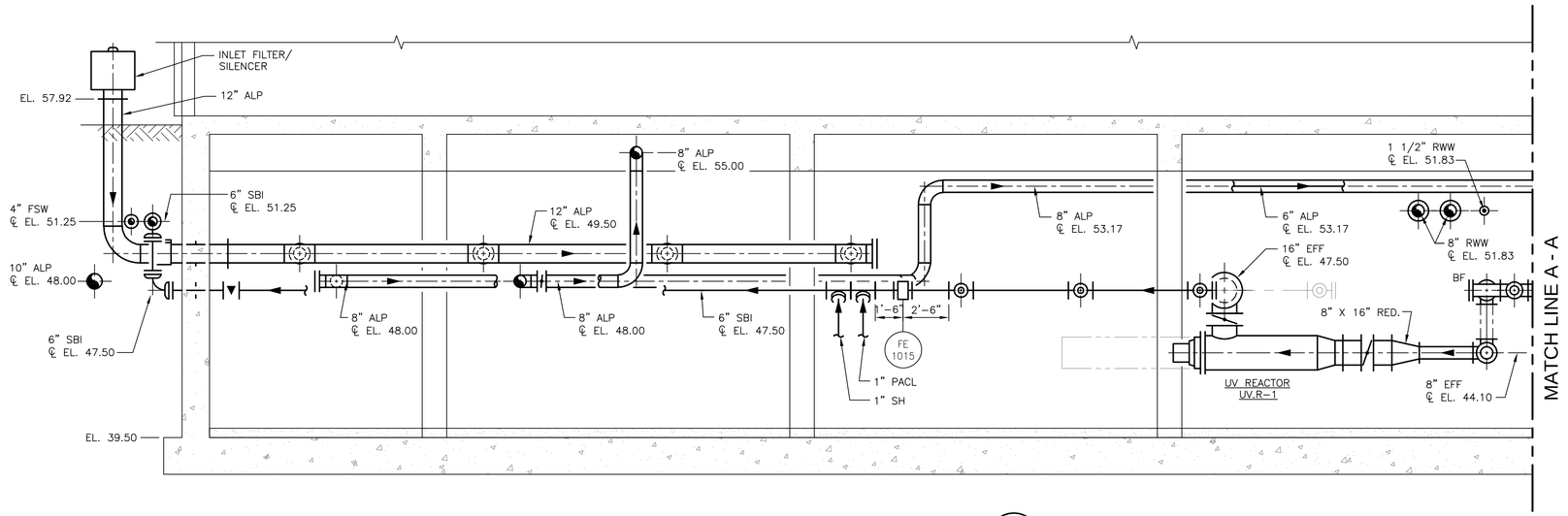
MECHANICAL PROCESS

SHEET TITLE

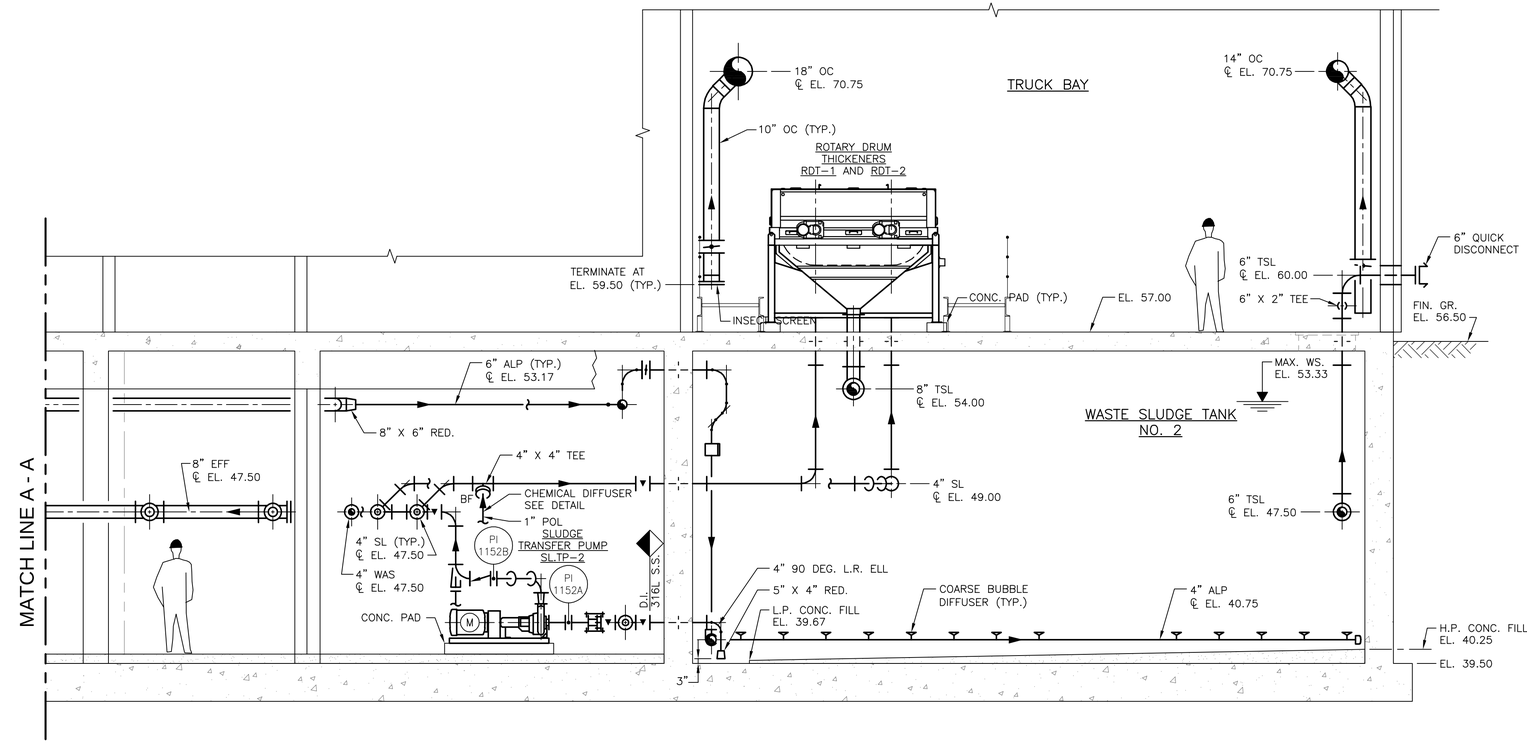
SECTIONS VII

SHEET NUMBER

10 D-307



SECTION 9
SCALE: 1/4"=1'-0"
10 D-102
10 D-103



SECTION 9
SCALE: 1/4"=1'-0"
10 D-101
10 D-104

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-308.DWG
LAST UPDATE: Wednesday, October 02, 2019 12:54:01 PM
PLOT DATE: Friday, January 17, 2020 9:07:13 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

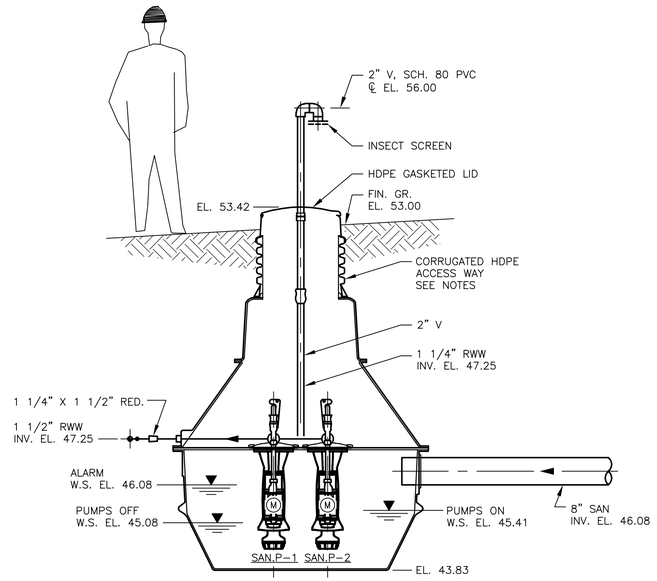
MECHANICAL PROCESS

SHEET TITLE

SECTIONS VIII

SHEET NUMBER

10 D-308



TYPICAL SECTION

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

NOTES:

1. FOR ORIENTATION OF PIPING PENETRATIONS, SEE CIVIL DRAWINGS.
2. CUT CORRUGATED HDPE ACCESS WAY TO LENGTH IN FIELD.

0 2 4 6

SCALE IN FEET

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

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\D10 D-309.DWG
LAST UPDATE: Wednesday, January 15, 2020 9:36:31 AM
PLOT DATE: Friday, January 17, 2020 9:07:21 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

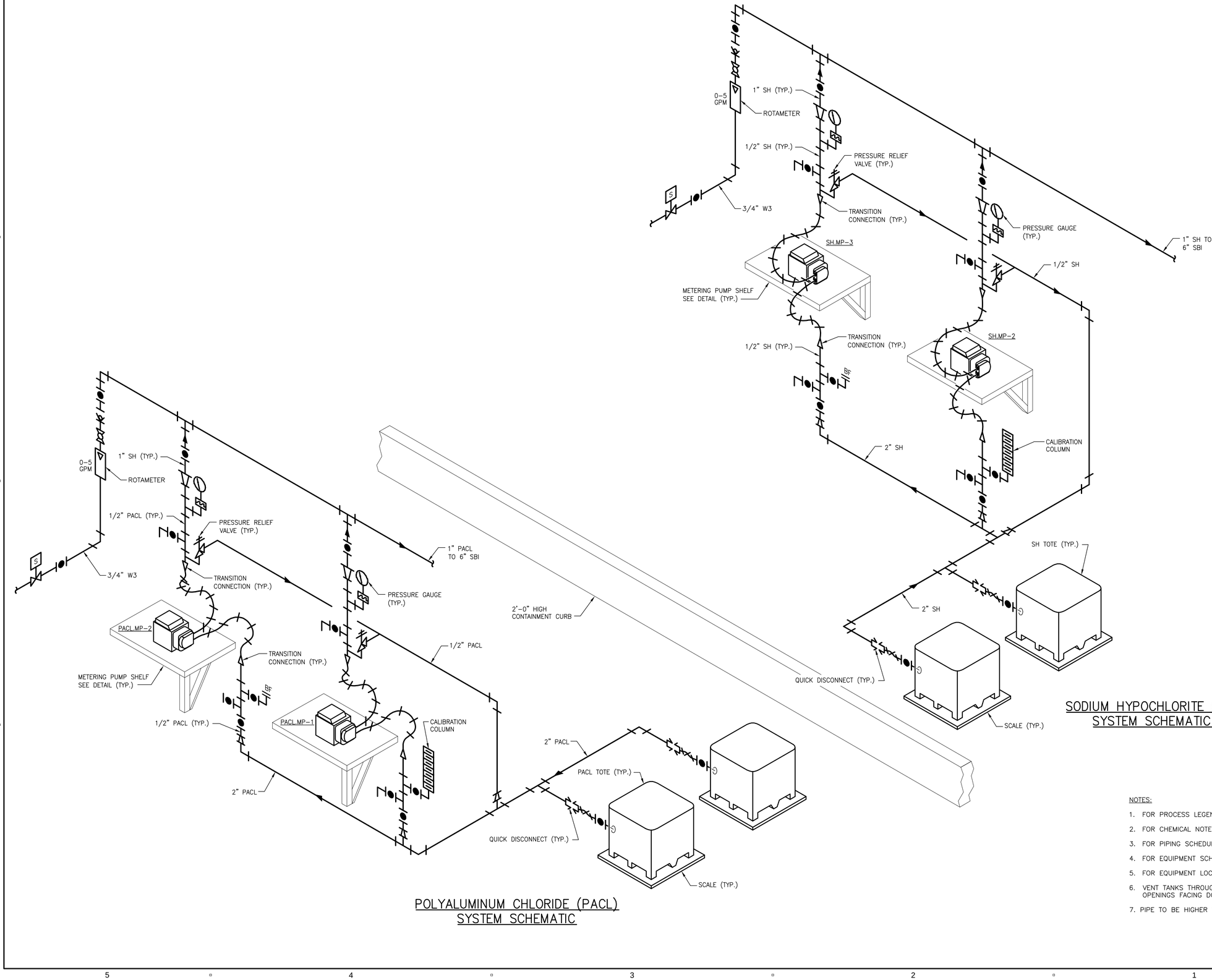
MECHANICAL PROCESS

SHEET TITLE

IN-PLANT PUMP STATION TYPICAL SECTION

SHEET NUMBER

10 D-309



NOTES:

1. FOR PROCESS LEGEND SEE SHEET 00 D–001.
2. FOR CHEMICAL NOTES SEE SHEET 00 D–002.
3. FOR PIPING SCHEDULE SEE SHEET 00 D–003.
4. FOR EQUIPMENT SCHEDULE SEE SHEET 00 D–005.
5. FOR EQUIPMENT LOCATIONS SEE SHEET 10 D–106.
6. VENT TANKS THROUGH ROOF PROVIDE VENT OPENINGS FACING DOWNWARD WITH INSECT SCREEN.
7. PIPE TO BE HIGHER THAN TOP OF TOTE.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER A. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

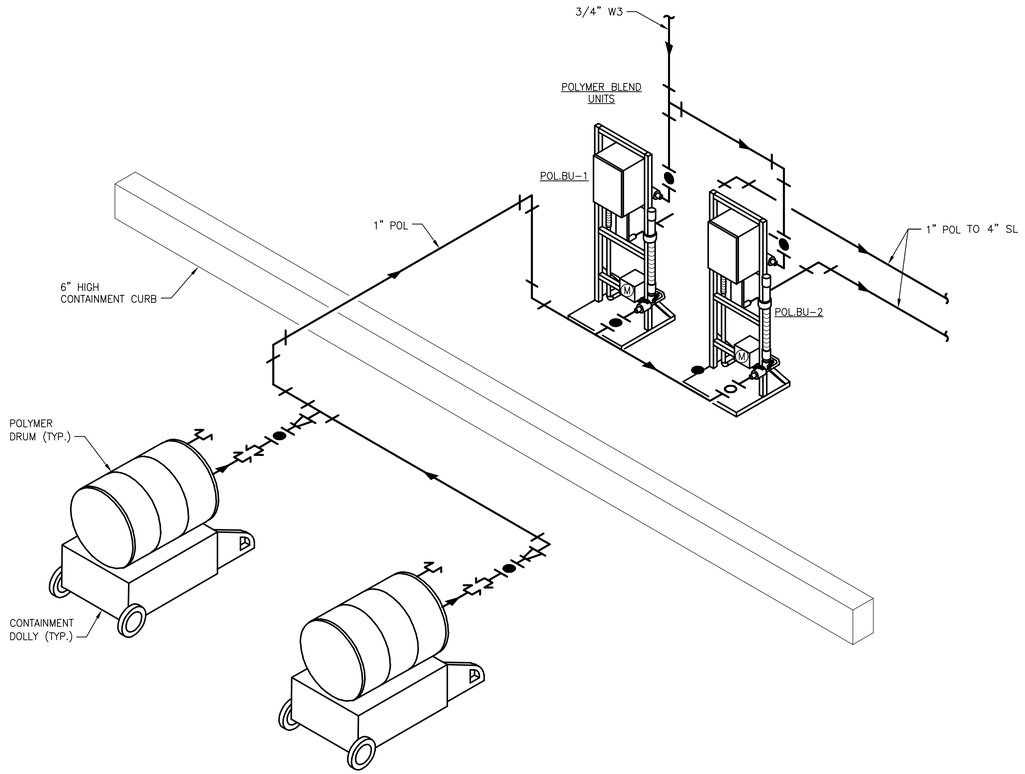
SHEET TITLE

CHEMICAL SYSTEM SCHEMATIC I

SHEET NUMBER

10 D-601

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\10 D-601.DWG
LAST UPDATE: Friday, January 17, 2020 9:01:52 AM
PLOT DATE: Friday, January 17, 2020 9:07:25 AM



POLYMER (POL) SYSTEM SCHEMATIC

NOTES:

1. FOR PROCESS LEGEND SEE SHEET 00 D-001.
2. FOR CHEMICAL NOTES SEE SHEET 00 D-002.
3. FOR PIPING SCHEDULE SEE SHEET 00 D-003.
4. FOR EQUIPMENT SCHEDULE SEE SHEET 00 D-005.
5. FOR EQUIPMENT LOCATIONS SEE SHEET 10 D-107.
6. VENT TANKS THROUGH ROOF PROVIDE VENT OPENINGS FACING DOWNWARD WITH INSECT SCREEN.
7. PIPE TO BE HIGHER THAN TOP OF TOTE.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

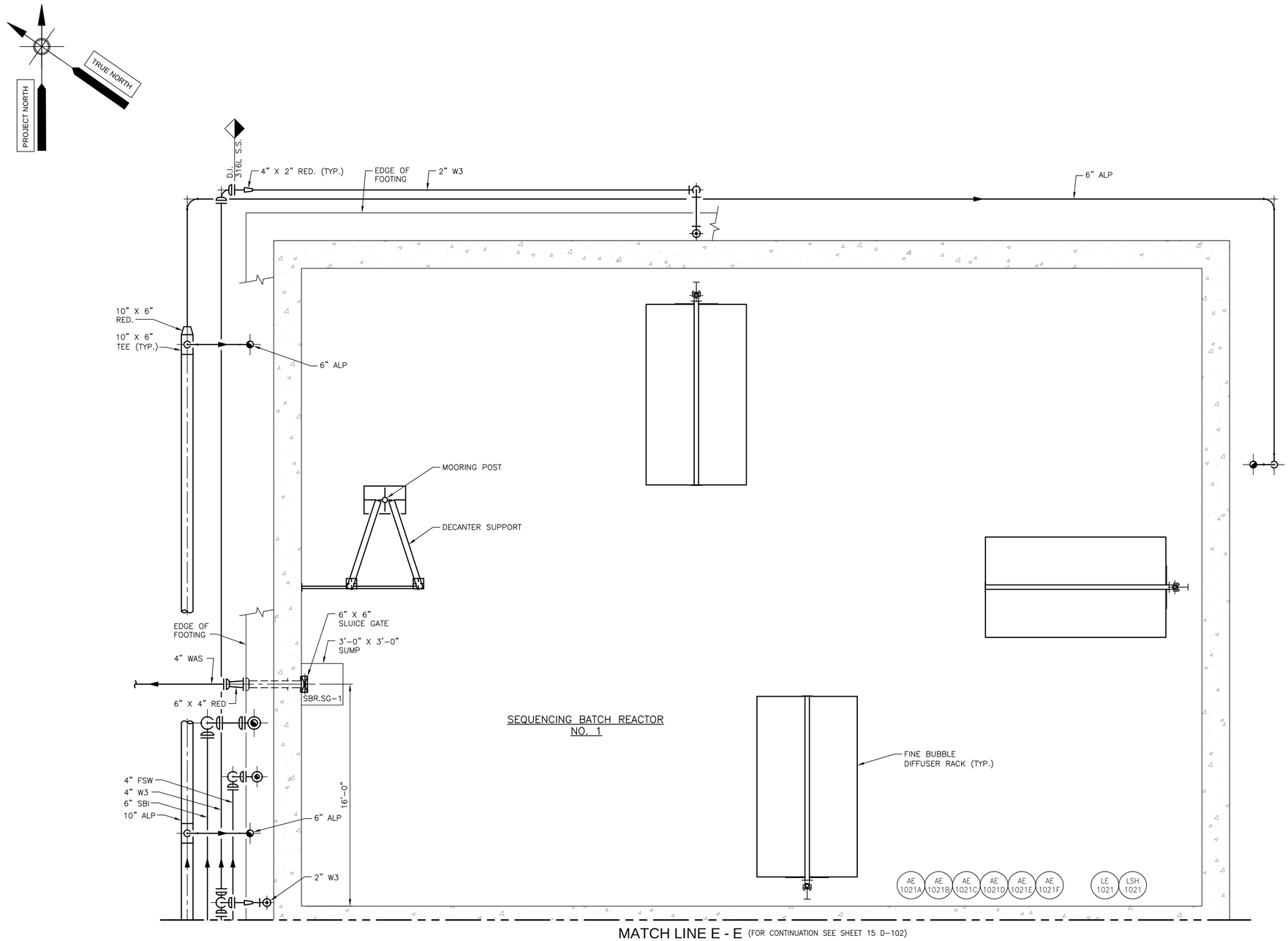
SHEET TITLE

CHEMICAL SYSTEM SCHEMATIC II

SHEET NUMBER

10 D-602

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\00\10 D-602.DWG
LAST UPDATE: Thursday, October 03, 2019 2:01:49 PM
PLOT DATE: Friday, January 17, 2020 9:07:30 AM



MATCH LINE E - E (FOR CONTINUATION SEE SHEET 15 D-102)

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DA15 D-101.DWG
LAST UPDATE: Thursday, September 12, 2019 7:54:11 AM
PLOT DATE: Friday, January 17, 2020 9:07:39 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

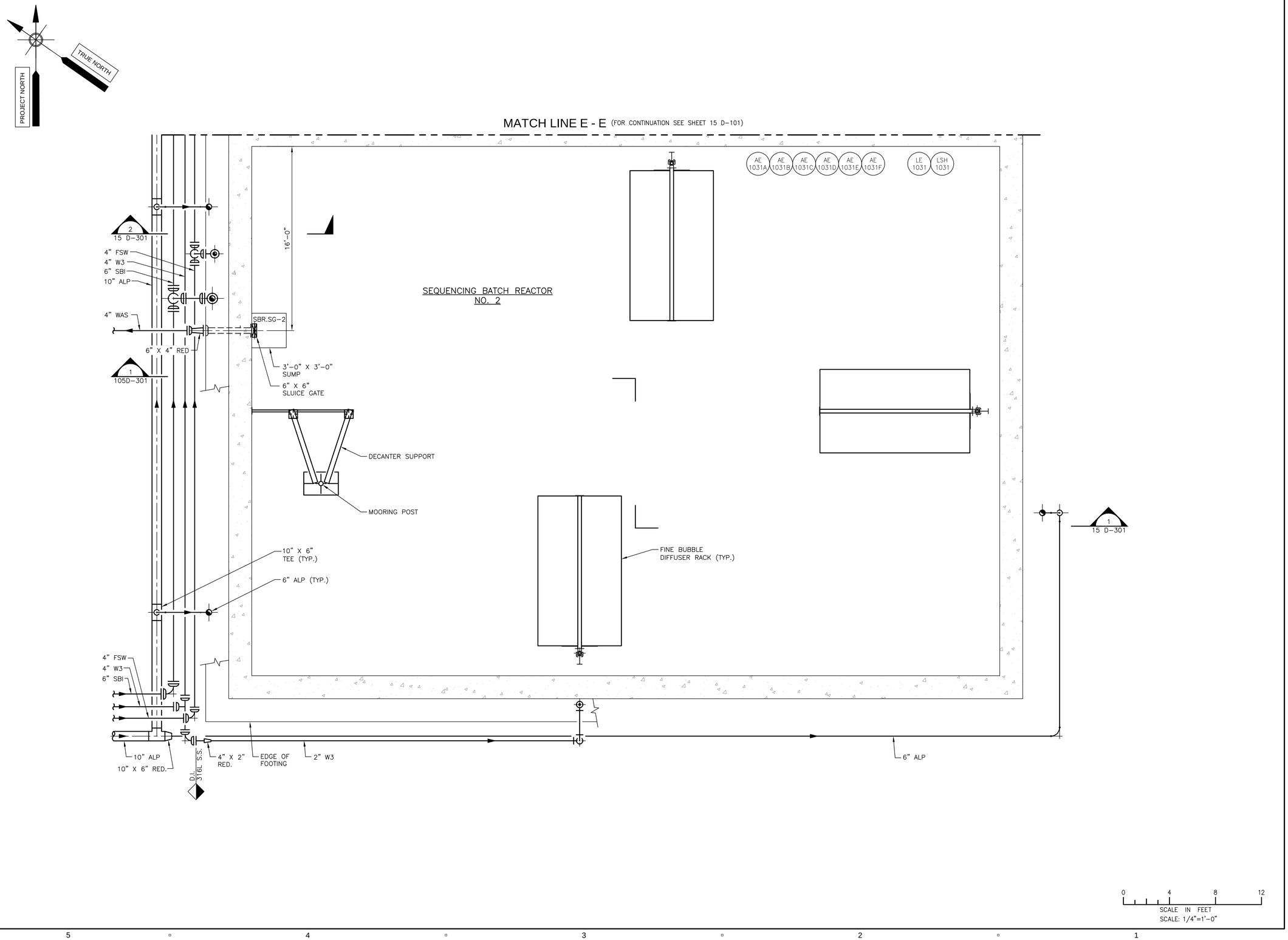
MECHANICAL PROCESS

SHEET TITLE

SBR LOWER PLAN I

SHEET NUMBER

15 D-101



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\15 D-102.DWG
LAST UPDATE: Thursday, September 12, 2019 7:54:40 AM
PLOT DATE: Friday, January 17, 2020 9:07:41 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

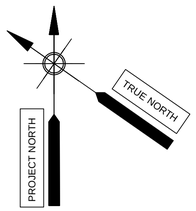
MECHANICAL PROCESS

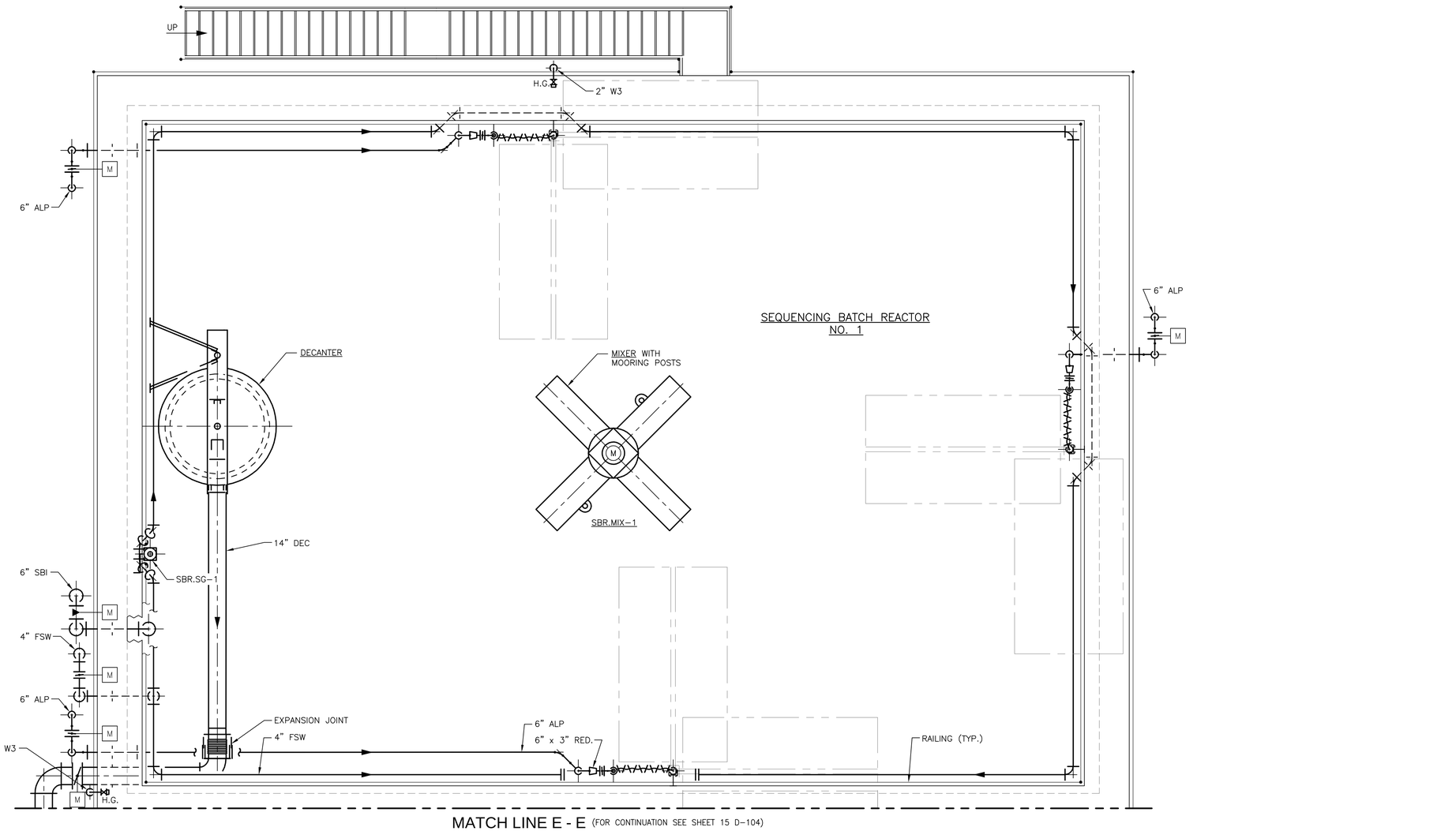
SHEET TITLE

SBR LOWER PLAN II

SHEET NUMBER

15 D-102





MATCH LINE E - E (FOR CONTINUATION SEE SHEET 15 D-104)

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\15 D-103.DWG
LAST UPDATE: Thursday, September 12, 2019 8:03:23 AM
PLOT DATE: Friday, January 17, 2020 9:07:47 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

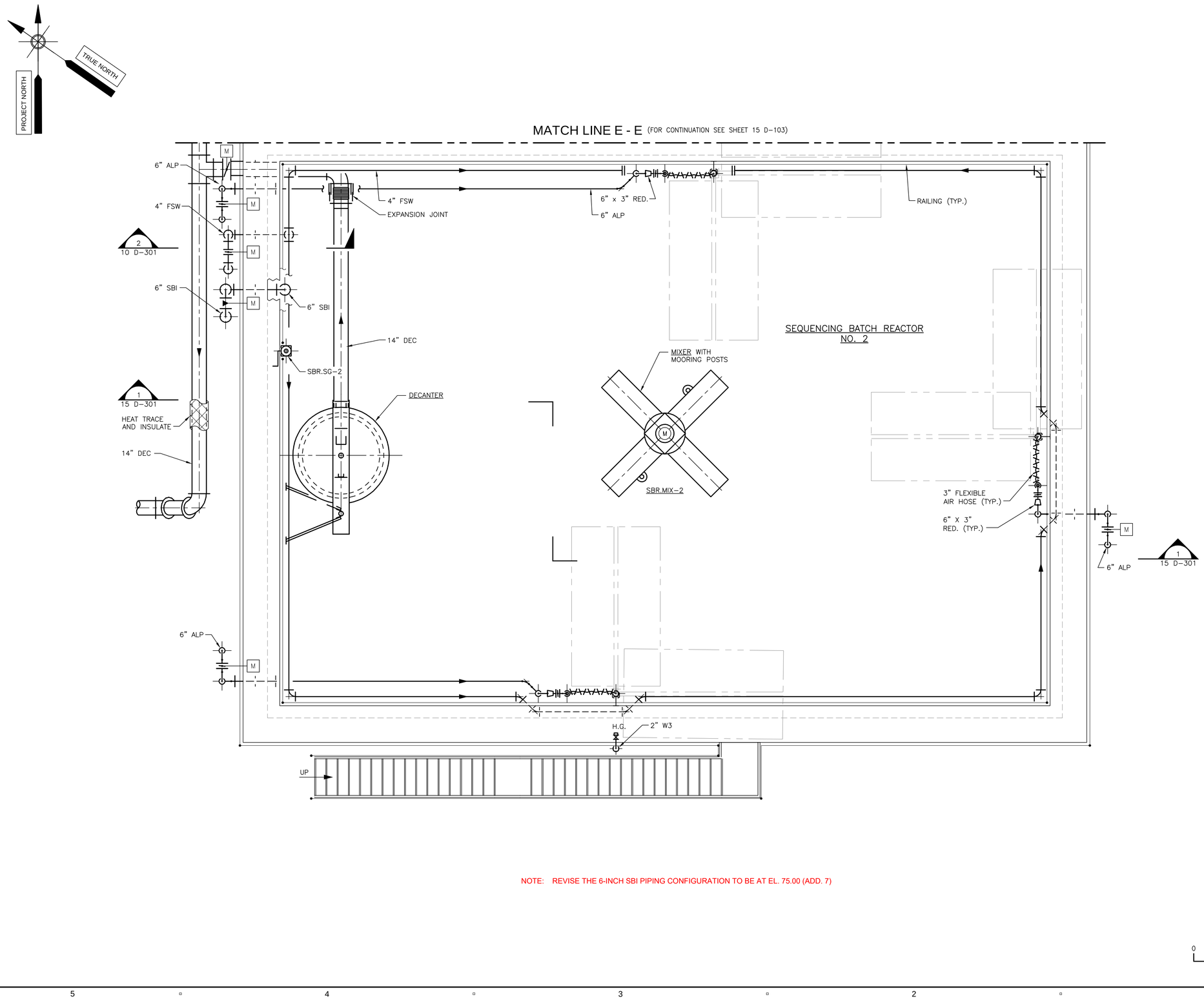
MECHANICAL PROCESS

SHEET TITLE

SBR UPPER PLAN I

SHEET NUMBER

15 D-103



NOTE: REVISE THE 6-INCH SBI PIPING CONFIGURATION TO BE AT EL. 75.00 (ADD. 7)

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\15 D-104.DWG
LAST UPDATE: Friday, October 04, 2019 10:27:19 AM
PLOT DATE: Friday, January 17, 2020 9:07:53 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED
PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

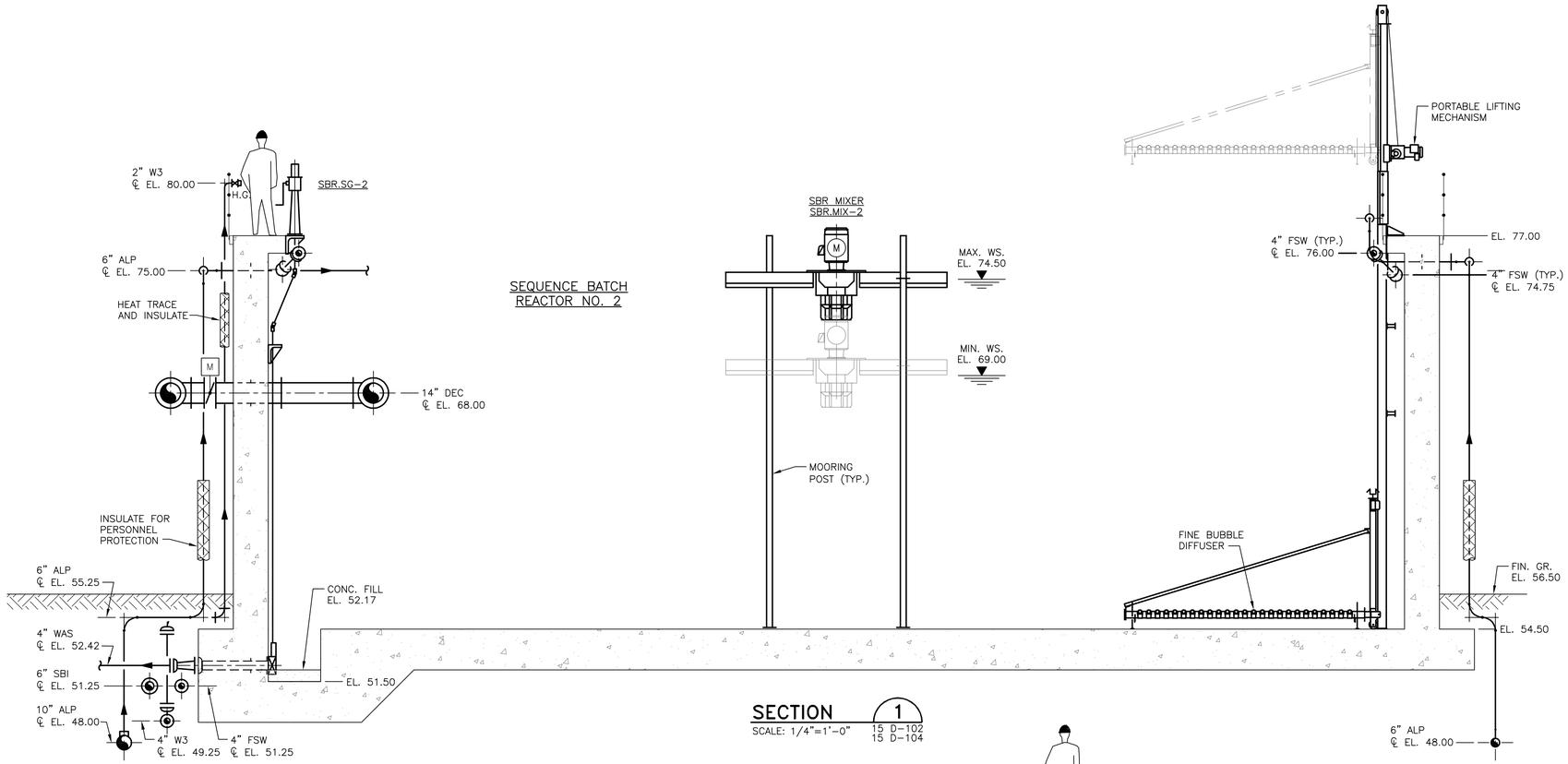
MECHANICAL PROCESS

SHEET TITLE

SBR UPPER PLAN II

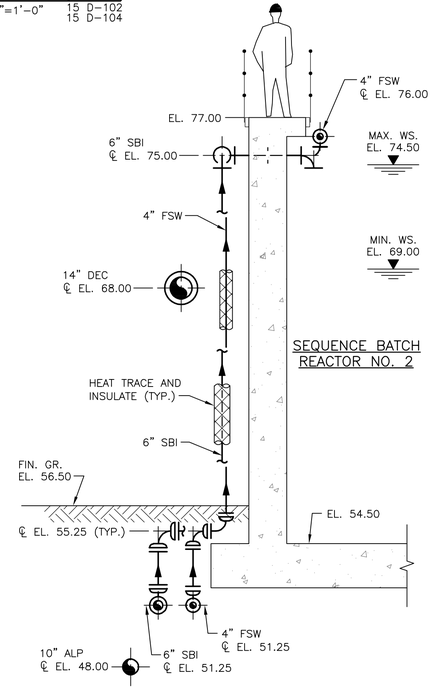
SHEET NUMBER

15 D-104



SEQUENCE BATCH
REACTOR NO. 2

SECTION 1
SCALE: 1/4"=1'-0"
15 D-102
15 D-104



SECTION 2
SCALE: 1/4"=1'-0"
15 D-102
15 D-104

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\15 D-301.DWG
LAST UPDATE: Thursday, October 03, 2019 2:43:58 PM
PLOT DATE: Friday, January 17, 2020 9:08:03 AM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GAMACHE
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

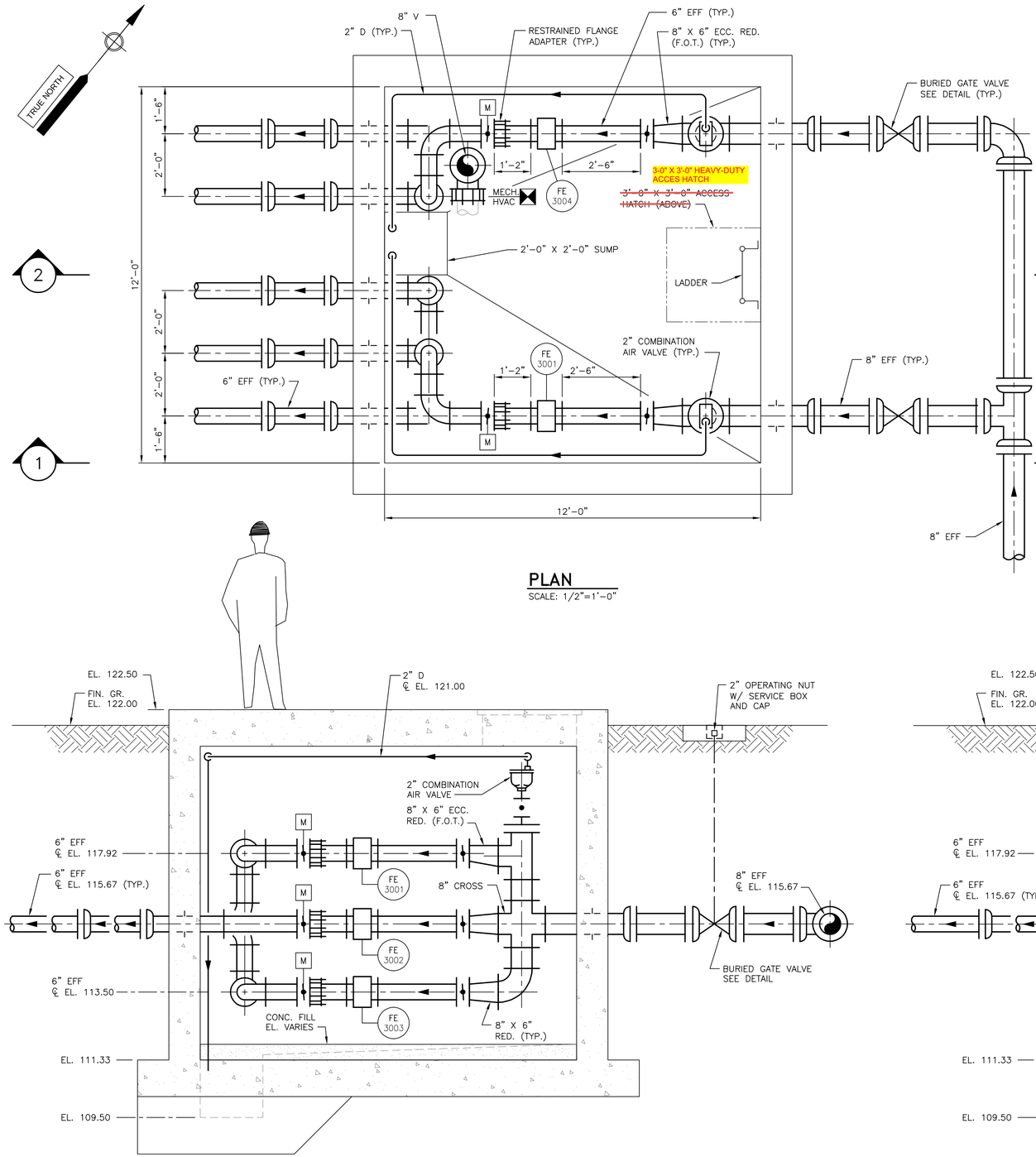
MECHANICAL PROCESS

SHEET TITLE

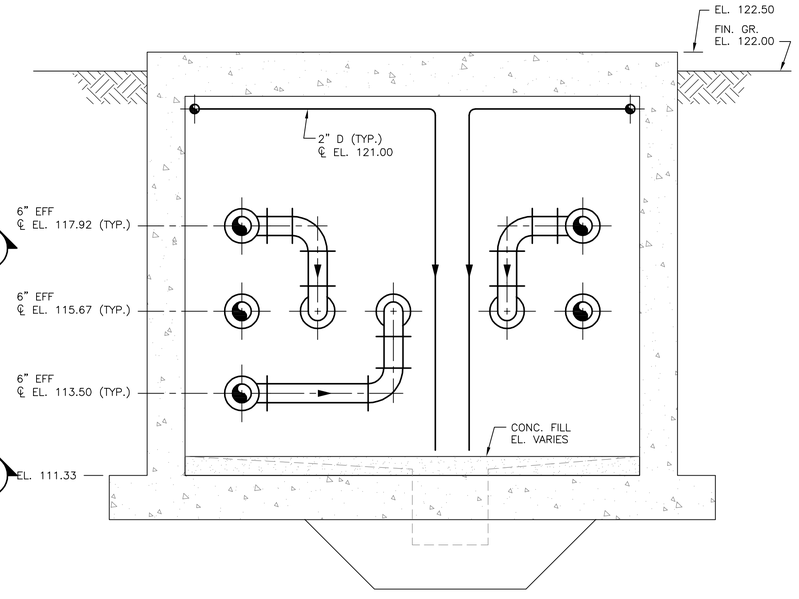
SBR SECTIONS

SHEET NUMBER

15 D-301

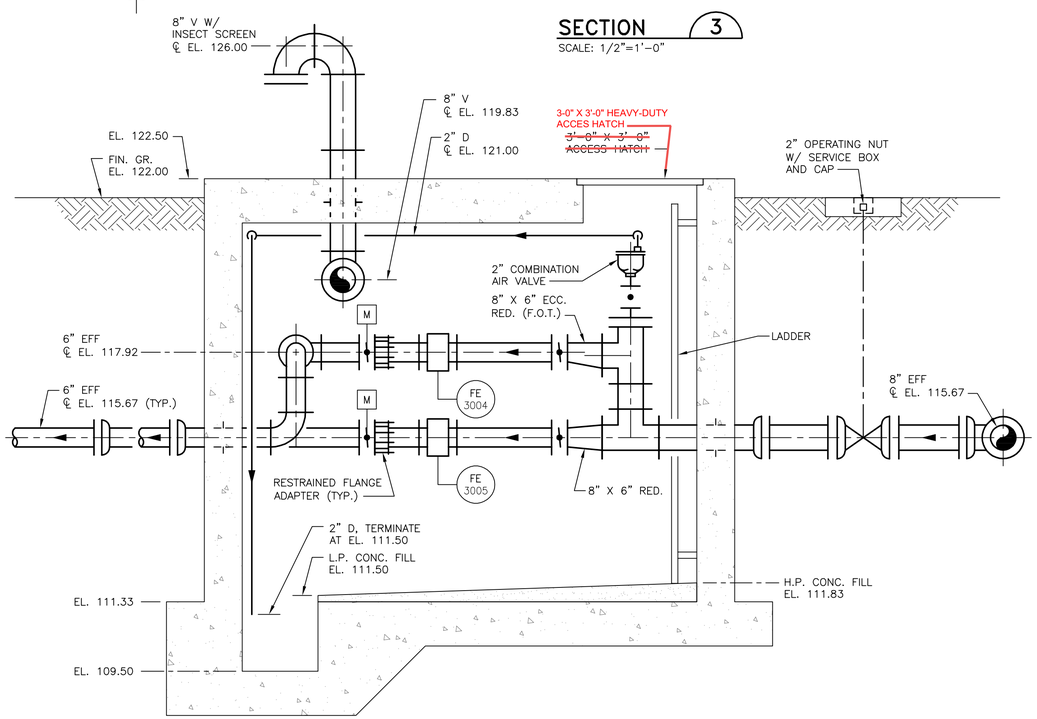


PLAN
SCALE: 1/2"=1'-0"



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

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



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

0 2 4 6
SCALE IN FEET
SCALE: 1/2"=1'-0"

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\30\D-101.DWG
LAST UPDATE: Thursday, October 03, 2019 1:51:32 PM
PLOT DATE: Friday, January 17, 2020 9:08:11 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C.MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

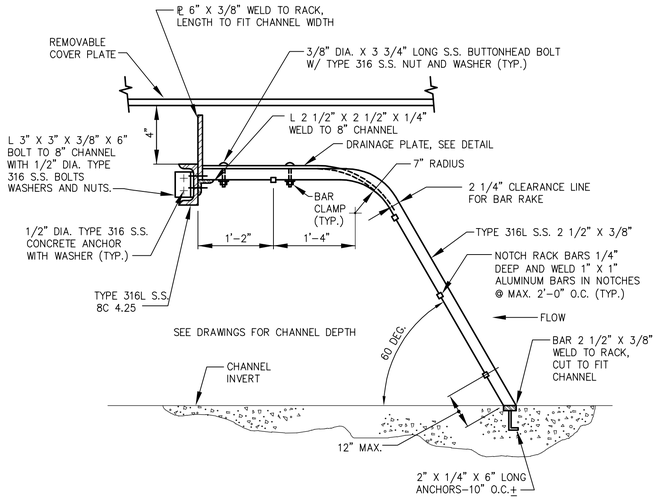
MECHANICAL PROCESS

SHEET TITLE

WICK DISTRIBUTION VAULT PLAN AND SECTIONS

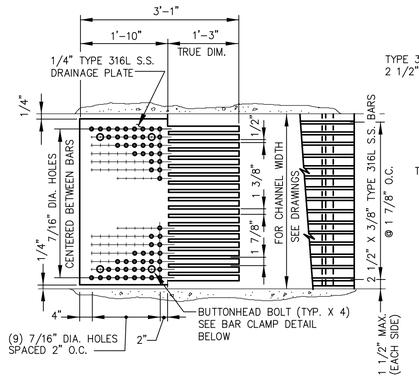
SHEET NUMBER

30 D-101

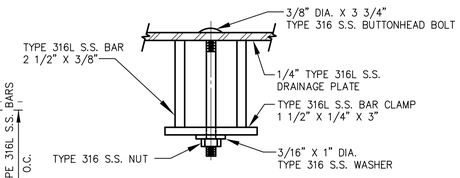


MANUAL BAR RACK

NTS



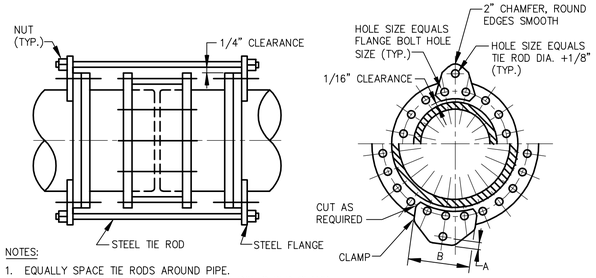
DRAINAGE PLATE



BAR CLAMP

DRAINAGE PLATE AND BAR CLAMP

NTS



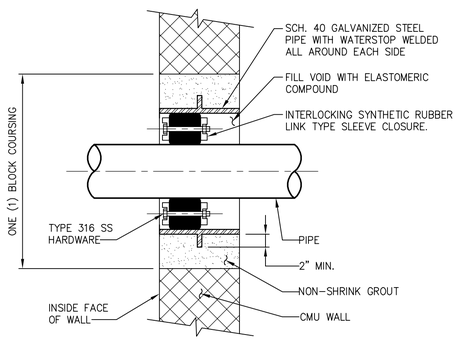
NOTES:

1. EQUALLY SPACE TIE RODS AROUND PIPE.
2. FOR STEEL FLANGE CLAMPS REQUIRING 3 BOLTS PER CLAMP, THE ORIENTATION OF THE STEEL FLANGE CLAMP AND PIPE FLANGE DRILLING IS PICTORIAL ONLY. EXACT ORIENTATION OF THE FLANGE CLAMP IS DETERMINED BY STANDARD FLANGE DRILLING.

PIPE SIZE	TIERODS		FLANGE CLAMP			
	NO.	DIA.	THICKNESS	NO. OF FLANGE BOLTS PER CLAMP	"A"	"B"
6"	2	1/2"	1/2"	2	2"	7 3/4"
8"	2	5/8"	1/2"	2	2"	8 5/8"
10"	2	3/4"	1/2"	2	2"	7 3/4"
12"	2	1"	1/2"	2	2"	8 1/2"
14"	2	1 1/8"	3/4"	2	2"	9"
16"	2	1 1/4"	7/8"	3	2"	12 1/4"
18"	2	1 3/8"	7/8"	3	2 1/2"	13"
20"	3	1 3/8"	1"	2	2 1/2"	8"
24"	4	1 3/8"	1"	2	2 1/2"	8 3/4"
30"	4	1 3/4"	1"	3	2 1/2"	12 1/4"
36"	6	1 3/4"	1 1/4"	2	2 1/2"	8 1/2"
42"	6	1 3/4"	1 1/4"	3	2 1/2"	12 3/4"
48"	8	1 3/4"	1 1/4"	3	2 1/2"	12 1/2"
54"	8	1 3/4"	1 1/4"	3	2 1/2"	12 1/2"
60"						
64"						

150 PSI SLEEVE COUPLING RESTRAINT FOR DUCTILE IRON PIPE

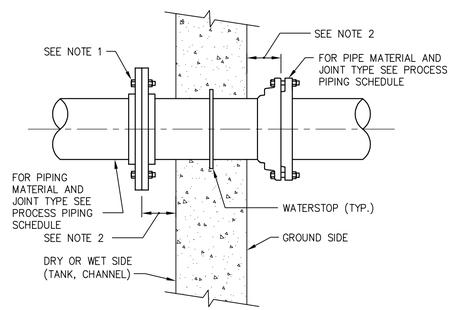
NTS



WALL SEAL

LINK TYPE SLEEVE CLOSURE THRU CMU WALL

NTS

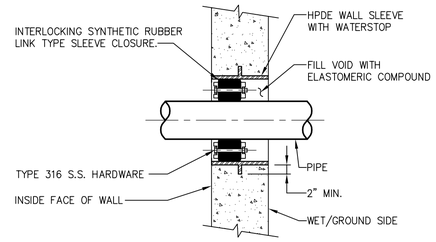


NOTES:

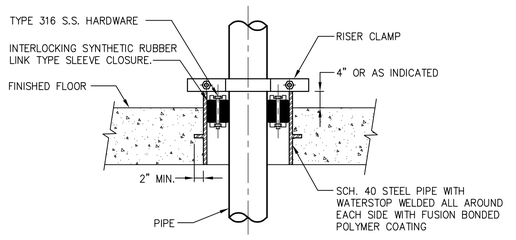
1. HARDWARE FOR WET SIDE SERVICE: TYPE 316 S.S.
2. 12 INCHES UNLESS OTHERWISE INDICATED.

WALL PENETRATION (NEW CONSTRUCTION) (WET OR DRY ⟷ GROUND)

NTS



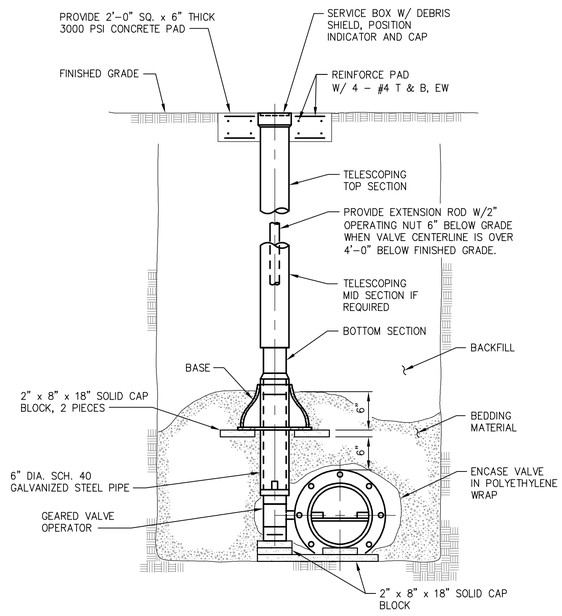
WALL SEAL



FLOOR SEAL

WALL AND FLOOR PENETRATION LINK TYPE SLEEVE CLOSURE

NTS



BURIED BUTTERFLY OR PLUG VALVE

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. FLAHERTY
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	C. MINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

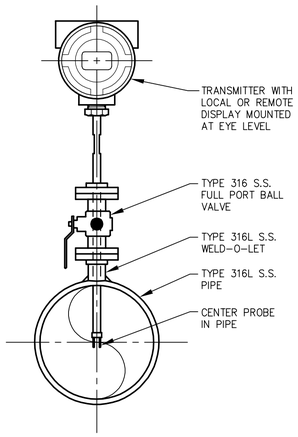
SHEET TITLE

DETAILS I

SHEET NUMBER

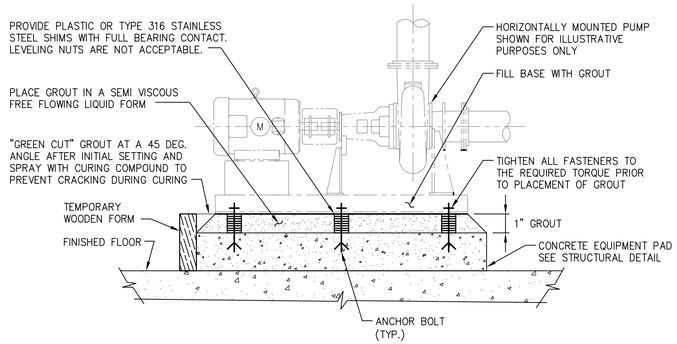
99 D-501

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D099 D-501.DWG
LAST UPDATE: Monday, August 05, 2019 12:42:30 PM
PLOT DATE: Friday, January 17, 2020 9:08:15 AM



THERMAL MASS INSERTION FLOW METER

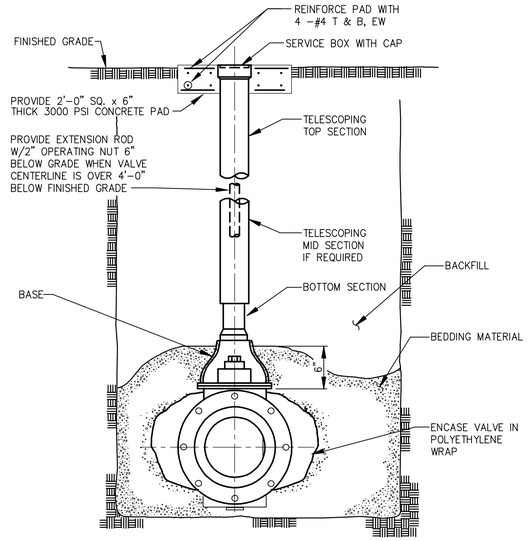
NTS



EQUIPMENT BASEPLATE ANCHORING

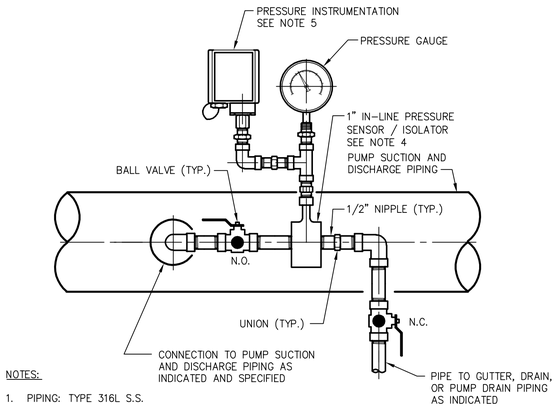
(TYP. FOR ALL PROCESS EQUIPMENT)

NTS



BURIED GATE VALVE

NTS

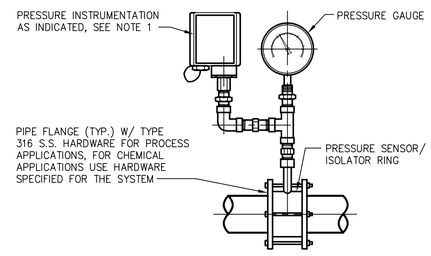


NOTES:

1. PIPING: TYPE 316L S.S.
2. VALVES: TYPE 316 S.S.
3. HARDWARE: TYPE 316 S.S.
4. FOR 300 CLASS ANSI USE FLANGED SENSOR
5. PROVIDE GAUGE AND PRESSURE INSTRUMENTATION (PIT, PS, ETC.) AS INDICATED AND SPECIFIED.

TYPE I PRESSURE GAUGE/ INSTRUMENT ASSEMBLY

NTS



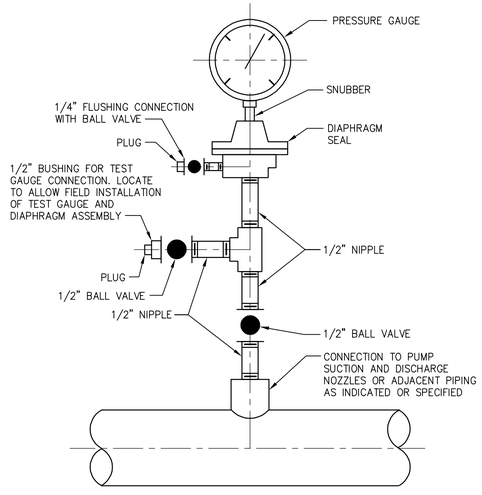
1 INCH AND LARGER

NOTES:

1. PROVIDE GUAGE AND PRESSURE INSTRUMENTATION (PIT, PS, ETC.) AS INDICATED AND SPECIFIED.
2. FOR CHEMICAL SYSTEM USE FULL FLANGE ONLY.

TYPE III PRESSURE GAUGE/ INSTRUMENT ASSEMBLY

NTS



TYPE IX PRESSURE GAUGE MOUNTING WITH DIAPHRAGM SEAL

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	C. MINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

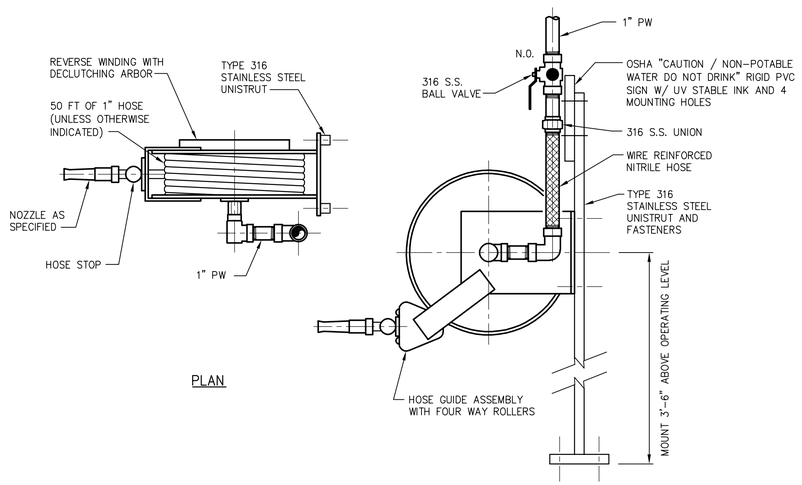
SHEET TITLE

DETAILS II

SHEET NUMBER

99 D-502

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D99 D-502.DWG
LAST UPDATE: Wednesday, October 02, 2019 2:21:09 PM
PLOT DATE: Friday, January 17, 2020 9:08:21 AM

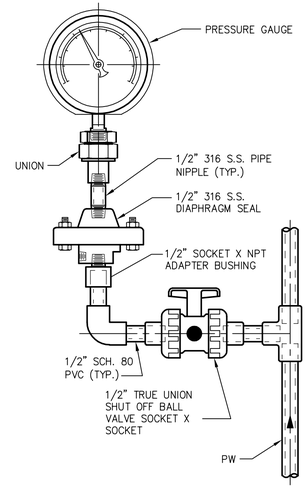


NOTES:

1. ALL SUPPORTS AND FASTENERS TO BE 316 S.S.
2. PROVIDE HOSE, REEL, AND NOZZLE PER SECTION 15370.

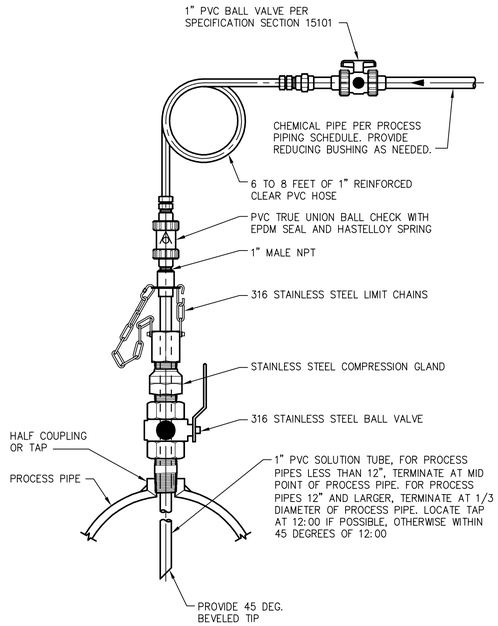
SPRING REWIND HOSE REEL

NTS



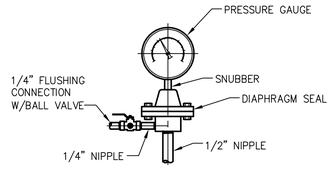
PRESSURE GAUGE MOUNTING FOR PLANT WATER (PW)

NTS



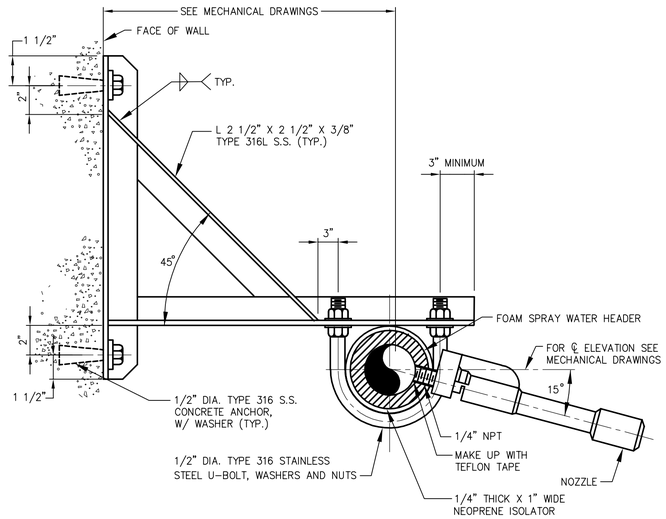
RETRACTABLE CHEMICAL INJECTION QUILL

NTS



PRESSURE GAUGE MOUNTING FOR CHEMICAL FEED

NTS

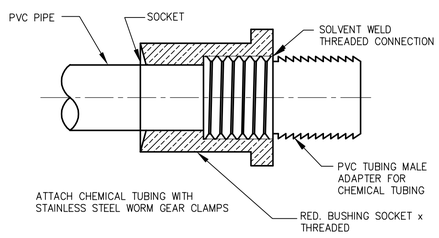


NOTES:

1. SPACE 1/4" HOLES AND THREADED PLUGS 10 FT OFF CENTER. PROVIDE HEADER WITH 20 HOLES AND PLUGS PER SBR TANK.

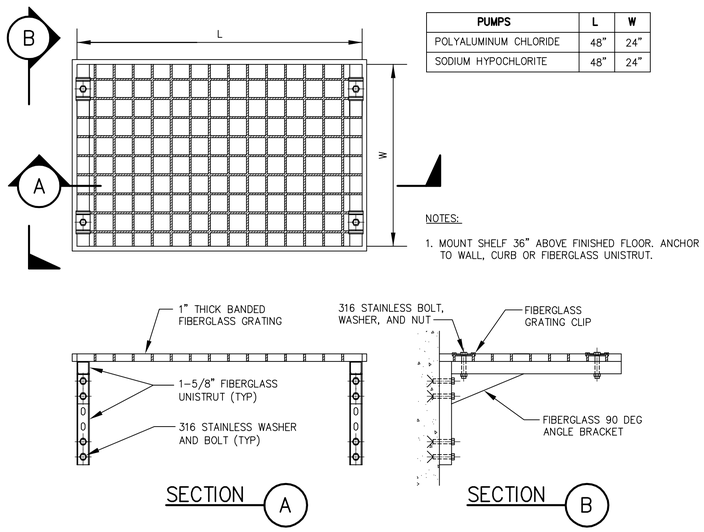
UNDERSLUNG FOAM SPRAY WATER NOZZLE CONNECTION AND HEADER SUPPORT

NTS



TRANSITION CONNECTION PVC TO TUBING

NTS



PUMPS	L	W
POLYALUMINUM CHLORIDE	48"	24"
SODIUM HYPOCHLORITE	48"	24"

NOTES:

1. MOUNT SHELF 36" ABOVE FINISHED FLOOR. ANCHOR TO WALL, CURB OR FIBERGLASS UNISTRUT.

METERING PUMP SHELF

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. GALLIGAN
No.40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	C. MINI
Drawn By:	C. MINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

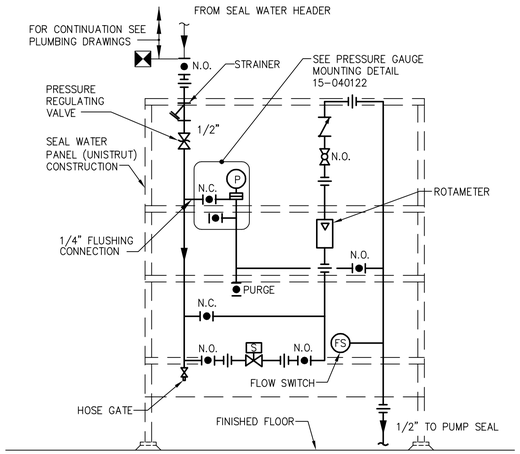
SHEET TITLE

DETAILS III

SHEET NUMBER

99 D-503

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D99 D-503.DWG
LAST UPDATE: Friday, January 17, 2020 8:34:35 AM
PLOT DATE: Friday, January 17, 2020 9:08:25 AM

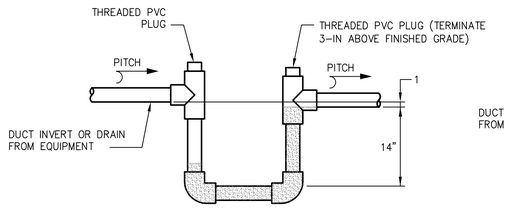


NOTES:

1. MOUNT PRESSURE GAUGE AT SAME CENTERLINE ELEVATION FOR EACH AND ALL PUMPS OF THE SAME SERVICE, NO HIGHER THAN 5'-0" ABOVE FINISHED FLOOR.
2. LOCATE PANEL ADJACENT TO PUMP.
3. INTERLOCK FLOW SWITCH AND SOLENOID VALVE W/PUMP STARTING CIRCUITS.
4. SEAL WATER IS REQUIRED AT THE PUMPS WITHOUT THE SPIRAL TRACK MECHANICAL SEAL - SBR TRANSFER PUMPS AND THICKENED SLUDGE PUMPS.
5. PROVIDE FLOOR MOUNTED EQUIPMENT DRAIN, 2-INCH PIPING AND ASSOCIATED FITTINGS AND SUPPORTS FROM SEAL WATER SYSTEM TO BASEMENT GUTTER FOR EACH SBR TRANSFER PUMP AND EACH THICKENED SLUDGE PUMP.

SEAL WATER PANEL PIPING FOR PUMPS WITH PACKING AND SPLIT MECHANICAL SEAL AND PRESSURE SENSORS

NTS

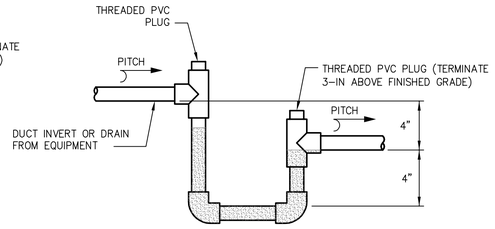


NOTES:

1. SEE ODOR CONTROL DIAGRAM FOR LOCATION OF EACH TRAP TYPE.

BLOW-THRU ODOR CONTROL DRAIN TRAP

NTS

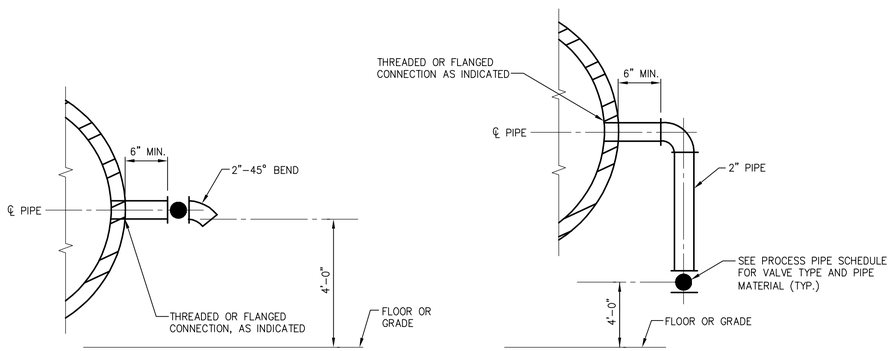


NOTES:

1. SEE ODOR CONTROL DIAGRAM FOR LOCATION OF EACH TRAP TYPE.

DRAW-THRU ODOR CONTROL DRAIN TRAP

NTS



LOCAL SAMPLE CONNECTION

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER J. GALLIGAN
No. 40563
REGISTERED PROFESSIONAL ENGINEER
1/17/2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	T. WASSELL/C. MINI
Drawn By:	N. RUBINI
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

MECHANICAL PROCESS

SHEET TITLE

DETAILS IV

SHEET NUMBER

99 D-504

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\D\99 D-504.DWG
LAST UPDATE: Friday, January 17, 2020 8:38:20 AM
PLOT DATE: Friday, January 17, 2020 9:08:30 AM

LEGEND

- BALL VALVE
- GATE VALVE
- BALANCING VALVE
- GLOBE VALVE
- ANGLE VALVE
- CHECK VALVE
- TEMP CONTROL VALVE
- CONTROL VALVE
- PRESSURE REDUCING VALVE
- GAUGE
- MOTOR OPERATED
- RELIEF VALVE
- DRAIN VALVE
- FLEXIBLE COUPLING
- STRAINER
- UNION
- DIRECTION OF FLOW
- CONCENTRIC REDUCER
- PIPE DROP
- PIPE RISER
- TRANSFER GRILLE OR LOUVER
- FLEXIBLE CONNECTION
- SAD / OAD — SUPPLY AIR DUCT OR OUTSIDE AIR DUCT
- RAD / EAD — RETURN AIR DUCT OR EXHAUST AIR DUCT
- VOLUME DAMPER (VD)
- FIRE DAMPER (FD)
- PUMP – BASE MOUNTED
- PUMP – IN–LINE

- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- PIPE ANCHOR
- PIPE GUIDE
- AIR EXTRACTOR
- SPLITTER DAMPER
- TURNING VANES
- MOTOR OPERATED DAMPER
- RECTANGULAR DUCT TO ROUND
- ELECTRIC DUCT HEATER (EDH)
- SUPPLY DIFFUSER OR REGISTER
- RETURN OR EXHAUST REGISTER
- UNIT HEATER (UH)
- SUPPLY OR OUTSIDE (AIR)
- RETURN OR EXHAUST (AIR)
- THERMOMETER
- CONNECT TO EXISTING
- LIMIT OF WORK
- LIMIT OF MATERIAL

- CO — CARBON MONOXIDE SENSOR
- F — FREEZESTAT
- FS — FLOW SWITCH
- SD — DUCT SMOKE DETECTOR
- SW — SWITCH
- T — THERMOSTAT
- TS — TEMPERATURE SENSOR
- DEMOLITION
- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE

ABBREVIATIONS

AC	AIR CONDITIONER
AD	ACCESS DOOR
AF	AIR FOIL FAN
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
AW	ACID WASTE
BC	BACKWARD CURVE FAN
BDD	BACK DRAFT DAMPER
BLR	BOILER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BV	BALANCING VALVE
CA	COMBUSTION AIR
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CP	CIRCULATING PUMP
CUH	CABINET UNIT HEATER
DAC	DUCTLESS AIR CONDITIONING UNIT
DB	DRY BULB
DEG	DEGREE
DF	DESTRATIFICATION FAN
DH	DEHUMIDIFIER
DHC	DUCT HEATING COIL
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBB	ELECTRIC BASEBOARD
ECH	ELECTRIC CABINET HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
ELE	ELECTRIC
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPLOSIONPROOF
FAI	FRESH AIR INTAKE
FC	FLEXIBLE CONNECTION
FC	FORWARD CURVE FAN
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FTR	FIN TUBE RADIATOR
GPM	GALLONS PER MINUTE
GUH	GAS FIRED UNIT HEATER
HC	HEATING COIL
HD	HOOD
HP	HORSEPOWER
HWR	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
IN WG	INCH WATER GAUGE
IR	INFRARED HEATER
KW	KILOWATT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LD	LOUVERED DOOR / LEAK DETECTOR
LLSV	LIQUID LINE SOLENOID VALVE
LRA	LOCKED ROTOR AMPS
MBH	THOUSAND BRITISH THERMAL UNIT
MD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
ODP	OPEN DRIP–PROOF
OV	FUEL OVERFLOW
P	PUMP
PD	PRESSURE DROP
PH	PHASE
RA	RETURN AIR
RAF	RETURN AIR FAN
RAR	RETURN AIR REGISTER
RG	RETURN GRILLE
RGL	REFRIGERANT LIQUID LINE
RGS	REFRIGERANT SUCTION LINE
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SAG	SUPPLY AIR GRILLE
SAR	SUPPLY AIR REGISTER
SD	SUCTION DIFFUSER / DUCT SMOKE DETECTOR
SF	SUPPLY FAN
SP	STATIC PRESSURE
SW	WALL SWITCH
TE	TOTALLY ENCLOSED
TEFC	TOTALLY ENCLOSED, FAN COOLED
TG	TRANSFER GRILLE
TK	TANK
TOD	TOP OF DUCT
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
V	VOLT
VD	VOLUME DAMPER
VTR	VENT THRU ROOF
W	WATT
WB	WET BULB
WG	WATER GAUGE
WMS	WIRE MESH SCREEN

GENERAL NOTES

1. INSTALL ALL WORK IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL CODES AND REGULATIONS.
2. INSULATE AND COVER ALL VALVES AND FITTINGS WITH PREFORMED FITTING COVERS.
3. PROVIDE AIRTIGHT ACCESS DOORS TO ALLOW FOR INSPECTION OF FIRE DAMPERS, CONTROL DAMPERS, INSTRUMENTATION, DETECTORS, FILTERS AND COILS FOR DUCTWORK NOT LESS THAN 6 INCHES BY 6 INCHES.
4. PROVIDE DAMPERS OF THE SAME MATERIALS AS THE DUCT SYSTEM WHERE THEY ARE INSTALLED. PROVIDE ALL DAMPERS WITH A POSITION INDICATOR THAT CAN BE EASILY SEEN FROM THE OPERATING LEVEL.
5. FIRE DAMPERS SHALL BE PROVIDED IN DUCTWORK AT FIRE RATED WALLS. PROVIDE FIRE DAMPERS AND CONNECTING DUCTWORK IN ACCORDANCE WITH NFPA 90A AND LOCAL CODES.
6. INSULATE ALL INTAKE AND EXHAUST AIR DUCTS AND AIR CONDITIONED SUPPLY AIR DUCTS AS SPECIFIED.
7. PROVIDE ALL EXHAUST LOUVERS WITH 1/2 INCH BIRDSCREEN. PROVIDE ALL INTAKE LOUVERS WITH INSECT SCREEN.
8. COORDINATE WITH ARCHITECTURAL DRAWING FOR OUTSIDE AIR INTAKE AND EXHAUST LOUVER ELEVATION, ROOF AND WALL OPENINGS (SIZE & LOCATION).
9. ALL RELIEF VALVES WILL BE HARD PIPED TO A FLOOR DRAIN.
10. PROVIDE ALL LOW POINTS IN PIPING SYSTEM WITH 3/4 INCH DRAINS AND ALL HIGH POINTS WITH 3/4 INCH VALVED MANUAL VENTS.
11. CAPACITIES OF EQUIPMENT ARE BASED ON OPERATION OF 35 PERCENT PROPYLENE GLYCOL SOLUTION AS INDICATED IN THE EQUIPMENT SCHEDULES.
12. ALL PIPES PENETRATING THROUGH FIRE RATED WALLS SHALL BE SEALED TO ENSURE THE FIRE RATING IS MAINTAINED.
13. PROVIDE ALL COOLING COILS W/ CONDENSATE DRIP PANS AND PIPING. INSULATE PAN & PIPING AS SPECIFIED. CONDENSATE PIPE SIZES SHALL BE ONE INCH FOR UP TO 5 TONS OF COOLING, AND 1 1/4 INCH FOR 5 TO 30 TONS OF COOLING. TERMINATE CONDENSATE PIPE AT NEAREST DRAIN OR AS INDICATED.
14. BLANK OFF UNUSED LOUVER AREA W/ INSULATED ALUMINUM PANELS WHERE LOUVER AREA IS LARGER THAN INTAKE OR EXHAUST AIR DUCT CONNECTION.
15. ALL ROTATING EQUIPMENT SHALL HAVE FLEXIBLE PIPE OR DUCT CONNECTIONS AND APPROVED VIBRATION ISOLATORS.
16. PROVIDE ALL NECESSARY PIPING, EQUIPMENT AND SUPPORTS ETC. NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT NECESSARY TO PROVIDE COMPLETE AND WORKABLE SYSTEMS.
17. PROVIDE COVERING TO ALL OPEN ENDS OF DUCTWORK TO PREVENT DUST, DIRT AND DEBRIS FROM ENTERING DURING CONSTRUCTION.
18. ALL SUPPLY AIR DIFFUSERS (SAD) ARE 4–WAY BLOW UNLESS OTHERWISE NOTED. SAD SELECTION BASED ON TITUS MODEL TDC. OFFICE AREA CEILING RETURN AIR GRILLES (RG) ARE BASED ON TITUS MODEL PAR. NECK SIZES SHALL BE AS INDICATED ON THE DRAWINGS. SUPPLY AIR REGISTERS (SAR) ARE BASED ON TITUS 300FS. RETURN AIR REGISTERS (RAR), EXHAUST AIR REGISTERS (ER), EXHAUST GRILLES (EG) AND TRANSFER GRILLES (TG) ARE BASED ON TITUS 350FL.
19. PROVIDE VOLUME DAMPERS AT ALL SUPPLY, RETURN AND EXHAUST AIR REGISTERS.
20. ALL EQUIPMENT SHALL BE LOCATED TO PROVIDE PROPER ACCESS FOR INSPECTION, MAINTENANCE AND SERVICE.
21. HVAC EQUIPMENT DIMENSIONS, LOCATIONS, DUCTWORK, AND PIPING SYSTEM LAYOUTS ARE BASED ON EQUIPMENT SELECTED BY THE ENGINEER. IF THE CONTRACTOR PROPOSES TO FURNISH EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACE DIFFERING FROM THAT INDICATED ON THE DRAWINGS OR SPECIFIED, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR APPROVAL, DETAILED HVAC, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, INSTRUMENTATION, AND ELECTRICAL DRAWINGS AND EQUIPMENT LISTS SHOWING ALL NECESSARY CHANGES AND EMBODYING ALL FEATURES OF THE EQUIPMENT HE PROPOSES TO FURNISH. THIS INFORMATION SHALL INCLUDE BUT NOT BE LIMITED TO PLANS, SECTIONS, DETAILS, AND SCHEMATICS OF ALL APPURTENANCES REQUIRED. SUCH CHANGES IF APPROVED BY THE ENGINEER SHALL BE AT NO EXTRA COST TO THE OWNER. THE CONTRACTOR SHALL ASSUME THE COST OF, AND THE RESPONSIBILITY FOR SATISFACTORILY ACCOMPLISHING ALL THE NECESSARY CHANGES CORRESPONDING TO THE DIMENSIONS AND CHARACTERISTICS OF THE EQUIPMENT SUBMITTED AND APPROVED BY THE ENGINEER. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
22. PROVIDE ALL CONTROL CONDUIT AND WIRING BETWEEN HVAC EQUIPMENT AND CONTROL POINTS. POWER, CONDUIT AND WIRING TO MOTOR OPERATED DAMPERS SHALL BE PROVIDED BY HVAC. ALL CONDUIT AND WIRING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF DIVISION 16.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS — ALAN J. GREEN — MECHANICAL — No. 34728 — REGISTERED PROFESSIONAL ENGINEER

1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NUMBER

00 M-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-001.DWG
LAST UPDATE: Monday, January 20, 2020 3:51:58 PM
PLOT DATE: Tuesday, January 28, 2020 3:34:20 PM

BOILER SCHEDULE

TAG NO.	TYPE	FUEL	BURNER INPUT MBH	GROSS OUTPUT MBH	EFFICIENCY	AIR CONN. IN.	FLUE DIAM CONN. IN.	VENT CATEGORY	ELECTRICAL V /PH/ HZ	SELECTION BASED ON MFR / MODEL
10-BLR-1	CONDENSING	NATURAL GAS	1,250	1,203	96.2%	6	8	IV	120/1/60	LOCHINVAR/ CREST FBN-1251
10-BLR-2	CONDENSING	NATURAL GAS	1,250	1,203	96.2%	6	8	IV	120/1/60	LOCHINVAR/ CREST FBN-1251

NOTES:
1. HEATING FLUID IS HOT WATER WITH 35% PROPYLENE GLYCOL
2. FULLY MODULATING BOILERS WITH 20:1 TURNDOWN AND OUTSIDE AIR TEMPERATURE RESET.
3. 10-BLR-1 & 2 SHALL BE HIGH EFFICIENCY CONDENSING BOILER & MUST COMPLY WITH ASME CSD-1.
4. AL290-4C STAINLESS STEEL VENTING.
5. INCLUDE ALARM BELL & CONDENSATE NEUTRALIZATION KIT.

PUMP SCHEDULE

TAG NO.	LOCATION	TYPE	SERVICE	GPM	HEAD (FT)	PUMP RPM	IMPELLER IN	MIN EFF %	MOTOR ENCLOSURE	MOTOR HP	ELECTRICAL VOLT/ PH/ HZ	BASED ON MFR/ MODEL
10-CP-1	MECHANICAL ROOM	BASE MTD	HEATING	206	70	1631	9.5	72	ODP	7.5	460/3/60	B&G/ E-1510-2BD
10-CP-2	MECHANICAL ROOM	BASE MTD	HEATING-STAND BY	206	70	1631	9.5	72	ODP	7.5	460/3/60	B&G/ E-1510-2BD
10-BP-1	MECHANICAL ROOM	INLINE	10-BLR-1 CIRC PUMP	103	20	2845	-	52.5	ODP	1	460/3/60	B&G/ ECOCIRC XL-40-200 3PH
10-BP-2	MECHANICAL ROOM	INLINE	10-BLR-2 CIRC PUMP	103	20	2845	-	52.5	ODP	1	460/3/60	B&G/ ECOCIRC XL-40-200 3PH

NOTES:
1. HEATING FLUID IS WATER WITH 35% PROPYLENE GLYCOL.
2. PROVIDE VFD BY PUMP MANUFACTURER FOR ALL PUMPS.

HYDRONIC UNIT HEATER SCHEDULE

TAG NO.	LOCATION	TYPE	CATALOG CAPACITY (MBH)	CORRECTED CAPACITY (MBH)	EWT (°F)	LWT (°F)	GPM	PRESS DROP (FT)	ELECTRICAL HP	VOLT	PH	ENCL.	SELECTION BASED ON MFR / MODEL
10-UH-1	TRUCK BAY	HYDRONIC- HORIZONTAL	95	64.8	150	130	9.6	0.41	1/6	115	1	EXP	TRANE/ UHS-132
10-UH-2	TRUCK BAY	HYDRONIC- HORIZONTAL	95	64.8	150	130	9.6	0.41	1/6	115	1	EXP	TRANE/ UHS-132
10-UH-3	GARAGE	HYDRONIC- HORIZONTAL	69.7	47.1	150	130	7	0.29	1/12	115	1	TE	TRANE/ UHS-96
10-UH-4	SODIUM HYPOCHLORITE ROOM	HYDRONIC- HORIZONTAL	43.6	29.5	150	130	4.4	0.17	1/20	115	1	TE	TRANE/ UHS-60
10-UH-5	POLYMER ROOM	HYDRONIC- HORIZONTAL	26.1	17.6	150	130	2.7	0.1	25 WATTS	115	1	TE	TRANE/ UHS-36
10-UH-6	SODA ASH ROOM	HYDRONIC- HORIZONTAL	13.1	8.8	150	130	1.3	0.1	16 WATTS	115	1	TE	TRANE/ UHS-18
10-UH-7	HEADWORKS	HYDRONIC- HORIZONTAL	69.7	47.1	150	130	7	0.3	1/6	115	1	EXP	TRANE/ UHS-96
10-UH-8	DISK FILTER	HYDRONIC- HORIZONTAL	34.8	23.5	150	130	3.5	0.12	1/20	115	1	TE	TRANE/ UHS-48
10-UH-9	DISK FILTER	HYDRONIC- HORIZONTAL	34.8	23.5	150	130	3.5	0.12	1/20	115	1	TE	TRANE/ UHS-48
10-UH-10	MECHANICAL ROOM	HYDRONIC- HORIZONTAL	26.1	18	150	130	2.7	0.1	25 WATTS	115	1	TE	TRANE/ UHS-36

NOTES:
1. UNIT HEATER MOUNTING HEIGHT SHALL BE 7.5' AFF UNLESS OTHERWISE INDICATED.
2. HEATING FLUID IS WATER WITH 35% PROPYLENE GLYCOL.
3. ALL UNIT HEATERS SHALL BE PROVIDED WITH BAKED PHENOLIC COATING FOR CORROSION RESISTANCE.
4. 10-UH-1, 2 & 6 SHALL BE EXPLOSIONPROOF FOR CLASS 1, DIVISION I GROUP D ENVIRONMENT, FAN SHALL BE OF NON SPARKING MATERIAL.

HYDRONIC CABINET UNIT HEATER SCHEDULE

TAG NO.	LOCATION	TYPE	CATALOG CAPACITY (BTUH)	CFM	GPM	EWT (°F)	LWT (°F)	MAX PD FT WTR.	MOTOR HP	MOTOR VOLT	MOTOR PH	SELECTION BASED ON MFR/ MODEL
10-CUH-1	STAIRS-NORTH	SLOP TOP WALL MOUNTED	17,310	200	1.15	150	130	2	37 WATTS	115	1	TRANE/ FFJB020
10-CUH-2	CORRIDOR- NORTH	* SEE BELOW ~~SLOP TOP WALL MOUNTED~~	17,310	200	1.15	150	130	2	37 WATTS	115	1	* SEE BELOW ~~TRANE/ FFJB020~~
10-CUH-3	VESTIBULE	SLOP TOP WALL MOUNTED	17,310	200	1.15	150	130	2	37 WATTS	115	1	TRANE/ FFJB020
10-CUH-4	STAIRS- SOUTH	SLOP TOP WALL MOUNTED	17,310	200	1.15	150	130	2	37 WATTS	115	1	TRANE/ FFJB020

NOTES:
1. UNITS SHALL BE PROVIDED WITH WALL MOUNTED THERMOSTAT, COIL CONTROL VALVE & UNIT MOUNTED FAN SPEED CONTROL AND DISCONNECT SWITCH.
2. UNITS SHALL BE WALL MOUNTED AS INDICATED WITH TOP DISCHARGE, INTAKE AT BOTTOM FRONT TOE SPACE OF UNIT. NO OA CONNECTION.
3. PROVIDE ONE EXTRA SET OF FILTERS FOR EACH UNIT.
4. SELECTION IS BASED ON A 3 ROW COIL.
5. UNIT SHALL BE FACTORY PRIMED AND PAINTED. COLOR TO BE SELECTED BY ARCHITECT.
6. HEATING FLUID IS WATER WITH 35% PROPYLENE GLYCOL.
7. UNITS SHALL BE WALL MOUNTED SLOPE TOP AS INDICATED. LOCATE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

* TYPE: HORIZONTALLY RECESSED -CEILING MOUNTED, MFR/MODEL: TRANE/FFEB020

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SCHEDULES I

SHEET NUMBER

00 M-002

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-002.DWG
LAST UPDATE: Tuesday, January 28, 2020 3:51:26 PM
PLOT DATE: Tuesday, January 28, 2020 3:52:21 PM

FAN SCHEDULE

TAG NO.	SERVES	TYPE	LOCATION	CFM	EXT STATIC (IN. W.G.)	EXT (1) STATIC (IN. W.G.)	RPM	DRIVE	MAX SONES	ELECTRICAL DATA						SELECTION BASED ON MFR/ MODEL
										OPERATING HP	HP	VFD	MOTOR ENCLOSURE	VOLTS	PH	
10-EF-1	BASEMENT PUMP ROOM-NORMAL	MIXED FLOW	INLINE	8,400/ 4,200	1.1	–	1204	BELT	72 dBA	2.48	3	YES	ODP	460	3	GREENHECK/ QEI-22-I-30
10-EF-2	BASEMENT PUMP ROOM-HIGH SPEED	MIXED FLOW	INLINE	15,000	0.8	–	1091	BELT	77 dBA	4.14	5	YES	ODP	460	3	GREENHECK/ QEI-27-I-50
10-EF-3	GARAGE NORMAL	SQUARE CENTRIFUGAL	INLINE	75	0.25	0.254	1439	DIRECT	5	0.02	1/40	NO	TEAO	115	1	GREENHECK/ SQ-60-D
10-EF-4	GARAGE- HIGH SPEED	SQUARE CENTRIFUGAL	INLINE	775	0.3	0.375	1231	DIRECT	10	0.09	1/4	NO	ODP	115	1	GREENHECK/ SQ-100-A
10-EF-5	SODIUM HYPO/ PACL	CENTRIFUGAL SIDEWALL	WALL	850/ 425	0.5	0.663	2303	BELT	15	0.39	1/2	YES	TEFC	460	3	GREENHECK/ CUBE-101-HP
10-EF-6	POLMER & SODA ASH ROOMS	CENTRIFUGAL SIDEWALL	WALL	630	0.5	0.613	1380	BELT	10	0.15	1/3	NO	TEFC	115	1	GREENHECK/ CUBE-099-3
10-EF-7	DISK FILTER	TUBULAR CENTRIFUGAL	INLINE	1,800/ 900	0.5	–	1546	BELT	62 dBA	0.55	3/4	YES	TEFC	460	3	GREENHECK/ TCB-2-13-7
10-EF-8	TOILET ROOMS & JAN CLOSET	SQUARE CENTRIFUGAL	INLINE	575	0.7	0.782	1645	BELT	12.5	0.26	1/3	NO	ODP	115	1	GREENHECK/ BSQ-90-3
10-EF-9	MECHANCIAL ROOM	SQUARE CENTRIFUGAL	INLINE	500	0.5	0.562	1654	DIRECT	10	0.12	1/6	NO	ODP	115	1	GREENHECK/ SQ-95-VG
10-EF-10	LAB- FUME HOOD-ADA NORTH	TUBULAR	INLINE	500	1.25	–	2169	BELT	67 dBA	0.3	1/2	YES	TEFC	460	3	GREENHECK/ TCB-2-09-5
10-EF-11	LAB- FUME HOOD SOUTH	TUBULAR	INLINE	810	1.25	–	2242	BELT	65 dBA	0.41	3/4	YES	TEFC	460	3	GREENHECK/ TCB-1-09-7
10-EF-12	LAB- ROOM PRESSURIZATION	SQUARE CENTRIFUGAL	INLINE	300	0.6	0.662	1703	DIRECT	10	0.08	1/10	NO	ODP	115	1	GREENHECK/ SQ-90-VG
10-SF-1	BASEMENT PUMP ROOM-NORMAL	SQUARE CENTRIFUGAL	INLINE	8,400/ 4,200	0.7	–	979	BELT	24	2.68	3	YES	ODP	460	3	GREENHECK/ BSQ-240-30
10-SF-2	BASEMENT PUMP ROOM-HIGH SPEED	MIXED FLOW	INLINE	15,000	0.5	–	1051	BELT	76 dBA	3.45	5	YES	ODP	460	3	GREENHECK/ QEI-27-I-50
10-SF-3A	TRUCK BAY	MIXED FLOW	INLINE	3,575	0.7	1.04	1706	BELT	68 dBA	1.13	1.5	NO	EXP	460	3	GREENHECK/ QEI-15-I-15
10-SF-3B	TRUCK BAY	MIXED FLOW	INLINE	3,575	0.7	1.04	1706	BELT	68 dBA	1.13	1.5	NO	EXP	460	3	GREENHECK/ QEI-15-I-15
10-SF-4	GARAGE- HIGH SPEED	SQUARE CENTRIFUGAL	INLINE	775	0.7	0.924	1930	BELT	18	0.42	3/4	NO	ODP	460	3	GREENHECK/ BSQ-90-7
10-SF-5	SODIUM HYPO/ PACL	TUBULAR CENTRIFUGAL	INLINE	750/ 375	0.6	–	1574	BELT	58 dBA	0.19	1/2	YES	TEFC	460	3	GREENHECK/ TCB-1-10-5
10-SF-6	POLMER & SODA ASH ROOMS	SQUARE CENTRIFUGAL	INLINE	600	0.6	–	1562	BELT	12	0.22	1/3	NO	TEFC	115	1	GREENHECK/ BSQ-90-3
10-SF-7	HEADWORKS	TUBULAR CENTRIFUGAL	INLINE	2,330	0.7	–	1190	BELT	62 dBA	0.69	1	NO	EXP	460	3	GREENHECK/ TCB-1-16-10
10-SF-8	DISK FILTER	TUBULAR CENTRIFUGAL	INLINE	1,800/ 900	0.75	–	1837	BELT	65 dBA	0.7	1	YES	TEFC	460	3	GREENHECK/ TCB-1-13-10
20-SF-1	EQUIPMENT STORAGE FACILITY- GARAGE	SQUARE CENTRIFUGAL	INLINE	150	0.5	–	1395	DIRECT	11	0.09	1/4	NO	ODP	115	1	GREENHECK/ SQ-97-VG
20-EF-1	EQUIPMENT STORAGE FACILITY- GARAGE	PROPELLER	WALL	2,500	0.4	0.566	1276	BELT	22	0.62	1	NO	ODP	460	3	GREENHECK/ SBE-2H24-1
20-EF-2	EQUIPMENT STORAGE FACILITY- WORK ROOM	SQUARE CENTRIFUGAL	INLINE	500	0.5	0.562	1654	DIRECT	10	0.12	1/6	NO	ODP	115	1	GREENHECK/ SQ-95-VG
30-EF-1	WICK DISTRIBUTION VAULT	SQUARE CENTRIFUGAL	INLINE	300	0.5	0.623	1409	DIRECT	11	0.11	1/4	NO	ODP	115	1	GREENHECK/ SQ-98-VG

NOTES:
1. SYSTEM STATIC PRESSURE/ STATIC PRESSURE INCLUDING BDD CORRECTION FACTORS.
2. PROVIDE DAMPERS, TYPE AS INDICATED ON THE PLANS. MOTOR OPERATED DAMPERS SHALL BE 120 V.
3. PROVIDE MOTOR SIDE SAFETY CAGE AND WALL SLEEVE ON ALL PROPELLER FANS.
4. PROVIDE SPEED CONTROLLER ON ALL DIRECT DRIVE FANS
5. PROVIDE ROOF CURBS FOR ALL ROOF MOUNTED FANS.
6. ALL TRUCK BAY (10-SF-3A & 3B), CHEMICAL ROOMS (10-SF-5 & 6 AND 10-EF-5 & 6), HEADWORKS (10-SF-7) AND DISK FILTER ROOM (10-EF-7 AND 10-SF-8) FANS, DAMPERS & ACCESSORIES SHALL BE COATED FOR CORROSION RESISTANCE WITH HI PRO POLYESTER.
7. LAB FUME HOOD EXHAUST FANS 10-EF-10 & 11 SHALL BE COATED FOR CORROSION RESISTANCE WITH HI-PRO Z.
8. VFD's FOR FANS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
9. PROVIDE 2" MERV 8 FILTERS & FILTER BOX WITH 10-SF-4.
9. FANS 10-SF-3A & 3B AND 10-SF-7 SERVING THE TRUCK BAY AND HEADWORKS SHALL BE OF SPAKPROOF CONSTRUCTION AMCA B.
10. 10-EF-10 SHALL INCLUDE VARI GREEN EC MOTOR 0-10 VDC SIGNAL. 115 TO 24 VDC TRANSFORMER, CONSTANT PRESSURE, INTEGRAL TRANSDUCER (2) ROOM TAPS.

AIR CONDITIONING UNIT- SPLIT SYSTEM SCHEDULE

TAG NO.	SERVES	LOCATION	TYPE	AIR HANDLING DATA								DX COOLING COIL DATA							ELECTRICAL		FILTER TYPE	SELECTION BASED ON MFR/ MODEL
				CFM		SP (IN WG)		SUPPLY FAN				NOMINAL COOLING (MBH)		EAT (°F)			LAT (°F)		VOLTS	PH		
				TOTAL	MIN OA	ESP	TSP	TYPE	MTR ENCL.	BHP	HP	TONS	TOTAL	SENSIBLE	DB	WB	DB	WB				
10-AC-1	ELECTRICAL ROOM	CEILING SUSPENDED	DRAW THRU – VARIABLE VOLUME	4,000	0	1	2.45	PLENUM	ODP	3.9	5	10	126.7	126.7	85	63.2	56.1	52.17	460	3	ANGLE/ MERV 8	TRANE/UCCAG08C

NOTES:
1. UNITS SHALL INCLUDE FILTER MIXING BOX WITH DAMPERS, DX COOLING COIL, ACCESS AND FAN SECTIONS.
2. PROVIDE ECONOMIZER WITH FILTER MIXING BOX .
3. SELECT ALL UNITS WITH FILTERS AT FULL- DIRTY CONDITION.
4. REFRIGERANT SHALL BE R-410A

AIR COOLED CONDENSING UNIT SCHEDULE

TAG NO.	SERVES	LOCATION	INTERLOCK	CAPACITY NOMINAL (TONS)	NET CAPACITY (MBH)	AMBIENT DEG(°F)	REFRIG. TYPE	COND UNIT EER	ELECTRICAL DATA												SELECTION BASED ON MFR / MODEL
											COMPRESSORS			CONDENSER FAN(S)					UNIT AMPS		
									VOLTS	PH	QTY.	RLA	LRA	QTY.	DIAM (IN)	HP(EA)	FLA(EA)	LRA (EA)	MCA	MAX FUSE	
10-ACCU-1	ELECTRICAL ROOM	GRADE	10-AC-1	10	122	95	R-410A	12.5	460	3	2	7.8 EACH	52	1	28	1	2.5	5.8	20	25	TRANE/ TTA12044CAB

NOTES:
1. COMPRESSOR START ASSIST CAPACITOR AND RELAY, CRANKCASE HEATER, CYCLE PROTECTION, FILTER DRYER AND LOW AMBIENT CONTROLLER.
2. WINTER START CONTROL, EVAP. FREEZE PROTECTION, LOW PRESSURE SWITCH AND TIME DELAY RELAY.
3. HOT GAS BYPASS.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SCHEDULES II

SHEET NUMBER

00 M-003

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-003.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:37:52 PM
PLOT DATE: Tuesday, January 28, 2020 3:34:37 PM

DUCTLESS AIR CONDITIONING UNIT SCHEDULE

TAG NO.	SERVES	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH) MINIMUM	TOTAL HEATING (MBH) @47F/ @17F	FAN CFM	INDOOR UNIT ELECTRICAL DATA			OUTDOOR UNIT						REFRIG	BASED ON MFR/ MODEL
						VOLTAGE	PHASE	MCA	TAG NO.	VOLTAGE	PHASE	REC. FUSE	MCA	MOCP		
10-DAC-1/ 10-HP-1	CONTROL ROOM	12	10.6	14/ 10.1	530 HIGH SPEED	208	1	1	10-HP-1	208	1	15	11	28	410A	TRANE-MITSUBISHI/ PLA-A12EA7 & PUZ-A12NKA7-(BS)
10-DAC-2/ 10-HP-2	CONFERENCE ROOM	18	15.3	19/ 11	600 HIGH SPEED	208	1	1	10-HP-2	208	1	15	11	28	410A	TRANE-MITSUBISHI/ PLA-A18EA7 & PUZ-A18NKA7-(BS)
10-DAC-3/ 10-HP-3	BREAK ROOM	18	15.3	19/ 11	600 HIGH SPEED	208	1	1	10-HP-3	208	1	15	11	28	410A	TRANE-MITSUBISHI/ PLA-A18EA7 & PUZ-A18NKA7-(BS)
10-DAC-4/ 10-HP-4	SUPERINTENDENT/ COPY ROOM	12	9.9	14/ 8.7	425 MEDIUM SPEED	208	1	1.45	10-HP-4	208	1	15	11	28	410A	TRANE-MITSUBISHI/ PEAD-A12AA7 & PUZ-A12NKA7-(BS)
20-DAC-1/20-HP-1	EQUIPMENT STORAGE FACILITY- OFFICE	18	12.24	19/ 11	425 HIGH SPEED	208	1	1	20-HP-1	208	1	15	13	28	410A	TRANE-MITSUBISHI/ PKA-A18HA7 & PUZ-A18NHA7-(BS)

NOTES:
1. PROVIDE REFRIGERANT TUBING SETS, WALL MOUNTED CONTROLLER/ THERMOSTAT (WIRED REMOTE),
2. HP OUTDOOR UNIT SHALL INCLUDE SEACOAST PROTECTIVE COATING.
3. PROVIDE CONDENSATE RECEIVER AND PUMP ASSEMBLY WITH DISCHARGE LINE CHECK VALVE FOR EACH DAC.
4. PROVIDE LOW AMBIENT KIT/CONTROLS DOWN TO 0 DEG F.
5. INDOOR UNIT SHALL BE THE RECESSED CEILING CASSETTE TYPE FOR 10-DAC-1, 2 & 3, HORIZONTAL DUCTED FOR 10-DAC-4 AND HIGH WALL MOUNTED FOR 20-DAC-1.
6. INDOOR UNIT POWER FED FROM OUTDOOR UNIT.

HYDRONIC DUCT HEATING COILS

TAG NO.	SERVES	LOCATION	CORRECTED FOR GLYCOL TOTAL (MBH)	CFM	AIR SIDE COIL FACE AREA SF	AIR SIDE EAT (°F)	AIR SIDE LAT (°F)	AIR SIDE P.D. (IN. W.G.)	WATER SIDE GPM	WATER SIDE EWT (°F)	WATER SIDE LWT (°F)	WATER SIDE MAX PD (FT)	COIL DATA MIN ROWS DEEP	COIL DATA NO. COILS	COIL DATA SIZE IN X IN	SELECTION BASED ON MFR/ MODEL
10-HC-1A	10-SF-3A	TRUCK BAY	199.7	3,575	6.25	7	58.6	0.19	21.2	150	130	8.9	2	1	30x30	GREENHECK/ HW58S02Q08
10-HC-1B	10-SF-3B	TRUCK BAY	199.7	3,575	6.25	7	58.6	0.19	21.2	150	130	8.9	2	1	30x30	GREENHECK/ HW58S02Q08
10-HC-2	10-SF-4	GARAGE	40.8	775	1.56	7	55.7	0.15	4.3	150	130	7	1	1	15x15	GREENHECK/ HW58S01A14
10-HC-3	10-SF-5	SODIUM HYPO/ PACL	46.2	750	1.56	7	63.9	0.17	4.9	150	130	2.8	2	1	15x15	GREENHECK/ HW58S02B09
10-HC-4	10-SF-6	POLYMER & SODA ASH	35.4	600	1.56	7	61.5	0.1	3.8	150	130	5.3	1	1	15x15	GREENHECK/ HW58S01A14
10-HC-5	10-SF-7	HEADWORKS	125.8	2,330	4.00	7	56.9	0.19	13.4	150	130	5.7	2	1	24x24	GREENHECK/ HW58S02Q08
10-HC-6	10-SF-8	DISK FILTER	95.5	1,800	4.00	7	56	0.11	10.2	150	130	3.3	2	1	24x24	GREENHECK/ HW58S02Q07
10-HC-7	10-SF-1	BASEMENT PUMP ROOM	459.7	8,400	12.25	7	57.5	0.28	48.9	150	130	4.9	2	1	42X42	GREENHECK/ HW58S02H09
10-HC-8	10-AC-3	MEN'S ROOM	17.5	200	0.73	55	135	0.2	1.9	150	130	3	4	1	10.5X10	GREENHECK/ HW58S04A13
10-HC-9	10-AC-3	WOMEN'S ROOM	17.5	200	0.73	55	135	0.2	1.9	150	130	3	4	1	10.5X10	GREENHECK/ HW58S04A13
10-HC-10	10-DH-1/ LAB	MECHANICAL ROOM	98.9	1,310	–	11	80.9	0.32	10.08	150	130	6.41	3	1	18X18	DESERT AIR/HW58CCJ01801800003R
10-HC-11	10-DH-2	MECHANICAL ROOM	79.6	1,800	–	40	80.9	0.21	8.11	150	130	8.99	2	1	21X21	DESERT AIR/HW58CBJ02102100002R

NOTES:
1. COILS SHALL BE PROVIDED WITH SAME END CONNECTIONS. ALL COILS SHALL BE DUCT MOUNTED.
2. HEATING FLUID IS WATER WITH 35% PROPYLENE GLYCOL.
3. EPOXY COATING SHALL BE APPLIED TO COILS 10-HC-1A, 1B, 3, 4, 5 & 6
4. ELECTOFIN COATING SHALL BE APPLIED TO 10-HC-2, 7, 8 & 9
5. COILS 10-HC-10 & 11 SHALL BE PROVIDED WITH THE DEHUMIDIFIERS, COILS SHALL BE ELECTROFIN COATED.

DEHUMIDIFIER SCHEDULE

TAG NO.	SERVES	TYPE	AIR HANDLING DATA TOTAL CFM	AIR HANDLING DATA OA CFM	AIR HANDLING DATA SP (IN WG) ESP	AIR HANDLING DATA SP (IN WG) TSP	AIR HANDLING DATA FAN DRIVE	AIR HANDLING DATA FAN MTR ENCL.	AIR HANDLING DATA FAN HP	COOLING DATA COOLING (MBH) TOTAL	COOLING DATA COOLING (MBH) SENSIBLE	COOLING DATA EAT (°F) DB	COOLING DATA EAT (°F) WB	LAT (°F) DEW PT DB	TOT. HEAT REMOVAL	MOISTURE REMOVAL	REFRIG. TYPE	ELECTRICAL MCA	ELECTRICAL MOPD	ELECTRICAL VOLTS	ELECTRICAL PH	SELECTION BASED ON MFR / MODEL
10-DH-1	LAB	VERTICAL/REFRIGERANT	1,310	500/ 810/ 1,310	1.8	3.2	VFD	ODP	2	83		76	73	56.4	102 MBH	46.2 LB/HR	R-410A	17	25	460	3	DESERT AIRE/ QV05P
10-DH-2	OFFICE AREAS	VERTICAL/REFRIGERANT	1,800	575	1.8	3.1	VFD	ODP	2	106		79.9	69.2	49.2	136 MBH	46.4 LB/HR	R-410A	20	25	460	3	DESERT AIRE/ QV08P

NOTES:
1. PROVIDE MIXING BOX, DAMPERS & FILTERS.
2. PROVIDE AUXILIARY AIR HOT WATER HEATING COILS (10-HC-10 & 11) FOR DUCT MOUNTING. SEE HEATING COIL SCHEDULE. PROVIDE 2-WAY CONTROL VALVE FOR EACH. COILS SHALL BE CONTROLLED BY THE DEHUMIDIFIER CONTROL SYSTEM.
3. OA SENSOR, DUCT SENSOR, TEMP AND HUMIDITY WALL MOUNTED SENSORS (AVERAGING).
4. ELECTROFIN COIL AND UNIT INTERIOR COATING.
5. HOT GAS BYPASS

DEHUMIDIFIER AIR COOLED CONDENSER SCHEDULE

TAG NO.	LOCATION	INTERLOCK	CFM	CAPACITY (MBH)	AMBIENT DEG(°F)	REFRIG. TYPE	ELECTRICAL DATA VOLTS	ELECTRICAL DATA PH	FANS QTY.	UNIT AMPS MCA	UNIT AMPS MOPD	SELECTION BASED ON MFR / MODEL
10-COND-1	GRADE	10-DH-1	5,557	98	95	R-410A	460	3	1	4	6	DESERT AIRE RC5S024C4K40900
10-COND-2	GRADE	10-DH-2	5,773	70	95	R-410A	460	3	1	4	6	DESERT AIRE RC5S039C4K41500

NOTES:
1. ELECTROFIN COIL COATING.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No.36728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SCHEDULES III

SHEET NUMBER

00 M-004

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-004.DWG
LAST UPDATE: Wednesday, January 22, 2020 9:22:23 AM
PLOT DATE: Tuesday, January 28, 2020 3:34:45 PM

GAS FIRED UNIT HEATER SCHEDULE

TAG NO.	LOCATION	NATURAL GAS INPUT (MBH)	NATURAL GAS OUTPUT (MBH)	CFM	TEMP RISE	MIN. THERMAL EFF. %	GAS CONN (IN)	VENT DIAM. (IN)	COMB. AIR INLET DIAM (IN)	ELECTRICAL DATA HP	ELECTRICAL DATA VOLTS	ELECTRICAL DATA PH	DESIGN BASED ON MFR/ MODEL
20-GUH-1	EQUIPMENT STORAGE FACILITY WORK ROOM	30	24.6	456	50	82	1/2	4	4	0.02	120	1	REZNOR/ MODEL UDAS 30
20-GUH-2	EQUIPMENT STORAGE FACILITY GARAGE	60	49.8	769	60	83	1/2	4	4	0.03	120	1	REZNOR/ MODEL UDAS 60
20-GUH-3	EQUIPMENT STORAGE FACILITY GARAGE	60	49.8	769	60	83	1/2	4	4	0.03	120	1	REZNOR/ MODEL UDAS 60
20-GUH-4	EQUIPMENT STORAGE FACILITY GARAGE	60	49.8	769	60	83	1/2	4	4	0.03	120	1	REZNOR/ MODEL UDAS 60

NOTES:
1. PROVIDE TOTALLY ENCLOSED FAN MOTOR, FAN GUARD, UNIT HANGER KIT & 24V WALL MOUNTED THERMOSTATS.
2. NATURAL GAS FIRED UNIT HEATERS SHALL BE SEPARATED COMBUSTION TYPE WITH 409 STAINLESS STEEL HEAT EXCHANGER.
3. INCLUDE VERTICAL COMBUSTION AIR/VENT KIT INCLUDING CONCENTRIC ADAPTER & VENT CAP.
4. MOUNTING HEIGHT 7 FT AFF TO BOTTOM OF UNIT OR IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

ELECTRIC UNIT HEATER SCHEDULE

TAG NO.	LOCATION	TYPE	CAPACITY (KW)	ELECTRICAL TEMP. RISE	ELECTRICAL VOLT	ELECTRICAL PH	MTG HT (FT)	SELECTION BASED ON MFR/ MODEL
10-EUH-1	ELECTRICAL ROOM	HORIZONTAL	5	45	480	3	7.5	QMARK/ MUH05-41

NOTES:
1. WALL MOUNTED 24V THERMOSTAT.
2. ALL UNIT HEATERS SHALL BE UL LISTED. PROVIDE SWIVEL MOUNTING BRACKETS.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SCHEDULES IV

SHEET NUMBER

00 M-005

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-005.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:38:50 PM
PLOT DATE: Tuesday, January 29, 2020 3:34:54 PM

SEQUENCES

A. GENERAL

1. IN GENERAL, THE HVAC EQUIPMENT SHALL BE CONTROLLED BY THE BUILDING MANAGEMENT AND CONTROL SYSTEM OR CONTROLS SUPPLIED WITH THE PARTICULAR PIECE OF EQUIPMENT.

2. "ATC SYSTEM" AND "BMS SYSTEM" ARE USED INTERCHANGEABLY.

3. THE SEQUENCES SHALL BE REVERSIBLE UNLESS NOTED OTHERWISE.

4. ALL CONTROLS AND CONTROL COMPONENTS MUST MEET THE NEMA AREA ELECTRICAL CLASSIFICATION FOR THE AREA IN WHICH THEY ARE LOCATED.

5. BMS ALARMS
ALARM INDICATED TO GO TO THE PLANT SCADA SYSTEM FROM THE BMS SHALL BE BY A "HVAC SYSTEM TROUBLE ALARM" ACTIVATED BY A DRY CONTACT AT THE LOCAL ATC PANEL. DIVISION 16 SHALL RUN WIRING FROM THE DRY CONTACT TO THE SCADA SYSTEM.

6. BUILDING FIRE ALARM SYSTEM INTERFACE: WHEN THE BUILDING FIRE ALARM SYSTEM DETECTS A FIRE ALARM CONDITION, A SIGNAL SHALL BE PROVIDED TO THE ATC SYSTEM BY DIVISION 16. THE HVAC VENTILATION SYSTEM IN THE BUILDING EXPERIENCING A FIRE ALARM SHALL BE SHUTDOWN.

B. ELECTRIC UNIT HEATERS: (EUH)

1. EACH ELECTRIC UNIT HEATER SHALL BE CONTROLLED BY AN INTEGRAL OR WALL MOUNTED THERMOSTAT (AS SHOWN ON THE EQUIPMENT SCHEDULE). ON A DROP IN SPACE TEMPERATURE BELOW THE THERMOSTAT SET POINT 55 DEGREES F (ADJUSTABLE), THE UNIT FAN SHALL START AND THE ELECTRIC HEATING COIL SHALL BE ENERGIZED.

2. WHEN THE SPACE TEMPERATURE IS ABOVE THE THERMOSTAT SET POINT, THE FAN SHALL STOP AND THE HEATER SHALL BE DEACTIVATED. THE THERMOSTAT SET POINT FOR THE UNIT HEATERS SHALL BE ADJUSTABLE.

C. GAS UNIT HEATERS (GUH)

A SEPARATE WALL MOUNTED THERMOSTAT SHALL CONTROL EACH GAS UNIT HEATER; ON A DROP IN SPACE TEMPERATURE BELOW THE THERMOSTAT SET POINT OF 55 DEGREES F (ADJUSTABLE), THE UNIT FAN SHALL START AND THE GAS HEATING SECTION SHALL BE ENERGIZED. WHEN THE SPACE TEMPERATURE IS ABOVE THE THERMOSTAT SET POINT, THE FAN SHALL STOP AND THE HEATER SHALL BE DEACTIVATED.

D. HYDRONIC UNIT HEATERS: (UH)

1. HOT WATER UNIT HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE WALL MOUNTED THERMOSTATS. UPON A CALL FOR HEATING THE THERMOSTAT SHALL OPEN THE TWO-WAY HOT WATER CONTROL VALVE AND START THE SUPPLY FAN. WHEN THE THERMOSTAT IS SATISFIED THE SUPPLY FAN SHALL STOP AND THE CONTROL VALVE SHALL CLOSE.

2. THE THERMOSTAT SET POINT FOR THE UNIT HEATERS SHALL BE 55 DEGREES F (ADJUSTABLE) EXCEPT FOR THE UNIT HEATERS IN THE CHEMICAL ROOMS. THE THERMOSTAT SET POINT FOR THE UNIT HEATERS IN CHEMICAL ROOMS (10-UH-4 & 5 AND 6) SHALL BE SET AT 60 DEGREES (ADJUSTABLE).

E. HYDRONIC CABINET UNIT HEATERS: (CUH)

1. HOT WATER CABINET HEATERS SHALL BE CONTROLLED BY BUILT IN FAN SPEED CONTROL SWITCHES, 24 VOLT, WALL-MOUNTED THERMOSTAT AND HOT WATER COIL CONTROL VALVES.

2. UPON A CALL FOR HEAT THE HOT WATER COIL CONTROL VALVE SHALL OPEN. WHEN THE THERMOSTAT IS SATISFIED THE CONTROL VALVE SHALL CLOSE AND THE FAN SHALL STOP.

3. THE THERMOSTAT SET POINT SHALL BE 65 DEGREES F (ADJUSTABLE).

F. DUCTLESS AIR CONDITIONING UNITS AND HEAT PUMPS

1. DUCTLESS SPLIT SYSTEMS SHALL BE PROVIDED WITH CONTROLS FROM THE MANUFACTURER. THE WIRED CONTROLLER SHALL BE WALL MOUNTED.

2. COOLING MODE: WHEN SPACE TEMPERATURE IS ABOVE THE ROOM THERMOSTAT SET POINT (ADJUSTABLE), THE INDOOR AIR HANDLING UNIT AND OUTDOOR HEAT PUMP WILL BE ACTIVATED TO MAINTAIN SPACE TEMPERATURE.

3. HEATING MODE: WHEN SPACE TEMPERATURE IS BELOW THE ROOM THERMOSTAT HEATING SET POINT (ADJUSTABLE), THE INDOOR AIR HANDLING UNIT AND OUTDOOR HEAT PUMP UNIT WILL BE ACTIVATED TO MAINTAIN SPACE TEMPERATURE.

SYSTEM	COOLING SET POINT	HEATING SET POINT
10-DAC/ HP-1	75 DEGREES F (ADJ)	70 DEGREES F (ADJ)
10-DAC/ HP-2	75 DEGREES F (ADJ)	70 DEGREES F (ADJ)
10-DAC/ HP-3	75 DEGREES F (ADJ)	70 DEGREES F (ADJ)
10-DAC/ HP-4	75 DEGREES F (ADJ)	70 DEGREES F (ADJ)
20-DAC/ HP-1	75 DEGREES F (ADJ)	70 DEGREES F (ADJ)

G. HYDRONIC DUCT HEATING COILS:

NORMAL: WHEN THE SPACE OR DUCT TEMPERATURE IS AT ITS SETPOINT (ADJUSTABLE) OR BELOW; THE DUCT MOUNTED HOT WATER HEATING COIL SHALL BE ENABLED. THE ROOM OR DUCT TEMPERATURE SENSOR, ACTING THROUGH THE CONTROLLER, SHALL MODULATE THE COIL'S TWO-WAY CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SET POINT (ADJUSTABLE).

COIL	LOCATION	SYSTEM	SET POINT
10-HC-1A MTD.	TRUCK BAY	10-SF-3A	55 DUCT
10-HC-1B MTD.	TRUCK BAY	10-SF-3B	55 DUCT
10-HC-2	GARAGE	10-SF-4	55 DUCT MTD.
10-HC-3	SODIUM HYPO/PACL	10-SF-5	60 DUCT MTD.
10-HC-4	POLYMER/SODA ASH	10-SF-6	60 DUCT MTD
10-HC-5	HEADWORKS	10-SF-7	68 DUCT MTD
10-HC-6	DISK FILTER	10-SF-8	55 DUCT MTD.
10-HC-7	BASEMENT PUMP ROOM	10-SF-1	55 DUCT MTD.
10-HC-8	MEN'S ROOM	10-DH-2	80 SPACE
10-HC-9	WOMEN'S ROOM	10-DH-2	80 SPACE
10-HC-10	10-DH-1/ LAB SUPPLY AIR	10-DH-1	80 DUCT MTD.
10-HC-11	10-DH-2 ADMIN. SUPPLY AIR	10-DH-2	80 DUCT MTD.

H. BASEMENT PUMP ROOM NORMAL VENTILATION SYSTEM:
(10-SF-1 & 10-EF-1)

1. THE SUPPLY FAN 10-SF-1 AND EXHAUST FAN 10-EF-1 SHALL RUN CONTINUOUSLY. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. STARTUP: UPON START UP, THE SUPPLY AND EXHAUST FANS SHALL START AND RUN AT HIGH SPEED.

3. NORMAL OPERATION: IN THE NORMAL OPERATION MODE THE SUPPLY FAN AND EXHAUST FANS SHALL RUN AT FULL SPEED.

4. THE VENTILATION SYSTEM SHALL OPERATE AT TWO SPEEDS. NORMAL SHALL BE FULL SPEED. PER NFPA 820 IN ORDER FOR THE PUMP ROOM TO REMAIN ELECTRICALLY UNCLASSIFIED 10-SF-1 AND 10-EF-1 SHALL RUN AT SLOW SPEED ONLY WHEN ALL OF THE FOLLOWING CONDITIONS OCCUR.

   a. THE OUTSIDE TEMPERATURE IS 50 DEGREES F OR LESS.

   b. THE SPACE IS UNOCCUPIED. PROVIDE OCCUPANCY "ON-OFF" SWITCH AT EACH STAIR DOOR (QUANTITY 2).

   c. THE COMBUSTIBLE GAS DETECTOR LEL SET TO FUNCTION AT 10 PERCENT OF THE LOWER FLAMMABLE LIMIT IS NOT IN ALARM. (THE LEL SIGNAL SHALL BE PROVIDED TO ATC PANEL BY DIVISION 16).

5. SAFETIES: WHEN ANY OF THE FOLLOWING SAFETIES ARE ACTIVATED, AFTER START UP FLOWS HAVE BEEN ESTABLISHED (APPROXIMATELY 5 MINUTES (ADJ.)), THE CONTROLLER SHALL SHUT DOWN THE SUPPLY AND THE EXHAUST FANS AND CLOSE THE ASSOCIATED DAMPERS. A TROUBLE ALARM SIGNAL SHALL BE SENT TO ATC PANEL AND AN "HVAC SYSTEM TROUBLE" ALARM SENT TO SCADA.

   a. WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

   b. THE ROOM TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

   c. WHEN EITHER OF THE TWO FLOW SWITCHES SENSES A LOSS OF AIR FLOW. THE SWITCHES SHALL CONFIRM THAT THE SUPPLY AND EXHAUST FANS ARE RUNNING. UPON A SIGNAL FROM EITHER FLOW SWITCH INDICATING NO FLOW, SUPPLY AND EXHAUST FANS SHALL BE SHUT DOWN AND AN ALARM SHALL BE TRANSMITTED TO THE ATC PANEL AND A "HVAC SYSTEM TROUBLE" ALARM TO SCADA.

I. PUMP ROOM HEAT REMOVAL VENTILATION SYSTEM WITH VFD CONTROL: (10-SF-2 & 10-EF-2)

1. A "HAND-OFF-AUTO" WALL SWITCH SHALL CONTROL EACH FAN. WHEN THE WALL SWITCH IS IN THE HAND POSITION THE ASSOCIATED MOTOR OPERATED DAMPER SHALL OPEN AND THE FAN SHALL RUN AT FULL SPEED. WHEN THE SWITCH IS IN THE AUTO POSITION THE FAN SHALL BE CONTROLLED BY THE ATC SYSTEM. WHEN THE SWITCH IS IN THE OFF POSITION THE FAN SHALL BE OFF AND THE ASSOCIATED MOTOR OPERATED DAMPER SHALL CLOSE.

2. THE SYSTEM SHALL BE CALLED TO RUN WHEN THE ROOM TEMPERATURE IS 85 DEGREES F (ADJUSTABLE). THE DUCT MOUNTED SUPPLY DAMPER 10-MD-2 AND EXHAUST DAMPER 10-MD-9 SHALL OPEN, SUPPLY FAN 10-SF-2 AND THE EXHAUST FAN 10-EF-2 SHALL START AT SLOW SPEED. WHEN THE ROOM TEMPERATURE IS 90 DEGREES F (ADJUSTABLE), THE FANS SHALL RUN AT FULL SPEED.

FAN	SUPPLY DAMPER	EA DAMPERS
10-SF-2	10-MD-2	--
10-EF-2	--	10-MD-9

J. TRUCK BAY
(SUPPLY FANS 10-SF-3A & 3B SHALL BE INTERLOCKED WITH THE ODOR CONTROL SYSTEM OC.F-1)

1. THE TRUCK BAY SHALL BE VENTILATED CONTINUOUSLY AT 12 ACH. THE SUPPLY FANS AND ODOR CONTROL FAN SHALL RUN CONTINUOUSLY. AN AIR FLOW SWITCH SHALL CONFIRM THAT EACH SUPPLY FAN (10-SF-3A & 3B) IS RUNNING.

2. THE SYSTEM IS SUPPLIED BY FANS 10-SF-3A & 3B AND EXHAUSTED BY ODOR CONTROL FAN (OC.F-1). THE SUPPLY FANS 10-SF-3A & 3B SHALL BE INTERLOCKED WITH OC.F-1 THROUGH THE ATC & SCADA SYSTEMS. THE ODOR CONTROL SYSTEM STATUS SHALL BE PROVIDED TO THE ATC PANEL BY DIVISION16 BY A DRY CONTACT IN THE ATC PANEL. SUPPLY FANS 10-SF-3A & 3B FLOW SWITCH STATUS SHALL BE SUPPLIED TO THE PLANT SCADA BY ANOTHER DRY CONTACT FROM THE ATC PANEL TO SCADA. THE ELECTRICAL CONTRACTOR SHALL CONNECT TO THE DRY CONTACTS AND RUN THE SIGNAL TO/FROM THE PLANT SCADA SYSTEM.

3. EACH SUPPLY FAN SHALL BE INTERLOCKED WITH ITS ASSOCIATED OA MOTOR OPERATED DAMPER.

4. THE SYSTEM SHALL BE CONTROLLED BY THE ATC & SCADA SYSTEMS: UPON START UP OR UPON RECEIVING A SIGNAL FROM THE ODOR CONTROL SYSTEM AS DESCRIBED ABOVE, THE MOTOR OPERATED DAMPER 10-MD-3A & 3B SHALL OPEN AND THE SUPPLY FANS SHALL START.

5. SAFETIES: WHEN ANY OF THE FOLLOWING SAFETIES ARE ACTIVATED, THE CONTROLLER SHALL SHUT DOWN THE SUPPLY FANS AND A TROUBLE ALARM SIGNAL SHALL BE SENT TO THE PLANT SCADA.

   a. WHEN EITHER SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 38 DEGREES F (ADJUSTABLE) FOR 5 MINUTES (ADJUSTABLE).

   b. THE FLOW SWITCH SHALL CONFIRM THAT 10-SF-3A & 3B ARE OPERATING CONTINUOUSLY. WHEN EITHER FLOW SWITCH SENSES NO FLOW, AN ALARM SHALL BE TRANSMITTED TO THE PLANT SCADA BY THE FLOW SWITCH FAIL DRY CONTACT AT THE ATC PANEL DESCRIBED ABOVE.

   c. IF SCADA SENDS A SIGNAL TO THE ATC SYSTEM INDICATING A NO FLOW ALARM FOR OC.F-1; THEN 10-SF-3A & 3B SHALL BE SHUT DOWN.

FAN	OA DAMPER
10-SF-3A	10-MD-3A
10-SF-3B	10-MD-3B

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SEQUENCES I

SHEET NUMBER

00 M-006

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M00 M-006.DWG
LAST UPDATE: Tuesday, January 28, 2020 9:50:21 AM
PLOT DATE: Tuesday, January 28, 2020 3:35:03 PM

SEQUENCES (CONT.)

K. HEADWORKS

(SUPPLY FAN 10-SF-7 SHALL BE INTERLOCKED WITH THE ODOR CONTROL SYSTEM OC.F-1)

1. THE HEADWORKS ROOM SHALL BE VENTILATED CONTINUOUSLY AT 12 ACH. THE SUPPLY FAN AND ODOR CONTROL FAN SHALL RUN CONTINUOUSLY. AN AIR FLOW SWITCH SHALL CONFIRM SUPPLY FAN (10-SF-7) STATUS.

2. THE SYSTEM IS SUPPLIED BY FAN 10-SF-7 AND EXHAUSTED BY ODOR CONTROL FAN (OC.F-1). THE SUPPLY FAN 10-SF-7 SHALL BE INTERLOCKED WITH OC.F-1 THROUGH THE ATC & SCADA SYSTEMS. THE ODOR CONTROL SYSTEM STATUS SHALL BE PROVIDED TO THE ATC PANEL BY DIVISION16 BY A DRY CONTACT IN THE ATC PANEL. SUPPLY FAN 10-SF-7 FLOW SWITCH STATUS SHALL BE SUPPLIED TO THE PLANT SCADA BY ANOTHER DRY CONTACT FROM THE ATC PANEL TO SCADA. THE ELECTRICAL CONTRACTOR SHALL CONNECT TO THE DRY CONTACTS AND RUN THE SIGNAL TO/FROM THE PLANT SCADA SYSTEM.

3. A "HAND-OFF-AUTO" WALL SWITCH SHALL CONTROL THE FAN (10-SF-7).

   a. WHEN THE WALL SWITCH IS IN THE HAND POSITION THE MOTOR OPERATED DAMPER 10-MD-7 SHALL OPEN AND FAN SHALL RUN.

   b. WHEN THE SWITCH IS IN THE OFF POSITION THE FAN SHALL BE OFF AND MOTOR OPERATED DAMPER 10-MD-7 SHALL CLOSE.

   c. WHEN THE SWITCH IS IN "AUTO" THE SYSTEM SHALL BE CONTROLLED BY THE ATC & SCADA SYSTEMS: UPON START UP OR UPON RECEIVING A SIGNAL FROM THE ODOR CONTROL SYSTEM AS DESCRIBED ABOVE, T THE MOTOR OPERATED DAMPER 10-MD-7 SHALL OPEN AND THE SUPPLY FAN SHALL START.

4. SAFETIES: WHEN ANY OF THE FOLOWING SAFETIES ARE ACTIVATED, AFTER START UP FLOWS HAVE BEEN ESTABLISHED (5 MINUTES), THE CONTROLLER SHALL SHUT DOWN THE SUPPLY FAN AND A TROUBLE ALARM SIGNAL SHALL BE SENT TO THE PLANT SCADA.

   a. WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 38 DEGREES F (ADJUSTABLE) FOR 5 MINUTES (ADJUSTABLE)

   b. THE FLOW SWITCH SHALL CONFIRM THAT 10-SF-7 IS OPERATING CONTINUOUSLY. WHEN THE 10-SF-7 FLOW SWITCH SENSES NO FLOW, AN ALARM SHALL BE TRANSMITTED TO THE PLANT SCADA.

   c. IF SCADA SENDS A SIGNAL TO THE ATC SYSTEM INDICATING A NO FLOW ALARM FOR OC.F-1; 10-SF-7 SHALL BE SHUT DOWN.

L. SODIUM HYPOCHLORITE & PACL ROOM

TWO SPEED SUPPLY AND EXHAUST FANS (100% OUTSIDE AIR):
(10-SF-5 AND 10-EF-5:)

1. THE SUPPLY AND EXHAUST FANS SHALL RUN CONTINUOUSLY. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. STARTUP: UPON START UP, THE SUPPLY AND EXHAUST FANS SHALL START AND RUN AT HIGH SPEED.

3. NORMAL OPERATION: IN THE NORMAL OPERATION MODE THE SUPPLY FAN 10-SF-5 SHALL PROVIDE 100 PERCENT OUTSIDE AIR, EXHAUSTED BY 10-EF-5. BOTH FANS RUN AT FULL SPEED.

4. WINTER OPERATION: WHEN THE OUTSIDE AIR TEMPERATURE IS 60 DEGREES F (ADJUSTABLE) OR LOWER. THE VENTILATION SYSTEM SHALL OPERATE AT SLOW SPEED.

5. SAFETIES: WHEN ANY OF THE FOLLOWING SAFETIES ARE ACTIVATED, AFTER START UP FLOWS HAVE BEEN ESTABLISHED (APPROXIMATELY 5 MINUTES (ADJ.)), THE CONTROLLER SHALL SHUT DOWN THE SUPPLY AND EXHAUST FANS AND CLOSE THE ASSOCIATED DAMPERS. A TROUBLE ALARM SIGNAL SHALL BE SENT TO ATC PANEL AND AN "HVAC SYSTEM TROUBLE" ALARM SENT TO SCADA.

   a. WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

   b. THE ROOM TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 50 DEGREES F (ADJUSTABLE)

FANS	DAMPERS
10-SF-5	10-MD-5
10-EF-5	BDD

M. POLYMER & SODA ASH ROOMS

SINGLE SPEED SUPPLY AND EXHAUST FANS (100% OUTSIDE AIR):
(10-SF-6 AND 10-EF-6:)

1. THE SUPPLY AND EXHAUST FANS SHALL RUN CONTINUOUSLY. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. STARTUP: UPON START UP, THE SUPPLY AND EXHAUST FANS SHALL START.

3. NORMAL OPERATION: IN THE NORMAL OPERATION MODE THE SUPPLY FAN 10-SF-6 SHALL PROVIDE 100 PERCENT OUTSIDE AIR, EXHAUSTED BY 10-EF-6.

4. SAFETIES: WHEN ANY OF THE FOLLOWING SAFETIES ARE ACTIVATED, AFTER START UP FLOWS HAVE BEEN ESTABLISHED (APPROXIMATELY 5 MINUTES (ADJ.)), THE CONTROLLER SHALL SHUT DOWN THE SUPPLY AND EXHAUST FANS AND CLOSE THE ASSOCIATED DAMPERS. A TROUBLE ALARM SIGNAL SHALL BE SENT TO ATC PANEL AND AN "HVAC SYSTEM TROUBLE" ALARM SENT TO SCADA.

   a. WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

   b. THE ROOM TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 50 DEGREES F (ADJUSTABLE)

FANS	DAMPERS
10-SF-6	10-MD-6
10-EF-6	BDD

N. DISK FILTER ROOM: TWO SPEED SUPPLY AND EXHAUST FANS: (10-SF-8 & 10-EF-7)

1. THE SUPPLY AND EXHAUST FANS SHALL RUN CONTINUOUSLY. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. STARTUP: UPON START UP, THE SUPPLY AND EXHAUST FANS SHALL START AND RUN AT HIGH SPEED.

3. NORMAL OPERATION: IN THE NORMAL OPERATION MODE THE SUPPLY FAN 10-SF-8 SHALL PROVIDE 100 PERCENT OUTSIDE AIR, EXHAUSTED BY 10-EF-7. BOTH FANS RUN AT FULL SPEED.

4. WINTER OPERATION: WHEN THE OUTSIDE AIR TEMPERATURE IS 60 DEGREES F (ADJUSTABLE) OR LOWER. THE VENTILATION SYSTEM SHALL OPERATE AT SLOW SPEED.

5. SAFETIES: WHEN ANY OF THE FOLLOWING SAFETIES ARE ACTIVATED, AFTER START UP FLOWS HAVE BEEN ESTABLISHED (APPROXIMATELY 5 MINUTES (ADJ.)), THE CONTROLLER SHALL SHUT DOWN THE SUPPLY AND EXHAUST FANS AND CLOSE THE ASSOCIATED DAMPERS. A TROUBLE ALARM SIGNAL SHALL BE SENT TO ATC PANEL AND AN "HVAC SYSTEM TROUBLE" ALARM SENT TO SCADA.

   a. WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

   b. THE ROOM TEMPERATURE SENSOR SENSES A TEMPERATURE BELOW 35 DEGREES F (ADJUSTABLE)

FANS	DAMPERS
10-SF-8	10-MD-8
10-EF-7	BDD

O. GARAGE NORMAL VENTILATION SYSTEM:
10-EF-3 WWTP- GARAGE
20-SF-1 EQUIPMENT STORAGE FACILITY- GARAGE

THE FAN SHALL RUN CONTINUOUSLY TO MAINTAIN CODE MINIMUM REQUIRED VENTILATION IN THE GARAGE.

P. GARAGES: NORMAL VENTILATION: (10-EF-3 AND 20-SF-1)
EXHAUST SYSTEM AND CO DETECTION SYSTEMS: (10-EF-4 AND 20-EF-1)

1. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. STARTUP AND NORMAL OPERATION: THE FAN(S) ARE CONTROLLED BY AN AUTO-RUN WALL SWITCH AND THE CARBON MONOXIDE (CO) DETECTION SYSTEM. WHEN THE FAN RECEIVES A CALL TO START, THE OA MOTOR OPERATED DAMPER SHALL OPEN. WHEN THE END SWITCHES CONFIRM THE DAMPER IS OPEN, THE EXHAUST FAN SHALL START.

3. EXHAUST FAN WALL SWITCH: THE FAN SHALL BE CONTROLLED BY AN "AUTO- RUN" WALL SWITCH. NORMAL SWITCH POSITION SHOULD BE IN "AUTO"

   a. AUTO: IF THE ROOM TEMPERATURE SENSOR SENSES A TEMPERATURE ABOVE 80 DEGREES F (ADJUSTABLE) THE ROOM OA MOTOR OPERATED WALL DAMPER SHALL OPEN, AND THE FAN SHALL RUN.

   b. RUN: WHEN THE OPERATOR DETERMINES THAT SUPPLEMENTAL VENTILATION IS REQUIRED THE SWITCH SHALL BE PLACED IN "RUN". THE MOTOR OPERATED OA WALL DAMPER SHALL OPEN AND THE FAN(S) SHALL RUN. HEAT IS NOT PROVIDED FOR OPERATION OF THE SUPPLEMENTAL VENTILATION SYSTEM. NOTE: A SIGN SHALL BE PLACED AT THE SWITCH LABELED: "CAUTION- HEAT IS NOT PROVIDED FOR VENTILATION SYSTEM OPERATION"

4. CO DETECTION SYSTEM:

   a. WHEN THE ROOM CO DETECTION SYSTEM IS ACTIVATED IT SHALL OVERRIDE ALL OTHER CONTROLS AND THE OA INTAKE MOTOR OPERATED DAMPER SHALL OPEN AND THE EXHAUST FAN SHALL RUN.

   b. WHEN THE CO SENSOR IS NOT IN ALARM AND THE WALL SWITCH IS "AUTO" THE FAN SHALL BE CONTROLLED AS DESCRIBED ABOVE.

5. SAFETIES: ACTIVATION OF THE CO DETECTION SYSTEM SHALL OVERRIDE ALL OTHER CONTROLS.

6. SYSTEM SHUTDOWN: WHEN THE SYSTEM SHUTS DOWN; THE FAN(S) SHALL STOP, AND THE OA MOTOR OPERATED DAMPER SHALL CLOSE.

BLDG	FAN	OA DAMPER	TEMPERATURE SET POINT
WWTP	10-EF-4 & 10-SF-4	10-MD-4	80 DEGREES F (ADJUSTABLE)
EQUIP. STG.	20-EF-1	20-MD-1	80 DEGREES F (ADJUSTABLE)

Q. FANS CONTROLLED BY THERMOSTATS:
(BOILER/ MECHANICAL ROOM 10-EF-9)

1. THE FAN SHALL BE ELECTRICALLY INTERLOCKED WITH ITS ASSOCIATED OUTSIDE AIR DAMPER.

2. WHEN THE SPACE TEMPERATURE IS ABOVE THE ROOM THERMOSTAT SET POINT (ADJUSTABLE), THE MOTOR OPERATED OUTSIDE AIR DAMPER SHALL OPEN AND THE FAN SHALL RUN.

3. WHEN THE SPACE TEMPERATURE IS BELOW THE ROOM THERMOSTAT SET POINT THE FAN SHALL STOP AND THE OUTSIDE AIR DAMPERS SHALL CLOSE.

FAN	OA DAMPER	SET POINT
10-EF-9	10-MD-12	80 DEGREES F (ADJUSTABLE)

R. FANS CONTROLLED BY WALL SWITCH:
(EQUIPMENT STORAGE FACILITY WORKROOM 20-EF-2)

1. A WALL SWITCH SHALL CONTROL THE FAN.
2. THE FAN SHALL BE ELECTRICALLY INTERLOCKED WITH ITS ASSOCIATED DAMPERS AS INDICATED IN THE TABLE.
3. WHEN THE WALL SWITCH IS IN THE "ON" POSITION THE MOTOR OPERATED DAMPERS SHALL OPEN AND THE EXHAUST FAN SHALL RUN. WHEN THE SWITCH IS IN THE "OFF" POSITION THE FAN SHALL STOP AND THE MOTOR OPERATED DAMPERS SHALL CLOSE.

FAN	EA DAMPER	OA DAMPER
20-EF-2	20-MD-2A	20-MD-2B

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No.36728
REGISTERED
PROFESSIONAL ENGINEER
1-27-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SEQUENCES II

SHEET NUMBER

00 M-007

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-007.DWG
LAST UPDATE: Monday, January 27, 2020 4:00:43 PM
PLOT DATE: Tuesday, January 28, 2020 3:35:13 PM

SEQUENCES (CONT.)

S. AIR CONDITIONING UNIT WITH ECONOMIZER ELECTRICAL ROOM: (AC-1 & ACCU-1)

1. THE AIR CONDITIONING SYSTEM SHALL BE CONTROLLED BY AN EMC APPLICATION SPECIFIC CONTROLLER. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. UPON START UP OF THE AIR CONDITIONING UNIT, THE OUTDOOR AIR INTAKE AND RETURN AIR SHALL BE POSITIONED TO THE MINIMUM OUTDOOR AIR POSITION AND THE EXHAUST AIR DAMPER SHALL BE CLOSED.

3. WHEN THE SPACE TEMPERATURE IS BELOW 55 DEGREES F (ADJUSTABLE), THE CONDENSING UNIT SHALL BE LOCKED OUT.

4. WHEN THE SPACE TEMPERATURE IS ABOVE THE ROOM THERMOSTAT SET POINT (ADJUSTABLE), THE CONDENSING UNIT SHALL OPERATE STAGES OF DX COOLING TO MAINTAIN THE "NORMAL" SPACE TEMPERATURE.

5. ECONOMIZER: WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN 65 DEGREES F (ADJUSTABLE) AND COOLING IS REQUIRED, ECONOMIZER COOLING SHALL BE ENABLED. THE UNIT'S OUTDOOR AIR INTAKE AND RETURN AIR DAMPERS SHALL BE POSITIONED TO PRODUCE A MIXED AIR TEMPERATURE OF 55 DEGREES (ADJUSTABLE) AND THE WALL MOUNTED EXHAUST AIR DAMPER SHALL OPEN.

6. WHEN THE SPACE TEMPERATURE IS ABOVE 100 DEGREES F (ADJUSTABLE) OR BELOW 45 DEGREES F (ADJUSTABLE), A "HVAC SYSTEM TROUBLE" ALARM SIGNAL WILL BE TRANSMITTED FROM THE ATC PANEL TO THE SCADA SYSTEM.

UNIT	OA DAMPER	RA DAMPER	EA DAMPER	SET POINT
10-AC-1	MD-1A	MD-1B	MD-1C	85 DEGREES F

T. BOILERS (10-BLR-1 AND 10-BLR-2), BOILER PUMPS (10-BP-1 & 2) AND SYSTEM CIRCULATING PUMPS (10-CP-1 & CP-2)

1. IN GENERAL, THE BOILERS SHALL OPERATE ON THEIR OWN FACTORY INSTALLED OPERATING CONTROLS. THE HOT WATER SUPPLY TEMPERATURE SHALL BE INDEXED AS A FUNCTION OF OUTDOOR AIR TEMPERATURE. WHEN THE OUTDOOR AIR TEMPERATURE IS 60° F (ADJUSTABLE) THE LEAVING WATER TEMPERATURE SHALL BE 130°F (ADJUSTABLE). WHEN THE OUTDOOR AIR TEMPERATURE IS 30° F (ADJUSTABLE) THE LEAVING WATER TEMPERATURE SHALL BE 150°F (ADJUSTABLE).

2. IN OPERATION, WHEN THE OUTDOOR AIR TEMPERATURE IS 60° F (ADJUSTABLE) OR BELOW, THE PRIMARY PUMPS 10-BP-1 AND 10-BP-2 AND SECONDARY PUMPS 10-CP-1 AND 10-CP-2 (ONE DUTY, ONE STANDBY) SHALL BE ENABLED. BOILER AND SYSTEM FLOW SHALL BE PROVED BY MEANS OF A FLOW SWITCH INSTALLED IN THE PRIMARY AND SECONDARY LOOPS TO PROVE FLOW. EACH BOILER IS CAPABLE OF MODULATING ITS FIRING RATE.

3. EACH BOILER HAS ITS OWN SEPARATE BOILER (PRIMARY) CIRCULATION PUMP. PUMPS 10-BP-1 AND 10-BP-2 SHALL BE CONSTANTLY POWERED. EACH BOILER'S ON-BOARD CONTROLLER WILL SEND A 0 – 10 VDC SIGNAL TO ITS OWN VARIABLE SPEED ELECTRONICALLY COMMUTATED MOTOR (ECM) BOILER PUMP (10-BP-1 AND 10-BP-2) IN ORDER TO MAINTAIN A MINIMUM DELTA T (SET BY THE INSTALLER) ACROSS THE BOILER HEAT EXCHANGER REGARDLESS OF THE BOILER MODULATION RATE AS WELL AS REDUCE THE NUMBER OF HIGH LIMIT LOCKOUTS WHEN THE FLOW IN THE PRIMARY LOOP IS EXTREMELY LOW.

4. THE LEAD BOILER RECEIVES A "CALL FOR HEAT" FROM THE SUPPLY HEADER MOUNTED TEMPERATURE SENSOR. THE LEAD BOILER WILL RESPOND TO THE REQUIRED RATE OF MODULATION TO MAINTAIN TARGET SETPOINT, ALLOWED TO RUN UP TO 100% (ADJUSTABLE) INPUT AS NECESSARY TO MEET DEMAND. SHOULD THE LEADER BOILER AT 100% FIRING RATE BE UNABLE TO EITHER DECREASE OR TO SATISFY THE HEAT DEMAND, THE LAG BOILER WILL BE STAGED ON.

5. THE LEAD BOILER CONTINUES TO FIRE AT 100%, WHILE THE LAG BOILER FIRES TO THE REQUIRED MODULATION RATE TO MAINTAIN SETPOINT. AT ANY TIME, THE BOILER PLANT APPROACHES THE TARGET SETPOINT, THE BOILERS WILL MODULATE DOWNWARD AND SHUT DOWN IN REVERSE ORDER OF HAVING BEEN CALLED INTO OPERATION, UNTIL SUCH TIME AS THE LEADER BOILER CAN CARRY THE HEATING LOAD AND ALSO SHUTS DOWN IF HEAT DEMAND HAS BEEN SATISFIED.

6. ROTATION OF THE BOILERS OCCURS THROUGH THE LEAD BOILER ON-BOARD CONTROL SYSTEM. THE "LEAD" BOILER IN THE SEQUENCE CHANGES EVERY 24 HOURS (NON-ADJUSTABLE).

7. ALARMS SHALL BE FURNISHED FROM THE BOILER CONTROL PANEL TO THE BUILDING MONITORING AND CONTROL SYSTEM (BMS) CENTRAL MONITORING STATION.

U. SECONDARY HOT WATER CIRCULATION PUMPS WITH VARIABLE FREQUENCY DRIVES (10-CP-1 AND 10-CP-2)

1. PROVIDE START/STOP CONTROL AND SPEED CONTROL FOR THE HOT WATER PUMPS VARIABLE FREQUENCY DRIVES.

2. INSTALL VARIABLE FREQUENCY DRIVES WITH "HAND-OFF-AUTO" SWITCHES AND PILOT LIGHTS FOR EACH PUMP 10-CP-1 AND 10-CP-2.

3. THE SCHEDULING AND OPERATION OF THE VARIABLE FREQUENCY DRIVES SHALL BE CONTROLLED BY A PRESSURE DIFFERENTIAL SENSOR LOCATED 2/3RDS OF THE DISTANCE FROM THE PUMP TO THE FURTHEST HEATING DEVICE IN THE SUPPLY PIPING.

4. THE PUMPS SHALL BE CONTROLLED IN A DUTY/STANDBY CONFIGURATION. PUMPS SHALL BE ENABLED FROM THE BOILER CONTROL CIRCUIT VIA A PUMP SEQUENCER. WHEN THE OUTDOOR AIR TEMPERATURE IS 60°F OR BELOW (ADJUSTABLE), THE BOILER CONTROL SHALL ENABLE THE PUMP SEQUENCER TO ENABLE, EXERCISE, AND ROTATE 10-CP-1 AND 10-CP-2 OPERATION.

5. ONCE THE SEQUENCER ENABLES A PUMP TO OPERATE, THE FLOW WILL ACTIVATE A FLOW SWITCH TO CONFIRM PROPER OPERATION. THE PUMP SEQUENCER ALLOWS A TIME DELAY FOR DETECTING A FLOW PROOF SIGNAL ONCE A PUMP CONTACT IS TURNED ON. THE AMOUNT OF TIME IS ADJUSTABLE FROM 10 TO 30 SECONDS THROUGH A DIP SWITCH. IF A FLOW PROOF SIGNAL IS NOT PRESENT WITHIN THE SELECTED TIME, THE CONTROL TURNS OFF THE FIRST PUMP CONTACT AND TURNS ON THE SECOND PUMP CONTACT. AN ALERT CONTACT WOULD THEN BE ACTIVATED TO INDICATE THE FAILURE TO THE ATC SYSTEM.

6. THE PUMP SEQUENCER SHALL AUTOMATICALLY CHANGE THE OPERATING SEQUENCE OF THE PUMPS BASED ON EQUAL RUN TIME ROTATION. EQUAL RUN TIME ROTATION IS BASED ON PUMP RUNNING HOURS AND ALLOWS FOR EQUAL USAGE OF BOTH PUMPS. THE PUMP SEQUENCER USES THE FREQUENCY OF ROTATION DIAL TO SET THE ROTATION OF THE PUMPS. THE CONTROLLER ROTATES THE OPERATING SEQUENCE OF THE PUMPS WHEN THE PUMPS ARE OFF. WHEN THE LEAD PUMP IS RUNNING CONTINUOUSLY, THE CONTROL WAITS FOR UP TO 12 HOURS TO ROTATE THE OPERATING SEQUENCE OF THE PUMPS.

7. WITH THE H-O-A SWITCH IN THE "HAND" POSITION THE PUMPS SHALL RUN CONTINUOUSLY. WITH THE SWITCH IN THE "OFF" POSITION THE PUMP SHALL NOT RUN. WITH THE SWITCH IN THE "AUTO" POSITION THE PUMP SHALL RUN UNDER THE CONTROL OF THE BOILER CONTROL CIRCUITS AND THE RESPECTIVE VARIABLE FREQUENCY DRIVE. THE VARIABLE FREQUENCY DRIVE SHALL MODULATE THE SPEED OF THE RESPECTIVE PUMPS 10-CP-1 AND 10-CP-2 IN RESPONSE TO A DIFFERENTIAL PRESSURE SENSOR SIGNAL.

8. THE DUTY PUMP VARIABLE FREQUENCY DRIVE SHALL START AT LOW SPEED AND SLOWLY MODULATE UP TO THE LOWEST SPEED THAT WILL MAINTAIN THE REMOTE DIFFERENTIAL PRESSURE SENSOR SET POINT AND SHALL MODULATE DOWN AS THE PRESSURE DIFFERENTIAL IS INCREASED. THE RECOMMENDED STARTING SET POINT FOR THE DIFFERENTIAL PRESSURE SENSOR IS 10 PSI. THE FINAL PRESSURE DIFFERENTIAL SETTING SHALL BE DETERMINED BY THE BALANCING CONTRACTOR AND THE THAT WILL PROVIDE FULL FLOW TO THE MOST REMOTE HEATING OUTPUT DEVICE WITH MINIMUM EXCESS PRESSURE.

9. WITH THE SPEED OF THE VARIABLE FREQUENCY DRIVE BELOW 25% ON THE DUTY PUMP 10-CP-1 OR 10-CP-2, THE DIFFERENTIAL PRESSURE BYPASS VALVE SHALL MODULATE TO MAINTAIN A DIFFERENTIAL PRESSURE OF 2 PSI (ADJUSTABLE) ABOVE THE PUMP DIFFERENTIAL PRESSURE SET POINT TO ALLOW FOR 20% FLOW THROUGH THE DUTY PUMP.

V. MAKEUP AIR DEHUMIDIFICATION UNIT AND CONDENSER:
(10-DH-2 & 10-COND-2 AND 10-EF-8 TOILET/ LOCKER EXHAUST)

1. THE SEQUENCE IS REVERSIBLE UNLESS OTHERWISE NOTED.

2. THE DEHUMIDIFIER SHALL OPERATE WITH ITS OWN FACTORY PROVIDED CONTROLS TO MAINTAIN SPACE HUMIDITY LEVEL AND TEMPERATURE. THE DEHUMIDIFIER CONTROL PANEL SHALL INTERFACE WITH THE BUILDING'S ATC CONTROL PANEL. ALL CONTROL WIRING BETWEEN THE DH, THE REMOTE CONDENSER, VENDOR SUPPLIED SENSORS AND EQUIPMENT, ROOM AND DUCT HUMIDISTATS AND THERMOSTATS TO/FROM THE DEHUMIDIFIER CONTROL PANEL SHALL BE BY THE ATC CONTRACTOR.

3. THE DEHUMIDIFIER INDOOR UNIT SHALL RUN BASED ON A TIME CLOCK. WHEN THE DEHUMIDIFIER IS OPERATING THE TOILET EXHAUST FAN (10-EF-8) SHALL RUN. SUPPLY AIR SHALL BE CONTROLLED TO 70 DEGREES F (ADJUSTABLE) AND WINTER MINIMUM OF 68 DEGREES F (ADJUSTABLE).

4. UPON START-UP OF THE 10-DH-2 INDOOR UNIT, THE OUTDOOR AIR INTAKE (10-MD-14A) AND RETURN AIR DAMPERS (10-MD-14B) SHALL BE SET TO THE MINIMUM OUTDOOR AIR POSITION. THE SYSTEM OCCUPIED/ UNOCCUPIED MODES SHALL BE CONTROLLED BY A TIME CLOCK WHICH SHALL ALSO CONTROL THE TOILET EXHAUST FAN 10-EF-8.

5. OCCUPIED MODE –IN THE OCCUPIED CYCLE THE SUPPLY FAN SHALL RUN CONTINUOUSLY, THE OUTDOOR AIR INTAKE DAMPER AND RETURN DAMPERS SHALL BE POSITIONED FOR THE MINIMUM OUTSIDE AIR POSITION.

SUMMER –

WHEN THE SUPPLY DUCT TEMPERATURE IS ABOVE 70 DEGREES F (ADJUSTABLE), THE UNIT SHALL OPERATE TO MAINTAIN THE "NORMAL" SUPPLY DUCT TEMPERATURE OF 70 DEGREES F (ADJUSTABLE).

WINTER –

DUCT HEATING COIL: WHEN THE OUTSIDE AIR TEMPERATURE IS 60 DEGREES F OR LOWER (ADJUSTABLE) THE ASSOCIATED DUCT MOUNTED HEATING COIL SHALL BE ENABLED. THE DUCT MOUNTED TEMPERATURE SENSOR ACTING THROUGH THE CONTROLLER, SHALL MODULATE THE TWO-WAY CONTROL VALVE TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT 70 DEGREES F (ADJUSTABLE).

6. UNOCCUPIED MODE – IN THE UNOCCUPIED CYCLE THE SYSTEM SHALL BE OFF, THE OUTDOOR AIR INTAKE DAMPER SHALL BE CLOSED AND EXHAUST FAN 10-EF-8 SHALL BE OFF.

7. SAFETIES:

a. IN THE OCCUPIED MODE WHEN THE SUPPLY DUCT MOUNTED TEMPERATURE SENSOR SENSES A TEMPERATURE ABOVE 80 DEGREES F (ADJ) OR BELOW 60 DEGREES F (ADJ) AFTER START UP FLOWS HAVE BEEN ESTABLISHED APPROXIMATELY 5 MINUTES, THE CONTROLLER SHUT DOWN THE DEHUMIDIFIER'S SUPPLY FAN AND CLOSE ITS OUTDOOR AIR DAMPER, SHUT DOWN THE ASSOCIATED CONDENSER AND EXHAUST FAN 10-EF-8 AND TRANSMIT A TROUBLE ALARM SIGNAL TO THE ATC SYSTEM AND A "HVAC SYSTEM TROUBLE ALARM" TO THE PLANT SCADA.

b. DUCT SMOKE DETECTOR: WHEN THE SUPPLY OR RETURN AIR DUCT MOUNTED SMOKE DETECTOR SENSES SMOKE; THE CONTROLLER SHALL SHUT DOWN THE DEHUMIDIFIER'S SUPPLY FAN AND CLOSE THE OUTDOOR AIR DAMPER, SHUT DOWN THE ASSOCIATED EXHAUST FAN AND TRANSMIT AN ALARM SIGNAL TO THE ATC SYSTEM. IN ADDITION, WHEN THE DUCT SMOKE DETECTOR SENSES SMOKE A SIGNAL SHALL ALSO BE SENT TO THE BUILDING FIRE ALARM PANEL WIRING TO THIS PANEL BY DIVISION 16.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SEQUENCES III

SHEET NUMBER

00 M-008

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M00 M-008.DWG
LAST UPDATE: Tuesday, January 28, 2020 9:50:30 AM
PLOT DATE: Tuesday, January 28, 2020 3:55:21 PM

SEQUENCES (CONT.)

W. LAB –MAKE UP AIR DEHUMIDIFIER 10–DH–1 & 10–COND–1, 10––HC–11
FUME HOOD EXHAUST FANS 10–EF–10 & 11
ROOM PRESSURIZATION FAN 10–EF–12

1. THE DEHUMIDIFIER SHALL OPERATE WITH ITS OWN FACTORY PROVIDED CONTROLS TO MAINTAIN SPACE HUMIDITY LEVEL AND TEMPERATURE. THE DEHUMIDIFIER CONTROL PANEL SHALL INTERFACE WITH THE BUILDING'S ATC CONTROL PANEL. ALL CONTROL WIRING BETWEEN THE DH, THE REMOTE CONDENSER, DUCT HEATING COIL AND CONTROL VALVE, VENDOR SUPPLIED SENSORS AND EQUIPMENT, ROOM AND DUCT HUMIDISTATS AND THERMOSTATS TO/FROM THE DEHUMIDIFIER CONTROL PANEL SHALL BE BY THE ATC CONTRACTOR.

2. UPON START–UP OF THE DEHUMIDIFIER UNIT, THE DAMPERS SHALL BE POSITIONED TO THE MINIMUM OUTDOOR AIR POSITION.

3. THE OA DAMPER SHALL MODULATE TO PROVIDE ADDITIONAL OA WHEN EITHER OR BOTH OF THE FUME HOODS ARE OPERATING. SEE FUME HOOD OPERATION BELOW FOR ADDITIONAL REQUIREMENTS.

4. FUME HOOD EXHAUST FANS 10–EF–10 & 11 SHALL BE SWITCHED ON OR OFF AS NEEDED. WHEN EACH FUME HOOD EXHAUST FAN IS SIGNALED TO START ITS ASSOCIATED DISCHARGE MOTOR OPERATED DAMPER SHALL OPEN.

5. OCCUPIED MODE –IN THE OCCUPIED CYCLE THE DEHUMIDIFIER SUPPLY FAN SHALL RUN CONTINUOUSLY, THE OUTDOOR AIR INTAKE DAMPER SHALL BE AT MINIMUM POSITION, OR AS REQUIRED FOR FUME HOOD OPERATION SEE TABLE BELOW, AND THE RETURN AIR DAMPER SHALL BE OPEN.

   a. IN THE OCCUPIED CYCLE THE DEHUMIDIFIER SUPPLY FAN SHALL RUN CONTINUOUSLY TO MAINTAIN THE ROOM TEMPERATURE SET POINT (75°F ADJUSTABLE)

6. UNOCCUPIED MODE – IN THE UNOCCUPIED MODE THE SUPPLY FAN SHALL RUN WHEN THE SPACE TEMPERATURE IS BELOW THE HEATING NIGHT SET BACK TEMPERATURE OF 55 DEGREES F (ADJUSTABLE). THE OUTDOOR AIR INTAKE DAMPER SHALL BE CLOSED AND THE RETURN AIR DAMPER SHALL BE OPEN. WHEN THE SPACE TEMPERATURE IS SATISFIED, THE FAN SHALL STOP.

7. SAFETIES:

   a. WHEN THE DUCT SMOKE DETECTOR SENSES SMOKE, THE SUPPLY FAN SHALL BE SHUT DOWN AND THE OUTSIDE AIR AND RETURN AIR DAMPERS SHALL CLOSE.

DAMPER TABLE

EQUIP.	OA DAMPER	RA DAMPER	EA DAMPER
10–DH–1	10–MD–13A	10–MD–13B	––
NORTH FUME HOOD 10–EF–10	–––	–––	10–MD–10
SOUTH FUME HOOD 10–EF–11	–––	–––	10–MD–11

OA REQUIREMENTS

NORTH ADA HOOD	500 CFM
SOUTH HOOD	810 CFM
BOTH HOODS OPERATING	1,310 CFM
NO HOODS OPERATING	100 CFM

8. 10–EF–12: THE LAB AREA SHALL BE KEPT SLIGHTLY NEGATIVE RELATIVE TO THE ADJACENT CORRIDOR. THIS SYSTEM SHALL OPERATE CONTINUOUSLY. THE DIFFERENTIAL PRESSURE SENSOR SHALL ENSURE THE LAB IS 0.1 INCHES WC NEGATIVE (ADJUSTABLE) RELATIVE TO THE ADJACENT CORRIDOR. THE 0 TO 10 VOLT PRESSURE SENSOR SIGNAL CONTROLLED EXHAUST FAN ECM MOTOR 10–EF–12 SHALL MODULATE TO ENSURE THE DIFFERENTIAL PRESSURE IS MAINTAINED.

X. WICK DISTRIBUTION VAULT (30–EF–1):

THE FAN SHALL BE OPERATED BY AN "ON–OFF" SWITCH PROVIDED BY ELECTRICAL. HEAT IS NOT PROVIDED FOR OPERATION OF THE FAN.

TABLE OF RESPONSIBILITY - ELECTRICAL, HVAC & PLUMBING

	ELEMENT	HVAC CONTRACTOR	PLUMBING CONTRACTOR	ELECTRICAL CONTRACTOR
1	480VAC, AND 120VAC POWER TO EXHAUST FANS AND PUMPS			X
2	480VAC, AND 120VAC POWER TO HVAC AND PLUMBING CONTROL PANELS			X
3	HVAC AND PLUMBING CONTROL SYSTEM COMPONENTS (INCLUDING, BUT NOT LIMITED TO PANELS, COMPUTER WORK STATIONS, CONTROLLERS, RELAYS, TRANSFORMERS, SENSORS, SWITCHES, CONTROL VALVES, CONTROL DAMPERS, DAMPER ACTUATORS, ETC.)	X	X	
4	CONTROL WIRING, CONDUIT AND CONNECTIONS REQUIRED FOR THE CONTROL OF THE HVAC AND PLUMBING SYSTEMS (INCLUDING, BUT NOT LIMITED TO, CONTROL WIRING FOR THERMOSTATS, SENSORS, RELAYS, CONTROL VALVES, CONTROLLERS, SWITCHES, DAMPERS, HVAC NETWORK CABLE, ETC.)	X	X	
5	POWER WIRING, CONDUIT AND CONNECTIONS REQUIRED FOR POWERING ANCILLARY HVAC, ATC AND PLUMBING DEVICES (INCLUDING, BUT NOT LIMITED TO, DEVICE POWER FOR 120VAC/24VDC DAMPERS, THERMOSTATS, CONTROL VALVES, RELAYS, SENSORS, ETC.)	X	X	
6	ADJUSTING CONTROL SET POINTS FOR HVAC AND PLUMBING SYSTEM EQUIPMENT	X	X	
7	ALL SPECIFIED HVAC/PLUMBING CONTROLS TESTING AND REMEDIAL WORK TO MAKE SYSTEMS FULLY FUNCTIONAL AND OPERATE IN ACCORDANCE WITH THE CONTROL SEQUENCES	X	X	
8	CONTROL WIRING BETWEEN MCC AND SCADA FOR HVAC AND PLUMBING ALARMS			X
9	CONTROL WIRING BETWEEN MCC AND HVAC (ATC) AND PLUMBING CONTROL PANELS			X
10	CONTROL WIRING BETWEEN HVAC (ATC) AND PLUMBING CONTROL PANELS AND PLANT SCADA			X
11	CONTROL WIRING BETWEEN HVAC CONTROL PANELS (ATC) AND FIRE ALARM CONTROL PANEL			X
12	CONTROL WIRING BETWEEN DUCT MOUNTED SMOKE DETECTORS AND ASSOCIATED AIR HANDLING UNIT STARTERS AT MCC AND FIRE ALARM SYSTEM			X
13	CONTROL WIRING BETWEEN SPRINKLER SYSTEM DEVICES AND FIRE ALARM SYSTEM			X
14	MCC LOCATED MOTOR STARTERS AND VFDS FOR 3ϕ HVAC EXHAUST FANS & PLUMBING EQUIPMENT			X
15	STAND ALONE 1ϕ/3ϕ MOTOR STARTERS & VFDS FOR HVAC AND PLUMBING EQUIPMENT			X
16	STAND ALONE VFDS AND CONTROLS FOR BOILER SYSTEM PUMPS	X		
17	SAFTEY DISCONNECT SWITCHES AT HVAC AND PLUMBING EQUIPMENT (BESIDES DISCONNECTS FOR CABINET UNIT HEATERS (CUH) THAT SHALL BE SUPPLIED INTEGRAL TO HEATER UNIT)			X
18	PROVIDE DUCT MOUNTED SMOKE DETECTORS			X
19	INSTALL DUCT MOUNTED SMOKE DETECTORS	X		

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

SEQUENCES IV

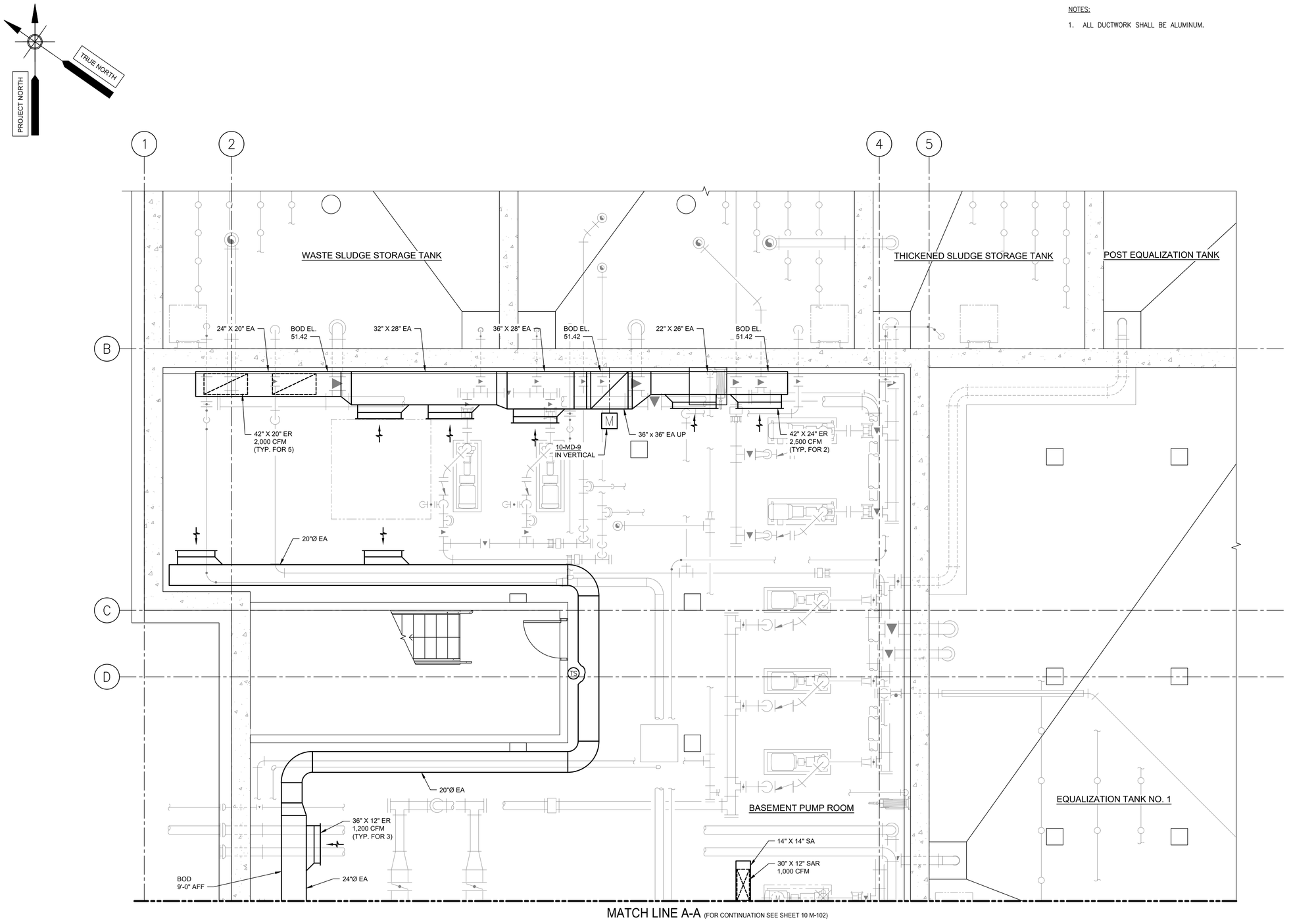
SHEET NUMBER

00 M-009

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\00 M-009.DWG
LAST UPDATE: Monday, January 27, 2020 4:38:29 PM
PLOT DATE: Tuesday, January 28, 2020 3:35:34 PM

NOTES:

1. ALL DUCTWORK SHALL BE ALUMINUM.



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-101.DWG
LAST UPDATE: Monday, January 13, 2020 11:34:06 AM
PLOT DATE: Tuesday, January 28, 2020 3:35:50 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-27-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4"=1'-0"

DISCIPLINE

HVAC

SHEET TITLE

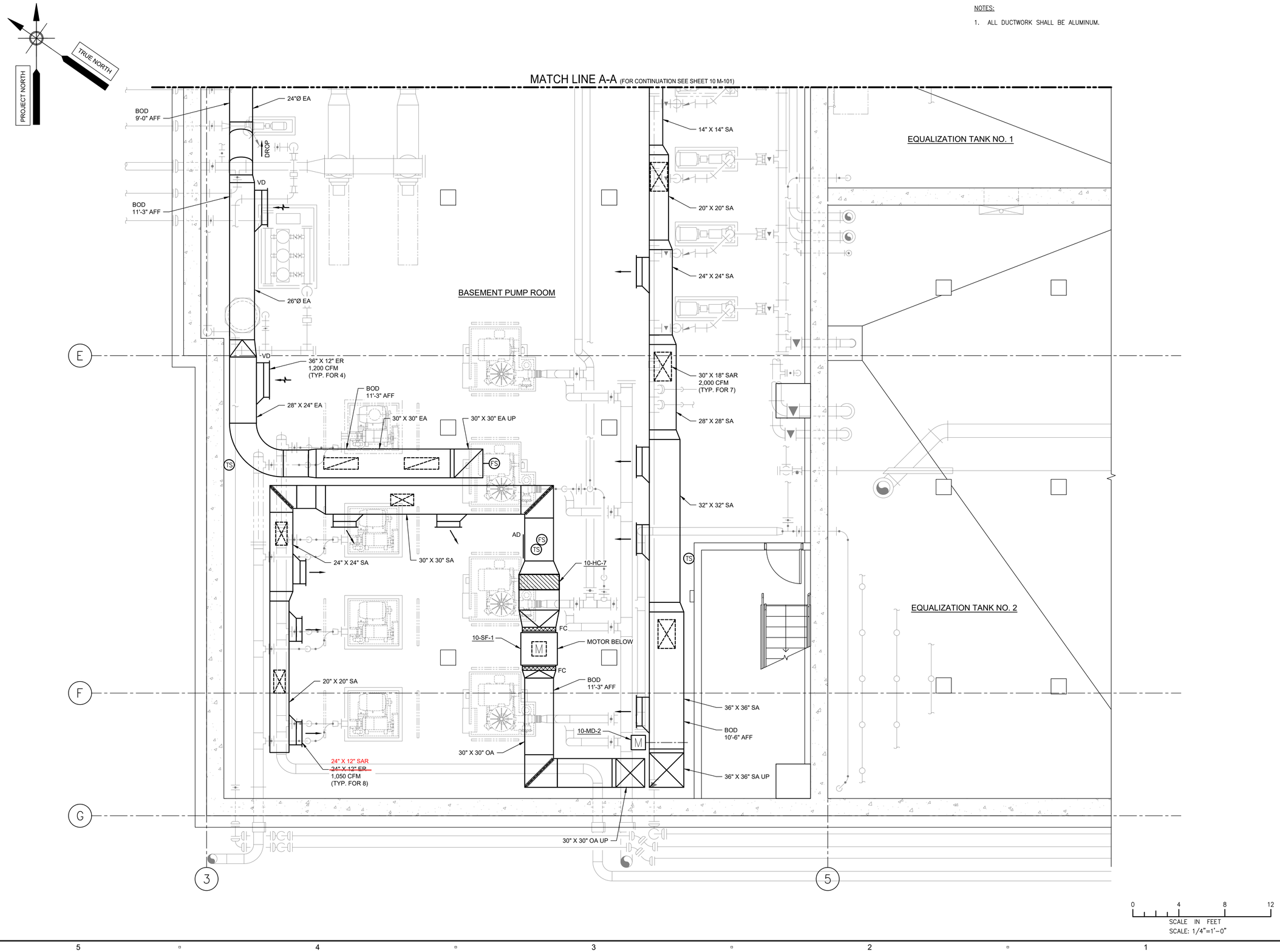
WWTF LOWER PLAN I - DUCTWORK

SHEET NUMBER

10 M-101

NOTES:

1. ALL DUCTWORK SHALL BE ALUMINUM.



0 4 8 12

SCALE IN FEET

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

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	**A. CASAVANT**
Drawn By:	**B. SANTOSUOSSO**
Dept Check:	**C. GALLIGAN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**1/4"=1'-0"**

DISCIPLINE

HVAC

SHEET TITLE

WWTF LOWER PLAN II - DUCTWORK

SHEET NUMBER

10 M-102

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-102.DWG
LAST UPDATE: Monday, January 13, 2020 11:06:38 AM
PLOT DATE: Tuesday, January 28, 2020 3:36:03 PM

NOTES:

1. ALL DUCTWORK IS ALUMINUM EXCEPT CHEMICAL ROOMS & TRUCK BAY SHALL BE FRP.
2. REGISTERS IN FRP DUCTWORK SHALL BE STAINLESS STEEL.

3'-4" X 3'-0" OA LOUVER W/ INSECT SCREEN

3'-4" X 3'-0" OA LOUVER W/ INSECT SCREEN

10-MD-3A

10-MD-3B

10-SF-3A

10-SF-3B

10-HC-1A

10-HC-1B

BOTTOM OF DUCT HEATER @ 13'-10"

BOD 14'-3"

22" X 22"

30" X 12" SAR 1,200 CFM (TYP. FOR 2)

20"Ø

TRUCK BAY
FF EL. 57.00

16"Ø

30" X 12" SAR 1,175 CFM

10-UH-1

10-UH-2

12" DEEP SEPARATED PLENUM

10-EF-3 (ABOVE) CONNECT TO 2'-0" X 1'-0" LOUVER

10-EF-4 (BELOW) CONNECT TO 2'-0" X 2'-0" LOUVER

10"Ø EA-DN TERMINATE 12"AFF COVER OPENING W/ 1/2" X 1/2" PVC COATED WIRE MESH SCREEN (425 CFM)

36" X 36" EA UP THROUGH ROOF. DOWN THRU FLOOR PROVIDE FIRE DAMPERS W/ ACCESS DOORS AT FLOOR AND CEILING

18" X 10" ER 425 CFM

2'-0" X 3'-0" EA LOUVER W/ BIRD SCREEN

CHASE ABOVE

10-EF-2 (IN RISER)

10-UH-4

10"Ø

BOD 10'-7" AFF

14"Ø

10-EF-5

TO 10-UH-4

GARAGE

SODIUM HYPOCHLORITE/ PACL ROOM

2'-0" X 3'-0" OA LOUVER W/ BIRD SCREEN

BOD 12'-9" AFF

12" X 8" SAR 390 CFM (TYP. FOR 2)

12" X 8" SAR 375 CFM (TYP. FOR 2)

10-MD-4

10-FLT-1

10-SF-4

10-HC-2

10-HC-3

10-SF-5

10-MD-5

2'-0" X 2'-0" OA LOUVER W/ INSECT SCREEN

10-UH-3

CO DETECTION SYSTEM PANEL

10-CUH-1

10-EF-12

PROVIDE HOODED WALL CAP W/ BIRD SCREEN. SIMILAR TO GREENHECK WC-10

STAIRS

18" X 18" SAD 10"Ø NECK 2-WAY 300 CFM

BOD 15'-1" AFF

CORRIDOR

BOD 10'-0" AFF

10-CUH-2

6"Ø OA

PROVIDE HOODED WALL CAP SIMILAR TO GREENHECK WC-6 W/ INSECT SCREEN

2'-0" X 2'-0" OA LOUVER W/ INSECT SCREEN

10-HP-1

10-HP-2 (ABOVE)
10-HP-3 (MIDDLE)
10-HP-4 (BELOW)

24" X 24" X 18" DEEP PLENUM CONNECT TO TOP OF LOUVER. BLANK OFF LOWER PORTION OF LOUVER

UP

BOD 13'-10" AFF

10"Ø

CONTROL ROOM

10-DAC-1

10"Ø EA

24" X 24" RG
10" X 10" NECK

10" X 10" CLEAR DUCT SIZE INTERNALLY LINED TO REDUCE SOUND TRANSMISSION

BOD 11'-4" AFF

MATCH LINE A-A (FOR CONTINUATION SEE SHEET 10 M-104)

10-MD-6

8"Ø

TO 10-UH-5

22" X 6" ER 230 CFM (TYP. FOR 2)

POLYMER ROOM

10-SF-6

10-HC-4

12" X 6" SAR 230 CFM (TYP. FOR 2)

14"Ø

BOD 10'-4" AFF

8" X 6"

10-UH-5

BOD 10'-7" AFF

12"Ø

10"Ø

12" X 8" ER 170 CFM

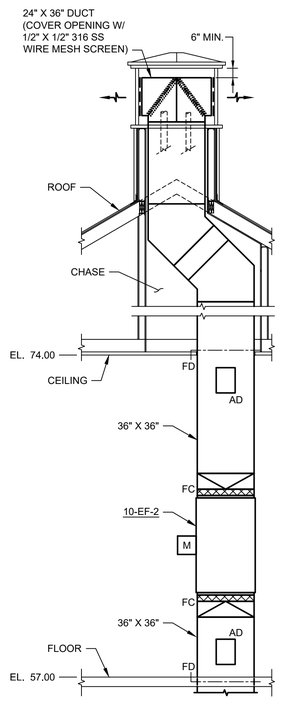
SODA ASH ROOM

8" X 6" SAR 170 CFM

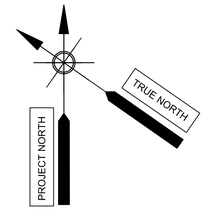
10-EF-6

10-UH-6

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



SECTION 1
SCALE: 1/4"=1'-0"
10 M-103



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN GREEN
MECHANICAL
No.36728
REGISTERED
PROFESSIONAL ENGINEER
1.17.20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4"=1'-0"

DISCIPLINE

HVAC

SHEET TITLE

WWTF UPPER PLAN I - DUCTWORK

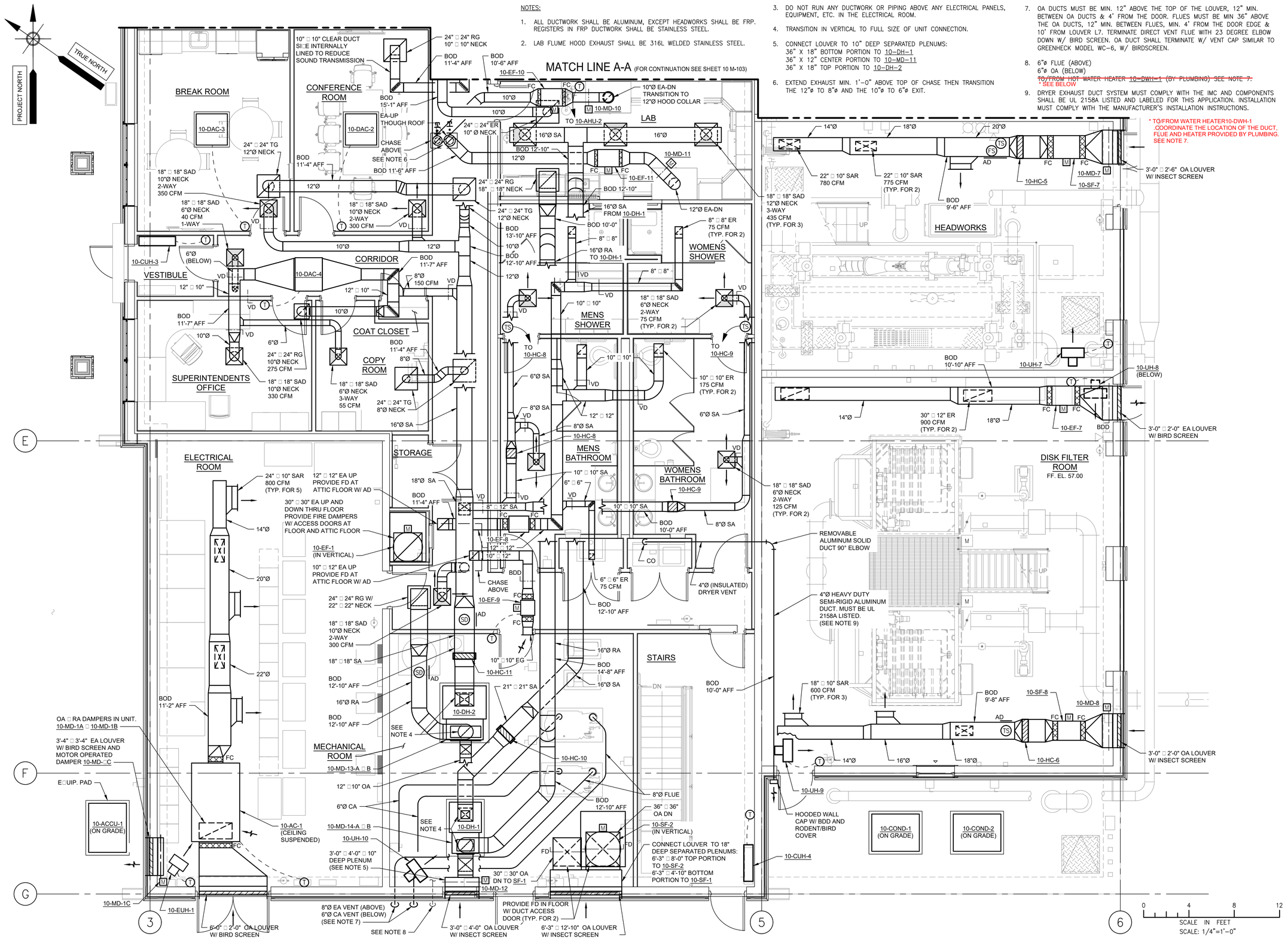
SHEET NUMBER

10 M-103

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M-10 M-103.DWG
LAST UPDATE: Monday, January 27, 2020 6:06:05 PM
PLOT DATE: Tuesday, January 28, 2020 3:36:22 PM

NOTES:

1. ALL DUCTWORK SHALL BE ALUMINUM, EXCEPT HEADWORKS SHALL BE FRP. REGISTERS IN FRP DUCTWORK SHALL BE STAINLESS STEEL.
2. LAB FLUME HOOD EXHAUST SHALL BE 316L WELDED STAINLESS STEEL.
3. DO NOT RUN ANY DUCTWORK OR PIPING ABOVE ANY ELECTRICAL PANELS, EQUIPMENT, ETC. IN THE ELECTRICAL ROOM.
4. TRANSITION IN VERTICAL TO FULL SIZE OF UNIT CONNECTION.
5. CONNECT LOUVER TO 10" DEEP SEPARATED PLENUMS:
   36" X 18" BOTTOM PORTION TO 10-DH-1
   36" X 12" CENTER PORTION TO 10-MD-11
   36" X 18" TOP PORTION TO 10-DH-2
6. EXTEND EXHAUST MIN. 1'-0" ABOVE TOP OF CHASE THEN TRANSITION THE 12"ø TO 8"ø AND THE 10"ø TO 6"ø EXIT.
7. OA DUCTS MUST BE MIN. 12" ABOVE THE TOP OF THE LOUVER, 12" MIN. BETWEEN OA DUCTS & 4' FROM THE DOOR. FLUES MUST BE MIN 36" ABOVE THE OA DUCTS, 12" MIN. BETWEEN FLUES, MIN. 4' FROM THE DOOR EDGE & 10' FROM LOUVER L7. TERMINATE DIRECT VENT FLUE WITH 23 DEGREE ELBOW DOWN W/ BIRD SCREEN. OA DUCT SHALL TERMINATE W/ VENT CAP SIMILAR TO GREENHECK MODEL WC-6, W/ BIRDSCREEN.
8. 6"ø FLUE (ABOVE)
   6"ø OA (BELOW)
   ~~TO/FROM HOT WATER HEATER 10-DWH-1 (BY PLUMBING) SEE NOTE 7.~~
   * SEE BELOW
9. DRYER EXHAUST DUCT SYSTEM MUST COMPLY WITH THE IMC AND COMPONENTS SHALL BE UL 2158A LISTED AND LABELED FOR THIS APPLICATION. INSTALLATION MUST COMPLY WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ALAN J. GREEN MECHANICAL No. 36726 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
11-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4"=1'-0"

DISCIPLINE

HVAC

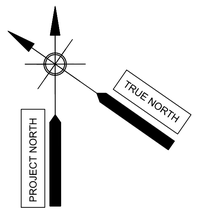
SHEET TITLE

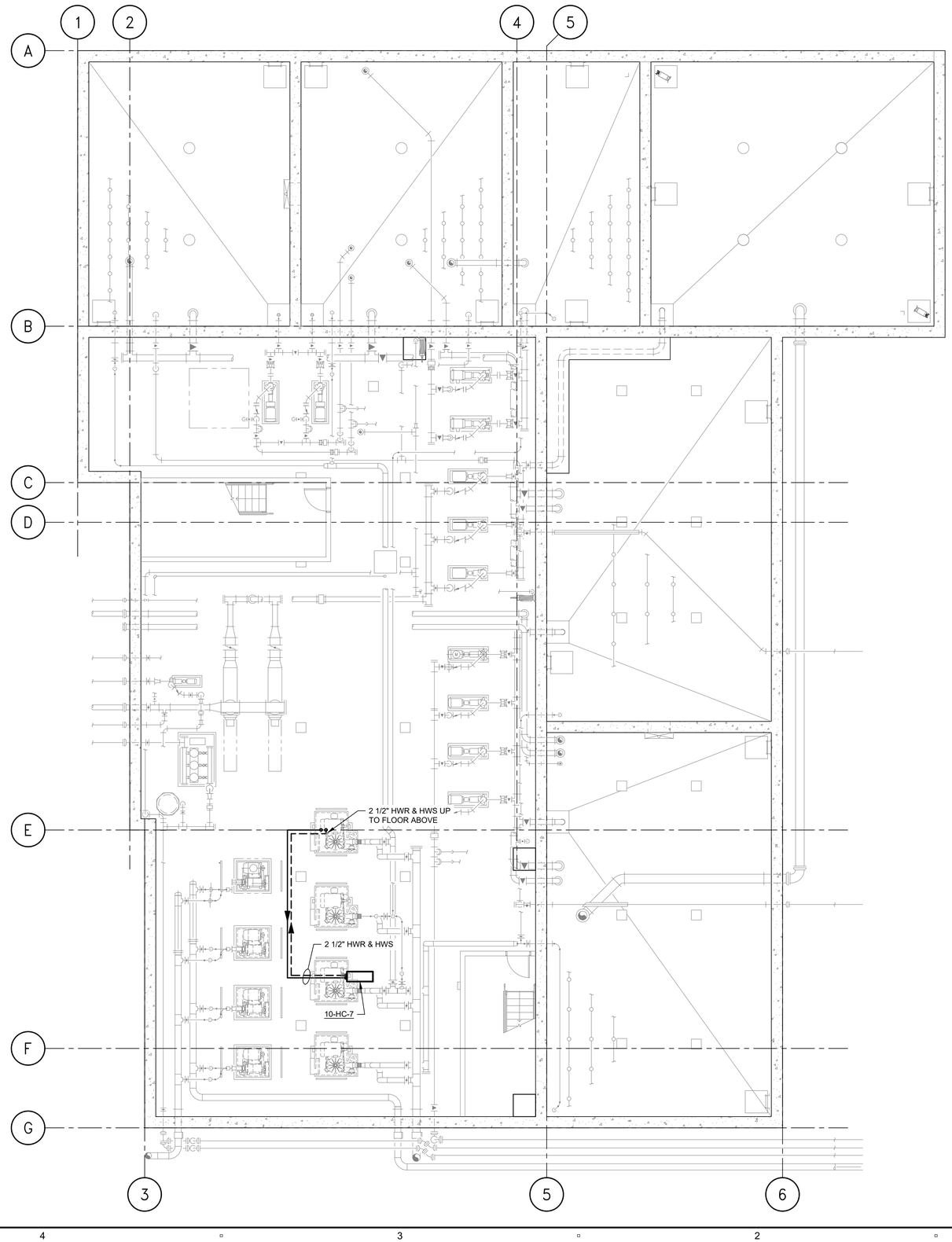
WWTF UPPER PLAN II - DUCTWORK

SHEET NUMBER

10 M-104

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-104.DWG
LAST UPDATE: Wednesday, January 29, 2020 10:56:17 AM
PLOT DATE: Wednesday, January 29, 2020 11:04:34 AM





0 8 16 24
SCALE IN FEET
SCALE: 1/8"=1'-0"

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
7-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. CASAVANT**
Drawn By:	**B. SANTOSUOSSO**
Dept Check:	**C. GALLIGAN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**1/8"=1'-0"**

DISCIPLINE

HVAC

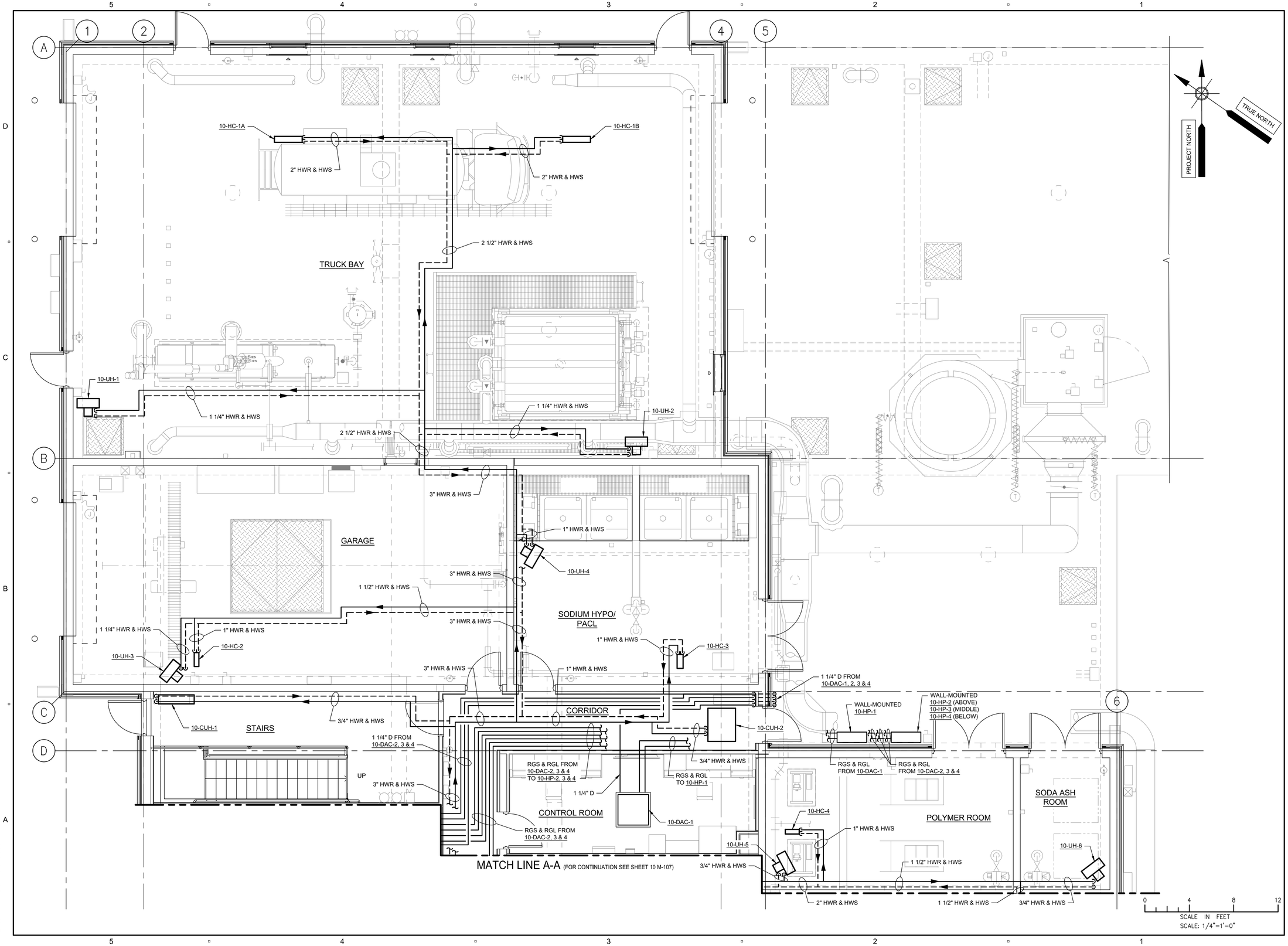
SHEET TITLE

WWTF LOWER PLAN - PIPING

SHEET NUMBER

10 M-105

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-105.DWG
LAST UPDATE: Monday, January 13, 2020 1:32:39 PM
PLOT DATE: Tuesday, January 28, 2020 3:36:55 PM



AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN GREEN MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4"=1'-0"

DISCIPLINE

HVAC

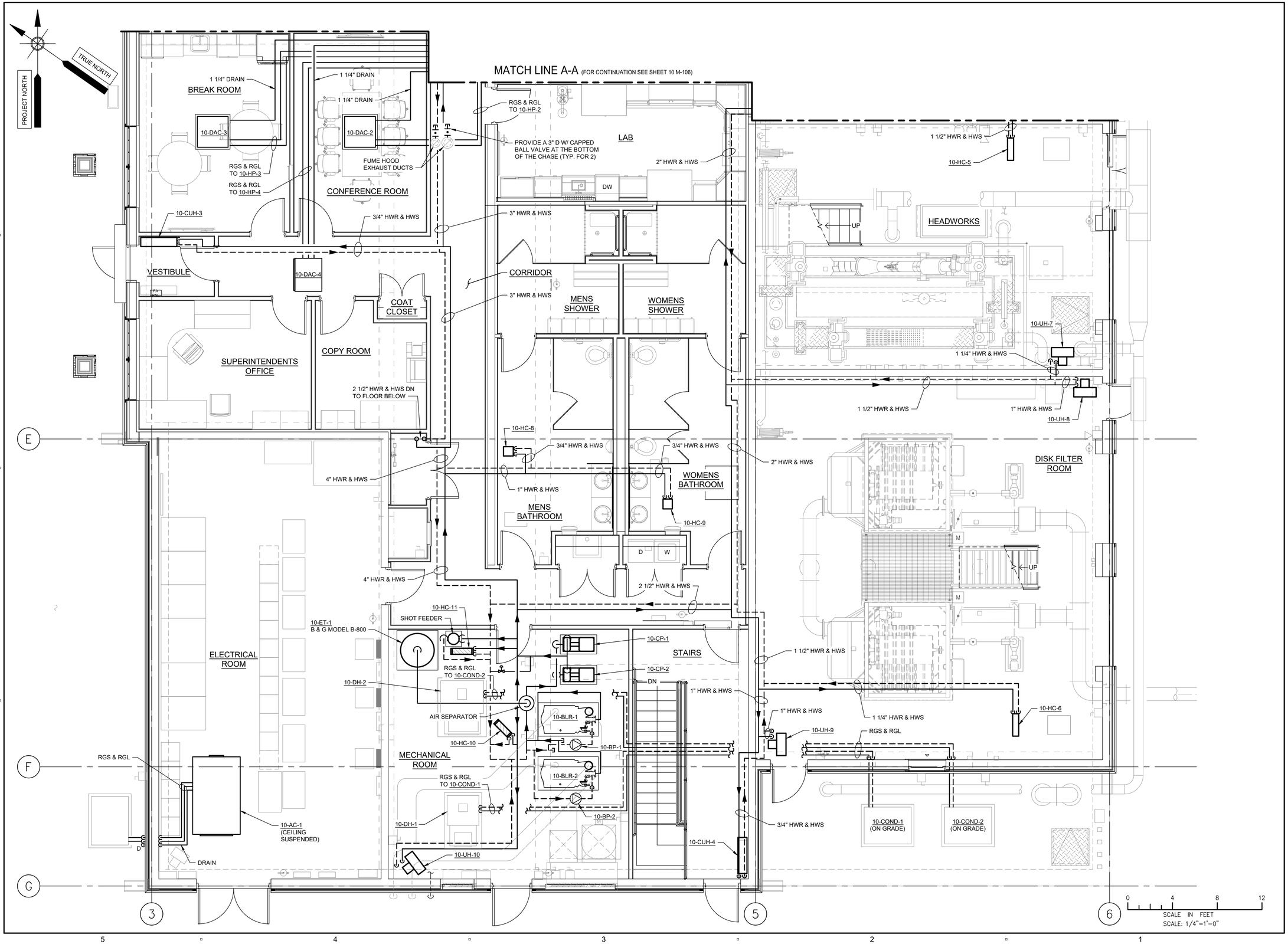
SHEET TITLE

WWTF UPPER PLAN I - PIPING

SHEET NUMBER

10 M-106

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-106.DWG
LAST UPDATE: Monday, January 13, 2020 2:48:26 PM
PLOT DATE: Tuesday, January 28, 2020 3:37:11 PM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\10 M-107.DWG
LAST UPDATE: Tuesday, January 28, 2020 3:40:57 PM
PLOT DATE: Tuesday, January 28, 2020 3:42:12 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER
1-27-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/4"=1'-0"

DISCIPLINE

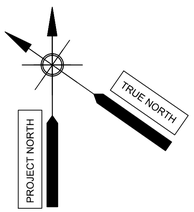
HVAC

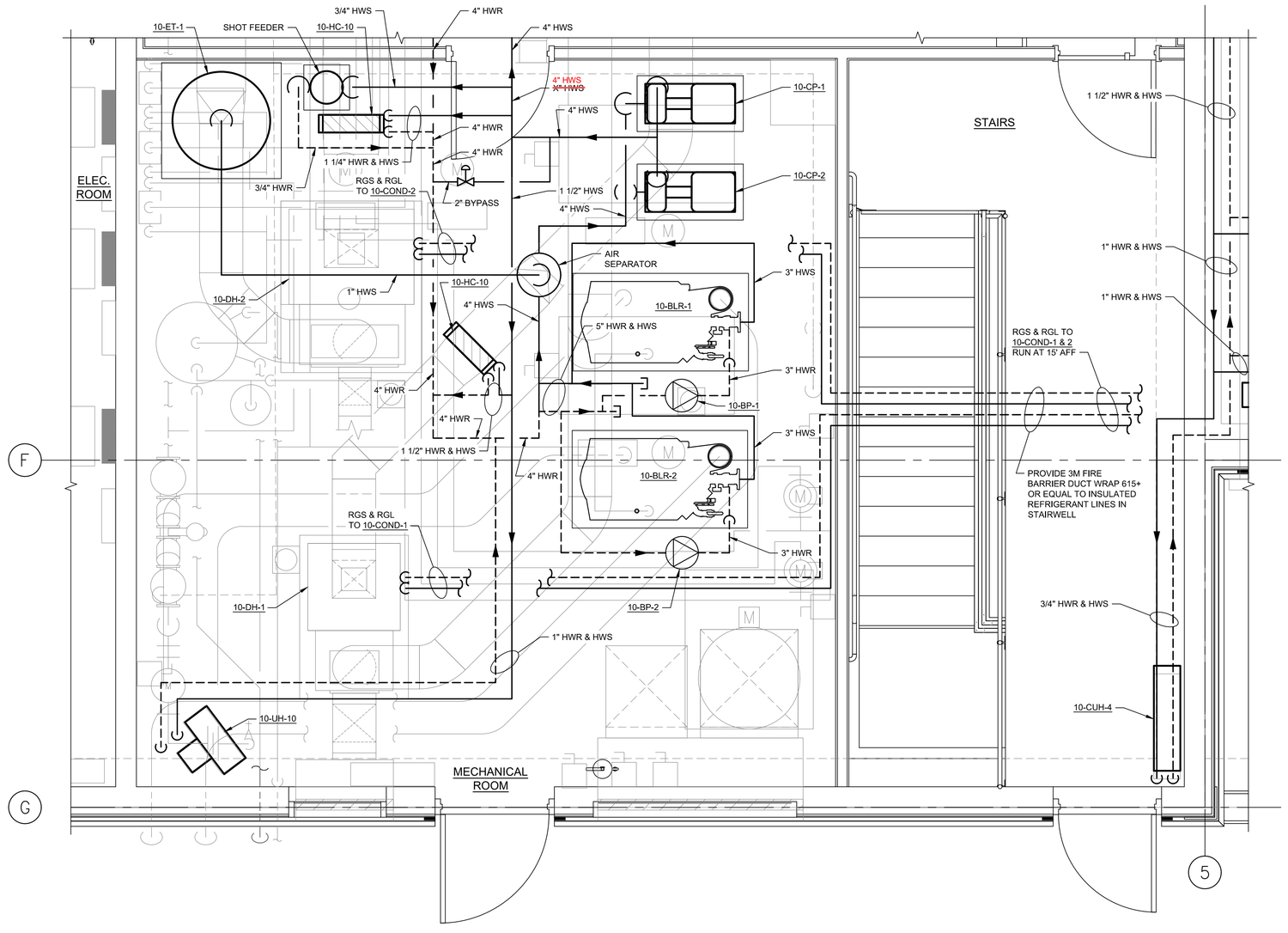
SHEET TITLE

WWTF UPPER PLAN II - PIPING

SHEET NUMBER

10 M-107





0 2 4 6
SCALE IN FEET
SCALE: 1/2"=1'-0"

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M-10 M-108.DWG
LAST UPDATE: Tuesday, January 28, 2020 3:43:47 PM
PLOT DATE: Tuesday, January 28, 2020 3:44:27 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/2"=1'-0"

DISCIPLINE

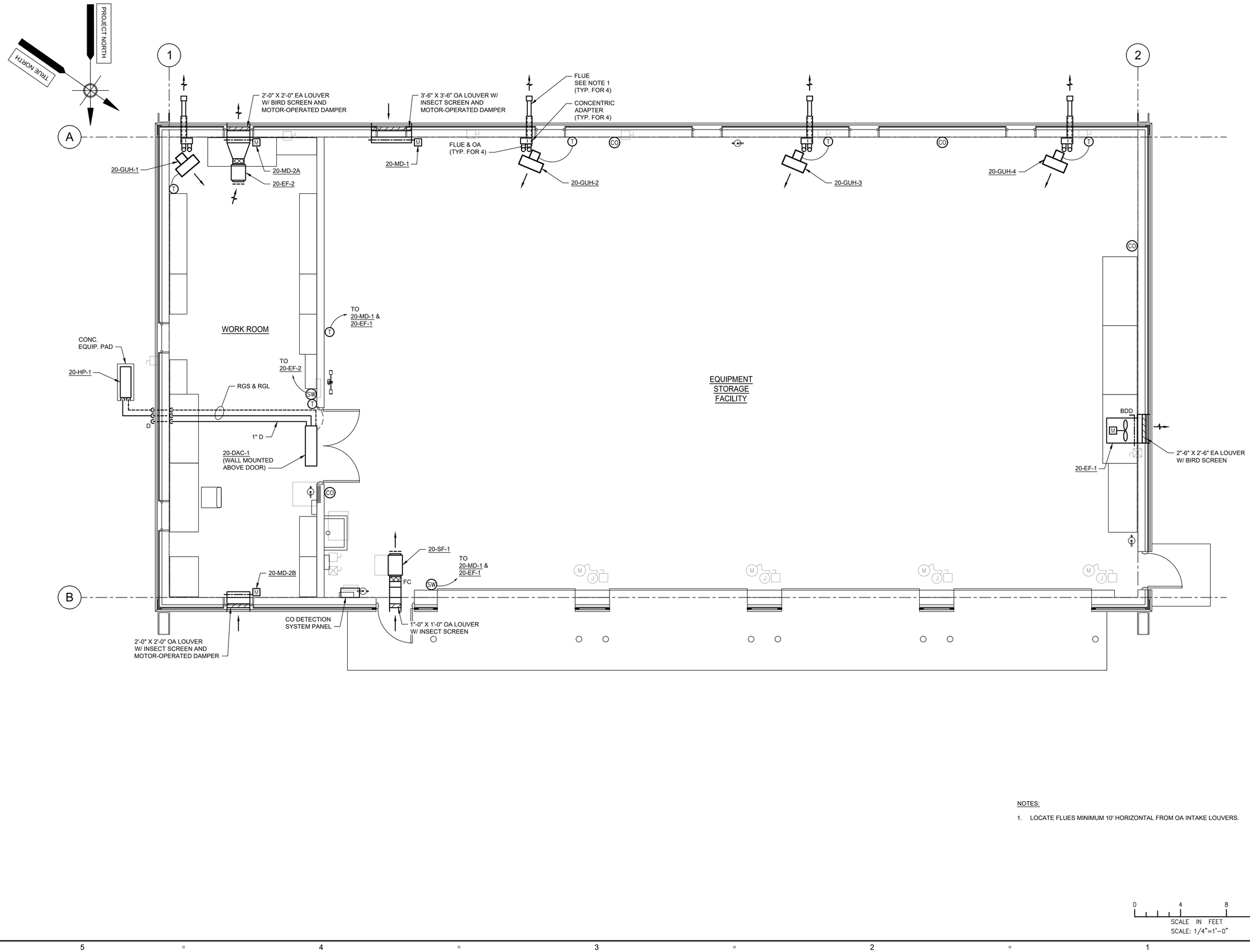
HVAC

SHEET TITLE

WWTF MECHANICAL ROOM - PART PLAN

SHEET NUMBER

10 M-108



NOTES:

1. LOCATE FLUES MINIMUM 10' HORIZONTAL FROM OA INTAKE LOUVERS.

0 4 8 12
SCALE IN FEET
SCALE: 1/4"=1'-0"

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\20 M-101.DWG
LAST UPDATE: Monday, January 13, 2020 3:41:40 PM
PLOT DATE: Tuesday, January 28, 2020 3:37:52 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. CASAVANT**
Drawn By:	**B. SANTOSUOSSO**
Dept Check:	**C. GALLIGAN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**1/4"=1'-0"**

DISCIPLINE

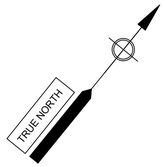
HVAC

SHEET TITLE

EQUIPMENT STORAGE FACILITY - GRADE LEVEL PLAN

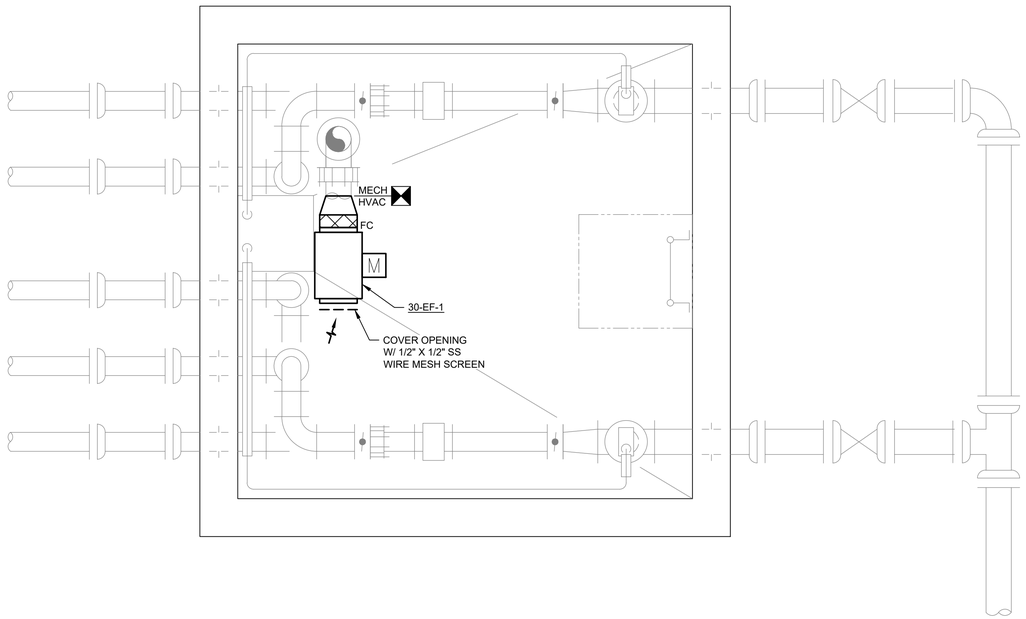
SHEET NUMBER

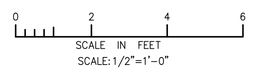
20 M-101



NOTES:

1. LOCATE 30-EF-1 AS HIGH AS POSSIBLE.





AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. CASAVANT**
Drawn By:	**B. SANTOSUOSSO**
Dept Check:	**C. GALLIGAN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**1/2"=1'-0"**

DISCIPLINE

HVAC

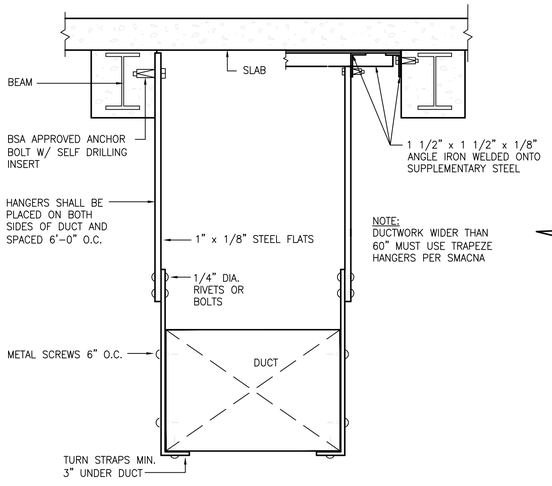
SHEET TITLE

WICK DISTRIBUTION VAULT - PLAN

SHEET NUMBER

30 M-101

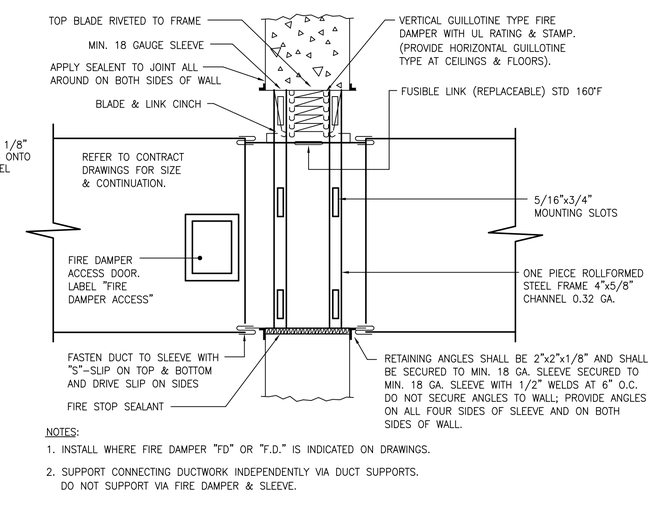
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\30 M-101.DWG
LAST UPDATE: Monday, January 13, 2020 3:02:58 PM
PLOT DATE: Tuesday, January 28, 2020 3:38:03 PM



NOTE: TRAPEZE HANGERS MAY BE USED

DUCTWORK STRAP HANGER 60" WIDTH MAX.

NTS

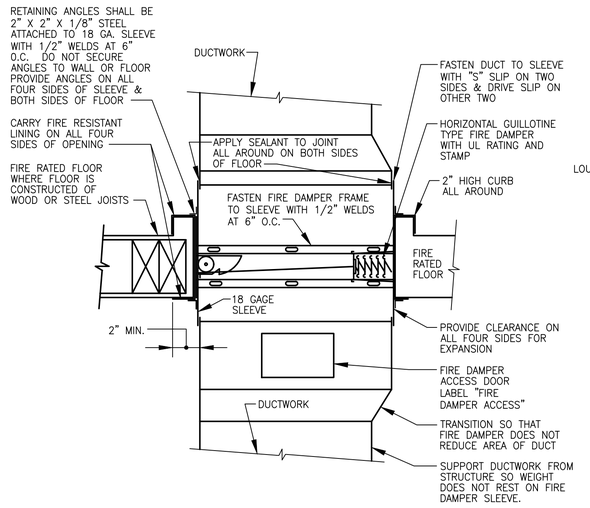


NOTES:

1. INSTALL WHERE FIRE DAMPER "FD" OR "F.D." IS INDICATED ON DRAWINGS.
2. SUPPORT CONNECTING DUCTWORK INDEPENDENTLY VIA DUCT SUPPORTS. DO NOT SUPPORT VIA FIRE DAMPER & SLEEVE.

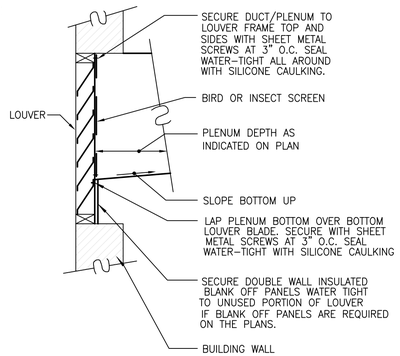
SECTION THROUGH FIRE DAMPER AT FIRE RATED WALL

NTS



FIRE DAMPER AT FIRE RATED FLOOR

NTS



LOUVER – PLENUM / DUCT CONNECTION DETAIL

NTS

45° BRANCH CONNECTION

NTS

ELBOW DEPTH H REQUIRED	NUMBER OF TIE RODS
0"–12"	NONE
13"–20"	1
21"–48"	2
49"–64"	3
65"–80"	4

CONSTRUCTION OF RADIUS ELBOWS

NTS

CONSTRUCTION OF TRANSITION AND 45° ELBOWS

NTS

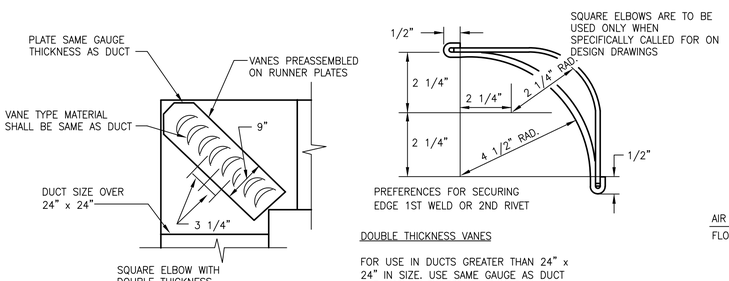
INLINE FAN DETAIL

NTS

NOTE:
FAN SHALL BE REMOVABLE FOR CLEANING OF LOUVERS AND SCREEN.

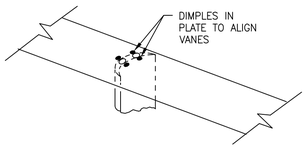
WALL MOUNTED PROPELLER FAN

NTS



DOUBLE THICKNESS VANES

FOR USE IN DUCTS GREATER THAN 24" x 24" IN SIZE. USE SAME GAUGE AS DUCT BUT NOT TO EXCEED 20 GAUGE.

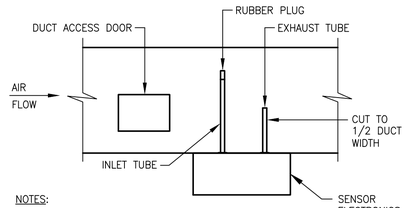


NOTES:

PROVIDE 1 STAY FOR DUCTS 72" TO 120" WIDE & 2 STAYS AT 1/3 POINTS FOR 120" & ABOVE.

TURNING VANE DETAIL

NTS

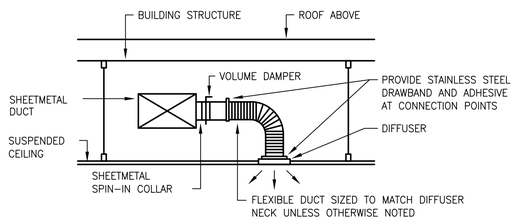


NOTES:

1. HOLE IN INLET TUBE TO FACE STREAM.
2. MOUNT HOUSING IN VERTICAL OR HORIZONTAL PLANE; ANGULAR MOUNTING NOT PERMITTED.
3. TUBES TO RUN PARALLEL TO FLOOR.

DUCT SMOKE DETECTOR DETAIL

NTS

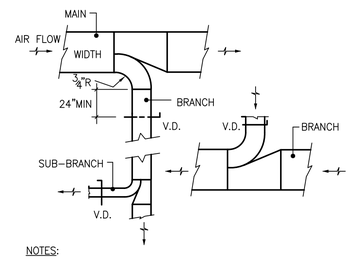


NOTES:

1. 4 FT MAX. FOR LENGTH OF FLEX DUCT.
2. FLEX DUCT SHALL BE FULLY EXTENDED AND CUT TO LENGTH.

TYPICAL SUPPLY DIFFUSER TAKE-OFF DETAIL

NTS



NOTES:

1. PROVIDE VOLUME DAMPERS AT ALL BRANCH CONNECTIONS SERVING SUPPLY, RETURN AND EXHAUST AIR MAINS.
2. PROVIDE VOLUME DAMPERS AT EACH SUB-BRANCH CONNECTIONS SERVING RETURN AND EXHAUST AIR BRANCHES.
3. PROVIDE VOLUME DAMPER AT EACH SUPPLY AIR SUB-BRANCH CONNECTION & SUBSEQUENT SUB-BRANCH CONNECTIONS.
4. VOLUME DAMPERS AT DUCTS OVER 2 SQ.FT. SHALL BE OF THE OPPOSED BLADE TYPE UNLESS OTHERWISE NOTED.

DUCT BRANCH AND SUB-BRANCH CONNECTIONS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

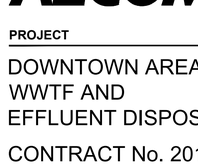
OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

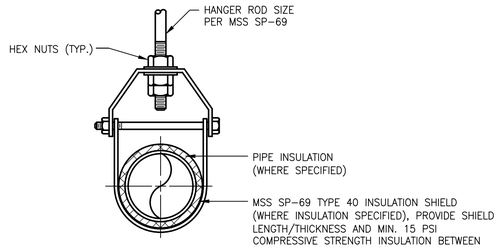
SHEET TITLE

DETAILS I

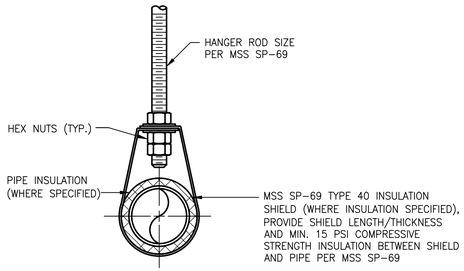
SHEET NUMBER

99 M-501

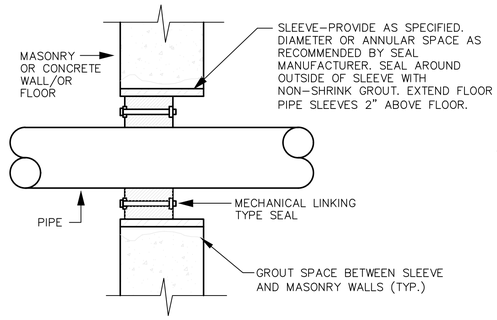
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\99 M-501.DWG
LAST UPDATE: Wednesday, October 02, 2019 3:20:33 PM
PLOT DATE: Tuesday, January 28, 2020 3:38:11 PM



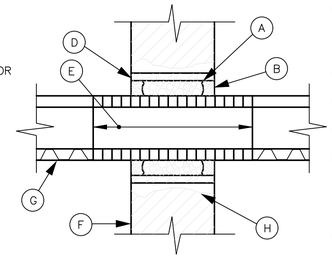
MSS SP-69 TYPE 1 PIPE HANGER DETAIL
(FOR 2" AND LARGER PIPE SIZES - EXCLUDING INSULATION)
NTS



MSS SP-69 TYPE 7 PIPE HANGER DETAIL
(FOR 1-1/2" AND SMALLER PIPE SIZES - EXCLUDING INSULATION)
NTS



EXTERIOR WALL/FLOOR PIPE PENETRATION DETAIL
NTS



(A) PROVIDE MIN. 1/4" CLEARANCE BETWEEN PIPE SLEEVE OR CORE DRILLED HOLE AND PIPE. PACK CLEARANCE SPACE WITH SPECIFIED INSULATION

(B) PROVIDE SPECIFIED END SEALANT

(C) NOT USED

(D) SLEEVE-PROVIDE AS SPECIFIED.

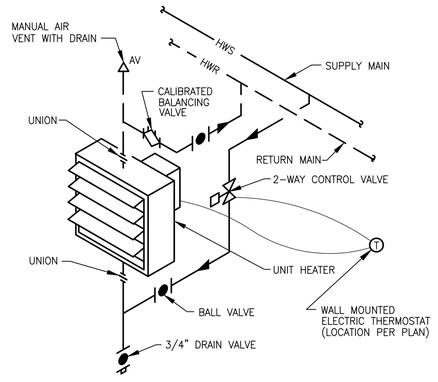
(E) CALCIUM SILICATE, CELLULAR GLASS, OR APPROVED EQUAL INSULATION THRU PENETRATION AND EXTENDED 2" ON BOTH SIDES OF WALL; PROVIDE METAL JACKET AS SPECIFIED OVER INSULATION

(F) WALL

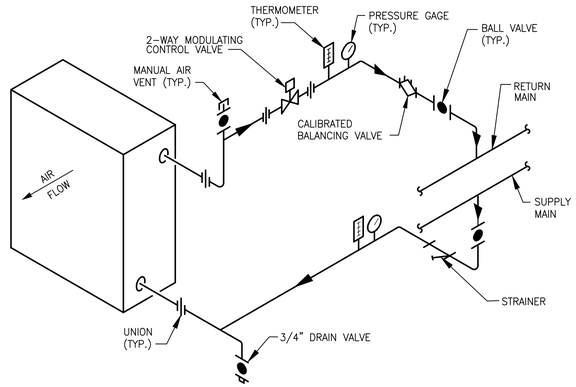
(G) SPECIFIED INSULATION

(H) GROUT SPACE BETWEEN SLEEVE AND MASONRY WALLS

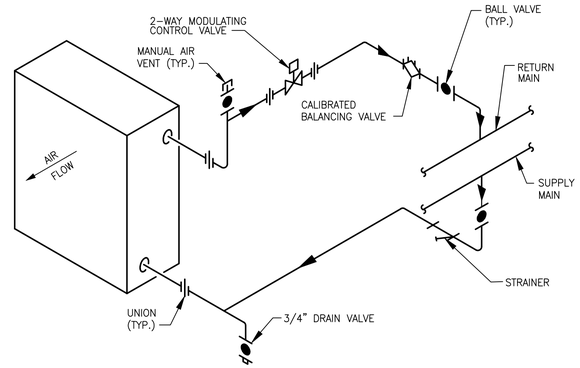
INTERIOR WALL PIPE PENETRATION DETAIL
(NOT FOR WATER TIGHT CONSTRUCTION)
NTS



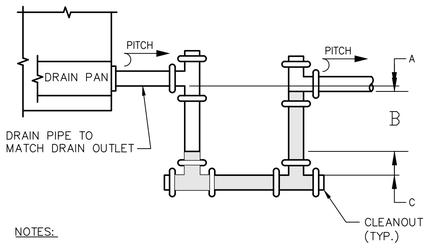
HOT WATER UNIT HEATER SCHEMATIC - DETAIL
NTS



HEATING HOT WATER COIL PIPING ARRANGEMENT
NTS



HOT WATER CABINET UNIT HEATER PIPING ARRANGEMENT
NTS



(A) THIS DIMENSION IN INCHES MUST BE GREATER THAN 1/2"

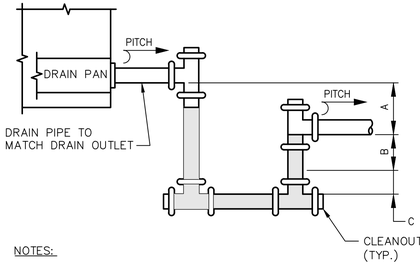
(B) THIS DIMENSION IN INCHES MUST BE GREATER THAN THE MAXIMUM FAN SUCTION STATIC PRESSURE IN INCHES WC (WITH DIRTY FILTERS, COILS, AND MAXIMUM AIR FLOW) PLUS 1/2".

(C) 1" WATER SEAL.

NOTES:

1. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAP.
2. PITCH DRAIN FOR PROPER RUNOFF.
3. MANUALLY PRIME FILL TRAP BEFORE START-UP TO FORM INITIAL DRAIN SEAL.
4. SUPPORT LENGTHY DRAIN LINES TO PREVENT SAG AND CONDENSATE OVERFLOW.

CONDENSATE TRAP DETAIL - BLOW THRU
NTS



A. THIS DIMENSION IN INCHES MUST BE GREATER THAN THE MAXIMUM FAN SUCTION STATIC PRESSURE IN INCHES WC (WITH DIRTY FILTERS, COILS, AND MAXIMUM AIR FLOW).

B. THIS DIMENSION IN INCHES MUST BE GREATER THAN 1/2 OF THE SAME MAXIMUM FAN SUCTION STATIC PRESSURE IN INCHES WC.

C. 1" WATER SEAL.

NOTES:

1. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAP.
2. PITCH DRAIN FOR PROPER RUNOFF.
3. MANUALLY PRIME FILL TRAP BEFORE START-UP TO FORM INITIAL DRAIN SEAL.
4. SUPPORT LENGTHY DRAIN LINES TO PREVENT SAG AND CONDENSATE OVERFLOW.

CONDENSATE TRAP DETAIL - DRAW THRU
NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

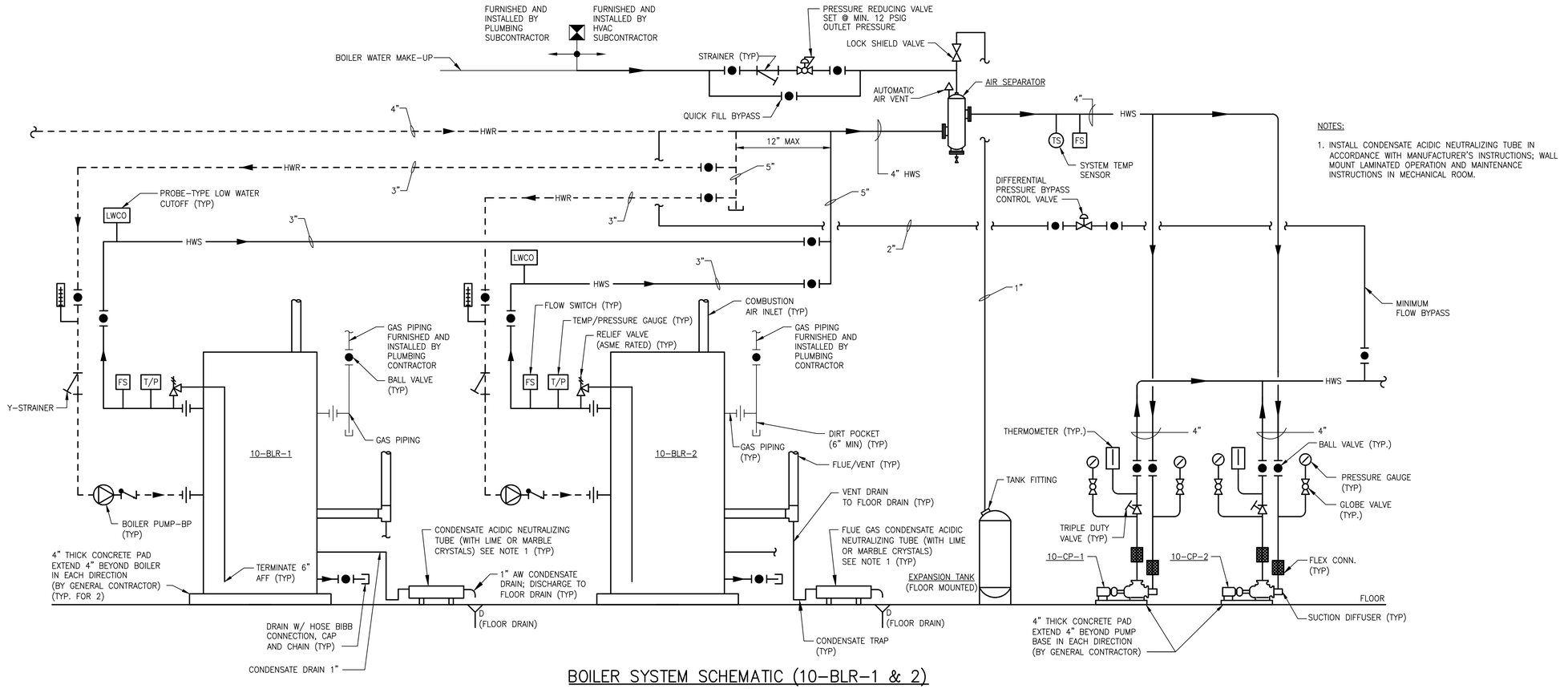
SHEET TITLE

DETAILS II

SHEET NUMBER

99 M-502

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M99 M-502.DWG
LAST UPDATE: Monday, January 20, 2020 5:02:05 PM
PLOT DATE: Tuesday, January 28, 2020 3:38:19 PM

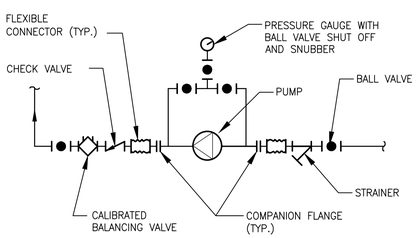


NOTES:

1. INSTALL CONDENSATE ACIDIC NEUTRALIZING TUBE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS; WALL MOUNT LAMINATED OPERATION AND MAINTENANCE INSTRUCTIONS IN MECHANICAL ROOM.

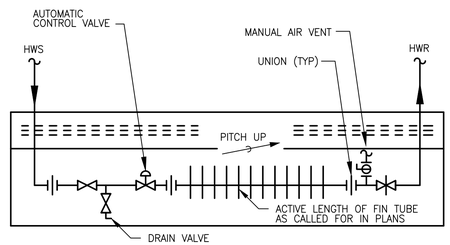
BOILER SYSTEM SCHEMATIC (10-BLR-1 & 2)

NTS



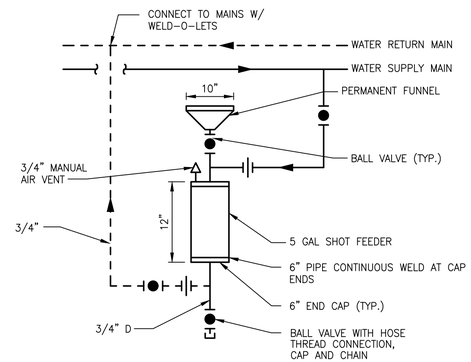
IN-LINE CENTRIFUGAL PUMP PIPING DETAIL

NTS



DOWNFLOW FINNED TUBE RADIATION PIPING DETAIL

NTS



CHEMICAL SHOT FEEDER

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1/7/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. CASAVANT
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

HVAC

SHEET TITLE

DETAILS III

SHEET NUMBER

99 M-503

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\M\99 M-503.DWG
LAST UPDATE: Tuesday, January 21, 2020 12:35:44 PM
PLOT DATE: Tuesday, January 28, 2020 3:38:27 PM

LEGEND

	BURIED PIPING
	ABOVE GROUND PIPING
D	DRAIN
W	WASTE
V	VENT
AW	ACID WASTE
AV	ACID VENT
TW1	TEMPERED WATER (POTABLE)
HW1	HOT WATER (POTABLE)
W1	COLD WATER (POTABLE)
W2	COLD WATER (NON-POTABLE)
HWR	HOT WATER RETURN (POTABLE)
TWR	TEMPERED WATER RETURN (POTABLE)
NG	NATURAL GAS
	PIPE DROP
	PIPE RISER
	GATE VALVE
	CHECK VALVE
	BALL VALVE
	BALL VALVE WITH BALANCING STOP
	PRESSURE REDUCING VALVE
FD	FLOOR DRAIN
FCO	FLOOR CLEANOUT
	EMERGENCY SHOWER AND EYE/FACE WASH
	EMERGENCY EYE/FACE WASH
	PRESSURE GAUGE WITH BALL VALVE SHUTOFF AND SNUBBER
	THERMOMETER
	STRAINER
	PITCH DOWN IN DIRECTION OF FLOW
	UNION
	END CAP
WHA	WATER HAMMER ARRESTOR
FS	FLOW SWITCH
	VALVE IN RISER
HB	HOSE BIBB
WH	WALL HYDRANT

LEGEND – MISCELLANEOUS

	NEW WORK (SHOWN DARK LINE)
	NEW WORK BY OTHERS (SHOWN LIGHT LINE)
	LIMIT OF WORK
	LIMIT OF MATERIAL

ABBREVIATIONS

AC	AIR COMPRESSOR	FCO	FLOOR CLEANOUT	PLC	PROGRAMMABLE LOGIC CONTROLLER
AD	ACCESS DOOR	FD	FLOOR DRAIN	PRV	PRESSURE REDUCING VALVE
AFF	ABOVE FINISHED FLOOR	FS	FLOW SWITCH	PSIG	POUNDS PER SQUARE INCH (GAUGE)
AFG	ABOVE FINISHED GRADE	FT	FOOT, FEET	PVC	POLYVINYLCHLORIDE
ARCH	ARCHITECTURAL	FWPS	FINISHED WATER PUMP STATION	PVDF	POLYVINYLIDENE
AVTR	ACID VENT THROUGH ROOF	GAL	GALLONS	RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
AV	ACID VENT	GC	GENERAL CONTRACTOR	RW	RAIN WASTE
AW	ACID WASTE	GCO	GRADE CLEANOUT (OUTDOOR)	RWPS	RAW WATER PUMP STATION
BP	BOOSTER PUMP	GPH	GALLONS PER HOUR	SAN	SANITARY
CA	COMPRESSED AIR	GPM	GALLONS PER MINUTE	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
CFH	CUBIC FEET PER HOUR	HB	HOSE BIB	SP	SUMP PUMP
℄	CENTER LINE	HP	HORSEPOWER	SPD	SUMP PUMP DISCHARGE
CI	CAST IRON	HW1	POTABLE HOT WATER	SST	STAINLESS STEEL
CO	CLEANOUT	HWR	HOT WATER RETURN	TP	TRAP PRIMER
CW	COLD WATER	IE	INVERT ELEVATION	TW1	POTABLE TEMPERED WATER
DB	DESIGN BUILDER	IN. WC.	INCHES WATER COLUMN	TWR	TEMPERED WATER RETURN
DCBFP	DOUBLE CHECK BACK FLOW PREVENTER	IW	INDIRECT WASTE	V	VENT
DCO	DANDY CLEANOUT	KW	KILOWATTS	VAC	VACUUM
DEG	DEGREE	LAV	LAVATORY	VP	VACUUM PUMP
DH	DRENCH HOSE	LPG	LIQUEFIED PETROLEUM GAS (PROPANE)	VFD	VARIABLE FREQUENCY DRIVE
DIA	DIAMETER	MAX	MAXIMUM	VTR	VENT THROUGH ROOF
DN	DOWN	MBH	THOUSAND BRITISH THERMAL UNITS	W	WASTE, BURIED WASTE
D	DRAIN	MFR	MANUFACTURER	W1	SERVICE COLD WATER
DIA	DIAMETER	MIN	MINIMUM	W2	NONPOTABLE COLD WATER
DWH	DOMESTIC WATER HEATER	NC	NORMALLY CLOSED	WC	WATER CLOSET
EFF	EFFICIENCY	NG	NATURAL GAS	WCO	WALL CLEANOUT
ES	EMERGENCY SHOWER	NTS	NOT TO SCALE	WH	WALL HYDRANT
EEW	EMERGENCY EYEWASH	OED	OPEN END DRAIN	WHA	WATER HAMMER ARRESTOR
EEW/DH	DUAL PURPOSE EMERGENCY EYEWASH/DRENCH HOSE	P	PLUMBING FIXTURE, PUMP	WTP	WATER TREATMENT PLANT
		PIT	PRESSURE INDICATING TRANSMITTER		
EWH	ELECTRIC WATER HEATER	PLBG	PLUMBING		
EL	ELEVATION				

GENERAL NOTES:

1. THE DRAWINGS ARE DIAGRAMMATIC ONLY TO SHOW THE SCOPE OF THE WORK INVOLVED. DO NOT SCALE DRAWINGS FOR FABRICATION PURPOSES. FINAL LOCATION OF EQUIPMENT AND PIPING SHALL BE DETERMINED IN FIELD. ANY WORK INSTALLED CONTRARY TO OR WITHOUT APPROVAL SHALL BE SUBJECT TO CHANGE. NO EXTRA COMPENSATION WILL BE ALLOWED.
2. PERFORM ALL WORK IN STRICT ACCORDANCE WITH LAWS, REGULATIONS, AND STANDARDS OF LOCAL, STATE AND FEDERAL GOVERNMENTS.
3. GIVE ALL NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK-CHARGES AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED TO PERFORM WORK.
4. COOPERATE AND COORDINATE WITH OTHER TRADES IN EXECUTING THE WORK. PERFORM WORK SO THAT PROGRESS OF ENTIRE PROJECT SHALL NOT BE DELAYED. PROVIDE INFORMATION TO OTHER TRADES AS REQUESTED. OBTAIN FINAL ROUGHING DIMENSIONS AS REQUIRED TO COMPLETE WORK.
5. SUBMIT SHOP DRAWINGS AND PRODUCT INFORMATION. NO WORK SHALL PROCEED WITHOUT WRITTEN APPROVAL ON EACH ITEM SCHEDULED, SPECIFIED AND/OR SHOWN ON PLAN.
6. PROVIDE PROPER ACCESS TO MATERIAL AND EQUIPMENT REQUIRING INSPECTION, MAINTENANCE OR SERVICE.
7. WHERE SUSPENDED CEILINGS ARE PROVIDED, RUN ALL EQUIPMENT AND PIPING CONCEALED ABOVE SUSPENDED CEILING. SEE ARCHITECTURAL DRAWINGS FOR SUSPENDED CEILING LOCATIONS.
8. PROVIDE ALL NECESSARY PIPING, EQUIPMENT AND SUPPORTS ETC. NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT NECESSARY TO PROVIDE COMPLETE AND WORKABLE SYSTEMS.

PLUMBING NOTES:

1. PIPING AND ACCESSORIES
   - A. PIPING SHALL FOLLOW THE GENERAL ROUTING INDICATED ON DRAWINGS. COORDINATE LOCATION WITH ALL OTHER PIPING, DUCTWORK, AND EQUIPMENT.
   - B. PROVIDE UNIONS IN CONNECTIONS TO EQUIPMENT FOR REPAIRS AND/OR REPLACEMENT. LOCATE BETWEEN SHUTOFF VALVES AND EQUIPMENT.
   - C. ALL SHUT-OFF VALVES AND WATER HAMMER ARRESTORS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.
   - D. PROVIDE PROPER DRAINAGE FOR ALL PIPING SYSTEMS. PITCH DOWN ALL HORIZONTAL DRAIN PIPING MIN. 1/4 INCH PER FOOT FOR 3" AND SMALLER. 1/8 INCH PER FOOT FOR 4" AND LARGER.
   - E. PROVIDE SEISMIC RESTRAINTS FOR PIPING AND EQUIPMENT WHERE REQUIRED BY THE BUILDING CODE.
   - F. MAINTAIN MAXIMUM HEADROOM. UNLESS OTHERWISE INDICATED, RUN ALL PRESSURIZED OVERHEAD HORIZONTAL PIPING MAXIMUM 12" BELOW ROOF STRUCTURAL MEMBERS. PIPING RUNNING ALONG WALLS MAY BE INSTALLED MIN. 8'-0" AFF. RUN ALL GRAVITY OVERHEAD HORIZONTAL PIPING AS HIGH AS POSSIBLE WHILE MAINTAINING REQUIRED PITCH.
   - G. PROVIDE FIRE STOP MATERIAL WHERE PIPING PENETRATES FIRE RATED WALLS.
   - H. VERIFY PLUMBING FIXTURE ROUGH-INS PRIOR TO START OF WORK.
   - I. PROVIDE ALL SERVICE WATER LINES, COLD WATER LINES, HOT WATER LINES, AND TEMPERED WATER LINES TO PLUMBING FIXTURES WITH ISOLATION VALVES.
   - J. LOCATE AND INSTALL WATER HAMMER ARRESTORS (WHA) PER PDI WH 201 REQUIREMENTS WHERE INDICATED ON DRAWINGS.
   - K. NO PORTION OF THE SANITARY DRAIN-WASTE-VENT SYSTEM INSTALLED UNDERGROUND SHALL BE LESS THAN TWO INCHES IN DIAMETER.
   - L. SANITARY PLUMBING VENTS THROUGH ROOF SHALL BE TERMINATED MINIMUM 18 INCHES ABOVE ROOF.
   - M. WITH THE EXCEPTION OF TRAP PRIMER PIPING, RUN ALL BURIED PIPING BENEATH, NOT IN, CONCRETE FLOOR SLABS. BURIED TRAP PRIMER PIPING SHALL BE RUN IN THE MIDDLE 1/3 OF THE CONCRETE FLOOR SLAB.
   - N. NO PLUMBING PIPING SHALL BE PERMITTED IN ELECTRICAL ROOM AND STAIRWELLS; NO GAS PIPING SHALL BE PERMITTED IN ELECTRICAL ROOM, CHEMICAL STORAGE AREA AND STAIRWELLS.
   - O. INSTALL DOMESTIC WATER HEATER INTAKE/EXHAUST PIPING IN ACCORDANCE WITH MFR INSTRUCTIONS. INSTALL DOMESTIC WATER HEATER CONDENSATE ACIDIC NEUTRALIZING TUBE IN ACCORDANCE WITH MFR INSTRUCTIONS.
   - P. MOUNT HOSE BIBBS 3'-0" AFF.
   - Q. PROVIDE DEEP SEAL TRAPS WITH MIN 4" SEAL FOR EACH FLOOR DRAIN.
   - R. ALL COPPER TUBING IN CORROSIVE SPACES SHALL BE PAINTED (INSULATED AND UNINSULATED).
   - S. PAINT ALL CAST IRON DRAIN-WASTE-VENT PIPING IN TANKS.
2. INSULATION
   - A. INSULATE ALL COLD WATER (W1) (W2), DOMESTIC HOT WATER (HW1) (HWR) AND EMERGENCY SHOWER/EYE/FACE WASH TEMPERED WATER (TW1) (TWR) PIPING.
   - B. INSULATE ALL HORIZONTAL SECTIONS OF ROOF DRAIN (RD) PIPING AND ROOF DRAIN BODIES.
   - C. INSULATE WATER COOLER DRAIN PIPING.
3. ELECTRICAL ENCLOSURES
   - A. ENCLOSURES SHALL MEAN ELECTRICAL EQUIPMENT ENCLOSURES AND ASSOCIATED CONDUIT.
   - B. ENCLOSURES SHALL BE NEMA TYPE 1 UNLESS OTHERWISE INDICATED IN AREA CLASSIFICATION SCHEDULE ON ELECTRICAL DRAWINGS.
4. FLASHING
   - A. ALL FLASHING OF PIPE PENETRATIONS THROUGH ROOF SHALL BE BY THE ROOFING SUBCONTRACTOR.
5. EQUIPMENT MOUNTING HEIGHTS UNLESS OTHERWISE INDICATED:
   - A. MIXING VALVES – 5'-0" AFF
   - B. BACKFLOW PREVENTERS – 3'-6" TO ℄
   - C. WALL HYDRANTS – 3'-0" AFG
   - D. PUMPS – 5'-0" AFF

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
9/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

SHEET TITLE

LEGENDS, GENERAL NOTES AND ABBREVIATIONS

SHEET NUMBER

00 P-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\00 P-001.DWG
LAST UPDATE: Wednesday, September 18, 2019 1:01:46 PM
PLOT DATE: Tuesday, January 28, 2020 12:44:23 PM

PLUMBING FIXTURE SCHEDULE

TAG NO.	MANUFACTURER & MODEL NUMBER	FIXTURE TYPE	FIXTURE DIMENSIONS (WHERE APPLICABLE)	WATER USAGE	SOIL OR WASTE	VENT	COLD WATER	HOT WATER	TEMPERED WATER	REMARKS
P-1	–	WATER CLOSET	N/A	1.28 GALLONS PER FLUSH	3"	2"	1"	–	–	(1)
P-2	–	URINAL	N/A	0.125 GALLONS PER FLUSH	2"	1 1/2"	3/4"	–	–	(2)
P-3	–	LAVATORY	MINIMUM OVERALL DIMENSIONS 20" WIDE X 17" FRONT TO REAR	0.5 GPM AT 60 PSIG FLOW PRESSURE	1 1/2"	1 1/2"	1/2"	1/2"	–	(3)
P-4	–	SHOWER	MINIMUM FOOTPRINT DIMENSIONS 36" X 36"	1.5 GPM AT 80 PSIG FLOW PRESSURE	2"	1 1/2"	1/2"	1/2"	–	(4)
P-5	–	KITCHEN SINK	MINIMUM DIMENSIONS 22" WIDE X 22" FRONT TO REAR X 7 1/2" DEEP	1.0 GPM AT 60 PSIG FLOW PRESSURE	2"	1 1/2"	1/2"	1/2"	–	(5)
P-6	–	SERVICE SINK	24" WIDE X 20" FRONT TO REAR	–	3"	2"	1/2"	1/2"	–	(6)
P-7	–	DRINKING WATER DISPENSER	–	–	–	–	1/2"	–	–	DISPENSER BY ARCH
P-8	GUARDIAN G1950*	EMERGENCY SHOWER AND EYE/FACE WASH UNIT	N/A	20 GPM AT 30 PSIG FLOW PRESSURE	–	–	–	–	1 1/4"	(8) (9)
P-9	GUARDIAN GBF1909*	EMERGENCY SHOWER AND EYE/FACE WASH UNIT (ADA)	N/A	20 GPM AT 30 PSIG FLOW PRESSURE	–	–	–	–	1 1/4"	(8) (9)
P-10	GUARDIAN G1990	EMERGENCY SHOWER AND EYE WASH UNIT (PVC CONSTRUCTION)	N/A	20 GPM AT 30 PSIG FLOW PRESSURE	–	–	–	–	2"	(8) (10)
P-11	–	–	–	–	–	–	–	–	–	
P-12	–	HOSE BIBB	N/A	–	–	–	3/4"	–	–	(12)
P-13	–	WALL HYDRANT (FREEZE RESISTANT)	N/A	–	–	–	3/4"	–	–	(13)
	–	LABORATORY SINK	N/A	–	1 1/2"	1 1/2"	1/2"	1/2"	–	LAB SINKS, FAUCETS AND TRIM BY ARCH
P-15	WATTS DP2-M2	CLOTHES WASHER SHUTOFF VALVE	N/A	–	–	–	1/2"	1/2"	–	

* SELECTION BASED ON GUARDIAN; GUARDIAN, HAWS AND SPEAKMAN ARE ALL ACCEPTABLE MANUFACTURER'S.

(1.) WATER CLOSET: ASME A112.19.2, ADA COMPLIANT, WHITE VITREOUS CHINA, TOP SPUD INLET, WALL MOUNTED/WALL OUTLET, SIPHON JET, INTEGRAL TRAP, ELONGATED BOWL, AND WHITE SOLID PLASTIC ELONGATED OPEN FRONT SEAT; MANUAL NONHOLD-OPEN FLUSH VALVE, CHROME PLATED COPPER ALLOY, INCLUDING VACUUM BREAKER AND ANGLE (CONTROL-STOP) VALVE WITH BACK CHECK. HEIGHT TO TOP OF SEAT SHALL BE 17" TO 19" ABOVE FLOOR.

(2.) URINAL: ASME A112.19.2, ADA COMPLIANT WHITE VITREOUS CHINA, TOP SPUD INLET, WALL-HUNG/WALL OUTLET WITH CONCEALED CARRIER AND FEET, SIPHON JET, INTEGRAL TRAP, AND EXTENDED SIDE SHIELDS; MANUAL NONHOLD-OPEN FLUSH VALVE, CHROME PLATED COPPER ALLOY, INCLUDING VACUUM BREAKER AND ANGLE (CONTROL-STOP) VALVE WITH BACK CHECK. HEIGHT TO TOP OF RIM SHALL BE 17" ABOVE FLOOR.

(3.) LAVATORY: ASME A112.19.2, ADA COMPLIANT, SELF-RIMMING OVAL COUNTERTOP TYPE, WHITE VITREOUS CHINA, FRONT CONCEALED OVERFLOW; ASME A112.18.1 CHROME PLATED COPPER ALLOY CENTERSET FAUCET (4" CENTERS) WITH LEVER HANDLES, AERATOR AND SUPPLY FITTINGS; PERFORATED GRID STRAINER WITH ADA COMPLIANT OFFSET TAILPIECE AND 1-1/4" ADJUSTABLE P-TRAP, ASME A112.18.2.

(4.) PLASTIC SHOWER STALL UNIT: ADA COMPLIANT, WHITE PLASTIC RECEPTOR WITH SLIP-RESISTANT FLOOR, BUILT-IN SOAP DISH, CUSHION SEAT, AND THREE WALLS INTEGRALLY MOLDED IN ONE PIECE. PROVIDE COPPER ALLOY BODY SHOWER DRAIN WITH NICKEL BRONZE PERFORATED GRID STRAINER AND 2" ADJUSTABLE P-TRAP. SHOWER SUPPLY FITTINGS: ASSE 1014, ADJUSTABLE SPRAY PATTERN HAND-HELD SHOWER HEAD WITH SWIVEL FITTING, 60" MINIMUM FLEXIBLE POLISHED STAINLESS STEEL HOSE AND IN-LINE VACUUM BREAKER, MINIMUM 25" GRAB BAR WITH SLIDING SHOWER HEAD HOLDER THAT LOCKS AT ANY HEIGHT TO ALLOW TO USE OF THE UNIT AS EITHER A HAND-HELD SPRAY OR A FIXED SHOWER HEAD.
MIXING VALVE: ASSE 1017, COPPER ALLOY PRESSURE BALANCE SINGLE CONTROL TYPE MIXING VALVE WITH FRONT ACCESS INTEGRAL SCREWDRIVER STOPS; ANCHOR THE MIXING VALVE AND PIPE TO EACH SHOWER IN WALL TO PREVENT MOVEMENT.

(5.) KITCHEN SINK: ASME A112.19.3, 18 GAGE STAINLESS STEEL WITH INTEGRAL MOUNTING RIM, SINGLE COMPARTMENT WITH LEDGE BACK AND UNDERSIDE COATED WITH SOUND DAMPENING MATERIAL; TOP-MOUNTED ASME A112.18.1 COPPER ALLOY FAUCET WITH SWING SPOUT, AERATOR AND SUPPLY FITTINGS; STAINLESS STEEL DRAIN OUTLET WITH CUP STRAINER AND 1-1/2" TAIL PIECE, ASME A112.18.2.

(6.) SERVICE SINK: ASME A112.19.1M, WHITE ENAMELED CAST-IRON WITH WALL MOUNTING KIT AND FLOOR SUPPORT BY WALL OUTLET CAST-IRON 3 INCH P-TRAP STANDARD, MINIMUM 9 INCH SPLASHBACK, AND STAINLESS STEEL RIM GUARD. PROVIDE ASME A112.18.1M COPPER ALLOY BACK-MOUNTED COMBINATION FAUCETS WITH VACUUM BREAKER, SPOUT WITH PAIL HOOK AND 3/4 INCH EXTERNAL HOSE THREADS, ROUGH CHROME FINISH.

(7.) NOT USED

(8.) 20 GPM FLOW CONTROL VALVE

(9.) ELECTRIC ALARM UNIT WITH FLASHING LIGHT AND HORN IN NEMA 4X ENCLOSURE WITH WALL MOUNTING KIT, 0.5 AMPS AT 120 VAC; DOUBLE POLE DOUBLE THROW FLOW SWITCH (SECOND CONTACT FOR REMOTE SIGNALING TO SCADA); MINIMUM 60" LONG NEMA 4X CONNECTOR CABLE.

(10.) ELECTRIC ALARM UNIT AND FLOW SWITCH-SAME AS NOTE (9) EXCEPT CLASS I DIV 1.

(11.) NOT USED.

(12.) PROVIDE VACUUM BREAKER AND METAL HANDLE. PROVIDE HOSE RACK AND 50 FT. HOSE; HOSE SHALL BE KINK RESISTANT RUBBER HOSE WITH COPPER ALLOY COUPLINGS.

(13.) PROVIDE VACUUM BREAKER AND METAL HANDLE.

(ADD .4)

Tag No.	Manufacturer & Model Number	Fixture Type	Fixture Dimensions (Where Applicable)	Water Usage	Soil or Waste	Vent	Cold Water	Hot Water	Tempered Water	Remarks
P-7	Quench750	Drinking Water Dispenser	13.5" X 14.5" X 40.5"	---	---	---	1/2"	---	---	Break Room

PUMP SCHEDULE (P-X)

TAG NO.	MANUFACTURER MODEL NO.*	LOCATION	TYPE	CAPACITY (GPM)	TOTAL HEAD (FT)	MOTOR DATA HP	MOTOR DATA VOLTS	MOTOR DATA PHASE	MOTOR DATA RPM	REMARKS
10-PP-1	TACO 0010-SF	MECHANICAL ROOM	WET ROTOR	1	3	1/8	115	1	3250	(2) (4) DOMESTIC HOT WATER RECIRC
10-PP-2	TACO 0009-SF	MECHANICAL ROOM	WET ROTOR	5	11	1/8	115	1	3250	(1) (4) TEMPERED WATER RECIRC

* SELECTION BASED ON TACO; TACO, BELL & GOSSETT AND GRUNDFOS ARE ALL ACCEPTABLE MANUFACTURER'S.

(1) 1" FLANGE
(2) 3/4" FLANGE
(3) CAST IRON CASING
(4) 304 SST CASING
(5) COMPANION FLANGES
(6) INVERTER DUTY MOTOR

GAS-FIRED DOMESTIC WATER HEATER SCHEDULE (DWH –)

TAG NO.	MANUFACTURER MODEL NO.*	LOCATION	FUEL TYPE	STORAGE CAPACITY (GALLONS)	MIN. RECOVERY 100 DEG. F RISE-GPH	MAX. INPUT (MBH)	REQUIRED GAS PRESSURE (IN W.C.)	MIN. EFF (%)	VOLTS	PHASE	MAX. AMPS	OPER. WT. (LBS)	REMARKS
10-DWH-1	PVI 50 L 130A-GCML	MECHANICAL ROOM	NAT. GAS	130	588	500	3.5 TO 14	96	120	1	11	2900	(1) (2) (3) (4)

* SELECTION BASED ON PVI; PVI, A.O. SMITH AND LOCHINVAR ARMOR ARE ALL ACCEPTABLE MANUFACTURER'S.

(1) PRESSURE/TEMPERATURE RELIEF VALVE
(2) DRAIN VALVE
(3) CONDENSATE NEUTRALIZATION SYSTEM
(4) MODULATING BURNER

ELECTRIC WATER HEATER SCHEDULE (EWH –)

TAG NO.	MANUFACTURER MODEL NO.*	LOCATION	STORAGE CAPACITY (GALS.)	RECOVERY 80 DEG. F RISE-GPH	INPUT (KW)	VOLT	PHASE	REMARKS
20-EWH-1	RHEEM XE10	EQUIPMENT STORAGE FACILITY	10	10	2.0	120	1	(1) (2) SINGLE HEATING ELEMENT

* SELECTION BASED ON RHEEM; RHEEM, RUUD AND BRADFORD-WHITE ARE ALL ACCEPTABLE MANUFACTURER'S.

(1) PRESSURE/TEMPERATURE RELIEF VALVE
(2) DRAIN VALVE

SUMP PUMP SCHEDULE (SP-X)

TAG NO.	MANUFACTURER MODEL NO.*	LOCATION	MIN. CAPACITY (GPM)	TOTAL HEAD (FT.)	LEAD PUMP "ON" POINT (IN.)**	LAG PUMP "ON" POINT (IN.)**	LEAD PUMP "OFF" POINT (IN.)**	LAG PUMP "OFF" POINT (IN.)**	HIGH WATER ALARM (IN.)**	MOTOR DATA (EACH PUMP) HP	MOTOR DATA (EACH PUMP) VOLT	MOTOR DATA (EACH PUMP) PHASE	REMARKS DUPLEX
10-SP-1/1A	ZOELLER G4161	FACILITY LOWER LEVEL	55	23	15.75	20	5.25	5.25	18	1/2	460	3	(1) (2) (3)
10-SP-2/2A	ZOELLER G4161	FACILITY LOWER LEVEL	55	23	15.75	20	5.25	5.25	18	1/2	460	3	(1) (2) (3)
10-SP-3	ZOELLER M75	FACILITY LOWER LEVEL	5	20	8.25	–	2.5	–	–	1/2	115	1	

* SELECTION BASED ON ZOELLER; ZOELLER, GOULD AND HYDROMATIC ARE ALL ACCEPTABLE MANUFACTURER'S.

** OPERATING AND ALARM LEVELS ARE MEASURED FROM BOTTOM OF SUMP BASIN.

(1) DOUBLE SEAL PUMP.

(2) 3" PUMP DISCHARGE RAIL SYSTEM, STAINLESS STEEL FITTED, WITH PULL RODS AND LIFTING CABLES TO SUIT (QTY-2).

(3) ZOELLER MODEL 10-11XX THREE PHASE DUPLEX CONTROL PANEL WITH NEMA 4X ENCLOSURE, HARD-WIRE POWER CONNECTION, ONE (1) DRY AUXILIARY CONTACTS ("HIGH WATER ALARM" AND (2) "PUMP RUN"), AND FOUR (4) VARIABLE LEVEL FLOAT SWITCH SYSTEM WITH CORD LENGTHS TO SUIT.

EXPANSION TANK SCHEDULE (ET –)

TAG NO.	MANUFACTURER MODEL NO.*	LOCATION	SERVICE	FLUID	TOTAL VOLUME (GALLONS)	MIN ALLOWED ACCEPTANCE VOLUME (GALLONS)	PRE-CHARGED PRESSURE (PSIG)	MOUNTING	MAX. OPER WT. (LBS)	REMARKS
10-ET-1	AMTROL ST-42V-C	MECHANICAL ROOM	DWH THERMAL EXPANSION	POTABLE WATER	17.2	11.2	75	FLOOR	165	(1)
20-ET-1	AMTROL ST-5-C	EQUIPMENT STORAGE FACILITY	EWH THERMAL EXPANSION	POTABLE WATER	2.1	0.9	75	FLOOR	21	(1)

* SELECTION BASED ON AMTROL; AMTROL, BELL & GOSSETT AND WESSELS ARE ALL ACCEPTABLE MANUFACTURER'S.

(1) ASME 150 PSIG RATED

DOMESTIC HOT WATER RECIRCULATION PUMP 10-PP-1 CONTROL SEQUENCE:

A. UPON A DROP IN HOT WATER RETURN TEMPERATURE TO 105 DEGREES F (ADJUSTABLE) AS SENSED BY AN AQUASTAT, PUMP SHALL START. UPON A RISE IN HOT WATER RETURN TEMPERATURE TO 107 DEGREES F (ADJUSTABLE), PUMP SHALL STOP.

TEMPERED WATER RECIRCULATION PUMP 10-PP-2 CONTROL SEQUENCE:

A. THE PUMP SHALL RUN CONTINUOUSLY, PROVIDE A MANUAL ON/OFF SWITCH.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS ALAN J. GREEN MECHANICAL No. 34728 REGISTERED PROFESSIONAL ENGINEER 1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

SHEET TITLE

SCHEDULES AND CONTROLS

SHEET NUMBER

00 P-002

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\00 P-002.DWG
LAST UPDATE: Monday, September 23, 2019 2:15:27 PM
PLOT DATE: Tuesday, January 28, 2020 12:44:31 PM

MATCH LINE A–A (FOR CONTINUATION SEE SHEET 10 P–102)

W2 BY GC; TO PLANT WATER STORAGE TANK 157 GPM

GC PLBG

CONTROL VALVE BY GC; COORDINATE WITH GC

3/4" W2

4" W2

4" W2 UP TO GRADE LEVEL

4" W2

2" W2

P–12

P–12

2" W2

6" W1 UP

P–12

2" W2

10'–0"

BURIED 6" W1 (60 PSIG)

PLBG GC

FOR CONTINUATION SEE CIVIL DRAWINGS

TRUE NORTH

PROJECT NORTH

1/4"=1'–0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-101.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:47:10 PM
PLOT DATE: Tuesday, January 28, 2020 12:48:18 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

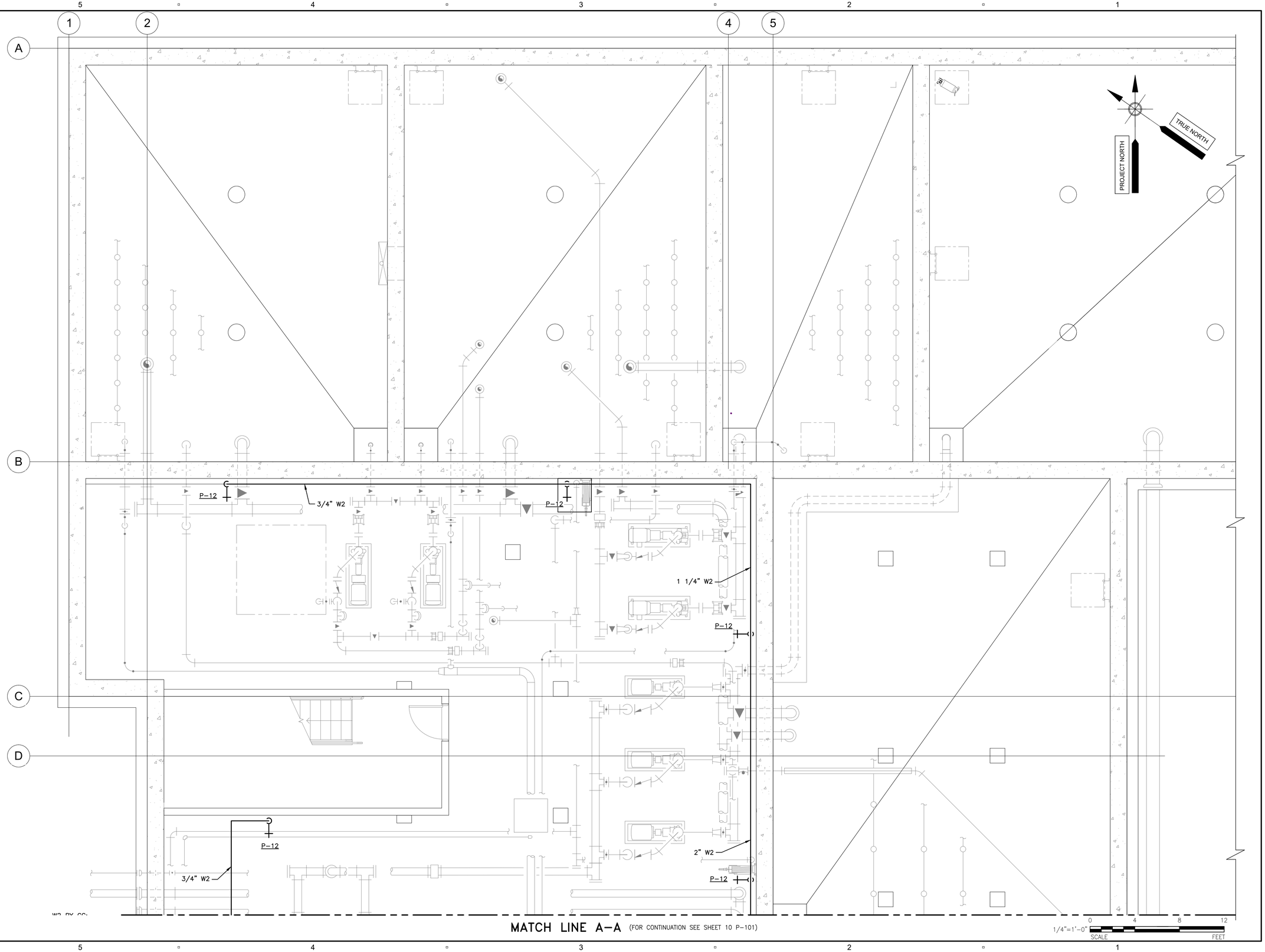
PLUMBING

SHEET TITLE

FACILITY LOWER PLAN I WATER AND GAS

SHEET NUMBER

10 P-101



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-102.DWG
LAST UPDATE: Friday, January 17, 2020 1:05:49 PM
PLOT DATE: Tuesday, January 28, 2020 12:44:49 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

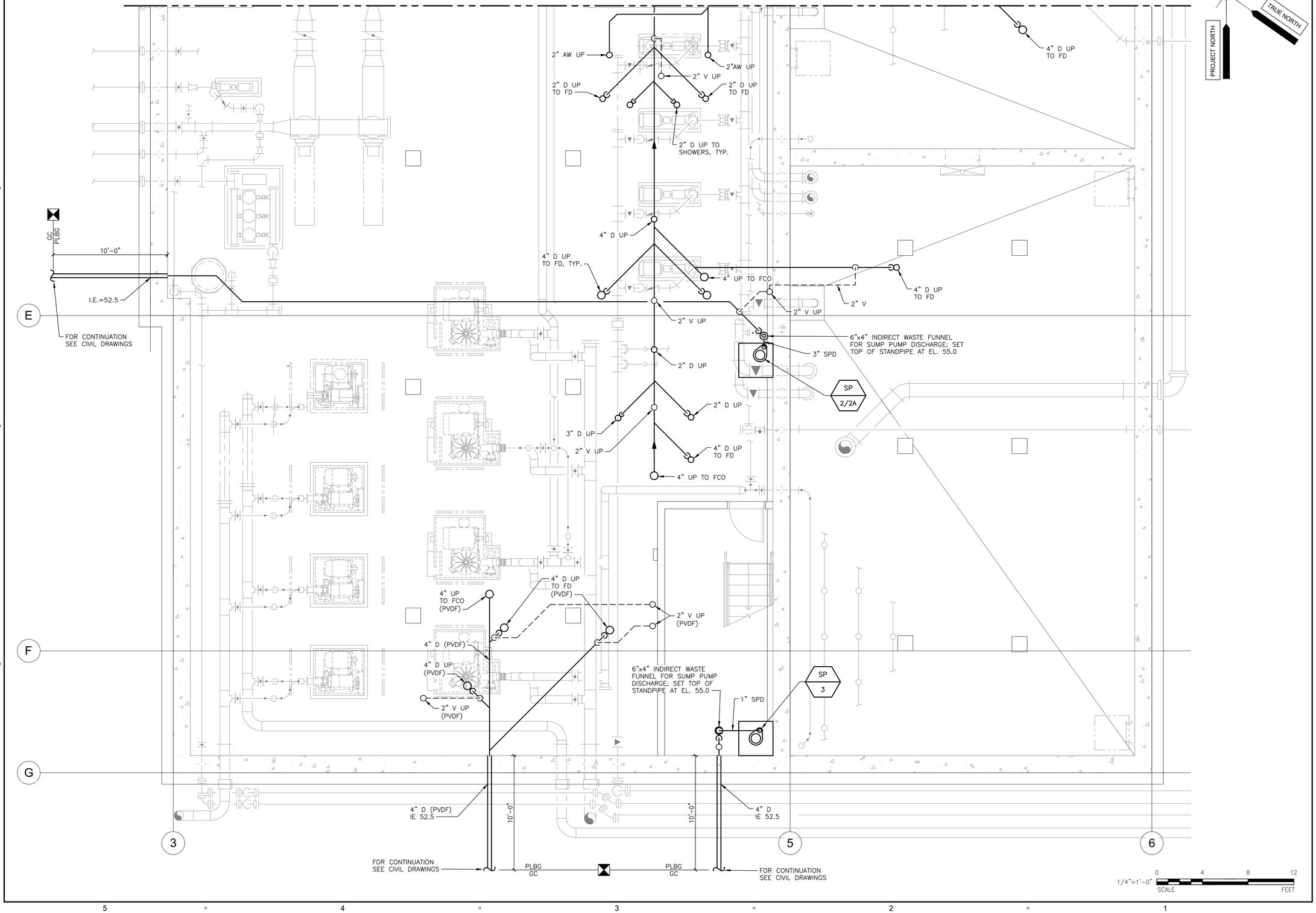
SHEET TITLE

FACILITY LOWER PLAN II WATER AND GAS

SHEET NUMBER

10 P-102

MATCH LINE A–A (FOR CONTINUATION SEE SHEET 10 P–104)



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P-10 P-103.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:41:23 PM
PLOT DATE: Tuesday, January 28, 2020 12:44:59 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN GREEN MECHANICAL No.36728 REGISTERED PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

SHEET TITLE

FACILITY LOWER PLAN I SANITARY DRAIN-WASTE-VENT

SHEET NUMBER

10 P-103

4" D

4" D (PVC) UP
TO TRENCH DRAIN

10'-0"

OIL
INTERCEPTOR

GC
PLBG

CI
PVC

4" D (PVC)

FCO

4" D (PVC)
I.E.=52.5

4" V
(PVC) UP

4" V
(BURIED)

4" D (PVC)

2" V (PVC) UP

SP
1/1A

2" V UP

6" X 4" INDIRECT WASTE FUNNEL
FOR SUMP PUMP DISCHARGE; SET
TOP OF STANDPIPE AT EL. 55.0

3" SPD

PVC
CI

2" V UP

4" UP FCO

4" D UP TO
TRENCH DRAIN

GC
PLBG

10'-0"

4" D
I.E.=52.5

FOR CONTINUATION
SEE CIVIL DRAWINGS

4" D

4" D UP
TO FD

4" UP
TO FCO

2" V UP

4" UP TO FCO

ACID NEUTRALIZATION
TANK; 30 GAL CAPACITY

GC
PLBG

10'-0"

2" D UP

4" W

FOR CONTINUATION
SEE CIVIL DRAWINGS

4" W
I.E.=52.5

2" V UP

4" D UP
TO FD

2" AV

2" AV UP

3" AW

2" AW UP

3" AW

4" UP
TO FCO

4" D UP
TO FD

2" V UP

MATCH LINE A-A (FOR CONTINUATION SEE SHEET 10 P-103)

TRUE NORTH

PROJECT NORTH

1/4"=1'-0"

SCALE

0 4 8 12

FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-104.DWG
LAST UPDATE: Friday, January 17, 2020 1:04:21 PM
PLOT DATE: Tuesday, January 28, 2020 12:45:09 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 39728
REGISTERED
PROFESSIONAL ENGINEER

1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**B. WEINSTEIN**
Drawn By:	**M. CURRAN**
Dept Check:	**A. GREEN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

PLUMBING

SHEET TITLE

FACILITY LOWER PLAN II SANITARY DRAIN-WASTE-VENT

SHEET NUMBER

10 P-104

MATCH LINE A–A (FOR CONTINUATION SEE SHEET 10 P–106)

BREAK RM
CONF RM
VESTIBULE
SUPER. OFFICE
COPY RM
ELECTRICAL ROOM
STG.
LAB
LAB SINK
DW
MENS SHWR
WOMENS SHWR
MENS RM
WOMENS RM
HEADWORKS
DISK FILTER RM
MECH. RM
UP
DN
WHA
FD
TRAP PRIMER VALVE
3/4" TP DN
3/4" NG DN TO FUME HOOD
4" W2 DN TO BASEMENT
BURIED NG SEE CIVIL DRAWINGS FOR CONTINUATION
PLBG GC
6" NG
GAS METER/REGULATOR BY UTILITY; LOCATE MIN. 3'–0" FROM DOORS, OPERABLE WINDOWS AND FRESH AIR INTAKES
SEE PART PLAN ON SHEET 10 P–109
TRUE NORTH
PROJECT NORTH
1/4"=1'–0"
SCALE
0 4 8 12
FEET

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-105.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:42:36 PM
PLOT DATE: Tuesday, January 28, 2020 12:45:23 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

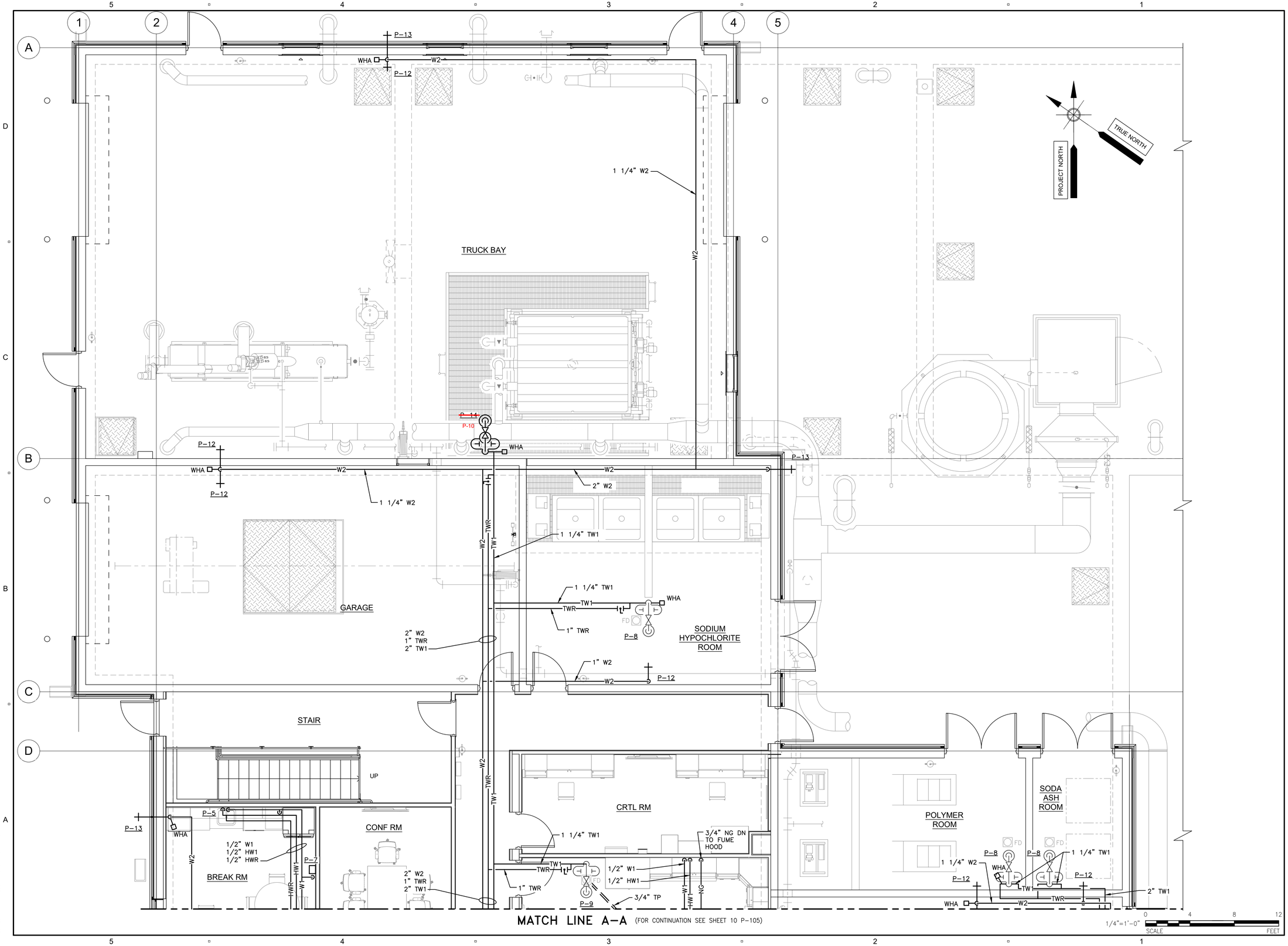
PLUMBING

SHEET TITLE

FACILITY UPPER PLAN I WATER AND GAS

SHEET NUMBER

10 P-105



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P10 P-106.DWG
LAST UPDATE: Friday, January 17, 2020 1:59:54 PM
PLOT DATE: Tuesday, January 28, 2020 12:45:34 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
4-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	4-10-20	ADD. 4/8

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

SHEET TITLE

FACILITY UPPER PLAN II WATER AND GAS

SHEET NUMBER

10 P-106

MATCH LINE A–A (FOR CONTINUATION SEE SHEET 10 P–108)

BREAK RM
CONF RM
VESTIBULE
SUPER. OFFICE
COPY RM
STG.
ELECTRICAL ROOM
LAB
DW
2" AW DN
P–14
2" V DN
2" AW DN
2" V DN
1 1/2" AV DN
2" AV
2" V
1 1/2" AV DN
2" FD
P–4
P–4
2" FD
MENS SHWR
WOMENS SHWR
2" D DN, TYP.
4" D DN
P–1
P–1
4" W
FCO
2" V
2" V DN
4" FD
4" FD
2" V DN
P–2
WCO
P–1
2" D DN
P–3 (TYP.)
MENS RM
WOMENS RM
2" V UP
3" D DN
WCO
2" D DN
1 1/2" V UP
3" V
4" VTR (THROUGH CHIMNEY)
P–6
D
W
2" V DN
4" FD
FCO
MECH. RM
PVDF BELOW 3'–0" AFF
CI ABOVE 3'–0" AFF
FCO
4" FD
4" FD
2" V DN
PROVIDE BARRIER TYPE TRAP SEAL PROTECTION DEVICE
2" V DN
4" FD
CI ABOVE 3'–0" AFF
PVDF BELOW 3'–0" AFF
PVDF BELOW 3'–0" AFF
CI ABOVE 3'–0" AFF
DN
HEADWORKS
4" FD
4" FD
UP
DISK FILTER RM
UP
TRUE NORTH
PROJECT NORTH

NOTES:
1. ALL ACID WASTE (AW) AND ACID VENT (AV) SHALL BE PFDF PIPE MATERIAL.

1/4"=1'–0"
SCALE
0 4 8 12
FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-107.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:43:03 PM
PLOT DATE: Tuesday, January 28, 2020 12:45:44 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

PLUMBING

SHEET TITLE

FACILITY UPPER PLAN I SANITARY DRAIN-WASTE-VENT

SHEET NUMBER

10 P-107

4" TRENCH DRAIN DN;
PROVIDE SEDIMENT TRAP

FCO

TRUCK BAY

4" V (PVC) DN

4" V (PVC)

PVC
CI

PVC
CI

2" V (PVC) DN

2" V DN

2" V

4" VTR
(THROUGH CHIMNEY)

2" V DN

3" AVTR
(THROUGH CHIMNEY)

SODIUM
HYPOCHLORITE/PACL
ROOM

FCO

4" TRENCH DRAIN DOWN; PROVIDE SEDIMENT TRAP AND BARRIER TYPE TRAP SEAL PROTECTION DEVICE

GARAGE

3" AV

FCO

4" FD

4" V

FCO

2" V DN

6

STAIR

3" AV

UP

3" V

2" V DN

CRTL RM

2" V

2" AW DN

FCO

2" AV DN
(TYP. FOR 2)

POLYMER
ROOM

SODA
ASH
ROOM

FCO

2" V DN

1 1/2" V

P-5

2" D DN

2" V

2" AV

4" FD

2" V DN

LAB

4" FD

4" FD

2" V

ACID NEUTRALIZATION
TANK; 30 GAL. CAPACITY
BELOW FLOOR

BREAK RM

CONF RM

NOTES:
1. ALL ACID WASTE (AW) AND ACID VENT (AV) SHALL BE PVDF PIPE MATERIAL.

MATCH LINE A–A (FOR CONTINUATION SEE SHEET 10 P–107)

TRUE NORTH

PROJECT NORTH

1/4"=1'-0"

SCALE

0 4 8 12

FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P-108.DWG
LAST UPDATE: Friday, January 17, 2020 1:09:31 PM
PLOT DATE: Tuesday, January 28, 2020 12:45:55 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN GREEN MECHANICAL
No. 36728
REGISTERED PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

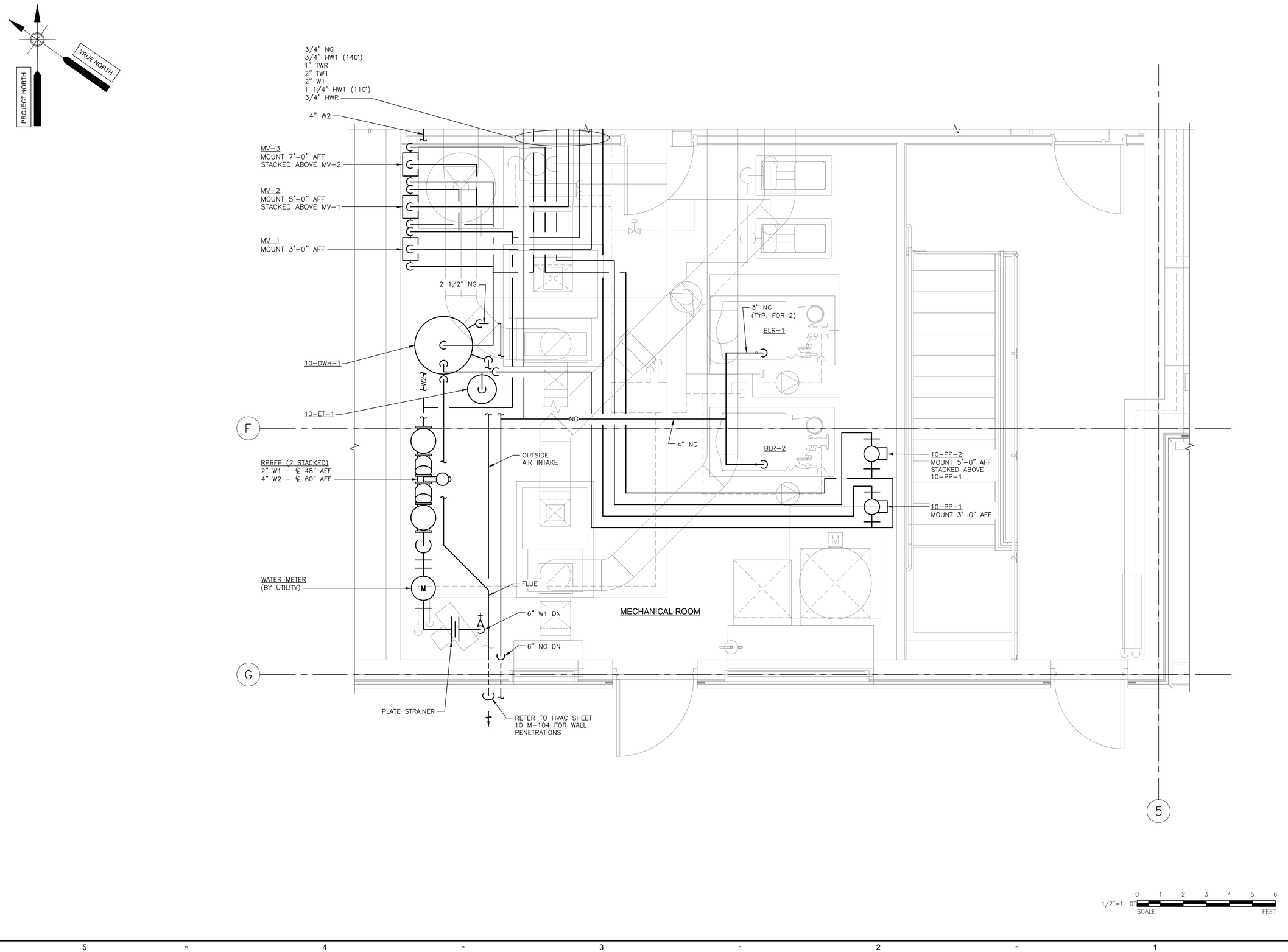
PLUMBING

SHEET TITLE

FACILITY UPPER PLAN II
SANITARY
DRAIN-WASTE-VENT

SHEET NUMBER

10 P-108



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\10 P-109.DWG
LAST UPDATE: Tuesday, January 28, 2020 3:32:25 PM
PLOT DATE: Tuesday, January 28, 2020 3:33:23 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	1/2"=1'-0"

DISCIPLINE

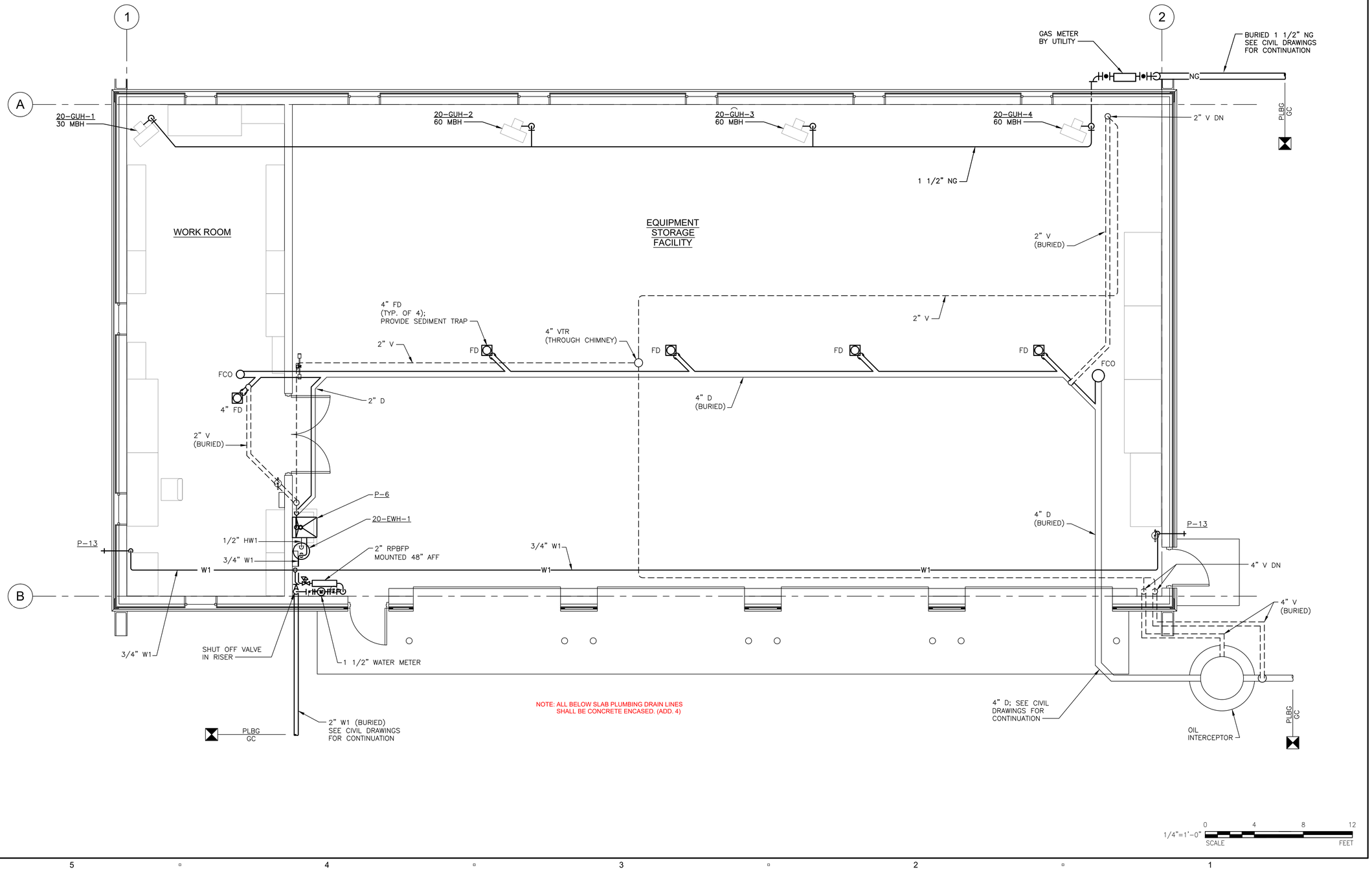
PLUMBING

SHEET TITLE

MECHANICAL ROOM PART PLAN

SHEET NUMBER

10 P-109



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P20 P-101.DWG
LAST UPDATE: Friday, January 17, 2020 1:48:43 PM
PLOT DATE: Tuesday, January 28, 2020 12:46:16 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

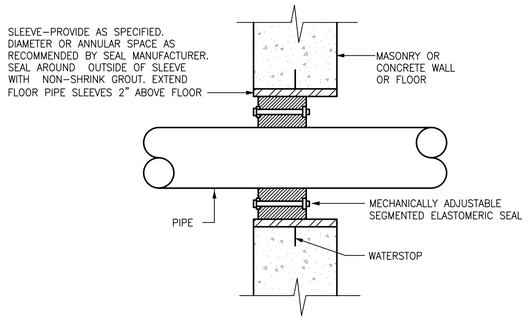
PLUMBING

SHEET TITLE

EQUIPMENT STORAGE FACILITY PLAN

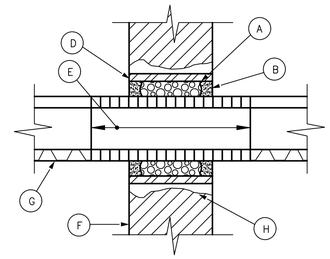
SHEET NUMBER

20 P-101



EXTERIOR WALL/FLOOR PIPE PENETRATION DETAIL

NTS



INTERIOR WALL/FLOOR PIPE PENETRATION DETAIL

(NOT FOR WATER TIGHT CONSTRUCTION)

NTS

(A) PROVIDE MIN. 1" CLEARANCE BETWEEN PIPE SLEEVE OR CORE DRILLED HOLE AND PIPE; PACK CLEARANCE SPACE WITH SPECIFIED INSULATION

(B) PROVIDE SPECIFIED END SEALANT

(C) NOT USED

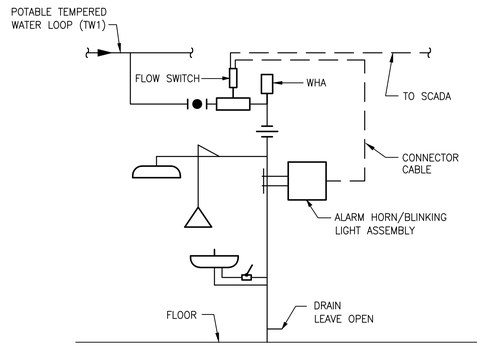
(D) SLEEVE–PROVIDE AS SPECIFIED. EXTEND FLOOR PIPE SLEEVES 2" ABOVE FLOOR

(E) CALCIUM SILICATE OR APPROVED EQUAL INSULATION THRU PENETRATION AND EXTENDED 2" ON BOTH SIDES OF WALL OR FLOOR; PROVIDE METAL JACKET AS SPECIFIED OVER INSULATION

(F) WALL OR FLOOR

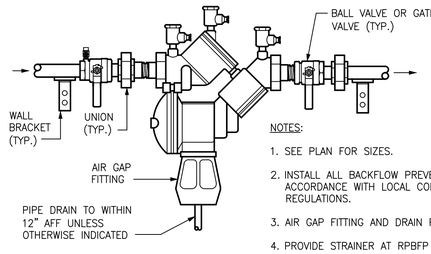
(G) SPECIFIED INSULATION

(H) GROUT SPACE BETWEEN SLEEVE & MASONRY WALLS



EMERGENCY SHOWER/EYE/FACE WASH PIPING DETAIL

NTS

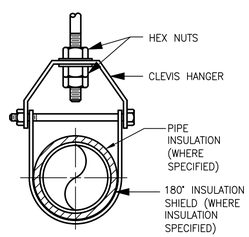


NOTES:

1. SEE PLAN FOR SIZES.
2. INSTALL ALL BACKFLOW PREVENTERS IN ACCORDANCE WITH LOCAL CODES AND REGULATIONS.
3. AIR GAP FITTING AND DRAIN PIPE SIZED PER MFR.
4. PROVIDE STRAINER AT RPBFP INLET.

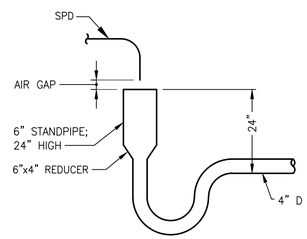
REDUCED PRESSURE BACKFLOW PREVENTER DETAIL

NTS



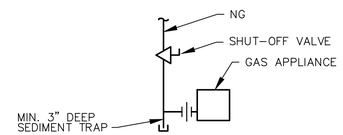
TYPICAL PIPE SUPPORT DETAIL

NTS



INDIRECT WASTE (IW) DETAIL

NTS



APPLIANCE GAS CONNECTION DETAIL

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1/17/20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**B. WEINSTEIN**
Drawn By:	**M . CURRAN**
Dept Check:	**A. GREEN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

PLUMBING

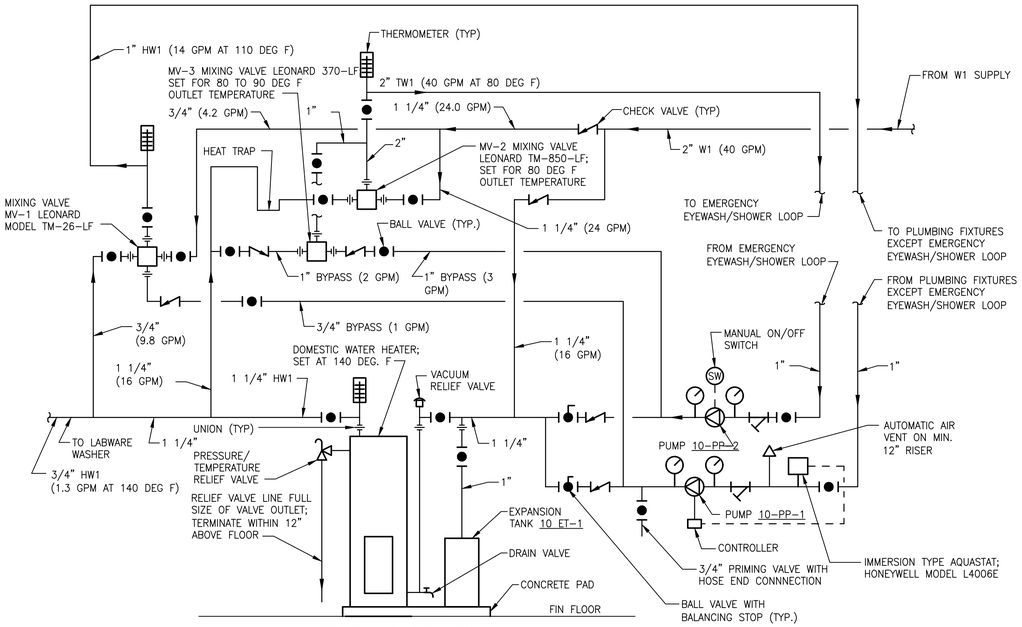
SHEET TITLE

DETAILS I

SHEET NUMBER

99 P-501

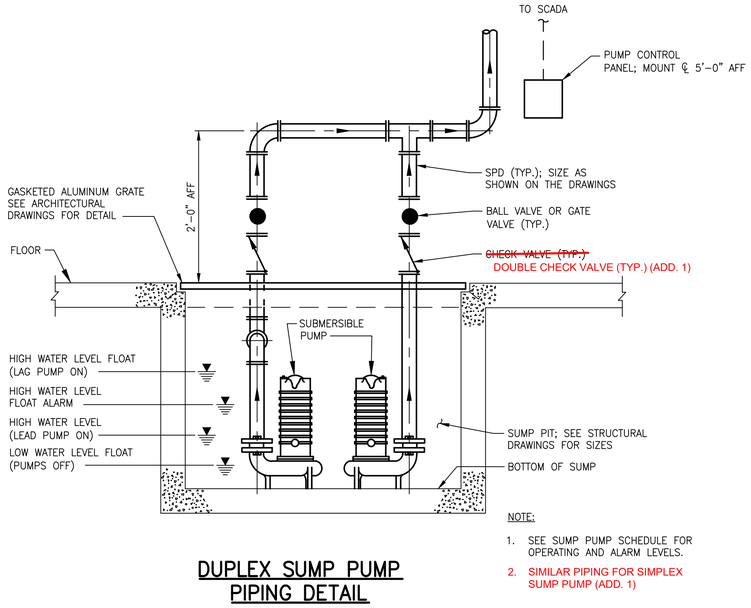
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P\99 P-501.DWG
LAST UPDATE: Thursday, September 19, 2019 11:15:36 AM
PLOT DATE: Tuesday, January 28, 2020 12:46:24 PM



WATER PIPING SCHEMATIC

10-DWH-1 DOMESTIC WATER HEATER WATER PIPING DETAIL

NTS

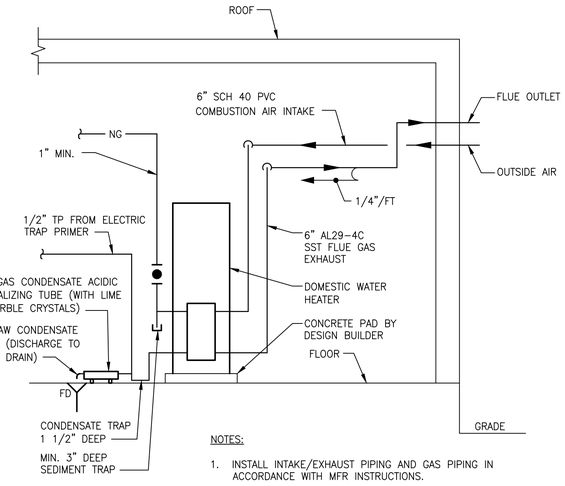


DUPLEX SUMP PUMP PIPING DETAIL

NTS

NOTE:

1. SEE SUMP PUMP SCHEDULE FOR OPERATING AND ALARM LEVELS.
2. SIMILAR PIPING FOR SIMPLEX SUMP PUMP (ADD. 1)

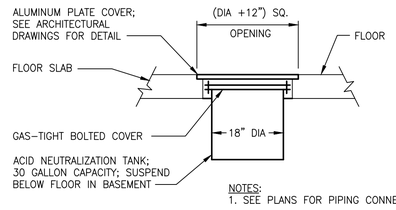


NOTES:

1. INSTALL INTAKE/EXHAUST PIPING AND GAS PIPING IN ACCORDANCE WITH MFR INSTRUCTIONS.
2. INSTALL CONDENSATE ACID NEUTRALIZING TUBE IN ACCORDANCE WITH MFR INSTRUCTIONS.

10-DWH-1 DOMESTIC WATER HEATER GAS PIPING DETAIL

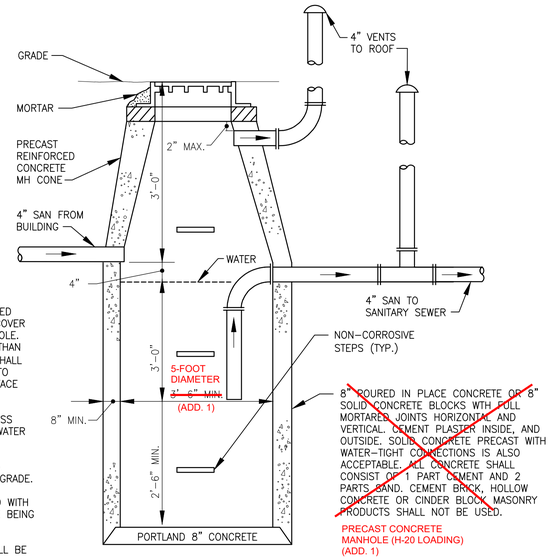
NTS



NOTES:
1. SEE PLANS FOR PIPING CONNECTIONS.

LABORATORY ACID NEUTRALIZATION TANK DETAIL

NTS



CONSTRUCTION:

1. THE SEPARATOR SHALL BE LOCATED OUTSIDE OF BUILDING AND THE COVER IS TO INCORPORATE A CENTER-HOLE. THE COVER SHALL BE NO LESS THAN 24" DIAMETER. THE SEPARATOR SHALL BE LOCATED AND CONSTRUCTED TO PREVENT SURFACE OR SUB-SURFACE WATER FROM ENTERING.
2. THE INLET PIPE SHALL BE NO LESS THAN FOUR INCHES ABOVE THE WATER LINE LEVEL.
3. THE SEPARATOR SHALL BE SET A MINIMUM OF THREE FEET BELOW GRADE.
4. THE SEPARATOR SHALL BE FILLED WITH WATER AND LEAK TESTED BEFORE BEING INTRODUCED INTO SERVICE.
5. THE NON-CORROSIVE STEPS SHALL BE SPACED AT 12-INCHES APART.
6. THE CHAMBER VENT AND OUTLET VENT SHALL RETURN TO THE INSIDE OF THE BUILDING AND EXTEND ~~THROUGH THE ROOF~~ THROUGH THE CHIMNEY. (ADD. 1)

GASOLINE/OIL/SAND SEPARATOR DETAIL

NTS

10-DWH-1 DOMESTIC WATER HEATER GAS PIPING DETAIL

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS ALAN J. GREEN MECHANICAL No. 34728 REGISTERED PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. GREEN
Drawn By:	B. SANTOSUOSSO
Dept Check:	C. GALLIGAN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	NONE

DISCIPLINE

PLUMBING

SHEET TITLE

DETAILS II

SHEET NUMBER

99 P-502

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P99 P-502.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:47:34 PM
PLOT DATE: Tuesday, January 28, 2020 12:48:26 PM

FIRE PROTECTION LEGEND

- BRANCH – BOTTOM CONNECTION
- BRANCH – TOP CONNECTION
- BURIED PIPE
- CAP PIPE
- FLANGE
- PIPE ELBOW DOWN
- PIPE ELBOW UP
- TEE
- UNION
- BALL VALVE
- CHECK VALVE
- NON–INDICATING GATE VALVE
- INDICATING GATE VALVE
- OS&Y GATE VALVE WITH TAMPER SWITCH
- AUTOMATIC AIR RELEASE VALVE
- FHV — FIRE HOSE VALVE
- PRESSURE RELIEF VALVE
- WYE STRAINER
- SIAMESE FIRE DEPARTMENT CONNECTION
- 3–WAY FIRE DEPARTMENT CONNECTION
- FLEXIBLE PIPE CONNECTOR
- PRESSURE GAUGE WITH BALL VALVE SHUTOFF AND SNUBBER
- RISER
- UPRIGHT SPRINKLER
- PENDENT SPRINKLER
- ELECTRIC ALARM BELL
- PIPE SLOPED DOWN
- WATER FLOW SWITCH
- F — FIRE PUMP
- J — JOCKEY PUMP
- M — FLOW METER

GENERAL NOTES

1. ALL WORKING DRAWINGS AND CALCULATIONS SHALL BE STAMPED AND SIGNED BY THE FIRE SUPPRESSION SUBCONTRACTOR'S LICENSED FIRE PROTECTION PROFESSIONAL ENGINEER AND SHALL BE SUBMITTED TO THE LOCAL FIRE DEPARTMENT FOR APPROVAL AND PERMIT PRIOR TO THE COMMENCEMENT OF ANY FIRE SUPPRESSION WORK. ALL WORKING DRAWINGS AND CALCULATIONS AS DESCRIBED ABOVE SHALL ALSO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE COMMENCEMENT OF ANY FIRE SUPPRESSION WORK.
2. USE GROUPS IN THIS STRUCTURE ARE NOT TO EXCEED THOSE INDICATED ON THE ARCHITECTURAL DRAWINGS. A FIRE PROTECTION AND HYDRAULIC ANALYSIS INDICATING THE ACCEPTABILITY OF THE FIRE SUPPRESSION SYSTEMS AND ASSOCIATED SYSTEMS TO ADEQUATELY SERVE THE PROPOSED USE GROUPS SHALL BE CONDUCTED BY A LICENSED FIRE PROTECTION PROFESSIONAL ENGINEER PRIOR TO USE GROUP CHANGES OF A GREATER HAZARD.
3. DURING CONSTRUCTION, PROVIDE FIRE PREVENTION SAFEGUARDING IN ACCORDANCE WITH NFPA 241 AND OWNER PROCEDURES.
4. MAINTAIN MAXIMUM HEADROOM FOR ALL PIPING.
5. UNLESS OTHERWISE SPECIFIED, ENCLOSURES FOR ELECTRICAL COMPONENTS SHALL BE NEMA TYPE 4 SO LOCATED WHERE INDICATED ON THE FIRE SUPPRESSION DRAWINGS. ENCLOSURE SHALL MEAN ELECTRICAL EQUIPMENT ENCLOSURES AND ASSOCIATED CONDUIT.
6. NUMERIC SCALES APPLY TO FULL SIZE DRAWINGS ONLY. REFER TO GRAPHIC SCALES FOR REDUCED SIZE DRAWINGS.

ABBREVIATIONS

ABD	AUTOMATIC BALL DRIP	FW	FIRE WATER
ACV	ALARM CHECK VALVE	GC	GENERAL CONTRACTOR
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER
AFG	ABOVE FINISHED GRADE	MAX	MAXIMUM
ATC	ACOUSTICAL TILE CEILING	MFR	MANUFACTURER
ATS	AUTOMATIC TRANSFER SWITCH	MIN	MINIMUM
BFP	BACKFLOW PREVENTER	NC	NORMALLY CLOSED
℄	CENTER LINE	NO	NORMALLY OPEN
DCBFP	DOUBLE CHECK BACKFLOW PREVENTER	ODP	OPEN DRIP PROOF
DN	DOWN	OS&Y	OUTSIDE SCREW AND YOKE
DPV	DRY PIPE VALVE	PIV	POST INDICATING VALVE
EXIST.	EXISTING	PSIG	POUNDS PER SQUARE INCH GAUGE
FACP	FIRE ALARM CONTROL PANEL	RPM	REVOLUTIONS PER MINUTE
FCO	FLOOR CLEANOUT	SQ FT	SQUARE FEET
FD	FLOOR DRAIN	TEFC	TOTALLY ENCLOSED FAN COOLED
FDC	FIRE DEPARTMENT CONNECTION	TYP.	TYPICAL
FHV	FIRE HOSE VALVE	WTP	WATER TREATMENT PLANT
FP	FIRE PROTECTION	VIF	VERIFY IN FIELD
FPS	FEET PER SECOND		
FS	FLOW SWITCH		

MISCELLANEOUS LEGEND

- NEW WORK, PIPING (SHOWN DARK)
- NEW WORK BY OTHERS (SHOWN LIGHT)
- LIMIT OF WORK
- AREA TO BE SPRINKLED

WATER–BASED FIRE SUPPRESSION SPRINKLER SYSTEMS

1. THE FIRE SUPPRESSION SUBCONTRACTOR SHALL DESIGN SPRINKLER SYSTEMS AND PRODUCE A COMPLETE SET OF WORKING DRAWINGS IN ACCORDANCE WITH NFPA 13–2016 ADOPTED BY THE MASSACHUSETTS BUILDING CODE. SYSTEMS SHALL BE HYDRAULICALLY CALCULATED PER THE DESIGN CRITERIA PROVIDED AND REQUIRED.
2. THE OWNER IS TO PROVIDE HEAT AS REQUIRED THROUGHOUT THE BUILDING TO PREVENT WATER IN THE SYSTEM FROM FREEZING. THE OWNER IS ALSO TO MAINTAIN THE SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 25 TESTING AND MAINTENANCE CRITERIA.
3. THESE FIRE SUPPRESSION DRAWINGS ARE NOT INTENDED TO SHOW SPRINKLER HEAD LOCATIONS, NUMBER OF SPRINKLER HEADS, OR THE SIZE AND ROUTING OF SPRINKLER PIPING. THIS SHALL BE THE RESPONSIBILITY OF THE FIRE SUPPRESSION SUBCONTRACTOR. THE FIRE SUPPRESSION SUBCONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL DRAWINGS.
4. THE DESIGN AREAS AND DENSITIES INDICATED ON THE FIRE SUPPRESSION DRAWINGS ARE FOR REFERENCE ONLY. THE FIRE SUPPRESSION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ALL DESIGN AREAS AND DENSITIES IN STRICT ACCORDANCE WITH NFPA 13.
5. IN ROOMS HAVING ACOUSTIC TILE CEILINGS, SPRINKLER HEADS SHALL BE CENTERED IN TILES.
6. SPRINKLER HEADS SHALL BE UL LISTED AND FM APPROVED FOR THE INSTALLATION APPLICATION AND CONFIGURATION SPECIFIC TO THIS PROJECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. POSITION ALL HEADS IN ACCORDANCE WITH NFPA 13, UL, FM AND THE MANUFACTURER'S INSTRUCTIONS. ALL HEADS SHALL BE OF THE SAME MANUFACTURER.
7. SPRINKLER HEADS SHALL BE STANDARD RESPONSE, STANDARD COVERAGE. SPRINKLER HEAD K–FACTOR SHALL BE 5.6 MINIMUM. SPRINKLER HEADS IN THE FOLLOWING ROOMS SHALL HAVE CORROSION RESISTANT WAX COATING OR EQUAL COATING:

   A. HEADWORKS
   B. DISK FILTER
   C. CHEMICAL STORAGE AREAS
   D. TRUCK BAY
   E. GARAGE

SPRINKLER SYSTEMS DESIGN CRITERIA

1. PROVIDE FULL COVERAGE AUTOMATIC WET PIPE SPRINKLER SYSTEM IN SPACES INDICATED PER NFPA 13.
2. PROVIDE NFPA 13 HAZARD CLASSIFICATIONS AND SPRINKLER ZONES AS FOLLOWS AS INDICATED ON FLOOR PLANS:

SPACE	NFPA 13 HAZARD CLASSIFICATION	DENSITY	SYSTEM TYPE
MECH. ROOM	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
HEADWORKS	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
DISK FILTER	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
ADMIN. AREAS	LIGHT HAZARD	0.10 GPM OVER 1500 SQ FT OR LESS	WET PIPE
CHEM. STOR.	ORDINARY HAZARD GROUP 2	0.20 GPM OVER 1500 SQ FT OR LESS	WET PIPE
BASEMENT	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
STAIRS	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
TRUCK BAY	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
GARAGE	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
LAB	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE
TOILET / LOCKER	LIGHT HAZARD	0.10 GPM OVER 1500 SQ FT OR LESS	WET PIPE
ALL OTHER SPACES	ORDINARY HAZARD GROUP 1	0.15 GPM OVER 1500 SQ FT OR LESS	WET PIPE

HOSE STREAM ALLOWANCE: 250 GPM FOR 60 MINUTES.

3. PROVIDE SPRINKLERS IN ALL ANCILLARY SPACES REQUIRED BY NFPA 13–2016, ARTICLE 8.15, EXCEPT NO SPRINKLERS IN ELECTRICAL ROOMS THAT ARE 2–HOUR FIRE RATED, CONTAIN ONLY DRY TYPE ELECTRICAL EQUIPMENT, AND ARE NOT USED FOR STORAGE SPACE.
4. PROVIDE SPRINKLERS AROUND AND BELOW OBSTRUCTIONS REQUIRED BY NFPA 13–2016, CHAPTER 8.
5. PROVIDE SPRINKLERS UNDER ALL FRP (COMBUSTIBLE) PLATFORMS REQUIRED BY NFPA 13–2016, ARTICLE 8.15.6. PROVIDE SPRINKLERS UNDER ALL METAL(NON–COMBUSTIBLE) PLATFORMS GREATER THAN 4'–0" WIDE REQUIRED BY NFPA 13–2016, ARTICLE 8.5.5.3.
6. PROVIDE SPRINKLERS IN SKYLIGHTS AND CEILING POCKETS REQUIRED BY NFPA 13–2016, ARTICLES 8.5.7 AND 8.6.7.
7. PROVIDE SPRINKLERS WITH TEMPERATURE RATING GREATER THAN "ORDINARY" WHERE REQUIRED BY NFPA 8–2016 ARTICLE 8.3.2.
8. HYDRAULIC CALCULATIONS SHALL INCORPORATE A MINIMUM 10 PSI CUSHION AT DESIGN CONDITIONS TO ALLOW FOR FUTURE DEGRADATION OF THE WATER SUPPLY.
9. ALL PIPING AND COMPONENTS SUBJECT TO PRESSURE SHALL BE RATED FOR MINIMUM 175 PSIG WORKING PRESSURE.

FIRE WATER SUPPLY HYDRAULIC DATA

1. THE FOLLOWING IS FIRE WATER SUPPLY HYDRAULIC DATA FROM 8/16/19 FIRE HYDRANT FLOW TEST ON THE SITE THAT SHALL BE USED TO PERFORM HYDRAULIC CALCULATIONS FOR DESIGN OF ALL WATER–BASED FIRE SUPPRESSION SYSTEMS:

STATIC PRESSURE:	60 PSIG
RESIDUAL PRESSURE:	55 PSIG
FLOW	1130 GPM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS — ALAN J. GREEN — MECHANICAL — No. 36728 — REGISTERED PROFESSIONAL ENGINEER
7-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	11/23/15	RFP ADDENDUM NO. 7

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

FIRE PROTECTION

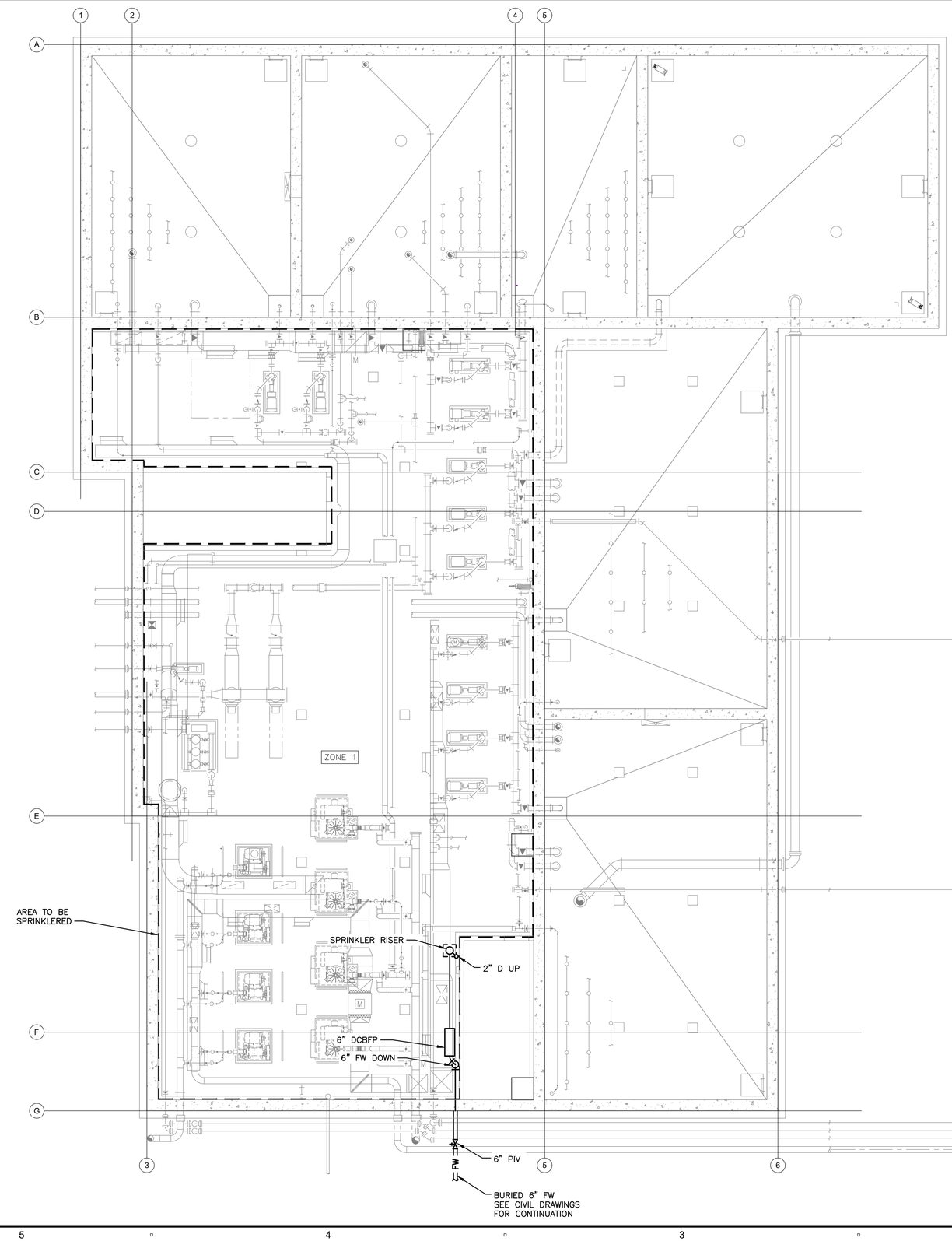
SHEET TITLE

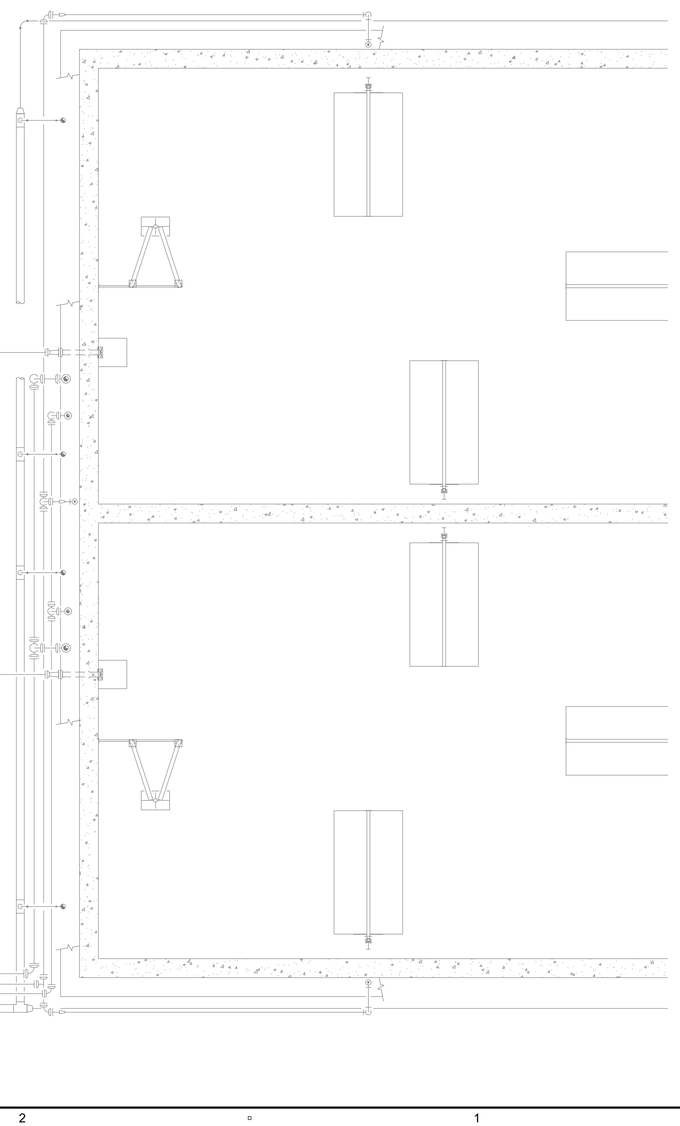
NOTES, LEGENDS AND ABBREVIATIONS

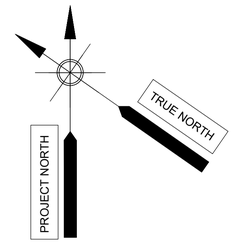
SHEET NUMBER

00 F-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\F00 F-001.DWG
LAST UPDATE: Tuesday, January 14, 2020 10:34:04 AM
PLOT DATE: Tuesday, January 28, 2020 12:50:39 PM







AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**B. WEINSTEIN**
Drawn By:	**M. CURRAN**
Dept Check:	**A. GREEN**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

FIRE PROTECTION

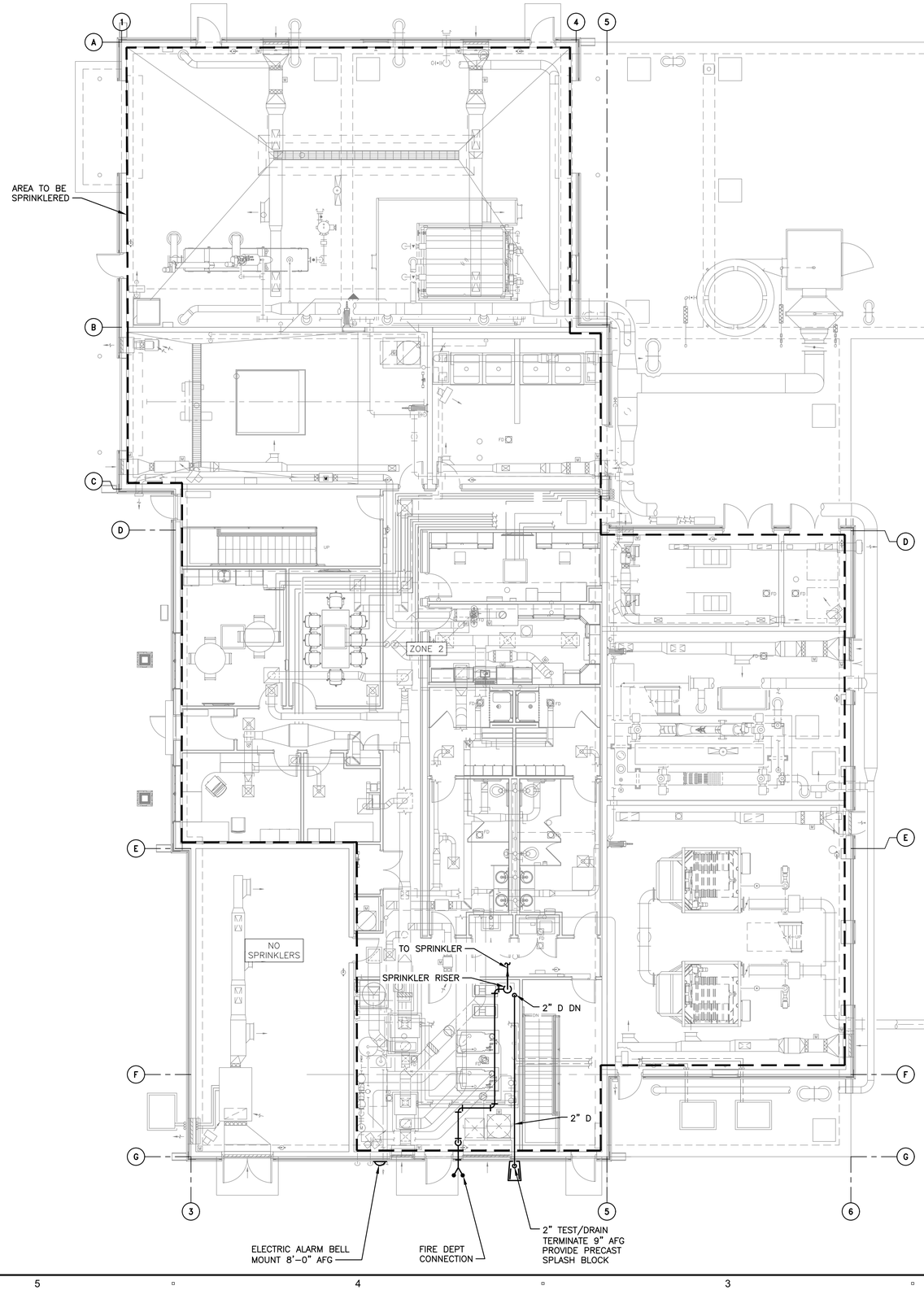
SHEET TITLE

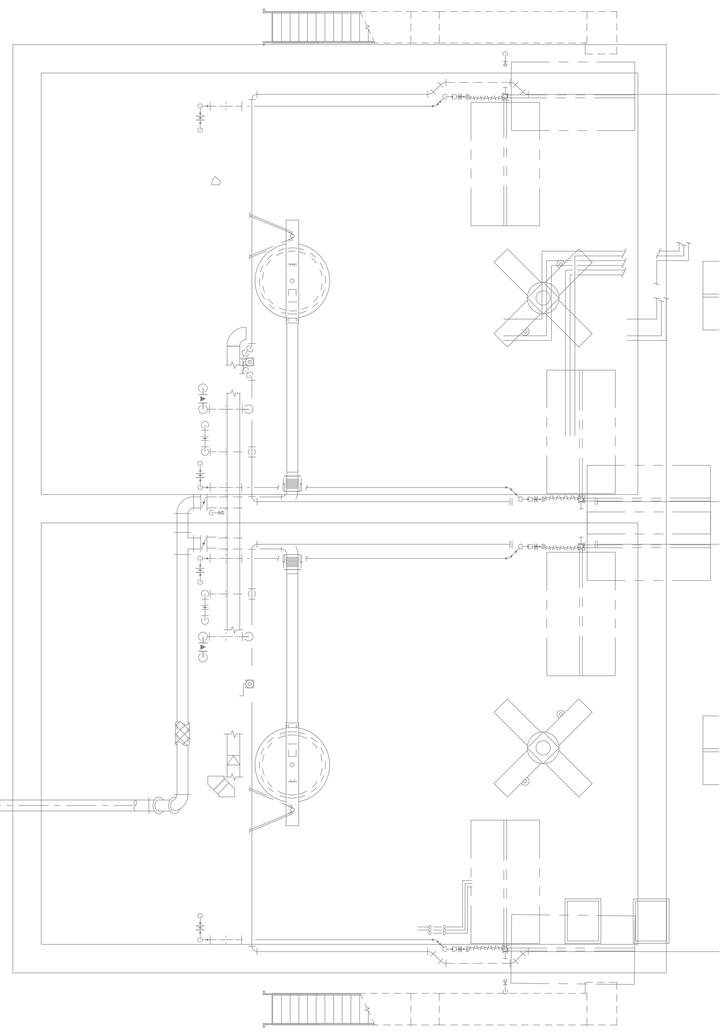
FACILITY LOWER LEVEL PLAN

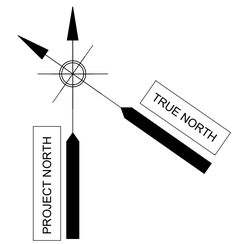
SHEET NUMBER

10 F-101

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\P10 F-101.DWG
LAST UPDATE: Friday, January 17, 2020 12:59:37 PM
PLOT DATE: Tuesday, January 28, 2020 12:50:42 PM







AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 34726
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

FIRE PROTECTION

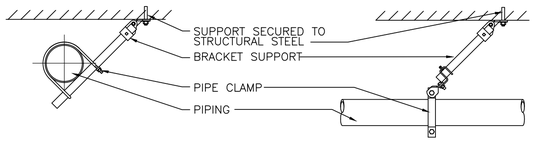
SHEET TITLE

FACILITY UPPER PLAN

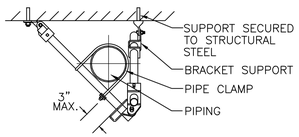
SHEET NUMBER

10 F-102

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\F-10 F-102.DWG
LAST UPDATE: Tuesday, January 28, 2020 12:52:36 PM
PLOT DATE: Tuesday, January 28, 2020 12:53:15 PM



LATERAL (TRANSVERSE) BRACE



LONGITUDINAL BRACE

LONGITUDINAL/LATERAL BRACE

NOTE:
ALL PIPING SHALL BE SEISMICALLY BRACED AND INSTALLED PER NFPA 13–2002.

SEISMIC PIPE BRACING DETAILS

NOT TO SCALE

(A) PROVIDE CLEARANCE AS SPECIFIED BETWEEN PIPE SLEEVE AND PIPE. PACK CLEARANCE SPACE WITH SPECIFIED INSULATION PROVIDE SPECIFIED END SEALANT

(B) (NOT USED)

(C) SLEEVE–PROVIDE AS SPECIFIED.

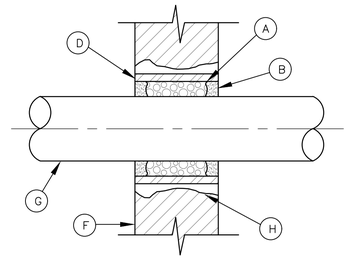
(D) EXTEND FLOOR PIPE SLEEVES 2" ABOVE FLOOR.

(E) (NOT USED)

(F) WALL OR FLOOR

(G) (NOT USED)

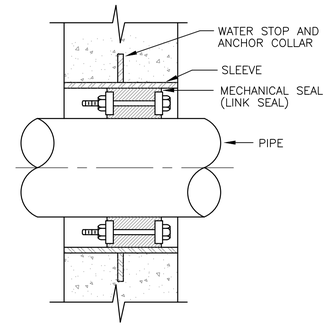
(H) GROUT SPACE BETWEEN SLEEVE AND MASONRY OR CONCRETE WALLS AND FLOORS



INTERIOR WALL/FLOOR THRU–PENETRATION DETAIL

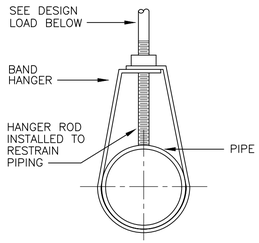
(NOT FOR WATER TIGHT CONSTRUCTION)

NOT TO SCALE

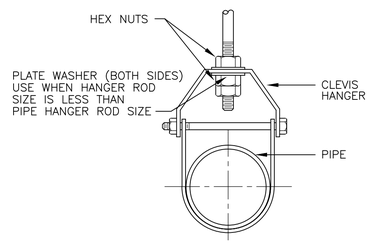


EXTERIOR WALL THRU–PENETRATION DETAIL

NOT TO SCALE



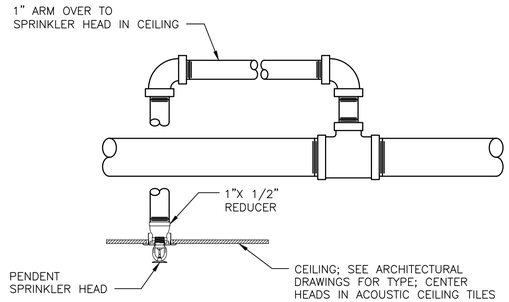
PIPING 2" AND SMALLER



PIPING 2 1/2" AND LARGER

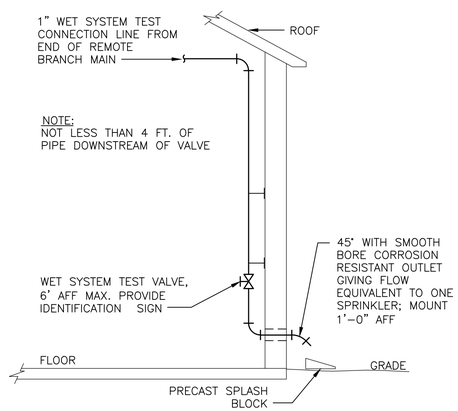
TYPICAL PIPE SUPPORT DETAILS

NOT TO SCALE



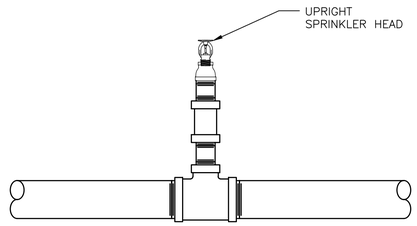
SPRINKLER HEAD ARM OVER

NOT TO SCALE



INSPECTOR'S TEST CONNECTION WET PIPE DETAIL

NOT TO SCALE



SPRINKLER UPRIGHT HEAD

NOT TO SCALE

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1-17-20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

FIRE PROTECTION

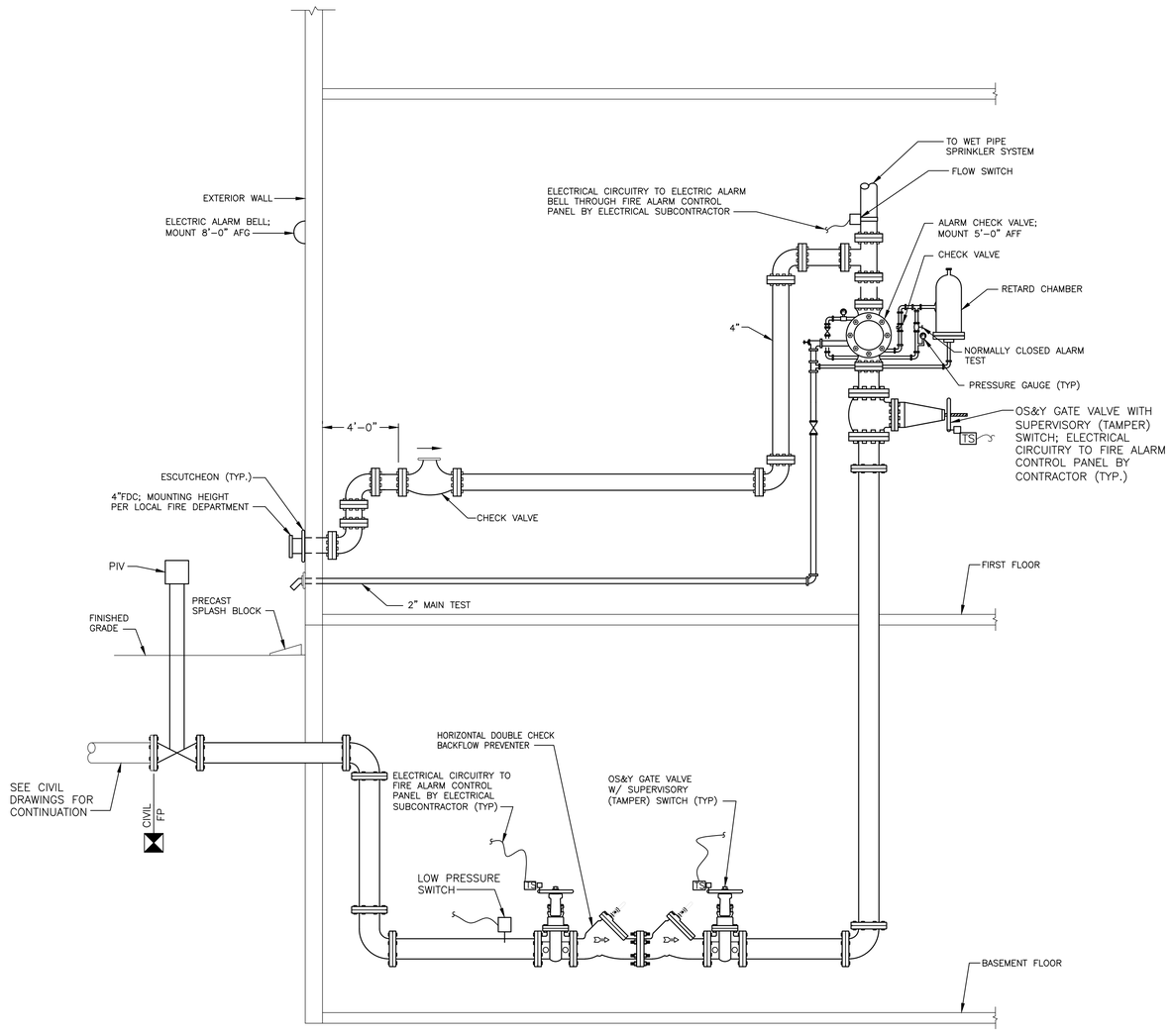
SHEET TITLE

DETAILS I

SHEET NUMBER

99 F-501

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\F\99 F-501.DWG
LAST UPDATE: Thursday, August 15, 2019 1:42:26 PM
PLOT DATE: Tuesday, January 28, 2020 12:51:04 PM



NOTES:

1. PROVIDE IDENTIFICATION SIGNS PER NFPA 13.
2. PROVIDE BACKFLOW PREVENTER IN ACCORDANCE WITH MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION RULES AND REGULATIONS. (310 CMR 22.22)

SPRINKLER RISER WITH HORIZONTAL DCBFP DETAIL

NOT TO SCALE

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\F\99 F-502.DWG
LAST UPDATE: Thursday, October 03, 2019 2:58:57 PM
PLOT DATE: Tuesday, January 28, 2020 12:51:11 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ALAN J. GREEN
MECHANICAL
No. 36728
REGISTERED
PROFESSIONAL ENGINEER
1.27.20

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	B. WEINSTEIN
Drawn By:	M. CURRAN
Dept Check:	A. GREEN
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

FIRE PROTECTION

SHEET TITLE

DETAILS II

SHEET NUMBER

99 F-502

DIAGRAMS

1200 / 800 — CIRCUIT BREAKER, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMBER IS FRAME SIZE. LOWER NUMBER IS TRIP SETTING. WHERE ONLY ONE NUMBER IS SHOWN, NUMBER IS TRIP SETTING.

MCP — MOTOR CIRCUIT PROTECTOR

MAGNETIC STARTER
FVNR = FULL VOLTAGE, NON-REVERSING
FVR = FULL VOLTAGE, REVERSING
FVTS = FULL VOLTAGE, TWO SPEED
RVNR = REDUCED VOLTAGE, NON-REVERSING,
AUTO-TRANSFORMER TYPE
PW = PART WINDING
C = MAGNETIC CONTACTOR (WITHOUT OL.)
RVSS = REDUCED VOLTAGE, SOLID STATE
FVNR 2 — NUMBER INDICATES NEMA STARTER SIZE

30A — UNFUSED DISCONNECT SWITCH. NUMBER DENOTES AMPERE RATING.

100 / 70 — FUSED DISCONNECT SWITCH, 3-POLE UNLESS OTHERWISE NOTES. UPPER NUMBER INDICATES FUSE CLIP AMPERE SIZE. LOWER NUMBER INDICATES FUSE RATING.

J — FUSE – LETTER DENOTES CLASS

TRANSFORMER, SIZE AS NOTED, DELTA CONNECTION-PRIMARY. WYE CONNECTION GROUNDED-SECONDARY (LOW VOLTAGE).

VFD — VARIABLE FREQUENCY DRIVE

INPUT LINE REACTOR

dV/dT — dV/dT OUTPUT FILTER

5 — SQUIRREL CAGE INDUCTION MOTOR. NUMBER DENOTES HORSEPOWER OR KW

5 — PACKAGED MOTOR WITH MOTOR, STARTER AND CONTROLS. NUMBER INDICATES KILOWATT RATING OR HORSEPOWER.

F 10KW — ELECTRIC UNIT HEATER 10KW INDICATES KILOWATT SIZE

600:5 (3) — CURRENT TRANSFORMER. UPPER NUMBERS ARE RATIO. NUMBER IN ( ) IS QUANTITY.

GFP — GROUND FAULT PROTECTION

ST — SHUNT TRIP RELAY

R — INDICATING LIGHTS: R=RED, B=BLUE, G=GREEN, A=AMBER, W=WHITE

K — KEY INTERLOCK

K — MECHANICALLY INTERLOCKED (KEY)

E — ELECTRICALLY INTERLOCKED

NORMALLY OPEN CONTACT

NORMALLY CLOSED CONTACT

VS — VOLTMETER SELECTOR SWITCH

AS — AMMETER SELECTOR SWITCH

CS — CIRCUIT BREAKER CONTROL SWITCH

CTB — CURRENT TEST BLOCK

PTB — POTENTIAL TEST BLOCK

SYS — SYNCHRONIZING SWITCH

TB — TEST BLOCK

26 — PROTECTIVE RELAY
2 – TIME DELAY RELAY
25 – SYNCHROCHECK RELAY
26 – THERMAL DEVICE
27 – UNDER VOLTAGE RELAY
43 – TRANSFER DEVICE
50 – INSTANTANEOUS OVER CURRENT RELAY
64 – GROUND PROTECTIVE RELAY
67 – DIRECTIONAL OVER CURRENT
74 – ALARM RELAY
83 – TRANSFER RELAY
86 – LOCKOUT RELAY, HAND RESET

A — A = AMMETER
D = DEMAND METER
F = FREQUENCY METER
KW = KILOWATT-HOUR METER
PF = POWER FACTOR METER
V = VOLTMETER
VAR = VARMETER
W = WATT METER
WH = WATT-HOUR METER

DIAGRAMS

480:120 (1) CPT — DRAWOUT DEVICE
CPT = CONTROL POWER TRANSFORMER
PT = POTENTIAL TRANSFORMER.
UPPER NUMBERS ARE RATIO.
NUMBER IN ( ) IS QUANTITY

PLANS

SD — SMOKE DUCT DETECTOR

MANUAL MOTOR STARTER

MAGNETIC MOTOR STARTER

COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH

UNFUSED DISCONNECT SWITCH

F — FUSED DISCONNECT SWITCH

PANELBOARD

M — MOTOR FURNISHED AND INSTALLED UNDER OTHER DIVISION, CONNECTED UNDER DIVISION 16.

M — PACKAGED MOTOR WITH MOTOR STARTER AND CONTROL FURNISHED AND INSTALLED UNDER OTHER DIVISIONS, CONNECTED UNDER DIVISION 16.

EQUIPMENT FURNISHED AND INSTALLED UNDER OTHER DIVISIONS, CONNECTED UNDER DIVISION 16.

J — JUNCTION BOX

TYPICAL DUCT BANK SECTION
[XX] 5" — INDICATES WIRE WIRE TYPE AND QUANTITY WITHIN DUCT.
SPARE 5" — INDICATES SIZE OF DUCT.
SECTION #

G — GROUND ROD: TYPE AND SIZE AS INDICATED ON PLAN OR IN SPECIFICATIONS.

G—G—G — EXOTHERMIC CONNECTION

GROUND ROD AND TEST WELL

GROUND PLATE: TYPE AND SIZE AS INDICATED ON PLAN OR IN SPECIFICATIONS.

G—G—G — EXOTHERMIC CONNECTION

G—G—G — BOLTED CONNECTION

G — GROUNDING CABLE

CONDUIT RUNS UNDERGROUND OR EMBEDDED IN CONCRETE

CONDUIT RUNS OVERHEAD

CONDUIT RUNS
PIPE LINE HEAT TRACING. FOR RATING SEE SPECIFICATIONS AND PLANS

XXX — SEE ABBREVIATION FOR ITEM TYPE

ELECTRICAL UTILITY POLE

DT3 1 a — SURFACE, RECESSED OR PENDANT MOUNTED LUMINARIE

SURFACE, RECESSED OR PENDANT MOUNTED LUMINARIE

SURFACE, RECESSED OR PENDANT MOUNTED NON-SWITCHED LUMINARIE (NIGHT LIGHT)

WALL MOUNTED INCANDESCENT, FLUORESCENT OR HIGH INTENSITY DISCHARGE LUMINARIE

POLE OR POST-TOP MOUNTED LUMINARIE

ROADWAY LUMINARIE

WALL MOUNTED EXIT LIGHT. ARROW (IF SHOWN) INDICATES DIRECTION OF EGRESS

CEILING OR PENDANT MOUNTED EXIT LIGHT. ARROW (IF SHOWN) INDICATES DIRECTION OF EGRESS

BATTERY OPERATED AUXILIARY LIGHTING UNIT, MOUNT 7'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED

REMOTE MOUNTED AUXILIARY LIGHTING HEAD MOUNTED 7'-6" ABOVE FLOOR UNLESS OTHERWISE NOTED.

"1" DENOTES PANELBOARD BRANCH CIRCUIT #1. "a" DENOTES CONTROLLED BY LOCAL SWITCH "a". "DT3" DENOTES FIXTURE TYPE. "E" DENOTES EXISTING FIXTURE

PLANS

S_a — SINGLE POLE SWITCH CONTROLS FIXTURES MARKED "a"

S_{2_b} — DOUBLE POLE SWITCH CONTROLS FIXTURES MARKED "b"

S_{3_c} — THREE-WAY SWITCH CONTROLS FIXTURES MARKED "c"

S_{4_d} — FOUR-WAY SWITCH CONTROLS FIXTURES MARKED "d"

HOA_e — HAND-OFF-AUTO SELECTOR SWITCH CONTROLS FIXTURES MARKED "e"

S_{MD} — MOTION DETECTOR INTERGRAL TO WALL SWITCH

OS — OCCUPANCY SENSOR (CEILING MOUNTED)

FLOOR/CEILING MOUNTED QUAD RECEPTACLE/DATA RECEPTACLE REFER TO FLOOR PLANS AND LEGEND FOR ADDITIONAL INFORMATION (GROUND TYPE)

FLOOR/CEILING MOUNTED QUAD RECEPTACLE REFER TO FLOOR PLANS AND LEGEND FOR ADDITIONAL INFORMATION (GROUND TYPE)

FLOOR/CEILING MOUNTED DUPLEX RECEPTACLE REFER TO FLOOR PLANS AND LEGEND FOR ADDITIONAL INFORMATION (GROUND TYPE)

FLOOR/CEILING MOUNTED DATA RECEPTACLE REFER TO FLOOR PLANS AND LEGEND FOR ADDITIONAL INFORMATION

GFCI — DUPLEX RECEPTACLE (GROUND TYPE) GFCI DENOTES GROUND FAULT CIRCUIT INTERRUPTER

WPG — DUPLEX RECEPTACLE (GROUND TYPE) GFCI WITHIN WEATHERPROOF ENCLOSURE

GFCI — QUAD RECEPTACLE (GROUND TYPE) GFCI DENOTES GROUND FAULT CIRCUIT INTERRUPTER

SPECIAL PURPOSE RECEPTACLE, TYPE AND AMPERE RATING AS INDICATED ON PLAN

WP — DUPLEX RECEPTACLE (GROUND TYPE), "WP" DENOTES WEATHERPROOF, "XP" DENOTES EXPLOSION PROOF

RECESSED TELEPHONE/DATA OUTLET, MOUNTED 48" AFF

SURFACE MOUNTED TELEPHONE/DATA OUTLET MOUNTED 48" AFF

RECESSED DATA OUTLET MOUNTED 48" AFF

SURFACE MOUNTED DATA OUTLET, MOUNTED 48" AFF

RI — REMOTE INDICATOR

I — SURFACE MOUNTED INTERCOM WALL OUTLET AND HAND STATION, MOUNTED 48" A.F.F.

I — CEILING FLUSH MOUNTED INTERCOM SPEAKER

I — TRUMPET TYPE INTERCOM LOUDSPEAKER

SECURITY

CR — CARD ACCESS READER (MOUNTED 3'-6" A.F.F.)

KP — KEYPAD ENTRY (MOUNTED 3'-6" A.F.F.)

EDL — ELECTRONIC DOOR LOCK (COORD. MOUNTING HEIGHT WITH ARCHITECTURAL PLANS AND DOOR HARDWARE REQUIREMENTS)

MD REX — REQUEST TO EXIT DETECTOR (COORD. MOUNTING HEIGHT WITH ARCHITECTURAL PLANS AND DOOR HARDWARE REQUIREMENTS)

CCTV CAMERA WITH INFRARED ILLUMINATOR (CEILING MOUNTED)

CRCP — CARD READER CONTROL PANEL (MOUNTED 3'-6" A.F.F.

SSCP — SECURITY CONTROL PANEL (MOUNTED 3'-6" A.F.F.)

MD — MOTION DETECTOR (CEILING MOUNTED)

MD REX — REQUEST TO EXIT MOTION DETECTOR (CEILING MOUNTED)

IS-D — INTRUSION SWITCH – DOOR

IS-W — INTRUSION SWITCH – WINDOW GLASS/BREAK

LEGEND:

DEMOLITION WORK – COORDINATE DISCONNECTING AND REMOVING ELECTRICAL WORK WITH DEMOLITION WORK PROVIDED UNDER OTHER DIVISIONS AND EXISTING CONDITIONS.

NEW WORK

EXISTING WORK

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALARM
AN	ANNUNCIATOR
ARMS	ARC REDUCTION MAINTENANCE SWITCH
ATO	AUTOMATIC THROW-OVER SYSTEM
ATS	AUTOMATIC TRANSFER SWITCH
CAH	CHEMICAL ALARM HORN
CHS	CHEMICAL ALARM INITIATING HAND SWITCH
CACP	CARD ACCESS CONTROL PANEL
CAP	CHEMICAL ALARM PANEL
CLF	CURRENT LIMITING FUSE
CMS	COMBINATION MOTOR STARTER
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
DB	DUCT BANK
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
EE	ELECTRICAL ENCLOSURE
EF	EXHAUST FAN
EHH	ELECTRICAL HAND HOLE
EL	ELEVATION
EMH	ELECTRICAL MANHOLE
EOV	ELECTRICALLY OPERATED VALVE
ES	EMERGENCY STOP SWITCH (MAIINTAINED CONTACT) (PROVIDE DEVICE THAT CAN BE LOCKED IN THE OFF POSITION)
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
FAA	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FANM	FIRE ALARM NETWORK MODULE
FS	SPRINKLER SYSTEM FLOW SWITCH
FSL	FIRE ALARM STATUS LIGHT
FIS	IONIZATION SMOKE DETECTOR STATUS STATION
FSR	FORWARD-STOP-REVERSE
FTC	FIRE FIGHTER'S TELEPHONE STORAGE CABINET
GANP	GENERATOR ANNUCIATOR PANEL
GEN	GENERATOR
GFP	GROUND FAULT PROTECTION
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GSC	GROUNDED SERVICE CONDUCTOR
GSCT	GROUND SENSING CURRENT TRANSFORMER
G	GROUND
HA	HAND-AUTOMATIC
HH	HAND HOLE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HS	HAND SWITCH
HTR	MOTOR HEATER
IL	INDICATING LIGHT
IR	IN REMOTE
ISB	INTRINSICALLY SAFE BARRIER
JB	JUNCTION BOX
KP	KEY PAD
KS	KEY SWITCH
KW	KILOWATT
LCS	LOCAL CONTROL STATION
LOR	LOCAL-OFF-REMOTE
LP	LIGHTING PANEL
LR	LOCAL-REMOTE
LS	LIMIT SWITCH

ABBREVIATIONS

MH	MANHOLE
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MM	MAINTENANCE MODE
MS	MOTOR STARTER
MOV	MOTOR OPERATED VALVE
MVT	PAD-MOUNTED TRANSFORMER
NATS	NON-AUTOMATIC TRANSFER SWITCH
NIR	NOT IN REMOTE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
OC	OPEN-CLOSE
O/C/T	OPEN/CLOSE/TRIP
OL'S	MOTOR OVERLOADS
OSC	OPEN-STOP-CLOSE
PB	PULL BOX
PLC	PROCESS LOGIC CONTROLLER
PM	POWER MONITOR
ROA	RUN-OFF-AUTOMATIC
ROR	RUN-OFF-REMOTE
SAAP	SECURITY ALARM ANNUNCIATOR PANEL
SSCP	SECURITY SYSTEM CONTROL PANEL
SEL	SELECTOR SWITCH
SF	SLOW-FAST
SFS	SLOW-FAST-STOP
SOFA	SLOW-OFF-FAST-AUTOMATIC
SPD	SURGE PROTECTION DEVICE
SS	START-STOP
SV	SOLENOID VALVE
SW	SWITCH
T	TRANSFORMER
TC	TIMED CLOSE
TD	TIME DELAY RELAY
TO	TIMED OPEN
TI	TIMER
TMH	TELEPHONE MAN HOLE
TQ	TORQUE ALARM SWITCH
TR	TRANSFORMER
TS	TEMPERATURE SENSOR
TX	TRANSFORMER, DRY-TYPE
TTC	TELEPHONE TERMINAL CABINET
TYP	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
W	DENOTES WATERTIGHT EQUIPMENT
WP	DENOTES WEATHERPROOF EQUIPMENT
XFMR	TRANSFORMER
XP	DENOTES EXPLOSION PROOF EQUIPMENT
XST	EXISTING
ZSS	ZERO SPEED SWITCH
AE	ANALYZER SENSOR
AIT	ANALYZER INDICATING TRANSMITTER
CFS	CHEMICAL FILL STATION PANEL
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
LIT	LEVEL INSTRUMENT TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW-LOW
MSH	MOISTURE SWITCH HIGH
O2	OXYGEN MONITOR
PS	PRESSURE SWITCH
TIT	TEMP INDICATING TRANSMITTER
TSH	TEMP SWITCH HIGH

GENERAL NOTES

1. SWITCHBOARD AND MCC COMPARTMENT DESIGNATIONS AS FOLLOWS:
   - BLANK: NOT INTENDED FOR USE, PLATE ONLY.
   - SPACE: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN
   - SPARE: CONTAINS A COMPLETE BREAKER, VFD OR STARTER INSTALLED, SIZE AS INDICATED AVAILABLE FOR FUTURE USE.
2. CONDUIT INSTALLATIONS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL TO BEAMS AND WALLS.
3. CONDUIT AND WIRE (NOT SHOWN) FOR LIGHTING FIXTURES, SWITCHES AND/OR RECEPTACLES SHALL BE FURNISHED AND INSTALLED AND SHALL BE:
   - A. 3/4" (MIN.) RIGID METAL CONDUIT
     - A1. EXPOSED IN UNFINISHED AREAS.
     - A2. CONCEALED ABOVE SUSPENDED CEILINGS AND IN WALLS IN FINISHED AREAS.
   - B. NO. 12 CU. WIRE (MIN.) TYPE "THWN/THHN" NO. OF WIRES AS REQUIRED, INCLUDING GROUND. PROVIDE TRAY RATED CABLE WHEN RUN IN CABLE TRAY.
4. PROVIDE COMPONENTS AND DEVICE ENCLOSURES RATED IN ACCORDANCE WITH THE NEMA RATINGS ON THE AREA CLASSIFICATION SCHEDULE.
5. DUCT BANK CONDUIT SIZES ARE GIVEN IN THE DUCT BANK CALLOUTS. WHERE THE SAME CONDUIT NUMBER IS USED BOTH IN THE DUCT BANK AND IN A BUILDING, THE CONDUIT SIZE GIVEN IN THE CONDUIT SCHEDULE APPLIES TO THE CONDUIT IN THE BUILDING ONLY.
6. FURNISH METAL PIPE SLEEVES FOR CONDUITS ROUTED THROUGH WALLS TO THE CONTRACTOR FOR PLACING IN WALLS PRIOR TO POURING OF CONCRETE.
7. ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, SWITCHBOARDS, MCCS AND VFDS, SHALL BE PROVIDED WITH A CONCRETE EQUIPMENT PAD IN ACCORDANCE WITH DRAWING 99 S-503, STRUCTURAL STANDARD DETAILS III.

ELECTRICAL SHEET NUMBERING

XY E-ZZZ

ZZZ – DRAWING NUMBER
- 000: GENERAL
- 100: PLANS – ELECTRICAL PLANS – LOWER/GRADE LEVELS
- 200: PLANS – ELECTRICAL PLANS – UPPER LEVEL
- 300: PLANS – ELECTRICAL PLANS – ROOF LEVEL
- 500: DETAILS
- 600: DIAGRAMS

XY – SITE LOCATION
- 00: GENERAL
- 10: WASTE WATER TREATMENT FACILITY (WWTF)
- 15: SBR NO.1 & NO.2
- 20: EQUIPMENT STORAGE FACILITY
- 25: IN-PLANT SANITARY PUMP STATION
- 30: WICK DISTRIBUTION VAULT & WICK WELLS
- 99: DETAILS

EXAMPLE:
10 E-001 – WWTF – ELECTRICAL SITE PLAN
15 E-101 – SBR NO.1 & NO.2 – ELECTRICAL POWER PLAN – GRADE LEVEL

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS — ANDREA ABRAHAM — ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

A9	04-30-20	ADDENDUM 9
1	03-24-2020	ADDENDUM 7
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NUMBER

00 E-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\00\E-001.DWG
LAST UPDATE: Tuesday, March 24, 2020 1:46:27 AM
PLOT DATE: Tuesday, March 24, 2020 4:11:22 AM

CONDUIT AND WIRE SCHEDULE

MEDIUM VOLTAGE POWER WIRING

[MV-1] 5"C, CABLE PROVIDED AND INSTALLED BY ELECTRICAL UTILITY.

LOW VOLTAGE POWER WIRING

[PA] 1"C, 2-12 AWG, 1-12 AWG (G)
[PA-4] 1"C, 4-12 AWG, 1-12 AWG (G)
[PA-6] 1"C, 6-12 AWG, 1-12 AWG (G)
[PB] 1"C, 3-12 AWG, 1-12 AWG (G)
[PC] 1C, 3-10 AWG, 1-10 AWG (G)
[PC-2] 1"C, 2-10 AWG, 1-10 AWG (G)
[PC-10] 2"C, 10-10 AWG, 1-10 AWG (G) 1
[PD] 1"C, 3-8 AWG, 1-10 AWG (G)
[PD-1] 1"C, 3-8 AWG, 1-10 AWG (G)
[PD-2] 1"C, 2-8 AWG, 1-10 AWG (G)
[PD-4] 1"C, 4-8 AWG, 1-10 AWG (G)
[PE] 1"C, 3-6 AWG, 1-10 AWG (G)
[PE-2] 1"C, 2-6 AWG, 1-10 AWG (G)
[PE-4] 1"C, 4-6 AWG, 1-10 AWG (G)
[PF] 1"C, 3-4 AWG, 1-10 AWG (G)
[PF-4] 1 1/2"C, 4-4 AWG, 1-10 AWG (G)
[PG] 1"C, 3-4 AWG, 1-8 AWG (G)
[PG-4] 1"C, 4-4 AWG, 1-8 AWG (G)
[PH] 1 1/4"C, 3-2 AWG, 1-8 AWG (G)
[PH-4] 1 1/2"C, 4-2 AWG, 1-8 AWG (G)
[PJ] 1 1/2"C, 3-1 AWG, 1-8 AWG (G)
[PJ-4] 1 1/2"C, 4-1 AWG, 1-8 AWG (G)
[PK] 1 1/2"C, 3-1 AWG, 1-6 AWG (G)
[PK-4] 1 1/2"C, 4-1 AWG, 1-6 AWG (G)
[PL] 1 1/2"C, 3-1/0 AWG, 1-6 AWG (G)
[PL-4] 1 1/2"C. 4-1/0 AWG, 1-6 AWG (G)
[PM] 1 1/2"C, 3-2/0 AWG, 1-6 AWG (G)
[PM-4] 2"C, 4-2/0 AWG, 1-6 AWG (G)
[PN] 2"C, 3-3/0 AWG, 1-6 AWG (G)
[PP] 2"C, 3-4/0 AWG, 1-4 AWG (G)
[PQ] 2 1/2"C, 3-250 KCM, 1-4 AWG(G)
[PR] 3"C, 3-350 KCM, 1-4 AWG(G)
[PS] 3"C, 3-350 KCM, 1-2 AWG(G)
[PT] 3"C, 3-500 KCM, 1-2 AWG(G)
[PU] 2-2"C, 6-3/0 AWG, 2-2 AWG(G)
[PV] 2-2"C, 6-4/0 AWG, 2-2 AWG(G)
[PW] 2-2"C, 6-250 KCM, 2-2 AWG(G)
[PX] 2-3"C, 6-350 KCM, 2-1 AWG(G)
[PY] 2-3"C, 6-500 KCM, 1-1/0 AWG(G)
[PZ] 3-3"C, 9-350 KCM, 3-1/0 AWG(G)
[PPB] 3-3"C, 9-500 KCM, 3-2/0 AWG(G)
[PPC] 3-3"C, 9-500 KCM, 3-3/0 AWG(G)
[PPD] 4-3"C, 12-350 KCM, 4-3/0 AWG(G)
[PPD-4] 4-3"C, 16-350 KCM, 4-3/0 AWG(G)
[PPE] 4-3"C, 12-500 KCM, 4-4/0 AWG(G)
[PPF] 5-3"C, 15-500 KCM, 5-4/0 AWG(G)
[PPF-4] 5-3"C, 20-500 KCM, 5-4/0 AWG(G)
[PPG] 6-3"C, 18-500 KCM, 6-250 KCM(G)
[PPG-4] 6-4"C, 24-500 KCM, 6-250 KCM(G)
[PPH] 7-4"C, 21-500 KCM, 7-350 KCM(G)
[PPJ] 8-4"C, 32-500 KCM, 8-500 KCM(G)

SIGNAL WIRING

[D2] 3/4"C, 2-14 AWG, 1-14 AWG (G)
[D3] 3/4"C, 3-14 AWG, 1-14 AWG (G)
[D4] 3/4"C, 4-14 AWG, 1-14 AWG (G)
[D5] 3/4"C, 5-14 AWG, 1-14 AWG (G)
[D6] 3/4"C, 6-14 AWG, 1-14 AWG (G)
[D7] 3/4"C, 7-14 AWG, 1-14 AWG (G)
[D8] 3/4"C, 8-14 AWG, 1-14 AWG (G)
[D9] 3/4"C, 9-14 AWG, 1-14 AWG (G)
[D10] 3/4"C, 10-14 AWG, 1-14 AWG (G)
[D11] 1"C, 11-14 AWG, 1-14 AWG (G)
[D12] 1"C, 12-14 AWG, 1-14 AWG (G)
[D13] 1"C, 13-14 AWG, 1-14 AWG (G)
[D14] 1"C, 14-14 AWG, 1-14 AWG (G)
[D15] 1"C, 15-14 AWG, 1-14 AWG (G)
[D16] 1"C, 16-14 AWG, 1-14 AWG (G)
[D17] 1"C, 17-14 AWG, 1-14 AWG (G)
[D18] 1"C, 18-14 AWG, 1-14 AWG (G)
[D19] 1"C, 19-14 AWG, 1-14 AWG (G)
[D20] 1"C, 20-14 AWG, 1-14 AWG (G)
[D28] 1"C, 28-14 AWG, 1-14 AWG (G)
[D30] 1"C, 30-14 AWG, 1-14 AWG (G)
[D34] 1 1/2"C, 34-14 AWG, 1-14 AWG (G)
[D40] 1 1/2"C, 40-14 AWG, 1-14 AWG (G)
[D50] 1 1/2"C, 50-14 AWG, 1-14 AWG (G)
[D60] 1 1/2"C, 60-14 AWG, 1-14 AWG (G)

CONTROL WIRING

[VSC] 1"C, VENDOR SUPPLIED CABLE
[CX] 1" C, COAXIAL CABLE
[E1] 1"C, 1-CAT 6 CABLE
[E2] 1"C, 2-CAT 6 CABLES
[FO1] 1"C, 1-FIBER OPTIC MEDIA CABLE
[FO2] 1"C, 2-FIBER OPTIC MEDIA CABLES
[C1] 1"C, 1-TSP 16 AWG
[C2] 1"C, 2-TSP 16 AWG
[C3] 1"C, 3-TSP 16 AWG
[C4] 1 1/2"C, 4-TSP 16 AWG
[C5] 1 1/2"C, 5-TSP 16 AWG
[C6] 1 1/2"C, 6-TSP 16 AWG
[C7] 1 1/2"C, 7-TSP 16 AWG
[C8] 1 1/2"C, 8-TSP 16 AWG
[C9] 2"C, 9-TSP 16 AWG
[C10] 2"C, 10-TSP 16 AWG
[C11] 2"C, 11-TSP 16 AWG
[C12] 2"C, 12-TSP 16 AWG
[C13] 2"C, 13-TSP 16 AWG
[C19] 2 1/2"C, 19-TSP 16 AWG
[C20] 2/1/2" C, 20-TSP 16 AWG
[T2] 1"C, 1-2 PAIR TELEPHONE CABLE
[T10] 2" C, 1-1O PAIR TELEPHONE CABLE

GROUNDING:

NOTE: ALL G SERIES WIRING SHALL BE CONNECTED TO GROUNDING BUS BAR LOCATED IN THE ELECTRICAL ROOM UNLESS OTHERWISE INDICATED. INSTALL IN PVC CONDUIT.

[G1] 1"C, 1-12 AWG(G)
[G2] 1"C, 1-10 AWG(G)
[G3] 1"C, 1-8 AWG(G)
[G4] 1C, 1-6 AWG(G)
[G5] 1"C, 1-4 AWG(G)
[G6] 1"C, 1-2 AWG(G)
[G7] 1"C, 1-1/0 AWG(G)
[G8] 1"C, 1-2/0 AWG(G)
[G9] 1 1/2"C, 1-3/0 AWG(G)
[G10] 1 1/2"C, 1-4/0 AWG(G)
[G11] 1 1/2"C, 1-250 KCM(G)
[G12] 2"C, 1-350 KCM(G)
[G13] 2"C, 1-500 KCM(G)

CONDUIT AND WIRE SCHEDULE NOTES:

1. FOR CIRCUITS RUN IN DUCT BANKS, THE DUCT SIZE INDICATED ON THE DUCT BANK SCHEDULE GOVERNS THE CONDUIT SIZE IN THE DUCT BANK. CONDUIT SIZES SHOWN HERE GOVERNS CONDUIT SIZE WHEN NOT RUN IN DUCT BANK.

ENVIRONMENTAL CLASSIFICATIONS*

LOCATION	NEMA TYPE					HAZARDOUS CLASS 1 GROUP D**		REMARKS
	1	3R	4	4X	12	DIV. 1	DIV. 2	SEE BELOW
(10) - WASTE WATER TREATMENT FACILITY (WWTF)								
VEST-1	x							1
101 - TRUCK BAY/SEPTAGE RECEIVING						x		
102 - GARAGE				x				
103 - BREAK ROOM	x							
104 - CHEM STORAGE ROOM - SH & PACL				x				
105 - CONFERENCE ROOM	x							
106 - SUPER. OFFICE	x							
107 - COPY ROOM	x							
108 - ELECTRICAL ROOM	x							
109 - MECHANICAL ROOM					x			
110 - STORAGE ROOM					x			
111 - MENS ROOM	x							
112 - MENS SHOWER					x			
113 - WOMENS ROOM	x							
114 - WOMENS SHOWER					x			
115 - LABORATORY	x							
116 - CONTROL ROOM	x							
117 - CHEM STORAGE ROOM - POLYMER				x				
118 - HEADWORKS ROOM						x		R3
119 - DISK FILTER ROOM				x				
120 - CORRIDOR	x							
121 - WASTE SLUDGE STORAGE TANK NO.2						x		R3
122 - THICKENED SLUDGE STORAGE TANK				x				
123 - POST EQUALIZATION TANK				x				
124 - PRE-EQUALIZATION TANK NO.1						x		R3
125 - PRE-EQUALIZATION TANK NO.2						x		R3
126 - BASEMENT PUMP ROOM			x					
STR-1, STR-2					x			
130 - CLOSET					x			
132 - MOP AREA					x			
133 - LAUNDRY	x							
134 - WASTE SLUDGE STORAGE TANK NO.1						x		R3
135 - CHEM STORAGE ROOM - SODA ASH				x				
ODOR CONTROL							x	R5
(15) - SBR TANKS								
128 - SBR TANK NO. 1							x	R4
129 - SBR TANK NO.2							x	R4
(20) - EQUIPMENT STORAGE FACILITY								
201 - EQUIPMENT STORAGE FACILITY			x					
202 - EQUIPMENT STORAGE FACILITY ADMIN	x							
(25) - SANITARY PUMP STATION								
SANITARY PUMP STATION						x		R3
(30) -WICK DISTRIBUTION								
WICK DISTRIBUTION VAULT			x					
WICK WELLS NO.1/2/3/4/5				x				
OUTDOORS (UNLESS OTHERWISE COVERED ABOVE)				x				R1

REMARKS:

* PROVIDE EQUIPMENT AND INSTALLATION TO COMPLY WITH AREA CLASSIFICATION REQUIREMENTS.

** RADIUS SHALL EXTEND TO ALL DIRECTIONS UNLESS SPECIFICALLY IDENTIFIED AS A HORIZONTAL OR VERTICAL RADIUS.

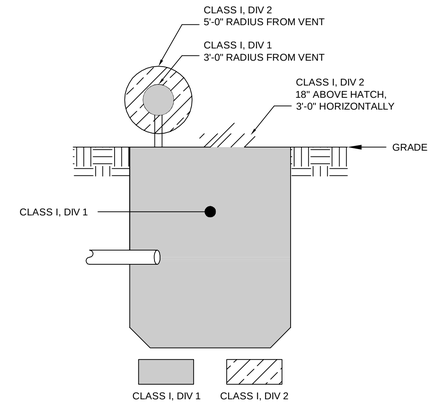
R1 = OUTDOORS ARE AREAS NOT ENCLOSED BY WALLS AND CEILING.

R2 = SEE FIGURE R2 THIS SHEET.

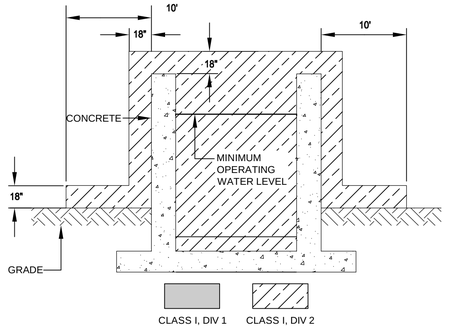
R3 = TANKS AND ENCLOSED STRUCTURES 1
CLASS 1 DIVISION 1 INSIDE TANK/STRUCTURE
CLASS 1 DIVISION 1 WITHIN 0.9 M (3 FT) RADIUS FROM VENT
CLASS 1 DIVISION 2 WITHIN 1.5 M (5 FT) RADIUS FROM VENT
CLASS 1 DIVISION 2 WITHIN 0.9 M (3 FT) HORIZONTAL RADIUS FROM HATCH
CLASS 1 DIVISION 2 WITHIN 1.5 M (5 FT) VERTICAL RADIUS FROM HATCH
NEMA 4X AREA BEYOND CLASSIFIED RADIUS
SEE FIGURE R3 THIS SHEET.

R4 = TANKS NOT ENCLOSED, OPEN TO ATMOSPHERE
CLASS I DIVISION 2 INSIDE TANK FROM MINIMUM OPERATING WATER SURFACE TO THE TOP OF THE TANK WALL
CLASS I DIVISION 2 RADIUS EXTENDS 0.46 M (18 IN.) ABOVE THE TOP OF THE TANK AND EXTENDING 0.46 M (18 IN.) BEYOND THE XTERIOR WALL.
CLASS I DIVISION 2 RADIUS 0.46 M (18 IN.) ABOVE GRADE EXTENDING 3 M (10 FT) HORIZONTALLY FROM THE EXTERIOR TANK WALLS.
SEE FIGURE R4 THIS SHEET.

R5 = PRIMARY ODOR ODOR CONTROL
CLASS I DIVISION 2 EXTENDS 0.9 M (3 FT) RADIUS FROM VENT. NEMA 4X BEYOND.



R3
ENCLOSED TANKS AND STRUCTURES
CLASSIFICATION DETAIL



R4
TANKS NOT ENCLOSED, OPEN TO ATMOSPHERE
CLASSIFICATION DETAIL

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 34962
REGISTERED
PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

ELECTRICAL SCHEDULES I

SHEET NUMBER

00 E-601

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E00\E-601.DWG
LAST UPDATE: Tuesday, March 24, 2020 12:36:47 AM
PLOT DATE: Tuesday, March 24, 2020 11:29 AM

LUMINAIRE SCHEDULE

LUMINAIRE TYPE	LUMINAIRE MTG	LAMP TYPE	LAMP WATTS	VOLTAGE	GUIDELINE MANUFACTURER	OR EQUAL	REMARKS AND OPTIONS
BM1	PEND	LED	45	MVOLT	LITHONIA SERIES FEM LED	OR EQUAL	LUMINAIRE 4'-0", ONE-PIECE FIBERGLASS HOUSING, LED'S MOUNTED TO CORE CIRCUIT BOARD, SPREAD LIGHT DISTRIBUTION, POLYCARBONATE LENS, O-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S (6,000 LUMENS), CRI OF 80, NEMA 4X LISTED.
BM2	PEND	LED	59	MVOLT	LITHONIA SERIES FHE LED	OR EQUAL	LUMINAIRE 2'-0", ONE-PIECE FIBERGLASS HOUSING, LED'S MOUNTED TO CORE CIRCUIT BOARD, MEDIUM LIGHT DISTRIBUTION, CLEAR POLYCARBONATE LENS, 0-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S (9,000 LUMENS), CRI OF 80, NEMA 4X LISTED.
BM3	PEND	LED	79	MVOLT	LITHONIA SERIES FHE LED	OR EQUAL	LUMINAIRE 2'-0", ONE-PIECE FIBERGLASS HOUSING, LED'S MOUNTED TO CORE CIRCUIT BOARD, MEDIUM LIGHT DISTRIBUTION, CLEAR POLYCARBONATE LENS, 0-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S (12,000 LUMENS), CRI OF 80, NEMA 4X LISTED.
BM4	PEND/ WALL/ CEILING	LED	20	MVOLT	LITHONIA SERIES CLX LED STRIP	OR EQUAL	LUMINAIRE 4'-0", STEEL HOUSING, BAKED WHITE POLYESTER FINISH, LED'S MOUNTED TO CORE CIRCUIT BOARD, WIDE LIGHT DISTRIBUTION, DIFFUSE ACRYLIC LENS, 0-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S (3,000 LUMENS), CRI OF 80, UL LISTED.
CJ1	GRID	LED	16	120	LITHONIA SERIES 2VTL	OR EQUAL	LUMINAIRE 2'-0" x 2'-0" RECESSED GRID MODEL, ACRYLIC LINEAR PRIMATIC DIFFUSER, VOLUMETRIC LIGHT DISTRIBUTION, WHITE PAINTED REFLECTOR, DIE-FORMED FRAME, HIGH EFFICIENCY LED DRIVERS, LED'S MOUNTED TO CORE CIRCUIT BOARDS, 0-10V DIMMING DRIVER, 2,000 NOMINAL LUMENS, 4000K LED'S, MINIMUM OF 80 CRI, IC RATED, CSA CERTIFIED. PROVIDE DRYWALL CEILING ADAPTER WITH TRIM KIT WHEN NOT USED WITH A DROP CEILING
CJ2	GRID	LED	26	120	LITHONIA SERIES 2VTL	OR EQUAL	LUMINAIRE 2'-0" x 2'-0" RECESSED GRID MODEL, ACRYLIC LINEAR PRIMATIC DIFFUSER, VOLUMETRIC LIGHT DISTRIBUTION, WHITE PAINTED REFLECTOR, DIE-FORMED FRAME, HIGH EFFICIENCY LED DRIVERS, LED'S MOUNTED TO CORE CIRCUIT BOARDS, 0-10V DIMMING DRIVER, 3,000 NOMINAL LUMENS, 4000K LED'S, MINIMUM OF 80 CRI, IC RATED, CSA CERTIFIED. PROVIDE DRYWALL CEILING ADAPTER WITH TRIM KIT WHEN NOT USED WITH A DROP CEILING
CJ3	GRID	LED	33	120	LITHONIA SERIES 2VTL	OR EQUAL	LUMINAIRE 2'-0" x 2'-0" RECESSED GRID MODEL, ACRYLIC LINEAR PRIMATIC DIFFUSER, VOLUMETRIC LIGHT DISTRIBUTION, WHITE PAINTED REFLECTOR, DIE-FORMED FRAME, HIGH EFFICIENCY LED DRIVERS, LED'S MOUNTED TO CORE CIRCUIT BOARDS, 0-10V DIMMING DRIVER, 4,000 NOMINAL LUMENS, 4000K LED'S, MINIMUM OF 80 CRI, IC RATED, CSA CERTIFIED. PROVIDE DRYWALL CEILING ADAPTER WITH TRIM KIT WHEN NOT USED WITH A DROP CEILING
DD1	GRID	LED	112	120	CROUSE-HINDS SERIES HAZARD-GARD EVLL	OR EQUAL	CLASS I, DIVISION 1 LUMINAIRE, COPPER FREE ALUMINUM HOUSING, GRAY POWDER COAT FINISH, HIGH EFFICIENCY LED DRIVERS, LED'S MOUNTED TO CORE CIRCUIT BOARDS, 11,000 NOMINAL LUMENS, 4000K LED'S, MINIMUM OF 80 CRI, STAINLESS STEEL HARDWARE, UL LISTED.
DD2	GRID	LED	149	120	CROUSE-HINDS SERIES HAZARD-GARD EVLL	OR EQUAL	CLASS I, DIVISION 1 LUMINAIRE, COPPER FREE ALUMINUM HOUSING, GRAY POWDER COAT FINISH, HIGH EFFICIENCY LED DRIVERS, LED'S MOUNTED TO CORE CIRCUIT BOARDS, 13,000 NOMINAL LUMENS, 4000K LED'S, MINIMUM OF 80 CRI, STAINLESS STEEL HARDWARE, UL LISTED.
EM1	WALL	LED	50	MVOLT	PARAFLEX SERIES DCSLM	OR EQUAL	WALL MOUNTED LUMINIARE, DIE CAST ALUMINUM HOUSING, THERMOSET POWDER COAT FINISH, (CUSTOM COLORED FINISH TO BE APPLIED TO THIS FIXTURE, COORDINATE COLOR WITH ARCHITECT), 4000K LED'S (5,193 LUMENS), HIGH EFFICIENCY DRIVER, BUTTON TYPE PHOTOCELL, FIELD ADJUSTABLE DISTRIBUTION, POLYCARBONATE LENS, CRI OF 80, WET LOCATION LISTED.
EM2	WALL	LED	40	120/277V	DIALIGHT SERIES SAFESITE LED AREA LIGHT	OR EQUAL	CLASS I, DIVISION 1, WALL MOUNTED LUMINAIRE, COPPER FREE ALUMINUM HOUSING, GRAY POLYESTER FINISH, GLASS LENS, STAINLESS STEEL HARDWARE, 0 DEGREE WALL MOUNT ACCESSORY, 4000K LED'S (4,001 - 5000 LUMENS), 0-10V DIMMING, HIGH EFFICIENCY DRIVER, -40°C to +65°C OPERATING TEMPERATURE RANGE, 6kv SURGE SUPPRESOR, MINIMUM CRI OF 80, UL LISTED.
EU1	WALL	LED	**2-6**	MVOLT	EMERGI-LITE SERIES JS-HP	OR EQUAL	EMERGENCY BATTERY UNIT, GRAY STEEL HOUSING, 12 VOLT, 40 WATT BATTERY WITH TWO 6 WATT LED HEADS, NON-AUDIBLE ADVANCED DIAGNOSTICS AND SELF-TEST, NEMA 1 LISTED, UL LISTED. PROVIDE BACKUP BATTERY POWER TO REMOTE HEADS RH1A/1B AND RH2A/2B AS SHOWN ON CONTRACT DRAWINGS.
EU2	WALL	LED	2-6	MVOLT	EMERGI-LITE SERIES HP	OR EQUAL	EMERGENCY BATTERY UNIT, GRAY FIBERGLASS HOUSING, STAINLESS STEEL HARDWARE, 12 VOLT, 40 WATT BATTERY WITH TWO 6 WATT LED HEADS, NON-AUDIBLE ADVANCED DIAGNOSTICS AND SELF-TEST, NEAM 4X LISTED, UL LISTED. PROVIDE BACKUP BATTERY POWER TO REMOTE HEADS RH1A/1B AND RH2A/2B AS SHOWN ON CONTRACT DRAWINGS.
EU3	WALL	LED	2-4	MVOLT	AZZ SERIES XPEL	OR EQUAL	CLASS I, DIVISION 1, EMERGENCY BATTERY UNIT, COPPER FREE ALUMINUM HOUSING, GRAY BAKED ON EPOXY FINISH, STAINLESS STEEL HARDWARE, TWO 4 WATT LED HEADS, MEDIUM BEAM DISTRIBUTION HEADS, NICKEL-CADIUM BATTERY, UL LISTED. PROVIDE BACKUP BATTERY POWER TO REMOTE HEAD K2 AS SHOWN ON CONTRACT DRAWINGS.
FA	PEND/WALL /CEILING	LED	-	120	LITHONIA SERIES CONTRACTOR SELECT EXR LED EXITS	OR EQUAL	EXIT SIGN, INJECTION-MOLDED THERMOPLATIC HOUSING, SINGLE FACE, RED LETTERS, WHITE BACKGROUND, NICKEL-CADIUM BATTERY, TEST SWITCH, STATUS INDICATOR, NEMA 1
FB	PEND/WALL /CEILING	LED	-	120	CROUSE-HINDS SERIES UX	OR EQUAL	EXIT SIGN, CAST ALUMINUM HOUSING (WHITE) WITH CLEAR POLYCARBONATE LENS, EQUIPPED WITH NICKEL CADIUM BATTERY, LONG LIFE LED'S, RED LETTERING, SELF DIAGNOSTICS/SELF TESTING, TIME DELAY, NEMA 4X LISTED.
FC	WALL/ PEND	LED	-	120	AZZ SERIES XPEX	OR EQUAL	EXIT SIGN, CLASS I, DIVISION 1, COPPER FREE ALUMINUM HOUSING, GRAY POWDER COAT FINISH, EQUIPPED WITH NICKEL CADIUM BATTERY, LONG LIFE LED'S, ACRYLIC LENS, SINGLE FACE, RED LETTERING, SELF DIAGNOSTICS, STAINLESS STEEL HARDWARE, UL LISTED.
K1	WALL	LED	1-4.1	-	SURE-LITES SERIES SEL SERIES REMOTE	OR EQUAL	EMERGENCY WEATHER-RESISTANT REMOTE HEAD, POLYCARBONATE HOUSING, UNIVERSAL VOLTAGE INPUT FROM 4.8V THROUGH 12V, 1-4.1 WATT HEADS (285 LUMENS), GREY FINISH, WET LOCATION, UL LISTED.
K2	WALL	LED	1-4	-	AZZ SERIES XPEL REMOTE HEAD	OR EQUAL	CLASS I, DIVISION I REMOTE HEAD, COPPER FREE HOUSING, PROVIDE EXPLOSION PROOF MOUNTED BOX FOR REMOTE HEAD UNIT, 1-4 WATT HEADS (285 LUMENS), GREY FINISH, UL LISTED. (TO BE POWERED ONLY OFF OF EU3 LUMINAIRES)
RH1A	WALL	LED	1-4.1	-	SURE-LITES SERIES SEL SERIES REMOTE	OR EQUAL	EMERGENCY WEATHER-RESISTANT REMOTE HEAD, POLYCARBONATE HOUSING, UNIVERSAL VOLTAGE INPUT FROM 4.8V THROUGH 12V, 1-4.1 WATT HEAD (285 LUMENS), WHITE FINISH, WET LOCATION, UL LISTED.
RH1B	WALL	LED	2-4.1	-	SURE-LITES SERIES SEL SERIES REMOTE	OR EQUAL	EMERGENCY WEATHER-RESISTANT REMOTE HEAD, POLYCARBONATE HOUSING, UNIVERSAL VOLTAGE INPUT FROM 4.8V THROUGH 12V, 2-4.1 WATT HEADS (285 LUMENS), WHITE FINISH, WET LOCATION, UL LISTED.
RH2A	WALL	LED	1-5	-	EMERGI-LITE SERIES SURVIVE-ALL EF39	OR EQUAL	SURFACE REMOTE EMERGENCY FIXTURE, ALUMINUM BACKPLATE, CLEAR POLYCARBONATE LIGHT COVER, FULLY GASKETED, 1-5 WATT 12V VOLT LED HEAD, NEMA 4X, UL LISTED, STAINLESS STEEL ACCESSORIES.
RH2B	WALL	LED	2-5	-	EMERGI-LITE SERIES SURVIVE-ALL EF39	OR EQUAL	SURFACE REMOTE EMERGENCY FIXTURE, ALUMINUM BACKPLATE, CLEAR POLYCARBONATE LIGHT COVER, FULLY GASKETED, 2-5 WATT 12V VOLT LED HEADS, NEMA 4X, UL LISTED, STAINLESS STEEL ACCESSORIES.
RC1	RECESSED	LED	23	MVOLT	GOTHAM LIGHTING - SERIES 6" EVO	OR EQUAL	RECESSED MOUNTED DOWN LIGHT, STEEL HOUSING, POLYCARBONATE LENSED LIGHT ENGINE, WHITE FLANGE FINISH, WIDE LIGHT DISTRIBUTION, SEMI SPECULAR DIFFUSER, 0-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S, (2,000 LUMENS), MINIMUM CRI OF 80, WET LOCATION WITH COVERED CEILINGS, UL LISTED.
SL1	POLE	LED	107	120-277V	STERNBERG LED E450LED EURO SERIES	OR EQUAL	LUMINAIRE WITH CAST ALUMINUM HOUSING, EURO LANTERN DESIGN, BLACK TEXTURED FINISH, TYPE T3 DISTRIBUTION, 21 HIGH OUTPUT 3500K LED'S (6485 LUMENS), LED'S MOUNTED TO CORE CIRCUIT BOARD, FLAT ACRYLIC LENS, 0-10V DIMMING, HIGH EFFICIENCY 1400mA DRIVER, MINIMUM CRI OF 80, R3 SLIP FITTER, POST TOP MOUNTING, WET LOCATION, BUTTON STYLE PHOTOCELL, UL LISTED. (MOUNTED ON LUMEC POLE BY SIGNIGY; RA61U-14-BKTX).
ST1	STAN.	LED	30	UNIV.	AZZ (RIGALITE) SERIES SAFJ LED	OR EQUAL	CLASS I, DIVISION 2 LUMINAIRE, LOW COPPER ALUMINUM HOUSING, WIDE LIGHT DISTRIBUTION PATTERN, CLEAR LOW PROFILE GLASS LENS, STAINLESS STEEL LENS GUARD, HIGH EFFIENCY DRIVER, 0-10V DIMMING, 30 WATTS, 4000K LED'S @ 1250ma (3,059 LUMENS), 10kV SURGE PROTECTION, BAKED-ON EPOXY GREY FINISH, MINIMUM CRI OF 70. MOUNTED ON 1-1/2" CONDUIT WITH 1-1/2" 90° STANCHION MOUNT ADAPTER, 110 MPH RATED ASSEMBLY, STAINLESS STEEL HARDWARE, UL LISTED.
WC1	WALL	LED	27	MVOLT	LITHONIA SERIES CONTEMPORARY CYLINDER 2'-0" LED VANITY WITH SWITCHABLE COLOR TEMP.	OR EQUAL	LUMINAIRE 2'-0", STEEL HOUSING BRONZE FINISH, LED'S MOUNTED TO CORE CIRCUIT BOARD, ACRYLIC DIFFUSER LENS, 0-10V DIMMING, HIGH EFFICIENCY DRIVER, 4000K LED'S, (1,850 LUMENS), MINIMUM CRI OF 90, DAMP LOCATION, UL LISTED.

EMERGENCY FIXTURES

TABLE OF RESPONSIBILITY - FIBER NETWORK SCOPE FOR WWTF & COLLECTION SYSTEM CONTRACTS

	ELEMENT	COLLECTION SYSTEM/ PUMP STATIONS CONTRACT 2019-01	WWTF/EFFLUENT DISPOSAL CONTRACT 2019-02
1	FURNISH AND INSTALL FIBER OPTIC NETWORK CABLE		X
2	FURNISH AND INSTALL CONDUITS FOR FIBER CONNECTION FROM WWTF TO RT. 7 CROSSING (TRENCH SECTIONS S1, S2) (EHH-S1, EHH-S2) 1		X
3	FURNISH AND INSTALL CONDUITS FOR FIBER CONNECTION FROM RT.7 CROSSING TO PS #1 (TRENCH SECTION S3) (EHH-S3.01/02/03/04) 1	X	
4	FURNISH AND INSTALL CONDUITS FOR FIBER CONNECTION FROM PUMP STATION #1 TO LOTS HOLLOW RD. (TRENCH SECTION S4) (EHH-S4.01/02/03/04/05/06/07/08/09/10/11/12) 1	X	
5	FURNISH AND INSTALL CONDUITS FOR FIBER CONNECTION FROM LOTS HOLLOW RD. TO WICK DIST. VAULT (TRENCH SECTION S5) (EHH-S5) 1		X

EQUIPMENT GROUNDING SCHEDULE

PROVIDE GROUNDING CONDUITS AND WIRES INDICATED FROM EQUIPMENT LISTED TO THE GROUNDING LOOP OR TO THE GROUNDING BUS BARS AS INDICATED AND IN ACCORDANCE WITH THE CONDUIT AND WIRE SCHEDULE. FOR GROUNDING OF PIPING AND OTHER MISCELLANEOUS ITEMS PROVIDE COMPLETE GROUNDING SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL REGULATIONS

EQUIPMENT	GROUNDING CONDUIT AND WIRE	QTY.	NOTES
PAD MOUNTED TRANSFORMER	[G11]	TWO	TO GROUNDING LOOP
DIESEL GENERATOR GEN.10-1 ENCLOSURE	[G11]	TWO	TO GROUNDING LOOP
2000 AMPS SWITCHBOARD	-	TWO	TO GROUND BUS BAR
MOTOR CONTROL CENTER	[G7]	TWO	TO GROUND BUS BAR
LESS THAN 300 HP TO 100 HP VFD UNIT	[G5]	ONE	TO GROUND BUS BAR
LESS THAN 100 HP TO 50 VFD UNIT	[G4]	ONE	TO GROUND BUS BAR
100 AMPS DISTRIBUTION PANEL	[G3]	ONE	TO GROUND BUS BAR 1
45 KVA DRY-TYPE TRANSFORMER	[G5]	ONE	TO GROUND BUS BAR
30 KVA DRY-TYPE TRANSFORMER	[G4]	ONE	TO GROUND BUS BAR
480VAC EQUIPMENT LOCAL CONTROL PANELS	[G2]	ONE	TO GROUNDING LOOP
FIRE ALARM CONTROL PANELS	[G2]	ONE	TO GROUND BUS BAR
PLC CONTROL PANELS	[G3]	ONE	TO GROUNDING LOOP
ANTENNA	[G2]	ONE	TO GROUNDING LOOP
100 HP AND LARGER MOTOR FRAMES	[G4]	ONE	RUN GROUND WIRE AND CONDUIT TO THE GROUNDING LOOP OR THE NEAREST GROUND BUS BAR
ANY STEEL TANK	[G4]	TWO	RUN GROUND WIRE AND CONDUIT TO THE GROUNDING LOOP OR THE NEAREST GROUND BUS BAR
BUILDING STEEL COLUMNS	[G4]	ONE	GROUND EVERY OTHER STEEL COLUMN TO GROUND LOOP OR NEAREST GROUND BUS USING EXOTHERMIC WELD CONNECTIONS.
GROUND BUS BAR	[G10]	TWO	TO GROUNDING LOOP
OUTDOOR TANKS, PUMP, MOTORS, PANELS OR EQUIPMENT	[G4]	ONE	TO GROUNDING LOOP 1
OUTDOOR LIGHT, CCTV AND UTILITY POLES	[G4]	ONE	TO GROUNDING LOOP
OUTDOOR METAL WALKWAYS, HANDRAILS	[G4]	ONE	TO GROUNDING LOOP

TABLE OF RESPONSIBILITY - ELECTRICAL, HVAC & PLUMBING

	ELEMENT	HVAC CONTRACTOR	PLUMBING CONTRACTOR	ELECTRICAL CONTRACTOR
1	480VAC, AND 120VAC POWER TO EXHAUST FANS AND PUMPS			X
2	480VAC, AND 120VAC POWER TO HVAC AND PLUMBING CONTROL PANELS			X
3	HVAC AND PLUMBING CONTROL SYSTEM COMPONENTS (INCLUDING, BUT NOT LIMITED TO PANELS, COMPUTER WORK STATIONS, CONTROLLERS, RELAYS, TRANSFORMERS, SENSORS, SWITCHES, CONTROL VALVES, CONTROL DAMPERS, DAMPER ACTUATORS, ETC.)	X	X	
4	CONTROL WIRING, CONDUIT AND CONNECTIONS REQUIRED FOR THE CONTROL OF THE HVAC AND PLUMBING SYSTEMS (INCLUDING, BUT NOT LIMITED TO, CONTROL WIRING FOR THERMOSTATS, SENSORS, RELAYS, CONTROL VALVES, CONTROLLERS, SWITCHES, DAMPERS, HVAC NETWORK CABLE, ETC.)	X	X	
5	POWER WIRING, CONDUIT AND CONNECTIONS REQUIRED FOR POWERING ANCILLARY HVAC, ATC AND PLUMBING DEVICES (INCLUDING, BUT NOT LIMITED TO, DEVICE POWER FOR 120VAC/24VDC DAMPERS, THERMOSTATS, CONTROL VALVES, RELAYS, SENSORS, ETC.)	X	X	
6	ADJUSTING CONTROL SET POINTS FOR HVAC AND PLUMBING SYSTEM EQUIPMENT	X	X	
7	ALL SPECIFIED HVAC/PLUMBING CONTROLS TESTING AND REMEDIAL WORK TO MAKE SYSTEMS FULLY FUNCTIONAL AND OPERATE IN ACCORDANCE WITH THE CONTROL SEQUENCES	X	X	
8	CONTROL WIRING BETWEEN MCC AND SCADA FOR HVAC AND PLUMBING ALARMS			X
9	CONTROL WIRING BETWEEN MCC AND HVAC (ATC) AND PLUMBING CONTROL PANELS			X
10	CONTROL WIRING BETWEEN HVAC (ATC) AND PLUMBING CONTROL PANELS AND PLANT SCADA			X
11	CONTROL WIRING BETWEEN HVAC CONTROL PANELS (ATC) AND FIRE ALARM CONTROL PANEL			X
12	CONTROL WIRING BETWEEN DUCT MOUNTED SMOKE DETECTORS AND ASSOCIATED AIR HANDLING UNIT STARTERS AT MCC AND FIRE ALARM SYSTEM			X
13	CONTROL WIRING BETWEEN SPRINKLER SYSTEM DEVICES AND FIRE ALARM SYSTEM			X
14	MCC LOCATED MOTOR STARTERS AND VFDS FOR 3ϕ HVAC EXHAUST FANS & PLUMBING EQUIPMENT			X
15	STAND ALONE 1ϕ/3ϕ MOTOR STARTERS & VFDS FOR HVAC AND PLUMBING EQUIPMENT			X
16	STAND ALONE VFDS AND CONTROLS FOR BOILER SYSTEM PUMPS	X		
17	SAFTEY DISCONNECT SWITCHES AT HVAC AND PLUMBING EQUIPMENT (BESIDES DISCONNECTS FOR CABINET UNIT HEATERS (CUH) THAT SHALL BE SUPPLIED INTEGRAL TO HEATER UNIT)			X
18	PROVIDE DUCT MOUNTED SMOKE DETECTORS			X
19	INSTALL DUCT MOUNTED SMOKE DETECTORS	X		

TABLE OF RESPONSIBILITY - ELECTRICAL, GENERAL, AND SYSTEM INTEGRATOR

	ELEMENT	GENERAL CONTRACTOR	SYSTEM INTEGRATOR	ELECTRICAL CONTRACTOR
1	FURNISH, TEST AND CALIBRATE INSTRUMENTS		X	
2	INSTALL INSTRUMENTS	X		
3	INSTALL FIELD LOCATED DEVICES ASSOCIATED WITH INSTRUMENTS INCLUDING TRANSMITTERS, INDICATORS, CONTROL PANELS, AND ANCIALLARY COMPONENTS THAT ARE NOT LOCATED WITHIN PROCESS PIPING AND TANKS. LOCATIONS SHALL BE AS INDICATED ON THE ELECTRICAL DRAWINGS.	X		
4	FURNISH NETWORK EQUIPMENT, SCADA THIN CLIENT WORKSTATIONS/ENCLOSURES		X	
4	FURNISH AND INSTALL INTERCONNECTING WIRE, CABLE, CONDUIT, AND CONNECTIONS FOR INSTRUMENTS			X
5	FURNISH AND INSTALL ETHERNET CABLES			X
6	PROVIDE FIBER OPTIC CABLE, PATCH PANELS AND ASSOCIATED HARDWARE		X	
7	INSTALL FIBER OPTIC CABLE			X
8	TERMINATE AND TEST FIBER OPTIC CABLE		X	
9	FURNISH AND INSTALL GAS MONITORING CONTROL PANELS, HORN STROBES AND ALARM DEVICES			X
10	FURNISH GAS MONITORING ANALYZER SENSORS AND TRANSMITTERS	X		
11	INSTALL GAS MONITORING ANALYZER SENSORS AND TRANSMITTERS			X

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 49420
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

ELECTRICAL SCHEDULES II

SHEET NUMBER

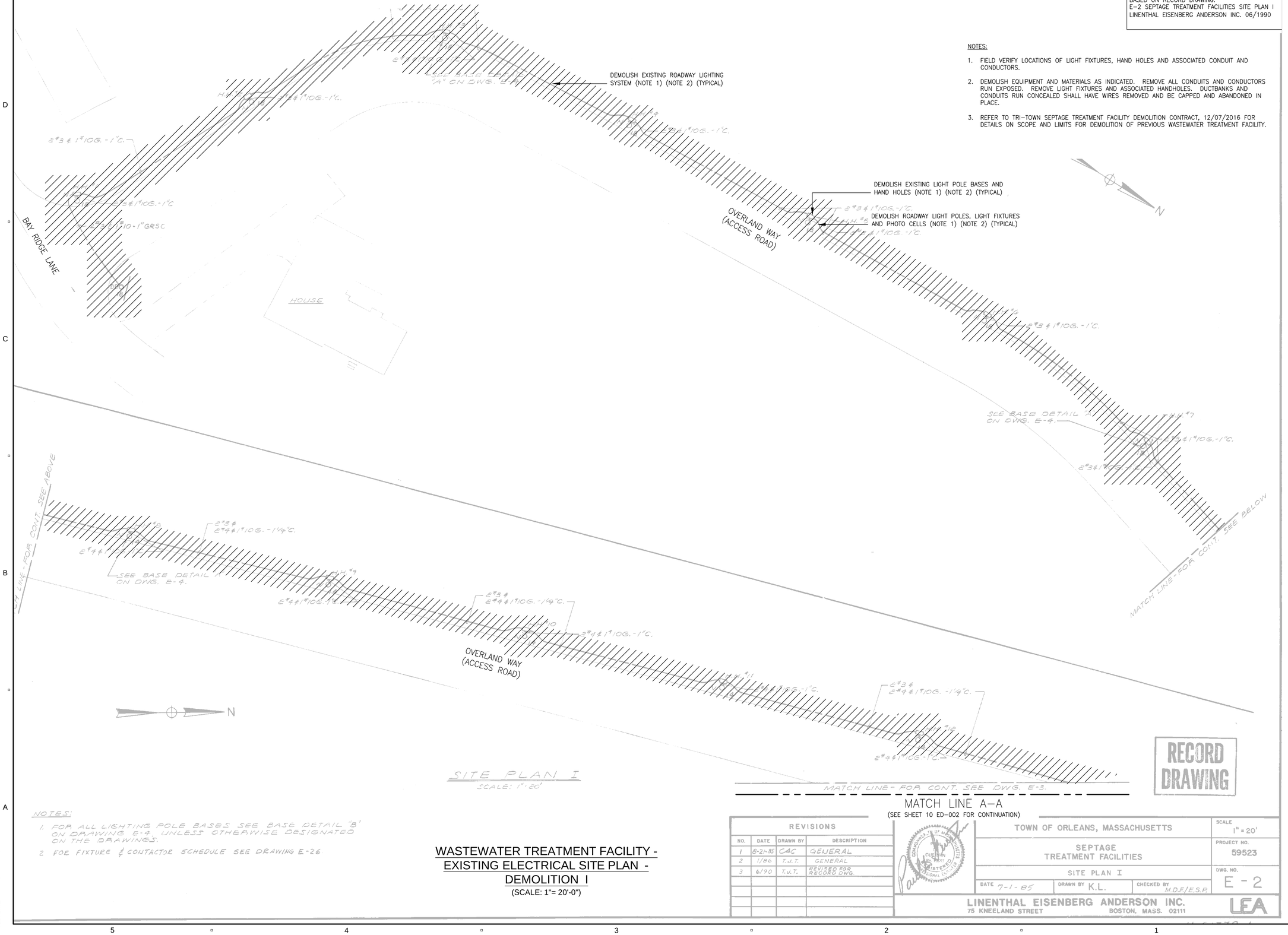
00 E-602

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\00 E-602.DWG
LAST UPDATE: Friday, March 20, 2020 2:26:14 PM
PLOT DATE: Tuesday, March 24, 2020 4:11:38 AM

BASED ON RECORD DRAWING:
E-2 SEPTAGE TREATMENT FACILITIES SITE PLAN I
LINENTHAL EISENBERG ANDERSON INC. 06/1990

NOTES:

1. FIELD VERIFY LOCATIONS OF LIGHT FIXTURES, HAND HOLES AND ASSOCIATED CONDUIT AND CONDUCTORS.
2. DEMOLISH EQUIPMENT AND MATERIALS AS INDICATED. REMOVE ALL CONDUITS AND CONDUCTORS RUN EXPOSED. REMOVE LIGHT FIXTURES AND ASSOCIATED HANDHOLES. DUCTBANKS AND CONDUITS RUN CONCEALED SHALL HAVE WIRES REMOVED AND BE CAPPED AND ABANDONED IN PLACE.
3. REFER TO TRI-TOWN SEPTAGE TREATMENT FACILITY DEMOLITION CONTRACT, 12/07/2016 FOR DETAILS ON SCOPE AND LIMITS FOR DEMOLITION OF PREVIOUS WASTEWATER TREATMENT FACILITY.



SITE PLAN I
SCALE: 1" = 20'

NOTES:

1. FOR ALL LIGHTING POLE BASES SEE BASE DETAIL "B" ON DRAWING E-4, UNLESS OTHERWISE DESIGNATED ON THE DRAWINGS.
2. FOR FIXTURE & CONTACTOR SCHEDULE SEE DRAWING E-26

MATCH LINE A-A
(SEE SHEET 10 ED-002 FOR CONTINUATION)

RECORD DRAWING

WASTEWATER TREATMENT FACILITY -
EXISTING ELECTRICAL SITE PLAN -
DEMOLITION I
(SCALE: 1"= 20'-0")

REVISIONS			
NO.	DATE	DRAWN BY	DESCRIPTION
1	8-21-85	CAC	GENERAL
2	1/86	T.J.T.	GENERAL
3	6/90	T.J.T.	REVISED FOR RECORD DWG.

TOWN OF ORLEANS, MASSACHUSETTS		SCALE 1" = 20'
SEPTAGE TREATMENT FACILITIES		PROJECT NO. 59523
SITE PLAN I		DWG. NO. E-2
DATE 7-1-85	DRAWN BY K.L.	CHECKED BY M.D.F./E.S.P.

LINENTHAL EISENBERG ANDERSON INC.
75 KNEELAND STREET BOSTON, MASS. 02111

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 ED-001.DWG
LAST UPDATE: Wednesday, January 15, 2020 8:39:21 AM
PLOT DATE: Monday, January 27, 2020 5:04:53 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

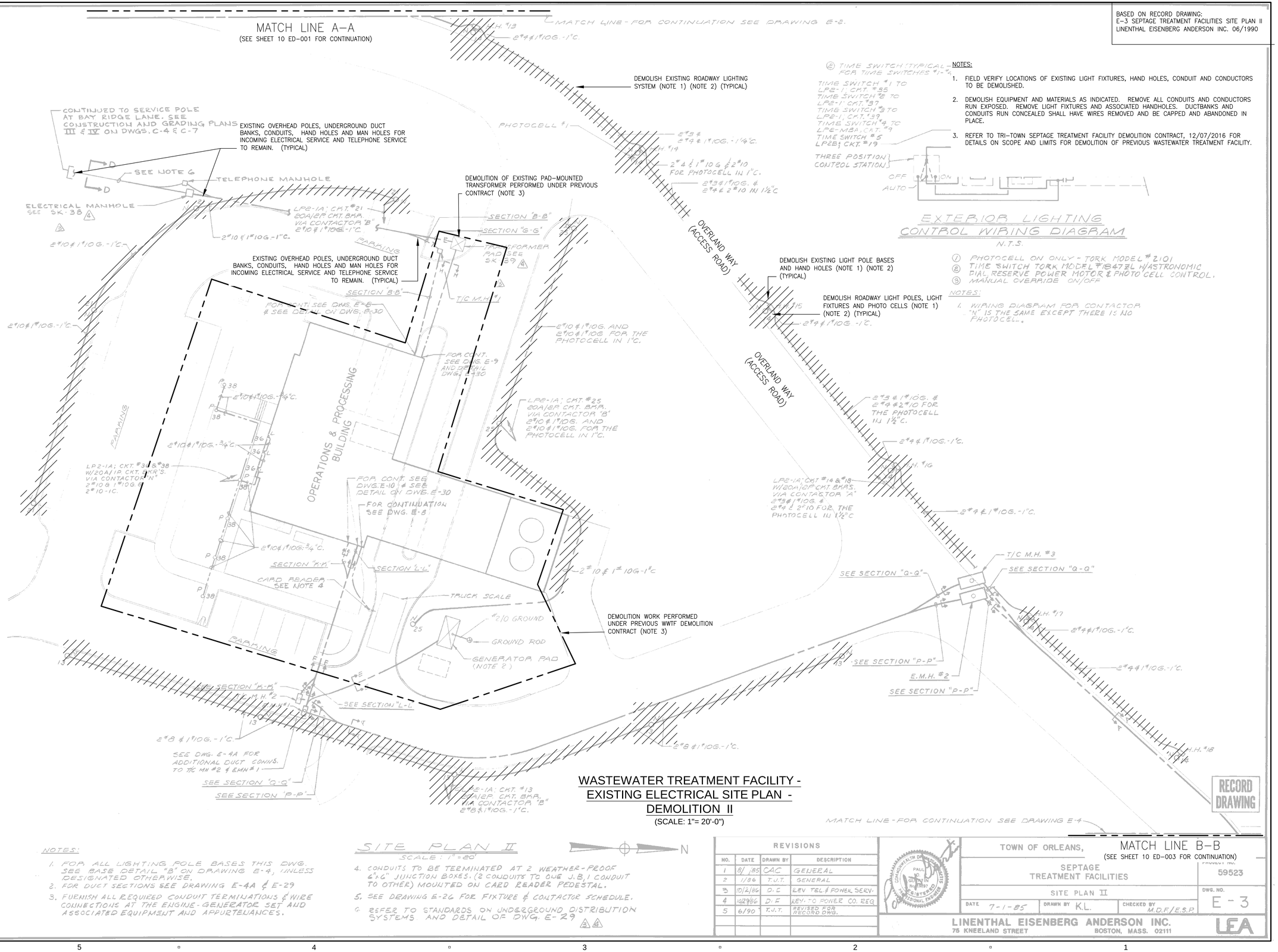
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - DEMOLITION I

SHEET NUMBER

10 ED-001



WASTEWATER TREATMENT FACILITY -
EXISTING ELECTRICAL SITE PLAN -
DEMOLITION II
(SCALE: 1"= 20'-0")

NOTES:

1. FOR ALL LIGHTING POLE BASES THIS DWG. SEE BASE DETAIL "B" ON DRAWING E-4, UNLESS DESIGNATED OTHERWISE.
2. FOR DUCT SECTIONS SEE DRAWING E-4A & E-29
3. FUENISH ALL REQUIRED CONDUIT TERMINATIONS & WIRE CONNECTIONS AT THE ENGINE-GENERATOR SET AND ASSOCIATED EQUIPMENT AND APPURTENANCES.

SITE PLAN II
SCALE: 1"=20'
N

4. CONDUITS TO BE TERMINATED AT 2 WEATHER-PROOF 6"x6" JUNCTION BOXES. (2 CONDUITS TO ONE J.B, 1 CONDUIT TO OTHER) MOUNTED ON CARD READER PEDESTAL.
5. SEE DRAWING E-26 FOR FIXTURE & CONTACTOR SCHEDULE.
6. REFER TO STANDARDS ON UNDERGROUND DISTRIBUTION SYSTEMS AND DETAIL OF DWG. E-29 ③④

REVISIONS			
NO.	DATE	DRAWN BY	DESCRIPTION
1	8/ ;85	CAC	GENERAL
2	11/86	T.J.T.	GENERAL
3	10/2/86	D.C.	REV. TEL.& POWER SERV.
4	10/29/86	D.F.	REV. TO POWER CO. REQ
5	6/90	T.J.T.	REVISED FOR RECORD DWG.

TOWN OF ORLEANS, SEPTAGE TREATMENT FACILITIES
SITE PLAN II
DATE 7-1-85 | DRAWN BY K.L. | CHECKED BY M.D.F./E.S.P.
PROJECT NO. 59523
DWG. NO. E-3
LINENTHAL EISENBERG ANDERSON INC.
75 KNEELAND STREET BOSTON, MASS. 02111
LEA

MATCH LINE B–B
(SEE SHEET 10 ED-003 FOR CONTINUATION)

RECORD DRAWING

BASED ON RECORD DRAWING:
E-3 SEPTAGE TREATMENT FACILITIES SITE PLAN II
LINENTHAL EISENBERG ANDERSON INC. 06/1990

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA C. ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - DEMOLITION II

SHEET NUMBER

10 ED-002

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 ED-002.DWG
LAST UPDATE: Wednesday, January 15, 2020 8:39:01 AM
PLOT DATE: Monday, January 27, 2020 5:05:03 PM

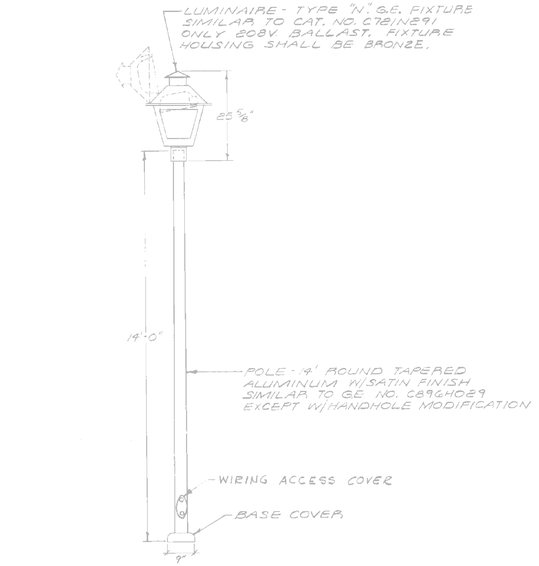
BASED ON RECORD DRAWING:
E-2 SEPTAGE TREATMENT FACILITIES SITE PLAN III
LINENTHAL EISENBERG ANDERSON INC. 06/1990

MATCH LINE - FOR CONTINUATION SEE DRAWING E-3

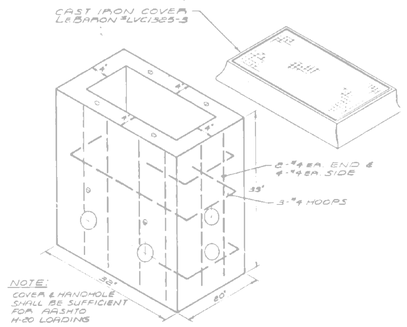
MATCH LINE B-B
(SEE SHEET 10 ED-002 FOR CONTINUATION)

NOTES:

1. FIELD VERIFY LOCATIONS OF LIGHT FIXTURES, HAND HOLES AND ASSOCIATED CONDUIT AND CONDUCTORS.
2. DEMOLISH EQUIPMENT AND MATERIALS AS INDICATED. REMOVE ALL CONDUITS AND CONDUCTORS RUN EXPOSED. REMOVE LIGHT FIXTURES AND ASSOCIATED HANDHOLES. DUCTBANKS AND CONDUITS RUN CONCEALED SHALL HAVE WIRES REMOVED AND BE CAPPED AND ABANDONED IN PLACE.
3. REFER TO TRI-TOWN SEPTAGE TREATMENT FACILITY DEMOLITION CONTRACT, 12/07/2016 FOR DETAILS ON SCOPE AND LIMITS FOR DEMOLITION OF PREVIOUS WASTEWATER TREATMENT FACILITY.



FIXTURE TYPE "N" - DETAIL
N.T.S.



PRECAST
ELECTRIC HANDHOLE DETAIL
NOT TO SCALE

2"/0 & 1"/0G. - 1"C.

NEW WOODCHIP STORAGE AREA

MIXING BUILDING

FOR CONT. SEE DETAIL ON DWG. E-22

SECTION "P-P"

SECTION "Q-Q"

E.M.H.#1

SECTION M-M

SECTION N-N

DEMOLISH EXISTING LIGHT POLE BASES AND HAND HOLES (NOTE 1) (NOTE 2) (TYPICAL)

PHOTOCELL #3

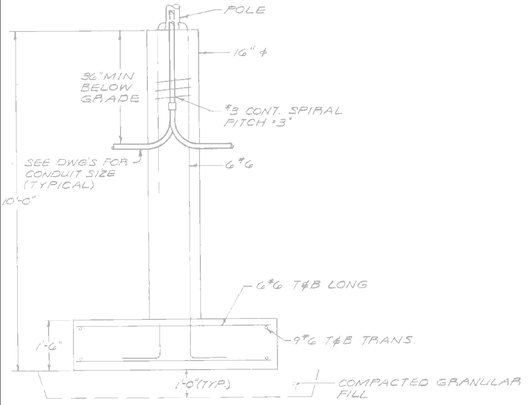
LP2-MB, CAT.#11 20A-2P C.B. VIA CONTACTOR "C" 2"/0 & 1"/0G. AND 2#10 FOR THE PHOTOCELL IN 1"C.

DEMOLISH EXISTING ROADWAY LIGHT POLES AND LIGHT FIXTURES (NOTE 1) (NOTE 2) (TYPICAL)

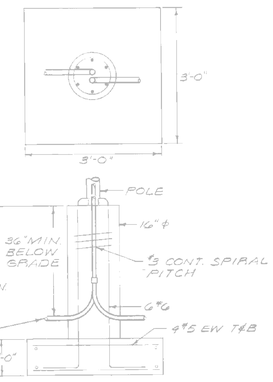
DEMOLITION WORK PERFORMED UNDER PREVIOUS WWTF DEMOLITION CONTRACT (NOTE 3)

COMPOSTING PAD

SITE PLAN III
SCALE: 1"=20'



DETAIL "A"



DETAIL "B"

LIGHTING POLE BASE DETAIL
NOT TO SCALE

NOTES:

1. SEE LIGHTING POLE BASE DETAIL "B" THIS DRAWING FOR ALL LIGHTING POLES UNLESS NOTED OTHERWISE.
2. FOR DUCT SECTIONS SEE DRAWING E-29.
3. SEE DRAWING E-26 FOR FIXTURE AND CONTACTOR SCHEDULE.

RECORD DRAWING

WASTEWATER TREATMENT FACILITY - EXISTING ELECTRICAL SITE PLAN - DEMOLITION III
(SCALE: 1"= 20'-0")

REVISIONS			
NO.	DATE	DRAWN BY	DESCRIPTION
1	8/1/85	C.A.C.	GENERAL
2	11/17/86	T.J.T.	GENERAL
3	6/90	T.J.T.	REVISED FOR RECORD DWG.

TOWN OF ORLEANS, MASSACHUSETTS
SEPTAGE TREATMENT FACILITIES
SITE PLAN III
DATE 7-1-85 | DRAWN BY J.F.C. | CHECKED BY E.L.S./E.S.P.
SCALE 1" = 20'
PROJECT NO. 59523
DWG. NO. E-4

LINENTHAL EISENBERG ANDERSON INC.
75 KNEELAND STREET BOSTON, MASS. 02111

AECOM

PROJECT
DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL
CONTRACT No. 2019-1
SRF No. 4486

OWNER
TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER
AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION
COMMONWEALTH OF MASSACHUSETTS ANDREA ABRAHAM ELECTRICAL NO. 54966 REGISTERED PROFESSIONAL ENGINEER
01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

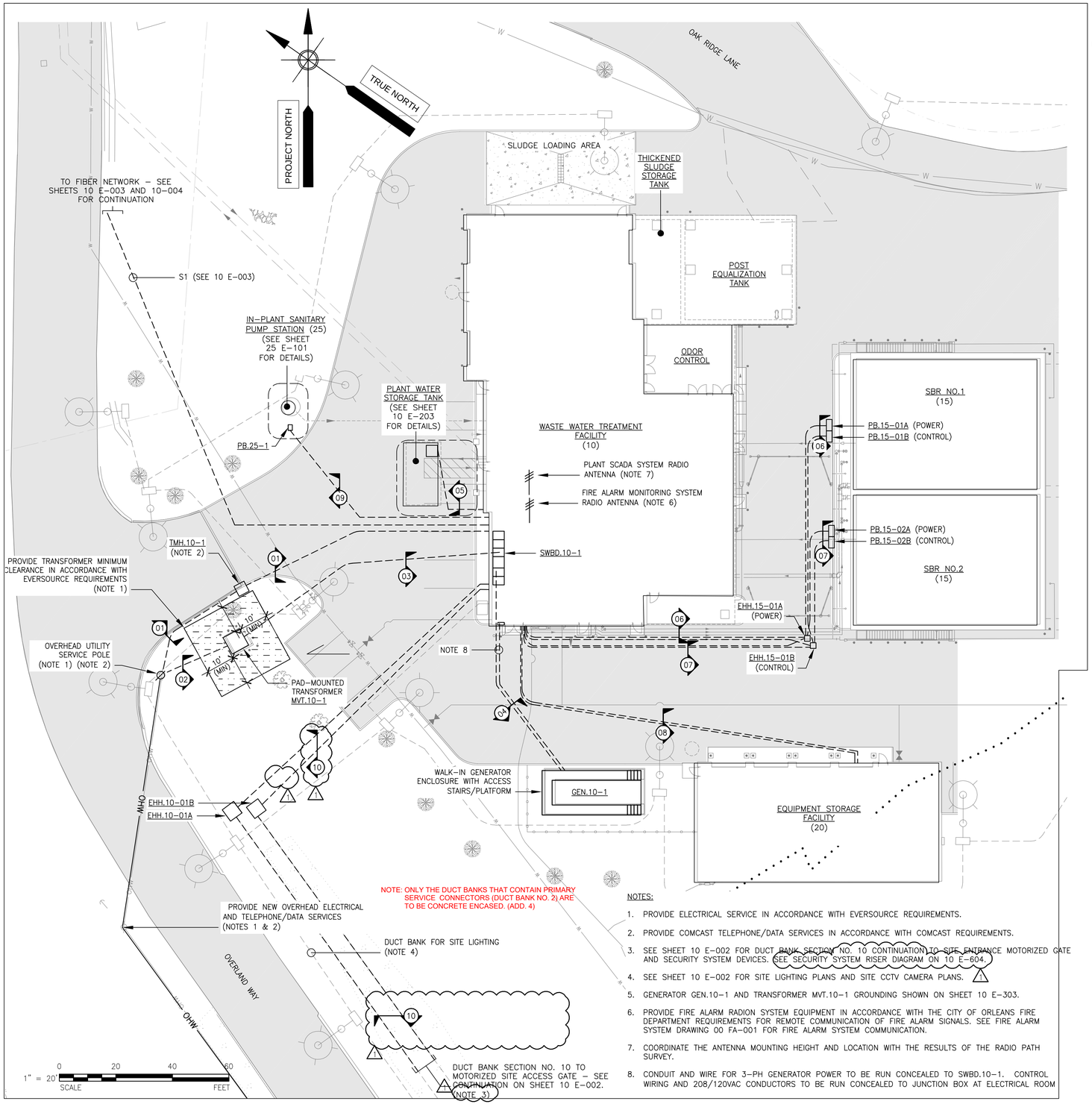
PROJECT NUMBER
60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE
ELECTRICAL
SHEET TITLE
WWTF - ELECTRICAL SITE PLAN - DEMOLITION III

SHEET NUMBER
10 ED-003

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\EL\10 ED-003 WWTF - ELECTRICAL SITE PLAN - DEMOLITION III.DWG
LAST UPDATE: Wednesday, January 15, 2020 8:28:36 AM
PLOT DATE: Monday, January 27, 2020 5:05:08 PM

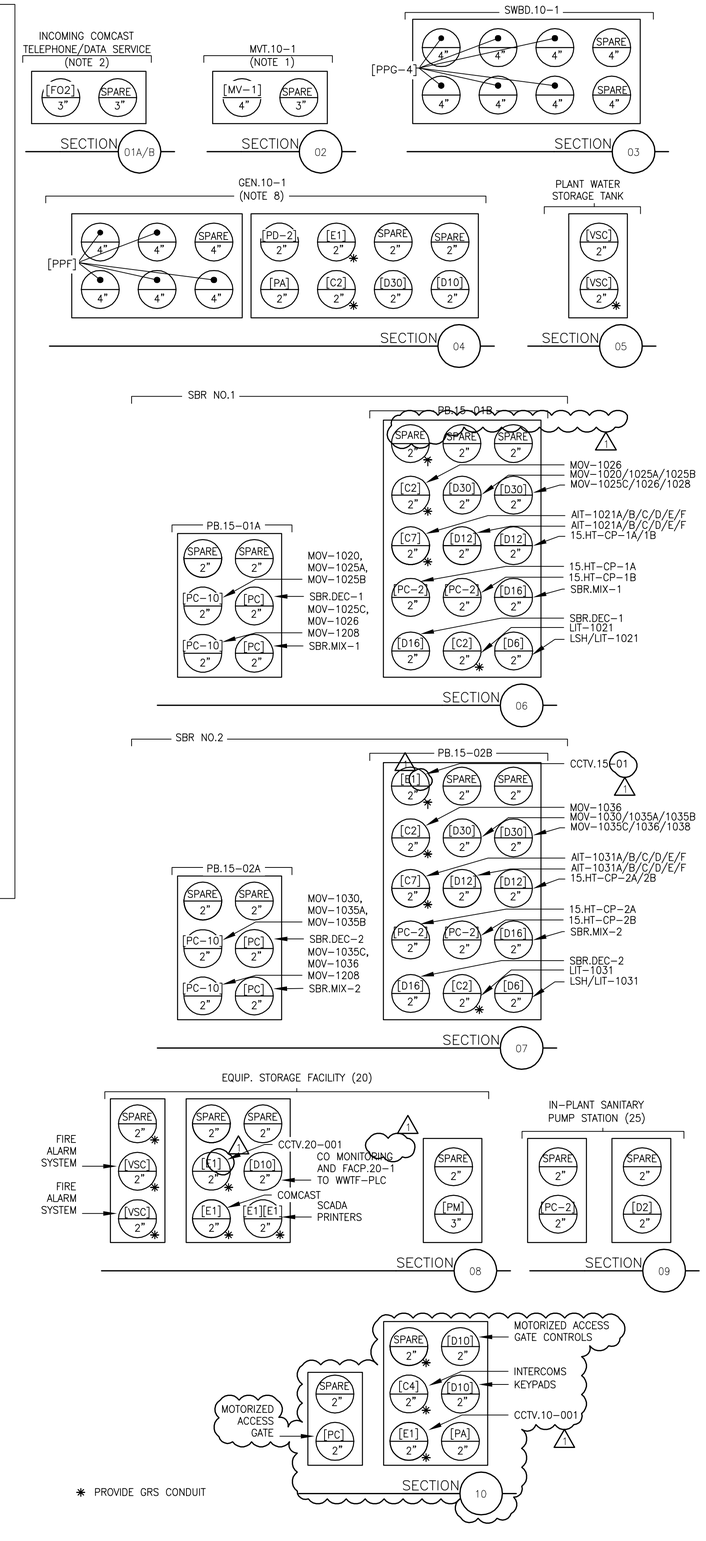


NOTES:

1. PROVIDE ELECTRICAL SERVICE IN ACCORDANCE WITH EVERSOURCE REQUIREMENTS.
2. PROVIDE COMCAST TELEPHONE/DATA SERVICES IN ACCORDANCE WITH COMCAST REQUIREMENTS.
3. SEE SHEET 10 E-002 FOR DUCT BANK SECTION NO. 10 CONTINUATION TO SITE ENTRANCE MOTORIZED GATE AND SECURITY SYSTEM DEVICES. SEE SECURITY SYSTEM RISER DIAGRAM ON 10 E-604.
4. SEE SHEET 10 E-002 FOR SITE LIGHTING PLANS AND SITE CCTV CAMERA PLANS.
5. GENERATOR GEN.10-1 AND TRANSFORMER MVT.10-1 GROUNDING SHOWN ON SHEET 10 E-303.
6. PROVIDE FIRE ALARM RADION SYSTEM EQUIPMENT IN ACCORDANCE WITH THE CITY OF ORLEANS FIRE DEPARTMENT REQUIREMENTS FOR REMOTE COMMUNICATION OF FIRE ALARM SIGNALS. SEE FIRE ALARM SYSTEM DRAWING 00 FA-001 FOR FIRE ALARM SYSTEM COMMUNICATION.
7. COORDINATE THE ANTENNA MOUNTING HEIGHT AND LOCATION WITH THE RESULTS OF THE RADIO PATH SURVEY.
8. CONDUIT AND WIRE FOR 3-PH GENERATOR POWER TO BE RUN CONCEALED TO SWBD.10-1. CONTROL WIRING AND 208/120VAC CONDUCTORS TO BE RUN CONCEALED TO JUNCTION BOX AT ELECTRICAL ROOM

WASTEWATER TREATMENT FACILITY - ELECTRICAL SITE PLAN I - POWER

(SCALE: 1"= 20'-0")



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 39562
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4
1	3-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

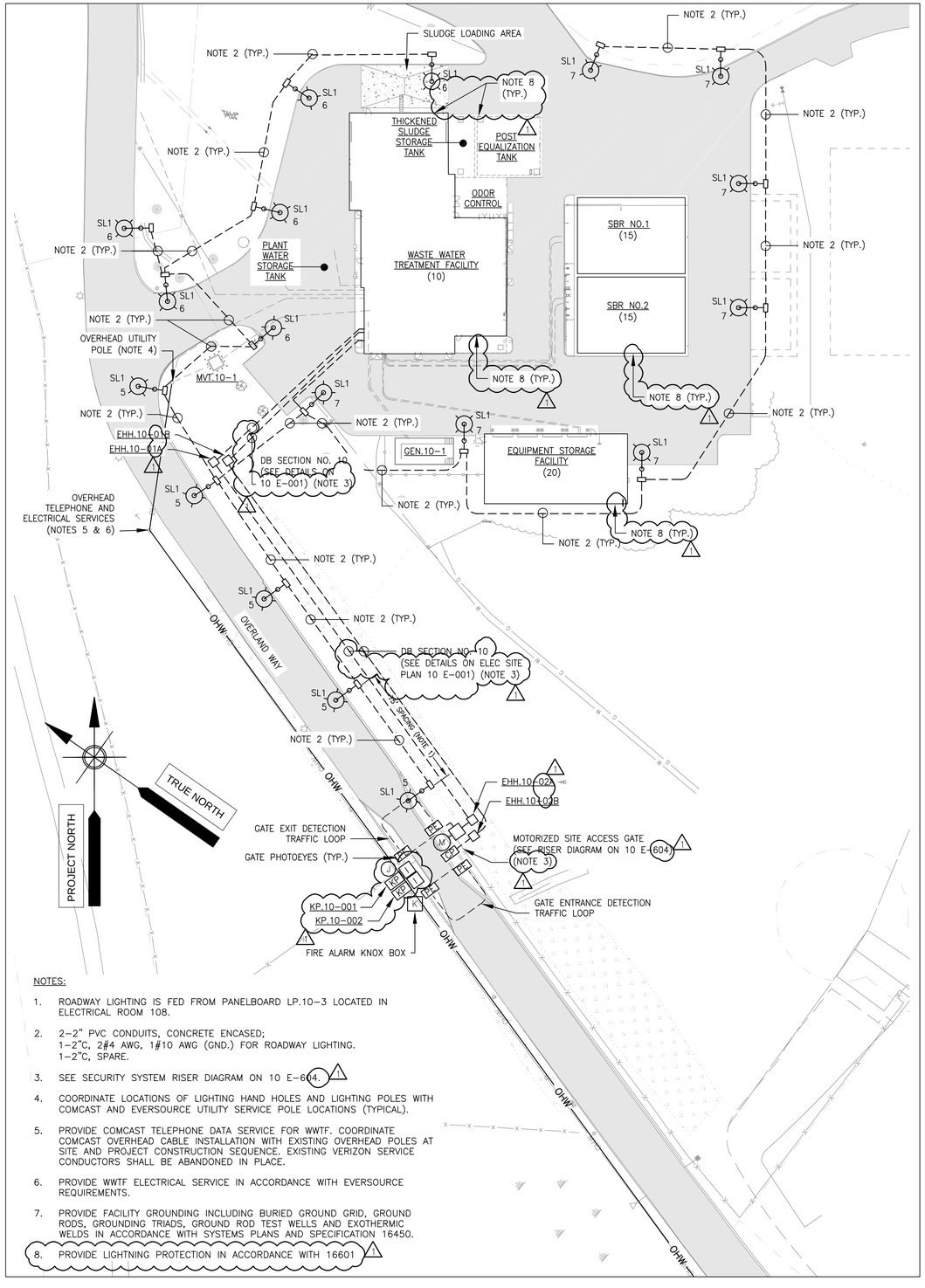
SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - POWER

SHEET NUMBER

10 E-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\E-001.DWG
LAST UPDATE: Thursday, March 19, 2020 6:52:46 PM
PLOT DATE: Tuesday, March 24, 2020 4:11:58 AM

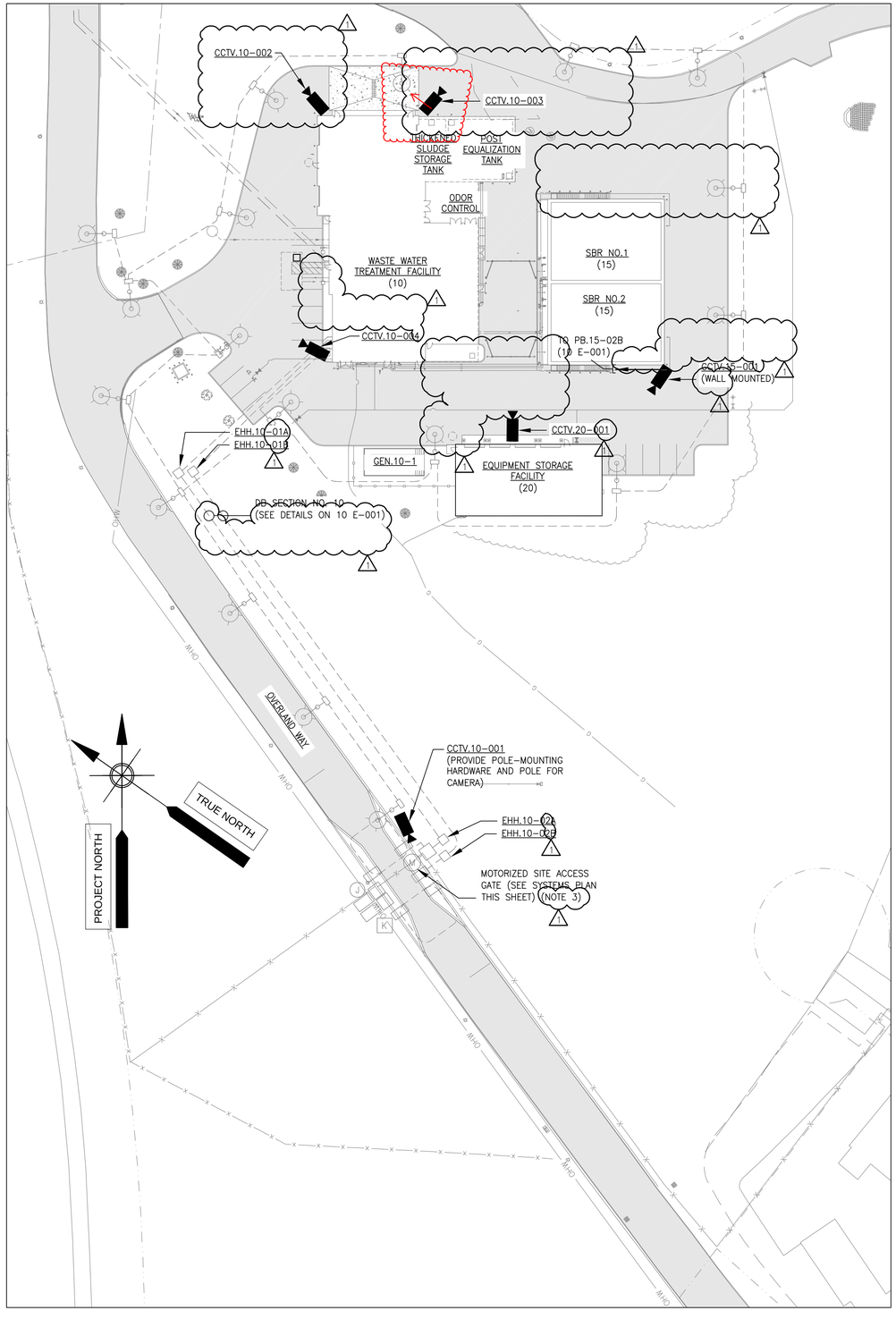


NOTES:

1. ROADWAY LIGHTING IS FED FROM PANELBOARD LP.10-3 LOCATED IN ELECTRICAL ROOM 108.
2. 2-2" PVC CONDUITS, CONCRETE ENCASED; 1-2"C, 2#4 AWG, 1#10 AWG (GND.) FOR ROADWAY LIGHTING. 1-2"C, SPARE.
3. SEE SECURITY SYSTEM RISER DIAGRAM ON 10 E-604.
4. COORDINATE LOCATIONS OF LIGHTING HAND HOLES AND LIGHTING POLES WITH COMCAST AND EVERSOURCE UTILITY SERVICE POLE LOCATIONS (TYPICAL).
5. PROVIDE COMCAST TELEPHONE DATA SERVICE FOR WWTF. COORDINATE COMCAST OVERHEAD CABLE INSTALLATION WITH EXISTING OVERHEAD POLES AT SITE AND PROJECT CONSTRUCTION SEQUENCE. EXISTING VERIZON SERVICE CONDUCTORS SHALL BE ABANDONED IN PLACE.
6. PROVIDE WWTF ELECTRICAL SERVICE IN ACCORDANCE WITH EVERSOURCE REQUIREMENTS.
7. PROVIDE FACILITY GROUNDING INCLUDING BURIED GROUND GRID, GROUND RODS, GROUNDING TRIADS, GROUND ROD TEST WELLS AND EXOTHERMIC WELDS IN ACCORDANCE WITH SYSTEMS PLANS AND SPECIFICATION 16450.
8. PROVIDE LIGHTNING PROTECTION IN ACCORDANCE WITH 16601

WASTEWATER TREATMENT FACILITY - ELECTRICAL SITE PLAN - SYSTEMS

(SCALE: 1"- 40'-0")



WASTEWATER TREATMENT FACILITY - ELECTRICAL SITE PLAN - SECURITY

(SCALE: 1"- 40'-0")

1" = 40' SCALE 0 40 80 120 FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 49542
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

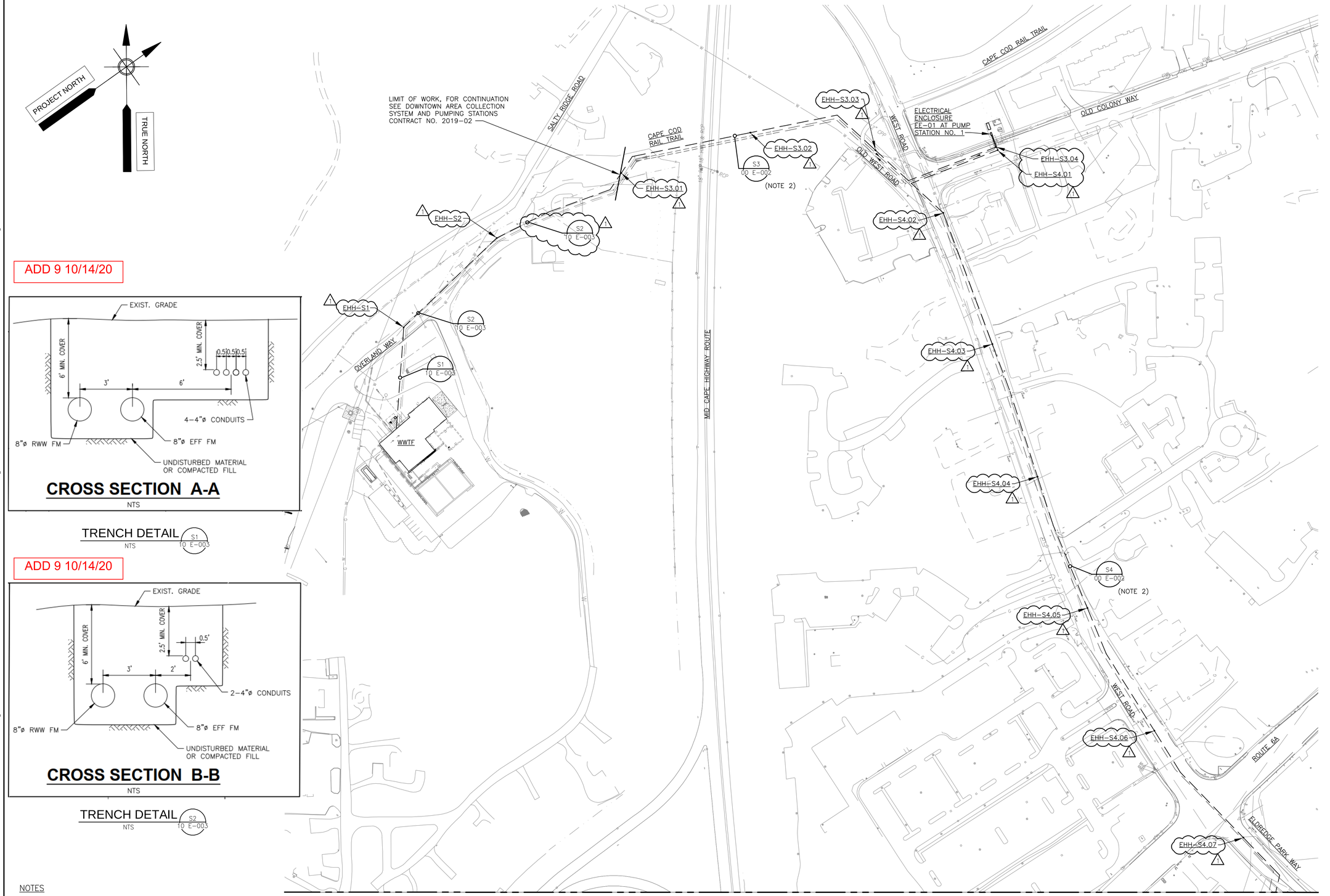
SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - SYSTEMS

SHEET NUMBER

10 E-002

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-002.DWG
LAST UPDATE: Tuesday, March 24, 2020 1:49:53 AM
PLOT DATE: Tuesday, March 24, 2020 4:12:19 AM



ADD 9 10/14/20

CROSS SECTION A-A

NTS

TRENCH DETAIL S1 / 10 E-003

NTS

ADD 9 10/14/20

CROSS SECTION B-B

NTS

TRENCH DETAIL S2 / 10 E-003

NTS

NOTES

1. SEE WWTF AND COLLECTION SYSTEM SCOPE DELINEATION TABLE ON SHEET 00 E-601 FOR FIBER NETWORK SCOPE
2. SEE COLLECTION SYSTEMS AND PUMP STATIONS CONTRACT FOR FIBER TRENCH SECTIONS S3, S4

MATCH LINE A - A (FOR CONTINUATION SEE SHEET 10 E-004

WASTEWATER TREATMENT FACILITY - ELECTRICAL SITE PLAN - FIBER NETWORK I

SCALE: 1"=100'-0"

1" = 100 SCALE 0 100 200 300 FEET

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-003.DWG
LAST UPDATE: Thursday, March 19, 2020 8:23:05 AM
PLOT DATE: Tuesday, March 24, 2020 4:12:32 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 43962
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	3-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	B. DESOUZA
Dept Check:	Y. RISK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

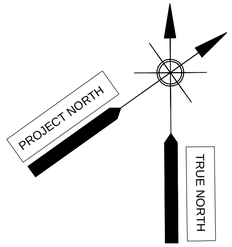
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - FIBER NETWORK I

SHEET NUMBER

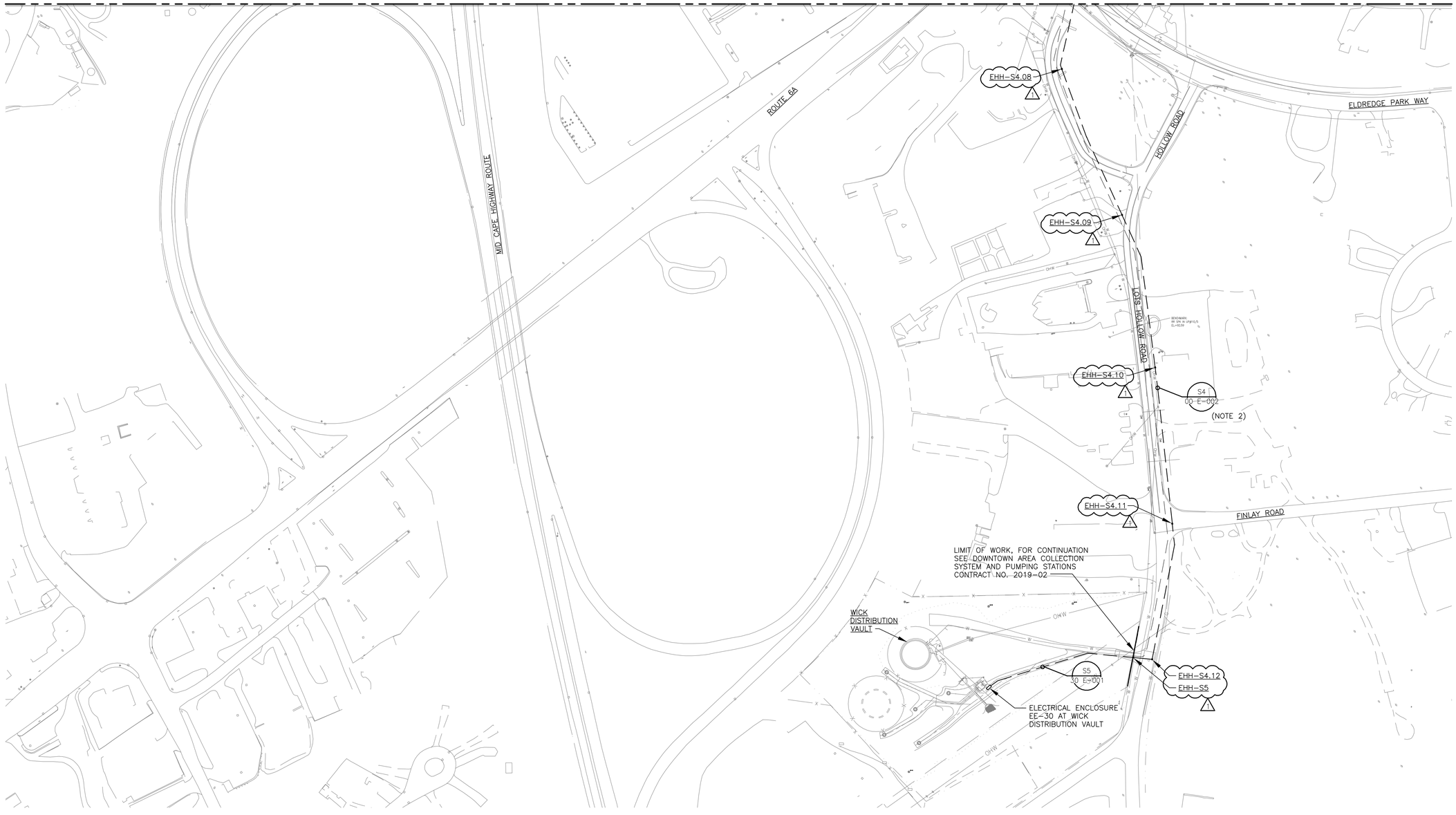
10 E-003



NOTES

1. SEE WWTF AND COLLECTION SYSTEM SCOPE DELINEATION TABLE ON SHEET 00 E-601 FOR FIBER NETWORK SCOPE
2. SEE COLLECTION SYSTEMS AND PUMP STATIONS CONTRACT FOR FIBER TRENCH SECTION S4

MATCH LINE A - A (FOR CONTINUATION SEE SHEET 10 E-003)



WASTEWATER TREATMENT FACILITY - ELECTRICAL SITE PLAN - FIBER NETWORK II

SCALE: 1'=100'-0"

1" = 100' SCALE 0 100 200 300 FEET

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\EL\10 E-004.DWG
LAST UPDATE: Thursday, March 19, 2020 8:33:16 AM
PLOT DATE: Tuesday, March 24, 2020 4:12:41 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 34968
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	3-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	B. DESOUZA
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SITE PLAN - FIBER NETWORK II

SHEET NUMBER

10 E-004

NOTES:

1. PROVIDE ELECTRICAL UTILITY SERVICE AND METERING IN ACCORDANCE WITH EVERSOURCE REQUIREMENTS.

LEGEND:

- (E) ELECTRICALLY INTERLOCK THE TWO MAIN CIRCUIT BREAKERS SO ONLY ONE CIRCUIT BREAKER IS CLOSED AT ANY TIME
- [K1] KIRK KEY INTERLOCK SO ONLY TWO OF THE THREE BREAKERS COULD BE CLOSED AT ANY SINGLE TIME.
- [CT] PROVIDE CONSTANT TORQUE VFD
- [1] WWTF–PLC
- [dV/dT] dV/dT OUTPUT FILTER

PRIMARY SERVICE FROM EVERSOURCE

OVERHEAD ELECTRICAL SERVICE UTILITY POLES

[MV–1]

MVT.10–1
OUTDOOR PAD MOUNTED
480VAC SECONDARY
3PH, 4 WIRE, 60HZ
TRANSFORMER PROVIDED BY UTILITY

EVERSOURCE UTILITY METERING EQUIPMENT (NOTE 1)

480/120V CLF (4)

[PPG–4]

GEN.10–1
480 VAC, 3 PHASE, 4 WIRE, 60 HZ, 750KW STANDBY, DIESEL GENERATOR

1600/1600

[PPF]

SWITCHBOARD SWBD.10-1

480VAC, 2000 AMP BUS, 3 PHASE, 3 WIRE, 65,000 AIC SYMMETRICAL SERVICE ENTRANCE RATED.

GROUND BUS (TYP.)

MAIN BONDING JUMPER (TYP

NEUTRAL CONNECTING PAD (TYP.)

CLF 480:120 CLF

OPEN TRANSITION AUTOMATIC THROWOVER SYSTEM (ATO)

PM

CB.10–M (N.C.)

AUX. CONTACT FOR BREAKER TRIP AND LOSS OF POWER ALARM

E 2000/1600 — E — 2000/1600 E

R G A O/C/T 1

1600:5 (3) ARMS MM 1

CB.10–G (N.O.)

CB.10–T (N.C.) 2000/1600

BUS A

200A [PN] SPD [PF] T.10–3 30KVA 480–208/120V 3–PH, 4 WIRE DRY–TYPE XFMR 480V/3ϕ DISTRIBUTION PANEL DP.10–3 [PJ–4] SPD 208/120V PANELBOARD LP.10–3

200A [PN] SPD [PF] T.10–1 30KVA 480–240/120V 1–PH, 3 WIRE DRY–TYPE XFMR 480V/3ϕ DISTRIBUTION PANEL DP.10–1 [PJ] SPD 240/120V PANELBOARD LP.10–1

K2 200A [PN] K2 — TO MCC.10–2A (SEE SHEET 10 E–007) 1

K1 600A [PX] K1 — TO MCC.10–1A (SEE SHEET 10 E–006) 1

30A SPD

BUS B

30A SPD

K1 600A [PX] K1 — TO MCC.10–1B (SEE SHEET 10 E–006) 1

K2 200A [PN] K2 — TO MCC.10–2B (SEE SHEET 10 E–007) 1

200A [PN] SPD [PF] T.10–2 30KVA 480–208/120V, 3–PH, 4 WIRE DRY–TYPE XFMR 480V/3ϕ DISTRIBUTION PANEL DP.10–2 [PJ–4] SPD 208/120V PANELBOARD LP.10–2

200A [PN] SPD [PF] T.10–4 30KVA 480–208/120V 3–PH, 4–WIRE DRY–TYPE XFMR 480V/3ϕ DISTRIBUTION PANEL DP.10–4 [PJ–4] SPD 208/120V PANELBOARD LP.10–4

PROVIDE SPACES FOR LOADS INDICATED AS FUTURE (TYP)

60AA [PF] T.10–5B 30KVA 480–208/120V 3–PH, 4 WIRE DRY TYPE XFMR [PJ–4] SPD 208/120V PANELBOARD LP.10–5

90A [PH] MIX.BLW–1 VFD (18–PULSE) CT [PH] 50 SBR MIXING BLOWER MIX.BLW–1

50AA [PE] MIX.BLW–3 VFD CT [PE] 30 SBR MIXING BLOWER MIX.BLW–3

90A [PH] SBR–BLW–3 VFD (18–PULSE) CT [PH] 50 SBR BLOWER SBR.BLW–1

90A [PH] SBR–BLW–1 VFD (18–PULSE) CT [PH] 50 SBR BLOWER SBR.BLW–3

90A [PJ] T.10–5A 45KVA 480–480/277V DRY–TYPE ISOLATION XFMR [PF–4] SPD 480V/3ϕ DISTRIBUTION PANEL DP.10–5

100A SPARE

100A SPARE

100A SPARE

100A SPARE

150A [PM] SPD [PF] T.20–1 30KVA 480–208/120V DRY TYPE TRANSFORMER 480V/3ϕ DISTRIBUTION PANEL DP.20–1 [PJ–4] SPD 208/120V PANELBOARD LP.20–1 EQUIPMENT STORAGE FACILITY (20)

90A [PH] 1 CT 1 SBR.BLW–4 VFD (18–PULSE) (FUTURE) [PH] 1 50 SBR BLOWER SBR.BLW–4 (FUTURE)

90A [PH] SBR.BLW–2 VFD (18–PULSE) CT [PH] 50 SBR BLOWER SBR.BLW–2

70A [PG] MIX.BLW–4 VFD CT [PG] 40 SBR MIXING BLOWER MIX.BLW–4

90A [PH] MIX.BLW–2 VFD (18–PULSE) CT [PH] 50 SBR MIXING BLOWER MIX.BLW–2

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E10 E-005.DWG
LAST UPDATE: Tuesday, March 24, 2020 2:18:21 AM
PLOT DATE: Tuesday, March 24, 2020 4:12:49 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS — ANDREW ABRAHAM — ELECTRICAL — NO. 49962 — REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

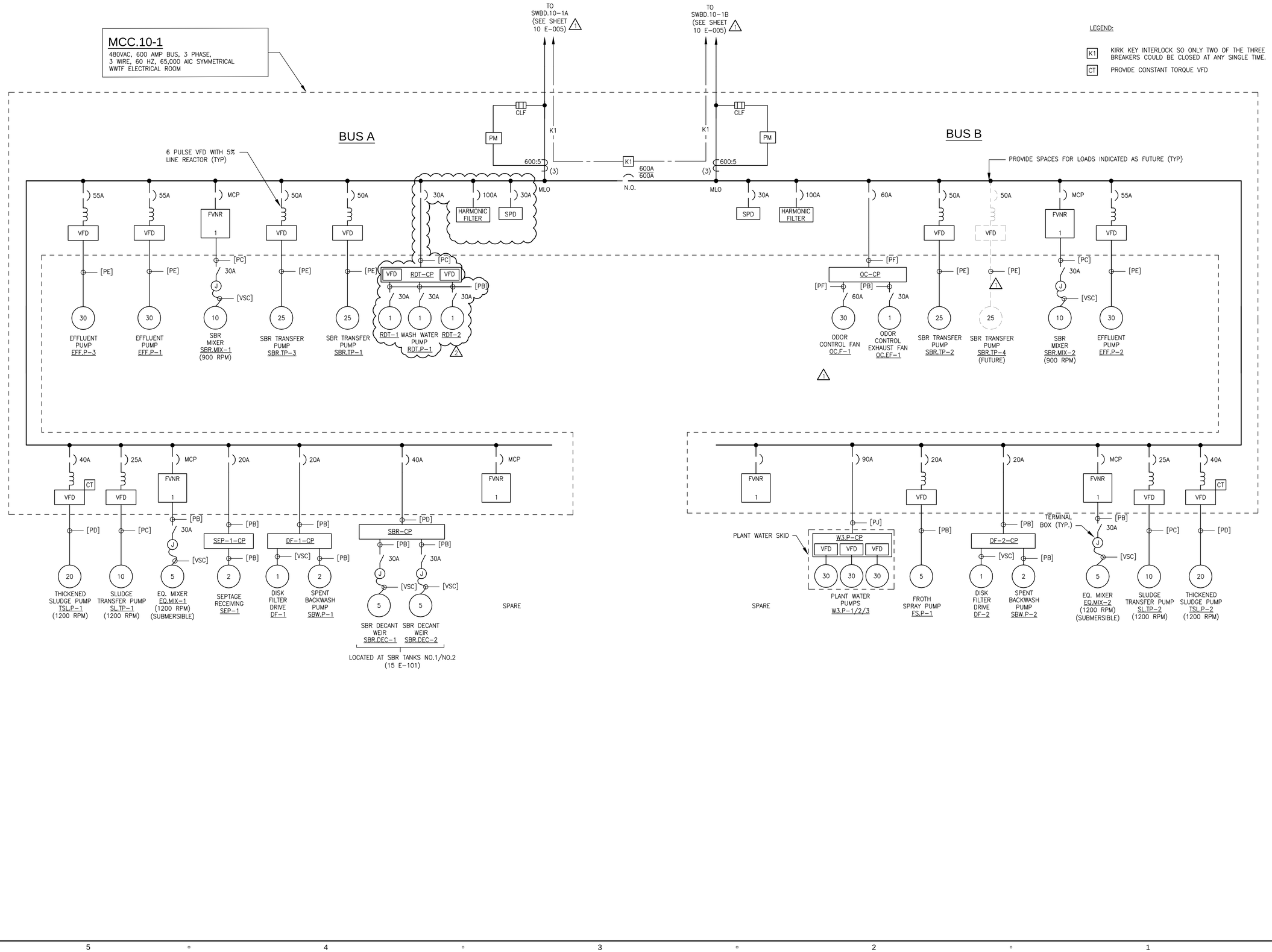
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SINGLE LINE DIAGRAM I - SWBD.10-1

SHEET NUMBER

10 E-005



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\E-006.DWG
LAST UPDATE: Friday, April 10, 2020 10:56:09 AM
PLOT DATE: Friday, April 10, 2020 10:57:26 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	04-10-2020	ADDENDUM 8
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

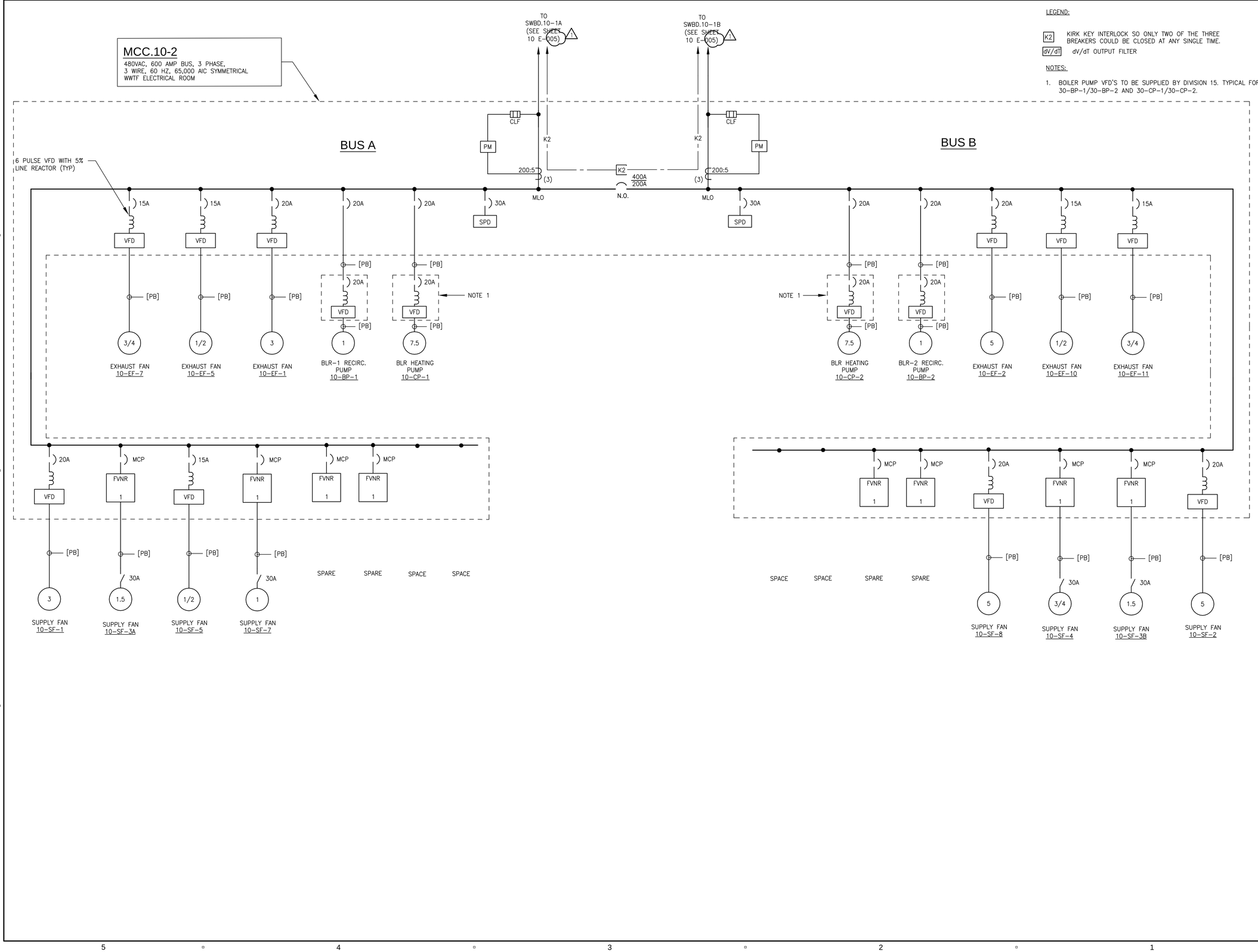
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SINGLE LINE DIAGRAM II - MCC.10-1

SHEET NUMBER

10 E-006



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\E-007.DWG
LAST UPDATE: Tuesday, March 24, 2020 2:17:54 AM
PLOT DATE: Tuesday, March 24, 2020 4:13:10 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 54621
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

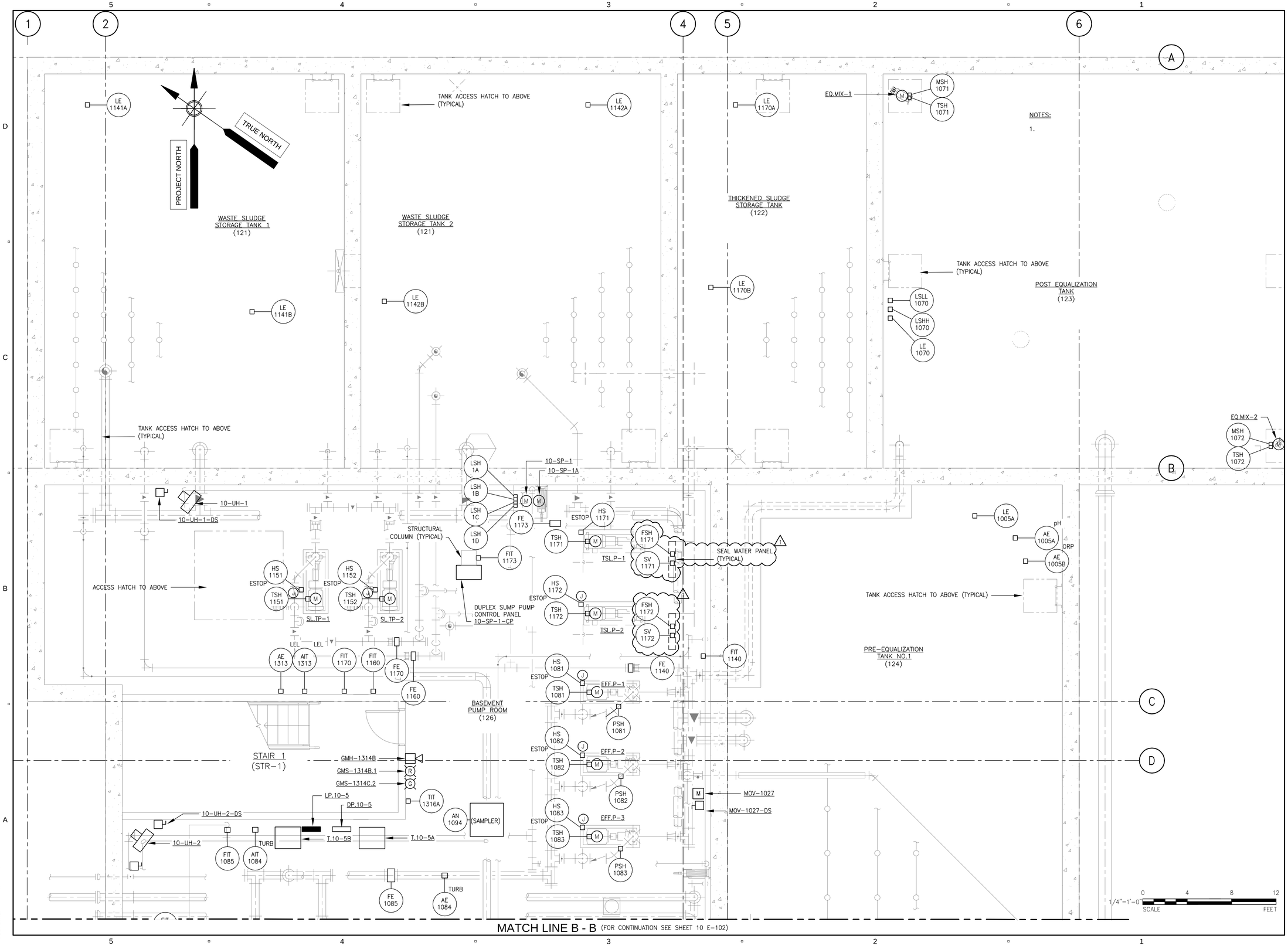
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL SINGLE LINE DIAGRAM III - MCC.10-2

SHEET NUMBER

10 E-007



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEET\SE\10 E-101.DWG
LAST UPDATE: Thursday, April 30, 2020 8:53:24 AM
PLOT DATE: Thursday, April 30, 2020 12:07:36 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	04-30-2020	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

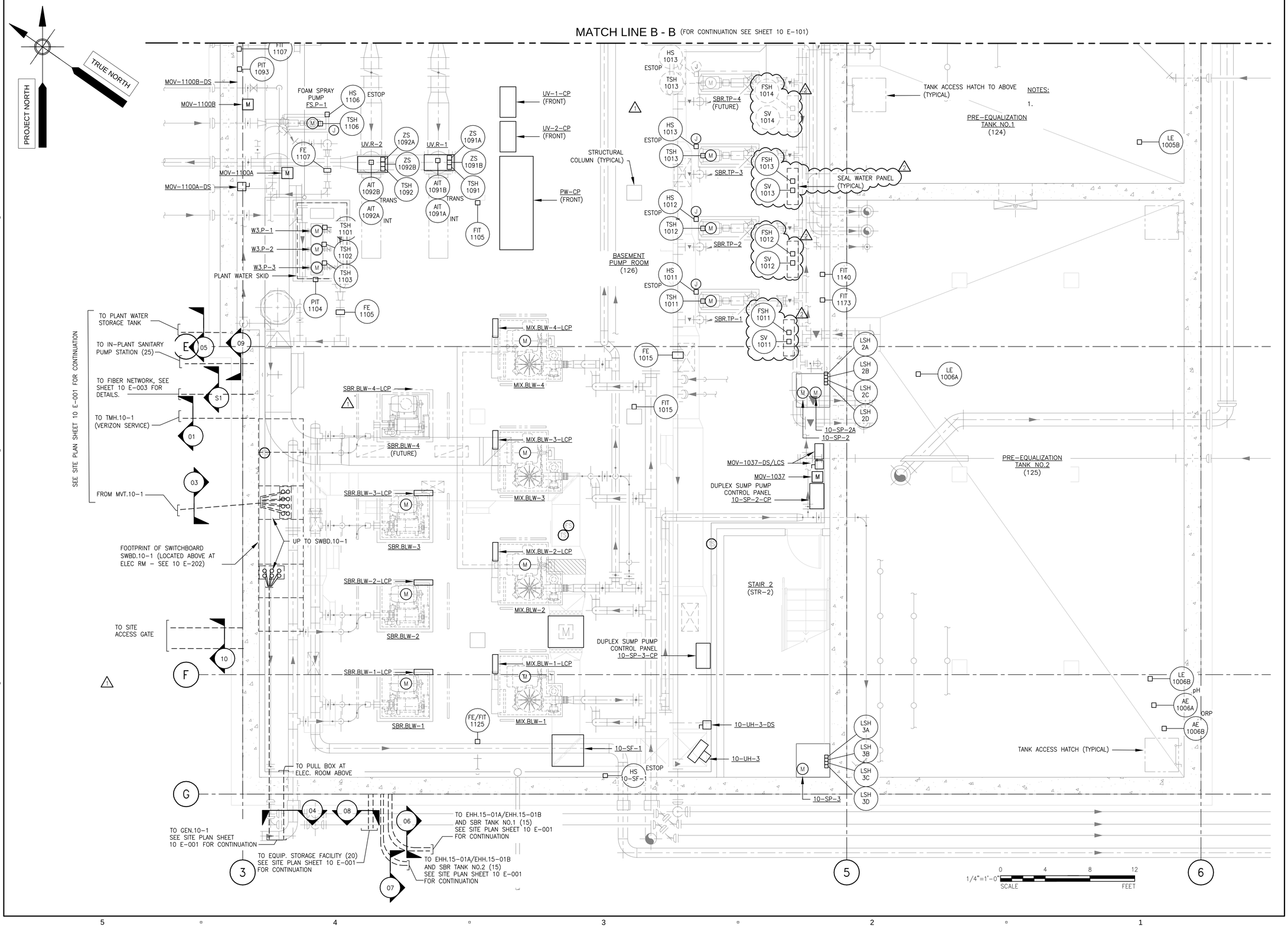
ELECTRICAL

SHEET TITLE

WWTF - LOWER LEVEL - POWER PLAN I

SHEET NUMBER

10 E-101



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	04-30-2020	ADDENDUM 9
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

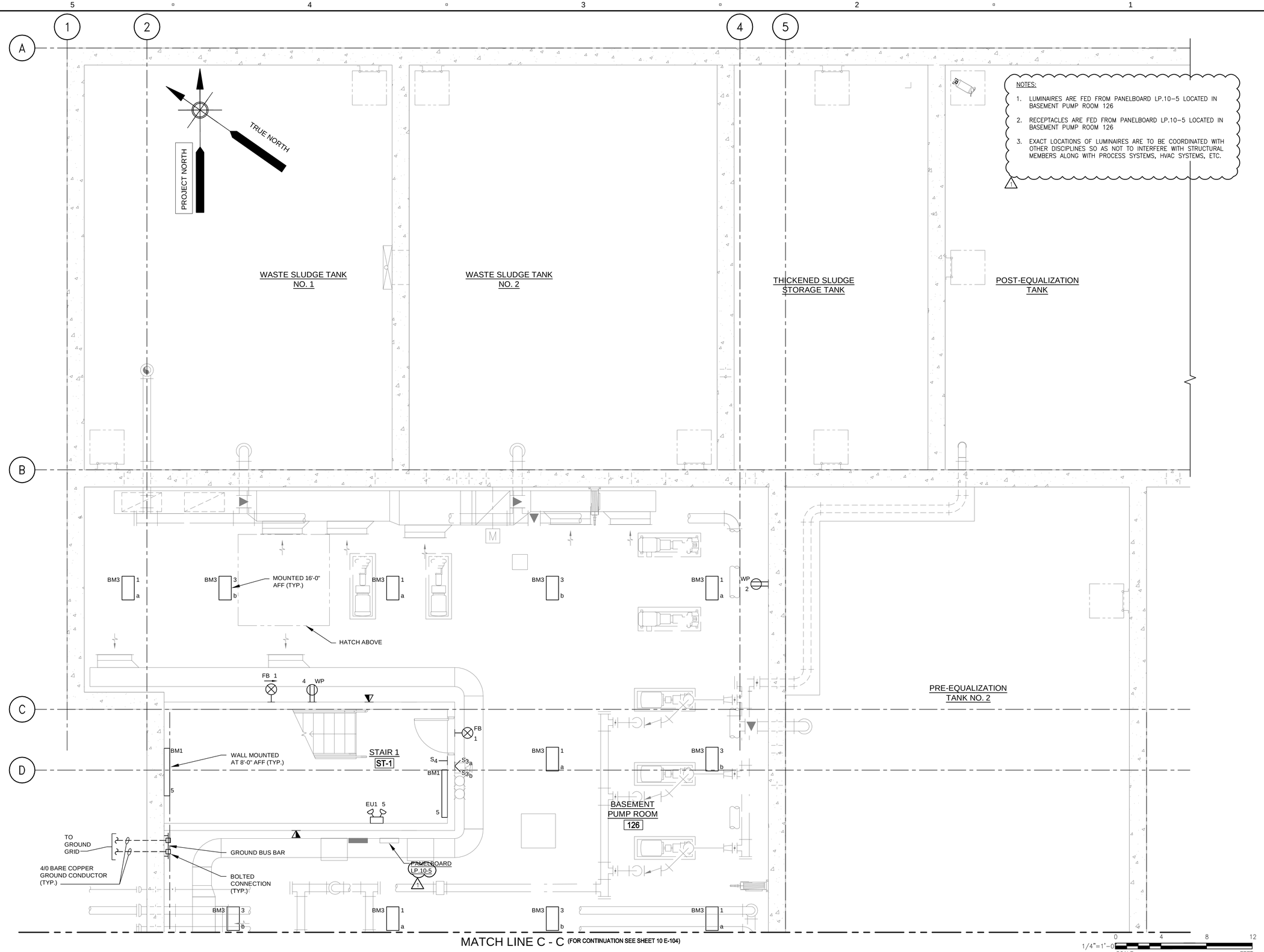
SHEET TITLE

WWTF - LOWER LEVEL - POWER PLAN II

SHEET NUMBER

10 E-102

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-102.DWG
LAST UPDATE: Thursday, April 30, 2020 9:24:53 AM
PLOT DATE: Thursday, April 30, 2020 12:07:49 PM



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-103.DWG
LAST UPDATE: Tuesday, March 24, 2020 2:15:23 AM
PLOT DATE: Tuesday, March 24, 2020 4:13:43 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 49962
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - LOWER LEVEL - SYSTEMS PLAN I

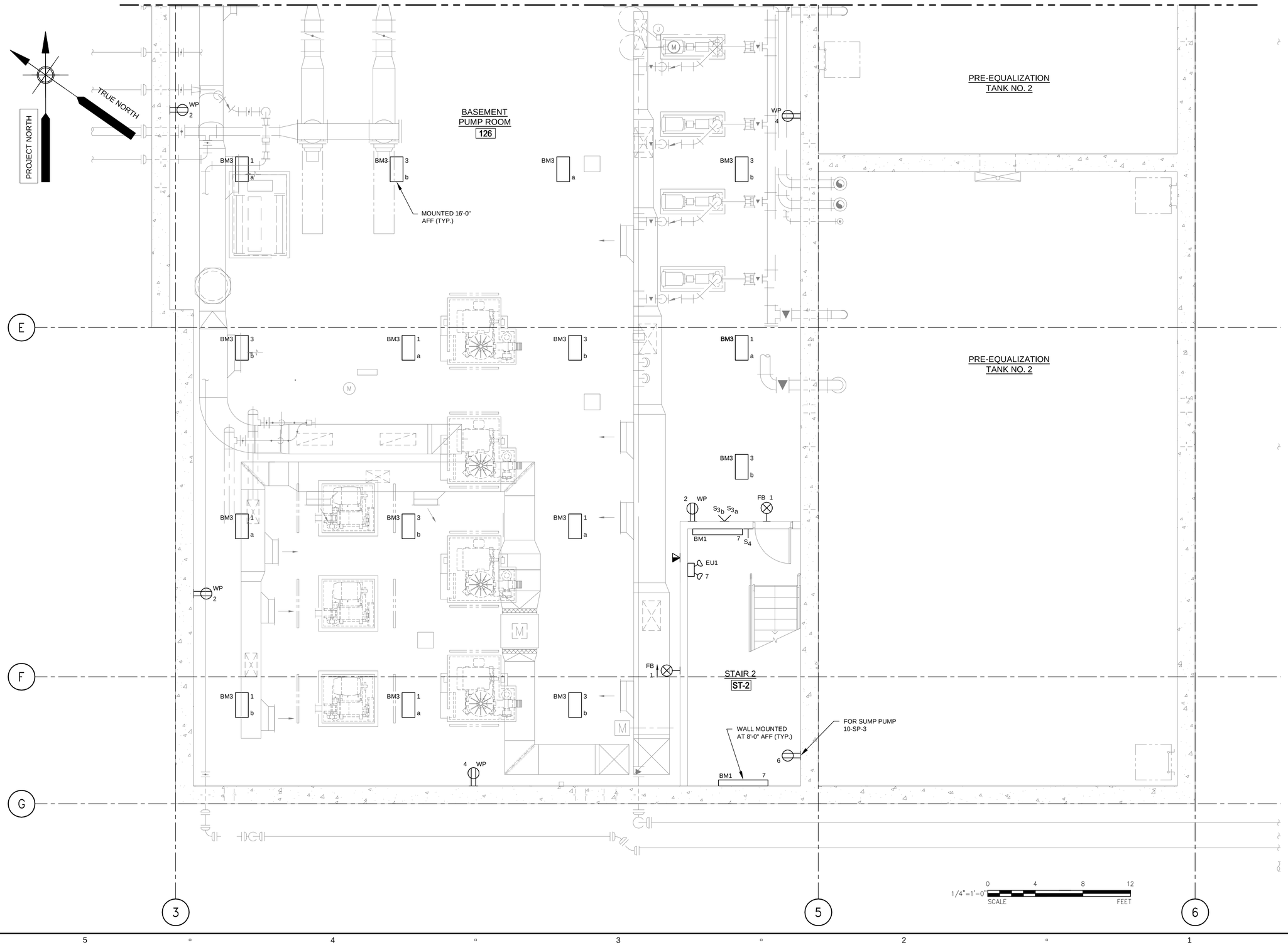
SHEET NUMBER

10 E-103

NOTES:

1. LUMINAIRES ARE FED FROM PANELBOARD LP.10-5 LOCATED THE BASEMENT PUMP ROOM 126 .
2. RECEPTACLES ARE FED FROM PANELBOARD LP.10-5 LOCATED IN BASEMENT PUMP ROOM 126 .
3. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.

MATCH LINE C - C (FOR CONTINUATION SEE SHEET 10 E-103)



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

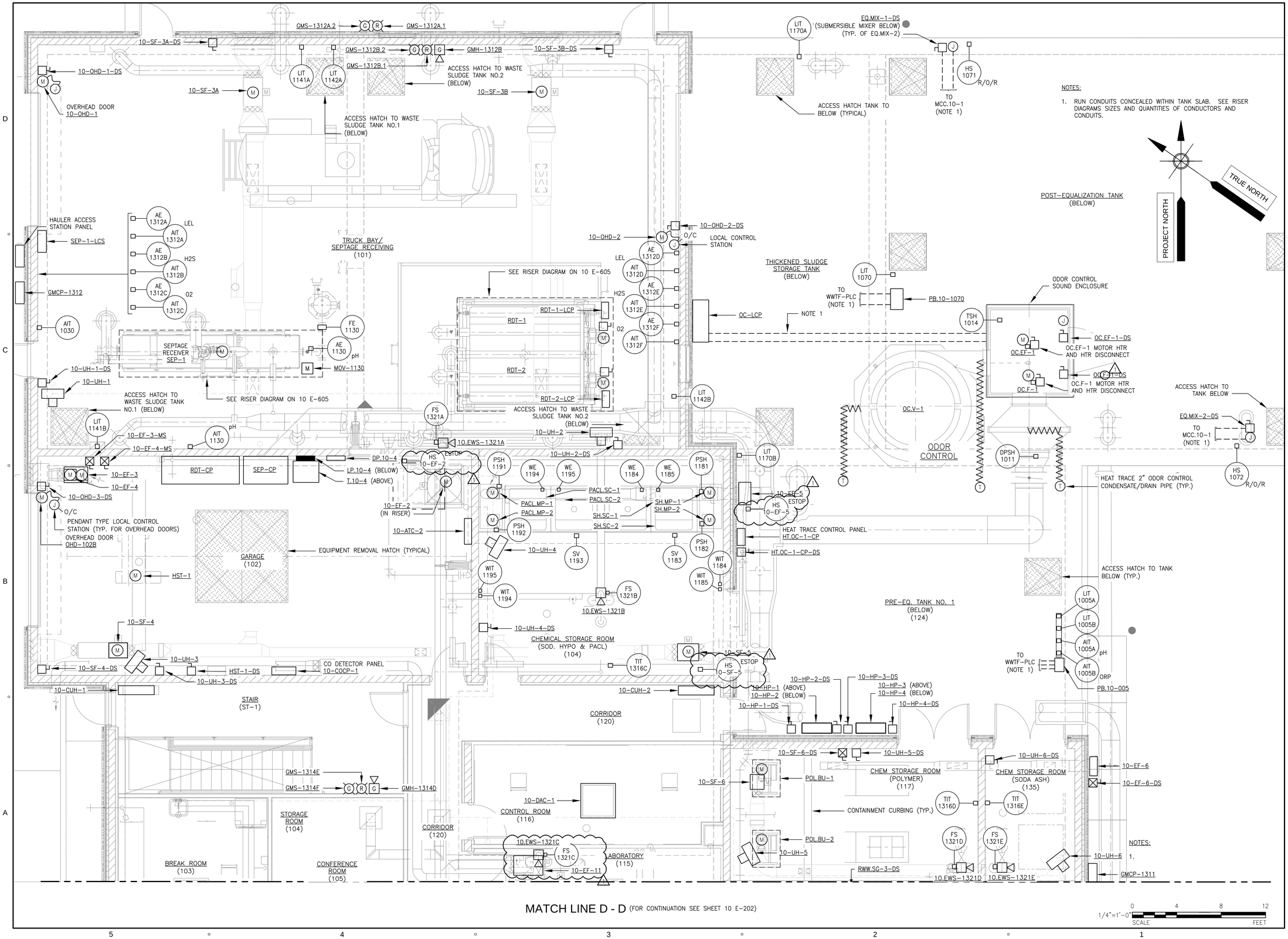
SHEET TITLE

WWTF - LOWER LEVEL - SYSTEMS PLAN II

SHEET NUMBER

10 E-104

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\E-104.DWG
LAST UPDATE: Tuesday, March 24, 2020 2:14:49 AM
PLOT DATE: Tuesday, March 24, 2020 4:13:58 AM



MATCH LINE D - D (FOR CONTINUATION SEE SHEET 10 E-202)

1/4"=1'-0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-201.DWG
LAST UPDATE: Tuesday, March 24, 2020 4:07:28 AM
PLOT DATE: Tuesday, March 24, 2020 4:14:25 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 39621
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - GRADE LEVEL - POWER PLAN I

SHEET NUMBER

10 E-201

MATCH LINE D - D (FOR CONTINUATION SEE SHEET 10 E-201)

TRUE NORTH

PROJECT NORTH

BREAK ROOM (103)

CONFERENCE ROOM (105)

HS 10-EF-10 ESTOP

HS 10-EF-11 ESTOP

10-EF-11

LABORATORY (115)

VESTIBULE (VEST-1)

10-CUH-3

CORRIDOR (120)

CORRIDOR (120)

MENS SHOWER ROOM (112)

WOMENS SHOWER ROOM (114)

CLOSET (130)

SUPER. OFFICE (106)

COPY ROOM (107)

MENS ROOM (111)

WOMENS ROOM (113)

STORAGE (110)

SEE SITE PLAN SHEET 10 E-001 FOR CONTINUATION

TO PLANT WATER STORAGE TANK

TO IN-PLANT SANITARY PUMP STATION (25)

05 LIT 1100 09

GROUND BUS BAR

PV EQUIP. (FUTURE)

SCADA SERVER RACK

WWTF-PLC

TO EHH-S1

S1

COMCAST TELEPHONE/DATA BACKBOARD

TO TMH.10-1 (VERIZON SERVICE)

01

03

FROM MVT.10-1

SEE ELECTRICAL PLAN 10 E-102 FOR LOCATIONS OF BELOW GRADE CONDUITS ENTERING BUILDING (TYPICAL)

SWBD.10-1

MCC.10-1

MIX.BLW-4 VFD

MIX.BLW-3 VFD

MIX.BLW-2 VFD

MIX.BLW-1 VFD

SBR.BLW-3 VFD

SBR.BLW-2 VFD

SBR.BLW-1 VFD

TIT 1316B

10-EF-1 (IN VERTICAL RISER)

HS 10-EF-1 ESTOP

10-EF-8

10-EF-8-DS

SERVICE SINK (120A)

LAUNDRY (120B)

LP.10-1 (BELOW)(TYP.) T.10-1 (ABOVE)(TYP.)

DP.10-1 LP.10-2 T.10-2

DP.10-2

LP.10-3 T.10-3

DP.10-3

10-CP-1 10-CP-2

10-CP-1-VFD 10-CP-2-VFD

10-BLR-1 10-BLR-1-DS

10-BP-1 10-BP-1-VFD

10-BLR-2 10-BLR-2-DS

10-BP-2 10-BP-2-VFD

10-PP-2-DS

10-PP-2

10-PP-1

10-BLR-2-DS

STAIR (ST-2)

10-SF-2 (IN VERTICAL RISER)

10-DH-2

10-DH-1

MECHANICAL ROOM (109)

10-UH-10-DS

10-UH-10

10-ATC-1

HS 10-SF-2 ESTOP

10-DH-1-DS

10-DH-2-DS

10-CUH-4

TO SITE ACCESS GATE

10

MCC.10-2

10-ACCU-1-DS

DIRECT BURIAL CONDUIT

10-ACCU-1

10-EUH-1

SBR-CP

SBR.BLW-1 VFD

SBR.BLW-4 VFD (FUTURE)

ELECTRICAL ROOM (108)

10-AC-1 (CEILING SUSPENDED)

FACP.10-1

SSCP.10-1

GEN. ANNUNCIATOR GACP.10-1

PULL BOX FROM GEN.10-1 FOR CONTROL AND 208/120VAC CONDUCTORS

08

04

CCTV-CP.10-1

TO GEN.10-1 SEE SITE PLAN SHEET 10 E-001 FOR CONTINUATION

TO EQUIP. STORAGE FACILITY (20) SEE SITE PLAN SHEET 10 E-001 FOR CONTINUATION

05

TO EHH.15-01A/EHH.15-01B AND SBR TANKS NO.1 & NO.2 (15) SEE SITE PLAN SHEET 10 E-001 FOR CONTINUATION

RWW.SG-1-DS

GMS-1311B

GMH-1311

GMS-1311A

10-SF-7

10-SF-7-DS

HEADWORKS (118)

ACCESS HATCH TO TANK BELOW (TYPICAL)

RWW.SG-1

LE 1001A

RWW.SG-3

LE 1001B

RWW.SCRN-1-LCP

WSH 1001

TSH 1001

AN 1002 (SAMPLER)

INFLUENT SCREEN RWW.SCR-1

SV 1001

RWW.SG-2

LEL H2S O2

AIT 1311A AIT 1311B AIT 1311C

AE 1311A AE 1311B AE 1311C

RWW.SG-4

ACCESS HATCH TO TANK BELOW (TYP.)

RWW.SG-2-DS

RWW.SG-4-DS

10-UH-7

10-UH-7-DS

10-UH-8-DS

10-UH-8

10-UH-8-DS

RWW.SCR-1-CP

10-SF-7

HS 10-EF-7 ESTOP

FS 1321F

10.EWS-1321F

TURB AIT 1056

TURB AIT 1050

SEE RISER DIAGRAM ON SHEET 10 E-606

DISK FILTER NO. 1 DF-1

DF-1-CP

SBW.P-1

AE 1056 TURB

AE 1050 TURB

FE 1050

MOV-1050

FIT 1050

FIT 1060

DISK FILTER ROOM (109)

MOV-1060

SEE RISER DIAGRAM ON SHEET 10 E-606

DISK FILTER NO. 2 DF-2

AE 1066 TURB

AE 1060 TURB

FE 1060

SBW.P-2

DF-2-CP

HS 10-SF-8 ESTOP

10-SF-8

AIT 1065 TURB

AIT 1060 TURB

10-UH-9

10-UH-9-DS

10-COND-2-DS

PRE-EQ. TANK NO. 2 (BELOW) (125)

NOTE 1

10-COND-1

10-COND-2

TO WWTF-PLC (NOTE 1)

PB.10-006

LIT 1006A

LIT 1006B

AIT 1006A pH

AIT 1006B ORP

ACCESS HATCH TO PRE-EQ. TANK NO. 2 BELOW

NOTES:

1. RUN CONDUITS CONCEALED WITHIN TANK SLAB. SEE RISER DIAGRAMS SIZES AND QUANTITIES OF CONDUCTORS AND CONDUITS.

1/4"=1'-0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\B1D\E-202.DWG

LAST UPDATE: Tuesday, March 24, 2020 4:03:50 AM

PLOT DATE: Tuesday, March 24, 2020 4:14:51 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS ANDREA ABRAHAM ELECTRICAL No. 52542 REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

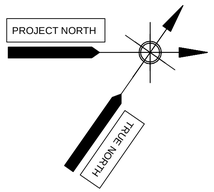
ELECTRICAL

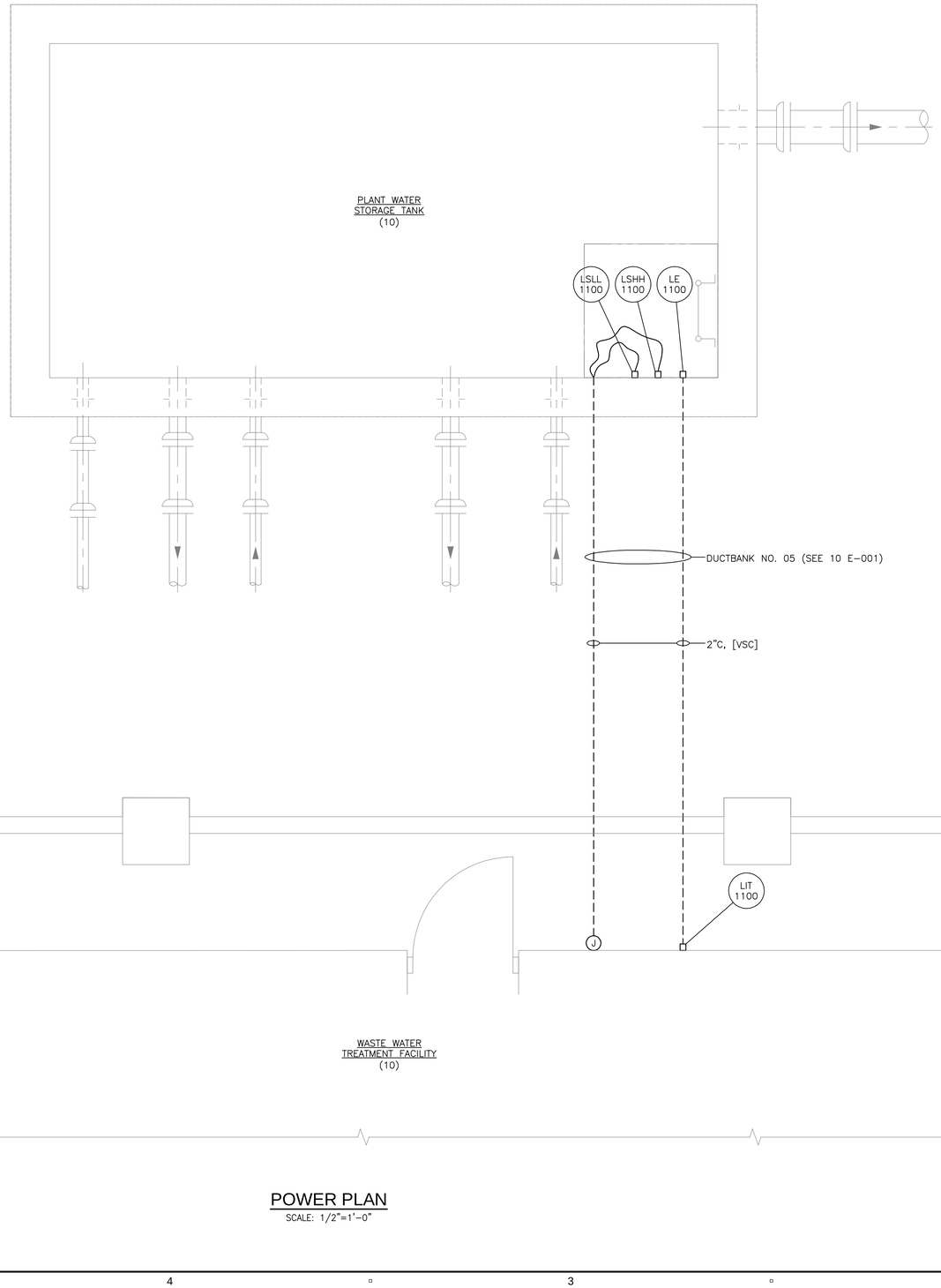
SHEET TITLE

WWTF - GRADE LEVEL - POWER PLAN II

SHEET NUMBER

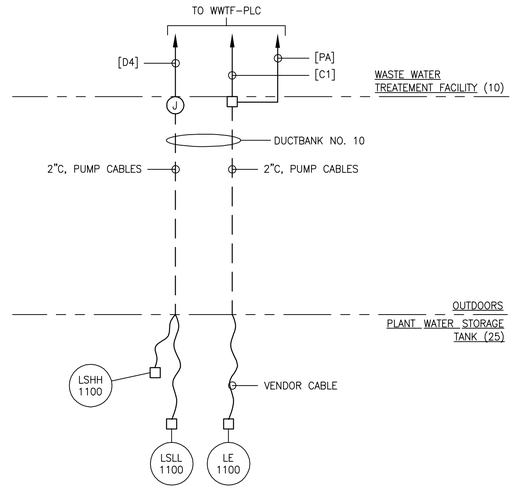
10 E-202





POWER PLAN

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



PLANT WATER STORAGE - RISER DIAGRAM

1/2"=1'-0"

0 1 2 3 4 5 6

SCALE FEET

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-203.DWG

LAST UPDATE: Monday, January 27, 2020 4:59:10 PM

PLOT DATE: Monday, January 27, 2020 5:08:24 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**D. ASPESI**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

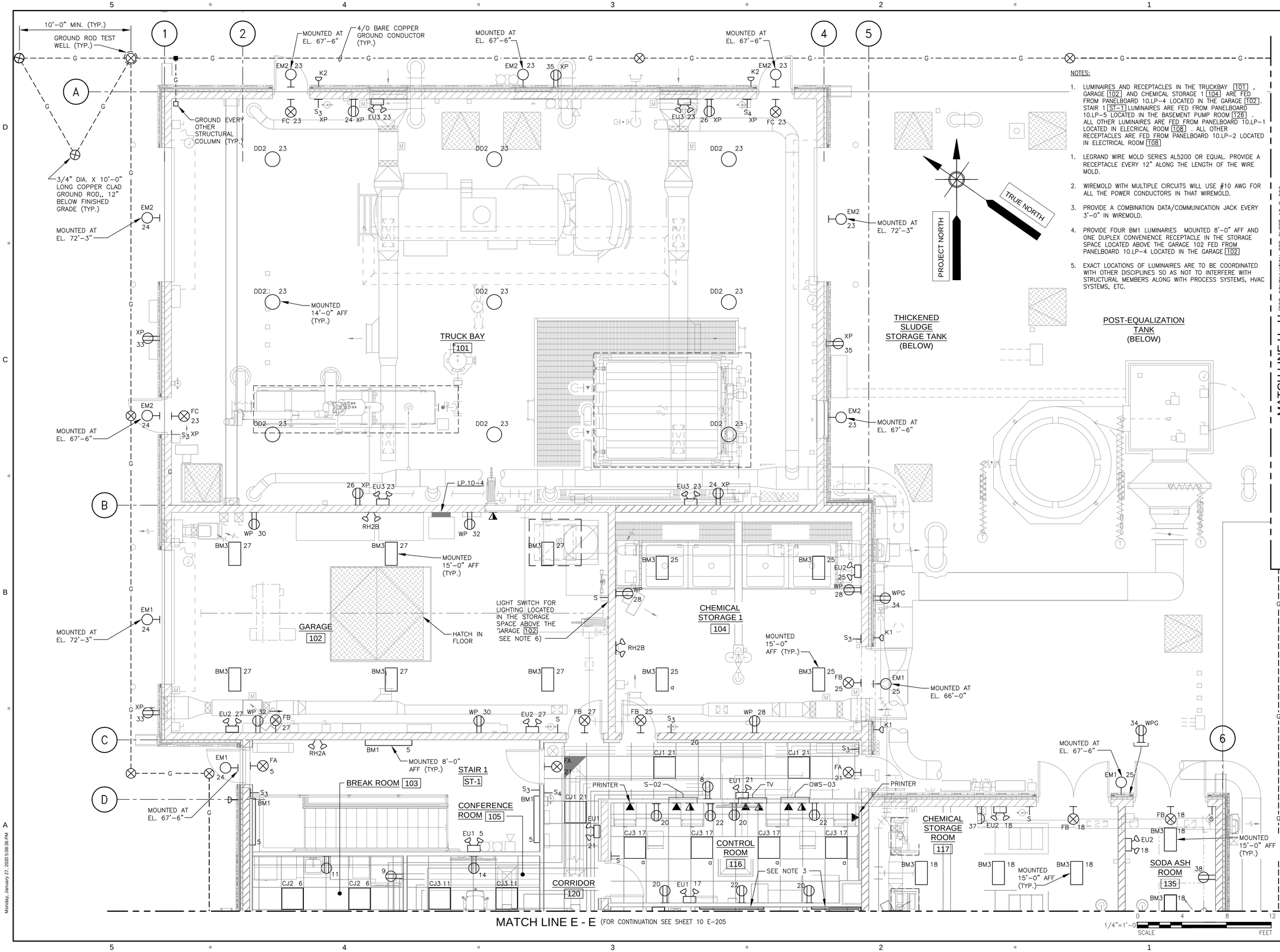
ELECTRICAL

SHEET TITLE

WWTF - GRADE LEVEL - POWER PLAN III (PW STORAGE TANK)

SHEET NUMBER

10 E-203



NOTES:

1. LUMINAIRES AND RECEPTACLES IN THE TRUCKBAY [101], GARAGE [102] AND CHEMICAL STORAGE 1 [104] ARE FED FROM PANELBOARD 10.LP-4 LOCATED IN THE GARAGE [102]. STAIR 1 [ST-1] LUMINAIRES ARE FED FROM PANELBOARD 10.LP-5 LOCATED IN THE BASEMENT PUMP ROOM [126]. ALL OTHER LUMINAIRES ARE FED FROM PANELBOARD 10.LP-1 LOCATED IN ELECRICAL ROOM [108]. ALL OTHER RECEPTACLES ARE FED FROM PANELBOARD 10.LP-2 LOCATED IN ELECTRICAL ROOM [108]

1. LEGRAND WIRE MOLD SERIES AL5200 OR EQUAL. PROVIDE A RECEPTACLE EVERY 12" ALONG THE LENGTH OF THE WIRE MOLD.
2. WIREMOLD WITH MULTIPLE CIRCUITS WILL USE #10 AWG FOR ALL THE POWER CONDUCTORS IN THAT WIREMOLD.
3. PROVIDE A COMBINATION DATA/COMMUNICATION JACK EVERY 3'-0" IN WIREMOLD.
4. PROVIDE FOUR BM1 LUMINARIES MOUNTED 8'-0" AFF AND ONE DUPLEX CONVENIENCE RECEPTACLE IN THE STORAGE SPACE LOCATED ABOVE THE GARAGE 102 FED FROM PANELBOARD 10.LP-4 LOCATED IN THE GARAGE [102]
5. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

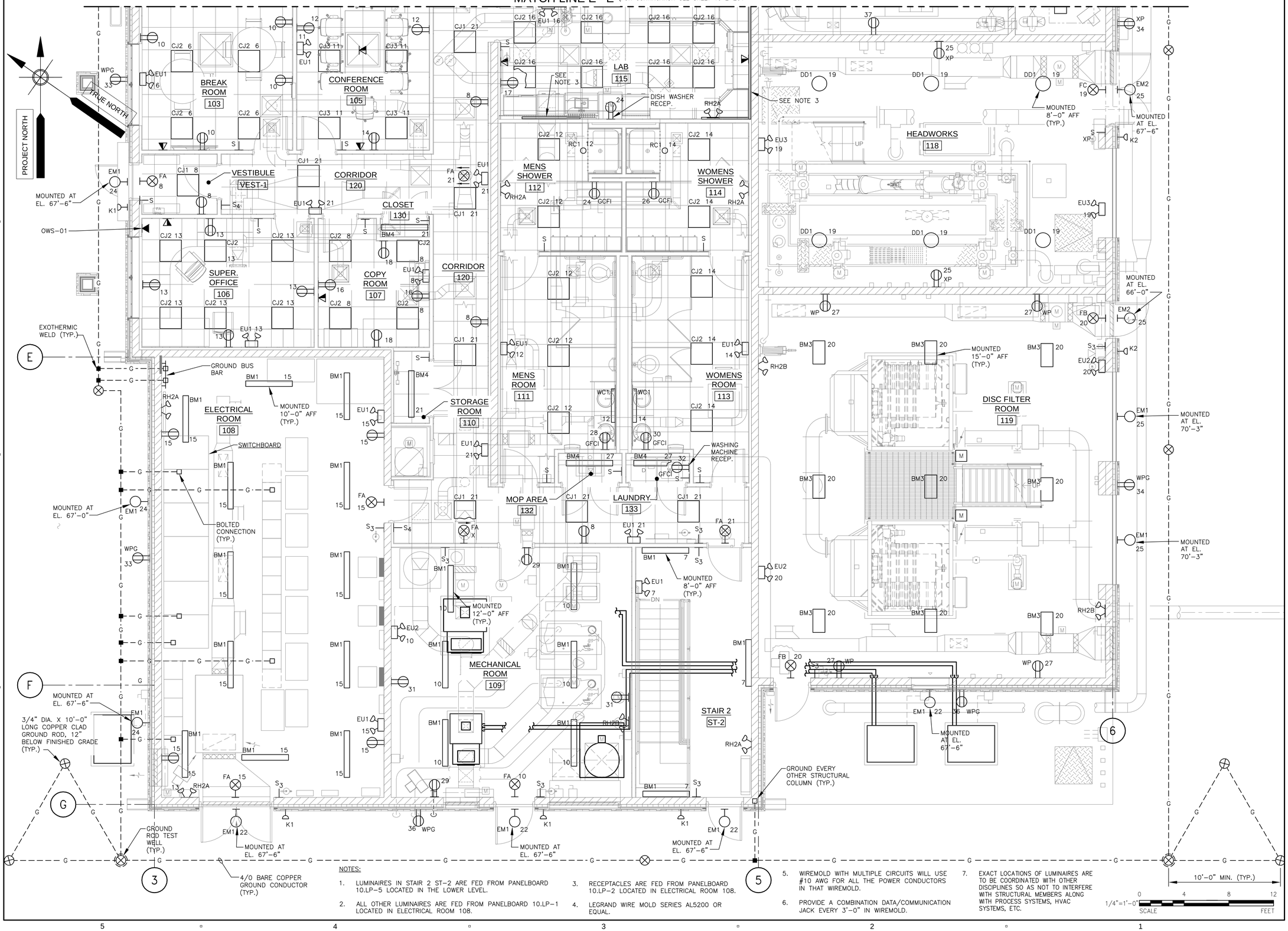
WWTF - GRADE LEVEL - SYSTEMS PLAN I

SHEET NUMBER

10 E-204

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-204.DWG
LAST UPDATE: Monday, January 27, 2020 2:26:32 PM
PLOT DATE: Monday, January 27, 2020 5:08:38 PM

MATCH LINE E - E (FOR CONTINUATION SEE SHEET 10 E-204



NOTES:

1. LUMINAIRES IN STAIR 2 ST-2 ARE FED FROM PANELBOARD 10.LP-5 LOCATED IN THE LOWER LEVEL.
2. ALL OTHER LUMINAIRES ARE FED FROM PANELBOARD 10.LP-1 LOCATED IN ELECTRICAL ROOM 108.
3. RECEPTACLES ARE FED FROM PANELBOARD 10.LP-2 LOCATED IN ELECTRICAL ROOM 108.
4. LEGRAND WIRE MOLD SERIES AL5200 OR EQUAL.
5. WIREMOLD WITH MULTIPLE CIRCUITS WILL USE #10 AWG FOR ALL THE POWER CONDUCTORS IN THAT WIREMOLD.
6. PROVIDE A COMBINATION DATA/COMMUNICATION JACK EVERY 3'-0" IN WIREMOLD.
7. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\E-205.DWG
LAST UPDATE: Monday, January 27, 2020 2:19:45 PM
PLOT DATE: Monday, January 27, 2020 5:08:51 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

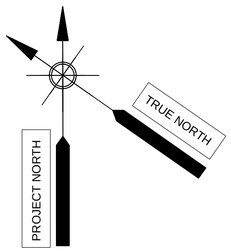
ELECTRICAL

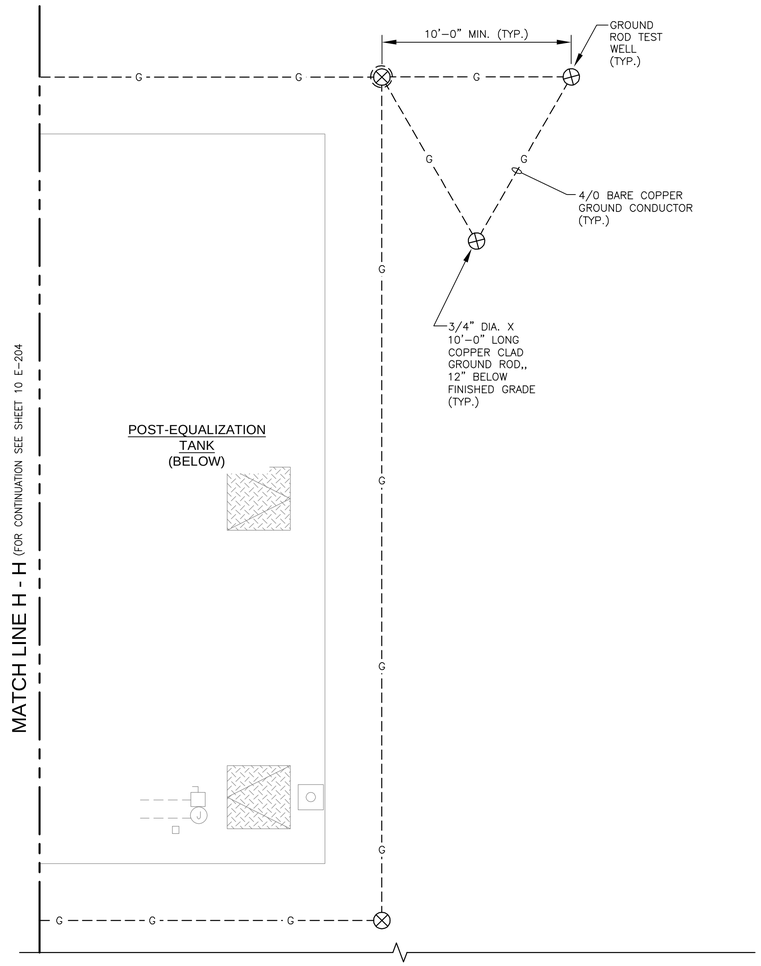
SHEET TITLE

WWTF - GRADE LEVEL - SYSTEMS PLAN II

SHEET NUMBER

10 E-205





0 4 8 12
1/4"=1'-0
SCALE FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-206.DWG
LAST UPDATE: Friday, January 24, 2020 9:35:01 AM
PLOT DATE: Monday, January 27, 2020 5:09:06 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**M. STEWART**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

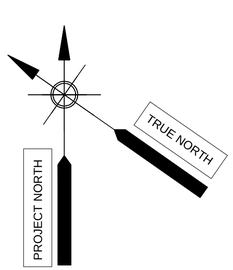
ELECTRICAL

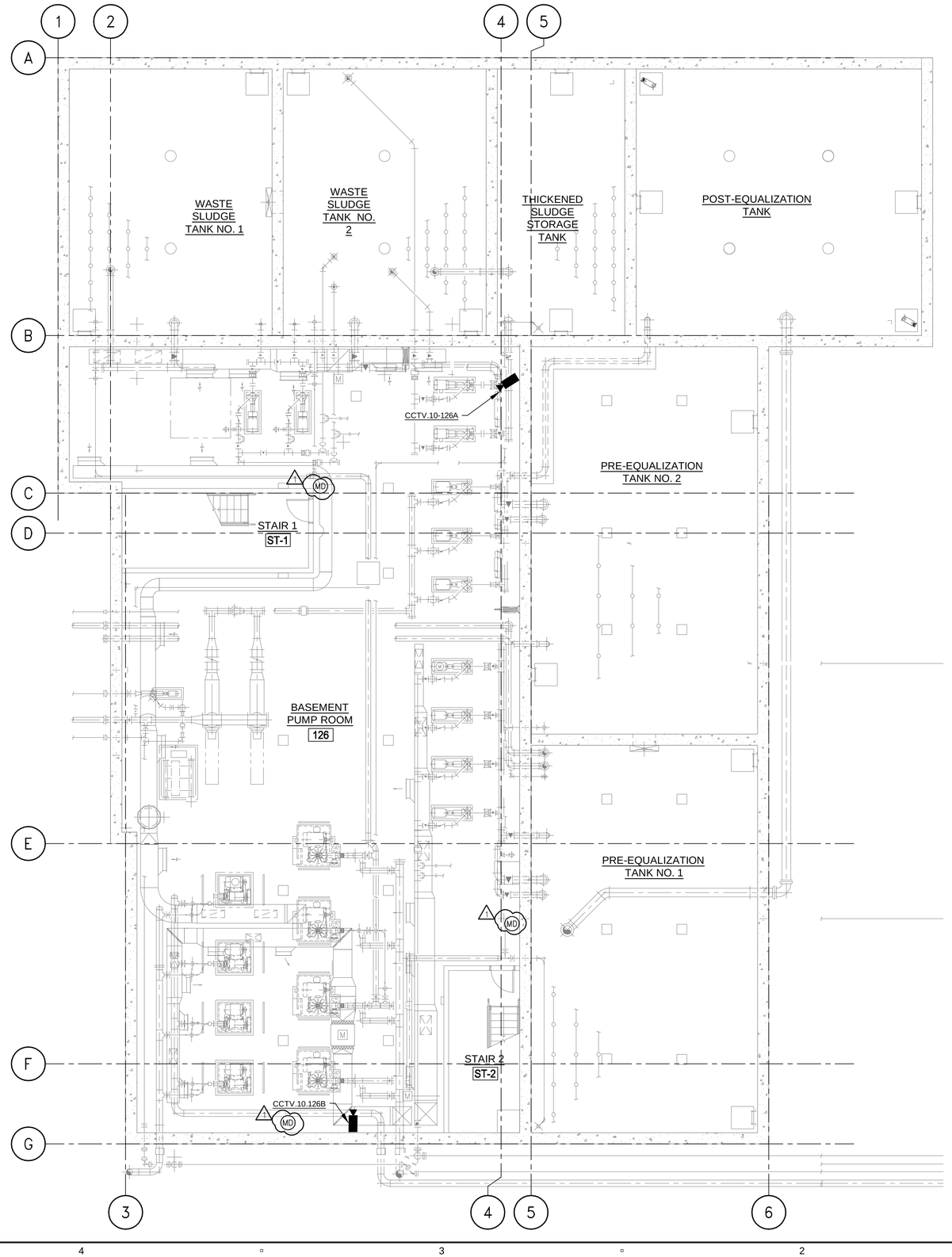
SHEET TITLE

WWTF - GRADE LEVEL - SYSTEMS PLAN III

SHEET NUMBER

10 E-206





NOTES:

1. SEE SECURITY RISER DIAGRAMS FOR ADDITIONAL INFOMATION.

1/8"=1'-0" SCALE 0 4 8 12 16 20 24 FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
REGISTERED
PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

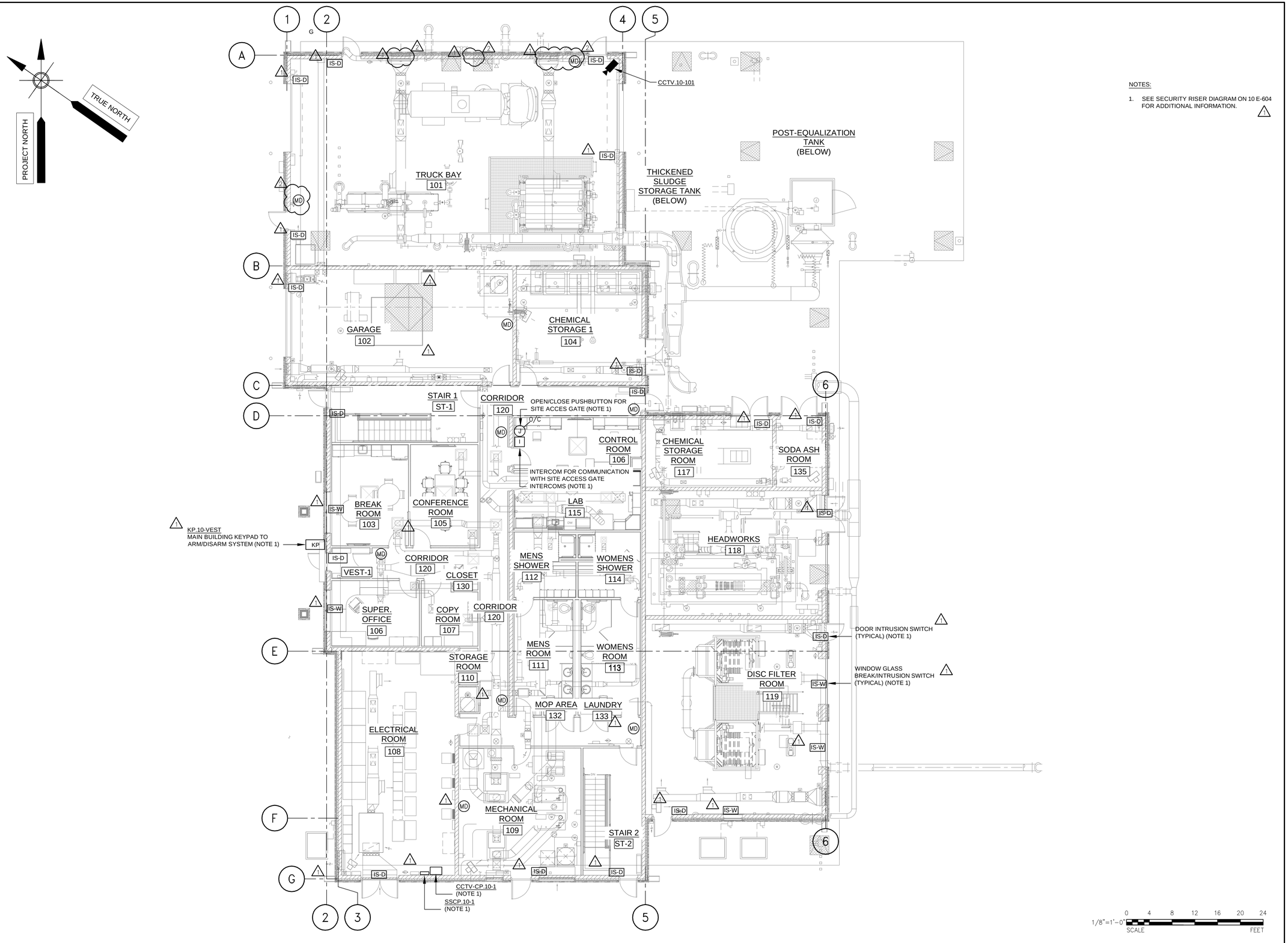
SHEET TITLE

WWTF - LOWER LEVEL - SECURITY PLAN I

SHEET NUMBER

10 E-301

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-301.DWG
LAST UPDATE: Monday, March 23, 2020 8:04:59 PM
PLOT DATE: Tuesday, March 24, 2020 4:15:01 AM



NOTES:

1. SEE SECURITY RISER DIAGRAM ON 10 E-604 FOR ADDITIONAL INFORMATION. (1)

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	04-10-2020	ADDENDUM 8
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

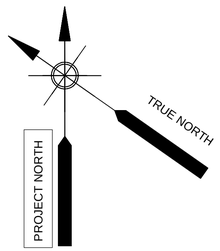
SHEET TITLE

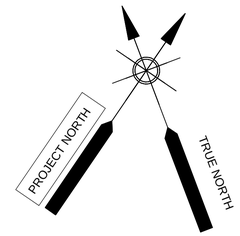
WWTF - GRADE LEVEL - SECURITY PLAN I

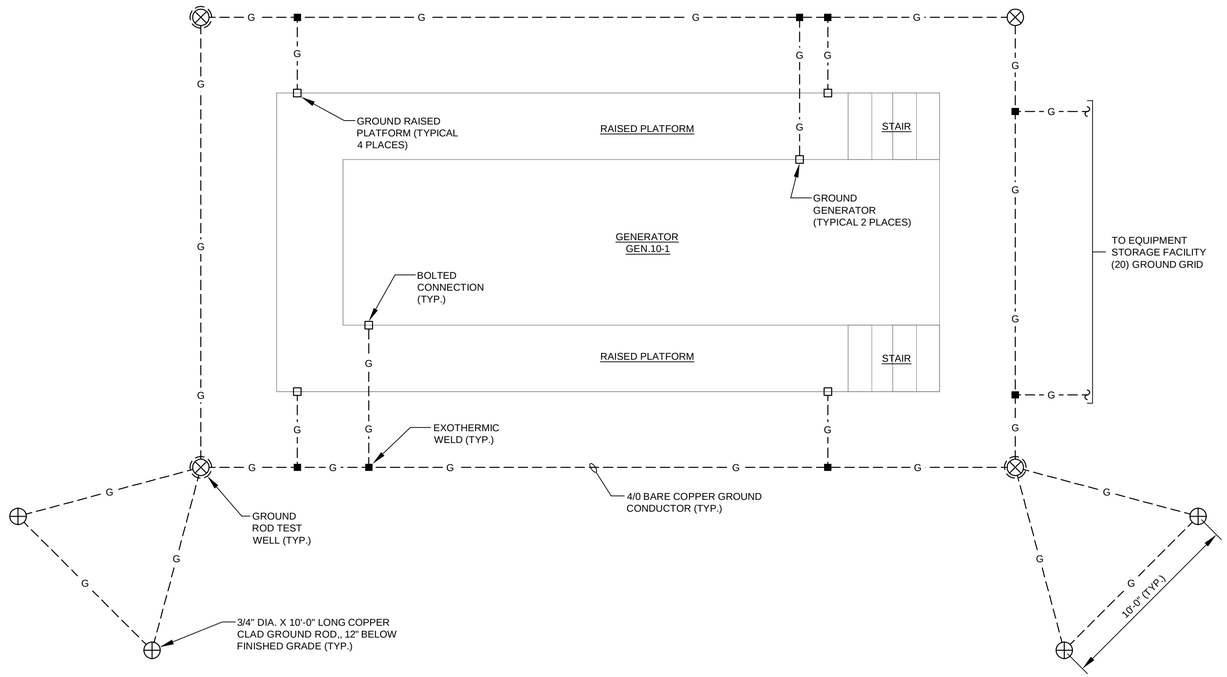
SHEET NUMBER

10 E-302

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\10 E-302.DWG
LAST UPDATE: Friday, April 10, 2020 10:56:00 AM
PLOT DATE: Friday, April 10, 2020 10:57:41 AM

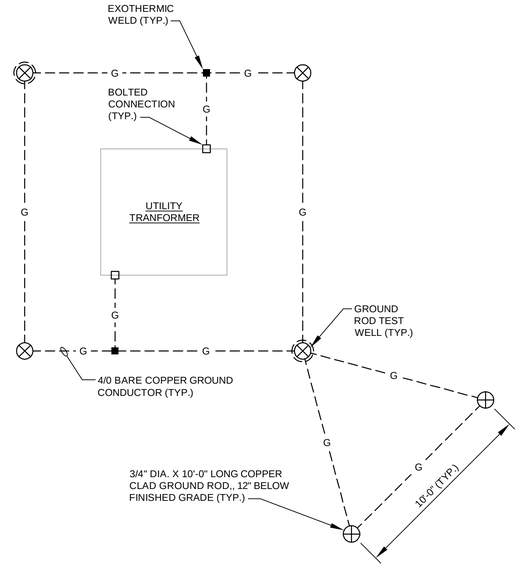






WASTEWATER TREATMENT FACILITY
GENERATOR GROUNDING PLAN

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



WASTEWATER TREATMENT FACILITY
TRANSFORMER GROUNDING PLAN

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

0 4 8 12
1/4"=1'-0"
SCALE FEET

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA M. GRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**M. STEWART**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - GENERATOR AND UTILITY TRANSFORMER GROUNDING PLAN

SHEET NUMBER

10 E-303

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-303.DWG
LAST UPDATE: Tuesday, October 01, 2019 2:44:51 PM
PLOT DATE: Monday, January 27, 2020 5:09:41 PM

PANELBOARD DP.10-1

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 200A. FRAME, 200A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
T.10-1/LP.10-1	-	8	1	A B C	2	-	-	
	-	8				-	2	MOTORIZED ACCESS GATE
	-	8				-	-	
10-AC-1 (INDOOR)/ 10-ACCU-1 (OUTDOOR)	-	-	3		4	-	-	
	1.5	-		25A		-	2	10-DH-2
	-	-				-	-	
10-DH-1	-	-	5		6	0.63	-	
	2	-		25A		0.63	-	10-COND-2
	-	-				0.63	-	
10-COND-1	-	0.63	7		8	-	-	
	-	0.63				10	-	10-EUH-1 (ELEC. ROOM)
	-	0.63				-	-	
SPARE	-	-	9		10	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	11		12	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	13		14	-	-	
	-	-				-	-	SPARE
	-	-				-	-	

TOTAL CONNECTED LOAD: KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

PANELBOARD DP.10-3

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 200A. FRAME, 200A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
T.10-3/LP.10-3	-	8	1	A B C	2	-	-	
	-	8				-	-	SPARE
	-	8				-	-	
MOV-1030 (SBR 2) MOV-1035A (SBR 2) MOV-1035B (SBR 2)	-	-	3		4	-	-	
	1.5	-				-	1.5	MOV-1035C (SBR 2) MOV-1036 (SBR 2) MOV-1038 (SBR 2)
	-	-				-	-	
SPARE	-	-	5		6	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	7		8	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	9		10	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	11		12	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	13		14	-	-	
	-	-				-	-	SPARE
	-	-				-	-	

TOTAL CONNECTED LOAD: KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

PANELBOARD DP.10-2

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 200A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
T.10-2/LP.10-2	-	8	1	A B C	2	-	-	
	-	8				-	1	MOV-1025C (SBR 1) MOV-1026 (SBR 1) MOV-1028 (SBR 1)
	-	8				-	-	
MOV-1020 (SBR 1) MOV-1025A (SBR 1) MOV-1025B (SBR 1)	-	-	3		4	-	-	
	1.5	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	5		6	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	7		8	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	9		10	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	11		12	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
SPARE	-	-	13		14	-	-	
	-	-				-	-	SPARE
	-	-				-	-	

TOTAL CONNECTED LOAD: KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

PANELBOARD DP.10-4

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 200A. FRAME, 200A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
T.10-4/LP.10-4	-	8	1	A B C	2	-	-	
	-	8				-	2.5	HOIST HST-1 (TROLLEY 1/2 HP, HOIST 2 HP)
						-	-	
RWW.SG-1 RWW.SG-3	-	-	3		4	-	-	
	1	-				-	1	RWW.SG-2 RWW.SG-4
	-	-				-	-	
RWW.SCR-1-CP	-	-	5		6	-	-	
	-	-		30A		-	-	10-OHD-2
	-	-				-	-	
10-OHD-1	-	-	7		8	-	-	
	-	-				-	-	MOV-1060 (DF #2)
	-	-				-	-	
MOV-1050 (DF #1)	-	-	9		10	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
POLYMER BLEND UNIT POL.BU-1	-	-	11		12	-	-	
	-	-				-	-	SPARE
	-	-				-	-	
POLYMER BLEND UNIT POL.BU-2	-	-	13		14	-	-	
	-	-				-	-	SPARE
	-	-				-	-	

TOTAL CONNECTED LOAD: KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: GARAGE 102

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - PANELBOARD SCHEDULES I

SHEET NUMBER

10 E-601

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-601.DWG
LAST UPDATE: Monday, January 06, 2020 2:49:18 PM
PLOT DATE: Monday, January 27, 2020 5:09:49 PM

PANELBOARD DP.10-5

SERVICE: 480V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 60A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
UV-1-CP	-	4.50	1	A B C	2	4.50	-	UV-2-CP
	-	4.50		25A 25A		4.50	-	
	-	4.50				4.50	-	
MOV-1027 (SBR 1) MOV-1037 (SBR 2)	-		3		4	-	-	UV EFFLUENT VALVE MOV-1100A
	-					-	1/2	
	-					-	-	
10-SP-1-CP (10-SP-1/1A)	-	0.58	5		6	0.58	-	10-SP-2-CP (10-SP-2/2A)
	1	0.58				0.58	1	
	-	0.58				0.58	-	
W2 VALVE MOV-1100B	-	-	7		8	-	-	SPARE
	1/2	-				-	-	
	-	-				-	-	

TOTAL CONNECTED LOAD: 30.48 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: BASEMENT PUMP ROOM

PANELBOARD LP.10-2

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	KVA C	CIR. NO.		CIR. NO.	KVA A	KVA B	KVA C	HP	LOCATION
15.HT-CP-2A (SBR #2)	-	-	-	-	1	NEUTRAL A B C	2	-	-	-	-	SPARE
15.HT-CP-2B (SBR #2)	-	-	-	-	3	30A* 30A*	4	-	-	-	-	SPARE
SPARE	-	-	-	-	5		6	-	-	-	-	SPARE
SPARE	-	-	-	-	7		8	0.90	-	-	-	WWTF CORR. 120 & VEST. VEST-1 RECP.
WWTF BREAK RM. (FRIDGE) 103 RECP.	-	-	1.50	-	9		10	-	0.72	-	-	WWTF BREAK ROOM 103 RECEPTACLES
WWTF BREAK RM (MICROWAVE) 103 RECP.	-	-	-	1.50	11		12	-	-	0.36	-	WWTF CONFERENCE ROOM 105 RECP.
WWTF SUPER OFFICE 106 RECEPTACLES	-	0.72	-	-	13		14	0.36	-	-	-	WWTF CONFERENCE ROOM 105 RECP.
WWTF ELECTRICAL ROOM 108 RECP.	-	-	0.72	-	15		16	-	0.36	-	-	WWTF COPY ROOM 107 RECEPTACLES
WWTF LABORATORY 115 RECEPTACLES	-	-	-	0.72	17		18	-	-	0.36	-	WWTF COPY ROOM 107 RECEPTACLES
WWTF LABORATORY 115 RECEPTACLES	-	0.72	-	-	19		20	0.72	-	-	-	WWTF CONTROL RM 116 RECEPTACLES
WWTF LABORATORY 115 RECEPTACLES	-	-	0.72	-	21		22	-	0.54	-	-	WWTF CONTROL RM 116 RECEPTACLES
WWTF LABORATORY 115 RECEPTACLES	-	-	-	0.72	23		24	-	-	0.18	-	WWTF MENS SHOWER 112 RECEPTACLE
WWTF HEADWORKS 118 RECEPTACLES	-	0.36	-	-	25		26	0.18	-	-	-	WWTF WOMENS SHOWER 114 RECP.
WWTF DISC FILTER RM. 119 RECP.	-	-	0.72	-	27		28	-	0.18	-	-	WWTF MENS ROOM 111 RECEPTACLE
WWTF MECHANICAL RM. 109 RECP.	-	-	-	0.36	29		30	-	-	0.18	-	WWTF WOMENS ROOM 113 RECEPTACLE
WWTF MECHANICAL RM. 109 RECP.	-	0.36	-	-	31		32	1.50	-	-	-	WWTF LAUNDRY 133 WASH. MACH. RECP.
WWTF EXTERIOR BUILDING RECEPTACLES	-	-	0.72	-	33		34	-	0.72	-	-	EXTERIOR BUILDING RECEPTACLES
WWTF EXTERIOR BUILDING RECEPTACLES	-	-	-	0.36	35		36	-	-	0.36	-	EXTERIOR BUILDING RECEPTACLES
WWTF POLYMER ROOM 117 RECP.	-	0.36	-	-	37		38	0.18	-	-	-	WWTF SODA ASH ROOM 135 RECP.
SPARE	-	-	-	-	39		40	-	-	-	-	SPARE
SPARE	-	-	-	-	41		42	-	-	-	-	SPARE

KVA PH A: 6.36 KVA PH B: 6.18 KVA PH C: 5.10
TOTAL CONNECTED LOAD: 17.64 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

* GFCI CIRCUIT BREAKER

PANELBOARD LP.10-1

SERVICE: 240/120V, 1PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	CIR. NO.		CIR. NO.	KVA A	KVA B	HP	LOCATION
SANITARY PUMP STATION (25) SAN.P-1/2	(2) 1	1.92	-	1	NEUTRAL A B 30A	2	-	-	-	SPARE
			1.92	3		4	-	-	-	SPARE
HT.15-CP-1A (SBR #1)	-	-	-	5	30A*	6	0.18	-	-	WWTF BREAK ROOM 103
15.HT-CP-1B (SBR #1)	-	-	-	7	30A*	8		0.14	-	VEST VEST-1 & COPY 107 RM LIGHTING
SPARE	-	-	-	9		10	0.27		-	WWTF MECHANICAL ROOM LIGHTING 109
WWTF CONFERENCE ROOM 105	-	-	0.20	11		12	-	0.20	-	WWTF MENS RM 111 & SHWR 112 LTG
WWTF SUPER OFFICE LIGHTING 106	-	0.24	-	13		14	0.20	-	-	WWTF WOMENS RM 113 & SHWR 114 LTG
WWTF ELECTRICAL ROOM LIGHTING 108	-		0.22	15		16	-	0.24	-	WWTF LAB LIGHTING 115
WWTF CONTROL ROOM LIGHTING 116	-	0.16		17		18	0.40	-	-	WWTF POLY XXX & SODA ASH RM 117 LTG
WWTF HEAD WORKS LIGHTING 118	-	-	0.96	19		20		0.72	-	WWTF DISC FILTER ROOM LIGHTING 119
WWTF CORRIDOR 120 & CLOS. 130 LTG.	-	0.24	-	21		22	0.22		-	WWTF EXTERIOR WALL MOUNTED LIGHTING
WWTF EXTERIOR WALL MOUNTED LIGHTING	-	-	0.28	23		24	-	0.30	-	WWTF EXTERIOR WALL MOUNTED LIGHTING
WWTF EXTERIOR WALL MOUNTED LIGHTING	-	0.30	-	25		26	-	-	-	SPARE
WWTF MOP AREA 132 & LAUNDRY 133	-		0.10	27		28	-	-	-	SPARE
SPARE	-	-	-	29		30	-	-	-	SPARE
SPARE	-	-	-	31		32	-	-	-	SPARE
SPARE	-	-	-	33		34	-	-	-	SPARE
SPARE	-	-	-	35		36	-	-	-	SPARE
SPARE	-	-	-	37		38	-	-	-	SPARE
SPARE	-	-	-	39		40	-	-	-	SPARE
SPARE	-	-	-	41		42	-	-	-	SPARE

KVA PH A: 4.13 KVA PH B: 5.28
TOTAL CONNECTED LOAD: 9.41 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

* GFCI CIRCUIT BREAKER

PANELBOARD LP.10-3

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	KVA C	CIR. NO.		CIR. NO.	KVA A	KVA B	KVA C	HP	LOCATION
SBR NO. 1 STANCHION MOUNTED LIGHTING	-	0.27	-	-	1	NEUTRAL A B C	2	0.36	-	-	-	SBR NO.1 RECEPTACLES
SBR NO. 2 STANCHION MOUNTED LIGHTING	-	-	0.33	-	3		4	-	0.54	-	-	SBR NO. 2 RECEPTACLES
ROADWAY LIGHTING	-	-	-	0.75	5		6	-	-	0.75	-	ROADWAY LIGHTING
ROADWAY LIGHTING	-	0.75	-	-	7		8	X	-	-	-	ATC.10-2
ATC.10-1	-	-	X	-	9		10	-	X	-	-	CCTV-CP.10-1
FACP.10-1	-	-	-	X	11		12	-	-	X	-	SSCP.10-1
WWTF-PLC	-	X	-	-	13	30A	14	X	-	-	-	WWTF-PLC
10-DAC-1/10-HP-1	-	-	1.14	-	15	25A 25A	16	-	1.14	-	-	10-DAC-2/10-HP-2
	-	-	-	1.14	17		18	-	-	1.14	-	
10-DAC-3/10-HP-3	-	1.14	-	-	19	30A 30A	20	1.14	-	-	-	10-DAC-4/10-HP-4
	-	-	1.14	-	21		22	-	1.14	-	-	
10-EF-9	1/6	-	-	X	23		24	-	-	X	1/3	10-EF-8
10-BLR-1	-	X	-	-	25		26	X	-	-	-	10-BLR-2
GEN.10-1 - ENCLOSURE POWER (LIGHTS, HEATER, ETC.)	-	-	X	-	27		28	-	0.8	-	-	10-DWH-1
	-	-	-	X	29		30	-	-	-	-	10-UH-5, 10-UH-6 (CHEM RM 117, 135)
GEN.10-1 - BATTERY CHARGER	-	X	-	-	31		32	-	-	-	-	SPARE
SPARE	-	-	-	-	33		34	-	-	-	-	SPARE
SPARE	-	-	-	-	35		36	-	-	-	-	SPARE
SPARE	-	-	-	-	37		38	-	-	-	-	SPARE
SPARE	-	-	-	-	39		40	-	-	-	-	SPARE
SPARE	-	-	-	-	41		42	-	-	-	-	SPARE

KVA PH A: 1.38 KVA PH B: 0.87 KVA PH C: 1.50
TOTAL CONNECTED LOAD: 3.75 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: ELECTRICAL ROOM 108

* GFCI CIRCUIT BREAKER

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. GRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - PANELBOARD SCHEDULES II

SHEET NUMBER

10 E-602

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-602.DWG
LAST UPDATE: Monday, January 06, 2020 2:19:29 PM
PLOT DATE: Monday, January 27, 2020 5:09:55 PM

PANELBOARD
LP.10-4

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	KVA C	CIR. NO.	NEUTRAL	CIR. NO.	KVA A	KVA B	KVA C	HP	LOCATION
SH.MP-1	-	x	-	-	1		2	x	-	-	-	SH.MP-2
PACL.MP-1	-	-	x	-	3		4	-	x	-	-	PACL.MP-2
10.EWS-01	-	-	-	x	5		6	-	-	x	-	10.EWS-02
10.EWS-03	-	x	-	-	7		8	-	-	-	-	10.EWS-04
GMCP-1311	-	-	-	-	9		10	-	-	-	-	GMCP-1312
10-COCP-1	-	-	-	-	11		12	-	-	-	-	10-COCP-2
10-UH-1, 10-UH-2 (TRUCK BAY)	-	-	-	-	13		14	-	-	-	-	10-UH-4, 10-CUH-2 (CHEM. RM 104, COR. 102)
10-UH-3	-	-	-	-	15		16	-	-	-	1/4	10-EF-4
10-CUH-1	-	-	-	-	17		18	-	-	-	1/3	10-SF-6
10-EF-3	1/40	-	-	-	19		20	-	-	-	-	
10-EF-6	1/3	-	-	-	21		22	-	-	-	-	
WWTF TRUCK BAY LIGHTING [101]	-	-	-	1.44	23		24	-	-	0.36	-	WWTF TRUCK BAY RECEPTACLES [101]
WWTF CHEM. STORAGE 1 LIGHTING [104]	-	0.32	-	-	25		26	0.36	-	-	-	WWTF TRUCK BAY RECEPTACLES [101]
WWTF GARAGE LIGHTING [102]	-	-	0.48	-	27		28	-	0.54	-	-	CHEMICAL STORAGE 1 [104] RECEPTACLES
WWTF STORAGE AREA ABOVE THE GARAGE [102] LIGHTING	-	-	-	0.18	29		30	-	-	0.36	-	WWTF GARAGE RECEPTACLES [102]
GMCP-1311 (HEADWORKS)	-	1.2	-	-	31		32	0.36	-	-	-	WWTF GARAGE RECEPTACLES [102]
GMCP-1312 (TRUCK BAY)	-	-	3	-	33	30A	34	-	0.18	-	-	WWTF STORAGE AREA ABOVE THE GARAGE [102] RECEPTACLES
SPARE	-	-	-	-	35		36	-	-	-	-	SPARE
SPARE	-	-	-	-	37		38	-	-	-	-	SPARE
SPARE	-	-	-	-	39		40	-	-	-	-	SPARE
SPARE	-	-	-	-	41		42	-	-	-	-	SPARE

KVA PH A: 1.22 KVA PH B: 1.20 KVA PH C: 2.16
TOTAL CONNECTED LOAD: 4.58 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: GARAGE ROOM 102

* GFCI CIRCUIT BREAKER

PANELBOARD
LP.10-5

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	KVA C	CIR. NO.	NEUTRAL	CIR. NO.	KVA A	KVA B	KVA C	HP	LOCATION
WWTF LOWER LEVEL PUMP RM LIGHTING	-	1.04	-	-	1		2	0.72	-	-	-	WWTF LOWER LEVEL PUMP RM RECEP.
WWTF LOWER LEVEL PUMP RM LIGHTING	-	-	1.04	-	3		4	-	0.54	-	-	WWTF LOWER LEVEL PUMP RM RECEP.
WWTF STAIR [ST-1] LIGHTING	-	-	-	0.25	5		6	-	-	0.7	1/2	10-SP-3
WWTF STAIR [ST-2] LIGHTING	-	0.25	-	-	7		8	-	-	-	-	SPARE
SPARE	-	-	-	-	9		10	-	-	-	-	SPARE
SPARE	-	-	-	-	11		12	-	-	-	-	SPARE
SPARE	-	-	-	-	13		14	-	-	-	-	SPARE
SPARE	-	-	-	-	15		16	-	-	-	-	SPARE
SPARE	-	-	-	-	17		18	-	-	-	-	SPARE
SPARE	-	-	-	-	19		20	-	-	-		SPARE
SPARE	-	-	-	-	21		22	-	-	-		SPARE
SPARE	-	-	-	-	23		24	-	-	-	-	SPARE
SPARE	-	-	-	-	25		26	-	-	-	-	SPARE
SPARE	-	-	-	-	27		28	-	-	-	-	SPARE
SPARE	-	-	-	-	29		30	-	-	-	-	SPARE
SPARE	-	-	-	-	31		32	-	-	-	-	SPARE
SPARE	-	-	-	-	33		34	-	-	-	-	SPARE
SPARE	-	-	-	-	35		36	-	-	-	-	SPARE
SPARE	-	-	-	-	37		38	-	-	-	-	SPARE
SPARE	-	-	-	-	39		40	-	-	-	-	SPARE
SPARE	-	-	-	-	41		42	-	-	-	-	SPARE

KVA PH A: 2.01 KVA PH B: 1.58 KVA PH C: 0.95
TOTAL CONNECTED LOAD: 4.54 KVA

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)
PANEL LOCATION: BASEMENT PUMP ROOM

* GFCI CIRCUIT BREAKER

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\ELD\10 E-603.DWG
LAST UPDATE: Monday, January 06, 2020 2:19:18 PM
PLOT DATE: Monday, January 27, 2020 5:10:04 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. BRAHIN
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**M. STEWART**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

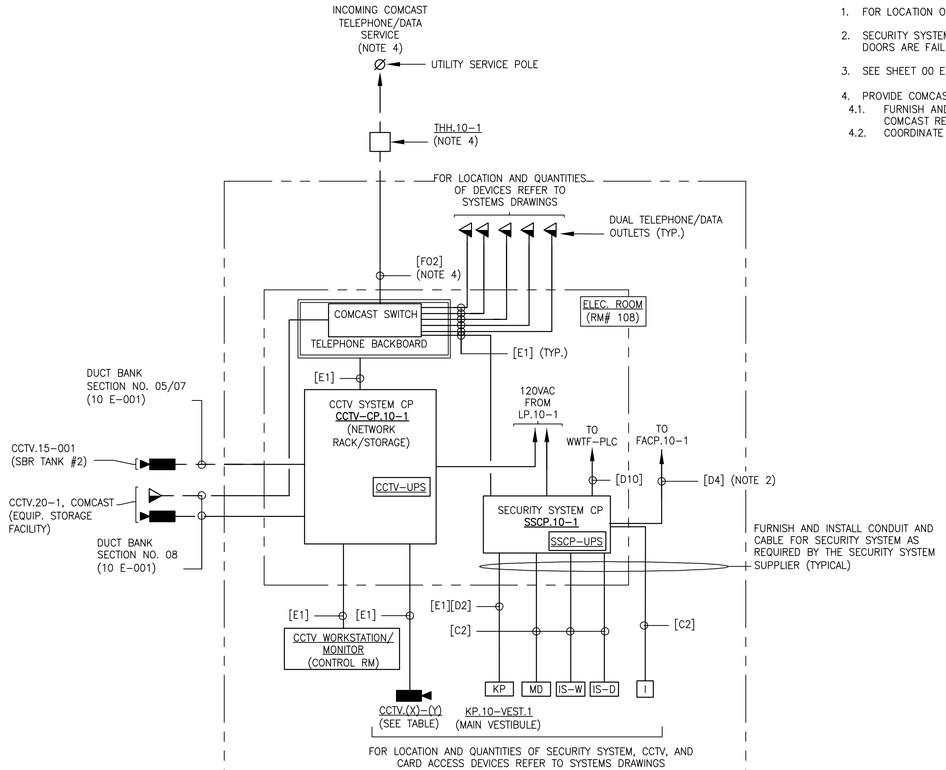
ELECTRICAL

SHEET TITLE

WWTF - PANELBOARD SCHEDULES III

SHEET NUMBER

10 E-603



TELEPHONE, SECURITY AND CCTV SYSTEM RISER

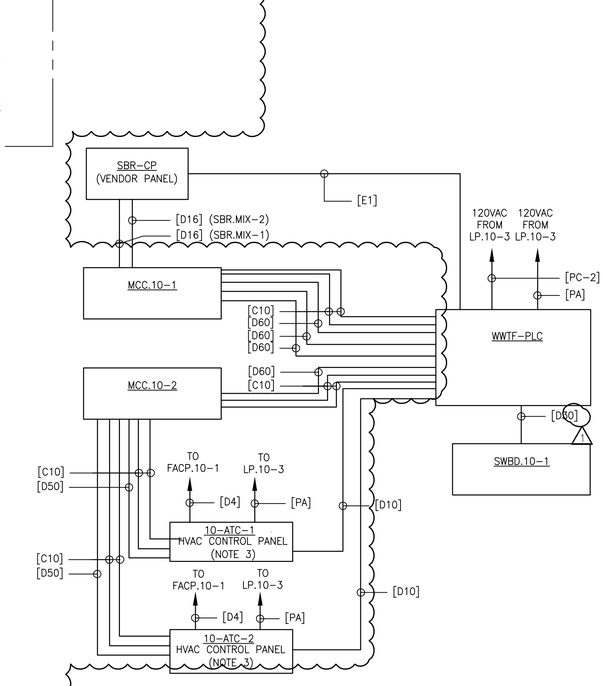
ORLEANS WWTF
(10)

CCTV DEVICE CCTV.(X)-(Y)	LOCATION	REMARKS
CCTV.10-001	SITE ENTRANCE GATE	(DB SECTION NO. 10 ON 10 E-001)
CCTV.10-002	WWTF EXTERIOR	
CCTV.10-003	WWTF EXTERIOR	
CCTV.10-004	WWTF EXTERIOR	
CCTV.10-101	WWTF TRUCK BAY (101)	
CCTV.10-126A	WWTF BASEMENT PUMP ROOM (126)	
CCTV.10-126B	WWTF BASEMENT PUMP ROOM (126)	
CCTV.15-001	SBR TANK NO.2 EXTERIOR	(DB SECTION NO. 07 ON 10 E-001)
CCTV.20-001	EQUIP. STORAGE FACILITY EXTERIOR	(DB SECTION NO. 08 ON 10 E-001)

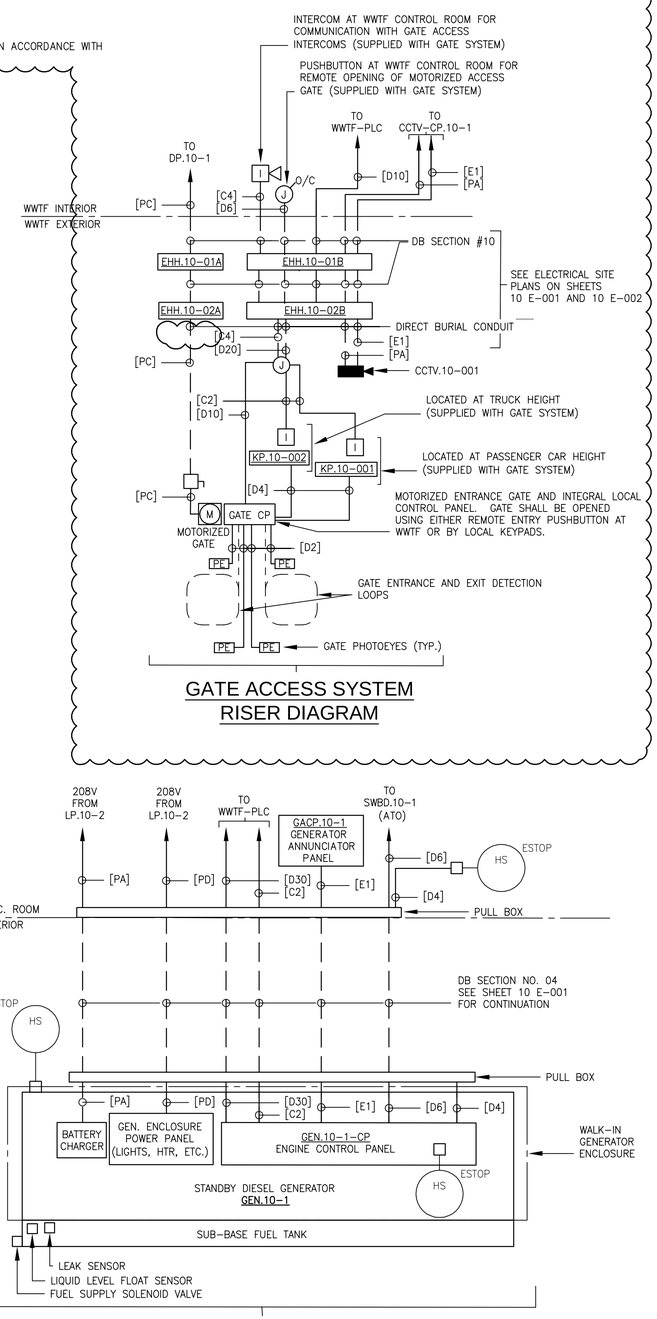
NOTES:

1. FOR LOCATION OF DEVICES SEE POWER AND SYSTEMS PLANS.
2. SECURITY SYSTEMS SHALL BE INTERLOCKED WITH THE MAIN FIRE ALARM CONTROL PANEL SUCH THAT IN THE EVENT OF A FIRE THE DOORS ARE FAIL OPEN.
3. SEE SHEET 00 E-602 TABLE OF RESPONSIBILITY FOR ELECTRICAL AND HVAC SCOPE OF SUPPLY.
4. PROVIDE COMCAST TELEPHONE AND DATA SERVICE(S) IN ACCORDANCE WITH COMCAST REQUIREMENTS.
   - 4.1. FURNISH AND INSTALL TELEPHONE MANHOLES, CONDUIT AND CABLE FOR TELEPHONE/DATA SERVICE(S) IN ACCORDANCE WITH COMCAST REQUIREMENTS.
   - 4.2. COORDINATE ~~TELEPHONE BACKBOARD, SWITCHES, AND SYSTEM HARDWARE WITH COMCAST REQUIREMENTS.~~

CLARIFYING 4.2: COORDINATE TELEPHONE BACKBOARD, SWITCHES, AND SYSTEM HARDWARE WITH COMCAST REQUIREMENTS.



MCC, ATC, AND SWBD CONTROL WIRING OVERALL RISER DIAGRAM



GATE ACCESS SYSTEM RISER DIAGRAM

STANDBY GENERATOR GEN.10-1 RISER DIAGRAM

WWTF- GENERAL RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 34962
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

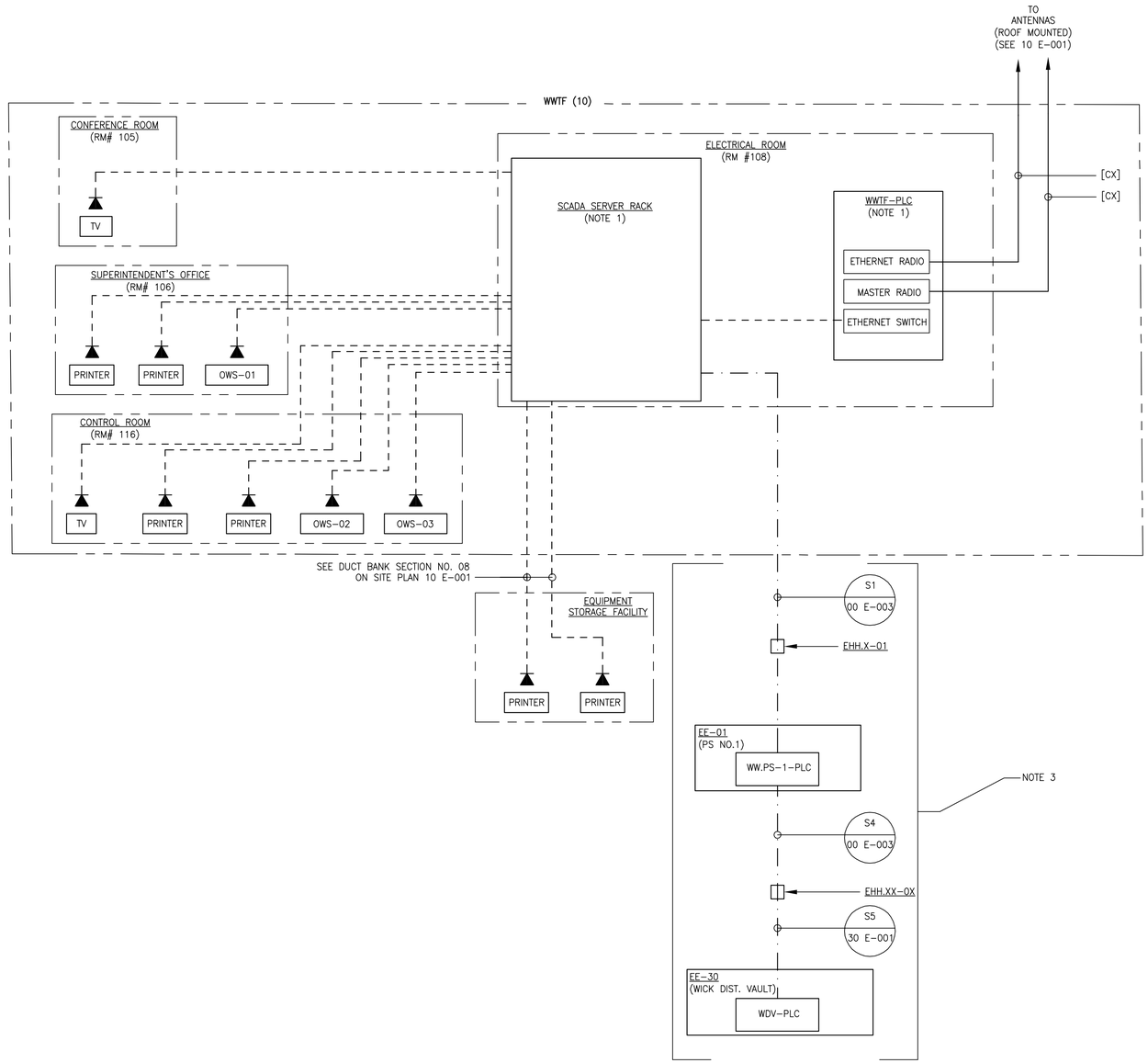
SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS I

SHEET NUMBER

10 E-604

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-604.DWG
LAST UPDATE: Monday, March 23, 2020 11:45:26 PM
PLOT DATE: Tuesday, March 24, 2020 4:15:29 AM



NOTES:

1. SEE SYSTEM ARCHITECTURE DRAWING 00 DI-602 FOR SCADA COMMUNICATION SYSTEM DETAILS.
2. SEE ELECTRICAL SYSTEMS PLANS FOR LOCATIONS OF SCADA SYSTEM DATA OUTLETS.
3. SEE TABLE OF RESPONSIBILITY TABLE FOR FIBER NETWORK SCOPE DELINEATION BETWEEN WWTF (2019-02) AND PUMP STATIONS (2019-01) CONTRACTS.

LEGEND:

[E1] - - - - - - - - - - - - - - - -

[FO1] — · — · — · — · —

WWTF- SCADA COMMUNICATIONS RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y, RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

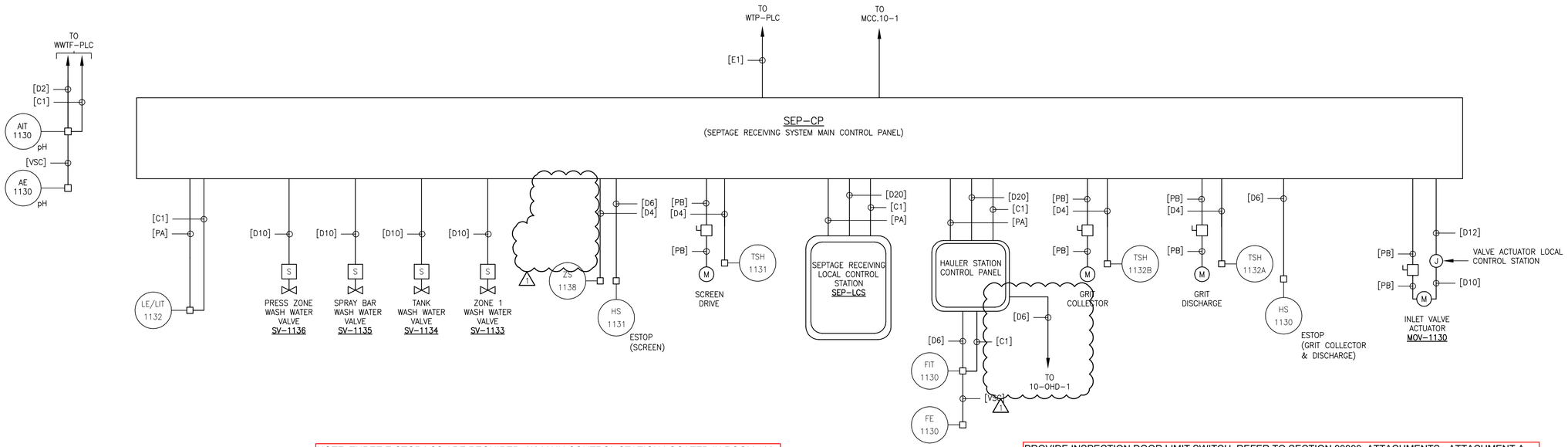
SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS II

SHEET NUMBER

10 E-605

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-605.DWG
LAST UPDATE: Monday, January 27, 2020 4:32:47 PM
PLOT DATE: Monday, January 27, 2020 5:10:21 PM

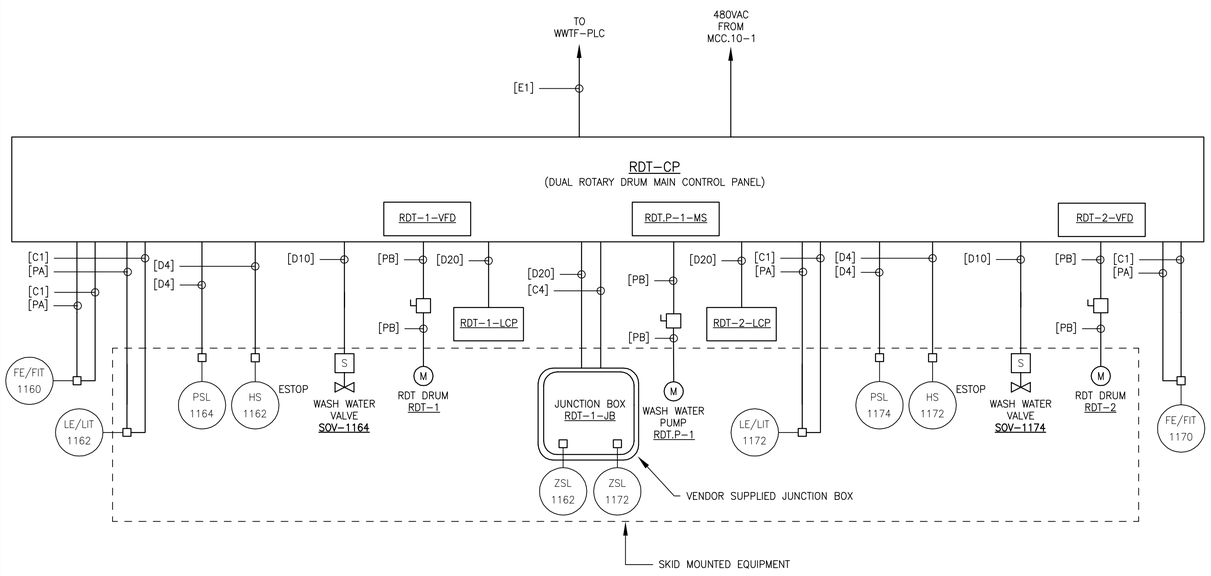


NOTE: THREE E-STOP LCS ARE REQUIRED: (A) MAIN CONTROL STATION LOCATED IN ROOM 102, GARAGE; (B) LOCAL CONTROL STATION AT THE SEPTAGE RECEIVING SYSTEM LOCATED IN ROOM 101, TRUCK BAY; AND (C) SLUDGE LOADING AREA (EXTERIOR)

PROVIDE INSPECTION DOOR LIMIT SWITCH. REFER TO SECTION 99999, ATTACHMENTS - ATTACHMENT A-SECTION 11333 SEPTAGE RECEIVING STATION HUBER TECHNOLOGY, INC. PROPOSAL, INSTRUMENTATION DRAWINGS AND CONTRACT ELECTRICAL AND INSTRUMENTATION DRAWINGS..

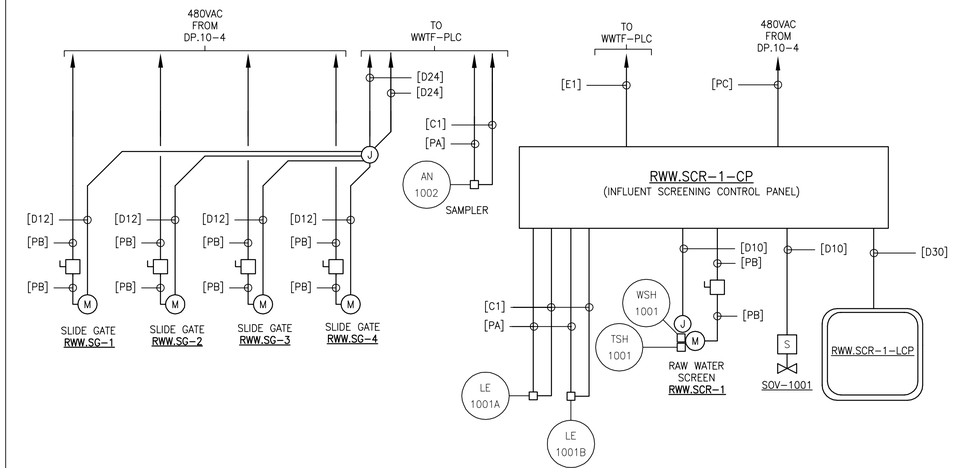
SEPTAGE RECEIVING SYSTEM - RISER DIAGRAMS

NTS



ROTARY DRUM THICKENER - RISER DIAGRAM

NTS



HEADWORKS - RISER DIAGRAMS

NTS

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	04-30-2020	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS III

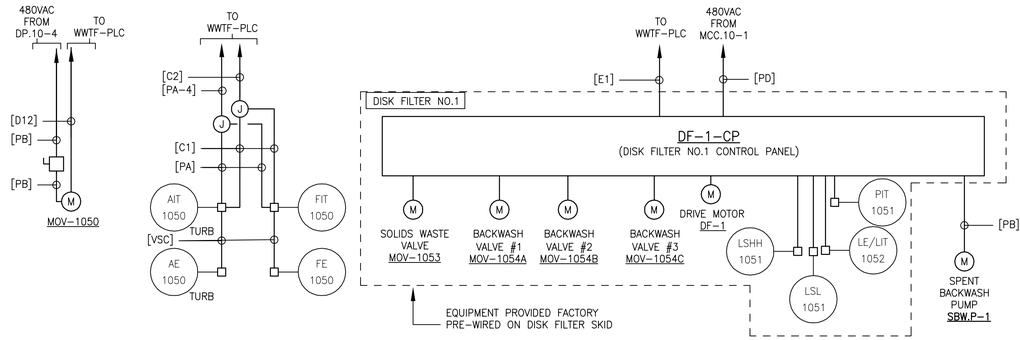
SHEET NUMBER

10 E-606

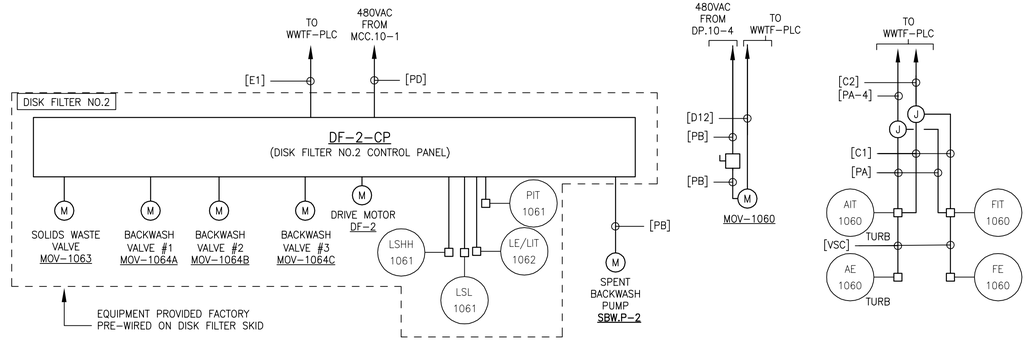
PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-606.DWG
LAST UPDATE: Thursday, April 30, 2020 12:04:15 PM
PLOT DATE: Thursday, April 30, 2020 12:07:57 PM

DISK FILTERS - RISER DIAGRAMS

NTS



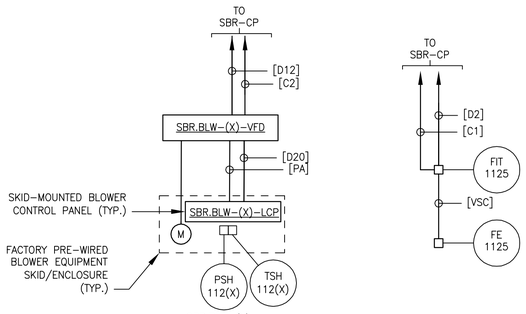
DISK FILTER NO.1 - RISER DIAGRAM



DISK FILTER NO.2 - RISER DIAGRAM

WWTF BLOWERS - RISER DIAGRAMS

NTS



SBR.BLW–(X)
SBR BLOWER NO.(X)

SBR BLOWER SBR.BLW–(X)	SBR BLOWER VFD SBR.BLW–(X)–VFD	LOCAL CONTROL PANEL SBR.BLW–(X)–LCP	TSH–112(X), PSH–112(X)	ESTOP HS–112(X)
SBR.BLW–1	SBR.BLW–1–VFD	SBR.BLW–1–LCP	1121	1121
SBR.BLW–2	SBR.BLW–2–VFD	SBR.BLW–2–LCP	1122	1122
SBR.BLW–3	SBR.BLW–3–VFD	SBR.BLW–3–LCP	1123	1123
SBR.BLW–4 (FUTURE)	SBR.BLW–4–VFD	SBR.BLW–4–LCP	1124	1124

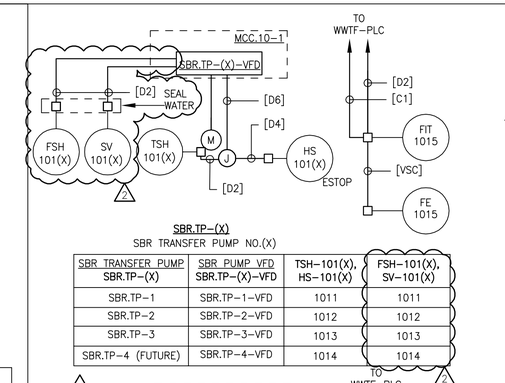
1

MIX.BLW–(X)
MIX BLOWER NO.(X)

MIX BLOWER MIX.BLW–(X)	MIX BLOWER VFD MIX.BLW–(X)	LOCAL CONTROL PANEL MIX.BLW–(X)–LCP	TSH–111(X), PSH–111(X)	ESTOP HS–111(X)
MIX.BLW–1	MIX.BLW–1–VFD	MIX.BLW–1–LCP	1111	1111
MIX.BLW–2	MIX.BLW–2–VFD	MIX.BLW–2–LCP	1112	1112
MIX.BLW–3	MIX.BLW–3–VFD	MIX.BLW–3–LCP	1113	1113
MIX.BLW–4	MIX.BLW–4–VFD	MIX.BLW–4–LCP	1114	1114

WWTF PUMPS - RISER DIAGRAMS

NTS

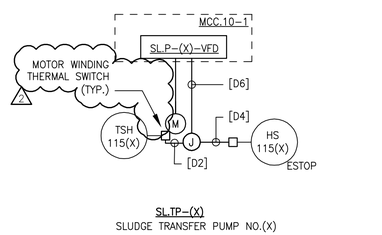


SBR.TP–(X)
SBR TRANSFER PUMP NO.(X)

SBR TRANSFER PUMP SBR.TP–(X)	SBR PUMP VFD SBR.TP–(X)–VFD	TSH–101(X), HS–101(X)	FSH–101(X), SV–101(X)
SBR.TP–1	SBR.TP–1–VFD	1011	1011
SBR.TP–2	SBR.TP–2–VFD	1012	1012
SBR.TP–3	SBR.TP–3–VFD	1013	1013
SBR.TP–4 (FUTURE)	SBR.TP–4–VFD	1014	1014

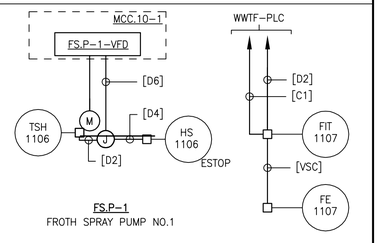
TSL.P–(X)
THICKENED SLUDGE PUMP NO.(X)

THICKENED SLUDGE PUMP TSL.P–(X)	TSL PUMP VFD TSL.P–(X)–VFD	TSH–117(X), HS–117(X)	FSH–117(X), SV–117(X)
TSL.P–1	TSL.P–1–VFD	1171	1171
TSL.P–2	TSL.P–2–VFD	1172	1172

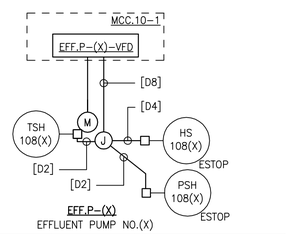


SL.TP–(X)
SLUDGE TRANSFER PUMP NO.(X)

SLUDGE TRANSFER PUMP SL.TP–(X)	SLUDGE PUMP VFD SL.TP–(X)–VFD	TSH–115(X), HS–115(X)
SL.TP–1	SL.TP–1–VFD	1151
SL.TP–2	SL.TP–2–VFD	1152

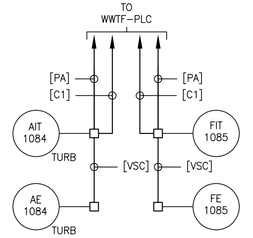


FS.P–1
FROTH SPRAY PUMP NO.1



EFF.P–(X)
EFFLUENT PUMP NO.(X)

EFFLUENT PUMP EFF.P–(X)	VFD EFF.P–(X)–VFD	TSH–101(X), HS–101(X)	PSH–101(X)
EFF.P–1	EFF.P–1–VFD	1081	1081
EFF.P–2	EFF.P–2–VFD	1082	1082
EFF.P–3	EFF.P–3–VFD	1083	1083



AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	04-30-2020	ADDENDUM 9
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS IV

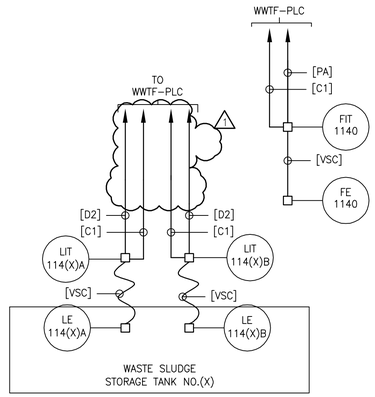
SHEET NUMBER

10 E-607

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E10 E-607.DWG
LAST UPDATE: Thursday, April 30, 2020 10:47:38 AM
PLOT DATE: Thursday, April 30, 2020 12:08:06 PM

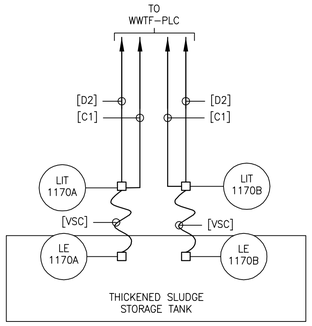
NOTES:

1. RUN CONDUITS INDICATED AS CONCEALED WITHIN TANK SLAB.
2. PROVIDE TERMINAL BOX AS INDICATED. INSTALL VENDOR SUPPLIED MOISTURE/TEMPERATURE DETECTION RELAYS WITHIN TERMINAL BOX.

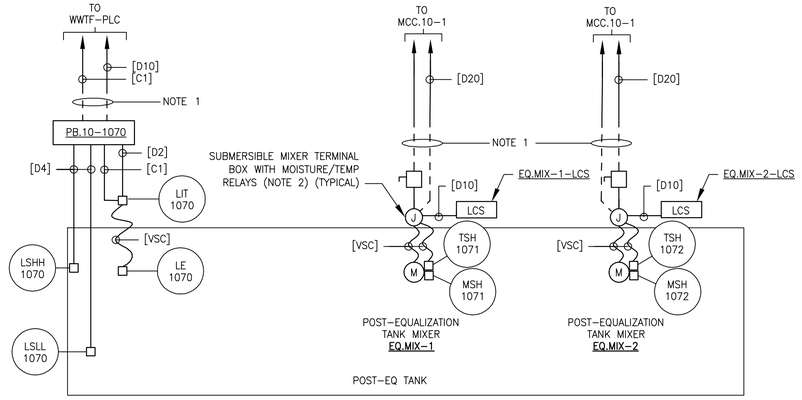


LEVEL LE/LIT–(X)	LOCATION
LE/LIT–1141A	WASTE SLUDGE STORAGE TANK NO.1
LE/LIT–1141B	
LE/LIT–1142A	WASTE SLUDGE STORAGE TANK NO.2
LE/LIT–1142B	

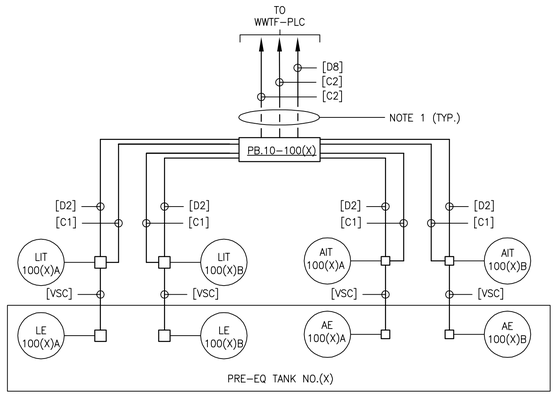
WASTE SLUDGE STORAGE TANKS NO.1 & NO.2 – RISER DIAGRAMS



THICKENED SLUDGE STORAGE TANK – RISER DIAGRAMS



POST–EQUALIZATION TANK – RISER DIAGRAMS

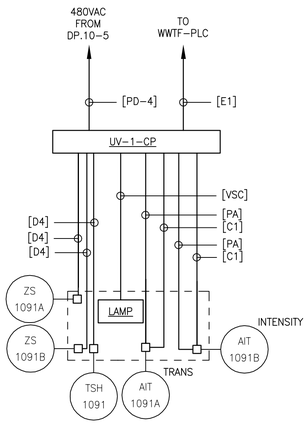


LEVEL LE/LIT–(X)	ANALYZER AE/AIT–(X)	PULL BOX PB.10–00(X)	LOCATION
LE/LIT–1005A	AE/AIT–1005A (pH)	PB.10–1005	PRE–EQUALIZATION TANK NO.1
LE/LIT–1005B	AE/AIT–1005B (ORP)		
LE/LIT–1006A	AE/AIT–1006A (pH)	PB.10–1006	PRE–EQUALIZATION TANK NO.2
LE/LIT–1006B	AE/AIT–1006B (ORP)		

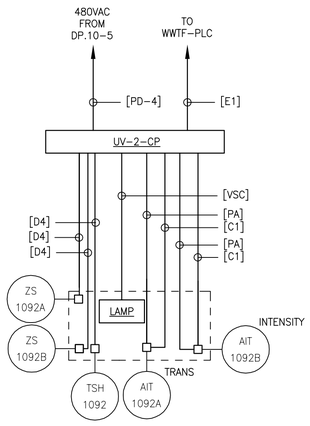
PRE–EQUALIZATION TANKS NO.1 & NO.2 – RISER DIAGRAMS

PRE-EQ, POST-EQ, WASTE SLUDGE AND THICKENED SLUDGE STORAGE TANKS - RISER DIAGRAMS

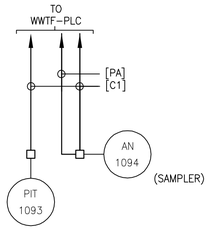
NTS



IN–LINE UV REACTOR NO.1
UVR–1

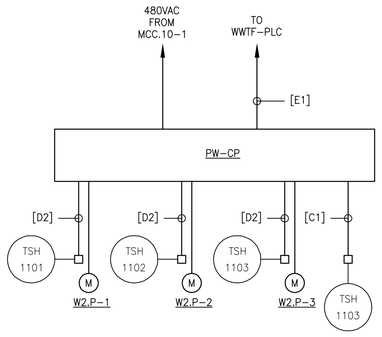


IN–LINE UV REACTOR NO.2
UVR–2

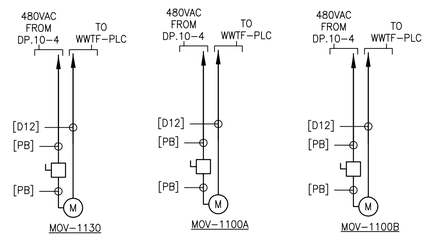


UV SYSTEM - RISER DIAGRAMS

NTS



PLANT WATER PUMPS/CONTROL PANEL



PLANT WATER SYSTEM - RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
No. 43962
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

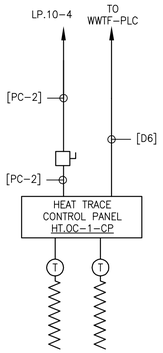
SHEET TITLE

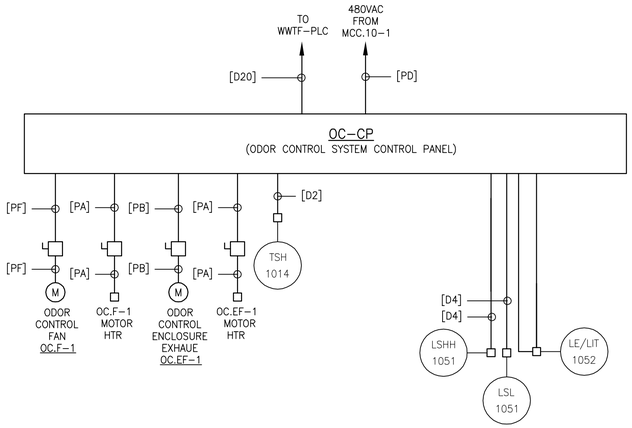
WWTF - ELECTRICAL RISER DIAGRAMS V

SHEET NUMBER

10 E-608

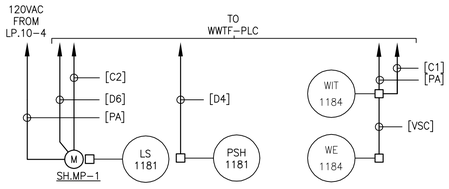
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E610 E-608.DWG
LAST UPDATE: Tuesday, March 24, 2020 3:47:22 AM
PLOT DATE: Tuesday, March 24, 2020 4:15:45 AM

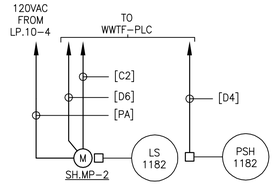




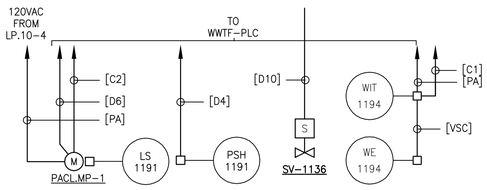
ODOR CONTROL - RISER DIAGRAMS

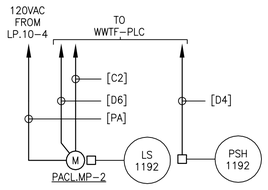
NTS



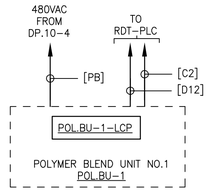


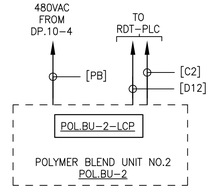
SODIUM HYPO METERING PUMPS - RISER DIAGRAMS





PACL METERING PUMPS - RISER DIAGRAMS





POLYMER BLEND UNIT - RISER DIAGRAMS

CHEMICALS - RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS VI

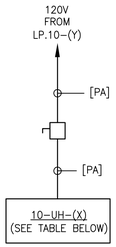
SHEET NUMBER

10 E-609

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\ELD\10 E-609.DWG
LAST UPDATE: Monday, January 27, 2020 2:59:26 PM
PLOT DATE: Monday, January 27, 2020 5:11:01 PM

NOTES:

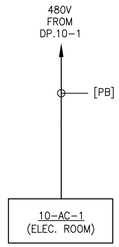
1. FOR LOCATION OF DEVICES SEE POWER PLAN AND SYSTEMS PLAN DRAWINGS.



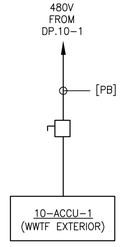
UNIT HEATERS

10-UH-(X)	LP.10-(Y)
10-UH-1	LP.10-X
10-UH-2	LP.10-X
10-UH-3	LP.10-X
10-UH-4	LP.10-X
10-UH-5	LP.10-X
10-UH-6	LP.10-X
10-UH-7	LP.10-X
10-UH-8	LP.10-X
10-UH-9	LP.10-X
10-GUH-1	LP.10-X
10-GUH-2	LP.10-X
10-GUH-3	LP.10-X
10-GUH-4	LP.10-X
10-CUH-1*	LP.10-X
10-CUH-2*	LP.10-X
10-CUH-3*	LP.10-X
10-CUH-4*	LP.10-X

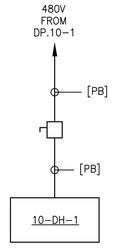
* DISCONNECT SUPPLIED INTEGRAL TO CABINET UNIT HEATERS



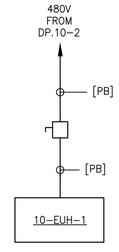
AIR CONDITIONING UNIT



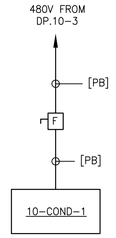
AIR CONDITIONING UNIT



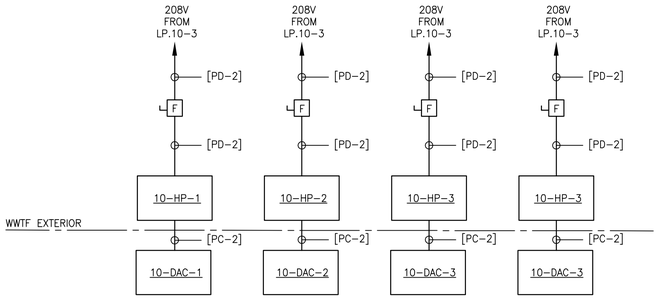
DEHUMIDIFIER
(TYPICAL OF 10-DH-2)



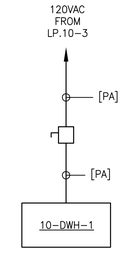
ELECTRIC UNIT HEATER



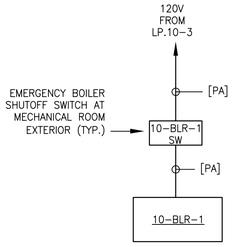
CONDENSING UNIT
(TYP. OF 10-COND-2)



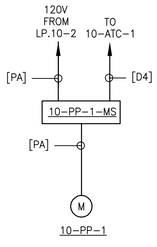
DUCTLESS SPLIT AIR CONDITIONERS



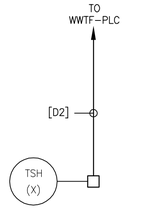
DOMESTIC WATER HEATER



BOILER
(TYP. OF 10-BLR-2)

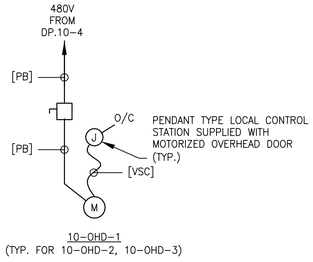


HOT WATER RECIRC. PUMP
(TYPICAL OF 10-PP-2)

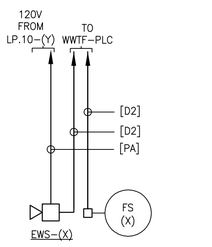


TEMP. SWITCHES TSH-(X)	LOCATION
TSH-01	ELEC ROOM
TSH-02	ELEC ROOM

ELECTRICAL ROOM TEMP. SWITCHES

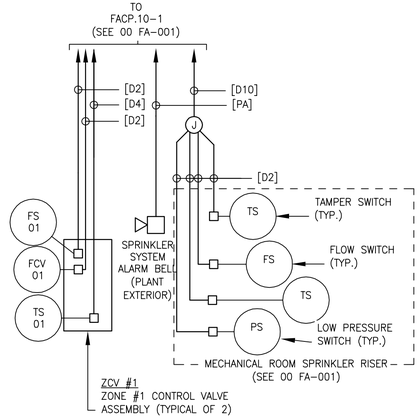


MOTORIZED OVERHEAD DOOR

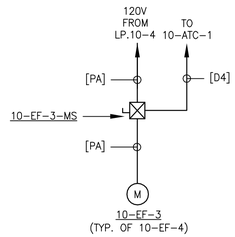


EMERGENCY EYEWASH SHOWER
ALARM HORNS & FLOW SWITCHES

EYEWASH SHOWER EWS-(X)	FLOW SWITCH FS-(X)	LP.10-(Y)
EWS-01	FS-01	LP.10-4
EWS-02	FS-02	
EWS-03	FS-03	
EWS-04	FS-04	
EWS-05	FS-05	

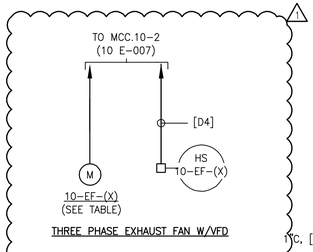


SPRINKLER ZONE CONTROL VALVE ASSEMBLY		
ZONE CONTROL VAVE ASSEMBLY ZCV #(X)	FS-(XX) FCV-(XX) TS-(XX)	LOCATION
ZCV #1	FS/FCV/TS-01	-
ZCV #2	FS/FCV/TS-02	-



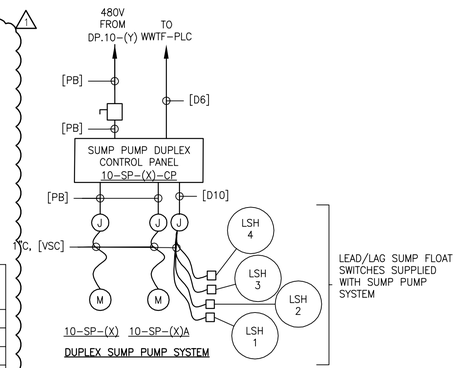
SINGLE PHASE EXHAUST FAN

SINGLE PHASE EXHAUST FAN 10-EF-(X)	120VAC POWER FROM LP.10-(X)
10-EF-3	LP.10-4
10-EF-4	LP.10-4
10-EF-6	LP.10-4
10-EF-8	LP.10-3
10-EF-9	LP.10-3
10-SF-6	LP.10-4



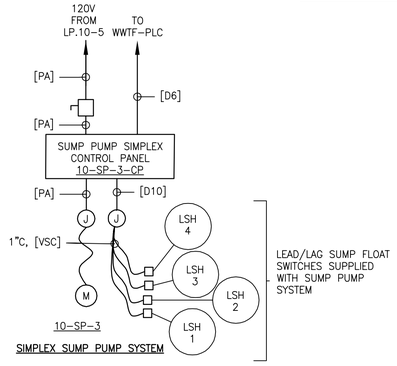
THREE PHASE EXHAUST FAN W/VFD

THREE PHASE EXHAUST FAN W/VFD 10-EF-(X)	ESTOP HS-10-EF-(X)
10-EF-1	HS-10-EF-1
10-EF-2	HS-10-EF-2
10-EF-5	HS-10-EF-5
10-EF-7	HS-10-EF-7
10-EF-10	HS-10-EF-10
10-EF-11	HS-10-EF-11
10-SF-1	HS-10-SF-1
10-SF-2	HS-10-SF-2
10-SF-5	HS-10-SF-5
10-SF-8	HS-10-SF-8

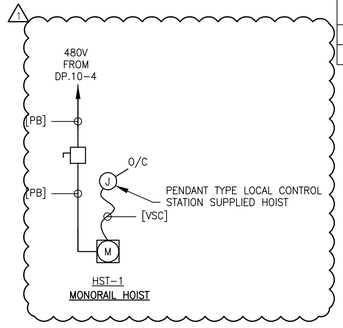


DUPLEX SUMP PUMP SYSTEM

SUMP PUMP CONTROL PANEL 10-SP-(X)-CP	SUMP PUMPS 10-SP-(X)	LOCATION	DP.10-(Y)
10-SP-1-CP	10-SP-1	WWTF BASEMENT PUMP ROOM	DP.10-5
	10-SP-1A		
10-SP-1-CP	10-SP-2		DP.10-5
	10-SP-2A		



SIMPLEX SUMP PUMP SYSTEM



MONORAIL HOIST

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10E-610.DWG
LAST UPDATE: Tuesday, March 24, 2020 3:58:35 AM
PLOT DATE: Tuesday, March 24, 2020 4:15:54 AM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 52647
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

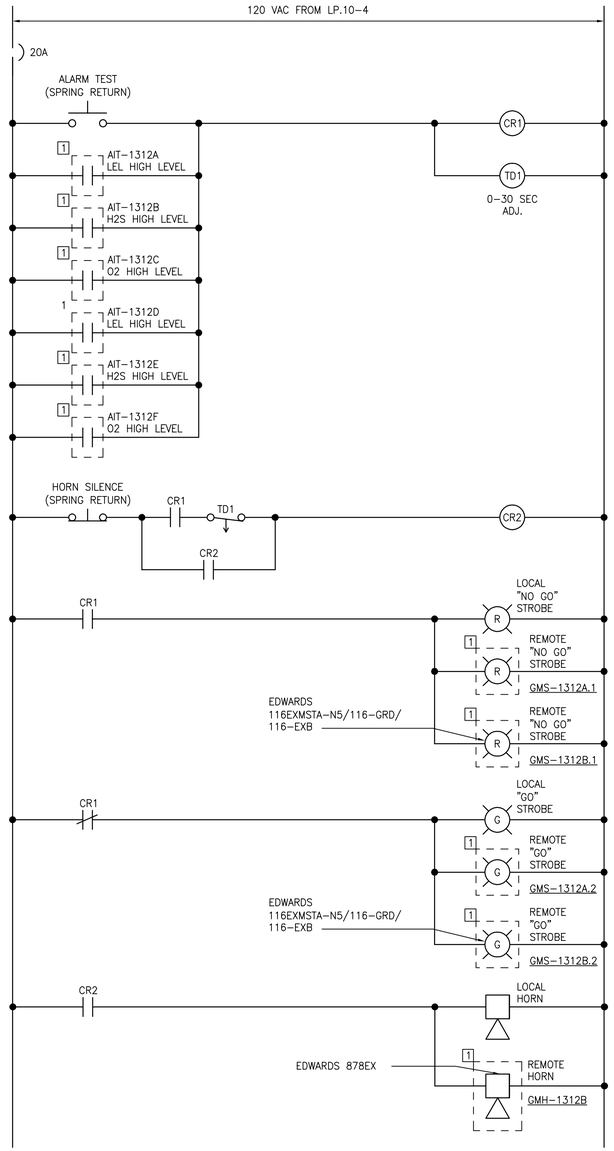
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS VII

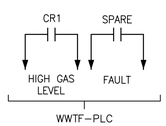
SHEET NUMBER

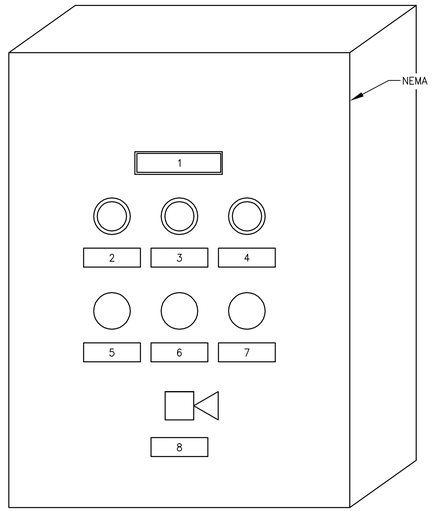
10 E-610



TRUCK BAY MONITORING PANEL GMCP-1312 WIRING DIAGRAM

(ALL COMPONENTS LOCATED AT CONTROL PANEL UNLESS OTHERWISE NOTED)

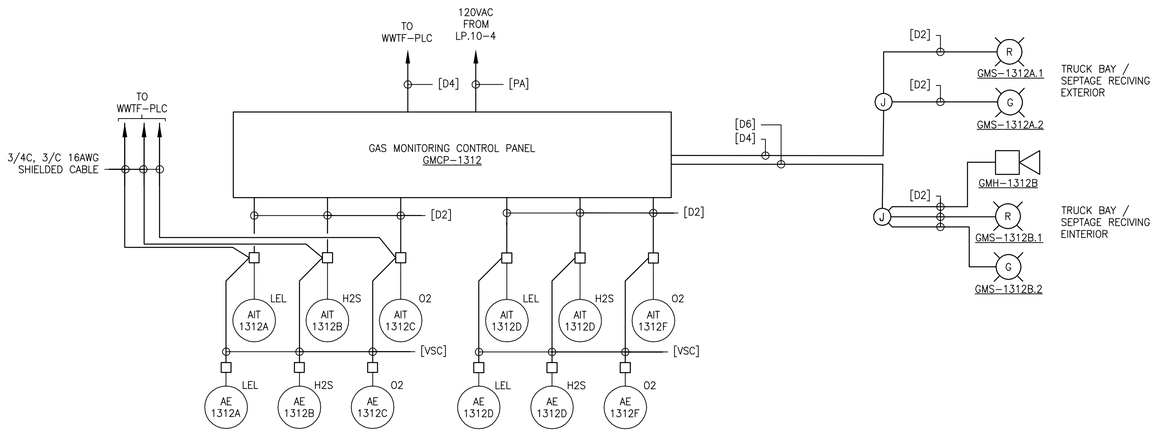




LEGEND

1. GAS MONITORING PANEL "GMCP-XXXX1"
2. RED INDICATING LIGHT - XXXXR
3. GREEN INDICATING LIGHT - XXXXG
4. POWER AVAILABLE LIGHT
5. HORN TEST PUSH BUTTON - HSXXXXA
6. STROBE TEST PUSH BUTTON - HSXXXXB
7. SILENCE PUSH BUTTON - HSXXXXC
8. HORN

GAS MONITORING CONTROL PANEL - TYPICAL ELEVATION DETAIL



TRUCK BAY GAS MONITORING - RISER DIAGRAM

LEGEND

1	DEVICE LOCATED AT EQUIPMENT
2	FROM/TO WWTF-PLC
3	FROM/TO SBR-CP
4	FROM/TO 10-ATC-1
5	FROM/TO 20-ATC-1

WWTF - GAS MONITORING - RISER DIAGRAM & SCHEMATICS

NTS

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-611.DWG
LAST UPDATE: Monday, January 27, 2020 2:59:02 PM
PLOT DATE: Monday, January 27, 2020 5:11:21 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

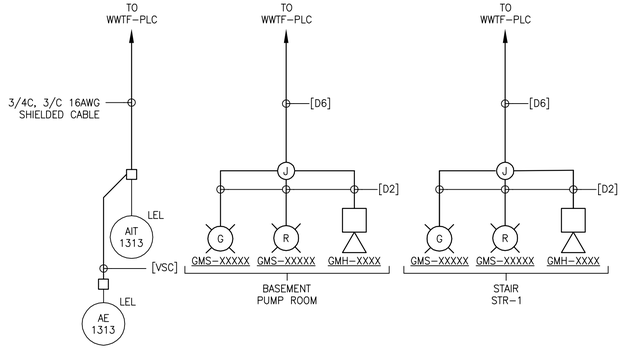
ELECTRICAL

SHEET TITLE

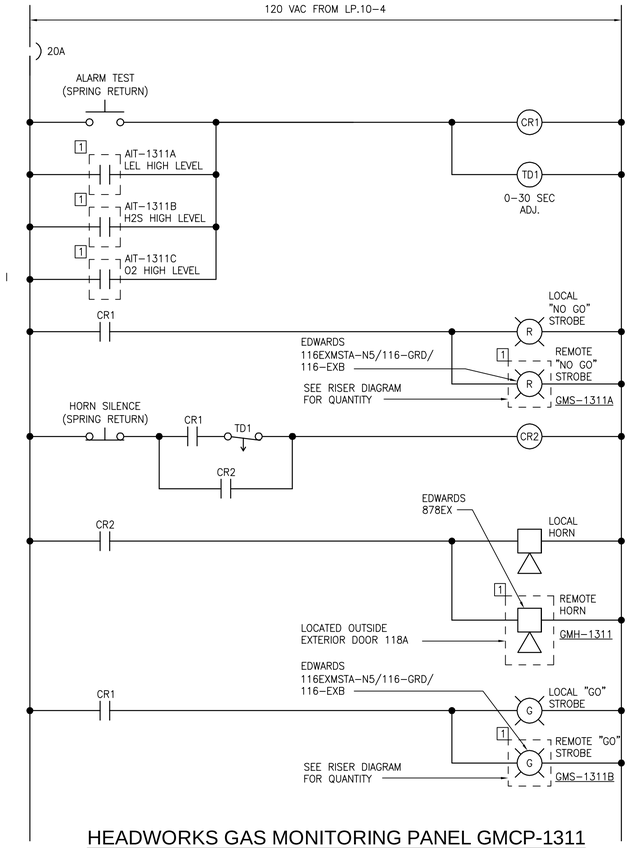
WWTF - ELECTRICAL RISER DIAGRAMS VIII

SHEET NUMBER

10 E-611

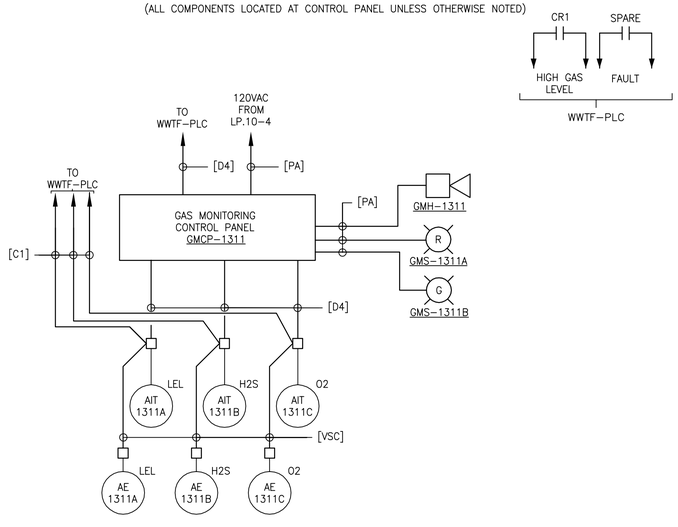


BASEMENT GAS MONITORING - RISER DIAGRAM

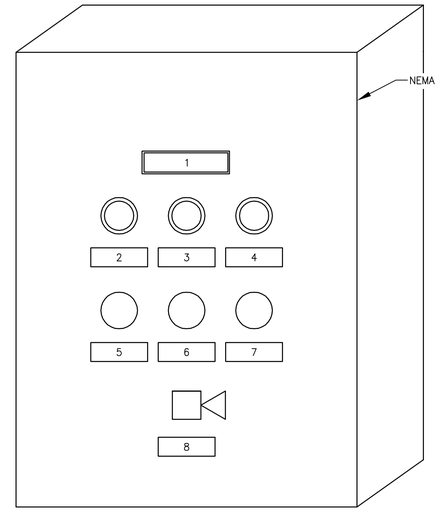


HEADWORKS GAS MONITORING PANEL GMCP-1311 WIRING DIAGRAM

(ALL COMPONENTS LOCATED AT CONTROL PANEL UNLESS OTHERWISE NOTED)



HEADWORKS GAS MONITORING - RISER DIAGRAM



GAS MONITORING CONTROL PANEL - ELEVATION DETAIL

LEGEND

1. GAS MONITORING PANEL "GMCP-1311"
2. RED INDICATING LIGHT – XXXXR
3. GREEN INDICATING LIGHT – XXXXG
4. POWER AVAILABLE LIGHT
5. HORN TEST PUSH BUTTON – HSXXXXA
6. STROBE TEST PUSH BUTTON – HSXXXXB
7. SILENCE PUSH BUTTON – HSXXXXC
8. HORN

LEGEND

- [1] DEVICE LOCATED AT EQUIPMENT
- [2] FROM/TO WWTF-PLC
- [3] FROM/TO SBR-CP
- [4] FROM/TO 10-ATC-1
- [5] FROM/TO 20-ATC-1

WWTF - GAS MONITORING RISER DIAGRAM & SCHEMATICS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDRE ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. ABRAHAM**
Drawn By:	**A. ABRAHAM**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

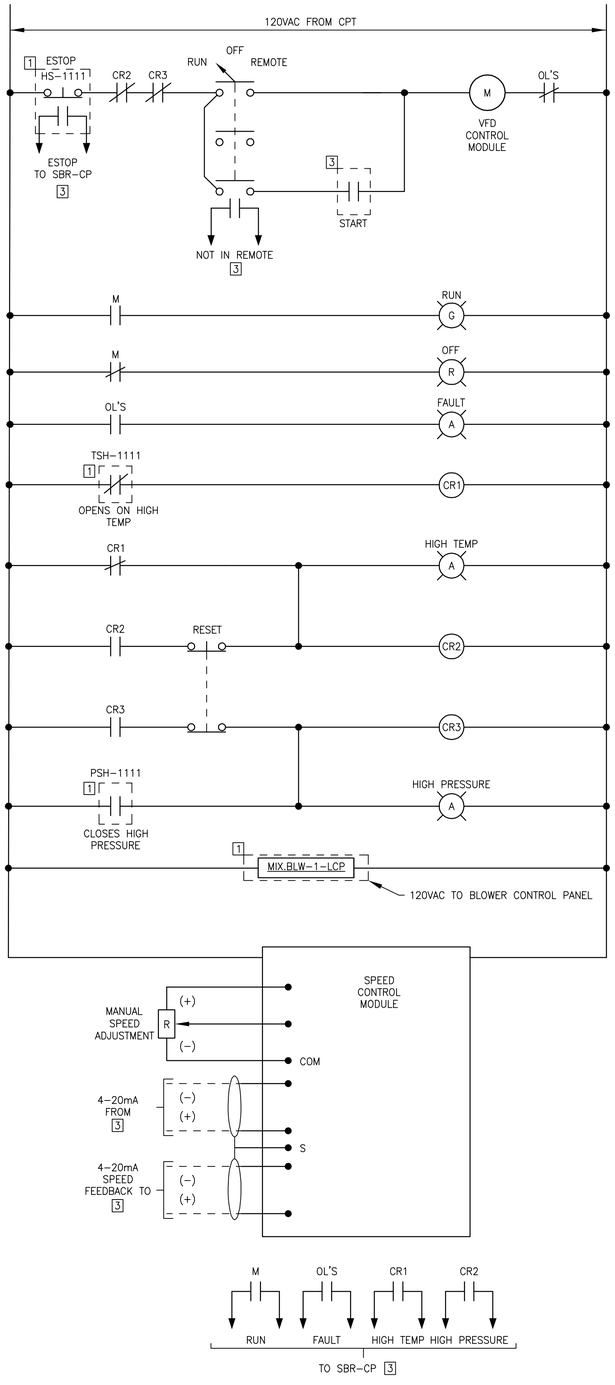
SHEET TITLE

WWTF - ELECTRICAL RISER DIAGRAMS IX

SHEET NUMBER

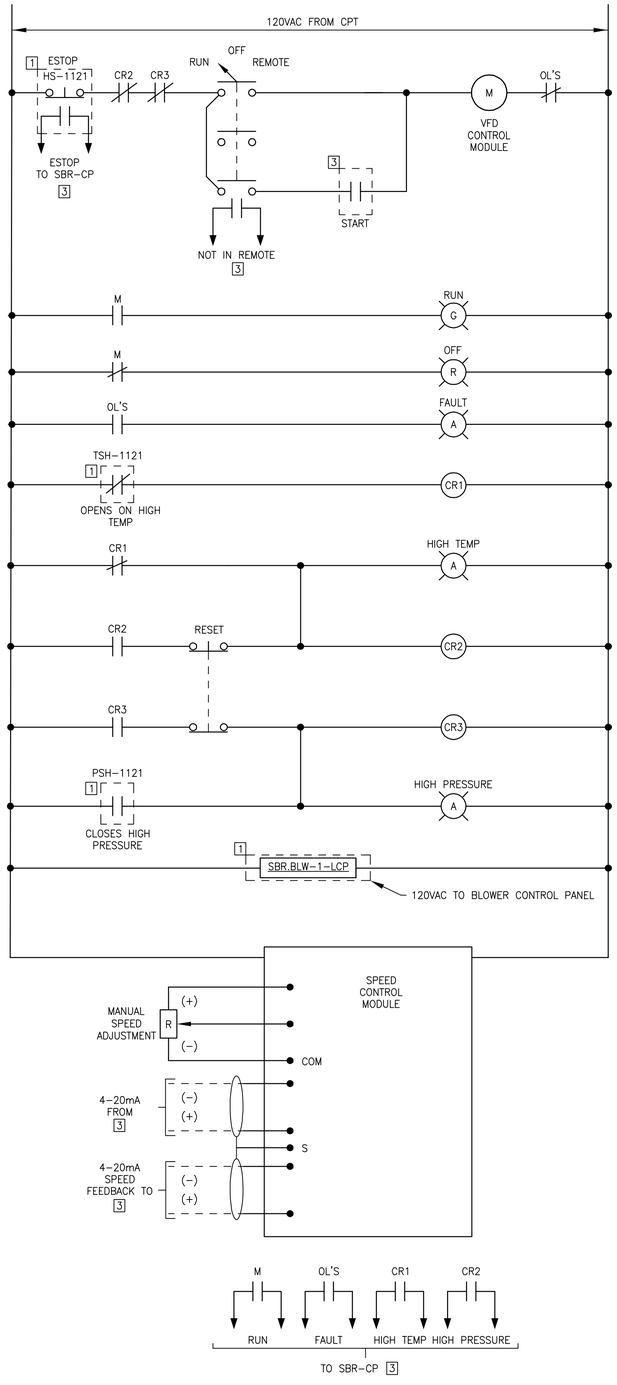
10 E-612

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E10 E-612.DWG
LAST UPDATE: Monday, January 27, 2020 2:58:49 PM
PLOT DATE: Monday, January 27, 2020 5:11:32 PM



MIXING BLOWER VFD WIRING DIAGRAM MIX.BLW-1-VFD

(TYPICAL OF MIX.BLW-2/3/4)
(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)



SBR BLOWER VFD WIRING DIAGRAM SBR.BLW-1-VFD

(TYPICAL OF SBR.BLW-2/3/4) 1
(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)

LEGEND

1 DEVICE LOCATED AT EQUIPMENT
2 FROM/TO WWTF-PLC
3 FROM/TO SBR-CP

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 43962
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

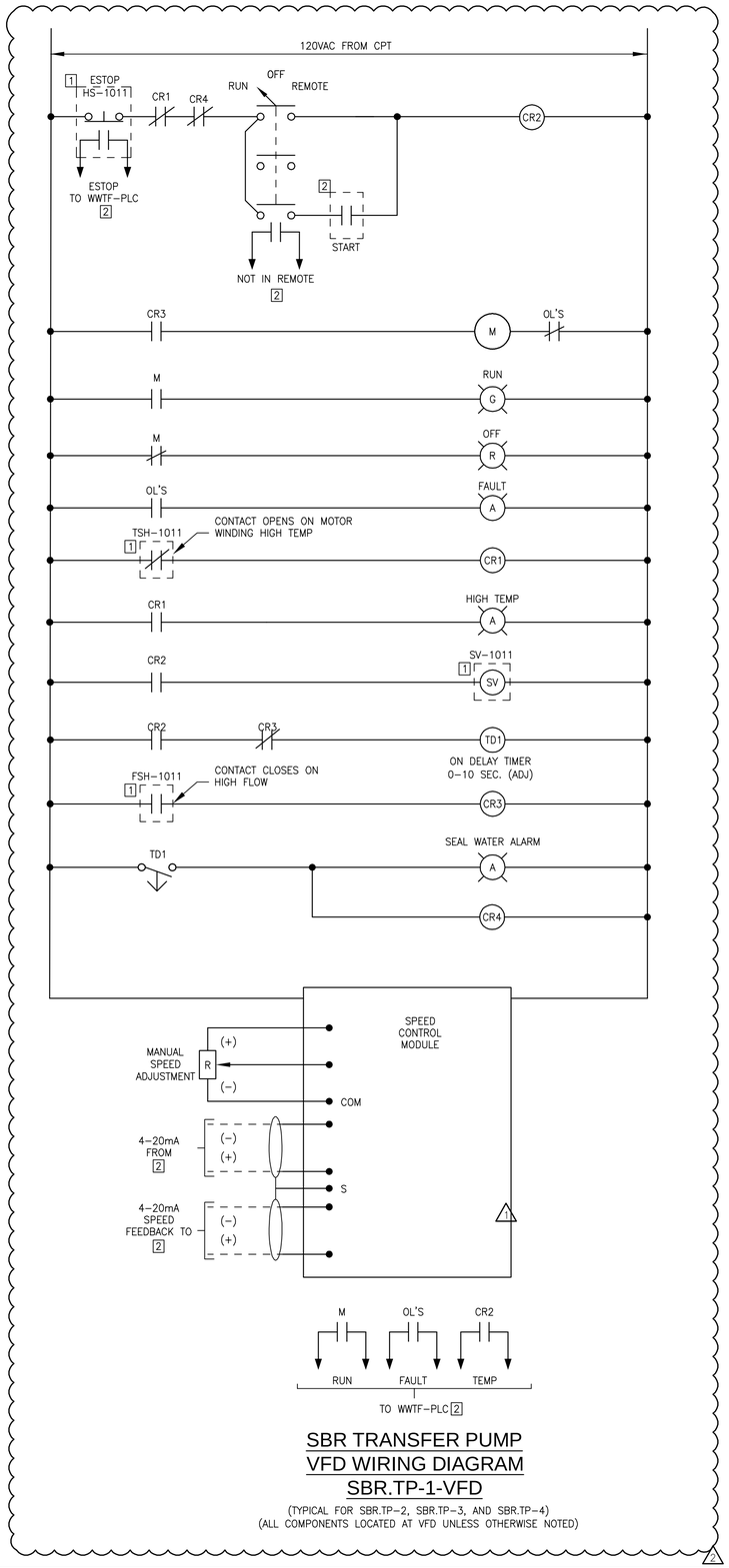
SHEET TITLE

WWTF - ELECTRICAL WIRING SCHEMATICS I

SHEET NUMBER

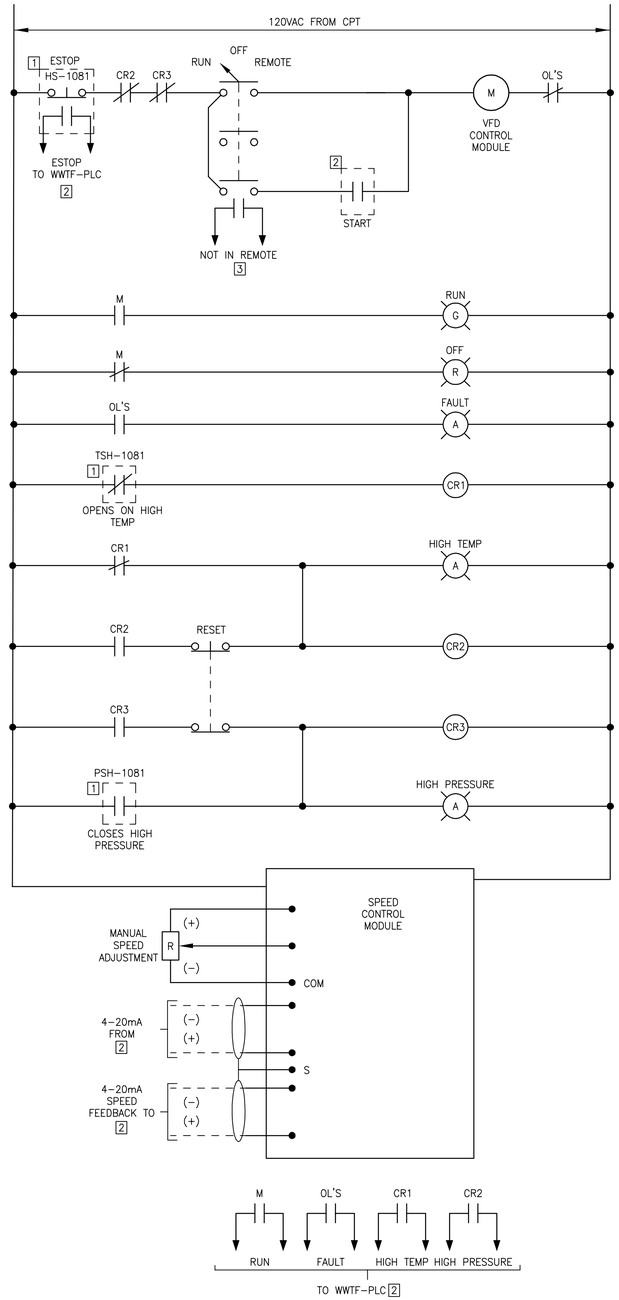
10 E-613

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-613.DWG
LAST UPDATE: Monday, March 23, 2020 11:21:43 PM
PLOT DATE: Tuesday, March 24, 2020 4:16:04 AM



SBR TRANSFER PUMP VFD WIRING DIAGRAM SBR.TP-1-VFD

(TYPICAL FOR SBR.TP-2, SBR.TP-3, AND SBR.TP-4)
(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)



EFFLUENT PUMP VFD WIRING DIAGRAM EFF.P-1-VFD

(TYPICAL OF EFF.P-2/3)
(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)

LEGEND

1. DEVICE LOCATED AT EQUIPMENT
2. FROM/TO WWTF-PLC
3. FROM/TO SBR-CP
4. FROM/TO 10-ATC-1
5. FROM/TO 20-ATC-1

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	04-30-2020	ADDENDUM 9
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

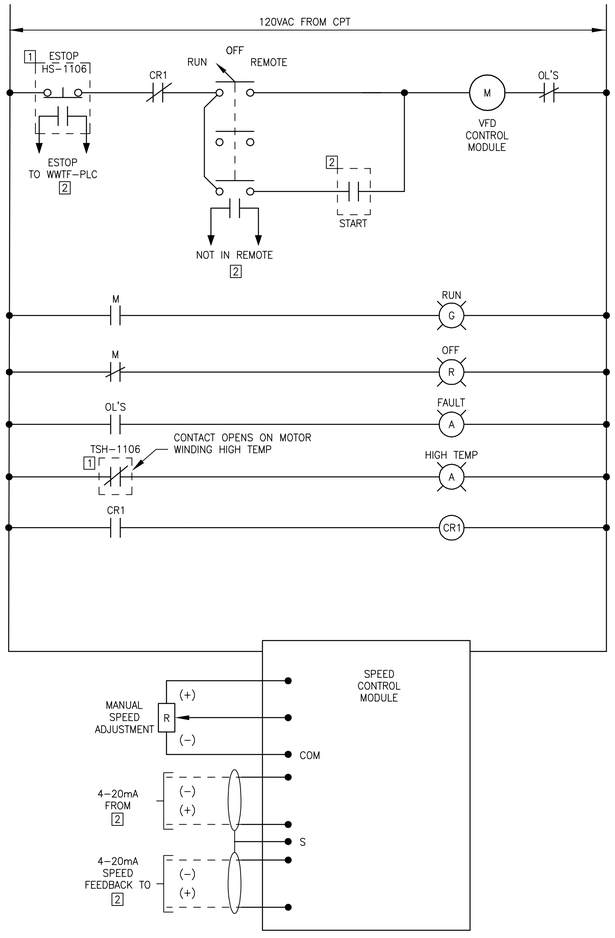
SHEET TITLE

WWTF - ELECTRICAL WIRING SCHEMATICS II

SHEET NUMBER

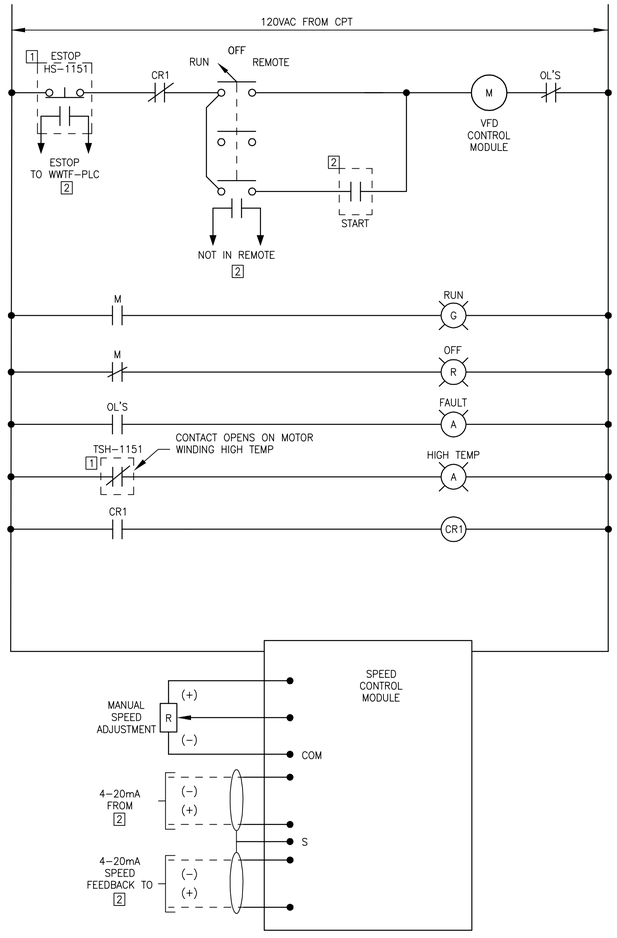
10 E-614

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 E-614.DWG
LAST UPDATE: Thursday, April 30, 2020 11:59:34 AM
PLOT DATE: Thursday, April 30, 2020 12:08:20 PM



FROTH SPRAY PUMP VFD WIRING DIAGRAM FSW.P-1-VFD

(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)



SLUDGE TRANSFER PUMP VFD WIRING DIAGRAM SL.TP-1-VFD

(TYPICAL OF SL.TP-2)

(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)

LEGEND

1. DEVICE LOCATED AT EQUIPMENT
2. FROM/TO WWTF-PLC
3. FROM/TO SBR-CP
4. FROM/TO 10-ATC-1
5. FROM/TO 20-ATC-1

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\ED10 E-615.DWG
LAST UPDATE: Monday, January 27, 2020 2:54:03 PM
PLOT DATE: Monday, January 27, 2020 5:12:00 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. ABRAHAM**
Drawn By:	**A. ABRAHAM**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

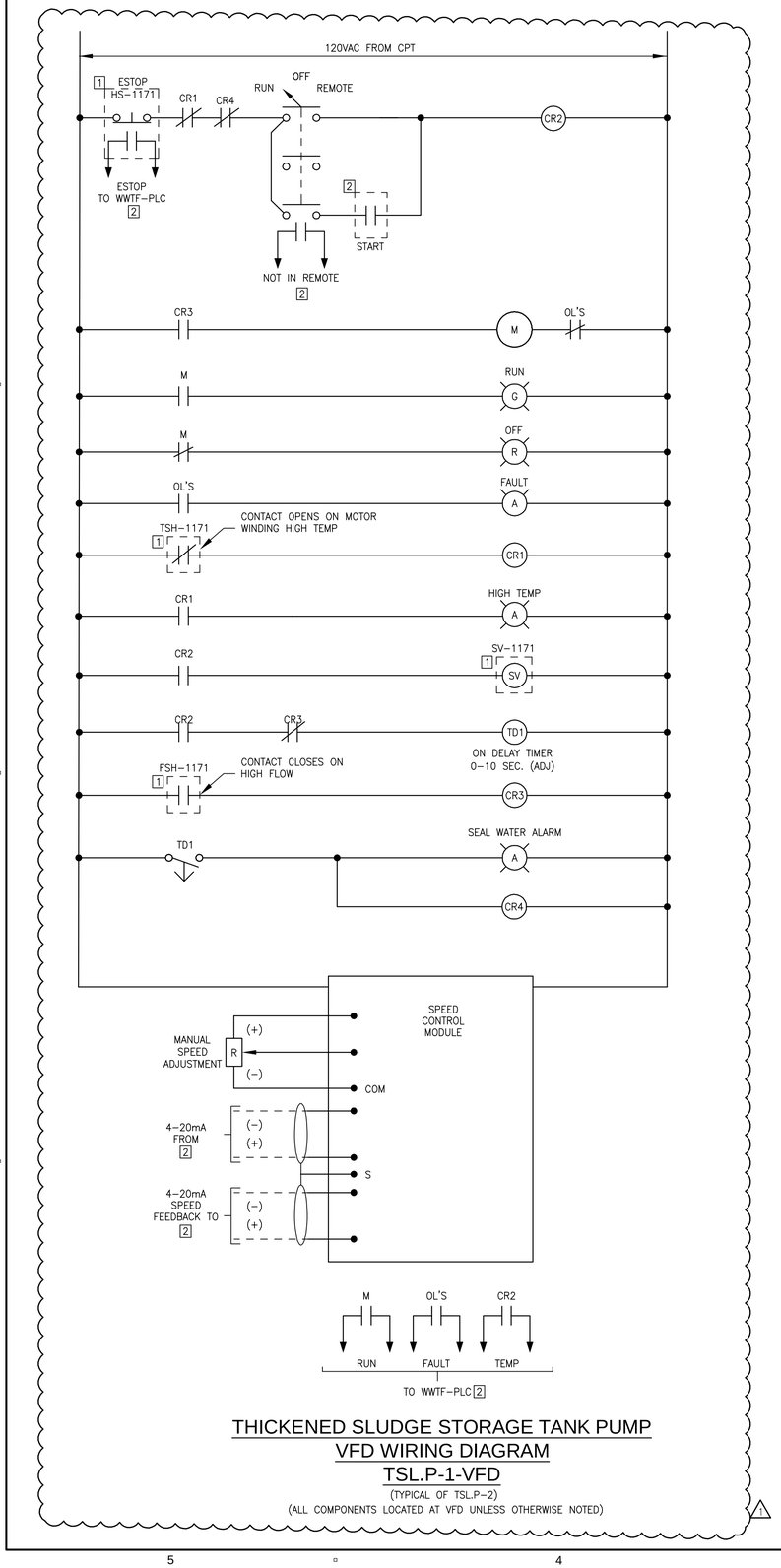
ELECTRICAL

SHEET TITLE

WWTF - ELECTRICAL WIRING SCHEMATICS III

SHEET NUMBER

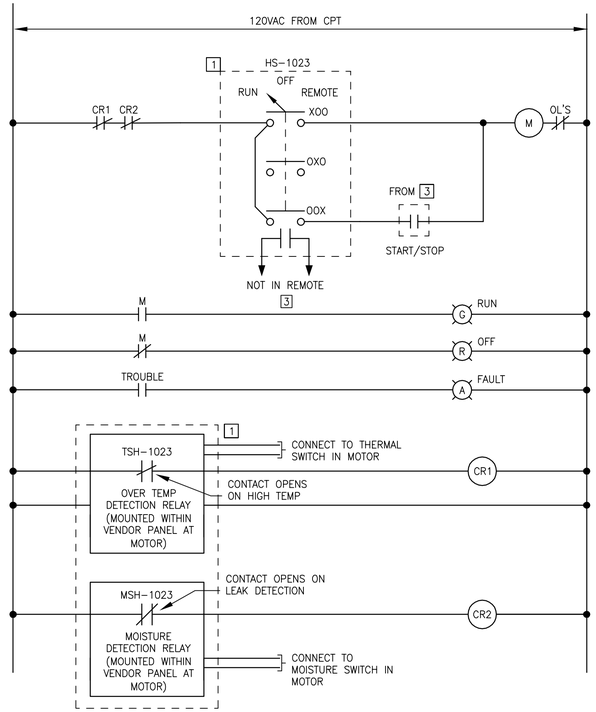
10 E-615

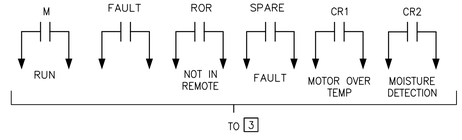


THICKENED SLUDGE STORAGE TANK PUMP VFD WIRING DIAGRAM TSL.P-1-VFD

(TYPICAL OF TSL.P-2)

(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)

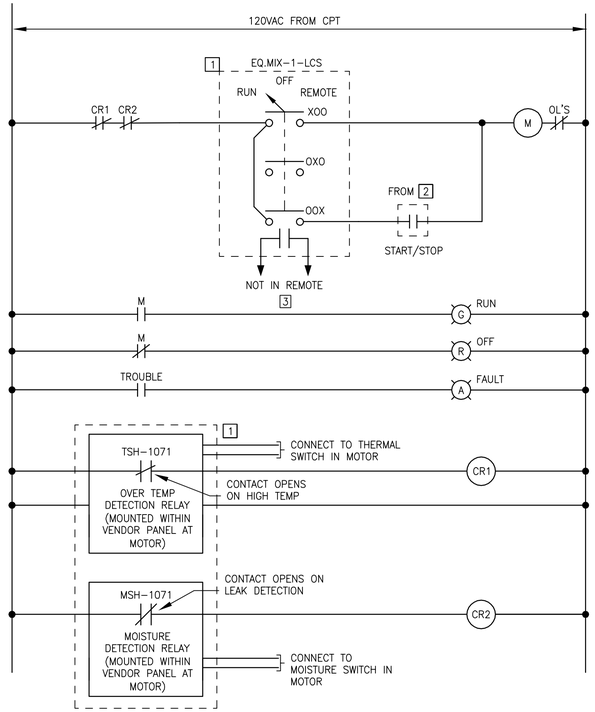


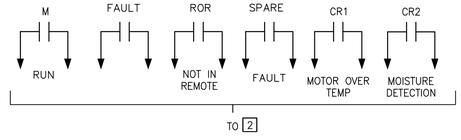


SBR TANK MIXER MOTOR STARTER WIRING DIAGRAM SBR.MIX-1

(TYPICAL FOR SBR.MIX-2)

(ALL COMPONENTS LOCATED AT MCC UNLESS OTHERWISE NOTED)





EQ TANK MIXER MOTOR STARTER WIRING DIAGRAM EQ.MIX-1

(TYPICAL FOR EQ.MIX-2)

(ALL COMPONENTS LOCATED AT MCC UNLESS OTHERWISE NOTED)

LEGEND

1	DEVICE LOCATED AT EQUIPMENT
2	FROM/TO WWTF-PLC
3	FROM/TO SBR-CP
4	FROM/TO 10-ATC-1
5	FROM/TO 20-ATC-1

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	04-30-2020	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

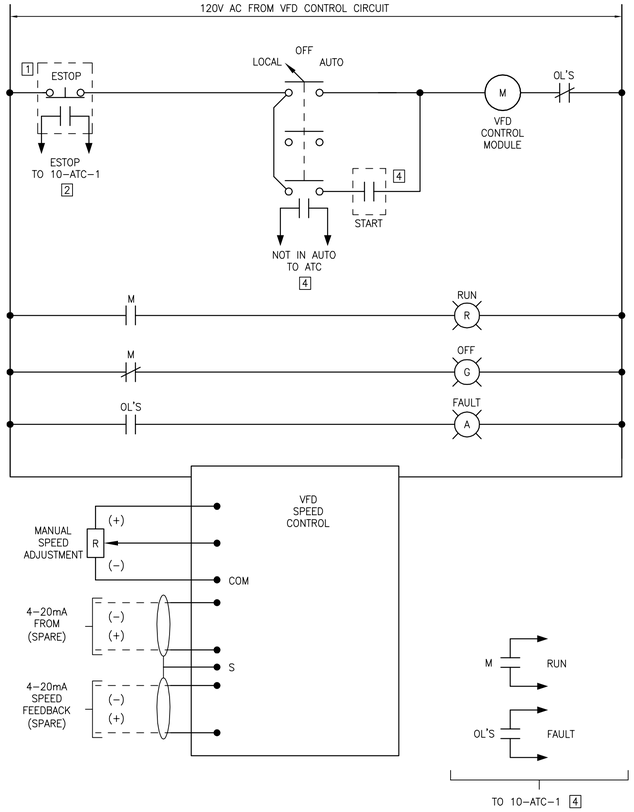
SHEET TITLE

WWTF - ELECTRICAL WIRING SCHEMATICS IV

SHEET NUMBER

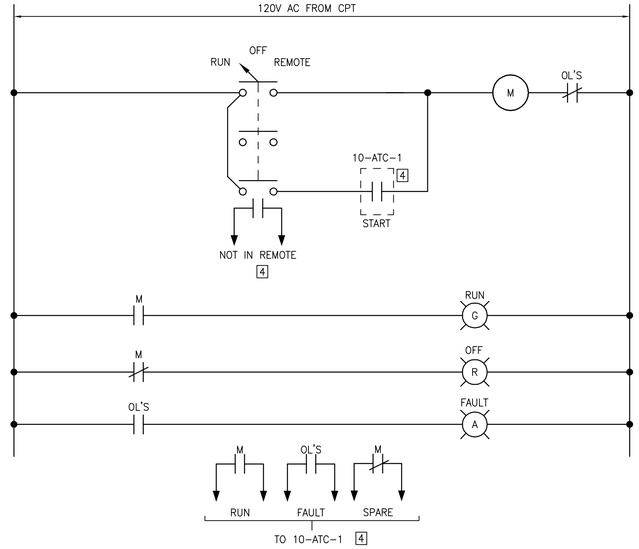
10 E-616

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\ELD\10 E-616.DWG
LAST UPDATE: Thursday, April 30, 2020 12:02:25 PM
PLOT DATE: Thursday, April 30, 2020 12:08:33 PM



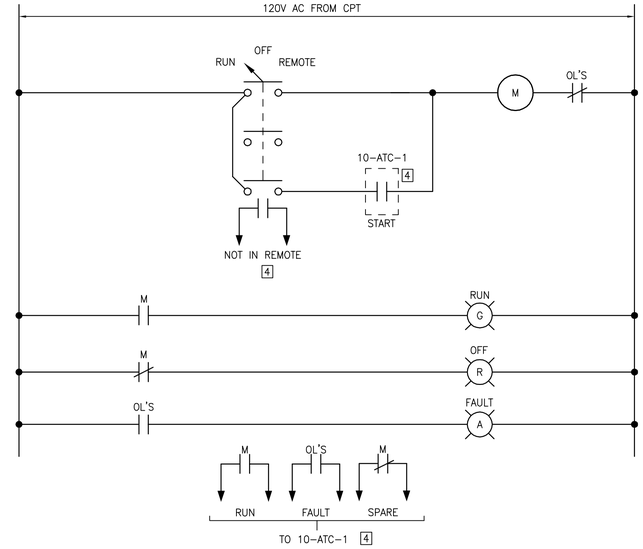
TYPICAL HVAC EQUIPMENT VFD WIRING DIAGRAM

(TYPICAL FOR 10-EF-1, 10-EF-2, 10-EF-5, 10-EF-7, 10-EF-10, 10-EF-11, 10-SF-1, 10-SF-2, 10-SF-5, 10-SF-8) (1)
(ALL COMPONENTS LOCATED AT VFD UNLESS OTHERWISE NOTED)



HVAC EXHAUST FAN MOTOR STARTER WIRING DIAGRAM

(TYPICAL FOR 10-SF-3A, 10-SF-3B, 10-SF-4, 10-SF-7)
(ALL COMPONENTS LOCATED AT STARTER UNLESS OTHERWISE NOTED)



TYPICAL 1-PHASE HVAC/PLUMBING PUMP MOTOR STARTER WIRING DIAGRAM

(TYPICAL FOR 10-PP-1, 10-PP-2)
(ALL COMPONENTS LOCATED AT STARTER UNLESS OTHERWISE NOTED)

LEGEND

1	DEVICE LOCATED AT EQUIPMENT
2	FROM/TO WWTF-PLC
3	FROM/TO SBR-CP
4	FROM/TO 10-ATC-1
5	FROM/TO 20-ATC-1

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 43962
REGISTERED
PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

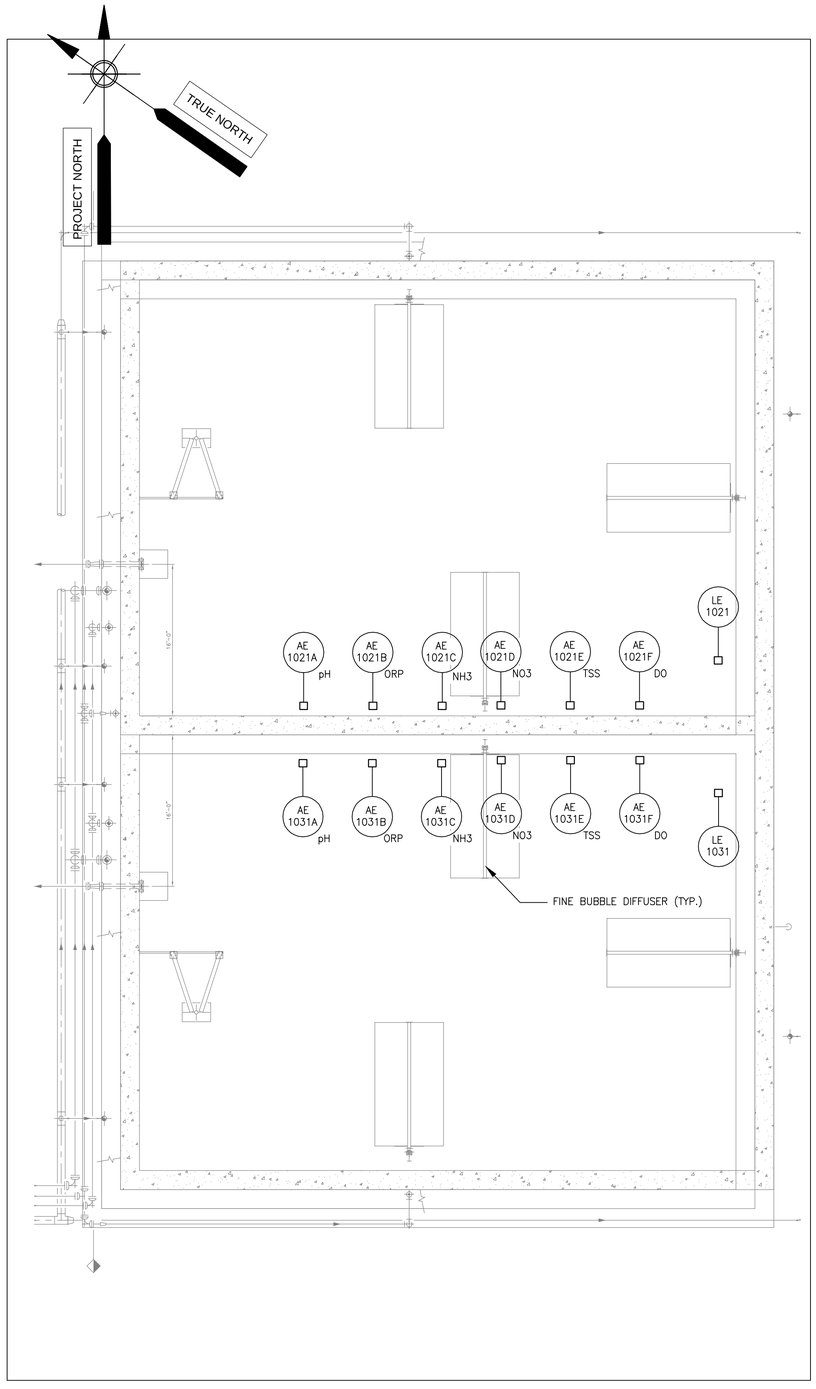
SHEET TITLE

WWTF - ELECTRICAL WIRING SCHEMATICS V

SHEET NUMBER

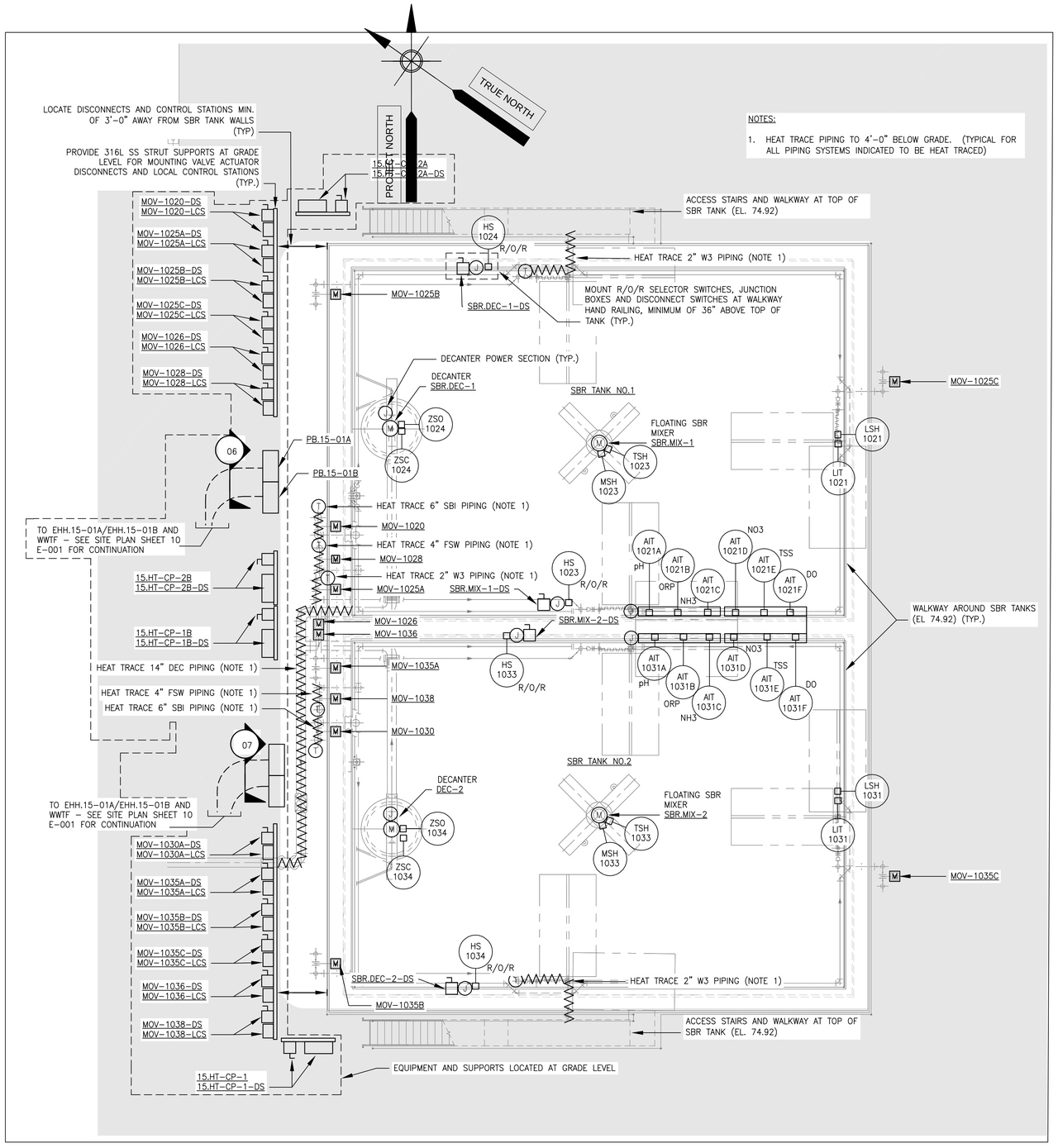
10 E-617

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E10 E-617.DWG
LAST UPDATE: Tuesday, March 24, 2020 4:03:20 AM
PLOT DATE: Tuesday, March 24, 2020 4:16:24 AM



SBR NO.1 & NO.2 - LOWER LEVEL POWER PLAN

(SCALE: 1/8"=1'-0")



SBR NO.1 & NO.2 - UPPER LEVEL POWER PLAN

(SCALE: 1/8"=1'-0")

1/8"=1'-0" SCALE 0 4 8 12 16 20 24 FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

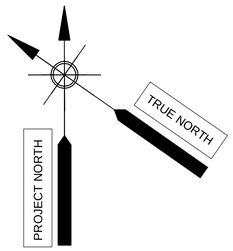
SHEET TITLE

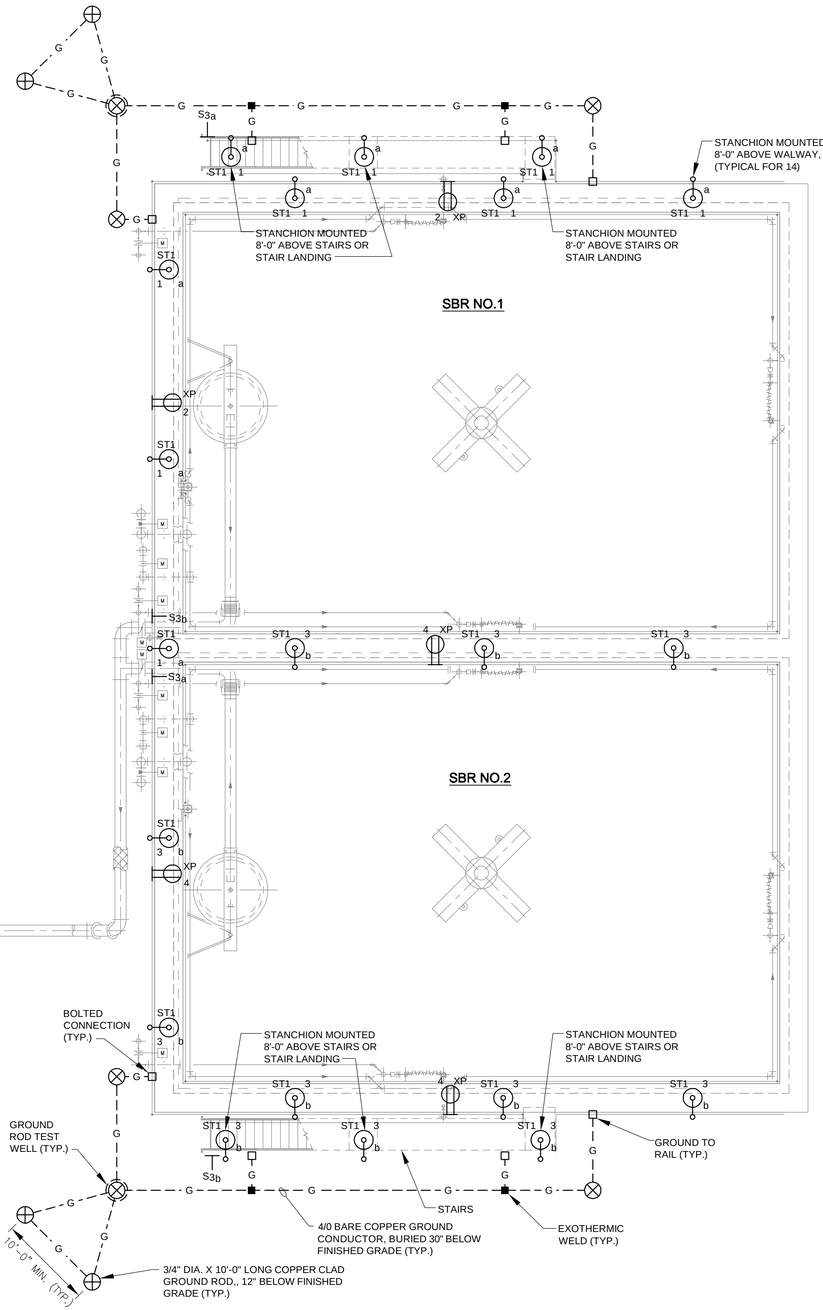
SBRS - POWER PLAN

SHEET NUMBER

15 E-101

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\15 E-101.DWG
LAST UPDATE: Wednesday, January 22, 2020 9:32:19 AM
PLOT DATE: Monday, January 27, 2020 5:12:47 PM





SBR NO. 1 & NO. 2 UPPER LEVEL SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. CONTRACTOR TO PROVIDE GROUNDING JUMPER TO THE INSIDE RAILING EVERY 50'-0" FOR EACH SBR TANK.
2. LUMINAIRES AND RECEPTACLES ARE FED FROM PANELBOARD LP.10-3.
3. SEE SITE LIGHTING AT SBR TANSK ON SHEET 10 E-002.
4. GROUNDING SHOWN BELOW GRADE LEVEL. THE LIGHTING AND RECEPTACLES ARE MOUNTED AT THE TOP OF THE SBR TANKS AND STAIRS.
5. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.

2r 2r

1/8"=1'-0" SCALE 0 4 8 12 16 20 24 FEET

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. BRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

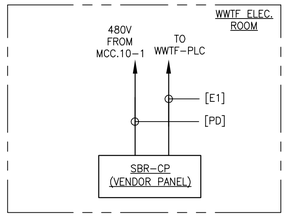
SHEET TITLE

SBRS - UPPER LEVEL - SYSTEMS PLAN

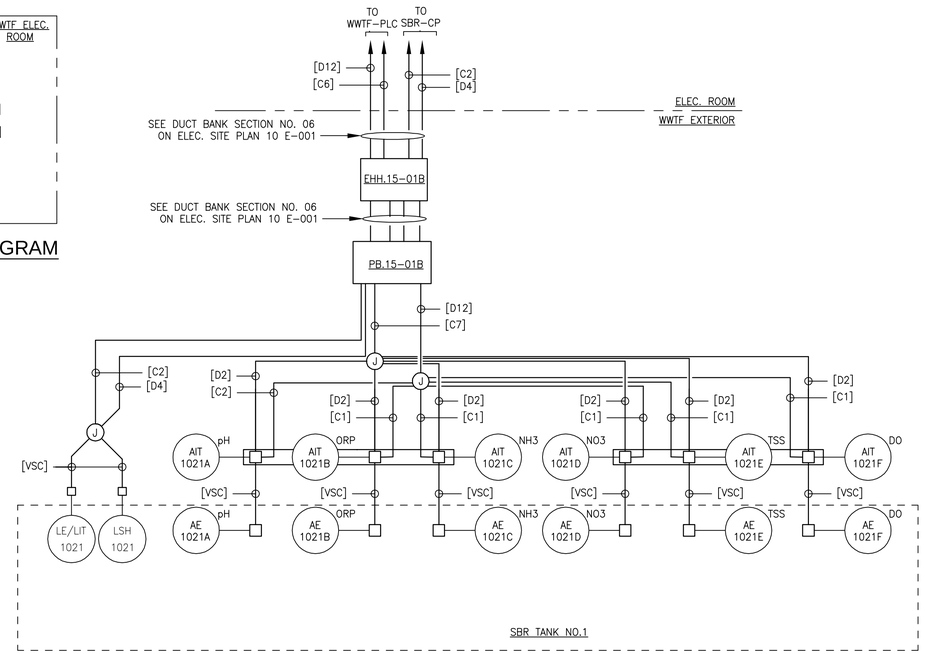
SHEET NUMBER

15 E-102

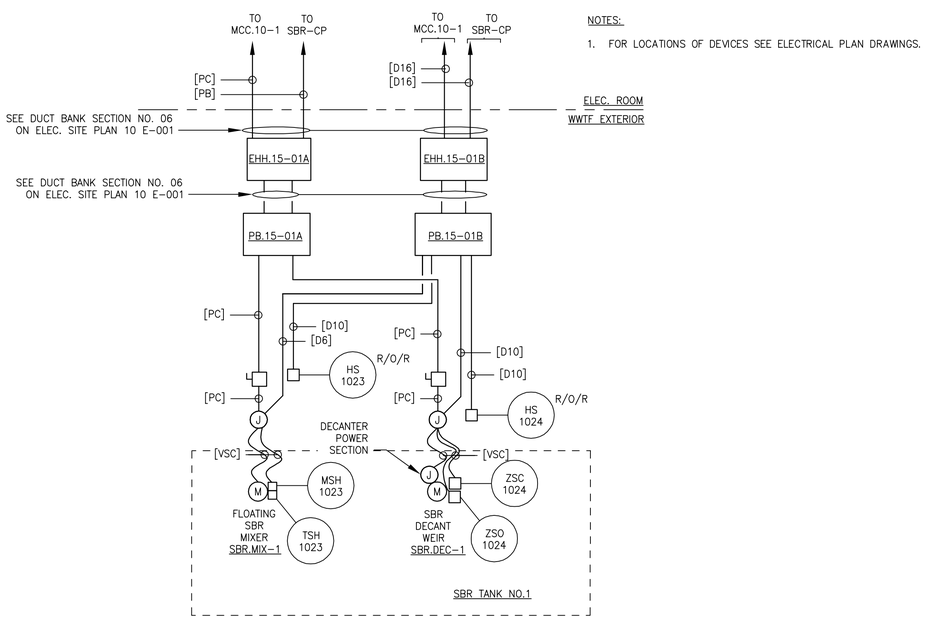
PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E15 E-102.DWG
LAST UPDATE: Monday, January 20, 2020 9:49:54 AM
PLOT DATE: Monday, January 27, 2020 5:12:57 PM



SBR-CP - RISER DIAGRAM



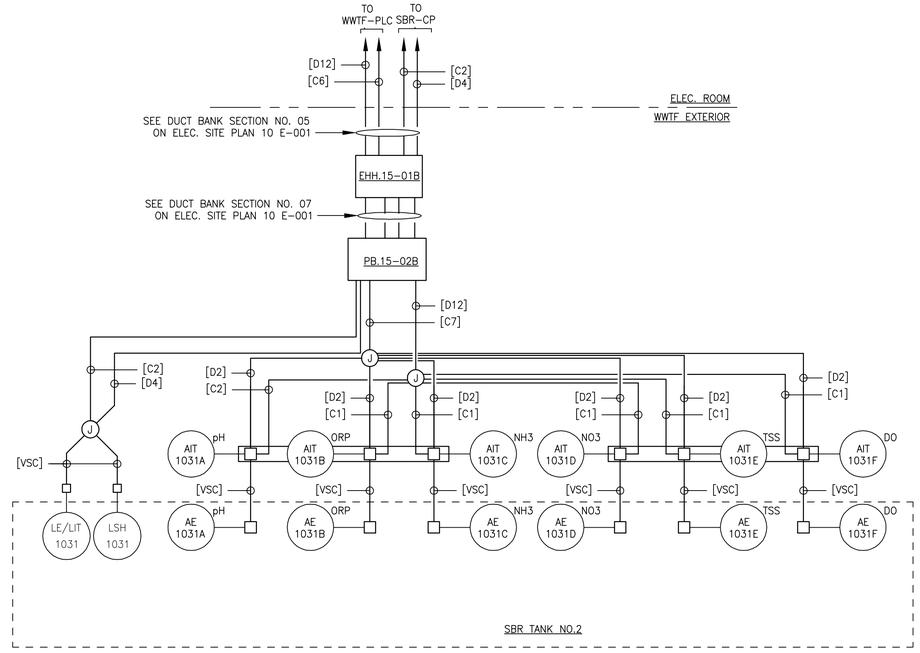
SBR TANK NO.1 ANALYZERS - RISER DIAGRAMS



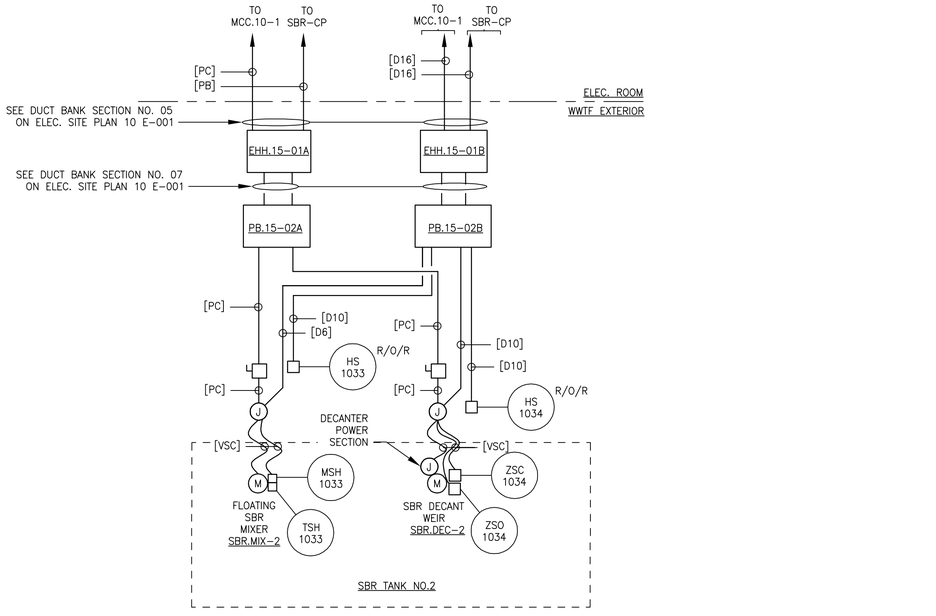
SBR TANK NO.1 MIXER/DECANTER - RISER DIAGRAMS

NOTES:

1. FOR LOCATIONS OF DEVICES SEE ELECTRICAL PLAN DRAWINGS.



SBR TANK NO.2 ANALYZERS - RISER DIAGRAMS



SBR TANK NO.2 MIXER/DECANTER - RISER DIAGRAMS

SBRS - RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y, RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

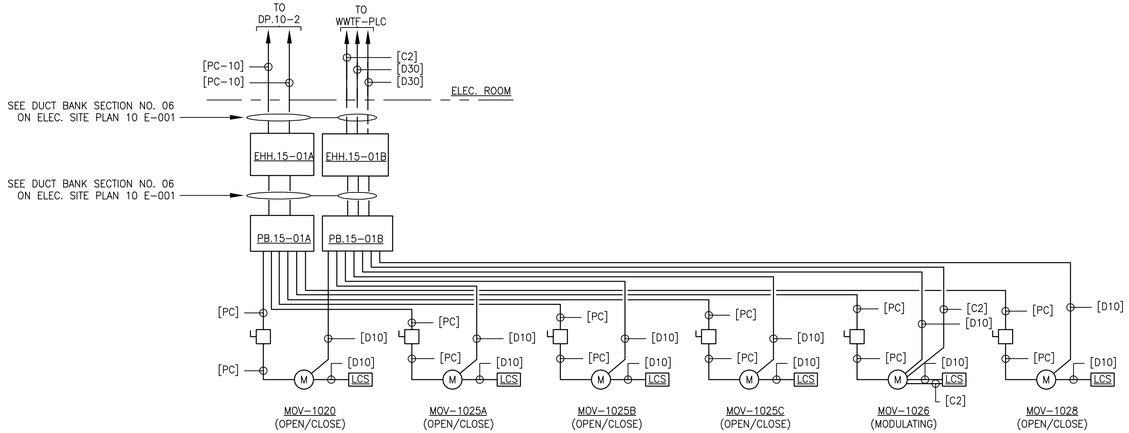
SHEET TITLE

SBRS - ELECTRICAL RISER DIAGRAMS I

SHEET NUMBER

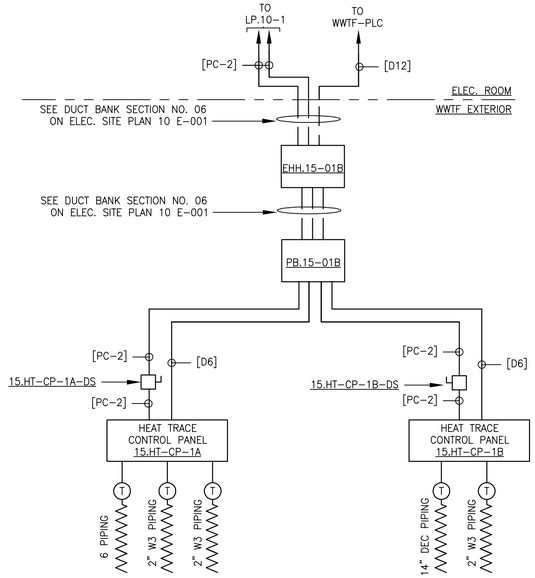
15 E-601

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E15 E-601.DWG
LAST UPDATE: Wednesday, January 22, 2020 8:57:47 AM
PLOT DATE: Monday, January 27, 2020 5:13:05 PM

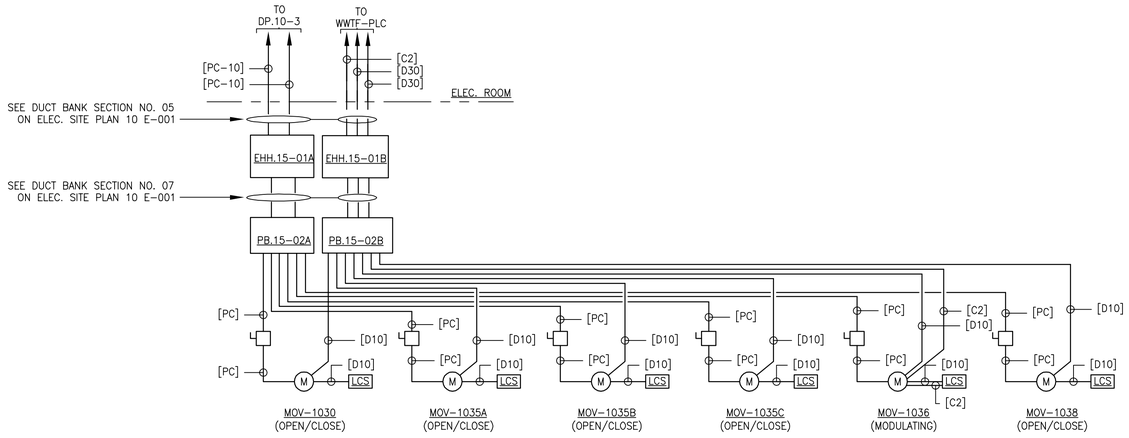


SBR TANK NO.1 VALVE ACTUATORS - RISER DIAGRAMS

VALVE MOV-102(X)	LOCAL CONTROL STATION MOV-102(X)-LCS	DISCONNECT MOV-102(X)-DS	TYPE	480VAC POWER FROM:	LOCATION
MOV-1020	MOV-1020-LCS	MOV-1020-DS	OPEN/CLOSE	DP.10-2	SBR TANK NO.1
MOV-1025A	MOV-1025A-LCS	MOV-1025A-DS	OPEN/CLOSE	DP.10-2	
MOV-1025B	MOV-1025B-LCS	MOV-1025B-DS	OPEN/CLOSE	DP.10-2	
MOV-1025C	MOV-1025C-LCS	MOV-1025C-DS	OPEN/CLOSE	DP.10-2	
MOV-1026	MOV-1026-LCS	MOV-1026-DS	MODULATING	DP.10-2	
MOV-1028	MOV-1028-LCS	MOV-1028-DS	OPEN/CLOSE	DP.10-2	

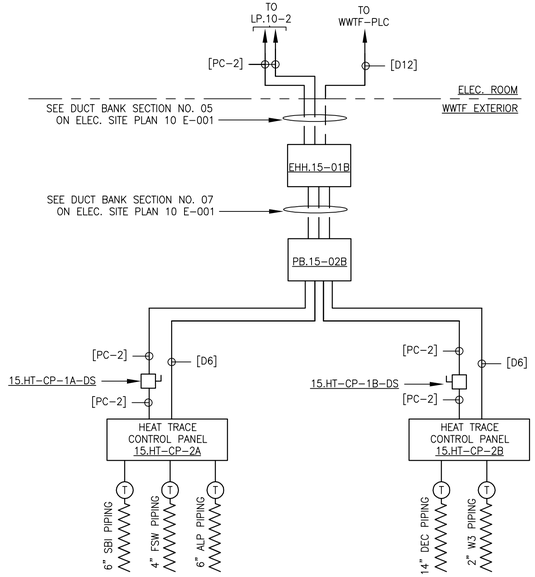


SBR NO.1 HEAT TRACE - RISER DIAGRAMS



SBR TANK NO.2 VALVE ACTUATORS - RISER DIAGRAMS

VALVE MOV-103(X)	LOCAL CONTROL STATION MOV-103(X)-LCS	DISCONNECT MOV-103(X)-DS	TYPE	480VAC POWER FROM:	LOCATION
MOV-1030	MOV-1030-LCS	MOV-1030-DS	OPEN/CLOSE	DP.10-3	SBR TANK NO.1
MOV-1035A	MOV-1035A-LCS	MOV-1035A-DS	OPEN/CLOSE	DP.10-3	
MOV-1035B	MOV-1035B-LCS	MOV-1035B-DS	OPEN/CLOSE	DP.10-3	
MOV-1035C	MOV-1035C-LCS	MOV-1035C-DS	OPEN/CLOSE	DP.10-3	
MOV-1036	MOV-1036-LCS	MOV-1036-DS	MODULATING	DP.10-3	
MOV-1038	MOV-1038-LCS	MOV-1038-DS	OPEN/CLOSE	DP.10-3	



SBR NO.2 HEAT TRACE - RISER DIAGRAMS

SBRS - RISER DIAGRAMS

NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

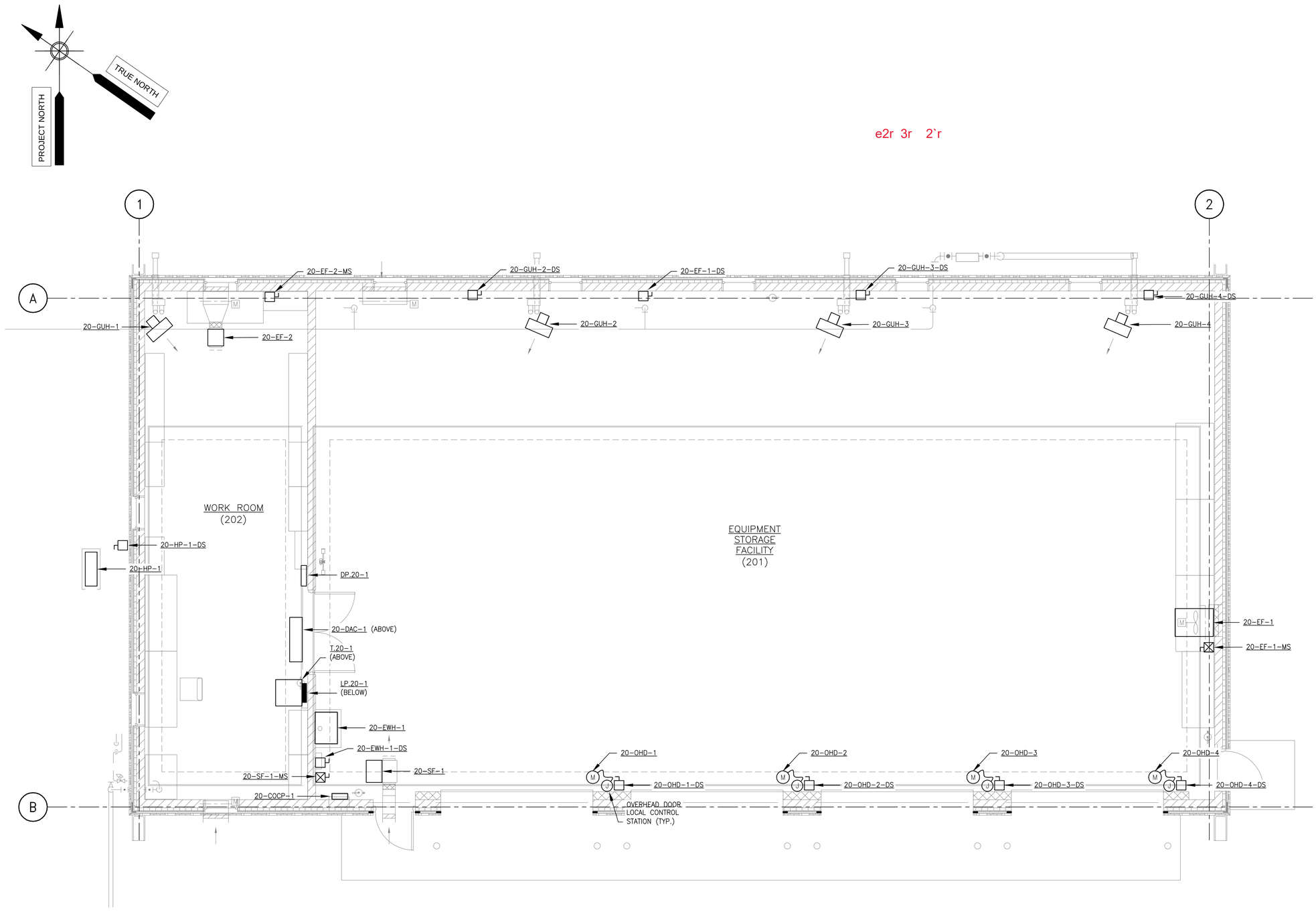
SHEET TITLE

SBRS - ELECTRICAL RISER DIAGRAMS II

SHEET NUMBER

15 E-602

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E15 E-602.DWG
LAST UPDATE: Wednesday, January 22, 2020 8:57:32 AM
PLOT DATE: Monday, January 27, 2020 5:13:15 PM



e2r 3r 2`r

EQUIPMENT STORAGE FACILITY - POWER PLAN

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

1/4"=1'-0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E20\E-101.DWG
LAST UPDATE: Wednesday, January 15, 2020 12:06:42 PM
PLOT DATE: Monday, January 27, 2020 5:13:26 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

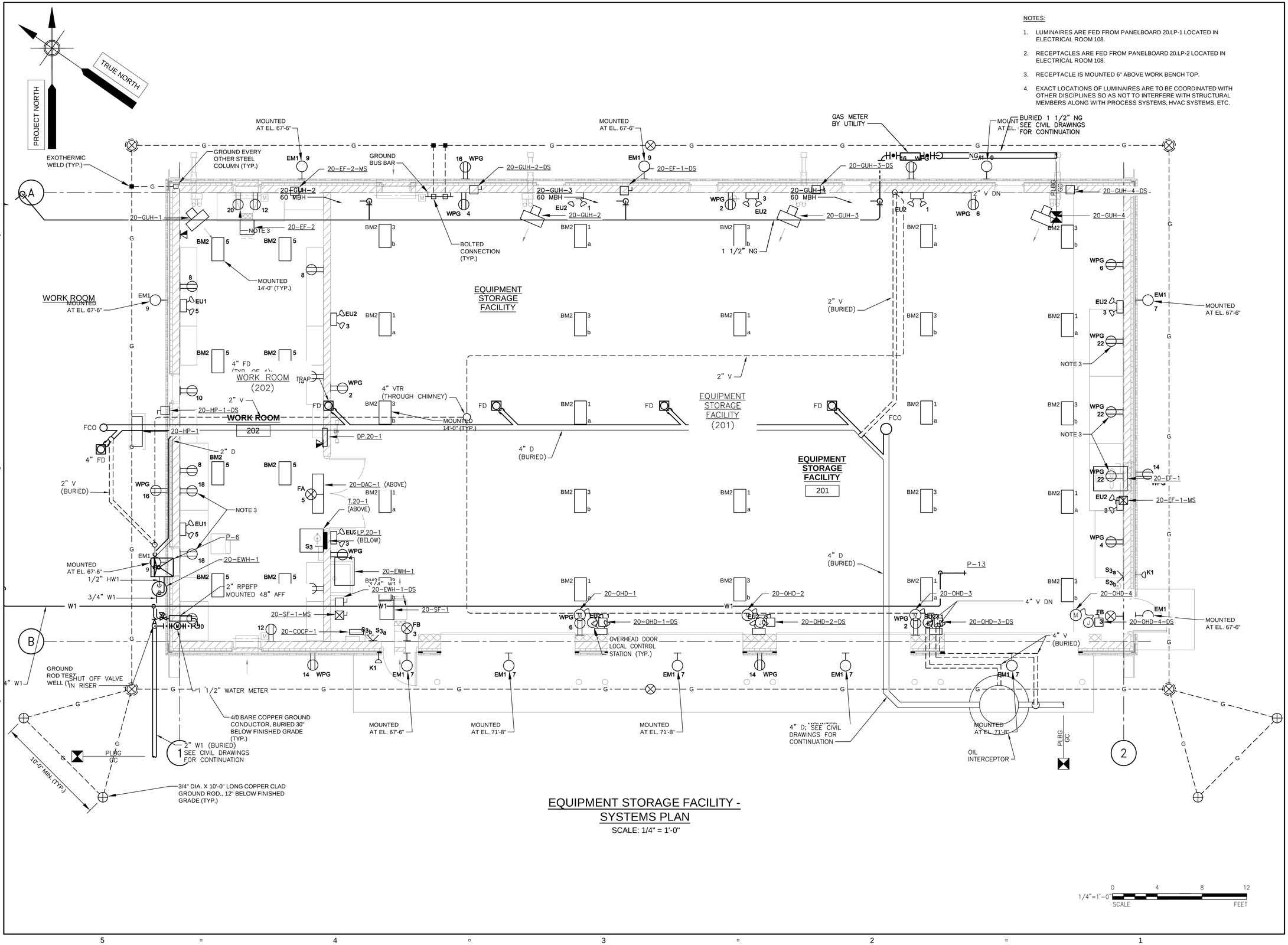
EQUIPMENT STORAGE FACILITY - POWER PLAN

SHEET NUMBER

20 E-101

NOTES:

1. LUMINAIRES ARE FED FROM PANELBOARD 20.LP-1 LOCATED IN ELECTRICAL ROOM 108.
2. RECEPTACLES ARE FED FROM PANELBOARD 20.LP-2 LOCATED IN ELECTRICAL ROOM 108.
3. RECEPTACLE IS MOUNTED 6" ABOVE WORK BENCH TOP.
4. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.



EQUIPMENT STORAGE FACILITY - SYSTEMS PLAN

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

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. BRAHIN
ELECTRICAL
NO. 54966
REGISTERED PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - SYSTEMS PLAN

SHEET NUMBER

20 E-102

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\ED\E-102.DWG
LAST UPDATE: Monday, January 20, 2020 9:50:16 AM
PLOT DATE: Monday, January 27, 2020 5:13:36 PM

PANELBOARD DP.20-1

SERVICE: 480V, 3PH, 3W, 60HZ
MAIN CIRCUIT BREAKER: 200A. FRAME, 200A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 65,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA	CIR. NO.		CIR. NO.	KVA	HP	LOCATION
T.20-1/LP.20-1	-	-		A		-	-	
	-	-	1	B	2	-	1	20-OHD-1
	-	-		C		-	-	
20-EF-1	-	-		A		-	-	
	1	-	3	B	4	-	1	20-OHD-2
	-	-		C		-	-	
20-OHD-4	-	-		A		-	-	
	1	-	5	B	6	-	1	20-OHD-3
	-	-		C		-	-	
20-OHD-5	-	-		A		-	-	
	1	-	7	B	8	-	-	SPARE
	-	-		C		-	-	
SPARE	-	-		A		-	-	
	-	-	9	B	10	-	-	SPARE
	-	-		C		-	-	
SPARE	-	-		A		-	-	
	-	-	11	B	12	-	-	SPARE
	-	-		C		-	-	
SPARE	-	-		A		-	-	
	-	-	13	B	14	-	-	SPARE
	-	-		C		-	-	

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)

TOTAL CONNECTED LOAD: KVA

PANEL LOCATION: EQUIP. STORAGE FACILITY

PANELBOARD LP.20-1

SERVICE: 208/120V, 3PH, 4W, 60HZ
MAIN CIRCUIT BREAKER: 100A. FRAME, 100A TRIP
GROUND BUS
SHORT CIRCUIT BRACING: 10,000 AMPS
CABINET: SURFACE MOUNTED

LOCATION	HP	KVA A	KVA B	KVA C	CIR. NO.		CIR. NO.	KVA A	KVA B	KVA C	HP	LOCATION
EQUIPMENT STORAGE FAC. GARAGE LTG.	-	0.72	-	-	1		2	0.54	-	-	-	EQUIP. STOR. FAC. GARAGE 201 RECP.
EQUIPMENT STORAGE FAC. GARAGE LTG.	-	-	0.98	-	3		4	-	0.54	-	-	EQUIP. STOR. FAC. GARAGE 201 RECP.
EQUIPMENT STOR. FAC. WORK ROOM LTG.	-	-	-	0.36	5		6	-	-	0.36	-	EQUIP. STOR. FAC. GARAGE 201 RECP.
EQUIPMENT STOR. FAC. EXTERIOR LTG.	-	0.38	-	-	7		8	0.36	-	-	-	EQUIP. STOR. FAC. WORK RM. 202 RECP.
EQUIPMENT STOR. FAC. EXTERIOR LTG.	-	-	0.25	-	9		10	-	0.36	-	-	EQUIP. STOR. FAC. WORK RM. 202 RECP.
20-DAC-1/20-HP-1	-	-	-	X	11		12	-	-	0.36	-	EQUIP. STOR. FAC. WORK RM. 202 RECP.
	-	X	-	-	13		14	0.54	-	-	-	EQUIPMENT STOR. FAC. EXTERIOR RECP.
20-SF-1	1/4	-	X	-	15		16	-	0.54	-	-	EQUIPMENT STOR. FAC. EXTERIOR RECP.
20-EF-2	1/6	-	-	X	17		18	-	-	0.36	-	EQUIP. STOR. FAC. WORK RM. 202 RECP.
20-COCP-1	-	X	-	-	19		20	0.18	-	-	-	EQUIP. STOR. FAC. WORK RM. 202 RECP.
20-EWH-1	-	-	2	-	21		22	-	0.54	-	-	EQUIP. STOR. FAC. GARAGE 201 RECP.
SPARE	-	-	-	X	23		24	-	-	-	-	SPARE
SPARE	-	-	-	-	25		26	-	-	-	-	SPARE
SPARE	-	-	-	-	27		28	-	-	-	-	SPARE
SPARE	-	-	-	-	29		30	-	-	-	-	SPARE
SPARE	-	-	-	-	31		32	-	-	-	-	SPARE
SPARE	-	-	-	-	33		34	-	-	-	-	SPARE
SPARE	-	-	-	-	35		36	-	-	-	-	SPARE
SPARE	-	-	-	-	37		38	-	-	-	-	SPARE
SPARE	-	-	-	-	39		40	-	-	-	-	SPARE
SPARE	-	-	-	-	41		42	-	-	-	-	SPARE

NEUTRAL
A B C
25A
25A

ALL BRANCH C/B 100 AMP FRAME 20 AMP TRIP (UNLESS OTHERWISE NOTED)

KVA PH A: KVA PH B: KVA PH C:
TOTAL CONNECTED LOAD: KVA

PANEL LOCATION: EQUIP. STORAGE FACILITY

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ASSBRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

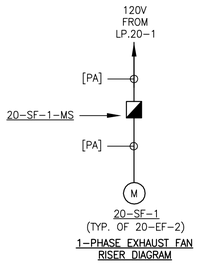
SHEET TITLE

EQUIPMENT STORAGE FACILITY - PANELBOARD SCHEDULES

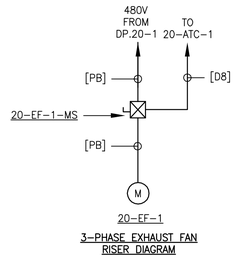
SHEET NUMBER

20 E-601

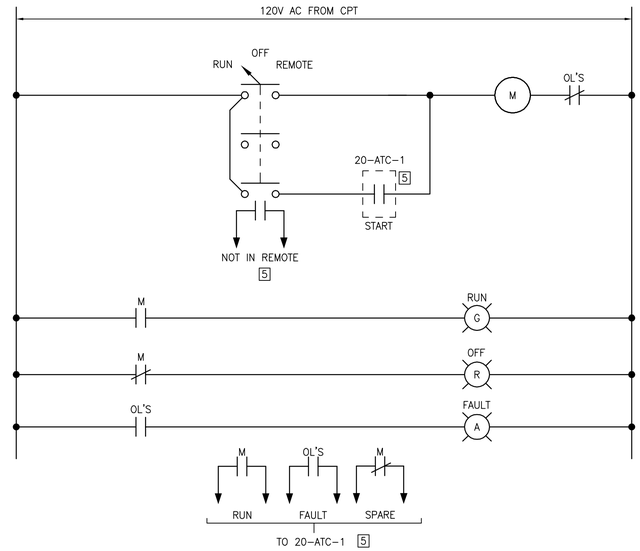
PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E20\E-601.DWG
LAST UPDATE: Thursday, September 26, 2019 11:57:49 AM
PLOT DATE: Monday, January 27, 2020 5:13:43 PM



1-PHASE EXHAUST FAN
RISER DIAGRAM

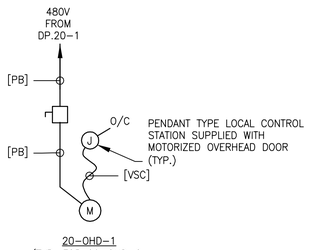


3-PHASE EXHAUST FAN
RISER DIAGRAM



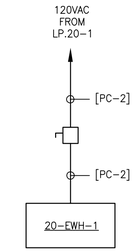
HVAC EXHAUST FAN MOTOR STARTER WIRING DIAGRAM

(TYPICAL FOR 20-SF-1, 20-EF-1, AND 20-EF-2)
(ALL COMPONENTS LOCATED AT STARTER UNLESS OTHERWISE NOTED)



PENDANT TYPE LOCAL CONTROL STATION SUPPLIED WITH MOTORIZED OVERHEAD DOOR (TYP.)

MOTORIZED OVERHEAD DOOR



ELECTRIC WATER HEATER

LEGEND

1	DEVICE LOCATED AT EQUIPMENT
2	FROM/TO WWTF-PLC
3	FROM/TO SBR-CP
4	FROM/TO 10-ATC-1
5	FROM/TO 20-ATC-1

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-24-20	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

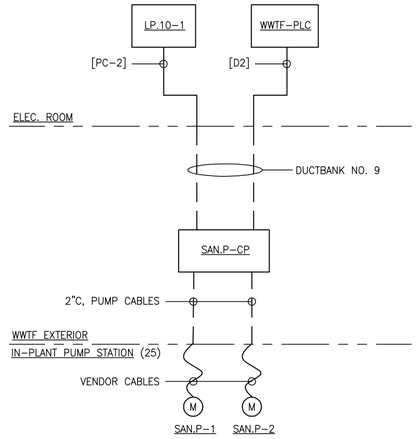
SHEET TITLE

EQUIPMENT STORAGE FACILITY - WIRING SCHEMATICS

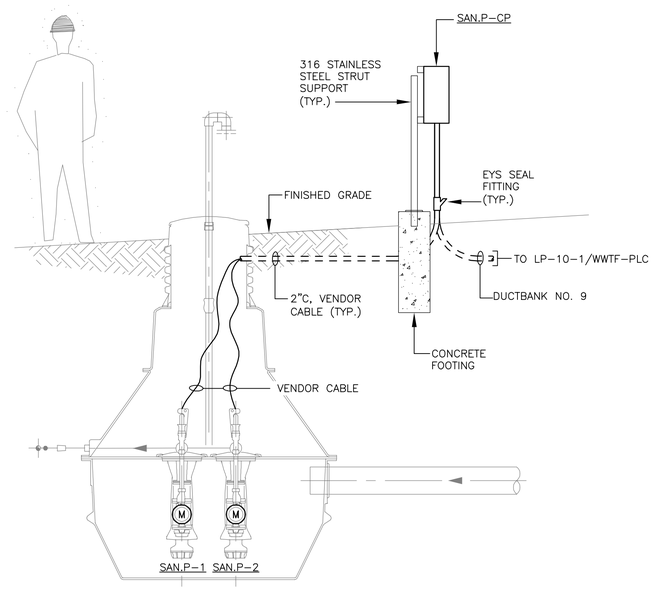
SHEET NUMBER

20 E-602

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E20\E-602.DWG
LAST UPDATE: Wednesday, October 09, 2019 11:27:30 AM
PLOT DATE: Tuesday, March 24, 2020 4:16:34 AM



IN-PLANT PUMP STATION
RISER DIAGRAM



IN-PLANT PUMP STATION
SECTON POWER PLAN

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA J. ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**D. ASPESI**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

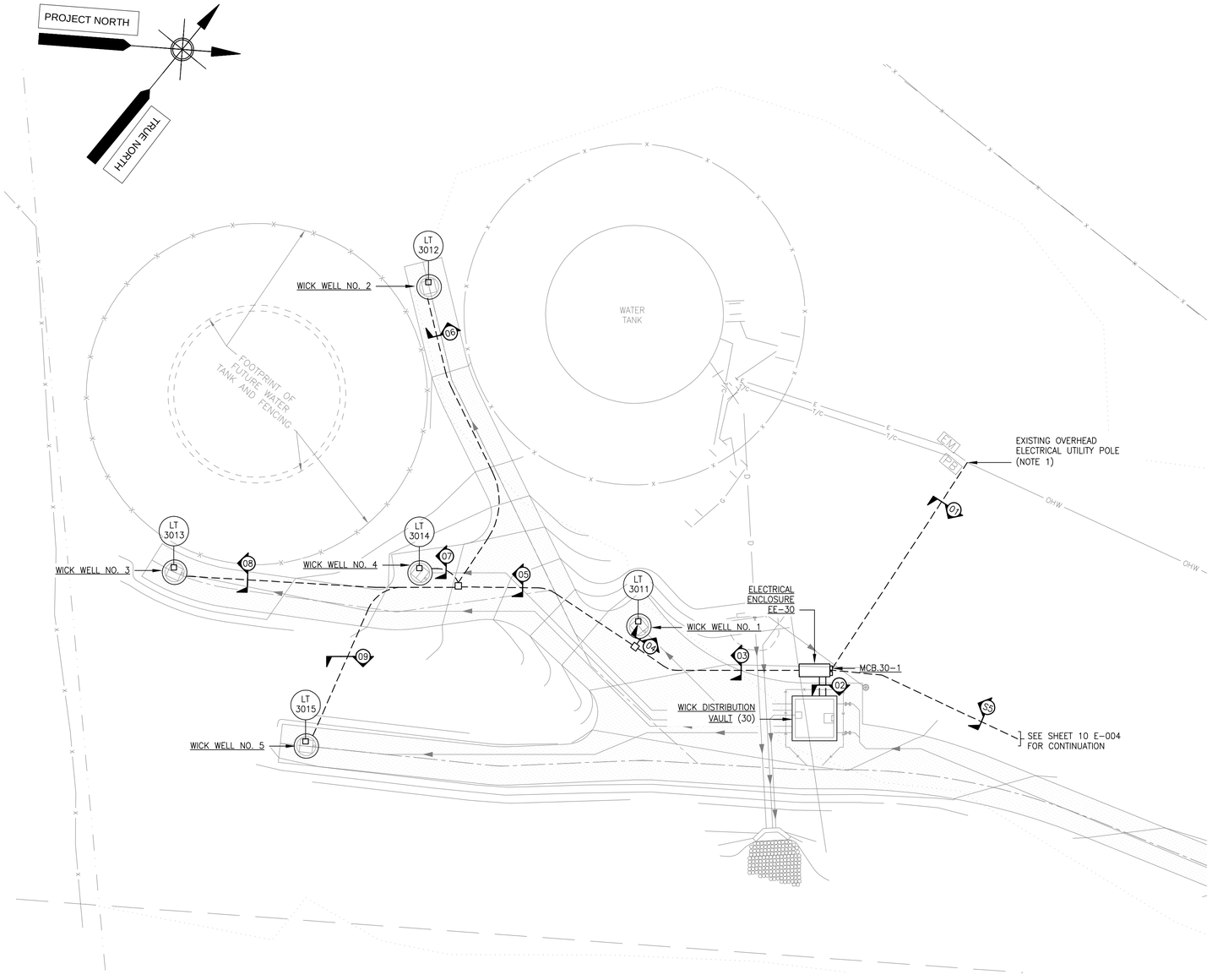
SHEET TITLE

SANITARY PUMP STATION - POWER PLAN

SHEET NUMBER

25 E-101

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\25 E-101.DWG
LAST UPDATE: Friday, January 24, 2020 1:05:46 PM
PLOT DATE: Monday, January 27, 2020 5:14:01 PM



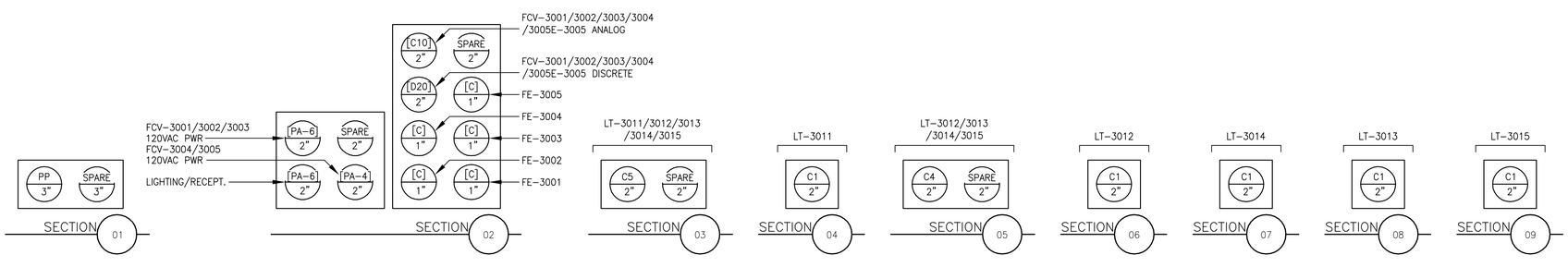
NOTES:

1. PROVIDE ELECTRICAL SERVICE IN ACCORDANCE WITH EVERSOURCE REQUIREMENTS.

Note: Only the duct banks that contain primary service conductors from the utility (Duct Bank No. 01) are to be concrete encased. (ADD 4)

WICK DISTRIBUTION VAULT - ELECTRICAL SITE PLAN

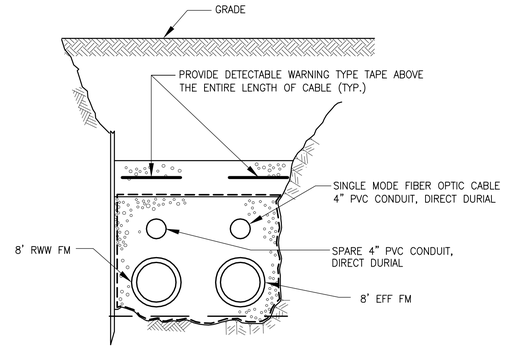
(SCALE: 1"= 20'-0")



TRENCH DETAIL

NTS

S5
30 E-001



1" = 20' (0, 20, 40, 60 SCALE FEET)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

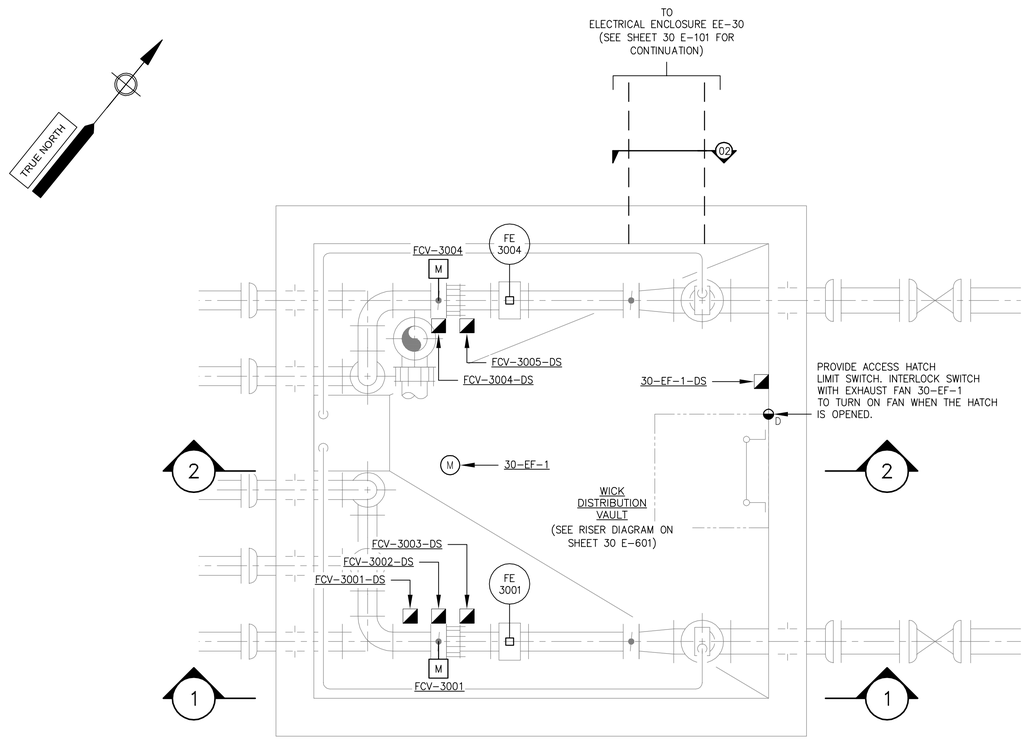
SHEET TITLE

WICK DISTRIBUTION VAULT - ELECTRICAL SITE PLAN

SHEET NUMBER

30 E-001

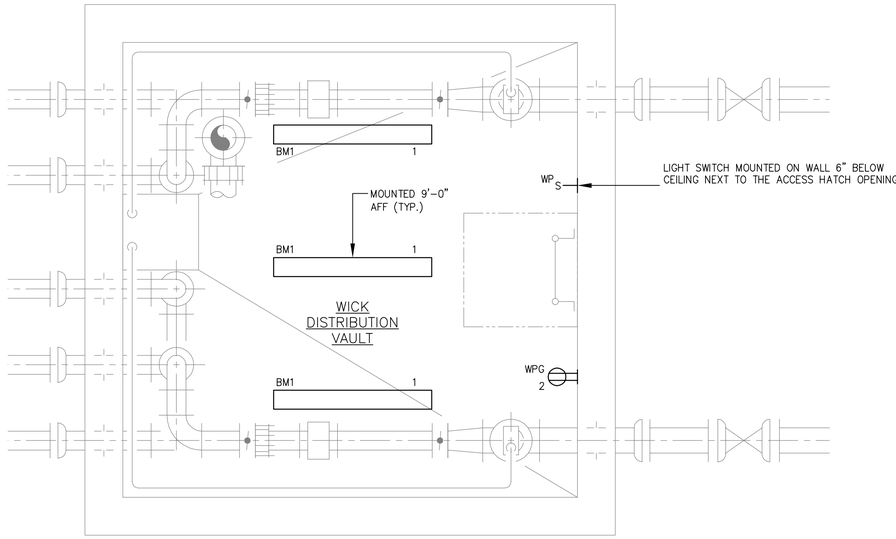
PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E30 E-001.DWG
LAST UPDATE: Monday, January 27, 2020 5:02:19 PM
PLOT DATE: Monday, January 27, 2020 5:14:12 PM



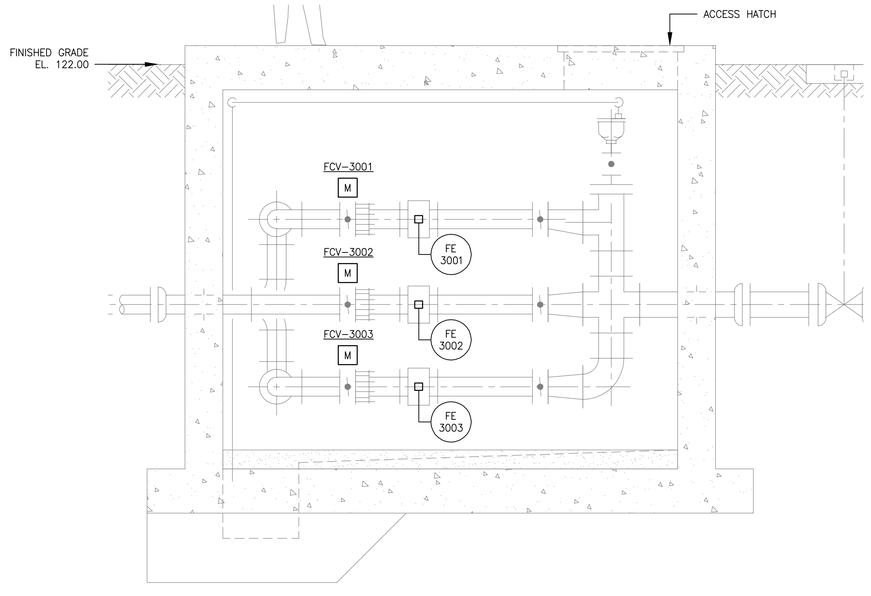
WICK DISTRIBUTION VAULT
POWER PLAN
SCALE: 1/2"= 1'-0"

NOTES:

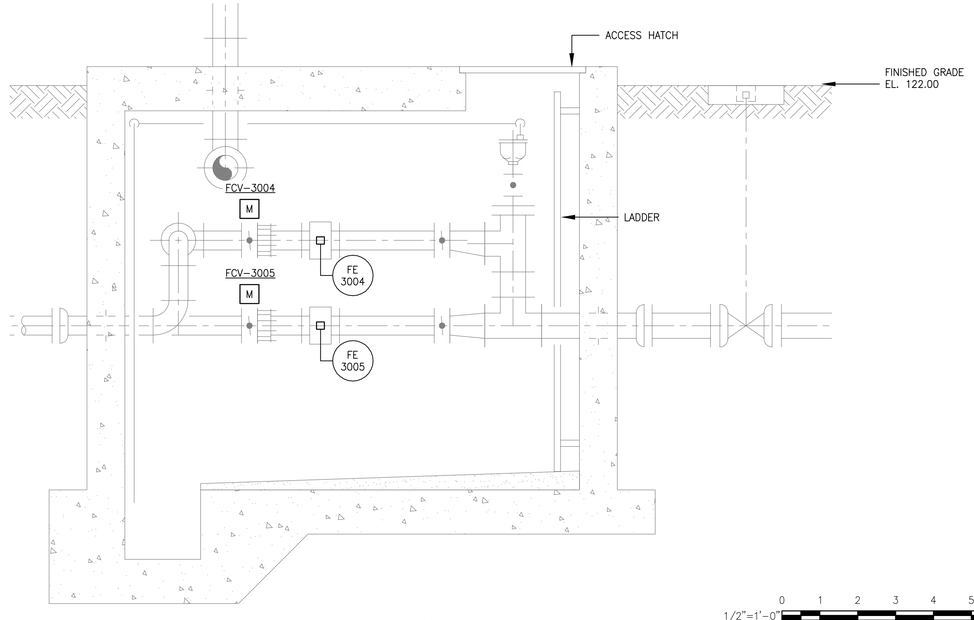
1. LUMINAIRES AND RECEPTACLES ARE FED FROM PANELBOARD LP.30-1 LOCATED IN THE EE-30 WICK DISTRIBUTION VAULT ELECTRICAL ENCLOSURE SEE SHEET 30 E-001 AND SHEET 30 E-002.
2. EXACT LOCATIONS OF LUMINAIRES ARE TO BE COORDINATED WITH OTHER DISCIPLINES SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS ALONG WITH PROCESS SYSTEMS, HVAC SYSTEMS, ETC.



WICK DISTRIBUTION VAULT
SYSTEMS PLAN
SCALE: 1/2"= 1'-0"



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



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

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

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E30\E-101.DWG
LAST UPDATE: Monday, January 27, 2020 5:02:54 PM
PLOT DATE: Monday, January 27, 2020 5:14:21 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

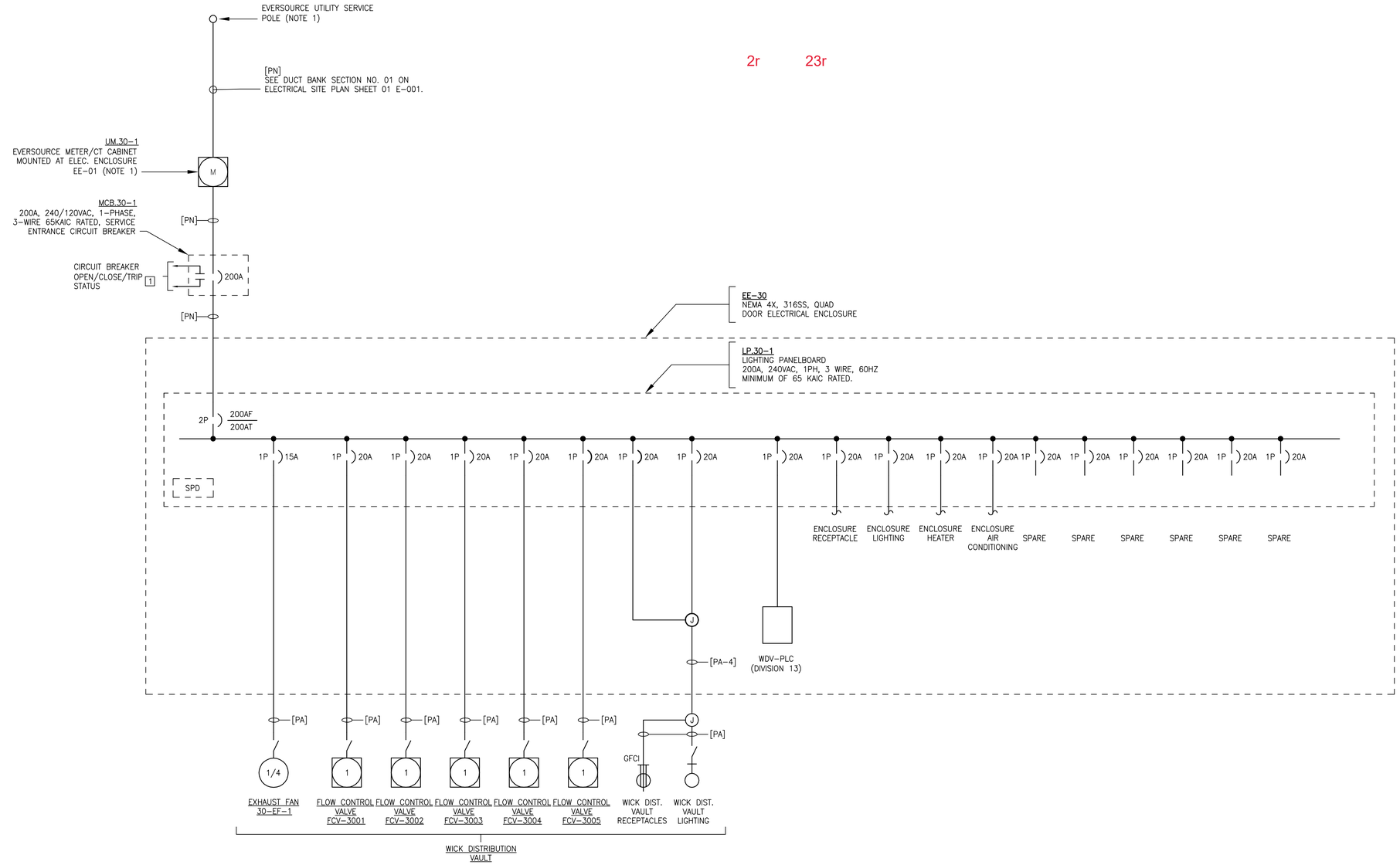
SHEET TITLE

WICK DISTRIBUTION VAULT - POWER AND SYSTEMS PLANS

SHEET NUMBER

30 E-101

2r 23r



WICK DISTRIBUTION VAULT - SINGLE LINE DIAGRAM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

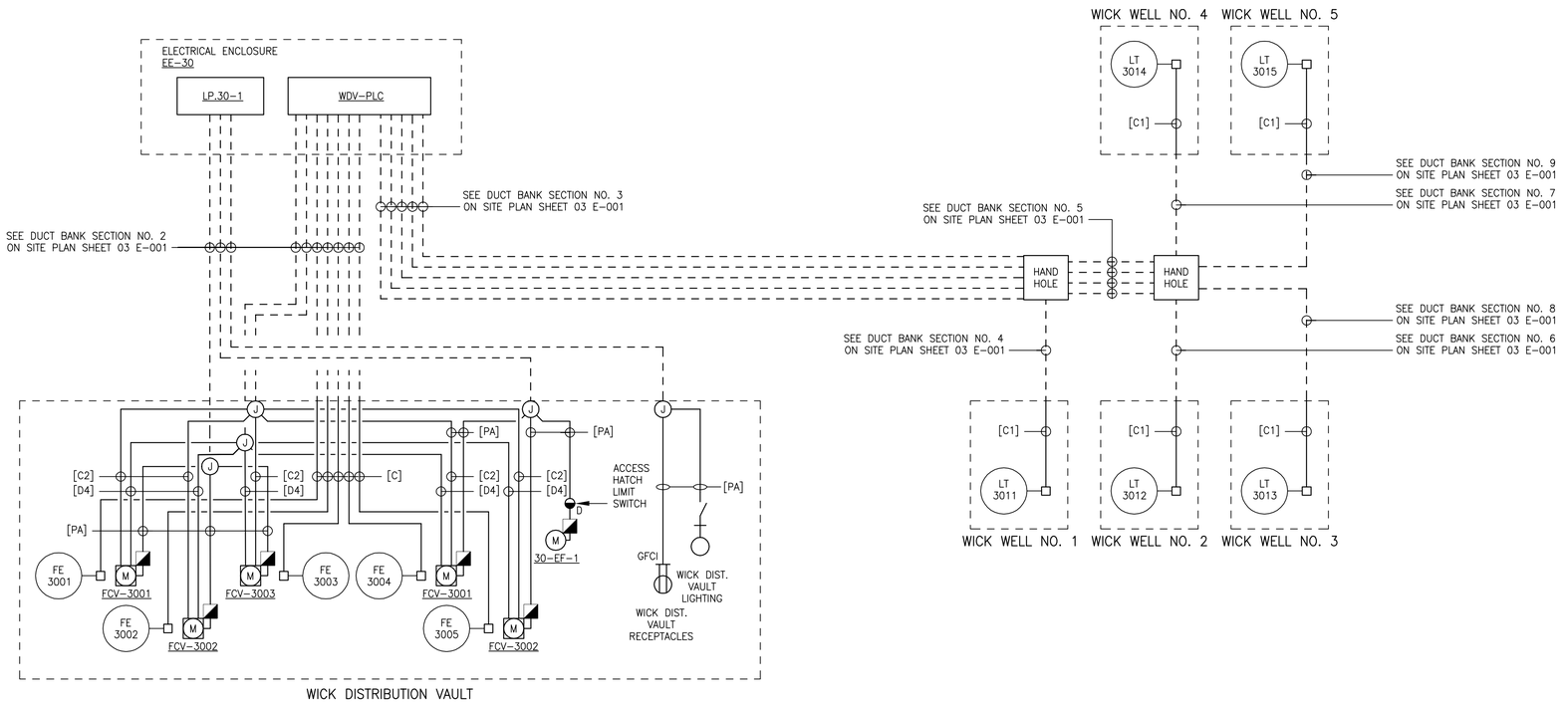
SHEET TITLE

WICK DISTRIBUTION VAULT - SINGLE LINE DIAGRAM

SHEET NUMBER

30 E-002

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E30\E-002.DWG
LAST UPDATE: Thursday, January 16, 2020 3:45:02 PM
PLOT DATE: Monday, January 27, 2020 5:14:30 PM



WICK DISTRIBUTION VAULT - RISER DIAGRAM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREW ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. ABRAHAM**
Drawn By:	**A. ABRAHAM**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

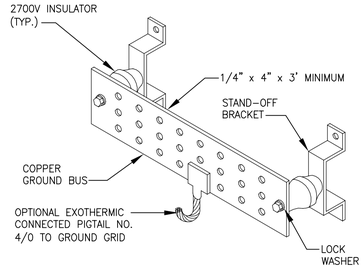
SHEET TITLE

WICK DISTRIBUTION VAULT - ELECTRICAL RISE DIAGRAM

SHEET NUMBER

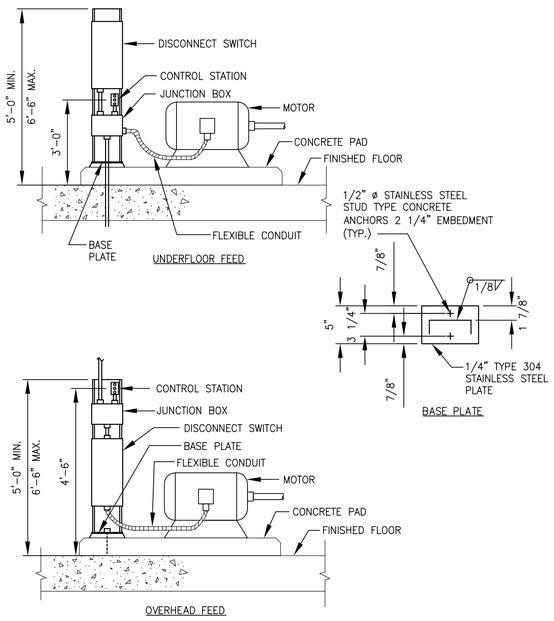
30 E-601

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E30\E-601.DWG
LAST UPDATE: Thursday, January 16, 2020 4:01:33 PM
PLOT DATE: Monday, January 27, 2020 5:14:40 PM



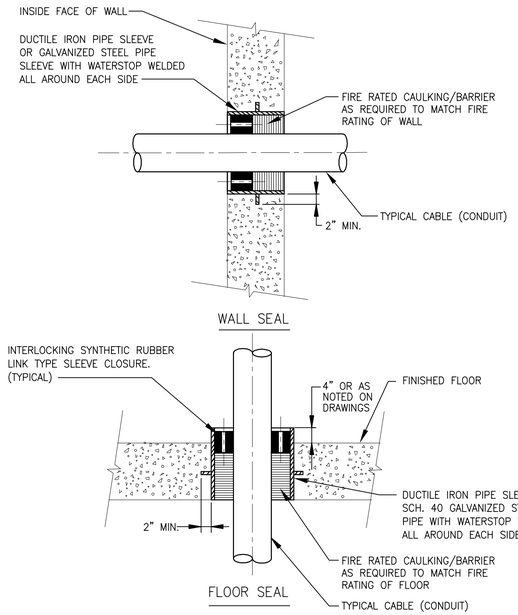
INSULATED GROUND BAR DETAIL

NTS



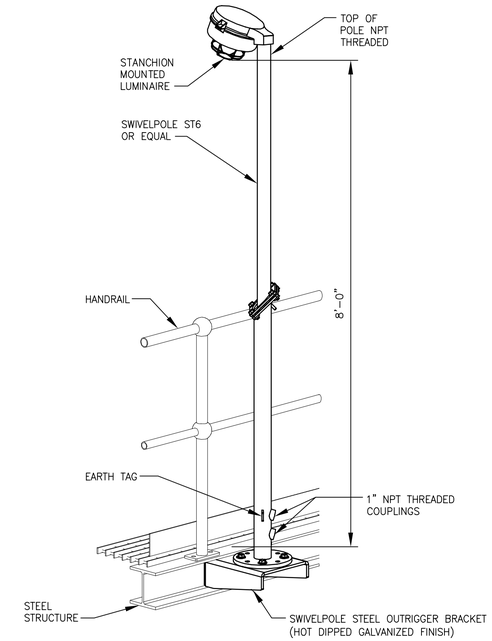
MOTOR CONNECTIONS WITH DISCONNECT SWITCH

NTS



TYPICAL DETAIL FOR CABLE OR CONDUIT PASSING THROUGH FLOOR SLABS OR WALL

NTS



TYPICAL STANCHION MOUNTED ST1 LUMINAIRE DETAIL

NTS

NOTES:

1. MAINTAIN 3" CLEARANCE FROM THE HANDRAIL TO THE SWIVELPOLE.
2. PROVIDE A JUNCTION BOX BRACKET AS NECESSARY AT EACH SWIVELPOLE LOCATION.
3. PROVIDE A TYPE EYS SEAL FITTINGS AT EACH POLE LOCATION BETWEEN THE JUNCTION BOX AND THE SWIVELPOLE. RUN SEAL TIGHT FLEXIBLE CONDUIT FROM EYS SEAL FITTING TO THREADED COUPLINGS INTEGRAL TO SWIVELPOLE.
4. SWIVELPOLE SHALL BE STRUCTURAL STEEL (HOT DIPPED GALVANIZED), ALL BRACKETS, FASTERNERS, NUTS, BOLTS, WASHERS, AND ANY ADDITIONAL APPURTENANCES SHALL BE MADE FROM 316 STAINLESS STEEL.
5. PROVIDE SEPARATE GROUND CONDUCTOR TO THE EARTH TAG INTEGRAL TO SWIVELPOLE TO THE STEEL STRUCTURE.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

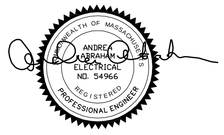
OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION



01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. ABRAHAM**
Drawn By:	**A. ABRAHAM**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

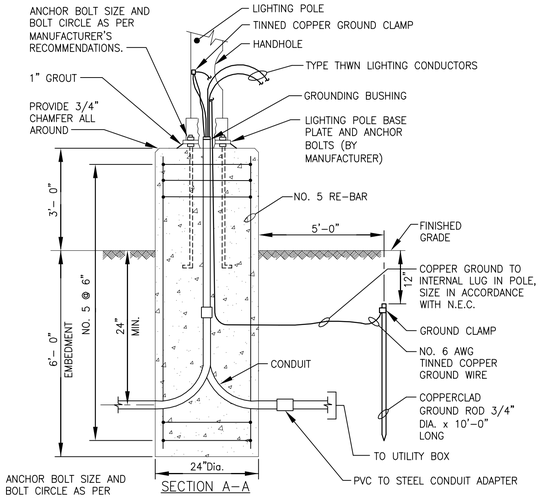
SHEET TITLE

ELECTRICAL DETAILS I

SHEET NUMBER

99 E-501

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E09\E-501.DWG
LAST UPDATE: Thursday, January 16, 2020 1:17:43 PM
PLOT DATE: Monday, January 27, 2020 5:14:49 PM



SECTION A–A

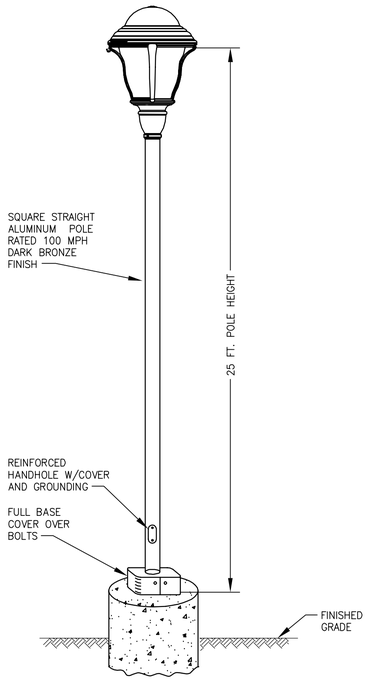
PLAN

POLE FOUNDATION FOR LIGHTING AND SURVEILLANCE CAMERA

N.T.S.

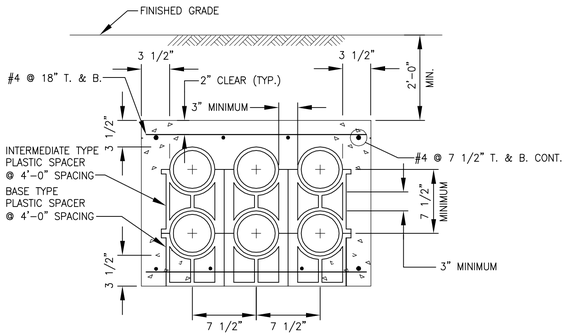
NOTE:

1. CIRCUIT GROUND CONDUCTOR GROUND ROD AND, GROUND CONDUCTOR TO BE BONDED TOGETHER AT POLE GROUND CLAMP.



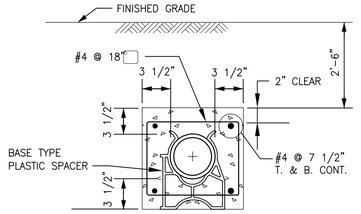
AREA LIGHTING POLE DETAIL

NTS



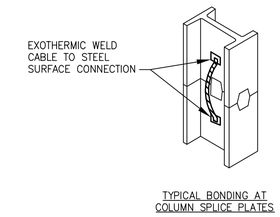
DUCTBANK SECTION

NTS



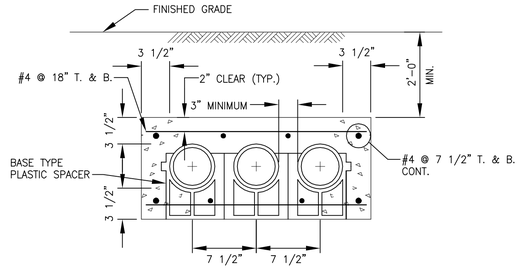
SINGLE CONDUIT DUCTBANK SECTION

NTS



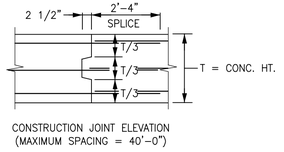
TYPICAL BONDING AT COLUMN SPLICE PLATES

NOTE: ONLY THE DUCT BANKS THAT CONTAIN PRIMARY SERVICE CONDUCTORS FROM THE UTILITY (DUCT BANK NO. 02) ARE TO BE CONCRETE ENCASED. (ADD. 4)



SINGLE LAYER DUCT BANK SECTION

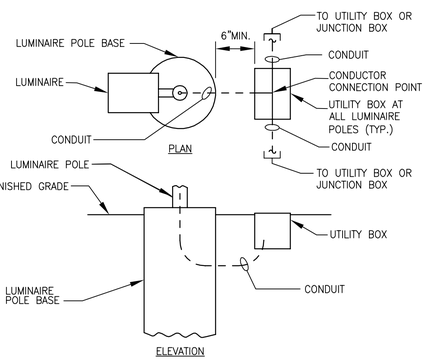
NTS



CONSTRUCTION JOINT ELEVATION (MAXIMUM SPACING = 40'-0")

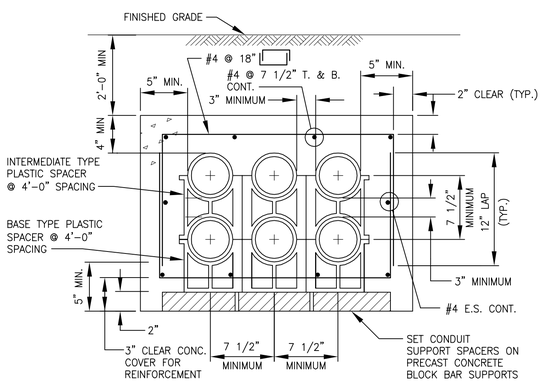
DUCTBANK CONSTRUCTION JOINT

NTS



GROUNDING FOR STEEL COLUMN

NTS

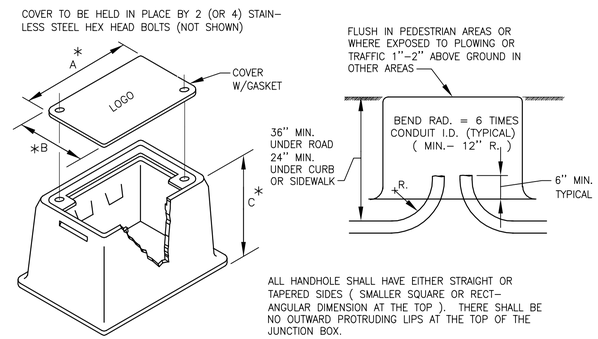


DUCT BANK SECTION UNDER ROADWAY AND PAVED AREA

NTS

POLE BASE/UTILITY BOX DETAIL

NTS



* DIMENSIONS A THRU C AS SHOWN ON THE PLANS. (MINIMUM 18" X 12" X 12" OR AS REQUIRED BY THE NATIONAL ELECTRICAL CODE)

UTILITY BOX

NTS

(SHAPE MAY VARY SLIGHTLY WITH MANUFACTURER)

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

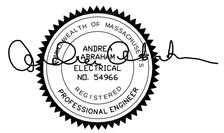
OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION



01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**A. ABRAHAM**
Drawn By:	**A. ABRAHAM**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

SHEET TITLE

ELECTRICAL DETAILS II

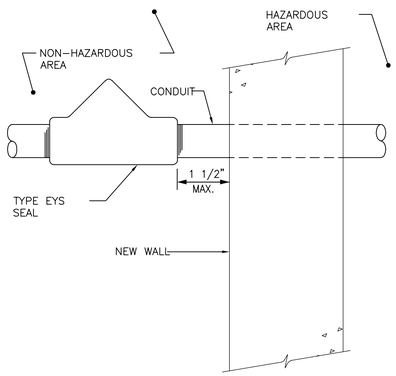
SHEET NUMBER

99 E-502

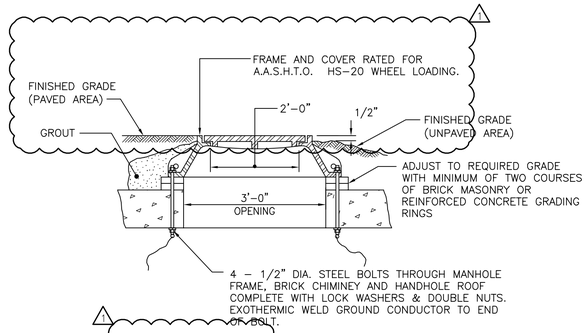
PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E99 E-502.DWG
LAST UPDATE: Thursday, August 01, 2019 10:57:28 AM
PLOT DATE: Monday, January 27, 2020 5:14:55 PM

HANDHOLE AND DUCT BANK NOTES

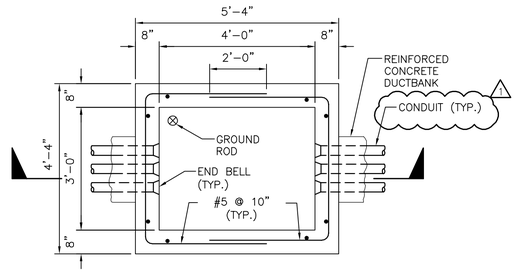
1. ALL CONCRETE INSERTS, FITTINGS AND ACCESSORIES ARE TO BE FABRICATED FROM HEAVY–DUTY STAINLESS STEEL.
2. ALL CONCRETE FOR HANDHOLES AND DUCT RUNS TO BE CLASS "A" (4000 PSI) AS PER THE STRUCTURAL SPECIFICATIONS.
3. ALL CONDUIT AND OTHER EQUIPMENT IN HANDHOLES SHALL BE BONDED WITH A NO. 4, STRANDED COPPER CABLE (MINIMUM).
4. ALL 4" OR LARGER STEEL CONDUIT BENDS SHALL HAVE A 36" RADIUS (MINIMUM).
5. ALL CABLES SHALL BE TAGGED WITH A PROTECTED PLASTIC TAG OF DISTINCTIVE COLOR AND MARKING FOR EACH VOLTAGE. THE TAGS WILL GIVE VOLTAGE AND CIRCUIT NUMBER ASSIGNED BY THE CONTRACT DRAWING CONDUIT AND WIRE SCHEDULE.
6. CONTRACTOR TO SIZE THE CIRCULAR OPENINGS IN THE HANDHOLE ROOF FROM FRAMES ACTUALLY FURNISHED.
7. PLASTIC DUCT SPACERS SHALL BE INSTALLED ON 4 FT. CENTERS. JOINTS ARE TO BE STAGGERED BETWEEN TIERS TO PROVIDE NOT LESS THAN 12 INCH LONGITUDINAL SEPARATION BETWEEN JOINTS SEPARATION BETWEEN JOINTS IN ANY TWO ADJOINING CONDUITS.
8. THE SIZE OF A HANDHOLE WINDOW DEPENDS ON THE NUMBER OF CONDUITS IN THE INCOMING DUCTLINE. TO DETERMINE THE ACTUAL WINDOW SIZE AND LOCATION, SEE THE DUCT SECTION. THE WINDOW OPENING MUST ALSO BE A MINIMUM OF ONE FOOT ABOVE HANDHOLE FLOOR AND / OR ONE FOOT BELOW HANDHOLE ROOF. EACH MANHOLE WINDOW SHOULD BE OFFSET FROM THE CENTER OF THE WALL SO THAT ONE VERTICAL EDGE IS CLOSE TO THE INTERSECTION OF TWO WALLS.
9. ALL STEEL CONDUIT SHALL BE TERMINATED IN HANDHOLES WITH CONDUIT GROUNDING BUSHINGS.
10. HANDHOLE COVER SHALL HAVE THE WORD "ELECTRIC" CAST ON THE COVER.
11. INSTALL TWO PULLING–IN IRONS OPPOSITE CENTER OF EACH ENTERING DUCT RUN. ONE 6" BELOW ROOF AND ONE 6" ABOVE FLOOR.
12. ALL DUCTS SHALL DRAIN FROM HIGH POINT TO HANDHOLE WITH A SLOPE OF NOT LESS THAN 4" PER 100 FEET.



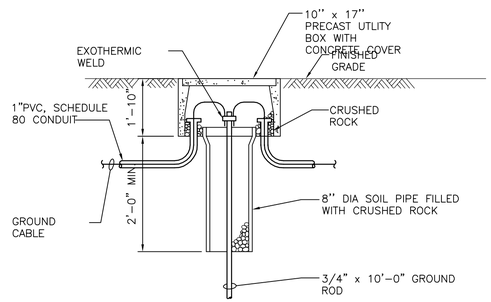
HAZARDOUS AREA ENTRANCE SEAL
NTS



HANDHOLE FRAME AND COVER
NTS



3'-0" X 4'-0" HANDHOLE
NTS



GROUND ROD AND TEST WELL
NTS

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 39962
REGISTERED
PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

ELECTRICAL DETAILS III

SHEET NUMBER

99 E-503

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E99 E-503.DWG
LAST UPDATE: Tuesday, March 24, 2020 1:24:38 AM
PLOT DATE: Tuesday, March 24, 2020 4:16:42 AM

FIRE ALARM

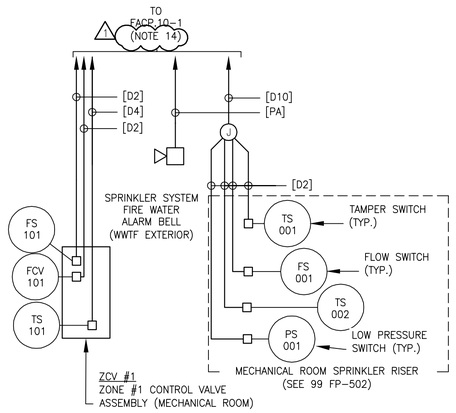
—FOC—	CONDUIT FOR FIBER OPTIC CABLE
F	FIRE ALARM MASTER BOX
F	MANUAL FIRE ALARM PULL STATION; WP – WEATHERPROOF.
F 110cd	FIRE ALARM HORN WITH STROBE 110cd INDICATOR CANDELA RATING
F	FIRE ALARM STROBE
H	FIRE ALARM HORN
K	KNOX BOX
FACP	FIRE ALARM CONTROL PANEL
FB	WEATHERPROOF FIRE ALARM BEACON
FAA	FIRE ALARM REMOTE ANNUNCIATOR
H	HEAT DETECTOR COMBINATION FIXED TEMPERATURE AND RATE OF RISE.
FD	FLAME DETECTOR, ULTRAVIOLET TYPE
SD	SMOKE DETECTOR
CO	CARBON MONOXIDE
RI	REMOTE ALARM INDICATOR
RTS	REMOTE TEST STATION WITH LIGHTS
FS	MONITORING MODULE WITH CONNECTION TO FLOW SWITCH ON FIRE PROTECTION PIPING (FLOW SWITCH FURNISHED AND INSTALLED BY OTHERS)
PS	MONITORING MODULE WITH CONNECTION TO PRESSURE SWITCH ON FIRE PROTECTION PIPING (PRESSURE SWITCH FURNISHED AND INSTALLED BY OTHERS)
TS	MONITORING MODULE WITH CONNECTION TO TEMPERATURE SWITCH ON FIRE PROTECTION PIPING (TEMPERATURE SWITCH FURNISHED AND INSTALLED BY OTHERS)
B	FIRE ALARM SPRINKLER BELL
FSD	FIRE SMOKE DAMPER
SD	DUCT SMOKE DETECTOR
CM	CONTROL MODULE
MM	MONITORING MODULE
1 Z	ADDRESSABLE MODULE

ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
AL	ALARM
ATS	AUTOMATIC TRANSFER SWITCH
EHH	ELECTRICAL HAND HOLE
EL	ELEVATION
EMH	ELECTRICAL MANHOLE
FACP	FIRE ALARM CONTROL PANEL
FOC	FIBER OPTIC CABLE
G	GROUND
HH	HAND HOLE
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
OC	OPEN–CLOSE
RGS	RIGID GALVANIZED STEEL CONDUIT
W	DENOTES WATERTIGHT EQUIPMENT
WP	DENOTES WEATHERPROOF EQUIPMENT
XP	DENOTES EXPLOSION PROOF EQUIPMENT

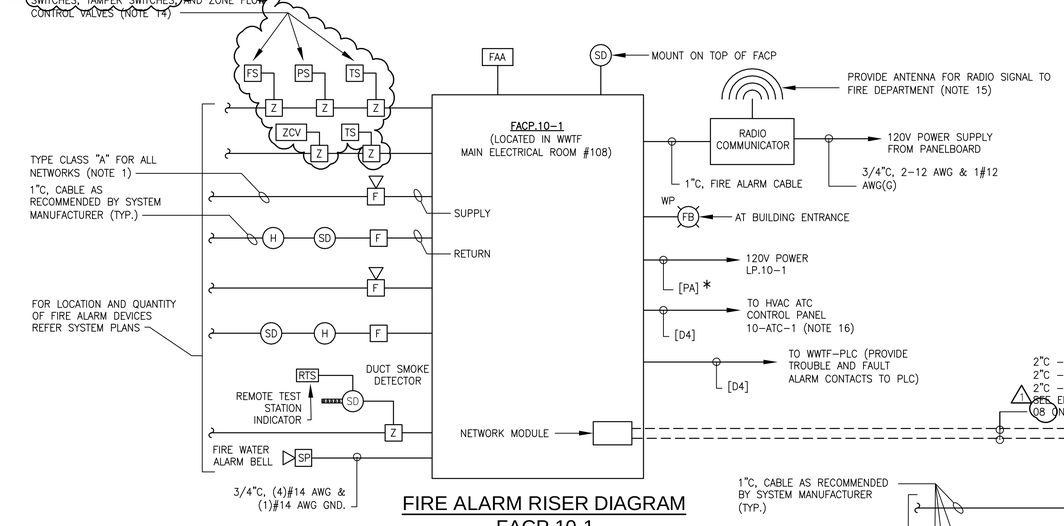
GENERAL NOTES

1. CONDUIT INSTALLATIONS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL TO BEAMS AND WALLS.
2. ITEMS SHALL BE PROVIDED WITH NEMA ENCLOSURE AS INDICATED ON THE EQUIPMENT ENCLOSURE SCHEDULE.
3. ALL DEVICES SHALL COMPLY WITH THE LATEST VERSION OF THE ADA (AMERICANS WITH DISABILITIES ACT).
4. THE CONTRACTOR SHALL FURNISH, MATERIALS, TOOLS AND OTHER EQUIPMENT REQUIRED TO INSTALL THE WORK SHOWN AND SPECIFIED. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM MATERIALS SHALL BE NEW AND SHALL BEAR THE REGISTERED UL MARK. WORK SHALL CONFORM WITH THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 70 (NEC) AND APPLICABLE FEDERAL, STATE AND LOCAL CODES. CONTRACTOR SHALL SECURE PERMITS AND PAY THE FEES REQUIRED TO CARRY OUT HIS WORK. THE CONTRACTOR SHALL FURNISH COPIES OF CERTIFICATES AND PERMITS TO THE OWNER.
5. THE DRAWINGS AND SPECIFICATIONS INDICATE THE INTENT OF THE DESIGN AND SHALL BE CONSIDERED AS DIAGRAMMATIC ONLY. EXACT LOCATIONS FOR DEVICES AND EQUIPMENT SHALL BE DETERMINED AT THE SITE, AS WORK PROGRESSES DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE. FINAL WORK SHALL BE DOCUMENTED ON AS BUILT RECORD DRAWINGS.
6. PULL STATIONS, HORN/STROBES, SMOKE DETECTORS, ETC INDICATE QUANTITY, EXACT LOCATIONS OF DEVICES SHALL BE DETERMINED IN THE FIELD AND COORDINATED WITH ARCHITECTURAL DRAWINGS.
7. CONTRACTOR SHALL VERIFY ALL DOORS SWINGS BEFORE INSTALLING BACK BOXES.
8. ALL FIRE ALARM STROBES SHALL BE FIELD ADJUSTABLE AND THE POWER SUPPLY SHALL BE SIZED BASED ON ALL THE STROBES HIGHEST SETTING.
9. ITEMS SHALL BE PROVIDED WITH MINIMUM NEMA ENCLOSURE RATING AS INDICATED ON THE AREA CLASSIFICATION SCHEDULE.
10. DUCT BANK CONDUIT SIZES ARE GIVEN IN THE DUCT BANK SECTION CALLOUTS. WHERE THE SAME CONDUIT NUMBER IS USED BOTH IN THE DUCT BANK AND IN A BUILDING, THE CONDUIT SIZE GIVEN IN THE CONDUIT SCHEDULE APPLIES TO THE CONDUIT IN THE BUILDING ONLY.
11. PROVIDE SCHEDULE 40 POLYVINYL CHLORIDE (PVC) CONDUITS FOR POWER AND CONTROL CIRCUITS WITHIN CONCRETE ENCASED DUCT BANK SYSTEM. PROVIDE RIGID GALVANIZED STEEL CONDUITS FOR 50 VOLTS AND BELOW CIRCUITS, INSTRUMENTATION, COMMUNICATIONS I/O, DATA HIGHWAY, FIRE ALARM AND COMMUNICATIONS NETWORKS WITHIN CONCRETE ENCASED DUCT BANK.
12. CONSOLIDATION OF CONDUITS IS NOT ACCEPTABLE WITHOUT ENGINEERS APPROVAL.
13. SEE SPECIFICATION 01015 FOR SEQUENCE OF WORK LIMITATIONS.
14. SEE FIRE PROTECTION SHEET 99 FP–502 SPRINKLER SYSTEM RISER DIAGRAM FOR SPRINKLER SYSTEM FIRE PROTECTION DEVICES AND ZONE CONTROL VALVES.
15. PROVIDE FIRE ALARM RADIO SYSTEM FOR REMOTE COMMUNICATION WITH THE CITY OF ORLEANS FIRE DEPARTMENT IN ACCORDNACE WITH THE CITY OF ORLEANS FIRE DEPARTMENT REQUIREMENTS. FIRE ALARM ANTENNA SHOWN AT WWTF ROOF ON ELECTRICAL SITE PLAN 10 E–001.
16. PROVIDE DRY CONTACTS FOR REMOTE INDICATION OF FIRE ALARM CONDITION TO HVAC AUTOMATIC TEMPERATURE CONTROL PANEL 10–ATC–1/20–ATC–1.



SPRINKLER SYSTEM - FIRE ALARM RISER DIAGRAM

NTS



FIRE ALARM RISER DIAGRAM FACP.10-1

NTS

* LABEL CONDUIT "FIRE PANEL POWER SUPPLY"

FIRE ALARM RISER DIAGRAM FACP.20-1

NTS

* LABEL CONDUIT "FIRE PANEL POWER SUPPLY"

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
No. 49542
REGISTERED PROFESSIONAL ENGINEER

03-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	03-24-2020	ADDENDUM 7

PROJECT NUMBER

60587515

Designed By:	A. ABRAHAM
Drawn By:	A. ABRAHAM
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

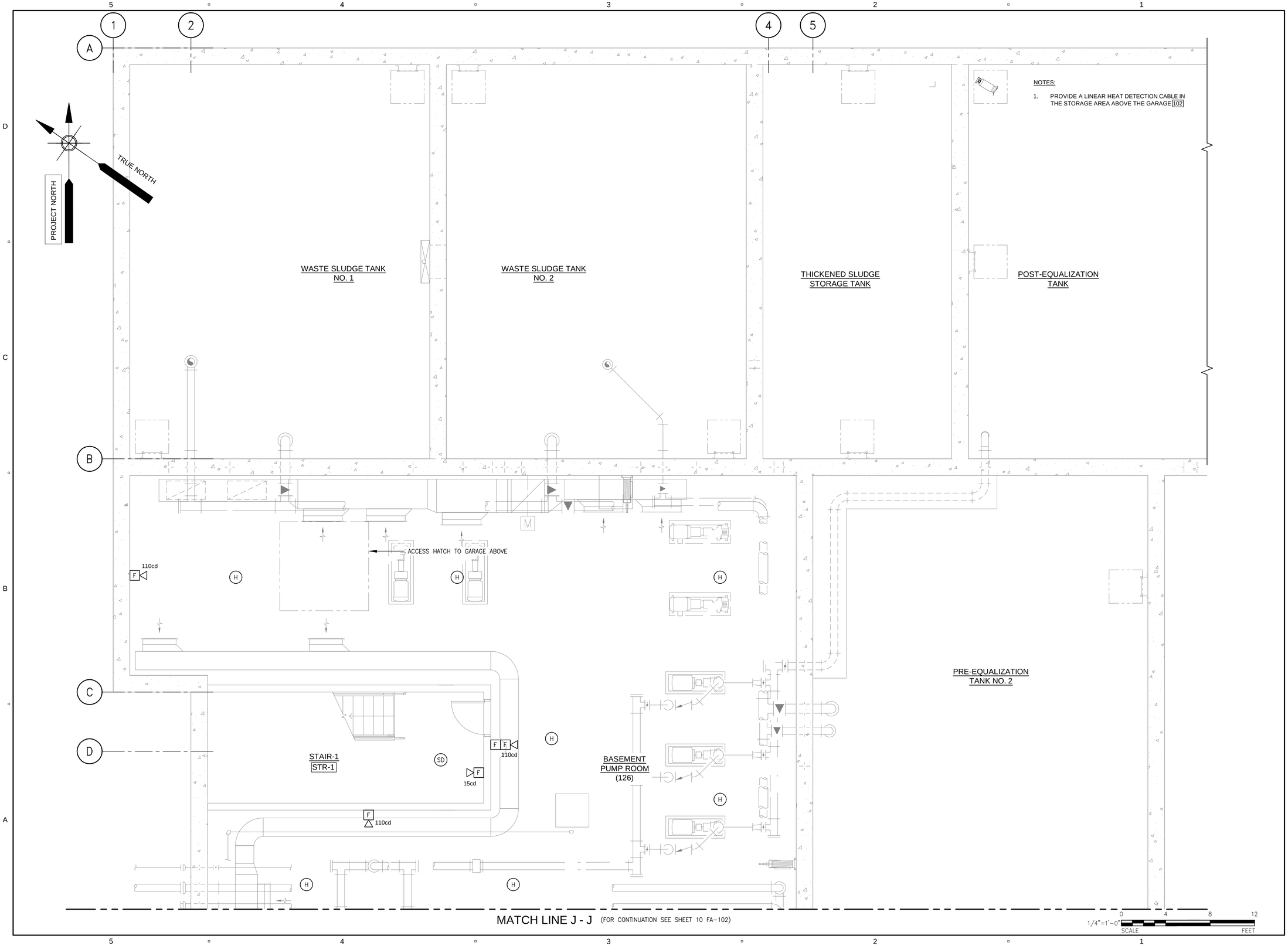
SHEET TITLE

FIRE ALARM LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NUMBER

00 FA-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E00 FA-001.DWG
LAST UPDATE: Friday, March 20, 2020 9:36:24 AM
PLOT DATE: Tuesday, March 24, 2020 4:16:47 AM



PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\EL\10 FA-101.DWG
LAST UPDATE: Wednesday, January 15, 2020 12:01:59 PM
PLOT DATE: Monday, January 27, 2020 5:15:17 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

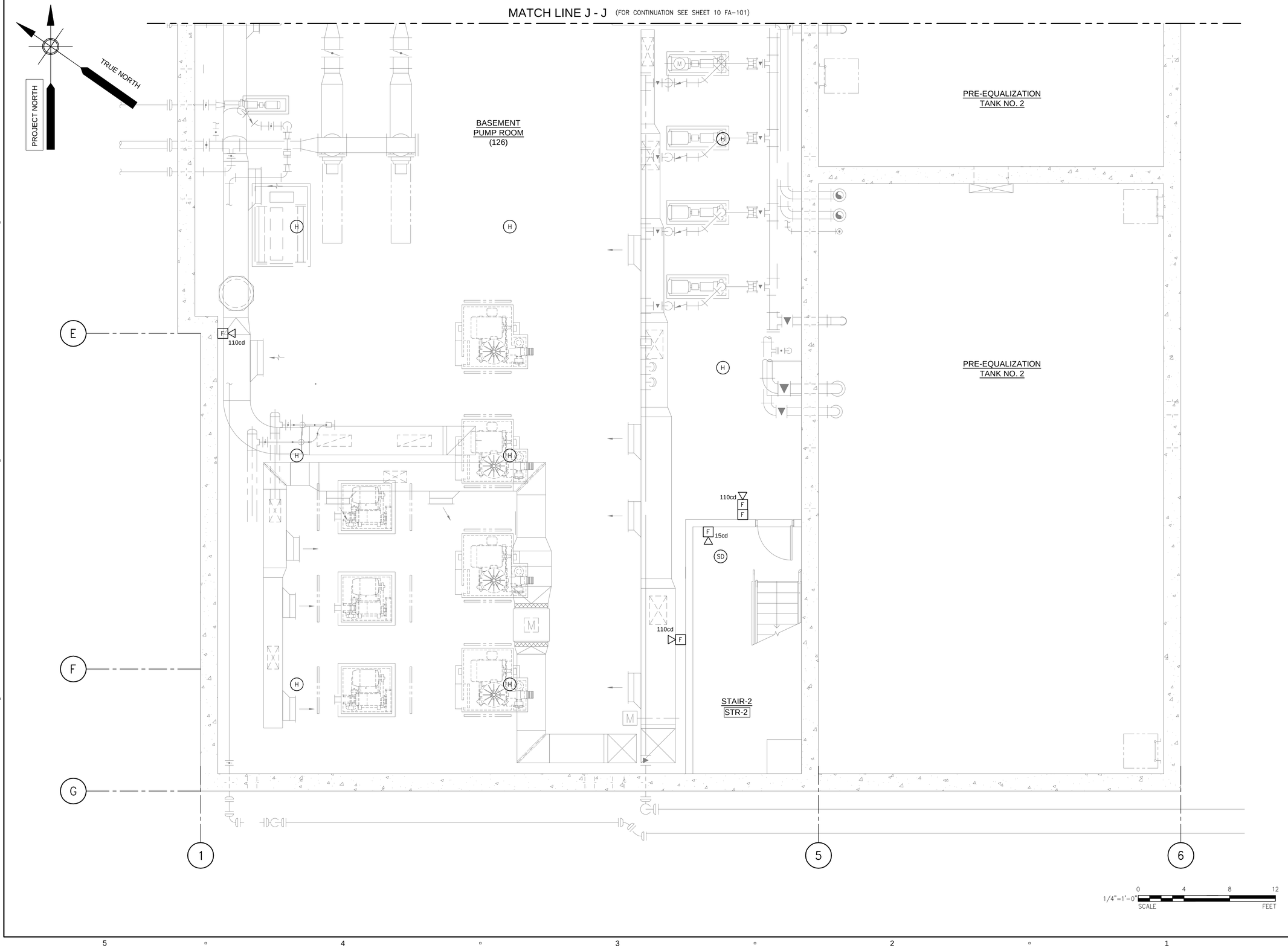
SHEET TITLE

WWTF - LOWER LEVEL - FIRE ALARM SYSTEM PLAN I

SHEET NUMBER

10 FA-101

MATCH LINE J - J (FOR CONTINUATION SEE SHEET 10 FA-101)



1/4"=1'-0" SCALE 0 4 8 12 FEET

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10\FA-102.DWG
LAST UPDATE: Wednesday, January 15, 2020 12:06:12 PM
PLOT DATE: Monday, January 27, 2020 5:15:27 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

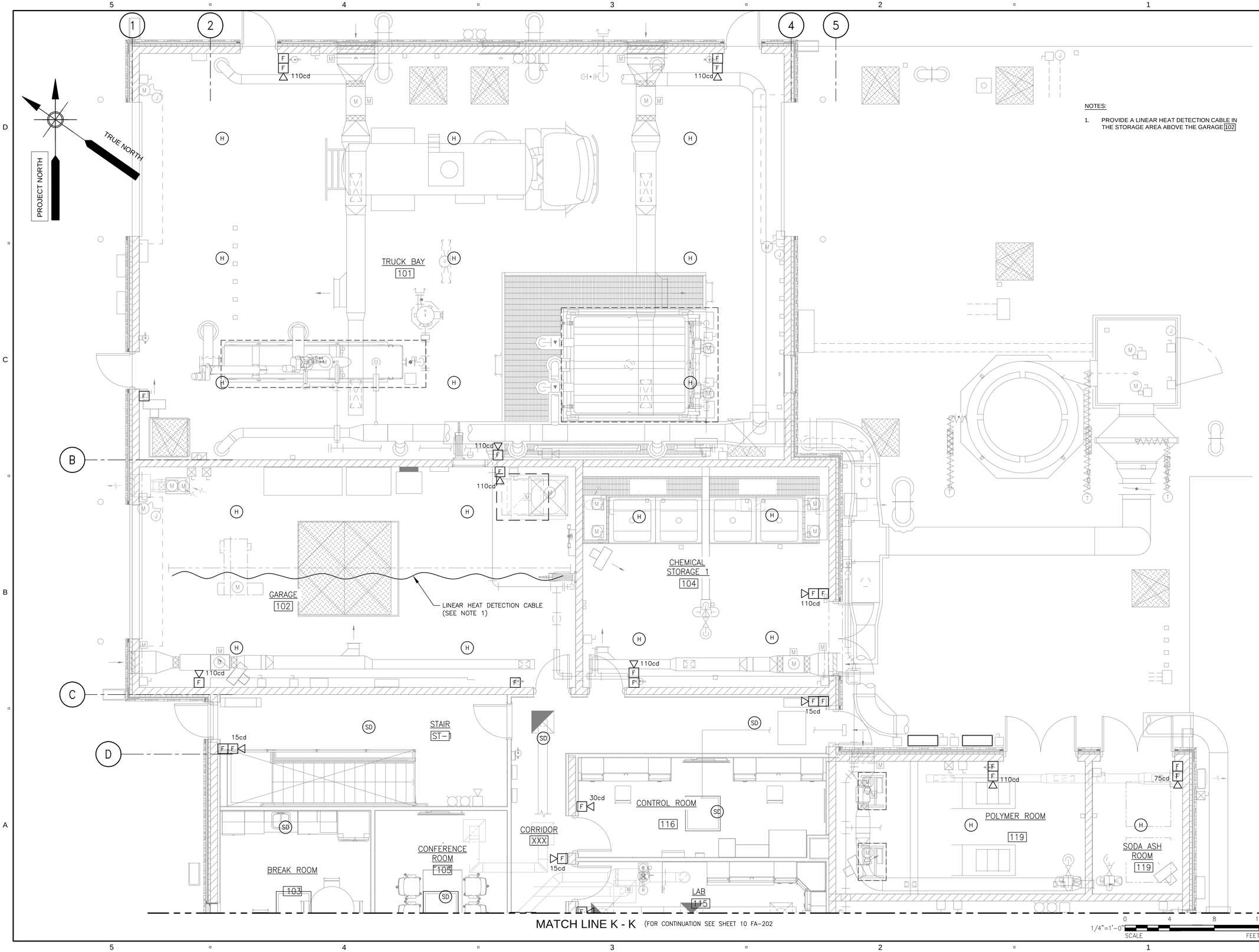
ELECTRICAL

SHEET TITLE

WWTF - LOWER LEVEL - FIRE ALARM SYSTEM PLAN II

SHEET NUMBER

10 FA-102



NOTES:

1. PROVIDE A LINEAR HEAT DETECTION CABLE IN THE STORAGE AREA ABOVE THE GARAGE 102

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

WWTF - GRADE LEVEL - FIRE ALARM SYSTEM PLAN I

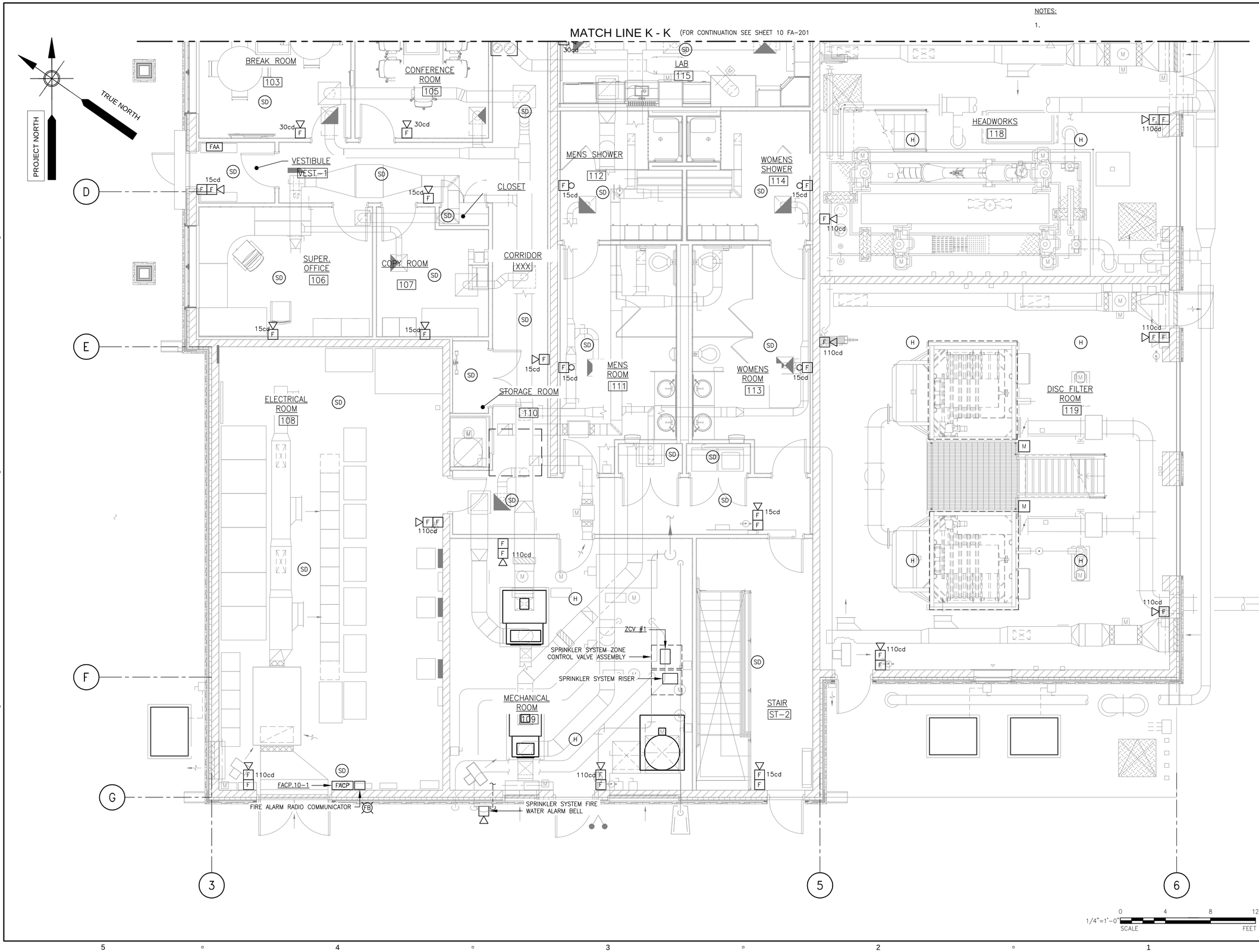
SHEET NUMBER

10 FA-201

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\10 FA-201.DWG
LAST UPDATE: Wednesday, January 15, 2020 12:05:56 PM
PLOT DATE: Monday, January 27, 2020 5:15:39 PM

NOTES:

1.



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\EL\10 FA-202.DWG
LAST UPDATE: Friday, January 24, 2020 11:59:18 AM
PLOT DATE: Monday, January 27, 2020 5:15:48 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA GRAHAM
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	M. STEWART
Drawn By:	M. STEWART
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

ELECTRICAL

SHEET TITLE

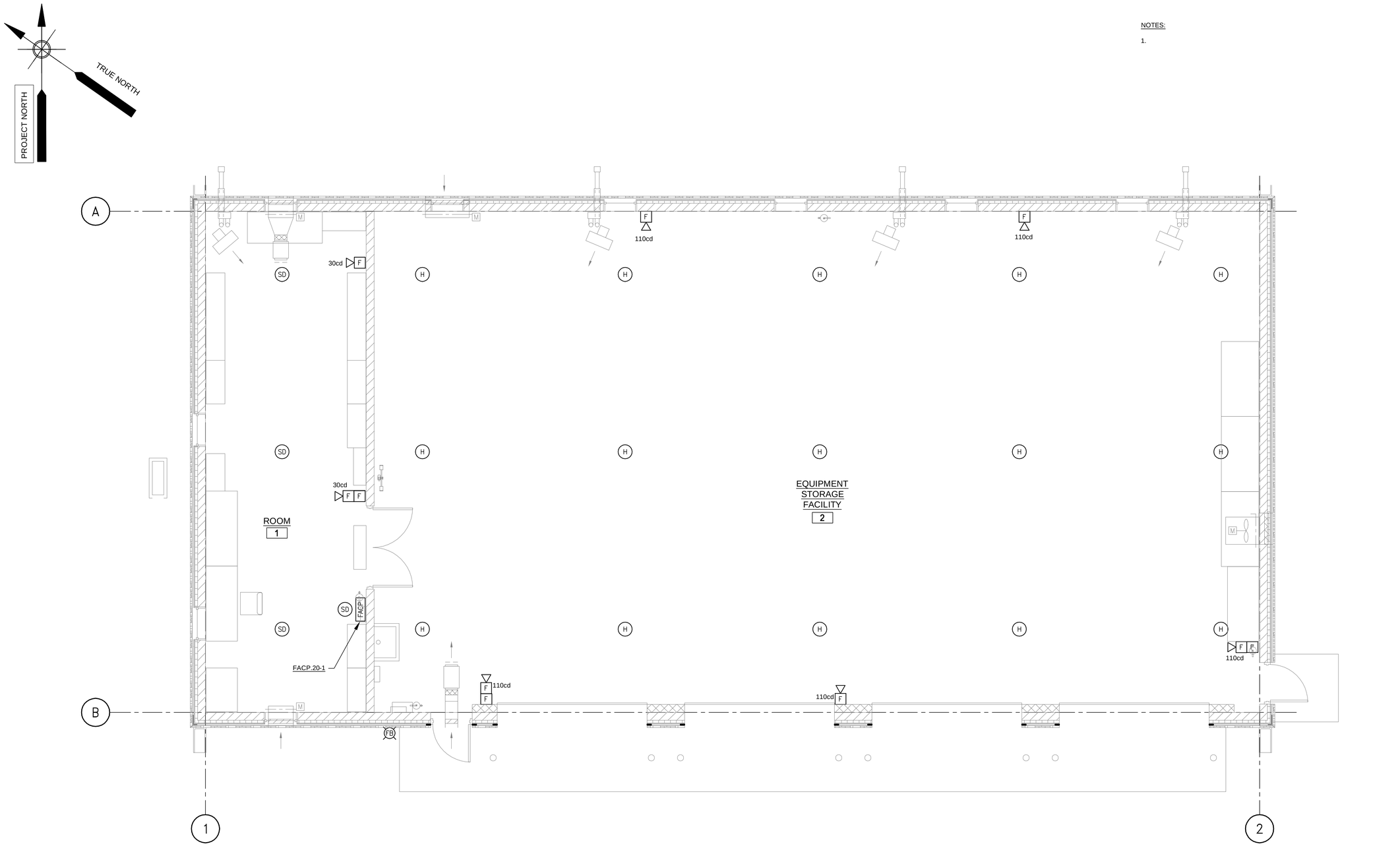
WWTF - GRADE LEVEL - FIRE ALARM SYSTEM PLAN II

SHEET NUMBER

10 FA-202

NOTES:

1.



EQUIPMENT STORAGE FACILITY - FIRE ALARM PLAN

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

0 4 8 12
1/4"=1'-0"
SCALE FEET

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
ANDREA ABRAHAMS
ELECTRICAL
NO. 54966
REGISTERED
PROFESSIONAL ENGINEER

01-24-2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**M. STEWART**
Drawn By:	**M. STEWART**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

ELECTRICAL

SHEET TITLE

EQUIPMENT STORAGE FACILITY - FIRE ALARM SYSTEM PLAN

SHEET NUMBER

20 FA-101

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\E\20 FA-101.DWG
LAST UPDATE: Wednesday, January 15, 2020 12:11:17 PM
PLOT DATE: Monday, January 27, 2020 5:15:55 PM

INSTRUMENT TYPE IDENTIFICATION LETTERS

THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ANALOG	ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL OR DIGITAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE OR INPUT		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY	RELIEF	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	USER'S CHOICE			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

MISCELLANEOUS ABBREVIATIONS

I/P	CURRENT TO PNEUMATIC CONVERTER
VFD	VARIABLE FREQUANCY DRIVE
ORP	OXIDATION REDUCTION POTENTIAL
SBI	SBR BASIN INFLUENT
MS	MOTOR STARTER
WWTF	WASTE WATER TREATMENT FACILITY
ISB	INTRINSICALLY SAFE BARRIER
PS	POWER SUPPLY
SBR	SEQUENCING BATCH REACTOR
S.P.	SET POINT
PLC	PROGRAMMABLE LOGIC CONTROLLER
GBT	GRAVITY BELT THICKENER
DO	DISSOLVED OXYGEN
H2S	HYDROGEN SULFIDE
O2	OXYGEN
pH	HYDROGEN ION CONCENTRATION
LP	LOCAL PANEL
VFD	VARIABLE FREQUENCY DRIVE
I/O	INPUT/OUTPUT
LEL	LOWER EXPLOSIVE LIMIT
DW	DEWATERING
OC	ODOR CONTROL
WW	WASTE WATER
SSL	ZERO SPEED SWITCH

SEE MECHANICAL LEGEND FOR ADDITIONAL ABBREVIATIONS AND PROCESS STREAM NAMES

SYMBOLS

FIBER MEDIA
HYDRAULIC CONTROL LINES
ELECTRIC INSTRUMENT LINES/ ETHERNET
PNEUMATIC SIGNAL
PROCESS FLOW
CAPILLARY TUBING
CONE CHECK VALVE
BALL VALVE
BALL CHECK VALVE
SWING CHECK VALVE
BUTTERFLY VALVE, DAMPER, OR LOUVER
PLUG VALVE
GATE VALVE
DIAPHRAGM VALVE
GLOBE VALVE
RESTRAINED FLEXIBLE COUPLING
FLOAT VALVE
3-WAY MIX VALVE
3-WAY DIVERTER VALVE
3-WAY SOLENOID VALVE
4-WAY MIX VALVE
4-WAY SOLENOID VALVE
ANGLE VALVE
SOLENOID VALVE
SELF-OPERATING BACK PRESSURE REGULATOR VALVE
SELF-OPERATING PRESSURE REGULATOR VALVE
PRESSURE REDUCING REGULATOR VALVE W/EXTERNAL PRESSURE TAP
PRESSURE RELIEF VALVE
VACUUM RELIEF VALVE
KNIFE GATE VALVE
PINCH VALVE
STOP LOG
SLUICE GATE
PREFABRICATED SLIDE GATE
MULTI-BLADE DAMPER

ACCUMULATOR
AERATOR
BAR SCREEN
CALIBRATION STANDPIPE
CHEMICAL SEAL
IN LINE SEAL (NOTE 2)
CONCENTRIC REDUCER
DRAIN
DUPLEX FILTER
ECCENTRIC REDUCER
FLEXIBLE HOSE
GRINDER
LOAD CELL
MIXER
VERTICAL SHAFT MIXER
PULSATION DAMPENER
QUICK DISCONNECT
RADIO, ULTRASONIC, OR ACOUSTIC SIGNAL
RUPTURE DISC (PRESSURE RELIEF)
RUPTURE DISC (VACUUM RELIEF)
STRAINER
CONE CHECK VALVE
DOUBLE DISC CHECK VALVE
FLAME ARRESTOR
INTRINSICALLY SAFE BARRIER
SUBMERSIBLE LEVEL TRANSDUCER

DIFFUSER
STATIC MIXER
TANK VENT
UNION
WEIR
CYLINDER ACTUATOR
DIAPHRAGM ACTUATOR WITH POSITIONER
HAND OPERATOR
HYDRAULIC OPERATOR
MOTOR OPERATOR
PNEUMATIC OPERATOR
SOLENOID OPERATOR
TERMINAL STRIP IN LOCAL PANEL FOR INTERFACE WITH COMPUTER/MUX
FLOW RATE CONTROLLER
FLOW ELEMENT (VENTURI)
INSERT FLOW ELEMENT (VENTURI)
MAGNETIC FLOWMETER
ORIFICE PLATE
RADIO ANTENNA
ROTAMETER
"V" NOTCH WEIR
VERTICAL TURBINE SOLIDS HANDLING PUMP
INLINE MIXER

WEIR GATE
WEIR
BLOWER
SUBMERSIBLE PUMP
CENTRIFUGAL PUMP
DIAPHRAGM PUMP
HOSE PUMP
METERING PUMP
POSITIVE DISPLACEMENT PUMP
PROGRESSIVE CAVITY PUMP
ROTARY LOBE PUMP
INSERTION MASS FLOW METER
LIMITS OF WORK (TRADE, CONTRACT, ETC.)
POINT OF CONNECTION NEW WORK TO EXISTING WORK
THIN CLIENT WORKSTATION
MANAGED ETHERNET SWITCH
FPP FIBEROPTIC PATCH PANEL
FMC FIBER MEDIA CONVERTER
UPS UNINTERRUPTIBLE POWER SUPPLY
FW FIREWALL

GENERAL NOTES

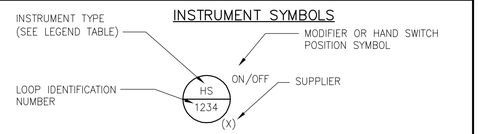
1. INSTRUMENT SUFFIX:

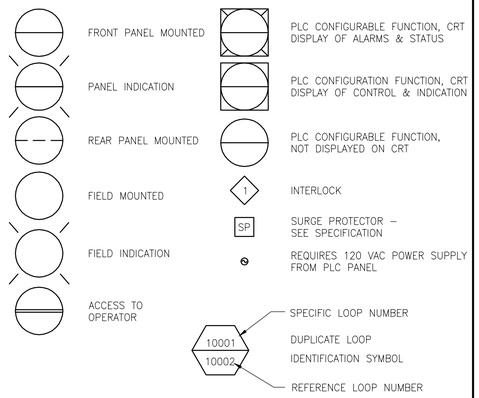
   NUMERIC SUFFIXES IDENTIFY INSTRUMENTS WITH DIFFERENT FUNCTIONS (E.G., A RUN AND AN OUT OF SERVICE LIGHT) ARE PRECEDED BY A DECIMAL POINT (E.G., AA:MIL-343.1 AND AA:MIL-343.2

   ALPHABETIC SUFFIXES IDENTIFY MULTIPLE OCCURRENCES OF INSTRUMENTS WITH THE SAME FUNCTION (E.G.,TWO VALVE INDICATORS IN DIFFERENT PANELS, (E.G. AA:ZIL-161.1A, AND AA:ZIL-161.1B).

2. SEE MECHANICAL FOR ISOLATION RING DETAIL

INSTRUMENT SYMBOLS





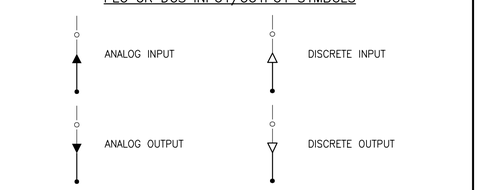
SUPPLIERS

ALL INSTRUMENTS ARE SPECIFIED BY INSTRUMENTATION (I) UNLESS INDICATED BY;

(E) SPECIFIED BY ELECTRICAL
(X) EXISTING
(M) SPECIFIED BY MECHANICAL
(H) SPECIFIED BY HVAC
(F) FURNISHED WITH EQUIPMENT
(P) SPECIFIED BY PLUMBING

CONTRACTOR SHALL PROVIDE ALL INSTRUMENTS AS SPECIFIED ON DATA SHEETS ATTACHED TO SPECIFICATION SECTION 13300

PLC OR DCS INPUT/OUTPUT SYMBOLS



HAND SWITCH POSITION SYMBOLS

(UNLABELLED SWITCHES ARE TO BE ON-OFF)

A	AUTOMATIC	SBY	STANDBY
C	CLOSE	F/R	FORWARD/REVERSE
F	FAST OR FORWARD	L/R	LOCAL/REMOTE
H	HAND	LOR	LOCAL/OFF/REMOTE
J	JOG	HOR	HAND-OFF-REMOTE
L	LOCAL	HOA	HAND-OFF-AUTO
M	MANUAL	OSC	OPEN/STOP/CLOSE
NIA	NOT IN AUTO	FSR	FORWARD/STOP/REVERSE
O	OPEN OR OFF	TSM	THRU/STOP/MIX
R	RUN OR REMOTE	OSF	OFF/SLOW/FAST
S/S	START/STOP	OTC	OPEN/TRAVEL/CLOSE
E/S	EMERGENCY STOP	O/S/C/A	OPEN/STOP/CLOSE/AUTO
		O/S/C	OPEN/STOP/CLOSE

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS SARKIS PAPAZIAN INSTRUMENTATION No.52296 REGISTERED PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

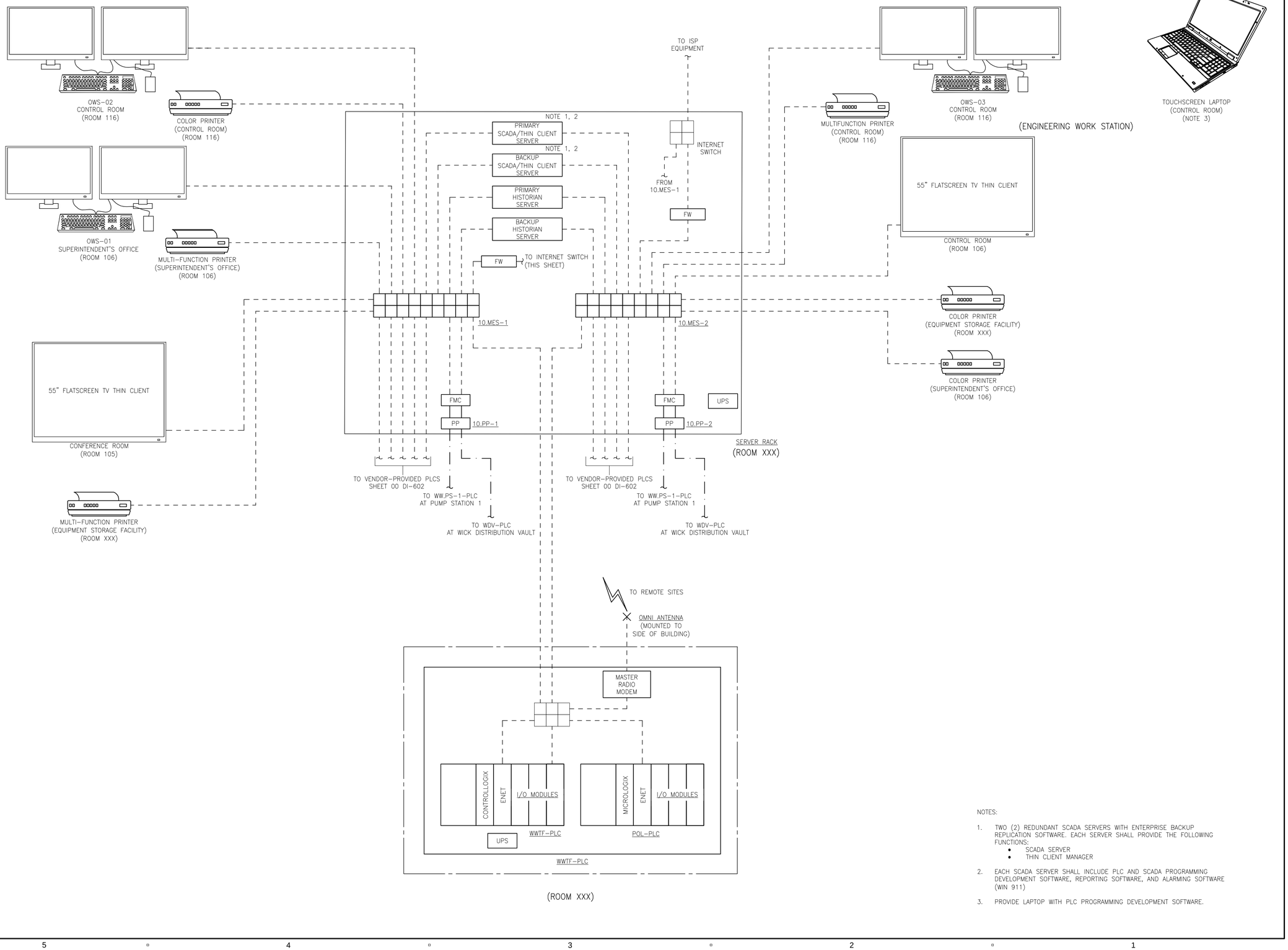
SHEET TITLE

INSTRUMENTATION LEGEND, ABBREVIATIONS, AND GENERAL NOTES

SHEET NUMBER

00 DI-001

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\00 DI-001.DWG
LAST UPDATE: Monday, January 27, 2020 2:55:05 PM
PLOT DATE: Monday, January 27, 2020 2:56:43 PM



NOTES:

1. TWO (2) REDUNDANT SCADA SERVERS WITH ENTERPRISE BACKUP REPLICATION SOFTWARE. EACH SERVER SHALL PROVIDE THE FOLLOWING FUNCTIONS:
   - SCADA SERVER
   - THIN CLIENT MANAGER
2. EACH SCADA SERVER SHALL INCLUDE PLC AND SCADA PROGRAMMING DEVELOPMENT SOFTWARE, REPORTING SOFTWARE, AND ALARMING SOFTWARE (WIN 911)
3. PROVIDE LAPTOP WITH PLC PROGRAMMING DEVELOPMENT SOFTWARE.

PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\00 DI-601.DWG
LAST UPDATE: Wednesday, January 08, 2020 12:08:01 PM
PLOT DATE: Monday, January 27, 2020 2:56:49 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH
PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

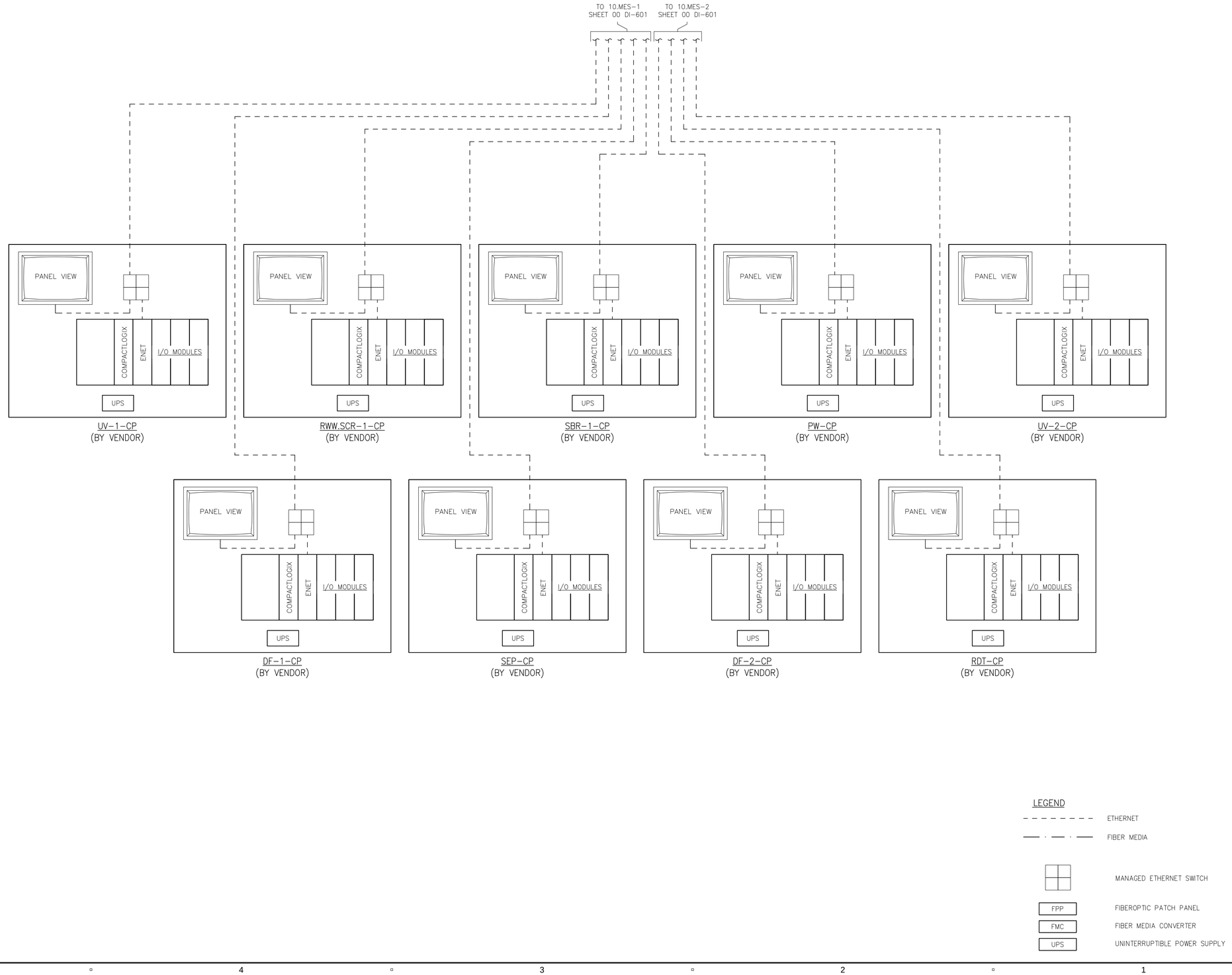
INSTRUMENTATION

SHEET TITLE

SYSTEM ARCHITECTURE 1

SHEET NUMBER

00 DI-601



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\00\00 DI-602.DWG
LAST UPDATE: Wednesday, January 08, 2020 12:12:03 PM
PLOT DATE: Monday, January 27, 2020 2:56:58 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

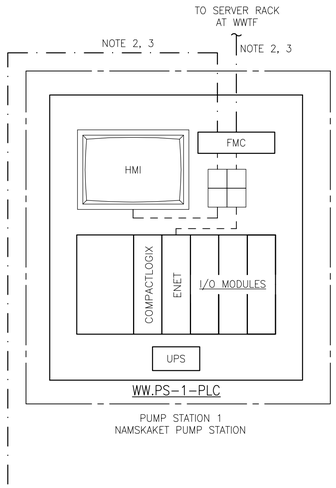
INSTRUMENTATION

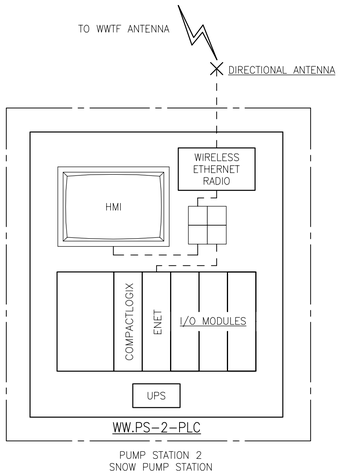
SHEET TITLE

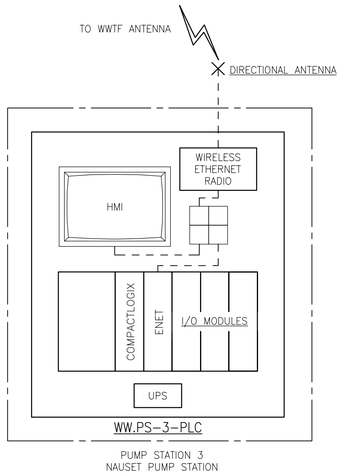
SYSTEM ARCHITECTURE 2

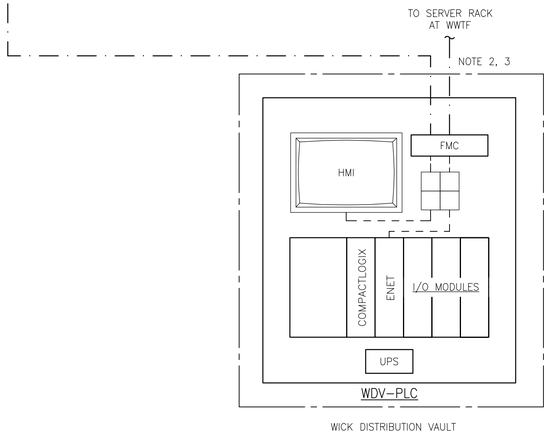
SHEET NUMBER

00 DI-602









NOTES:

1. ~~PUMP STATION PLC PANELS, REMOTE COMMUNICATION HARDWIRED AND CONFIGURATION/INTEGRATION TO BE PROVIDED UNDER THIS CONTRACT. SEE PUMP STATION INSTRUMENTATION DRAWINGS FOR REFERENCE REGARDING I/O QUANTITY.~~
2. FIBER OPTIC CABLE, ANCILLARY HARDWIRED, AND ASSOCIATED TERMINATIONS AND TESTING ASSOCIATED WITH THE REMOTE PUMP STATIONS TO BE PROVIDED UNDER THIS CONTRACT.
3. PROVIDE 12 STRAND, SINGLE MODE FIBER OPTIC CABLE IN ACCORDANCE WITH DIVISION 13 SPECIFICATIONS.
1. PUMP STATION PLC PANELS, REMOTE COMMUNICATION HARDWIRED AND CONFIGURATION/INTEGRATION TO BE PROVIDED UNDER THIS CONTRACT. SEE PUMPING STATION INSTUMENTATION DRAWINGS UNDER CONTRACT 2019-02, DRAWING NUMBERS 00 DI-601, 01 DI-601, 02 DI-601, 02 DI-602, 03 DI-601, 03 DI-602, AND 99 DI-601 FOR REFERENCE REGARDING I/O QUANTITY, AS ATTACHED.

LEGEND

- ETHERNET
- FIBER MEDIA
- MANAGED ETHERNET SWITCH
- FPP — FIBEROPTIC PATCH PANEL
- FMC — FIBER MEDIA CONVERTER
- UPS — UNINTERRUPTIBLE POWER SUPPLY

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	4-10-20	ADD. 5/8

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

INSTRUMENTATION

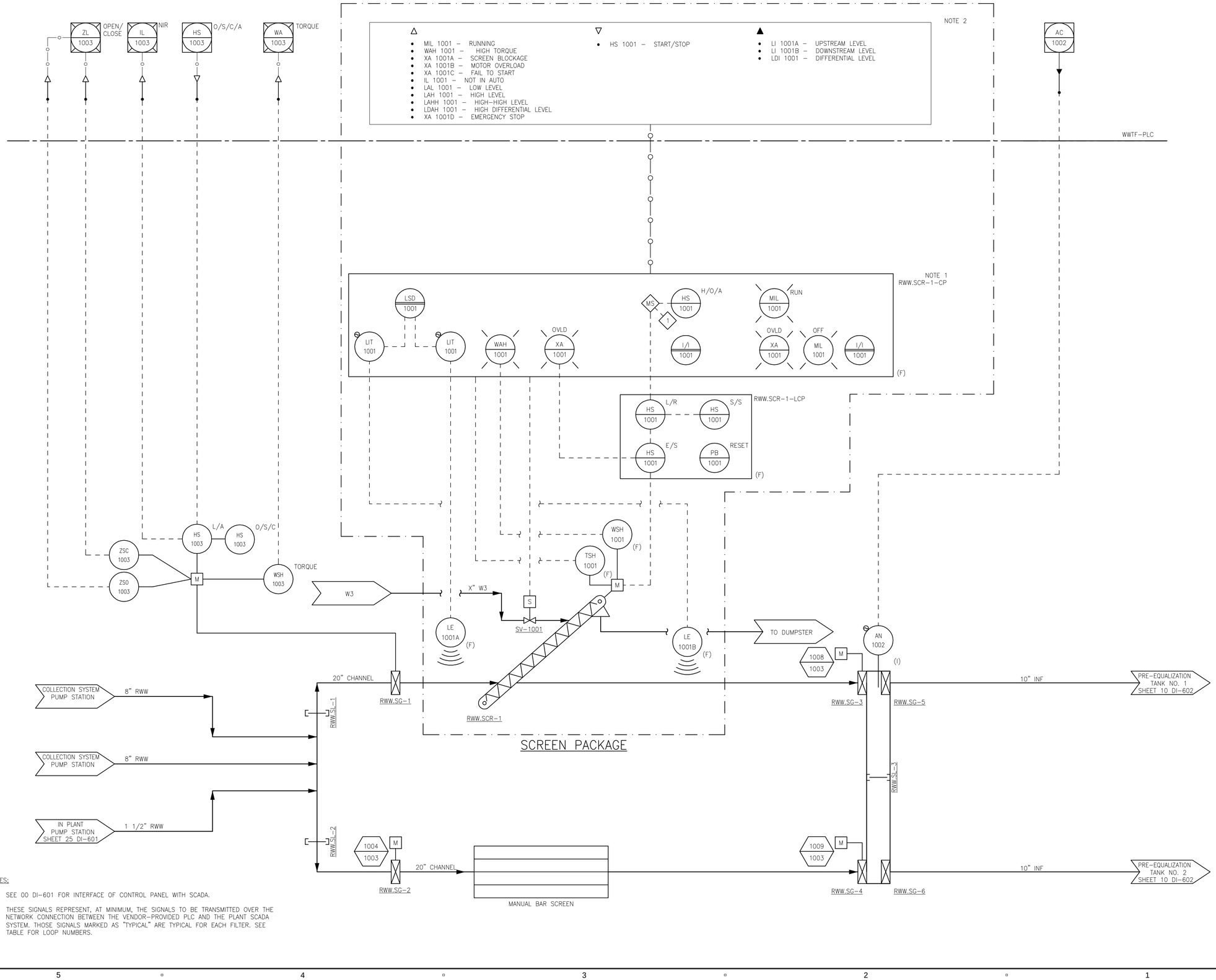
SHEET TITLE

SYSTEM ARCHITECTURE 3

SHEET NUMBER

00 DI-603

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\0000 DI-603.DWG
LAST UPDATE: Monday, January 13, 2020 4:33:02 PM
PLOT DATE: Monday, January 27, 2020 2:57:05 PM



NOTES:

1. SEE 00 DI–601 FOR INTERFACE OF CONTROL PANEL WITH SCADA.
2. THESE SIGNALS REPRESENT, AT MINIMUM, THE SIGNALS TO BE TRANSMITTED OVER THE NETWORK CONNECTION BETWEEN THE VENDOR–PROVIDED PLC AND THE PLANT SCADA SYSTEM. THOSE SIGNALS MARKED AS "TYPICAL" ARE TYPICAL FOR EACH FILTER. SEE TABLE FOR LOOP NUMBERS.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-601.DWG
LAST UPDATE: Monday, January 13, 2020 8:38:02 AM
PLOT DATE: Monday, January 27, 2020 2:57:12 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARKIS PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

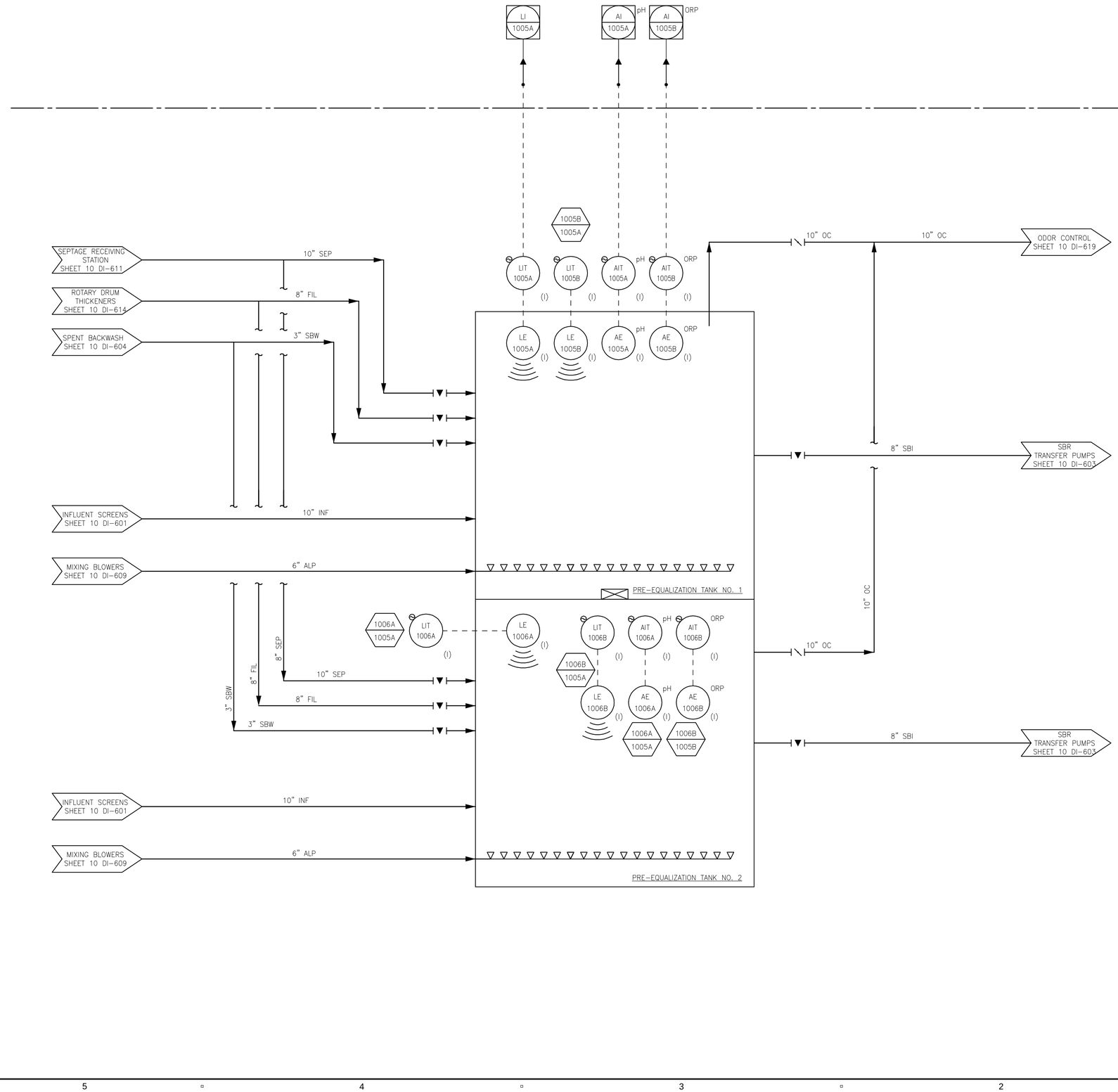
INSTRUMENTATION

SHEET TITLE

INFLUENT SCREENING P&ID

SHEET NUMBER

10 DI-601



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-602.DWG
LAST UPDATE: Monday, January 13, 2020 8:29:05 AM
PLOT DATE: Monday, January 27, 2020 2:57:19 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

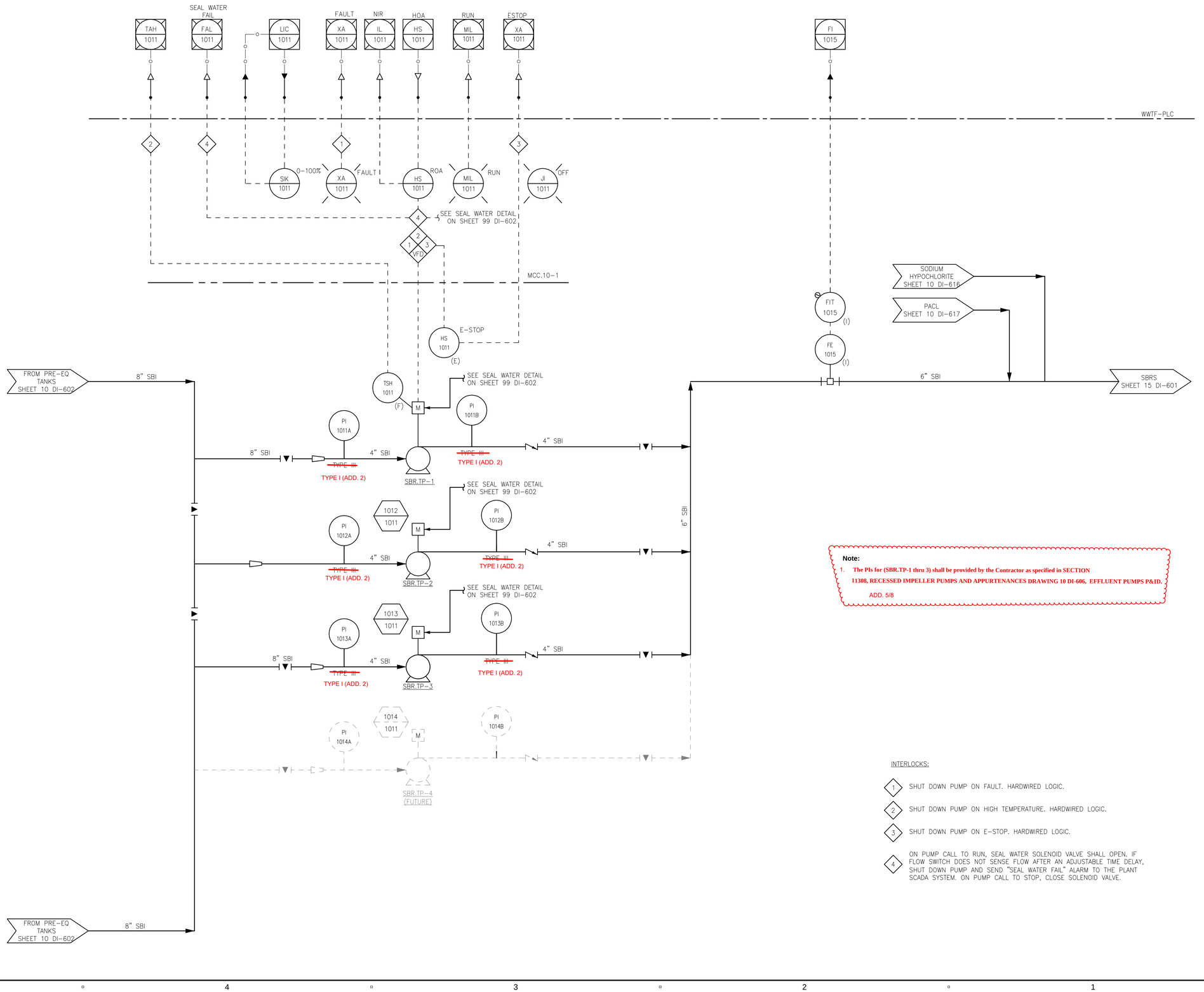
INSTRUMENTATION

SHEET TITLE

PRE-EQUALIZATION TANKS P&ID

SHEET NUMBER

10 DI-602



Note:

1. **The PIs for (SBR.TP-1 thru 3) shall be provided by the Contractor as specified in SECTION 11308, RECESSED IMPELLER PUMPS AND APPURTENANCES DRAWING 10 DI-606, EFFLUENT PUMPS P&ID.**

ADD. 5/8

INTERLOCKS:

1. SHUT DOWN PUMP ON FAULT. HARDWIRED LOGIC.
2. SHUT DOWN PUMP ON HIGH TEMPERATURE. HARDWIRED LOGIC.
3. SHUT DOWN PUMP ON E-STOP. HARDWIRED LOGIC.
4. ON PUMP CALL TO RUN, SEAL WATER SOLENOID VALVE SHALL OPEN. IF FLOW SWITCH DOES NOT SENSE FLOW AFTER AN ADJUSTABLE TIME DELAY, SHUT DOWN PUMP AND SEND "SEAL WATER FAIL" ALARM TO THE PLANT SCADA SYSTEM. ON PUMP CALL TO STOP, CLOSE SOLENOID VALVE.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	4-10-20	ADD. 5/8

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

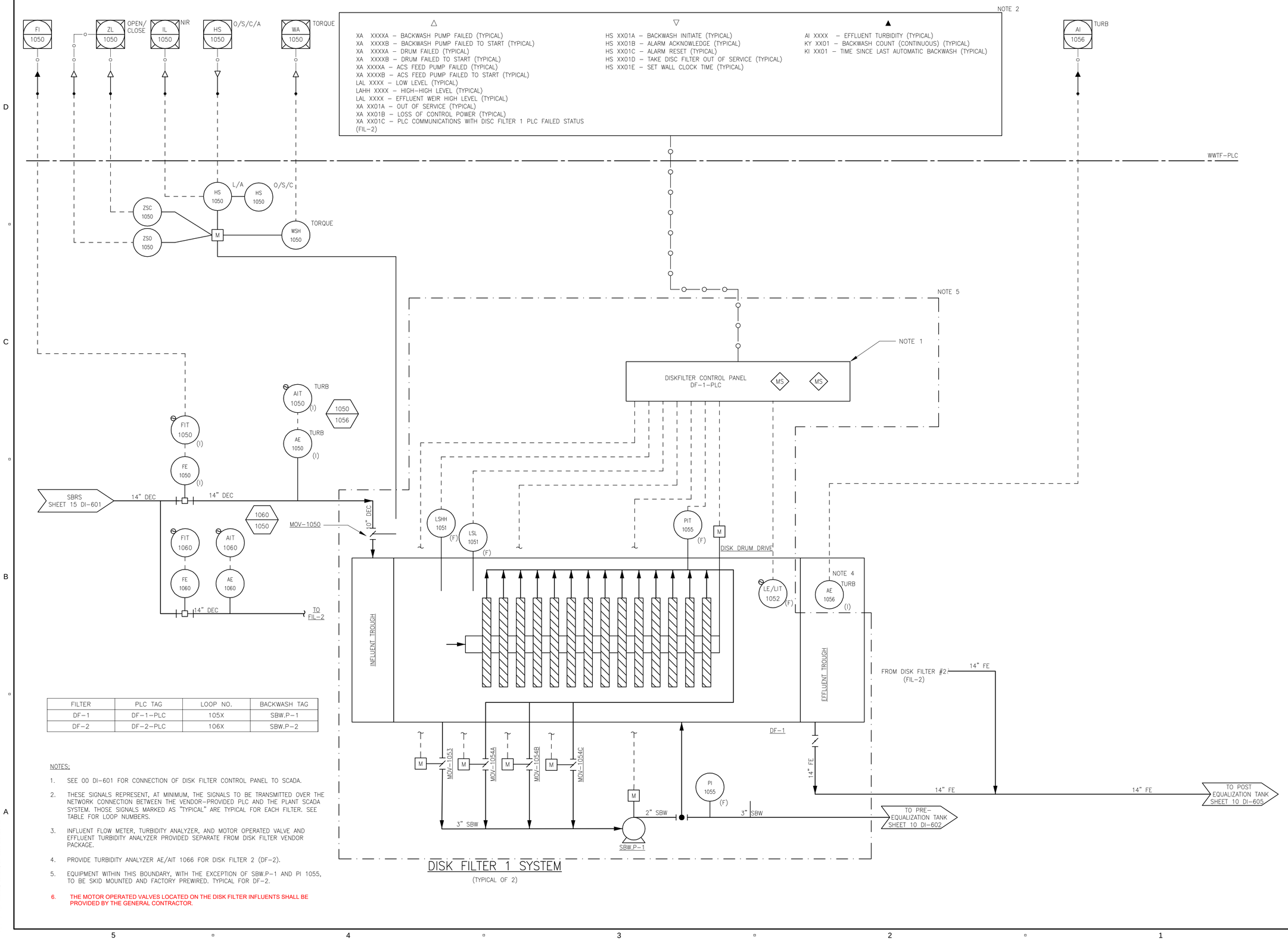
SHEET TITLE

SBR TRANSFER PUMPS P&ID

SHEET NUMBER

10 DI-603

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-603.DWG
LAST UPDATE: Friday, January 24, 2020 4:36:47 PM
PLOT DATE: Monday, January 27, 2020 2:57:26 PM



FILTER	PLC TAG	LOOP NO.	BACKWASH TAG
DF–1	DF–1–PLC	105X	SBW.P–1
DF–2	DF–2–PLC	106X	SBW.P–2

NOTES:

1. SEE 00 DI–601 FOR CONNECTION OF DISK FILTER CONTROL PANEL TO SCADA.
2. THESE SIGNALS REPRESENT, AT MINIMUM, THE SIGNALS TO BE TRANSMITTED OVER THE NETWORK CONNECTION BETWEEN THE VENDOR–PROVIDED PLC AND THE PLANT SCADA SYSTEM. THOSE SIGNALS MARKED AS "TYPICAL" ARE TYPICAL FOR EACH FILTER. SEE TABLE FOR LOOP NUMBERS.
3. INFLUENT FLOW METER, TURBIDITY ANALYZER, AND MOTOR OPERATED VALVE AND EFFLUENT TURBIDITY ANALYZER PROVIDED SEPARATE FROM DISK FILTER VENDOR PACKAGE.
4. PROVIDE TURBIDITY ANALYZER AE/AIT 1066 FOR DISK FILTER 2 (DF–2).
5. EQUIPMENT WITHIN THIS BOUNDARY, WITH THE EXCEPTION OF SBW.P–1 AND PI 1055, TO BE SKID MOUNTED AND FACTORY PREWIRED. TYPICAL FOR DF–2.
6. THE MOTOR OPERATED VALVES LOCATED ON THE DISK FILTER INFLUENTS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

DISK FILTER 1 SYSTEM

(TYPICAL OF 2)

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-604.DWG
LAST UPDATE: Wednesday, January 15, 2020 5:08:27 PM
PLOT DATE: Monday, January 27, 2020 2:57:33 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A9	04-30-20	ADDENDUM 9

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

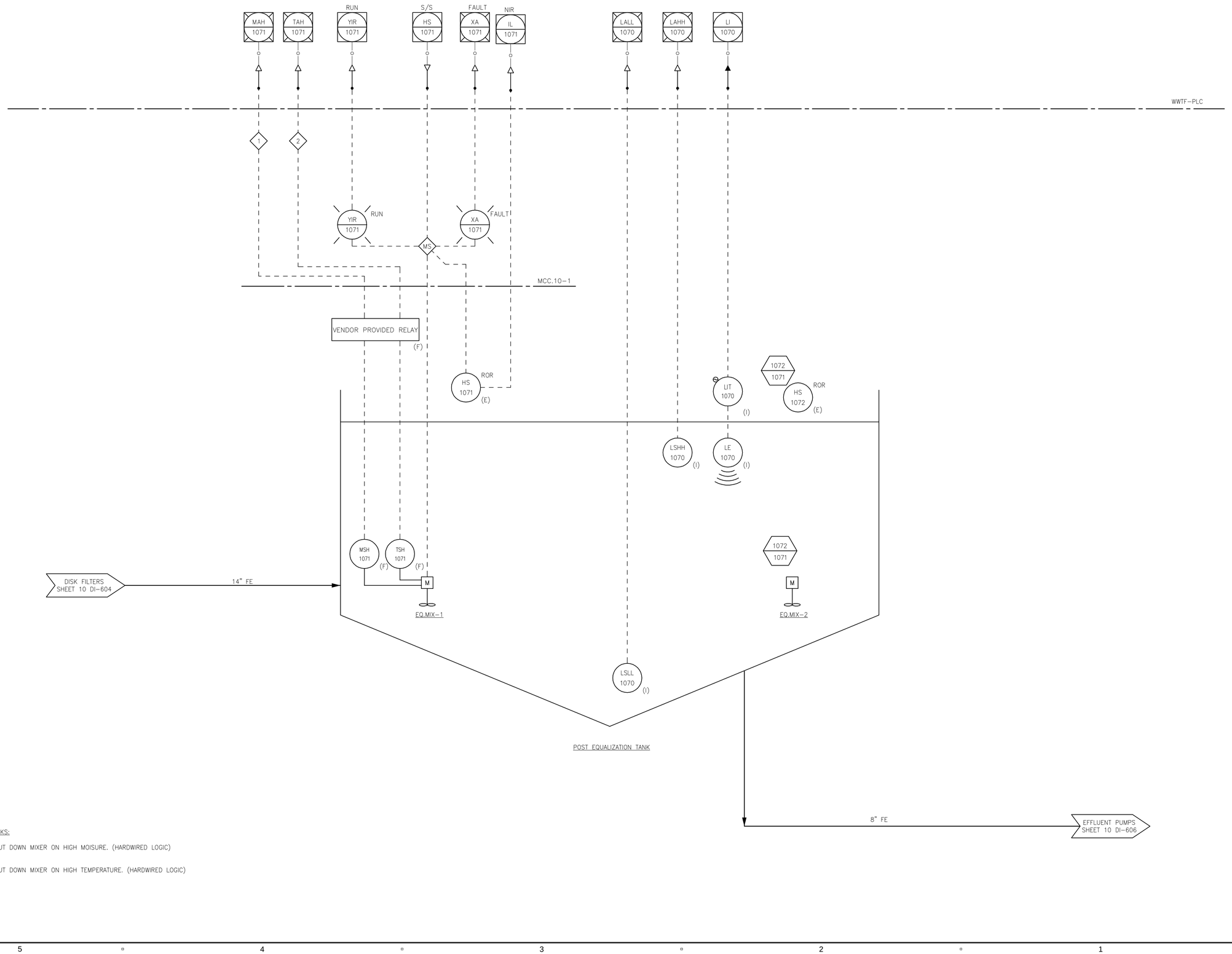
INSTRUMENTATION

SHEET TITLE

DISK FILTERS P&ID

SHEET NUMBER

10 DI-604



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-605.DWG
LAST UPDATE: Monday, January 13, 2020 9:41:04 AM
PLOT DATE: Monday, January 27, 2020 2:57:39 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARKIS H. PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

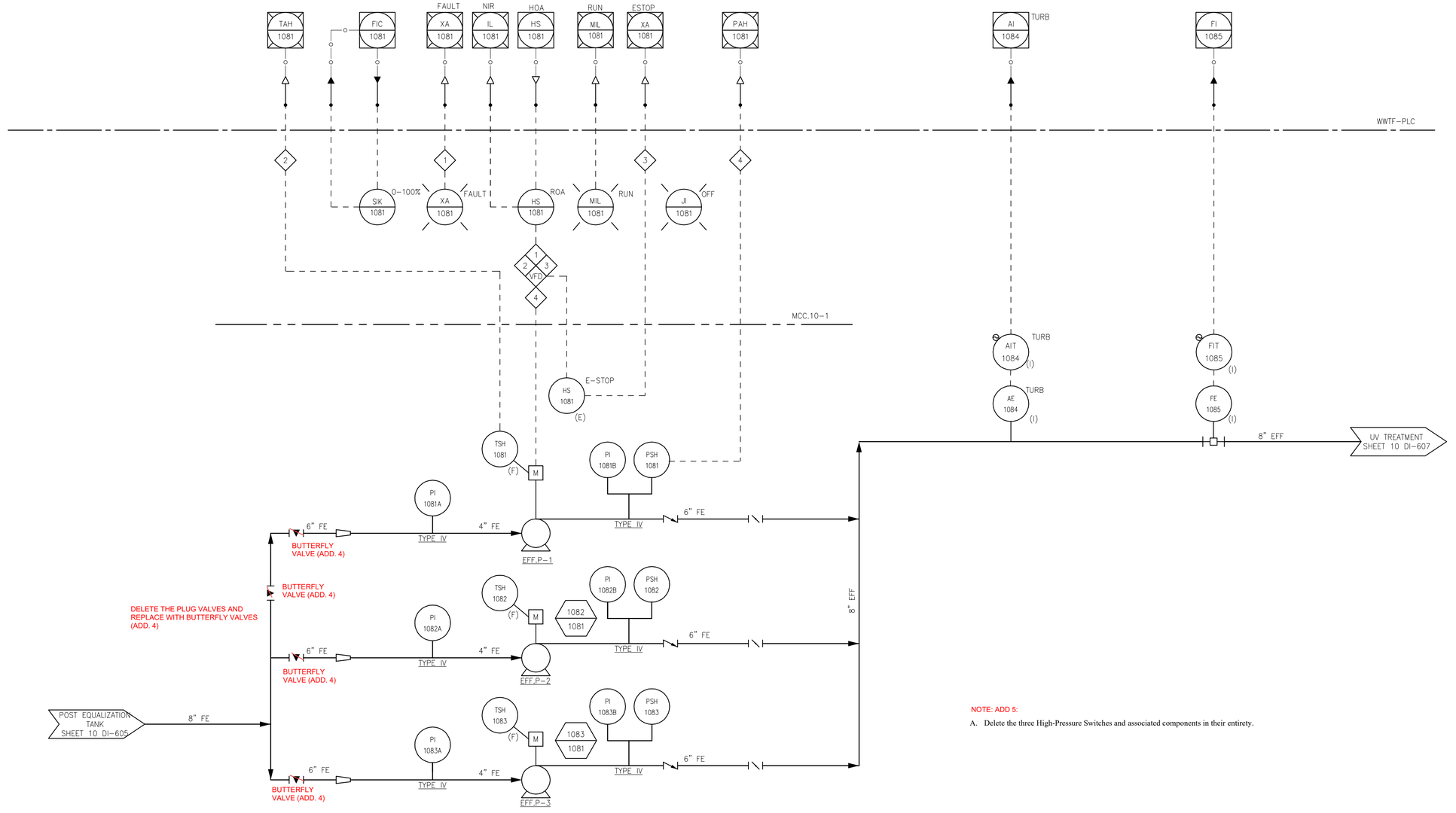
INSTRUMENTATION

SHEET TITLE

POST EQUALIZATION TANK P&ID

SHEET NUMBER

10 DI-605



NOTE: ADD 5:

A. Delete the three High-Pressure Switches and associated components in their entirety.

NOTE:

1. THE PIS FOR (EFF. P1 THRU 3) SHALL BE PROVIDED BY THE CONTRACTOR AS SPECIFIED IN SECTION 11316, PROCESS PUMPS AND APPURTANCES. (ADD. 5)

INTERLOCKS:

1. SHUT DOWN PUMP ON FAULT. (HARDWIRED LOGIC.)
2. SHUT DOWN PUMP ON HIGH TEMPERATURE (HARDWIRED LOGIC).
3. SHUT DOWN PUMP ON E–STOP. (HARDWIRED LOGIC)
4. SHUT DOWN PUMP ON HIGH PRESURE. (HARDWIRED LOGIC)

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARKIS PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-10-20	ADDENDUM 5
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

SHEET TITLE

EFFLUENT PUMPS P&ID

SHEET NUMBER

10 DI-606

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-606.DWG
LAST UPDATE: Monday, January 13, 2020 9:52:10 AM
PLOT DATE: Monday, January 27, 2020 2:57:46 PM

NOTE 1

△
- JI 1091 – BUILBS ON (TYP)
- YA 1091A – INDIVIDUAL LAMP FAIL (TYP)
- YA 1091B – MULTIPLE LAMP FAIL (TYP)
- XA 1091B – LOW UV INTENSITY (TYP)
- XA 1091C – LOW UV DOSE (TYP)
- XA 1091A – COMMUNICATION FAIL (COMMON)

▽
- JS 1091 – BULBS ON/OFF (TYP)

▲
- AI 1091A – UV TRANSMITTANCE (TYP)
- AI 1091B – UV INTENSITY (TYP)

▼
- AC 1091 UVT SETPOINT (TYP)
- FI 1085 EFFLUENT FLOW (COMMON)

PI 1093
AC 1094

WWTF–PLC

UV–1–CP

AI 1019A
AI 1019B
ZL 1100A
IL 1100A
NIR
MIL 1091
RUN
ENABLE
HS 1091

(F)

PIT 1093 (I)
PE 1093 (I)
AN 1094 (I)

16" EFF
8" EFF
8" EFF
EFFLUENT DISPOSAL SHEET 30 DI–601

4" EFF
PLANT WATER STORAGE TANK SHEET 10 DI–608

UV TRANSMITTANCE
UV INTENSITY

AIT 1091A (F) UV TRANS
AIT 1091B (F) UV INT
TSH 1091 (F)

M
WIPING UNIT
UVR–1

16" EFF
16" EFF
16" EFF

EFFLUENT PUMPS SHEET 10 DI–606
8" EFF

1092 1091

AIT 1092A (F) UV TRANS
AIT 1092B (F) UV INT
TSH 1092 (F)

1092 1091

M
WIPING UNIT
UVR–2

NOTES:

1. PROVIDE REQUIRED SIGNALS OVER ETHERNET NETWORK FOR A COMPLETE AND OPERATIONAL SYSTEM. SIGNALS INDICATED ARE TO BE PROVIDED AT A MINIMUM. SIGNALS INDICATED AS "TYP" ARE TYPICAL FOR EACH UV REACTOR. SIGNALS INDICATED AS "COMMON" ARE SHARED BETWEEN THE TWO UV REACTORS.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH
PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

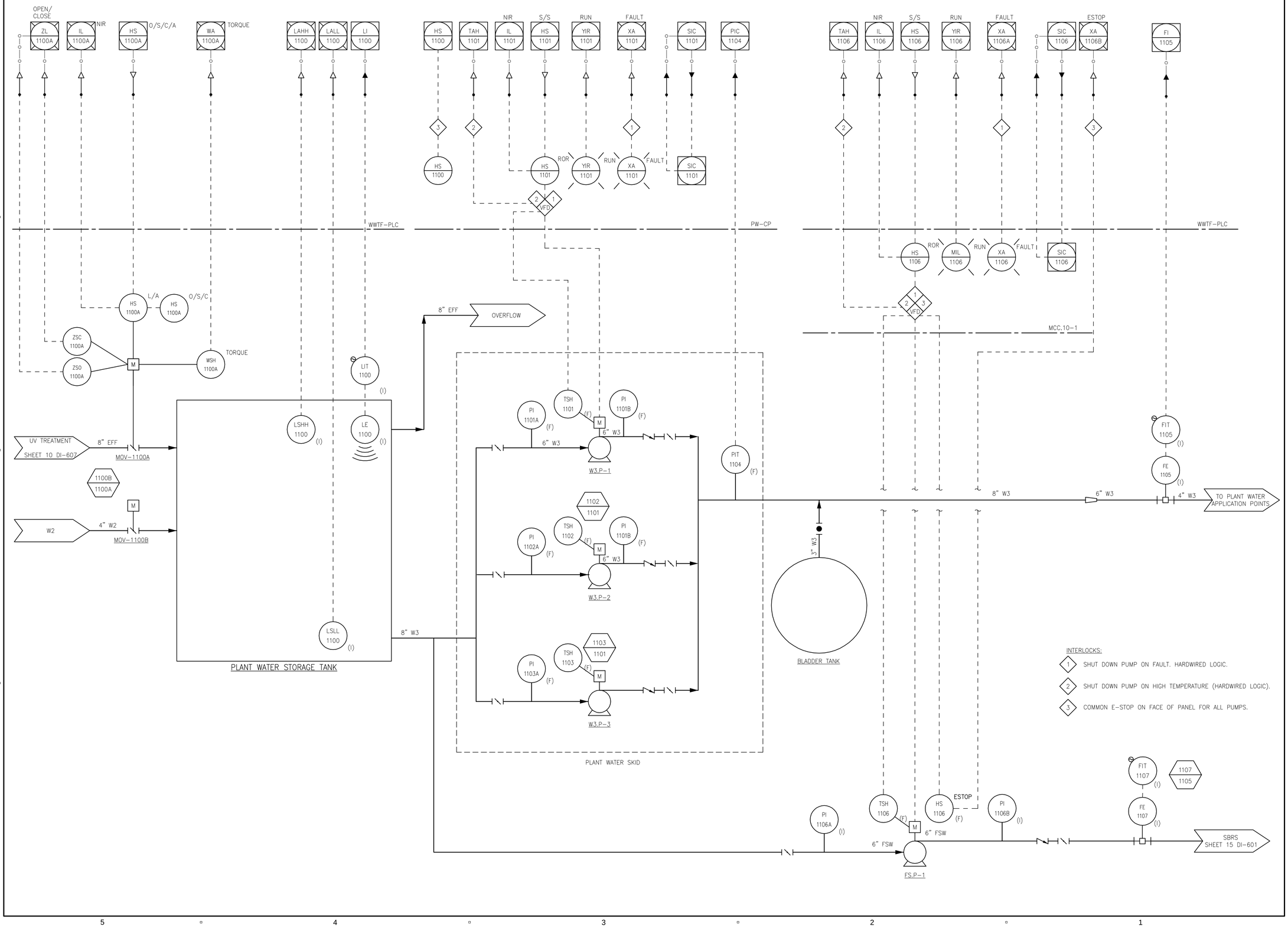
SHEET TITLE

UV TREATMENT P&ID

SHEET NUMBER

10 DI-607

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-607.DWG
LAST UPDATE: Monday, January 13, 2020 10:06:40 AM
PLOT DATE: Monday, January 27, 2020 2:57:55 PM



AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

INSTRUMENTATION

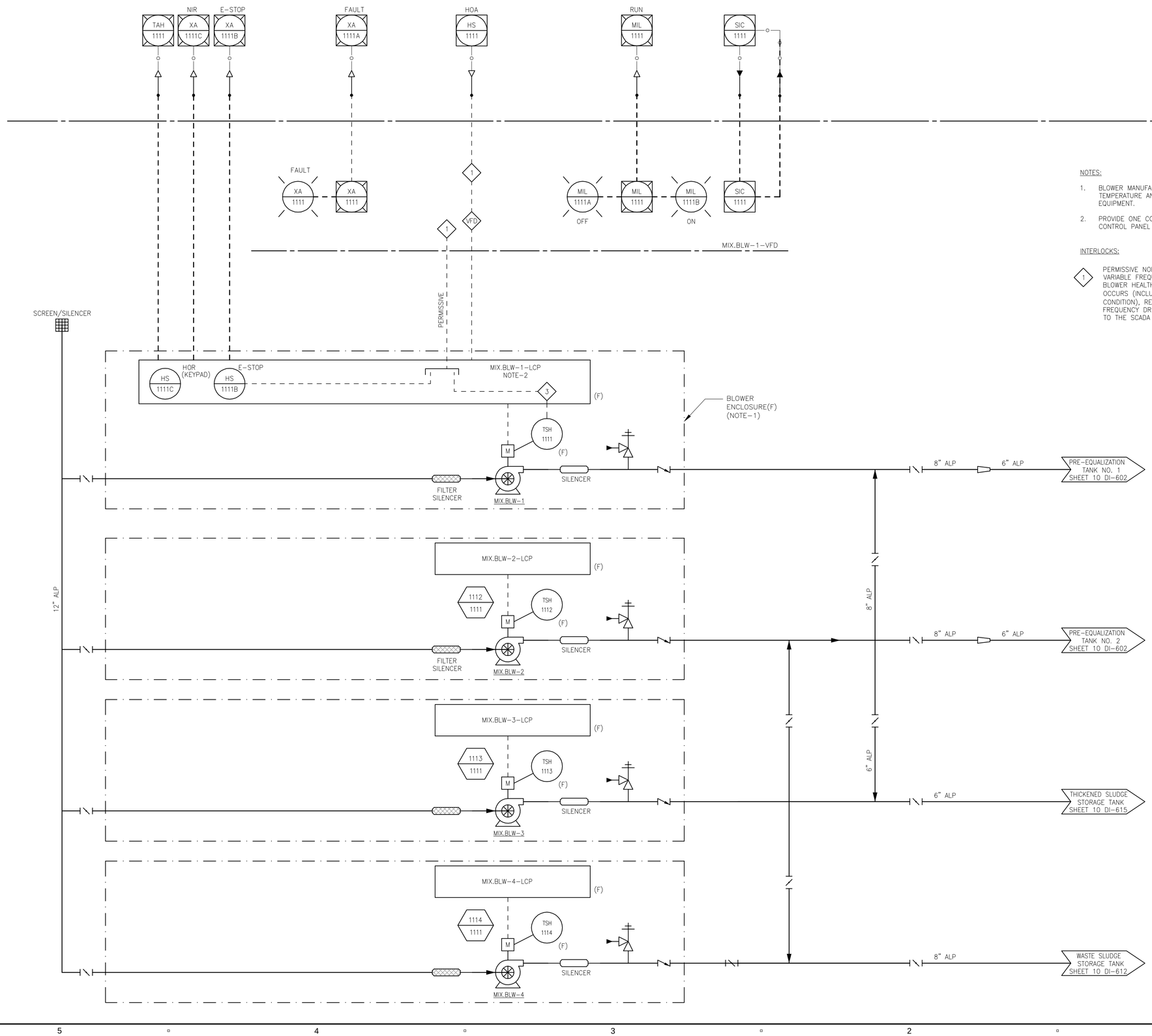
SHEET TITLE

PLANT WATER SYSTEM P&ID

SHEET NUMBER

10 DI-608

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-608.DWG
LAST UPDATE: Wednesday, January 08, 2020 9:17:54 AM
PLOT DATE: Monday, January 27, 2020 2:58:02 PM



NOTES:

1. BLOWER MANUFACTURER SHALL PROVIDE ALL BLOWER TEMPERATURE AND VIBRATION INSTRUMENTS TO PROTECT EQUIPMENT.
2. PROVIDE ONE CONTROL PANEL FOR EACH BLOWER. FLUSH MOUNT CONTROL PANEL ON BLOWER ENCLOSURE.

INTERLOCKS:

1 PERMISSIVE NORMALLY CLOSED DRY CONTACT WIRED TO ASSOCIATED VARIABLE FREQUENCY DRIVE. CONTACT TO REMAIN CLOSED IN A BLOWER HEALTHY STATE. CONTACT TO OPEN WHEN A FAULT OCCURS (INCLUDING E-STOP ACTIVATION OR HIGH TEMPERATURE CONDITION), RESULTING IN THE SHUT DOWN OF THE VARIABLE FREQUENCY DRIVE AND THE ALARM CONDITION BEING TRANSMITTED TO THE SCADA PLC.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

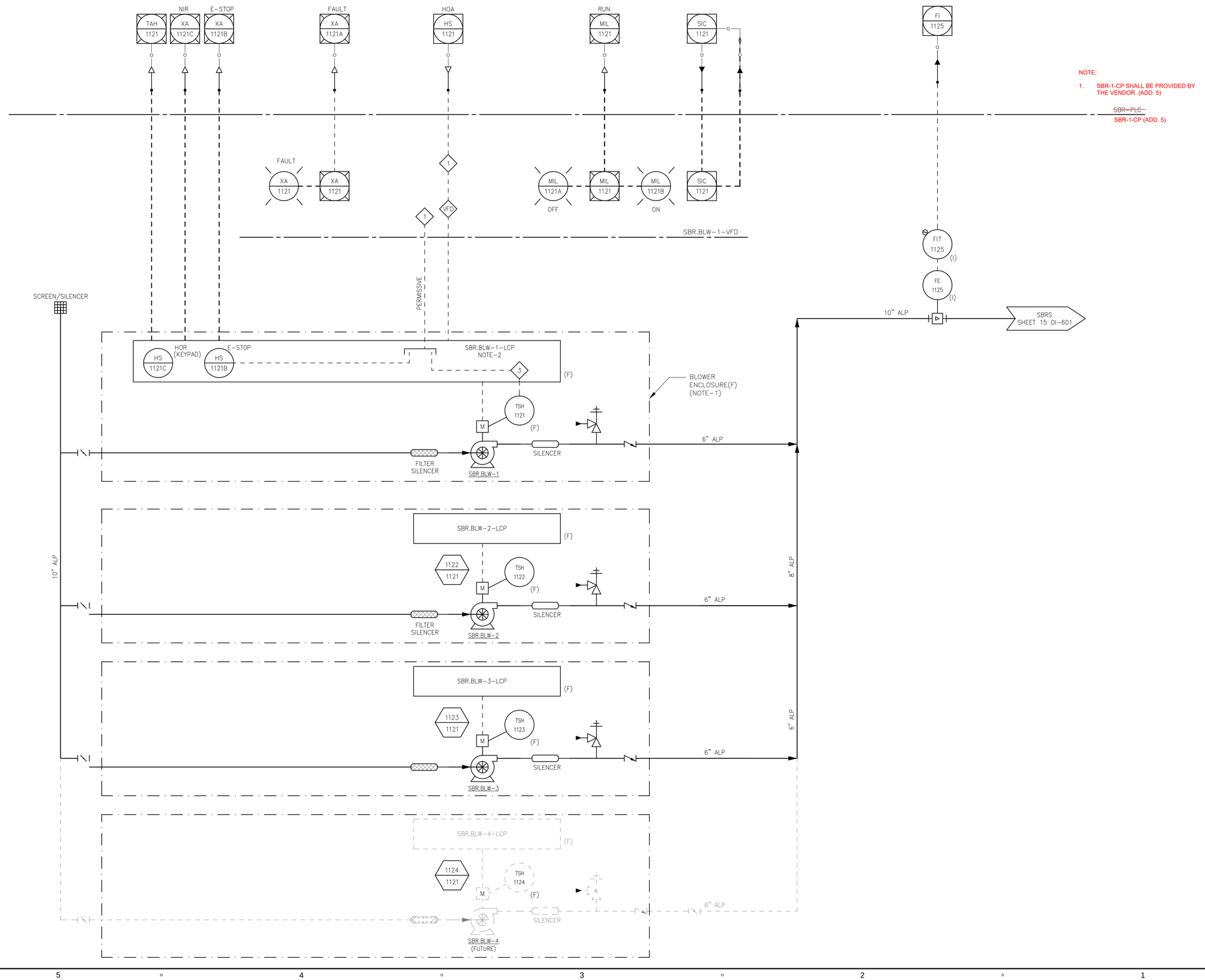
SHEET TITLE

MIXING BLOWERS P&ID

SHEET NUMBER

10 DI-609

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-609.DWG
LAST UPDATE: Friday, January 24, 2020 4:37:13 PM
PLOT DATE: Monday, January 27, 2020 2:58:09 PM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-610.DWG
LAST UPDATE: Monday, January 13, 2020 10:49:53 AM
PLOT DATE: Monday, January 27, 2020 2:58:16 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-10-20	ADDENDUM 5

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

SHEET TITLE

SBR BLOWERS P&ID

SHEET NUMBER

10 DI-610

NOTE 1

WWTP–PLC

SEP–PLC
(SEPTAGE SYSTEM CONTROL PANEL)

SEP–LCS

W3
SPRAY WATER

HS 1031 H/O/A (F)
HS 1031 F/O/R (F)
SCREEN

HS 1031 H/O/A (F)
GRIT COLLECTOR

HS 1031 H/O/A (F)
GRIT DISCHARGE

HS 1030 O/C (F)
INFLUENT VALVE

LIT 1132 (F)

VD

ODOR CONTROL
SHEET

ESTOP
HS 1131 (F)
TSH 1131 (F)
M
SCREEN
DRIVE

ACCESS CARD READER (F)

SV 1136 S (F)
SV 1135 S (F)
SV 1134 S (F)
SV 1133 S (F)

HATCH COVER
ZS 1138 (F)

AIT 1130 (F)
FIT 1130 (F)
M
4" SEP
pH
AE 1130 (F)
FE 1130 (F)

SEPTAGE
TRUCK UNLOAD
K
ROCK
TRAP

GRIT DISCHARGE
DRIVE
M
E–STOP
HS 1132 (F)

SCREENINGS CONTAINER

GRIT COLLECTOR
DRIVE
M

8" SEP
WASTE SLUDGE
STORAGE TANKS
SHEET 10 DI–612

PRE–EQUALIZATION
TANKS
SHEET 10 DI–602

SEPTAGE RECIEVING STATION

NOTES:

1. THESE SIGNALS REPRESENT, AT MINIMUM, THE SIGNALS TO BE TRANSMITTED OVER THE NETWORK CONNECTION BETWEEN THE VENDOR–PROVIDED PLC AND THE PLANT SCADA SYSTEM. THOSE SIGNALS MARKED AS "TYPICAL" ARE TYPICAL FOR EACH RDT. SEE TABLE FOR LOOP NUMBERS.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-611.DWG
LAST UPDATE: Monday, January 13, 2020 4:32:49 PM
PLOT DATE: Monday, January 27, 2020 2:58:23 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

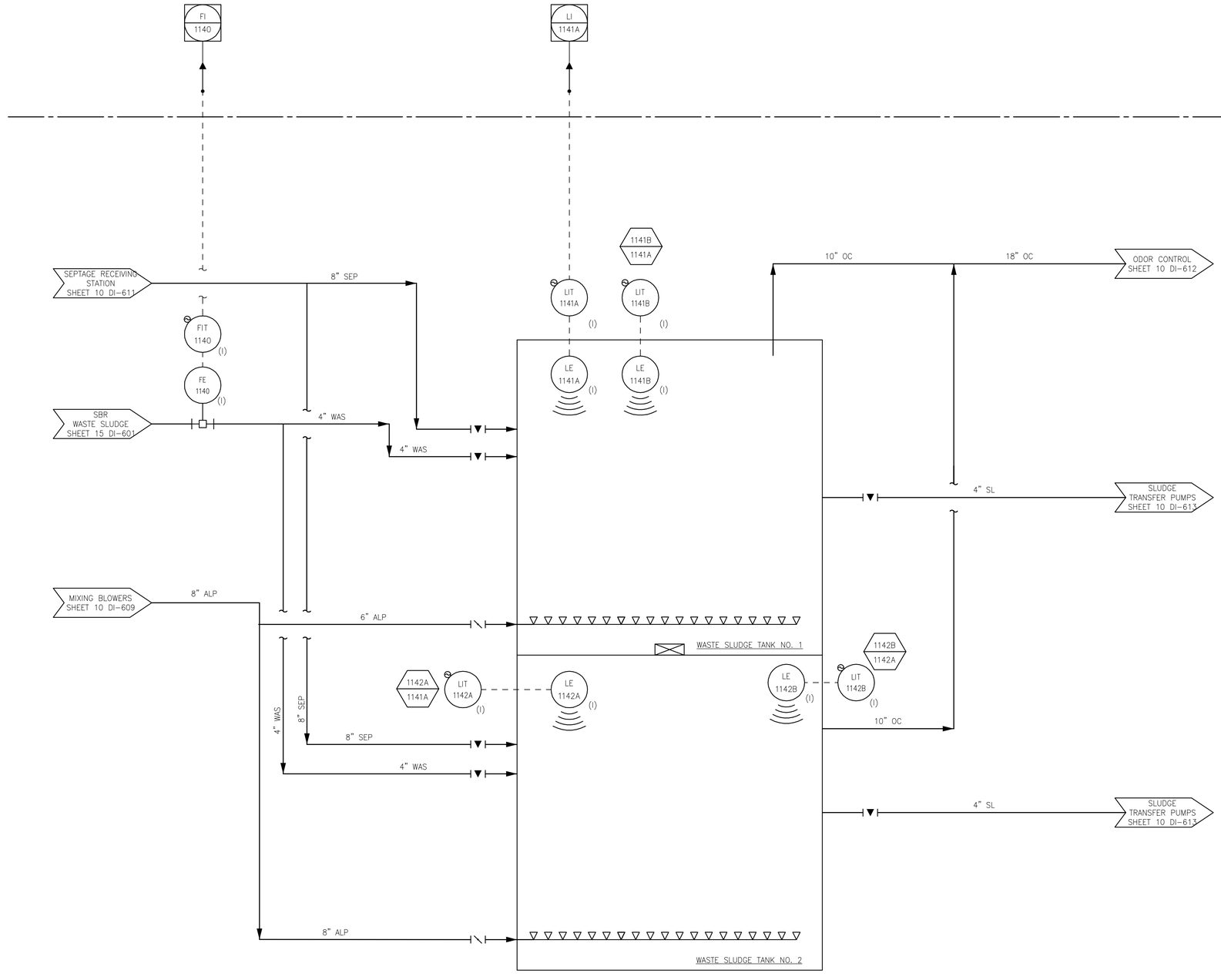
INSTRUMENTATION

SHEET TITLE

SEPTAGE RECEIVING P&ID

SHEET NUMBER

10 DI-611



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-612.DWG
LAST UPDATE: Monday, January 13, 2020 11:15:28 AM
PLOT DATE: Monday, January 27, 2020 2:58:30 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

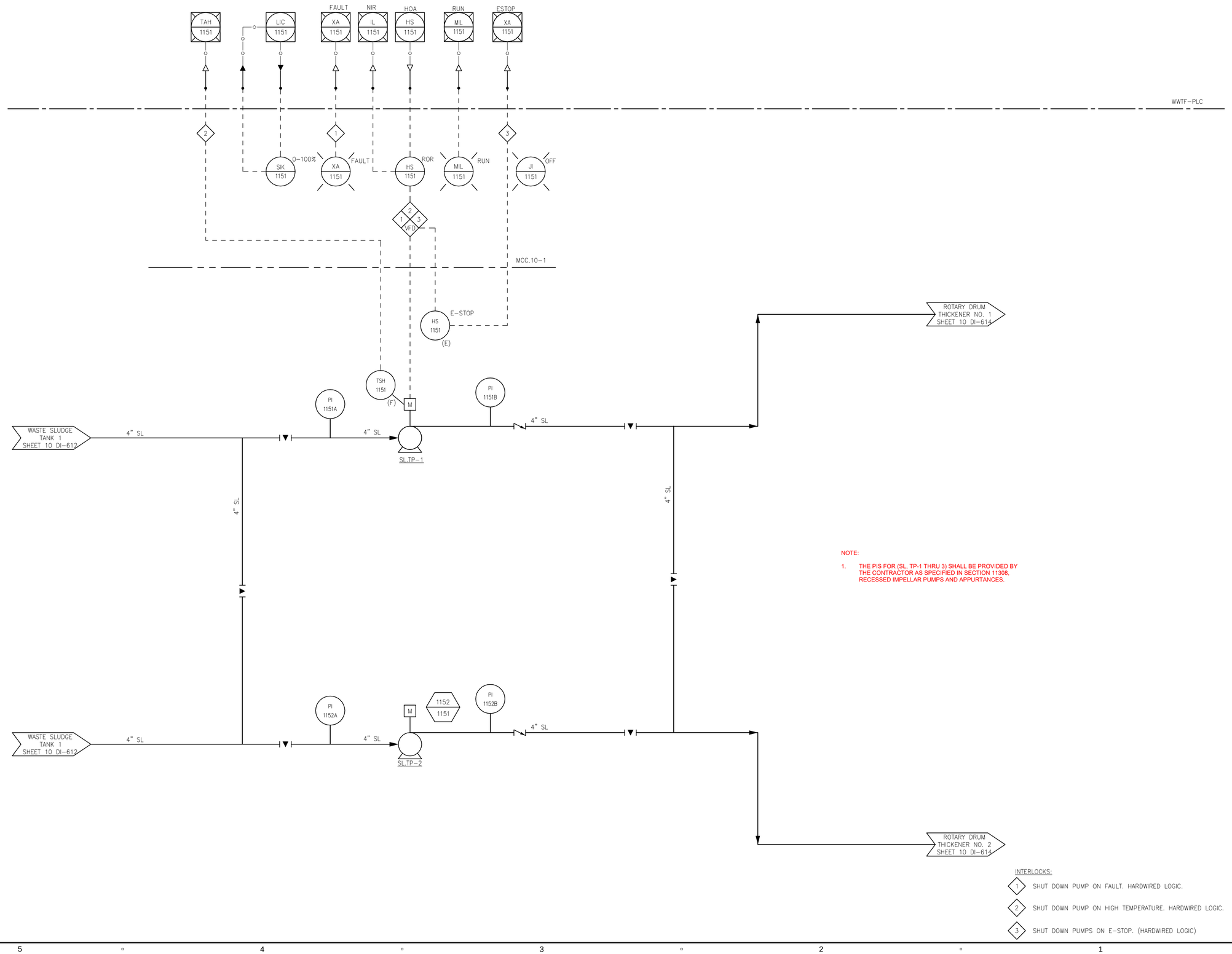
INSTRUMENTATION

SHEET TITLE

WASTE SLUDGE STORAGE TANKS P&ID

SHEET NUMBER

10 DI-612



NOTE:

1. THE PIS FOR (SL. TP-1 THRU 3) SHALL BE PROVIDED BY THE CONTRACTOR AS SPECIFIED IN SECTION 11308, RECESSED IMPELLAR PUMPS AND APPURTANCES.

INTERLOCKS:

1. SHUT DOWN PUMP ON FAULT. HARDWIRED LOGIC.
2. SHUT DOWN PUMP ON HIGH TEMPERATURE. HARDWIRED LOGIC.
3. SHUT DOWN PUMPS ON E–STOP. (HARDWIRED LOGIC)

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-613.DWG
LAST UPDATE: Monday, January 13, 2020 11:21:52 AM
PLOT DATE: Monday, January 27, 2020 2:58:37 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-10-20	ADDENDUM 5

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

SHEET TITLE

SLUDGE TRANSFER PUMPS P&ID

SHEET NUMBER

10 DI-613

△

XA XXXXA – ESTOP ACTIVE (TYPICAL)
JAL XXXXA – PLC LOW BATTERY (TYPICAL)
JAL XXXXB – UPS POWER OFF (TYPICAL)
XA XXXXB – CPU IN FAULT (TYPICAL)
IL XXXXA – SLUDGE CONDITIONER IN AUTO (TYPICAL)
XA XXXX – SLUDGE CONDITIONER DRIVE FAULTED (TYPICAL)
IL XXXXB – SLUDGE CONDITIONER IN HAND (TYPICAL)
IL XXXXC – SLUDGE CONDITIONER IN OFF (TYPICAL)
LAH XXXX – SLUDGE CONDITIONING TANK HIGH LEVEL (TYPICAL)
XA XXXX – DRUM THICKENER DRIVE FAULTED (TYPICAL)
MIL XXXX – DRUM THICKENER DRIVE RUNNING (TYPICAL)
IL XXXXA – THICKENER COND. IN AUTO (TYPICAL)
IL XXXXB – THICKENER COND. IN HAND (TYPICAL)
IL XXXXC – THICKENER COND. IN OFF (TYPICAL)
JI – XXXX – WASH WATER PUMP SOLENOID OPEN (TYPICAL)
MIL XXXX – POLYMER SYSTEM RUNNING (TYPICAL)
MIL XXXXA – SYSTEM STARTED (TYPICAL)

▲

SC XXXX – PBU SETPOINT (0–100%) (TYPICAL)
FI XXXXA – WAS FLOWRATE

▼

SC XXXX – WAS FLOW SETPOINT

NOTE 1

WWTF–PLC

RDT–1–CP

FI 1160 FLOW

SIC 1161 / SIK 1161

FAULT XA 1161 / HOA HS 1161 / RUN MIL 1161 / NIR IL 1161 / VFD (F) / HS 1161 ROA

ESTOP XA 1162 / TWAS LEVEL LI 1162 / DRUM ZERO SPEED ZAL 1162 / SIC 1162 / SIK 1162 / HS 1162 ESTOP

FAULT XA 1162 / HOA HS 1162 / VFD / RUN MIL 1162 / NIR IL 1162 / HS 1162 HOA

PAL 1164

O/C ZAO 1164 / HS 1164 / ZAC 1164

(F)

RDT–1–LCP

L/R HS 1162A / START HS 1162B / STOP HS 1162C / RUN MIL 1162 / FAULT XA 1162 / ESTOP HS 1162D

(F)

8" OC → ODOR CONTROL

FIT 1160 (I)

FE 1160 (I)

SLUDGE TRANSFER PUMPS SHEET 10 DI–613 — 4" SL — 3" SL — 4" SL

POLYMER SHEET 10 DI–618 — 1" POL

FIT 1170 (I)

FE 1170 (I)

SLUDGE TRANSFER PUMPS SHEET 10 DI–613 — 4" SL — 3" SL — 4" SL

POLYMER SHEET 10 DI–618 — 1" POL

3W — 2" 3W

M

WASHWATER PUMP

HS 1162 ESTOP (PULL CORD) (F) / LIT 1162 (F)

DUAL–DRUM RDT
RDT–1

HS 1172 ESTOP (F) / LIT 1172 (F) / 1172 1162 / 1172 1162

DUAL–DRUM RDT
RDT–2

1172 1162

ZSL 1162 (F) / PSL 1164 (F) / ZSO 1164 (F) / ZSC 1164 (F)

ZSL 1172 (F) / PSL 1174 (F) / 1174 1162 / ZSO 1174 (F) / 1174 1162 / ZSC 1174 (F)

6" TSL → THICKENED SLUDGE STORAGE TANK SHEET 10 DI–615

8" FIL → PRE–EQUALIATION TANKS SHEET 10 DI–602

NOTES:

1. THESE SIGNALS REPRESENT, AT MINIMUM, THE SIGNALS TO BE TRANSMITTED OVER THE NETWORK CONNECTION BETWEEN THE VENDOR–PROVIDED PLC AND THE PLANT SCADA SYSTEM. THOSE SIGNALS MARKED AS "TYPICAL" ARE TYPICAL FOR EACH RDT. SEE TABLE FOR LOOP NUMBERS.

ROTARY DRUM THICKENER PACKAGE

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-614.DWG
LAST UPDATE: Thursday, January 16, 2020 3:53:02 PM
PLOT DATE: Monday, January 27, 2020 2:58:43 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

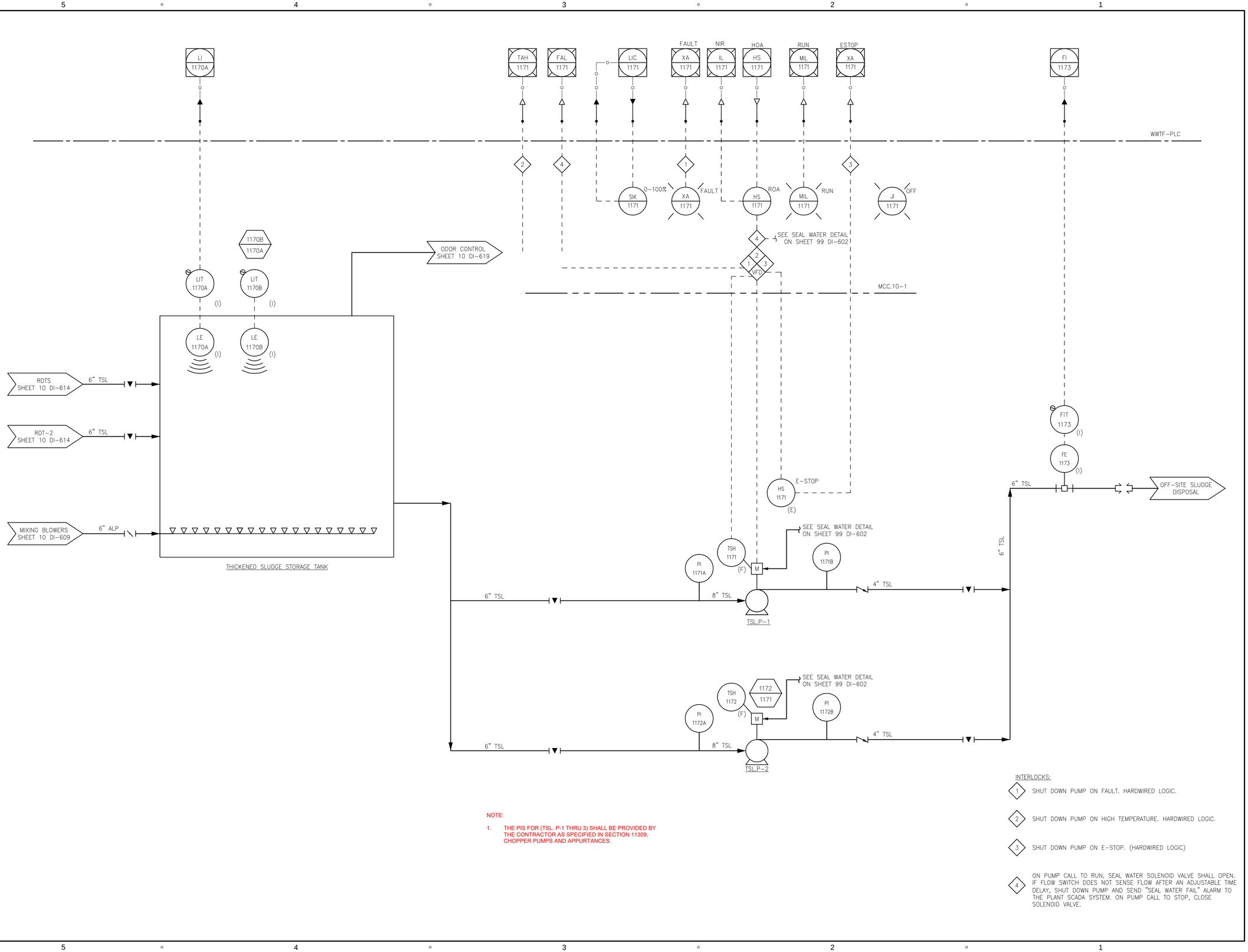
INSTRUMENTATION

SHEET TITLE

ROTARY DRUM THICKENERS P&ID

SHEET NUMBER

10 DI-614



INTERLOCKS:

1. SHUT DOWN PUMP ON FAULT. HARDWIRED LOGIC.
2. SHUT DOWN PUMP ON HIGH TEMPERATURE. HARDWIRED LOGIC.
3. SHUT DOWN PUMP ON E-STOP. (HARDWIRED LOGIC)
4. ON PUMP CALL TO RUN, SEAL WATER SOLENOID VALVE SHALL OPEN. IF FLOW SWITCH DOES NOT SENSE FLOW AFTER AN ADJUSTABLE TIME DELAY, SHUT DOWN PUMP AND SEND "SEAL WATER FAIL" ALARM TO THE PLANT SCADA SYSTEM. ON PUMP CALL TO STOP, CLOSE SOLENOID VALVE.

NOTE:

1. THE PIS FOR (TSL. P-1 THRU 3) SHALL BE PROVIDED BY THE CONTRACTOR AS SPECIFIED IN SECTION 11309, CHOPPER PUMPS AND APPURTANCES.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-615.DWG
LAST UPDATE: Monday, January 13, 2020 11:46:29 AM
PLOT DATE: Monday, January 27, 2020 2:58:50 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-10-20	ADDENDUM 5

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

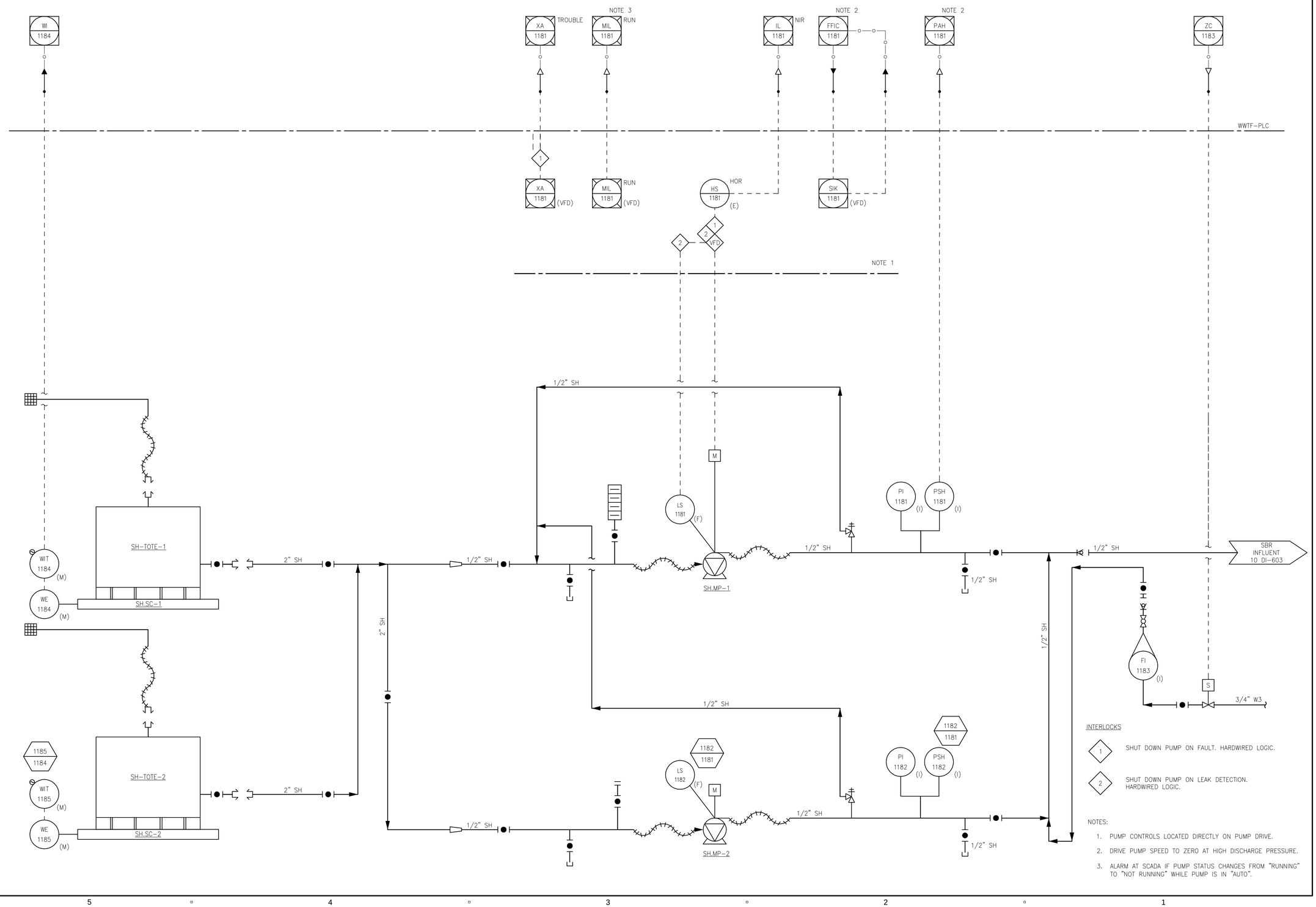
INSTRUMENTATION

SHEET TITLE

THICKENED SLUDGE STORAGE TANK AND PUMPS P&ID

SHEET NUMBER

10 DI-615



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-616.DWG
LAST UPDATE: Monday, January 13, 2020 12:26:39 PM
PLOT DATE: Monday, January 27, 2020 2:58:57 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

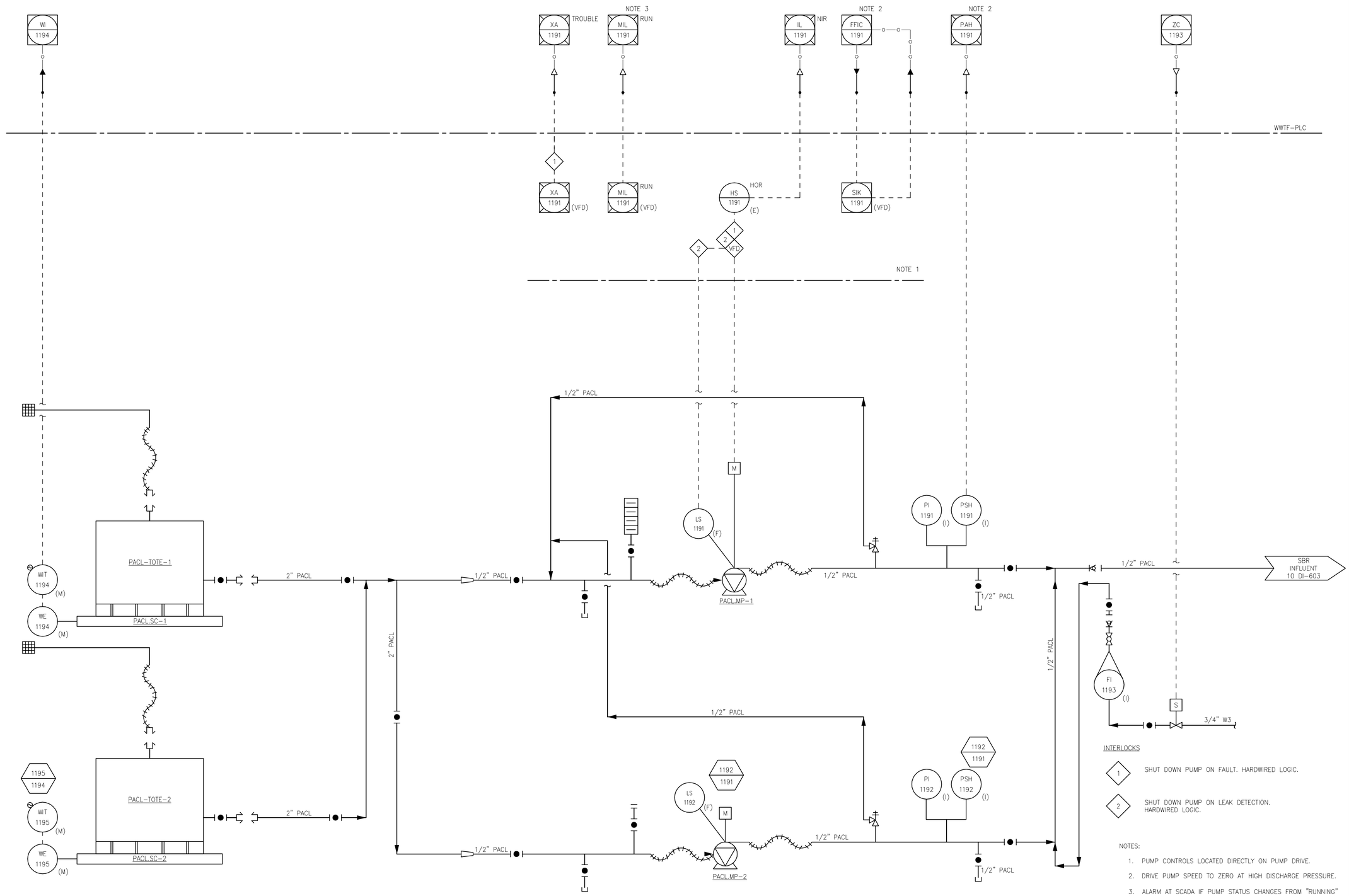
INSTRUMENTATION

SHEET TITLE

SODIUM HYPOCHLORITE P&ID

SHEET NUMBER

10 DI-616



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-617.DWG
LAST UPDATE: Monday, January 13, 2020 12:42:29 PM
PLOT DATE: Monday, January 27, 2020 2:59:04 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

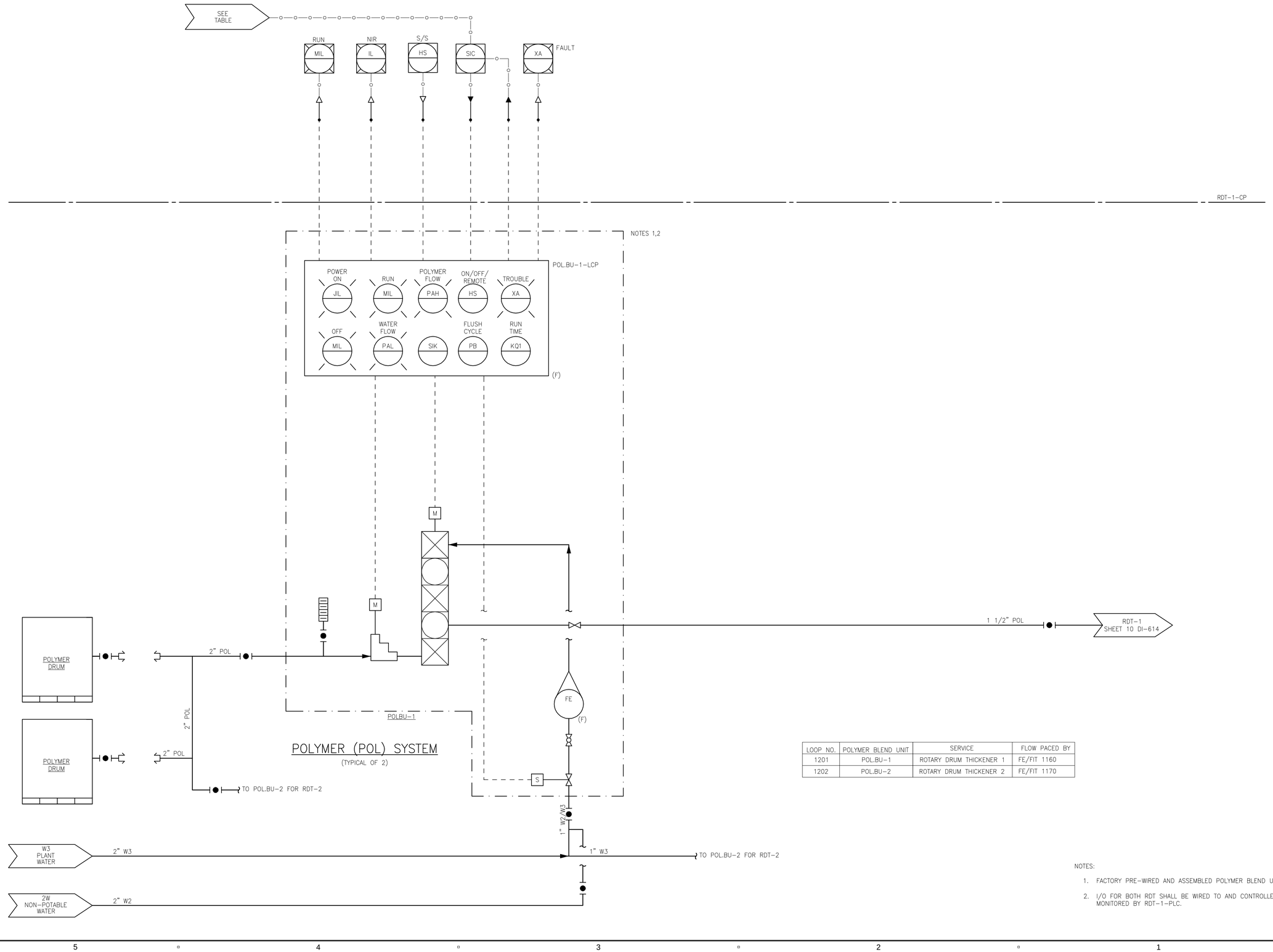
INSTRUMENTATION

SHEET TITLE

POLYALUMINUM CHLORIDE P&ID

SHEET NUMBER

10 DI-617



LOOP NO.	POLYMER BLEND UNIT	SERVICE	FLOW PACED BY
1201	POL.BU-1	ROTARY DRUM THICKENER 1	FE/FIT 1160
1202	POL.BU-2	ROTARY DRUM THICKENER 2	FE/FIT 1170

NOTES:

1. FACTORY PRE-WIRED AND ASSEMBLED POLYMER BLEND UNIT SKID.
2. I/O FOR BOTH RDT SHALL BE WIRED TO AND CONTROLLED AND MONITORED BY RDT-1-PLC.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

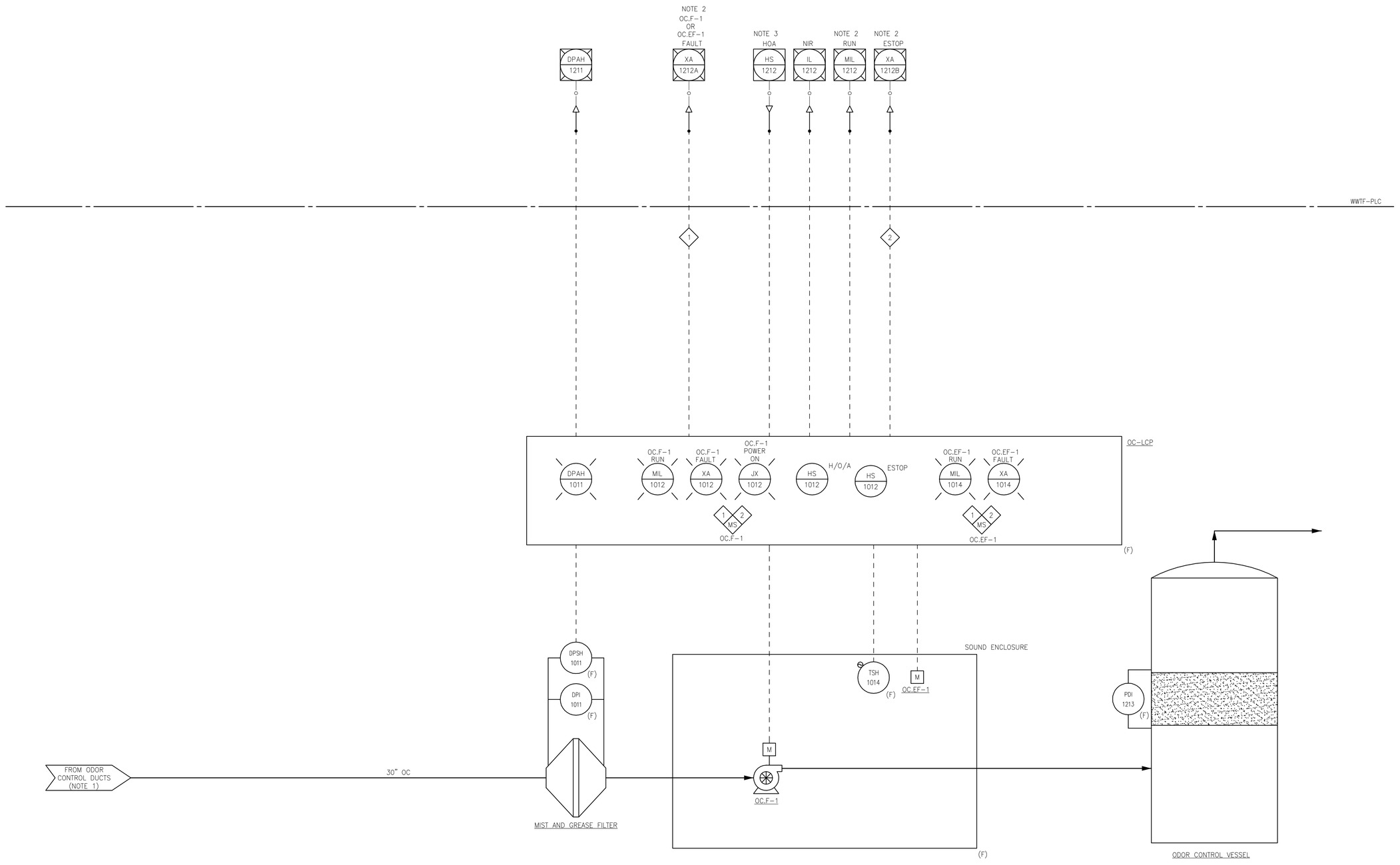
SHEET TITLE

POLYMER P&ID

SHEET NUMBER

10 DI-618

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\10 DI-618.DWG
LAST UPDATE: Wednesday, January 08, 2020 10:36:10 AM
PLOT DATE: Monday, January 27, 2020 2:59:11 PM



INTERLOCKS

1. SHUT DOWN FAN ON FAULT. HARDWIRED LOGIC
2. SHUT DOWN BOTH FANS ON E-STOP HARDWIRED LOGIC.

NOTES:

1. SEE SHEET 00 D-009 FOR DETAILS REGARDING THE ODOR CONTROL AIR FLOW FROM PROCESS AREAS TO THE ODOR CONTROL SYSTEM.
2. WHEN THE ODOR CONTROL SYSTEM STARTS, ATC SHALL START HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7. IN THE EVENT THAT THE ODOR CONTROL SYSTEM STOPS OR FAILS, HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7 SHALL STOP.
3. WHEN HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7 ARE RUNNING, THE ODOR CONTROL SYSTEM SHALL RUN. UPON RECEIPT OF STOP OR FAILURE SIGNAL OF ANY OF THESE HVAC SUPPLY FANS FROM THE ATC PANEL, THE ODOR CONTROL SYSTEM SHALL STOP.

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPPAS
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

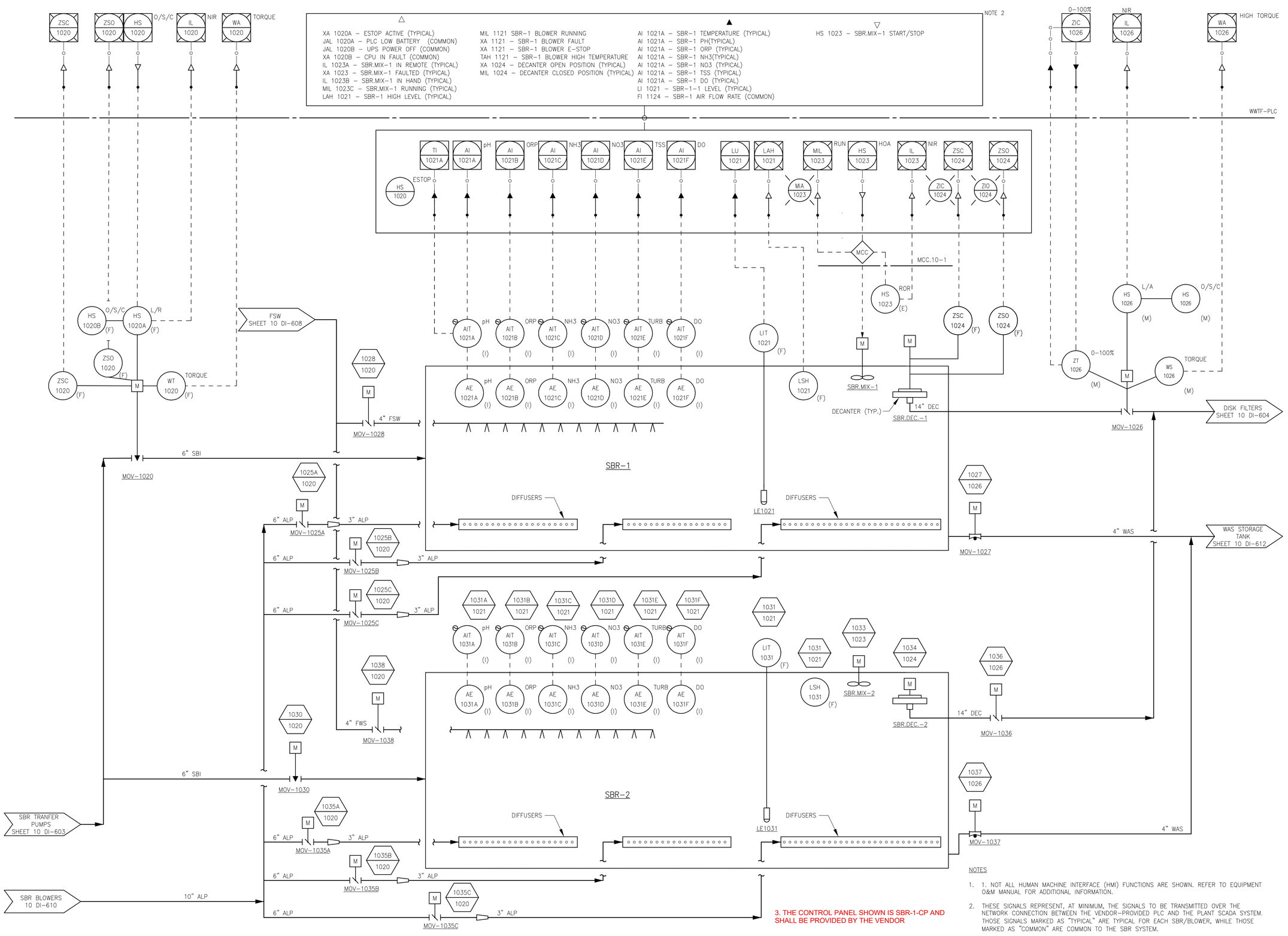
SHEET TITLE

WWTF ODOR CONTROL SYSTEM P&ID

SHEET NUMBER

10 DI-619

PATHFILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\10 DI-619.DWG
LAST UPDATE: Wednesday, January 08, 2020 10:38:48 AM
PLOT DATE: Monday, January 27, 2020 2:59:17 PM



NOTES

1. 1. NOT ALL HUMAN MACHINE INTERFACE (HMI) FUNCTIONS ARE SHOWN. REFER TO EQUIPMENT O&M MANUAL FOR ADDITIONAL INFORMATION.
2. THESE SIGNALS REPRESENT, AT MINIMUM, THE SIGNALS TO BE TRANSMITTED OVER THE NETWORK CONNECTION BETWEEN THE VENDOR–PROVIDED PLC AND THE PLANT SCADA SYSTEM. THOSE SIGNALS MARKED AS "TYPICAL" ARE TYPICAL FOR EACH SBR/BLOWER, WHILE THOSE MARKED AS "COMMON" ARE COMMON TO THE SBR SYSTEM.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH E. PAPEJCAK
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

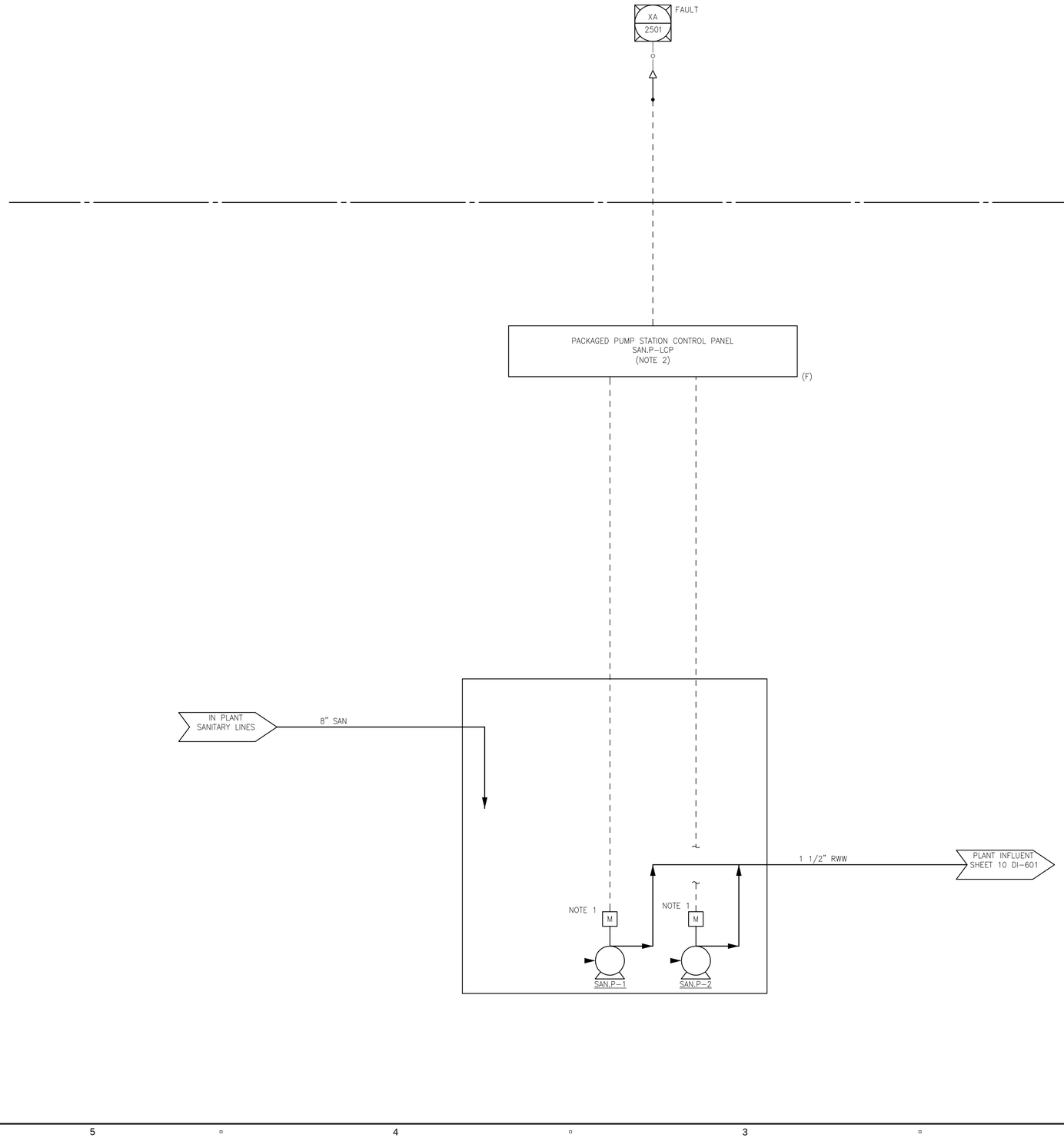
SHEET TITLE

SBRS P&ID

SHEET NUMBER

15 DI-601

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\15 DI-601.DWG
LAST UPDATE: Monday, January 13, 2020 1:41:20 PM
PLOT DATE: Monday, January 27, 2020 2:59:24 PM



NOTES:

1. EACH GRINDER PUMP SHALL BE INCLUDED WITH THE FOLLOWING AS DEFINED IN SPECIFICATION SECTION 11306:
   - INTEGRAL CHECK VALVE
   - ANTI SIPHON VALVE
   - INTEGRAL LEVEL CONTROLS
   - OVERTEMP PROTECTION
   - RUN DRY PROTECTION.
2. FOR DETAILS REGARDING THE LOCAL CONTROLS REQUIRED AT THE LOCAL CONTROL PANEL, SEE SPECIFICATION SECTION 11306.
3. THE CONTROL PANEL SHOWN IS SBR-1-CP AND SHALL BE PROVIDED BY THE VENDOR. (ADD. 5)

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	03-10-20	ADDENDUM 5

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

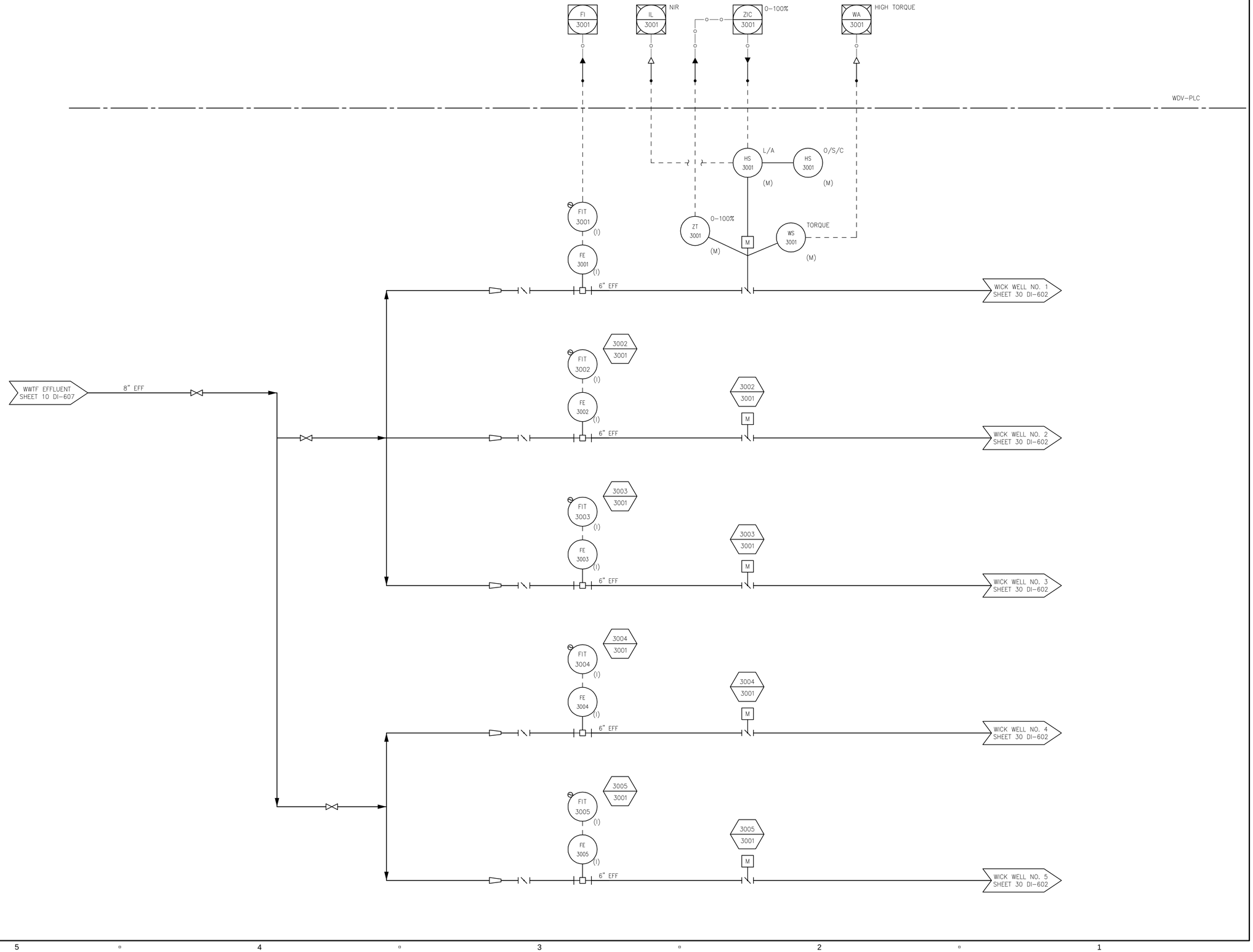
SHEET TITLE

IN PLANT PUMP STATION P&ID

SHEET NUMBER

25 DI-601

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\25 DI-601.DWG
LAST UPDATE: Monday, January 13, 2020 1:51:22 PM
PLOT DATE: Monday, January 27, 2020 2:59:31 PM



PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\30 DI-601.DWG
LAST UPDATE: Wednesday, January 08, 2020 11:07:25 AM
PLOT DATE: Monday, January 27, 2020 2:59:38 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

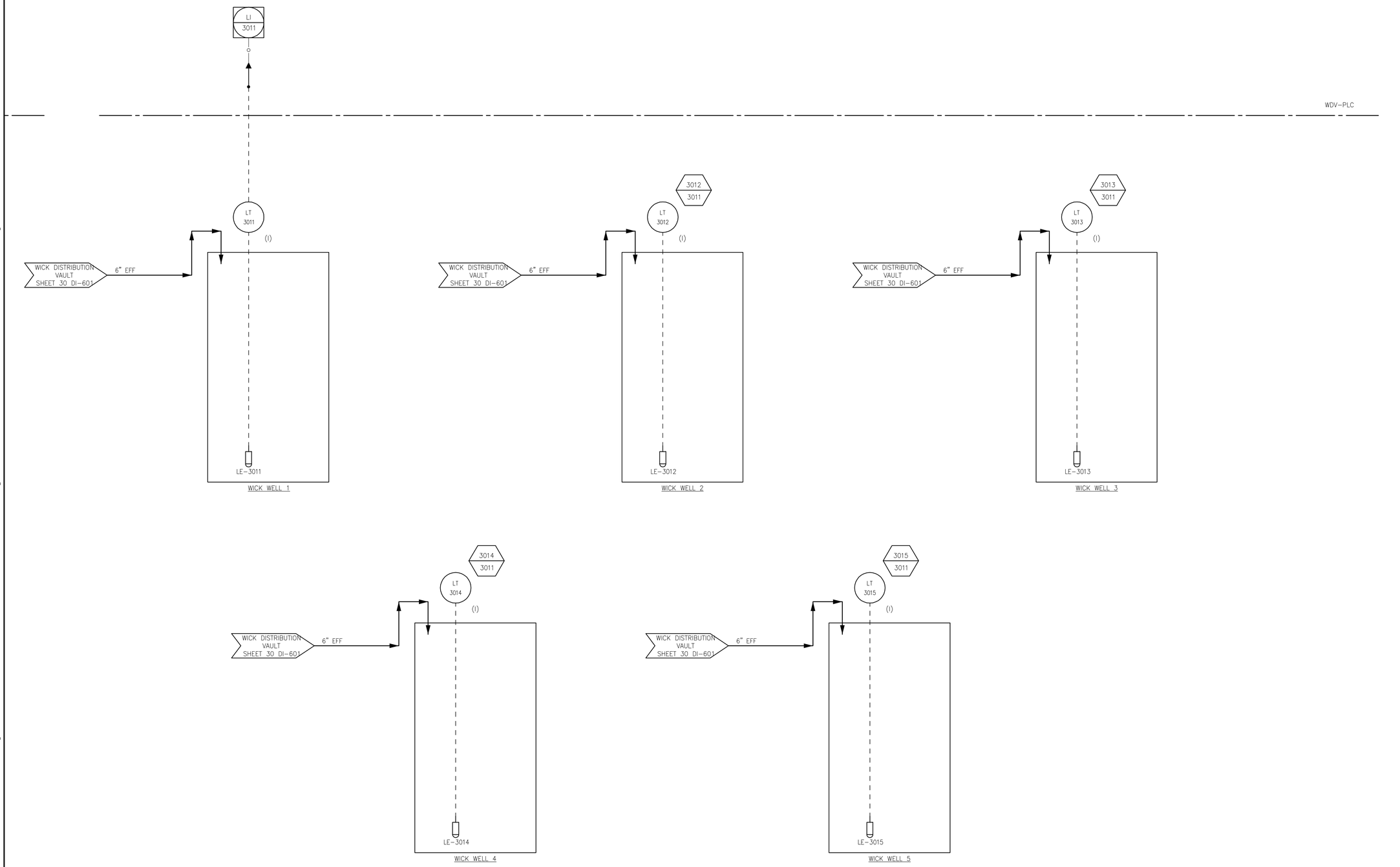
INSTRUMENTATION

SHEET TITLE

WICK DISTRIBUTION VAULT P&ID

SHEET NUMBER

30 DI-601



PATH\FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTF\SHEETS\DI\30 DI-602.DWG
LAST UPDATE: Wednesday, January 08, 2020 11:09:58 AM
PLOT DATE: Monday, January 27, 2020 2:59:46 PM

AECOM

PROJECT

DOWNTOWN AREA
WWTF AND
EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	**S. PAPAZIAN**
Drawn By:	**S. PAPAZIAN**
Dept Check:	**Y. RIZK**
Proj Check:	**T. PARECE**
Date:	**JANUARY 2020**
Scale:	**AS NOTED**

DISCIPLINE

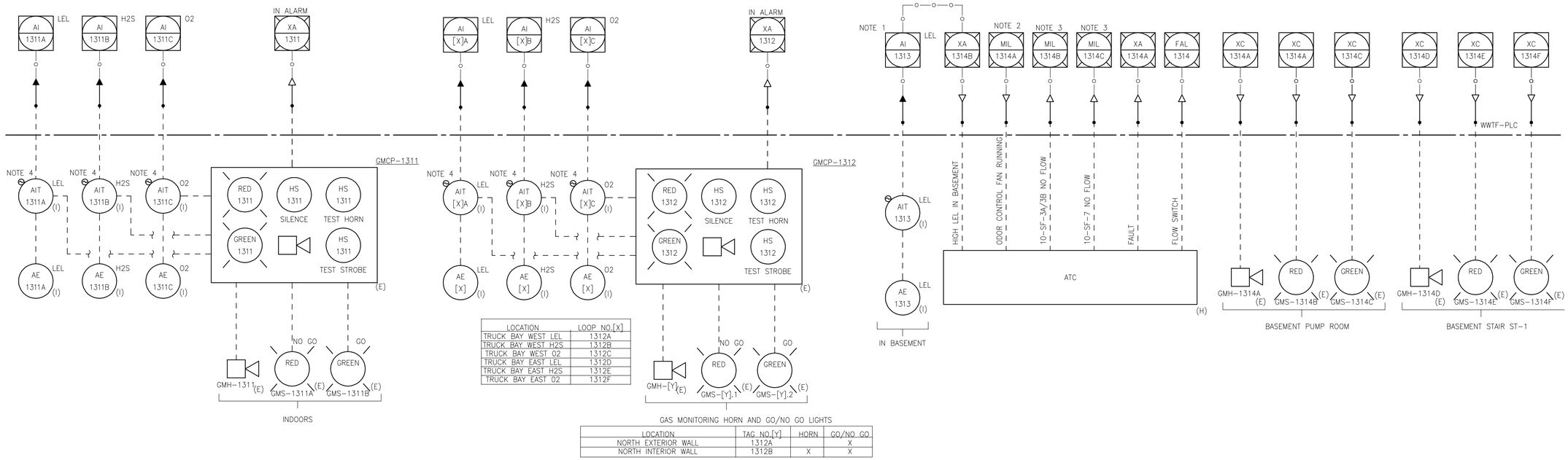
INSTRUMENTATION

SHEET TITLE

WICK DISTRIBUTION P&ID

SHEET NUMBER

30 DI-602



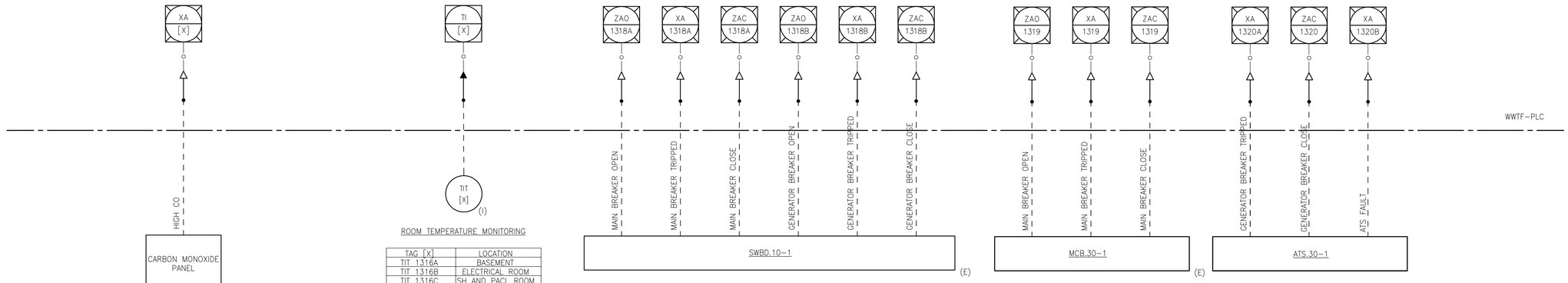
HEADWORKS GAS MONITORING

TRUCK BAY GAS MONITORING

LOCATION	LOOP NO.[X]
TRUCK BAY WEST LEL	1312A
TRUCK BAY WEST H2S	1312B
TRUCK BAY WEST O2	1312C
TRUCK BAY EAST LEL	1312D
TRUCK BAY EAST H2S	1312E
TRUCK BAY EAST O2	1312F

GAS MONITORING HORN AND GO/NO GO LIGHTS

LOCATION	TAG NO.[Y]	HORN	GO/NO GO
NORTH EXTERIOR WALL	1312A		X
NORTH INTERIOR WALL	1312B	X	X



TAG	LOCATION	LOOP
10-CO-CP-1	WWTF GARAGE	1315A
20-CO-CP-1	EQUIP. STORAGE FACILITY GARAGE	1315B

TAG [X]	LOCATION
TIT 1316A	BASEMENT
TIT 1316B	ELECTRICAL ROOM
TIT 1316C	SH AND PACL ROOM
TIT 1316D	POLYMER ROOM
TIT 1316E	SODA ASH ROOM

NOTES:

1. ON HIGH LEL IN BASEMENT, ATC WILL INITIATE HIGH SPEED VENTILATION IN THE SPACE. ON "NO FLOW" STATUS FROM 10-EF-1 OR 10-SF-1, AN ALARM SHALL BE GENERATED AT THE SCADA SYSTEM.
2. WHEN THE ODOR CONTROL SYSTEM STARTS, ATC SHALL START HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7. IN THE EVENT THAT THE ODOR CONTROL SYSTEM STOPS OR FAILS, HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7 SHALL STOP.
3. WHEN FLOW IS SENSED FROM HVAC SUPPLY FANS 10-SF-3A, 10-SF-3B, AND 10-SF-7, THE ODOR CONTROL SYSTEM SHALL RUN. UPON RECEIPT OF "NO FLOW" OR FAILURE SIGNAL OF ANY OF THESE HVAC SUPPLY FANS FROM THE ATC PANEL, THE ODOR CONTROL SYSTEM SHALL STOP.
4. GAS MONITORING TRANSMITTERS ARE 3-WIRE DEVICES.

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\99 DI-601.DWG
LAST UPDATE: Monday, January 13, 2020 2:51:28 PM
PLOT DATE: Monday, January 27, 2020 2:59:52 PM

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

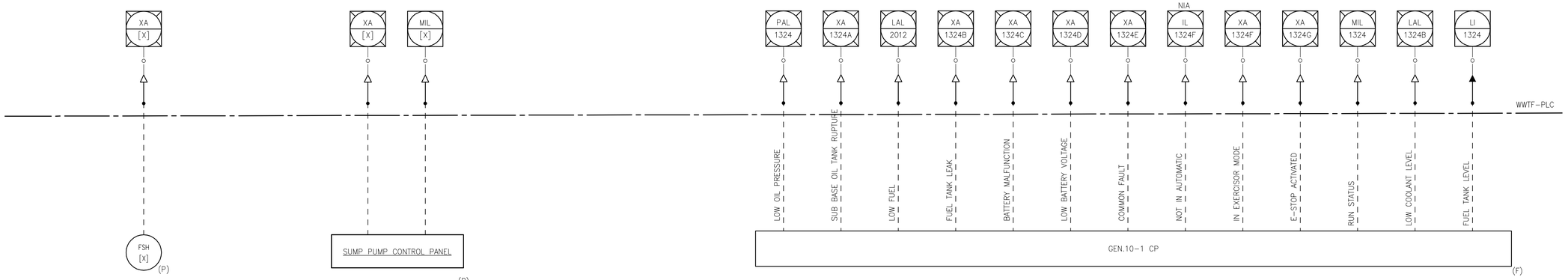
INSTRUMENTATION

SHEET TITLE

MISCELLANEOUS SIGNALS

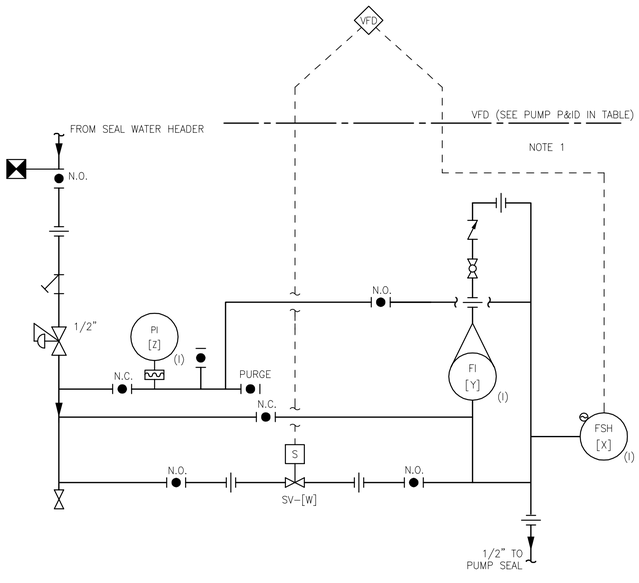
SHEET NUMBER

99 DI-601



TAG [X]	FIXTURE	LOCATION
FSH 1321A	EWS-1	TRUCK BAY/SEPTAGE RECEIVING
FSH 1321B	EWS-2	SODIUM HYPOCHLORITE/PACL ROOM
FSH 1321C	EWS-3	LABORATORY
FSH 1321D	EWS-4	POLYMER ROOM
FSH 1321E	EWS-5	SODA ASH ROOM
FSH 1321F	EWS-6	DISK FILTER ROOM

TAG	LOOP [X]	LOCATION
10-SP-1/1A	1322A	
10-SP-2/2A	1322B	
10-SP-3	1322C	



SEAL WATER PANEL

TABLE OF SEAL WATER INSTRUMENTS						
PUMP	SHEET	SOLENOID [W]	FLOW SWITCH [X]	ROTAMETER [Y]	PRESSURE GAUGE [Z]	LOCATION
SBR.TP-1	10 DI-603	SV-1011	FSH 1011	FI 1011	PI 1011C	MCC.10-1
SBR.TP-2		SV-1012	FSH 1012	FI 1012	PI 1012C	
SBR.TP-3		SV-1013	FSH 1013	FI 1013	PI 1013C	
TSL.P-1	10 DI-615	SV-1171	FSH 1171	FI 1171	PI 1171C	
TSL.P-2		SV-1172	FSH 1172	FI 1172	PI 1171C	

TABLE OF RESPONSIBILITY - ELECTRICAL, GENERAL, AND SYSTEM INTEGRATOR				
	ELEMENT	GENERAL CONTRACTOR	SYSTEM INTEGRATOR	ELECTRICAL CONTRACTOR
1	FURNISH, TEST AND CALIBRATE INSTRUMENTS		X	
2	INSTALL INSTRUMENTS	X		
3	INSTALL FIELD LOCATED DEVICES ASSOCIATED WITH INSTRUMENTS INCLUDING TRANSMITTERS, INDICATORS, CONTROL PANELS, AND ANCIALLARY COMPONENTS THAT ARE NOT LOCATED WITHIN PROCESS PIPING AND TANKS. LOCATIONS SHALL BE AS INDICATED ON THE ELECTRICAL DRAWINGS.	X		
4	FURNISH NETWORK EQUIPMENT, SCADA THIN CLIENT WORKSTATIONS/ENCLOSURES		X	
4	FURNISH AND INSTALL INTERCONNECTING WIRE, CABLE, CONDUIT, AND CONNECTIONS FOR INSTRUMENTS			X
5	FURNISH AND INSTALL ETHERNET CABLES			X
6	PROVIDE FIBER OPTIC CABLE, PATCH PANELS AND ASSOCIATED HARDWARE		X	
7	INSTALL FIBER OPTIC CABLE			X
8	TERMINATE AND TEST FIBER OPTIC CABLE		X	
9	FURNISH AND INSTALL GAS MONITORING CONTROL PANELS, HORN STROBES AND ALARM DEVICES			X
10	FURNISH GAS MONITORING ANALYZER SENSORS AND TRANSMITTERS	X		
11	INSTALL GAS MONITORING ANALYZER SENSORS AND TRANSMITTERS			X

NOTES:

1. SEE 99 D-504 FOR ADDITIONAL SEAL WATER DETAILS.

AECOM

PROJECT

DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL

CONTRACT No. 2019-1
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	3/9/20	ADDENDUM NO. 5

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

SHEET TITLE

MISC SIGNALS II AND TABLE OF RESPONSIBILITY

SHEET NUMBER

99 DI-602

PATH/FILENAME: P:\60587515 - ORLEANS DOWNTOWN AREA WWTP\SHEETS\DI\99 DI-602.DWG
LAST UPDATE: Friday, March 06, 2020 2:13:37 PM
PLOT DATE: Friday, March 06, 2020 2:13:54 PM

INSTRUMENT TYPE IDENTIFICATION LETTERS

THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ANALOG	ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL OR DIGITAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE OR INPUT		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY	RELIEF	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	USER'S CHOICE			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

MISCELLANEOUS ABBREVIATIONS

I/P	CURRENT TO PNEUMATIC CONVERTER	GBT	GRAVITY BELT THICKENER
E/I	VOLTAGE TO CURRENT CONVERTER	DO	DISSOLVED OXYGEN
∑	ADD OR TOTALIZE	H2S	HYDROGEN SULFIDE
√	SQUARE ROOT	O2	OXYGEN
X	MULTIPLY	pH	HYDROGEN ION CONCENTRATION
⊘	DIVIDE	LP	LOCAL PANEL
>	HIGH SELECT	VFD	VARIABLE FREQUENCY DRIVE
MV	MEASURED VARIABLE	△	DIFFERENCE
<	LOW SELECT	I/O	INPUT/OUTPUT
S.P.	SET POINT	ER	ELECTRICAL ROOM
PLC	PROGRAMMABLE LOGIC CONTROLLER	LEL	LOWER EXPLOSIVE LIMIT
f(x)	CHARACTERISTIC	DW	DEWATERING
P	PROPORTIONAL CONTROL MODE	OC	ODOR CONTROL
D	DERIVATIVE	WW	WASTE WATER
∫	INTEGRAL CONTROL MODE	SSL	ZERO SPEED SWITCH

SEE MECHANICAL LEGEND FOR ADDITIONAL ABBREVIATIONS AND PROCESS STREAM NAMES

SYMBOLS

HYDRAULIC CONTROL LINES
ELECTRIC INSTRUMENT LINES
PNEUMATIC SIGNAL
PROCESS FLOW
CAPILLARY TUBING
INTERNAL LINK SIGNAL
CONE CHECK VALVE
BALL VALVE
BALL CHECK VALVE
SWING CHECK VALVE
BUTTERFLY VALVE, DAMPER, OR LOUVER
PLUG VALVE
GATE VALVE
DIAPHRAGM VALVE
GLOBE VALVE
RESTRAINED FLEXIBLE COUPLING
FLOAT VALVE
3-WAY MIX VALVE (M)
3-WAY DIVERTER VALVE
3-WAY SOLENOID VALVE (S)
4-WAY MIX VALVE
4-WAY SOLENOID VALVE (S)
ANGLE VALVE
SOLENOID VALVE (S)
SELF-OPERATING BACK PRESSURE REGULATOR VALVE
SELF-OPERATING PRESSURE REGULATOR VALVE
PRESSURE REDUCING REGULATOR VALVE W/EXTERNAL PRESSURE TAP
PRESSURE RELIEF VALVE
VACUUM RELIEF VALVE
KNIFE GATE VALVE (K)
PINCH VALVE
STOP LOG
SLUICE GATE
PREFABRICATED SLIDE GATE
MULTI-BLADE DAMPER

ACCUMULATOR
AERATOR (M)
BAR SCREEN
CALIBRATION STANDPIPE
CHEMICAL SEAL
IN LINE SEAL (NOTE 2)
CONCENTRIC REDUCER
DRAIN
DUPLEX FILTER
ECCENTRIC REDUCER
FLEXIBLE HOSE
GRINDER (G)
LOAD CELL
MIXER
VERTICAL SHAFT MIXER (M)
PULSATION DAMPENER
QUICK DISCONNECT
RADIO, ULTRASONIC, OR ACOUSTIC SIGNAL
RUPTURE DISC (PRESSURE RELIEF)
RUPTURE DISC (VACUUM RELIEF)
STRAINER
CONE CHECK VALVE
DOUBLE DISC CHECK VALVE
FLAME ARRESTOR (FA)
INTRINSICALLY SAFE BARRIER (ISB)
SUBMERSIBLE LEVEL TRANSDUCER

DIFFUSER
STATIC MIXER
TANK VENT
UNION
WEIR (W)
CYLINDER ACTUATOR
DIAPHRAGM ACTUATOR WITH POSITIONER
HAND OPERATOR
HYDRAULIC OPERATOR (H)
MOTOR OPERATOR (M)
PNEUMATIC OPERATOR (P)
SOLENOID OPERATOR (S)
TERMINAL STRIP IN LOCAL PANEL FOR INTERFACE WITH COMPUTER/MUX
FLOW RATE CONTROLLER
FLOW ELEMENT (VENTURI)
INSERT FLOW ELEMENT (VENTURI)
MAGNETIC FLOWMETER
ORIFICE PLATE
PARSHALL FLUME
ROTAMETER
ACOUSTIC OR DOPPLER INLINE FLOWMETER
"V" NOTCH WEIR
VERTICAL TURBINE SOLIDS HANDLING PUMP (M)
INLINE MIXER

WEIR GATE
WEIR (W)
BLOWER
SUBMERSIBLE PUMP
CENTRIFUGAL PUMP
CENTRIFUGE AND SLUDGE CAKE PUMP
DIAPHRAGM PUMP
HOSE PUMP
METERING PUMP
POSITIVE DISPLACEMENT PUMP
PLUNGER PUMP
PRESSURE PUMP
PROGRESSIVE CAVITY PUMP (M)
ROTARY LOBE PUMP
VARIBLE INLET VANE DAMPER
INSERTION MASS FLOW METER
LIMITS OF WORK (TRADE, CONTRACT, ETC.)
POINT OF CONNECTION NEW WORK TO EXISTING WORK

GENERAL NOTES

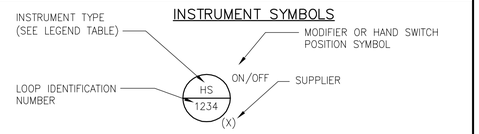
1. INSTRUMENT SUFFIX:

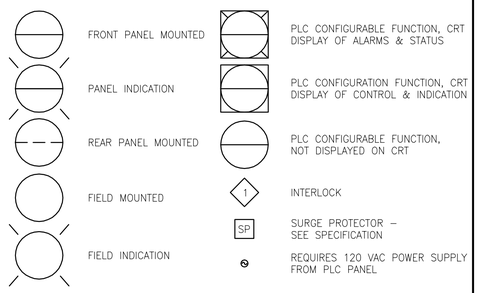
   NUMERIC SUFFIXES IDENTIFY INSTRUMENTS WITH DIFFERENT FUNCTIONS (E.G., A RUN AND AN OUT OF SERVICE LIGHT) ARE PRECEDED BY A DECIMAL POINT (E.G., AA:MIL-343.1 AND AA:MIL-343.2

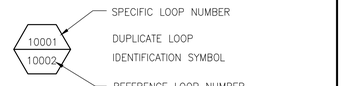
   ALPHABETIC SUFFIXES IDENTIFY MULTIPLE OCCURRENCES OF INSTRUMENTS WITH THE SAME FUNCTION (E.G.,TWO VALVE INDICATORS IN DIFFERENT PANELS, (E.G. AA:ZIL-161.1A, AND AA:ZIL-161.1B).

2. SEE MECHANICAL FOR ISOLATION RING DETAIL

INSTRUMENT SYMBOLS







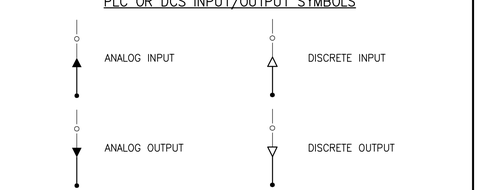
SUPPLIERS

ALL INSTRUMENTS ARE SPECIFIED BY INSTRUMENTATION (I) UNLESS INDICATED BY;

(E) SPECIFIED BY ELECTRICAL
(X) EXISTING
(M) SPECIFIED BY MECHANICAL
(H) SPECIFIED BY HVAC
(F) FURNISHED WITH EQUIPMENT
(P) SPECIFIED BY PLUMBING

CONTRACTOR SHALL PROVIDE ALL INSTRUMENTS AS SPECIFIED ON DATA SHEETS ATTACHED TO SPECIFICATION SECTION 13300

PLC OR DCS INPUT/OUTPUT SYMBOLS



HAND SWITCH POSITION SYMBOLS

(UNLABELLED SWITCHES ARE TO BE ON-OFF)

A	AUTOMATIC	SBY	STANDBY
C	CLOSE	F/R	FORWARD/REVERSE
F	FAST OR FORWARD	L/R	LOCAL/REMOTE
H	HAND	LOR	LOCAL/OFF/REMOTE
J	JOG	HOR	HAND-OFF-REMOTE
L	LOCAL	HOA	HAND-OFF-AUTO
M	MANUAL	OSC	OPEN/STOP/CLOSE
O	OPEN OR OFF	FSR	FORWARD/STOP/REVERSE
R	RUN OR REMOTE	TSM	THRU/STOP/MIX
S/S	START/STOP	OSF	OFF/SLOW/FAST
E/S	EMERGENCY STOP	OTC	OPEN/TRAVEL/CLOSE

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

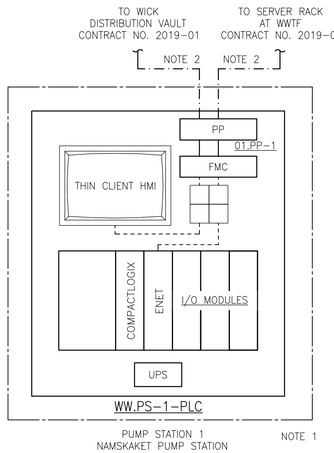
SHEET TITLE

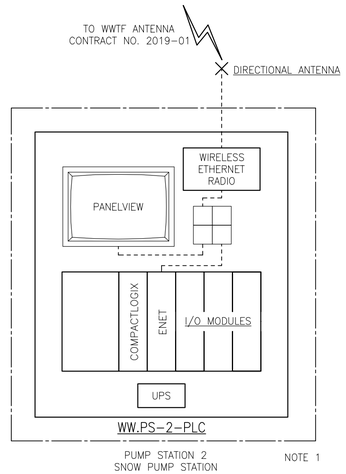
INSTRUMENTATION LEGEND, SYMBOLS, AND GENERAL NOTES

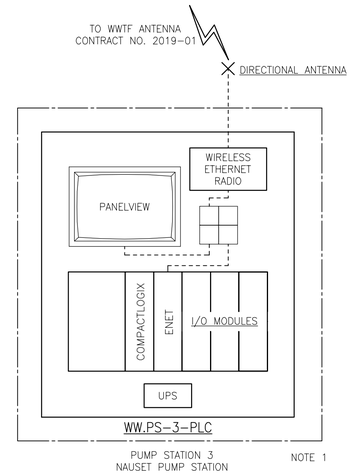
SHEET NUMBER

00 DI-001

Last saved by: TREMBLAYS (2020-01-27) Last Plotted: 2020-01-27
Filename: P:\60476644 - ORLEANS DOWNTOWN PUMP STATIONS\SHEETS\DI\00 DI-001 INSTRUMENTATION LEGEND, SYMBOLS, AND GENERAL NOTES.DWG







NOTES:

1. PUMP STATION PLC PANELS, REMOTE COMMUNICATION HARDWARE AND CONFIGURATION/INTEGRATION TO BE PROVIDED UNDER THE WWTF CONTRACT AND HAVE BEEN SHOWN HERE FOR CLARITY.
2. FIBER OPTIC CABLE, ANCILLARY HARDWARE, AND ASSOCIATED TERMINATIONS AND TESTING ASSOCIATED WITH THE REMOTE PUMP STATIONS TO BE PROVIDED UNDER THE WWTF CONTRACT.

LEGEND

- ETHERNET
- FIBER MEDIA
- MANAGED ETHERNET SWITCH
- FPP — FIBEROPTIC PATCH PANEL
- FMC — FIBER MEDIA CONVERTER
- UPS — UNINTERRUPTIBLE POWER SUPPLY

NOTES:

1. PLC BASED CONTROL PANELS TO BE PROVIDED UNDER CONTRACT NO. 2019-1, DOWNTOWN AREA WWTF AND EFFLUENT DISPOSAL.

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

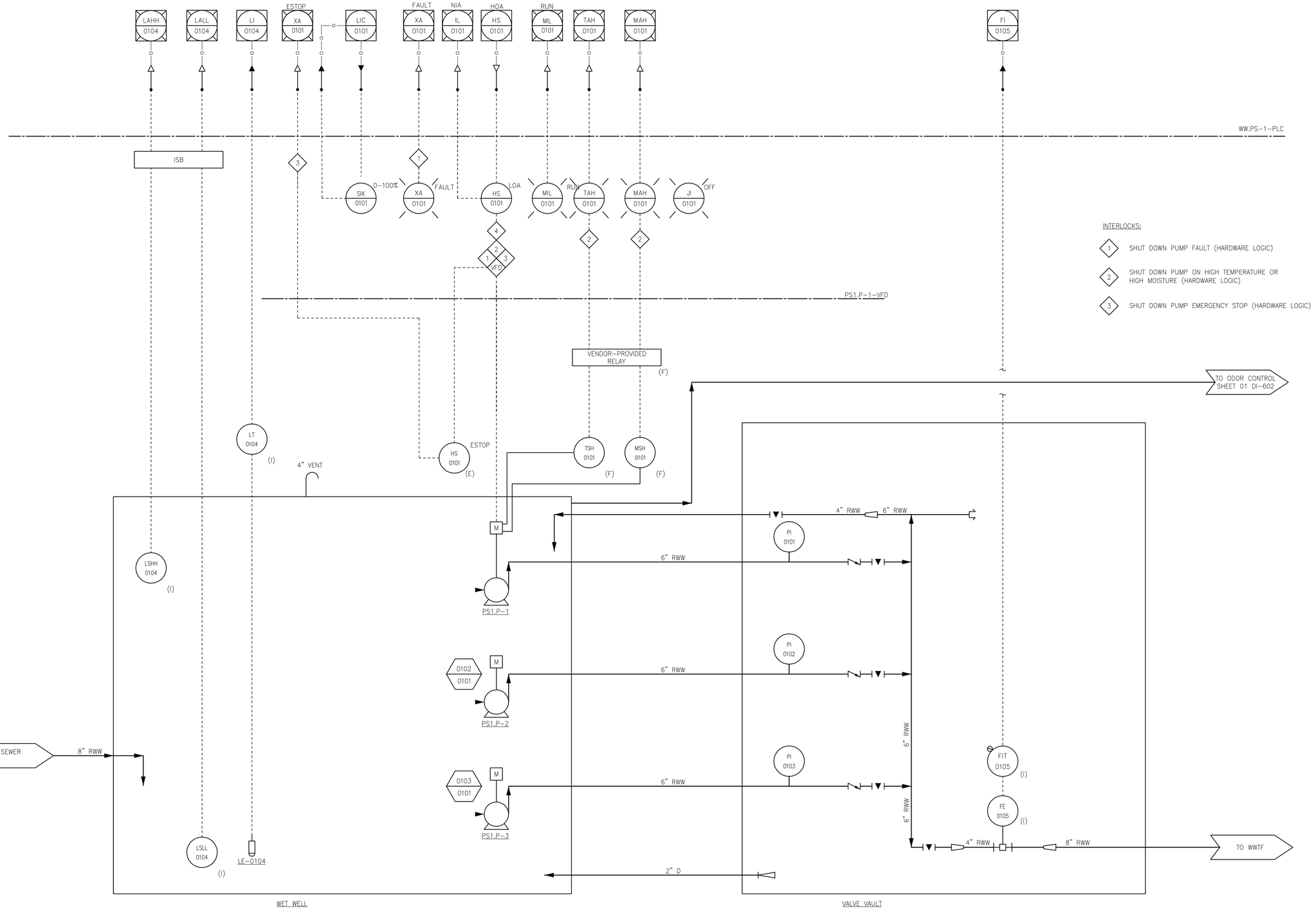
SHEET TITLE

SYSTEM ARCHITECTURE

SHEET NUMBER

00 DI-601

Last saved by: TREMBLAYS (2019-04-22) Last Plotted: 2020-01-27
Filename: P:\60476844 - ORLEANS DOWNTOWN PUMP STATIONS\SHEETS\DI\00 DI-601.DWG



INTERLOCKS:

1. SHUT DOWN PUMP FAULT (HARDWARE LOGIC)
2. SHUT DOWN PUMP ON HIGH TEMPERATURE OR HIGH MOISTURE (HARDWARE LOGIC)
3. SHUT DOWN PUMP EMERGENCY STOP (HARDWARE LOGIC)

Last saved by: TREMBLAYS (2020-01-24) Last Plotted: 2020-01-27
Filename: P:\60476644 - ORLEANS DOWNTOWN PUMP STATIONS\SHEETS\DI\10 DI-601.DWG

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

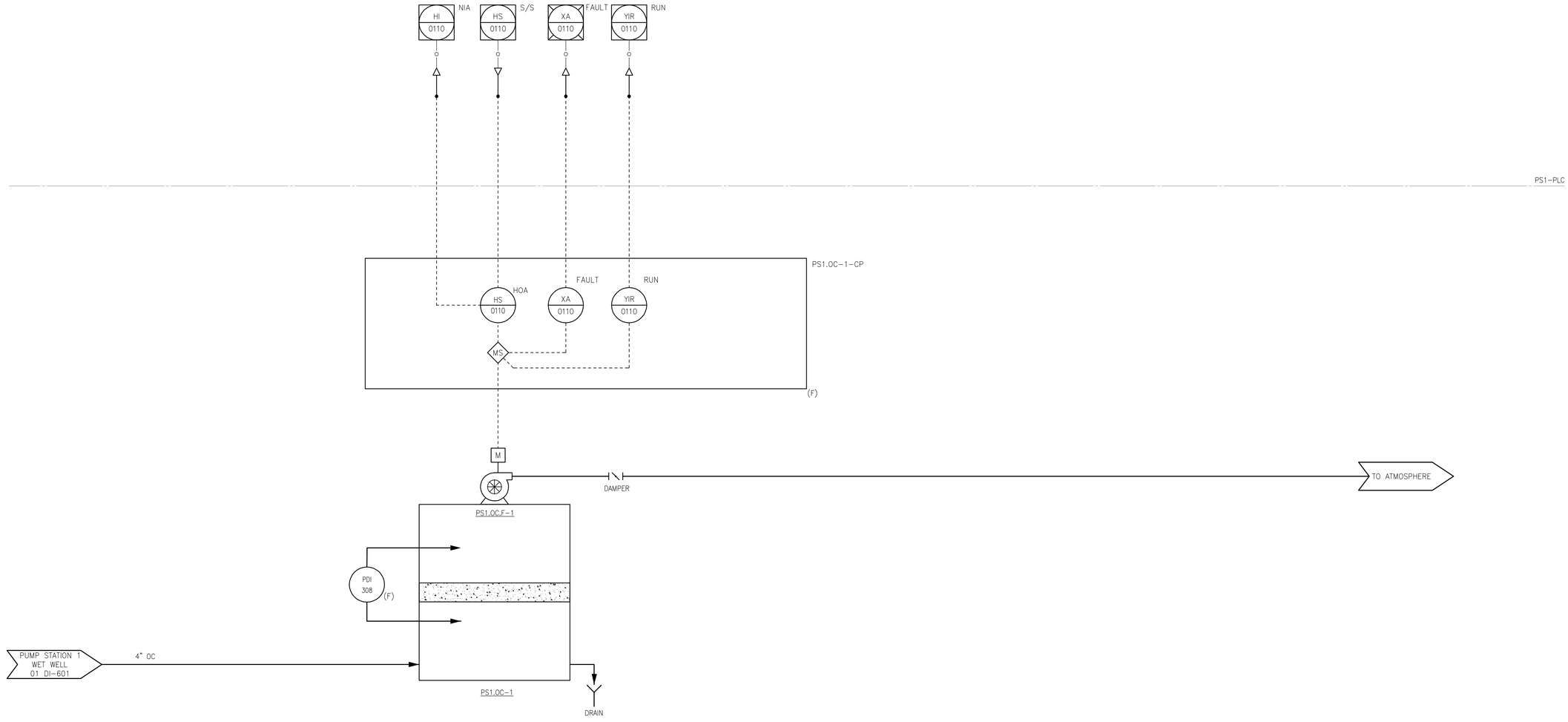
INSTRUMENTATION

SHEET TITLE

PUMP STATION 1 P&ID

SHEET NUMBER

01 DI-601



Last saved by: TREMBLAYS (2019-06-06) Last Plotted: 2020-01-27
Filename: P:\60476844 - ORLEANS DOWNTOWN PUMP STATIONS\SHEET\SD\01 DI-602.DWG

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPPAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

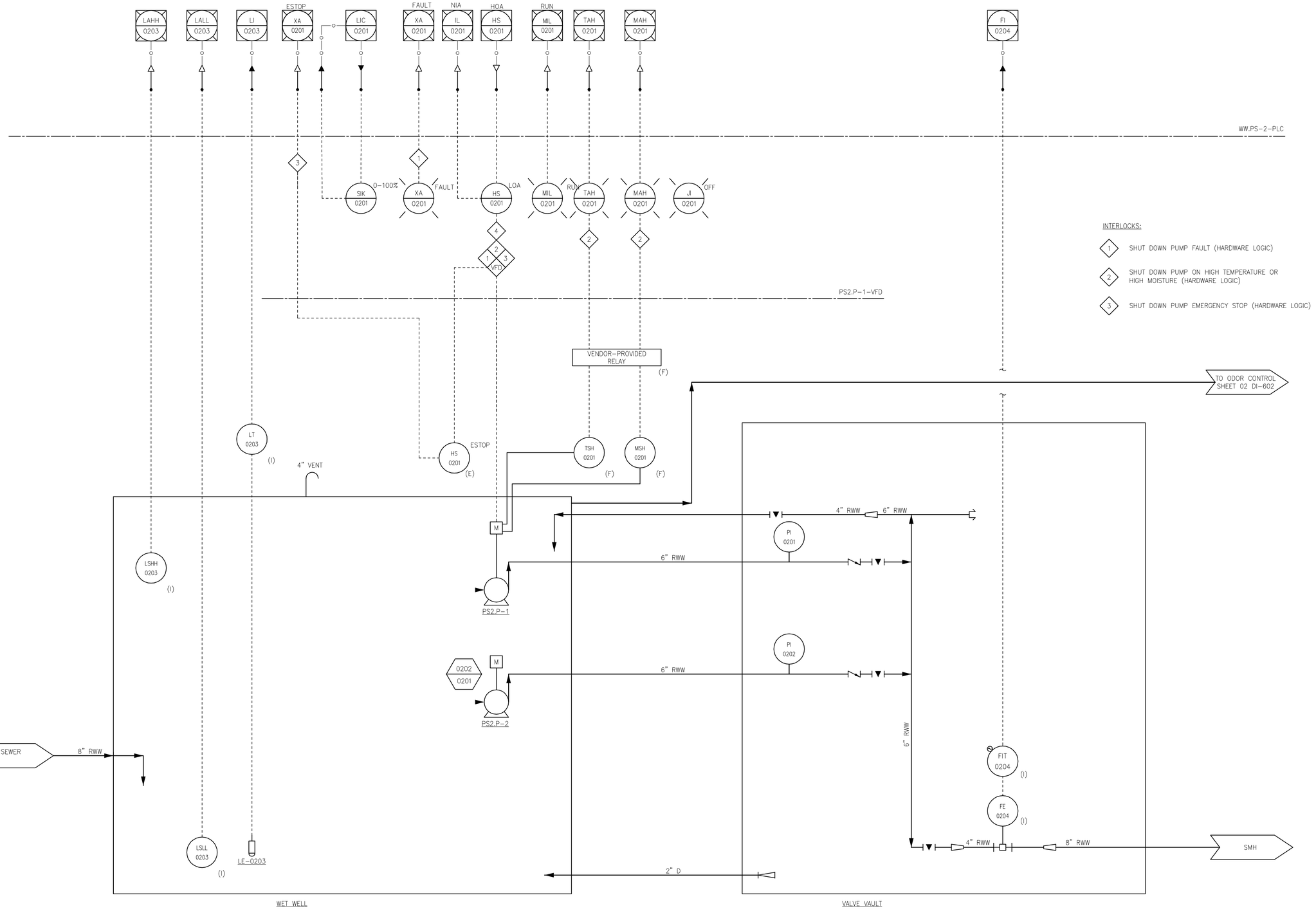
INSTRUMENTATION

SHEET TITLE

PUMP STATION 1 ODOR CONTROL P&ID

SHEET NUMBER

01 DI-602



Last saved by: TREMBLAYS (2019-04-22) Last Plotted: 2020-01-27
Filename: P:\60476644 - ORLEANS DOWNTOWN PUMP STATIONS\SHEETS\DI\02 DI-601.DWG

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

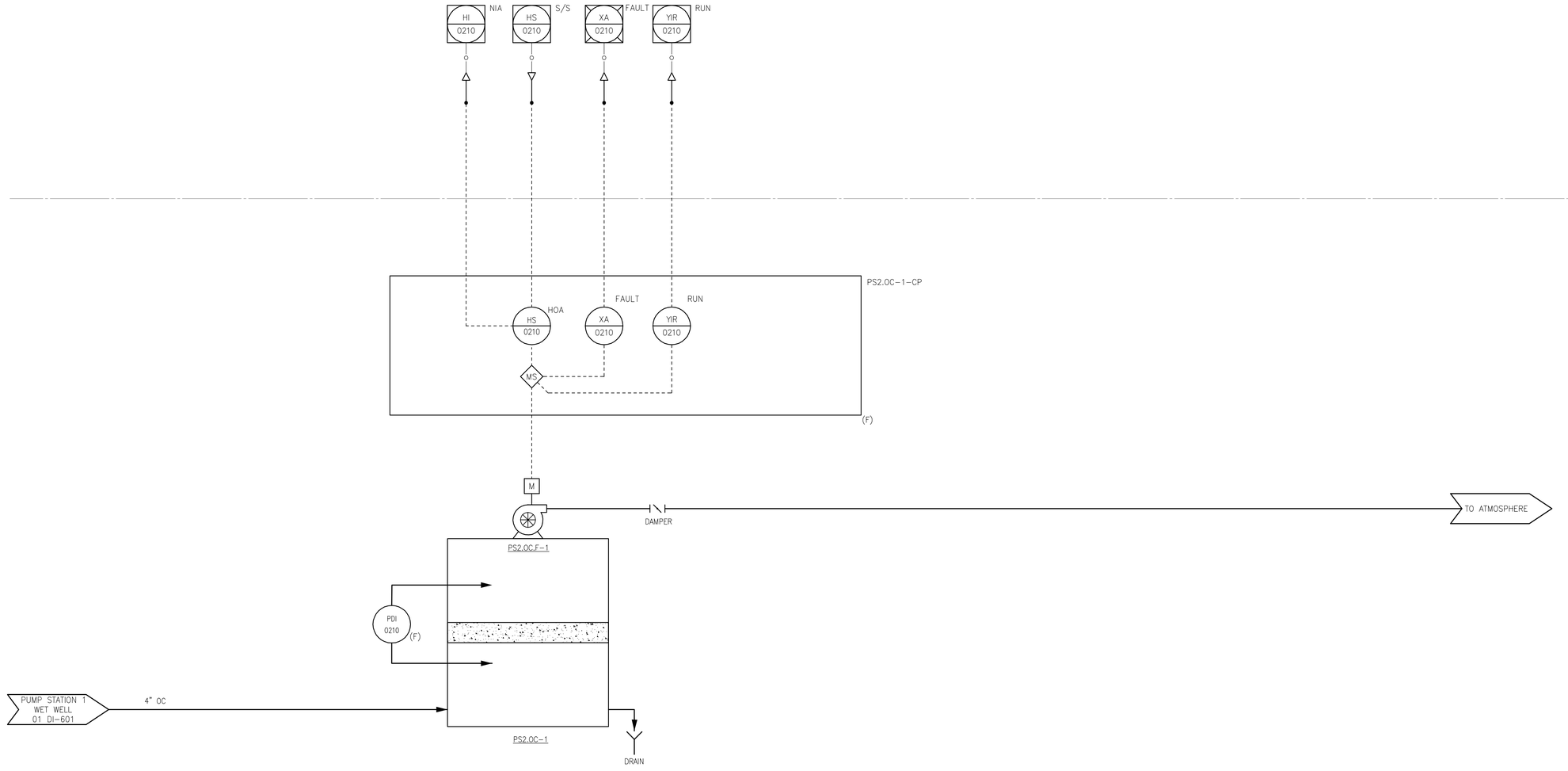
INSTRUMENTATION

SHEET TITLE

PUMP STATION NO. 2 P&ID

SHEET NUMBER

02 DI-601



Last saved by: TREMBLAYS (2019-06-06) Last Plotted: 2020-01-27
Filename: P:\60476844 - ORLEANS DOWNTOWN PUMP STATIONS\SHEET\SD\02 DI-602.DWG

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPPUN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

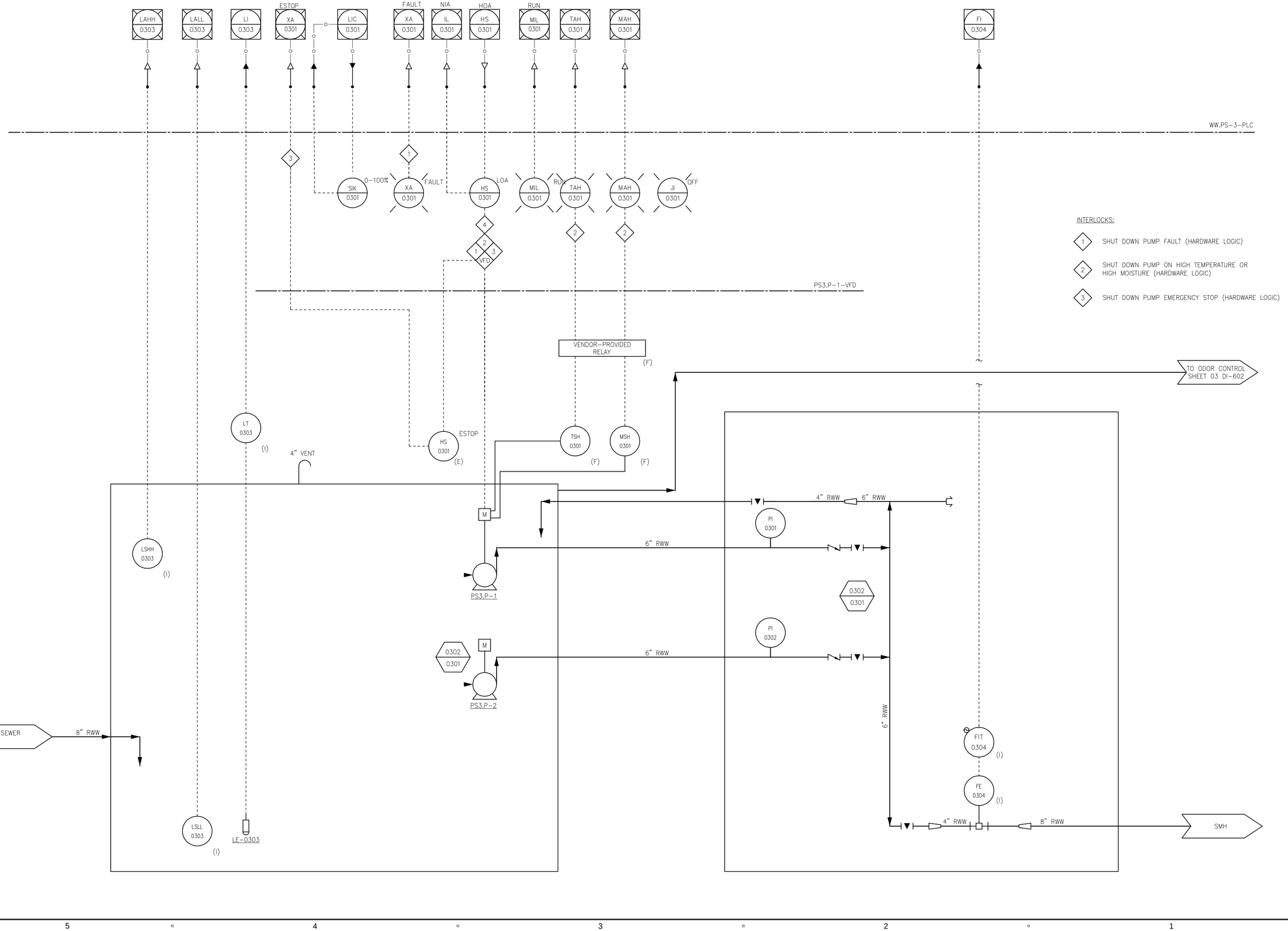
INSTRUMENTATION

SHEET TITLE

PUMP STATION 2 ODOR CONTROL P&ID

SHEET NUMBER

02 DI-602



Last saved by: TREMBLAYS (2019-04-22) Last Plotted: 2020-01-27
Filename: P:\60476644 - ORLEANS DOWNTOWN PUMP STATIONS\SHEETS\DI\03 DI-601.DWG

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPAZIAN
INSTRUMENTATION
No.52296
REGISTERED PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	S. PAPAZIAN
Drawn By:	S. PAPAZIAN
Dept Check:	Y. RIZK
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

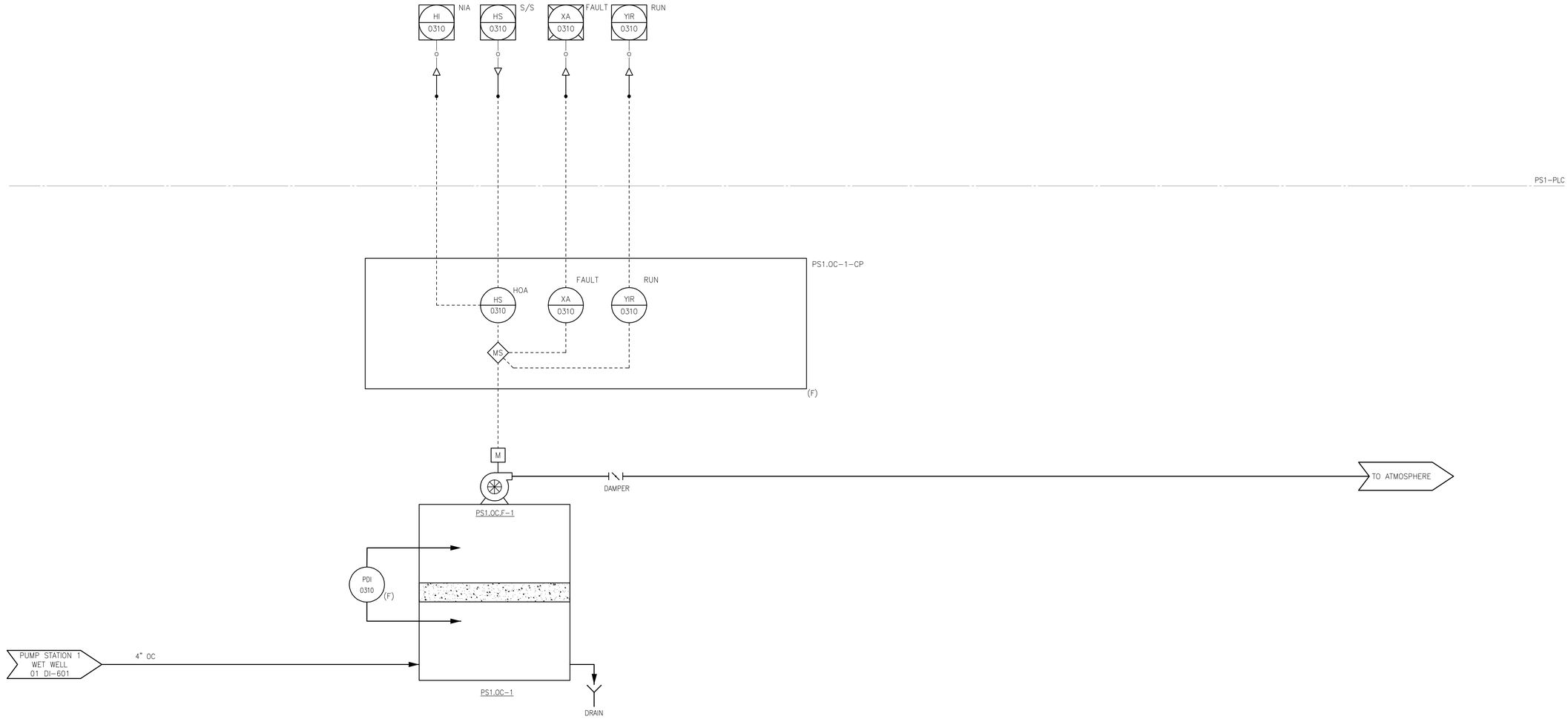
INSTRUMENTATION

SHEET TITLE

PUMP STATION NO. 3 P&ID

SHEET NUMBER

03 DI-601



Last saved by: TREMBLAYS (2019-06-06) Last Plotted: 2020-01-27
Filename: P:\60476844 - ORLEANS DOWNTOWN PUMP STATIONS\SHEET\SD\03 DI-603.DWG

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA
19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPPAN
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

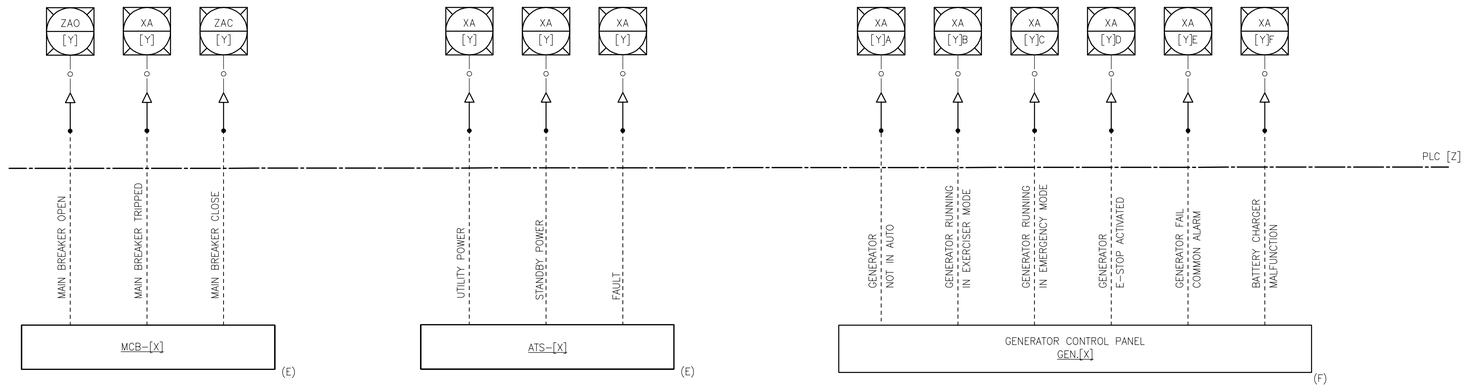
INSTRUMENTATION

SHEET TITLE

PUMP STATION 3 ODOR CONTROL P&ID

SHEET NUMBER

03 DI-603



EQUIP TAG [X]	LOOP NO. [Y]	LOCATION	PLC [Z]
MCB.01-1	0111	PUMP STATION 1	WW.PS-1-PLC
MCB.02-1	0211	PUMP STATION 2	WW.PS-2-PLC
MCB.03-1	0311	PUMP STATION 3	WW.PS-3-PLC

EQUIP TAG	LOOP NO. [Y]	LOCATION	PLC [Z]
ATS.01-1	0121	PUMP STATION 1	WW.PS-1-PLC
ATS.02-1	0212	PUMP STATION 2	WW.PS-2-PLC
ATS.03-1	0312	PUMP STATION 3	WW.PS-3-PLC

EQUIP TAG [X]	LOOP NO. [Y]	LOCATION	PLC [Z]
GEN.01-1	0131	PUMP STATION 1	WW.PS-1-PLC
GEN.02-1	0213	PUMP STATION 2	WW.PS-2-PLC
GEN.03-1	0313	PUMP STATION 3	WW.PS-3-PLC

AECOM

PROJECT

DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS

CONTRACT No. 2019-02
SRF No. 4486

OWNER

TOWN OF ORLEANS, MA

19 SCHOOL ROAD
ORLEANS, MA 02653
(508) 240-3700

ENGINEER

AECOM TECHNICAL SERVICES, INC.
9 JONATHAN BOURNE DRIVE
POCASSET, MA 02559
PHONE: (508) 833-6950
www.aecom.com

REGISTRATION

COMMONWEALTH OF MASSACHUSETTS
SARAH PAPPAS
INSTRUMENTATION
No.52296
REGISTERED
PROFESSIONAL ENGINEER

Jan 24 2020

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	02-28-20	ADDENDUM 4

PROJECT NUMBER

60587515

Designed By:	----
Drawn By:	----
Dept Check:	----
Proj Check:	T. PARECE
Date:	JANUARY 2020
Scale:	AS NOTED

DISCIPLINE

INSTRUMENTATION

SHEET TITLE

MISCELLANEOUS SIGNALS

SHEET NUMBER

99 DI-601

Last saved by: TREMBLAYS (2019-06-06) Last Plotted: 2020-01-27
Filename: P:\60476844 - ORLEANS DOWNTOWN PUMP STATIONS\SHEET\SD\99 DI-601.DWG