Memorandum

Subject: Muddy Creek WWTP Expansion to 0.66 MGD - Addendum No. 2 to RFQ
Date: January 14, 2026
To: All Prospective Offerors
From: Water & Sewer Authority of Cabarrus County (WSACC)
Copy: Brown and Caldwell

WSACC received additional questions regarding the RFQ, and this Addendum No. 2 provides the associated responses to all prospective Offerors. Wording for some questions has been modified for presentation here while preserving the meaning of each question.

Addendum No. 2 – May prospective Offerors perform a drone flight at the MCWWTP?

Given the limited remaining time prior to the SOQ deadline, and that this opportunity would need to be made available to all prospective Offerors for their consideration, WSACC declines to allow prospective Offerors to perform drone flight(s) at the MCWWTP at this time.

Addendum No. 2 – Can WSACC provide as-builts or past design documents of the existing structures?

The following drawings are provided as attachments to this Addendum No. 2, to all prospective Offerors for informational purposes only. These drawings cannot be relied upon as an exact representation of actual conditions. The selected Design-Build team shall be responsible for verifying, validating, and supplementing all information required for the design and construction of the Project.

- Cabarrus County, North Carolina Muddy Creek Wastewater Treatment Plant – Issued for Construction Drawings
- Water and Sewer Authority of Cabarrus County (WSACC) Muddy Creek WWTP 0.15 MGD Expansion Record Drawings
- Contract 7.0 – Muddy Creek WWTP 0.30 MGD Expansion Reference Drawings

Addendum No. 2 – If documents or existing structures cannot be obtained, can WSACC provide the dimensions of the existing aeration basins?

See attached documents provided in response to the previous question.

Addendum No. 2 – Are 11 x 17 sheets permitted? If so, how are they counted in terms of page limits – do they count as one page or two?

11 x 17 sheets are permitted in the SOQ, provided they are included primarily to show a drawing, larger photo or set of photos, or another similar use that would not be reasonable to convey via an 8.5 x 11 sheet. 8.5 x 11 sheets should be used when conveying narrative text in the SOQ. 11 x 17 sheets included as referenced above will count as one page. Each Offeror will be limited to the use of four (4) 11 x 17 sheets in their SOQ submission.

Questions

Further questions can be directed to Thomas Hahn, PE at t.hahn@wsacc.org. The last day to submit questions regarding the RFQ is January 20, 2026.

Attachments:

A. Cabarrus County, North Carolina Muddy Creek Wastewater Treatment Plant – Issued for Construction Drawings
B. Water and Sewer Authority of Cabarrus County (WSACC) Muddy Creek WWTP 0.15 MGD Expansion Record Drawings
C. Contract 7.0 – Muddy Creek WWTP 0.30 MGD Expansion Reference Drawings

Attachment A

CABARRUS COUNTY, NORTH CAROLINA

MUDDY CREEK WASTEWATER TREATMENT PLANT

CONTRACT S - SINGLE PRIME

CONTRACT A - GENERAL CONSTRUCTION

CONTRACT B - HVAC AND PLUMBING

CONTRACT C - ELECTRICAL

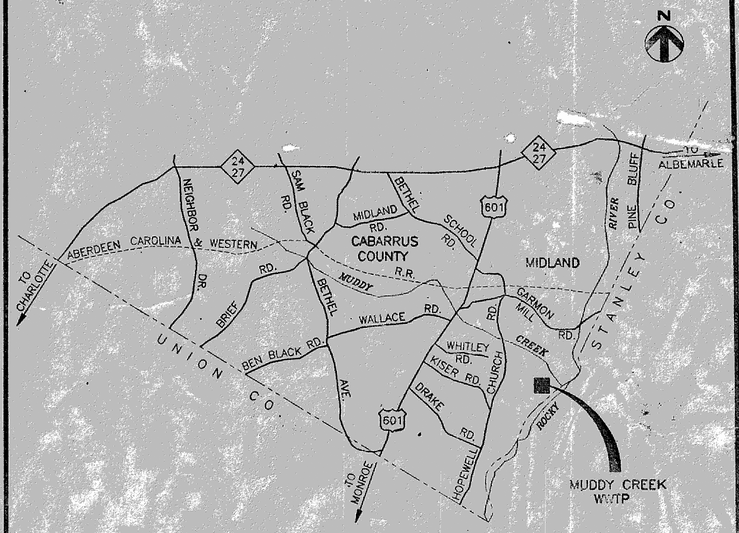
CONTRACT L - INTERCEPTOR

1994

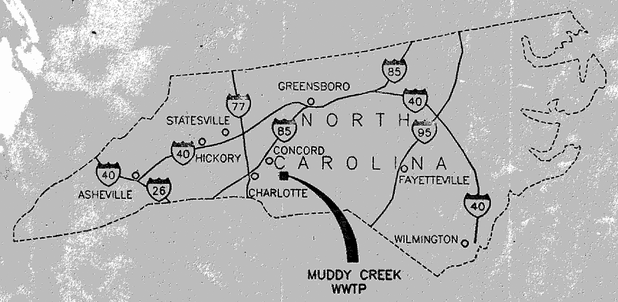
P:\MUDDYCR2\MC-0001

HDR Engineering, Inc.
of North Carolina

Vicinity Map



Location Map



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GENERAL

1	Cover Sheet and Location Map
2	Drawing Index
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3B	NOT USED
3C	General Symbols
4	Site Grading, Staking and Erosion Control Plan
5	Access Road
6	Site Details
6A	Site Details
6B	Site Details
7	Hydraulic Profile and Process Design Summary
8	Site Piping Plan

ADMINISTRATION BUILDING

101	Administration Building – Floor Plan and Schedules
102	Administration Building – Elevations and Sections
103	Administration Building – Wall Sections
104	Administration Building – Plan and Sections
105	Administration Building – Laboratory and Lavatory Plans and Elevations
106	Administration Building – Reflected Ceiling Plan

PUMP STATION

201	Pump Station – Plan, Sections and Details

MODULAR TREATMENT UNIT (MTU)

301	MTU, CFU – Plan and Sections
302	MTU, CFU – Foundation Plan and Section

FILTRATION/UV DISINFECTION

401	UV Disinfection – Plan and Sections

CASCADE AERATION/EFFLUENT MONITORING

501	Cascade Aerator – Plan, Sections and Details
502	Effluent Monitoring Box – Plan, Sections and Details

HVAC AND PLUMBING

601	Administration Building Floor Plan – HVAC
602	Administration Building Details – HVAC
603	Administration Building Floor Plan – Plumbing

ELECTRICAL

701	Site Plan – Electrical
702	Treatment Plant – Electrical
703	Administration Building Floor Plan – Electrical
704	Pump Station and Effluent Monitoring Box Plans – Electrical
705	One-Line Diagram
706	Electrical Details and Control Wiring Diagrams
707	Details – Electrical
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801	General Notes
802	Drawing Layout
803	Interceptor Sta 3+68.83 to Sta 11+00
804	Interceptor Sta 11+00 to Sta 22+00
805	Interceptor Sta 22+00 to Sta 33+00
806	Interceptor Sta 33+00 to Sta 43+00
807	Interceptor Sta 43+00 to Sta 53+00
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809	Interceptor Sta 64+00 to Sta 75+00
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811	Interceptor Sta 86+00 to Sta 96+00
812	Interceptor Sta 96+00 to Sta 106+14.27
813	Interceptor Extension Sta 0+00 to Sta 11+00
814	Interceptor Extension Sta 11+00 to Sta 22+00
815	Interceptor Extension Sta 22+00 to Sta 30+94.59
816	Interceptor Details

HDR

HDR Engineering, Inc. of North Carolina

Issue No	Description	Date	Drwn	Chkd	Resp. Engr	Proj Mgr
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8295 REGISTERED RICHARD B. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	M&C/Process: R. HAMILTON
Civil: SHUE / MOSTELLER	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Cabarrus County North Carolina

Drawing Index

Date	Project No	Sheet No	Issue
MAR 1994	00187-041-018	2	0
Scale: NO SCALE			

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GENERAL ABBREVIATIONS

@	AT
AB	ANCHOR BOLT
AC	ALTERNATING CURRENT
AD	ACCESS DOOR
ADD	ADDENDUM
ADJ	ACENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
AIC	AMPS INTERRUPTION CAPACITY (SYMMETRICAL)
AL	ACCESS LADDER
ALTN	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
ANDZ	ANODIZED
APPR	APPROXIMATE
ARCH	ARCHITECTURE OR ARCHITECT
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BET	BETWEEN
BF	BLIND FLANGE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCH MARK
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILL OR REGISTER
BOT	BOTTOM
BPL	BASE PLATE
BRG	BEARING
BRGPL	BEARING PLATE
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
BWG	BACKWASH GULLET
C	CONDUIT
CAB	CABINET
CB	CATCH BASIN
CFM	CUBIC FEET PER MINUTE
CGU	CERAMIC GLAZED UNITS
CH	CHAMFER
CIR	CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COM	COMMON
COMB	COMBINATION
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRIDOR
CRS	COUNTERSINK
CS	COURSES
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTD	CENTER, CENTERED
CTRL	CONTROL
CUFT	CUBIC FOOT
CUYD	CUBIC YARD
CXT	CIRCUIT
DC	DIRECT CURRENT
DCJ	DOWELED CONTROL JOINT
DEM	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DN	DOWN
DWG	DRAWING
DWL	DOWEL
E	EAST
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ENCL	ENCLOSURE
ENTR	ENTRANCE
EQ	EQUAL
EQPT	EQUIPMENT
ES	EMERGENCY SHOWER AND EYEWASH
EST	ESTIMATE
EW	EACH WAY
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXPL	EXPLOSION PROOF
EXPO	EXPOSED
EXT	EXTERIOR
°F	FAHRENHEIT
FAB	FABRICATED
FAI	FAILS AS IS (IN EXISTING POSITION)
FB	FLOOR BEAM
FC	FAIL CLOSED
FCP	FILTER CONTROL PANEL
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FL	FLOOR
FLA	FULL LOAD AMPS
FLG	FLANGE
FLOUR	FLUORESCENT

GENERAL ABBREVIATIONS

FO	FINISHED OPENING/FAIL OPEN
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPT	FLOOR PLATE
FT	FOOT OR FEET
FTG	FOOTING
FUT	FUTURE
FWD	FORWARD
GA	GAGE
GALV	GALVANIZED
GL	GLASS
GLACB	GLAZED ACOUSTICAL CONCRETE BLOCK
GLCB	GLAZED CONCRETE BLOCK
GPM	GALLONS PER MINUTE
GRD	GROUND
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
HC	HOLLOW CORE
HDW	HARDWARE
HEX	HEXAGONAL
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HSB	HIGH STRENGTH BOLT
HT	HEIGHT
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWL	HIGH WATER LEVEL
HZ	HERTZ
ID	INSIDE DIAMETER OR INTERIOR DIMENSION
IE	INVERT ELEVATION
IG	ISOLATED GROUND
IN	INCHES
INC	INCLUDING
INCAND	INCANDESCENT
INSTL	INSTALL, INSTALLATION
INSUL	INSULATION
INTR	INTERIOR OR INTERMEDIATE
J	JOIST
JCT	JUNCTION
JF	JOINT FILLER
JT	JOINT
K	KIP
kV	KILOVOLTS
kVA	KILOVOLT AMPERES
kW	KILOWATT
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LC	LOCKED CLOSED
LF	LINEAR FEET
LH	LEFT HAND
LL	LIVE LOAD
LO	LOCKED OPEN
LPT	LOW POINT
LTG	LIGHTING
LTL	LINTEL
LV	LOW VOLTAGE
LWC	LIGHT WEIGHT CONCRETE
LWL	LOW WATER LEVEL
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBH	THOUSAND BTU'S PER HOUR
MBR	MEMBER
MCBD	METAL CORNER BEAD
MECH	MECHANICAL
MED	MEDIUM
MET	METAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MRD	METAL ROOF DECK
MTD	MOUNTED
MTG	MOUNTING
N	NORTH
NC	NORMALLY CLOSED
ND	NORMALLY DE-ENERGIZED
NE	NORMALLY ENERGIZED
NEC	NATIONAL ELECTRIC CODE
NEUT	NEUTRAL
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN/NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OH	OVERHEAD
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSA	OUTSIDE AIR

GENERAL ABBREVIATIONS

PCC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PF	POWER FACTOR
PH	PHASE
PL	PLATE
PLAS	PLASTER
PNT	PAINT
POC	POINT OF CURVATURE
POT	POINT OF TANGENCY
PREFAB	PREFABRICATED
PSC	PRESTRESSED CONCRETE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT
PTC	PRETENSIONED CONCRETE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PWD	PLYWOOD
PWR	POWER
P/LF	POUNDS PER LINEAL FOOT
R	RISER
RA	RETURN AIR
RAD	RADIUS
REC	RECESS
REF	REFERENCE
REINF	REINFORCED,REINFORCING
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISED, REVISION
RFG	ROOFING
RGS	RIGID GALVANIZED STEEL CONDUIT
RH	RIGHT HAND
RL	ROOF LOAD
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
S	SOUTH
SA	SUPPLY AIR
SAD	SUPPLY AIR DROP
SCED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRL	STRUCTURAL
SUSP	SUSPEND
SWD	SUPPLY WALL DIFFUSER
SYM	SYMMETRICAL
SYS	SYSTEM
TA	TOILET ACCESSORY
TC	TOP OF CURB
TEMP	TEMPERATURE
TERM	TERMINAL
THK/TH	THICK
TKBD	TACKBOARD
TO	TOP OF
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TURNING POINT
TRD	TREAD
TYP	TYPICAL
UFD	UNDERFLOOR DUCT
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT AMPERE
VB	VAPOR BARRIER
VBX	VALVE BOX
VERT	VERTICAL
VEST	VESTIBULE
VINT	VINYL TILE
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WATTS/WEST
WD	WOOD
WDO	WINDOW
WG	WATER GAUGE
WGL	WIRE GLASS
WL	WATER LEVEL
WM	WIRE MESH
WP	WEATHERPROOF
WATS	WATER SURFACE
WS	WATER STOP
W/	WITH
W/O	WITHOUT
Z/C TS	Z CONDUCTOR TWISTED SHIELDED CABLE
2/C TS	2 CONDUCTOR TWISTED SHIELDED CABLE
3/C TS	3 CONDUCTOR TWISTED SHIELDED CABLE

EQUIPMENT PREFIXES

A	AMMETER
ABM	AERATION BASIN MIXER
AF	AIR FILTER
AFB	AIR FLUIDIZING BLOCK
AHU	AIR HANDLING UNIT
AR	AIR RECEIVER
ATS	AUTOMATIC TRANSFER SWITCH
AV	AIR VIBRATOR
B	BLOWER
BCO	BELT CONVEYOR
BFP	BELT FILTER PRESS
BKR	BREAKER
BV	BALANCE VALVE
CB	CIRCUIT BREAKER
CD	CEILING DIFFUSER
CMX	CHEMICAL MIXER
CNS	CHLORINE SCALE
CO	CLEAN OUT
COMP	COMPRESSOR
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CSI	CHEMICAL INDUCTION EQUIPMENT
CT	CURRENT TRANSFORMER
D	DOOR
DA	DAMPER
DCF	DUST COLLECTOR FAN
DCL	DUST COLLECTOR
DISC	DISCONNECT
DISP	DISPENSER
ED	EQUIPMENT DRAIN
EE	EMERGENCY EYEWASH
EF	EXHAUST FAN
EFT	EFFLUENT FILTERS
EJ	EXPANSION JOINT
ES	EMERGENCY SHOWER
ETM	ELAPSE TIME METER
EWC	ELECTRICAL WATER COOLER
F	FAN
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FAD	FOUL AIR DUCT
FACP	FIRE ALARM CONTROL PANEL
FD-X	FLOOR DRAIN
FD	FIRE DAMPER
FDR	FEEDER
FDV	FIRE DEPARTMENT VALVE
FE	FLOW ELEMENT
FECT	FIRE EXTINGUISHER CABINET
FEXT	FIRE EXTINGUISHER
FHC	FIRE HOSE CABINET
FHY	FIRE HYDRANT
FJ/PB	FORWARD JOG PUSHBUTTON
FMS	FLOW MEASURING STATION
FSA	HIGH SPEED SURFACE AERATOR
FXTR	FIXTURE
G	ISOLATION GATE
GBT	GRAVITY BELT THICKENER
GC	GRIT CONCENTRATOR
GFI	GROUND FAULT INTERRUPTOR
GRV	GRAVITY ROOF VENTILATOR
GW	GRIT WASHER
H	HATCH
HB	HOSE BIB
HBS	HAND BAR SCREEN
HOP	HOPPER
HPP	HYDRAULIC POWER PACK
HST	HOIST
HTP	HEAT PUMP
HWH	HOT WATER HEATER
HX	HEAT EXCHANGER
HYT	HYDROPNEUMATIC TANK
IH	INTAKE HOOD
JBF	JUNCTION BOX FIRE ALARM
JBP	JUNCTION BOX PAGING
JBT	JUNCTION BOX TELEPHONE
LF	LABORATORY FURNISHINGS
LL	120/208V LIGHTING PANELBOARD
LP	120/208V POWER PANELBOARD
LSK	LAB SINK
LVR	LOUVER
M	MOTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CONTROL PANEL
MCS	MECHANICALLY CLEANED SCREEN
MOD	MOTOR OPERATED DAMPER
MS	MOP SINK
MU	MAKE-UP AIR UNIT
MX	MIXER
ODS	ODOR SCRUBBER
P	PUMP
PB	PUSH BUTTON
PBU	POLYMER BLENDING UNIT
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PT	POTENTIAL TRANSFORMER

EQUIPMENT PREFIXES

R	REGISTER
RD	ROOF DRAIN
RECEP	RECEPTACLE
RESET/PB	RESET PUSHBUTTON
RF	RETURN FAN
RFT	REMOTE FIELD TERMINAL
RJ	RUN-JOG SELECTOR SWITCH
RJR	REMOTE-JOG-RUN SELECTOR SWITCH
RJ/PB	REVERSE JOG PUSHBUTTON
RL	REMOTE-LOCAL SELECTOR SWITCH
SBM	SPLITTER BOX MIXER
SCF	SCREW FEEDER
SCH	SLUDGE CAKE HOPPER
SD	SMOKER DAMPER
SF	SUPPLY FAN
SG	SLUDGE GRINDER
SH	SHOWER
SHM	SLUDGE HOLDING MIXER
SK	SINK
SMX	SLUDGE MIXER
SS	SAFETY SWITCH
SSK	SERVICE SINK
STR	STARTER
STX	STATIC MIXER
SW	SWITCH
SWBD	SWITCHBOARD
S/PB	START PUSHBUTTON
T	THERMOSTAT
TA	TOILET ACCESSORY
TB	TERMINAL BOARD
TEL	TELEPHONE
TFM	TRICKLING FILTER MECHANISM
TK	TANK
TPN	TOILET PARTITION
TRANS	TRANSFORMER
TRO	TROLLEY
TRP	TRAP
TTC	TELEPHONE TERMINAL CABINET
UH	UNIT HEATER
UR	URINAL
V	VALVE
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VGR	VORTEX GRIT REMOVAL EQUIPMENT
VP	VACUUM PUMP
VS	VOLTAGE SWITCH
VTM	VOLTMETER
WC	WATER CLOSET
WH	WALL HYDRANT
WHD	WATTHOUR DEMAND METER
WM	WATTMETER

GENERAL NOTES

A. THIS IS A GENERAL ABBREVIATION SHEET FOR TEXT, EQUIPMENT PREFIXES AND PIPE SERVICE CATEGORIES. NOT ALL ABBREVIATIONS WILL BE USED IN THIS CONTRACT.

PIPE SERVICES CATEGORIES

ABE	AERATION BASIN EFFLUENT
CA	COMPRESSED AIR
CAE	CASCADE AERATOR EFFLUENT
CLE	CLARIFIER EFFLUENT
DRN	DRAIN
FB	FILTER BYPASS
FE	FILTER EFFLUENT
LPA	LOW PRESSURE PROCESS AIR
PLE	PLANT EFFLUENT
RAS	RETURN ACTIVATED SLUDGE
REF	SCUM
RL	ROOF LEADER
RS	RAW SEWAGE
SAN	SANITARY SEWER
SCM	SCUM
STM	STORMWATER
UVE	UTRAVIOLET DISENFECTION AREA EFFLUENT
VA	VACUUM
WAS	WASTE ACTIVATED SLUDGE
W-1	POTABLE WATER
W-2	NON-POTABLE WATER

HDR

HDR Engineering, Inc. of North Carolina

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NORTH CAROLINA PROFESSIONAL SEAL 8205 RICHARD D. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
M/C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Cabarrus County North Carolina

General Abbreviations, Equipment Prefixes and Pipe Service Categories

Date	MAR 1994
Scale	NO SCALE
Project No.	00137-041-018
Sheet No.	3A
Issue	0

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SITE WORK

EXISTING / PROPOSED

- STRUCTURES/BUILDING COMPONENTS
- ROADWAY (W/O CURBS)
- ROADWAY (W/CURBS)
- SPOT ELEVATION (986.0)
- CONTOUR (986.0)
- TREES OR SHRUBS
- TREE LINE (CLUSTER OR SHRUBS)
- SLOPE (0.5%)
- COORDINATE (N 1099.04, E 798.63)
- FIRE HYDRANT
- SILT FENCE
- TEMPORARY SEDIMENT TRAP
- TEMPORARY DIVERSION (TD)
- PERMANENT DIVERSION (PD)
- FABRIC DROP INLET PROTECTION
- EXCAVATED DROP INLET PROTECTION
- CHECK DAM

ARCHITECTURAL MATERIAL SYMBOLS

- DOOR NO. OR ACCESSORIES NO.
- ROOM NUMBER
- COLUMNS (LETTER DESIGNATION)
- WALL ELEVATION (PLAN REFERENCE)
- ELEVATION TARGET
- LABORATORY FURNISHINGS (LF-00)
- INTERIOR ELEVATION (NUMBER DESIGNATION)
- WALL TYPE (LETTER DESIGNATION)
- WINDOW TYPE (LETTER DESIGNATION)
- GLASS TYPE

FRAME ELEVATION

EXISTING / PROPOSED

- CONCRETE BLOCK
- BRICK
- GYPSUM BOARD & PLASTER
- METAL
- INSULATION (RIGID)
- INSULATION (BATT)
- CERAMIC TILE
- PLAN - STEEL STUD PARTITION WALL
- GLAZED CONCRETE BLOCK
- PLYWOOD
- PRECAST/POURED CONCRETE
- GROUT
- EARTH
- GRAVEL
- GRATING
- CHECKERPLATE

PIPING & APPURTENANCES

- EXISTING PIPE LESS THAN 4" (3" A; PIPING CATEGORY; LINE SIZE)
- EXISTING PIPE 4" AND GREATER (LINE SIZE; PIPING CATEGORY; 6" A; TYPICAL VALVE)
- NEW PIPE LESS THAN 4" (3" A)
- NEW PIPE 4" AND GREATER (6" A)
- VALVE NO. OR EQUIPMENT NO.
- GATE VALVE
- PLUG VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- NEEDLE VALVE
- BACKFLOW PREVENTER

MECHANICAL/HVAC

- SUPPLY OR OUTSIDE
- EXHAUST OR RETURN

MISCELLANEOUS

- DIRECTION OF PARTIAL SECTION — SECTION LETTER; SHEET NO. ON WHICH SECTION IS SHOWN; SHEET NO. FROM WHICH SECTION IS TAKEN
- DIRECTION OF FULL SECTION — SECTION LETTER; SHEET NO. ON WHICH SECTION IS SHOWN; SHEET NO. FROM WHICH SECTION IS TAKEN
- DIRECTION OF ELEVATION — ELEVATION LETTER; SHEET NO. ON WHICH ELEVATION IS SHOWN; SHEET NO. FROM WHICH ELEVATION IS TAKEN
- DETAIL NUMBER; SHEET NO. ON WHICH DETAIL IS SHOWN
- PROJECT NORTH ARROW (N)
- CENTER LINE
- DEMOLITION
- NOT IN CONTRACT
- CONSTRUCTION (SPECIFIC) NOTES (NUMBER DESIGNATION)

GENERAL NOTES

A. THIS IS A GENERAL LEGEND SHEET. NOT ALL SYMBOLS WILL BE USED IN CONTRACT.

B. WHERE CONFLICTS OCCUR BETWEEN THIS GENERAL LEGEND SHEET AND THE SPECIFIC SHEETS HEREIN, THE SPECIFIC SHEETS SHALL TAKE PRECEDENCE.

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd	Resp. Engr	Proj. Mgr
D	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND E. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Cabarrus County North Carolina

General Symbols

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	3C	0

Scale: NO SCALE

P:\MUDDYCR2\MC-0003C

SITE LAYOUT INFORMATION

POINT	NORTHING	EASTING	DESCRIPTION
122	534,524.77	1,554,135.44	INTERSECTION POINT OF ℄'S STA 1+23.80 = STA 9+59.67
123	534,517.76	1,554,249.70	IRON @ PROPERTY/EASEMENT LINE INTERSECTION
124	534,633.35	1,554,322.93	POINT ON EASEMENT LINE
125	534,424.17	1,554,294.50	PI STA = 3+12.0
126	534,219.23	1,554,083.67	PI STA = 5+69.5
127	534,350.45	1,553,956.11	PI STA = 7+31.0

PI STA = 7+31.0
R = 50'
Δ = 90°
PC = STA 6+81.00
PT = STA 7+59.58

PI STA = 5+69.5
R = 50'
Δ = 90°
PC = STA 5+19.50
PT = STA 5+88.00

PI STA = 3+12.0
R = 50'
Δ = 103.5°
PC = STA 2+48.58
PT = STA 3+38.90

STA 33+05.65 SEE SHEET 5

STA 0+00

MATCHLINE

EXISTING PROPERTY LINE

S 57°41'16" E 1056.34'

137.00'
S32°-18'-44"W

INT. STA 1+23.80 = STA 9+59.67

INT. STA 2+74.95 = STA 0+00

ADMINISTRATION BUILDING

EL 502.5

EL 502.9

EL 502.9

BLOWERS SEE DETAIL THIS SHEET

SECONDARY CLARIFIERS

MODULAR TREATMENT UNIT

FILTERS

UV DISINFECTION AREA

CASCADE AERATOR

REFRIGERATED SAMPLER

EFFLUENT MONITORING BOX

CB-1

CB-2

8" SAN

PERMANENT EASEMENT

INFLUENT PUMP STATION

501.23

498.81

495.72

SLASH

BRUSH

N 60°59'46" W 750.68'

SITE LAYOUT INFORMATION

POINT	NORTHING	EASTING	DESCRIPTION
100	534,393	1,554,060	ADMINISTRATION BLDG.
101	534,424	1,554,092	ADMINISTRATION BLDG.
102	534,165	1,554,199	REFRIGERATED SAMPLER
103	534,308	1,554,077	BLOWERS
104	534,316	1,554,085	BLOWERS
105	534,296	1,554,111	FILTER
106	534,312	1,554,128	FILTER
107	534,314	1,554,134	FILTER
108	534,309	1,554,138	FILTER
109	534,331	1,554,141	SECONDARY CLARIFIER
110	534,316	1,554,156	SECONDARY CLARIFIER
111	534,344	1,554,152	MODULAR TREATMENT UNIT
112	534,391	1,554,200	MODULAR TREATMENT UNIT
113	534,209	1,554,132	UV DISINFECTION AREA
114	534,195	1,554,146	UV DISINFECTION AREA
115	534,189	1,554,166	CASCADE AERATOR
116	534,178	1,554,176	CASCADE AERATOR
117	534,159	1,554,193	EFFLUENT MONITORING BOX
118	534,152	1,554,200	EFFLUENT MONITORING BOX
119	534,861	1,554,526	INFLUENT PUMP STATION
120	534,854	1,554,542	INFLUENT PUMP STATION
121	533,934	1,554,416	PLANT EFFLUENT OUTFALL (SEE SHEET 8)

CATCH BASIN INFORMATION

POINT	NORTHING	EASTING	INV IN (FT)	INV OUT (FT)	RIM ELEV
CB-1	534,276	1,554,099	–	488.25	491.50
CB-2	534,404	1,554,228	–	490.25	493.50

GENERAL NOTES

A. ALL PIPING SHALL HAVE A MINIMUM OF 36" OF COVER, UNLESS SPECIFIED OTHERWISE.

SPECIFIC NOTES

1. 100 YEAR FLOOD ELEVATION 479.5
2. CONCRETE CATCH BASIN. SEE DETAIL, SHEET 6. PROVIDE FABRIC DROP INLET PROTECTION.
3. ~~CONCRETE STEPS. SEE DETAIL, SHEET 6.~~ (1 C Q S-1)
4. LINE DITCHES WITH TEMPORARY LINER (STRAW WITH NET).
5. LINE DITCH WITH TEMPORARY LINER (SYNTHETIC MAT).
6. REMOVE EXISTING FENCE FROM PUMP STATION EASEMENT BETWEEN POINTS INDICATED.
7. END CHAINLINK FENCE AND BEGIN BARBED WIRE CATTLE FENCE.
8. PROVIDE STANDARD GATE AS SHOWN ON DETAIL, SHEET 6A WITH 12' OPENING.
9. PROVIDE STANDARD GATE AS SHOWN ON DETAIL, SHEET 6A WITH 24' OPENING.
10. PROVIDE STANDARD CATTLE GATE AS SHOWN ON DETAIL, SHEET 6A WITH 12' OPENING.
11. PROVIDE SILT FENCE.

20'-6"

12'-0"

#5'S @ 15" E.W. HOOK @ EA. END

PLAN

#5 @ 15"

#5 CONT (TYP.)

1'-0" (MIN.)

6"

1'-3"

1'-0"

SECTION

C AD-2 BLOWER PAD DETAIL

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

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
2	REVISED AS NOTED	11/28/94				
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO. 2	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND A. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	I&C/Process: R. HAMILTON
Civil: SHUE / MOSTELLER	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: J. DANCY

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

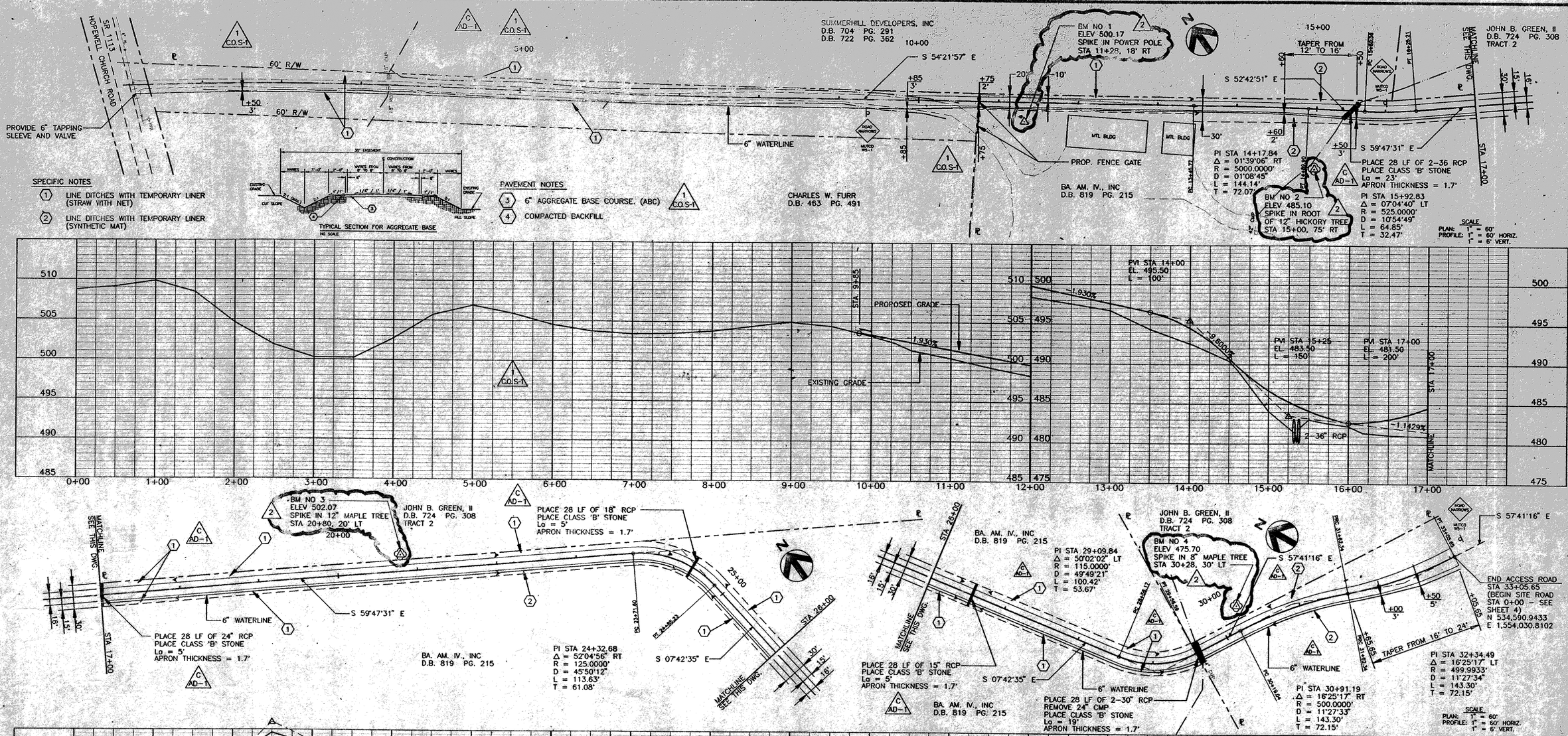
Cabarrus County North Carolina

Site Grading, Staking and Erosion Control Plan

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	4	2

Scale: 1"= 30'

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Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
2	REVISED AS NOTED	11/28/94				
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RICHARD D. HAMILTON 5-15-94

Project Manager	R. Hamilton
Architect	-
I&C/Process	R. HAMILTON
Civil	C. COSTNER
Mechanical	-
Electrical	R. MILLS
Structural	H. ANTSNEL
Drawn By	C. COSTNER

Cabarrus County Utility Department

Muddy Creek WWTP

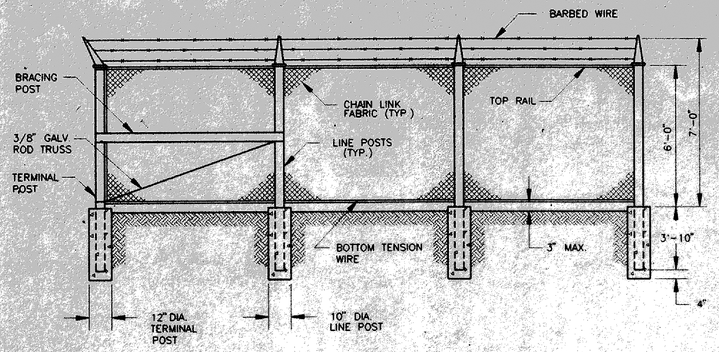
Contract A - General Construction

Cabarrus County North Carolina

Access Road

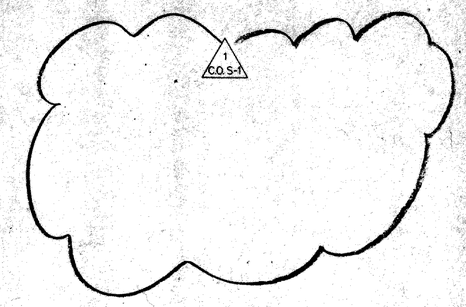
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	5	2
Scale: As Noted			

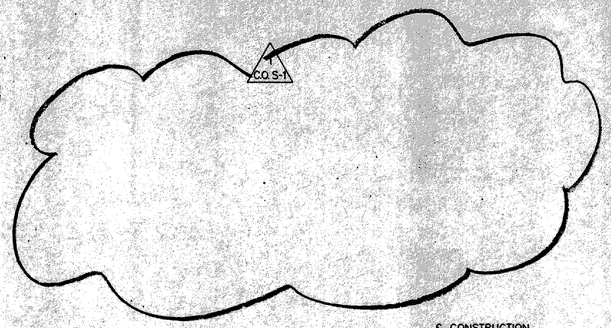
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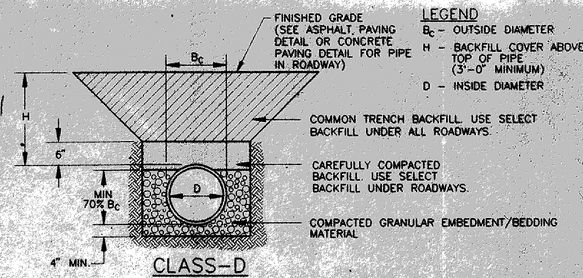


FENCE DETAIL

NO SCALE

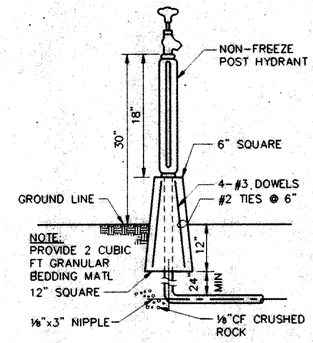






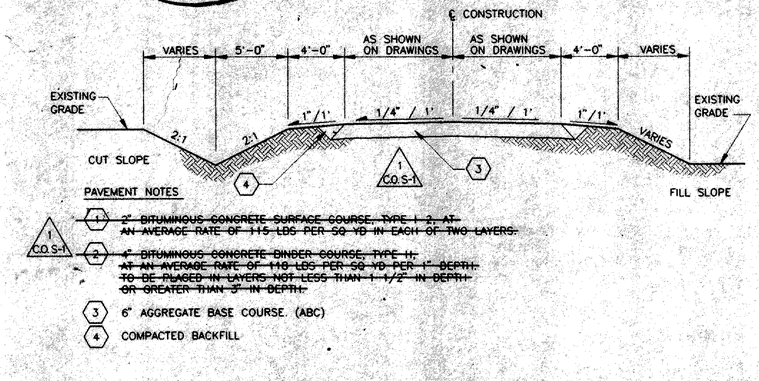
PIPE BEDDING DETAIL

NO SCALE



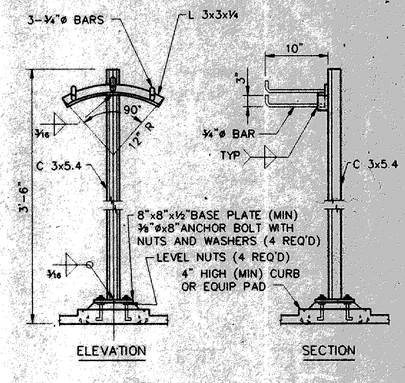
YARD HYDRANT (YH-3)

NO SCALE



TYPICAL SECTION FOR ASPHALT PAVING

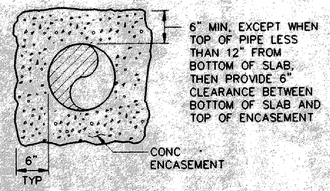
NO SCALE



NOTE:
A. FINISH AND GRIND ALL ROUGH EDGES (TYP), GALVANIZE ALL PIECES AFTER FABRICATION.
B. PROVIDE ONE HOSE RACK ADJACENT TO EXTERIOR YARD HYDRANT

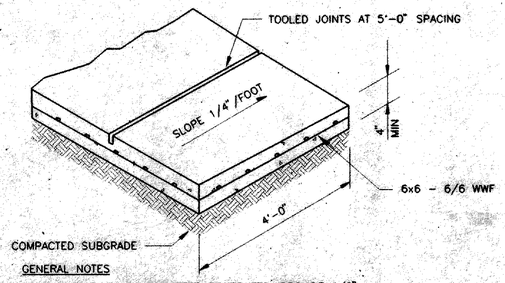
HOSE RACK

NO SCALE



TYPICAL CONCRETE ENCASEMENT

NO SCALE (FOR ALL UNDERSLAB PIPE ENCASEMENT)



GENERAL NOTES

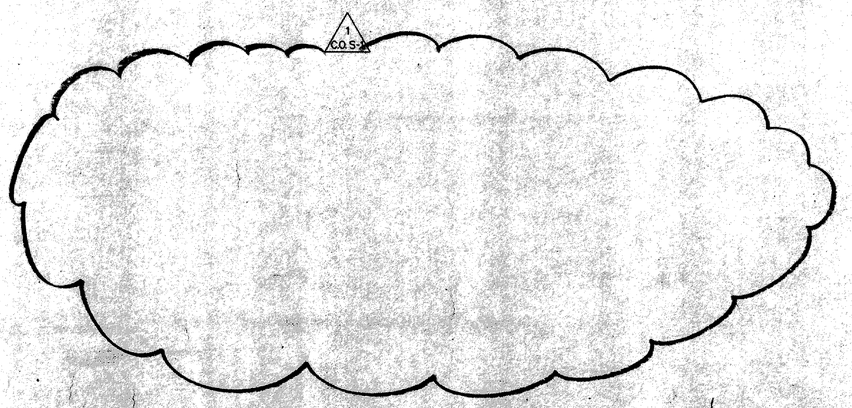
A. AT ALL UTILITY POLES METER BOXES ETC. PROVIDE 1/2" PREMOLDED JT FILLER (FULL DEPTH) ALL AROUND.

B. PLACE 3/4" INCH PREFORMED EXPANSION JOINTS AT INTERVALS OF 20 FEET AND AT ALL JUNCTIONS WITH PREVIOUSLY PLACED SIDEWALKS, CURBS OR OTHER STRUCTURES. SEAL SIDEWALK JOINTS WITH POLYURETHANE SEALANT.

C. DEPTH OF TOOLED JOINT SHALL BE EQUAL TO 1/3 x HEIGHT.

CONCRETE SIDEWALK DETAIL

NO SCALE



HDR Engineering, Inc. of North Carolina

Issue No	Description	Date	Drawn	Chkd	Resp. Engr.	Proj. Mgr
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8207 RAYMOND A. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	M/C/Process: R. HAMILTON
Civil: K. MOSTELLER	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

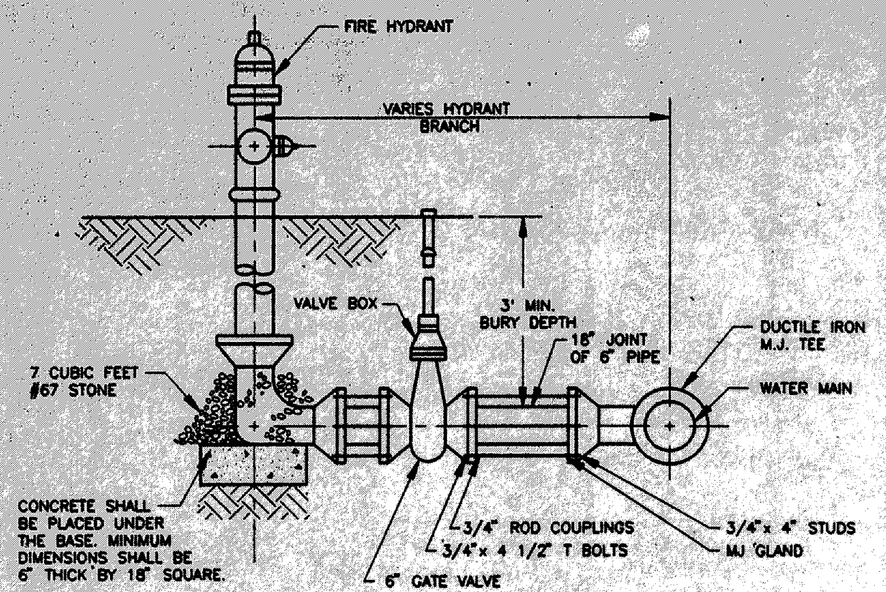
Cabarrus County — North Carolina

Site Details

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	6	1

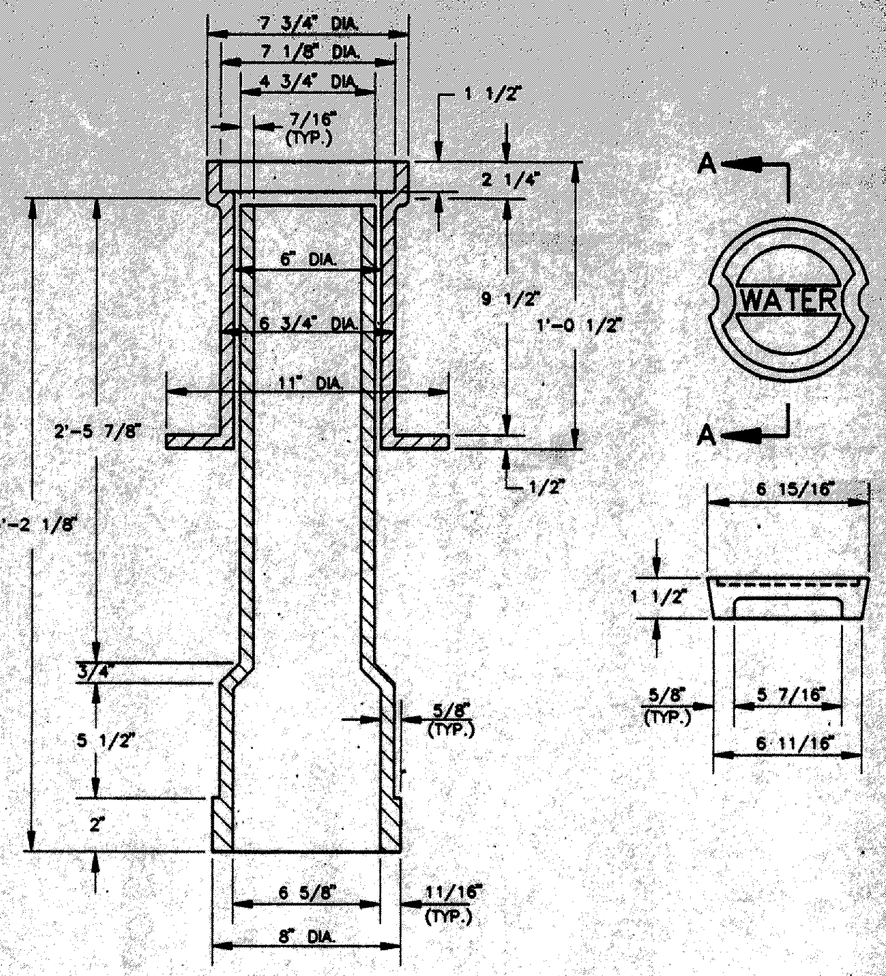
Scale: AS NOTED

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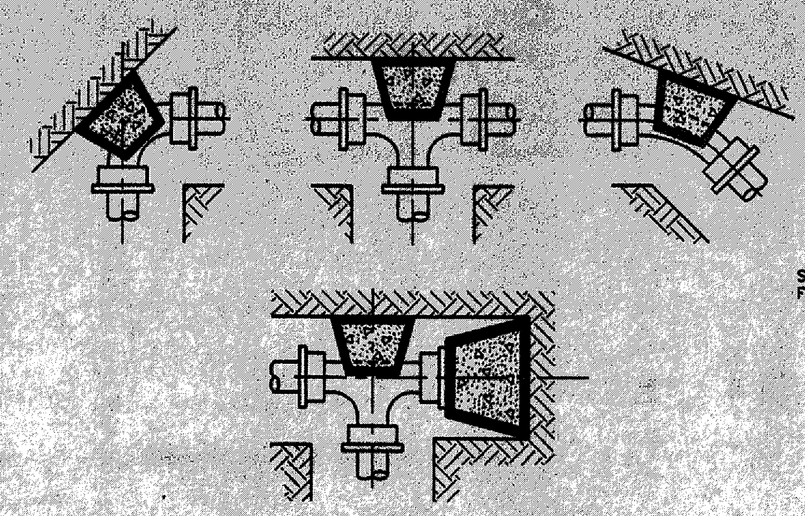


NOTES:
1. DO NOT COVER ANY JOINT WITH CONCRETE.
2. BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH. DO NOT BLOCK WEEP HOLES ON HYDRANTS.
3. PROVIDE TIE RODS AS SPECIFIED.
4. PROVIDE CONCRETE BLOCKING AS SPECIFIED.

HYDRANT DETAIL
NO SCALE



STANDARD TELESCOPIC VALVE BOX DETAIL
NO SCALE

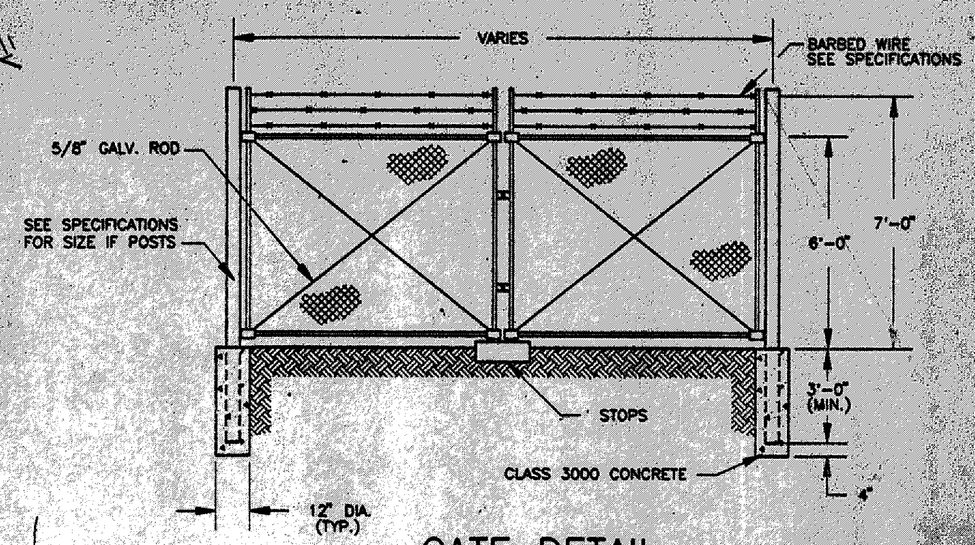


NOTES
1. THESE DETAILS ARE FOR BOTH VERTICALLY & HORIZONTALLY LAID PIPE.
2. POURED IN PLACE CONCRETE SHALL BE CLASS 3000.
3. LEAVE JOINTS CLEAR OF CONCRETE FOR EASY ACCESS.
4. POLYETHYLENE SHALL BE WRAPPED AROUND FITTINGS WHERE CONCRETE BLOCKING WILL EVENTUALLY BE REMOVED.
5. FITTING FACTORS:
   - 90° —— 1.41
   - 45° —— 0.77
   - 22 1/2° —— 0.39
   - 11 1/4° —— 0.20

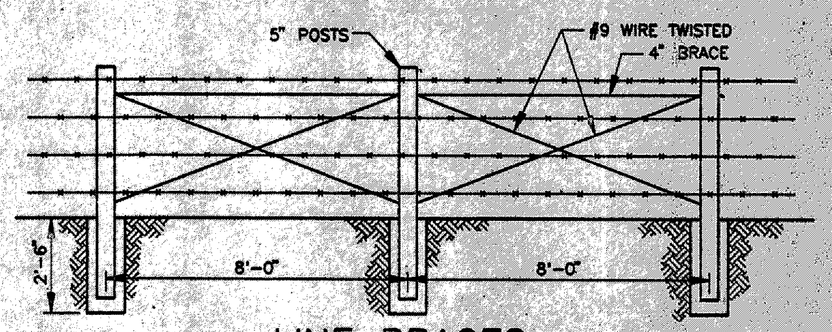
REQUIRED AREA OF BLOCK FACE EARTH BEARING SHALL BE FIGURED AS FOLLOWS:
WHERE:
B = AREA OF BLOCK FACE (FT^2)
A = AREA OF PIPE DIAMETER IN SQUARE INCHES.
P = DESIGN WORKING PRESSURE, PSI.
C = FITTING FACTOR

$$B = \frac{P \cdot A \cdot C}{2000}$$

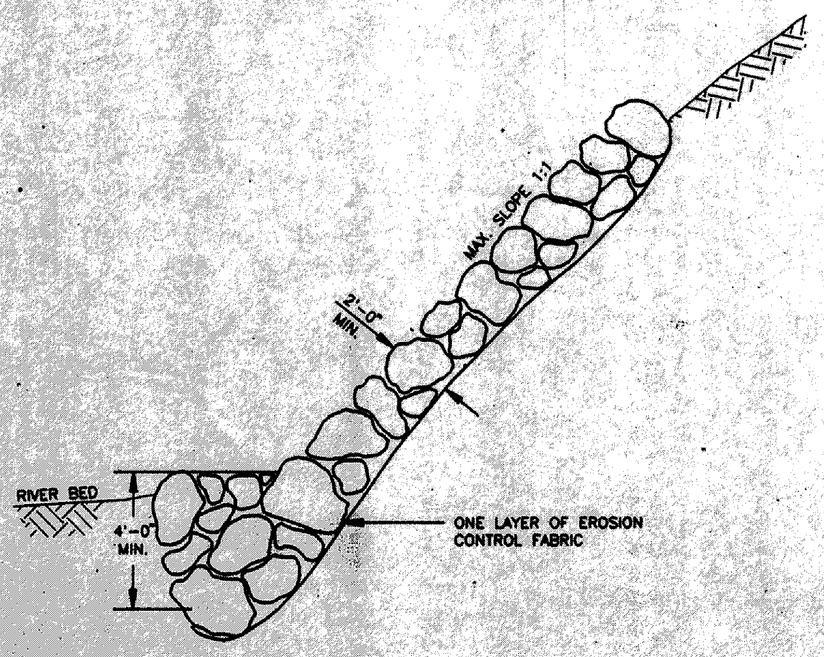
CONCRETE BLOCKING DETAIL
NO SCALE



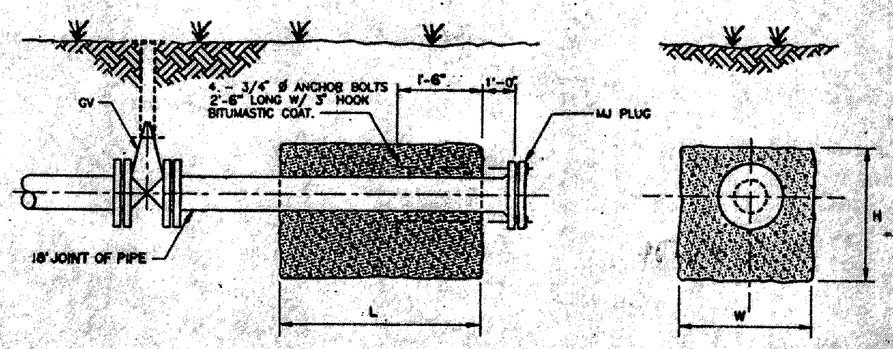
GATE DETAIL
NO SCALE



LINE BRACES
LINE BRACE TO BE ERECTED BETWEEN CORNER OR GATE POSTS AT INTERVALS NOT EXCEEDING 320 FT.

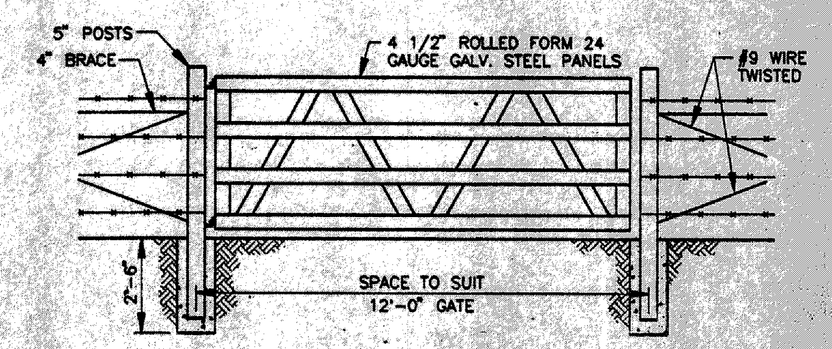


STONE RIPRAP DETAIL
NO SCALE

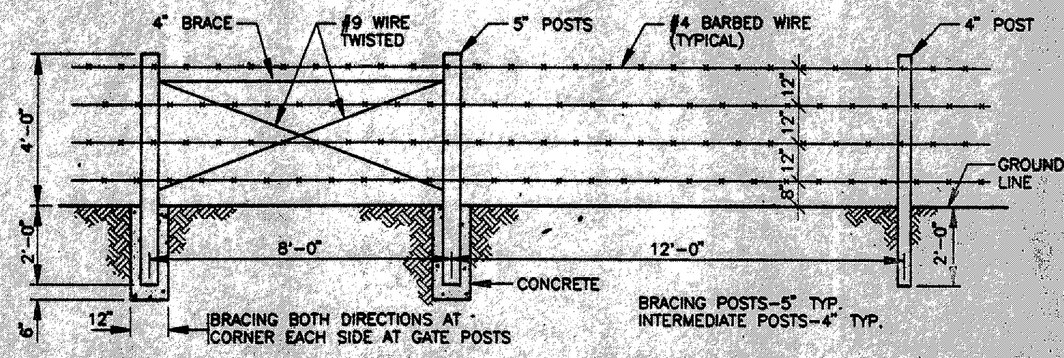


PLUG BLOCK DIMENSION TABLE			
LINE SIZE (IN.)	W (FT.)	H (FT.)	L (FT.)
2	1	1	3
6	2	2	3
8	3	2.5	3
12	3.5	3	3

PLUG BLOCKING DETAIL
NO SCALE



GATE



BARBED WIRE FENCE DETAILS
NO SCALE

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.
D	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8205 REGISTERED ENGINEER 1994

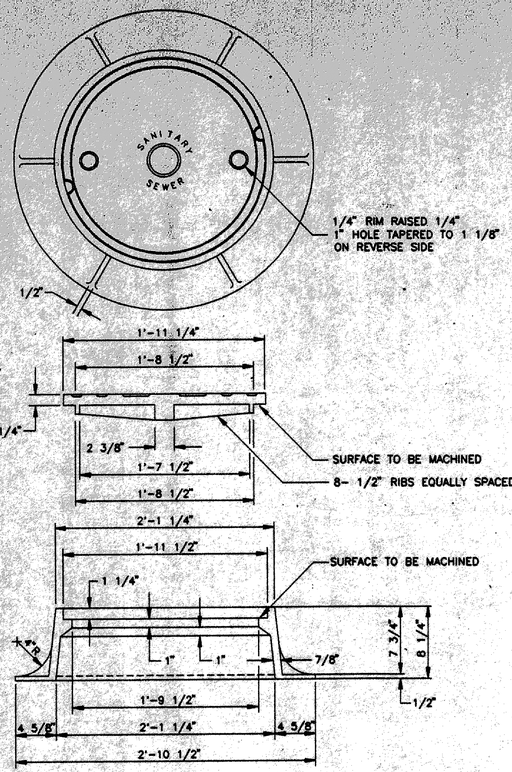
Project Manager	R. HAMILTON
Architect	--
Civil	K. MOSTELLER
Electrical	R. MILLS
M/C/Process	R. HAMILTON
Mechanical	--
Structural	H. ANTSHEL
Drawn By	M. LINDOUS

Cabarrus County Utility Department
Muddy Creek WWTP
Contract A - General Construction
Cabarrus County North Carolina

Site Details

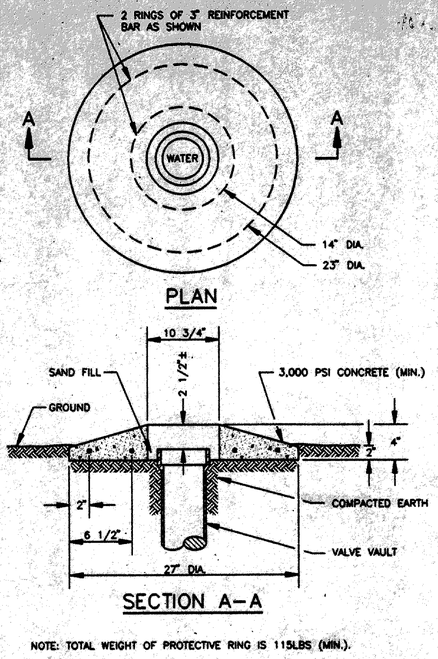
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	6A	B
Scale: AS NOTED			

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MANHOLE COVER DETAIL

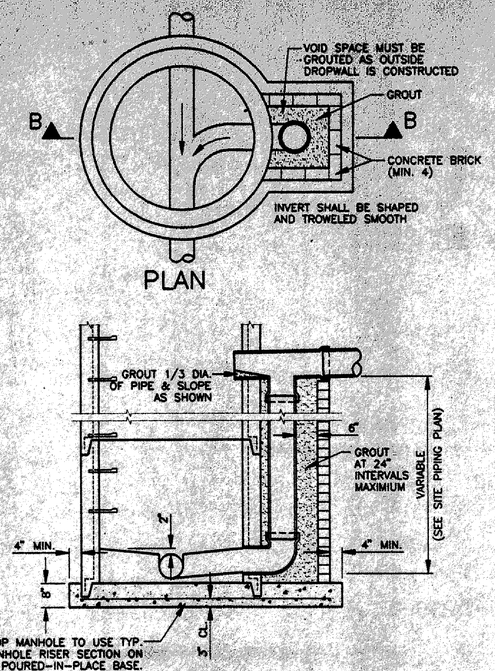
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NOTE: TOTAL WEIGHT OF PROTECTIVE RING IS 115LBS (MIN.).

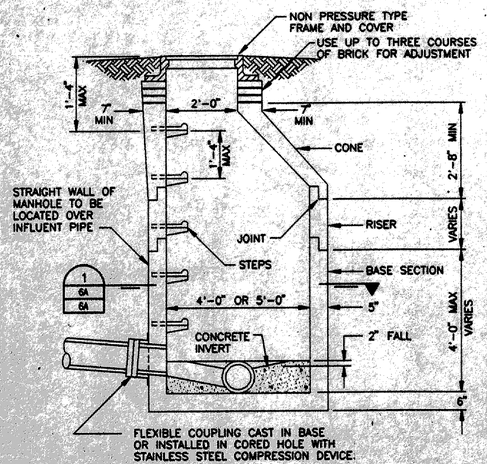
PROTECTIVE RING DETAIL

NO SCALE



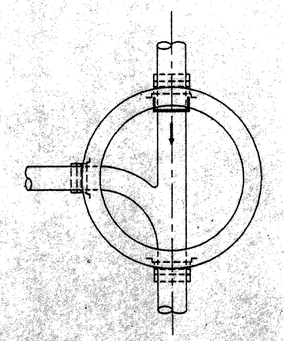
TYPICAL DROP MANHOLE DETAIL

NO SCALE



PRECAST MANHOLE DETAIL

NO SCALE



SECTION

NO SCALE

1 / 99C-1 / 99C-1

HDR Engineering, Inc. of North Carolina

No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND R. HAMILTON

Project Manager	R. HAMILTON		
Architect	-	QC/Process	R. HAMILTON
Civil	K. MOSTELLER	Mechanical	-
Electrical	R. MILLS	Structural	H. ANTSHEL
		Drawn By	M. LINVOUS

Cabarrus County Utility Department

Muddy Creek WWTP

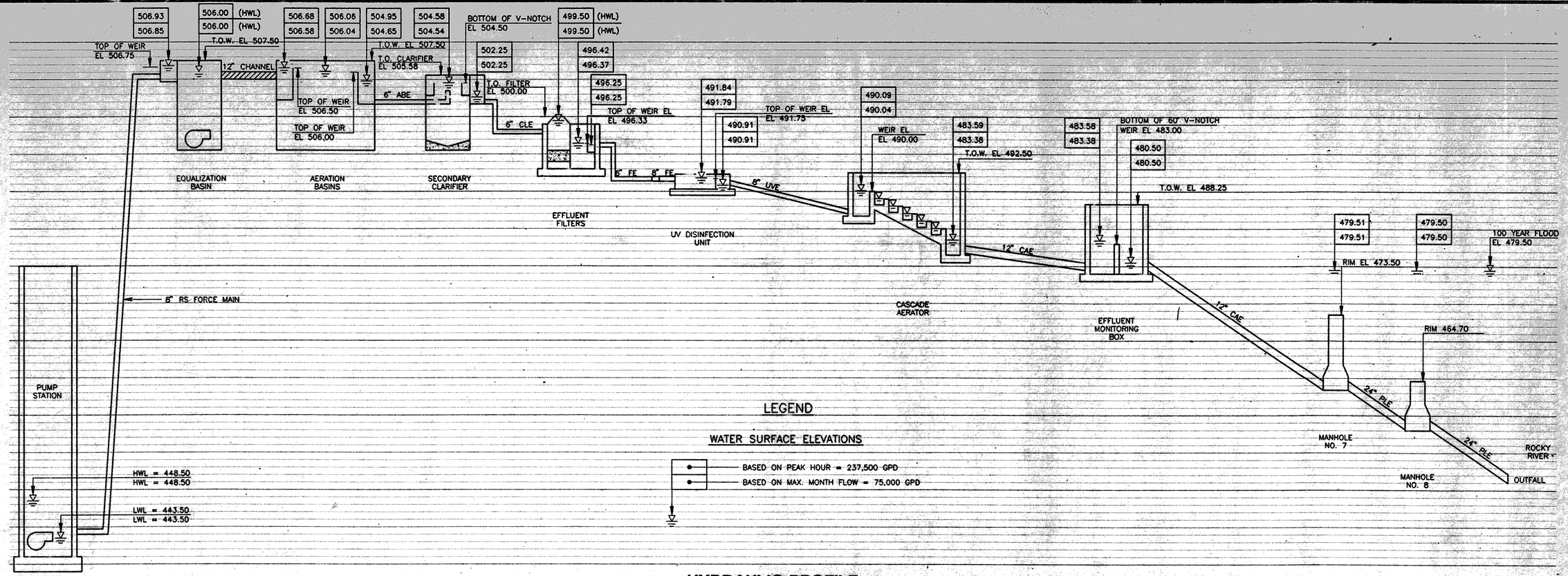
Contract A - General Construction

Cabarrus County North Carolina

Site Details

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	6B	0
Scale: AS NOTED			

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HYDRAULIC PROFILE

PROCESS DESIGN SUMMARY

Influent design Criteria

Phase I Flow

Average Annual	0.0625 MGD	
Maximum Month	0.0750 MGD	Plant Design Capacity
Peak Hour	0.2370 MGD	

Phase II Flow

Average Annual	0.1250 MGD	
Maximum Month	0.1500 MGD	
Peak Hour	0.4740 MGD	

BOD_5	250 mg/l
TSS	200 mg/l
NH_3-N	30 mg/l

Effluent Design Requirements

	Summer	Winter
BOD_5	10 mg/l	18 mg/l
NH_3-N	4 mg/l	8 mg/l
DO	5 mg/l	5 mg/l
TSS	30 mg/l	30 mg/l
Fecal Coliform	200 colonies/100ml	200 colonies/100ml
pH	6-9 SU	6-9 SU
Chlorine	28 ug/l	28 ug/l

Process Design Requirements

Raw Sewage Pump Station and Force Main

Sized for Phase II Flows

Peak design flow	330 gpm
Number of pumps	2 @ 330 gpm each
System head curve	Attached
Wet well diameter	6 ft
Storage volume	211 gal/vf
Select cycle time	10 minutes
Required volume	825 gal = 3.9 vf
Force main diameter	8 in
Velocity @ 330 gpm	2.11 fps

Splitter Box and Bar Screen

Provide splitter box with two 1'0" weir plates
Provide manually screened bar screen with 1" maximum opening on inlet channel to equalization basin

Equalization Basin

Volume	15,000 gal
Aeration System	Course Bubble Diffusers
Aeration Capacity	60 scfm
Equalization Pumps	2 @ 52 gpm each

Aeration Basins

Volume	2 @ 37,500 gal each
Avg. Hydraulic Detention Time	24 hour
Process Design	Calculated for Standard, Summer and Winter Conditions (See Attached Sheets for detailed calculations)
Aeration System	Medium Bubble Diffusers
Design Oxygen Requirements	140 #O_2/day per basin (maximum summer condition)
Diffuser Capacity	280 #O_2/day per basin (with one basin out of service)
Aeration Capacity	500 scfm @ 6 psi
Blower Capacity (incl. equalization and sludge digestion)	2 @ 700 scfm @ 6 psi
Design MCRT	15 - 30 days

Secondary Clarifiers

Diameter	2 @ 12 ft each	
Side Water Depth	9 ft	
Solids Loading Rate	Average	20 #/sf/day
	Peak Winter Rate	41 #/sf/day
Overflow Rate	332 gpd/sf	
Weir Loading Rate	1,105 gpd/lf	

Return Sludge Pumps

Capacity	2 @ 44 gpm each (Throttled)

Effluent Filters

Diameter	2 @ 5 ft each
Surface Area	19.64 sf each
Loading Rate	1.32 gpm/sf
Backwash Rate	15 gpm/sf for 10 minutes
Backwash Clearwell Storage	3,787 gallons
Backwash Pumps	2 @ 300 gpm each
Backwash Waste Holding Tank	4,476 gallons
Backwash Transfer Pumps	2 @ 52 gpm each

Ultra-Violet Light Disinfection

Peak Hydraulic Flow Rate	237,000 gpd (with equalization basin bypass)
UV transmission at 253.7 nm	65%
Maximum TSS	30 mg/l
Guaranteed Fecal Coliform	<200 colonies/100 ml on 30 day geometric mean

Cascade Aerator

Design Temperature	32 deg C
Design Influent D.O.	0 mg/l
Design Saturation D.O.	7.1 mg/l
Required Final D.O.	>5.0 mg/l
Number of Cascades	6 @ 1 ft each
Predicted Final D.O.	5.5 mg/l

Effluent Monitoring Box

60° V-notch weir
24 hour composite refrigerated sampler

Sludge Digestion

Volume	1 @ 25,000 gallons
Average Waste Sludge Rate	1,400 gal/day
	64 #/day MLSS
	51.2 #/day MLVSS
Average Hydraulic Detention Time	17.9 days
Solids Loading Rate	0.015 #VSS/cf/day
Assumed VSS Destruction	70% for O_2 requirements
	40% for sludge volume requirements
Oxygen Required	72 #/day
Air Required for Cell Destruction	130 scfm Governs
Air Required for Mixing	100 scfm
Aeration System	Course Bubble Diffusers

Sludge Holding Tank

Volume	1 @ 10,000 gallons
Solids Loading	43.52 #/day MLSS
Thickened by Batch Decanting	
Predicted Sludge Concentration	3%
Average Daily Sludge Volume	22.6 cf/day = 170 gpd
Assume one-half the volume for decanting	5,000 gallon available storage
Maximum time between hauling	29 days, say once per month

Sludge Disposal

Trucked to Concord Regional Wastewater Management Facility

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND G. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department
Muddy Creek WWTP
Contract A - General Construction
Cabarrus County North Carolina

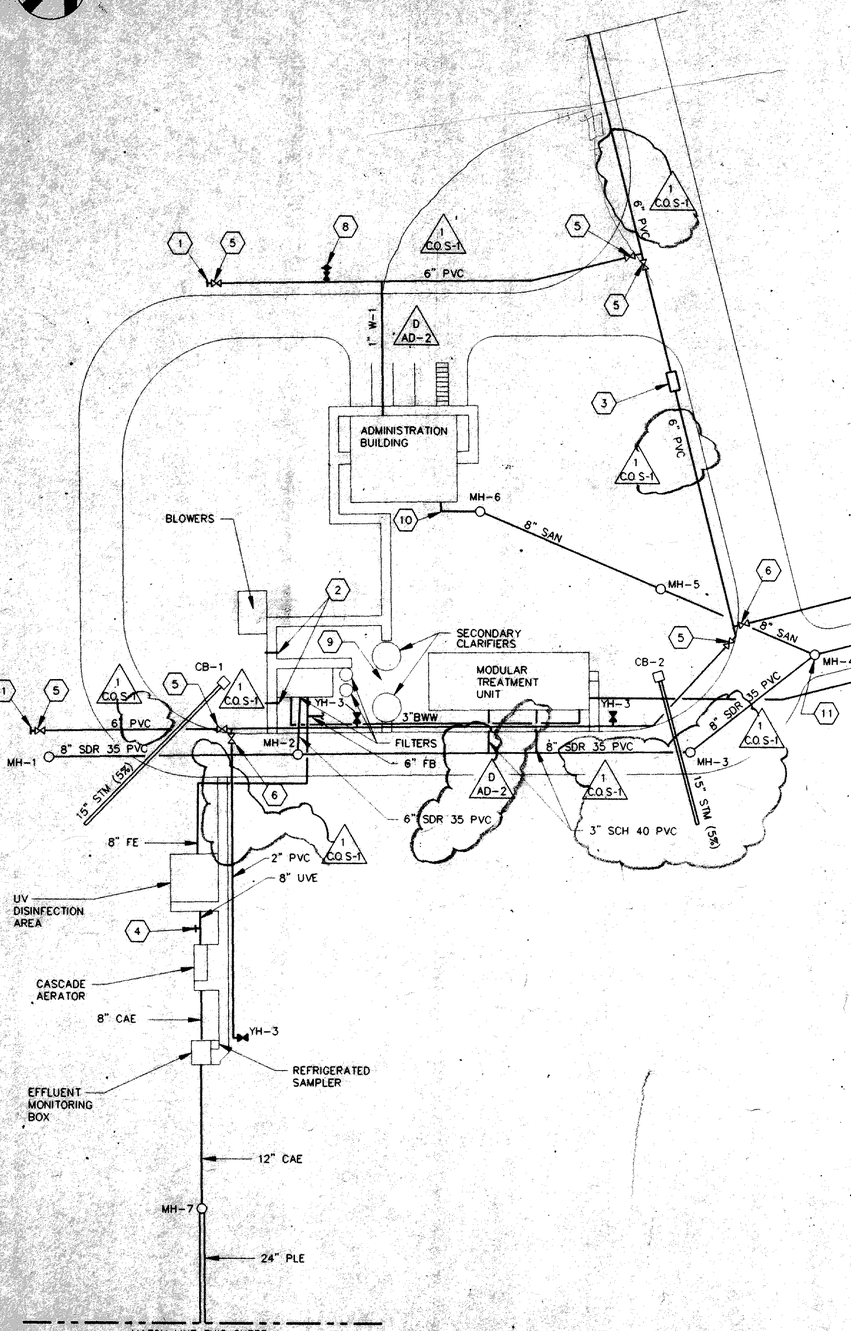
Hydraulic Profile and Process Design Summary

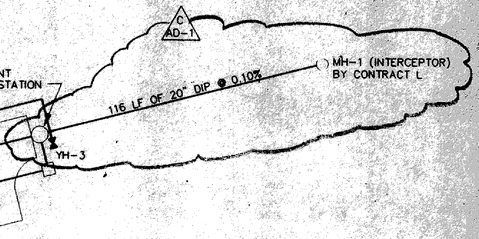
Date: MAR 1994	Project No.: 00187-041-018	Sheet No.: 7	Issue: 0
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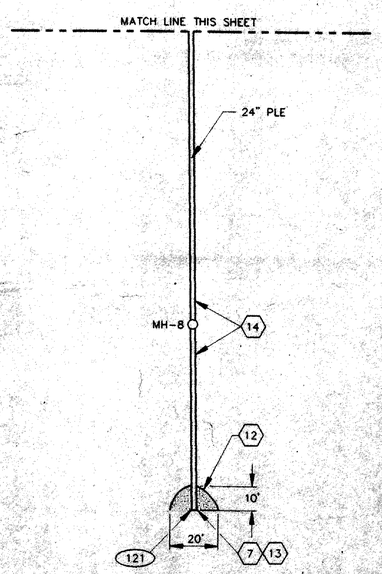
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MANHOLE AND CATCH BASIN INFORMATION

POINT	NORTHING	EASTING	INV IN (FT)	INV OUT (FT)	RIM ELEV
MH-1	534,204	1,544,068	–	487.14	490.50
MH-2	534,276	1,554,142	486.44	486.34	495.91
MH-3	534,390	1,554,260	485.20	485.10	495.12
MH-4	534,456	1,554,269	484.67 (DRN) 490.76 (SAN)	484.57	496.08
MH-5	534,431	1,554,204	491.33	491.23	495.00
MH-6	534,402	1,554,127	498.43	498.33	502.50
MH-7	534,112	1,554,244	463.30	463.20	473.50
MH-8	533,990	1,554,363	458.10	458.00	464.70
MH-9	534,483	1,554,287	483.67	483.57	495.20







SPECIFIC NOTES

1. PROVIDE MECHANICAL JOINT PLUG IN END OF PIPE.
2. PROVIDE 4 INCH DIAMETER PVC PIPE FOR DRAINAGE UNDER SIDEWALK.
3. PROVIDE BACKFLOW PREVENTER IN ACCORDANCE WITH STANDARD SPECIFICATION OF THE WATER AND SEWER DISTRICT OF CABARRUS COUNTY.
4. PROVIDE 8"x 8" TEE WITH MECHANICAL JOINT PLUG IN BRANCH SIDE OF TEE.
5. 6" GATE VALVE
6. 2" GATE VALVE
7. 24" PLE OUTFALL. (SEE SITE LAYOUT INFORMATION ON SHEET 4, FOR LOCATION)
8. PROVIDE FIRE HYDRANT AS SPECIFIED.
9. SEE SHEET 301 FOR PIPING IN THIS AREA
10. GENERAL CONTRACTOR SHALL PROVIDE 'CLEANOUT, TERMINATED AT FINISHED GRADE. SEE ADMINISTRATION BUILDING PLUMBING PLAN FOR CONTINUATION OF PIPING.
11. PROVIDE DROP MANHOLE AS SHOWN ON DETAIL SHEET 6A.
12. PLACE CLASS II RIPRAP AROUND OUTFALL. SEE RIPRAP DETAIL, SHEET 6.
13. PROVIDE 24" DIA. FLARED END SECTION AS SPECIFIED. INVERT ELEVATION 451.0
14. PROVIDE CLASS D BEDDING FOR ENTIRE LENGTH OF OUTFALL, INCLUDING THE FLARED END SECTION.

Issue No.	Description	Date	Dwn.	Chkd	Resp. Engr.	Proj. Mgr.
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
D	CONFORM TO ADDENDA NO. 2	9/22/94				
C	CONFORM TO ADDENDA NO. 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND B. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	SHUE / MOSTELLER
Electrical	B. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. AMTSHEL
Drawn By	J. FINCH

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

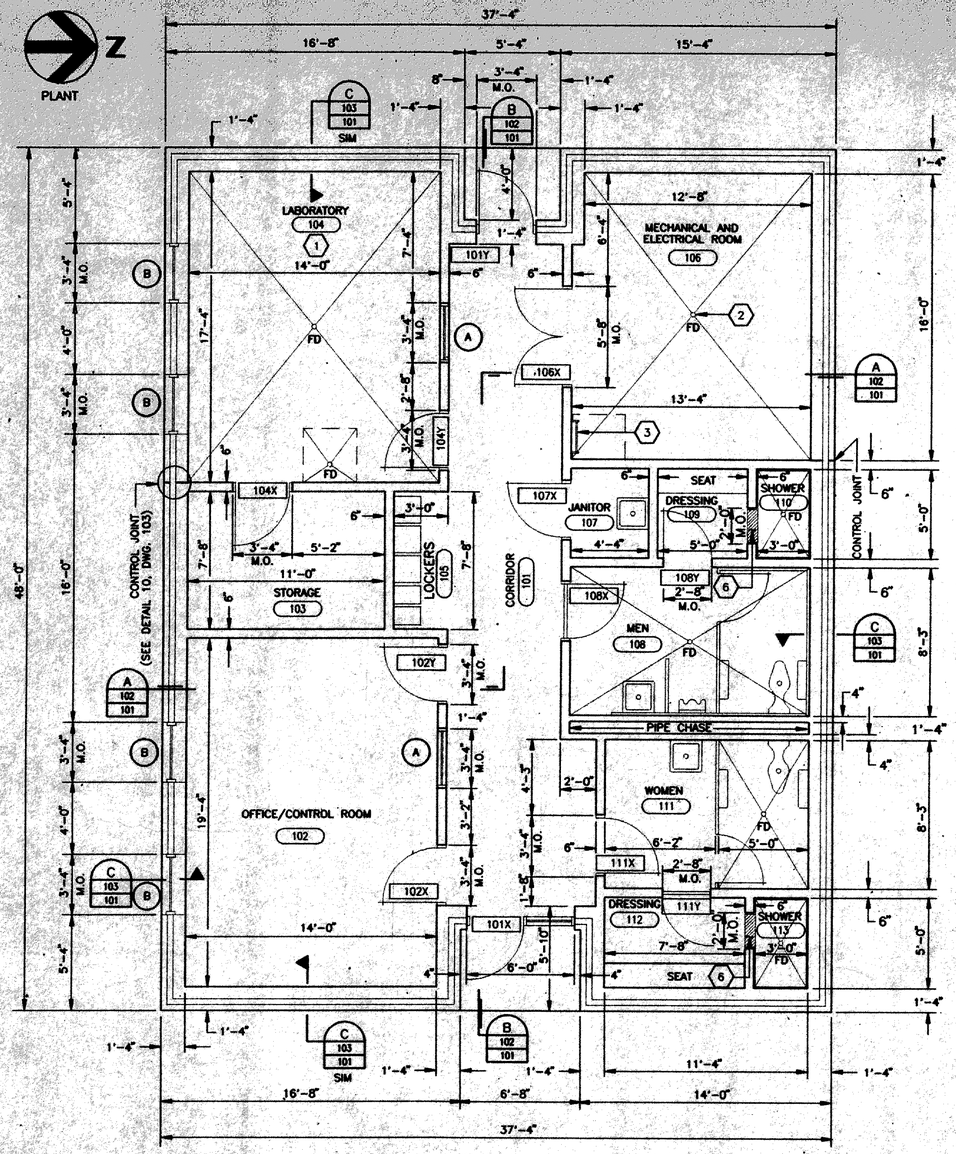
Cabarrus County North Carolina

Site Piping Plan

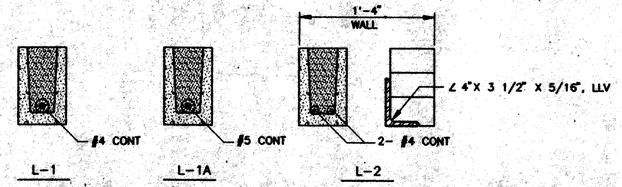
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	8	1

Scale 1"= 30'

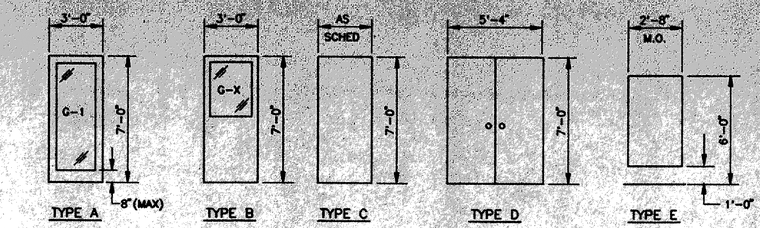
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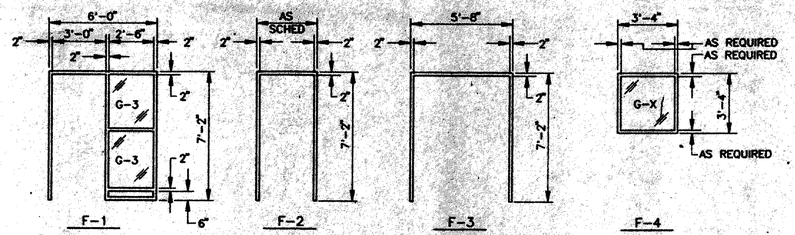
PLAN
SCALE: 1/4"= 1'-0"



④ LINTEL DETAILS
NOT TO SCALE



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



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

SPECIFIC NOTES

1. SEE SHEET 105 FOR LAB EQUIPMENT LAYOUT.
2. LOCATE FD TO CLEAR MECH AND ELECT EQUIPMENT.
3. LADDER TO ROOF HATCH.
4. MINIMUM 8" BEARING EACH END ON SOLID FILLED MASONRY. SEE CMU WALL REINFORCING DETAILS FOR ADDITIONAL REQUIREMENTS.
5. FILL ALL JAMBS WITH MORTAR AND SEAL FRAME/MASONRY INTERFACE WITH MATCHING COLOR ELASTOMERIC SEALER.
6. TILE OVER 4" HIGH CURB.

GLASS SCHEDULE

NO.	TYPE
G-1	5/8" (MIN) CLEAR, TEMPERED INSULATING
G-2	5/8" (MIN) CLEAR INSULATING
G-3	1" CLEAR, TEMPERED INSULATING, FIXED
G-4	1/4" CLEAR, WIRE GLASS
G-5	1" CLEAR INSULATING

ABBREVIATIONS

ALUM.	ALUMINUM	H.M.	HOLLOW METAL
A.C.T.	ACCOUSTICAL CEILING TILE	PTD.	PAINTED
C.M.U.	CONCRETE MASONRY UNIT	S.C.	SPECIAL COATING (EPOXY)
CONC. W/H.	CONCRETE WITH HARDENER	S.S.	STAINLESS STEEL
C.T.	CERAMIC TILE	RVT	RESILIENT TILE FLOORING
EXP.	EXPOSED	W.D.	WOOD
G.W.B.	GYPSUM WALLBOARD	S.C.F.	SPECIAL COATING FLOORING

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS NORTH	WALLS SOUTH	WALLS WEST	WALLS EAST	WNSCT	CEILING	CEILING HEIGHT	REMARKS
101	ENTRY/CORRIDOR	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	A.C.T.	8'-8"	
102	OFFICE/CONTROL ROOM	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	A.C.T.	8'-8"	
103	STORAGE	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	A.C.T.	8'-8"	
104	LABORATORY	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	A.C.T.	8'-8"	RUBBER BASE AROUND ALL LAB. EQUIP.
105	LOCKERS	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	A.C.T.	8'-8"	
106	MECHANICAL/ELECTRICAL	CONC/H	–	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	EXPOSED		
107	JANITOR	RVT	RUBBER	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	GWB/PTD	8'-8"	
108	MEN	CT	CT	CMU/SC	CMU/SC	CMU/SC	CMU/SC	CT (5' HIGH)	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE
109	DRESSING (MEN)	CT	CT	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE
110	SHOWER (MEN)	CT	CT	CT	CT	CT	CT	–	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE C.T. FULL HEIGHT OF WALLS & FASCIA AT OPENING
111	WOMEN	CT	CT	CMU/SC	CMU/SC	CMU/SC	CMU/SC	CT (5' HIGH)	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE
112	DRESSING (WOMEN)	CT	CT	CMU/SC	CMU/SC	CMU/SC	CMU/SC	–	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE
113	SHOWER (WOMEN)	CT	CT	CT	CT	CT	CT	–	GWB/PTD	8'-8"	RECESS CONCRETE FOR FLOOR TILE C.T. FULL HEIGHT OF WALLS & FASCIA AT OPENING

DOOR/WINDOW/LINTEL SCHEDULE

DR/WN NO.	SIZE	DOOR TYPE	DOOR MTL.	DOOR FINISH	DOOR LOUVER	GLASS	LABEL	FRAME TYPE	FRAME MTL.	FRAME FINISH	HDWE SET	SIGNAGE ROOM NAME	REMARKS	LINTEL DESIG.
101X	3'-0" X 7'-0"	A	ALUM.	ANODIZED	–	G-1	–	F-1	ALUM	ANODIZED	HW-19		WEATHERSTRIPPED ⑤	L2
101Y	3'-0" X 7'-0"	B	ALUM.	ANODIZED	–	G-2	–	F-2	ALUM	ANODIZED	HW-19		WEATHERSTRIPPED ⑤	L2
102X	3'-0" X 7'-0"	B	WD	PTD	–	G-4	–	F-2	H.M.	PTD	HW-1	OFFICE	⑤	L1
102Y	3'-0" X 7'-0"	B	WD	PTD	–	G-4	–	F-2	H.M.	PTD	HW-1	OFFICE	⑤	L1
104X	3'-0" X 7'-0"	C	WD	PTD	–		–	F-2	H.M.	PTD	HW-7		⑤	L1
104Y	3'-0" X 7'-0"	B	WD	PTD	–	G-4	–	F-2	H.M.	PTD	HW-12	LABORATORY	⑤	L1
106X	PR 2'-8" X 7'-0"	D	WD	PTD	–		–	F-3	H.M.	PTD	HW-15	MECHANICAL-ELECTRICAL	⑤	L1A
107X	3'-0" X 7'-0"	C	WD	PTD	–		–	F-2	H.M.	PTD	HW-3	JANITOR	⑤	L1
108Y	2'-8" X 5'-0"	E	WD	PTD	–		–	F-2	H.M.	PTD	HW-28		⑤	L1
108X	3'-0" X 7'-0"	C	WD	PTD	–		–	F-2	H.M.	PTD	HW-9	MEN	⑤	L1
111X	3'-0" X 7'-0"	C	WD	PTD	–		–	F-2	H.M.	PTD	HW-9	WOMEN	⑤	L1
111Y	2'-8" X 5'-0"	E	WD	PTD	–		–	F-2	H.M.	PTD	HW-28		⑤	L1
Ⓐ	3'-0" X 3'-0" (NOM.)					G-4		F-4	H.M.	PTD	–		INTERIOR FIXED PANEL	L1
Ⓑ	3'-0" X 3'-0" (NOM.)					G-5		F-4	ALUM	ANODIZED	–		FIXED	L2

No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL SEAL 8209 ENGINEER RAYMOND B. HAMILTON

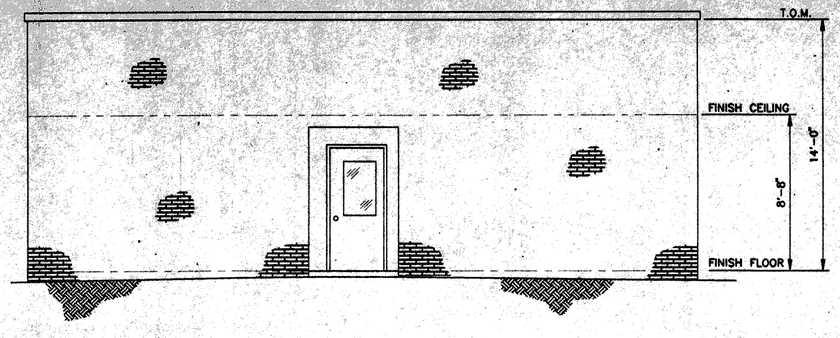
Project Manager: R. HAMILTON	
Architect: –	I&C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SAIT

Cabarrus County Utility Department
Muddy Creek WWTP
Contract A - General Construction
Cabarrus County North Carolina

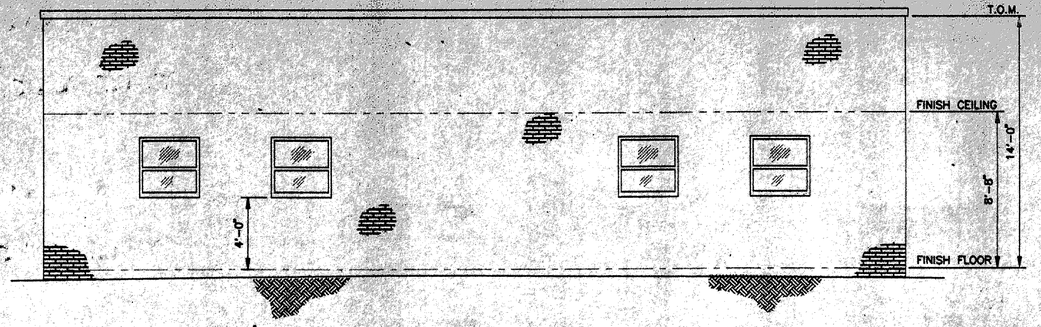
Administration Building
Floor Plan and Schedules

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	101	0
Scale 1/4"= 1'-0"			

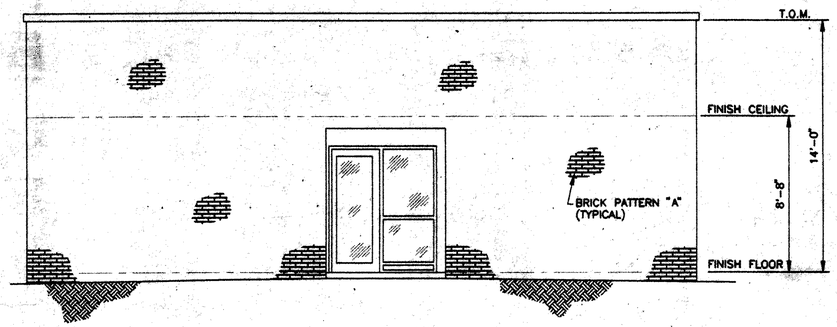
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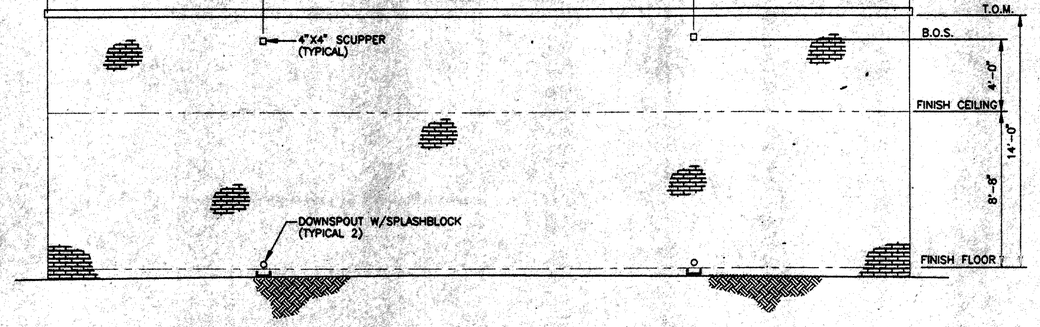
WEST ELEVATION
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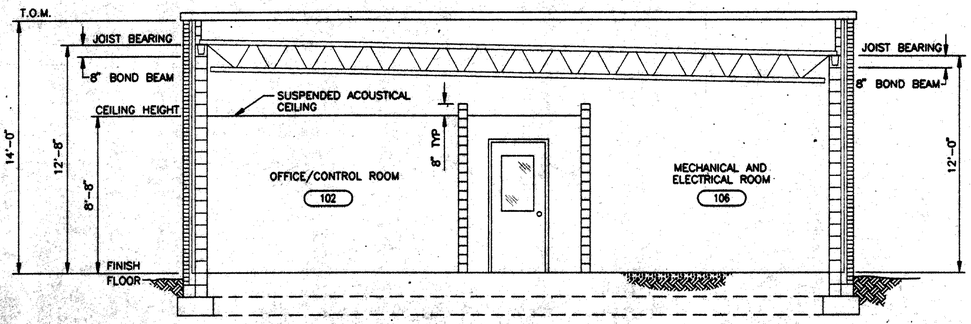
SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



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

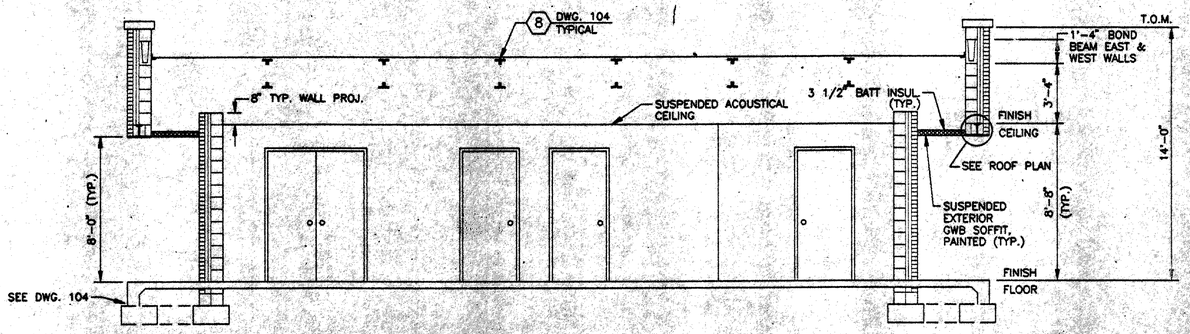


NORTH ELEVATION
SCALE: 1/4" = 1'-0"



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

A 102 101



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

B 102 101

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8205 RAYMOND D. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	I&C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

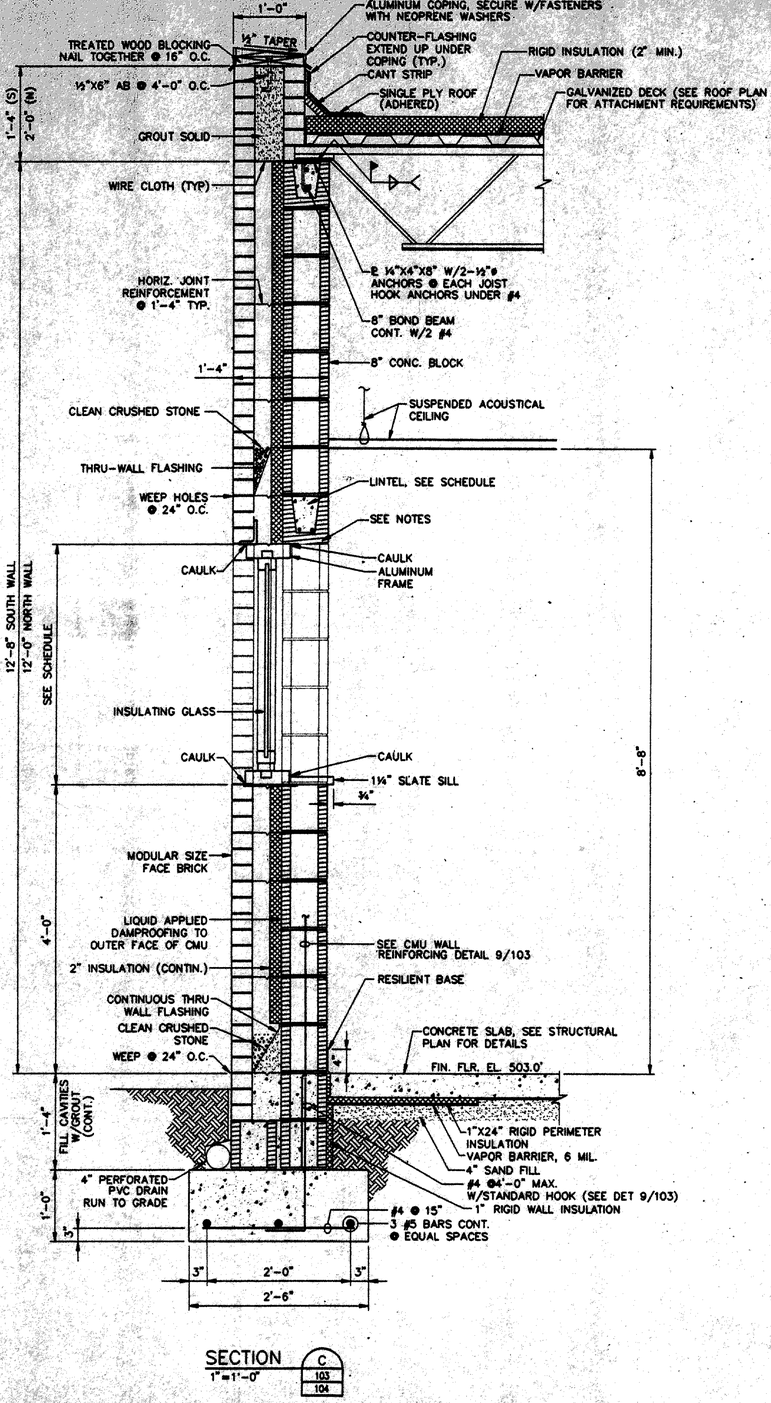
Contract A - General Construction

Cabarrus County — North Carolina

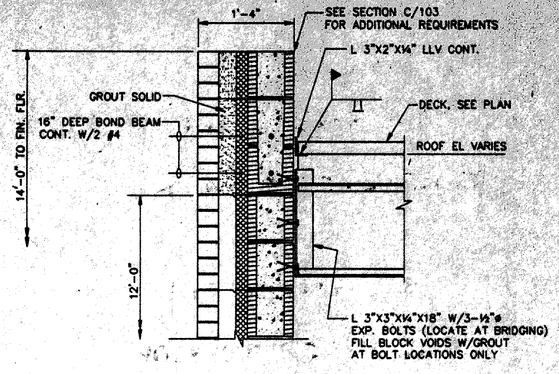
Administration Building Elevations & Sections

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	102	0
Scale: 1/4" = 1'-0"			

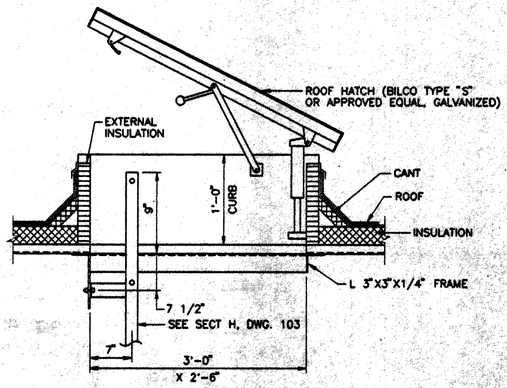
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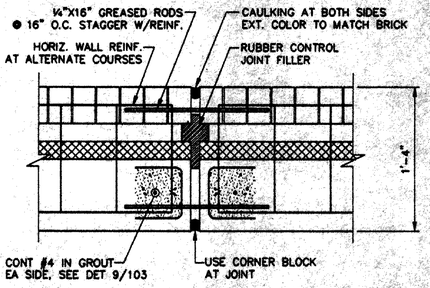
SECTION C
1"=1'-0" 103 104



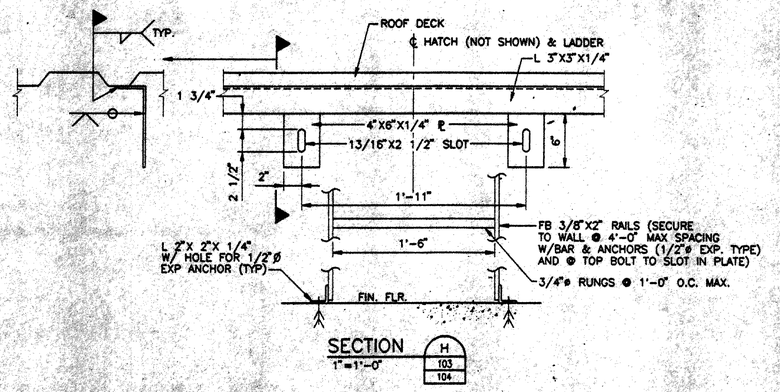
SECTION F
1"=1'-0" 103 104



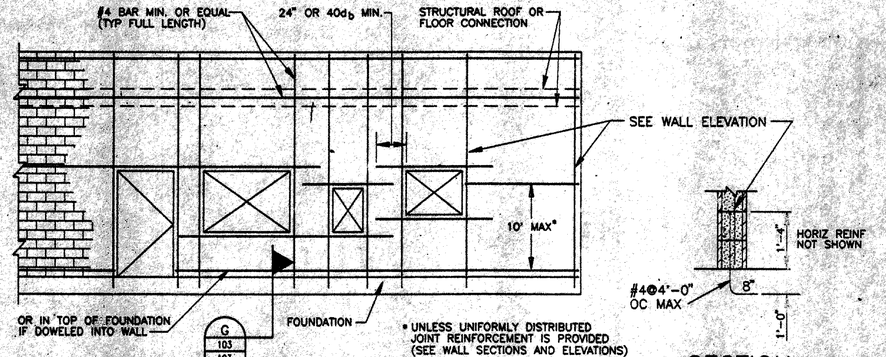
SECTION J
SCALE: 1"=1'-0" 104 103



DETAIL 10
1 1/2"=1'-0" 103



SECTION H
1"=1'-0" 103 104



SECTION G
103 103

CMU WALL REINFORCING 9
NO SCALE 103

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	6/22/94				
B	ISSUED FOR BID	5/18/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8295 RAYMOND B. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
M/C/Process	R. HAMILTON
Mechanical	–
Structural	N. ANTSHEL
Drawn By	R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

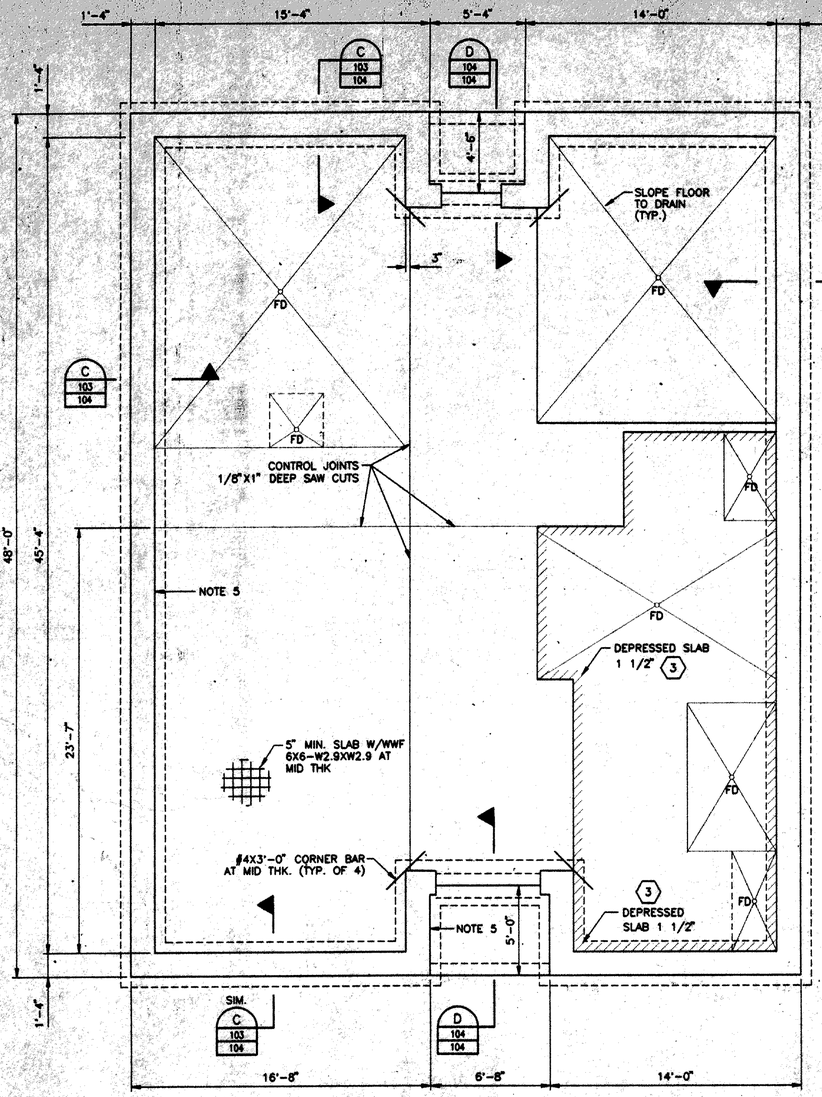
Contract A - General Construction

Cabarrus County North Carolina

Administration Building Wall Sections

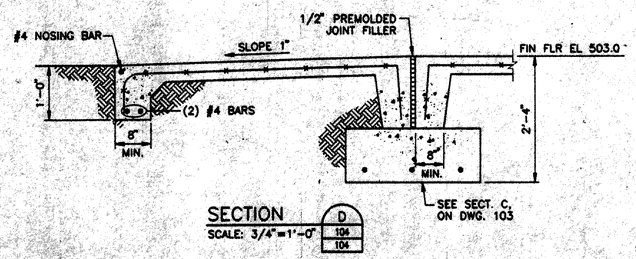
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	103	0
Scale: AS NOTED			

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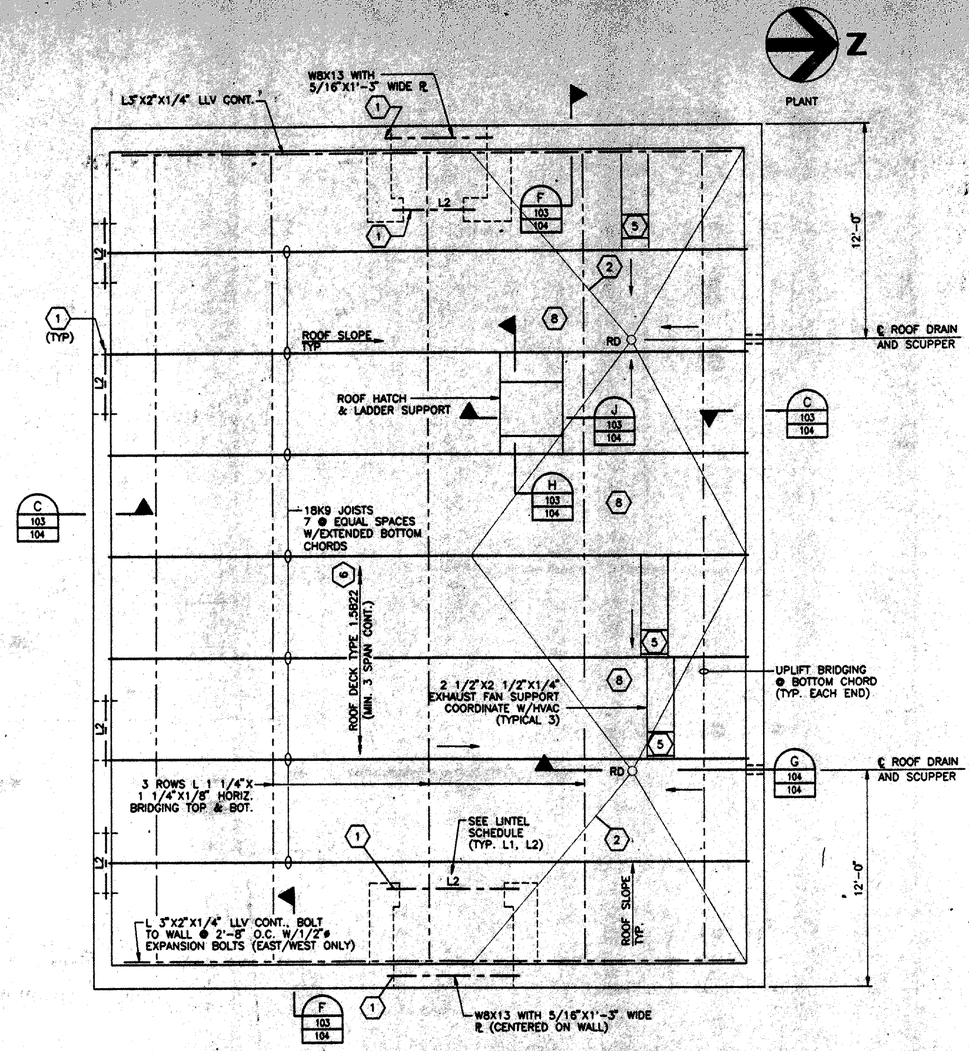
FLOOR/FOUNDATION PLAN

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



SECTION

SCALE: 3/4"=1'-0" D 104 104



ROOF PLAN

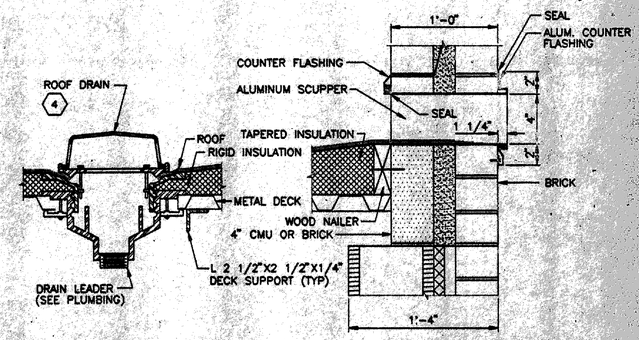
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. MATERIALS OF CONSTRUCTION:
   a. STRUCTURAL AND PLATE STEEL – ASTM A36
   b. CONCRETE (CIP) – 4,000 PSI @ 28 DAYS
   c. CONCRETE (PC) – 5,000PSI @ 28 DAYS
   d. REINFORCING – ASTM A615, GR. 60
   e. ANCHORS – CARBON STEEL
2. BUILDING IS DESIGNED TO RESIST 80 MPH WINDS AND LOADS DUE TO SEISMIC ZONE 1 (Av=0.10) EARTHQUAKES. SUPERIMPOSED DESIGN LOADS ARE:
   ROOF LIVE = 20 psf
   ROOF DEAD = 15 psf (MAX.)
   ROOF MISCELLANEOUS = 10 psf
   SLAB ON GRADE = 100 psf
   ROOF CONCENTRATED = AS ON HVAC PLAN
3. BUILDING JOISTS SHALL BE DESIGNED TO RESIST A NET WIND UPLIFT LOAD OF 40 POUNDS PER LINEAR FOOT.
4. DESIGN SOIL BEARING PRESSURE IS ASSUMED TO BE 2,000 psf.
5. PROVIDE CONTINUOUS 1/2" PREMOLDED EXPANSION JOINT MATERIAL AT ALL CONCRETE TO CMU INTERFACES SEAL AT FLOOR LEVEL WITH GUN-GRADE ELASTOMERIC SEALER.
6. COORDINATE THE STRUCTURAL DETAILS WITH ARCHITECTURAL , AND OTHER CONTRACT DOCUMENTS.
7. ALL REBAR INDICATED AS DOWELS SHALL LAP WITH ADJACENT REINFORCING 2'-0", UNLESS NOTED OTHERWISE.

SPECIFIC NOTES

1. BEARING LENGTH TO BE 8" MINIMUM. FILL ALL CAVITIES AND VOIDS WITH GROUT FULL HEIGHT OF WALL TO BEARING ELEVATION. TYP. EACH END OF ALL LINTELS. REFERENCE CMU WALL REINFORCING DETAILS FOR ADDITIONAL REQUIREMENTS.
2. TAPER INSULATION AS REQUIRED TO SLOPE ROOF TO DRAINS.
3. USE MORTAR W/ REINFORCING TO SET TILE. SEE FLOOR PLAN FOR AREA DEFINITION.
4. ROOF DRAINS SUPPLIED TO GENERAL CONTRACTOR FOR INSTALLATION IN ROOF. SEE PLUMBING DWGS FOR DETAILS.
5. FOR PREFABRICATED ROOF CURBS SEE DWG 602.
6. ATTACH DECKING TO JOISTS TO RESIST THE MINIMUM WIND UPLIFT STIPULATED ABOVE FOR THE JOISTS.
7. PROVIDE WALKING PADS ON ROOFTOP BETWEEN HATCH, ALL MECHANICAL EQUIPMENT AND DRAINS.



SECTION

1 1/2"=1'-0" G 104 104

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Proj. Engr.	Proj. Mgr.
C	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	6/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8205 RAYMOND D. SHAMBLEY 4-94

Project Manager: R. HAMILTON	
Architect: –	M&P/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SAIT

Cabarrus County Utility Department

Muddy Creek WWTP

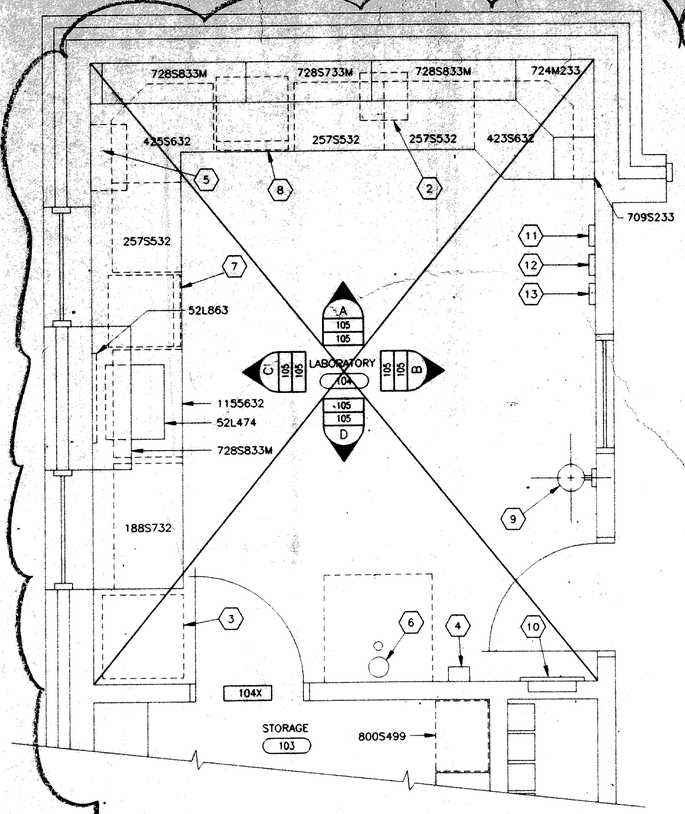
Contract A - General Construction

Cabarrus County North Carolina

Administration Building Plans and Sections

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	104	0
Scale: AS NOTED			

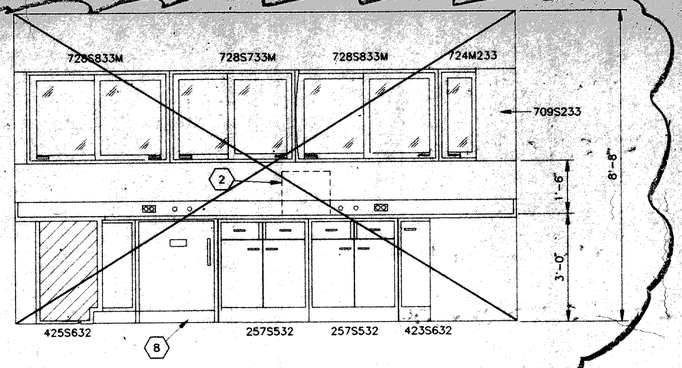
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LABORATORY PLAN

SCALE: 1/2"= 1'-0"
(NOT IN CONTRACT)

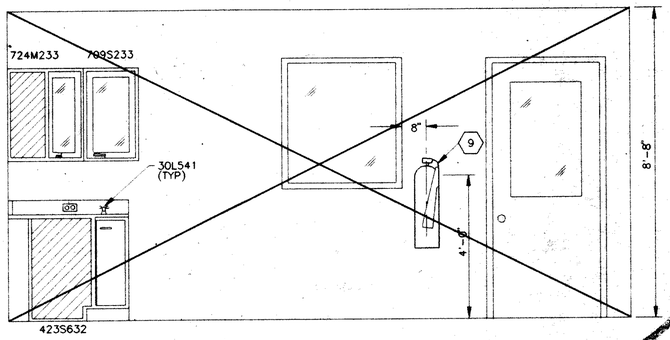
1 C.O.S-1



A 105 105 ELEVATION

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

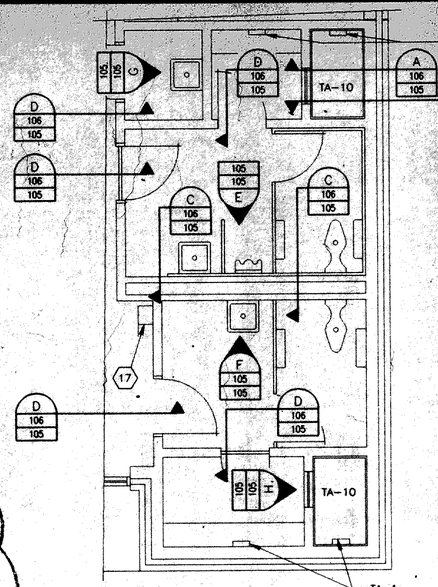
1 C.O.S-1



B 105 105 ELEVATION

SCALE: 1/2"= 1'-0"
(NOT IN CONTRACT)

1 C.O.S-1



LAVATORY PLAN

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

GENERAL NOTES

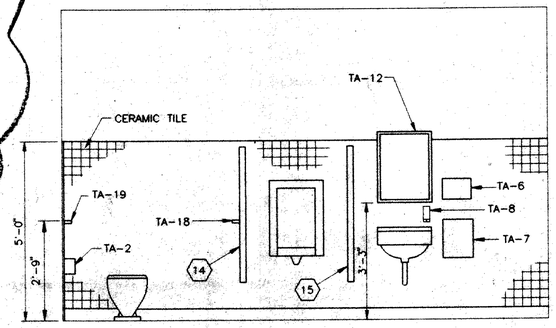
1 C.O.S-1

1. ~~LABORATORY CASEWORK MODEL NUMBERS REFERS TO FISHER HAMILTON CATALOGUE. SEE SPECIFICATION SECTION 12345 FOR OTHER ACCEPTABLE MANUFACTURERS OF CASEWORK.~~

SPECIFIC NOTES

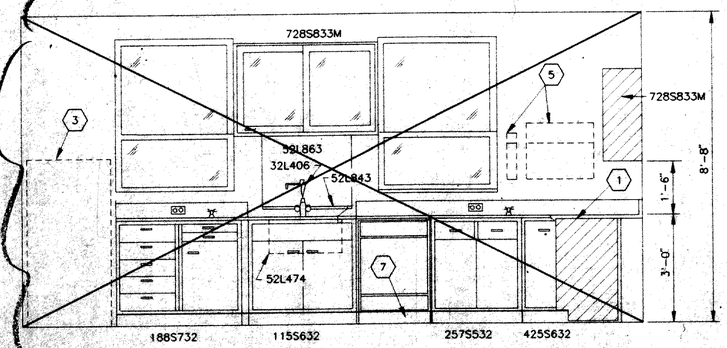
1 C.O.S-1

1. ~~COUNTER TOPS SHALL BE MOLDED EPOXY RESIN, FISHER HAMILTON WORKTOP TYPE B, STANDARD EDGE, FORM CURB OF EQUAL.~~
2. ~~MUFFLE FURNACE (BY OTHERS).~~
3. ~~REFRIGERATOR FREEZER (BY OTHERS).~~
4. ~~WALL MOUNTED FIRE BLANKET.~~
5. ~~GLASS WATER STILL AND FEED WATER PRETREATMENT KIT.~~
6. ~~EMERGENCY SHOWER-EYEWASH.~~
7. ~~GLASSWARE WASHER.~~
8. ~~REFRIGERATED INCUBATOR (BY OTHERS).~~
9. FIRE EXTINGUISHER.
10. ELECTRIC PANEL (INSTALLED BY ELECTRICAL CONTRACTOR)
11. EFFLUENT FLOW RECORDER. SEE SPECIFICATION SECTION 15060.
12. RAS FLOW RECORDER. SEE SPECIFICATION SECTION 15060.
13. WAS FLOW RECORDER. SEE SPECIFICATION SECTION 15060.
14. METAL TOILET PARTITION.
15. METAL WALL HUNG SCREEN.
16. PROVIDE LOCKERS AS SPECIFIED.
17. PROVIDE COOLER AS SPECIFIED.



E 105 105 ELEVATION

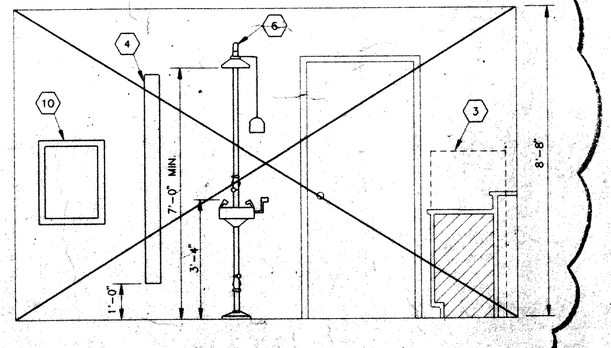
SCALE: 1/2"= 1'-0"



C 105 105 ELEVATION

SCALE: 1/2"= 1'-0"
(NOT IN CONTRACT)

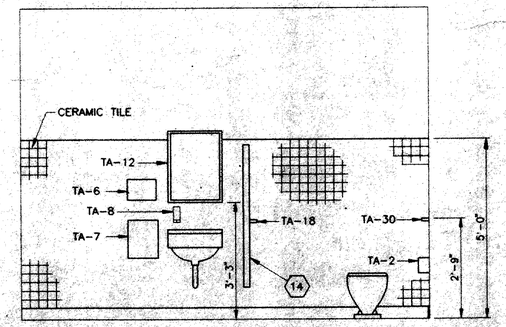
1 C.O.S-1



D 105 105 ELEVATION

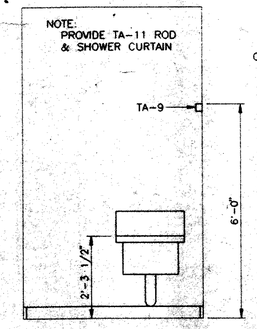
SCALE: 1/2"= 1'-0"
(NOT IN CONTRACT)

1 C.O.S-1



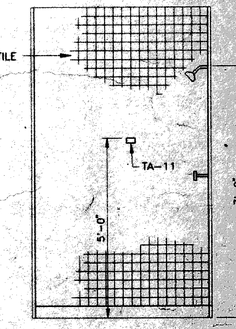
F 105 105 ELEVATION

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



G 105 105 ELEVATION

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



H 105 105 ELEVATION

SCALE: 1/2"= 1'-0"
(BOTH SHOWERS ARE IDENTICAL)

HDR

HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drawn	Check	Resp. Engr.	Proj. Mgr.
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8209 ENGINEER RAYMOND E. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	H&C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R SATT

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

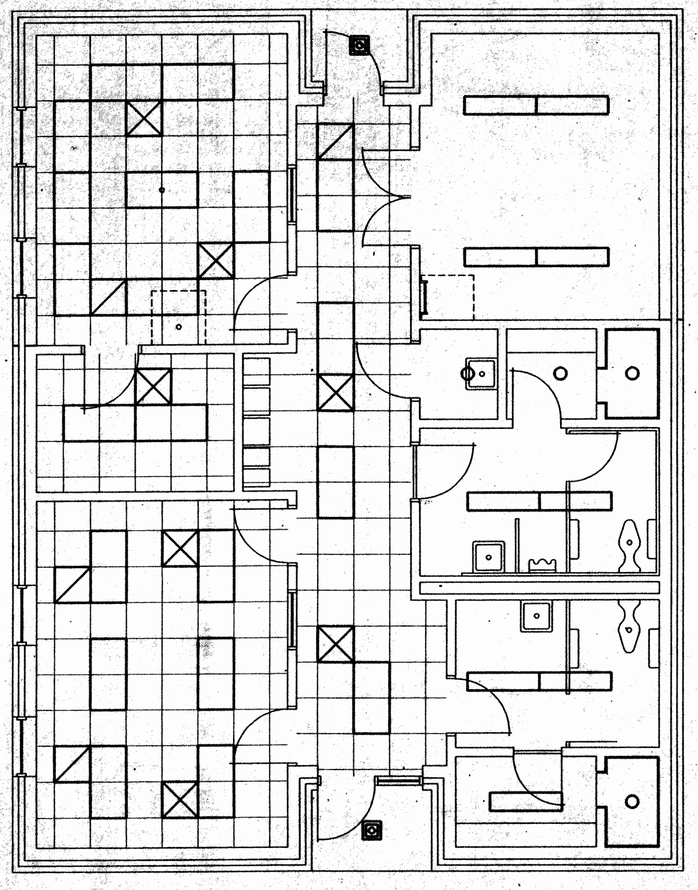
Cabarrus County — North Carolina

Administration Building
Laboratory and Lavatory
Plans and Elevations

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	105	1

Scale: AS NOTED

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REFLECTED CEILING PLAN

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

HDR

HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drawn	Checked	Resp. Dept.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8205 REGISTERED RAYMOND R. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	M/C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

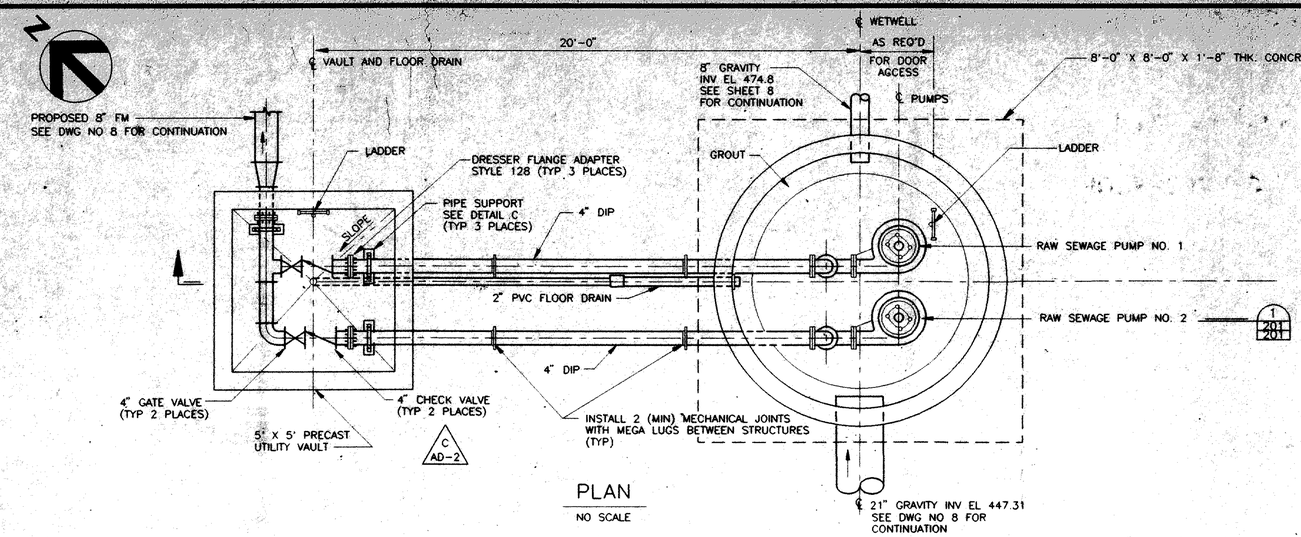
Contract A - General Construction

Cabarrus County — North Carolina

Administration Building
Reflected Ceiling Plan

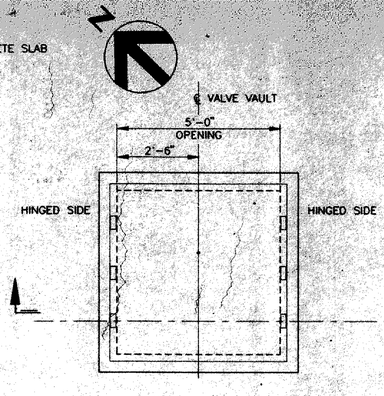
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	106	0
Scale: AS NOTED			

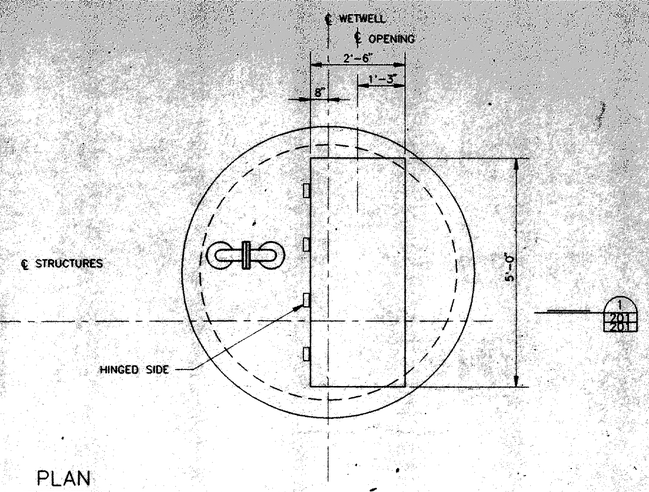
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PLAN

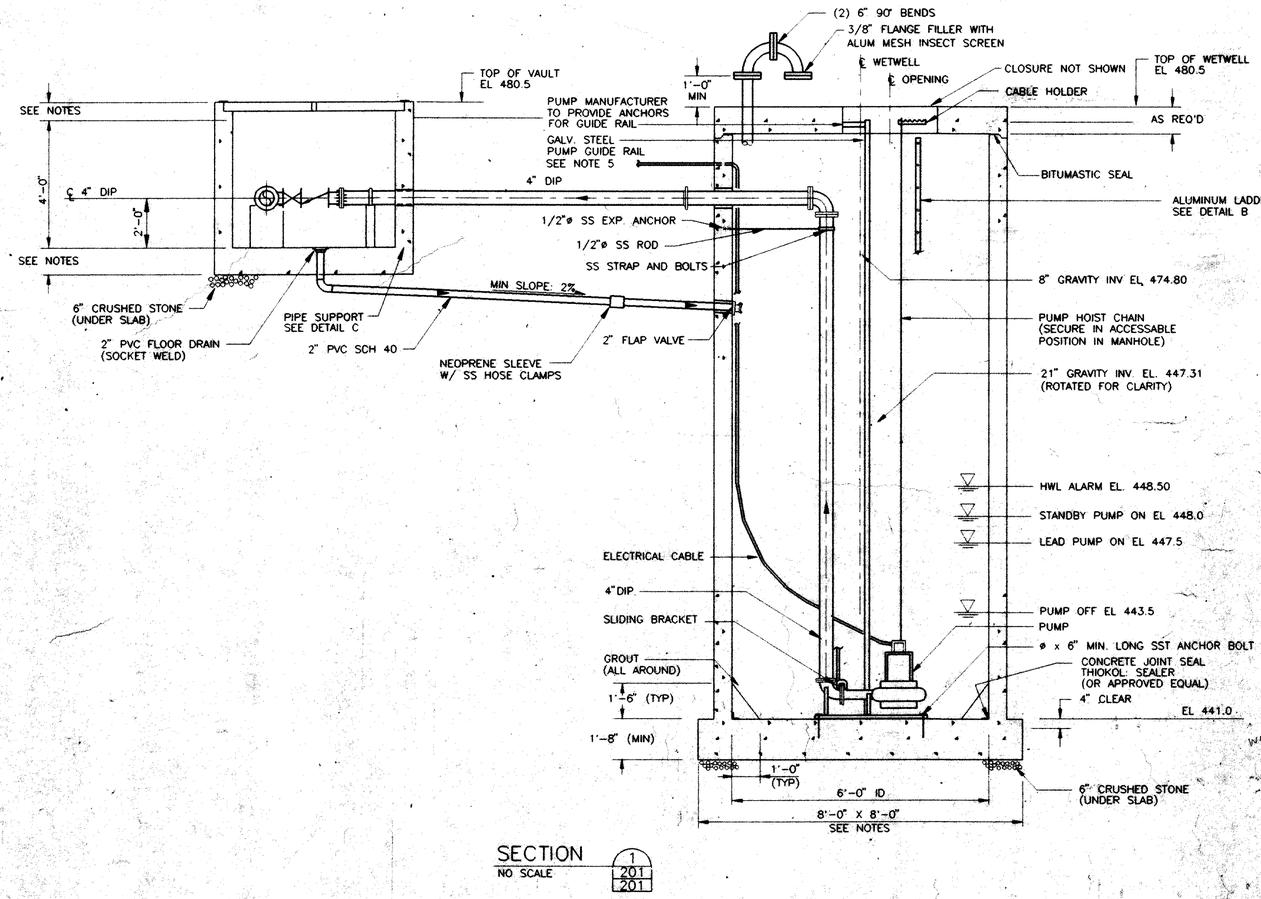
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PLAN

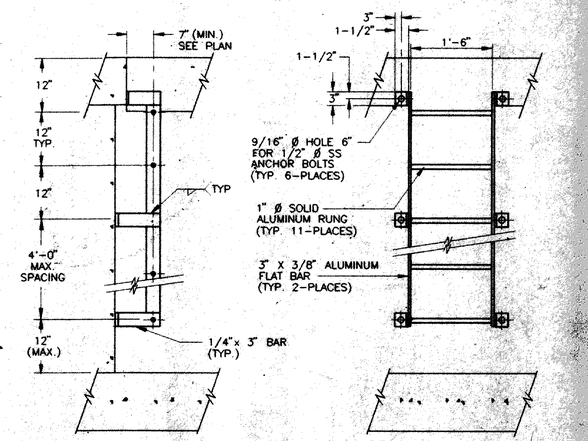
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SECTION

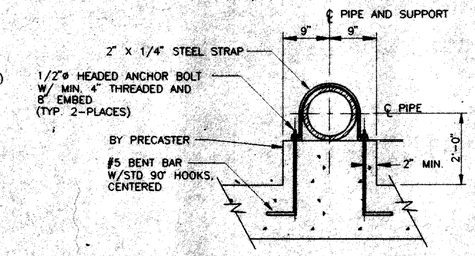
NO SCALE

1 201



DETAIL B

NO SCALE



DETAIL C

NO SCALE

GENERAL NOTES

1. FOR PRECAST COMPONENTS, FABRICATOR TO SUPPLY CALCULATIONS AND SHOP DRAWINGS FOR ENGINEERS APPROVAL. STABILITY AS WELL AS STRUCTURAL INTEGRITY TO WITHSTAND LOADINGS INDICATED, MUST BE CONSIDERED.
2. COMPACTED BACKFILL TO 90% MAX. DENSITY BY ASTM D-1557.
3. SUPPORT PER MANUFACTURER'S RECOMMENDATION. COORDINATE LOCATION WITH MANHOLE, LADDER ETC.
4. ALL PIPE AND FITTINGS IN VALVE VAULT TO BE FLANGED DIP.
5. PROVIDE RECESSED HASP, COVERED BY A HINGED LID, FLUSH WITH SURFACE.
6. THE INTERIOR WALLS OF BOTH THE WETWELL AND VALVE VAULT SHALL BE WATER PROOFED WITH A BITUMINOUS SEALANT.
7. FOR PRECAST STRUCTURES PROVIDE BOOTS TO WATERPROOF OPENINGS. IF STRUCTURES ARE CAST IN PLACE, PROVIDE WALL SLEEVES AND LINK SEALS FOR ALL OPENINGS.

1 C.O.S-1

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd	Resp Engr	Proj Mgr
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO. 2	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8209 ENGINEER RAYMOND G. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By:	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

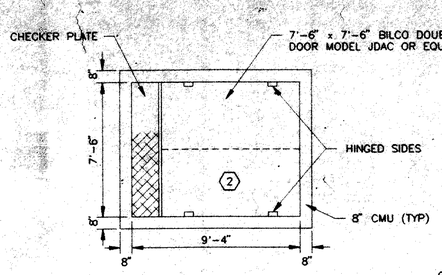
Cabarrus County North Carolina

Pump Station Plan, Sections and Details

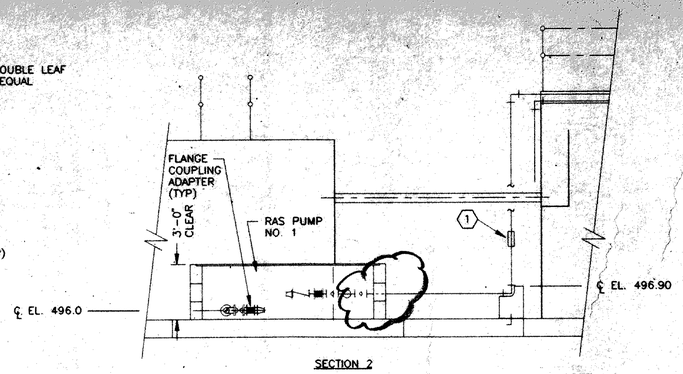
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	201	1

Scale: AS NOTED

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RAS/WAS PUMP STATION
TOP PLAN
N.T.S.



SECTION 2

GENERAL NOTES:

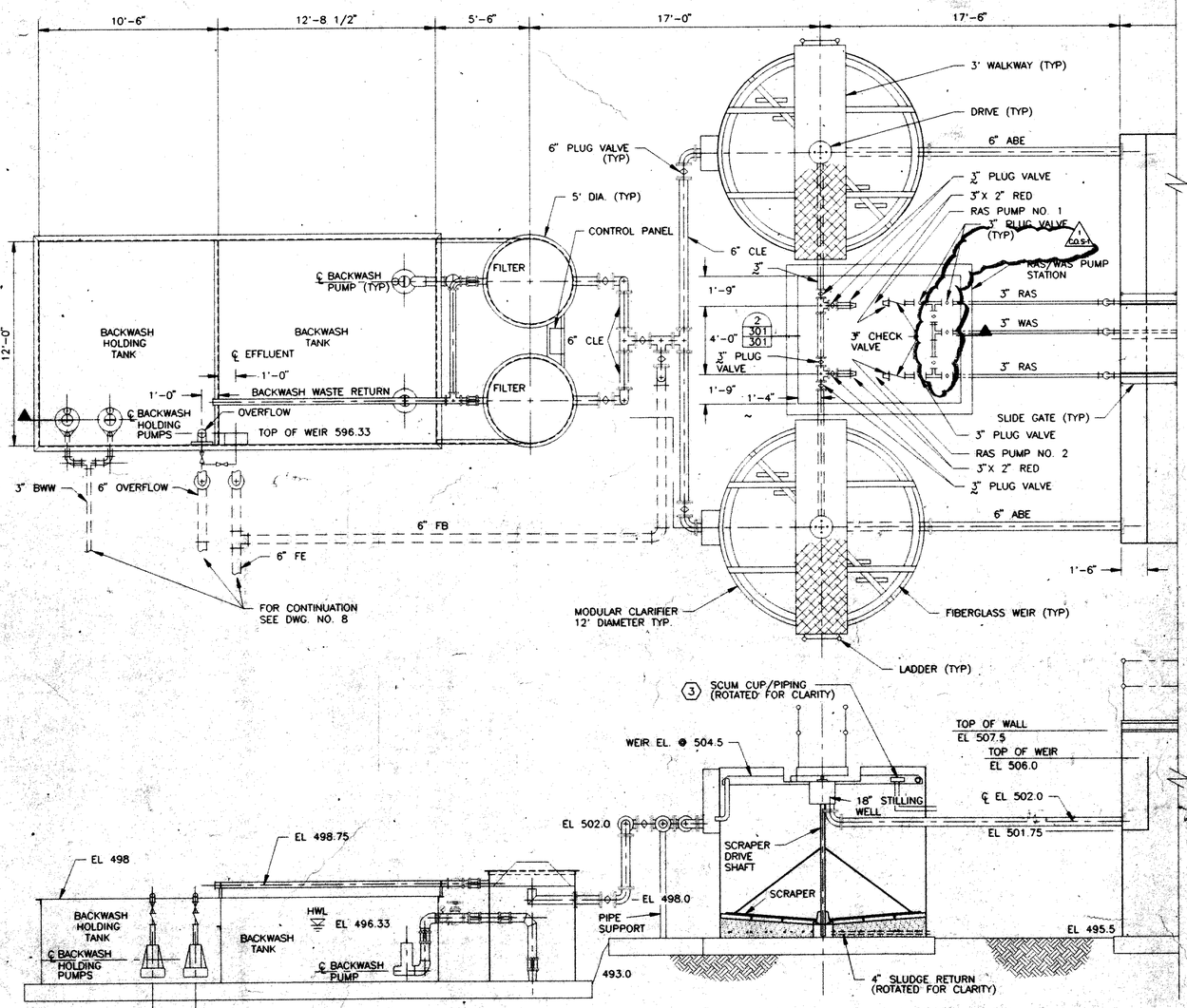
1. DRAWING OF MODULAR TREATMENT UNIT IS CONCEPTUAL IN NATURE AND IS INTENDED TO SHOW GENERAL COMPONENTS OF REQUIRED PROCESS. ACTUAL CONSTRUCTION DETAILS TO BE FURNISHED BY CONTRACTOR PER MANUFACTURER'S SHOP DRAWINGS.
2. INTERNAL BACKWASH PIPING AND VALVES IS TO BE SIZED AND CONFIGURED BY THE FILTER MANUFACTURER.

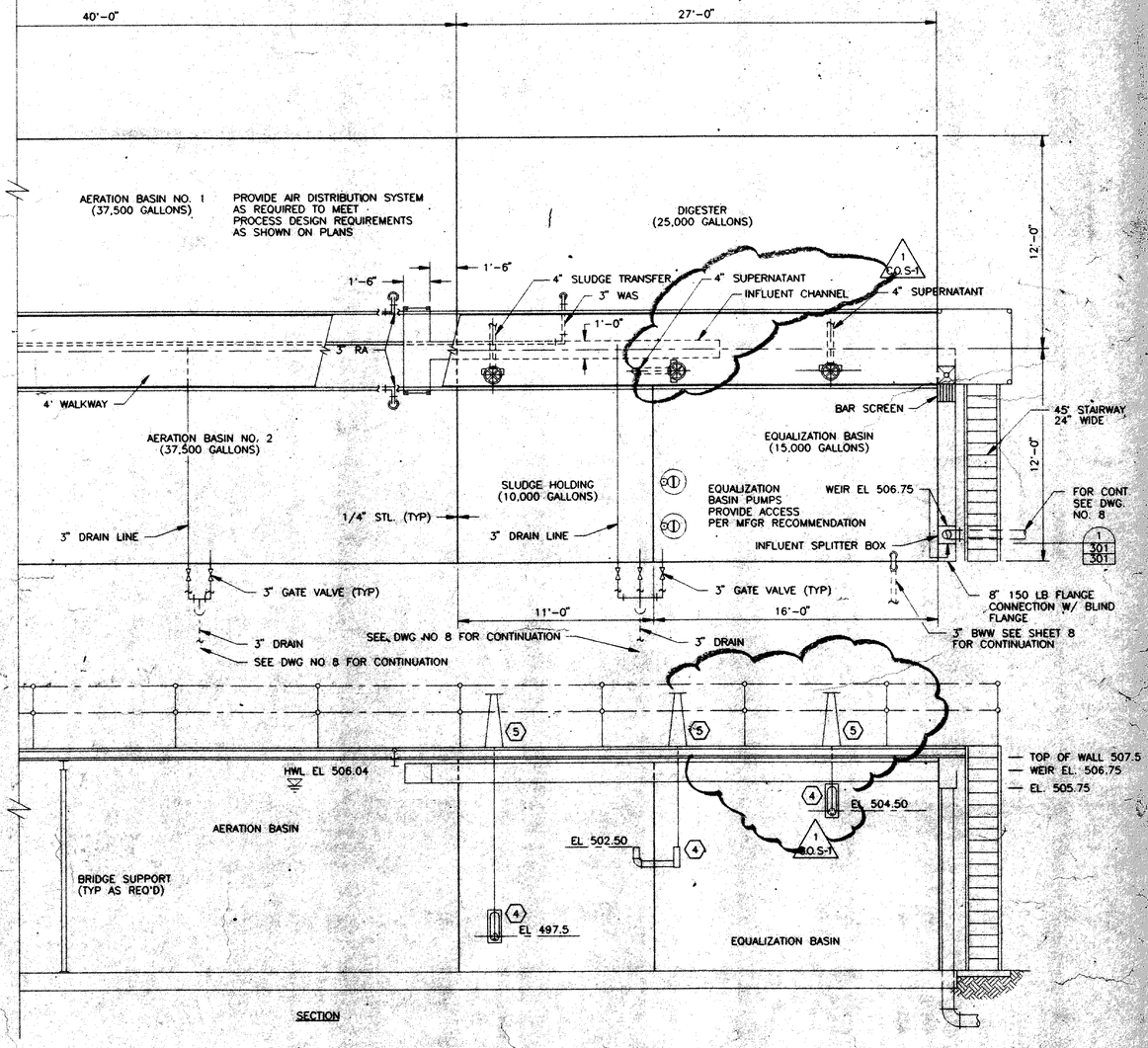
C AD-2

SPECIFIC NOTES:

1. 3" FLOW ELEMENT TYP. FOR RAS/WAS LINES. SEE SECTION 15.60 FOR SPECIFICATIONS.
2. PROVIDE INTERMEDIATE SUPPORT FOR ACCESS DOOR AND CHECKER PLATE PER DOOR MFGR. RECOMMENDATIONS.
3. ROUTE SCUM WITHDRAWAL PIPING TO 8" DRN.
4. 4" SLUICE GATE: CLOW MODEL NO F5350 OR EQUAL.
5. NRS-INDICATING FLOOR STAND. CLOW MODEL NO F5505 OR EQUAL.
6. MOTOR OPERATED FLOOR STAND.

1 C.O. S-1





SECTION

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn	Chkd.	Resp. Engr.	Proj. Mgr.
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO. 2	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8206 ENGINEER RAYMOND S. HAMILTON

Project Manager: R. HAMILTON	
Architect: –	I&C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

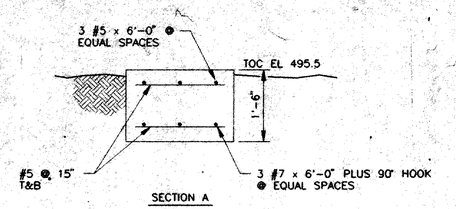
Contract A - General Construction

Cabarrus County North Carolina

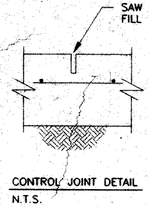
Modular Treatment Unit, Clarifier & Filter Unit Plan and Sections

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	301	1
Scale 1/4" = 1'-0"			

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SECTION A
N.T.S.



CONTROL JOINT DETAIL
N.T.S.

GENERAL NOTES

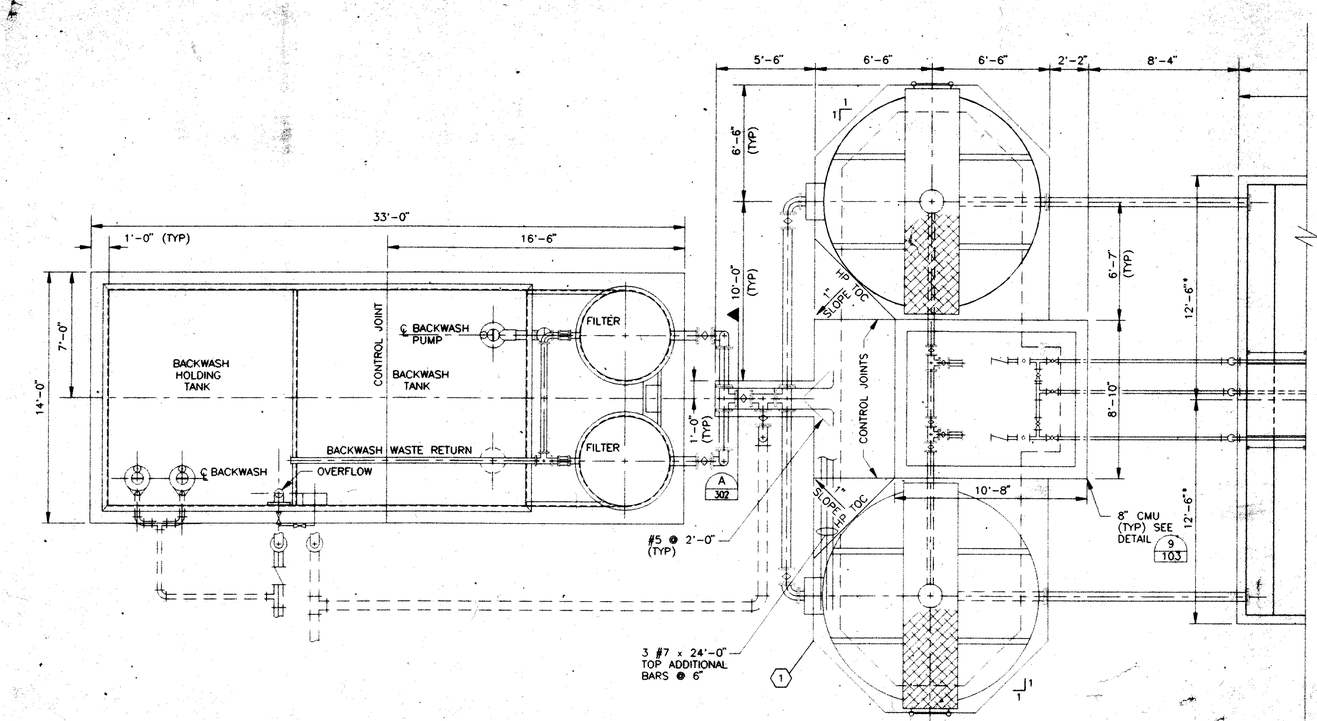
C AD-2

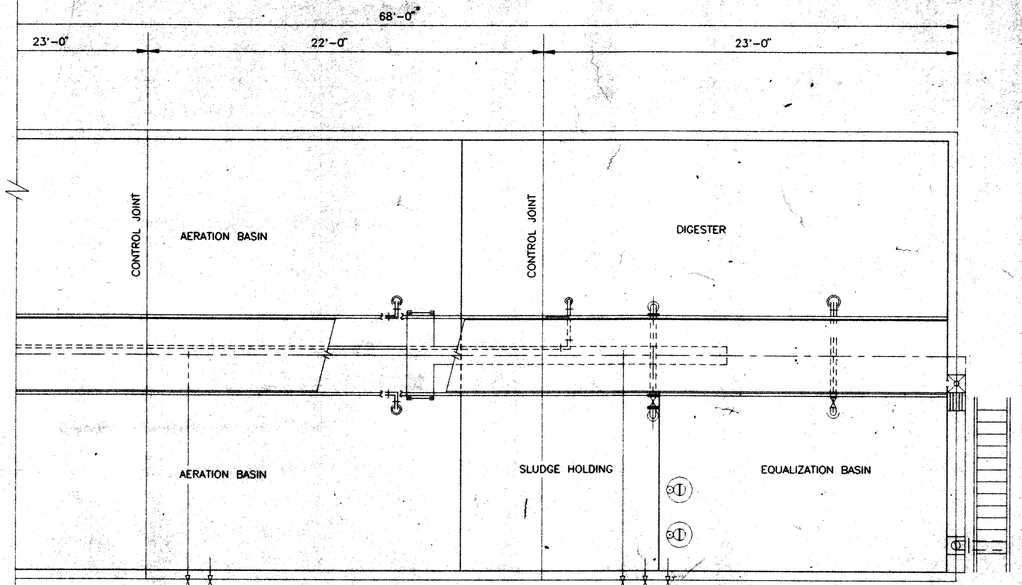
A. THIS SHEET IS FOR STRUCTURAL PURPOSES ONLY. IGNORE ANY PIPING CONFLICTS WITH SHEET 301.

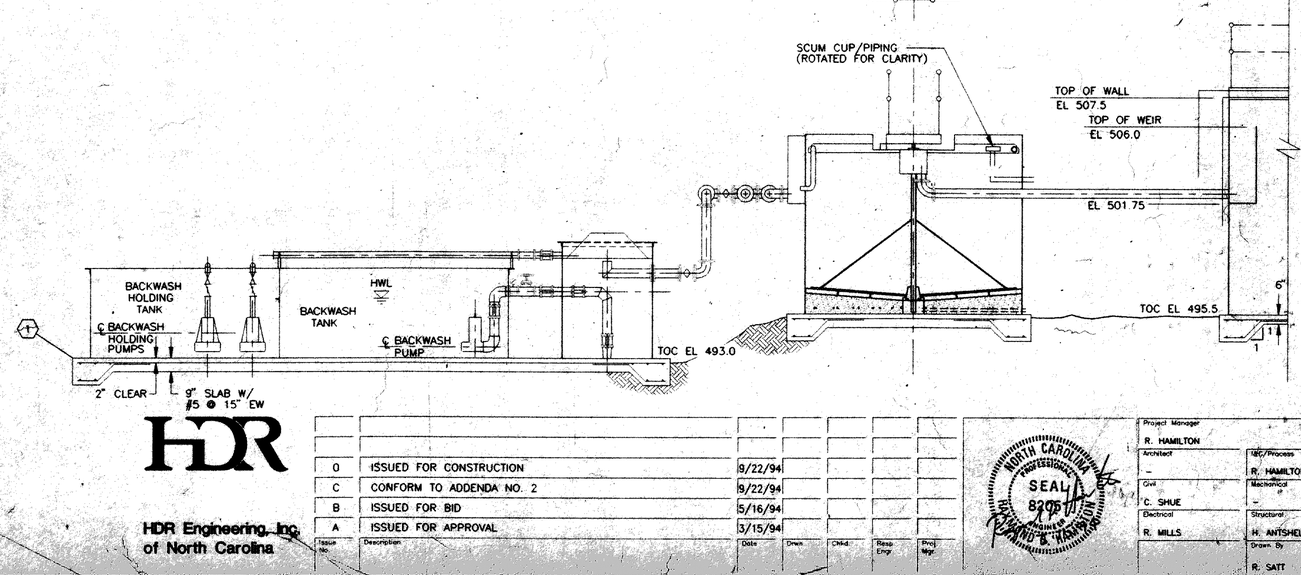
SPECIFIC NOTES

(1) CHAMFER ALL EXPOSED EDGES

* DIMENSION TO BE VERIFIED OR ADEQUATE BASED UPON PURCHASED EQUIPMENT







HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn	Chkd	Resp Engr	Proj Mgr
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO. 2	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND E. HAMILTON

Project Manager: R. HAMILTON	
Architect: -	Mfg/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: -
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

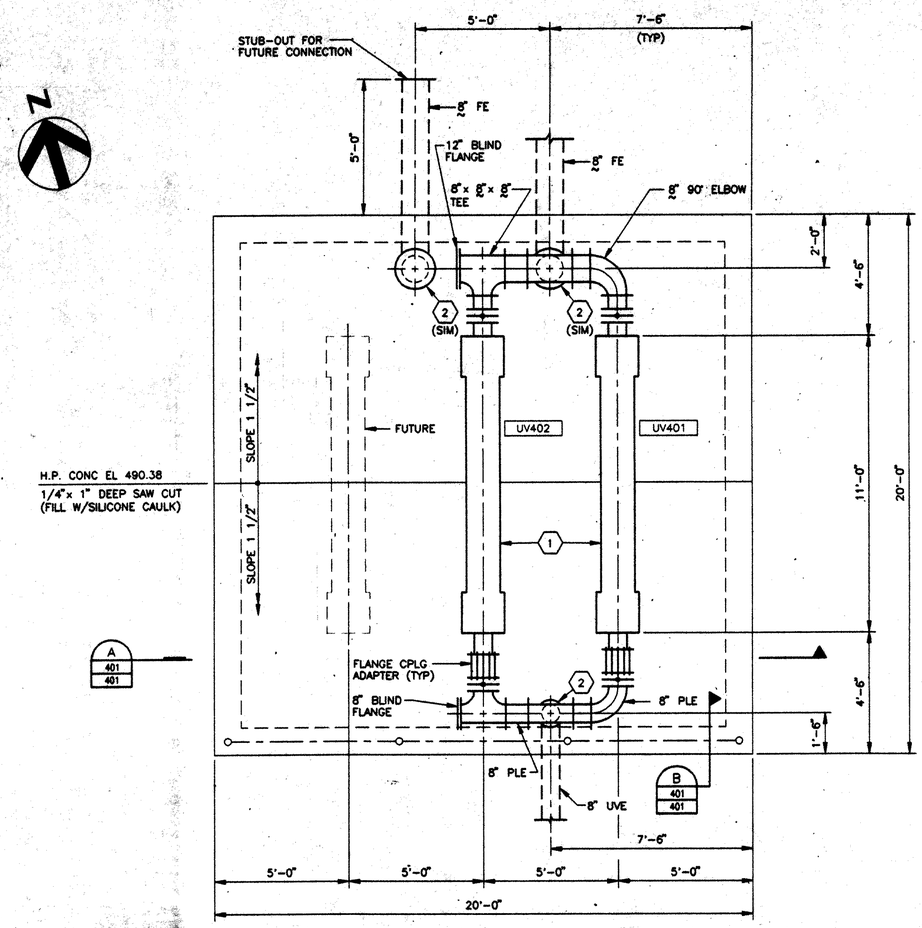
Cabarrus County North Carolina

Modular Treatment Unit, Clarifier & Filter Unit Foundation Plan and Sections

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	302	0

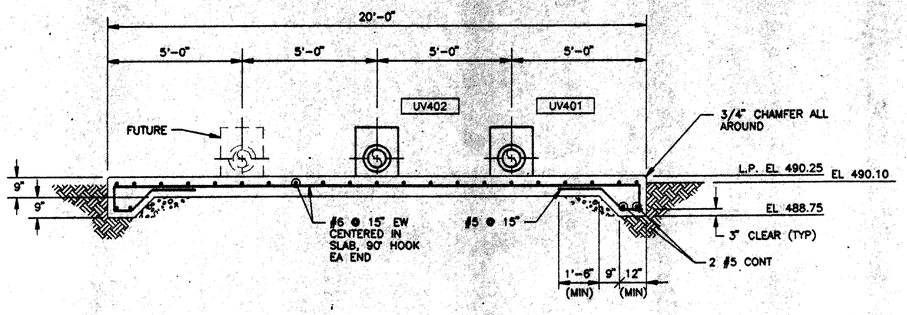
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UV DISINFECTION AREA PLAN

SCALE: 3/8" = 1'-0"



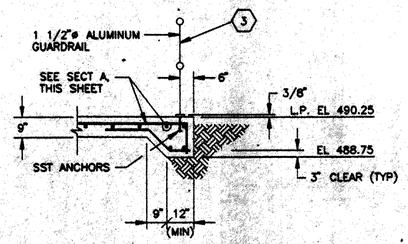
SECTION

SCALE: 3/8" = 1'-0"

A 401 401

SPECIFIC NOTES

1. WEIR HT FOR UV DISINFECTION UNITS SHALL BE SET @ ELEVATION 491.75.
2. DUCTILE IRON PIPE WALL CONNECTION, SEE DETAIL 1, SHEET 501.
3. MOUNT POWER RECEPTACLES AND UV MONITORING PANELS TO GUARDRAIL.



SECTION

SCALE: 3/8" = 1'-0"

B 401 401

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8209 RICHARD D. HAMILTON 4

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Contract A - General Construction

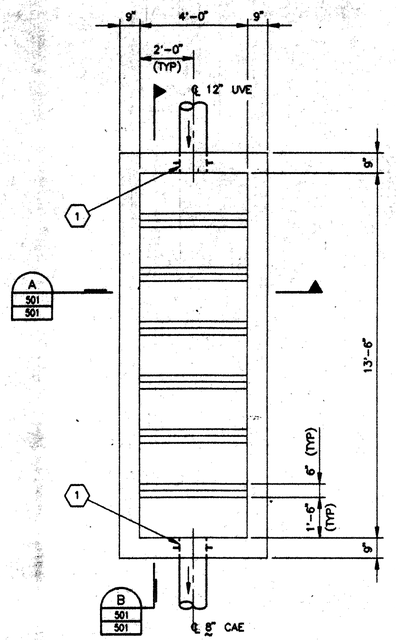
Cabarrus County North Carolina

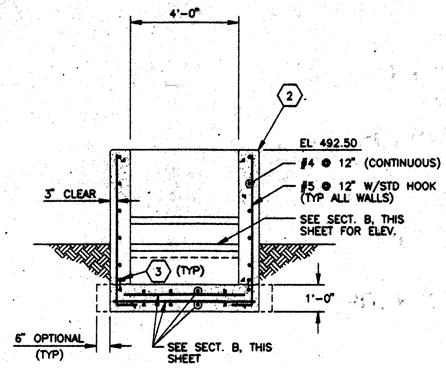
UV Disinfection Plan and Sections

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	401	0

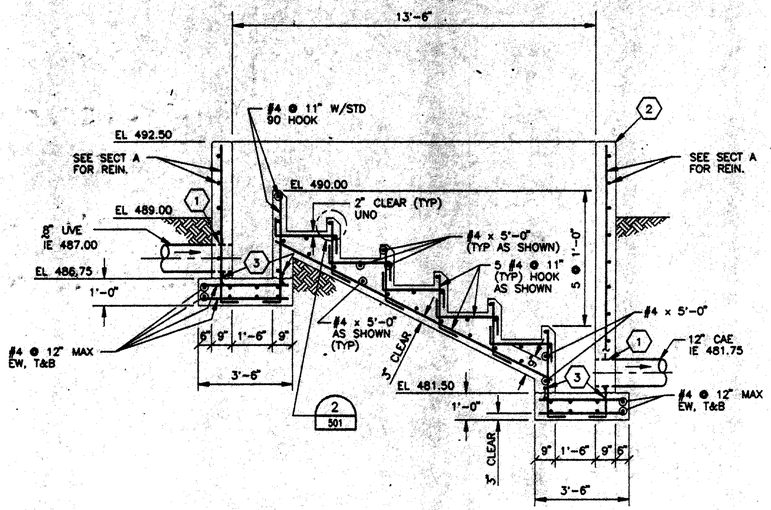
Scale: AS NOTED

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SECTION
SCALE: 3/8" = 1'-0"
A 501 501



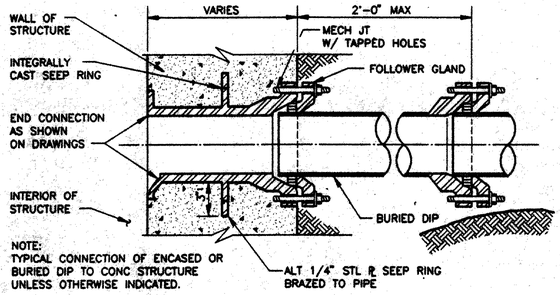
SECTION
SCALE: 3/8" = 1'-0"
B 501 501

SPECIFIC NOTES

1. DUCTILE IRON PIPE WALL CONNECTION. SEE DETAIL 1, THIS SHEET.
2. CHAMFER EXPOSED EDGES 3/4".
3. WATERSTOP TO BE 3/8" x 6" LONG DUMBELL TYPE.

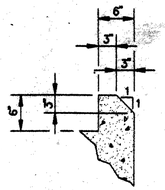
CASCADE AERATOR PLAN

SCALE: 3/8" = 1'-0"



DIP WALL CONNECTION DETAIL

NO SCALE
1 501



WEIR DETAIL

(TYP 6 PLACES)
SCALE: 1" = 1'-0"
2 501

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
C	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/18/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8209 ENGINEER RAYMOND D. HAMILTON

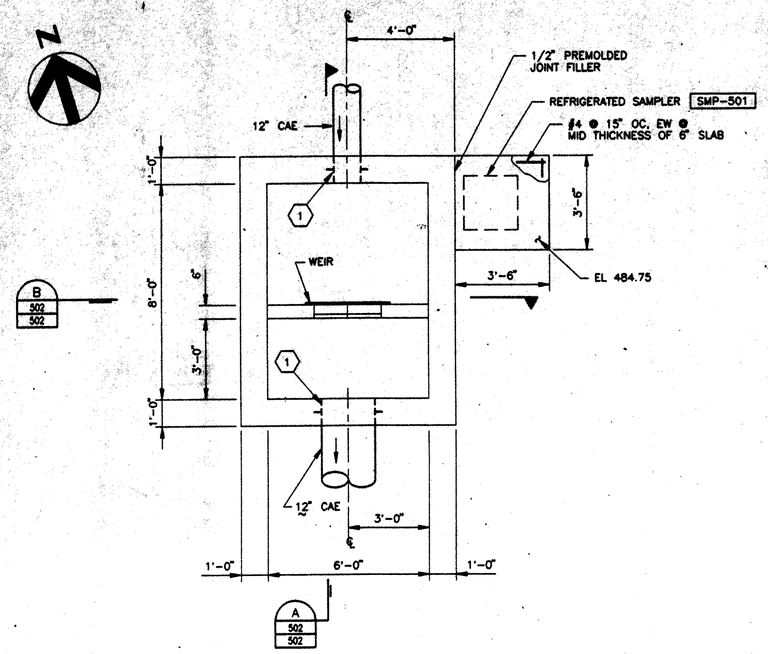
Project Manager: R. HAMILTON			
Architect: --		I&C/Process: R. HAMILTON	
Civil: C. SHUE		Mechanical: --	
Electrical: R. MILLS		Structural: H. ANTSHEL	
		Drawn By: M. LINKOUS	

Cabarrus County Utility Department
Muddy Creek WWTP
Contract A - General Construction
Cabarrus County North Carolina

Cascade Aerator Plan, Sections and Details

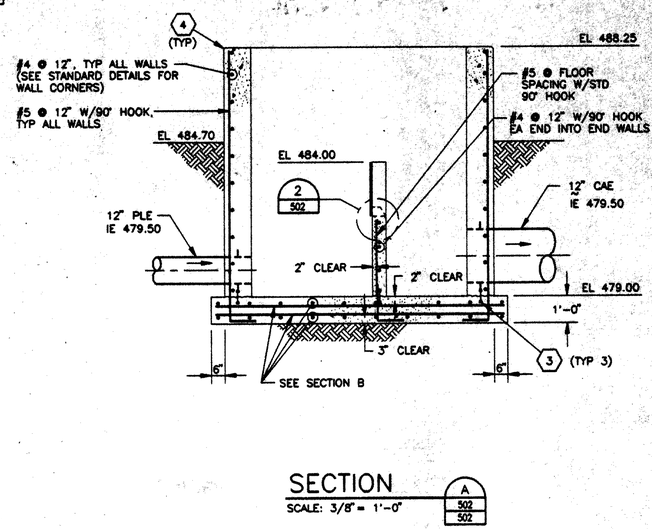
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	501	0
Scale: AS NOTED			

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EFFLUENT MONITORING BOX PLAN

SCALE: 3/8" = 1'-0"



SECTION

SCALE: 3/8" = 1'-0"

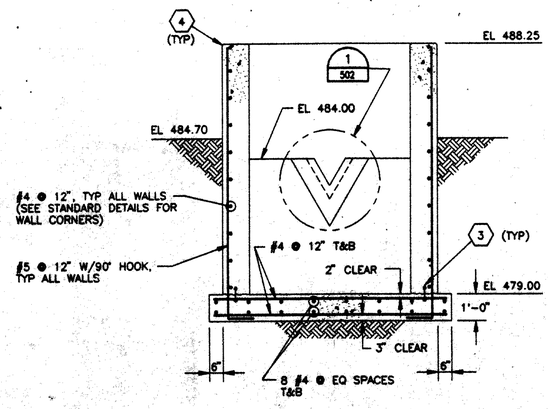
A 502 502

GENERAL NOTES

A. ENTIRE EFFLUENT MONITORING BOX MAY BE CONSTRUCTED OFF SITE. PRECASTER MAY PROPOSE TO REVISE REINFORCING AND THICKNESSES TO ACHIEVE SAME STRUCTURAL INTEGRITY. ENGINEER MUST APPROVE ANY CHANGES TO THIS DESIGN.

SPECIFIC NOTES

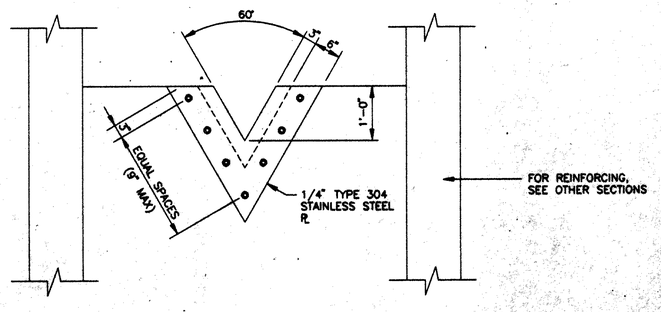
1. DUCTILE IRON PIPE WALL CONNECTION, SEE DETAIL 1, SHEET 501.
2. PROVIDE FULL LENGTH 1/8" THICK NEOPRENE GASKET BETWEEN STEEL PLATE AND CONCRETE. SEAL WITH SILICONE AT EXPOSED EDGE. RUN "S" BEAD OF SILICONE CAULKING ALONG BACK OF PLATE PRIOR TO INSTALLATION.
3. WATERSTOP TO BE 3/8" x 4" CONTINUOUS DUMBBELL TYPE.
4. PROVIDE 3/4" CHAMFER AT ALL EXPOSED EDGES.



SECTION

SCALE: 3/8" = 1'-0"

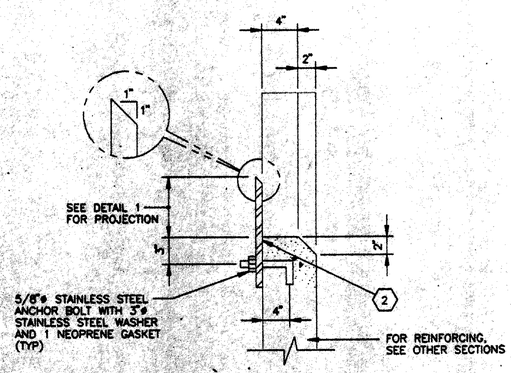
B 502 502



60° V-NOTCH WEIR DETAIL

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

1 502



DETAIL

NO SCALE

2 502

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND D. MILLS 9-22-94

Project Manager: R. HAMILTON	
Architect: –	I&C/Process: R. HAMILTON
Civil: C. SHUE	Mechanical: –
Electrical: R. MILLS	Structural: H. ANTSHEL
	Drawn By: M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

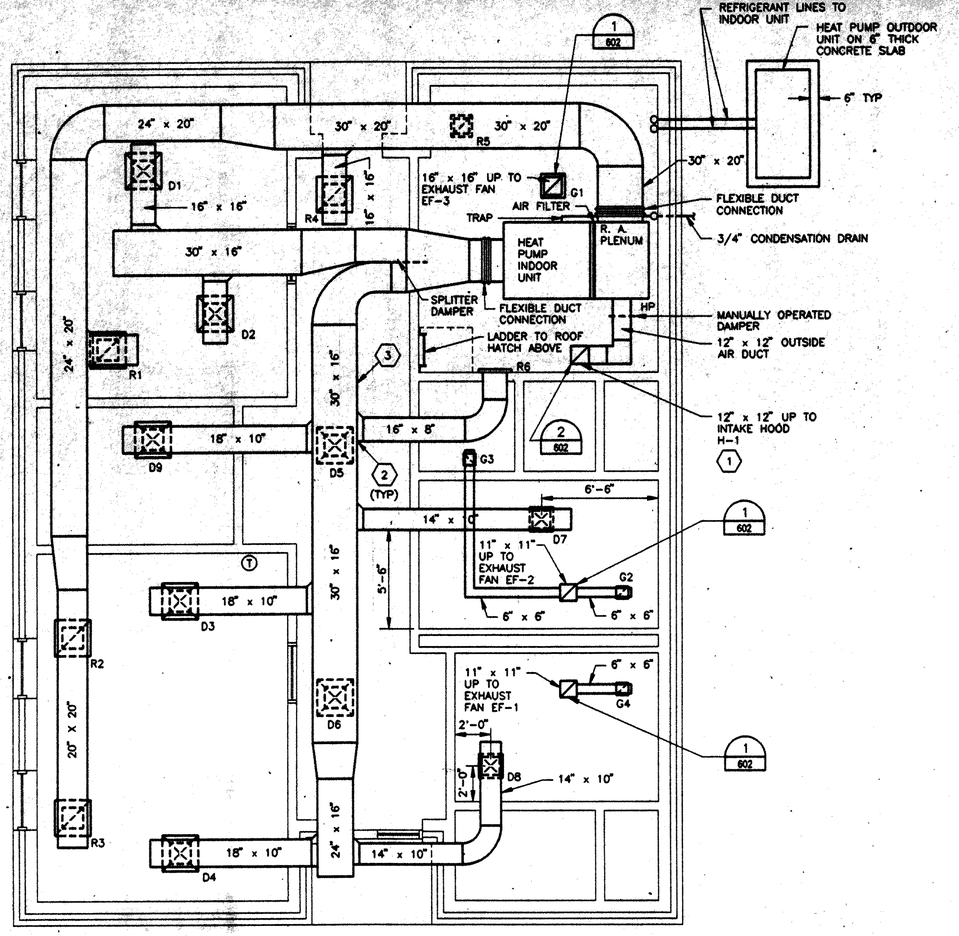
Contract A - General Construction

Cabarrus County North Carolina

Effluent Monitoring Box Plan, Sections and Details

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	502	0
Scale: AS NOTED			

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HVAC PLAN – ADMIN. BLDG.

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

LEGEND

- SUPPLY DIFFUSER IN CEILING
- RETURN GRILLE OR REGISTER IN CEILING
- SUPPLY DUCT SECTION
- RETURN DUCT SECTION
- D DIFFUSER
- R REGISTER
- G GRILLE
- F FAN
- (T) THERMOSTAT

SPECIFIC NOTES

1. INSTALL ROOF HOOD ON PREFABRICATED ROOF CURB AS SHOWN FOR ROOF MOUNTED EXHAUST FAN. OMIT BACKDRAFT DAMPER.
2. CONSTRUCT DUCT FITTINGS AS SHOWN IN DETAILS ON SHEET 602.
3. ALL DUCTS ARE BETWEEN SUSPENDED CEILING AND ROOF.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	LOCATION	TYPE	CFM	AIR DISTRIBUTION	NOMINAL PANEL SIZE (INCHES)	NECK SIZE (INCHES)	MATERIAL	FINISH	MFG. & MODEL NUMBER
D1	LABORATORY	SUPPLY DIFFUSER	350	4-WAY	24 x 24	14 x 14	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D2	LABORATORY	SUPPLY DIFFUSER	350	4-WAY	24 x 24	14 x 14	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D3	OFFICE	SUPPLY DIFFUSER	350	2-WAY	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D4	OFFICE	SUPPLY DIFFUSER	400	2-WAY	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D5	CORRIDOR	SUPPLY DIFFUSER	200	4-WAY	24 x 24	10 x 10	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D6	CORRIDOR	SUPPLY DIFFUSER	200	4-WAY	24 x 24	10 x 10	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
D7	MENS TOILET	SUPPLY DIFFUSER	300	4-WAY	16 x 16	12 x 12	ALUMINUM	OFF WHITE BAKED ENAMEL	CARNES 4740-8
D8	WOMENS TOILET	SUPPLY DIFFUSER	200	4-WAY	13 x 13	9 x 9	ALUMINUM	OFF WHITE BAKED ENAMEL	CARNES 4740-8
D9	STORAGE	SUPPLY DIFFUSER	100	4-WAY	24 x 24	8 x 8	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPA
R1	LABORATORY	RETURN REGISTER	800	——	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPR
R2	OFFICE	RETURN REGISTER	400	——	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPR
R3	OFFICE	RETURN REGISTER	350	——	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPR
R4	CORRIDOR	RETURN REGISTER	400	——	24 x 24	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES SPR
R5	ELECTRICAL ROOM	RETURN REGISTER	350	——	14 x 14	12 x 12	STEEL	OFF WHITE BAKED ENAMEL	CARNES 500
R6	ELECTRICAL ROOM	SUPPLY REGISTER	350	SINGLE DEFLECT.	18 x 10	16 x 8	STEEL	OFF WHITE BAKED ENAMEL	CARNES 100H
G1	ELECTRICAL ROOM	EXHAUST GRILLE	1200	——	18 x 18	16 x 16	STEEL	OFF WHITE BAKED ENAMEL	CARNES 550
G2	MENS TOILET	EXHAUST GRILLE	200	——	8 x 8	6 x 6	ALUMINUM	OFF WHITE BAKED ENAMEL	CARNES 550
G3	JANITORS CLOSET	EXHAUST GRILLE	50	——	8 x 8	6 x 6	ALUMINUM	OFF WHITE BAKED ENAMEL	CARNES 550
G4	WOMENS TOILET	EXHAUST GRILLE	100	——	8 x 8	6 x 6	ALUMINUM	OFF WHITE BAKED ENAMEL	CARNES 550

SPLIT SYSTEM HEAT PUMP SCHEDULE

INDOOR UNIT											OUTDOOR UNIT					
MARK	TOTAL CAPACITY	SENSIBLE CAPACITY	CFM	HP	EXTERNAL STATIC PRESSURE	ELECTRICAL RESISTANCE HEAT	ELECTRICAL VOLTS	ELECTRICAL Ø	ELECTRICAL AMPS	MFG. & MODEL NUMBER	MARK	CAPACITY	ELECTRICAL VOLTS	ELECTRICAL 0	ELECTRICAL AMPS	MFG. & MODEL NUMBER
HP	90 MBH	65 MBH	2800	1	0.40" H_2O	29.4 KW	480	3	42.3	CARRIER 38BQ008	HP	90 MBH	480	3	21.8	CARRIER 40BA009

FAN SCHEDULE

MARK	LOCATION	CFM	TYPE	BLADE DIAMETER	RPM	PRESSURE IN. WATER	DRIVE	HP	VOLTS	PHASE	MFG. & MODEL NUMBER
EF-1	WOMENS TOILET	310	ROOF EXHAUSTER	10 3/4"	800	1/8	DIRECT	113W	120	1	CARNES VEDB-10
EF-2	MENS TOILET	310	ROOF EXHAUSTER	10 3/4"	800	1/8	DIRECT	113W	120	1	CARNES VEDB-10
EF-3	ELECTRICAL ROOM	1290	ROOF EXHAUSTER	10 3/4"	860	1/4	DIRECT	1/8	120	1	CARNES VEDB-15

ROOF MOUNTED INTAKE HOOD SCHEDULE

MARK	LOCATION	CFM	HOOD (INCHES)	INLET (INCHES)	MFG. & MODEL NUMBER
H-1	ELECTRICAL ROOM	729	29 x 29	12 x 12	CARNES LIA 12 x 12 WITH BIRDSCREEN

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 5340 RICHARD C. MILLS 3/6/94

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
M/C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	K. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

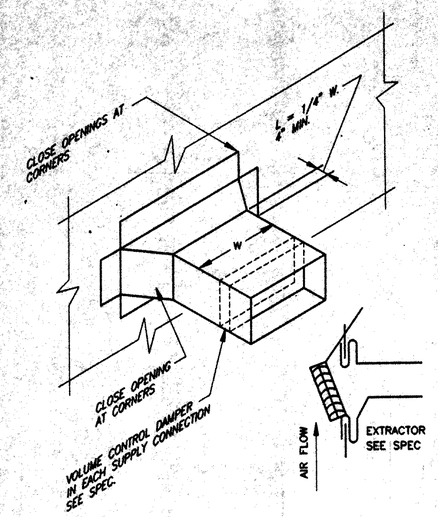
Contract B - HVAC

Cabarrus County North Carolina

Administration Building
Floor Plan
HVAC

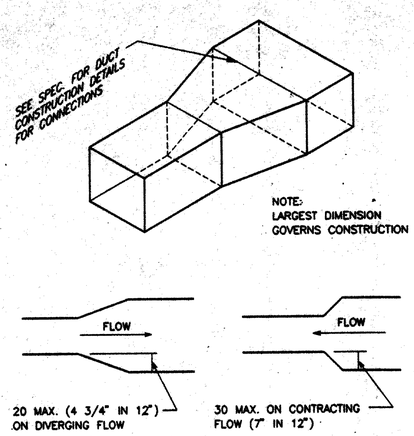
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	601	0
Scale: AS NOTED			

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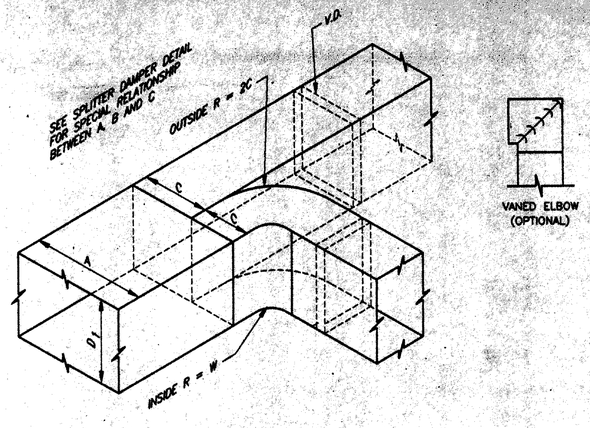
BRANCH CONNECTION DETAIL

NO SCALE



TRANSITION DETAIL

NO SCALE

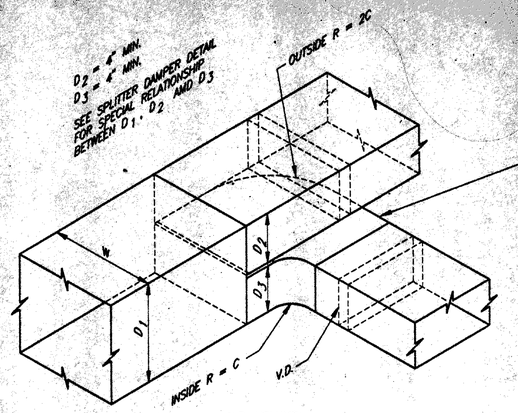


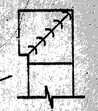
V.D. VOLUME:
CONTROL DAMPER IN EACH BRANCH DUCT
SEE SPECS.

NOTE:
MAY HAVE SPLITTER CONTROL IN LIEU OF VOLUME DAMPERS.

PARALLEL FLOW BRANCH DETAIL

NO SCALE



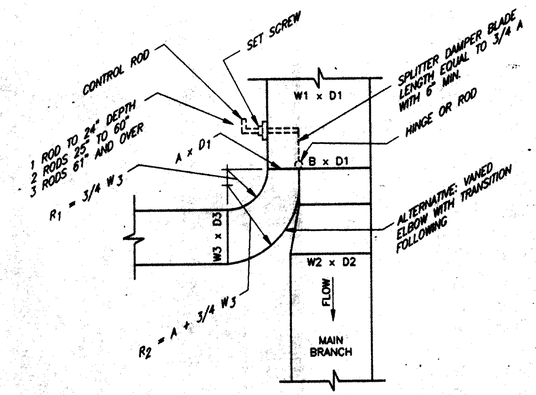


V.D. VOLUME:
CONTROL DAMPER IN EACH BRANCH DUCT
SEE SPECS.

NOTE:
MAY HAVE SPLITTER CONTROL IN LIEU OF VOLUME DAMPERS.

PARALLEL FLOW BRANCH DETAIL

NO SCALE

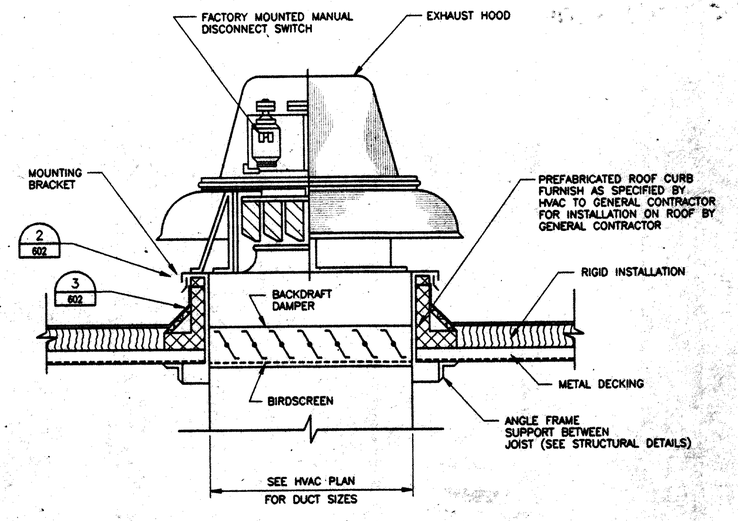


$$A = \left[\frac{(W3) \times (D3)}{(W2)(D2) + (W3)(D3)} \right]$$

B = W1 − A

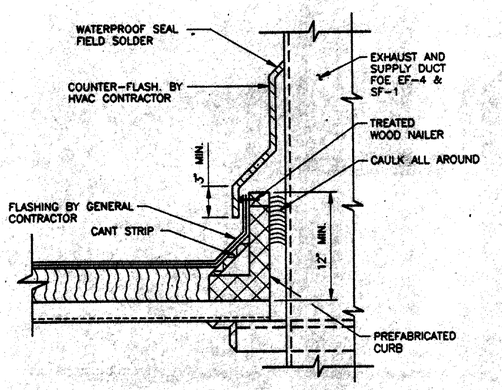
SPLITTER DAMPER DETAIL

NO SCALE



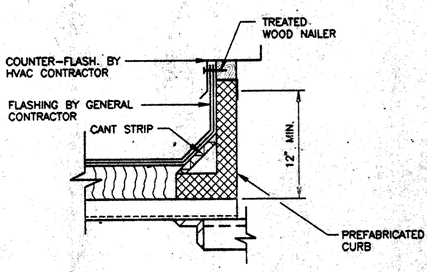
ROOF MOUNTED EXHAUST FAN – DETAIL 1/602

NO SCALE



DUCT ROOF PENETRATION – DETAIL 2/602

NO SCALE



CURB – DETAIL 3/602

NO SCALE

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS
3/15/94

Project Manager: R. HAMILTON			
Architect: –		M&C/Process: R. HAMILTON	
Civil: C. SHUE		Mechanical: –	
Electrical: R. MILLS		Structural: H. ANTSHEL	
		Drawn By: R. SATT	

Cabarrus County Utility Department

Muddy Creek WWTP

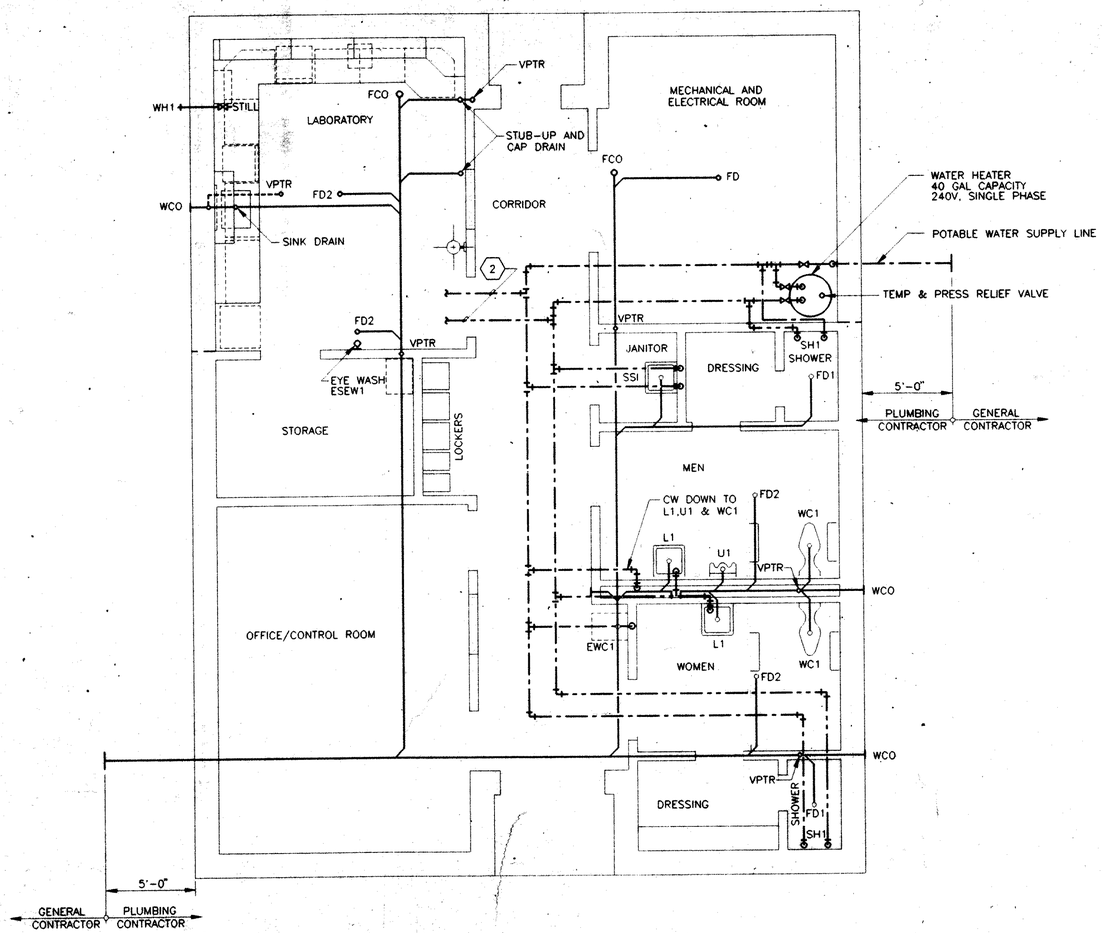
Contract B - HVAC

Cabarrus County — North Carolina

Administration Building Details - HVAC

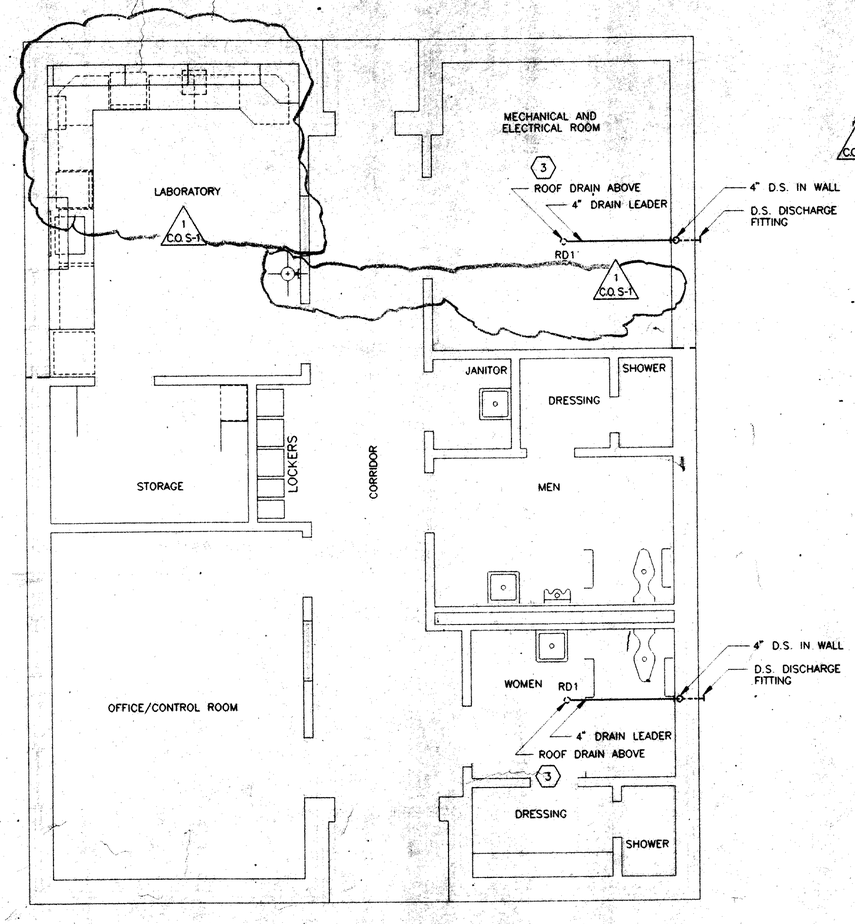
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	602	0
Scale: AS NOTED			

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FLOOR PLAN – PLUMBING

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



COMPRESSED AIR & VACUUM PIPING PLAN
ROOF DRAINAGE PIPING

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

GENERAL NOTES

A. UNLESS OTHERWISE NOTED ALL WASTE PIPING 4" DIA.

B. UNLESS OTHERWISE NOTED ALL HOT & COLD WATER PIPING 3/4" DIA.

C. ~~PLUMBING CONTRACTOR TO CONNECT HOT & COLD WATER LINES, DRAIN LINES, VACUUM LINES AND COMPRESSED AIR LINES TO ALL LABORATORY EQUIPMENT PROVIDED BY THE GENERAL CONTRACTOR.~~ 1 C.O.S-1

D. ~~HOT & COLD WATER PIPING, VACUUM PIPING AND COMPRESSED AIR PIPING INSTALLED ABOVE CEILING AND EXTENDED DOWN INSIDE WALLS TO FIXTURES AND EQUIPMENT.~~

E. PROVIDE VENT PIPES THROUGH ROOF DOWN TO DRAINS WHERE SHOWN. PROVIDE HORIZONTAL VENT LINES ABOVE CEILING FROM VENTS DOWN IN WALLS TO EACH ITEM REQUIRING VENTING IN ACCORDANCE WITH THE N.C. BUILDING CODE.

SPECIFIC NOTES

1 C.O.S-1

1. ~~SEE SHEET 105 FOR LOCATION OF AIR AND VACUUM OUTLETS.~~
2. EXTEND COLD WATER AND HOT WATER DOWN IN WALLS TO SINK, STILL, EYE WASH AND LAB BENCHES.
3. TURN OVER ROOF DRAINS TO GENERAL CONTRACTOR FOR INSTALLATION IN ROOF SYSTEM BY GENERAL CONTRACTOR.

PLUMBING LEGEND

———	DRAIN OR WASTE PIPING
- - - - -	VENT PIPING
———	COLD WATER PIPING
———	HOT WATER PIPING
—CA—	COMPRESSED AIR PIPING
—V—	VACUUM PIPING
FD	FLOOR DRAIN
FCO	FLOOR CLEANOUT
YCO	YARD CLEANOUT
WCO	WALL CLEANOUT
CO	CLEANOUT
VPTR	VENT PIPE THROUGH ROOF

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd	Resp. Engr.	Proj. Mgr.
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8206 ENGINEER RICHARD B. HAMILTON

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
Mech/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	R SATT

Cabarrus County Utility Department
Muddy Creek WWTP
Contract B - HVAC
Cabarrus County North Carolina

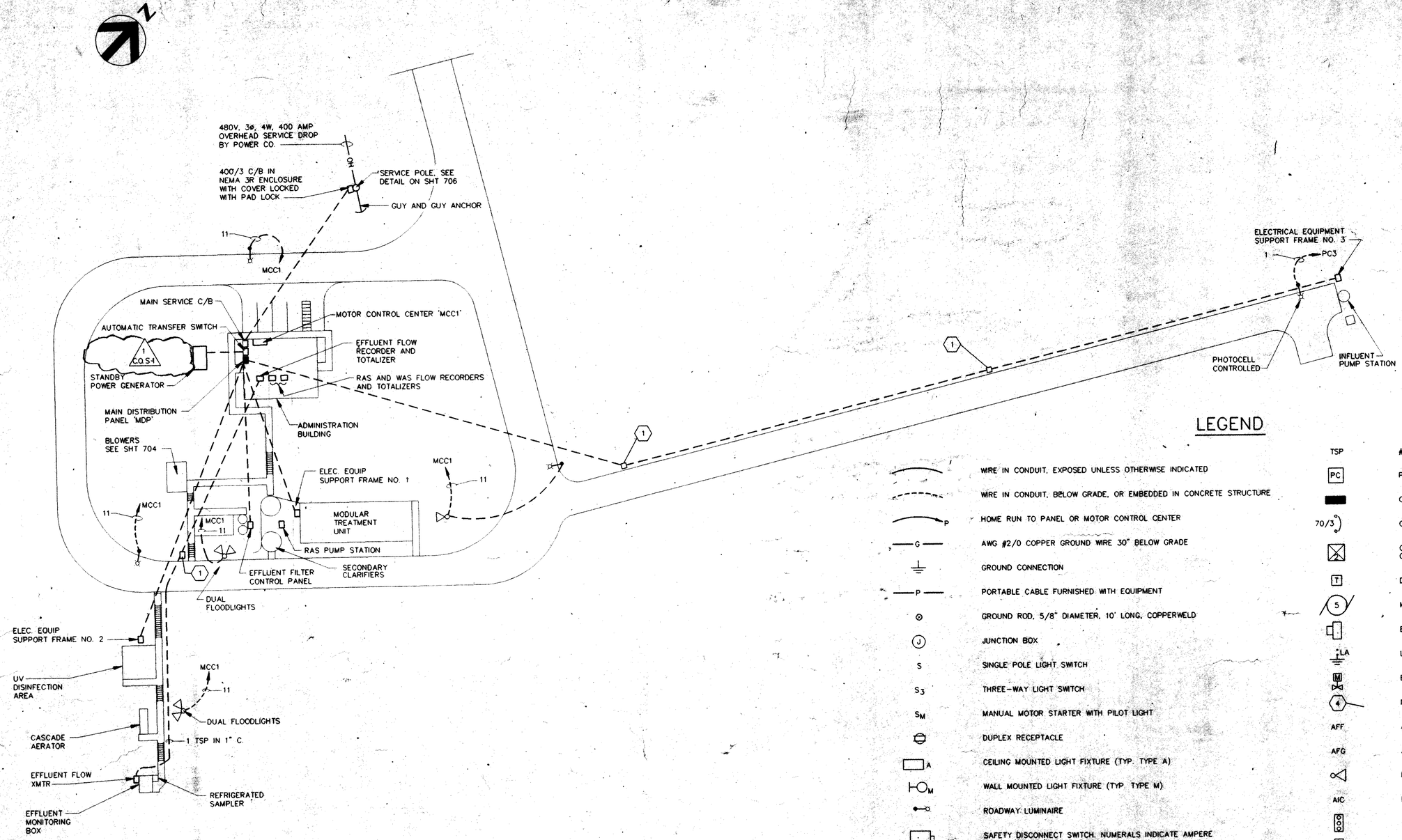
Administration Building Floor Plan Plumbing

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	603	1
Scale: AS NOTED			

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SPECIFIC NOTES:

(1) PULL BOX - SEE DETAIL ON SHEET 706



PLAN

LEGEND

	WIRE IN CONDUIT, EXPOSED UNLESS OTHERWISE INDICATED
	WIRE IN CONDUIT, BELOW GRADE, OR EMBEDDED IN CONCRETE STRUCTURE
P	HOME RUN TO PANEL OR MOTOR CONTROL CENTER
G	AWG #2/0 COPPER GROUND WIRE 30" BELOW GRADE
	GROUND CONNECTION
P	PORTABLE CABLE FURNISHED WITH EQUIPMENT
	GROUND ROD, 5/8" DIAMETER, 10' LONG, COPPERWELD
J	JUNCTION BOX
S	SINGLE POLE LIGHT SWITCH
S_3	THREE-WAY LIGHT SWITCH
S_M	MANUAL MOTOR STARTER WITH PILOT LIGHT
	DUPLEX RECEPTACLE
A	CEILING MOUNTED LIGHT FIXTURE (TYP. TYPE A)
M	WALL MOUNTED LIGHT FIXTURE (TYP. TYPE M)
	ROADWAY LUMINAIRE
60/3/40	SAFETY DISCONNECT SWITCH. NUMERALS INDICATE AMPERE RATING/POLES/FUSE RATING.
PR	30A RELAY IN NEMA 1 ENCLOSURE
WH	WATER HEATER
FS	FLOAT SWITCH
BCP	BLOWER CONTROL PANEL
SST	STAINLESS STEEL

TSP	#18 AWG TWISTED, SHIELDED PAIR INSTRUMENTATION CABLE
PC	POWER CENTER, SQUARE D CLASS 7414
	CIRCUIT BREAKER PANELBOARD
70/3	CIRCUIT BREAKER. NUMERALS INDICATE AMPS/POLES.
2	COMBINATION TYPE MAGNETIC MOTOR STARTER IN MOTOR CONTROL CENTER. NEMA SIZE IS INDICATED.
T	DRY TYPE TRANSFORMER, 480V PRIMARY, 120/240V, 1ø, 3W, SECONDARY
5	MOTOR, HORSEPOWER INDICATED
	ELECTRIC UNIT HEATER AT CEILING
LA	LIGHTNING ARRESTOR
M	ELECTRIC MOTOR OPERATED VALVE
4	NOTE REFERENCE SYMBOL, MEANS "SEE GENERAL NOTE 4"
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
	FLOODLIGHT ON POLE
AIC	RMS AMPERES INTERRUPTING RATING
	START/STOP PUSHBUTTON CONTROL STATION WITH PILOT LIGHT
	ON/OFF SELECTOR SWITCH CONTROL STATION WITH PILOT LIGHT
	TRACE HEATING OUTLET
TM	THERMAL MAGNETIC
MCP	MOTOR CIRCUIT PROTECTOR
ET	ELAPSED TIME INDICATOR
	TELEPHONE OUTLET WITH 3/4" CONDUIT UP TO CEILING SPACE

HDR Engineering, Inc. of North Carolina

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A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS 3/15/94

Project Manager	R. HAMILTON
Architect	-
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	-
Structural	H. ANTSHEL
Drawn By	J. DANCY

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

Cabarrus County North Carolina

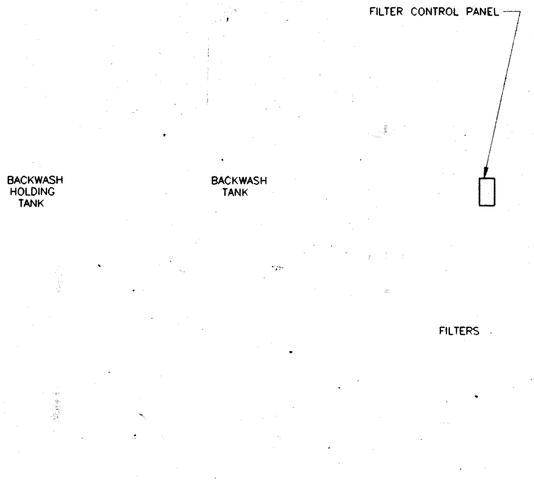
Site Plan - Electrical

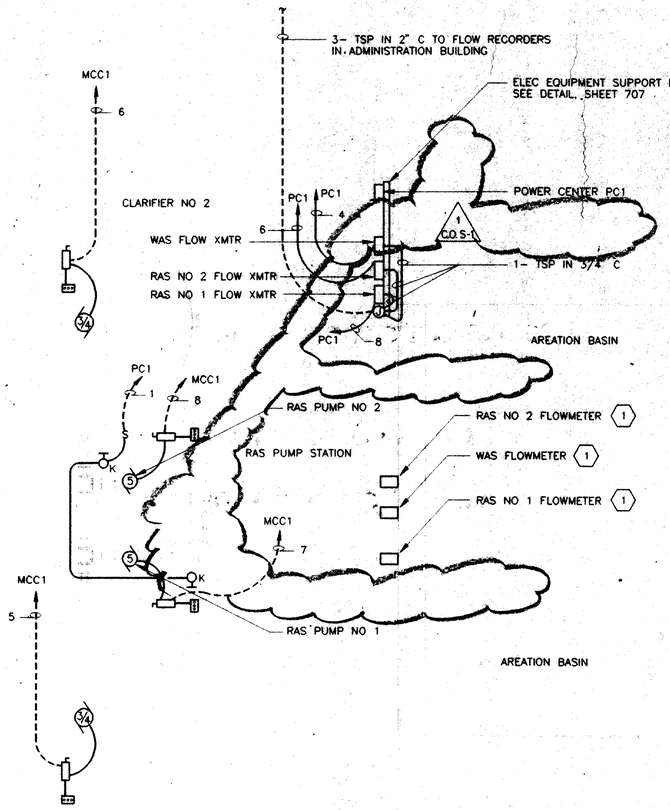
Date	Project No.	Sheet No.	Issue
MAR. 1994	00187-041-018	701	1
Scale 1" = 30'			

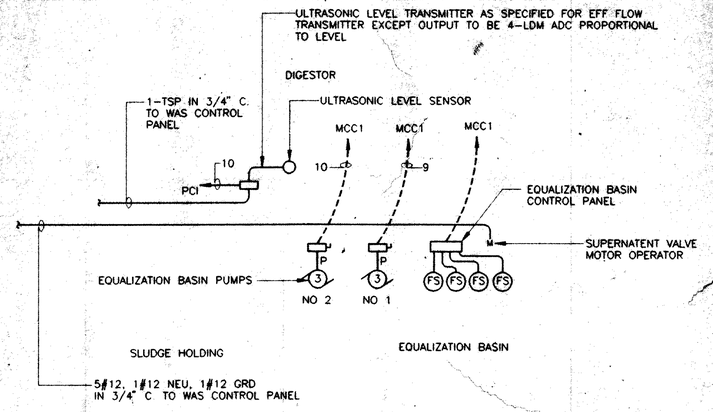
P:\MUDDYCR2\MC-0701

SPECIFIC NOTES

(1) PROVIDE CONDUIT FROM FLOWMETER TO FLOW TRANSMITTER AND INSTALL FLOWMETER CABLES IN THESE CONDUITS.







HDR Engineering, Inc. of North Carolina

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NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS 5/17/94

Project Manager	R. HAMILTON
Architect	–
M/C/Process	R. HAMILTON
Civil	C. SHUE
Mechanical	–
Electrical	R. MILLS
Structural	H. ANTSHEL
Drawn By	R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

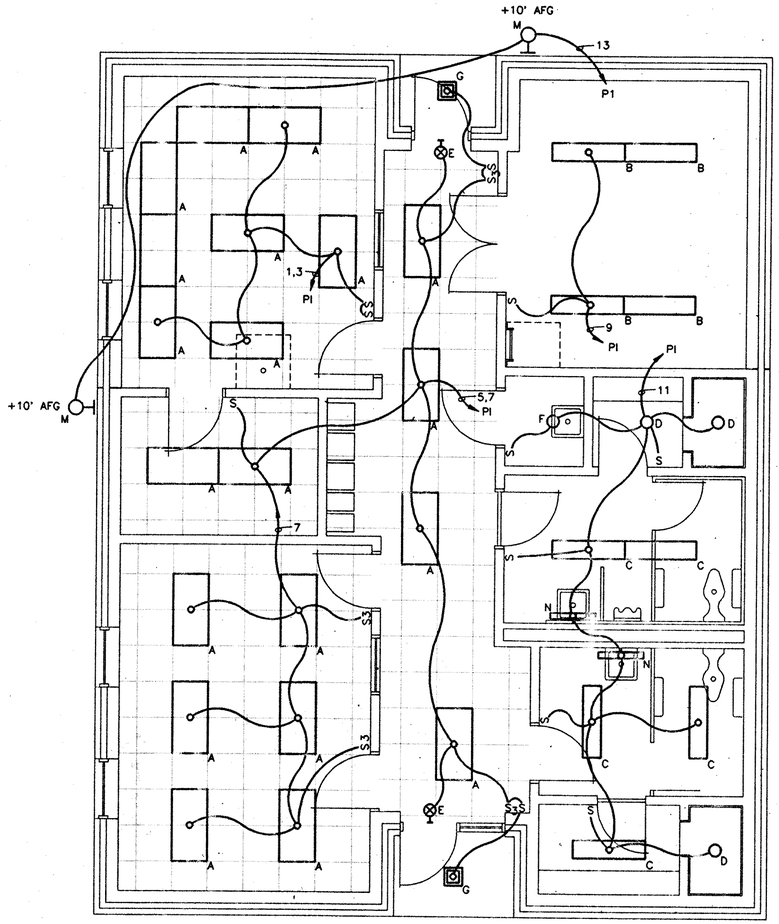
Cabarrus County North Carolina

Treatment Plant Electrical

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	702	1

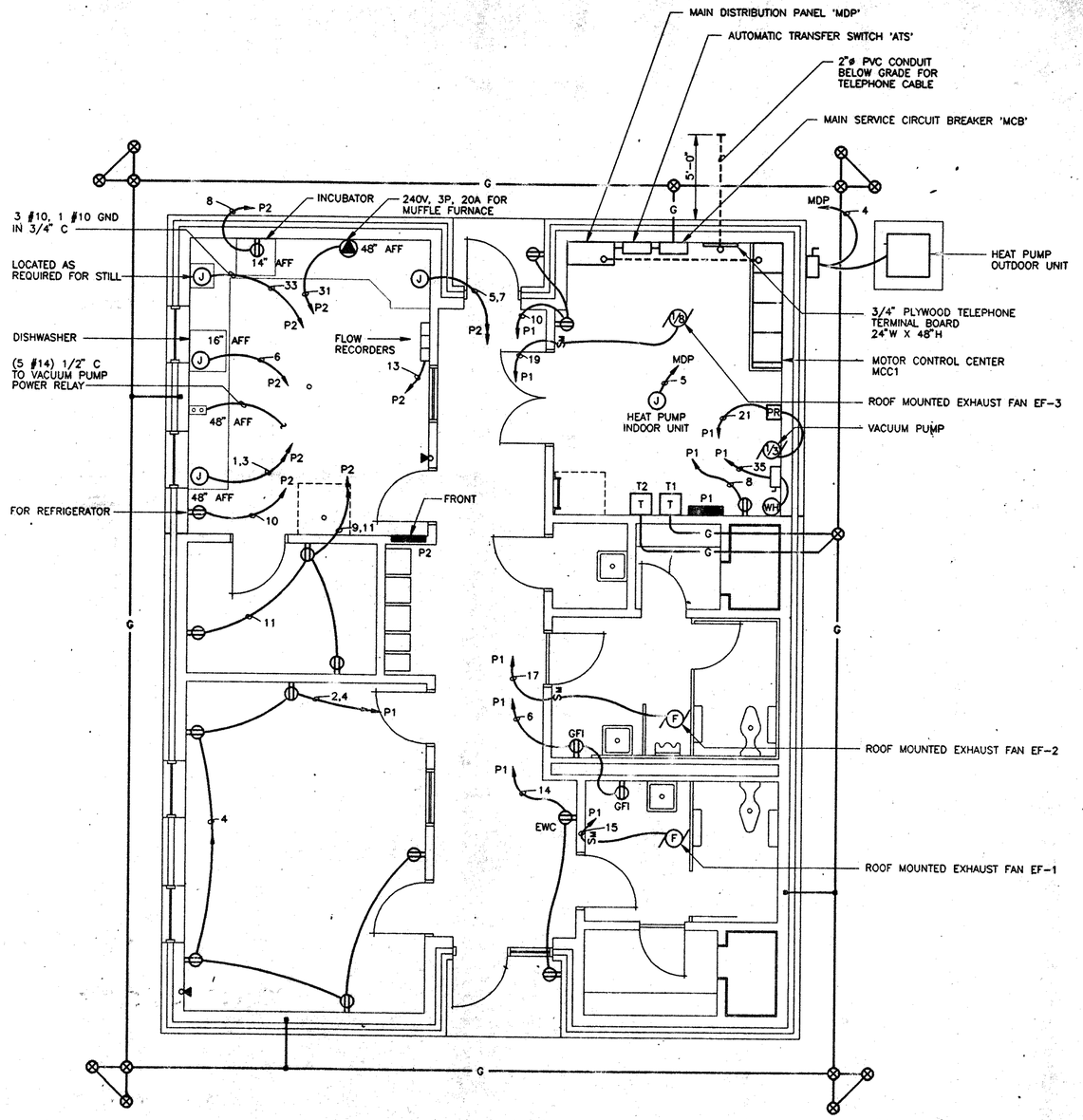
Scale 1/4" = 1'-0"

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LIGHTING PLAN – ADMIN. BLDG.

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



NOTE:

IF THIS BUILDING IS NOT PART OF THIS CONTRACT, PROVIDE THE FOLLOWING EQUIPMENT AND WIRING IN THE SEPARATE BUILDING SHOWN ON THE PLANS:

- MOTOR CONTROL CENTER MCC1
- MAIN SERVICE CIRCUIT BREAKER 'MCB'
- AUTOMATIC TRANSFER SWITCH 'ATS'
- MAIN DISTRIBUTION PANEL 'MDP'
- DRY TYPE TRANSFORMER 'T1'
- PANEL 'P1'
- EXHAUST FAN
- SIX TYPE 'B' LIGHT FIXTURES
- ONE TYPE 'M' LIGHT FIXTURE OVER DOOR
- GROUND GRID
- THREE FLOW RECORDERS
- AREA LIGHTING TIME SWITCH
- AREA LIGHTING PHOTOCELL
- TWO RECEPTACLE

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
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A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 5340 RICHARD C. MILLS 3/21/94

Project Manager	R. HAMILTON
Architect	–
Civil	C. SHUE
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	–
Structural	H. ANTSHEL
Drawn By	R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

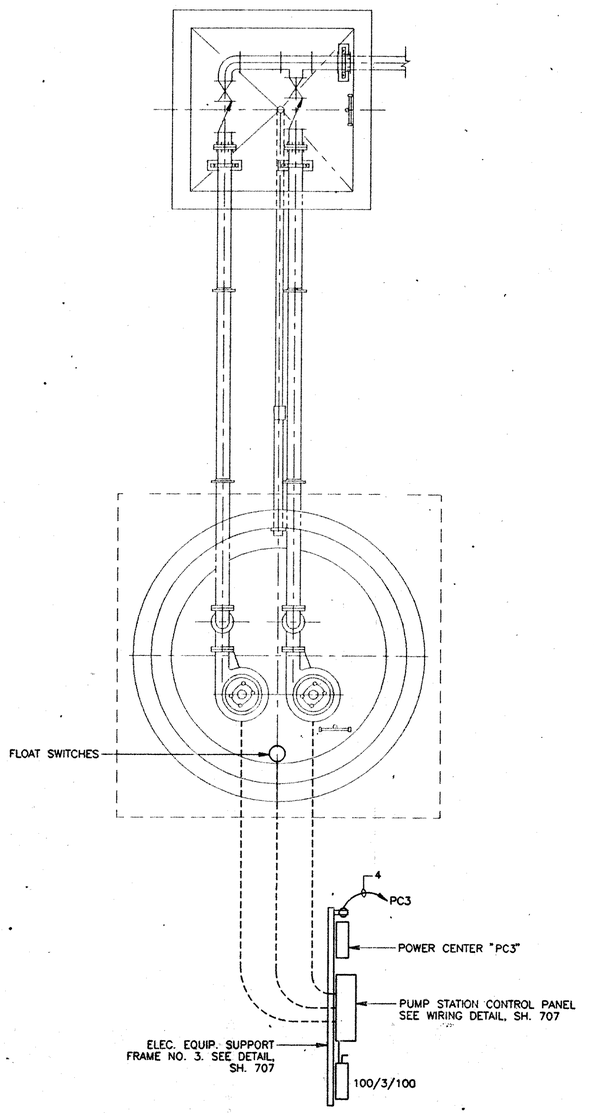
Contract C – Electrical

Cabarrus County North Carolina

Administration Building Floor Plan Electrical

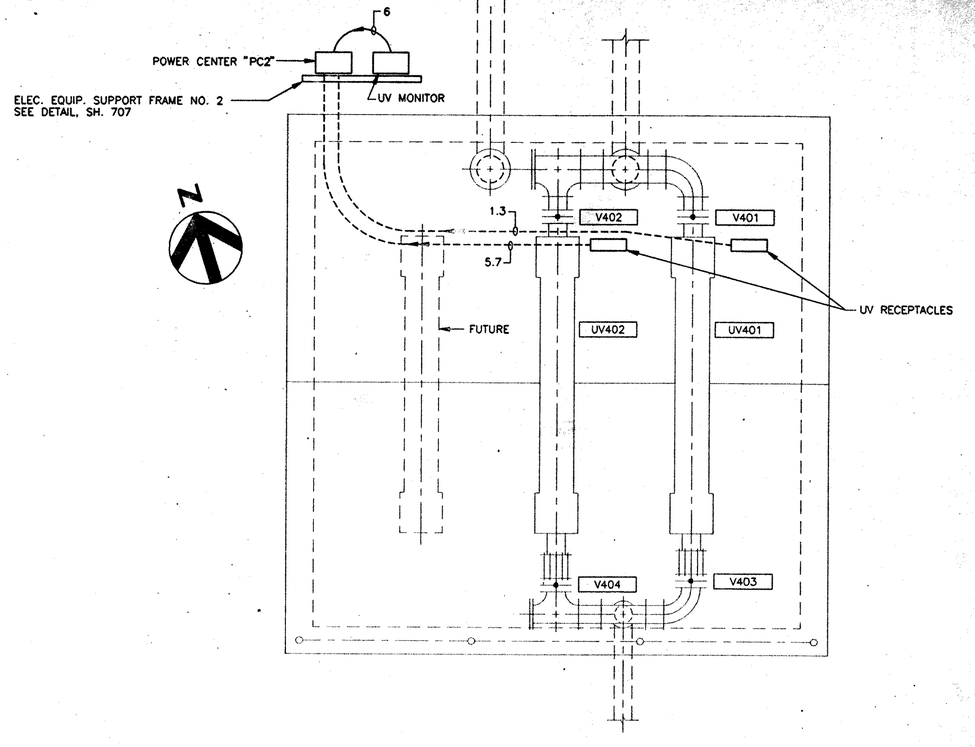
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	703	0
Scale: AS NOTED			

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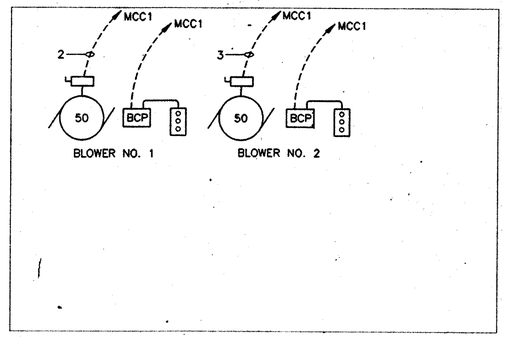
PUMP STATION PLAN

NO SCALE



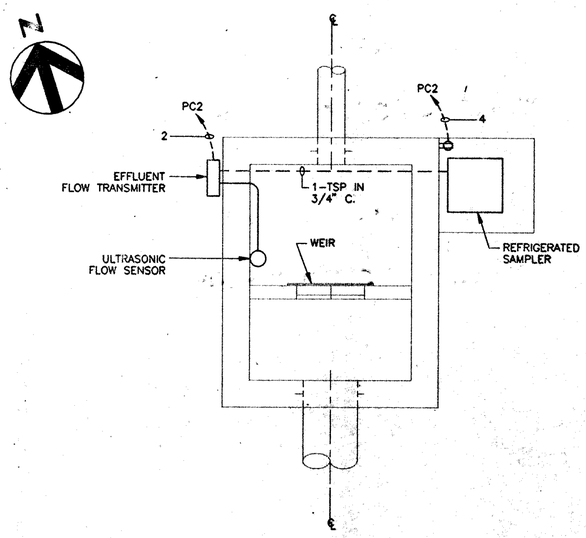
UV DISINFECTION AREA PLAN

SCALE: 3/8" = 1'-0"



BLOWER PAD PLAN

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



EFFLUENT MONITORING BOX PLAN

SCALE: 3/8" = 1'-0"

HDR

HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
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NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS 3/15/94

Project Manager	R. HAMILTON
Architect	–
I&C/Process	R. HAMILTON
Civil	C. SHUE
Mechanical	–
Electrical	R. MILLS
Structural	H. ANTSHEL
	Drawn By: R. SATT

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

Cabarrus County North Carolina

Pump Station and Effluent Monitoring Box Plans Electrical

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	704	0
Scale: AS NOTED			

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480V, 3ø
4W, Y
SERVICE

100 KW GENERATOR
GENERAC SD 100 OR
APPROVED EQUAL
1 C.O. S-1

4#12 & 1#12 GND IN 3/4" C.

3-500MCM & 3#0 GND
IN 3 1/2" C.

MAIN SERVICE CIRCUIT BREAKER
'MCB'
400/3

AUTOMATIC TRANSFER SWITCH
'ATS'
480V, 3 POLE, 400 AMPS
400/3
TM

MAIN DISTRIBUTION PANEL 'MDP'
480V, 3ø

1	2	3	4	5	6	7	8	9	10	11	12	13
300/3 TM	60/2 TM	60/2 TM	30/3 TM	60/3 TM	40/3 TM	40/3 TM	50/3 TM					125/3 TM
	2#6 & 1#8 GND IN 1" C.	2#6 & 1#8 GND IN 1" C.	3#10 & 1#10 GND IN 3/4" C.	3#6 & 1#8 GND IN 1 1/4" C.	2#8 & 1#10 GND IN 1" C.	2#8 & 1#10 GND IN 1" C.	3#6 & 1#8 GND IN 2" C.					3#1/0 & 1#2 GND IN 3" C.
	T1 25KVA	T2 25KVA			PC	PC						
	3#1 & 1#6 GRD IN 1 1/2" C		AS REQUIRED FOR HEAT PUMP									
	120/240V, 1ø, 3W PANEL 'P1' (ELECTRICAL ROOM)	120/240V, 1ø, 3W PANEL 'P2' (LABORATORY)	'HEAT PUMP OUTDOOR UNIT	HEAT PUMP INDOOR UNIT	120/240V, 1ø, 3W, 15 KVA POWER CENTER 'PC1' (RAS PUMP STATION)	120/240V, 1ø, 3W, 15 KVA POWER CENTER 'PC2' (UV STRUCTURE)	EFFLUENT FILTER CONTROL PANEL	SPACE	SPACE	SPACE	SPACE	

3-300MCM & 1#2 IN 3" C.

MOTOR CONTROL CENTER 'MCC1'
480V, 3ø, 600 AMP BUS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	100/3 MCP	100/3 MCP		3/3 MCP	3/3 MCP	15/3 MCP	15/3 MCP	7/3 MCP	7/3 MCP	20/3 TM				
	ET	ET		ET	ET	ET	ET	ET	ET					
	3#2, 1#6 GND, 4#12 IN 2" C.	3#2, 1#6 GND, 4#12 IN 2" C.		3#12, 1#12 GND, 4#14 IN 1" C.	3#12, 1#12 GND, 4#14 IN 1" C.	3#12, 1#12 GND, 4#14 IN 1" C.	3#12, 1#12 GND, 4#14 IN 1" C.	3#12, 1#12 GND. IN 3/4" C.	8#14, 1#14 GND IN 3/4" C.	3#12, 1#12 GND. IN 3/4" C.	3#12, 1#12 GND. IN 3/4" C.			
									4#14	4#14		LIGHTING CONTACTOR		
	BCP	BCP												
	100/3/NF	100/3/NF												
	50	50		3/4	3/4	5	5	3		3				
	BLOWER CONTROL PANEL	AERATION BLOWER NO. 1	BLOWER CONTROL PANEL	AERATION BLOWER NO. 2	SPACE FOR FUTURE BLOWER STARTER	CLARIFIER NO. 1 DRIVE	CLARIFIER NO. 2 DRIVE	RAS PUMP NO. 1	RAS PUMP NO. 2	EQUALIZATION BASIN EFFLUENT PUMP NO. 1	EQUALIZATION BASIN CONTROL PANEL	EQUALIZATION BASIN EFFLUENT PUMP NO. 2	ROADWAY AND AREA LUMINAIRES	SPACE

NEMA 3R WIRE TROUGH

100/3/100

PC

INFLUENT PUMP STATION CONTROL PANEL

P	P	P
15	15	
		HW ALARM
		START NO. 2
		START NO. 1
		STOP PUMPS

120/240V, 1ø, 3W, 5KVA, POWER CENTER 'PC3' (INFLUENT PUMP STATION)

INFLUENT PUMP NO. 1

INFLUENT PUMP NO. 2

FLOAT SWITCHES

SPACE

SPACE

SPACE

SPACE

HDR

HDR Engineering, Inc.
of North Carolina

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NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS 3/31/94

Project Manager	R. HAMILTON
Architect	-
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	-
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

Cabarrus County North Carolina

One-Line Diagram

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	705	1
Scale: NO SCALE			

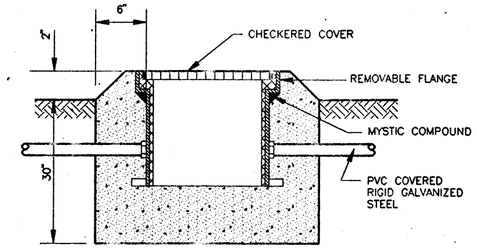
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LIGHTING FIXTURE SCHEDULE

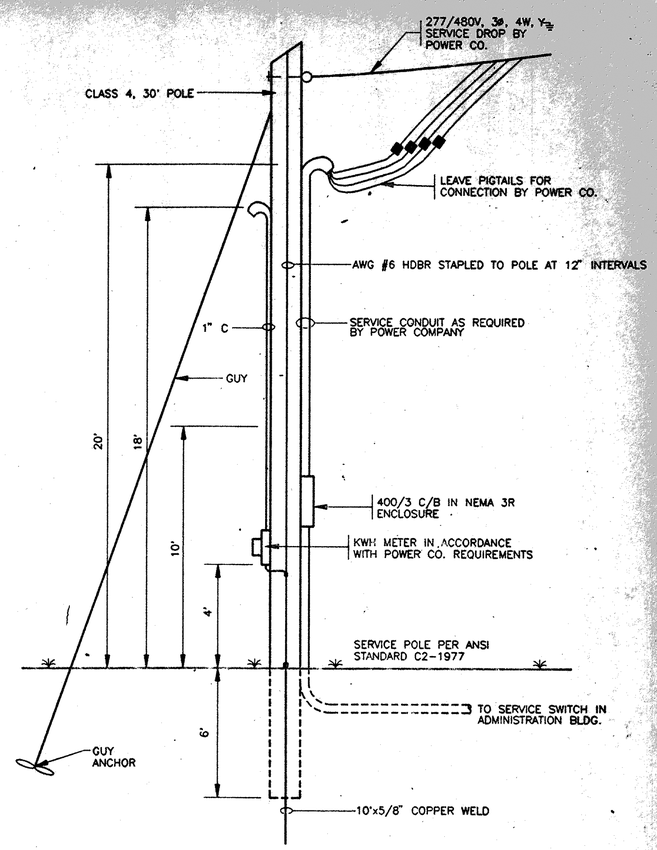
NO	MANUFACTURER	CATALOG NO.	LAMPS				MOUNTING	TYPE OF DEILING (OR WALL)	DESCRIPTION
			FLOUR.	INCAND	MERCURY	ORDERING CODE			
A	BENJAMIN	AGR-7244-4	4-40W			F40CW	LAY-IN	SUSP ACOUS. TILE	4 LAMP LAY-IN, 2'x4'
B	BENJAMIN	FL-1024-4U	2-40W			F40CW	PENDANT	OPEN STRUCTURE	2 LAMP INDUSTRIAL, 4'
C	BENJAMIN	FA-2424-4R	2-40W			F40CW	SURFACE	GYP BD OR CONC.	2 LAMP VAPOR TIGHT 4'
D	MOLDCAST	V-230		2-60W		60A	RECESSED	GYP BOARD	SEMIRECESSED ENCL INCAND *
E	BENJAMIN	EXO-120		2-25W		40TIO/IF	WALL SURFACE	(BLOCK)	SINGLE FACE EXIT
F	LEVITON	9875		1-100W		100A	CEILING	GYP BOARD	KEYLESS LAMPHOLDER
G	KIRLIN	2206-15			1-100W	H100DX38	RECESSED	GYP BOARD	RECESSED ENCLOSED HID *
K	HUBBELL	AOWXF22110		1-200W		200A	WALL SURFACE	CONCRETE	VAPORTIGHT INCAND WALL BRACKET *
M	BENJAMIN	OWW-250-120			1-250W	H250DX37	WALL SURFACE	(BLOCK)	HID ENCLOSED WALL BRACKET *,**
N	ALCO	2232	2-30W			F30T12/CW	WALL BRACKET	(BLOCK)	FLOURESCENT WALL BRACKET

* UL LISTED FOR WET LOCATION

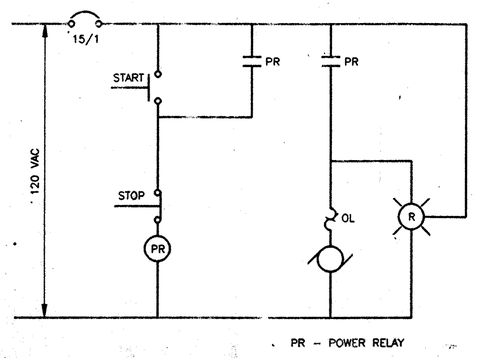
** WITH PHOTOCELL CONTROLLER



PULL BOX DETAIL

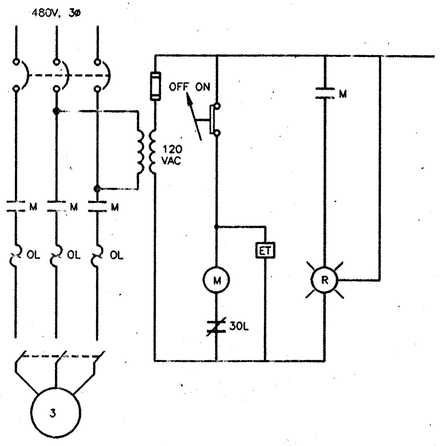


SERVICE POLE DETAIL



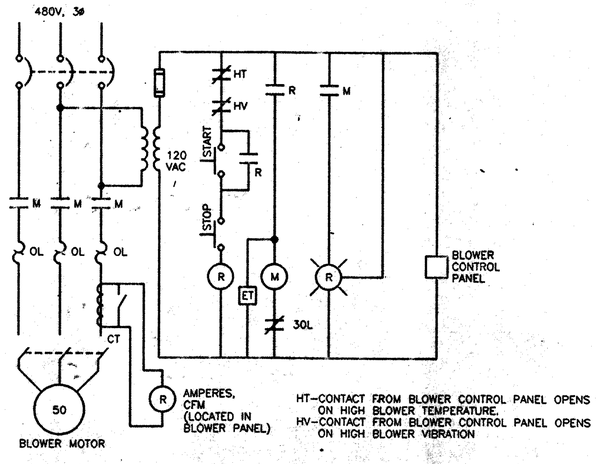
PR - POWER RELAY

LABORATORY VACUUM PUMP CONTROL WIRING DIAGRAM



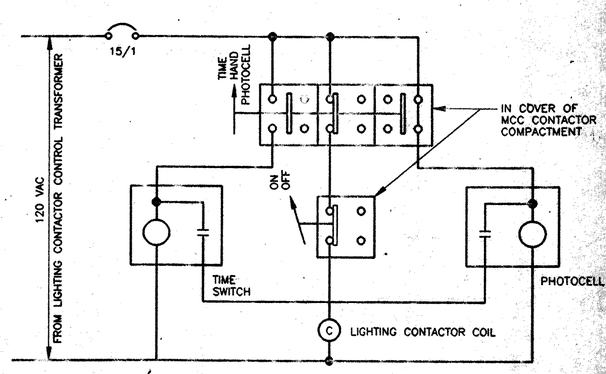
EQUALIZATION BASIN PUMPS AND RAS PUMPS CONTROL WIRING DIAGRAM

(TYPICAL FOR 4 PUMPS)



AERATION BLOWERS CONTROL WIRING DIAGRAM

(TYPICAL FOR 2 BLOWERS)



NOTES:
1. MOUNT TIME SWITCH BESIDE MCC.
2. MOUNT PHOTOCELL ON BUILDING EXTERIOR.

EXTERIOR LIGHTING CONTROL DIAGRAM

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
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NORTH CAROLINA PROFESSIONAL SEAL 5340 ENGINEER RICHARD C. MILLS 3/15/94

Project Manager	R. HAMILTON
Architect	--
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
MEC/Process	R. HAMILTON
Mechanical	--
Structural	H. ANTSHEL
Drawn By	S. HANCOCK

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

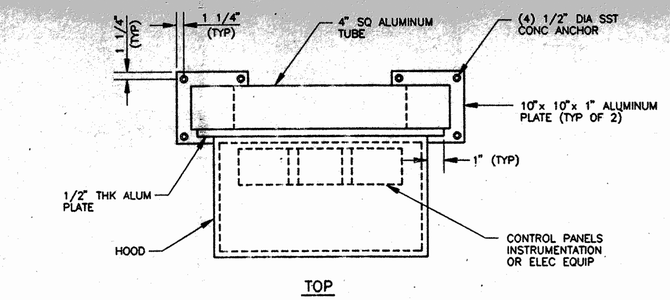
Cabarrus County North Carolina

Electrical Details and Control Wiring Diagrams

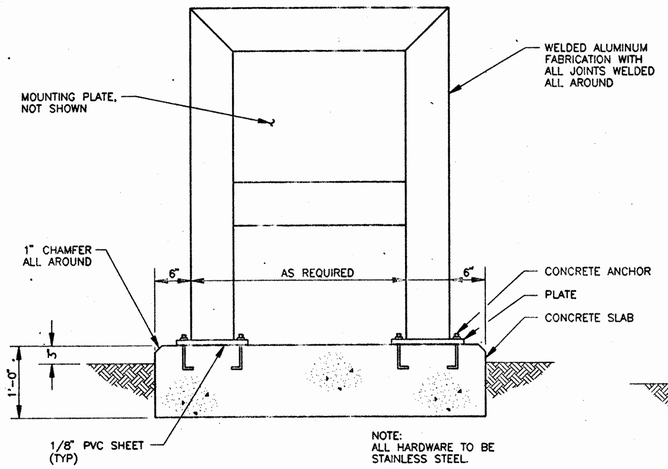
Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	706	0

Scale: NO SCALE

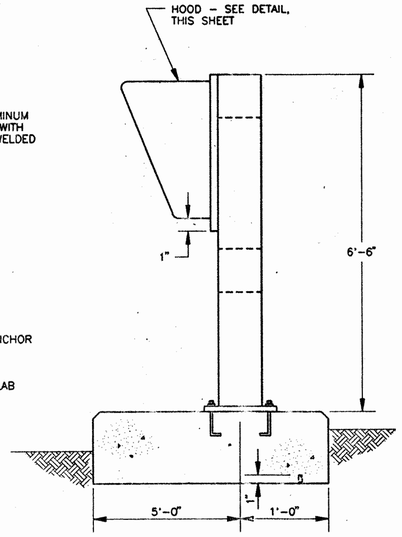
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TOP



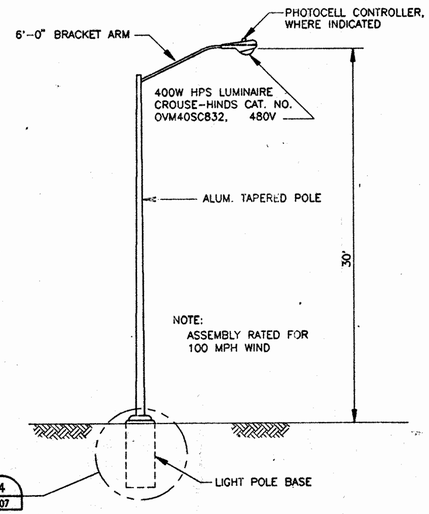
FRONT



SIDE

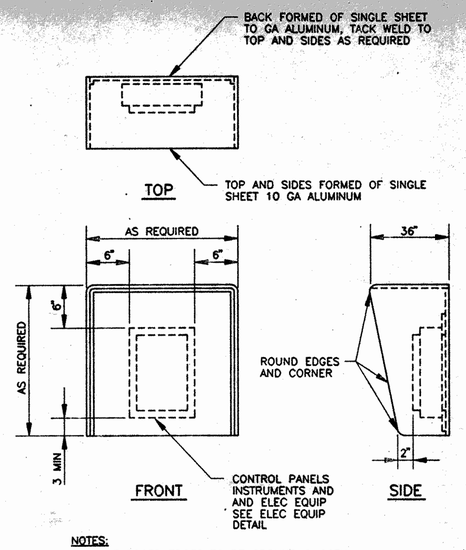
ELEC EQUIP SUPPORT FRAME - DETAIL 1/707

NO SCALE



ROADWAY LUMINAIRE - DETAIL 3/707

NO SCALE

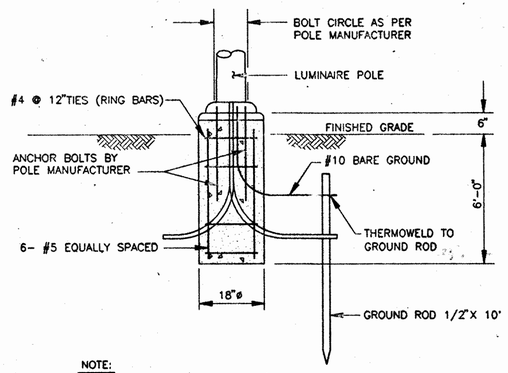


NOTES:

1. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.

HOOD DETAIL

NO SCALE

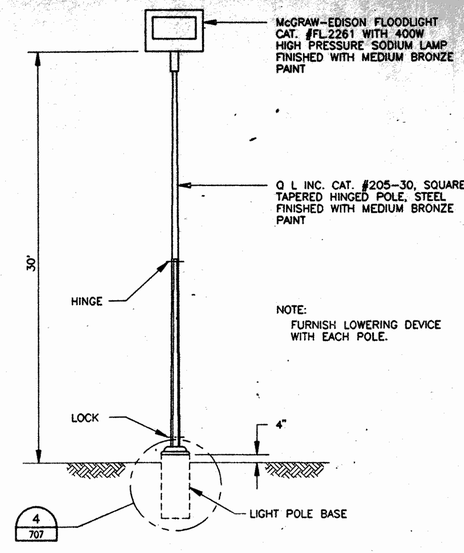


NOTE:

FINISH CONCRETE TOP FOR SEATING OF POLE WITHOUT SHIMS. APPLY HEAVY COATING OF ALUMINASTIC COMPOUND, CONSISTENCY "K" TO BASE OF POLE AND ANCHOR BOLTS WHICH COME IN CONTACT WITH CONCRETE. 2" BEVEL ON CONCRETE TOP.

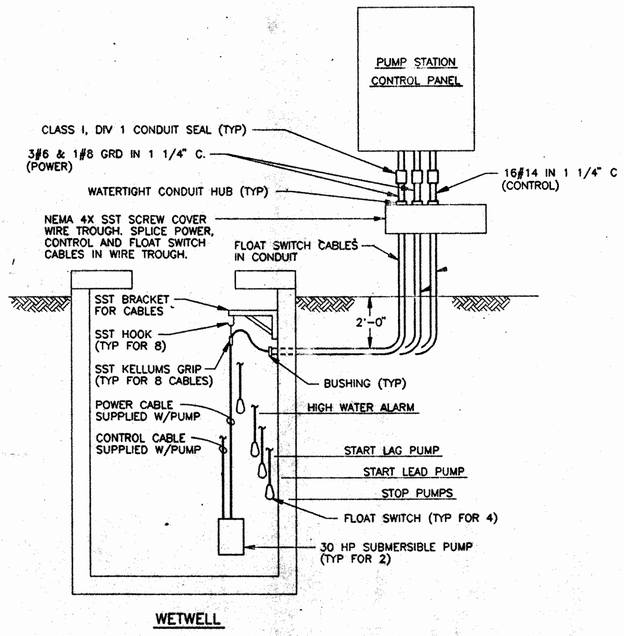
LIGHT POLE BASE - DETAIL 4/707

NO SCALE



AREA LUMINAIRE - DETAIL 2/707

NO SCALE



WETWELL

INFLUENT PUMP STATION WIRING - DETAIL 5/707

NO SCALE

HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER RICHARD C. MILLS 5340 3/15/94

Project Manager	R. HAMILTON
Architect	-
Civil	SHUE / MOSTELLER
Electrical	R. MILLS
I&C/Process	R. HAMILTON
Mechanical	-
Structural	H. ANTSHEL
Drawn By	M. LINKOUS

Cabarrus County Utility Department

Muddy Creek WWTP

Contract C - Electrical

Cabarrus County North Carolina

Details - Electrical

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	707	0

Scale: AS NOTED

P:\MUDDYCR2\MC-0707

PANEL DESIGNATION: P1
VOLTAGE: 120/240V,1ø,3W
AMPERES: 150A

LOCATION: ADMINISTRATION BUILDING ELECTRICAL ROOM
MAIN: 150/2 CIRCUIT BREAKER
PANEL MOUNTING: SURFACE

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO.	CKT NO.	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
LIGHTS	0.6		20	1	1	2	20	1	0.6		RECEPTACLES
LIGHTS		1.0	20	1	3	4	20	1		0.6	RECEPTACLES
LIGHTS	1.2		20	1	5	6	20	1	0.6		RECEPTACLES-TOILET
LIGHTS		1.2	20	1	7	8	20	1		0.6	RECEPTACLES
LIGHTS	0.4		20	1	9	10	20	1	0.6		RECEPTACLES
LIGHTS		1.0	20	1	11	12	20	1		0.6	RECEPTACLES
EXTERIOR LIGHTS	0.6		20	1	13	14	20	1	0.5		ELEC WATER COOLER
EXHAUST FAN EF-1		0.2	15	1	15	16		1			SPACE
EXHAUST FAN EF-2	0.2		15	1	17	18		1			SPACE
EXHAUST FAN EF-3		0.4	15	1	19	20		1			SPACE
VACUUM PUMP	0.6		15	1	21	22		1			SPACE
SPARE			20	1	23	24		1			SPACE
SPARE			20	1	25	26		1			SPACE
SPACE				1	27	28		1			SPACE
SPACE				1	29	30		1			SPACE
SPACE				2	31	32		2			SPACE
SPACE				2	33	34		2			SPACE
WATER HEATER	2.3	2.3	30	2	35	36		2			SPACE
SUB-TOTAL	5.9	3.8							2.3	1.8	SUB-TOTAL

L1: 8.2 KVA
L2: 5.6 KVA

TOTAL CONNECTED LOAD= 13.8 KVA

*GFI TYPE CIRCUIT BREAKER

PANEL DESIGNATION: P2
VOLTAGE: 120/240V,1ø,3W
AMPERES: 150A

LOCATION: ADMINISTRATION BUILDING LABORATORY
MAIN: 150/2 CIRCUIT BREAKER
PANEL MOUNTING: FLUSH

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO.	CKT NO.	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
RECEPTACLES IN BENCH	0.6		20	1	1	2	20	1	0.8		HOOD EXHAUST FAN EF-4 (FUTURE)
RECEPTACLES IN BENCH		0.6	20	1	3	4	20	1		0.4	HOOD SUPPLY FAN SF-1 (FUTURE)
RECEPTACLES IN BENCH	0.6		20	1	5	6	20	1	1.6		DISHWASHER
RECEPTACLES IN BENCH		0.6	20	1	7	8	20	1		1.0	INCUBATOR
RECEPTACLES	0.6		20	1	9	10	20	1	0.8		REFRIGERATOR
RECEPTACLES		0.6	20	1	11	12	20	1			SPARE
RECORDERS	0.1			1	13	14	20	1			
SPACE				1	15	16	15	1			
				1	17	18	15	1			
				1	19	20		1			SPACE
				1	21	22		1			
				1	23	24		1			
				1	25	26		1			
				1	27	28		1			
				1	29	30		1			
MUFFLE FURNACE	1.5	1.5	20	2	31	32	20	2	1.0	1.0	FUME HOOD (FUTURE)
STILL	1.5	1.5	30	2	33	34		2			SPACE
SPACE				2	35	36		2			SPACE
SUB-TOTAL	4.8	4.8							4.2	2.4	SUB-TOTAL

L1: 9.0 KVA
L2: 7.2 KVA

TOTAL CONNECTED LOAD= 16.2 KVA

PANEL DESIGNATION: PC1 (15KVA)
VOLTAGE: 120/240V 1ø,3W
AMPERES: 80A

LOCATION: RAS PUMP STATION
MAIN: 80A MCB
PANEL MOUNTING: NEMA 3R

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO	CKT NO.	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
RAS VAULT LIGHTS	0.4		15	1	1	2	15	1			1 C.O.S-1 SPARE
SPARE			15	1	3	4	15	1		0.2	WAS FLOW XMTR
			15	1	5	6	15	1	0.2		RAS NO. 2 FLOW XMTR
			15	1	7	8	15	1		0.2	RAS NO. 1 FLOW XMTR
			15	1	9	10	15	1	0.1		DIGESTOR LEVEL XMTR
			15	1	11	12	15	1			SPARE
SUB-TOTAL	0.4	0.0							0.3	0.4	SUB-TOTAL

L1: 0.7 KVA
L2: 0.4 KVA

1 C.O.S-1

TOTAL CONNECTED LOAD= 1.1 KVA

1 C.O.S-1

PANEL DESIGNATION: PC2 (15KVA)
VOLTAGE: 120/240V 1ø,3W
AMPERES: 80A

LOCATION: UV DISINFECTION AREA
MAIN: 80A MCB
PANEL MOUNTING: NEMA 3R

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO	CKT NO.	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
UV RECEPTACLES	0.8		20	1	1	2	20	1	0.1		EFFLUENT FLOW XMTR
		0.8	20	1	3	4	20	1		0.5	REFRIG. SAMPLER
	0.8		20	1	5	6	20	1	0.1		UV MONITOR
		0.8	20	1	7	8	20	1			SPARE
SPARE			20	1	9	10	20	1			SPARE
SPARE			20	1	11	12	20	1			SPARE
SUB-TOTAL	1.6	1.6							0.2	0.5	SUB-TOTAL

L1: 1.8 KVA
L2: 2.1 KVA

TOTAL CONNECTED LOAD= 3.9 KVA

PANEL DESIGNATION: PC3 (5KVA)
VOLTAGE: 120/240V 1ø,3W
AMPERES: 30A

LOCATION: INFLUENT PUMP STATION
MAIN: 30A MCB
PANEL MOUNTING: NEMA 3R

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO	CKT NO	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
ROADWAY LUMINAIRE	0.5		20	1	1	2	20	1			SPARE
SPARE			20	1	3	4	20	1		0.5	RECEPTACLE
SPARE			20	1	5	6	20	1			SPARE
SUB-TOTAL	0.5	0.0							0.0	0.5	SUB-TOTAL

L1: 0.5 KVA
L2: 0.5 KVA

TOTAL CONNECTED LOAD= 1.0 KVA

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Check	Resp. Engr.	Proj. Mgr.
1	CONFORM TO CHANGE ORDER S-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8206 ENGINEER RAYMOND S. HAMILTON

Project Manager: R. HAMILTON
Architect: -
Civil: SHUE / MOSTELLER
Electrical: R. MILLS
I&C/Process: R. HAMILTON
Mechanical: -
Structural: H. ANTSHEL
Drawn By: S. HANCOCK

Cabarrus County Utility Department
Muddy Creek WWTP
Contract C - Electrical
Cabarrus County North Carolina

Panel Schedules

Date: MAR 1994
Scale: NO SCALE
Project No: 00187-041-018
Sheet No: 708
Issue: 1

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GENERAL NOTES

1. IT IS THE INTENT OF THIS UNIT PRICE CONTRACT TO ESTABLISH PRICES FOR ALL WORK TO BE PERFORMED ON THIS PROJECT. COST OF ALL WORK NOTED ON THE DRAWINGS FOR WHICH UNIT PRICE ITEMS HAVE NOT BEEN ESTABLISHED SHALL BE MERGED INTO OTHER ITEMS. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THIS WORK.

2. UTILITY LOCATIONS (EXISTING), AS SHOWN ON THE PLANS, WERE COMPILED BASED ON THE BEST INFORMATION AVAILABLE . THESE LOCATIONS ARE NOT INTENDED TO BE EXACT OR COMPLETE. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THEIR APPROPRIATE OWNERS AND SHALL COORDINATE CONSTRUCTION WITH SUCH.

4. THE PROPOSED HORIZONTAL AND/OR VERTICAL (INVERT ELEVATIONS) LOCATIONS OF SEWER MAINS SHALL BE ADJUSTED TO AVOID ANY CONFLICT WITH OTHER PROPOSED AND/OR EXISTING UTILITIES AND DRAINAGE STRUCTURES AS DIRECTED BY THE ENGINEER.

5. FOR TECHNICAL SPECIFICATIONS AND/OR STANDARD DRAWINGS, THE CONTRACTOR IS REFERRED TO THE CABARRUS COUNTY UTILITY DEPARTMENT STANDARD SPECIFICATIONS AND PROJECT CONTRACT DOCMENTS.

6. ALL PAVEMENT REPLACEMENTS SHALL MATCH EXISTING AND COST FOR SUCH SHALL BE INCLUDED IN THE UNIT COSTS FOR SEWER PIPE.

7. CONTRACTOR SHALL VERIFY EXISTING GROUND ELEVATION AT MANHOLES PRIOR TO SETTING RIM ELEVATIONS.

8. CLASS "D" STONE BEDDING SHALL BE PROVIDED UNLESS OTHERWISE NOTED.

GENERAL EROSION CONTROL NOTES:

1. EROSION CONTROL MEASURES SHALL BE CONSTUCTED AS PER PLAN AND CABARRUS COUNTY UTILITY DEPARTMENT STANDARDS, AND AS DIRECTED BY ENGINEER.

2. ALL DITCH LINES DISTURBED OR RELOCATED DURING CONTRUCTION SHALL BE RESTABLIZED BY THE CONTRACTOR. INSTALL A TEMPORARY DITCH LINER OF JUTE OR GEOTEXTILE FABRIC ON THE DITCH BOTTOM AND SIDE SLOPES.

LEGEND

EXISTING MANHOLE	EX. MH
NEW MANHOLE	
EXISTING CATCH BASIN	CB
NEW CATCH BASIN	CB
EXIST TELEPHONE OR POWER POLE	
NEW TELEPHONE OR POWER POLE	
GUY WIRE	
WATER VALVE	WV
GAS VALVE	GV
SIGN	SIGN
GRATE OR DROP INLET	DI
RIGHT OF WAY MONUMENT	ROW MON.
EXISTING IRON PIPE	EIP
WATER METER	WM
EXIST PRECISE TRAVERSE POINT	
TREE	
EXISTING WATER LINE	W
NEW WATER LINE	
EXISTING SANITARY SEWER	
NEW SANITARY SEWER	
EXISTING RIGHT OF WAY/ PROPERTY LINE	
NEW RIGHT OF WAY	
PERMANENT EASEMENT	
TEMPORARY CONSTRUCTION EASEMENT	E E
PROPOSED GATE	
EXISTING PAVEMENT	
SURVEY LINE	
CENTER LINE	
EXISTING STORM SEWER	
NEW STORM SEWER	
GAS LINE	G G
UNDERGROUND COMMUNICATION CABLE	T T
UNDERGROUND POWER LINE	P P
FENCE	X X
EXISTING GUARD RAIL	
FIRE HYDRANT	FH
WOODS LINE	
EXISTING HOUSE	
TEMPORARY SILT FENCE	
DITCH CHECK DAM	
DROP INLET PROTECTION	
TEMPORARY SEDIMENT TRAP	
TEMPORARY CHANNEL CROSSING	SIZE, TEMP. CHANNEL CROSSING

HDR Engineering, Inc. of North Carolina

No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/18/94				
A	ISSUED FOR APPROVAL	5/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND A. HAMILTON

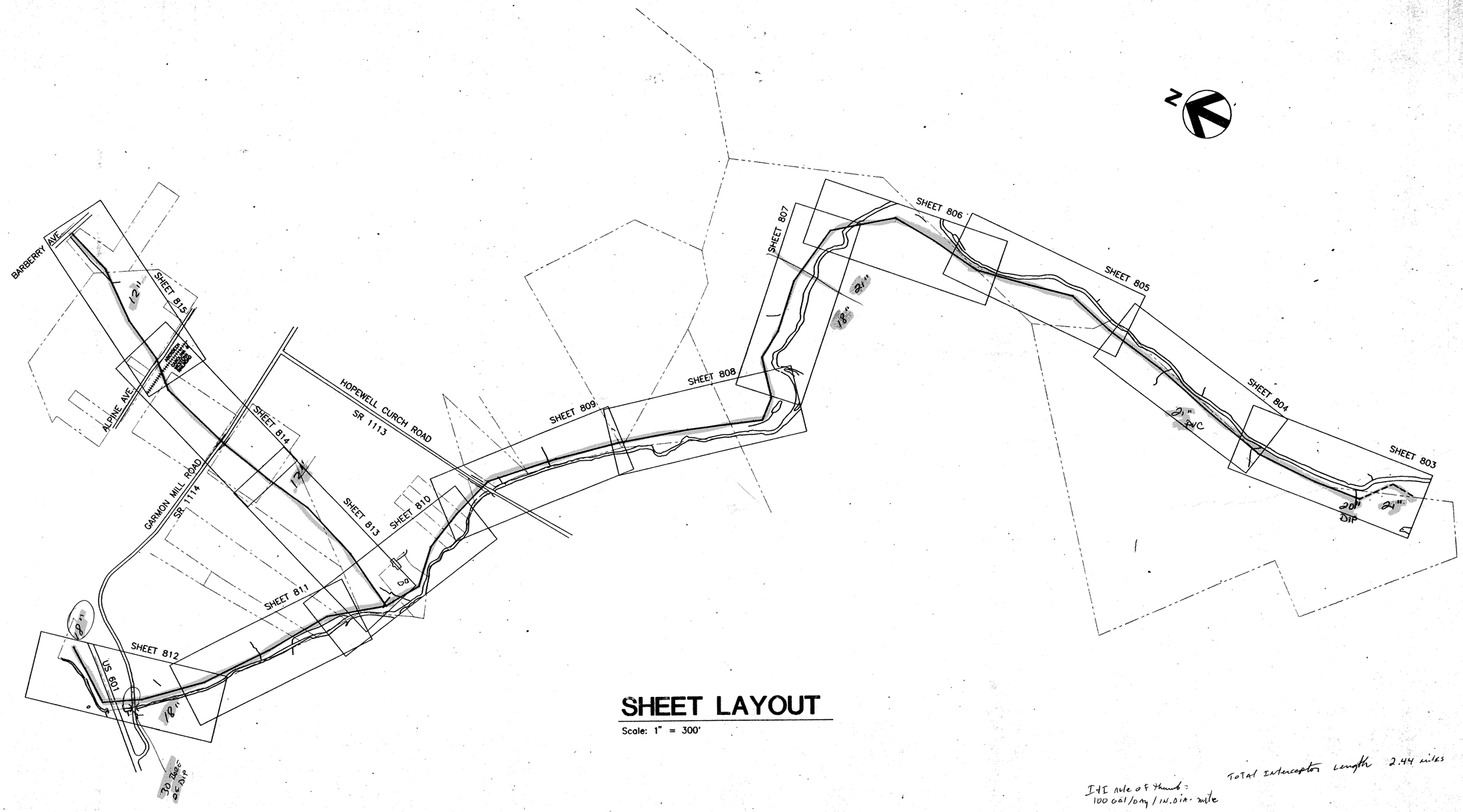
Project Manager: Roy Hamilton, PE
Architect | MEC/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department
Muddy Creek WWTP
Contract L - Sewer Line Construction
Cabarrus County North Carolina

General Notes

Date: MAR 1994 | Project No.: 00187-041-018 | Sheet No.: 801 | Issue: 0
Scale: As Noted

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SHEET LAYOUT

Scale: 1" = 300'

Total Interceptor Length 2.44 miles

I+I rule of thumb:
100 gal/day / in. dia. mile

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND D. HAMILTON 3/15/94

Project Manager: Ray Hamilton, PE
Architect | I&C/Process
Civil | Mechanical
JCC | Structural
Electrical | Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

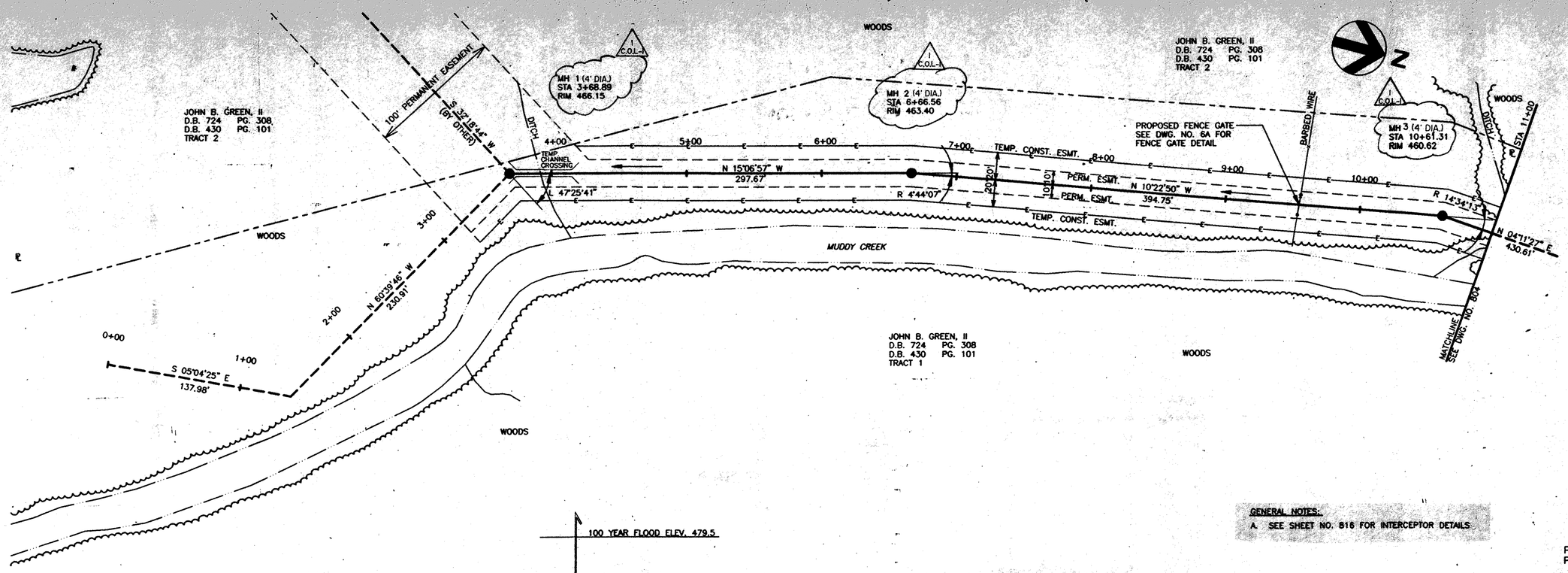
Contract L - Sewer Line Construction

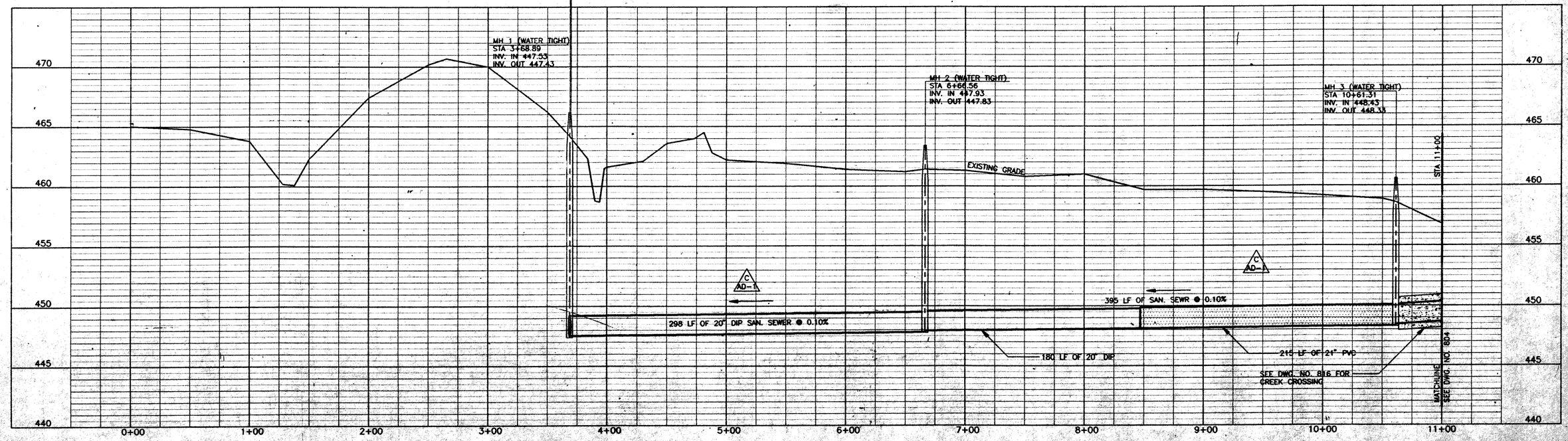
Cabarrus County, North Carolina

Drawing Layout

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 802
Issue: 0

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GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS.

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drawn	Chkd.	Proj. Engr.	Proj. Mgr.
I	CONFORM TO CHANGE ORDER L-1	9/22/94				
O	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	5/15/94				

NORTH CAROLINA SEAL 8701 REGISTERED PROFESSIONAL ENGINEER

Project Manager: J Ray Hamilton, PE
Architect | Mtl/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

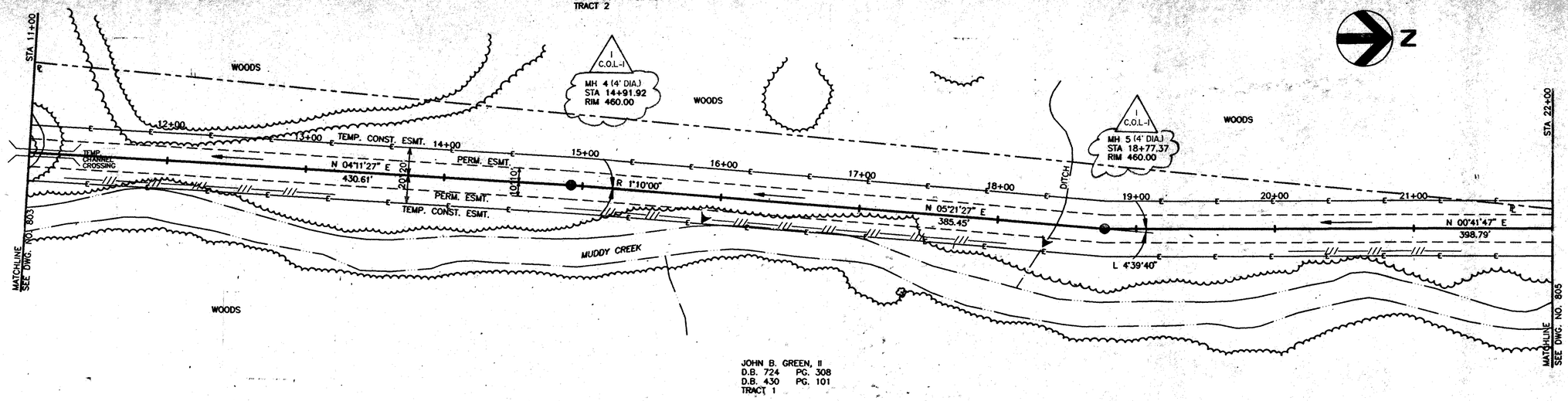
Contract L - Sewer Line Construction

Cabarrus County North Carolina

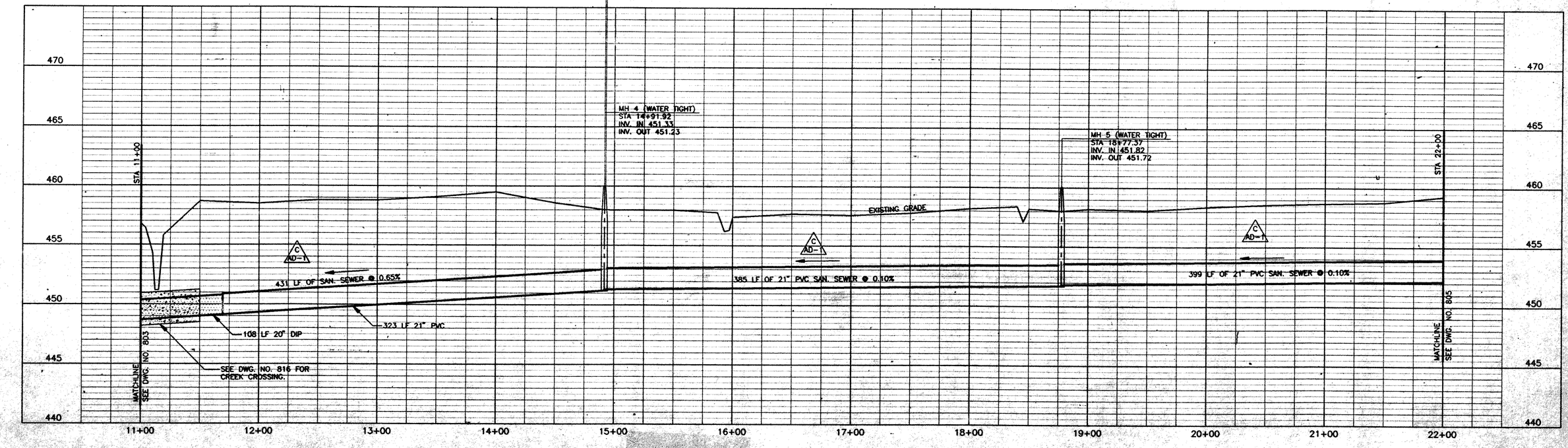
Interceptor
Sta 3+68.83 to Sta 11+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 803
Issue: I

P:\MUDDYCR\SHEET1



100 YEAR FLOOD ELEV. 479.5



GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
I	CONFORM TO CHANGE ORDER L-I	9/22/94				
O	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8270 RICHARD L. HAMILTON

Project Manager: Roy Hamilton, PE
Architect | I&C/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

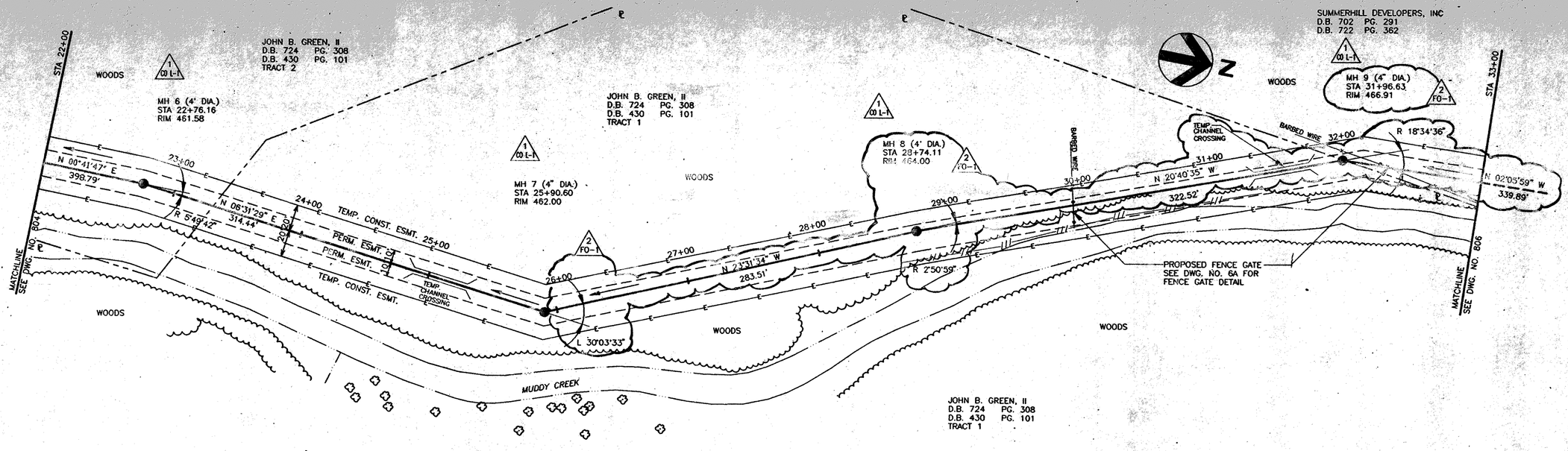
Contract L - Sewer Line Construction

Cabarrus County North Carolina

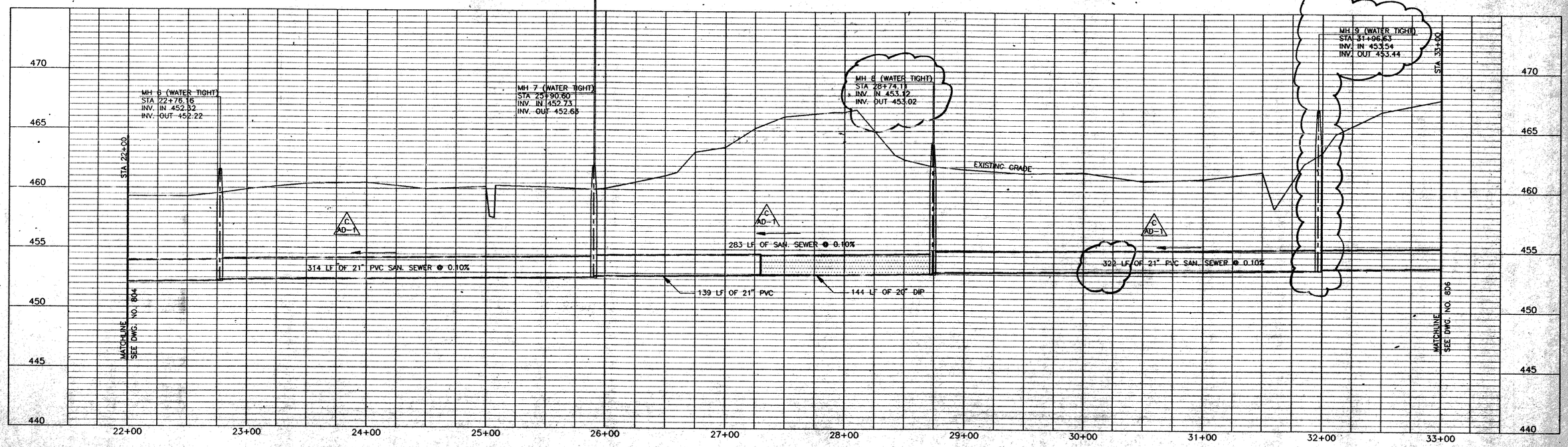
Interceptor Sta 11+00 to Sta 22+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 804
Issue: I

P:\MUDDYCR2\SHEET2



SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
2	CONFORM TO FIELD ORDER NO. 1	12/6/94				
1	CONFORM TO CHANGE ORDER L-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND D. HAMILTON
Ray 12-7-94

Project Manager: Ray Hamilton, PE
Architect | I&C/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

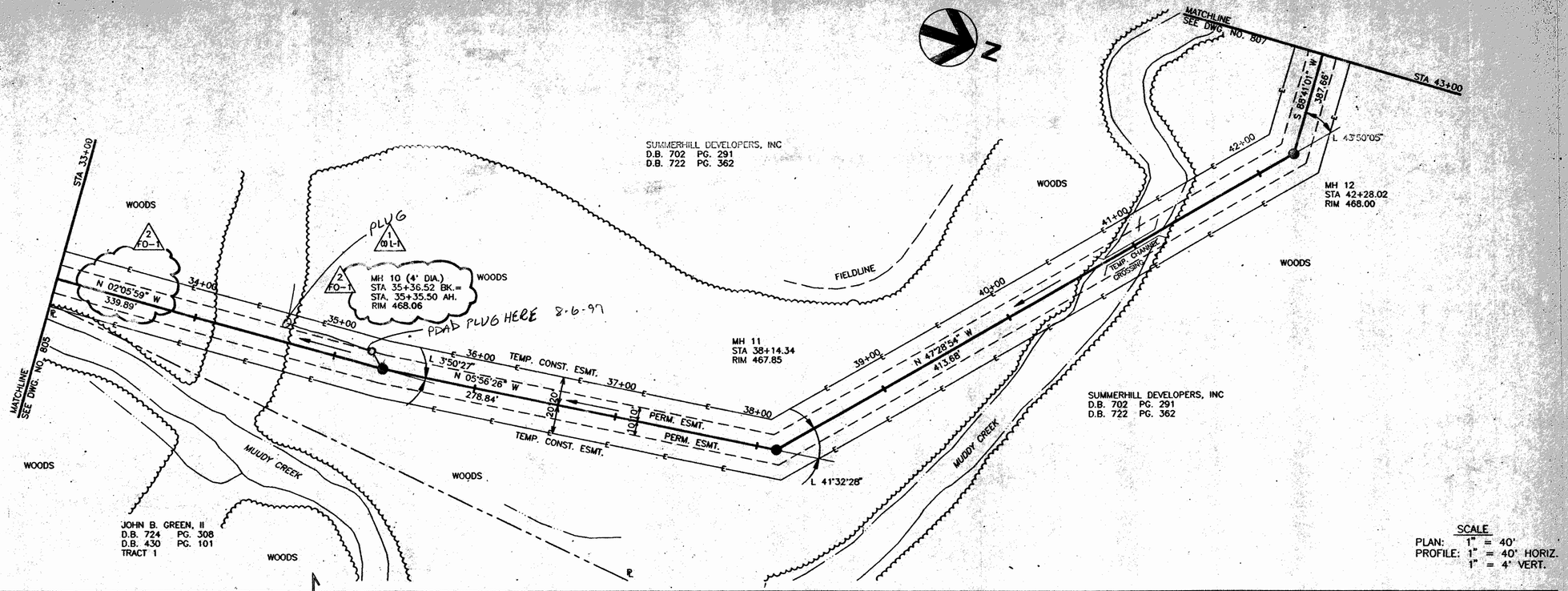
Contract L - Sewer Line Construction

Cabarrus County North Carolina

Interceptor
Sta 22+00 to Sta 33+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 805
Issue: 2

P:\MUDDYCR2\SHEET3



HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Proj. Engr.	Proj. Mgr.
2	CONFORM TO FIELD ORDER NO. 1	12/6/94				
1	CONFORM TO CHANGE ORDER L-1	9/22/94				
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND D. HAMILTON
12-7-94

Project Manager	Ray Hamilton, PE
Architect	H&C/Process
Civil	Mechanical
JCC	Structural
Electrical	Drawn By
	JCC

Cabarrus County Utility Department

Muddy Creek WWTP

Contract L - Sewer Line Construction

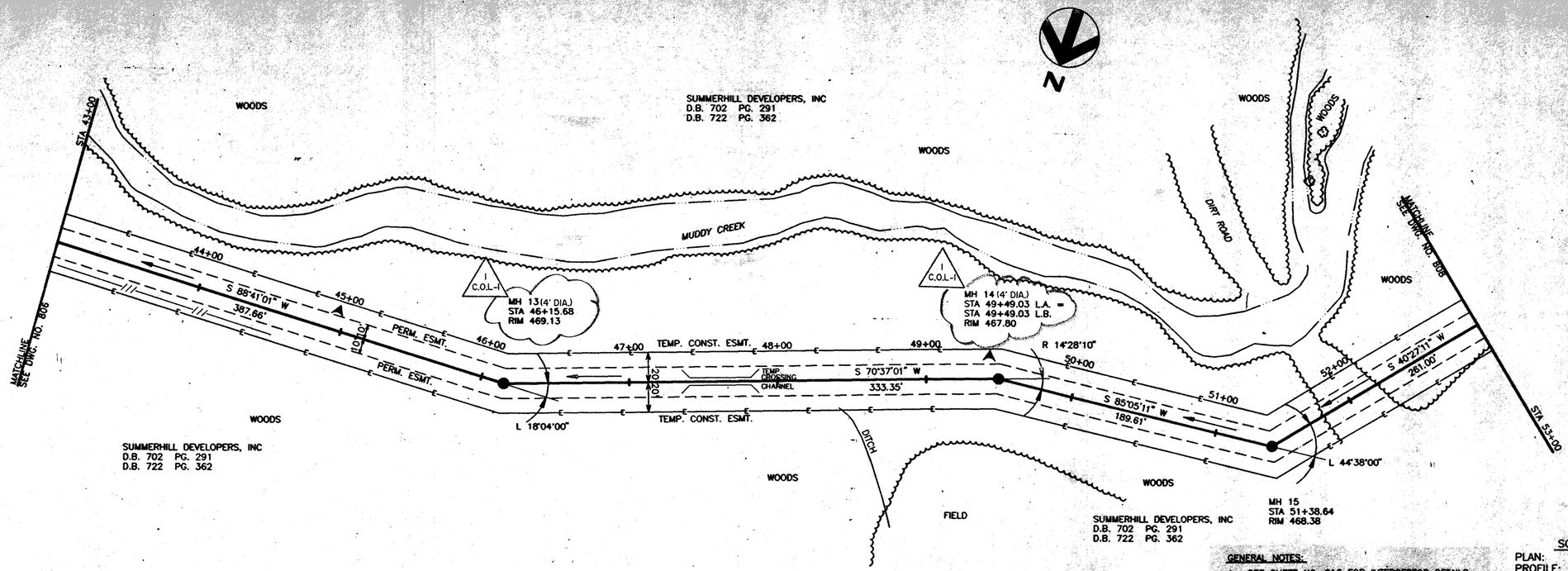
Cabarrus County North Carolina

Interceptor Sta 33+00 to Sta 43+00

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018.	806	2

Scale: As Noted

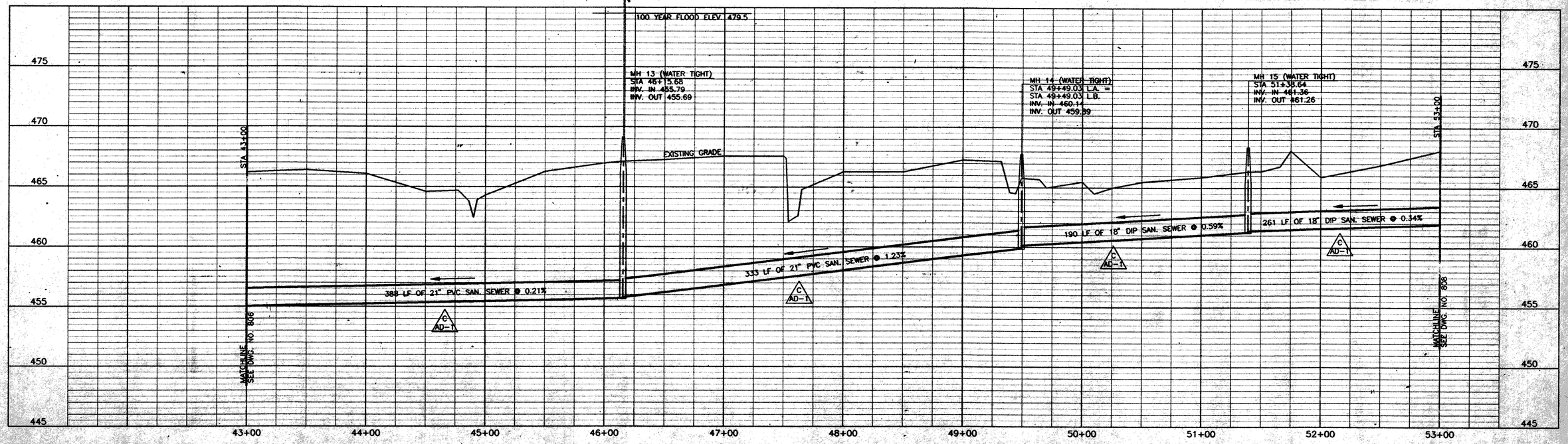
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GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR Engineering, Inc. of North Carolina

No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
I	CONFORM TO CHANGE ORDER L-I	9/22/94				
O	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 8205 RAND S. HAMILTON

Project Manager: Roy Hamilton, PE
Architect | Mc/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

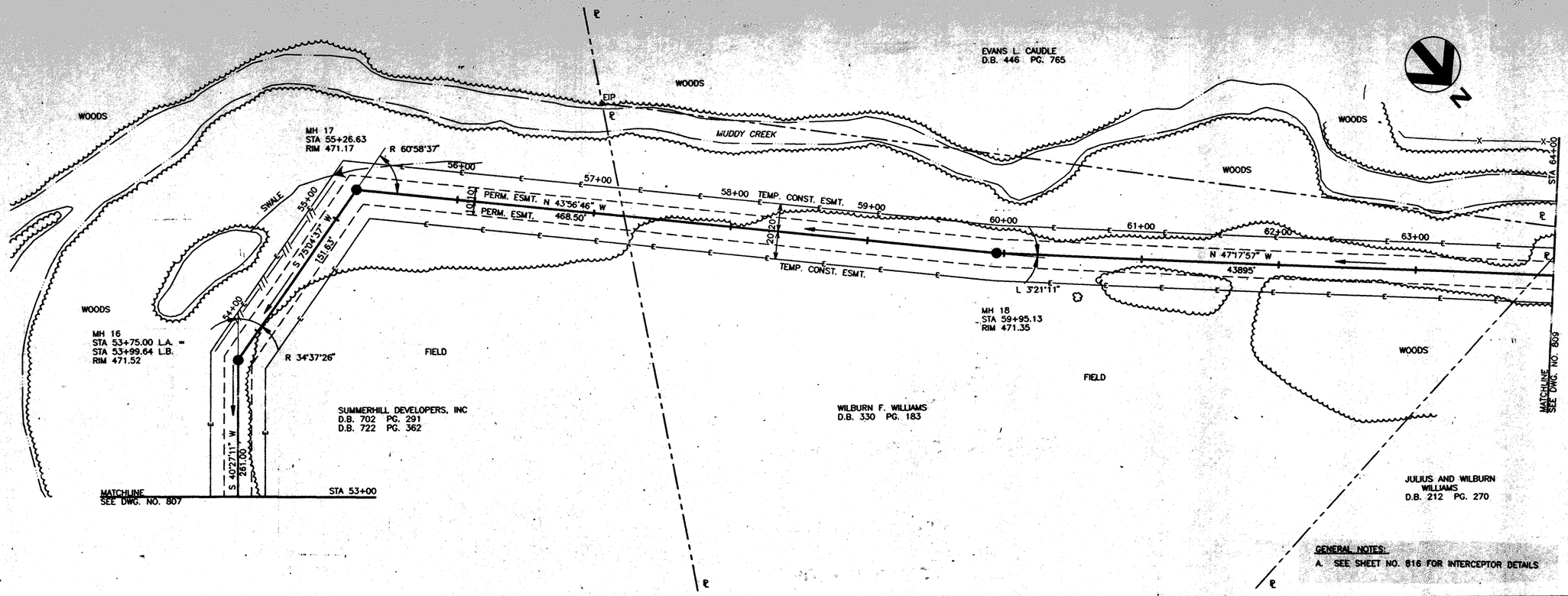
Contract L - Sewer Line Construction

Cabarrus County — North Carolina

Interceptor Sta 43+00 to Sta 53+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 807
Issue: I

P:\MUDDYCR2\SHEET5



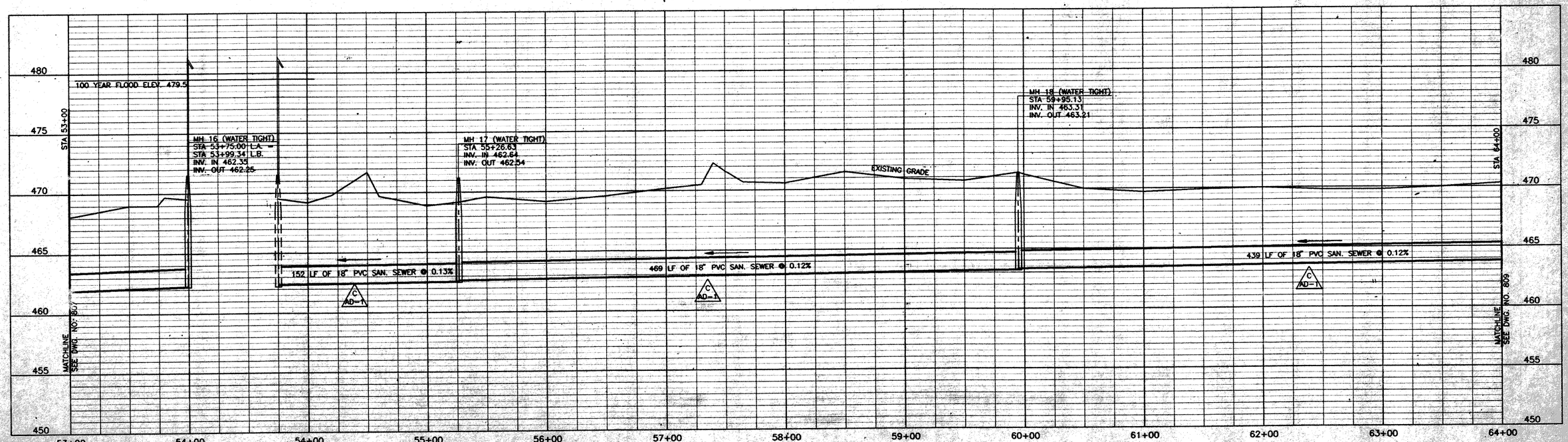
GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE

PLAN: 1" = 40'

PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR

HDR Engineering, Inc.
of North Carolina

No.	Description	Date	Drwn.	Chkd.	Proj. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8207 ENGINEER RICHARD B. HARRINGTON

Project Manager: Roy Hamilton, PE	
Architect	Mfg/Process
Civil: JCC	Mechanical
Electrical	Structural
	Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

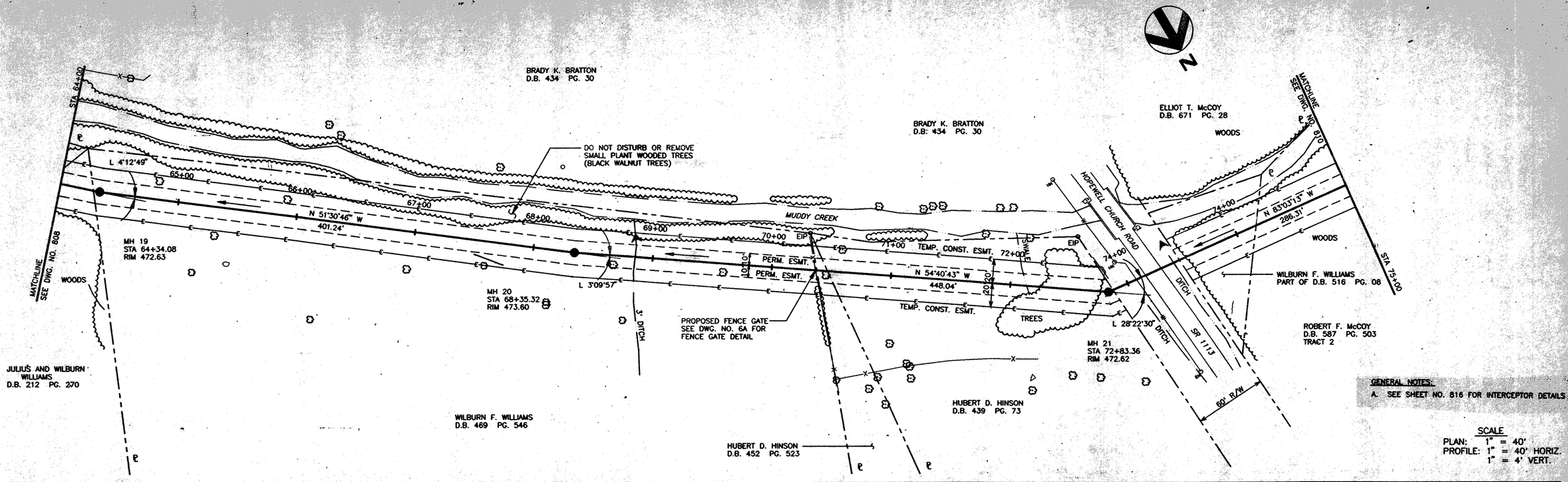
Contract L - Sewer Line Construction

Cabarrus County North Carolina

Interceptor
Sta 53+00 to Sta 64+00

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	808	0
Scale: As Noted			

P:\MUDDYCR2\SHEET6



GENERAL NOTES:

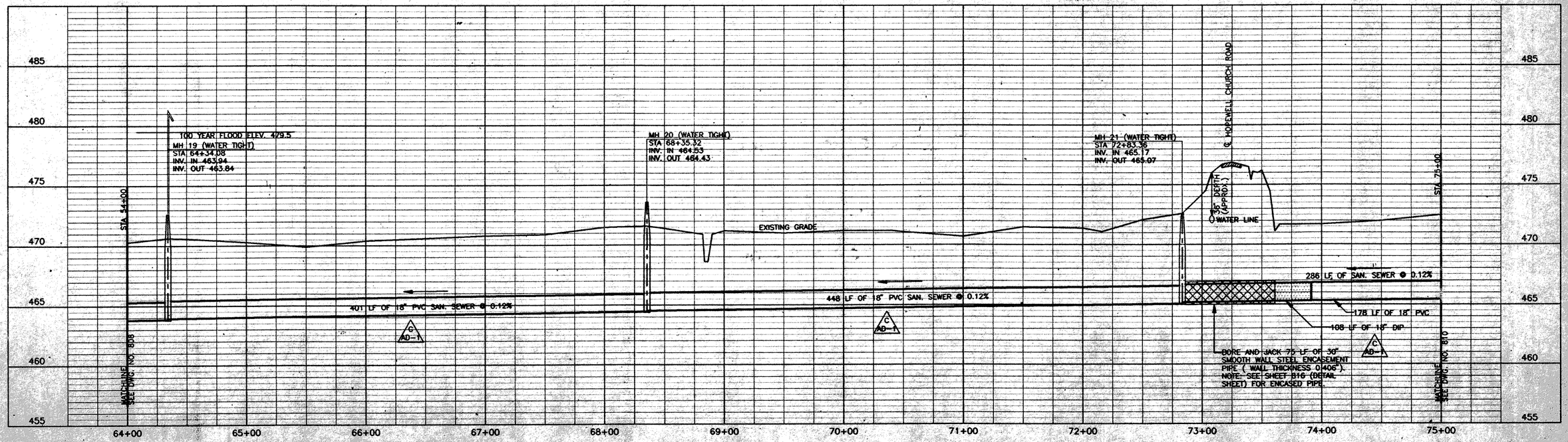
A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE

PLAN: 1" = 40'

PROFILE: 1" = 40' HORIZ.

1" = 4' VERT.



0	ISSUED FOR CONSTRUCTION	9/22/94					
C	CONFORM TO ADDENDA NO 1	6/6/94					
B	ISSUED FOR BID	5/16/94					
A	ISSUED FOR APPROVAL	3/15/94					
Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.	

HDR

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL SEAL 8206 ENGINEER RAYMOND A. HAMILTON

Project Manager: Roy Hamilton, PE

Architect | M/C/Process

Civil: JCC | Mechanical

Electrical | Structural

Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

Contract L - Sewer Line Construction

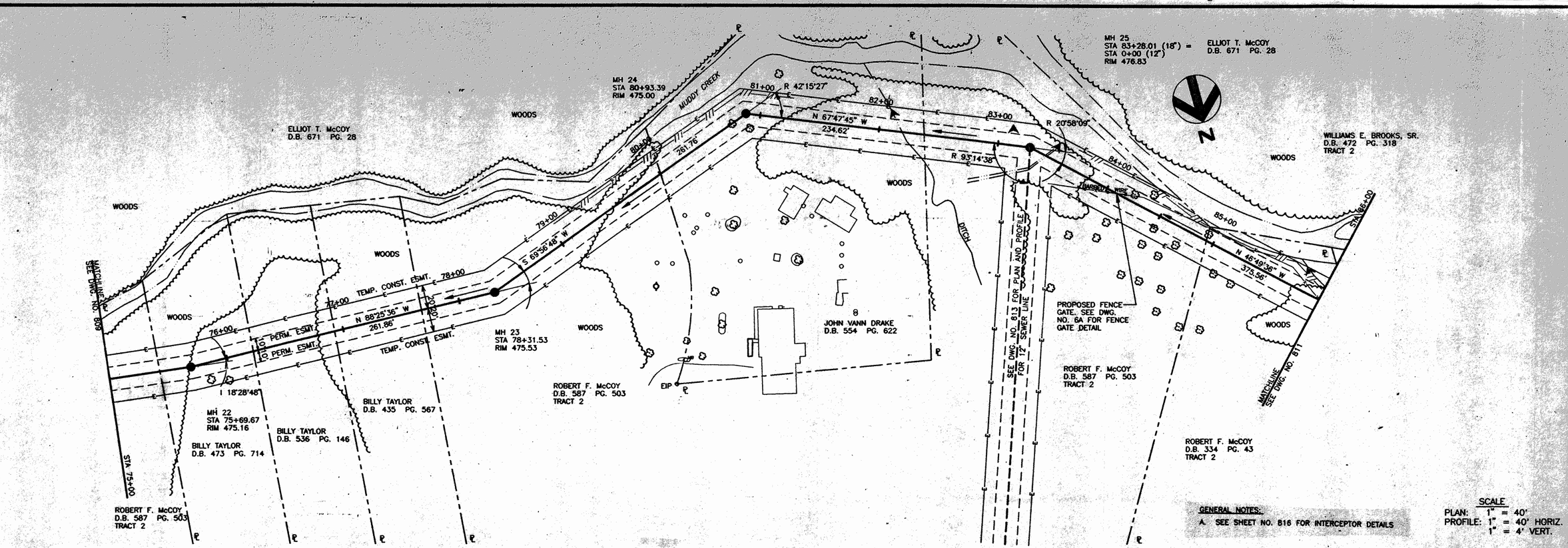
Cabarrus County North Carolina

Interceptor
Sta 64+00 to Sta 75+00

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	809	0

Scale: As Noted

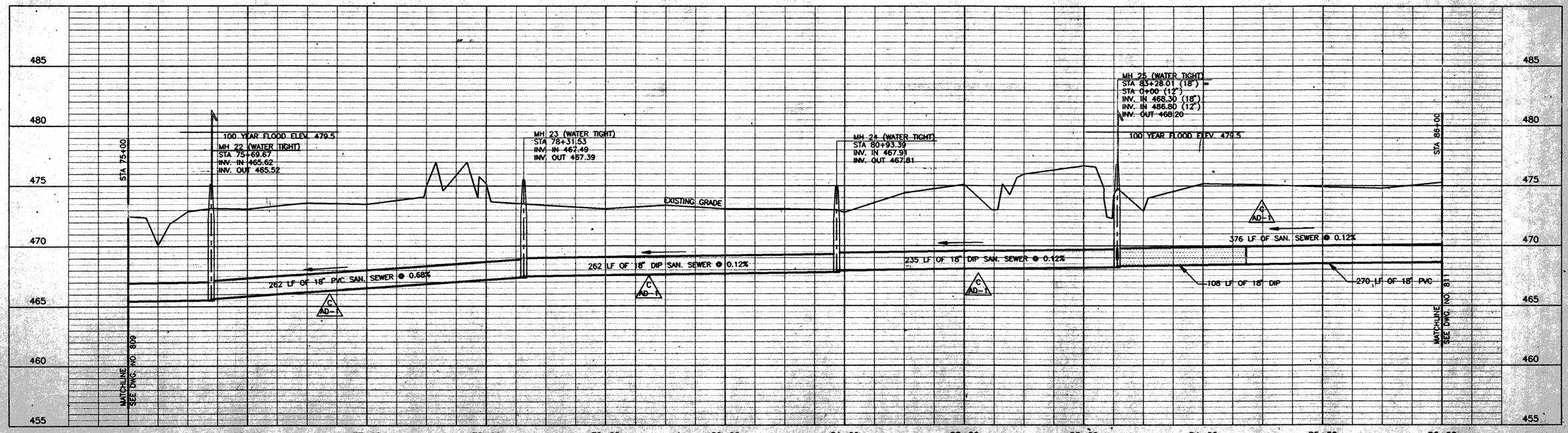
P:\MUDDYCR2\SHEET7



GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR

HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Proj. Engr.	Prod. Mgr.
O	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8209 ROY HAMILTON

Project Manager: Roy Hamilton, PE
Architect | M/C/Process
Civil | Mechanical
JCC | Structural
Electrical | Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

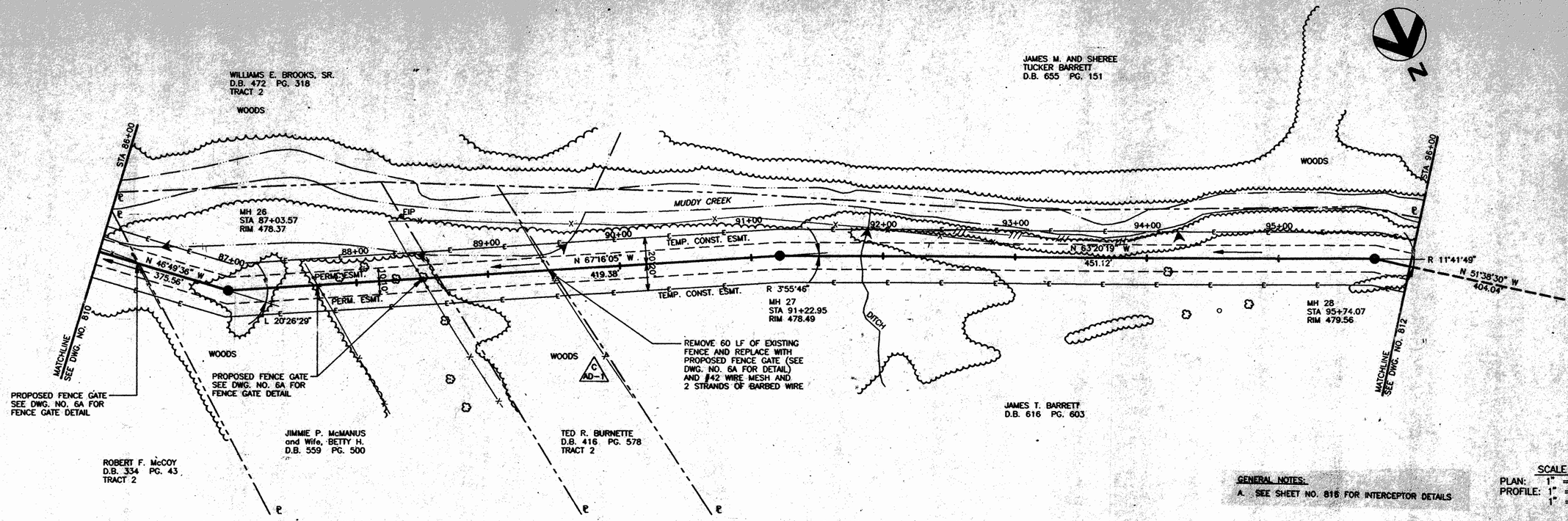
Contract L - Sewer Line Construction

Cabarrus County — North Carolina

Interceptor
Sta 75+00 to Sta 86+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 810
Issue: 0

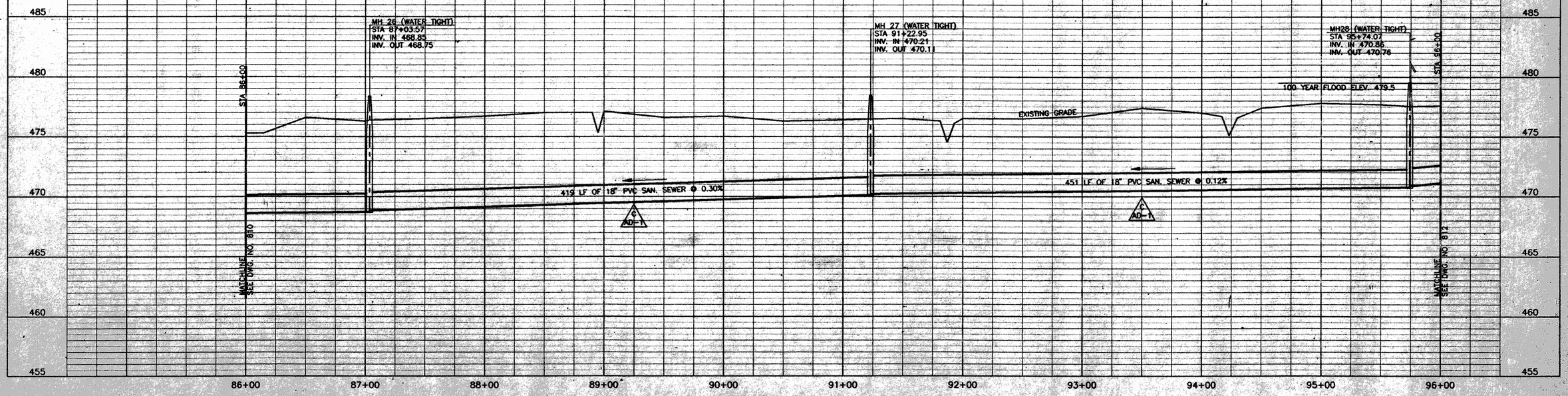
P:\MUDDYCR2\SHEETS



GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR

HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Spec. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO. 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8201 RAYMOND L. HAMILTON

Project Manager: Roy Hamilton, PE
Architect | I&C/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

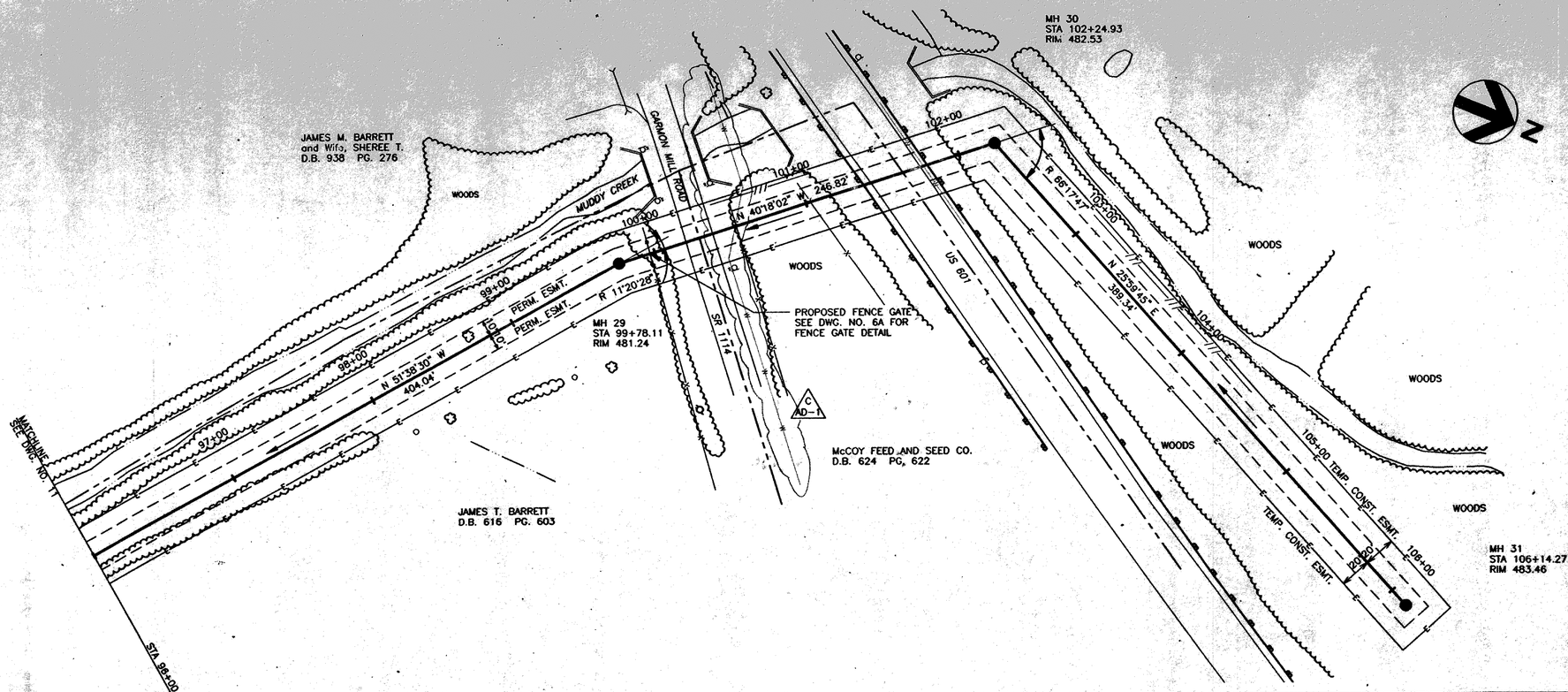
Contract L - Sewer Line Construction

Cabarrus County North Carolina

Interceptor
Sta 86+00 to Sta 96+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 811
Issue: 0

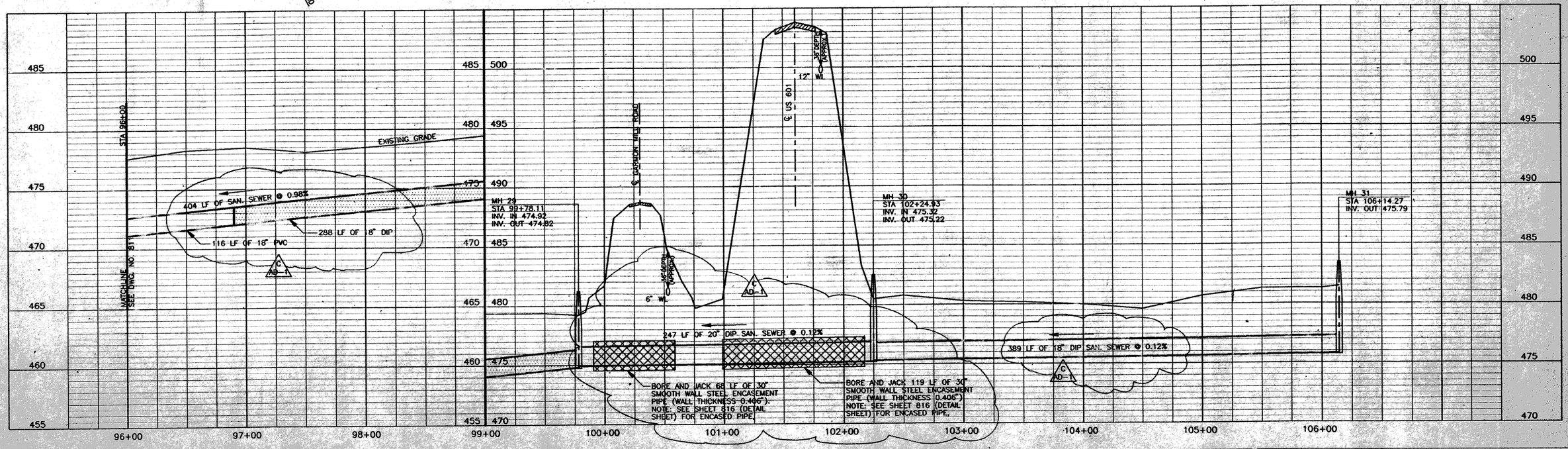
M:\MUDDYCR2\ SHEET9



GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8205 RAYMOND C. HAMILTON

Project Manager: Ray Hamilton, PE
Architect | M/C/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

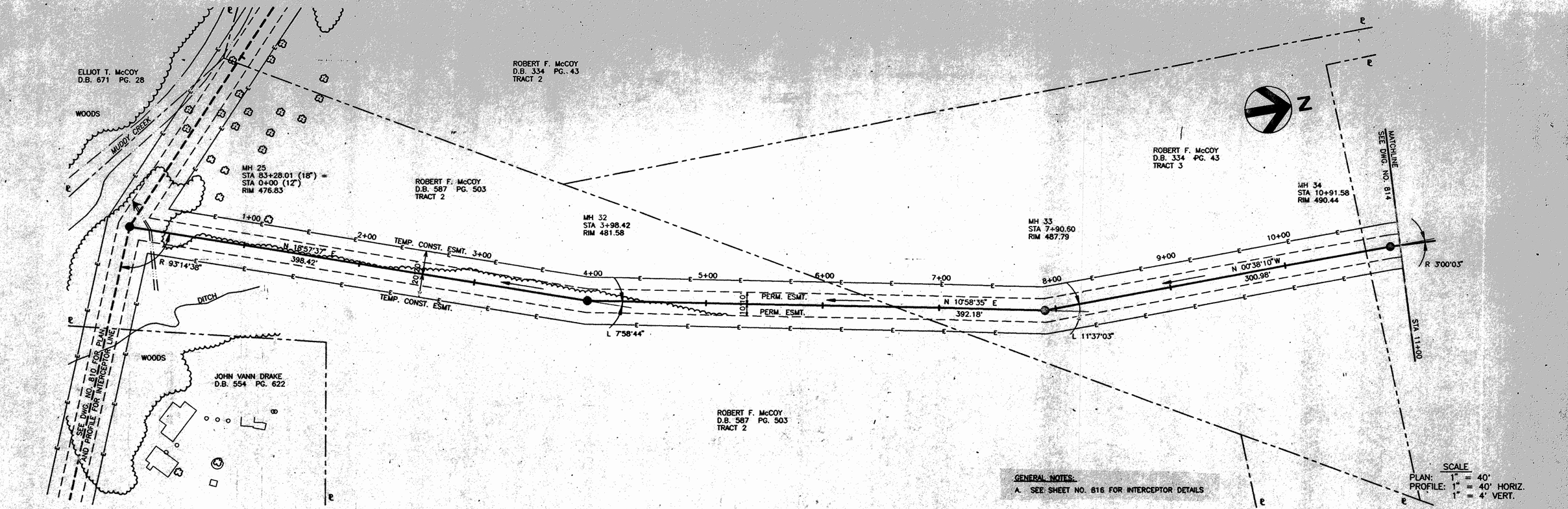
Contract L - Sewer Line Construction

Cabarrus County North Carolina

Interceptor Sta 96+00 to StA 106+14.27

Date: MAR 1994 | Project No.: 00187-041-018 | Sheet No.: 812 | Issue: 0
Scale: As Noted

P:\MUDDYCRK2\SHEET10



HDR

HDR Engineering, Inc.
of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA PROFESSIONAL SEAL 8206 ENGINEER RAYMOND A. HAMILTON

Project Manager: Ray Hamilton, PE	
Architect	I&C/Process
Civil: JCC	Mechanical
Electrical	Structural
	Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

Contract L - Sewer Line Construction

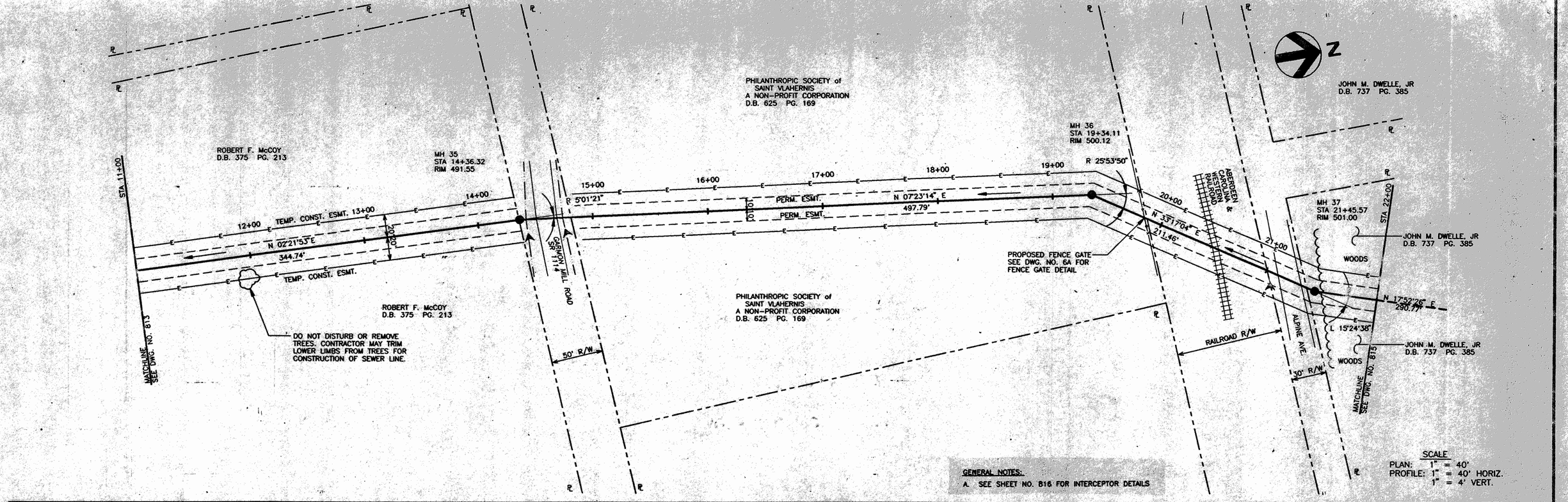
Cabarrus County North Carolina

Interceptor Extension
Sta 0+00 to Sta 11+00

Date	Project No.	Sheet No.	Issue
MAR 1994	00187-041-018	813	0

Scale: As Noted

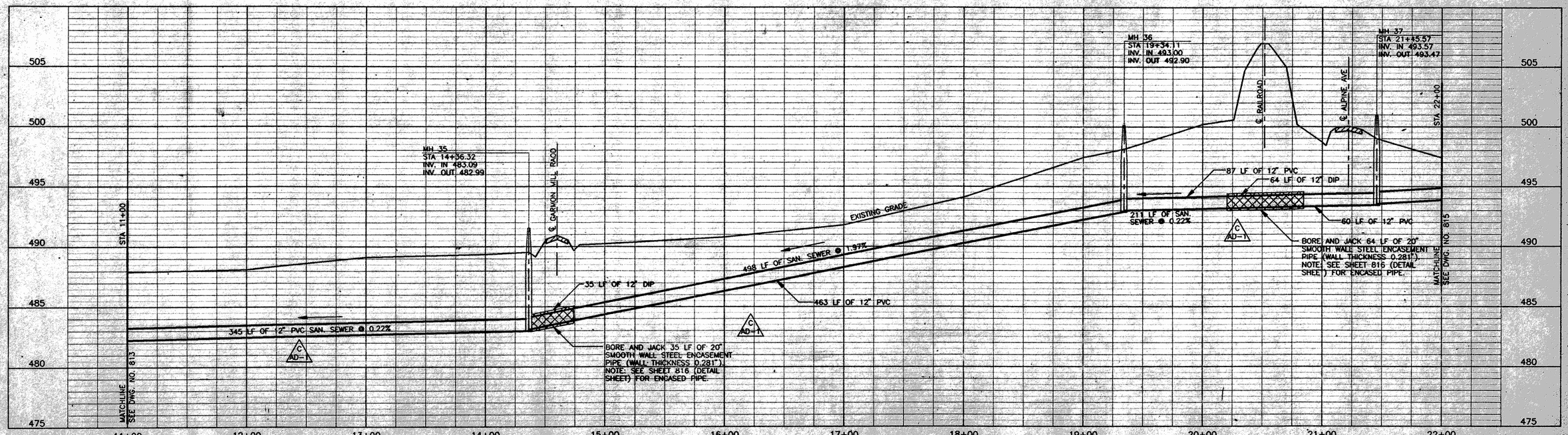
P:\MUDDYCRK2\SHEET11



GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA SEAL 8205 RICHARD B. HAMILTON

Project Manager: Roy Hamilton, PE
Architect | Mech/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

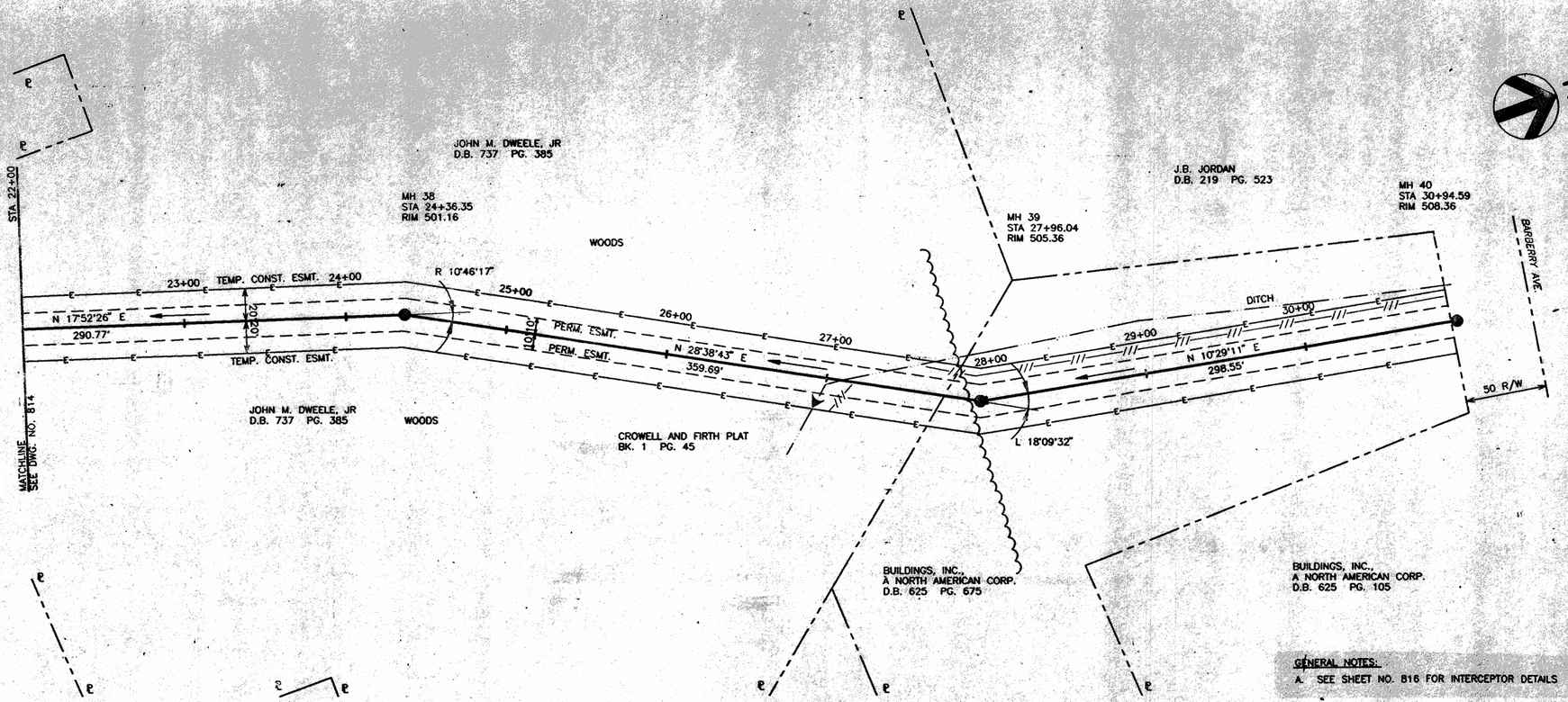
Contract L - Sewer Line Construction

Cabarrus County — North Carolina

Interceptor Extension Sta 11+00 to sta 22+00

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 814
Issue: 0

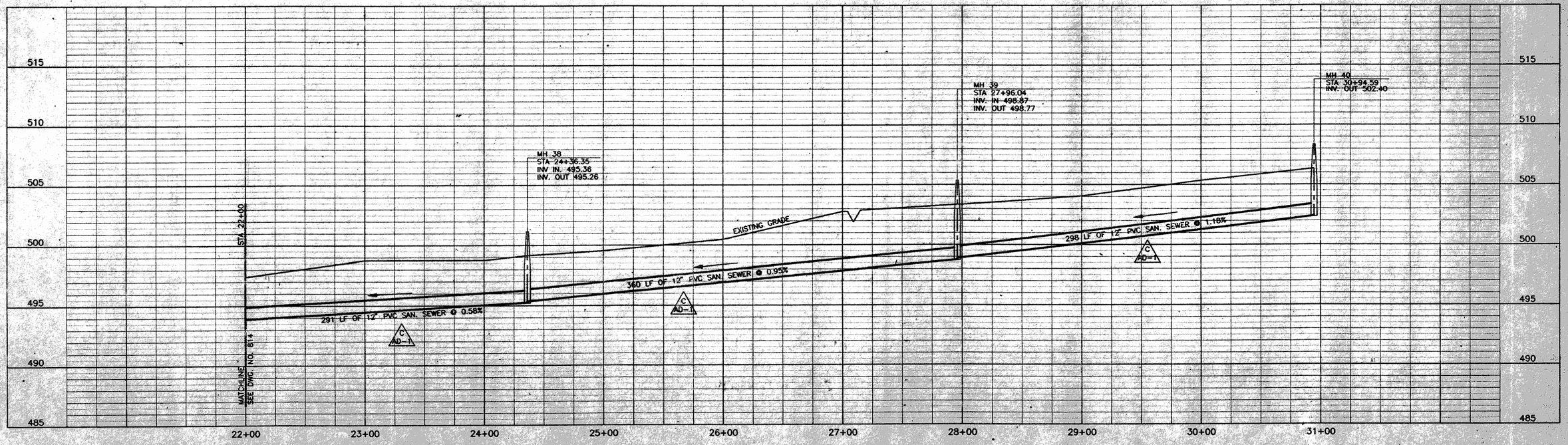
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GENERAL NOTES:

A. SEE SHEET NO. 816 FOR INTERCEPTOR DETAILS

SCALE
PLAN: 1" = 40'
PROFILE: 1" = 40' HORIZ.
1" = 4' VERT.



HDR Engineering, Inc. of North Carolina

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
0	ISSUED FOR CONSTRUCTION	9/22/94				
C	CONFORM TO ADDENDA NO 1	6/6/94				
B	ISSUED FOR BID	5/16/94				
A	ISSUED FOR APPROVAL	3/15/94				

NORTH CAROLINA SEAL 8301 RAYMOND S. HAMILTON

Project Manager: Roy Hamilton, PE
Architect | I&C/Process
Civil | Mechanical
JCC | Structural
Electrical | Drawn By: JCC

Cabarrus County Utility Department

Muddy Creek WWTP

Contract L - Sewer Line Construction

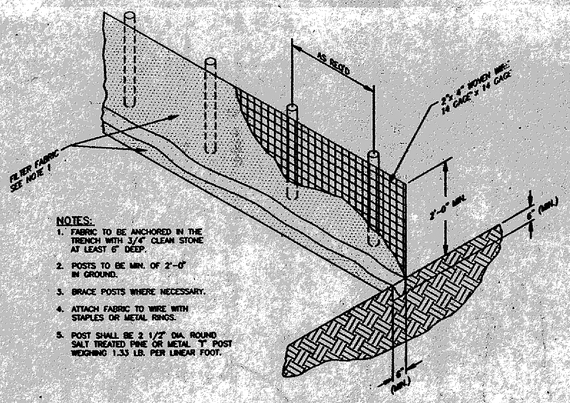
Cabarrus County North Carolina

Interceptor Extension Sta 22+00 to Sta 30+94.59

Date: MAR 1994
Scale: As Noted
Project No.: 00187-041-018
Sheet No.: 815
Issue: 0

P:\MUDDYCRK2\SHEET13

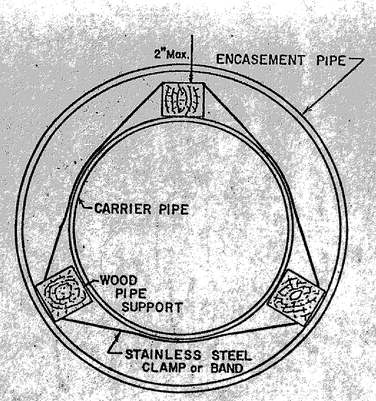
TEMPORARY SILT FENCE

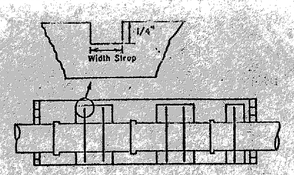


NOTES:
1. FABRIC TO BE ANCHORED IN THE TRENCH WITH 3/4" CLEAN STONE AT LEAST 6" DEEP.
2. POSTS TO BE MIN. OF 2'-0" IN GROUND.
3. BRACE POSTS WHERE NECESSARY.
4. ATTACH FABRIC TO WIRE WITH STAPLES OR METAL RINGS.
5. POST SHALL BE 2 1/2" DIA. ROUND SALT TREATED PINE OR METAL 'T' POST WEIGHING 1.33 LB. PER LINEAR FOOT.

NO SCALE

PIPE ENCASEMENT





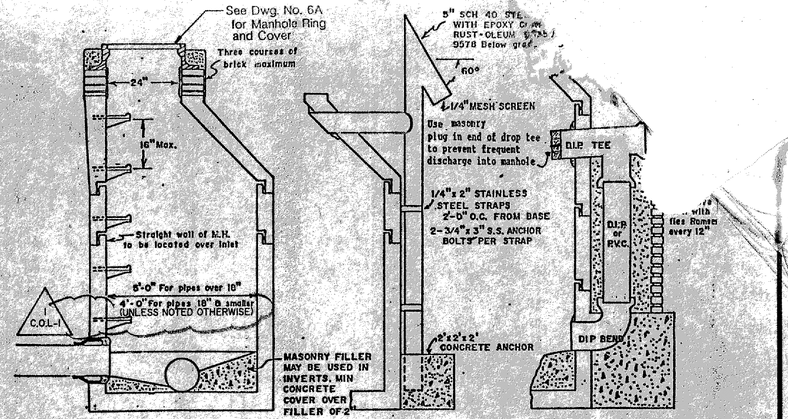
Carrier Pipe	Casing Pipe I.D.	Wall Thickness
4"	8"	0.188"
6"	12"	0.188"
8"	16"	0.250"
10"	18"	0.250"
12"	20"	0.281"
16"	24"	0.344"
24"	30"	0.406"
30"	42"	0.500"
36"	48"	0.500"

1. No pipe shall be supported by bell.
2. Pipe support shall be pressure treated pine.
3. Length of support = length of pipe section x 0.44
4. End sections less than 4' may be unsupported.
5. Wall thickness as per table unless otherwise shown on plan.
6. Masonry seal at ends - 2"x 4" weep hole at low end.
7. Provide 2 straps for first 2' of support plus 1 strap for each additional 2' of support.

CABARRUS COUNTY STD. DWG. 14

NO SCALE

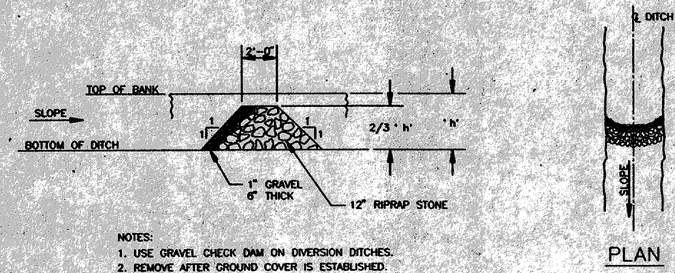
STANDARD MANHOLE



CABARRUS COUNTY STD. DWG. 10

NO SCALE

TEMPORARY CHANNEL CROSSING

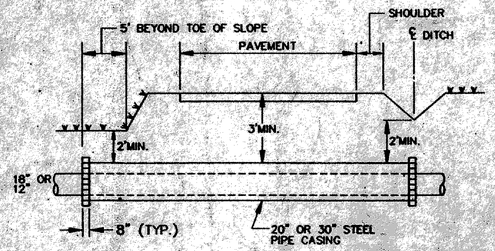


NOTES:
1. USE GRAVEL CHECK DAM ON DIVERSION DITCHES.
2. REMOVE AFTER GROUND COVER IS ESTABLISHED.

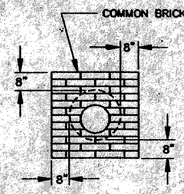
PLAN

NO SCALE

PAVEMENT REPLACEMENT



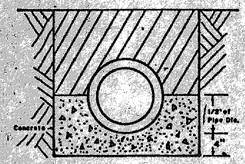
ELEVATION



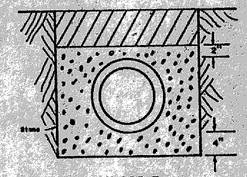
END VIEW

NO SCALE

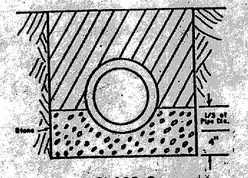
CREEK CROSSING



CLASS A



CLASS B



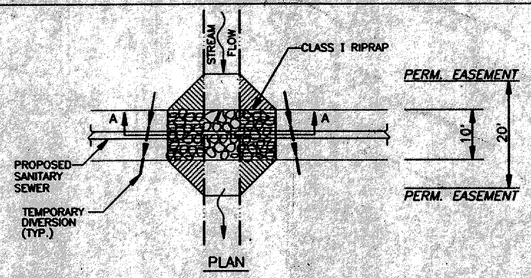
CLASS C

NOTES:
ALL CONCRETE = 3000 psi
ALL STONE = N.C.D.O.T. NO. 67

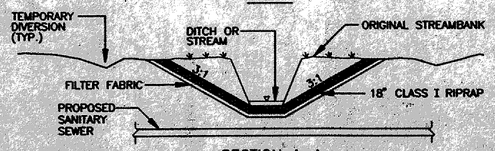
CABARRUS COUNTY STD. DWG. 8

NO SCALE

CHECK DAM



PLAN

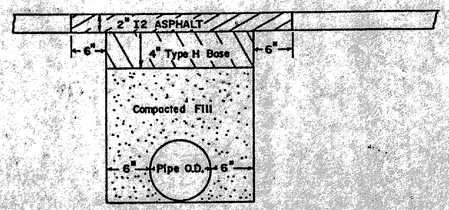


SECTION A-A

NO SCALE

BORE AND JACK PIPE CROSSING

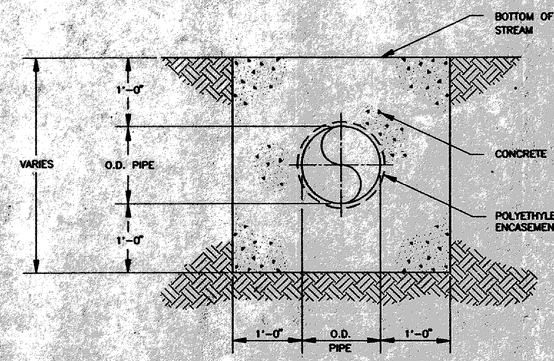
NOTE
FOR CONCRETE PAVEMENTS SUBSTITUTE
3500 psi concrete to match existing thickness for I2 Asphalt
4" ABC Stone for H Base



CABARRUS COUNTY STD. DWG. 15

NO SCALE

PIPE BEDDING



NO SCALE

1	CONFORM TO CHANGE ORDER L-1	9/22/94					
0	ISSUED FOR CONSTRUCTION	9/22/94					
B	ISSUED FOR BID	5/18/94					
A	ISSUED FOR APPROVAL	5/15/94					
Issue No.	Description	Date	Drwn	Chkd	Proj. Engr.	Proj. Mgr.	

HDR Engineering, Inc. of North Carolina

NORTH CAROLINA PROFESSIONAL SEAL 8205 ENGINEER RAYMOND B. HAMILTON

Project Manager: Ray Hamilton, PE
Architect | I&C/Process
Civil: JCC | Mechanical
Electrical | Structural
Drawn By: JCC

Cabarrus County Utility Department
Muddy Creek WWTP
Contract L - Sewer Line Construction
Cabarrus County North Carolina

Interceptor Details

Date: MAR 1994 | Scale: As Noted | Project No.: 00187-041-018 | Sheet No.: 816 | Issue: 1

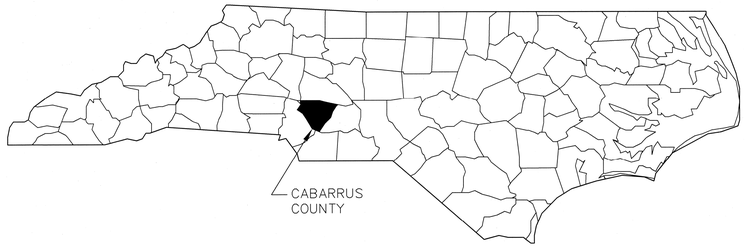
P:\MUDCRK\SHEET14

Attachment B

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC) MUDDY CREEK WWTP 0.15 MGD EXPANSION

JULY 2008

MC PROJECT NO. 02000-0014



VICINITY MAP
SCALE: NOT TO SCALE

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WSACC

WATER & SEWER AUTHORITY
OF CABARRUS COUNTY

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWING"

NORTH CAROLINA PROFESSIONAL SEAL 28849 ENGINEER JAMES T. YON
11-19-2010

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Raleigh, North Carolina 27606
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C-0342

www.mckimcreed.com

RECORD DRAWING

NOVEMBER 2010

02000-0014

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP

ABBREVIATIONS:

@	AT
ALT.	ALTERNATE
AL.	ALUMINUM
ANCH.	ANCHOR
APPROX.	APPROXIMATE
B/B	BACK TO BACK
BOC	BACK OF CURB
BLDG.	BUILDING
BLVD.	BOULEVARD
BM.	BEAM
B.O.	BOTTOM OF
BOT.	BOTTOM
C	CHANNEL
C.B.	CATCH BASIN
CHEM.	CHEMICAL
CI	CURB INLET OR CAST IRON
℄	CENTERLINE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL.	COLUMN
CONC.	CONCRETE
CU.	COPPER
DBL.	DOUBLE
DET.	DETAIL
DISCH.	DISCHARGE
DIA.	DIAMETER
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DN.	DOWN
EA.	EACH
EF	EXHAUST FAN
E.F.	EACH FACE
E.W.	EACH WAY
EFW	EFFLUENT FLUSHING WATER
EL	ELEVATION
ELEC.	ELECTRICAL
EP	EDGE OF PAVEMENT
ETC.	AND SO FORTH
EXIST.	EXISTING
EXP.	EXPANSION
FH	FIRE HYDRANT
FIN.	FINISH
FLG.	FLANGE
FLR.	FLOOR
FD	FLOOR DRAIN
FRP	FIBERGLASS REINFORCED PLASTIC
GALV.	GALVANIZED
GA.	GAUGE
G.S.	GALVANIZED STEEL
GR.	GRADE
HDPE	HIGH DENSITY POLYETHYLENE
HB	HOSE BIB
H.P.	HIGH POINT
HP	HORSE POWER
H/R	HANDRAIL
I.D.	INSIDE DIAMETER
INV.	INVERT
IR	IRON ROD
J.B.	JUNCTION BOX
JT.	JOINT
LG.	LONG
L	ANGLE
MAX.	MAXIMUM
MAINT.	MAINTENANCE
MBR	MEMBRANE BIOREACTOR
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MIN.	MINIMUM
MG	MILLION GALLON(S)
MGD	MILLION GALLONS PER DAY
MJ	MECHANICAL JOINT
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
N.T.S.	NOT TO SCALE
NO./#	NUMBER
NPW	NON-POTABLE WATER
O.C.	ON CENTER
O H	OVERHEAD
PC	POINT OF CURVATURE
P.D.	POSITIVE DISPLACEMENT
P/L	PROPERTY LINE
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
P.S.	PUMP STATION
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PROP.	PROPOSED
P.V.	PLUG VALVE
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
REF.	REFERENCE
REINF.	REINFORCED
REQ'D	REQUIRED
RESTR.	RESTRAINED
R/W	RIGHT-OF-WAY
SCH.	SCHEDULE
SL.	SLUDGE
SQ.	SQUARE
SS	STAINLESS STEEL
S/W	SIDEWALK
SYM.	SYMMETRICAL
TO	TOP OF
TOC	TOP OF CONCRETE
TOG	TOP OF GRATE
TP	TOP OF PAVEMENT
TOW	TOP OF WALL
T.&B.	TOP & BOTTOM
THK.	THICK
TYP.	TYPICAL
VERT.	VERTICAL
w/	WITH
WB	WATER BIB
W/L	WATER LINE
W.L.	WATER LEVEL
WAS	WASTE ACTIVATED SLUDGE
WWF	WELDED WIRE FABRIC
YI	YARD INLET

LEGEND:

NEW LINEWORK (INCLUDES PEN WIDTHS SHOWN)

EXIST. LINEWORK (INCLUDES ALL HALFTONES

CHAIN LINK FENCE

SILT FENCE

RIGHT OF WAY

PROPERTY LINE

PROPERTY LINE INSET

GRADING CONTOUR LINES — 20

CURB AND GUTTER

TREELINE

MATCHLINE

LIMITS OF DISTRUBANCE

DESIGNATED WETLANDS

GRAVEL SURFACES

CONC. SURFACE

BORING LOCATIONS — GEOBORE 2A

POST HYDRANT

MANHOLE

POWER POLE

CURB AND YARD INLETS

WATER BIB

WELL HEAD

BOLLARD

GATE VALVE

BUTTERFLY VALVE

BALL VALVE

PLUG VALVE

CHECK VALVE

CLEANOUT — CO

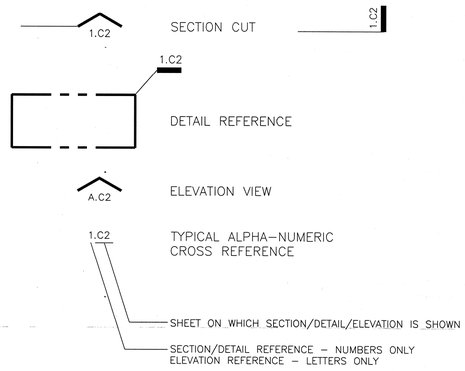
FLOOR DRAIN — FD

TIE-IN - NEW TO EXIST.

SILT SOCK

INLET PROTECTION

CROSS REFERENCING SYMBOLOGY:



EXAMPLE

REFERENCE NUMBER OR LETTER

2 - PLAN - WWTP LAYOUT
3/8"=1'-0"

A - ELEVATION - OPS. BLDG.
N.T.S.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWINGS"

REV.NO.	DESCRIPTIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28848 JAMES T. LYON
11-19-2010

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C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

CIVIL
DRAWING SYMBOLOGY, LEGEND AND ABBREVIATIONS

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0002
DRAWING NUMBER G2

STATUS: RECORD DRAWING
REVISION 1

N:\CAD\WSACC\Muddy Creek WWTP\Drawings\G2 Drawing Symbology, Legend and Abbreviations.dwg

GENERAL NOTES:

1. SAFETY

   A. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF EMPLOYEES ON THE PROJECT AND SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF FEDERAL, STATE AND LOCAL SAFETY LAWS AND BUILDING CODES TO PREVENT ACCIDENTS OR INJURY. THE CONTRACTOR SHALL ERECT AND PROPERLY MAINTAIN AT ALL TIMES ALL NECESSARY SAFEGUARDS AND BARRICADES FOR THE PROTECTION OF EMPLOYEES WHILE WORKING AND SAFETY OF OTHERS EMPLOYED NEAR THE WORK SITE AND THE PUBLIC. FURTHER, THE CONTRACTOR SHALL POST DANGER SIGNS AND OTHER WARNING DEVICES TO PROTECT INDIVIDUALS FROM BEING INJURED IN THE VICINITY OF THE WORK SITE.

   B. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE O.S.H.A. SAFETY REQUIREMENTS. THE CONTRACTOR SHALL INSURE ALL WORK PROCEEDS IN ACCORDANCE WITH O.S.H.A. REQUIREMENTS FOR SAFETY TRENCHING, EXCAVATION, AND CONFINED SPACE ENTRY PROCEDURES.

   C. THE CONTRACTOR SHALL PROVIDE ADEQUATE EQUIPMENT AND FACILITIES AS ARE NECESSARY AND REQUIRED TO PROVIDE EMERGENCY FIRST AID TO ANY PERSON WHO MAY BE INJURED IN THE EXECUTION OF THE WORK UNDER THIS CONTRACT.

2. PROTECTION OF WORK

   A. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL BURIED UTILITIES INCLUDING WATER MAINS, SEWERS, FORCEMAIN, STORM DRAINS, ELECTRICAL WIRES, CONTROL WIRES, AND TELEPHONE CABLES BEFORE BEGINNING WORK.

   B. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE PROTECTION OF ALL BUILDINGS, STRUCTURES AND UTILITIES (BOTH PUBLIC AND PRIVATE), INCLUDING POWER POLES, SIGNS, UTILITY SERVICES, WATER MAINS, HYDRANTS, SEWERS, FORCE MAINS, STORM DRAINS, BURIED ELECTRICAL OR CONTROL WIRES, AND TELEPHONE CABLES WHETHER OR NOT THEY ARE SHOWN ON THE CONTRACT DRAWINGS.

   C. THE CONTRACTOR SHALL CAREFULLY SUPPORT AND PROTECT ANY UTILITIES, STRUCTURES, PIPE LINES, AND CONDUITS WHICH MAY BE ENCOUNTERED DURING COMPLETION OF THE WORK. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY HIM TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE

3. BURIED UTILITIES

   A. THE CONTRACTOR SHALL NOTIFY "NC ONE-CALL" AT 1-800-632-4949 TWO (2) WEEKS PRIOR TO EXCAVATING IN CONSTRUCTION AREAS IN ORDER TO RELOCATE BURIED UTILITIES. NO EXCAVATION IS AUTHORIZED UNTIL AFTER UTILITY LOCATORS HAVE MARKED ALL EXISTING UTILITIES.

   B. UNDERGROUND UTILITIES LOCATIONS ARE APPROXIMATE ONLY. THOSE SHOWN ON THE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY OWNERS OF ADJACENT UTILITIES WHEN EXECUTION OF THE WORK MAY AFFECT THEM. ALL DAMAGE, INJURY OR LOSS TO ANY PROPERTY, BY THE CONTRACTOR, OR ANY SUB-CONTRACTOR, TO THE FAULT OF NEGLIGENCE OF THE CONTRACTOR, SHALL BE REPLACED OR RESTORED TO AT LEAST ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR THE SAFETY AND PROTECTION OF THE WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL THE WORK IS COMPLETED AND THE ENGINEER HAS ISSUED A NOTICE TO THE OWNER AND THE CONTRACTOR AS DESCRIBED HEREIN THAT WORK IS ACCEPTABLE AND FOR A PERIOD OF TWELVE MONTHS THEREAFTER.

   C. THE CONTRACTOR SHALL EXCAVATE TEST PITS AS REQUIRED TO LOCATE EXISTING UTILITIES. THESE SHALL BE EXCAVATED TO LOCATE BURIED UTILITIES AND TO DETERMINE EXACT LOCATIONS AND/OR MATERIALS OF EXISTING UTILITIES. SOME HAND EXCAVATION MAY BE NECESSARY TO PROTECT UTILITIES. TEST PITS SHALL BE EXCAVATED AT LEAST TWO (2) WEEKS PRIOR TO CONSTRUCTION OF A PARTICULAR ITEM OF WORK SO THAT DESIGN REVISIONS MAY BE MADE IF REQUIRED. ALL TEST PITS REQUIRED OR NECESSARY BY THE CONTRACTOR SHOULD BE INCLUDED IN THE PRICES STATED FOR OTHER BID ITEMS.

   D. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR REPAIR OF ANY SUCH DAMAGE AS QUICKLY AS POSSIBLE AT HIS OWN EXPENSE. THE CONTRACTOR SHALL MAINTAIN A SUPPLY OF REPAIR MATERIALS AND PIPE ON THE JOB SITE AT ALL TIMES IN ORDER TO MINIMIZE THE INCONVENIENCE CAUSED BY SUCH DAMAGE.

   E. EXISTING CULVERTS LOCATED BELOW GRAVEL OR PAVED ENTRANCES AS WELL AS DROP INLETS, OR OTHER STORM DRAIN PIPING THAT IS DAMAGED DURING LINE EXCAVATION, CONSTRUCTION, OR BACKFILL SHALL BE REMOVED AND REPLACED IN KIND IN ACCORDANCE WITH THE SPECIFICATIONS.

   F. ALL PRESSURIZED PIPING INSTALLED AS PART OF THIS WORK SHALL BE RESTRAINED TO PREVENT BLOW-OFF AT ALL TEES, VALVES & FITTINGS. ACCEPTABLE RESTRAINT TECHNIQUES INCLUDE THRUST BLOCKS OR MECHANICALLY RESTRAINED PIPING IN ACCORDANCE WITH THE DETAILS HEREIN AND SPECIFICATIONS.

4. CONSTRUCTION

   A. THE CONTRACTOR SHALL USE ONLY DESIGNATED BENCH MARKS FOR REFERENCE ELEVATIONS.

   B. THE CONTRACTOR SHALL INSTALL A MECHANICAL PLUG IN THE END OF ALL PIPE WORK AT THE COMPLETION OF EACH WORK DAY TO SEAL IT FROM WATER AND SOIL.

   C. EROSION CONTROL SHALL BE PROVIDED BY THE CONTRACTOR, IN ACCORDANCE WITH CONTRACT DOCUMENTS. EROSION CONTROLS SHALL BE IN PLACE PRIOR TO CONSTRUCTION. ALL DISTURBED AREAS ARE TO BE IMMEDIATELY STABILIZED.

   D. THE CONTRACTOR SHALL SUPPORT UTILITY POLES AS NECESSARY. COST OF UTILITY POLE SUPPORT WILL NOT BE PAID SEPARATELY. COST OF THIS WORK SHOULD BE INCLUDED AS PART OF OTHER BID ITEMS.

   E. CONTRACTOR SHALL COMPLY WITH APPROVED N.C.D.O.T. ENCROACHMENT AGREEMENTS WHILE WORKING WITHIN THE N.C.D.O.T. RIGHT-OF-WAY.

   F. UNIFORM TRAFFIC CONTROL SHALL BE PROVIDED BY CONTRACTOR FOR WORK ALONG STATE HIGHWAYS AS REQUIRED BY THE STATE HIGHWAY DEPARTMENT DISTRICT ENGINEER WHERE APPLICABLE. AT ALL OTHER LOCATIONS FLAGGERS ARE REQUIRED AS A MINIMUM.

   G. AT LEAST ONE-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON PUBLIC ROADWAYS UNLESS PREVIOUSLY APPROVED IN WRITING BY NCDOT.

   H. ACCESS TO RESIDENCES AND BUSINESSES SHALL BE MAINTAINED AT ALL TIMES.

   I. CONTRACTOR SHALL MINIMIZE PLACEMENT OF EXCAVATED MATERIAL ON PAVED ROAD SURFACE DURING CONSTRUCTION. CONTRACTOR TO COVER ASPHALT WITH SAND PRIOR TO PLACEMENT OF EXCAVATED MATERIAL ON PAVEMENT. ALL PUBLIC STREETS SHALL BE CLEANED DAILY.

   J. ALL DISTURBED DITCH LINES SHALL BE RESHAPED, RESEEDED, MULCHED AND TACK COAT APPLIED.

   K. UPON COMPLETION OF CONSTRUCTION, THE NEW PIPING SYSTEMS SHALL BE TESTED, INSPECTED AND APPROVED IN ACCORDANCE WITH THE SPECIFICATIONS PRIOR TO BEING PLACED IN SERVICE. NO POTABLE WATER, WASTEWATER OR RECLAIMED WATER SHALL BE ALLOWED TO FLOW THROUGH THE NEW SYSTEMS UNTIL APPROVED BY THE OWNER, ENGINEER, AND THE CONDITIONS IN THE CONSTRUCTION PERMIT ARE COMPLETE.

   L. ANY BENDS, FITTINGS, OR SPECIAL DEVICES ON FORCE MAIN, WATER LINES, OR GRAVITY SEWER PIPING WHICH ARE NOT SHOWN ON THE DRAWINGS, BUT WHICH ARE REQUIRED TO MAKE A FULLY OPERATIONAL SYSTEM, SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF OTHER BID ITEMS. ANY APPURTENANCES (INCLUDING RESTRAINING RODS, ETC.) NOT SPECIFICALLY INDICATED ON THE BID FORM SHALL BE INCLUDED IN THE UNIT COST FOR PIPELINE.

   M. REFER TO SPECIFICATIONS FOR COATINGS. ALL UNDERGROUND FITTINGS AND APPURTENANCES SHALL BE MECHANICAL JOINT OR RESTRAINED JOINT PER SPECIFICATIONS.

   N. ALL BURIED DUCTILE IRON FITTINGS SHALL BE PRESSURE CLASS 350, CEMENT-LINED, MECHANICAL JOINT OR RESTRAINED JOINT FITTINGS OR CLASS 350 D.I., FLANGED FITTINGS FOR ABOVE GROUND INSTALLATIONS UNLESS NOTED OTHERWISE.

   O. RETAINER GLANDS SHALL BE INSTALLED ON ALL DUCTILE IRON FITTINGS WHERE INDICATED ON PLANS.

   P. ALL VALVES AND REDUCERS SHALL BE SUPPORTED AND RESTRAINED VIA THREADED ROD TO ADJACENT FITTINGS, OR PROVIDE THRUST COLLAR FOR RODDING.

   Q. ALL EXPOSED PIPING SHALL BE HEAT TRACED AND INSULATED.

   R. EXISTING EQUIPMENT, PIPING, PADS, ETC. SHOWN ARE PER OWNER SUPPLIED SURVEY OR EXISTING TREATMENT PLANT DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO ORDERING, FABRICATION OR INSTALLATION OF ANY EQUIPMENT OR PIPING SYSTEMS. ADJUSTMENTS MAY NEED TO BE MADE IN THE FIELD AFTER LOCATING EXISTING SUB-GRADE PIPING. GENERAL ROUTINGS SHOULD CLOSELY RESEMBLE LAYOUT SHOWN. ANY MAJOR DESCRIPENCIES DISCOVERED BY CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.

5. SITEWORK

   A. ALL EXCESS MATERIAL SHALL BE DISPOSED OF OFF SITE UNLESS APPROVED BY THE OWNER. A COPY OF A WRITTEN AGREEMENT BETWEEN THE CONTRACTOR AND THE SITE OWNER SHALL BE SUBMITTED TO THE ENGINEER BEFORE ANY MATERIAL IS REMOVED FROM THE SITE.

   B. THE CONTRACTOR IS RESPONSIBLE FOR RECORDING PRECONSTRUCTION CONDITIONS BY USE OF PHOTOGRAPHS, VIDEO TAPES, AND OTHER METHODS. THE COST OF THIS PRECONSTRUCTION DOCUMENTATION SHALL NOT BE PAID SEPARATELY BUT SHOULD BE INCLUDED AS PART OF OTHER BID ITEMS.

   C. IN AREAS WHERE NEW STRUCTURES ARE TO BE CONSTRUCTED, EXISTING SUBGRADE SOILS MUST BE EXAMINED BY THE ENGINEER TO DETERMINE THE NEED FOR ADDITIONAL EXCAVATION OR COMPACTION PRIOR TO CONSTRUCTION.

   D. COMPACTION TESTING IS REQUIRED IN ALL LOCATIONS WHERE BURIED PIPING IS BEING INSTALLED. THE COST OF SUCH TESTS WILL BE CONSIDERED INCIDENTAL TO THE WORK AND NO SEPARATE PAYMENT FOR THIS WORK WILL BE ALLOWED.

6. RECORD DOCUMENTS

   A. ALL BURIED UTILITIES ENCOUNTERED SHALL BE DOCUMENTED WITH DEPTH AND THREE (3) TIES AND SHOWN BY THE CONTRACTOR ON RECORD DRAWINGS.

   B. ALL NEW VALVES AND FITTINGS SHALL BE DOCUMENTED WITH THREE (3) TIES AND SHOWN BY THE CONTRACTOR ON RECORD DRAWINGS. THESE TIES SHALL IMMEDIATELY BE PROVIDED TO THE ENGINEER.

   C. NEW PROCESS PIPING, UTILITY LINES AND VALVES SHALL BE ACCURATELY PLOTTED ON THE RECORD DRAWINGS WITH TIES TO STRUCTURES AND BUILDINGS.

   D. CONTRACTOR MONTHLY INVOICES WILL NOT BE APPROVED FOR PAYMENT UNTIL HE PROVIDES EVIDENCE THAT AS-BUILT DATA HAS BEEN UPDATED TO REFLECT ALL WORK TO DATE.

   E. CONTRACTOR SHALL SUBMIT FINAL RECORD DRAWINGS PRIOR TO THE OWNER'S ISSUANCE OF THE SUBSTANTIAL COMPLETION CERTIFICATE.

   F. ANY FIELD CHANGES SHALL BE APPROVED IN ADVANCE BY THE ENGINEER AND SHALL BE ACCURATELY REFLECTED ON THE CONTRACTOR'S RECORD DRAWINGS.

7. SEQUENCE OF OPERATION

   A. THE CONTRACTOR SHALL SEQUENCE OPERATIONS SUCH THAT THE EXISTING TREATMENT SYSTEM EQUIPMENT CONTINUES OPERATIONS THROUGHOUT CONSTRUCTION UNTIL A TIME WHERE THE NEW TREATMENT SYSTEM EQUIPMENT SYSTEM IS IN PLACE, TESTED, AND PREPARED TO BE BROUGHT ON-LINE. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER WHEN THIS POINT HAS BEEN REACHED, AT WHICH TIME THE OWNER WILL PLAN FOR A SHUT-DOWN PERIOD OF THE EXISTING WASTE WATER TREATMENT PLANT TO ALLOW THE CONTRACTOR TO MAKE FINAL CONNECTIONS OF THE NEW TREATMENT SYSTEM EQUIPMENT. CONTRACTOR SHOULD PLAN ON A SHUT DOWN PERIOD OF NO MORE THAN 6 HOURS AT ANY TIME.

   B. CONTRACTOR MUST READ AND UNDERSTAND HIS OBLIGATIONS AS DEFINED IN SECTION "SPECIAL CONDITIONS" OF THE SPECIFICATIONS.

   C. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION ACTIVITIES WITH THE ENGINEER AND OWNER IN ORDER TO FACILITATE A SMOOTH CONSTRUCTION PROCESS.

8. WORK AROUND OVERHEAD HIGH VOLTAGE LINES

   A. THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING PROVISIONS AND REQUIREMENTS WHEN WORKING AROUND OVERHEAD OR HIGH VOLTAGE LINES:

      1) CONTACT THE ELECTRIC UTILITY 48 HOURS PRIOR TO COMMENCING WORK IF THE CONTRACTOR'S TOOLS OR MATERIALS WILL INTRUDE TO WITHIN SIX (6) FEET OF AN OVERHEAD POWER LINE.

      2) CONTACT THE UTILITY 48 HOURS PRIOR TO COMMENCING WORK IF EQUIPMENT SUCH AS CRANES OR DERRICKS WILL BE OPERATED WITHIN TEN (10) FEET OF AN OVERHEAD POWER LINE.

      3) POST AND MAINTAIN WARNING SIGNS WITHIN AND ON THE OUTSIDE OF EQUIPMENT OPERATING NEAR AN OVERHEAD HIGH VOLTAGE LINE.

      4) THE RESPONSIBLE PARTY FOR COORDINATING AND ADVISING THE POWER COMPANY SHALL BE THE CONTRACTOR.

      5) THE CONTRACTOR'S COST FOR UNDERTAKING THE ABOVE LISTED MEASURES AS WELL AS ANY ADDITIONAL MEASURES REQUIRED BY THE POWER COMPANY AND ASSOCIATED COSTS INVOICED BY THE POWER COMPANY SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

9. MOBILIZATION AND STAGING

   A. CONTRACTOR STAGING AREA AND VEHICULAR ACCESS TO THE WORK SITE SHALL BE COORDINATED WITH THE ENGINEER AND OWNER PRIOR TO MOBILIZATION.

   B. ACCESS TO THE SITE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

10. GRADING

    A. INITIATE EROSION CONTROL SEQUENCE BEFORE BEGINNING CLEARING AND GRADING OPERATIONS.

    B. CLEAR AREAS TO BE GRADED OF ALL VEGETATION. PROTECT VEGETATION BEYOND GRADING LIMITS.

    C. STRIP TOPSOIL TO FULL DEPTH IN AREAS TO BE GRADED.

    D. PLACE FILL IN MAXIMUM 12" LIFTS AND COMPACT ALL FILL AREAS TO 95% OF MAXIMUM DENSITY, OR AS DIRECTED DIFFERENTLY PER GEOTECHNICAL RECOMMENDATIONS.

    E. ALL AREAS ARE TO BE GRADED SO THAT NO AREAS OF STANDING WATER OCCUR.

    F. CONTRACTOR SHALL FIELD VERIFY EXISTING TOPOGRAPHY IN RELATION TO THE PROPOSED GRADES TO ENSURE DRAINAGE IN THE DIRECTIONS INDICATED ON THE PLAN.

11. EROSION CONTROL

    A. TOTAL DISTURBED AREA = 1.1 ACRES

    B. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT IT WILL NOT ERODE.

    C. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED EVERY 7 DAYS OR AFTER EACH RAIN EVENT THAT EXCEEDS 1/2 INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.

    D. CONSTRUCTION OPERATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.

    E. ANY GRADING BEYOND THE DENUDED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE NCDENR EROSION CONTROL ORDINANCE AND IS SUBJECT TO A FINE.

    F. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER WORK HAS CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.

GENERAL EROSION CONTROL NOTES:

1. SITE CONSTRUCTION SEQUENCE

   A. OBTAIN EROSION CONTROL PLAN APPROVAL FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (NCDENR).

   B. CONTRACTOR SHALL NOTIFY THE EROSION CONTROL INSPECTOR OF NCDENR AND CABARRUS COUNTY INSPECTIONS DEPARTMENT OF THE TIME AND PLACE OF THE PRE-CONSTRUCTION MEETING TO ALLOW DISCUSSION OF EROSION CONTROL MEASURES.

   C. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE N.C. EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL.

   D. REMOVE PORTIONS OF THE EXISTING CHAINLINK FENCE TO INSTALL SILT FENCE AS SHOWN ON PLANS.

   E. INSTALL INLET AND OUTLET PROTECTION AS SHOWN ON PLANS.

   F. BEGIN CLEARING, ROUGH GRADING, AND CONSTRUCTION AS NOTED ON CIVIL/MECHANICAL PLANS ONCE ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

   G. IF IT IS DETERMINED DURING CONSTRUCTION THAT SIGNIFICANT SEDIMENT IS LEAVING THE SITE DESPITE PROPER IMPLEMENTATION AND MAINTENANCE, THE CONTRACTOR IS OBLIGATED TO TAKE ADDITIONAL CORRECTIVE ACTION. CONTACT OWNERS REPRESENTATIVE AND ENGINEER WITH ANY ADDITIONAL MEASURES NEEDED.

   H. COMPLETE FINAL GRADING OF ALL SLOPES, LANDSCAPE AREAS, SWALES AND PERMANENTLY VEGETATE.

   I. REMOVE ALL EROSION CONTROL MEASURES.

2. EROSION CONTROL MAINTENANCE

   A. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES 6" DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED OR REPLACED AS NECESSARY TO MAINTAIN A BARRIER. ALL AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWING"

REV.NO.	DESCRIPTIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 26045 ENGINEER JAMES T. MOTT

11-19-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

GENERAL CONSTRUCTION NOTES

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER: G0003
DRAWING NUMBER: G3

STATUS: RECORD DRAWING
REVISION 1

S:\2000\0013\Civil\Sheets\Plan Sheets\G0003.dgn
S:\2000\0013\Civil\Sheets\Plan Sheets\G0003.dwg

VALVES

- BALL VALVE
- BUTTERFLY VALVE
- TELESCOPING VALVE
- MOTORIZED VALVE
- GATE VALVE
- PLUG VALVE
- SPRING LOADED ANGLE SAFETY VALVE

PUMPS

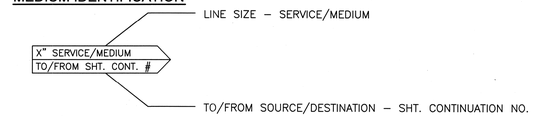
- SUBMERSIBLE PUMP
- CENTRIFUGAL PUMP

MISC. SYMBOLS

- REDUCER
- FLANGED CONNECTION
- PROCESS FLOW ARROW
- AIR DIFFUSER
- FLOW METER
- TIE–IN = NEW TO EXIST.
- FILTER
- SILENCER
- BLOWER
- MOTOR
- EXPANSION BELLOWS

IDENTIFICATION

MEDIUM IDENTIFICATION



LINES

- NEW PIPING
- EXIST. PIPING
- NEW EQUIPMENT
- EXIST. EQUIPMENT
- FUTURE EQUIPMENT

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1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

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PROCESS SCHEMATIC SYMBOLOGY

DATE:	APRIL 2008
MCE PROJ. #	02000–0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0004
DRAWING NUMBER G4

STATUS: RECORD DRAWING
REVISION 1

8" INFLUENT FROM PUMP STATION
8"
NC
(8" EQ BASIN/BAR SCREEN BY-PASS)
8"
8"
AUTOMATIC BAR SCREEN
MANUAL BAR SCREEN (BACKUP)
8"
12"
12"
6"
N.O.
4"
4" DRAIN FROM DUMPSTER HOUSE KEEPING PAD
EXTERNAL EQUALIZATION BASIN
4"
4"
EXT. EQ BASIN PUMPS
8"
4"
DRAIN
FM
6"
8"
INFLUENT SAMPLER
INFLUENT SPLITTER BOX @ SURGE BASIN #1
3"
DRAIN
8"
SURGE BASIN #1
SURGE BASIN #2
SURGE PUMPS
3"
3"
6" EMERGENCY O'FLOW
6"
6"
FLOW REGULATOR SPLITTER BOX
6"
3"
3"
6" EMERGENCY O'FLOW
6"
6"
FLOW REGULATOR SPLITTER BOX
3"
DRAIN
AERATION BASIN #4
AERATION BASIN #3
AERATION BASIN #2
AERATION BASIN #1
3"
DRAIN
3"
DRAIN
3"
DRAIN
3"
DRAIN
6" EFFLUENT TO CLARIFIER #4
3" RAS FROM CLARIFIER #4
3" RAS FROM CLARIFIER #3
6" EFFLUENT TO CLARIFIER #3
4" SUPERNATE FROM AEROBIC DIGESTER #2
4" SUPERNATE FROM SLUDGE HOLDING TANK #2
6" AIR FROM BLOWERS #4/#5
6" AIR FROM BLOWERS #1/#2/#3
4" SUPERNATE FROM AEROBIC DIGESTER #1
4" SUPERNATE FROM SLUDGE HOLDING TANK #1
6" EFFLUENT TO CLARIFIER #2
3" RAS FROM CLARIFIER #2
3" RAS FROM CLARIFIER #1
6" EFFLUENT TO CLARIFIER #1
3" SLUDGE FROM SLUDGE HOLDING TANK #2
3" SLUDGE FROM SLUDGE HOLDING TANK #1
8" GRAVITY SEWER FROM MANHOLE #10
3" SLUDGE TO TRUCK LOADING
3" SLUDGE TO TRUCK LOADING
3"
3"
8" GRAVITY DRAIN TO PUMP STATION
MANHOLE #4
MANHOLE #3
MANHOLE #11
EXTERNAL EQUALIZATION BASIN BLOWER #1
ATMOSPHERE
3"
4"
6"
6"
6"
BLOWER #2 (SPARE) BACK-UP
ATMOSPHERE
3"

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1	RECORD DRAWING	09/2010
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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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"RECORD DRAWING"

NORTH CAROLINA PROFESSIONAL SEAL 28845 ENGINEER JAMES T. LYNK

11-19-2010

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PROCESS SCHEMATIC

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0005
DRAWING NUMBER G5

STATUS: RECORD DRAWING
REVISION 1

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

6" EFFLUENT FROM AERATION BASIN #4
3" RAS TO AERATION BASIN #4
3" RAS TO AERATION BASIN #3
6" EFFLUENT FROM AERATION BASIN #3
4" SUPERNATE TO SURGE BASIN #2
4" SUPERNATE TO SURGE BASIN #2
6" AIR TO SURGE #2 AND AERATION BASINS #3/#4
6" AIR TO SURGE #1 & AERATION BASINS #1/#2
4" SUPERNATE TO SURGE BASIN #1
4" SUPERNATE TO SURGE BASIN #1
6" EFFLUENT FROM AERATION BASIN #2
3" RAS TO AERATION BASIN #2
3" RAS TO AERATION BASIN #1
6" EFFLUENT FROM AERATION BASIN #1
3" SLUDGE TO TRUCK LOADING STATION
3" SLUDGE TO TRUCK LOADING STATION
8" GRAVITY SEWER TO MANHOLE #11

SLUDGE HOLDING TANK #2
SLUDGE HOLDING TANK #1
AEROBIC DIGESTER #2
AEROBIC DIGESTER #1
SLUDGE TRANSFER AIRLIFT
3" WAS
RAS/WAS PUMP #4
RAS/WAS PUMP #3
RAS/WAS PUMP #2
RAS/WAS PUMP #1
FM
2" NPT

CLARIFIER #4
CLARIFIER #3
CLARIFIER #2
CLARIFIER #1
WEIR
STILLING WELL
SCUM CUP
SUMP
SCUM

6" EFFLUENT TO DISK FILTERS #1/#2
6" AIR FROM BLOWERS #4/#5
6" AIR FROM BLOWERS #1/#2/#3
6" EFFLUENT TO DISK FILTER #1/#2
OLD FILTER INFLUENT LINE
8" GRAVITY SEWER FROM MANHOLE #10

NOTE: DRAIN TIE-IN LOCATIONS TO GRAVITY SEWER MAY NOT SHOW IN CORRECT SEQUENCE TO ACTUALL PIPE TIE-IN LOCATION.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/28/08

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"RECORD DRAWINGS"

SEAL
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11-19-2010

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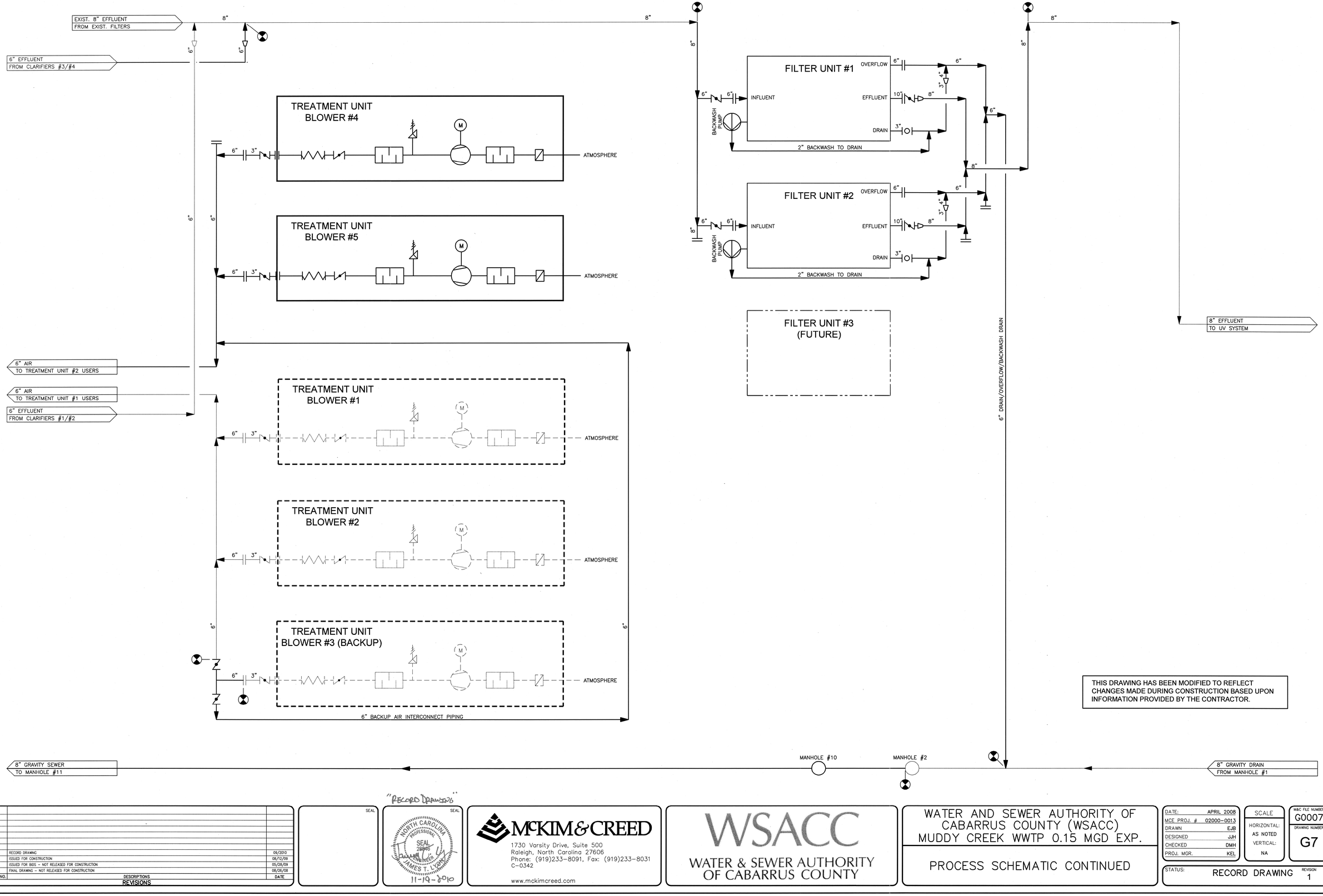
PROCESS SCHEMATIC CONTINUED

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0006
DRAWING NUMBER G6

STATUS: RECORD DRAWING
REVISION 1



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A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

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11-19-2010

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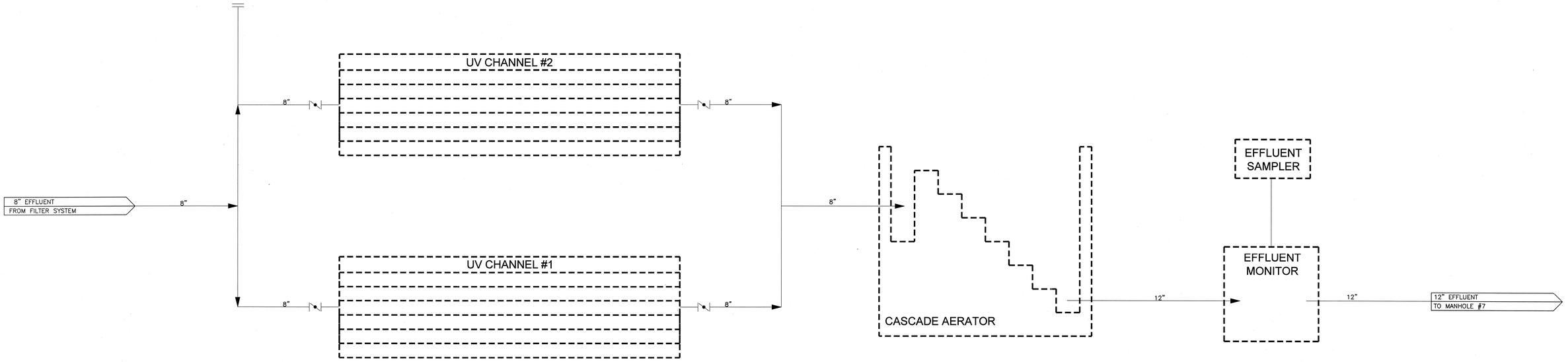
PROCESS SCHEMATIC CONTINUED

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0007
DRAWING NUMBER G7

STATUS: RECORD DRAWING
REVISION 1



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A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 28048 ENGINEER JAMES T. LYON

11-19-2010

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MUDDY CREEK WWTP 0.15 MGD EXP.

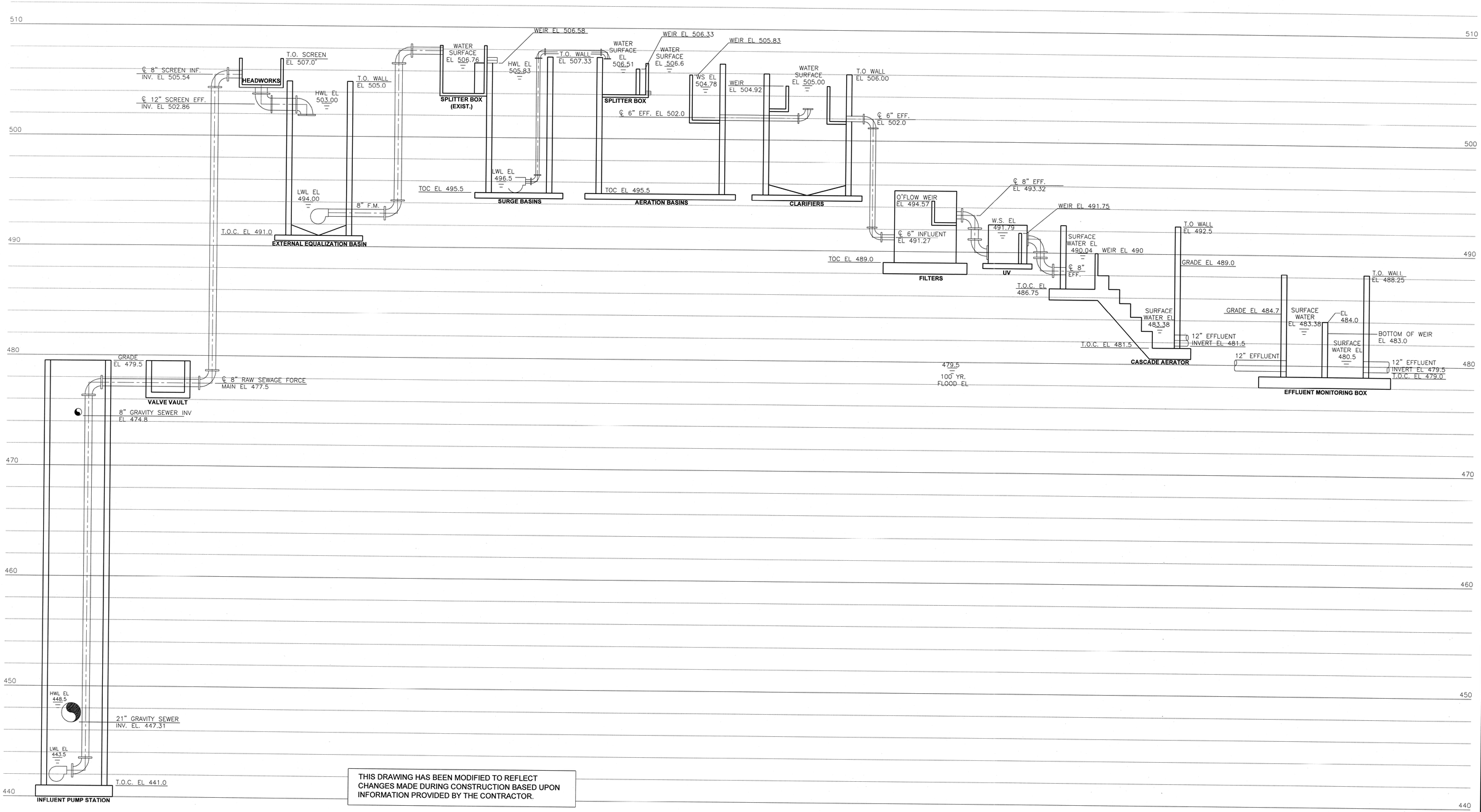
PROCESS SCHEMATIC CONTINUED

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0008
DRAWING NUMBER G8

STATUS: RECORD DRAWING
REVISION 1



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B	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 28845 ENGINEER JAMES T. LIONETTI
11-19-2010

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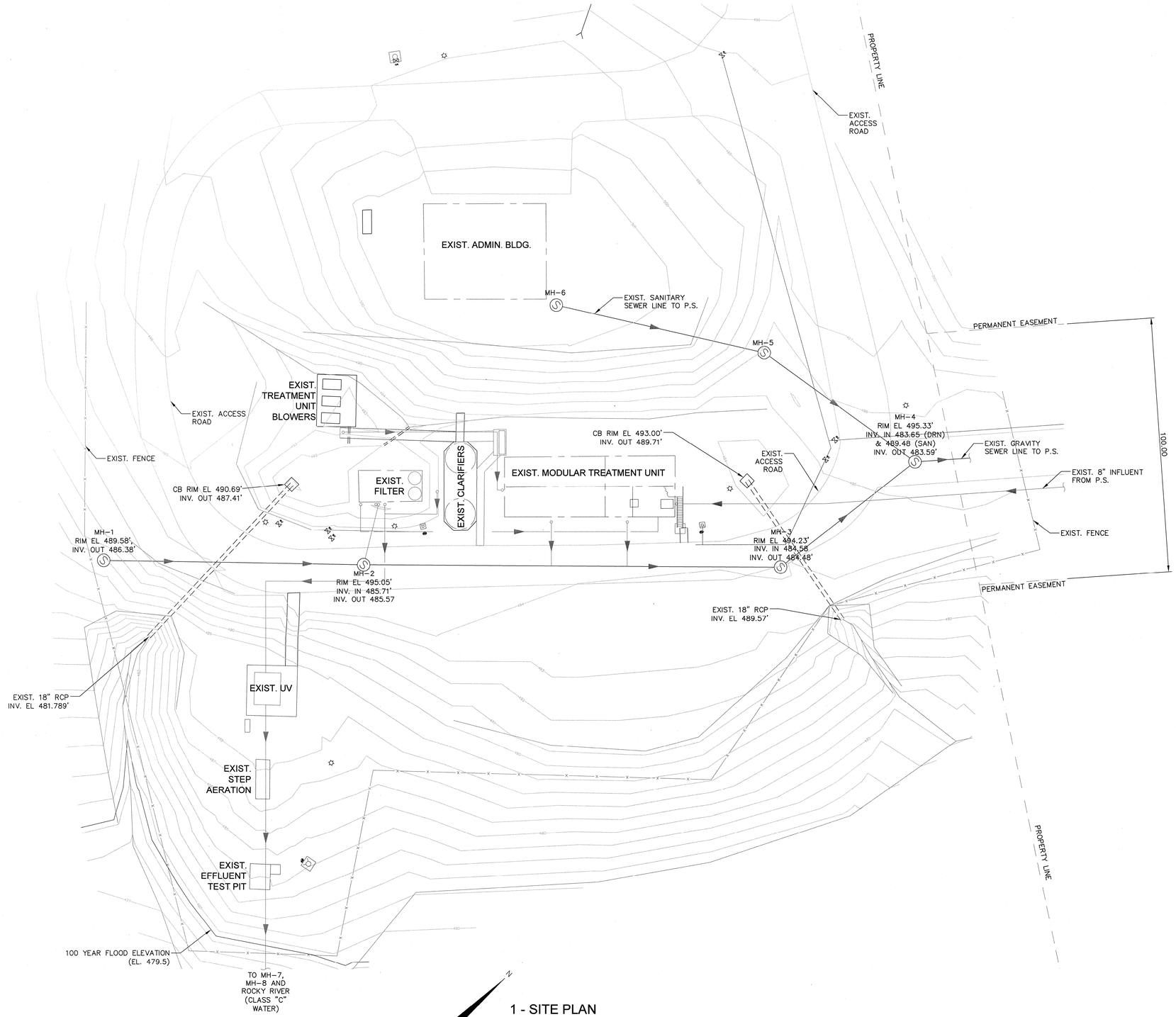
HYDRAULIC PROFILE

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER G0009
DRAWING NUMBER G9

STATUS: RECORD DRAWING REVISION 1



1 - SITE PLAN

1" = 20'

NOTES:

1. EXISTING SITE PLAN IS BASED ON SURVEY DATA AS PROVIDED BY THE OWNER. CONTRACTOR TO VERIFY CRITICAL LOCATIONS PRIOR TO LAYOUT OF NEW FACILITIES.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWINGS"

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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 28848 ENGINEER JAMES T. LYON
11-19-2010

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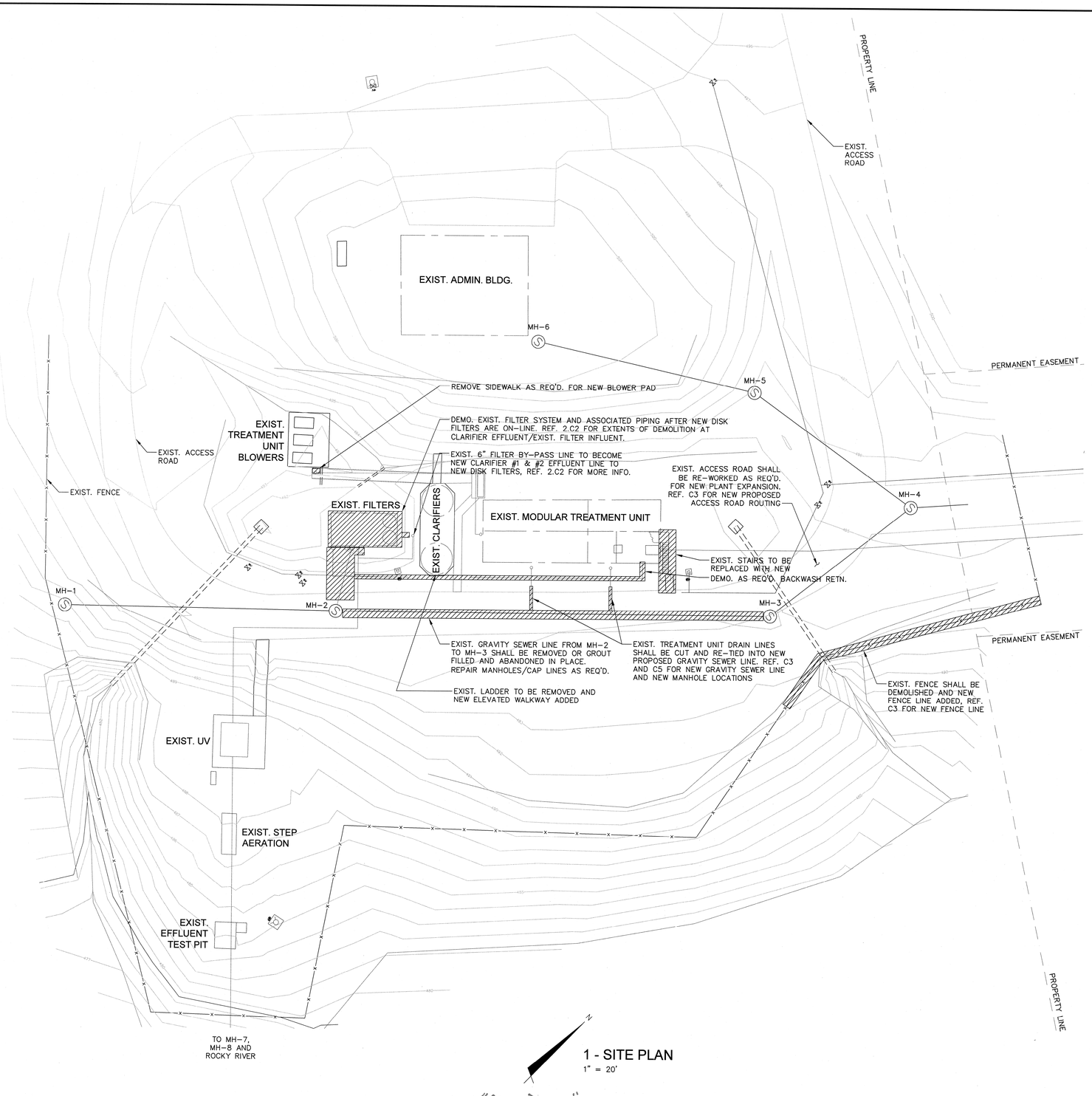
EXISTING SITE PLAN

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

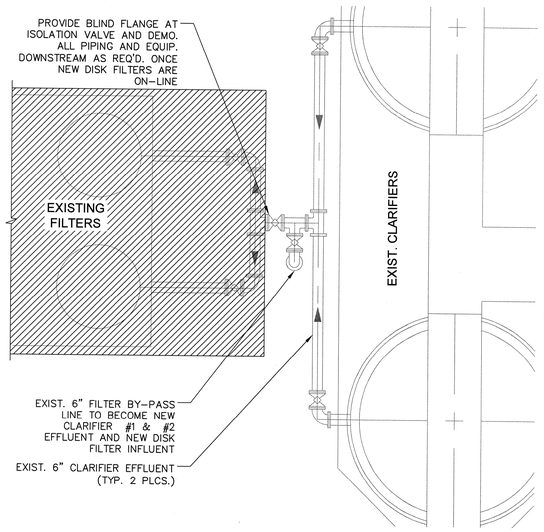
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER CS101
DRAWING NUMBER C1

STATUS: RECORD DRAWING
REVISION 1



1 - SITE PLAN
1" = 20'



2 - PARTIAL PLAN - EXIST. CLARIFIERS / EXIST. FILTERS
1/4" = 1'-0"

LEGEND:

= DEMO. OR ABANDONED IN PLACE

NOTES:

1. ALL SUB-GRADE PIPING LOCATIONS ARE ASSUMED BASED ON PREVIOUS DRAWINGS. GENERAL CONTRACTOR (GC) SHALL CONFIRM ALL APPLICABLE PIPING LOCATIONS PRIOR TO DEMOLITION.

2. GC SHALL NOTE; ALL EXIST. PIPING MAY NOT BE SHOWN ON THESE PLANS. IT IS THE GC's RESPONSIBILITY TO MAKE ANY NECESSARY PROVISIONS FOR PIPING THAT MAY NOT BE INCLUDED ON THE PLANS.

3. THE EXIST. TREATMENT SYSTEM MUST BE LEFT IN SERVICE UNTIL THE NEW TREATMENT SYSTEM IS ON-LINE. DEMOLITION OF CERTAIN COMPONENTS MAY NEED TO BE DELAYED UNTIL THE NEW SYSTEM IN ON-LINE.

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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

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"RECORD DRAWING"

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NORTH CAROLINA PROFESSIONAL SEAL 28946 ENGINEER JAMES T. LYON
11-19-2010

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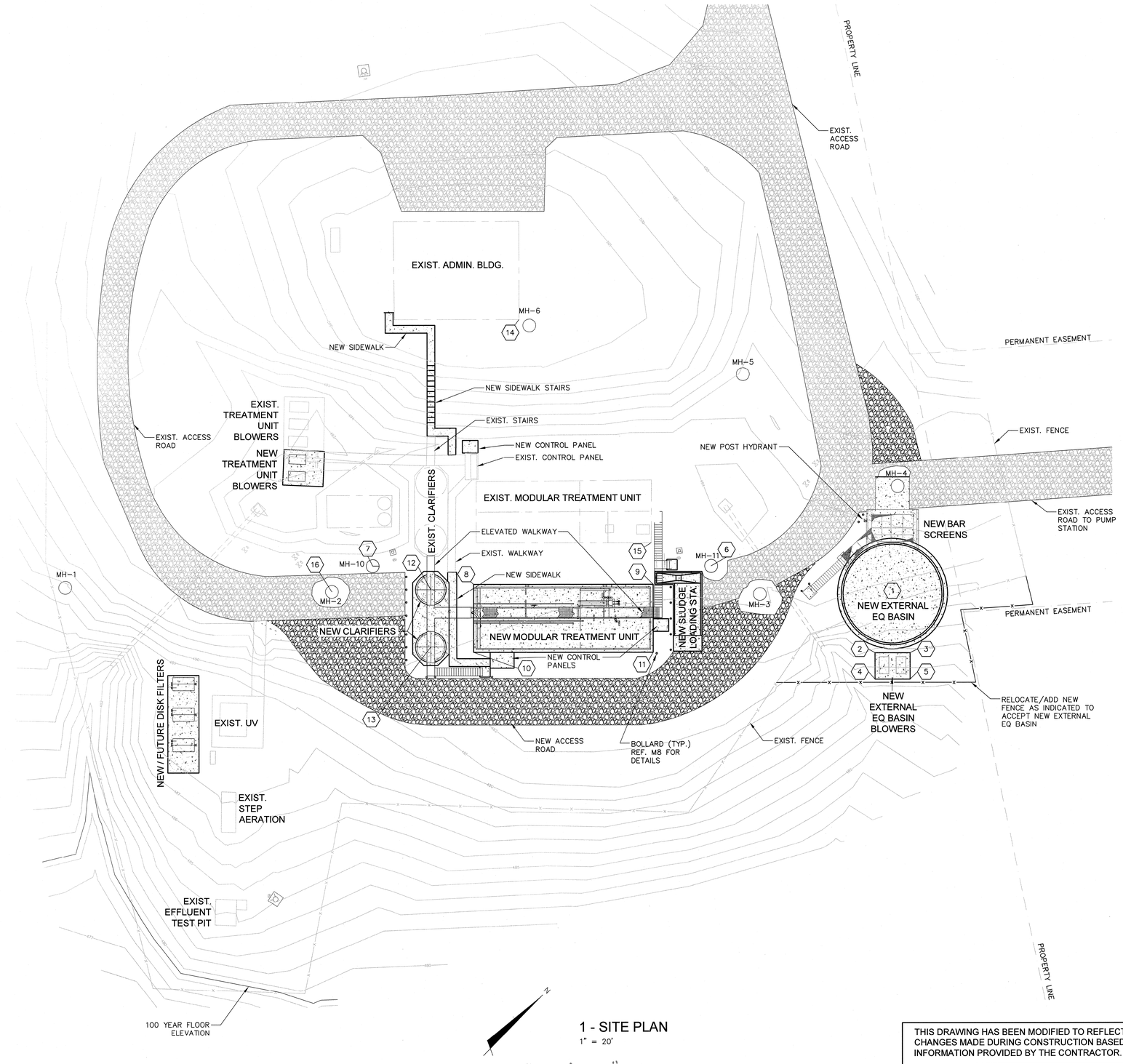
DEMOLITION PLAN

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER CS102
DRAWING NUMBER C2

STATUS: RECORD DRAWING
REVISION 1



1 - SITE PLAN
1" = 20'

NOTES:

1. PLANT LAYOUT IS BASED ON A SURVEY PROVIDED BY WSACC. IT IS THE INTENT OF THE ENGINEER TO MIRROR AS CLOSELY AS POSSIBLE THE EXISTING PLANT WITH THE NEW PLANT. CC SHALL MAKE NECESSARY ADJUSTMENTS WHERE REQUIRED TO ACHIEVE ALIGNMENT WITH EXIST. EQUIPMENT, WALKWAYS, ELEVATED WALKWAYS, PIPING SYSTEMS ETC.

2. REF. C5 FOR SITE PIPING AND THE MECHANICAL SHEETS FOR DETAILED EQUIPMENT ARRANGEMENTS AND PIPING DRAWINGS.

3. WORK ALL DISCIPLINES TOGETHER FOR DESIGN.

LEGEND:

= EXIST. GRAVEL ROAD

= NEW GRAVEL ROAD

= CONC. PADS/SLABS

STAKING LEGEND

STRUCTURE	POINT /LOCATION	NORTHING	EASTING
EXTERNAL EQUALIZATION BASIN	1 CENTER BASIN	534423.5249	1554297.7618
EQ BLOWER PAD	2 CORNER/ CONC. PAD	534402.3939	1554309.1153
EQ BLOWER PAD	3 CORNER/ CONC. PAD	534411.8331	1554318.7668
EQ BLOWER PAD	4 CORNER/ CONC. PAD	534395.2446	1554316.1073
EQ BLOWER PAD	5 CORNER/ CONC. PAD	534404.6838	1554325.7588
MANHOLE #11	6 CENTER	534382.1838	1554240.7562
MANHOLE #10	7 CENTER	534291.1652	1554147.6902
TREATMENT MODULE	8 CORNER/ CONC. PAD	534313.3434	1554180.3790
TREATMENT MODULE	9 CORNER/ CONC. PAD	534361.5878	1554229.7086
TREATMENT MODULE	10 CORNER/ CONC. PAD	534294.7555	1554198.5581
TREATMENT MODULE	11 CORNER/ CONC. PAD	534342.9999	1554247.8876
CLARIFER #3	12 CENTER	534300.3770	1554169.9810
CLARIFIER #4	13 CENTER	534284.6487	1554185.3634
BENCHMARK #1	14 CORNER ADMIN. BUILDING	534398.2174	1554121.8506
BENCHMARK #2	15 CORNER EXIST. TREATMENT UNIT	534372.4955	1554217.9781
BENCHMARK #3	16 CENTER MANHOLE #2	534273.1560	1554143.3620

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	05/28/08

SEAL

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"RECORD DRAWINGS"

NORTH CAROLINA PROFESSIONAL SEAL 28946 ENGINEER JAMES T. LYON
11-19-2010

McKIM&CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

PROPOSED SITE PLAN AND STAKING PLAN

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER CS103
DRAWING NUMBER C3

STATUS: RECORD DRAWING
REVISION 1

EXIST. TREATMENT UNIT BLOWERS

NEW TREATMENT UNIT BLOWERS

EXIST. FILTERS

EXIST. CLARIFIERS

EXIST. MODULAR TREATMENT UNIT

LIMITS OF DISTURBANCE

PROPERTY LINE

INLET PROTECTION (REF. M7) TYP.

MH-4

BAR SCREENS ABOVE

NEW EXTERNAL EQ BASIN

NEW EXTERNAL EQ BASIN BLOWERS

MH-10

MH-2

MH-11

MH-3

NEW CLARIFIERS

NEW MODULAR TREATMENT UNIT

SLUDGE LOADING STATION

NEW / FUTURE DISK FILTERS

EXIST. UV

OUTLET PROTECTION (REF. M7) TYP.

SILT SOCK (REF. M7) TYP.

SILT FENCE (REF. M7) TYP.

LIMITS OF DISTURBANCE

489 490 491 492 493 494 487 488

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWINGS"

1 - SITE PLAN
1" = 10'

NOTES:

1. REFERENCE G3 FOR ALL GRADING, EROSION CONTROL, AND MAINTENANCE NOTES.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	06/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 28846 ENGINEER JAMES T. LYON

11-19-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

PROPOSED GRADING PLAN

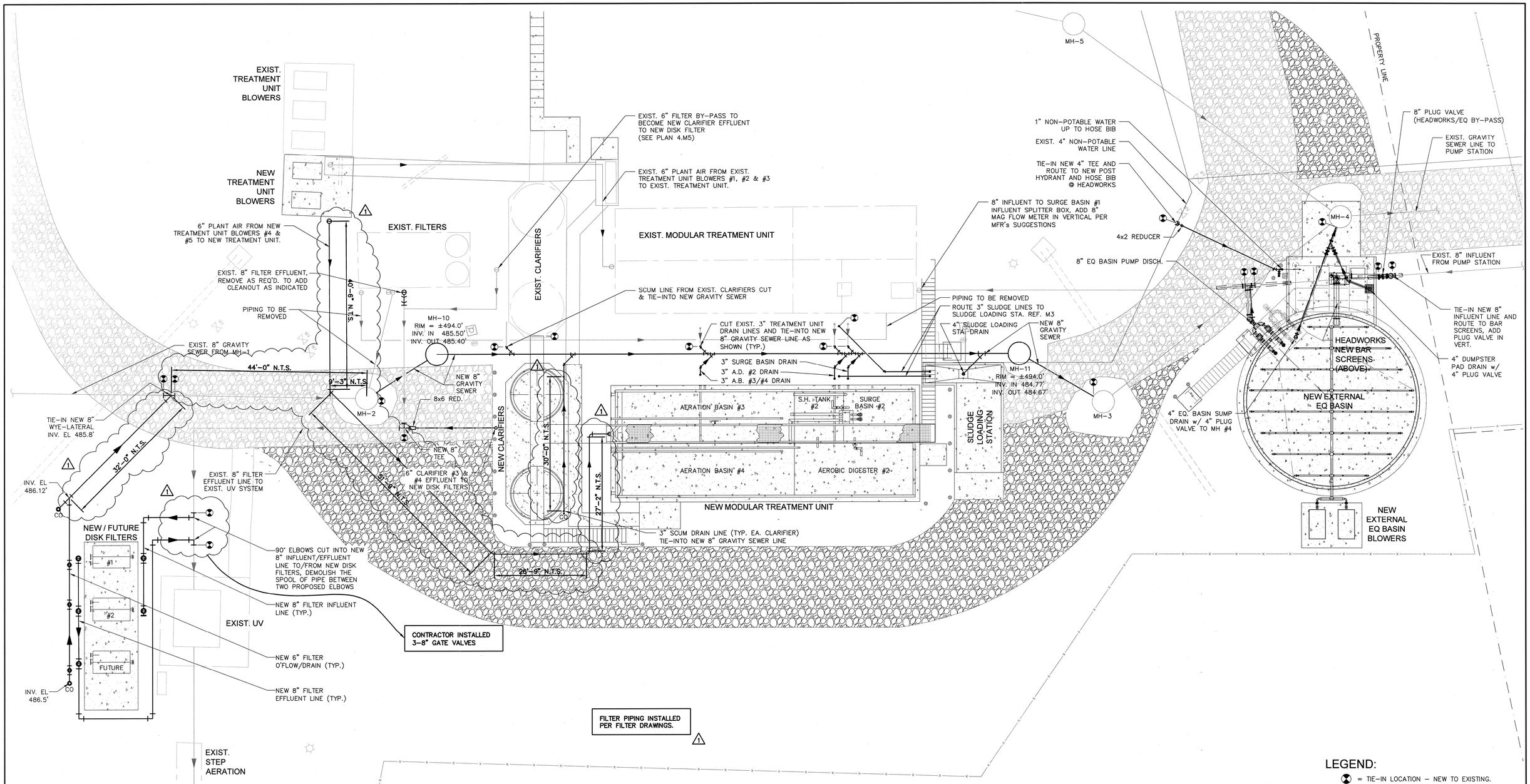
DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER CS104
DRAWING NUMBER C4

STATUS: RECORD DRAWING
REVISION 1

Plotted: 11/19/2010 - 10:30:00am By: Emily Bell
S:\2000\0013\00-Drawings\G4\Proposed\MCWSACC Grading.dwg



1 - SITE PLAN
1" = 10'

LEGEND:

= TIE-IN LOCATION – NEW TO EXISTING.

NOTES:

1. THIS DRAWING SHOWS BELOW GRADE PIPING AND SHALL BE USED IN CONJUNCTION WITH MECHANICAL SHEETS M1–M6 FOR ABOVE-GRADE PIPING/EQUIPMENT LAYOUTS.
2. ALL SUB-GRADE PIPING LOCATIONS ARE ASSUMED, BASED ON PREVIOUS DRAWINGS. GC SHALL CONFIRM ALL APPLICABLE PIPING SIZES, LOCATIONS AND TIE-IN LOCATIONS, PRIOR TO FABRICATING ANY PIPING.
3. GENERAL CONTRACTOR SHALL NOTE: ALL EXIST. PIPING MAY NOT BE SHOWN ON THESE PLANS. IT IS THE GC's RESPONSIBILITY TO MAKE ANY NECESSARY PROVISIONS FOR PIPING THAT MAY NOT BE INCLUDED ON THE PLANS.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

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"RECORD DRAWING"

NORTH CAROLINA PROFESSIONAL SEAL 28848 ENGINEER JAMES T. LYON

11-19-2010

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MUDDY CREEK WWTP 0.15 MGD EXP.

SITE YARD PIPING PLAN

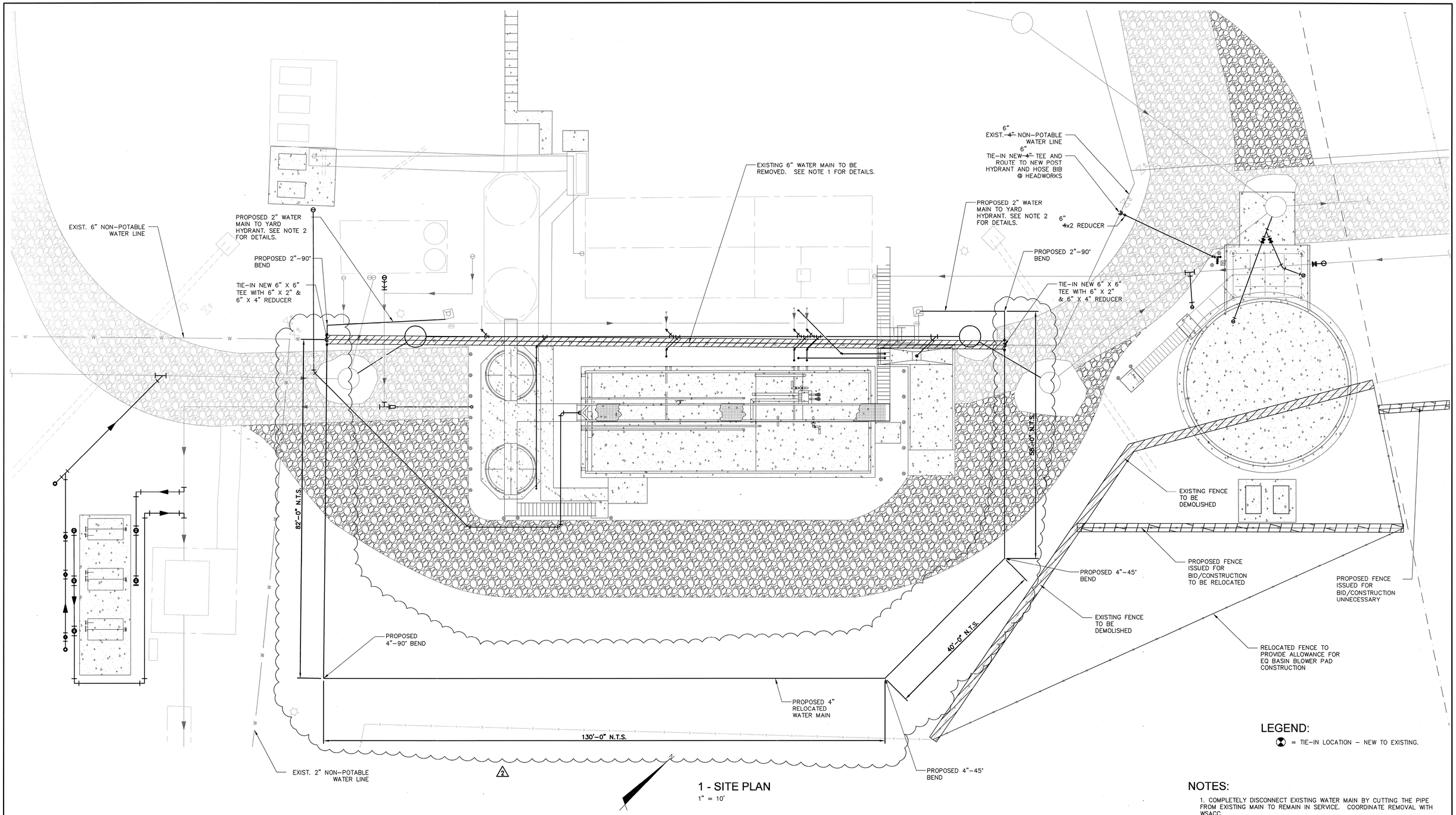
DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER CS105
DRAWING NUMBER C5

STATUS: RECORD DRAWING
REVISION 1

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Plotted: 11/19/2010 9:05:00 AM By: jjohnson
M:\Projects\02000\02000-0013\Drawings\Civil\Sheets\CS105.dwg



1 - SITE PLAN
1" = 10'

LEGEND:

= TIE-IN LOCATION - NEW TO EXISTING.

NOTES:

1. COMPLETELY DISCONNECT EXISTING WATER MAIN BY CUTTING THE PIPE FROM EXISTING MAIN TO REMAIN IN SERVICE. COORDINATE REMOVAL WITH WSACC.

2. COMPLETELY DISCONNECT EXISTING WATER MAIN SERVICES TO THE EXISTING YARD HYDRANTS. CONNECT PROPOSED 2" WATER MAINS TO THE EXISTING YARD HYDRANTS.

~~3. CLOUDED TEXT DENOTES REVISIONS.~~

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWING"

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
2	RECORD DRAWING	09/2010
1	REVISED FOR WATER MAIN AND FENCE RELOCATION	10/13/2009
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 29846 ENGINEER JAMES T. LYON
11-19-2010

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.
REQUEST FOR PROPOSAL #1
EX. WATER MAIN & FENCE RELOCATION

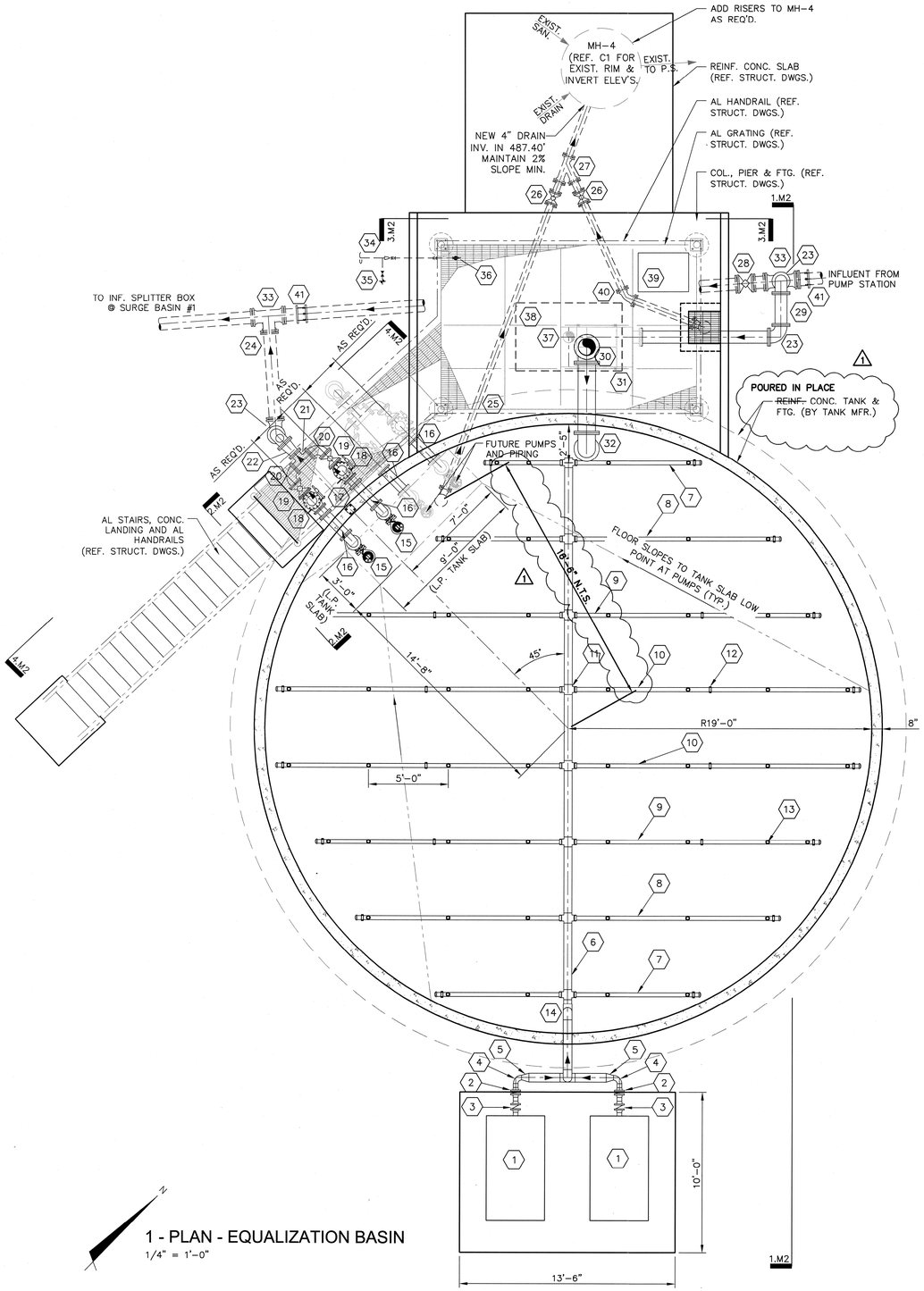
DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	JTL
DESIGNED	JTL
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

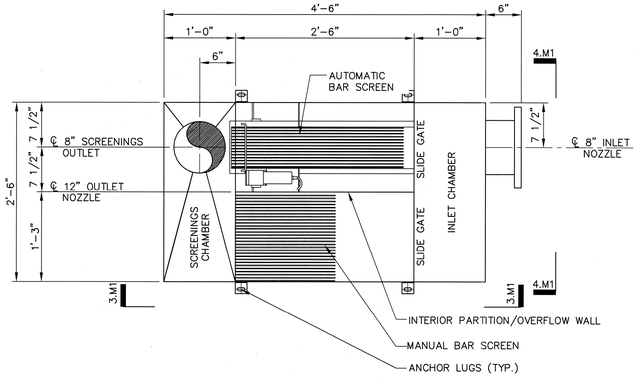
M&C FILE NUMBER CS105A
DRAWING NUMBER C5A

STATUS: RECORD DRAWING
REVISION 2

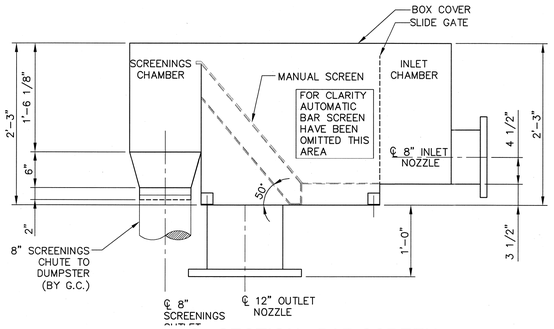
Plotted: 11/19/2010 10:08:05 AM By: jtlyon
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Xrefs: C5A-BASE.dwg, C5A-TOPO.dwg, C5A-TOPO-ADD.dwg, C5A-TOPO-ADD2.dwg, C5A-TOPO-ADD3.dwg, C5A-TOPO-ADD4.dwg, C5A-TOPO-ADD5.dwg, C5A-TOPO-ADD6.dwg, C5A-TOPO-ADD7.dwg, C5A-TOPO-ADD8.dwg, C5A-TOPO-ADD9.dwg, C5A-TOPO-ADD10.dwg, C5A-TOPO-ADD11.dwg, C5A-TOPO-ADD12.dwg, C5A-TOPO-ADD13.dwg, C5A-TOPO-ADD14.dwg, C5A-TOPO-ADD15.dwg, C5A-TOPO-ADD16.dwg, C5A-TOPO-ADD17.dwg, C5A-TOPO-ADD18.dwg, C5A-TOPO-ADD19.dwg, C5A-TOPO-ADD20.dwg, C5A-TOPO-ADD21.dwg, C5A-TOPO-ADD22.dwg, C5A-TOPO-ADD23.dwg, C5A-TOPO-ADD24.dwg, C5A-TOPO-ADD25.dwg, C5A-TOPO-ADD26.dwg, C5A-TOPO-ADD27.dwg, C5A-TOPO-ADD28.dwg, C5A-TOPO-ADD29.dwg, C5A-TOPO-ADD30.dwg, C5A-TOPO-ADD31.dwg, C5A-TOPO-ADD32.dwg, C5A-TOPO-ADD33.dwg, C5A-TOPO-ADD34.dwg, C5A-TOPO-ADD35.dwg, C5A-TOPO-ADD36.dwg, C5A-TOPO-ADD37.dwg, C5A-TOPO-ADD38.dwg, C5A-TOPO-ADD39.dwg, C5A-TOPO-ADD40.dwg, C5A-TOPO-ADD41.dwg,



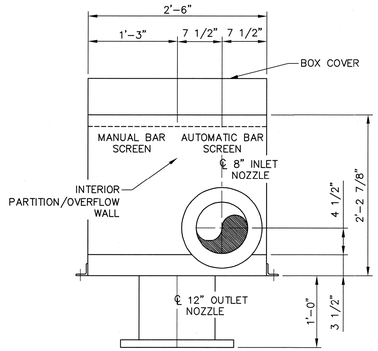
1 - PLAN - EQUALIZATION BASIN
1/4" = 1'-0"



2 - PLAN - BAR SCREEN
1" = 1'-0"

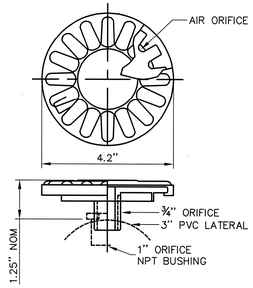


3 - SECTION - BAR SCREEN
1" = 1'-0"



4 - SECTION - BAR SCREEN
1" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



5 - DETAIL - FLEXCAP DIFFUSER
N.T.S.

NOTES:

1. EQUIPMENT LAYOUT IS BASED ON PRELIMINARY INFORMATION PROVIDED BY ONE MANUFACTURER. GENERAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT AND PIPING SIZES, DIMENSIONS AND ELEVATIONS WITH CERTIFIED VENDOR DRAWINGS PRIOR TO ORDERING, FABRICATION AND INSTALLATION OF EQUIPMENT OR PIPING.
2. ALL EXPOSED WATER/SEWER AND SLUDGE PIPING MUST BE HEAT TRACED AND INSULATED PER THE SPECIFICATIONS.

EQUIPMENT AND PIPE LEGEND:

1. EQUALIZATION BASIN BLOWER
2. **4"** ~~3"~~ SS BUTTERFLY VALVE
3. **4"** ~~3"~~ SS CHECK VALVE
4. **4"** ~~3"~~ SS 90° BEND
5. **6"x4"** ~~6"x3"~~ SS REDUCER
6. 6" SCH 80 PVC AIR MANIFOLD w/EIGHT 6"x3" CROSSES AND ONE 6" BLD. FLG.
7. 3" SCH 80 PVC AIR LATERALS (Q=4) 8'-4"± LONG EACH w/2 FLEXCAP AIR DIFFUSERS
8. 3" SCH 80 PVC AIR LATERALS (Q=4) 13'-4" LONG EACH w/3 FLEXCAP AIR DIFFUSERS
9. 3" SCH 80 PVC AIR LATERALS (Q=4) 15'-10" LONG EACH w/4 FLEXCAP AIR DIFFUSERS
10. 3" SCH 80 PVC AIR LATERALS (Q=4) 18'-4" LONG EACH w/4 FLEXCAP AIR DIFFUSERS
11. 3" VAN STONE FLANGES w/EPDM GASKETS AND 304 SS BOLT SETS
12. 3" 304 STAINLESS STEEL PIPE SUPPORTS (Q=40) w/MAX SPACING 5'
13. FLEXCAP COARSE BUBBLE DIFFUSER (REF. 5.M1)
14. 6" 304 SS AIR DROP PIPE
15. SUBMERSIBLE PUMP
16. CAST-IN WALL PIPE (TYP. 4 PLCS.) PROVIDE BLIND FLG. FOR FUTURE
17. DAVIT CRANE BASE
18. 6" DI CHECK VALVE
19. 6" PLUG VALVE
20. 6" 90° DI ELBOW
21. 6" DI TEE
22. 8"x6" REDUCER
23. 8" 90° DI ELBOW
24. 8" DI EFFLUENT TO EXIST. 8" DI INFLUENT
25. 4" DI EQUALIZATION BASIN DRAIN TO MH-4
26. 4" DI PLUG VALVE w/ VALVE BOX
27. 4" 45° WYE-LATERAL
28. 8" DI PLUG VALVE (BY-PASS)
29. 8" DI INFLUENT FROM EXIST. 8" INFLUENT TO BAR SCREEN
30. AUTOMATIC/MANUAL BAR SCREEN (REF. 2.M1)
31. 2'x2' GRATE w/ 4" DI DRAIN (DUMPSTER HOUSEKEEPING PAD)
32. 12" BAR SCREEN EFLUENT TO EQ BASIN
33. CUT-IN NEW 8" DI TEE INTO EXIST. 8" INFLUENT w/ COUPLING
34. 2" NON-POTABLE WATER LINE TO YARD HYDRANT
35. 2" YARD HYDRANT
36. 1" HOSE BIB AT SCREEN PLATFORM LEVEL
37. SCREENINGS CHUTE TO DUMPSTER
38. SCREENINGS DUMPSTER
39. EXIST. INFLUENT SAMPLER (RELOCATE FROM EXIST. TREATMENT PLANT HEADWORKS)
40. 4" 45° BEND
41. COUPLING

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 28846 ENGINEER JAMES T. LYDAY
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WSACC
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.
MECHANICAL - EXTERNAL EQUALIZATION BASIN / BLOWERS / BAR SCREEN PLAN, SECTIONS AND DETAILS

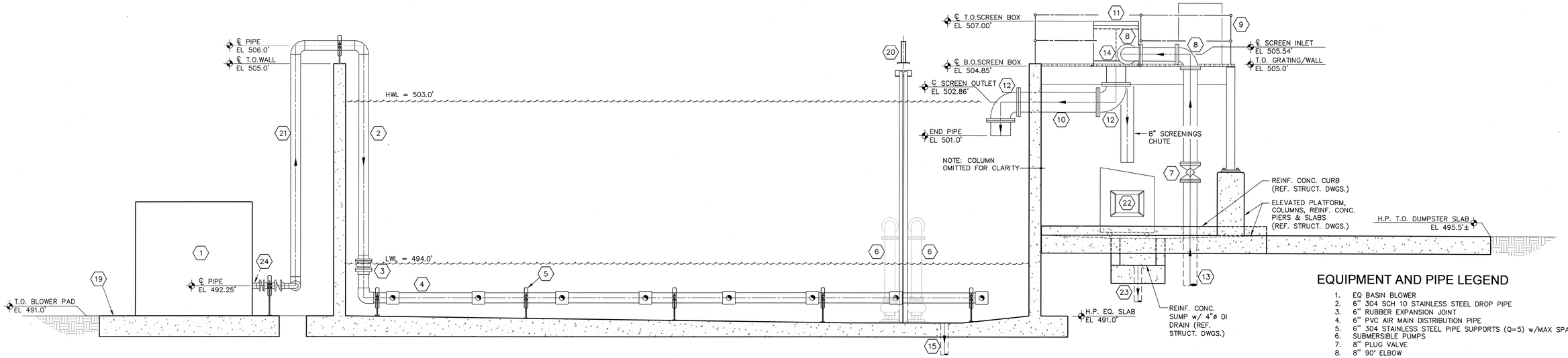
DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ101
DRAWING NUMBER M1

STATUS: RECORD DRAWING
REVISION 1

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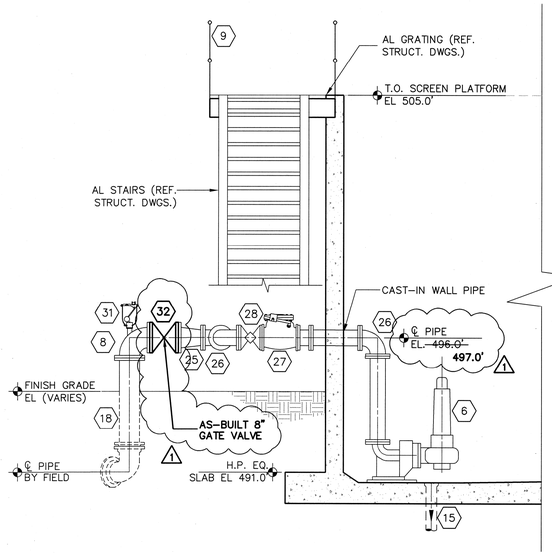


1 - SECTION - EQUALIZATION BASIN

⅜" = 1'-0"

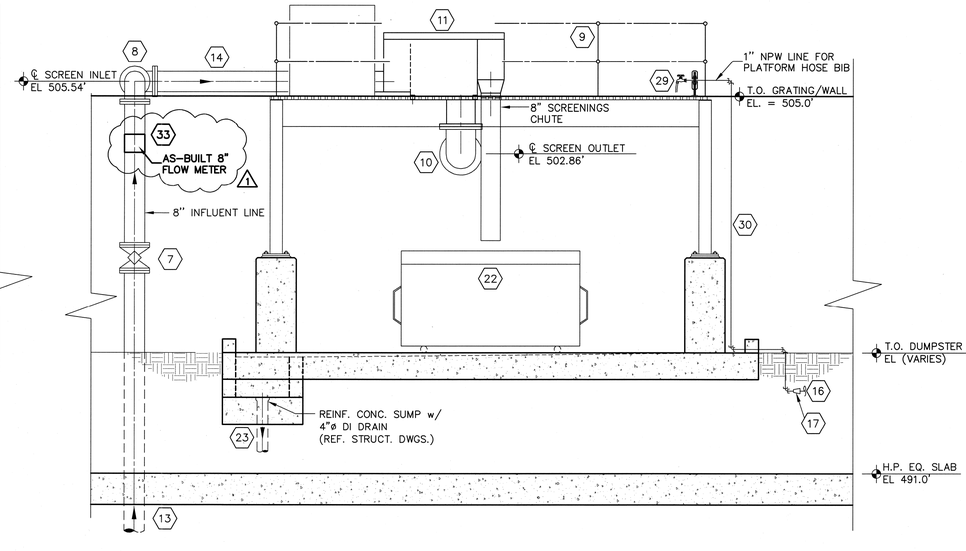
EQUIPMENT AND PIPE LEGEND

1. EQ BASIN BLOWER
2. 6" 304 SCH 10 STAINLESS STEEL DROP PIPE
3. 6" RUBBER EXPANSION JOINT
4. 6" PVC AIR MAIN DISTRIBUTION PIPE
5. 6" 304 STAINLESS STEEL PIPE SUPPORTS (Q=5) w/MAX SPACING 5'
6. SUBMERSIBLE PUMPS
7. 8" PLUG VALVE
8. 8" 90° ELBOW
9. AL GUARDRAIL (REF. STRUCT. DWGS.)
10. 12" SCREEN DISCHARGE PIPE
11. BAR SCREEN
12. 12" 90° ELBOW
13. 8" INFLUENT LINE FROM IPS
14. 8" SCREEN INLET
15. 4" EQUALIZATION BASIN DRAIN
16. 2" NPW LINE
17. 2"X1" REDUCER
18. 8" EFFLUENT PIPE FROM EQ BASIN
19. 12" THICK CONCRETE PAD
20. REMOVABLE PEDESTAL MOUNTED PORTABLE DAVIT CRANE WITH BASE
21. 6" 304 SCH 10 STAINLESS STEEL AIR PIPE
22. DUMPSTER
23. 4" DI DUMPSTER DRAIN TO MH-4
24. 4"~~3~~" 304 SCH 10 STAINLESS STEEL AIR PIPE
25. 8"X6" REDUCER
26. 6" 90° DI ELBOW
27. 6" DI CHECK VALVE
28. 6" DI PLUG VALVE
29. 1" HOSE BIB
30. 1" NPW LINE
31. AIR RELEASE VALVE
32. 8" GATE VALVE
33. 8" FLOW METER



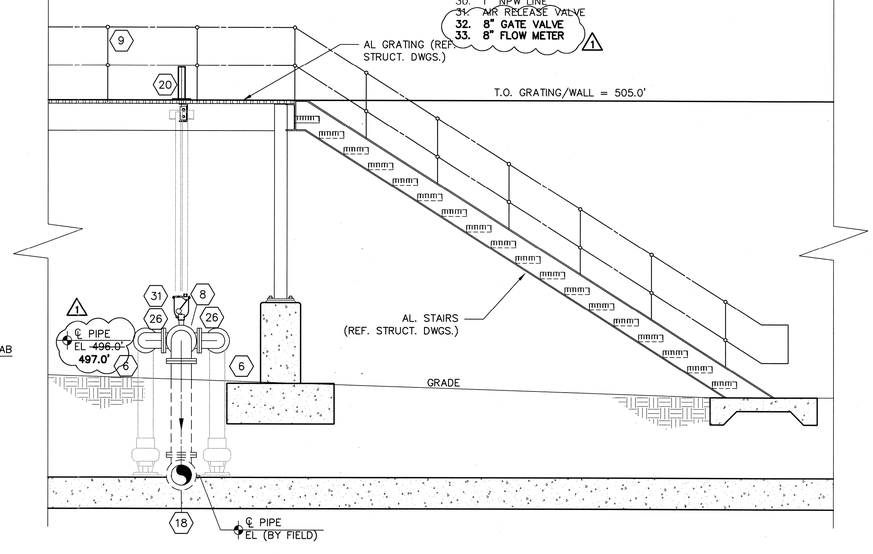
2 - SECTION - EQUALIZATION BASIN

⅜" = 1'-0"



3 - SECTION - EQUALIZATION BASIN

⅜" = 1'-0"



4 - SECTION - EQUALIZATION BASIN

⅜" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

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	REVISIONS	
1	RECORD DRAWING	09/2010
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C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

"RECORD DRAWINGS"

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 28846 ENGINEER JAMES T. LYONS

11-19-2010

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WSACC

WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

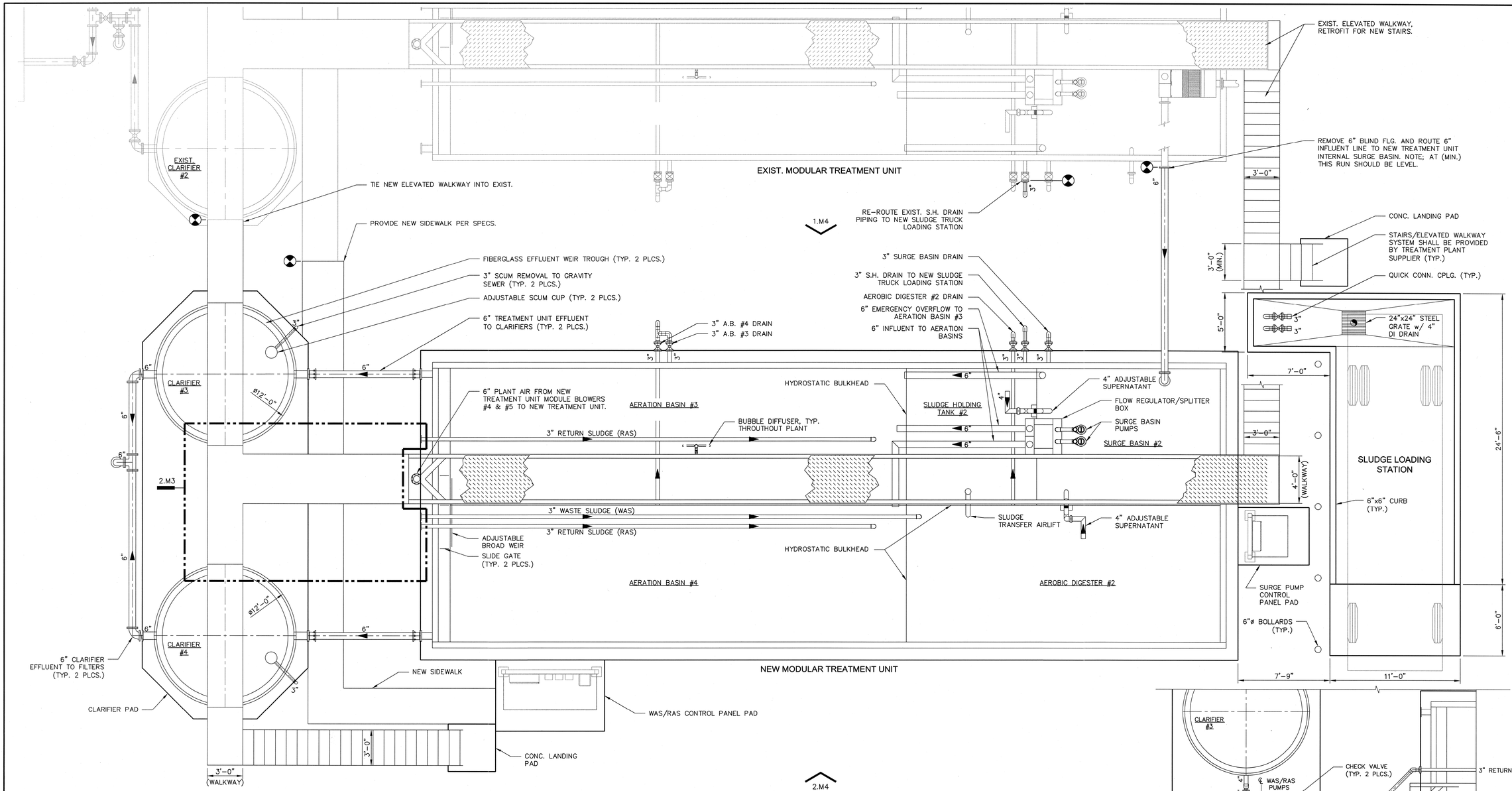
MECHANICAL – EXTERNAL EQUALIZATION BASIN / BLOWERS / BAR SCREEN SECTIONS

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ102
DRAWING NUMBER M2

STATUS: RECORD DRAWING
REVISION 1



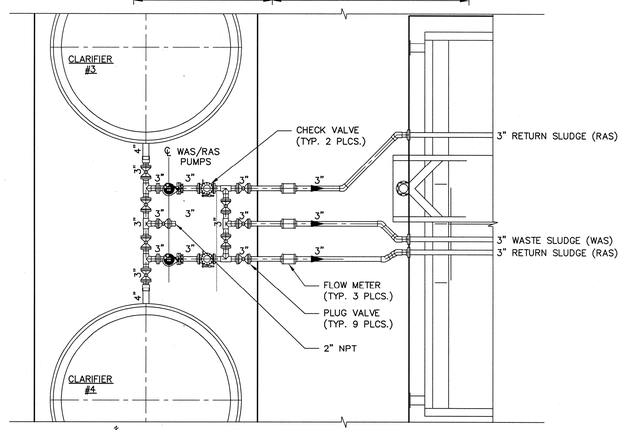
LEGEND:

⊠ = TIE-IN LOCATION – NEW TO EXISTING.

NOTES:

1. FOR SUB-GRADE PIPING WORK THIS DRAWING w/ C5 YARD PIPING PLAN.
2. MODULAR TREATMENT PLANT AND CLARIFIER STAIRS AND ELEVATED WALKWAYS DESIGN PROVIDED BY TREATMENT PLANT SUPPLIER AND SHALL FOLLOW NC BUILDING CODE w/ MAX. STAIR RISER 7" & MIN. STAIR TREAD 11"X36"
3. PIPE SUPPORTS NOT PROVIDED BY OTHERS, SHALL BE DESIGNED AND INSTALLED BY THE GENERAL CONTRACTOR.

1 - PLAN - TREATMENT UNIT
1/4" = 1'-0"



2 - PARTIAL PLAN - WAS/RAS PIPING
1/4" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

"RECORD DRAWING"

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 28845 ENGINEER JAMES T. LYON
11-19-2010

McKIM&CREED
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MUDDY CREEK WWTP 0.15 MGD EXP.

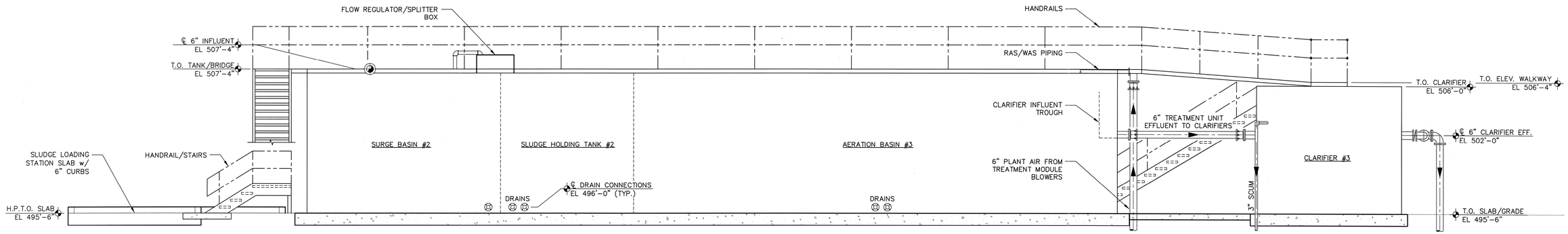
MECHANICAL
MODULAR TREATMENT UNIT PLAN
w/ CLARIFIERS

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

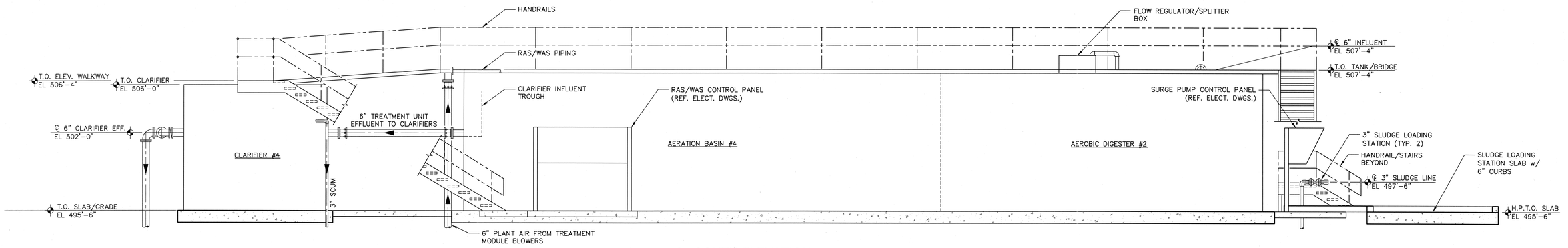
M&C FILE NUMBER: MQ103
DRAWING NUMBER: M3

STATUS: RECORD DRAWING
REVISION: 1



1 - NORTH ELEVATION

1/4" = 1'-0"



2 - SOUTH ELEVATION

1/4" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

"RECORD DRAWING"

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 28946 ENGINEER JAMES T. LYDA

11-19-2010

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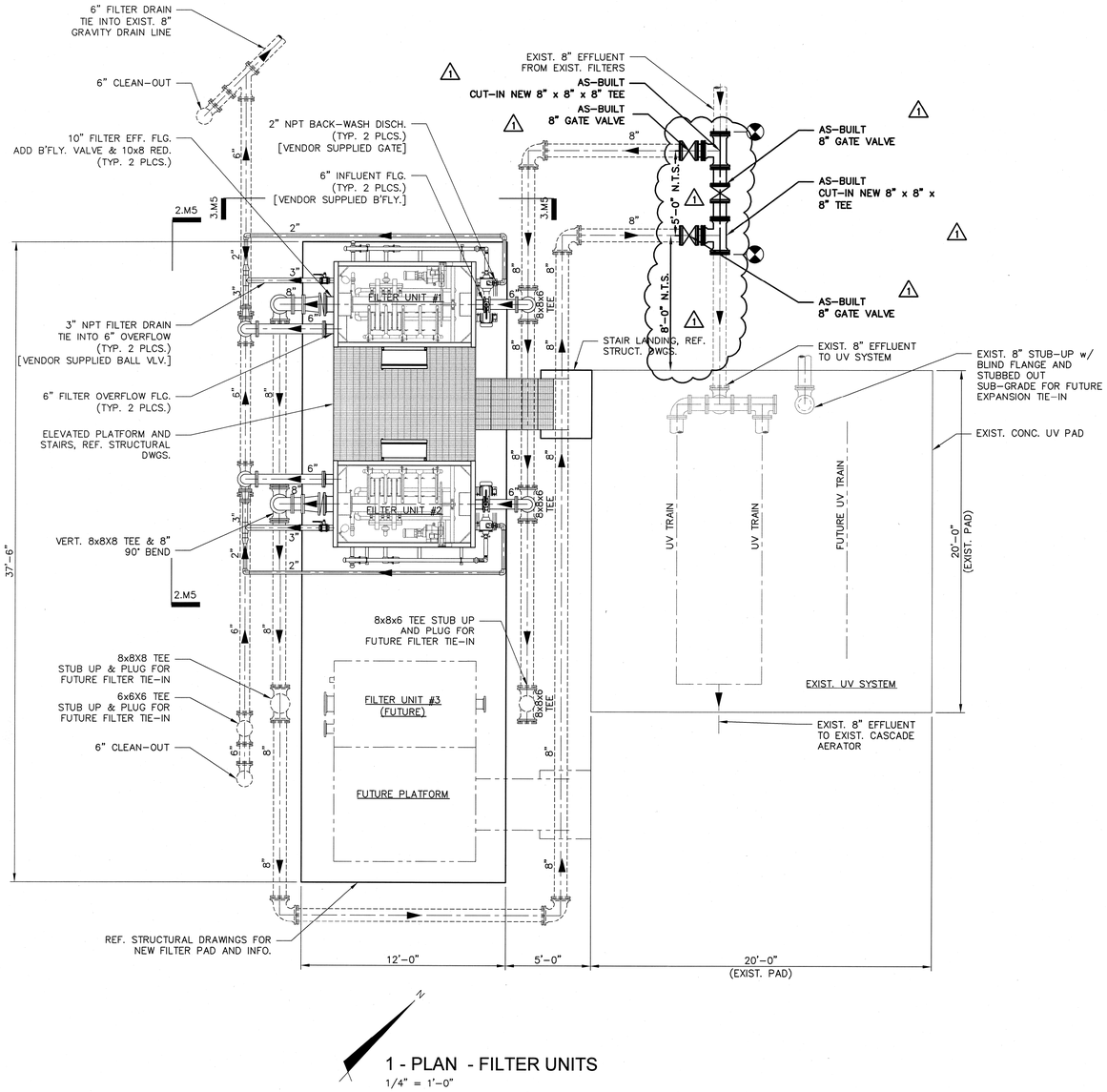
MECHANICAL
MODULAR TREATMENT UNIT ELEVATIONS AND SECTIONS w/ CLARIFIERS

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

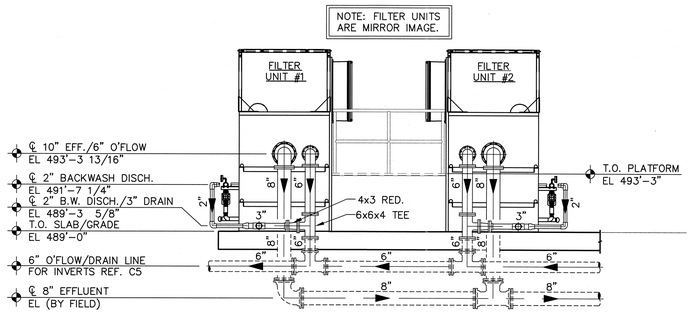
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ104
DRAWING NUMBER M4

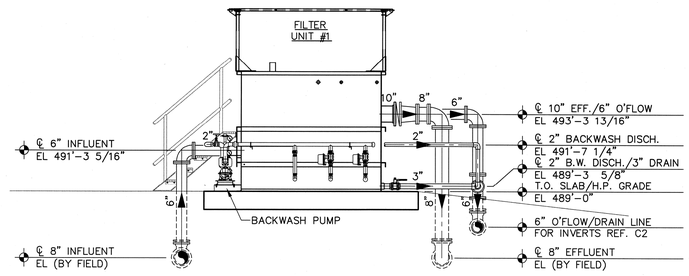
STATUS: RECORD DRAWING
REVISION 1



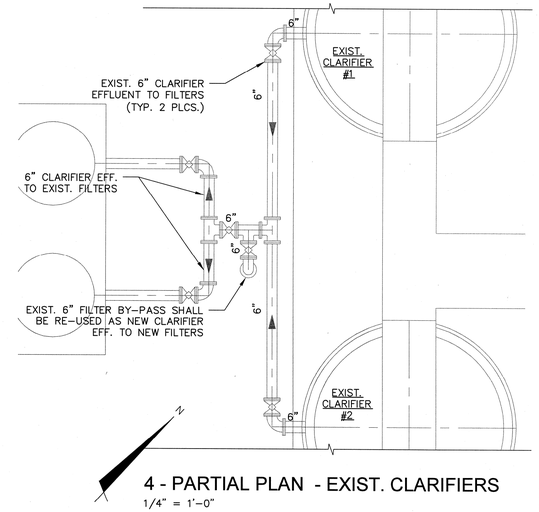
1 - PLAN - FILTER UNITS
1/4" = 1'-0"



2 - SECTION - FILTER UNITS
1/4" = 1'-0"



3 - SECTION - FILTER UNITS
1/4" = 1'-0"



4 - PARTIAL PLAN - EXIST. CLARIFIERS
1/4" = 1'-0"

LEGEND:

⊗ = TIE-IN LOCATION – NEW TO EXISTING.

——— = PIPE ABOVE GRADE

------- = PIPE BELOW GRADE

NOTES:

1. EXISTING EQUIPMENT, PIPING, PADS, ETC. SHOWN ARE PER OWNER SUPPLIED SURVEY OR EXISTING TREATMENT PLANT DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO ORDERING, FABRICATION OR INSTALLATION OF ANY EQUIPMENT OR PIPING SYSTEMS. ADJUSTMENTS MAY NEED TO BE MADE IN THE FIELD AFTER LOCATING EXISTING SUB-GRADE PIPING. GENERAL ROUTINGS SHOULD CLOSELY RESEMBLE LAYOUT SHOWN. ANY MAJOR DISCREPANCIES DISCOVERED BY CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.

2. CONTRACTOR SHALL PROVIDE AS-BUILTS FOR JOB INCLUDING INVERTS OF ALL SUB-GRADE PIPING.

3. G.C. SHALL VERIFY PIPING AND EQUIPMENT SUPPLIED BY VENDOR AND PIPING SUPPLIED BY PIPING CONTRACTOR.

4. WORK THIS SHEET WITH SITE YARD PIPING PLAN C5.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	06/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL

"RECORD DRAWING"

NORTH CAROLINA PROFESSIONAL SEAL 28916 ENGINEER JAMES T. HOWE

11-19-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

MECHANICAL
DISK-FILTER PLAN AND SECTIONS AND PART. PLAN @ EXIST. CLARIFIERS

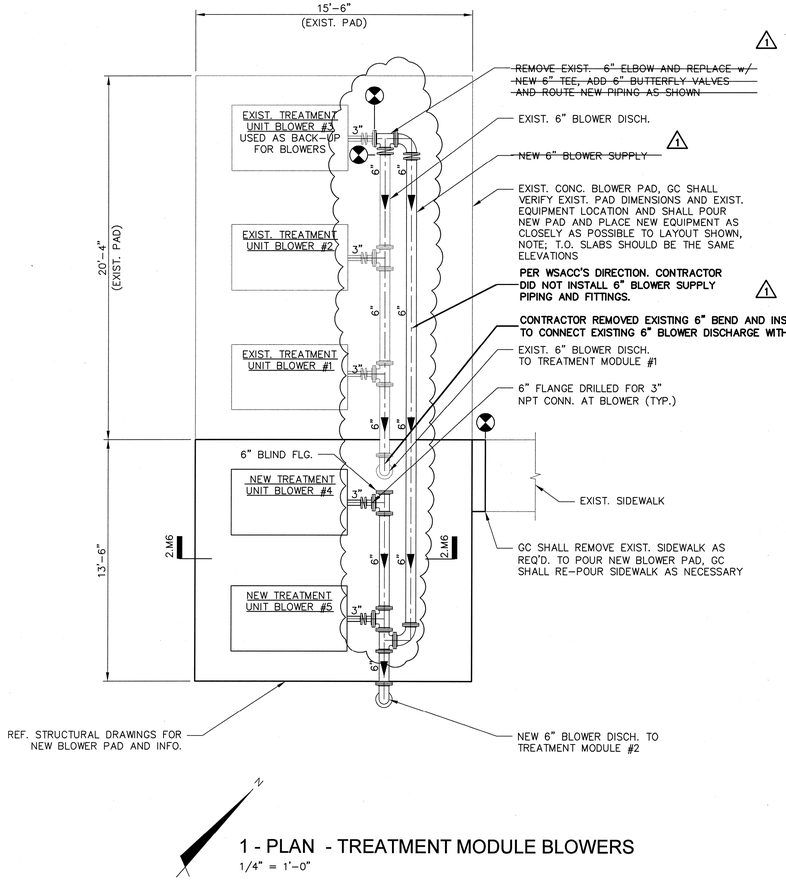
DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ105
DRAWING NUMBER M5

STATUS: RECORD DRAWING REVISION 1

R:\Projects\WSACC\Muddy Creek WWTP 0.15 MGD Exp\Drawings\Mechanical\M5.dwg 11/19/2010 10:04:06 AM EDT



1 - PLAN - TREATMENT MODULE BLOWERS
1/4" = 1'-0"

1 ~~REMOVE EXIST. 6" ELBOW AND REPLACE w/ NEW 6" TEE, ADD 6" BUTTERFLY VALVES AND ROUTE NEW PIPING AS SHOWN~~

1 EXIST. 6" BLOWER DISCH.

1 ~~NEW 6" BLOWER SUPPLY~~

EXIST. CONC. BLOWER PAD, GC SHALL VERIFY EXIST. PAD DIMENSIONS AND EXIST. EQUIPMENT LOCATION AND SHALL POUR NEW PAD AND PLACE NEW EQUIPMENT AS CLOSELY AS POSSIBLE TO LAYOUT SHOWN, NOTE; T.O. SLABS SHOULD BE THE SAME ELEVATIONS

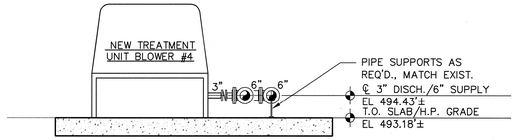
1 **PER WSACC'S DIRECTION. CONTRACTOR DID NOT INSTALL 6" BLOWER SUPPLY PIPING AND FITTINGS.**

CONTRACTOR REMOVED EXISTING 6" BEND AND INSTALLED NEW 6" TEE WITH 6" VALVES TO CONNECT EXISTING 6" BLOWER DISCHARGE WITH NEW 6" BLOWER DISCHARGE PIPING

1

EXIST. 6" BLOWER DISCH. TO TREATMENT MODULE #1

6" FLANGE DRILLED FOR 3" NPT CONN. AT BLOWER (TYP.)



2 - SECTION - FILTER UNITS
1/4" = 1'-0"

LEGEND:

= TIE-IN LOCATION – NEW TO EXISTING.

NOTES:

1. EXISTING EQUIPMENT, PIPING, PADS, ETC. SHOWN ARE PER OWNER SUPPLIED SURVEY OR EXISTING TREATMENT PLANT DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO ORDERING, FABRICATION OR INSTALLATION OF ANY EQUIPMENT OR PIPING SYSTEMS. ADJUSTMENTS MAY NEED TO BE MADE IN THE FIELD AFTER LOCATING EXISTING CONDITIONS. GENERAL ROUTINGS SHOULD CLOSELY RESEMBLE LAYOUT SHOWN. ANY MAJOR DISCREPANCIES DISCOVERED BY CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.

2. CONTRACTOR SHALL PROVIDE AS-BUILTS FOR JOB INCLUDING INVERTS OF ALL SUB-GRADE PIPING EXPOSED FOR CONSTRUCTION.

3. WORK THIS SHEET WITH SITE YARD PIPING PLAN C5.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

"RECORD DRAWING"

REV.NO.	DESCRIPTIONS	DATE
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

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NORTH CAROLINA PROFESSIONAL SEAL 29645 ENGINEER JAMES T. LYON
11-19-2010

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MUDDY CREEK WWTP 0.15 MGD EXP.

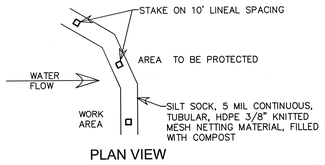
MECHANICAL
MODULAR TREATMENT PLANT BLOWER
PLAN AND SECTION

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

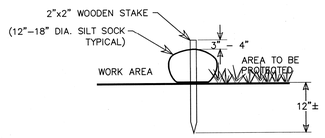
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ106
DRAWING NUMBER M6

STATUS: RECORD DRAWING
REVISION 1

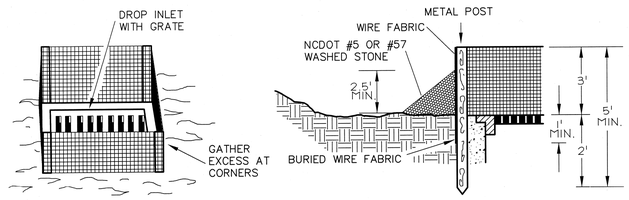


PLAN VIEW



SILT SOCK DETAIL

NOT TO SCALE

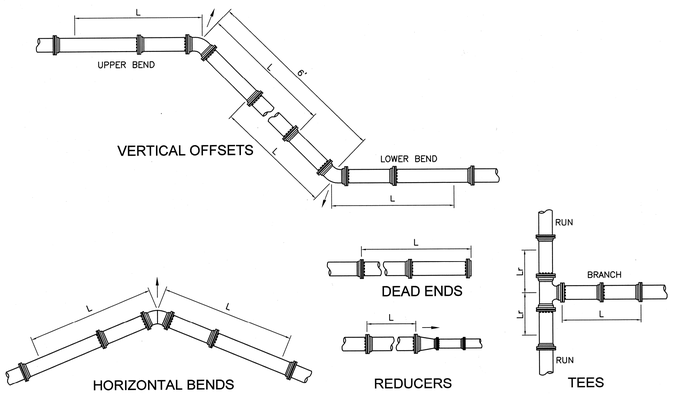


CONSTRUCTION SPECIFICATIONS:

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE ON THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF THE BLOCK AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2–INCH OPENING OVER ALL BLOCK OPENING TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4–TO 1/2–INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. NCDOT #5 OR #57 WASHED STONE IS RECOMMENDED.

INLET PROTECTION

NOT TO SCALE



Size & Material		Horizontal Bend (Degrees)				Tee	Reducer	Dead End	Vertical Offset 45° Bend	
		90	45	22.5	11.25	6" Branch	X 6"		Upper	Lower
12" PVC	Length Restrained (ft)	60	25	12	6	23	99	136	66	21
10" PVC	Length Restrained (ft)	51	21	10	5	40	71	115	56	18
8" PVC	Length Restrained (ft)	43	18	8	4	47	40	96	46	15
6" PVC	Length Restrained (ft)	33	14	7	3	53	4" – 38	56	35	11

Size & Material		Horizontal Bend (Degrees)				Tee	Reducer	Dead End	Vertical Offset 45° Bend	
		90	45	22.5	11.25	6" Branch	X 6"		Upper	Lower
12" DIP	Length Restrained (ft)	48	20	9	5	21	63	87	35	15
10" DIP	Length Restrained (ft)	41	17	8	4	26	45	73	29	12
8" DIP	Length Restrained (ft)	34	14	7	3	30	26	61	25	10
6" DIP	Length Restrained (ft)	26	11	5	2	34	4" – 24	47	19	8

DESIGN PARAMETERS

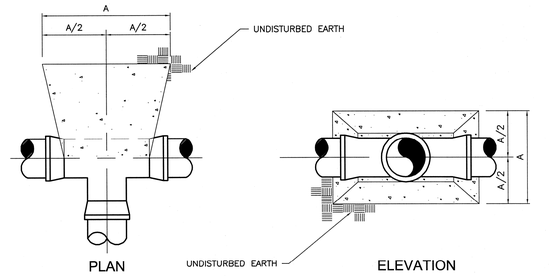
DEPTH OF BURY	3 FT
SAFETY FACTOR	2:1
TRENCH TYPE	3, SEE DETAIL
TEST PRESSURE	150 PSI
SOIL TYPE	SILTY SANDS, SAND SILT MIXTURES BACKFILLED USING NATIVE SOILS.

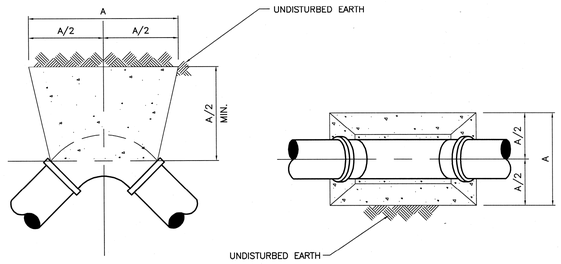
NOTES:

1. THE CONTRACTOR SHALL INSTALL RESTRAINED JOINT THRUST PROTECTION AT ALL BENDS, TEES, REDUCERS, VERTICAL OFFSETS. THE ABOVE LENGTHS ARE MINIMUM LENGTHS REQUIRED FOR THE DESIGN PARAMETERS SHOWN ABOVE. THESE RESTRAINING CONDITIONS ARE COMMON CONDITIONS ENCOUNTERED IN NORMAL PIPELINE CONSTRUCTION, ANY OTHER CONDITIONS SHALL BE APPROVED BY THE PROJECT ENGINEER.
2. WHEN USING MECHANICAL JOINT RESTRAINTS SUCH AS MEGA–LUGS FOR PVC & DIP OR TR FLEX AND GRIFFIN SNAP–LOK, CONCRETE BLOCKING SHALL BE EXCLUDED FROM THE INSTALLATION.

MECHANICAL JOINT RESTRAINT DETAILS

NOT TO SCALE





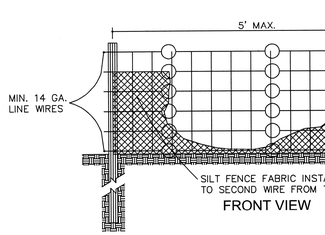
NOTE: THRUST BLOCKS SHALL BE CONSTRUCTED OF 3000 P.S.I. CONCRETE. THRUST BLOCK SIZE DETERMINED BY SMALLEST DIA. OF TEE ALL FITTINGS ARE D.I. MECHANICAL JOINT.

TABLE "A" DIMENSIONS (IN FEET)

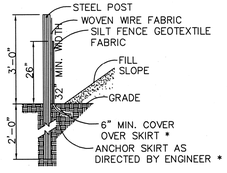
BEND	PIPE SIZE (NOM. DIA. IN INCHES)									
	2	4	6	8	10	12	16	18	20	24
90°	1.5	1.9	2.8	3.8	4.7	5.9	7.5	8.5	9.4	11.2
45°	1.0	1.4	2.1	2.8	3.5	4.3	5.5	6.2	6.9	8.3
22 1/2°	0.8	1.0	1.5	2.0	2.5	3.1	4.0	4.5	4.9	5.7
11 1/4°	0.8	1.0	1.1	1.5	1.8	2.2	2.2	3.2	3.6	4.4
TEES	1.6	1.9	2.8	3.8	4.7	5.9	7.5	8.5	9.4	11.2

THRUST BLOCK DETAIL FOR WATER MAIN TEES AND BENDS

NOT TO SCALE



FRONT VIEW



SIDE VIEW

1. CHECK SILT FENCE INTEGRITY AFTER EACH RAIN EVENT.
2. SILT FENCES SHOULD NOT BE USED AT PIPE OUTLETS OR IN AREAS OF CONCENTRATED FLOW (CREEKS, DITCHLINES, SWALES ETC.)
3. TO INCREASE STORAGE CAPACITY AND PROLONG THE LIFE OF THE SILT FENCE, IT IS GENERALLY ADVISABLE TO DIG A SEDIMENT PIT IN FRONT OF YOUR SILT FENCE WHENEVER POSSIBLE.
4. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE PER 100 FT OF FENCE AND NEVER IN AREAS OF CONCENTRATED FLOW –END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
5. FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE.
6. REMOVE SILT FENCE AFTER END OF CONSTRUCTION.

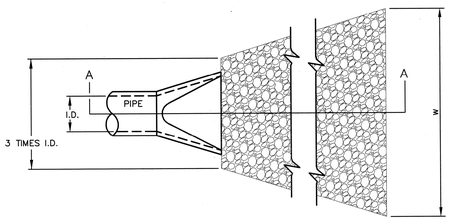
STANDARD SILT FENCE DETAIL

NOT TO SCALE

	EARLY SUMMER SEASON	LATE FALL SEASON
SEEDING MIXTURE	40 LBS/ACRE OF GERMAN MILLET BROWN TOP MILLET MAY BE SUBSTITUTE FOR GERMAN MILLET. 80 LBS/ACRE OF TALL FESCUE	120 LBS/ACRE RYE (GRAIN) 80 LBS/ACRE TALL FESCUE
SEEDING DATES	MAY 1 – AUGUST 15 REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. APPLY 4000 LBS/ACRE STRAW OR EQUIVALENT HYDROSEEDING.	OCTOBER 25 – DECEMBER 30 APPLY 4000 LBS/ACRE STRAW OR EQUIVALENT HYDROSEEDING.
SEEDING AMENDMENTS	APPLY LIME AND FERTILIZER PER SOIL TESTS, OR 2000 LBS/ACRE LIMESTONE AND 750 LBS/ACRE 10–10–10 FERTILIZER.	APPLY LIME AND FERTILIZER PER SOIL TESTS, OR 2000 LBS/ACRE LIMESTONE AND 750 LBS/ACRE 10–10–10 FERTILIZER.

SEEDING SCHEDULE TEMP. SEEDING FOR WARM AND COOL SEASON

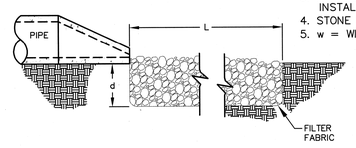
NOT TO SCALE



PLAN VIEW

NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON = 7.5'.
2. d = DEPTH OF THE RIPRAP APRON = 12" (MIN.)
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.
4. STONE SHOULD BE OF RIPRAP CLASS "B".
5. w = WIDTH OF RIPRAP APRON = 3.75'.



OUTLET PROTECTION

NOT TO SCALE

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL

"RECORD DRAWING"

NORTH CAROLINA PROFESSIONAL SEAL 28946 ENGINEER JAMES T. LYON

11-19-2010

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WSACC
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

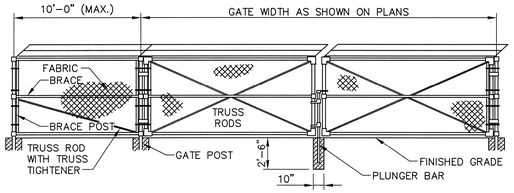
CIVIL / MECHANICAL DETAILS

DATE:	September 2010
MCE PROJ. #	02000–0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

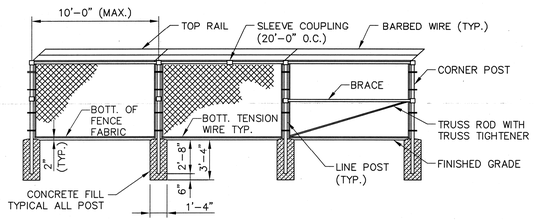
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ301
DRAWING NUMBER M7

STATUS: RECORD DRAWING
REVISION 1

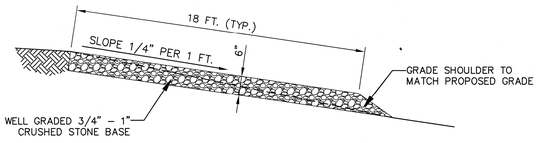


GATE DETAIL
NOT TO SCALE

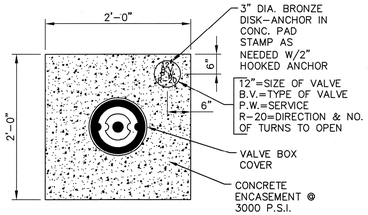


NOTE: NEW FENCING MATERIAL SHALL MATCH EXST. FENCE.

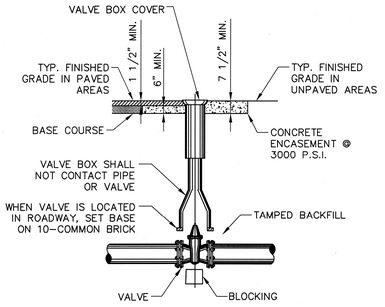
CHAIN LINK FENCE DETAIL
NOT TO SCALE



TYPICAL NEW GRAVEL ACCESS ROAD CROSS SECTION
NOT TO SCALE



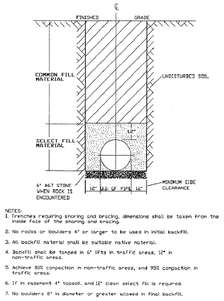
PLAN



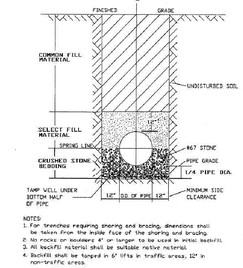
SECTION

NOTE: THE VALVE BOX SHALL BE CENTERED AND SET PLUMB WITH THE TOP OF THE BOX NEATLY TO GRADE OF THE SURFACE OF THE EXISTING GROUND, UNLESS OTHERWISE DIRECTED BY THE OWNER. SHOCK AND STRESS SHALL NOT BE TRANSFERRED FROM THE BOX TO THE VALVE. THE TOP OF THE OPERATING NUT SHALL BE NO MORE THAN 48-INCHES BELOW THE TOP RIM OF THE VALVE BOX (AS MEASURED FROM FINAL GRADE). THE CONTRACTOR SHALL INSTALL AN APPROVED VALVE STEM EXTENSION DEVICE WHERE NECESSARY TO COMPLY WITH THE 48-INCHES MAXIMUM DISTANCE.

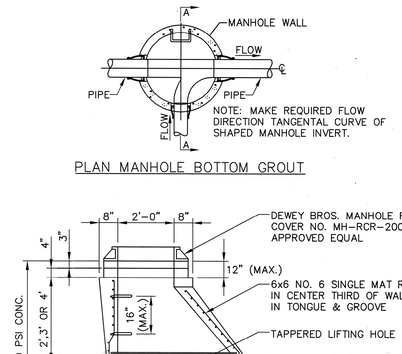
VALVE BOX DETAIL
NOT TO SCALE



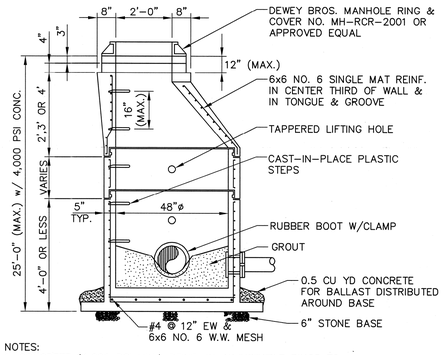
TYPICAL TRENCHING DETAIL FOR DIP
NOT TO SCALE



TYPICAL TRENCHING DETAIL FOR PVC SDR 35
NOT TO SCALE

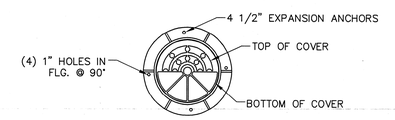


PLAN MANHOLE BOTTOM GROUT

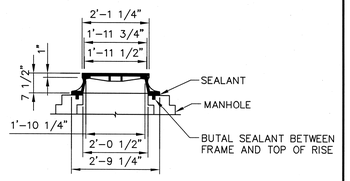


NOTES:
1. CONCRETE (4,000 PSI MIN.) REINF. IN ADJUSTABLE RINGS TO MEET ASTM. C-478-72 WIRE MESH-ASTM. A-1 85-69.
2. FLAT-TOP MANHOLE TO BE USED WHERE REQUIRED BY GRADE.

A-A SECTION - MANHOLE

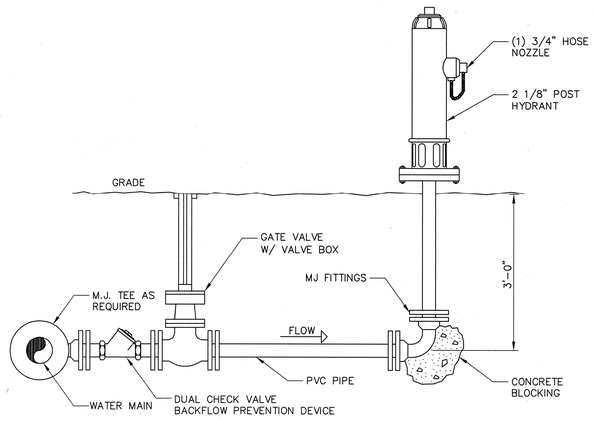


MANHOLE COVER PLAN

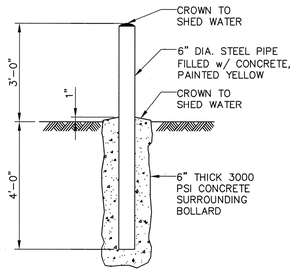


MANHOLE COVER SECTION

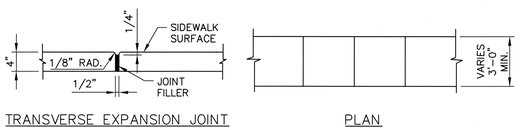
PRE-CAST MANHOLE DETAILS
NOT TO SCALE



YARD HYDRANT DETAIL
NOT TO SCALE

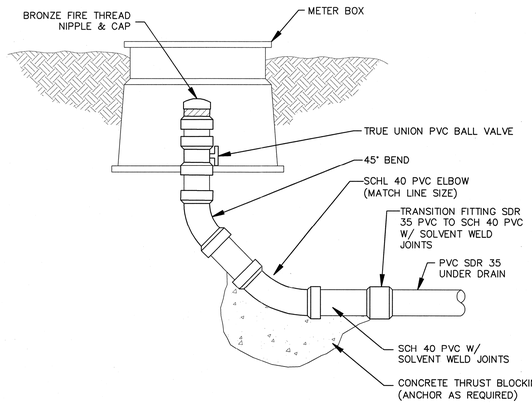


BOLLARD DETAIL
NOT TO SCALE

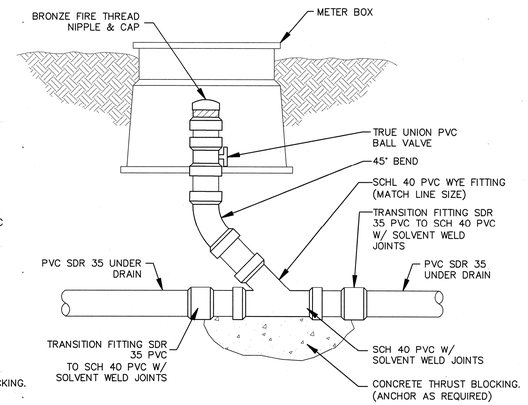


TRANSVERSE EXPANSION JOINT PLAN

STANDARD CONCRETE SIDEWALK
NOT TO SCALE



TYPE 1 - END LINE CLEAN OUT
NOT TO SCALE



TYPE 2 IN-LINE CLEAN OUT
NOT TO SCALE

NOTE: PVC SHOWN, DI SIMILAR

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
B	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29945 ENGINEER JAMES T. HORN
"RECORD DRAWINGS"
11-19-2010

McKIM&CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

CIVIL / MECHANICAL DETAILS

DATE:	September 2010
MCE PROJ. #	02000-0013
DRAWN	EJB
DESIGNED	JJH
CHECKED	DMH
PROJ. MGR.	KEL

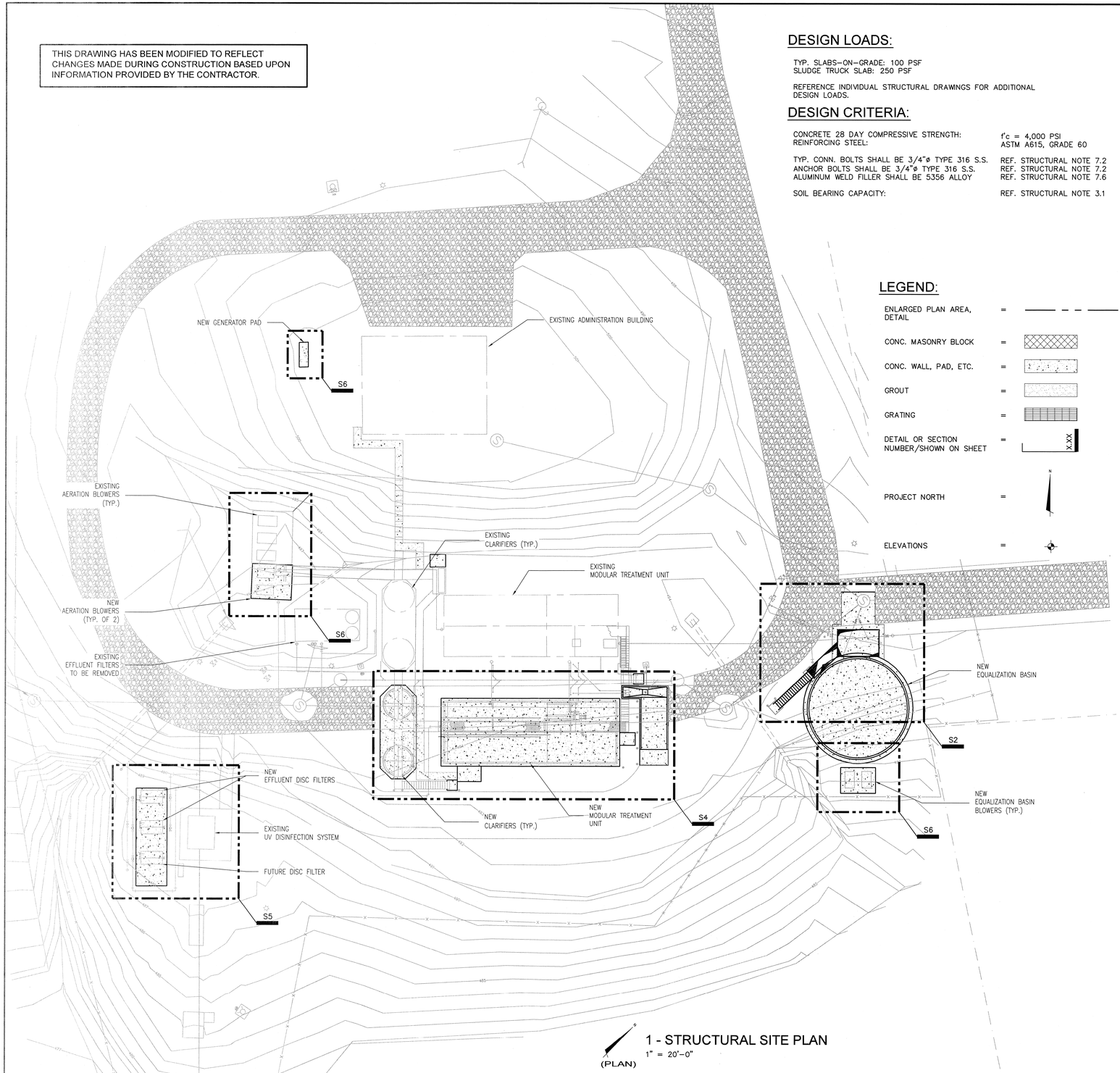
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER MQ302
DRAWING NUMBER M8

STATUS: RECORD DRAWING
REVISION 1

M:\Projects\Wsacc\...\Civil\Details\...

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



1 - STRUCTURAL SITE PLAN
(PLAN)
1" = 20'-0"

DESIGN LOADS:

TYP. SLABS-ON-GRADE: 100 PSF
SLUDGE TRUCK SLAB: 250 PSF

REFERENCE INDIVIDUAL STRUCTURAL DRAWINGS FOR ADDITIONAL DESIGN LOADS.

DESIGN CRITERIA:

CONCRETE 28 DAY COMPRESSIVE STRENGTH:	f'c = 4,000 PSI
REINFORCING STEEL:	ASTM A615, GRADE 60
TYP. CONN. BOLTS SHALL BE 3/4"ø TYPE 316 S.S.	REF. STRUCTURAL NOTE 7.2
ANCHOR BOLTS SHALL BE 3/4"ø TYPE 316 S.S.	REF. STRUCTURAL NOTE 7.2
ALUMINUM WELD FILLER SHALL BE 5356 ALLOY	REF. STRUCTURAL NOTE 7.6
SOIL BEARING CAPACITY:	REF. STRUCTURAL NOTE 3.1

LEGEND:

ENLARGED PLAN AREA, DETAIL =
CONC. MASONRY BLOCK =
CONC. WALL, PAD, ETC. =
GROUT =
GRATING =
DETAIL OR SECTION NUMBER/SHOWN ON SHEET = XXX
PROJECT NORTH = N
ELEVATIONS =

GENERAL NOTES:

1.0 GENERAL

1.1 ALL WORK IS TO BE PERFORMED IN A GOOD, WORKMANLIKE AND PROFESSIONAL MANNER.

1.2 ALL CONSTRUCTION SHALL BE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, VOLUME I, LATEST EDITION, OR LOCAL BUILDING CODE REQUIREMENTS IF MORE STRINGENT.

1.3 THESE DRAWINGS DO NOT SHOW PROVISIONS FOR SAFETY DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE REQUIRED BRACING, SHORING, AND SAFETY DEVICES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

2.0 COORDINATION

2.1 STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH CIVIL, HVAC AND ELECTRICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.2 COORDINATE THE EXACT SIZE AND LOCATION OF ALL SLEEVES AND OPENINGS THROUGH WALLS OR CONCRETE SLABS WITH CIVIL, HVAC, ELECTRICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.3 ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS ARE TO BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE WORK PROCEEDS.

3.0 FOUNDATIONS

3.1 DESIGN ALLOWABLE SOIL BEARING PRESSURE – 2,000 PSF IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AS PREPARED BY FROEHLING & ROBERTSON, INC. (PROJECT NO. G63-256G, DATED SEPTEMBER 26, 2005). THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THIS VALUE PRIOR TO FOUNDATION CONSTRUCTION. IN AREAS WHERE THE SOIL DOES NOT YIELD THIS BEARING STRESS VALUE, ADJUSTMENT IN THE FOOTING DEPTHS AND FOUNDATION DIMENSION MAY BE MADE BY THE ENGINEER BEFORE WORK PROCEEDS. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY SUCH ADJUSTMENTS.

3.2 ALL FOOTING AND SLAB SUBGRADES SHALL BE PREPARED IN ACCORDANCE TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT.

3.3 FOOTING EXCAVATIONS AND FORMS SHALL BE REVIEWED BY AN OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. THE REVIEW SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

3.4 FOOTING ELEVATIONS SHALL NOT BE RAISED OR LOWERED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

3.5 ALL EXCAVATIONS SHALL BE ADEQUATELY DEWATERED BEFORE PLACEMENT OF CONCRETE. NO CONCRETE OR CONCRETE FILL SHALL BE PLACED IN STANDING WATER. WATER ACCUMULATION EXCEEDING 1 INCH SHALL BE PUMPED OUT.

3.6 ALL FILL BELOW FOUNDATIONS SHALL BE SELECT MATERIAL FREE FROM ROOTS, TRASH WOOD SCRAPS, AND OTHER EXTRANEOUS MATERIALS. PLACE FILL IN LIFTS NOT EXCEEDING THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT AS PREPARED BY FROEHLING & ROBERTSON, INC. (PROJECT NO. G63-256G, DATED SEPTEMBER 26, 2005).

3.7 CONSTRUCTION JOINTS IN SLABS & FOOTINGS SHALL BE MADE AT LOCATIONS SHOWN ON DRAWINGS, AT OFFSETS AND CHANGES IN DIRECTION AND AT THIRTY (30) FEET MAXIMUM.

3.8 ANCHOR BOLTS SHALL BE SET BY MEANS OF TEMPLATE. "FLOATING" ANCHOR BOLTS INTO PLACE IS PROHIBITED.

3.9 CONTRACTOR IS TO VERIFY THE ELEVATION AND LOCATION OF ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. ANY "KNOWN" UTILITY LINES DAMAGED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IF ANY "UNKNOWN" UTILITY LINES ARE ENCOUNTERED WHEN EXCAVATING THE CONTRACTOR IS TO CEASE ALL EXCAVATION ACTIVITY UNTIL THE ENGINEER AND OWNER ARE NOTIFIED AND INSTRUCTIONS ARE PROVIDED ABOUT HOW TO PROCEED.

4.0 REINFORCING STEEL

4.1 BARS SHALL BE ROLLED FROM NEW BILLET-STEEL OF DOMESTIC MANUFACTURE CONFORMING TO "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT," ASTM A 615, GRADE 60 AND SUPPLEMENTARY REQUIREMENT S-1.

4.2 DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "ACI DETAILING MANUAL," LATEST PUBLICATION.

4.3 REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. THE REVIEW SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

4.4 WELDED WIRE FABRIC SHALL CONFORM TO "STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT," ASTM A185.

4.5 PROVIDE BARS AT CORNERS AND INTERSECTIONS OF WALLS & FOOTINGS OF THE SAME NUMBER AND SIZE AS LONGITUDINAL BARS, U.N.O. ON THE DRAWINGS.

4.6 FABRICATE CONTINUOUS BARS IN WALLS & FOOTINGS TO THE LONGEST PRACTICABLE LENGTHS.

4.7 REINFORCING STEEL SHALL NOT BE BENT AFTER BEING PARTIALLY EMBEDDED IN HARDENED CONCRETE.

4.8 BARS SHALL BE COLD BENT AND SHALL NOT BE HEATED FOR ANY REASON.

4.9 REINFORCING BARS SHALL NOT BE WELDED UNLESS NOTED OTHERWISE ON THE DRAWINGS.

4.10 IT IS ACCEPTABLE TO LAP REINFORCING STEEL IN CONCRETE IN NON "LCS" STRUCTURES A MINIMUM 50 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

4.11 LAP SPLICED BARS IN CONCRETE ARE TO BE WIRE TIED.

5.0 CONCRETE

5.1 IN GENERAL CONCRETE SHALL DEVELOP 4,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS. REFERENCE "DESIGN CRITERIA" THIS DWG. & PROJECT SPECIFICATIONS FOR APPLICATION & SPECIFIC CONCRETE MIX DESIGN REQUIREMENTS.

5.2 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318 & TO "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES", ACI 350 & TO "DESIGN OF SLABS ON GRADE", ACI 360 (LATEST EDITIONS).

5.3 PLACE 1/2 INCH EXPANSION JOINT MATERIAL BETWEEN EDGES OF SLABS AND VERTICAL SURFACES UNLESS NOTED OTHERWISE.

5.4 PROVIDE CONSTRUCTION OR CONTROL JOINTS IN SLABS & WALLS AT LOCATIONS SHOWN ON DRAWINGS, AT OFFSETS AND CHANGES IN DIRECTION AND AT THIRTY (30) FEET MAXIMUM.

5.5 CHAMFER EXPOSED EDGES OF CONCRETE 3/4 INCH, UNLESS NOTED OTHERWISE.

5.6 CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER CURING OF ALL CONCRETE. CURING METHODS SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" ACI 350 AND "STANDARD PRACTICE FOR CURING CONCRETE," ACI 308, LATEST EDITIONS.

5.7 UNLESS NOTED OTHERWISE DOWELS SHALL BE THE SAME NUMBER AND SIZE AS THE LARGEST VERTICAL BAR TO WHICH THEY ARE SPLICED.

5.8 REFERENCE PROJECT SPECIFICATIONS FOR REQUIRED FINISHES.

5.9 BONDING AGENT TO BE STRUCTURAL EPOXY ADHESIVE CONFORMING TO ASTM C-881 TYPE I AND II, GRADE 2, CLASS B AND C WITH A MINIMUM BOND STRENGTH OF 1900 PSI.

5.10 CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS FOR APPROVAL TO OWNER PRIOR TO FABRICATION. DO NOT FABRICATE REINFORCING PRIOR TO RECEIPT OF APPROVED SHOP DRAWINGS.

5.11 ROUGHEN THE HARDENED CONCRETE POUR SURFACE OF CONSTRUCTION JOINTS TO A FULL AMPLITUDE OF 1/4" MINIMUM.

6.0 GROUT

6.1 PROVIDE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES AND ELSEWHERE AS INDICATED ON DRAWINGS. NON-SHRINK GROUT SHALL CONFORM TO ASTM C 1107. GROUT SHALL BE NON-METALLIC AND NON-STAINING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.

7.0 ALUMINUM

7.1 ALUMINUM FABRICATION SHALL BE IN CONFORMANCE WITH THE ALUMINUM ASSOCIATION, INC. "SPECIFICATIONS FOR ALUMINUM STRUCTURES".

7.2 UNLESS NOTED OTHERWISE, MATERIALS SHALL BE:
a. PLATE & SHEET – ASTM B209; 6061-T6, 6061-T651 ALLOY.
b. EXTRUDED SHAPES – ASTM B221; 6061-T6, 6061-T651 ALLOY.
c. CASTINGS – ASTM B108; 214 ALLOY.
d. TYP. CONN. BOLTS & ANCHOR BOLTS – ASTM A193; GRADE B8 OR, ASTM 276; TYPE 316 STAINLESS STEEL.
e. NUTS – ASTM A194; GRADE M, OR ASTM 276; TYPE 316 STAINLESS STEEL.

7.3 ALUMINUM SHALL BE SEPARATED FROM DIRECT CONTACT WITH OTHER MATERIALS (STEEL, CONCRETE, ETC.) BY PRESSURE SENSITIVE TAPE, BITUMASTIC COATING, OR OTHER PROTECTIVE METHOD SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE.

7.4 OVERSIZED AND SLOTTED HOLES SHALL NOT BE USED FOR BOLTED CONNECTIONS ON THIS PROJECT EXCEPT AT LOCATIONS NOTED ON DRAWINGS.

7.5 ALL COPES, BLOCKS, CUTS, CUT-OFFS AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENTRANT CORNERS SHAPED, AND NOTCH-FREE TO A RADIUS OF AT LEAST 1/2 INCH. THE FILLET AND ITS CONTIGUOUS CUTS SHALL MEET WITHOUT OFFSET OR CUTTING PAST THE POINT OF TANGENCY.

7.6 ALUMINUM WELDING SHALL CONFORM TO AWS A5.10.

7.7 THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING, AND GUYING OF ALUMINUM FRAMING AGAINST WIND, CONSTRUCTION LOADS, AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAMING.

7.8 REFERENCE PROJECT SPECIFICATIONS FOR HANDRAIL REQUIREMENTS.

8.0 ABBREVIATIONS

8.1 THE FOLLOWING LIST OF ABBREVIATIONS IS NOT INTENDED TO REPRESENT ALL THOSE USED ON THE DRAWINGS, BUT TO SUPPLEMENT THE MORE COMMON ABBREVIATIONS USED.

ADD'L	=	ADDITIONAL	N.S.	=	NEAR SIDE
AL	=	ALUMINUM	N.T.S.	=	NOT TO SCALE
BLDG.	=	BUILDING	O/F	=	OUTSIDE FACE
B.O.	=	BOTTOM OF	O/O	=	OUT TO OUT
C8	=	AL C8x6.48	OPNG.	=	OPENING
C10	=	AL C10x8.64	OPP.	=	OPPOSITE
C12	=	AL C12x10.4	PLCS.	=	PLACES
CLR	=	CLEAR	P.P.	=	PUMP PAD
CMU	=	CONC. MASONRY UNIT	RAD.	=	RADIUS
C.O.	=	CLEAN OUT	REF.	=	REFERENCE
COL	=	COLUMN	REINF.	=	REINFORCING
CONC.	=	CONCRETE	ROT.	=	ROTATE
CONT.	=	CONTINUOUS	SPECS.	=	SPECIFICATIONS
DBL.	=	DOUBLE	S.S.	=	STAINLESS STEEL
DIR.	=	DIRECTION	STD.	=	STANDARD
EA.	=	EACH	STL.	=	STEEL
E.O.	=	EDGE OF	SW	=	SHOP WELD
E.Q.	=	EQUAL	T&B	=	TOP & BOTTOM
E.W.	=	EACH WAY	T/D	=	TURN DOWN
EXIST.	=	EXISTING	THK.	=	THICK
EXP.	=	EXPANSION	T.O.	=	TOP OF
F.S.	=	FAR SIDE	T.O.S	=	TOP OF STEEL
FTG.	=	FOOTING	TYP.	=	TYPICAL
FW	=	FIELD WELD	U.N.O.	=	UNLESS NOTED OTHERWISE
GA.	=	GAGE	W.P.	=	WORK POINT
GALV.	=	GALVANIZED			
I/F	=	INSIDE FACE			
JT.	=	JOINT			
LCS	=	LIQUID CONTAINMENT STRUCTURE			
L3	=	AL L3x3x3/8			
L4	=	AL L4x4x3/8			
MAT'L	=	MANUFACTURER			
MFG.	=	METAL			
NOM.	=	NOMINAL			

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	11/2010
0	FINAL DESIGN - ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24995 WILLIAM F. BAND
11-9-10

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www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

STRUCTURAL SITE PLAN

DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: NA

M&C FILE NUMBER SA001
DRAWING NUMBER S1

STATUS: RECORD DRAWING
REVISION 1

DESIGN LOADS:

LIVE LOAD: 100 PSF PLATFORMS, STAIRS
ROOF: N/A
SNOW: 10 PSF (GROUND)
WIND: ZONE: 90 mi/hr EXPOSURE: C IMPORTANCE FACTOR: 1.15 WIND
1.25 SEISMIC
1.10 SNOW

NORTH CAROLINA STATE BUILDING CODE (NCSBC) 2009
CALCULATED WIND BASE SHEARS: Vx = 3.33 k Vy = 3.75 k

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 1.5
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 32.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.8%
SEISMIC USE GROUP.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....		= C

BASIC STRUCTURAL SYSTEM:

ORDINARY CONCENTRICALLY BRACED FRAME

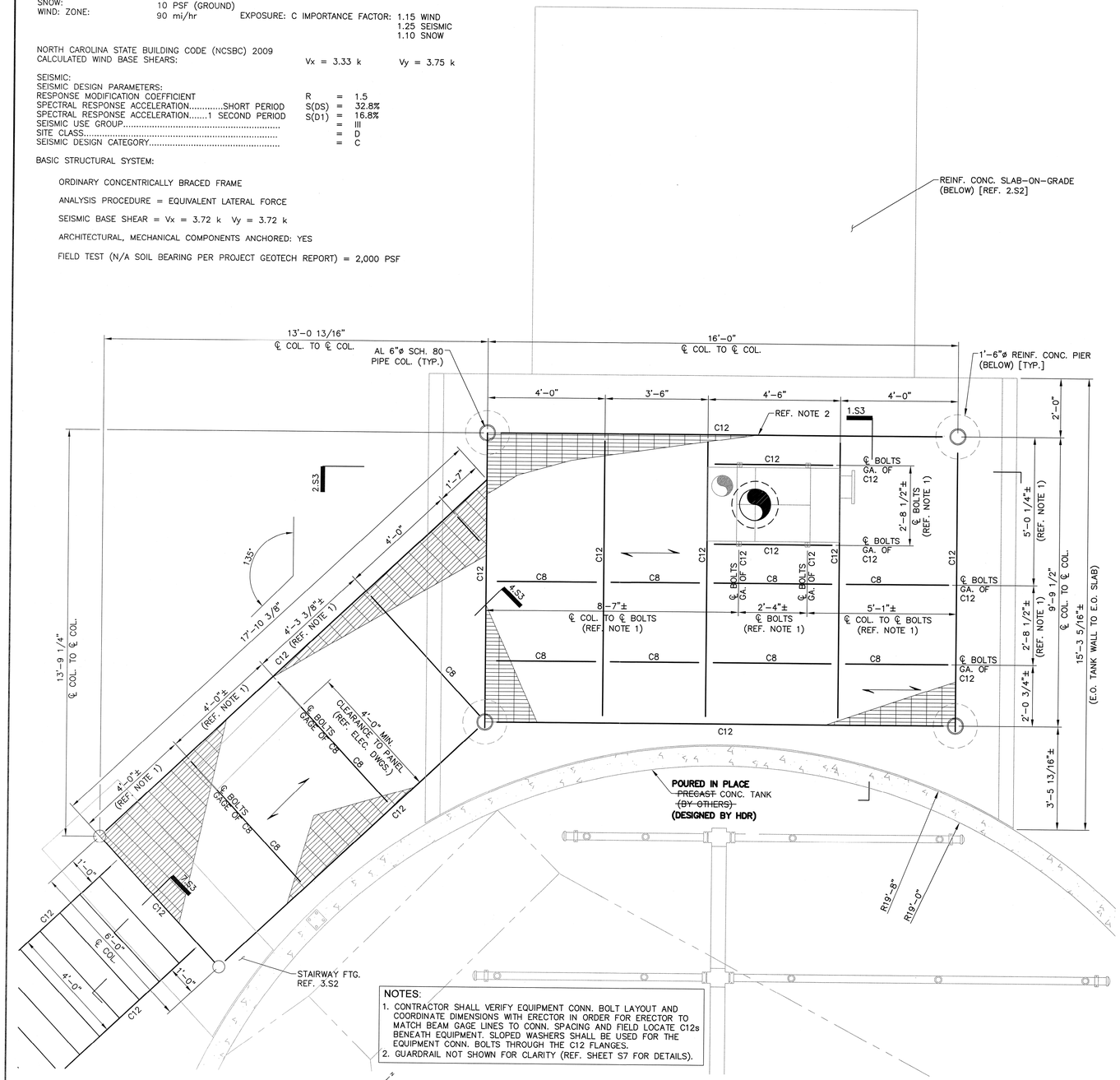
ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = 3.72 k Vy = 3.72 k

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED: YES

FIELD TEST (N/A SOIL BEARING PER PROJECT GEOTECH REPORT) = 2,000 PSF

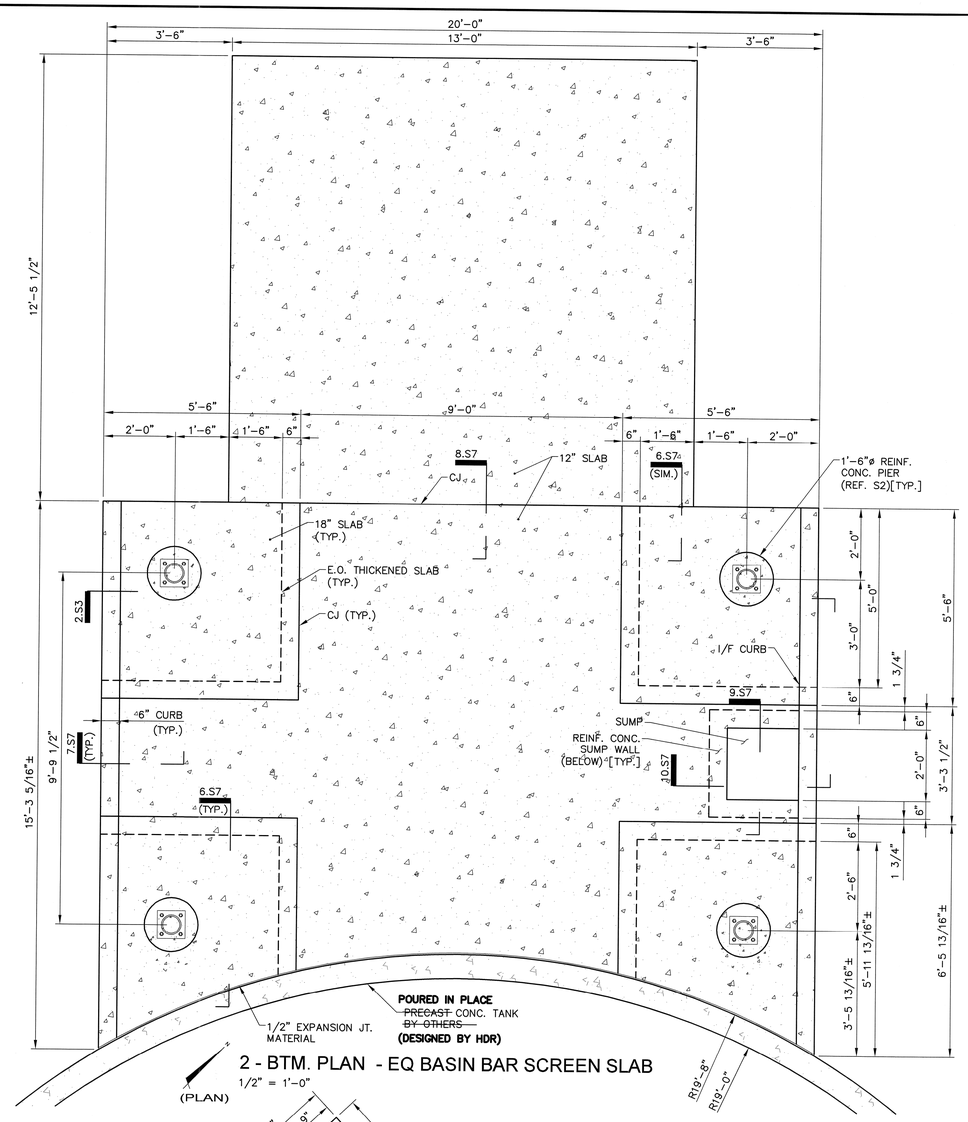
PLATFORM DIMENSIONS AS PER "ANYTHING METAL" SHOP DRAWINGS.



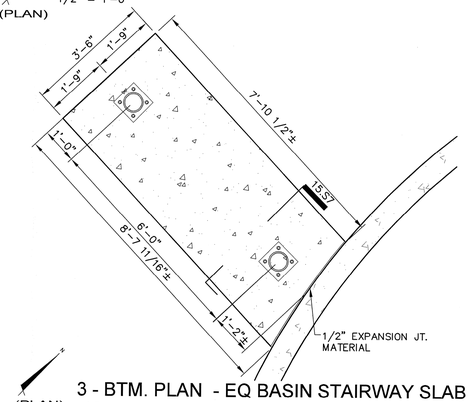
NOTES:
1. CONTRACTOR SHALL VERIFY EQUIPMENT CONN. BOLT LAYOUT AND COORDINATE DIMENSIONS WITH ERECTOR IN ORDER FOR ERECTOR TO MATCH BEAM GAGE LINES TO CONN. SPACING AND FIELD LOCATE C12s BENEATH EQUIPMENT. SLOTTED WASHERS SHALL BE USED FOR THE EQUIPMENT CONN. BOLTS THROUGH THE C12 FLANGES.
2. GUARDRAIL NOT SHOWN FOR CLARITY (REF. SHEET S7 FOR DETAILS).

1 - TOP PLAN - EQ BASIN BAR SCREEN PLATFORM
1/2" = 1'-0"
(PLAN)

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



2 - BTM. PLAN - EQ BASIN BAR SCREEN SLAB
1/2" = 1'-0"
(PLAN)



3 - BTM. PLAN - EQ BASIN STAIRWAY SLAB
1/2" = 1'-0"
(PLAN)

REV.NO.	DESCRIPTIONS REVISIONS	DATE
2	RECORD DRAWING	11/2010
1	EQ BASIN PLATFORM FRAMING REVISIONS	01/12/10
0	FINAL DESIGN - ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

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11-9-10

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC) MUDDY CREEK WWTP 0.15 MGD EXP.

STRUCTURAL - EXTERNAL EQUALIZATION BASIN / BLOWERS / BAR SCREEN PLANS

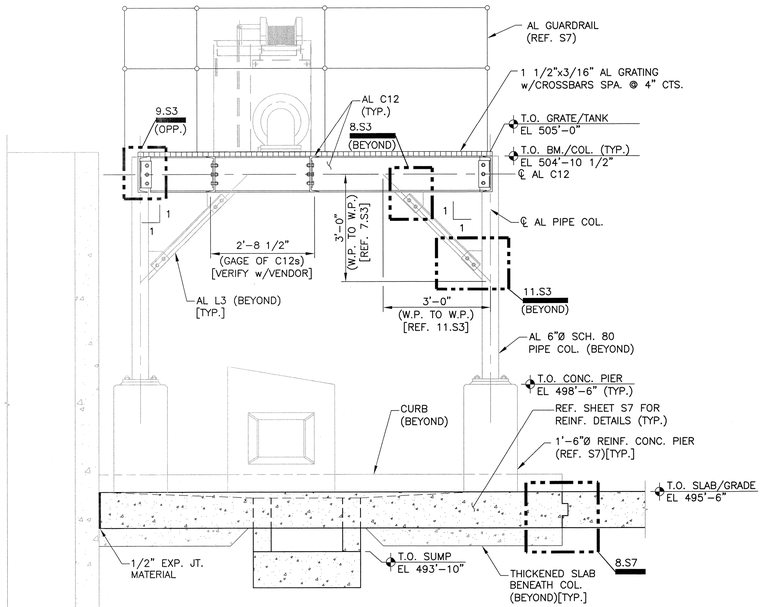
DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER SF101
DRAWING NUMBER S2

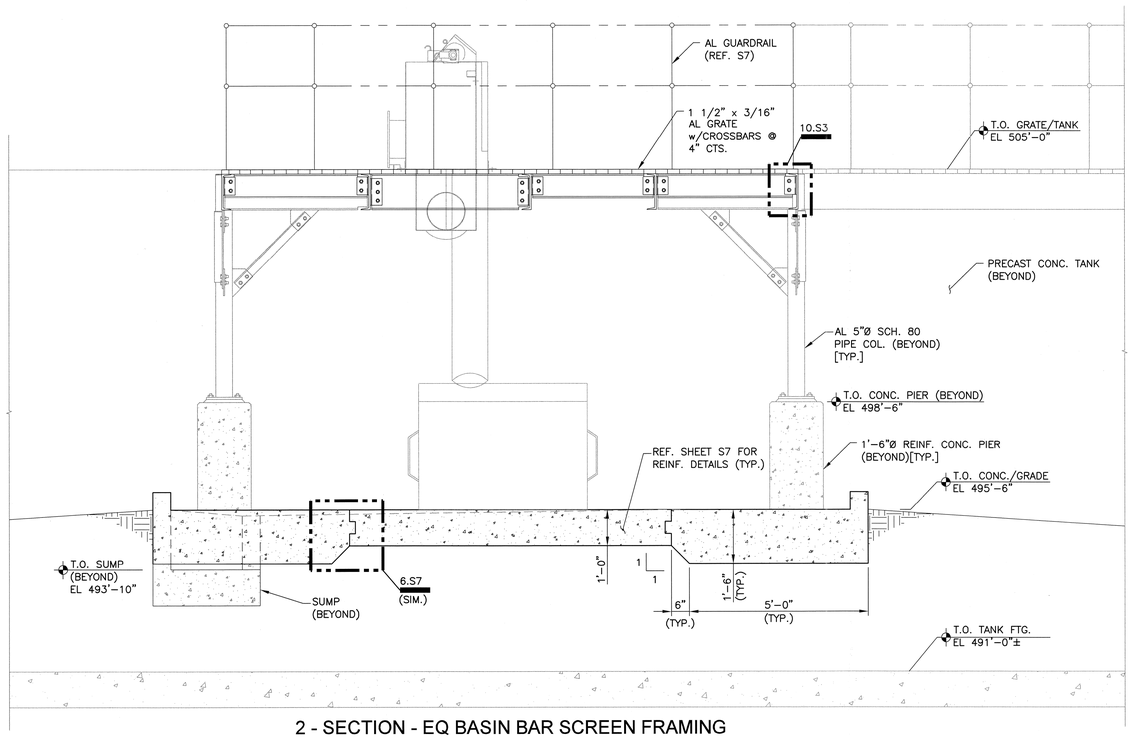
STATUS: RECORD DRAWING REVISION 2

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



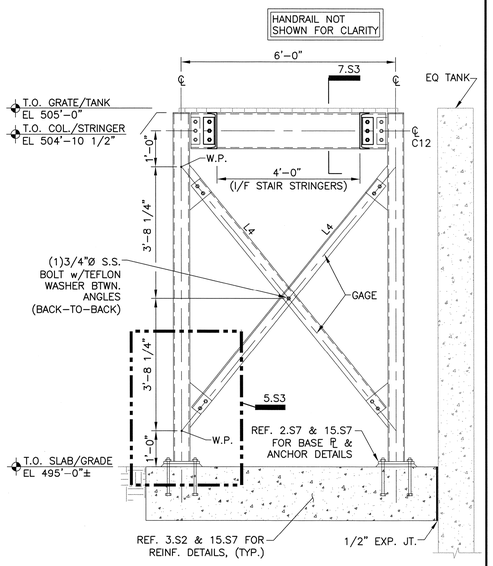
1 - SECTION - EQ BASIN BAR SCREEN FRAMING

1/2" = 1'-0"



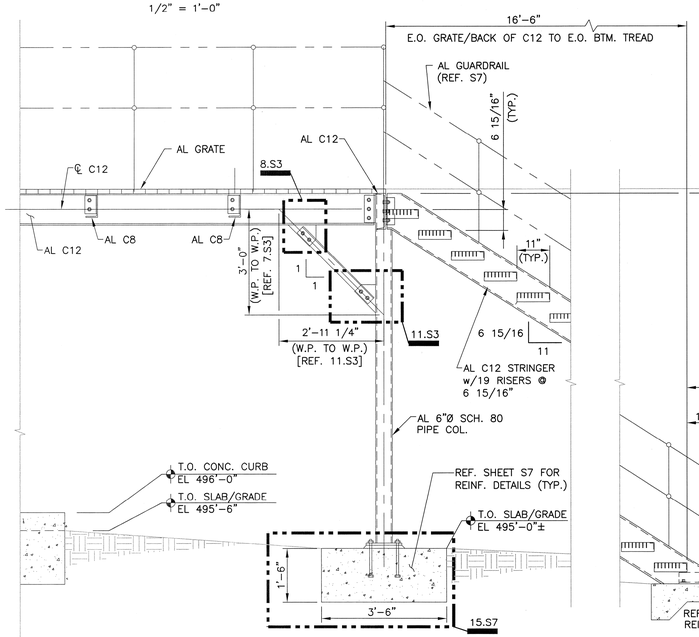
2 - SECTION - EQ BASIN BAR SCREEN FRAMING

1/2" = 1'-0"



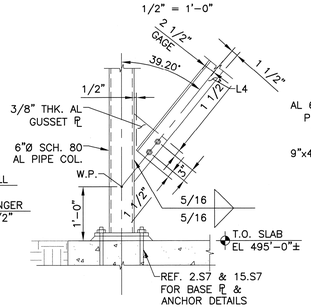
3 - SECTION - STAIRWAY X-BRACE

1/2" = 1'-0"



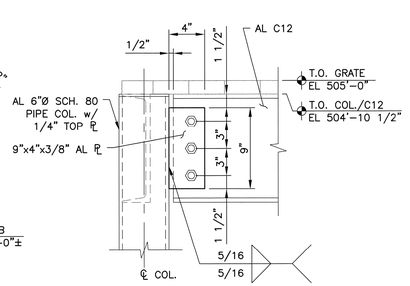
4 - SECTION - EQ BASIN BAR SCREEN FRAMING STAIRS

1/2" = 1'-0"



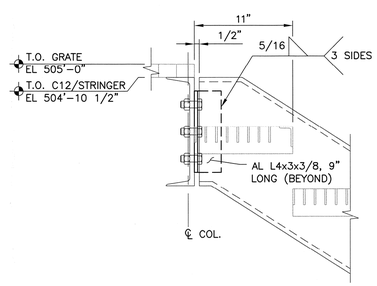
5 - DETAIL

3/4" = 1'-0"



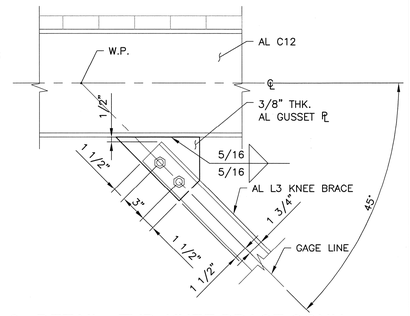
6 - TYP. DETAIL

1 1/2" = 1'-0"



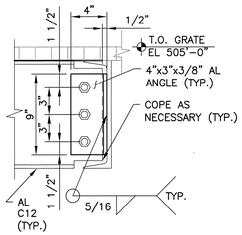
7 - SECTION

1 1/2" = 1'-0"



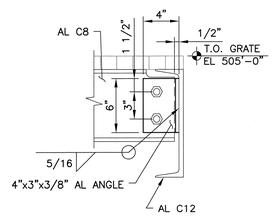
8 - DETAIL - TYP. KNEE BRACE CONN.

1 1/2" = 1'-0"



9 - TYP. SECTION

1 1/2" = 1'-0"

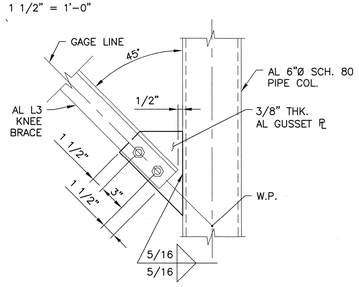


10 - TYP. SECTION

1 1/2" = 1'-0"

HANDRAIL NOT SHOWN ON DETAILS FOR CLARITY.

PLATFORM DIMENSIONS AS PER "ANYTHING METAL" SHOP DRAWINGS.



11 - DETAIL - TYP. KNEE BRACE CONN.

1 1/2" = 1'-0"

REV.NO.	DESCRIPTIONS REVISIONS	DATE
2	RECORD DRAWING	11/2010
1	EQ BASIN PLATFORM FRAMING REVISIONS	01/12/10
0	FINAL DESIGN – ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	09/26/08

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24995 WILLIAM I. BAND 11.9.10

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C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

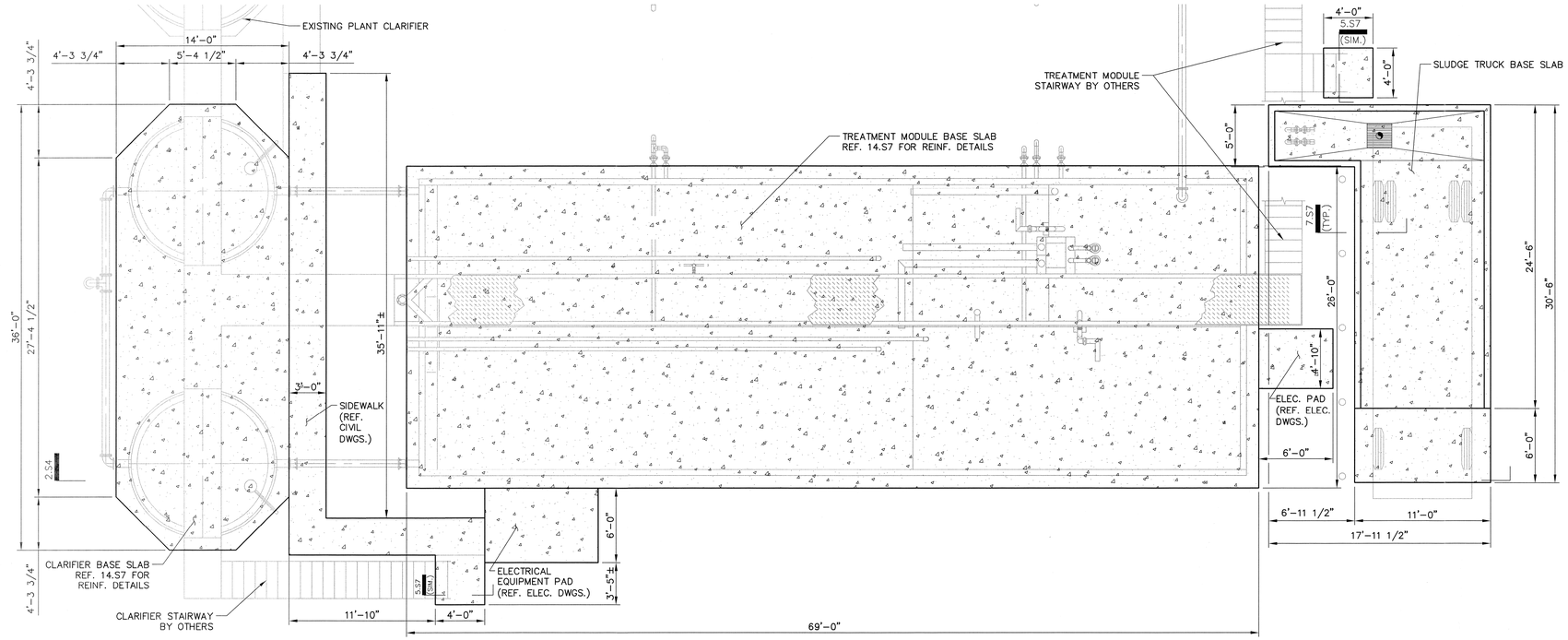
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.
STRUCTURAL – EXTERNAL EQUALIZATION BASIN / BLOWERS / BAR SCREEN SECTIONS AND DETAILS

DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

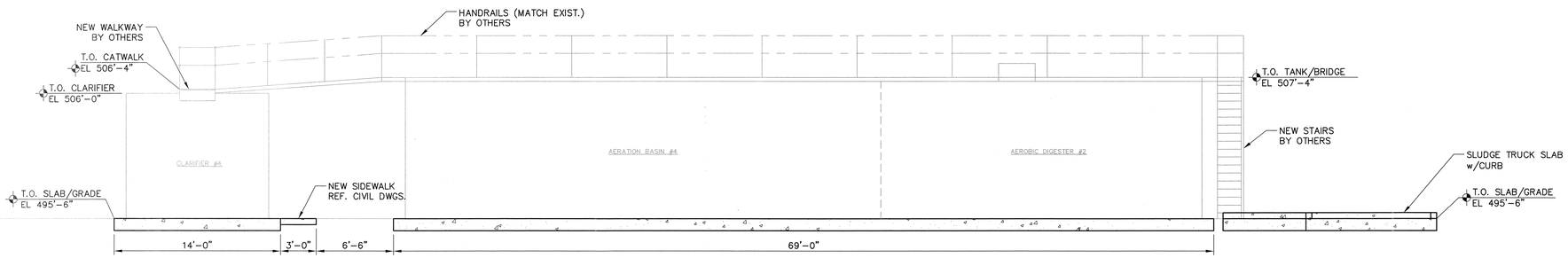
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER SF102
DRAWING NUMBER S3

STATUS: RECORD DRAWING
REVISION 2



1 - PLAN - MODULAR TREATMENT UNIT & CLARIFIERS
3/16" = 1'-0"
(PLAN)



2 - SECTION - MODULAR TREATMENT UNIT & CLARIFIERS
3/16" = 1'-0"

TREATMENT MODULE SLAB DESIGN LOADS:

LIVE LOAD: 100 PSF SLABS
ROOF: N/A
SNOW: 10 PSF (GROUND)
WIND: ZONE: 90 mi/hr EXPOSURE: C

IMPORTANCE FACTOR:
1.15 WIND
1.25 SEISMIC
1.10 SNOW

NORTH CAROLINA STATE BUILDING CODE (NCSBC) 2009:
CALCULATED WIND BASE SHEARS: Vx = 15.31 k Vy = 5.48 k

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 2.5
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 32.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.8%
SEISMIC USE GROUP.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....		= C

BASIC STRUCTURAL SYSTEM:

STEEL FLAT-BOTTOM GROUND-SUPPORTED TANK

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = 262.40 k Vy = 262.40 k

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED: YES (ASSUMED)

FIELD TEST (N/A SOIL BEARING PER PROJECT GEOTECH REPORT) = 2,000 PSF

CLARIFIER SLAB DESIGN LOADS:

LIVE LOAD: 100 PSF SLABS
ROOF: N/A
SNOW: 10 PSF (GROUND)
WIND: ZONE: 90 mi/hr EXPOSURE: C

IMPORTANCE FACTOR:
1.15 WIND
1.25 SEISMIC
1.10 SNOW

NORTH CAROLINA STATE BUILDING CODE (NCSBC) 2009:
CALCULATED WIND BASE SHEARS: Vx = 3.06 k Vy = 1.08 k

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 2.5
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 32.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.8%
SEISMIC USE GROUP.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....		= C

BASIC STRUCTURAL SYSTEM:

STEEL FLAT-BOTTOM GROUND-SUPPORTED TANK

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = 42.64 k Vy = 42.64 k

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED: YES (ASSUMED)

FIELD TEST (N/A SOIL BEARING PER PROJECT GEOTECH REPORT) = 2,000 PSF

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	11/2010
0	FINAL DESIGN - ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24995 WILLIAM F. BAND
11-9-10

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

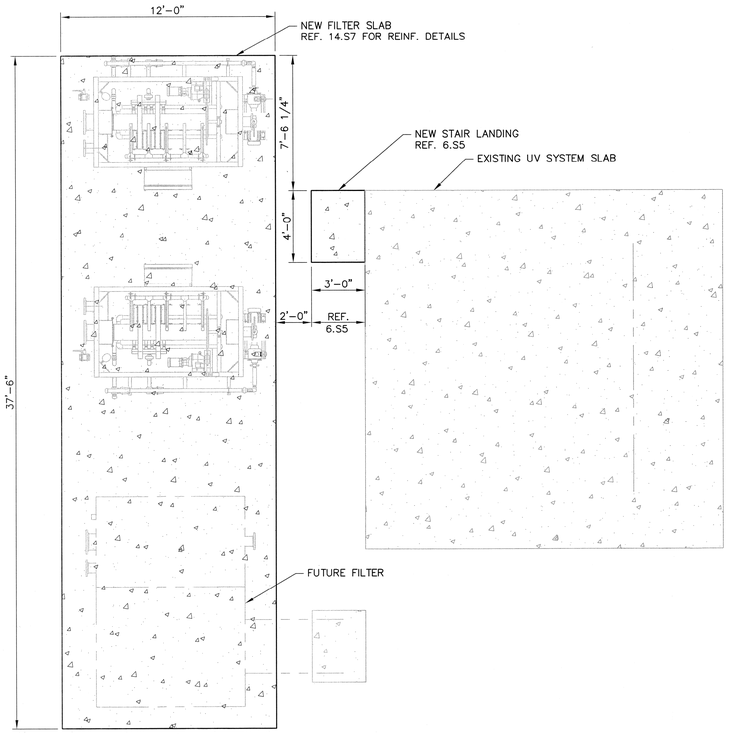
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.
STRUCTURAL - MODULAR TREATMENT UNIT / CLARIFIERS PLAN AND SECTION

DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

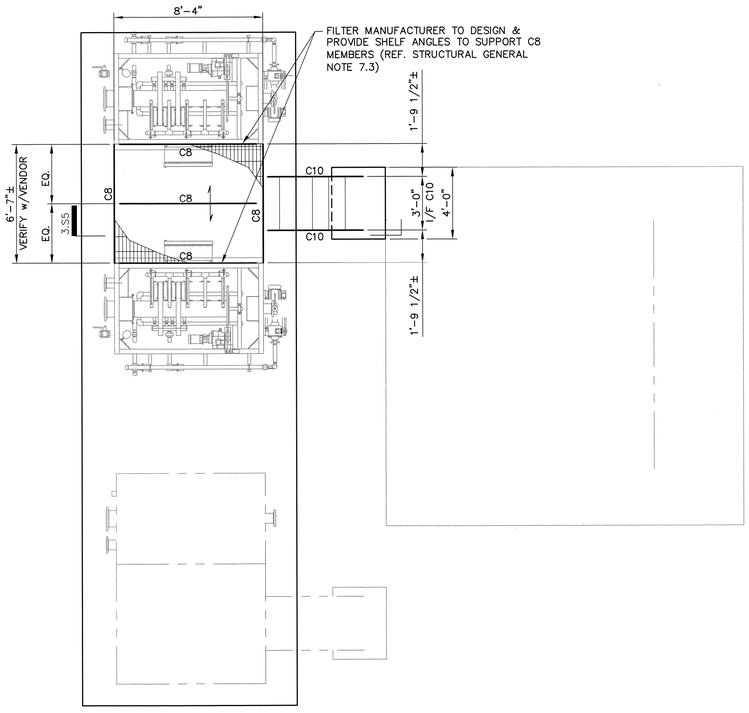
M&C FILE NUMBER SC201
DRAWING NUMBER S4

STATUS: RECORD DRAWING REVISION 1



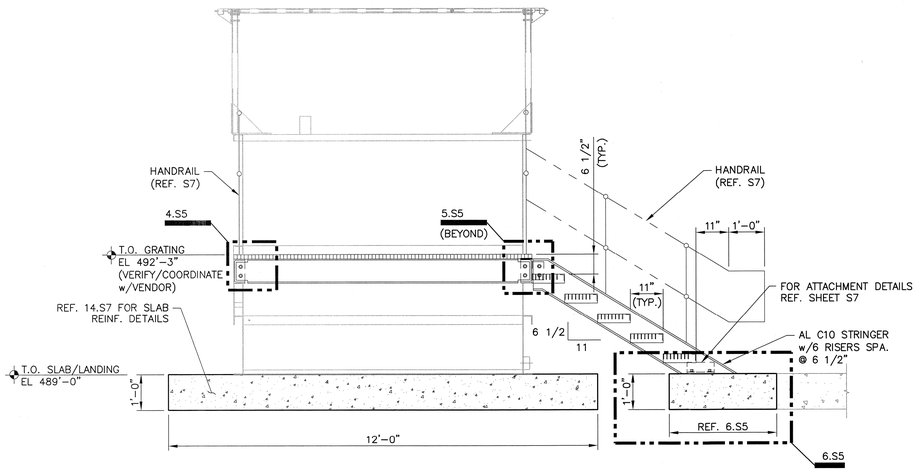
1 - BTM. PLAN - FILTER SLAB & STAIR LANDING

(PLAN) 1/4" = 1'-0"



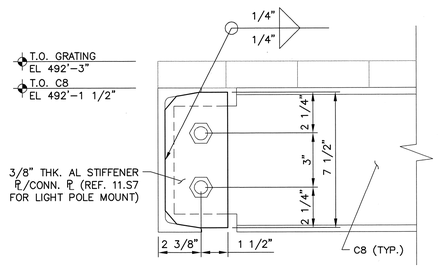
2 - TOP PLAN - FILTER PLATFORM & STAIRS

(PLAN) 1/4" = 1'-0"



3 - SECTION - FILTER PLATFORM & STAIRS

1/2" = 1'-0"



4 - SECTION - TYP. CONN.

3" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

FILTER SLAB DESIGN LOADS:

LIVE LOAD:	100 PSF PLATFORMS, STAIRS, SLAB	
ROOF:	N/A	
SNOW:	10 PSF (GROUND)	
WIND: ZONE:	90 mi/hr EXPOSURE: C	IMPORTANCE FACTOR: 1.15 WIND, 1.25 SEISMIC, 1.10 SNOW

NORTH CAROLINA STATE BUILDING CODE (NCSBC) 2009:
CALCULATED WIND BASE SHEARS: Vx = 4.93 k Vy = 1.11 k

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 2.5
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 32.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.8%
SEISMIC USE GROUP.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....		= C

BASIC STRUCTURAL SYSTEM:

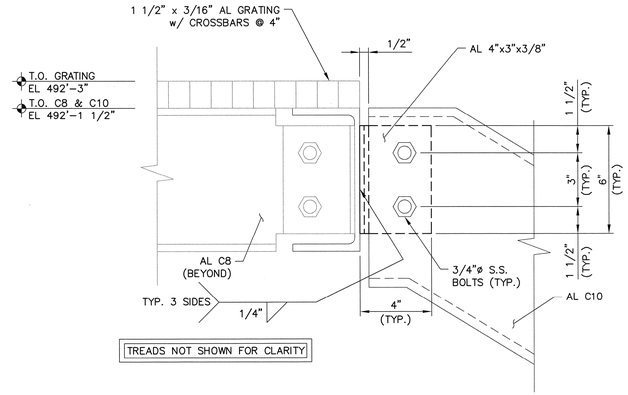
STEEL FLAT-BOTTOM GROUND-SUPPORTED TANK

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = 22.96 k Vy = 22.96 k

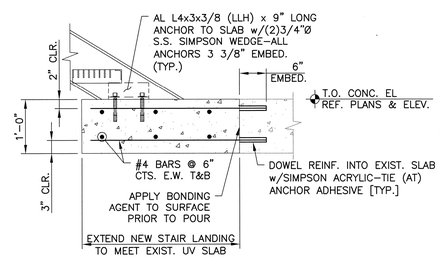
ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED: YES (ASSUMED)

FIELD TEST (N/A SOIL BEARING PER PROJECT GEOTECH REPORT) = 2,000 PSF



5 - DETAIL - TYP. STAIR CONNECTION

3" = 1'-0"



6 - DETAIL - DISC FILTER STAIR LANDING

3/4" = 1'-0"

REV.NO.	DESCRIPTIONS REVISIONS	DATE
1	RECORD DRAWING	11/2010
0	FINAL DESIGN - ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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11-9-10

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.
STRUCTURAL - DISK FILTERS BASE SLAB / LANDING & PLATFORM / STAIR FRAMING

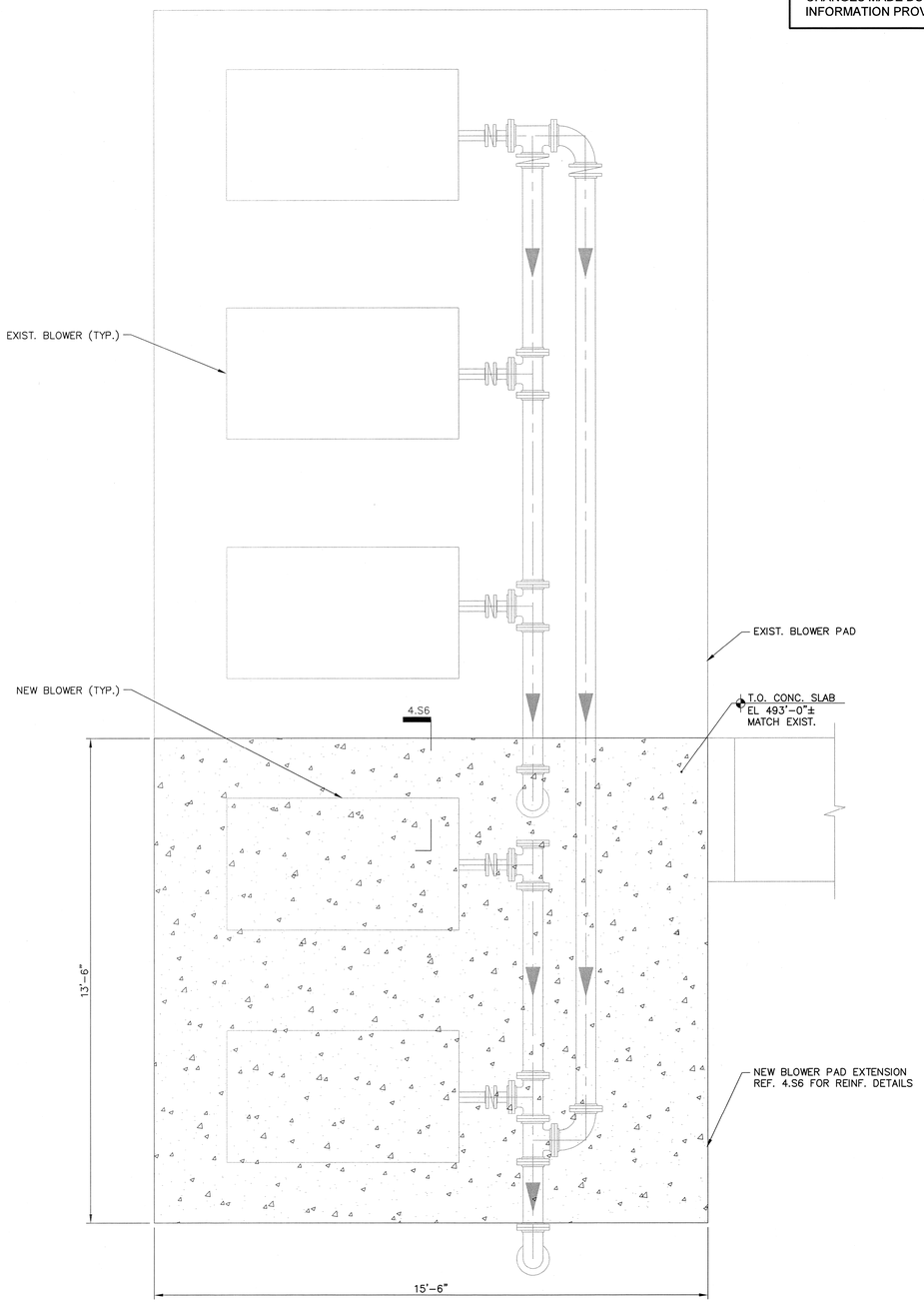
DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

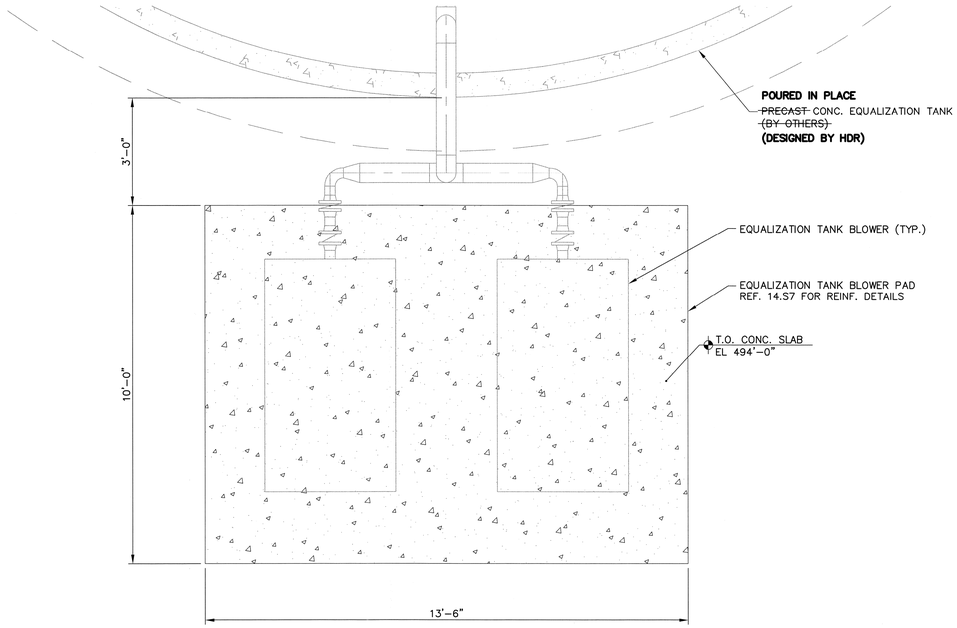
M&C FILE NUMBER: SC202
DRAWING NUMBER: S5

STATUS: RECORD DRAWING REVISION 1

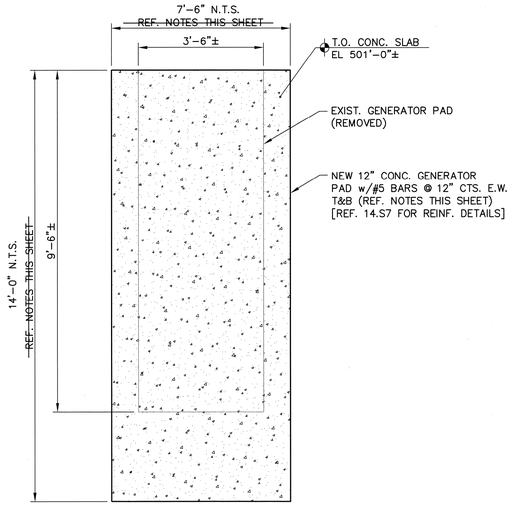
THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



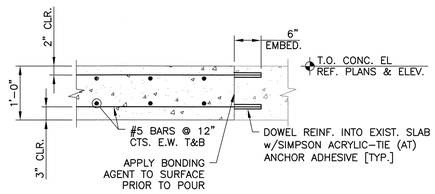
1 - PLAN - TREATMENT MODULE BLOWER PAD EXTENSION
1/2" = 1'-0"
(PLAN)



2 - PLAN - EQ BASIN BLOWER PAD
1/2" = 1'-0"
(PLAN)



3 - PLAN - GENERATOR PAD
1/2" = 1'-0"
(PLAN)



4 - SECTION - BLOWER PAD EXTENSION
1/2" = 1'-0"

BLOWER PAD DESIGN LOADS:

LIVE LOAD:	100 PSF PLATFORMS, STAIRS, SLAB	
ROOF:	N/A	
SNOW:	10 PSF (GROUND)	
WIND: ZONE:	90 mi/hr EXPOSURE: C	IMPORTANCE FACTOR: 1.15 WIND, 1.25 SEISMIC, 1.10 SNOW

NORTH CAROLINA STATE BUILDING CODE (NCSBC) 2009:
CALCULATED WIND BASE SHEARS: Vx = 0.96 k Vy = 0.96 k

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 3.0
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 32.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.8%
SEISMIC USE GROUP.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....		= C

BASIC STRUCTURAL SYSTEM:

HORIZONTAL, SADDLE SUPPORTED WELDED STEEL VESSEL

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = 0.44 k Vy = 0.44 k

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED: YES (ASSUMED)

FIELD TEST (N/A SOIL BEARING PER PROJECT GEOTECH REPORT) = 2,000 PSF

NOTES:

1. CONTRACTOR SHALL COORDINATE NEW GENERATOR PAD DIMENSIONS PRIOR TO CONSTRUCTION OF PAD WITH ENGINEER AFTER SPECIFIC GENERATOR HAS BEEN CHOSEN FOR THE SITE.
2. REMOVAL OF EXISTING GENERATOR PAD SHALL ALLOW EXISTING CONDUIT & ELECTRICAL SUPPLY TO REMAIN INTACT AND BE REUSED FOR THE NEW GENERATOR AND PAD.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	11/2010
0	FINAL DESIGN – ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24995 WILLIAM F. BAND 11-9-10

McKIM&CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC) MUDDY CREEK WWTP 0.15 MGD EXP.

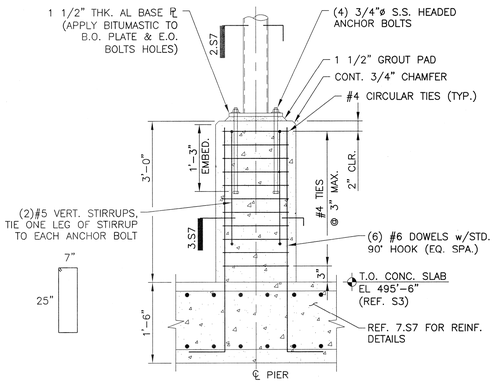
STRUCTURAL – BLOWER AND GENERATOR PADS

DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

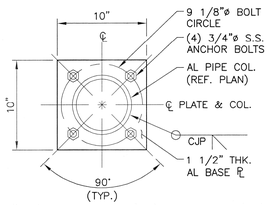
M&C FILE NUMBER: SC203
DRAWING NUMBER: S6

STATUS: RECORD DRAWING
REVISION: 1



1 - SECTION - TYP. COL. PIER & FOOTING

3/4" = 1'-0"



2 - SECTION - TYP. COL. BASE PLATE

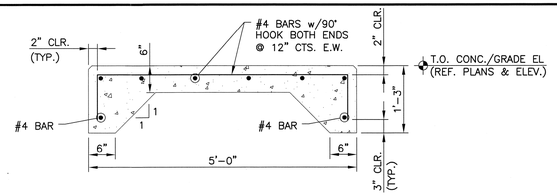
1 1/2" = 1'-0"

3 - SECTION - TYP. COL. PIER

3/4" = 1'-0"

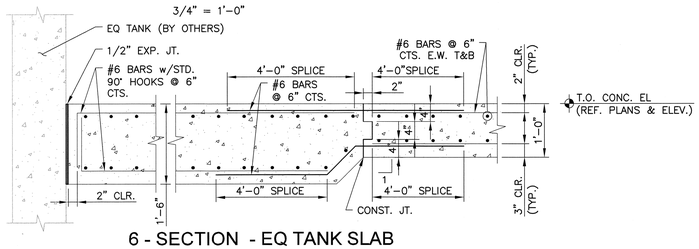
4 - DETAIL - TYP. STAIR STRINGER TO LANDING CONN.

1" = 1'-0"



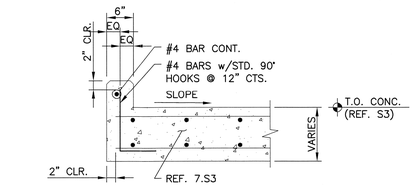
5 - SECTION - TYP. STAIR LANDING

3/4" = 1'-0"



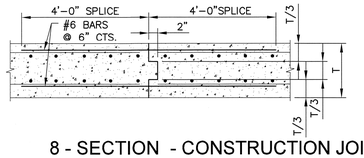
6 - SECTION - EQ TANK SLAB

3/4" = 1'-0"



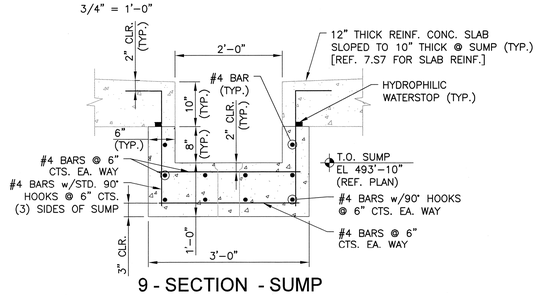
7 - SECTION - TYP. SLAB CURB

3/4" = 1'-0"



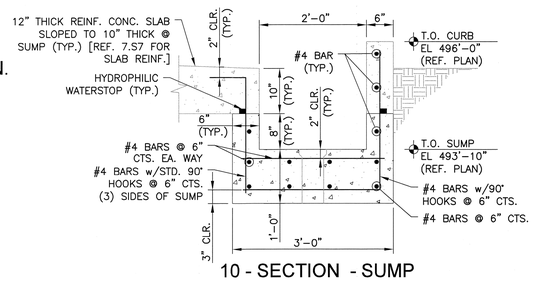
8 - SECTION - CONSTRUCTION JOINT

3/4" = 1'-0"



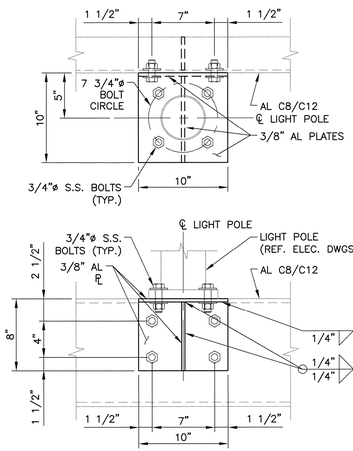
9 - SECTION - SUMP

3/4" = 1'-0"



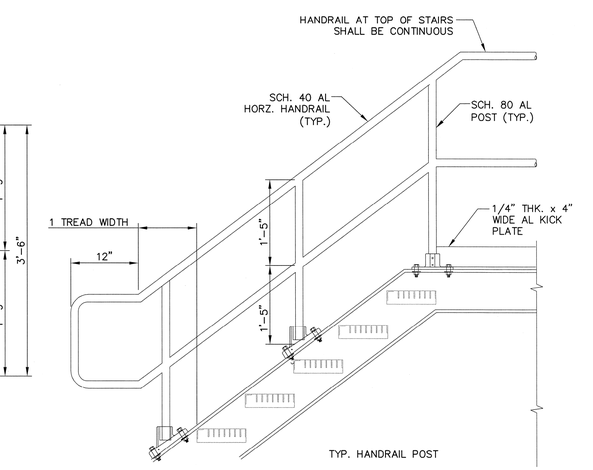
10 - SECTION - SUMP

3/4" = 1'-0"



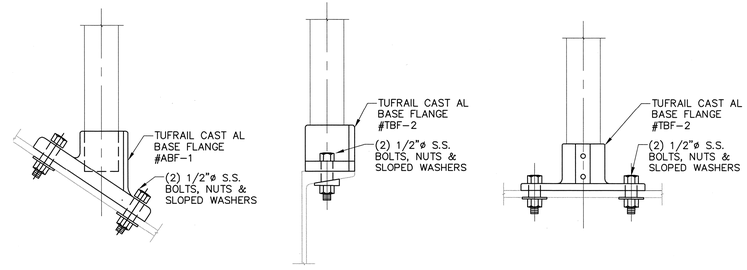
11 - DETAILS - TYP. LIGHT POLE BASE CONNECTION

1" = 1'-0"



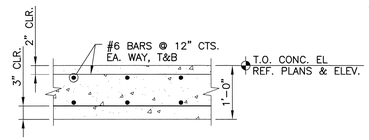
12 - DETAIL - TYP. GUARDRAILS & HANDRAILS

SCALE: 1"=1'-0"



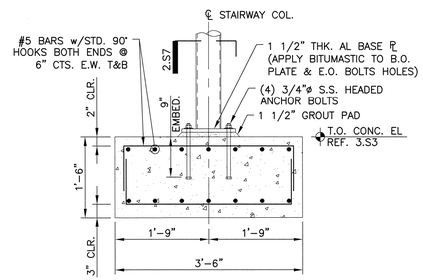
13 - DETAIL - TYP. GUARDRAIL POST

SCALE: 3"=1'-0"



14 - DETAIL - TYP. 12" SLAB REINF.

3/4" = 1'-0"



15 - DETAIL - STAIRWAY COL./FTG.

3/4" = 1'-0"

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
2	RECORD DRAWING	11/2010
1	EQ BASIN PLATFORM FRAMING REVISIONS	01/12/10
0	FINAL DESIGN - ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS NOT RELEASED FOR CONST.	05/28/09
B	REVISED PER REGULATORY COMMENTS	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

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C-0342
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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

STRUCTURAL DETAILS

DATE:	AUGUST 2009
MCE PROJ. #	02000-0013
DRAWN	DWB
DESIGNED	DWB
CHECKED	CHG
PROJ. MGR.	KEL

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

M&C FILE NUMBER SF103
DRAWING NUMBER S7

STATUS: RECORD DRAWING
REVISION 2

GENERAL ELECTRICAL SYMBOLS

LP-3 — CONDUIT HOMERUN TO EQUIPMENT (PANEL BOARD) SHOWN. LINE TYPE DESIGNATES CONCEALED, EXPOSED, ETC. NUMBERS/TEXT DESIGNATE HOMERUN EQUIPMENT (I.E. PANEL BOARD CIRCUIT NUMBER).

GENERAL CONDUIT RUN CONCEALED IN FURRED WALLS AND CEILINGS, EXPOSED ELSEWHERE UNLESS OTHERWISE NOTED OR SPECIFIED.

CONCEALED CONDUIT IN FLOOR SLAB, UNDERGROUND, ETC.

EXISTING CABLE OR CONDUIT

CONDUIT TURNED DOWN

CONDUIT TURNED UP

E — SITE ELECTRICAL

E — EXISTING SITE ELECTRICAL

T — SITE TELEPHONE

T — EXISTING SITE TELEPHONE

OHE — OVERHEAD ELECTRICAL UTILITY

OHT — OVERHEAD TELEPHONE UTILITY

UGE — UNDERGROUND ELECTRICAL UTILITY

UGT — UNDERGROUND TELEPHONE UTILITY

G — SITE GROUND

G — EXISTING SITE GROUND

DS — SECURITY - DOOR SWITCH

LS — LIMIT SWITCH

LP — LIGHTING PROTECTION

T — THERMOSTAT

PB — PULL BOX, SIZE PER NEC UNLESS OTHERWISE NOTED

JB OR PB — JUNCTION BOX, SIZE PER NEC UNLESS OTHERWISE NOTED

E — ELECTRICAL EQUIPMENT CONNECTION (HARDWIRED)

GROUND ROD

GROUND ROD TEST WELL

PANELBOARD

TX — TRANSFORMER

DISCONNECT SWITCH. TOP NUMBER DENOTES FUSE SIZE (NF=NON-FUSED). BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING.

CIRCUIT BREAKER. TOP NUMBER DENOTES TRIP. BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING.

COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH OR MOTOR CIRCUIT PROTECTOR. LEFT NUMBER DENOTES NEMA STARTER SIZE. TOP NUMBER DENOTES FUSE SIZE OR MCP. BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING.

S OR S — CONTROL SWITCH:
- [LOWERCASE LETTER] - CONTROL SWITCHING
- M - MANUAL STARTER
- D - DIMMER CONTROL
- 3 - THREE-WAY SWITCHING
- 4 - FOUR-WAY SWITCHING
- OS - OCCUPANCY SENSOR SWITCHING

OUTLETS - STANCHION, FLOOR BOX, OR WALL MOUNTED AS SHOWN. NUMBER DENOTES PANEL BOARD CIRCUIT FOR POWER OUTLETS. IF SHOWN, LOWERCASE LETTER DENOTES CONTROL SWITCHING FOR POWER OUTLETS.

STANCHION	FLOOR	WALL	
			SIMPLEX RECEPTACLE.
			DUPLEX RECEPTACLE.
			QUADRAPLEX RECEPTACLE.
			VOICE (PHONE) OUTLET.
			DATA OUTLET.
			VOICE/DATA COMBINATION OUTLET.
			SPECIAL PURPOSE RECEPTACLE (TYPE 1) - AMPERE RATING, VOLTAGE, AND PHASE AS INDICATED.
			SPECIAL PURPOSE RECEPTACLE (TYPE 2) - AMPERE RATING, VOLTAGE, AND PHASE AS INDICATED.

LIGHTING SYMBOLS

A1 / LP-1 — LIGHT FIXTURES (VARIOUS TYPES) - UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT. LOWERCASE LETTER DENOTES CONTROL SWITCH. DUAL SWITCHING INDICATED BY PAIRS OF LOWERCASE LETTERS. "NL" DENOTES NIGHT LIGHT, CIRCUIT AHEAD OF CONTROL SWITCHES.

EMERGENCY/NIGHT LIGHT FIXTURES (VARIOUS TYPES) - DIAGONALLY SHADED SYMBOLS DENOTE BATTERY EQUIPPED EMERGENCY LIGHTING FIXTURES, CIRCUIT AHEAD OF CONTROL SWITCHES. UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT.

EXIT LIGHTS, CEILING MOUNTED. SHADING INDICATES FACE. MARK AS INDICATED WITH DIRECTION ARROWS. IF SHOWN, UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT.

EXIT LIGHTS, WALL MOUNTED. SHADING INDICATES FACE. MARK AS INDICATED WITH DIRECTION ARROWS. IF SHOWN, UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT.

EMERGENCY LIGHT - BATTERY EQUIPPED EMERGENCY LIGHT, CIRCUIT AHEAD OF CONTROL SWITCHES. ADDITIONAL FIXTURE HEADS MAY BE SHOWN CONNECTED TO UNIT. IF SHOWN, UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT.

PC — PHOTOELECTRIC CONTROL DEVICE

LC — LIGHTING CONTACTOR

TYPICAL ABBREVIATIONS

A, AMP	AMPERE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFG	ABOVE FINISHED GRADE
AIT	ANALYTICAL INDICATION TRANSMITTER
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C, CND	CONDUIT
CAB	CABINET
CAT	CATALOG
CL	CHLORINE
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL SWITCH
CV	CONTROL VALVE
CT	CURRENT TRANSFORMER
CU	COPPER
EF	EXHAUST FAN
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EPRF	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPS
FLOUR	FLUORESCENT
FLR	FLOOR
FMC	FLEXIBLE METAL CONDUIT
FWE	FURNISHED WITH EQUIPMENT
GEN	GENERATOR
G, GND	GROUND
GFI	GROUND FAULT INTERRUPTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
Hz	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT (GALVANIZED)
INCAND	INCANDESCENT
JB	JUNCTION BOX
K	THOUSAND
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATTS
KWH	KILOWATT-HOURS
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LIT	LEVEL INDICATION TRANSMITTER
LP	LIGHTING PANEL, LIGHT POLE
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N, NEUT	NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSH-BUTTON
PCP	PUMP CONTROL PANEL
PF	POWER FACTOR
PH, ϕ	PHASE
PIT	PRESSURE INDICATION TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PT	POTENTIAL TRANSFORMER
PWR	POWER
RECPT	RECEPTACLE
REQ'D	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT (GALVANIZED)
RTU	REMOTE TELEMETRY UNIT
SCR	DC MOTOR DRIVE
SH	SHEET
SPEC	SPECIFICATION
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
STP	SHIELDED TWISTED PAIR
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TEL	TELEPHONE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE, WATT
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER

GENERAL NOTES

1. THE GENERAL NOTES STATED ON THIS DRAWING ARE APPLICABLE TO ALL ELECTRICAL WORK UNLESS NOTED OTHERWISE. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL SYMBOLS AND ABBREVIATION MAY NOT BE UTILIZED FOR THIS PROJECT.
3. ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS.
4. ELECTRICAL PLANS SHOW MAJOR CABLE AND CONDUIT REQUIREMENTS. REFER TO EQUIPMENT DETAILS FOR ADDITIONAL REQUIREMENTS.
5. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED SO THAT ALL CODE-REQUIRED AND MANUFACTURER-RECOMMENDED SERVICING CLEARANCES ARE MAINTAINED. INSTALLATIONS SHALL FULLY COMPLY WITH NEC 110-26 FOR CLEARANCE REQUIREMENTS.
6. ROUGH-IN CONDUIT AS REQUIRED FOR DIRECT CONNECTION TO EQUIPMENT AS SHOWN. PROVIDE FLEXIBLE CONNECTIONS TO ALL EQUIPMENT AND MAKE ALL CONNECTIONS COMPLETE AND IN ACCORDANCE WITH THE SPECIFICATIONS.
7. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED PULL BOXES, TERMINAL BOXES AND JUNCTION BOXES FOR INSTALLATION OF THE WIRING IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS THOUGH THE BOXES MAY NOT BE INDICATED ON THE DRAWINGS
8. CONDUIT AND WIRING FOR LIGHTING, RECEPTACLES AND OTHER SINGLE PHASE POWERED DEVICES ARE GENERALLY NOT SHOWN BUT SHALL BE PROVIDED AS REQUIRED FOR PROPER SERVICE. CIRCUITS SHALL BE PROVIDED IN INDIVIDUAL CONDUITS.
9. ALL AMPACITIES ARE BASED ON 75°C RATING. THE CONTRACTOR IS RESPONSIBLE FOR THE INCREASING OF CONDUCTOR SIZES AS NECESSARY TO MEET THE REQUIREMENTS OF NEC 110-14(C) WHERE TERMINATIONS ARE NOT LISTED AND LABELED FOR USE AT 75°C. THIS REQUIREMENT APPLIES TO TERMINATIONS IN BOTH NEW EQUIPMENT AND IN EXISTING EQUIPMENT TO WHICH TERMINATIONS ARE MADE AS PART OF THIS PROJECT.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTION OF ALL EQUIPMENT INSTALLED OR MODIFIED AS PART OF THIS CONTRACT.
11. CONTRACTOR SHALL PROVIDE AUXILIARY SUPPORTS FOR THE PANEL BOARDS, TRANSFORMER, CONTROL PANELS, ETC.. AS REQUIRED.
12. CONDUIT SHALL RUN PARALLEL TO LANDSCAPE AND STRUCTURAL FEATURES, AND THE BENDS AND TURNS SHALL BE MADE BY MEANS OF CONDUIT FITTINGS. MOST CONDUIT LAYOUTS ARE NOT AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROPOSE LOGICAL GROUPINGS, MARSHALING AND ROUTING OF CONDUITS AND WIRING FOR APPROVAL BY ENGINEER PRIOR TO INSTALLATION.
13. ALL SPARE CONDUITS SHALL BE CAPPED OR PLUGGED AND SHALL INCLUDE 1/8" POLYPROPYLENE PULL STRING.
14. ALL NEW EQUIPMENT SHALL FIT INTO EXISTING AVAILABLE SPACE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE EQUIPMENT WHICH MEETS THE SPACE REQUIREMENTS.
15. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUITS ARE BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS APPROVED BY THE ENGINEER MAY BE MADE BY THE CONTRACTOR AT HIS EXPENSE TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED.
16. THE CONTRACTOR SHALL PROVIDE A CIRCUIT IDENTIFICATION LABEL AT EACH END OF EACH BRANCH CIRCUIT WIRE.
17. GROUND FAULT CURRENT INTERRUPTING (GFCI) RECEPTACLES FOR 120 VOLT SERVICE:
    A. IN NON-PROCESS AREAS EXPOSED TO WATER SUCH AS TOILET ROOMS, SHOWER AREAS, KITCHENS, ETC.., INDIVIDUAL GFCI RECEPTACLES SHALL BE PROVIDED.
    B. OUTDOORS OR IN PROCESS AREAS, ALL RECEPTACLES SHALL BE WEATHER PROOF, CORROSION RESISTANT, AND SHALL BE INDIVIDUAL GFCI DEVICES.
18. ALL 480V ELECTRICAL EQUIPMENT SHALL HAVE A MINIMUM AIC RATING AS SHOWN ON THE CONTRACT DRAWINGS.
19. NO SPLICES SHALL BE MADE WITHOUT ENGINEERS APPROVAL. NO JUNCTIONS SHALL BE MADE BELOW GRADE WITHOUT APPROVAL OF THE ENGINEER. PROVIDE NEMA 4X SST JUNCTION BOX MOUNTED 18" A.F.G. NEXT TO HANDHOLE SUPPORTED BY SST UNISTRUT EMBEDDED IN THE CONCRETE SURROUNDING THE HANDHOLE TO MAKE JUNCTION ABOVE GRADE.
20. ELECTRICAL DUCTBANKS SHALL CROSS PROCESS PIPING AT NEAR A 90° ANGLE WHERE POSSIBLE. REFER TO DUCTBANK DETAILS AND SPECIFICATIONS.
21. REFER TO SPECIFICATIONS WITHIN DIVISION 13000 FOR ADDITIONAL REQUIREMENTS AND RESPONSIBILITY.
22. REFER TO SPECIFICATIONS WITHIN DIVISION 16000 FOR TYPE OF CONDUIT AND CABLING TO BE USED PER APPLICATION AND LOCATION.
23. NOT ALL MOISTURE AND HAZARDOUS AREA CONDUIT SEALS ARE SHOWN ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE CODE, SPECIFICATION, AND DRAWING REQUIREMENTS FOR THEIR LOCATION.

TYPICAL DEVICE MOUNTING HEIGHTS

RECEPTACLES (OFFICE AREA)	18" AFF
RECEPTACLES (COUNTER TOP)	48" AFF
LIGHT SWITCHES	48" AFF
EXIT LIGHTS (WALL MTD)	1" ABOVE DOOR
EMERGENCY LIGHTS (WALL MTD)	7'-6" AFF
DATA OUTLETS	18" AFF

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP DATA NO.	LAMP DATA TYPE	BALLAST NO.	BALLAST TYPE	VOLTS / WATTS	MOUNTING	MANUFACTURER	CATALOG/SERIES NO.	REMARKS
A1	POLE MOUNTED AREA LIGHT	1	175W MH	1	PULSE START	120 / 208	POLE MOUNT (10' ABOVE TOP OF STRUCTURE)	HOLOPHANE R-A-L DAY-BRITE	PTA-175PM-27-A-541 SAF SERIES VHG SERIES	PROVIDE POLE, MOUNTING ARM, AND HARDWARE TO MOUNT FIXTURE AS SHOWN.
A2	ROADWAY/AREA LIGHT	1	400W HPS	1	CWA	480 / 467	POLE MOUNT (30' AFG)	CROUSE-HINDS OR APROVED EQUAL	OVM SERIES	REFER TO LIGHTING DETAILS FOR ADDITIONAL FIXTURE REQUIREMENTS.

LIGHTING FIXTURE SCHEDULE NOTES:

1. REFER TO SPECIFICATION SECTION 16500 FOR ADDITIONAL REQUIREMENTS
2. POLES AND REQUIRED MOUNTING HARDWARE SHALL BE FURNISHED AND INSTALLED FOR ALL POLE MOUNTED FIXTURES. POLES SHALL BE RATED FOR 100 M.P.H WIND. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
3. CATALOG/SERIES NUMBERS ARE SUBJECT TO CHANGE FROM MANUFACTURER

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-12-2010

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

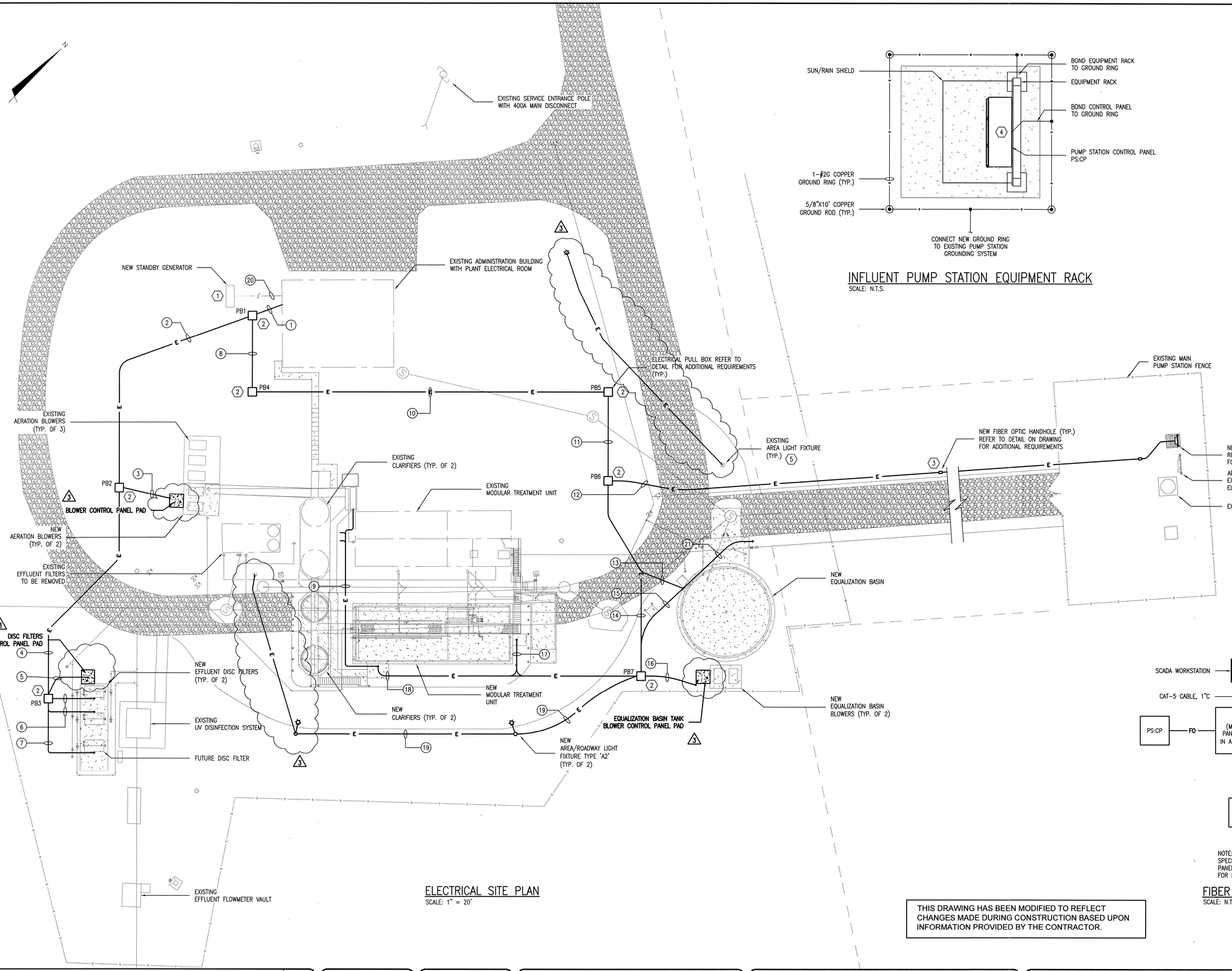
GENERAL NOTES, SYMBOLS, AND LIGHTING FIXTURE SCHEDULE

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE — HORIZONTAL: NA — VERTICAL: NA

M&C FILE NUMBER EA001 — DRAWING NUMBER E1

STATUS: RECORD DRAWING — REVISION 1



ELECTRICAL SITE PLAN
SCALE: 1" = 20'

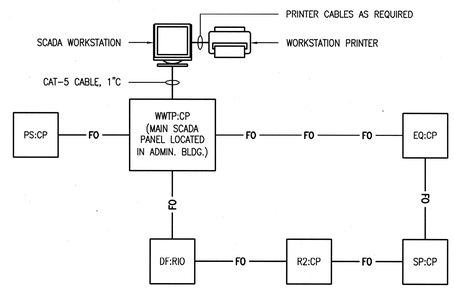
INFLUENT PUMP STATION EQUIPMENT RACK
SCALE: N.T.S.

NOTES:

1. REFER TO DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS, AND LIGHTING FIXTURE SCHEDULE.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
3. ALL ABOVE GROUND CONDUIT AND FITTINGS OUTDOORS SHALL BE RIGID GALVANIZED STEEL (RGS). ALL CONDUIT BELOW GRADE SHALL BE CONCRETE ENCASED SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. REFER TO DUCTBANK SCHEDULE, SPECIFICATIONS, AND TYPICAL CONDUIT TRANSITION DETAIL FOR ADDITIONAL REQUIREMENTS.
4. ALL SPARE CONDUITS SHALL TERMINATE INTO THE ADMIN BLDG. ELECTRICAL ROOM AND BE CLEARLY MARKED AS TO WHERE THE OTHER END IS LOCATED. REFER TO ELECTRICAL ROOM WALL PENETRATION DETAIL FOR ADDITIONAL REQUIREMENTS.
5. LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE. CONTRACTOR SHALL VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION TO ENSURE EXISTING FACILITIES ARE NOT DAMAGED OR OTHERWAYS DISRUPTED DURING CONSTRUTION UNLESS SPECIFICALLY SHOWN.
6. CONTRACTOR SHALL PROVIDE A MINIMUM OF 12" SEPARATION BETWEEN POWER CONDUITS AND CONTROL/COMMUNICATION CONDUITS WITHIN DUCTBANKS.

KEYNOTES:

1. EXISTING GENERATOR TO BE REMOVED. INSTALL NEW GENERATOR IN EXISTING GENERATOR'S LOCATION AND RECONNECT EXISTING POWER AND CONTROL CABLES TO THE NEW GENERATOR. THE GENERATOR SUPPLIER SHALL CONFIGURE THE NEW GENERATOR TO OPERATE WITH THE EXISTING 400A, GENERAC TRANSFER SWITCH. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEMPORARY BACK-UP POWER DURING ALL TRANSITIONS TO ENSURE BACK-UP POWER IS AVAILABLE AT ALL TIMES. ANY SHUTDOWN DUE TO THE INSTALLATION OF THE GENERATORS SHALL BE COORDINATED WITH THE OWNER AND BE SCHEDULED AT THEIR CONVENIENCE.
2. ELECTRICAL PULL BOX SIZED AS REQUIRED. REFER TO DETAIL, SHEET E12, FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL LOCATE NEW FIBER OPTIC HANDHOLE APPROXIMATELY HALF WAY DOWN DRIVEWAY BETWEEN THE PLANT SITE AND THE MAIN PUMP STATION SITE.
4. CONTRACTOR SHALL PROVIDE NEW EQUIPMENT RACK AND CONCRETE PAD FOR NEW PUMP STATION CONTROL PANEL, PS:CP, AS SHOWN. PROVIDE ALL REQUIRED POWER AND CONTROL CONDUIT/WIRE TO CONNECT PS:CP TO THE EXISTING PUMP STATION EQUIPMENT (PUMPS, FLOATS, ETC.). REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS. CONTRACTOR SHALL INSTALL EQUIPMENT RACK, CONTROL PANEL, CONDUIT/WIRE, ETC. PRIOR TO DISCONNECTING THE EXISTING PUMP STATION CONTROL PANEL TO MINIMIZE THE DOWNTIME REQUIRED TO REPLACE THE PUMP STATION CONTROL EQUIPMENT. ALL DOWNTIME REQUIRED TO INSTALL PS:CP AND RECONNECT EXISTING PUMP EQUIPMENT SHALL BE COORDINATED WITH AND DONE AT THE OWNER'S CONVENIENCE.
5. RELOCATE EXISTING LIGHT FIXTURE AND RECONNECT TO EXISTING CIRCUIT AS REQUIRED TO MOVE FIXTURE OUT OF ROADWAY EXTENSION.



NOTE: REFER TO PARTIAL POWER PLANS AND SPECIFICATIONS FOR ADDITIONAL CONTROL PANEL AND COMMUNICATION REQUIREMENTS FOR EACH CONTROL PANEL.

FIBER OPTIC LOOP SCHEMATIC
SCALE: N.T.S.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC. 09
1	CHANGE ORDER - INFLUENT FLOWMETER ADDITION	DEC. 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER 11-12-2010 ARTHUR L. ANCHORS

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MUDDY CREEK WWTP 0.15 MGD EXP.

ELECTRICAL SITE PLAN

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: 1" = 20'
VERTICAL: NA

M&C FILE NUMBER EB101
DRAWING NUMBER E2

STATUS: RECORD DRAWING REVISION 3

DUCTBANK SCHEDULE

(1) INSTALL THE FOLLOWING CONDUIT/WIRE FROM THE ADMIN BUILDING TO ELECTRICAL PULL BOX PB1:

A. 3 #4, 1 #8G, 1 INCH CONDUIT – AERATION BLOWER NO. 4 & NO. 5 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 2 (480V POWER)
E. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
F. PULL STRING, 1 INCH CONDUIT – SPARE
G. 3 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT BAR SCREEN (480V POWER)
H. 3 #10, 1 #10G, 1 INCH CONDUIT – EQUALIZATION BASIN PUMPS NO. 1 & NO. 2 (480V POWER)
I. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
J. PULL STRING, 1 INCH CONDUIT – SPARE
K. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
L. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
M. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
N. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)
O. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
P. 16 #14, 1 #14G, 1 INCH CONDUIT – AERATION BLOWER NO. 1 & NO. 2 (CONTROLS)
Q. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
R. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
S. FIBER OPTIC CABLE, 1 INCH CONDUIT – PUMP STATION COMMUNICATIONS
T. PULL STRING, 1 INCH CONDUIT – FUTURE EFFLUENT DISC FILTER NO. 3 (POWER)
U. PULL STRING, 1 INCH CONDUIT – FUTURE EQUALIZATION BASIN PUMPS NO. 3 & 4 (POWER)
V. PULL STRING, 1 INCH CONDUIT – SPARE
W. PULL STRING, 1 INCH CONDUIT – SPARE
X. PULL STRING, 1 INCH CONDUIT – SPARE

(2) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB1 TO ELECTRICAL PULL BOX PB2:

A. 3 #4, 1 #8G, 1 INCH CONDUIT – AERATION BLOWER NO. 4 & NO. 5 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 2 (480V POWER)
E. 16 #14, 1 #14G, 1 INCH CONDUIT – AERATION BLOWER NO. 1 & NO. 2 (CONTROLS)
F. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
G. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
H. PULL STRING, 1 INCH CONDUIT – FUTURE EFFLUENT DISC FILTER NO. 3 (POWER)
I. PULL STRING, 1 INCH CONDUIT – SPARE

(3) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB2 TO THE AERATION BLOWERS AS SHOWN:

A. 3 #4, 1 #8G, 1 INCH CONDUIT – AERATION BLOWER NO. 4 & NO. 5 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 16 #14, 1 #14G, 1 INCH CONDUIT– AERATION BLOWER NO. 4 & NO. 5 (CONTROLS)

(4) INSTALL THE FOLLOWING CONDUIT/WIRE BETWEEN ELECTRICAL PULL BOX PB2 AND PB3 AS SHOWN:

A. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 (480V POWER)
B. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 2 (480V POWER)
C. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
D. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
E. PULL STRING, 1 INCH CONDUIT – FUTURE EFFLUENT DISC FILTER NO. 3 (POWER)
F. PULL STRING, 1 INCH CONDUIT – SPARE

(5) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB3 TO THE NEW DISC FILTER COMMUNICATION CONTROL PANEL EQUIPMENT RACK AS SHOWN:

A. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
B. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
C. 8 #14, 1 #14G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 & NO. 2 (CONTROLS)
D. PULL STRING, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 3 (CONTROLS)
E. PULL STRING, 1 INCH CONDUIT – SPARE

(6) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB3 TO THE NEW DISC FILTER EQUIPMENT CONTROL PANELS AS SHOWN:

A. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 (480V POWER)
B. 3 #10, 1 #10G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 2 (480V POWER)
C. 4 #14, 1 #14G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 1 (CONTROLS)
D. 4 #14, 1 #14G, 1 INCH CONDUIT – EFFLUENT DISC FILTER NO. 2 (CONTROLS)

(7) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB3 TO THE FUTURE EFFLUENT DISC FILTER LOCATION AS SHOWN:

A. PULL STRING, 1 INCH CONDUIT – FUTURE EFFLUENT DISC FILTER NO. 3 (POWER)
B. PULL STRING, 1 INCH CONDUIT – FUTURE EFFLUENT DISC FILTER NO. 3 (CONTROLS)

(8) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB1 TO ELECTRICAL PULL BOX PB4 AS SHOWN:

A. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT BAR SCREEN (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – EQUALIZATION BASIN PUMPS NO. 1 & NO. 2 (480V POWER)
E. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
F. PULL STRING, 1 INCH CONDUIT – SPARE
G. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
H. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
I. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
J. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)
K. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
L. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
M. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
N. FIBER OPTIC CABLE, 1 INCH CONDUIT – PUMP STATION COMMUNICATIONS
O. PULL STRING, 1 INCH CONDUIT – FUTURE EQUALIZATION BASIN PUMPS NO. 3 & 4 (POWER)
P. PULL STRING, 1 INCH CONDUIT – SPARE
Q. PULL STRING, 1 INCH CONDUIT – SPARE

(9) INSTALL THE FOLLOWING CONDUIT/WIRE FROM THE NEW RAS/WAS EQUIPMENT RACK TO THE EXISTING RAS/WAS PUMPS AND FLOWMETERS AS REQUIRED::

A. 3 #10, 1 #10G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMP NO. 1 (480V POWER)
B. 3 #10, 1 #10G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMP NO. 2 (480V POWER)
C. 4 #14, 2 #14G, 1 INCH CONDUIT – RAS PUMP NO. 1 & NO. 2 MOISTURE PROBES
D. 3 TSP, 1 INCH CONDUIT – EXISTING RAS/WAS FLOWMETERS

(10) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB4 TO ELECTRICAL PULL BOX PB5 AS SHOWN:

A. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT BAR SCREEN (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – EQUALIZATION BASIN PUMPS NO. 1 & NO. 2 (480V POWER)
E. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
F. PULL STRING, 1 INCH CONDUIT – SPARE
G. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
H. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
I. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
J. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)
K. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
L. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
M. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
N. FIBER OPTIC CABLE, 1 INCH CONDUIT – PUMP STATION COMMUNICATIONS
O. PULL STRING, 1 INCH CONDUIT – FUTURE EQUALIZATION BASIN PUMPS NO. 3 & 4 (POWER)
P. PULL STRING, 1 INCH CONDUIT – SPARE
Q. PULL STRING, 1 INCH CONDUIT – SPARE

(11) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB5 TO ELECTRICAL PULL BOX PB6:

A. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT BAR SCREEN (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – EQUALIZATION BASIN PUMPS NO. 1 & NO. 2 (480V POWER)
E. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
F. PULL STRING, 1 INCH CONDUIT – SPARE
G. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
H. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
I. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
J. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)
K. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
L. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
M. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
N. FIBER OPTIC CABLE, 1 INCH CONDUIT – PUMP STATION COMMUNICATIONS
O. PULL STRING, 1 INCH CONDUIT – FUTURE EQUALIZATION BASIN PUMPS NO. 3 & 4 (POWER)
P. PULL STRING, 1 INCH CONDUIT – SPARE
Q. PULL STRING, 1 INCH CONDUIT – SPARE

(12) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB6 TO THE MAIN PUMP STATION ELECTRICAL EQUIPMENT RACK AS SHOWN:

A. FIBER OPTIC CABLE, 1 INCH CONDUIT – PUMP STATION COMMUNICATIONS

(13) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB6 TO THE EQUALIZATION BASIN AS SHOWN:

A. 3 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT BAR SCREEN (480V POWER)
B. 3 #10, 1 #10G, 1 INCH CONDUIT – EQUALIZATION BASIN PUMPS NO. 1 & NO. 2 (480V POWER)
C. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS

(14) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB6 TO ELECTRICAL PULL BOX PB7 AS SHOWN:

A. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
D. PULL STRING, 1 INCH CONDUIT – SPARE
E. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
F. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
G. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
H. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)
I. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
J. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
K. PULL STRING, 1 INCH CONDUIT – SPARE
L. PULL STRING, 1 INCH CONDUIT – SPARE

(15) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB7 TO THE EQUALIZATION BASIN AS SHOWN:

A. 2 #10, 1 #10G, 1 INCH CONDUIT – EQ BASIN LIGHTING (120V POWER)
B. 2 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT SAMPLER (120V POWER)
C. 2 #10, 1 #10G, 1 INCH CONDUIT – EQ BASIN HEAT TRACING (120V POWER)
D. 2 #10, 1 #10G, 1 INCH OCNDUIT – INFLUENT FLOWMETER (120V POWER)
E. 16 #14, 1 #14G, 1 INCH CONDUIT – EQ BASIN BLOWERS NO. 1 & 2 (CONTROLS)
F. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS

(16) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB7 TO THE EQUALIZATION BASIN BLOWERS AS SHOWN:

A. 3 #1, 1 #8G, 1.25 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 & NO. 2 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 16 #14, 1 #14G, 1 INCH CONDUIT – EQUALIZATION BASIN BLOWER NO. 1 (CONTROLS)
D. PULL STRING, 1 INCH CONDUIT – SPARE

(17) INSTALL THE FOLLOWING CONDUIT/WIRE AS SHOWN:

A. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
B. 2 #12, 1 #12G, 1 INCH CONDUIT – SURGE PUMP EQUIPMENT RACK RECEPT. (120V POWER)
C. 2 #12, 1 #12G, 1 INCH CONDUIT – FLOW TRANSMITTER FIT-04 (120V POWER)
D. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
E. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
F. PULL STRING, 1 INCH CONDUIT – SPARE

(18) INSTALL THE FOLLOWING CONDUIT/WIRE AS SHOWN:

A. 3 #8, 1 #8G, 1 INCH CONDUIT – EXISTING RAS/WAS PUMPS NO. 1 & NO. 2 AND NEW RAS/WAS PUMPS NO. 3 & 4 (480V POWER)
B. PULL STRING, 1 INCH CONDUIT – SPARE
C. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 3 (480V POWER)
D. 3 #10, 1 #10G, 1 INCH CONDUIT – CLARIFIER NO. 4 (480V POWER)
E. 3 #10, 1 #10G, 1 INCH CONDUIT – SURGE PUMPS NO. 3 & NO. 4 (480V POWER)
F. 2 #6, 1 #6G, 1 INCH CONDUIT – POWERCENTER 'PC4' FEEDER (480V POWER)
G. 2 #12, 1 #12G, 1 INCH CONDUIT – SURGE PUMP EQUIPMENT RACK RECEPT. (120V POWER)
H. 2 #12, 1 #12G, 1 INCH CONDUIT – FLOW TRANSMITTER FIT-04 (120V POWER)
I. 2 #10, 1 #10G, 1 INCH CONDUIT – EQ BASIN LIGHTING (120V POWER)
J. 2 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT SAMPLER (120V POWER)
K. 2 #10, 1 #10G, 1 INCH CONDUIT – EQ BASIN HEAT TRACING (120V POWER)
L. 2 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT FLOWMETER (120V POWER)
M. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
N. FIBER OPTIC CABLE, 1 INCH CONDUIT – PLANT COMMUNICATIONS
O. PULL STRING, 1 INCH CONDUIT – SPARE

(19) INSTALL THE FOLLOWING CONDUIT/WIRE FROM ELECTRICAL PULL BOX PB7 TO THE AREA/ROADWAY LIGHTING AS SHOWN:

A. 2 #10, 1 #10G, 1 INCH CONDUIT – AREA LIGHTING (480V POWER)

(20) INSTALL THE FOLLOWING CONDUIT/WIRE FROM THE ADMIN BUILDING TO THE STANDBY GENERATOR:

A. 2 #10, 1 #10G, 1 INCH CONDUIT – GENERATOR BLOCK HEATER (240V POWER)
B. 2 #12, 1 #12G, 1 INCH CONDUIT – GENERATOR BATTERY CHARGER (120V POWER)
C. 4 #14, 1 #14G, 1 INCH CONDUIT – GENERATOR CONTROLS

(21) INSTALL THE FOLLOWING CONDUIT/WIRE AS REQUIRED TO THE INFLUENT FLOWMETER AS SHOWN:

A. 2 #10, 1 #10G, 1 INCH CONDUIT – INFLUENT FLOWMETER (120V POWER)

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER – INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	06/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS
12-2-2010

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WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

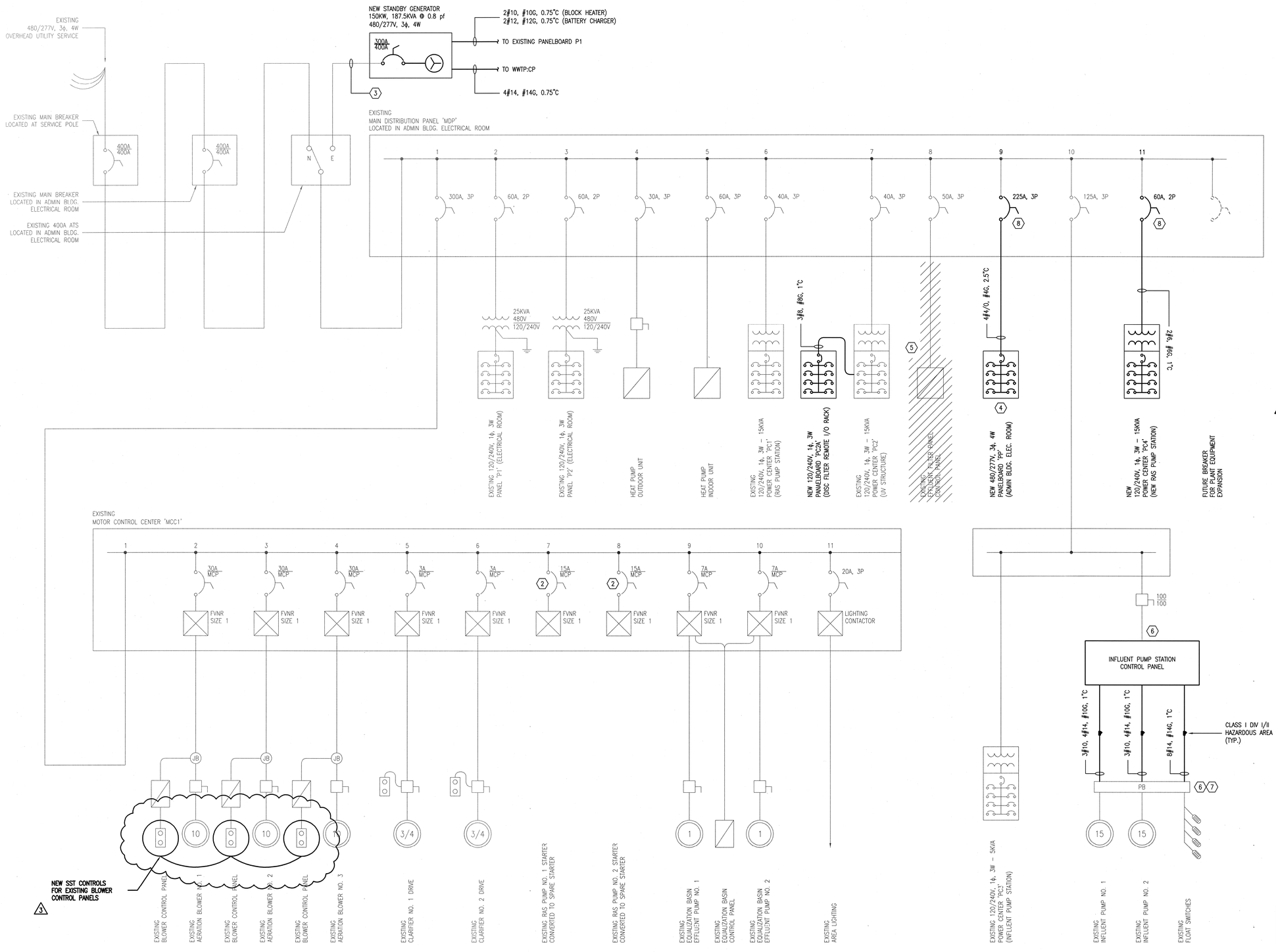
SITE PLAN DUCTBANK NOTES

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER: ER101
DRAWING NUMBER: E3

STATUS: RECORD DRAWING
REVISION: 3



NOTES:

1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
3. REFER TO PANELBOARD SCHEDULES AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
4. REFER TO ELECTRICAL POWER PLANS FOR ADDITIONAL INFORMATION ABOUT CONDUIT/WIRE REQUIREMENTS BETWEEN EQUIPMENT.
5. ALL LOCAL DISCONNECTS SHOWN ARE NEMA 4X SST UNLESS OTHERWISE NOTED.
6. EXISTING MCC IS SQUARE D MODEL 6. ALL MODIFICATIONS SHALL BE IN ACCORDANCE WITH THE ORIGINAL MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

KEYNOTES:

1. (NOT USED)
2. EXISTING CONDUIT AND STARTERS FOR EXISTING RAS PUMPS NO. 1 & NO. 2 SHALL REMAIN AS SPARES. EXISTING WIRE SHALL BE REMOVED IN ITS ENTIRETY. THE CONTRACTOR SHALL INSTALL NEW CONDUIT/WIRE, RAS PUMP CONTROL PANEL, AND ALL ANCILLARY DEVICES AS REQUIRED FOR RAS PUMP OPERATION AS SHOWN AND SPECIFIED PRIOR TO DISCONNECTING/RECONNECTING POWER TO THE EXISTING RAS PUMPS TO MINIMIZE OPERATIONAL DISRUPTION. ANY DOWNTIME DUE TO INSTALLATION OF THE RAS PUMP CONTROL PANEL SHALL BE COORDINATED WITH THE OWNER AND SHALL BE DONE AT THEIR CONVENIENCE.
3. GENERATOR SHALL BE LOCATED SUCH THAT IT CAN CONNECT TO THE EXISTING GENERATOR POWER AND CONTROL LEADS FROM THE EXISTING AUTOMATIC TRANSFER SWITCH.
4. NEW 480/277V PANELBOARD 'PP'. REFER TO DRAWING E5 FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR SHALL REMOVE EXISTING EFFLUENT SAND FILTER CONTROL PANEL. BREAKER AND CONDUIT SHALL REMAIN AS SPARES. EXISTING WIRE SHALL BE REMOVED IN ITS ENTIRETY.
6. CONTRACTOR SHALL RECONNECT NEW PUMP STATION CONTROL PANEL TO EXISTING PUMPING EQUIPMENT AND 100A POWER FEEDER AS SHOWN.
7. CONTRACTOR SHALL INSTALL LOUVER/VENT AND FILTER ON END OF THE EXISTING PULL BOX. LOUVER/VENT SHALL BE STAINLESS STEEL, SERIES AVK, FILTER SHALL BE SERIES AFLT BY HOFFMAN OR APPROVED EQUAL.
8. NEW BREAKERS INSTALLED IN MDP SHALL MATCH THE AIC RATING OF THE EXISTING PANELBOARD.
9. **REFER TO DRAWING E13 FOR EXISTING BLOWER MOTOR STARTER MODIFICATIONS.**

3

WWTP LOAD TABULATION

* EXISTING KW DEMAND:	55.00
EXISTING KVA @ 0.8 pf:	68.75
** PROPOSED RUNNING LOAD AMPS:	92.25
PROPOSED RUNNING KVA:	76.70
PROPOSED + 1.25% EXISTING KVA:	162.63
PROPSED + EXISTING KW @ 0.8 pf:	130.11
PROPOSED + EXISTING LOAD AMPS @ 480V:	195.62
1.25% PROPOSED + EXISTING LOAD AMPS @ 480V:	244.52

* – EXISTING PLANT DEMAND KW UTLIZED PER NEC ARTICLE 220.87.

** – RUNNING LOAD UTILIZED FOR SERVICE ENTRANCE LOADING CALCULATION PER NEC ARTICLE 220.60.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER – INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-12-2009

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

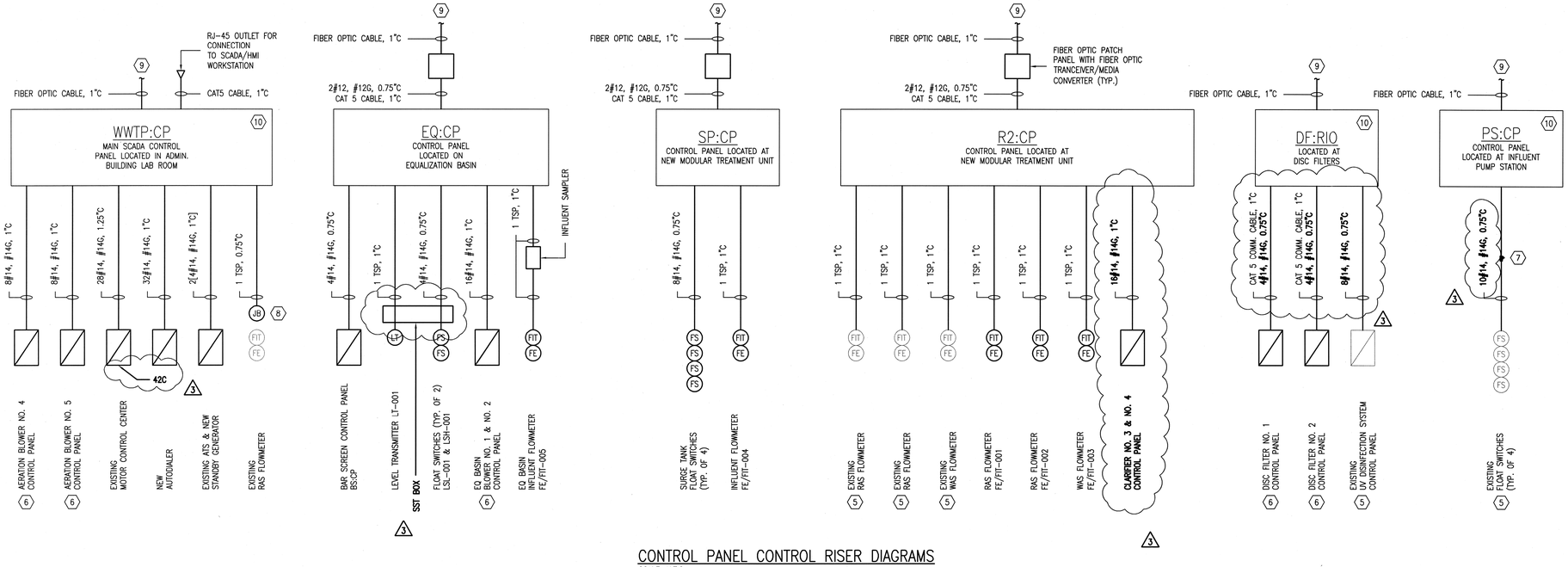
SINGLE LINE DIAGRAM

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER ES101
DRAWING NUMBER E4

STATUS: RECORD DRAWING
REVISION 3



CONTROL PANEL CONTROL RISER DIAGRAMS

SCALE: N.T.S.

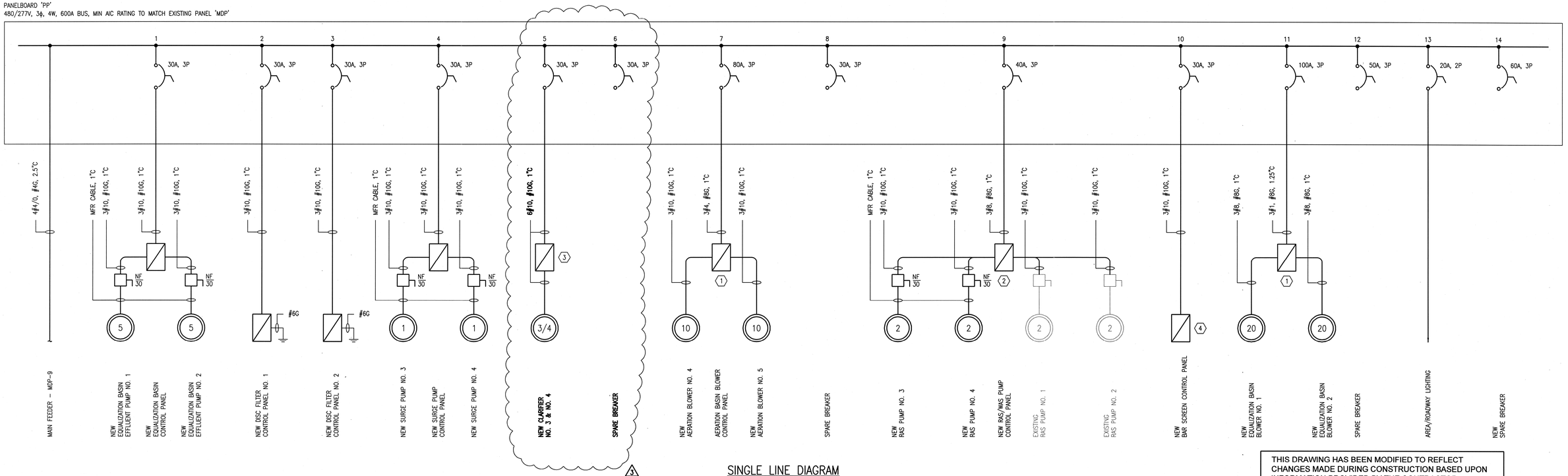
NOTES:

1. REFER TO DRAWING E-1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
3. REFER TO PANELBOARD SCHEDULES AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
4. REFER TO ELECTRICAL POWER PLANS FOR ADDITIONAL INFORMATION ABOUT CONDUIT/WIRE REQUIREMENTS BETWEEN EQUIPMENT.
5. ALL LOCAL DISCONNECTS SHOWN ARE NEMA 4X SST UNLESS OTHERWISE NOTED.

KEYNOTES:

1. BLOWER CONTROL PANEL. REFER TO SPECIFICATION SECTION 11370 FOR ADDITIONAL REQUIREMENTS.
2. RAS/WAS CONTROL PANEL WITH ADJUSTABLE FREQUENCY DRIVES. REFER TO SPECIFICATION 11300 FOR ADDITIONAL REQUIREMENTS. ROUTE POWER AND SENSOR CABLES FROM NEW CONTROL PANEL TO EXISTING DISCONNECT AND RECONNECT POWER TO PUMPS.
3. CLARIFIER CONTROL PANEL. REFER TO SPECIFICATION SECTION 11300 FOR ADDITIONAL REQUIREMENTS.
4. BAR SCREEN CONTROL PANEL: REFER TO SPECIFICATION SECTION 11331 AND BAR SCREEN RISER DIAGRAM FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR SHALL PROVIDE CONDUIT AND WIRE AS SHOWN TO RECONNECT EXISTING EQUIPMENT. PROVIDE ADDITIONAL NEMA 4X SST JUNCTION BOXES, MOUNTING HARDWARE, ETC. AS REQUIRED TO MAKE CONNECTIONS AND ROUTE CONDUIT/WIRE TO THE CONTROL PANEL INDICATED.
6. REFER TO SITE PLAN (E2) AND DUCTBANK SCHEDULE (E3) FOR ADDITIONAL CONDUIT/WIRE REQUIRMENTS BETWEEN THE FIELD EQUIPMENT AND THE CONTROL PANEL INDICATED.
7. CLASS I DIV I/II HAZARDOUS AREA SEALOFF
8. PROVIDE A NEMA 12 JUNCTION BOX INSIDE ADMIN BUILDING LAB ROOM AND INTERCEPT THE EXISTING SIGNAL WIRE FOR THE EFFLUENT FLOWMETER AND REROUTE THIS SIGNAL TO WWTP:CP.
9. REFER TO DRAWING E2 FOR FIBER OPTIC LOOP SCHEMATIC
10. CONTROL PANEL SUPPLIED BY CONTROL SYSTEMS INTEGRATOR SHALL BE PROVIDED WITH FIBER OPTIC PATCH PANEL, FIBER OPTIC TRANSCEIVER/MEDIA CONVERTER INTERNAL TO THE PANEL UNLESS OTHERWISE NOTED. REFER TO SPECIFICATION 13100 FOR ADDITIONAL REQUIREMENTS.

NEW
PANELBOARD 'PP'
480/277V, 3ϕ, 4W, 600A BUS, MIN AIC RATING TO MATCH EXISTING PANEL 'MDP'



SINGLE LINE DIAGRAM

SCALE: N.T.S.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

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A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 15081
11-12-2010
ENGINEER
ARTHUR L. ANCHORS

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MUDDY CREEK WWTP 0.15 MGD EXP.

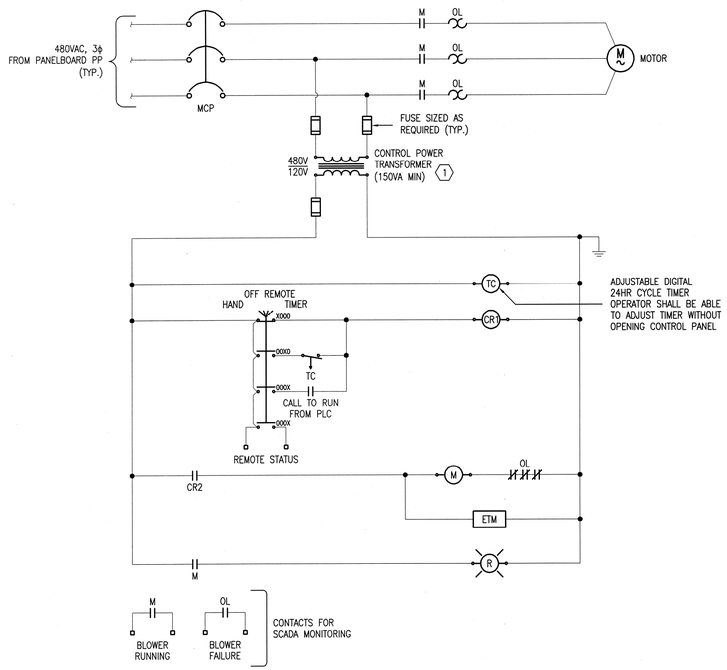
SINGLE LINE DIAGRAM AND CONTROL RISER DIAGRAM

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

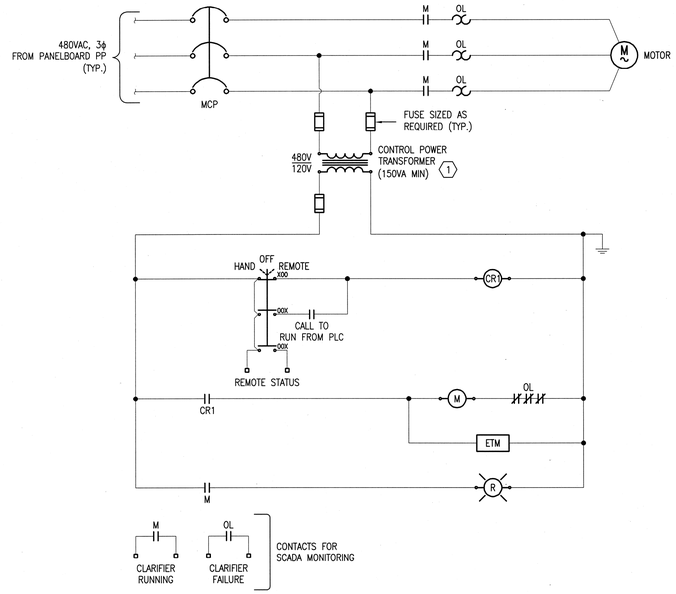
M&C FILE NUMBER ES102
DRAWING NUMBER E5

STATUS: RECORD DRAWING REVISION 3



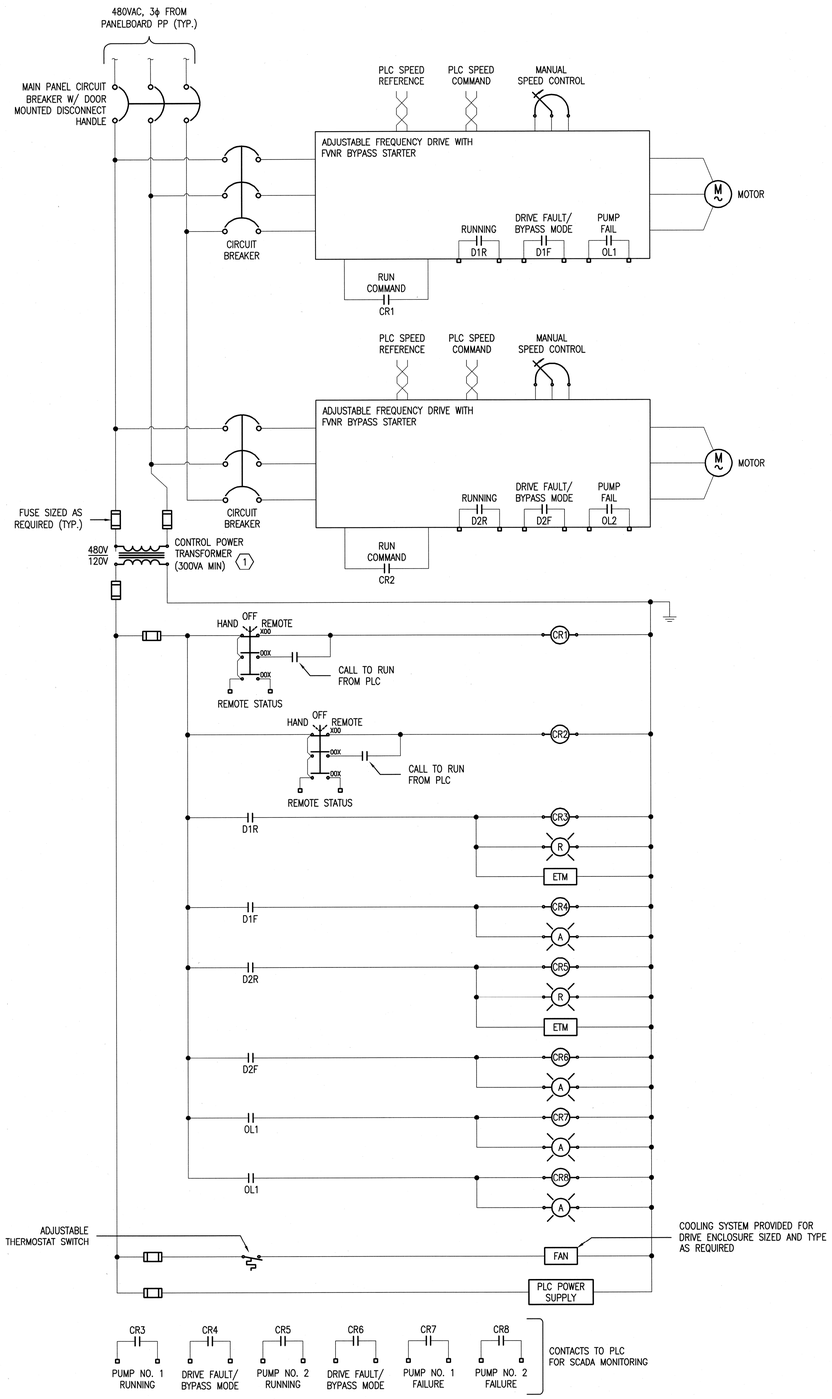
BLOWER MOTOR CONTROL PANEL SCHEMATIC

SCALE: N.T.S.



CLARIFIER CONTROL PANEL SCHEMATIC

SCALE: N.T.S.



EQ BASIN PUMP AND RAS/WAS PUMP MOTOR SCHEMATIC

SCALE: N.T.S.

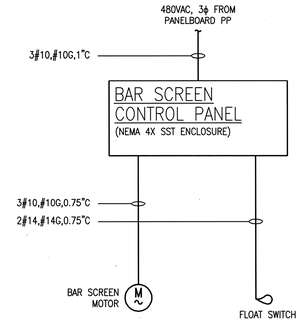
NOTES:

1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
3. REFER TO ELECTRICAL POWER PLANS FOR ADDITIONAL INFORMATION ABOUT CONDUIT/WIRE REQUIREMENTS BETWEEN EQUIPMENT.
4. MOTOR SCHEMATICS SHOWN REFLECT MINIMUM REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. REFER TO SPECIFICATIONS AS FOLLOWS FOR ADDITIONAL CONTROL PANEL REQUIREMENTS:
   - 5.1. CLARIFIER CONTROL PANEL – SPEC 11300
   - 5.2. EQ BASIN CONTROL PANEL – SPEC 11310
   - 5.3. BLOWER CONTROL PANEL – SPEC 11370
   - 5.4. BAR SCREEN CONTORL PANEL – SPEC 11331
   - 5.5. DISC FILTER CONTORL PANEL – SPEC 11337
   - 5.6. ALL OTHER CONTORL PANELS – 13100

KEYNOTES:

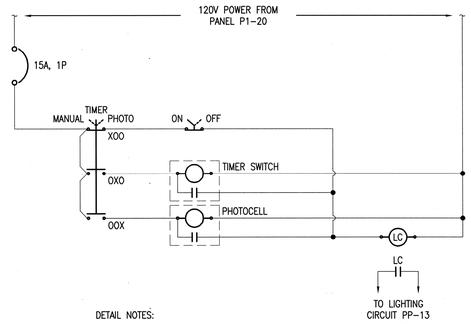
1. CONTROL POWER TRANSFORMERS SHALL BE SIZED AS REQUIRED FOR ALL CONTROL, HEATING, COOL, AND MISC. LOADS REQUIRED FOR PROPER CONTROL AND OPERATRION OF THE EQUIPMENT AS SHOWN AND SPECIFIED.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.



BAR SCREEN RISER DIAGRAM

SCALE: N.T.S.



DETAIL NOTES:

1. LIGHTING CONTACTOR, RELAYS, CONTROLS, SWITCHES, ETC. SHALL BE MOUNTED INSIDE A NEMA 12 ENCLOSURE UNLESS OTHERWISE NOTED.
2. TIMER SWITCH AND PHOTOCELL SHALL BE BY TORK OR APPROVED EQUAL.

EXTERIOR LIGHTING CONTROL DIAGRAM

SCALE: N.T.S.

REV.NO.	DESCRIPTIONS	DATE
3	RECORD DRAWING	09/2010
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B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-12-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC) MUDDY CREEK WWTP 0.15 MGD EXP.

CONTROL SCHEMATIC DIAGRAMS

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER: EC101
DRAWING NUMBER: E6

STATUS: RECORD DRAWING
REVISION: 3

PANEL: PP

ENCLOSURE: NEMA: 12 MOUNTING: SURFACE | MAIN: 225A | MB ☐ | MLO ☒
VOLTS: 480/277V, 3 PHASE, 4 WIRE | NEUTRAL: | 100% ☒ | 200% ☐
LOCATION: ADMIN. BLDG. ELEC. ROOM | BRACING: MIN. AIC RATING TO MATCH THAT OF EXISTING PANEL 'MDP' FEED: 4#4/0, #4G, 2.5"C

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	LOAD SERVED
	1.85							A					1.80			
EQ BASIN EFFLUENT PUMPS		1.85		30	3	3#10, #10G, 1"C	1	B	2	3#10, #10G, 1"C	30	3		1.80		DISC FILTER CONTROL PANEL NO. 1
CONTROL PANEL			1.85					C							1.80	
	1.80							A					1.85			
DISC FILTER CONTROL PANEL NO. 2		1.80		30	3	3#10, #10G, 1"C	3	B	4	3#10, #10G, 1"C	30	3		1.85		SURGE PUMPS CONTROL PANEL
			1.80					C							1.85	
	1.00							A					1.00			
CLARIFIER NO. 3 CONTROL PANEL		1.00		30	3	3#10, #10G, 1"C	5	B	6	3#10, #10G, 1"C	30	3		1.00		CLARIFIER NO. 4 CONTROL PANEL
			1.00					C							1.00	
	12.80							A					0.00			
AERATION BLOWER NO. 4 & NO. 5		12.80		80	3	3#4, #8G, 1"C	7	B	8	–	30	3		0.00		SPARE BREAKER
CONTROL PANEL			12.80					C							0.00	
	6.70							A					0.05			
RAS/WAS PUMPS CONTROL PANEL		6.70		40	3	3#8, #8G, 1"C	9	B	10	3#10, #10G, 1"C	30	3		0.05		BAR SCREEN CONTROL PANEL
			6.70					C							0.05	
EQUALIZATION BASIN	16.90							A					0.00			
BLOWER NO. 1 & NO. 2		16.90		100	3	3#1, #8G, 1.25"C	11	B	12	–	50	3		0.00		SPARE BREAKER
CONTROL PANEL			16.90					C							0.00	
SPACE	0.00							A					0.00			
SITE LIGHTING		0.80		20	2	2#12, #12G, 1"C	13	B	14	–	60	3		0.00		SPARE BREAKER
			0.80					C							0.00	
TOTAL(S):	41.05	41.85	41.85										4.70	4.70	4.70	

TOTAL BUS A LOAD: 45.75 KVA
TOTAL BUS B LOAD: 46.55 KVA
TOTAL BUS C LOAD: 46.55 KVA
TOTAL CONNECTED KVA: 138.85

SCHEDULE NOTES:
1. REFER TO SPECIFICATION SECTION 16470 PANELBOARDS FOR ADDITIONAL REQUIREMENTS.
2. ALL BUSSES SHALL BE PLATED COPPER.
3. ALL BREAKERS SHALL BE FULLY RATED.

PANEL: PC4

ENCLOSURE: NEMA: 3R MOUNTING: SURFACE | MAIN: 80A | MB ☒ | MLO ☐
VOLTS: 120/240V, 1 PHASE, 3 WIRE | NEUTRAL: | 100% ☒ | 200% ☐
LOCATION: NEW MODULAR TREATMENT UNIT EQUIPMENT RACK | BRACING: 18,000A FULLY RATED FEED:

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
RAS FLOW TRANSMITTER	0.10		20	1	2#12, #12G, 0.75"C	1	A	2	2#10, #10G, 1"C	20	1	1.00		EQUALIZATION BASIN LIGHT & RECEPT.
RAS FLOW TRANSMITTER		0.10	20	1	2#12, #12G, 0.75"C	3	B	4	2#10, #10G, 1"C	20	1		1.00	EQUALIZATION BASIN BUBBLER
WAS FLOW TRANSMITTER	0.10		20	1	2#12, #12G, 0.75"C	5	A	6	2#10, #10G, 1"C	20	1	0.50		INFLUENT SAMPLER
HEAT TRACING		1.00	30	1	2#10, #10G, 0.75"C	7	B	8	2#10, #10G, 0.75"C	20	1		0.63	AERATION BASIN LIGHTS
HEAT TRACING	1.00		30	1	2#10, #10G, 1"C	9	A	10	2#12, 1#12G, 1"C	20	1	0.10		AERATION BASIN INFLUENT FLOWMETER
CONV. RECEPTACLE		0.36	20	1	2#10, #10G, 0.75"C	11	B	12	–	20	1		0.00	SPARE BREAKER
EQ BASIN INFLUENT FLOW TRANSMITTER	0.10		20	1	2#10, #10G, 1"C	13	A	14	–	20	1	0.00		SPARE BREAKER
SPARE BRAEKER		0.00	20	1	–	15	B	16	–	20	1		0.00	SPARE BREAKER
SPACE	0.00					17	A	18				0.00		SPACE
SPACE		0.00				19	B	20					0.00	SPACE
SPACE	0.00					21	A	22				0.00		SPACE
SPACE		0.00				23	B	24					0.00	SPACE
TOTAL(S):	1.30	1.46										1.60	1.63	

TOTAL BUS A LOAD: 2.90 KVA
TOTAL BUS B LOAD: 3.09 KVA
TOTAL CONNECTED KVA: 5.99

SCHEDULE NOTES:
1. REFER TO SPECIFICATION SECTION 16470 PANELBOARDS FOR ADDITIONAL REQUIREMENTS.
2. ALL BUSSES SHALL BE PLATED COPPER.
3. ALL BREAKERS SHALL BE FULLY RATED.

PANEL: PC2A

ENCLOSURE: NEMA: 4X MOUNTING: SURFACE | MAIN: 40A | MB ☒ | MLO ☐
VOLTS: 120/240V, 1 PHASE, 3 WIRE | NEUTRAL: | 100% ☒ | 200% ☐
LOCATION: NEW DISC FILTER REMOTE I/O RACK | BRACING: 18,000A FULLY RATED FEED: 2#8, #8G, 1"C

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
DISC FILTER RECEPT.	0.36		20	1	2#12, #12G, 0.75"C	1	A	2	2#10, #10G, 1"C	20	1	1.50		HEAT TRACING
DISC FILTER LIGHTING		0.42	20	1	2#12, #12G, 0.75"C	3	B	4	2#10, #10G, 1"C	20	1		1.50	HEAT TRACING
REMOTE I/O DF:RIO	0.20		20	1	2#12, #12G, 0.75"C	5	A	6	–	20	1	0.00		SPARE BREAKER (FUTURE HEAT TRACING)
SPARE BREAKER		0.00	20	1	–	7	B	8	–	20	1		0.00	SPARE BREAKER
SPACE	0.00					9	A	10				0.00		SPACE
SPACE		0.00				11	B	12					0.00	SPACE
TOTAL(S):	0.56	0.42										1.50	1.50	

TOTAL BUS A LOAD: 2.06 KVA
TOTAL BUS B LOAD: 1.92 KVA
TOTAL CONNECTED KVA: 3.980

SCHEDULE NOTES:
1. REFER TO SPECIFICATION SECTION 16470 PANELBOARDS FOR ADDITIONAL REQUIREMENTS.
2. ALL BUSSES SHALL BE PLATED COPPER.
3. ALL BREAKERS SHALL BE FULLY RATED.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

PANEL: EXISTING P1

ENCLOSURE: NEMA: 1 MOUNTING: SURFACE | MAIN: 150A | MB ☒ | MLO ☐
VOLTS: 120/240V, 1 PHASE, 3 WIRE | NEUTRAL:
LOCATION: ADMIN BLDG. ELECTRICAL ROOM | FEED:

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
LIGHTS	0.60		20	1	EXISTING	1	A	2	EXISTING	20	1	0.60		RECEPTACLES
LIGHTS		1.00	20	1	EXISTING	3	B	4	EXISTING	20	1		0.60	RECEPTACLES
LIGHTS	1.20		20	1	EXISTING	5	A	6	EXISTING	20	1	0.60		RECEPTACLES – TOIL, EXT.
LIGHTS		1.20	20	1	EXISTING	7	B	8	EXISTING	20	1		0.60	RECEPTACLES – EXTERIOR
LIGHTS	0.40		20	1	EXISTING	9	A	10	EXISTING	20	1	0.60		RECEPTACLES
LIGHTS		1.00	20	1	EXISTING	11	B	12	EXISTING	20	1		0.60	RECEPTACLES
EXTERIOR LIGHTS	0.60		20	1	EXISTING	13		14	EXISTING	20	1	0.50		ELEC WATER COOLER
EXHAUST FAN EF-1		0.20	15	1	EXISTING	15		16	EXISTING	20	1		0.20	RECEPTACLES – INFLUENT SAMPLER
EXHAUST FAN EF-2	0.20		15	1	EXISTING	17		18	EXISTING	20	1	0.50		BACK FLOW HEATER
EXHAUST FAN EF-3		0.40	15	1	EXISTING	19		20	2#12, #12G, 0.75"C	20	1		0.20	NEW EXTERIOR LIGHTING CONTROLLER *
BATTERY CHARGER & WATER HEATER	1.00		15	1	EXISTING	21		22	2#12, #12G, 0.75"C	20	1	0.50		GENERATOR BATTERY CHARGER *
RECEPTACLE AT TELEPHONE BOARD		0.20	20	1	EXISTING	23		24	2#10, #10G, 0.75"C	20	2		1.00	GENERATOR BLOCK HEATER *
TIMER FOR AERATION BLOWERS	0.10		20	1	EXISTING	25		26				1.00		
SPACE		0.00				27		28					0.00	SPACE
SPACE	0.00					29		30				0.00		SPACE
SPACE		0.00				31		32					0.00	SPACE
	0.00					33		34				0.00		
SPACE		0.00				35		36					0.00	SPACE
	0.00					37		38				0.00		
WATER HEATER		2.30	30	2	EXISTING	39		40					0.00	SPACE
	2.30					41		42				0.00		
TOTAL(S):	6.40	6.30										4.30	3.20	

TOTAL BUS A LOAD: 10.70 KVA
TOTAL BUS B LOAD: 9.50 KVA
TOTAL CONNECTED KVA: 20.20

SCHEDULE NOTES:
1. * – INDICATES EXISTING BREAKER TO BE MODIFIED OR ADDED AS SHOWN/REQUIRED. WHEN SUPPLYING NEW BREAKERS, AIC RATING FOR THE NEW BREAKERS SHALL MATCH THAT OF THE EXISTING PANEL.

PANEL: EXISTING P2

ENCLOSURE: NEMA: 1 MOUNTING: FLUSH | MAIN: 150A | MB ☒ | MLO ☐
VOLTS: 120/240V, 1 PHASE, 3 WIRE | NEUTRAL:
LOCATION: ADMIN BLDG. LAB ROOM | FEED:

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
RECEPTACLES	0.60		20	1	EXISTING	1	A	2	EXISTING	20	1	0.80		HOOD EXHAUST FAN
RECEPTACLES		0.60	20	1	EXISTING	3	B	4	EXISTING	20	1		0.40	HOOD SUPPLY FAN
RECEPTACLES	0.60		20	1	EXISTING	5	A	6	EXISTING	20	1	1.60		DISHWASHER
RECEPTACLES		0.60	20	1	EXISTING	7	B	8	EXISTING	20	1		1.00	INCUBATOR
RECEPTACLES	0.60		20	1	EXISTING	9	A	10	EXISTING	20	1	0.80		REFRIGERATOR
RECEPTACLES		0.60	20	1	EXISTING	11	B	12	2#12, #12G, 0.75"C	20	1		0.20	WWTP:CP *
SPARE BREAKER *	0.00		20	1	–	13		14	–	20	1	0.00		SPARE BREAKER
SPACE		0.00				15		16	–	20	1		0.00	SPARE BREAKER
SPACE	0.00					17		18	–	20	1	0.00		SPARE BREAKER
SPACE		0.00				19		20					0.00	SPACE
SPACE	0.00					21		22				0.00		SPACE
SPACE		0.00				23		24					0.00	SPACE
SPACE	0.00					25		26				0.00		SPACE
SPACE		0.00				27		28					0.00	SPACE
SPACE	0.00					29		30				0.00		SPACE
MUFFLE FURNACE		1.50	20	2	EXISTING	31		32		20	2		0.00	SPARE BREAKER
	1.50					33		34				0.00		
STILL		1.50	30	2	EXISTING	35		36					0.00	SPACE
	1.50					37		38				0.00		
SPACE		0.00				39		40					0.00	SPACE
	0.00					41		42				0.00		
TOTAL(S):	4.80	4.80										3.20	1.60	

TOTAL BUS A LOAD: 8.00 KVA
TOTAL BUS B LOAD: 6.40 KVA
TOTAL CONNECTED KVA: 14.40

SCHEDULE NOTES:
1. * – INDICATES EXISTING BREAKER TO BE MODIFIED OR ADDED AS SHOWN/REQUIRED. WHEN SUPPLYING NEW BREAKERS, AIC RATING FOR THE NEW BREAKERS SHALL MATCH THAT OF THE EXISTING PANEL.

PANEL: EXISTING PC2

ENCLOSURE: NEMA: 3R MOUNTING: SURFACE | MAIN: 80A | MB ☒ | MLO ☐
VOLTS: 120/240V, 1 PHASE, 3 WIRE | NEUTRAL:
LOCATION: UV DISINFECTION STRUCTURE | FEED:

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER AMP	BREAKER POLE	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
UV RECEPTACLES	0.80		20	1	EXISTING	1	A	2	EXISTING	20	1	0.10		EFFLUENT FLOW TRANSMITTER
UV RECEPTACLES		0.80	20	1	EXISTING	3	B	4	EXISTING	20	1		0.50	REFRIG. SAMPLER
UV RECEPTACLES	0.80		20	1	EXISTING	5	A	6	EXISTING	20	1	0.10		UV MONITOR
UV RECEPTACLES		0.80	20	1	EXISTING	7	B	8	EXISTING	20	1		0.10	UV MONITOR
PANELBOARD 'PC2A'	2.06		40	2	3#8, #8G, 1"C	9	A	10	EXISTING	20	1	1.50		HEAT TRACING
		1.92				11	B	12	EXISTING	20	1		0.36	GFCI RECEPT. (NOTE 2) *
TOTAL(S):	3.66	3.52										1.70	0.96	

TOTAL BUS A LOAD: 5.36 KVA
TOTAL BUS B LOAD: 4.48 KVA
TOTAL CONNECTED KVA: 9.84

SCHEDULE NOTES:
1. * – INDICATES EXISTING BREAKER TO BE MODIFIED OR ADDED AS SHOWN/REQUIRED. WHEN SUPPLYING NEW BREAKERS, AIC RATING FOR THE NEW BREAKERS SHALL MATCH THAT OF THE EXISTING PANEL.
2. CONTRACTOR SHALL RE-WIRE EXISTING GFCI RECEPT. CIRCUIT AS REQUIRED TO UTILIZE EXISTING SPARE BREAKER AS SHOWN.

REV.NO.	DESCRIPTIONS	DATE
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER – INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

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NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-12-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

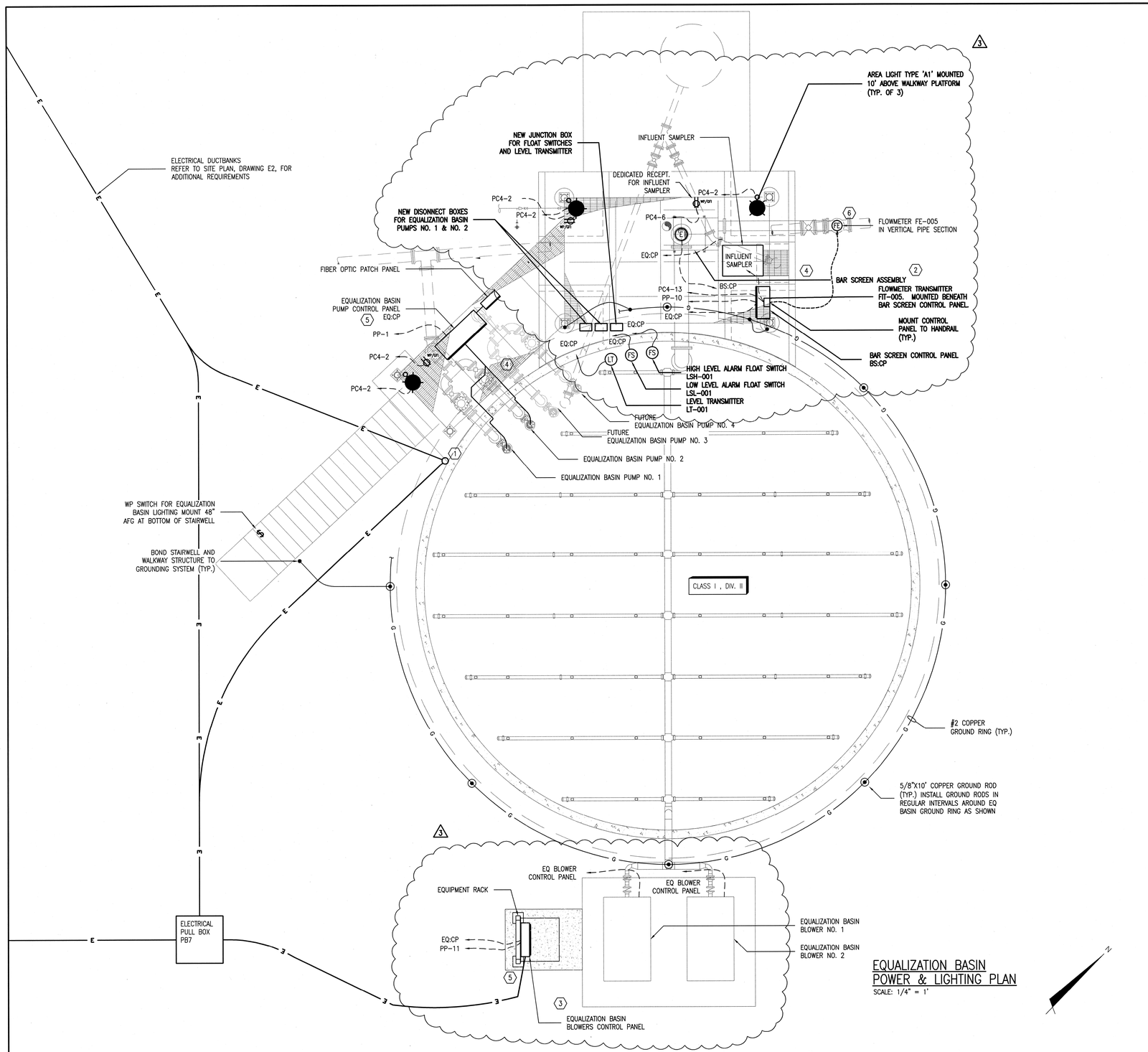
PANELBOARD SCHEDULES

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER ER101
DRAWING NUMBER E7

STATUS: RECORD DRAWING
REVISION 3



EQUALIZATION BASIN POWER & LIGHTING PLAN

SCALE: 1/4" = 1'

NOTES:

1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. REFER TO DRAWING E2 FOR ELECTRICAL SITE PLAN AND FIBER OPTIC LOOP SCHEMATIC.
3. REFER TO PANELBOARD SCHEDULES, SINGLE LINE DIAGRAMS, CONTROL RISER DIAGRAMS, AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
4. ALL ABOVE GROUND CONDUIT AND FITTINGS OUTDOORS SHALL BE RIGID GALVANIZED STEEL (RGS). ALL CONDUIT BELOW GRADE SHALL BE CONCRETE ENCASED SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. REFER TO DUCTBANK SCHEDULE, SPECIFICATIONS, AND TYPICAL CONDUIT TRANSITION DETAIL FOR ADDITIONAL REQUIREMENTS.
5. MOUNT EQUIPMENT OUTSIDE OF HAZARDOUS AREAS. REFER TO HAZARDOUS AREA BOUNDARY DETAIL FOR ADDITIONAL INFORMATION.
6. CONTRACTOR SHALL INSTALL THE FOLLOWING CONDUIT/WIRE AS REQUIRED FOR THE NEW INFLUENT FLOWMETER:

   A. FROM FE-005 TO FIT-005: FLOW SENSOR CABLE, 1 INCH CONDUIT
   B. FROM FIT-005 TO INFLUENT SAMPLER: 1 TSP, 1 INCH CONDUIT
   C. FROM FIT-005 TO PC4: 2#10, #10G, 1 INCH CONDUIT
   D. FROM INFLUENT SAMPLER TO EQ:CP: 1 TSP, 1 INCH CONDUIT

KEYNOTES:

(1) CONDUIT FROM DUCTBANK SYSTEM SHALL RUN EXPOSED ALONG EQUALIZATION BASIN STRUCTURE TO CONTROL PANELS SHOWN. ROUTE CONDUIT UNDERNEATH WALKWAY PLATFORM AND SECURE TO PLATFORM AS REQUIRED. PROVIDE NEMA 4X SST PULL BOXES AS REQUIRED FOR ROUTING CONDUIT TO CONTROL PANELS.

(2) ENCLOSED INTERIOR OF SCREEN IS CLASSIFIED AS A CLASS I DIV I HAZARDOUS AREA. THE NON ENCLOSED PART OF THE SCREEN AND THE SURROUNDING AREA AROUND THE SCREEN IS CLASSIFIED AS A CLASS I DIV II. REFER TO HAZARDOUS AREA BOUNDARY DETAIL FOR ADDITIONAL INFORMATION.

(3) BLOWER CONTROL PANELS SHALL BE MOUNTED SUCH THAT ANY REQUIRED CLEARANCES AND ACCESS TO THE BLOWERS ARE MAINTAINED.

(4) ALL EXPOSED PROCESS PIPING FOR THE BAR SCREEN SYSTEM AND EQ BASIN SHALL BE ELECTRICALLY HEAT TRACED. PROVIDE AMBIENT-SENSING THERMOSTAT FOR TEMPERATURE REGULATION AND MOUNT TO HANDRAIL AT TOP OF BASIN. HEAT TRACE SYSTEM SHALL BE BY TYCO THERMAL CONTROLS OR APPROVED EQUAL. CONNECT HEAT TRACING SYSTEM TO 120V CIRCUIT 9 IN PANEL PC4.

(5) BOND EQUIPMENT RACK AND CONTROL PANEL TO GROUND RING WITH MINIMUM #6G CONDUCTOR. COORDINATE WITH CONTROL PANEL SUPPLIER FOR ADDITIONAL GROUNDING REQUIREMENTS.

(6) CONTRACTOR SHALL CONNECT FLOWMETER GROUNDING RINGS TO EQ BASIN GROUND RING. CONTRACTOR SHALL UTILIZE AT A MINIMUM, 1-#6 BARE TINNED COPPER CONDUCTOR FOR GROUND CONNECTION. REFER TO MANUFACTURER RECOMMENDATIONS FOR ADDITIONAL REQUIREMENTS.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS REVISIONS	DATE
3	RECORD DRAWING	09/2010
2	SUGGESTERD MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER - INFLUENT FLOWMETER ADDITION	DEC. 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

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NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-1-2010

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

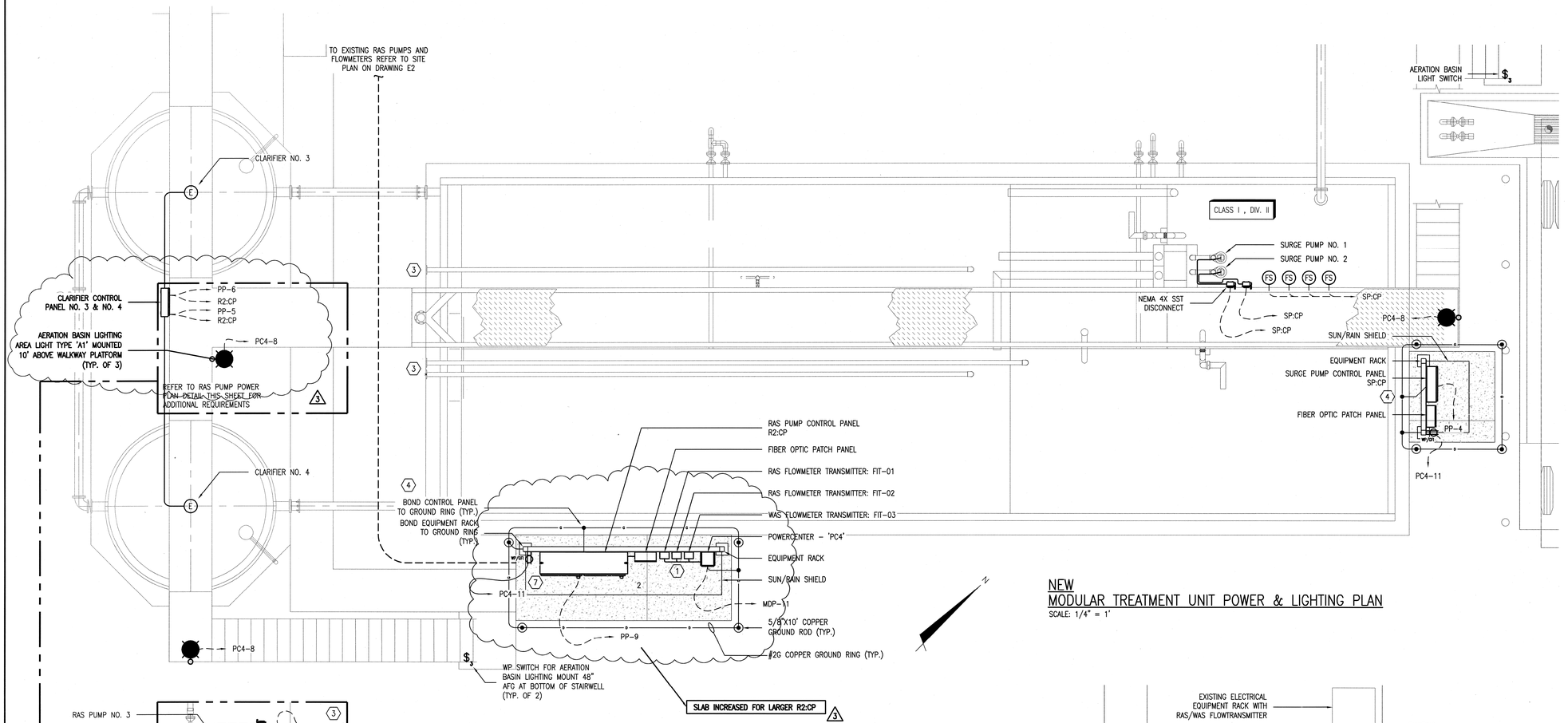
EQUALIZATION BASIN POWER PLAN

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: 1/4" = 1'
VERTICAL: NA

M&C FILE NUMBER EP101
DRAWING NUMBER E8

STATUS: RECORD DRAWING REVISION 3



NEW
MODULAR TREATMENT UNIT POWER & LIGHTING PLAN
SCALE: 1/4" = 1'

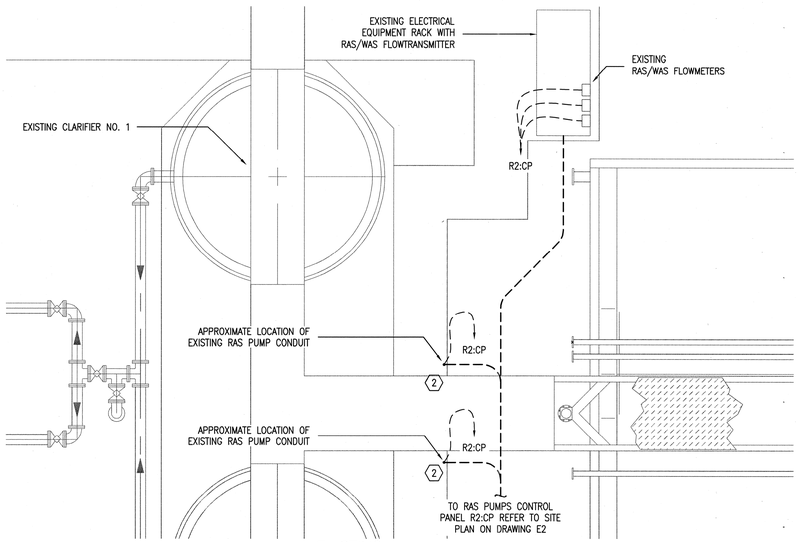
NEW
RAS PUMP POWER PLAN
SCALE: 3/8" = 1'

NOTES:

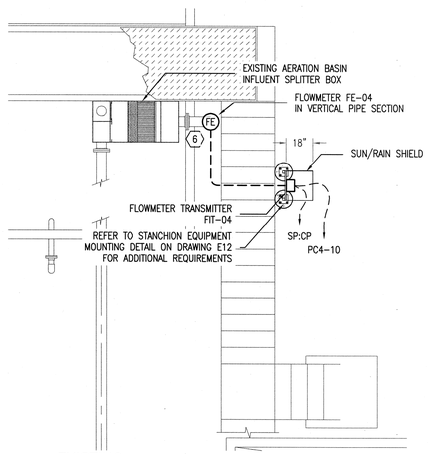
1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. REFER TO DRAWING E2 FOR ELECTRICAL SITE PLAN AND FIBER OPTIC LOOP SCHEMATIC.
3. REFER TO PANELBOARD SCHEDULES, SINGLE LINE DIAGRAMS, CONTROL RISER DIAGRAMS, AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
4. MOUNT EQUIPMENT OUTSIDE OF HAZARDOUS AREAS. REFER TO HAZARDOUS AREA BOUNDARY DETAIL FOR ADDITIONAL INFORMATION.
5. ALL ABOVE GROUND CONDUIT AND FITTINGS OUTDOORS SHALL BE RIGID GALVANIZED STEEL (RGS). ALL CONDUIT BELOW GRADE SHALL BE CONCRETE ENCASED SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. REFER TO DUCTBANK SCHEDULE, SPECIFICATIONS, AND TYPICAL CONDUIT TRANSITION DETAIL FOR ADDITIONAL REQUIREMENTS.
6. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION ABOUT MOUNTING EQUIPMENT ON HANDRAILS FOR THE MODULAR TREATMENT UNIT AND CLARIFIERS.
7. CONTRACTOR SHALL NOT DRILL THROUGH NEW OR EXISTING SLABS TO INSTALL GROUND RODS.

KEYNOTES:

1. ROUTE 1 TSP, 1"C FROM EACH FLOWMETER TRANSMITTER TO THE RAS PUMP CONTROL PANEL, R2:CP.
2. ROUTE CONDUIT/WIRE FROM NEW RAS PUMP CONTROL PANEL, R2:CP, TO EXISTING RAS PUMP DISCONNECTS AS REQUIRED. INTERCEPT EXISTING CONDUIT WHERE SHOWN AND CONNECT NEW CONDUIT. REFER TO SINGLE LINE DIAGRAMS AND CONNECTION DIAGRAMS FOR ADDITIONAL REQUIREMENTS.
3. ALL EXPOSED PROCESS PIPING LEAVING THE MODULAR TREATMENT UNIT FOR THE RAS/WAS SYSTEM SHALL BE ELECTRICALLY HEAT TRACED. PROVIDE AMBIENT-SENSING THERMOSTAT FOR TEMPERATURE REGULATION AND MOUNT TO SIDE OF MODULAR TREATMENT UNIT 60" AFG. HEAT TRACE SYSTEM SHALL BE BY TYCO THERMAL CONTROLS OR APPROVED EQUAL. CONNECT HEAT TRACING SYSTEM TO 120V CIRCUIT 7 IN PANEL PC4.
4. COORDINATE WITH CONTROL PANEL SUPPLIER FOR ADDITIONAL GROUNDING REQUIREMENTS.
5. CONTRACTOR SHALL CONNECT FLOWMETER GROUNDING RINGS TO RAS EQUIPMENT RACK GROUND RING. CONTRACTOR SHALL UTILIZE AT A MINIMUM, 1-#6 BARE TINNED COPPER CONDUCTOR FOR GROUND CONNECTION. REFER TO MANUFACTURER RECOMMENDATION FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR SHALL INSTALL ONE 5/8" X 10' COPPER GROUND ROD AT FLOWMETER AND CONNECT FLOWMETER GROUNDING RINGS TO GROUND ROD. REFER TO MANUFACTURER RECOMMENDATION FOR ADDITIONAL REQUIREMENTS. CONTRACTOR SHALL UTILIZE AT A MINIMUM, 1-#6 BARE TINNED COPPER CONDUCTOR FOR CONNECTING FLOWMETER TO GROUND ROD. IN ADDITION, THE CONTRACTOR SHALL UTILIZE 1-#2G CONDUCTOR AND TIE THE GROUND ROD DESCRIBED ABOVE TO THE SURGE PUMP COTNROL PANEL EQUIPMENT RACK GROUND RING.
7. COORDINATE RACK LAYOUT TO ENSURE REQUIRED CLEARANCE IS PROVIDED FOR THE RAS PUMP CONTROL PANEL AIR CONDITIONER. REFER TO MANUFACTURER REQUIREMENTS FOR ADDITIONAL REQUIREMENTS.



EXISTING
RAS PUMP POWER PLAN
SCALE: 1/4" = 1'



EXISTING
INFLUENT SPLITTER BOX POWER PLAN
SCALE: 1/4" = 1'

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER - INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/28/08

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NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS 11-12-2010

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WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

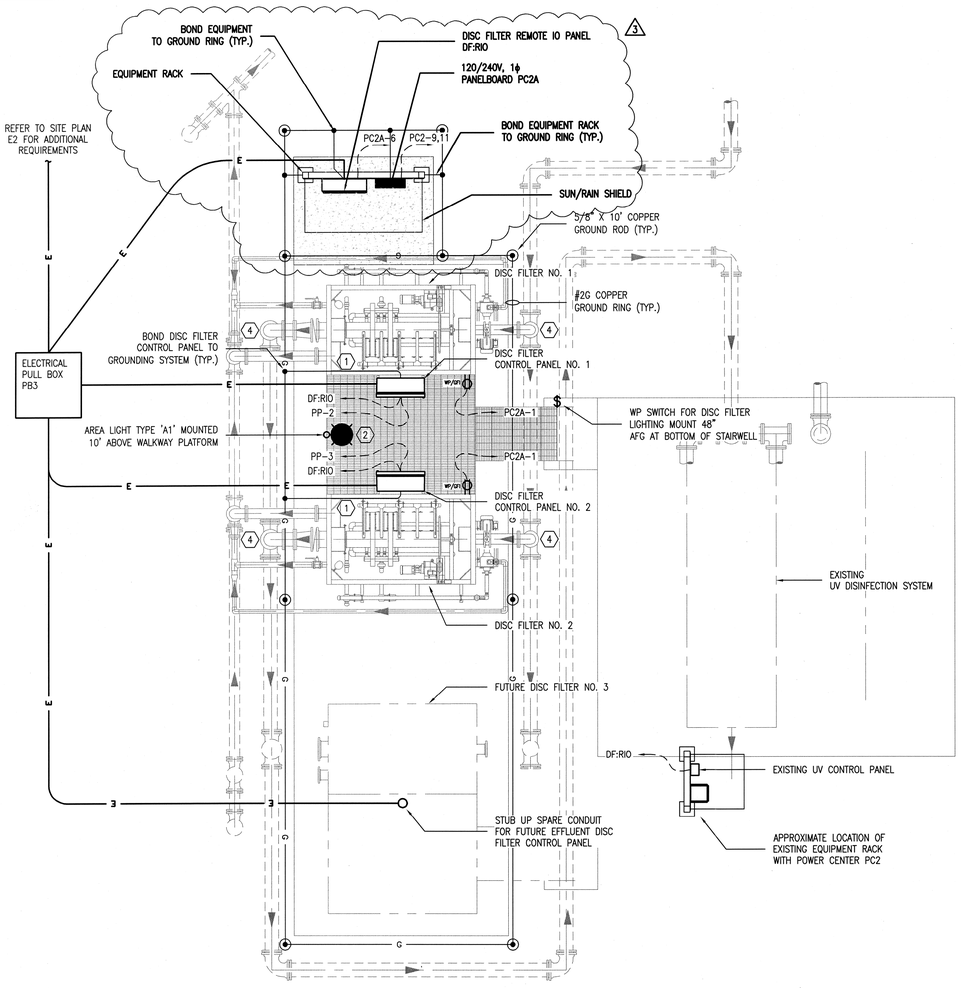
MODULAR TREATMENT UNIT POWER PLAN

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: 1/4" = 1'
VERTICAL: NA

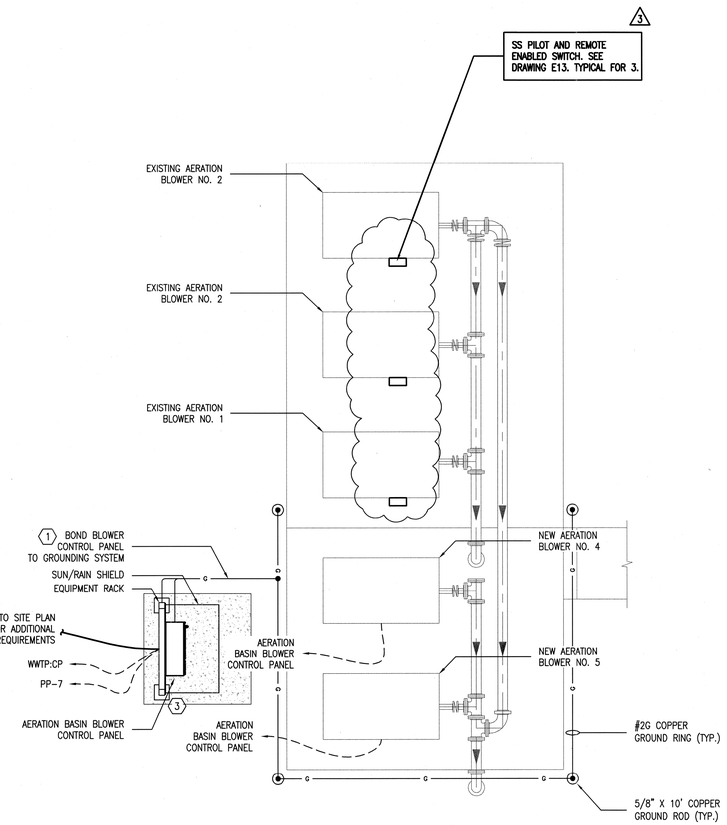
M&C FILE NUMBER EP101
DRAWING NUMBER E9

STATUS: RECORD DRAWING
REVISION 3



EFFLUENT DISC FILTERS POWER PLAN

SCALE: 1/4" = 1'



AERATION BLOWER POWER PLAN

SCALE: 1/4" = 1'

NOTES:

1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. REFER TO DRAWING E2 FOR ELECTRICAL SITE PLAN AND DUCTBANK SCHEDULE.
3. REFER TO PANELBOARD SCHEDULES, SINGLE LINE DIAGRAMS, CONTROL RISER DIAGRAMS, AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
4. ALL ABOVE GROUND CONDUIT AND FITTINGS OUTDOORS SHALL BE RIGID GALVANIZED STEEL (RGS). ALL CONDUIT BELOW GRADE SHALL BE CONCRETE ENCASED SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. REFER TO DUCTBANK SCHEDULE, SPECIFICATIONS, AND TYPICAL CONDUIT TRANSITION DETAIL FOR ADDITIONAL REQUIREMENTS.
5. MOUNT EQUIPMENT OUTSIDE OF HAZARDOUS AREAS. REFER TO HAZARDOUS AREA BOUNDARY DETAIL FOR ADDITIONAL INFORMATION.

KEYNOTES:

1. COORDINATE WITH CONTROL PANEL SUPPLIER FOR ADDITIONAL GROUNDING/WIRING REQUIREMENTS.
2. ROUTE 2#12, #12G, 0.75"C AND CONNECT NEW LIGHT FIXTURE ON EFFLUENT DISC FILTER TO PANELBOARD PC2A CIRCUIT NO. 3. INSTALL SPARE 1" CONDUIT FROM NEW LIGHT FIXTURE SHOWN TO FUTURE EFFLUENT DISC FILTER FOR FUTURE LIGHT. INSTALL PULL STRING IN SPARE CONDUIT.
3. BLOWER CONTROL PANEL SHALL BE MOUNTED SUCH THAT ANY REQUIRED CLEARANCES AND ACCESS TO THE BLOWERS, NEW AND EXISTING, ARE MAINTAINED.
4. ALL EXPOSED PROCESS PIPING FOR THE DISC FILTER SYSTEM SHALL BE ELECTRICALLY HEAT TRACED. PROVIDE AMBIENT-SENSING THERMOSTAT FOR TEMPERATURE REGULATION AND MOUNT TO HANDRAIL AT DISC FILTER SKID. HEAT TRACE SYSTEM SHALL BE BY TYCO THERMAL CONTROLS OR APPROVED EQUAL. CONNECT HEAT TRACING SYSTEM TO 120V CIRCUIT AS FOLLOWS:

   A. DISC FILTER NO. 1 – CIRCUIT NO. 2 IN PANELBOARD PC2A.
   B. DISC FILTER NO. 2 – CIRCUIT NO. 4 IN PANELBOARD PC2A.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
3	RECORD DRAWING	09/2010
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER – INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/28/08

REVISIONS

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

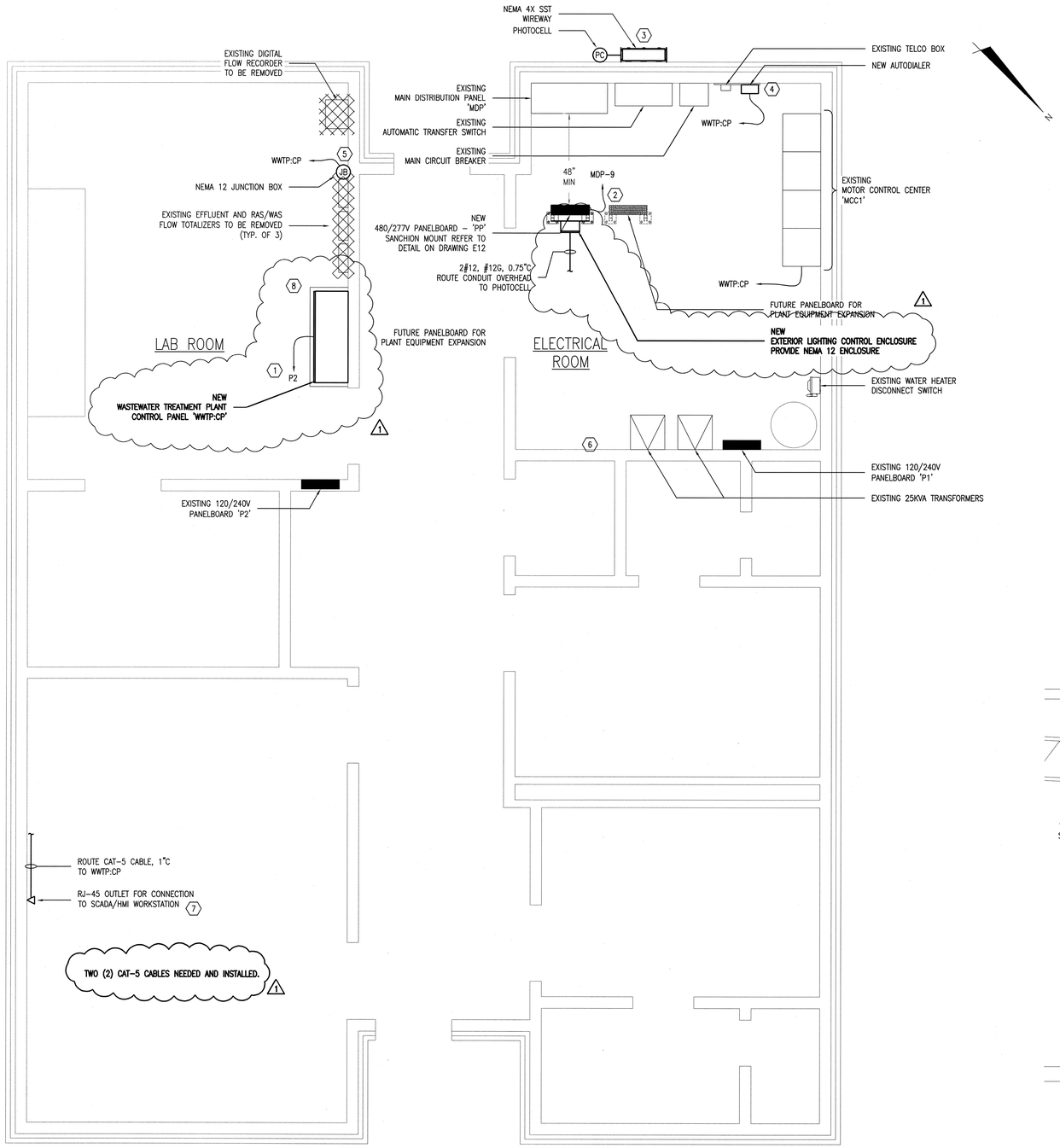
EFFLUENT DISC FILTER AND AERATION BLOWERS POWER PLAN

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: 1/4" = 1'
VERTICAL: NA

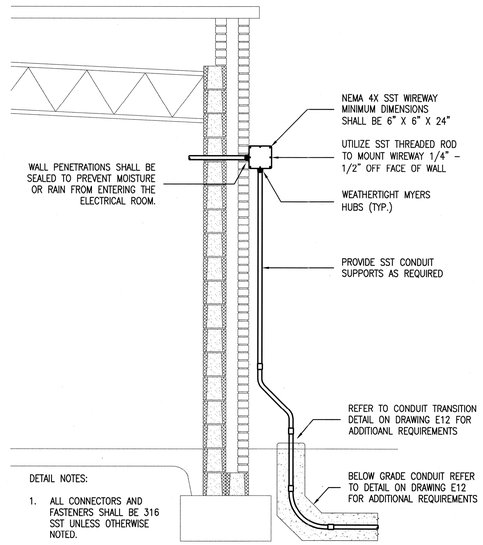
M&C FILE NUMBER EP103
DRAWING NUMBER E10

STATUS: RECORD DRAWING REVISION 3



PARTIAL EXISTING ADMINISTRATION BUILDING POWER PLAN

SCALE: 1/2" = 1'



CONDUIT WALL PENETRATION DETAIL

SCALE: N.T.S.

NOTES:

1. REFER TO DRAWING E1 FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
2. REFER TO DRAWING E2 FOR ELECTRICAL SITE PLAN AND DUCTBANK SCHEDULE.
3. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
4. REFER TO PANELBOARD SCHEDULES, SINGLE LINE DIAGRAMS, CONTROL RISER DIAGRAMS, AND CONTROL MOTOR SCHEMATICS FOR ADDITIONAL CONDUIT/WIRE REQUIREMENTS.
5. CONDUIT RUN INSIDE EXISTING ADMINISTRATION BUILDING SHALL BE RIGID GALVANIZED STEEL (RGS) UNLESS OTHERWISE NOTED.
6. CONDUIT PENETRATIONS THROUGH EXISTING EXTERIOR WALLS SHALL BE WEATHERPROOF. SEAL CONDUIT PENETRATIONS WITH DRY PACK GROUT, EXPANSION FOAM IS NOT ACCEPTABLE.

KEYNOTES:

1. INSTALL 2#12, #12.G, 0.75"C FROM THE NEW WASTEWATER TREATMENT CONTROL PANEL, WWTP:CP, TO PANELBOARD P2 AND ROUTE CONDUIT OVERHEAD AND ABOVE CEILING. TURN DOWN TO PANELBOARD P2 AND ROUTE NEW CONDUIT INSIDE THE WALL. CONNECT TO EXISTING SPARE BREAKER IN PANELBOARD P2, SPACE 12.
2. ROUTE CONDUIT OVERHEAD AND EXPOSED FROM/TO THE NEW PANELBOARD PP.
3. ALL CONDUIT RUNNING TO EQUIPMENT LOCATED OUTSIDE OF THE ADMIN BUILDING SHALL BE ROUTED THROUGH THE WIREWAY AS SHOWN. CONTRACTOR SHALL ROUTE CONDUIT INSIDE ADMIN BUILDING TO THE WIREWAY OVERHEAD. CONDUIT SHALL BE ROUTED TO AVOID EXISTING HVAC DUCTS AND OTHER MISC. EQUIPMENT AND STRUCTURES LOCATED OVERHEAD. REFER TO CONDUIT WALL PENETRATION DETAIL FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTOR SHALL REMOVE EXISTING AUTODIALER AND INSTALL NEW 16-CHANNEL AUTODIALER AS SPECIFIED IN SECTION 13100. CONTRACTOR SHALL RECONNECT NEW AUTODIALER TO EXISTING TELEPHONE SERVICE AND POWER CIRCUIT. ANY DOWNTIME REQUIRED DURING INSTALLATION OF THE NEW AUTODIALER SHALL BE COORDINATED WITH AND DONE AT THE OWNER'S CONVENIENCE.
5. CONTRACTOR SHALL REMOVE IN ITS ENTIRETY THE EXISTING DIGITAL FLOW RECORDER AND EXISTING FLOW TOTALIZERS, WIRE, AND EXPOSED CONDUIT UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL PROVIDE A NEMA 12 JUNCTION BOX AND INTERCEPT THE EXISTING SIGNAL WIRE FOR THE EFFLUENT FLOWMETER AND REROUTE THIS SIGNAL TO WWTP:CP. PROVIDE ADDITIONAL 1 TSP, 0.75"C AS REQUIRED.
6. MOUNT EXTERIOR LIGHTING CONTROL ENCLOSURE OUTSIDE OF EXISTING LADDER CLEARANCE.
7. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE FINAL LOCATION OF THE SCADA/HMI WORKSTATION DATA CONNECTION. REFER TO SPECIFICATION 13100 FOR ADDITIONAL CONNECTOR REQUIREMENTS.
8. REMOVE FLOOR TILES AND PROVIDE A 4" HOUSEKEEPING PAD FOR WWTP:CP AS SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING/REPAIRING ALL FLOOR TILES, WALLS, DOORS, ETC. DAMAGED OR REMOVED DURING INSTALLATION OF THE CONTROL PANEL AT NO ADDITIONAL COST TO THE OWNER.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS
11-12-2010

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C-0342
www.mckimcreed.com

WSACC
WATER & SEWER AUTHORITY OF CABARRUS COUNTY

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

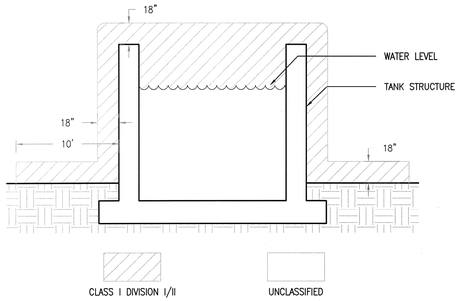
ADMINISTRATION BUILDING POWER PLAN

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

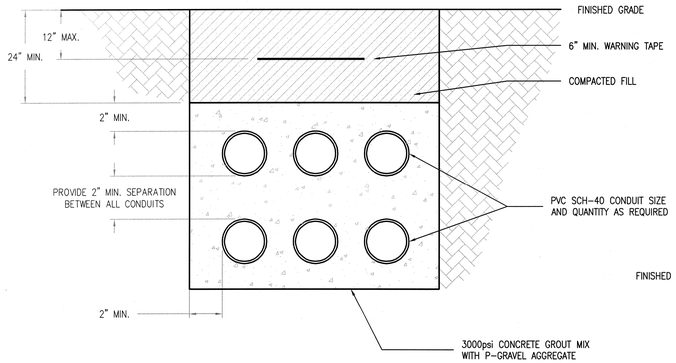
SCALE
HORIZONTAL: 1/4" = 1'
VERTICAL: NA

M&C FILE NUMBER EP104
DRAWING NUMBER E11

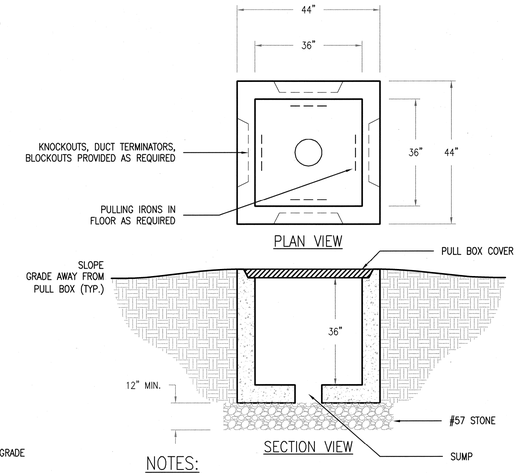
STATUS: RECORD DRAWING REVISION 1



CLASS I DIV I/II BOUNDARIES
SCALE: N.T.S.



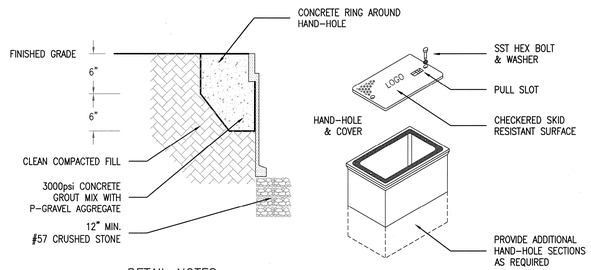
NON-REINFORCED CONCRETE DUCTBANK
SCALE: N.T.S.



NOTES:

1. CONCRETE SHALL BE 5000psi MINIMUM. STEEL REINFORCEMENT: ASTM A-615, GRADE 60. COVER TO STEEL: 1" MINIMUM.
2. VAULT SHALL MEET ASTM C857 AND ACI 318 WITH AASHTO HS-20-44 LOADING.
3. PROVIDE PULL BOX COVER TO MEET LOADING CONDITIONS DESCRIBED IN NOTE 2.
4. PROVIDE PULL EYES, GROUNDING ROD HOLE & INSERTS FOR CABLE RACKS AS REQUIRED.
5. DIMENSIONS SHOWN ARE A MINIMUM. PROVIDE PULL BOX SIZED AS REQUIRED BY NEC FOR CONDUIT WIRE PULLED TO BOX.

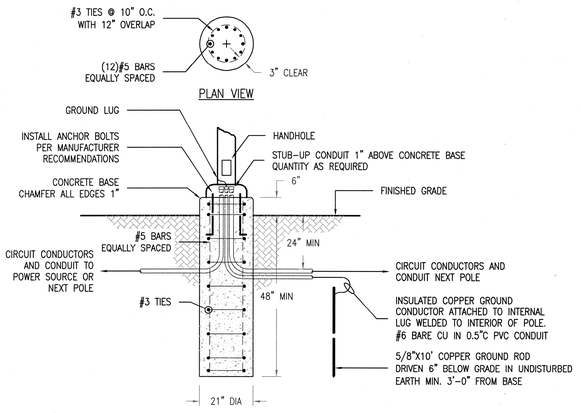
ELECTRICAL PULL BOX DETAIL
SCALE: N.T.S.



DETAIL NOTES:

1. HOUSING SHALL BE POLYMER CONCRETE REINFORCED WITH FIBERGLASS MESH AND SHALL HAVE A COMPRESSIVE STRENGTH NO LESS THAN 10,000psi.
2. HAND-HOLE AND COVER SHALL WITHSTAND A SERVICE LOAD OF NO LESS THAN 15,000-LBS OVER A 10"x10" AREA.
3. PROVIDE STAINLESS STEEL BOLTS, WASHERS AND INSERTS.
4. PROVIDE COVER LOGO "ELECTRICAL" "CONTROLS" OR "COMMUNICATIONS" AS APPLICABLE OR INDICATED ON THE DRAWINGS.
5. MINIMUM BOX SIZE SHALL BE 24" LONG x 17" WIDE x 36" DEEP.

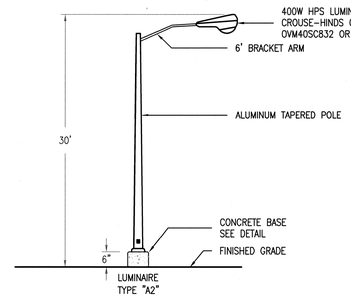
FIBER OPTIC HAND-HOLE
SCALE: N.T.S.



NOTE:

1. FINISH CONCRETE TOP FOR SEATING OF POLE WITHOUT SHIMS. APPLY HEAVY COATING OF ALUMINASTIC COMPOUND, CONSISTENCY "K" TO BASE OF POLE AND ANCHOR BOLTS WHICH COME IN CONTACT WITH CONCRETE. 2" BEVEL ON CONCRETE TOP

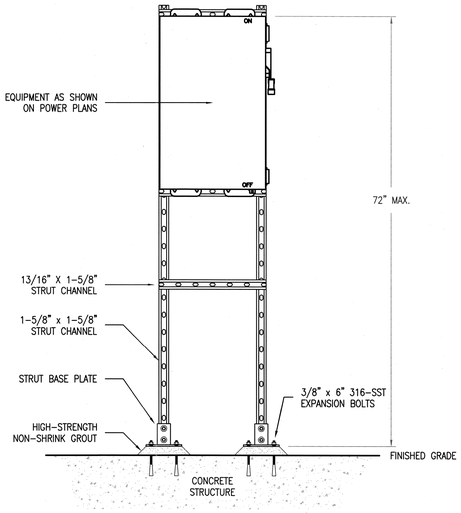
LIGHT POLE BASE DETAIL
SCALE: N.T.S.



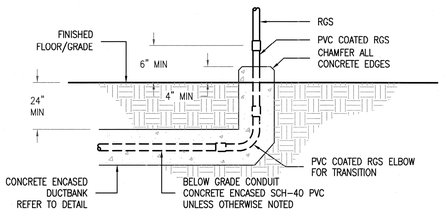
ROADWAY/AREA LIGHT POLE DETAIL
SCALE: N.T.S.

STANCHION MOUNT DETAIL NOTES:

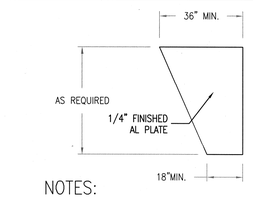
1. FILE AND ROUND ALL CORNERS SMOOTH, REAM ALL HOLES.
2. USE 316-SST FASTENERS AND HARDWARE.
3. USE THE FOLLOWING SST CHANNEL TYPES AS DESCRIBED:
   A) MOUNTING EQUIPMENT LESS THAN 50LBS - USE SINGLE SIDED STRUT, B-LINE B22 OR EQUAL.
   B) MOUNTING EQUIPMENT GREATER THAN 50LBS - USE DOUBLE SIDED, EXTRUDED "H" STRUT, B-LINE B22A OR EQUAL.
4. PROVIDE A MINIMUM OF 12" DIA X 36" DEEP 3000 PSI CONCRETE BASES FOR ALL VERTICAL SUPPORTS IF NO FLOOR OR STRUCTURE IS PRESENT. EXTEND CONCRETE 4" ABOVE FINISHED GRADE.



STANCHION MOUNT EQUIPMENT DETAIL
SCALE: N.T.S.



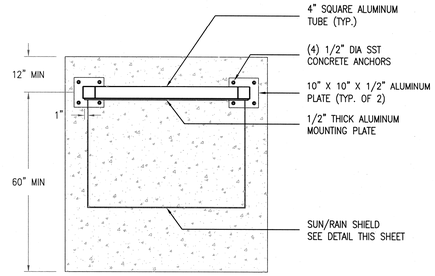
TYPICAL CONDUIT TRANSITION DETAIL
SCALE: N.T.S.

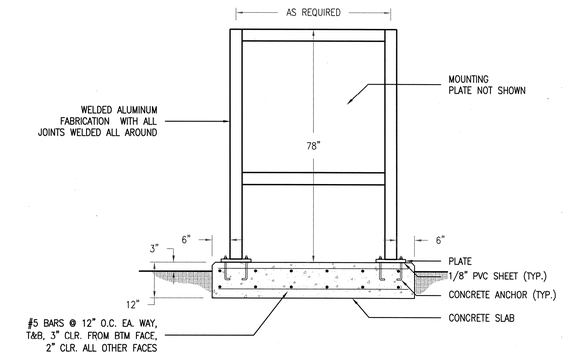


NOTES:

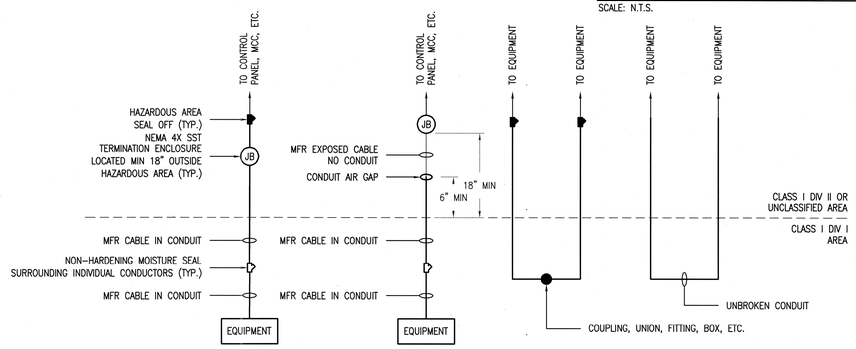
1. ALL EXPOSED EDGES SHALL BE GROUND SMOOTH AND BURR FREE.
2. PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN THE EQUIPMENT AND THE SIDES AND TOP OF THE SUN/RAIN SHIELD.
3. EXTEND BOTTOM OF SUN/RAIN SHIELD A MINIMUM OF 3" BELOW THE LOWEST MOUNTED EQUIPMENT.

EQUIPMENT RACK SUN/RAIN SHIELD
SCALE: N.T.S.





ELECTRICAL EQUIPMENT RACK DETAIL
SCALE: N.T.S.



NOTE: REFER TO NEC CHAPTER 5 FOR HAZARDOUS AREA WIRING REQUIREMENTS.

TYPICAL WIRING FOR CLASS I DIV I OR DIV II AREAS
SCALE: N.T.S.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	
1	RECORD DRAWING	09/2010
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS - NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS - SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION	08/26/08

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS
11-2-2010

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WSACC
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

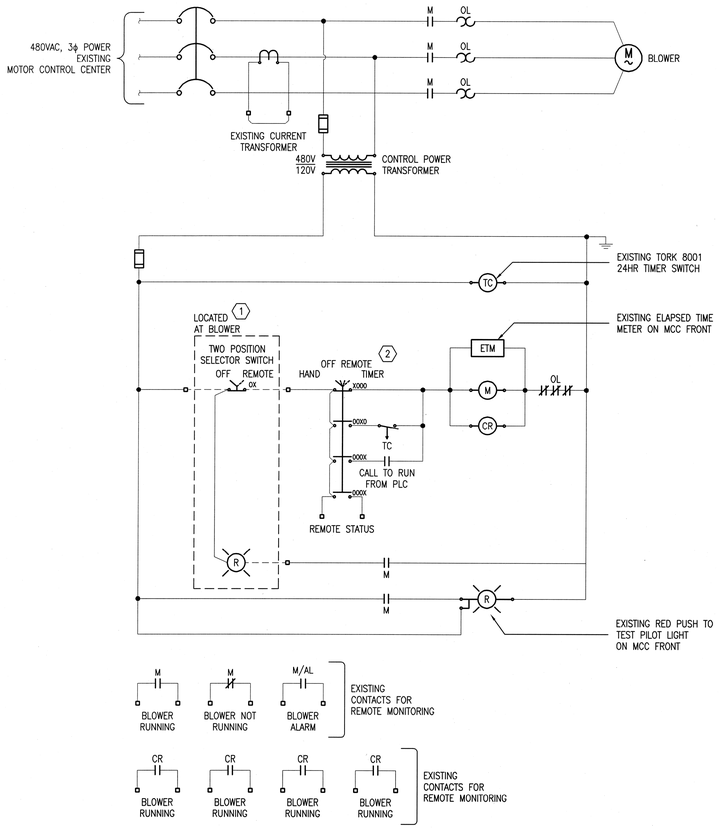
ELECTRICAL DETAILS

DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	DMH/ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: 1/4" = 1'
VERTICAL: NA

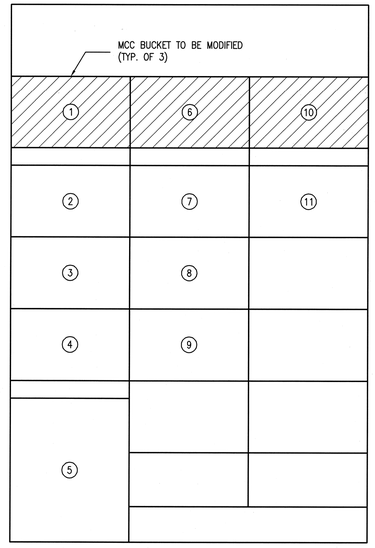
M&C FILE NUMBER EP101
DRAWING NUMBER E12

STATUS: RECORD DRAWING REVISION 1



EXISTING AERATION BLOWER MOTOR CONTROL SCHEMATIC

SCALE: N.T.S. TYPICAL OF 3 BLOWERS



EXISTING MOTOR CONTROL CENTER ELEVATION

SCALE: N.T.S.

EQUIPMENT TAG

1. EXISTING AERATION BASIN BLOWER NO. 1 – TO BE MODIFIED
2. EXISTING RAS PUMP NO. 1 – TO REMAIN AS SPARE STARTER (REFER TO DRAWING E4)
3. EXISTING SURGE TANK PUMP NO. 1 – NOT MODIFIED
4. EXISTING CLARIFIER NO. 1 – NOT MODIFIED
5. MAIN LUG COMPARTMENT
6. EXISTING AERATION BASIN BLOWER NO. 2 – TO BE MODIFIED
7. EXISTING RAS PUMP NO. 2 – TO REMAIN AS SPARE STARTER (REFER TO DRAWING E4)
8. EXISTING SURGE TANK PUMP NO. 2 – NOT MODIFIED
9. EXISTING CLARIFIER NO. 2 – NOT MODIFIED
10. EXISTING AERATION BASIN BLOWER NO. 3 – TO BE MODIFIED
11. EXISTING AREA LIGHTING – NOT MODIFIED

NOTES:

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
2. REFER TO ELECTRICAL POWER PLANS FOR ADDITIONAL INFORMATION ABOUT CONDUIT/WIRE REQUIREMENTS BETWEEN EQUIPMENT.
3. MODIFICATIONS TO EXISTING MCC SHALL BE IN ACCORDANCE WITH THE ORIGINAL MANUFACTURER'S SPECIFICATIONS. EXISTING MOTOR CONTROL CENTER IS SQUARE D, MODEL 6.
4. CONTRACTOR SHALL MINIMIZE DOWNTIME REQUIRED TO MODIFY EXISTING AERATION BASIN BLOWERS NO. 1 – NO. 3 STARTERS AS SHOWN. ANY DOWNTIME DUE TO MODIFYING THE STARTERS SHALL BE COORDINATED WITH THE OWNER AND SHALL BE DONE AT THEIR CONVENIENCE.

KEYNOTES:

1. CONTRACTOR SHALL REPLACE EXISTING START/STOP PUSHBUTTON STATION WITH NEW NEMA 4X SST SELECTOR SWITCH ENCLOSURE TO HOUSE THE REMOTE/OFF SELECTOR SWITCH AND RED RUN PILOT LIGHT. EXISTING FIELD WIRING ROUTED TO START/STOP PUSHBUTTON SHALL BE UTILIZED TO CONNECT NEW SELECTOR SWITCH ENCLOSURE. PROVIDE ADDITIONAL SST MOUNTING HARDWARE, FASTENERS, ETC. AS REQUIRED TO MOUNT NEW SELECTOR SWITCH ENCLOSURE IN PLACE OF EXISTING PUSHBUTTON STATION AT EACH AERATION BLOWER, TYP. OF 3. SELECTOR SWITCH AND PILOT LIGHT SHALL BE RATED NEMA 4X. PILOT LIGHT SHALL BE LED TYPE.
2. CONTRACTOR SHALL ADD FOUR POSITION SELECTOR SWITCH TO EACH AERATION BASIN BLOWER NO. 1 – NO. 3 MCC BUCKET AS SHOWN AND RE-WIRE AS REQUIRED TO PROVIDE ADDED FUNCTIONALITY TO MATCH AERATION BASIN BLOWERS NO. 4 AND NO. 5 INSTALLED AS A PART OF THIS CONTRACT. THE EXISTING 24 HR YORK 8001 TIMERS SHALL REMAIN AND BE RECONNECTED TO THE CONTROL CIRCUIT, AS REQUIRED AND SHOWN, TO PROVIDE LOCAL TIMER CONTROL SEPARATE FROM THE SCADA SYSTEM/PLC.

THIS DRAWING HAS BEEN MODIFIED TO REFLECT CHANGES MADE DURING CONSTRUCTION BASED UPON INFORMATION PROVIDED BY THE CONTRACTOR.

REV.NO.	DESCRIPTIONS	DATE
4	RECORD DRAWING	09/2010
3	AERATION BASIN BLOWERS NO. 1 – 3, INTEGRATED INTO SCADA SYSTEM	MAR 10
2	SUGGESTED MODIFICATIONS TO INCORPORATE DUPLEX CONTROL PANELS	DEC 09
1	CHANGE ORDER – INFLUENT FLOWMETER ADDITION	DEC 09
0	ISSUED FOR CONSTRUCTION	08/12/09
C	ISSUED FOR BIDS – NOT RELEASED FOR CONSTRUCTION	05/28/09
B	REVISED PER REGULATORY COMMENTS – SCADA SYSTEM INCLUDED	04/2009
A	FINAL DRAWING – NOT RELEASED FOR CONSTRUCTION	08/26/08

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15061 ENGINEER ARTHUR L. ANCHORS
11-12-2010

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WSACC
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY (WSACC)
MUDDY CREEK WWTP 0.15 MGD EXP.

EXISTING AERATION BASIN BLOWERS NO. 1 – NO. 3 CONTROL MODIFICATIONS

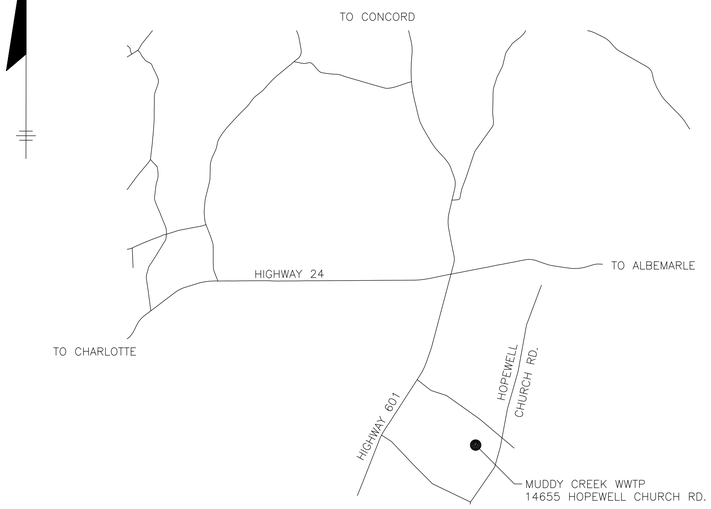
DATE:	APRIL 2008
MCE PROJ. #	02000-0013
DRAWN	BMW
DESIGNED	BMW
CHECKED	ALA
PROJ. MGR.	KEL

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER EC101
DRAWING NUMBER E13

STATUS: RECORD DRAWING REVISION 4

Attachment C



LOCATION MAP

BOARD OF DIRECTORS

CHAIRMAN	TROY BARNHARDT
DIRECTORS	BRIAN HIATT
	DARRELL HINNANT
	MICHAEL LEGG
	JONATHAN MARSHALL
	DAVID PHILLIPS
	ELIZABETH POOLE
	ROBERT RITCHIE
	STEVE SCIASCIA
EXECUTIVE DIRECTOR	MICHAEL WILSON
DIRECTOR OF ENGINEERING	TIMOTHY KISER, P.E.

REFERENCE DRAWINGS

WASTEWATER FACILITIES

CONTRACT 7.0
MUDDY CREEK WWTP 0.30 MGD EXPANSION

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT
ORIGINALLY ISSUED
AND SEALED BY:
GREGORY J. WELLS
NC PE #24494
24 JUL 2017

willis ENGINEERS

WILLIS ENGINEERS, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA, 28277 – NC LICENSE F-0114

1968.015

GENERAL NOTES:

1. ALL WORK SHALL BE COORDINATED WITH THE ENGINEER AND THE PLANT STAFF. PLANT OPERATION AND PLANT ACCESS MUST BE MAINTAINED AT ALL TIMES.
2. INSTALLATION OF NEW EQUIPMENT AND STRUCTURES TO MATCH THE ELEVATIONS OF THE EXISTING FACILITIES IS CRITICAL. ELEVATIONS PROVIDED ON THE DRAWINGS SHALL BE CONFIRMED AND CONVEYED ON APPROPRIATE SHOP DRAWING SUBMITTALS.
3. SIZE, LOCATION AND DEPTH OF BURIED UTILITIES SHOWN ARE APPROXIMATE AND ARE SHOWN TO THE EXTENT POSSIBLE. ROUTING OF NEW PIPING AND POTENTIAL CONFLICTS SHALL BE VERIFIED PRIOR TO BEGINNING CONSTRUCTION. WHERE NECESSARY, POINTS OF CONNECTION TO EXISTING UTILITIES SHALL BE CONFIRMED PRIOR TO ORDERING OR FABRICATING NEW COMPONENTS.
4. ALL OPENINGS IN PLANT PERIMETER FENCE SHALL BE CLOSED AND SECURED TO PREVENT ACCESS DURING NON-WORKING HOURS.
5. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING FACILTIIES SCHEDULED TO REMAIN.
6. ALL MATERIAL GENERATED BY DEMOLITION, INCLUDING BUT NOT LIMITED TO, CONCRETE, REBAR, PROCESS EQUIPMENT, GRATING, HANDRAILS, AND PIPING SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR.
7. UNLESS OTHERWISE NOTED, ALL MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE. NO CONSTRUCTION DEBRIS MAY BE BURIED OR LEFT ON SITE.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY ASSOCIATED WITH ALL REQUIREMENTS CURRENTLY MANDATED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
9. ALL HOLES, TRENCHES AND OTHER HAZARDS SHALL BE ADEQUATELY PROTECTED BY BARRICADES OR OTHER PROTECTIVE DEVICES AS REQUIRED.
10. FOR WORK IN EXISTING STRUCTURES, THE OWNER WILL DRAIN, WASH DOWN AND REMOVE ACCUMULATED GRIT AND SOLIDS PRIOR TO SCHEDULED WORK BY THE CONTRACTOR.

SCHEDULE OF MAJOR WORK ITEMS:

1. REPLACE INFLUENT PUMPS AND DISCHARGE PIPING.
2. REPLACE SCREENING EQUIPMENT.
3. INSTALL NEW EQUALIZATION BASIN PUMPS.
4. RENOVATE TREATMENT UNITS INTO EXPANDED AERATION BASINS.
5. REPLACE THREE TREATMENT UNIT BLOWERS.
6. RENOVATE CLARIFIERS INTO SLUDGE HOLDING TANKS.
7. INSTALL NEW CLARIFIERS.
8. INSTALL NEW RAS / WAS PUMP STATION.
9. INSTALL NEW FILTER.
10. REPLACE UV DISINFECTION UNITS.
11. INSTALL NEW CHEMICAL STORAGE ENCLOSURE.
12. INSTALL NEW ELECTRICAL SERVICE AND GENERATOR.
13. INTEGRATE NEW EQUIPMENT AND CONTROLS INTO EXISTING SCADA SYSTEM.

GENERAL CONSTRUCTION SEQUENCE:

THE FOLLOWING SHALL BE THE GENERAL SEQUENCE OF CONSTRUCTION. PRIOR TO BEGINNING WORK THE CONTRACTOR SHALL SUBMIT A DETAILED WRITTEN PROJECT SCHEDULE FOR APPROVAL IDENTIFYING THE SEQUENCE AND DURATION OF EACH MAJOR WORK ITEM. ELECTRICAL WORK TO SUPPORT THE SEQUENCE OF CONSTRUCTION SHALL BE COMPLETED CONCURRENTLY.

1. CONSTRUCT NEW CLARIFIERS, RAS/WAS PUMP STATION AND PIPING WITH TEMPORARY CONNECTION TO EXISTING 8" FILTER INFLUENT.
2. RENOVATE TREATMENT UNIT NO. 2 INTO AERATION BASINS NO. 3 AND NO. 4 AND RENOVATE CLARIFIERS NO. 3 AND NO. 4 INTO SLUDGE HOLDING TANKS. PLACE ITEMS FROM NO. 1 ABOVE INTO SERVICE.
3. RENOVATE TREATMENT UNIT NO. 1 INTO AERATION BASINS NO. 1 AND NO. 2, RENOVATE CLARIFIERS NO. 1 AND NO. 2 INTO SLUDGE HOLDING TANKS, REPLACE AERATION BLOWERS AND INSTALL NEW CHEMICAL STORAGE ENCLOSURE.
4. INSTALL NEW UV UNITS AND NEW FILTER AND COMPLETE ASSOCIATED PIPING.
5. COMPLETE WORK AT HEADWORKS AND EQUALIZATION BASIN.
6. COMPLETE WORK AT INFLUENT PUMP STATION.

DRAWING INDEX

G-1 SCHEDULES AND GENERAL NOTES
G-2 EXISTING SITE PLAN
G-3 NEW SITE PLAN
G-4 NEW SITE PIPING PLAN
G-5 GRADING PLAN
G-6 GRADING SECTIONS
G-7 NEW HYDRAULIC PROFILE
G-8 FLOW DIAGRAM
G-9 GENERAL DETAILS
G-10 GENERAL DETAILS

INFLUENT PUMP STATION
M-1 DEMO PLAN
M-2 DEMO PLAN AND SECTION
M-3 NEW PLAN
M-4 NEW PLAN AND SECTIONS

HEADWORKS AND EQUALIZATION BASIN
M-5 DEMO PLAN
M-6 DEMO PLAN AND SECTIONS
M-7 NEW PLAN AND DETAIL
M-8 NEW PLAN AND SECTIONS
M-9 NEW SECTIONS

AERATION BASIN
M-10 DEMO PLAN
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M-13 NEW PLANS
M-14 NEW SECTIONS AND DETAILS

BLOWERS
M-15 DEMO PLAN AND SECTION
M-16 NEW PLAN, SECTION AND DETAIL

CLARIFIERS
M-17 PLAN AT WALKWAY
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FILTRATION AND DISINFECTION
M-20 DEMO PLANS
M-21 DEMO SECTIONS
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M-23 NEW SECTIONS AND DETAIL

SLUDGE HOLDING TANKS
M-24 DEMO PLAN AND SECTION
M-25 NEW PLAN AND SECTIONS

CHEMICAL STORAGE ENCLOSURE
M-26 PLAN AND SECTION

INSTRUMENTATION AND CONTROLS
M-27 CONTROL SCHEMATIC
M-28 CONTROL SCHEMATIC

ELECTRICAL
E-1 SITE PLAN AND ENLARGED PLANS
E-2 INFLUENT PUMP STATION
E-3 HEADWORKS AND EQUALIZATION BASIN
E-4 AERATION BASIN
E-5 BLOWERS
E-6 CLARIFIERS, FILTRATION AND DISINFECTION
E-7 POWER RISER DIAGRAM
E-8 PANELS AND DETAILS

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

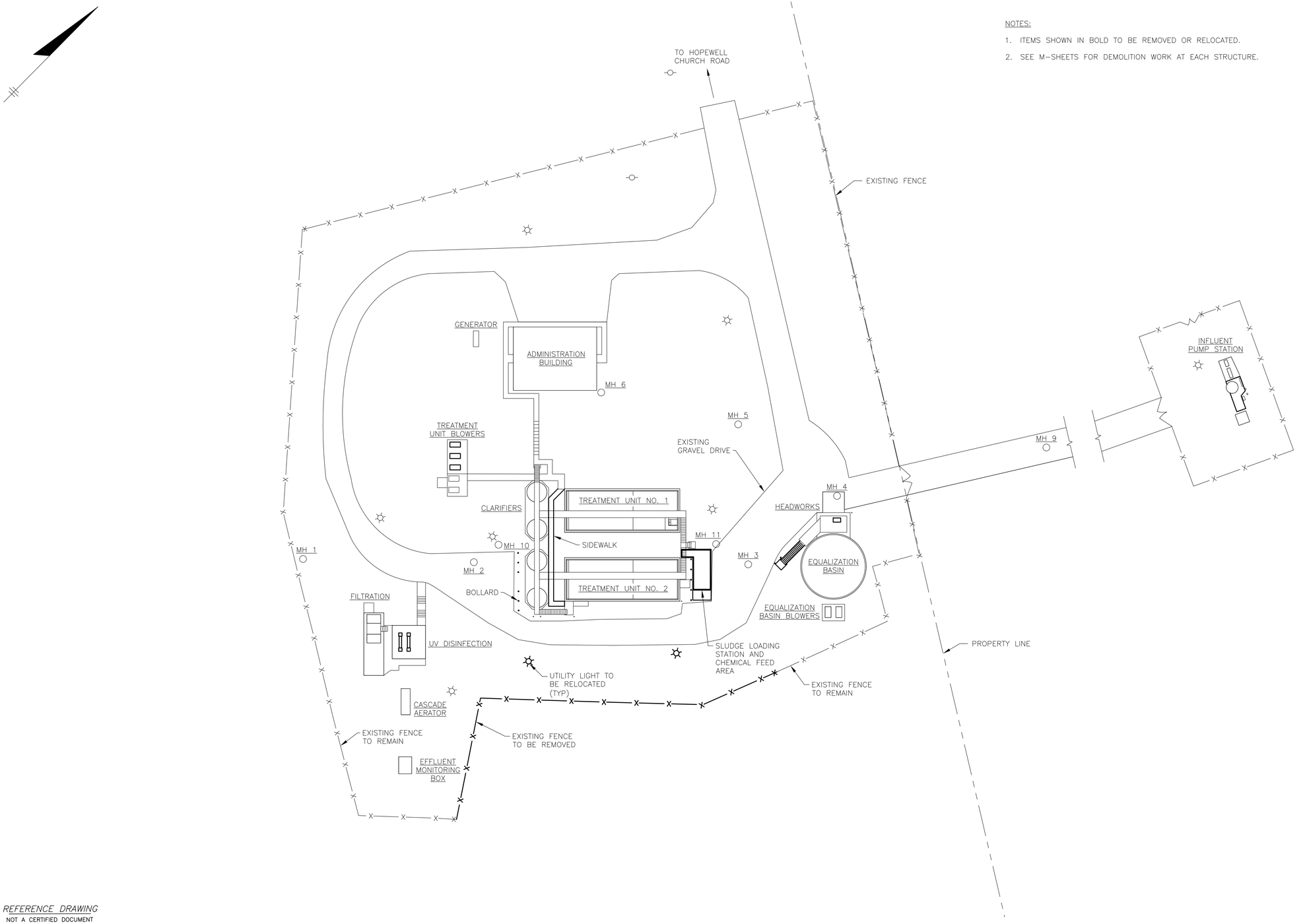
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GREGORY J. WELLS
NC PE #24494
24 JUL 2017

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED GJW MADE BY AMA CHECKED CAWjr	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	TREATMENT PLANT EXPANSION SCHEDULES AND GENERAL NOTES	1968.015 G-1REF.DWG OCTOBER 2019	G-1

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.
2. SEE M–SHEETS FOR DEMOLITION WORK AT EACH STRUCTURE.

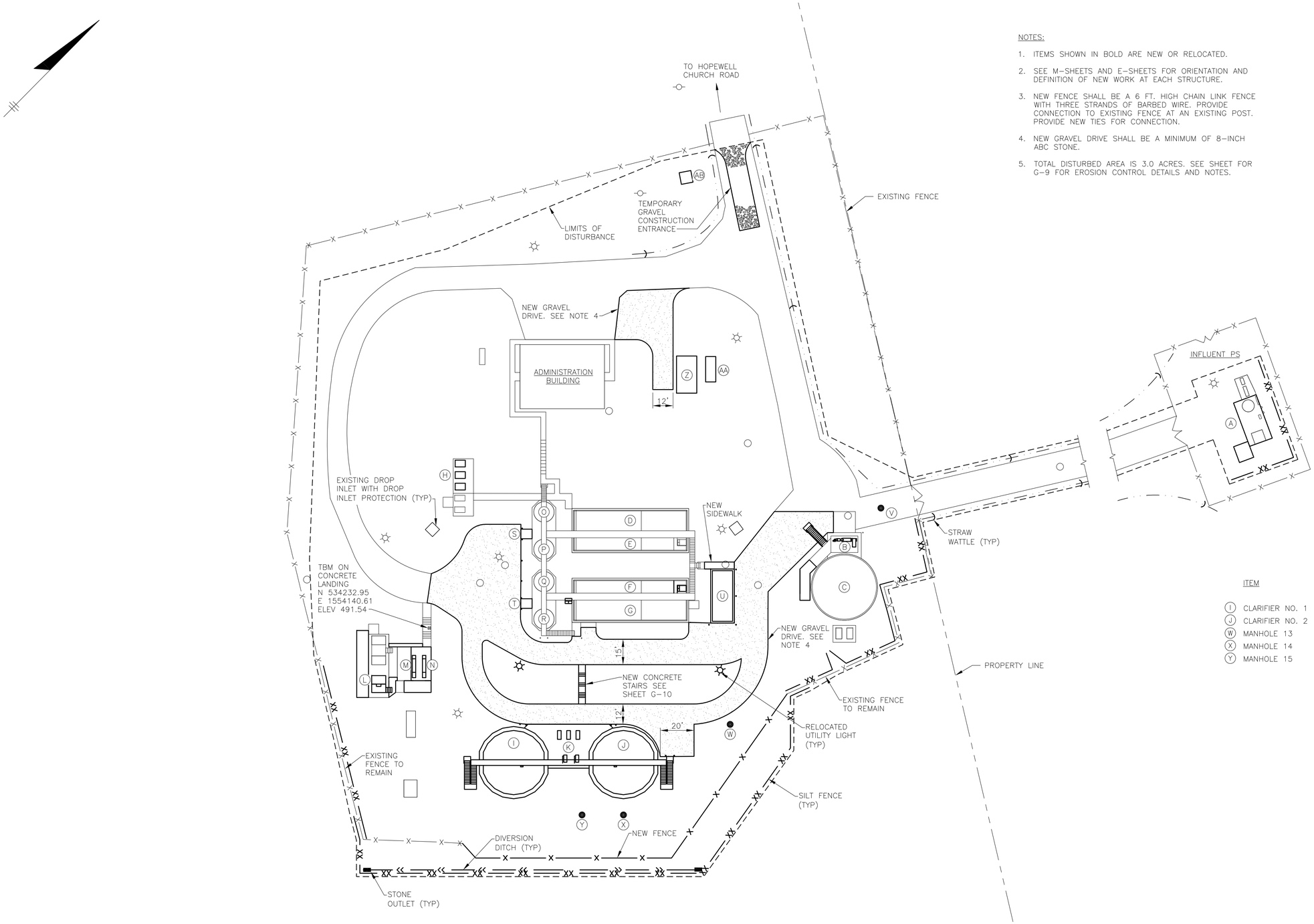


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WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED GJW MADE BY AMA CHECKED CAWjr	30' 0 30' 60'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	TREATMENT PLANT EXPANSION EXISTING SITE PLAN	1968.015 G–2REF.DWG OCTOBER 2019	G–2



NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW OR RELOCATED.
2. SEE M-SHEETS AND E-SHEETS FOR ORIENTATION AND DEFINITION OF NEW WORK AT EACH STRUCTURE.
3. NEW FENCE SHALL BE A 6 FT. HIGH CHAIN LINK FENCE WITH THREE STRANDS OF BARBED WIRE. PROVIDE CONNECTION TO EXISTING FENCE AT AN EXISTING POST. PROVIDE NEW TIES FOR CONNECTION.
4. NEW GRAVEL DRIVE SHALL BE A MINIMUM OF 8-INCH ABC STONE.
5. TOTAL DISTURBED AREA IS 3.0 ACRES. SEE SHEET FOR G-9 FOR EROSION CONTROL DETAILS AND NOTES.

SCHEDULE OF NEW AND RENOVATED STRUCTURES:

- (A) INFLUENT PUMP STATION
- (B) HEADWORKS
- (C) EQUALIZATION BASIN
- (D) AERATION BASIN NO. 1
- (E) AERATION BASIN NO. 2
- (F) AERATION BASIN NO. 3
- (G) AERATION BASIN NO. 4
- (H) BLOWER NO. 1, NO. 2 AND NO. 3
- (I) CLARIFIER NO. 1
- (J) CLARIFIER NO. 2
- (K) RAS / WAS PUMP STATION
- (L) FILTER NO. 3
- (M) UV DISINFECTION UNIT NO. 1
- (N) UV DISINFECTION UNIT NO. 2
- (O) SLUDGE HOLDING TANK NO. 1
- (P) SLUDGE HOLDING TANK NO. 2
- (Q) SLUDGE HOLDING TANK NO. 3
- (R) SLUDGE HOLDING TANK NO. 4
- (S) SLUDGE LOADING STATION NO. 1
- (T) SLUDGE LOADING STATION NO. 2
- (U) CHEMICAL STORAGE ENCLOSURE
- (V) MANHOLE 12
- (W) MANHOLE 13
- (X) MANHOLE 14
- (Y) MANHOLE 15
- (Z) ELECTRICAL SERVICE AREA
- (AA) GENERATOR
- (AB) CT ENCLOSURE

LOCATION SCHEDULE

ITEM		LOCATION	COORDINATES N	COORDINATES E
(I)	CLARIFIER NO. 1	CENTER	534211.20	1554232.13
(J)	CLARIFIER NO. 2	CENTER	534256.79	1554278.46
(W)	MANHOLE 13	CENTER	534317.23	1554307.63
(X)	MANHOLE 14	CENTER	534234.71	1554300.19
(Y)	MANHOLE 15	CENTER	534217.50	1554282.70

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IN CHARGE CAWjr
DESIGNED GJW
MADE BY AMA
CHECKED CAWjr

30' 0 30' 60'

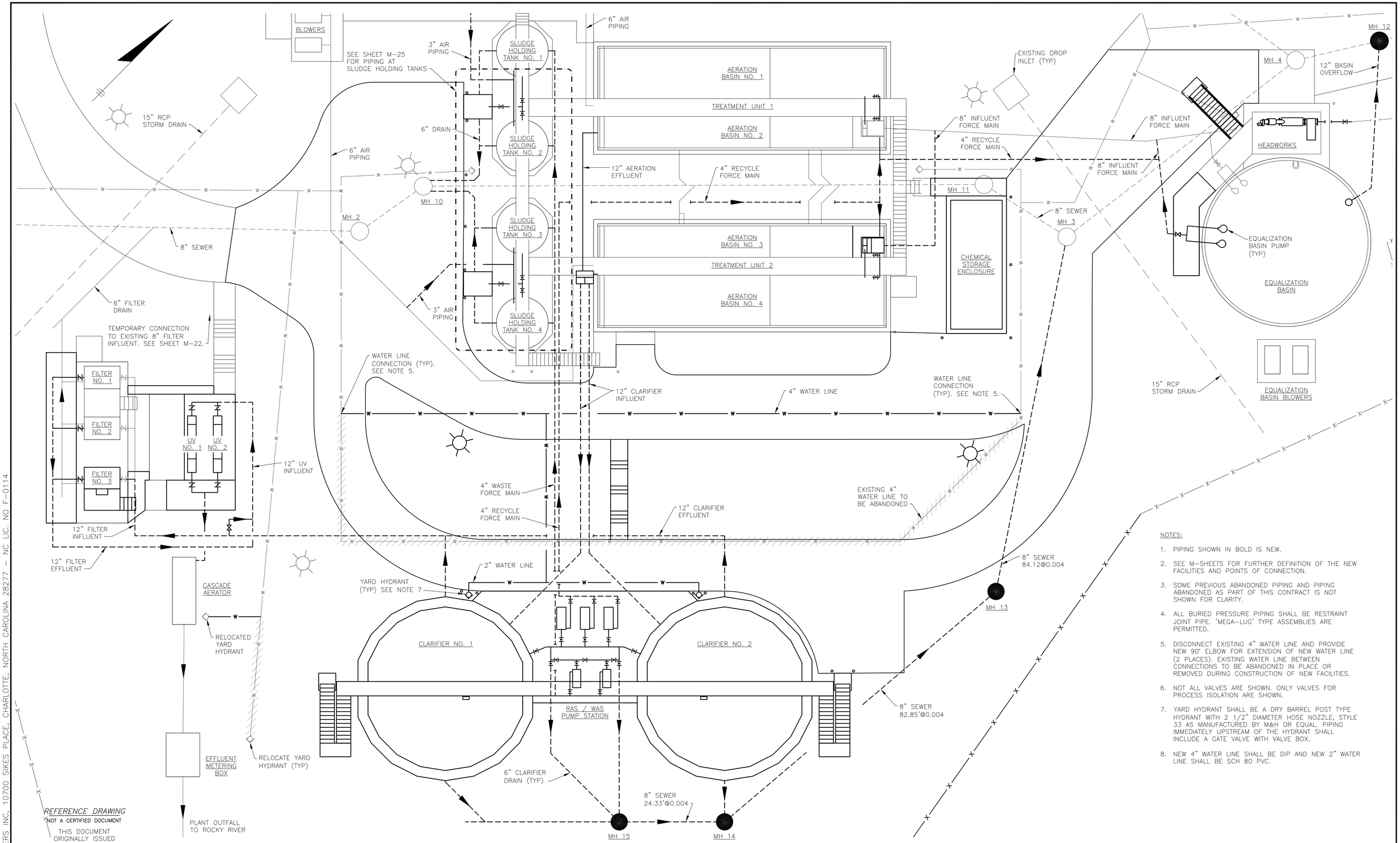
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION
NEW SITE PLAN

1968.015
G-3REF.DWG
OCTOBER 2019

G-3



NOTES:

1. PIPING SHOWN IN BOLD IS NEW.
2. SEE M-SHEETS FOR FURTHER DEFINITION OF THE NEW FACILITIES AND POINTS OF CONNECTION.
3. SOME PREVIOUS ABANDONED PIPING AND PIPING ABANDONED AS PART OF THIS CONTRACT IS NOT SHOWN FOR CLARITY.
4. ALL BURIED PRESSURE PIPING SHALL BE RESTRAINT JOINT PIPE. 'MEGA-LUG' TYPE ASSEMBLIES ARE PERMITTED.
5. DISCONNECT EXISTING 4" WATER LINE AND PROVIDE NEW 90° ELBOW FOR EXTENSION OF NEW WATER LINE (2 PLACES). EXISTING WATER LINE BETWEEN CONNECTIONS TO BE ABANDONED IN PLACE OR REMOVED DURING CONSTRUCTION OF NEW FACILITIES.
6. NOT ALL VALVES ARE SHOWN. ONLY VALVES FOR PROCESS ISOLATION ARE SHOWN.
7. YARD HYDRANT SHALL BE A DRY BARREL POST TYPE HYDRANT WITH 2 1/2" DIAMETER HOSE NOZZLE, STYLE 33 AS MANUFACTURED BY M&H OR EQUAL. PIPING IMMEDIATELY UPSTREAM OF THE HYDRANT SHALL INCLUDE A GATE VALVE WITH VALVE BOX.
8. NEW 4" WATER LINE SHALL BE DIP AND NEW 2" WATER LINE SHALL BE SCH 80 PVC.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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IN CHARGE CAWjr
DESIGNED GJW
MADE BY AMA
CHECKED CAWjr

10' 0 10' 20'

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION

NEW SITE PIPING PLAN

1968.015
G-4REF.DWG
OCTOBER 2019

G-4

SLUDGE HOLDING NO. 3

SLUDGE HOLDING NO. 4

AERATION BASIN NO. 3

AERATION BASIN NO. 4

CHEMICAL STORAGE ENCLOSURE

EQUALIZATION BASIN

1 G-6

DISINFECTION

FILTRATION

RELOCATED UTILITY LIGHT

RELOCATED UTILITY LIGHT

NEW GRAVEL DRIVE

494

493

492

491

490

489

488

CASCADE AERATION

CLARIFIER NO. 1

RAS / WAS PUMP STATION

CLARIFIER NO. 2

SILT FENCE (TYP)

2 G-6

2 G-6

487

486

485

484

483

482

481

480

479

EXISTING FENCE

EFFLUENT MONITORING BOX

EXISTING CONTOURS (TYP)

NEW CONTOURS (TYP)

LIMITS OF DISTURBANCE. SEE SHEET G-3

NEW FENCE

STONE OUTLET (TYP)

DIVERSION DITCH (TYP)

1 G-6

REFERENCE DRAWING

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IN CHARGE	CAWjr
DESIGNED	GJW
MADE BY	AMA
CHECKED	CAWjr

10' 0 10' 20'

1	REVISED PLAN	24 JUL 17

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION

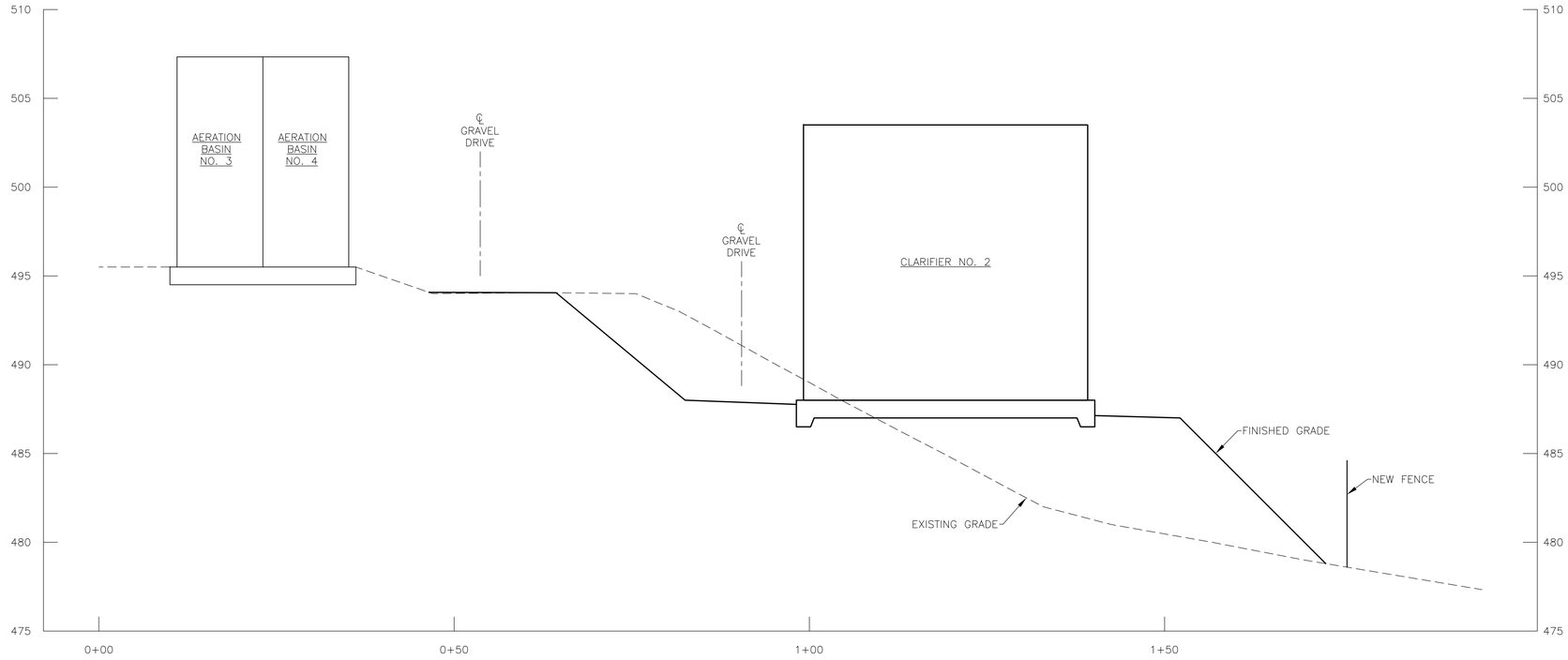
GRADING PLAN

1968.015

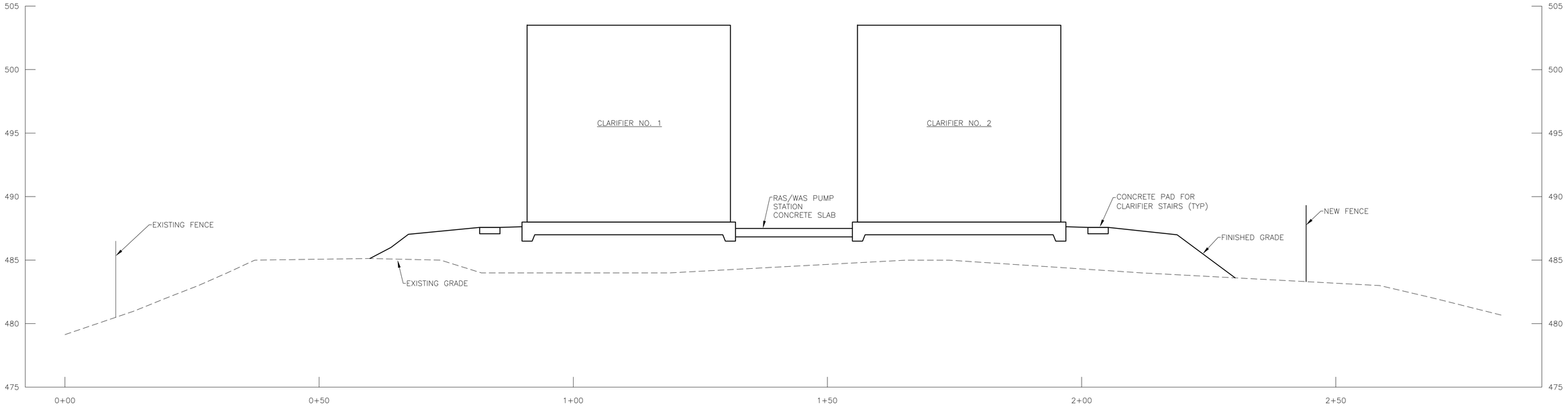
G-5REF.DWG

OCTOBER 2019

G-5



SECTION 1 / G-5



SECTION 2 / G-5

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IN CHARGE CAWjr
DESIGNED GJW
MADE BY AMA
CHECKED CAWjr

V 4' 0 4' 8'
H 10' 0 10' 20'

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION
GRADING SECTIONS

1968.015
G-6REF.DWG
OCTOBER 2019

G-6

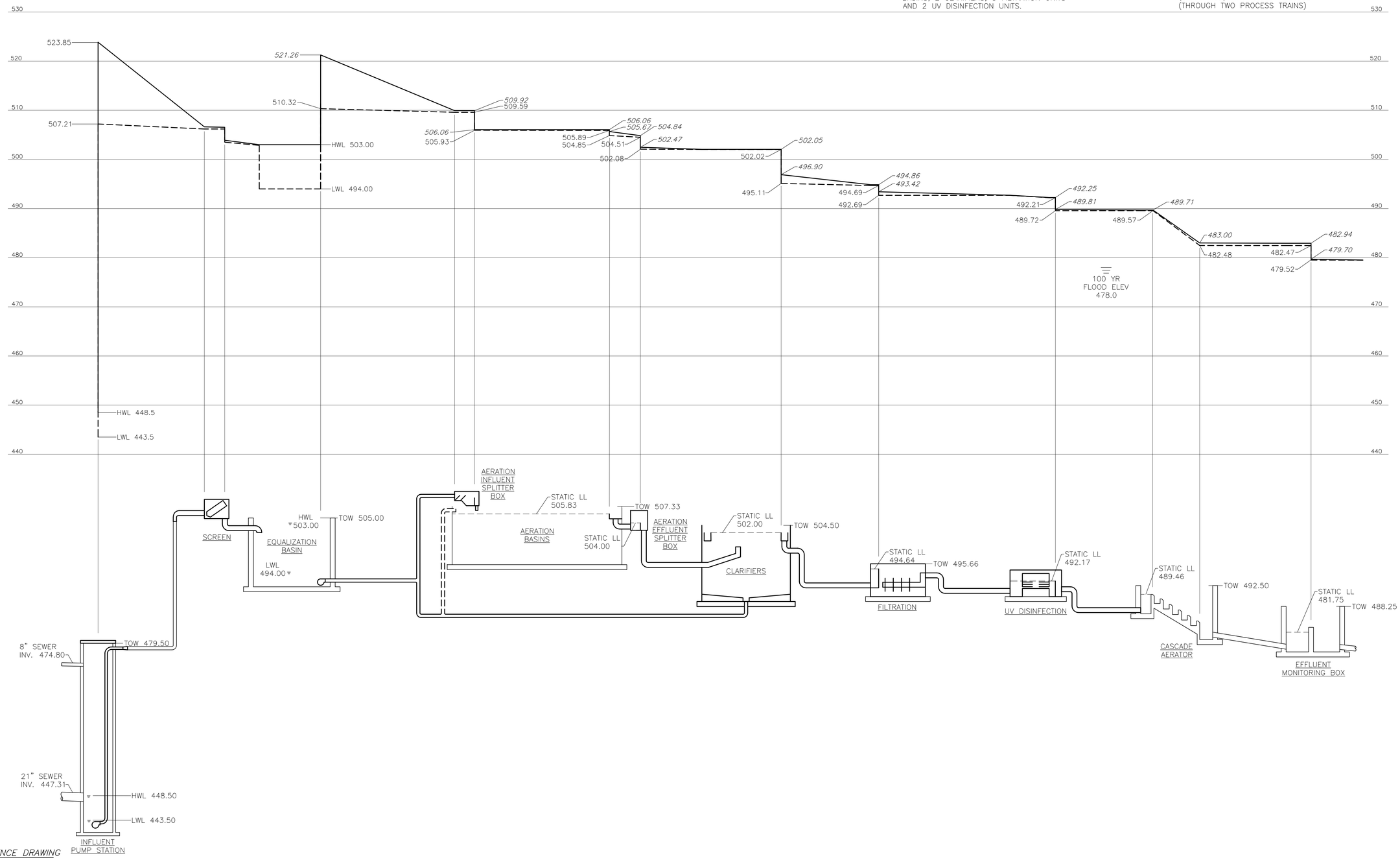
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NOTES:

1. ONE PROCESS TRAIN INCLUDES 2 AERATION BASINS, 1 CLARIFIER, 2 FILTRATION UNITS AND 1 UV DISINFECTION UNIT.
2. TWO PROCESS TRAINS INCLUDES 4 AERATION BASINS, 2 CLARIFIERS, 3 FILTRATION UNITS AND 2 UV DISINFECTION UNITS.

HGL AT PEAK FLOW (1.05 MGD) (THROUGH ONE PROCESS TRAIN)

HGL AT AVERAGE DESIGN FLOW (0.300 MGD) WITH 0.300 RECYCLE (THROUGH TWO PROCESS TRAINS)



REFERENCE DRAWING

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IN CHARGE	CAWjr
DESIGNED	SEG
MADE BY	AMA
CHECKED	CAWjr

V / H: 10' 0 10' 20' — NOT TO SCALE

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION

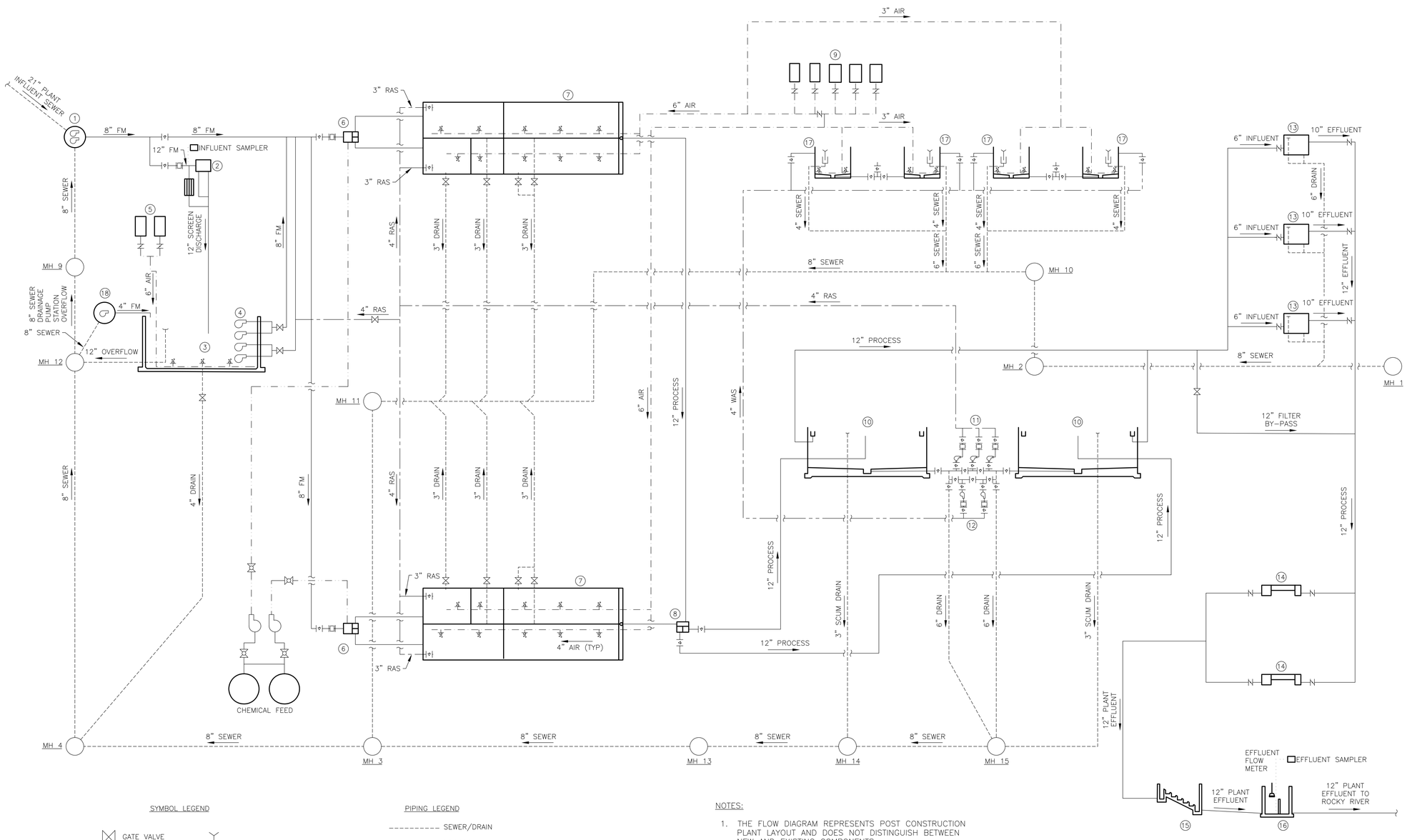
NEW HYDRAULIC PROFILE

1968.015

G-7REF.DWG

OCTOBER 2019

G-7



SYMBOL LEGEND

- GATE VALVE
- PLUG VALVE
- BUTTERFLY VALVE
- BALL VALVE
- FLOW METER
- TELESCOPING VALVE
- PUMP
- DIFFUSER AIR

PIPING LEGEND

- SEWER/DRAIN
- PROCESS
- RAS
- WAS
- AIR
- CHEMICAL FEED
- SAMPLING

NOTES:

1. THE FLOW DIAGRAM REPRESENTS POST CONSTRUCTION PLANT LAYOUT AND DOES NOT DISTINGUISH BETWEEN NEW AND EXISTING COMPONENTS.
2. NOT ALL VALVES ARE SHOWN. ONLY VALVES FOR PROCESS ISOLATION ARE SHOWN.

TREATMENT / EQUIPMENT LEGEND

(1) INFLUENT PUMP STATION
QUANTITY: 2 PUMPS
CAPACITY: 730 GPM, EACH

(2) SCREENING
INCLINE DRUM
QUANTITY: 1
OPENING SIZE: 5MM
MANUAL
QUANTITY: 1
BAR SPACING: 1-INCH

(3) EQUALIZATION BASIN
CAPACITY: 75,000 GAL

(4) EQUALIZATION BASIN PUMPS
QUANTITY: 4
CAPACITY: 2 @ 264 GPM
2 @ 730 GPM

(5) EQUALIZATION BASIN BLOWERS
QUANTITY: 2
CAPACITY: 454 ICFM

(6) AERATION INFLUENT SPLITTER BOX

(7) AERATION BASINS
QUANTITY: 4
CAPACITY: 62,500 GAL, EACH

(8) AERATION EFFLUENT SPLITTER BOX

(9) AERATION BASIN BLOWERS
QUANTITY: 5
CAPACITY: 3 @ 450 SCFM
2 @ 250 SCFM

(10) CLARIFIERS
QUANTITY: 2
CAPACITY: 112,300 GAL

(11) RAS PUMPING
QUANTITY: 3
CAPACITY: 208 GPM, EACH

(12) WAS PUMPING
QUANTITY: 2
CAPACITY: 75 GPM, EACH

(13) FILTRATION
QUANTITY: 3
CAPACITY: 277 GPM, EACH

(14) UV DISINFECTION
QUANTITY: 2
CAPACITY: 730 GPM, EACH

(15) CASCADE AERATOR

(16) EFFLUENT MONITORING BOX

(17) SLUDGE HOLDING TANKS
QUANTITY: 4
CAPACITY: 7,600 GAL, EACH

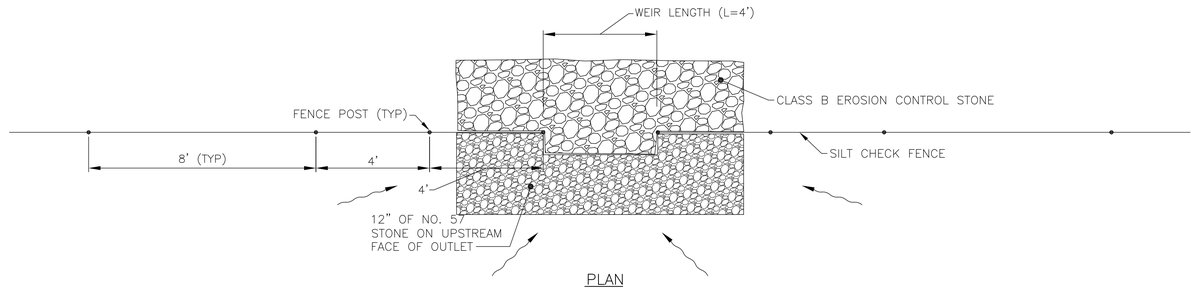
(18) DRAINAGE PUMP STATION
QUANTITY: 1 PUMP
CAPACITY: 208 GPM

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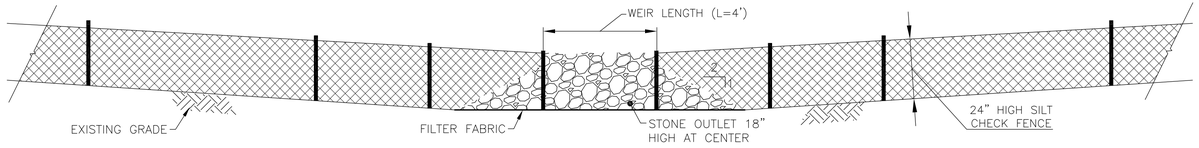
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IN CHARGE CAWjr DESIGNED GJW MADE BY AMA CHECKED CAWjr	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	TREATMENT PLANT EXPANSION FLOW DIAGRAM	1968.015 G-8REF.DWG OCTOBER 2019	G-8

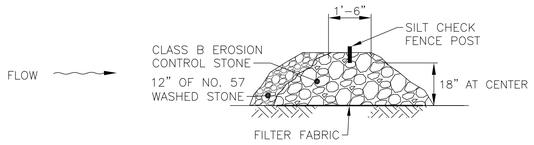
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PLAN



SECTION ALONG FENCE

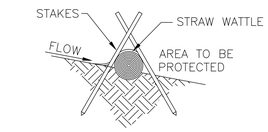


SECTION THROUGH STONE OUTLET

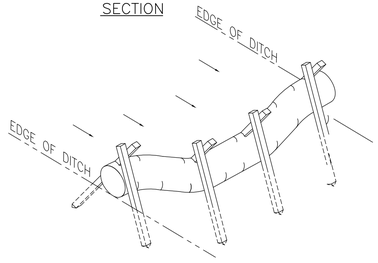
NOTE:

INSPECT STONE OUTLETS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. REMOVE SEDIMENT ACCUMULATED BEHIND OUTLET AND RESTORE STONE AS REQUIRED.

STONE OUTLET DETAIL



SECTION

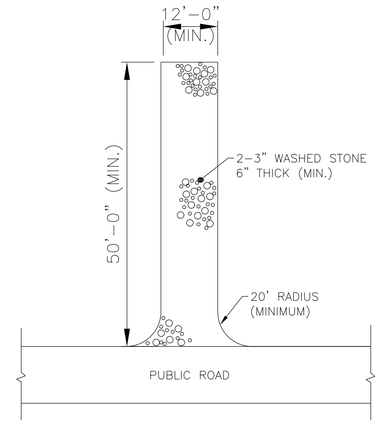


PLAN

NOTES:

1. WATTLES SHALL BE SECURED TO GROUND EVERY 2'-0" BY WOOD STAKES.
2. ALL DISTURBED DITCHES SHALL BE STABILIZED WITH EXCELSIOR MATTING.
3. INSPECT DITCHES WITH STRAW WATTLES WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. REMOVE SEDIMENT ACCUMULATED BEHIND THE WATTLES AND RESECURE STAKES, AS NEEDED.

STRAW WATTLE

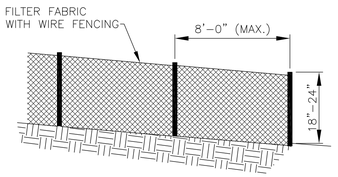


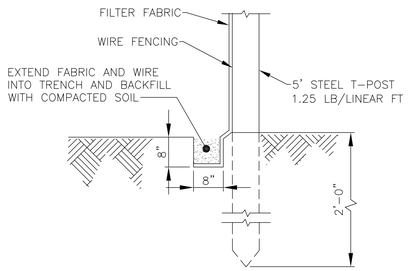
NOTE:

INSPECT TEMPORARY CONSTRUCTION ENTRANCE PERIODICALLY FOR CONDITION OF SURFACE. TOP DRESS WITH NEW WASHED STONE AS NEEDED. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS TRACKED ONTO PUBLIC ROADWAYS.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

CONFORMS TO EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL DETAIL 6.06



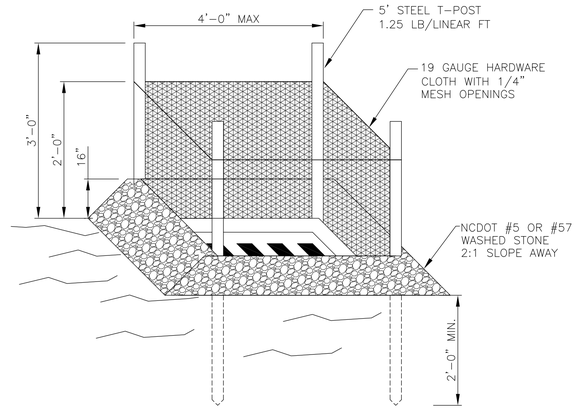


NOTE:

INSPECT SILT FENCE WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. REMOVE SEDIMENT DEPOSITS TO REDUCE PRESSURE ON THE FENCE. ANY DAMAGED FABRIC SHALL BE REPAIRED OR REPLACED IMMEDIATELY AS REQUIRED.

SILT CHECK FENCE

CONFORMS TO EROSION AND SEDIMENT CONTROL PLANNING DESIGN MANUAL DETAIL 6.62



NOTES:

1. CONTRACTOR MAY USE BLOCK AND GRAVEL INLET PROTECTION IN ACCORDANCE WITH EROSION CONTROL DETAIL 6.52 IN LIEU OF WOVEN MESH PROTECTION.
2. INSPECT INLET PROTECTION WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. CLEAN OUT SEDIMENT AND REPLACE STONE AS NEEDED TO MAINTAIN INLET PROTECTION AS SPECIFIED.

DROP INLET PROTECTION

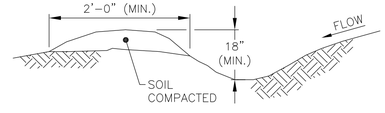
CONFORMS TO EROSIONS AND SEDIMENT CONTROL PLANNING DESIGN MANUAL DETAIL 6.51

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL TAKE WHATEVER MEASURES NECESSARY TO MINIMIZE SOIL EROSION AND SILTATION. HE SHALL KEEP FULLY INFORMED OF ALL SUCH REGULATIONS WHICH AFFECT THE CONDUCT OF THE WORK, AND SHALL AT ALL TIMES OBSERVE AND COMPLY WITH ALL SUCH REGULATIONS.
2. PERMANENT GROUND COVER SHALL BE ESTABLISHED ON ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3:1 WITHIN SEVEN (7) WORKING DAYS OF THE LAST LAND DISTURBING ACTIVITY. ALL OTHER DISTURBED AREAS SHALL BE PROVIDED WITH PERMANENT GROUND COVER WITHIN FOURTEEN (14) CALENDAR DAYS. GROUND COVER WILL CONSIST OF SEEDING, MULCHING AND FERTILIZING AS SPECIFIED. THE CONTRACTOR WILL BE REQUIRED TO FOLLOW THE LAND DISTURBING ACTIVITIES (AS CLOSELY AS PRACTICAL) WITH RESTORATION, FERTILIZING, SEEDING, AND MULCHING.
3. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND FOLLOWING EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY. THE CONTRACTOR, UPON COMPLETION OF THIS PROJECT, SHALL LEAVE INTACT THOSE TEMPORARY EROSION CONTROL DEVICES DEEMED NECESSARY BY THE ENGINEER FOR FUTURE PROTECTION.
4. SEDIMENT FENCES (SILT CHECK FENCE) SHALL BE CONSTRUCTED WHERE SHOWN ON THE PLANS. CONSTRUCTION SHALL CONFORM TO EROSION CONTROL DETAIL 6.62. INSPECT SILT FENCES WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AS NEEDED TO MAINTAIN ADEQUATE STORAGE. IF SILT FENCE BECOMES DAMAGED OR COLLAPSES, REPLACE IMMEDIATELY. SILT FENCE SHALL BE REMOVED AFTER DRAINAGE AREA HAS BEEN STABILIZED.
5. ALL DISTURBED AREAS SHALL BE SEEDED WITH PERMANENT SEED FOR PRIMARY STABILIZATION AND TEMPORARY SEED FOR IMMEDIATE GROUND STABILIZATION. PERMANENT SEED SHALL BE KENTUCKY 31 FESCUE APPLIED AT A RATE OF 100LBS/ACRE. IF SEEDING WILL OCCUR BETWEEN AUGUST 15 AND APRIL 15, TEMPORARY SEED SHALL BE RYE GRAIN APPLIED AT A RATE OF 40 LBS PER ACRE. IF SEEDING WILL OCCUR BETWEEN APRIL 15 AND AUGUST 15, TEMPORARY SEED SHALL BE GERMAN MILLET APPLIED AT A RATE OF 10 LBS PER ACRE.
6. LIME AND FERTILIZER SHALL BE APPLIED WITH ALL SEEDING ACTIVITIES. A 5-10-10 GRADE OF FERTILIZER SHALL BE SPREAD AT A RATE OF 40LBS/1000SF. LIME SHALL BE APPLIED AT A RATE OF 75 LBS/1000 SF.
7. MULCH SHALL BE SPREAD UNIFORMLY AT A RATE OF 4,000 LBS/ACRE IN A CONTINUOUS BLANKET OVER THE AREAS SPECIFIED. THICKNESS OF THE COVERING SHALL BE ADEQUATE TO HOLD THE SOIL BUT SUFFICIENTLY LOOSE AND OPEN TO FAVOR THE DEVELOPMENT OF GRASS.
8. CONTRACTOR SHALL MAINTAIN A RAIN GAUGE AT THE PROJECT SITE AND PROVIDE WEEKLY AND POST RAINFALL INSPECTION REPORTS IN ACCORDANCE WITH NPDES REQUIREMENTS.
9. ANY OFF-SITE BORROW AND WASTE REQUIRED FOR THIS PROJECT MUST COME FROM A SITE WITH AN APPROVED EROSION CONTROL PLAN, A SITE REGULATED UNDER THE MINING ACT OF 1971, OR A LANDFILL REGULATED BY THE DIVISION OF SOLID WASTE MANAGEMENT. TRASH/DEBRIS FROM DEMOLITION ACTIVITIES OR GENERATED BY ANY ACTIVITIES ON SITE MUST BE DISPOSED OF AT A FACILITY REGULATED BY THE DIVISION OF SOLID WASTE MANAGEMENT OR PER DIVISION OF SOLID WASTE MANAGEMENT OR DIVISION OF WATER RESOURCES RULES AND REGULATIONS.

EROSION CONTROL CONSTRUCTION SEQUENCE:

1. APPLY AND RECEIVE APPROVAL FOR LAND DISTURBING ACTIVITIES.
2. HOLD PRECONSTRUCTION MEETING WITH NCDEQ INSPECTOR PRIOR TO THE START OF CONSTRUCTION.
3. INSTALL EROSION CONTROL MEASURES IN ADVANCE OF LAND DISTURBING ACTIVITIES.
4. CONSTRUCT FACILITIES.
5. MAINTENANCE OF EROSION CONTROL DEVICES IS THE CONTRACTOR'S RESPONSIBILITY. EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT. THE DEVICES SHALL BE INSPECTED FOR DAMAGE AND REPAIRS SHALL BE COMPLETED IMMEDIATELY.
6. RESEED, MULCH, AND STABILIZE DISTURBED AREAS AS SOON AS PRACTICAL.
7. MAINTAIN ALL EROSION CONTROL MEASURES. AFTER PROJECT AREA IS STABILIZED, REMOVE EROSION CONTROL DEVICES.



NOTE:

INSPECT TEMPORARY DIVERSIONS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM FLOW AREA AND REPAIR THE DIVERSION RIDGE, AS REQUIRED.

TEMPORARY DIVERSION DITCH

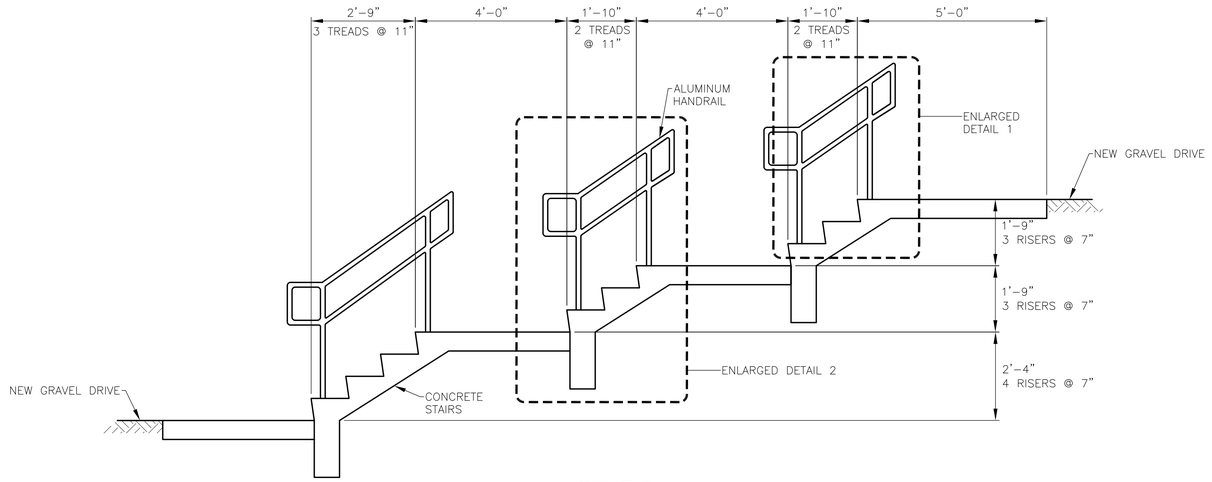
CONFORMS TO EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL DETAIL 6.20

REFERENCE DRAWING
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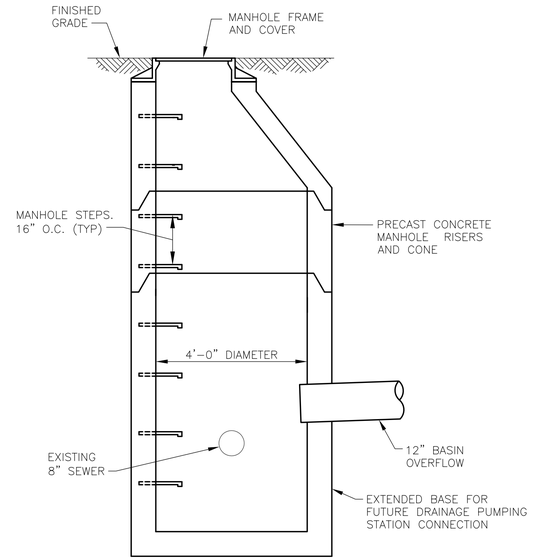
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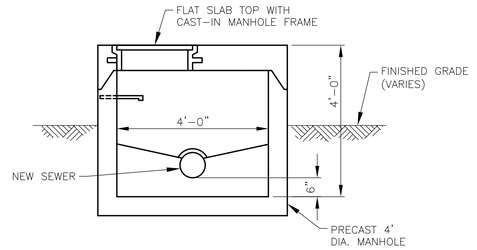
IN CHARGE CAWjr DESIGNED GJW MADE BY AMA CHECKED CAWjr	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	TREATMENT PLANT EXPANSION GENERAL DETAILS	1968.015 G-9REF.DWG OCTOBER 2019	G-9



SECTION



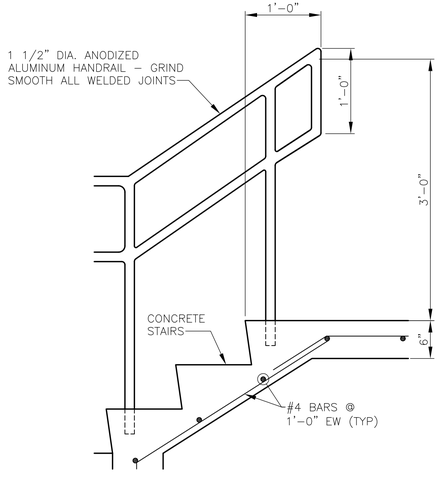
SECTION



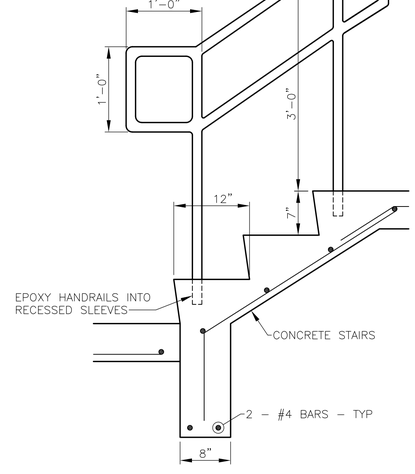
MANHOLE SCHEDULE

MH	INV OUT	INV IN
13	485.07	485.27
14	485.59	485.79
15	485.87	486.07

NEW MANHOLE 13, 14 AND 15

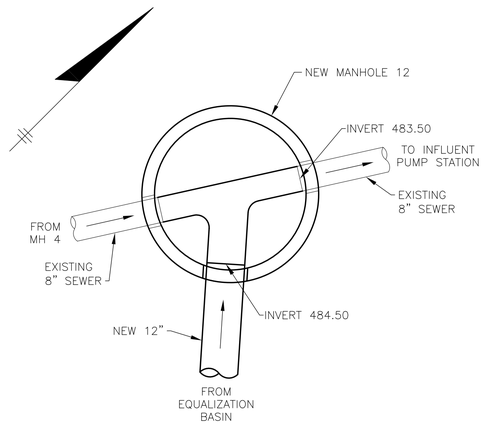


ENLARGED DETAIL 1



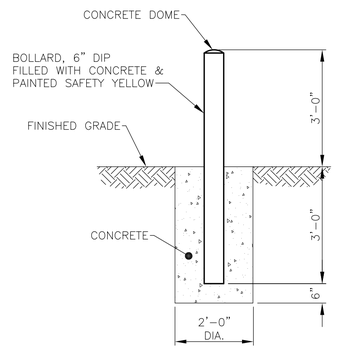
ENLARGED DETAIL 2

CONCRETE STAIRS



PLAN

NEW MANHOLE 12



PIPE BOLLARD

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DESIGNED	GJW
MADE BY	AMA
CHECKED	CAWjr

1' 0 1' 2'
2' 0 2' 4'

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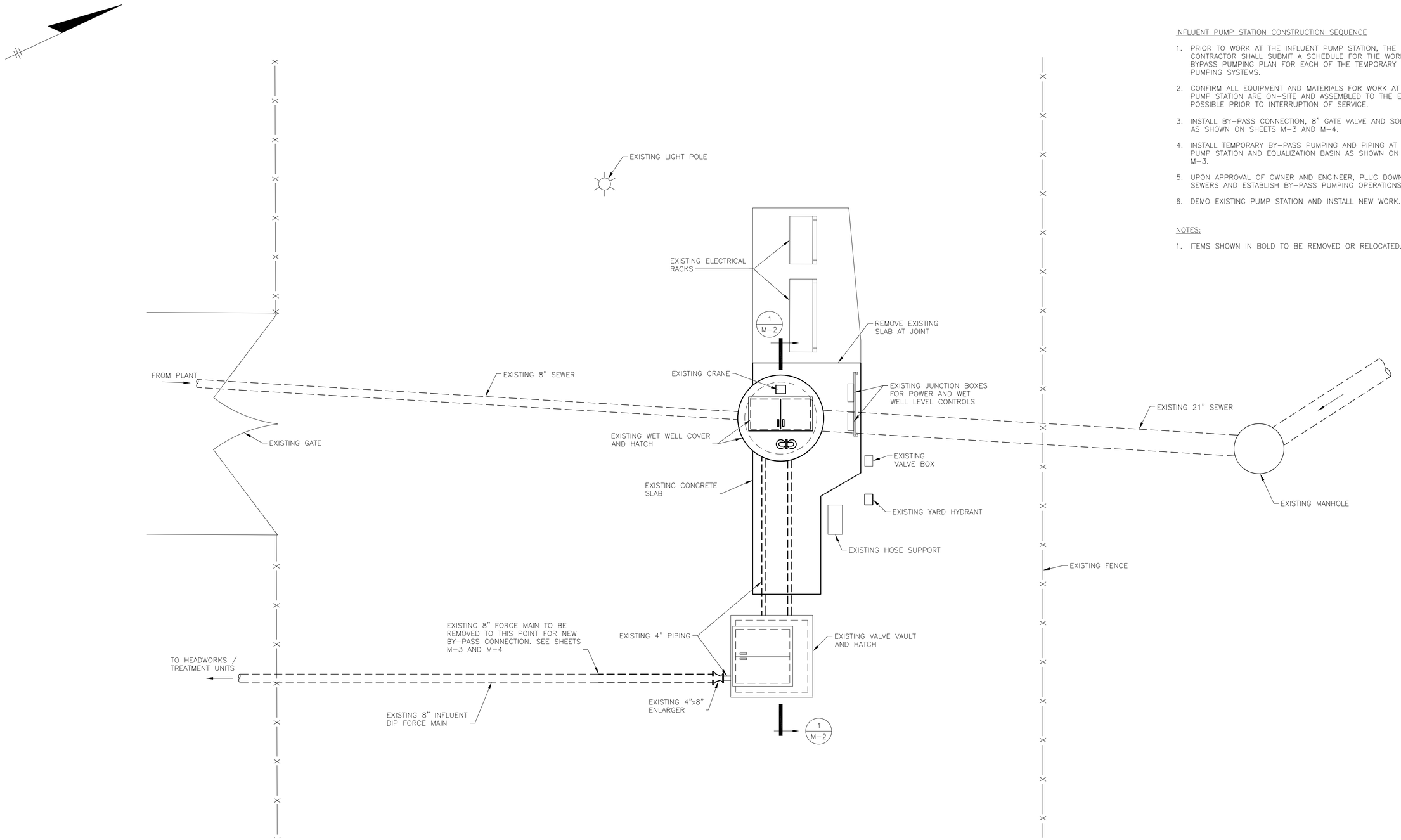
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

TREATMENT PLANT EXPANSION
GENERAL DETAILS

1968.015
G-10REF.DWG
OCTOBER 2019

G-10

WILLIS ENGINEERS INC., 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



INFLUENT PUMP STATION CONSTRUCTION SEQUENCE

1. PRIOR TO WORK AT THE INFLUENT PUMP STATION, THE CONTRACTOR SHALL SUBMIT A SCHEDULE FOR THE WORK AND A BYPASS PUMPING PLAN FOR EACH OF THE TEMPORARY BYPASS PUMPING SYSTEMS.
2. CONFIRM ALL EQUIPMENT AND MATERIALS FOR WORK AT INFLUENT PUMP STATION ARE ON-SITE AND ASSEMBLED TO THE EXTENT POSSIBLE PRIOR TO INTERRUPTION OF SERVICE.
3. INSTALL BY-PASS CONNECTION, 8" GATE VALVE AND SOLID SLEEVE AS SHOWN ON SHEETS M-3 AND M-4.
4. INSTALL TEMPORARY BY-PASS PUMPING AND PIPING AT INFLUENT PUMP STATION AND EQUALIZATION BASIN AS SHOWN ON SHEET M-3.
5. UPON APPROVAL OF OWNER AND ENGINEER, PLUG DOWNSTREAM SEWERS AND ESTABLISH BY-PASS PUMPING OPERATIONS.
6. DEMO EXISTING PUMP STATION AND INSTALL NEW WORK.

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.

DEMO PLAN AT GRADE

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24 JUL 2017

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MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

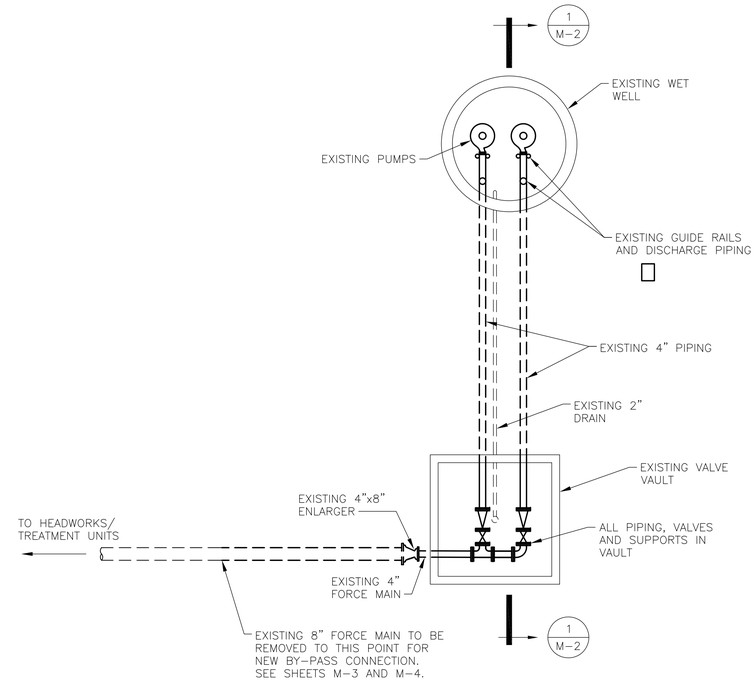
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

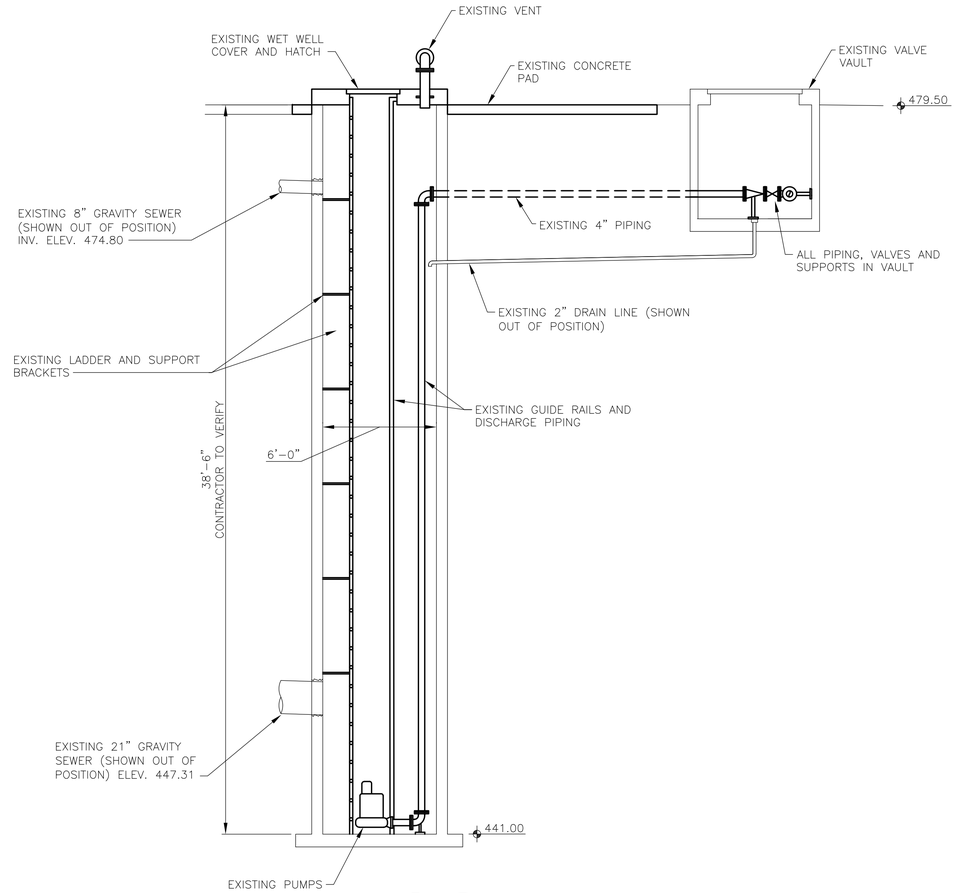
INFLUENT PUMP STATION
DEMO PLAN

1968.015
M-1REF.DWG
OCTOBER 2019

M-1



DEMO PLAN AT WET WELL



DEMO SECTION

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.
2. ALL EXISTING PUMPS, PIPING AND APPURTENANT HARDWARE AND SUPPORTS SHALL BE REMOVED FROM WET WELL AND VALVE VAULT. VOIDS IN CONCRETE SHALL BE CLEANED AND PATCHED.

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CHECKED CAWjr

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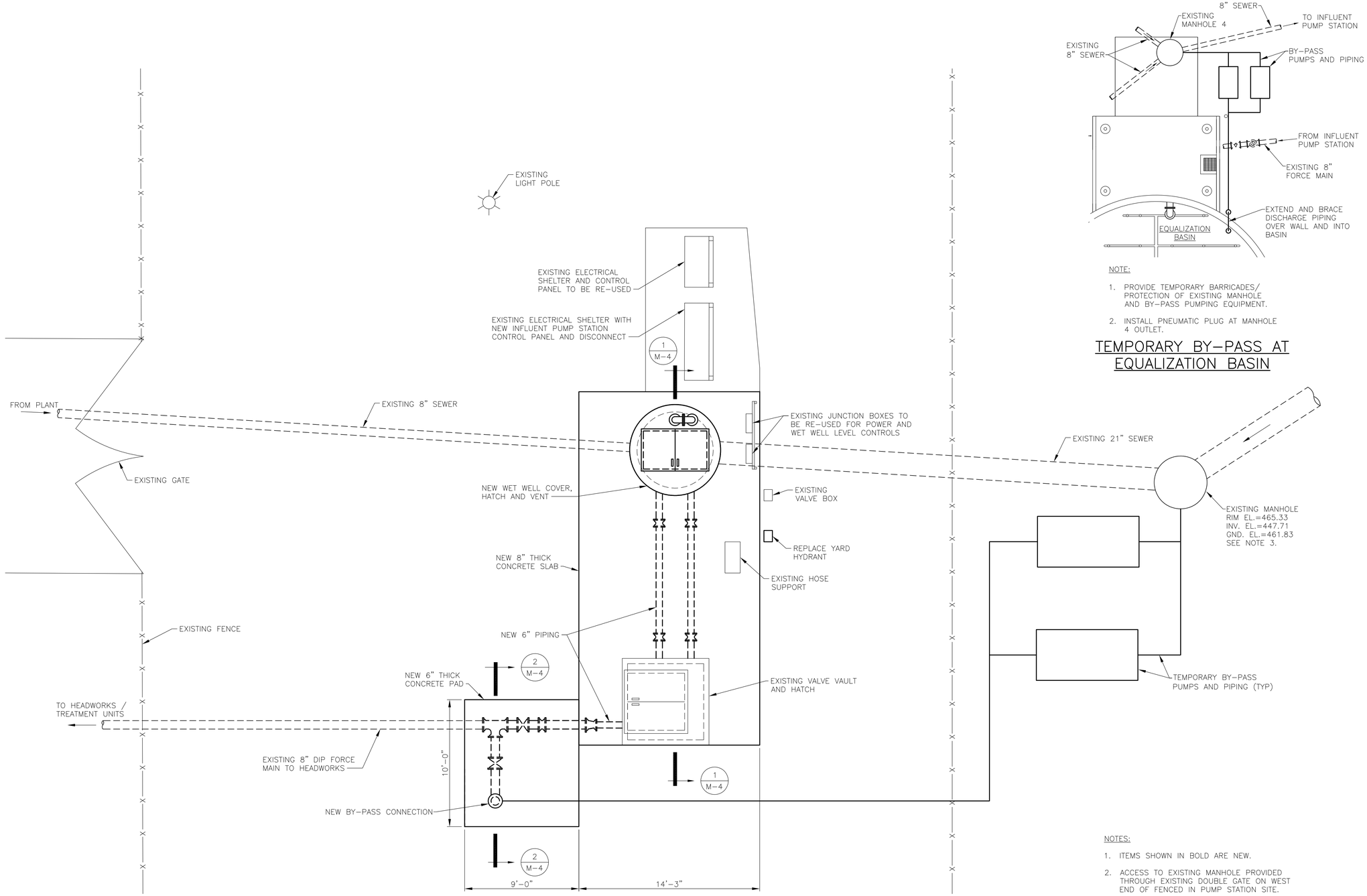
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

INFLUENT PUMP STATION
DEMO PLAN AND SECTION

1968.015
M-2REF.DWG
OCTOBER 2019

M-2



NEW PLAN AT GRADE

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ACCESS TO EXISTING MANHOLE PROVIDED THROUGH EXISTING DOUBLE GATE ON WEST END OF FENCED IN PUMP STATION SITE.
3. ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL CONFIRM PRIOR TO SUBMITTING BY-PASS PUMPING PLAN.

NOTE:

1. PROVIDE TEMPORARY BARRICADES/ PROTECTION OF EXISTING MANHOLE AND BY-PASS PUMPING EQUIPMENT.
2. INSTALL PNEUMATIC PLUG AT MANHOLE 4 OUTLET.

TEMPORARY BY-PASS AT EQUALIZATION BASIN

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4' 0 4' 8'
8' 0 8' 16'

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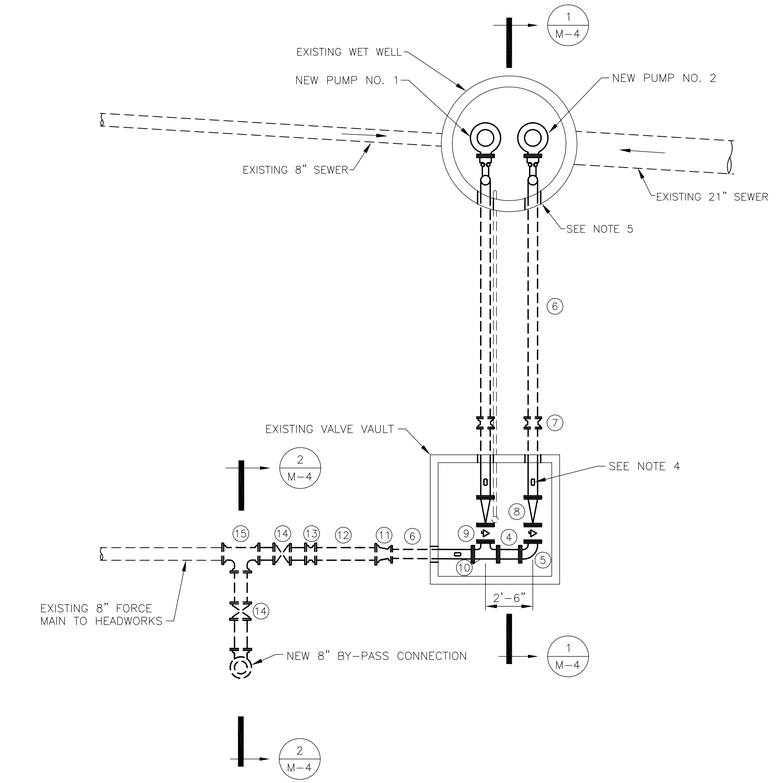
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

INFLUENT PUMP STATION
NEW PLAN

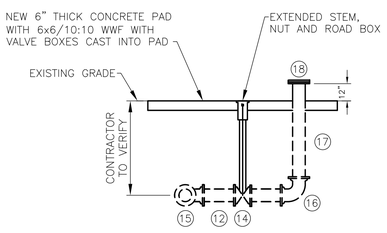
1968.015
M-3REF.DWG
OCTOBER 2019

M-3

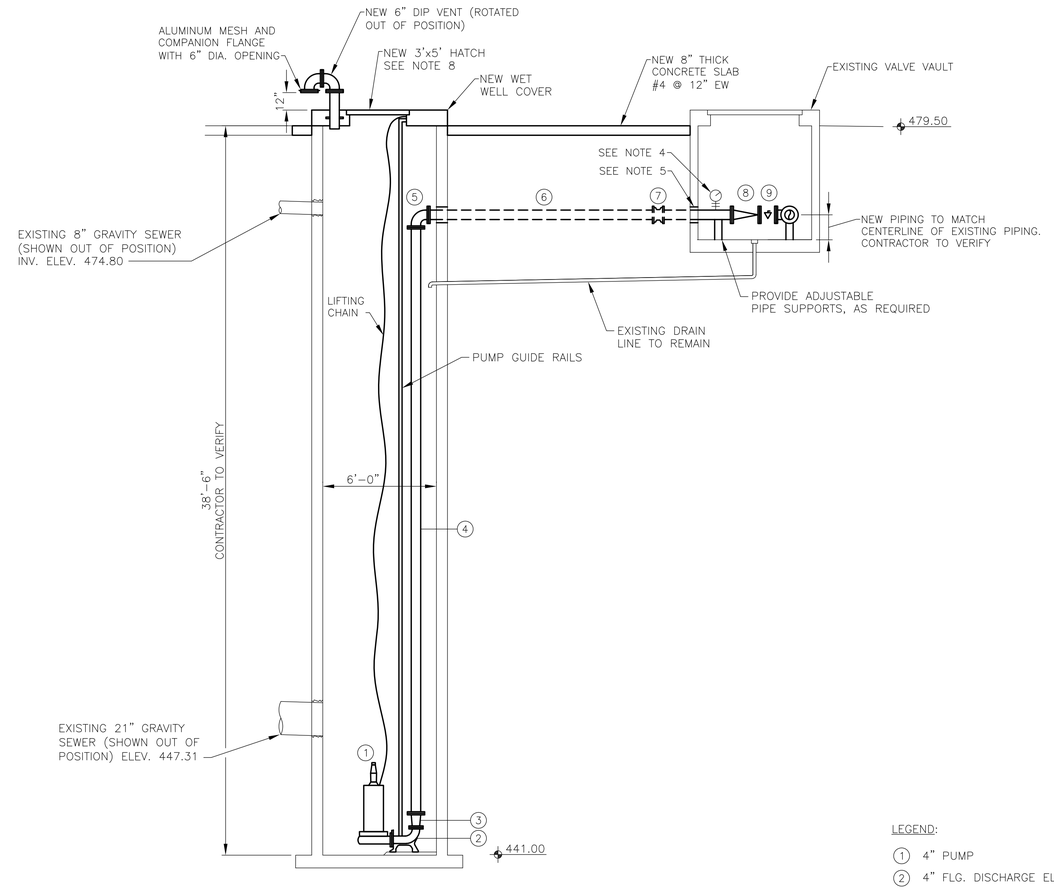
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NEW PLAN AT WET WELL



NEW SECTION 2 M-3 / 2 M-4



NEW SECTION 1 M-3 / 1 M-4

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ALL NEW PIPING SHALL BE FLANGED DIP IN WET WELL AND VALVE VAULT AND MJ DIP USING "MEGA-LUG" TYPE ASSEMBLIES IN BURIED LOCATIONS.
3. ALL DIP PIPING IN WET WELL AND VALVE VAULT SHALL BE PAINTED.
4. TAP DISCHARGE PIPE WITH 1/2" TAP, 1/2" BALL VALVE AND PRESSURE GAUGE. USE STAINLESS STEEL OR BRASS FITTINGS. (TYP OF BOTH DISCHARGE PIPES AND OUTLET HEADER).
5. REMAINING VOIDS IN CONCRETE WET WELL AND VALVE VAULT FROM REMOVAL OF EXISTING PIPE AND OPENING AROUND NEW PIPING SHALL BE SEALED WITH NON-SHRINK GROUT.
6. ALL NEW PUMP GUIDE RAILS, LIFTING CHAIN, BRACKETS AND OTHER APPURTENANT HARDWARE TO SUPPORT DISCHARGE PIPING, RAILS, ETC. SHALL BE STAINLESS STEEL.
7. CHECK VALVES SHALL BE PROVIDED WITH LEVER ARMS ON SOUTH SIDE OF VALVE TO AVOID CONFLICT WITH NORTH WALL OF VALVE VAULT.
8. NEW HATCH SHALL BE A DOUBLE LEAF ACCESS HATCH WITH GRATED PANEL FALL PROTECTION.
9. EXISTING ACCESS LADDER IN VALVE VAULT TO REMAIN.

LEGEND:

1. 4" PUMP
2. 4" FLG. DISCHARGE ELBOW
3. 4"x6" FLG. ENLARGER
4. 6" FLG. DIP
5. 6" FLG. 90° BEND
6. 6" FLG-PE DIP
7. 6" MJ SOLID SLEEVE
8. 6" FLG. CHECK VALVE, SEE NOTE 7
9. 6" FLG. PLUG VALVE
10. 6" FLG. TEE
11. 6"x8" MJ ENLARGER
12. 8" DIP
13. 8" MJ SOLID SLEEVE
14. 8" MJ GATE VALVE
15. 8" MJ TEE
16. 8" MJ 90° ELBOW
17. 8" FLG-PE DIP
18. 8" BLIND FLANGE

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4' 0 4' 8'

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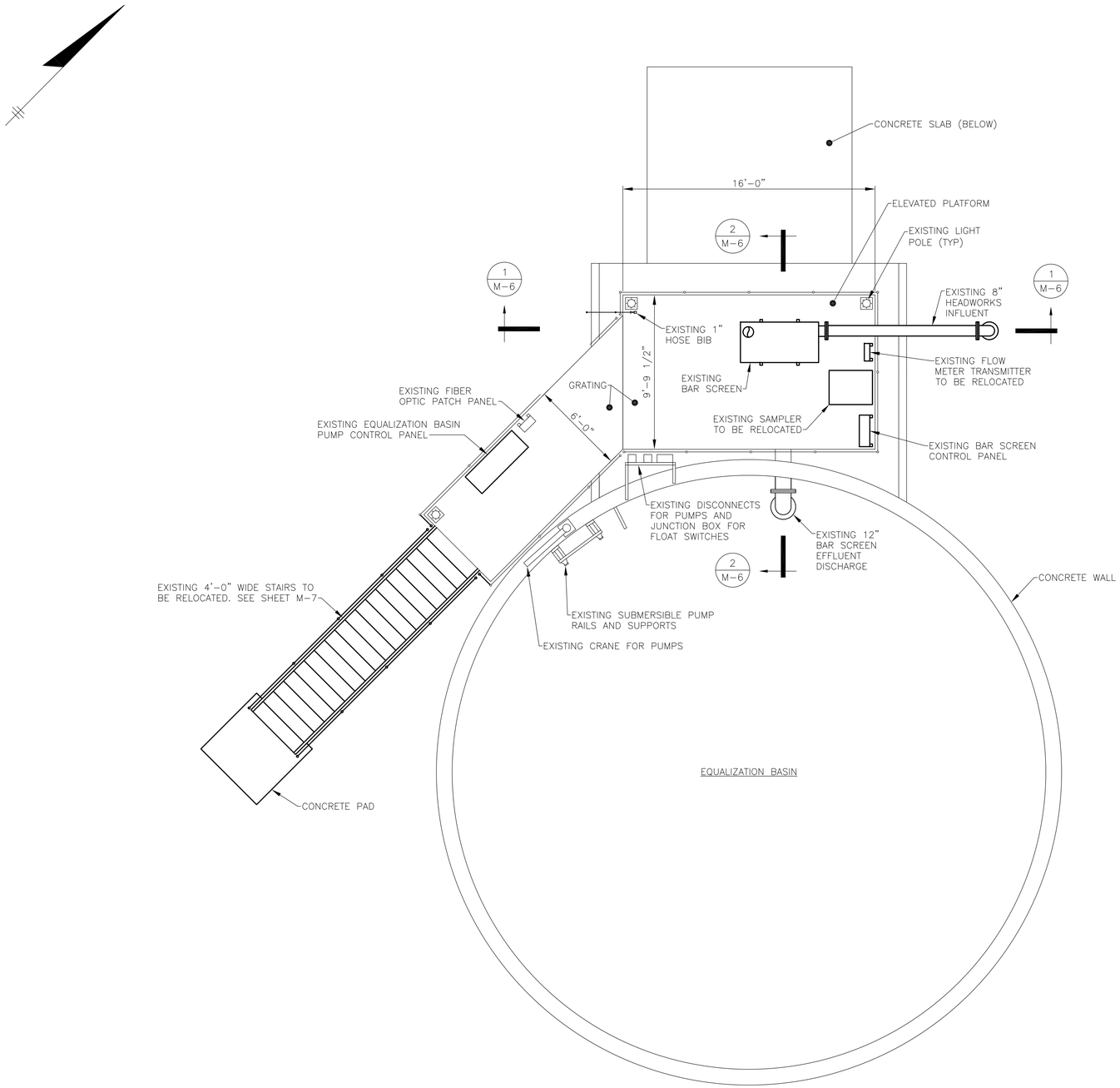
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

INFLUENT PUMP STATION
NEW PLAN AND SECTIONS

1968.015
M-4REF.DWG
OCTOBER 2019

M-4

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DEMO PLAN AT PLATFORM

HEADWORKS AND EQUALIZATION BASIN CONSTRUCTION SEQUENCE

1. CONFIRM ALL EQUIPMENT AND MATERIALS FOR WORK AT HEADWORKS AND EQUALIZATION BASIN ARE ON-SITE AND ASSEMBLED TO THE EXTENT POSSIBLE PRIOR TO INTERRUPTION OF SERVICE.
2. UPON APPROVAL OF OWNER AND ENGINEER, TAKE HEADWORKS AND EQUALIZATION BASIN OUT OF SERVICE BY OPENING AND CLOSING EXISTING PLUG VALVES ON INFLUENT SIDE OF HEADWORKS.
3. DRAIN AND HOSE DOWN EQUALIZATION BASIN.
4. DEMO ITEMS TO BE REMOVED AND INSTALL NEW WORK.

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.

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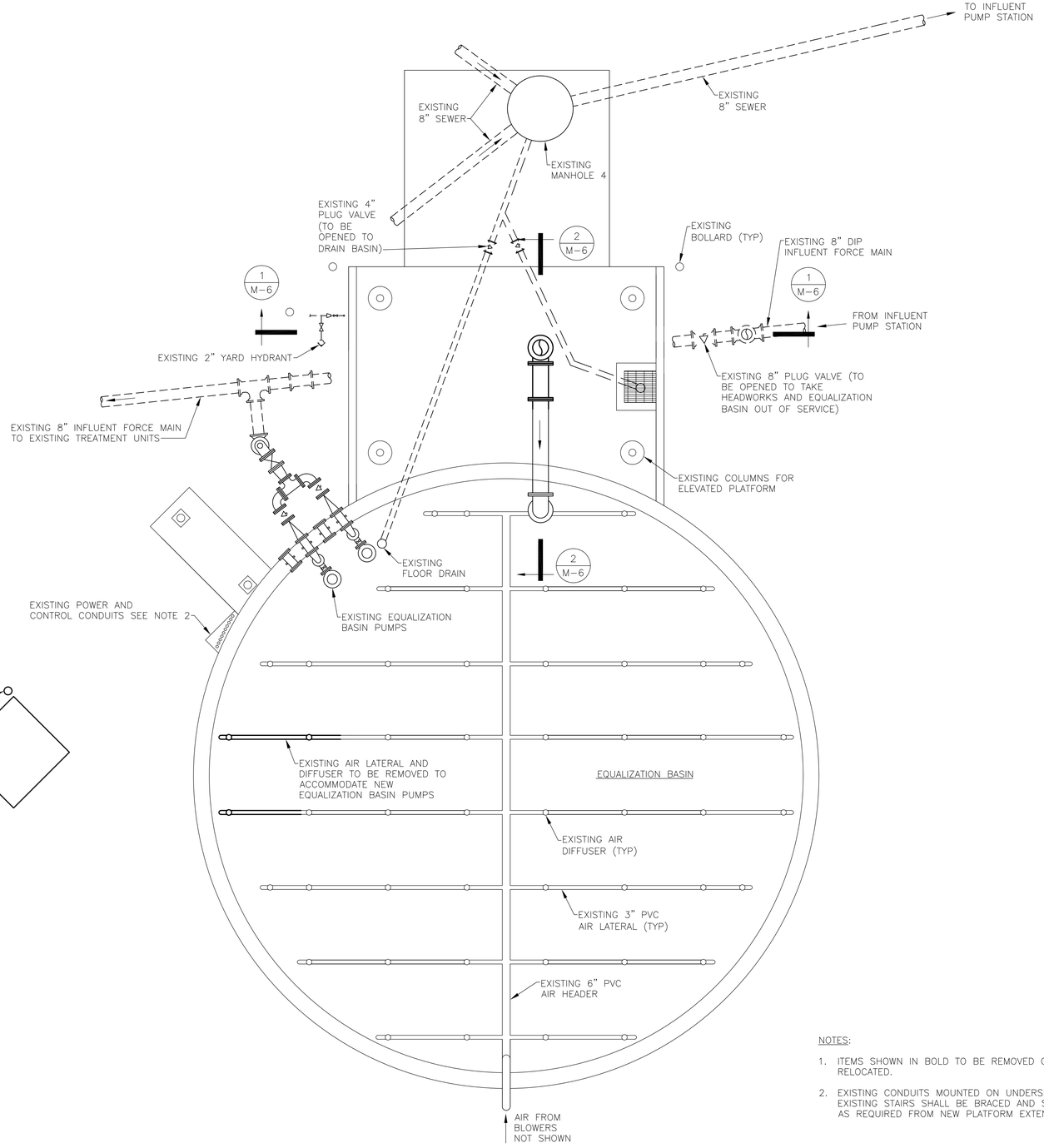
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

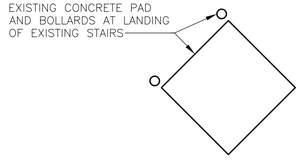
HEADWORKS AND EQUALIZATION BASIN
DEMO PLAN

1968.015
M-5REF.DWG
OCTOBER 2019

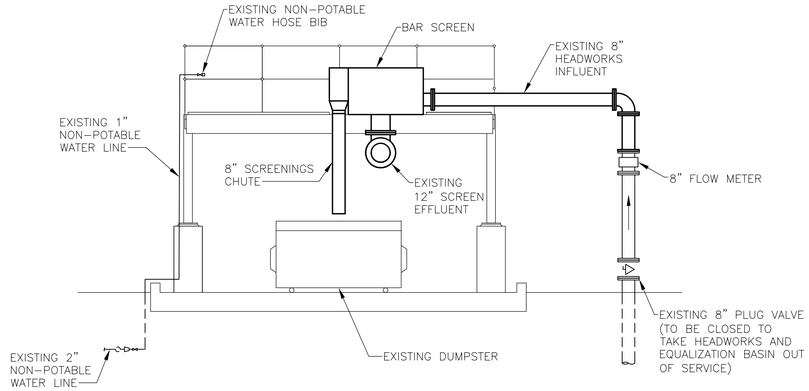
M-5

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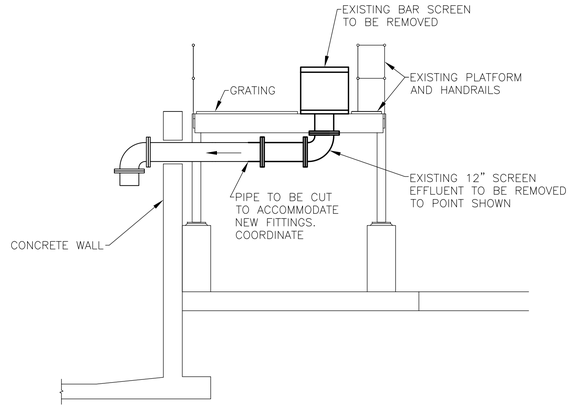




DEMO PLAN BELOW PLATFORM



DEMO SECTION 1 M-5 / 1 M-6



DEMO SECTION 2 M-5 / 2 M-6

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.
2. EXISTING CONDUITS MOUNTED ON UNDERSIDE OF EXISTING STAIRS SHALL BE BRACED AND SUPPORTED AS REQUIRED FROM NEW PLATFORM EXTENSION.

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4' 0 4' 8'

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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

HEADWORKS AND EQUALIZATION BASIN
DEMO PLAN AND SECTIONS

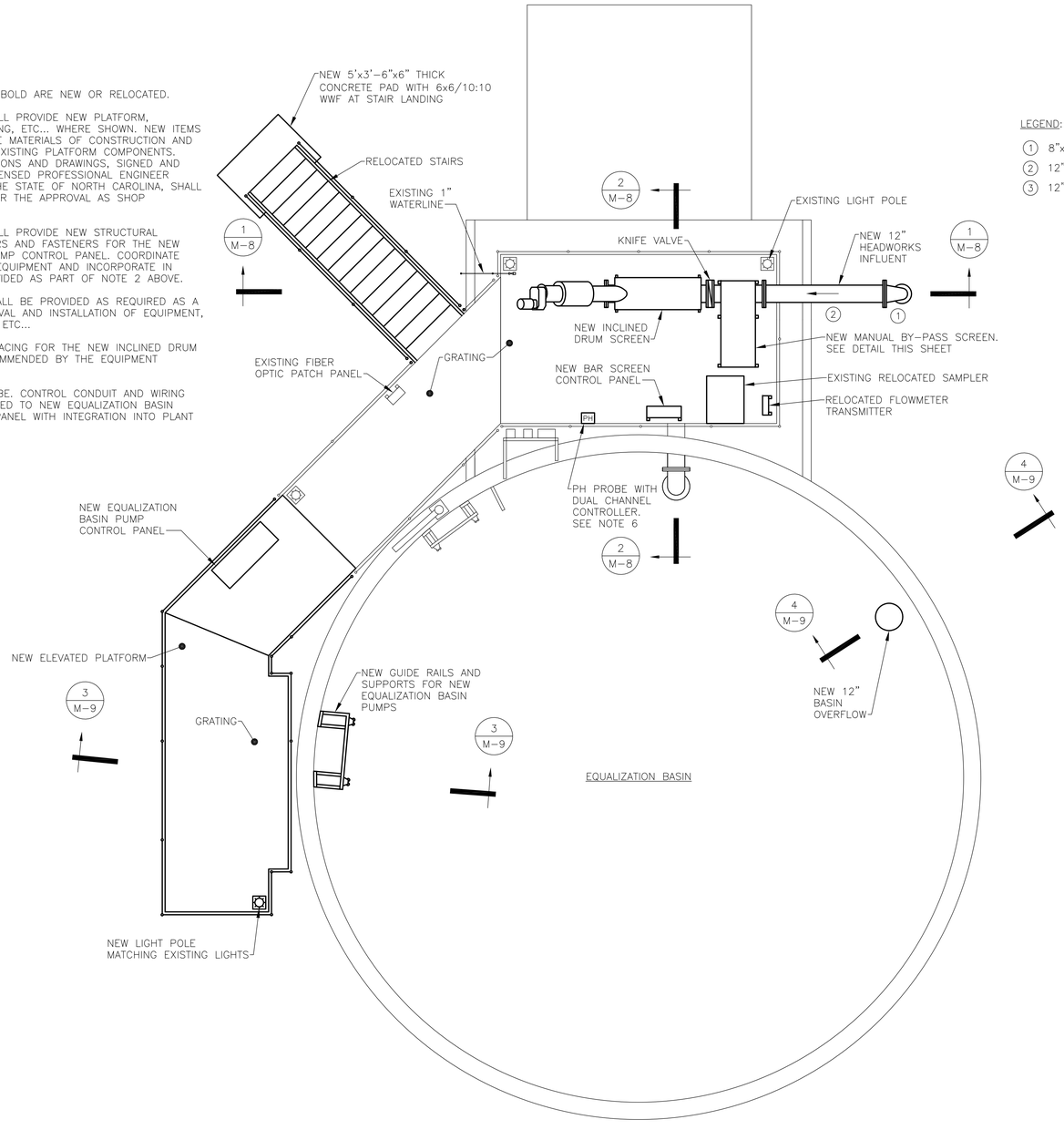
1968.015
M-6REF.DWG
OCTOBER 2019

M-6

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NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW OR RELOCATED.
2. CONTRACTOR SHALL PROVIDE NEW PLATFORM, SUPPORTS, GRATING, ETC... WHERE SHOWN. NEW ITEMS SHALL MATCH THE MATERIALS OF CONSTRUCTION AND DESIGN OF THE EXISTING PLATFORM COMPONENTS. DESIGN CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR THE APPROVAL AS SHOP DRAWINGS.
3. CONTRACTOR SHALL PROVIDE NEW STRUCTURAL SUPPORT MEMBERS AND FASTENERS FOR THE NEW SCREENS AND PUMP CONTROL PANEL. COORDINATE WITH APPROVED EQUIPMENT AND INCORPORATE IN DOCUMENTS PROVIDED AS PART OF NOTE 2 ABOVE.
4. NEW GRATING SHALL BE PROVIDED AS REQUIRED AS A RESULT OF REMOVAL AND INSTALLATION OF EQUIPMENT, CONDUIT, PIPING, ETC...
5. PROVIDE HEAT TRACING FOR THE NEW INCLINED DRUM SCREEN AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
6. PROVIDE PH PROBE. CONTROL CONDUIT AND WIRING SHALL BE PROVIDED TO NEW EQUALIZATION BASIN PUMP CONTROL PANEL WITH INTEGRATION INTO PLANT SCADA SYSTEM.

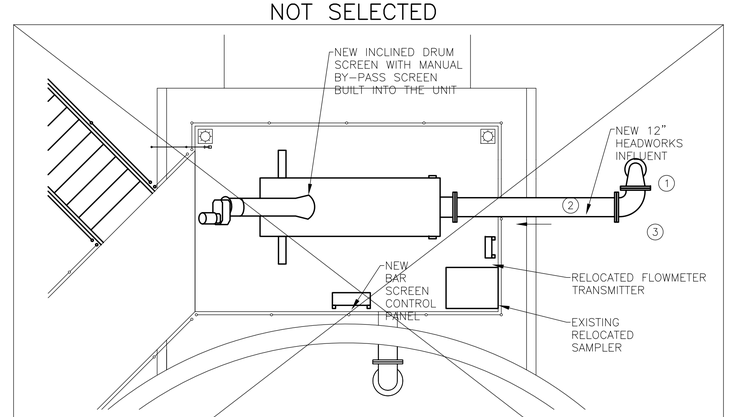


LEGEND:

1. 8"x12" FLG. 90° BEND
2. 12" FLG. DIP
3. 12" FLG. 90° BEND

NEW PLAN AT PLATFORM

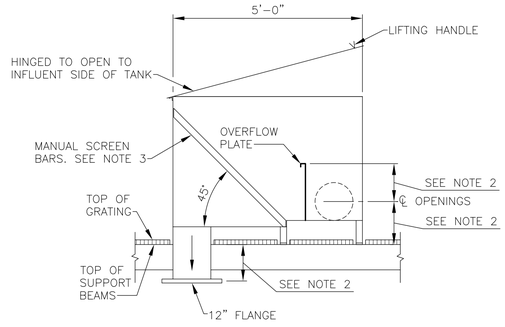
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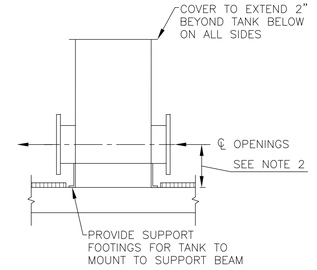
ALTERNATIVE SCREEN NOTES:

1. ALTERNATE SCREEN WITH BUILT-IN MANUAL SCREEN PERMITTED. CONTRACTOR SHALL COORDINATE ALL NECESSARY CHANGES INCLUDING BUT NOT LIMITED TO INFLUENT AND EFFLUENT PIPING, EQUIPMENT SUPPORT, ETC.

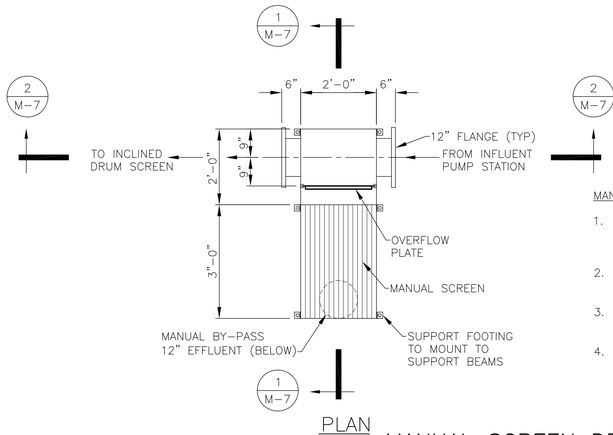
ALTERNATIVE ABOVE PLATFORM



SECTION 1/M-7



SECTION 2/M-7



PLAN

MANUAL SCREEN NOTES:

1. ALL COMPONENTS OF MANUAL BYPASS SCREEN SHALL BE STAINLESS STEEL. ENCLOSURE WALLS, COVER AND BOTTOM SHALL BE A MINIMUM 1/4" THICK.
2. COORDINATE ELEVATIONS WITH ELEVATIONS FOR INCLINED DRUM SCREEN.
3. MANUAL SCREEN BARS SHALL BE 2"x1/4" THICK SPACED FOR 1" CLEAR OPENINGS.
4. PROVIDE HASP FOR COVER TO ENSURE CLOSURE AND LOCKING ARM TO REMAIN OPEN WHEN NECESSARY.

MANUAL SCREEN DETAILS

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

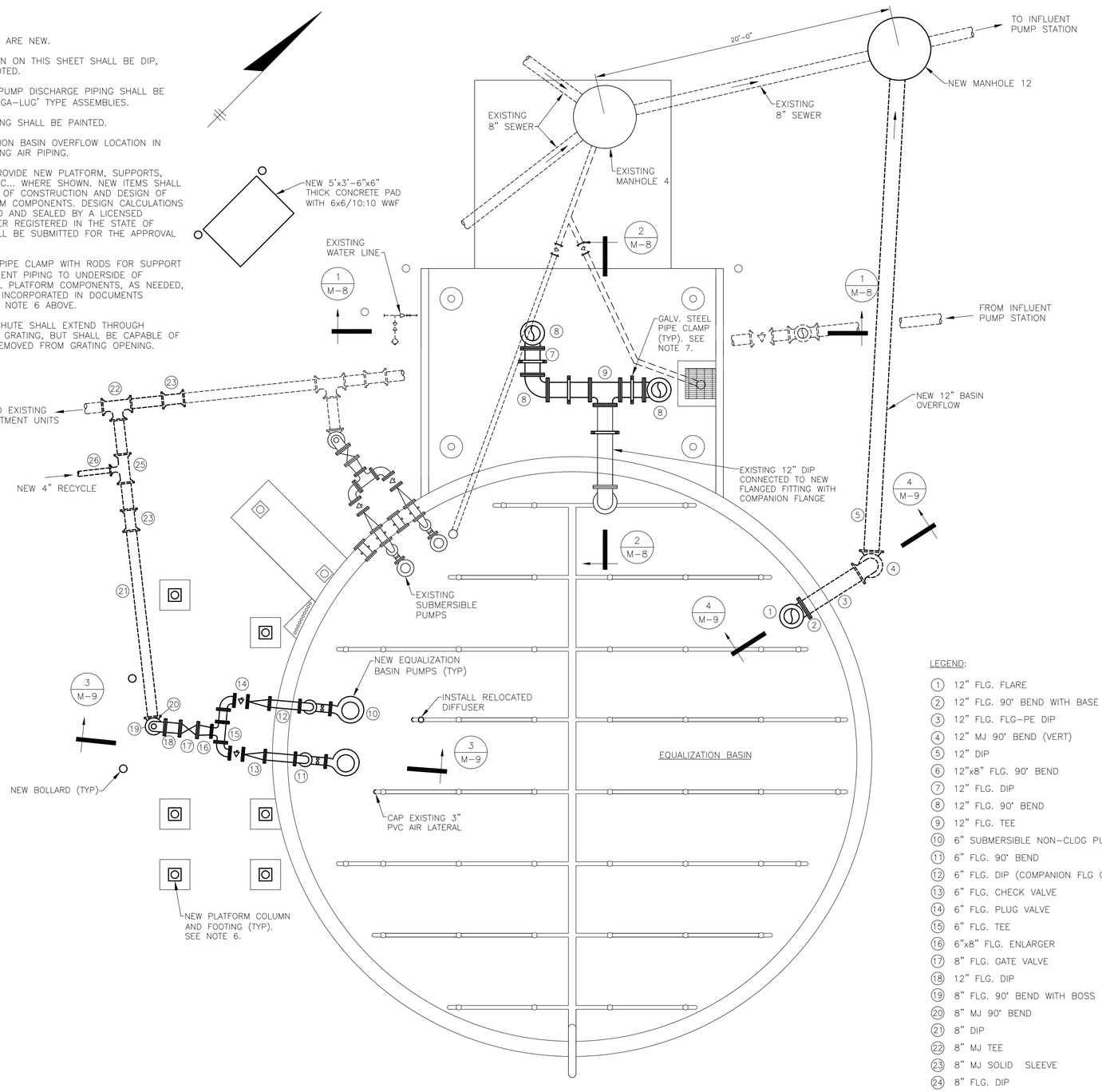
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY:
GREGORY J. WELLS
NC PE #24494
24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

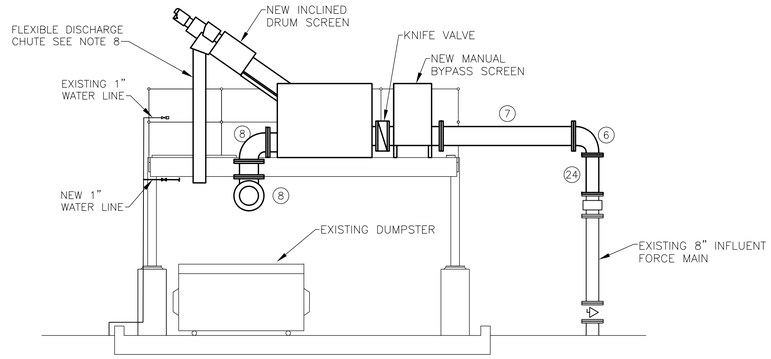
IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	2' 0 2' 4' 4' 0 4' 8'	willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	HEADWORKS AND EQUALIZATION BASIN NEW PLAN AND DETAIL	1968.015 M-7REF.DWG OCTOBER 2019	M-7

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ALL NEW PIPING SHOWN ON THIS SHEET SHALL BE DIP, UNLESS OTHERWISE NOTED.
3. BURIED EQUALIZATION PUMP DISCHARGE PIPING SHALL BE RESTRAINED USING 'MEGA-LUG' TYPE ASSEMBLIES.
4. ALL EXPOSED DIP PIPING SHALL BE PAINTED.
5. CONTRACTOR TO POSITION BASIN OVERFLOW LOCATION IN BASIN TO AVOID EXISTING AIR PIPING.
6. CONTRACTOR SHALL PROVIDE NEW PLATFORM, SUPPORTS, FOOTINGS, GRATING, ETC... WHERE SHOWN. NEW ITEMS SHALL MATCH THE MATERIALS OF CONSTRUCTION AND DESIGN OF THE EXISTING PLATFORM COMPONENTS. DESIGN CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR THE APPROVAL AS SHOP DRAWINGS.
7. PROVIDE GALV. STEEL PIPE CLAMP WITH RODS FOR SUPPORT OF 12" SCREEN EFFLUENT PIPING TO UNDERSIDE OF PLATFORM. ADDITIONAL PLATFORM COMPONENTS, AS NEEDED, TO BE PROVIDED AND INCORPORATED IN DOCUMENTS PROVIDED AS PART OF NOTE 6 ABOVE.
8. FLEXIBLE DISCHARGE CHUTE SHALL EXTEND THROUGH OPENING IN PLATFORM GRATING, BUT SHALL BE CAPABLE OF PERIODICALLY BEING REMOVED FROM GRATING OPENING.



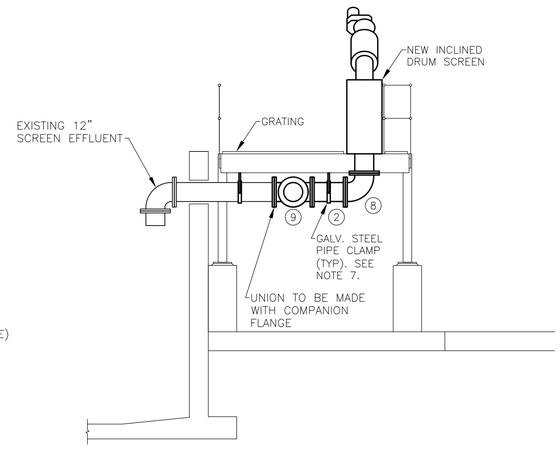
NEW PLAN BELOW PLATFORM



NEW SECTION 1 M-7 / 1 M-8

LEGEND:

1. 12" FLG. FLARE
2. 12" FLG. 90° BEND WITH BASE
3. 12" FLG. FLG-PE DIP
4. 12" MJ 90° BEND (VERT)
5. 12" DIP
6. 12"x8" FLG. 90° BEND
7. 12" FLG. DIP
8. 12" FLG. 90° BEND
9. 12" FLG. TEE
10. 6" SUBMERSIBLE NON-CLOG PUMP
11. 6" FLG. 90° BEND
12. 6" FLG. DIP (COMPANION FLG ON OUTSIDE)
13. 6" FLG. CHECK VALVE
14. 6" FLG. PLUG VALVE
15. 6" FLG. TEE
16. 6"x8" FLG. ENLARGER
17. 8" FLG. GATE VALVE
18. 12" FLG. DIP
19. 8" FLG. 90° BEND WITH BOSS FOR AIR RELEASE TAP
20. 8" MJ 90° BEND
21. 8" DIP
22. 8" MJ TEE
23. 8" MJ SOLID SLEEVE
24. 8" FLG. DIP
25. 8"x4" TEE
26. 4" DIP



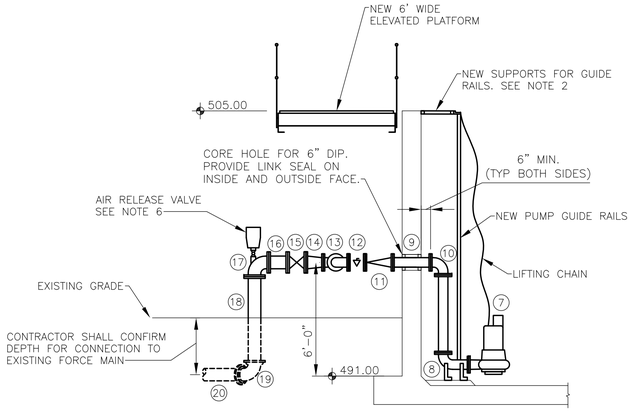
NEW SECTION 2 M-7 / 2 M-8

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

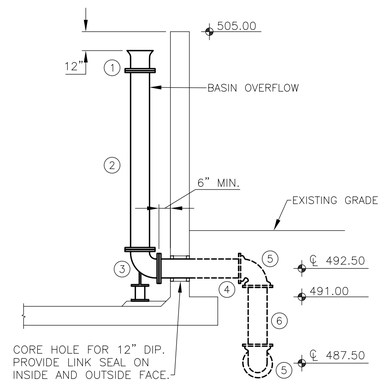
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	4' 0 4' 8'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	HEADWORKS AND EQUALIZATION BASIN NEW PLAN AND SECTIONS	1968.015 M-8REF.DWG OCTOBER 2019	M-8

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



NEW SECTION (3/M-7) (3/M-8)



NEW SECTION (4/M-7) (4/M-8)

LEGEND:

1. 12" FLG. FLARE
2. 12" FLG. DIP
3. 12" FLG. DIP 90° BEND WITH BASE (SEE NOTE 4)
4. 12" FLG. FLG-PE DIP
5. 12" MJ 90° BEND
6. 12" DIP
7. 6" VERTICAL SUBMERSIBLE NON-CLOG PUMP
8. 6" FLG. DISCHARGE BEND (SEE NOTE 4)
9. 6" FLG. DIP (SEE NOTE 5)
10. 6" FLG. 90° BEND
11. 6" FLG. CHECK VALVE
12. 6" FLG. PLUG VALVE
13. 6" FLG. TEE
14. 6"x8" FLG. ENLARGER
15. 8" FLG. GATE VALVE
16. 12" FLG. DIP
17. 8" FLG. 90° BEND WITH BOSS FOR AIR RELEASE TAP
18. 8" FLG-PE DIP
19. 8" MJ 90° BEND
20. 8" DIP

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ALL NEW PUMP GUIDE RAILS, LIFTING CHAINS, SUPPORT AND OTHER APPURTENANT HARDWARE FOR NEW PUMPS SHALL BE STAINLESS STEEL.
3. TAP DISCHARGE PIPE WITH 1/2" TAP, 1/2" BALL VALVE AND PRESSURE GAUGE. USE STAINLESS STEEL OR BRASS FITTINGS. (TYP OF BOTH DISCHARGE PIPES JUST OUTSIDE WALL AND OUTLET HEADER ON 12" SPOOL BEFORE 90° TURNED DOWN).
4. EXISTING BASIN FLOOR IS SLOPED. PROVIDE NON-SHRINK GROUT BASE (MIN. 2" THICK) TO ENSURE LEVEL SURFACE TO MOUNT PUMP DISCHARGE ELBOWS AND OVERFLOW BASE ELBOW.
5. PROVIDE 6" FLG-PE DIP THROUGH WALL PENETRATION WITH COMPANION FLANGE FOR JOINT OUTSIDE OF TANK.
6. PROVIDE 1" AIR RELEASE VALVE WITH LEVER ACTUATED ISOLATION BALL VALVE. ALL PIPING AND VALVES FOR AIR RELEASE VALVE SHALL BE STAINLESS STEEL OR BRASS.
7. ALL PIPING SHOWN ON THIS SHEET SHALL BE DIP.
8. EXPOSED DIP, INCLUDING PUMP DISCHARGE AND OVERFLOW PIPE IN TANK, SHALL BE PAINTED.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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WILLIS ENGINEERS INC., 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

HEADWORKS AND EQUALIZATION BASIN
NEW SECTIONS

1968.015
M-9REF.DWG
OCTOBER 2019

M-9

GENERAL SCOPE OF WORK AT EXISTING TREATMENT UNITS

1. REMOVE ALL EXISTING PIPING, EQUIPMENT AND OTHER APPURTENANT ITEMS, SUCH AS ELECTRICAL CONDUIT AND WIRING, FROM WITHIN THE EXISTING TREATMENT UNITS, UNLESS OTHERWISE NOTED.
2. RENOVATE THE EXISTING SURGE, SLUDGE HOLDING, AND DIGESTER BASINS INTO EXPANDED AERATION BASINS.
3. CONSTRUCT NEW CLARIFIERS AS SHOWN ON SHEETS M-17 THROUGH M-19.
4. RENOVATE THE EXISTING CLARIFIERS INTO SLUDGE HOLDING TANKS AS SHOWN ON SHEETS M-24 AND M-25.

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.
2. TWO AERATION BASINS (1 AND 2 OR 3 AND 4), AND ASSOCIATED SURGE, SLUDGE HOLDING, DIGESTER BASINS AND CLARIFIERS SHALL BE OPERATIONAL AT ALL TIMES. LIKEWISE SLUDGE LOADING CAPABILITIES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. HANDRAIL NOT SHOWN FOR CLARITY.
4. ALL EQUALIZATION PIPING AND APPURTENANCES SHALL BE REMOVED. OVERHEAD SUPPORT BEAM BETWEEN TREATMENT UNITS MAY REMAIN.
5. EXISTING AIR DROPS IN FOUR EXISTING AERATION BASINS, SURGE, SLUDGE HOLDING AND DIGESTER BASINS TO BE REMOVED AT EXISTING AIR HEADER. EXISTING THREADED TAP TO BE CAPPED. SIMILAR FOR AIR LIFT PUMP TAPS.
6. ALL PENETRATIONS IN THE CENTERLINE TANK WALL SHALL BE SEALED, UNLESS OTHERWISE NOTED.
7. PENETRATIONS IN BASIN WALLS MAY REMAIN OPEN. IN ADDITION, ADDITIONAL OPENINGS SHALL BE PROVIDED, AS NOTED ON M-13.
8. CANOPY TO BE REMOVED.
9. CHEMICAL STORAGE TANKS AND METERING PUMP TO BE RELOCATED TO NEW CHEMICAL STORAGE ENCLOSURE, AS SHOWN ON SHEET M-26. CONTRACTOR SHALL ESTABLISH TEMPORARY LOCATION FOR CHEMICAL FEED EQUIPMENT DURING CONSTRUCTION.
10. UPON DEMOLITION OF TREATMENT UNITS AND CLARIFIERS, REMAINING COMPONENTS SHALL BE PRESSURE WASHED. AREAS WITH EXCESSIVE WEAR SHALL HAVE FURTHER SURFACE PREPARATION AND THEN COATED. ENTIRE TANK COATING NOT REQUIRED.

FROM BLOWERS
EXISTING 6" DIP AIR PIPING
DOWN
EXISTING ELECTRICAL EQUIPMENT
EXISTING CLARIFIER NO. 1
EXISTING CLARIFIERS TO BE RENOVATED INTO SLUDGE HOLDING TANKS. SEE SHEET M-24.
EXISTING 8" BURIED PIPING TO BE REMOVED FOR NEW WORK (TYP)
EXISTING 2" WATER LINE AND HYDRANT. RELOCATE IF NECESSARY.
EXISTING HOSE SUPPORT
EXISTING MH 10
EXISTING CLARIFIER NO. 2
EXISTING SIDEWALK
3" SCUM DRAIN TO BE ABANDONED
EXISTING 6" CLARIFIER INFLUENT (TYP)
EXISTING CLARIFIER NO. 3
FROM MH 2
TO FILTRATION AND DISINFECTION
EXISTING 6" CLARIFIER EFFLUENT TO BE ABANDONED
FROM BLOWERS
EXISTING CLARIFIERS TO BE RENOVATED INTO SLUDGE HOLDING TANKS. SEE SHEET M-24.
EXISTING 6" DIP AIR PIPING
EXISTING BOLLARD TO BE REMOVED (TYP)
EXISTING CLARIFIER NO. 4
DOWN
WALKWAY
EXISTING BOLLARD TO REMAIN (TYP)
EXISTING AERATION BASIN NO. 1
BASIN WALL (TYP) SEE NOTE 7
EXISTING DIGESTER NO. 1
EXISTING AIR DROP (TYP) SEE NOTE 5
WALKWAY
CENTERLINE TANK WALL SEE NOTE 6
EXISTING AIR DROP (TYP) SEE NOTE 5
EXISTING AERATION BASIN NO. 2
EXISTING WALL SEE NOTE 7
EXISTING SLUDGE HOLDING NO. 1
EXISTING SURGE BASIN NO. 1
EXISTING FLOWMETER TRANSMITTER
FROM INFLUENT PUMP STATION
EXISTING 8" DIP INFLUENT FORCE MAIN
EXISTING AERATION INFLUENT SPLITTER BOX TO REMAIN WITH MODIFICATION. SEE SHEET M-12.
EXISTING 2" WATER LINE
EXISTING YARD HYDRANT VALVE BOX AND HOSE SUPPORT
EXISTING PLATFORM FOR INFLUENT SPLITTER BOX
EXISTING DRAINS (TYP)
EXISTING 8" SEWER
EXISTING EQUALIZATION PIPING. SEE NOTE 4.
EXISTING MH 11
EXISTING SLUDGE WITHDRAWAL LINE (TYP)
CAP SEWER LATERAL
TO MH 3
EXISTING SLUDGE LOADING STATION
EXISTING CONCRETE SLAB WITH CURB
EXISTING AERATION BASIN NO. 3
EXISTING SLUDGE HOLDING NO. 2
BASIN WALL SEE NOTE 7
EXISTING SURGE BASIN NO. 2
UP
EXISTING CHEMICAL STORAGE TANKS AND METERING PUMP SEE NOTE 9
EXISTING CHEMICAL FEED AREA
EXISTING CANOPY SEE NOTE 8
EXISTING 3" RECYCLE
EXISTING 3" WASTE
CENTERLINE TANK WALL SEE NOTE 6
EXISTING AERATION BASIN NO. 4
EXISTING DIGESTER NO. 2
EXISTING SURGE PUMP CONTROL PANEL AND FIBER OPTIC PATCH PANEL
EXISTING BOLLARD TO BE REMOVED (TYP)
EXISTING RAS/WAS FLOW METER TRANSMITTERS AND FIBER OPTIC PANEL
EXISTING RAS/WAS PUMP CONTROL PANEL

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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GREGORY J. WELLS
NC PE #24494
24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	5' 0 5' 10'	willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	AERATION BASIN DEMO PLAN	1968.015 M-10REF.DWG OCTOBER 2019	M-10

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. HANDRAIL ON WALKWAYS AND STAIRS NOT SHOWN FOR CLARITY.

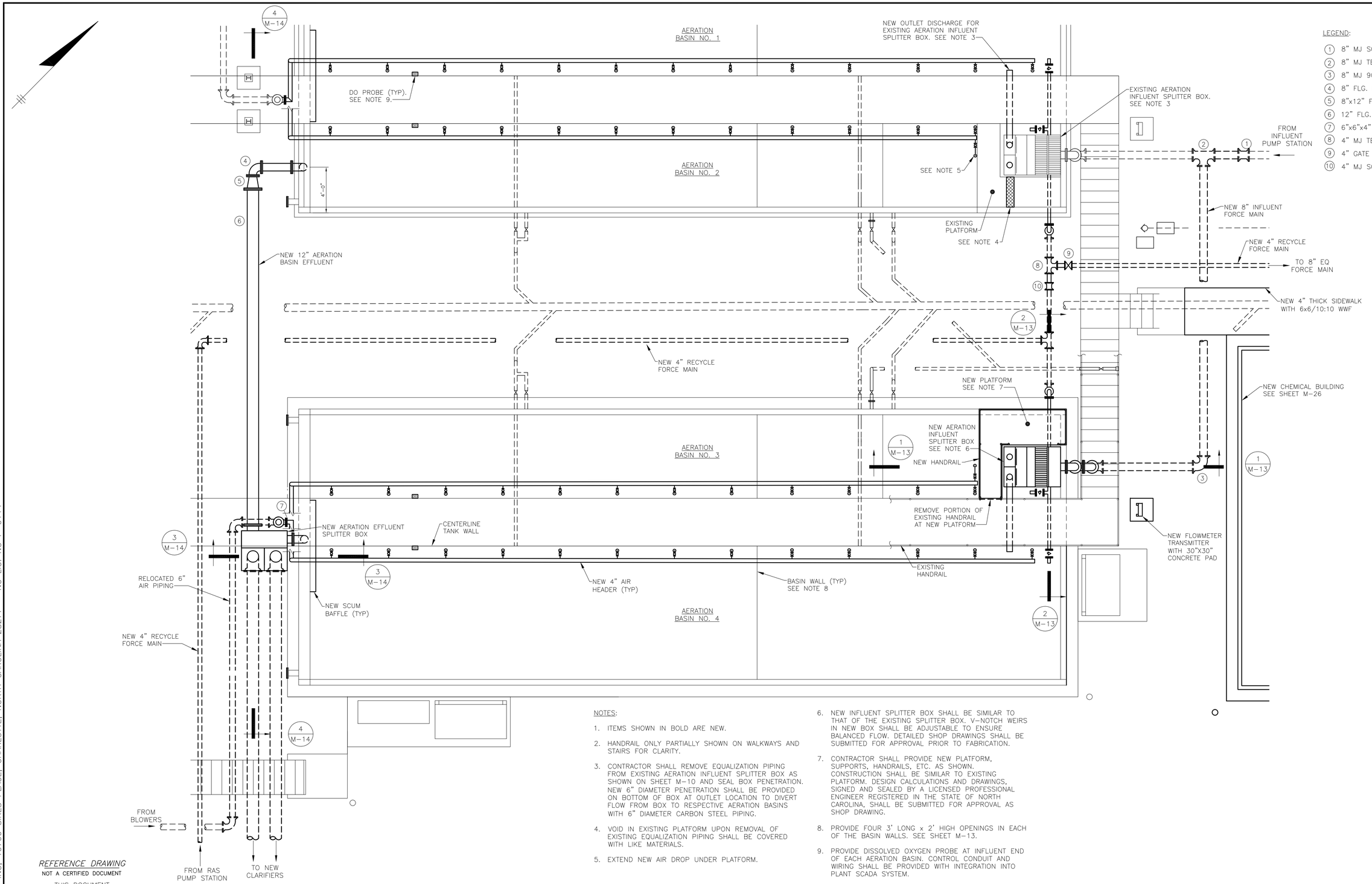
FROM BLOWERS
EXISTING 6" DIP AIR PIPING
NEW 6"X6"X3" TEE
NEW 6" SOLID SLEEVE
NEW 3" AIR LINE
SLUDGE HOLDING NO. 1
SEE SHEET M-25 FOR NEW SLUDGE HOLDING TANKS PLANS AND SECTIONS
SLUDGE LOADING STATION NO. 1
SLUDGE HOLDING NO. 2
4" WASTE FORCE MAIN
AERATION BASIN NO. 1
BASIN WALL
3" RECYCLE SLUDGE (TYP)
NEW 4" AIR HEADER (TYP)
WALKWAY
EXISTING AERATION INFLUENT SPLITTER BOX
AERATION BASIN NO. 2
BASIN WALL
FROM INFLUENT PUMP STATION
EXISTING 8" DIP INFLUENT FORCE MAIN
4" RECYCLE FORCE MAIN
EXISTING MH 11
NEW 12" AERATION BASIN EFFLUENT
EXISTING 8" SEWER
EXISTING MH 10
3" SCUM DRAIN TO BE ABANDONED
NEW 4" RECYCLE FORCE MAIN
NEW PLATFORM
NEW 8" INFLUENT FORCE MAIN
CHEMICAL STORAGE ENCLOSURE SEE SHEET M-26
SLUDGE HOLDING NO. 3
NEW 6" DRAIN LINE (TYP)
AERATION BASIN NO. 3
NEW AERATION INFLUENT SPLITTER BOX
FROM BLOWERS
NEW 3" DIP AIR LINE
NEW AIR DROPS (TYP)
CENTERLINE TANK WALL
NEW AIR DROPS (TYP)
NEW FLOWMETER TRANSMITTER WITH 30"X30" CONCRETE PAD
SLUDGE LOADING STATION NO. 2
NEW AERATION EFFLUENT SPLITTER BOX
BASIN WALL
AERATION BASIN NO. 4
EXISTING CLARIFIERS TO BE RENOVATED INTO SLUDGE HOLDING TANKS. SEE SHEET M-25.
SLUDGE HOLDING NO. 4
13'-0"
EXISTING 6" DIP AIR PIPING
EXISTING RAS/WAS PANEL TO BE RE-PURPOSED TO RECEIVE SIGNALS FROM NEW DO PROBES
NEW BOLLARD (TYP)
WALKWAY
TO NEW CLARIFIERS

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	5' 0 5' 10'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	AERATION BASIN NEW PLAN	1968.015 M-11REF.DWG OCTOBER 2019	M-11



LEGEND:

1. 8" MJ SOLID SLEEVE
2. 8" MJ TEE
3. 8" MJ 90° BEND
4. 8" FLG. 90° BEND
5. 8"x12" FLG. ENLARGER
6. 12" FLG. DIP
7. 6"x6"x4" FLG. TEE
8. 4" MJ TEE
9. 4" GATE VALVE
10. 4" MJ SOLID SLEEVE

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. HANDRAIL ONLY PARTIALLY SHOWN ON WALKWAYS AND STAIRS FOR CLARITY.
3. CONTRACTOR SHALL REMOVE EQUALIZATION PIPING FROM EXISTING AERATION INFLUENT SPLITTER BOX AS SHOWN ON SHEET M-10 AND SEAL BOX PENETRATION. NEW 6" DIAMETER PENETRATION SHALL BE PROVIDED ON BOTTOM OF BOX AT OUTLET LOCATION TO DIVERT FLOW FROM BOX TO RESPECTIVE AERATION BASINS WITH 6" DIAMETER CARBON STEEL PIPING.
4. VOID IN EXISTING PLATFORM UPON REMOVAL OF EXISTING EQUALIZATION PIPING SHALL BE COVERED WITH LIKE MATERIALS.
5. EXTEND NEW AIR DROP UNDER PLATFORM.
6. NEW INFLUENT SPLITTER BOX SHALL BE SIMILAR TO THAT OF THE EXISTING SPLITTER BOX. V-NOTCH WEIRS IN NEW BOX SHALL BE ADJUSTABLE TO ENSURE BALANCED FLOW. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
7. CONTRACTOR SHALL PROVIDE NEW PLATFORM, SUPPORTS, HANDRAILS, ETC. AS SHOWN. CONSTRUCTION SHALL BE SIMILAR TO EXISTING PLATFORM. DESIGN CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR APPROVAL AS SHOP DRAWING.
8. PROVIDE FOUR 3' LONG x 2' HIGH OPENINGS IN EACH OF THE BASIN WALLS. SEE SHEET M-13.
9. PROVIDE DISSOLVED OXYGEN PROBE AT INFLUENT END OF EACH AERATION BASIN. CONTROL CONDUIT AND WIRING SHALL BE PROVIDED WITH INTEGRATION INTO PLANT SCADA SYSTEM.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

willis ENGINEERS

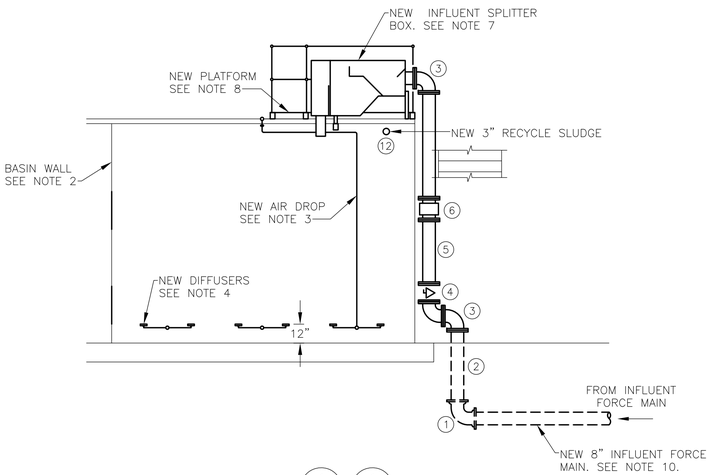
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

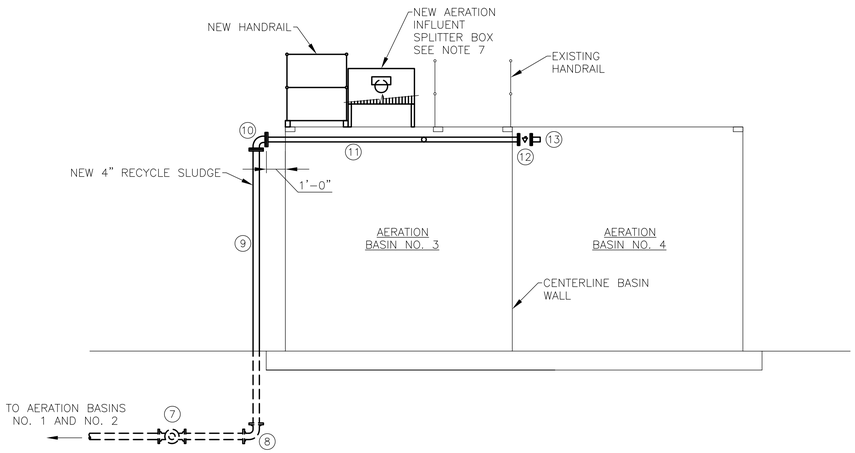
AERATION BASIN
NEW PARTIAL PLAN

1968.015
M-12REF.DWG
OCTOBER 2019

M-12

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114





LEGEND:

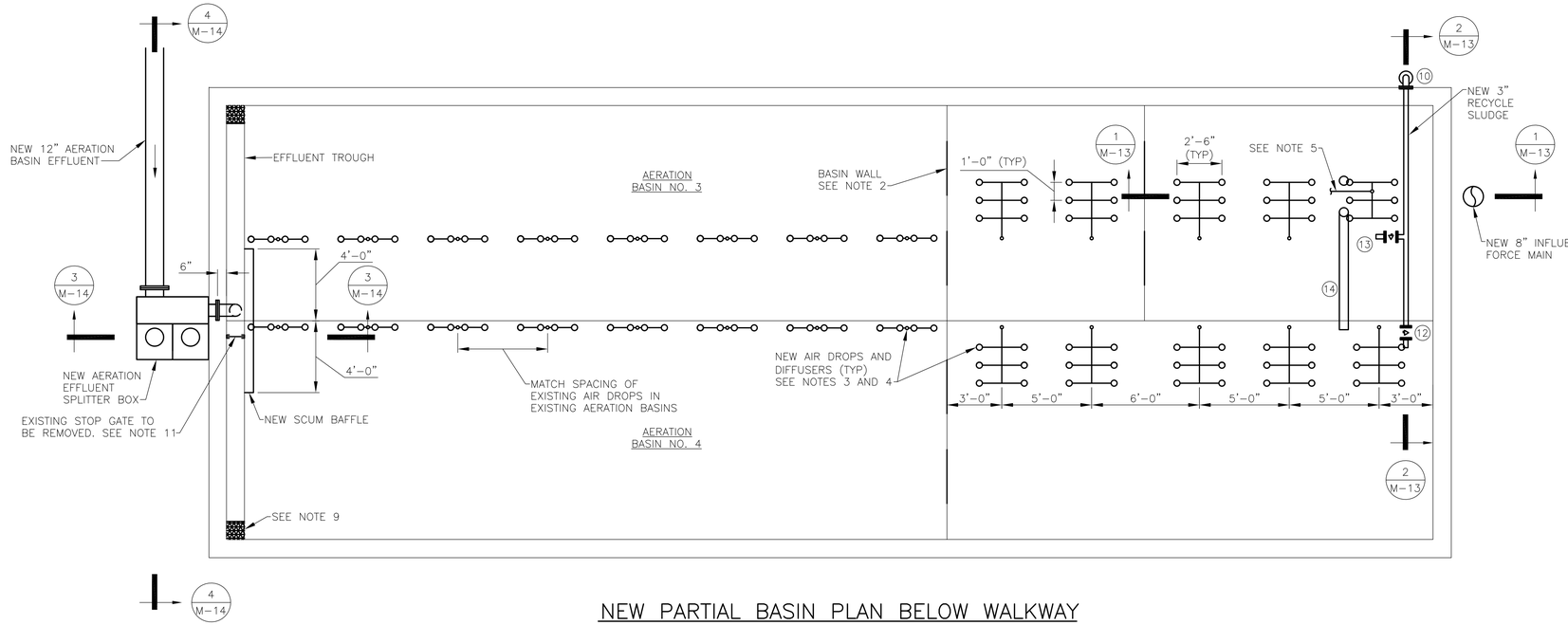
1. 8" MJ 90° BEND
2. 8" FLG–PE DIP
3. 8" FLG. 90° BEND
4. 8" FLG. PLUG VALVE
5. 8" FLG. DIP
6. 8" FLG. FLOW METER
7. 4" MJ TEE
8. 4" MJ 90° BEND
9. 4" FLG–PE DIP
10. 4" FLG. 90° BEND
11. 3" WELDED CARBON STEEL PIPING (4" FLG. FOR CONNECTION TO ITEM 10)
12. 3" FLG. PLUG VALVE WITH EXTENDED STEM AND 8" DIA. HANDWHEEL
13. 6" LONG WELDED CARBON STEEL DISCHARGE
14. 6" DIAMETER WELDED CARBON STEEL

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. PROVIDE FOUR 3' LONG x 2' HIGH OPENINGS IN EACH OF THE BASIN WALLS. UPON DRAINING BASINS FOR DEMOLITION, CONTRACTOR SHALL COORDINATE OPENINGS WITH ENGINEER AND OWNER TO AVOID EXISTING WALL BRACING.
3. NEW AIR DROPS SHALL BE 1–1/4" SCH 40 GALV. STEEL PIPE WITH BRASS BALL VALVES POSITIONED NEAR WALKWAY FOR OPERATION. A UNION SHALL BE PROVIDED ON VERTICAL DROP JUST BELOW THE TURNED DOWN ELBOW.
4. NEW DIFFUSERS SHALL BE 4" DIAMETER COARSE BUBBLE DIFFUSERS MATCHING EXISTING DIFFUSERS (FLEXCAP DIFFUSER).
5. EXTEND NEW AIR DROP UNDER PLATFORM.
6. AIR DROP SPACING SHALL BE SIMILAR FOR AERATION BASINS NO. 1 AND NO. 2.
7. NEW INFLUENT SPLITTER BOX SHALL BE SIMILAR TO THAT OF THE EXISTING SPLITTER BOX. V–NOTCH WEIRS IN NEW BOX SHALL BE ADJUSTABLE TO ENSURE BALANCED FLOW. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
8. CONTRACTOR SHALL PROVIDE NEW PLATFORM, SUPPORTS, HANDRAILS, ETC. AS SHOWN. CONSTRUCTION SHALL BE SIMILAR TO EXISTING PLATFORM. DESIGN CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR APPROVAL AS SHOP DRAWING.
9. SEAL OPENINGS IN BOTTOM OF EFFLUENT TROUGH AT ABANDONED 6" OUTLET (TYP. BOTH TREATMENT UNITS).
10. ABOVE GRADE NEW 8" INFLUENT FORCE MAIN SHALL BE HEAT TRACED AND INSULATED.
11. REMOVE EXISTING STOP GATE TO ALLOW EFFLUENT FROM BOTH BASINS TO COMBINE FOR DISCHARGE TO NEW AERATION EFFLUENT SPLITTER BOX.
12. PROVIDE HEAT TRACING AND INSULATION FOR EXPOSED INFLUENT FORCE MAIN AND EXPOSED 4" RECYCLE FORCE MAIN.

NEW SECTION (1/M-12, 1/M-13)

NEW SECTION (2/M-12, 2/M-13)



NEW PARTIAL BASIN PLAN BELOW WALKWAY

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

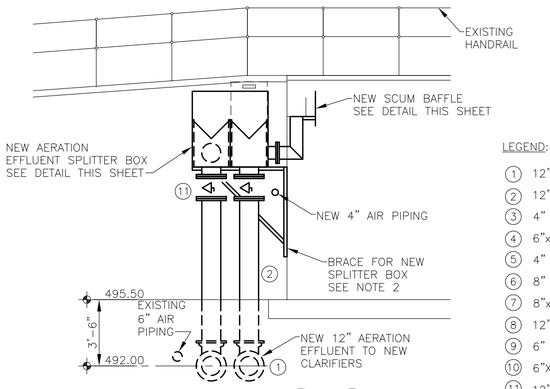
willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

AERATION BASIN
NEW PLANS

1968.015
M–13REF.DWG
OCTOBER 2019

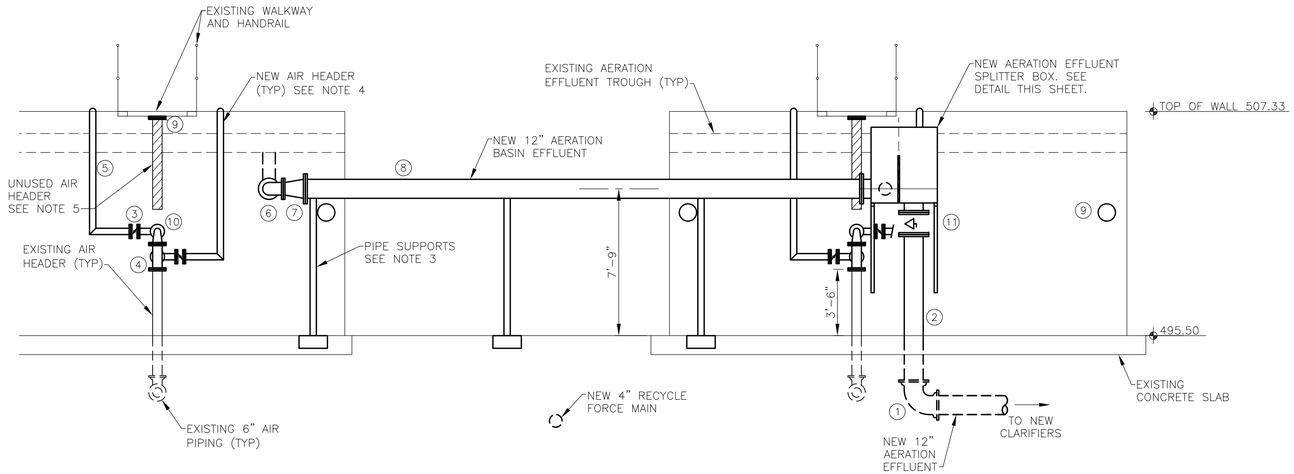
M–13

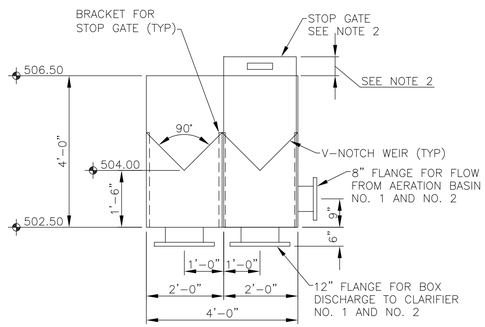


NEW SECTION (3/M-12, 3/M-13)

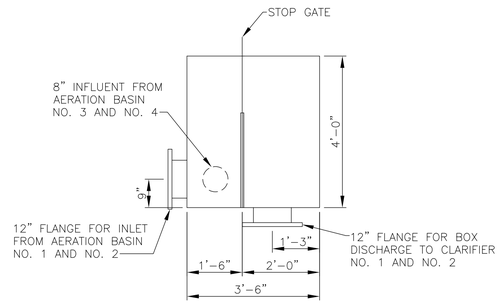
LEGEND:

1. 12" MJ 90° BEND
2. 12" FLG-PE DIP
3. 4" FLG. BUTTERFLY VALVE
4. 6"x6"x4" FLG. TEE
5. 4" DIAMETER WELDED CARBON STEEL
6. 8" FLG. 90° BEND
7. 8"x12" FLG. ENLARGER
8. 12" FLG. DIP
9. 6" BLIND FLANGE
10. 6"X4" FLG. 90° BEND
11. 12" FLG. PLUG VALVE

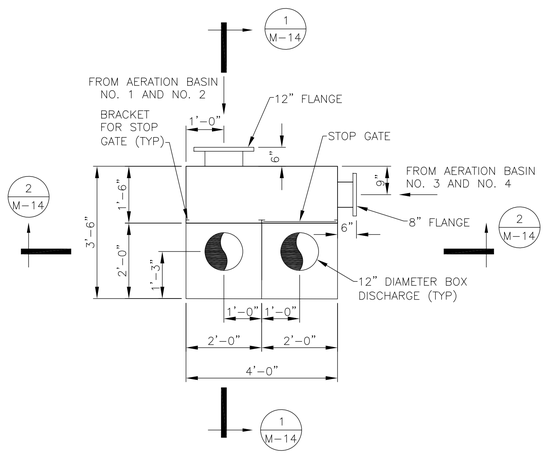




SECTION (1/M-14)



SECTION (2/M-14)

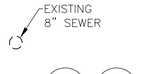


PLAN

NEW AERATION EFFLUENT SPLITTER BOX DETAIL

NEW EFFLUENT SPLITTER BOX NOTES:

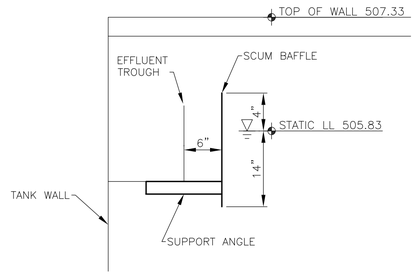
1. ALL COMPONENTS OF BOX SHALL BE CONSTRUCTED OF 1/4" THICK A36 CARBON STEEL WITH SEAMS CONTINUOUS SEAL WELDED INSIDE AND OUT. BOX SURFACES SHALL BE COATED MATCHING THAT OF EXISTING TANK CONSTRUCTION.
2. STOP GATE SHALL BE 1/4" THICK ALUMINUM PLATE. TOP OF STOP GATE SHALL EXTEND A MINIMUM OF 6" ABOVE TOP OF BOX TO ALLOW REMOVAL FROM PERSONNEL ON WALKWAY ABOVE. PROVIDE HANDLE IN STOP GATE.



NEW SECTION (4/M-12, 4/M-13)

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. CONTRACTOR SHALL PROVIDE SUFFICIENT BRACING FOR NEW AERATION EFFLUENT SPLITTER BOX. DESIGN CALCULATIONS AND DETAILED SHOP DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
3. PROVIDE PIPE SUPPORTS FOR NEW 12" AERATION BASIN EFFLUENT AS NEEDED (MIN. 2). SUPPORTS SHALL BE A "SADDLE" TYPE SUPPORT ON A 3" DIAMETER PIPE COLUMN WITH WELDED BASE PLATE MOUNTED TO 18"x18"x8" CONCRETE FOOTING WITH #5 @ 6" EW/T&B WITH FOUR 1/2" DIAMETER ANCHOR BOLTS, EMBEDDED A MINIMUM OF 5".
4. USE PENETRATIONS AT TOP OF TANK WALLS REMAINING FROM REMOVAL OF EXISTING 3" RECYCLE PIPING. REMAINING UNUSED PENETRATIONS SHALL BE CLEANED AND COATED.
5. REMOVE UNUSED AIR HEADER TO FLANGE ON UNDERSIDE OF WALKWAY. CAP WITH 6" BLIND FLANGE.



NEW SCUM BAFFLE DETAIL

NEW SCUM BAFFLE NOTES:

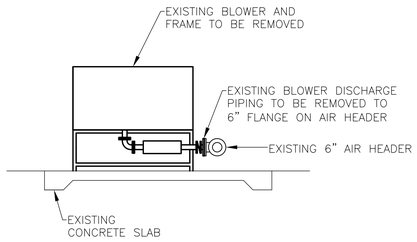
1. SCUM BAFFLE SHALL BE CONSTRUCTED OF 3/16" THICK A36 CARBON STEEL COATED TO MATCH THAT OF EXISTING TANK CONSTRUCTION.
2. CONTRACTOR SHALL PROVIDE SUFFICIENT SUPPORT ANGLES AND BRACING TO AVOID SAGGING OR DISTORTION. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

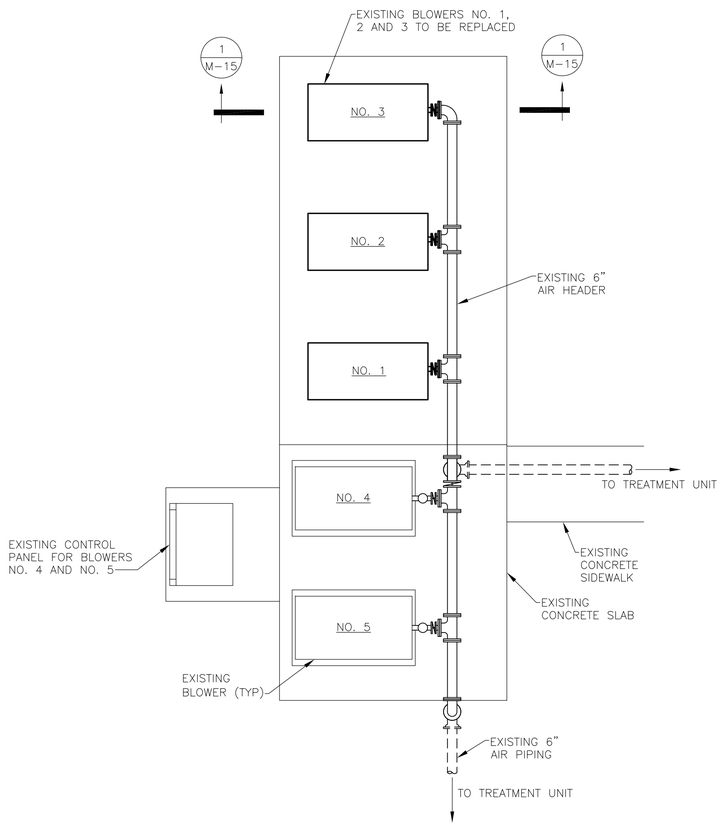
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	1' 0 1' 2' 2' 0 2' 4' 4' 0 4' 8'	willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	AERATION BASIN NEW SECTIONS AND DETAILS	1968.015 M-14REF.DWG OCTOBER 2019	M-14



DEMO SECTION (1 / M-15)



DEMO PLAN

BLOWERS NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED.
2. WORK ON BLOWERS TO BE CONCURRENT WITH WORK AT AERATION BASIN NO. 1 AND NO. 2.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT
ORIGINALLY ISSUED
AND SEALED BY:
GREGORY J. WELLS
NC PE #24494
24 JUL 2017

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

willis ENGINEERS

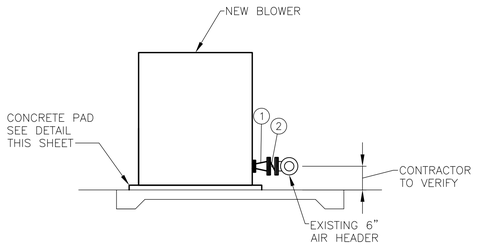
WATER AND SEWER AUTHORITY
OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

BLOWERS
DEMO PLAN AND SECTION

1968.015
M-15REF.DWG
OCTOBER 2019

M-15

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



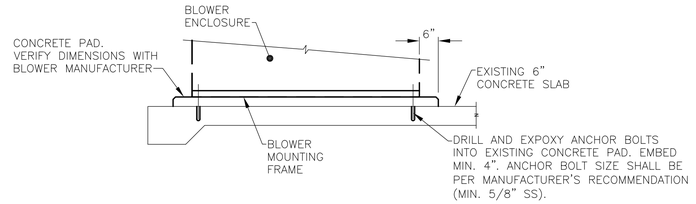
NEW SECTION 1 / M-16

NOTES:

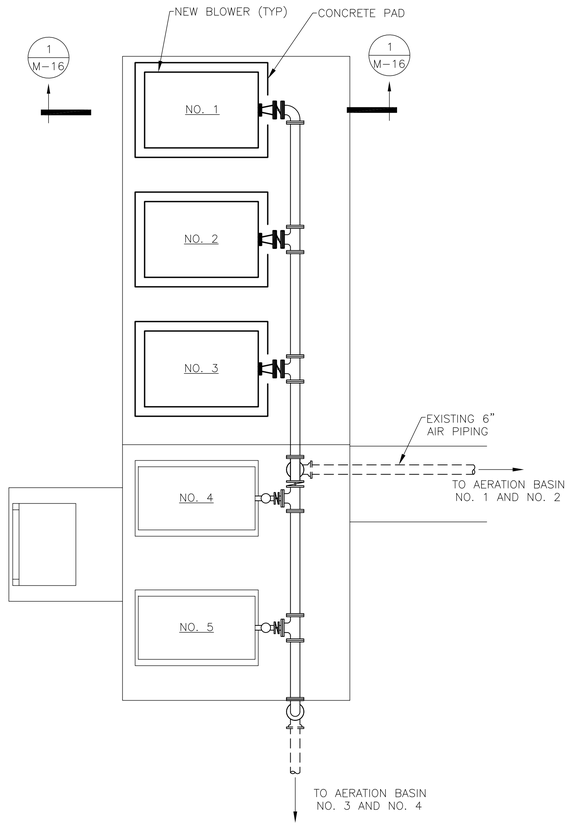
1. ITEMS SHOWN IN BOLD ARE NEW.
2. WORK ON BLOWERS TO BE CONCURRENT WITH WORK AT AERATION BASIN NO. 1 AND NO. 2.
3. BLOWERS 1-3 TO BE RENUMBERED.

LEGEND:

(1) 6"x3" FLG. ENLARGER
(2) 6" WAFER STYLE BUTTERFLY VALVE



CONCRETE PAD DETAIL



NEW PLAN

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

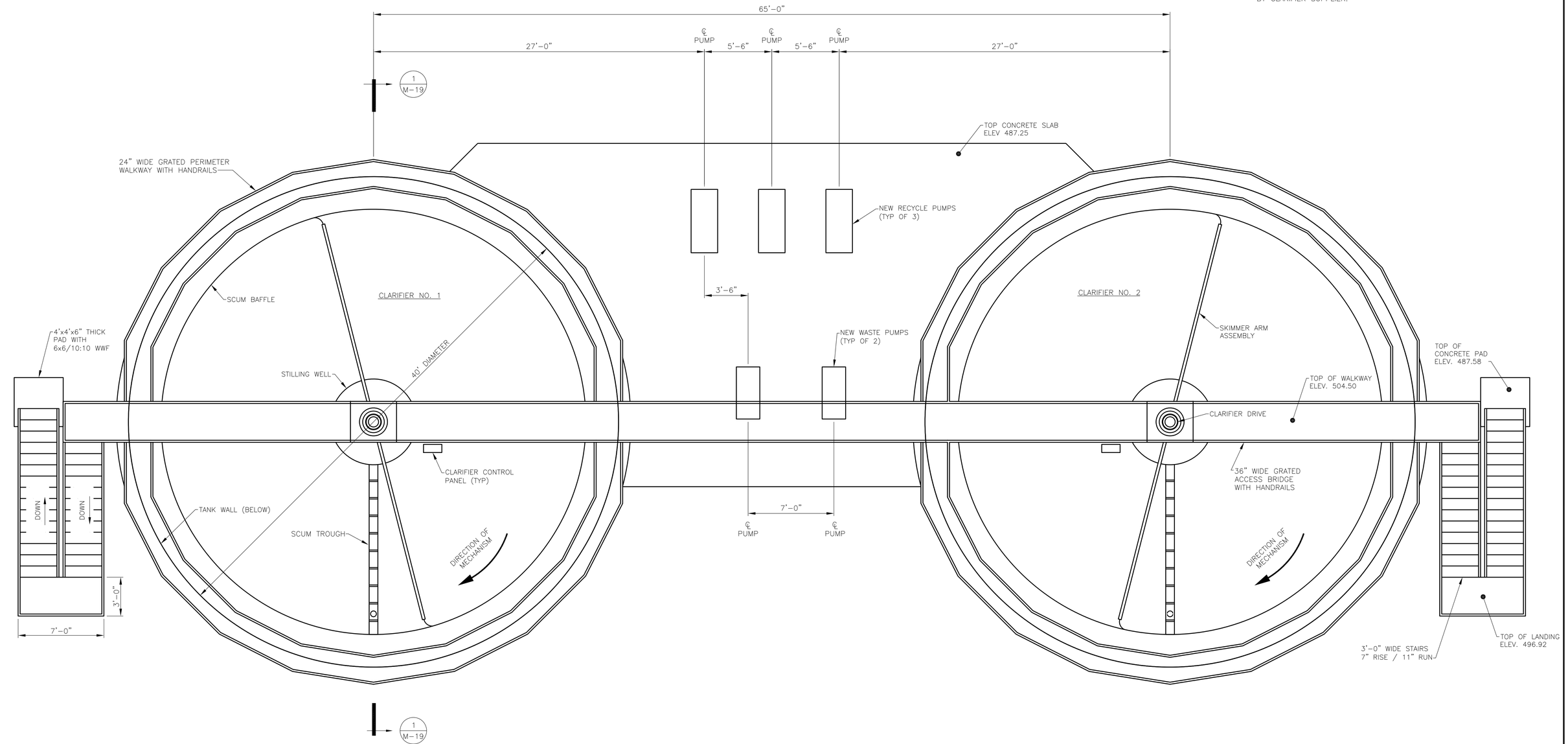
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ORIGINALLY ISSUED
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GREGORY J. WELLS
NC PE #24494
24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	2' 0 2' 4'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	BLOWERS NEW PLAN, SECTION AND DETAIL	1968.015 M-16REF.DWG OCTOBER 2019	M-16

NOTES:

1. ITEMS ON THIS SHEET ARE NEW OR RELOCATED.
2. HANDRAIL NOT SHOWN FOR CLARITY.
3. STAIRS AND APPURTENANT COMPONENTS SHALL BE PROVIDED BY CLARIFIER SUPPLIER.

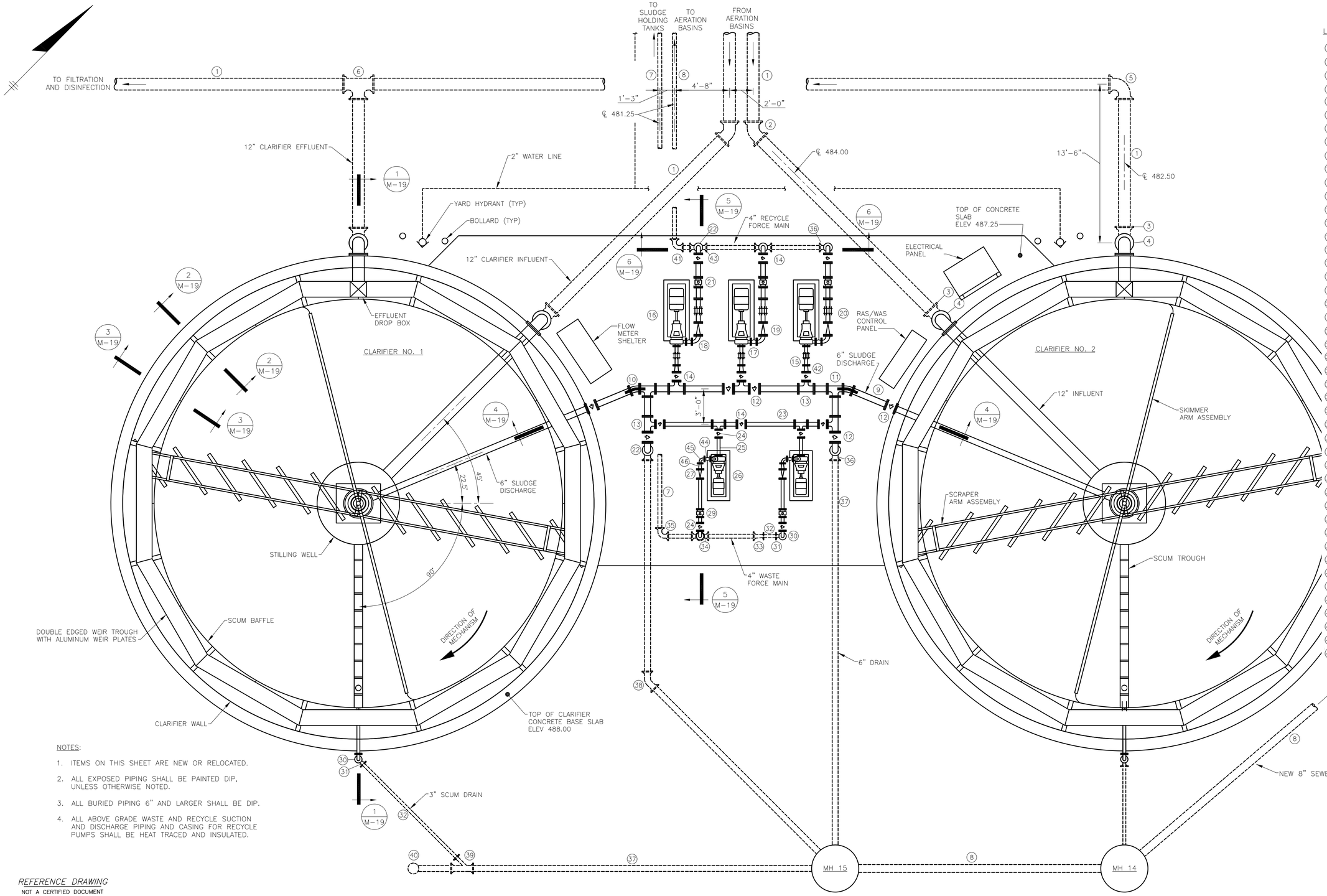


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24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	4' 0 4' 8'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	CLARIFIERS PLAN AT WALKWAY	1968.015 M-17REF.DWG OCTOBER 2019	M-17



LEGEND:

1. 12" DIP
2. 12" MJ 22.5° BEND, ROTATED
3. 12" MJ 90° BEND (VERT)
4. 12" FLG. 90° BEND (VERT)
5. 12" MJ 90° BEND (HORIZ)
6. 12"x12" MJ TEE
7. 4" DIP
8. 4" DIP
9. 6" FLG. DIP
10. 6" FLG. 22.5° BEND
11. 6" FLG. TEE
12. 6" FLG PLUG VALVE
13. 6"x4" FLG. TEE
14. 4" FLG PLUG VALVE
15. 3" FLG. FLEX COUPLING W/TIE RODS
16. 3" RECYCLE PUMPS
17. 3" RUBBER COUPLING
18. 3"x4" FLG. 90° BEND
19. 4" FLG. CHECK VALVE
20. 4" FLG. FLEX COUPLING W/TIE RODS
21. 4" FLG. FLOW METER
22. 4" FLG. 90° BEND
23. 4"x4"x3" FLG. TEE
24. 3" FLG. PLUG VALVE
25. 3" FLG. DIP
26. 3" WASTE PUMP
27. 3" FLG. CHECK VALVE
28. 3" FLG. FLEX COUPLING W/TIE RODS
29. 3" FLG. FLOW METER
30. 3" FLG. 90° BEND (VERT)
31. 3" MJ 90° BEND (VERT)
32. 3" DIP
33. 3"x4" MJ ENLARGER
34. 4"x4"x3" MJ TEE
35. 4" MJ 90° BEND
36. 6" MJ 90° BEND
37. 6" DIP
38. 6" MJ 45° BEND
39. 6"x6"x3" MJ WYE
40. 6" CLEAN OUT
41. 4" MJ 90° BEND
42. 4"x3" MJ REDUCER
43. 4" MJ TEE
44. 2" RUBBER COUPLING
45. 2" FLG. 90° BEND
46. 2"x3" FLG. ENLARGER

NOTES:

1. ITEMS ON THIS SHEET ARE NEW OR RELOCATED.
2. ALL EXPOSED PIPING SHALL BE PAINTED DIP, UNLESS OTHERWISE NOTED.
3. ALL BURIED PIPING 6" AND LARGER SHALL BE DIP.
4. ALL ABOVE GRADE WASTE AND RECYCLE SUCTION AND DISCHARGE PIPING AND CASING FOR RECYCLE PUMPS SHALL BE HEAT TRACED AND INSULATED.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

willis ENGINEERS

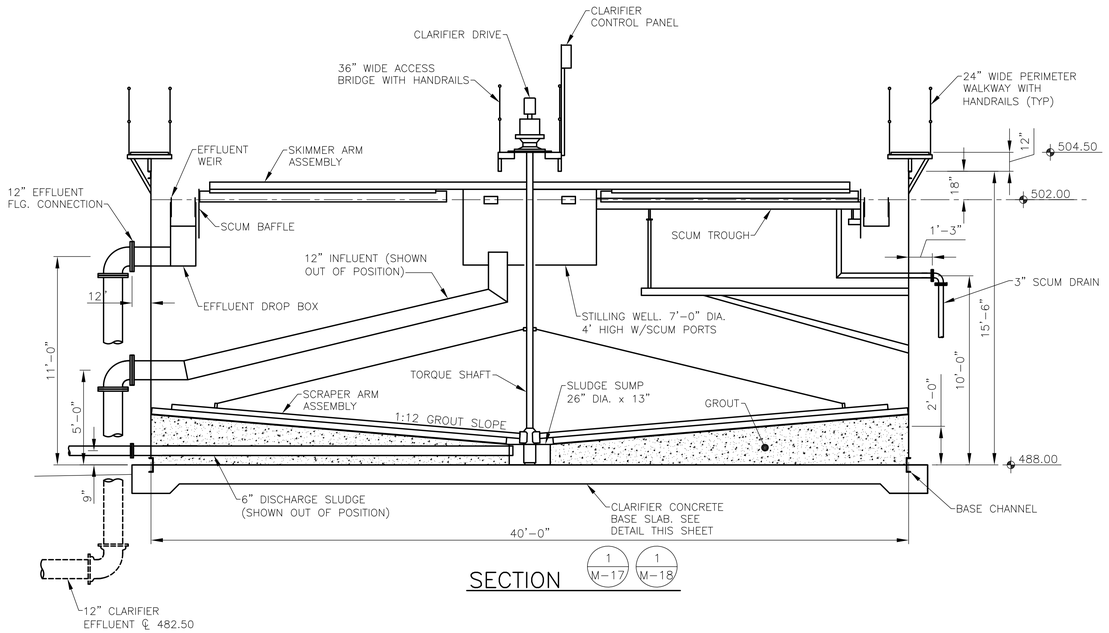
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

CLARIFIERS
PLAN BELOW WALKWAY

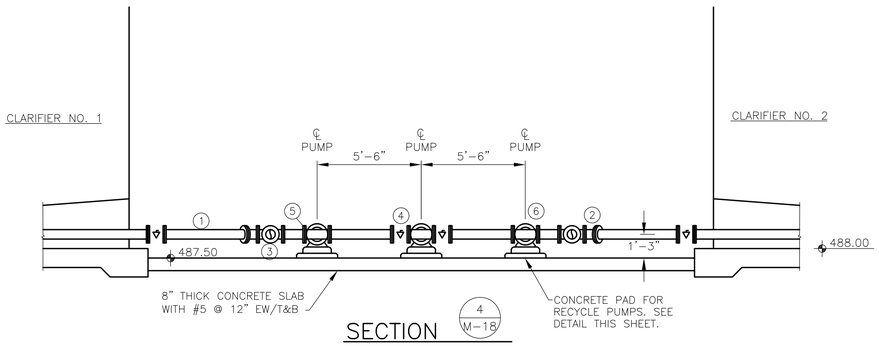
1968.015
M-18REf.DWG
OCTOBER 2019

M-18

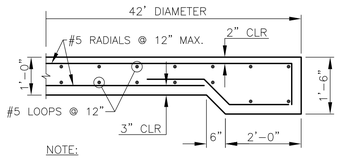
WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114



SECTION (1/M-17) (1/M-18)



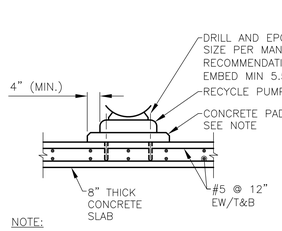
SECTION (4/M-18)



NOTE:

BASE CHANNEL FOR CLARIFIER NOT SHOWN. COORDINATE LOCATION AND EMBEDMENT WITH EQUIPMENT MANUFACTURER.

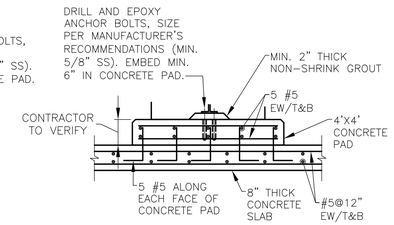
CLARIFIER CONCRETE BASE SLAB DETAIL



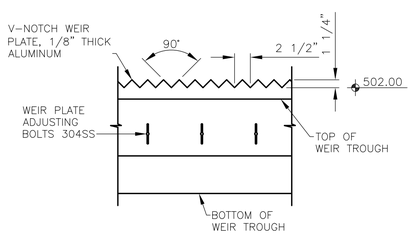
NOTE:

CONTRACTOR SHALL VERIFY SIZE OF CONCRETE PAD WITH PUMP MANUFACTURER.

RECYCLE PUMP CONCRETE PAD DETAIL



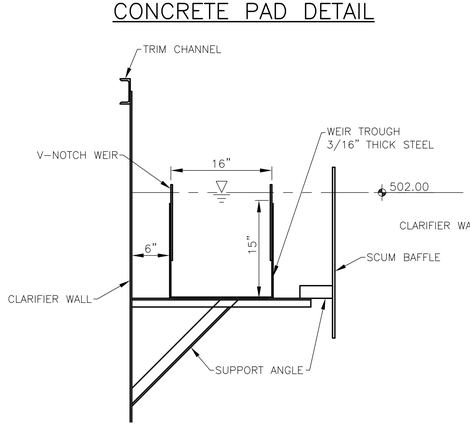
WASTE PUMP CONCRETE PAD DETAIL



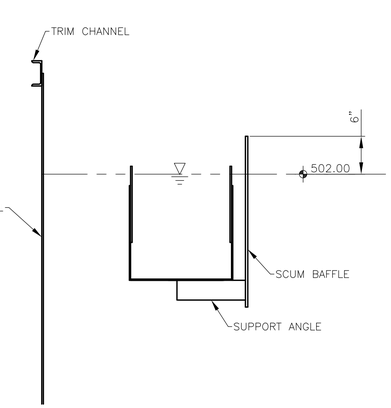
WEIR PLATE DETAIL

WEIR AND TROUGH NOTES:

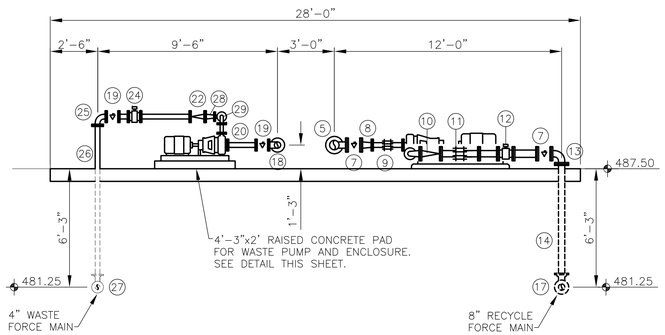
1. PERIMETER WALKWAYS NOT SHOWN FOR CLARITY.
2. CONTRACTOR SHALL PROVIDE SUFFICIENT SUPPORT BRACKETS AND ANGLES FOR TROUGH AND BAFFLE TO AVOID SAGGING OR DISTORTION. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATIONS.



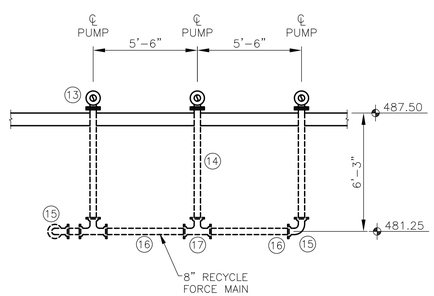
SECTION (2/M-18)



SECTION (3/M-18)



SECTION (5/M-18)



SECTION (6/M-18)

LEGEND:

1. 6" FLG. DIP
2. 6" FLG. 22.5° BEND
3. 6" FLG. TEE
4. 6" FLG. PLUG VALVE
5. 6"x6"x4" FLG TEE
6. 3" RECYCLE PUMPS
7. 4" FLG. PLUG VALVE
8. 4"x3" REDUCER
9. 3" FLG. FLEX COUPLING W/TIE RODS
10. 4" FLG. CHECK VALVE
11. 4" FLG. FLEX COUPLING W/TIE RODS
12. 4" FLG. FLOW METER
13. 4" FLG. 90° BEND
14. 4" FLG.-PE DIP
15. 4" MJ 90° BEND
16. 4" DIP
17. 4" MJ TEE
18. 4"x4"x3" FLG. TEE
19. 3" FLG. PLUG VALVE
20. 3" FLG. DIP
21. 3" WASTE PUMPS
22. 3" CHECK VALVE
23. 3" FLG. FLEX COUPLING W/TIE RODS
24. 3" FLG. FLOW METER
25. 3" FLG. 90° BEND
26. 3" FLG.-PE DIP
27. 4"x4"x3" MJ TEE
28. 2"x3" FLG. ENLARGER
29. 2" FLG. 90° BEND

NOTES:

1. ITEMS ON THIS SHEET ARE NEW OR RELOCATED.
2. ALL EXPOSED PIPING SHALL BE PAINTED DIP, UNLESS OTHERWISE NOTED.
3. ALL BURIED PIPING SHALL BE DIP, UNLESS OTHERWISE NOTED.
4. ALL ABOVE GRADE WASTE AND RECYCLE SUCTION AND DISCHARGE PIPING AND CASING FOR RECYCLE PUMPS SHALL BE HEAT TRACED AND INSULATED.
5. CONTRACTOR SHALL PROVIDE GALV. STEEL ADJUSTABLE PIPE SUPPORTS FOR ALL ABOVE GRADE WASTE AND RECYCLE SUCTION AND DISCHARGE PIPING. SUPPORTS SHALL BE EITHER SADDLE OR FLANGE TYPE WITH STANCHION AND BASE PLATE MOUNTED TO CONCRETE SLAB PER MANUFACTURER'S RECOMMENDATIONS.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

IN CHARGE	CAWjr
DESIGNED	SEG
MADE BY	AMA
CHECKED	CAWjr

1' 0 1' 2' | 2' 0 2' 4' | 4' 0 4' 8'

willis ENGINEERS

WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

MUDDY CREEK WWTP EXPANSION

CLARIFIERS

SECTIONS AND DETAILS

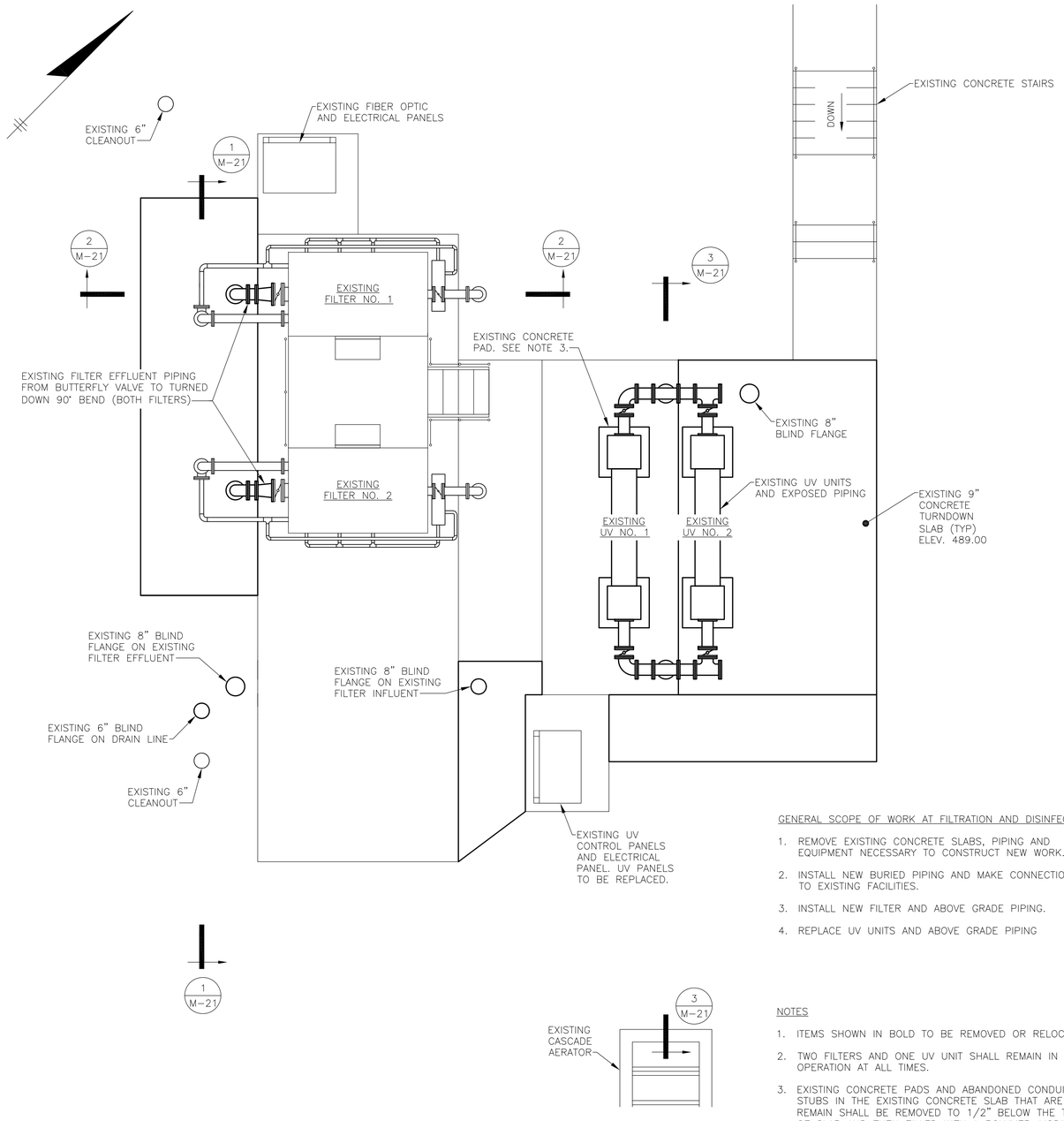
1968.015

M-19REF.DWG

OCTOBER 2019

M-19

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



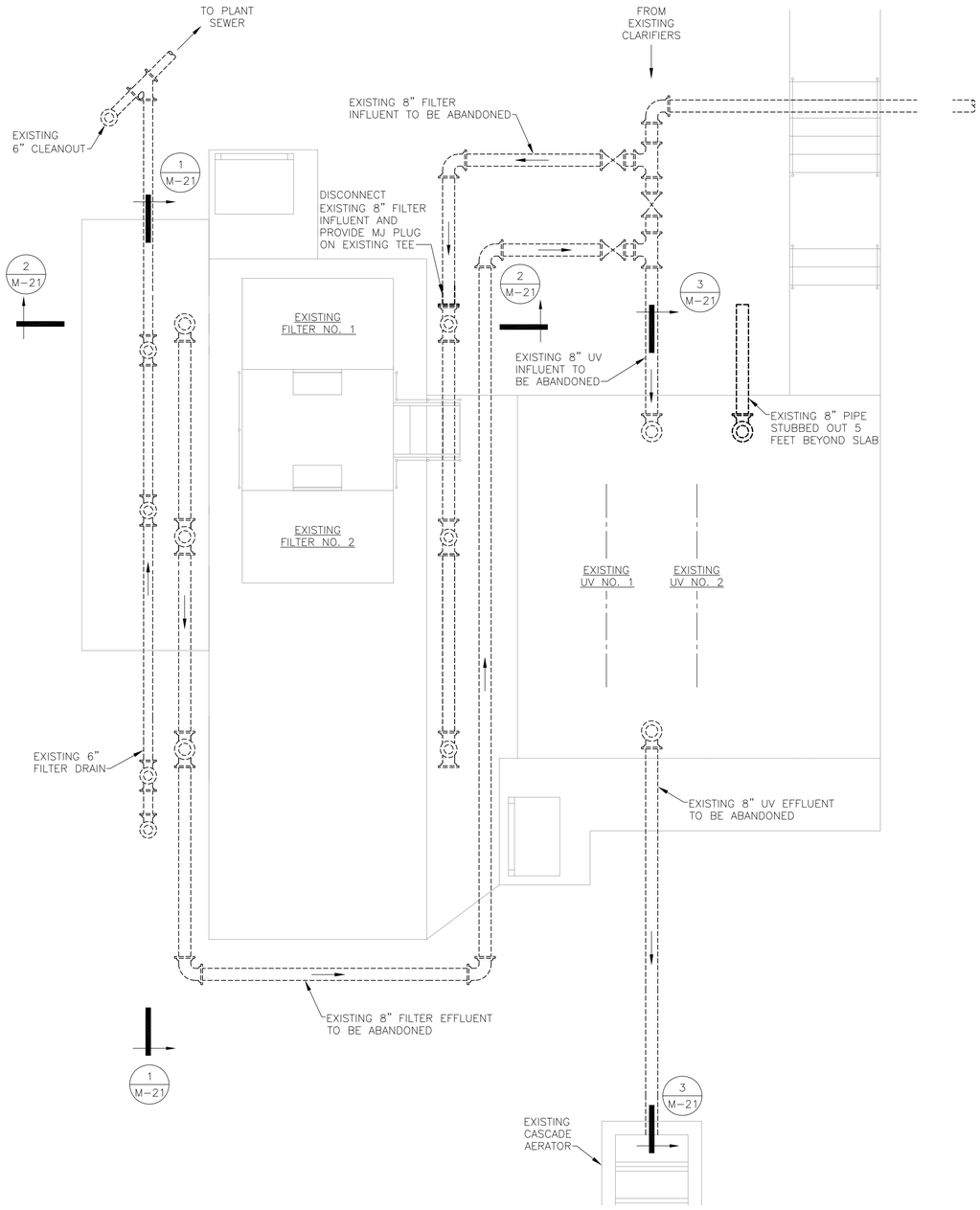
GENERAL SCOPE OF WORK AT FILTRATION AND DISINFECTION

1. REMOVE EXISTING CONCRETE SLABS, PIPING AND EQUIPMENT NECESSARY TO CONSTRUCT NEW WORK.
2. INSTALL NEW BURIED PIPING AND MAKE CONNECTIONS TO EXISTING FACILITIES.
3. INSTALL NEW FILTER AND ABOVE GRADE PIPING.
4. REPLACE UV UNITS AND ABOVE GRADE PIPING

NOTES

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.
2. TWO FILTERS AND ONE UV UNIT SHALL REMAIN IN OPERATION AT ALL TIMES.
3. EXISTING CONCRETE PADS AND ABANDONED CONDUIT STUBS IN THE EXISTING CONCRETE SLAB THAT ARE TO REMAIN SHALL BE REMOVED TO 1/2" BELOW THE TOP OF SLAB AND THEN FILLED WITH A POLYMER-MODIFIED CEMENTITIOUS COATING (SIKATOP 122 PLUSOR OR EQUAL) TO THE ORIGINAL PROFILE.

DEMO PLAN AT GRADE



DEMO PLAN BELOW GRADE

REFERENCE DRAWING
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IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

4' 0 4' 8'

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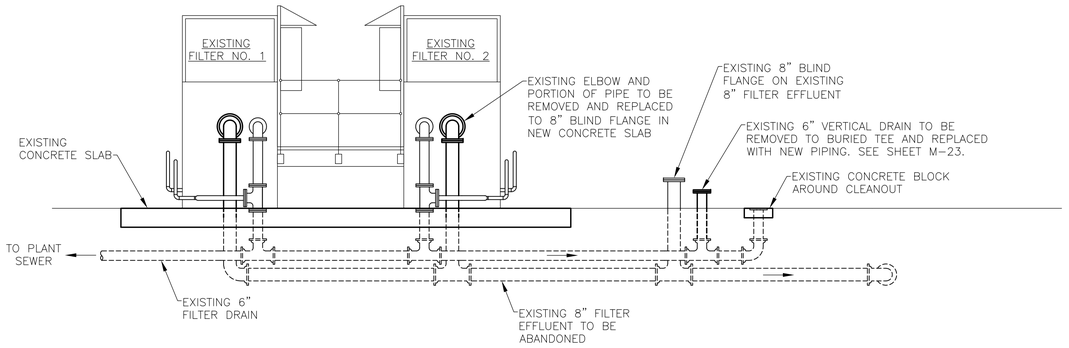
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

FILTRATION AND DISINFECTION
DEMO PLANS

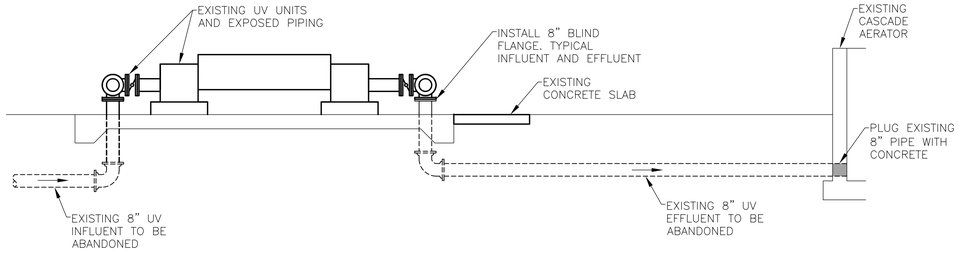
1968.015
M-20REF.DWG
OCTOBER 2019

M-20

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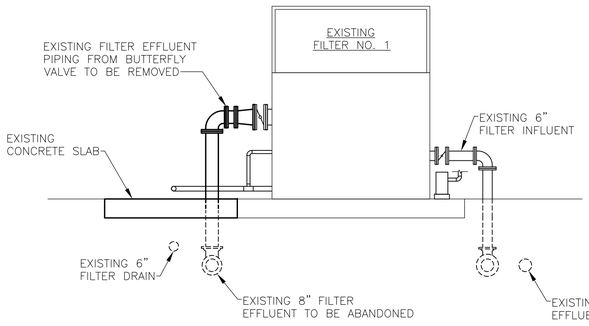
DEMO SECTION 1 / M-20



DEMO SECTION 3 / M-20

NOTES

1. ITEMS SHOWN IN BOLD TO BE REMOVED OR RELOCATED.



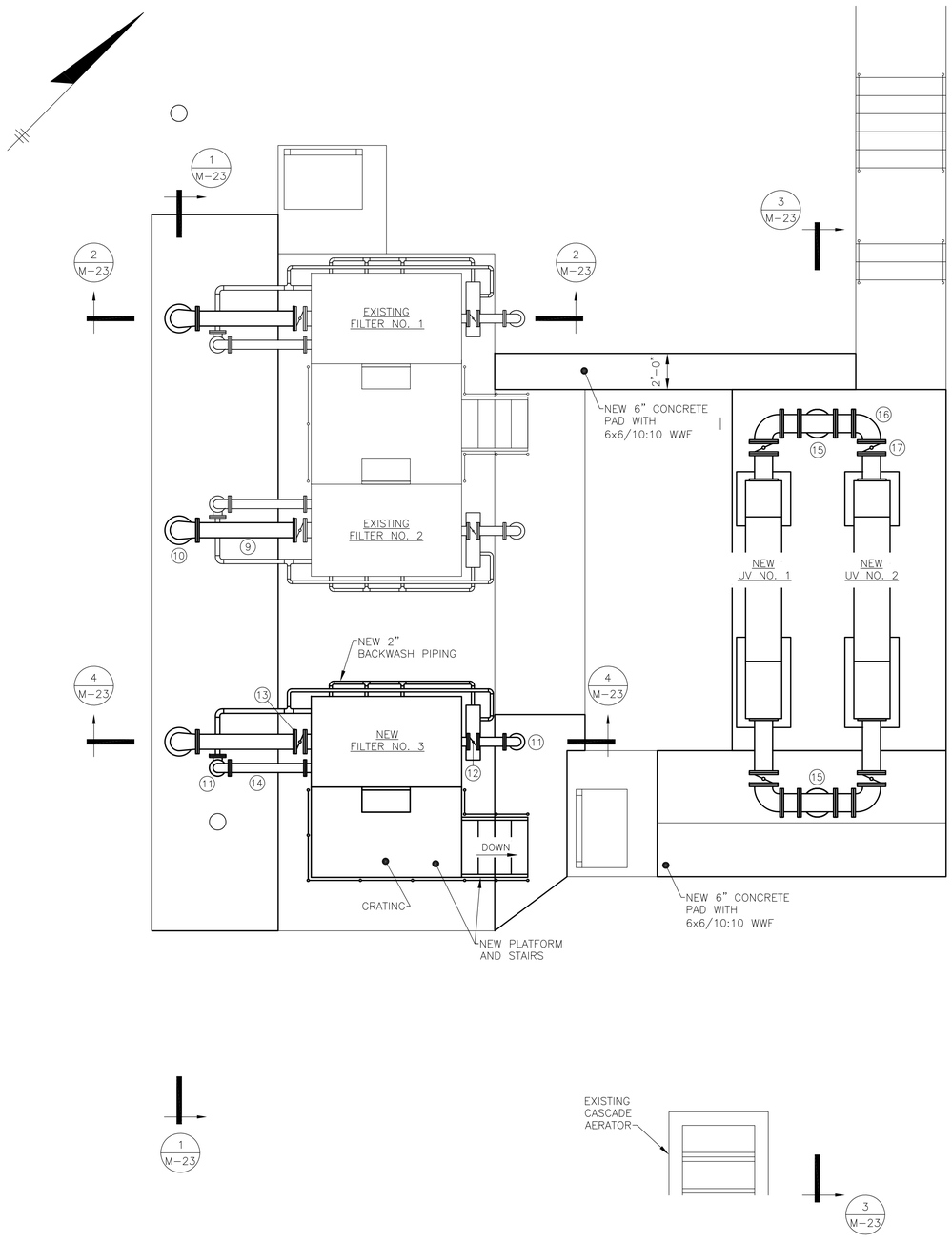
DEMO SECTION 2 / M-20

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24 JUL 2017

IN CHARGE CAWjr DESIGNED SEG MADE BY AMA CHECKED CAWjr	4' 0 4' 8'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	FILTRATION AND DISINFECTION DEMO SECTIONS	1968.015 M-21REF.DWG OCTOBER 2019	M-21



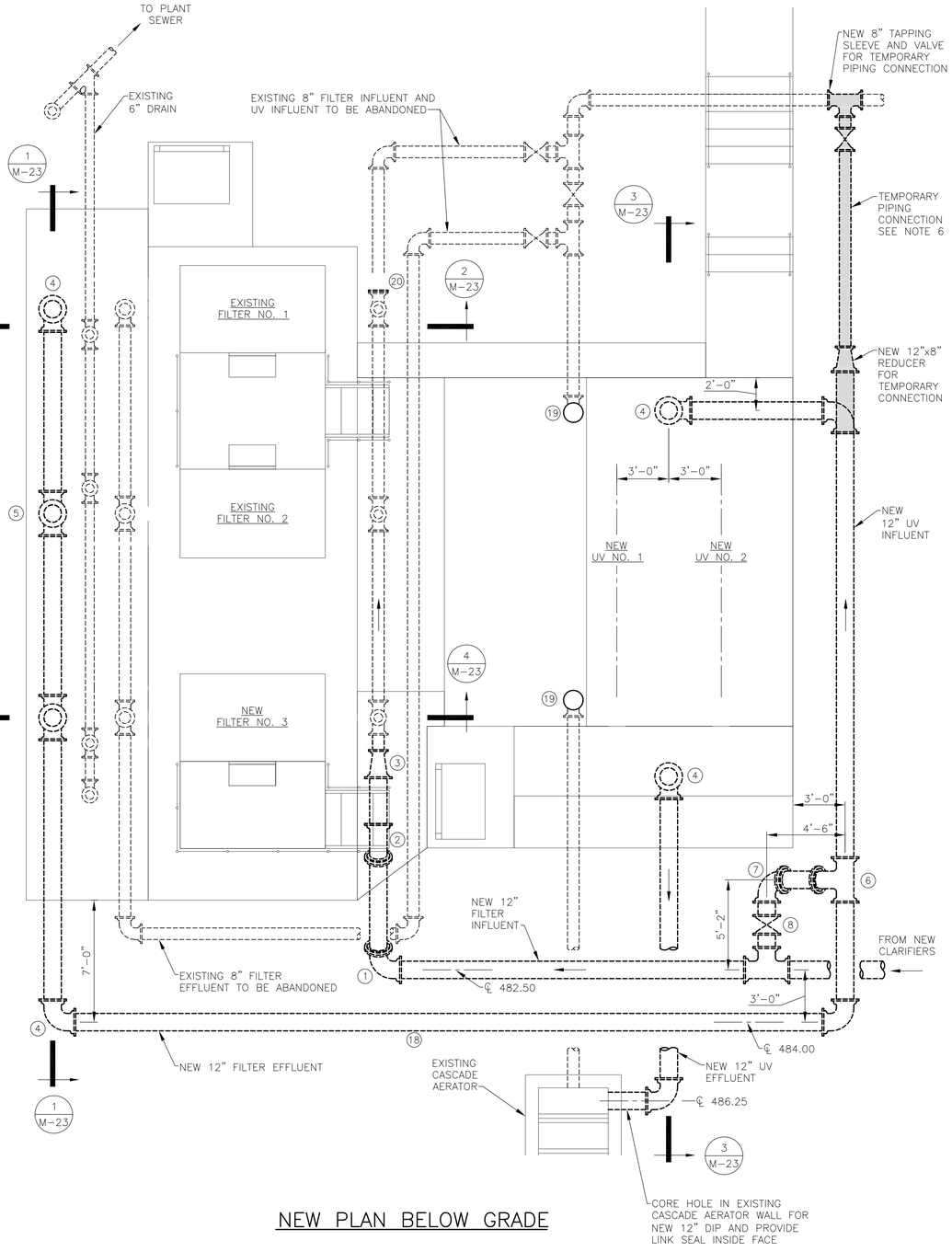
NEW PLAN AT GRADE

LEGEND:

1. 12" MJ 90° BEND (ROTATED UP)
2. 12" 11 1/4° MJ BEND (VERT)
3. 12"x8" MJ REDUCER
4. 12" MJ 90° BEND
5. 12" MJ TEE
6. 12" MJ TEE (ROTATED UP)
7. 12" MJ 90° BEND (ROTATED DOWN)
8. 12" MJ GATE VALVE
9. 10" FLG DIP
10. 10"x12" FLG. ENLARGED BEND
11. 6" FLG. 90° BEND
12. 6" FLG. BUTTERFLY VALVE
13. 10" FLG. BUTTERFLY VALVE
14. 6" FLG. DIP
15. 12" FLG. TEE
16. 12" FLG. 90° BEND
17. 12" FLG. BUTTERFLY VALVE
18. 12" DIP
19. 8" BLIND FLANGE
20. 8" MJ PLUG

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ALL NEW PIPING 6" AND LARGER SHALL BE DIP.
3. EXPOSED PIPING SHALL BE PAINTED.
4. EXPOSED 6" INFLUENT FILTER PIPING, BACKWASH PIPING AND 12" INFLUENT UV PIPING SHALL BE HEAT TRACED AND INSULATED.
5. CONTRACTOR SHALL PROVIDE NEW PLATFORM, SUPPORTS AND GRATING, ETC. WHERE SHOWN. NEW ITEMS SHALL MATCH THE MATERIALS OF CONSTRUCTION AND DESIGN OF EXISTING PLATFORM COMPONENTS. DESIGN CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED FOR APPROVAL AS SHOP DRAWINGS.
6. UPON PLACING NEW CLARIFIERS IN SERVICE PRIOR TEMPORARY PIPING TO CONNECT NEW 12" UV INFLUENT PIPING TO EXISTING 8" FILTER INFLUENT. UPON DECOMMISSIONING TEMPORARY PIPING, CLOSE VALVE AT TAPPING SLEEVE AND VALVE.



NEW PLAN BELOW GRADE

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IN CHARGE CAWjr
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MADE BY AMA
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4' 0 4' 8'

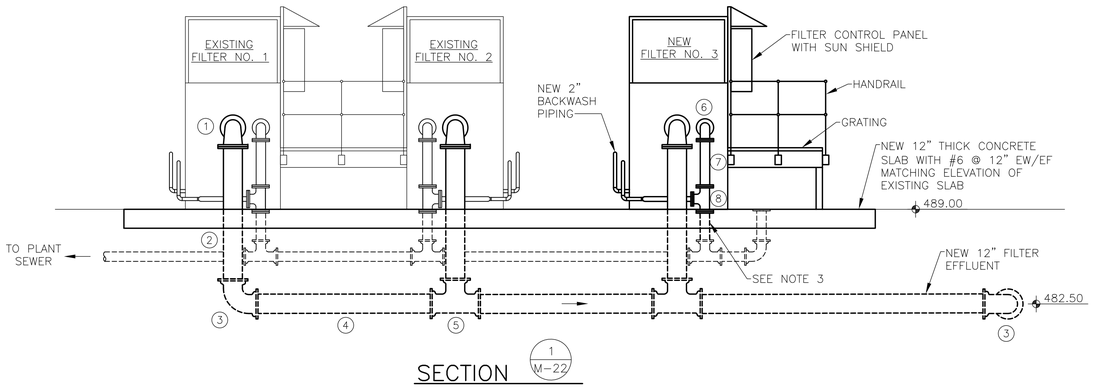
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WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

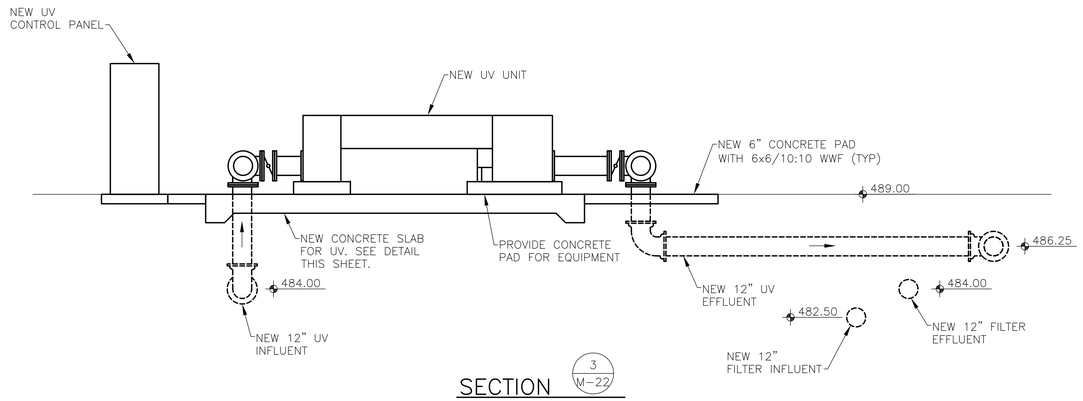
FILTRATION AND DISINFECTION
NEW PLANS

1968.015
M-22REF.DWG
OCTOBER 2019

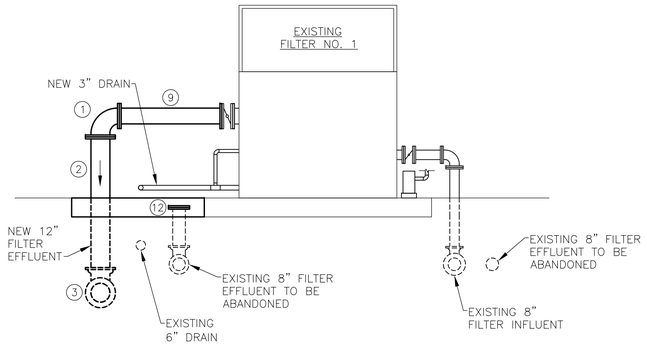
M-22



SECTION 1 M-22



SECTION 3 M-22



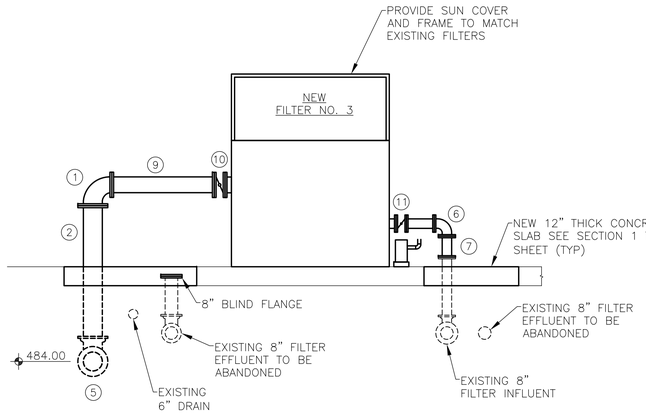
SECTION 2 M-22

LEGEND:

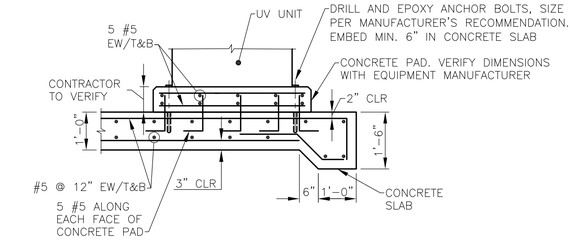
1. 10"x12" FLG. ENLARGED 90° BEND
2. 12" FLG-PE DIP
3. 12" MJ 90° BEND
4. 12" DIP
5. 12" MJ TEE
6. 6" FLG. 90° BEND
7. 6" FLG. DIP
8. 6"x6"x3" FLG. TEE
9. 10" FLG DIP
10. 10" FLG. BUTTERFLY VALVE
11. 6" FLG. BUTTERFLY VALVE
12. 8" BLIND FLANGE

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. EXISTING 8" FILTER EFFLUENT (TO BE ABANDONED) NOT SHOWN FOR CLARITY IN SECTION 1.
3. EXISTING 6" VERTICAL DRAIN AT FILTER 3 TO BE REMOVED TO BURIED TEE AND REPLACED WITH NEW 6" DIP FLG-PE SPOOL TO ALLOW NEW 6"x6"x4" TEE ABOVE TO BE SET AT PROPER ELEVATION TO DRAIN THE FILTER.
4. FILTER NO. 3 SHALL MATCH THE DESIGN AND BE PROVIDED BY THE SAME MANUFACTURER AS FILTER NO. 1 AND NO. 2. LIKEWISE, FILTER NO. 3 SHALL BE SET AT THE SAME ELEVATION OF THE EXISTING FILTERS.
5. CONTRACTOR SHALL PROVIDE GALV. STEEL ADJUSTABLE PIPE SUPPORTS FOR 8" AND 12" ABOVE GRADE FILTER AND UV PIPING. SUPPORTS SHALL BE EITHER SADDLE OR FLANGE TYPE WITH STANCHION AND BASEPLATE MOUNTED TO CONCRETE SLAB PER MANUFACTURER'S RECOMMENDATIONS.



SECTION 4 M-22



NEW UV CONCRETE BASE SLAB DETAIL

REFERENCE DRAWING
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GREGORY J. WELLS
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24 JUL 2017

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DESIGNED	SEG
MADE BY	AMA
CHECKED	CAWjr

2' 0 2' 4'
4' 0 4' 8'

willis ENGINEERS

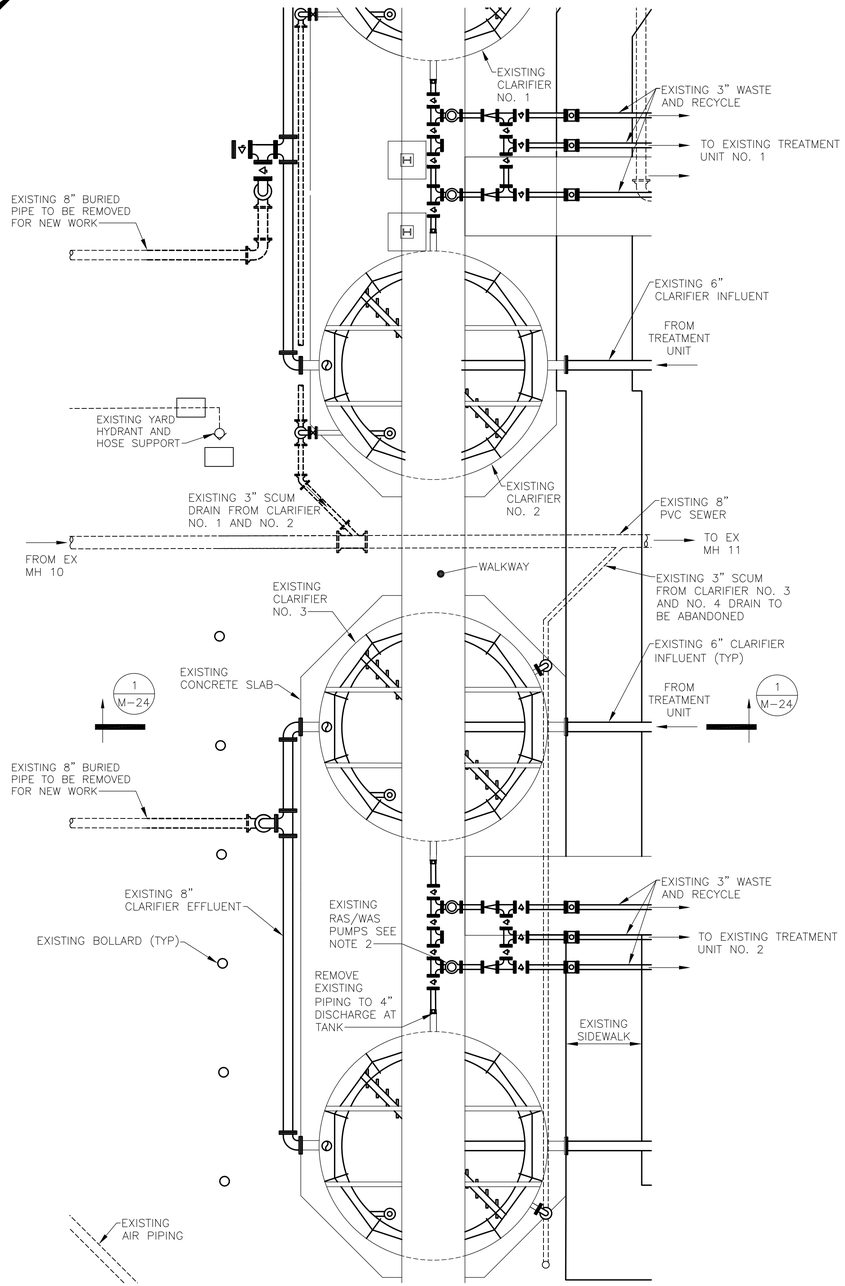
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

FILTRATION AND DISINFECTION
NEW SECTIONS AND DETAIL

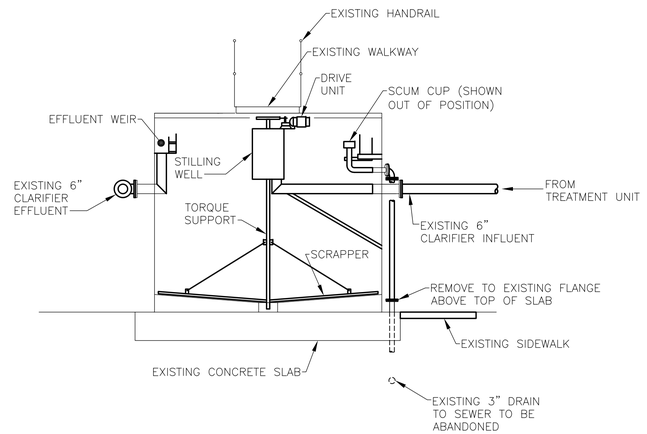
1968.015
M-23REF.DWG
OCTOBER 2019

M-23

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



DEMO PLAN



DEMO SECTION 1 M-24

NOTES:

1. ITEMS SHOWN IN BOLD TO BE REMOVED.
2. EXISTING RAS/WAS PUMPS AND ENCLOSURES FOR TREATMENT UNIT NO. 2 TO BE RELOCATED TO NEW RAS/WAS PUMP STATION AT NEW CLARIFIERS. EXISTING RAS/WAS PUMPS FOR TREATMENT UNIT NO. 1 AND NO. 2 TO BE REMOVED.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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GREGORY J. WELLS
NC PE #24494
24 JUL 2017

IN CHARGE CAWjr
DESIGNED SEG
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CHECKED CAWjr

4' 0 4' 8'

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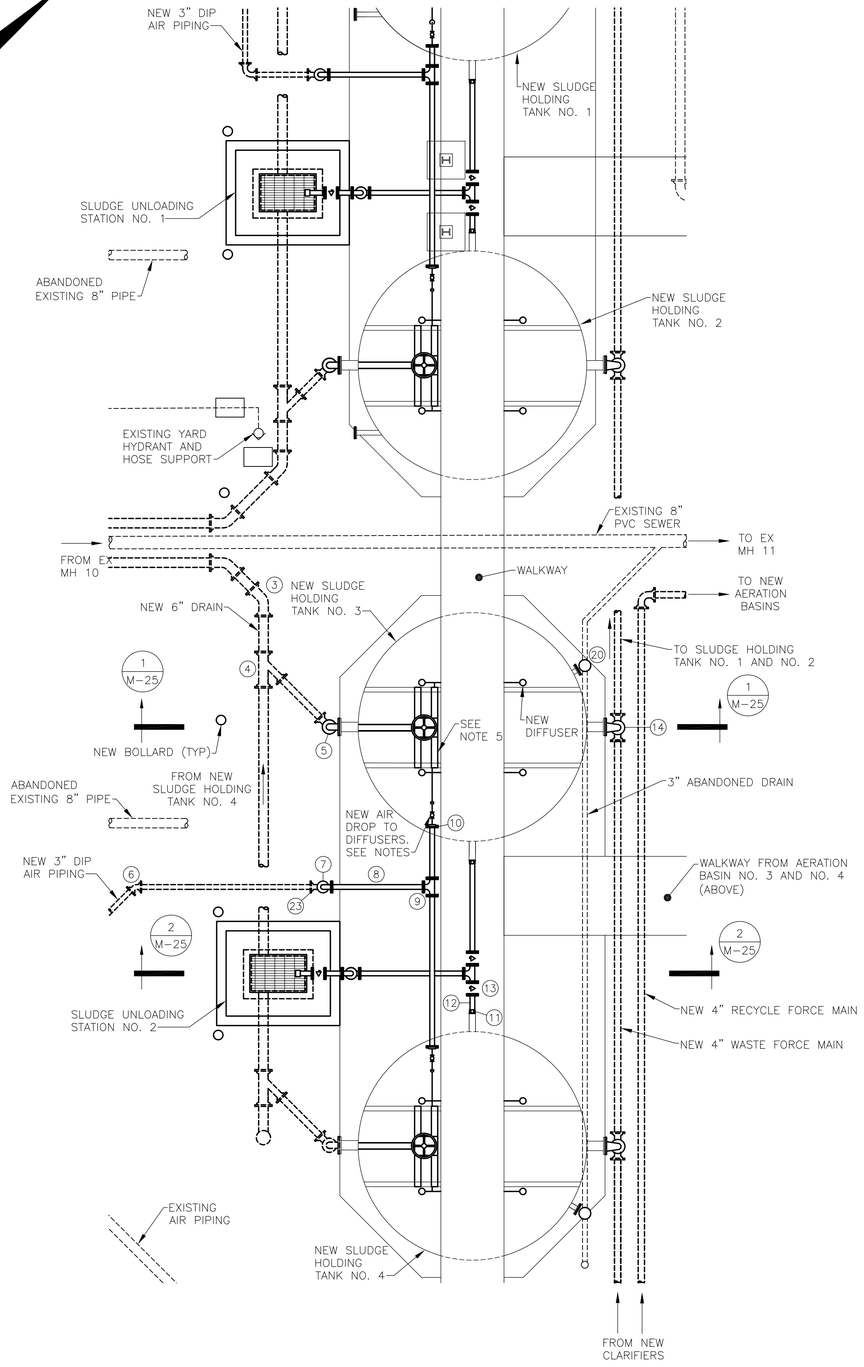
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

SLUDGE HOLDING TANKS
DEMO PLAN AND SECTION

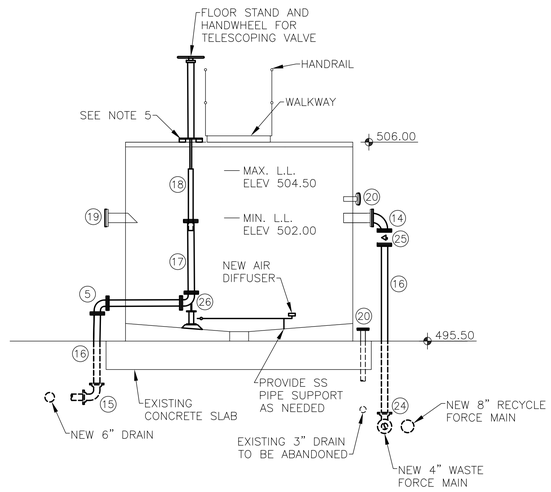
1968.015
M-24REF.DWG
OCTOBER 2019

M-24

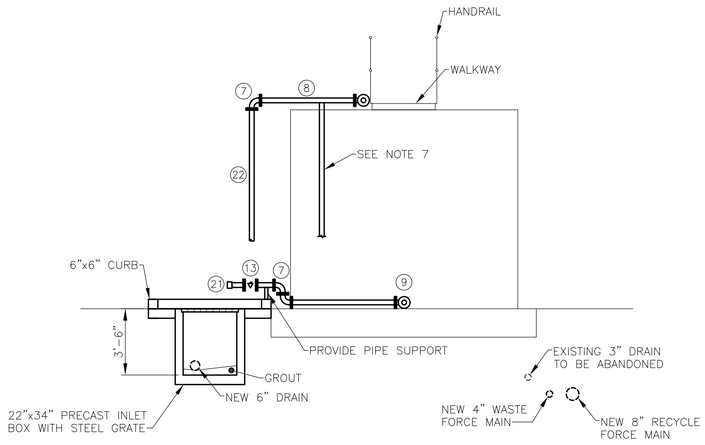
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NEW PLAN



NEW SECTION 1 M-25



NEW SECTION 2 M-25

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW.
2. ITEMS ON THIS SHEET ARE FOR TANK NO. 3 AND NO. 4. WORK FOR TANK NO. 1 AND NO. 2 IS SIMILAR. SEE SHEET M-11.
3. HANDRAIL IN PLANS NOT SHOWN FOR CLARITY.
4. PROVIDE NEW CARBON STEEL SUPPORTS ACROSS EXISTING TANK CHANNELS TO MOUNT BASE PLATE FOR FLOOR STAND OF NEW TELESCOPING VALVE. COORDINATE WITH VALVE MANUFACTURER.
5. NEW AIR DROPS SHALL BE 1-1/4" SCH 40 GALV. STEEL PIPE WITH BRASS BALL VALVES POSITIONED NEAR WALKWAY FOR OPERATION.
6. NEW DIFFUSERS SHALL BE 4" DIAMETER COARSE BUBBLE DIFFUSERS MATCH EXISTING DIFFUSERS (FLEX CAP DIFFUSER).
7. PROVIDE PIPE SUPPORT FOR OVERHEAD 3" DIP AIR PIPING AS NEEDED. MINIMUM ONE AT LOCATION SHOWN AND ONE ON EACH RUN FROM TEE TO SLUDGE HOLDING TANKS. SUPPORTS SHALL BE GALV. STEEL ADJUSTABLE SADDLE WITH STANCHION AND BASE PLATE MOUNTED TO EXISTING CONCRETE SLAB. DRILL AND EPOXY ANCHOR BOLTS (MIN. 4-1/2" DIA.) WITH MIN. 5" EMBEDMENT.
8. ALL EXPOSED DIP AND STEEL PIPING SHALL BE PAINTED, INCLUDING INSIDE TANKS.
9. ALL SLUDGE SUCTION AND LOADING STATION PIPING AND EXPOSED WASTE FORCE MAIN SHALL BE HEAT TRACED AND INSULATED.
10. EXISTING CLARIFIER FLOOR IS SLOPED. PROVIDE NON-SHRINK GROUT BASE (MIN. 2" THICK) TO ENSURE LEVEL SURFACE TO MOUNT BASE ELBOW.

LEGEND:

1. ~~8" COUPLING~~
2. ~~8"x8"x6" WYE~~
3. 6" 45° BEND
4. 6"x6"x4" WYE
5. 4" FLG. 90° BEND
6. 3" MJ 45° BEND
7. 3" FLG. 90° BEND
8. 3" FLG. DIP
9. 3" FLG. TEE
10. 3" BLIND FLANGE WITH 1-1/4" THREADED TAP
11. 4"x3" THREADED BUSHING
12. 3" THREADED-FLG DIP
13. 3" FLG. PLUG VALVE
14. 6"x4" FLG. 90° REDUCING ELBOW
15. 4" MJ 90° BEND
16. 4" PE-FLG DIP
17. 4" FLG. DIP
18. 4" TELESCOPING VALVE
19. 6" BLIND FLANGE
20. 3" BLIND FLANGE
21. 3" QUICK COUPLING
22. 3" FLG-PE DIP
23. 3" MJ 90° BEND
24. 4" MJ TEE
25. 4" FLG. PLUG VALVE
26. 4" FLG. 90° BEND WITH BASE. SEE NOTE 10.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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4' 0 4' 8'

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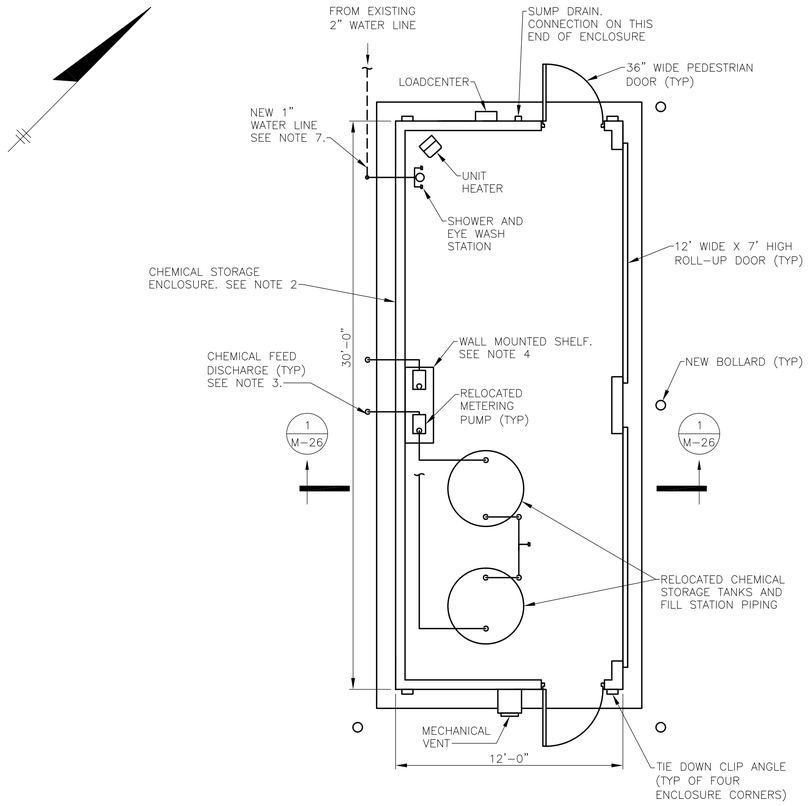
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

SLUDGE HOLDING TANKS
NEW PLAN AND SECTIONS

1968.015
M-25REF.DWG
OCTOBER 2019

M-25

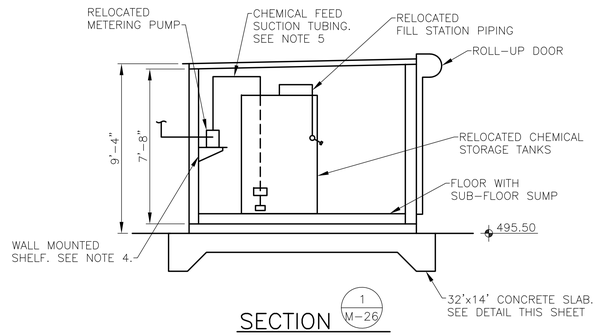
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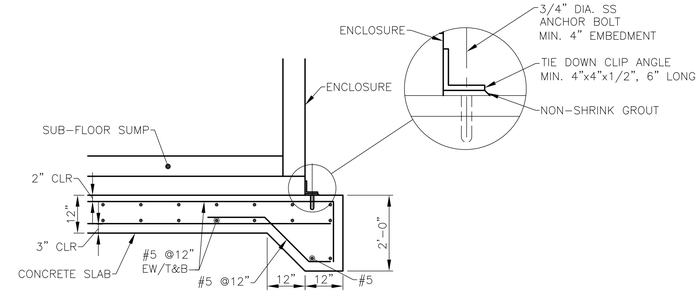
PLAN

NOTES:

1. ITEMS SHOWN IN BOLD ARE NEW OR RELOCATED.
2. CHEMICAL STORAGE ENCLOSURE SHALL BE A PRE-ENGINEERED ENCLOSURE EQUIPPED WITH, BUT NOT LIMITED TO, ELECTRICAL OUTLETS, INTERIOR LIGHTS, HEATING, AND A SUB-FLOOR SUMP COMPONENT.
3. ROUTE CHEMICAL FEED DISCHARGE FROM ENCLOSURE TO EXISTING TREATMENT UNITS.
4. PROVIDE COATED HEAVY GAUGE STEEL WALL MOUNTED SHELF FOR METERING PUMP. MIN. 4' LONG X 18" WIDE.
5. PROVIDE SUPPORTS FROM ENCLOSURE CEILING AND WALL TO SUPPORT CHEMICAL TUBING.
6. ENCLOSURE SHALL INCLUDE MIN. THREE GFI WEATHERPROOF DOUBLE RECEPTACLES MOUNTED 18" ABOVE FLOOR ALONG BACK WALL.
7. PROVIDE HEAT TRACING AND INSULATION OF EXPOSED 1" WATER LINE.
8. EXTEND DRAIN FOR SHOWER AND EYE WASH STATION THROUGH WALL OF ENCLOSURE AND DISCHARGE TO DAYLIGHT.



SECTION 1/M-26



CONCRETE SLAB DETAIL

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ORIGINALLY ISSUED
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GREGORY J. WELLS
NC PE #24494
24 JUL 2017

IN CHARGE CAWjr
DESIGNED SEG
MADE BY AMA
CHECKED CAWjr

2' 0 2' 4'
4' 0 4' 8'

willis ENGINEERS

WATER AND SEWER AUTHORITY
OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

CHEMICAL STORAGE ENCLOSURE
PLAN AND SECTION

1968.015
M-26REF.DWG
OCTOBER 2019

M-26

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114

SCHEDULE OF SYMBOLS

- CENTRIFUGAL PUMP
- 0–100psi 4" — PRESSURE GAUGE, NUMERATOR DENOTES RANGE, DENOMINATOR DENOTES GAUGE SIZE
- 0–100psi 4" — PRESSURE GAUGE WITH ISOLATION DIAPHRAGM
- G — ON — INDICATOR LIGHT AND LABEL
- PB — S/L — PUSHBUTTON AND LABEL
- SUBMERGED PRESSURE SENSORS
- DO — DISSOLVED OXYGEN PROBE
- PH — PH PROBE
- SW — HOA — HAND/OFF/AUTO SELECTOR SWITCH AND LABEL
- SW — SPEED — POTENTIOMETER AND LABEL
- 1 SW 3 — PUMP SELECT — SELECTOR SWITCH AND LABEL
- XXXX — XXXX — DIGITAL INDICATOR AND LABEL
- VFD — VARIABLE FREQUENCY DRIVE
- PLC — PROGRAMMABLE LOGIC CONTROLLER
- M — MAGNETIC FLOW METER

TREATMENT PLANT EQUIPMENT BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED	WORK INCLUDED IN INTEGRATION ALLOWANCE		TREATMENT PLANT EQUIPMENT BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED	WORK INCLUDED IN INTEGRATION ALLOWANCE	
	LOCAL CONTROL PANEL	SCADA COMPUTER FUNCTIONS		LOCAL CONTROL PANEL	SCADA COMPUTER FUNCTIONS
INFLUENT PUMPING STATION	NEW INFLUENT PUMP CONTROL PANEL(S) SEE SHEET E–2	NEW SCADA SCREEN FOR INFLUENT PUMP STATION	EQUALIZATION BASIN	NEW EQUALIZATION BASIN CONTROL PANEL SEE SHEET E–3	NEW SCADA SCREEN FOR EQUALIZATION BASIN PUMP STATION
0–100 4" (TYPICAL) PUMP NO. 1	XXXX WET WELL LEVEL; SW HOA; R ON; A FAULT INTERFACE EQUIPMENT WITH EXISTING PLC IN CONTROL PANEL TO REMAIN	PUMP STATUS: ON/OFF/FAULT ALARM LOG WET WELL LEVEL COMM VIA EXISTING FIBER OPTIC NETWORK IN EXISTING PANEL	EXISTING EQUALIZATION BASIN PUMP NO. 1	VFD XXXX SPEED (RPM); SW HOA; SW SPEED R RUNNING; A FAULT HAND: MANUAL SPEED CONTROL AUTO: PUMP CONTROL BASED ON WET WELL LEVEL FROM TRANSDUCER	PUMP STATUS: ON/OFF/FAULT PUMP SPEED ALARM LOG BASIN LEVEL
PUMP NO. 2	SAME	SAME	PUMP NO. 2	SAME	SAME
1 2 3 EXISTING SUBMERGED PRESSURE TRANSDUCER AND BACK–UP FLOAT SYSTEM FOR PUMP CONTROL			PUMP NO. 3	VFD SW HOA; P SPEED R RUNNING; A FAULT HAND: MANUAL SPEED CONTROL AUTO: SPEED BASED ON PRESET FLOW RATE FROM METERS. ABOVE SET POINT INCREASE FLOW TO MAINTAIN MAXIMUM ALLOWABLE WATER LEVEL.	PUMP STATUS: ON/OFF/FAULT PUMP SPEED ALARM LOG COMM VIA EXISTING FIBER OPTIC NETWORK IN EXISTING PANEL
HEADWORKS AREA	NEW EQUALIZATION BASIN CONTROL PANEL(S) SEE SHEET E–3	NEW SCADA SCREEN FOR HEADWORKS AREA	PUMP NO. 4	SAME	SAME
M EXISTING MAGNETIC FLOW METER NEW INCLINED FINE SCREEN INTEGRATED CONTROL PANEL BY SCREEN MANUFACTURER CONTROL WASHER AND CONVEYORS BASED ON WATER LEVEL AND TIMERS CONTROL WASH WATER FLOW OTHER FUNCTIONS PER SPECIFICATIONS OUTPUTS TO NEW EQUALIZATION BASIN CONTROL PANEL:	PLC XXXX FLOW (GPM) REWIRE TO NEW EQUALIZATION BASIN CONTROL PANEL RUN STATUS COMMON FAULT HIGH LEVEL ALARM TO EQUALIZATION BASIN PANEL	INDICATE, TREND & TOTALIZE FLOW SCREEN RUN STATUS, COMMON FAULT, HIGH LEVEL ALARM, ELAPSED TIME METER COMM VIA EXISTING FIBER OPTIC NETWORK IN EXISTING PANEL	1 2 3 SUBMERGED PRESSURE TRANSDUCER AND BACK–UP FLOAT SYSTEM FOR PUMP CONTROL (PART OF INTEGRATION ALLOWANCE)		
			XXXX PH (PH EQUIPMENT PART OF INTEGRATION ALLOWANCE)	PH LOCAL DISPLAY	INDICATE PH

REFERENCE DRAWING
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NC PE #24494
24 JUL 2017

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MADE BY AMA
CHECKED GJW

NO SCALE

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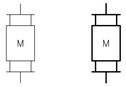
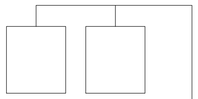
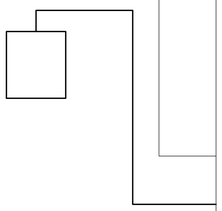
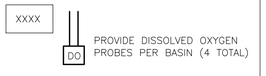
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

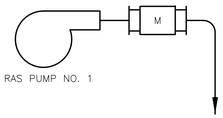
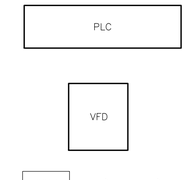
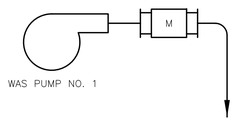
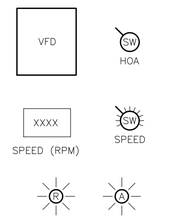
INSTRUMENTATION AND CONTROLS
CONTROL SCHEMATIC

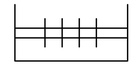
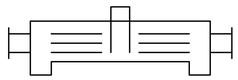
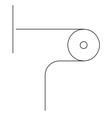
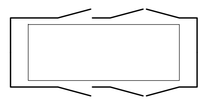
1968.015
M–27REF.DWG
OCTOBER 2019

M–27

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F–0114

TREATMENT PLANT EQUIPMENT BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED	WORK INCLUDED IN INTEGRATION ALLOWANCE	
	LOCAL CONTROL PANEL	SCADA COMPUTER FUNCTIONS
EQUALIZATION BASIN (CONTINUED)	NEW EQUALIZATION BASIN CONTROL PANEL SEE SHEET E-3	NEW SCADA SCREEN FOR EQUALIZATION BASIN PUMP STATION
 EXISTING FLOW METER TO BASINS NO. 1 AND NO. 2, ADD NEW FLOW METER TO BASINS NO. 3 AND NO. 4 (PART OF INTEGRATION ALLOWANCE)	 FLOW FLOW	INDICATE INDIVIDUAL AND COMBINED FLOW. TREND FLOWS TOTALIZE FLOWS SET TARGET FLOW RATE SET MAX/TARGET BASIN LEVEL ELEVATION
BLOWERS	EXISTING BLOWER PANEL SEE SHEET E-5	
 EXISTING BLOWERS 4 AND 5	EXISTING FUNCTIONS	EXISTING FUNCTIONS
NEW BLOWER 1	NEW BLOWER SEE SHEET E-5	
	NO LOCAL DISPLAY	BLOWER STATUS: ON/OFF/FAULT ALARM LOG
NEW BLOWER 2 AND 3	SAME	SAME
AERATION BASINS		
 PROVIDE DISSOLVED OXYGEN PROBES PER BASIN (4 TOTAL) (DO EQUIPMENT PART OF INTEGRATION ALLOWANCE)	DO LOCAL DISPLAY PROVIDE INTERFACE WITH EXISTING PLC IN RE-PURPOSED RAS/WAS CONTROL PANEL	INDICATE DO CONCENTRATION

TREATMENT PLANT EQUIPMENT BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED	WORK INCLUDED IN INTEGRATION ALLOWANCE	
	LOCAL CONTROL PANEL	SCADA COMPUTER FUNCTIONS
RAS/WAS PUMPS	RAS/WAS PUMP PANEL SEE SHEET E-6	RAS/WAS SCREEN
 RAS PUMP NO. 1 (FLOW METER PART OF INTEGRATION ALLOWANCE)	 SPEED (RPM) HOA SPEED RUNNING FAULT HAND: MANUAL SPEED CONTROL AUTO: PUMP CONTROL BASED ON PRESET FLOW RATE	PUMP STATUS: ON/OFF/FAULT SET FLOW RATE PUMP SPEED ALARM LOG
RAS PUMPS NO. 2 AND NO. 3	SAME	SAME
 WAS PUMP NO. 1 (FLOW METER PART OF INTEGRATION ALLOWANCE)	 HOA SPEED (RPM) SPEED RUNNING FAULT HAND: MANUAL SPEED CONTROL AUTO: PUMP CONTROL BASED ON PRESET FLOW RATE	PUMP STATUS: ON/OFF/FAULT SET FLOW RATE PUMP SPEED ALARM LOG
WAS PUMP NO. 2	SAME	SAME
FILTER AND DISINFECTION	NEW LOCAL RELAY PANEL SEE SHEET E-6	
 EXISTING DISK FILTER NO. 1	EXISTING FUNCTIONS	EXISTING FUNCTIONS

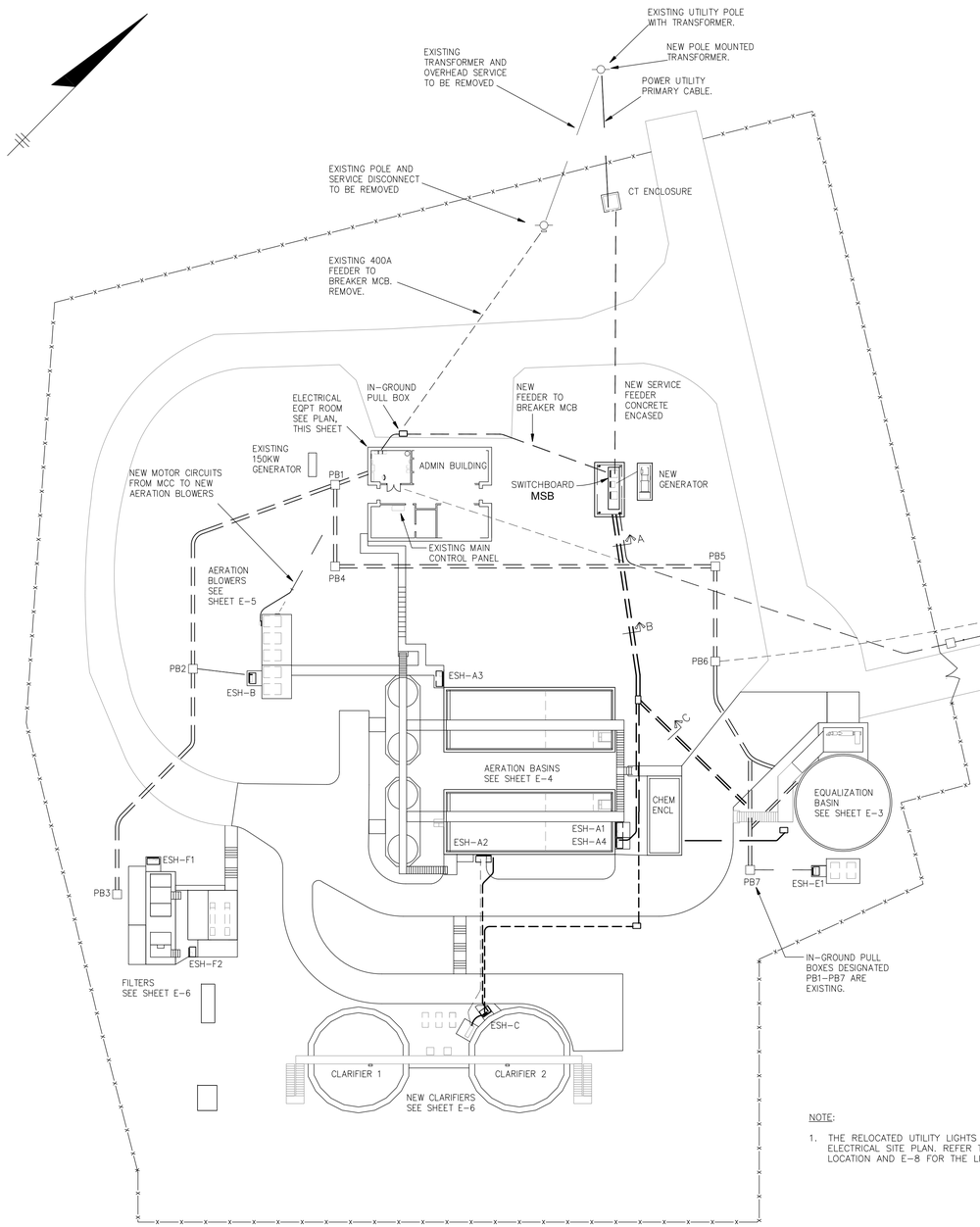
TREATMENT PLANT EQUIPMENT BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED	WORK INCLUDED IN INTEGRATION ALLOWANCE	
	LOCAL CONTROL PANEL	SCADA COMPUTER FUNCTIONS
FILTER NO. 2	SAME	SAME
 NEW DISK FILTER NO. 3 LOCAL PANEL BY FILTER SUPPLIER		RUN STATUS: ONE/OFF/FAULT
 NEW UV UNIT NO. 1 LOCAL CONTROL PANEL BY UV SUPPLIER		RUN STATUS: ONE/OFF/FAULT
UV UNIT NO. 2	SAME	SAME
CHEMICAL STORAGE ENCLOSURE	NEW CHEMICAL STORAGE ENCLOSURE SEE SHEET E-4	
 RELOCATED CHEMICAL METERING PUMP	PROVIDE INTERFACE IN RE-PURPOSED SURGE TANK CONTROL PANEL	INDICATE RUN STATUS
GENERATOR		
 NEW GENERATOR		RUN STATUS: ON/OFF/FAULT

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

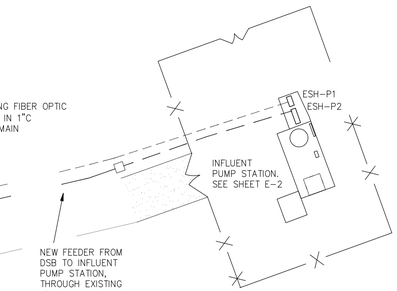
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: GREGORY J. WELLS NC PE #24494 24 JUL 2017

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED CAWjr MADE BY AMA CHECKED GJW	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	INSTRUMENTATION AND CONTROLS CONTROL SCHEMATIC	1968.015 M-28REF.DWG OCTOBER 2019	M-28



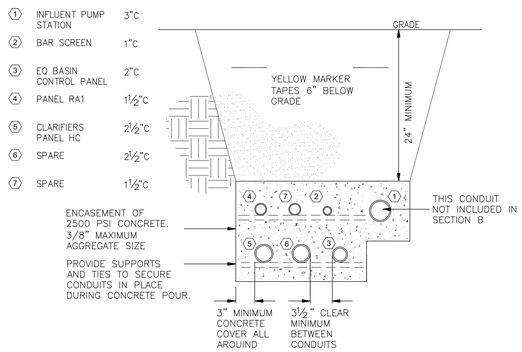
ELECTRICAL SITE PLAN



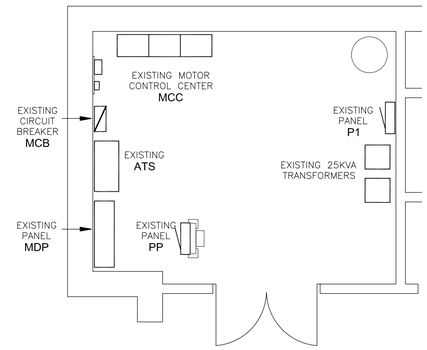
NOTE:

1. THE RELOCATED UTILITY LIGHTS AREA NOT SHOWN IN THE ELECTRICAL SITE PLAN. REFER TO SHEET G-3 FOR THE LOCATION AND E-8 FOR THE LIGHT POLE BASE DETAIL.

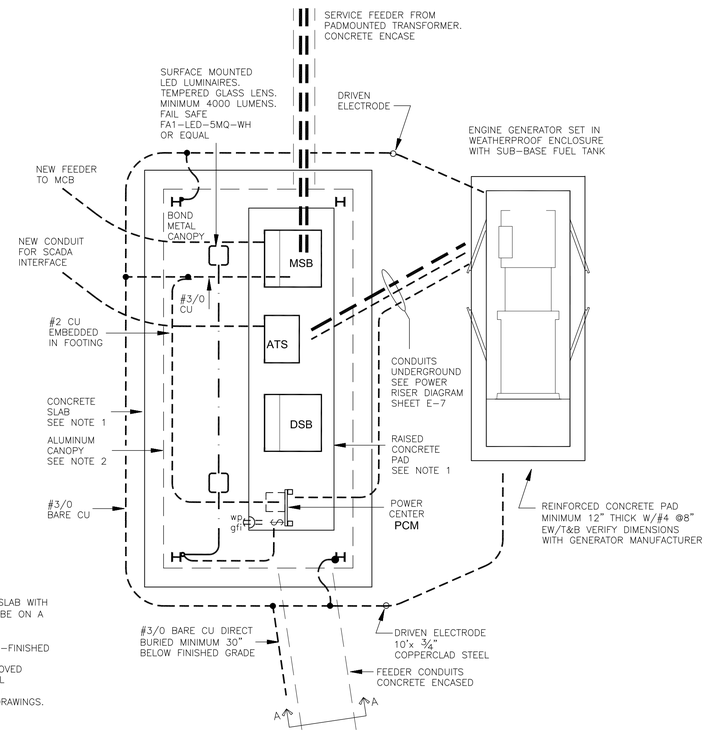
1	INFLUENT PUMP STATION	3"C
2	BAR SCREEN	1"C
3	EQ BASIN CONTROL PANEL	2"C
4	PANEL RA1	1½"C
5	CLARIFIERS PANEL HC	2½"C
6	SPARE	2½"C
7	SPARE	1½"C



DUCTBANK SECTIONS A AND B



EXISTING ELECTRICAL EQUIPMENT ROOM



NEW ELECTRICAL SERVICE AREA

ELECTRICAL SERVICE AREA NOTES:

1. PROVIDE MINIMUM 12'x22'x12" THICK CONCRETE SLAB WITH #4 @8" EW/T&B. ELECTRICAL EQUIPMENT SHALL BE ON A CONCRETE PAD 4" ABOVE THE TOP OF SLAB.
2. PROVIDE MINIMUM 10'x20' PRE-ENGINEERED, PRE-FINISHED ALUMINUM CANOPY OVER ELECTRICAL EQUIPMENT. CONTRACTOR SHALL VERIFY EXACT SIZE OF APPROVED ELECTRICAL EQUIPMENT AND PROVIDE DIMENSIONAL DRAWINGS OF CANOPY, CONCRETE SLAB/PAD AND EQUIPMENT FOR APPROVAL WITH CANOPY SHOP DRAWINGS.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: WINSTON L. EZZELL NC PE #9504 24 JUL 2017

IN CHARGE	CAWjr
DESIGNED	WLE
MADE BY	WLE
CHECKED	CAWjr

4' 0 4' 8'
30' 0 30' 60'

willis ENGINEERS

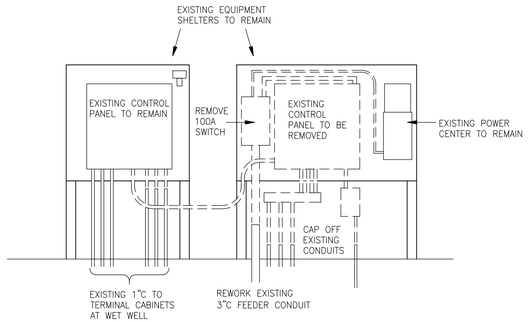
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

ELECTRICAL
SITE PLAN AND ENLARGED PLANS

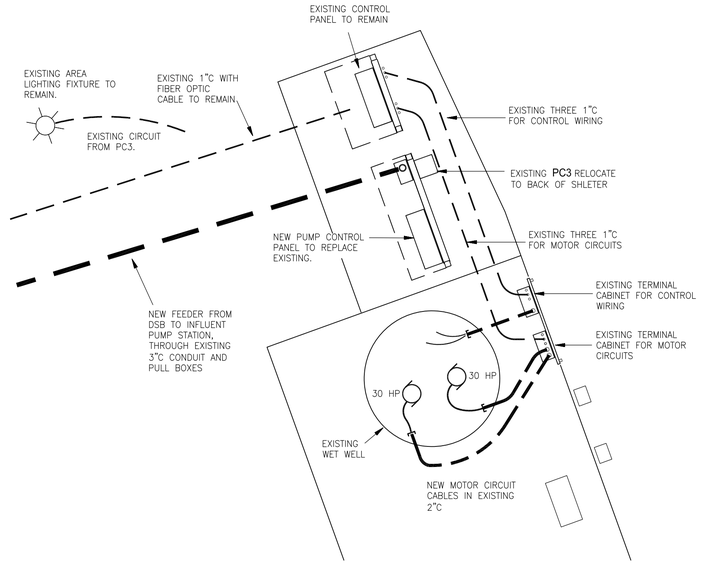
1968.015
E-1REF.DWG
OCTOBER 2019

E-1

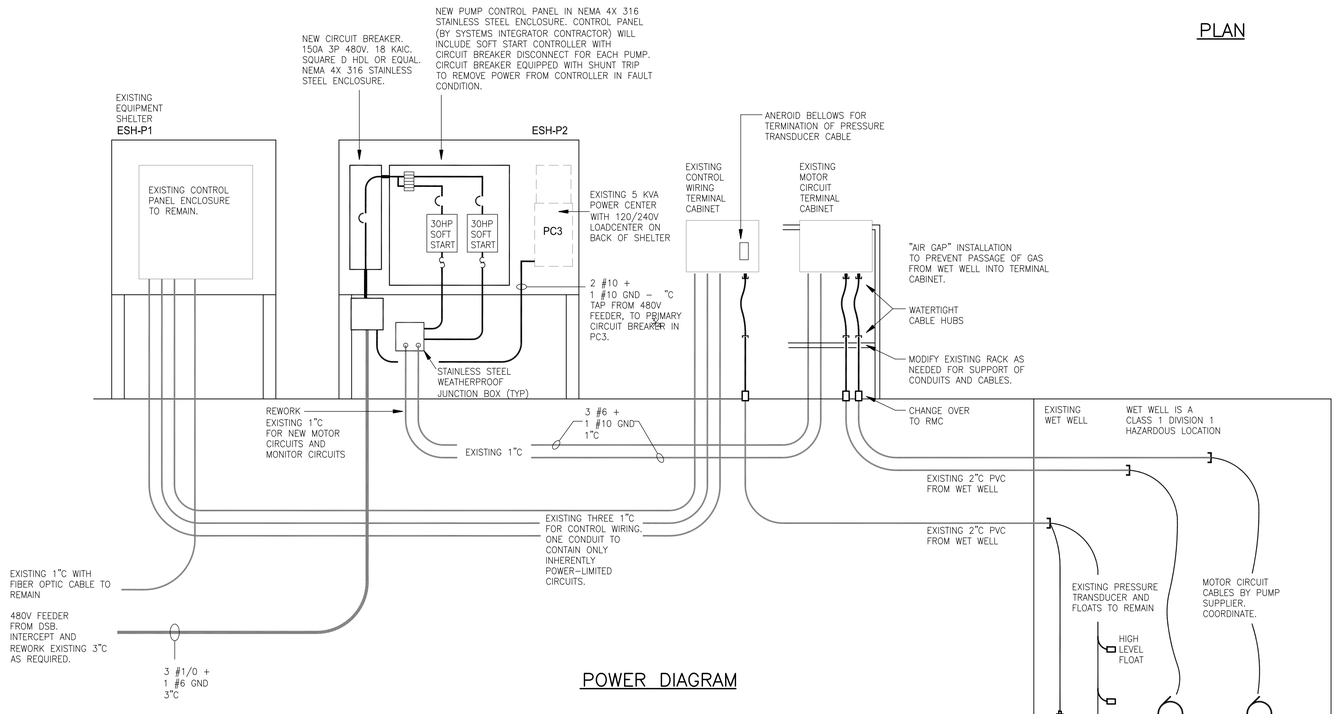
WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



EXISTING CONTROL PANELS



PLAN



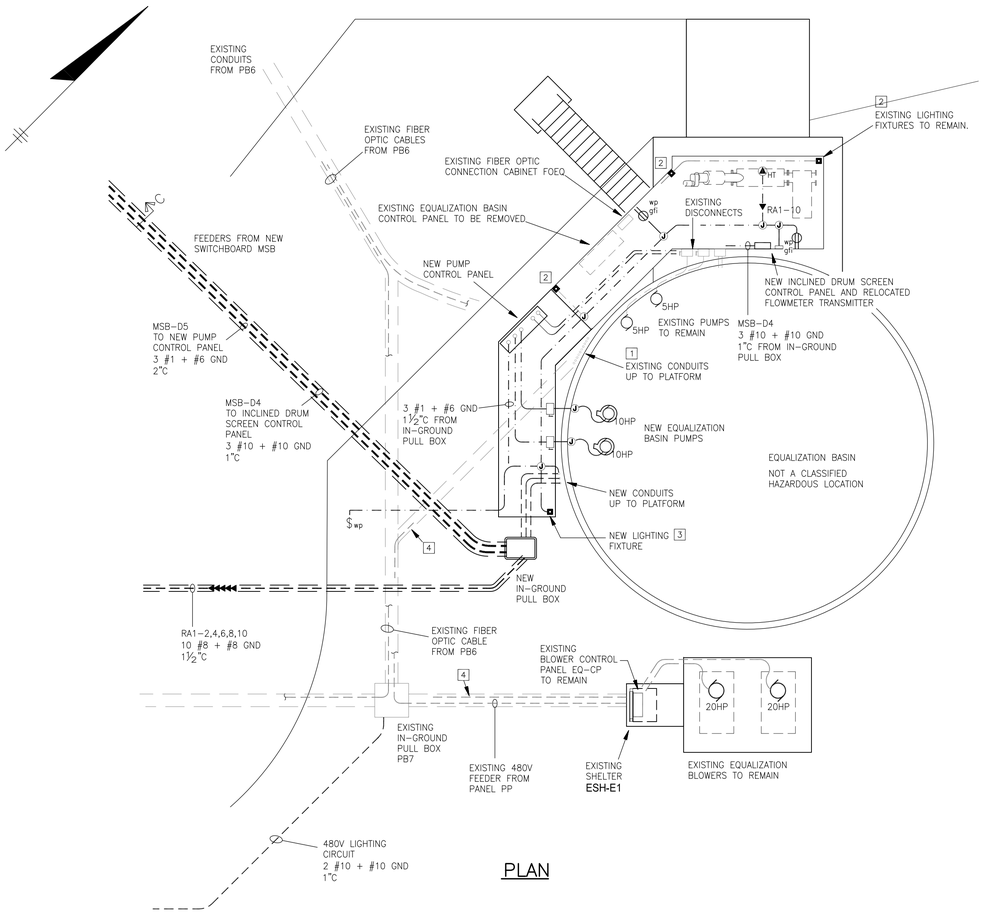
POWER DIAGRAM

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

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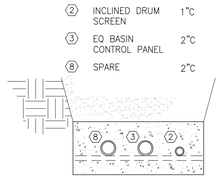
IN CHARGE CAWjr DESIGNED WLE MADE BY WLE CHECKED CAWjr	4' 0 4' 8'		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	ELECTRICAL INFLUENT PUMP STATION	1968.015 E-2REF.DWG OCTOBER 2019	E-2



PLAN

DRAWING REFERENCE NOTES

1. EXISTING CONDUITS ROUTED UNDERGROUND, THEN VERTICALLY ON SIDE OF BASIN TO UNDERSIDE OF STEEL PLATFORM. CONDUITS NO LONGER IN USE SHALL BE CAPPED 72" ABOVE GRADE.
2. THREE EXISTING AREA LIGHTING FIXTURES ARE LOCATED AS SHOWN. INTERCEPT EXISTING CONDUIT ON UNDERSIDE OF DECK. REFEED FROM NEW SOURCE AS SHOWN. PROVIDE CONTROL SWITCH IN STEEL FS BOX WITH WEATHERPROOF OPERATING COVER.
3. PROVIDE ONE NEW POST-MOUNTED LIGHTING FIXTURE TO MATCH EXISTING.
4. EXISTING 1"C AVAILABLE IN EXISTING DUCTBANKS. REWORK AS REQUIRED TO PROVIDE FOR CONTROL WIRING BETWEEN NEW EQUALIZATION BASIN CONTROL PANEL AND EXISTING BLOWER CONTROL PANEL. LEAVE WITH PULL WIRE FOR USE BY SYSTEMS INTEGRATOR CONTRACTOR.

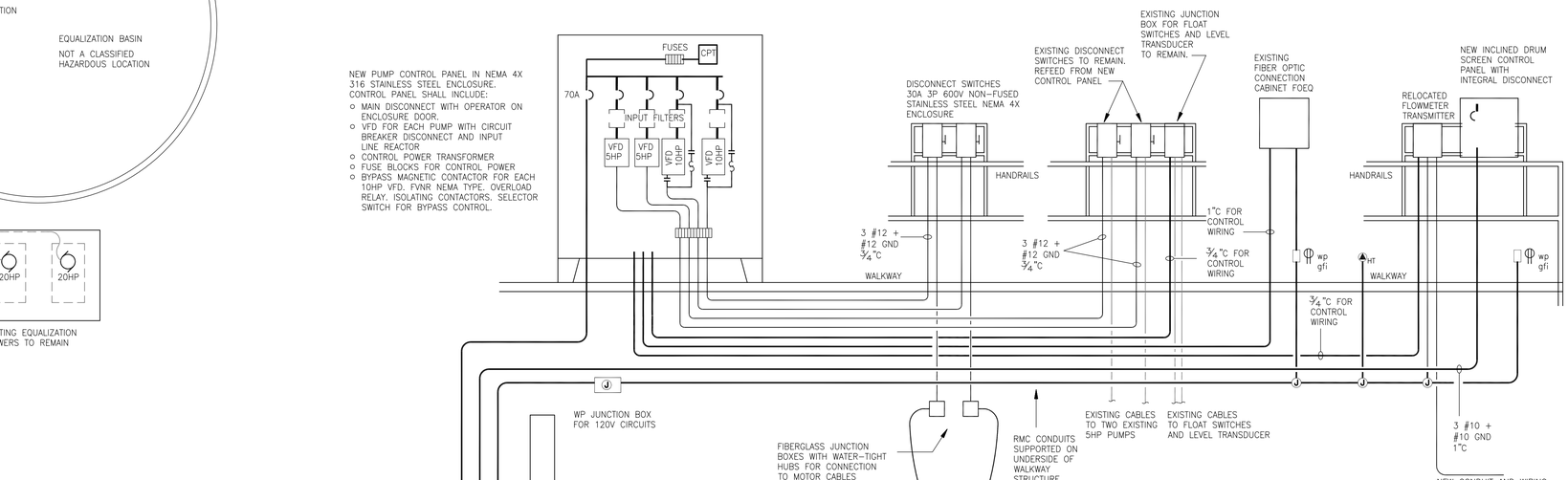


DUCTBANK SECTION C

SEE DETAIL ON SHEET E-1 FOR ADDITIONAL REQUIREMENTS

NEW PUMP CONTROL PANEL IN NEMA 4X 316 STAINLESS STEEL ENCLOSURE. CONTROL PANEL SHALL INCLUDE:

- MAIN DISCONNECT WITH OPERATOR ON ENCLOSURE DOOR.
- VFD FOR EACH PUMP WITH CIRCUIT BREAKER DISCONNECT AND INPUT LINE REACTOR
- CONTROL POWER TRANSFORMER
- FUSE BLOCKS FOR CONTROL POWER
- BYPASS MAGNETIC CONTACTOR FOR EACH 10HP VFD. FVNR NEMA TYPE. OVERLOAD RELAY. ISOLATING CONTACTORS. SELECTOR SWITCH FOR BYPASS CONTROL.



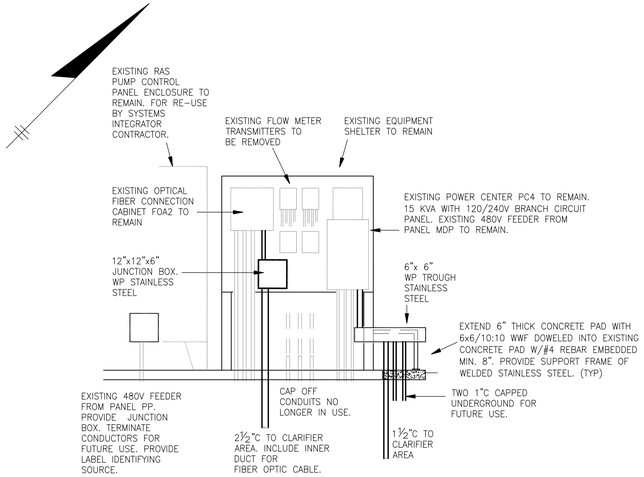
EQUALIZATION BASIN POWER DIAGRAM

REFERENCE DRAWING
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IN CHARGE CAWjr DESIGNED WLE MADE BY WLE CHECKED CAWjr	8' 0 8' 16'	willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	ELECTRICAL HEADWORKS AND EQUALIZATION BASIN	1968.015 E-3REF.DWG OCTOBER 2019	E-3

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114



EXISTING EQUIPMENT SHELTER ESH–A2

KVA LOAD	LOAD SERVED	WIRE SIZE	BRKR AMPS	CKT NO.	A B C	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED	KVA LOAD
–	CLAR WALKWAY LIGHTS	8	20	1		2	80		SECONDARY MAIN	25.0
–	CLAR RECEPT	8	20	3		4				
–	CLAR HEAT TRACE	8	20	5		6	20	–	GFIC RECEPT	–
–	CLAR FLOW METERS	8	20	7		8	20	–	SPCP RECEPT	–
–	CLAR HEAT TRACE	8	20	9		10	20		AIT 3 4	–
–	BASIN LIGHTS		20	11		12	20		TU2 HT	–
	SPACE ONLY		20	13		14	20		RAS/WAS FITS	–
			20	15		16	20		SPARE	–
			20	17		18			SPACE ONLY	
				19		20				
				21		22				
				23		24				
				25		26				
				27		28				
				29		30				

SQUARE D POWER CENTER
15 KVA TRANSFORMER
480V 1 PHASE PRIMARY
120/240V 1 PHASE 3 WIRE
SECONDARY.

POWER CENTER PC4 (EXISTING)

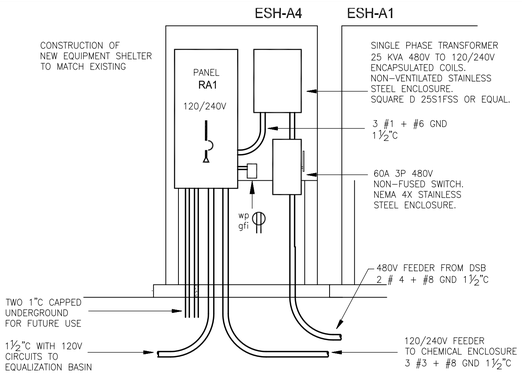
KVA LOAD	LOAD SERVED	WIRE SIZE	BRKR AMPS	CKT NO.	A B	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED	KVA LOAD
.2	RECEPT		20	1		2	20	.8	EQ BASIN LIGHTS	.5
.2	FLOWMETER TRANSMITTER		20	3		4	20	.8	EQ BASIN RECEPT	.8
1.0	HEAT TRACE	8	20	5		6	20	.8	EQ BASIN	.5
	CHEM. FEED CP		20	7		8	20	.8	EQ BASIN	.5
	SPARE		20	9		10	20	.8	EQ BASIN HEAT TRACE	1.0
	SPACE ONLY		20	11		12	20		SPARE	
			20	13		14	20		SPARE	
			20	15		16	20		SPARE	
			20	17		18			SPACE ONLY	
				19		20			SPACE ONLY	
				21		22	80	3	CHEMICAL ENCLOSURE	16.0
				23		24				

SQUARE D TYPE NQOD
SURFACE MOUNTED
120/240V 1 PHASE 3 WIRE
225A BUSSES AND NEUTRAL
125A MAIN BREAKER @ BOTTOM
PANEL SHALL BE RATED 10,000AIC
NEMA 4 STAINLESS STEEL ENCLOSURE

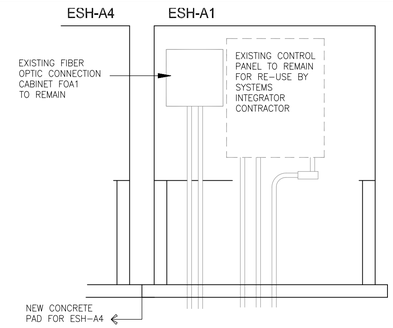
LOAD TABULATION

CATEGORY	GROSS	USE	NET
LIGHTING	.5	@ 125 % =	.6
HVAC	10.0	@ 100 % =	10.0
MISCELLANEOUS	8.7	@ 100 % =	8.7
TOTALS	19.2		19.3

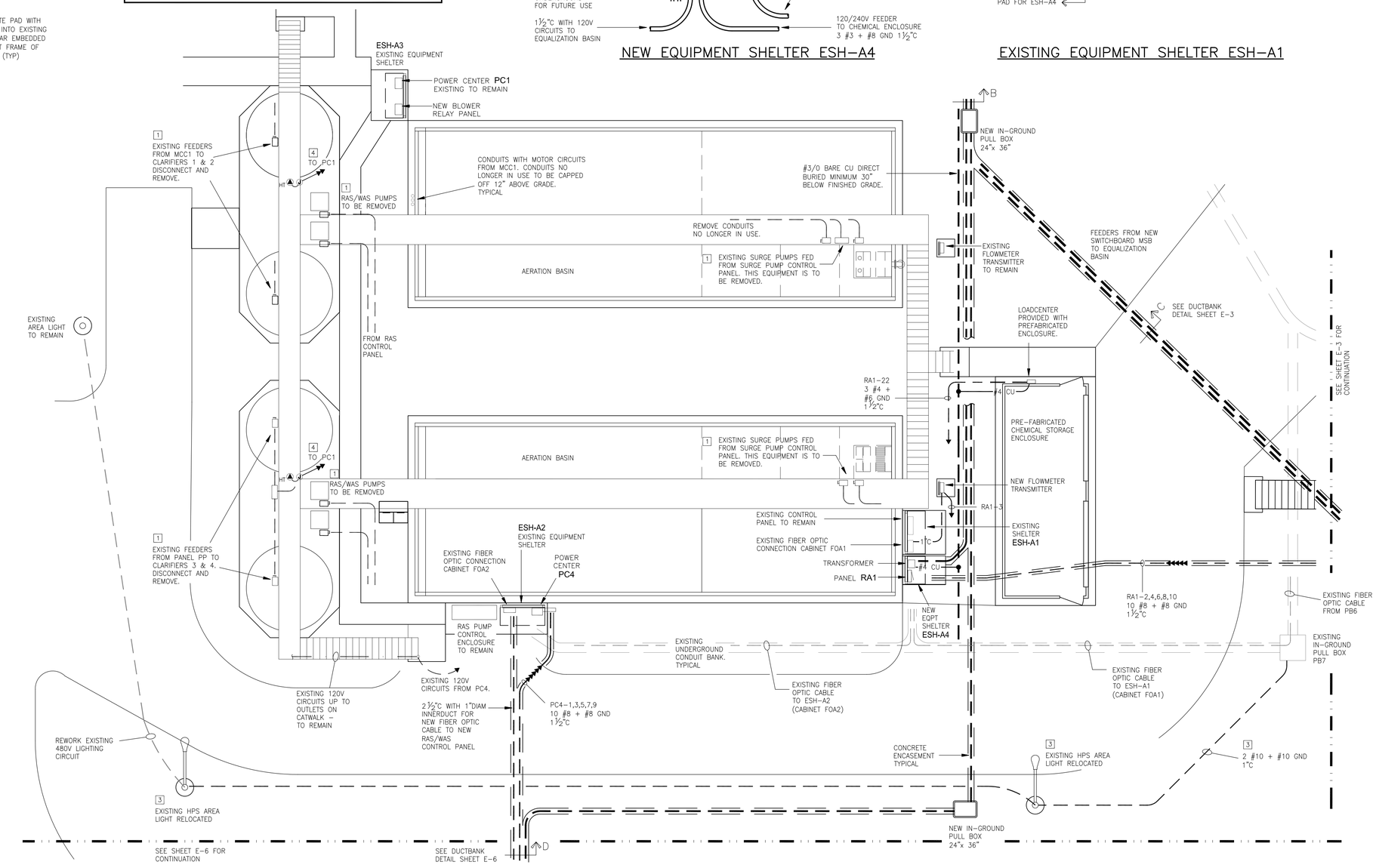
PANEL RA1



NEW EQUIPMENT SHELTER ESH–A4



EXISTING EQUIPMENT SHELTER ESH–A1



DRAWING REFERENCE NOTES

1. EXISTING EQUIPMENT TO BE REMOVED. PERFORM ALL ELECTRICAL DEMOLITION WORK AS REQUIRED. DISCONNECT AND MAKE SAFE FEEDERS AND CIRCUITS. REMOVE CONDUCTORS BACK TO SOURCE UNLESS NOTED OTHERWISE. REMOVE ABOVE–GROUND CONDUITS NO LONGER IN USE.
2. ~~RAS/WAS PUMPS 3 & 4 WILL BE RELOCATED. SALVAGE EXISTING DISCONNECTS AND SUPPORTS FOR RE–USE.~~
3. TWO EXISTING POLE–MOUNTED AREA LIGHTING FIXTURES (400W HPS) ARE TO BE RELOCATED. REMOVE FIXTURES UNDAMAGED FROM PRESENT LOCATIONS. PROVIDE NEW REINFORCED CONCRETE BASES AND REINSTALL FIXTURES. EXISTING 480V SITE LIGHTING CIRCUIT ORIGINATES IN PANEL PP, AND IS ROUTED THROUGH PULL BOX PB7. REWORK AND EXTEND EXISTING CIRCUIT TO SERVE RELOCATED FIXTURES.
4. PROVIDE CAST FS–TYPE BOX WITH GASKETED COVER AND SUITABLE HUBS FOR CONNECTION OF HEAT TRACE. COORDINATE FOR EXACT LOCATIONS. TO EACH BOX, PROVIDE TWO 20A 120V CIRCUITS FROM CIRCUIT BREAKERS AVAILABLE IN POWER CENTER PC1.

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY:
WINSTON L. EZZELL
NC PE #9504
24 JUL 2017

IN CHARGE	CAWjr
DESIGNED	WLE
MADE BY	WLE
CHECKED	CAWjr

4' 0 4' 8'

willis ENGINEERS

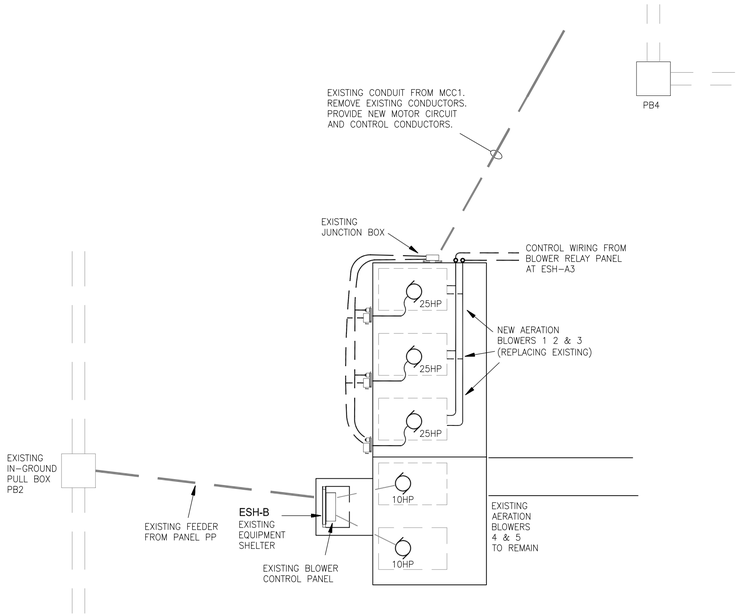
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

ELECTRICAL
AERATION BASIN

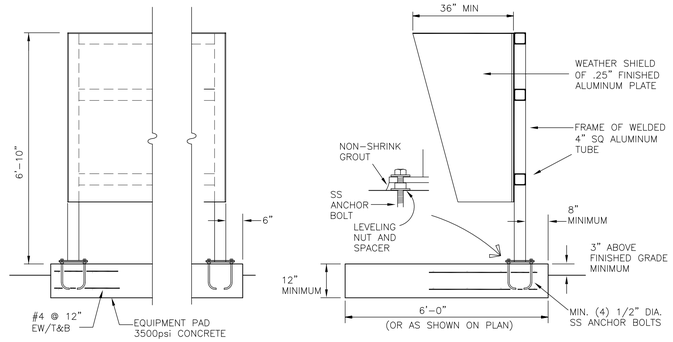
1968.015
E–4REF.DWG
OCTOBER 2019

E–4

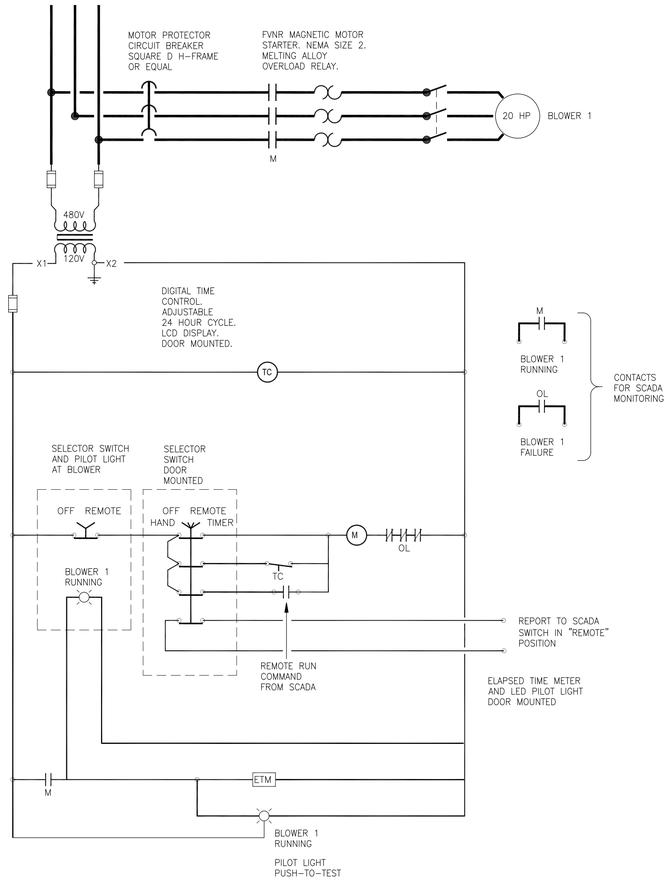
WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F–0114



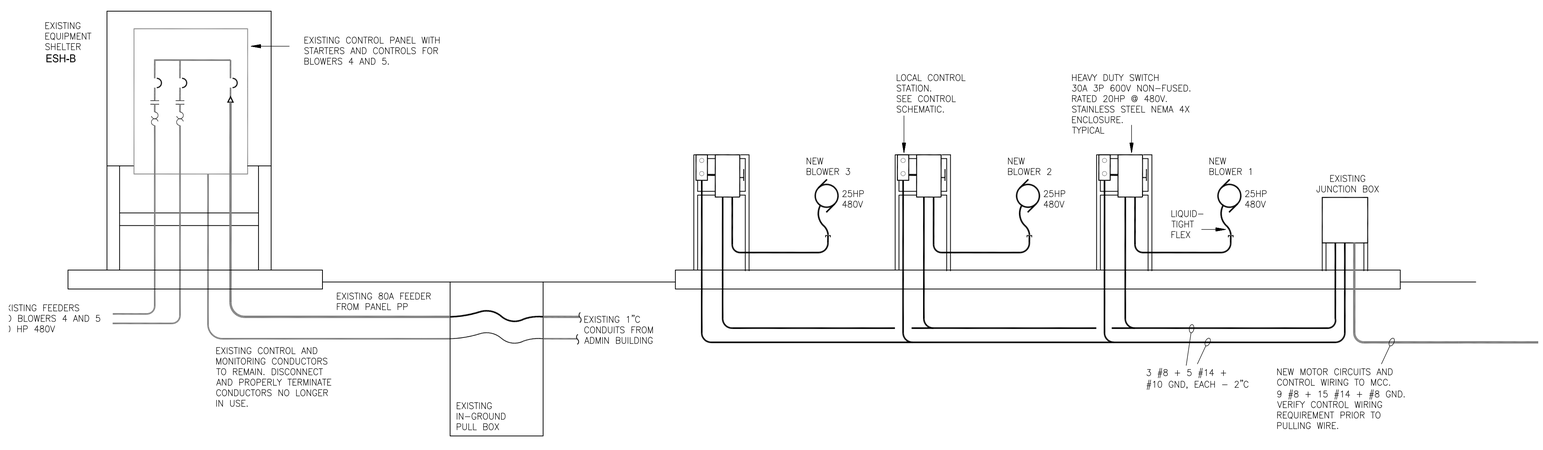
PLAN – AERATION BLOWERS



TYPICAL EQUIPMENT SHELTER DETAIL



AERATION BLOWERS 1,2,&3
CONTROL SCHEMATIC



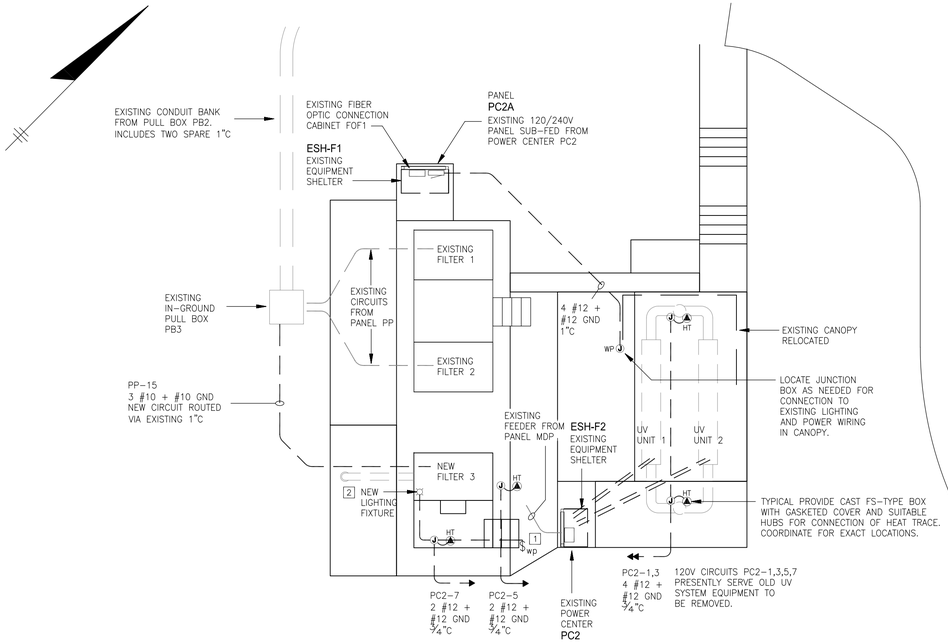
POWER RISER DIAGRAM

REFERENCE DRAWING
NOT A CERTIFIED DOCUMENT

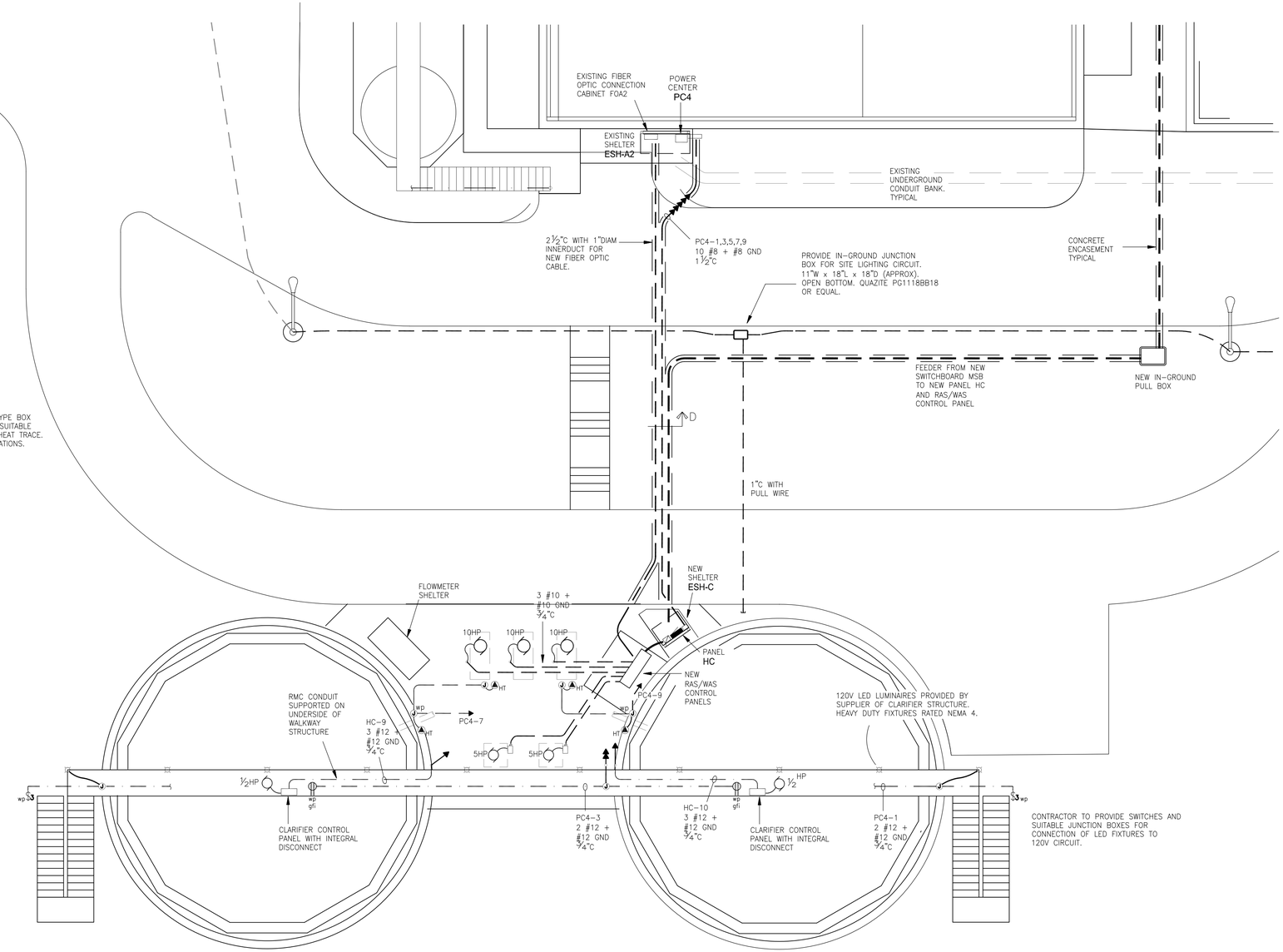
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: WINSTON L. EZZELL NC PE #9504 24 JUL 2017

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

IN CHARGE CAWjr DESIGNED WLE MADE BY WLE CHECKED CAWjr	8' 0 8' 16'	willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	ELECTRICAL BLOWERS	1968.015 E-5REF.DWG OCTOBER 2019	E-5



FILTRATION AND DISINFECTION PLAN



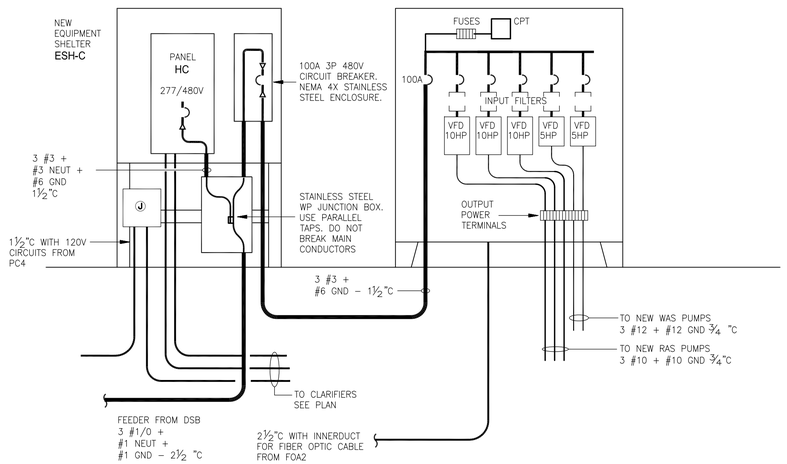
CLARIFIER PLAN

DRAWING REFERENCE NOTES

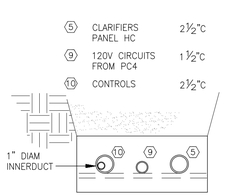
1. PROVIDE CONTROL SWITCH IN STEEL FS BOX WITH WEATHERPROOF OPERATING COVER.
2. PROVIDE ONE NEW POST-MOUNTED LIGHTING FIXTURE TO MATCH EXISTING FOR FILTERS 1 AND 2.

NEW PUMP CONTROL PANEL IN NEMA 4X 316 STAINLESS STEEL ENCLOSURE. CONTROL PANEL SHALL INCLUDE:

- MAIN DISCONNECT WITH OPERATOR ON ENCLOSURE DOOR.
- VFD FOR EACH PUMP WITH CIRCUIT BREAKER DISCONNECT AND INPUT LINE REACTOR
- CONTROL POWER TRANSFORMER
- FUSE BLOCKS FOR CONTROL POWER



POWER RISER DIAGRAM



DUCTBANK SECTION D

SEE DETAIL ON SHEET E-1 FOR ADDITIONAL REQUIREMENTS

KVA LOAD	LOAD SERVED	WIRE SIZE	BRKR AMPS	CKT NO.	A B C	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED	KVA LOAD
	SPARE	-	20	1						
	SPARE		20	3		4	30		SPARE	
	SPARE		20	5						
2.0	CLARIFIER 1	12	15	9		10	15	12	CLARIFIER 2	2.0
6.0	SPARE		20	15		16	20		UV SYSTEM	

SQUARE D TYPE NF
SURFACE MOUNTED
277/480V 3 PHASE 4 WIRE
100A BUSSES AND NEUTRAL
100A MAIN BREAKER @ BOTTOM
PANEL SHALL BE RATED 18,000AIC
NEMA 3R ENCLOSURE

PANEL HC

LOAD TABULATION

CATEGORY	GROSS		USE	NET
LIGHTING	-	@	- % =	-
MOTORS (NON-HVAC)	4.0	@	- % =	-
MISCELLANEOUS	12.0	@	- % =	-
TOTALS	16.0	@	- % =	-

REFERENCE DRAWING
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WINSTON L. EZZELL
NC PE #9504
24 JUL 2017

IN CHARGE CAWjr
DESIGNED WLE
MADE BY WLE
CHECKED CAWjr

8' 0 8' 16'

willis ENGINEERS

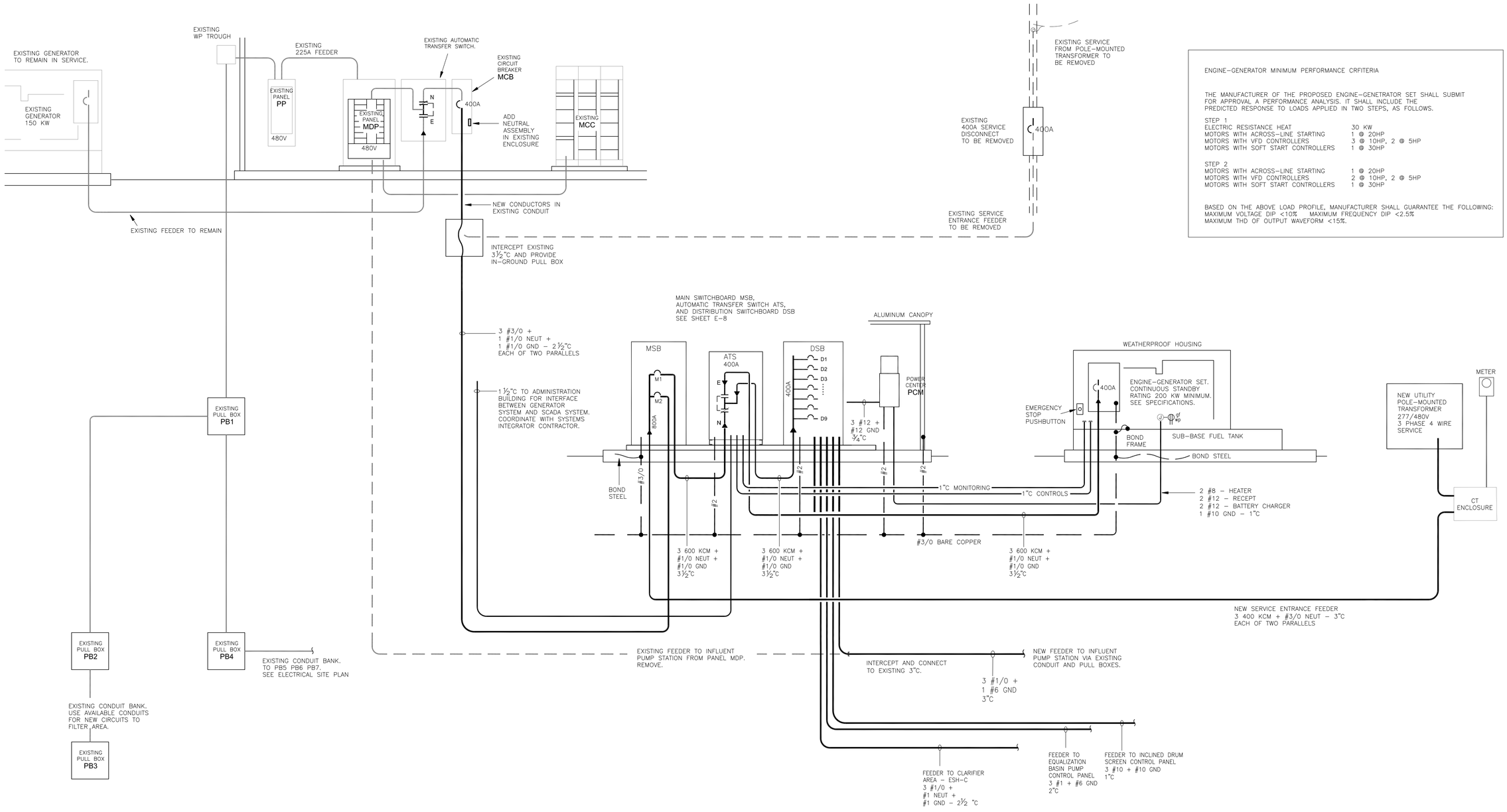
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY
MUDDY CREEK WWTP EXPANSION

ELECTRICAL
CLARIFIERS, FILTRATION AND DISINFECTION

1968.015
E-6REF.DWG
OCTOBER 2019

E-6

WILLIS ENGINEERS INC, 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 - NC LIC. NO F-0114



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IN CHARGE CAWjr DESIGNED WLE MADE BY WLE CHECKED CAWjr	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	ELECTRICAL POWER RISER DIAGRAM	1968.015 E-7REF.DWG OCTOBER 2019	E-7

WILLIS ENGINEERS INC. 10700 SIKES PLACE, CHARLOTTE, NORTH CAROLINA 28277 – NC LIC. NO F-0114

KVA LOAD	LOAD SERVED		WIRE SIZE	BRKR AMPS	CKT NO.	A B C	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED		KVA LOAD
25.0	PANEL P1	①	–	60	1		2	60		PANEL P2	①	25.0
	VIA TRNSF 1				3		4			VIA TRNSF 2		
					5		6					
6.0	HT PUMP	①	–	30	7		8	40	–	POWER CENTER PC1	①	15.0
					9		10					
					11		12					
15.0	POWER CENTER PC2	①	–	40	13		14	50	–	SPARE		
	FILTER AREA				15		16					–
					17		18					
30.0	AIR HANDLER	①	–	60	19		20	125	–	SPARE	③	
					21		22			(INFLUENT PUMP STATION)		
					23		24					
65.0	MCC1	①	–	300	25		26	225	4/0	PANEL PP	①	102.0
					27		28					
							30	60	6	POWER CENTER PC4	①	15.0
	SPACE ONLY						32					
							34			SPACE ONLY		
							36					
							38					
							40					
							42					

SQUARE D I-LINE
SURFACE MOUNTED
480V 3 PHASE 3 WIRE
400A BUSSES
MAIN LUGS ONLY

LOAD TABULATION

CATEGORY	GROSS		USE	NET
LIGHTING	8.0	@ 125 % =	10.0	
HVAC	36.0	@ – % =	36.0	
MOTORS (NON-HVAC)	164.0	@ 85 % =	139.4	
MISCELLANEOUS	90.0	@ 40 % =	36.0	
TOTALS	298.0	@ – % =	221.4	

PANEL MDP (EXISTING)

① EXISTING BREAKER AND LOAD SERVED TO REMAIN AS IS.

② USE EXISTING BREAKER TO SERVE NEW LOAD AS SHOWN.

③ DISCONNECT EXISTING LOAD. LEAVE BREAKER AS SPARE.

KVA LOAD	LOAD SERVED		WIRE SIZE	BRKR AMPS	CKT NO.	A B C	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED		KVA LOAD
5.0	FILTER 1	①	10	30	3		4	30	–	SPARE	③	–
										(CLARIFIERS 3 & 4)		
5.0	FILTER 2	①	10	30	9		10	40	–	RAS CP	③	–
5.0	FILTER 3	②	10	30	15		16	30	–	SPARE	①	–
42.0	AERATION	①	–	80	21		22	100	–	BLOWERS 1 & 2	①	42.0
	BLOWERS 4 & 5											
	SPARE				27		28	30	–	SPARE	③	–
										(EQ CP)		
	SPARE				33		34	30	–	SPARE	③	–
										(BAR SCREEN)		
1.0	LIGHTING	①		20	37		40	60		SPARE		–
					41							

SQUARE D TYPE NF
SURFACE MOUNTED
480V 3 PHASE 3 WIRE
225A BUSSES
MAIN LUGS ONLY

LOAD TABULATION

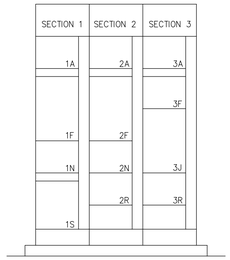
CATEGORY	GROSS		USE	NET
LIGHTING	1.0	@ – % =	–.–	
HVAC	–	@ – % =	–.–	
MOTORS (NON-HVAC)	101.0	@ – % =	–.–	
MISCELLANEOUS		@ – % =	–.–	
TOTALS	102.0	@ – % =	–.–	

PANEL PP (EXISTING)

① EXISTING BREAKER AND LOAD SERVED TO REMAIN AS IS.

② USE EXISTING BREAKER TO SERVE NEW LOAD AS SHOWN.

③ DISCONNECT EXISTING LOAD. LEAVE BREAKER AS SPARE.



MCC – ELEVATION

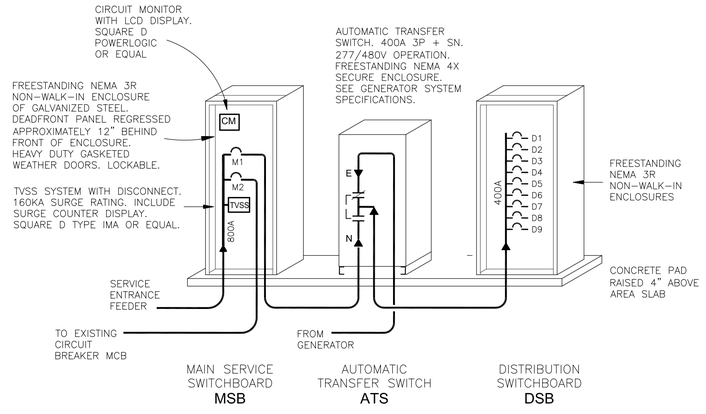
EXISTING MOTOR CONTROL CENTER MCC

EXISTING MOTOR CONTROL CENTER IS SQUARE D MODEL 6, FOR 480V 3 PHASE 3 WIRE OPERATION. CONTRACTOR SHALL PROVIDE NEW COMPONENTS AND MAKE OTHER MODIFICATIONS AS NOTED.
NEW COMPONENTS SHALL BE BY SQUARE D, AND SHALL BE AS RECOMMENDED BY THE MANUFACTURER. WIRING TYPES, AIC RATINGS, ETC. SHALL MATCH EXISTING. COORDINATE WITH SUPPLIERS OF PROCESS EQUIPMENT AND WITH SYSTEMS INTEGRATOR FOR CONTROL INTERFACES.

UNIT	ITEM	DEVICE DESCRIPTION	KVA
1A ①	SPARE	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 1.	
1F	AERATION BLOWER 1	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 2.	21.0
1N ②	SPARE	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 1.	
1S	INCOMING FEEDER	MAIN LUGS ONLY	
2A ①	SPARE	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 1.	
2F	AERATION BLOWER 2	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 2.	21.0
2N ②	SPARE	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 1.	
3A ①	SPARE	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 1.	
3F	LIGHTING	20A 3P CIRCUIT BREAKER	2.0
3J	AERATION BLOWER 3	FVNR MAGNETIC MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR DISCONNECT. NEMA SIZE 2.	21.0

① REMOVE EXISTING STARTER NOW SERVING 10 HP AERATION BLOWER.

② ITEM SERVED BY THIS UNIT WILL BE REMOVED BY THIS PROJECT. PERFORM ELECTRICAL DEMOLITION WORK AS REQUIRED. LEAVE STARTER UNIT AS SPARE.



ELEVATION @ NEW SERVICE EQUIPMENT

NEW SWITCHBOARD MSB

SWITCHBOARD SHALL BE SQUARE D TYPE QED-2 OR EQUAL.
277/480V 3 PHASE 4 WIRE OPERATION. FULLY RATED 65,000 AIC.
TIN-PLATED COPPER BUSSES, NEUTRAL, AND GROUND BAR. ENCLOSURE SHALL BE FREESTANDING NEMA 3R NON-WALK-IN TYPE, OF GALVANIZED STEEL.
DEADFRONT PANELS REGRESSED BEHIND OUTER WEATHER DOORS. SEISMIC RATED FOR LOCALE. LABEL FOR SERVICE ENTRANCE USE.
EQUIP WITH TVSS. SQUARE D IMA OR EQUAL. 160KA PER PHASE.

UNIT	LOAD SERVED	KVA	DEVICE DESCRIPTION	RATING
M1	ATS	202.0	MOLDED CASE CIRCUIT BREAKER. ELECTRONIC TRIP.	400A 3P
D2	PANEL MDP ADMIN BUILDING	298.0	MOLDED CASE CIRCUIT BREAKER. ELECTRONIC TRIP.	400A 3P
	TOTAL	500.0		

LOAD TABULATION

CATEGORY	KVA GROSS	USE	KVA NET	PF (EST)	KW NET
LIGHTING	9.0	@ 125 % =	12.5	.95	11.9
HVAC	46.0	@ 100 % =	46.0	.90	41.4
MOTORS (NON-HVAC)	321.0	@ 93 % =	300.0	.87	261.0
MISCELLANEOUS	124.0	@ 50 % =	62.0	.95	58.9
TOTALS	500.0		420.5		373.2

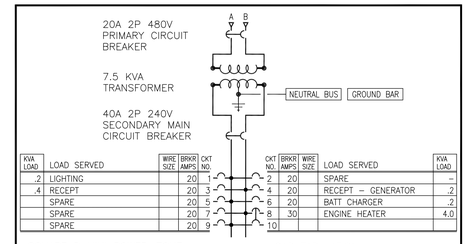
NEW SWITCHBOARD DSB

SWITCHBOARD SHALL BE SQUARE D TYPE QED-2 OR EQUAL.
277/480V 3 PHASE 4 WIRE OPERATION. FULLY RATED 65,000 AIC.
TIN-PLATED COPPER BUSSES, NEUTRAL, AND GROUND BAR. ENCLOSURE SHALL BE FREESTANDING NEMA 3R NON-WALK-IN TYPE, OF GALVANIZED STEEL.
DEADFRONT PANELS REGRESSED BEHIND OUTER WEATHER DOORS.

UNIT	LOAD SERVED	KVA	DEVICE DESCRIPTION	RATING
D1	POWER CENTER PCM	5.0	MOLDED CASE CIRCUIT BREAKER.	15A 3P
D2	BAR SCREEN	5.0	MOLDED CASE CIRCUIT BREAKER.	30A 3P
D3	TRANSFORMER T-1	25.0	MOLDED CASE CIRCUIT BREAKER.	70A 3P
D4	EQUALIZATION BASIN CONTROL PANEL	36.0	MOLDED CASE CIRCUIT BREAKER.	125A 3P
D5	RAS/WAS SYSTEM PANEL HC	64.0	MOLDED CASE CIRCUIT BREAKER.	150A 3P
D6	INFLUENT PUMP STATION	67.0	MOLDED CASE CIRCUIT BREAKER.	150A 3P
D7	SPACE ONLY		EQUIPPED SPACE FOR CIRCUIT BREAKER – 100A 2P FRAME	
D8	SPACE ONLY		EQUIPPED SPACE FOR CIRCUIT BREAKER – 100A 3P FRAME	
D9	SPACE ONLY		EQUIPPED SPACE FOR CIRCUIT BREAKER – 250A 3P FRAME	
	TOTAL	202.0		

LOAD TABULATION

CATEGORY	KVA GROSS	USE	KVA NET	PF (EST)	KW NET
LIGHTING	1.0	@ 125 % =	1.3	.95	1.2
HVAC	10.0	@ 100 % =	10.0	1.0	10.0
MOTORS (NON-HVAC)	157.0	@ 100 % =	157.0	.87	136.6
MISCELLANEOUS	34.0	@ 50 % =	17.0	.95	16.2
TOTALS	202.0		169.6		164.0



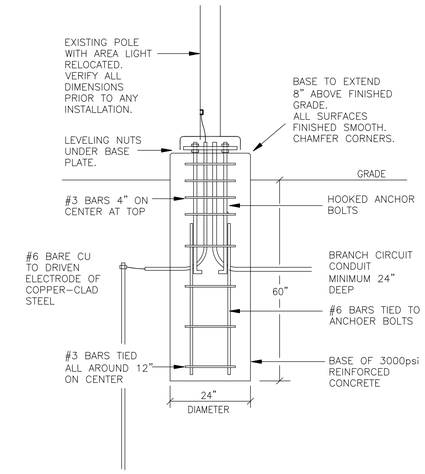
KVA LOAD	LOAD SERVED	WIRE SIZE	BRKR AMPS	CKT NO.	CKT NO.	BRKR AMPS	WIRE SIZE	LOAD SERVED	KVA LOAD
.2	LIGHTING		20	1	2	20		SPARE	–
.4	RECEPT		20	3	4	20		RECEPT – GENERATOR	.2
	SPARE		20	5	6	20		BATT CHARGER	.2
	SPARE		20	7	8	30		ENGINE HEATER	4.0
	SPARE		20	9	10				

SQUARE D MINI POWER-ZONE COMBINATION TRANSFORMER AND LOADCENTER. 480V PRIMARY. 120/240V 1-PHASE 3-WIRE SECONDARY. BOLT-ON BRANCH BREAKERS. NEMA 3R WEATHERPROOF ENCLOSURE.

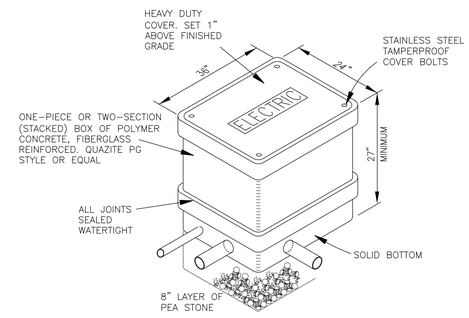
LOAD TABULATION

CATEGORY	GROSS		USE	NET
LIGHTING	.2	@ – % =	–.–	
RECEPTACLES	.4	@ – % =	–.–	
MISCELLANEOUS	4.2	@ – % =	–.–	
TOTALS	4.8	@ – % =	–.–	

POWER CENTER PCM



LIGHT POLE BASE DETAIL



IN-GROUND PULL BOX DETAIL

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IN CHARGE CAWjr DESIGNED WLE MADE BY WLE CHECKED CAWjr	NO SCALE		willis ENGINEERS	WATER AND SEWER AUTHORITY OF CABARRUS COUNTY MUDDY CREEK WWTP EXPANSION	ELECTRICAL PANELS AND DETAILS	1968.015 E-8REF.DWG OCTOBER 2019	E-8