Sign In
Stand by Generator

Name	Company	Phone
Guillermo Popero	GBJ Electrical	(919) 909-5257
David Johnson	Ty Hope Construction	336-708-9447
Josh Erwin	Nilon Power	919-588-9059
Chas Davidson	Gregory Poole Power Systems	919-737-4184
Brian Wainwright	Bitting Elec	919-369-7838
Hector Vasquez	Ready Power LLC	504-234-2656

Orange Water and Sewer Authority

Our community's trusted partner for clean water and environmental protection

ADDENDA

ADDENDUM NUMBER 03

DATE: 09-10-2026

PROJECT: Enterprise Generator Replacements

OWASA CIP NUMBER: 378-14

OWNER: ORANGE WATER AND SEWER AUTHORITY

TO: ALL SUBMITTERS

This Addendum is to provide answers to questions received. Questions received are found italicized with OWASA answers in bold.

- *Looking at pictures of Oaks #3, the center lugs of the ATS are all open which indicates that this is a 240V Single Phase system not 3ph as listed on the sheet.* **OWASA data indicates that the system is 3-phase. Please plan to verify prior to finalizing order on the genset.**
- *At Oaks #3, what is in the enclosure to the left of the ATS but it would appear to be double lugged with the feeders to the pump control panel, should any of this be separated or reconfigured for the new installation? (there are multiple cases of feeders being double lugged under a single lug which is a code violation).* ***OWASA is not sure what the purpose of the enclosure is, but when out at the facility it appeared to function like a junction box. The only guidance OWASA would offer is that if, in the performance of work and attaining the appropriate permit that additional effort is needed it should be reflected in the bid price.***
- *Please send out the pre-bid attendee sign-in sheet?* **Please see the attached original sign-in sheet. Please note there was one other contractor that came later: Sanford Electrical Contractors.**
- *Will OWASA identify the desired install location of the docking station? There are options for installing that that would be most convenient for the installer (right next to the ATS) but not necessarily the most convenient for the end user when connecting a portable or load bank to the system.* ***OWASA would prefer for the docking station to be in an area that is easiest to access quickly and preferably out of the way of normal maintenance operations. For the basis of the bid please assume that the docking station will be located within 10-ft of the entrance gate or entrance threshold if there is no gate.***

OWASA WWT staff will work with the contractor on the preferred location during planning for each lift station.

- *What are the required enclosure types for the ATS and Docking Station? NEMA 3R, NEMA 4X SS?* **NEMA 3R is acceptable.**
- *When do you anticipate release of the next addendum?* **OWASA apologizes for this being a bit late, but the date of this addendum is when we expect.**
- *Should the installation of new equipment and materials be per the OWASA Manual of Standards, Specifications, and Design 2025?* **The OWASA Manual of Standards, Specifications and Design 2025 is generally meant for contractors as part of the development services. If the final RFP differs from the design manual bidders should assume the RFP (along with any amendments) is correct.**
    - *What are the required conduit types?* **The RFP did not specify conduit types. Since this is at root a replacement project. Conduit should meet what is in place currently or as required by code.**
    - *Should the generator be provided to meet the OWASA standards or be proved per the RFP?* **See above regarding conflicts between RFP and Design Manual.**
- *Will OWASA provide a general scope of supply for each site, this will help with the consistency of pricing and quality of the end product.*
    - *ATS replacement or not?* **The summary table in the RFP has been amended to show that some (generally the older and smaller) pump stations will require new ATS's. For the newer and larger PS's OWASA requests bidder assumes the current ATS will be used for base pricing. OWASA requests bidders provide an option for providing and installing a new ATS as well as any reasoning why this would be a preferred option for OWASA.**
    - *Amperage ratings for the required equipment, ATS / Docking Station?* **Any new ATS and the docking station shall be sized to accommodate 125% of the load of supplied generator.**
    - *Details on the options for the Docking Stations?* **OWASA is not specifying options on the docking station. It must be able to accommodate a portable generator at 125% the provided genset and to be able to allow connection of a load bank at 100% of the load of a new genset.**
- *Are there any as built drawings for the stations?* **Available as-built drawings have been provided with this addendum. OWASA does not have as-built drawings for Manning Drive, Rangewood and Sherwood Forest.**
- *The sites looked to have service entrance disconnects. The specs call for the ATS to have a disconnect on the utility service side. Please confirm if this is required.* **Yes, this is required.**
- *Are stainless steel silencers required for the exhaust?* **Yes**
- *Do the generator enclosures need to be painted hunter green?* **Yes**
- *Are remote annunciators needed?* **No**
- *What size (amperage) are the docking stations on each site?* **They should be able to accommodate 125% of that provided by the proposed genset.**
- *As mentioned in the site visits, the current configuration of the generator fuel tanks has increased their length overall.*

    - *Can existing gen pads be amended to accommodate the longer tanks?* **Yes**
    - *Has it been determined if these longer units will fit in the existing locations?* **No**
    - *What will be required if the pads need to be extended?* **Pad extensions, if they are there to accommodate only the fuel tank should be constructed at the same thickness and width of the current pad and tied to the current pad with epoxied dowels.**
- *The RFP page 2. discusses submittal requirements and states… "1. Certified drawings of the unit and its foundation requirements" It is my understanding that if required, this information is typically provided by a structural engineer.*
    - *If we are extending the existing pads can this statement be removed?* **OWASA will remove that requirement if it is only to hold the extended portion of the fuel tank.**
    - *Do engineered drawings for these modifications need to be provided?* **OWASA does not require engineered drawings but some sort of drawing/sketch may be required by the municipality that will issue the associated permit.**
- *Some of these existing equipment hoods and racks have limited space for expansion.*
    - *Is it acceptable to install the docking station on a separate rack?* **Yes**
    - *Do you have a standard rack detail available in case the Docking station needs to be located separately?* **OWASA does not have a standard rack drawing.**
- *See attached PS Site Layout sheet from the 2025 OWASA manual that indicates Gen enclosures should be painted green by the Mfg and an 8" gen pad. This also indicates a wood rack (detail 539.05) be used for service equipment, which seems obsolete.* **See above about the 2025 Design Manual. No wood racks are acceptable.**
- *Are you still considering pushing the bid date on this one?* **Bid date has been pushed to September 24, 2026.**
- *What options should be included for the Docking stations? The standard options/adders typically quoted with the TMTS-5 docking stations are;*
    - *A = 2 wire auto start* **This is not necessary as part of the docking station**
    - *C = 20A GFCI Receptacle (Battery Charger)* **This is not necessary as part of the docking station.**
    - *D = 30A Receptacle (Block Heater)* **This is not necessary as part of the docking station.**
    - *Q = Load Dump Receptacle* **This is necessary as part of the docking station if is for the attachment of the load bank. If the unit already has a connection for a load bank then it is unnecessary.**
- *The other options/adders they may want are:*
    - *What SCADA (which is mentioned in the package, but not sure if it is required for the docking station)* **This is not necessary as part of the docking station**
    - *Surge Protection Device* **This is not necessary as part of the docking station**
- *What is the required NEMA rating for the docking station?* **NEMA 3R**
- *Should the amperage rating of the Docking station be determined by the Utility Service amperage (Service Disconnect amperage) or the generator main breaker amperage?* **125% of generator main breaker amperage**

- *The generator specs shown on the RFP indicates 75dba but OWASA spec Section 3 P. 211 xiv. shows 68db, will these generators be required to meet OWASA standard specifications? I have received feedback from gen mfgs that 68db will requirement expensive custom enclosures.* **The RFP was incorrect. 68 dba at 23 ft is requested**
- *What is the required NEMA rating for the ATS?* **NEMA 3R**
- *In the first paragraph of the RFP, the statement "installation of a new ATS if deemed necessary by the bidder" is included. This seems like a good opportunity to get a variety pricing and scopes based on a subjective understanding of what is actually needed. Would you consider solidifying the scope?* **As seen on the summary table attached OWASA is requesting a new ATS at 7 out of the 10 pump stations. At the other 3 the newer and larger PS's OWASA requests bidder assumes the current ATS will be used for base pricing. OWASA requests bidders provide an option for procuring and installing a new ATS as well as any reasoning why this would be a preferred option for OWASA.**
- *The 6 bid items indicated for each generator is onerous and requires a significant amount of additional work when estimating pricing. Would you consider simplifying this list*. **OWASA requested this breakout for each unit so that we better understand the funding profile and can know if we need to adjust the sequence of when the stations are done. OWASA will entertain additional options to the base pricing and include that within our evaluation as a value proposition.**

Revised Attachment 2 Summary of Scope Table

Attachment 2

Phase	Pump Station Name	Address	Exisitng Gen Set Size (KW)	Voltage/Phase	Minimum Genset Size Requested (KW)	Peak Operational Load (KW)	Minimum Fuel to Run at Peak Operational Load (hrs)	Scope Summary
1	Chapel Hill North	1898 Martin Luther King Blvd., Chapel Hill, 27517	105	480V/3P/4W	**100**	30	**48**	Procure and install of: Generator Transfer Switch Fuel Base Docking Station
	Countryside	838-840 Kenmore Rd., Chapel Hill, 27514	150	240V/3P/4W	**100**	30	**48**	Procure and install of: Generator Fuel Base Docking Station Provide Option for intall of new ATS
	Sherwood Forest	120 Friar Ln, Chapel Hill, 27517	50	480V/3P/4W	**40**	20	**48**	Procure and install of: Generator Transfer Switch Fuel Base Docking Station
	Manning Drive	701 Manning Dr. Chapel Hill, 27517	50	240V/3P/4W	**40**	20	**48**	
	Meadowmont #1	2001 E. Barbee Chapel Rd., Chapel Hill, 27517	50	480V/3P/4W	**40**	20	**48**	
	Rangewood	706 Shannon Dr. Chapel Hill, 27516	50	240V/3P/4W	**40**	20	**48**	
	Meadowmont #2	611 Meadowmont Ln., Chapel Hill, 27517	25	480V/3P/4W	**25**	20	**48**	
2	Heritage Hills	604 1/2 Brandywine Rd. Chapel Hill, 27516	125	240V/3P/4W	**125**	60	**72**	Procure and install of: Generator Fuel Base Docking Station Provide Option for intall of new ATS
	Lake Ellen	1208-500 Martin Luther King Jr. Blvd. Chapel Hill, 27517	100	480V/3P/4W	**80**	50	**72**	
	Oaks #3	224 Lancaster Dr. Chapel Hill, 27517	50	240V/3P/4W	**50**	30	**48**	Procure and install of: Generator Transfer Switch Fuel Base Docking Station

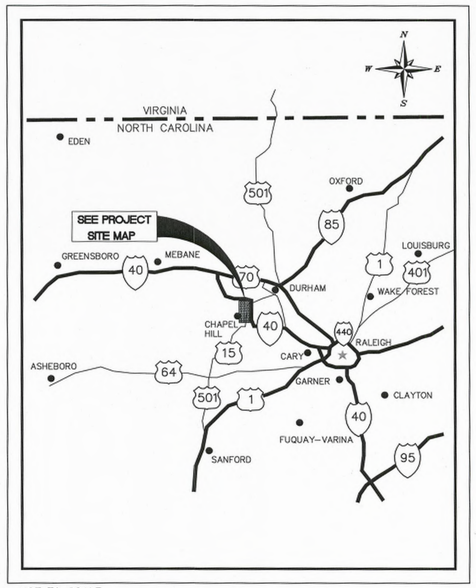
As-Builts

June 20, 2018 - 10:15am By: dan.buis

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

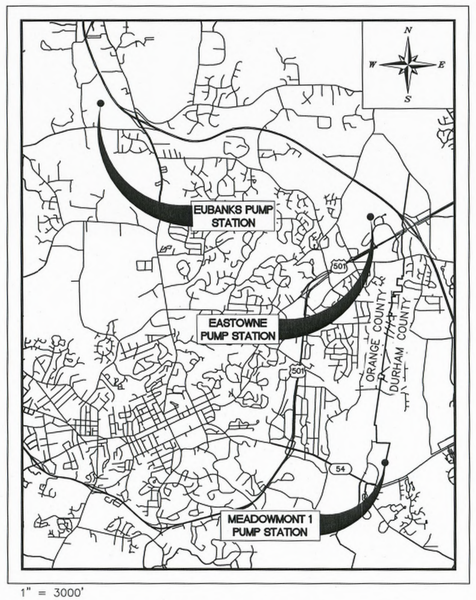
EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT

RECORD DRAWINGS



NOT TO SCALE

PROJECT LOCATION



1" = 3000'

PROJECT SITE

RECORD DRAWINGS

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY–HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS–BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

ISSUED FOR CONSTRUCTION
BY ____ DATE ____

REVISIONS

NO.	DATE	DESCRIPTION	BY
10			
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NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURTLE

DRAWING:

SEAL:

DATE: JUNE 2018

JOB NUMBER: 011935006

PREPARED IN THE OFFICE OF:

Kimley»Horn

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PHONE: (919) 682-3583 FAX: (919) 677-2050

K:\DUR_Utilities\011935006 - OWASA 2016 PS Impvs\CAD_Record Drawings\PlanSheets\1 COVER.dwg

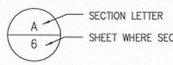
ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
AC	ASBESTOS CEMENT
ADDL	ADDITIONAL
AL	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE
ASPH	ASPHALT
ASSY	ASSEMBLY
ATTN	ATTENTION
AVG	AVERAGE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BM	BENCHMARK
BO	BLOWOFF
C&G	CURB AND GUTTER
CAP	CAPACITY
CB	CATCH BASIN
CCW	COUNTERCLOCKWISE
CEM	CEMENT
CI	CAST IRON
CI	CURB INLET
CIP	CAST IRON PIPE
CL	CENTERLINE
CL	CLASS
CO	CLEANOUT
CONC	CONCRETE
COORD	COORDINATE
CTR	CENTER
CTRL	CONTROL
CU FT	CUBIC FEET
CU IN	CUBIC INCH
CU YD	CUBIC YARD
CW	CLOCKWISE
DAT	DATUM
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DIST	DISTANCE
DR	DRIVE
E	EAST
EA	EACH
EFF	EFFICIENCY
ESMT	EASEMENT
EXIST	EXISTING
EXT	EXTERIOR
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FLG	FLANGE
FOC	FACE OF CURB
FPS	FEET PER SECOND
FT	FEET
G	NATURAL GAS
GAL	GALLON
GALV	GALVANIZED
GOVT	GOVERNMENT
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HH	HAND HOLE
HORIZ	HORIZONTAL
HP	HORSE POWER
HYD	HYDRANT
INV	INVERT
IP	IRON PIPE
LF	LINEAR FEET (FOOT)
LL	LOWER LEVEL
LN	LANE
LP	LIGHT POLE
LS	LUMP SUM
LTS	LAND TREATMENT SITE
MATL	MATERIAL
MAX	MAXIMUM
MBL	MAXIMUM BUILDING LIMIT
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MSL	MEAN SEA LEVEL
N	NORTH
NA	NOT APPLICABLE
NFC	NATIONAL FIRE CODE
NO	NUMBER
NTS	NOT TO SCALE
OWASA	ORANGE WATER AND SEWER AUTHORITY
PCF	POUNDS PER CUBIC FOOT
PERM	PERMANENT
PKWY	PARKWAY
PL	PROPERTY LINE
PLF	POUNDS PER LINEAR FOOT
POLY	POLYETHYLENE (PLASTIC)
PPM	PARTS PER MILLION
PROP	PROPERTY
PRV	PRESSURE RELIEF VALVE
PSI	POUNDS PER SQUARE INCH
QA	QUALITY ASSURANCE
QC	QUALITY CONTROL
QTY	QUANTITY
RCP	REINFORCED CONCRETE PIPE
REQD	REQUIRED
ROW	RIGHT OF WAY
RR	RAILROAD
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SI	INTERNATIONAL SYSTEM OF UNITS
SLV	SLEEVE
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
SURV	SURVEY
SW	SIDEWALK
SYM	SYMBOL
TBM	TEMPORARY BENCHMARK
TC	TERRA COTTA
TCP	TRAFFIC CONTROL PLAN
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPORARY
THH	TELECOM HAND HOLE
TP	TELEPHONE POLE
TV	TELEVISION
TYP	TYPICAL
UGND	UNDERGROUND
UTIL	UTILITY
VAR	VARIES
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WEST
W/	WITH
W/O	WITHOUT
WL	WATERLINE
WM	WATER METER
WT	WEIGHT
WW	WASTE WATER
YI	YARD INLET

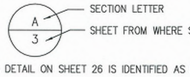
SECTION KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

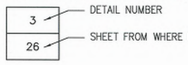
(A) A SECTION CUT ON SHEET 3 IS IDENTIFIED AS FOLLOWS:



(B) THE SECTION SHOWN ON SHEET 6 IS IDENTIFIED AS FOLLOWS:



(C) A DETAIL ON SHEET 26 IS IDENTIFIED AS FOLLOWS:



MATERIALS

GRADE OR EARTH

SAND

GRAVEL/RIP RAP

CONCRETE

CONC. FILL OR GROUT

GRATING

CHECKERED PLATE

ROCK

WATER SURFACE

ASPHALT

BRICK

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY/ROW	
	SETBACK	
	EASEMENT	
	CENTERLINE	
	BUILDING	
	WETLAND BUFFER	
	CREEK/DITCH	
	FLOODWAY BOUNDARY	
	EDGE WATER	
	TREELINE	
250	CONTOURS (MAJOR)	250
	CONTOURS (MINOR)	
G	GAS	GAS
W	WATER	W
SS	SEWER	SS
	STORM DRAIN	
FM	FORCE MAIN	FM
	GROUND PROFILE	
	EXISTING/PROPOSED ITEMS	
	CULVERT	15" RCP
	GUARDRAIL	
	CHAIN LINK FENCE	
X	BARB WIRE FENCE	X
	STOCKADE FENCE	
	RAILROAD	
E	ELECTRICAL	
T	TELEPHONE	
UGE	UNDERGROUND ELECTRICAL	UGE
OHP	OVERHEAD POWER	
UNK	UNDERGROUND UNKNOWN UTILITY	
	MATCH LINE	
	TEMPORARY CONSTRUCTION EASEMENT	TCE
	LIMITS OF DISTURBANCE	LOD
	LIMITS OF DISTURBANCE/ TREE PROTECTION FENCE	LOD/TPF
	SILT FENCE	
	COMBINATION SILT FENCE/ TREE PROTECTION FENCE	TPF
	TEMPORARY DIVERSION DITCH	TD
	TREE PROTECTION	TPF
	REMOVE UTILITY	
	ABANDON IN PLACE	

EXISTING	DESCRIPTION	PROPOSED
	TELEPHONE PEDESTAL	
	TRANSFORMER PAD	
	GATE VALVE	
	PLUG VALVE	
	LIGHT POLE	
	UTILITY POLE	
	HANDHOLE	THH
	GUY WIRE	
	HYDRANT	
	STORM DRAINAGE STRUCTURE	
	SANITARY SEWER MANHOLE	
W	POTABLE WELL	
FH	FIRE HYDRANT	
WM	WATER METER	
CO	SANITARY SEWER CLEANOUT	CO
PP	POWER POLE	
	REDUCER	
	BLOWOFF ASSEMBLY	
	BACKFLOW PREVENTER	
	TYPICAL PLUG AND REMOVAL	SS
	TYPICAL IN-LINE PLUG	SS
230.20	SPOT GRADE	+ 230.20
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BENCHMARK	
	NCGS-NORTH CAROLINA GEODETIC MONUMENT	
X 342.00'	SPOT ELEVATION	X 342.00'
	GEOTECHNICAL BORING	
	TEMPORARY BENCHMARK	TBM01
	SOIL BORING/AUGER PROBE	B01
	SURVEY IRON	
	WETLANDS	
	SIGN	
	TEMPORARY CONSTRUCTION ENTRANCE	
	PAVEMENT REPLACEMENT	
	STONE FILTER	
	U-SHAPED INLET PROTECTION	
	MILLING LIMITS	
	CURLED WOOD MATTING	

INDEX TO SHEETS

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3	GENERAL NOTES
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~~5~~	~~MEADOWMONT 1 PUMP STATION EXISTING CONDITIONS AND DEMO PLAN~~
6	EASTOWNE OVERALL PLAN
7	EASTOWNE PUMP STATION SITE PLAN
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10	EASTOWNE PUMP STATION MECHANICAL PLAN
11	EASTOWNE MISCELLANEOUS STRUCTURAL DETAILS
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~~22~~	~~ELECTRICAL DETAILS~~
~~23~~	~~ELECTRICAL DETAILS~~
~~24~~	~~C&I DIAGRAM & SIGNAL PATHS SCHEMATIC~~
~~25~~	~~STATION CONTROLLERS~~

RECORD DRAWINGS

No.	REVISIONS	DATE	BY

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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL:



INDEX AND ABBREVIATIONS

SHEET NUMBER
2
OF
25

Plotted By: Burke, Don Sheet Set: EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT Layout: 2 INDEX AND ABBREVIATIONS
BREVIATIONS June 20, 2018 10:16:44am K:\DUR_Utilities\011935006 - OWASA 2016 PS Improv\CADD_Record Drawings\PlanSheets\2 INDEX AND ABBREVIATIONS.dwg

GENERAL NOTES:

1. ALL WORK SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES, AND ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT ITS EXPENSE, UNLESS PREVIOUSLY OBTAINED BY THE OWNER AND PROVIDED AT THE PRECONSTRUCTION CONFERENCE.
2. DEVIATION FROM THESE PLANS AND NOTES WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER OR THEIR REPRESENTATIVE OR THE ENGINEER MAY BE CAUSE FOR THE WORK TO BE UNACCEPTABLE.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.
4. CONTRACTOR SHALL PLAN AND CONSTRUCT WORK SO AS TO CAUSE MINIMUM INCONVENIENCE TO THE OWNER AND PUBLIC. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND ERECT AND MAINTAIN AT ALL TIMES DURING THE PROGRESS OR TEMPORARY SUSPENSION OF WORK, SUITABLE BARRIERS, FENCES, SIGNS OR OTHER ADEQUATE PROTECTION, INCLUDING FLAG MEN AND WATCHMEN AS NECESSARY TO INSURE THE SAFETY OF THE PUBLIC AS WELL AS THOSE ENGAGED IN THE CONSTRUCTION WORK. CONSTRUCTION SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BY THE NCDOT.
5. ALL SANITARY SEWER CONSTRUCTION SHALL CONFORM TO NCDEQ REGULATIONS, AND TO CURRENT OWASA REGULATIONS, STANDARDS, AND SPECIFICATIONS.
6. CONTRACTOR SHALL COORDINATE ALL WORK WITH OWASA.
7. ALL PIPE LENGTHS AND DISTANCES BETWEEN STRUCTURES ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE ALONG A HORIZONTAL PLANE.
8. THE CONTRACTOR SHALL PROVIDE ALL STAKEOUT SURVEY. ANY EXISTING STAKEOUT OR BENCHMARKS SHALL NOT BE RELIED UPON BY THE CONTRACTOR.
9. COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD 83).
10. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY OWASA PRIOR TO CONSTRUCTION.
11. LOCATIONS OF EXISTING SHOWN UTILITIES ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE SIZE, DEPTH, MATERIAL AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION AND TO TAKE WHATEVER STEPS ARE NECESSARY TO PROVIDE FOR THEIR PROTECTION. THE ENGINEER HAS ATTEMPTED TO LOCATE AND INDICATE ALL EXISTING FACILITIES ON THE PLANS; HOWEVER, THIS INFORMATION IS SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE ENGINEER AND THE OWNER ASSUME NO RESPONSIBILITY FOR THE LOCATIONS OF UTILITIES SHOWN OR NOT SHOWN. PRIOR TO DIGGING ON AND OFF SITE, THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED BY "NC 811" 1-800-632-4949. THE CONTRACTOR SHALL CONTACT ANY UTILITY COMPANY WHOSE UTILITIES ARE NOT LOCATED BY "NC 811" FOR EXACT LOCATION OF THEIR UTILITIES PRIOR TO STARTING CONSTRUCTION. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND/OR REPLACE ANY AND ALL DAMAGE MADE TO UTILITIES BY THE CONTRACTOR TO EXISTING CONDITIONS AT THE CONTRACTOR'S EXPENSE.
12. BURIED DATA, TELEPHONE AND CATV CABLES (FIBER OPTICS AND CONVENTIONAL) ARE KNOWN TO VARY DUE TO INSTALLATION TECHNIQUES. CONTRACTOR SHALL COORDINATE WORK WITH CONFLICTING DATA, TELEPHONE AND CATV CABLES AS NECESSARY FOR INSTALLATION OF THE PROPOSED WATER AND SEWER. UTILITY COORDINATION SHALL BE INCLUDED IN THE PROJECT SCHEDULE AND IT IS THE EXPLICIT RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT THE PROJECT SCHEDULE INCLUDES THE NECESSARY RELOCATION. THE CONTRACTOR SHALL NOT BE PAID ADDITIONALLY FOR THIS COORDINATION.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH UTILITY PROVIDERS ANY ADDITIONAL SUPPORT OF EXISTING UTILITY POLES OR OTHER ITEMS AS REQUIRED FOR TRENCH EXCAVATION. ALL COSTS OF SUCH WORK SHALL BE PAID BY THE CONTRACTOR.
14. THE CONTRACTOR SHALL VERIFY THE VOLTAGES OF ALL ELECTRICAL UTILITIES AND FOLLOW THE APPROPRIATE OSHA STANDARDS WHEN WORKING IN THEIR VICINITY.
15. THE CONTRACTOR SHALL INSTALL ALL SIGNS AS REQUIRED BY NCDOT ALONG STATE ROADWAYS AND ALONG CITY/TOWN STREETS.
16. UNLESS OTHERWISE INDICATED, ALL EXISTING GRADE ELEVATIONS SHOWN ARE ALONG THE PIPE CENTERLINE.
17. THE MINIMUM TRENCH WIDTHS SHALL BE IN STRICT ACCORDANCE WITH THE "TRENCH EXCAVATION LIMITS" AS SHOWN ON THE DRAWINGS.
18. OWNERS WILL FURNISH DESCRIPTIONS OF EASEMENTS UPON REQUEST.
19. ALL PAVEMENT CUTS SHALL BE SAWCUT ALONG A CONTINUOUS STRAIGHT LINE AND REPAVED PER THE DETAILS. DECORATIVE CONCRETE SHALL BE CUT TO THE NEAREST JOINT.
20. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE FIRST EXPANSION JOINT BEYOND THE TRENCH EXCAVATION LIMITS AND TO THE FULL WIDTH. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING.
21. THE CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCES, MAIL BOXES, PLANTERS AND LANDSCAPING WITHIN THE EASEMENT AS REQUIRED FOR PIPE INSTALLATION.
22. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION OF THE UTILITY. ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED EASEMENT WIDTHS. EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.
23. PLACED RIP-RAP SHALL HAVE A MINIMUM DEPTH OF 1.5 TIMES THE MAXIMUM STONE DIAMETER AND SHALL HAVE A LAYER OF TYPE II GEOTEXTILE SEPARATOR PLACED BETWEEN THE SOIL AND STONE.
24. ALL MATERIAL CLEARED AND GRUBBED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE WORK, SUCH AS TREES, VEGETATION, ETC., SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF-SITE AT A STATE APPROVED DISPOSAL SITE.
25. IMMEDIATELY PRIOR TO DISTURBANCE, CONTRACTOR SHALL VIDEOTAPE UTILITY ALIGNMENTS INCLUDING EACH DRIVEWAY, SIDEWALK, ETC., TO BE DISTURBED. EACH SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR BETTER. VIDEO SHALL BE SUBMITTED TO OWASA AND THE ENGINEER PRIOR TO WORK.
26. CONTRACTOR SHALL MAINTAIN A MEANS FOR ACCESS TO EACH PROPERTY AT ALL TIMES.
27. DURING CONSTRUCTION, EMERGENCY VEHICLE APPARATUS ACCESS AND ACCESS TO FIRE HYDRANTS SHALL BE MAINTAINED AT ALL TIMES.
28. WHERE THE CONTRACTOR DETERMINES THAT ENCROACHMENT ONTO PRIVATE PROPERTY IS NECESSARY AND AN EASEMENT HAS NOT BEEN PROVIDED, THE CONTRACTOR SHALL CONTACT INDIVIDUAL PROPERTY OWNERS AND OBTAIN WRITTEN APPROVAL FOR THAT ENCROACHMENT. SUCH APPROVALS SHALL BE PROVIDED TO THE OWNER AND ENGINEER.
29. CONTRACTOR SHALL NOTIFY HOME AND BUSINESS OWNERS AT LEAST 7 DAYS PRIOR TO CONSTRUCTION THAT CONSTRUCTION ACTIVITY WILL TAKE PLACE IN THEIR AREA.
30. LANE AND SHOULDER CLOSURES SHALL BE IN ACCORDANCE WITH CITY/TOWN AND NCDOT REQUIREMENTS.
31. TRENCHES SHALL BE BACKFILLED OR COVERED WITH ROAD PLATES AT THE END OF THE WORK DAY.
32. CONTRACTOR SHALL PATCH ALL ROADWAY PAVEMENT DISTURBANCES BY THE END OF EACH WEEK. TEMPORARY GRAVEL PATCHES SHALL BE PROVIDED DAILY AND MAINTAINED UNTIL PAVEMENT PATCH IS PROVIDED. EROSION CONTROL SHALL BE PROVIDED AS NECESSARY FOR GRAVEL AREAS.
33. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL TOOLS, APPLIANCES, CONSTRUCTION EQUIPMENT AND MACHINERY, AND SURPLUS MATERIALS AND SHALL RESTORE TO ORIGINAL CONDITION ALL PROPERTY NOT DESIGNATED FOR ALTERATION BY THE CONTRACT DOCUMENTS.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO NORTH CAROLINA SEDIMENT AND EROSION CONTROL STANDARDS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHERE A GOOD STAND OF GRASS HAS BEEN ESTABLISHED AND EROSION IS NO LONGER EVIDENT. REMOVAL OF THE REMAINDER OF THE EROSION CONTROL DEVICES SHALL OCCUR AS OTHER AREAS ARE ESTABLISHED. REMOVAL OF THE EROSION CONTROL DEVICES SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER.
2. ALL SLOPES SHALL BE 3:1 OR FLATTER, UNLESS OTHERWISE SHOWN.
3. ALL AREAS DISTURBED BY GRADING, EXCAVATION, AND GENERAL CONSTRUCTION SHALL BE SEEDED, MULCHED, AND RESTORED IN ACCORDANCE WITH NORTH CAROLINA SEDIMENT AND EROSION CONTROL STANDARDS.
4. EXISTING VEGETATION OUTSIDE OF THE LIMITS OF DISTURBANCE AND CLEARING LIMITS TO REMAIN SHALL BE PROTECTED FROM DAMAGE.
5. ANY AREAS THE CONTRACTOR UTILIZES FOR STOCKPILING SHALL HAVE ADEQUATE EROSION CONTROL MEASURES INSTALLED PER THE NORTH CAROLINA SEDIMENT AND EROSION CONTROL HANDBOOK.
6. A LAYER OF SAND, SCREENINGS, OR FINES SHALL BE DEPOSITED ON IMPERVIOUS SURFACES PRIOR TO THE DEPOSITION OF EXCAVATED MATERIAL TO FACILITATE CLEAN UP AND PROTECT EXISTING PAVEMENT. THE STREET SHOULD BE SWEPT DAILY TO REMOVE DIRT.
7. ALL DEWATERING DISCHARGE SHALL BE FILTERED THROUGH SILT BAGS AND/OR OTHER APPROVED EROSION CONTROL MEASURES.
8. CONTRACTOR TO ENSURE THAT SEDIMENT LADEN RUNOFF DOES NOT LEAVE SITE LIMITS OR ENTER PROTECTED AREAS. ANY SEDIMENT DEPOSITED BEYOND DISTURBED AREA WITHIN SITE LIMITS SHALL BE REMOVED.
9. WHEN A CRUSHED STONE CONSTRUCTION ENTRANCE HAS BEEN COVERED WITH SOIL OR HAS BEEN PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THAT OF THE ORIGINAL APPLICATION.
10. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL CONSTRUCTION STAGING AREA ENTRANCES AND ALL CONSTRUCTION ACCESS LOCATIONS INTO NON-PAVED AREA. TWO TO THREE INCH STONE SHALL BE USED FOR THE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE.
11. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING UPON FIELD CONDITIONS.
12. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHERE A GOOD STAND OF GRASS HAS BEEN ESTABLISHED AND EROSION IS NO LONGER EVIDENT. REMOVAL OF THE REMAINDER OF THE EROSION CONTROL DEVICES SHALL OCCUR AS OTHER AREAS ARE ESTABLISHED. REMOVAL OF THE EROSION CONTROL DEVICES SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER.
13. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION.
14. THE CONTRACTOR SHALL TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
15. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.
16. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN (7) DAYS OR AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (1/2) INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
17. 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 THE CONSTRAINTS LISTED BELOW:
    - 17.1 PERMANENT GROUND COVER: FOR AN AREA OF LAND-DISTURBING ACTIVITY WHERE GRADING ACTIVITIES HAVE BEEN COMPLETED, TEMPORARY OR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PROVIDED AS SOON AS PRACTICABLE, BUT IN NO CASE LATER THAN FIVE(5) WORKING DAYS AFTER COMPLETION OF GRADING.
    - 17.2 TEMPORARY GROUND COVER: FOR AN AREA WITH NO SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 14 CALENDAR DAYS.
18. FOR AN AREA OF MODERATE SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 10 DAYS. FOR PURPOSES OF THIS ITEM, "MODERATE SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS LESS THAN OR EQUAL TO 3:1.
19. FOR AN AREA OF STEEP SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF SEVEN DAYS. FOR PURPOSES OF THIS SUBDIVISION, "STEEP SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS GREATER THAN 3:1.

STRUCTURAL NOTES:

CAST-IN-PLACE CONCRETE

1. THE GENERAL CONTRACTOR SHALL ASSIST AND COOPERATE WITH AN INDEPENDENT TESTING LABORATORY WHICH SHALL CONDUCT ALL THE SPECIFIED TESTS REQUIRED FOR THE CONCRETE WORK AND REPORT THE RESULTS OF THESE TESTS DIRECTLY AND PROMPTLY TO THE ENGINEER FOR REVIEW.
2. DETAILING OF REBAR SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE ACI DETAILING MANUAL, AND CONCRETE REINFORCING INSTITUTE'S LATEST EDITION OF "MANUAL OF STANDARD PRACTICE." ALL SHOP DRAWINGS PERTAINING TO REBAR DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW.
3. CONCRETE MIX DESIGN FOR ALL CONCRETE WORK IS REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW. IT IS TO BE NOTED THAT THE CONCRETE SUPPLIER SHALL HAVE A QUALITY CONTROL PROCEDURE FOR THE PRODUCTION OF ALL CONCRETE, WHICH MUST BE ACCEPTABLE TO THE ENGINEER AND MEETS CURRENT ACI STANDARDS.
4. CONCRETE SHALL BE WET CURED IN ACCORDANCE WITH ACI 301.
5. CONCRETE COMPRESSIVE DESIGN STRENGTH IN 28 DAYS SHALL BE 4,000 PSI.

REINFORCEMENT

1. REINFORCING: ASTM A615, GRADE 60, FOR SLABS, FOUNDATIONS, AND WALLS IS ACCEPTABLE.
2. LAP ALL SPLICES AS SHOWN ON THE STRUCTURAL DRAWINGS.
3. CLEAR DISTANCE FROM FACE OF CONCRETE TO MAIN STEEL SHALL BE AS SHOWN ON THE STRUCTURAL DRAWINGS. WHERE CLEAR DISTANCE IS NOT SHOWN, ACI 301 SHALL CONTROL.
4. PROVIDE 3/4 INCH CHAMFERS AT ALL EXPOSED EDGES UNLESS NOTED OTHERWISE.
5. BAR SUPPORTS, DESIGN, DETAILING, FABRICATION, AND PLACING OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE APPLICABLE VERSIONS OF ACI 318 (BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE) AND ACI 315 (DETAILING MANUAL).
6. WHERE SHOWN OR SPECIFIED ON PLANS, PROVIDE STANDARD ACI 90-DEGREE HOOK.

PRECAST CONCRETE

1. ALL PRECAST CONCRETE UNITS SHALL BE PRODUCED BY AN EXPERIENCED MANUFACTURER REGULARLY ENGAGED IN THE PRODUCTION OF SUCH ITEMS. ALL PRECAST STRUCTURES SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN NORTH CAROLINA.
2. ALL MANUFACTURED PRECAST CONCRETE AND SITE-CAST UNITS SHALL BE FREE OF DEFECTS, CHECKS, AND CRACKS. CARE SHALL BE TAKEN IN THE MIXING OF MATERIALS, CASTING, CURING AND SHIPPING TO AVOID ANY OF THE ABOVE.
3. THE ENGINEER MAY ELECT TO EXAMINE THE UNITS AT THE CASTING YARD OR UPON ARRIVAL OF THE SAME AT THE SITE. THE ENGINEER SHALL HAVE THE OPTION OF REJECTION ANY OR ALL OF THE PRECAST WORK IF IT DOES NOT MEET THE REQUIREMENTS OF THE SPECIFICATIONS OR DRAWINGS. ALL REJECTED WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

UTILITY NOTES:

1. UTILITY SEPARATION REQUIREMENTS:
    - 1.1 DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
    - 1.2 WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
    - 1.3 WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
    - 1.4 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
    - 1.5 MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE).
    - 1.6 ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
2. MINIMUM PIPE COVER FOR SANITARY SEWER SHALL BE 3.5 FEET UNLESS DUCTILE IRON PIPE IS USED AND LESS COVER IS SPECIFICALLY APPROVED BY THE ENGINEER.
3. CONTRACTOR SHALL CORE DRILL AND MODIFY ALL EXISTING MANHOLES FOR CONNECTION OF PROPOSED SEWERS.
4. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 72 HOUR ADVANCE NOTICE TO OWASA.
5. RESTRAINED JOINT PIPE JOINTS SHALL BE INSTALLED BETWEEN THE STATIONS INDICATED ON THE DRAWINGS. IF A BEND OR FITTING IS RELOCATED BY THE CONTRACTOR FOR HIS CONVENIENCE THEN THE REQUIRED LENGTH OF RESTRAINED JOINTS SHALL BE MAINTAINED, AT NO ADDITIONAL COST TO THE OWNER. IF ADDITIONAL BENDS OR FITTINGS INSTALLED BY THE CONTRACTOR FOR HIS CONVENIENCE, THEN THE CONTRACTOR SHALL INSTALL THE REQUIRED LENGTH OF RESTRAINING JOINTS AS DETERMINED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
6. ALL BURIED PRESSURIZED PIPE AND FITTINGS SHALL BE RESTRAINED JOINT, UNLESS OTHERWISE SHOWN. A THRUST RESTRAINT PRESSURE OF 200 PSI SHALL BE USED FOR THIS PROJECT.
7. ALL MECHANICAL JOINTS SHALL BE FITTED WITH RESTRAINING TYPE ACCESSORY KITS MEGA-LUG SERIES 1100 OR EQUAL. ALL BURIED EXTERIOR PRESSURIZED PIPING SHALL HAVE RESTRAINED JOINTS FOR THRUST PROTECTION UNLESS OTHERWISE SPECIFIED.
8. AS-BUILT ELEVATIONS SHALL BE ACQUIRED BY A LICENSED SURVEYOR DURING INSTALLATION AND AS SOON AS PRACTICABLE, BUT IN NO CASE LATER THAN FIVE(5) WORKING DAYS AFTER COMPLETION OF GRADING.
9. PIPE ALIGNMENT SHOWN IS BASED ON STANDARD FITTINGS AVAILABLE FOR DI PIPE. JOINT DEFLECTIONS SHALL NOT EXCEED 75 PERCENT OF MANUFACTURER'S RECOMMENDED DEFLECTION. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
10. ALL METAL NON-STAINLESS STEEL SEWER PIPE AND FITTINGS SHALL BE LINED WITH PROTECTO 401 CERAMIC EPOXY OR EQUAL. ALL DUCTILE IRON PIPE SHALL BE PC 350.
11. DETECTOR TAPE AND WIRE IS REQUIRED FOR ALL BURIED PIPE.
12. ALL MANHOLE COVERS AND VALVE BOX LIDS FOR WATER SHALL READ "WATER", ALL MANHOLE COVERS AND VALVE BOX LIDS FOR SEWER SHALL READ "SEWER".
13. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE OWNER.
14. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL DIP FORCE MAIN BEDDING SHALL BE TYPE "A" PER DETAIL D12/12.

GENERAL BYPASS PUMPING NOTES:

1. BYPASS PUMPING PLAN SEALED BY A N.C. PROFESSIONAL ENGINEER MUST BE SUBMITTED TO THE ENGINEER PRIOR TO PUMPING OPERATIONS TO COORDINATE WITH ADMINISTRATION ENGINEERING STAFF. PUMPS SHOULD BE SIZED TO HANDLE THE PEAK FLOW.
2. PUMPING OPERATIONS MUST BE MONITORED 24 HOURS A DAY FOR EACH DAY OF THE PUMPING OPERATION BY QUALIFIED PERSONNEL IN ORDER TO RESPOND TO PROBLEMS OR FAILURES.
3. NO PIPING, PUMPS, ELECTRICAL OR OTHER SYSTEMS CRITICAL TO THE PUMP STATIONS OPERATION OF THE SYSTEM SHALL BE REMOVED UNTIL THE BYPASS PUMPING SYSTEM IS OPERATIONAL AND APPROVED FOR USE BY OWASA.
4. CONTRACTOR SHALL OPERATE AND MAINTAIN BYPASS PUMPING 24 HOURS/DAY WITHOUT RELIANCE ON OWASA.
5. CONTRACTOR SHALL PLAN WORK AS TO MINIMIZE BYPASS PUMPING DURATIONS.
6. ALL BYPASS PUMPING EQUIPMENT SHALL BE SOUND ATTENUATED AND SHALL BE DESIGNED TO HANDLE THE SPECIFIED FLOW WITH THE LARGEST PUMP OUT OF SERVICE. SOUND ATTENUATION SHALL BE PER TOWN OF CHAPEL HILL ORDINANCE 11-39 AND SHALL NOT EXCEED 45 dB AT THE PROPERTY LINE.
7. BYPASSES SHALL BE EQUIPPED WITH CELLULAR PHONE BASED TELEMETRY SYSTEMS PROVIDING REMOTE ALARM REPORTING TO CONTRACTOR AND BYPASS SUBCONTRACTOR.
8. ALL BYPASS SYSTEMS SHALL HAVE 100% REDUNDANCY WITH EQUIVALENT BACKUP PUMPS AND PIPING AND SHALL BE SIZED TO HANDLE BYPASS RATES SHOWN IN TABLE 3.1.
9. ALL BYPASS PUMPS AND PIPING SHALL BE INSPECTED BY THE CONTRACTOR A MINIMUM OF ONCE PER DAY FOR PROPER OPERATION.
10. BYPASS PUMPING SHALL REMAIN ENTIRELY IN PLACE AND FULLY OPERATIONAL UNTIL THE PROPOSED WORK HAS BEEN TESTED, APPROVED, FLOW IS DIVERTED AND UNTIL THE REMOVAL OR SHUT DOWN IS APPROVED BY THE ENGINEER AND/OR OWASA.
11. CONTRACTOR SHALL PROVIDE A SEPARATE DETAILED BYPASS PUMPING PLAN FOR EACH SITE. THE BYPASS PUMPING PLAN SHALL INCLUDE THE FOLLOWING AT A MINIMUM:
    - 11.1. SKETCHES OF THE PROPOSED LAYOUT WITH PIPING SIZES
    - 11.2. PUMP CURVES AND DATA SHEETS FOR EACH PROPOSED PUMP
    - 11.3. TELEMETRY SYSTEM DATA SHEETS
    - 11.4. DETAILED SCHEDULE FOR BYPASS PUMPING
    - 11.5. WASTEWATER OPERATING AND CONTROL ELEVATIONS
    - 11.6. PUMP OPERATION SEQUENCE
    - 11.7. SOUND LEVELS FOR EACH PUMP AT 20 TO 25 FEET
    - 11.8. PUMP FAILURE RESPONSE PLAN
    - 11.9. SPILL RESPONSE PLAN
    - 11.10. AT LEAST FOUR (4) 24/7 EMERGENCY RESPONSE CONTACT NAMES AND PHONE NUMBERS
    - 11.11. A LIST OF PERSONS/COMPANIES ON STANDBY TO HANDLE SPILLS
    - 11.12. RUNTIME FOR EACH PUMP AT FULL LOAD WITHOUT REFUELING
12. SEE SPECIFICATION SECTION 11101 FOR ADDITIONAL REQUIREMENTS.
13. THE LOWEST MANHOLE RIM ELEVATION ON MANHOLES TRIBUTARY TO THE EASTOWNE LIFT STATION IS AT MH #9303, WHICH IS 4 MANHOLES AND APPROX. 800 LF UPSTREAM AT MINIMUM GRADE OF THE MANHOLE ONSITE AT THE LIFT STATION (MH #9312). SEE BELOW TABLE 3.2 FOR COMPARISON. ELEVATION INFORMATION IS APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR.

SITE NAME	ADF (GPM)	PDF (GPM)	BYPASS RATE (GPM)
EASTOWNE	135	850	1000
MEADOWMONT 1	50	258	500
EUBANKS	25	372	500

TABLE 3.1

MANHOLE #	RIM ELEV (FT MSL)	INV OUT (FT MSL)
9303	271.28	264.88
9312	278.42	262.55

TABLE 3.2

PROJECT NOTES:

1. SOME OF THE PROJECT IS LOCATED WITHIN THE 100 YEAR FLOOD PLAIN. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THE WORK, EQUIPMENT, WORKERS AND THE EXISTING PUMP STATION FROM FLOODING.
2. CONTRACTOR SHALL COORDINATE WITH OWNER TO DETERMINE WHAT EQUIPMENT AND MATERIALS THE OWNER WISHES TO RETAIN AFTER REMOVAL. CONTRACTOR SHALL PROVIDE ONSITE STORAGE FOR ITEMS UNTIL OWNER PICKS THEM UP.

RECORD DRAWINGS

No.	REVISIONS	DATE	BY

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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

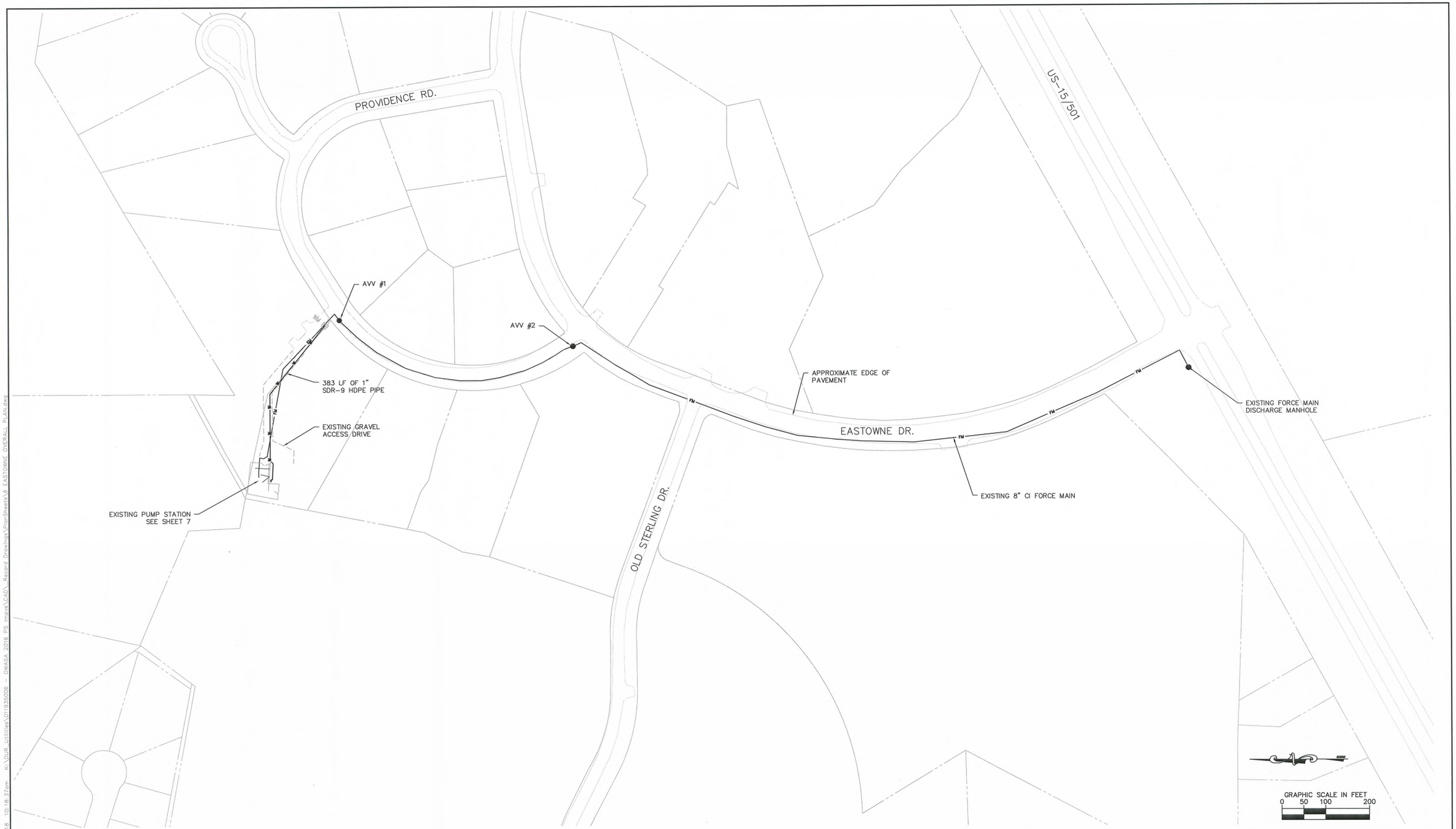
EASTOWNE, EUBANKS, AND MEADOWMONT 1
PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL: NORTH CAROLINA SEAL 33186 ENGINEER ZACHARY G. PURVIS 6-30-18

GENERAL NOTES

SHEET NUMBER 3 OF 25

Plotted By:Rufo, Don Sheet Set:EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT Layout:3 GENERAL NOTES
Date:June 20, 2018 10:17:24am K:\OUR Utilities\011935006 OWASA 2016 PS Imps\CAD_Record Drawings\Plan Sheets\3 GENERAL NOTES.dwg



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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	1" = 100'
DESIGNED BY	###
DRAWN BY	###
CHECKED BY	###

EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURVIS
6-29-18

EASTOWNE OVERALL PLAN

SHEET NUMBER 6 OF 25

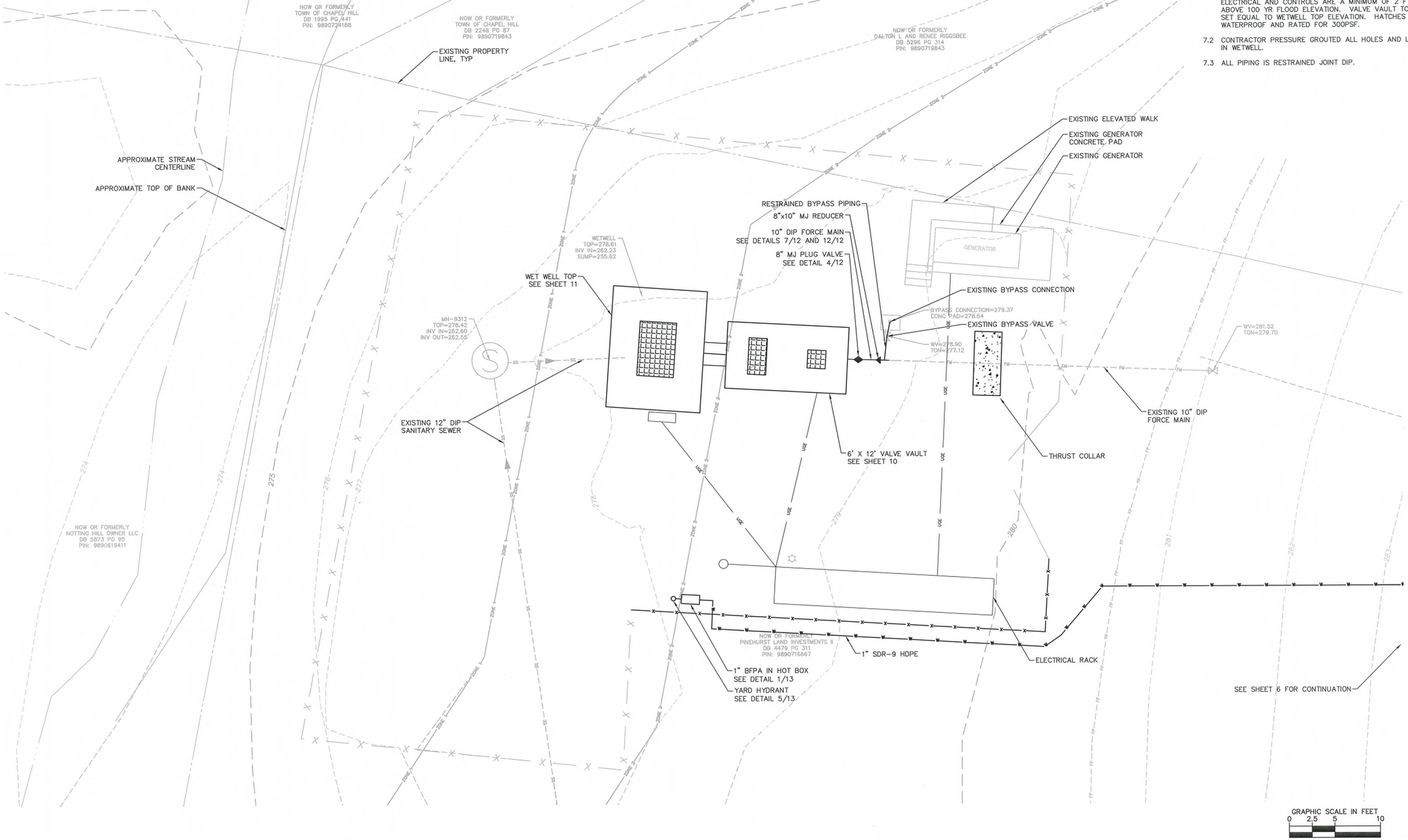
Plotted By: Bulo, Dan June 20, 2018 10:18:37am K:\OUR_Utilities\011935006 OWASA 2016 PS Improv\CADD_Record Drawings\PlanSheets\6 EASTOWNE OVERALL PLAN.dwg

NOTES:

7.1 100-YR FLOOD ELEVATION = 280.7 FT MSL. ALL ELECTRICAL AND CONTROLS ARE A MINIMUM OF 2 FT ABOVE 100 YR FLOOD ELEVATION. VALVE VAULT TOP IS SET EQUAL TO WETWELL TOP ELEVATION. HATCHES ARE WATERPROOF AND RATED FOR 300PSF.

7.2 CONTRACTOR PRESSURE GROUTED ALL HOLES AND LEAKS IN WETWELL.

7.3 ALL PIPING IS RESTRAINED JOINT DIP.



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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	1" = 5'
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL:
NORTH CAROLINA
SEAL
33186
ENGINEER
ZACHARY G. PURVIS
6-20-18

EASTOWNE PUMP STATION SITE PLAN

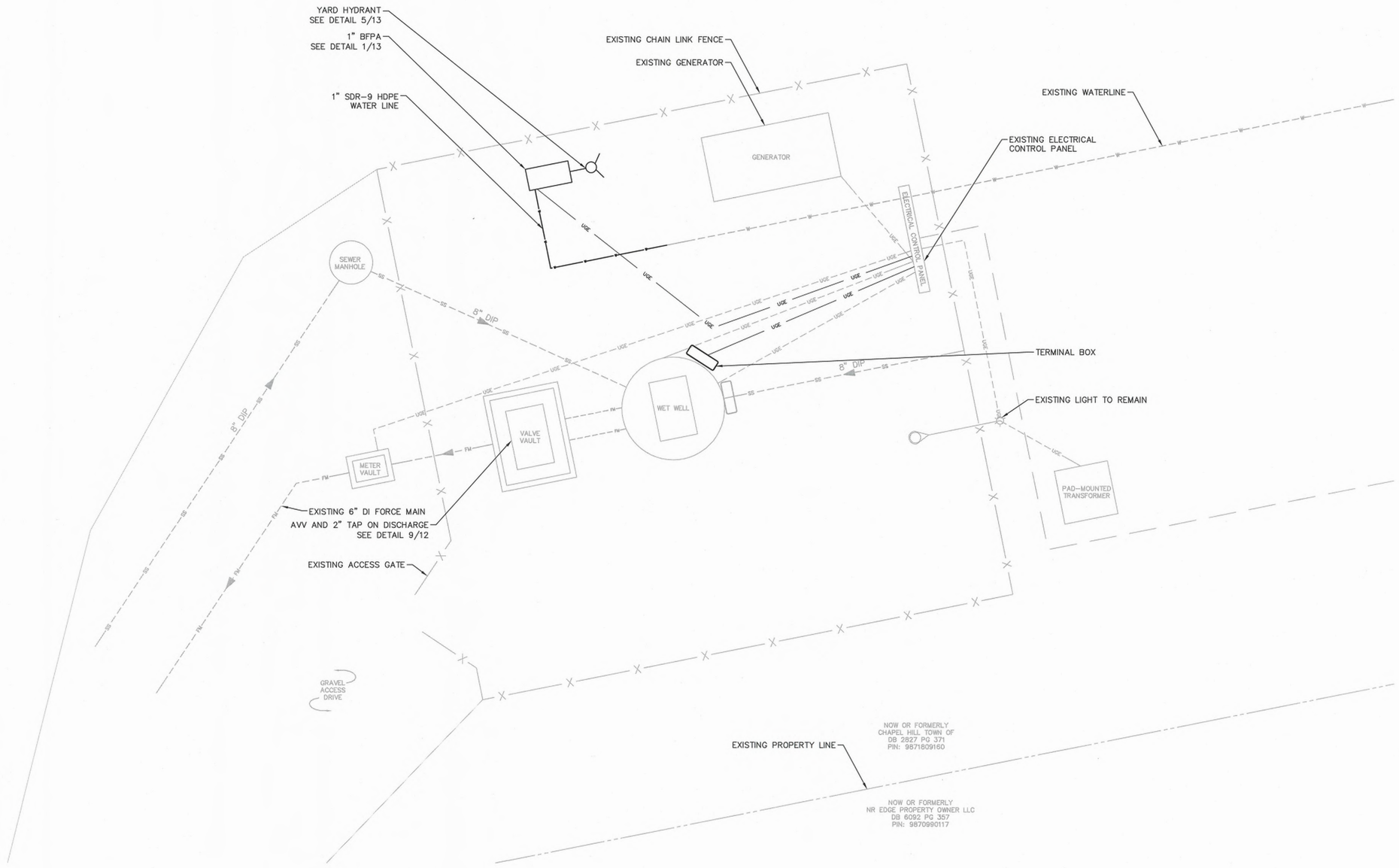
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7
OF
25

Plotted By:Bula, Dan June 20, 2018 10:21:07am K:\DUR_Utilities\011935006 - OWASA 2016 PS Improv\CAD_Record Drawings\PlanSheets\Y

NOTES:
8.1 EXISTING SITE, STRUCTURES, EQUIPMENT, AND PROPERTY LINES ARE APPROXIMATE FROM RECORD DRAWINGS, OWASA GIS AND FIELD MEASUREMENTS.

8.2 ALL DISTURBED AREAS INSIDE FENCE AND DRIVEWAY COVERED WITH A MINIMUM OF 4" OF #57 STONE.

8.3 ANNULAR SPACE BETWEEN THE DISCHARGE PIPES AND THE INTERIOR WET WELL WALL GROUTED WITH NON-SHRINK GROUT.



GRAPHIC SCALE IN FEET
0 2.5 5 10

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EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURVIS 6-20-18

EUBANKS PUMP STATION SITE PLAN

SHEET NUMBER 8 OF 25

Plotted By: Blue, Don June 20, 2018 10:22:27am K:\DUR_Utilities\011935006 - OWASA 2016 PS Impvs\CAD_Record Drawings\PlanSheets\8 EUBANKS PUMP STATION SITE PLAN.dwg

NOTES:

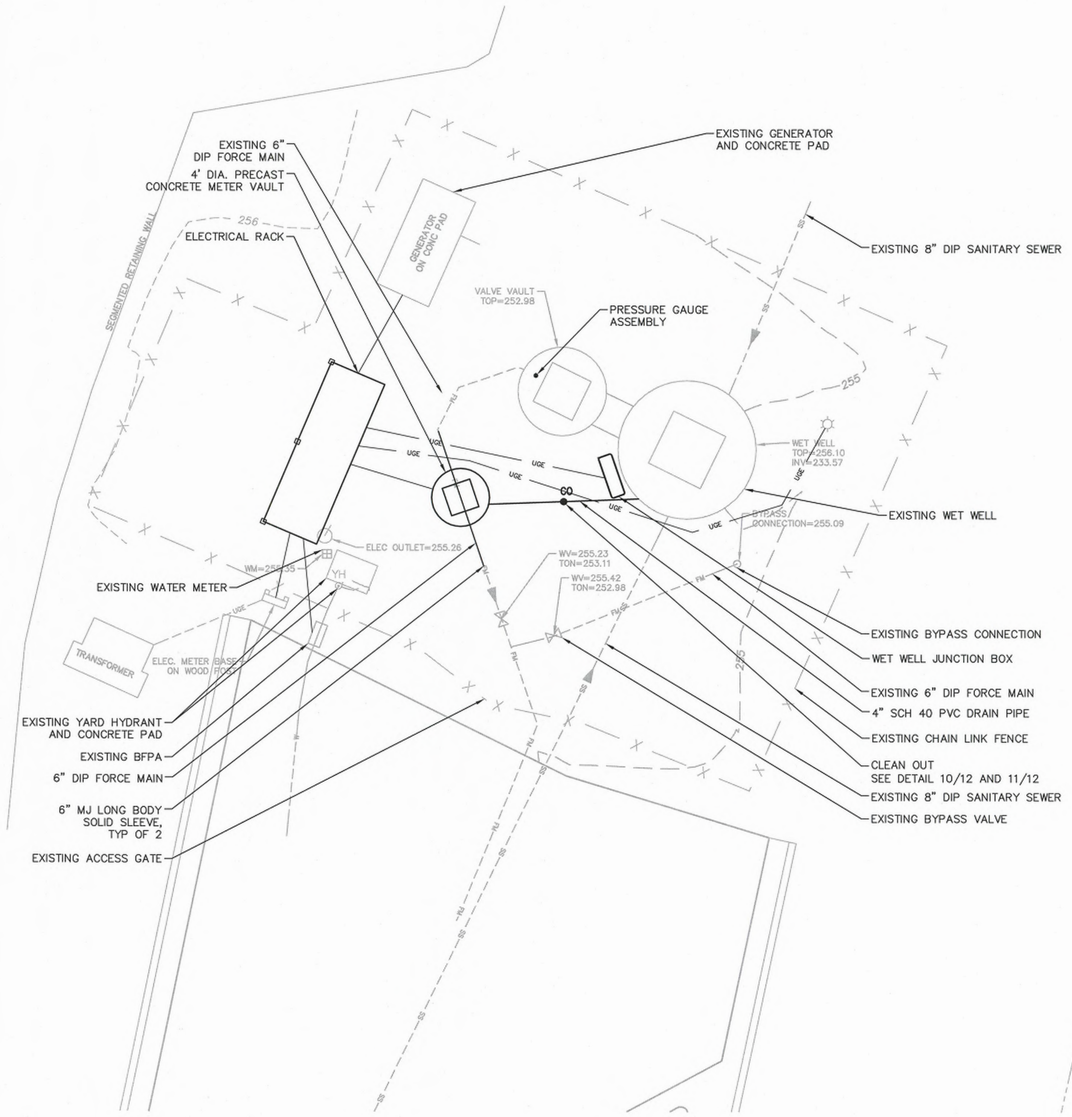
9.1 100-YR FLOOD ELEVATION = 242.5 FT MSL. ALL ELECTRICAL AND CONTROLS ARE A MINIMUM OF 2 FT ABOVE 100 YR FLOOD ELEVATION.

9.2 ALL DISTURBED AREAS INSIDE FENCE AND DRIVEWAY COVERED WITH A MINIMUM OF 4" OF #57 STONE.

9.3 ALL PIPING AND FITTINGS ARE RESTRAINED.

9.4 PLAN IS BASED ON A SURVEY PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. JULY 2016.

9.5 CONTRACTOR PROVIDED ONE (1) SPARE FAIRBANKS MORSE 4"-D5432 MTK WITH A 1750 RPM, 3 PH, 60 HZ, 480 V, 15 HP MOTOR AND A 9.75" T4B1AF IMPELLER. PUMP DESIGN POINT IS 372 GPM AT 73 FT TDH. PUMP WAS SUPPLIED WITH 40' OF SUBMERSIBLE CABLE.



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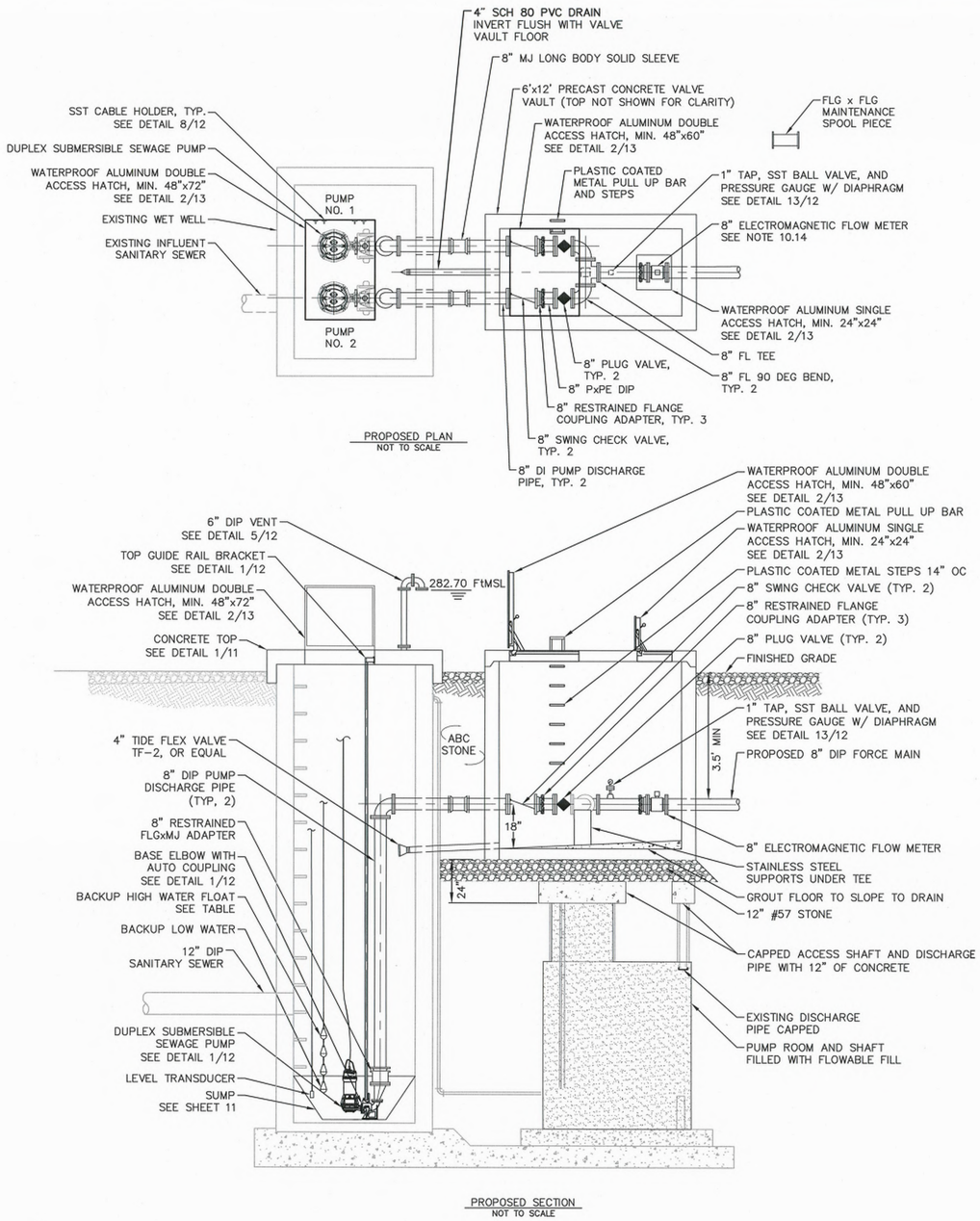
EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURVIS

MEADOWMONT 1 PUMP STATION SITE PLAN

SHEET NUMBER 9 OF 25

Plotted By: Bliss, Dan June 20, 2018 10:23:53am K:\DUR_Utilities\011935006 - OWASA 2016 PS Impvs\CAD_Record Drawings\FinalSheets\9 MEADOWMONT 1 PUMP STATION SITE PLAN.dwg



PROPOSED SECTION
NOT TO SCALE

NOTES:

10.1 ALL ITEMS IN BOLD ARE NEW.

10.2 HATCHES ARE WATERPROOF, AND SUPPLIED WITH FALL PROTECTION OF THE HINGED AL GRATING TYPE.

10.3 304L SST INTERMEDIATE GUIDE RAIL BRACKETS INSTALLED AS REQUIRED BY PUMP MANUFACTURER, AND DETAIL 1/12.

10.4 ALL HARDWARE, SUPPORTS, BRACING, FASTENERS, ANCHOR BOLTS ETC., INSIDE WET WELL ARE ANSI TYPE 304L STAINLESS STEEL.

10.5 FLOATS ARE SIGNAL DUTY MERCURY FREE FLOAT SWITCHES WITH THREE WIRES SUITABLE FOR OPERATION AS NORMALLY OPEN OR NORMALLY CLOSED.

WET WELL DIMENSIONS	10'x7'
DISCHARGE PIPING	8"
PUMP CURVE POINT #1	0 GPM/184 TDH
PUMP CURVE POINT #2	260 GPM/162 TDH
PUMP CURVE POINT #3	870 GPM/110 TDH
PUMP CURVE POINT #4	1590 GPM/48 TDH
ALLOWABLE CURVE DEVIATION (3)	3% FLOW/2% HEAD
HORSEPOWER	57.7
VOLTAGE/ PHASE/ CYCLES	480V, 3PH, 60 HZ
MAX. OPERATING SPEED	1780
DESIGN PUMP	ABS XFP 100J-CH1
IMPELLER	12.8" DIA SINGLE VANE
MINIMUM SPHERE PASSAGE	3.15"
PRIMARY LEVEL SENSING METHOD	SUBMERSIBLE PRESSURE TRANSDUCER
BACKUP LEVEL SENSING METHOD	FLOATS
CHECK VALVES	FLANGED LEVER AND WEIGHT
PLUG VALVES	FLANGED FULL PORT HAND WHEEL OPERATED

TABLE 10.1 – PUMP STATION GENERAL INFORMATION

TOP OF WET WELL (EXISTING)	278.60 FT MSL
TOP OF WET WELL (PROPOSED)	279.10 FT MSL
WETWELL INVERT IN	262.23 FT MSL
BACKUP HIGH WATER	261.90 FT MSL
HIGH WATER ALARM	261.90 FT MSL
LAG PUMP ON	261.57 FT MSL
LEAD PUMP ON	261.23 FT MSL
PUMPS OFF	258.73 FT MSL
PRESSURE TRANSDUCER	255.10 FT MSL
WETWELL BOTTOM	254.10 FT MSL
100-YR FLOOD	280.70 FT MSL

TABLE 10.2 – PUMP STATION ELEVATIONS

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DATE	JUN 2018
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DESIGNED BY	ZGP
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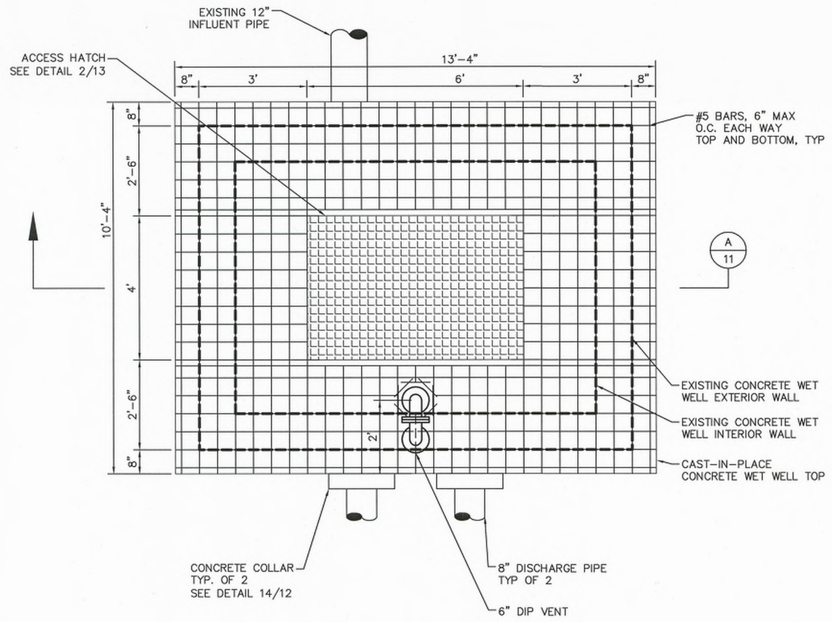
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SEAL: NORTH CAROLINA PROFESSIONAL SEAL 33180 ENGINEER ZACHARY G. PURVIS

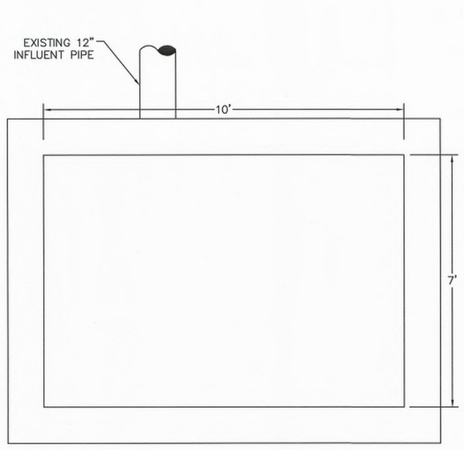
EASTOWNE PUMP STATION MECHANICAL PLAN

SHEET NUMBER 10 OF 25

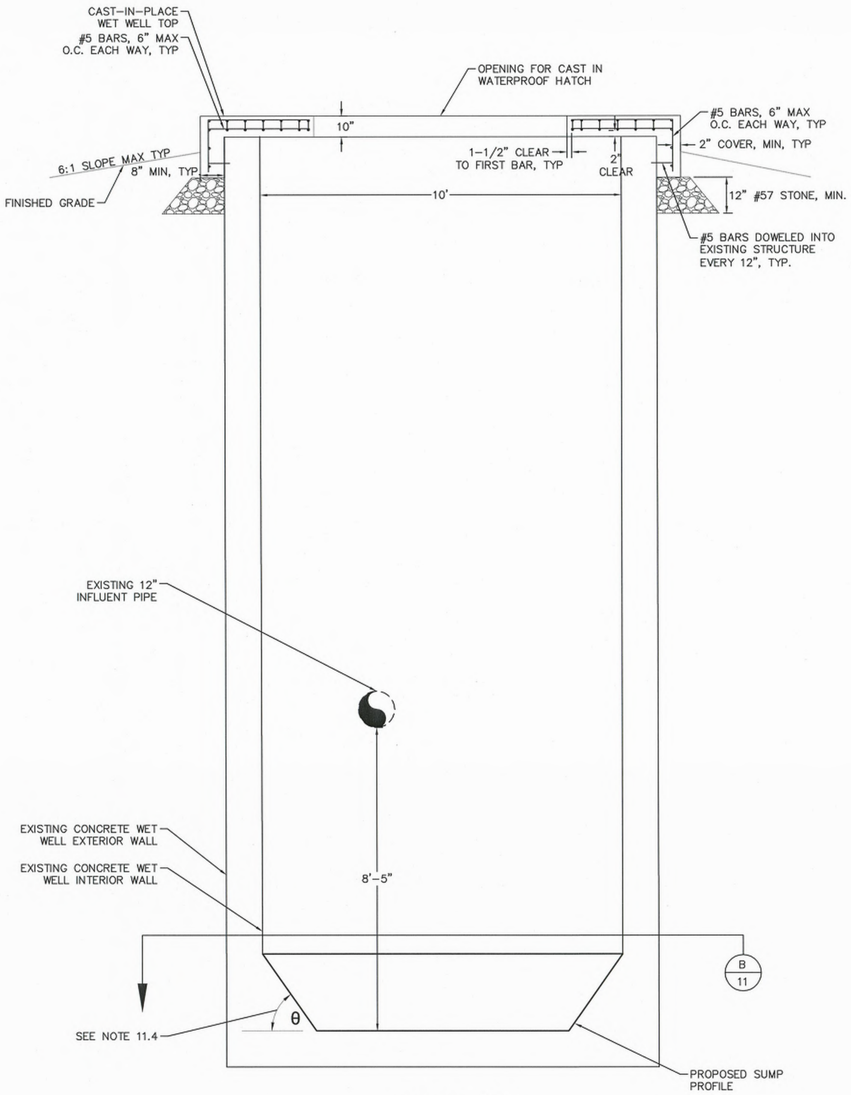
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1
11
WET WELL TOP
SCALE: N.T.S.



SECTION B 11



SECTION A 11

NOTES:
11.1 SEE STRUCTURAL NOTES ON SHEET 3 FOR ADDITIONAL INFORMATION.

11.2 EXISTING SUMP REMOVED AND REFORMED WITH A FLAT BOTTOM AND FILLET AS SHOWN IN SECTION A/11.

11.3 ALL EXPOSED CONCRETE EDGES HAVE A 3/4" FILLET.

11.4 ANGLE IS BETWEEN 30 AND 60 DEGREES.

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DATE	JUN 2018
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

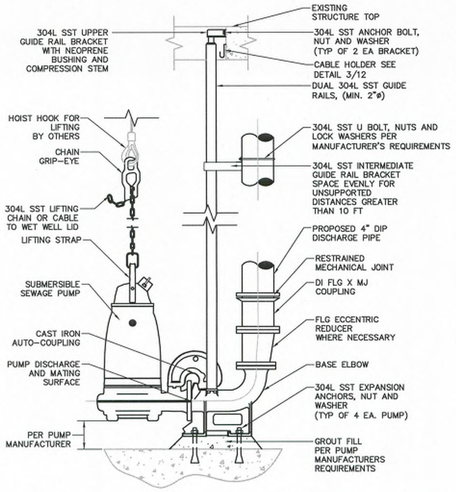
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SEAL: NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER CHARY G. PURYEAR 6/29/18

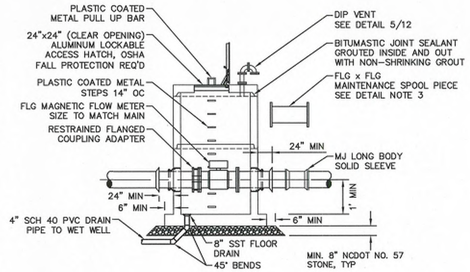
EASTOWNE MISCELLANEOUS STRUCTURAL DETAILS

SHEET NUMBER 11 OF 25

Plotted By: Duo, Dan June 29, 2018 10:25:37am K:\DUR_Utilities\011935006 - OWASA 2016 PS Imps\CAD_Record Drawings\PlanSheets\11 EASTOWNE MISCELLANEOUS STRUCTURAL DETAILS.dwg

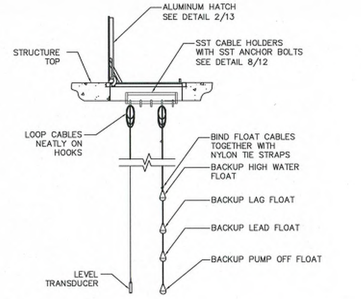


1	SUBMERSIBLE PUMP AND LIFT OUT ASSEMBLY
12	SCALE: N.T.S.

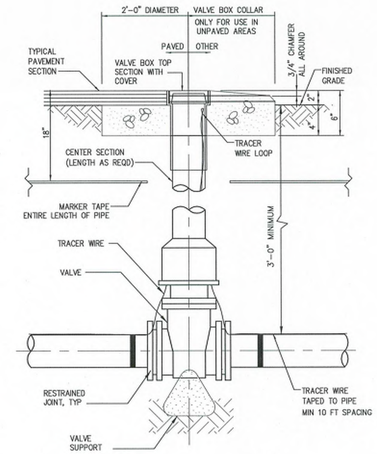


NOTES:
1. ALL PIPE, METER AND FITTING SIZES SHALL BE THE SAME SIZE AS THE HOST FORCE MAIN.
2. RESTRAINED FLANGED COUPLING ADAPTER SHALL BE ROMAC RFCA OR EQUAL
3. MAGNETIC FLOW METER SHALL BE ENDRESS AND HAUSER PROLINE PROMAG D400 CLASS 1, DIVISION 2 AND SHALL BE SUPPLIED WITH REMOTE READ OUT IN PUMP CONTROL PANEL. DEVICE OUTPUT SHALL BE 4-20mA AND SCADA READY WITH 24VDC SUPPLY VOLTAGE.
4. CONTRACTOR SHALL PROVIDE A FLANGE X FLANGE SPOOL PIECE IDENTICAL IN SIZE AND LAYING LENGTH TO THE METER.

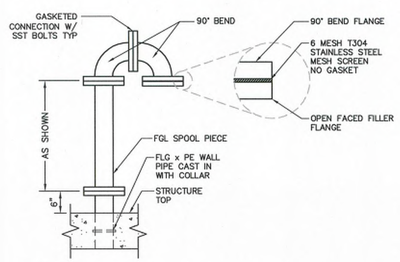
2	MAGNETIC FLOW METER MANHOLE
12	SCALE: N.T.S.



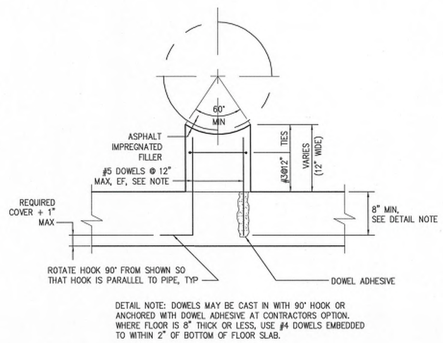
3	ACCESS AND CONTROLS HATCH
12	SCALE: N.T.S.



4	VALVE BOX
12	SCALE: N.T.S.

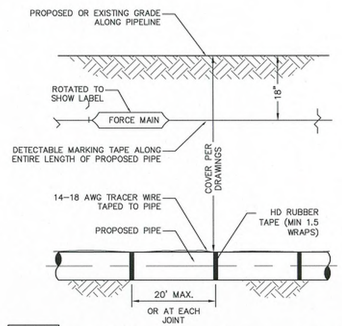


5	VENT PIPE
12	SCALE: N.T.S.

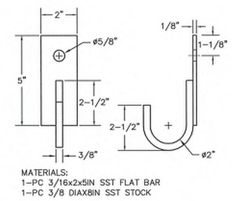


DETAIL NOTE: DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.

6	PIER PIPE SUPPORT
12	SCALE: N.T.S.

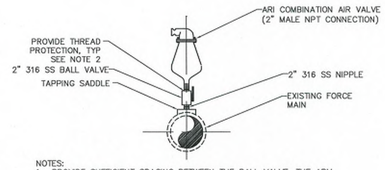


7	DETECTABLE MARKING TAPE AND WIRE
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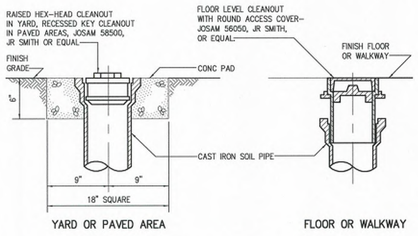
MATERIALS:
1-PC 3/16x2x5IN SST FLAT BAR
1-PC 3/8 DIAx8IN SST STOCK

8	SST CABLE HOLDER
12	SCALE: N.T.S.

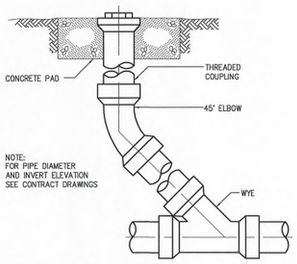


NOTES:
1. PROVIDE SUFFICIENT SPACING BETWEEN THE BALL VALVE, THE ARV, AND THE TAPPING SADDLE SUCH THAT THE BALL VALVE WILL OPERATE PROPERLY.
2. MALE THREADED END OF ARV SHALL BE COATED WITH ANTI-SEIZE THREAD COMPOUND PRIOR TO INSTALLATION.
3. PROVIDE BUSHINGS AND ADAPTERS AS NECESSARY TO CONNECT TO TAP.

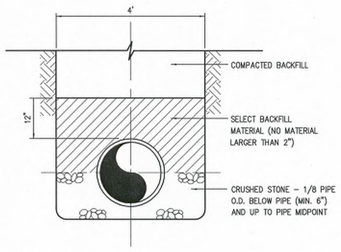
9	AIR VACUUM VALVE ASSEMBLY
12	SCALE: N.T.S.



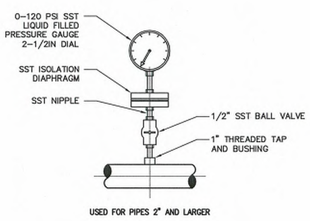
10	CLEANOUTS
12	SCALE: N.T.S.



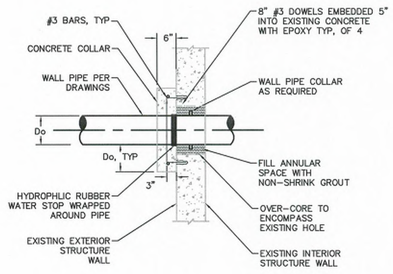
11	CLEANOUT RISER
12	SCALE: N.T.S.



12	PIPE EMBEDMENT TYPE B
12	SCALE: N.T.S.



13	PRESSURE GAUGE
12	SCALE: N.T.S.



14	PIPE PENETRATION COLLAR
12	SCALE: N.T.S.

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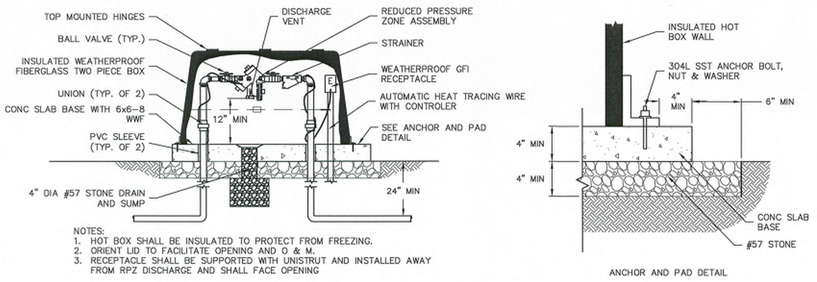
EASTOWNE, EUBANKS, AND MEADOWMONT 1
PUMP STATIONS IMPROVEMENTS PROJECT
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CARRBORO, NORTH CAROLINA

SEAL: 33186 ENGINEER CHARY G. PURVIS 6-26-19

MISCELLANEOUS DETAILS

SHEET NUMBER 12 OF 25

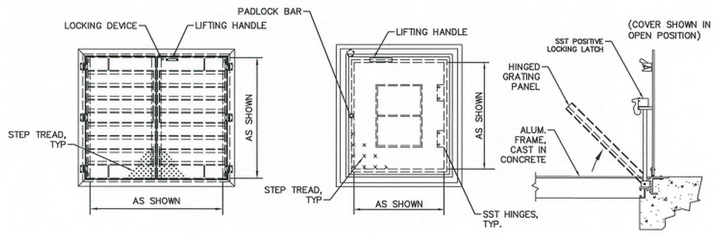
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NOTES:
1. HOT BOX SHALL BE INSULATED TO PROTECT FROM FREEZING.
2. ORIENT LID TO FACILITATE OPENING AND O & M.
3. RECEPTACLE SHALL BE SUPPORTED WITH UNISTRUT AND INSTALLED AWAY FROM RPZ DISCHARGE AND SHALL FACE OPENING

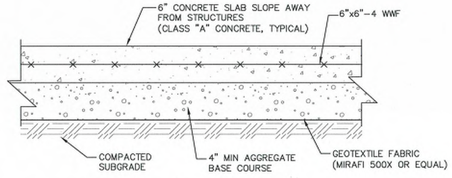
ANCHOR AND PAD DETAIL

1 / 13 — 1" REDUCED PRESSURE STONE ASSEMBLY IN HOT BOX
SCALE: N.T.S.

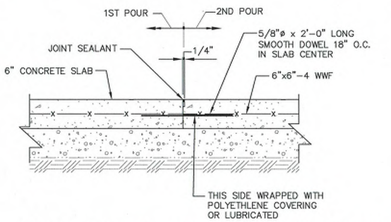


NOTES:
1. ALL HATCH COMPONENTS SHALL BE SST OR ALUMINUM.
2. HATCHES SHALL BE WATERPROOF AND RATED FOR 300PSF.
3. EXPOSED HARDWARE SHALL BE TAMPER-PROOF.
4. FALL PROTECTION SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
5. CONTRACTOR SHALL CONFIRM THAT DIMENSIONS ARE ADEQUATE FOR INSTALLATION, REMOVAL, AND MAINTENANCE OF EQUIPMENT WITH EQUIPMENT MANUFACTURERS.

2 / 13 — ACCESS HATCHES
SCALE: N.T.S.

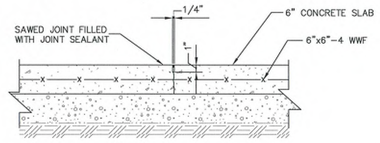


CONCRETE PAD DETAIL
NOT TO SCALE



PAINT FACE OF JOINT WITH BOND BREAKING COMPOUND PRIOR TO 2ND POUR

CONSTRUCTION JOINT



JOINT SHALL BE SAWED IMMEDIATELY AFTER INITIAL SET, BEFORE CONCRETE BEGINS TO COOL, AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH NOT TO BE DAMAGED BY THE BLADE, AND BEFORE RANDOM DRYING SHRINKAGE CRACKS CAN FORM.

CONTROL JOINT

3 / 13 — CONCRETE PAD
SCALE: N.T.S.

GENERAL
1. FOUNDATIONS ARE DESIGNED FOR A PRESUMPTIVE ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF. CONTRACTOR SHALL VERIFY SOIL CONDITIONS AND BEARING CAPACITY PRIOR TO CONSTRUCTION.

2. EXCAVATE A MINIMUM 18" BELOW PROPOSED EQUIPMENT FOUNDATIONS OF EXPANSIVE, ORGANIC, UNCONSOLIDATED OR OTHERWISE UNACCEPTABLE MATERIAL AND REPLACE WITH WELL-COMPACTED MATERIAL ACCEPTABLE TO OWNER/ENGINEER.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING, AND RELOCATING AS REQUIRED ALL SERVICE AND UTILITY LINES IN VICINITY OF THE WORK SITE. ALL EXCAVATIONS NEAR THESE LINES TO BE CARRIED OUT WITH EXTREME CAUTION. COORDINATE ALL RELOCATIONS WITH THE PROPERTY OWNER.

4. CONTRACTOR TO CUT/FILL EXISTING SITE SUBSOIL TO PROVIDE AN AREA AS LEVEL AS POSSIBLE FOR THE EQUIPMENT FOUNDATIONS. ALL FILL AREAS ARE TO BE FILLED WITH SUITABLE MATERIALS. FILL MATERIALS ARE TO BE PLACED, COMPACTED, AND TESTED IN MAXIMUM LIFTS OF 8". COMPACTION OF ALL FILL MATERIAL AND AGGREGATE BASE COURSE SHALL ACHIEVE 95 PERCENT OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 698. ALL TESTS MUST MEET THE MINIMUM SPECIFIED SOIL BEARING CAPACITY. COMPACTION TESTING IS BY THE CONTRACTOR.

MATERIALS
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION TO ACI-318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL HAVE A SLUMP BETWEEN 3" AND 6".

3. REINFORCING BARS SHALL CONFORM TO THE LATEST REVISION OF ASTM-A615 GRADE 60 SPECIFICATIONS AND BE DETAILED IN ACCORDANCE WITH THE LATEST REVISION TO ACI-318.

4. TEST CYLINDERS SHALL BE MOLDED AND LABORATORY CURED IN ACCORDANCE WITH ASTM C31. THREE CYLINDERS SHALL BE TAKEN FOR EACH DAY'S CONCRETE PLACEMENT. CYLINDERS SHALL BE TESTED IN ACCORDANCE WITH THE LATEST REVISION TO ASTM C39.

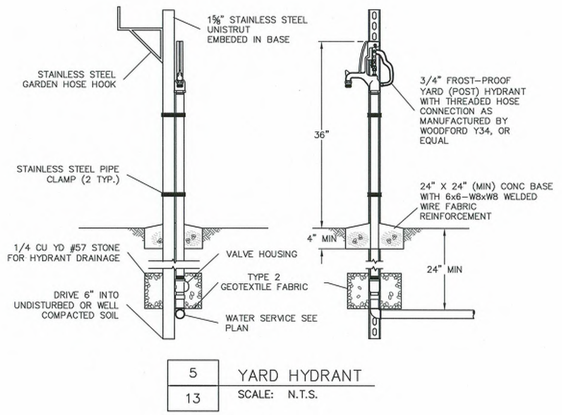
5. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH ¾" x 45° CHAMFER, UNLESS OTHERWISE NOTED.

6. CONCRETE FORMWORK IS TO BE STRIPPED WITHIN 48 HOURS. VIBRATION OF THE CONCRETE MUST ASSURE THAT HONEYCOMBING WILL BE AT A MINIMUM. MECHANICAL VIBRATION OF ALL CONCRETE IS REQUIRED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ABOVE GRADE CONCRETE IS TO BE RUBBED AND PATCHED TO ASSURE SMOOTH FINISH AT TIME OF FORM REMOVAL. CONTRACTOR SHALL PROVIDE A BROOM FINISH ON THE TOP SURFACE OF THE EQUIPMENT FOUNDATION.

ELECTRICAL
1. CONTRACTOR SHALL REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON THE STRUCTURAL DRAWINGS. CONTRACTOR SHALL VERIFY PLACEMENT OF EQUIPMENT AND LOCATION OF CONDUIT FOR MANUFACTURERS AND VENDORS SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION OF ALL UTILITIES.

TOLERANCES
1. TOPS OF CONCRETE FOUNDATION MUST BE WITHIN 0.02' OF ELEVATION REQUIRED.

CONCRETE PAD NOTES



5 / 13 — YARD HYDRANT
SCALE: N.T.S.

RECORD DRAWINGS

No.	REVISIONS	DATE	BY

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PHONE: 919-682-3538 FAX: 919-677-2050
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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

EASTOWNE, EUBANKS, AND MEADOWMONT 1
PUMP STATIONS IMPROVEMENTS PROJECT
PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

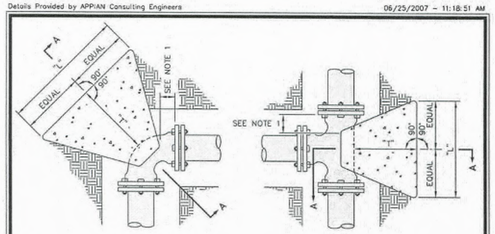
NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURVIS
SEAL:

MISCELLANEOUS DETAILS

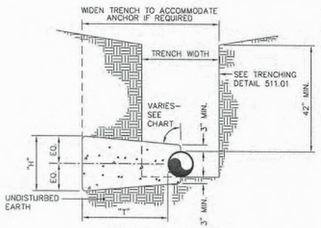
SHEET NUMBER 13 OF 25

Plotted By: Bulo, Dan June 06, 2018 10:27:23am K:\DUR_Utilities\011935006 - OWASA 2016 PS Imps\CAD_Record Drawings\PlanSheets\13 MISCELLANEOUS DETAILS.dwg

Details Provided by APPIAN Consulting Engineers 06/25/2007 - 11:18:51 AM



FOR ALL BEND FITTINGS FOR TEE FITTING



SECTION A-A

NOTES:
1. Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
2. Fittings are to be completely wrapped with plastic, prior to pouring concrete.
3. Concrete to be minimum 3,000 psi. @ 28 days.

OWASA Quality Service Since 1977

400 Jones Ferry Road
PO Box 366
Carrboro, NC 27510-0366

ORANGE WATER AND SEWER AUTHORITY

Voice (919) 968-4421
FAX (919) 968-4464
www.owasa.org

USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE:	DETAIL #:
Not To Scale	≥512.02
REVISION DATE:	SHEET #:
August 15, 2003	1 of 4

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 06/25/2007 - 11:19:19 AM

⚠ TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME CONCRETE CU. YD.
<4 INCHES	11 1/4°	---	---	---	---
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.00	1.00	2.50	0.09
	TEE / PLUG	1.00	1.00	2.00	0.07
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.00	1.00	2.50	0.09
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
6 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	3.00	0.28
	TEE / PLUG	2.00	2.00	2.50	0.23
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.75	0.25
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	2.00	2.00	3.00	0.28
	45°	3.00	2.50	3.00	0.47
	90°	4.50	3.00	3.50	0.94
	TEE / PLUG	4.50	3.00	3.00	0.81
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	3.00	3.50	0.84
	90°	6.50	3.50	3.50	1.54
	TEE / PLUG	6.50	3.50	3.00	1.32

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

OWASA Quality Service Since 1977

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ORANGE WATER AND SEWER AUTHORITY

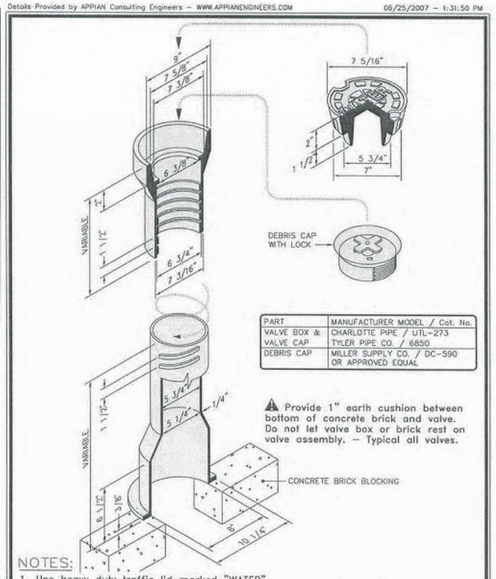
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USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE:	DETAIL #:
Not To Scale	≥512.02
REVISION DATE:	SHEET #:
August 15, 2003	2 of 4

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 06/25/2007 - 1:31:50 PM



⚠ Provide 1" earth cushion between bottom of concrete brick and valve. Do not let valve box or brick rest on valve assembly. - Typical all valves.

NOTES:
1. Use heavy duty traffic lid marked "WATER".

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USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

STANDARD SCREW VALVE BOX DETAIL

SCALE:	DETAIL #:
Not To Scale	≥513.01
REVISION DATE:	SHEET #:
August 15, 2003	1 of 1

NOTE: REFER TO OWASA REFERENCED SPECIFICATIONS AND DETAILS.

RECORD DRAWINGS

No.	REVISIONS	DATE	BY

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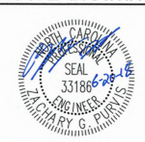
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PHONE: 919-682-3538 FAX: 919-677-2050
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KHA PROJECT	011935006
DATE	JUN 2018
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	DGB
CHECKED BY	MAS

EASTOWNE, EUBANKS, AND MEADOWMONT 1 PUMP STATIONS IMPROVEMENTS PROJECT

PREPARED FOR
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

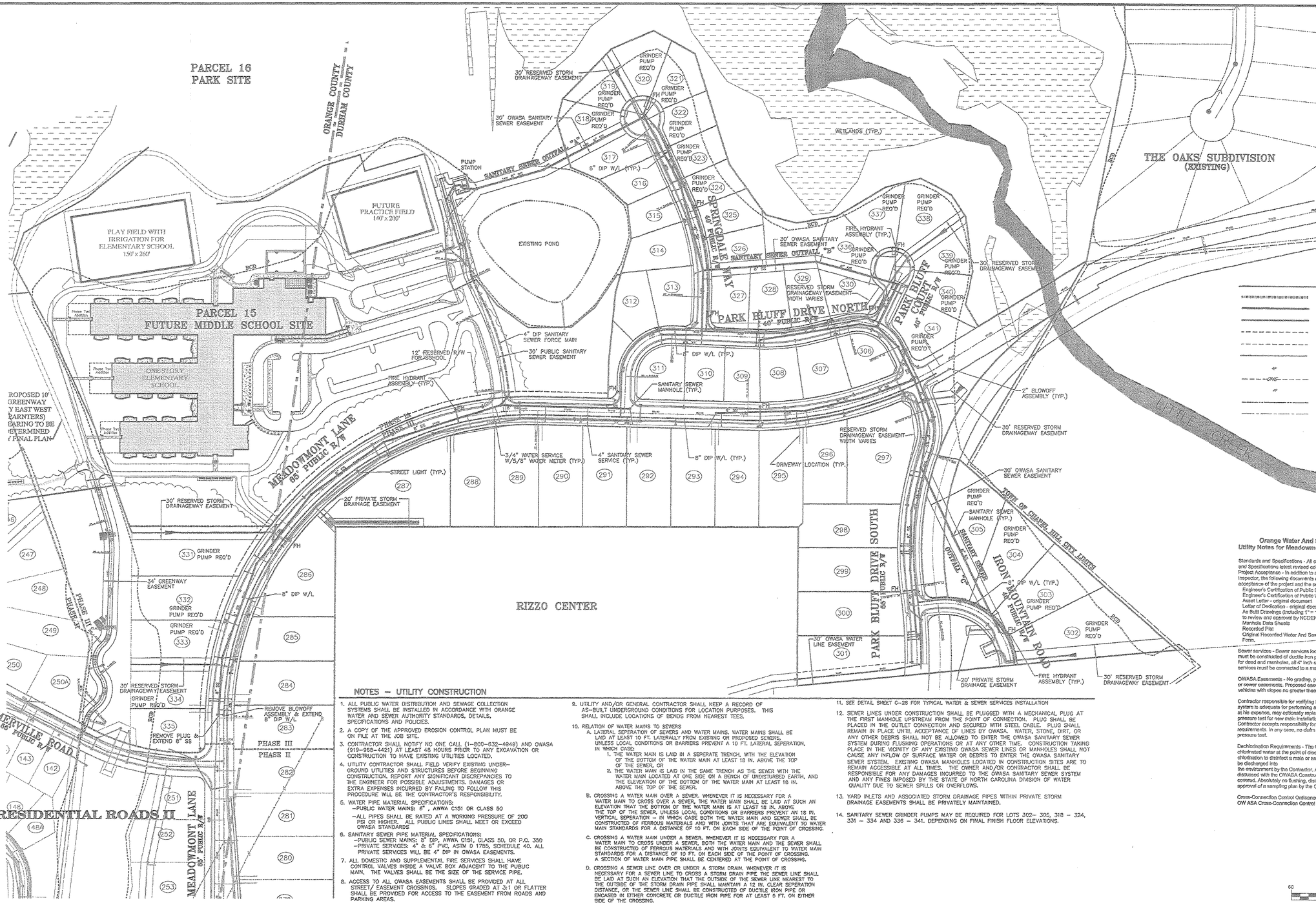
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MISCELLANEOUS DETAILS

SHEET NUMBER
14
OF
25

Plotted By: Rula, Dan June 20, 2018 10:28:38am K:\DUR_Utilities\011935006 - OWASA 2016 PS Improv\CAD_Record Drawings\PlanSheets\14 MISCELLANEOUS DETAILS.dwg



NOTES – UTILITY CONSTRUCTION

1. ALL PUBLIC WATER DISTRIBUTION AND SEWAGE COLLECTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ORANGE WATER AND SEWER AUTHORITY STANDARDS, DETAILS, SPECIFICATIONS AND POLICIES.
2. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE.
3. CONTRACTOR SHALL NOTIFY NC ONE CALL (1-800-632-4949) AND OWASA (919-968-4421) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION TO HAVE EXISTING UTILITIES LOCATED.
4. UTILITY CONTRACTOR SHALL FIELD VERIFY EXISTING UNDER-GROUND UTILITIES AND STRUCTURES BEFORE BEGINNING CONSTRUCTION. REPORT ANY SIGNIFICANT DISCREPANCIES TO THE ENGINEER FOR POSSIBLE ADJUSTMENTS. DAMAGES OR EXTRA EXPENSES INCURRED BY FAILING TO FOLLOW THIS PROCEDURE WILL BE THE CONTRACTOR'S RESPONSIBILITY.
5. WATER PIPE MATERIAL SPECIFICATIONS:
   - –PUBLIC WATER MAINS: 8" , AWWA C151 OR CLASS 50
   - –ALL PIPES SHALL BE RATED AT A WORKING PRESSURE OF 200 PSI OR HIGHER. ALL PUBLIC LINES SHALL MEET OR EXCEED OWASA STANDARDS
6. SANITARY SEWER PIPE MATERIAL SPECIFICATIONS:
   - –PUBLIC SEWER MAINS: 8" DIP, AWWA C151, CLASS 50, OR P.C. 350
   - –PRIVATE SERVICES: 4" & 6" PVC, ASTM D 1785, SCHEDULE 40. ALL PRIVATE SERVICES WILL BE 4" DIP IN OWASA EASEMENTS.
7. ALL DOMESTIC AND SUPPLEMENTAL FIRE SERVICES SHALL HAVE CONTROL VALVES INSIDE A VALVE BOX ADJACENT TO THE PUBLIC MAIN. THE VALVES SHALL BE THE SIZE OF THE SERVICE PIPE.
8. ACCESS TO ALL OWASA EASEMENTS SHALL BE PROVIDED AT ALL STREET/ EASEMENT CROSSINGS. SLOPES GRADED AT 3:1 OR FLATTER SHALL BE PROVIDED FOR ACCESS TO THE EASEMENT FROM ROADS AND PARKING AREAS.
9. UTILITY AND/OR GENERAL CONTRACTOR SHALL KEEP A RECORD OF AS-BUILT UNDERGROUND CONDITIONS FOR LOCATION PURPOSES. THIS SHALL INCLUDE LOCATIONS OF BENDS FROM NEAREST TEES.
10. RELATION OF WATER MAINS TO SEWERS
    A. LATERAL SEPERATION OF SEWERS AND WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST 10 FT. LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10 FT. LATERAL SEPERATION, IN WHICH CASE:
       1. THE WATER MAIN IS LAID IN A SEPERATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 IN. ABOVE THE TOP OF THE SEWER, OR
       2. THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 IN. ABOVE THE TOP OF THE SEWER.
    B. CROSSING A WATER MAIN OVER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 IN. ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 IN. VERTICAL SEPERATION – IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FT. ON EACH SIDE OF THE POINT OF CROSSING.
    C. CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FT. ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
    D. CROSSING A SEWER LINE OVER OR UNDER A STORM DRAIN. WHENEVER IT IS NECESSARY FOR A SEWER LINE TO CROSS A STORM DRAIN PIPE THE SEWER LINE SHALL BE LAID AT SUCH AN ELEVATION THAT THE OUTSIDE OF THE SEWER LINE NEAREST TO THE OUTSIDE OF THE STORM DRAIN PIPE SHALL MAINTAIN A 12 IN. CLEAR SEPERATION DISTANCE, OR THE SEWER LINE SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE OR ENCASED IN EITHER CONCRETE OR DUCTILE IRON PIPE FOR AT LEAST 5 FT. ON EITHER SIDE OF THE CROSSING.
11. SEE DETAIL SHEET C-28 FOR TYPICAL WATER & SEWER SERVICES INSTALLATION
12. SEWER LINES UNDER CONSTRUCTION SHALL BE PLUGGED WITH A MECHANICAL PLUG AT THE FIRST MANHOLE UPSTREAM FROM THE POINT OF CONNECTION. PLUG SHALL BE PLACED IN THE OUTLET CONNECTION AND SECURED WITH STEEL CABLE. PLUG SHALL REMAIN IN PLACE UNTIL ACCEPTANCE OF LINES BY OWASA. WATER, STONE, DIRT, OR ANY OTHER DEBRIS SHALL NOT BE ALLOWED TO ENTER THE OWASA SANITARY SEWER SYSTEM DURING FLUSHING OPERATIONS OR AT ANY OTHER TIME. CONSTRUCTION TAKING PLACE IN THE VICINITY OF ANY EXISTING OWASA SEWER LINES OR MANHOLES SHALL NOT CAUSE ANY INFLOW OF SURFACE WATER OR DEBRIS TO ENTER THE OWASA SANITARY SEWER SYSTEM. EXISTING OWASA MANHOLES LOCATED IN CONSTRUCTION SITES ARE TO REMAIN ACCESSIBLE AT ALL TIMES. THE OWNER AND/OR CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES INCURRED TO THE OWASA SANITARY SEWER SYSTEM AND ANY FINES IMPOSED BY THE STATE OF NORTH CAROLINA DIVISION OF WATER QUALITY DUE TO SEWER SPILLS OR OVERFLOWS.
13. YARD INLETS AND ASSOCIATED STORM DRAINAGE PIPES WITHIN PRIVATE STORM DRAINAGE EASEMENTS SHALL BE PRIVATELY MAINTAINED.
14. SANITARY SEWER GRINDER PUMPS MAY BE REQUIRED FOR LOTS 302– 305, 318 – 324, 331 – 334 AND 336 – 341. DEPENDING ON FINAL FINISH FLOOR ELEVATIONS.

Orange Water And Sewer Authority
Utility Notes for Meadowmont Residential Roads III

Standards and Specifications - All construction shall be in accordance with OWASA Standards and Specifications latest revised edition.
Project Acceptance - In addition to a Final Inspection approved by the OW ASA Construction Inspector, the following documents must be received and approved by OWASA before acceptance of the project and the setting of meters:
Engineer's Certification of Public Sewer - original document
Engineer's Certification of Public Water - original document
Asset Letter - original document
Letter of Dedication - original document
As Built Drawings (including 1" = 100' Scale Site Plan) As Builts of sewer construction subject to review and approval by NCDENR Division of Water Quality.
Manhole Data Sheets
Recorded Plat
Original Recorded Water And Sewer Deeds of Easement - prepared using OWASA's Standard Form.

Sewer services - Sewer services located within public right-of-ways or OWASA sewer easements must be constructed of ductile iron pipe from the tap up to and including the first clean-out. Except for dead end manholes, all 4" inch sewer services must be tapped into the sewer main. All 6" services must be connected to a manhole.

OWASA Easements - No grading, plantings, or encroachments are allowed within OWASA water or sewer easements. Proposed easements must have vehicular access for OWASA maintenance vehicles with slopes no greater than 4 to 1.

Contractor responsible for verifying that existing valve at the point of connection to the OWASA system is adequate for performing and passing hydrostatic pressure and leakage test. Contractor, at his expense, may optionally replace valve or install a new valve for the purpose of performing a pressure test for new main installation. If Contractor elects to pressure test against existing valve, Contractor accepts responsibility for ensuring passing pressure test in accordance with OWASA requirements. In any case, no claim whatsoever shall be made against OWASA for failure of pressure test.

Dechlorination Requirements - The Contractor shall be responsible for neutralization of chlorinated water at the point of discharge from the main being tested. This shall occur following chlorination to disinfect a main or any other time when elevated levels of chlorine could potentially be discharged into
the environment by the Contractor. At the time the disinfection and purity testing procedures are discussed with the OWASA Construction Inspector, the procedure for dechlorination will be covered. Absolutely no flushing, disinfection, or purity sampling is to take place without prior approval of a sampling plan by the OWASA Inspector.

Cross-Connection Control Ordinance - Backflow Prevention will be required in accordance with OW ASA Cross-Connection Control Ordinance and Manual.

GRAPHIC SCALE
60 0 30 60 120
1 inch = 60 ft.

6		
5	REVISED PER TOWN OF CHAPEL HILL & OWNER	12-13-02
4	REVISED PER TOWN OF CHAPEL HILL & OWNER	10-10-02
3	REVISED PER TOWN OF CHAPEL HILL	8-19-02
2	PER OWASA	7-02-02
1	PER TOWN OF CHAPEL HILL	6-21-02
	REVISIONS	DATE

APPLICANT:
EAST WEST PARTNERS
MANAGEMENT COMPANY, INC.
190 FINLEY GOLF COURSE ROAD
CHAPEL HILL, NORTH CAROLINA 27514

THE JOHN R. McADAMS COMPANY, INC.
ENGINEERS/PLANNERS/SURVEYORS
RESEARCH TRIANGLE PARK, NC
P.O. BOX 14005 ZIP 27709-4005
(919) 361-5000

NORTH CAROLINA PROFESSIONAL 21542 ENGINEER WILLIAM H. DERR

PROJECT NO.	EWP-97580
FILENAME:	P3-580U.DWG
DESIGNED BY:	BGS
DRAWN BY:	KAS
SCALE:	1" = 100'
DATE:	2-26-02

FINAL DESIGN – RELEASED FOR CONSTRUCTION

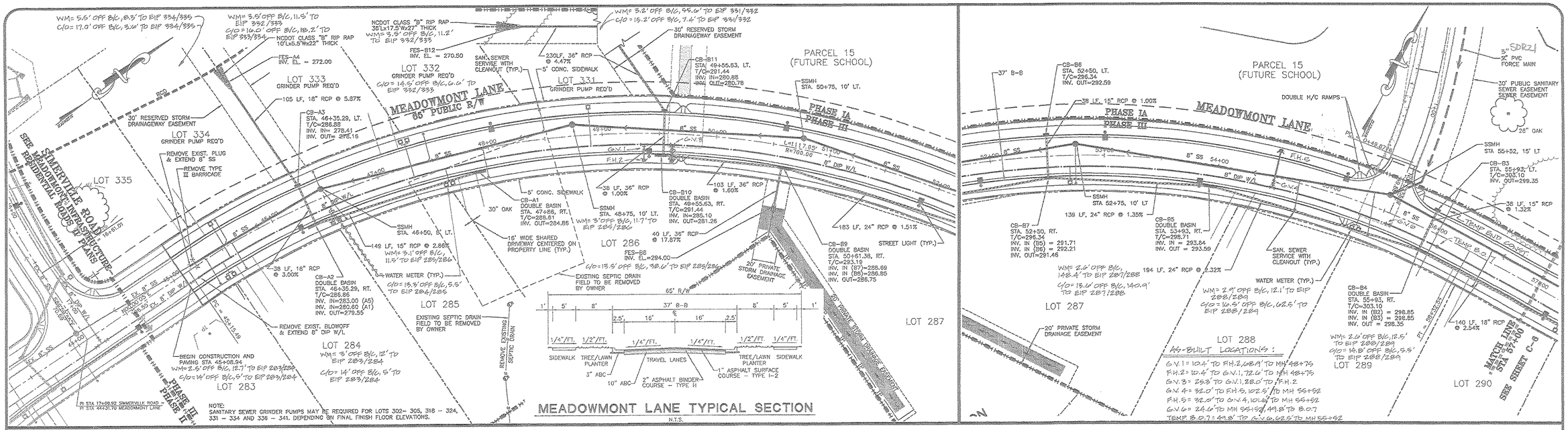
MEADOWMONT
INFRASTRUCTURE-RESIDENTIAL ROADS III
TRIANGLE TOWNSHIP, DURHAM COUNTY NORTH CAROLINA
CHAPEL HILL TOWNSHIP, ORANGE COUNTY, NORTH CAROLINA

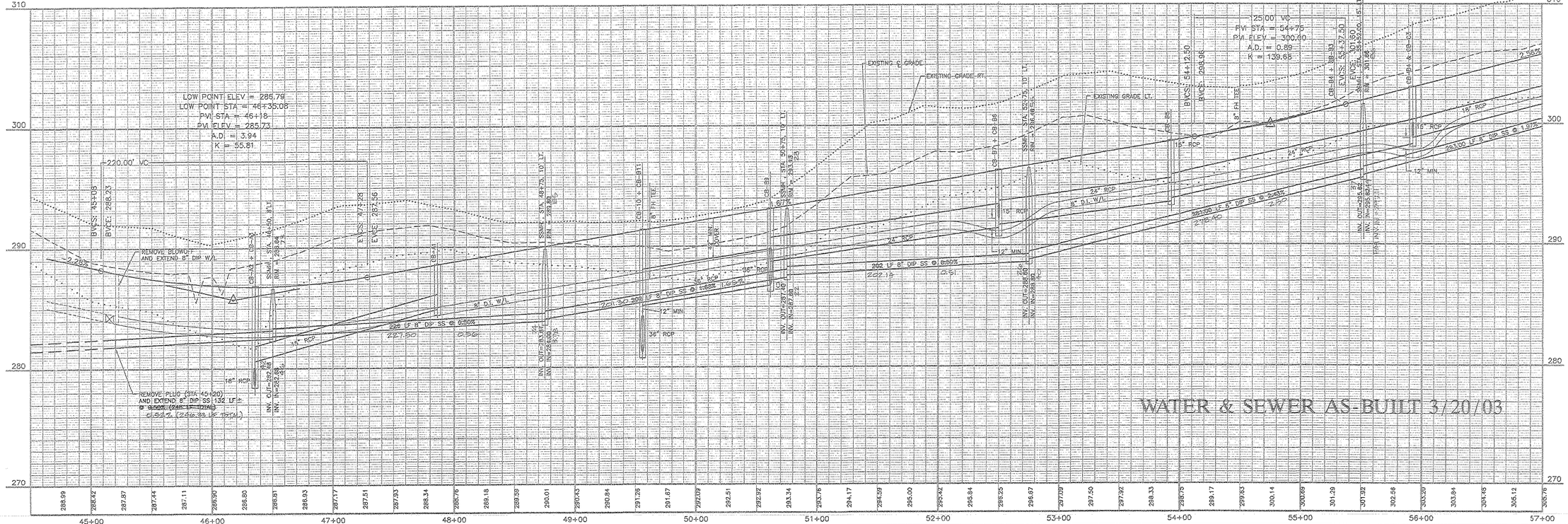
OVERALL UTILITY PLAN

SHEET NO. C-6
McADAMS
PRINT DATE:

RES-M17-115-02

X:\Land\Eng\Meadowmont\V3-580U.dwg Fri Dec 20 08:25:23 2002 M. LeBlanc





FINAL DESIGN — RELEASED FOR CONSTRUCTION

NO.	REVISIONS	DATE
6		
5		
4	REVISED PER TOWN OF CHAPEL HILL & OWNER	12-13-02
3	REVISED PER TOWN OF CHAPEL HILL & OWNER	10-10-02
2	REVISED PER TOWN OF CHAPEL HILL	8-19-02
1	PER TOWN OF CHAPEL HILL	6-21-02

APPLICANT:
EAST WEST PARTNERS
MANAGEMENT COMPANY, INC.
190 FINLEY GOLF COURSE ROAD
CHAPEL HILL, NORTH CAROLINA 27514

THE JOHN R. McADAMS COMPANY, INC.
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(919) 361-5000

NORTH CAROLINA PROFESSIONAL SEAL 21942 ENGINEER WILLIAM H. DENIS 3/20/03

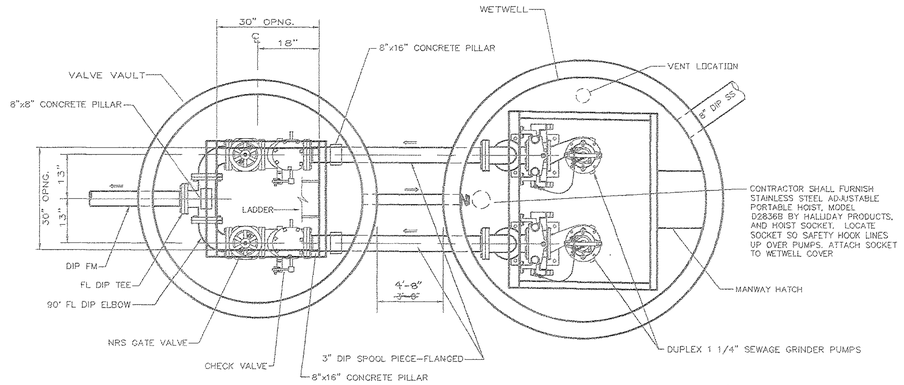
PROJECT NO.	EWP-97580
FILENAME:	P3-580PP1.dwg
DESIGNED BY:	BMF/BGS
DRAWN BY:	KAS/CKT
HORIZ. SCALE:	1" = 40'
VERT. SCALE:	1" = 4'
DATE:	2-26-02

MEADOWMONT
INFRASTRUCTURE-RESIDENTIAL ROADS III
TRIANGLE TOWNSHIP, DURHAM COUNTY NORTH CAROLINA
CHAPEL HILL TOWNSHIP, ORANGE COUNTY, NORTH CAROLINA
MEADOWMONT LANE– STA. 45+08.94 TO STA. 57+00

SHEET NO. C-7
McADAMS
PRINT DATE:

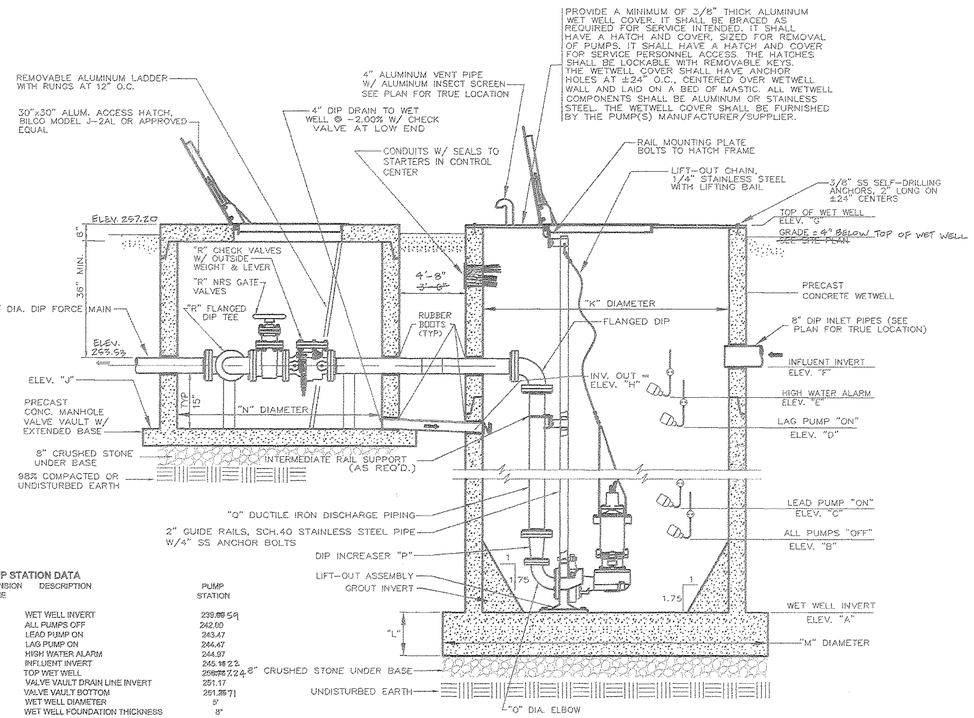
RES-M17-115-03

X:\Land\Eap\Meadowmont\P3-ESDP1.dwg Fri Dec 20 09:41:19 2002 M. LeBlanc



PUMP STATION PLAN

NOT TO SCALE



SECTION THRU PUMP STATION

NOT TO SCALE

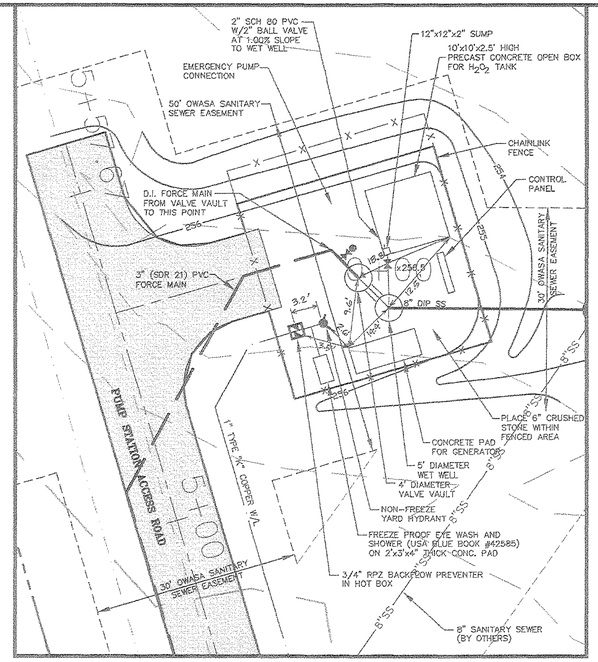
PUMP STATION DATA

DIMENSION NAME	DESCRIPTION	PUMP STATION
A	WET WELL INVERT	239.69 59
B	ALL PUMPS OFF	242.60
C	LEAD PUMP ON	243.47
D	LAG PUMP ON	244.47
E	HIGH WATER ALARM	244.97
F	INFLUENT INVERT	245.16 22
G	TOP WET WELL	256.72 24
H	VALVE VAULT DRAIN LINE INVERT	251.17
J	VALVE VAULT BOTTOM	251.25 71
K	WET WELL DIAMETER	5'
L	WET WELL FOUNDATION THICKNESS	8"
M	WET WELL FOUNDATION DIAMETER	7'-0"
N	VALVE VAULT DIAMETER	6'
O	DISCHARGE ELBOW DIAMETER	1 1/2"
P	DISCHARGE LINE INCREASER	1 1/4" X 3"
Q	DISCHARGE LINE DIAMETER	3"
R	CHECK VALVE, GATE VALVE, & F.M. DIAMETER	3"

PUMPING CONDITIONS:
70 GPM @ 58 FT. TDH, 230/460V.
3 PHASE, 2.4 HP MOTOR

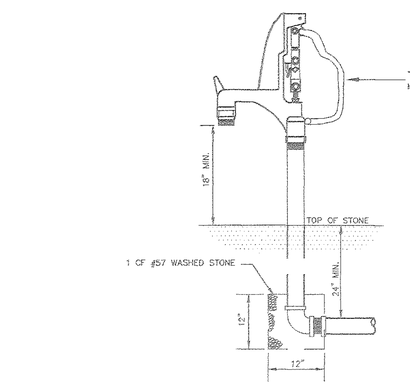
PUMP TYPE:
ABS PIRANHA SUBMERSIBLE GRINDER
PUMP MODEL M25/2

NOTES FOR LIFT STATION CONTROL CENTER:
1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND NATIONAL ELECTRICAL CODES.
2. SERVICE METER SHALL BE MOUNTED ON LIGHT POLE.
3. ALL WIRING SHALL BE IN RIGID OR IMC. STEEL CONDUIT.
4. ALL WIRE SHALL BE COPPER TYPE THHW / THHN.
5. ALL MATERIALS SHALL BE NEW AND SHALL BE U.L. LISTED.
6. CATALOG NUMBERS ARE TO ESTABLISH QUALITY, GENERAL APPEARANCE AND FUNCTION. SUBSTITUTIONS MAY BE SUBMITTED FOR CONSIDERATION.



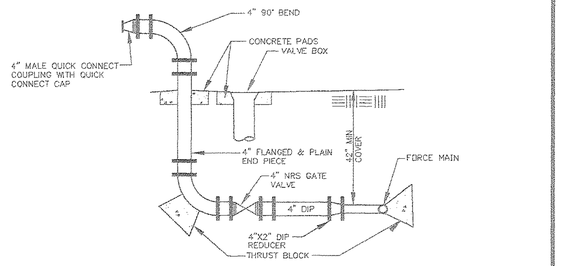
PUMP STATION PLAN

SCALE: 1"=10'



YARD HYDRANT (non-freeze)

NOT TO SCALE



TYPICAL EMERGENCY PUMP CONNECTION

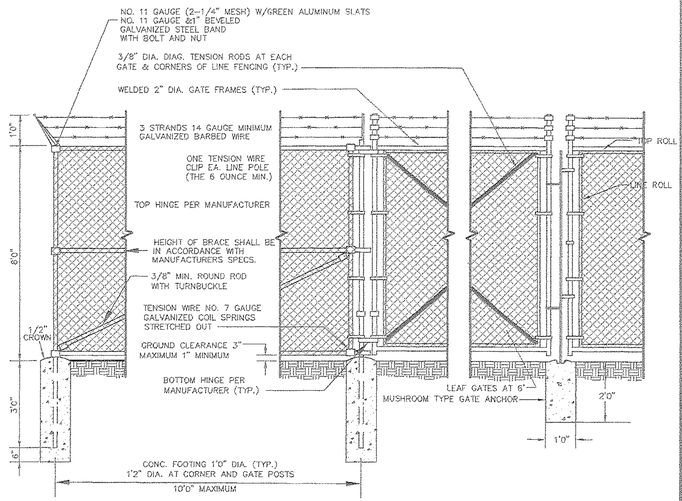
NOT TO SCALE

GENERATOR FUEL TANK CAPACITY CALCULATION
2.33 GAL/HR X 24 HOUR = 56 GAL REQ'D
80 GALLON TANK PROVIDED

NORTH CAROLINA PROFESSIONAL SEAL 21642 ENGINEER WILLIAM H. DERKS

William H. Derks 5/16/03

AS - BUILT 5/16/03



FENCE DETAIL

NOT TO SCALE

FINAL DESIGN - RELEASED FOR CONSTRUCTION

6		
5		
4		
3	CORRECTED FLOW & TDH	12-13-02
2	REVISED PER TOWN OF CHAPEL HILL	8-19-02
1	PER TOWN OF CHAPEL HILL	6-21-02
	REVISIONS	DATE

OWNER:
EAST WEST PARTNERS MANAGEMENT CO., INC.
190 FINLEY GOLF COURSE ROAD
CHAPEL HILL, NORTH CAROLINA 27514

THE JOHN R. McADAMS COMPANY, INC.
ENGINEERS/PLANNERS/SURVEYORS
RESEARCH TRIANGLE PARK, NC
P.O. BOX 14005 ZIP 27709-4005
(919) 361-5000

NORTH CAROLINA PROFESSIONAL SEAL 21642 ENGINEER WILLIAM H. DERKS 5/16/03

PROJECT NO.	EWP-97540
FILENAME:	P3-580PS.DWG
DESIGNED BY:	BMF
DRAWN BY:	KAS
HORIZ. SCALE:	AS SHOWN
VERT. SCALE:	
DATE:	2-26-02

PUMP STATION SITE PLAN AND DETAILS

MEADOWMONT
INFRASTRUCTURE-RESIDENTIAL ROADS III

TRIANGLE TOWNSHIP, DURHAM COUNTY NORTH CAROLINA
CHAPEL HILL TOWNSHIP, ORANGE COUNTY, NORTH CAROLINA

PUMP STATION PLAN & DETAILS

SHEET NO. C-15

McADAMS

PRINT DATE:

RES-M17-115-01

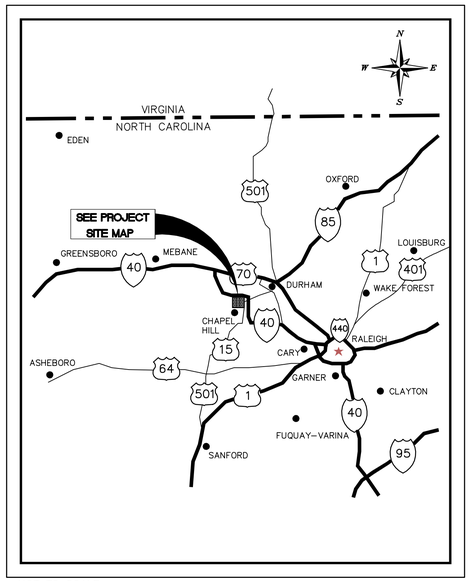
X:\Land\Eap Meadowmont\P3-580PS.dwg Fri Dec 20 09:02:22 2002 N. LaBlanc

December 02, 2013 - 9:57am By: joeybailey

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

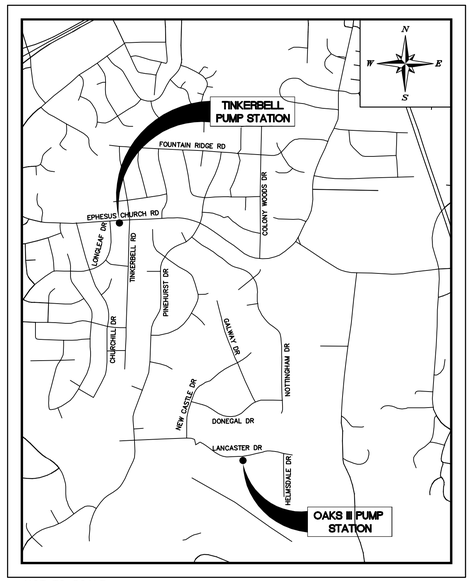
OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

CONTRACT NO. 1 - CONSTRUCTION PLANS



NOT TO SCALE

PROJECT LOCATION



NOT TO SCALE

PROJECT SITE

ISSUED FOR CONSTRUCTION
BY _____
DATE _____

CONSTRUCTION RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS-BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

REVISIONS

NO.	DATE	DESCRIPTION	BY
10			
9			
8			
7			
6			
5			
4			
3			
2			
1			

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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DRAWING:

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY C. PURVIS

DATE:
NOVEMBER 2013

JOB NUMBER:
018484009

PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.

P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068 LICENSE #F-0102
PHONE: (919) 677-2000 FAX: (919) 677-2050

K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\1 COVER.dwg

ABBREVIATIONS

AB	ANCHOR BOLT	FAB	FABRICATE	MAINT	MAINTENANCE	S	SOUTH/SLOPE
AC	ALTERNATING CURRENT/ ASBESTOS CEMENT	F&C	FRAME AND COVER	MATL	MATERIAL	SAN	SANITARY
		F&G	FRAME AND GRATE	MAX	MAXIMUM	SBL	SURVEY BASELINE
ACT	ACOUSTIC TILE	FC	FLUSHING CONNECTION	MECH	MECHANICAL	SCH	SCHEDULE
AD	AREA DRAIN	FD	FLOOR DRAIN	MEMB	MEMBRANE	SD	STORM/SITE DRAIN
ADDL	ADDITIONAL	FDN	FOUNDATION	MET	METAL	SECT	SECTION
ADJ	ADJUSTABLE	FE	FIRE EXTINGUISHER	MFR	MANUFACTURER	SERV	SERVICE
AFF	ABOVE FINISHED FLOOR	FF	FINISH FLOOR	MG	MILLION GALLONS	SEW	SEWER
AGGR	AGGREGATE	FH	FIRE HYDRANT	MGD	MILLION GALLONS PER DAY	SF	SQUARE FEET
AL	ALUMINUM	FIN	FINISH	MH	MANHOLE	SHT	SHEET
ALLOW	ALLOWANCE/ALLOWABLE	FIX	FIXTURE	MIN	MINIMUM	SI	SQUARE INCH
ALT	ALTERNATE	FL	FLASHING/FLOOR	MISC	MISCELLANEOUS	SIM	SIMILAR
APPROX	APPROXIMATE	FLEX	FLEXIBLE	MJ	MECHANICAL JOINT	SJ	STEEL JOIST
ARCH	ARCHITECTURAL	FLG	FLANGE	MLDG	MOLDING	SPEC	SPECIFICATION
ASB	ASBESTOS	FLUOR	FLUORESCENT	MO	MASONRY OPENING	SQ	SQUARE
ASPH	ASPHALT	FLXC	FLEXIBLE CONNECTION	MOD	MODIFY/MODIFIED	SS	SANITARY SEWER
AT	ASPHALT TILE	FM	FORCE MAIN	MON	MONUMENT	SST	STAINLESS STEEL
		FMF	FIREPROOF	MOT	MOTOR	ST	STREET
		FRP	FIBERGLASS REINFORCED POLYESTER LAMINATE	MTD	MOUNTED	STA	STATION
B	BORING			MTG	MOUNTING	STD	STANDARD
BD	BOARD	FT	FEET	MULT	MULTIPLE	STG	STORAGE
BFE	BOTTOM OF FITTING ELEV	FTG	FOOTING/FITTING			STIR	STIRRUP
BFPA	BACK FLOW PREVENTION ASSEMBLY	FURR	FURRING/FURRED			STL	STEEL
						STR	STRUCTURAL
BFV	BUTTERFLY VALVE					SUB	SUBSTITUTE
BITUM	BITUMINOUS					SUP	SUPPLY
BJB	BLIND JUNCTION BOX			N	NORTH	SUPT	SUPERINTENDENT
℄	BASELINE			NA	NOT APPLICABLE	SUR	SURFACE
BL	BUILDING LINE			NF	NEAR FACE	SUSP	SUSPENDED
BLDG	BUILDING	G	GAS/GAS LINE	NGVD	NATIONAL GEODETIC VERTICAL DATUM	SW	SWITCH
BLK	BLOCK	GA	GAUGE			SWBD	SWITCHBOARD
BM	BENCH MARK	GAL	GALLON	NIC	NOT IN CONTRACT	SWD	SIDE WATER DEPTH
BOC	BACK OF CURB	GALV	GALVANIZED	NO	NUMBER	SYM	SYMMETRICAL
BOT	BOTTOM	GC	GENERAL CONTRACTOR	NOM	NOMINAL		
BRG	BEARING	GEN	GENERATOR	NPW	NON POTABLE WATER		
BRK	BRICK	GI	GALVANIZED IRON	NTS	NOT TO SCALE		
BRZ	BRONZE	GL	GLASS				
BSMT	BASEMENT	GPM	GALLONS PER MINUTE				
BT	BOLT	GR	GRADE			T	TREAD
BUR	BUILT-UP ROOFING	GV	GATE VALVE			T&B	TOP AND BOTTOM
BV	BALL VALVE	GW	GUY WIRE			T&G	TONGUE AND GROOVE
		GWB	GYPSUM WALL BOARD			TAN	TANGENT
C	CLOSET/CARPET/CHANNEL	GWF	GLAZED WALL FINISH	OC	ON CENTER	TBM	TEMPORARY BENCH MARK
CAB	CABINET	GYP	GYPSUM	OD	OUTSIDE DIAMETER	TC	TOP OF CURB
CB	CATCH BASIN			OF	OUTSIDE FACE	TDH	TOTAL DYNAMIC HEAD
C/C	CENTER TO CENTER			OFF	OFFICE	TECH	TECHNICAL
CE	CONSTRUCTION EASEMENT			OPER	OPERATOR	TEL	TELEPHONE
CEM	CEMENT			OPNG	OPENING	TEMP	TEMPERATURE
CER	CERAMIC			OPP	OPPOSITE	TER	TERRAZZO
CF	CUBIC FEET			ORIG	ORIGINAL	THERMO	THERMOSTAT
CFM	CUBIC FEET PER MINUTE	H	HEIGHT	OT	OPEN TRUSS	THK	THICK
CI	CAST IRON/CUBIC INCHES	HDW	HARDWARE	OVHD	OVERHEAD	THRU	THROUGH
CIP	CAST IRON PIPE	HEX	HEXAGONAL			TOD	TOP OF DECK
℄	CENTER LINE	HM	HOLLOW METAL			TOF	TOP OF FOOTING
CL_2	CHLORINE	HORZ	HORIZONTAL			TOM	TOP OF MASONRY/MANHOLE
CLG	CEILING	HP	HORSEPOWER			TOS	TOP OF SLAB
CLKG	CAULKING	HPT	HIGH POINT	PAR	PARALLEL	TOW	TOP OF WALL
CLR	CLEAR	HTR	HEATER	PC	POINT OF CURVE/PIECE	TOL	TOLERANCE
CMP	CORRUGATED METAL PIPE	HVAC	HEATING,VENTILATION AND AIR CONDITIONING	PCC	POINT OF COMPOUND CURVE	TPS	TWISTED PAIR SHIELDED
CMU	CONCRETE MASONRY UNIT			PCF	POUNDS PER CUBIC FOOT	TRANS	TRANSFORMER
CO	CLEANOUT	HW	HOT WATER	PE LINING	POLYETHYLENE LINING	TYP	TYPICAL
COL	COLUMN	HWL	HIGH WATER LEVEL	PERF	PERFORATED		
CONC	CONCRETE	HWY	HIGHWAY	PERP	PERPENDICULAR		
CONST	CONSTRUCTION	HYD	HYDRAULIC	PI	POINT OF INTERSECTION	UG	UNDERGROUND
CONT	CONTINUOUS			℗	PROPERTY LINE/PLATE	UH	UNIT HEATER
CONTR	CONTRACTOR			PNL	PANEL	UNFIN	UNFINISHED
CORP	CORPORATION			PP	POWER POLE	UR	URINAL
CORR	CORRIDOR			PREFAB	PREFABRICATED	UTIL	UTILITY
CP	CONCRETE PLANK			PRV	PRESSURE RELIEF VALVE		
CRS	COURSE			PS	PUMPING STATION		
CT	CERAMIC TILE			PSF	POUNDS PER SQUARE FOOT		
CTJ	CONTROL JOINT	I	IRON	PSI	POUNDS PER SQUARE INCH		
CU	COPPER	ID	INSIDE DIAMETER	PT	POINT OF TANGENT/POINT	VAC	VACUUM
CV	CHECK VALVE	IF	INSIDE FACE	PTN	PARTITION	VAT	VINYL ASBESTOS TILE
CW	COLD WATER	IN	INCH	PV	PLUG VALVE	VB	VALVE BOX
CY	CUBIC YARD	INCL	INCLUDED	PVC	POLYVINYL CHLORIDE	VCP	VITRIFIED CLAY PIPE
		INF	INFLUENT	PVC	POINT OF VERTICAL CURVE	VEL	VELOCITY
DC	DIRECT CURRENT	INS	INSULATION	PVI	POINT OF VERTICAL INTERSECTION	VENT	VENTILATING/VENTILATION
DET	DETAIL	INT	INTERIOR	PVMT	PAVEMENT	VERT	VERTICAL
DF	DRINKING FOUNTAIN	INV	INVERT	PVT	POINT OF VERTICAL TANGENCY	VOL	VOLUME
DIA (ϕ)	DIAMETER			PW	POTABLE WATER	VP	VENT PIPE
DIAG	DIAGONAL					VWC	VINYL WALL COVERING
DIM	DIMENSION						
DIP	DUCTILE IRON PIPE						
DISCH	DISCHARGE	J	JOIST	QTY	QUANTITY		
DIST	DISTRIBUTION	JB	JUNCTION BOX				
DJ	DOUBLE JOIST	JCT	JUNCTION			W	WEST/WIDTH
DL	DEAD LOAD	JT	JOINT			W/	WITH
DN	DOWN			R	RADIUS/RISER	WC	WATER CLOSET
DOZ	DOZEN			RCP	REINFORCED CONCRETE PIPE	WF	WIDE FLANGE
DR	DOOR			RD	ROAD/ROOF DRAIN	WH	WALL HYDRANT
DWG	DRAWING			RECIR	RECIRCULATION	WI	WROUGHT IRON
DWL	DOWEL			RECP	RECEPTACLE	WL	WATER LEVEL
				RECT	RECTANGULAR	W/L	WATER LINE
		L	LENGTH/ANGLE	RED	REDUCER	WO	WINDOW OPENING
E	EAST/EASEMENT	LA	LINE AHEAD	REF	REFERENCE	W/O	WITHOUT
EA	EACH	LAB	LABORATORY	REG	REGISTER	WP	WATERPROOF
ECC	ECCENTRIC	LAM	LAMINATED	REINF	REINFORCING	WPFG	WATER PROOFING
EF	EACH FACE	LAT	LATERAL	REM	REMOVE	WPT	WALL PENETRATING TYPE
EFF	EFFLUENT	LAV	LAVATORY	REQD	REQUIRED	WSE	WATER SURFACE ELEVATION
EIP	EXIST IRON PIPE	LB	POUND/LINE BACK	REST	RESTRAINED	WSP	WEATHERSTRIP
EL OR ELEV	ELEVATION	LF	LINEAR FEET	REVSE	REVISE	WT	WEIGHT
ELEC	ELECTRIC/ELECTRICAL	LG	LONG	RF	ROOF	WV	WATER VALVE
ELL	ELBOW	LL	LIVE LOAD	RFG	ROOFING	WWF	WELDED WIRE FABRIC
ENGR	ENGINEER	LLH	LONG LEG HORIZONTAL	RJ	RESTRAINED JOINT		
ENT	ENTRANCE	LLV	LONG LEG VERTICAL	RM	ROOM		
EOG	EDGE OF GRAVEL	LP	LIGHT POLE	RND	ROUND		
EOP	EDGE OF PAVEMENT	LPT	LOW POINT	RO	ROUGH OPENING		
EQ	EQUAL	LT	LIGHT	RPM	REVOLUTIONS PER MINUTE	YD	YARD
EQPT	EQUIPMENT	LTG	LIGHTING	RR	RAILROAD	YH	YARD HYDRANT
EW	EACH WAY	LVR	LOUVER	RRS	RAILROAD SPIKE	YR	YEAR
EX	EXISTING	LWL	LOW WATER LEVEL	RT	RIGHT		
EXC	EXCAVATE			RTU	REMOTE TERMINAL UNIT		
EXH	EXHAUST			RW	RAW WATER		
EXP	EXPANSION			R/W	RIGHT OF WAY		
EXT	EXTERIOR						

INDEX TO SHEETS

SHEET NO	DWG NO	DESCRIPTION
1		COVER
2	X1	INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS
~~3~~	~~G1~~	~~TINKERBELL PUMP STATION EXISTING CONDITIONS AND DEMO PLAN~~
~~4~~	~~G2~~	~~OAKS III PUMP STATION EXISTING CONDITIONS AND DEMO PLAN~~
5	G3	TINKERBELL PUMP STATION SITE PLAN GENERAL
6	G4	OAKS III PUMP STATION SITE PLAN GENERAL
7	M1	TINKERBELL PUMP STATION PLAN AND SECTION MECHANICAL
8	M2	OAKS III PUMP STATION PLAN AND SECTION MECHANICAL
9	D1	MISCELLANEOUS DETAILS
10	D2	MISCELLANEOUS DETAILS
11	D3	MISCELLANEOUS DETAILS
~~12~~	~~E1~~	~~TINKERBELL ELECTRICAL NOTES, DETAILS & SINGLE LINE DIAGRAM~~
~~13~~	~~E2~~	~~TINKERBELL ELECTRICAL PLANS AND DETAILS~~
~~14~~	~~E3~~	~~OAKS III ELECTRICAL NOTES, DETAILS & SINGLE LINE DIAGRAM~~
~~15~~	~~E4~~	~~OAKS III ELECTRICAL PLANS AND DETAILS~~
~~16~~	~~P1~~	~~TINKERBELL DRIVEWAY PLAN~~
~~17~~	~~P2~~	~~TINKERBELL TRAFFIC CONTROL~~

GENERAL CONSTRUCTION SEQUENCE

1. CONTRACTOR SHALL OBTAIN APPROPRIATE CONSTRUCTION PERMITS AND ADHERE TO REQUIREMENTS THROUGHOUT
2. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES
3. CLEAR AND GRUB
4. ROUGH GRADE SITE
5. INSTALL PROPOSED IMPROVEMENTS
6. FINISH FINAL GRADING AND SURFACE RESTORATION
7. REMOVE SEDIMENTATION AND EROSION CONTROL MEASURES

GENERAL NOTES:

1. ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL. BASED ON NAVD 1988.
2. LOCATIONS OF EXISTING SHOWN UTILITIES ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE EXACT SIZE, DEPTH, MATERIAL, ORIENTATION, AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION AND TO TAKE WHATEVER STEPS ARE NECESSARY TO PROVIDE FOR THEIR PROTECTION. THE OWNER HAS ATTEMPTED TO LOCATE AND INDICATE EXISTING UTILITIES ON THE DRAWINGS; HOWEVER, THIS INFORMATION IS SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE OWNER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS OF UTILITIES SHOWN OR NOT SHOWN. PRIOR TO CONSTRUCTION ON OR OFF SITE, THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED BY "NC ONE-CALL" 1-800-632-4949. THE CONTRACTOR SHALL CONTACT ANY OTHER UTILITY COMPANY WHOSE UTILITIES ARE NOT LOCATED BY "NC ONE CALL" FOR EXACT LOCATION OF ITS UTILITIES PRIOR TO STARTING CONSTRUCTION. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND/OR REPLACE ANY AND ALL DAMAGES TO EXISTING UTILITIES, AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.
4. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE FIRST EXPANSION JOINT BEYOND THE TRENCH EXCAVATION LIMITS AND TO THE FULL WIDTH. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING.
5. BURIED TELEPHONE AND CATV CABLES (FIBER OPTICS AND CONVENTIONAL) ARE KNOWN TO VARY DUE TO INSTALLATION TECHNIQUES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANY TO DETERMINE SPECIFIC CABLE LOCATIONS AND NOTIFYING THE ENGINEER OF THE EXACT ELEVATION OF THE CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH LOCATING, SUPPORTING, RELOCATING OR REPAIRING BURIED CABLES ALONG THE ROUTE.
6. THE CONTRACTOR SHALL PLACE SAND OR SCREENINGS ON ALL ASPHALT SURFACES THAT ARE AFFECTED BY THE CONSTRUCTION.
7. THE CONTRACTOR SHALL INSTALL ALL SIGNS, AS REQUIRED BY NCDOT, ALONG STATE ROADWAYS AND CITY STREETS, AS REQUIRED BY THE TOWN OF CHAPEL HILL.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION. ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED EASEMENT WIDTHS. EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.
9. OWNER WILL FURNISH DESCRIPTION OF EASEMENTS UPON REQUEST.
10. ALL PIPE INSTALLED ON THIS PROJECT SHALL BE PC 350 DUCTILE IRON PIPE (DIP) WITH PROTECTO 401 LINING. ALL PIPE SHALL BE RESTRAINED JOINT UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION PLANS.
11. ALL NON-BURIED EXPOSED PIPING IN PUMP STATION, VALVE VAULT, OTHER STRUCTURES, OR ABOVE GRADE SHALL HAVE FLANGED JOINTS WITH STAINLESS STEEL BOLTS UNLESS OTHERWISE SPECIFIED. ALL NON-BURIED EXPOSED PIPING SHALL BE PRIMED AND COATED IN ACCORDANCE WITH SECTION 09900.
12. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
13. CONTRACTOR SHALL VERIFY EXACT MATERIALS, LOCATION, ELEVATION, DIMENSIONS, AND LAYOUT OF EXISTING PIPING TO BE CONNECTED TO PRIOR TO ORDERING MATERIALS.
14. DETECTOR TAPE IS REQUIRED FOR ALL NON-METALLIC BURIED PIPE.
15. THE CONTRACTOR SHALL RESTORE GRADE TO PRE-CONSTRUCTION CONDITION UNLESS OTHERWISE NOTED ON THE DRAWINGS.
16. ALL EROSION CONTROL MEASURES TO REMAIN IN PLACE UNTIL ENTIRE SITE IS RE-ESTABLISHED.
17. STOCKPILE LOCATIONS AND LAYDOWN AREAS SHALL BE LOCATED WITHIN THE EXISTING CONSTRUCTION LIMITS AS SHOWN ON THE DRAWINGS. CONSTRUCTION ENTRANCES SHALL BE PLACED AS NEEDED BY THE CONTRACTOR ACCORDING TO THE STANDARD DETAILS IN THE DRAWINGS.
18. GROUND COVER AND SLOPES SHALL BE RESTORED WITHIN 5 WORKING DAYS.
19. ALL PAVEMENT CUTS SHALL BE SAWCUT ALONG A CONTINUOUS STRAIGHT LINE.
20. CONTRACTOR SHALL PLAN AND CONSTRUCT WORK SO AS TO CAUSE MINIMUM INCONVENIENCE TO THE OWNER, PUBLIC, AND TO PROHIBIT THE POTENTIAL FOR ENVIRONMENTAL IMPACTS. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND ERECT AND MAINTAIN AT ALL TIMES DURING THE PROGRESS OR TEMPORARY SUSPENSION OF WORK, SUITABLE BARRIERS, FENCES, SIGNS OR OTHER ADEQUATE PROTECTION, INCLUDING FLAGMEN AND WATCHMEN AS NECESSARY TO INSURE THE SAFETY OF THE PUBLIC AS WELL AS THOSE ENGAGED IN THE CONSTRUCTION WORK. CONSTRUCTION SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BY THE NCDOT. COORDINATE ROAD CLOSURES WITH OWASA, LOCAL FIRE DEPARTMENTS, AND NCDOT AS APPLICABLE.
21. ALL MATERIAL CLEARED AND GRUBBED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE WORK, SUCH AS TREES, VEGETATION, FENCING, ETC., SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF-SITE AT AN APPROVED DISPOSAL SITE.
22. EXISTING EQUIPMENT MARKED FOR REMOVAL SHALL BE REMOVED AND TURNED OVER TO OWASA. CONTRACTOR SHALL COORDINATE WITH OWASA PERSONNEL TEMPORARY STORAGE AND TRANSPORTATION OF EQUIPMENT REMOVED. IF OWASA DOES NOT WANT THE MATERIAL, THE CONTRACTOR SHALL DISPOSE OF IT.
23. SAFETY IS THE CONTRACTORS RESPONSIBILITY. CONTRACTOR SHALL ABIDE BY ALL FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS. CONTRACTOR SHALL PROTECT THE PUBLIC FROM CONSTRUCTION SITE AND ACTIVITIES.
24. ALL WORK SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES, AND ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT ITS EXPENSE, UNLESS PREVIOUSLY OBTAINED BY THE OWNER AND PROVIDED AT THE PRECONSTRUCTION CONFERENCE.
25. ALL WORK SHALL COMPLY WITH OWASA STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
26. DEVIATION FROM THESE CONTRACT DOCUMENTS, WITHOUT THE PRIOR WRITTEN CONSENT OF THE ENGINEER, MAY BE CAUSE FOR THE WORK TO BE REJECTED.
27. CONTRACTOR SHALL COORDINATE ALL WORK WITH OWASA AND ENGINEER.
28. ALL ITEMS SHOWN IN BOLD ARE TO BE REPAIRED, REPLACED OR ADDED.
29. CONTRACTOR SHALL VERIFY ALL HATCH, PUMP, AND STRUCTURAL CLEARANCE DIMENSIONS.
30. ALL EQUIPMENT AND MATERIALS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION, IN ACCORDANCE WITH SECTION 01300.

GENERAL BYPASS PUMPING NOTES:

1. CONTRACTOR SHALL BE PREPARED TO OPERATE AND MAINTAIN BYPASSES AROUND THE CLOCK WITHOUT RELIANCE ON OWASA.
2. CONTRACTOR SHALL PLAN WORK AS TO MINIMIZE BYPASS PUMPING DURATIONS.
3. ALL BYPASS PUMPS SHALL BE SOUND ATTENUATED AND SHALL BE DESIGNED TO HANDLE THE PEAK INFLOW RATE AS SHOWN ON THE DRAWINGS PLUS 50% MINIMUM.
4. BYPASSES SHALL BE EQUIPPED WITH CELLULAR PHONE BASED TELEMETRY SYSTEMS PROVIDING REMOTE ALARM REPORTING TO CONTRACTOR AND BYPASS SUBCONTRACTOR.
5. ALL BYPASSES SHALL BE REDUNDANT WITH EQUIVALENT BACKUP PUMPS AND PIPING.
6. ALL BYPASS PUMPS AND PIPING SHALL BE INSPECTED BY THE CONTRACTOR A MINIMUM OF ONCE PER DAY FOR PROPER OPERATION.
7. CONTRACTOR SHALL PROVIDE A SEPARATE DETAILED BYPASS PUMPING PLAN FOR EACH SITE. THE BYPASS PUMPING PLAN SHALL INCLUDE THE FOLLOWING AT A MINIMUM:
   - 7.1. SKETCHES OF THE PROPOSED LAYOUT WITH PIPING SIZES
   - 7.2. PUMP CURVES AND DATA SHEETS FOR EACH PROPOSED PUMP
   - 7.3. TELEMETRY SYSTEM DATA SHEETS
   - 7.4. DETAILED SCHEDULE FOR BYPASS PUMPING
   - 7.5. WASTEWATER OPERATING AND CONTROL ELEVATIONS
   - 7.6. PUMP OPERATION SEQUENCE
   - 7.7. SOUND LEVELS FOR EACH PUMP AT 20 TO 25 FEET
   - 7.8. PUMP FAILURE RESPONSE PLAN
   - 7.9. SPILL RESPONSE PLAN
   - 7.10. AT LEAST FOUR (4) 24/7 EMERGENCY RESPONSE CONTACT NAMES AND PHONE NUMBERS
   - 7.11. A LIST OF PERSONS/COMPANIES ON STANDBY TO HANDLE SPILLS
   - 7.12. RUNTIME FOR EACH PUMP AT FULL LOAD WITHOUT REFUELING

CONSTRUCTION RECORD DRAWINGS

X1

LEGEND

MATERIALS

GRADE OR EARTH
SAND
GRAVEL/RIP RAP
CONCRETE
CONC. FILL OR GROUT
GRATING
CHECKERED PLATE
ROCK
WATER SURFACE
ASPHALT
BRICK

SYMBOLS

EXIST. WATER LINE
EXIST. SANITARY SEWER
EXIST. STORM DRAIN
EXIST. ELECTRICAL
EXIST. TELEPHONE
EXIST. GAS
EXIST FIRE HYDRANT
EXIST SAN SEWER MH
EXIST. VALVE
EXIST. FENCE
EXIST. WATER METER
EXIST POWER POLE
EXIST. SS CLEANOUT
PROPOSED WATERMAIN
SANITARY SEWER AND MANHOLE
PROPOSED VALVE
STORM DRAINAGE STRUCTURE
REDUCER
BLOWOFF ASSEMBLY
BACKFLOW PREVENTER
PROPOSED FIRE HYDRANT
PROPOSED WATER METER
TYPICAL PLUG AND REMOVAL
TYPICAL IN-LINE PLUG
B01 SOIL BORING/AUGER PROBE
SR SEISMIC LINE
TEMPORARY CONSTRUCTION ENTRANCE
PAVEMENT REPLACEMENT
STONE FILTER
CURB INLET PROTECTION
INLET PROTECTION
STONE CHECK DAM
TYPE 1 DITCH LINING
CLASS A RIP RAP

SECTION AND DETAIL KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

(A) A SECTION CUT ON SHEET 3 IS IDENTIFIED AS FOLLOWS:

A / 6 — A = SECTION LETTER; 6 = SHEET WHERE SECTION IS SHOWN

(B) THE SECTION SHOWN ON SHEET 6 IS IDENTIFIED AS FOLLOWS:

A / 3 — A = SECTION LETTER; 3 = SHEET FROM WHERE SECTION WAS TAKEN

STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE DRAWINGS BY ONE OF TWO METHODS:

2000003 → REFERENCED ITEM

OR:

SEE 2000003 → REFERENCED ITEM

STANDARD DETAILS ARE COMPILED IN APPROXIMATE NUMERICAL ORDER IN THE BACK OF THE DRAWINGS.

LINETYPES

PROPOSED ITEMS
EXISTING ITEMS
PROPERTY/R/W LINE
EASEMENT LINE
HIDDEN ITEMS
DEMOLITION ITEMS
CENTER LINE
MATCH LINE
EXIST GROUND PROFILE
CREEK / DITCH
EXIST EDGE OF PAV'MT
SILT FENCE
TCE — TEMPORARY CONSTRUCTION EASEMENT
272 — EXISTING CONTOUR
272 — PROPOSED CONTOUR
TD — TEMPORARY DIVERSION SWALE
LOD — LIMITS OF DISTURBANCE

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT	018484009
DATE	11-18-13
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS
CONTRACT NO. 1
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

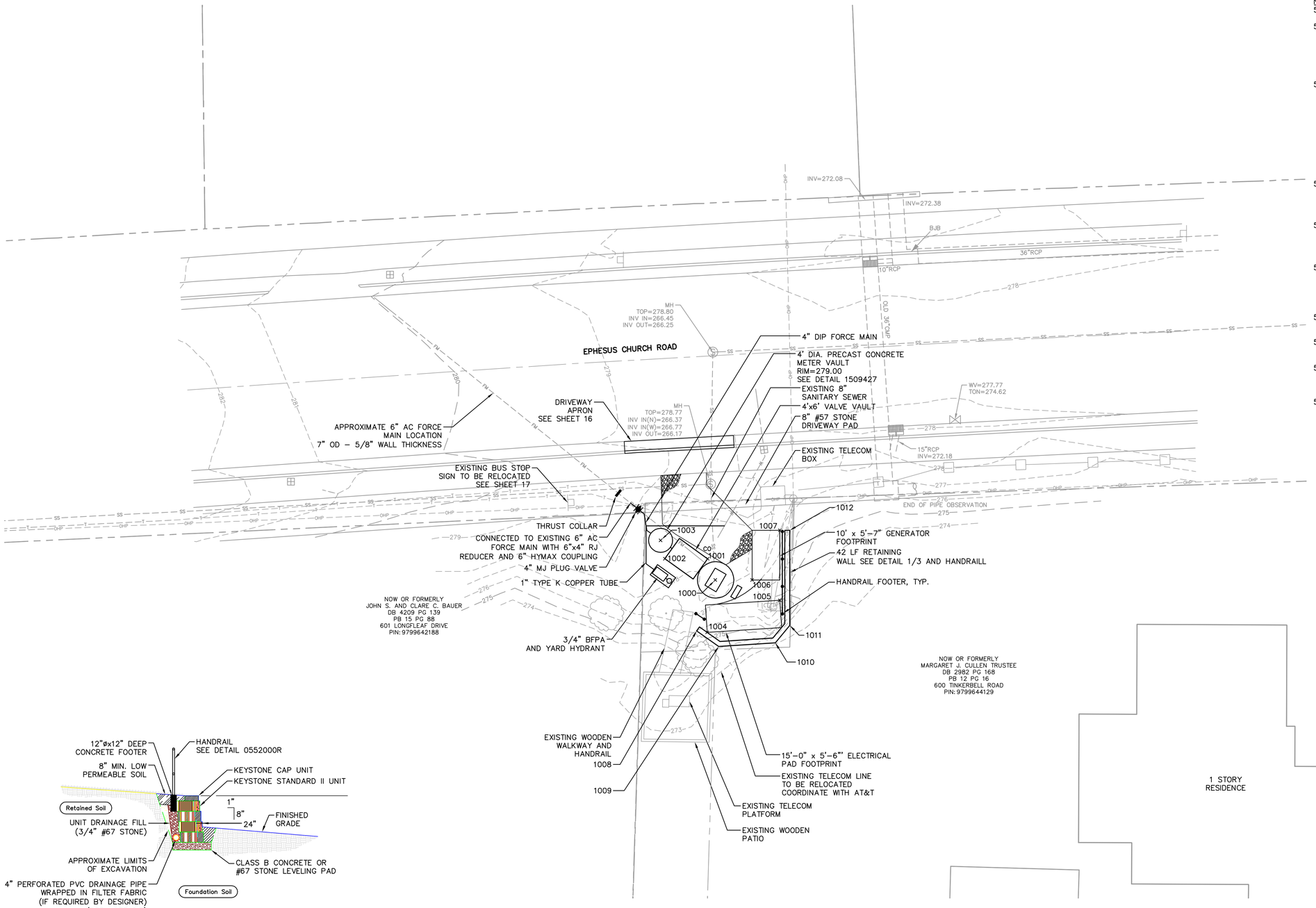
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PUNT

INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS

SHEET NUMBER 2 OF 17

Plotted By: Bailey Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 2 INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS December 02, 2013 09:57:33am K:\RAL_WRK\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\X2 INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS.dwg



RETAINING WALL WITH HANDRAIL DETAIL 1 3

NOTES:

5.1 SEE SHEET 17 FOR TRAFFIC CONTROL PLAN.

5.2 CONTRACTOR SHALL TEMPORARILY RELOCATE BUS STOP SIGN AS SHOWN ON DRAWINGS AND COORDINATE RELOCATION WITH STEPHEN SPADE WITH THE TOWN OF CHAPEL HILL, PHONE 919-969-4900. SIGN SHALL BE PLACED IN ITS ORIGINAL LOCATION UPON COMPLETION OF CONSTRUCTION ACTIVITIES.

5.3 CONTRACTOR SHALL THOROUGHLY CLEAN AND WASH WETWELL INTERIOR WITH HIGH PRESSURE WATER. CONCRETE pH RANGE SHALL THEN BE TESTED. WETWELL SHALL BE COATED WITH ONE COAT OF NSP-100 @ 150-200 SQ FT PER GALLON OR EQUAL PRIMER, ONE INTERMEDIATE COAT OF NSP-120 HPEC @ 15 MILS, AND ONE TOP COAT OF NSP-120 HPEC @ 15 MILS. ALL HOLES, DEPRESSIONS, CRACKS OR OTHER IMPERFECTIONS SHALL BE REPAIRED PRIOR TO THE APPLICATION OF PRIMER. CONTRACTOR SHALL PRESSURE GROUT ALL HOLES AND LEAKS PRIOR TO COATING.

5.4 100-YR FLOOD ELEVATION = 277 FT MSL AT THIS SITE. ALL ELECTRICAL AND CONTROLS SHALL BE A MINIMUM OF 2 FT ABOVE 100 YR FLOOD ELEVATION. VALVE VAULT TOP SHALL BE SET EQUAL TO WETWELL TOP ELEVATION.

5.5 STRUCTURAL AND SUBSURFACE DRAINAGE DESIGN FOR RETAINING WALLS ARE NOT ADDRESSED IN THESE DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR FINAL RETAINING WALL DESIGN.

5.6 TOP OF WALL ("TOW") AND BOTTOM OF WALL ("BOW") GRADES SHOWN ON THESE PLANS REPRESENT FINISHED GROUND ADJACENT TO WALL. THE CONTRACTOR SHALL PROVIDE ADDITIONAL HEIGHT AS NECESSARY FOR FOOTINGS AND CAP BLOCKS.

5.7 RETAINING WALL, HANDRAIL, AND STABILIZATION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN NC.

5.8 ALL BYPASS PUMPING EQUIPMENT AND GENERATOR SHALL BE SOUND ATTENUATED.

5.9 CONTRACTOR SHALL MULCH THE ENTIRE SITE WITH 2" OF PINE BARK MULCH TRIPLE SHRED UPON COMPLETION OF CONSTRUCTION.

5.10 GENERATOR AND TANK SHALL BE PAINTED "DARK FOREST GREEN". CONTRACTOR SHALL SUBMIT COLOR SAMPLES FOR OWASA STAFF TO APPROVE. FOLLOW GENERATOR MANUFACTURER'S GUIDELINES FOR PAINTING. SEE SPECIFICATION 09900.

POINT TABLE			
POINT	NORTHING	EASTING	DESCRIPTION
1000	794324.4859	1996470.9637	EXISTING PUMP STATION
1001	794328.7446	1996469.4290	CORNER OF VALVE VAULT
1002	794328.7706	1996460.8267	CORNER OF VALVE VAULT
1003	794332.4543	1996459.9853	CENTER OF METER VAULT
1004	794313.9583	1996469.3422	CORNER OF CONTROLS
1005	794320.4036	1996483.9610	CORNER OF CONTROLS
1006	794324.4869	1996478.3777	CORNER OF GENERATOR
1007	794334.4869	1996483.9610	CORNER OF GENERATOR
1008	794314.2314	1996467.2290	RETAINING WALL
1009	794311.0993	1996471.6439	RETAINING WALL
1010	794311.8292	1996483.0678	RETAINING WALL
1011	794315.3454	1996485.9610	RETAINING WALL
1012	794334.4869	1996485.9610	RETAINING WALL

CONSTRUCTION RECORD DRAWINGS

G3

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT 018484009
DATE 11-18-13
SCALE 1" = 10'
DESIGNED BY ZGP
DRAWN BY JGB
CHECKED BY KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

PREPARED FOR

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

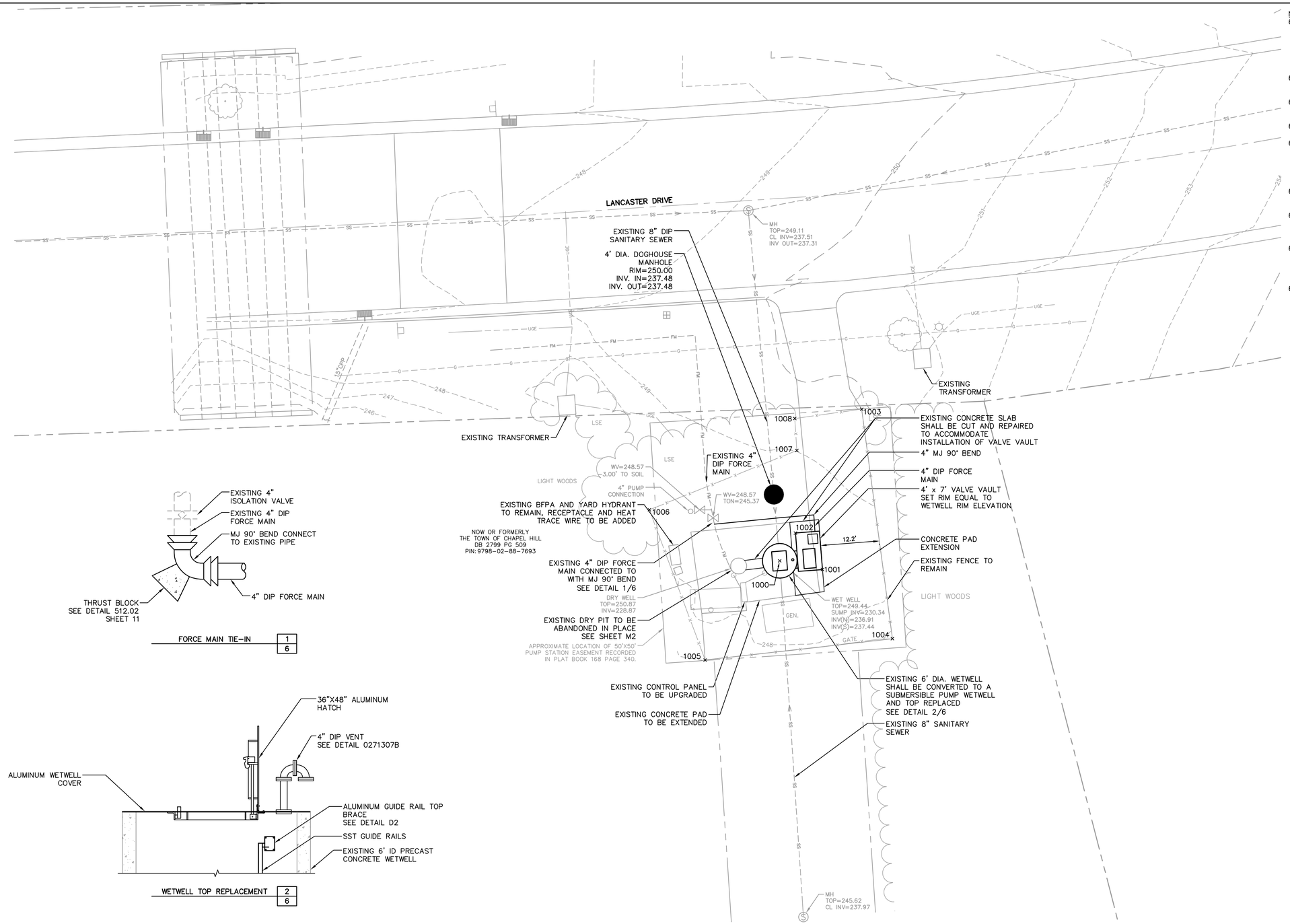
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PIRTLE

TINKERBELL PUMP STATION SITE PLAN GENERAL

SHEET NUMBER 5 OF 17

Plotted By:Bailey, Joey Sheet Set:OWASA Oaks-Tinkerbell Layout:5 TINKERBELL PUMP STATION SITE PLAN December 02, 2013 09:57:44am K:\RAL_WRS\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\5 TINKERBELL PUMP STATION SITE PLAN.dwg



FORCE MAIN TIE-IN 1/6

WETWELL TOP REPLACEMENT 2/6

NOTES:

6.1 ANY TEMPORARY ROAD CLOSURES AND TRAFFIC CONTROL SHALL BE COORDINATED WITH NCDOT AND THE TOWN OF CHAPEL HILL. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS FOR ANY ACTIVITIES INSIDE THE RIGHT OF WAY. TRAFFIC CONTROL PLANS SHALL BE IN ACCORDANCE WITH NCDOT SPECIFICATIONS.

6.2 CONTRACTOR SHALL PRESSURE GROUT HOLES AND LEAKS IN WETWELL.

6.3 VALVE VAULT AND HATCH SHALL BE AASHTO HS20 TRAFFIC LOAD RATED.

6.4 100-YR FLOOD ELEVATION = 248 FT MSL AT THIS SITE.

6.5 WETWELL COVER SHALL BE 1/4" MINIMUM THICK DIAMOND PATTERN ALUMINUM SUCH AS HALLIDAY PRODUCTS SERIES CIR, OR EQUAL. COVER SHALL BE DESIGNED FOR A MINIMUM OF 300 LBS PER SQ. FT. LOAD.

6.6 ALL BYPASS PUMPS SHALL BE SOUND ATTENUATED PER SECTION 16.

6.7 CONTRACTOR SHALL COVER ALL DISTURBED AREAS INSIDE FENCE AND DRIVEWAY WITH A MINIMUM OF 4" OF #57 STONE.

6.8 DISTURBED AREAS OUTSIDE OF FENCE AND WITHIN GRASS SHALL BE RESTORED WITH FESCUE SOD WITHIN 5 DAYS. OTHER DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITIONS.

6.9 ALL PIPING SHALL BE RESTRAINED.

POINT TABLE

POINT	NORTHING	EASTING	DESCRIPTION
1000	789347.6400	1999066.6500	EXISTING PUMP STATION
1001	789345.8296	1999075.5151	CORNER OF VALVE VAULT
1002	789353.4163	1999069.9078	CORNER OF VALVE VAULT
1003	789379.1400	1999083.6700	EXISTING FENCE CORNER
1004	789331.4600	1999090.0500	EXISTING FENCE CORNER
1005	789327.0442	1999051.1489	EXISTING FENCE CORNER
1006	789358.2400	1999039.5800	EXISTING FENCE CORNER
1007	789370.5600	1999070.1900	EXISTING FENCE CORNER
1008	789377.2000	1999069.7700	EXISTING FENCE CORNER

GRAPHIC SCALE IN FEET
0 5 10 20

CONSTRUCTION RECORD DRAWINGS

G4

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1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT	018484009
DATE	11-18-13
SCALE	1" = 10'
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

PREPARED FOR

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

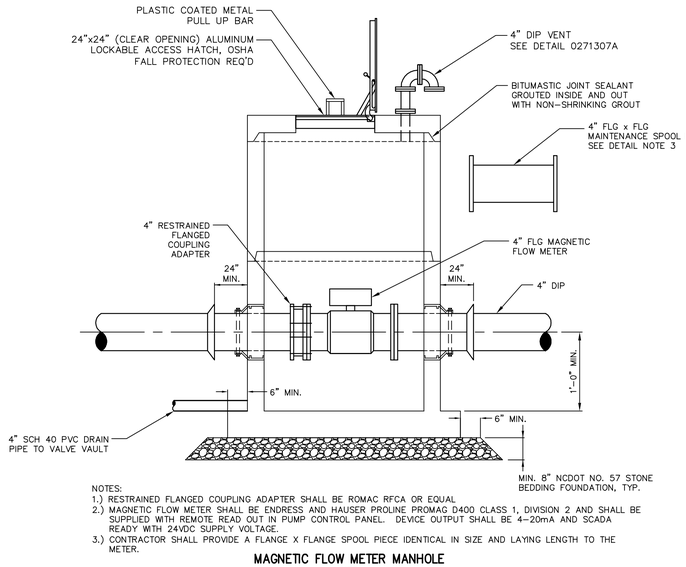
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PIRKLE

OAKS III PUMP STATION SITE PLAN GENERAL

SHEET NUMBER 6 OF 17

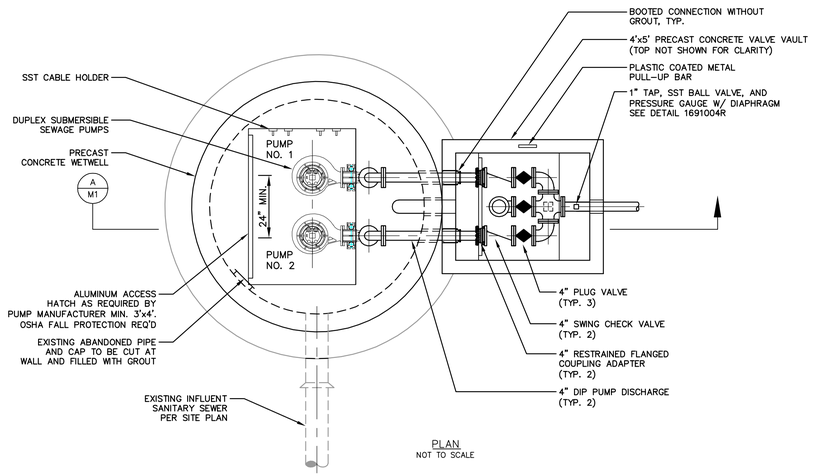
Plotted By: Ripley, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 6 OAKS III PUMP STATION SITE PLAN December 02, 2013 09:57:56am K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\6 OAKS III PUMP STATION SITE PLAN.dwg



NOTES:
1.) RESTRAINED FLANGED COUPLING ADAPTER SHALL BE ROMAC RFCA OR EQUAL
2.) MAGNETIC FLOW METER SHALL BE ENDRESS AND HAUSER PROLINE PROMAG D400 CLASS 1, DIVISION 2 AND SHALL BE SUPPLIED WITH REMOTE READ OUT IN PUMP CONTROL PANEL. DEVICE OUTPUT SHALL BE 4-20mA AND SCADA READY WITH 24VDC SUPPLY VOLTAGE.
3.) CONTRACTOR SHALL PROVIDE A FLANGE X FLANGE SPOOL PIECE IDENTICAL IN SIZE AND LAYING LENGTH TO THE METER.

MAGNETIC FLOW METER MANHOLE
NTS

1509427



PLAN
NOT TO SCALE

SECTION A/M1
NOT TO SCALE

NOTES:
7.1 PROVIDE SST INTERMEDIATE GUIDE RAIL BRACKETS AS REQUIRED BY PUMP MANUFACTURER.

7.2 PROVIDE A GAS-TIGHT SEAL AT ALL ELECTRICAL PENETRATIONS. UTILIZE KOR-N-SEAL BOOT WITH STAINLESS STEEL STRAPS, OWHERE SHOWN. ALL WALL PENETRATIONS SHALL BE WATERTIGHT.

7.3 ALL NON-BURIED EXPOSED PIPING IN PUMP STATION, VALVE VAULT, OTHER STRUCTURES, OR ABOVE GRADE SHALL HAVE FLANGED JOINTS WITH STAINLESS STEEL BOLTS UNLESS OTHERWISE SPECIFIED. ALL NON-BURIED EXPOSED PIPING SHALL BE PRIMED AND COATED WITH 2 COATS OF TNEMEC COAL TAR EPOXY.

7.4 ALL FLANGED COUPLING ADAPTERS SHALL BE LOCKING TYPE. FLANGE COUPLING ADAPTERS SHALL BE MEGALUG 2100 SERIES AS MANUFACTURED BY EBAA IRON, OR EQUAL.

7.5 ALL HARDWARE, SUPPORTS, BRACING, FASTENERS, ANCHOR BOLTS ETC., INSIDE WETWELL SHALL BE ANSI TYPE 304L STAINLESS STEEL.

7.6 ALL EQUIPMENT AND MATERIALS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION IN ACCORDANCE WITH SECTION 01300.

7.7 VALVE VAULT SHALL BE OF MONOLITIC CONSTRUCTION WITH SEPARATE TOP.

7.8 ACCESS HATCHES SHALL BE LOCKABLE ALUMINUM SIDEWALK SUITABLE FOR 300 PSF LIVE LOAD AS MANUFACTURED BY HALLIDAY, OR EQUAL WITH INTEGRAL OSHA FALL PROTECTION SYSTEM.

7.9 SITE GRADING SHALL BE SLOPED AWAY FROM PUMP STATION AND VALVE VAULT.

7.10 ALL LIFTING LUG HOLES SHALL BE FILLED WITH GROUT AFTER INSTALLATION.

7.11 INSTALL EQUIPMENT IN ACCORDANCE WITH ALL MANUFACTURER'S RECOMMENDATIONS.

7.12 NO FLANGE COUPLING ADAPTERS OF ANY KIND SHALL BE USED INSIDE WETWELL UNLESS SHOWN.

7.13 THE PUMP MOTORS SHALL NOT BE OVERLOADED BEYOND THEIR NAMEPLATE RATING AT THE DESIGN CONDITIONS NOR AT ANY POINT ALONG THE OPERATING RANGE.

7.14 THE ENTIRE WETWELL INTERIOR SHALL BE LINED WITH NSP EPOXY COATING. SEE SHEET 5.

7.15 CONTRACTOR SHALL PROVIDE ONE (1) COMPLETE SPARE PRESSURE GAUGE ASSEMBLY.

7.16 PUMPS AND BASE ELBOWS SHALL BE MANUFACTURED BY THE SAME COMPANY.

7.17 PUMP CABLES SHALL BE SUPPLIED WITH BRAIDED STAINLESS STEEL CABLE GRIPS AS MANUFACTURED BY KELLUM, SLINGCO, OR EQUAL.

7.18 SUBGRADE BENEATH VALVE VAULT SHALL BE COMPACTED TO 98% STD PROCTER.

7.19 CONTRACTOR SHALL POWERWASH, CLEAN AND DISINFECT THE WETWELL AFTER DEWATERING. CONTRACTOR SHALL NOTIFY ENGINEER TWO (2) DAYS PRIOR TO WETWELL CLEANING TO ALLOW FOR AN INSPECTION TO BE SCHEDULED.

PUMP STATION GENERAL INFORMATION	
PEAK INFLOW	120 GPM
STARTUP OPERATING CONDITION	250 GPM @ 65 FT
WETWELL DIAMETER	6'
DISCHARGE PIPING	4"ø DUCTILE IRON
PUMP CURVE POINT #1	0 GPM @ 86 FT
PUMP CURVE POINT #2	240 GPM @ 65 FT
PUMP CURVE POINT #3	600 GPM @ 48 FT
PUMP CURVE POINT #4	810 GPM @ 34 FT
ALLOWABLE CURVE DEVIATION	±3% FLOW, ±2% HEAD
HORSEPOWER	14.1 (NON-OVERLOADING OVER ENTIRE PUMP CURVE)
VOLTAGE/ PHASE/ CYCLES	230 VOLT/3 PHASE/60 HZ.
MAX. OPERATING SPEED	1760 RPM
PUMP	ABS XFP100E CB1
IMPELLER	8.86 INCH CONTRABLOCK PLUS
MINIMUM SPHERE PASSAGE	3.15 IN
PRIMARY LEVEL SENSING METHOD	SUBMERSIBLE PRESSURE TRANSDUCER
BACKUP LEVEL SENSING METHOD	FLOATS
CHECK VALVES	GA LUDLOW CUSHIONED LEVER AND WEIGHT
PLUG VALVES	DEZURIK FULL PORT QUARTER TURN WITH HANDWHEEL
PUMP STATION ELEVATIONS	
TOP OF WETWELL	279.18'
WETWELL INVERT IN	266.02'
BACKUP HIGH WATER	266.52'
HIGH WATER ALARM	266.02'
LAG PUMP ON	265.76'
LEAD PUMP ON	265.46'
PUMPS OFF	263.93'
PRESSURE TRANSDUCER	263.43'
WETWELL BOTTOM	262.93'

CONSTRUCTION RECORD DRAWINGS

M1

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS
CONTRACT NO. 1
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

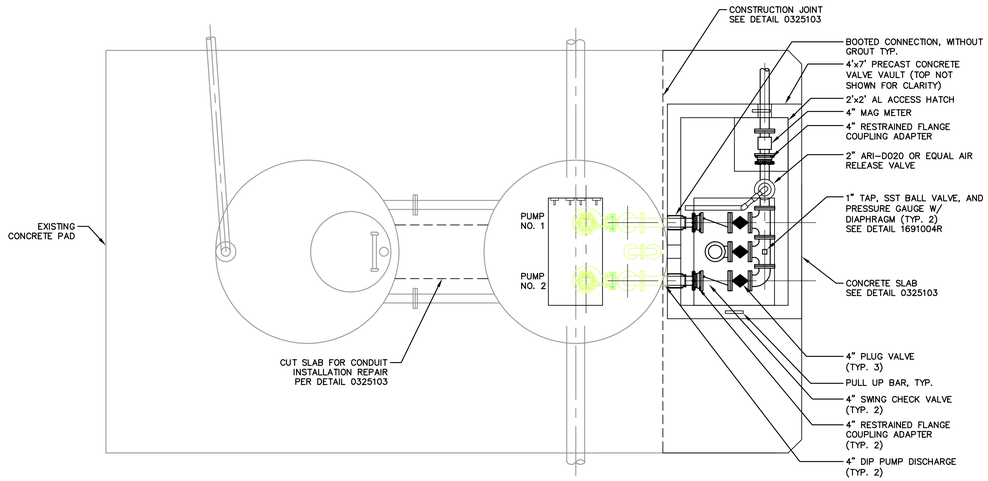
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURNELL

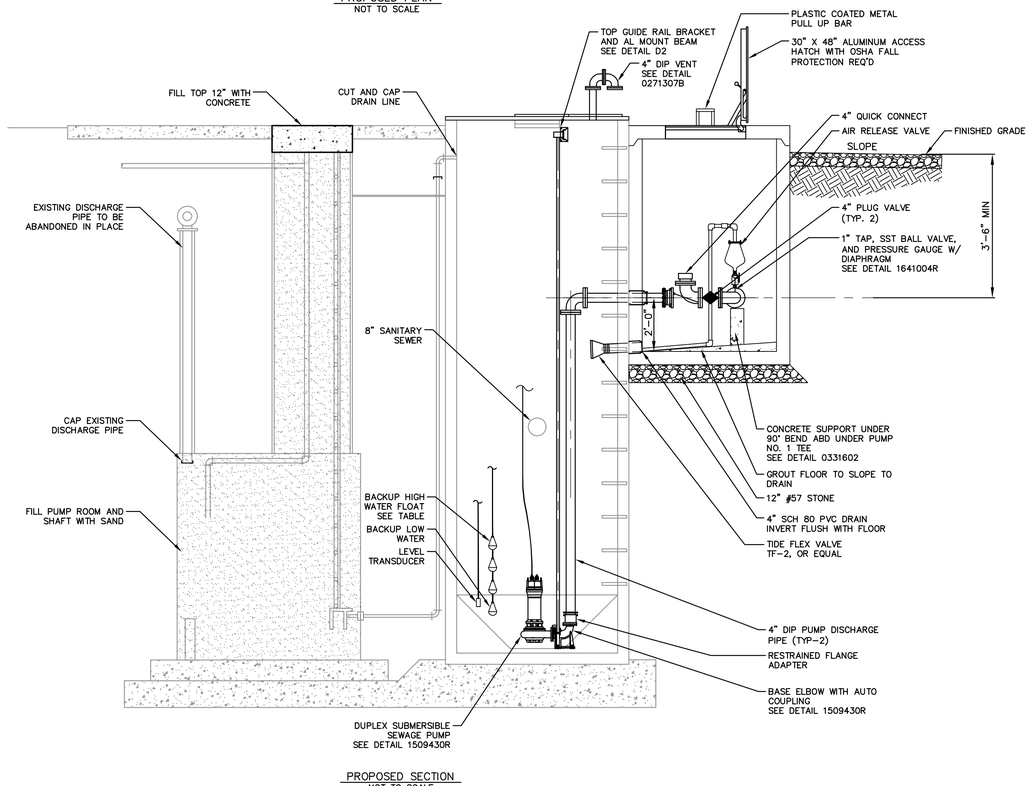
TINKERBELL PUMP STATION PLAN AND SECTION MECHANICAL

SHEET NUMBER 7 OF 17

Plotted By: Bailey, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 7 TINKERBELL PUMP STATION PLAN AND SECTION MECHANICAL December 02, 2013 09:58:04am K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\Record Dwgs\PlanSheets\7 TINKERBELL PUMP STATION PLAN AND SECTION MEC



PROPOSED PLAN
NOT TO SCALE



PROPOSED SECTION
NOT TO SCALE

NOTES:

8.1 ALL ITEMS IN BOLD ARE PROPOSED.

6.2. CONTRACTOR SHALL VERIFY ACCESS HATCH AND PUMP DIMENSIONS.

8.3 PROVIDE 304L SST INTERMEDIATE GUIDE RAIL BRACKETS AS REQUIRED BY PUMP MANUFACTURER, AND DETAIL 1509430R.

8.4 ALL HARDWARE, SUPPORTS, BRACING, FASTENERS, ANCHOR BOLTS ETC., INSIDE WETWELL SHALL BE ANSI TYPE 304L STAINLESS STEEL.

8.5 ALL EQUIPMENT AND MATERIALS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION, IN ACCORDANCE WITH SECTION 01300.

8.6 FLOATS SHALL BE SIGNAL DUTY MERCURY FREE FLOAT SWITCHES WITH THREE WIRES SUITABLE FOR OPERATION AS NORMALLY OPEN OR NORMALLY CLOSED.

8.7 INSTALL EQUIPMENT IN ACCORDANCE WITH ALL MANUFACTURER'S RECOMMENDATIONS.

8.8 NO FLANGE ADAPTERS OF ANY KIND SHALL BE USED INSIDE WETWELL UNLESS OTHERWISE SHOWN.

8.9 CONTRACTOR SHALL PROVIDE ONE (1) COMPLETE SPARE PRESSURE GAUGE ASSEMBLY.

8.10 PUMPS AND BASE ELBOWS SHALL BE MANUFACTURED BY THE SAME COMPANY.

8.11 PUMP CABLES SHALL BE SUPPLIED WITH BRAIDED STAINLESS STEEL CABLE GRIPS AS MANUFACTURED BY KELLUM, SLINGCO, OR EQUAL.

8.12 CONTRACTOR SHALL POWERWASH, CLEAN AND DISINFECT THE WETWELL AFTER DEWATERING. CONTRACTOR SHALL NOTIFY ENGINEER TWO (2) DAYS PRIOR TO WETWELL CLEANING TO ALLOW FOR AN INSPECTION TO BE SCHEDULED.

8.13 MAGNETIC FLOW METER SHALL BE ENDRESS AND HAUSER PROLINE PROMAG D400 CLASS 1, DIVISION 2 AND SHALL BE SUPPLIED WITH REMOTE READ OUT IN PUMP CONTROL PANEL. DEVICE OUTPUT SHALL BE 4-20mA AND SCADA READY WITH 24VDC SUPPLY VOLTAGE.

PUMP STATION GENERAL INFORMATION	
PEAK INFLOW	119 GPM
STARTUP OPERATING CONDITION	146 GPM @ 66.3 FT
WETWELL DIAMETER	6'
DISCHARGE PIPING	4"ø DUCTILE IRON
PUMP CURVE POINT #1	0 GPM @ 86 FT
PUMP CURVE POINT #2	169 GPM @ 69 FT
PUMP CURVE POINT #3	565 GPM @ 50.6 FT
PUMP CURVE POINT #4	810 GPM @ 34 FT
ALLOWABLE CURVE DEVIATION	±3% FLOW, ±2% HEAD
HORSEPOWER	12.1
VOLTAGE/ PHASE/ CYCLES	230 VOLT/3 PHASE/60 HZ.
MAX. OPERATING SPEED	1760 RPM
PUMP	ABS XFP100E-CB1
IMPELLER	8.43 INCH CONTRABLOC PLUS IMPELLER
MINIMUM SPHERE PASSAGE	3.15
PRIMARY LEVEL SENSING METHOD	PRESSURE TRANSDUCER
BACKUP LEVEL SENSING METHOD	FLOATS
CHECK VALVES	GA LUDLOW CUSHIONED LEVER AND WEIGHT
PLUG VALVES	DEZURIK FULL PORT QUARTER TURN WITH HANDWHEEL
PUMP STATION ELEVATIONS	
TOP OF WETWELL	249.44
WETWELL INVERT IN	236.91(N), 237.44(S)
BACKUP HIGH WATER	237.44
HIGH WATER ALARM	236.44
LAG PUMP ON	235.88
LEAD PUMP ON	235.38
PUMPS OFF	232.86
PRESSURE TRANSDUCER	232.11
WETWELL BOTTOM	231.11

CONSTRUCTION RECORD DRAWINGS

M2

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT	018484009
DATE	11-18-13
SCALE	NTS
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS
CONTRACT NO. 1
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

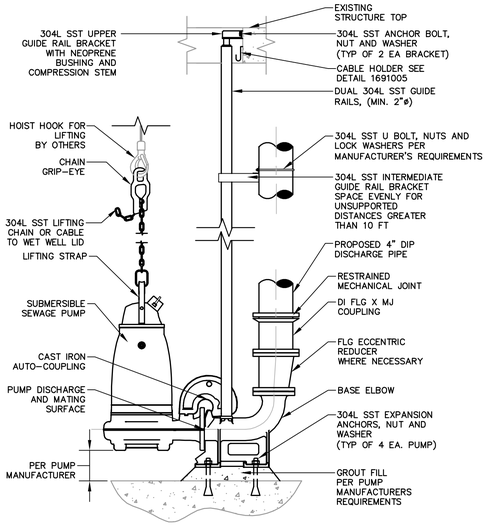
SEAL:



OAKS III PUMP STATION PLAN AND SECTION MECHANICAL

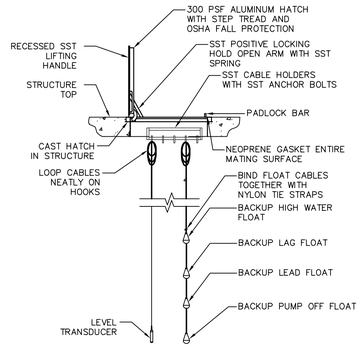
SHEET NUMBER
8
OF
17

Plotted By: Bailey, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 8 OAKS III PUMP STATION PLAN AND SECTION MECHANICAL December 02, 2013 09:58:14am K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\Record\dwgs\PlanSheets\8 OAKS III PUMP STATION PLAN AND SECTION MECHA



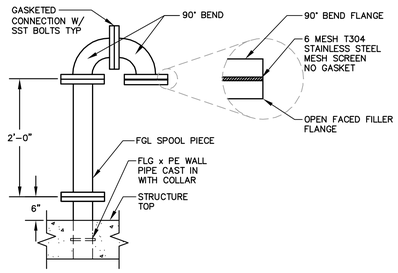
SUBMERSIBLE PUMP AND LIFT OUT ASSEMBLY

1509430R



ACCESS AND CONTROLS HATCH

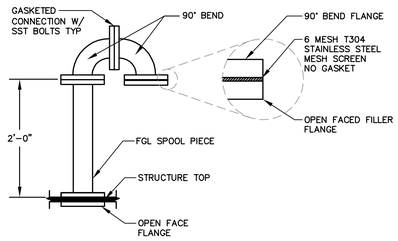
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VENT PIPE

NTS

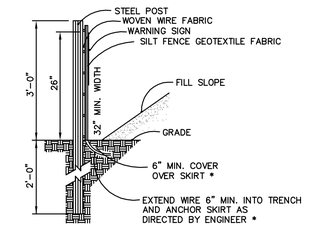
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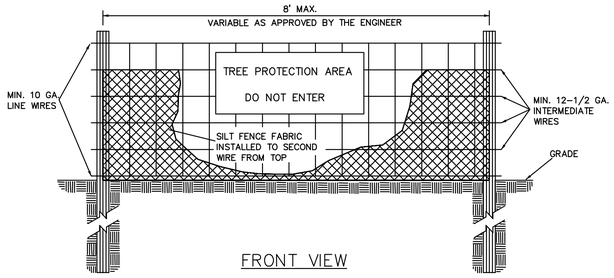
VENT PIPE

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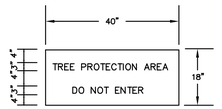
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SIDE VIEW



FRONT VIEW



WARNING SIGN DETAIL

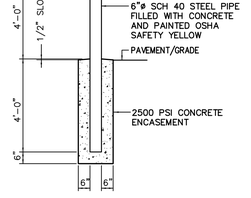
* FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE. FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

NOTES:

1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS SHALL BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
4. PLACE A SIGN AT EACH END OF TREE PROTECTION AND 50' ON CENTER THEREAFTER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
8. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.

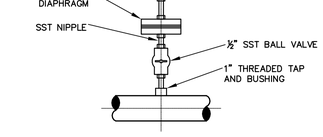
STANDARD TEMPORARY SILT / TREE PROTECTION FENCE

0227037



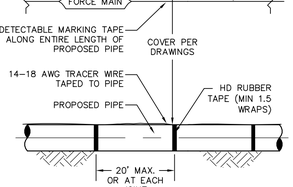
BOLLARD TYPE 1

0245102



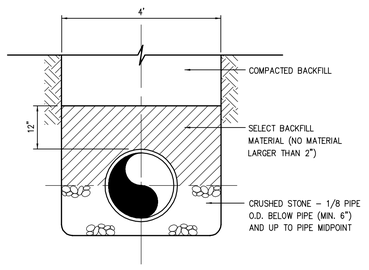
PRESSURE GAUGE INSTALLATION WITH THREADED TAP USED FOR PIPES 2" AND LARGER

1691004R



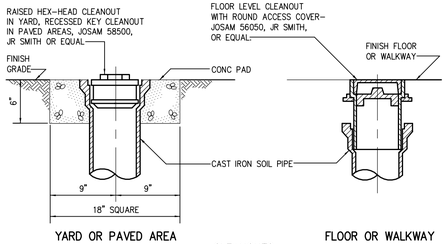
DETECTABLE MARKING TAPE AND WIRE

DETAIL D1



TYPE B

0222102

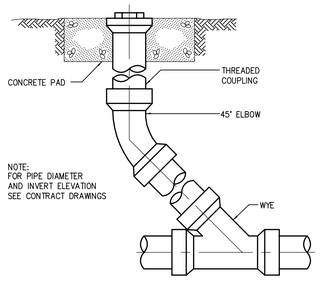


YARD OR PAVED AREA

FLOOR OR WALKWAY

CLEANOUTS

1542300



CLEANOUT RISER

1542400

EROSION CONTROL NOTES:

1. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHERE A GOOD STAND OF GRASS HAS BEEN ESTABLISHED AND EROSION IS NO LONGER EVIDENT. REMOVAL OF THE REMAINDER OF THE EROSION CONTROL DEVICES SHALL OCCUR AS OTHER AREAS ARE ESTABLISHED. REMOVAL OF THE EROSION CONTROL DEVICES SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER.
2. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION.
3. THE CONTRACTOR SHALL TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
4. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.
5. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN (7) DAYS OR AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (1/2) INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
6. 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 THE CONSTRAINTS LISTED BELOW:

PERMANENT GROUND COVER:
FOR AN AREA OF LAND-DISTURBING ACTIVITY WHERE GRADING ACTIVITIES HAVE BEEN COMPLETED, TEMPORARY OR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PROVIDED AS SOON AS PRACTICABLE, BUT IN NO CASE LATER THAN FIVE(5) WORKING DAYS AFTER COMPLETION OF GRADING.

TEMPORARY GROUND COVER:
1) FOR AN AREA WITH NO SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 14 CALENDAR DAYS.
2) FOR AN AREA OF MODERATE SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 10 DAYS. FOR PURPOSES OF THIS ITEM, "MODERATE SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS LESS THAN OR EQUAL TO 3:1.
3) FOR AN AREA OF STEEP SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF SEVEN DAYS. FOR PURPOSES OF THIS SUBDIVISION, "STEEP SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS GREATER THAN 3:1.

CONSTRUCTION RECORD DRAWINGS

D1

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT	018484009
DATE	11-18-13
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY

CARRBORO, NORTH CAROLINA

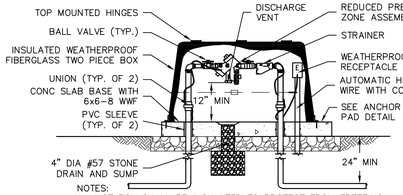
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURNELL

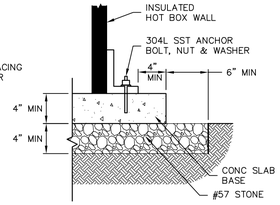
MISCELLANEOUS DETAILS

SHEET NUMBER 9 OF 17

Plotted By: Bailey, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 9 MISCELLANEOUS DETAILS December 02, 2013 09:58:23am K:\RAL_WRG\018484009 - OWASA Countryside-Oaks-Tinkerbell\CAD\RecordDwgs\PlanSheets\9 MISCELLANEOUS DETAILS.dwg



NOTES:
1. HOT BOX SHALL BE INSULATED TO PROTECT FROM FREEZING.
2. ORIENT LID TO FACILITATE OPENING AND O & M.
3. RECEPTACLE SHALL BE SUPPORTED WITH UNISTRUT AND INSTALLED AWAY FROM RPZ DISCHARGE AND SHALL FACE OPENING

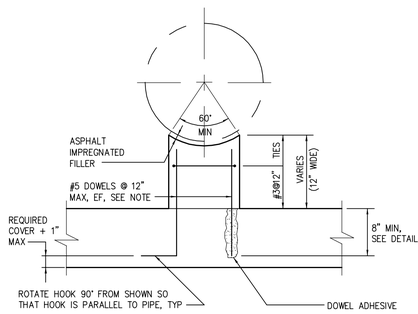


ANCHOR AND PAD DETAIL

1" REDUCED PRESSURE ZONE ASSEMBLY IN HOT BOX

NTS

1511510

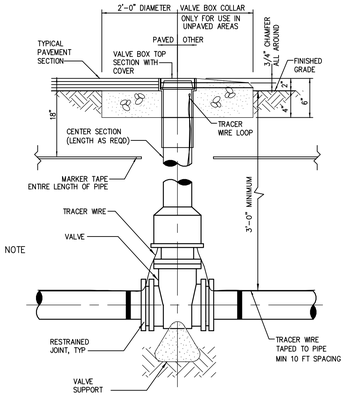


DETAIL NOTE: DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.

PIER

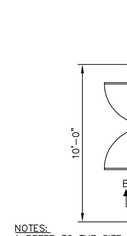
PIPE SUPPORT

0331602



VALVE BOX

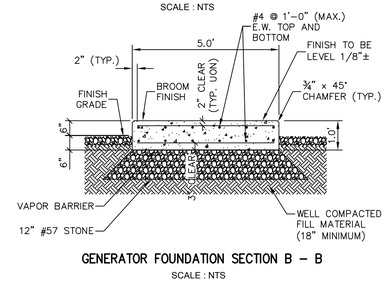
0264000R



NOTES:
1. REFER TO THE SITE PLAN ON SHEET 5 FOR GENERATOR PAD LOCATION AND ORIENTATION.

GENERATOR FOUNDATION PLAN

SCALE : NTS



GENERATOR FOUNDATION SECTION B – B

SCALE : NTS

GENERAL

1. FOUNDATIONS ARE DESIGNED FOR A PRESUMPTIVE ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF. CONTRACTOR SHALL VERIFY SOIL CONDITIONS AND BEARING CAPACITY PRIOR TO CONSTRUCTION.

2. EXCAVATE A MINIMUM 18" BELOW PROPOSED EQUIPMENT FOUNDATIONS OF EXPANSIVE, ORGANIC, UNCONSOLIDATED OR OTHERWISE UNACCEPTABLE MATERIAL AND REPLACE WITH WELL-COMPACTED MATERIAL ACCEPTABLE TO VERIZON.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING, AND RELOCATING AS REQUIRED ALL SERVICE AND UTILITY LINES IN VICINITY OF THE WORK SITE. ALL EXCAVATIONS NEAR THESE LINES TO BE CARRIED OUT WITH EXTREME CAUTION. COORDINATE ALL RELOCATIONS WITH THE PROPERTY OWNER.

4. CONTRACTOR TO CUT/FILL EXISTING SITE SUBSOIL TO PROVIDE AN AREA AS LEVEL AS POSSIBLE FOR THE EQUIPMENT FOUNDATIONS. ALL FILL AREAS ARE TO BE FILLED WITH SUITABLE MATERIALS. FILL MATERIALS ARE TO BE PLACED, COMPACTED, AND TESTED IN MAXIMUM LAYERS OF 8". COMPACTION OF ALL FILL MATERIAL SHALL ACHIEVE 95 PERCENT OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 698. ALL TESTS MUST MEET THE MINIMUM SPECIFIED SOIL BEARING CAPACITY. COMPACTION TESTING IS BY THE CONTRACTOR.

MATERIALS

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION TO ACI-318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL HAVE A SLUMP BETWEEN 3" AND 6".

3. REINFORCING BARS SHALL CONFORM TO THE LATEST REVISION OF ASTM-A615 GRADE 60 SPECIFICATIONS AND BE DETAILED IN ACCORDANCE WITH THE LATEST REVISION TO ACI-318.

4. TEST CYLINDERS SHALL BE MOLDED AND LABORATORY CURED IN ACCORDANCE WITH ASTM C31. THREE CYLINDERS SHALL BE TAKEN FOR EACH DAY'S CONCRETE PLACEMENT. CYLINDERS SHALL BE TESTED IN ACCORDANCE WITH THE LATEST REVISION TO ASTM C39.

5. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH ¾" x 45° CHAMFER, UNLESS OTHERWISE NOTED.

6. CONCRETE FORMWORK IS TO BE STRIPPED WITHIN 48 HOURS. VIBRATION OF THE CONCRETE MUST ASSURE THAT HONEYCOMBING WILL BE AT A MINIMUM. MECHANICAL VIBRATION OF ALL CONCRETE IS REQUIRED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ABOVE GRADE CONCRETE IS TO BE RUBBED AND PATCHED TO ASSURE SMOOTH FINISH AT TIME OF FORM REMOVAL. CONTRACTOR SHALL PROVIDE A BROOM FINISH ON THE TOP SURFACE OF THE EQUIPMENT FOUNDATION.

ELECTRICAL

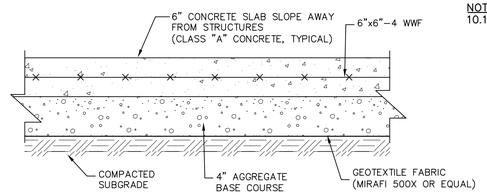
1. CONTRACTOR SHALL REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON THE STRUCTURAL DRAWINGS. CONTRACTOR SHALL VERIFY PLACEMENT OF EQUIPMENT AND LOCATION OF CONDUIT FOR MANUFACTURERS AND VENDORS SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION OF ALL UTILITIES.

TOLERANCES

1. TOPS OF CONCRETE FOUNDATION MUST BE WITHIN 0.02' OF ELEVATION REQUIRED.

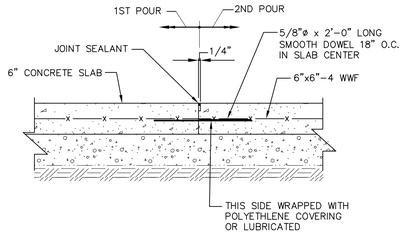
FOUNDATION NOTES

GENERATOR PAD DETAILS AND NOTES



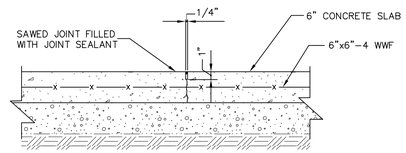
CONCRETE PAD DETAIL

NOT TO SCALE



PAINT FACE OF JOINT WITH BOND BREAKING COMPOUND PRIOR TO 2ND POUR

CONSTRUCTION JOINT



JOINT SHALL BE SAWED IMMEDIATELY AFTER INITIAL SET, BEFORE CONCRETE BEGINS TO COOL, AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH NOT TO BE DAMAGED BY THE BLADE, AND BEFORE RANDOM DRYING SHRINKAGE CRACKS CAN FORM.

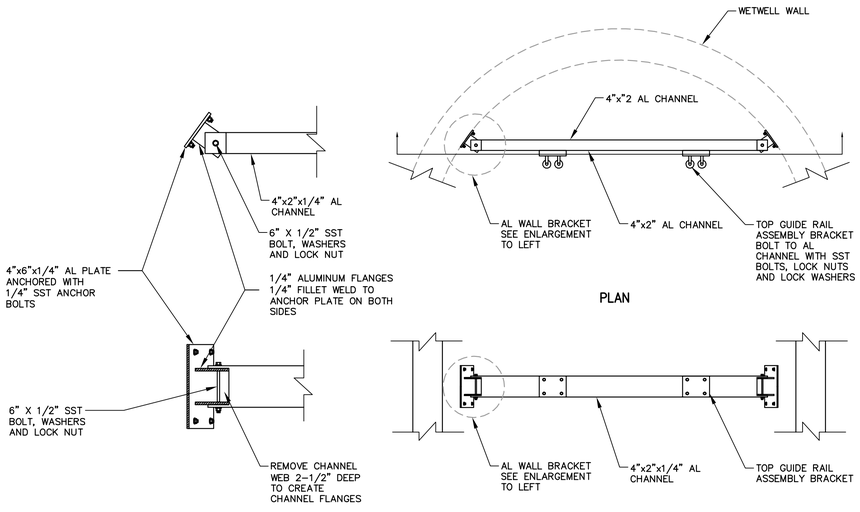
CONTROL JOINT

PAD JOINT DETAILS

NOT TO SCALE

0325103

NOTES:
10.1 ALL STAINLESS STEEL SHALL BE ANSI TYPE 304L OR 316, UNLESS OTHERWISE NOTED.



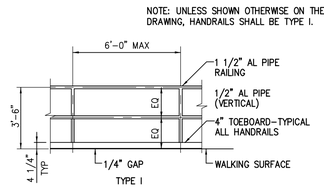
WALL BRACKET ELARGEMENTS

PLAN

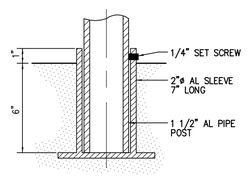
SECTION

TOP GUIDE RAIL BRACE ASSEMBLY

D2



ELEVATION



REMOVABLE POST IN CONCRETE

ALUMINUM HANDRAILS

0552000R

CONSTRUCTION RECORD DRAWINGS

D2

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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PHONE: 919-677-2000 FAX: 919-677-2050
NC LICENSE #F-0102 WWW.KIMLEY-HORN.COM

KHA PROJECT	018484009
DATE	11-18-13
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

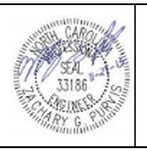
OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY

CARRBORO, NORTH CAROLINA

SEAL:

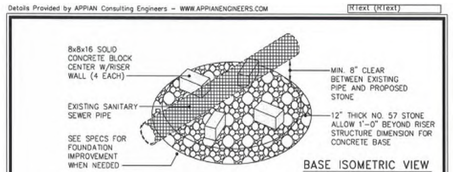


MISCELLANEOUS DETAILS

SHEET NUMBER 10 OF 17

Plotted By: Bailey, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 10 MISCELLANEOUS DETAILS December 02, 2013 09:58:28am K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\10 MISCELLANEOUS DETAILS.dwg

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM RText (RText)



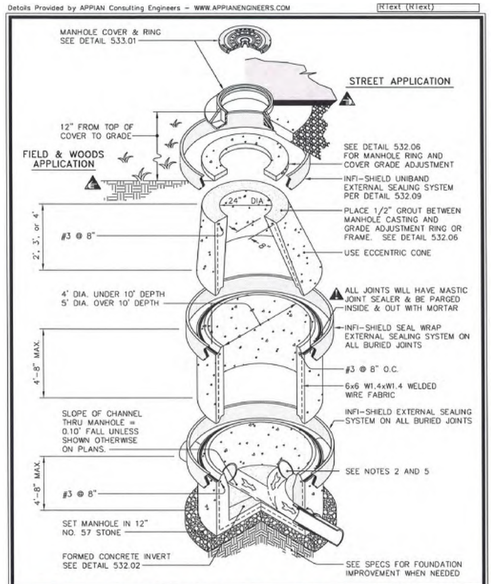
OWASA Quality Service Since 1977

400 Jones Ferry Road PO Box 366 Carrboro, NC 27510-0366 **ORANGE WATER AND SEWER AUTHORITY** Voice (919) 968-4421 FAX (919) 968-4464 www.owasa.org
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

PRECAST CONCRETE DOGHOUSE MANHOLE

SCALE: Not To Scale | DETAIL # ±532.08 | REVISION DATE: April 13, 2007 | SHEET # 1 of 2

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM RText (RText)



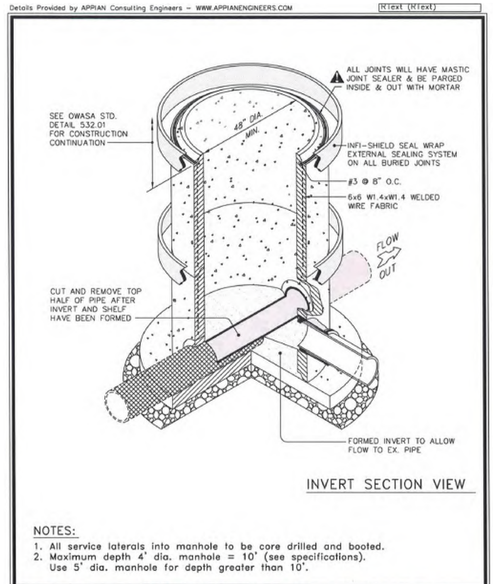
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STANDARD ECCENTRIC MANHOLE DETAIL

SCALE: Not To Scale | DETAIL # ±532.01 | REVISION DATE: April 13, 2007 | SHEET # 1 of 2

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM RText (RText)



NOTES:
1. All service laterals into manhole to be core drilled and booted.
2. Maximum depth 4' dia. manhole = 10' (see specifications). Use 5' dia. manhole for depth greater than 10'.

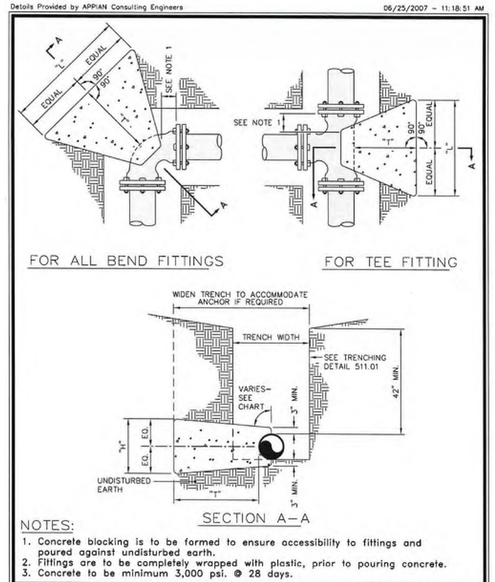
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PRECAST CONCRETE DOGHOUSE MANHOLE

SCALE: Not To Scale | DETAIL # ±532.08 | REVISION DATE: April 13, 2007 | SHEET # 2 of 2

Details Provided by APPIAN Consulting Engineers 06/25/2007 – 11:18:51 AM



NOTES:
1. Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
2. Fittings are to be completely wrapped with plastic, prior to pouring concrete.
3. Concrete to be minimum 3,000 psi. @ 28 days.

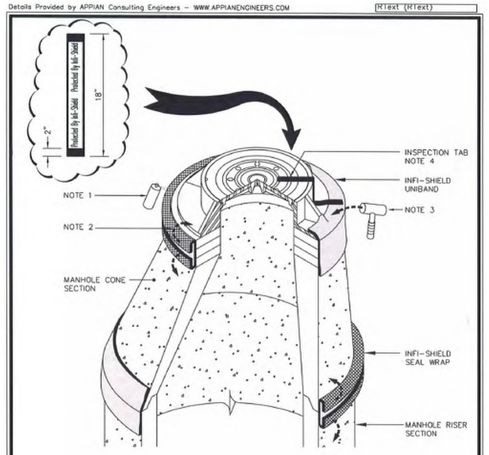
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USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL # ±512.02 | REVISION DATE: August 15, 2003 | SHEET # 1 of 4

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM RText (RText)



INSTALLATION NOTES:
1. Clean casting frame, riser rings and cone section. Spray primer to areas where attaching non-hardening butyl mastic.
2. Install the Infi-shield External Seal on the outside surface of the adjustment ring area covering all grade rings. Remove protective tape and fold back on to the structure.
3. Useing a rubber hammer, tap the sealing surface area.
4. Ensure lid and casting is clean. Attach inspection tab to manhole lid and backfill.
5. Contact Sealing Systems Inc. for additional installation instructions @ 800-478-2054.

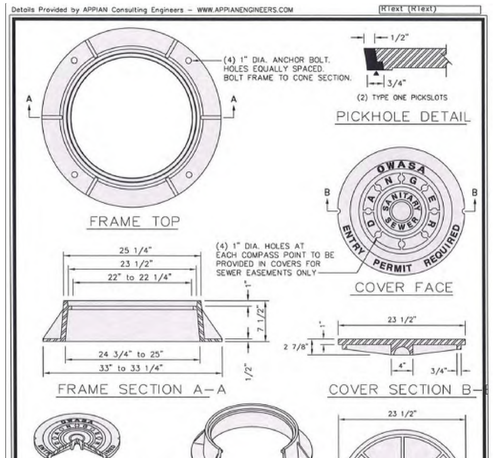
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INFI-SHIELD EXTERNAL SEALING DETAIL

SCALE: Not To Scale | DETAIL # ±532.09 | REVISION DATE: April 13, 2007 | SHEET # 1 of 1

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM RText (RText)



APPROVED MODELS	EAST JORDAN IRON WORKS V-1384	US FOUNDRY USF-669	CAPITOL FOUNDRY MH-2001
COVER WEIGHT	135 Lbs.	125 Lbs.	120 Lbs.
FRAME WEIGHT	180 Lbs.	190 Lbs.	190 Lbs.
LOAD RATING	HEAVY DUTY	HEAVY DUTY	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B
FINISH	UNCOATED	UNCOATED	UNCOATED

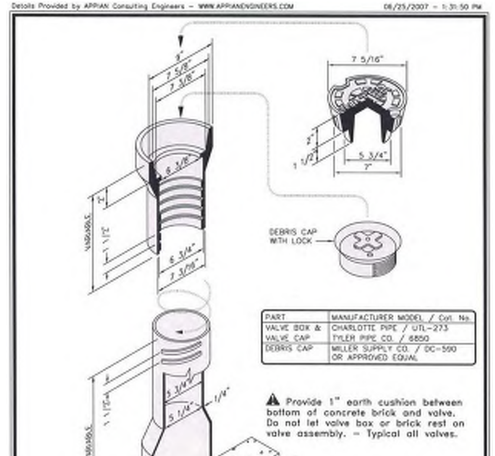
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SANITARY SEWER MANHOLE FRAME and COVER

SCALE: Not To Scale | DETAIL # ±533.01 | REVISION DATE: April 13, 2007 | SHEET # 1 of 1

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM 06/25/2007 – 1:31:50 PM



PART	MANUFACTURER MODEL / Cat. No.
VALVE BOX & VALVE CAP	CHARLOTTE PIPE / CTL-273 TYLER PIPE CO. / 6850
DEBRIS CAP	MILLER SUPPLY CO. / DC-590 OR APPROVED EQUAL

⚠ Provide 1" earth cushion between bottom of concrete brick and valve. Do not let valve box or brick rest on valve assembly. – Typical all valves.

NOTES:
1. Use heavy duty traffic lid marked "WATER".

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STANDARD SCREW VALVE BOX DETAIL

SCALE: Not To Scale | DETAIL # ±513.01 | REVISION DATE: August 15, 2003 | SHEET # 1 of 1

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM 06/25/2007 – 11:19:19 AM

⚠ TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME CONCRETE CU. YD.
<4 INCHES	11 1/4°	---	---	---	---
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.00	1.00	2.50	0.09
	TEE / PLUG	1.00	1.00	2.00	0.07
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.00	1.00	2.50	0.09
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
6 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	3.00	0.28
	TEE / PLUG	2.00	2.00	2.50	0.23
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.75	0.25
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	2.00	2.00	3.00	0.28
	45°	3.00	2.50	3.00	0.47
	90°	4.50	3.00	3.50	0.94
	TEE / PLUG	4.50	3.00	3.00	0.81
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	3.00	3.50	0.84
	90°	6.50	3.50	3.50	1.54
	TEE / PLUG	6.50	3.50	3.00	1.32

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL # ±512.02 | REVISION DATE: August 15, 2003 | SHEET # 2 of 4

D3

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/18/13	ZGP

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KHA PROJECT	018484009
DATE	11-18-13
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

OAKS III AND TINKERBELL PUMP STATION IMPROVEMENTS

PREPARED FOR

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

CONSTRUCTION RECORD DRAWINGS

SEAL:

MISCELLANEOUS DETAILS

SHEET NUMBER 11 OF 17

Plotted By: Bailey, Joey Sheet Set: OWASA Oaks-Tinkerbell Layout: 11 MISCELLANEOUS DETAILS December 02, 2013 10:00:59am K:\RAL_WRG\018484007 – OWASA Oaks-Tinkerbell\Oaks & Tinkerbell\CAD\RecordDwgs\PlanSheets\11 MISCELLANEOUS DETAILS.dwg

ORANGE WATER AND SEWER AUTHORITY

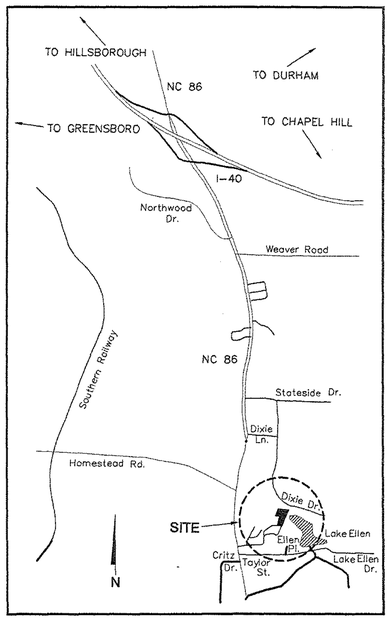
CARRBORO, NORTH CAROLINA

OWASA

LAKE ELLEN PUMP STATION IMPROVEMENTS
CIP No 277-13

CONTRACT DOCUMENTS

MAY 2003



VICINITY MAP
NOT TO SCALE

CDM Camp Dresser & McKee

consulting engineering construction operations

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

CDM JOB No 6127-36184

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By _____ Date 9/7/04
CDM

NORTH CAROLINA PROFESSIONAL SEAL 27053 ENGINEER KEVIN C. IRBY 9/7/04
CIVIL/MECHANICAL

NORTH CAROLINA PROFESSIONAL SEAL 24336 ENGINEER JAMES W. FOREHAND 9/7/04
STRUCTURAL

NORTH CAROLINA PROFESSIONAL SEAL 27710 ENGINEER JOHN G. SYNCO 9/15/2004
ELECTRICAL

FFD2

SPS-L01-35-01

Filename: C:\LAKE ELLEN\CIVIL\CPRSITE.dwg Xref's: [] Plotted by: COMPONESCHUA Time: 8/30/2004 9:24:04 AM

A B C D E F G H

1 2 3 4

N

1" = 5'
2.5 0 5

NOTES:

1. EXISTING PUMPS, MOTORS AND PORTABLE GENERATOR WILL REMAIN OWASA PROPERTY
2. DEMOLITION WORK TO OCCUR AFTER ALL NEW FACILITIES ARE INSTALLED AND TESTED AND IN SATISFACTORY OPERATION.
3. TOWN OF CHAPEL HILL RESOURCE CONSERVATION DISTRICT ELEVATION DEFINED AS 5-FEET ABOVE 100-YEAR FLOODPLAIN ELEVATION.

Ø BOOKER CREEK
(SEE EXISTING SITE PLAN SHEET 1 OF1 BY TITAN ATLANTIC GROUP)

OWASA SANITARY SEWER EASEMENT DB 880 PG 78

16" DIP FLOW

S83°34'50"E 73.70

280.65 TOTAL (DEED OVERLAP)
178.97

S83°37'08"E 3.68'

100 - YEAR FLOODPLAIN ELEV = 433.20 (NAVD) (SEE NOTE 3)

277.05

N74°06'21"E 29.01

ELEV = 436.20 (NAVD) (SEE NOTE 3)

N15°53'39"W 30.00

N18°31'57"E 34.66

S74°06'21"W 12.91

NEW SPIGOT LOCATION

439.0

439.5

EXISTING MANHOLE

NEW MANHOLE
N 799892.318
E 1983727.730
RIM EL = 440.50
INV IN 16" DI = 425.90
INV OUT 16" DI = 425.65

EXISTING POWER BOARD, POWER METER SWITCHES, & TELEPHONE PAD TO BE DEMOLISHED

C / CD-1 NEW CHAIN LINK FENCE (TYP) (MAINTAIN ALIGNMENT ALONG WOODS LINE ON NORTH SIDE)

438.5

8" SS

440.0

16" DIP

EXIST PUMP STATION TO BE DEMOLISHED (SEE NOTE 1)

440.5

441.0

EXIST GENERATOR TO BE REMOVED (SEE NOTE 1)

16" DIP

441.5

12" DI FLG VENT W/ INSECT SCREEN

NEW GENERATOR & ELEC PAD (SEE ELECTRICAL DWGS)

FUTURE CHEMICAL INJECTION CONNECTION

16" DI INFL INV IN = 424.98

442.0

BY-PASS PUMP OUT E / MD-1

B-1

10' ID PRECAST WET WELL
N 799866.415
E 1983707.520
RIM EL = 442.98
INV EL = 424.98
(SEE SHEET M-1)

442.5

443.0

VALVE VAULT (SEE SHEET M-1)

12" DI DISCHARGE

12" DI 45° RJ BEND

TOWN OF CHAPEL HILL 50' STREAM SIDE CORRIDOR ZONE BOUNDARY

LOCATE NEW FENCING 4'± FROM EXIST FENCE TO THE EXTENT OF LEVEL AREA ON WEST SIDE

4'±

OWASA SANITARY SEWER EASEMENT D 880 PB 73

N18°31'57"E 40.36

LOCATE NEW FENCING 4' ± FROM EXITING FENCE TO EXTENT OF LEVEL AREA (MAINTAIN ALIGNMENT ALONG WOODS LINE ON SOUTH SIDE)

4'±

C / CD-1 NEW CHAIN LINK FENCE (TYP)

443.5

444.0

N83°34'50"W 47.27

NEW 12' ACCESS GATE

N83°34'50"W 27.73

445.0

CLEAR AREA AND MATCH EXIST ACCESS ROAD TO NEW GATE

N15°03'37"E 37.07

OWASA SANITARY SEWER EASEMENT DB 880 PG 80

EIP

SEE DETAIL D / CD-1

CO

438.5

439.0

439.5

6"

440.0

440.5

441.0

C / CD-1 EXISTING CHAIN LINK FENCING TO BE REMOVED AND REPLACED W/ NEW FENCING (1'-0" INSIDE OWASA EASEMENT ON EAST SIDE OF PUMP STATION

2 / M-1 4' ID METER MANHOLE RIM EL = 441.64

EXISTING FENCE TO BE REMOVED ON ALL SIDES

441.5

442.0

442.5

443.0

443.5

444.0

444.5

445.0

445.5

446.0

446.5

447.0

S71°31'11"E 62.19

100 - YEAR FLOODPLAIN ELEV = 433.20 (NAVD) (SEE NOTE 3)

20.00'

N18°31'57"E 24.45' EIP TO EIP

OWASA 20' SANITARY SEWER EASEMENT DB 880 PG 69

EIP

ELEV = 436.20 (NAVD) (SEE NOTE 3)

S71°37'11"E 47.81

FM FM FM FM FM FM FM FM FM FM FM FM

4"DIP SEWER FORCE MAIN

6"DIP SEWER FORCE MAIN

54.52'

N18°31'57"E 251.65 EIP TO EIP

DUKE POWER EASEMENT DB 880 PG 72 "EXHIBIT A" PB 7 PG 38

TOWN OF CHAPEL HILL 50' STREAM SIDE CORRIDOR ZONE BOUNDARY

LEGEND

NEW CHAIN LINK FENCE

EXISTING FACILITIES TO BE DEMOLISHED

B-1 APPROXIMATE LOCATION OF TEST BORING DRILLED BY AACCURATE DRILLING, INC. OF RALEIGH, N.C. ON DECEMBER 14, 2002

RECORD DRAWING

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By _____ Date 9/7/04

CDM

NORTH CAROLINA PROFESSIONAL SEAL 27053 ENGINEER KEVIN C. IRBY 9/7/04

FFDZ

SPS-L01-35-02

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04	JC	BM	REVISED FOR RECORD

DESIGNED BY: K. IRBY
DRAWN BY: M. BASS
SHEET CHK'D BY: W. MASON
CROSS CHK'D BY: D. HEISER
APPROVED BY: W. MILES
DATE: MAY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 500
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

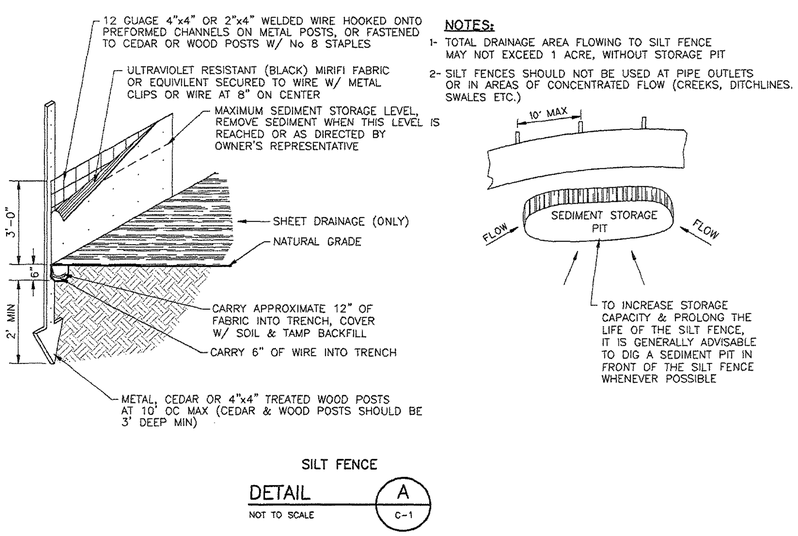
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

LAKE ELLEN PUMP STATION IMPROVEMENTS

PROPOSED SITE PLAN

PROJECT NO. 6127-36184
FILE NAME: CPRSITE.dwg

SHEET NO.
C-1



NOTES:

1- TOTAL DRAINAGE AREA FLOWING TO SILT FENCE MAY NOT EXCEED 1 ACRE, WITHOUT STORAGE PIT

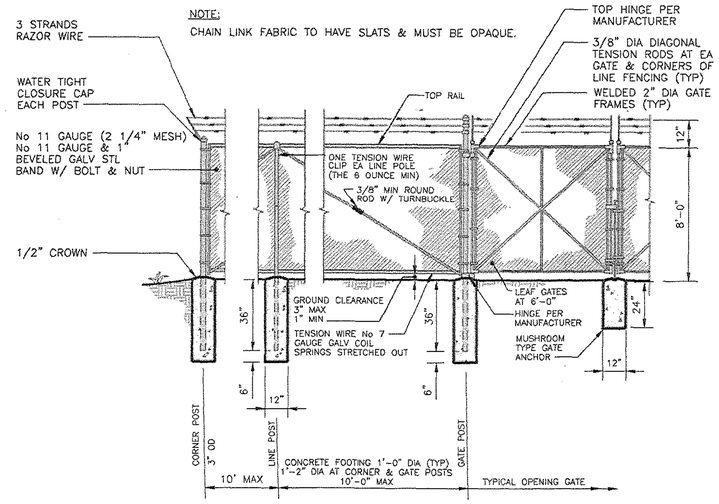
2- SILT FENCES SHOULD NOT BE USED AT PIPE OUTLETS OR IN AREAS OF CONCENTRATED FLOW (CREEKS, DITCHLINES, SWALES ETC.)

TO INCREASE STORAGE CAPACITY & PROLONG THE LIFE OF THE SILT FENCE, IT IS GENERALLY ADVISABLE TO DIG A SEDIMENT PIT IN FRONT OF THE SILT FENCE WHENEVER POSSIBLE

SILT FENCE

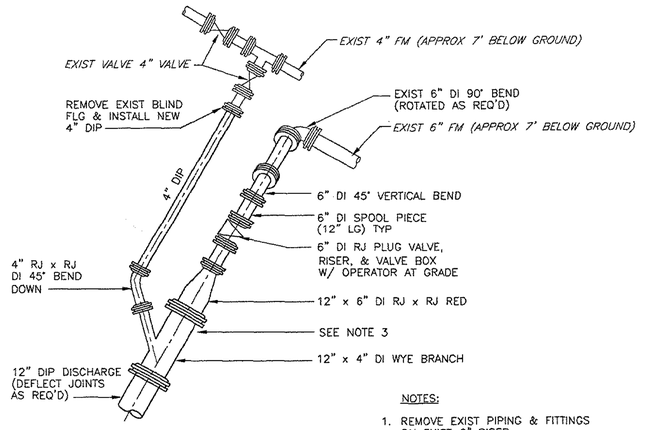
DETAIL A / C-1 — NOT TO SCALE

NOTE:
CHAIN LINK FABRIC TO HAVE SLATS & MUST BE OPAQUE.



TYPICAL 8-FOOT HIGH CHAIN-LINK FENCE

DETAIL C / C-1 — NOT TO SCALE

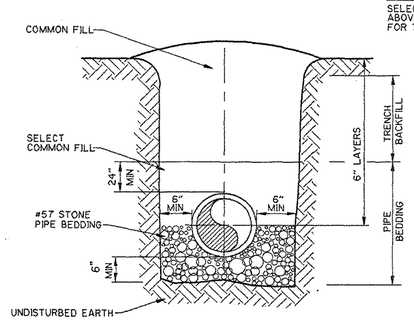


DETAIL D / C-1 — 3/8" = 1'-0"

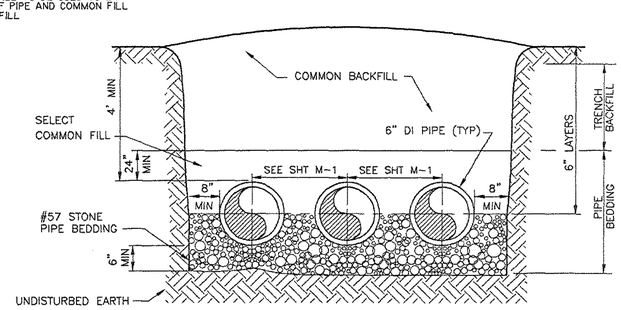
NOTES:

1. REMOVE EXIST PIPING & FITTINGS ON EXIST 6" RISER.
2. REMOVE EXIST CONCRETE THRUST BLOCKING AS REQ'D & INSTALL NEW THRUST BLOCKING AT NEW RESPECTIVE FITTINGS. (E / -)
3. FOR THE FUTURE TIE-IN OF 12" FORCE MAIN TO 12" DISCHARGE, OWNER WILL REMOVE THE 12"x6" RED, AND CONNECT THE FUTURE FORCE MAIN TO THE 12"x4" WYE. THE 4" 45° BEND WILL BE REMOVED AND THE 4" BRANCH BLIND FLANGED. THIS WORK NOT TO BE CONSIDERED AS PART OF THIS CONTRACT.

NOTE:
SELECT COMMON FILL TO BE USED TO 24" ABOVE THE TOP OF PIPE AND COMMON FILL FOR TRENCH BACKFILL



12" & 16" PIPE BEDDING



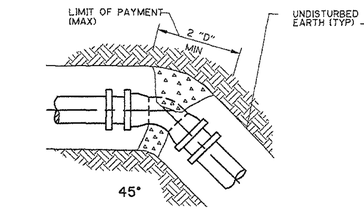
PIPE BEDDING FOR 6" DI PUMP DISCHARGE

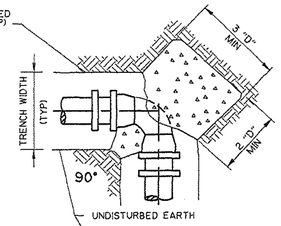
PIPE BEDDING

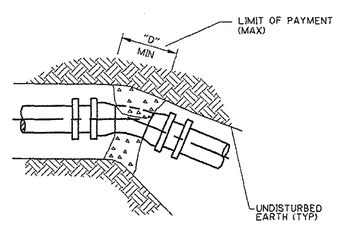
DETAIL B / C-1 — NOT TO SCALE

PIPE BEDDING NOTES

1. PIPE BEDDING & TRENCH BACKFILL - COMMON FILL OR SELECTED COMMON FILL MATERIAL COMPACTED IN LAYERS TO 95% MAXIMUM DENSITY AS PER AASHTO T180 AND 98% UNDER PAVED AREAS. SEE SPECIFICATIONS
2. USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE OWNER'S REPRESENTATIVE
3. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION. DEWATER AS NECESSARY.
4. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF FLOW.
5. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL BE AS REQ'D TO REACH SUITABLE FOUNDATION; FOR NON-CUSHIONING TRENCH DEPTH SHALL BE BE 6" BELOW BOTTOM OF UTILITY
6. SHEETING SHALL BE DRIVEN BELOW THE UTILITY INVERT IF REQUIRED FOR LATERAL SUPPORT OR UNSUITABLE MATERIAL REMOVAL. WHERE DRIVEN BELOW PIPE INVERT, SHEETING SHALL BE CUT OFF A MIN OF 12" ABOVE TOP OF PIPE, OR HIGHER, AS AUTHORIZED BY THE OWNER'S REPRESENTATIVE, AND LEFT IN PLACE. IN NO CASE SHALL SHEETING LEFT IN PLACE EXTEND HIGHER THAN 30" BELOW URFACE GRADE UNLESS SPECIFICALLY APPROVED. BRACING SHALL BE PROVIDED AS REQUIRED.
7. BACKFILL MATERIALS SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIALS REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. EXCAVATED MATERIALS MIXED WITH DELETERIOUS SUBSTANCES DURING CONSTRUCTION SHALL NOT BE USED FOR BACKFILLING.
8. THIS SHEET REFERS TO DIP AND BURIED STEEL



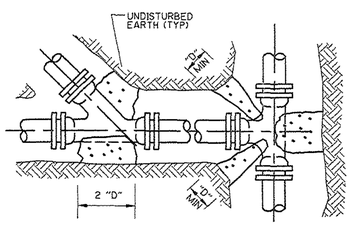


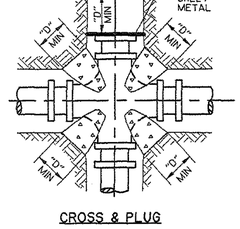


11 1/4° - 22 1/2°

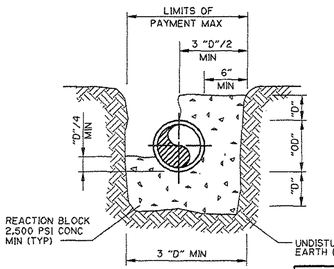
NOTES

"D"=DIAMETER OF PIPE. "OD"=OUTSIDE DIAMETER OF PIPE. REACTION BLOCK DIMENSIONS MAY BE MODIFIED IN THE FIELD BY THE ENGINEER DEPENDING ON THE SOIL BEARING PRESSURE.





CROSS & PLUG



SECTION

THRUST BLOCKING

DETAIL E / - — 3/8" = 1'-0"

THRUST BLOCKING NOTES

1. THRUST BLOCKS SHALL BE USED ONLY AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
2. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED MATERIAL WHERE TRENCH WALL HAS BEEN DISTURBED. EXCAVATE ALL LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL.
3. ON TEES AND BENDS, EXTEND THRUST BLOCK THE FULL LENGTH AND PUT WOOD BLOCKING IN FRONT OF ALL PLUGS BEFORE POURING CONCRETE. JOINTS SHALL BE COVERED BY THRUST BLOCK
4. ALL WOOD BLOCKING SHALL BE CREOSOTED 12 LB. EMPTY CELL PER LATEST REVISION UNITED STATES FEDERAL SPEC. TT W-556.
5. BACKFILL SHALL CONSIST ENTIRELY OF CLEAN SAND AND SMALL ROCK FRAGMENTS. ANY MUCK FOUND AROUND THE EXCAVATION SHALL BE REPLACED WITH COMPACTED MATERIAL AS APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FOUNDRY DESIGNED RESTRAINING SYSTEMS SHALL BE PROVIDED FOR ALL PRESSURE PIPES 8" AND LARGER. THRUST BLOCKS WILL NOT BE USED ON PIPES 8" AND LARGER UNLESS WRITTEN APPROVAL IS GIVEN BY THE OWNER'S REPRESENTATIVE.
7. FOUNDRY DESIGNED RESTRAINING SYSTEMS SHALL BE PROVIDED ON PRESSURE PIPES 6" AND SMALLER WHERE STANDARD THRUST BLOCKING IS NOT SUITABLE, AND/OR SOIL RESISTANCE BEARING IS LESS THAN 2,000 PSF.

RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED AS A RESULT.

By _____ Date 9/7/04

CDM

NORTH CAROLINA PROFESSIONAL SEAL 27033 ENGINEER KEVIN C. IRBY

9/7/04

FED2

SPS-L01-35-03

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. IRBY
DRAWN BY: M. BASS
SHEET CHK'D BY: W. MASON
CROSS CHK'D BY: D. HEISER
APPROVED BY: W. MILES
DATE: MAY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

LAKE ELLEN PUMP STATION IMPROVEMENTS

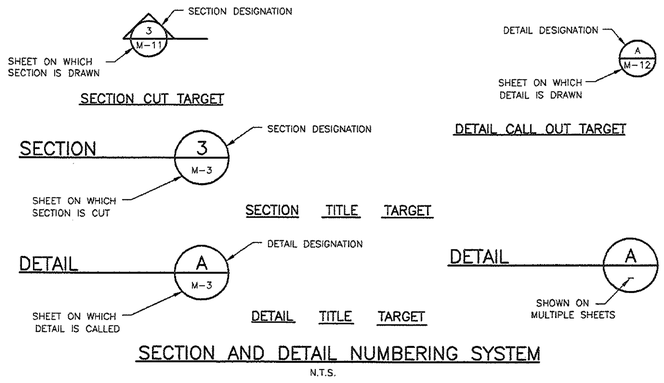
MISCELLANEOUS CIVIL DETAILS

PROJECT NO. 6127-36184
FILE NAME: CDTCD-1.dwg

SHEET NO.
CD-1

INDEX OF DRAWINGS

SHEET NO.	TITLE
GENERAL	
	COVER SHEET
G-1	INDEX, ABBREVIATIONS AND LEGEND
CIVIL	
	EXISTING CONDITION SURVEY (TITAN ATLANTIC GROUP)
C-1	PROPOSED SITE PLAN
CD-1	MISCELLANEOUS CIVIL DETAILS
MECHANICAL / STRUCTURAL	
M-1	PUMP STATION - PLAN, SECTIONS AND DETAILS
MD-1	MISCELLANEOUS MECHANICAL DETAILS
ELECTRICAL	
E-1	SYMBOLS AND ABBREVIATIONS AND ELECTRICAL SITE PLAN
E-2	SINGLE LINE POWER DIAGRAM, ELEMENTARY CONTROL DIAGRAMS
	AND ELECTRICAL EQUIPMENT FRONT VIEW
E-3	MISCELLANEOUS ELECTRICAL PLANS, AND ELECTRICAL DETAILS



SECTION AND DETAIL NUMBERING SYSTEM

N.T.S.

ABBREVIATIONS

GENERAL

ALUMINUM	AL, ALUM
ANGLE	<
BENCH MARK	BM
BETWEEN	BTWN
CENTER LINE	℄
CENTER TO CENTER	CC
DIAMETER	DIA, DIAM
DIAGONAL	DIAG
DIMENSION	DIM
DISCHARGE	DISC
DRAWING	DWG
EACH	EA
ELEVATION	EL, ELEV
EFFLUENT	EFF
EXISTING	EXIST
FINISH	FIN
FLOOR	FL
HIGH	H
HIGH POINT	HP
INFLUENT	INFL
LONG	LG
LIGHT POLE	LP
MATERIAL	MTL
MANUFACTURE	MFG
MAXIMUM	MAX
MECHANICAL	MECH
METAL	MET
MINIMUM	MIN
MOUNTED	MTD
NOMINAL	NOM
NOT TO SCALE	NTS
NUMBER	NO
ON CENTER	OC
OPTION	OPT
OPPOSITE	OPP
OPENING	OPNG
OR EQUAL	O/E
PIECE	PC
POINT	PT
POUND	LB
PLATE	PL
RADIUS	RAD, R
REQUIRED	REQ'D
RIGHT OF WAY	R/W
ROOM	RM
SQUARE	SQ
STAINLESS STEEL	SS
SIDEWALK	SDWK
SHEET	SH, SHT
SYMMETRICAL	SYMM
SECTION	SEC
STANDARD	STD
STEEL	STL
THICK	THK
TYPICAL	TYP
TOP & BOTTOM	T&B
TEMPORARY	TEMP
THREADED	THD
UTILITY EASEMENT	UE
VERTICAL	VERT
WEST	W
WITH	W/
WATER LEVEL	WL
WEATHERPROOF	WPF
WATER	W, WTR

VALVES, FITTINGS, ETC. — SYMBOLS

AIR CUSHION CHECK VALVE	ACCV
AIR RELIEF VALVE	ARV
BLIND FLANGE	BF
BURIED GEAR OPERATOR	BO
CHECK VALVE	CV
ELECTRIC VALVE ACTUATOR	EVA
ELEVATED GEAR OPERATOR	EO
EXPANSION JOINT	EXJ
FIRE HYDRANT	FH
FITTINGS	FTG
FLANGED ADAPTER	FA
FLEXIBLE COUPLING	FC
FLOOR BOX (BUSHING TYPE)	FB
FLOOR STAND	FS
GATE VALVE	GV
HARNESSED FLANGE ADAPTER COUPLING	HFAC
HOSE BIBB	HB
HYDRAULIC VALVE ACTUATOR	HVA
MECHANICAL JOINT PLUG	MJP
PLUG VALVE	PV
REDUCER	RED
SILENT CHECK VALVE	SCV
UNION	UN
VALVE BOX	VB
VICTAULIC COUPLING (GROOVED ENDS)	VC (G)
VICTAULIC COUPLING (SHOULDERED ENDS)	VC (S)
WALL SLEEVE	WS
WALL PIECE (WITH WATER STOP)	WAP

PIPE

BLACK STEEL PIPE	BSP
CONCRETE PRESSURE PIPE	CPP
COPPER PIPE	CU
DUCTILE IRON PIPE	DIP
DUCTILE IRON	DI
FLANGE	FLG
MECHANICAL JOINT	MJ
POLYETHYLENE PIPE	PP
POLYVINYLCHLORIDE	PVC
REINFORCED CONCRETE PIPE	RCP
RESTRAINED JOINT	RJ
SLIP-ON JOINT	SJ
STEEL PIPE	SP
TIED JOINT	TJ

SURVEY

GAS VALVE	GV
INVERT	INV
MAILBOX	MB
OVERHEAD UTILITIES	OHU
RIGHT-OF-WAY	R/W
SIGN	SN
SANITARY SEWER MANHOLE	SSMH
TELEPHONE RISER	TR
UTILITY POLE	UP
UNDERGROUND TELEPHONE CABLE	UTC
WATER METER	WM
WATER VALVE	WV

LEGEND

S	ABOVE GROUND
S	BELOW GROUND
	NEW MAIN THIS PROJECT
20" W.M.	EXISTING WATER MAIN
16" R.W.	EXISTING RAW WATER MAIN
M.H. SAN. S.	EXISTING SANITARY SEWER W/ MANHOLE
10" F.M.	EXISTING FORCE MAIN
T	EXISTING BURIED TELEPHONE
P	EXISTING POWER DUCTS OR CABLES
O.H.P.	OVERHEAD POWER
CATV	EXISTING CABLE TELEVISION
C.B. 15" S.S.	EXISTING STORM SEWER W/CATCH BASIN
	EXISTING LIGHT POLE
OHU	EXISTING OVERHEAD UTILITIES
GAS	EXISTING GAS MAIN
WV	EXISTING WATER VALVE
	EXISTING GAS LINE MARKER
F.H.	FIRE HYDRANT
	R/W - RIGHT OF WAY
	℄ - PROPERTY LINE
	LIMITS OF CONSTRUCTION

* SEE ELECTRICAL SHEETS FOR ELECTRICAL LEGEND

	NEW MAIN TO BE CONST. UNDER EXISTING UTILITY
	NEW MAIN TO BE CONST. OVER EXISTING UTILITY
□ or ○ P.P.	EXISTING POWER POLE
□ or ○ L.P.	EXISTING LIGHT POLE
B-1	SOIL BORING
BM-1 1	BENCH MARK
	EXISTING CHAIN LINK FENCE
	SILT FENCE/EROSION CONTROL
	NEW CHAIN LINK FENCE
	NEW STRUCTURES
	EXISTING STRUCTURES (TO REMAIN)
	EXISTING STRUCTURES (TO BE REMOVED)
	NEW CONCRETE SLAB OR SIDEWALKS
	FUTURE STRUCTURE
X 11.50	EXISTING ELEVATION

RECORD DRAWING

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By WWM Date 9/7/04

CDM

NORTH CAROLINA PROFESSIONAL SEAL 27093 ENGINEER R. BASS

9/7/04

SPS-L01-35-04

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. IRBY
DRAWN BY: M. BASS
SHEET CHK'D BY: W. MASON
CROSS CHK'D BY: D. HEISER
APPROVED BY: W. MILES
DATE: MAY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

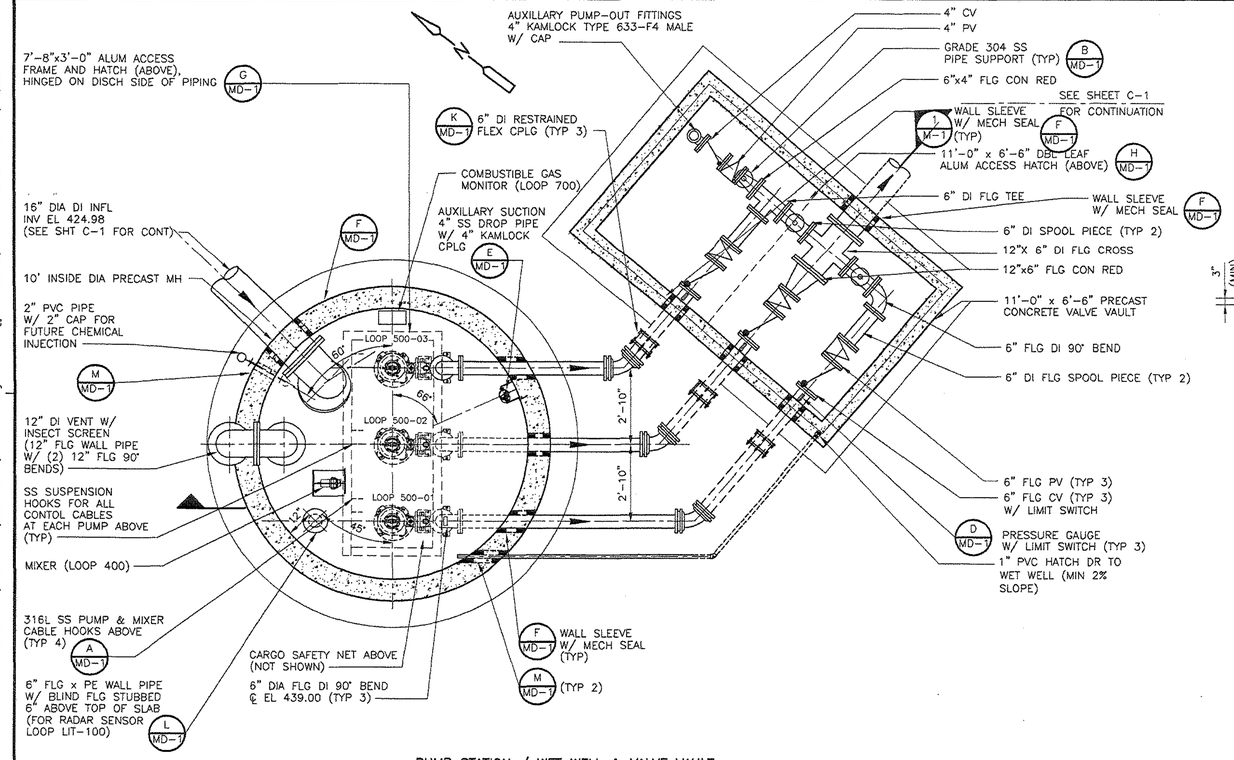
LAKE ELLEN PUMP STATION IMPROVEMENTS

INDEX OF DRAWINGS, ABBREVIATIONS, AND LEGEND

PROJECT NO. 6127-36184
FILE NAME: GINDXG01.dwg

SHEET NO.
G-1

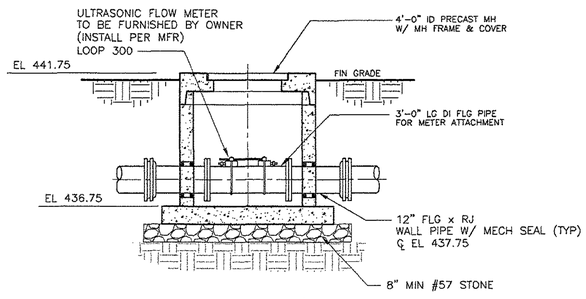
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PUMP STATION / WET WELL & VALVE VAULT

PLAN

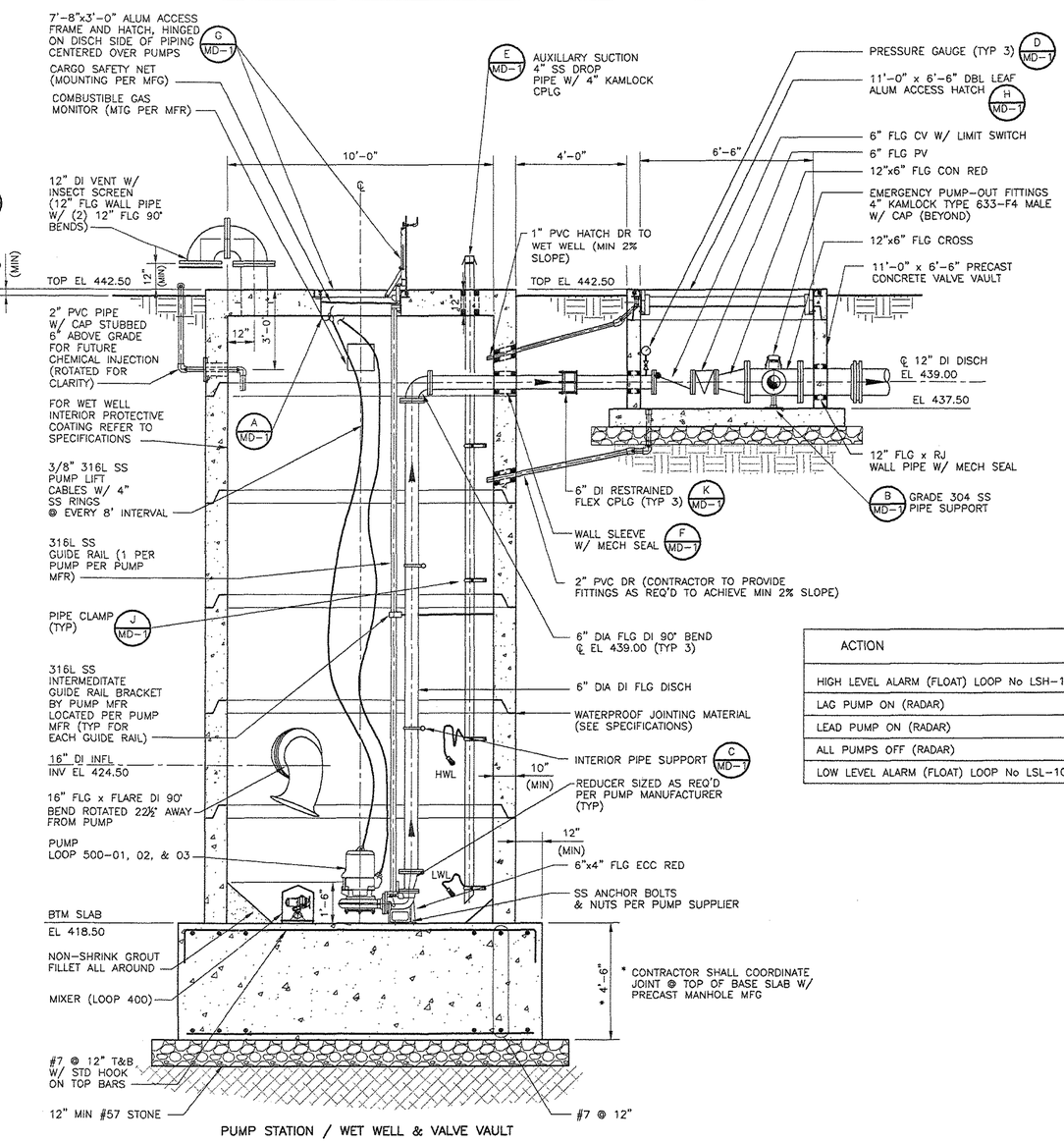
3/8" = 1'-0"



METER MANHOLE

SECTION 2 / C-1

3/8" = 1'-0"



ACTION	ELEVATION
HIGH LEVEL ALARM (FLOAT) LOOP No LSH-100	424.50
LAG PUMP ON (RADAR)	424.00
LEAD PUMP ON (RADAR)	423.00
ALL PUMPS OFF (RADAR)	420.00
LOW LEVEL ALARM (FLOAT) LOOP No LSL-100	419.50

PUMP STATION / WET WELL & VALVE VAULT

SECTION 1 / -

3/8" = 1'-0"

FF02

SPS-L01-35-05

RECORD DRAWING

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By _____ Date 9/7/04

CDM

NORTH CAROLINA PROFESSIONAL SEAL 24336 ENGINEER JAMES M. FOREMAN — 9/7/04

NORTH CAROLINA PROFESSIONAL SEAL 27053 ENGINEER K. IRBY P.E. — 9/7/04

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04	JC	BM	REVISED FOR RECORD

DESIGNED BY: K. IRBY
DRAWN BY: M. BASS
SHEET CHK'D BY: W. MASON
CROSS CHK'D BY: K. IRBY
APPROVED BY: W. MILES
DATE: MAY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

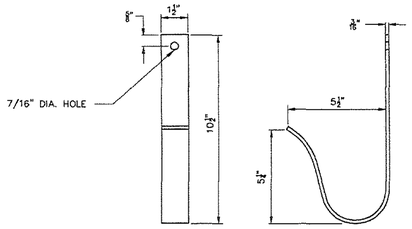
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

LAKE ELLEN PUMP STATION IMPROVEMENTS

PUMP STATION AND VALVE VAULT
PLAN, SECTION AND DETAILS

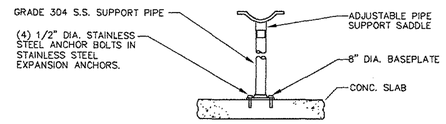
PROJECT NO. 6127-36184
FILE NAME: MPSPSM01.dwg

SHEET NO.
M-1



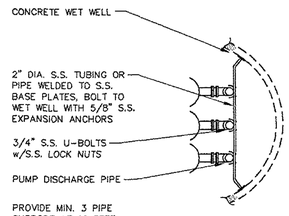
ELECTRIC CABLE HANGER DETAIL

DETAIL A — NOT TO SCALE — M-1



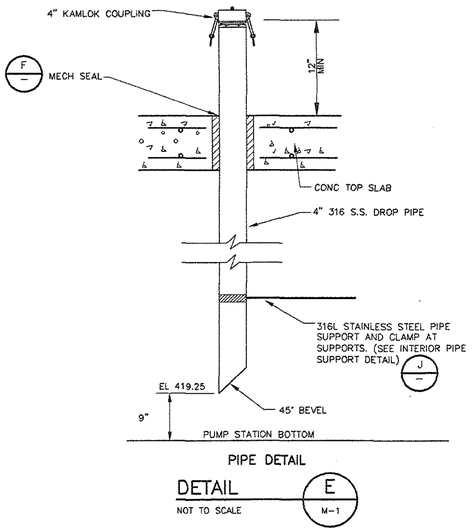
PIPE SUPPORT DETAIL

DETAIL B — NOT TO SCALE — M-1



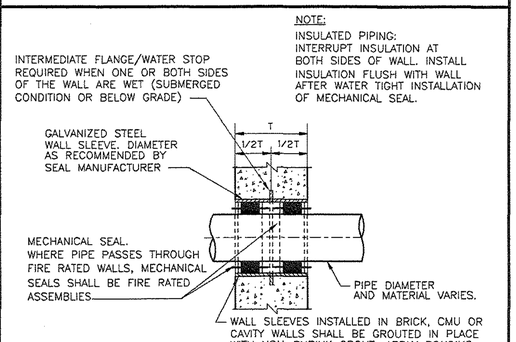
INTERIOR PIPE SUPPORT

DETAIL C — NOT TO SCALE — M-1



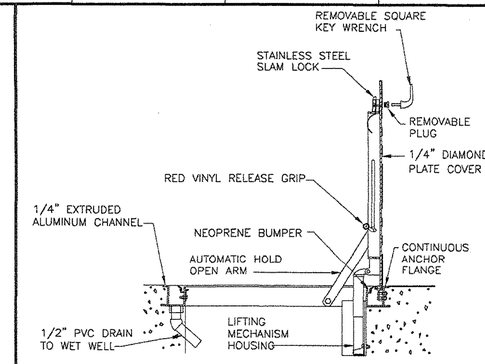
PIPE DETAIL

DETAIL E — NOT TO SCALE — M-1



WALL SLEEVE WITH MECHANICAL SEAL FOR CONCRETE, BRICK CMU OR CAVITY WALLS

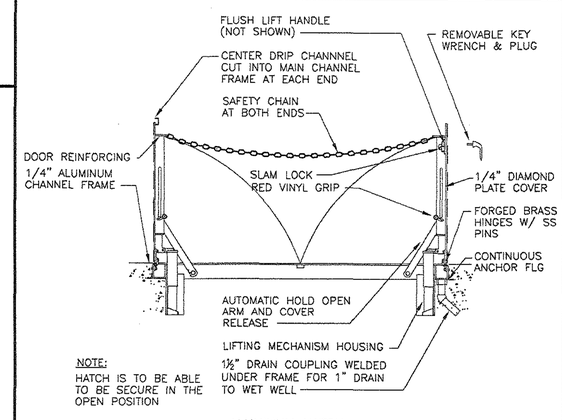
DETAIL F — NOT TO SCALE — M-1



ALUMINUM HATCH

DETAIL G — NOT TO SCALE — M-1

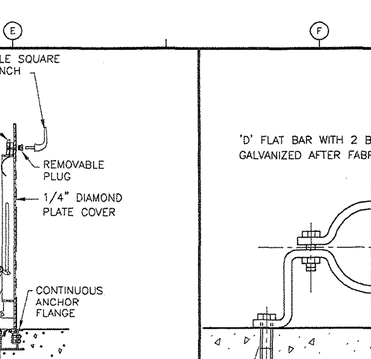
NOTE: HATCH IS TO BE ABLE TO BE SECURE IN THE OPEN POSITION



NOTE: HATCH IS TO BE ABLE TO BE SECURE IN THE OPEN POSITION

ALUMINUM HATCH

DETAIL H — NOT TO SCALE — M-1



NOTES:

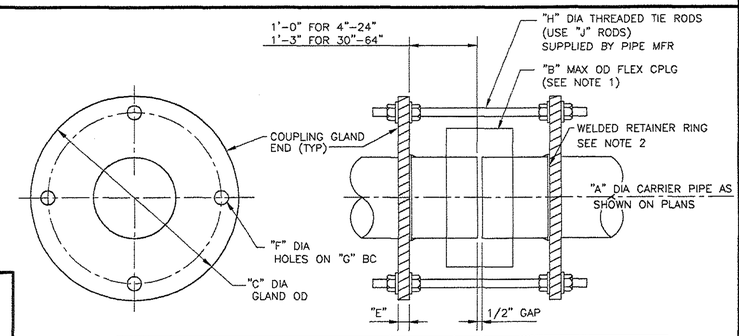
1. WHERE SUBMERGED OR LOCATED ON OR ABOVE TOP OF WALL OF HYDRAULIC STRUCTURE, PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL
2. WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC
3. FOR FLANGED PIPING INCREASE 'B' DIMENSION AS REQUIRED

DIMENSIONS IN INCHES					
PIPE DIA.	'A'	'B' SEE NOTE 3 BELOW	'C' HOLE DIA.	'D' FLAT BAR SIZE	LOAD RATING LBS.*
3/4	5-15/16	2-1/2	7/16	3/16 X 1-1/4	300
1	6-1/4	2-5/8	7/16	3/16 X 1-1/4	300
1-1/4	6-11/16	2-3/4	7/16	3/16 X 1-1/4	300
1-1/2	6-15/16	3	7/16	3/16 X 1-1/4	300
2	8-5/16	3-3/16	7/16	1/4 X 1-1/4	500
2-1/2	8-7/8	3-7/16	7/16	1/4 X 1-1/4	500
3	9-1/8	3-3/4	7/16	1/4 X 1-1/4	500
3-1/2	10-1/16	4	7/16	1/4 X 1-1/4	500
4	10-9/16	4-1/4	9/16	1/4 X 1-1/2	600
5	11-3/4	4-3/4	9/16	1/4 X 1-1/2	600
6	14-3/8	5-5/16	9/16	3/8 X 1-1/2	850
8	16-5/8	6-5/16	9/16	3/8 X 1-1/2	850

* SAFETY FACTOR OF 5

PIPE CLAMP FOR INDIVIDUAL PIPES

DETAIL J — NTS — M-1



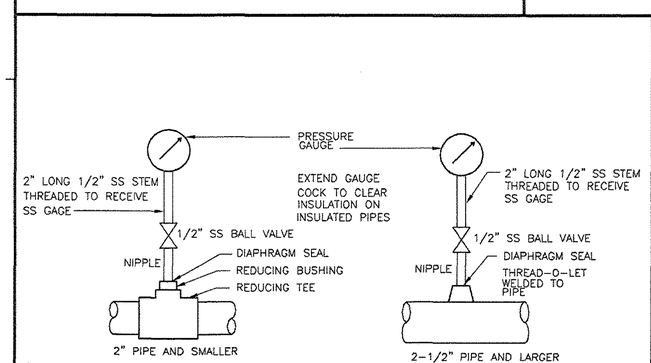
DIMENSIONS IN INCHES									
"A"	'B' MAXIMUM	"C"	"D" PIPE OD	"E" D.I.	"E" STEEL / SS	"F" B.H. DIA	"G" B.C.	"H" TIE ROD DIA	"J" NO.RODS	TIE ROD LENGTH
4	9.00	11.50	4.80	0.75	0.75	7/8	9.88	3/4	4	31-1/2
6	11.00	13.50	6.90	0.87	1.00	7/8	11.88	3/4	4	31-1/2
8	13.06	15.63	9.05	1.00	1.00	7/8	13.94	3/4	4	31-1/2
10	15.81	18.37	11.10	1.00	1.00	7/8	16.69	3/4	4	31-1/2
12	18.06	20.63	13.20	1.00	1.00	7/8	18.94	3/4	6	31-1/2
14	19.31	23.00	15.30	1.50	1.50	7/8	21.32	3/4	10	31-1/2
16	21.38	24.63	17.40	1.56	2.00	7/8	23.01	3/4	12	31-1/2
18	23.50	27.00	19.50	1.62	2.00	7/8	25.38	3/4	12	31-1/2
20	25.63	29.13	21.60	1.69	2.00	7/8	27.51	3/4	14	31-1/2
24	29.19	33.38	25.80	1.81	2.00	7/8	31.69	3/4	16	31-1/2
30	37.00	40.11	32.00	2.25	2.50	1-1/8	38.25	1	20	31-1/2
36	43.31	46.30	38.30	2.44	2.50	1-1/8	44.56	1	24	31-1/2
42	49.50	53.12	44.50	2.62	3.00	1-3/8	51.00	1-1/4	28	41-1/2"
48	55.81	60.00	50.80	2.81	3.00	1-3/8	57.50	1-1/4	32	41-1/2"
54	62.57	66.88	57.56	3.00	3.00	1-3/8	64.38	1-1/4	36	41-1/2"
60	66.41	66.41	61.61	3.12	3.50	1-3/4	69.25	1-1/2	26	42
64	70.47	70.47	65.67	3.38	3.50	1-3/4	76.00	1-1/2	26	42

NOTE:

1. FLEXIBLE COUPLINGS ARE NOT FURNISHED BY PIPE MANUFACTURER FOR THIS JOINT. CONTRACTOR SHALL VERIFY COUPLING LENGTH AND DIAMETER DIMENSIONS FOR APPROPRIATE CLEARANCES TO ENSURE THEY ARE COMPATIBLE WITH THE THRUST HARNESS.
2. WELDED RETAINER RING SHALL BE WELDED AT THE FACTORY, WITH COUPLING GLANDS INSTALLED ON THE PIPE.

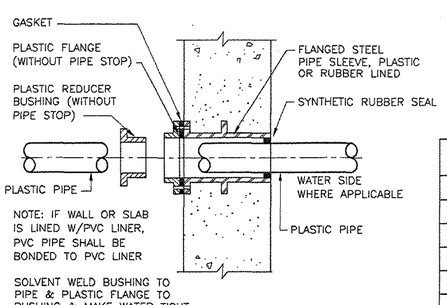
THRUST HARNESS FOR FLEXIBLE COUPLING

DETAIL K — NTS — M-1



PRESSURE GAUGE ASSEMBLY IN PIPES

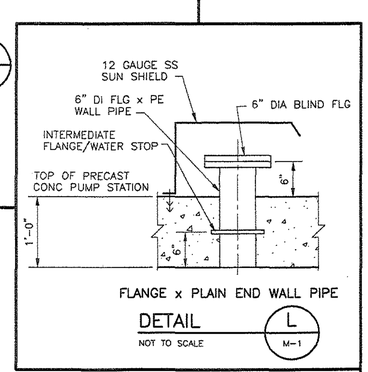
DETAIL D — NOT TO SCALE — M-1



PLASTIC WALL PIPE PENETRATION

DETAIL M — NTS — M-1

PLASTIC PIPE SIZE	OUTSIDE DIAMETER	WALL SLEEVE SIZE	FLANGE DIAMETER
¾"	1.050	2"	6"
1"	1.315	2"	6"
1 ¼"	1.660	3"	7 ½
1 ½"	1.900	3"	7 ½
2"	2.375	4"	9"
3"	3.500	4"	9"
4"	4.500	6"	11"
6"	6.625	8"	13 ½
8"	8.625	10"	16"



FLANGE x PLAIN END WALL PIPE

DETAIL L — NOT TO SCALE — M-1

RECORD DRAWING

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By _____ Date 9/7/04

CDM

NORTH CAROLINA PROFESSIONAL SEAL 27054 ENGINEER KEVIN C. IRBY

9/7/04

SPS-L01-35-06

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. IRBY
DRAWN BY: M. BASS
SHEET CHK'D BY: W. MASON
CROSS CHK'D BY: K. IRBY
APPROVED BY: W. MILES
DATE: APRIL 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

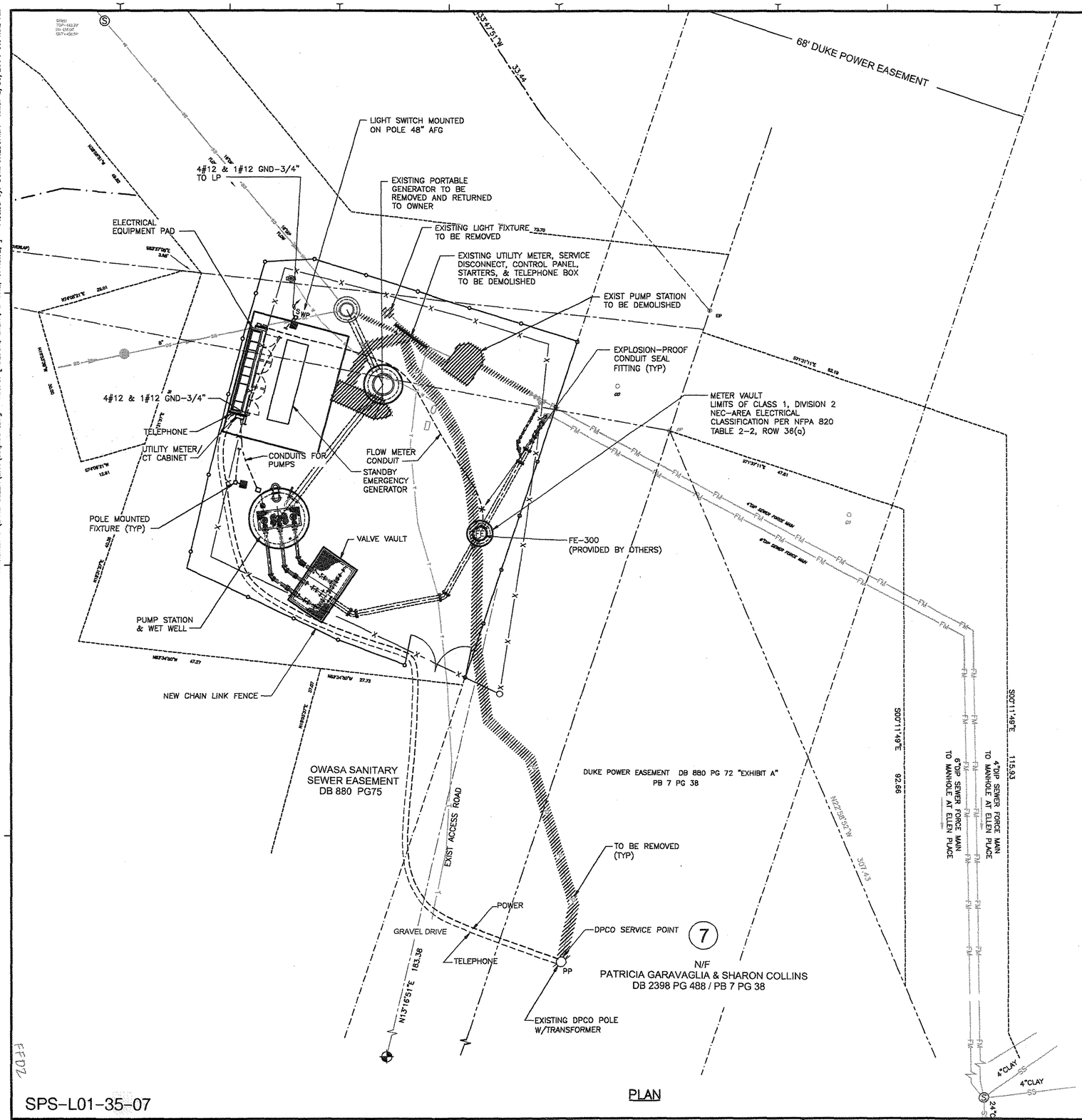
LAKE ELLEN PUMP STATION IMPROVEMENTS

MISCELLANEOUS MECHANICAL DETAILS

PROJECT NO. 6127-36184
FILE NAME: MPS0MD1.dwg

SHEET NO.
MD-1

Filename: C:\LAKE ELLEN\Elec\estplt001.dwg Xref's: [TBLOCK, ETEXT, E-SITE, CPRSITE,] Plotted by: COMPONESCHUA Time: 8/30/2004 8:54:32 AM



PLAN

ABRREVIATIONS

A	AMPERES
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANFER SWITCH
BKR	BREAKER
CT	CURRENT TRANSFORMER
GB	GENERATOR BREAKER
GND	GROUND
KVA	KILOVOLT-AMPERES
KW	KILOWATT
LTG	LIGHTING
MAX	MAXIMUM
MB	MAIN BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NTS	NOT TO SCALE
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
SE	SERVICE ENTRANCE
SH	SHIELDED
SS	STAINLESS STEEL
TR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WIRE, WATT, WITH
WP	WEATHERPROOF

SYMBOLS

HOME RUN TO DESIGNATED EQUIPMENT. NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS, HASH MARKS INDICATE NUMBER OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2#12 CONDUCTORS. UNLESS OTHERWISE NOTED.

CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.

(LLS) LIQUID LEVEL SWITCH

(LE) LEVEL ELEMENT

(AE) ANALYSIS ELEMENT

(FE) FLOW ELEMENT

(TS) TEMPERATURE SWITCH

(J) JUNCTION BOX PER NEC, FLUSH MOUNTED UNLESS INDICATED OTHERWISE

[AIT] ANALYSIS INDICATING TRANSMITTER

[FIT] FLOW INDICATING TRANSMITTER

EXTERIOR LUMINAIRE AND MOUNTING STANDARD

SINGLE POLE SWITCH, 48" AFF, SURFACE MOUNTED

GENERAL NOTES

1. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE CIVIL, MECHANICAL, STRUCTURAL DRAWINGS, AND APPROVED MANUFACTURER'S SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.
2. ALL WORK SHALL COMPLY WITH NEC AND LOCAL CODES.
3. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AS NOTED IN SPECIFICATIONS.
4. ALL CONDUITS SHALL HAVE A BOND WIRE SIZED PER TABLE 250-122 OF THE NEC (UNLESS OTHERWISE NOTED).
5. CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES, PIPING, ETC. REROUTE NEW CONDUITS, HANDHOLES, PULLBOXES, ETC., AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
6. REFER TO CIVIL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.

NORTH CAROLINA PROFESSIONAL SEAL 27710 ENGINEER JUAN M. SANCHEZ
9/15/2004

RECORD DRAWING

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By JMS Date 9/15/04

CDM

SPS-L01-35-07

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04	JC	BM	REVISED FOR RECORD

DESIGNED BY: J. SANCHEZ
DRAWN BY: R. CARTER
SHEET CHK'D BY: P. LEFAVE
CROSS CHK'D BY: D. HEISER
APPROVED BY: J. SANCHEZ
DATE: JULY 2003

CDM Camp Dresser & McKee
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

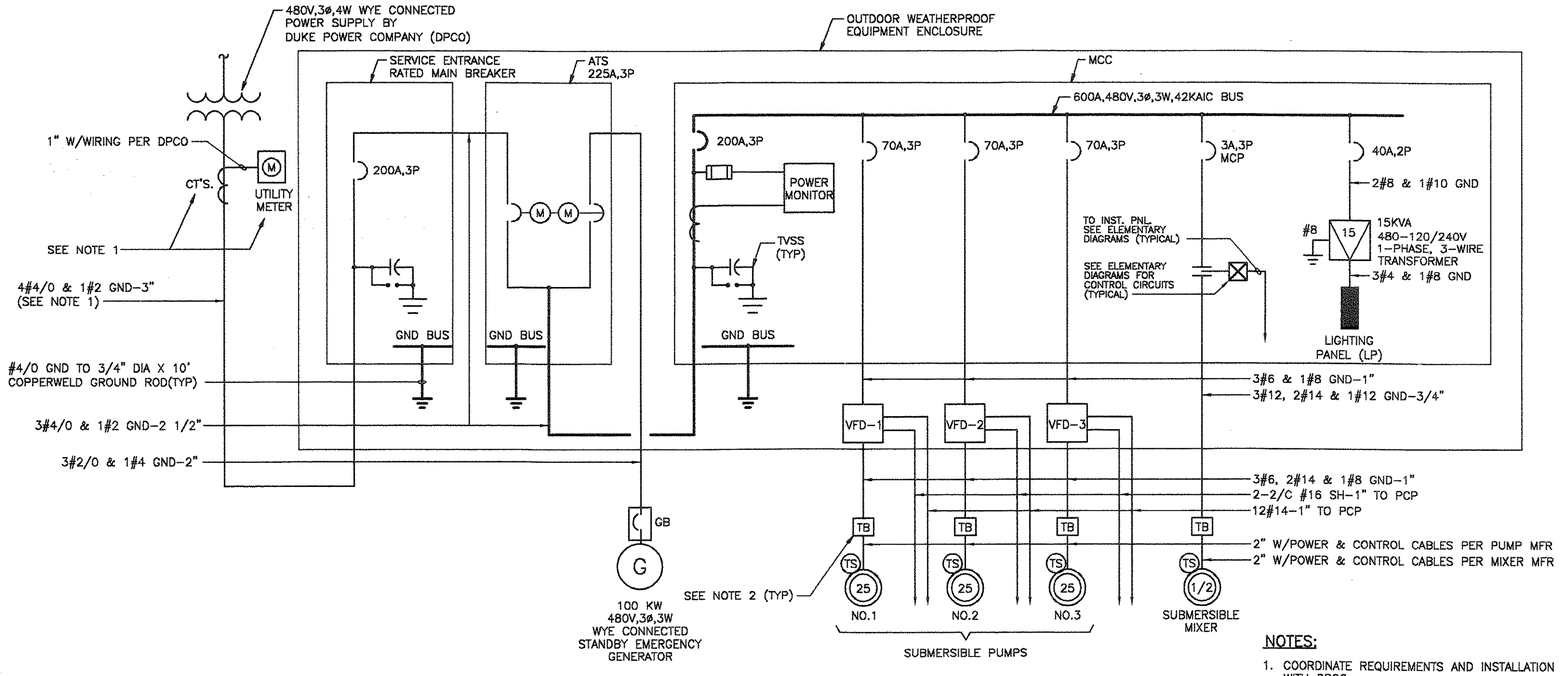
LAKE ELLEN PUMP STATION IMPROVEMENTS

SYMBOLS AND ABBREVIATIONS AND ELECTRICAL SITE PLAN

PROJECT NO. 6127-36184
FILE NAME: ESTPL001.dwg

SHEET NO.
E-1

Filename: C:\LAKE ELLEN\Elec\EGEDI002.dwg Xref's: [TBLOCK, ETEXT,] Plotted by: COMPONESCHUA Time: 8/30/2004 10:08:48 AM

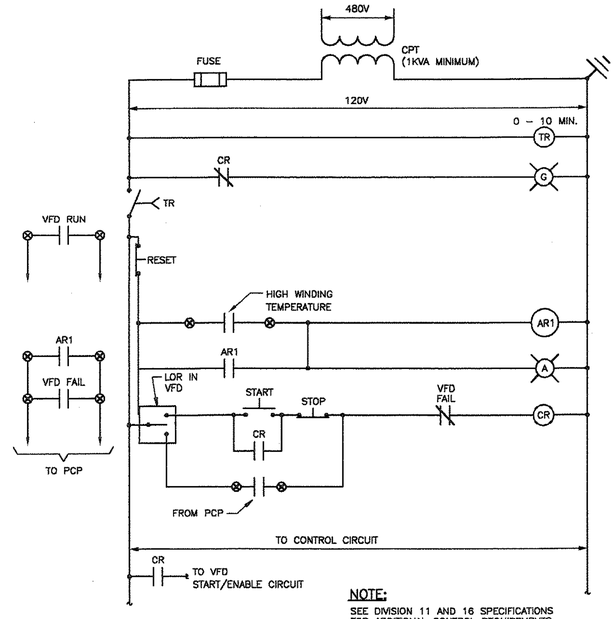


SINGLE LINE POWER DIAGRAM

NTS

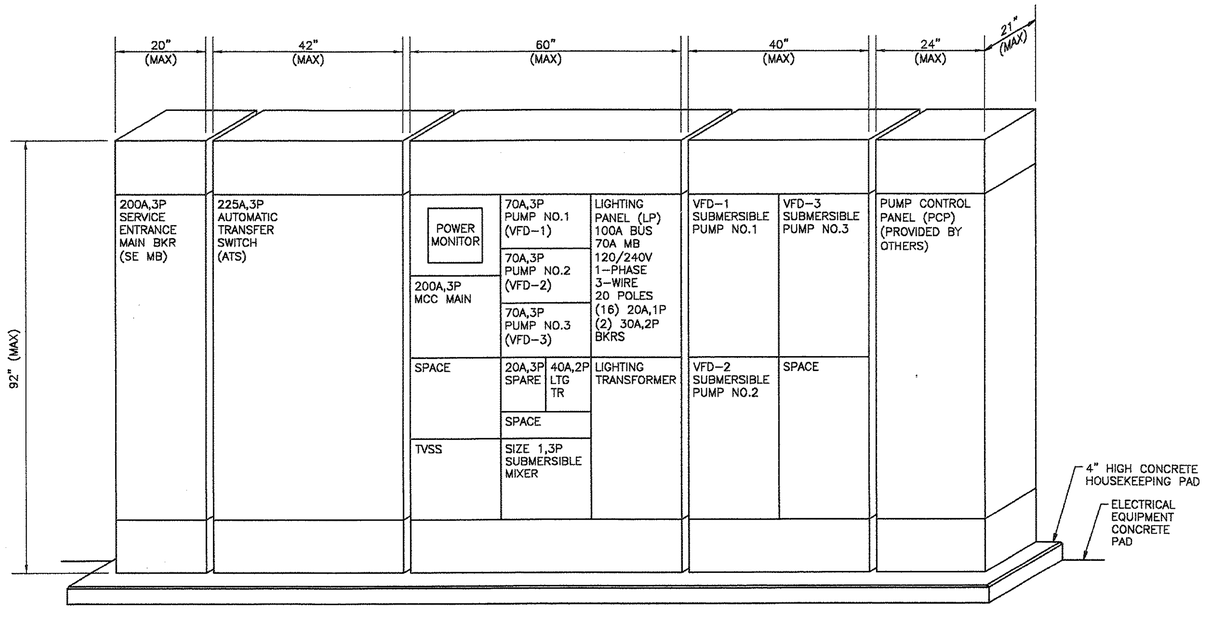
NOTES:

1. COORDINATE REQUIREMENTS AND INSTALLATION WITH DPCO.
2. PROVIDE TERMINAL BOX WITH 3-PHASE INSULATED DISTRIBUTION BLOCK FOR POWER AND INSULATED DISTRIBUTION BLOCK FOR CONTROL. PROVIDE A PERMANENT BARRIER TO SEPARATE POWER AND CONTROL.



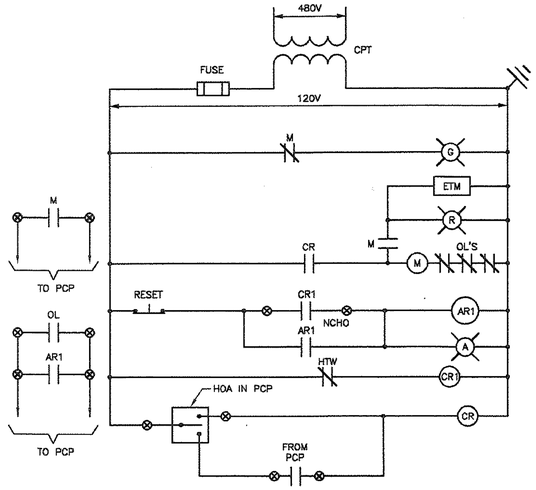
NOTE:
SEE DIVISION 11 AND 16 SPECIFICATIONS FOR ADDITIONAL CONTROL REQUIREMENTS.

SUBMERSIBLE PUMP VARIABLE FREQUENCY DRIVES



ELECTRICAL EQUIPMENT FRONT VIEW

NTS



NOTE:
SEE DIVISION 11 SPECIFICATIONS FOR ADDITIONAL CONTROL REQUIREMENTS.

SUBMERSIBLE MIXER

NORTH CAROLINA PROFESSIONAL SEAL 27710 ENGINEER J. M. SANCHEZ 9/15/2004

RECORD DRAWING

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By wlm Date 9/15/04

CDM

SPS-L01-35-08

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04	JC	BM	REVISED FOR RECORD

DESIGNED BY: J. SANCHEZ
DRAWN BY: R. CARTER
SHEET CHK'D BY: P. LEFAVE
CROSS CHK'D BY: D. HEISER
APPROVED BY: J. SANCHEZ
DATE: JULY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

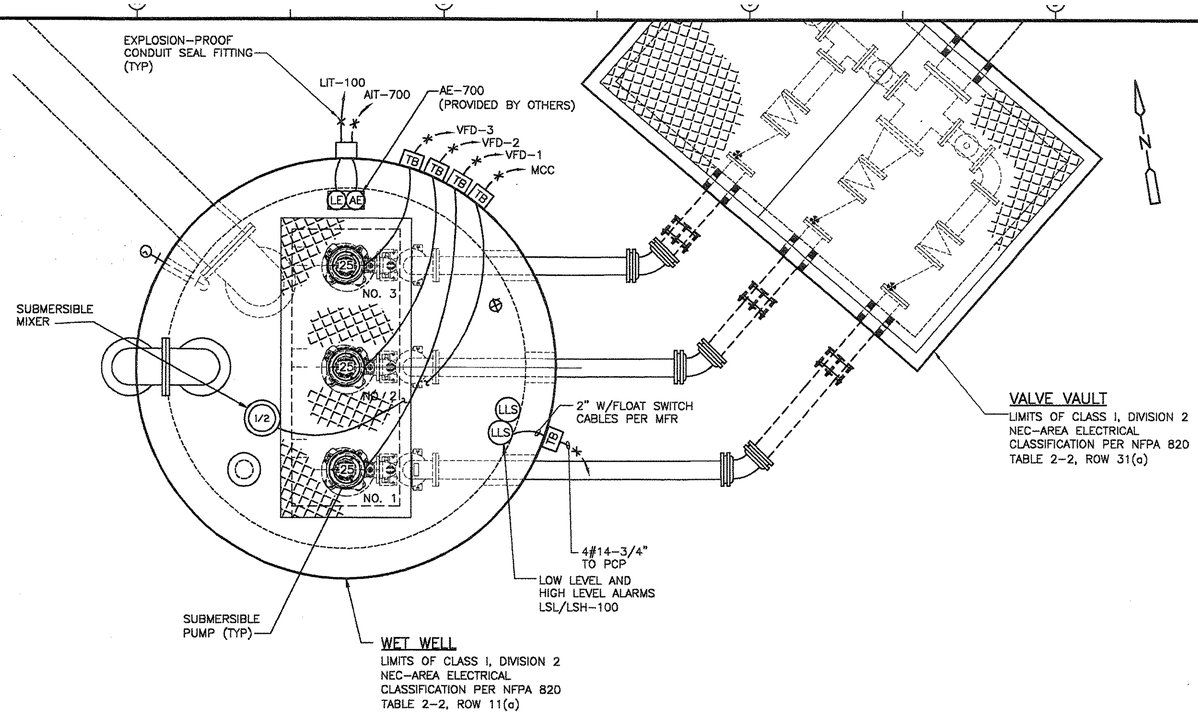
LAKE ELLEN PUMP STATION IMPROVEMENTS

SINGLE LINE POWER DIAGRAM, ELEMENTARY CONTROL DIAGRAMS AND ELECTRICAL EQUIPMENT FRONT VIEW

PROJECT NO. 6127-36184
FILE NAME: EGEDI002.dwg

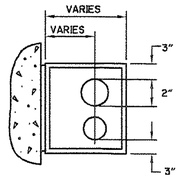
SHEET NO.
E-2

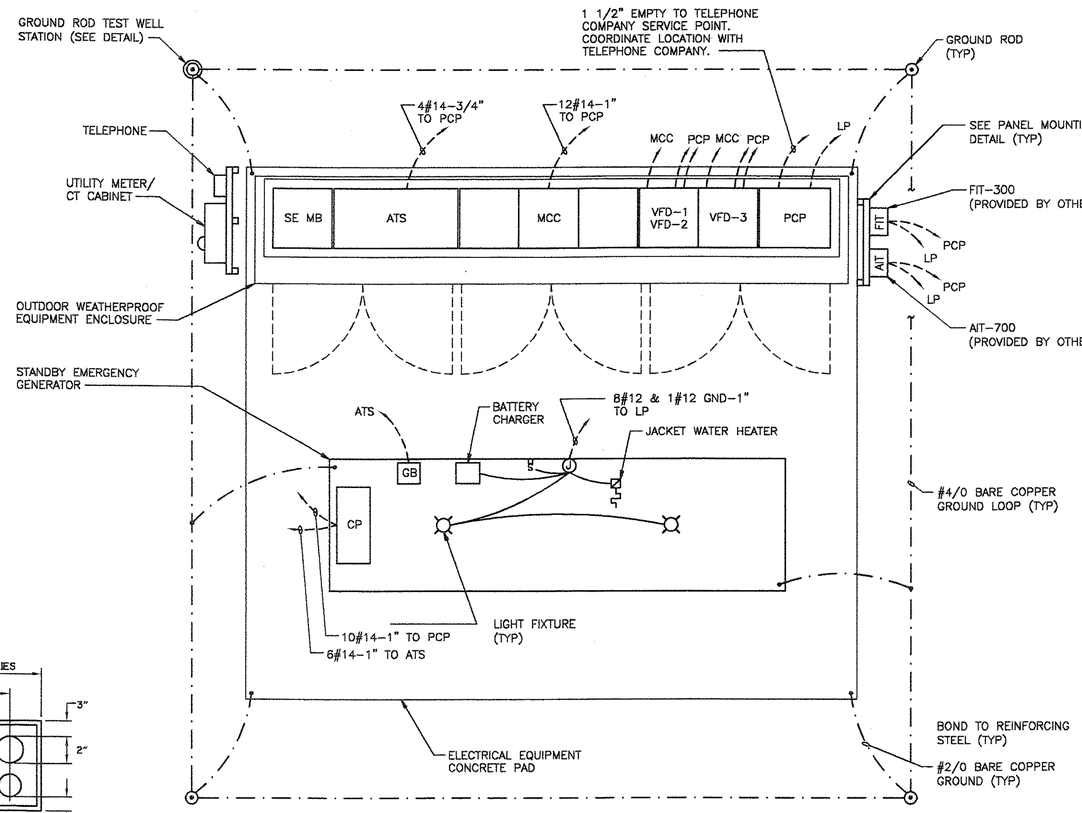
Filename: C:\LAKE ELLEN\Elec\EMISCPL03.dwg Xref's: [TBLOCK, ETEXT, CPRSITE,] Plotted by: COMPONESCHUA Time: 8/30/2004 10:18:01 AM



PUMP STATION/WET WELL & VALVE VAULT PLAN

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



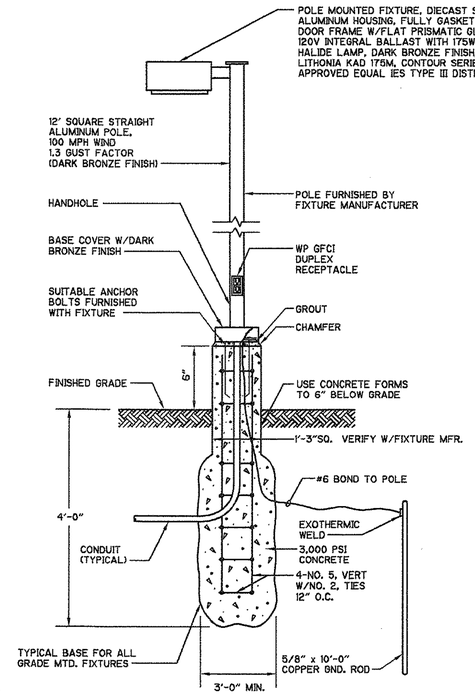


ELECTRICAL EQUIPMENT PLAN

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

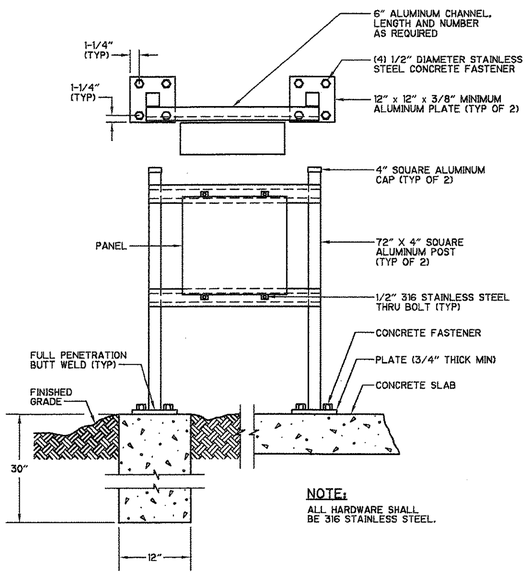
NOTE:

1. CONTRACTOR SHALL MOUNT LOCAL ALARM HORN/STROBE LIGHT SPECIFIED IN SECTION 11306B AND SUPPLIED BY CITL ALARM UNIT SHALL BE MOUNTED SUCH THAT IT CAN BE SEEN, WITHOUT OBSTRUCTION, FROM THE PUMP STATION ENTRANCE GATE.



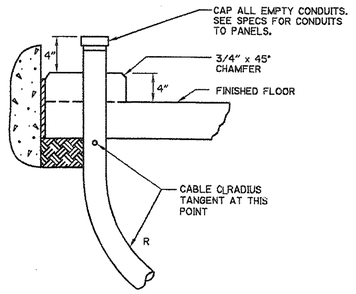
POLE MOUNTED FIXTURE DETAIL

NTS



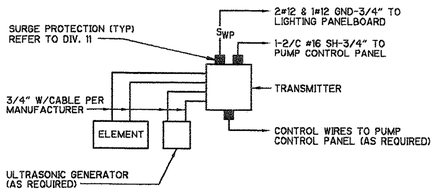
PANEL MOUNTING DETAIL

NTS



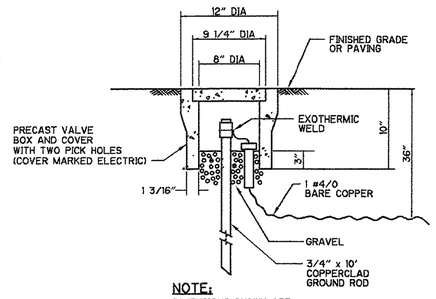
TYPICAL CONDUIT THRU SLAB

NTS



TYPICAL TRANSMITTER

NTS



NOTE:
DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS

GROUND ROD TEST WELL STATION DETAIL

NTS

NORTH CAROLINA PROFESSIONAL SEAL 27710 ENGINEER JOHN M. SANCHEZ

9/15/2004

RECORD DRAWING

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By _____ Date 9/15/04

CDM

SPS-L01-35-09

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04	JC	BM	REVISED FOR RECORD

DESIGNED BY: J. SANCHEZ
DRAWN BY: R. CARTER
SHEET CHK'D BY: P. LEFAVE
CROSS CHK'D BY: D. HEISER
APPROVED BY: J. SANCHEZ
DATE: JULY 2003

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

LAKE ELLEN PUMP STATION IMPROVEMENTS

MISCELLANEOUS ELECTRICAL PLANS, AND ELECTRICAL DETAILS

PROJECT NO. 6127-36184
FILE NAME: EMISCPL03.dwg

SHEET NO.
E-3

Orange Water and Sewer Authority

OWASA

CONSTRUCTION PLANS

for

Heritage Hills

Wastewater Pumping Station Improvements

Single Prime Contract

(CIP 277-03)

HDR Project No. 11496-1641-018

December 2004

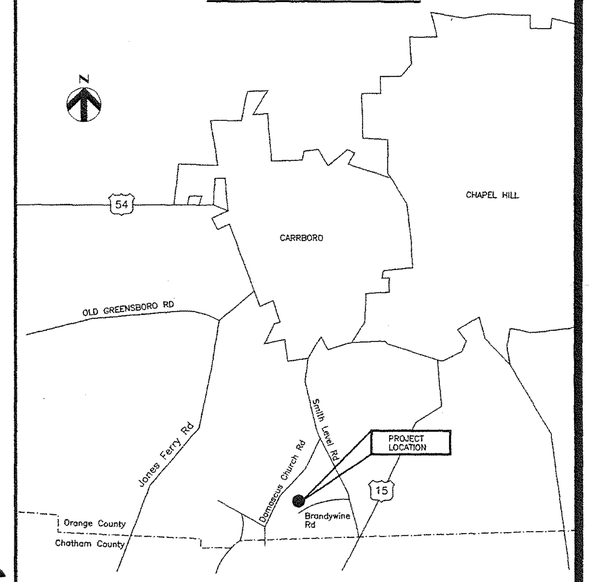
As Recorded

HDR Engineering, Inc.
of the Carolinas
Suite 1400
128 S. Tryon Street
Charlotte, NC 28202-5009
(704) 338-6700

RECORD DRAWINGS

These Record Drawings have been prepared from record information provided by the Contractor.

Location Map



Index of Drawings

	Cover & Index of Drawings
General	
G-1	General Abbreviations
G-2	Equipment Prefixes and Piping Symbology
G-3	Electrical Legend and Abbreviations
Civil	
C-1	Site Plan, Yard Piping and Erosion Control
C-2	Civil Standard Details
Structural and Mechanical	
D-1	Demolition Plan
D-2	Pumping Station Upper and Lower Plan
D-3	Pumping Station Section
D-4	Structural and Mechanical Standard Details
D-5	Structural and Mechanical Standard Details
Electrical	
E-1	Electrical Site Plan
E-2	Electrical Single Line Diagram
E-3	Electrical Schedules and Control Diagrams

P:\OWASA-HERITAGEHILLS\000-00.DWG

A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
A	ARCHITECTURAL (DWG DISCIPLINE), AMP
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ABAN	ABANDON
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT
ACST	ACOUSTIC
AD	ADDENDUM, AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AI	AREA INLET
AIC	AMPS INTERRUPTING CAPACITY
ALIG	ALIGNMENT
ALUM	ALUMINUM
ALT	ALTERNATE, ALTITUDE
AM	ACOUSTICAL MATERIAL
AMB	AMBIENT
ANC	ANCHOR
AP	ACCESS PANEL
APRX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AT	AMP TRIP
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ACOUSTICAL WALL TILE
B/B	BACK TO BACK
BAL	BALANCE
BBD	BULLETIN BOARD
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER, BOLT CIRCLE
BD	BOARD
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BITUM	BITUMINOUS
BKG	BACKING
BL	BASE LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BOC	BACK OF CURB
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOL	BOTTOM OF LOUVER
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOU	BOTTOM OF UNIT
BP	BASE PLATE
BRG	BEARING
BRGP	BEARING PLATE
BRKT	BRACKET
BS	BOTH SIDES
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BTWLD	BUTT WELD
BU	BELL UP, BUILT UP
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
BYP	BYPASS
C TO C	CENTER TO CENTER
C&G	CURB & GUTTER
C	CHANNEL SHAPE, CENTIGRADE, CONDUIT, CIVIL (DRAWING DISCIPLINE)
CAB	CABINET
CAP	CAPACITY
CAT	CATALOG
CAV	CAVITY
CB	CATCH BASIN
CCB	CONCRETE BLOCK
CCW	COUNTER CLOCKWISE
CDF	CONTROLLED DENSITY FILL
CE	CONCRETE EDGE
CER	CERAMIC
CF	CUBIC FEET (FOOT)
CFL	COUNTER FLASHING
CHFR	CHAMFER
CHBD	CHALKBOARD
CHD	CHORD
CHH	COMMUNICATION HANDHOLE
CI	CURB INLET
CIP	CAST-IN-PLACE
CIPB	CONCRETE INTERLOCKING PAVER BALLAST
CIRC	CIRCULATION, CIRCULAR
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLR	CLEAR

CMH	COMMUNICATION MANHOLE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
CONC	CONCENTRIC, CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COOR	COORDINATE
CORR	CORROSIVE, CORRUGATED
CP	CHECKER PLATE, CONTROL POINT
CPLG	COUPLING
CRL	CORROSION RESISTANT LINING
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CSS	CLINIC SERVICE SINK
CT	CERAMIC TILE
CTR	CENTER
CTRL	CONTROL
CVT	CULVERT
CU	COPPER, CUBIC
CW	CLOCKWISE
CY	CUBIC YARD
d	PENNY (NAIL MEASURE)
D	DEEP, DIFFUSER
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DMPF	DAMP PROOFING
DN	DOWN
DO	DISSOLVED OXYGEN, DITTO
DP	DEPTH
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DOWN SPOUT
DT	DOUBLE TEE, DRIP TRAP ASSEMBLY
DUP	DUPLICATE
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	EAST, ELECTRICAL (DWG DISCIPLINE)
EA	EACH, EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EF	EACH FACE
EFF	EFFLUENT, EFFICIENCY
EHH	ELECTRICAL HANDHOLE
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELBOW, ELEVATION
ELEC	ELECTRICAL
EMBD	EMBEDDED
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
ENGR	ENGINEER
ENTR	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE, EMERGENCY SHOWER
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
EW	EACH WAY, EMERGENCY EYE/FACE WASH
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY, EACH FACE
EWTB	EACH WAY, TOP AND BOTTOM
EXC	EXCAVATION
EXH	EXHAUST
EXST	EXISTING
EXP	EXPANSION, EXPOSED
EXT	EXTERIOR, EXTERNAL, EXTENSION

F&B	FACE & BYPASS
F TO F	FACE TO FACE
FAB	FABRICATE
FB	FLOOR BEAM
FBD	FIBERBOARD
FBG	FIBERGLASS
FBM	BOARD FOOT MEASURE
FBO	FURNISHED BY OWNER
FC	FLUSHING CONECTION
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDTN	FOUNDATION
FDR	FEEDER
FE	FLANGED END
FEC	FIRE EXTINGUISHER CABINET
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE, FACTORY FINISH, FLAT FACE
FG	FINISHED GRADE
FIG	FIGURE
FH	FIRE HYDRANT
FIN	FINISH
FJT	FLUSH JOINT
FL	FLOW, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLOR	FLUORESCENT
FLR	FLOOR
FLS	FLASHING, FLUSH
FO	FINISHED OPENING
FN	FENCE
FOB	FLAT ON BOTTOM
FOC	FACE OF CONCRETE, FACE OF CURB
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FPT	FEMALE PIPE THREAD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FRTM	FIRE RETARDANT TREATED MATERIAL
FS	FLOOR SINK, FAR SIDE
FT	FEET, FOOT
FTG	FOOTING, FITTING
FUR	FURRED, FURRING
FURN	FURNITURE, FURNISH
FUT	FUTURE
FV	FACE VELOCITY
FW	FIELD WELD, FIRE WALL
FWD	FORWARD
FWE	FURNISHED WITH EQUIPMENT
FXTR	FIXTURE
G	GRILLE, GROUND, GENERAL (DWG DISCIPLINE)
GA	GAGE (METAL THICKNESS)
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR, GRADE BREAK
GC	GROOVED COUPLING
GD	GUARD
GEN	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFMU	GROUND FACE MASONRY UNIT
GG	GUTTER GRADE
GJ	GROOVED JOINT
GL	GLASS
GLB	GLASS BLOCK
GND	GROUND
GP	GUY POLE
GR	GRADE
GRTG	GRATING
GSB	GYPSUM SHEATHING BOARD
GT	GREASE TRAP
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP	GYPSUM HARDBOARD
H	HIGH
HB	HOSE BIB
HBD	HARDBOARD
HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL CURVE
HC	HORIZONTAL CENTERLINE
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPS	HIGH PRESSURE SODIUM
HPT	HORIZONTAL POINT OF TANGENCY
HR	HOSE REEL, HOUR
HS	HEADED STUD, HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
HTG	HEATING
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ, CYCLES PER SECOND

I	INSTRUMENTATION (DWG DISCIPLINE)
ID	INSIDE DIAMETER, INTERIOR DIMENSION
IE	INVERT ELEVATION
IF	INSIDE FACE
IH	INTAKE HOOD
IMP	IMPACT
IN	INCH
INC	INCLUDE, INCANDESCENT
INF	INFLUENT
INSTR	INSTRUMENTATION
INSUL	INSULATION
INT	INTERIOR, INTERSECTION
INTR	INTERMEDIATE, INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	*INSIDE RADIUS*
IRR	IRRIGATION
ISO	ISOMETRIC
JB	JUNCTION BOX
JCT	JUNCTION
JF	JOINT FILLER
JST	JOIST
JT	JOINT
K	KIP
KB	KNEE BRACE
KCMIL	THOUSAND CIRCULAR MILS
KD	KNOCK DOWN
KO	KNOCK OUT
KSI	KIPS PER SQUARE INCH
L	ANGLE, LENGTH, LAVATORY
LAD	LADDER
LAM	LAMINATE
LATL	LATERAL
LB	LAG BOLT, POUND
LCTB	LIQUID CHALK AND TACK BOARD
LDG	LANDING
LDR	LEADER
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMLU	LIQUID MARKER LECTURE UNIT
LNG	LONGITUDINAL
LOC	LOCATION
LP	LOW POINT
LPS	LOW PRESSURE SODIUM
LR	LONG RADIUS
LT	LEFT
LTD	LIMITED
LTG	LIGHTING
LTL	LINTEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
LVR	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
M	MECHANICAL (DWG DISCIPLINE)
MA	MIXED AIR
MACH	MACHINED
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MECHANICAL CONTRACTOR, MECHANICAL COUPLING
MCB	METAL CORNER BEAD
MCJ	MASONRY CONTROL JOINT
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLO	MAIN LUGS ONLY
MMADF	MAXIMUM MONTH ABERAGE DAY FLOW
MMB	MEMBRANE
MO	MASONRY OPENING
MOD	MODULAR, MODIFY
MON	MONUMENT
MPT	MALE PIPE THREAD
MRGWB	MOISTURE RESISTANT GYPSUM WALLBOARD
MS	MOP SINK
MSL	MEAN SEA LEVEL
MT	MOUNT
MU	MASONRY UNIT
MULL	MULLION
MV	MEDIUM VOLTAGE
MW	MONITORING WELL

N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NAT	NATURAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NEAR FACE, NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT-TO-OUT
OA	OUTSIDE AIR, OVERALL
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE, OFFICE FURNISHING
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
OR	OUTSIDE RADIUS
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PAINT, PROCESS (DWG DISCIPLINE)
PA	PUBLIC ADDRESS
PAR	PARALLEL, PARAPET
PB	PANIC BAR, PULL BOX
PBD	PARTICLE BOARD
PC	POINT OF CURVE, PIECE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PF	POWER FACTOR
PFMU	PREFACED MASONRY UNIT
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE, PROPERTY LINE
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PNEU	PNEUMATIC
POL	POLISH
POS	POSITIVE, POSITION
PP	POLYPROPYLENE, POWER POLE
PRC	POINT OF REVERSE CURVATURE
PREF	PREFINISHED
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY
PROT	PROTECTION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PST	PRESTRESSED
PT	POINT, POINT OF TANGENCY
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PWD	PLYWOOD
PWJ	PLYWOOD WEB JOIST
PZ	PIEZOMETER
Q	RATE OF FLOW
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY

RECORD DRAWINGS

These Record Drawings have been prepared from record information provided by the Contractor.

R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
R	RADIUS, REGISTER, RISER
RA	RETURN AIR
RB	RESILIENT BASE, ROCK BERM
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	*RETAINING, RETURN*
REV	REVISION, REVERSE
RF	RESILIENT FLOORING
RFG	ROOFING
RFL	*REFLECTED, REFLECTOR*
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RGS-PVC	PVC COATED RGS
RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY
RL	REQUIRED LAP
RLFA	RELIEF AIR
RND	ROUND
RNG	RUNNING
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RVT	RESILIENT VINYL TILE
RY	*READY*
S	SOUTH, SINK, STRUCTURAL (DWG DISCIPLINE)
SA	SUPPLY AIR
SAMU	SOUND ABSORBING MASONRY UNIT
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCN	SCREEN
SE	STEEL/ALUMINUM EDGE
SEC	SECONDARY, SECONDS
SECT	SECTION
SEP	SEPARATE
SF	SQUARE FOOT
SG	SHEET GLASS, SEALANT GROOVE
SH	SHOWER
SHT	SHEET
SHTG	SHEATHING
SIL	SILENCE
SIM	SIMILAR
SL	SLOPE
SLTD	SLOTTED
SLV	SLEEVE
SMLS	SEAMLESS
SOG	SLAB ON GRADE
SP	SOUNDPROOF, STANDPIPE
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SPST	SINGLE POLE SINGLE THROW
SPT	SET POINT
SQ	SQUARE
SR	SHORT RADIUS
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STIF	STIFFENER
STIR	*STIRRUP*
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL, STRAIGHT
SUB	SUBSTITUTE
SUC	SUCTION
SUSP	SUSPENDED
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T	TILE, TREAD
TA	TOILET ACCESSORY, TEMPERED AIR
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEF	TROWELED EPOXY FLOORING
TEMP	TEMPORARY, TEMPERATURE
THD	THREAD
THK	THICK
THRESH	THRESHOLD
THRU	THROUGH
TKBD	TACK BOARD
TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM
TOC	TOP OF CURB, TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE, TOP OF LEDGER
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB, TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION, TELEPHONE POLE, TOE PLATE, TRAP PRIMER, TOTAL
TPD	TOILET PAPER DISPENSER
TPG	*TOPPING*
TR	TRANSOM
TRANS	TRANSITION
TRD	TRENCH DRAIN
TSS	*TOTAL SUSPENDED SOLIDS*
TYP	TYPICAL
U	URINAL
UG	UNDERGROUND
ULT	ULTIMATE
UNFN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT, VELOCITY, VOLT
VA	VOLT AMPERE
VAC	VACUUM
VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE
VB	VAPOR BARRIER, VINYL BASE, VALVE BOX
VC	VERTICAL CURVE
VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VIN	VINYL
VS	VERSES, VAPOR SEAL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
W	WATT, WEST, WIDE, WINDOW, WIRE, WIDE FLANGE BEAM
WB	WOOD BASE
WC	WATER CLOSET, WATER COLUMN
WD	WOOD, WIDTH
WF	WIDE FLANGE, WASH FOUNTAIN
WG	WIRE GLASS, WATER GAGE
WH	WALL HYDRANT, WEEP HOLE
WI	WROUGHT IRON
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WATERPROOF, WORKING POINT
WTHP	WEATHERPROOF
WS	WATERSTOP, WATER SURFACE
WSCT	WAINSCOT
WT	WEIGHT, WATER TIGHT
WWF	WELDED WIRE FABRIC
XP	EXPLOSION PROOF
XS	EXTRA STRONG
XXS	DOUBLE EXTRA STRONG
XSECT	CROSS SECTION
YH	YARD HYDRANT
YS	YIELD STRENGTH

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS DRAWING INCLUDE VARIATIONS OF THE WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING; "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.
4. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.
5. SEE PROJECT EQUIPMENT AND PIPING SYSTEMS DRAWING FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH	BDR	JKR	JKR
0	Issued for Construction	4/04	JSH	BDR	JKR	JKR

This document originally issued and sealed by Joseph K. Robinson 026156 on 4/23/04 This media should not be considered a certified document of the original.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026156 JOSEPH K. ROBINSON 4/30/04

THIS DOCUMENT IS ONLY CERTIFIED AS TO REVISIONS

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ONE INCH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY.

Project Manager	Joe K. Robinson, P.E.
Designed	J. Robinson, P.E.
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

Carrboro North Carolina

General Abbreviations

Date: December 2004	Project No.: 11496-1641-018	Drawing No.: G-1	Issue: 1
Scale: None	File Name: 00G-02.DWG		

SPS-H01-118-02

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SITE PLAN SYMBOLOGY

- EMBANKMENT SLOPE
- 50.5 — CONTOUR
- VEGETATION
- CO — CLEAN OUT
- MH — MANHOLE
- MW — MONITORING WELL
- PZ — PIEZOMETER
- CB — STORM DRAIN CATCH BASIN
- UV — UTILITY VAULT
- PP — POWER POLE
- TP — TELEPHONE POLE
- FH — FIRE HYDRANT
- YH–X — YARD HYDRANT
- × 75.5 — EXISTING SPOT ELEVATION
- 75.8 — FINISHED SPOT ELEVATION
- HORIZONTAL CP–X, CONTROL POINT
- BENCHMARK
- TH–"X" — IDENTIFICATION AND APPROXIMATE LOCATION OF SOIL TEST HOLE
- DOWNGUY

NOTES:

1. UTILITIES THAT ARE SUSPENDED ABOVE GRADE ARE DESIGNATED BY THE PREFIX "OH".

- T — TELEPHONE LINE
- E — ELECTRIC LINE
- F — FIBER OPTIC
- C — COMMUNICATION
- HANDRAIL
- PIPELINE
- LARGE PIPELINE
- PIPELINE BENEATH CONCRETE OR STRUCTURE
- RAILROAD
- DRAINAGE FLOW
- NATURAL WATERWAY
- X — X — CHAIN LINK FENCE
- X — X — FIELD FENCE
- PROPERTY LINE
- CENTERLINE
- RB — ROCK BERM
- SF — SILT FENCE

PIPING SYMBOLOGY

NOTES:

1. VALVE TYPES FOR VALVES 4" AND LARGER ARE INDICATED BY SYMBOLOGY SHOWN BELOW. VALVES 3–1/2" AND SMALLER MAY BE SHOWN WITH GATE VALVE SYMBOL
   REGARDLESS OF VALVE TYPE – REFER TO SPECIFICATIONS FOR REQUIREMENTS.
2. SYMBOLOGY SHOWN IS FOR SINGLE LINE PIPING. DOUBLE LINE PIPING SYMBOLS ARE SIMILAR.

VALVES

- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- CHECK VALVE
- DOUBLE DISK CHECK VALVE
- BALL CHECK VALVE
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- PINCH VALVE
- KNIFE GATE VALVE
- OR — PRESSURE RELIEF VALVE
- PLUG VALVE
- NEEDLE VALVE
- PRESSURE REDUCING VALVE
- X — AIR RELIEF / VACUUM VALVE; A = AIR RELIEF, V = VACUUM
- PRESSURE REGULATING VALVE
- THREE WAY BALL VALVE
- THREE WAY PLUG VALVE

MISCELLANEOUS

- VARIABLE AREA METER
- ROTAMETER
- UNION
- WYE–STRAINER; LINE SIZE CHANGE (CONCENTRIC REDUCER)
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE PIPING CONNECTION
- LINE SIZE CHANGE (CONCENTRIC REDUCER)
- LINE SIZE CHANGE (ECCENTRIC REDUCER)
- LINE TURNING DOWN
- LINE TURNING UP
- BLIND FLANGE
- PIPE JOINT (SEE SPECS FOR REQUIREMENTS)
- SLEEVE TYPE COUPLING
- FLANGED COUPLING ADAPTER (FCA)
- FLEXIBLE CONNECTION
- HARNESSED MECHANICAL COUPLING

MISCELLANEOUS (CONTINUED)

- PRESSURE GAGE (W/COCK)
- TRAP
- QUICK DISCONNECT CAM & GROOVE COUPLING
- CAP or PLUG
- CO — INTERIOR CLEANOUT
- HB–X — HOSE VALVE, HOSE BIBB OR FLUSHING CONNECTION
- HR–X — HOSE RACK
- FD–X — FLOOR DRAIN

X = TYPE DESIGNATED IN SPECIFICATIONS

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

PLUMBING PIPING:

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

PIPING SERVICE:

DR	DRAIN
WI	POTABLE WATER
SS	SANITARY SEWER
H202	HYDROGEN PEROXIDE
RS	RAW SEWAGE

RECORD DRAWINGS

These Record Drawings have been prepared from record information provided by the Contractor.

MATERIALS IN PLAN/SECTION

- DEMOLITION
- CONCRETE
- MASONRY (CMU)
- BRICK (PLAN)
- ASPHALT
- GRANULAR FILL
- SAND
- EARTH
- METAL (SECTION)
- GRATING (PLAN)
- CHECKERED PLATE
- BRICK (SECTION)
- RIGID INSULATION
- BATT INSULATION
- WOOD – CONTINUOUS
- WOOD – NON CONTINUOUS
- PLYWOOD
- GYPSUM BOARD

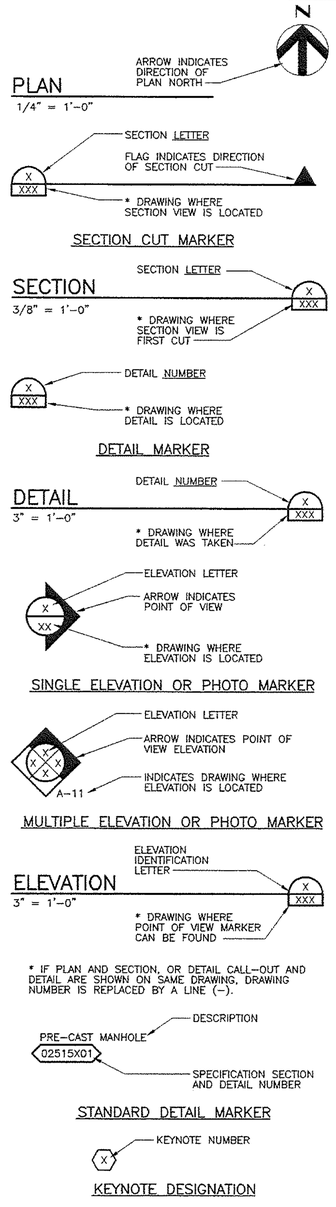
REFLECTED CEILING SYMBOLOGY

- SUSPENDED GYPSUM WALLBOARD CEILING
- 2x4 ACOUSTICAL SUSPENDED CEILING
- RECESSED LIGHT FIXTURE
- 1x4 FLUORESCENT LIGHT FIXTURE
- 2x4 FLUORESCENT LIGHT FIXTURE
- 4x4 FLUORESCENT LIGHT FIXTURE
- SUPPLY AIR DIFFUSER/GRILLE
- RETURN AIR GRILLE

FIRE WALL RATINGS

- 1 HOUR FIRE RATED WALL
- 2 HOUR FIRE RATED WALL

GENERAL SYMBOLOGY



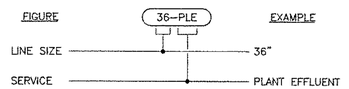
* IF PLAN AND SECTION, OR DETAIL CALL–OUT AND DETAIL ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACED BY A LINE (–).

STANDARD DETAIL MARKER

KEYNOTE DESIGNATION

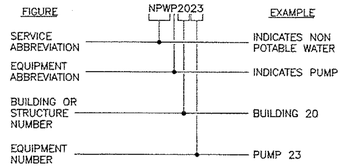
IDENTIFICATION SYMBOLOGY

PIPING:

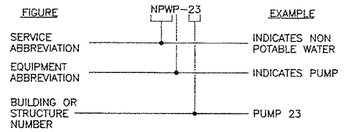


EQUIPMENT TAG NUMBERS:

ALTERNATE 1



ALTERNATE 2



ARCHITECTURAL:

- XX–XX — ROOM NUMBER
- XXXX — DOOR NUMBER
- X — COLUMN GRID LINE
- X — WALL TYPE
- X — WINDOW TYPE
- L / XX — LOUVER

GENERAL NOTES:

1. THIS IS A STANDARD DRAWING SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DEEMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.
3. SEE PROJECT EQUIPMENT AND PIPING SYSTEMS DRAWING FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH	BDR	JKR	JKR
0	Issued for Construction	4/04	JSH	BDR	JKR	JKR

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026156 JOSEPH K. ROBINSON

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BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY.

Project Manager	Joe K. Robinson, P.E.
Designed	J. Robinson, P.E.
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

Carrboro North Carolina

Equipment Prefixes and Piping Symbology

Date	Project No.	Drawing No.	Issue
December 2004	11496–1641–018	G-2	1
Scale: None	File Name: 00G–02.DWG		

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SPS–H01–118–03

LOW VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCCB – MOLDED CASE
ICCB – INSULATED CASE
LVP – LOW VOLTAGE POWER
MCP – MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

SEPARATELY MOUNTED CIRCUIT BREAKER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

GROUND FAULT PROTECTION

MEDIUM VOLTAGE CIRCUIT BREAKER

FUSE, SIZE AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE SIZE AND NUMBER OF POLES AS NOTED

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

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

DISCONNECT OR DRAWOUT CONNECTION

MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER.

MOTOR CONTROLLER AND SEPARATELY MOUNTED MOTOR CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT.

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A – MAGNETIC STARTER NEMA SIZE

B – STARTER TYPE
NONE – FULL VOLTAGE NON–REVERSING (FVNR)
FVR – FULL VOLTAGE REVERSING
2S – TWO SPEED
RVAT – REDUCED VOLTAGE AUTO TRANSFORMER

C – CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

D – CONTROLLER TYPE
VFD – VARIABLE FREQUENCY DRIVE
SS – SOLID STATE

SEPERATLY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

THERMAL OVERLOAD ELEMENT

THERMAL OVERLOAD RELAY CONTACT

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

MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

GENERATOR

TRANSFER SWITCH, CURRENT RATING AND NUMBER OF POLES AS NOTED.

ATS – AUTOMATIC
MTS – MANUAL

TRANSFORMER

Δ 3 PHASE, 3 WIRE DELTA CONNECTION

3 PHASE, 4 WIRE GROUNDED WYE CONNECTION

SWITCHBOARD OR PANELBOARD. NAME, VOLTAGE, PHASE. NUMBER OF WIRES WHEN INDICATED.

NON–MOTOR LOAD WITH DESIGN KVA, KW OR AMPS

CONTROL POWER TRANSFORMER (CPT)

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

UTILITY WATT–HOUR METER PER UTILITY REQUIREMENTS

DIGITAL METERING PACKAGE

RUN TIME METER

GROUND

LIGHTNING ARRESTER

LOW VOLTAGE SURGE PROTECTIVE DEVICE

ELECTRICAL CONNECTION

NO ELECTRICAL CONNECTION

SOLENOID VALVE

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

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

NORMALLY OPEN CONTACT (N.O.)

NORMALLY CLOSED CONTACT (N.C.)

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

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

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

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

NORMALLY OPEN TEMPERATURE SWITCH, CLOSE ON RISING TEMPERATURE

NORMALLY CLOSED TEMPERATURE SWITCH, OPEN ON RISING TEMPERATURE

NORMALLY OPEN FLOW SWITCH, CLOSE ON INCREASING FLOW

NORMALLY CLOSED FLOW SWITCH, OPEN ON INCREASING FLOW

NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL

NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL

NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE

NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE

NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT

NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT

FIELD WIRING EXTERNAL TO CONTROL PANEL

INTERLOCK, X INDICATES TYPE

TYPES:
E – ELECTRICAL
M – MECHANICAL
K – KEY

3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS, UNLESS OTHERWISE NOTED, 2 POSITION SIMILAR

NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

INDICATING LIGHT, X INDICATES LENS COLOR

PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

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

TRANSFORMER

SELECTOR SWITCH

PUSHBUTTON

INSTRUMENTATION/CONTROL DEVICE

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

JUNCTION OR PULL BOX

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

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

PHOTOCELL

CEILING/PENDANT MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT OR INCANDESCENT

WALL MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT OR INCANDESCENT

CEILING/PENDANT MOUNTED FLUORESCENT FIXTURE

WALL MOUNTED FLUORESCENT FIXTURE

CEILING/PENDANT MOUNTED FLUORESCENT FIXTURE NORMAL/EMERGENCY

WALL MOUNTED FLUORESCENT FIXTURE NORMAL/EMERGENCY

EMERGENCY LIGHT FIXTURE, 2 ATTACHED HEADS AS SHOWN

EMERGENCY LIGHT, REMOTE MOUNTED HEAD

DOUBLE FACED CEILING OR WALL MOUNTED EXIT LIGHT, DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

SINGLE FACED CEILING OR WALL MOUNTED EXIT LIGHT, DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

AREA OR ROADWAY LIGHT – POLE MOUNTED

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

TOGGLE SWITCH

SUBCRIPTS:
X – INDICATES TYPE
NONE NONE – SINGLE POLE
3 – THREE–WAY
4 – FOUR–WAY
HP – TOGGLE SWITCH, HORSEPOWER RATED
K – KEY SWITCH
TE – MANUAL MOTOR STARTER WITH THERMAL ELEMENT
P – PILOT LIGHT
L – LIGHTED HANDLE
Y – INDICATES CONTROLLING SWITCH (IF REQUIRED)

SPECIAL PURPOSE RECEPTACLE AS DEFINED ON PLANS

PLUG–IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED

TELECOMMUNICATIONS OUTLET JUNCTION BOX

QUAD–DUPLEX RECEPTACLE, TWO NEMA 5–20R UNDER COMMON COVER PLATE.

DUPLEX RECEPTACLE, NEMA 5–20R

SIMPLEX RECEPTACLE, NEMA 5–20R

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

CONDUIT TURNING UP

CONDUIT TURNING DOWN

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

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

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

CIRCUIT HASH MARKS (WHEN INDICATED), LONG, SHORT, SINGLE DOT AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND AND ISOLATED EQUIPMENT GROUND RESPECTIVELY. #12 IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

CONDUIT TAG OR CIRCUIT NUMBER – WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE DRAWINGS

RECORD DRAWINGS

These Record Drawings have been prepared from record information provided by the Contractor.

GROUND CABLE

GROUND ROD

EXTERIOR PADMOUNTED TRANSFORMER

POLE MOUNTED TRANSFORMER

ELECTRICAL HANDHOLE OR MANHOLE
Y – MHX OR HHX WHERE X INDICATES SEQUENCE NUMBER

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLS SHEET. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT.
2. IN GENERAL CONDUIT ROUTING IS NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS INCLUDING THOSE SHOWN ON ONE–LINES AND HOME RUNS. SEE SPECIFICATIONS FOR CONDUIT INSTALLATION REQUIREMENTS. CONDUIT ROUTINGS AND STUB–UP LOCATIONS THAT ARE SHOWN ARE APPROXIMATE, EXACT ROUTINGS SHALL BE AS REQUIRED FOR EQUIPMENT FURNISHED.
3. WHEN BRANCH CIRCUITS ARE NOT SHOWN ON THE PLANS THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS AND CONDUCTORS REQUIRED. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE BRANCH CIRCUIT.
4. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.
5. SEE PROJECT EQUIPMENT AND PIPING SYSTEMS DRAWING FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.

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1	As Recorded	12/04	JSH	BDR	JWM	JKR
0	Issued for Construction	4/04	JSH	BDR	JWM	JKR

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022182 JOHN W. MITCHELL

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(704) 338–6700

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY.

Project Manager: Joe K. Robinson, P.E.
Designed: J. Mitchell, P.E.
Designed:
Checked: T. Coyle
Drawn: J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

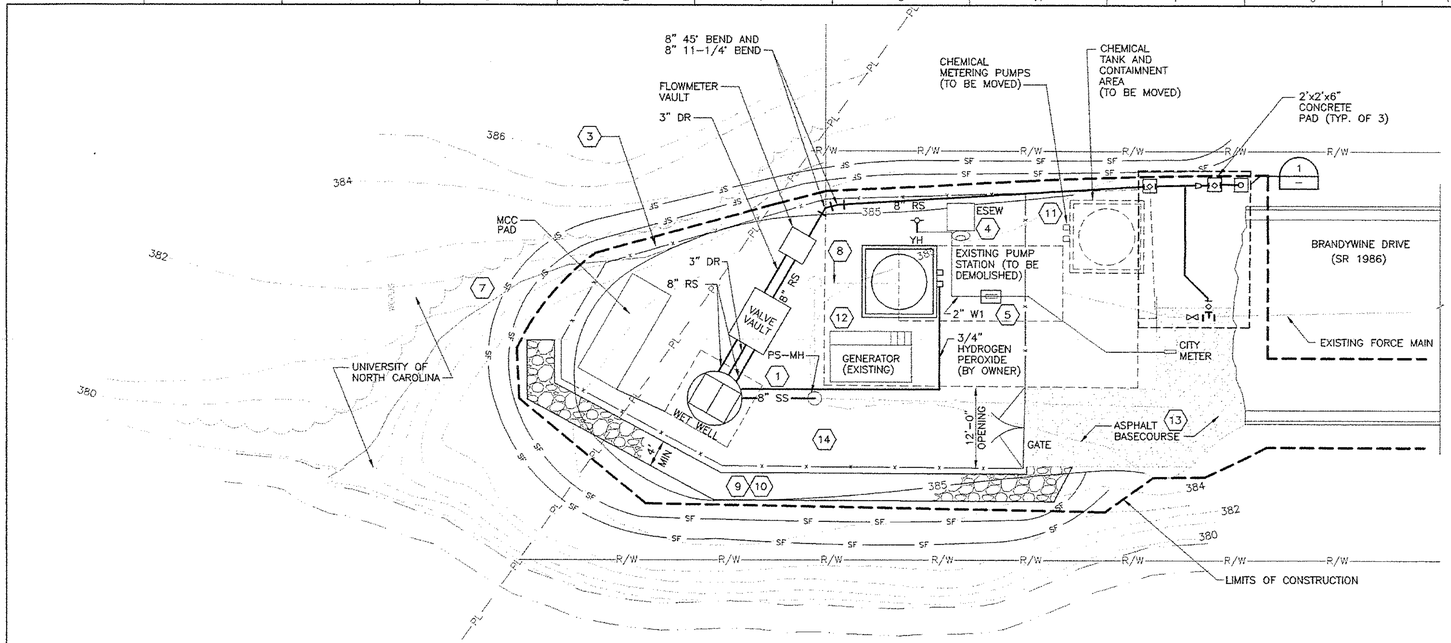
Carrboro North Carolina

Electrical Legend & Abbreviations

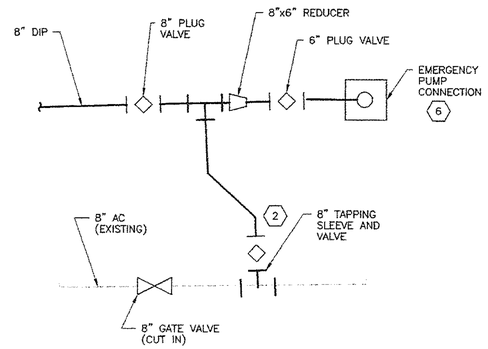
Date: December 2004
Project No.: 11496–1641–018
Drawing No.: G-3
Issue: 1
Scale: None
File Name: 00G–03.DWG

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SPS–H01–118–04



SITE PLAN
1" = 10'



DETAIL
NTS — 1

GENERAL NOTES:

A. PROPERTY LINE (–PL–) APPROXIMATED FROM OWASA SEWER COLLECTION SYSTEM GRID MAP NO. 118.

B. 100 YEAR FOOD ELEVATION IS APPROXIMATELY 385.00 FT IN VINCINITY OF SITE.

C. CONTRACTOR TO VERIFY ALL CONTOURS AND PROPERTY BOUNDARIES.

D. CONTRACTOR SHALL PROTECT EXISTING TREES AS DIRECTED BY ENGINEER.

E. CONTRACTOR TO LOCATE UTILITY LINES.

F. TBM IS PUMP STATION MANHOLE.

G. LIMITED CONTRACTOR STAGING WILL BE AVAILABLE BEYOND THE LAST DRIVEWAY ON BRANDYWINE ROAD

KEY NOTES

1. TIE SANITARY SEWER LINE FROM EXISTING MANHOLE. CONTRACTOR SHALL PLUG THE EXISTING CONNECTION INTO EXISTING PUMP STATION AS SEQUENCED IN SPECIFICATIONS.
2. PROVIDE 8"x8" TAPPING SLEEVE AND VALVE TO TAP EXISTING FORCE MAIN MIDPOINT OF THE JOINTS. CONTRACTOR SHALL FIELD VERIFY LOCATION, PIPE MATERIAL, AND PIPE DIMENSIONS.
3. PROVIDE NEW 8 FT. FENCING AND GATE AS SHOWN. SEE OWASA DETAIL 289.03.
4. CONTRACTOR SHALL MOVE EXISTING BACKFLOW PREVENTOR AND REPIPE POTABLE WATER LINE TO THE NEW YARD HYDRANT AND NEW EMERGENCY SHOWER AND EYEWASH. EYEWASH SYSTEM SHALL ALSO INCLUDE A 4'x4'x6" SLOPED CONCRETE PAD. SEE DETAILS.
5. PROVIDE NEW CONCRETE PAD FOR RELOCATED BACKFLOW PREVENTOR 2'x3'x4".
6. PROVIDE EMERGENCY PUMP CONNECTION WITH VALVE AS SHOWN ON THE TYPICAL EMERGENCY PUMP CONNECTION DETAIL. SEE OWASA DETAIL 539.02. USE PLUG VALVE IN LIEU OF GATE VALVE.
7. DOUBLE ROW SILT FENCE. SEE SEDIMENT FENCE STANDARD DETAIL 02270M001 (SIMILAR) AND SPECIFICATION 02270.
8. ABANDON EXISTING SANITARY SEWER IN PLACE.
9. PROVIDE 4' MINIMUM WIDE STONE WALKWAY PARALLELING NEW FENCE USING CABC STONE 6–INCHES DEEP. TIE WALKWAY TO EXISTING PATH.
10. PROVIDE SIGN NOTIFYING PUBLIC OF "RESTRICTED AREA" AND "PATH IS TEMPORARY CLOSED DUE TO CONSTRUCTION."
11. CONTRACTOR TO MOVE THE CHEMICAL TANK AREA OVER TO WHERE THE EXISTING PUMP STATION IS AFTER IT IS DEMOLISHED. THE TANK MAY BE TAKEN OUT OF SERVICE DURING CONSTRUCTION.
12. SEE SPECIFICATIONS FOR SOIL BORING INFORMATION.
13. ASPHALT BASECOURSE SHALL CONSIST OF 12–IN COMPACTED SUBGRADE, 8–IN AGGREGATE BASE AND 3–IN BINDER COURSE.
14. 6" STONE INSIDE FENCE AREA.

RECORD DRAWINGS

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Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH	BDR	JKR	JKR
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026156 JOSEPH K. ROBINSON 12/10/04

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Project Manager	Joe K. Robinson, P.E.
Designed	R. Mehta
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

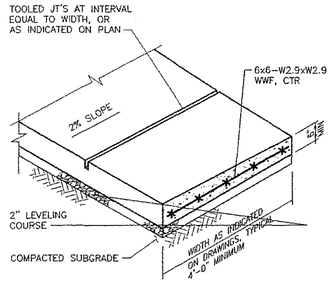
Orange Water and Sewer Authority
Heritage Hills Wastewater Pumping Station Improvements
Carrboro **North Carolina**

Site Plan, Yard Piping and Erosion Control

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	C-1	1
Scale: As Noted	File Name: OWASA-HH_C-01.DWG		

SPS-H01-118-05

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07-20-03 JPOWERS 10-16-09



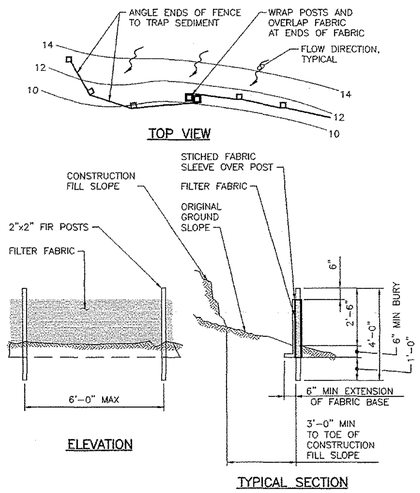
NOTES:

1. PROVIDE FULL DEPTH 3/8" PREMOLDED EXPANSION JOINT FILLER ALL AROUND AT ALL UTILITY POLES, METER BOXES, ETC.
2. PLACE FULL DEPTH THRU JOINTS W/1/2"x6" PREMOLDED EJF AT POINT OF TANGENCY AND AT MIN. 25' INTERVALS.

CONCRETE WALKWAY

NTS

02529M001



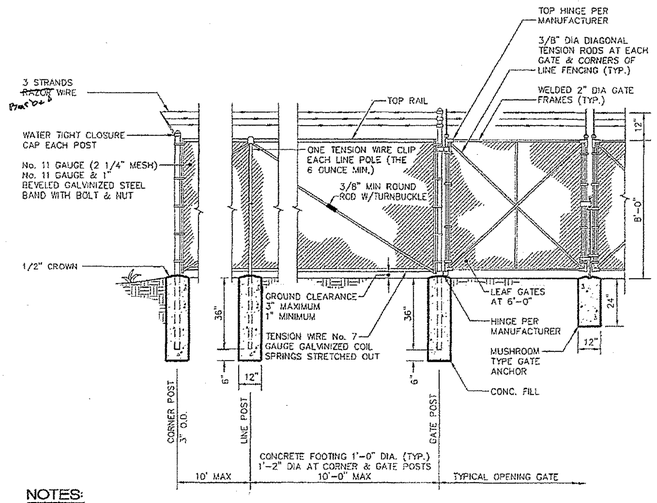
NOTE:

1. REMOVE EROSION SEDIMENT WHEN LEVEL REACHES 1 FOOT.

SEDIMENT FENCE

NTS

02270M001



NOTES:

1. Chain link fabric to have slats & must be opaque.

TYPICAL CHAIN LINK FENCE DETAIL

NTS

OWASA 289.03

RECORD DRAWINGS

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Designed	R. Mehta
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
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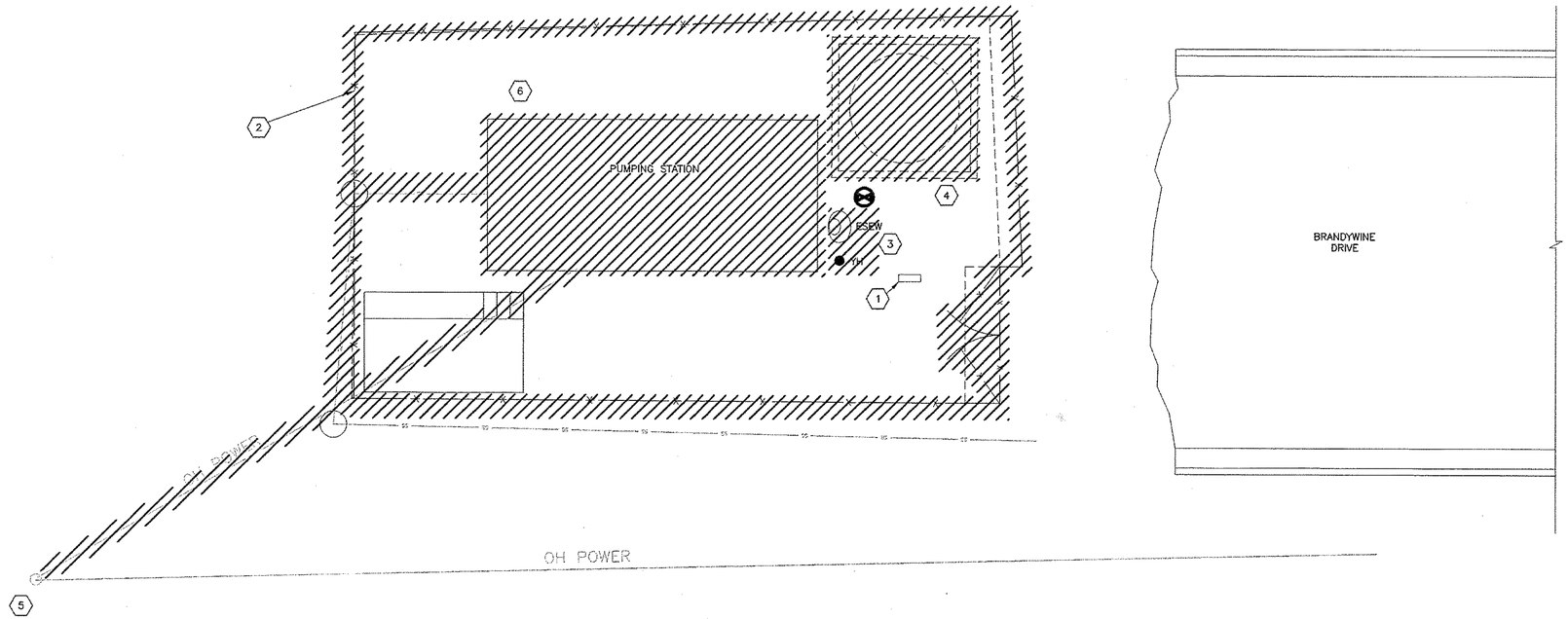
Carrboro **North Carolina**

Civil Standard Details

Date	Project No.	Drawing No.	Issue
December 2004	11496–1641–018	C-2	1
Scale: As Noted	File Name: 00G–04.DWG		

SPS–H01–118–06

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08-08-03 XPDWGS 17:48:42



DEMOLITION PLAN
1" = 5'-0"

GENERAL NOTES:

A. SEE SPECIFICATION 01260 FOR DEMOLITION SEQUENCE.

B. EXISTING PUMP STATION SHALL NOT BE DEMOLISHED UNTIL THE NEW PUMP STATION IS READY TO OPERATE OR THE CONTRACTOR PROVIDES TEMPORARY PUMPING APPROVED BY THE OWNER AND ENGINEER.

C. IDENTIFY AND PROTECT EXISTING TREES IN AREA. THE REMOVAL OF ANY TREES REQUIRES APPROVAL OF OWNER. REPLACE ANY REMOVED TREES TO MATCH EXISTING.

CONTRACTOR TO MAINTAIN SECURITY OF SITE DURING ENTIRE DEMOLITION AND CONSTRUCTION PROCESS.

KEY NOTES

1. MOVE BACKFLOW PREVENTOR TO NEW LOCATION AS SHOWN ON SITE PLAN. IN ADDITION, DEMOLISH CONCRETE PAD.
2. DEMOLISH EXISTING FENCE AND GATE.
3. DEMOLISH EMERGENCY SHOWER/EYEWASH AND YARD HYDRANT.
4. MOVE CHEMICAL TANK AND CONTAINMENT TO NEW LOCATION, SEE DRAWING C-1.
5. OWNER WILL ARRANGE FOR RELOCATION OF EXISTING POWER POLE. CONTACT INFORMATION IS PIEDMONT ELECTRIC, RONALD HURDLE (919) 644-3426.
6. DEMOLISH EXISTING PUMP STATION STRUCTURE TO 2-FT BELOW GRADE. FILL PIT WITH CLEAN RUBBLE AND FILL MATERIAL. THE DRY PIT IS APPROXIMATELY 15-FT BELOW THE OPERATOR FLOOR.

RECORD DRAWINGS

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Issue No.	Description	Date	Drawn	Cktd.	Resp. Engr.	Proj. Mgr.
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NORTH CAROLINA PROFESSIONAL SEAL 026156 ENGINEER JOSEPH K. ROBINSON 12/10/04

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Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

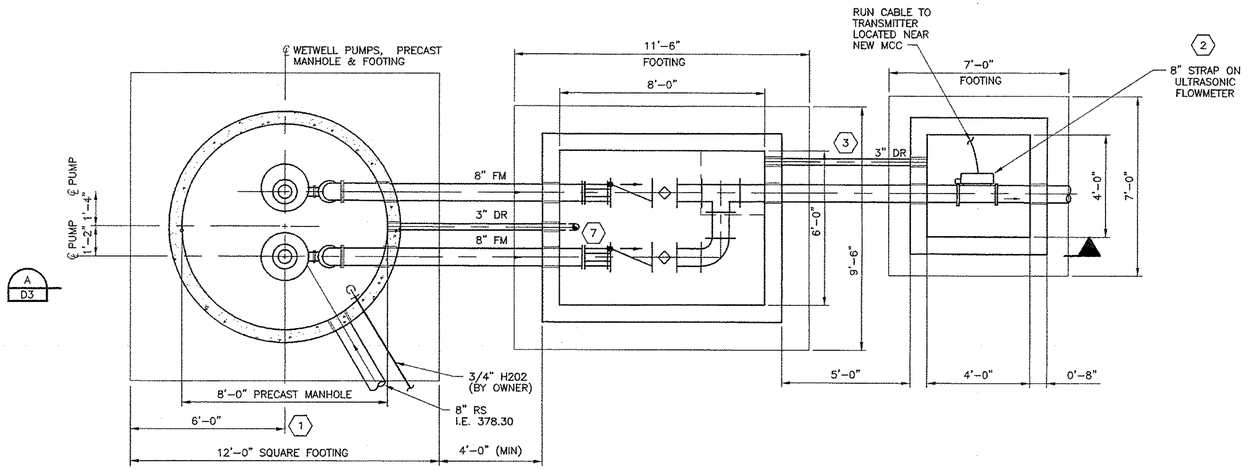
Carrboro North Carolina

Demolition Plan

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	D-1	1
Scale: As Noted	File Name: OWASA-HH_D-01.DWG		

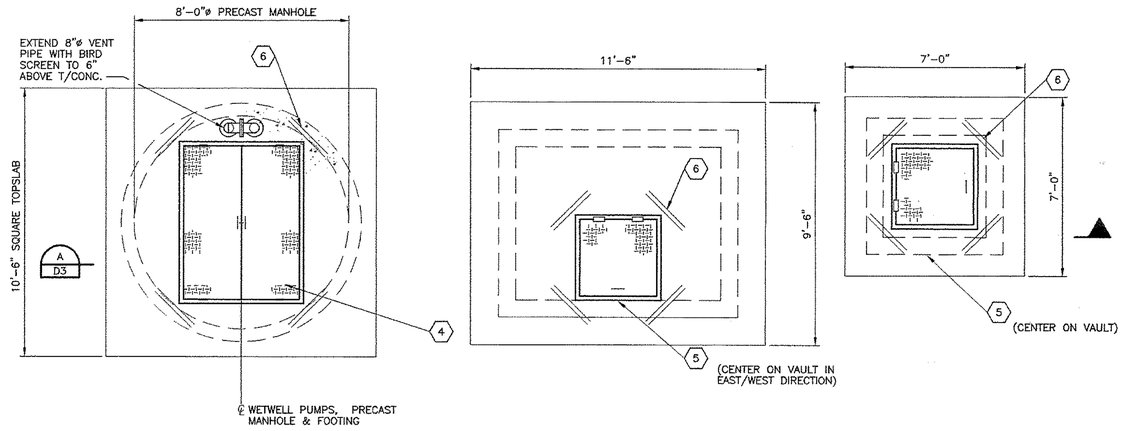
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07-03-03 JPOWERS 10:44:34



LOWER PLAN

SCALE: 3/8" = 1'–0"



UPPER PLAN

SCALE: 3/8" = 1'–0"

GENERAL NOTES:

A. PROVIDE FLEXIBLE CONNECTIONS FOR PIPE PENETRATIONS. SEE DETAIL. PROVIDE KOR–N–SEAL FOR PIPE–TO–MANHOLE CONNCETIONS.

B. THE EXTERIOR WALLS OF THE WETWELL SHALL BE WATER PROOFED WITH A BITUMINOUS SEALANT.

C. CAST–IN–PLACE CONCRETE TO BE 4000 PSI, SEE SPECIFICATION 03002.

D. REINFORCING FOR CAST–IN–PLACE CONCRETE TO BE A615, GRADE 60.

E. AT CONTRACTOR'S OPTION, PRECAST BASES MAY BE SUBSTITUTED FOR CAST–IN–PLACE BASES SHOWN. SEE SPECIFICATION 02515 FOR ADDITIONAL DESIGN REQUIREMENTS IN THE EVENT OF SUBSTITUTION.

KEY NOTES:

(1) CONTRACTOR MAY FURNISH PRECAST BOTTOM SECTION FOR WETWELL AT HIS OPTION. COMPUTATIONS FOR UPLIFT AND SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.

(2) FLOWMETER TO BE SUPPLIED BY OWNER.

(3) GRAVITY DRAIN DISCHARGE FROM FLOWMETER VAULT.

(4) ACCESS DOOR PER SPECIFICATION 08305. SIZE AND LOCATION DETERMINED BY THE CONTRACTOR BASED ON EQUIPMENT SELECTION TO PERMIT REMOVAL OF PUMPS AND MIXER.

(5) 3 FT x 3 FT ACCESS DOOR PER SPECIFICATION 08305.

(6) 2–#5 BARS x 2'–0" LONG AT OPENING CORNERS.

(7) 3 IN CAST IRON BODY FLOOR DRAIN, WADE W:1200–TD, OR APPROVED EQUAL.

NORTH CAROLINA PROFESSIONAL SEAL 024761 ENGINEER JEFFREY J. MITCHELL

THIS DOCUMENT IS ONLY CERTIFIED AS TO REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 026156 ENGINEER JOSEPH K. ROBINSON 12/10/04

THIS DOCUMENT IS ONLY CERTIFIED AS TO REVISIONS

RECORD DRAWINGS

These Record Drawings have been prepared from record information provided by the Contractor.

Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH			JKR
0	Issued for Construction	4/04	JSH	BDR	JKR	JKR

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HDR Engineering, Inc. of the Carolinas
Suite 1400
128 S. Tryon Street
Charlotte, NC 28202–5009
(704) 338–6700

BAR LENGTH 1" ORIGINAL DRAWING. IF BAR IS NOT 1" ADJUST SCALE ACCORDINGLY

Project Manager	Joe K. Robinson, P.E.
Designed	R. Mehta
Designed	J. J. Mitchell
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

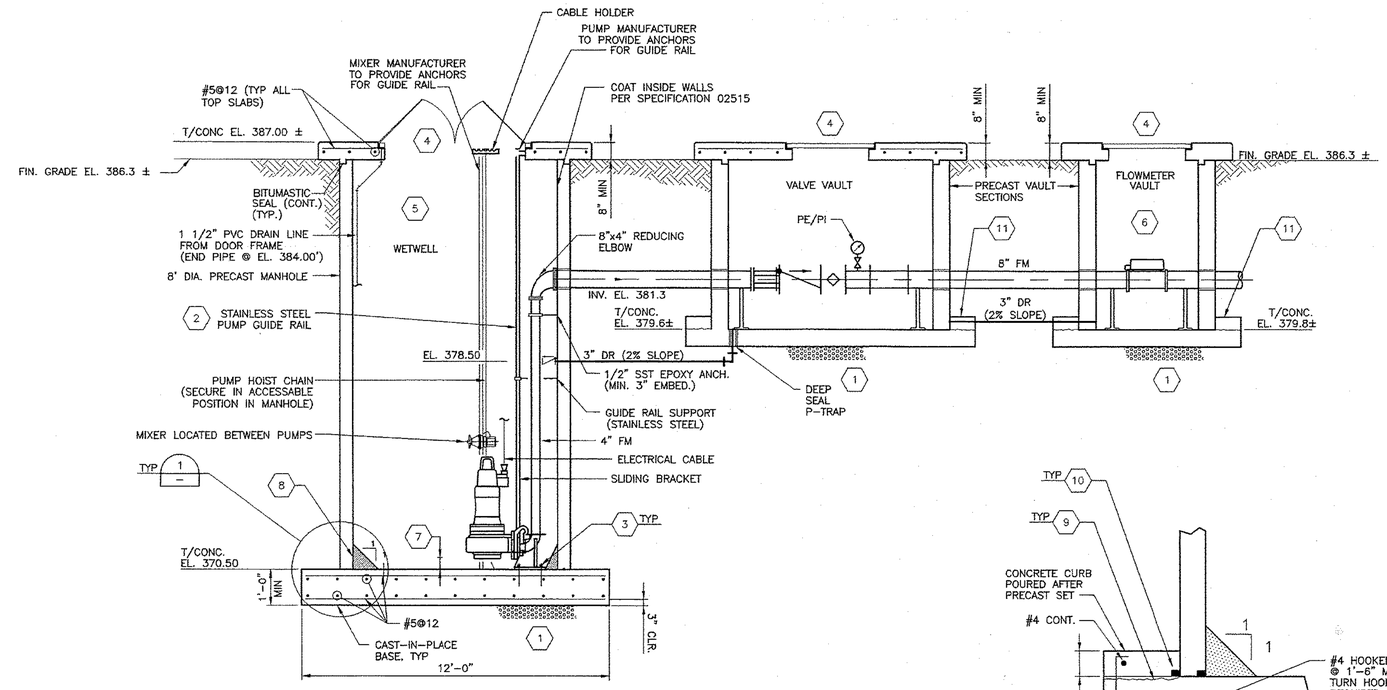
Carrboro **North Carolina**

Pumping Station
Upper and Lower Plan

Date: December 2004	Project No.: 11496–1641–018	Drawing No.: D-2	Issue: 1
Scale: As Noted	File Name: D–2.dwg		

SPS–H01–118–08

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08–10–03 JP/WEPS 12:28:50



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

A
D2

DETAIL
NOT TO SCALE

1
—

GENERAL NOTES:

A. PROVIDE FLEXIBLE CONNECTIONS FOR PIPE PENETRATIONS. SEE DETAIL PROVIDE KOR-N-SEAL FOR PIPE-TO-MANHOLE CONNECTIONS.

B. THE EXTERIOR WALLS OF THE WETWELL SHALL BE WATER PROOFED WITH A BITUMINOUS SEALANT.

C. PIPE SUPPORTS SHALL BE USED AT THE LOCATIONS SHOWN AND AS REQUIRED TO MINIMIZE STRESS ON ALL PIPE VALVES, FITTINGS AND WALL PENETRATIONS.

D. SEE GEOTECHNICAL REPORT NO. 1-30-0536 BY GEOTECHNOLOGIES INC. FOR DESCRIPTION OF SUBSURFACE CONDITIONS. ALL ROCK EXCAVATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 02200.

E. CONTRACTOR TO PROVIDE SHORING AND SHEETING AS NECESSARY.

F. INVERT ELEVATION OF INCOMING 8" RS IS 378.30.

KEY NOTES:

(1) 6" GRANULAR FILL PER SPECIFICATION 02200.

(2) SUPPORT PER MANUFACTURER'S RECOMMENDATION. COORDINATE LOCATION WITH MANHOLE, ACCESS, PUMPS, ETC.

(3) STAINLESS STEEL EPOXY ANCHOR (DRILL AND SET IN EPOXY). SEE SPECIFICATION 05505 FOR MINIMUM EMBEDMENT.

(4) PROVIDE CONFINED SPACE ENTRY SIGN PER SPEC SECTION 10400.

(5) ATTACH CHEMICAL DRIP LINE (EL 380.00) AND TRANSDUCER TO MIXER GUIDE RAIL. MATCH EXISTING.

(6) STRAP-ON FLOWMETER TO BE SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.

(7) CONTRACTOR TO VERIFY DIMENSION WITH PUMP STATION MANUFACTURER.

(8) GROUT FILLET PER PUMP MANUFACTURER RECOMMENDATION.

(9) ROUGHEN SURFACE AND APPLY BONDING AGENT, EUCLID "CORR-BOND", OR APPROVED EQUAL.

(10) HYDROPHILIC STRIP-TYPE WATER STOP, CONT. AROUND WALL BASE, CJ-3030-M BY GREENSTREAK, OR APPROVED EQUAL.

(11) SEE BASE OF WETWELL FOR CURB.

LEVEL SETTING SCHEDULE

SETTING	*TYPE*	*ELEVATION*
HIGH-HIGH	FLOAT & TRANSDUCER	378.30
HIGH	FLOAT & TRANSDUCER	377.30
LAG PUMP ON	TRANSDUCER	376.30
LEAD PUMP ON	TRANSDUCER	375.30
ALL PUMPS OFF	TRANSDUCER	372.30

NORTH CAROLINA PROFESSIONAL SEAL 024761 ENGINEER JEFFREY J. MITCHELL

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NORTH CAROLINA PROFESSIONAL SEAL 16279 ENGINEER RAYMOND A. GORDON 7-23-04

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128 S. Tryon Street
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(704) 338-6700

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY.

Project Manager	Joe K. Robinson, P.E.
Designed	R. Mehta
Designed	J. J. Mitchell
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

Carrboro North Carolina

Pumping Station Sections

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	D-3	1
Scale: As Noted	File Name: D-3.dwg		

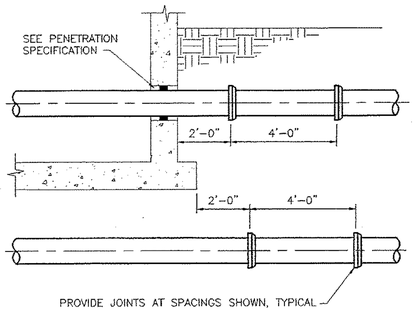
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05-07-04 JOHNSON 1:35:58

LOCATION OF FLEXIBLE CONNECTIONS

15060M003

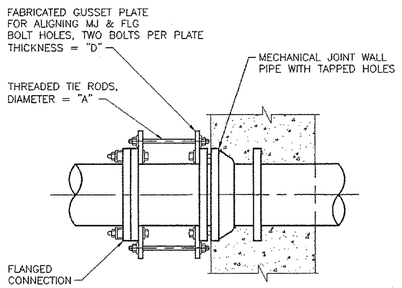
NTS



RESTRAINED MECHANICAL JOINT TO FLANGED JOINT

15062M001

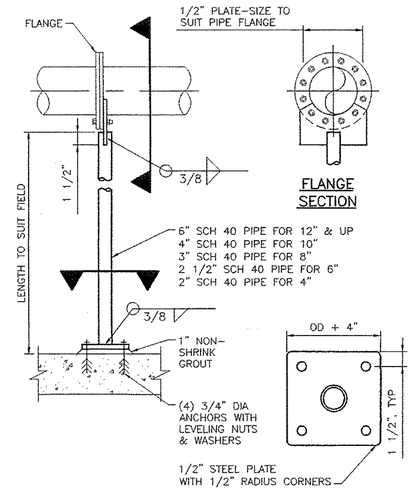
NTS



PIPE SIZE	"D"	"A"	MAX PRESSURE 2-RODS	MAX PRESSURE 3-RODS
2	3/8	5/8	200	–
2 1/2	3/8	5/8	200	–
3	3/8	5/8	200	–
4	3/8	5/8	200	–
5	3/8	5/8	200	–
6	1/2	5/8	140	200
8	1/2	3/4	140	190
10	3/4	7/8	140	190
12	3/4	1	140	190
14	3/4	1	85	130
16	3/4	1 1/8	65	110
18	3/4	1 1/8	65	110
20	3/4	1 1/8	65	110
24	1	1 1/4	65	100

NOTE:

1. USE WHEN SPACE IS LIMITED AND YOU CANNOT INSTALL A DOUBLE MECHANICAL JOINT.



NOTE:

1. NOT INTENDED FOR THRUST RESTRAINT.

FLANGED PIPE SUPPORT

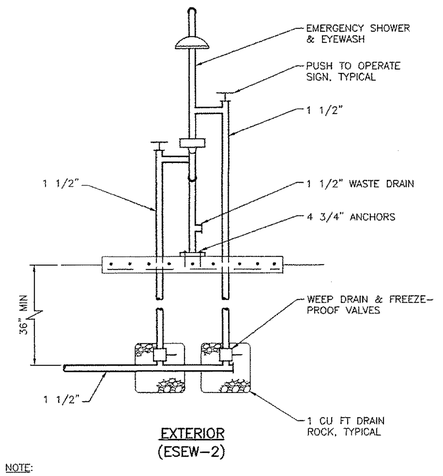
15090M011

NTS

YARD HYDRANT (NON FREEZE)

OWASA 289.04

NTS



EXTERIOR (ESEW-2)

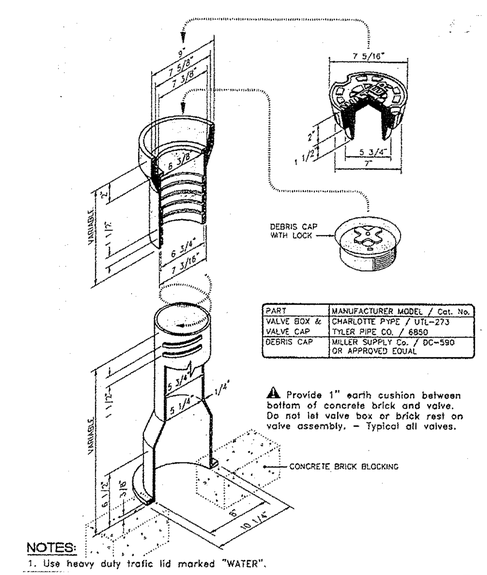
NOTE:

1. EXTERIOR SYSTEM TO BE EQUIPPED WITH FREEZE-PROOF VALVES.
2. DAYLIGHT WASTE DRAIN DOWNGRADIENT OF PAD.

EMERGENCY SHOWER & EYEWASH

15440M013

NTS



PART	MANUFACTURER MODEL / Cat. No.
VALVE BOX & VALVE CAP	CHARLOTTE PIPE / UTL-273 TYLER PIPE CO. / 6850
DEBRIS CAP	MILLER SUPPLY Co. / DC-590 OR APPROVED EQUAL

⚠ Provide 1" earth cushion between bottom of concrete brick and valve. Do not let valve box or brick rest on valve assembly. - Typical all valves.

NOTES:

1. Use heavy duty trafic lid marked "WATER".

STANDARD SCREW VALVE BOX DETAIL

OWASA 293.01

NTS

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NORTH CAROLINA REGISTERED PROFESSIONAL SEAL 026156 ENGINEER JOSEPH K. ROBINSON

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Project Manager	Joe K. Robinson, P.E.
Designed	
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

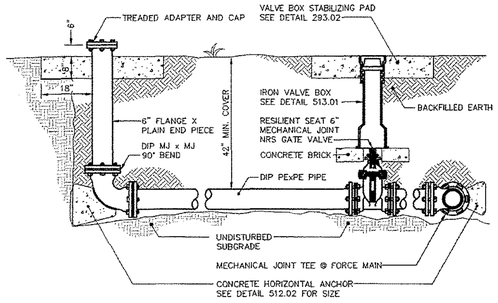
Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

Carrboro North Carolina

Structural & Mechanical Standard Details

Date	Project No.	Drawing No.	Issue
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Scale: As Noted	File Name: 00D-04.DWG		

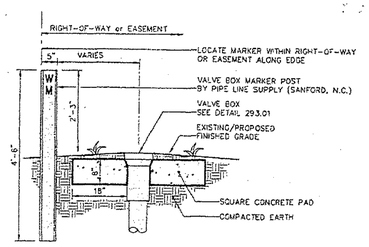
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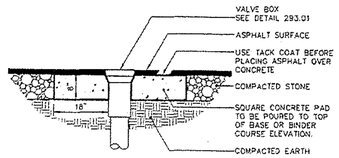
TYPICAL EMERGENCY PUMP CONNECTION

NTS

OWASA 539.02



FIELD AND EASEMENT OR SIDE OF ROAD LOCATION



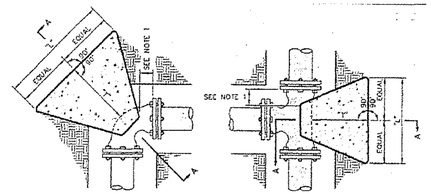
IN STREET LOCATION

NOTES:
1. Concrete to be minimum 3,000 PSI @ 28 days.

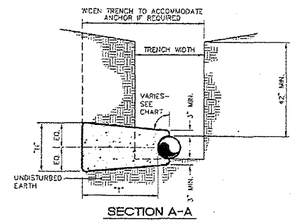
VALVE BOX STABILIZING PAD DETAILS

NTS

OWASA 293.02



FOR ALL BEND FITTINGS FOR TEE FITTING



SECTION A-A

NOTES:
1. Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
2. Fittings are to be completely wrapped with plastic, prior to pouring concrete.
3. Concrete to be minimum 3,000 psi. @ 28 days.

BLOCKING DETAIL FOR HORIZONTAL BENDS AND TEE

NTS

OWASA 292.02 1 OF 4

⚠ TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME CONCRETE Cu. Yd.
4 INCHES	11 1/4°	---	---	---	---
	22 1/2°	1.00	1.00	1.50	0.09
	45°	1.00	1.00	1.50	0.09
	90°	1.00	1.00	2.50	0.09
	TEE	1.00	1.00	2.00	0.07
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.00	1.00	2.50	0.09
	90°	1.50	1.50	2.50	0.13
	TEE	1.50	1.50	2.00	0.12
6 INCHES	11 1/4°	1.00	1.50	2.50	0.13
	22 1/2°	1.00	1.50	2.50	0.13
	45°	1.00	1.50	2.50	0.15
	90°	2.00	2.00	3.00	0.28
	TEE	2.00	2.00	2.50	0.23
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.75	0.25
	90°	3.00	2.00	3.00	0.39
	TEE	3.00	2.00	2.75	0.32
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	2.00	2.00	3.00	0.28
	45°	3.00	2.00	3.00	0.42
	90°	4.50	3.00	3.50	0.84
	TEE	4.50	3.00	3.00	0.81
16 INCHES	11 1/4°	3.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	3.00	3.50	0.84
	90°	6.00	3.50	3.50	1.54
	TEE	6.50	3.50	3.00	1.32

CHART NOTES

1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

BLOCKING DETAIL FOR HORIZONTAL BENDS AND TEE

NTS

OWASA 292.02 2 OF 4

⚠ TEST PRESSURE = 200 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	H	"T"	VOLUME CONCRETE Cu. Yd.
4 INCHES	11 1/4	1.00	1.00	1.50	0.09
	22 1/2	1.00	1.00	1.50	0.09
	45	1.00	1.00	1.50	0.09
	90	1.50	1.50	2.50	0.13
	TEE	1.50	1.50	2.00	0.12
4 INCHES	11 1/4	1.00	1.00	2.50	0.09
	22 1/2	1.00	1.00	2.50	0.09
	45	1.50	1.50	2.50	0.13
	90	1.50	1.50	2.50	0.13
	TEE	2.00	1.50	2.00	0.12
6 INCHES	11 1/4	1.50	1.50	2.50	0.13
	22 1/2	1.50	1.50	2.50	0.13
	45	1.50	1.50	2.50	0.15
	90	2.50	2.00	3.00	0.33
	TEE	2.50	2.00	2.50	0.28
8 INCHES	11 1/4	2.00	2.00	2.50	0.23
	22 1/2	2.00	2.00	2.50	0.23
	45	2.00	2.00	2.50	0.23
	90	4.00	2.00	3.00	0.50
	TEE	4.00	2.00	2.50	0.42
12 INCHES	11 1/4	2.00	2.00	3.00	0.28
	22 1/2	3.00	2.00	3.00	0.29
	45	4.00	2.50	3.00	0.61
	90	5.50	3.00	3.50	1.13
	TEE	5.50	3.00	3.00	0.97
16 INCHES	11 1/4	2.00	2.00	3.00	0.28
	22 1/2	4.00	2.00	3.00	0.39
	45	6.00	3.00	3.50	1.13
	90	7.50	4.00	3.50	1.90
	TEE	7.50	4.00	3.00	1.72

CHART NOTES

1 If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer
2 Blocking sizes shown in these tables assume the following
   a Blocking is constructed in residual soils as shown in detail
   b Soil bearing pressure = 2000 psf
   c Velocity of flow = 15 fps
3 This detail not applicable to reducing bends
4 Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation Therefore, blocking size is conservative

BLOCKING DETAIL FOR HORIZONTAL BENDS AND TEE

NTS

OWASA 292.02 3 OF 4

⚠ TEST PRESSURE = 250 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME CONCRETE Cu. Yd.
4 INCHES	11 1/4	1.00	1.00	1.50	0.09
	22 1/2	1.00	1.00	1.50	0.09
	45	1.00	1.00	1.50	0.09
	90	1.50	1.50	2.50	0.13
	TEE	1.50	1.50	2.00	0.12
4 INCHES	11 1/4	1.00	1.00	2.50	0.09
	22 1/2	1.00	1.00	2.50	0.09
	45	1.50	1.50	2.50	0.13
	90	2.00	2.00	2.50	0.23
	TEE	2.00	2.00	2.50	0.19
6 INCHES	11 1/4	1.50	1.50	2.50	0.13
	22 1/2	1.50	1.50	2.50	0.13
	45	2.00	1.50	2.50	0.19
	90	3.00	2.00	3.00	0.39
	TEE	3.00	2.00	2.50	0.32
8 INCHES	11 1/4	2.00	2.00	2.50	0.23
	22 1/2	2.00	2.00	2.50	0.23
	45	2.00	2.00	2.50	0.28
	90	4.00	2.50	3.00	0.61
	TEE	4.00	2.50	2.50	0.51
12 INCHES	11 1/4	2.00	2.00	3.00	0.28
	22 1/2	3.50	2.00	3.00	0.44
	45	4.50	2.75	3.00	0.75
	90	8.00	3.50	3.50	1.43
	TEE	6.00	3.50	3.00	1.22
16 INCHES	11 1/4	2.50	2.00	3.00	0.33
	22 1/2	4.00	2.50	3.00	0.61
	45	6.00	3.50	3.50	1.43
	90	8.00	4.50	4.00	2.24
	TEE	8.00	4.50	3.50	2.45

CHART NOTES

1 If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer
2 Blocking sizes shown in these tables assume the following
   a Blocking is constructed in residual soils as shown in detail
   b Soil bearing pressure = 2000 psf
   c Velocity of flow = 15 fps
3 This detail not applicable to reducing bends
4 Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation Therefore, blocking size is conservative

BLOCKING DETAIL FOR HORIZONTAL BENDS AND TEE

NTS

OWASA 292.02 4 OF 4

RECORD DRAWINGS

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Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH	BDR	JKR	JKR
0	Issued for Construction	4/04	JSH	BDR	JKR	JKR

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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 026156 JOSEPH K. ROBINSON

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Charlotte, NC 28202-5009
(704) 338-6700

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY.

Project Manager	Joe K. Robinson, P.E.
Designed	R. Mehta
Designed	
Checked	E. Davison, P.E.
Drawn	J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

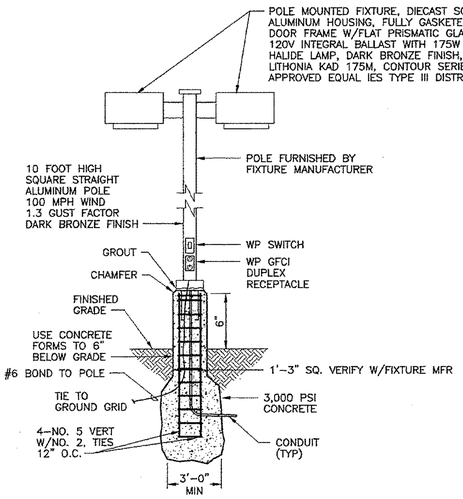
Carrboro North Carolina

Structural & Mechanical Standard Details

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	D-5	1
Scale: As Noted	File Name: OOD-05.DWG		

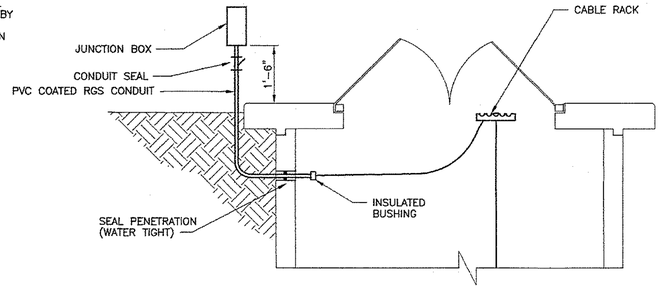
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J:\OLTS\MAIN\PWSS_P\OWASA-HERITAGE HILLS\OOD-05.DWG
07-03-03 JPOWERS 06:24:19

SPS-H01-118-11



LIGHT POLE DETAIL

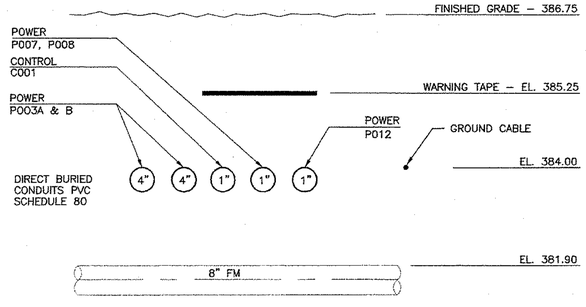
NOT TO SCALE



TYPICAL CONDUIT PENETRATION

NOT TO SCALE

A



SECTION

NOT TO SCALE

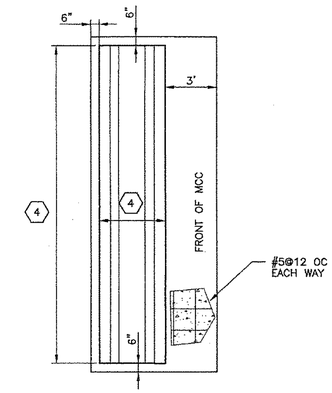
B

GENERAL NOTES

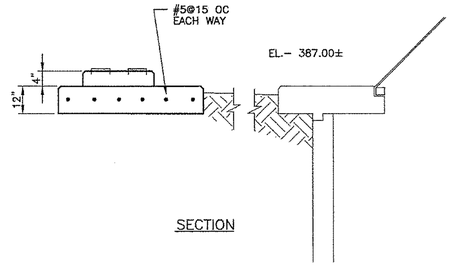
1. ALL UNDERGROUND ELECTRIC TO BE RUN IN SCHEDULE 80 PVC DIRECT BURIED 24" BELOW FINISHED GRADE.
2. ALL CONDUITS FROM JUNCTION BOXES INTO WETWELL AND FLOW METER VAULT SHALL BE SCHEDULE 40 PVC COATED RGS CONDUIT WITH CONDUIT SEAL AT JB.

KEY NOTES

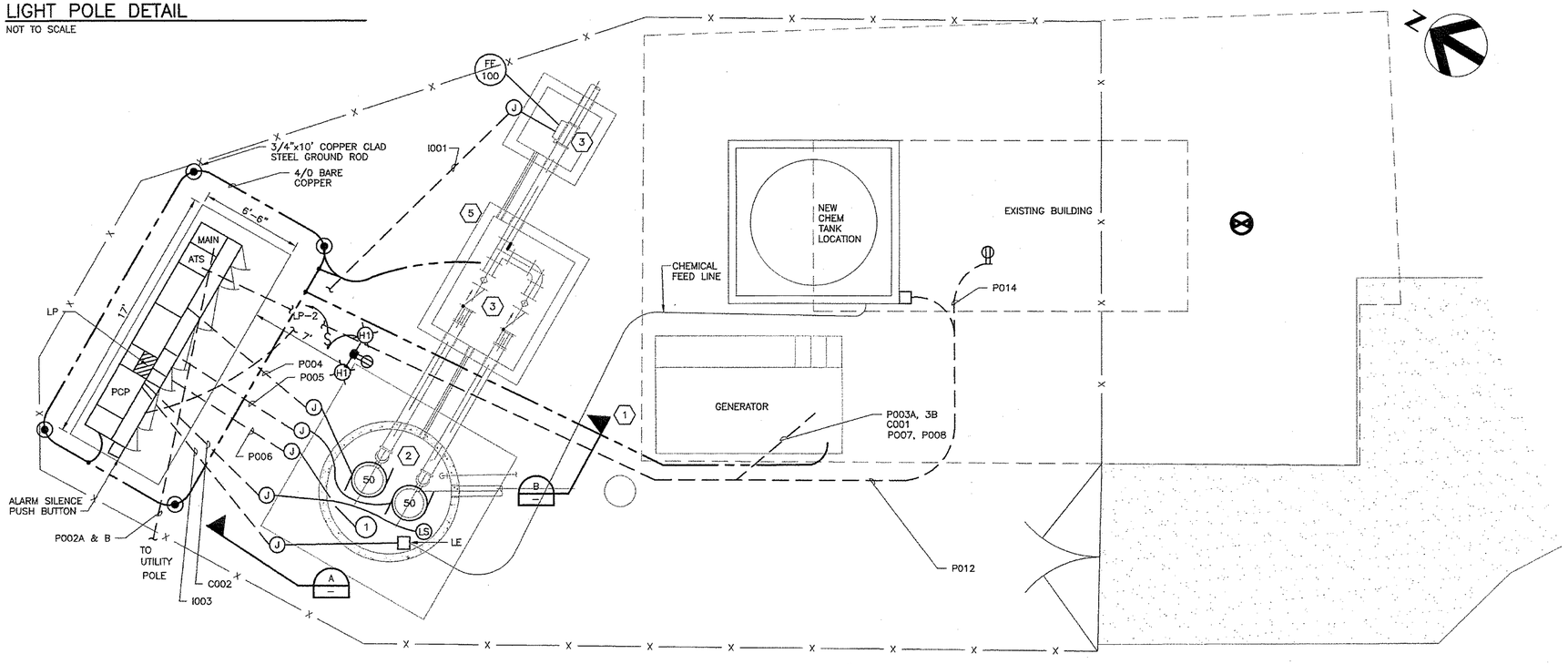
1. TIE NEW GROUND GRID TO EXISTING GRID AROUND GENERATOR.
2. HAZARDOUS AREA CLASS 1 DIVISION 2 LIMITED TO INSIDE OF WETWELL PER NFPA 820 TABLE 4.2 LINE 11A.
3. HAZARDOUS AREA CLASS 1 DIVISION 2 LIMITED TO INSIDE OF VAULT PER NFPA 820 TABLE 4.2 LINE 31A.
4. ELECTRICAL CONTRACTOR TO VERIFY DIMENSIONS FOR PAD AND LOCATION OF EMBEDDED CHANNELS FROM CERTIFIED SHOP DRAWINGS. 4" HOT DIPPED GALVANIZED CHANNELS EMBEDDED FOR SUPPORT OF MCC. MCC TO BE TACK WELDED OR BOLTED TO CHANNELS.
5. CONNECT GROUND CABLE TO FLANGE BOLT ON DOWN STREAM SIDE OF VALVES.



PLAN



SECTION



MCC PAD DETAIL

NOT TO SCALE

RECORD DRAWINGS

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Issue No.	Description	Date	Drwn.	Chkd.	Resp. Engr.	Proj. Mgr.
1	As Recorded	12/04	JSH	TJC	JWM	JKR
0	Issued for Construction	4/04	JSH	TJC	JWM	JKR

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NORTH CAROLINA PROFESSIONAL SEAL 022182 ENGINEER JOHN W. MITCHELL

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Project Manager: Joe K. Robinson, P.E.
Designed: J. Mitchell, P.E.
Designed:
Checked: T. Coyle, P.E.
Drawn: J. Powers

Orange Water and Sewer Authority
Heritage Hills Wastewater
Pumping Station Improvements

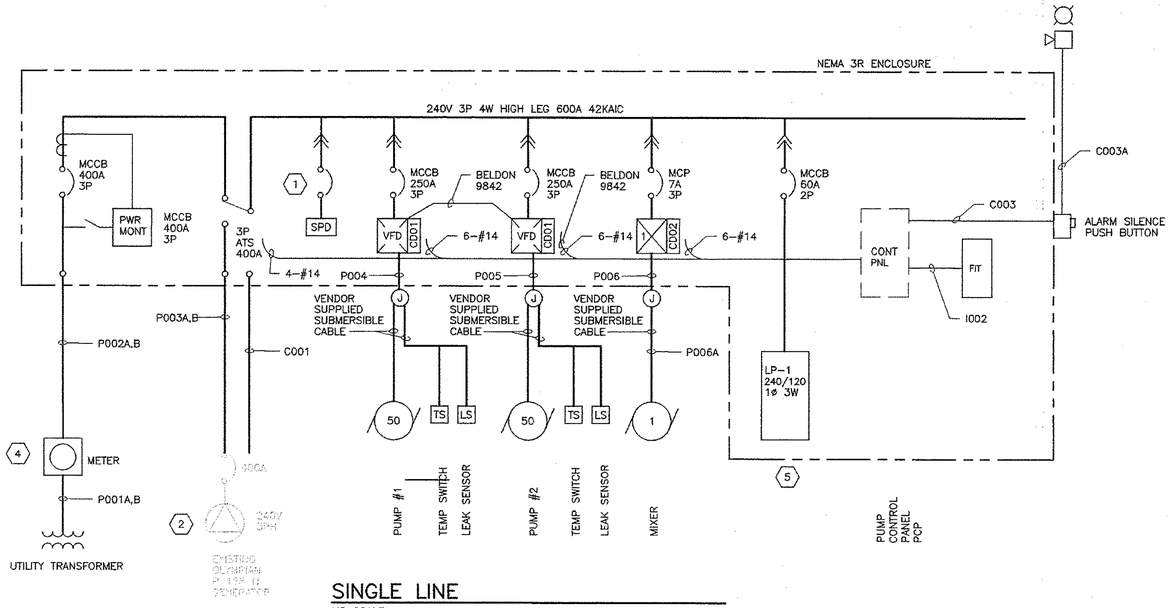
Carrboro North Carolina

Electrical Site Plan and Sections

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	E-1	1
Scale: 1"=4'	File Name: OWASA-HH_E-01R.DWG		

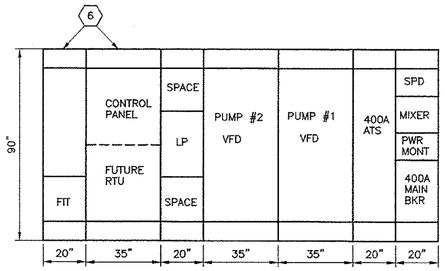
SPS-H01-118-12

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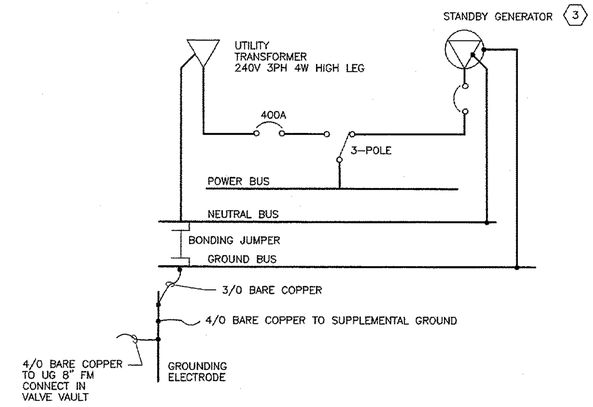
SINGLE LINE

NO SCALE



MCC ELEVATION

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



GROUNDING SYSTEM DETAIL

NO SCALE

KEY NOTES

1. SPD BREAKER SIZED BY SPD VENDOR TO COORDINATE WITH UNIT INSTALLED.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE BETWEEN GENERATOR MANUFACTURER AND THE VFD MANUFACTURER THAT THE HARMONICS GENERATED BY THE VFD WILL NOT ADVERSELY AFFECT THE ABILITY OF THE GENERATOR TO START AND RUN THE PUMPS. ANY SPECIAL HARMONIC FILTERS SHALL BE PROVIDED BY THE VFD VENDER.
3. ELECTRICAL CONTRACTOR TO VERIFY THAT THE NEUTRAL BONDING JUMPER IS REMOVED FROM IN THE GENERATOR.
4. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF SERVICE POLE AND METER LOCATION WITH SERVING UTILITY.
5. SYSTEM VOLTAGE 240/120 V 3PH DELTA HIGH LEG. CONTRACTOR TO VERIFY VOLTAGE ON PANEL BOARD PRIOR TO ENERGIZING BRANCH CIRCUITS.
6. SECTIONS PROVIDED WITH HORIZONTAL BUS FOR FUTURE EXTENSION. NO VERTICAL BUS. SECTIONS TO BE PROVIDED WITH BRACKETS TO SUPPORT SUB-PANEL FOR CONTROL HARDWARE. SUB-PANEL BY OWNER'S SYSTEM INTEGRATER, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.

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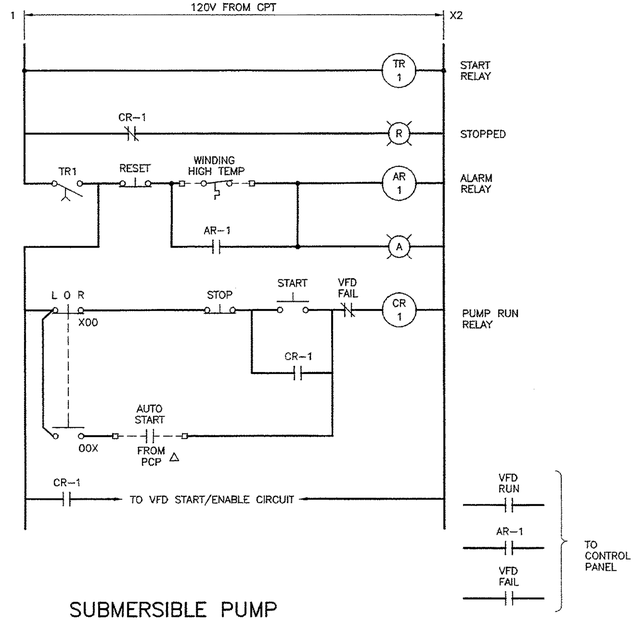
Orange Water and Sewer Authority
Heritage Hills Wastewater Pumping Station Improvements
Carrboro **North Carolina**

Electrical Single Line Diagram

Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	E-2	1
Scale: As Noted	File Name: OWASA_HH_E-2.dwg		

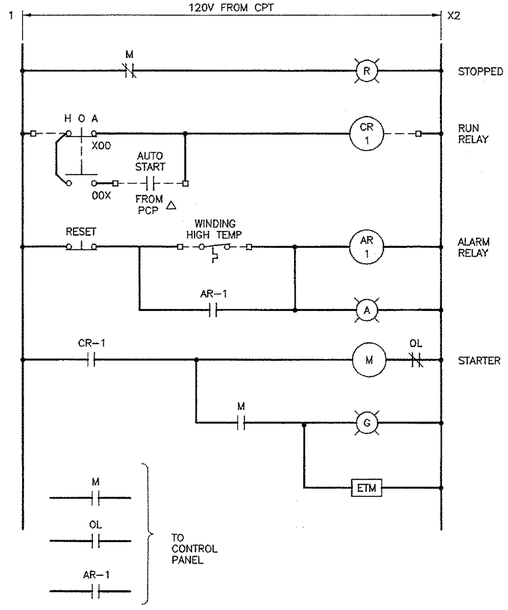
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SPS-H01-118-13



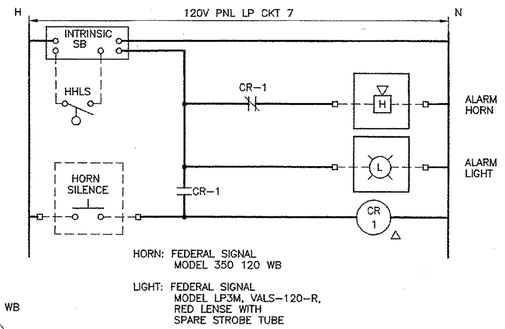
SUBMERSIBLE PUMP CONTROL DIAGRAM CD01

NO SCALE



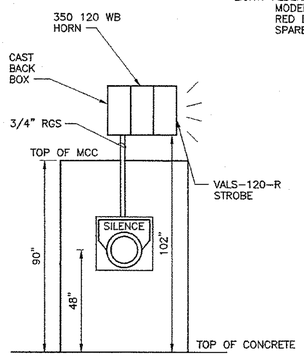
MIXER CONTROL DIAGRAM CD02

NO SCALE



HORN: FEDERAL SIGNAL
MODEL 350 120 WB

LIGHT: FEDERAL SIGNAL
MODEL LP3M, VALS-120-R,
RED LENSE WITH
SPARE STROBE TUBE



NOTES:

1. MOUNT HORN SILENCE PUSH BUTTON PANEL TO END OF MCC.
2. LIGHT AND HORN TO BE 12" ABOVE TOP OF MCC, HORN AIMED TOWARD GATE.
3. ENCLOSURE TO BE NEMA 4X STAINLESS STEEL.
4. STROBE LIGHT MOUNTED TO HORN AND AIMED TOWARD GATE.
5. △ SYMBOL DESIGNATES EQUIPMENT LOCATED IN CONTROL PANEL.

HIGH WETWELL ALARM CONTROL DIAGRAM CD03

NO SCALE

CONDUIT, WIRE AND CABLE SCHEDULE

CONDUIT NO.	ORIGIN	DESTINATION	CONDUIT	WIRE IN CONDUIT					NOTES
				POWER	NEUTRAL	GROUND	INSTRUMENTATION	CONTROL	
P001A	UTILITY TRANSFORMER	UTILITY METER	2 1/2"	3-#4/0	1-#4/0				
P001B			2 1/2"	3-#4/0	1-#4/0				
P002A	UTILITY METER	MCC	2 1/2"	3-#4/0	1-#4/0				
P002B			2 1/2"	3-#4/0	1-#4/0				
P003A	STANDBY GENERATOR	MCC	2 1/2"	3-#4/0	1-#4/0	1-#2			
P003B			2 1/2"	3-#4/0	1-#4/0	1-#2			
P004	MCC	PUMP #1 JB	2"	3-#2/0		1-#4		4-#14	
P004A	PUMP #1 JB	PUMP #1	3" *						MARINE CABLE SUPPLIED WITH PUMP
P005	MCC	PUMP #2 JB	2"	3-#2/0		1-#4		4-#14	
P005A	PUMP #2 JB	PUMP #2	3" *						MARINE CABLE SUPPLIED WITH PUMP
P006	MCC	MIXER JB	1"	3-#12		1-#12			
P006A	MIXER JB	MIXER MOTOR	1" *						MARINE CABLE SUPPLIED WITH PUMP
P007	LP CKT 1,3	GENERATOR HEATER	1"	2-#10		1-#10			
P008	LP CKT 5	GENERATOR BATTERY CHARGER	1"	1-#12	1-#12	1-#12			
P009	LP CKT 2	YARD LIGHT AND RECEPTACLE	1"	1-#12	1-#12	1-#12			
P010	LP CKT 6	FLOW TRANSMITTER	3/4"	1-#12	1-#12	1-#12			WIRED WITHIN MCC
P011	LP CKT 8	CONTROL PANEL		1-#12	1-#12	1-#12			WIRED WITHIN MCC
P012	LP CKT 10	CHEMICAL FEED SYSTEM	1"	1-#10	1-#10	1-#10			
P013	LP CKT 7	HH LEVEL ALARM PNL	3/4"	1-#12	1-#12	1-#12			
P014	LP CKT 9	BFP BOX HEATER RECPT	1"	1-#10	1-#10	1-#10			
C001	MCC ATS	GENERATOR	1"			1-#12		7-#14	
C002	CONTROL PANEL	HIGH, HIGH HIGH LEVEL FLOAT SWITCH JB	1"			1-#12		3-#14	
C002A	HIGH, HIGH HIGH LEVEL FLOAT SWITCH JB	FLOAT	1" *						MARINE CABLE SUPPLIED SWITCH
C003	CONTROL PANEL	HORN SILENCE ENCLOSURE				1-#12		5-#14	WIRED WITHIN MCC
C003A	HORN SILENCE ENCLOSURE	HORN/LIGHT	3/4"					3-#14	
I001	FLOW ELEMENTS	FLOW TRANSMITTER	1" *						SPECIALTY CABLE PROVIDED WITH TRANSDUCER
I002	FLOW TRANSMITTER	CONTROL PANEL					1-TSP #16		WIRED WITHIN MCC
I003	WETWELL LEVEL PRESSURE TRANSDUCER	LEVEL TRANSMITTER (MOUNTED IN CONTROL PANEL)	1" *						SPECIALTY CABLE PROVIDED WITH TRANSDUCER

* PVC COATED RGS CONDUIT WITH SEAL.

PANELBOARD NO: LP

VOLTAGE:	240/120	BUS RATING (A):	100	ENCLOSURE:	NEMA 4X
PHASE:	1	MAIN OC DEVICE:	60/2	MOUNTING:	SURFACE
WIRE:	3+GND	INTERRUPTING RATING (KA):	10	LOCATION:	ELECT EQUIP RACK
200% NEUTRAL:	NO	SERVICE ENTRANCE LABEL:	NO		

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	OCP AMPS	P		OCP AMPS	P	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	DESCRIPTION	CKT NO.
1	GENERATOR HEATER			2,000		20	2	A	20	1	150				POLE LIGHT	2
3				2,000				B	20	1			180		RECEPTACLE	4
5	GEN BATT CHARGER			500		20	1	A	20	1				100	FLOW METER	6
7	H-H LEVEL ALARM				100	20	1	B	20	1				1,500	CONTROL PANEL	8
9	BFP HEATER RECPT			1,000		20	1	A	20	1				1,000	CHEM FEED SYSTEM	10
11	SPARE					20	1	B	20	1					SPARE	12
13								A								14
15								B								16
17								A	SIZE BY SPD VENDOR	2					SURGE PROTECTION DEVICE	18
19								B								20

LOAD SUMMARY

	LTS	REC	MECH	MISC	SPARE	TOTAL				PHASE BALANCE	
CONNECTED LOAD (KVA)	0.2	0.2	5.5	2.7	---	8.5		240	LINE-TO-LINE VOLTS	PHASE A (KVA)	4.8
DEMAND FACTOR	1.25	NEC	1.00	1.00	20%	---		36	CONNECTED AMPS	PHASE B (KVA)	3.8
DESIGN LOAD (KVA)	0.2	0.2	5.5	2.7	1.7	10.3		43	DESIGN AMPS		

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Orange Water and Sewer Authority
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Pumping Station Improvements

Carrboro North Carolina

Electrical Schedules and Control Diagrams

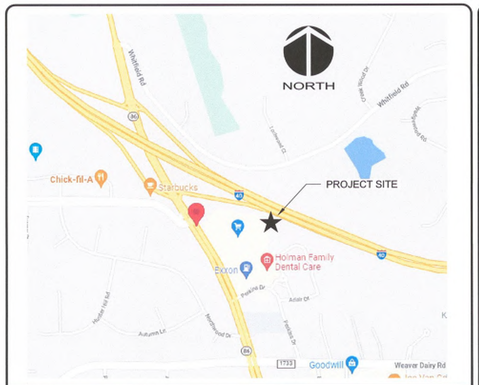
Date	Project No.	Drawing No.	Issue
December 2004	11496-1641-018	E-3	1
Scale: As Noted	File Name: OWASA_HH_E-3R.dwg		

SPS-H01-118-14

//OLDSMAIN/PROJS_P/OWASA-HERITAGE HILLS/OWASA-HH_E-03.DWG
09-27-04 JPOWERS 09:58:53

ORANGE WATER AND SEWER AUTHORITY
CHAPEL HILL NORTH PUMP STATION REHABILITATION

PROJECT NO. 01519-0057
NOVEMBER 2023
REVISED AFTER CONSTRUCTION



VICINITY MAP NOT TO SCALE

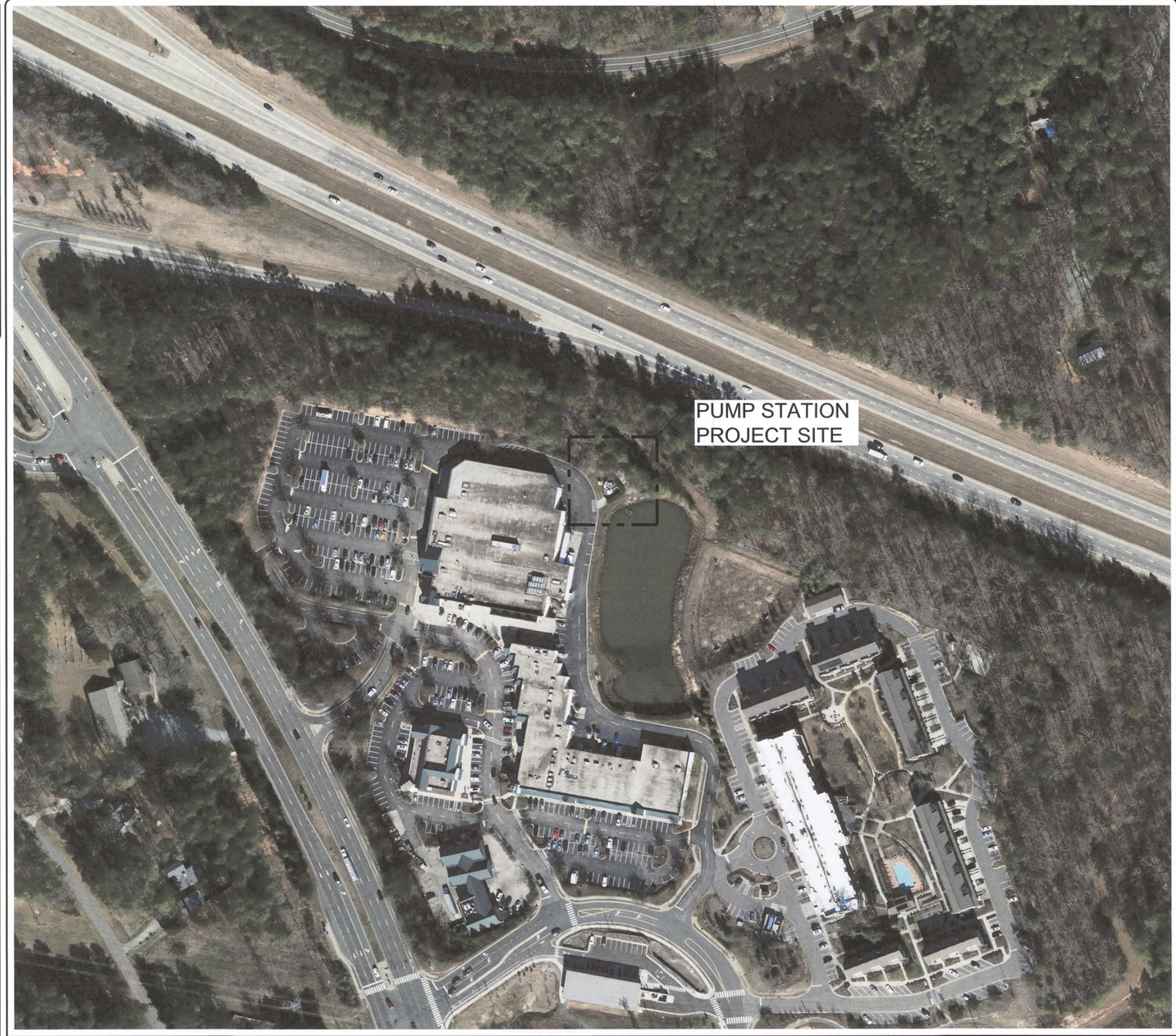
PROJECT NAME: CHAPEL HILL NORTH PUMP STATION REHABILITATION

OWNER/DEVELOPER:
ORANGE WATER AND SEWER AUTHORITY
400 JONES FERRY RD
CARRBORO, NC 27510

OWASA

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Venture IV Building, Suite 500
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Raleigh, North Carolina 27606-2689
Phone: (919) 233-8091, Fax: (919) 233-8031
NC License# F-1222
www.mckimcreed.com

PROJECT INFORMATION



SITE MAP SCALE: 1" = 200'

SHEET INDEX

Sheet Number	Sheet Title
GENERAL	
G00.0	COVER SHEET
G00.1	CIVIL - MECHANICAL LEAD SHEET
CIVIL: CIVIL SITE	
C00.0	EXISTING SITE PLAN
C00.1	SITE DEMOLITION PLAN
C00.2	PROPOSED SITE PLAN
MECHANICAL	
M00.0	PUMP STATION PLAN AND SECTIONS
STRUCTURAL	
S00.0	GENERAL NOTES, DESIGN LOADS, DESIGN CRITERIA & LEGEND
S01.0	EXIST. P.S. WET WELL REHAB PLAN, SECTIONS & DETAILS
ELECTRICAL	
E00.0	GENERAL NOTES AND ABBREVIATIONS
E00.1	TYPICAL POWER AND CONTROL SYMBOLS
E01.0	EXISTING POWER AND CONTROL RISER DIAGRAM 1 OF 2
E01.1	EXISTING POWER AND CONTROL RISER DIAGRAM 2 OF 2
E01.2	PROPOSED POWER AND CONTROL RISER DIAGRAM
E02.0	PANELBOARD SCHEDULES AND LOAD TABLE
DETAILS	
D00.1	OWASA STANDARD DETAILS

RECORD DRAWING

811 Know what's below. Call before you dig.

SHEET INDEX

PROJECT NO. 01519-0057 CHAPEL HILL NORTH PUMP STATION REHABILITATION

SUBMITTAL DATE: NOVEMBER 2023

1 ABBREVIATIONS

1SFD	1 STORY FRAMED DWELLING
1SBKBUS	1 STORY BRICK BUSINESS
A	AIR
AC	ASBESTOS CEMENT
AL OR ALUM	ALUMINUM
ARV	AIR RELEASE VALVE
ASPH	ASPHALT
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BK	BRICK
BLD	BLIND
BO	BOLLARD
BOV	BLOW OFF VALVE
BV	BALL VALVE
CATV	CABLE TELEVISION
CB	CATCH BASIN
C&G	CURB AND GUTTER
CHN	CHAIN
CI	CURB INLET
C/L, ℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CON	CONCENTRIC
CONC	CONCRETE
CPLG	COUPLING
CPP	CORRUGATED PLASTIC PIPE
CS	COMPOST SOCK
CSF	COMBO SILT / TREE PROTECTION FENCE
CV	CHECK VALVE
CWTD	CLEAN WATER TEMPORARY DIVERSION
D	DRAIN
DI	DROP INLET / DUCTILE IRON
DIP	DUCTILE IRON PIPE
DUCT	DUCT BANK
D/W	DRIVE WAY
DWG	DRAWING
EL OR ELEV	ELEVATION
EOG	EDGE OF GRAVEL
EOI	END OF INFORMATION
EP, EOP	EDGE OF PAVEMENT
EW	EYEWASH
EX	EXISTING
EXP	EXPANSION
LP	LIGHT POLE
LT	LIGHT
FCA	FLANGE COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTOR
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FHA	FIRE HYDRANT ASSEMBLY
FIN	FINISHED
FLG	FLANGE
FLEX	FLEXIBLE
FLR	FLOOR
FM	FORCE MAIN
FRP	FIBERGLASS REINFORCED PIPE
FO	FIBER OPTIC
FOT	FLAT ON TOP
GL	GUTTER LINE
GM	GAS METER
GRAV	GRAVEL
GTS	GAS TEST STATION
GV	GAS VALVE
GV	GATE VALVE
GW	GUY WIRE
HB	HOSE BIB
HB	HOT BOX
HDPE	HIGH-DENSITY POLYETHYLENE
HP	HIGH POINT
HWL	HIGH WATER LEVEL
INV	INVERT ELEVATION
IPF	IRON POST FOUND
JB	JUNCTION BOX
JT	JOINT
LF	LINEAR FEET
LOD	LIMITS OF DISTURBANCE
LP	LOW POINT
LR	LONG RADIUS
LSA	LANDSCAPE AREA
LWL	LOW WATER LEVEL
MB	MAIL BOX
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
MTL	METAL
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NIC	NOT IN CONTRACT
NWL	NORMAL WATER LEVEL
OHE/OE	OVER HEAD ELECTRIC
O/F	OVERFLOW
OU	OVER HEAD UTILITIES
PE	PLAIN END
PIV	POST INDICATOR VALVE
POLY	POLYMER
PP	POWER POLE
PRV	PRESSURE REDUCING VALVE
PTFE	POLYTETRAFLUOROETHYLENE
PV	PLUG VALVE
PVC	POLY VINYL CHLORIDE
PW	POTABLE WATER
RCP	REINFORCED CONCRETE PIPE
REC	PER RECORD
RED	REDUCER

1 ABBREVIATIONS CONTINUED

RFCA	RESTRAINED FLANGE COUPLING ADAPTER
RJ	RESTRAINED JOINT
RK	ROCK
R/W, ROW	RIGHT OF WAY
S	SIGN
SDMH	STORM DRAIN MANHOLE
SF	SILT FENCE
SS	SANITARY SEWER
S.S.	STAINLESS STEEL
SSF	SUPER / HIGH HAZARD SILT FENCE
SSMH	SANITARY SEWER MANHOLE
STA	STATION
SUE	SUBSURFACE UTILITY ENGINEERING
S/W	SIDE WALK
SVC	SERVICE
TBM	TEMPORARY BENCH MARK
TC	TERRA COTTA
TLP	TRAFFIC LIGHT POLE
TOB	TOP OF BANK
TOC	TOP OF CONCRETE
TOG	TOP OF GRATING
TOS	TOP OF SLAB
TOW	TOP OF WALL
TH	TEST HOLE
TPF	TREE PROTECTION FENCE
TSBOX	TRAFFIC SIGNAL BOX
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UNK	UNKNOWN
VAR	VARIABLE
VCP	VITRIFIED CLAY PIPE
WD	WOOD
WL	WATER LINE
WM	WATER METER
WV	WATER VALVE
XP	CROSS LIGHT POLE
WWF	WELDED WIRE FABRIC
YI	YARD INLET

2 EXISTING SYMBOL LEGEND

DESCRIPTION	SYMBOL
11.25° HORIZONTAL BEND	
22.50° HORIZONTAL BEND	
45° HORIZONTAL BEND	
90° HORIZONTAL BEND	
AC UNIT	AC
BENCH MARK	
TEMP. BENCH MARK	
BLOW OFF VALVE	
BOLLARD	BO
TEST BORE HOLE LOCATION	B-#
CABLE TV PEDISTAL	C
CATCH BASIN	
CLEAN OUT	CO
CONCRETE MONUMENT FOUND	CMF
CONTROL POINT	
CROSS	
CURB INLET	
ELECTRIC BOX	E
ELECTRIC MANHOLE	E
END OF INFORMATION	
FLAG POLE	FP
GAS METER	GM
GUY POLE	
GUY WIRE	
HANDHOLE	HH
HYDRANT	
IRON POST FOUND	IPF
IRON ROD FOUND	IPF
LIGHT POLE	LP
MAIL BOX	MB
MONITOR WELL	
POWER POLE	PP
WATER MANHOLE	W
PK FOUND	PKF
RAIL ROAD SPIKE	RRSPIKE
SANITARY SEWER MANHOLE	S
SHRUB	
SIGN	
STORM DRAIN MANHOLE	D
TAPPING SLEEVE AND VALVE	
TEE	
TELEPHONE MANHOLE	T
TELEPHONE PEDESTAL	T
TRAFFIC SIGNAL BOX	
TRANSFORMER	
DECIDUOUS TREE	
PINE TREE	
UTILITY POLE	
VALVE	
WATER METER	
WATER WELL	W
YARD HYDRANT	

3 EXISTING LINE LEGEND

DESCRIPTION	LINETYPE
UNDERGROUND CABLE TV	TV
UNDERGROUND PER RECORD CABLE TV	TV(R)
UNDERGROUND ELECTRIC	E
PER RECORD UNDERGROUND ELECTRIC	E(R)
UDERGROUND FIBER OPTIC	FO
PER RECORD UNDERGROUND FIBER OPTIC	FO(R)
SANITARY SEWER FORCEMAIN	FM
PER RECORD SANITARY SEWER FORCE MAIN	FM(R)
UNDERGROUND GAS	G
UNDERGROUND PER RECORD GAS	G(R)
OVER HEAD UTILITIES	OU
RECLAIMED WATER LINE	R
PER RECORD RECLAIMED WATER LINE	R(R)
GRAVITY SANITARY SEWER	SS
PER RECORD GRAVITY SANITARY SEWER	SS(R)
STORM DRAINAGE	
UNDERGROUND TELEPHONE	T
UNDERGROUND PER RECORD TELEPHONE	T(R)
UNDERGROUND UNKNOWN	U
WATER LINE	W
PER RECORD WATER LINE	W(R)
FENCE	x x
GUARD RAIL	G G
BACK OF CURB	
EASEMENT	
EDGE OF GRAVEL	
EDGE OF PAVEMENT	
PROPERTY LINE	
RIGHT OF WAY	
ROAD CENTER LINE	
100 YEAR FLOODPLAIN	100FP
DITCH ℄	
MAJOR CONTOUR	
MINOR CONTOUR	
RIPARIAN BUFFER ZONE 1	Z1
RIPARIAN BUFFER ZONE 2	Z2
TOP OF BANK	
TREELINE	
WATERCOURSE ℄	
WETLAND BOUNDARY	WLB

4 PROPOSED SYMBOL LEGEND

DESCRIPTION	SYMBOL
11.25° HORIZONTAL BEND	
22.50° HORIZONTAL BEND	
45° HORIZONTAL BEND	
90° HORIZONTAL BEND	
VERTICAL BEND	
AIR RELEASE VALVE	A
VALVE	
BLOWOFF VALVE	
HYDRANT	
YARD HYDRANT	
CROSS	
TEE	
TAPPING SLEEVE AND VALVE	
REDUCER	
CAP/PLUG	
POTABLE WATER SERVICE METER	
RECLAIMED WATER SERVICE METER	
EXISTING UTILITY SERVICE RECONNECTION	
CONCENTRIC SANITARY SEWER MANHOLE	
ECCENTRIC SANITARY SEWER MANHOLE	
FLAT TOP SANITARY SEWER MANHOLE	
CLEAN OUT	
ARC FILTER	
CHECK DAM	
INLET PROTECTION	
PIPE INLET PROTECTION	
SILT FENCE OUTLET	
WATTLE	

5 PROPOSED LINE LEGEND

DESCRIPTION	LINETYPE
PERMANENT EASEMENT	
TEMPORARY EASEMENT	
SANITARY SEWER FORCE MAIN	FM
RECLAIMED WATER LINE	R
GRAVITY SANITARY SEWER	SS
WATER LINE	W
TO BE ABANDONED	
DIVERSION DITCH	
LIMITS OF DISTURBANCE/CLEARING LIMITS	LOD
COMBINATION SILT FENCE/TREE PROTECTION	CSF
TEMPORARY SILT FENCE	SF
TEMPORARY SUPER SILT FENCE	SSF
TEMPORARY TREE PROTECTION FENCE	TPF
COMPOST SOCK	CS
PERMANENT FENCE	x x
GUARD RAIL	G G

6 PROFILE LINE LEGEND

DESCRIPTION	LINETYPE
EXISTING GRADE PAVEMENT PROFILE	
EXISTING GRADE GROUND PROFILE	
PROPOSED GRADE PROFILE	
THEORETICAL 1:1 SLOPE	
WETLAND CROSSING	

7 AREA LEGEND

WETLANDS	
RIP-RAP	
TEMP. SLOPE STABILIZATION	
STRAW WITH NET LINER	

8 PROCESS ABBREVIATIONS

A	PROCESS AIR
ALUM	WTP ALUM SLUDGE
AS	ACTIVATED SLUDGE
BW	BACKWASH
BWD	BACKWASH DRAIN
BWS	BACK WASH SUPPLY
BWW	BACK WASH WASTE
D	DRAIN
EXP	EXPANSION
FA	FOUL AIR
FE	FINAL EFFLUENT
FI	FILTER INFLUENT
FFM	FILTRATE FORCE MAIN
FTD	FILTER DRAIN
FTE	FILTER EFFLUENT
GR	GRIT
GV	GATE VALVE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IFM	INFLUENT FORCE MAIN
ML	MIXED LIQUOR
NAOCL	SODIUM HYPOCHLORITE
NAOH	SODIUM HYDROXIDE (CAUSTIC SODA)
NG	NATURAL GAS
NPW	NON-POTABLE WATER
NRCY	NITRIFIED RECYCLE
PD	PROCESS DRAIN
PE	PRIMARY EFFLUENT
PS	PRIMARY SLUDGE
PTE	PRELIMINARY TREATMENT EFFLUENT
PTFE	POLYTETRAFLUOROETHYLENE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RW	RAW WASTEWATER
SBR	SEQUENCING BATCH REACTOR
SD	STORM DRAIN
SPD	SUMP PUMP DISCHARGE
SR	SCRUBBER RECIRCULATION
SRD	SCRUBBER RECIRCULATION DISCHARGE
SRP	SCRUBBER RECIRCULATION PUMP
SRS	SCRUBBER RECIRCULATION SUCTION
SUP	DIGESTER SUPERNATANT
SW	SEAL WATER
UV	ULTRAVIOLET
WAS	WASTE ACTIVATED SLUDGE

9 MECHANICAL SYMBOLS

VALVE SYMBOL	DESCRIPTION
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	PLUG VALVE
	BALL VALVE
	GLOBE VALVE

10 GENERAL NOTES

GENERAL NOTES:

1. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL LAYOUTS, DIMENSIONS AND ELEVATIONS ON THE PLANS WITH FINAL APPROVED EQUIPMENT DRAWINGS AS WELL AS ALL TECHNICAL SPECIFICATIONS PRIOR TO STARTING CONSTRUCTION AND SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEERS CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
2. THE CONTRACTOR SHALL COORDINATE ALL RELATED DISCIPLINE DRAWINGS TO ENSURE ACCURATE INSTALLATION OCCURS.
3. CONTRACTOR TO COORDINATE WITH HARRIS TEETER SUCH THAT CONSTRUCTION DOES NOT CONFLICT WITH DELIVERIES TO THE NEARBY LOADING DOCK. CONTRACTOR SHALL NOT BLOCK OR IMPEDE ACCESS/EGRESS TO THE HARRIS TEETER LOADING DOCK AT ANY TIME. CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES TO BE COORDINATED IN ADVANCE TO MINIMIZE CONFLICTS WITH TRAFFIC NEAR THE WORK AREA.

PUMP STATION GENERAL NOTES:

1. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL LAYOUTS, DIMENSIONS AND ELEVATIONS ON THE PLANS WITH FINAL APPROVED EQUIPMENT DRAWINGS AS WELL AS ALL TECHNICAL SPECIFICATIONS PRIOR TO STARTING CONSTRUCTION AND SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEERS CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
2. THE CONTRACTOR SHALL COORDINATE ALL RELATED DISCIPLINE DRAWINGS TO ENSURE ACCURATE INSTALLATION OCCURS, INCLUDING P&ID'S.
3. CONTRACTOR SHALL INSTALL HOSE RACKS, SPLASH PADS AND BOLLARDS AT ALL YARD HYDRANT LOCATIONS. SPLASH PADS SHALL BE 3'x3'x6". REFERENCE DETAILS FOR ADDITIONAL INFORMATION.
4. CONTRACTOR SHALL MAINTAIN A CLEAR PATH FOR ALL SURFACE WATER DRAINAGE STRUCTURES AND DITCHES DURING CONSTRUCTION.
5. ALL PIPE LINES SHALL HAVE A MINIMUM COVER OF 36" UNLESS OTHERWISE NOTED OR DIRECTED.
6. HEAT TRACE AND INSULATE ALL EXPOSED PIPING ABOVE GRADE, 6" OR SMALLER AND ANY PIPING THAT MAY BE SUBJECT TO FREEZING.
7. NOTE; ALL VAULTS, MANHOLES, INLET STRUCTURES, BASINS, WET WELLS ETC. SHALL BE CONSIDERED "CONFINED SPACE ENTRY" AND SHALL BE MARKED AS SUCH BY MEANS OF STAMPING MANHOLE COVERS AND PLACING PERMANENT SIGNAGE ON THE VAULTS, BASINS OR STRUCTURES WARNING OF THE "CONFINED SPACE ENTRY" CONDITION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PIPE SUPPORTS WHETHER SHOWN ON THE CONTRACT DOCUMENTS OR NOT. PIPE SUPPORTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR SPACING AND SUPPORT. ADDITIONALLY, PROVIDE SUPPORT WHERE ABOVE GRADE PIPING CHANGES DIRECTION, IS ADJACENT TO FLANGED VALVES OR OTHER APPURTENANCES OR AT EQUIPMENT CONNECTIONS AND HEAVY FITTINGS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR LOW POINT DRAINS AND HIGH POINT VENTS.
10. CONTRACTOR SHALL SLOPE GRAVITY LINES AS INDICATED ON THE DRAWINGS OF IF NOT INDICATED ON THE DRAWINGS SLOPE SHALL BE AT POSITIVE GRADE PER 14A OF NCAC 2T (MIN.) TO FACILITATE THE INTENDED DRAINAGE BETWEEN STRUCTURES. CONTRACTOR SHALL CONFIRM ALL INVERTS PRIOR TO STARTING CONSTRUCTION.
11. CONTRACTOR SHALL RESTRAIN ALL UNDERGROUND PRESSURE PIPING AT ALL FITTINGS AND PIPE JOINTS.
12. CONTRACTOR SHALL COORDINATE YARD HYDRANT LOCATION WITH OWNER. PROVIDE HOSE RACK AND SPLASH PADS AT EACH LOCATION.

EXISTING UTILITIES:

1. UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN MADE AVAILABLE FROM VARIOUS ENTITIES THAT MAY INCLUDE UTILITY OWNERS, SURVEY RECORD DRAWINGS AND OTHERS. THIS INFORMATION MAY NOT BE ALL-INCLUSIVE AND THE CONTRACTOR IS ADVISED THAT ADDITIONAL UNDERGROUND UTILITIES AND CABLES MAY EXIST. INVESTIGATION MAY BE NECESSARY PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ALL POTENTIAL CONFLICTS.
2. THE CONTRACTOR SHALL FIELD VERIFY SIZE, DEPTH, LOCATION AND MATERIAL OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL CAREFULLY SUPPORT AND PROTECT ANY UTILITIES, STRUCTURES, POWER POLES, PIPE LINES AND CONDUITS WHICH MAY BE ENCOUNTERED DURING COMPLETION OF THE WORK AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL APPLY NECESSARY MEANS TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION . ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR OR UTILITY OWNER (WHERE REQUIRED) TO THE SATISFACTION OF THE ENGINEER AND UTILITY OWNER AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL TAKE STEPS NECESSARY TO PROTECT EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. MUCH OF THE CONSTRUCTION WILL OCCUR PARALLEL TO THE EXISTING UTILITIES. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL DAMAGED UTILITIES, SPILLS, CONTAMINATIONS, CLEANUP, VIOLATIONS, FINES, ETC. CAUSED BY CONSTRUCTION OF THIS PROJECT.

11 PIPING SCHEDULE

ABBREVIATION	DESIGNATION	PIPE MATERIAL	NOTES
INF	INFLUENT	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK
EFF	EFFLUENT	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK, PROVIDE PIPE WITH PROTECTIVE LINING - ENTIRE NETWORK
D or SS	DRAIN OR SANITARY SEWER	DUCTILE IRON / SCH. 80 PVC	>=4" DIP / <=3" SCH. 80 PVC SOLVENT WELD, RESTRAIN ALL FITTINGS
FM	FORCE MAIN	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK
NPW	NON-POTABLE WATER	RESTRAINED DUCTILE IRON / SCH. 80 PVC	>=4" DIP / <=3" SCH. 80 PVC SOLVENT WELD, RESTRAIN ENTIRE NETWORK
A	PROCESS AIR	SCH. 10 304 STAINLESS STEEL	
SL	SLUDGE	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK
SC	SCUM	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK
PW	POTABLE WATER	RESTRAINED DUCTILE IRON / SCH. 80 PVC	>=4" DIP / <=3" SCH. 80 PVC SOLVENT WELD, RESTRAIN ENTIRE NETWORK
FA	FOUL AIR	SCH. 80 PVC / FRP	FRP ABOVE GRADE SCH. 80 PVC BELOW GRADE
ATAD	ATAD SUPPLY & DISCHARGE	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK
PE	PLANT EFFLUENT	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK, PROVIDE PIPE CONNECTING NEW EQ TANK w/ EXISTING EQ BASIN AND (NEW AND EXISTING) BIODENOPHO DITCHES WITH PROTECTIVE LINING
RAS/WAS	WASTE/RETURN ACTIVATED SLUDGE	RESTRAINED DUCTILE IRON	RESTRAIN ENTIRE NETWORK

12 CROSS-REF SYMBOLOGY

X.XXX.X = SECTION CUT SYMBOL

X.XXX.X = STRUCTURE / BUILDING ELEVATION

X.XXX.X = DETAIL

RECORD DOCUMENT – DISCLAIMER

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REV.NO.	DESCRIPTION	DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

REVISIONS

RECORD DRAWING

NORTH CAROLINA PROFESSIONAL SEAL 049985 11/20/2023 ENGINEER JOSEPH LAWDANSKI

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

GENERAL

CIVIL - MECHANICAL LEAD SHEET

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	KJS
CHECKED	KJS
PROJ. MGR.	KJS

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

G00.1
DRAWING NUMBER
1
REVISION

STATUS: REVISED AFTER CONSTRUCTION



PLAN VIEW

HORIZ. SCALE: 1"=5'

5' 0 5' 10'

SCALE: 1"=5' (Horiz.)

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	RECORD DRAWING	
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REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 040985 ENGINEER JOSEPH LAWDANSKI 11-22-23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

CIVIL SITE

EXISTING SITE PLAN

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	KJS
CHECKED	KJS
PROJ. MGR.	KJS

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

C00.0
DRAWING NUMBER
1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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DEMOLITION NOTES:

1. WET WELL / PUMP STATION
   - 1.1. REMOVE WET WELL TOP SLAB AND HATCH. WET WELL STRUCTURE TO REMAIN
   - 1.2. REMOVE PUMPS, PUMP CONTROL PANEL, AND APPURTENANCES
   - 1.3. REMOVE FIBERGLASS PUMP ENCLOSURE, VALVES AND PIPING

2. CONTAINMENT PAD/CONTAINMENT AREA
   - 2.1. SAW CUT AND REMOVE PERIMETER WALL OF THE CONCRETE CONTAINMENT AREA SUCH THAT IT PROJECTS NO MORE THAN 1/2" ABOVE THE FLOOR SLAB.
   - 2.2. FLOOR SLAB TO REMAIN AND BE PROTECTED DURING CONSTRUCTION.
   - 2.3. REMOVE EXISTING CONDUIT, JUNCTION BOXES AND ASSOCIATED WIRING MOUNTED TO THE WALL. DE-TERMINATE WIRING AT POWER PANEL, CUT/CAP CONDUIT 12" BELOW GRADE.
3. ATS AND ATS CONCRETE PAD
   - 3.1. TO REMAIN IN SERVICE

4. GENERATOR PAD AND GENERATOR
   - 4.1. TO REMAIN IN SERVICE

5. 8' WOODEN FENCE & GATE
   - 5.1. TO REMAIN. SEE BID ALLOWANCE FOR REPLACEMENT UPON OWNER REQUEST

6. DISCHARGE FORCE MAIN AND EMERGENCY PUMP CONNECTION AND VALVE
   - 6.1. EXISTING FORCE MAIN TO REMAIN IN SERVICE.
   - 6.2. EXISTING EMERGENCY PUMP CONNECTION TO BE REMOVED IN IT'S ENTIRETY. EXISTING EMERGENCY PUMP CONNECTION VALVE AND TEE TO BE REMOVED.

7. ELECTRICAL PANELS, AREA LIGHT AND INSTRUMENTATION
   - 7.1. TO REMAIN IN SERVICE
   - 7.2. EX. TRANSFORMER AND TRANSFORMER PAD OUTSIDE OF PUMP STATION FENCE TO REMAIN IN SERVICE.
   - 7.3. EXISTING COMMUNICATION ENCLOSURE TO REMAIN. SEE DIVISION 17 SPECIFICATIONS FOR UPGRADES TO THE SCADA COMMUNICATION SYSTEM.

8. EX. WATER SERVICE, WATER METER AND YARD HYDRANT
   - 8.1. EX. WATER SERVICE AND WATER METER TO REMAIN
   - 8.2. YARD HYDRANT TO REMAIN. YARD HYDRANT CAN BE TEMPORARILY REMOVED FOR CONSTRUCTION BUT IS TO BE REINSTALLED PER OWASA STANDARD DETAIL 539.04,

9. EX. CONC. DRIVEWAY AND ASPHALT DRIVEWAY
   - 9.1. PROTECT EX. ASPHALT DRIVEWAY, CONCRETE DRIVEWAY, CONCRETE CURB AND GUTTER AND STORM DRAINAGE; ANY DAMAGE IS TO BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER

PLAN VIEW
HORIZ. SCALE: 1"=5'

5' 0 5' 10'
SCALE: 1"=5' (Horiz.)

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RECORD DRAWING

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049985 ENGINEER JOSEPH LAWDANSKI 11/20/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

CIVIL SITE

SITE DEMOLITION PLAN

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	JKS
CHECKED	KJS
PROJ. MGR.	KJS

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

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1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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CONSTRUCTION NOTES:

1. WET WELL MODIFICATIONS AND REHABILITATION
   - 1.1. INSTALL NEW WET WELL TOP SLAB WITH OPENING SIZE PER REQUIREMENTS OF THE VACUUM PRIMED PUMP PACKAGE MANUFACTURER. INSTALL NEW WET WELL TOP SLAB AND RISER SECTION PRIOR TO REHABILITATING EXISTING WET WELL.
   - 1.2. INSTALL NEW VACUUM PRIMED PUMP PACKAGE (REF. SHEET M00.0 FOR ADDITIONAL DETAILS)
   - 1.3. REHABILIATE EXISTING WET WELL (REF. SHEET S01.0 FOR ADDITIONAL DETAILS)
2. CONSTRUCTION SEQUENCE
   - 2.1. REFERENCE SPECIFICATION SECTION 01 10 10 - MAINTENANCE OF FACILITY OPERATIONS DURING CONSTRUCTION FOR INFORMATION RELATED TO CONSTRUCTION SEQUENCE AND OPERATIONAL REQUIREMENTS.
   - 2.2. REFERENCE SPECIFICATION SECTION 02 07 10 - TEMPORARY BYPASS PUMPING FOR INFORMATION RELATED TO BYPASS PUMPING REQUIREMENTS.
3. PIPING
   - 3.1. ALL YARD PIPING TO BE 401 LINED DIP WITH RESTRAINED MECHANICAL JOINT DI FITTINGS WITH CONCRETE BLOCKING. FLG x PE PIPE TO BE 401-LINED WITH MANUFACTURER'S STANDARD ASPHALTIC COATING.
   - 3.2. ALL RESTRAINT GLANDS, COUPLINGS AND FLANGE PACKS TO BE PROVIDED WITH STAINLESS STEEL HARDWARE, NUTS & BOLTS.
4. RESTORATION
   - 4.1. ALL DISTURBED AREA WITHIN EXISTING PERIMETER FENCE TO BE RESTORED WITH WASHED STONE (MIN. 4" THICKNESS), TO MATCH EXISTING.
   - 4.2. ALL DISTURBED AREA BEYOND THE EXISTING PERIMETER FENCE TO BE RESTORED TO MATCH EXISTING, INCLUDING LANDSCAPE AND HARDSCAPE AREAS. ALL TURF AREAS TO BE RESTORED WITH SEED/MULCH PER OWASA STANDARD SPECIFICATIONS.

PLAN VIEW
HORIZ. SCALE: 1"=5'

5' 0 5' 10'
SCALE: 1"=5' (Horiz.)

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	RECORD DRAWING	
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REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049985 JOSEPH LAWDANSKI 11/14/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

CIVIL SITE

PROPOSED SITE PLAN

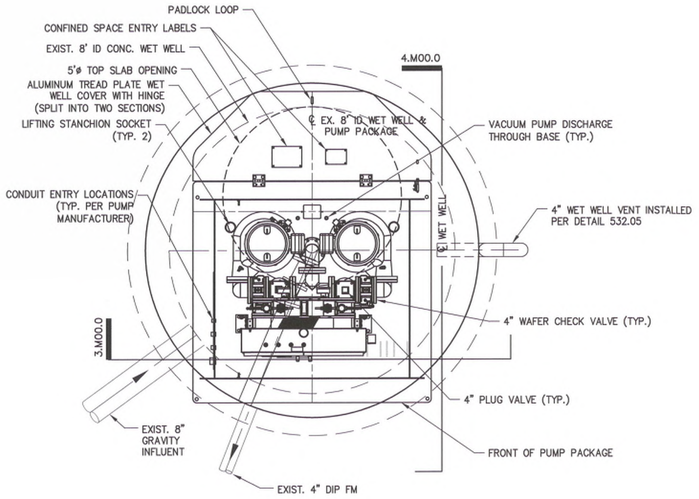
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	KJS
CHECKED	KJS
PROJ. MGR.	KJS

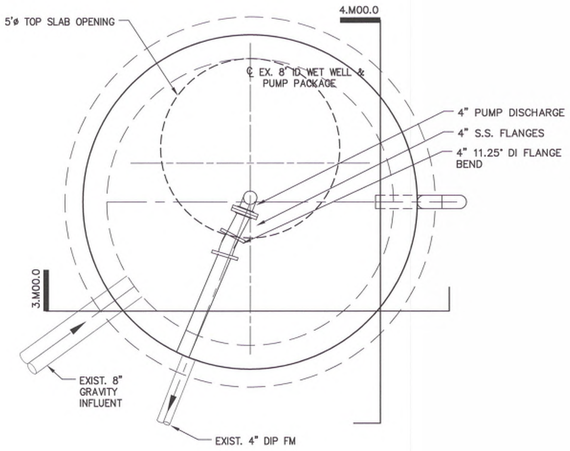
SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

C00.2
DRAWING NUMBER
1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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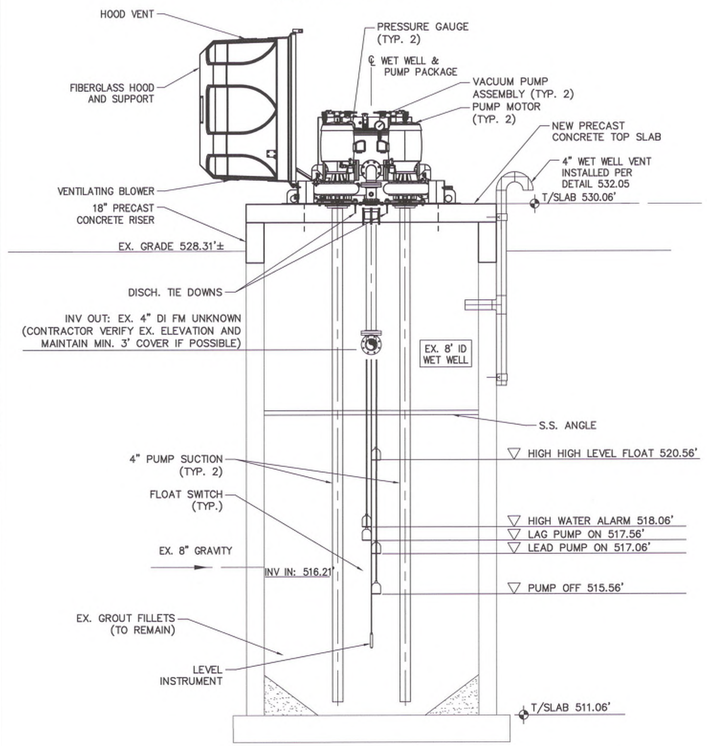
NOTES:

1. NEW PUMP DISCHARGE PIPING TO BE SCHEDULE 40 STAINLESS STEEL (304 OR 316).
2. NEW PUMP SUCTION PIPING TO BE SCHEDULE 10 STAINLESS STEEL (304 OR 316).
3. ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. TO BE STAINLESS STEEL (304 OR 316).
4. REFERENCE "S" SHEETS FOR WET WELL REHABILITATION REQUIREMENTS.

PUMP DESIGN DATA	
PUMP STYLE	VACUUM PRIMED - VERTICAL
PUMP MODEL	4C3B (S&L)
PUMP SIZE	4"x4"
PUMP CAPACITY	220 GPM
TDH	138 FEET
MOTOR SIZE	25 HP
MOTOR SPEED	1800 RPM
ELECTRICAL	460 VOLTS

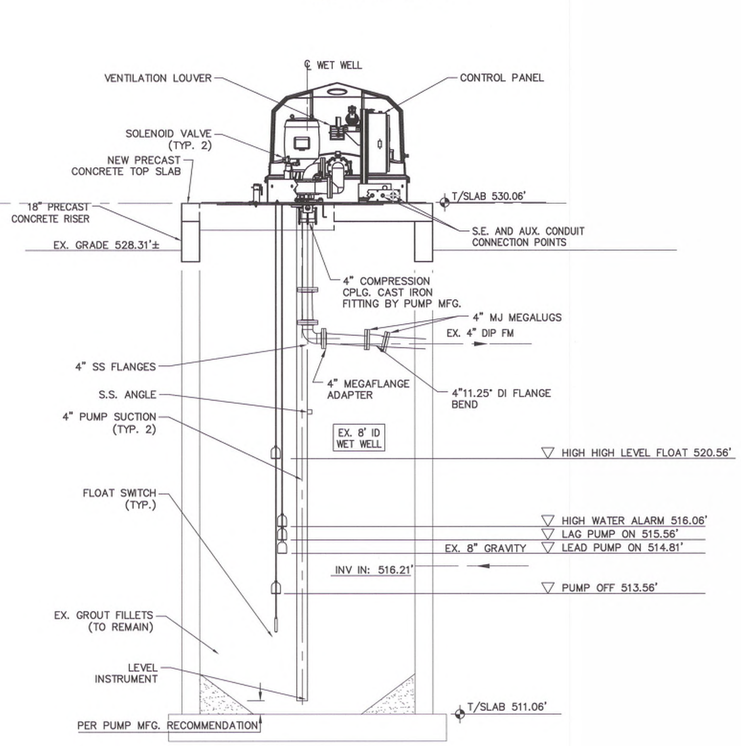
1 - TOP PLAN w/o HOOD

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



2 - PLAN BELOW TOP SLAB

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



3 - SECTION

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

4 - SECTION

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

RECORD DOCUMENT – DISCLAIMER

THESE RECORD DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE CONSULTANT (MCKIM & CREED, INC.) HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED AS A RESULT OF ERRONEOUS INFORMATION PROVIDED BY OTHERS.

REV.NO.	DESCRIPTION	DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

RECORD DRAWING

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 042985 ENGINEER JOSEPH LAWDANSKI 11/20/23

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www.mckimcreed.com

OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

MECHANICAL

PUMP STATION PLAN AND SECTIONS

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	KJS
CHECKED	KJS
PROJ. MGR.	KJS

SCALE: HORIZONTAL: AS NOTED; VERTICAL: N/A

M00.0 — DRAWING NUMBER

1 — REVISION

STATUS: REVISED AFTER CONSTRUCTION

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1 GENERAL NOTES

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, 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.

1.4 THE STRUCTURE(S) HAS / HAVE BEEN DESIGNED IN ACCORDANCE w/ THE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE, 2018 EDITION.

2 COORDINATION

2.1 STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH & COORDINATED w/ CIVIL, ELECTRICAL, MECHANICAL & DETAIL DRAWINGS, VENDOR SUBMITTAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.2 COORDINATE THE EXACT SIZE AND LOCATION OF ALL SLEEVES AND OPENINGS THROUGH WALLS AND / OR CONCRETE SLABS w/ CIVIL, ELECTRICAL, MECHANICAL & DETAIL DRAWINGS, VENDOR SUBMITTAL 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, INCLUDING ORDERING AND FABRICATING MATERIALS.

2.4 INDEPENDENT TESTING / REVIEW OF MATERIALS SHALL BE PROVIDED AS DEFINED IN PROJECT SPECIFICATIONS IF APPLICABLE. IN GENERAL PROJECT INVOLVES THE FOLLOWING:
A. N/A.

2.5 IF COORDINATION OF INFORMATION PRESENTED CONFLICTS w/ THE PROJECT SPECIFICATIONS, THE DRAWINGS WILL TAKE PRECEDENCE.

2.6 IN GENERAL CALL-OUTS ARE FOR NEW CONSTRUCTION U.N.O.. EXISTING CONSTRUCTION CALL-OUTS, ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURES ARE BASED ON EXISTING RECORD DRAWINGS PROVIDED TO McKIM & CREED. THE (*) SYMBOL ON INDIVIDUAL FACILITY "STRUCTURAL" DRAWINGS INDICATES EXISTING CONSTRUCTION CALL-OUTS, CONDITIONS, ELEVATIONS AND DIMENSIONS TO BE FIELD VERIFIED BY THE GENERAL CONTRACTOR U.N.O. PRIOR TO CONSTRUCTION, INCLUDING ORDERING AND FABRICATING MATERIALS. RECORD DRAWINGS PROVIDED BY ORANGE WATER & SEWER AUTHORITY, INCLUDES:
A. NONE.

2.7 SPECIAL INSPECTIONS (IF APPLICABLE): PRE-CAST REINFORCED CONCRETE WORK SHALL BE REVIEWED AS STATED IN CONJUNCTION w/ THEIR RESPECTIVE NOTES BELOW, CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE AND THE PROJECT SPECIAL INSPECTIONS STATEMENT IN THE PROJECT SPECIFICATIONS.

3 FOUNDATIONS

NOT APPLICABLE.

4 REINFORCING STEEL

NOT APPLICABLE.

5 CONCRETE

NOT APPLICABLE.

6 GROUT

6.1 GROUT WHERE REQUIRED SHALL BE NON-SHRINK GROUT IN CONFORMANCE TO ASTM C1107.

6.2 GROUT SHALL BE NON-METALLIC AND NON-STAINING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.

7 MASONRY

NOT APPLICABLE.

8 STRUCTURAL STEEL

NOT APPLICABLE.

9 ALUMINUM

NOT APPLICABLE.

10 PRECAST CONCRETE

10.1 PRE-CAST CONCRETE FIELD ASSEMBLED STRUCTURES & COMPONENTS OF STRUCTURES TO BE DESIGNED BY THE PRE-CAST MANUFACTURER UTILIZING "DESIGN LOADS" PROVIDED ON THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS. COORDINATE w/ THE CIVIL, ELECTRICAL, MECHANICAL, DETAIL AND VENDOR EQUIPMENT DRAWINGS FOR ADDITIONAL MATERIALS REQUIRED FOR CALCULATION OF THE DEAD LOADS, LIVE LOADS AND EQUIPMENT LOADS, THAT MAY BE SUSPENDED FROM THE SIDE WALLS AND UNDERSIDE OF THE TOP SLAB.

10.2. PRE-CAST CONCRETE FIELD ASSEMBLED STRUCTURES MANUFACTURER IS REQUIRED TO SUBMIT DRAWINGS AND CALCULATION PACKAGES SEALED, SIGNED AND DATED BY AN ENGINEER CURRENTLY LICENSED BY THE STATE OF NORTH CAROLINA. FABRICATION OF THE PRE-CAST FIELD ASSEMBLED STRUCTURE COMPONENTS SHOULD NOT OCCUR UNTIL "FINAL" APPROVAL OF THE MANUFACTURER's DRAWINGS AND CALCULATIONS SUBMITTALS.

10.3 REFERENCE MECHANICAL & STRUCTURAL DRAWINGS FOR PRE-CAST CONCRETE FIELD ASSEMBLED STRUCTURES FOUNDATION SYSTEMS AND BEARING ELEVATIONS, DIMENSIONS, WALL AND SLAB PIPE PENETRATIONS, ACCESS HATCH OPENING's, & PIPE / EQUIPMENT SUPPORT REQUIREMENTS.

10.4 REFERENCE PROJECT SPECIFICATIONS FOR ALL INTERIOR AND EXTERIOR SLAB SURFACE FINISH REQUIREMENTS.

10.5 PRE-CAST FIELD ASSEMBLED STRUCTURES WALL AND SLAB ASSEMBLIES TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5,000 PSI U.N.O. BY THE PRE-CAST CONCRETE FIELD ASSEMBLED STRUCTURES MANUFACTURER.

10.6 REFERENCE ALL PROJECT SPECIFICATIONS RELATED TO THE PRE-CAST CONCRETE FIELD ASSEMBLED STRUCTURES FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

10.7 CONSTRUCTION ACTIVITIES RELATED TO THE PRE-CAST FIELD ASSEMBLED STRUCTURES TO BE REVIEWED BY THE THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE CONSTRUCTION OF THE PROJECT. THESE REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE AND "COORDINATION" NOTE 2.7 ABOVE.

11 PRE-ENGR. TIMBER TRUSS

NOT APPLICABLE.

12 PRE-ENGR. METAL BLDGS.

NOT APPLICABLE.

13 MISC. BUILDING MATERIALS

13.1 ALL MISCELLANEOUS MATERIALS ARE TO BE DELIVERED TO SITE & STAGED ON SITE PRIOR TO INSTALLATION. STORE ON SITE AS REQUIRED BY THE MATERIAL MANUFACTURER TO AVOID DAMAGE PRIOR TO INSTALLATION.

14 ABBREVIATIONS

14.1 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
AL.	=	ALUMINUM
ALT.	=	ALTERNATE
BLDG.	=	BUILDING
BLK.	=	BLOCK
BM.	=	BEAM
B.O.	=	BOTTOM OF
BRG.	=	BEARING
C.I.P.	=	CAST-IN-PLACE
CLR.	=	CLEAR
CMU	=	CONC. MAS. UNIT
C.O.	=	CLEAN OUT
COL.	=	COLUMN
CONC.	=	CONCRETE
CONN.	=	CONNECTION
CONST.	=	CONSTRUCTION
CONT.	=	CONTINUOUS
COORD.	=	COORDINATE
CTR.	=	CENTER
CTR'D.	=	CENTERED
DBL.	=	DOUBLE
DIR.	=	DIRECTION
DWG.	=	DRAWING
DWG.'s.	=	DRAWINGS
EA.	=	EACH
EL.	=	ELEVATION
E.O.	=	EDGE OF
EQ.	=	EQUAL
EQUIP.	=	EQUIPMENT
EXIST.	=	EXISTING
EXP.	=	EXPANSION
FLG.	=	FLANGE
FDN.	=	FOUNDATION
F.S.	=	FAR SIDE
FT.	=	FEET
FTG.	=	FOOTING
GA.	=	GAGE
GALV.	=	GALVANIZED
GALV'D	=	GALVANIZED
HORZ.	=	HORIZONTAL
H.P.	=	HIGH POINT
HRS.	=	HOURS
I/F	=	INSIDE FACE
INFO.	=	INFORMATION
INTR.	=	INTERIOR
JST.	=	JOIST
JT.	=	JOINT
KB	=	KNEE BRACE
LCS	=	LIQUID CONTAINMENT STRUCTURES
LLH	=	LONG LEG HORIZONTAL
LLV	=	LONG LEG VERTICAL
L.P.	=	LOW POINT
LSL	=	LONG SLOTTED
MAS.	=	MASONRY
MATL.	=	MATERIAL
MFG.	=	MANUFACTURER
MIN.	=	MINIMUM
MTL.	=	METAL
N/A	=	NOT APPLICABLE
NA	=	NOT APPLICABLE
NOM.	=	NOMINAL
N.S.	=	NEAR SIDE
N.T.S.	=	NOT TO SCALE
O.C.	=	ON CENTER
O/F	=	OUTSIDE FACE
O/H	=	OVERHANG
O/O	=	OUT TO OUT
OPNG.	=	OPENING
OPP.	=	OPPOSITE
ORIENT.	=	ORIENTATION
PLCS.	=	PLACES
P.P.	=	PUMP PAD
RAD.	=	RADIUS
REF.	=	REFERENCE
REINF.	=	REINFORCING
REQ'D.	=	REQUIRED
RET.	=	RETAINING
ROT.	=	ROTATE
SIM.	=	SIMILAR
SPA.	=	SPACED
SPECS.	=	SPECIFICATIONS
S.S.	=	STAINLESS STEEL
SSL	=	SHORT SLOTTED
STD.	=	STANDARD
STL.	=	STEEL
T&B	=	TOP & BOTTOM
T/D	=	TURN DOWN
THK.	=	THICK
THK'D	=	THICKENED
T.O.	=	TOP OF
T.O.S	=	TOP OF STEEL
TYP.	=	TYPICAL
U.N.O.	=	UNLESS NOTED OTHERWISE
XB	=	CROSS OR "X"-BRACE
VERT.	=	VERTICAL
W.P.	=	WORK POINT

15 DESIGN LOADS

DESIGN LOADS BASIS OF DESIGN:
NORTH CAROLINA STATE BUILDING CODE 2018 (INTERNATIONAL BUILDING CODE (IBC) 2015 w/ NC AMENDMENTS) & ASCE 7-10 FOR WIND & SEISMIC DESIGN

EQUIP. LOAD: N/A
LIVE LOAD: REF. PROJECT SPECIFICATIONS
ROOF LOAD: N/A
SNOW LOAD: N/A
WIND LOAD: N/A

CALCULATED WIND BASE SHEARS:
Vx & Vy = N/A

COMPONENTS & CLADDING WIND PRESSURES:
ZONE 1, ZONE 2 & ZONE 3 ROOF PRESSURES = N/A
ZONE 4 & ZONE 5 WALL PRESSURES = N/A

SEISMIC:
SEISMIC DESIGN PARAMETERS:
RESPONSE MODIFICATION COEFFICIENT ..... R = PER PRE-CAST MFG.
SPECTRAL RESPONSE ACCELERATION ..... SHORT PERIOD S(DS) = 16.6%
SPECTRAL RESPONSE ACCELERATION ..... 1 SECOND PERIOD S(D1) = 12.4%
SEISMIC OCCUPANCY CATEGORY ..... = III
SITE CLASS ..... = D
SEISMIC DESIGN CATEGORY ..... SDC = B
IMPORTANCE FACTOR ..... Ie = 1.25

BASIC STRUCTURAL SYSTEM BUILDING / NON-BUILDING TYPE STRUCTURE:
PER PRE-CAST MFG.

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE (TO BE VERIFIED BY PRE-CAST MFG.)

SEISMIC BASE SHEAR:
Vx = Vy = PER PRE-CAST MFG.

** NOTE: REF. INDIVIDUAL BLDG. / FACILITY STRUCTURAL DWG.'s FOR ALL "VARIES" INFO

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED?: Y

SOIL BEARING: FIELD TEST PER PROJECT GEOTECH REPORT = 4,000 PSF
REF. PROJECT SPECIFICATIONS & PROJECT GEOTECHNICAL REPORT

16 DESIGN CRITERIA

CONCRETE 28 DAY COMPRESSIVE STRENGTH:	
SLABS-ON-GRADE & NON LCS SLABS	f'c = 4,000 PSI ... N/A
PIPE ENCASEMENTS:	f'c = 3,000 PSI ... N/A
SLABS & WALLS OF LCS:	f'c = 4,500 PSI ... N/A
BEAMS & COLUMNS OF LCS:	f'c = 4,500 PSI ... N/A
NON-LCS FOOTINGS, WALLS, COLUMNS & BEAMS:	f'c = 4,000 PSI ... N/A
BELOW GRADE & RETAINING WALLS:	f'c = 4,000 PSI ... N/A
SIDEWALK, DRIVEWAY, CURB & GUTTER:	f'c = 3,000 PSI ... N/A
REINFORCING STEEL:	ASTM A615, GRADE 60
WELDED WIRE FABRIC:	ASTM A1064 ... N/A
STRUCTURAL STEEL:	REF. STRUCT. NOTE 8.1 ... N/A
ALUMINUM:	REF. STRUCT. NOTE 9.2 ... N/A
BOLTS SHALL BE 3/4"Ø ASTM A325 OR TYPE 316 S.S.:	REF. STRUCT. NOTE 8.3 ... N/A
ANCHOR BOLTS SHALL BE 3/4"Ø ASTM F-1554 OR ASTM A36 (STEEL); TYPE 316 S.S. (ALUMINUM):	REF. STRUCT. NOTE 8.1 ... N/A
STEEL ELECTRODES SHALL CONFORM TO:	AWS 5.5 E70XX (REF. STRUCT. NOTE 8.4) ... N/A
ALUMINUM WELD FILLERS ALLOYS SHALL CONFORM TO:	AWS A5.10 (REF. STRUCTURAL NOTE 9.5) ... N/A
SOIL BEARING CAPACITY:	REF. "DESIGN LOADS" TABLE

17 LEGEND

ENLARGED PLAN AREA, DETAIL	=		
CONC. MASONRY BLOCK	=		(EXISTING)
BRICK VENEER	=		(EXISTING)
CONC. WALL, SLAB, ETC.	=		(EXISTING)
GROUT	=		(EXISTING)
GRATING	=		(EXISTING)
DETAIL OR SECTION NO./SHEET NO. REFERENCE	=	X-SYY.Y	X-SYY.Y
PROJECT NORTH	=	NORTH	
ELEVATION DATUM	=		
ELEVATION NO./SHEET NO. REFERENCE	=	X-SYY.Y	
ELEVATIONS X'-X" (Y.YY')	=	X'-X" = DISTANCE TO/FROM FACILITY REFERENCE EL 0'-0" Y.YY' = EQUIVALENT SITE EL VERTICAL DATUM	
STEP IN FOOTING ELEVATION	=	$	
STL. FRAMING COL./BM. MOMENT CONNECTION	=	▶	

RECORD DRAWING

RECORD DOCUMENT – DISCLAIMER
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REV.NO.		DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER ISAAC C. DOWLESS 11/20/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

STRUCTURAL

GENERAL NOTES, DESIGN LOADS, DESIGN CRITERIA & LEGEND

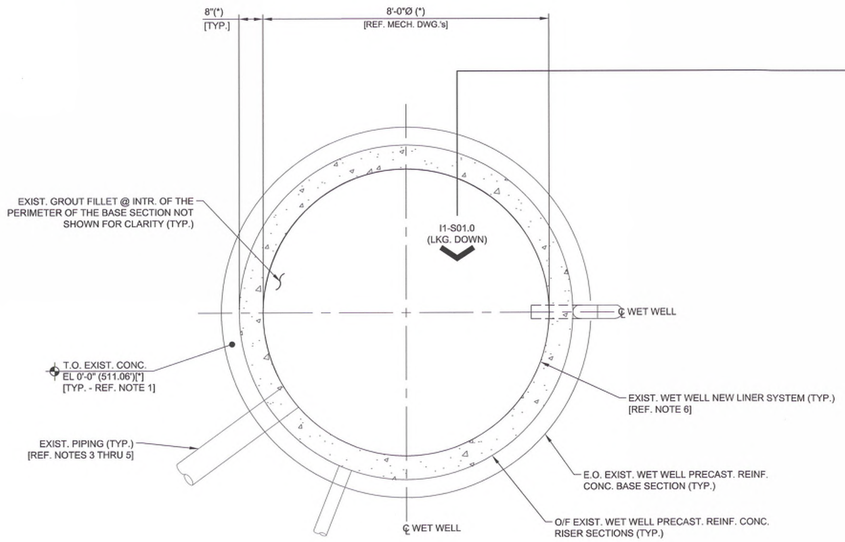
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	WFB
DESIGNED	WFB
CHECKED	WFB / AEA / KJS
PROJ. MGR.	KJS

SCALE
HORIZONTAL: NA
VERTICAL: NA

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DRAWING NUMBER
1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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1 - PLAN - EXIST. P.S. WET WELL LAYOUT & REHAB REQ.'s

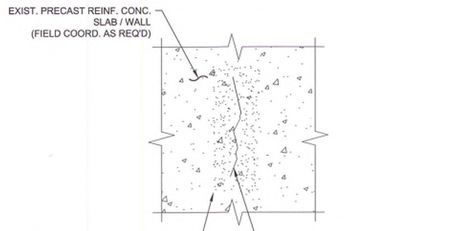
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NORTH



IMAGE I1-S01.0 DOWN

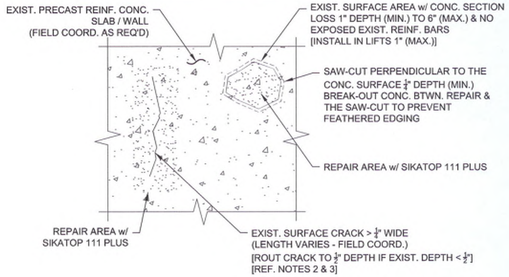
NOTE(S):
1. REFERENCE PROJECT SPECS. FOR ADDITIONAL INFORMATION.
2. CRACKS DO NOT EXHIBIT GROUND WATER LEAK FROM OUTSIDE THE WET WELL.
3. REF. DETAIL 4-S01.0 FOR CRACKS EXHIBITING WATER LEAK FROM OUTSIDE THE WET WELL.



2 - DETAIL - TYPE I CONC. REPAIR

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

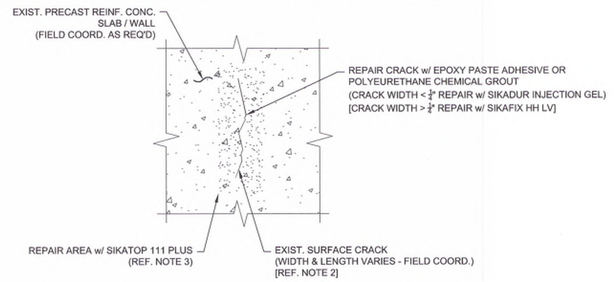
NOTE(S):
1. REFERENCE PROJECT SPECS. FOR ADDITIONAL INFORMATION.
2. CRACKS DO NOT EXHIBIT GROUND WATER LEAK FROM OUTSIDE THE WET WELL.
3. REF. DETAIL 4-S01.0 FOR CRACKS EXHIBITING WATER LEAK FROM OUTSIDE THE WET WELL.



3 - DETAIL - TYPE II CONC. REPAIR

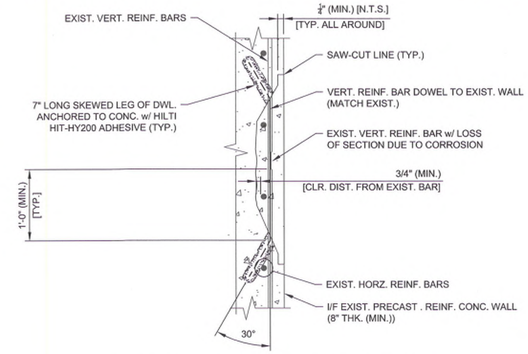
SCALE: 1/2" = 1'-0"

NOTE(S):
1. REFERENCE PROJECT SPECS. FOR ADDITIONAL INFORMATION.
2. CRACKS EXHIBIT GROUND WATER LEAK FROM OUTSIDE THE WET WELL.
3. REPAIR CRACK TO DRY CONDITION PRIOR TO INSTALLING REPAIR MORTAR.



4 - DETAIL - TYPE III CONC. REPAIR

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



5 - DETAIL - TYPE IV CONC. REPAIR

SCALE: 1" = 1'-0"

WET WELL REHAB PLAN NOTES:

1. REFERENCE ELEVATION FOR THE PUMP STATION's EXISTING WET WELL FACILITY IS THE EXISTING BASE SECTION T.O. CONC. EL 0'-0" = 511'-0 3/8" (511.06') N.A.V.D.-88. REFERENCE MECH. DWG.'s FOR ADDITIONAL INFORMATION.
2. GRADE ELEVATION AROUND THIS STRUCTURE IS 528.25'(±). REFERENCE CIVIL DRAWING's FOR ADDITIONAL INFORMATION.
3. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFORMATION ONLY. REFERENCE CIVIL, ELECTRICAL, MECHANICAL & EQUIPMENT VENDOR DRAWINGS AS REQUIRED, FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
4. CONTRACTOR TO NOTE NOT ALL EQUIPMENT & PIPING / CONDUIT MAY BE SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ ELECTRICAL, MECHANICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING, CONDUIT & MISCELLANEOUS EQUIPMENT EITHER SHOWN OR NOT SHOWN THIS PLAN.
5. REFERENCE CIVIL, ELECTRICAL, MECHANICAL & EQUIPMENT VENDOR DRAWINGS FOR LOCATIONS & INFORMATION REGARDING WALL PENETRATIONS FOR PIPING & CONDUIT ROUTING REQUIREMENTS EITHER SHOWN OR NOT SHOWN.
6. IN GENERAL REHABILITATION OF THE INTERIOR OF THE EXISTING WET WELL INCLUDES REMOVING EXISTING EQUIPMENT TO BE REPLACED, CLEANING THE INTERIOR, REPAIRING CONCRETE DEFECTS TO MITIGATE POTENTIAL LEAKS & INSTALLATION OF A NEW LINER SYSTEM. REGARDING THE WET WELL REHAB SYSTEM NOTE THE FOLLOWING:
   a.) COORDINATE w/ ELECTR. & MECH. DWG.'s FOR EXISTING PIPING AND EQUIPMENT REQUIRING REPAIR, REMOVAL AND / OR REPLACEMENT.
   b.) CLEAN THE STRUCTURE INTERIOR TO THE BASE CONCRETE OF THE T.O. EXIST. CONCRETE BASE SECTION & THE I/F OF THE EXIST. RISER SECTION WALLS. CLEANING SHALL INCLUDE REMOVAL OF ALL GRIT & SLUDGE FROM THE INTERIOR OF THE EXISTING WET WELL.
   c.) PREPARE THE INTERIOR EXISTING CONCRETE SURFACES TO REQ'D SURFACE PROFILES AS APPLICABLE.
   d.) CONCRETE TO BE REVIEWED AFTER DRAINED AND CLEANED DURING CONSTRUCTION. REPAIR EXISTING CONCRETE DEFECTS INCLUDING BUT NOT LIMITED TO CRACKS, BLISTERING, DELAMINATIONS, HOLES, HONEYCOMBING, PITTING, SCALING, SPALLS, VOIDS & EXPOSED REINFORCING AS APPLICABLE.
   e.) REPAIR EXISTING CONCRETE SURFACES THAT HAVE EXPERIENCED EXCESSIVE SECTION LOSS DUE TO HYDROGEN SULFIDE ATTACK OR OTHER CORROSIVE AGENTS.
   f.) INSTALL THE VARIOUS COMPONENTS OF THE NEW LINER SYSTEM. THE NEW LINER SYSTEM IS SPECTRASHIELD MFG. BY CCI SPECTRUM, INC.. THE LINER SYSTEM INCLUDES BUT NOT LIMITED TO THE FOLLOWING:
      1.) BARRIER LAYER = COAT w/ (2) COMPONENT 100% SOLID MODIFIED POLYUREA INSTALLED TO 40 MILS DFT (MIN.).
      2.) RESURFACING LAYER = COAT w/ POLYMERIC FOAM LAYER INSTALLED TO 400 MILS DFT (MIN.).
      3.) FINAL BARRIER LAYER = COAT w/ (2) COMPONENT 100% SOLID MODIFIED POLYUREA INSTALLED TO 60 MILS DFT (MIN.).
   g.) INSTALL ALL PRODUCTS IN ACCORDANCE w/ BUT NOT LIMITED TO MFG.'s REQUIREMENTS & RECOMMENDATIONS REGARDING SURFACE PREPARATION, MIXING, APPLICATION, EQUIPMENT SETTINGS, LIMITATIONS, SAFETY, CLEAN-UP & STORAGE.
7. REFERENCE DWG. S00.0 FOR ADDITIONAL STRUCTURAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA AND LEGEND.

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RECORD DRAWING

REV.NO.		DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049053 ENGINEER ISAAC C. DOWLESS 11/20/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

STRUCTURAL

EXIST. P.S. WET WELL REHAB PLAN, SECTIONS & DETAILS

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	WFB
DESIGNED	WFB
CHECKED	WFB / AEA / KJS
PROJ. MGR.	KJS

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S01.0
DRAWING NUMBER

1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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1 ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE UTILIZED FOR THIS PROJECT

A, AMP	AMMETER / AMPERE
ACV	AIR OPERATED CONTROL VALVE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AIT	ANALYTICAL INDICATION TRANSMITTER
AL	ALUMINUM
ARMS	ARC-FLASH REDUCTION SYSTEM
AS	AMMETER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
AQD	ARC QUENCHING DEVICE
BKR	BREAKER
BLDG	BUILDING
BV	BUTTERFLY VALVE
C	CONDUIT
CAB	CABINET
CB	CIRCUIT BREAKER
CBV	CABLE BY VENDOR, INSTALLED BY CONTRACTOR
CCTV	CLOSED CIRCUIT TELEVISION
CHH	COMMUNICATION HANDHOLE
CKT	CIRCUIT
CLG	CEILING
CL2	CHLORINE
CMH	COMMUNICATION MANHOLE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL STATION
CSH	DIAPHRAGM LEAK DETECTOR
CT	CURRENT TRANSFORMER
CTRL	CONTROL
CU	COPPER
CV	CONTROL VALVE
DB	DECIBEL
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DETD	DUAL ELEMENT TIME DELAY
DISC	DISCONNECT
DN	DOWN
DPDT	DOUBLE POLE DOUBLE THROW
DPSH	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH
DWG	DRAWING
EC	EMPTY CONDUIT
EF	EXHAUST FAN
EHH	ELECTRICAL HANDHOLE
EL, ELEV	ELEVATION
ELTU	ELECTRONIC TRIP UNIT
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPRF	EXPLOSION PROOF
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FIT	FLOW INDICATION TRANSMITTER
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLOUR	FLUORESCENT
FMC	FLEXIBLE METALLIC CONDUIT
FS	FLOW SWITCH
FT	FEET OR FOOT
FUT	FUTURE
FVNR	FULL VOLTAGE NON-REVERSING STARTER
FWE	FURNISHED WITH EQUIPMENT
G, GND	GROUND
GALV	GALVANIZED
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFIC	GROUND FAULT CIRCUIT INTERRUPTER
HDG	HOT DIPPED GALVANIZED
HH	HANDHOLE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HZ	HERTZ
ID	INTERIOR DIAMETER
IHH	INSTRUMENTATION HANDHOLE
IMC	INTERMEDIATE METALLIC CONDUIT (GALVANIZED)
IMH	INSTRUMENTATION MANHOLE
IMT	INTERMEDIATE METALLIC
IN	INCHES
ITB	INSTRUMENT TERMINAL BOX
JB	JUNCTION BOX
K	THOUSAND
KA	KILOVOLT AMPERE
KAIC	THOUSAND AMPERES INTERRUPTING CURRENT
KCMIL	THOUSAND CIRCULAR MILLS
KVA	THOUSAND VOLT AMPERES
KW	KILOWATTS
KWH	KILOWATT-HOURS
LA	LIGHTNING ARRESTOR
LCP	LOCAL CONTROL PANEL
LED	LIGHT-EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LIT	LEVEL INDICATION TRANSMITTER
LP	LIGHTING PANEL, LIGHT POLE
LS	LEVEL SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
M	MOTOR
MA	MILLIAMPERE
MB	MOTOR BEARINGDETECTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MS	MOISTURE SENSOR
MSB	MAIN SWITCHBOARD
MTD	MOUNTED/MOUNTING
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE - MOTOR VIBRATION DETECTOR
NA	NON-AUTOMATIC
N/A	NOT APPLICABLE
NC	NORMALLY CLOSE
NEC	NATIONAL ELECTRIC CODE
N, NEU	NEUTRAL
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OL	OVERLOAD RELAY
P	POLE
PA	PUBLIC ADDRESS
PB	PUSH BUTTON
P/B	PULL BOX
PCP	PUMP CONTROL PANEL
PF	POWER FACTOR
PFC	POWER FACTOR CORRECTION CAPACITORS
PFD	PULL FUSE DISCONNECT
ϕ, PH	PHASE
PIT	PRESSURE INDICATION TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PR	PAIR
PRI	PRIMARY
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PTZ	PAN-TILT-ZOOM
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RMC	RIGIDREMOTE TELEMETRY UNIT
R/S	RUN/STOP HAND SWITCH
RVSS	REDUCED VOLTAGE SOFT STARTER
SCCR	SHORT CIRCUIT CURRENT RATING
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SEC	SECONDARY
SP	SPARE
SPEC	SPECIFICATION
SPD	SURGE PROTECTION DEVICE
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
ST	SHUNT TRIP
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TB	TERMINAL BOX
TEL	TELEPHONE
TEMP	TEMPERATURE
TEW	THERMOCOUPLE EXTENSION WIRE
TIT	TEMPERATURE INDICATION TRANSMITTER
TMTU	THERMAL-MAGNETIC TRIP UNIT
TS	TEMPERATURE SWITCH
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTMETER
VAC	VOLTS ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VLV	MANUAL OPERATED VALVE
VS	VOLTMETER SWITCH
WS	TORQUE SWITCH
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
ZI	ZONE INTERLOCK
ZC	STROKE POSITIONER
ZS	LIMIT SWITCH
ZSC	LIMIT SWITCH CLOSED
ZSO	LIMIT SWITCH OPEN

2 CONTRACTOR RESPONSIBILITIES

2.1. CONTRACTOR SHALL REFERENCE ALL SPECIFICATIONS, DRAWINGS AND CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.

2.2. CONTRACTOR SHALL COMPLY WITH ALL OWASA STANDARDS, DETAILS, AND SPECIFICATIONS.

2.2.1. https://www.owasa.org/developers-contractors-engineers/

2.3. THE GENERAL NOTES AS STATED ON THIS SHEET ARE APPLICABLE TO ALL CONTRACT DOCUMENTS AND SCOPE OF WORK UNDER THIS CONTRACT UNLESS NOTED OTHERWISE.

2.4. ALL ELECTRICAL WORK SHALL COMPLY WITH THE CURRENT NFPA, NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.

2.5. CONTRACTOR SHALL COORDINATE WITH THE LOCAL ELECTRICAL UTILITY TO ESTABLISH NEW ELECTRICAL SERVICE(S) AND FINAL CONNECTIONS TO PROVIDE UTILITY POWER AS REQUIRED TO INCLUDE ESTABLISHING TEMPORARY UTILITY ACCOUNT TO PROVIDE ELECTRICAL POWER FOR START-UP AND COMMISSIONING.

2.6. THE ELECTRICAL INSTALLATION SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE NECA/NEIS STANDARDS TO INCLUDE OWNER CONSTRUCTION STANDARDS.

2.7. CONTRACTOR SHALL PLAN AND COORDINATE ELECTRICAL CONSTRUCTION WITH ALL CRAFT/TRADE TO ACHIEVE AN EFFICIENT AND EFFECTIVE ELECTRICAL INSTALLATION.

2.8. THE SCHEDULING AND DURATION OF ANY PROCESS OR FACILITY SHUTDOWN TO REMOVE AND/OR INSTALL EQUIPMENT SHALL BE COORDINATED IN ADVANCE WITH FACILITY MANAGEMENT, ENGINEER, OWNER OR OWNER REPRESENTATIVE.

5 ELECTRICAL EQUIPMENT

5.1. 600V RATED ELECTRICAL EQUIPMENT SHALL HAVE AN AMPERE INTERRUPTING CAPACITY (AIC) RATINGS AS SHOWN ON THE CONTRACT DRAWINGS.

5.2. EQUIPMENT SHALL BE ARRANGED AND INSTALLED TO COMPLY WITH ALL CODE-REQUIRED, MANUFACTURER-RECOMMENDED AND HEAT-DISSIPATION CLEARANCES.

5.3. EQUIPMENT INSTALLATIONS AND PLACEMENTS SHALL COMPLY WITH NEC ARTICLE 110 FOR ALL CLEARANCE REQUIREMENTS.

5.4. EQUIPMENT SHALL FIT INTO THOSE SPACES AS SHOWN ON THE CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE TO PROVIDE EQUIPMENT WHICH MEETS THE SPACE REQUIREMENTS.

5.5. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTIONS FOR ALL EQUIPMENT INSTALLED AND/OR MODIFIED UNDER CONTRACT.

8 GROUNDING AND BONDING

8.1. GROUNDING AND BONDING SYSTEMS SHALL COMPLY WITH NFPA 70 AND NFPA 780 TO INCLUDE THOSE REQUIREMENTS IN SPECIFICATION SECTION 26 05 19

8.2. REFERENCE GROUNDING INSTALLATION DETAILS AS SHOWN ON CONTRACT DOCUMENTS

8.3. ALL DIRECT-BURIED GROUNDING SYSTEM CONDUCTORS SHALL BE BARE 4/0AWG COPPER

8.4. ALL CONCRETE ENCASED GROUNDING SYSTEM CONDUCTORS SHALL BE TINNED 4/0AWG COPPER

8.5. ALL GROUNDING AND BONDING TAPS SHALL BE TINNED #2AWG COPPER MINIMUM

8.6. GROUNDING SYSTEM CONDUCTORS SHALL BE BURIED 30-INCH BELOW FINISHED GRADE

8.7. UNDERGROUND OR CONCRETE ENCASED GROUNDING SYSTEM CONNECTIONS SHALL BE MADE WITH EXOTHERMIC WELDS

8.8. CONNECTIONS TO STRUCTURAL STEEL AND/OR REBAR SHALL BE MADE WITH EXOTHERMIC WELDS

8.9. ELECTRICAL EQUIPMENT AND/OR FRAMING SUPPORTS SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.10. MECHANICAL EQUIPMENT AND/OR SKID FRAMING SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.11. MAN-WAY AND/OR EQUIPMENT HATCH FRAMES SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.12. GROUND TEST WELLS SHALL BE 15-INCH MINIMUM ROUND CONCRETE WITH CAST IRON COVER WITH BEAD WELDED LETTERING, "GROUND" AND RATED AASHTO H-10 LOADING

8.12.1. J&R CONCRETE PRODUCTS P/N E6-RT-BOX OR EQUAL

8.13. GROUNDING SYSTEM EXTENSIONS:

8.13.1. PROVIDE SUFFICIENT SLACK GROUNDING CABLE TO MAKE CONNECTIONS TO FUTURE GROUNDING CONDUCTORS, DUCTBANKS AND/OR EQUIPMENT

8.13.2. INSTALL 2.0-INCH PVC PIPE 48-INCH ABOVE FINISHED GRADE AT LOCATION AND INDICATE ON AS-BUILD DRAWINGS WITH A MINIMUM OF THREE (3) MEASUREMENTS FROM NEAREST STRUCTURES

9 SITE LIGHTING

9.1. CONTRACTOR SHALL REFERENCE ALL CONTRACT DRAWINGS PRIOR TO EXCAVATION AND INSTALLATION OF UNDERGROUND RACEWAYS, DUCTBANKS AND GROUNDING/BONDING COMPONENTS.

9.2. ALL SITE LIGHTING POWER "RUN" CONDUCTORS SHALL BE #6AWG STRANDED COPPER W/600V TYPE XHHW-2, 90°C INSULATION.

9.3. ALL SITE LIGHTING POWER "TAP" CONDUCTORS SHALL BE #10AWG STRANDED COPPER W/ 600V TYPE THHN/THWN, 90°C INSULATION.

9.4. ALL TAP AND RUN CONNECTIONS SHALL BE WATER-PROOF.

9.5. TRANSITIONS THROUGH FINISHED GRADE AND CONCRETE SHALL BE PVC-COATED ALUMINUM CONDUIT EXTENDING 12-INCHES ABOVE AND BELOW TRANSITION.

9.6. ALL SITE LIGHTING BRANCH CIRCUITS SHALL BE DIRECT-BURIED SCH-80 2.0" PVC CONDUIT UNLESS SHOWN OTHERWISE ON THE CONTRACT DRAWINGS.

3 POWER AND CONTROL RACEWAYS

3.1. EXPOSED CONDUIT SHALL BE RIGID ALUMINUM CONDUIT (RAC). OTHER TYPES SUCH AS GRS, IMC AND EMT ARE NOT ACCEPTABLE UNLESS APPROVED BY ENGINEER.

3.2. CONCEALED CONDUIT EMBEDDED IN CONCRETE SHALL BE SCH-40 PVC

3.3. DIRECT-BURIED CONDUIT SHALL BE DIRECT-BURIED SCH-80 PVC

3.4. TRANSITIONS THROUGH FINISHED GRADE AND/OR CONCRETE SHALL BE PVC-COATED RAC CONDUIT.

3.5. DRAWINGS DEPICT MAJOR DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCTS, RACEWAY, CONDUIT, ETC., TO INCLUDE CABLE, CONDUCTOR AND WIRING IN SCHEMATIC AND/OR DIAGRAMMATIC FORMATS. THE CONTRACTOR SHALL REFERENCE ALL EQUIPMENT SPECIFICATIONS AND MANUFACTURER INSTRUCTIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.

3.6. RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS ARE NOT TYPICALLY SHOWN ON THE DRAWINGS. CONTRACTOR SHALL DEVELOP LOGICAL GROUPINGS, ROUTING AND MARSHALLING OF DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCT, RACEWAY, CONDUIT, ETC., THESE SHALL NOT BE ROUTED THROUGH OR INTERFERE WITH ANY STRUCTURAL ELEMENTS. CONTRACTOR SHALL SUBMIT THESE RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS PER THE SPECIFICATIONS FOR ENGINEER REVIEW PRIOR TO INSTALLATION.

3.7. RACEWAY ROUTINGS SHALL BE ORGANIZED AND GROUPED IN A PRACTICAL MANNER TO MINIMIZE CROSS-OVERS AND SADDLES. RACEWAY INSTALLATIONS SHALL BE ARRANGED TO ENTER EQUIPMENT FOR DIRECT CONDUCTOR TERMINATIONS.

3.8. RACEWAYS SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED OR SHOWN. THESE SHALL RUN PARALLEL TO LANDSCAPE AND STRUCTURAL FEATURES WHILE THE BENDS AND TURNS SHALL BE MADE BY MEANS OF LARGE RADII FITTINGS.

3.9. PROVIDE FLEXIBLE RACEWAY CONNECTIONS TO ALL EQUIPMENT SUBJECT TO MOVEMENT AND/OR VIBRATION. CONTRACTOR SHALL MAKE RACEWAY CONNECTIONS COMPLETE AND IN ACCORDANCE WITH THE SPECIFICATIONS.

3.10. CONTRACTOR SHALL PROVIDE ALL REQUIRED PULL BOXES, TERMINAL BOXES AND JUNCTION BOXES FOR INSTALLATION FOR THE WIRING SYSTEMS IN ACCORDANCE WITH THE SPECIFICATIONS THOUGH ALL BOXES MAY NOT BE INDICATED ON THE DRAWINGS.

3.11. SPARE CONDUITS SHALL BE CAPPED OR PLUGGED WITH A PVC FITTING AND INCLUDE 200# TEST POLYPROPYLENE PULL STRING.

6 DUCTBANK SYSTEMS

6.1. DUCTBANK SYSTEM ROUTING AND SECTIONS ARE SHOWN ON THE CONTRACT DOCUMENTS AS DIAGRAMMATIC, CONTRACTOR SHALL SUBMIT PROPOSED DUCTBANK INSTALLATION LAYOUT DRAWINGS FOR ENGINEER REVIEW PRIOR TO EXCAVATION, FABRICATION AND/OR INSTALLATION PER SPECIFICATION SECTION 26 05 43 1.4A

6.2. DUCTBANK SYSTEMS SHALL NOT INTERFERE WITH ANY STRUCTURAL FOUNDATION AND/OR FEATURE

6.3. DUCTBANK SYSTEMS SHALL HAVE A MINIMUM OF 18-INCH OF CLEAN COMPACTED COVER UNLESS OTHERWISE STATED IN THE CONTRACT DOCUMENTS

6.4. DUCTBANK SYSTEMS ROUTED UNDER ROADWAYS SHALL BE CONSTRUCTED AND INSTALLED PER STRUCTURAL ENGINEER OF RECORD DESIGN REQUIREMENTS

6.5. DUCTBANK SYSTEMS SHALL INCLUDE A BARE 4/0AWG COPPER GROUNDING CONDUCTOR LAID 6 TO 12-INCHES ABOVE DUCTBANK AND ROUTED INTO EACH MAN-HOLE

6.6. DUCTBANK GROUNDING CONDUCTOR SHALL BE CONNECTED WITH EXOTHERMIC WELDS TO GROUNDING SYSTEMS AS SHOWN THE DRAWINGS

6.7. DUCTBANK SYSTEMS SHALL BE ARRANGED TO ALLOW 1.5 TO 2.0-INCH MINIMUM SEPARATION BETWEEN RACEWAYS

6.8. ABS PLASTIC DUCT-SPACERS SHALL BE UTILIZED AND INSTALLED TO MAINTAIN RACEWAY SEPARATION DURING PLACEMENT OF CONCRETE

6.8.1. UNDERGROUND DEVICES INC. P/N DUCT DONUT 2C OR APPROVED EQUAL

6.9. RACEWAYS SHALL BE SECURED TO PREVENT FLOATATION DURING CONCRETE PLACEMENT WITH METALLIC HOLD-DOWN ASSEMBLIES

6.9.1. UNDERGROUND DEVICES, INC. P/N HOLD-DOWN BAR H5X-XX-2X OR APPROVED EQUAL

6.10. ALL RACEWAYS BENDS SHALL BE MADE WITH LARGE SWEEP RADII

6.11. ALL RACEWAYS SHALL BE REAMED, DE-BURRED AND CLEAN PRIOR TO COUPLING

6.12. ALL PVC RACEWAYS SHALL BE JOINED WITH GREY HEAVY-BODIED PVC CEMENT AND FULLY SEATED IN SLIP-COUPLING OR FITTING

6.13. ALL PVC RACEWAYS SHALL ENTER MAN-HOLE WALLS PERPENDICULAR AND HAVE BELL-END FITTINGS INSTALLED PRIOR TO DRAWING WIRES OR CABLES

6.14. RACEWAY ARRANGEMENTS SHALL BE MADE TO MAXIMUM THE DISTANCE BETWEEN 480/277V AND 208/120V FEEDER AND BRANCH CONDUCTORS FROM LOW-VOLTAGE AND FIBER OPTIC SIGNAL CABLING

6.15. DUCTBANK EXTENSIONS:

6.15.1. BULK-HEAD DUCTBANK CONCRETE POUR AND REMOVE ALL FORM WORK

6.15.2. EXTEND ALL REBAR AND CONDUITS 24" MINIMUM FROM END OF CONCRETE DUCTBANK

6.15.3. GLUE PVC END CAPS ON ALL CONDUITS. SLEEVE REBAR WITH PVC PIPE

6.15.4. INSTALL 2.0-INCH PVC PIPE 48-INCH ABOVE FINISHED GRADE AT LOCATION AND INDICATE ON AS-BUILD DRAWINGS WITH A MINIMUM OF THREE (3) MEASUREMENTS FROM NEAREST STRUCTURES

10 WIRING DEVICES

10.1. GENERAL

10.1.1. INDOORS OR NON PROCESS AREAS SHALL BE INSTALLED CONCEALED AND FLUSH WITH STAINLESS-STEEL DEVICE COVER PLATES.

10.1.2. OUTDOORS OR IN PROCESS AREAS SHALL BE INSTALLED WITHIN WEATHER-PROOF, CORROSION RESISTANT DEVICE BOXES WITH METALLIC IN-USE AND/OR WATER-TIGHT DEVICE COVER PLATES.

10.2. RECEPTACLES/GROUND FAULT CURRENT INTERRUPTING (GFCI)

10.2.1. SHALL BE INDIVIDUAL GFCI RECEPTACLE DEVICES RATED FOR 20A/120V WITH LED POWER INDICATOR.

10.2.2. GFCI RECEPTACLE DEVICES SHALL NOT SHARE NEUTRAL CONDUCTORS ON THREE-PHASE SYSTEMS

4 CABLE TRAY

4.1. THE CABLE TRAY INSTALLATION SHALL MEET ALL THE REQUIREMENTS OF ALL APPLICABLE NECA/NEIS STANDARDS. THESE INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

4.1.1. NECA 1: STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION

4.1.2. NECA/NEMA 105-2015: STANDARD FOR INSTALLING METAL CABLE TRAY

4.2. ALL CABLE TRAYS SHALL BE ALUMINUM LADDER TYPE WITH 4-INCH SIDE WALLS AND 12-INCH RUNG SPACING.

4.3. THE MANUFACTURER'S RECOMMENDED MECHANICAL LOADING SHALL NOT BE EXCEEDED.

4.4. THE CABLE TRAY SHALL BE CAREFULLY ALIGNED AND LEVELED PLUMB AND TRUE. CABLE TRAY SECTIONS AND FITTINGS SHALL BE ASSEMBLED ON THEIR SUPPORTS AND JOINED TOGETHER, USING MANUFACTURER'S STANDARD CONNECTOR UNITS, PROPERLY ALIGNED AND SECURED.

4.5. SPLICES SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO POINTS ONE-THIRD THE DISTANCE BETWEEN SUPPORT AND MIDPOINT OF THE SPAN. STRAIGHT SECTION LENGTHS SHOULD BE EQUAL TO OR GREATER THAN THE SPAN LENGTH TO ENSURE NOT MORE THAN ONE SPLICE PLATE BETWEEN SUPPORTS.

4.6. ALL METALLIC CABLE TRAYS ARE TO BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 392.60 AND BEST INDUSTRIAL PRACTICES.

4.7. ALUMINUM CABLE TRAY SYSTEMS OR SECTIONS, CONDUCTIVITY SHALL BE ESTABLISHED AND MAINTAINED BY PERFORMING THE FOLLOWING OPERATION AT EACH BONDING JUMPER LUG CONNECTION:

4.7.1. WIRE-BRUSH ALUMINUM SURFACES TO EXPOSE A BRIGHT 'WHITE' METAL SURFACE.

4.7.2. CLEAN BRUSHED SURFACES WITH DENATURED ALCOHOL.

4.7.3. APPLY ANTI-OXIDIZING COMPOUND (BURNDY PENTROX OR APPROVED EQUAL) TO CLEAN, BRUSHED SURFACES. A TIME PERIOD OF LESS THAN 5 MINUTES MUST NOT ELAPSE BETWEEN STEPS 'A' AND 'C'.

4.8. RE-APPLY ANTI-OXIDIZING COMPOUND AS REQUIRED AND BOLT LUG COMPONENTS.

4.9. SUFFICIENT SPACE SHALL BE PROVIDED AND MAINTAINED ABOUT THE CABLE TRAYS TO ALLOW ADEQUATE ACCESS FOR INSTALLING AND MAINTAINING CABLING.

4.10. ALL CABLES AND CABLE TIES SHALL BE SECURED TO CABLE TRAY RUNGS. UV-RESISTANT NYLON 'TY-WRAPS' ARE ACCEPTABLE FOR HORIZONTAL RUNS AND STAINLESS-STEEL 'TY-WRAPS' SHOULD BE USED IN VERTICAL RUNS. MAXIMUM TIE SPACING SHALL BE 12-INCHES FOR CABLES IN VERTICAL CABLE TRAYS AND 36-INCHES FOR CABLES IN HORIZONTAL. CABLE TIES SHALL BE OF SUFFICIENT TENSILE STRENGTH AND RIGIDITY TO PREVENT "SNAKING" OF CABLES.

4.11. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTIONS OF CABLE TRAYS TO ALL ELECTRICAL EQUIPMENT AS REQUIRED PER CONTRACT.

4.12. MANUFACTURED STRUT-CHANNEL BRACES, BRACKETS, FITTINGS OR POST BASES SHALL BE PROVIDED AND INSTALLED WITH ASSOCIATED HARDWARE AND FASTENERS FOR CABLE TRAY SUPPORTS.

4.13. STRUT-CHANNEL SHALL NOT BE BENT, DRILLED, MITER-CUT OR OTHERWISE MODIFIED TO PRODUCE FITTINGS, BRACES OR BRACKETS FOR CABLE TRAY SUPPORTS.

7 CABLES/ CONDUCTORS/ WIRES

7.1. QUANTITY AND SIZING OF CONDUCTORS, CABLING, WIRING AND RESPECTIVE RACEWAYS DEPICTED ON THE CONTRACT DOCUMENTS ARE SELECTED UPON THE BASIS OF DESIGN, STANDARD ELECTRICAL COMPONENTS AND/OR STANDARD EQUIPMENT WITH DIRECT ROUTED CONNECTIONS.

7.2. CONTRACTOR MAY SUBMIT FOR REVIEW BY ENGINEER AND PRIOR TO INSTALLATION, LOGICAL CONDUCTOR AND RACEWAY GROUPINGS IN COMPLIANCE WITH APPLICABLE CODES, STANDARDS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO OWNER.

7.3. CONTRACTOR SHALL PROVIDE A CIRCUIT IDENTIFICATION LABEL AT EACH END OF EACH POWER, BRANCH, CONTROL AND INSTRUMENTATION CIRCUIT CABLE ASSEMBLY, CONDUCTOR OR WIRE.

7.4. POWER/FEEDER

7.4.1. CONTRACTOR SHALL NOT EXCEED CABLE MANUFACTURER SPECIFICATIONS FOR SIDE-WALL AND TENSION LIMITS WHEN DRAWING POWER CABLES INTO RACEWAYS.

7.4.2. CONTRACTOR SHALL DRAW POWER CABLES AND CONDUCTORS WITHIN RACEWAYS UTILIZING POLYWATER LUBRICANT J OR APPROVED EQUAL.

7.4.3. NO SPLICES TO POWER CONDUCTORS AND/OR CABLING SHALL BE MADE WITHOUT ENGINEER APPROVAL. NO JUNCTIONS SHALL BE MADE BELOW GRADE WITHOUT APPROVAL OF ENGINEER.

7.5. POWER/BRANCH

7.5.1. RACEWAY AND WIRING FOR LIGHTING, RECEPTACLES AND BRANCH CIRCUITS ARE NOT TYPICALLY SHOWN ON THE CONTRACT DRAWINGS BUT SHALL BE PROVIDED AS REQUIRED UNDER THIS CONTRACT

11 HARDWARE AND SUPPORTS

11.2. "TAPCONS" AND TWO-HOLE PVC CONDUIT STRAPS ARE NOT ACCEPTABLE

11.3. ALL FASTENERS AND HARDWARE SHALL BE STAINLESS-STEEL 316L

11.4. STRUT-CHANNEL AND CONDUIT STRAPS SHALL BE STAINLESS-STEEL 316L FOR INTERIOR AND EXTERIOR LOCATIONS

11.5. STRUT-CHANNEL SHALL NOT BE BENT, DRILLED, CUT OR OTHERWISE MODIFIED TO PRODUCE FITTINGS, BRACES OR BRACKETS FOR CONDUIT AND EQUIPMENT SUPPORTS.

11.6. MANUFACTURED STRUT-CHANNEL BRACES, BRACKETS, FITTINGS OR POST BASES SHALL BE PROVIDED AND INSTALLED WITH ASSOCIATED HARDWARE AND FASTENERS FOR CONDUIT AND EQUIPMENT SUPPORTS.

11.7. CONTRACTOR SHALL PROVIDE ALL SUPPORTS AND FASTENING HARDWARE FOR SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, CONTROL PANELS, ETC., AS REQUIRED IN THE SPECIFICATIONS.

11.8. CONTRACTOR SHALL PROVIDE AND INSTALL CONCRETE EMBEDDED LEVELING CHANNEL SUPPORTS FOR FLOOR MOUNTED EQUIPMENT SPANNING DISTANCES 48" AND GREATER IN LENGTH OR 36" AND GREATER IN DEPTH.

11.9. STRUCTURAL MEMBERS SHALL NOT BE DRILLED, CUT, WELDED TO, OR OTHERWISE MODIFIED WITHOUT PRIOR APPROVAL OF THE ENGINEER OF RECORD.

RECORD DOCUMENT – DISCLAIMER

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RECORD DRAWING

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049985 ENGINEER JOSEPH LAWDANSKI 11/20/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

GENERAL NOTES AND ABBREVIATIONS

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
DESIGNED	JAL
CHECKED	JAG
PROJ. MGR.	KJS

SCALE
HORIZONTAL: N/A
VERTICAL: NA

DRAWING NUMBER: E00.0

REVISION: 1

STATUS: REVISED AFTER CONSTRUCTION

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1 GENERAL ELECTRICAL SYMBOLS

- LIGHTING, INSTRUMENT OR RECEPTACLE PANELBOARD
- POWER PANELBOARD
- CP — CONTROL PANEL
- MCC — MOTOR CONTROL CENTER
- PM — POWER MONITOR
- A — AMMETER
- AS — AMMETER SWITCH
- V — VOLTMETER
- VS — VOLTMETER SWITCH
- FS — FLOAT/FLOW SWITCH
- LS — LIMIT SWITCH
- PS — PRESSURE SWITCH
- T — THERMOSTAT
- JB — JUNCTION BOX, SIZE PER NEC
- E — ELECTRICAL EQUIPMENT CONNECTION
- XXX — ELECTRICAL MANHOLE / HANDHOLE AND THE LETTERS INDICATE THE TYPE OF THE HOLE
- DB110 — RACEWAY SYSTEM CALL-OUTS:
  CT - CABLE TRAY
  BD - BUS DUCT
  DB - DUCTBANK
  EC - EXPOSED CONDUIT
  WW - WIRE WAY/TROUGH
- 042000 — RACEWAY AND/OR CABLE ID NUMBER
- LP-3 — RACEWAY HOMERUN TO EQUIPMENT ID TAG AS SHOWN. LINE TYPE DESIGNATES CONCEALED, EXPOSED, ETC. NUMBERS/TEXT DESIGNATE HOMERUN EQUIPMENT (I.E. PANEL BOARD CIRCUIT NUMBER).
- TO PLC-1 / 9#14 #12G 0.75"C — CONDUCTOR/CABLE CALL-OUT WITHIN RACEWAY
- CONCEALED RACEWAY(S) IN FLOOR SLAB, UNDERGROUND, ETC.
- EXISTING RACEWAY(S) AND/OR CABLES
- RACEWAY TURNED DOWN
- RACEWAY TURNED UP
- RACEWAY TERMINATED / CAPPED OFF
- RACEWAY REMOVED / ABANDONED

- E — NEW ELECTRICAL RACEWAY(S)
- E — EXISTING ELECTRICAL RACEWAY(S)
- T — NEW TELEPHONE LINE(S)
- T — EXISTING TELEPHONE LINE(S)
- OHE — OVERHEAD ELECTRICAL UTILITY
- OHT — OVERHEAD TELEPHONE UTILITY
- UGE — UNDERGROUND ELECTRICAL UTILITY
- UGT — UNDERGROUND TELEPHONE UTILITY
- G — NEW GROUNDING / BONDING
- G — EXISTING GROUNDING / BONDING
- L — NEW LIGHTNING PROTECTION CONDUCTOR

2 TYPICAL POWER SYMBOLS

- CLASS 1/2 DIVISION I/II CONDUIT SEAL-OFF FITTING
- LOCAL CONTROL STATION WITH THREE OR MORE SELECTOR/PUSH SWITCHES LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION
- LOCAL CONTROL STATION WITH TWO SELECTOR/PUSH SWITCHES LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION
- LOCAL CONTROL STATION WITH ONE SELECTOR/PUSH SWITCH LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION
- LOCATED AT FIELD DEVICE
- LOCATED AT MAIN CONTROL PANEL
- LOCATED AT LOCAL CONTROL PANEL
- MOUNTED ON DOOR
- PSR / EO — 1200AT / 1600AF — DRAW-OUT POWER CIRCUIT BREAKER WITH PROGRAMMABLE SOLID STATE RELAY 'EO' DENOTES ELECTRICALLY OPERATED
- ASR — 1200AT / 1600AF — FIXED-MOUNT POWER CIRCUIT BREAKER WITH ADJUSTABLE SOLID STATE RELAY
- 300AT / 300AF — TMTU — CIRCUIT BREAKER, GENERIC FIXED-MOUNT
  'TMTU' THERMAL-MAGNETIC TRIP UNIT
  'ELTU' ELECTRONIC TRIP UNIT
- CB1 — CIRCUIT BREAKER, GENERIC
- CB2 — CIRCUIT BREAKER, THERMAL
- CB3 — CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTOR
- 3R — 175AT / 200AF — CIRCUIT BREAKER, THERMAL ENCLOSED
  TOP NUMBER DENOTES TRIP
  BOTTOM NUMBER DENOTES FRAME SIZE
  UPPER LEFT NUMBER DENOTES NEMA ENCLOSURE RATING
- FU1 — FUSE, GENERIC
- 30AT / 600V / RK1 — FUSE, GENERIC
  TOP NUMBER DENOTES TRIP
  BOTTOM NUMBER DENOTES VOLTAGE CLASS
  MIDDLE NUMBER DENOTES TYPE
- L21-30 — WIRING DEVICE, POWER RECEPTACLE WITH INTEGRAL DISCONNECT / LOAD BREAK
  NEMA CONFIGURATION SHOWN LOWER RIGHT
- PR1 / L21-30 — WIRING DEVICE, POWER RECEPTACLE
  NEMA CONFIGURATION SHOWN LOWER RIGHT

- XF1 — TRANSFORMER, POWER
  TYPE AND RATINGS AS NOTED ON THE DRAWINGS
- XF2 — TRANSFORMER, SHIELDED ISOLATION
  TYPE AND RATINGS AS NOTED ON THE DRAWINGS
- CT1 / 100/5 — TRANSFORMER, CURRENT 'CT'
  TYPE AND RATINGS AS NOTED ON THE DRAWINGS
- PT1 / 100:1 — TRANSFORMER, POTENTIAL 'PT' OR 'VT'
  TYPE AND RATINGS AS NOTED ON THE DRAWINGS
- N / E / L — AUTOMATIC OR MANUAL TRANSFER SWITCH, STAND-ALONE
  TYPE AND RATINGS AS NOTED ON THE DRAWINGS
- 100AT / 200AF / F / 4X/SS — SAFETY / DISCONNECT SWITCH
  TOP NUMBER DENOTES FUSE SIZE (NF=NON-FUSED)
  BOTTOM NUMBER DENOTES FRAME SIZE
  RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING
- 00 — 21-70AT / 7AF — FVNR — 12 — MOTOR CONTROLLER, STAND-ALONE WITH EXTERNAL DISCONNECT:
  UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
  UPPER RIGHT NUMBERS DENOTE AMPERE AND FRAME RATINGS
  CENTER RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING
  LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
  FVNR FULL VOLTAGE NON-REVERSE
  FVR FULL VOLTAGE REVERSIBLE
  TS1W TWO SPEED - SINGLE WINDING
  TS2W TWO SPEED - DUAL WINDING
  RVSS REDUCED VOLTAGE SOFT STARTER
  RVAT REDUCED VOLTAGE AUTO TRANSFORMER
  VFD VARIABLE FREQUENCY DRIVE
- 00 — FVNR — MOTOR CONTROLLER, FULL-VOLTAGE MCC UNIT:
  UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
  LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
  FVNR FULL VOLTAGE NON-REVERSE
  FVR FULL VOLTAGE REVERSIBLE
- 2 — TS2W — MOTOR CONTROLLER, PART-WINDING MCC UNIT:
  UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
  LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
  TS1W TWO SPEED - SINGLE WINDING
  TS2W TWO SPEED - DUAL WINDING
- 1 — RVAT — MOTOR CONTROLLER, REDUCED-VOLTAGE MCC UNIT:
  UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
  LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
  RVSS REDUCED VOLTAGE SOFT STARTER
  RVAT REDUCED VOLTAGE AUTO TRANSFORMER
- 1 — VFD — MOTOR CONTROLLER, VARIABLE FREQUENCY DRIVE, MCC UNIT:
  UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
  LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
  VFD VARIABLE FREQUENCY DRIVE
- 3% — LINE OR LOAD REACTOR
  CENTER RIGHT NUMBER DENOTES PERCENT IMPEDANCE
- dV/dT — MOTOR PROTECTION FILTER
- M / 15HP / 460V / 21.0 FLA — AC MOTOR
  SINGLE OR THREE PHASE AS NOTED
- CABLE-TRAY
  TYPE AS NOTED ON THE DRAWINGS

NOTES:
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ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

3 TYPICAL CONTROL AND SCHEMATIC SYMBOLS

- PB1 — MOMENTARY PUSH BUTTON NORMALLY OPENED
- PB2 — MOMENTARY PUSH BUTTON NORMALLY CLOSED
- PB3 — MUSHROOM PUSH BUTTON NORMALLY OPENED
- PB4 — MUSHROOM PUSH BUTTON NORMALLY CLOSED
- TG1 — TOGGLE SWITCH NORMALLY OPENED
- TG2 — TOGGLE SWITCH NORMALLY CLOSED
- SS1 — TWO-POSITION SWITCH NORMALLY OPENED
- SS2 / H / O / A — THREE-POSITION BUTTON NORMALLY OPENED
- LS1 — LIMIT SWITCH NORMALLY OPENED
- LS2 — LIMIT SWITCH NORMALLY CLOSED
- LS3 — LIMIT SWITCH HELD OPENED
- LS4 — LIMIT SWITCH HELD CLOSED
- TS1 — TEMPERATURE SWITCH NORMALLY OPENED
- TS2 — TEMPERATURE SWITCH NORMALLY CLOSED
- FLS1 — FLOAT SWITCH NORMALLY OPENED
- FLS2 — FLOAT SWITCH NORMALLY CLOSED
- FS1 — FLOW SWITCH NORMALLY OPENED
- FS2 — FLOW SWITCH NORMALLY CLOSED
- PS1 — PRESSURE SWITCH NORMALLY OPENED
- PS2 — PRESSURE SWITCH NORMALLY CLOSED
- TD1 — ON DELAY TIME RELAY NORMALLY OPENED TIMED CLOSED NOTC
- TD2 — ON DELAY TIME RELAY NORMALLY CLOSED TIMED OPENED NCTO
- TD3 — OFF DELAY TIME RELAY NORMALLY OPENED TIMED OPENED NOTO
- TD4 — OFF DELAY TIME RELAY NORMALLY CLOSED TIMED CLOSED NCTC
- LT1 / B — INDICATION LIGHT
  W - WHITE G - GREEN A - AMBER
  R - RED B - BLUE C - CLEAR
- LT2 / R — INDICATION LIGHT, PUSH-TO-TEST
  W - WHITE G - GREEN A - AMBER
  R - RED B - BLUE C - CLEAR

- CR1 / L — CONTROL RELAY, GENERIC
  DESIGNATIONS:
  CR CONTROL RELAY
  MX AUXILIARY RELAY
  TR TIMING RELAY
  AR ALARM RELAY
  RR READY RELAY
- LR1 / L — CONTROL RELAY, LATCHING
- CR1 — CONTACT, NORMALLY OPENED
  TOP ID TAG DENOTES PARENT RELAY
- LR1 — CONTACT, NORMALLY CLOSED
  TOP ID TAG DENOTES PARENT RELAY
- SOL1 — SOLENOID, GENERIC
- R1 — HEATING ELEMENT, GENERIC
- ETM — ELAPSED TIME METER, ELECTRONIC
- AH1 — HORN, ALARM
- AH2 / A/V — HORN, ALARM
  AUDIO AND VISUAL ANNUNCIATION
- XF3 — TRANSFORMER, CONTROL POWER
  RATINGS AS NOTED ON THE DRAWINGS
- BAT1 — BATTERY OR DC POWER SOURCE
- M / O/C — MOTOR ACTUATED VALVE
  M MODULATING
  O/C OPEN/CLOSE
- S — MOTOR ACTUATED VALVE
  M MODULATING
  O/C OPEN/CLOSE

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RECORD DRAWING

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049985 ENGINEER JOSEPH LAWDANSKI 11/20/23

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

TYPICAL POWER AND CONTROL SYMBOLS

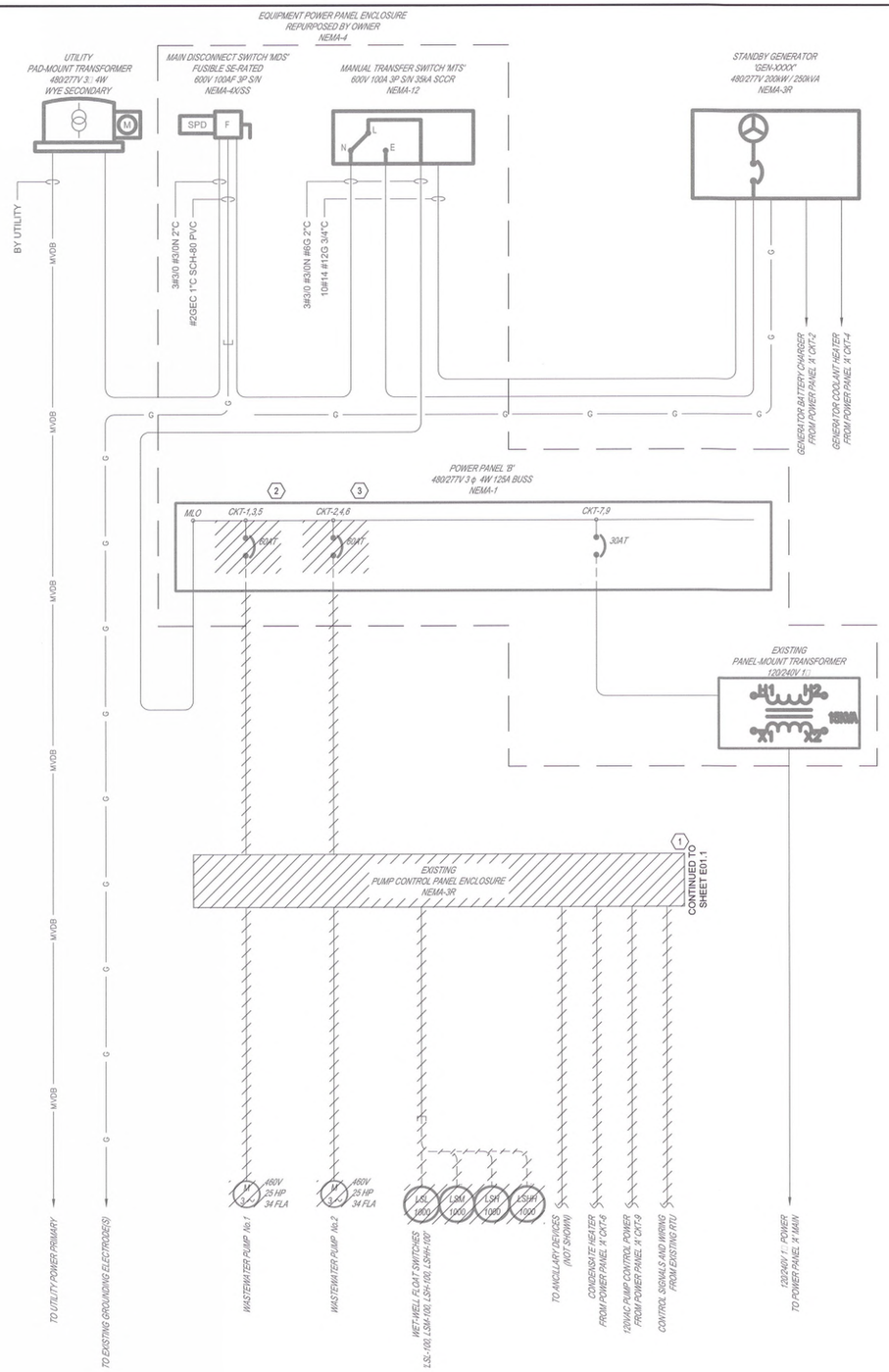
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
DESIGNED	JAL
CHECKED	JAG
PROJ. MGR.	KJS

SCALE
HORIZONTAL: N/A
VERTICAL: NA

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DRAWING NUMBER
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REVISION

STATUS: REVISED AFTER CONSTRUCTION

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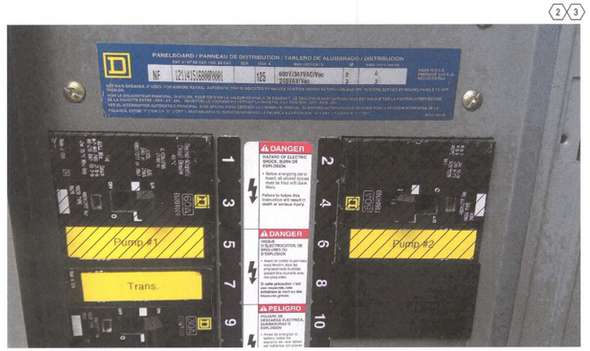




EXISTING EQUIPMENT POWER PANEL PHOTO DETAIL E01.0 - 1
SCALE: N.T.S.



EXISTING PUMP CONTROL PANEL DEMOLITION PHOTO DETAIL E01.0 - 2
SCALE: N.T.S.



EXISTING PUMP CONTROL PANEL DEMOLITION PHOTO DETAIL E01.0 - 3
SCALE: N.T.S.

DEMOLITION GENERAL NOTES:

1. THE SCHEDULING AND DURATION OF ANY SHUTDOWN OF THE FACILITY TO REMOVE AND/OR INSTALL EQUIPMENT SHALL BE COORDINATED WITH THE OWNER. REFERENCE DIVISION-1 SPECIFICATIONS FOR SPECIAL CONSTRUCTION CONDITIONS AND SEQUENCING REQUIREMENTS.
2. EQUIPMENT IDENTIFIED FOR DEMOLITION SHALL BE REMOVED IN GOOD CONDITION AND PROPERLY DISPOSED, SALVAGED OR DELIVERED TO THE OWNER.
3. ALL WIRE AND CABLING TO BE DEMOLISHED SHALL BE REMOVED IN THEIR ENTIRETY.
4. ALL WIRE AND CABLING THAT HAS BEEN REMOVED SHALL BE PROPERLY DISPOSED, SALVAGED OR DELIVERED TO A SPECIFIED LOCATION AS DIRECTED BY THE OWNER.
5. ALL EXPOSED CONDUIT TO BE DEMOLISHED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL SUPPORTS AND HARDWARE.
6. ALL REMAINING HOLES SHALL BE REPAIRED AND PATCHED TO MATCH EXISTING.
7. ALL ABANDONED CONDUITS SHALL HAVE PVC CONDUIT CAPS INSTALLED AT BOTH ENDS.

DEMOLITION KEYNOTES:

(1) DETERMINATE AND REMOVE PUMP CONTROL PANEL, PUMPS, FLOATS AND WIRING FROM EXISTING PUMP SKID.

(2) DETERMINATE AND REMOVE EXISTING 3-POLE 'PUMP 1' CIRCUIT BREAKER, CONDUIT AND CONDUCTORS. REPLACE WITH 100A 3-POLE CIRCUIT BREAKER, ALONG WITH CONDUCTORS AND CONDUIT AS SPECIFIED HEREIN.

(3) DETERMINATE AND REMOVE EXISTING 3-POLE 'PUMP 2' CIRCUIT BREAKER, CONDUIT AND CONDUCTORS. REPLACE WITH BLANKING PLATE.

LIMITS OF
ELECTRICAL DEMOLITION WORK

AREA CLASSIFICATIONS

CONTRACTOR SHALL REFERENCE NFPA 820 2020 EDITION

WASTEWATER PUMPING STATION WET-WELLS: THOSE ENCLOSED SPACES, UNDER SOLID HATCHES, MAN-WAYS, PLANKING, ETC. WHICH ARE NOT OPEN TO ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS AND WITH NO AIR CHANGES ARE CONSIDERED CLASS-1/DIVISION-I

BELOW GRADE METERING/PIPE VAULT: THOSE ENCLOSED SPACES, UNDER SOLID HATCHES, MAN-WAYS, ETC. WHICH ARE NOT OPEN TO ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS AND NOT NORMALLY VENTILATED ARE CONSIDERED CLASS-1/DIVISION-II

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RECORD DRAWING

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CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

EXISTING POWER AND CONTROL RISER DIAGRAM 1 OF 2

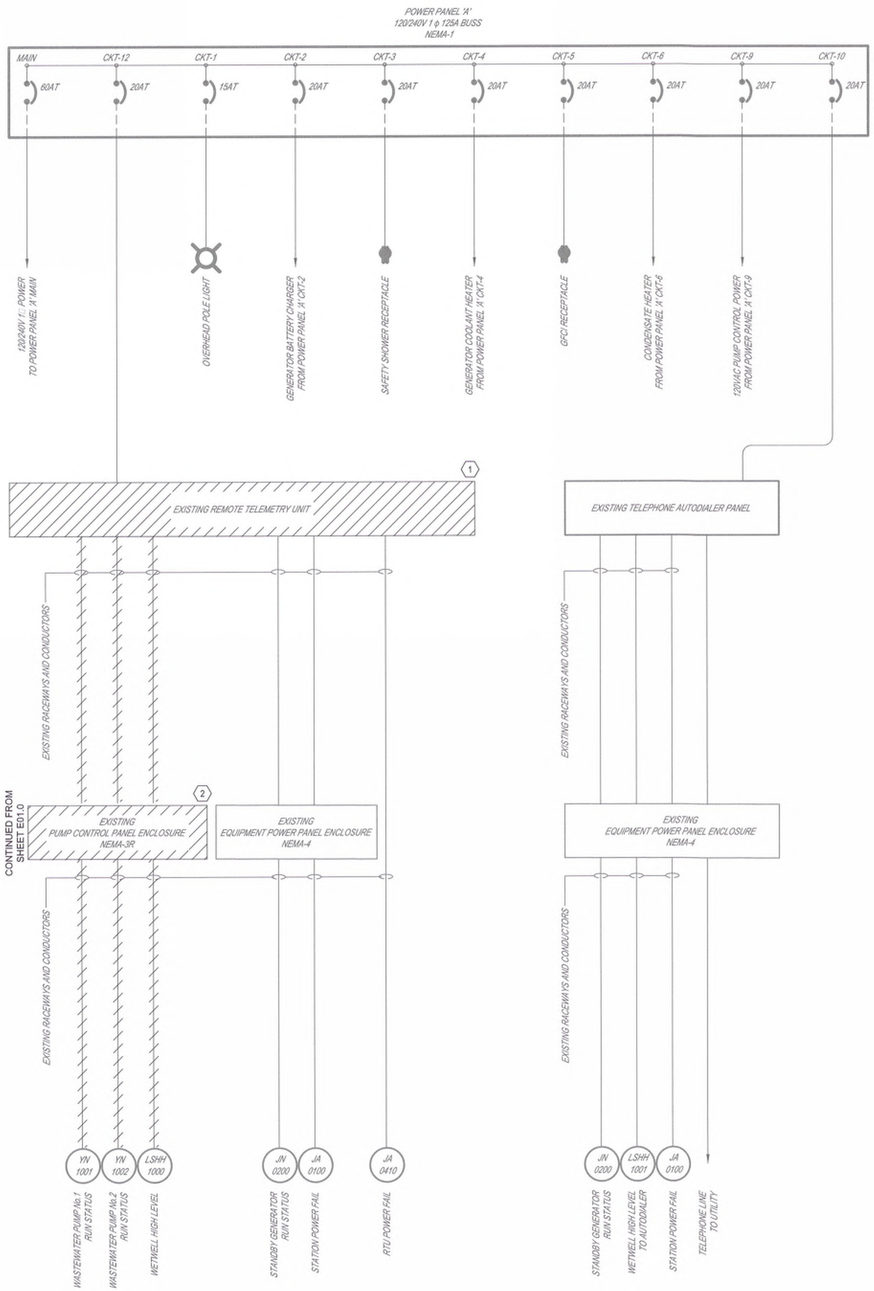
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
DESIGNED	JAL
CHECKED	JAG
PROJ. MGR.	KJS

SCALE
HORIZONTAL: N/A
VERTICAL: NA

E01.0 DRAWING NUMBER
1 REVISION

STATUS: REVISED AFTER CONSTRUCTION

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1



EXISTING RTU BACKPLANE DEMOLITION PHOTO DETAIL E01.1 - 1
SCALE: N.T.S.

3



EXISTING TELEPHONE AUTODIALER PHOTO DETAIL E01.1 - 2
SCALE: N.T.S.

DEMOLITION GENERAL NOTES:

1. THE SCHEDULING AND DURATION OF ANY SHUTDOWN OF THE FACILITY TO REMOVE AND/OR INSTALL EQUIPMENT SHALL BE COORDINATED WITH THE OWNER. REFERENCE DIVISION-1 SPECIFICATIONS FOR SPECIAL CONSTRUCTION CONDITIONS AND SEQUENCING REQUIREMENTS.
2. EQUIPMENT IDENTIFIED FOR DEMOLITION SHALL BE REMOVED IN GOOD CONDITION AND PROPERLY DISPOSED, SALVAGED OR DELIVERED TO THE OWNER.
3. ALL WIRE AND CABLING TO BE DEMOLISHED SHALL BE REMOVED IN THEIR ENTIRETY.
4. ALL WIRE AND CABLING THAT HAS BEEN REMOVED SHALL BE PROPERLY DISPOSED, SALVAGED OR DELIVERED TO A SPECIFIED LOCATION AS DIRECTED BY THE OWNER.
5. ALL EXPOSED CONDUIT TO BE DEMOLISHED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL SUPPORTS AND HARDWARE.
6. ALL REMAINING HOLES SHALL BE REPAIRED AND PATCHED TO MATCH EXISTING.
7. ALL ABANDONED CONDUITS SHALL HAVE PVC CONDUIT CAPS INSTALLED AT BOTH ENDS.

DEMOLITION KEYNOTES:

1. DETERMINATE AND REMOVE REMOTE TELEMETRY UNIT BACKPLANE ONLY
2. REMOVE EXISTING CONTROL WIRING BETWEEN 'RTU' AND 'PCP'.
3. EXISTING AUTODIALER AND CONTROL WIRING SHALL REMAIN INTACT

LIMITS OF
ELECTRICAL DEMOLITION WORK

AREA CLASSIFICATIONS

CONTRACTOR SHALL REFERENCE NFPA 820 2020 EDITION

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BELOW GRADE METERING/PIPE VAULT: THOSE ENCLOSED SPACES, UNDER SOLID HATCHES, MAN-WAYS, ETC. WHICH ARE NOT OPEN TO ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS AND NOT NORMALLY VENTILATED ARE CONSIDERED CLASS-1/DIVISION-II

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CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

EXISTING POWER AND CONTROL RISER DIAGRAM 2 OF 2

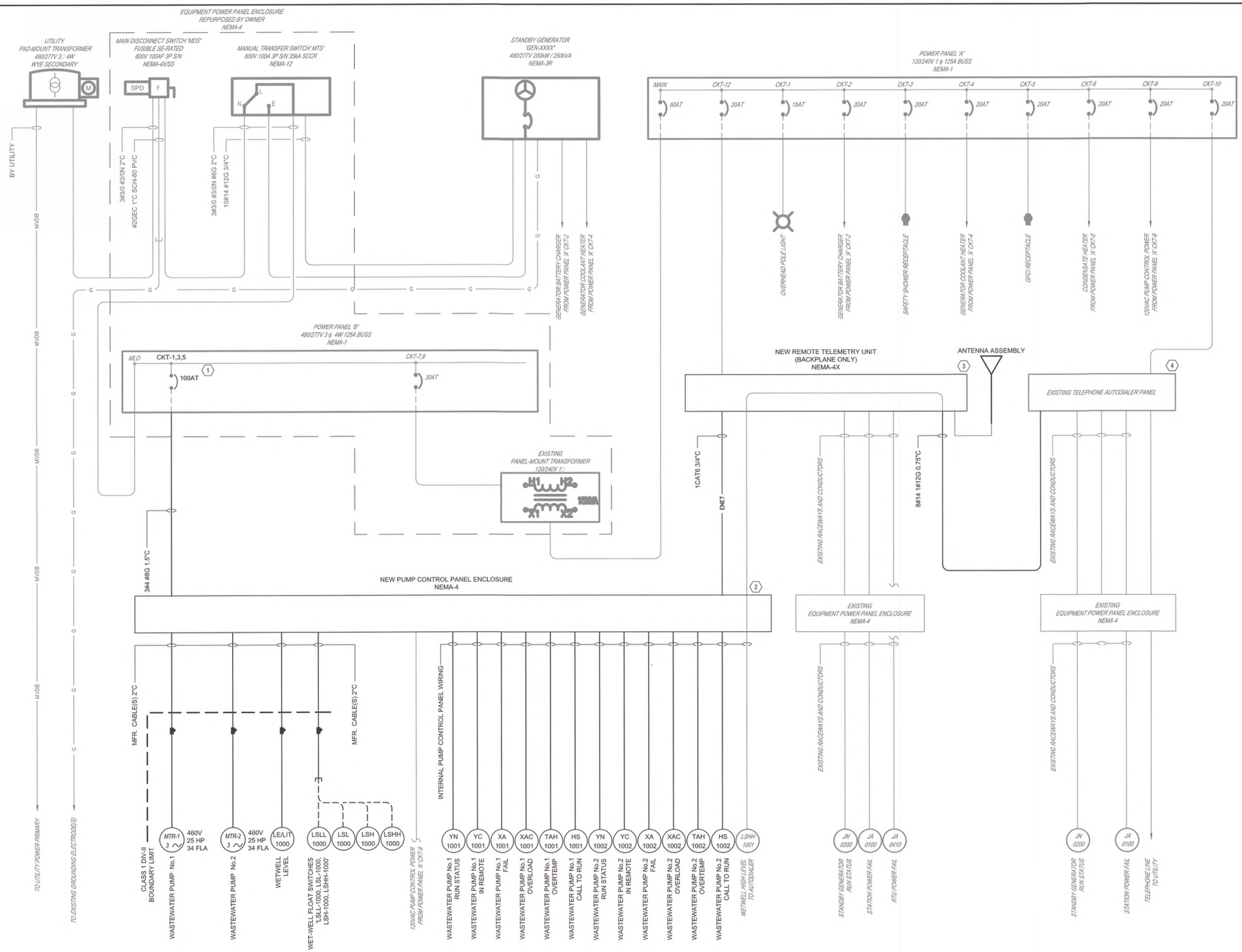
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
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SCALE
HORIZONTAL: N/A
VERTICAL: NA

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GENERAL NOTES:

1. REFERENCE ALL CONTRACT DOCUMENTS, SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL REFERENCE AND IMPLEMENT ALL OWASA CONSTRUCTION DETAILS AND STANDARDS
3. ALL AC POWER CONDUCTORS FOR CIRCUITS 100A AND GREATER SHALL BE STRANDED COPPER 600V TYPE XHHW-2 90°C
4. ALL AC POWER CONDUCTORS FOR CIRCUITS LESS THAN 100A SHALL BE STRANDED COPPER 600V TYPE THHN/THWN 75°C
5. ALL CONTROL CONDUCTORS RATED LESS THAN 120V SHALL BE STRANDED COPPER 300V TYPE THHN/THWN 75°C
6. ALL UNDERGROUND RACEWAYS (THREE OR MORE) THAT LEAVE THE BUILDING OR STRUCTURAL ENVELOPE SHALL BE SCH-40 PVC CONDUIT PLACED IN REINFORCED CONCRETE DUCT-BANKS
   - 6.1. UNDERGROUND RACEWAYS (LESS THAN THREE) SHALL BE SCH-80 PVC CONDUIT DIRECT-BURIED WITH 24-INCH MINIMUM COVER FROM FINISHED GRADE
7. RACEWAY TRANSITIONS OR PENETRATIONS THROUGH CEMENTITOUS MATERIAL AND FINISHED GRADE SHALL BE PVC-RAC

INSTALLATION KEYNOTES:

1. PROVIDE AND INSTALL NEW 100A 3-POLE CIRCUIT BREAKER, RACEWAYS AND CONDUCTORS AS REQUIRED TO RECONNECT NEW DEVICES
2. PROVIDE NEW CAT6 CABLE BETWEEN PUMP CONTROL PANEL AND REMOTE TELEMETRY UNIT
3. PROVIDE AND INSTALL NEW RTU BACKPLANE. RECONNECT ALL REMAINING HARDWIRED DEVICES INCLUDING BUT NOT LIMITED TO: GENERATOR, TRANSFER SWITCH, HIGH LEVEL, AND NEW CAT6 DATA CABLE
4. PROVIDE UP TO FOUR (4) INTERPOSING RELAYS TO PROVIDE AUTODIALER FUNCTIONALITY UPON INSTALLATION OF NEW EQUIPMENT

AREA CLASSIFICATIONS

CONTRACTOR SHALL REFERENCE NFPA 820 2020 EDITION

WASTEWATER PUMPING STATION WET-WELLS: THOSE ENCLOSED SPACES, UNDER SOLID HATCHES, MAN-WAYS, PLANKING, ETC. WHICH ARE NOT OPEN TO ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS AND WITH NO AIR CHANGES ARE CONSIDERED CLASS-1/DIVISION-I

BELOW GRADE METERING/PIPE VAULT: THOSE ENCLOSED SPACES, UNDER SOLID HATCHES, MAN-WAYS, ETC. WHICH ARE NOT OPEN TO ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS AND NOT NORMALLY VENTILATED ARE CONSIDERED CLASS-1/DIVISION-II

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REV. NO	DESCRIPTION	DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

RECORD DRAWING

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 049985 ENGINEER JOSEPH LAWDANSKI 11/20/23

McKIM&CREED
Venture IV Building, Suite 500
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Raleigh, North Carolina 27606-2689
Phone: (919) 233-8091, Fax: (919) 233-8031
NC Licensed# F-1222
www.mckimcreed.com

OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

PROPOSED POWER AND CONTROL RISER DIAGRAM

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
DESIGNED	JAL
CHECKED	JAG
PROJ. MGR.	KJS

SCALE
HORIZONTAL: NA
VERTICAL: NA

E01.2
DRAWING NUMBER

1
REVISION

STATUS:
REVISED AFTER CONSTRUCTION

I:\01519\0057\ENG\80-DRAWINGS\ELECTRICAL\ES100_01519-0057.DWG 11/20/2023 11:01:16 CODIE TONDRE

ELECTRICAL PANEL: EXISTING POWER PANEL 'B'

LOCATION: CHAPEL HILL NORTH PUMP STATION

ENCLOSURE: NEMA-1 MOUNTING: SURFACE
VOLTS: 480/270V 3 PHASE / 4 WIRE
BRACING:

MAIN:
NEUTRAL: 100%
FEED:

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER AMP	BREAKER POLE	FEEDER CIRCUIT CONDUIT & WIRING	CKT	PHASE	CKT	FEEDER CIRCUIT CONDUIT & WIRING	BREAKER POLE	BREAKER AMP	LOAD (KVA) C	LOAD (KVA) B	LOAD (KVA) A	LOAD SERVED
PUMP CONTROL PANEL MOTOR POWER	21.437						1	A	2						0.000	
		21.437		100	3	3#4 #8G 1.5"C	3	B	4					0.000		SPACE
			21.437				5	C	6				0.000			
TRANSFORMER 'XMR-A'	1.375						7	A	8						0.000	
		1.000		30	2	3#10 #10G 1"C	9	B	10					0.000		SPACE
SPACE			0.000				11	C	12				0.000			
TOTAL(S):	22.812	22.437	21.437										0.000	0.000	0.000	

TOTAL BUS A LOAD: 22.812 KVA
TOTAL BUS B LOAD: 22.437 KVA
TOTAL BUS C LOAD: 21.437 KVA

TOTAL CONNECTED KVA: 66.686

ELECTRICAL PANEL: EXISTING POWER PANEL 'A'

LOCATION: CHAPEL HILL NORTH PUMP STATION

ENCLOSURE: NEMA-3R MOUNTING: SURFACE
VOLTS: 120/240V 1 PHASE / 3 WIRE
BRACING:

MAIN: 60A MCB
NEUTRAL: 100%
PRIMARY FEED: 3#10 #10G 1"C (FROM XFMR-A)

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	BRANCH CIRCUIT CONDUIT & WIRING	CKT	PH	CKT	BRANCH CIRCUIT CONDUIT & WIRING	BREAKER POLE	BREAKER AMP	B	A	LOAD SERVED
PUMP STATION POLE LIGHT	0.250		15	1	2#14 #14G 3/4"C	1	A	2	2#12 #12G 3/4"C	1	20		0.250	GENERATOR BATTERY CHARGER
SAFETY SHOWER RECEPTACLE		0.250	20	1	2#12 #12G 3/4"C	3	B	4	2#12 #12G 3/4"C	1	20	0.500		GENERATOR COOLANT HEATER
GFCI RECEPTACLE	0.250		20	1	2#12 #12G 3/4"C	5	A	6		1	20		0.000	SPARE BREAKER
SPARE BREAKER		0.000	20	1		7	B	8		1	20	0.000		SPARE BREAKER
PUMP CONTROL PANEL CONTROL POWER	0.500		20	1	2#12 #12G 3/4"C	9	A	10	2#12 #12G 3/4"C	1	20		0.125	AUTODIALER
SPARE BREAKER		0.000	30	2		11	B	12	2#12 #12G 3/4"C	1	20	0.250		REMOTE TELEMETRY UNIT 'RTU'
	0.000					13	A	14		1	20		0.000	SPACE
SPACE		0.000	20	1		15	B	16		1	20	0.000		SPACE
SPACE	0.000		20	1		17	A	18		1	20		0.000	SPACE
TOTAL(S):	1.000	0.250										0.750	0.375	

TOTAL BUS A LOAD: 1.375 KVA
TOTAL BUS B LOAD: 1.000 KVA

TOTAL CONNECTED KVA: 2.375 KVA

GENERAL NOTES:

1. REFERENCE ALL CONTRACT DOCUMENTS, SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL REFERENCE AND IMPLEMENT ALL OWASA CONSTRUCTION DETAILS AND STANDARDS.
3. ALL AC POWER CONDUCTORS FOR CIRCUITS 100A AND GREATER SHALL BE STRANDED COPPER 600V TYPE XHHW-2 90°C
4. ALL AC POWER CONDUCTORS FOR CIRCUITS LESS THAN 100A SHALL BE STRANDED COPPER 600V TYPE THHN/THWN 75°C
5. ALL CONTROL CONDUCTORS RATED LESS THAN 120V SHALL BE STRANDED COPPER 300V TYPE THHN/THWN 75°C
6. ALL UNDERGROUND RACEWAYS (THREE OR MORE) THAT LEAVE THE BUILDING OR STRUCTURAL ENVELOPE SHALL BE SCH-40 PVC CONDUIT PLACED IN REINFORCED CONCRETE DUCT-BANKS
   - 6.1. UNDERGROUND RACEWAYS (LESS THAN THREE) SHALL BE SCH-80 PVC CONDUIT DIRECT-BURIED WITH 24-INCH MINIMUM COVER FROM FINISHED GRADE
7. RACEWAY TRANSITIONS OR PENETRATIONS THROUGH CEMENTITOUS MATERIAL AND FINISHED GRADE SHALL BE PVC-RAC

DEMOLITION KEYNOTES:

(1) DETERMINATE AND REMOVE PUMP CONTROL PANEL, PUMPS, FLOATS AND WIRING FROM EXISTING PUMP SKID.

(2) DETERMINATE AND REMOVE EXISTING 3-POLE 'PUMP 1' CIRCUIT BREAKER, CONDUIT AND CONDUCTORS. REPLACE WITH 100A 3-POLE CIRCUIT BREAKER, ALONG WITH CONDUCTORS AND CONDUIT AS SPECIFIED HEREIN.

(3) DETERMINATE AND REMOVE EXISTING 3-POLE 'PUMP 2' CIRCUIT BREAKER, CONDUIT AND CONDUCTORS. REPLACE WITH BLANKING PLATE.

CHAPEL HILL NORTH PUMP STATION LOAD / DEMAND CALCULATION

3-PHASE CONNECTED LOAD

DESCRIPTION	TYPE	DEMAND FACTOR	CONNECTED kVA	DEMAND kVA
WASTEWATER PUMP No.1 'PMP-MTR-101'	CONTINUOUS	1.25	28.266	35.333
WASTEWATER PUMP No.2 'PMP-MTR-102'	COINCIDENT	1.00	28.266	28.266
			3-PHASE CONNECTED TOTAL:	63.60

1-PHASE CONNECTED LOAD

PANELBOARD 'PPA'				
GENERATOR ANCILLARY DEVICES	CONTINUOUS	1.25	1.250	1.563
CONTROLS EQUIPMENT	CONTINUOUS	1.25	0.875	1.094
RECEPTACLES AND LIGHTING	NONCONTINUOUS	0.50	1.000	0.500
			1-PHASE CONNECTED TOTAL:	3.156
			3-PHASE CONNECTED TOTAL:	63.599
			TOTAL ESTIMATED LOAD:	66.755

ESTIMATED MAXIMUM DEMAND

67 kVA 460V / 3ϕ = 84 A

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REV NO.	DESCRIPTION	DATE
1	REVISED AFTER CONSTRUCTION	NOV 2023

RECORD DRAWING

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

ELECTRICAL

PANELBOARD SCHEDULES AND LOAD TABLE

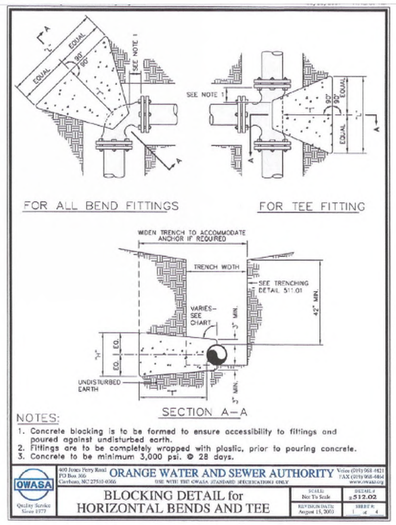
PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	JAL
DESIGNED	JAL
CHECKED	JAG
PROJ. MGR.	KJS

SCALE
HORIZONTAL: N/A
VERTICAL: NA

E02.0
DRAWING NUMBER
1
REVISION

STATUS: REVISED AFTER CONSTRUCTION

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NOTES:
1. Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
2. Fittings are to be completely wrapped with plastic, prior to pouring concrete.
3. Concrete to be minimum 3,000 psi. @ 28 days.

OWASA Quality Service Since 1977
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ORANGE WATER AND SEWER AUTHORITY
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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL #: s 512.02 | REVISION DATE: August 15, 2023 | SHEET #: 1 of 4

TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME, CONCRETE CU. YD.
48 INCHES	11 1/4°	---	---	---	---
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.00	1.00	2.50	0.09
	TEE / PLUG	1.00	1.00	2.00	0.07
42 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.00	1.00	2.50	0.09
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.50	0.12
36 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	3.00	0.28
	TEE / PLUG	2.00	2.00	2.50	0.23
30 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.75	0.25
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
24 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	2.00	2.00	3.00	0.28
	45°	3.00	2.50	3.00	0.47
	90°	4.50	3.00	3.50	0.94
	TEE / PLUG	4.50	3.00	3.00	0.81
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	5.00	3.00	3.50	0.84
	90°	6.50	3.50	3.50	1.54
	TEE / PLUG	6.50	3.50	3.00	1.32

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL #: s 512.02 | REVISION DATE: August 15, 2023 | SHEET #: 2 of 4

TEST PRESSURE = 200 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME, CONCRETE CU. YD.
48 INCHES	11 1/4°	1.00	1.00	1.00	0.04
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
42 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.50	1.50	2.50	0.15
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
36 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.50	2.00	3.00	0.33
	TEE / PLUG	2.50	2.00	2.50	0.28
30 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.50	0.23
	90°	4.00	2.00	3.00	0.42
	TEE / PLUG	4.00	2.00	2.50	0.32
24 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	2.50	3.00	0.61
	90°	5.50	3.00	3.50	1.13
	TEE / PLUG	5.50	3.00	3.00	0.97
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	4.00	2.00	3.00	0.50
	45°	5.50	3.00	3.50	1.13
	90°	7.50	4.00	3.50	2.01
	TEE / PLUG	7.50	4.00	3.00	1.72

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL #: s 512.02 | REVISION DATE: August 15, 2023 | SHEET #: 3 of 4

TEST PRESSURE = 250 P.S.I.

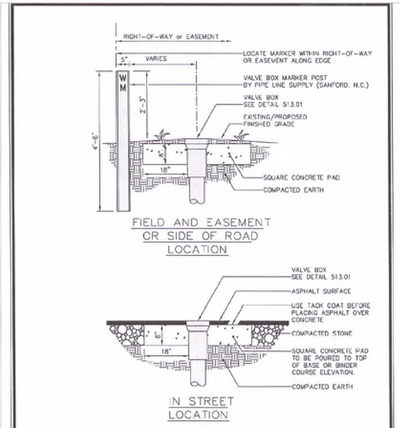
PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.) "L"	"H"	"T"	VOLUME, CONCRETE CU. YD.
48 INCHES	11 1/4°	1.00	1.00	1.00	0.04
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
42 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	2.50	0.23
	TEE / PLUG	2.00	2.00	2.00	0.18
36 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	2.00	1.50	2.50	0.19
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
30 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.50	2.00	2.50	0.28
	90°	4.00	2.50	3.00	0.61
	TEE / PLUG	4.00	2.50	2.50	0.51
24 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.50	2.00	3.00	0.44
	45°	4.50	2.75	3.00	0.74
	90°	6.00	3.50	3.50	1.43
	TEE / PLUG	6.00	3.50	3.00	1.22
16 INCHES	11 1/4°	2.50	2.00	3.00	0.33
	22 1/2°	4.00	2.50	3.00	0.61
	45°	6.00	3.50	3.50	1.43
	90°	8.00	4.50	4.00	2.74
	TEE / PLUG	8.00	4.50	3.50	2.40

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

SCALE: Not To Scale | DETAIL #: s 512.02 | REVISION DATE: August 15, 2023 | SHEET #: 4 of 4



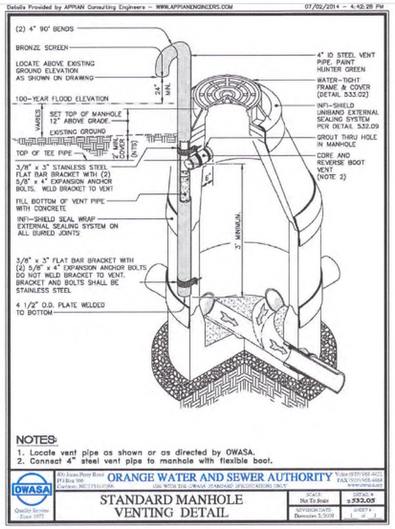
NOTES:
1. Concrete to be minimum 3,000 PSI @ 28 days.

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VALVE BOX STABILIZING PAD DETAILS

SCALE: Not To Scale | DETAIL #: s 513.02 | REVISION DATE: August 15, 2023 | SHEET #:

Details Provided by APPIAN Consulting Engineers – WWW.APPIANENGINEERS.COM 07/02/2014 – 4:42:28 PM

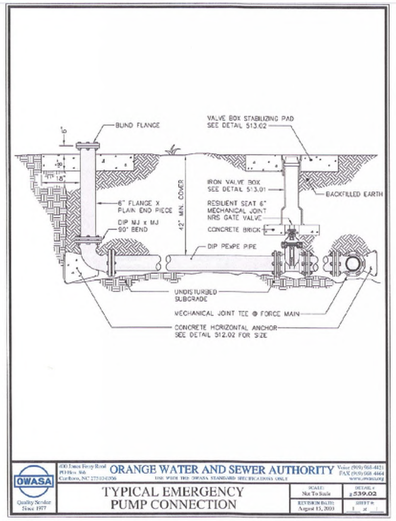


NOTES:
1. Locate vent pipe as shown or as directed by OWASA.
2. Connect 4" steel vent pipe to manhole with flexible boot.

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STANDARD MANHOLE VENTING DETAIL

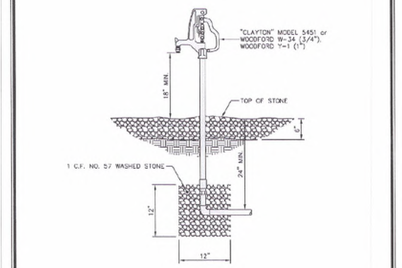
SCALE: No To Scale | DETAIL #: s 532.05 | REVISION DATE: Revision 3/2018 | SHEET #:



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TYPICAL EMERGENCY PUMP CONNECTION

SCALE: No To Scale | DETAIL #: s 539.02 | REVISION DATE: August 15, 2023 | SHEET #:



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YARD HYDRANT (NON-FREEZE)

SCALE: No To Scale | DETAIL #: s 539.04 | REVISION DATE: August 15, 2023 | SHEET #:

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REV.NO	DESCRIPTION	DATE
	RECORD DRAWING	
1	REVISED AFTER CONSTRUCTION	NOV 2023

REVISIONS

NORTH CAROLINA PROFESSIONAL 049985 11/20/23 ENGINEER JOSEPH LAWDANSKI

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OWASA

CHAPEL HILL NORTH PUMP STATION REHABILITATION

DETAILS

OWASA STANDARD DETAILS

PROJ. START DATE:	2021.NOV
MCE PROJ. #	01519-0057
DRAWN	EJB
DESIGNED	KJS
CHECKED	KJS
PROJ. MGR.	KJS

SCALE: HORIZONTAL: AS NOTED VERTICAL: N/A

D00.1 DRAWING NUMBER

1 REVISION

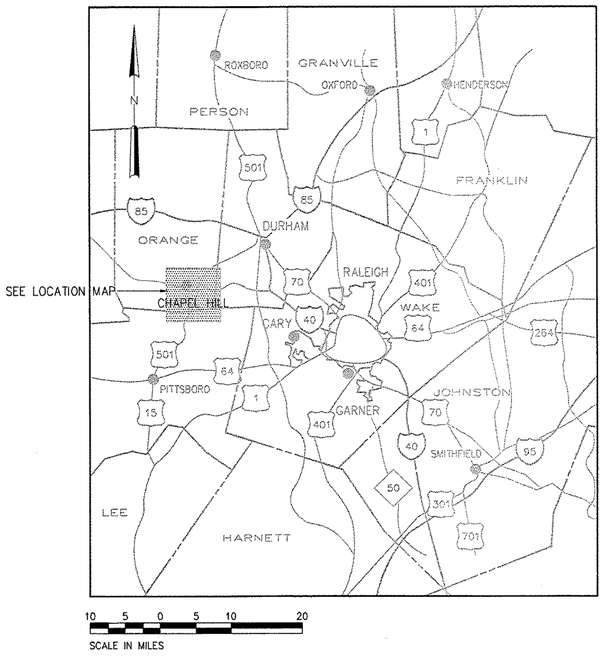
STATUS: REVISED AFTER CONSTRUCTION

I:\01519\0057\ENG\80-DRAWINGS\DETAILS\D00.1.DWG 11/20/2023 11:01:20 CODIE TONDRE

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE PUMP STATION AND FORCE MAIN IMPROVEMENTS

CONTRACT NO 1 - GENERAL CONSTRUCTION



VICINITY MAP

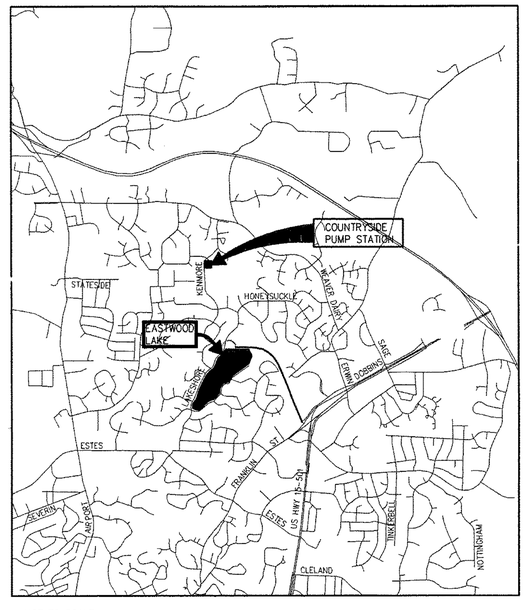
RECORD DRAWING

OWASA

CIP PROJECT NO. 276-28

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11-13-00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS 11/13/00



NOT TO SCALE

LOCATION MAP

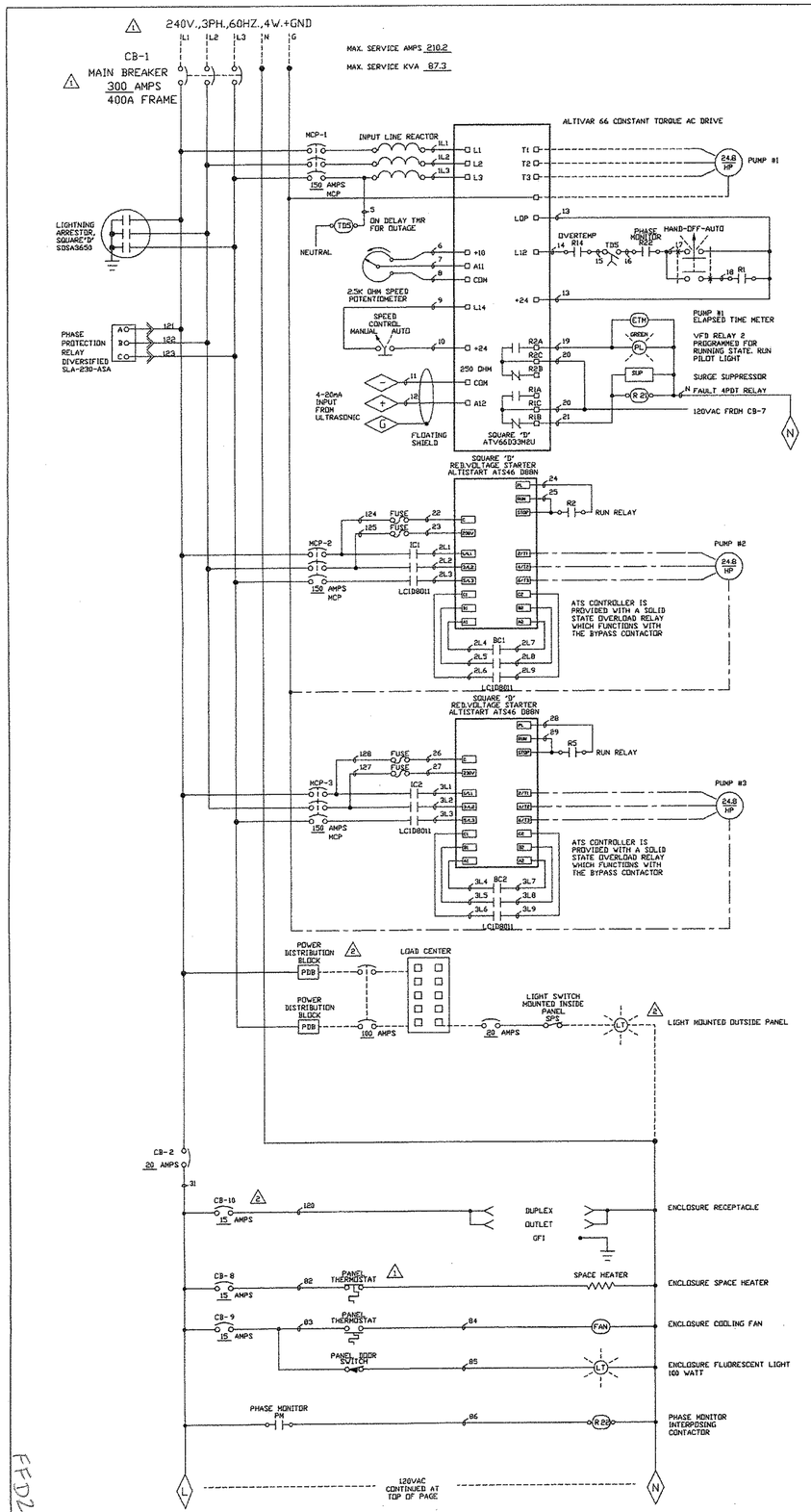
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ISSUED FOR CONSTRUCTION
BY JBM DATE 10/5/99

FFD2

SPS-C01-37-01

PLOT DATE: 11/7/00 10:55am FILE= H:\30383\Gen\Cover by PLANNING KEITH=DWGS\SHEETS, MISC\Location,



LEGEND

M	MOTOR STARTER
R	RELAY
T	TRANSFORMER
VAR	SURGE PROTECTOR
CB	CIRCUIT BREAKER
LS	LIMIT SWITCH
OL	OVERLOAD
PB	PUSHBUTTON
PL	PILOT LIGHT
SS	SELECTOR SWITCH

LEGEND

SU	START-UP SOCKET
SV	SOLENOID VALVE
TB	TERMINAL BLOCK
TC	24 HOUR TIME CLOCK
TD	TIME DELAY RELAY
ETM	ELAPSED TIME METER
LLR	LIQUID LEVEL RELAY
PLS	PUSH BUTTON LIMIT SWITCH
———	WIRING INSIDE PANEL
— — —	WIRING OUTSIDE BY DAVCO
------	WIRING NOT BY DAVCO
#○	WIRE MARKER

WIRE COLORS:

NEUTRAL ---------- WHITE
ALL WIRES LARGER THAN #12 --- BLACK
GROUND (IF REQ'D) ---------- GREEN
ALL OTHER WIRES ---------- RED

NEMA 3R ENCLOSURE PAINTED FORREST GREEN EXTERIOR & GLOSS WHITE ON THE INTERIOR.

PANEL TO BEAR A UL LABEL

Rev.		Description	By	Date
5	S	FINAL AS BUILT		D.K. 9-28-00
4	S	DELETE PIN #'S, R14 - 16 NO CONTACTS	PDG	5-16-00
3	S	CHANGE WIRE NUMBERS, AS BUILT	PDG	5-5-00
2	S	CHANGES PER CUSTOMER	PDG	5-2-00
1	S	CHANGES PER CUSTOMER	PDG	11-8-99

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Job Name/Owner: ORANGE WATER & SEWER

Engineer:

Contractor:

USFilter
P.O. BOX 1419
THOMASVILLE, GA. 31799
Phone 912-226-5733
DAVCO PRODUCTS

Title: TRIPLEX PUMP CONTROL PANEL ELECTRICAL SCHEMATIC

Dftn. PDG	Date 10-21-99	Scale:	NONE
Chkd.	Date		
Apvd. AGR	Date 10-25-99		
Size D	Dwg. No. 6057SW-D-5	Rev. 5	

Updated Sheet

FFD2

ABBREVIATIONS

AB	ANCHOR BOLT	FAB	FABRICATE	MAINT	MAINTENANCE	S	SOUTH/SLOPE
AC	ALTERNATING CURRENT/ ASBESTOS CEMENT	F & C	FRAME AND COVER	MATL	MATERIAL	SAN	SANITARY
		F & G	FRAME AND GRATE	MAX	MAXIMUM	SBL	SURVEY BASELINE
ACT	ACOUSTIC TILE	FC	FLUSHING CONNECTION	MECH	MECHANICAL	SCH	SCHEDULE
AD	AREA DRAIN	FD	FLOOR DRAIN	MEMB	MEMBRANE	SD	STORM/SITE DRAIN
ADJ	ADJUSTABLE	FDN	FOUNDATION	MET	METAL	SECT	SECTION
AFF	ABOVE FINISHED FLOOR	FE	FIRE EXTINGUISHER	MFR	MANUFACTURER	SERV	SERVICE
AGGR	AGGREGATE	FF	FINISH FLOOR	MG	MILLION GALLONS	SEW	SEWER
AL	ALUMINUM	FH	FIRE HYDRANT	MGD	MILLION GALLONS PER DAY	SF	SQUARE FEET
ALLOW	ALLOWANCE/ALLOWABLE	FIN	FINISH	MH	MANHOLE	SHT	SHEET
ALT	ALTERNATE	FIX	FIXTURE	MIN	MINIMUM	SI	SQUARE INCH
APPROX	APPROXIMATE	FL	FLASHING/FLOOR	MISC	MISCELLANEOUS	SIM	SIMILAR
ARCH	ARCHITECTURAL	FLEX	FLEXIBLE	MJ	MECHANICAL JOINT	SJ	STEEL JOIST
ASB	ASBESTOS	FLG	FLANGE	MLDG	MOLDING	SPEC	SPECIFICATION
ASPH	ASPHALT	FLUOR	FLUORESCENT	MO	MASONRY OPENING	SQ	SQUARE
AT	ASPHALT TILE	FLXC	FLEXIBLE CONNECTION	MOD	MODIFY/MODIFIED	SS	SANITARY SEWER
		FM	FORCE MAIN	MON	MONUMENT	SST	STAINLESS STEEL
		FPRF	FIREPROOF	MOT	MOTOR	ST	STREET
		FRP	FIBERGLASS REINFORCED POLYESTER LAMINATE	MTD	MOUNTED	STA	STATION
				MTG	MOUNTING	STD	STANDARD
		FT	FEET	MULT	MULTIPLE	STG	STORAGE
		FTG	FOOTING/FITTING			STIR	STIRRUP
B	BORING	FURR	FURRING/FURRED			STL	STEEL
BD	BOARD					STR	STRUCTURAL
BFE	BOTTOM OF FITTING ELEV					SUB	SUBSTITUTE
BFV	BUTTERFLY VALVE					SUP	SUPPLY
BITUM	BITUMINOUS					SUPT	SUPERINTENDENT
℄	BASELINE					SUR	SURFACE
BL	BUILDING LINE					SUSP	SUSPENDED
BLDG	BUILDING					SW	SWITCH
BLK	BLOCK			N	NORTH	SWBD	SWITCHBOARD
BM	BENCH MARK			NA	NOT APPLICABLE	SWD	SIDE WATER DEPTH
BOC	BACK OF CURB	G	GAS/GAS LINE	NF	NEAR FACE	SYM	SYMMETRICAL
BOT	BOTTOM	GA	GAUGE	NIC	NOT IN CONTRACT		
BRG	BEARING	GAL	GALLON	NO	NUMBER		
BRK	BRICK	GALV	GALVANIZED	NOM	NOMINAL		
BRZ	BRONZE	GC	GENERAL CONTRACTOR	NPW	NON POTABLE WATER		
BSMT	BASEMENT	GEN	GENERATOR	NTS	NOT TO SCALE		
BT	BOLT	GI	GALVANIZED IRON				
BUR	BUILT-UP ROOFING	GL	GLASS				
BV	BALL VALVE	GPM	GALLONS PER MINUTE				
		GR	GRADE			T	TREAD
		GV	GATE VALVE			T&B	TOP AND BOTTOM
		GW	GUY WIRE			T&G	TONGUE AND GROOVE
		GWB	GYPSUM WALL BOARD			TAN	TANGENT
		GWF	GLAZED WALL FINISH			TBM	TEMPORARY BENCH MARK
C	CLOSET/CARPET/CHANNEL	GYP	GYPSUM	OC	ON CENTER	TC	TOP OF CURB
CAB	CABINET			OD	OUTSIDE DIAMETER	TDH	TOTAL DYNAMIC HEAD
CB	CATCH BASIN			OF	OUTSIDE FACE	TECH	TECHNICAL
C/C	CENTER TO CENTER			OFF	OFFICE	TEL	TELEPHONE
CE	CONSTRUCTION EASEMENT			OPER	OPERATOR	TEMP	TEMPERATURE
CEM	CEMENT			OPNG	OPENING	TER	TERRAZZO
CER	CERAMIC			OPP	OPPOSITE	THERMO	THERMOSTAT
CF	CUBIC FEET			ORIG	ORIGINAL	THK	THICK
CFM	CUBIC FEET PER MINUTE			OT	OPEN TRUSS	THRU	THROUGH
CI	CAST IRON/CUBIC INCHES			OVHD	OVERHEAD	TOD	TOP OF DECK
CIP	CAST IRON PIPE					TOF	TOP OF FOOTING
CL	CENTER LINE	H	HEIGHT			TOM	TOP OF MASONRY/MANHOLE
CL_2	CHLORINE	HDW	HARDWARE			TOS	TOP OF SLAB
CLG	CEILING	HEX	HEXAGONAL			TOW	TOP OF WALL
CLKG	CAULKING	HM	HOLLOW METAL			TOL	TOLERANCE
CLR	CLEAR	HORZ	HORIZONTAL			TPS	TWISTED PAIR SHIELDED
CMP	CORRUGATED METAL PIPE	HP	HORSEPOWER			TRANS	TRANSFORMER
CMU	CONCRETE MASONRY UNIT	HPT	HIGH POINT			TYP	TYPICAL
CO	CLEANOUT	HTR	HEATER				
COL	COLUMN	HVAC	HEATING, VENTILATION AND AIR CONDITIONING	PAR	PARALLEL		
CONC	CONCRETE			PC	POINT OF CURVE/PIECE		
CONST	CONSTRUCTION	HW	HOT WATER	PCC	POINT OF COMPOUND CURVE		
CONT	CONTINUOUS	HWL	HIGH WATER LEVEL	PCF	POUNDS PER CUBIC FOOT		
CONTR	CONTRACTOR	HWY	HIGHWAY	PE LINING	POLYETHYLENE LINING		
CORP	CORPORATION	HYD	HYDRAULIC	PERF	PERFORATED		
CORR	CORRIDOR			PERP	PERPENDICULAR	UG	UNDERGROUND
CP	CONCRETE PLANK			PI	POINT OF INTERSECTION	UH	UNIT HEATER
CRS	COURSE			ℙ	PROPERTY LINE/PLATE	UNFIN	UNFINISHED
CT	CERAMIC TILE			PNL	PANEL	UR	URINAL
CTJ	CONTROL JOINT			PP	POWER POLE	UTIL	UTILITY
CU	COPPER			PREFAB	PREFABRICATED		
CV	CHECK VALVE			PRV	PRESSURE RELIEF VALVE		
CW	COLD WATER			PS	PUMPING STATION		
CY	CUBIC YARD			PSF	POUNDS PER SQUARE FOOT		
				PSI	POUNDS PER SQUARE INCH		
		I	IRON	PT	POINT OF TANGENT/POINT		
		ID	INSIDE DIAMETER	PTN	PARTITION	VAC	VACUUM
		IF	INSIDE FACE	PV	PLUG VALVE	VAT	VINYL ASBESTOS TILE
		IN	INCH	PVC	POLYVINYL CHLORIDE	VCP	VITRIFIED CLAY PIPE
DC	DIRECT CURRENT	INCL	INCLUDED	PVMT	PAVEMENT	VEL	VELOCITY
DET	DETAIL	INF	INFLUENT	PW	POTABLE WATER	VENT	VENTILATING/VENTILATION
DF	DRINKING FOUNTAIN	INS	INSULATION			VERT	VERTICAL
DIA (ø)	DIAMETER	INT	INTERIOR			VOL	VOLUME
DIAG	DIAGONAL	INV	INVERT			VP	VENT PIPE
DIM	DIMENSION					VWC	VINYL WALL COVERING
DIP	DUCTILE IRON PIPE						
DISCH	DISCHARGE						
DIST	DISTRIBUTION			QTY	QUANTITY		
DJ	DOUBLE JOIST						
DL	DEAD LOAD						
DN	DOWN	J	JOIST				
DOZ	DOZEN	JB	JUNCTION BOX				
DR	DOOR	JCT	JUNCTION				
DWG	DRAWING	JT	JOINT				
DWL	DOWEL			R	RADIUS/RISER	W	WEST/WIDTH
				RCP	REINFORCED CONCRETE PIPE	W/	WITH
				RD	ROAD/ROOF DRAIN	WC	WATER CLOSET
				RECIR	RECIRCULATION	WF	WIDE FLANGE
				RECP	RECEPTACLE	WH	WALL HYDRANT
				RECT	RECTANGULAR	WI	WROUGHT IRON
				RED	REDUCER	WL	WATER LEVEL
E	EAST/EASEMENT			REF	REFERENCE	W/L	WATER LINE/
EA	EACH			REG	REGISTER	WO	WINDOW OPENING
ECC	ECCENTRIC			REINF	REINFORCING	W/O	WITHOUT
EF	EACH FACE	L	LENGTH/ANGLE	REM	REMOVE	WP	WATERPROOF
EFF	EFFLUENT	LA	LINE AHEAD	REQD	REQUIRED	WPFG	WATER PROOFING
EIP	EXIST IRON PIPE	LAB	LABORATORY	REST	RESTRAINED	WPT	WALL PENETRATING TYPE
EL OR ELEV	ELEVATION	LAM	LAMINATED	REV	REVISE	WSE	WATER SURFACE ELEVATION
ELEC	ELECTRIC/ELECTRICAL	LAT	LATERAL	RF	ROOF	WSP	WEATHERSTRIP
ELL	ELBOW	LAV	LAVATORY	RFG	ROOFING	WT	WEIGHT
ENGR	ENGINEER	LB	POUND/LINE BACK	RJ	RESTRAINED JOINT	WV	WATER VALVE
ENT	ENTRANCE	LF	LINEAR FEET	RM	ROOM	WWF	WELDED WIRE FABRIC
EOG	EDGE OF GRAVEL	LG	LONG	RND	ROUND		
EOP	EDGE OF PAVEMENT	LL	LIVE LOAD	RO	ROUGH OPENING		
EQ	EQUAL	LLH	LONG LEG HORIZONTAL	RPM	REVOLUTIONS PER MINUTE		
EQPT	EQUIPMENT	LLV	LONG LEG VERTICAL	RR	RAILROAD		
EW	EACH WAY	LP	LIGHT POLE	RT	RIGHT		
EX	EXISTING	LPT	LOW POINT	RTU	REMOTE TERMINAL UNIT		
EXC	EXCAVATE	LT	LIGHT	RW	RAW WATER	YD	YARD
EXH	EXHAUST	LTG	LIGHTING	R/W	RIGHT OF WAY	YR	YEAR
EXP	EXPANSION	LVR	LOUVER				
EXT	EXTERIOR	LWL	LOW WATER LEVEL				

INDEX OF DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
GENERAL		
	COVER	COVER
1	X1	INDEX, ABBREVIATIONS AND LEGEND
2	G1	SITE PLAN
3	G2	FORCE MAIN – PLAN AND PROFILE
4	G3	FORCE MAIN – PLAN AND PROFILE
5	G4	FORCE MAIN – PLAN AND PROFILE
MECHANICAL		
6	M1	PUMP STATION – PLANS AND SECTION
ELECTRICAL		
7	E1	SITE PLAN AND DETAILS
MISCELLANEOUS STANDARD DETAILS		
8	D1	MISCELLANEOUS STANDARD DETAILS
9	D2	MISCELLANEOUS STANDARD DETAILS
10	D3	MISCELLANEOUS STANDARD DETAILS
11	D4	MISCELLANEOUS STANDARD DETAILS
TRAFFIC CONTROL PLANS		
12		TRAFFIC CONTROL PLAN
13		TRAFFIC CONTROL PLAN

NOTES:

1. ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.
2. TYPICAL DEPTH OF COVER FOR BURIED FORCE MAIN SHALL BE 3 FT UNLESS OTHERWISE SHOWN OR SPECIFIED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH DUKE POWER COMPANY ANY ADDITIONAL SUPPORT OF EXISTING POWER POLES AS REQUIRED FOR TRENCH EXCAVATION. ALL COSTS OF SUCH WORK SHALL BE PAID BY THE CONTRACTOR.
4. LOCATIONS OF EXISTING SHOWN UTILITIES IS APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXACT LOCATION, ORIENTATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO EXCAVATION FOR THE FORCE MAIN.
5. COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON THE NORTH CAROLINA PLANE COORDINATE SYSTEM.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMA– TION PROVIDED IN THE CONTRACT DOCUMENTS.
7. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL INTERCEPTOR AND FORCE MAIN TRENCH BEDDING SHALL BE TYPE A.
8. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CON– TRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED.
9. THE MINIMUM TRENCH WIDTHS SHALL BE IN STRICT ACCORDANCE WITH THE "TRENCH WIDTH EXCAVATION LIMITS" AS SHOWN ON THE DRAWINGS.
10. UNLESS OTHERWISE INDICATED, ALL EXISTING GRADE ELEVATIONS SHOWN ARE ALONG THE PIPE ALIGNMENT.
11. CURBS AND CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE FIRST EXPANSION JOINT BEYOND THE TRENCH EXCAVATION LIMITS AND TO THE FULL WIDTH. CURBS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING. SEE SECTION 7 OF THE SPECIFICATIONS.
12. BURIED TELEPHONE AND CATV CABLES (FIBRE OPTICS AND CONVENTIONAL) ARE KNOWN TO VARY DUE TO INSTALLATION TECHNIQUES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANY TO DETERMINE SPECIFIC CABLE LOCATIONS AND NOTIFYING THE ENGINEER OF THE EXACT ELEVATION OF THE CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH LOCATING, RELOCATING OR REPAIRING BURIED CABLES ALONG THE INTERCEPTOR ROUTE.
13. THE CONTRACTOR SHALL PLACE 3 TO 4 INCHES OF SAND OR SCREENINGS ON ALL ASPHALT SURFACES THAT ARE AFFECTED BY THE INSTALLATION OF THE INTERCEPTOR.
14. THE CONTRACTOR SHALL INSTALL ALL SIGNS AS REQUIRED BY NCDOT ALONG STATE ROADWAYS AND CITY STREETS AS REQUIRED BY THE TOWN OF CHAPEL HILL.
15. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION OF THE PUMP STATION, IN ACCORDANCE WITH DETAIL 0222121 AND SECTION 4 OF THE SPECIFICATIONS. ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED EASEMENT WIDTHS. EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.
16. PLACED RIP–RAP SHALL HAVE A MINIMUM DEPTH OF 24–INCHES AND SHALL HAVE A LAYER OF TYPE II GEOTEXTILE SEPARATOR PLACED BETWEEN THE SOIL AND THE STONE.
17. OWNER WILL FURNISH DESCRIPTION OF EASEMENTS UPON REQUEST.
18. INSTALL CURB INLET SEDIMENT CONTROL AT ALL CURB INLETS. SEE DETAIL 0227002.
19. CONCRETE CURB AND GUTTER SHALL BE REPLACED IN ACCORDANCE WITH DETAIL 0242000.

CHAPEL HILL NOTES:

1. A PRECONSTRUCTION MEETING WITH THE TOWN OF CHAPEL HILL URBAN FORESTER SHALL BE ARRANGED PRIOR TO DISTURBING THE PROJECT SITE.
2. THE CONTRACTOR SHALL STRIP THE ENTIRE AREA WITHIN THE CLEARING LIMITS AND INSTALL ALL SEDIMENTATION AND/OR EROSION CONTROL DEVICES AS SHOWN AND ANY SPECIAL CONDITIONS NOTED IN THE SEDIMENTATION AND EROSION CONTROL "LETTER OF APPROVAL" FOR THIS PROJECT.
3. CONTRACTOR SHALL INSTALL 4 FT HIGH, ORANGE WARNING BARRIER FENCE ALONG CLEARING LIMITS WHERE INDICATED PRIOR TO CLEARING SITE.
4. ALL AREAS WHICH DO NOT RECEIVE PLANTING OR PAVEMENT SHALL BE GRADED IN ACCORDANCE WITH SPEC SECTION 7 AND 1CD READ FOR SEEDING.
5. THE CONTRACTOR SHALL HAVE THE LAND DISTURBING PERMIT ON–SITE PRIOR TO THE BEGINNING ANY LAND DISTURBING ACTIVITIES.
6. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER, ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
7. CLEARING LIMITS TO BE WITHIN RIGHT–OF–WAY, CUT–FILL LINES AND DRAINAGE EASEMENTS, OR AS INDICATED.
8. CALL 919–571–4700 FOR ON SITE INSPECTION BY THE S&EC OFFICE.
9. SEEDING SHALL BE AS SPECIFIED.
10. ALL EROSION CONTROL MEASURES TO REMAIN IN PLACE UNTIL ENTIRE SITE IS STABILIZED.
11. CALL 919–571–4700 FOR INSPECTION AT THE END OF PROJECT FOR APPROVAL TO REMOVE TEMPORARY MEASURES AND RELEASE OF PERFORMANCE BOND.

TREE PROTECTION NOTES:

1 ANY TREE ROOTS EXPOSED BY CONSTRUCTION SHALL BE SEVERED CLEANLY WITH A PRUNING TOOL.

2 DO NOT DISPOSE OF ANY CHEMICALS OR REMOVE SOIL OUTSIDE THE LIMIT OF WORK.

CONSTRUCTION SEQUENCE

1 OBTAIN APPROPRIATE PERMITS.

2 HOLD PRECONSTRUCTION CONFERENCE WITH LANDSCAPE PROTECTION SUPERVISOR, ENGINEER AND URBAN FORESTER.

3 ERECT TREE PROTECTION FENCING.

4 CLEAR AND GRUB TREES AND SHRUBS TO BE REMOVED.

5 INSTALL SOIL AND EROSION CONTROL MEASURES.

6 ROUGH GRADE SITE.

7 EXCAVATE AND INSTALL UTILITIES.

8 FINISH FINAL GRADING AND SURFACE RESTORATION.

9 REMOVE TREE PROTECTION FENCING.

LEGEND

MATERIALS

- GRADE OR EARTH
- ASPHALT PAVING
- SAND
- GRAVEL
- CONCRETE
- CONC. FILL OR GROUT
- CONC. MASONRY UNIT
- BRICK
- ROCK
- STEEL
- INSULATION
- WATER SURFACE
- GRATING
- CHECKERED PLATE
- GLASS
- WOOD BLOCKING

SYMBOLS

- PROPOSED FORCE MAIN
- W – EXIST. WATER LINE
- SS – EXIST. SANITARY SEWER
- SD – EXIST. STORM DRAIN
- E – EXIST. ELECTRICAL
- T – EXIST. TELEPHONE
- G – EXIST. GAS
- EXIST. VALVE
- NEW VALVE
- SILT FENCE
- NEW AIR RELEASE VALVE ASSEMBLY
- FH EXIST. FIRE HYDRANT
- MH EXIST. SAN. SEWER MH
- WM EXIST. WATER METER
- PP EXIST POWER POLE
- CO EXIST. SS CLEANOUT
- AP SOIL BORING/AUGER PROBE
- SR SEISMIC LINE
- EXIST GROUND PROFILE
- CREEK / DITCH
- EXIST EDGE OF PAV'MT

SECTION AND DETAIL KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

(A) A SECTION CUT ON DRAWING A3 IS IDENTIFIED AS FOLLOWS:

A / A6 — A: SECTION LETTER; A6: DRAWING WHERE SECTION IS SHOWN

(B) THE SECTION SHOWN ON DRAWING A6 IS IDENTIFIED AS FOLLOWS:

A / A3 — A: SECTION LETTER; A3: DRAWING FROM WHERE SECTION WAS TAKEN

DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT DETAILS ARE IDENTIFIED BY A SQUARE WITH A NUMBER IN THE UPPER HALF.

STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE CONTRACT DRAWINGS BY ONE OF TWO METHODS:

1509203 → REFERENCED ITEM

OR:

SEE 1509203 → REFERENCED ITEM

LINETYPES

- PROPOSED ITEMS
- EXISTING ITEMS
- HIDDEN ITEMS
- DEMOLITION ITEMS
- CENTER LINE
- MATCH LINE
- CONCRETE CURB
- EASEMENT BOUNDARY

RECORD DRAWING

SPS-C01-37-03

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

DESIGNED JBM
DRAWN PWS
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 6397 ENGINEER DONALD L. CORDELL 11-17-00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS, JR. 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

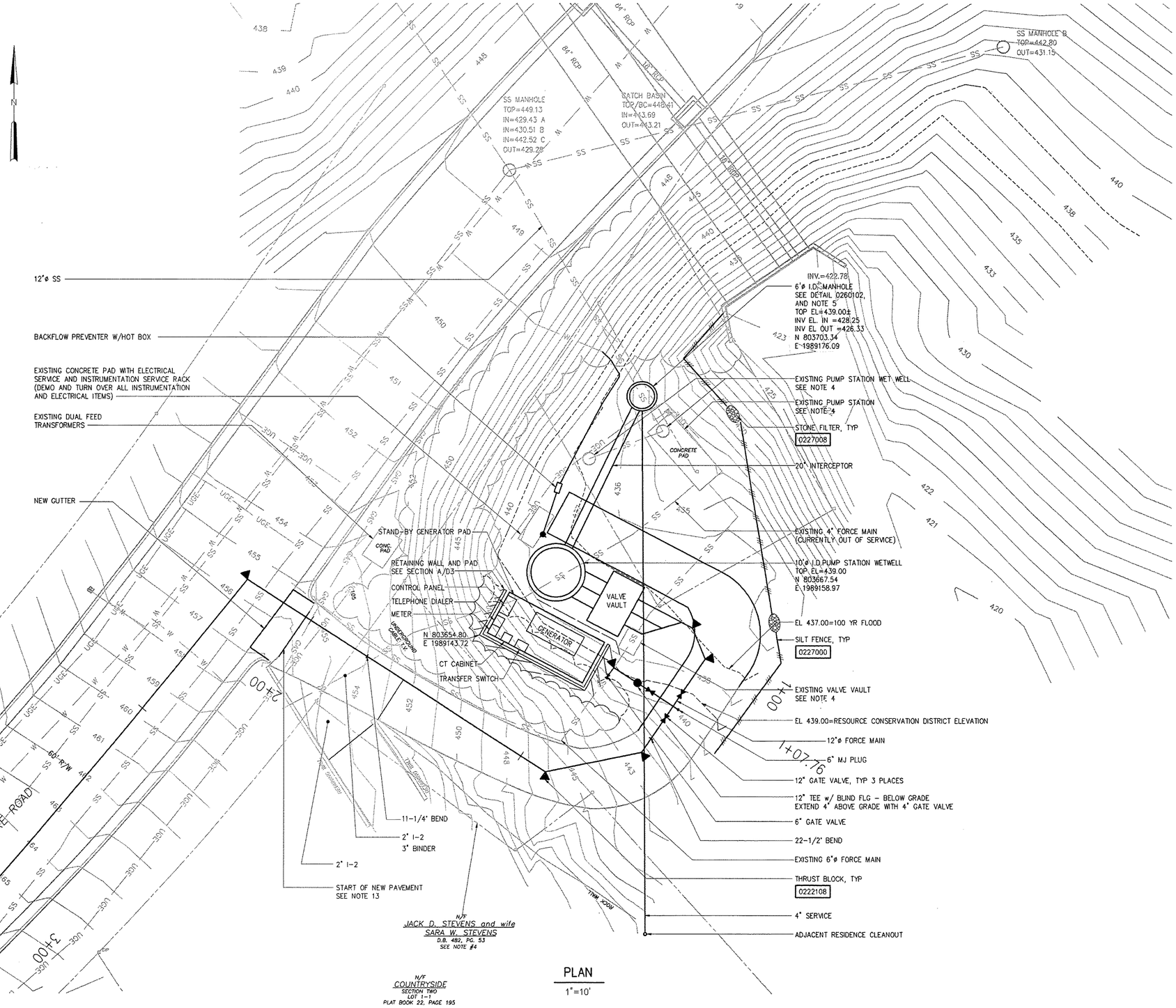
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

INDEX OF DRAWINGS, SYMBOLS AND ABBREVIATIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER X1
SHEET 1 OF 13

11/17/00 10:58am FILE= H:\30387\Gen\X01r by PTLAWANSON XREFs=Misc\30387-tb,



NOTES:

1 ALL PLANAMETRIC AND TOPOGRAPHIC INFORMATION PROVIDED BY COOPER AND ASSOCIATES, CARY, NORTH CAROLINA.

2 THE 100 YEAR FLOOD ELEVATION IS 437.00.

3 THE RESOURCE CONSERVATION DISTRICT ELEVATION IS 439.00.

4 THE DEMOLITION WORK SHALL NOT BEGIN UNTIL THE NEW PUMP STATION IS OPERATIONAL FOR A MINIMUM OF 14 CALENDAR DAYS. ALL DEMOLITION SHALL BE CONDUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF CONTRACT SPECIFICATION. THE DEMOLITION WORK FOR THE TWO WET WELL MANHOLE SHALL CONSIST OF REMOVING THE TOP SECTIONS (TO A MINIMUM OF 3 FEET BELOW GRADE) AND FILLING THE WET WELLS WITH SELECT FILL OR SAND. THE DEMOLITION WORK AT THE PUMP STATIONS SHALL CONSIST OF REMOVING THE EXISTING PUMPS AND DELIVERING THE PUMPS TO THE OWASA OPERATIONS CENTER, THE PUMP STATION ACCESS TUBE SHALL BE REMOVED AND THE PUMP STATION SHALL BE FILLED WITH SELECT FILL OR SAND. THE CONCRETE SLAB SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. THE EXISTING VALVE VAULT SHALL BE REMOVED AND THE EXISTING 6" PIPE SHALL BE PLUGGED.

5 THE NEW INFLUENT MANHOLE SHALL BE THE DOG HOUSE STYLE AND SET OVER THE EXISTING 12" SS. AFTER THE NEW PUMP STATION HAS BEEN CHECKED OUT AND READY FOR SERVICE THE EXISTING 12" SS SHALL BE CUT TO DIVERT INFLUENT FLOW INTO THE NEW PUMP STATION WET WELL. THE MANHOLE INVERT SHALL BE FORMED TO ROUTE THE FLOW TO THE NEW WET WELL AND THE 12" SS SHALL BE PLUGGED ON THE DOWN STEAM (EXISTING PUMP STATION) SIDE.

6 ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE, OR AS SOON AS PRACTICABLE AFTER, ANY LAND CLEARING OR DISTURBANCE ACTIVITIES MAY BEGIN.

7 ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT AND REPAIRED OR REPLACED AS NECESSARY.

8 ALL EROSION CONTROL MEARSURES SHALL BE CLEANED OF A ACCUMULATED SEDIMENT ONCE MEASURE HAS BECOME HALF FULL, BY VOLUME.

9 REMOVED SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER SUCH THAT FURTHER SEDIMENT TRANSPORT DOES NOT OCCUR.

10 ALL DISTRUBED AREAS LEFT EXPOSED WILL, WITHIN 30 WORKING DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

11 GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PLANTED OR OTHERWISE PROVIDED WITHIN 30 WORKING DAYS ON THAT PORTION OF THE TRACT (DISTURBED AREA) UPON WHICH FURTHER ACTIVE CONSTRUCTION IS NOT BEING UNDERTAKEN.

12 ALL EROSION CONTROL MEARURES SHALL REMAIN IN PLACE UNTIL ALL DISTRUBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ONCE ENTIRE AREA HAS BEEN STABILIZED, TEMPORARY EROSION CONTROL MEASURES MAY BE REMOVES AND LOCATIONS RETURNED TO ORIGINAL CONDITION.

13 THE PUMP STATION ACCESS DRIVE FROM CURB LINE AS INDICATED SHALL BE A TYPE "C" PAVEMENT WITHOUT THE OVERLAY WEARING SURFACE AND SUB-BASE. THE BASE (BINDER COURSE) SHALL BE OF 5 INCHES.

14 THE CONTRACTOR SHALL INSTALL GRAVEL ON THE ACCESS ROAD TO FORM A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT. THE GRAVEL SHALL EXTEND 50 LF FROM CURB LINE.

15 INSTALL 2" I-2 FROM THE BACK OF THE CURB TO THE LINE INDICATED ON THE SITE PLAN.

DISTRUBED AREA = 0.25 AC.

SPS-C01-37-04

RECORD DRAWING

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
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DRAWN PWS
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER — DONALD L. CORDELL

NORTH CAROLINA PROFESSIONAL SEAL 10118 — JOSEPH B. MEEKS — 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

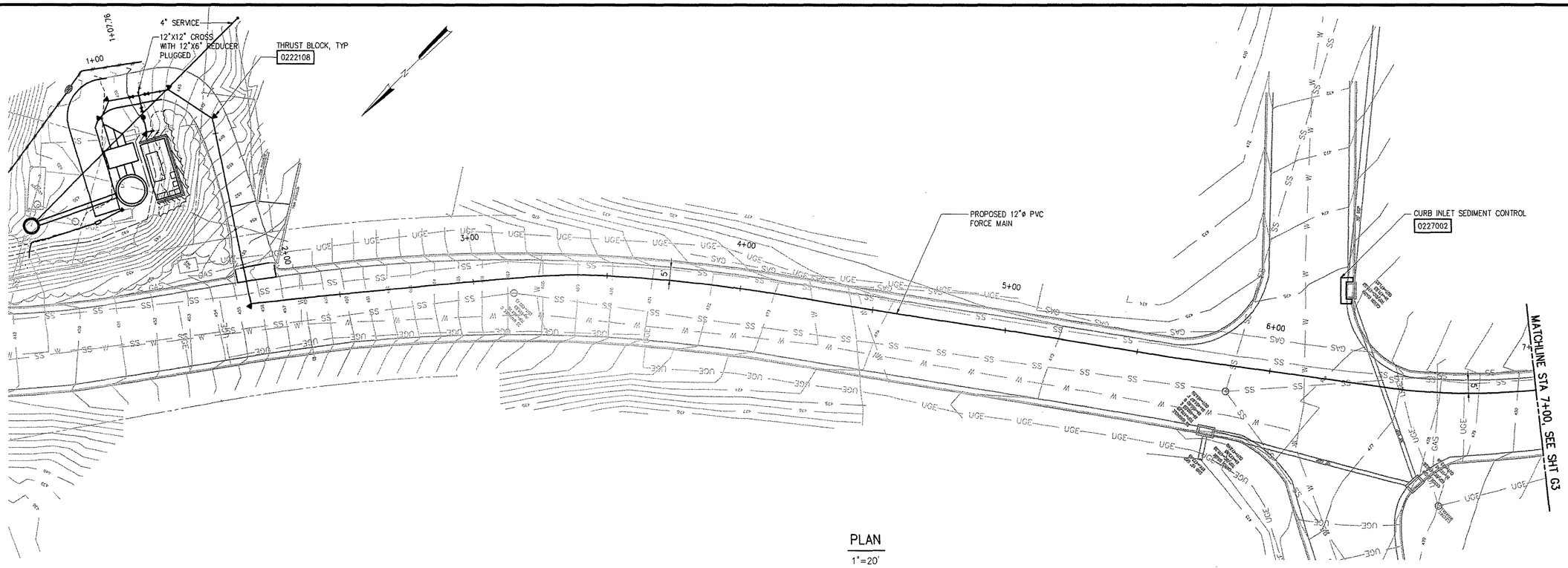
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

PUMP STATION
GENERAL
SITE PLAN

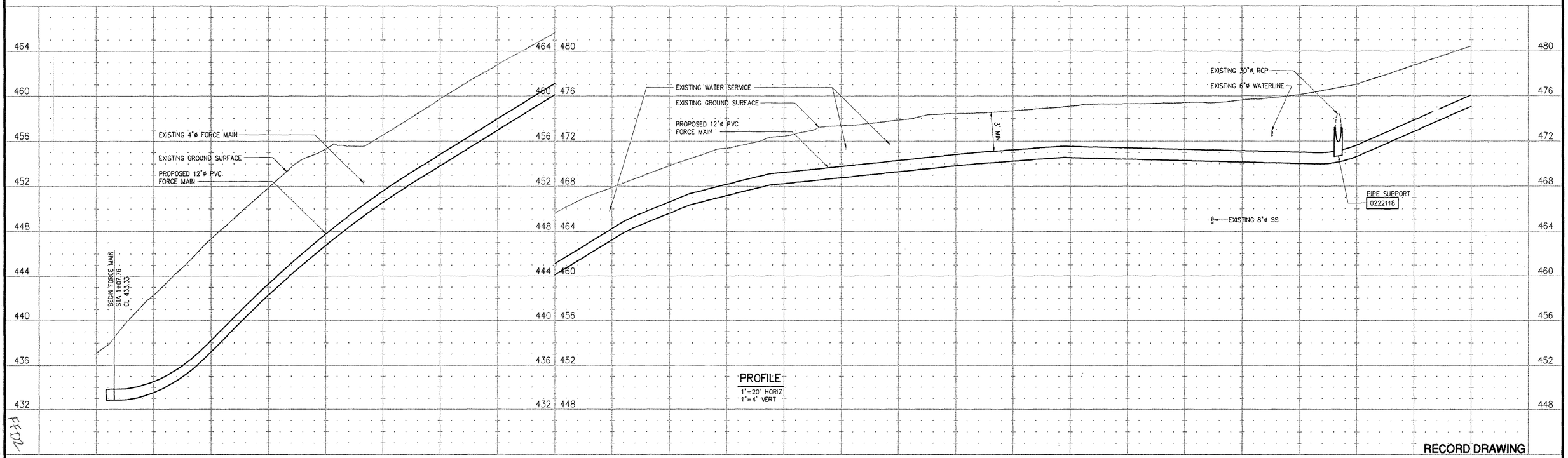
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER G1
SHEET 2 OF 13

11/17/00 10:08am FILE= H:\30387\Gen\G01r by PTLAWANSON XREFs=00\Sp-st, Misc\30387-tb,



PLAN
1"=20'



PROFILE
1"=20' HORIZ
1"=4' VERT

RECORD DRAWING

NOTES:

1 ALL PLANAMETRIC AND TOPOGRAPHIC INFORMATION PROVIDED BY COOPER AND ASSOCIATES, CARY, NORTH CAROLINA.

2 THE 100 YEAR FLOOD ELEVATION IS 437.00.

3 THE RESOURCE CONSERVATION DISTRICT ELEVATION IS 439.00.

4 PAVEMENT REPLACEMENT SHALL BE TYPE 'A'.

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

DESIGNED JBM
DRAWN PWS
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER RONALD L. CORDELL
11/7/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 JOSEPH B. MEEKS
11/13/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
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ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

FORCE MAIN
STA 1+07.76 TO STA 7+00
GENERAL
PLAN AND PROFILE

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER G2
SHEET 3 OF 13

SPS-C01-37-05

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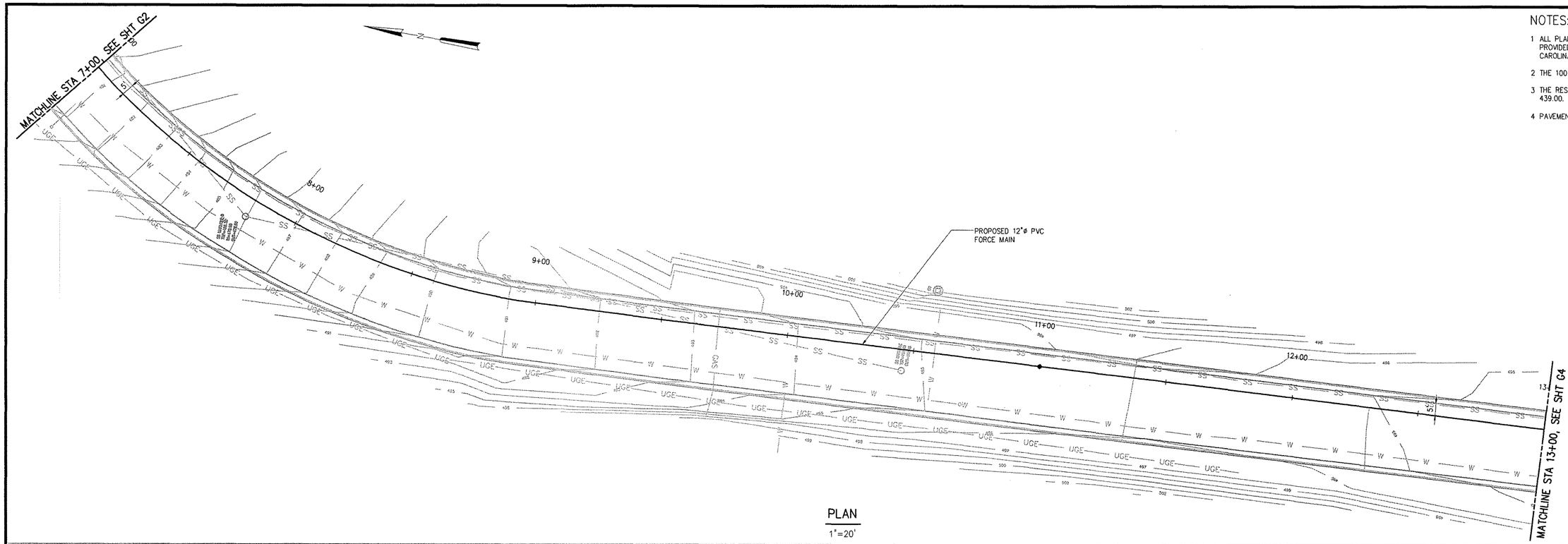
NOTES:

1 ALL PLANAMETRIC AND TOPOGRAPHIC INFORMATION PROVIDED BY COOPER AND ASSOCICATES, CARY, NORTH CAROLINA.

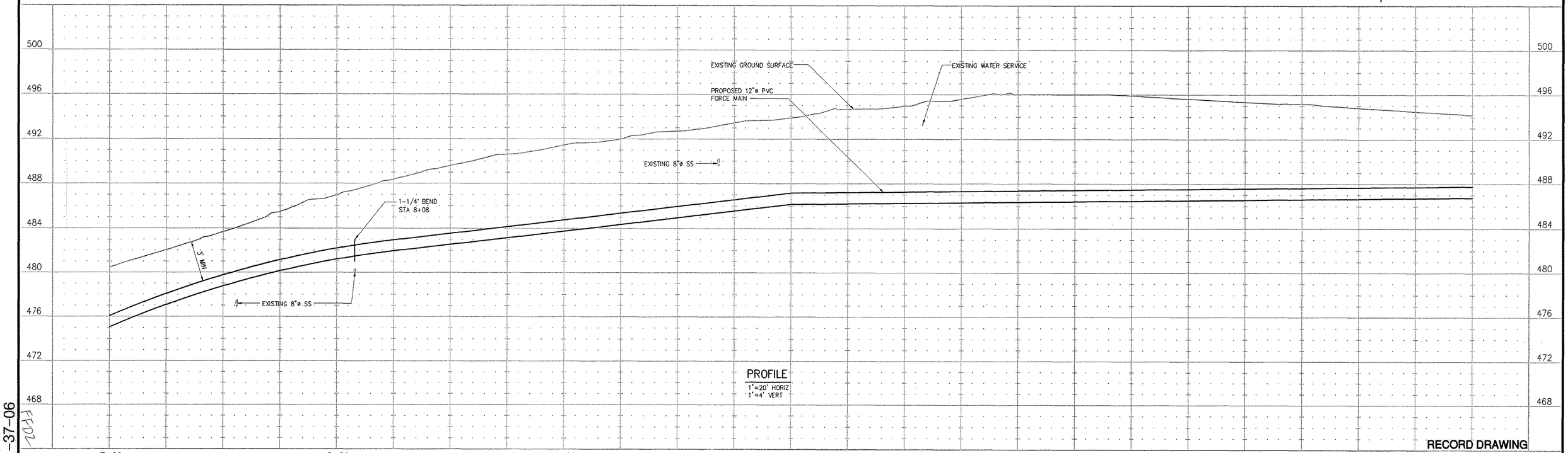
2 THE 100 YEAR FLOOD ELEVATION IS 437.00.

3 THE RESOURCE CONSERVATION DISTRICT ELEVATION IS 439.00.

4 PAVEMENT REPLACEMENT SHALL BE TYPE "A".



PLAN
1"=20'



PROFILE
1"=20' HORIZ
1"=4' VERT

RECORD DRAWING

SPS-C01-37-06

FD2

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

DESIGNED JBM
DRAWN PWS
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 JOSEPH B. MEEKS 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

FORCE MAIN
STA 13+00 TO STA 14+00
GENERAL
PLAN AND PROFILE

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER G3
SHEET 4 OF 13

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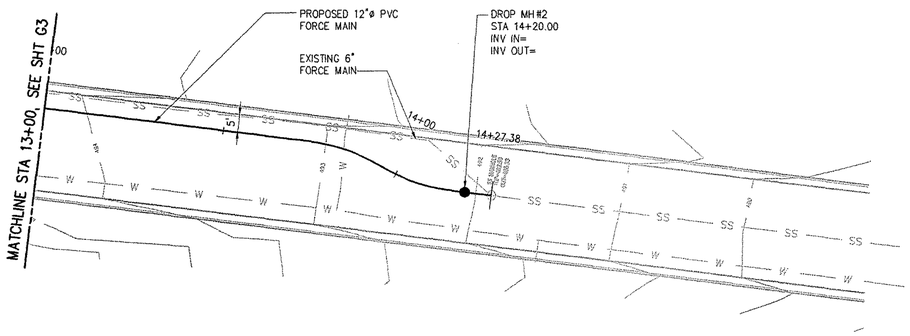
NOTES:

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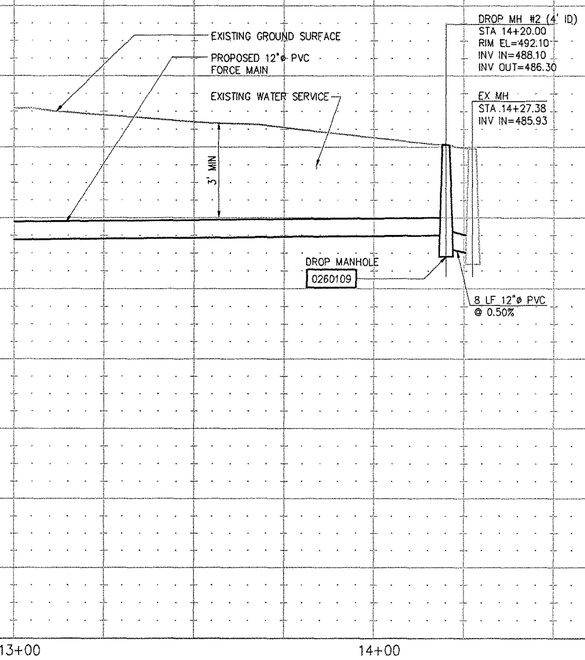
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3 THE RESOURCE CONSERVATION DISTRICT ELEVATION IS 439.00.

4 PAVEMENT REPLACEMENT SHALL BE TYPE "A".



PLAN
1"=20'



PROFILE
1"=20' HORIZ
1"=4' VERT

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NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
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PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 9397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS, JR. 11/17/00

HAZEN AND SAWYER
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ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

FORCE MAIN
STA 13+00 TO STA 14+29.75
GENERAL
PLAN AND PROFILE

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

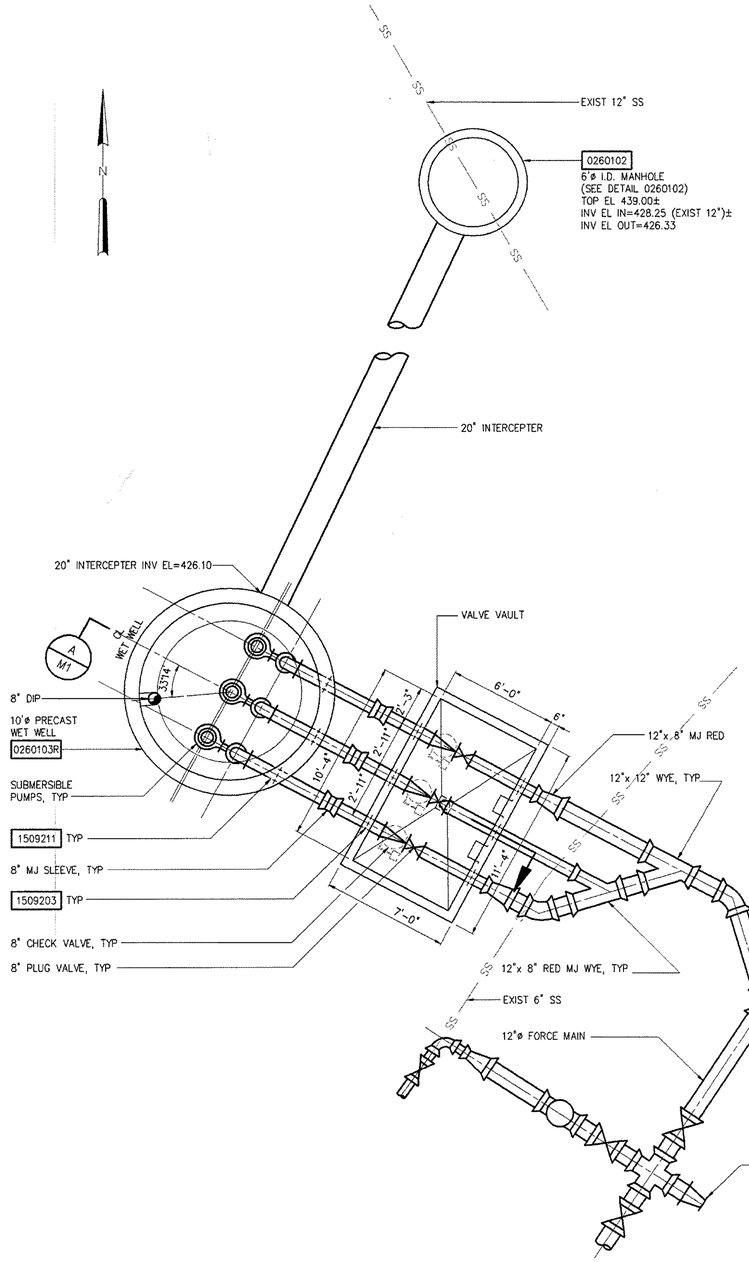
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DRAWING NUMBER G4
SHEET 5 OF 13

SPS-C01-37-07

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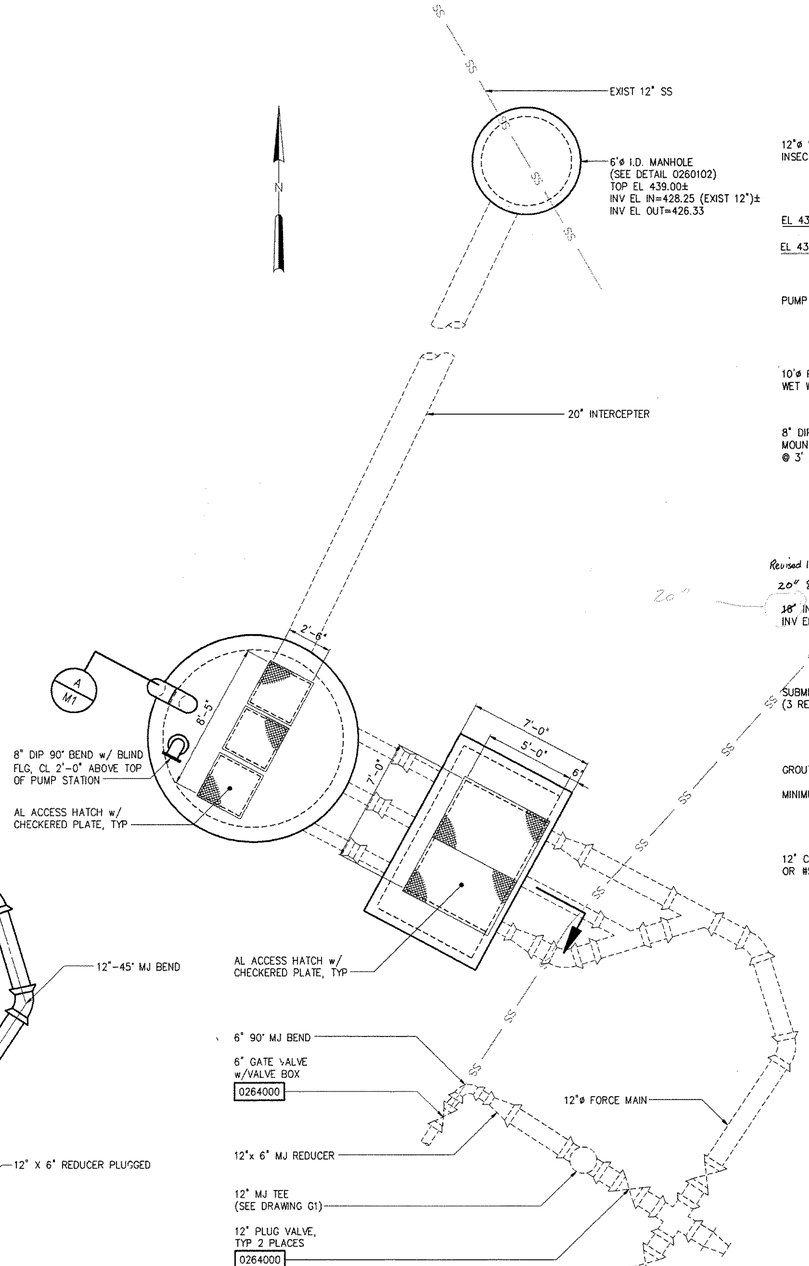
NOTES:

1 CONTRACTOR SHALL COORDINATE MANHOLE DIAMETER, HATCH SIZES, ETC. FOR THE SPECIFIC PUMP SUPPLIED. MINIMUM DIAMETER SHALL BE 10'-0".



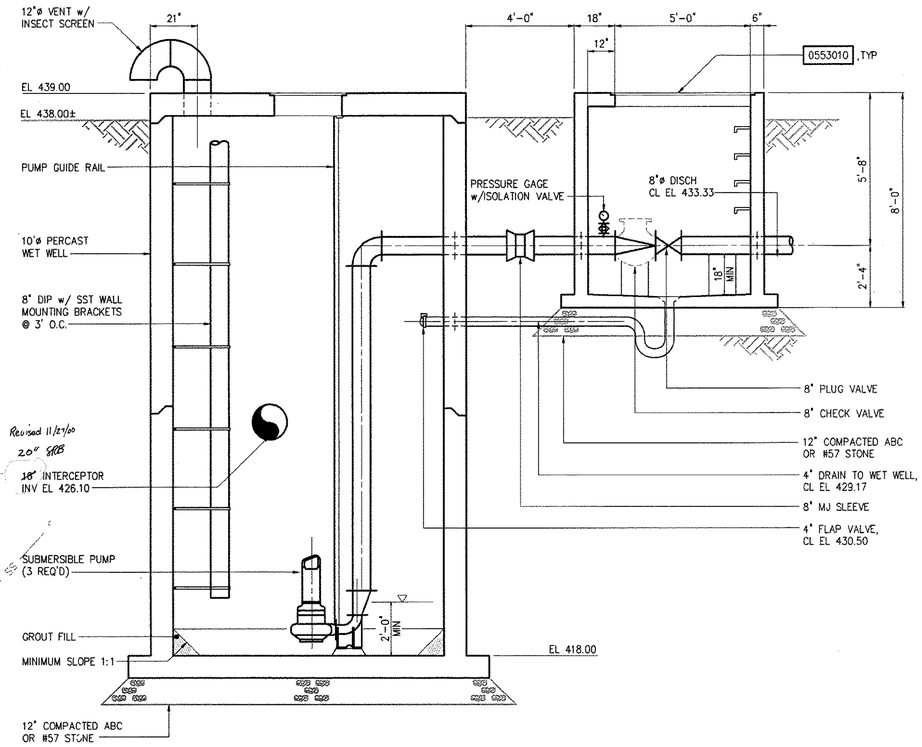
BOTTOM PLAN

1/4"=1'-0"



TOP PLAN

1/4"=1'-0"



SECTION A M1

3/8"=1'-0"

PUMP CONTROL SCHEDULE	
HIGH LEVEL ALARM AND ALL PUMPS ON (FLOAT SWITCH)	ELEVATION 426.50
CONSTANT SPEED PUMP ON	ELEVATION 425.50
VARIABLE SPEED PUMP ON	ELEVATION 423.00
ALL PUMPS OFF	ELEVATION 420.00
LOW LEVEL ALARM AND ALL PUMPS OFF (FLOAT SWITCH)	ELEVATION 419.50

NOTE: ELEVATIONS INDICATED WERE INITIAL SETPOINTS

SPS-C01-37-08

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CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS

11/19/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

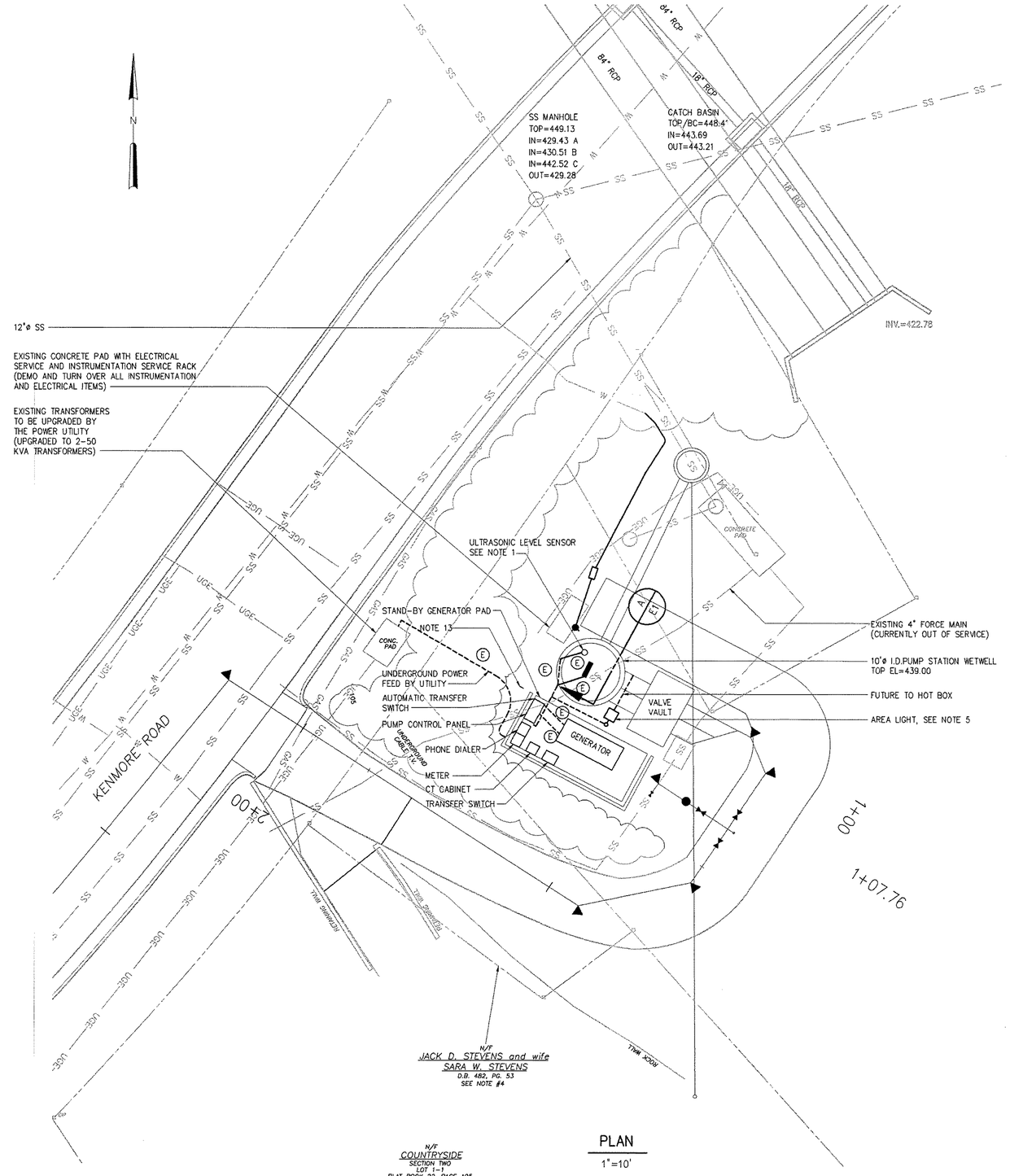
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

PUMP STATION WETWELL AND VALVE VAULT MECHANICAL PLANS AND SECTION

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

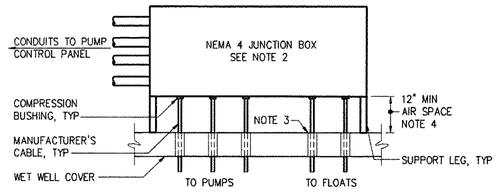
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H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER M1
SHEET 6 OF 13

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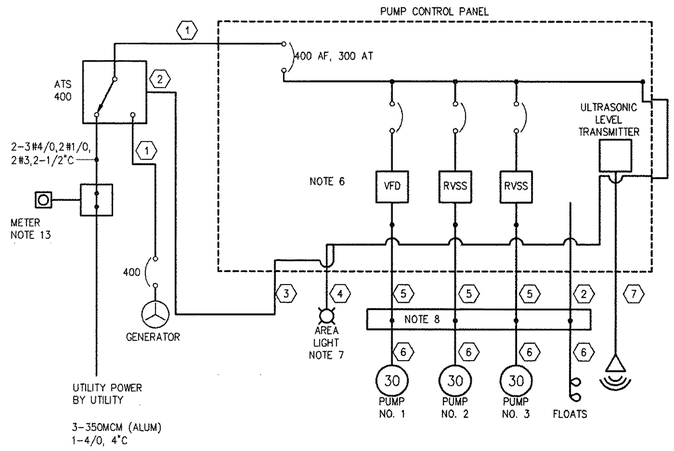
PLAN

1"=10'



SECTION A / E1

NTS



PUMP STATION SINGLE LINE DIAGRAM

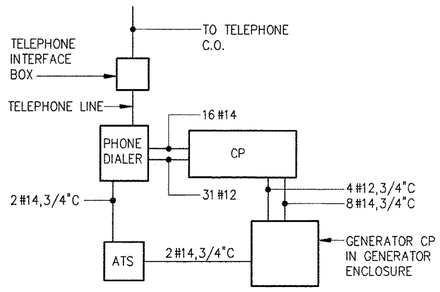
NO SCALE

LOAD CENTER		
CRT #	SIZE	SERVICE
1	20	SPARE
2	20	AREA LIGHT
3	20	PHONE DIALER
4	20	GENERATOR HEATER
5	20	SPARE
6	20	BATTERY CHARGER
7	20	SPARE
8	20	SPARE
9	20	SPARE
10	20	SPARE
11	20	SPARE
12	20	SPARE

CONDUIT AND WIRE SCHEDULE (NUMBERS REFERENCE THIS DRAWING ONLY)	
NO.	DESCRIPTION
①	2EA. 3#4/0, 2#1/0, 2#3,2 1/2"C (PARALLEL FEEDS)
②	SEE GENERAL/CONTROL PANEL LAYOUT
③	SEE GENERAL/CONTROL PANEL LAYOUT
④	2#12, #12G, 3/4"C
⑤	3#4, 3/6#14, #8G, 1 1/4"C
⑥	VENDOR - FURNISHED CABLE
⑦	VENDOR - FURNISHED CABLE IN 1"C

LEGEND:

- (E) UNDER-SLAB OR DIRECT-BURIED CONDUIT
- (E) EXPOSED CONDUIT
- (X) CIRCUIT CALLOUT (SEE SCHEDULE)



GENERAL/CONTROL PANEL LAYOUT

NO SCALE

NOTES:

1. INSTALL SENSOR PER MANUFACTURER'S RECOMMENDATIONS.
2. PAINT JUNCTION BOX AND EXPOSED CONDUIT FOREST GREEN. SPLICE FIELD WIRING AND MANUFACTURER'S CABLE IN JUNCTION BOX.
3. SEAL SLAB PENETRATIONS AROUND CABLES WITH NON-HARDENING DUCT SEAL.
4. PROVIDE AND EXPANDED ALUMINUM SHROUD AROUND EXPOSED CABLES.
5. AREA LIGHT SHALL BE 250 WATT POLE MOUNTED, HEAVY DUTY, HIGH PRESSURE SODIUM LIGHT FIXTURE, ASYMMETRIC DISTRIBUTION 120 VAC, DIE CAST ALUMINUN HOUSING, PRISMATIC GLASS REFRACTOR, CUT-OFF DESIGN, TYPE III DISTRIBUTION, WITH 25 FT. CLASS V TREATED WOOD POLE WITH 6 FT. TRUSS ARM.
6. MINI POWER CENTER OR EQUAL.
7. INSTALL SWITCH IN CONTROL PANEL TO CONTROL AREA LIGHT.
8. JUNCTION BOX ABOVE WETWELL.
9. ALL ELECTRICAL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND STATE AND LOCAL CODES.
10. ALL MATERIAL SHALL BE U.L. LISTED WHERE SUCH LISTING ARE TYPICALLY AVAILABLE.
11. ALL CONDUIT AND FITTINGS SHALL BE RIGID GALVANIZED STEEL.
12. ALL WIRING SHALL BE STRANDED THWN RATED 90°C.

SPS-C01-37-09

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NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/7/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 SURVEYOR JOSEPH B. MEEKS, JR. 10/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

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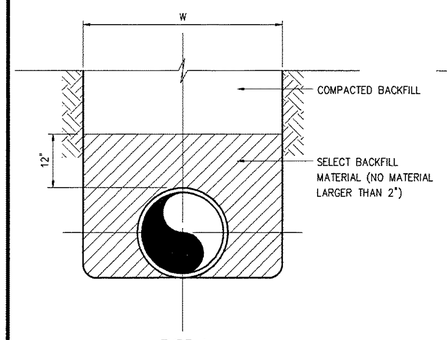
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

PUMP STATION
ELECTRICAL
SITE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

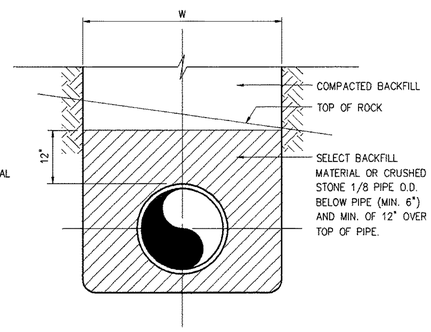
DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER E1
SHEET 7 OF 13

11/16/00 2:52pm FILE= H:\30387\ELEC\E01r by PTLAWANSON XREFs=00\Sp-st, Misc\30387-tb, Details\PS-E-DA, Details\ps-e-db, Details\SCHEDULE, Details\ps-e-dc,



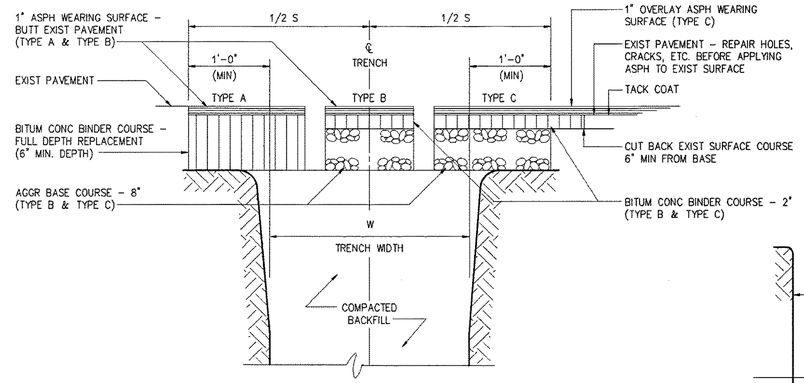
TYPE A
IN EARTH

0222100



TYPE A
IN ROCK

0222101

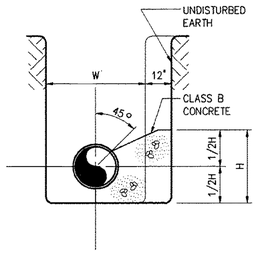


TYPICAL PAVEMENT REPLACEMENT

0251302

NOTES:

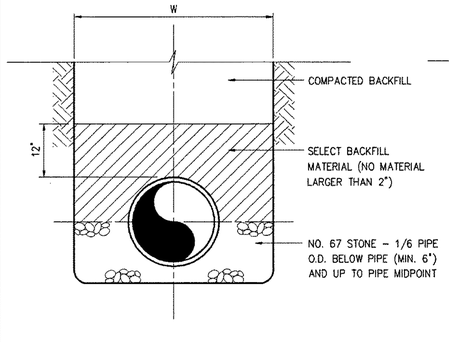
1 CONCRETE THRUST BLOCKS, ARCHES, ENCASEMENTS, FLOWABLE FILL, ETC. SHALL BE FORMED USING PLYWOOD OR SANDBAGS TO PROVIDE REQ'D SHAPE.



TYPICAL SECTION
TEE OR BEND

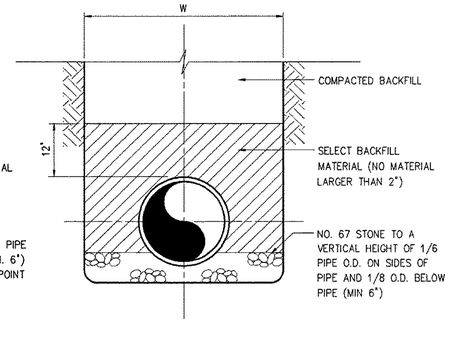
CONCRETE THRUST BLOCK SCHEDULE*										
PIPE SIZE (IN)	BEND 90°/TEE H	L	45° H	L	22 1/2° H	L	11 1/4° H	L	5 5/8° H	L	DESIGN PRESSURE (PSI)
6.0	1.4	2.8	1.0	2.1	0.7	1.5	0.5	1.0	XXX	XXX	100
8.0	1.8	3.7	1.4	2.7	1.0	1.9	0.7	1.4	XXX	XXX	100
12.0	2.7	5.4	2.0	4.0	1.4	2.8	1.0	2.0	XXX	XXX	100
16.0	3.6	7.1	2.6	5.2	1.9	3.7	1.3	2.6	XXX	XXX	100
24.0	5.3	10.5	3.9	7.7	2.8	5.5	2.0	3.9	XXX	XXX	100
30.0	6.5	13.1	4.8	9.6	3.4	6.9	2.4	4.9	XXX	XXX	100
36.0	7.8	15.6	5.8	11.5	4.1	8.2	2.9	5.8	XXX	XXX	100
42.0	9.1	18.2	6.7	13.4	4.8	9.5	3.4	6.8	XXX	XXX	100
48.0	10.4	20.7	7.6	15.3	5.4	10.9	3.9	7.7	XXX	XXX	100
54.0	11.7	23.3	8.6	17.1	6.1	12.2	4.3	8.7	XXX	XXX	100

* BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5



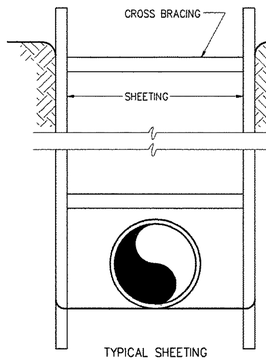
TYPE B

0222102R



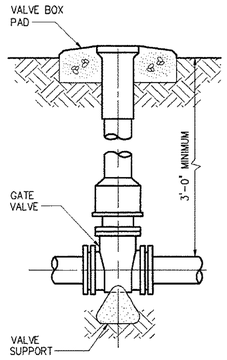
TYPE C

0222103R



TYPICAL SHEETING

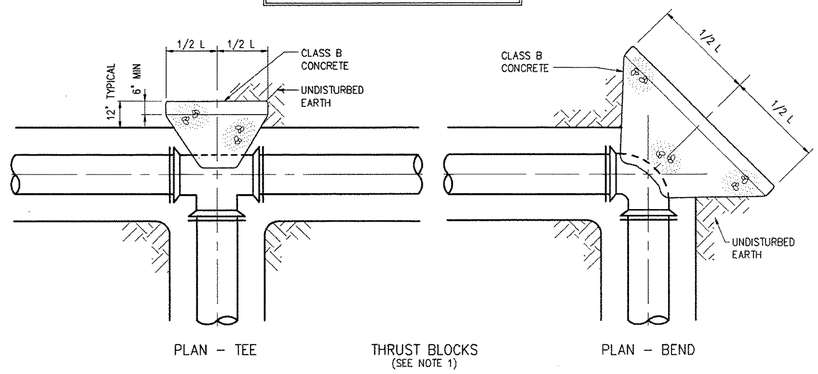
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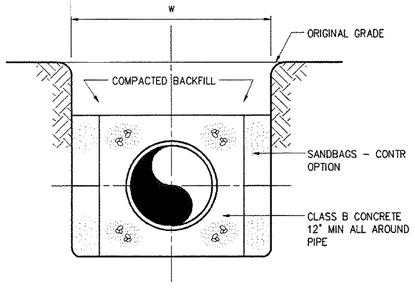
VALVE BOX

0264000

CONCRETE THRUST BLOCKING SHALL BE USED ONLY AS APPROVED BY ENGINEER.

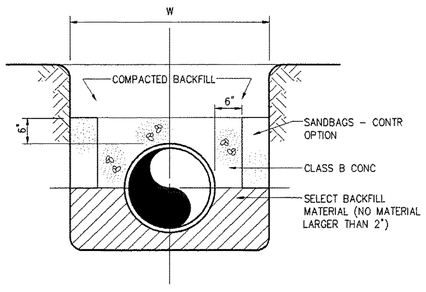


0222108



CONCRETE ENCASEMENT
(SEE NOTE 1)

0222104R



CONCRETE ARCH
(SEE NOTE 1)

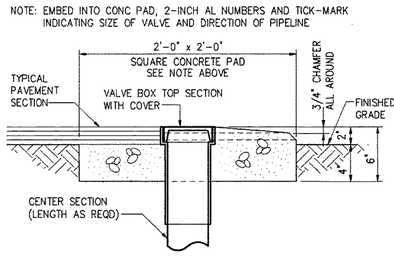
0222105

PIPE BEDDING

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W WIDTH OF TRENCH MAX	W=MIN
4"–6"	3'–9"	2'–0"
8"–10"	3'–9"	2'–2"
12"	3'–9"	O.D.+2'
14"–16"	4'–2"	O.D.+2'
18"	4'–4"	O.D.+2'
20",21"	4'–8"	O.D.+2'
24"	4'–11"	O.D.+2'
27"	5'–9"	O.D.+2'
30"	6'–7"	O.D.+2'
36"	7'–4"	O.D.+2'
42"	8'–2"	O.D.+2'
48"	8'–9"	O.D.+2'
54"	9'–4"	O.D.+2'
60"	9'–10"	O.D.+2'
72"	11'–0"	O.D.+2'
78"	11'–8"	O.D.+2'
84"	12'–0"	O.D.+2'
90"	12'–6"	O.D.+2'
96"	13'–0"	O.D.+2'
108"	14'–0"	O.D.+2'
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0–6'	S=W+4'	
>6–8'	S=W+8'	
>8–10'	S=W+12'	
>10–12'	S=W+16'	
>12–14'	S=W+20'	
>14–16'	S=W+24'	
>16–18'	S=W+28'	
>18'	S=W+32'	

W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

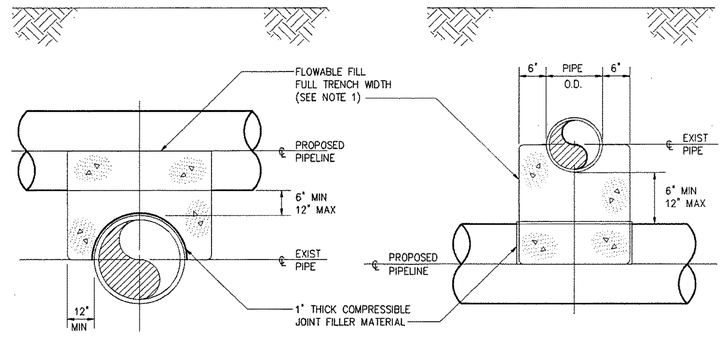
NOTE: EMBED INTO CONC PAD, 2-INCH AL NUMBERS AND TICK-MARK INDICATING SIZE OF VALVE AND DIRECTION OF PIPELINE



VALVE BOX PAD

0264005

NOTE: NO ENCASEMENT REQUIRED FOR SPACE GREATER THAN 12"



PROPOSED PIPELINE OVER EXIST PIPE

PROPOSED PIPELINE UNDER EXIST PIPE

0222118

RECORD DRAWING

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NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
2	CONSTRUCTION	10/99	JBM
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CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 SURVEYOR JOSEPH B. MEEKS, JR. 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

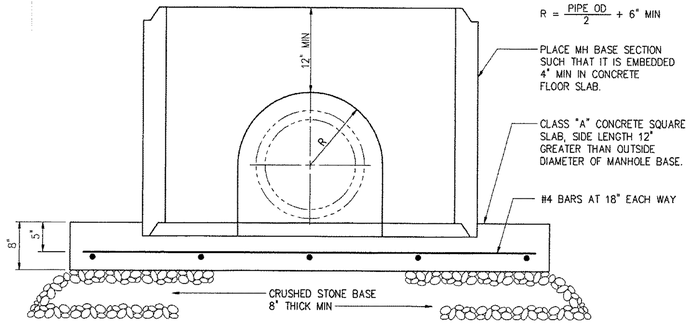
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER D1
SHEET 8 OF 13

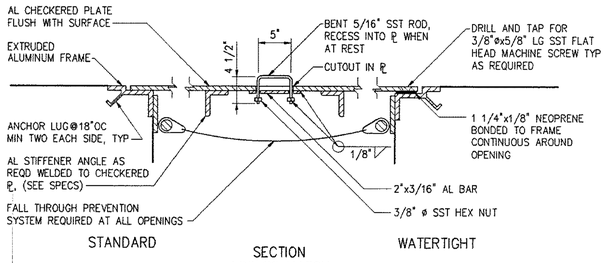
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DOGHOUSE PRECAST MANHOLES

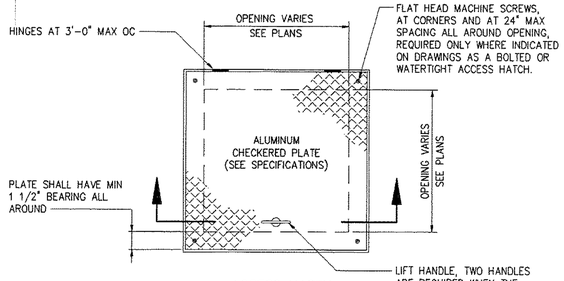
0260102

NOTE: FILL ANNULAR SPACE BETWEEN OUTSIDE OF PIPE AND MH WITH CONCRETE OR MASONRY TO INSURE WATERTIGHTNESS.



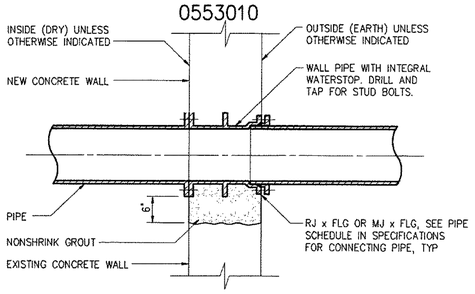
STANDARD — WATERTIGHT

SECTION
ACCESS HATCH

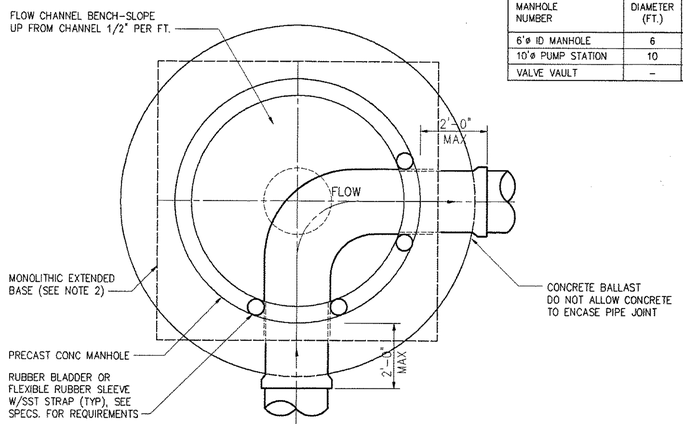


ACCESS HATCH

0553010

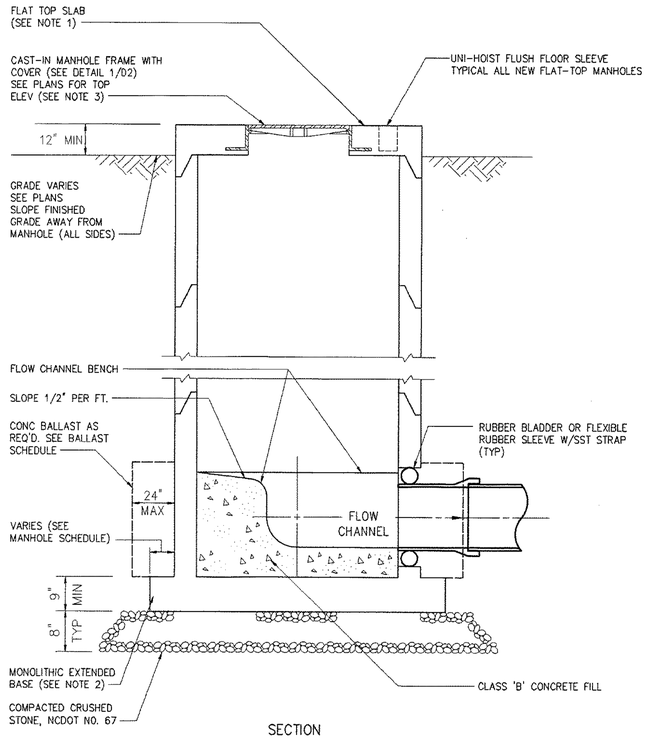


1509203



PLAN

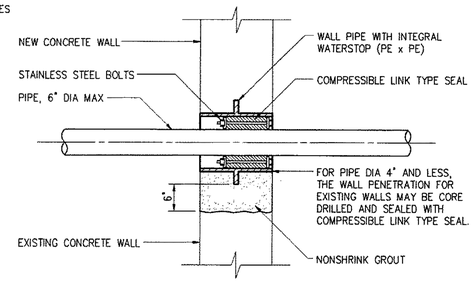
BALLAST SCHEDULE							
MANHOLE NUMBER	DIAMETER (FT.)	WIDTH OF EXTENDED BASE (MIN)	TYPE OF COVER	VENT PIPE REQUIRED	ELEV. OF VENT PIPE	OUTSIDE STEPS REQD	CONCRETE BALLAST REQD (C.Y.)
6'ø ID MANHOLE	6	0.5 FT	STANDARD	NO	–	NO	0.0
10'ø PUMP STATION	10	1.0 FT	STANDARD	YES	–	NO	14.5
VALVE VAULT	–	1.0 FT	STANDARD	NO	–	NO	2.4



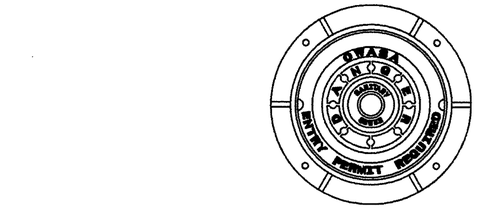
SECTION

TYPICAL FLAT TOP MANHOLE

0260103R



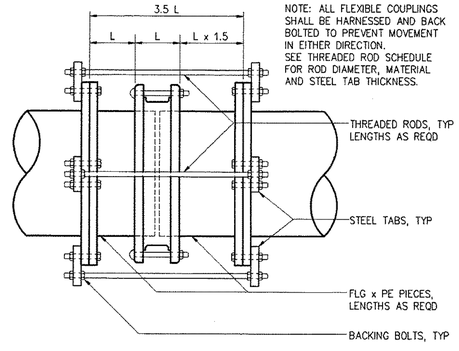
1509211



U.S. FOUNDRY USF-669
VULCAN V-1384, DOMESTIC ONLY

OWASA MANHOLE COVER

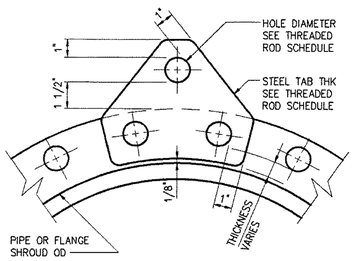
DETAIL 1
NTS D2



NOTE: ALL FLEXIBLE COUPLINGS SHALL BE HARNESSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

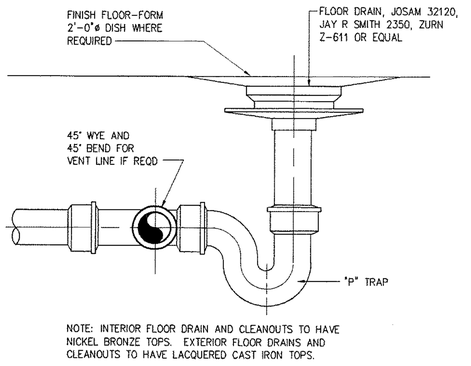
HARNESSED FLEXIBLE COUPLING

1516400



STEEL TAB

1516401



NOTE: INTERIOR FLOOR DRAIN AND CLEANOUTS TO HAVE NICKEL BRONZE TOPS. EXTERIOR FLOOR DRAINS AND CLEANOUTS TO HAVE LACQUERED CAST IRON TOPS.

FLOOR DRAIN

1542102

NOTES:

1. NO GRADE RINGS WILL BE ALLOWED. THE MANHOLE TOP ELEVATION SHALL BE EQUAL TO OR GREATER THAN THE ELEVATION INDICATED ON THE PLANS. THE MAXIMUM DIFFERENTIAL IN TOP ELEVATION FROM THAT INDICATED ON PLANS SHALL NOT EXCEED 1'-0".
2. MIN. DIMENSIONS AND REINFORCING FOR MONOLITIC EXTENDED BASES SHALL BE FOLLOWS:
   4'ø MH – 6'-0" SQ. W/#5 BARS @8" OC/EW
   5'ø MH – 7'-0" SQ. W/#5 BARS @8" OC/EW
   6'ø MH – 9'-0" SQ. W/#5 BARS @8" OC/EW
   7'ø MH – 10'-2" SQ. W/#5 BARS @8" OC/EW
   8'ø MH – 11'-4" SQ. W/#5 BARS @8" OC/EW

FF02

SPS-C01-37-11

RECORD DRAWING

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	11/00	JBM
2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

DESIGNED H & S
DRAWN H & S
CHECKED JBM
PROJ.ENGR. H & S
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEERING JOSEPH B. MEEKS 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

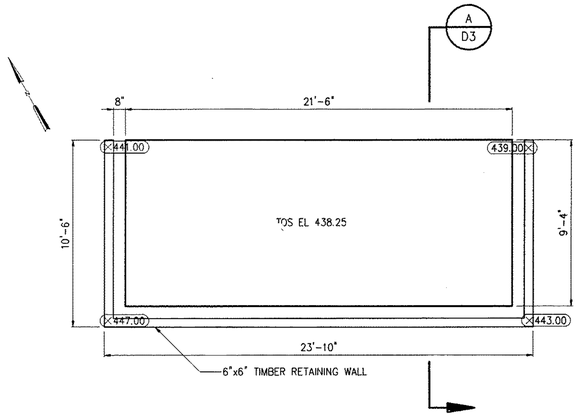
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER D2
SHEET 9 OF 13

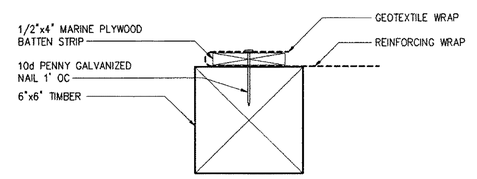
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NOTES:



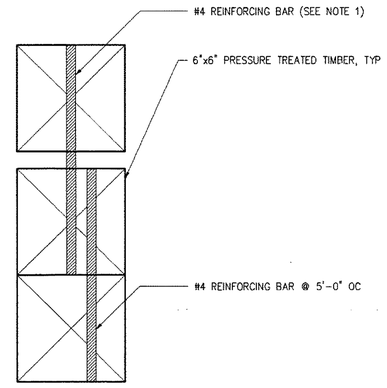
GENERATOR PAD AND RETAINING WALL TOP PLAN

1/4"=1'-0"



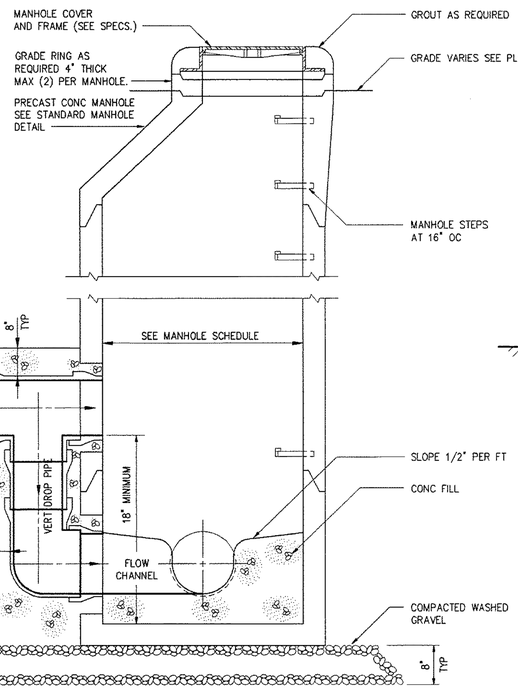
GEOTEXTILE CONNECTION

DETAIL 2 / 3"=1'-0" D3



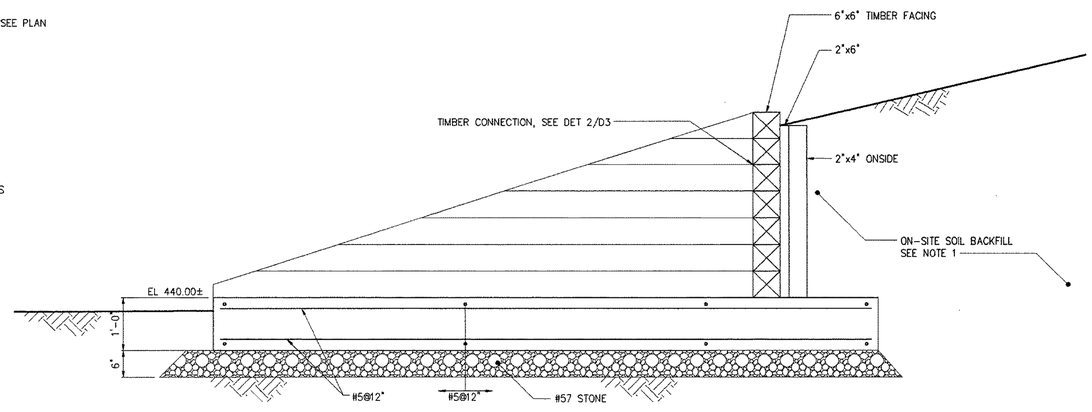
TIMBER FACING CORNER CONNECTION

DETAIL 3 / 1"=1'-0" D3



DROP MANHOLE

0260109



NOTES:

1 FOR GRADATION AND COMPACTION REQUIREMENTS FOR SOIL BACKFILL, SEE SPECIFICATIONS.

SECTION A / 3/4"=1'-0" D3

2017

SPS-C01-37-12

RECORD DRAWING

NO.	ISSUED FOR	DATE	BY
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2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

DESIGNED JBM
DRAWN H & S
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS 11/17/00

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

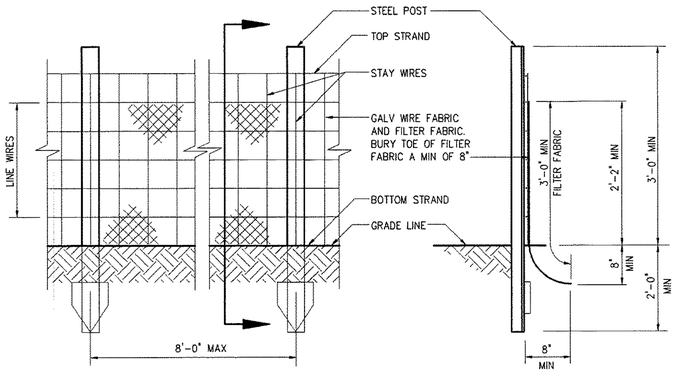
COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

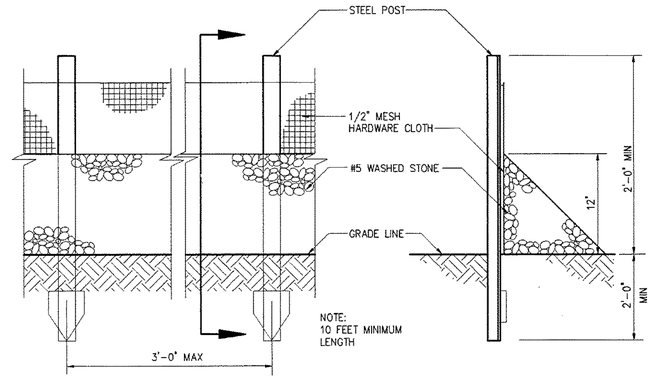
DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER D3
SHEET 10 OF 13

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ELEVATION
SILT FENCE

SECTION
SILT FENCE



ELEVATION
STONE FILTER

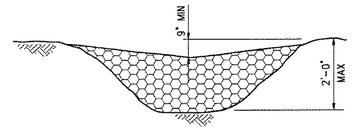
SECTION
STONE FILTER

0227008

NOTE:

1. EXTRA STRENGTH FILTER FABRIC (AS APPROVED BY ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
2. FILTER FABRIC SHALL BE WIRED DIRECTLY TO POST.

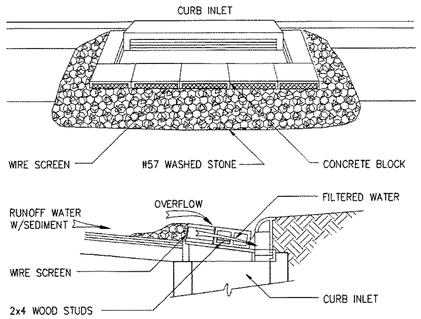
0227000



FOR LARGER CHANNELS USE NCDOT CLASS 1 RIP-RAP FACED WITH # 57 WASHED STONE.

STONE CHECK DAM

0227003



CURB INLET SEDIMENT CONTROL

0227002

SPS-C01-37-13

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2	CONSTRUCTION	10/99	JBM
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CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 10118 ENGINEER JOSEPH B. MEEKS, JR. 11/17/00

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ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

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DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER D4
SHEET 11 OF 13

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TABLE 1 STOPPING SIGHT DISTANCE	
SPEED (MPH)	MINIMUM STOPPING SIGHT DISTANCE (FT)
≤ 30	200
35	250
40	325
45	400
50	475
55	550

TABLE 2
LENGTH OF TAPER

WIDTH (W) (FT)	1		2		3		4		5		6		7		8		9		10		11		12	
SPEED(S) (MPH)	LENGTH OF TAPER (FT)																							
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
20	10	15	15	20	20	30	30	45	35	55	40	60	50	75	55	85	60	90	70	105	75	115	80	120
25	15	25	25	40	35	55	45	70	55	85	65	100	75	115	85	130	95	145	105	160	115	175	125	190
30	15	25	30	45	45	70	60	90	70	115	90	135	105	160	120	180	135	205	150	225	165	250	180	270
35	25	40	45	70	65	100	85	130	105	160	125	190	145	220	165	250	185	280	205	310	225	340	245	370
40	30	45	55	85	80	120	110	165	135	205	160	240	190	285	215	325	240	360	270	405	295	445	320	480
45	45	70	90	135	135	205	180	270	225	340	270	405	315	475	360	540	405	610	450	675	495	745	540	810
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55	55	85	110	165	165	250	220	330	275	415	330	515	385	580	440	660	495	745	550	825	605	910	660	990

SPS-C01-37-14

GENERAL NOTES

1. TRAFFIC CONTROL PLAN (TCP) FOR THIS PROJECT CONSISTS OF SEVERAL TYPICAL DRAWINGS SHOWING TRAFFIC CONTROL DEVICES TO BE USED WHERE VARIOUS TYPES OF CONSTRUCTION ACTIVITIES ARE OCCURRING ON THE PROJECT. THESE DRAWINGS ARE FOR TYPICAL SITUATIONS AND SHOULD BE ADAPTED TO THE ACTUAL FIELD CONDITIONS WHICH EXIST DUE TO UNFORESEEN FIELD SITUATIONS. IT MAY BE IMPOSSIBLE TO ADAPT THE PRESCRIBED TYPICAL DRAWING EXACTLY AS SHOWN TO THE ACTUAL FIELD SITUATIONS. THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER SHALL MOVE, SUPPLEMENT, CHANGE AND/OR REMOVE THE TRAFFIC CONTROL DEVICES ASSOCIATED WITH THESE TYPICALS TO INSURE THAT THE MOTORIST CAN TRAVERSE THROUGH THE CONSTRUCTION AREA IN A SAFE AND EFFICIENT MANNER.
2. CONSTRUCTION PHASING MAY DICTATE THAT TWO OR MORE TYPICAL DRAWINGS BE USED IN ONE AREA OF CONSTRUCTION DURING DIFFERENT PHASES OR AREAS OF CONSTRUCTION. CHANNELIZING DEVICES ASSOCIATED WITH THESE TYPICALS SHALL BE MOVED, SUPPLEMENTED, CHANGED OR REMOVED AS REQUIRED BY THE CONSTRUCTION PHASING OF THE PLANS. THE LOCATION AND POSITIONING OF THESE DEVICES SHALL BE APPROVED BY THE ENGINEER TO INSURE THAT THE MOTORIST DOES NOT RECEIVE A MISREPRESENTATION FROM THE INFORMATION CONVEYED TO HIM WHEN TWO OR MORE TYPICALS OVERLAP.
3. OPERATIONAL SIGNS ARE GENERALLY MOUNTED ON PORTABLE SUPPORTS. THESE ARE NORMALLY USED FOR SHORT TERM OPERATIONS TO WARN AND GUIDE TRAFFIC THROUGH OR AROUND CONSTRUCTION AREAS WITHIN A CONSTRUCTION AREA. OPERATIONAL SIGNS SHALL BE INSTALLED PRIOR TO THE START OF OPERATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SIGNS SHALL BE MAINTAINED IN PROPER POSITION, CLEAN AND LEGIBLE AT ALL TIMES. IF NEED BE THEY SHALL BE BALLASTED OR WEIGHTED IN SUCH A MANNER THAT THEY WILL BE STABLE UNDER WIND AND VEHICLE ACTION.* THEY SHALL BE REMOVED WHEN NOT APPLICABLE. THE BOTTOM OF THE SIGN SHALL BE A MINUMUM OF ONE (1) FOOT ABOVE THE PAVEMENT SURFACE.
4. THE CONTRACTOR SHALL MARK ALL HAZARDS WITHIN THE LIMITS OF THE PROJECT WITH WELL MAINTAINED SIGNS, BARRICADES, WARNING AND/OR CHANNELIZING DEVICES. DEVICES SHALL BE MOVED, SUPPLEMENTED, CHANGED OR REMOVED AS REQUIRED DURING THE PROGRESS OF CONSTRUCTION AS APPROVED BY THE ENGINEER.
5. DETOURS INVOLVING THE ROUTING OF TRAFFIC OVER ROADS OUTSIDE THE LIMITS OF THE PROJECT MAY BE NOTED IN THE CONTRACT TO BE MARKED AND MAINTAINED BY THE STATE FORCES. THE CONTRACTOR WILL BE REQUIRED TO ERECT AND MAINTAIN ANY REQUIRED SIGNS, BARRICADES, ETC., AT THE BEGINNING AND END OF THE WORK AND INTERSECTION OF ROADWAYS. THE LOCATION AND POSITIONING OF THESE SIGN, BARRICADES, ETC., SHALL BE AS APPROVED BY THE ENGINEER.
6. FLAGGER'S ATTIRE SHALL CONSIST OF A FLUORESCENT ORANGE VEST, SHIRT, OR JACKET. THE FLAGGER SHALL BE EQUIPPED WITH STOP/SLOW PADDLE (SEE MUTCD – PART VI – SECTION 6F-2 – PAGE 6F-1). RED FLAGS WILL BE ACCECTABLE IN LIEU OF THE PADDLE IN EMERGENCY SITUATIONS ONLY. FLAGGERS, PROPERLY EQUIPPED AND INSTRUCTED, WILL BE PROVIDED BY THE CONTRACTOR AND STATIONED AT THE LOCATIONS SPECIFIED OR AS DIRECTED BY THE ENGINEER. A FLUORESCENT ORANGE CAP MAY BE REQUIRED.
7. WORK ON THE PROJECT OR ANY SEPARATE ACTIVITY THEREIN SHALL NOT START UNTIL ALL THE REQUIRED SIGNS, BARRICADES, WARNING AND/OR CHANNELIZING DEVICES ARE INSTALLED AND APPROVED BY THE ENGINEER.
8. UPON COMPLETION OF PROPOSED CONSTRUCTION, STATE AND LOCAL FORCES WILL INSTALL FINAL PAVEMENT MARKINGS.
9. THE CONTRACTOR SHALL MAINTAIN INGRESS AND EGRESS TO ALL DRIVEWAYS DURING THE CONSTRUCTION PROJECT.
10. FOR CONSTRUCTION ON ONE OR MORE CONTINUOUS STREETS, STATIONARY CONSTRUCTION SIGNING SHALL BE PLACED AT THE BEGINNING AND END OF THE CONSTRUCTION PHASE.
11. ADVANCE WARNING FLASHING ARROW PANEL TO HAVE MINIMUM CLEARANCE OF 7 FEET ABOVE PAVEMENT. ARROW PANEL SHALL BE LOCATED ON THE SHOULDER (PAVED OR UNPAVED).
12. ADVANCE WARNING, FLASHING ARROW PANEL TO BE 24"x 48" TYPE "A". THE ENTIRE SURFACE AREA IS TO CONTAIN THE APPROPRIATE LAMP SPACING.
13. CONTRACTOR SHOULD BE AWARE THAT WHEN CONSTRUCTION AREA IS IN OR NEAR A CREST VERTICAL OR HORIZONTAL CURVE, WORK AREA SHALL BE EXTENDED SO THAT LANE CLOSURE BEGINS IN ADVANCE OF THE CURVE, AND MINIMUM STOPPING SIGHT DISTANCE IS MET. (SEE TABLE 1)
14. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN TAPERS OR TRANSITION AREAS SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT, UNLESS OTHERWISE INDICATED.
15. THE MAXIMUM SPACING BETWEEN CHANNELIZATION DEVICES SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED, UNLESS OTHERWISE INDICATED.
16. FOR MINIMUM AND MAXIMUM TAPER LENGTH SEE TABLE 2 THIS SHEET.
17. A MINIMUM OF 5 DEVICES ON A 10:1 TAPER TO BE USED IN TRANSITION.
18. TYPE III BARRICADES WITH SIGN R11-4 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ONE-HALF ROADWAY.
19. TYPE III BARRICADES WITH R11-2 AND M4-10(R)/(L) ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
20. LOCATE SIGN R11-4 AT EACH END OF STREET.
21. AS THE WORK ZONE MOVES ALONG THE STREET, THE TRAFFIC CONTROL DEVICES SHALL ALSO MOVE TO PROVIDE THE SAME TCP LAYOUT AS INDICATED.

* BALLASTING SHALL BE DONE WITH SANDBAGS OR OTHER YIELDING MATERIAL PLACED IN SUCH A POSITION THAT THEY DO NOT BECOME MISSILES OR CAUSE UNREASONABLE DAMAGE IF HIT.

SIGN LEGEND

W20-1	ROAD CONSTRUCTION AHEAD
W20-2	DETOUR AHEAD
W20-3	ROAD CLOSED AHEAD
W20-5R	RIGHT LANE CLOSED
W20-5L	LEFT LANE CLOSED
W20-7A	FLAGGER
W5-1A	LANE NARROWS
G20-2	END CONSTRUCTION
R11-2	ROAD CLOSED
R11-4	ROAD CLOSED TO THRU TRAFFIC
M4-10R	DETOUR (RIGHT)
M4-10L	DETOUR (LEFT)

LEGEND

I	TYPE I BARRICADES WITH STEADY BURN LIGHTS
⊨	TYPE II BARRICADE
▭	TYPE III BARRICADE
▲	CONES
●	DRUMS
○≤	FLASHING ARROW PANEL
▬●	FLAGGER
⊢	STATIONARY CONSTRUCTION SIGN
◁	SIGN (PORTABLE MOUNTED)
▭	WORK AREA
⇄	DIRECTION OF TRAFFIC FLOW
➡	DIRECTION OF DETOUR TRAFFIC FLOW
▬	RAILROAD TRACK
□—	RAILROAD FLASHING LIGHT SIGNAL AND AUTOMATIC GATE

RECORD DRAWING

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2	CONSTRUCTION	10/99	JBM
1	REGULATORY APPROVAL	10/99	JBM

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CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

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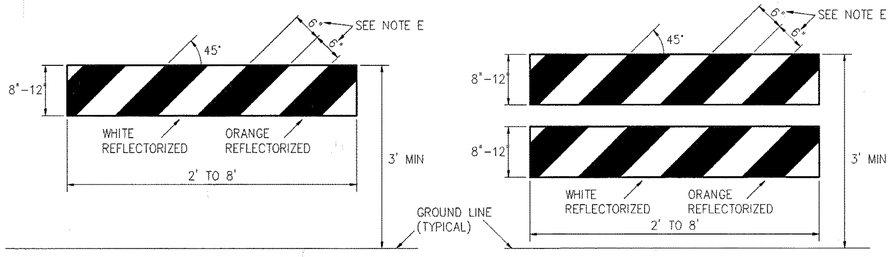
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CARRBORO, NORTH CAROLINA
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TRAFFIC CONTROL PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

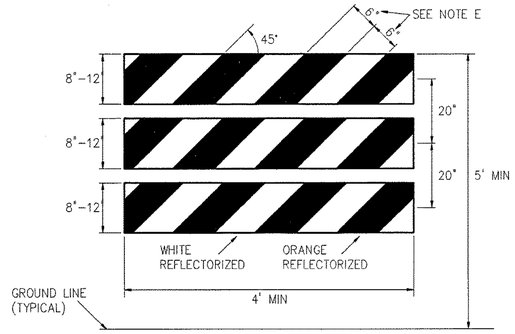
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CONTRACT NUMBER 1
DRAWING NUMBER TCP-1
SHEET 12 OF 13

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TYPE I

TYPE II



TYPE III

BARRICADE CHARACTERISTICS

	TYPE I	TYPE II	TYPE III
WIDTH OF RAIL	8"– 12"	8"– 12"	8"– 12"
LENGTH OF RAIL	2' TO 8'	2' TO 8'	VARIABLE
WIDTH OF STRIPES	6" (NOTE E)	6" (NOTE E)	6"
HEIGHT	3' MIN	3' MIN	5' MIN
NUMBER OF REFLECTORIZED RAIL FACES	2 (ONE IN EACH DIRECTION)	4 (TWO IN EACH DIRECTION)	3 (IF FACING TRAFFIC IN ONE DIRECTION) 6 (IF FACING TRAFFIC IN TWO DIRECTIONS)

A. WHERE ACCESS IS PROVIDED THROUGH THE TYPE III BARRICADES FOR CONSTRUCTION EQUIPMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSIGNING A PERSON TO ASSURE PROPER CLOSURE AT THE END OF EACH WORKING DAY.

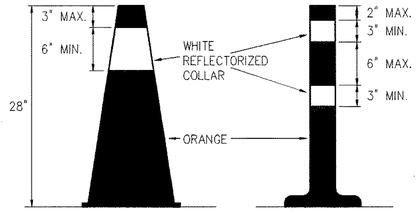
B. BARRICADE RAILS SHOULD BE SUPPORTED IN A MANNER THAT WILL ALLOW THEM TO BE SEEN BY THE MOTORIST AND PROVIDE A STABLE SUPPORT NOT EASILY BLOWN OVER BY THE WIND OR TRAFFIC. FOR TYPE I BARRICADES, THE SUPPORT MAY INCLUDE OTHER UNSTRIPED HORIZONTAL PANELS NECESSARY TO PROVIDE STABILITY.

C. THERE SHALL BE A 1:1 RATIO OF WHITE TO ORANGE FOR ALL TYPES OF BARRICADES. THE ENTIRE AREA OF ORANGE AND WHITE SHALL BE REFLECTORIZED* WITH ENCLOSED LENS (ENGINEER GRADE) SHEETING. THE PREDOMINANT COLOR FOR OTHER BARRICADE COMPONENTS SHALL BE WHITE, EXCEPT THAT UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED.

D. BARRICADES ARE LOCATED ADJACENT TO TRAFFIC AND THEREFORE SUBJECT TO IMPACT BY ERRANT VEHICLES BECAUSE OF THEIR VULNERABLE POSITION AND THE POSSIBLE HAZARD THEY COULD CREATE, THEY SHALL BE CONSTRUCTED OF LIGHTWEIGHT MATERIAL AND OF YIELDING DESIGN.

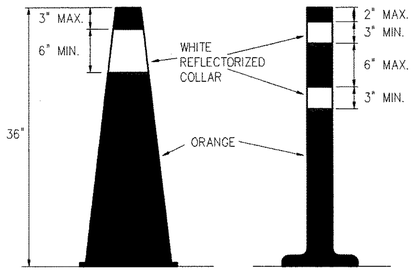
E. FOR RAILS LESS THAN 3 FEET LONG, 4 INCH WIDE STRIPES SHALL BE USED.

* REFLECTORIZED MATERIALS SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICE WILL DISPLAY THE SAME APPROXIMATE COLOR DAY AND NIGHT. THE REFLECTIVE SHEETING SHALL MEET THE REQUIREMENT OF AASHTO M268. THE REFLECTIVE SHEETING ON EACH TRAFFIC CONTROL DEVICE SHALL HAVE A SMOOTH APPEARANCE. THE REFLECTIVE SHEETING SHALL BE APPLIED IN A WORKMANLIKE MANNER SUCH THAT THERE ARE NO BUBBLES OR WRINKLES IN THE MATERIAL.



CONE

TUBULAR MARKER



CONE

TUBULAR MARKER

A. TRAFFIC CONES SHALL BE CONICAL IN SHAPE AND SHALL BE A MINIMUM OF 28" HIGH WITH A BROADENED BASE AND SHOULD BE MADE OF MATERIALS THAT WILL WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. ORANGE SHALL BE THE PREDOMINATE COLOR ON CONES. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A WHITE REFLECTORIZED* CONE COLLAR. IN GENERAL, CONES ARE NOT RECOMMENDED FOR NIGHTTIME OPERATIONS, BUT MAY BE PERMITTED IN EMERGENCY SITUATIONS OR OPERATIONS OF SHORT DURATION PROVIDED THE CONES ARE FITTED WITH REFLECTIVE COLLARS. WHERE CONES ARE USED ON INTERSTATE AND FREEWAY FACILITIES THEY SHALL HAVE A MINIMUM HEIGHT OF 36". 28" CONES SHOULD HAVE A MINIMUM WEIGHT OF 10 LBS, 36" CONES SHOULD HAVE A MINIMUM WEIGHT OF 10 LBS, 70% OF THE CONE'S WEIGHT SHALL BE IT'S BASE.

B. TUBULAR MARKERS ARE SIMILAR TO CONES IN THAT THEY ARE LIGHTWEIGHT AND EASY TO INSTALL, BUT THEY ARE ALSO LIMITED IN VISIBILITY. IF THEY ARE TO BE USED AT NIGHT, THEY MUST HAVE AT LEAST TWO REFLECTORIZED* COLLARS.

C. THE PRIMARY FUNCTION OF CONES AND TUBULAR MARKERS IS FOR DAYTIME CHANNELIZATION OF TRAFFIC. WHEN THEY ARE USED, THEY SHOULD BE BALLASTED IN A MANNER ASSURING THAT THEY WILL NOT BE BLOWN OVER OR DISPLACED BY THE DRAFT FROM MOVING VEHICLES.

WARNING LIGHTS

AS USED HEREIN WARNING LIGHTS ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS, THE COLOR OF LIGHT EMITTED SHALL BE YELLOW. THEY MAY BE EITHER STEADY BURN OR FLASHING MODE AND IN ACCORDANCE WITH THE ITE STANDARD FOR FLASHING AND STEADY BURN WARNING LIGHTS.

TYPE A (LOW INTENSITY) ARE MOST COMMONLY MOUNTED ON BARRICADES, DRUMS OR ADVANCE WARNING SIGNS ARE INTENDED TO CONTINUALLY WARN DRIVERS OF A HAZARD.

TYPE B (HIGH INTENSITY) – ARE NORMALLY MOUNTED ON THE ADVANCE WARNING SIGNS OR INDEPENDENT SUPPORTS. THESE LIGHTS ARE EFFECTIVE DAY AND NIGHT SO THEY MUST BE DESIGNATED TO OPERATE 24 HOURS A DAY. A FLASHING YELLOW SIGNAL HEAD POWERED BY AC CURRENT OR PORTABLE GENERATOR MAY BE USED, MOUNTED SINGULARLY OR IN PAIRS.

WHERE COMMERCIAL POWER IS AVAILABLE, THEY SHOULD BE OF THE "PERMANENT" TYPE, CONFORMING TO PARAGRAPH 6E–5 OF THE M U T C D.

TYPE C (STEADY BURN) – ARE INTENDED TO BE USED TO DELINEATE THE LINE OF TRAVEL ON DETOURS, ON LANE CHANGES, LANE CLOSURES AND OTHER SIMILAR CONDITIONS. AS USED HEREIN, STEADY BURN LIGHTS SHALL MEAN A SERIES OF LOW WATTAGE YELLOW ELECTRIC LIGHTS.

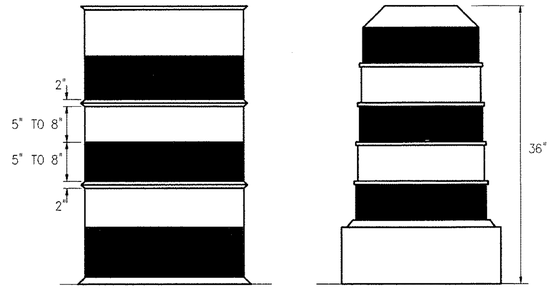
STEADY BURN LIGHTS ONLY ARE USED TO DELINEATE THE TRAVEL WAY THROUGH AND AROUND OBSTRUCTIONS IN A CONSTRUCTION OR MAINTAINANCE ZONE.

WARNING LIGHTS ON BARRICADES SHALL BE INSTALLED TO A MINIMUM MOUNTING HEIGHT OF 36" TO THE BOTTOM OF THE LENS.

FLASHING WARNING LIGHTS SHALL NOT BE USED FOR DELINEATION, AS A SERIES OF FLASHERS WOULD TEND TO OBSCURE THE DESIRED VEHICLE PATH.

55–GALLON METAL DRUM

PLASTIC DRUM



DRUMS

DRUMS USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL NORMALLY BE 55–GALLON CAPACITY DRUMS. DEVICES MANUFACTURED OF PLASTIC OR OTHER YIELDING MATERIALS ARE DESIRABLE IF THEY MEET THE NOMINAL DIMENSIONS OF 55–GALLON CAPACITY DRUMS. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, ORANGE AND WHITE STRIPES FIVE TO EIGHT INCHES WIDE, COVERING ENTIRE OUTSIDE. THE ENTIRE AREA OF ORANGE AND WHITE SHALL BE REFLECTORIZED* WITH ENCLOSED LENS (ENGINEER GRADE) SHEETING, EXCEPT FOR THE CORRUGATION AREA WHERE A 2" NON–REFLECTORIZED BAND WILL BE ALLOWED. DRUMS ARE MOST COMMONLY USED TO CHANNELIZE OR DELINEATE TRAFFIC FLOW. EACH DRUM SHALL BE WEIGHTED WITH NO LESS THAN 40 LBS AND NO MORE THAN 60 LBS OF SAND, DRAIN HOLES SHALL BE PROVIDED SO THAT WATER WILL NOT ACCUMULATE AND FREEZE IN THE BOTTOM OF THE DRUM.

DURING HOURS OF DARKNESS STEADY BURN WARNING LIGHTS MAY BE PLACED ON THE DRUM TO FURTHER AID CHANNELIZATION AND DELINEATION. IF WARNING LIGHTS ARE USED ON DRUMS, THE WARNING LIGHTS SHALL BE BOLTED TO THE DRUM.

RECORD DRAWING

SPS–C01–37–15

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3	RECORD DRAWING	11/00	JBM
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1	REGULATORY APPROVAL	10/99	JBM

DESIGNED JBM
DRAWN PWS
CHECKED JBM
PROJ.ENGR. JBM
APPROVED

NORTH CAROLINA PROFESSIONAL SEAL 8397 ENGINEER DONALD L. CORDELL 11/17/00

NORTH CAROLINA PROFESSIONAL SEAL 19118 ENGINEER JOSEPH B. MEERS, JR. 11/17/00

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ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

COUNTRYSIDE
PUMP STATION AND FORCE MAIN IMPROVEMENTS

TRAFFIC CONTROL PLANS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE SEPTEMBER 1999
H & S JOB NUMBER 30387
CONTRACT NUMBER 1
DRAWING NUMBER TCP–2
SHEET 13 OF 13

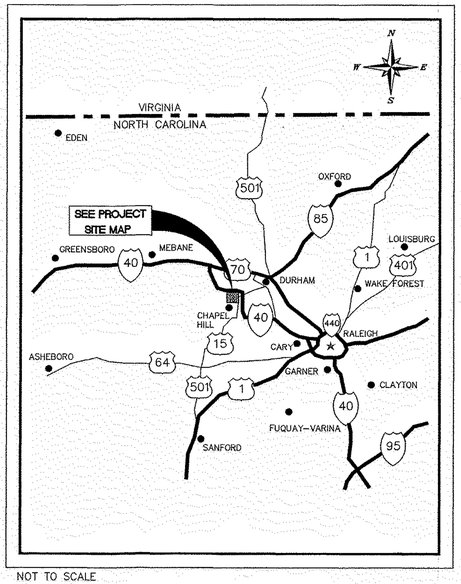
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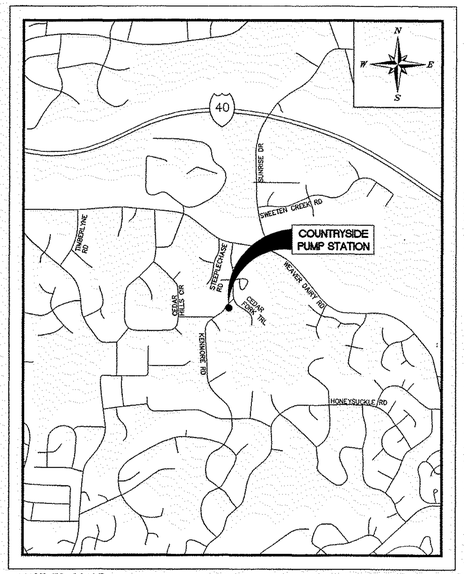
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CONTRACT NO. 1 - RECORD DRAWINGS



NOT TO SCALE

PROJECT LOCATION



NOT TO SCALE

PROJECT SITE

CONSTRUCTION RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS-BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33186 ZACHARY G. PURVIS 1-30-13

DRAWING:

SEAL:

DATE:
FEBRUARY 2012

JOB NUMBER:
018484007

PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.

P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068 NC LICENSE #F-0102
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ABBREVIATIONS

AB	ANCHOR BOLT	FAB	FABRICATE	MAINT	MAINTENANCE	S	SOUTH/SLOPE
AC	ALTERNATING CURRENT/ ASBESTOS CEMENT	F&C	FRAME AND COVER	MATL	MATERIAL	SAN	SANITARY
		F&G	FRAME AND GRATE	MAX	MAXIMUM	SBL	SURVEY BASELINE
ACT	ACOUSTIC TILE	FC	FLUSHING CONNECTION	MECH	MECHANICAL	SCH	SCHEDULE
AD	AREA DRAIN	FD	FLOOR DRAIN	MEMB	MEMBRANE	SD	STORM/SITE DRAIN
ADDL	ADDITIONAL	FDN	FOUNDATION	MET	METAL	SECT	SECTION
ADJ	ADJUSTABLE	FE	FIRE EXTINGUISHER	MFR	MANUFACTURER	SERV	SERVICE
AFF	ABOVE FINISHED FLOOR	FF	FINISH FLOOR	MG	MILLION GALLONS	SEW	SEWER
AGGR	AGGREGATE	FH	FIRE HYDRANT	MGD	MILLION GALLONS PER DAY	SF	SQUARE FEET
AL	ALUMINUM	FIN	FINISH	MH	MANHOLE	SHT	SHEET
ALLOW	ALLOWANCE/ALLOWABLE	FIX	FIXTURE	MIN	MINIMUM	SI	SQUARE INCH
ALT	ALTERNATE	FL	FLASHING/FLOOR	MISC	MISCELLANEOUS	SIM	SIMILAR
APPROX	APPROXIMATE	FLEX	FLEXIBLE	MJ	MECHANICAL JOINT	SJ	STEEL JOIST
ARCH	ARCHITECTURAL	FLG	FLANGE	MLDG	MOLDING	SPEC	SPECIFICATION
ASB	ASBESTOS	FLUOR	FLUORESCENT	MO	MASONRY OPENING	SQ	SQUARE
ASPH	ASPHALT	FLXC	FLEXIBLE CONNECTION	MOD	MODIFY/MODIFIED	SS	SANITARY SEWER
AT	ASPHALT TILE	FM	FORCE MAIN	MON	MONUMENT	SST	STAINLESS STEEL
		FPRF	FIREPROOF	MOT	MOTOR	ST	STREET
		FRP	FIBERGLASS REINFORCED POLYESTER LAMINATE	MTD	MOUNTED	STA	STATION
B	BORING			MTG	MOUNTING	STD	STANDARD
BD	BOARD	FT	FEET	MULT	MULTIPLE	STG	STORAGE
BFE	BOTTOM OF FITTING ELEV	FTG	FOOTING/FITTING			STIR	STIRRUP
BFV	BUTTERFLY VALVE	FURR	FURRING/FURRED			STL	STEEL
BITUM	BITUMINOUS					STR	STRUCTURAL
℄	BASELINE					SUB	SUBSTITUTE
BL	BUILDING LINE					SUP	SUPPLY
BLDG	BUILDING			N	NORTH	SUPT	SUPERINTENDENT
BLK	BLOCK			NA	NOT APPLICABLE	SUR	SURFACE
BM	BENCH MARK			NF	NEAR FACE	SUSP	SUSPENDED
BOC	BACK OF CURB	G	GAS/GAS LINE	NGVD	NATIONAL GEODETIC VERTICAL DATUM	SW	SWITCH
BOT	BOTTOM	GA	GAUGE			SWBD	SWITCHBOARD
BRG	BEARING	GAL	GALLON	NIC	NOT IN CONTRACT	SWD	SIDE WATER DEPTH
BRK	BRICK	GALV	GALVANIZED	NO	NUMBER	SYM	SYMMETRICAL
BRZ	BRONZE	GC	GENERAL CONTRACTOR	NOM	NOMINAL		
BSMT	BASEMENT	GEN	GENERATOR	NPW	NON POTABLE WATER		
BT	BOLT	GI	GALVANIZED IRON	NTS	NOT TO SCALE		
BUR	BUILT-UP ROOFING	GL	GLASS				
BV	BALL VALVE	GPM	GALLONS PER MINUTE				
		GR	GRADE			T	TREAD
		GV	GATE VALVE			T&B	TOP AND BOTTOM
C	CLOSET/CARPET/CHANNEL	GW	GUY WIRE			T&G	TONGUE AND GROOVE
CAB	CABINET	GWB	GYPSUM WALL BOARD			TAN	TANGENT
CB	CATCH BASIN	GWF	GLAZED WALL FINISH	OC	ON CENTER	TBM	TEMPORARY BENCH MARK
C/C	CENTER TO CENTER	GYP	GYPSUM	OD	OUTSIDE DIAMETER	TC	TOP OF CURB
CE	CONSTRUCTION EASEMENT			OF	OUTSIDE FACE	TDH	TOTAL DYNAMIC HEAD
CEM	CEMENT			OFF	OFFICE	TECH	TECHNICAL
CER	CERAMIC			OPER	OPERATOR	TEL	TELEPHONE
CF	CUBIC FEET			OPNG	OPENING	TEMP	TEMPERATURE
CFM	CUBIC FEET PER MINUTE			OPP	OPPOSITE	TER	TERRAZZO
CI	CAST IRON/CUBIC INCHES			ORIG	ORIGINAL	THERMO	THERMOSTAT
CIP	CAST IRON PIPE			OT	OPEN TRUSS	THK	THICK
℄	CENTER LINE	H	HEIGHT	OVHD	OVERHEAD	THRU	THROUGH
Cl_2	CHLORINE	HDW	HARDWARE			TOD	TOP OF DECK
CLG	CEILING	HEX	HEXAGONAL			TOF	TOP OF FOOTING
CLKG	CAULKING	HM	HOLLOW METAL			TOM	TOP OF MASONRY/MANHOLE
CLR	CLEAR	HORZ	HORIZONTAL			TOS	TOP SLAB
CMP	CORRUGATED METAL PIPE	HP	HORSEPOWER			TOW	TOP OF WALL
CMU	CONCRETE MASONRY UNIT	HPT	HIGH POINT	PAR	PARALLEL	TOL	TOLERANCE
CO	CLEANOUT	HTR	HEATER	PC	POINT OF CURVE/PIECE	TPS	TWISTED PAIR SHIELDED
COL	COLUMN	HVAC	HEATING,VENTILATION AND AIR CONDITIONING	PCC	POINT OF COMPOUND CURVE	TRANS	TRANSFORMER
CONC	CONCRETE			PCF	POUNDS PER CUBIC FOOT	TYP	TYPICAL
CONST	CONSTRUCTION	HW	HOT WATER	PE LINING	POLYETHYLENE LINING		
CONT	CONTINUOUS	HWL	HIGH WATER LEVEL	PERF	PERFORATED		
CONTR	CONTRACTOR	HWY	HIGHWAY	PERP	PERPENDICULAR		
CORP	CORPORATION	HYD	HYDRAULIC	PI	POINT OF INTERSECTION	UG	UNDERGROUND
CORR	CORRIDOR			ℙ	PROPERTY LINE/PLATE	UH	UNIT HEATER
CP	CONCRETE PLANK			PNL	PANEL	UNFIN	UNFINISHED
CRS	COURSE			PP	POWER POLE	UR	URINAL
CT	CERAMIC TILE			PREFAB	PREFABRICATED	UTIL	UTILITY
CTJ	CONTROL JOINT			PRV	PRESSURE RELIEF VALVE		
CU	COPPER			PS	PUMPING STATION		
CV	CHECK VALVE			PSF	POUNDS PER SQUARE FOOT		
CW	COLD WATER	I	IRON	PSI	POUNDS PER SQUARE INCH		
CY	CUBIC YARD	ID	INSIDE DIAMETER	PT	POINT OF TANGENT/POINT	VAC	VACUUM
		IF	INSIDE FACE	PTN	PARTITION	VAT	VINYL ASBESTOS TILE
DC	DIRECT CURRENT	IN	INCH	PV	PLUG VALVE	VCP	VITRIFIED CLAY PIPE
DET	DETAIL	INCL	INCLUDED	PVC	POLYVINYL CHLORIDE	VEL	VELOCITY
DF	DRINKING FOUNTAIN	INF	INFLUENT	PVC	POINT OF VERTICAL CURVE	VENT	VENTILATING/VENTILATION
DIA (ø)	DIAMETER	INS	INSULATION	PVI	POINT OF VERTICAL INTERSECTION	VERT	VERTICAL
DIAG	DIAGONAL	INT	INTERIOR	PVMT	PAVEMENT	VOL	VOLUME
DIM	DIMENSION	INV	INVERT	PVT	POINT OF VERTICAL TANGENCY	VP	VENT PIPE
DIP	DUCTILE IRON PIPE			PW	POTABLE WATER	VWC	VINYL WALL COVERING
DISCH	DISCHARGE						
DIST	DISTRIBUTION						
DJ	DOUBLE JOIST						
DL	DEAD LOAD	J	JOIST	QTY	QUANTITY		
DN	DOWN	JB	JUNCTION BOX				
DOZ	DOZEN	JCT	JUNCTION			W	WEST/WIDTH
DR	DOOR	JT	JOINT			W/	WITH
DWG	DRAWING			R	RADIUS/RISER	WC	WATER CLOSET
DWL	DOWEL			RCP	REINFORCED CONCRETE PIPE	WF	WIDE FLANGE
				RD	ROAD/ROOF DRAIN	WH	WALL HYDRANT
E	EAST/EASEMENT			RECIR	RECIRCULATION	WI	WROUGHT IRON
EA	EACH			RECP	RECEPTACLE	WL	WATER LEVEL
ECC	ECCENTRIC	L	LENGTH/ANGLE	RECT	RECTANGULAR	W/L	WATER LINE
EF	EACH FACE	LA	LINE AHEAD	RED	REDUCER	WO	WINDOW OPENING
EFF	EFFLUENT	LAB	LABORATORY	REF	REFERENCE	W/O	WITHOUT
EIP	EXIST IRON PIPE	LAM	LAMINATED	REG	REGISTER	WP	WATERPROOF
EL OR ELEV	ELEVATION	LAT	LATERAL	REINF	REINFORCING	WPFG	WATER PROOFING
ELEC	ELECTRIC/ELECTRICAL	LAV	LAVATORY	REM	REMOVE	WPT	WALL PENETRATING TYPE
ELL	ELBOW	LB	POUND/LINE BACK	REQD	REQUIRED	WSE	WATER SURFACE ELEVATION
ENGR	ENGINEER	LF	LINEAR FEET	REST	RESTRAINED	WSP	WEATHERSTRIP
ENT	ENTRANCE	LG	LONG	REV	REVISE	WT	WEIGHT
EOG	EDGE OF GRAVEL	LL	LIVE LOAD	RF	ROOF	WV	WATER VALVE
EOP	EDGE OF PAVEMENT	LLH	LONG LEG HORIZONTAL	RFG	ROOFING	WWF	WELDED WIRE FABRIC
EQ	EQUAL	LLV	LONG LEG VERTICAL	RJ	RESTRAINED JOINT		
EQPT	EQUIPMENT	LP	LIGHT POLE	RM	ROOM		
EW	EACH WAY	LPT	LOW POINT	RND	ROUND		
EX	EXISTING	LT	LIGHT	RO	ROUGH OPENING		
EXC	EXCAVATE	LTG	LIGHTING	RPM	REVOLUTIONS PER MINUTE	YD	YARD
EXH	EXHAUST	LVR	LOUVER	RR	RAILROAD	YR	YEAR
EXP	EXPANSION	LWL	LOW WATER LEVEL	RRS	RAILROAD SPIKE		
EXT	EXTERIOR			RT	RIGHT		
				RTU	REMOTE TERMINAL UNIT		
				RW	RAW WATER		
				R/W	RIGHT OF WAY		

INDEX TO SHEETS

SHEET NO	DWG NO	DESCRIPTION
1		COVER
2	X1	INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS
3	G1	SITE PLAN
4	M1	MECHANICAL PLAN AND SECTION
5	D1	MISCELLANEOUS DETAILS
6	E1	ELECTRICAL NOTES, DETAILS & SINGLE LINE DIAGRAM
7	E2	ELECTRICAL PLANS AND DETAILS

GENERAL NOTES:

1. ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.
2. LOCATIONS OF EXISTING SHOWN UTILITIES ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE EXACT SIZE, DEPTH, MATERIAL, ORIENTATION, AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION AND TO TAKE WHATEVER STEPS ARE NECESSARY TO PROVIDE FOR THEIR PROTECTION. THE ENGINEER HAS ATTEMPTED TO LOCATE AND INDICATE ALL EXISTING UTILITIES ON THE PLANS; HOWEVER, THIS INFORMATION IS SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE ENGINEER AND THE OWNER ASSUME NO RESPONSIBILITY FOR THE LOCATIONS OF UTILITIES SHOWN OR NOT SHOWN. PRIOR TO DIGGING ON OR OFF SITE, THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED BY "NC ONE-CALL" 1-800-632-4949. THE CONTRACTOR SHALL CONTACT ANY UTILITY COMPANY WHOSE UTILITIES ARE NOT LOCATED BY "NC ONE CALL" FOR EXACT LOCATION OF THEIR UTILITIES PRIOR TO STARTING CONSTRUCTION. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND/OR REPLACE ANY AND ALL DAMAGE MADE TO UTILITIES BY THE CONTRACTOR TO EXISTING CONDITIONS AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.
4. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE FIRST EXPANSION JOINT BEYOND THE TRENCH EXCAVATION LIMITS AND TO THE FULL WIDTH. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING.
5. BURIED TELEPHONE AND CATV CABLES (FIBER OPTICS AND CONVENTIONAL) ARE KNOWN TO VARY DUE TO INSTALLATION TECHNIQUES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANY TO DETERMINE SPECIFIC CABLE LOCATIONS AND NOTIFYING THE ENGINEER OF THE EXACT ELEVATION OF THE CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH LOCATING, SUPPORTING, RELOCATING OR REPAIRING BURIED CABLES ALONG THE ROUTE.
6. THE CONTRACTOR SHALL PLACE SAND OR SCREENINGS ON ALL ASPHALT SURFACES THAT ARE AFFECTED BY THE CONSTRUCTION.
7. THE CONTRACTOR SHALL INSTALL ALL SIGNS AS REQUIRED BY NCDOT ALONG STATE ROADWAYS AND CITY STREETS AS REQUIRED BY THE TOWN OF CHAPEL HILL.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION. ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED EASEMENT WIDTHS. EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.
9. OWNER WILL FURNISH DESCRIPTION OF EASEMENTS UPON REQUEST.
10. ALL PIPE INSTALLED ON THIS PROJECT SHALL BE DUCTILE IRON PIPE (DIP).
11. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
12. CONTRACTOR SHALL VERIFY EXACT MATERIALS, LOCATION, ELEVATION, DIMENSIONS, AND LAYOUT OF EXISTING PIPING TO BE CONNECTED TO PRIOR TO ORDERING MATERIALS.
13. DETECTOR TAPE IS REQUIRED FOR ALL NON-METALLIC BURIED PIPE.
14. THE CONTRACTOR SHALL RESTORE GRADE TO PRE-CONSTRUCTION CONDITION UNLESS OTHERWISE NOTED ON THE DRAWINGS.
15. ALL EROSION CONTROL MEASURES TO REMAIN IN PLACE UNTIL ENTIRE SITE IS ESTABLISHED.
16. STOCKPILE LOCATIONS AND LAYDOWN AREAS SHALL BE LOCATED WITHIN THE EXISTING CONSTRUCTION LIMITS AS SHOWN ON THE DRAWINGS. CONSTRUCTION ENTRANCES SHALL BE PLACED AS NEEDED BY THE CONTRACTOR ACCORDING TO THE STANDARD DETAILS IN THE DRAWINGS.
17. GROUND COVER AND SLOPES SHALL BE RESTORED WITHIN 5 WORKING DAYS.
18. ALL PAVEMENT CUTS SHALL BE SAWCUT ALONG A CONTINUOUS STRAIGHT LINE.
19. CONTRACTOR SHALL PLAN AND CONSTRUCT WORK SO AS TO CAUSE MINIMUM INCONVENIENCE TO THE OWNER AND PUBLIC AND TO MINIMIZE POTENTIAL FOR ENVIRONMENTAL IMPACT. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND ERECT AND MAINTAIN AT ALL TIMES DURING THE PROGRESS OR TEMPORARY SUSPENSION OF WORK, SUITABLE BARRIERS, FENCES, SIGNS OR OTHER ADEQUATE PROTECTION, INCLUDING FLAG MEN AND WATCHMEN AS NECESSARY TO INSURE THE SAFETY OF THE PUBLIC AS WELL AS THOSE ENGAGED IN THE CONSTRUCTION WORK. CONSTRUCTION SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BY THE NCDOT. COORDINATE ROAD CLOSURES WITH OWASA, FIRE DEPARTMENTS AND NCDOT AS APPLICABLE.
20. ALL MATERIAL CLEARED AND GRUBBED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE WORK, SUCH AS TREES, VEGETATION, FENCING, ETC., SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF-SITE AT AN APPROVED DISPOSAL SITE.
21. EXISTING EQUIPMENT MARKED FOR REMOVAL SHALL BE REMOVED AND TURNED OVER TO OWASA. CONTRACTOR SHALL COORDINATE WITH OWASA PERSONNEL TEMPORARY STORAGE AND TRANSPORTATION OF EQUIPMENT REMOVED.

EROSION CONTROL NOTES:

1. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHERE A GOOD STAND OF GRASS HAS BEEN ESTABLISHED AND EROSION IS NO LONGER EVIDENT. REMOVAL OF THE REMAINDER OF THE EROSION CONTROL DEVICES SHALL OCCUR AS OTHER AREAS ARE ESTABLISHED. REMOVAL OF THE EROSION CONTROL DEVICES SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER.
2. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION.
3. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
4. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.
5. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN (7) DAYS OR AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (1/2) INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
6. 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 THE CONSTRAINTS LISTED BELOW.

PERMANENT GROUND COVER:
FOR AN AREA OF LAND-DISTURBING ACTIVITY WHERE GRADING ACTIVITIES HAVE BEEN COMPLETED, TEMPORARY OR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PROVIDED AS SOON AS PRACTICABLE, BUT IN NO CASE LATER THAN SEVEN DAYS AFTER COMPLETION OF GRADING.

TEMPORARY GROUND COVER:
1) FOR AN AREA WITH NO SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 14 DAYS.
2) FOR AN AREA OF MODERATE SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF 10 DAYS. FOR PURPOSES OF THIS ITEM, "MODERATE SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS LESS THAN OR EQUAL TO THREE UNITS OF HORIZONTAL DISTANCE TO ONE UNIT OF VERTICAL DISTANCE.
3) FOR AN AREA OF STEEP SLOPE, TEMPORARY GROUND COVER SHALL BE PROVIDED FOR THE AREA IF IT HAS NOT BEEN DISTURBED FOR A PERIOD OF SEVEN DAYS. FOR PURPOSES OF THIS SUBDIVISION, "STEEP SLOPE" MEANS AN INCLINED AREA, THE INCLINATION OF WHICH IS GREATER THAN THREE UNITS OF HORIZONTAL DISTANCE TO ONE UNIT OF VERTICAL DISTANCE.

CONSTRUCTION RECORD DRAWINGS X1

LEGEND

MATERIALS

GRADE OR EARTH
SAND
GRAVEL/RIP RAP
CONCRETE
CONC. FILL OR GROUT
GRATING
CHECKERED PLATE
ROCK
WATER SURFACE
ASPHALT
BRICK

SYMBOLS

W — EXIST. WATER LINE
SS — EXIST. SANITARY SEWER
EXIST. STORM DRAIN
E — EXIST. ELECTRICAL
T — EXIST. TELEPHONE
EXIST. GAS
FH — EXIST FIRE HYDRANT
EXIST SAN SEWER MH
EXIST. VALVE
EXIST. FENCE
WM — EXIST. WATER METER
PP — EXIST POWER POLE
CO — EXIST. SS CLEANOUT

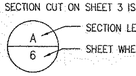
PROPOSED WATERMAIN
SANITARY SEWER AND MANHOLE
NEW VALVE
STORM DRAINAGE STRUCTURE
REDUCER
BLOWOFF ASSEMBLY
BACKFLOW PREVENTER
PROPOSED FIRE HYDRANT
PROPOSED WATER METER
SS — TYPICAL PLUG AND REMOVAL
SS — TYPICAL IN-LINE PLUG
B01 SOIL BORING/AUGER PROBE
SR SEISMIC LINE

TEMPORARY CONSTRUCTION ENTRANCE
PAVEMENT REPLACEMENT
STONE FILTER
CURB INLET PROTECTION
INLET PROTECTION
STONE CHECK DAM
TYPE 1 DITCH LINING
CLASS A RIP RAP

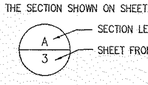
SECTION AND DETAIL KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

(A) A SECTION CUT ON SHEET 3 IS IDENTIFIED AS FOLLOWS:



(B) THE SECTION SHOWN ON SHEET 6 IS IDENTIFIED AS FOLLOWS:



STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE DRAWINGS BY ONE OF TWO METHODS:

2000003 — REFERENCED ITEM

OR:

SEE 2000003 — REFERENCED ITEM

STANDARD DETAILS ARE COMPILED IN APPROXIMATE NUMERICAL ORDER IN THE BACK OF THE DRAWINGS.

LINETYPES

PROPOSED ITEMS
EXISTING ITEMS
PROPERTY/R/W LINE
EASEMENT LINE
HIDDEN ITEMS
DEMOLITION ITEMS
CENTER LINE
MATCH LINE
EXIST GROUND PROFILE
CREEK / DITCH
EXIST EDGE OF PAVMT
SILT FENCE
TCE — TEMPORARY CONSTRUCTION EASEMENT
ZONE 1 — ZONE 1 BUFFER
ZONE 2 — ZONE 2 BUFFER
TD — TEMPORARY DIVERSION SWALE
LOD — LIMITS OF DISTURBANCE

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/13/12	ZGP

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KHA PROJECT	018484007
DATE	2-23-12
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

COUNTRYSIDE PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

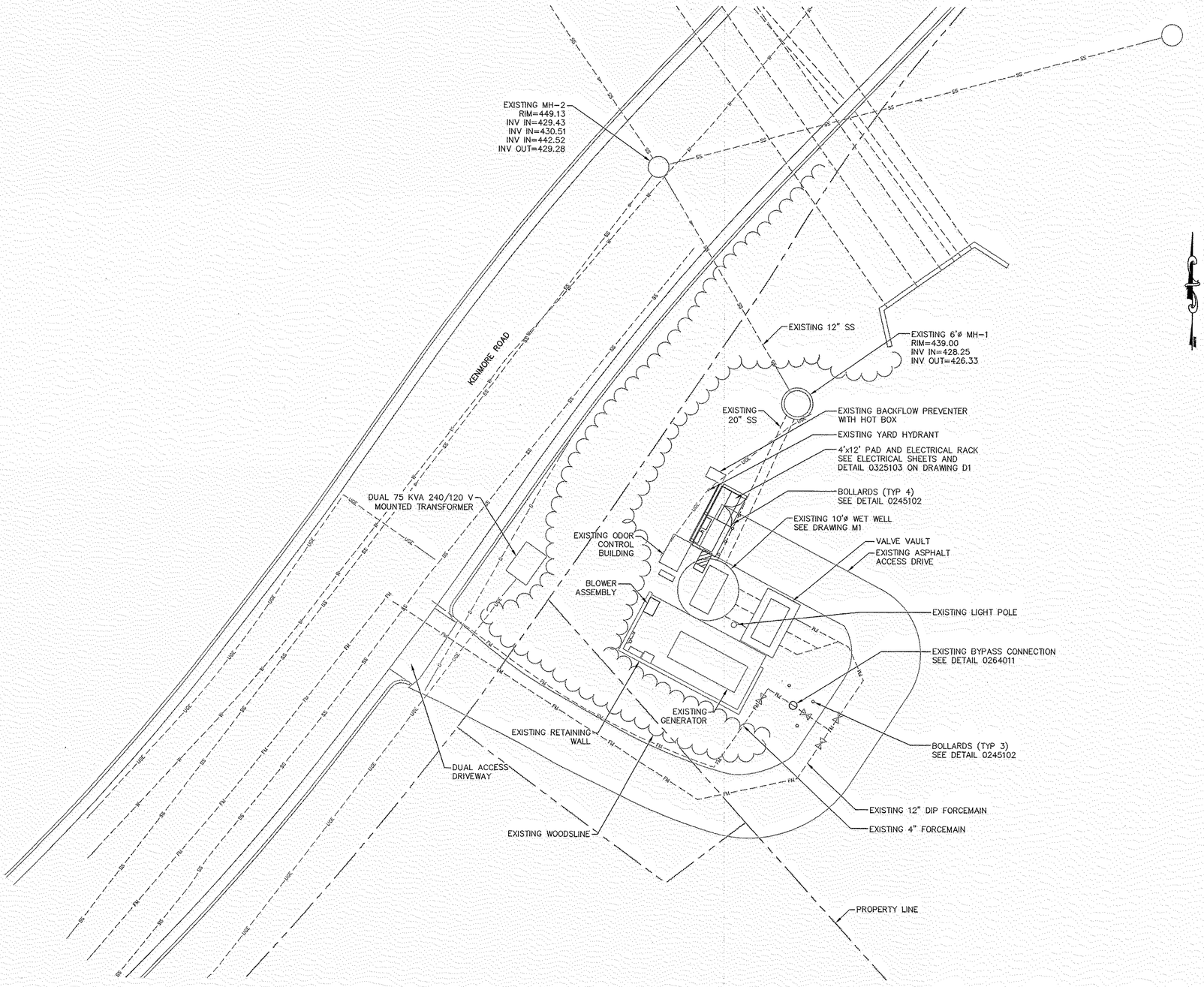
SEAL 33186 ENGINEER GARY C. PURYEAR 1-30-13

SEAL:

INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS

SHEET NUMBER 2 OF 7

Plotted By: Bailey, Joey Sheet Set: OWASA Countryside-Oaks-Tinkerbell Layout: 2 INDEX, GENERAL NOTES, LEGEND AND ABBREVIATIONS May 07, 2013 04:15:32pm K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Countryside\CAD\Record Drawings\PlanSheets\2 INDEX, GENERAL NOTES, LEGEND AND ABBREVI



GENERAL NOTES:

3.1 BLOWER ASSEMBLY IS A LITTLE JOHN 3 MANUFACTURED BY DO2E. BLOWER IS A 3 HP, 3 PHASE, 240V K04-MS REGENERATIVE BLOWER MANUFACTURED BY FPZ. MAX FLOW IS 98 CFM.

CONSTRUCTION RECORD DRAWINGS

GRAPHIC SCALE IN FEET
0 5 10 20

G1

No.	REVISIONS	DATE	BY
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KHA PROJECT	018484007
DATE	2-23-12
SCALE	1" = 10'
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

COUNTRYSIDE PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

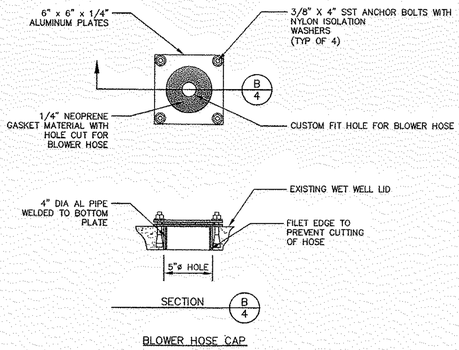
NORTH CAROLINA SEAL 33186 1-24-13 ENGINEER ZACHARY G. PURNELL

SEAL:

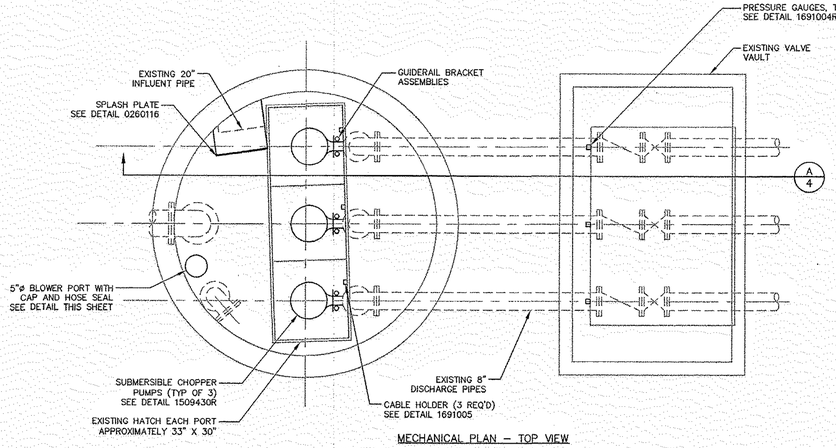
SITE PLAN GENERAL

SHEET NUMBER 3 OF 7

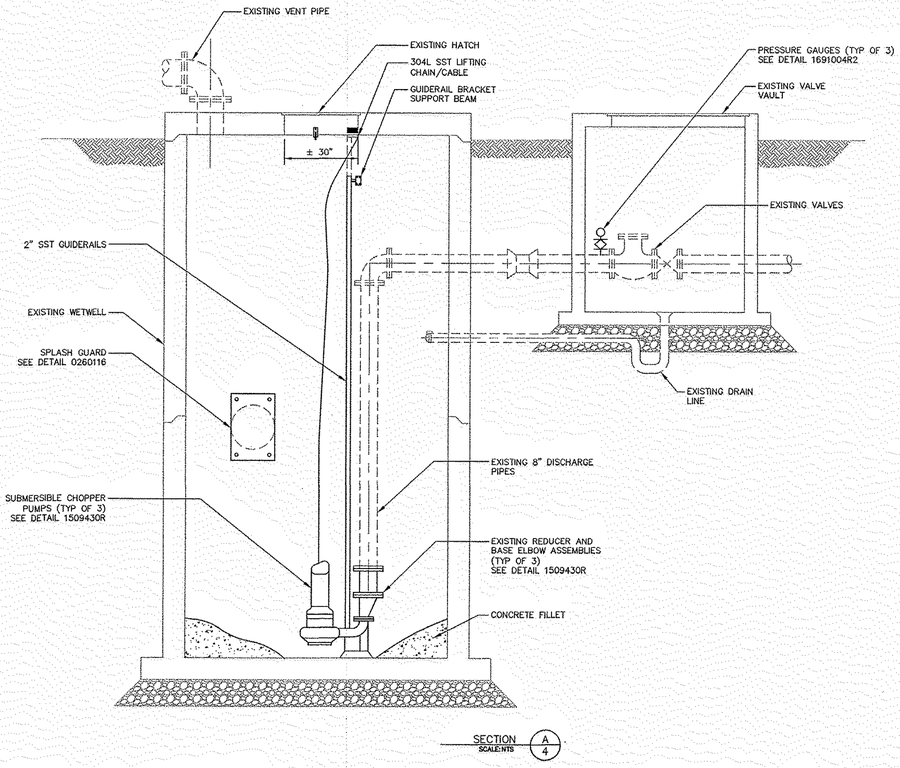
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BLOWER HOSE CAP



MECHANICAL PLAN – TOP VIEW



NOTES:

4.1 PUMPS ARE 34 HP, 240V, 3 PH, 1755 RPM FLYGT FP 3171.350 HT, WITH 278.00 MM DIAMETER IMPELLERS.

4.2 PUMPS OUT PUT THE FOLLOWING AT STARTUP ON 6/28/2012
- PUMP #1: 1126 GPM
- PUMP #2: 1140 GPM
- PUMP #3: 1140 GPM

4.3 PUMP SERIAL NUMBERS ARE
- PUMP #1: 1230001
- PUMP #2: 1230002
- PUMP #3: 1230003

PUMP STATION DESIGN GENERAL INFORMATION	
WET WELL DIAMETER	10'
DISCHARGE PIPING SIZE	8"ø
PUMP CURVE POINT #1	800 GPM @ 88 FT
PUMP CURVE POINT #2	1000 GPM @ 75 FT
HORSEPOWER	40 HP
VOLTAGE/ PHASE/ CYCLES	230 VOLT/3 PHASE/60 HZ.
MAX. OPERATING SPEED	1800 RPM
PRIMARY LEVEL SENSING METHOD	RADAR LEVEL TRANSDUCER
BACKUP LEVEL SENSING METHOD	FLOATS
PUMP STATION ELEVATIONS*	
TOP OF WETWELL	439.00'
WET WELL INVERT IN	426.10'
BACKUP HIGH WATER	426.10'
HIGH WATER ALARM	425.70'
LAG PUMP ON	425.50'
LEAD PUMP ON	423.00'
PUMPS OFF	421.00'
WETWELL BOTTOM	418.00'

* ALL ELEVATIONS ARE BASED ON DESIGN PLANS BY HAZEN & SAWYER DATED 11-17-00.

CONSTRUCTION RECORD DRAWINGS

M1

No.	REVISIONS	DATE	BY
1	RECORD DRAWNGS	11/13/12	ZGP

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KHA PROJECT	018484007
DATE	2-23-12
SCALE	3/8"=1'-0"
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

COUNTRYSIDE PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

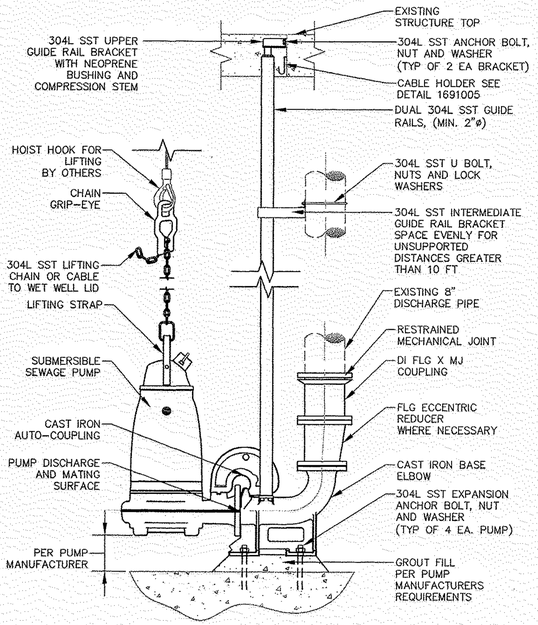
SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 33186 ENGINEER ZACHARY G. PURVIS 1-30-13

PLAN AND SECTION MECHANICAL

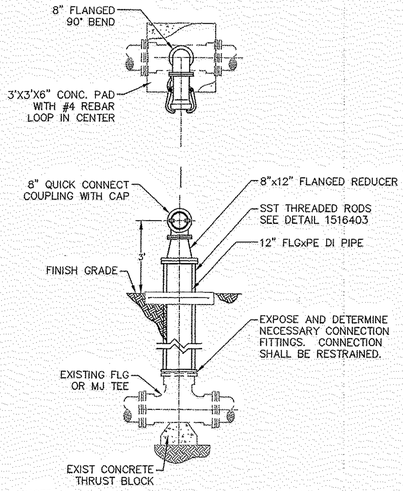
SHEET NUMBER 4 OF 7

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SUBMERSIBLE PUMP AND LIFT OUT ASSEMBLY

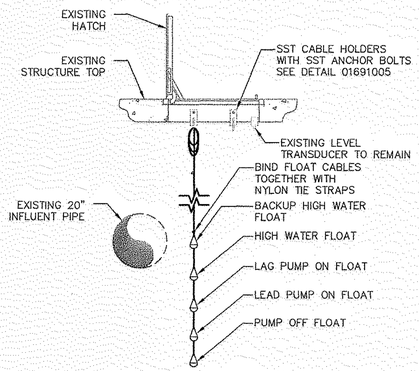
1509430R



NOTE:
1.) ALL PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS FORCE MAIN UNLESS OTHERWISE NOTED.
2.) QUICK CONNECT FITTING SHALL BE BAUER/BALL AND SOCKET TYPE. CONTRACTOR SHALL CONFIRM ORIENTATION WITH OWNER.
3.) EXISTING CONNECTION CONSISTING OF 4" PIPE, GATE VALVE AND FITTINGS SHALL BE REMOVED
4.) CONTRACTOR SHALL PROVIDE A FLANGED 8"x4" REDUCER WITH GASKET KITS FOR FUTURE USE.

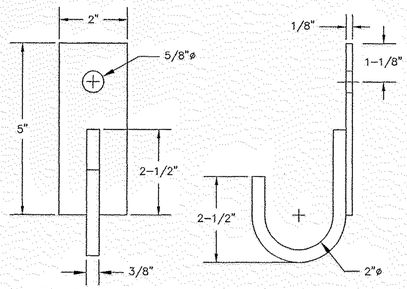
EMERGENCY BYPASS PUMPING DISCHARGE CONNECTION

0264011



LEVEL CONTROLS

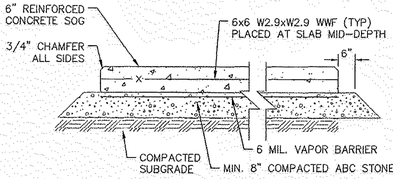
1509429



MATERIALS:
1-PC 3/16"x2"x5" 304L SST FLAT BAR
1-PC 3/8" DIAX8" 304L SST STOCK

CABLE HOLDER

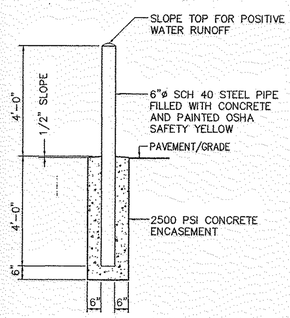
1691005



TYPICAL SLAB-ON-GRADE

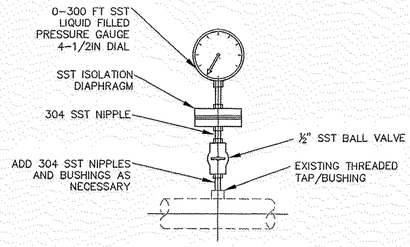
0325103

NOTES:
5.1 ALL STAINLESS STEEL SHALL BE ANSI TYPE 304L OR 316, UNLESS OTHERWISE NOTED.



BOLLARD TYPE 1

0245102



PRESSURE GAUGE INSTALLATION WITH THREADED TAP USED FOR PIPES 2" AND LARGER

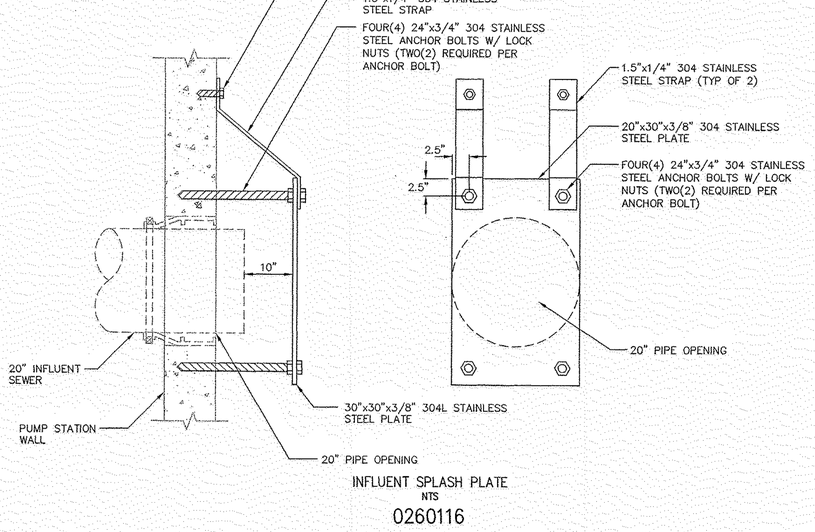
1691004R2

THREADED ROD SCHEDULE

PIPE SIZE	DESIGN PRESSURE (DIMENSIONS IN INCHES) 50 PSI BOLTS NO-DIA	50 PSI TAB THK	100 PSI BOLTS NO-DIA	100 PSI TAB THK	150 PSI BOLTS NO-DIA	150 PSI TAB THK	200 PSI BOLTS NO-DIA	200 PSI TAB THK	250 PSI BOLTS NO-DIA	250 PSI TAB THK	300 PSI BOLTS NO-DIA	300 PSI TAB THK	350 PSI BOLTS NO-DIA	350 PSI TAB THK
4,6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	8-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	8-3/4	2	10-3/4	2	10-3/4	2
30	4-1	2 1/4	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	8-1	2 1/4	10-1	2 1/4	10-1	2 1/4
36	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	8-1	2 1/2	10-1	2 1/2	12-1	2 1/2	14-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4
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54	6-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

1. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
2. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
3. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
4. THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED.
5. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNEMEC 46-465 HI-BUILD OR EQUAL.

1516403



INFLUENT SPLASH PLATE

NTS

0260116

CONSTRUCTION RECORD DRAWINGS

D1

No.	REVISIONS	DATE	BY
1	RECORD DRAWINGS	11/13/12	ZGP

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Kimley-Horn and Associates, Inc.

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KHA PROJECT	018484007
DATE	2-23-12
SCALE	N/A
DESIGNED BY	ZGP
DRAWN BY	JGB
CHECKED BY	KFC

COUNTRYSIDE PUMP STATION IMPROVEMENTS

CONTRACT NO. 1

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

NORTH CAROLINA SEAL 33186 ENGINEER ZACHARY G. PURVIS 1-31-13

SEAL:

MISCELLANEOUS DETAILS

SHEET NUMBER 5 OF 7

Plotted By: Bailey, Joey Sheet Set: OWASA Countryside-Oaks-Tinkerbell Layout: 5 MISCELLANEOUS DETAILS May 07, 2013 04:14:38pm K:\RAL_WRG\018484007 - OWASA Countryside-Oaks-Tinkerbell\Courtyside\Oaks-Tinkerbell\Record Drawings\PlanSheets\5 MISCELLANEOUS DETAILS.dwg

LOAD SERVED	KVA / Phase A	KVA / Phase B	CKT BRKR	CKT NO	NEUTRAL A B	CKT NO	CKT BRKR	KVA / Phase A	KVA / Phase B	LOAD SERVED
ODOR SCRUBBER	0.53	---	1P-15	1		2	1P-20	0.15	—	AREA LIGHT
PHONE DIALER (DIALSTAT)	—	0.20	1P-20	3		4	1P-20	---	1.00	GENERATOR HEATER
SCADA RTU PANEL	0.36	—	1P-20	5		6	1P-20	0.50	--	GENERATOR BATTERY CHARGER
SPACE	—	0.00	---	7		8	---	---	0.00	SPACE
SPACE	0.00	—	---	9		10	---	0.00	--	SPACE
SPACE	—	0.00	---	11		12	---	---	0.00	SPACE
SPACE	0.00	—	---	13		14	---	0.00	---	SPACE
SPACE	—	0.00	---	15		16	---	---	0.00	SPACE
SPACE	0.00	—	---	17		18	---	0.00	---	SPACE
SPACE	—	0.00	---	19		20	---	---	0.00	SPACE
SPACE	0.00	—	---	21		22	---	0.00	—	SPACE
SPACE	—	0.00	---	23		24	---	---	0.00	SPACE
SUB TOTAL	0.89	0.20						0.65	1.00	SUB TOTAL
								1.54	1.20	TOTAL

C/B TEMP. 75 C. RATING 120 240 V 1 PH 3 W
MOUNTING SURFACE

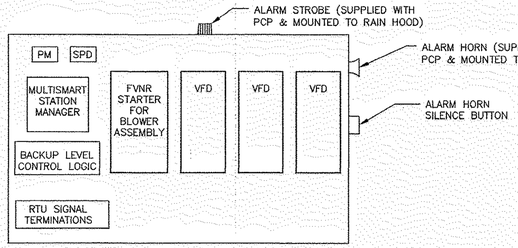
ISOLATED GROUND BUS	NO
MAIN CIRCUIT BREAKER	YES
SERVICE ENTR. RATED	NO
MINIMUM AIC (K AMPS)	10
MCB RATING	100A
BUS RATING	100A
NEUTRAL RATING	100%

LOAD TYPE		CONNECTED KVA A	CONNECTED KVA B	NEC DEM FACTOR	DEMAND KVA A	DEMAND KVA B
GENERAL LIGHTING		0.00	0.00	125%	0.00	0.00
GENERAL USE				≤10 KVA@100%	0.00	0.00
RECEPT		0.00	0.00	>10KVA@50%	0.00	0.00
MOTORS AND	LARGEST	0.53	0.00	125%	0.66	0.00
EQUIPMENT	ALL OTHERS	0.00	0.00	100%	0.00	0.00
EXTERIOR LIGHTING		0.15	0.00	125%	0.19	0.00
DEDICATED RECEPT		0.00	0.00	100%	0.00	0.00
SIGN		0.00	0.00	125%	0.00	0.00
MISCELANEOUS		0.86	1.20	100%	0.86	1.20
TOTAL KVA PER PHASE		1.54	1.20		1.71	1.20
TOTAL DEMAND AMPERES PER PHASE					14	10

PANEL / FEEDER (TOTAL KVA)	2.91
(TOTAL KVA) X 1000 = TOTAL AMPS / VOLTS	12

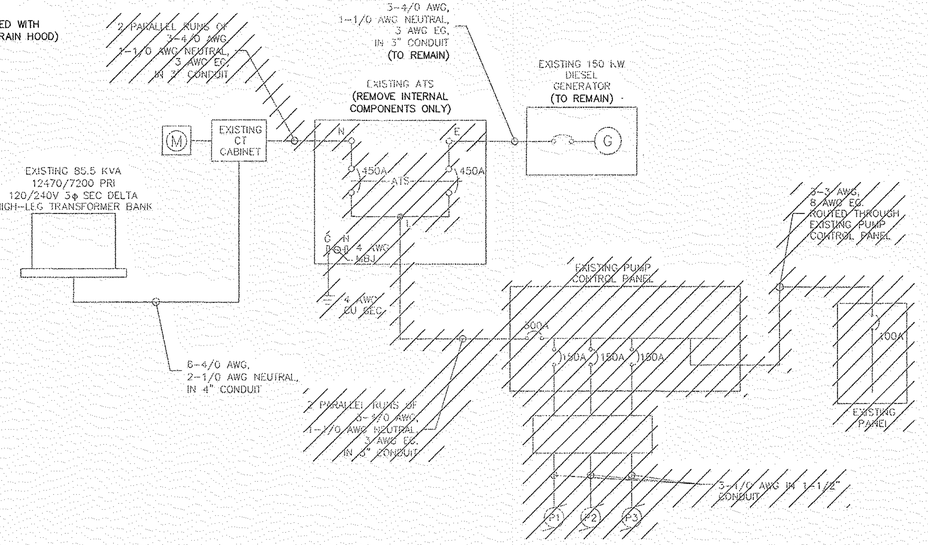
PANEL 'A'

1 PANEL SCHEDULE
NOT TO SCALE



PUMP CONTROL PANEL PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR. ACTUAL LAYOUT BY PANEL MANUFACTURER.

2 DUPLEX CONTROL PANEL
NOT TO SCALE



3 EXISTING SINGLE-LINE DIAGRAM
NOT TO SCALE

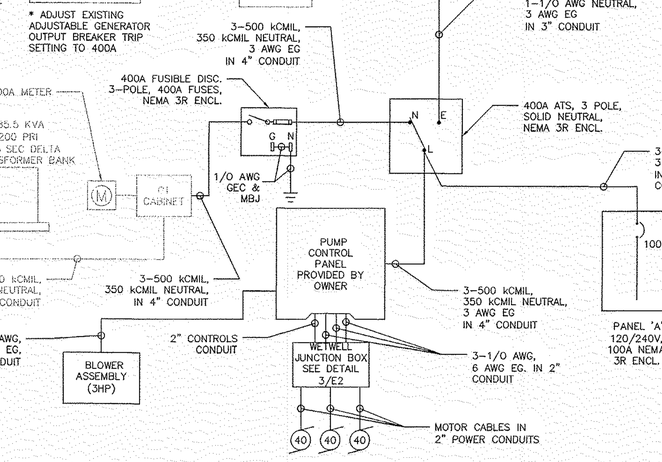
GENERAL NOTES:

1. NEW SERVICE TO BE 400 AMP, 120/240V, 3-PHASE, 4-WIRE, DELTA HIGH-LEG.
2. USE COPPER CONDUCTORS W/ 600 VOLT "THWN-THHN" INSULATION, RATED FOR 75 DEGREES C. UNLESS NOTED OTHERWISE CONDUCTORS SHALL BE 2-12 AWG, 12 AWG EG, IN 1" CONDUIT.
3. CONTRACTOR SHALL APPLY FOR NEW ELECTRICAL SERVICE FOR THE OWNER/TENANT. THIS APPLICATION SHALL BE MADE NO LATER THAN THE NEXT BUSINESS DAY FOLLOWING THE AWARD OF THE CONTRACT. CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY FOR METERING REQUIREMENTS, SERVICE ROUTING, AND METERING.
4. THERE SHALL BE NO SPLICES INSIDE WET WELL.
5. CONDUIT SHALL BE RIGID PVC (SCHEDULE 80), BELOW GRADE AND RGS ABOVE GRADE UNLESS NOTED OTHERWISE. CONDUIT INSIDE OR PENETRATING SEWER STRUCTURES SHALL BE PVC COATED RIGID GALVANIZED STEEL CONDUIT.
6. EACH PANEL SHALL BE REMOVABLE WITHOUT THE REMOVAL OF ADJACENT PANELS. PROVIDE 3" MINIMUM SEPARATION BETWEEN ALL PANELS. PUMP CONTROL PANEL SHALL BE FREE STANDING ON 12" FEET. ALL OTHER PANELS SHALL BE DESIGNED FOR WALL MOUNTED INSTALLATIONS.
7. CONNECT POWER AND CONTROL WIRING IN ACCORDANCE WITH CONTROL PANEL WIRING DIAGRAMS.
8. GROUND ROD SHALL BE COPPER CLAD, 10'-0" x 3/4"ø. GROUNDING CONDUCTOR SHALL BE 2 AWG BARE TINNED SOLID COPPER UNLESS NOTED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT THE LOCAL ELECTRICAL UTILITY AND OBTAIN, IN WRITING, THE MAXIMUM AVAILABLE FAULT CURRENT AT THE UTILITY SERVICE POINT. THE CONTRACTOR SHALL ENSURE ALL ELECTRICAL EQUIPMENT, CIRCUIT BREAKERS, DISCONNECTS, FUSES, AND PANEL BOARDS HAVE A FAULT CURRENT INTERRUPTING RATING GREATER THAN THE AVAILABLE FAULT CURRENT. IN NO CASE SHALL THE FAULT CURRENT INTERRUPTING RATING BE LESS THAN 10,000 AMPS.
10. FOR ALL UNDERGROUND CONDUIT, BURY A MINIMUM OF 24" BELOW GRADE.
11. CONTRACTOR TO PROVIDE PULL BOXES AS NEEDED TO ENSURE NO GREATER THAN 360 DEGREES OF BENDS BETWEEN PULL POINTS IN CONDUIT RUNS.
12. ALL ELECTRICAL WORK SHALL COMPLY WITH NEC, STATE, AND LOCAL CODES.
13. ALL PUMP STATION CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ANY APPLICABLE STATE AND LOCAL CODES. ALL CONTROLS, RELAYS, STARTERS, ETC SHALL BE NEMA RATED. NO IEC COMPONENTS SHALL BE PERMITTED.
14. FLOATS SHALL BE SIGNAL DUTY FLOAT SWITCHES WITH THREE WIRES SUITABLE FOR OPERATION AS NORMALLY OPEN OR NORMALLY CLOSED. BACKUP LOW WATER FLOAT SHALL BE CONFIGURED TO DISENGAGE ANY PUMPS IN OPERATION IF WETWELL DROPS BELOW SPECIFIED ELEVATION AND TO TRIGGER AN ALARM CONDITION TO SCADA (ONLY).

LOAD SUMMARY

DESCRIPTION	INITIAL INSTALLED kVA	INITIAL DEMAND FACTOR	INITIAL DEMAND kVA
LARGEST MOTOR	43	1.25	54
ALL OTHER MOTORS	90	1.00	90
PUMP STA. OTHER	2.64	---	2.91

TOTAL LOAD (kVA)	135.64		146.91
TOTAL DEMAND AMPS (@ 240V 3?)			355



NOTE: THE GENERATOR USED IN CONJUNCTION WITH A 3-POLE AUTOMATIC TRANSFER SWITCH WITH A SOLID NEUTRAL IS NOT A SEPARATELY DERIVED SYSTEM. AS SUCH, DO NOT BOND THE NEUTRAL TO GROUND AT THE GENERATOR.

* ADJUST EXISTING ADJUSTABLE GENERATOR OUTPUT BREAKER TRIP SETTING TO 400A

4 PROPOSED SINGLE-LINE DIAGRAM
NOT TO SCALE

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED SOLELY ON INFORMATION PROVIDED BY THE CONTRACTOR. ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION.

E1

No.	REVISIONS	DATE	BY

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KHA PROJECT	018484007
DATE	11/16/12
SCALE	N/A
DESIGNED BY	JAV
DRAWN BY	NAC
CHECKED BY	JDC

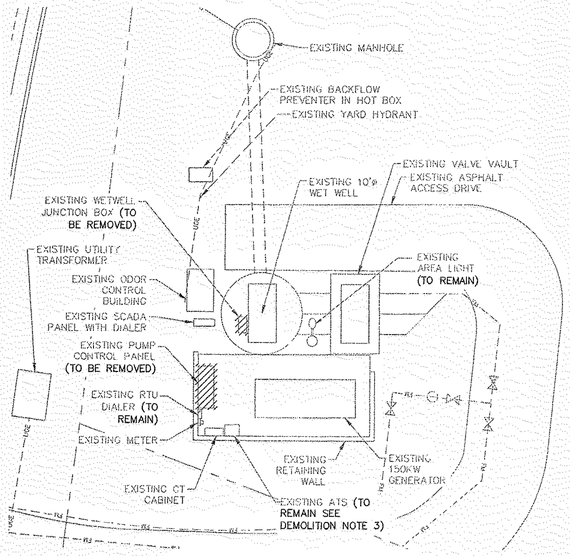
COUNTRY SIDE PUMP STATION IMPROVEMENTS
CONTRACT NO. 1
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

RECORD DRAWINGS

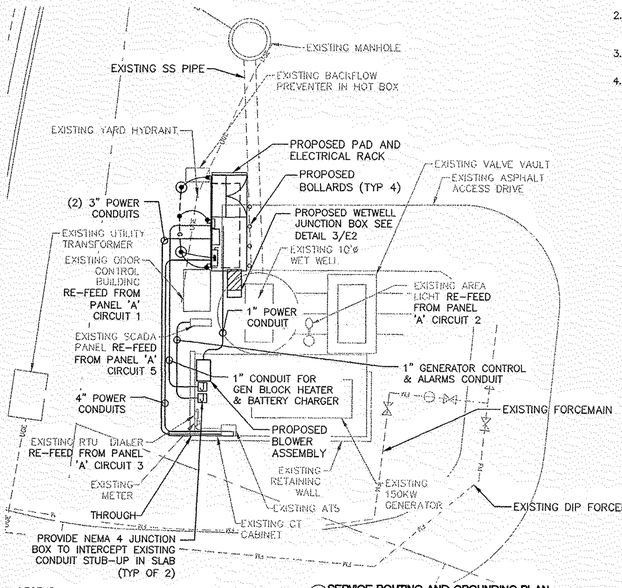
ELECTRICAL NOTES, DETAILS & SINGLE LINE DIAGRAMS

SHEET NUMBER 6 OF 7

Plotted By: Nell Chester Sheet Setting: Layout: E1 November 14, 2012 03:45:38pm L:\Projects — Eng\2012 Projects\2012022-KHA-OWASA Countryside NC E1.dwg
K:\KHA-OWASA Tinkerbell+ Lift Sta NC\Dwg\Countryside\R1-12022-KHA-OWASA Countryside NC E1.dwg



1 ELECTRICAL/CONTROLS DEMOLITION PLAN
SCALE: 1"=10'

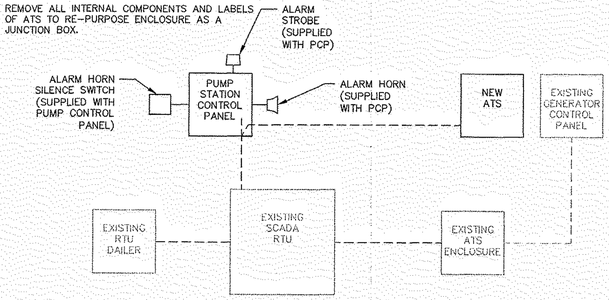


LEGEND:
- GROUND ROD EXOTHERMICALLY WELDED TO GROUNDING CONDUCTOR
- 2 AWG BARE TINNED COPPER GROUNDING CONDUCTOR
- EXOTHERMIC WELD

2 SERVICE ROUTING AND GROUNDING PLAN
SCALE: 1"=10'

DEMOLITION NOTES:

1. EXISTING EQUIPMENT MARKED FOR DEMOLITION SHALL BE REMOVED AND TURNED OVER TO OWASA. CONTRACTOR SHALL COORDINATE WITH OWASA PERSONNEL TEMPORARY STORAGE AND TRANSPORTATION OF EQUIPMENT REMOVED.
2. REUSE EXISTING CONDUCTORS AND CONDUIT AS FEASIBLE. CONDUCTORS NOT RE-USED SHALL BE REMOVED FROM CONDUITS. CONDUITS NOT RE-USED SHALL BE CUT FLUSH WITH GRADE AND CAPPED. SEAL ANY HOLES IN EQUIPMENT OR CONCRETE LEFT AFTER REMOVAL OF CONDUITS.
3. REMOVE ALL INTERNAL COMPONENTS AND LABELS OF ATS TO RE-PURPOSE ENCLOSURE AS A JUNCTION BOX.

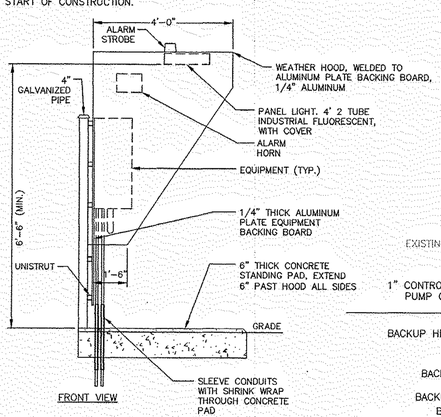


NOTES:

1. NEW SCADA INTERCONNECT CONDUITS SHALL BE 1-1/4" ø.
2. MOUNT ALARM HORN TO RAINHOOD.
3. MOUNT ALARM STROBE TO TOP OF NEW RAINHOOD.
4. ROUTE GENERATOR ALARMS VIA CONDUIT TO SCADA PANEL, THEN TO NEW ATS.
5. PROVIDE WIRING AS NEEDED FOR LISTED SCADA MONITORING AND CONTROLS AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. IN ADDITION PROVIDE (2) SPARE PAIRS EACH FROM PUMP CONTROL PANEL, ATS. & GEN TO RTU.

CONSTRUCTION PHASING NOTES:

1. CONTRACTOR SHALL PERFORM ALL WORK AS TO MAINTAIN OPERABILITY OF 2 PUMPS UNDER AUTOMATIC CONTROL AT ALL TIMES THROUGHOUT CONSTRUCTION.
2. ALL PROPOSED ELECTRICAL SYSTEMS ARE TO BE INSPECTED BY OWNER'S REPRESENTATIVE OR ENGINEER AND DEEMED FUNCTIONING BEFORE THE EXISTING COUNTERPARTS OF THE SYSTEM ARE DISABLED OR REMOVED.
3. ANY SCADA POINT TERMINATED AT THE RTU DIALER MUST BE CONNECTED AND FUNCTIONAL WHENEVER THE SITE IS LEFT UNATTENDED. BACKUP HIGH LEVEL ALARM MUST BE FUNCTIONAL AT ALL TIMES.
4. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING FUEL LEVEL OF EXISTING GENERATOR DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING FUEL TANK TO THE LEVEL MEASURED AT THE START OF CONSTRUCTION.

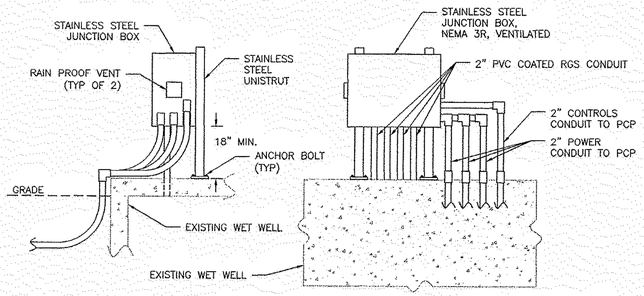


FRONT VIEW

RTU MONITOR CONDITIONS		
THE FOLLOWING CONDITIONS SHALL BE MONITORED. CONTRACTOR PROVIDE & INSTALL CONDUIT & WIRING FOR TERMINATION BY OWASA SCADA INSTALLER.		FROM
DI (2)	UTILITY POWER AVAILABLE	ATS
DI (2)	TRANSFER TO EMERGENCY POWER	ATS
DI	GENERATOR RUNNING	GEN
DI	GENERATOR FAILURE	GEN
DI	GENERATOR WARNING	GEN
DI (2)	3-PHASE POWER FAILURE	PCP
DI (2)	AC CONTROL POWER FAILURE	PCP
DI (2)	WET WELL HIGH WATER	PCP
DI	WET WELL BACKUP HIGH WATER	FLOAT SWITCH (1)
DI (2)	ANALOG WET WELL LEVEL	PCP
DO (2)	HIGH LEVEL ALARM HORN SILENCE	RTU
DI	GENERATOR LOW FUEL (SET AT 60-70% LEVEL)	GEN
DI	GENERATOR FUEL TANK LEAK	GEN
DI (2)	PUMP 1 BREAKER TRIPPED	PCP
DI (2)	PUMP 2 BREAKER TRIPPED	PCP
DI (2)	PUMP 3 BREAKER TRIPPED	PCP
DI (2)	PUMP 1 O/L TRIPPED	PCP
DI (2)	PUMP 2 O/L TRIPPED	PCP
DI (2)	PUMP 3 O/L TRIPPED	PCP
DI (2)	PUMP 1 RUNNING	PCP
DI (2)	PUMP 2 RUNNING	PCP
DI (2)	PUMP 3 RUNNING	PCP
DI (2)	LAG PUMP RUNNING	PCP

NOTES:
(1) WET WELL BACKUP HIGH WATER FLOAT SWITCH WIRED DIRECTLY TO RTU THROUGH PCP. THIS IS NOT A SIGNAL GENERATED BY PCP.

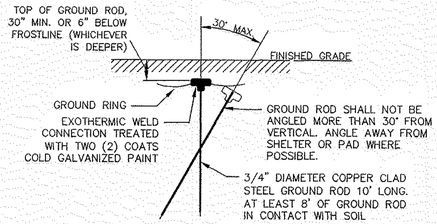
(2) COORDINATE WIRING REQUIREMENTS WITH I&C SUPPLIER. SIGNALS CARRIED BY DISCRETE CONNECTIONS OR BY MODBUS RTU PROTOCOL OVER COMPATIBLE NETWORK CONNECTIONS.



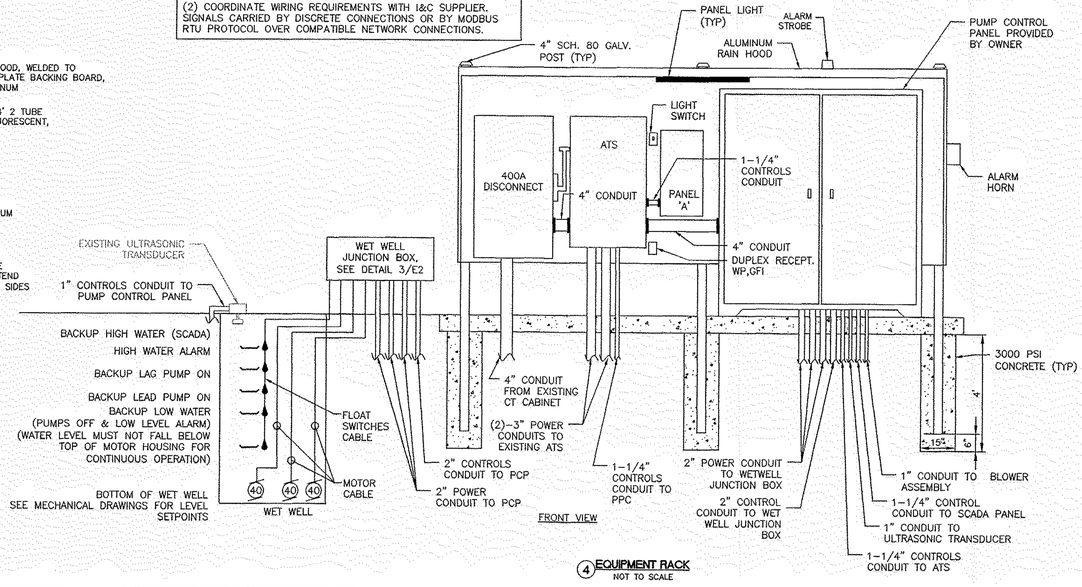
3 WET WELL JUNCTION BOX DETAIL
NOT TO SCALE

WETWELL JUNCTION BOX NOTES:

1. SEAL AROUND WIRE/CABLE ENTERING WET WELL JUNCTION BOX & CONTROL PANELS TO PREVENT THE MIGRATION OF MOISTURE INTO THE CONTROL PANELS.
2. TO SEAL AROUND WIRES USE NON-HARDENING SEAL COMPOUND IDEAL CAT No. 31-601 (OR EQUIVALENT).
3. WET WELL JUNCTION BOX SHALL CONTAIN TERMINAL STRIPS OR SPLICE CONNECTIONS AS NECESSARY TO FACILITATE REMOVAL OF WIRES/CABLES TO WET WELL WITHOUT DISCONNECTION FROM MAIN ELECTRICAL/CONTROL PANELS. JUNCTION BOX SHALL BE LOCATED A MINIMUM OF 18 INCHES ABOVE TOP OF WET WELL SLAB AND 24 INCHES ABOVE FINISHED GRADE.



5 GROUND ROD DETAIL
NOT TO SCALE



FRONT VIEW

4 EQUIPMENT RACK
NOT TO SCALE

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED SOLELY ON INFORMATION PROVIDED BY THE CONTRACTOR. ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION.

No.	REVISIONS	DATE	BY

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DATE	11/16/12
SCALE	N/A
DESIGNED BY	JAV
DRAWN BY	NAC
CHECKED BY	JDC

COUNTRY SIDE PUMP STATION IMPROVEMENTS
CONTRACT NO. 1
ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

RECORD DRAWINGS

ELECTRICAL PLANS AND DETAILS

SHEET NUMBER 7 OF 7

E2

Plotted By: Nell Chester Sheet Set: Kha Layout: E2 November 14, 2012 03:46:17pm L:\Projects - Eng\2012 Projects\2012022-KHA-OWASA Countryside WTP-1 Tinkerbell+ Lift Sta NC\Dwg\Countryside WTP-1-12022-KHA-OWASA Countryside NC E2.dwg

Revised Bid Sheet

Bid Sheet

Phase	Pump Station	Item Decription	Qty	Unit	Unit Price	Total
Phase 1	All	Project Management	1	LS	$ -	$ -
	Chapel Hill North	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Chapel Hill North Subtotal				$ -
	Countryside	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Option to Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Countryside Subtotal				$ -
	Sherwood Forest	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Subtotal				$ -
	Manning Drive	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Manning Drive Subtotal				$ -
	Meadowmont #1	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Meadowmont #1 Subtotal				$ -
	Rangewood	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Rangewood Subtotal				$ -
	Meadowmont #2	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
		Meadowmont #2 Subtotal				$ -
		Phase 1 Subtotal				***$ -***

Bid Sheet

Phase	Pump Station	Item Decription	Qty	Unit	Unit Price	Total
Phase 2	Heritage Hills	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Option to Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
					Heritage Hills Subtotal	$ -
	Lake Ellen	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Option to Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
					Lake Ellen Subtotal	$ -
	Oaks #3	Permitting	1	LS	$ -	$ -
		Generator Set (equip)	1	LS	$ -	$ -
		Mobilize and install generator	1	LS	$ -	$ -
		Install new ATS	1	LS	$ -	$ -
		Install docking station	1	LS	$ -	$ -
		Demobilization and disposition of existing	1	LS	$ -	$ -
					Oaks#3 Subtotal	$ -
					Phase 2 Subtotal	***$ -***
Contract Total						**$ -**