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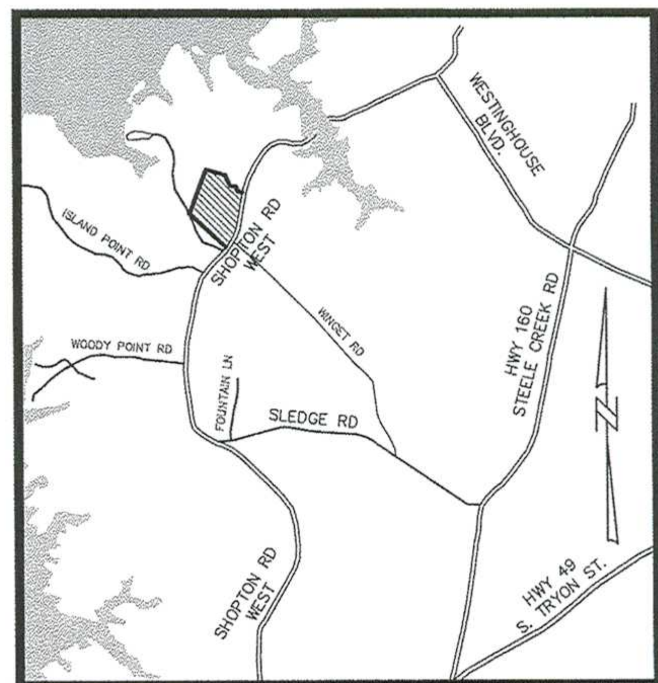


VICINITY MAP
N.T.S.

# CHARLOTTE–MECKLENBURG UTILITY DEPARTMENT
## CHARLOTTE, NORTH CAROLINA

# ENGINEERING DIVISION
## SANITARY SEWER SYSTEM IMPROVEMENTS
## CHAPEL COVE PHASE 4
## PUMP STATION & FORCE MAIN

### LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WATER METER
- EXISTING ℄ SAN. SWR.
- PROPOSED ℄ SAN.SWR.
- EXISTING SAN. SWR. MANHOLE
- PROPOSED SAN. SWR. MANHOLE
- UNDERGROUND TELEPHONE
- UNDERGROUND CABLE
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UTILITY POLE/GUY WIRE
- TOWER LINE
- EXISTING GAS MAIN
- GAS VALVE
- EXISTING WATER R/W
- PROPOSED WATER R/W
- ROAD/STREET R/W
- PROPERTY LINE
- EDGE OF PAVEMENT
- GROUND PROFILE
- EXISTING IRON PIN
- MARSH
- CREEK OR BRANCH
- RIP – RAP
- TREE
- BUILDING
- RAILROAD
- GUARD RAIL
- PIERS
- BRIDGE
- FENCE ( LABEL TYPE )
- STREET SIGN ( LABEL TYPE )
- STORM DRAIN/CATCH BASIN
- SEDIMENT FENCE (SILT FENCE) STD. 6.62
- TEMPORARY SEDIMENT TRAP STD. 6.60
- CHECK DAM STD. 6.83
- TEMPORARY DIVERSION STD 6.20
- TEMPORARY STREAM CROSSING STD. 6.70

### INDEX OF SHEETS


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| SHEET NO. 3 | FORCE MAIN TRUNKLINE & EGRETS POINT DRIVE (WET WELL TO MH #26) |
| SHEET NO. 4 | PUMP STATION SITE PLAN & GRADING PLAN |
| SHEET NO. 5 | ACCESS ROAD PLAN & PROFILE |
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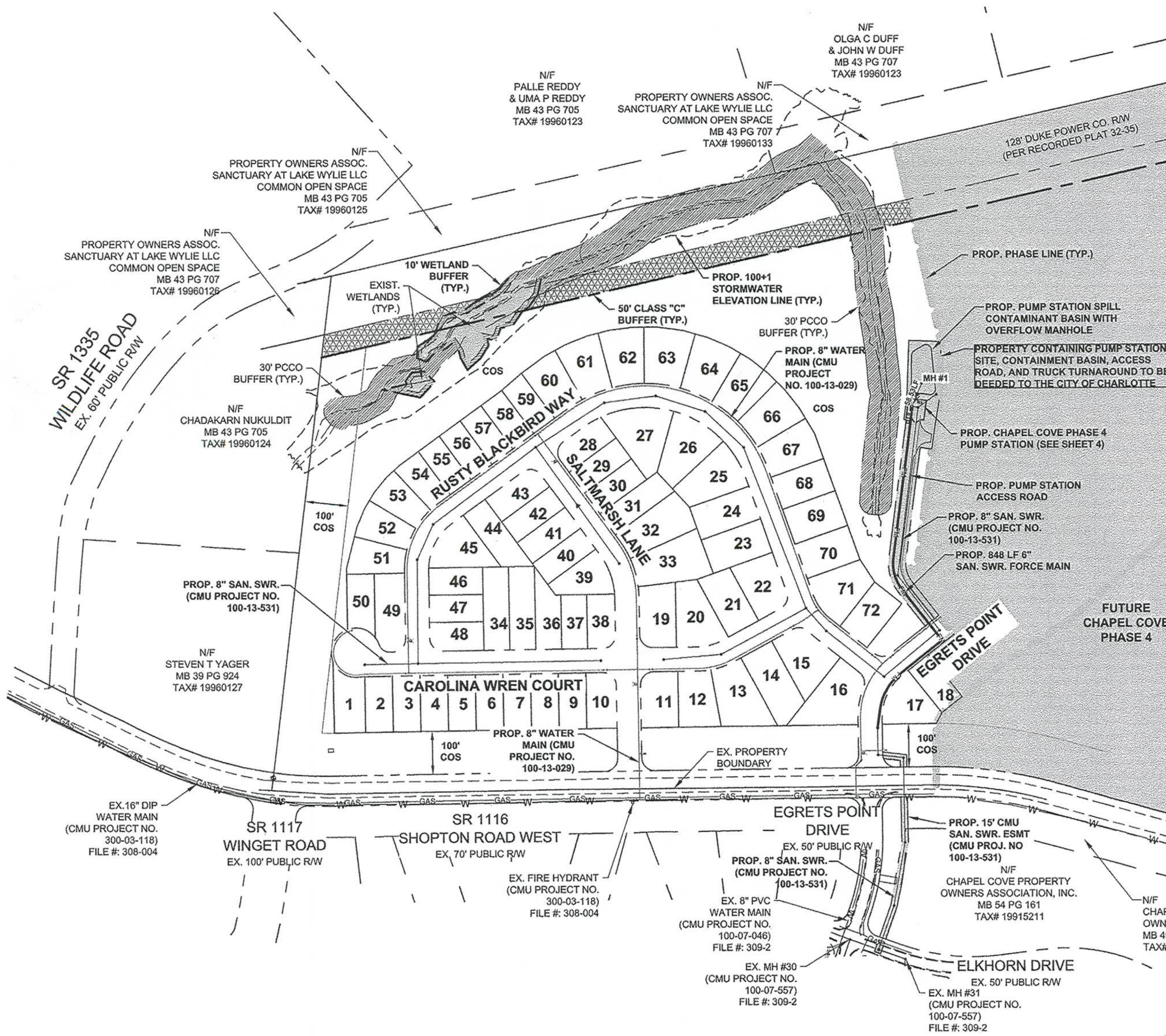
| SHEET NO. 8 | BACKFLOW DETAIL |
| SHEET NO. E1 | PUMP STATION ELECTRICAL PLANS & DETAILS |
| SHEET NO. E2 | PUMP STATION ELECTRICAL CONTROLS |
| SHEET NO. E3 | PUMP STATION DIESEL GENERATOR DETAILS & SPECIFICATIONS |


-Developer must pay capacity fee for Pump Station Water Service prior to Final Inspection.

-Design Engineer is Responsible for certifying Pump Station. Permit must be received by NCDENR prior to Activation.

**NOTE**

**PUMP STATION AND FORCE MAIN SHALL NOT BE ACTIVATED UNTIL NCDENR RECEIVES PUMP STATION AND FORCE MAIN AS-BUILTS.**




### GENERAL NOTES AND REQUIREMENTS:

1. CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARDS AND SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.
2. ALL CONTRACTORS WORKING ON CMU PROJECTS ARE REQUIRED TO OWN A COPY OF THE DESIGN MANUAL AND SHALL KEEP A COPY ON THE JOB SITE AT ALL TIMES.
3. CONTRACTOR IS FULLY RESPONSIBLE FOR CONTACTING ALL APPROPRIATE PARTIES AND ASSURING THAT UTILITIES ARE LOCATED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. CALL NC ONE CALL AT 1-800-632-4949 OR 811 FOR UTILITY LOCATING SERVICES 48 HOURS PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. IF THE PROPOSED WATER AND/OR SANITARY SEWER IS INSTALLED WITHIN 12" IN ANY DIRECTION (VERTICALLY OR HORIZONTALLY) FROM GAS MAINS, THEN THE CONTRACTOR SHALL CALL PIEDMONT NATURAL GAS COMPANY AT (704) 525-5585 AND INFORM THEM.
5. SANITARY SEWER LATERAL LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO RELOCATION DUE TO FIELD CONDITIONS.
6. SANITARY SEWER LATERALS ARE TO BE INSTALLED AT A DEPTH NO GREATER THAN FIVE (5) FEET WHERE PRACTICAL AT THE PROPERTY LINE UNLESS INDICATED ON THE PLANS TO BE INSTALLED AT "MINIMUM SLOPE".
7. MINIMUM COVER OF 36" FOR WATER MAINS.
8. DUCTILE IRON PIPE (RED BRASS FOR 2" WATER PIPE) REQUIRED FOR BOTH WATER & SANITARY SEWER LINES IF THE FOLLOWING CLEARANCES ARE NOT MET:
   - 8.1. WATER LINE CROSSING UNDER SEWER LINE (FOR ANY CLEARANCE).
   - 8.2. 18" VERTICAL SEPARATION FOR WATER LINE INSTALLED ABOVE SEWER LINE.
   - 8.3. 10' HORIZONTAL SEPARATION FOR WATER LINE PARALLEL TO SEWER LINE (OR 18" VERTICAL SEPARATION IN SEPARATE DITCHES).
   - 8.4. FOR WATER LINES 12" CLEARANCE WITH STORM DRAINS, GAS MAINS, TELEPHONE DUCTS, AND UNDERGROUND CABLES.
9. RECORDED PLATS ARE REQUIRED FOR ACTIVATION OF WATER MAINS, EASEMENTS ARE NOT ACCEPTABLE.
10. THE CONTRACTOR/DEVELOPER SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WITHIN CITY OF CHARLOTTE-MAINTAINED STREET RIGHTS-OF-WAY (R/W). PRIOR TO CONSTRUCTION, A CONTRACTOR'S EMPLOYEE SHALL HOLD A VALID EXCAVATION CERTIFICATION FROM CDOT'S STREET MAINTENANCE DIVISION (SMD) AND SHALL BE ON SITE DURING WORK IN THE STREET'S PAVEMENT, INCLUDING SIDEWALK AND DRIVEWAYS. CONTACT SMD AT (704) 336-3200 TO ENROLL IN THE NEXT CERTIFICATION CLASS.
11. THE PERMIT SHALL BE OBTAINED BY CALLING CDOT AT (704) 432-ROW1 (704-432-7691) OR COMPLETING AN APPLICATION SPREADSHEET BY E-MAIL TO ROWUSE@CI.CHARLOTTE.NC.US. THE APPLICATION CAN BE FOUND ONLINE AT HTTP://WWW.CHARMECK.ORG/DEPARTMENTS/TRANSPORTATION/ROW.HTM. SMD CHARGES A STREET DEGRADATION FEE WHICH MUST BE PAID BY THE CONTRACTOR/DEVELOPER BEFORE THE PERMIT WILL BE ISSUED.
12. THE CONTRACTOR SHALL CALL (704) 432-ROW1 (704-432-7691) AT LEAST 48 HOURS PRIOR TO COMMENCING WORK AUTHORIZED BY THE PERMIT.
13. AFTER RECEIPT OF THE RIGHT-OF-WAY USER PERMIT CALL STREET CUT PERMITS TELEPHONE (704) 336-4025 TO OPEN CUT STREETS OR SIDEWALK AREAS. THE PERMIT MUST BE OBTAINED BY A CDOT UTILITY CERTIFIED PERSON AS DEFINED IN THE CDOT UTILITY STREET CUT SPECIFICATIONS. THE CONTRACTOR SHALL HAVE A CDOT CERTIFIED EXCAVATION REPRESENTATIVE ON SITE AT ALL TIMES WHILE WORKING IN CDOT STREET RIGHT-OF-WAYS.

**CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARD SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.**

## DEVELOPMENT INFORMATION:

**PROJECT NAME:** CHAPEL COVE PHASE 4 PUMP STATION & FORCE MAIN


**DEVELOPER:** CHAPEL COVE AT GLENGATE, LLC.
227 WEST TRADE STREET
SUITE 1000
CHARLOTTE, NC 28202
JOSEPH WALKER
EMAIL: JWALKER@CRESCENTCOMMUNITIES.COM
PHONE: (980) 321-5180
FAX: (704) 295-0952

**ENGINEER:** ESP ASSOCIATES, P.A.
P.O. BOX 7030
CHARLOTTE, NC 28241
DANIS E. SIMMONS, PE
EMAIL: DSIMMONS@ESPASSOCIATES.COM
PHONE: (704) 583-4949
FAX: (704) 583-4950


**PROPERTY INFORMATION:** TAX PARCEL ID# 199-161-09
DB 23071, PG. 661
MB 40 PG 271 & 273

**INSPECTOR:**
**CONTRACTOR:**

**DATE TO SYSTEMS & RECORDS:**
**BY:**
**INSIDE CHARLOTTE: ( ) YES (X) NO (MECKLENBURG COUNTY)**
**TOPO NO.: 309, 1396-505**


ESP Associates. P.A.
P.O. Box 7030
Charlotte, NC 28241
3475 Lakemont Blvd.
Fort Mill, SC 29708
704-583-4949 (NC)
803-802-2440 (SC)
www.espassociates.com


GRAPHIC SCALE
200' 0 100' 200' 400' 800'
( IN FEET )
1 inch = 200 ft.

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

**APPROVED FOR CONSTRUCTION**
**CHARLOTTE-MECKLENBURG UTILITY DEPT.**
8-12-14
DATE

**THIS SET IS CURRENT THROUGH SHEET DATE: 07-23-14**

NCDENR PERMIT#: WQ0037299

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

APPROVALS (SEALS)

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025775 DANIS E. SIMMONS 7-23-14

NCPLS (AS BUILT) | NCPE

NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

### SUMMARY OF SEWER MAIN & FORCE MAIN

| SIZE | LENGTH | SIZE | LENGTH |
|---|---|---|---|
| 6" FM | 848 LF | | |
| 8" SS | ±58 LF | | |
| | | | |

TOTAL NO. MANHOLES: 1
TOTAL NO. LOTS SERVED: 255
PROJECT NAME: CHAPEL COVE PHASE 4 PUMP STATION & FORCE MAIN
JOB NO: 100-13-532
DATE OF ACTIVATION:
DATE AS BUILT: BY:

RD MOODY 7-31-14

V:\UJ16.474 - Chapel Cove Phase 4A_UJ16.474\SHEETS\UJ16_CMU-PS COVER.dwg, CMU1 - COVER, msinkovitz

# 2012 APPENDIX B
# BUILDING CODE SUMMARY
# FOR ALL COMMERCIAL PROJECTS
## (Includes: New Construction, Upfits, Renovations, Additions)
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

### a. Project Information – (Required information for all projects)

Name of Project: Chapel Cove Phase 4 Pump Station & Force Main
Address: 12800 Shopton Road West Zip Code 28728
Proposed Use: Utility - Sanitary Sewer Pump Station
Owner/Authorized Agent: Chapel Cove at Glengate, LLC Phone # ( 980 ) 321 - 5180 E-Mail jwalker@crescentcommunities.com
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☒ City______ ☐ County______ ☐ State

### b. Project Summary/ Alternative Means of Compliance – (Required information for all projects)

Building description: N/A

Scope of work details: (If phased construction, please see plan submittal guidelines for submittal requirements.)
Installation of a sanitary sewer pump station with electrical work.

Does this project have air rights, easements, an assumed or deeded property line, no build easements or other circumstances similar to the aforementioned? Yes _______ No __X__ If yes, please provide a copy of the official documents.

Renovation projects only: If you are using Chapter 34 (3412- Existing buildings) in the NCSBC or NFPA 101 as an alternative for Code compliance please schedule a preliminary review before submitting your project for review. Notes for Plans Examiner and Inspectors: Please reproduce the evaluation form on the plans.
N/A

If applicable to your project: Alternative Means of Compliance/Engineering Judgement:
http://charmeck.org/mecklenburg/county/CodeEnforcement/Pages/codeinterpretation.aspx
(Approval needed from the Code Administrator is required before submitting)
N/A

Check if applicable to your project:
☐ Industrial equipment with declaration document attached. [See www.Meckpermit.com (Electrical Services)] http://charmeck.org/mecklenburg/county/CodeEnforcement/Electrical/Documents/IndustrialMachineryFAQ.pdf

☐ RTAP (Revisions to approved plans.)[See www.Meckpermit.com (Commercial Plan Review Services)] http://charmeck.org/mecklenburg/county/CodeEnforcement/PlanReview/Pages/RevisionstoApprovedPlansProcess.aspx

### c. Design Professional Information – (Required Information for all Projects)

LEAD DESIGN PROFESSIONAL: Danis E. Simmons, P.E.

| DESIGNER | FIRM | NAME | LICENSE # | TELEPHONE # INCLUDE EXT. | E-MAIL |
|---|---|---|---|---|---|
| Architectural | N/A | | | ( ) | |
| Civil | ESP Associates, P.A. | Danis Simmons | 025775 | (704) 583-4949 | dsimmons@espassociates.com |
| Electrical | KM Armstrong Associates, Inc. | James Henderson | 16329 | (704) 366-1776 | jhenderson@kmaa.com |
| Fire Alarm | N/A | | | ( ) | |
| Plumbing | N/A | | | ( ) | |
| Mechanical | N/A | | | ( ) | |
| Sprinkler-Standpipe | N/A | | | ( ) | |
| Structural | N/A | | | ( ) | |
| Retaining Walls >5' High | N/A | | | ( ) | |
| Other | N/A | | | ( ) | |



### d. Type of work being performed – (Required Information for all Projects)

What type of work is being performed?

☒ New Construction:

(A project from the site work through the completion of work required for tenant occupancy) This includes Shell buildings.

☐ Addition: (An Existing Building that is adding heated or unheated space. This could be an addition to the footprint or a vertical expansion)
http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Building/PDFs/Chapter%202%20-%20Definitions.pdf

☐ Upfit: (First Time Interior Completion)

(Upfit – the first time interior completion of a virgin (never occupied) shell space in a newly constructed building. The applicant must provide a copy of the approved shell)

☐ Alteration: (Previously Occupied Space) This includes Change of Use.

http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Building/PDFs/Chapter%202%20-%20Definitions.pdf

### e. Code Information- NCSBC -- (If using the REHAB code please go to section f.)

Building Code: ☒ 2012 North Carolina State Building Code (NCSBC)
☐ 2012 Chapter 34 (attach summary per section b)
☐ 1995 Existing Building Code Vol. 9

New Building: ☒ New building ☐ Shell building
☐ First time interior completion (upfit)
☐ Addition

Existing Building: ☐ Change of use/occupancy
☐ Building/tenant space interior completion (Alteration / Renovation)

Year of construction ________ Previous use ________

Alteration/Renovations projects: Please see 3411 NCSBC for compliance for Accessibility for Existing Buildings. A letter from the designer will be required to be reproduced on the plans to verify how compliance will be achieved. This can be placed on the plans after the Appendix B.
http://charmeck.org/mecklenburg/county/CodeEnforcement/PlanReview/Documents/Section%203409%20Compliance.pdf

### f. REHAB Code (Existing Building Code)
http://charmeck.org/mecklenburg/county/CodeEnforcement/PlanReview/Pages/NCRehabCode.aspx

☐ 2009 NC REHAB CODE Information: Scope of work / work area must be listed and delineated on the plans.
Check all that apply: ☐ Repair ☐ Renovation ☐ Alteration ☐ Reconstruction ☐ Change of use ☐ Addition



☐ Last known legal occupancy use________ Historic Property: Yes ☐ No ☐
Original Building Construction Date: ________ Date of Preliminary Meeting ________
Justifications for using the REHAB code:

Reviewers Notes for Field Inspector:

### g. Basic Building Data -- (Required information for all projects)

Construction Type: (Table 601) (check all that apply) ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A ☐ I-B ☐ II-B ☐ III-B ☐ V-B
Sprinklers: (Chapter 9) ☐ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: (Section 905) ☐ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: http://charmeck.org/city/charlotte/Fire/Pages/default.aspx ☐ No ☐ Yes (Primary)
Flood Hazard Area: (Appendix G) ☐ No ☐ Yes
Building Height: (feet) ________ (Table 503)
Gross Building Area:

| FLOOR | EXISTING (SQ FT) | NEW (SQ FT) | SUB-TOTAL |
|---|---|---|---|
| 6th Floor | | | |
| 5th Floor | | | |
| 4th Floor | | | |
| 3rd Floor | | | |
| 2nd Floor | | | |
| Mezzanine | | | |
| 1st Floor | | | |
| Basement | | | |
| TOTAL | | | |

### h. Allowable Area / Occupancy Classification – (Required information for all projects)

Occupancy: (Chapter 3)
Assembly (303) ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business (304) ☐ B
Educational (305) ☐ E
Factory (306) ☐ F-1 Moderate ☐ F-2 Low
Hazardous (307) ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional (308) ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile (309) ☐ M
Residential (310) ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage (311) ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous (312) ☐ U
Accessory Occupancies :(508) If Applicable
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐ B
Educational ☐ E
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐ M
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4



Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐ U
Incidental Uses: If applicable- areas with additional requirements (Table 508.2.5):
☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
☐ Refrigerant machine room
☐ Hydrogen cutoff rooms, not classified as Group H
☐ Incinerator rooms
☐ Paint shops, not classified as Group H, located in occupancies other than Group F
☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
☐ Laundry rooms over 100 square feet
☐ Group I-3 cells equipped with padded surfaces
☐ Group I-2 waste and linen collection rooms
☐ Waste and linen collection rooms over 100 square feet
☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power or uninterrupted power supplies
☐ Rooms containing fire pumps
☐ Group I-2 storage rooms over 100 square feet
☐ Group I-2 commercial kitchens
☐ Group I-2 laundries equal to or less than 100 square feet
☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment
Special Uses: If Applicable ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427
Special Provisions: If Applicable ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 509.8 ☐ 509.9
Mixed Occupancy/Use: (506.5) If Applicable ☐ No ☐ Yes Separation: _____ Hr. Exception: ________
☐ Incidental Use Separation: (508.2.5)
This separation is not exempt as a Non-Separated Use (see exceptions).
☐ Non-Separated Use (508.3)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.
☐ Separated Use: (508.4) - See below for area calculations
For each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1. If applicable to this project please provide a key plan with all occupancies identified with square footage.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{___}{___} + \frac{___}{___} + \ldots = ___ \leq 1.00$$

| STORY NO. | DESCRIPTION AND USE | (A) BLDG AREA PER STORY (ACTUAL) | (B) TABLE 503[1] AREA | (C) AREA FOR FRONTAGE INCREASE | (D) AREA FOR SPRINKLER INCREASE | (E) ALLOWABLE AREA OR UNLIMITED | (F) MAXIMUM BUILDING AREA[4] |
|---|---|---|---|---|---|---|---|
| | | | | | | | |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

[1] Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = ______ (F)
b. Total Building Perimeter = ______ (P)
c. Ratio (F/P) = ______ (F/P)
d. W = Minimum width of public way = ______ (W)
e. Percent of frontage increase $I_f = 100\,[F/P - 0.25] \times W/30$ = ______ (%)
[2] The sprinkler increase per Section 506.3 is as follows:
a. Multi-story building $I_s$ = 200 percent
b. Single story building $I_s$ = 300 percent
[3] Unlimited area applicable under conditions of Section 507.
[4] Maximum Building Area = total number of stories in the building x E (506.4).
[5] The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.1.2.

### i. Allowable Height (Chapter 5) -- (Required for Additions, New Construction)

| | ALLOWABLE (TABLE 503) | INCREASE FOR SPRINKLERS | SHOWN ON PLANS | CODE REFERENCE |
|---|---|---|---|---|
| Type of Construction | Type ____ | | Type ____ | |
| Building Height in Feet | | Feet = H + 20' = ____ | | |
| Building Height in Stories | | Stories + 1 = ____ | | |

### j. Fire Protection Requirements (Chapter 7) -- (Required Information for all projects)

Please check our Plan Submittal Guidelines if a Life Safety Plan is required for your project.
http://charmeck.org/mecklenburg/county/CodeEnforcement/Publications/Documents/psguide.pdf

| BUILDING ELEMENT | FIRE SEPARATION DISTANCE (FEET) | RATING REQ'D | RATING PROVIDED (W/ * REDUCTION) | DETAIL # AND SHEET # | DESIGN # FOR RATED ASSEMBLY | DESIGN # FOR RATED PENETRATION | DESIGN # FOR RATED JOINTS |
|---|---|---|---|---|---|---|---|
| Structural Frame, including columns, girders, trusses | | | | | | | |
| Bearing Walls (see section k. (601 - 602) if rated) | | | | | | | |
| Exterior | | | | | | | |
| North | | | | | | | |
| East | | | | | | | |
| West | | | | | | | |
| South | | | | | | | |
| Interior | | | | | | | |
| Nonbearing Walls and Partitions- (see section k.(601 - 602) if rated) | | | | | | | |
| Exterior walls | | | | | | | |
| North | | | | | | | |
| East | | | | | | | |
| West | | | | | | | |
| South | | | | | | | |
| Interior walls and partitions | | | | | | | |
| Floor Construction | | | | | | | |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Including supporting beams and joists | | | | | | | |
| Roof Construction Including supporting beams and joists | | | | | | | |
| Shaft Enclosures - Exit | | | | | | | |
| Shaft Enclosures - Other | | | | | | | |
| Corridor Separation | | | | | | | |
| Occupancy Separation | | | | | | | |
| Party/Fire Wall Separation | | | | | | | |
| Smoke Barrier Separation | | | | | | | |
| Tenant Separation | | | | | | | |
| Incidental Use Separation | | | | | | | |

* Indicate section number permitting reduction

### k. Percentage of Wall Opening Calculations -- (New Construction, Addition and Change of Use)

(Table 705.8)

| FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES | DEGREE OF OPENINGS PROTECTION (TABLE 705.8) | ALLOWABLE AREA (%) | ACTUAL SHOWN ON PLANS (%) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Building/PDFs/Chapter%207%20-%20Fire%20and%20Smoke%20Protection%20Features.pdf

### l. Wall Legends – (Required for all Projects)

CHECK IF THE FOLLOWING ARE PRESENT AND INDICATED BY A WALL LEGEND ON ALL PLANS
☐ Fire Walls 706 ☐ Fire Barriers 707 ☐ Shaft Enclosure 708 ☐ Fire Partitions 709 ☐ Smoke Barriers 710
☐ Smoke Partitions 711 ☐ No rated walls are present
http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Building/PDFs/Chapter%207%20-%20Fire%20and%20Smoke%20Protection%20Features.pdf

### m. Life Safety Systems (Existing or new systems) -- (Required for all Projects)

Emergency Lighting: (S1006) ☐ No ☐ Yes
Exit Signs: (S1011) ☐ No ☐ Yes
Fire Alarm: (S907, NFPA 72-07) ☐ No ☐ Yes
Smoke Detection Systems: (S907) ☐ No ☐ Yes ☐ Partial ______
Panic Hardware: (S1008.1.10) ☐ No ☐ Yes
Life safety systems generator:(S2702.2) ☐ No ☐ Yes

### n. Life Safety Plan check list for compliance -- (Required for all projects) Check items that are applicable to your project

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)



☐ Existing structures within 30' of the proposed building
☐ Occupancy types for each area as it relates to occupant load calculation (Table 1004.1.1)
☐ Occupant loads for each area
☐ Exit access travel distances (1016)
☐ Common path of travel distances (1014.3 & 1028.8)
☐ Dead end lengths (1018.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.1)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1008.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1008.1.9.7)
☐ Location of doors with electromagnetic egress locks (1008.1.9.8)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1029)
☐ The square footage of each fire area (902)
☐ The square footage of each smoke compartment (407.4)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

### o. Exit Requirements—(Required for all Projects)

NUMBER AND ARRANGEMENT OF EXITS
(TABLE 1021.1)

| FLOOR, ROOM OR SPACE DESIGNATION | MINIMUM[2] NUMBER OF EXITS: REQUIRED T1021.1 (SINGLE EXIT 1021.2) | MINIMUM NUMBER OF EXITS: SHOWN ON PLANS | TRAVEL DISTANCE: ALLOWABLE TRAVEL DISTANCE (TABLE 1016.1) | TRAVEL DISTANCE: ACTUAL TRAVEL DISTANCE SHOWN ON PLANS | ARRANGEMENT MEANS OF EGRESS[1,3] (SECTION 1015.2): REQUIRED DISTANCE BETWEEN EXIT DOORS | ARRANGEMENT MEANS OF EGRESS: ACTUAL DISTANCE SHOWN ON PLANS |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[1] Corridor dead ends (Section 1018.4)
[2] Buildings with single exits (Table 1021.2), Spaces with one means of egress (Table 1015.1)
[3] Common Path of Travel (Section 1014.3)

OCCUPANT LOAD AND EXIT WIDTH
(TABLE 1004.1.1)

| USE GROUP OR SPACE DESCRIPTION[7] | (a) AREA[1] sq. ft. | (b) AREA[1] PER OCCUPANT | (1004.1.1) CALCULATED OCCUPANT LOAD (a÷b) | (c) EGRESS WIDTH PER OCCUPANT (SECTION 1005.1): STAIR | (c) LEVEL | EXIT WIDTH (in)[2,3,4,5,6] REQUIRED WIDTH (SECTION 1005.1) (a÷b) x c: STAIR | REQUIRED WIDTH: LEVEL | ACTUAL WIDTH SHOWN ON PLANS: STAIR | ACTUAL WIDTH SHOWN ON PLANS: LEVEL |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.3 | 0.2 | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

[1] See Table 1004.1.1 to determine whether net or gross area is applicable.
See definition "Area, Gross" and "Area, Net" (Section 1002)
[2] Minimum stairway width (Section 1009.1); min. corridor width (Section 1018.2), min. door width (Section 1008.1.1)
[3] Minimum width of exit passageway (Section 1023.2)
[4] See Section 1004.5 for converging exits.
[5] The loss of one means of egress shall not reduce the available capacity to less than 50 percent of the total required (Section 1005.1)
[6] Assembly occupancies (Section 1028)
[7] Spaces within occupancies or use groups shall be calculated independently. (Ex. Lobbies, lounges, break rooms, conference rooms.)

### p. Accessible Dwelling Units and sleeping units – (Only for R-1, R-2 occupancy)

ACCESSIBLE DWELLING UNITS
(1107)

| TOTAL UNITS | ACCESSIBLE UNITS REQUIRED | ACCESSIBLE UNITS PROVIDED | TYPE A UNITS REQUIRED | TYPE A UNITS PROVIDED | TYPE B UNITS REQUIRED | TYPE B UNITS PROVIDED | TOTAL ACCESSIBLE UNITS PROVIDED |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

### q. Accessible Parking—(Projects that are New Construction, Additions, Change of Use)

(1106)

| LOT OR PARKING AREA | TOTAL # OF PARKING SPACES: REQUIRED | TOTAL # OF PARKING SPACES: PROVIDED | # OF ACCESSIBLE SPACES PROVIDED: REGULAR WITH 5' ACCESS AISLE | VAN SPACES WITH 132" ACCESS AISLE | VAN SPACES WITH 8' ACCESS AISLE | TOTAL # ACCESSIBLE PROVIDED |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| TOTAL | | | | | | |

### r. Structural Design – (Primarily for New Construction, Additions and Change of Use)
**If adding dead loads or live loads to the building structural system information in any project will be required. This information may be located on the structural sheets. The structural sheet must be in the same format as noted in this section. If it is on the structural sheets, please indicate here. (Located on Structural Sheet Number_____: Yes _____ No _____)**

DESIGN LOADS:

Importance Factors: (ASCE/SEI 7-05- 11.5) Wind ______ Snow ______ Seismic ______

Live Loads: Roof: (1603.1.2, 1607.11, 1611) ______ psf
Floor: (1603.1.1, 1607.10, T 1607.10) ______ psf
Live load Reductions: (1603.1.1, 1607.9,) ______ psf
Ground Snow Load: (1608.2) ______ psf

Wind Load: Basic Wind Speed: (1609.3) ______ mph (ASCE-7)
Exposure Category (1609.4) ______
Wind Base Shears (for MWFRS)(Engineer Cal's) Vx = ______ Vy = ______



SEISMIC DESIGN CATEGORY: (1613.1, 1613.5.6) ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Occupancy Category: (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration: (Engineer cal's) $S_s$ ______ %g $S_1$ ______ %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Seismic base shear: (Engineer Cal's) $V_X$ = ______ $V_Y$ = ______
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report as a reference document) ________ psf
Presumptive Bearing capacity ________ psf
Pile size, type, and capacity ________

SPECIAL INSPECTIONS REQUIRED: ☐ Yes ☐ No

### s. Special Inspections -- (If applicable to your project)
http://charmeck.org/mecklenburg/county/CodeEnforcement/Forms/Documents/SI%20Scope.pdf

SCHEDULE OF SPECIAL INSPECTIONS
☐ No special inspections required for this project ☐ Special inspections required

The following sheets comprise the required schedule of Special Inspections for this project. The construction divisions which require special inspections for this project are as follows:

☐ IT-1 Verification of Soils ☐ IT-10 Inspection of Structural Steel Fabricators
☐ IT-2 Excavation and Fill ☐ IT-11 Structural Masonry
☐ IT-3 Piling and Drilling Piers ☐ IT-12 Welding
☐ IT-4 Modular Retaining Walls ☐ IT-13 High Strength Bolts & Steel Framing Insp.
☐ IT-5 Reinforced Concrete ☐ IT-14 Sprayed Fire-Resistance Materials
☐ IT-6 Post Tension Slab ☐ IT-15 Exterior Insulation and Finish system
☐ IT-7 Pre-cast Concrete Erection ☐ IT-16 Seismic Resistance
☐ IT-8 Pre-stressed Concrete ☐ IT-17 Smoke Control
☐ IT-9 Inspection of Pre-Cast Fabricators ☐ IT-18 Detention Basin
☐ IT-19 Special Cases

Check the above boxes for the special inspection required for this project and list below specific special inspections required under Chapter 17. For questions regarding Special Inspections please see www.Meck-SI.com.

### t. Plumbing Fixtures Requirements (New Construction, Additions, Upfits, Alterations and Change of Use or if increasing occupant load)
http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Building/PDFs/Chapter%2029%20-%20Plumbing%20Systems.pdf
(TABLE 2902.1)

| OCCUPANCY | WATERCLOSETS | URINALS | LAVATORIES | SHOWERS/ | DRINKING |
|---|---|---|---|---|---|



| USE GROUP AND/OR SPACE DESIGNATION | MALE | FEMALE | | MALE | FEMALE | TUBS | FOUNTAINS |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Total Required | | | | | | | |
| Total Provided | | | | | | | |

### u. Special Approvals (If applicable to your project)

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

### v. Energy Summary (New Construction, Additions, Change of use and upfits)

BUILDING ENVELOPE:

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the North Carolina Energy Conservation Code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Climate Zone: (North Carolina Energy Conservation Code NCECC 301.1) ☐ 3 ☐ 4 ☐ 5
http://ecodes.biz/ecodes_support/free_resources/2012NorthCarolina/Energy/PDFs/Chapter%203%20-%20General%20Requirements.pdf

Method of Compliance:
☐ Prescriptive (NCECC)
☐ Performance (NCECC or Com Check) Report must be reproduced on drawings
☐ Prescriptive (ASHRAE 90.1)
☐ Performance (ASHRAE 90.1)

THERMAL ENVELOPE: (NCECC Chapter 4 and or 5)

Roof/ceiling Assembly (each assembly)
Description of assembly: ______
U-Value of total assembly: ______
R-Value of insulation: ______
Skylights in each assembly: ______
U-Value of skylight: ______
total square footage of skylights in each assembly: ______



Exterior Walls (each assembly)
Description of assembly: ______
U-Value of total assembly: ______
R-Value of insulation: ______
Openings (windows or doors with glazing)
U-Value of assembly: ______
Solar heat gain coefficient: ______
projection factor: ______
Door R-Values: ______

Walls below grade (each assembly)
Description of assembly: ______
U-Value of total assembly: ______
R-Value of insulation: ______

Floors over unconditioned space (each assembly)
Description of assembly: ______
U-Value of total assembly: ______
R-Value of insulation: ______

Floors slab on grade
Description of assembly: ______
U-Value of total assembly: ______
R-Value of insulation: ______
Horizontal/vertical requirement: ______
slab heated: ______

**MECHANICAL SUMMARY (NCECC 503) This information may be located on the mechanical sheets. The mechanical sheet must be in the same format as noted in this section. If it is on the mechanical sheets, please indicate here. (Located on Mechanical Sheet Number _____: Yes _____ No _____)**

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: ______
summer dry bulb: ______

Interior design conditions
winter dry bulb: ______
summer dry bulb: ______
relative humidity: ______

Building heating load: ______

Building cooling load: ______

Mechanical Spacing Conditioning System
Unitary
description of unit: ______
heating efficiency: ______



cooling efficiency: ______
size category of unit: ______
Boiler
Size category. If oversized, state reason.: ______
Chiller
Size category. If oversized, state reason.: ______

List equipment efficiencies: ______

**ELECTRICAL SUMMARY (NCECC 505) This information may be located on the electrical sheets. The electrical sheet must be in the same format as noted in this section. If it is on the electrical sheets, please indicate here. (Located on Electrical Sheet Number E1 : Yes X No _____)**

ELECTRICAL SYSTEM AND EQUIPMENT Not Applicable.

Method of Compliance:
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Prescriptive Compliance
☐ 506.2.1 More Efficient Mechanical Equipment
☐ 506.2.2 Reduced Lighting Power Density
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.4 Higher Efficiency Service Water Heating
☐ 506.2.5 On-Site Supply of Renewable Energy
☐ 506.2.6 Automatic Daylighting Control Systems



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NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER DANIS E. SIMMONS 7-11-14

# CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

| | |
|---|---|
| (S) 100-13-532 Job No. | File No. |
| Scales | |
| PLAN | N/A |
| PROFILE | N/A |
| | N/A |
| As Built | Date |

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC CHARLOTTE ETJ, NC

NORTH CAROLINA
BUILDING CODE
APPENDIX B

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | Sheet | Of |
|---|---|---|---|---|---|---|---|
| ESP | MJS | MJS | DES | RD Moody 7-31-14 | 07/11/14 | 1A | 8 |

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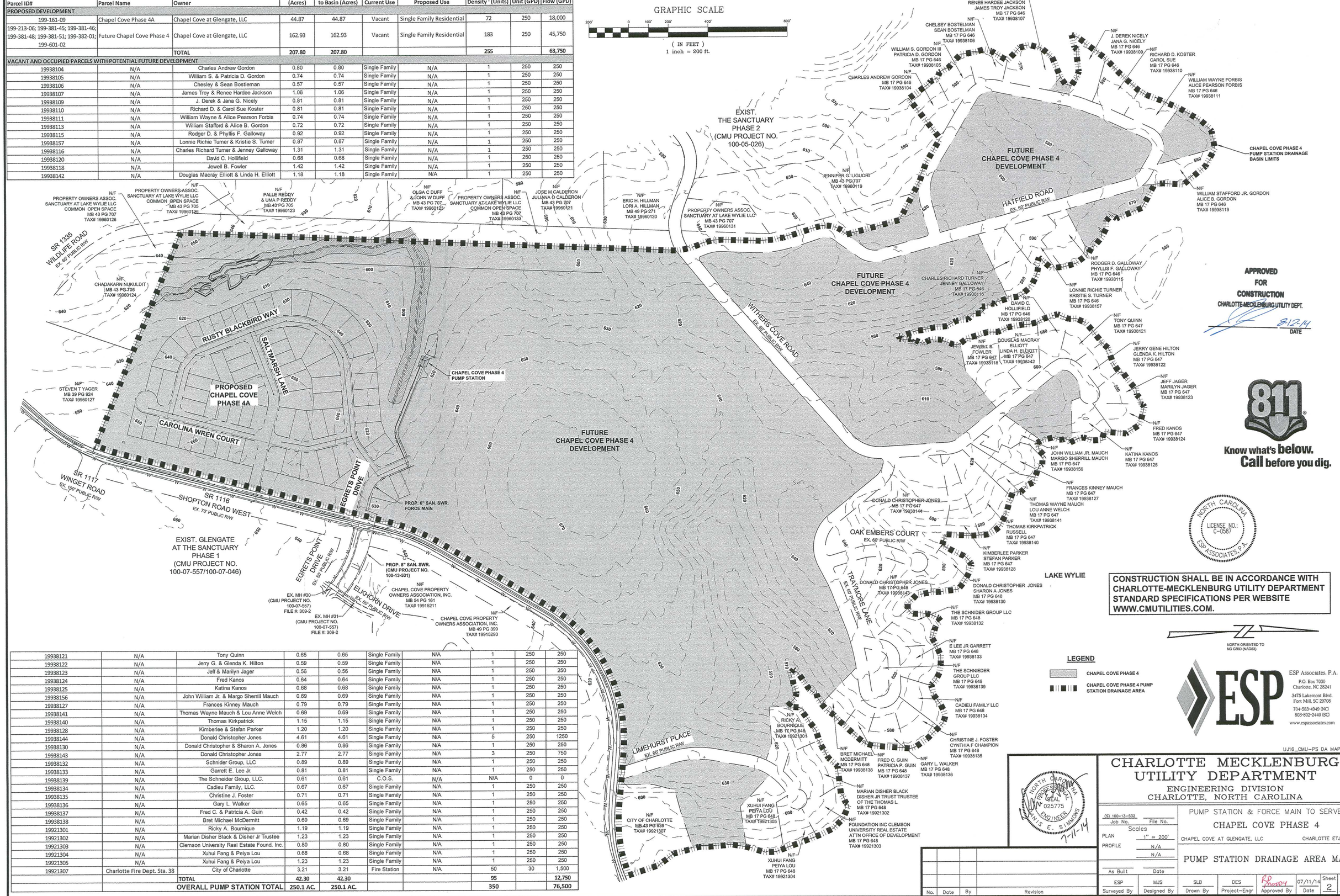
| Parcel ID# | Parcel Name | Owner | Land Area (Acres) | Area Contributing to Basin (Acres) | Current Use | Proposed Use | Proposed Density [1] (Units) | Flow per Unit (GPD) | Estimated Flow (GPD) |
|---|---|---|---|---|---|---|---|---|---|
| PROPOSED DEVELOPMENT | | | | | | | | | |
| 199-161-09 | Chapel Cove Phase 4A | Chapel Cove at Glengate, LLC | 44.87 | 44.87 | Vacant | Single Family Residential | 72 | 250 | 18,000 |
| 199-213-06; 199-381-45; 199-381-46; 199-381-48; 199-381-51; 199-382-01; 199-601-02 | Future Chapel Cove Phase 4 | Chapel Cove at Glengate, LLC | 162.93 | 162.93 | Vacant | Single Family Residential | 183 | 250 | 45,750 |
| | | **TOTAL** | **207.80** | **207.80** | | | **255** | | **63,750** |
| VACANT AND OCCUPIED PARCELS WITH POTENTIAL FUTURE DEVELOPMENT | | | | | | | | | |
| 19938104 | N/A | Charles Andrew Gordon | 0.80 | 0.80 | Single Family | N/A | 1 | 250 | 250 |
| 19938105 | N/A | William S. & Patricia D. Gordon | 0.74 | 0.74 | Single Family | N/A | 1 | 250 | 250 |
| 19938106 | N/A | Chesley & Sean Bostleman | 0.57 | 0.57 | Single Family | N/A | 1 | 250 | 250 |
| 19938107 | N/A | James Troy & Renee Hardee Jackson | 1.06 | 1.06 | Single Family | N/A | 1 | 250 | 250 |
| 19938109 | N/A | J. Derek & Jana G. Nicely | 0.81 | 0.81 | Single Family | N/A | 1 | 250 | 250 |
| 19938110 | N/A | Richard D. & Carol Sue Koster | 0.81 | 0.81 | Single Family | N/A | 1 | 250 | 250 |
| 19938111 | N/A | William Wayne & Alice Pearson Forbis | 0.74 | 0.74 | Single Family | N/A | 1 | 250 | 250 |
| 19938113 | N/A | William Stafford & Alice B. Gordon | 0.72 | 0.72 | Single Family | N/A | 1 | 250 | 250 |
| 19938115 | N/A | Rodger D. & Phyllis F. Galloway | 0.92 | 0.92 | Single Family | N/A | 1 | 250 | 250 |
| 19938157 | N/A | Lonnie Richie Turner & Kristie S. Turner | 0.87 | 0.87 | Single Family | N/A | 1 | 250 | 250 |
| 19938116 | N/A | Charles Richard Turner & Jenney Galloway | 1.31 | 1.31 | Single Family | N/A | 1 | 250 | 250 |
| 19938120 | N/A | David C. Hollifield | 0.68 | 0.68 | Single Family | N/A | 1 | 250 | 250 |
| 19938118 | N/A | Jewell B. Fowler | 1.42 | 1.42 | Single Family | N/A | 1 | 250 | 250 |
| 19938142 | N/A | Douglas Macray Elliott & Linda H. Elliott | 1.18 | 1.18 | Single Family | N/A | 1 | 250 | 250 |
| 19938121 | N/A | Tony Quinn | 0.65 | 0.65 | Single Family | N/A | 1 | 250 | 250 |
| 19938122 | N/A | Jerry G. & Glenda K. Hilton | 0.59 | 0.59 | Single Family | N/A | 1 | 250 | 250 |
| 19938123 | N/A | Jeff & Marilyn Jager | 0.56 | 0.56 | Single Family | N/A | 1 | 250 | 250 |
| 19938124 | N/A | Fred Kanos | 0.64 | 0.64 | Single Family | N/A | 1 | 250 | 250 |
| 19938125 | N/A | Katina Kanos | 0.68 | 0.68 | Single Family | N/A | 1 | 250 | 250 |
| 19938156 | N/A | John William Jr. & Margo Sherrill Mauch | 0.69 | 0.69 | Single Family | N/A | 1 | 250 | 250 |
| 19938127 | N/A | Frances Kinney Mauch | 0.79 | 0.79 | Single Family | N/A | 1 | 250 | 250 |
| 19938141 | N/A | Thomas Wayne Mauch & Lou Anne Welch | 0.69 | 0.69 | Single Family | N/A | 1 | 250 | 250 |
| 19938140 | N/A | Thomas Kirkpatrick | 1.15 | 1.15 | Single Family | N/A | 1 | 250 | 250 |
| 19938128 | N/A | Kimberlee & Stefan Parker | 1.20 | 1.20 | Single Family | N/A | 1 | 250 | 250 |
| 19938144 | N/A | Donald Christopher Jones | 4.61 | 4.61 | Single Family | N/A | 5 | 250 | 1250 |
| 19938130 | N/A | Donald Christopher & Sharon A. Jones | 0.86 | 0.86 | Single Family | N/A | 1 | 250 | 250 |
| 19938143 | N/A | Donald Christopher Jones | 2.77 | 2.77 | Single Family | N/A | 3 | 250 | 750 |
| 19938132 | N/A | Schnider Group, LLC | 0.89 | 0.89 | Single Family | N/A | 1 | 250 | 250 |
| 19938133 | N/A | Garrett E. Lee Jr. | 0.81 | 0.81 | Single Family | N/A | 1 | 250 | 250 |
| 19938139 | N/A | The Schneider Group, LLC. | 0.61 | 0.61 | C.O.S. | N/A | N/A | 0 | 0 |
| 19938134 | N/A | Cadieu Family, LLC. | 0.67 | 0.67 | Single Family | N/A | 1 | 250 | 250 |
| 19938135 | N/A | Christine J. Foster | 0.71 | 0.71 | Single Family | N/A | 1 | 250 | 250 |
| 19938136 | N/A | Gary L. Walker | 0.65 | 0.65 | Single Family | N/A | 1 | 250 | 250 |
| 19938137 | N/A | Fred C. & Patricia A. Guin | 0.42 | 0.42 | Single Family | N/A | 1 | 250 | 250 |
| 19938138 | N/A | Bret Michael McDermitt | 0.69 | 0.69 | Single Family | N/A | 1 | 250 | 250 |
| 19921301 | N/A | Ricky A. Bournique | 1.19 | 1.19 | Single Family | N/A | 1 | 250 | 250 |
| 19921302 | N/A | Marian Disher Black & Disher Jr Trustee | 1.23 | 1.23 | Single Family | N/A | 1 | 250 | 250 |
| 19921303 | N/A | Clemson University Real Estate Found. Inc. | 0.80 | 0.80 | Single Family | N/A | 1 | 250 | 250 |
| 19921304 | N/A | Xuhui Fang & Peiya Lou | 0.68 | 0.68 | Single Family | N/A | 1 | 250 | 250 |
| 19921305 | N/A | Xuhui Fang & Peiya Lou | 1.23 | 1.23 | Single Family | N/A | 1 | 250 | 250 |
| 19921307 | Charlotte Fire Dept. Sta. 38 | City of Charlotte | 3.21 | 3.21 | Fire Station | N/A | 50 | 30 | 1,500 |
| | | **TOTAL** | **42.30** | **42.30** | | | **95** | | **12,750** |
| | | **OVERALL PUMP STATION TOTAL** | **250.1 AC.** | **250.1 AC.** | | | **350** | | **76,500** |




**APPROVED FOR CONSTRUCTION**
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE

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

NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

**CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARD SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.**

NORTH ORIENTED TO NC GRID (NAD83)

**LEGEND**
- CHAPEL COVE PHASE 4
- CHAPEL COVE PHASE 4 PUMP STATION DRAINAGE AREA


ESP Associates, P.A.
P.O. Box 7030
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NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER LUKE E. SIMMONS 7-11-14

# CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

(S) 100-13-532 — Job No. / File No.
Scales: PLAN 1" = 200'; PROFILE N/A; N/A
As Built / Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

PUMP STATION DRAINAGE AREA MAP

| ESP | MJS | SLB | DES | RD 7-31-14 | 07/11/14 | Sheet 2 | Of 8 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

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Fort Mill, SC 29708
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www.espassociates.com

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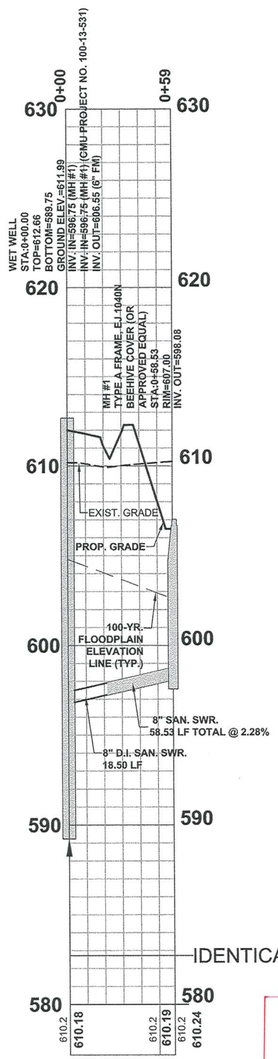
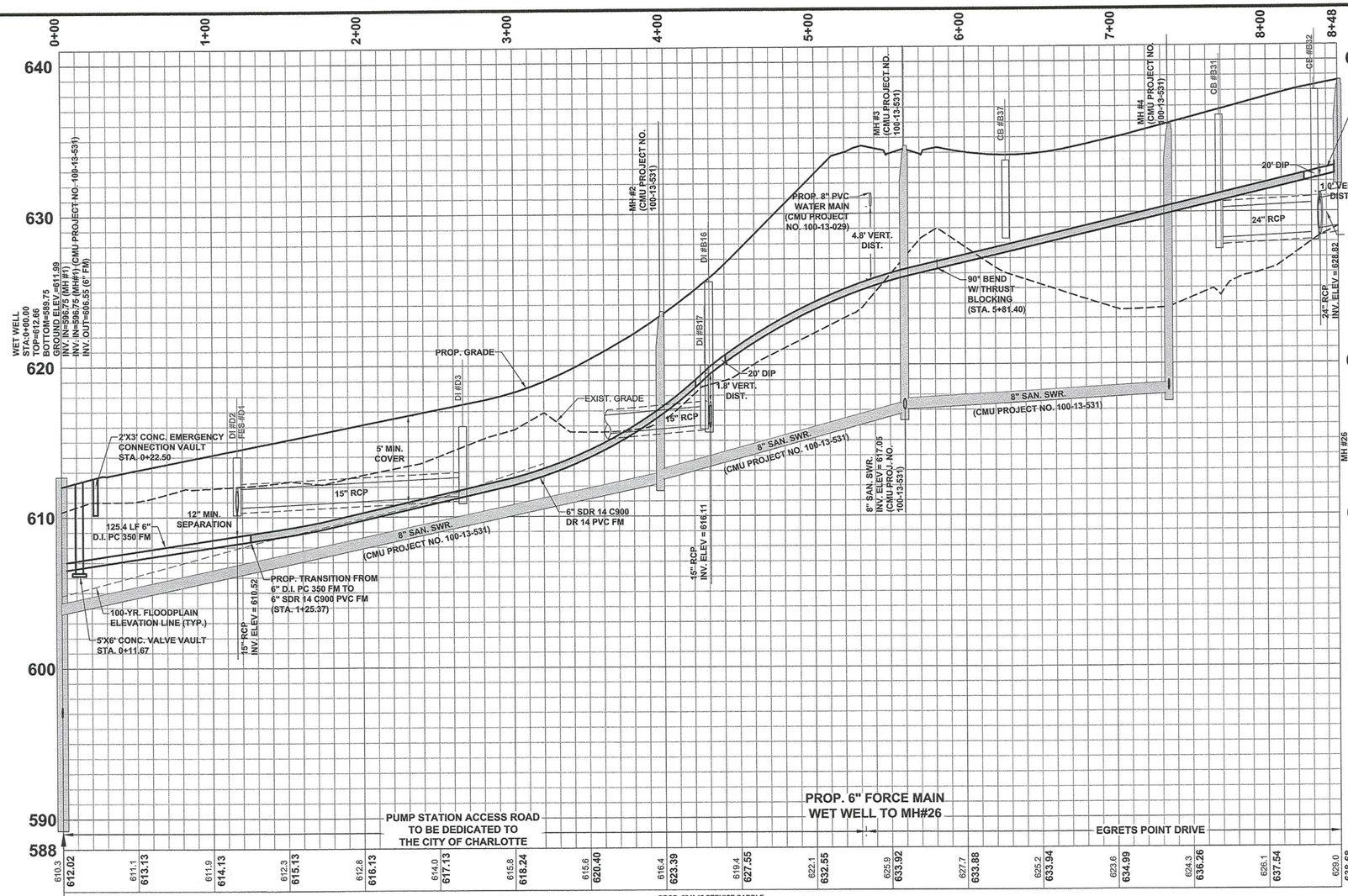
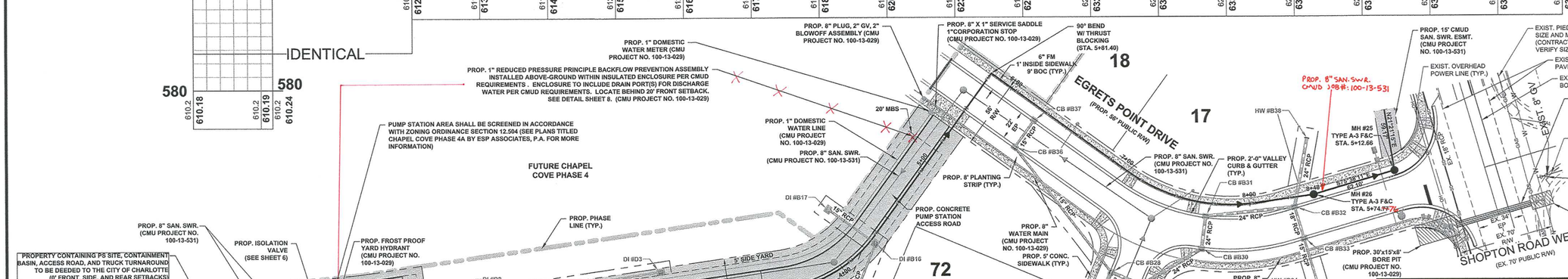



APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE




Horizontal Scale 1 inch = 40 ft
Vertical Scale 1 inch = 4 ft

NOTES:

1. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMUD-REQUIRED BACKFLOW PREVENTER.
2. EACH CMUD-REQUIRED BPA IS REQUIRED TO BE TESTED BY A CMUD-APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE.

**CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARD SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.**

NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER KAMISE E. SIMMONS 7-23-14

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

# CHARLOTTE MECKLENBURG UTILITY DEPARTMENT

ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

(S) 100-13-530 Job No. | File No.

Scales: PLAN 1" = 40' | PROFILE 1" = 40' | 1" = 4'

As Built | Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

FORCE MAIN TRUNKLINE & EGRETS POINT DRIVE (WET WELL TO MH #26)

| ESP | MJS | SLB | DES | RD Moody | 07/23/14 | Sheet 3 | Of 8 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

7-31-14

UJ16_CMU-PUMP FMPP.dwg

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## Chapel Cove Phase 4A

### Overflow Spill Containment Basin Sizing

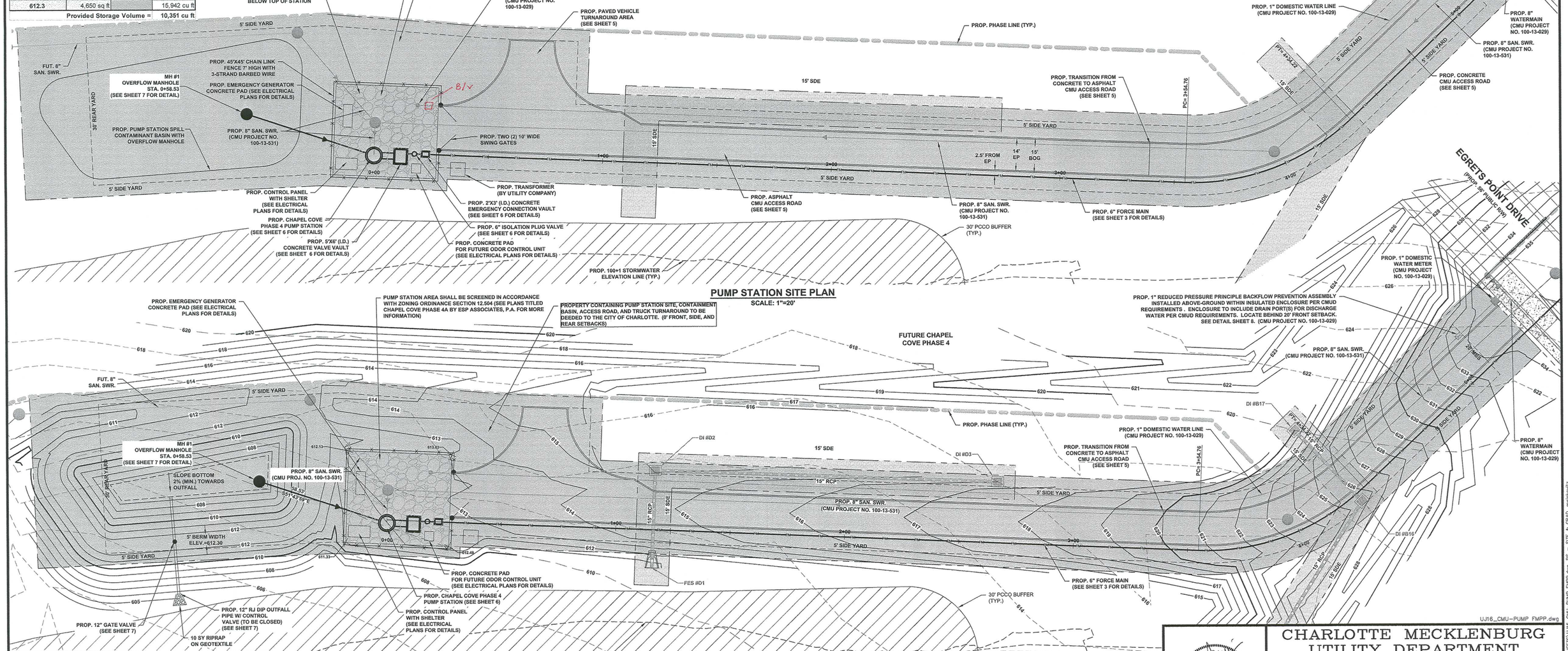
Minimum Required Storage Volume = 24-Hour Average Daily Flow

| | | |
|---|---|---|
| Average Daily Flow | 76,500 | GPD |
| Average Daily Flow | 10,227 | $Ft^3$/Day |

**Minimum Required Storage Volume = 10,227 cu ft**

| ELEV | AREA | INCR. VOL | CUM. VOL |
|---|---|---|---|
| 606.5 | 742 sq ft | | 0 cu ft |
| | | 431 cu ft | |
| 607 | 988 sq ft | | 431 cu ft |
| | | 1,253 cu ft | |
| 608 | 1,538 sq ft | | 1,684 cu ft |
| | | 1,841 cu ft | |
| 609 | 2,161 sq ft | | 3,525 cu ft |
| | | 2,497 cu ft | |
| 610 | 2,850 sq ft | | 6,022 cu ft |
| | | 3,215 cu ft | |
| 611 | 3,594 sq ft | | 9,237 cu ft |
| | | 1,114 cu ft | |
| 611.3 | 3,832 sq ft | | 10,351 cu ft |
| | | 4,234 cu ft | |
| 612 | 4,396 sq ft | | 14,585 cu ft |
| | | 1,357 cu ft | |
| 612.3 | 4,650 sq ft | | 15,942 cu ft |

**Provided Storage Volume = 10,351 cu ft**




**PUMP STATION SITE PLAN**
SCALE: 1"=20'

**PUMP STATION GRADING PLAN**
SCALE: 1"=20'

**CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARD SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.**

NOTES:

1. FOR MORE INFORMATION SEE PLANS TITLED "CHAPEL COVE PHASE 4A" BY ESP ASSOCIATES, P.A. DATED SEPTEMBER 25, 2013.
2. CONTRACTOR TO PROVIDE TO CMU SEALED SHOP DRAWINGS FOR CONTROL PANEL SHELTER AND FOOTINGS DESIGNED TO WITHSTAND A 100 MPH WING LOAD PRIOR TO PUMP STATION ACCEPTANCE BY CMU
3. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMUD-REQUIRED BACKFLOW PREVENTER.
4. EACH CMUD-REQUIRED BPA IS REQUIRED TO BE TESTED BY A CMUD-APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE.

APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE

GRAPHIC SCALE
0 10' 20' 40' 80'
( IN FEET )
1 inch = 20 ft.

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


ESP Associates, P.A.
P.O. Box 7030
Charlotte, NC 28241
3475 Lakemont Blvd.
Fort Mill, SC 29708
704-583-4949 (NC)
803-802-2440 (SC)
www.espassociates.com


NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER WILLIAM E. SIMMONS 7-23-14

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

# CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

(S) 100-13-532 Job No. / File No.
Scales: PLAN 1" = 40'; PROFILE 1" = 40'
As Built / Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

PUMP STATION
SITE PLAN & GRADING PLAN

| ESP | MJS | SLB | DES | RD Moody | 07/23/14 | Sheet 4 | Of 8 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

7-31-14

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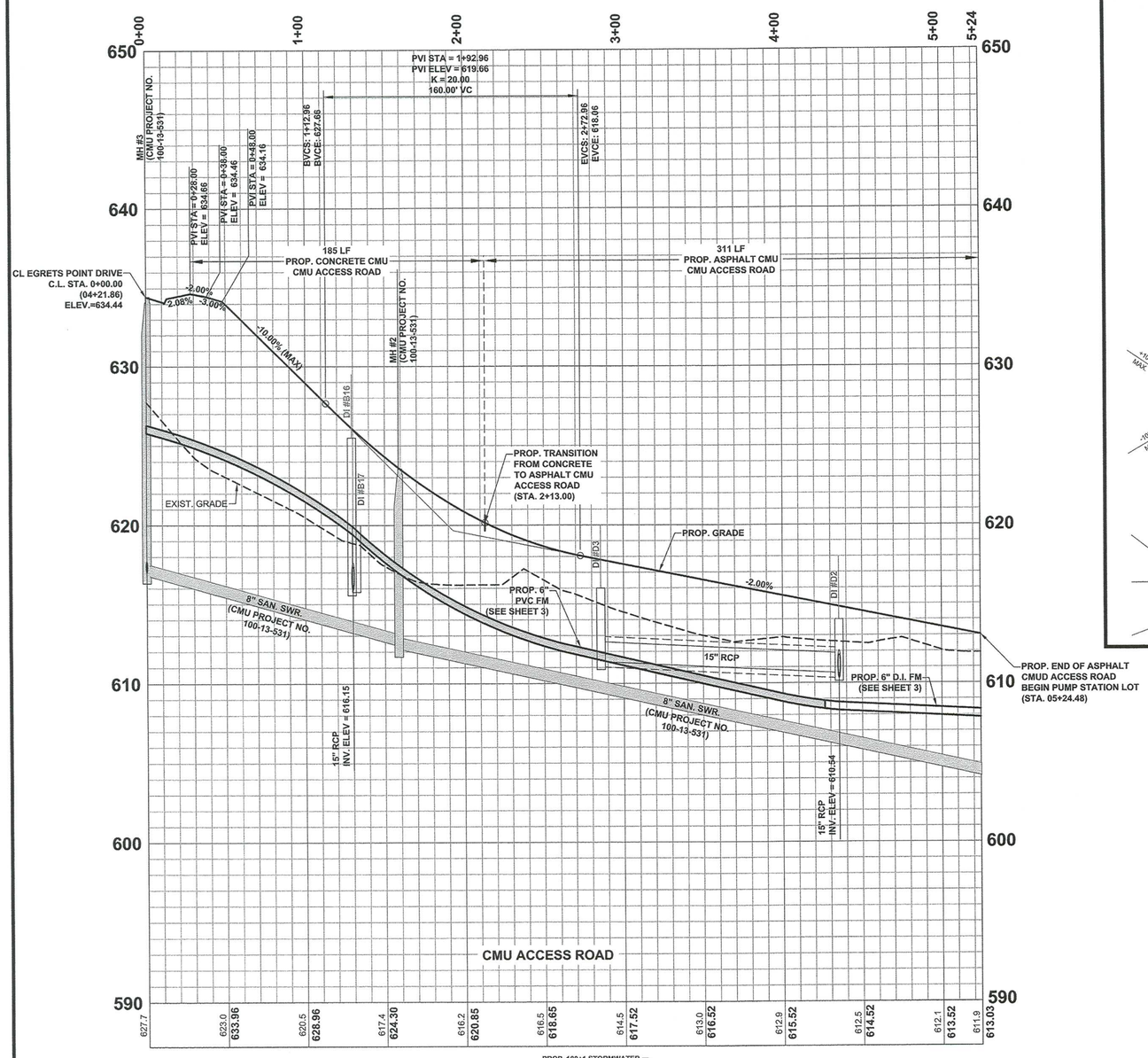
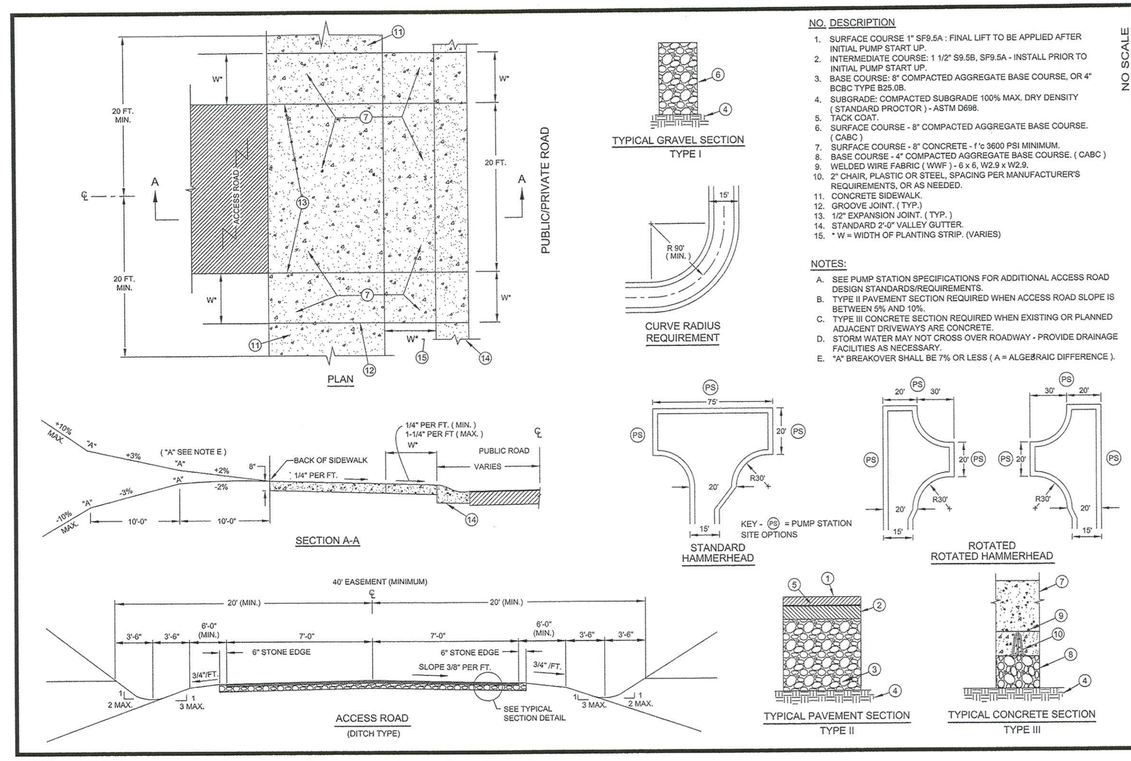



NO. DESCRIPTION

1. SURFACE COURSE 1" SF9.5A : FINAL LIFT TO BE APPLIED AFTER INITIAL PUMP START UP.
2. INTERMEDIATE COURSE: 1 1/2" S9.5B, SP9.5A - INSTALL PRIOR TO INITIAL PUMP START UP.
3. BASE COURSE: 8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B.
4. SUBGRADE: COMPACTED SUBGRADE 100% MAX. DRY DENSITY ( STANDARD PROCTOR ) - ASTM D698.
5. TACK COAT.
6. SURFACE COURSE - 8" COMPACTED AGGREGATE BASE COURSE. ( CABC )
7. SURFACE COURSE - 8" CONCRETE - f 'c 3600 PSI MINIMUM.
8. BASE COURSE - 4" COMPACTED AGGREGATE BASE COURSE. ( CABC )
9. WELDED WIRE FABRIC ( WWF ) - 6 x 6, W2.9 x W2.9.
10. 2" CHAIR, PLASTIC OR STEEL, SPACING PER MANUFACTURER'S REQUIREMENTS, OR AS NEEDED.
11. CONCRETE SIDEWALK.
12. GROOVE JOINT. ( TYP.)
13. 1/2" EXPANSION JOINT. ( TYP. )
14. STANDARD 2'-0" VALLEY GUTTER.
15. * W = WIDTH OF PLANTING STRIP. (VARIES)

NOTES:

A. SEE PUMP STATION SPECIFICATIONS FOR ADDITIONAL ACCESS ROAD DESIGN STANDARDS/REQUIREMENTS.
B. TYPE II PAVEMENT SECTION REQUIRED WHEN ACCESS ROAD SLOPE IS BETWEEN 5% AND 10%.
C. TYPE III CONCRETE SECTION REQUIRED WHEN EXISTING OR PLANNED ADJACENT DRIVEWAYS ARE CONCRETE.
D. STORM WATER MAY NOT CROSS OVER ROADWAY - PROVIDE DRAINAGE FACILITIES AS NECESSARY.
E. *A" BREAKOVER SHALL BE 7% OR LESS ( A = ALGEBRAIC DIFFERENCE ).

NO SCALE

STANDARD NO. A | VERSION NO. V1.0 | VERSION DATE 11-2-2010

ACCESS ROAD STANDARDS AND DETAILS

CHARLOTTE-MECKLENBURG UTILITIES
STANDARD DETAILS
SEWER PUMP STATION

NOTES:

1. FOR MORE INFORMATION SEE PLANS TITLED "CHAPEL COVE PHASE 4A" BY ESP ASSOCIATES, P.A. DATED SEPTEMBER 25, 2013.

**STREET CENTERLINE LINE TABLE**

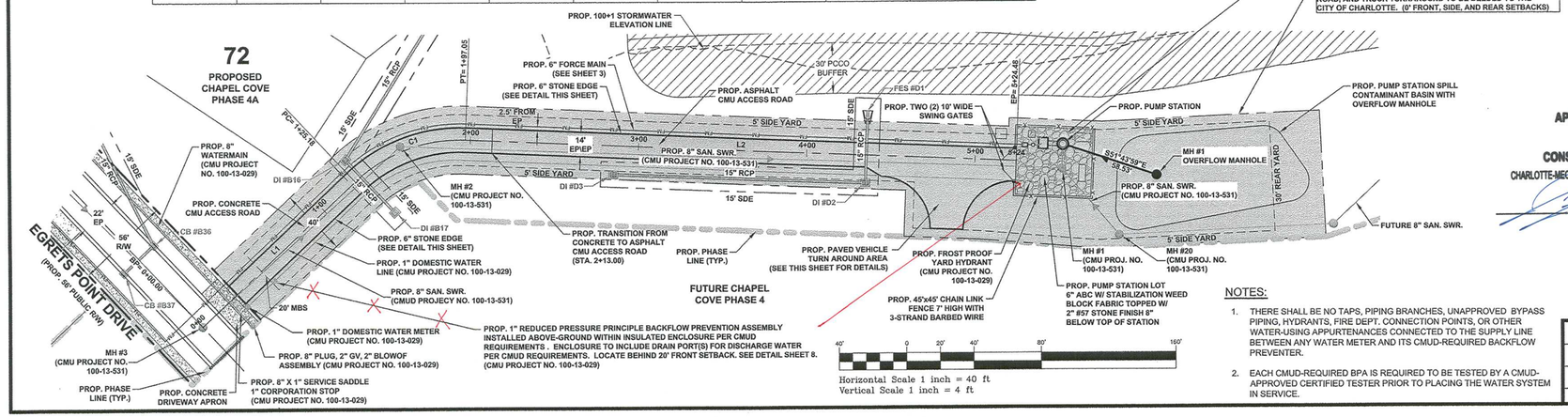
| LINE | LENGTH | BEARING |
|---|---|---|
| L1 | 125.18' | S 66°38'43" W |
| L2 | 327.42' | N 67°35'45" W |

**STREET CENTERLINE CURVE TABLE**

| CURVE | RADIUS | LENGTH | TANGENT | CHORD | BEARING | DELTA |
|---|---|---|---|---|---|---|
| C1 | 90.00' | 71.88' | 37.98' | 69.98' | S 89°31'29" W | 45°45'32" |

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

CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT STANDARD SPECIFICATIONS PER WEBSITE WWW.CMUTILITIES.COM.




PUMP STATION AREA SHALL BE SCREENED IN ACCORDANCE WITH ZONING ORDINANCE SECTION 12.504 (SEE PLANS TITLED CHAPEL COVE PHASE 4A BY ESP ASSOCIATES, P.A. FOR MORE INFORMATION

PROPERTY CONTAINING PS SITE, CONTAINMENT BASIN, ACCESS ROAD, AND TRUCK TURNAROUND TO BE DEEDED TO THE CITY OF CHARLOTTE. (0' FRONT, SIDE, AND REAR SETBACKS)

NORTH CORRECTED TO NC GRID (NAD83)

NOTES:

1. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMUD-REQUIRED BACKFLOW PREVENTER.
2. EACH CMUD-REQUIRED BPA IS REQUIRED TO BE TESTED BY A CMUD-APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE.

APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE

NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER DENNIS E. SIMMONS 7-23-14

NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

ESP Associates, P.A.
P.O. Box 7030
Charlotte, NC 28241
3475 Lakemont Blvd.
Fort Mill, SC 29708
704-583-4949 (NC)
803-802-2440 (SC)
www.espassociates.com

UJ16_CMU-PS ACCESS ROAD.dwg

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

(S) 100-13-532 Job No. | File No.
Scales: PLAN 1" = 40' | PROFILE 1" = 40' | 1" = 4'
As Built | Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

ACCESS ROAD PLAN & PROFILE

| ESP | MJS | DES | RD Moody | 07/23/14 | Sheet 5 | Of 8 |
|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | |

7-31-14

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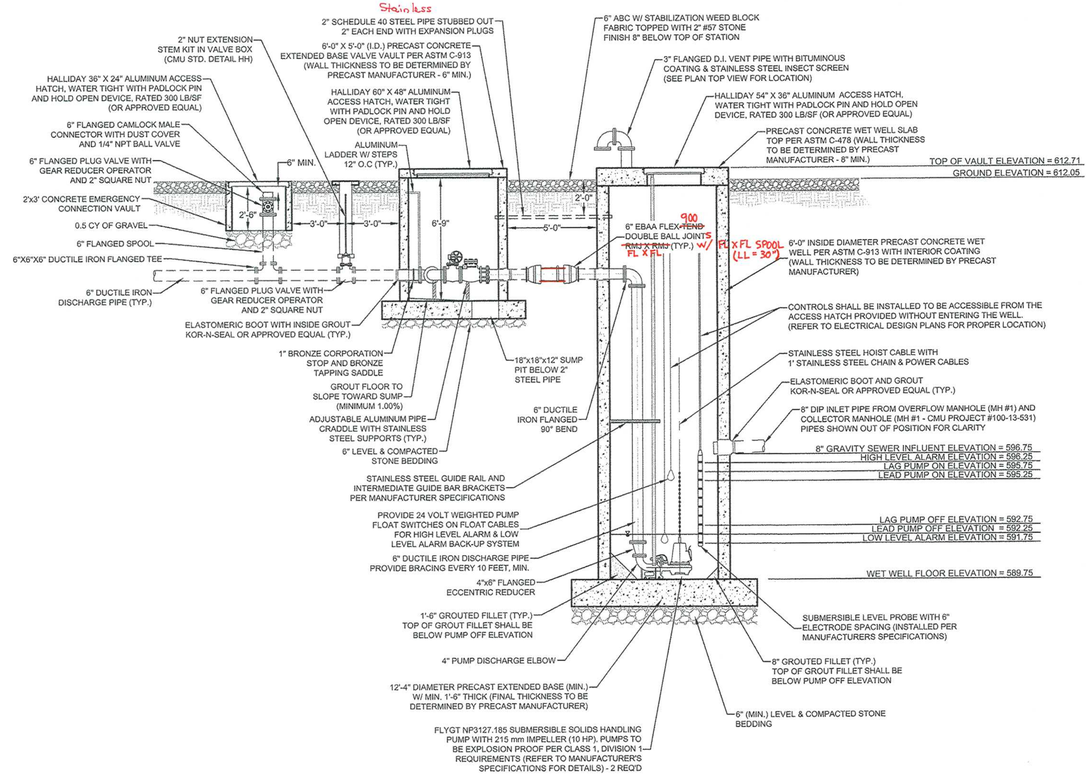
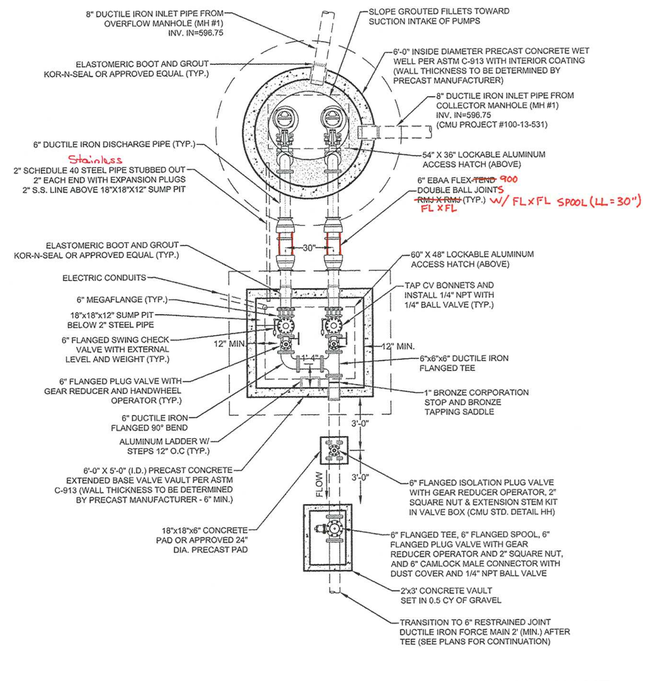


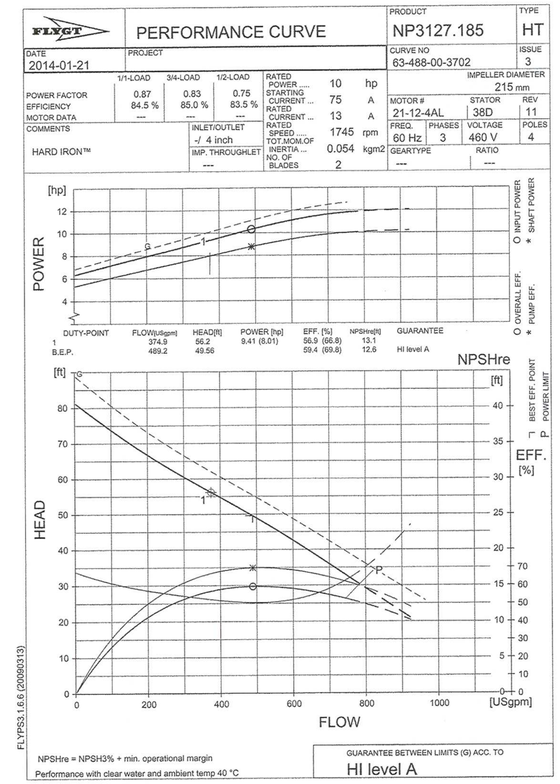

## PUMP STATION WET WELL, VALVE VAULT, ISOLATION VALVE, AND EMERGENCY CONNECTION SECTION VIEW

SCALE: 1"=4'

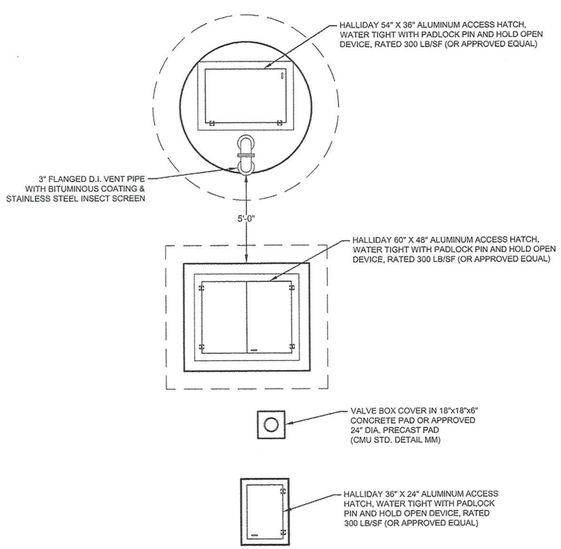



## PUMP STATION WET WELL, VALVE VAULT, ISOLATION VALVE, AND EMERGENCY CONNECTION PLAN VIEW

SCALE: 1"=4'




## FLYGT MODEL NP3127.185 (63-488) PERFORMANCE CURVE




## PUMP STATION WET WELL, VALVE VAULT, ISOLATION VALVE, AND EMERGENCY CONNECTION TOP PLAN VIEW

SCALE: 1"=4'

## PUMP STATION DESIGN CRITERIA:

DESIGN FLOW CALCULATIONS

CHAPEL COVE PHASE 4
- 255 UNITS X 250 GPD/UNIT = 63,750 GPD
FUTURE FLOW FROM EXISTING ADJACENT PROPERTIES
- 45 SINGLE FAMILY LOTS + 1 FIRE STATION
= 45 UNITS X 250 GPD/UNIT + 50 OCCUPANTS X 30 GAL/OCCUPANT = 12,750 GPD
AVERAGE DAILY FLOW = 53.13 GPM
PEAKING FACTOR (PF) = 2.5
TOTAL PEAK DAILY INFLOW = 191,250 GPD
PEAK DAILY INFLOW = 132.81 GPM
DESIGN OPERATING CONDITIONS = 375 GPM @ 56.2 TDH

TOTAL DYNAMIC HEAD CALCULATIONS (AT END OF LIFE DESIGN OPERATING CONDITIONS)

SUCTION STATIC HEAD = 2.24 FT
DISCHARGE STATIC HEAD = 43.02 FT
FRICTION HEAD LOSS IN FORCE MAIN AT DESIGN PUMP RATE = 13.33 FT
FRICTION HEAD LOSS IN FITTINGS AT DESIGN PUMP RATE = 1.82 FT
FRICTION HEAD LOSS AT EXIT = 0.31 FT

TOTAL DYNAMIC HEAD (END OF LIFE) = 56.24 FT

PUMP SELECTION

PUMP: FLYGT NP3127.185 (DUPLEX)
MOTOR: 10 HP (EA. PUMP)
IMPELLER: 215 mm DIA. HARD IRON
SUCTION: 4" DIA.
DISCHARGE: 4" DIA.
POWER REQUIREMENT: 60 Hz - 3 PHASE, 460 VOLT
BEST EFFICIENCY POINT: 489.2 GPM @ 49.56' TDH (59.4% TOTAL EFFICIENCY)
BEGINNING OF LIFE DUTY POINT: 405 GPM @ 54.58' TDH (82.8% OF BEP)
END OF LIFE DUTY POINT: 375 GPM @ 56.24' TDH (76.7% OF BEP)

PUMP STATION OPERATING CONDITIONS

| | |
|---|---|
| TOP OF SLAB | = 612.71 |
| GROUND ELEV. | = 612.05 |
| TOP F.M. DISCHARGE | = 607.05 |
| INFLUENT IN | = 596.75 |
| HIGH LEVEL ALARM | = 596.25 |
| LAG PUMP ON | = 595.75 |
| LEAD PUMP ON | = 595.25 |
| LAG PUMP OFF | = 592.75 |
| LEAD PUMP OFF | = 592.25 |
| TOP OF PUMP | = 592.09 |
| LOW LEVEL ALARM | = 591.75 |
| PUMP SUCTION | = 590.01 |
| WET WELL FLOOR | = 589.75 |

CYCLE TIME @ ADF & PUMP RATE (END OF LIFE) = 375 GPM

V (WORKING VOL) = 635 GAL
$Q_p$ (PUMPING) = 375 GPM
$Q_{adf}$ (INFLOW) = 53.13 GPM
$V = T \times Q_{adf} \times (1-Q_{adf}/Q_p)$
$T = V/(Q_{adf} \times (1-Q_{adf}/Q_p))$ = 13.91 MIN

RE-FILL TIME = 635 GAL / 53.13 GPM = 11.94 MIN.
DRAW DOWN TIME = 635 GAL / (375-53.13) GPM = 1.97 MIN
CYCLE TIME = 11.94 + 1.97 = 13.91 MIN
CYCLES PER HOUR = 4.3
CYCLES PER HOUR PER PUMP = 2.1

CYCLE TIME @ PDF & PUMP RATE (END OF LIFE) = 375 GPM

$Q_p$ (PUMPING) = 635 GPM
$Q_{pdf}$ (INFLOW) = 132.81 GPM
$V = T \times Q_{pdf} \times (1-Q_{pdf}/Q_p)$
$T = V/(Q_{pdf} \times (1-Q_{pdf}/Q_p))$ = 7.40 MIN

RE-FILL TIME = 635 GAL / 132.81 GPM = 4.78 MIN.
DRAW DOWN TIME = 635 GAL / (375-132.81) GPM = 2.62 MIN
CYCLE TIME = 4.78 + 2.62 = 7.40 MIN
CYCLES PER HOUR = 8.1
CYCLES PER HOUR PER PUMP = 4.0

## PUMP STATION DESIGN CRITERIA

APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE

**NOTE:**
**1. CONTRACTOR SHALL SUPPLY CMU WITH 2 (TWO) EACH OF BASIC REPAIR KIT, IMPELLER, AND WEAR PLATE.**

NORTH CAROLINA LICENSE NO.: C-0587 ESP ASSOCIATES, P.A.

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


ESP Associates, P.A.
P.O. Box 7030
Charlotte, NC 28241
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704-583-4949 (NC)
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NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER MANUEL E. SIMMONS 7-11-14

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

(S) 100-13-532 Job No. / File No.
Scales
PLAN SEE PLAN
PROFILE N/A
N/A
As Built / Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

PUMP STATION SECTION PLAN

| ESP | MJS | MJS | DES | RD 7/30/2014 | 07/11/14 | Sheet 6 | Of 8 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

7-31-14


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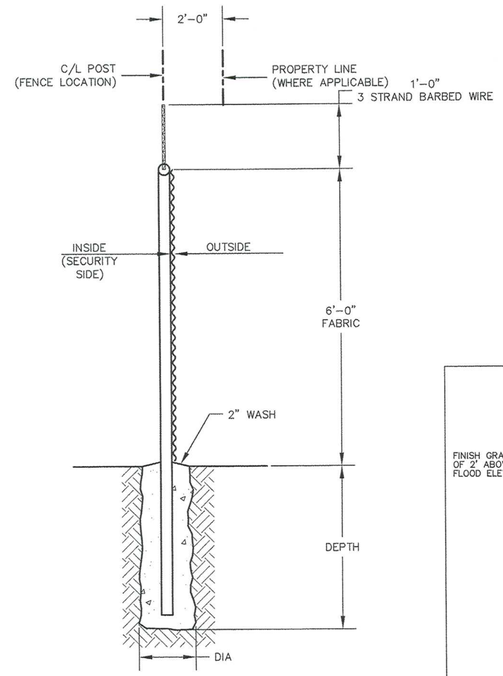
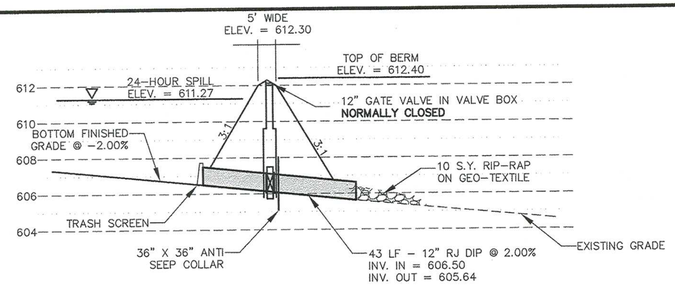



NOTE:
FENCE POST FOOTING DEPTHS AND DIMENSIONS SHALL BE DETERMINED BY FENCE CONTRACTOR.

## CHAIN LINK FENCE

WITH 3 STRAND BARBED WIRE

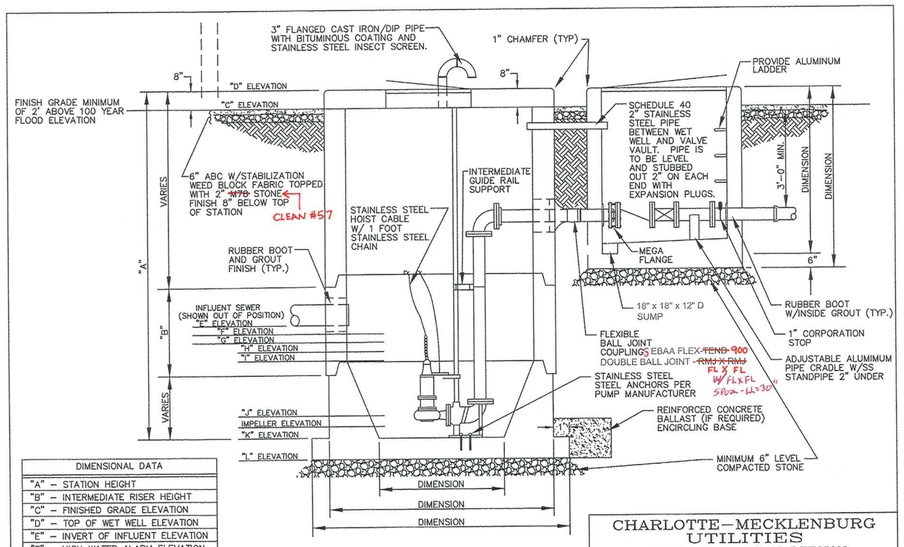



NOTES:
1. CONTRACTOR SHALL CONSTRUCT CONTAINMENT BASIN BERM FROM CLAY SOILS.
2. CONTRACTOR SHALL PROVIDE COMPACTION TESTS FOR CLAY SOIL USED AS CONTAINMENT BASIN BERM FILL.

## CONTAINMENT BASIN OUTLET

SCALE: HORIZONTAL: 1"=20'

VERTICAL: 1"=4'

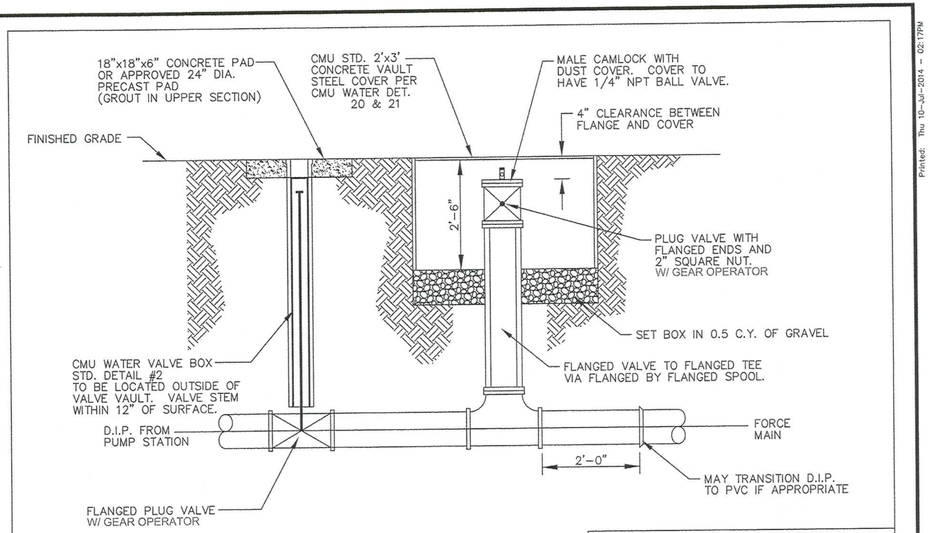



| DIMENSIONAL DATA |
|---|
| "A" – STATION HEIGHT |
| "B" – INTERMEDIATE RISER HEIGHT |
| "C" – FINISHED GRADE ELEVATION |
| "D" – TOP OF WET WELL ELEVATION |
| "E" – INVERT OF INFLUENT ELEVATION |
| "F" – HIGH WATER ALARM ELEVATION |
| "G" – LAG PUMP ON ELEVATION |
| "H" – LEAD PUMP ON ELEVATION |
| "I" – PUMPS OFF ELEVATION |
| "J" – LOW LEVEL ALARM ELEVATION |
| "K" – WET WELL FLOOR ELEVATION |
| "L" – BOTTOM ELEVATION |

| No. | Date | By | Revision |
|---|---|---|---|

CHARLOTTE–MECKLENBURG UTILITIES
SYSTEM PROTECTION DIVISION
CHARLOTTE, NORTH CAROLINA

| | | | | | |
|---|---|---|---|---|---|
| Job No. / File No. | | STANDARD DETAIL SEWER PUMP STATION | | | |
| Scales PLAN N.T.S. PROFILE Hor. Vert. | | | | | |
| As Built / Date | | SUBMERSIBLE STATION ELEVATION VIEW | | | |
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date / Sheet |
| | EAB | BJW | EAB | | 4/2003 / 3 |

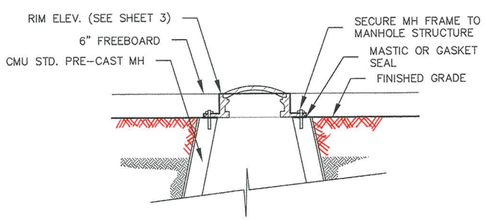



NOTES:
1. CONTRACTOR TO FURNISH "T" – HANDLE VALVE KEY AND WRENCH FOR 2" NUT AS PERMANENT STATION EQUIPMENT.
2. PUMP CONNECTIONS LARGER THAN 8" SHALL BE HOUSED IN VAULT SIZED AS REQUIRED FOR APPLICATION AS DETERMINED BY CMU.
3. ALL VALVES OPEN LEFT.

| No. | Date | By | Revision |
|---|---|---|---|

CHARLOTTE–MECKLENBURG UTILITIES
SYSTEM PROTECTION DIVISION
CHARLOTTE, NORTH CAROLINA

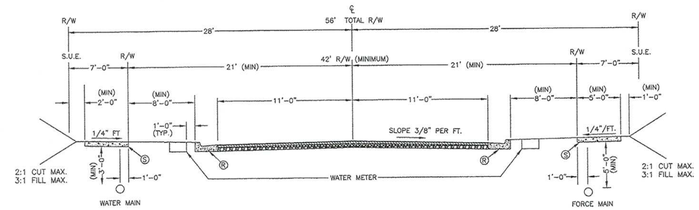
| | | | | | |
|---|---|---|---|---|---|
| Job No. / File No. | | STANDARD DETAIL SEWER PUMP STATION | | | |
| Scales PLAN N.T.S. PROFILE Hor. Vert. | | | | | |
| As Built / Date | | EMERGENCY PUMP CONNECTION DETAIL UP TO 8-INCH | | | |
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date / Sheet |
| | EAB | BJW | EAB | | 4/2003 / 2 |




NOTE:
OVERFLOW MANHOLE FRAME AND GRATE SHALL BE EAST JORDAN IRON WORKS TYPE 2027Z1 FRAME WITH TYPE 1040 N BEEHIVE GRATE OR APPROVED EQUAL.

## OVERFLOW MANHOLE

SEE SHEET 3 FOR LOCATION AND ELEVATIONS



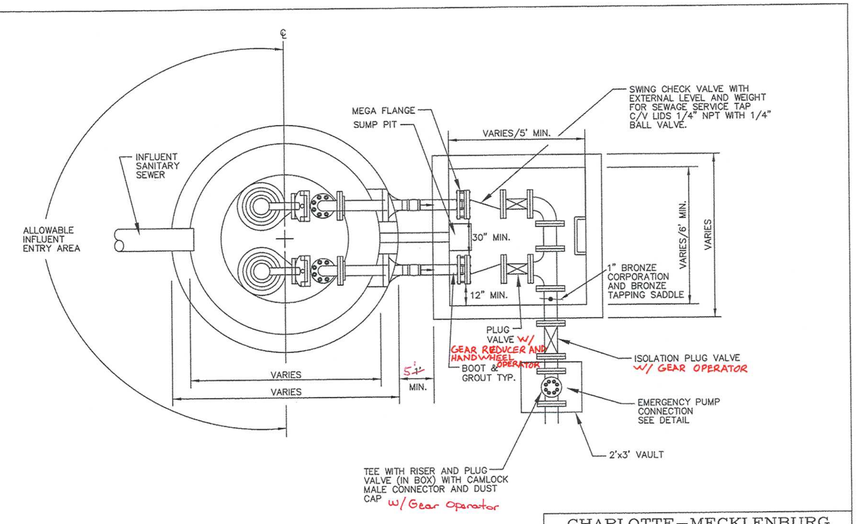

KEY
Ⓡ 2'-0" VALLEY GUTTER
Ⓢ 4" CONCRETE SIDEWALK

TYPICAL SECTION

**PROPOSED 56' PUBLIC R/W**
**25 MPH DESIGN SPEED**

1. EGRETS POINT DRIVE
2. RUSTY BLACKBIRD WAY
3. CAROLINA WREN COURT
4. SALTMARSH LANE

LOCAL RESIDENTIAL MEDIUM STREET




| No. | Date | By | Revision |
|---|---|---|---|

CHARLOTTE–MECKLENBURG UTILITIES
SYSTEM PROTECTION DIVISION
CHARLOTTE, NORTH CAROLINA

| | | | | | |
|---|---|---|---|---|---|
| Job No. / File No. | | STANDARD DETAIL SEWER PUMP STATION | | | |
| Scales PLAN N.T.S. PROFILE Hor. Vert. | | | | | |
| As Built / Date | | SUBMERSIBLE STATION PLAN VIEW | | | |
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date / Sheet |
| | EAB | BJW | EAB | | 4/2003 / 4 |

UJ16_CMU-PS DETAILS.dwg

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FOR
CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE

NORTH CAROLINA
LICENSE NO.:
C-0567
ESP ASSOCIATES, P.A.

NORTH CAROLINA
PROFESSIONAL
SEAL
025775
ENGINEER
TONIS E. SIMMONS
7-11-14

| No. | Date | By | Revision |
|---|---|---|---|

CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

| | | | | | |
|---|---|---|---|---|---|
| (S) 100-13-532 Job No. / File No. | | PUMP STATION & FORCE MAIN TO SERVE: CHAPEL COVE PHASE 4 | | | |
| Scales PLAN N/A PROFILE N/A N/A | | CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC | | | |
| As Built / Date | | PUMP STATION DETAILS AND STREET CROSS SECTION | | | |
| ESP Surveyed By | MJS Designed By | MJS Drawn By | DES Project-Engr | RD MOODY Approved By | 07/11/14 Date / Sheet 7 Of 8 |

7-31-14

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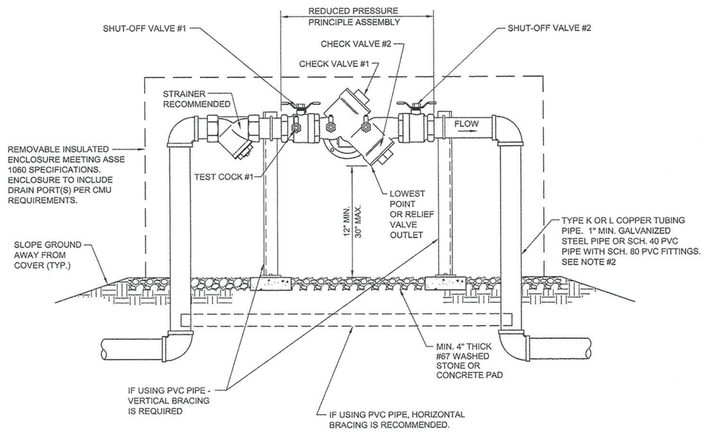
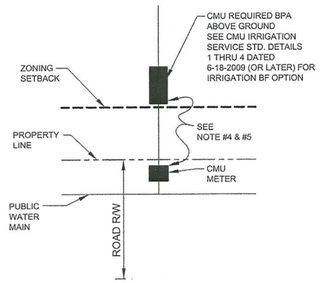



NOTES:

1. BACKFLOW PREVENTION ASSEMBLIES (BPA's) SHALL CONFORM TO CMU SPECIFICATIONS. SHUT-OFF VALVES ARE SPECIFIC TO EACH APPROVED BPA AND NO SUBSTITUTIONS OF SHUT-OFF VALVES ARE PERMITTED. REFER TO CMU APPROVED LIST OF BPA's.
2. PIPE MATERIAL AND FITTINGS SHALL BE AS SPECIFIED IN CMU STANDARDS & SPECIFICATIONS. IF USING PVC PIPE / FITTINGS, VERTICAL SUPPORT IS REQUIRED AND HORIZONTAL BRACING IS RECOMMENDED.
3. INSULATED ENCLOSURE SHALL BE AS SPECIFIED IN CMU ENCLOSURE INFORMATION - HEATED INSULATED ENCLOSURE IS RECOMMENDED. NO INSULATION SHALL BE WRAPPED AROUND BPA.
4. ALL LOCATIONS FOR BPA'S REQUIRE CMU APPROVAL AND MUST BE OUTSIDE OF ZONING SET-BACK.
5. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMU - REQUIRED BACKFLOW PREVENTER.
6. EACH CMU-REQUIRED BPA IS REQUIRED TO BE TESTED BY A CMU-APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE.
7. ALL BACKFLOW PREVENTERS INTENDED FOR ADDRESSING CHARLOTTE-MECKLENBURG UTILITIES REQUIREMENTS, REQUIRE PRIOR APPROVAL FROM THE APPROPRIATE CHARLOTTE-MECKLENBURG UTILITIES BACKFLOW INSPECTOR.




TYPICAL LOCATION REQUIREMENT
FOR ABOVE GROUND INSTALLATION
N.T.S.

NO SCALE

STANDARD NO. 13

VERSION NO. 1.1

VERSION DATE 7-1-2009

# REDUCED PRESSURE PRINCIPLE ASSEMBLY (RP) 3/4" - 1" ABOVE GROUND

CHARLOTTE-MECKLENBURG UTILITIES

STANDARD DETAILS

BACKFLOW PREVENTION

CHARLOTTE

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UJ16_CMU-PS SECTION.dwg

NORTH CAROLINA PROFESSIONAL SEAL 025775 ENGINEER MARK S. E. SIMMONS 7-1-14

CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

| | |
|---|---|
| (S) 100-13-532 / Job No. | File No. |
| Scales | |
| PLAN | N/A |
| PROFILE | N/A |
| | N/A |
| As Built | Date |

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CHAPEL COVE AT GLENGATE, LLC — CHARLOTTE ETJ, NC

BACKFLOW DETAIL

| ESP | MJS | MJS | DES | RD Moody | 07/11/14 | Sheet 8 | Of 8 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

7-31-14

| No. | Date | By | Revision |
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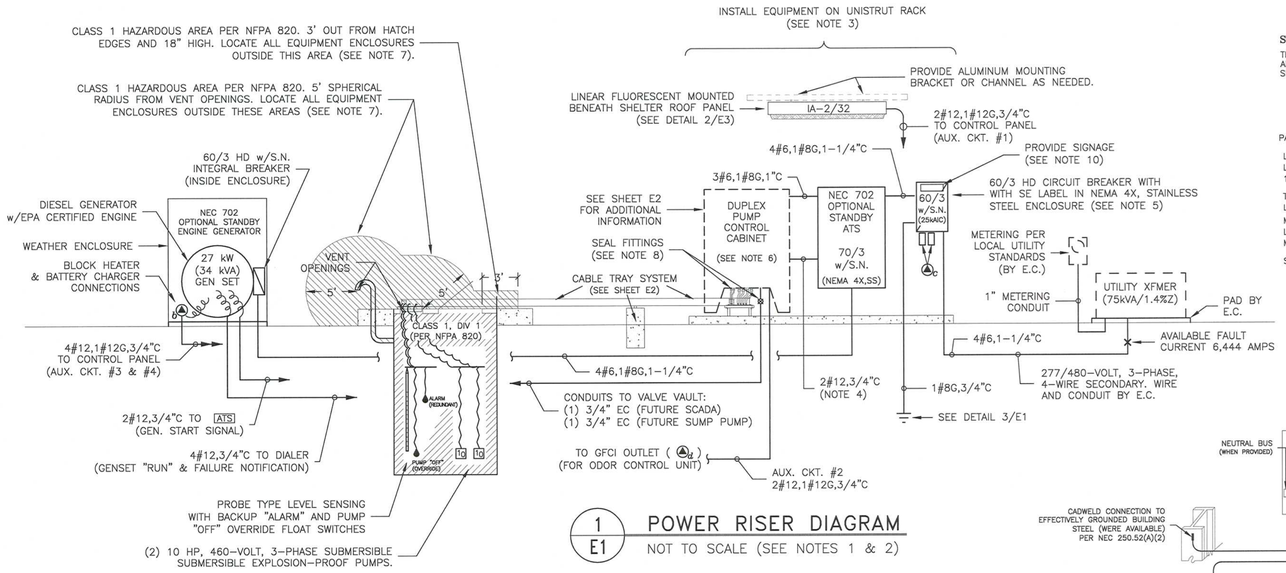
NOTES:

1. ALL EQUIPMENT AND EQUIPMENT TERMINATIONS SHALL BE RATED FOR 75°C COPPER CONDUCTORS
2. UNLESS OTHERWISE NOTED, THE ELECTRICAL EQUIPMENT SHOWN ABOVE SHALL BE MANUFACTURED BY SQUARE D OR AN APPROVED EQUAL.
3. SUPPORT POLES FOR RACK SHALL BE (MINIMUM) 3" GALVANIZED PIPE (RIGID) AND 1–5/8" STAINLESS STEEL UNISTRUT FOR HORIZONTAL SUPPORT OF ELECTRICAL BOXES. CONTRACTOR SHALL UTILIZE PROPER UNISTRUT CLAMPS/BRACKETS AND FACTORY DRILLED HOLES WHEN MOUNTING ELECTRICAL BOXES & CABINETS. POLES SHALL BE EMBEDDED IN CONCRETE 36" (MINIMUM) BELOW FINISHED GRADE; SEE DETAIL 2/E2 FOR ADDITIONAL RACK FABRICATION INFORMATION. PUMP CONTROL PANEL SHALL BE FREE STANDING ON INTEGRATED LEGS THAT ARE BOLTED TO THE SLAB. ELECTRICAL EQUIPMENT RACK AND EQUIPMENT ENCLOSURES SHALL BE LOCATED OUTSIDE THE HAZARDOUS BOUNDARIES INDICATED. A MINIMUM WORKING CLEARANCE OF 3'6" & HEADROOM OF 6'6 SHALL BE MAINTAINED PER NEC 110.26. ELECTRICAL AND CONTROL CABINETS SHALL BE MOUNTED SUCH THAT NO OPERABLE HANDLE EXCEEDS 6'6" ABOVE SLAB WHEN IN THEIR HIGHEST POSITION.
4. PROVIDE CONNECTION TO CONTROL PANEL DIALER TO SIGNAL PUMP STATION OPERATION FROM DIESEL GENERATOR (i.e., TRANSFER SWITCH IN "EMERGENCY/STANDBY" POSITION).
5. AN THERMAL MAGNETIC, SERVICE ENTRANCE LISTED CIRCUIT BREAKER HAS BEEN PROVIDED, IN LIEU OF THE FUSIBLE DISCONNECT MANDATED BY NECDENR–MDR 5.01(C), THIS WAS DONE PER THE REQUEST OF CMUD (i.e., THE LOCAL AHJ). A CIRCUIT BREAKER AS THE MAIN DISCONNECT & OVERCURRENT DEVICE DOES NOT MEET THE SPECIFIC WORDING OF THE FAST–TRACK DOCUMENT HOWEVER, IN THIS APPLICATION, THERE IS NO MEANINGFUL DIFFERENCE IN THE QUALITY OR CORRECTNESS (PER NEC) OF THIS CHOICE. THIS ITEM IS NOT CONSIDERED TO BE A DEVIATION FROM THE NCDENR–MDR.
6. CONTROL PANEL TO BE FURNISHED BY PUMP MANUFACTURER. PANEL SHALL BE U.L. (UL 698A) LISTED FOR DUPLEX 10 HP SUBMERSIBLE PUMPS. ALL MOTOR, CONTROL AND AUXILIARY CIRCUITS SHALL HAVE INDIVIDUAL OVERCURRENT PROTECTION LOCATED AND SIZED IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (NEC) REQUIREMENTS. POWER INPUT SHALL BE 480–VOLT, 3–PHASE, 3–WIRE WITH INCOMING LUGS RATED FOR 75°C, #6 AWG, COPPER CONDUCTORS. AN INTERNAL TRANSFORMER SHALL BE PROVIDED TO SERVE PANEL MOUNTED RECEPTACLE, DIALER AND PUMP CONTROLS. ALSO, ADDITIONAL BRANCH CIRCUIT BREAKERS SHALL BE PROVIDED TO SERVE AN AREA LIGHT, GENERATOR APPURTENANCES, ALONG WITH CONNECTIONS FOR A FUTURE SUMP PUMP SCADA SYSTEM. PANEL SHALL BE EQUIPPED WITH A SOLID STATE, 16–CHANNEL, CMUD APPROVED TELEPHONE DIALER TO ANNUNCIATE ALARM CONDITIONS. PANEL SHALL HAVE "DRY" CONTACTS TO INDICATE ALL ALARM AND STATUS CONDITIONS. CONTACTS SHALL BE WIRED TO "OUTPUT" TERMINAL BLOCKS FOR EASY CONNECTION AND IDENTIFICATION. CONTROL PANEL SHALL BE PROVIDED WITH INTRINSICALLY SAFE (IS) RELAYS (OR MULTI–CHANNEL MODULE) FOR MONITORING FLOATS IN A FLAMMABLE GAS/VAPOR ENVIRONMENT. SIMILARLY, PANEL SHALL HAVE AN INTEGRAL BATTERY BACKUP SYSTEM TO POWER LOCAL ALARMS & TELEMETRY DURING ANY A/C POWER INTERRUPTIONS (INCLUDING GENERATOR FAILURE); BATTERY CAPACITY SHALL BE SUFFICIENT FOR AT LEAST 2 HOURS OF NON–PUMPING OPERATION.
7. "NORTH CAROLINA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES – MINIMUM DESIGN REQUIREMENTS (NCDENR–MDR) FOR FAST–TRACK PERMITTING OF PUMP STATIONS & FORCE MAINS" REQUIRE THAT WET WELLS (& OTHER LOCATIONS) BE CONSIDERED CLASS 1, DIVISION 1, GROUP D (HAZARDOUS ENVIRONMENTS WITH FLAMMABLE GASSES OR VAPORS). SINCE NCDENR–MDR DOES NOT DEFINE "OTHER LOCATIONS", NFPA 820 GUIDELINES WERE FOLLOWED TO DETERMINE CLASSIFICATIONS OF ASSOCIATED AREAS (i.e., NEAR VENTS, HATCHES, ETC.). THE CLASS 1, DIVISION 1, GROUP D CLASSIFICATION DICTATED UNDER NCDENR–MDR CORRESPONDS TO A "COMBINATION SEWER" TYPE WET WELL (IN NFPA 820, SEE DETAIL 3/E2 FOR REQUIREMENTS); DETAIL 3/E2 (REPRODUCED FROM NFPA 820) WAS USED IN DETERMINING CLASSIFIED AREAS FOR THIS FACILITY – SEE 3/E2 FOR HAZARD LIMITS APPLIED TO THIS SITE. THE DESIGN RELATING TO THOSE AREAS MEETS OR EXCEEDS THE REQUIREMENTS OF NEC 500, 501 & 504.
8. PROVIDE CONDUIT & CABLE SEALS BELOW CONTROL PANEL.
9. INSTALL 3/4" UNDERGROUND CONDUIT (w/PULL CORD) BETWEEN EQUIPMENT RACK TO PERIMETER FENCE LINE. COORDINATE STUB–OUT POINT AT FENCE LINE WITH LOCAL PHONE SERVICE PROVIDER.
10. PROVIDE SIGNAGE INDICATING EXISTENCE OF THE "STANDBY" POWER SYSTEM AND WARNINGS FOR SHOCK HAZARD (OF "GROUNDING") PER NEC 702.7




1/E1 POWER RISER DIAGRAM
NOT TO SCALE (SEE NOTES 1 & 2)

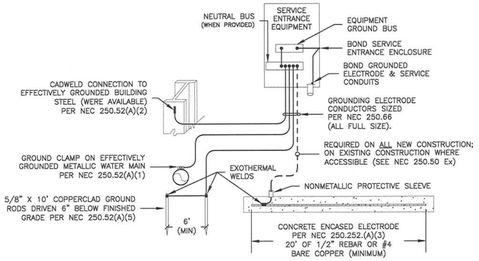
**SHORT CIRCUIT REQUIREMENTS:**

THE AMPERE INTERRUPTING RATING (AIR) OF ALL SERVICE EQUIPMENT AND PANELBOARDS SHALL BE NO LESS THAN 10,000 AMPS.

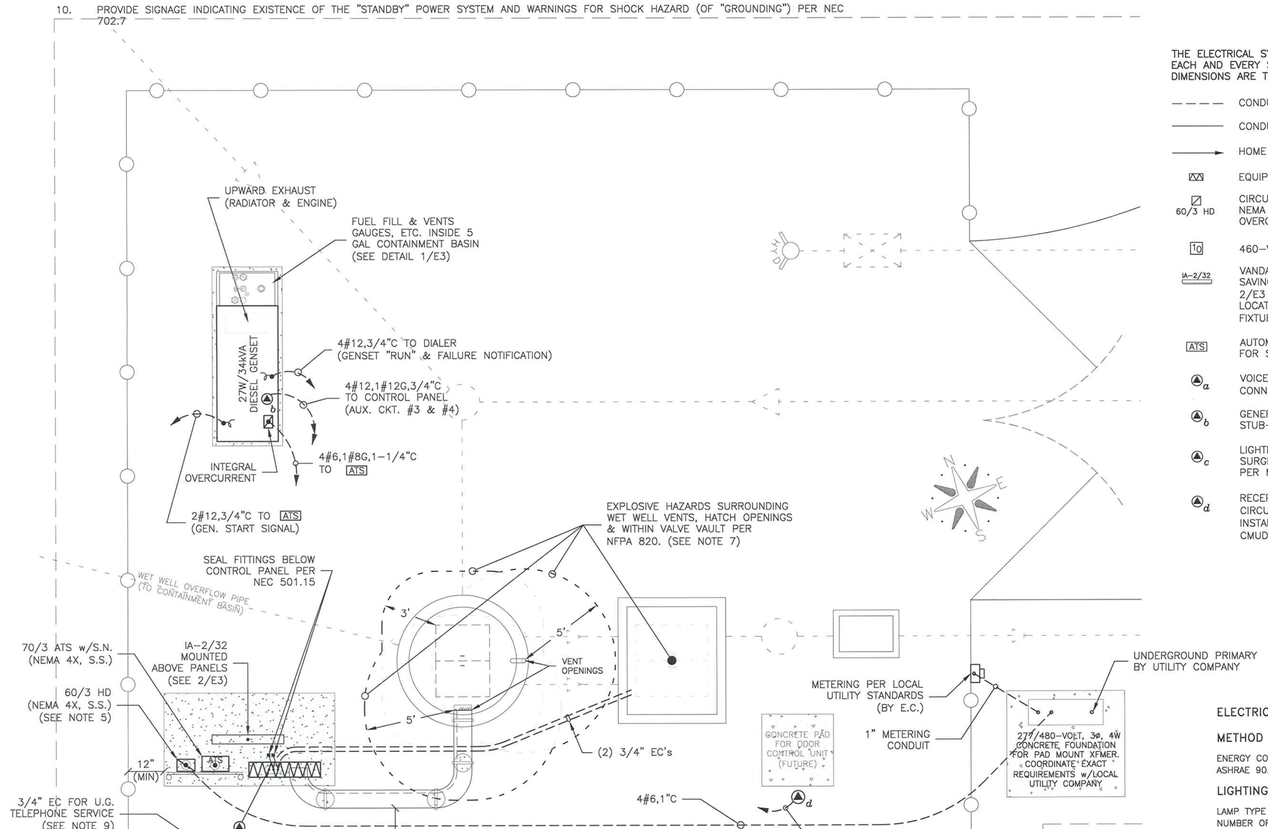
PANEL FEEDER CALCULATIONS @ 480V, 3ø:

| | |
|---|---|
| LIFT PUMP 10 HP | 14.0 FLA |
| LIFT PUMP 10 HP | 14.0 FLA |
| 1ø – 120 VOLT (5 kVA, #AB) | 10.4 FLA |
| TOTAL LOAD | 38.4 AMPS |
| LARGEST MOTOR FLA X 0.25 = | 3.5 AMPS |
| MIN WIRE SIZE AMPS | 41.9 AMPS |
| LARGEST MOTOR FLA X 1.25 = | 17.5 AMPS |
| MAXIMUM OVERCURRENT DEVICE | 59.4 AMPS |

SERVICE & FEEDER SIZED FOR 60 AMP




3/E1 GROUNDING DETAIL
NOT TO SCALE




2/E1 SITE PLAN – ELECTRICAL
1/4" = 1'–0" (SEE NOTES 1 & 2)

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ELECTRICAL SYMBOLS

THE ELECTRICAL SYMBOLS HEREINAFTER LISTED ARE A BASIC STANDARD FOR ALL PROJECTS AS APPLICABLE. EACH AND EVERY SYMBOL MAY NOT NECESSARILY APPEAR ON THE SPECIFIC PROJECT DRAWINGS. ALL DIMENSIONS ARE TO TOP OF THE OUTLET BOX UNLESS OTHERWISE NOTED.

- – – – – CONDUIT CONCEALED IN OR BELOW FLOOR, BELOW GRADE OR IN WALL, AS APPLICABLE.
- ——— CONDUIT EXPOSED ON SURFACE OF CEILING, OVERHEAD STRUCTURE OR WALL AS APPLICABLE.
- ——→ HOME RUN TO PANELBOARD, MOTOR CONTROL CENTER, OR SWITCHBOARD AS INDICATED.
- EQUIPMENT CONTROL PANEL, CABINET, OR MODULE AS APPLICABLE.
- 60/3 HD — CIRCUIT BREAKER. NUMERALS INDICATE AMPERE RATING, POLES, AND FRAME. PROVIDE WITH NEMA 4X, STAINLESS STEEL ENCLOSURE UNLESS INDICATED OTHERWISE. NOTE: GENERATOR OVERCURRENT DEVICE IS PROVIDED AS AN INTEGRAL COMPONENT OF THAT EQUIPMENT.
- 1o — 460–VOLT, THREE PHASE MOTOR, HORSEPOWER AS INDICATED.
- IA–2/32 — VANDAL RESISTANT, 4' VAPOR–TIGHT, LINEAR FLUORESCENT WITH TWO, 32–WATT, T8, ENERGY SAVING LAMPS AND ELECTRONIC BALLAST CAPABLE OF STARTING DOWN TO 0°F. SEE DETAIL 2/E3 FOR LOCATION, SEE 1/E1 & 1/E2 FOR WIRING. E.C. TO COORDINATE PRECISE LOCATION AND MOUNTING WITH CMUD AND PROVIDE WALL MOUNT BRACKETS AS NEEDED. FIXTURE SHALL BE EQUAL TO COOPER–FAILSAFE MODEL #FSPC–32A–LMV.
- ATS — AUTOMATIC TRANSFER SWITCH IN NEMA 4X STAINLESS STEEL ENCLOSURE. SEE DETAIL 1/E3 FOR SPECIFICATIONS.
- (a) — VOICE GRADE TELEPHONE SERVICE POINT (MOUNT TERMINAL BOX TO RACK). E.C. TO PROVIDE CONNECTION TO TELEPHONE DIALER (IN PANEL) AND WIRE COMPLETE.
- (b) — GENERATOR BLOCK HEATER/BATTERY CHARGER CONNECTIONS. E.C. TO VERIFY CONDUIT STUB–UP WITH GENERATOR MANUFACTURER AND WIRE COMPLETE.
- (c) — LIGHTNING ARRESTER AND CAPACITOR. PROVIDE DELTA #LA603 LIGHTNING ARRESTER & #CA603 SURGE CAPACITOR AND MOUNT BELOW SERVICE DISCONNECT ENCLOSURE. MAKE CONNECTION PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
- (d) — RECEPTACLE FOR ODOR CONTROL UNIT. PROVIDE NEMA 5–15R, DUPLEX OUTLET WITH GFCI CIRCUIT INTERRUPTER IN WEATHERPROOF BOX WITH GASKETED, EXTRA–DUTY, "IN–USE" COVER. INSTALL IN CAST METAL "FS" STYLE BOX AT LOCATION INDICATED (OR OTHER AS DIRECTED BY CMUD). AFTER LOCATION IS VERIFIED, E.C. SHALL INSTALL AND WIRE COMPLETE.

ELECTRICAL SYSTEM

METHOD OF COMPLIANCE:

ENERGY CODE: ☒ PRESCRIPTIVE ☐ PERFORMANCE
ASHRAE 90.1: ☐ PRESCRIPTIVE ☐ PERFORMANCE

LIGHTING SCHEDULE: (EACH FIXTURE TYPE) SEE FIXTURE SCHEDULE

LAMP TYPE REQUIRED IN FIXTURE — NUMBER OF BALLASTS IN FIXTURE
NUMBER OF LAMPS IN FIXTURE — TOTAL WATTAGE PER FIXTURE
BALLAST TYPE USED IN THE FIXTURE

TOTAL INTERIOR WATTAGE SPECIFIED = 0 TOTAL ALLOWED = N/A
TOTAL EXTERIOR WATTAGE SPECIFIED = 60 TOTAL ALLOWED = N/A

ADDITIONAL PRESCRIPTIVE COMPLIANCE:

☐ 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT
☐ 506.2.2 REDUCED LIGHTING POWER DENSITY
☐ 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS
☐ 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING
☐ 506.2.5 ON–SITE SUPPLY OF RENEWABLE ENERGY
☐ 506.2.3 AUTOMATIC DAYLIGHTING CONTROL SYSTEMS
☒ NOT APPLICABLE

GENERAL ELECTRICAL NOTES

THE WORK COVERED BY THIS CONTRACT CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, SUPPLIES, AND MATERIALS AND PERFORMING ALL OPERATIONS, INCLUDING TRENCHING, BACKFILLING, CUTTING, CHANNELING, CHASING AND PATCHING NECESSARY FOR THE INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE PLANS AND NOTES ON THE DRAWINGS.

ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE NATIONAL ELECTRIC CODE AND APPLICABLE LOCAL AND STATE CODES. SERVICE CONNECTIONS AND METERING SHALL BE IN ACCORDANCE WITH THE UTILITY HAVING JURISDICTION.

**ALL WIRING SHALL BE IN PVC COATED RIGID STEEL CONDUIT. MYERS PVC COATED HUBS SHALL BE USED AT ALL CONNECTION POINTS.**

THE CONDUIT AND THE NEUTRAL CONDUCTOR FOR THE WIRING SYSTEMS, AND ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED. ALL FEEDER AND BRANCH CIRCUIT CONDUITS SHALL CONTAIN A GREEN GROUNDING CONDUCTOR IN ADDITION TO THE CIRCUIT CONDUCTORS. THE GROUNDING SLOT IN ALL RECEPTACLES AND MOTOR FRAMES SHALL BE GROUNDED BY CONNECTION THROUGH A BONDED JUMPER TO THE OUTLET BOX OR CONDUIT AND GROUNDING CONDUCTOR.

**ALL CONDUCTORS, UNLESS OTHERWISE NOTED, SHALL BE TYPE THWN/THHN, COPPER RUN IN CONDUIT.** ALL CONDUCTORS SHALL BE STRANDED UNLESS OTHERWISE NOTED. CONDUCTORS IN FIXTURE CHANNELS SHALL BE TYPE THHN RATED 90 DEGREES C.

ALL EQUIPMENT, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE, SHALL BE FURNISHED WITH FACTORY APPLIED FINISHED COAT. ALL PRIME COATED EQUIPMENT SHALL BE TOUCHED UP WHERE SCRATCHED, CLEANED, AND LEFT READY FOR PAINTING.

THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTION EXCEPT AS OTHERWISE SPECIFICALLY NOTED. LOW VOLTAGE CONTROL WIRING FOR MECHANICAL EQUIPMENT IS INCLUDED IN THE MECHANICAL WORK. THE EXACT LOCATION OF STUB–UPS AND POINTS OF CONNECTION TO EQUIPMENT FURNISHED BY OTHER TRADES SHALL BE COORDINATED WITH THE TRADE FURNISHING THE EQUIPMENT BEFORE THE CONDUIT IS INSTALLED.

APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
9-12-14
DATE

K.M. ARMSTRONG ASSOC. INC.
1111 THE PLAZA
CHARLOTTE, NC 28205
704–366–1776
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| | |
|---|---|
| JOB NO. | 17713–00 |
| DATE | 9/16/13 |
| DRAWN | JMH |
| DESIGN | JMH |
| CHECKED | BLS |

NORTH CAROLINA PROFESSIONAL SEAL 16329 ENGINEER JAMES M. HENDERSON
3/6/14

| No. | Date | By | Revision |
|---|---|---|---|
| | | | |

CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

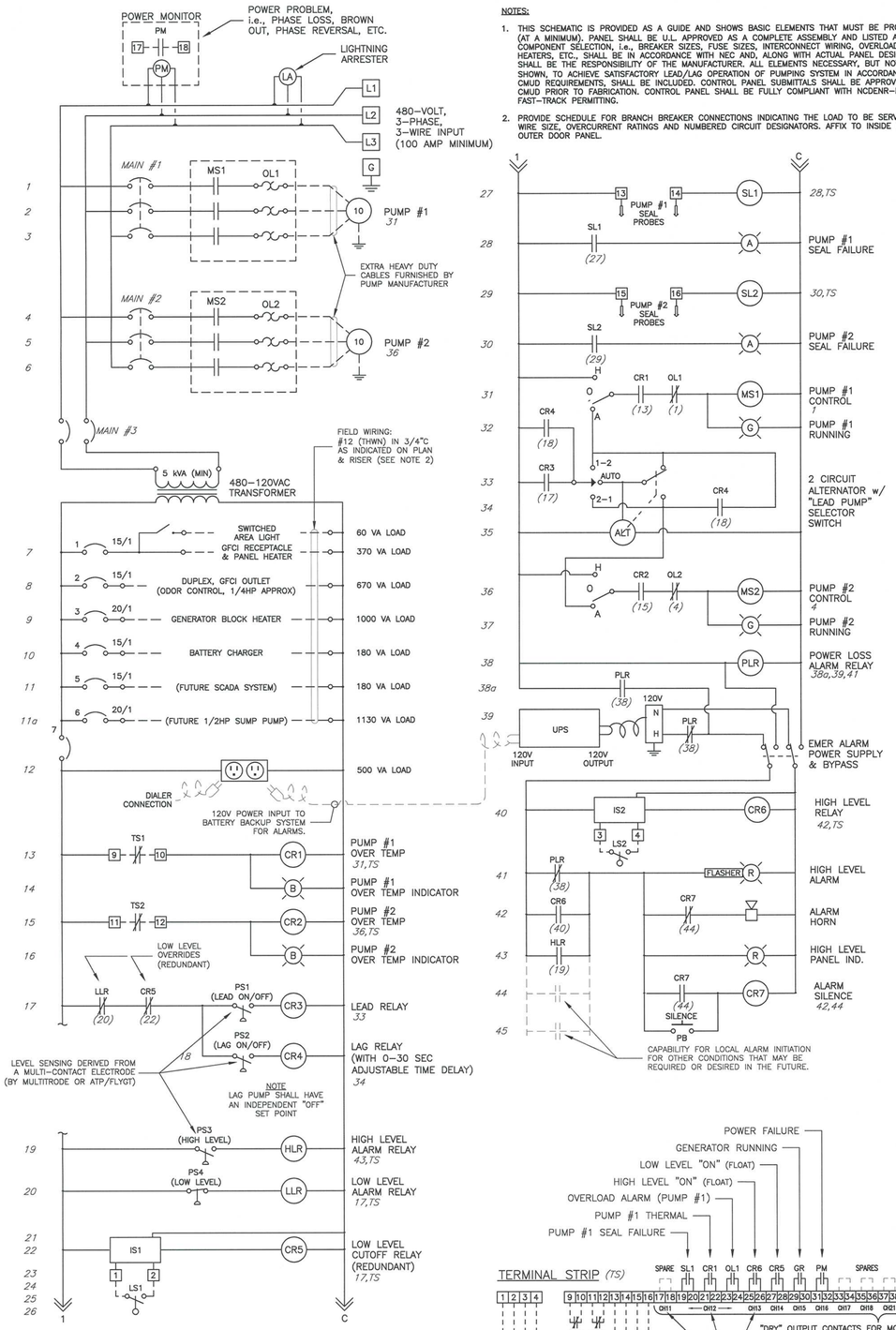
100–13–532 Job No. — File No.
Scales: PLAN AS NOTED; PROFILE AS NOTED
As Built — Date

PUMP STATION & FORCE MAIN TO SERVE: CHAPEL COVE PHASE 4
CRESCENT RESOURCES — CHARLOTTE, NC

PUMP STATION ELECTRICAL PLANS & DETAILS

| ESP | JMH | JMH | DES | RD MOODY | | Sheet E1 | Of 3 |
|---|---|---|---|---|---|---|---|
| Surveyed By | Designed By | Drawn By | Project–Engr | Approved By | Date | | |

7-3-14




NOTES:

1. THIS SCHEMATIC IS PROVIDED AS A GUIDE AND SHOWS BASIC ELEMENTS THAT MUST BE PROVIDED (AT A MINIMUM). PANEL SHALL BE U.L. APPROVED AS A COMPLETE ASSEMBLY AND LISTED AS SUCH. COMPONENT SELECTION, i.e., BREAKER SIZES, FUSE SIZES, INTERCONNECT WIRING, OVERLOAD HEATERS, ETC., SHALL BE IN ACCORDANCE WITH NEC AND, ALONG WITH ACTUAL PANEL DESIGN, SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. ALL ELEMENTS NECESSARY, BUT NOT SHOWN, TO ACHIEVE SATISFACTORY LEAD/LAG OPERATION OF PUMPING SYSTEM IN ACCORDANCE WITH CMUD REQUIREMENTS, SHALL BE INCLUDED. CONTROL PANEL SUBMITTALS SHALL BE APPROVED BY CMUD PRIOR TO FABRICATION. CONTROL PANEL SHALL BE FULLY COMPLIANT WITH NCDENR-MDR FOR FAST-TRACK PERMITTING.
2. PROVIDE SCHEDULE FOR BRANCH BREAKER CONNECTIONS INDICATING THE LOAD TO BE SERVED, WIRE SIZE, OVERCURRENT RATINGS AND NUMBERED CIRCUIT DESIGNATORS. AFFIX TO INSIDE OF OUTER DOOR PANEL.

DIAL-OUT NUMBERS:

| | |
|---|---|
| PHONE POSITION #1 | (704) 336-2733 |
| PHONE POSITION #2 | (704) 378-6633 |
| PHONE POSITION #3 | (704) 424-5754 |

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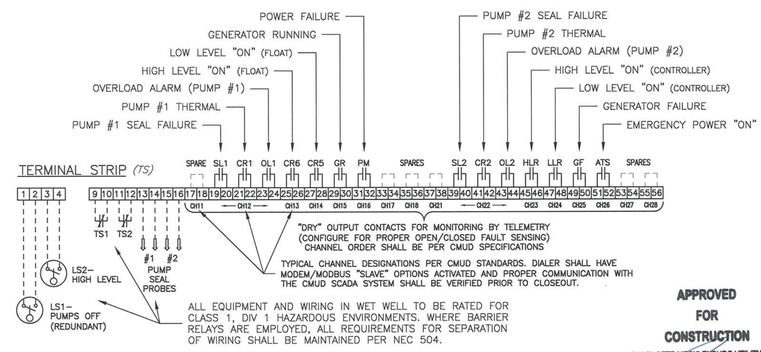
## 1 / E2 PUMP CONTROL SCHEMATIC

NOT TO SCALE (SEE NOTE 1)

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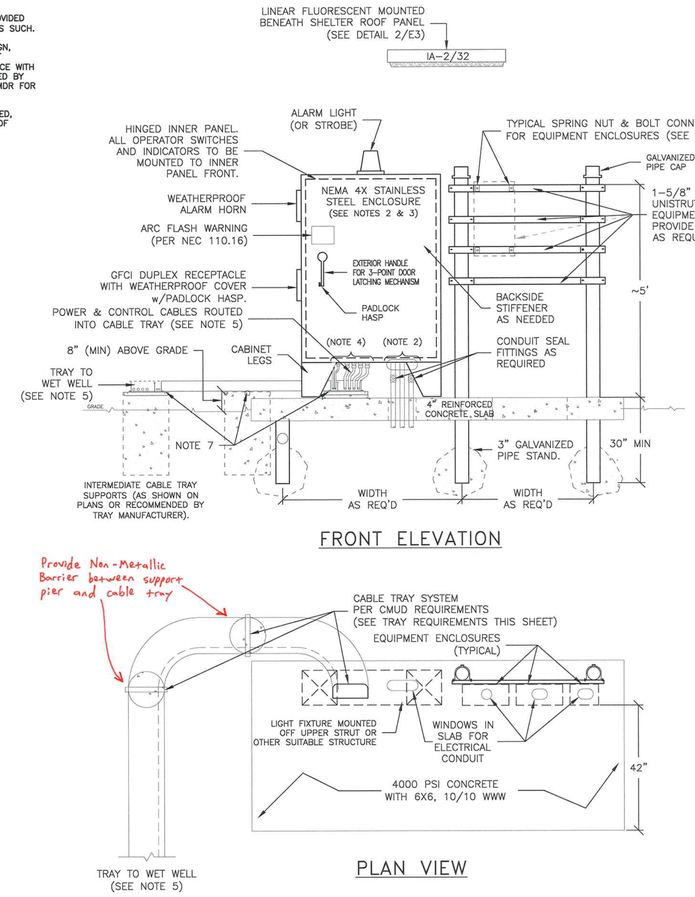
8-12-14
DATE



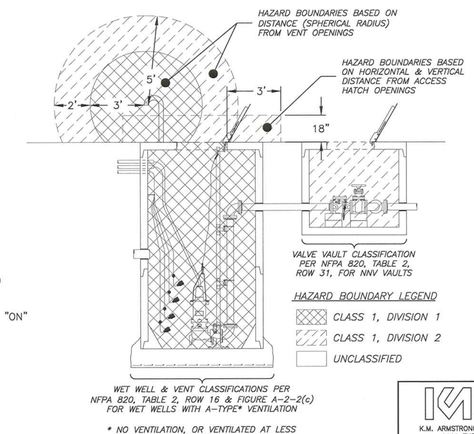

FRONT ELEVATION




PLAN VIEW

## 2 / E2 DETAIL – ELECTRICAL EQUIPMENT LAYOUT

NOT TO SCALE (SEE NOTE 1)




## 3 / E2 DETAIL – NFPA 820

NOT TO SCALE

**COLOR CODING:**
CONTROL WIRING SHALL HAVE CONTINUOUS, COLORED INSULATING JACKETS AS FOLLOWS.

* "NORMAL" POWERED CONTROL WIRING: POWERED (HOT) CONDUCTORS, "RED"; NEUTRAL (COMMON) CONDUCTORS "WHITE".
* "EMERGENCY" POWERED (UPS) CONTROL WIRING: POWERED (HOT) CONDUCTORS, "PURPLE"; NEUTRAL (COMMON) CONDUCTORS "WHITE".
* DIALER ALARM CONDUCTORS SHALL BE "YELLOW".

**NOTES (ELECTRICAL EQUIPMENT LAYOUT & CABLE TRAY INSTALLATION):**

1. EQUIPMENT LAYOUT DETAIL IS **NOT TO SCALE.** EQUIPMENT LOCATIONS AND (RELATIVE) SIZES ARE ESTIMATED. CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ACTUAL EQUIPMENT/SITE CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY.
2. ALL CONDUIT ATTACHMENTS SHALL BE MADE USING "MYERS" TYPE AND SHALL MAINTAIN NEMA 4X LISTING OF CONTROL ENCLOSURE.
3. ALL RACK MOUNTED ENCLOSURES SHALL BE INSTALLED USING FACTORY DRILLED HOLES, MOUNTING LUGS OR BUSHINGS. PENETRATIONS OF ANY NEMA/U.L. LISTED ENCLOSURE (CONDUITS, MOUNTING HARDWARE, OR PHYSICAL ATTACHMENTS) SHALL NOT DEGRADE THAT ORIGINAL LISTING.
4. ALL CABLE TERMINATIONS SHALL BE PROPERLY SEALED IN ACCORDANCE WITH NEC 501.5(D)(1). PROVIDE CLASS 1 TYPE CABLE SEAL FITTINGS AT CONTROL PANEL FOR EACH CABLE SERVING WET WELL EQUIPMENT.
5. CABLES WITHIN CABLE TRAY SHALL BE OF A TYPE APPROVED FOR EXTRA-HARD USAGE AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC 501.11. CABLES SHALL RUN CONTINUOUSLY FROM WET WELL UTILIZATION EQUIPMENT (i.e., BOTH CLASSIFIED & INTRINSICALLY ITEMS) TO INSIDE THE CONTROL PANEL. ADDITIONAL, OR INTERMEDIATE, CABLE SEALS SHOULD NOT BE NECESSARY.
6. DUE TO INCREASED SIZE & WEIGHT ISSUES FOR MANY AUTOMATIC TRANSFER SWITCHES, CMUD MAY REQUIRE THIS EQUIPMENT TO BE SELF-SUPPORTING (FREESTANDING) OR PROVIDED WITH AN INDEPENDENT SUPPORT RACK THAT's ISOLATED AND APART FROM THE SHELTER STRUCTURE. COORDINATE INSTALLATION REQUIREMENTS WITH CMUD.
7. ALL CABLE TRAY SUPPORTS SHALL BE FITTED WITH A NYLON EXPANSION PAD AND SECURED USING EXPANSION GUIDE CLAMPS. CABLE TRAY SHALL NEVER BE INSTALLED IN DIRECT CONTACT WITH CONCRETE.

## CABLE TRAY REQUIREMENTS:

(A) CABLE TRAY SYSTEM SHALL BE MANUFACTURED BY B-LINE, CHALFANT, MP HUSKY, THOMAS & BETTS OR APPROVED EQUAL.

(B) ALL COMPONENTS SHALL MEET NEC AND STATE BUILDING CODE REQUIREMENTS.

(C) CABLE TRAY AND COVER SHALL BE CONSTRUCTED OF TYPE 6063-T6 ALUMINUM ALLOY.

(D) CABLE TRAY SHALL CONSIST OF A VENTILATED TROUGH TRAY WITH A VENTILATED FLANGE TYPE COVER.

(E) CABLE TRAY SYSTEM SHALL BE HEAVY DUTY TYPE, RATED FOR OUTDOOR USE.

(F) THE MINIMUM CABLE TRAY WIDTH SHALL BE 12"; MINIMUM TRAY HEIGHT SHALL BE 4".

(G) CABLE TRAY SHALL BE INSTALLED LEVEL. WHENEVER POSSIBLE, HEIGHT ADJUSTMENTS BETWEEN WET WELL AND CONTROL PANEL SHALL BE MADE USING STANDARD, FACTORY ASSEMBLED, INSIDE AND OUTSIDE VERTICAL BENDS. WITH PRIOR APPROVAL (BY CMUD), NONSTANDARD OFFSETS MAY BE ACHIEVED USING ADJUSTABLE (HINGED) SPLICE PLATES ALONG WITH A SHORT, SLOPING TRAY SECTION.

(H) LOAD RATING REQUIREMENTS SHALL BE BASED ON SUPPORT SPAN AND LOAD RATINGS EXPECTED (INCLUDING CABLE WEIGHT PLUS 250 LBS.) AT A MINIMUM LOAD CAPABILITY SHALL BE 400 LBS AT A SPAN OF 6'. VERTICAL DEFLECTION BETWEEN SPAN SUPPORTS SHALL NOT EXCEED 1/200TH OF SPAN LENGTH. (LESS THAN 3/8" FOR A 6' SPAN).

(I) ALL HORIZONTAL BENDS SHALL BE FACTORY ASSEMBLED; NO FIELD MODIFICATIONS WILL BE ALLOWED.

(J) HEAVY DUTY COVER CLAMPS SHALL BE INSTALLED EVERY THREE FEET. THERE SHALL BE A MINIMUM OF TWO COVER CLAMPS FOR EACH COVER SECTION, INCLUDING HORIZONTAL BENDS.

(K) A 4" RADIUS DROP OUT SHALL BE PROVIDED AT THE ENTRANCE TO THE WET WELL TO PROVIDE CABLE PROTECTION. AT THIS POINT, THE CABLE TRAY TOP AND SIDES SHALL BE EXTENDED OVER THE OPENING IN THE WET WELL AND TERMINATED WITH A BLIND END PLATE.

(L) STRAIN RELIEF DEVICES (STAINLESS STEEL, WIRE MESH CORD GRIPS) SHALL BE USED WHERE CABLES ENTER THE WET WELL.

(M) CABLE TRAY SECTION BELOW CONTROL PANEL SHALL BE TERMINATED USING A BLIND END PLATE. TRAY COVER BELOW CONTROL PANEL SHALL HAVE BUSHED OPENING (3-SIDED) CONTROL CABLE DROP-IN. CONTRACTOR SHALL MAINTAIN ADEQUATE SEPARATION OF INTRINSICALLY SAFE CABLES IN ACCORDANCE WITH NEC 504.

(N) CORD GRIP CONNECTORS SHALL BE USED WHERE CABLES ENTER THE CONTROL PANEL. CONNECTORS SHALL NOT DEGRADE U.L. LISTING OR NEMA RATING (4X) OF ENCLOSURE.

(O) A FULL HEIGHT BARRIER STRIP, CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY, SHALL BE INSTALLED OVER THE FULL LENGTH OF TRAY SYSTEM TO PROVIDE A 2" TRAY SECTION THAT IS EFFECTIVELY SEPARATED FROM THE 10" POWER WIRING SECTION. ALL INTRINSICALLY SAFE CONTROL CABLES SHALL BE ROUTED IN THIS SECTION.

(P) NYLON EXPANSION PADS AT SUPPORTS, AND EXPANSION SPLICE PLATES AT SECTION JOINTS, SHALL BE UTILIZED TO ALLEVIATE MECHANICAL STRESSES DUE TO THERMAL EXPANSION OR INTERMITTENT LOADING.

(Q) TRAY SYSTEM SHALL BE ELEVATED 8" ABOVE FINISHED GRADE ON CYLINDRICAL OR RECTANGULAR REINFORCED CONCRETE PIERS WITH 1-5/8", 316 STAINLESS STEEL CHANNEL GROUTED INTO SUPPORT PIER. TRAY SHALL GBE ATTACHED USING RESILIENT MOUNTS (GUIDE CLAMPS).

(R) UNLESS INDICATED OTHERWISE, THE CABLE TRAY SYSTEM SHALL BE ROUTED ALONG THE FENCE LINE IN AREAS THAT WILL NOT HINDER STATION ACCESS OR MAINTENANCE OPERATIONS. TRAY SYSTEM SHALL BE INSTALLED NO CLOSER THAN 12" FROM FENCING.

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| JOB NO. | 17713-00 |
| DATE | 9/16/13 |
| DRAWN | JMH |
| DESIGN | JMH |
| CHECKED | BLS |

NORTH CAROLINA PROFESSIONAL SEAL 16329 ENGINEER JAMES M. HENDERSON
3/6/14

| No. | Date | By | Revision |
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# CHARLOTTE MECKLENBURG UTILITY DEPARTMENT

ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4

CRESCENT RESOURCES — CHARLOTTE, NC

PUMP STATION
ELECTRICAL CONTROLS

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| 100-13-532 | Job No. |
| File No. | |
| Scales | |
| PLAN | AS NOTED |
| PROFILE | AS NOTED |
| As Built | Date |

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| Surveyed By | Designed By | Drawn By | Project-Engr | Approved By | Date | | |

7-31-14

**I. OPTIONAL STANDBY (NEC 702) POWER SYSTEMS:** The Contractor shall furnish, install and connect an automatic starting diesel engine driven generator set, complete, as hereinafter specified. The system shall be provided complete with all necessary automatic starting equipment, transfer switch, fuel tank, supply and return fuel oil piping, exhaust system/silencer, generator output circuit breaker, and all other necessary appurtenances for complete and operable system. Standby power system shall be UL2200 listed & labeled. Generator shall be EPA Certified to the proper Tier Level based on unit's manufacture and installation dates.

**II. PRODUCTS:**

**A. Engine Generator Set:** The Generator, consisting of a performance matched diesel engine and electrical alternator, (see engine & alternator below) shall be the product of an established diesel generator manufacturer.

1. The distributor must be authorized to perform warranty work on both the engine and generator. The distributor shall have factory-trained service personnel under their direct employ.

2. Supplier must have no less than sixty percent of all generator replacement parts in his stock at all times. Certified proof of this requirement shall be available from the distributor

3. Generator capacity shall be sufficient to power all connected loads. Size shall be based on a 2-step generator loading sequence; Step #1 = "lead" pump & all appurtenances, Step #2 = "lag" pump. Acceptable performance under installed conditions shall be as follows:

a) Starting voltage dip shall not exceed 25%
b) Frequency dip of less than 10%.

4. Generator set capacity shall not be less than 30% of fully loaded pump station facility.

5. The complete operating system, including engine generator set, accessories, and transfer switch, shall be furnished to the Contractor by one vendor as a single, complete package to assure system responsibility and that vendor shall be the local factory authorized distributor of the engine company.

6. Generator shall be furnished in weatherproof enclosure. Batteries shall be provided with a separate enclosure and be located adjacent to the generator.

7. Generator shall be equipped with an NFPA 110, 12-light monitor and meter package as indicated below:

a) AC volt/ammeters w/phase selector switch.
b) Dual scale frequency/tachometer
c) A/C rheostat with ±5% output voltage adjustment.
d) Light indicators w/alarm contacts as follows:

(1) Generator run (green)
(2) Low oil pressure alert (yellow)
(3) High coolant temp alert (yellow)
(4) Low oil pressure alarm (red)
(5) High coolant temp alarm (red)
(6) Overcrank shutdown (red)
(7) Overspeed shutdown (red)
(8) Switch Off, Auto-start mode off (flashing red)
(9) Low coolant temp (yellow)
(10) Low fuel (yellow)
(11) (2) Auxiliary fault indicators (red lights)
(a) Fuel leak detection
(b) Unused spare indication.

**B. Engine:** The engine shall be the product of an established American diesel engine Manufacturer and shall be a model that has been manufactured and successfully operated for a period to sufficiently establish its reliability.

1. The engine shall be of the four-cycle type, multi-cylinder, and capable of starting solely on No. 2 diesel fuel. The engine shall develop its respective rated horsepower at 1800 rpm. Rating shall be in accordance with the requirements of the Diesel Engine Manufacturer's Association of 85-degrees and elevation of 1500-feet.

2. Maximum or gross engine horsepower to produce standby generator kW ratings is unacceptable. Minimum engine horsepower at 1800 rpm will be determined by the formula below:

$$HP = [kW \div (EFF \times 0.746)] + RF + ACC + MF$$

Where,

HP = Minimum Engine Horsepower
kW = Generator Rating in Kilowatts
EFF = Gen-Set Efficiency
RF = Radiator Fan Horsepower
ACC = Accessory Horsepower
MF = Manufacturing Tolerance

3. The engine shall be equipped with a 12 or 24-volt electrical starting system capable of starting cold on No. 2 diesel fuel. Engine shall automatically start on power failure and transfer to standby power and retransfer to normal power upon auxiliaries recommended by the Manufacturer for proper, sure, quick starting of the engine including insulated glow plugs as a cold weather starting aid.

4. Engine shall be liquid cooled via fin-tube radiator and engine driven blower fan. Radiator shall dissipate full load engine heat at a 110-degree F ambient temperature using a 50% ethylene glycol solution. Radiator top tank temperature shall not exceed 205°F.

5. Engine shall be equipped with an adjustable isochronous type electronic governor with stalled work capacity 50% greater than required. Governor shall be furnished by engine manufacturer.

6. Combustion exhaust shall be routed via a critical or hospital grade silencer and, where discharge is vertical, terminated with a hinged rain cap. Silencer's furnished integrally with a sound attenuating weather housing are equally acceptable.

**C. Alternator:** Alternator shall be the product of an established generator manufacturer and shall be a model that has been manufactured and successfully operated for a period to sufficiently establish its reliability.

1. Design shall be revolving field, single bearing, 4-pole, brushless, drip-proof construction. Temperature rise shall be no greater than 130°C at rated output.

2. Alternator shall be a reconnectable, 12-lead type, wired and bonded (at factory) into the integral overcurrent device on side of alternator (inside weather enclosure). Neutral bonding (by factory) shall comply with NEC 250.35(B) for a Nonseparately Derived System.

3. A Permanent Magnet Generator (PMG) shall be included to provide a reliable source of excitation power for optimum motor starting and short circuit performance, except that shunt excited alternators may be used on units 30kW & smaller..

**D. Batteries & Charger:** Heavy-Duty lead-acid batteries shall be provided with generator and mounted within a separate weather enclosure. Charger shall be mounted in generator enclosure and access, for DC cables, through the battery and generator enclosures shall be provided routing the DC cables.

1. 12 or 24-volt battery system shall be provided to match engine cranking system. Capacity shall be for at least three cranking cycles (each cycle consisting of three 10-second cranks with five-second rest period between each crank), total cranking time of 160 seconds.

2. An automatic "float" type battery charger shall be provided to maintain the batteries at normal capacity and to recharge batteries after cranking.

a) The charger shall have fused 120-volt input with fused 12 or 24-volt outputs.
b) The charger shall have output ammeter/voltmeter displays.
b) Regulated DC output shall be isolated from A.C. input.
c) Unit shall be capable of recharging a completely discharged battery in eight hours or less.
d) The charger shall be U.L. listed and labeled.


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**E. Weatherproof Noise Attenuating Housing:** A weather enclosure with noise attenuation features shall be furnished to limit the combined engine & exhaust noises produced by the generator. All generator installations shall limit noise to 75 dBA (average readings taken at 8 positions, measured 23' (7m) from unit centerline in a free field environment). Enclosure shall be painted steel and listed as Nema 3R (or equivalent).

**F. Automatic transfer switch (ATS):** ATS shall be enclosed contactor type unit having an "Open Transition" type transfer operation. Unit shall be continuous rated for all load types and furnished with all necessary contacts, relays and accessories required for proper operation. Transfer switches utilizing molded case or insulated case circuit breakers shall not be acceptable.

1. ATS enclosure shall be weather/corrosion resistant stainless steel with UL-3R (or NEMA 4X) listing.

2. ATS control shall be such that the engine shall continue to run for five minutes after retransfer to normal power and then shut down.

3. Auxiliary control and status contacts shall be furnished for generator starting, shutdown & off-site monitoring.

4. ATS shall be furnished with 7-day exerciser clock for unattended exercising of engine.

**G. Sub-Base Fuel Storage Tank:** Fuel storage having a "State Code" configuration shall be provided with the fuel capacity indicated on drawings. Tanks shall be double-wall construction to provide secondary containment of fuel in the event of a weld, seam or other failure in the storage sections of the tank. Tank shall extend beyond the motor end of the generator enclosure to accommodate a covered fueling area with spill basin. Spill basin shall have a 5 gallon capacity with a 95% shutoff float and high fuel level switch. The secondary containment shall provide at least 10% of the storage tanks capacity. Tank capacity shall be of sufficient to provide no less than 24 hours of operation at the generator's full rated load. All materials shall be new and rust free and shall meet ASTMA36 Standards. On smaller units, sub-base type tanks are permitted if no generator controls, meters or breaker handles will be more than 6' above finished grade. For larger generators, a platform type tank shall be furnished providing a non-skid standing surface (18" minimum width) around the perimeter of the generator's weather housing.

1. Tank design shall incorporate structural steel channels or I-beam side rails common to both the fuel tank and the secondary confinement. Top and bottom of both the fuel tank and secondary confinement sections shall be 10-gauge minimum sheet steel. Secondary confinement section of tank shall have a minimum depth of three inches.

a) All internal cross members shall be sized to support the specified generator and all necessary appurtenances. Cross members shall be designed to allow free and equal flow of fuel through the storage tank and the secondary confinement section.
b) Provide a minimum of four lifting-eyes sized to lift the entire assembly.
c) A "stub-up" sleeve shall be provided through both the main fuel tank and secondary confinement section. Sleeve shall be 12-inches square and shall not compromise the secondary containment criteria. Sleeve shall be located below the output circuit breaker and generator control panel.

2. Construction of the tank shall be in two steps. The fuel tank section shall be constructed, deburred and pressure tested. The secondary containment section then shall be constructed, deburred and pressure tested.

a) Pressure tests shall be at 10 PSI minimum. Any defects shall be repaired and retested.
b) All welds shall be continuous MIG or dual shield type.

3. The tank shall be equipped with the following fittings and appurtenances:

a) 2-inch N.P.T. manual fill pipe with cap located within fuel fill spill basin.
b) Mechanical fuel level sight located to allow monitoring during filling and to prevent over filling.
c) Fuel supply and return fittings. Flexible fuel lines shall be provided between tank and engine.
d) 3/4-inch N.P.T. vents with screened mushroom caps shall be provided for fuel storage and secondary containment sections of the tank. Fuel storage vent be piped in at 12' above grade atop a galvanized pipe unless specifically directed (by CMUD) to do otherwise.
e) A leak detection device mounted in the secondary containment section of the tank with dry contacts for annunciation at the engine panel shall be provided.
f) Provide low fuel alarm contacts to indicate at the engine panel when there is only three hours fuel remaining in the tank.
g) A 5-gallon, fuel fill spill containment basin with 95% shutoff & high fuel level switch.

**III. EXECUTION:**

**A. Shop Drawings, Manuals & Submittals:** Drawings, details, and instructions necessary for installation of the generating unit and accessories shall be submitted prior to the purchase of any equipment. Such documents shall indicate compliance with 30% voltage dip and 10% frequency dip maximums for loads served. The Contractor shall furnish operating and maintenance instructions and manuals.

**B. Personnel instructions:** Provisions shall be made for instruction of Owner's operating personnel during the construction period, and a concentrated instruction course during the final check and acceptance test stages.

**C. Field tests:** The engine generator sets shall first be broken in, in accordance with the recommendations of the Engine Manufacturer, and all safeties checked. After this the set shall be run two hours at 75% rated load, and then immediately after by two hours at 100% rated load. Voltage performance shall be verified. Any problems or deficiencies found shall be corrected and test repeated until satisfactory. All required instrumentation for testing shall be provided.

**D. Fuel:** Upon installation of the tank, the Electrical Contractor shall fill the tank with diesel fuel and refill the tank at completion of testing and operation just prior to acceptance of the Project.

**IV. GUARANTEE AND SERVICE:**

**A. Guarantee:** All equipment and wiring shall be guaranteed against defects in materials and workmanship for a one year period from the start up and beneficial use of the system.

**B. Service:** The Manufacturer's factory trained service representatives shall perform all service.

1. Warranty service for the equipment will be performed during normal working hours, (Monday through Friday, 8:00 a.m. to 5:00 p.m., excluding holidays). Emergency service provided at times other than stipulated above shall be provided from the same source at additional cost to the Owner.

2. The Manufacturer shall have a service facility within a reasonable distance to the Project with effective dispatching to assure a maximum two-hour response to the Owner's request for service. The Manufacturer shall demonstrate this capability to the Owner and shall provide this minimum response under all reasonable circumstances.

3. Upon satisfactory completion of all tests the Manufacturer's representative shall present to the Owner a proposal to provide semi annual inspection, service and testing of the system.

DIESEL GENERATOR SET:
KOHLER MODEL #20REOZJC (OR EQUAL):
130°C, 12-LEAD, PMG EXCITED ALTERNATOR (KOHLER #4P4), 2.4 LITER, 4-CYLINDAR, TURBOCHARGED DIESEL ENGINE (JOHN DEERE #4024TF281D) IN SOUND ATTENUATING ENCLOSURE ON 24-HOUR (MINIMUM), DOUBLE-WALL FUEL TANK PER SPECIFICATIONS.

AUTOMATIC TRANSFER SWITCH:
70-AMP, 3-POLE, 4-WIRE AUTO TRANSFER SWITCH IN NEMA 4X STAINLESS STEEL ENCLOSURE KOHLER #KSS-DMTF-0070S

ALL GENERATORS, REGARDLESS OF MANUFACTURER, SHALL START & OPERATE ALL CONNECTED LOADS (TOTAL LOAD ASSUMED IN 2 STEPS OR LESS) WITH NO GREATER THAN 25% VOLTAGE* OR 10% FREQUENCY DIP.

| kW/kVA RATING | VOLTAGE | APPROX. DIMENSIONS | | |
|---|---|---|---|---|
| | | LENGTH | WIDTH | HEIGHT* |
| 27/34 | 277/480 | 114" | 41" | ~72" |

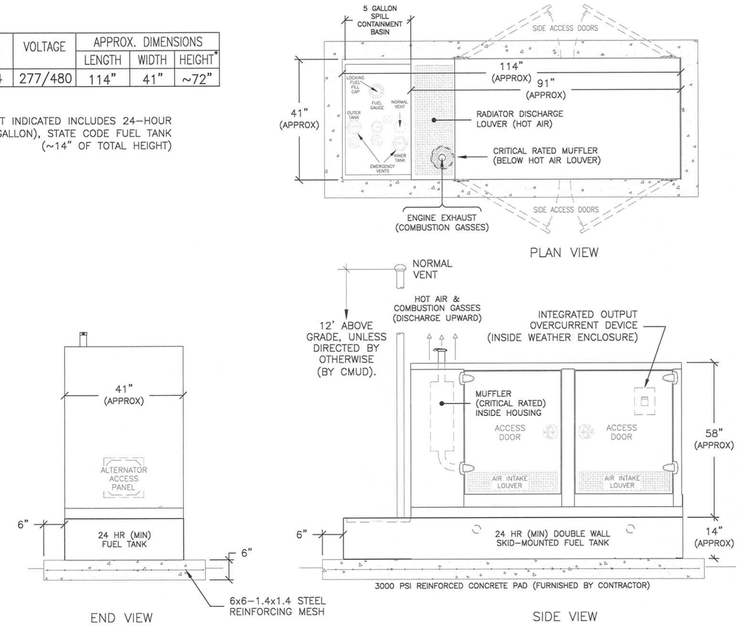
* HEIGHT INDICATED INCLUDES 24-HOUR (116 GALLON), STATE CODE FUEL TANK (~14" OF TOTAL HEIGHT)

GENSET RUN TIME (BASED ON 116* GALLON)

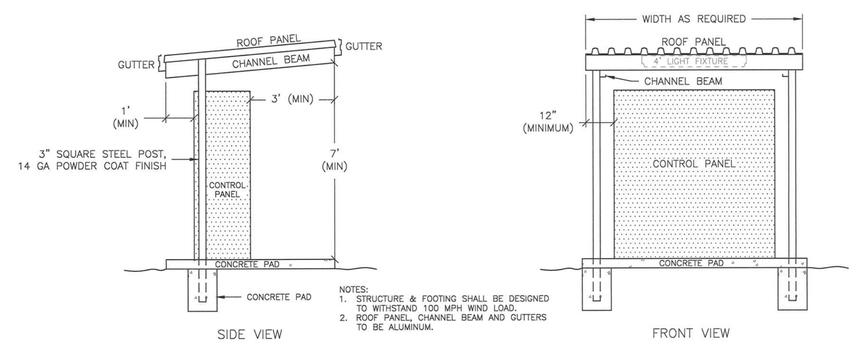
| | |
|---|---|
| GENERATOR AT FULL RATED CAPACITY (1.9 GPH) | 61 HOURS |
| GENERATOR AT 78% (1.55 GPH)▲ | 74 HOURS |
| GENERATOR AT 75% (1.5 GPH) | 77 HOURS |
| GENERATOR AT 50% (1.0 GPH) | 116 HOURS |
| GENERATOR AT 25% (0.6 GPH) | 96 HOURS |

▲ PERCENTAGE OF RATED CAPACITY REQUIRED TO POWER TOTAL CONNECTED LOAD; FUEL CONSUMPTION INTERPOLATED.

* 116 GALLON TANK CAPACITY AND RUN TIMES ARE ONLY INTENDED TO SHOW THE RUN TIMES EXPECTED IF THE RECOMMENDED KOHLER UNIT ALONG WITH THE STANDARD MINIMUM CAPACITY AVAILABLE IN THE "STATE CODE" CONFIGURATION. ACTUAL CAPACITY REQUIREMENT IS 24 HOURS AS INDICATED IN SPECIFICATIONS.




1 / E3 GENERATOR & TANK DETAIL
NOT TO SCALE (w/"STATE CODE" STYLE TANK)




NOTES:
1. STRUCTURE & FOOTING SHALL BE DESIGNED TO WITHSTAND 100 MPH WIND LOAD.
2. ROOF PANEL, CHANNEL BEAM AND GUTTERS TO BE ALUMINUM.

2 / E3 DETAIL – CONTROL PANEL SHELTER
NOT TO SCALE

APPROVED FOR CONSTRUCTION
CHARLOTTE-MECKLENBURG UTILITY DEPT.
8-12-14
DATE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| JOB NO. | 17713-00 |
| DATE | 9/16/13 |
| DRAWN | JMH |
| DESIGN | JMH |
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NORTH CAROLINA PROFESSIONAL SEAL 16329 ENGINEER JAMES M. HENDERSON
3/6/14

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CHARLOTTE MECKLENBURG UTILITY DEPARTMENT
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

100-13-532 Job No. / File No.
Scales: PLAN AS NOTED; PROFILE AS NOTED
As Built / Date

PUMP STATION & FORCE MAIN TO SERVE:
CHAPEL COVE PHASE 4
CRESCENT RESOURCES — CHARLOTTE, NC

PUMP STATION
DIESEL GENERATOR DETAILS & SPECIFICATIONS

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