UTILITIES COMMISSION,
CITY OF NEW SMYRNA BEACH, FLORIDA
SMYRNA 115KV-23KV SUBSTATION EXPANSION

ITB #08-19

VICTINITY MAP

Prepared By:

VOLUSIA COUNTY LOCATION MAP

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SMYRNA SUBSTATION EXPANSION

COVER SHEET, LOCATION MAP AND VICINITY MAP

Sheet 1 of 1
<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>FILE NAME</th>
<th>SHEET DESCRIPTION</th>
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<tbody>
<tr>
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<td>a1</td>
<td>SMYRNA SUBSTATION EXPANSION</td>
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</tbody>
</table>

**ISSUED FOR BID NOT FOR CONSTRUCTION**
20' ROCK DRIVEWAY
SEE TYPICAL SECTION FOR GEOGRID AND GEOTEXTILE ROCK YARD

SLOPE VARIES 0.02 FT. PER FT. SLOPE

GEOGRID STABILIZED ROCK ROAD

95 L.F. OF 18" CLASS 5 (V) RCP

SMYRNA SUBSTATION EXPANSION

MIRAFI 140-N GEOTEXTILE FABRIC ABOVE COMPACTED EARTH AND BELOW TENSAR TRIAX LAYER TENSAR TRIAX ABOVE MIRAFI 140-N SINGLE LAYER TENSAR TX-140 OVERLAPPED BY ONE FOOT ALONG EACH EDGE OF 13' WIDE ROLLS

4" MIN. TO 5" MAX. (TYP) LAYER NUMBER 5 SIZE STONE PLACED IN 4" CELLULAR CONFINEMENT

12 INCH LAYER TO CONTAIN A WELL DRAINING A-3 SAND CONTAINING LESS THAN 5% FINES. COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.

CLEAR TREES AND BRUSH AND REMOVE FROM SITE. CLEAR AND GRUB TO REMOVE STUMPS AND ROOTS TO 24" DEPTH. STRIP 12" OF TOP SOIL AND REMOVE FROM SITE. BACKFILL WITH A-3 SAND AND COMPACT TO 95% DENSITY PER ASTM D-1557.

WHERE ROCK YARD MEETS SODDED AREAS, WRAP MIRAFI 140 N UP BETWEEN THE ROCK AND SOD TO PROVIDE A BARRIER BETWEEN ROCK AND SOD. THIS WILL PREVENT RAINFALL RUNOFF FROM FLOWING DOWN THROUGH THE ROCK, ALONG THE TOP OF MIRAFI, AND UNDERNEATH THE FIRST PIECE OF SOD.

TYPICAL SECTION FOR CELLULAR CONFINEMENT GEOGRID AND GEOTEXTILE, ROCK DRIVEWAYS AND Access ROAD

TYPICAL SECTION FOR GEOGRID AND GEOTEXTILE, ROCK YARD

PERMITTING PLANS

SMYRNA SUBSTATION EXPANSION

SHIELD CROSS SECTIONS & DETAILS

FRANK W. WILSON III, PE
License No. 51577
Engineer of Record:
Fred Wilson & Associates, Inc.
Consulting Engineers
3970 Hendricks Avenue, Jacksonville, FL 32207
Certificate of Authorization No. 7188

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PERMITTING PLANS

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This item has been digitally signed and sealed by:

PRINTED NAME

FRANK W. WILSON III

LICENSE NO.

51577

CERTIFICATE OF AUTHORIZATION NO.

7188

This item has been electronically signed and sealed by:

DATE: [Blank]

No. [Blank]

P R O F E S S I O N A L E N G I N E E R I N G

The undersigned hereby certifies that the plans and specifications submitted herewith are true and correct, to the best of my knowledge and belief, and that I am duly qualified to make the same. I hereby certify that I am responsible for all work contained within this submittal, and that it is the result of my own work and labor, except for those portions for which the specifications contemplate the use of work performed by others.

My Signature

Associate Engineer

Date

[Signature]

[Position]

[Company]

[Address]
SMYRNA SUBSTATION EXPANSION

LEVEL SPREADER

TEMPORARY DIVERSION DIKE

SEEDING MIXTURES, RATES AND DATES

<table>
<thead>
<tr>
<th>Size</th>
<th>Conditions</th>
<th>Seed Mixtures</th>
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<td>High Maintenance Lengths</td>
<td>General</td>
<td>1. Bahiagrass</td>
<td>45-60 lb</td>
<td>1 b</td>
<td>21S5-91</td>
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<tr>
<td></td>
<td></td>
<td>2. Bahiagrass</td>
<td>45-60 lb</td>
<td>1 b</td>
<td>21S5-91</td>
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<tr>
<td></td>
<td>Use</td>
<td>3. Bahiagrass with one of the following:</td>
<td>0-12 lbs</td>
<td>4 oz</td>
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<td></td>
<td></td>
<td>1. Southern White Clover</td>
<td>3 lbs</td>
<td>1.2 oz</td>
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<td></td>
<td></td>
<td>2. Annual White Sweetclover</td>
<td>3 lbs</td>
<td>3 oz</td>
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<td>3. Cleaver Clover</td>
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<td></td>
<td>4. Alkaligrass</td>
<td>3 lbs</td>
<td>3 oz</td>
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<td></td>
<td>5. Holy Bolgo</td>
<td>4 lbs</td>
<td>1.5 oz</td>
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<tr>
<td></td>
<td></td>
<td>6. Asystelena</td>
<td>12 lbs</td>
<td>4.5 oz</td>
<td>21S5-91</td>
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Shrubs

1. Sericea Leptophylla | 0-4 lb |

Dry Areas

1. Weeping Lovegrass with one of the following:
   - a. Bahiagrass (50% scarified seed) | 5 lbs |
   - b. Bermudagrass (tubed) | 3-5 lbs |
   - c. Hair grass | 0-12 lbs |

Usual mixtures of the above plant materials are better than a single plant alone. Each of these seed mixes above can be grown mixture with normal proportions and the proper combination of the recommended planting rates. The normal seeding rate for each plant is a single species. That mixture should be planted at a ratio of equal parts as specified.

- Usually mixtures of the above plant materials are better than a single plant alone. Each of these seed mixes above can be grown mixture with normal proportions and the proper combination of the recommended planting rates. The normal seeding rate for each plant is a single species. That mixture should be planted at a ratio of equal parts as specified.

- 3.1 Slope or Flatter

- 2.1 or Flatter

- 0% Channel Grade

- Maximum Grade of 1% for a Transition of 10 Minimum

- Diversion or Dike

- Undisturbed Soil

- 6 M

- Section A-A
SMYRNA SUBSTATION EXPANSION

GENERAL CONTRACTOR NOTES:
1. REMOVE EXISTING 3MVAR SUBSTATION BUS, SUPPORT STRUCTURES, AND INSULATORS AS INDICATED.
2. REMOVE INSULATORS AND CONNECTORS FROM EXISTING 3MVAR BUS SUPPORT STRUCTURE AS INDICATED; SUPPORT STRUCTURE SHALL BE REPAIRED/REPLACED, RECOLORING DONE AND REASSEMBLED IN PLACE.
3. REMOVAL AND RELOCATION OF CONDUIT ARE PULL OFF, ETC. IF PITS SHALL BE COORDINATED WITH AN APPROVED OUTAGE PLAN.
4. REMOVE LIGHTNING ARRESTER FROM STRUCTURE.

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GENERAL CONTRACTOR NOTES:

1. INSTALL SUBSTATION STRUCTURES, BUS, AND EQUIPMENT AS SHOWN, OUTSIDE OF MASONRY WALL(S). THE MASONRY WALL(S) AND TRANSFORMERS ARE TO BE COORDINATED AND APPROVED BY THE OWNER IN ADVANCE OF THE ANTICIPATED COMMENCEMENT DATE.

2. PROVIDE NEW FENCE AND GATES AS SHOWN AND AS DETERMINED IN THE SPECIFICATIONS.

3. PROVIDE ALL MATERIALS INCLUDED ON TRANSFORMER, EINWORKS AND JUMPERS, INCLUDING INSTALLATION OF ALL REQUIRED CONNECTORS.

4. TRANSFORMER(s) WILL BE PLACED ON FOUNDATIONS BUILT BY OTHERS. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL CONNECTORS TO THE TRANSFORMERS AS WELL AS TESTING STAMPED AND COMMISSIONING.

5. ALL MACHINING AND EQUIPMENT NOT PRODUCED BY THE OWNER THAT ARE INCLUDED FOR A COMPLETE INSTALLATION WILL BE PROVIDED, DELIVERED AND INSTALLED BY THE GENERAL CONTRACTOR.

6. EXISTING SUBSTATION TRANSFORMER AND SUBMERSIBLE PUMP (NOT SHOWN ON THE DRAWING) SHALL BE IN PLACE AND FUNCTIONAL DURING CONSTRUCTION. SEE SHEET E-100 AND THE RECOMMENDED SEQUENCE OF CONSTRUCTION FOR LOCATION OF CABINET EQUIPMENT.

7. PROVIDE SUBMETER AND CONTROL PANEL FOR EIN COMPONENTS.

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GENERAL CONTRACTOR NOTES:

1. EXISTING TRANSFORMER FOUNDATION, 115KV STRUCTURE FOUNDATIONS, AND 39KV EQUIPMENT FOUNDATIONS SHALL BE PROPERLY DEMOLISHED, RECLAIMED, AND CONSERVED THE REMAINDER SHALL PER THE SPECIFICATIONS LISTED IN OTHER DRAWINGS.

2. EXISTING FOUNDATION TO BE DEMOLISHED PRIOR AND ANY NEW WORK FOUNDATION OR CONCRETE SHALL BE REMOVED IN ITS ENTIRETY; STANDARDS SHOWN SHALL CONSIST OF REMOVING THE FOUNDATION UP TO A HEIGHT OF 4'-10" BELOW GRADE.

Owner's Instructions:

- The existing transformer foundation, 115kV structure foundations, and 39kV equipment foundations shall be properly demolished, reclaimed, and conserved. The remainder shall per the specifications listed in other drawings.

- The existing foundation to be demolished prior to any new work foundation or concrete. Standards shown shall consist of removing the foundation up to a height of 4'-10" below grade.
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GENERAL CONTRACTOR NOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONCRETE AND CABLE TRENCH AS SHOWN. SCHEDULED INSTALLATION SHALL BE APPOINTED IN THE APPROVED WORK PLAN.

2. INSTALLATION OF CONCRETE TO THE TRANSFORMERS SHALL BE COORDINATED WITH THE CONTRACTOR FOR CORRECT PLACEMENT OF THE OIL CONTAINMENT SYSTEM.

3. CONCRETE SUBBASE IN TRANSFORMER AREA SHALL BE CONCRETE ENCODED TO A LOW FOR SINKING OF THE OIL CONTAINMENT SYSTEM.

4. CONTRACTOR SHALL PROVIDE AND INSTALL IF PCI CONCRETE TO A POINT OF CUSTOMER SUBSTATION FENCE, CY, CONCRETE AND COVE FOR CONNECTION BY CUSTOMER DISTRIBUTION, INSTALL ALL CONCRETE MONUMENT AT SPACE LEVEL TO MARK THE LOCATION OF THE CAPTIVE END OF THE CONCRETE.

5. CONCRETE SHALL BE PLACED AND FINISHED AS SHOWN. INSTALL MEDIUM VOLTAGE FEEDERS CONSISTS OF WELDING GRADE.

6. EXISTING TRANSFORMER AND SUBSTATION COMPONENTS ARE SHOWN ON THE DRAWING SHALL BE IN PLUGS AND INSURED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORDER OF CONSTRUCTION FOR LOCATION OF EXISTING EQUIPMENT.
SMYRNA SUBSTATION
EXPANSION

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GENERAL CONTRACTOR NOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL NEW GROUNDING AS SHOWN.

2. ALL NEW GROUNDING SHALL BE 1/0 COMPRSSL. BN. UNLESS OTHERWISE NOTED.
   INSTALL GROUND CONDUCTOR IN WELD GROOVE.

3. ALL NEW GROUND RODS SHALL BE 3/8" DIAMETER COPPER/AL COPPER/AL THICK. E/LENGTH
   ROOMS SHALL BE COUPLED TOGETHER AND DRIVEN TO A DEPTH OF 42 IN WELD GROOVE.

4. NEW GROUND CONNECTION SHALL USE LOOSE COILS EXISTING WELD, SEAL OF MATERIALS FOR HOLDING GROUND TURNS. SEE PDG 00816, FOR WELD DETAILS.

5. AT ALL NEW EQUIPMENT AND STRUCTURAL LOCATIONS EXCEPT THE GROUND TABS 4" ABOVE GROUND, THESE SHALL BE CONNECTED TO THE GROUND PADS OF THE EQUIPMENT OR STRUCTURE UNTIL INSTALLATION.

6. INSTALLATION OF GROUNDS TO THE TRANSFORMER SHALL BE COORDINATED WITH THE GROUND CONSTRUCTION COORDINATOR OF TRANSFORMER INSTALLATION SYSTEM.

7. EXISTING GROUND CHECK IN IS NOW INCLUDED WITHIN THE JOB. LOCATION MAY VARY FROM WHAT IS SHOWN. BOTH THE ENGINEER AND
   OWNER IS LARGELY RESPONSIBLE FOR DETERMINATION OF LOCATION.

LEGEND:

--- NEW GROUND CONDUCTOR

--- EXISTING GROUND CONDUCTOR

--- NEW GROUND WELD CONNECTOR

--- NEW GROUND WELD CONNECTOR

--- EXISTING GROUND WELD CONNECTOR

--- NEW GROUND ROD

--- EXISTING GROUND ROD

--- NEW GROUND ROD

--- NEW EXISTING GROUND ROD CONNECTOR

--- PERIMETER FENCE:

--- EXISTING PERIMETER FENCE

--- EXISTING PERIMETER FENCE

--- NEW PERIMETER FENCE

--- NEW PERIMETER FENCE

--- NEW PERIMETER FENCE
SMYRNA SUBSTATION EXPANSION

SECTION A-A
865-Scale 1:100

SECTION B-B
865-Scale 1:100

GENERAL CONTRACTOR INSTRUCTIONS

1. REFER TO THE BILL OF MATERIAL FOR A LIST OF ITEMS TO BE PURCHASED AND INSTALLED BY THE CONTRACTOR.

2. TRANSFORMERS AND CIRCUIT BREAKERS ARE TO BE PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.

3. CONTRACTOR SHALL INSTALL ALL EQUIPMENT ShOWN, INSTALLATION OF STRUCTURE, EQUIPMENT AND BLD shall be per the approved work plan.

4. LOW VOLTAGE EQUIPMENT, CABLES AND CONNECTIONS USING ANY OTHER EQUIPMENT NOT SHOWN ON THE BILL OF MATERIALS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

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EXPANSION

TYPICAL 115KV CT/CCVT JUNCTION BOX CONNECTION
NOT TO SCALE

TYPICAL CONDUIT ENTRANCE TO CABLE TRENCH
NOT TO SCALE

TYPICAL 30 CT JUNCTION BOX
NOT TO SCALE

TYPICAL 30 CCVT JUNCTION BOX
NOT TO SCALE

CABLE TRENCH RISER DETAIL
NOT TO SCALE

TYPICAL 23KV PT JUNCTION BOX CONNECTION
NOT TO SCALE

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Smyrna Substation Expansion

Fence Grounding Intermediate Post
Not to Scale

Fence Grounding Corner Post
Not to Scale

Chainlink Double Swing Gate Grounding
Not to Scale

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STRAIGHT FIXTURE MOUNTING BRACKET

SEE NOTE 1

STRUCTURE LEG

LIGHTING JUNCTION BOX DETAIL

NOT TO SCALE

FLOODLIGHT TO STEEL STRUCTURE MOUNTING DETAIL

NOT TO SCALE

FLOODLIGHT TO STEEL STRUCTURE GROUNDING DETAIL

GENERAL CONTRACTOR NOTES:

1. MOUNTING SHOWN FOR E2260A0130 FLOOD LIGHT FIXTURE WITH STRAIGHT MOUNTING BRACKET. SEE DRAWING E110 FOR CORRECT FIXTURE, MOUNTING HEIGHT, ORIENTATION, AND BRACKET AT EACH SPECIFIC STRUCTURE LOCATION.

SMYRNA SUBSTATION EXPANSION

LIGHTING INSTALLATION DETAILS

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GENERAL CONTRACTOR NOTES:
1. CONTRACTOR SHALL PROVIDE TWO (2) TOGGLE SWITCHES, WITH SURFACE MOUNT BOX AND COVER PLATE (BY CONTRACTOR) IN RELAY VAULT. SEE CONTROL HOUSE LAYOUT DRAWING E400 FOR SWITCH LOCATION.

2. IDENTIFY GROUND CONNECTOR WITH GREEN MARKING TAPE OR BY STRIPPING THE END OF THE INSULATION BACK FROM THE END OF THE CONDUCTOR.

3. CONTRACTOR SHALL PROVIDE PHOTOCELL AT LIGHTING JUNCTION BOX L11. ROUTE PHOTOCELL CONTROL CABLE TO LIGHTING JUNCTION BOX INSIDE CONTROL HOUSE AND TERMINATE AS SHOWN.

4. CONNECT LIGHTING NEUTRALS AT TERMINAL BLOCK "A" AS SHOWN.

5. CONTRACTOR SHALL PROVIDE PHOTOCELL BYPASS SWITCH WITH SURFACE MOUNT BOX AND COVER PLATE IN LIGHTING JUNCTION BOX.

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NOTES:
1. CONTROL, INSTALL, REPLACE EXISTING XD AC SHUNT TRANSFER SWITCHES.
2. CONTRACTOR SHALL PROVIDE TEMPORARY AC POWER TO THE SUBSTATION WHILE THE TRANSFER SWITCH IS OUT OF SERVICE.
Scope of Work Statement:

1. Cassadaga Line Installations
   a. Install one 115kV self supporting double-dead-end structure 258 (NEW); one 90'-16kip spun concrete pole set 20' deep; 6 strain insulator assemblies; 6 bolted conductor dead-end assemblies; 3 jumper post insulator assemblies, and 2 shield wire dead-end assemblies. See Structure Framing Details.
   b. Install one 115kV self supporting double-dead-end structure 259; one 90'-16kip spun concrete pole set 22' deep; 6 strain insulator assemblies; 6 bolted conductor dead-end assemblies, and 3 shield wire dead-end assemblies. See Structure Framing Details.
   c. At the new Cassadaga Line terminal position in Smyrna Sub install 3 strain insulator assemblies; 3 bolted conductor dead-end assemblies; and 2 shield wire dead-end assemblies. See Structure Framing Details.
   d. Modify existing 115kV guyed wood double-dead-end structure 257: Drill pole at 1-8 below shield down guy attachment seal, move the guy attachment down and attach new shield wire dead-end assembly. Drill pole at 1-8 above phase down guy attachments east and attach new strain insulator assemblies. Drill pole at 1-8 below phase attachments north and replace strain insulator assemblies with jumper post insulator assemblies. See Structure Framing Details.
   e. Install approximately 130'-8" of 795 kcm "Arbutus" AAC, and approximately 530'-8" of 3/4" n HS steel shield wire, in 2 spans (280 circuit feet) from structure 257 to the new Cassadaga Line terminal position in Smyrna Sub. See Strung Charts.

2. Cassadaga Line Removals
   a. Remove approximately 780'-8" of 795 "Arbutus" AAC, and approximately 520'-8" of 3/4" n HS steel shield wire, in 2 spans (280 circuit feet) from structure 257 to the existing Cassadaga Line terminal position in Smyrna Sub.
   b. Remove existing 115kV largest structure 258: 795 fiberglass pole, 3 polymer line post insulator assemblies, 2 shield wire support assemblies, and 2 2/0 side guys; cut 2 guy anchors at 2-ft below grade.
   c. At existing Cassadaga Line terminal position in Smyrna Sub, remove 3 polymer strain insulator assemblies and 2 shield dead-end assemblies.

3. Airport Line Installation
   a. Install one 85'-8" 16-kip spun concrete pole AP1, set 21'-8" deep, at 15'-8" south of existing structure 1 of the Airport line.
   b. Maintain existing phase relationship and line tensions east. See strung charts for span into substitution.

4. Airport Line Removals
   a. Remove existing 115kV double-dead-end structure 1: 75'-8" spun concrete pole; 6 10-feet porcelain dead-ends, 3 polymer jumper post insulators, 3 strain wire dead-ends; 5 1/2-in down guys; Cut 4 guy anchors at 2-ft below grade.

5. Location
   a. The work will take place in Volusia County, Florida, at the Smyrna Substation, north of SR 44 and west of I-95. Coordinate with the Utilities Commission, City of New Smyrna Beach, for substation access.
   b. Survey information: Distances and coordinates are expressed in US Survey Feet unless specified otherwise. Structure coordinates X and Y are shown in the table below.
   c. The Contractor shall notify utility owners through Sunshine State One Call of Florida, Inc. (800-432-4770) at least 2 business days in advance of construction, for location marking or flagging of underground facilities before excavating. Where underground facilities in close proximity to a steel pole or ear earth, the Contractor shall hand dig the top 4-feet to expose the utility, and shall take all steps necessary to avoid damage. The Contractor shall be liable for any damage caused to such utility facilities.
   d. Clearing the work site shall be at Contractor's expense. See project specifications for additional requirements and information.

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1. SEE DRILLING DETAIL DRAWING FOR DRILLING INFORMATION.

NOTES:

STRUCTURE 258 (NEW)

ELEVATION B-B

GROUND LINE

11'-0"

8'-0"

8'-0"

90'-0"

70'-0"

20'-0"

SPUN CONCRETE POLE

ELEVATION C-C

8'-0"

8'-0"

8'-6"

1'-6"

STRUCTURE 257 MODIFICATIONS

1. POLE TO BE FIELD DRILLED FOR NEW ASSEMBLY PER DIMENSIONS GIVEN AT 1-FT ABOVE EYE PLATE OF DOWN GUYS.

2. POLE TO BE FIELD DRILLED TO LOWER GUY ATTACHMENT BY 1-FOOT.

3. POLE TO FIELD DRILLED FOR NEW ASSEMBLY AT 1-FOOT BELOW PHASE ATTACHMENT NORTH (TOWARD EXISTING STRUCTURE 258).

4. FINAL CONFIGURATION IS SHOWN.

ELEVATION A-A

GROUND LINE

EXISTING WOOD POLE

MINIMUM BACKFILL PER SPEC

5'-0" TO 258 (NEW)

TO 259 FROM 256

FROM 256

TO 258 (NEW)

NOTE 2

NOTE 1

NOTE 3

NOTE 1 (TYP.)

NOTE 2 (TYP.)

NOTE 3 (TYP.)

NOTE 4 (TYP.)

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TRANSMISSION STRUCTURE/FRAMING

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1. See drilling detail drawing for drilling information.

NOTES:

MINIMUM BACKFILL PER SPEC

ELEVATION LOOKING NORTH

8'-0"

8'-6"

ELEVATION LOOKING EAST

8'-0"

8'-0"

1'-0"

MINIMUM BACKFILL PER SPEC

ELEVATION D-D

85'-0"

64'-0"

21'-0"

ELEVATION E-E

FROM SMYRNA SUB TO STR 2

SPUN CONCRETE POLE

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### Material List

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<td>280-40-100119, Tie, Dead-End, HDG, 7/8&quot; in-pat, 6 in bolt spacing, JRM</td>
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### Diagram

**Transmit Jump Support**

**30° to 75° Double Dead-End Transmission**

**Shield Wire DDE 30° to 75°**
**GROUND FOR TRANSMISSION POLES**

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*CONTRACTOR SHALL LEAVE A 4' TAIL TO REACH NEW STRUCTURE GROUND CONNECTOR

**SHIELD WIRE DEAD-END ON SUBSTATION STRUCTURE**

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*CONTRACTOR SHALL LEAVE A 4' TAIL TO REACH NEW STRUCTURE GROUND CONNECTOR

**PHASE DEAD-END ON SUBSTATION STRUCTURE**

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<td>2</td>
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*CONTRACTOR SHALL LEAVE A 4' TAIL TO REACH NEW STRUCTURE GROUND CONNECTOR

**SMYRNA SUBSTATION EXPANSION**

**TRANSMISSION ASSEMBLY DETAILS**

**ISSUED FOR BID**

**NOT FOR CONSTRUCTION**
LOOKING TOWARD "A" FACE

A-C HOLES DISTANCE FROM TIP AND DESCRIPTION

GROUND INSERTS (SEE DETAIL) DISTANCE FROM TIP

STEP INSERTS (SEE DETAIL)

NOTE

A. HOLE PLACEMENT:
   - All holes shall have minimum of 16 in.
   - Dimension hole designation "G" indicates the hole is located on the
     bottom row of holes, 10 in. from the tip.
   - "D" indicates the hole manufacturer shall provide the coupling and internal cable with connectors.

NOTES

- TRANSFORMER, PHASE TO PHASE, KEEP NO DISTRIBUTION UNINTERRUPTED.
- NO FIBER ATTACHMENTS

LOAD TREE COORDINATES

GROUND INSERTS DETAIL

GROUND INSERTS DETAIL

LOOKING TOWARD "B" FACE

B-D HOLES DISTANCE FROM TIP AND DESCRIPTION

GROUND INSERTS (SEE DETAIL) DISTANCE FROM TIP

STEP INSERTS (SEE DETAIL)

NOTE

A. HOLE PLACEMENT:
   - All holes shall have minimum of 16 in.
   - Dimension hole designation "G" indicates the hole is located on the
     bottom row of holes, 10 in. from the tip.
   - "D" indicates the hole manufacturer shall provide the coupling and internal cable with connectors.

NOTES

- TRANSFORMER, PHASE TO PHASE, KEEP NO DISTRIBUTION UNINTERRUPTED.
- NO FIBER ATTACHMENTS

LOAD TREE COORDINATES

GROUND INSERTS DETAIL

GROUND INSERTS DETAIL

ISSUED FOR BID

NOT FOR CONSTRUCTION

SMYRNA SUBSTATION EXPANSION

TRANSMISSION POLE DRILLING DETAILS

CATALOG NO. E404

DATE: 4/5/15

DRAWN BY: B. MCKEE

CHECKED BY: J. STEEL

SME-DES

UTILITY COMMISSION
City of Smyrna Beach
LOOKING TOWARD "A" FACE

DISTANCE FROM GROUND LINE

A-C HOLES DISTANCE FROM TIP AND DESCRIPTION

STEP INSERTS (SEE DETAIL)

GROUND INSERTS DETAIL

A-C HOLES DISTANCE FROM TIP AND DESCRIPTION

STEP INSERTS (SEE DETAIL)

GROUND INSERTS DETAIL

NOTE:

A. ALL HOLES SHALL BE AT MINIMUM 10 IN

B. DESCRIPTION MARKED "SS" INDICATES THE HOLES LOCATED ON THE BACKSIDE FACE (LOOKING FROM THE TOP).

C. THE POLE MANS/u/HER SHALL PROVIDE THE COUPLINGS AND INTERNAL CABLE WITH CONNECTORS,

ISSUED FOR BID
NOT FOR CONSTRUCTION
### From Structure 257 to Structure 258 New

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<th>Tension (Horiz)</th>
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### From Structure 258 New to Structure 259 New

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SMYRNA SUBSTATION EXPANSION

ISSUED FOR BID

NOT FOR CONSTRUCTION
### Drilled Shaft Foundation Details

#### Anchor Rods

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<th>Rod Diameter (In)</th>
<th>Rod Length (In)</th>
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#### Anchor Rod End Assembly

- **Type A**: Heavy Hex NUT (Top Nut May Be Jam), Heavy Hex Leveling NUT, Heavy Hex (Top Nut May Be Jam), Double Nut, 2" Chamfer. 
- **Type B**: STD Hook Around Anchor Rod. 
- **Type C**: STD Hook Around Anchor Rod. 

#### Anchor Rod Assembly Notes & Specifications:

1. **Tack Welding of Nuts and/or Bearing Plates to Anchor Rods** is not permissible for Grade 105. 
2. Anchor Rod Assembly Type "B" & "C" nut may be secured to rod by tack welding. 
3. Nuts and Bearing Plates to be tack welded shall be of suitable specification for welding; fabricator to verify. 
4. Tack welding of nuts and/or Bearing Plates to Anchor Rods is not permissible for Grade 105. 
5. All Anchor Rods, Heads and/or Bearing Plates shall be hot-dipped galvanized in accordance with spec. 

#### Drilled Shaft Details

- **Drilled Shaft Length (See Schedule)**: Min. 48 x Bar Diameter Lap Spacing. All Ties shall have a stagger to Diament of Shaft (See Schedule). 
- **Maximum 10 FT Spacing**. 
- **Provide Cages** if required. 
- **Provide Casings** if required. 
- **Provide Alignment Spacers** at top and bottom. 

#### Expansion Drilled Shaft Foundation Details

- **Typical Anchor Rod Top Assembly**: Cotter pin type lock washer. 
- **Drilled Shaft Details**: Compact in maximum 6" Lifts to project geotechnical report. 

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**FOR BIDDING PURPOSES ONLY**

- **NOT FOR CONSTRUCTION**

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**Construction Notes & Specifications**

- **Contractor should verify all Anchor Rod and Anchor Rods assembly with Equipment Manufacturer/Supplier prior to final installation to the equipment manufacturer/supplier if not specified.**

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**Contact**

- **E-Mail**: SI@structuresintl.com
- **Tel**: (904) 296-8846
- **Fax**: (904) 296-2646
- **Address**: Building 600, 7563 Philips Highway, Jacksonville, FL 32256
PREPARE SITE IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS. BEARING LEVELS SOILS, AFTER COMPACTION, SHOULD EXHIBIT DENSITIES EQUIVALENT TO 98% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) TO A DEPTH OF AT LEAST TWO FOOT BELOW THE FOUNDATION BEARING LEVEL.

#5 REBAR 12" O.C. TOP & BOTTOM BOTH WAYS
SEE FINAL DESIGN FOR REINFORCEMENT
3" CLR COV

FORGED HEAVY HEX HEAD
ASTM F1554 GR. 55
18" EMBEDMENT
5" PROJECTION
SMYRNA SUBSTATION EXPANSION

TRANSFORMER & CIRCUIT BREAKER FOUNDATION

FOR BIDDING PURPOSES ONLY

NOT FOR CONSTRUCTION

PREPARE SUBGRADE SOILS PER PROJECT GEOTECHNICAL REPORT RECOMMENDATIONS. SOIL SHALL EXHIBIT DENSITY OF 98% ASTM D-1557 WITHIN THE 2 FT OF THE FOUNDATION BEARING LEVEL.

HARD TROWEL FINISH FLATNESS & LEVELNESS SHALL MEET "FLAT" CRITERIA PER ACI 117

#5 @ 12" O.C. TOP & BOTTOM EACH WAY

#6 @ 10" O.C. EACH WAY

(4) ROWS OF #4 TIES AT 20" O.C. IN TRANSVERSE DIRECTION USE (3) ROWS OF #4 TIES AT 20" O.C.

TRANSFORMER & CIRCUIT BREAKER FOUNDATION

FLORIDA CERTIFICATE OF AUTHORIZATION NO: 9800

JACKSONVILLE, FLORIDA 32256

BUILDING 600

TEL: (904) 296-2646

FAX: (904) 296-8846

E-MAIL: SI@STRUCTURESINTL.COM

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HARD TROWEL FINISH FLATNESS & LEVELNESS SHALL MEET "FLAT" CRITERIA PER ACI 117

#5 @ 12" O.C. TOP & BOTTOM EACH WAY

#6 @ 10" O.C. EACH WAY

(4) ROWS OF #4 TIES AT 20" O.C. IN TRANSVERSE DIRECTION USE (3) ROWS OF #4 TIES AT 20" O.C.
INPUTS TO RELAYING

SPARE AUXILIARY CONTACTS

REMOTE ENABLE-ON: SUPV. CONTROL ENABLED (VIA OUTPUTS 106/107)

1. ALL DEVICES IN BREAKER IN FOLLOWING POSITION:
   BREAKER OPEN

2. SUPERVISORY ENABLE PERFORMED USING SEL-351S "REMOTE ENABLE" PUSHBUTTON AND SELOGIC EQUATIONS AS FOLLOWS:

   A. OUT106 & OUT107 DISABLED.

   DEVICES DE-ENERGIZED

   1. REMOTE ENABLE-OFF: SUPV. CONTROL DISABLED WITH OUTPUTS

   B. DEVICES DE-ENERGIZED

   NOTES:

   250V,10A 41FU9

   (FOR MORE DETAILED INTERNAL SCHEMATICS, REFER TO SIEMENS DWG XXXXX)

ISOLATES 52A SS-23-1B CLOSED INDICATION (52a)

THIS SHEET

22.9KV CIRCUIT BREAKER SS-23-1B CONTROL CIRCUIT

NOTE 1

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.
INPUTS TO RELAYING

SPARE AUXILIARY CONTACTS

NOTE:
1. ALL CIRCUITS IN BRIEFER IN FOLLOWING POSTION:
   - CIRCUIT BREAKER IS OPENED

2. TRANSFORMER BRAKE-ACTUATED RELAYS 105/106

3. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.
INPUTS TO RELAYING

SPARE AUXILIARY CONTACTS

125 VDC

120/240 VAC

2. SUPERVISORY ENABLE PERFORMED USING SEL-351S "REMOTE ENABLE" PUSHBUTTON AND SELOGIC EQUATIONS AS FOLLOWS:

A. OUT106 & OUT107 DISABLED.

REMOTE ENABLE-OFF: SUPV. CONTROL DISABLED WITH OUTPUTS DE-ENERGIZED

B. ALL DEVICES IN BREAKER IN FOLLOWING POSITION:

BREAKER OPEN

NOTES:

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND

SEE DRAWING V102.
INPUTS TO RELAYING

SPARE AUXILIARY CONTACTS

NOTE:

1. ALL DEVICES IN BREAKER IN FOLLOWING POSITION:
   - BREAKER OPEN
   - ALL DEVICES DE-ENERGIZED

2. SUPERVISORY ENABLE PERFORMED USING SEL-351S "REMOTE ENABLE" PUSHBUTTON AND SELOGIC EQUATIONS AS FOLLOWS:
   - OUT106 & OUT107 DISABLED.

3. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

23KV FEEDER BREAKER 232-8 CONTROL CIRCUIT

NOTE (1):

250V, 10A

42FU9

28B-3

R

BU

O

Y

BR

BK

TO 125V DC

TO 120/240 VAC

DIST. PANEL L-3

BKR 23

WOODHEAD RECEPTACLE

ISSUED FOR BID

NOT FOR CONSTRUCTION
INPUTS TO RELAYING

SPARE AUXILIARY CONTACTS

125 VDC

120 VAC

240 VAC

HTR HTR

COMP

MOT

RCP

37

36

52

23

12

9

13

SW LPC

SW

LCH

11

5

52Y

52

7

23

1104

1250

1470

1135

4226-1

4226-2

4226-3

4226-4

4226-5

4226-6

4226-7

4226-8

4226-9

4226-10

4226-11

PS A17

A18

Z25

Z26

NOTE 1

1. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

NOT FOR CONSTRUCTION

SMYRNA SUBSTATION EXPANSION

23KV FEEDER BREAKER 298 DC SCHEMATIC

ISSUED FOR BID

NOTES:

1. ALL DEVICES IN BREAKER IN FOLLOWING POSITION

   1. BREAKER CLOSED
   2. PB (FOR MORE DETAILED INTERNAL SCHEMATICS, REFER TO SIEMENS DWG XXXXX)

   2. SUPERVISORY ENABLE PERFORMED USING SEL-351S "REMOTE ENABLE" PUSHBUTTON AND SELOGIC EQUATIONS AS FOLLOWS:

   A. OUT106 & OUT107 DISABLED.

   B. DEVICES DE-ENERGIZED

   3. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND

   SEE DRAWING V102.
ISSUED FOR BID

SMYRNA SUBSTATION
EXPANSION
23KV MAIN BREAKER 2B
DC SCHEMATIC
SMYRNA SUBSTATION EXPANSION

SUPERCEDED
SEE Dwg E600

NOTES:
FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
ELECTRICAL THREE LINE DIAGRAM  - UCNSB
Smyrna Substation Expansion

Issued for Bid

Notes:

For general notes, abbreviations and legend see drawing V102.


Not for Construction
NOTES:

FOR GENERAL NOTES, ABBREVIATIONS AND
LEGEND SEE DRAWING V102.

DRAWING SOURCE:
WIRING DIAGRAM PANEL 5 - UCNSB DWG.
ED-5001 SHT 37, DATED 8/5/81 REV.6, DATED
12/17.
NOTES:

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
WIRING DIAGRAM PANEL NO. 23 - UCNSB
NOTE: 1) REUSED CONTACTS FOR NEW CARRIER UNIT (UPLC-11) SEE SHEET 137

TRIP BKR. 11
4Z27 4Z28 4Z25 4Z26

TRIP BKR. 12
4Z59 4Z60 4Z57 4Z58

7C LOCKOUT BKR. 11
9C LOCKOUT BKR. 12

LINE 2 BFI

CARRIER STOP LINE 1
SMYRNA SUBSTATION EXPANSION

NOTES:

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
WIRING DIAGRAM PANEL NO. 23 - UCNSB
NOTES:
FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
SWITCHBOARD & WIRING DIAGRAM PANEL NO. 18 - UCNSB DWG. ED-5001 SHT 102, DATED 2/19/82 REV.3, DATED 1/16.
SMYRNA SUBSTATION EXPANSION

ISSUED FOR BID

NOT FOR CONSTRUCTION

DRAWING SOURCE:

SWITCHBOARD WIRING DIAGRAM PANEL NO. 28 - UCNSB DWG. ED-5001 SHT 107, DATED 2/19/92 REV. 2, DATED 12/17.

1. NOTES:

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

COLOR WORK PRINT

DRAWING SUPERVISOR:

SMYRNA SUBSTATION EXPANSION

SWITCHBOARD WIRING DIAGRAM PANEL NO. 28

OR

RD

BU

SMYRNA SUBSTATION

EXPANSION
NOT FOR CONSTRUCTION

1. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
WIRING DIAGRAM PANEL NO. 29 - UCNSB
DWG. ED-5001 SHT 108, DATED 2/19/92 REV.7,
DATED 12/17.
SMYRNA SUBSTATION
EXPANSION

ISSUED FOR BID
NOT FOR CONSTRUCTION

1. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.

DRAWING SOURCE:
ISSUED FOR BID

NOT FOR CONSTRUCTION

DRAWING SOURCE:
THREE LINE DIAGRAM 115kV BKR#6 - FLORIDA POWER CORP DWG. ED-5001 SHT 109, DATED 2/19/92 REV.3, DATED 12/17.

1. FOR GENERAL NOTES, Abbreviations and Legends See Drawing V102.

COLOR WORK PRINT
ADDITION SHEET

115KV BUS# 5
115KV BUS# 6
SMYRNA SUBSTATION EXPANSION
115kV BREAKER CONTROL
DC ELEMENTARY

NOT FOR CONSTRUCTION

DRAWING SOURCE:
DC SCHEMATIC AIRPORT AND CASSADAGA LR
ISSUED FOR BID
NOT FOR CONSTRUCTION

FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING V102.
SMYRNA SUBSTATION
EXPANSION

NOTED:

1. NOTES:

ISSUED FOR BID
NOT FOR CONSTRUCTION
SMYRNA SUBSTATION
EXPANSION

ISSUED FOR BID

NOT FOR CONSTRUCTION

SECTION VIEW "BB"

SECTION VIEW "CC"

FRONT VIEW