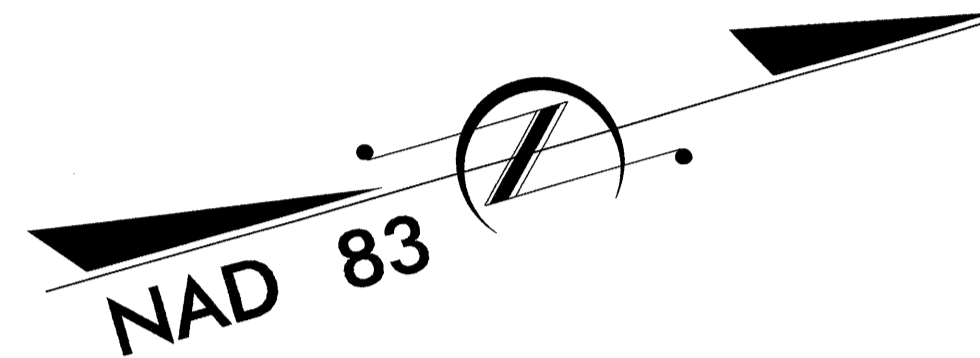


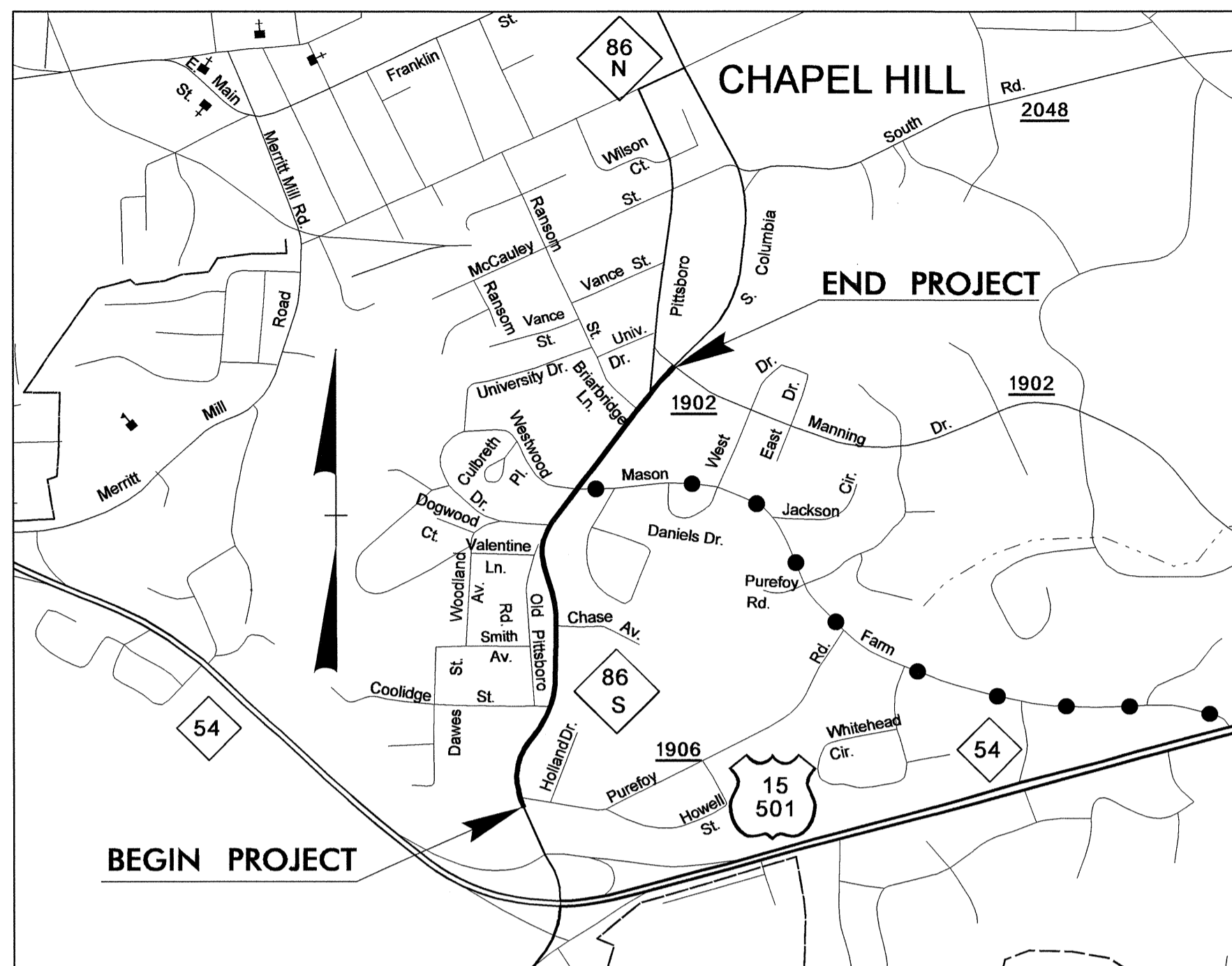
# UTILITY CONSTRUCTION PLANS ORANGE COUNTY

**LOCATION: NC 86 (SOUTH COLUMBIA STREET)  
FROM SR 1906 (PUREFOY ROAD) TO SR 1902  
(MANNING DRIVE) IN CHAPEL HILL**

**TYPE OF WORK: UTILITY RELOCATION**

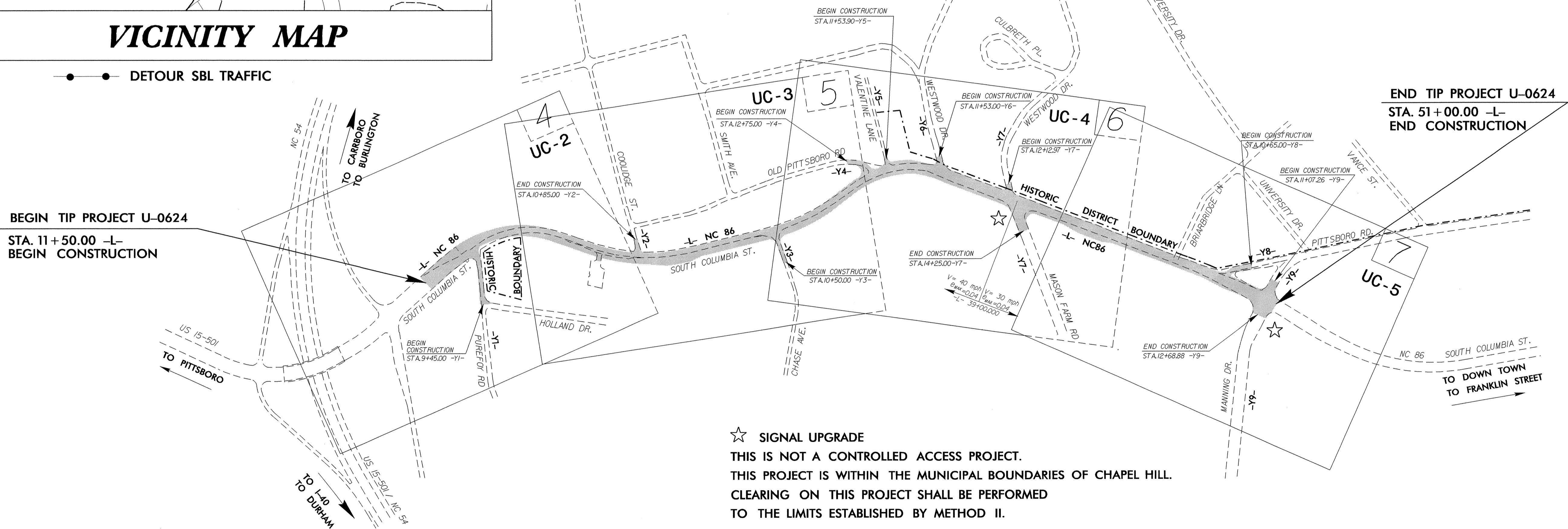


**TIP PROJECT: U-0624**



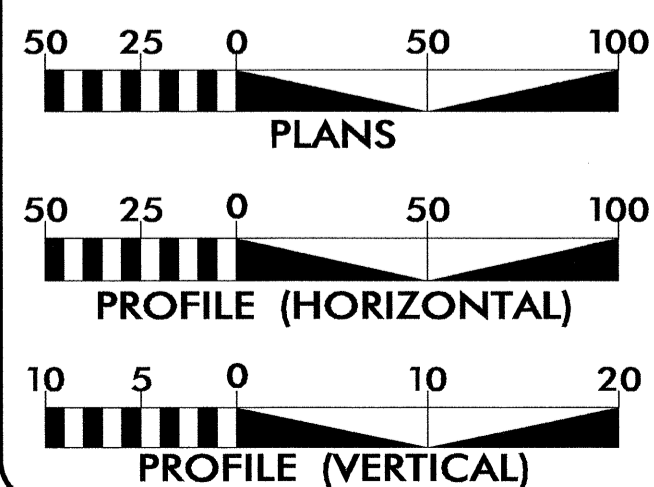
**VICINITY MAP**

● — ● DETOUR SBL TRAFFIC



☆ SIGNAL UPGRADE  
THIS IS NOT A CONTROLLED ACCESS PROJECT.  
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CHAPEL HILL.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

**GRAPHIC SCALES**



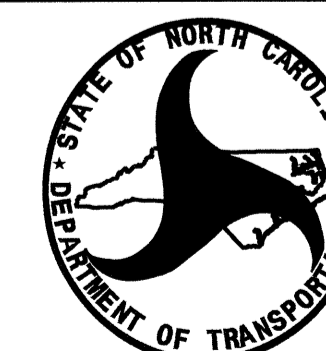
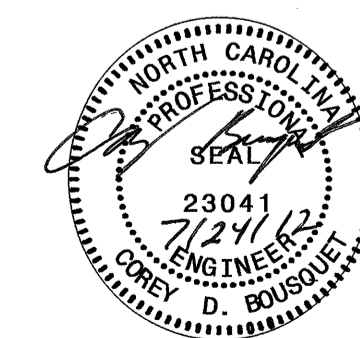
**INDEX OF SHEETS**

| SHEET NO.        | DESCRIPTION                      |
|------------------|----------------------------------|
| UC-1             | TITLE SHEET                      |
| UC-2             | UTILITY SYMBOLOGY                |
| UC-3             | NOTES                            |
| UC-3A THRU UC-3C | DETAILS                          |
| UC-4 THRU UC-7   | UTILITY CONSTRUCTION PLAN SHEETS |

**WATER AND SEWER OWNERS ON PROJECT**

- (1) WATER OWASA
- (2) SANITARY SEWER OWASA

SEAL



PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
PROJECT SERVICES  
UTILITY SECTION**

1591 MAIL SERVICES CENTER  
RALEIGH NC 27699-1591  
PHONE (919) 250-4128  
FAX (919) 250-4119

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Corey Bousquet, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Stephanie Athey** UTILITIES PROJECT DESIGNER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS

|                                 |  |
|---------------------------------|--|
| Water Line (Sized as Shown)     |  |
| 11 1/4 Degree Bend              |  |
| 22 1/2 Degree Bend              |  |
| 45 Degree Bend                  |  |
| 90 Degree Bend                  |  |
| Plug                            |  |
| Tee                             |  |
| Cross                           |  |
| Reducer                         |  |
| Gate Valve                      |  |
| Butterfly Valve                 |  |
| Tapping Valve                   |  |
| Line Stop                       |  |
| Line Stop with Bypass           |  |
| Blow Off                        |  |
| Fire Hydrant                    |  |
| Relocate Fire Hydrant           |  |
| Remove Fire Hydrant             |  |
| Water Meter                     |  |
| Relocate Water Meter            |  |
| Remove Water Meter              |  |
| Water Pump Station              |  |
| RPZ Backflow Preventer          |  |
| DCV Backflow Preventer          |  |
| Relocate RPZ Backflow Preventer |  |
| Relocate DCV Backflow Preventer |  |

## PROPOSED SEWER SYMBOLS

|  |  |
|--|--|
| Gravity Sewer Line (Sized as Shown)    |  |
| Force Main Sewer Line (Sized as Shown) |  |
| Manhole (Sized per Note)               |  |
| Sewer Pump Station                     |  |

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

|  |  |
|--|--|
| Power Pole                             |  |
| Telephone Pole                         |  |
| Joint Use Pole                         |  |
| Telephone Pedestal                     |  |
| Utility Line by Others (Type as Shown) |  |
| Trenchless Installation                |  |
| Encasement by Open Cut                 |  |
| Encasement                             |  |

|                   |  |
|-------------------|--|
| Thrust Block      |  |
| Air Release Valve |  |
| Utility Vault     |  |
| Concrete Pier     |  |
| Steel Pier        |  |
| Plan Note         |  |
| Pay Item Note     |  |

## EXISTING UTILITIES SYMBOLS

|  |  |   |  |
|--|--|---|--|
| Power Pole                             |  | *Underground Power Line                   |  |
| Telephone Pole                         |  | *Underground Telephone Cable              |  |
| Joint Use Pole                         |  | *Underground Telephone Conduit            |  |
| Utility Pole                           |  | *Underground Fiber Optics Telephone Cable |  |
| Utility Pole with Base                 |  | *Underground TV Cable                     |  |
| H-Frame Pole                           |  | *Underground Fiber Optics TV Cable        |  |
| Power Transmission Line Tower          |  | *Underground Gas Pipeline                 |  |
| Water Manhole                          |  | Aboveground Gas Pipeline                  |  |
| Power Manhole                          |  | *Underground Water Line                   |  |
| Telephone Manhole                      |  | Aboveground Water Line                    |  |
| Sanitary Sewer Manhole                 |  | *Underground Gravity Sanitary Sewer Line  |  |
| Hand Hole for Cable                    |  | Aboveground Gravity Sanitary Sewer Line   |  |
| Power Transformer                      |  | *Underground SS Forced Main Line          |  |
| Telephone Pedestal                     |  | Underground Unknown Utility Line          |  |
| CATV Pedestal                          |  | SUE Test Hole                             |  |
| Gas Valve                              |  | Water Meter                               |  |
| Gas Meter                              |  | Water Valve                               |  |
| Located Miscellaneous Utility Object   |  | Fire Hydrant                              |  |
| Abandoned According to Utility Records |  | Sanitary Sewer Cleanout                   |  |
| End of Information                     |  |   |  |

\*For Existing Utilities  
 Utility Line Drawn from Record (Type as Shown)   
 Designated Utility Line (Type as Shown)

5/14/99  
 23-Jul-2012 11:38  
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 REV: 2/1/2012

5/14/99

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24-JUL-2009 15:47  
\*\*\*\*\*PRINTING\*\*\*\*\*

# UTILITY CONSTRUCTION

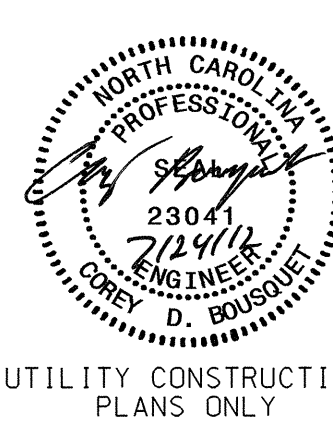
## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NCDOT "STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES" DATE JANUARY 2012 AND ORANGE WATER AND SEWER AUTHORITY STANDARDS AND SPECIFICATIONS DATED AUGUST 2003 OR LATEST REVISED VERSION.
2. THE EXISTING UTILITIES BELONG TO OWASA.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPROTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.
10. ALL MATERIALS NECESSARY TO RELOCATE OR RECONNECT WATER METERS ARE INCIDENTAL TO THE UNIT COST FOR RECONNECT OR RELOCATE WATER METER.

## PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE PATH DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
2. ALL PROPOSED WATER LINES OVER 2" SHALL BE DUCTILE IRON.
3. ALL SERVICE LINES TO WATER METERS SHALL BE COPPER, TYPE K, SOFT DROWN COPPER, UNLESS NOTED OTHERWISE ON PLANS.
4. ALL MANHOLE COVER ADJUSTMENTS TO BE DONE IN ACCORDANCE WITH NCDOT AND OWASA SPECIFICATIONS.
5. WATER LINE TIE-IN NEEDS TO BE COORDINATED WITH OWNER AND RESIDENT ENGINEER FOR THE TIE-INS MAY BE REQUIRED ON WEEKEND OR NIGHT.

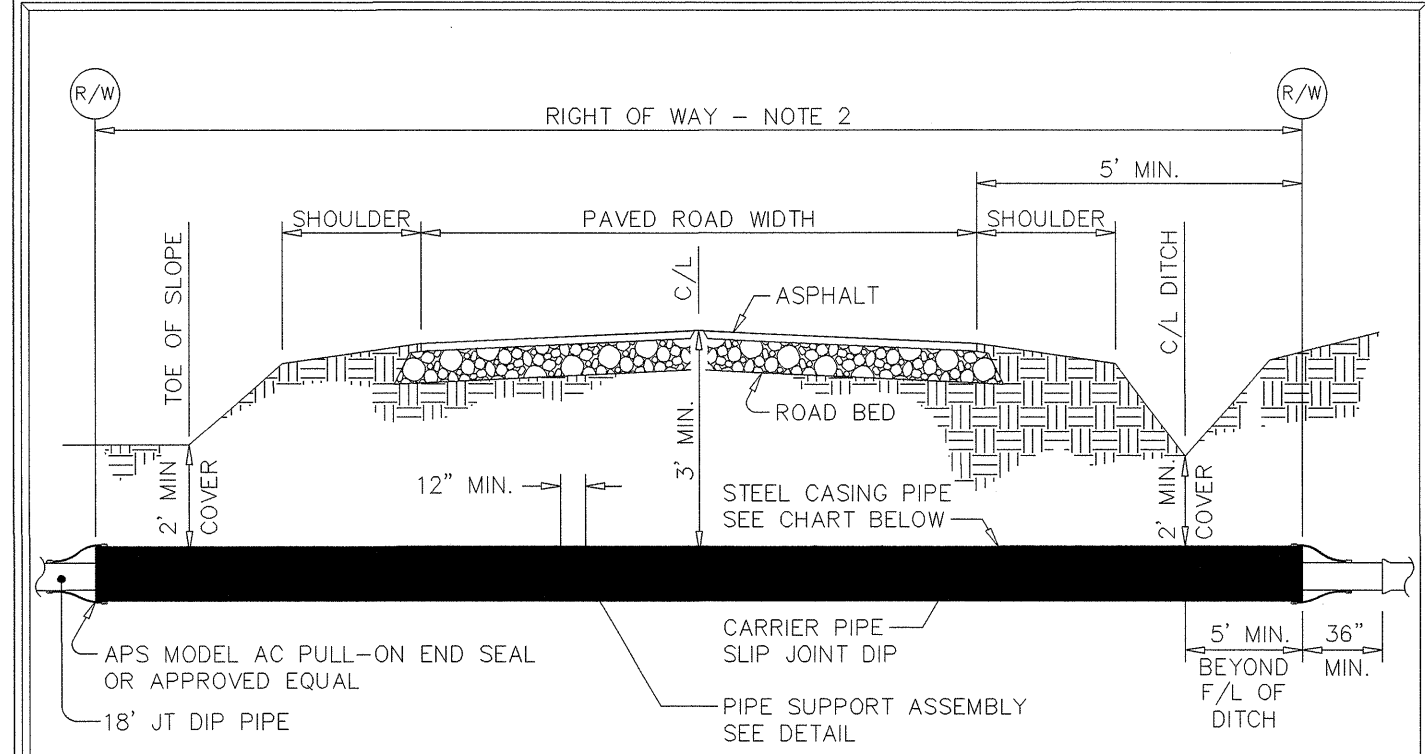
| PROJECT REFERENCE NO.   | SHEET NO.  |
|---|--|
| U-0624  | UC-3   |
| DESIGNED BY: SBA  |  |
| DRAWN BY: SBA   |  |
| CHECKED BY: CDB   |  |
| APPROVED BY: CDB  |  |
| REVISED:  |  |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 707-6690<br>FAX: (919) 250-4151 |  |

UTILITY CONSTRUCTION  
PLANS ONLY

## UTILITY CONSTRUCTION

5/14/99

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



| CARRIER PIPE NOMINAL DIAMETER | CARRIER PIPE OUTSIDE DIAMETER | CASING PIPE RAILROAD |                | CASING PIPE HIGHWAY |                |
|-------------------------------|-------------------------------|----------------------|----------------|---------------------|----------------|
|                               |                               | OUTSIDE DIAMETER     | WALL THICKNESS | OUTSIDE DIAMETER    | WALL THICKNESS |
| 6" & UNDER                    | 6.90"                         | 12 3/4"              | 0.188"         | 12 3/4"             | 0.250"         |
| 8"                            | 9.05"                         | 16"                  | 0.250"         | 16"                 | 0.250"         |
| 10"                           | 11.10"                        | 20"                  | 0.281"         | 20"                 | 0.250"         |
| 12"                           | 13.20"                        | 24"                  | 0.344"         | 24"                 | 0.250"         |
| 14"                           | 15.30"                        | 28"                  | 0.406"         | 28"                 | 0.312"         |
| 16"                           | 17.40"                        | 30"                  | 0.406"         | 30"                 | 0.312"         |
| 20"                           | 21.60"                        | 42"                  | 0.563"         | 42"                 | 0.312"         |
| 24"                           | 25.80"                        | 42"                  | 0.563"         | 42"                 | 0.312"         |

\*DIMENSIONS ARE WITHOUT COATINGS

**NOTES:**

1. Installation by dry bore & jacking.
2. Bore to run from Right-of-Way to Right-of-Way unless approved otherwise by OWASA.
3. Grease encasement pipe as required for ease of installation.
4. Steel pipe to be 35,000 psi min. yield strength, grade B.
5. All exposed metal to be coated with epoxy or asphaltic material.
6. Skids to be installed, manufactured by ITT Grinnell, Charlotte, N.C. / Spider Manufacturing, Durham, N.C. / APS casing spacers by Advanced Products Systems Inc, Lafayette, LA. / or approved equal.

400 Jones Ferry Road  
PO Box 366  
Carboro, NC 27510-0366  
Voice (919) 968-4421  
FAX (919) 968-4464  
www.owasa.org

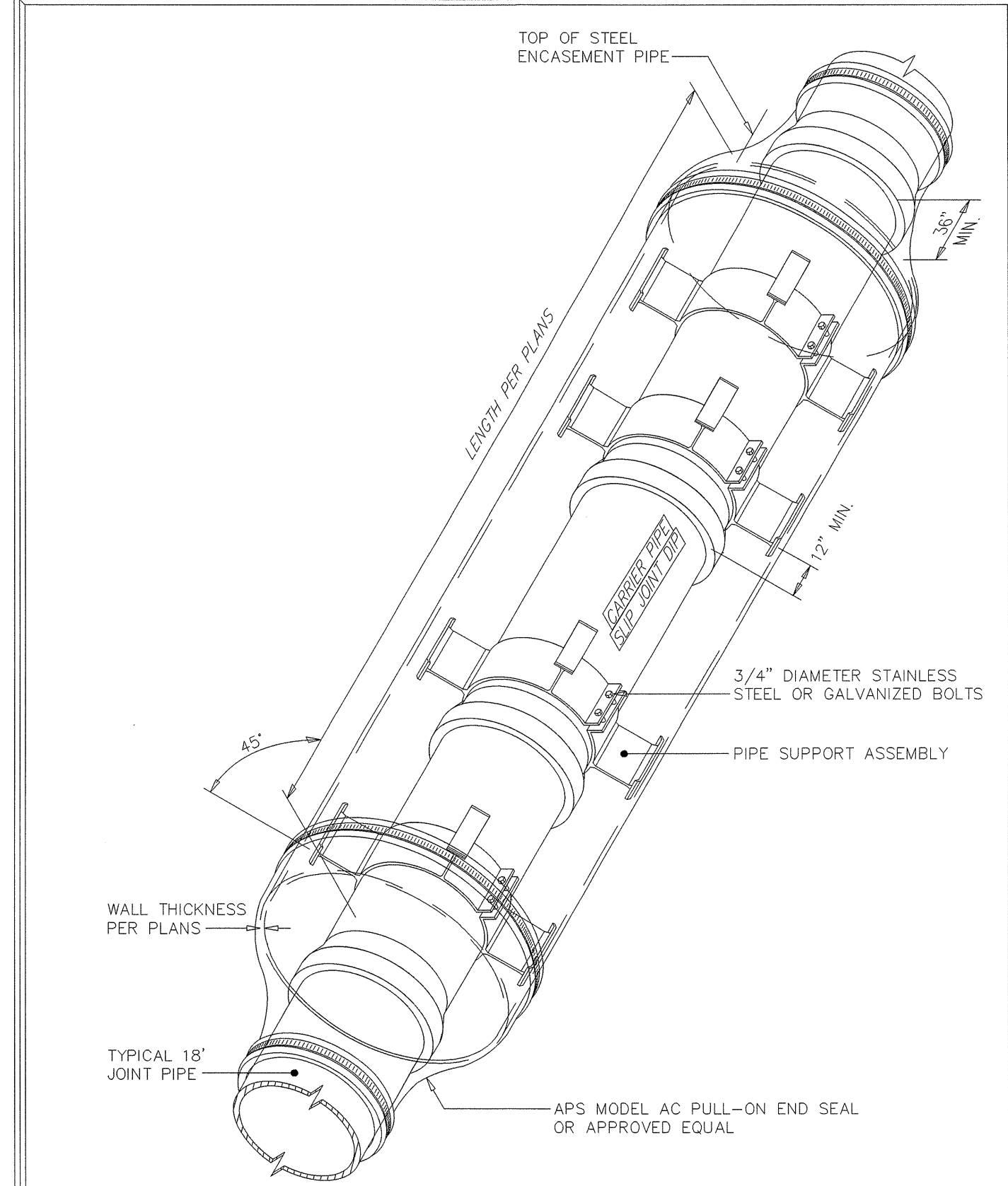
**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**TYPICAL DETAIL for BORE UNDER PAVED ROADS / HIGHWAYS**

SCALE: Not To Scale  
REVISION DATE: August 15, 2003

DETAIL # 2517.01  
SHEET # 1 of 2

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



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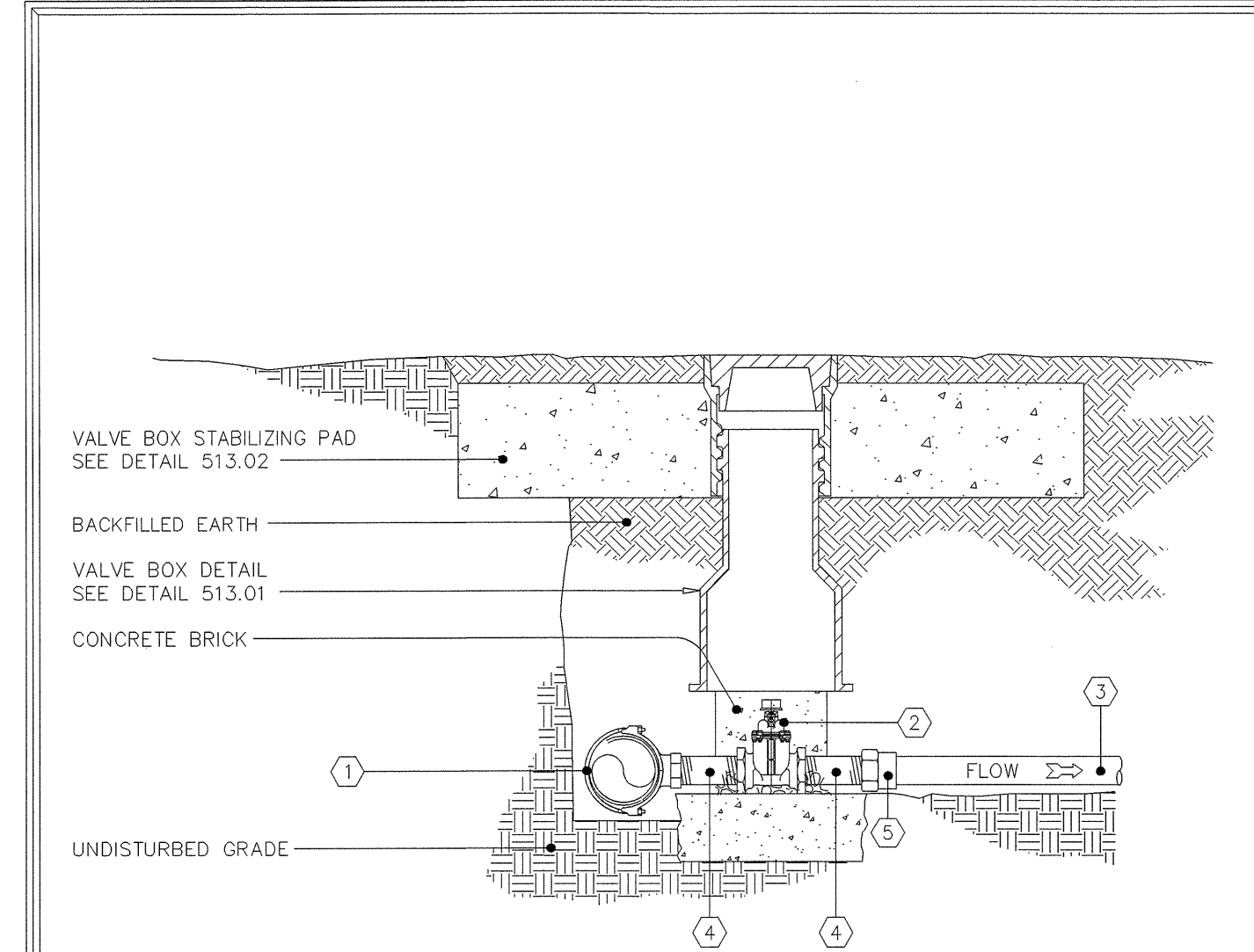
**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**TYPICAL DETAIL for BORE UNDER PAVED ROADS / HIGHWAYS**

SCALE: Not To Scale  
REVISION DATE: August 15, 2003

DETAIL # 2517.01  
SHEET # 2 of 2

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



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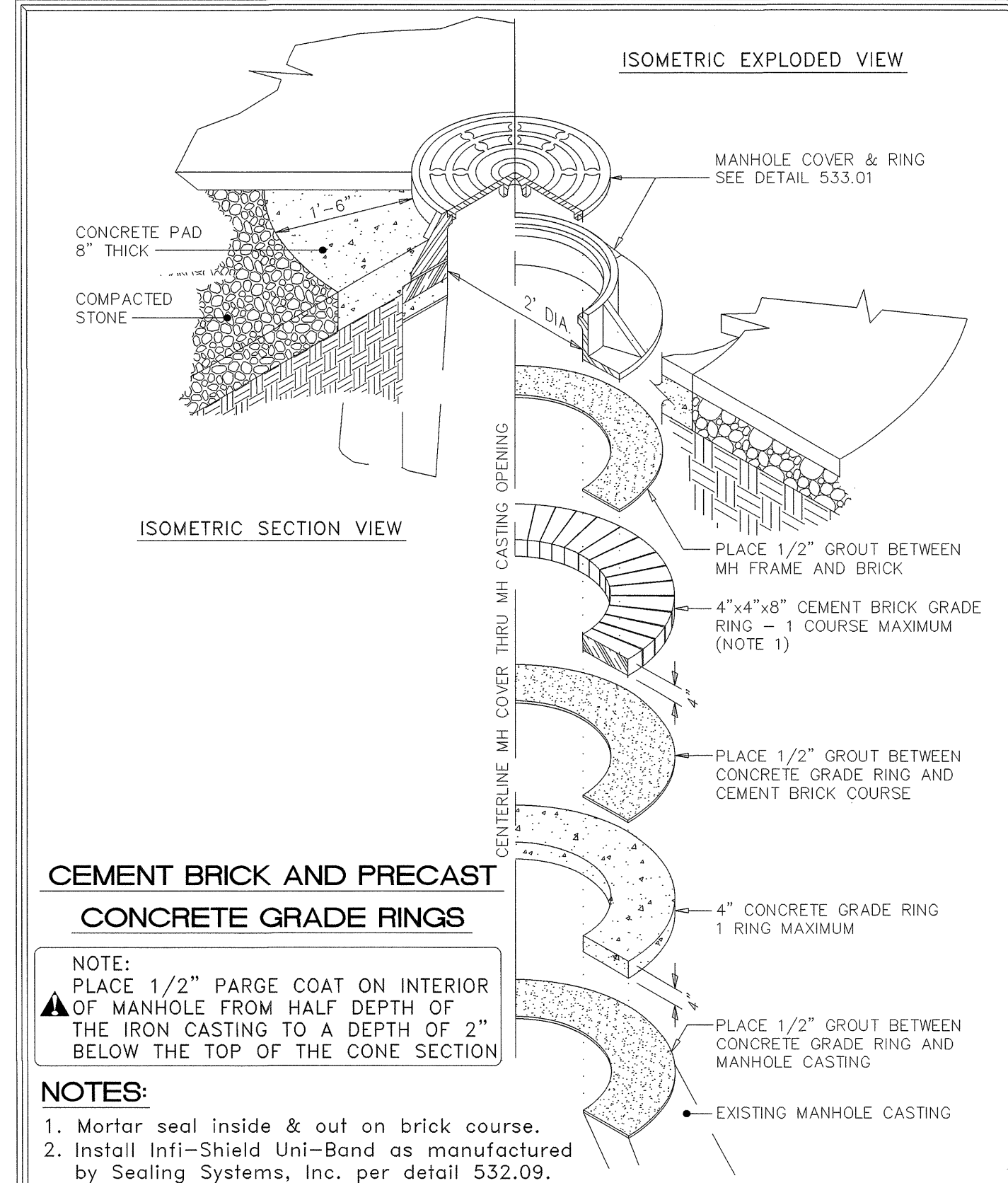
**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**STANDARD 2" TAP**

SCALE: Not To Scale  
REVISION DATE: July, 2012

DETAIL # 2  
SHEET # of

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



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Carboro, NC 27510-0366  
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FAX (919) 968-4464  
www.owasa.org

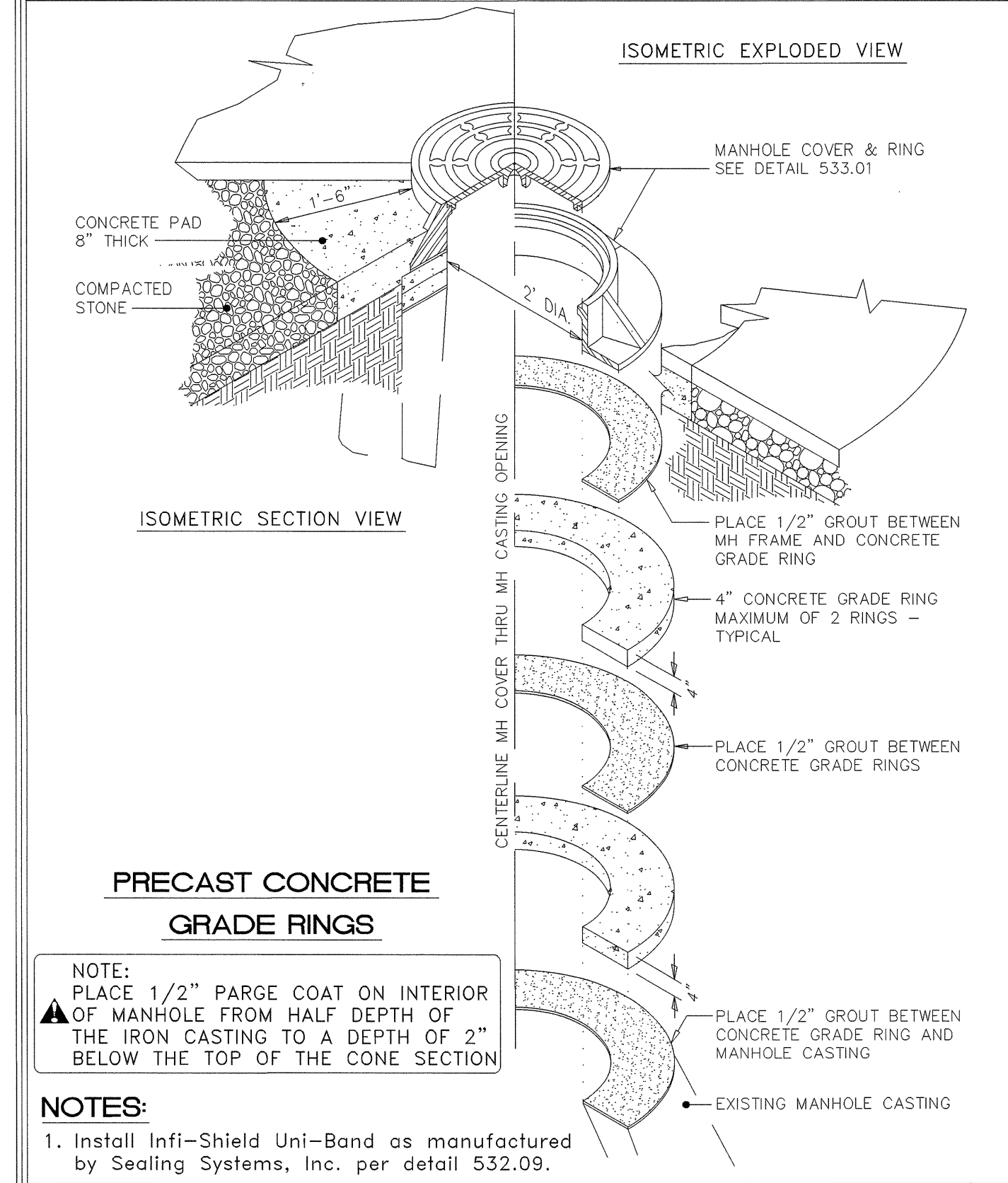
**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**MANHOLE RING AND COVER GRADE ADJUSTMENT**

SCALE: Not To Scale  
REVISION DATE: December 1, 2009

DETAIL # 2532.06  
SHEET # 2 of 3

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



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PO Box 366  
Carboro, NC 27510-0366  
Voice (919) 968-4421  
FAX (919) 968-4464  
www.owasa.org

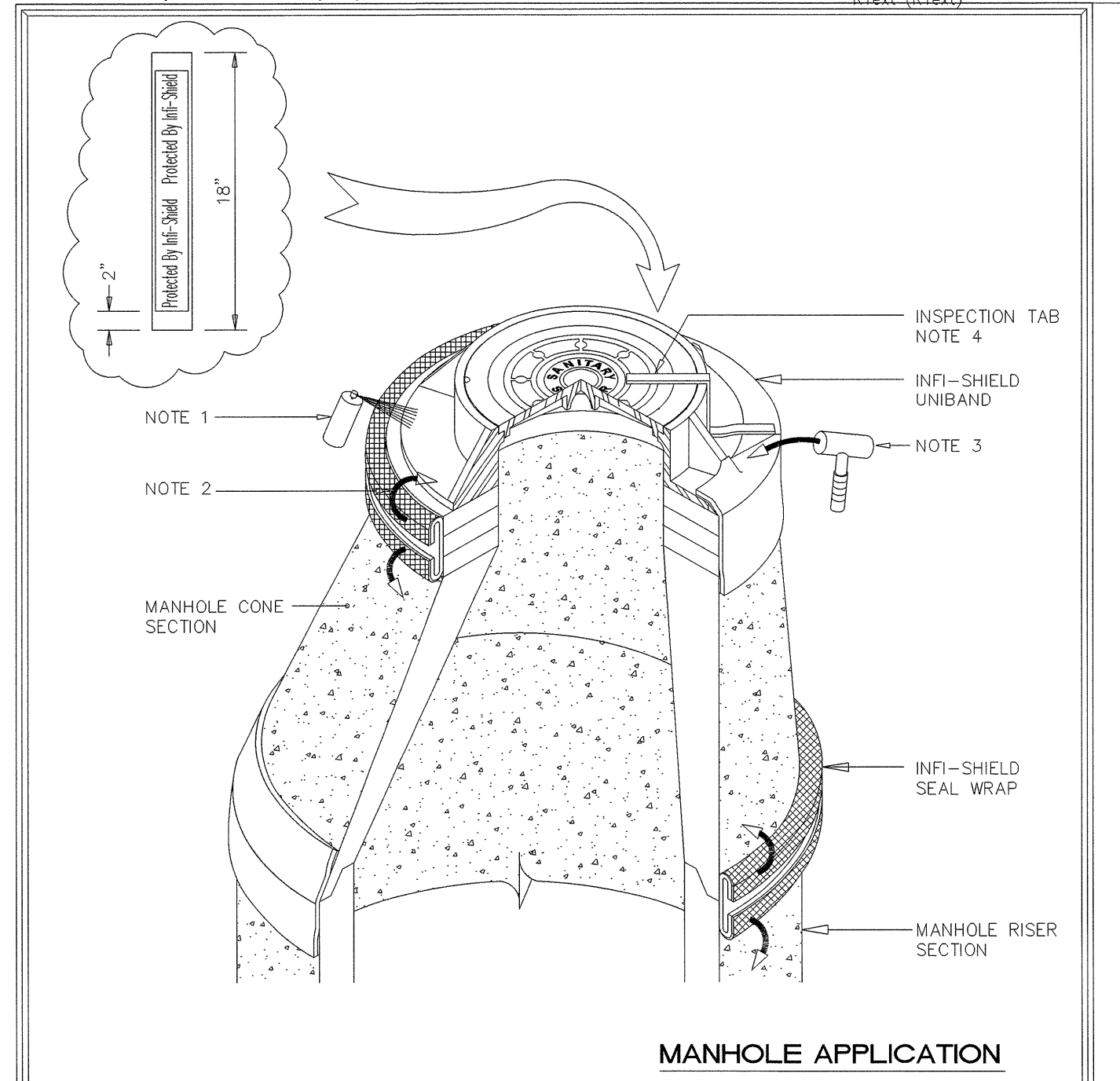
**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**MANHOLE RING AND COVER GRADE ADJUSTMENT**

SCALE: Not To Scale  
REVISION DATE: December 1, 2009

DETAIL # 2532.06  
SHEET # 3 of 3

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



400 Jones Ferry Road  
PO Box 366  
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**ORANGE WATER AND SEWER AUTHORITY**  
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

**INFI-SHIELD EXTERNAL SEALING DETAIL**

SCALE: Not To Scale  
REVISION DATE: April 13, 2007

DETAIL # 2532.09  
SHEET # 1 of 1

PROJECT REFERENCE NO. **U-0624** SHEET NO. **UC-3A**

DESIGNED BY: **NSH**

DRAWN BY: **NSH**

CHECKED BY: **CDB**

APPROVED BY: **CDB**

REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

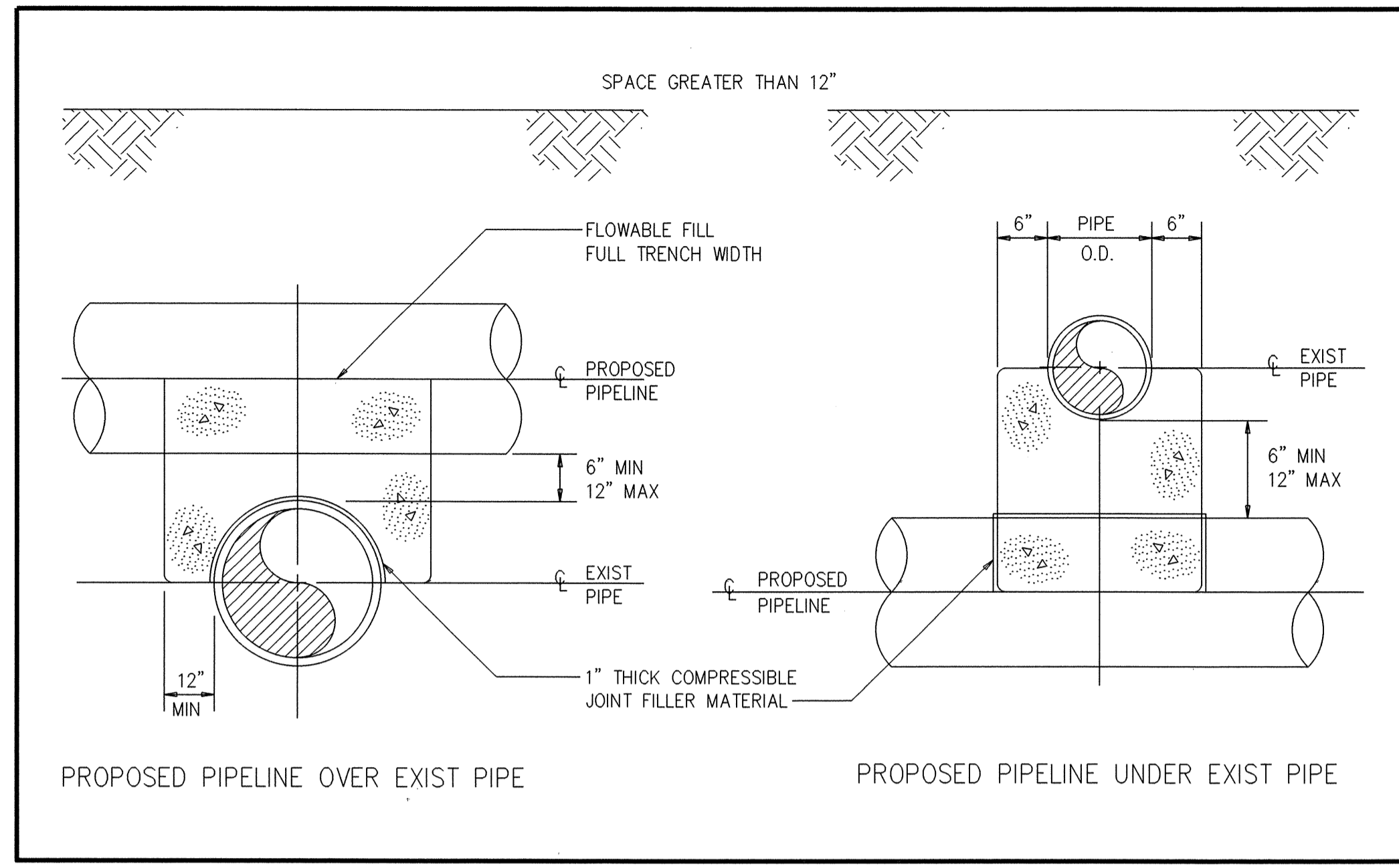
UTILITY CONSTRUCTION PLANS ONLY

23041  
7/24/07  
COREY D. BOUSQUET  
REGISTERED PROFESSIONAL ENGINEER

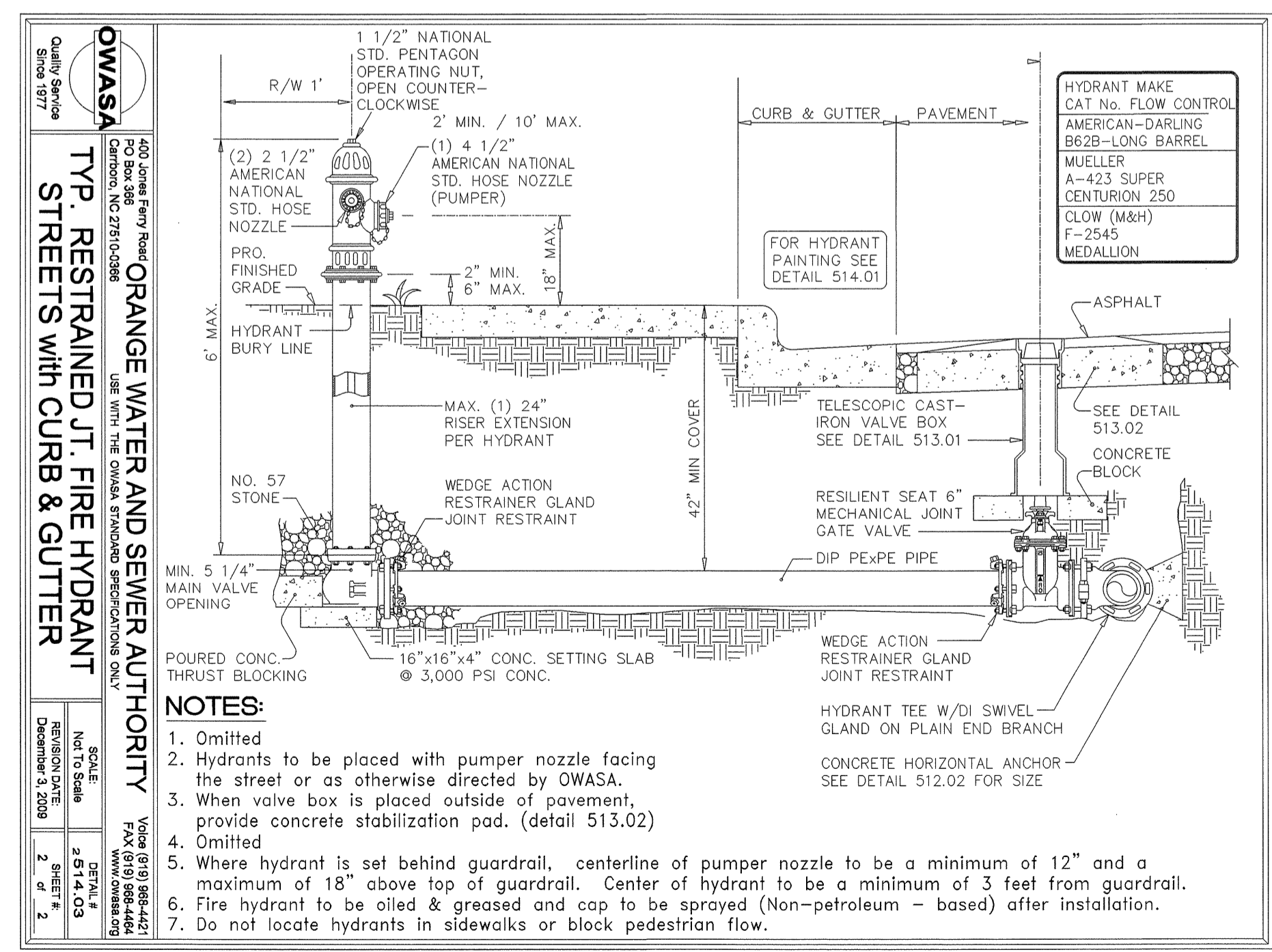
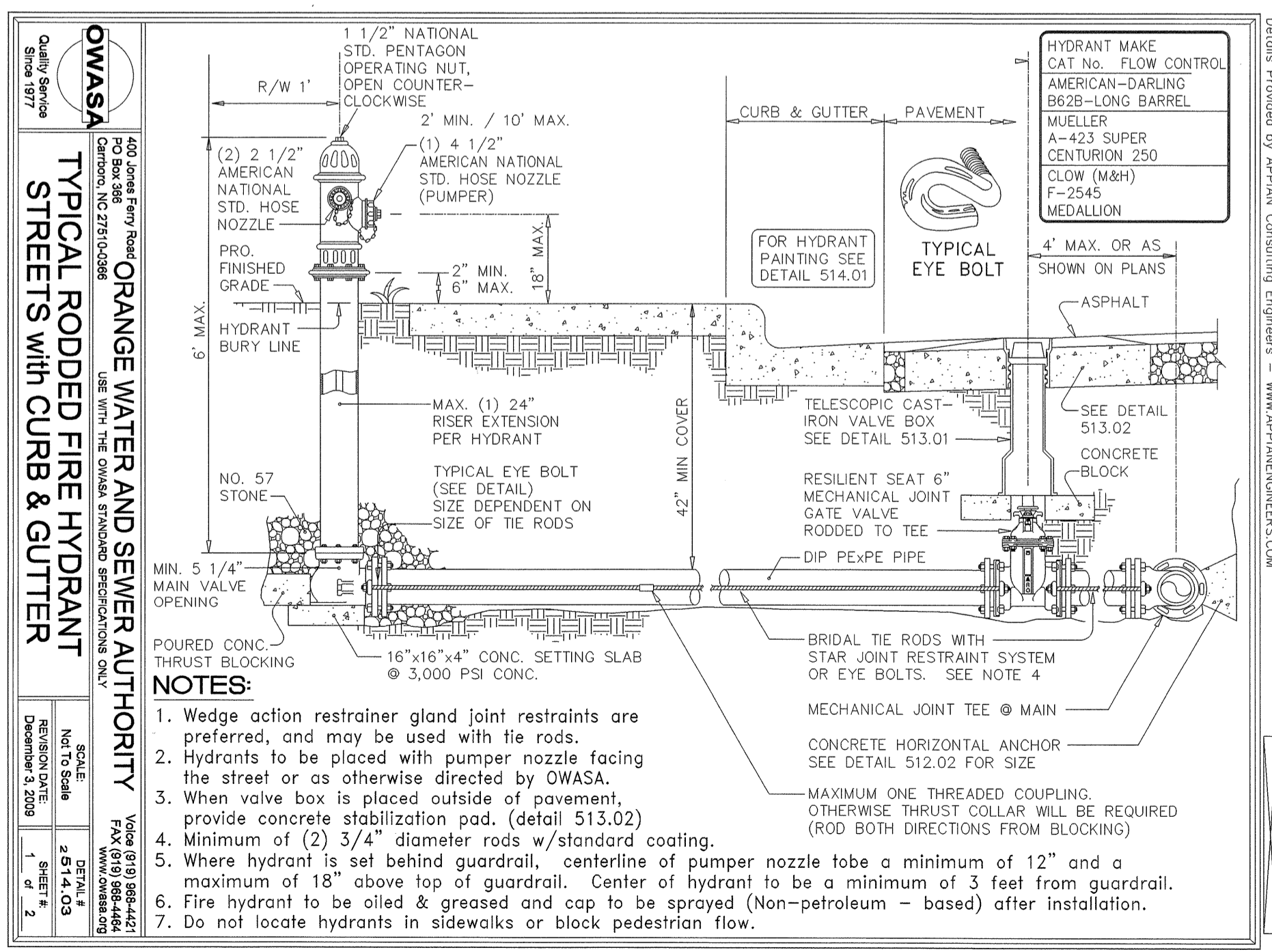
**UTILITY CONSTRUCTION**

24-Jul-2012 10:25  
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**UTILITY CONSTRUCTION**



| MAXIMUM TRENCH WIDTH AT TOP OF PIPE |                       |                            |                       |
|-------------------------------------|-----------------------|----------------------------|-----------------------|
| NOMINAL PIPE SIZE (INCHES)          | TRENCH WIDTH (INCHES) | NOMINAL PIPE SIZE (INCHES) | TRENCH WIDTH (INCHES) |
| 4                                   | 28                    | 20                         | 44                    |
| 6                                   | 30                    | 24                         | 48                    |
| 8                                   | 32                    | 30                         | 54                    |
| 10                                  | 34                    | 36                         | 60                    |
| 12                                  | 36                    | 42                         | 66                    |
| 14                                  | 38                    | 48                         | 72                    |
| 16                                  | 40                    | 54                         | 78                    |
| 18                                  | 42                    |                            |                       |

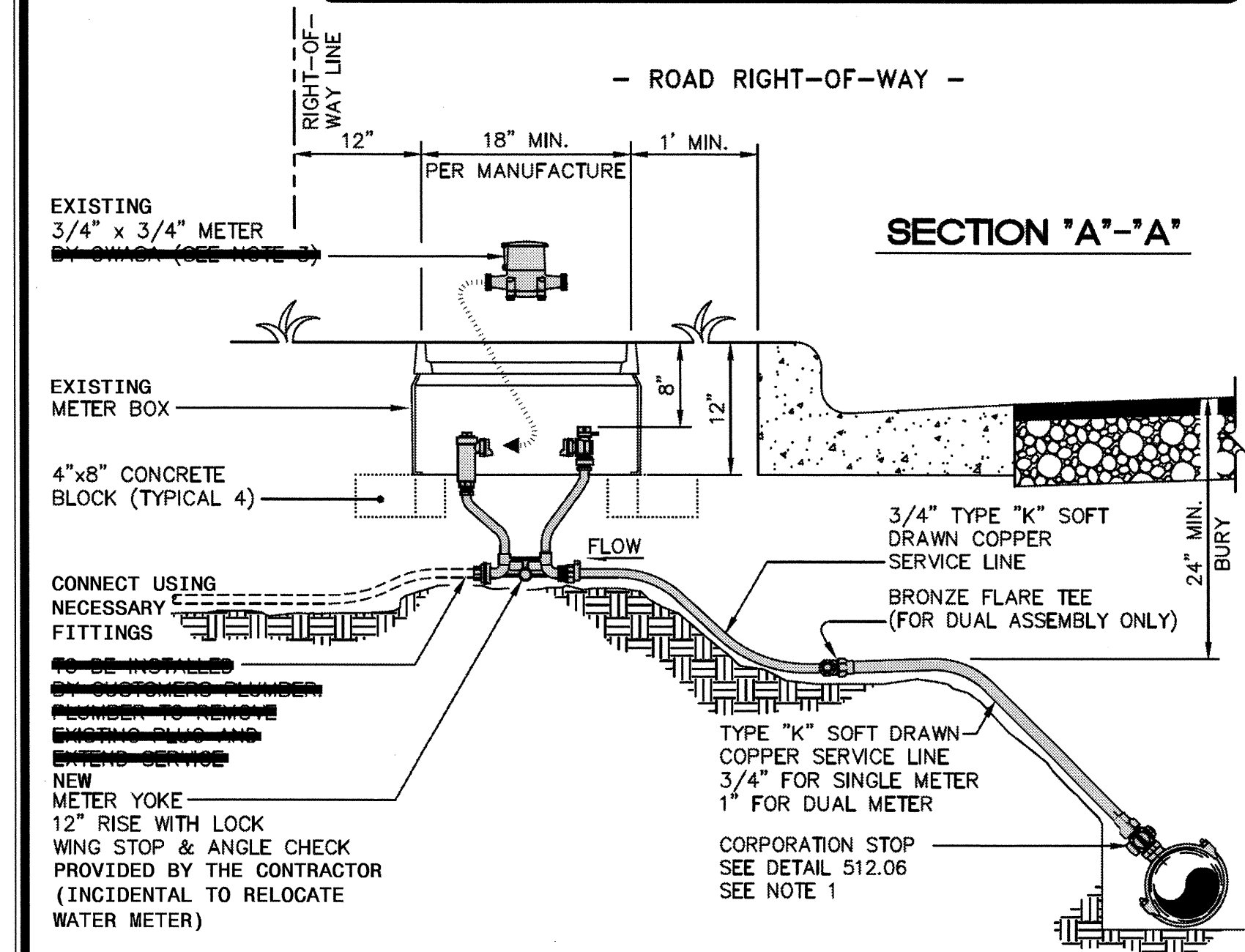


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 5/14/99

5/14/09

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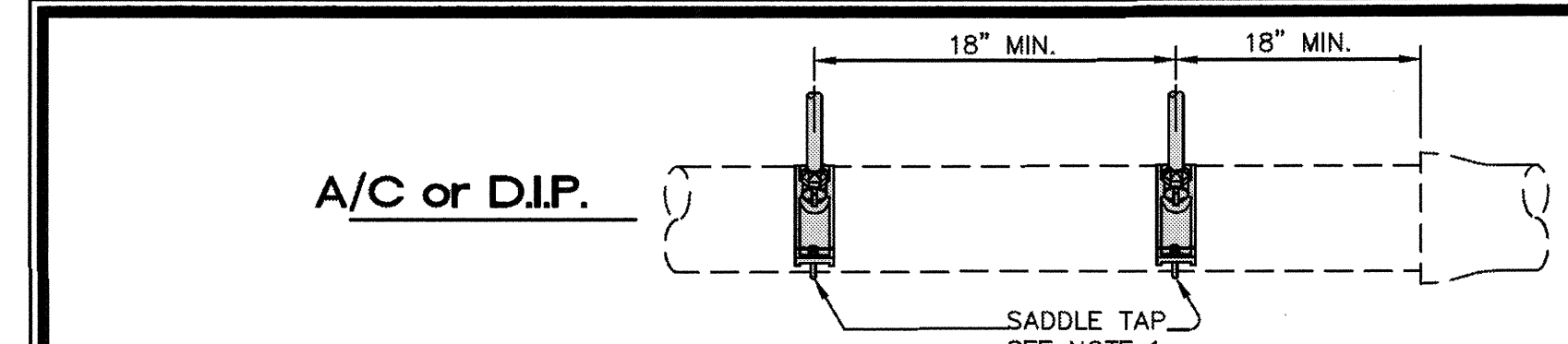
| PART         | MANUFACTURER MODEL / Cat. No.  |
|--------------|--|
| METER BOX    | OW SYSTEMS CORP. / WAG 1110-120<br>MID STATES PLASTICS, INC. / MDSF 4110-120   |
| METER SETTER | FORD (3/4") / VBHH73-11-33-NL<br>FORD (1") / VBHH74-12W-11-44-NL<br>MUELLER (3/4" & 1") / H-2404N-2A & TWO H-14222N COUPLINGS<br>SPECIFY SIZE OF YOKE WHEN ORDERING MUELLER SETTER |
| METER        | INSTALLED BY OWNER UPON PAYMENT OF FEE   |
| TAPPING      | SEE DETAIL 512.06  |



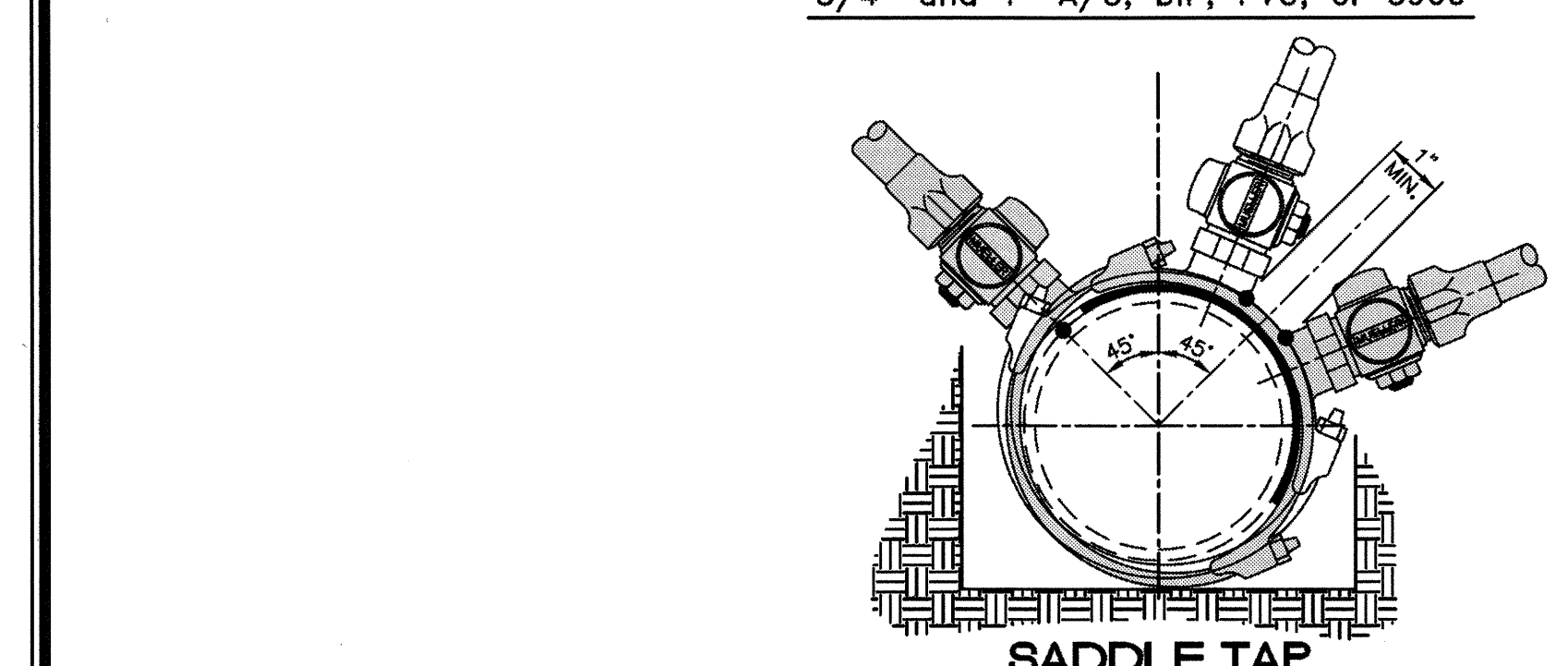
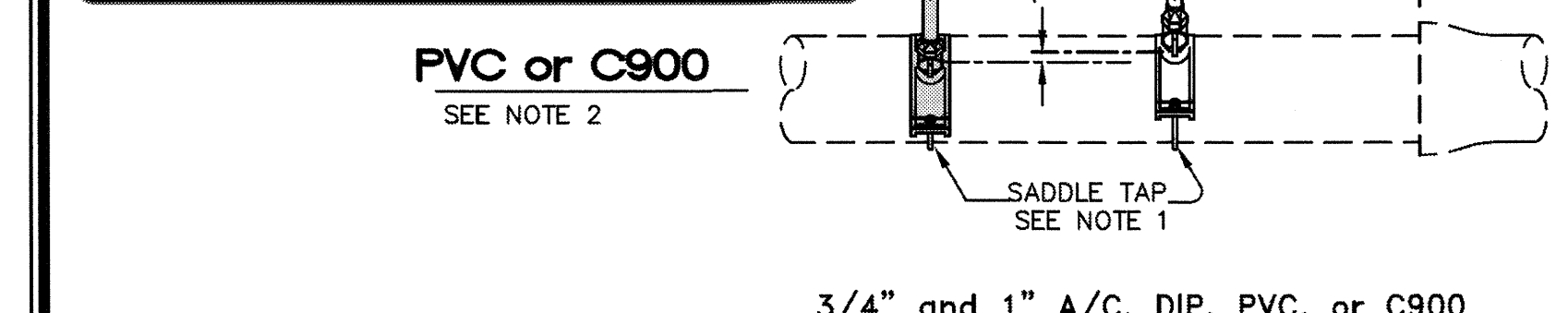
- NOTES:**
1. Bronze service saddles shall be used on all service connections. Direct taps shall be made only as directed by an OWASA representative. See tapping detail 512.06.
  2. Omitted
  3. If installation is for dual meter, meter should be purchased from OWASA (at applicable expense).
  4. Meter must be level across meter connections.
  5. Substitution requires approval by OWASA's Director of Engineering.

|                               |   |   |                                |   |
|-------------------------------|---|---|--------------------------------|---|
|                               | 400 Jones Ferry Road<br>PO Box 366<br>Carrboro, NC 27510-0366                       | <b>ORANGE WATER AND SEWER AUTHORITY</b>         |                                | Voice (919) 968-4421<br>FAX (919) 968-4464<br>www.owasa.org |
|                               |   | USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY |                                |   |
| Quality Service<br>Since 1977 | 3/4" SINGLE & 1" DUAL COMBINED DOMESTIC<br>AND FIRE PROTECTION SERVICE INSTALLATION | SCALE:<br>Not To Scale                          | REVISION DATE:<br>May 29, 2012 | DETAIL #<br>2 515.02<br>SHEET #:<br>1 of 2                  |

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 07/10/2012 - 4:29:19 PM



| PART       | MANUFACTURER MODEL / Cat. No.                               |
|------------|---|
| SADDLE     | FORD / 101B SERIES OR 202B SERIES<br>MUELLER / BR1B OR BR2B |
| CORP. STOP | FORD / F600 SERIES<br>MUELLER / H-15000 SERIES              |



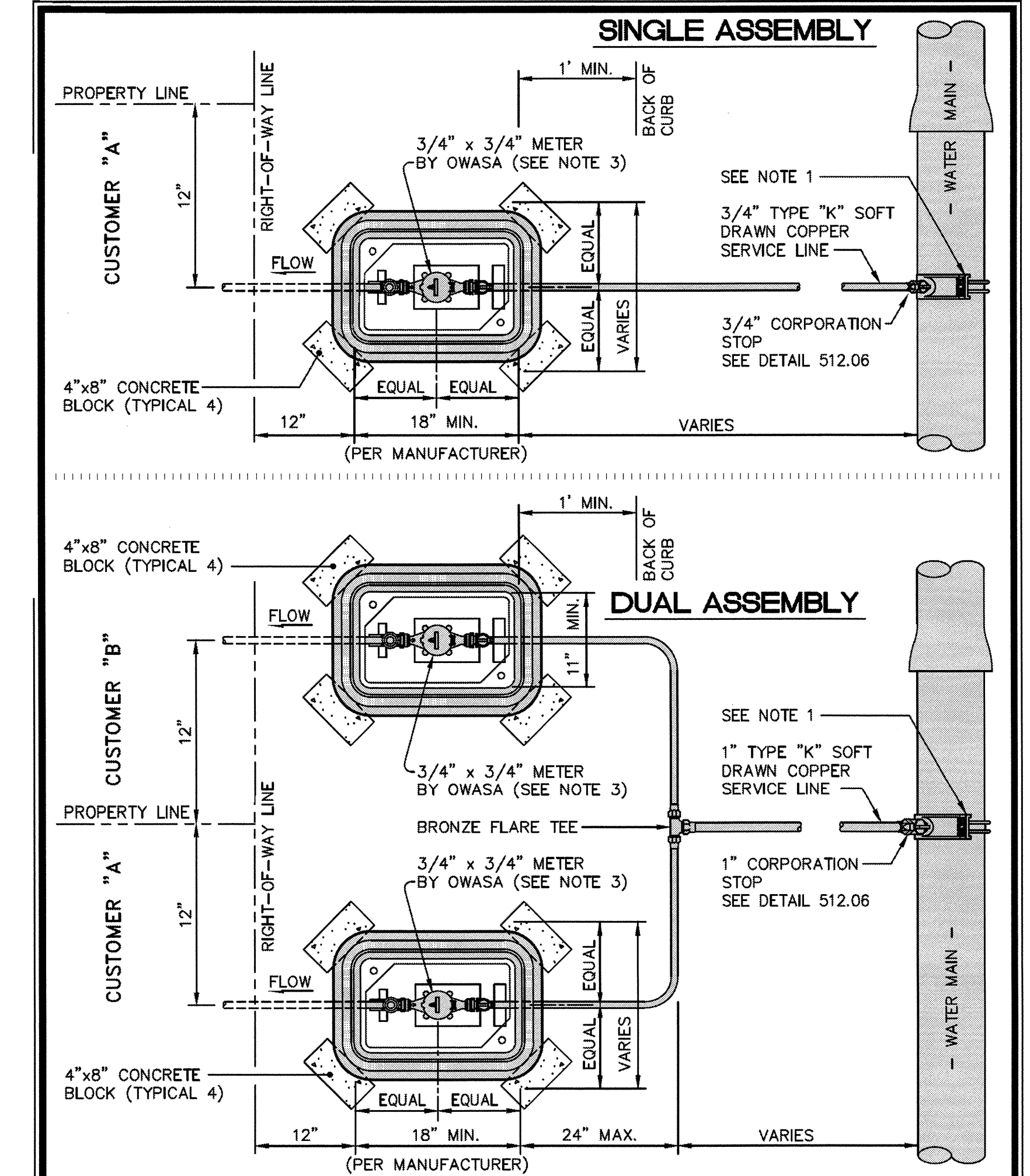
- NOTES:**
1. All bronze saddle (Single or double strap for 3/4" and 1")
  2. If 2 taps are made on each side of the main there shall be a minimum of 18" horizontal separation. Multiple taps on the same side shall have a minimum 18" horizontal separation and staggered a minimum of 1" vertically to prevent damage to the main.

|                               |   |   |                                 |   |
|-------------------------------|---|---|---------------------------------|---|
|                               | 400 Jones Ferry Road<br>PO Box 366<br>Carrboro, NC 27510-0366 | <b>ORANGE WATER AND SEWER AUTHORITY</b>         |                                 | Voice (919) 968-4421<br>FAX (919) 968-4464<br>www.owasa.org |
|                               |   | USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY |                                 |   |
| Quality Service<br>Since 1977 | STANDARD 3/4" and 1"<br>WATER TAPPING DETAIL                  | SCALE:<br>Not To Scale                          | REVISION DATE:<br>October, 2011 | DETAIL #<br>2 512.06<br>SHEET #:<br>1 of 1                  |

|  |                           |
|--|---------------------------|
| PROJECT REFERENCE NO.<br><b>U-0624</b>                                     | SHEET NO.<br><b>UC-3C</b> |
| DESIGNED BY: <b>NSH</b>  |                           |
| DRAWN BY: <b>NSH</b>   |                           |
| CHECKED BY: <b>CDB</b>   |                           |
| APPROVED BY: <b>CDB</b>  |                           |
| REVISED:   |                           |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION                          |                           |
| UTILITIES ENGINEERING SEC.<br>PHONE: (919) 250-4128<br>FAX: (919) 250-4119 |                           |
| UTILITY CONSTRUCTION<br>PLANS ONLY   |                           |

**UTILITY CONSTRUCTION**

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM



|                               |   |   |                                |   |
|-------------------------------|---|---|--------------------------------|---|
|                               | 400 Jones Ferry Road<br>PO Box 366<br>Carrboro, NC 27510-0366                       | <b>ORANGE WATER AND SEWER AUTHORITY</b>         |                                | Voice (919) 968-4421<br>FAX (919) 968-4464<br>www.owasa.org |
|                               |   | USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY |                                |   |
| Quality Service<br>Since 1977 | 3/4" SINGLE & 1" DUAL COMBINED DOMESTIC<br>AND FIRE PROTECTION SERVICE INSTALLATION | SCALE:<br>Not To Scale                          | REVISION DATE:<br>May 29, 2012 | DETAIL #<br>2 515.02<br>SHEET #:<br>2 of 2                  |

23-JUL-2012 09:45  
D:\PC\owner\_details\0624\_ut\_details\0624.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

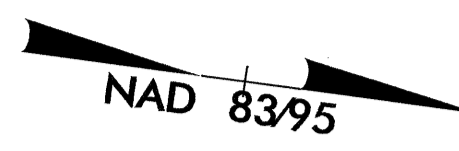
5/14/99

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|   |                          |
|---|--------------------------|
| PROJECT REFERENCE NO.<br><b>U-0624</b>                                | SHEET NO.<br><b>UC-4</b> |
| DESIGNED BY: <b>SBA</b>   |                          |
| DRAWN BY: <b>SBA</b>  |                          |
| CHECKED BY: <b>CDB</b>  |                          |
| APPROVED BY: <b>CDB</b>   |                          |
| REVISIION:  |                          |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION                           |                          |
| PROJECT SERVICES UNIT<br>PHONE: (919) 250-4128<br>FAX: (919) 250-4119 |                          |
| UTILITY CONSTRUCTION PLANS ONLY                                       |                          |

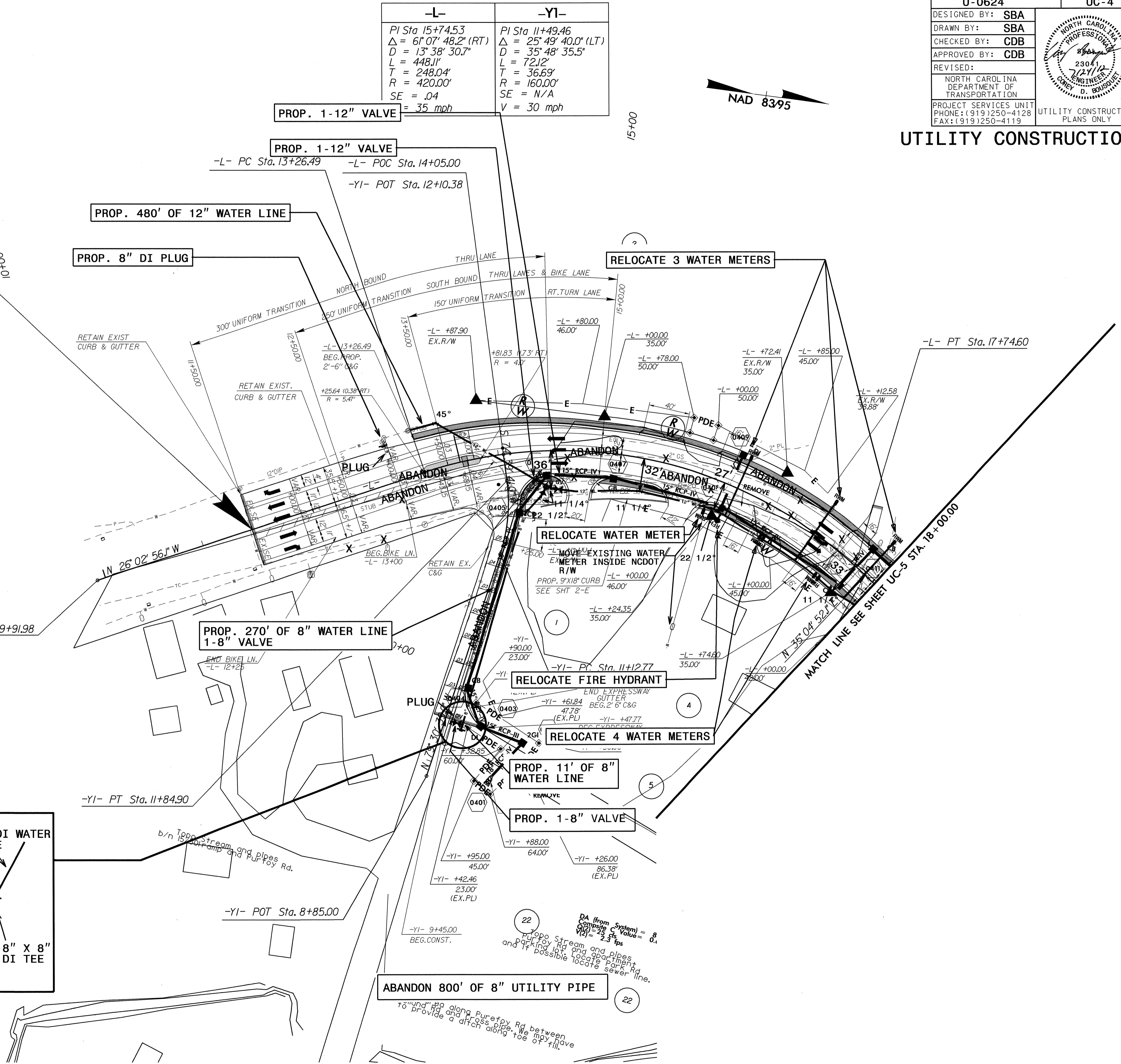
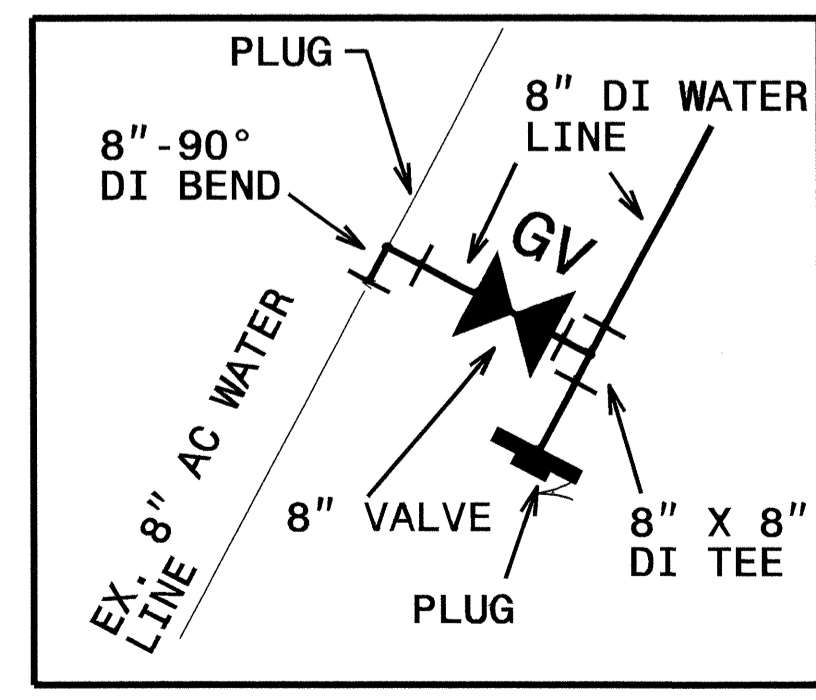
# UTILITY CONSTRUCTION

| -L-                                   | -YI-                                  |
|---------------------------------------|---------------------------------------|
| PI Sta 15+74.53                       | PI Sta 11+49.46                       |
| $\Delta = 61^{\circ} 07' 48.2''$ (RT) | $\Delta = 25^{\circ} 49' 40.0''$ (LT) |
| D = 13' 38' 30.7"                     | D = 35' 48' 35.5"                     |
| L = 448.11'                           | L = 72.12'                            |
| T = 248.04'                           | T = 36.69'                            |
| R = 420.00'                           | R = 160.00'                           |
| SE = .04                              | SE = N/A                              |
| V = 35 mph                            | V = 30 mph                            |



**-L- STA. 11+50.00  
BEGIN STATE PROJECT U-624**

NC 86  
TO PITTSBORO



**ABANDON 800' OF 8" UTILITY PIPE**

to "and" #2 along Purefoy Rd between  
provide a ditch along toe of fill.

DA (from System) = 8  
Composite C Value = 0.1  
V<sub>2</sub> = 2.3 fps

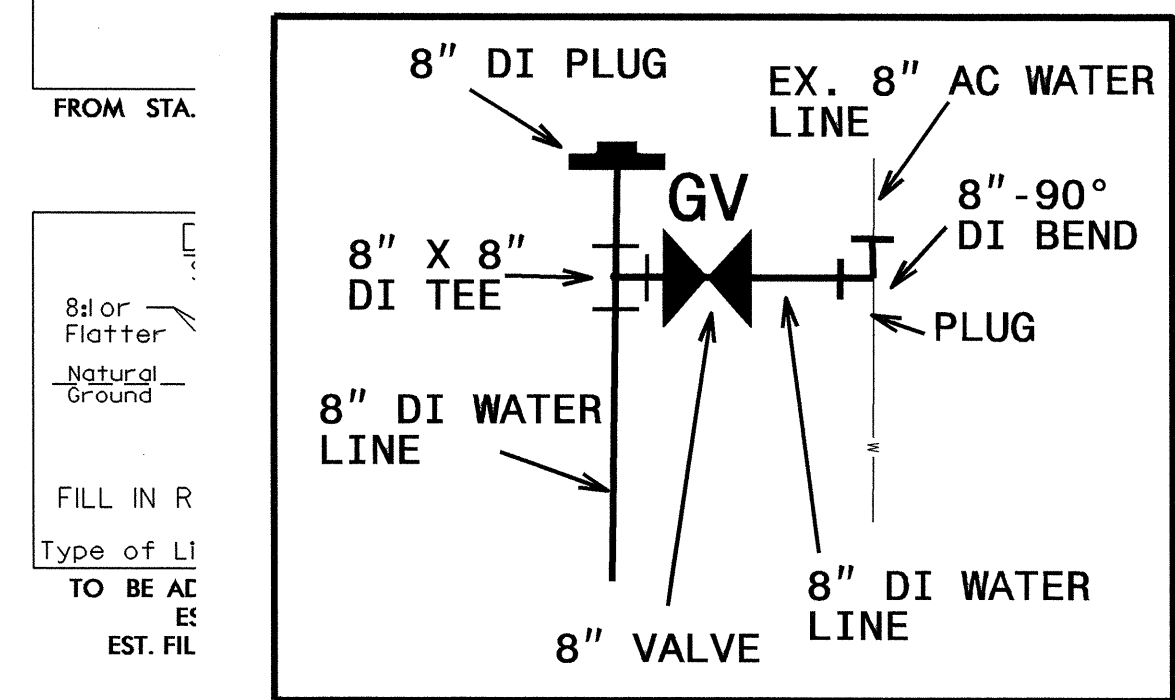
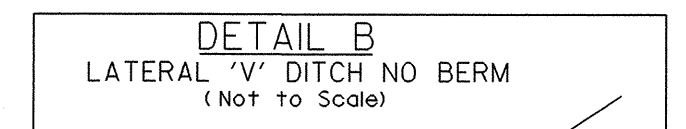
Purefoy Rd and pipes  
parking lot. Locate pipe  
and if possible locate sewer line.

MATCH LINE SEE SHEET UC-5 STA. 18+00.00

|   |                          |
|---|--------------------------|
| PROJECT REFERENCE NO.<br><b>U-0624</b>  | SHEET NO.<br><b>UC-5</b> |
| DESIGNED BY: <b>SBA</b>   |                          |
| DRAWN BY: <b>SBA</b>  |                          |
| CHECKED BY: <b>CDB</b>  |                          |
| APPROVED BY: <b>CDB</b>   |                          |
| REVISED:  |                          |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 250-4128<br>FAX: (919) 250-4119 |                          |
| UTILITY CONSTRUCTION PLANS ONLY   |                          |

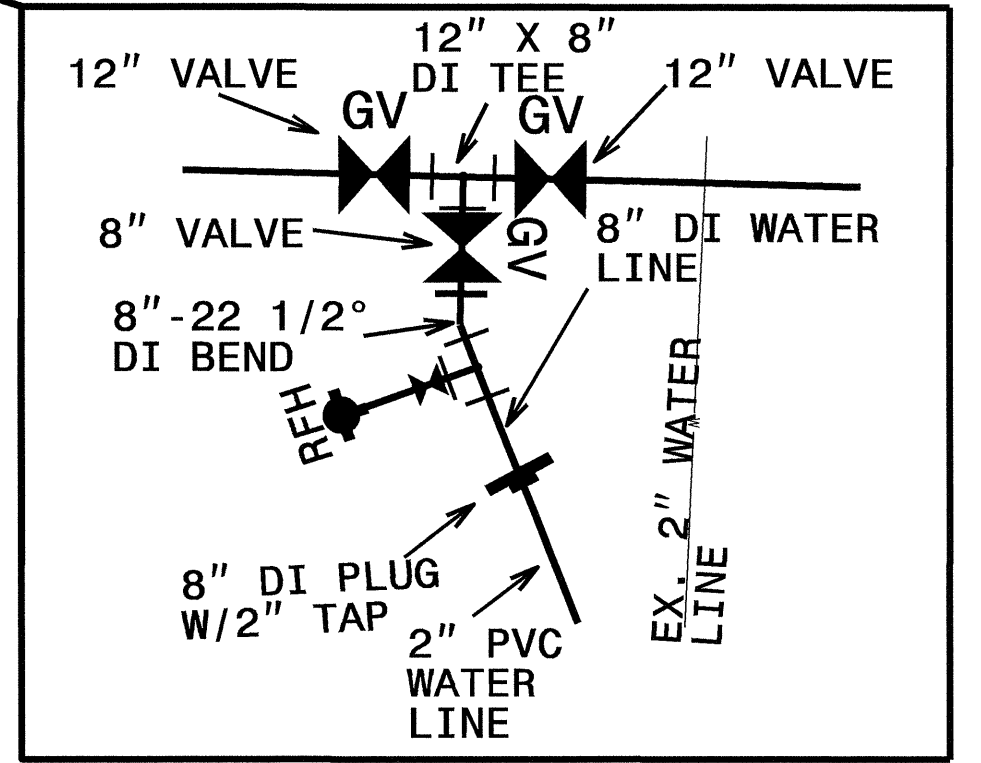
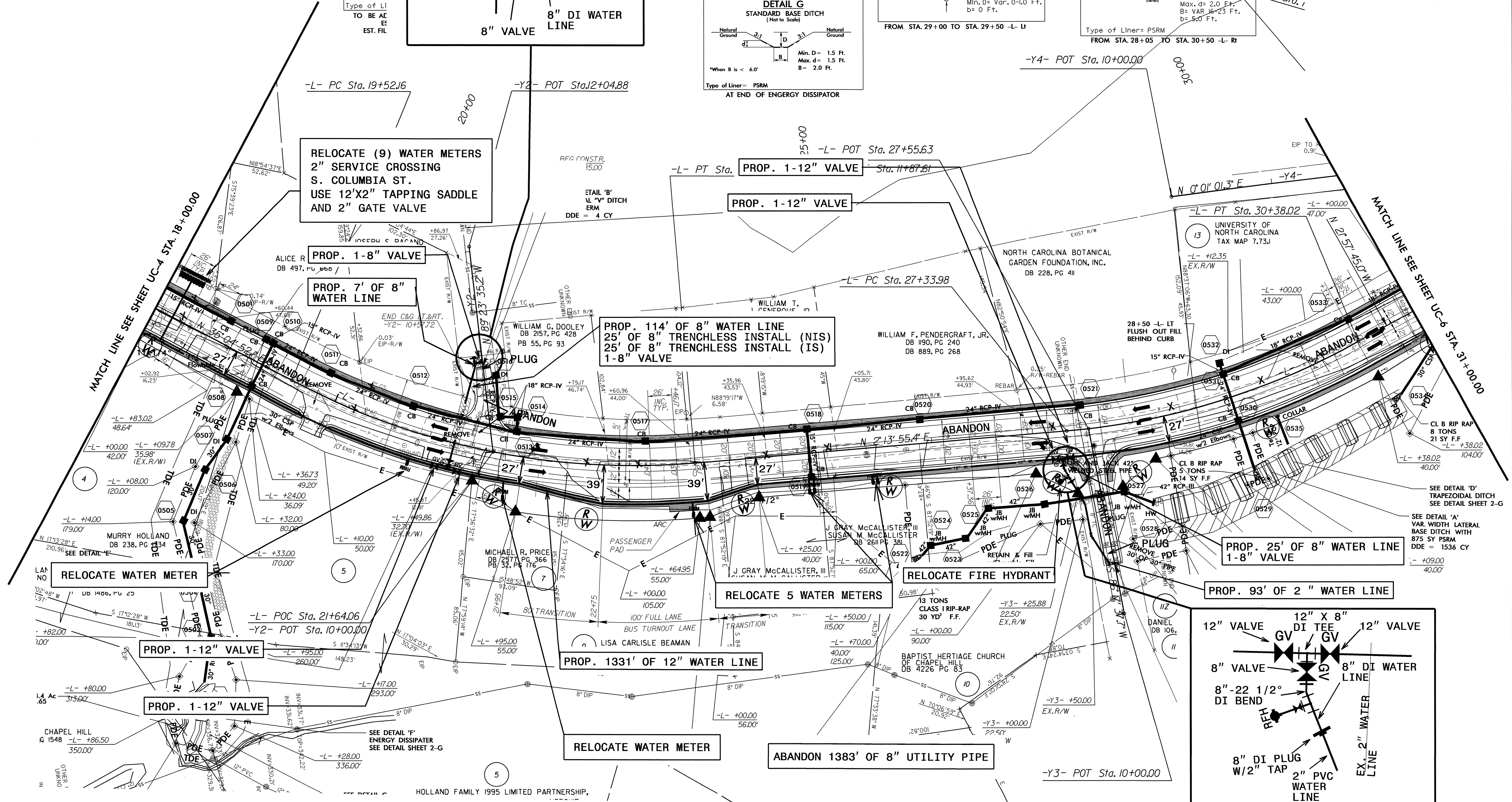
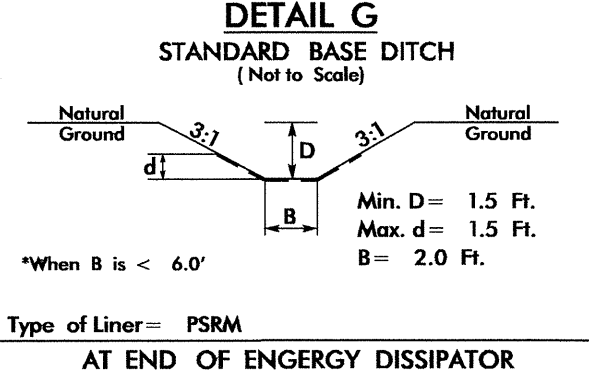
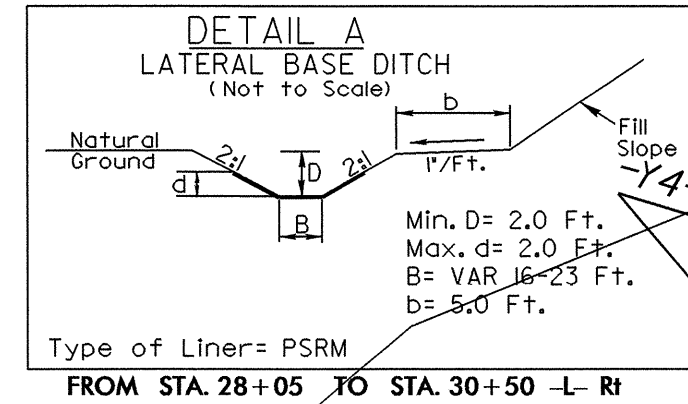
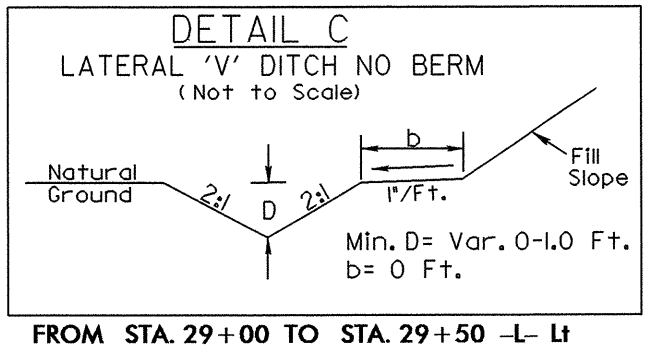
# UTILITY CONSTRUCTION

LEGEND: TRENCHLESS INSTALL

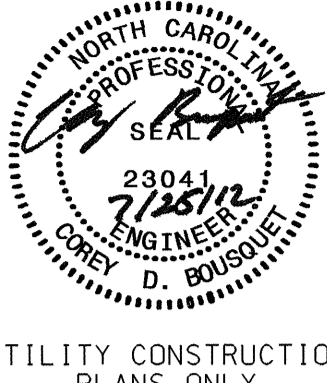


SE = .04  
V = 40 mph

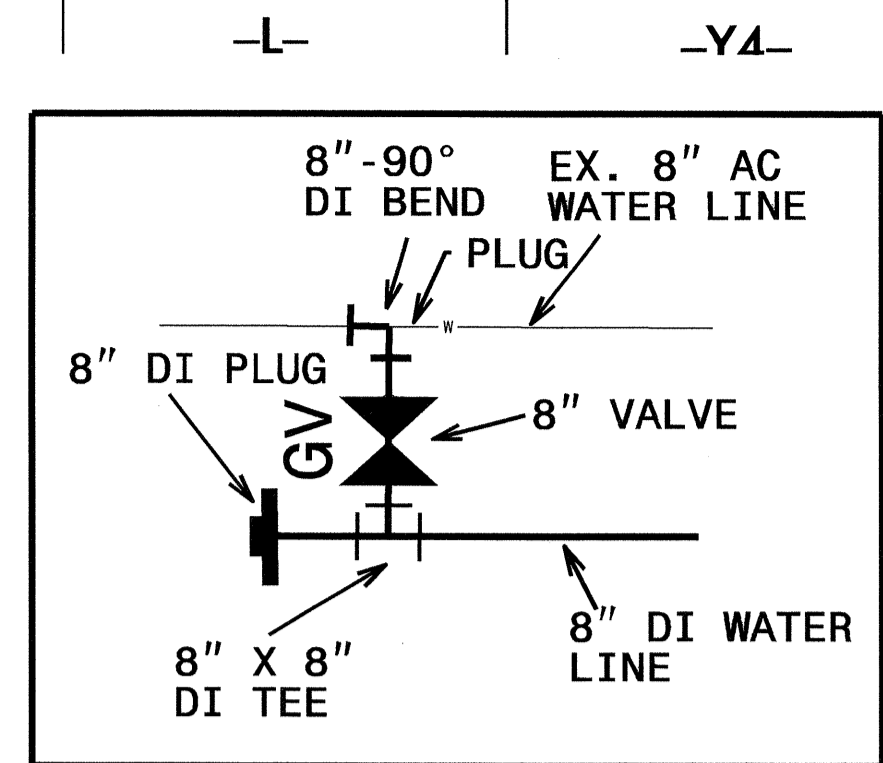
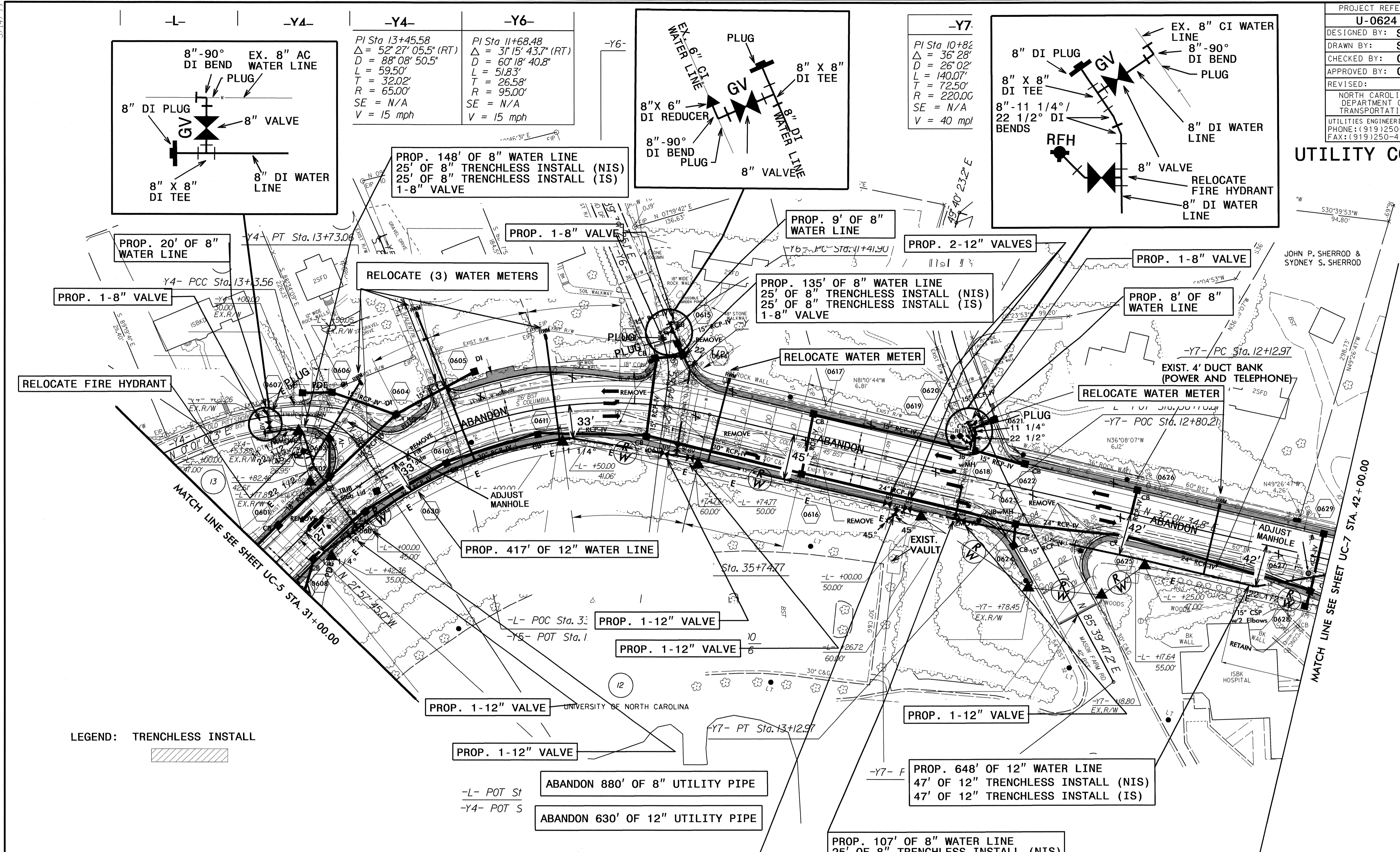
SE = .04  
V = 40 mph





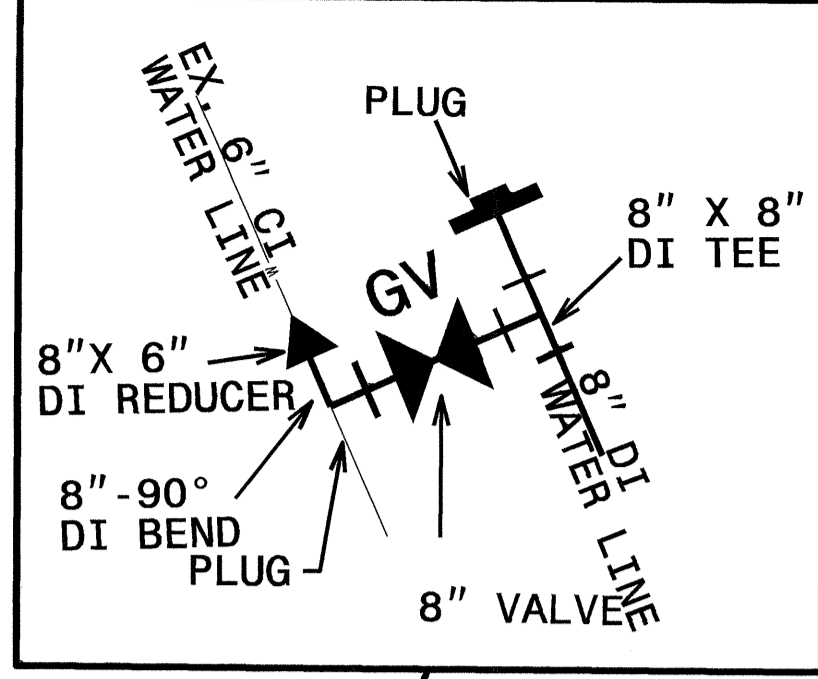


**UTILITY CONSTRUCTION**

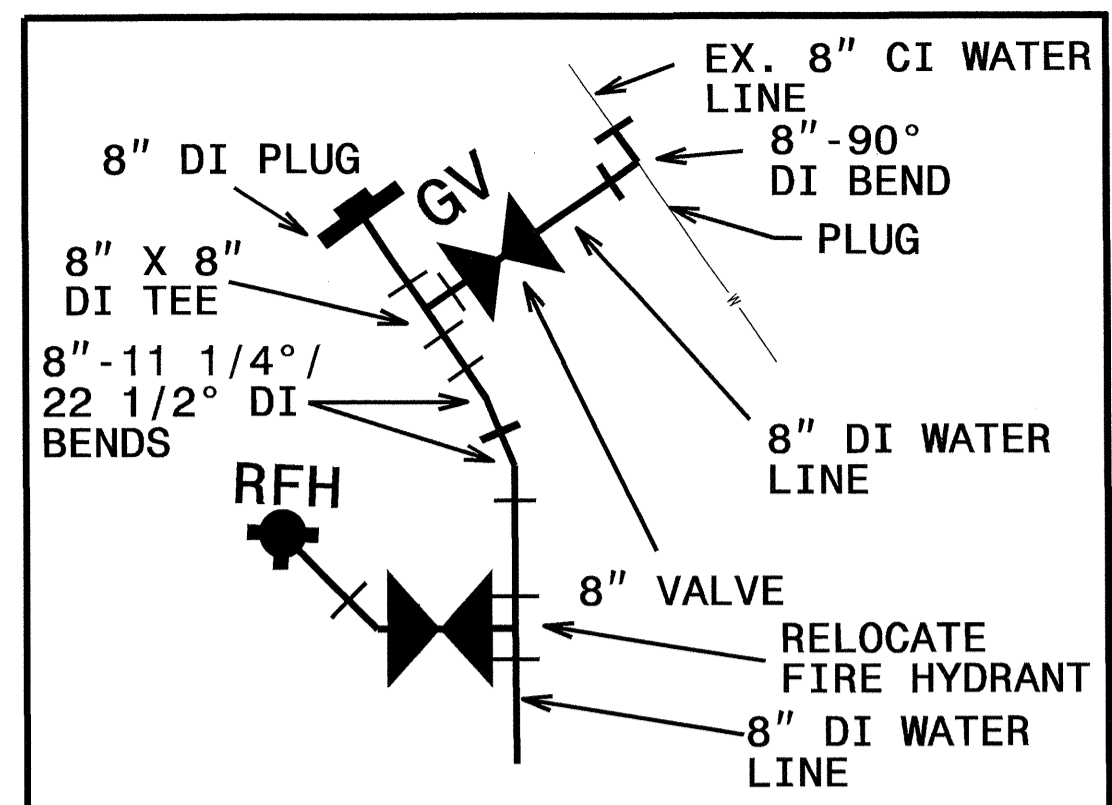


**-Y4-**  
 PI Sta 13+45.58  
 $\Delta = 52^{\circ} 27' 05.5''$  (RT)  
 $D = 88^{\circ} 08' 50.5''$   
 $L = 59.50'$   
 $T = 32.02'$   
 $R = 65.00'$   
 $SE = N/A$   
 $V = 15$  mph

**-Y6-**  
 PI Sta 11+68.48  
 $\Delta = 31^{\circ} 15' 43.7''$  (RT)  
 $D = 60^{\circ} 18' 40.8''$   
 $L = 51.83'$   
 $T = 26.58'$   
 $R = 95.00'$   
 $SE = N/A$   
 $V = 15$  mph



**-Y7-**  
 PI Sta 10+82  
 $\Delta = 36^{\circ} 28'$   
 $D = 26^{\circ} 02'$   
 $L = 140.07'$   
 $T = 72.50'$   
 $R = 220.00'$   
 $SE = N/A$   
 $V = 40$  mph



LEGEND: TRENCHLESS INSTALL

-L- POT St  
 -Y4- POT S

ABANDON 880' OF 8" UTILITY PIPE

ABANDON 630' OF 12" UTILITY PIPE

| 2005 AADT       | OLD PITTSBORO RD. |        | VALENTINE LN. |        | WESTWOOD DR.   |      | WESTWOOD DR. |       | S. COLUMBIA ST. |        |
|-----------------|-------------------|--------|---------------|--------|----------------|------|--------------|-------|-----------------|--------|
|                 | 600               |        | -100          |        | 600            |      | 400          |       | 3000            | 16,000 |
| 2030 AADT       | 700               |        | NA            |        | 700            |      | 500          |       | 4700            | 26,300 |
|                 | 200               | 400    | -100          | -100   | 400            | 200  | 100          | 100   |                 |        |
|                 | 300               | 400    | NA            | NA     | 400            | 300  | 100          | 100   |                 |        |
| S. COLUMBIA ST. | 19,000            | 19,200 | 19,200        | 19,000 | 6000           | 3000 | 16,000       | NC 86 |                 |        |
|                 | 30,900            | 31,000 | 31,000        | 30,900 | 9300           | 4700 | 26,300       |       |                 |        |
|                 |                   |        |               |        | 9200           |      |              |       |                 |        |
|                 |                   |        |               |        | 14300          |      |              |       |                 |        |
|                 |                   |        |               |        | MASON FARM RD. |      |              |       |                 |        |

PROP. 18' OF 12" WATER LINE  
 1-12" VALVE  
 WORK MAY NEED TO BE DONE AT NIGHT

★ SIGNAL UPGRADE

FOR -L- PROFILE, SEE SHEET 8  
 FOR -Y4- PROFILE, SEE SHEET 10  
 FOR -Y5- PROFILE, SEE SHEET 10  
 FOR -Y6- PROFILE, SEE SHEET 10  
 FOR -Y7- PROFILE, SEE SHEET 11

5/14/99

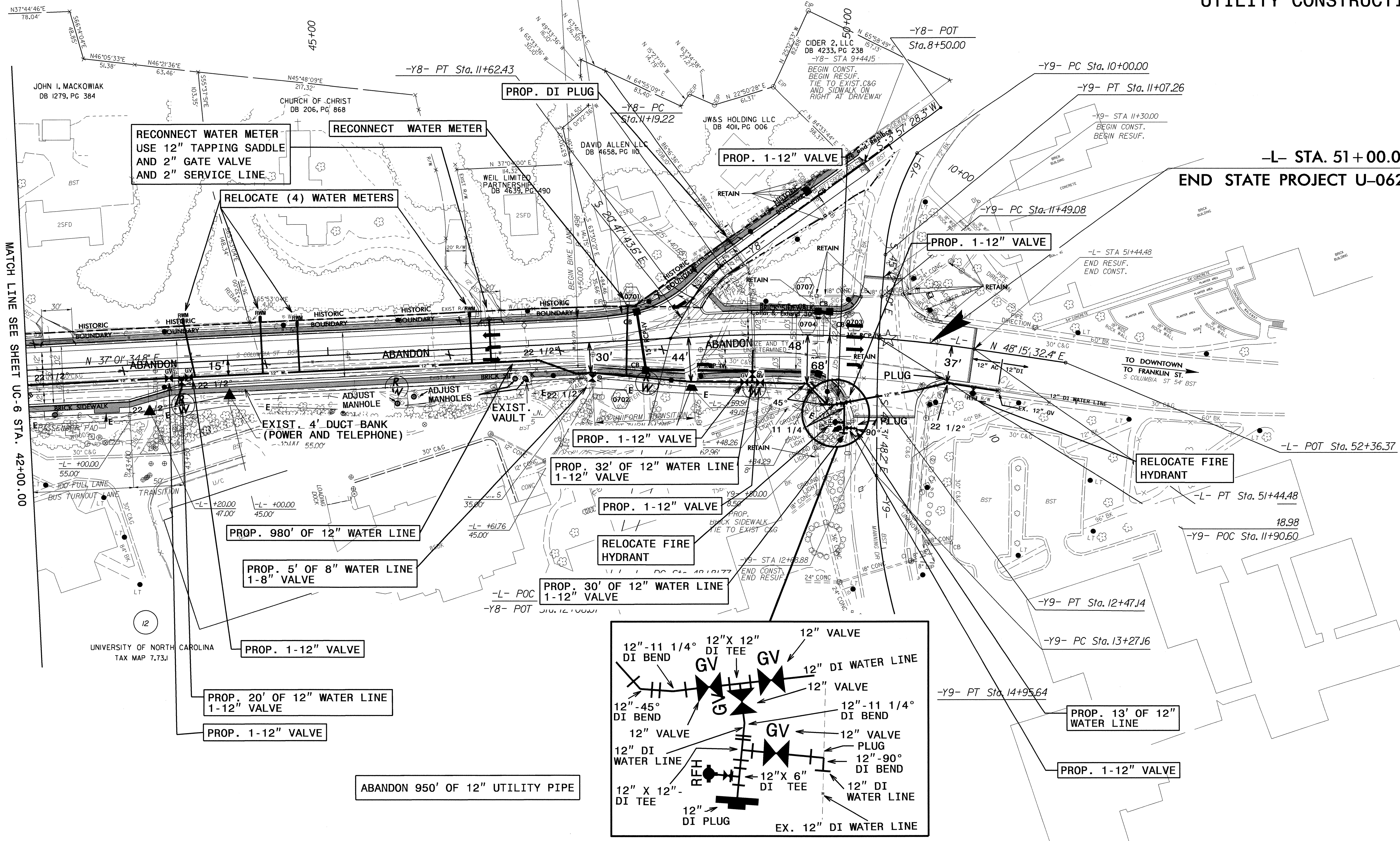
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5/14/09

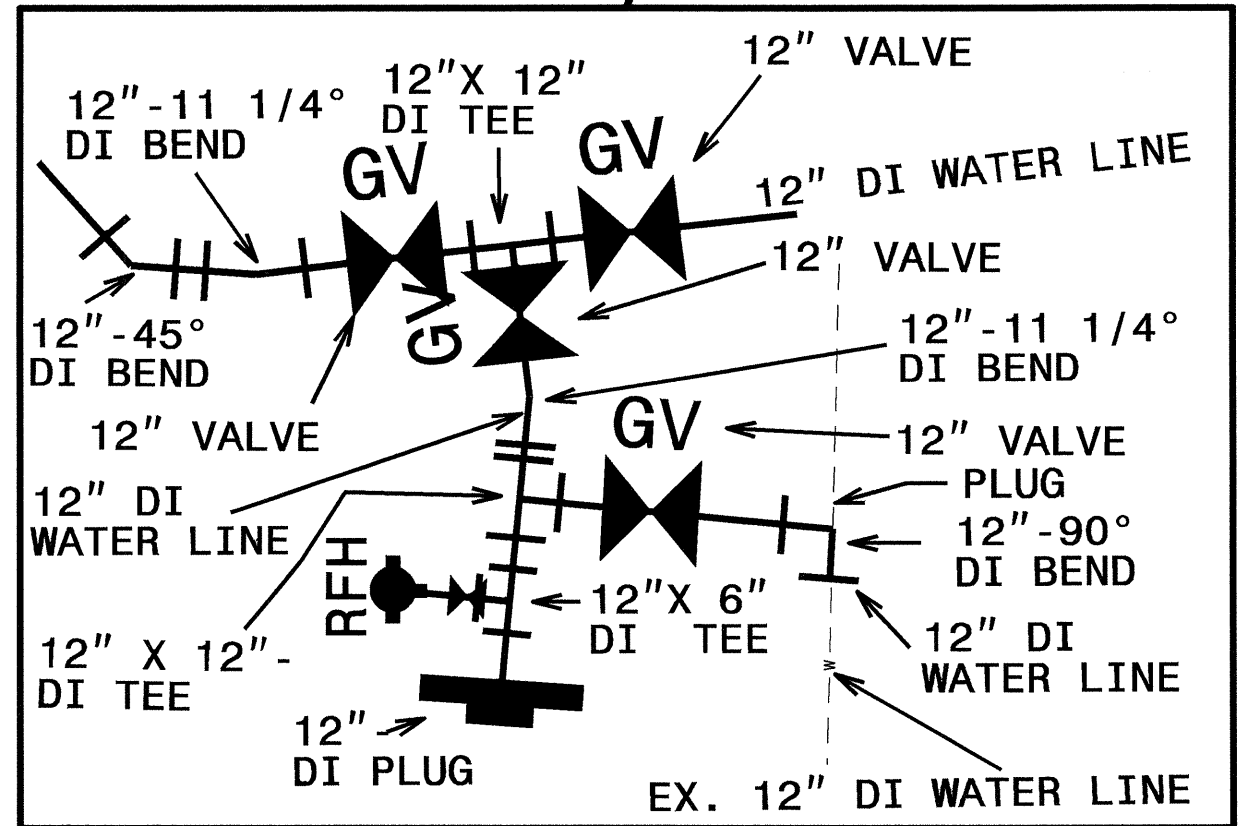
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|   |           |
|---|-----------|
| PROJECT REFERENCE NO.   | SHEET NO. |
| U-0624  | UC-7      |
| DESIGNED BY: SBA  |           |
| DRAWN BY: SBA   |           |
| CHECKED BY: CDB   |           |
| APPROVED BY: CDB  |           |
| REVISED:  |           |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 250-4128<br>FAX: (919) 250-4119 |           |
| UTILITY CONSTRUCTION<br>PLANS ONLY  |           |

# UTILITY CONSTRUCTION



-L- STA. 51+00.00  
END STATE PROJECT U-0624



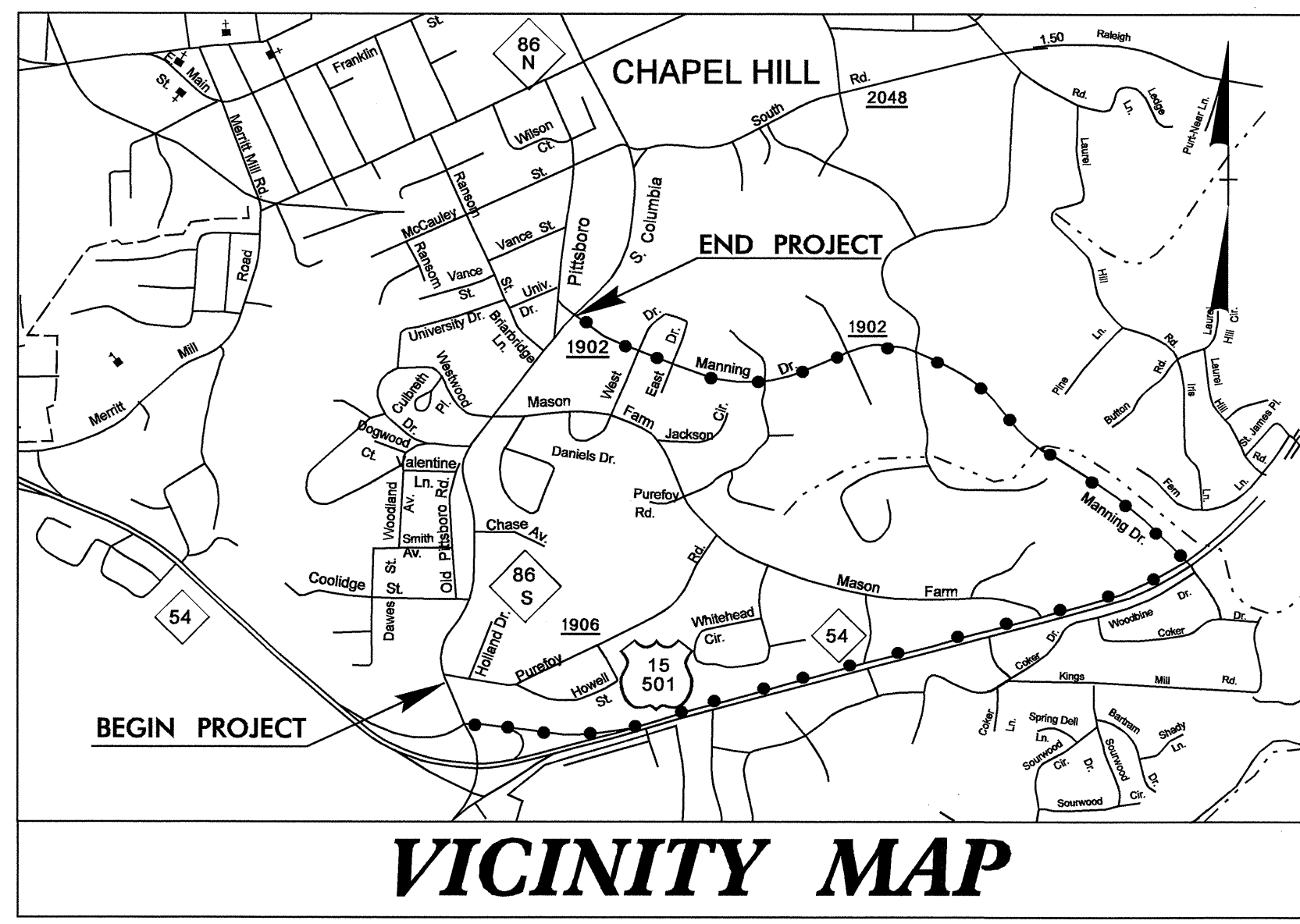
MATCH LINE SEE SHEET UC-6 STA. 42+00.00

09/08/99

TIP PROJECT: U-0624

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

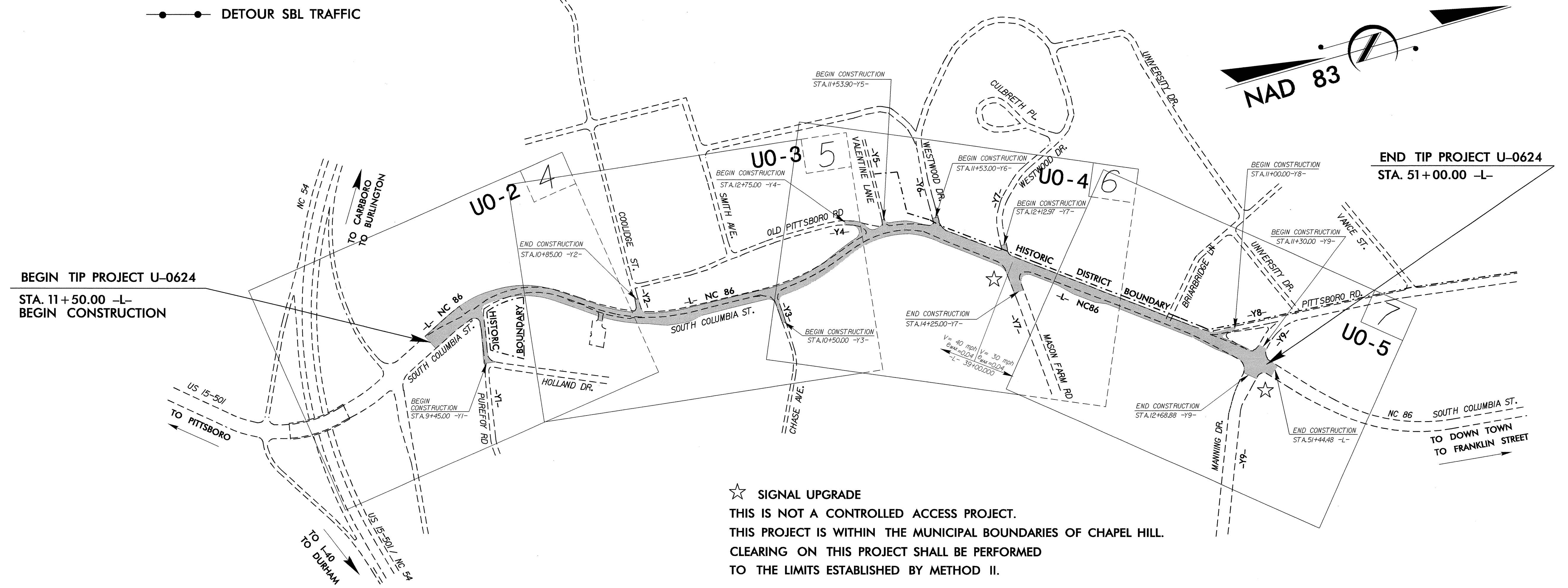
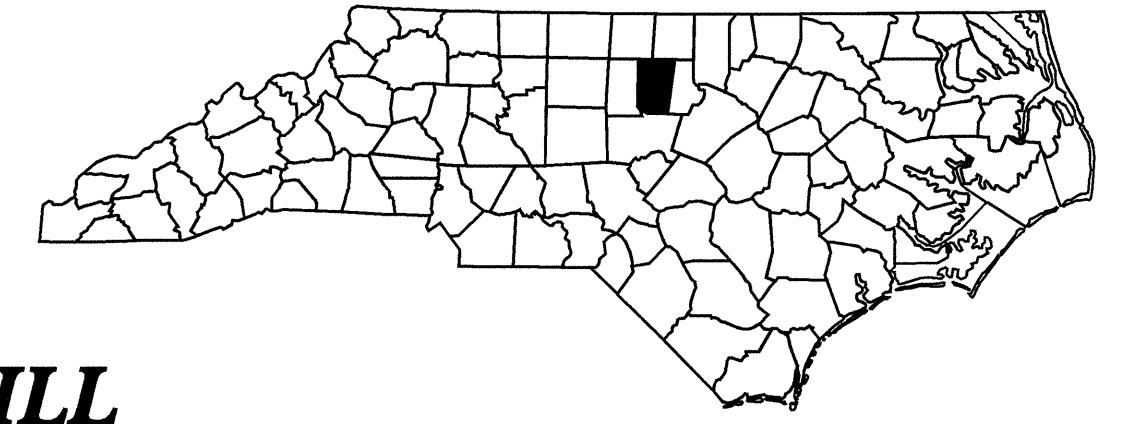
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|------------|-----------|
| T.I.P. NO. | SHEET NO. |
| U-0624     | UO-1      |



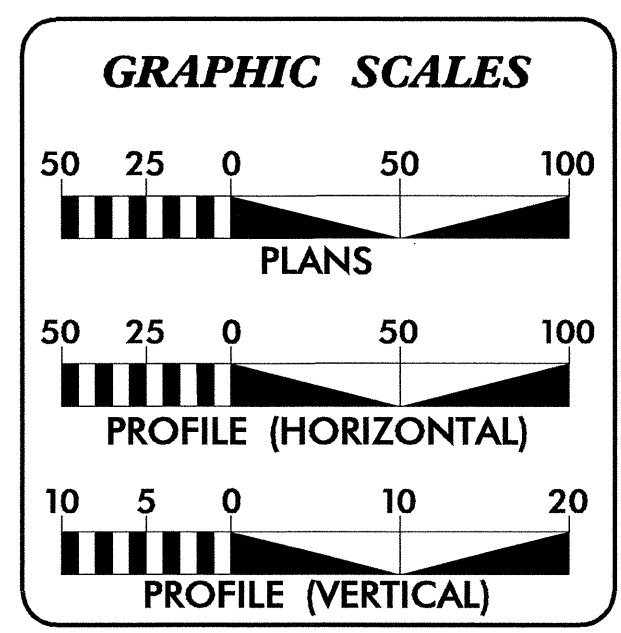
# UTILITIES BY OTHERS PLANS ORANGE COUNTY

LOCATION: NC 86 (SOUTH COLUMBIA STREET)  
FROM SR 1906 (PUREFOY ROAD) TO  
SR 1902 (MANNING DRIVE) IN CHAPEL HILL

TYPE OF WORK: UTILITIES RELOCATION



☆ SIGNAL UPGRADE  
 THIS IS NOT A CONTROLLED ACCESS PROJECT.  
 THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CHAPEL HILL.  
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.



| INDEX OF SHEETS |                               |
|-----------------|-------------------------------|
| SHEET NO.       | DESCRIPTION                   |
| UO-1            | TITLE SHEET                   |
| UO-2 THRU UO-5  | UTILITY BY OTHERS PLAN SHEETS |

| UTILITY OWNERS ON PROJECT |
|---------------------------|
| (1) DUKE (Power)          |
| (2) AT&T (Telephone)      |
| (3) TWC (Cable TV)        |
| (4) PSNC (Gas)            |

PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
 UTILITIES ENGINEERING  
 SECTION**

1591 MAIL SERVICES CENTER  
 RALEIGH NC 27699-1591  
 PHONE (919) 250-4128  
 FAX (919) 250-4119

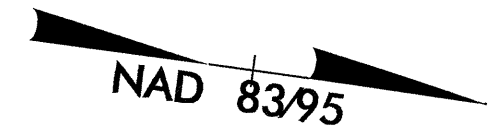
**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Corey Bousquet, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Nabil Hamdan** UTILITIES PROJECT DESIGNER

07-APR-2009 09:54  
r:\utilities\rdy\ut\proj\U-624\_U1\_rdytsh\_U01.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

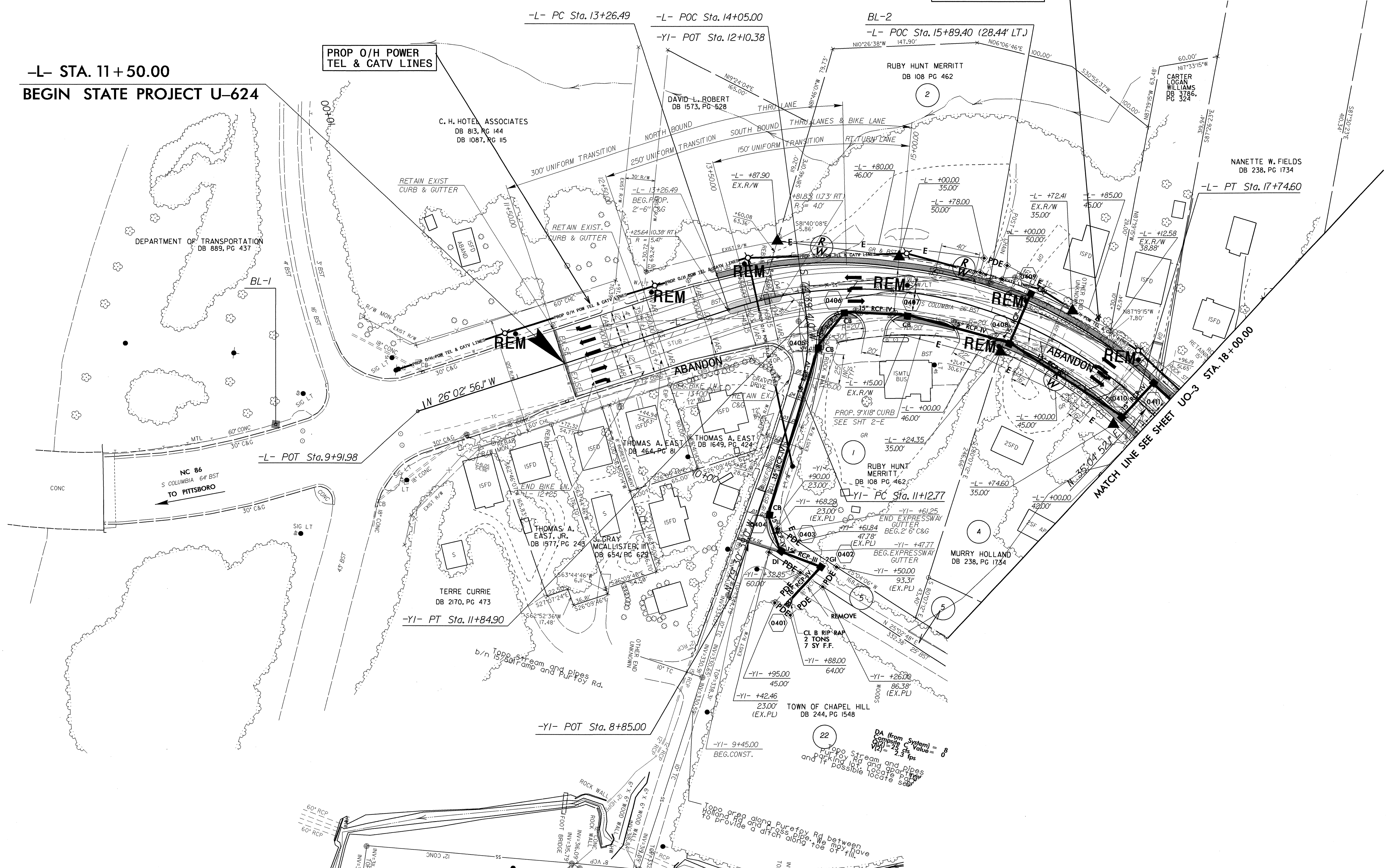
| -L-                                 | -YI-                                |
|-------------------------------------|-------------------------------------|
| PI Sta 15+74.53                     | PI Sta 11+49.46                     |
| $\Delta = 61^{\circ}07'48.2''$ (RT) | $\Delta = 25^{\circ}49'40.0''$ (LT) |
| D = 13' 38' 30.7"                   | D = 35' 48' 35.5"                   |
| L = 448.11'                         | L = 721.2'                          |
| T = 248.04'                         | T = 36.69'                          |
| R = 420.00'                         | R = 160.00'                         |
| SE = .04                            | SE = N/A                            |
| V = 35 mph                          | V = 30 mph                          |



-L- STA. 11+50.00  
BEGIN STATE PROJECT U-624

PROP O/H POWER  
TEL & CATV LINES

15+00  
PROP O/H POWER  
TEL & CATV LINES



MATCH LINE SEE SHEET UO-3  
STA. 18+00.00

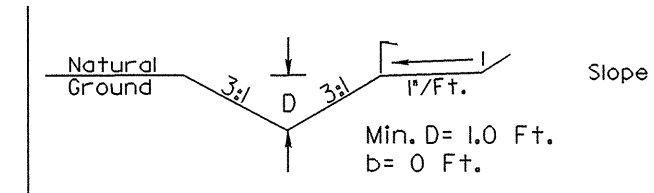
DA (from System) = 8  
Composite C Value = 8  
Y1 = 2.5 ft  
Topo stream and pipes  
along Purefoy Rd and  
Holland Rd and adjacent  
to provide a ditch along  
top of fill, have  
possible locate  
and if possible  
locate

5/14/99  
 01-JUN-2011 14:52  
 N:\U01\11\11\0624\_Ut\_rdy\_psh04\_U02.dgn

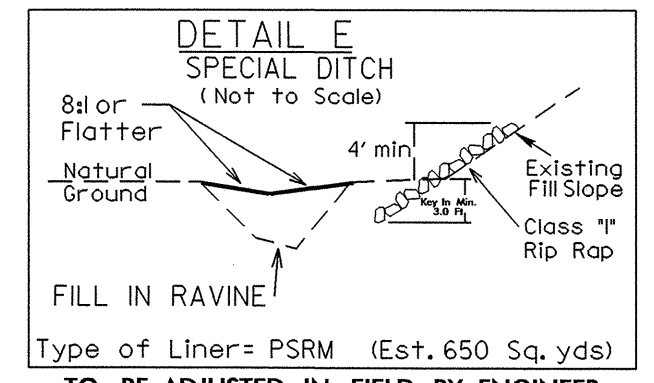
UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

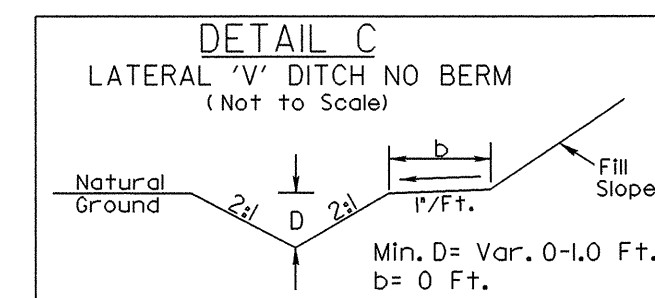
|  |  |
|--|--|
| $\Delta = 32'50''56.8''$ (LI)<br>$D = 7'57''27.9''$<br>$L = 412.79'$<br>$T = 212.24'$<br>$R = 720.00'$<br>$SE = .04$<br>$V = 40$ mph | $\Delta = 7'57''21.9''$<br>$L = 304.04'$<br>$T = 154.32'$<br>$R = 720.00'$<br>$SE = .04$<br>$V = 40$ mph |
|--|--|



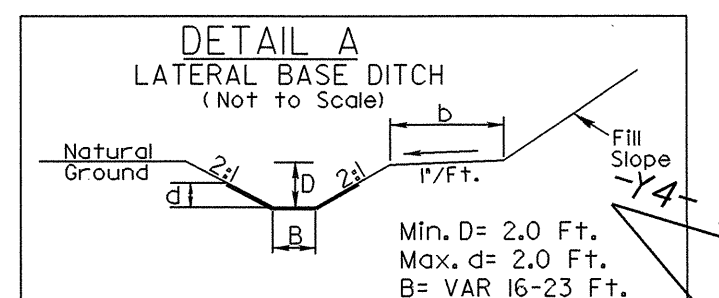
FROM STA. 10+75 TO STA. 11+25 -Y2- RI



Type of Liner= PSRM (Est. 650 Sq. yds)  
TO BE ADJUSTED IN FIELD BY ENGINEER  
EST. RIP RAP = 30 TONS  
EST. FILL REQUIRED = 245 CU. YDS

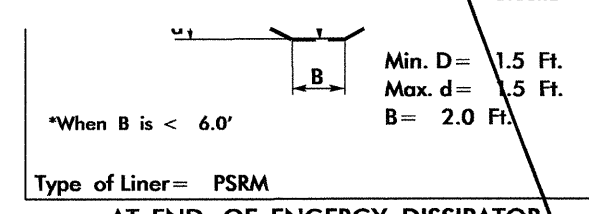


FROM STA. 29+00 TO STA. 29+50 -L- LI



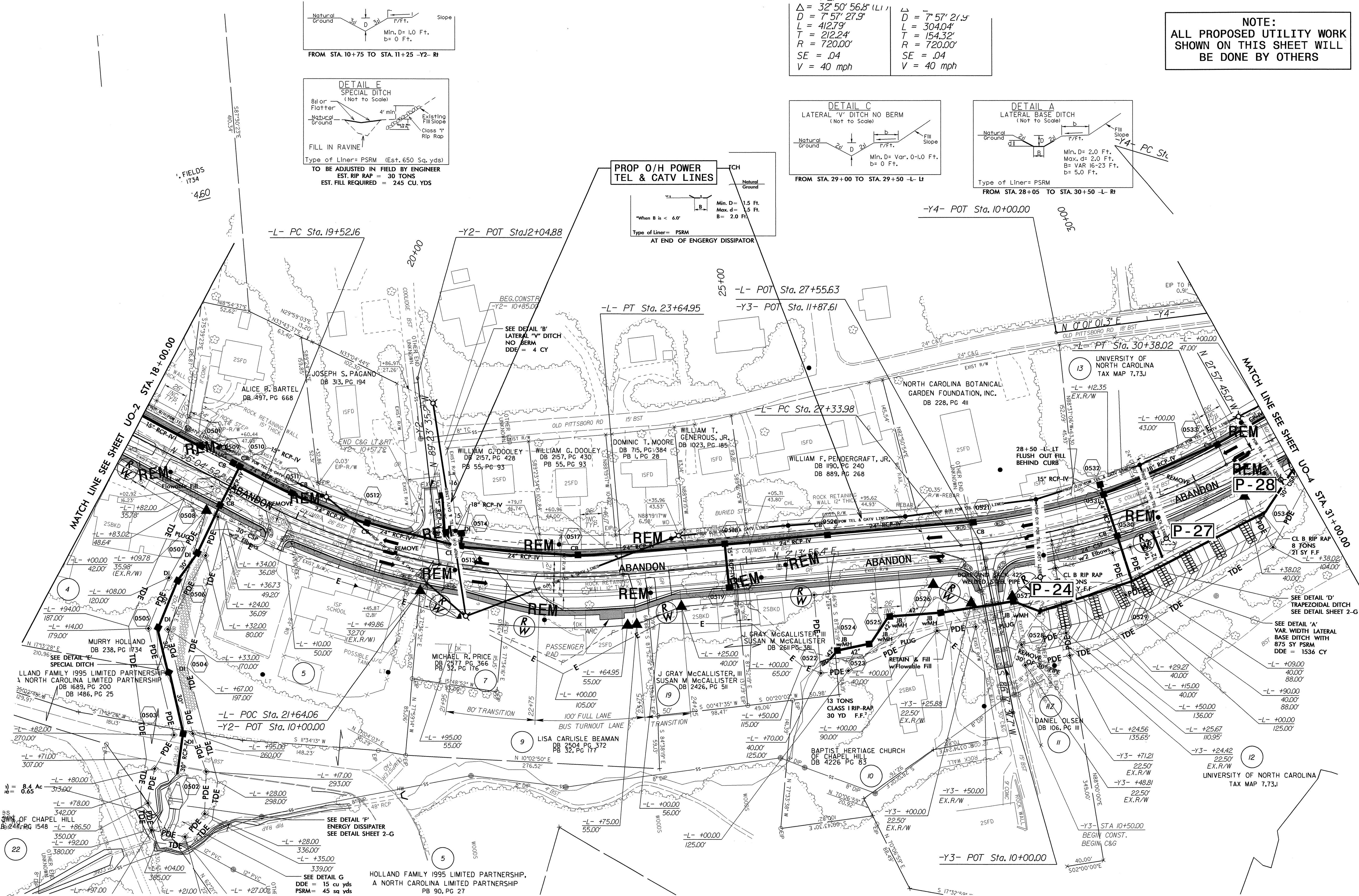
Type of Liner= PSRM  
FROM STA. 28+05 TO STA. 30+50 -L- RI

PROP O/H POWER TEL & CATV LINES



Type of Liner= PSRM  
AT END OF ENERGY DISSIPATOR

5/14/99  
21-JUN-2011 14:38  
U:\proj\13\U0624\U0624\_Ut\_rdy\_psh05\_U03.dgn



1) = 8.4 Ac  
16) = 0.65

HOLLAND FAMILY 1995 LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
PB 90, PG 27

SEE DETAIL 'D'  
TRAPEZOIDAL DITCH  
SEE DETAIL SHEET 2-G

SEE DETAIL 'A'  
VAR. WIDTH LATERAL  
BASE DITCH WITH  
875 SY PSRM  
DDE = 1536 CY

SEE DETAIL 'F'  
ENERGY DISSIPATOR  
SEE DETAIL SHEET 2-G

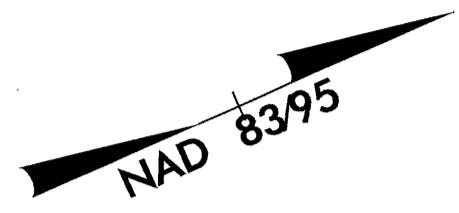
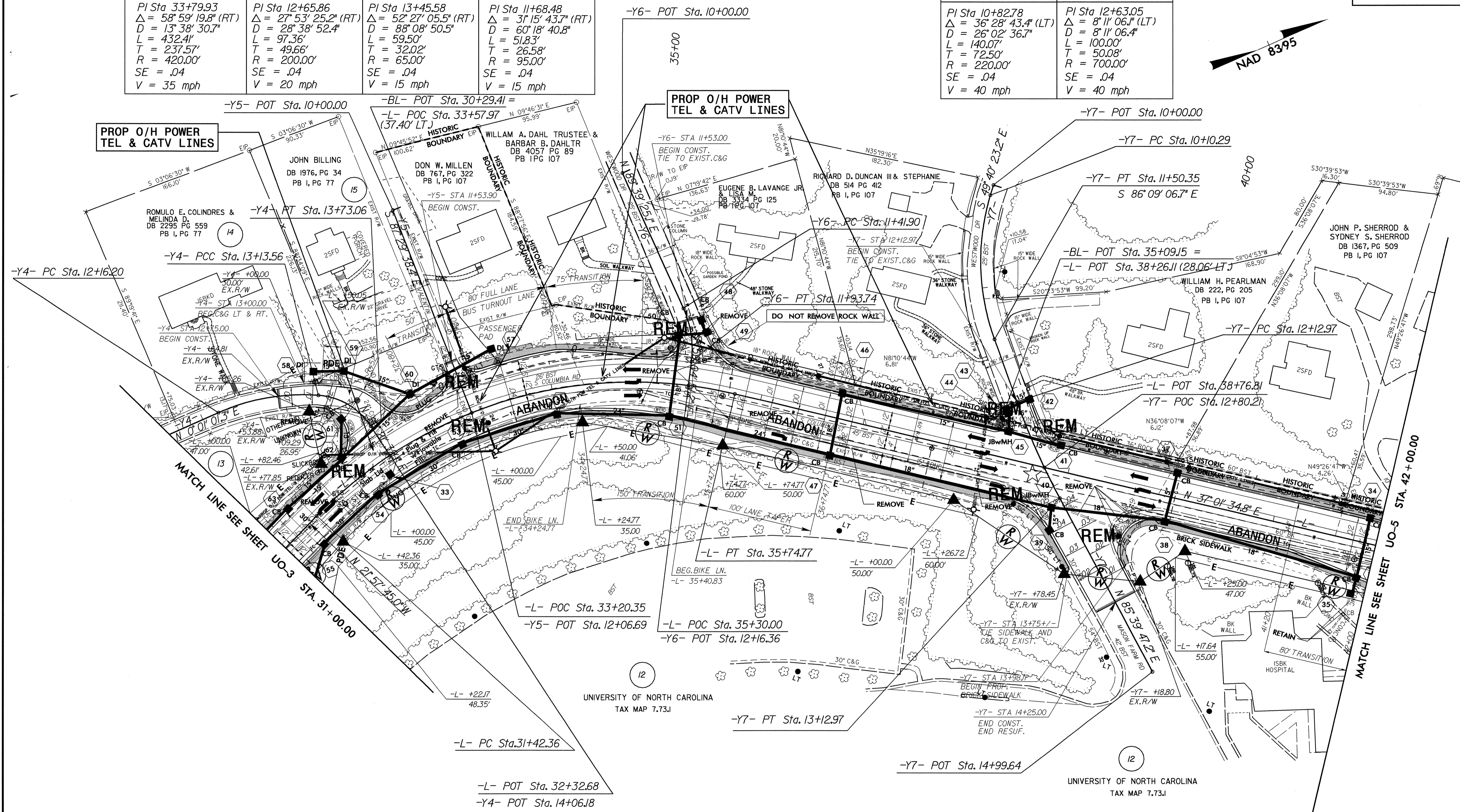
SEE DETAIL 'G'  
DDE = 15 CU YDS  
PSRM = 45 SQ YDS

UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

| -L-   | -Y4-  | -Y4-   | -Y6-   |
|---|---|--|--|
| PI Sta 33+79.93<br>Δ = 58° 59' 19.8" (RT)<br>D = 13° 38' 30.7"<br>L = 432.41'<br>T = 237.57'<br>R = 420.00'<br>SE = .04<br>V = 35 mph | PI Sta 12+65.86<br>Δ = 27° 53' 25.2" (RT)<br>D = 28° 38' 52.4"<br>L = 97.36'<br>T = 49.66'<br>R = 200.00'<br>SE = .04<br>V = 20 mph | PI Sta 13+45.58<br>Δ = 52° 27' 05.5" (RT)<br>D = 88° 08' 50.5"<br>L = 59.50'<br>T = 32.02'<br>R = 65.00'<br>SE = .04<br>V = 15 mph | PI Sta 11+68.48<br>Δ = 31° 15' 43.7" (RT)<br>D = 60° 18' 40.8"<br>L = 51.83'<br>T = 26.58'<br>R = 95.00'<br>SE = .04<br>V = 15 mph |

| -Y7-   | -Y7-   |
|--|--|
| PI Sta 10+82.78<br>Δ = 36° 28' 43.4" (LT)<br>D = 26° 02' 36.7"<br>L = 140.07'<br>T = 72.50'<br>R = 220.00'<br>SE = .04<br>V = 40 mph | PI Sta 12+63.05<br>Δ = 8° 11' 06.1" (LT)<br>D = 8° 11' 06.4"<br>L = 100.00'<br>T = 50.08'<br>R = 700.00'<br>SE = .04<br>V = 40 mph |

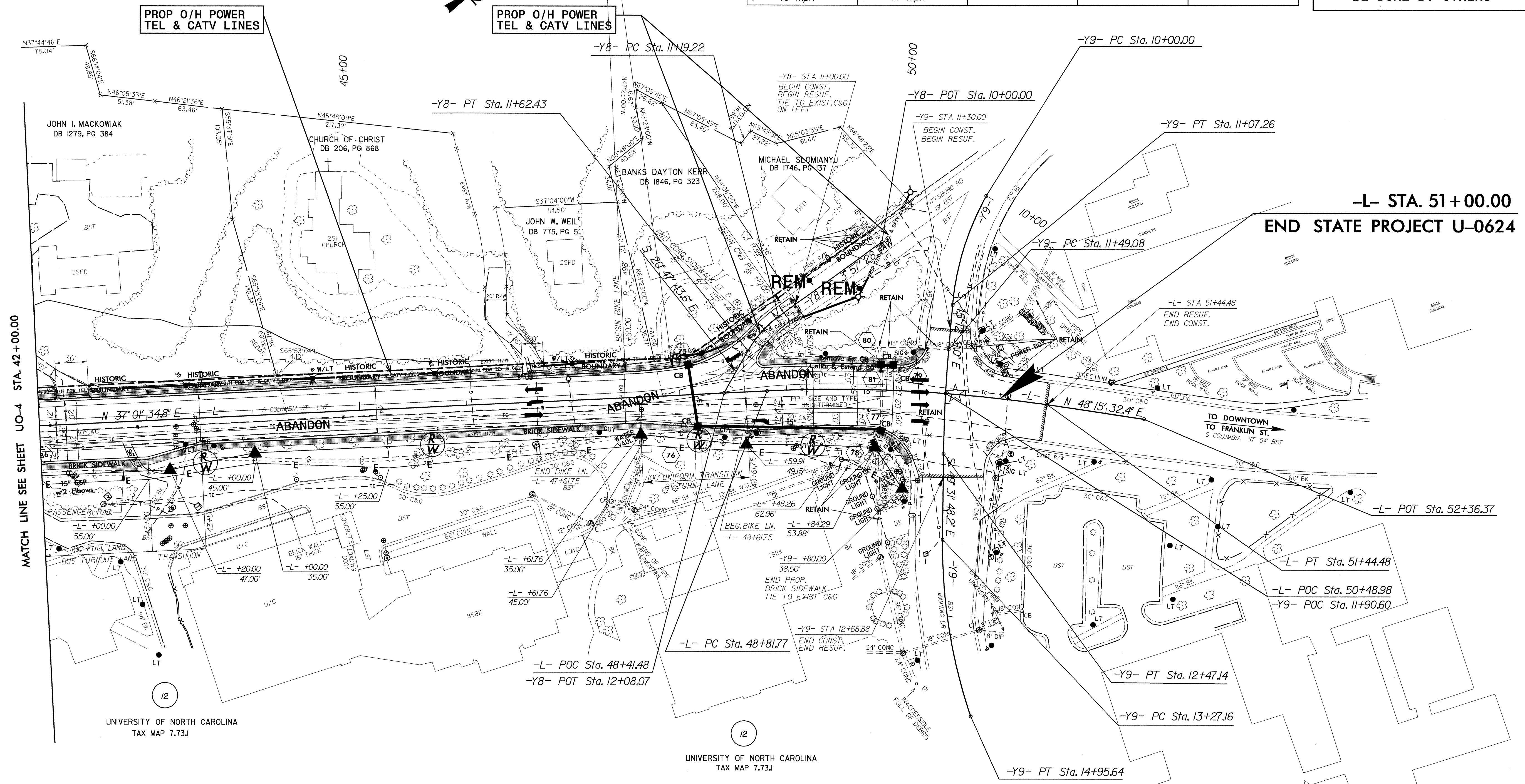
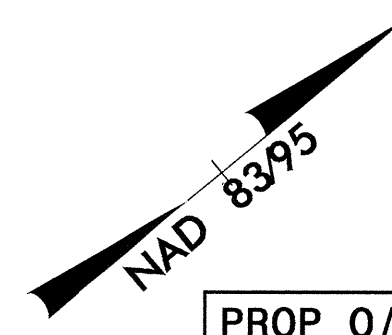


5/14/99  
07-APR-2009 15:53 U:\ut\1\0624\Ut\_rdy\_psh06\_U04.dgn

UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

| -L-                            | -Y8-                           | -Y9-                           | -Y9-                          | -Y9-                           |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|
| PI Sta 50+13.55                | PI Sta 11+41.77                | PI Sta 10+54.47                | PI Sta 11+98.13               | PI Sta 14+12.21                |
| $\Delta = 11' 13' 57.6''$ (RT) | $\Delta = 24' 45' 11.9''$ (LT) | $\Delta = 24' 34' 59.6''$ (LT) | $\Delta = 4' 19' 17.2''$ (LT) | $\Delta = 19' 18' 21.8''$ (LT) |
| $D = 4' 16' 32.9''$            | $D = 57' 17' 44.8''$           | $D = 22' 55' 05.9''$           | $D = 4' 24' 26.5''$           | $D = 11' 27' 33.0''$           |
| $L = 262.70'$                  | $L = 43.20'$                   | $L = 107.26'$                  | $L = 98.05'$                  | $L = 168.48'$                  |
| $T = 131.77'$                  | $T = 21.94'$                   | $T = 54.47'$                   | $T = 49.05'$                  | $T = 85.04'$                   |
| $R = 1,340.00'$                | $R = 100.00'$                  | $R = 250.00'$                  | $R = 1,300.00'$               | $R = 500.00'$                  |
| SE = NC                        | SE = NC                        |                                |                               |                                |
| V = 40 mph                     | V = 40 mph                     |                                |                               |                                |



-L- STA. 51+00.00  
END STATE PROJECT U-0624

MATCH LINE SEE SHEET UO-4 STA. 42+00.00