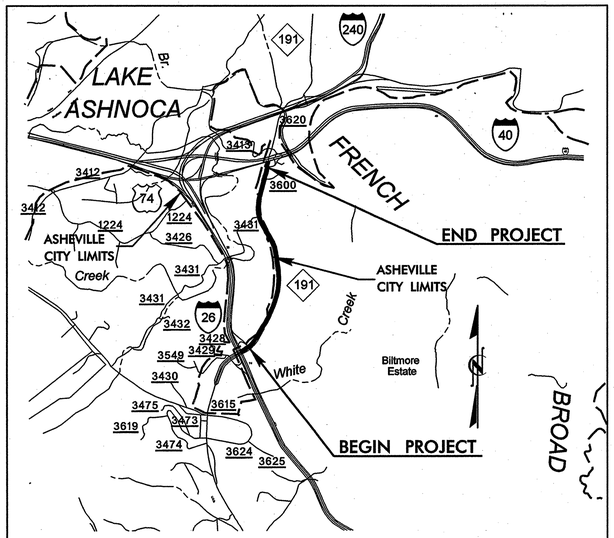
TIP PROJECT: U-3601

See Sheet 1-A For Index of Sheets



VICINITY MAP

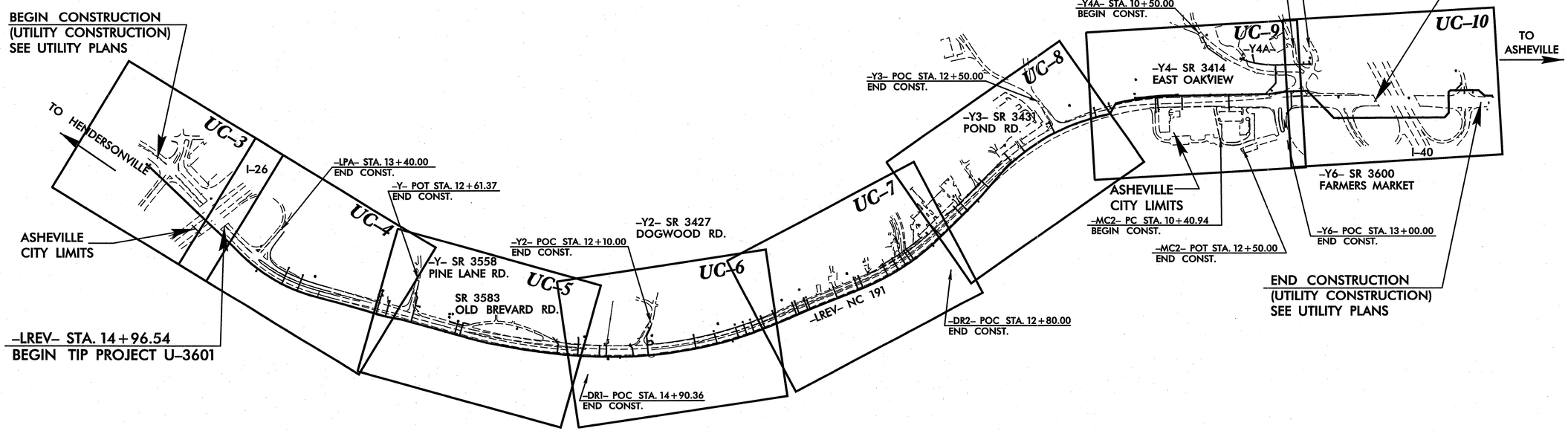
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-3601	UC-1

BUNCOMBE COUNTY

LOCATION: ASHEVILLE - NC 191 (BREVARD ROAD) FROM I-26 TO I-40

TYPE OF WORK: WATER LINE RELOCATION AND SEWER LINE RELOCATION



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	GENERAL NOTES
UC-3 THRU UC-10	UTILITY CONSTRUCTION PLAN SHEETS
UC-11 THRU UC-16	PROFILE SHEETS
UC-17 THRU UC-19	DETAILS SHEETS

PUBLIC UTILITY OWNERS ON PROJECT

(1) WATER CITY OF ASHEVILLE
(2) SEWER MSD

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030001 JEREMY A. RIVENBARK

PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068
PHONE: (919) 677-2000 FAX: (919) 677-2050

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Carl Barclay, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Ali Koucheki, P.E. UTILITIES PROJECT DESIGNER

5/14/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-2
R/W SHEET NO.	

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEREMY A. RIVENBARK 10/17/08

UTILITY CONSTRUCTION

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
UC-1	COVER SHEET
UC-2	INDEX, PROJECT NOTES, AND LEGEND
UC-3	PLAN SHEET, STA. 10+00.00 TO STA. 19+04.39
UC-4	PLAN SHEET, STA. 19+04.39 TO STA. 30+32.46
UC-5	PLAN SHEET, STA. 30+32.46 TO STA. 44+02.03
UC-6	PLAN SHEET, STA. 44+02.03 TO STA. 58+61.90
UC-7	PLAN SHEET, STA. 58+61.90 TO STA. 72+79.90
UC-8	PLAN SHEET, STA. 72+79.90 TO STA. 86+64.86
UC-9	PLAN SHEET, STA. 86+64.86 TO STA. 101+02.87
UC-10	PLAN SHEET, STA. 101+02.87 TO STA. 117+94.14
UC-11	PROFILE SHEET, STA. 10+00.00 TO STA. 38+00.00
UC-12	PROFILE SHEET, STA. 38+00.00 TO STA. 66+00.00
UC-13	PROFILE SHEET, STA. 66+00.00 TO STA. 94+00.00
UC-14	PROFILE SHEET, STA. 94+00.00 TO STA. 117+94.14
UC-15	PROFILE SHEET, -W7-, -W8-, -SS1-, AND -SS2-
UC-16	PROFILE SHEET, -SS2-, -SS3-, AND -SS4-
UC-17	STANDARD DETAILS
UC-18	STANDARD DETAILS
UC-19	STANDARD DETAILS

PROJECT NOTES:

1. ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.
2. TYPICAL DEPTH OF COVER FOR BURIED PIPELINE SHALL BE 4 ft UNLESS OTHERWISE SHOWN OR SPECIFIED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE CITY OF ASHEVILLE FOR ANY ADDITIONAL INFORMATION ON EXISTING WATER UTILITIES AND MSD ON EXISTING SEWER UTILITIES.
4. LOCATIONS OF EXISTING SHOWN UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXACT LOCATION, ORIENTATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO EXCAVATION FOR THE PIPELINE.
5. COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON THE NCDOT LOCALIZED PLANE COORDINATE SYSTEM FOR THIS PROJECT.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.
7. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL FORCE MAIN AND WATER PIPELINE TRENCH BEDDING SHALL BE IN ACCORDANCE WITH DETAIL 6.19. ALL GRAVITY SEWER PIPELINE TRENCH BEDDING SHALL BE TYPE BE IN ACCORDANCE WITH DETAIL 0222102.
8. THE MINIMUM TRENCH WIDTHS SHALL BE IN STRICT ACCORDANCE WITH THE 'TRENCH EXCAVATION LIMITS' AS SHOWN ON THE DRAWINGS.
9. UNLESS OTHERWISE INDICATED, ALL GRADE ELEVATIONS SHOWN ARE ALONG THE PIPELINE ALIGNMENT.
10. THE CONTRACTOR SHALL PLACE 3 TO 4-INCHES OF SAND OR SCREENINGS ON ALL ASPHALT SURFACES THAT ARE AFFECTED BY THE INSTALLATION OF THE PIPELINE.
11. THE CONTRACTOR SHALL REINSTALL ALL SIGNS AS REQUIRED BY NCDOT ALONG STATE ROADWAYS AND CITY STREETS AS REQUIRED BY THE CITY OF ASHEVILLE.
12. THE CONTRACTOR SHALL REMOVE AND REINSTALL ALL EXISTING FENCE AS REQUIRED FOR PIPE INSTALLATION. ANY ADDITIONAL FENCE MATERIALS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
13. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION OF THE PIPELINE, ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED EASEMENT/RW WIDTHS. EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.
14. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CITY OF ASHEVILLE AND MSD CURRENT DESIGN GUIDELINES UNDER THE INSPECTION OF THE CITY OF ASHEVILLE/MSD AND BY A LICENSED N.C. UTILITY CONTRACTOR.
15. PLACED RIP-RAP SHALL HAVE A MINIMUM DEPTH OF 24" AND SHALL HAVE A LAYER OF TYPE II GEOTEXTILE SEPARATOR PLACED BETWEEN THE SOIL AND STONE.
16. CITY OF ASHEVILLE/MSD WILL FURNISH DESCRIPTION OF EASEMENTS UPON REQUEST.
17. RESTRAINED PIPE JOINTS SHALL BE INSTALLED BETWEEN THE STATIONS INDICATED ON THE DRAWINGS. IF A BEND OR FITTING IS RELOCATED BY THE CONTRACTOR FOR HIS CONVENIENCE THEN THE REQUIRED LENGTH OF RESTRAINED JOINTS SHALL BE MAINTAINED, AT-NO ADDITIONAL COST TO THE OWNER. IF ADDITIONAL BENDS OR FITTINGS ARE INSTALLED BY THE CONTRACTOR FOR HIS CONVENIENCE, THEN THE CONTRACTOR SHALL INSTALL THE REQUIRED LENGTH OF RESTRAINING JOINTS AS DETERMINED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
18. PIPELINE ALIGNMENT SHOWN IS BASED ON STANDARD FITTINGS AVAILABLE FOR DUCTILE IRON PIPE. JOINT. DEFLECTIONS SHALL NOT EXCEED 75 PERCENT OF MANUFACTURERS RECOMMENDED DEFLECTION.
19. DETECTOR TAPE IS REQUIRED FOR ALL BURIED PIPELINE.
20. THE CONTRACTOR SHALL PROVIDE A MEANS TO KEEP ALL NEW PIPING COMPLETELY ISOLATED FROM EXISTING PIPING UNTIL ALL NEW PIPING HAS BEEN TESTED, DISINFECTED AND ACCEPTED FOR SERVICE. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE MEANS FOR FLUSHING NEW PIPELINES.
21. A THRUST RESTRAINT DESIGN PRESSURE OF 350 PSI SHALL BE USED FOR THIS PROJECT.
22. ALL MANHOLE COVERS FOR WATER LINE SHALL READ 'WATER' AND SEWER SHALL READ 'SEWER' WITH APPROPRIATE LOGOS.
23. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE, AND MATERIALS OF ALL EXISTING WATERLINES AND SEWERS TO BE CONNECTED TO THE PROPOSED PIPELINES PRIOR TO EXCAVATION FOR THE PIPELINE OR ORDERING MATERIALS.
24. THE CONTRACTOR SHALL RELOCATE WATER SERVICES TO THE PROPOSED WATER MAIN AS REQUIRED TO MAINTAIN SERVICE. SECTIONS OF EXISTING MAINS TO BE ABANDONED SHALL REQUIRE RELOCATED SERVICES CONFORMING TO NCDOT STANDARD SPECIFICATIONS. ALL RELOCATIONS SHALL BE ANTICIPATED AND PERFORMED AS PART OF THE PROJECT CONSTRUCTION CONTRACTOR TO VERIFY EXISTING SERVICE LOCATION AND SIZE PRIOR TO INSTALLATION/RELOCATION.
25. ALL UTILITIES SHALL BE CONSTRUCTED WITH MINIMUM SEPARATION REQUIREMENTS AS SPECIFIED IN NCDOT STANDARD SPECIFICATIONS AND APPLICABLE STATE AND LOCAL GUIDLINES.

LEGEND

MATERIALS

- GRADE OR EARTH
- ASPHALT PAVING
- SAND
- GRAVEL
- CONCRETE
- CONC. FILL OR GROUT
- CONC. MASONRY UNIT
- BRICK
- ROCK
- STEEL
- INSULATION
- WATER SURFACE
- GRATING
- CHECKERED PLATE
- GLASS
- WOOD BLOCKING

SYMBOLS

- W — EXIST. WATER LINE
- SS — EXIST. SANITARY SEWER
- EXIST. STORM DRAIN
- P — EXIST. ELECTRICAL
- T — EXIST. TELEPHONE
- G — EXIST. GAS
- FH — EXIST FIRE HYDRANT
- EXIST SAN SEWER MH
- EXIST. BUTTERFLY VALVE
- EXIST. GATE VALVE
- WM — EXIST. WATER METER
- PP — EXIST POWER POLE
- CO — EXIST. SS CLEANOUT
- PROPOSED PIPELINE
- SANITARY SEWER MANHOLE
- PROPOSED BUTTERFLY VALVE ASSEMBLY
- PROPOSED GATE VALVE ASSEMBLY
- PROPOSED AIR RELEASE VALVE ASSEMBLY
- STORM DRAINAGE STRUCTURE
- REDUCER
- BLOWOFF ASSEMBLY
- BACKFLOW PREVENTER
- PROPOSED FIRE HYDRANT
- PROPOSED WATER METER
- AP — SOIL BORING/AUGER PROBE
- SR — SEISMIC LINE

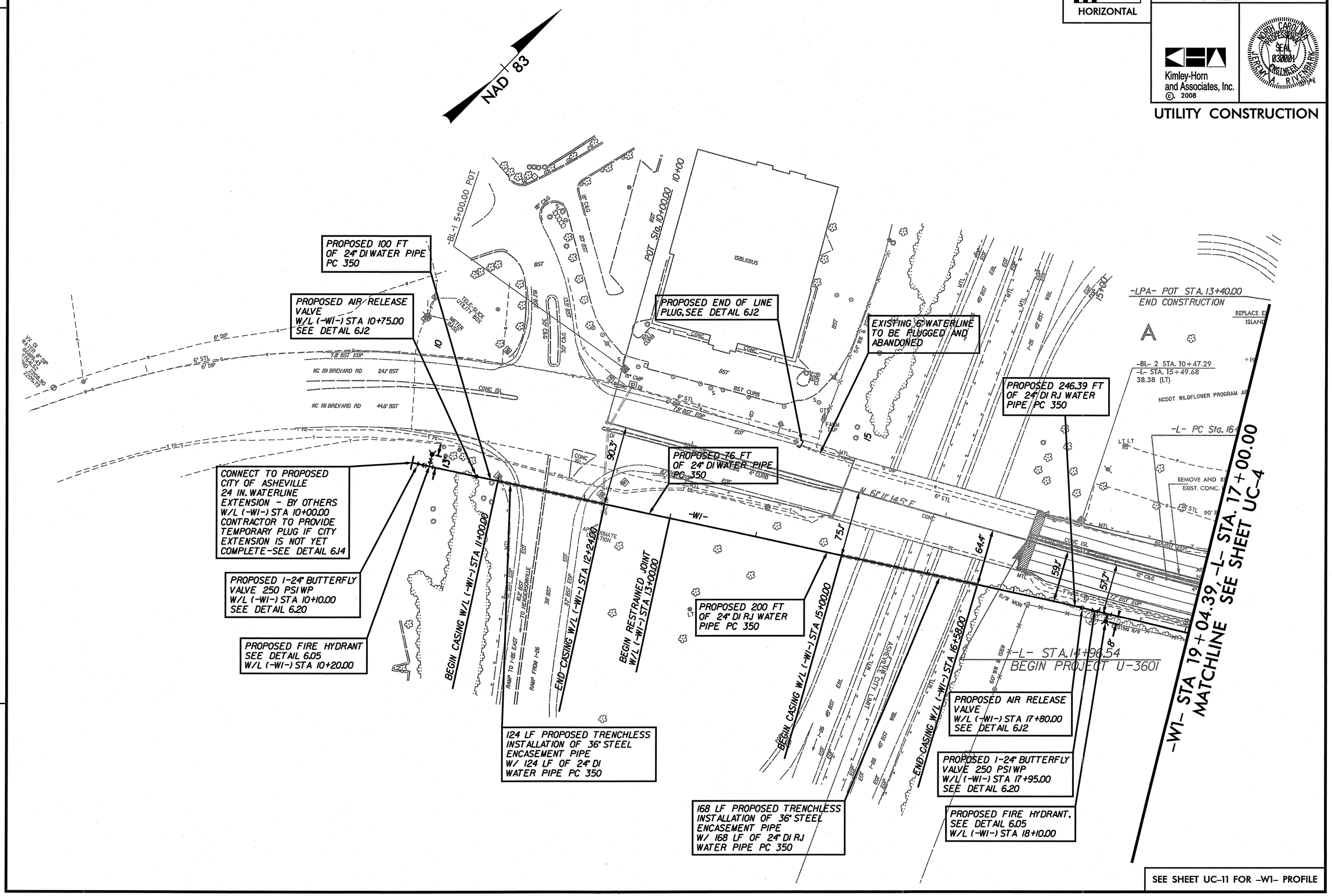
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-3
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JERRY A. RIVENBARK

UTILITY CONSTRUCTION



SEE SHEET UC-11 FOR -W1- PROFILE

R:\Projects\U3601\New Files\III-5-2007\U-3601 Revision\Proj\u3601_rdy_psh_3.dgn 3/14/2008

R/W REV. - REVISED PROPOSED EASEMENTS ON PARCEL 2. 103007 SC

DESIGN REV. - REVISED DRAINAGE AND REMOVED PROP. RETAINING WALL ON PARCEL 2. 103007 SC

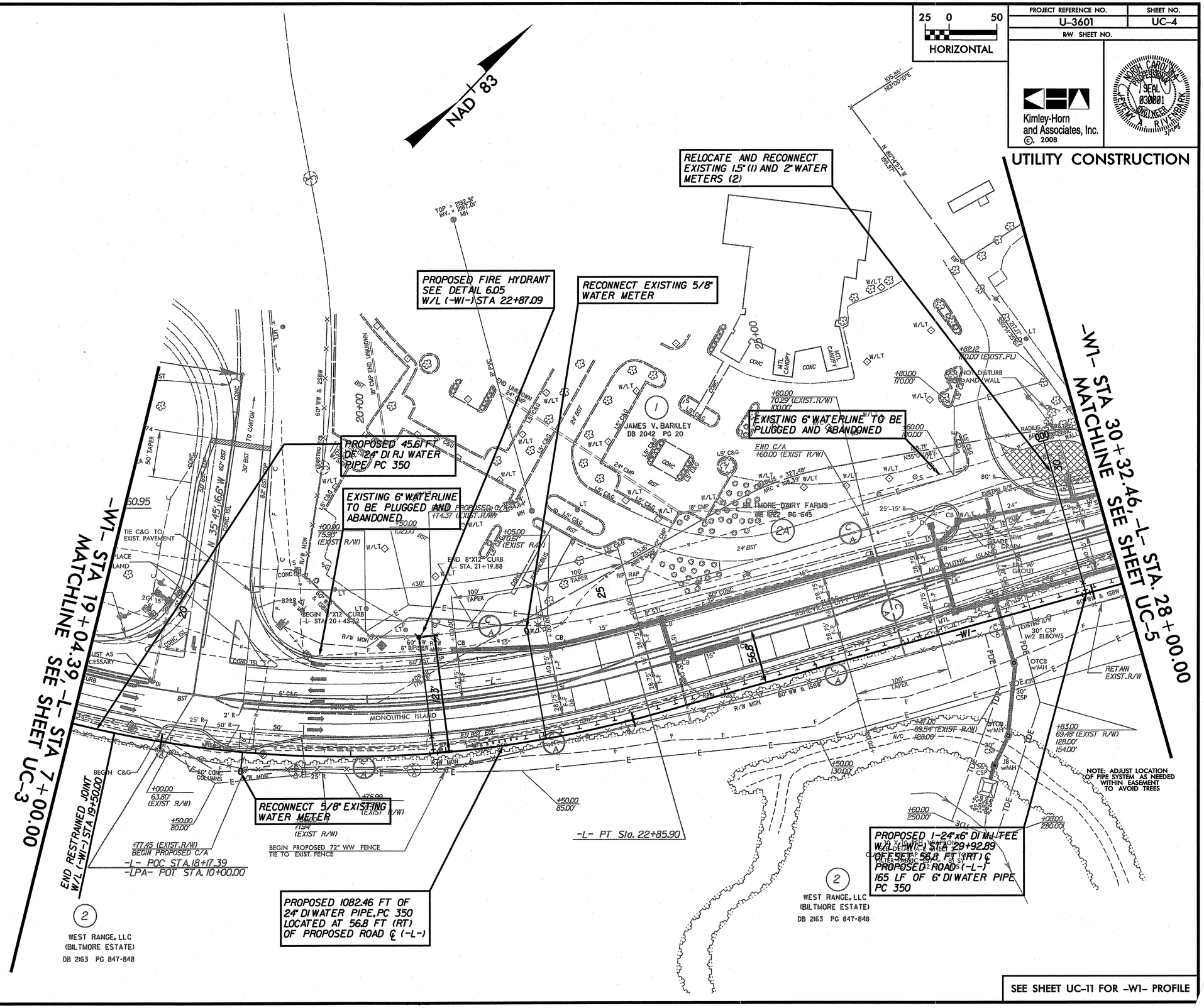
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-4
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEREMY A. RIVENBARK

UTILITY CONSTRUCTION



SEE SHEET UC-11 FOR -W1- PROFILE

R:\Proj\tech\U360\New Files (II-5-2007\U-3601 Revision\Proj\u3601_rdy_psh_4.dgn 3/14/2008

REVISIONS
R/W REV. - REVISED PROPOSED EASEMENTS ON PARCEL 2. 10/30/07 SC
DESIGN REV. - REVISED DRAINAGE AND REMOVED PROP. RETAINING WALL ON PARCEL 2. 10/30/07 SC

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-5
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER MICHAEL A. RIVENBARK

UTILITY CONSTRUCTION

-W1- STA 44+42.03, -L- STA. 42+00.00
MATCHLINE SEE SHEET UC-6

-W1- STA 30+32.46, -L- STA. 28+00.00
MATCHLINE SEE SHEET UC-4

NAD 83

PROPOSED 100 LF OF 2" TYPE K COPPER WATER PIPE W/ 6" CAP AND 2" TAP

CONNECT TO EXISTING 2" WATER PIPE

-L- POT STA.12+61.37 END CONST.

REMOVE EXISTING FIRE HYDRANT

EXISTING 6" WATERLINE TO BE PLUGGED AND ABANDONED

PROPOSED CAP

EXISTING 6" WATERLINE TO BE PLUGGED AND ABANDONED

REMOVE SEWER MH

PROPOSED FIRE HYDRANT SEE DETAIL 6.05 W/L (-W2-) STA 10+00.0

EXISTING MH 1A STA 10+00.00 (-SSI-) (-L-) STA 32+77.8

PROPOSED MH 1B STA 10+56.61 (-SSI-) (-L-) STA 32+79.62 OFFSET 27.5 FT (LT)(-L-) MH RIM=2207.61 INV.IN=2197.14 INV.OUT=2196.94 SEE DETAIL 0260101

PROPOSED 103.57 LF 8" PC 350 PVC SEWER PIPE

EXISTING MH 1C STA 11+60.18 (-SSI-) (-L-) STA 33+83.2

CONNECT TO EXISTING 6" WATER PIPE

PROPOSED CAP

CONNECT TO EXISTING 6" WATER PIPE

EXISTING 6" WATERLINE TO BE PLUGGED AND ABANDONED

PROPOSED 66.61 LF 8" PC 350 PVC SEWER PIPE

460 FT RT OF -L- (TYP.)

24" DIWATER PIPE VARIES THROUGH THIS AREA

24" DIWATER PIPE VARIES THROUGH THIS AREA

24" DIWATER PIPE VARIES THROUGH THIS AREA

ABANDON 106 LF 8" SEWER PIPE

-L- POT STA. 29+87.90

-L- POT STA.10+00.00

PROPOSED 1410 FT OF 24" DIWATER PIPE PC 350

-L- PC STA. 34+15.45

PROPOSED CAP

PROPOSED AIR RELEASE VALVE W/L (-W1-) STA 38+29.22 SEE DETAIL 6.12

PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 32+32.45 SEE DETAIL 6.20

PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 42+77.48 SEE DETAIL 6.20

RELOCATE AND RECONNECT EXISTING 5/8" WATER METER

PROPOSED 1-24" X 6" DI MJ TEE
W/L (-W1-) STA 32+46.38
OFFSET 46.0 FT (RT) FROM ℄ PROPOSED ROAD (-L-)
W/L (-W2-) STA 10+00.00
1-6" GATE VALVE AND VALVE BOX, 200 PSI
1-6" X 6" DI MJ TEE
130 FT OF 6" MJ DIWATER PIPE PC 350

PROPOSED 1-24" X 6" DI MJ TEE
W/L (-W1-) STA 36+06.38
OFFSET 46.0 FT FROM ℄ PROPOSED ROAD (-L-)
W/L (-W3-) STA 10+00.00
1-6" GATE VALVE AND VALVE BOX, 200 PSI
1-6" 90° DI MJ BEND
1-6" 22 1/2° DI MJ BEND
1-6" MJ SOLID SLEEVE COUPLING
135 FT OF 6" MJ DIWATER PIPE PC 350

RELOCATE EXISTING AND RECONNECT 5/8" WATER METERS (2)

PROPOSED 1-24" X 6" DI MJ TEE
W/L (-W1-) STA 43+12.48
OFFSET 43.7 FT. FROM ℄ PROPOSED ROAD (-L-)
W/L (-W4-) STA 10+00.00
1-6" GATE VALVE AND VALVE BOX, 200 PSI
1-6" 45° DI MJ BEND
1-6" 22 1/2° DI MJ BEND
1-6" MJ SOLID SLEEVE COUPLING
121 FT OF 6" MJ DIWATER PIPE PC 350

5' X 5' PSH
SEE DETAIL A-1 SHEET 2 OF 2
CLASS "B" RIP RAP EST = 12 TONS
FILTER FABRIC EST = 25 SY
DDE EST = 9 CU YDS

BUNCOMBE COUNTY FARM BUREAU DB 1725 PG 706-707

RBR AFFILIATES, LLC DB 3553 PG 483-485

EFFIE E. BLANKENSHIP DB 1116 PG 32

LINDA A. MULLIN DB 2099 PG 75

JAMES C. SEATTLES DB 913 PG 280 DB 1117 PG 401

CONNIE KAY SCHAFFER DB 1923 PG 482

EFFIE E. BLANKENSHIP DB 1116 PG 32

RICHARD DONALD HOUSTON DB 791 PG 96

HAZEL WELLS DB 890 PG 494

BOBBY JOE BRIGMAN, ET AL DB 1160 PG 441

RACHEL REED SMITH DB 1119 PG 133

MARGARET ANSON TRUSTEES

BILTMORE DAIRY FARMS DB 1222 PG 645

RBR AFFILIATES, LLC DB 3553 PG 483-485

EDWARD McGLAMERY & CAROLINA CASE

DORIS PRESSLEY

WEST RANGE, LLC (BILTMORE ESTATE) DB 2163 PG 847-848

ASHEVILLE CITY LIMIT

MONOLITHIC ISLAND

24" DIWATER PIPE VARIES THROUGH THIS AREA

WEST RANGE, LLC (BILTMORE ESTATE) DB 2163 PG 847-848

WEST RANGE, LLC (BILTMORE ESTATE) DB 2163 PG 847-848

SEE SHEET UC-11 AND UC-12 FOR -W1- PROFILE
SEE SHEET UC-15 FOR -SS1- PROFILE

3/14/2008
R:\Project\U360\New Files (II-5-2007)\U-3601 Revision\Proj\U360_rdy_psh_5.dgn

REVISIONS
R/W REV. - REVISED PROPOSED R/W AND EASEMENTS AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. 10/3007 SC
DESIGN REV. - REMOVED PROP. RETAINING WALL ADJACENT TO PARCEL 2. 10/3007 SC

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-6
R/W SHEET NO.	

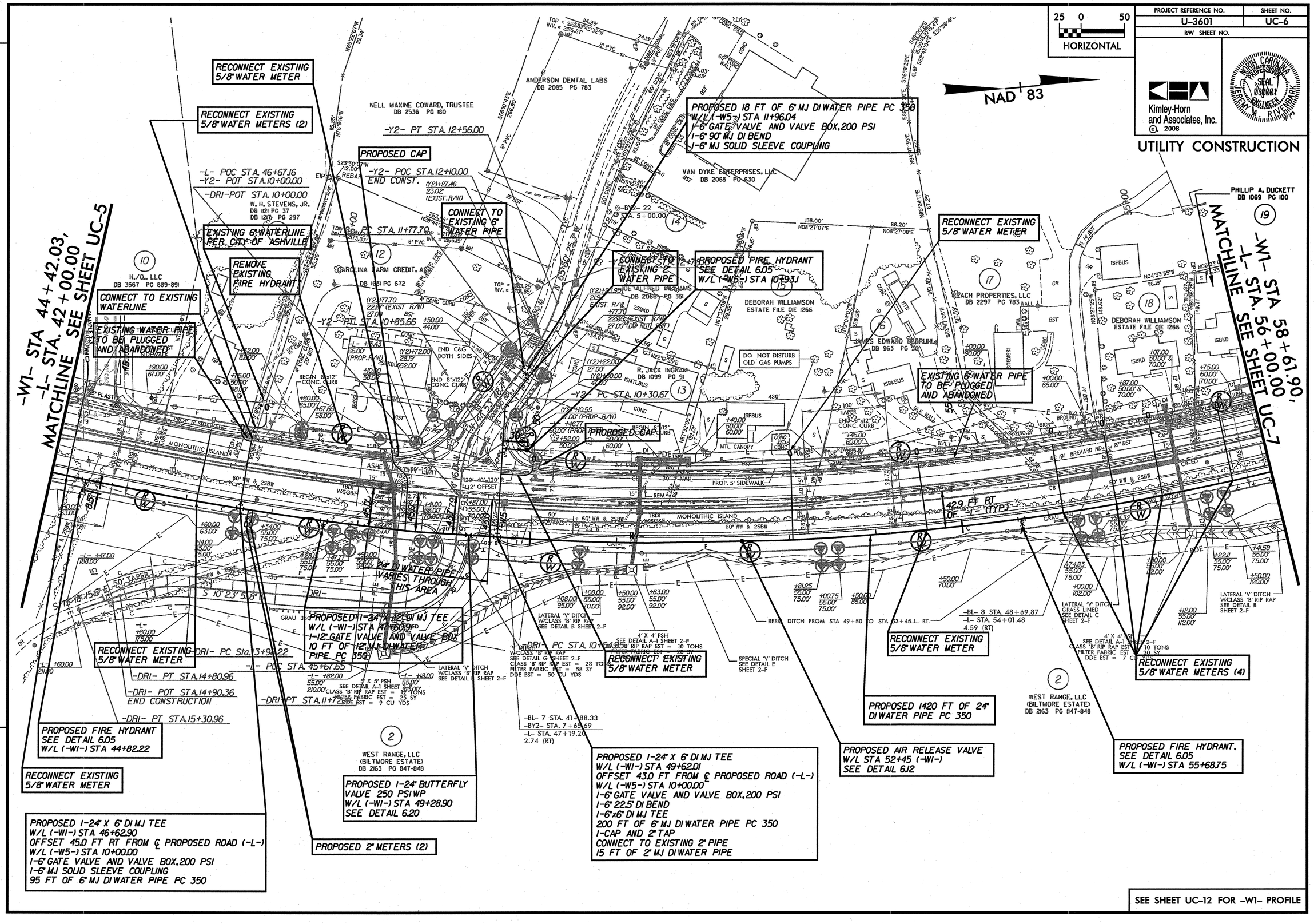
25 0 50
HORIZONTAL

NAD 83

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JERRY W. RIVENBARK

UTILITY CONSTRUCTION



SEE SHEET UC-12 FOR -W1- PROFILE

REVISIONS
R/W REV. - REVISED PROPOSED R/W LINE AND EASEMENTS AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. 10/30/07 SC
DESIGN REV. - REVISED DRAINAGE ON PARCEL 2. 10/30/07 SC

R:\Projects\U3601\New Files (11-5-2007)\U-3601 Revision\Proj\U3601_rdy_psh_6.dgn 3/17/2008

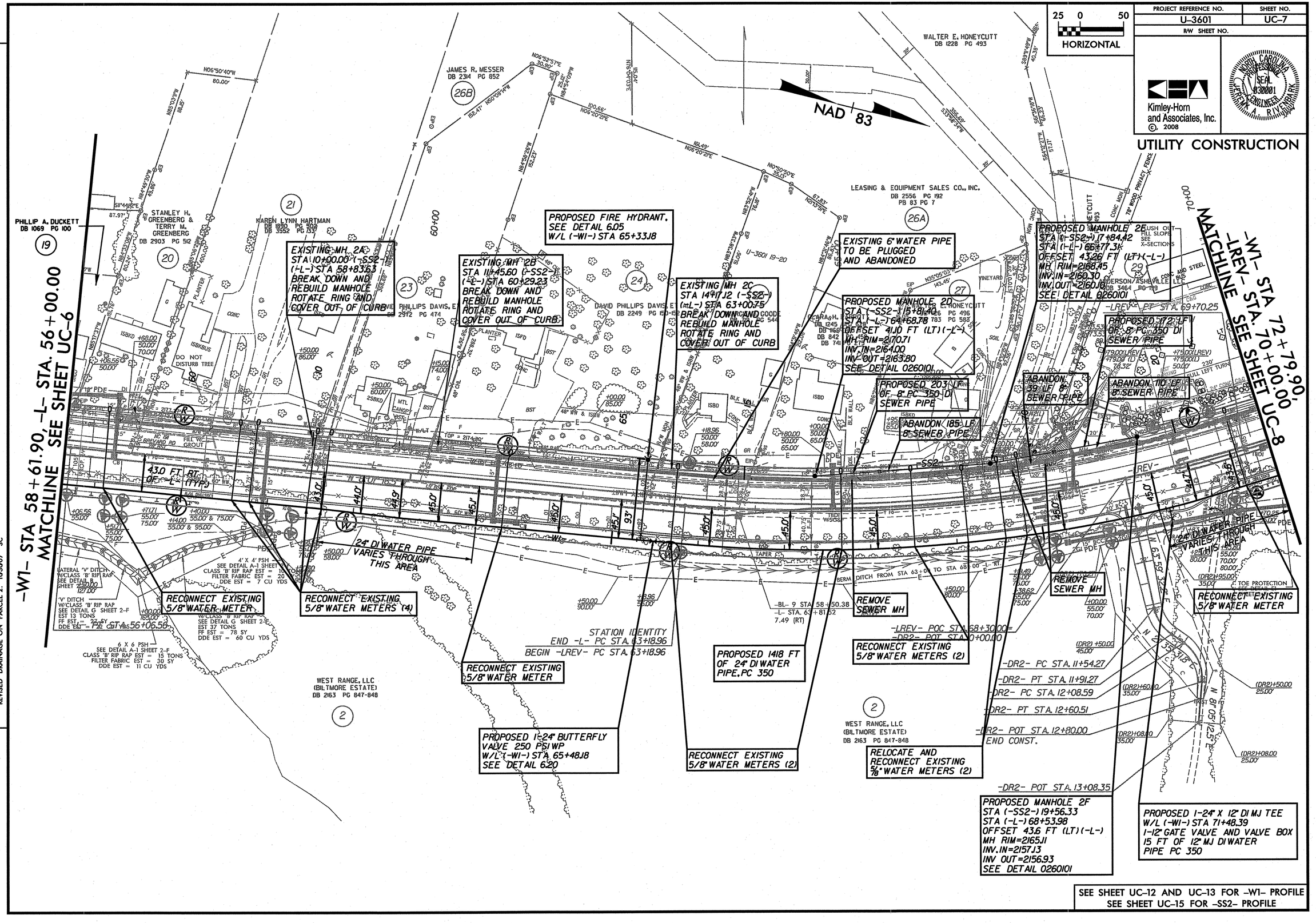
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-7
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEFFREY A. RIVENBARK

UTILITY CONSTRUCTION



SEE SHEET UC-12 AND UC-13 FOR -W1- PROFILE
SEE SHEET UC-15 FOR -SS2- PROFILE

R:\Projects\U360\New Files\U-5-2007\U-3601 Revisions\Proj\U3601_rdy_psh_T.dgn 3/17/2008

REVISIONS

R/W REV. - REVISED PROPOSED R/W AND EASEMENTS AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. R/W AND EASEMENT PARTIAL STATIONS AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCEL 29. 103007 SC

DESIGN REV. - ADDED STATION IDENTITY @ -L-/-LREV- STA. 63+18.96 TO ALLOW FOR A LATERAL SHIFT IN PROPOSED ALIGNMENT AWAY FROM PARCEL 2. REVISED DRAINAGE ON PARCEL 2. 103007 SC

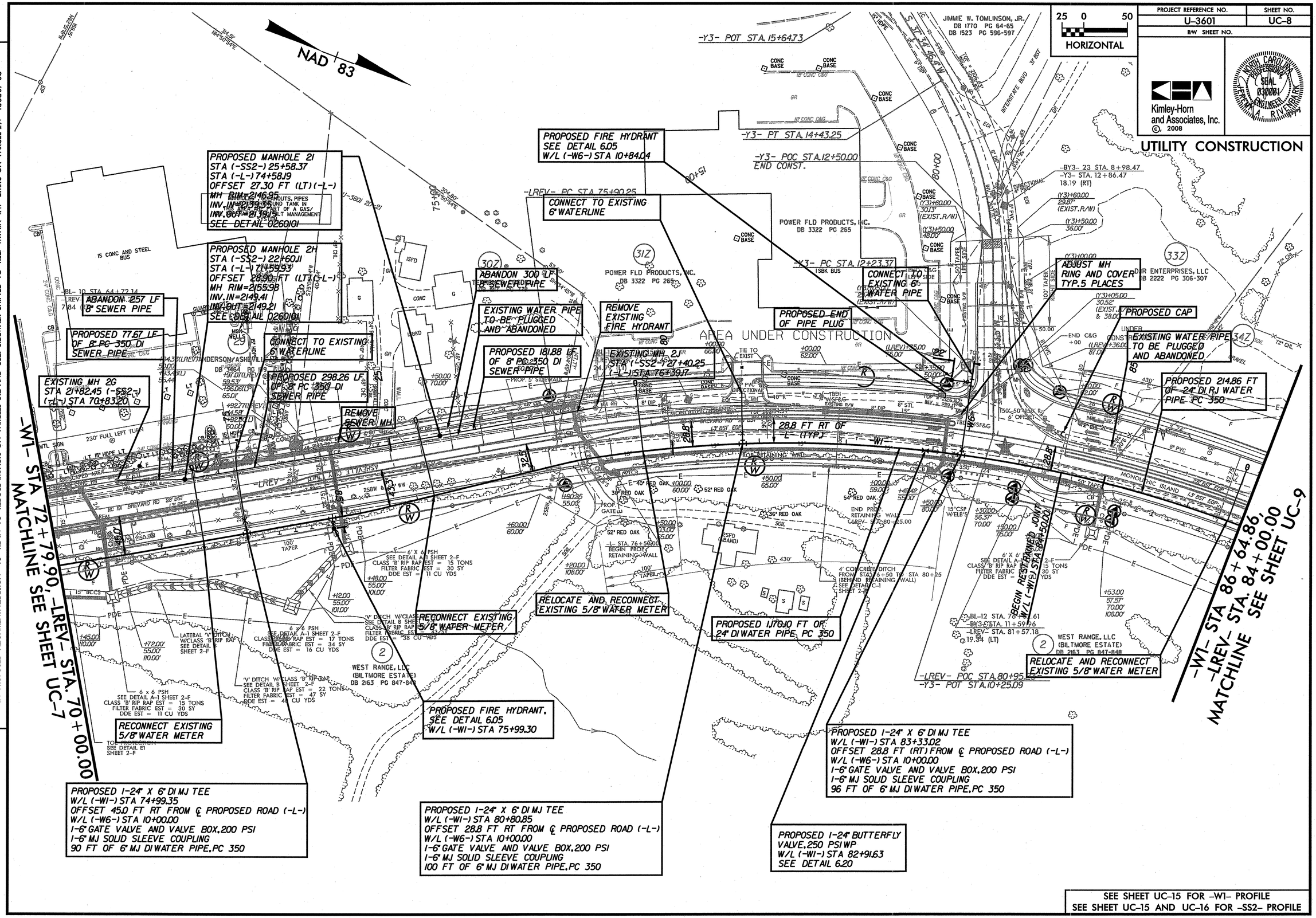
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-8
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030081 ENGINEER RAYMOND A. RIVENBARK

UTILITY CONSTRUCTION



SEE SHEET UC-15 FOR -W1- PROFILE
SEE SHEET UC-15 AND UC-16 FOR -SS2- PROFILE

R/W	REV. - REV. PROP. R/W AND TEMP CONSTRUCTION EASEMENTS FOR ALIGNMENT SHIFT ON PARCELS 2, 30Z, 31Z, 33Z, AND 34Z. R/W AND EASEMENT PARTIAL STATIONS AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCEL 2. 103007 SC
	DESIGN REV. - REVISED DRAINAGE, REVISED DRIVEWAY CONNECTION, RELOCATED PROP. RETAINING WALL, AND RELOCATED PROP. WOVEN WIRE FENCE ON PARCEL 2 DUE TO LATERAL SHIFT IN PROPOSED ALIGNMENT. REDESIGN -Y3- TIE IN TO REDUCE IMPACTS ON PARCELS 31Z AND 33Z. SIDEWALK SHIFTED TO KEEP WITHIN R/W LIMITS ON PARCEL 29. 103007 SC

REVISIONS

R:\Project\U3601\New Files (11-5-2007)\U-3601 Revision\Proj\U3601_rdy_psh_8.dgn
3/14/2008

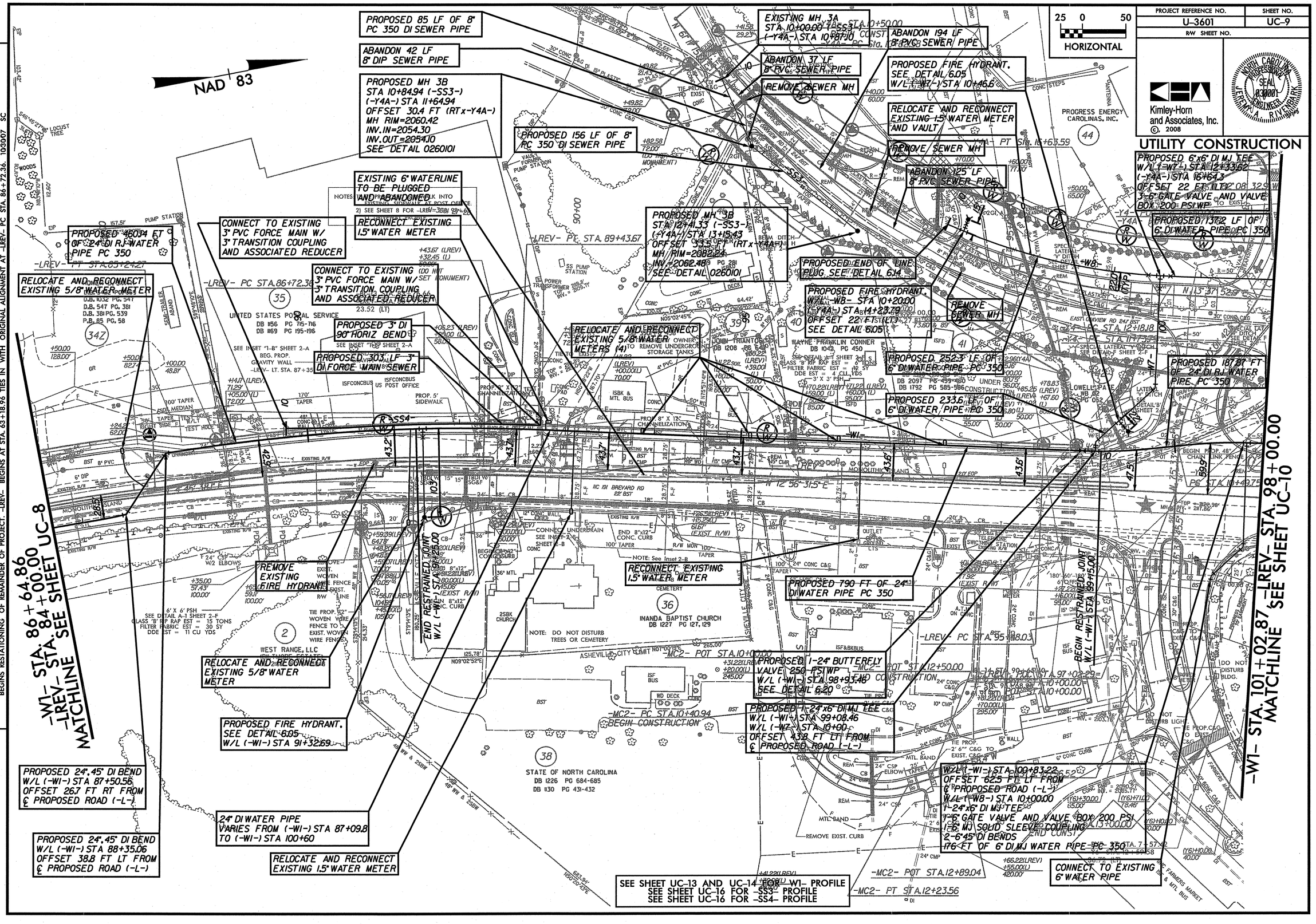
R:\Projects\U3601\View Files (II-5-2007)\U-3601 Revision\Proj\U3601_rdy_psh_9.dgn 3/14/2008

REVISIONS

R/W REV. - REVISED PROP. R/W AND TEMPORARY CONSTRUCTION EASEMENT LINES ON PARCELS 2 & 34Z. ADJUSTED PROP. PERMANENT DRAINAGE EASEMENT AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. R/W AND EASEMENT PARTIAL STA. AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCELS 2, 35, 36, 37, 38, 39, 40, 41, AND 42. 103007 SC

DESIGN REV.- RELOCATED PROP. WOVEN WIRE FENCE AND REVISED DRAINAGE ON PARCEL 2. REVISED LIMITS OF PROP. GRAVITY WALL ON PARCEL 35. ALIGNMENT SHIFT AT -L- STA. 63+18.96 BEGINS AT STA. 63+18.96 TIES IN WITH ORIGINAL ALIGNMENT AT -LREV- PC STA. 86+72.36. 103007 SC

BEGINS RESTATIONING OF REMAINDER OF PROJECT. -LREV- PC STA. 86+72.36. 103007 SC



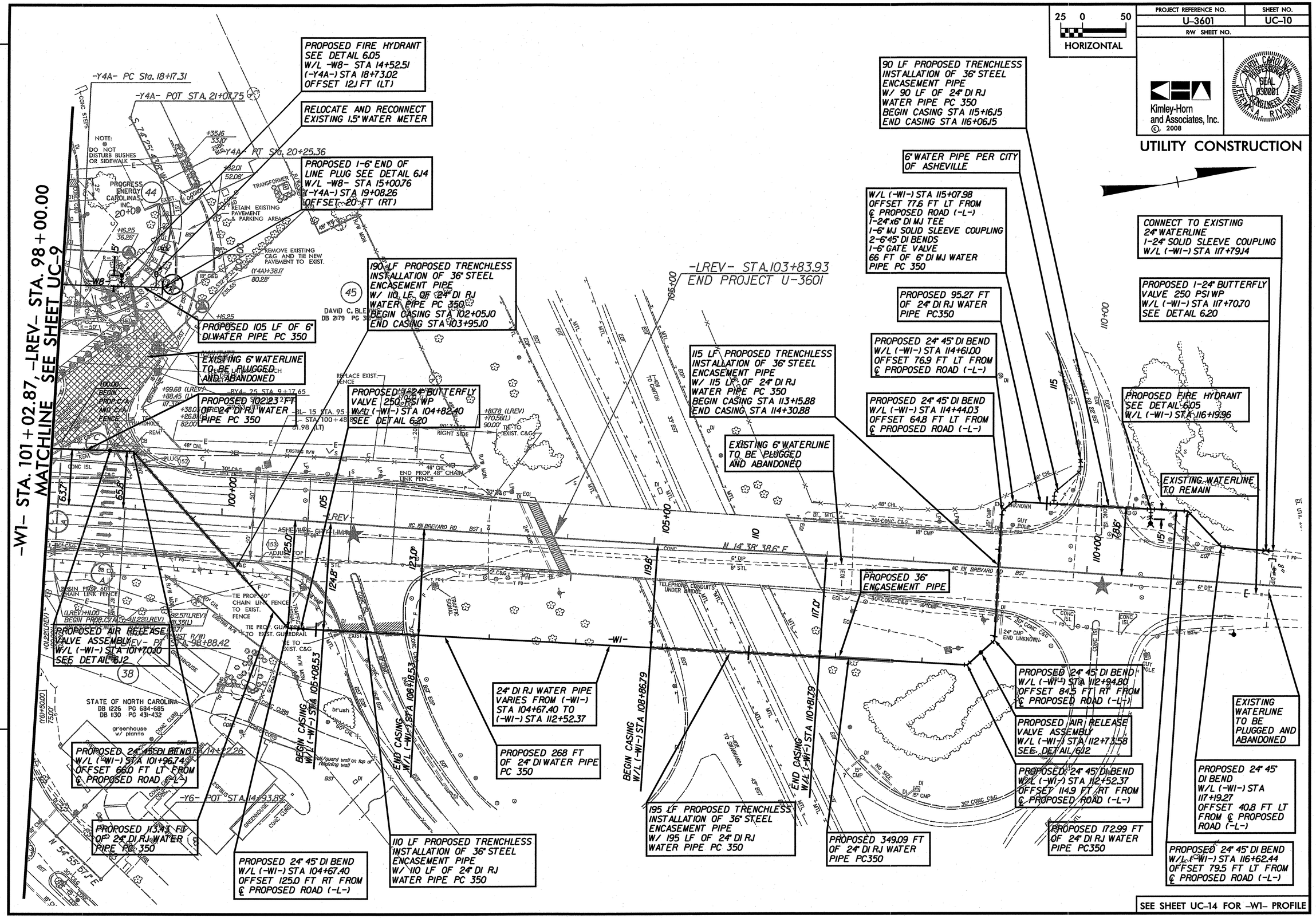
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-10
R/W SHEET NO.	

25 0 50
HORIZONTAL

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JERRY A. RIVENBARK

UTILITY CONSTRUCTION


-W1- STA. 101+02.87, -LREV- STA. 98+00.00
MATCHLINE SEE SHEET UC-9
-Y4A- PC Sta. 18+17.31
-Y4A- POT STA. 21+07.75
-Y4A- PT Sta. 20+25.36
-LREV- STA. 103+83.93
END PROJECT U-3601
PROPOSED FIRE HYDRANT SEE DETAIL 6.05 W/L -W8- STA 14+52.51 (-Y4A-) STA 18+73.02 OFFSET 121 FT (LT)
RELOCATE AND RECONNECT EXISTING 1.5" WATER METER
PROPOSED 1-6" END OF LINE PLUG SEE DETAIL 6.14 W/L -W8- STA 15+00.76 (-Y4A-) STA 19+08.26 OFFSET 20 FT (RT)
190 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 110 LF OF 24" DI RJ WATER PIPE PC 350 BEGIN CASING STA 102+05.10 END CASING STA 103+95.10
PROPOSED 105 LF OF 6" DI WATER PIPE PC 350
EXISTING 6" WATERLINE TO BE PLUGGED AND ABANDONED
PROPOSED 102.32 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 104+82.40 SEE DETAIL 6.20
PROPOSED 113.43 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED AIR RELEASE VALVE ASSEMBLY W/L (-W1-) STA 101+70.10 SEE DETAIL 6.12
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 101+96.74 OFFSET 66.0 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 104+67.40 OFFSET 125.0 FT RT FROM ℄ PROPOSED ROAD (-L-)
110 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 110 LF OF 24" DI RJ WATER PIPE PC 350
24" DI RJ WATER PIPE VARIES FROM (-W1-) STA 104+67.40 TO (-W1-) STA 112+52.37
PROPOSED 268 FT OF 24" DI WATER PIPE PC 350
BEGIN CASING W/L (-W1-) STA 105+08.53
END CASING W/L (-W1-) STA 106+18.53
BEGIN CASING W/L (-W1-) STA 108+86.79
END CASING W/L (-W1-) STA 110+81.79
195 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 195 LF OF 24" DI RJ WATER PIPE PC 350
PROPOSED 349.09 FT OF 24" DI RJ WATER PIPE PC350
115 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 115 LF OF 24" DI RJ WATER PIPE PC 350 BEGIN CASING STA 113+15.88 END CASING STA 114+30.88
EXISTING 6" WATERLINE TO BE PLUGGED AND ABANDONED
90 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 90 LF OF 24" DI RJ WATER PIPE PC 350 BEGIN CASING STA 115+16.15 END CASING STA 116+06.15
6" WATER PIPE PER CITY OF ASHEVILLE
W/L (-W1-) STA 115+07.98 OFFSET 77.6 FT LT FROM ℄ PROPOSED ROAD (-L-) 1-24"x6" DI MJ TEE 1-6" MJ SOLID SLEEVE COUPLING 2-6"45° DI BENDS 1-6" GATE VALVE 66 FT OF 6" DI MJ WATER PIPE PC 350
PROPOSED 95.27 FT OF 24" DI RJ WATER PIPE PC350
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 114+61.00 OFFSET 76.9 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 114+44.03 OFFSET 64.8 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 36" ENCASEMENT PIPE
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 112+94.80 OFFSET 84.5 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED AIR RELEASE VALVE ASSEMBLY W/L (-W1-) STA 112+73.58 SEE DETAIL 6.12
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 112+52.37 OFFSET 114.9 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 172.99 FT OF 24" DI RJ WATER PIPE PC350
CONNECT TO EXISTING 24" WATERLINE 1-24" SOLID SLEEVE COUPLING W/L (-W1-) STA 117+79.14
PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 117+70.70 SEE DETAIL 6.20
PROPOSED FIRE HYDRANT SEE DETAIL 6.05 W/L (-W1-) STA 116+19.96
EXISTING WATERLINE TO REMAIN
EXISTING WATERLINE TO BE PLUGGED AND ABANDONED
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 117+19.27 OFFSET 40.8 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 116+62.44 OFFSET 79.5 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 114+72.26 OFFSET 66.0 FT LT FROM ℄ PROPOSED ROAD (-L-)
-Y6- POT STA. 14+93.89
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 104+67.40 OFFSET 125.0 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 112+52.37 OFFSET 114.9 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 116+62.44 OFFSET 79.5 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 117+19.27 OFFSET 40.8 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 172.99 FT OF 24" DI RJ WATER PIPE PC350
PROPOSED 349.09 FT OF 24" DI RJ WATER PIPE PC350
PROPOSED 195 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 195 LF OF 24" DI RJ WATER PIPE PC 350
PROPOSED 268 FT OF 24" DI WATER PIPE PC 350
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 101+96.74 OFFSET 66.0 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 113.43 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 104+67.40 OFFSET 125.0 FT RT FROM ℄ PROPOSED ROAD (-L-)
110 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 110 LF OF 24" DI RJ WATER PIPE PC 350
PROPOSED 105 LF OF 6" DI WATER PIPE PC 350
PROPOSED 102.32 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 104+82.40 SEE DETAIL 6.20
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 101+96.74 OFFSET 66.0 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 104+67.40 OFFSET 125.0 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 112+52.37 OFFSET 114.9 FT RT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 116+62.44 OFFSET 79.5 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 24" 45° DI BEND W/L (-W1-) STA 117+19.27 OFFSET 40.8 FT LT FROM ℄ PROPOSED ROAD (-L-)
PROPOSED 172.99 FT OF 24" DI RJ WATER PIPE PC350
PROPOSED 349.09 FT OF 24" DI RJ WATER PIPE PC350
PROPOSED 195 LF PROPOSED TRENCHLESS INSTALLATION OF 36" STEEL ENCASEMENT PIPE W/ 195 LF OF 24" DI RJ WATER PIPE PC 350
PROPOSED 268 FT OF 24" DI WATER PIPE PC 350
PROPOSED 113.43 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED 105 LF OF 6" DI WATER PIPE PC 350
PROPOSED 102.32 FT OF 24" DI RJ WATER PIPE PC 350
PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 104+82.40 SEE DETAIL 6.20
PROPOSED 1-24" BUTTERFLY VALVE 250 PSI WP W/L (-W1-) STA 117+70.70 SEE DETAIL 6.20
PROPOSED FIRE HYDRANT SEE DETAIL 6.05 W/L (-W1-) STA 116+19.96
PROPOSED FIRE HYDRANT SEE DETAIL 6.05 W/L -W8- STA 14+52.51 (-Y4A-) STA 18+73.02 OFFSET 121 FT (LT)
RELOCATE AND RECONNECT EXISTING 1.5" WATER METER
PROPOSED 1-6" END OF LINE PLUG SEE DETAIL 6.14 W/L -W8- STA 15+00.76 (-Y4A-) STA 19+08.26 OFFSET 20 FT (RT)
NOTE: DO NOT DISTURB BUSHES OR SIDEWALK
PROGRESS ENERGY CAROLINAS INC.
RETAIN EXISTING PAVEMENT & PARKING AREA
REMOVE EXISTING C&G AND TIE NEW PAVEMENT TO EXIST.
DAVID C. BLE DB 2179 PG 3
STATE OF NORTH CAROLINA DB 1226 PG 684-685 DB 1130 PG 431-432
NC 191 BREVARD RD
ASHEVILLE CITY LIMITS
N 14° 38' 38.6" E
N 54° 55' 67" E
TELEPHONE CONDUITS UNDER BRIDGE
TRAFFIC SIGNAL
TIE PROP. 60" CHAIN LINK FENCE TO EXIST. FENCE
TIE PROP. GUARDRAIL TO EXIST. GUARDRAIL
TIE TO EXIST. C&G
END PROP. 48" CHAIN LINK FENCE
BEGIN PROP. 60" CHAIN LINK FENCE
TIE TO EXIST. C&G
RIGHT SIDE
EXISTING R/W
-W1-
-LREV-
-Y4A-
-W8-
-Y6-
-BL- 15 STA. 95+
STA 100+48.98 (LT)
STA 103+95.10
STA 105+08.53
STA 106+18.53
STA 108+86.79
STA 110+81.79
STA 112+52.37
STA 114+30.88
STA 116+62.44
STA 117+19.27
STA 117+70.70
STA 117+79.14
STA 101+70.10
STA 104+82.40
STA 104+67.40
STA 101+96.74
STA 101+02.87
STA 98+00.00
STA 98+88.42
STA 98+00.00
STA 100+00
STA 105+00
STA 110+00
STA 115+00
STA 120+00
STA 75+00
STA 76+50.00
STA 76+50.00
STA 76+50.

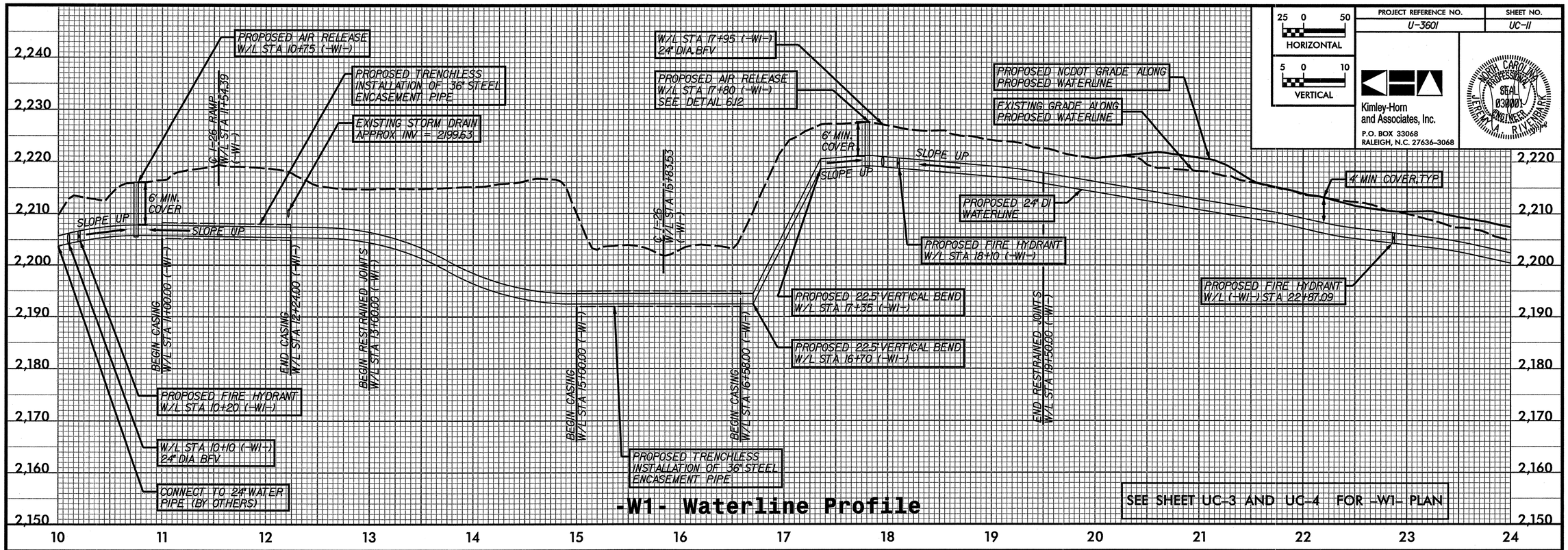
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-11

HORIZONTAL 25 0 50

VERTICAL 5 0 10

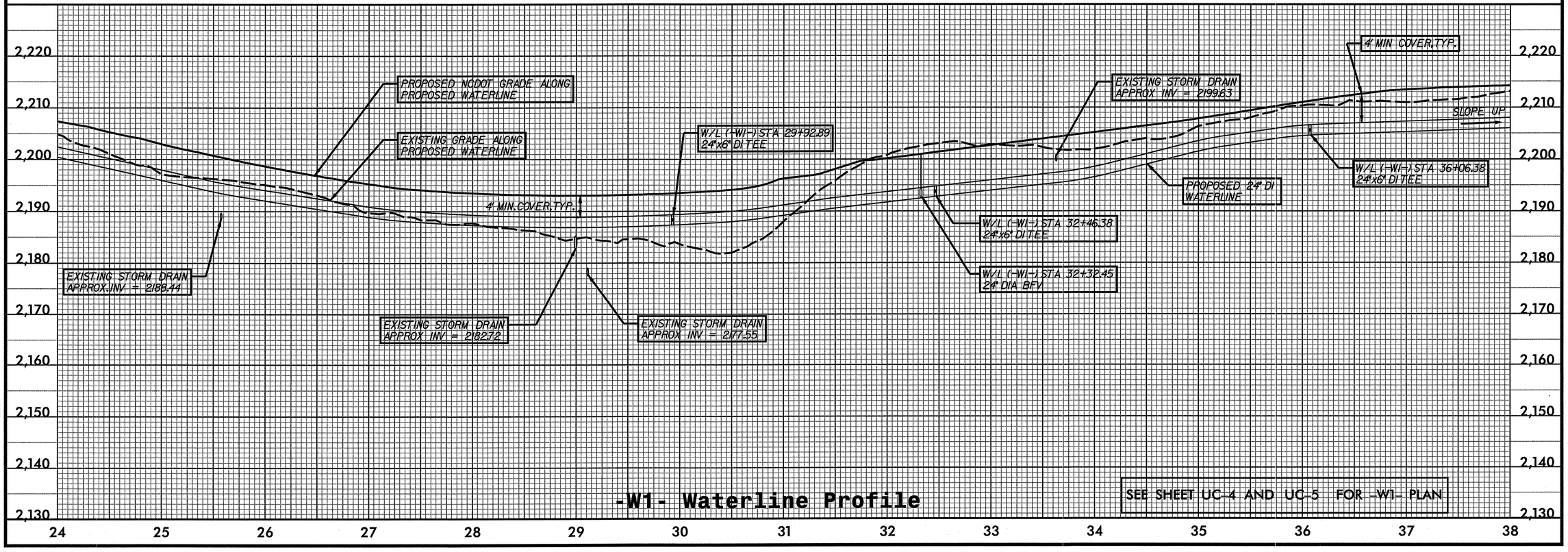
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEREMY A. RIVENBARK



-W1- Waterline Profile

SEE SHEET UC-3 AND UC-4 FOR -W1- PLAN



-W1- Waterline Profile

SEE SHEET UC-4 AND UC-5 FOR -W1- PLAN

$FILEL$

3/14/2008

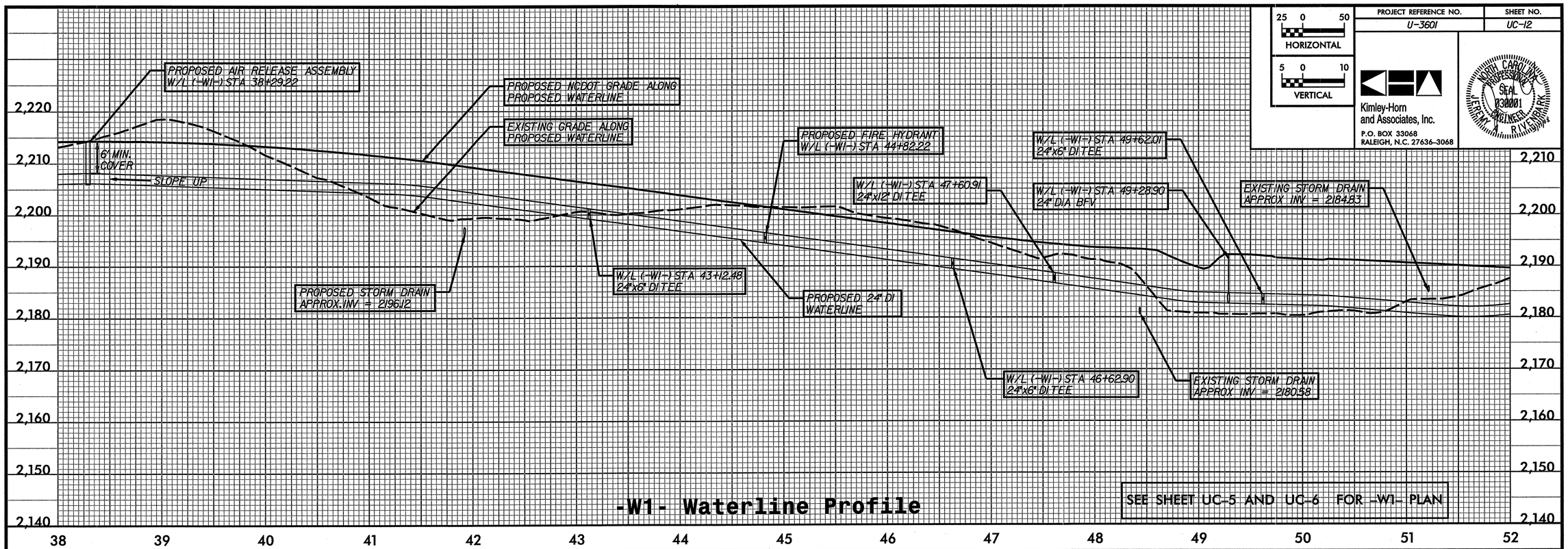
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-12

25 0 50 HORIZONTAL

5 0 10 VERTICAL

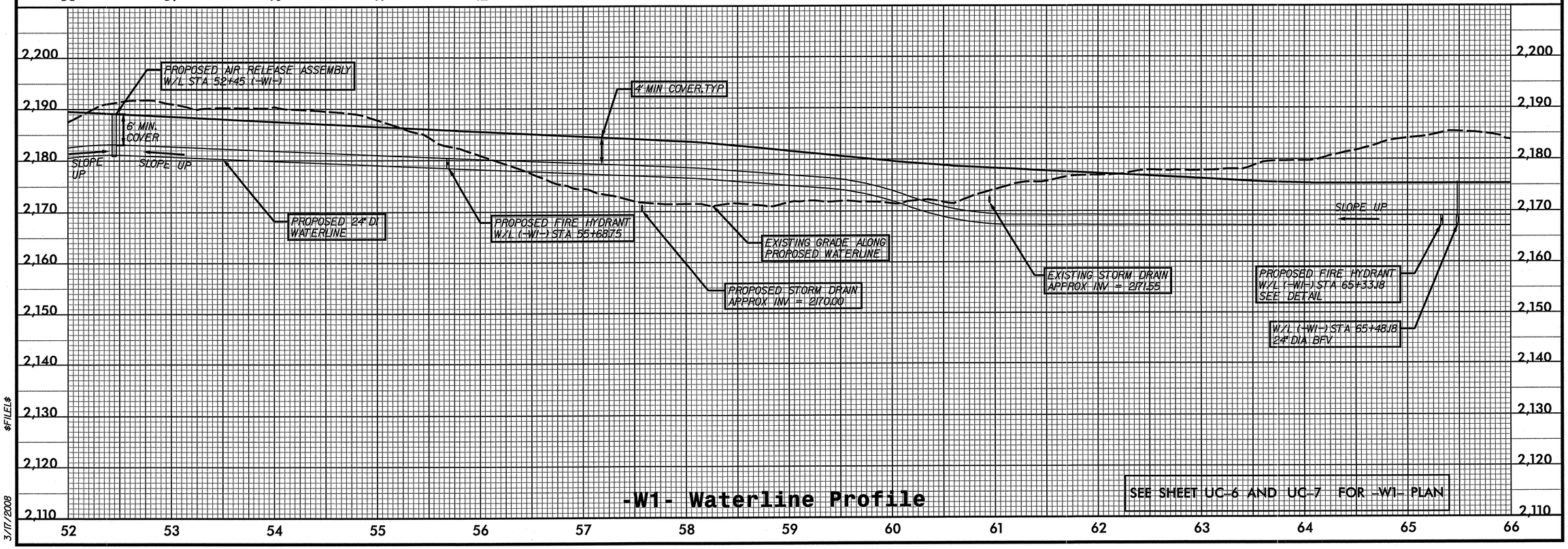
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEREMY A. RIVERBARK



-W1- Waterline Profile

SEE SHEET UC-5 AND UC-6 FOR -W1- PLAN



-W1- Waterline Profile

SEE SHEET UC-6 AND UC-7 FOR -W1- PLAN

$FILEL$

3/17/2008

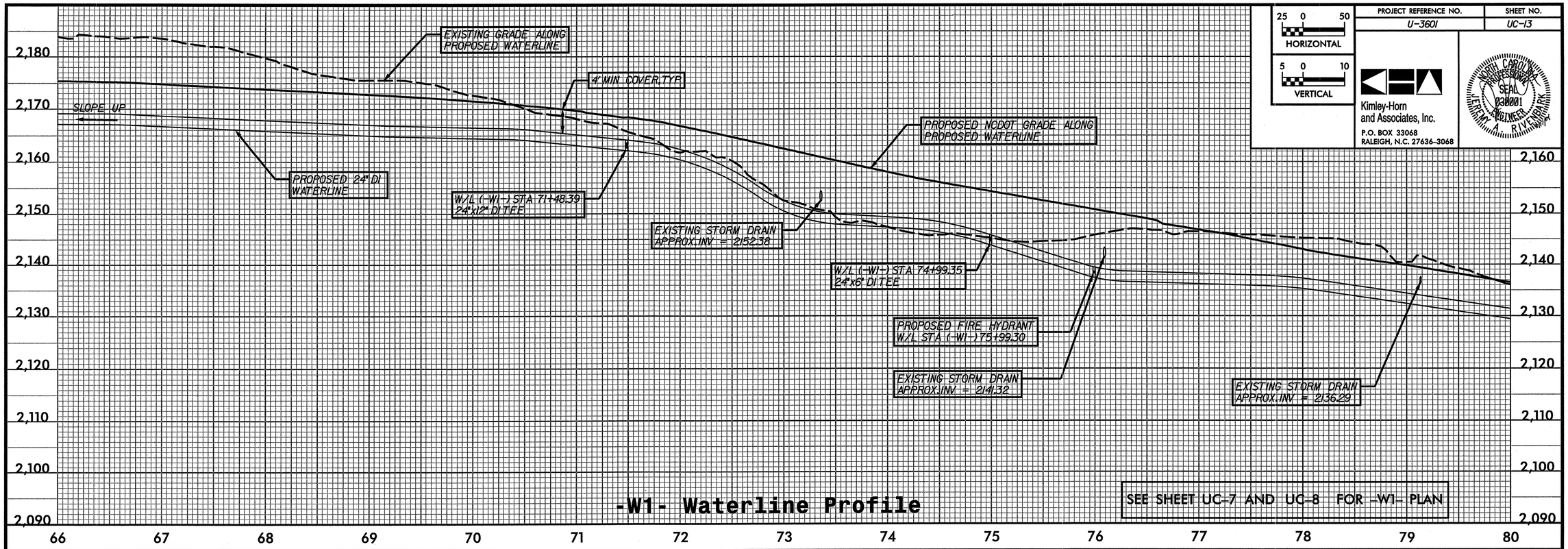
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-13

25 0 50 HORIZONTAL

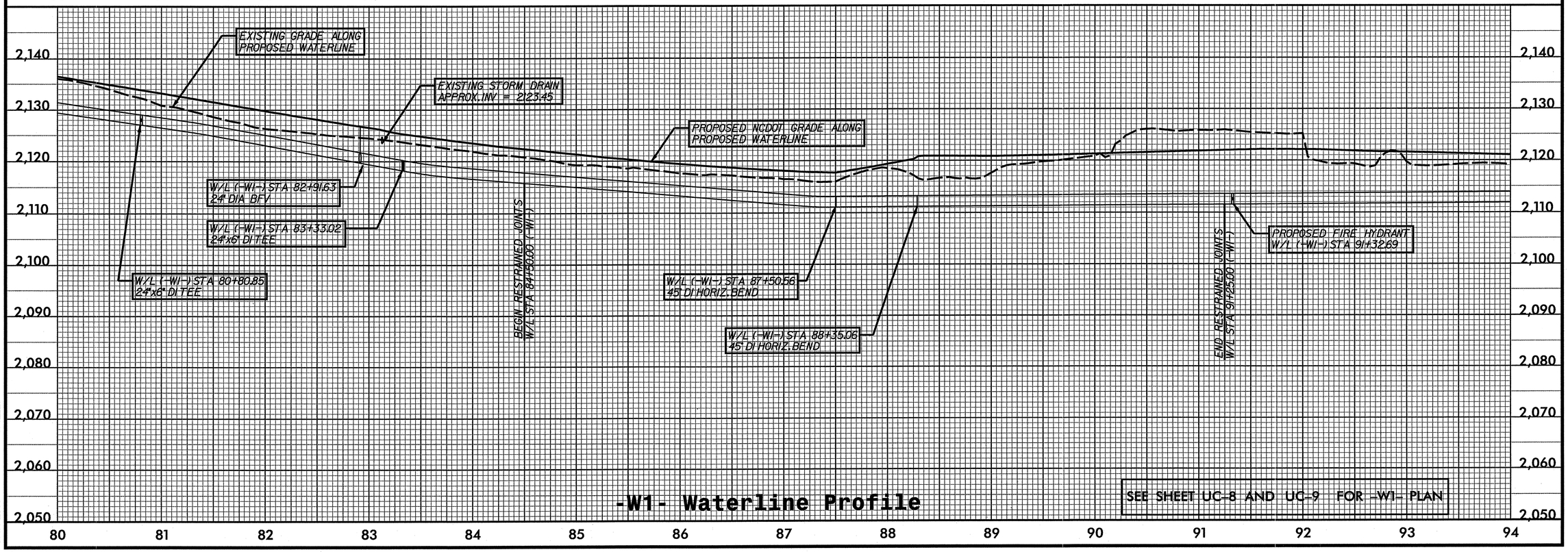
5 0 10 VERTICAL

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 038001 ENGINEER JEREMY A. RIVERS



-W1- Waterline Profile



-W1- Waterline Profile

$FILE1$

3/17/2008

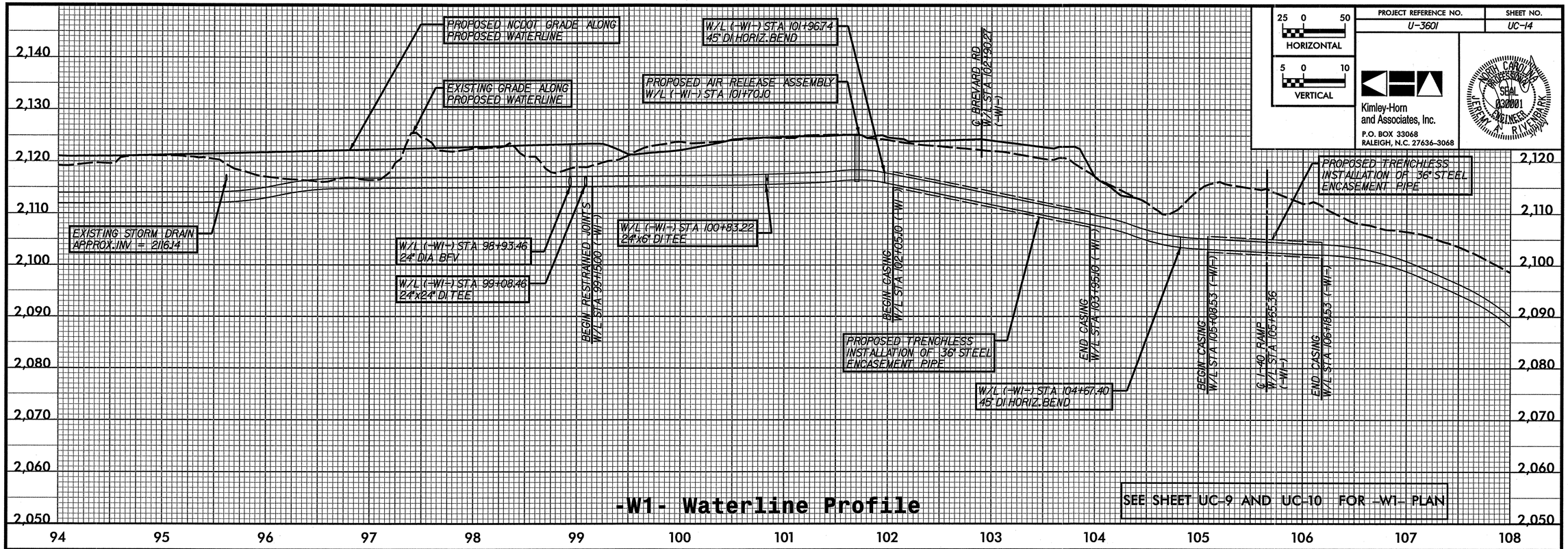
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-14

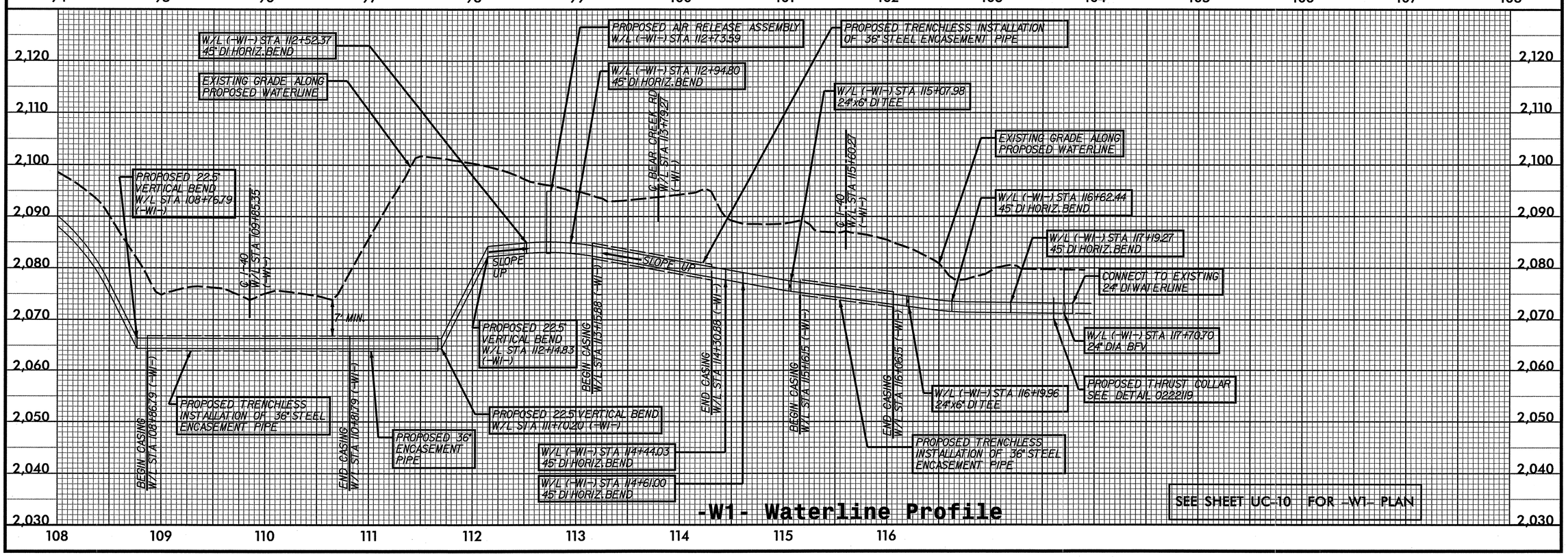
25 0 50 HORIZONTAL

5 0 10 VERTICAL

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEREMY R. IVERSON





$FILE1$

3/17/2008

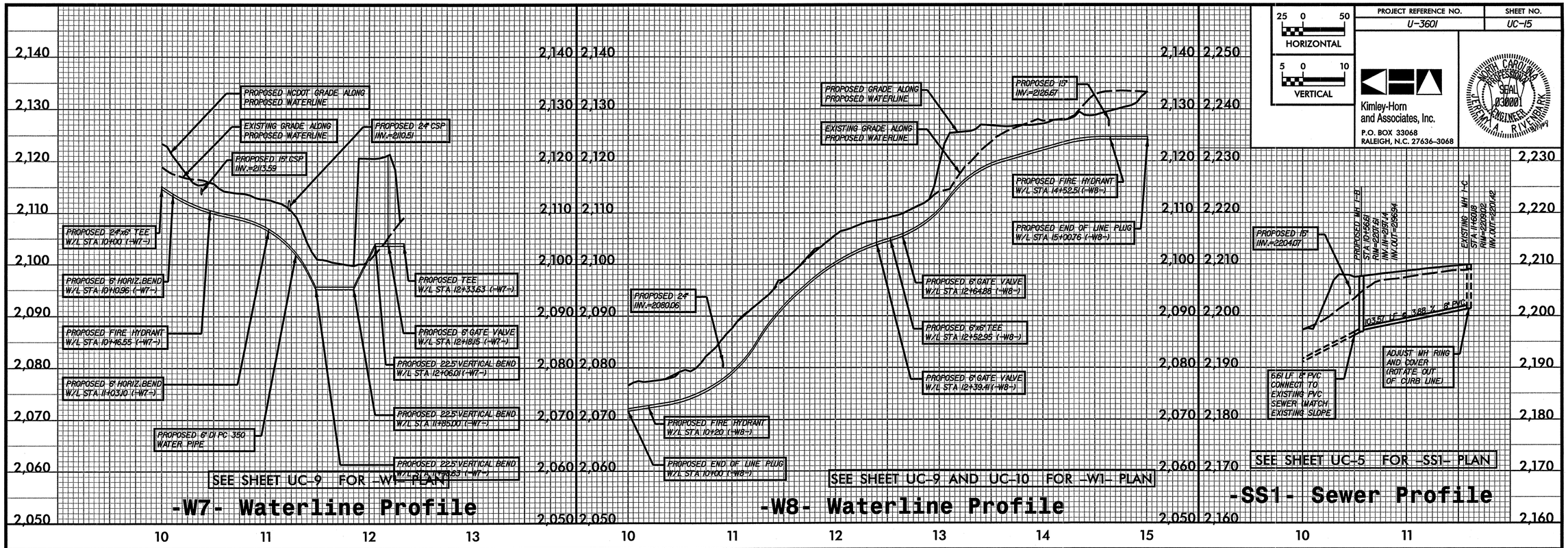
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-15

HORIZONTAL: 25 0 50

VERTICAL: 5 0 10

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER TERRY A. RIVENBARK



$FILEL$

3/14/2008

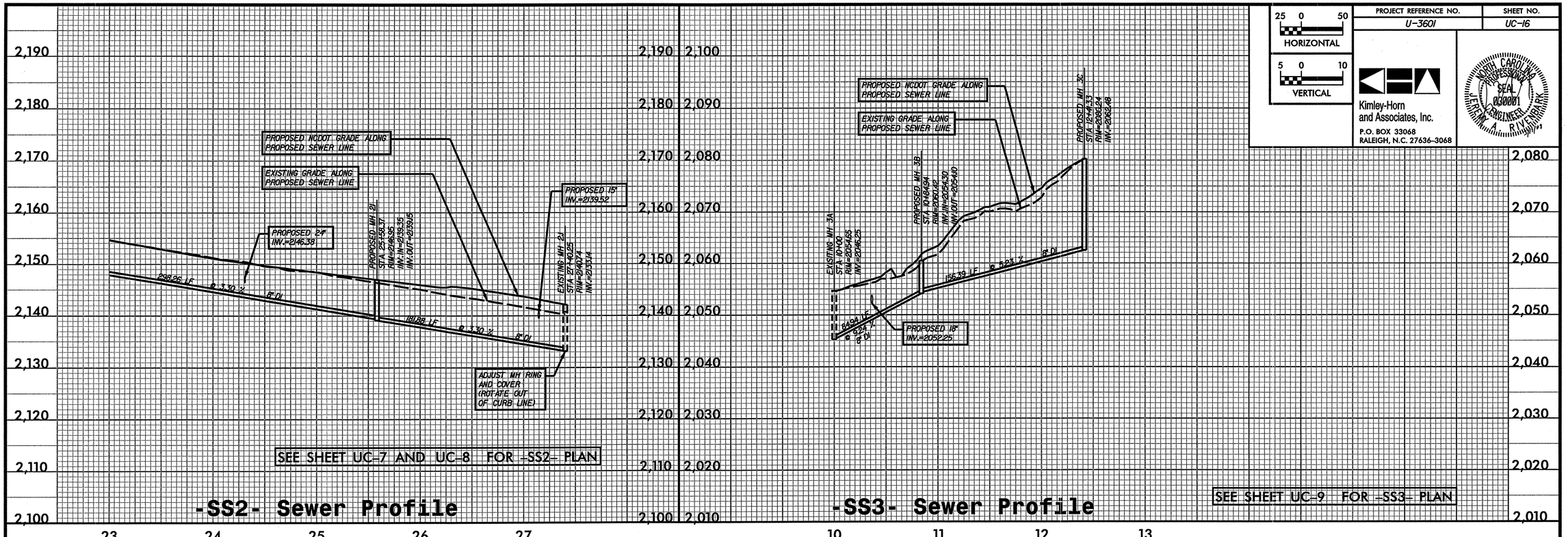
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-16

25 0 50 HORIZONTAL

5 0 10 VERTICAL

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 030001 ENGINEER JEFFREY A. RIVENBARK



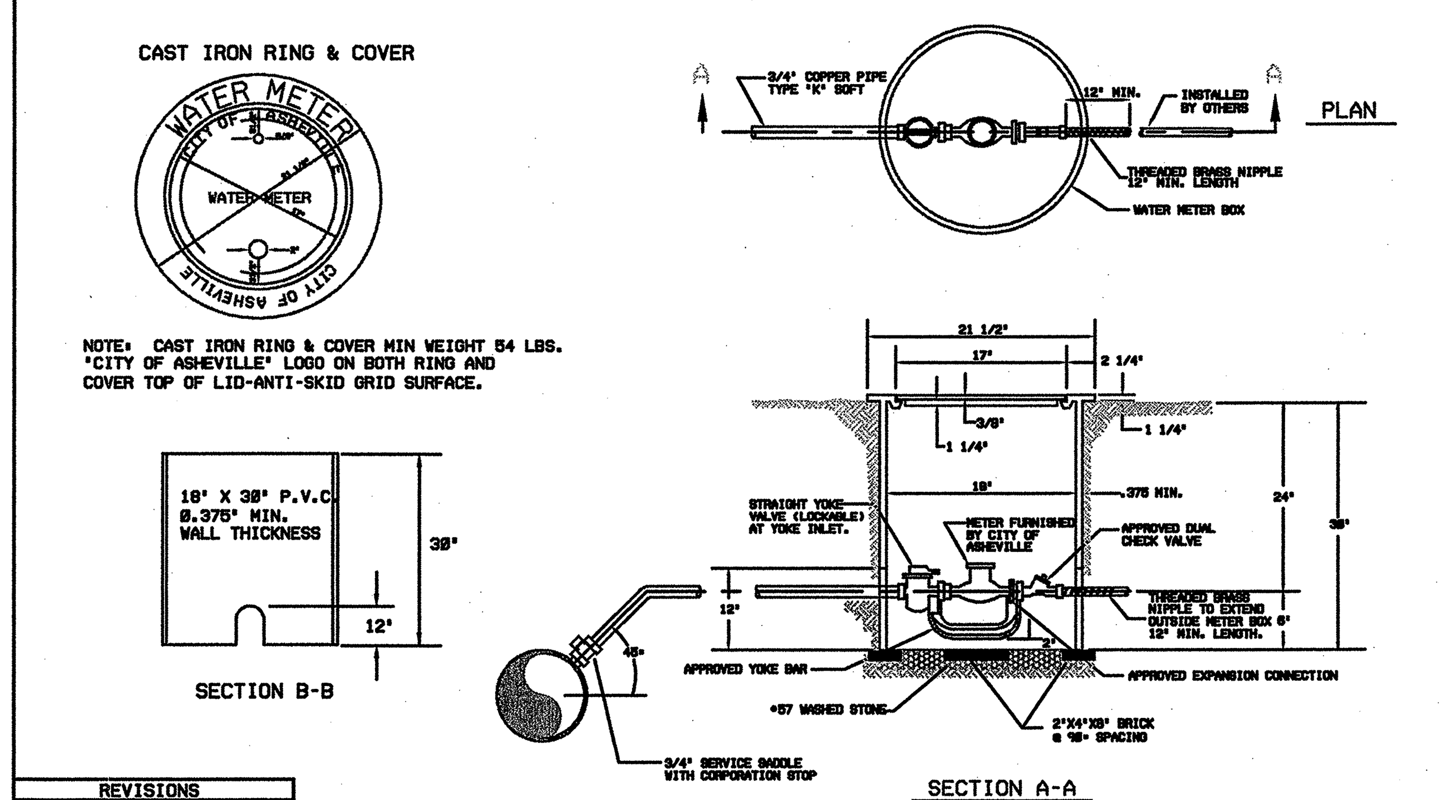
$FILE1$

3/14/2008

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-17
R/W SHEET NO.	

Kimley-Horn and Associates, Inc.
©, 2008

UTILITY CONSTRUCTION



REVISIONS	
DATE	DESCRIPTION
07/07/99	[illegible]
12/08/00	[illegible]

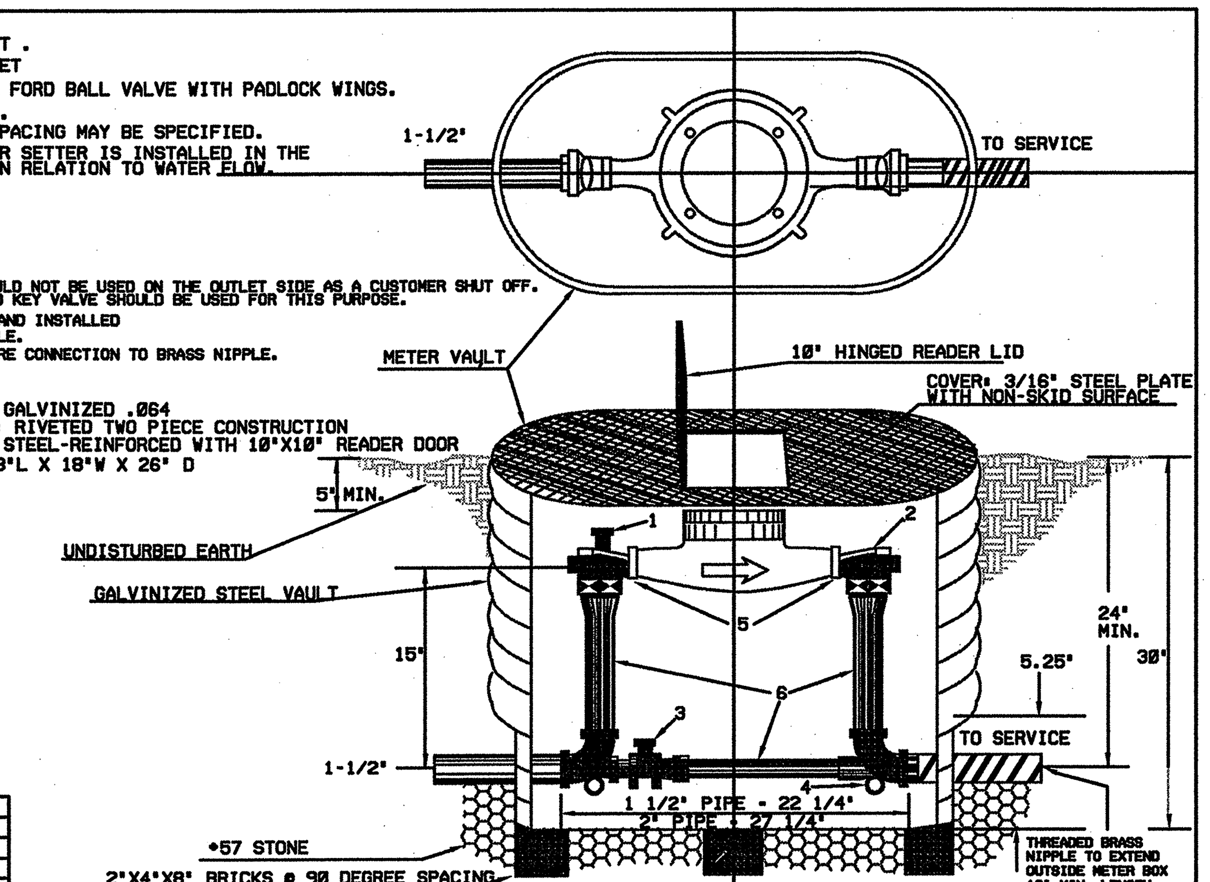
NOTE: THIS DETAIL WILL APPLY TO ALL DOMESTIC WATER SERVICE TRANSFERS AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS AND SHOWN ON THE ENGINEERING DRAWINGS.

ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	DETAIL - 5/8 WATER METER BOX	STD. NO. 6.01

1. BALL VALVE ON INLET .
2. DUAL CHECK ON OUTLET
3. BY-PASS INCLUDES A FORD BALL VALVE WITH PADLOCK WINGS.
4. BRACE PIPE EYELETS.
5. DIFFERENT FLANGE SPACING MAY BE SPECIFIED.
6. BE SURE THAT COPPER SETTER IS INSTALLED IN THE CORRECT POSITION IN RELATION TO WATER FLOW.

NOTE: ANGLE BALL VALVES SHOULD NOT BE USED ON THE OUTLET SIDE AS A CUSTOMER SHUT OFF. FLANGED ANGLE INVERTED KEY VALVE SHOULD BE USED FOR THIS PURPOSE.
METER TO BE FURNISHED AND INSTALLED BY THE CITY OF ASHEVILLE.
METER MUST BE SET BEFORE CONNECTION TO BRASS NIPPLE.

MATERIAL: COPPER-STEEL GALVINIZED .064
METHOD OF CONSTRUCTION: RIVETED TWO PIECE CONSTRUCTION
LID: 3/16" FLOOR PLATE STEEL-REINFORCED WITH 10"X10" READER DOOR
WEIGHT: 100LBS SIZE: 38"L X 18"W X 26" D



REVISIONS	
DATE	DESCRIPTION
12/08/98	

ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	POSITIVE DISPLACEMENT 1-1/2" METERS & METER VAULT	STD. NO. 6.02

GENERAL NOTES:

METER AND BYPASS ASSEMBLY TO BE DUCTILE IRON FLANGED PIPE

METER FACE TO BE A MAXIMUM OF 3.5' BELOW FINISHED GRADE

ADJUSTABLE CONNECTING PIECE TO BE CLOW F-1439 ADJUSTABLE CONNECTOR

ACCESS DOOR SHALL BE STEEL/ALUMINUM DOUBLE LEAF DOOR WITH A MINIMUM OPENING OF 42" X 36" AND CENTERED OVER METER DOOR SHALL BE REINFORCED FOR AASHTO H-20 LOADING IN AREAS SUBJECT TO VEHICULAR TRAFFIC..

VALVES INSIDE VAULT SHALL BE IRON BODY TYPE AND HAND WHEEL OPERATED

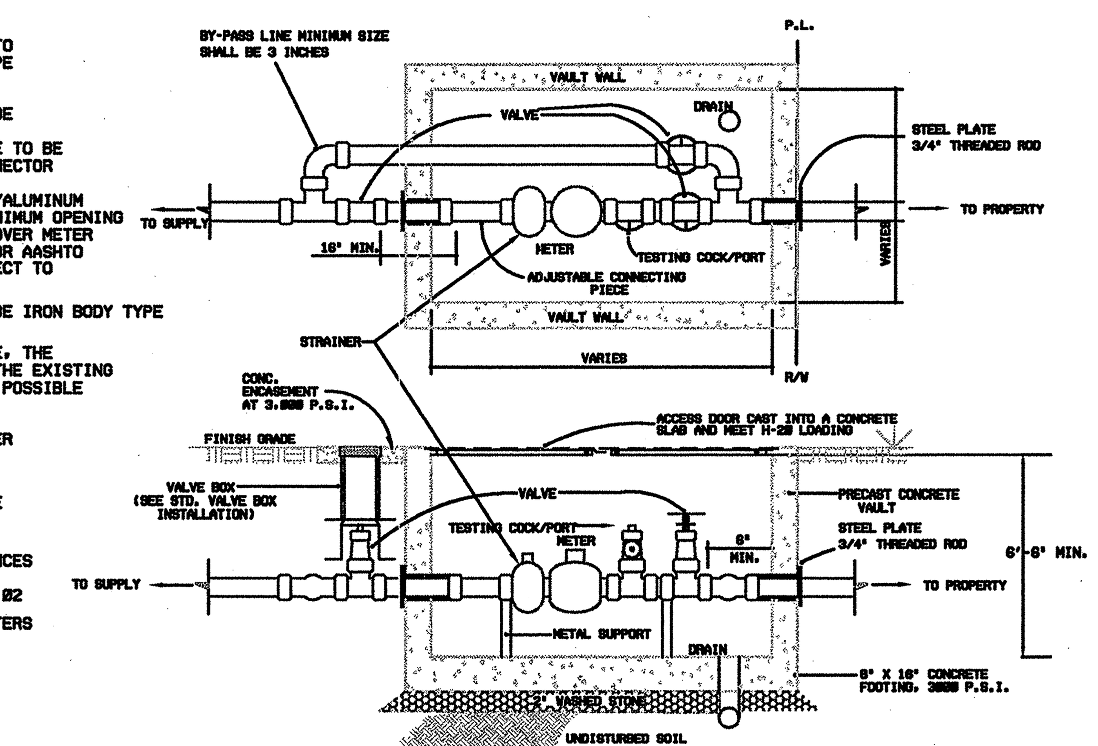
TO ENSURE POSITIVE DRAINAGE, THE VAULT SHOULD BE TIED INTO THE EXISTING STORM DRAINAGE SYSTEM WHEN POSSIBLE OR DRAINED TO DAYLIGHT.

METER DEVICE SHALL BE AS PER CITY OF ASHEVILLE CURRENT REQUIREMENTS.

STEEL PLATE THICKNESS TO BE CALCULATED BASED UPON SYSTEM OPERATING PRESSURE

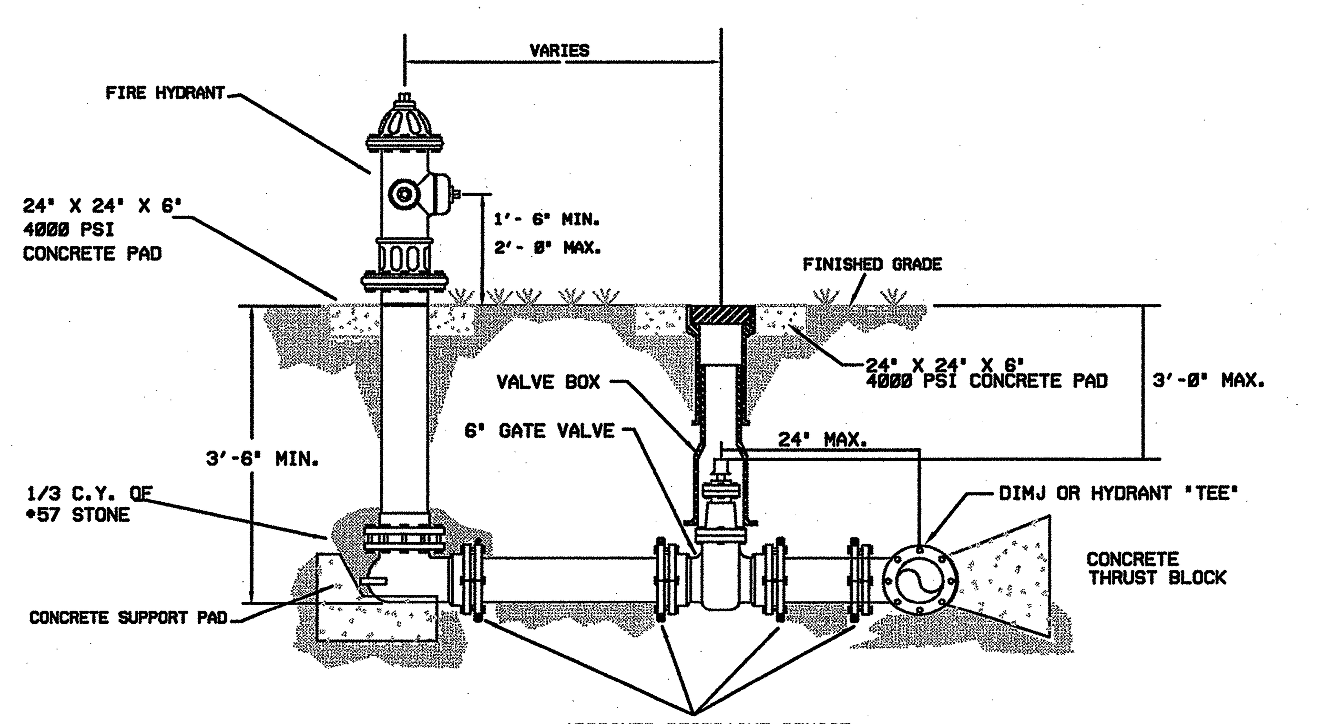
ALL FITTINGS AND APPURTENANCES OUTSIDE THE VAULT SHALL BE RESTAINED AS PER SECTION 6.02

ALL PIPING FOR 3" WATER METERS SHALL BE DUTILE IRON CLASS 350.



REVISIONS	
DATE	DESCRIPTION
12/08/98	
8/99	VAULT & NOTES
3/01	METER SIZE

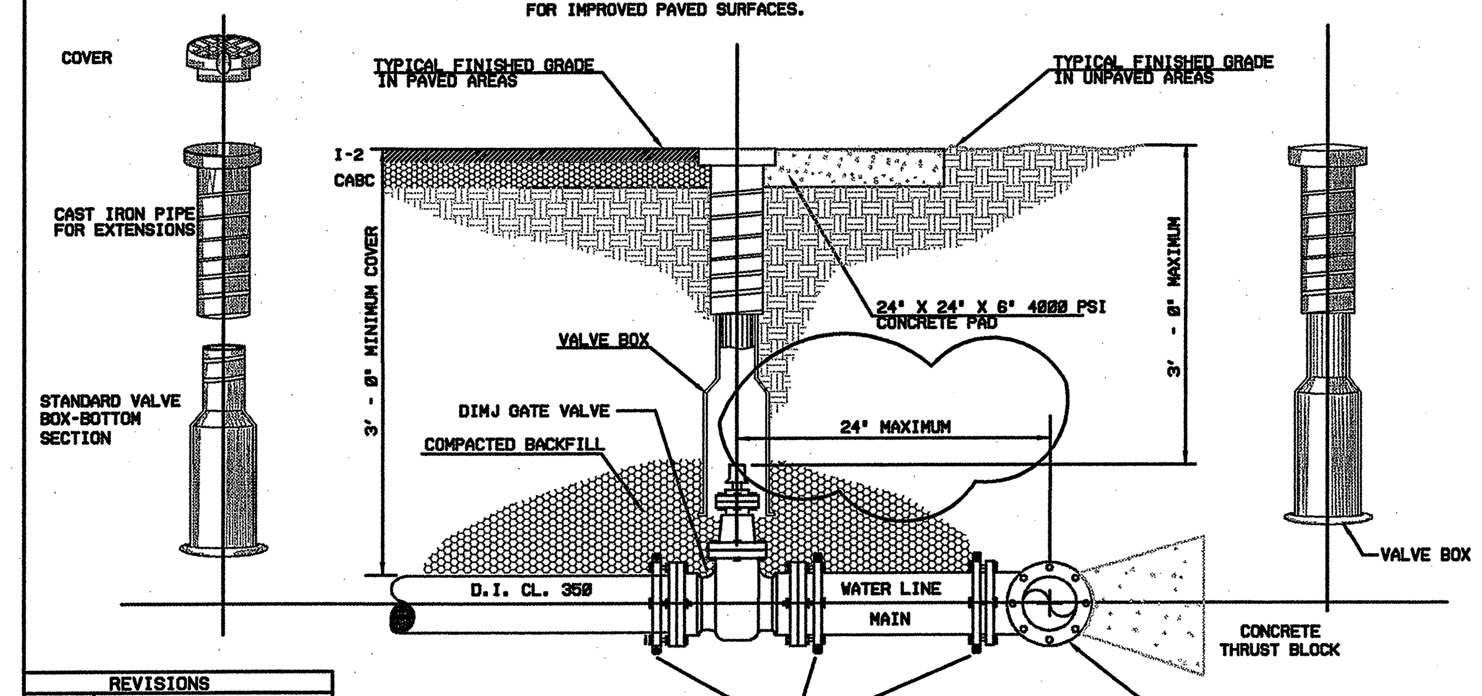
ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	STANDARD 3" & ABOVE COMPOUND METER INSTALLATION AND VAULT	STD. NO. 6.03



REVISIONS	
DATE	DESCRIPTION
8/99	HYDRANT TEE MEGALUGS
9/00	MAXIMUM DISTANCE BETWEEN TEE AND VALVE

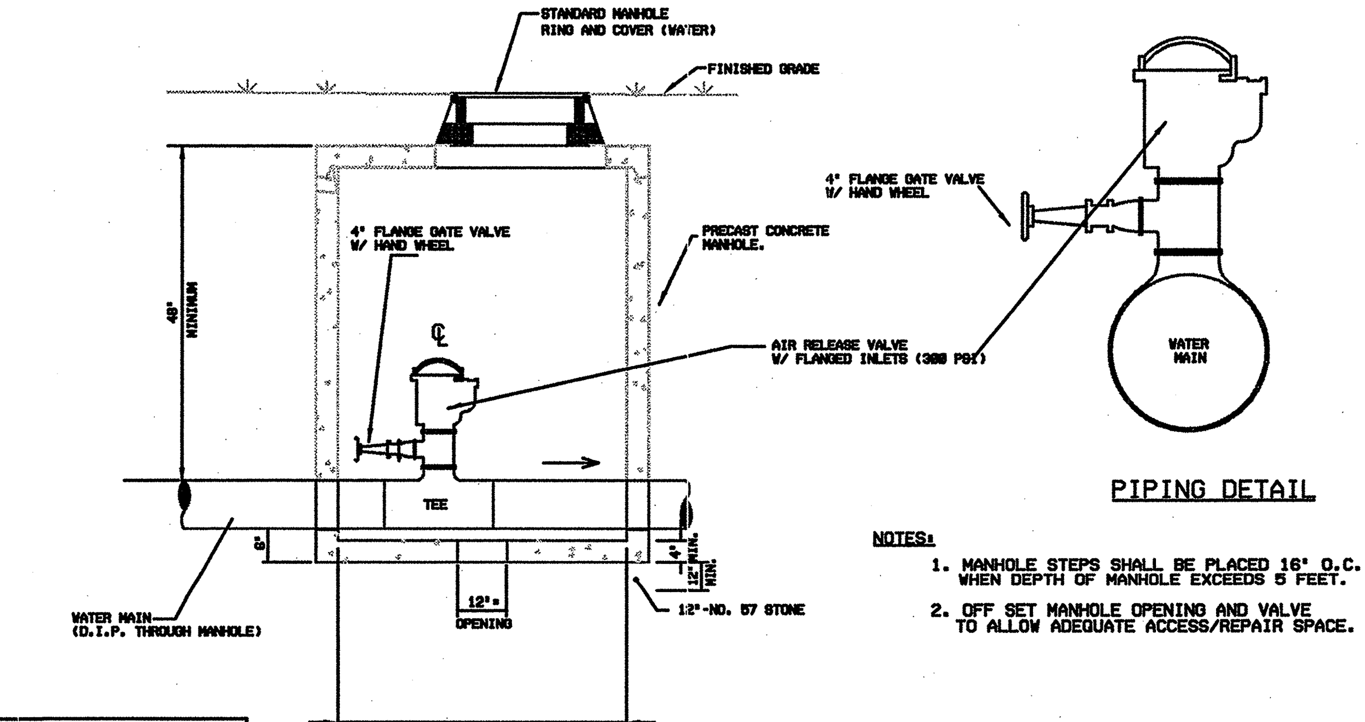
ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	FIRE HYDRANT INSTALLATION	STD. NO. 6.05

GENERAL NOTES:
1. SEE STANDARD THRUST BLOCK DIMENSIONS.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
3. VALVE BOX WILL NOT CONTACT WATER MAIN OR VALVE
4. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR IMPROVED PAVED SURFACES.



REVISIONS	
DATE	DESCRIPTION
08/99	COMBINED WITH STD. DETAIL 6.09
09/00	MAX DISTANCE BETWEEN VALVE & WATERLINE CHANGED TO 24"

ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	TYPICAL VALVE & VALVE BOX INSTALLATION	STD. NO. 6.06



NOTES:
1. MANHOLE STEPS SHALL BE PLACED 16" O.C. WHEN DEPTH OF MANHOLE EXCEEDS 5 FEET.
2. OFF SET MANHOLE OPENING AND VALVE TO ALLOW ADEQUATE ACCESS/REPAIR SPACE.

REVISIONS	
DATE	DESCRIPTION
12/15/98	

ASHEVILLE	CITY OF ASHEVILLE, N.C. ENGINEERING DEPARTMENT	STANDARD AIR RELEASE VALVE INSTALLATION 4" AND ABOVE	STD. NO. 6.12

5/14/99

REVISIONS

R/W REV. - ADDED DRIVEWAY ACCESSES TO PARCEL 37. 11/24/04 JT
R/W REV. - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 34. 4/5/05 REO
R/W REV. - REVISED R/W LINE ADJACENT TO PARCEL 2 AT -L- STA. 85+23.27 RT 08/26/05 SC

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

R:\Project\U3601\New Files(11-23-2005)\OtherFiles\proj\u3601s9.psh

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-18
R/W SHEET NO.	

Kimley-Horn and Associates, Inc.
© 2008

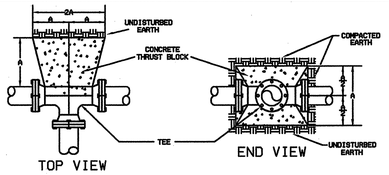
NORTH CAROLINA PROFESSIONAL SEAL 030081 ENGINEER JEFFREY A. RIVENBARK

UTILITY CONSTRUCTION

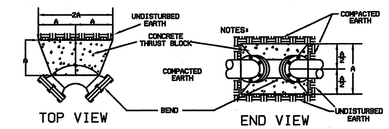
TABLE OF 'A' DIMENSIONS (IN FEET)

	BEND	90	45	22 1/2	11 1/4	TEE
PIPE SIZE NOMINAL DIAMETER IN INCHES	6	1.4	1.	1.0	1.0	1.2
	8	1.9	1.0	1.5	1.5	1.6
	10	2.4	1.0	1.0	1.0	2.0
	12	2.8	2.	2.0	2.0	2.4
	16	3.8	2.0	2.5	2.5	2.8
	24	5.6	4.2	3.0	3.0	4.5

NOTES:
1. ALL FITTINGS MUST BE RESTRAINED AS SPECIFIED IN SECTION 6.05 OF THE STANDARD SPECIFICATIONS AND DETAILS MANUAL.
2. DIMENSION TABLE GIVEN IS A GUIDE ONLY. ENGINEER SHALL BE RESPONSIBLE TO CALCULATE THRUST BLOCK DIMENSIONS BASED ON ACTUAL SOIL AND OPERATING PRESSURE CONDITIONS.
3. FITTING JOINTS SHALL BE KEPT FREE OF CONCRETE. A LAYER OF POLYETHYLINE PLASTIC SHALL BE PLACED BETWEEN THE FITTING AND THE CONCRETE.
4. PRE-CAST THRUST BLOCKS ARE NOT ACCEPTABLE.
5. CONCRETE SHALL HAVE 4000 P.S.I. COMPRESSIVE STRENGTH.



TYPICAL THRUST BLOCK FOR TEES
NTS



TYPICAL THRUST BLOCK FOR BENDS
NTS

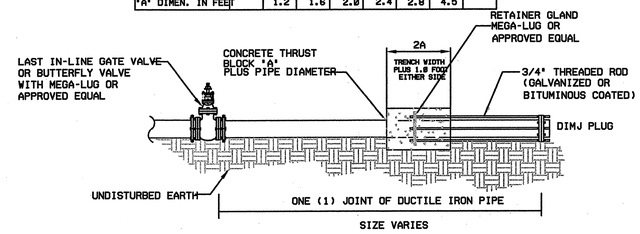
REVISIONS	
DATE	DESCRIPTION
05/99	
09/00	4000 P.S.I. CONCRETE SPECIFIED

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

THRUST BLOCKS FOR FITTINGS

STD. NO. 6.13

PIPE SIZE (NOMINAL DIAMETER IN INCHES)						
	6	8	10	12	16	24
'A' DIMEN. IN FEET	1.2	1.6	2.0	2.4	2.8	4.5



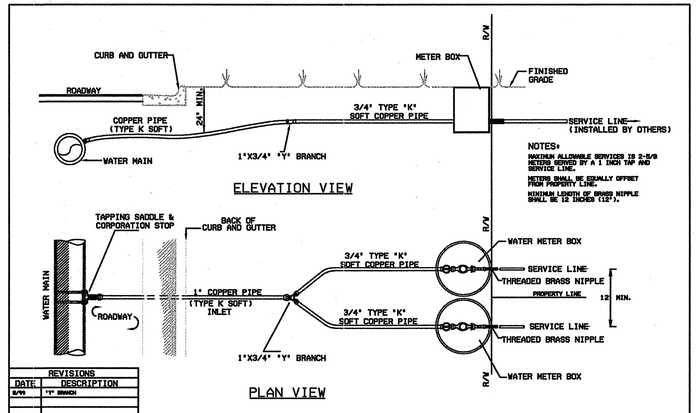
1. ALL FITTINGS MUST BE RESTRAINED AS SPECIFIED IN SECTION 6.05 OF THE STANDARD SPECIFICATIONS AND
2. DIMENSION TABLE GIVEN IS A GUIDE ONLY. ENGINEER SHALL BE RESPONSIBLE TO CALCULATE THRUST BLOCK DIMENSIONS BASED ON ACTUAL SOIL AND OPERATING
3. FITTING JOINTS SHALL BE KEPT FREE OF CONCRETE. A LAYER OF POLYETHYLINE PLASTIC SHALL BE PLACED BETWEEN THE FITTING AND THE CONCRETE.

REVISIONS	
DATE	DESCRIPTION
12/15/99	NEW DETAIL
07/07/99	

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

END OF LINE PLUG

STD. NO. 6.14



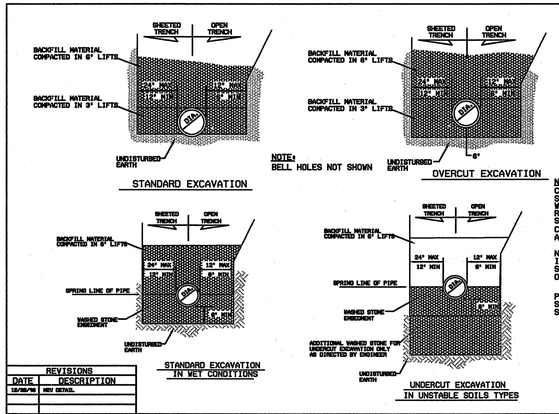
NOTES:
MAXIMUM ALLOWABLE SERVICES IS 2-5/8 METERS SERVED BY A 1 INCH TAP AND SERVICE LINE.
METERS SHALL BE EQUALLY OFFSET FROM PROPERTY LINE.
MINIMUM LENGTH OF BRASS NIPPLE SHALL BE 12 INCHES (12").

REVISIONS	
DATE	DESCRIPTION
5/99	"Y" BRANCH

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

STANDARD MULTIPLE BRANCH SERVICES

STD. NO. 6.15



NOTES:
CONSTRUCTION OF TRENCHES SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS. CONTRACTOR SHALL BE RESPOSIBLE FOR COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

NO BOULDERS OR STONES IN EXCESS OF 4" IN SIZE SHALL BE USED AS PART OF THE INITIAL BACKFILL.

PIPE BEDDING MATERIAL SHALL BE # 57 WASHED STONE.

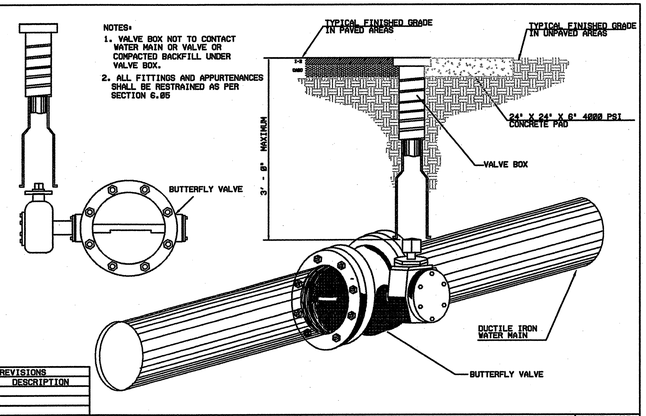
REVISIONS	
DATE	DESCRIPTION
12/05/99	NEW DETAIL

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

TYPICAL TRENCH DETAIL

STD. NO. 6.19

NOTES:
1. VALVE BOX NOT TO CONTACT WATER MAIN OR VALVE OR COMPACTED BACKFILL UNDER VALVE BOX.
2. ALL FITTINGS AND APPURTENANCES SHALL BE RESTRAINED AS PER SECTION 6.05

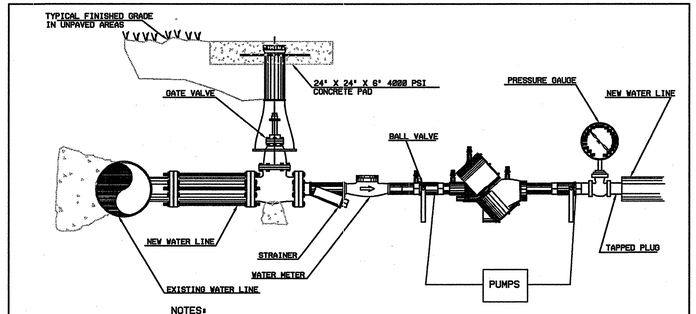


REVISIONS	
DATE	DESCRIPTION
05/99	

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

TYPICAL BUTTERFLY VALVE INSTALLATION

STD. NO. 6.20



NOTES:
1.) PRIOR TO CONNECTING TO THE EXISTING WATERLINE, THE NEW WATER LINE WILL BE PRESSURE TESTED, DISINFECTED AND A CLEAR WATER SAMPLE OBTAINED.
2.) ALL WATER FOR FILLING AND FLUSHING OF NEW WATER LINE WILL BE DRAWN THROUGH THE REDUCED PRESSURE ZONE ASSEMBLY.
3.) THE COSTS FOR PROVIDING REDUCED PRESSURE ZONE ASSEMBLY AND SLEEVE NECESSARY FOR FINAL CONNECTION WILL BE INCIDENTAL TO THE WATER LINE INSTALLATION.
4.) CONTRACTOR WILL BE REQUIRED TO HAVE WATER METER TESTED TO MEET ACCURACY STANDARDS OF AWWA C708, BY THE CITY OF ASHEVILLE WATER MAINTENANCE DIVISION ANNUALLY. METER MUST BEAR A CERTIFICATION TAG AT ALL TIMES.

REVISIONS	
DATE	DESCRIPTION
07/07/99	

CITY OF ASHEVILLE, N.C.
ENGINEERING DEPARTMENT

NEW WATER LINE PRESSURE TEST
BACKFLOW PREVENTION ASSEMBLY

STD. NO. 6.21

REVISIONS

R/W REV. - ADDED DRIVEWAY ACCESSES TO PARCEL 37. 11/24/04 JT
R/W REV. - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 34. 4/05/05 REO
R/W REV. - REVISED R/W LINE ADJACENT TO PARCEL 2 AT -L- STA. 85+23.27 RT 08/26/05 SC

5/14/99

SYSTEM: ENGINEER: NAME: CHRIS

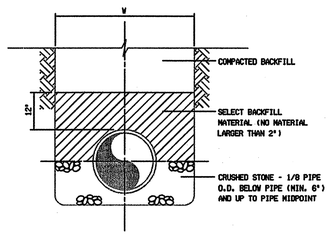
R:\Project\U360\New Files\I-23-2005\OtherFiles\proj\u360ds9.psh

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UC-19
R/W SHEET NO.	

Kimley-Horn and Associates, Inc.
© 2008

NORTH CAROLINA PROFESSIONAL SEAL 030081 ENGINEER JEFFREY A. RIVENBARK

UTILITY CONSTRUCTION

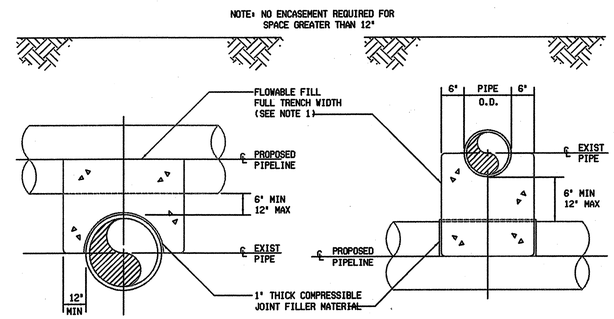


TYPE B

0222102

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W WIDTH OF TRENCH MAX	W-MIN
4"-6"	3'-9"	2'-8"
8"-18"	3'-9"	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20",21"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
27"	5'-3"	O.D.+2'
30"	6'-7"	O.D.+2'
36"	7'-4"	O.D.+2'
42"	8'-2"	O.D.+2'
48"	8'-9"	O.D.+2'
54"	9'-4"	O.D.+2'
60"	9'-18"	O.D.+2'
72"	11'-8"	O.D.+2'
78"	11'-8"	O.D.+2'
84"	12'-8"	O.D.+2'
90"	12'-8"	O.D.+2'
96"	13'-8"	O.D.+2'
108"	14'-8"	O.D.+2'
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0-6'	S=W+4'	
>6-8'	S=W+6'	
>8-10'	S=W+12'	
>10-12'	S=W+16'	
>12-14'	S=W+20'	
>14-16'	S=W+24'	
>16-18'	S=W+28'	
>18'	S=W+32'	
W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.		

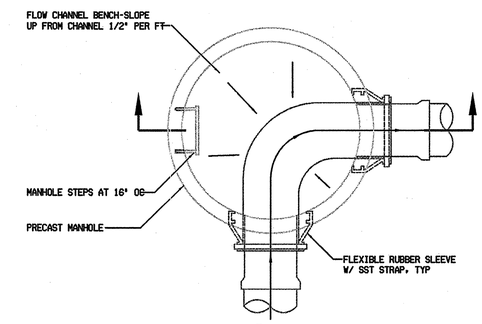
0222110



PROPOSED PIPELINE OVER EXIST PIPE

PROPOSED PIPELINE UNDER EXIST PIPE

0222118



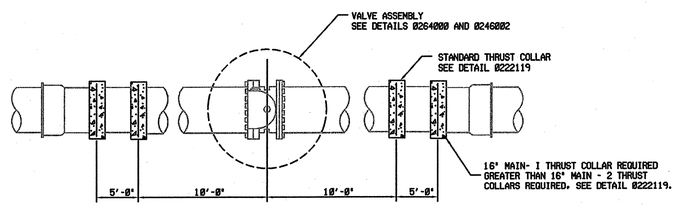
PLAN

0260100

CONCRETE THRUST BLOCK SCHEDULE*											
PIPE SIZE (IN.)	TEE		BEND 90°		BEND 45°		BEND 22 1/2°		BEND 11 1/2° & 5 5/8°		DESIGN PRESSURE (PSI)
	H	L	H	L	H	L	H	L	H	L	
6"	1.9	3.8	2.2	4.5	1.6	3.3	1.2	2.3	0.8	1.7	350
8"	2.5	5.0	2.9	5.8	2.1	4.3	1.5	3.1	1.1	2.2	350
12"	3.6	7.2	4.3	8.5	3.1	6.3	2.2	4.5	1.6	3.2	350
16"	4.7	9.5	5.6	11.2	4.1	8.3	2.9	5.9	2.1	4.2	350
24"	7.0	14.0	8.3	16.7	6.1	12.2	4.4	8.7	3.1	6.2	350
30"	8.75	17.5	10.3	20.7	7.6	15.2	5.4	10.8	3.8	7.7	350
36"	10.5	21.0	12.4	24.7	9.1	18.2	6.5	13.0	4.6	9.2	350
42"	12.1	24.2	14.4	28.7	10.6	21.1	7.5	15.1	5.3	10.7	350
48"	13.8	27.6	16.4	32.8	12.1	24.1	8.6	17.2	6.1	12.2	350
54"	15.5	31.0	18.4	36.9	13.6	27.1	9.7	19.4	6.9	13.7	350

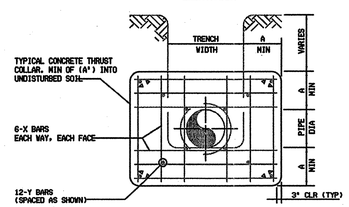
* BASED ON SOIL BEARING STRENGTH OF 2000 PSF

0222120



THRUST COLLARS AT VALVES 16" AND LARGER

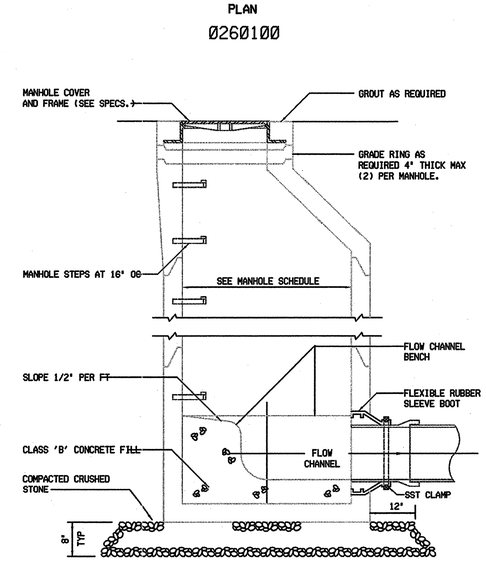
ELEVATION



THRUST COLLAR

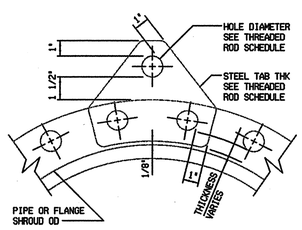
PIPE SIZE	X BARS	Y BARS	A	B
6"-30"	#5	#5	1'-4"	1'-7"
42"& >	#6	#6	1'-8"	1'-9"

0222119



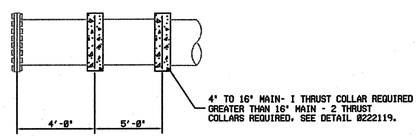
SECTION

0260101



STEEL TAB

1516401



THRUST COLLARS AT BLOW-OFF

0222125

REVISIONS

R/W REV. - ADDED DRIVEWAY ACCESSES TO PARCEL 37. 11/2404 JT
R/W REV. - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 34. 4505 REO
R/W REV. - REVISED R/W LINE ADJACENT TO PARCEL 2 AT -L- STA. 85+23.27 RT 082605 SC

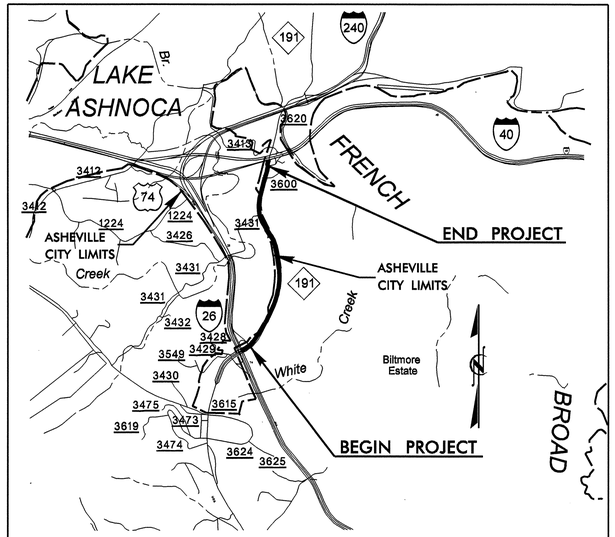
5/14/99

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

R:\Project\U3601\New Files\11-23-2005\OtherFiles\proj\U3601S9.psh

TIP PROJECT: U-3601

See Sheet 1-A For Index of Sheets



VICINITY MAP

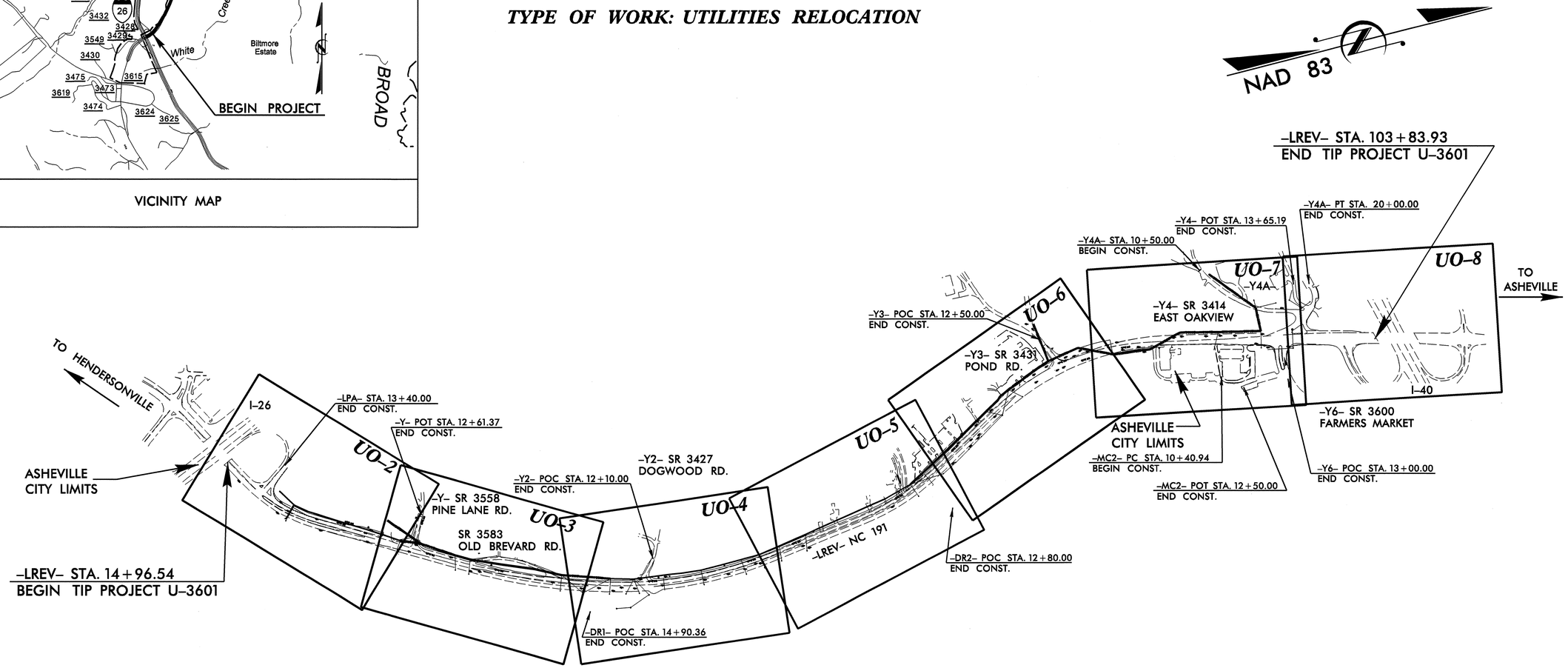
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-3601	UO-1

BUNCOMBE COUNTY

LOCATION: ASHEVILLE – NC 191 (BREVARD ROAD) FROM I-26 TO I-40

TYPE OF WORK: UTILITIES RELOCATION



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-8	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) BELLSOUTH

(2) PROGRESS ENERGY

PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.

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

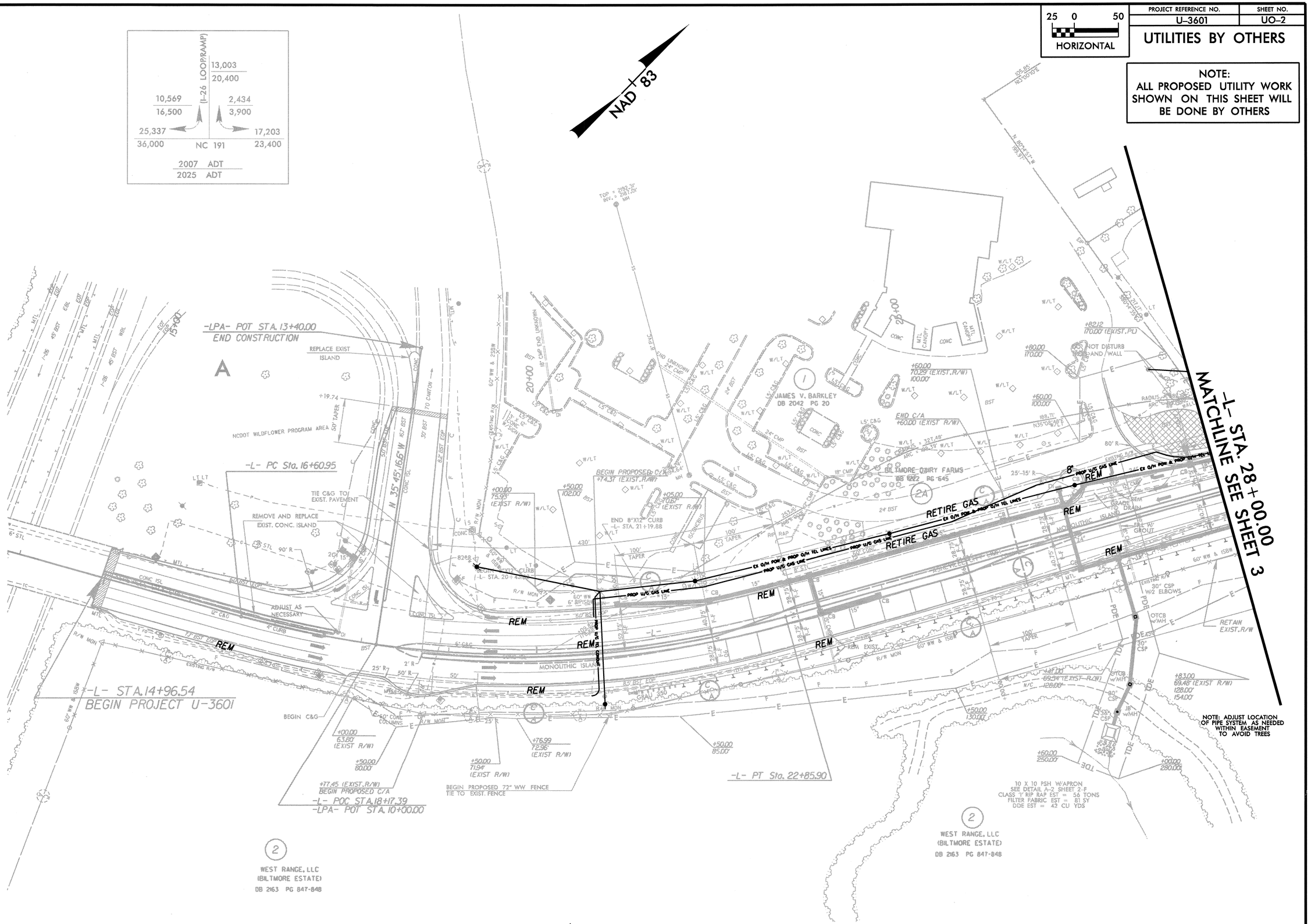
Roger Worthington, P.E.	UTILITIES SECTION ENGINEER
Carl Barclay, P.E.	UTILITIES SQUAD LEADER PROJECT ENGINEER
Ali Koucheki, P.E.	UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-2

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

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



R:\Projects\U3601\New Files (II-5-2007)\U-3601 Revision\Proj\UTILITY BYOTHERS\u3601_util_byothers_psh_UO_2.dgn
4/16/2008

REVISIONS

R/W REV. - REVISED PROPOSED EASEMENTS ON PARCEL 2. 10/3007 SC
DESIGN REV. - REVISED DRAINAGE AND REMOVED PROP. RETAINING WALL ON PARCEL 2. 10/3007 SC

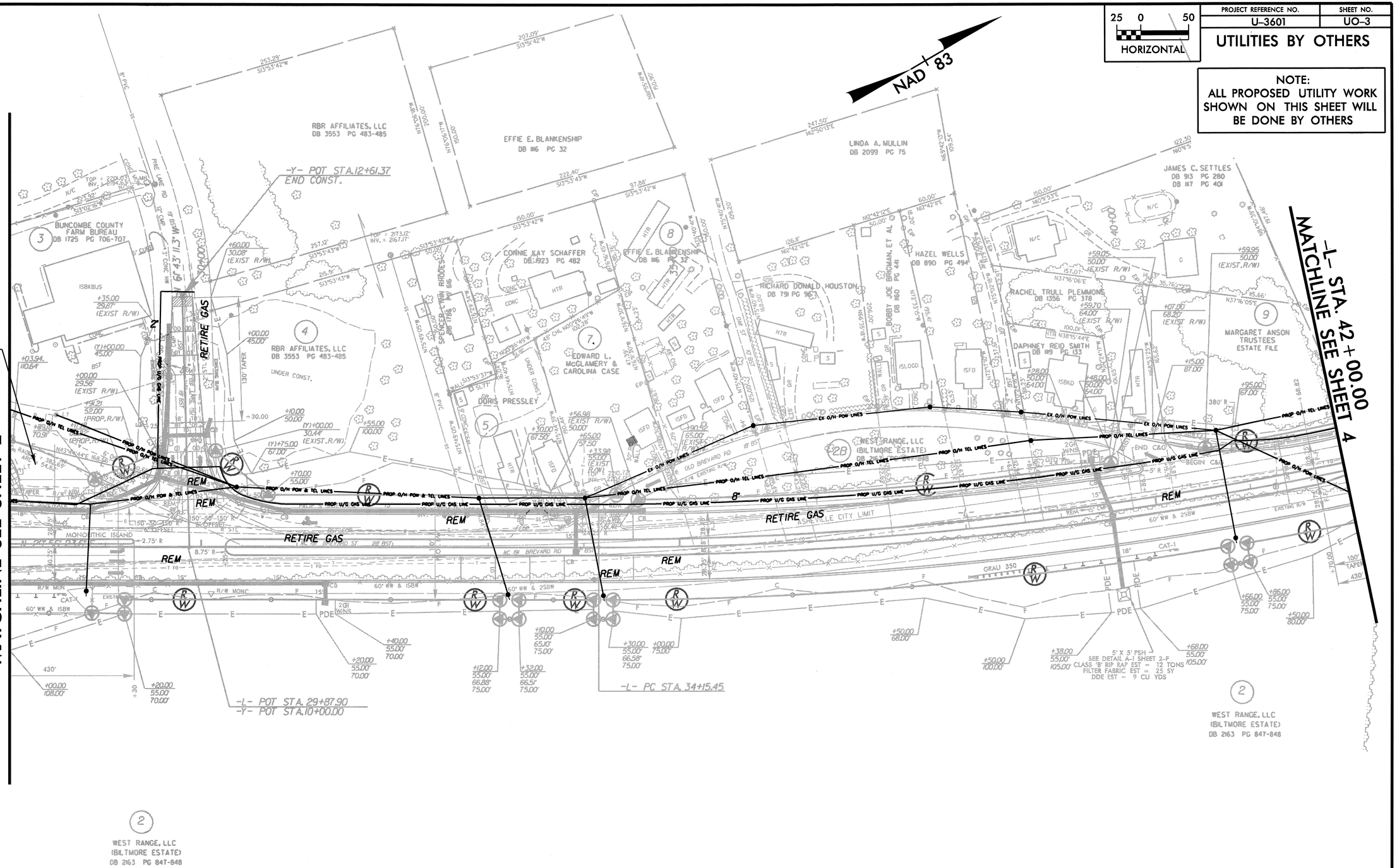
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-3

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

NAD 83

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



REVISIONS	
R/W REV. - REVISED PROPOSED R/W AND EASEMENTS AND UPDATED EXISTING R/W LIMITS ON PARCEL 2.	103007 SC
DESIGN REV. - REMOVED PROP. RETAINING WALL ADJACENT TO PARCEL 2.	103007 SC

R:\Project\U360\New Files (11-5-2007)\U-3601 Revision\Proj\UTILITY BYOTHERS\u3601_util_byothers_psh_UO_3.dgn
4/16/2008

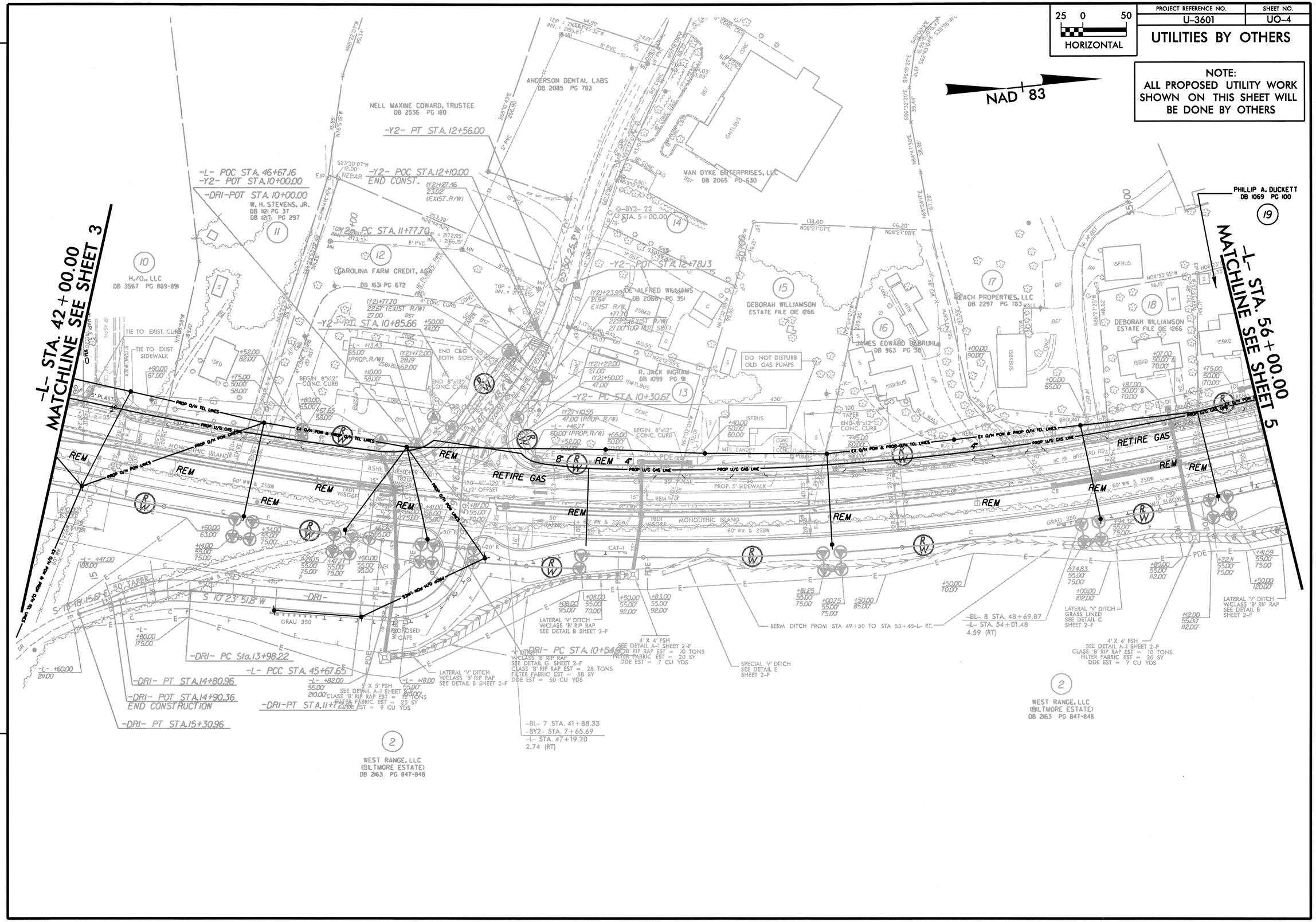
PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-4

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

NAD 83

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



REVISIONS
RW REV. - REVISED PROPOSED RW LINE AND EASEMENTS AND UPDATED EXISTING RW LIMITS ON PARCEL 2. 103007 SC
DESIGN REV. - REVISED DRAINAGE ON PARCEL 2. 103007 SC

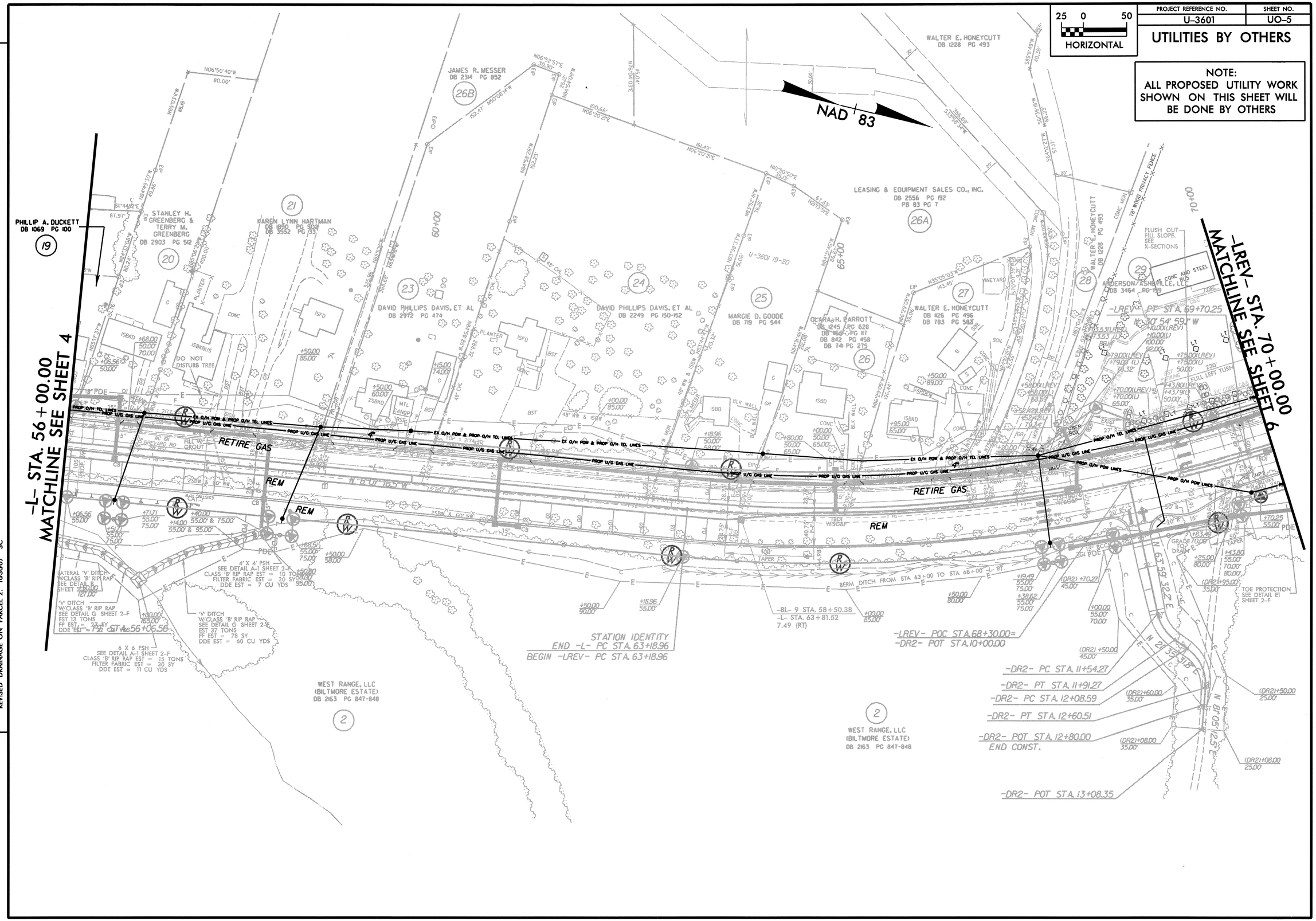
R:\Project\U3601\New Files (11-5-2007)\U-3601 Revision\Proj\UTILITY BYOTHERS\u3601_util_byothers_psh_UO_4.dgn
4/16/2008

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-5

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

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



REV.	REVISIONS
R/W	REV. - REVISED PROPOSED R/W AND EASEMENTS AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. R/W AND EASEMENT PARTIAL STATIONS AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCEL 29. 103007 SC
DESIGN	REV. - ADDED STATION IDENTITY @ -L/-LREV- STA. 63+18.96 TO ALLOW FOR A LATERAL SHIFT IN PROPOSED ALIGNMENT AWAY FROM PARCEL 2. REVISED DRAINAGE ON PARCEL 2. 103007 SC

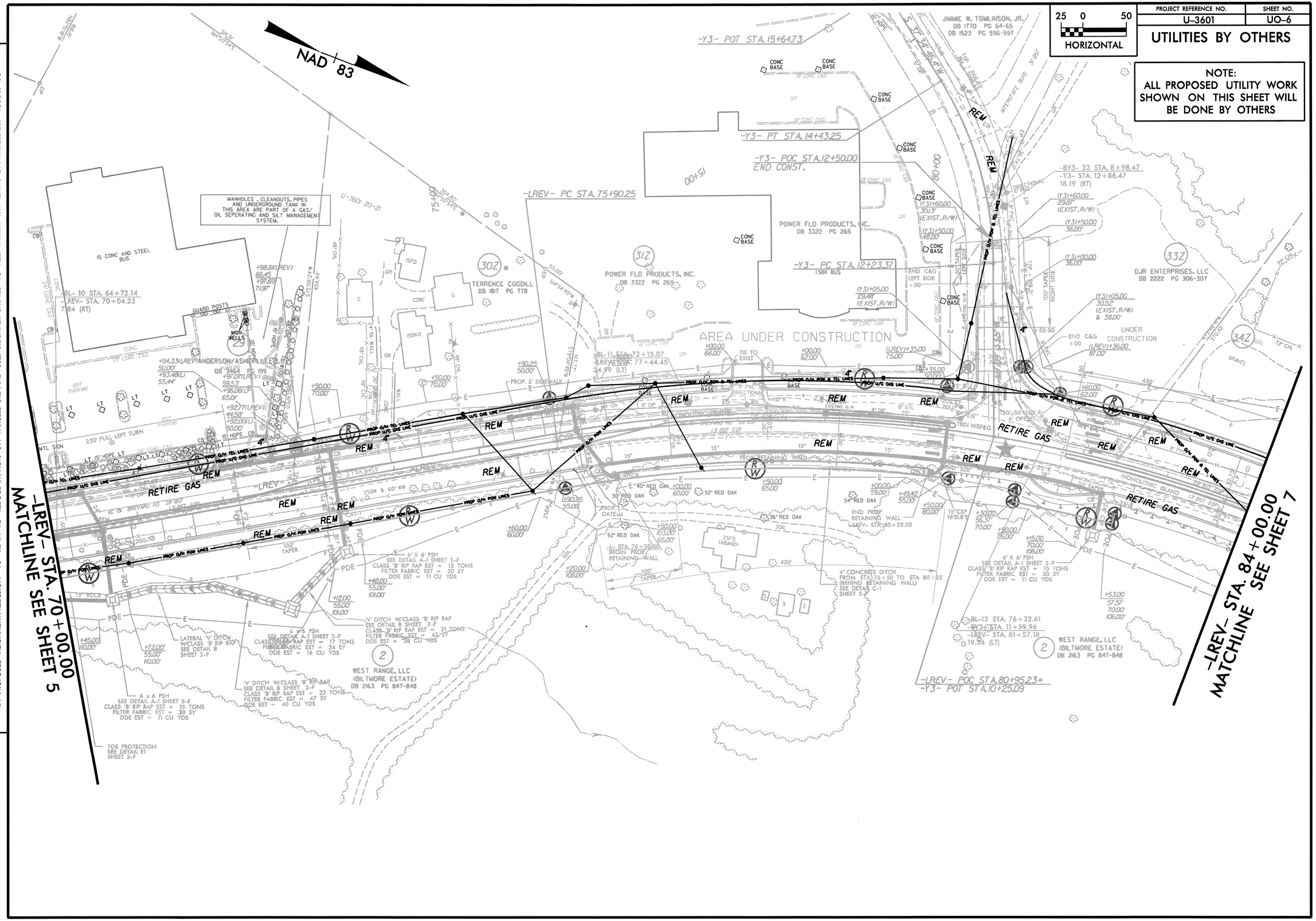
R:\Project\U360\New Files\III-5-2007\U-3601 Revision\Pro\UTILITY BY OTHERS\u3601_util_byothers_psh_U0_5.dgn 4/16/2008

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-6

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

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



REVISIONS
R/W REV. – REV. PROP. R/W AND TEMP CONSTRUCTION EASEMENTS FOR ALIGNMENT SHIFT ON PARCELS 2, 30Z, 31Z, 33Z AND 34Z. R/W AND EASEMENT PARTIAL STATIONS AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCEL 29. ADJUSTED PERMANENT DRAINAGE EASEMENTS AND UPDATED EXIST. R/W LIMITS ON PARCEL 2. 10/30/07 SC
DESIGN REV. – REVISED DRAINAGE, REVISED DRIVEWAY CONNECTION, RELOCATED PROP. RETAINING WALL AND RELOCATED PROP. WOVEN WIRE FENCE ON PARCEL 2 DUE TO LATERAL SHIFT IN PROPOSED ALIGNMENT. REDESIGN -Y3- TIE IN TO REDUCE IMPACTS ON PARCELS 31Z AND 33Z. SIDEWALK SHIFTED TO KEEP WITHIN R/W LIMITS ON PARCEL 29. 10/30/07 SC

R:\Project\U3601\New Files (11-5-2007)\U-3601 Revision\Pro\UTILITY BY OTHERS\u3601_util_byothers_psh_UO_6.dgn 4/16/2008

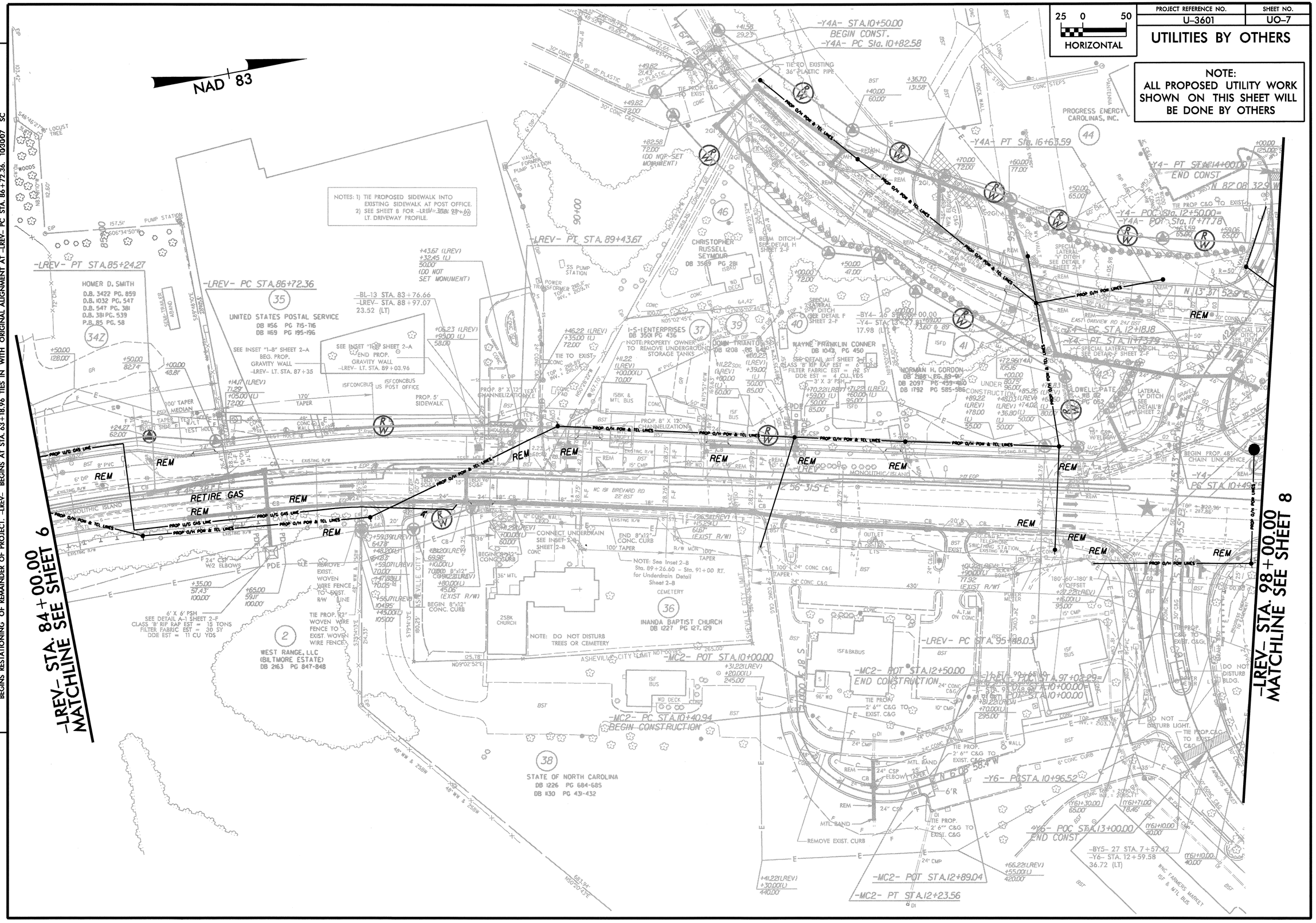
R:\Proj\ed\U360\View Files\U-5-2007\U-3601 Revision\Proj\UTILITY BYOTHERS\u3601_util_byothers_psh_UO_7.dgn
4/16/2008

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-7

UTILITIES BY OTHERS

25 0 50
HORIZONTAL

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



R/W REV. - REVISED PROP. R/W AND TEMPORARY CONSTRUCTION EASEMENT LINES ON PARCELS 2 & 34Z. ADJUSTED PROP. PERMANENT DRAINAGE EASEMENT AND UPDATED EXISTING R/W LIMITS ON PARCEL 2. R/W AND EASEMENT PARTIAL STA. AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCELS 2, 35, 36, 37, 38, 39, 40, 41, AND 42. 103007 SC
DESIGN REV.- RELOCATED PROP. WOVEN WIRE FENCE AND REVISED DRAINAGE ON PARCEL 2. REVISED LIMITS OF PROP. GRAVITY WALL ON PARCEL 35. ALIGNMENT SHIFT AT -L- STA. 63+18.96 BEGINS RESTATIONING OF REMAINDER OF PROJECT. -LREV- BEGINS AT STA. 63+18.96 TIES IN WITH ORIGINAL ALIGNMENT AT -LREV- PC STA. 86+72.36. 103007 SC

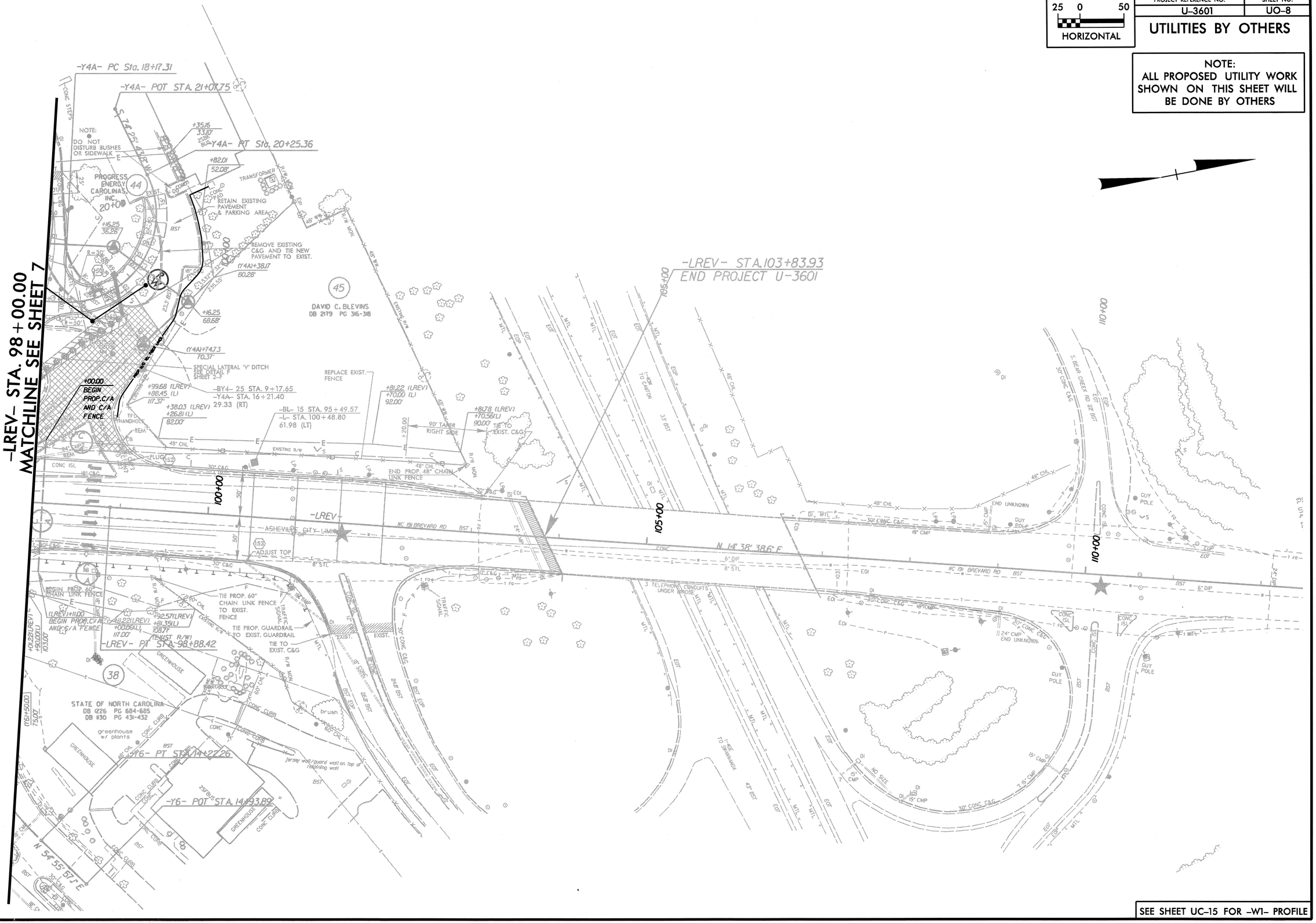
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3601	UO-8

25 0 50
HORIZONTAL

UTILITIES BY OTHERS

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



SEE SHEET UC-15 FOR -W1- PROFILE

R:\Project\U360\New Files (11-5-2007)\U-3601 Revision\Pro\UTILITY BYOTHERS\u3601_util_byothers_psh_U0_8.dgn 4/16/2008

REVISIONS

RW REVISION - RW AND EASEMENT PARTIAL STATIONS AND OFFSETS LABELED FOR BOTH -L- (ORIGINAL) AND -LREV- ALIGNMENTS ON PARCELS 38 AND 45. 10/30/07 SC