TIP PROJECT: R-2246B

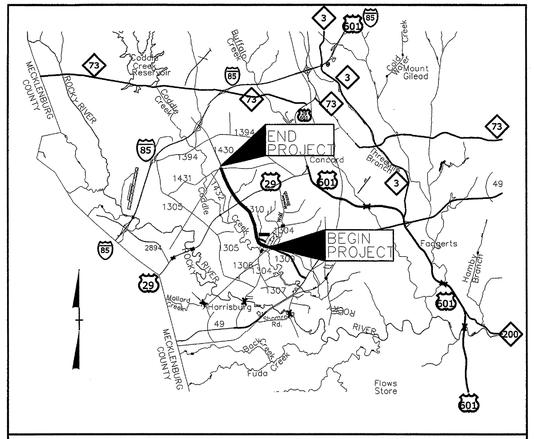
09/08/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
CABARRUS COUNTY

T.I.P. NO.	SHEET NO.
R-2246B	UC-1

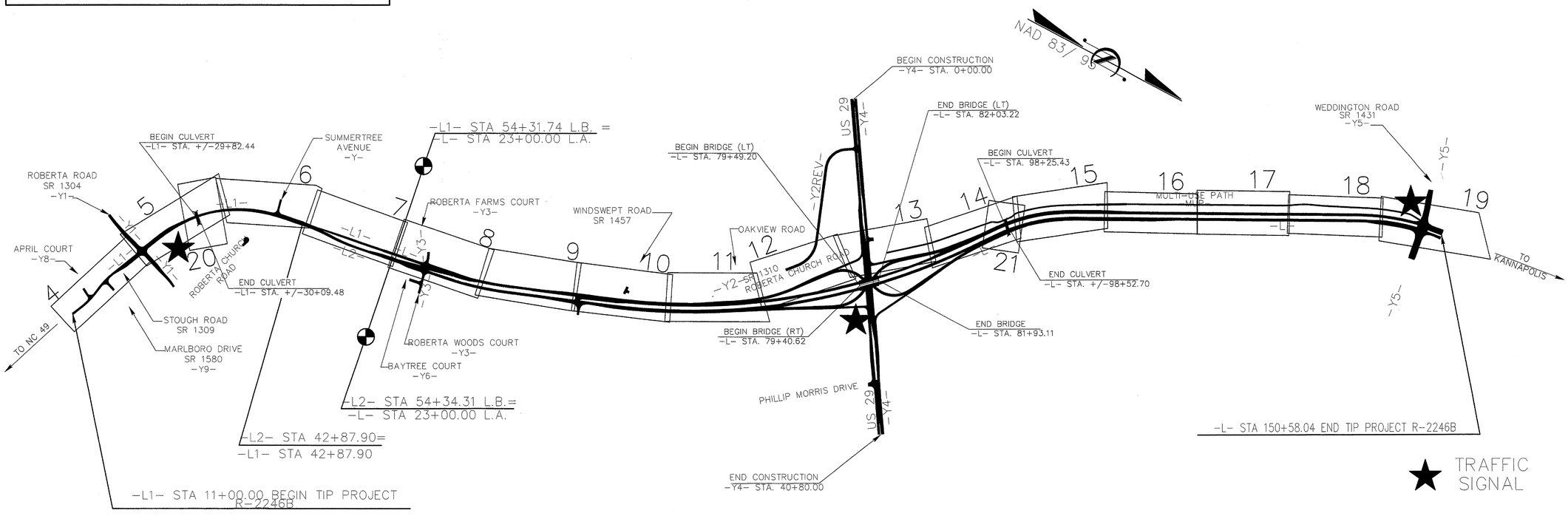
STATEWIDE TIER PROJECT



VICINITY MAP

LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF SR 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

TYPE OF WORK: POTABLE WATER LINE AND SANITARY SEWER LINE INSTALLATION AND RELOCATIONS.



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	NOTES
UC-3 THRU UC-3b	DETAILS
UC-4 THRU UC-21	UTILITY CONSTRUCTION SHEETS

WATER AND SEWER OWNERS ON PROJECT:
CITY OF CONCORD

NOTE:
1. ALL 24" WATER MAINS TO BE D.I.P. & RESTRAINED JOINT AS NOTED.
2. ALL 24" VALVES TO BE BUTTERFLY VALVES
3. ALL 2" WATER MAINS TO BE P.V.C.
4. ALL 8" WATER MAINS TO BE P.V.C.
5. ALL SAN. SEWER CROSSING WITHIN NCDOT R.O.W. TO BE D.I.P.
6. ALL AIR RELEASE VALVES TO BE COMBINATION AIR VALVES

Concord NORTH CAROLINA High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER SUE HYDE

Engineer's Seal

DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
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Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Carl A. Barclay, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER

CONSTRUCTION SEQUENCE

1. CONTRACTOR SHALL ENSURE THAT ALL NECESSARY PERMITS HAVE BEEN RECEIVED AND THAT THOSE REQUIRED TO BE DISPLAYED ON-SITE ARE AVAILABLE.

2. CONTRACTOR SHALL HOLD PRE-CONSTRUCTION MEETING AT LEAST 48 HOURS BEFORE THE ACTUAL START OF CONSTRUCTION.

3. CONTRACTOR SHALL CONTACT CAROLINA ONE CALL AND ALL ENTITIES HAVING BURIED UTILITIES AT LEAST 72 HOURS PRIOR TO DIGGING OR AS DIRECTED AT THE PRE-CONSTRUCTION MEETING.

4. CONTRACTOR SHALL MAINTAIN TRAFFIC AND SAFETY CONTROL MEASURES AT ALL TIMES ON THE PROJECT. (SEE TRAFFIC CONTROL.)

5. CONTRACTOR SHALL INSTALL TEMPORARY CONSTRUCTION ENTRANCES (IF ANY) AT EACH POINT OF ACCESS TO STORAGE AND CONSTRUCTION AREAS.

6. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH PLANS AND BEFORE STARTING WORK.

7. CONTRACTOR SHALL CLEAR RIGHT-OF-WAY IF NECESSARY.

8. STOCKPILE RIP-RAP ON SITE AND INSTALL ALL OTHER EROSION CONTROL MEASURES WHERE THE WORK IS OCCURRING. THE CONTRACTOR SHALL NOT INSTALL EROSION CONTROL MEASURES IN AREAS WHERE THE WORK WILL NOT OCCUR FOR SOME TIME. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY THE CITY/PROJECT ENGINEER OR UPON RECOMMENDATION OF NC DENR PERSONNEL AS CONDITIONS WARRANT.

9. IN AREAS WHERE IT IS NOT FEASIBLE TO INSTALL EROSION CONTROL DEVICES, ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED BY THE CONTRACTOR WITHIN THREE DAYS OF INITIAL DISTURBANCE. TEMPORARY SEEDING SHALL BE REQUIRED ON ALL OTHER AREAS TO BE DISTURBED FOR A PERIOD OF 10 DAYS OR LONGER.

10. CONTRACTOR SHALL COORDINATE ALL BLOW-OFFS AND TESTING WITH THE CITY ENGINEERING DEPARTMENT'S CONSTRUCTION ADMINISTRATOR AT LEAST 24 HOURS IN ADVANCE OF SUCH WORK. NOTIFY THE RESPONSE AREA FIRE DEPARTMENT IF EXISTING SYSTEM VALVES NEED TO BE SHUT OFF IN THE COURSE OF THE WORK.

11. UPON COMPLETION OF THE INSTALLATION AND WITH APPROVAL OF NC DENR-DLR, ALL EROSION CONTROL DEVICES EXCEPT FOR CREEK/STREAM BANK STABILIZATION SHALL BE REMOVED AND DISPOSED OF IN AN ACCEPTABLE MANNER. EACH SECTION SHALL BE SEEDED AT EARLIEST POSSIBLE DATE AFTER INSTALLATION OF PIPE, STRUCTURE, OR ACCESS.

12. ONCE GROUND COVER IS FIRMLY ESTABLISHED, ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITH THE APPROVAL OF NC DENR-DLR.

13. CONTRACTOR SHALL REFERENCE SPECIAL CONDITIONS FOR JOB SEQUENCE AND OTHER DIRECTIONS, IF ANY. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH THE CITY ENGINEERING DEPARTMENT.

GENERAL NOTES

1. ALL MATERIALS, EQUIPMENT, LABOR, AND WORKMANSHIP IS TO BE IN ACCORDANCE WITH AND SUBJECT TO THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATIONS; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS, AND NCDOT STANDARD SPECIFICATIONS, AND THE NORTH CAROLINA ADMINISTRATIVE CODE FOR WASTEWATER COLLECTION AND WATER DISTRIBUTION SYSTEMS. IN THE EVENT OF CONFLICT BETWEEN THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATION; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS,AND NCDOT 2012 STANDARD SPECIFICATIONS, OR THE NORTH CAROLINA ADMINISTRATIVE CODE, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY.

2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE LATEST STANDARDS OF THE N.C. SEDIMENTATION POLLUTION CONTROL ACT AND APPLICABLE LOCAL AND FEDERAL REQUIREMENTS.

3. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION ADMINISTRATOR OF THE CITY OF CONCORD ENGINEERING DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF BEGINNING WORK.

4. INDIVIDUAL WATER, GAS, SEWER, TELEPHONE, AND CABLE SERVICES MAY OR MAY NOT BE SHOWN ON THE PLANS. CONTRACTOR TO CONTACT APPROPRIATE AGENCY FOR FIELD LOCATIONS.

5. CITY OF CONCORD ELECTRIC, WATER, AND SEWER DEPARTMENT PERSONNEL WILL ASSIST THE CONTRACTOR IN LOCATING ALL CITY OF CONCORD UTILITY SERVICES AND LINES.

6. IF MAILBOX PULL-OFF AREAS ARE DISTURBED, CRUSHED STONE STABILIZER SHALL BE PLACED WITH SUFFICIENT LENGTH TO ACCOMMODATE VEHICULAR TRAFFIC. THESE AREAS SHALL BE MAINTAINED FOR THE ONE-YEAR WARRANTY PERIOD. THE COST OF THESE ITEMS SHALL BE INCLUDED IN THE COST OF LAYING PIPE.

7. THIS PROJECT IS SUBJECT TO 100 YEAR FLOOD PER FIRM MAP 3710560000J, 3710551900J, 3710550900J NOVEMBER 5, 2008.

8. FIRE HYDRANT EXTENSIONS, IF NEEDED, SHALL BE INCLUDED IN THE COST OF THE HYDRANT INSTALLATION.

9. GATE OR BUTTERFLY VALVES, BLOW-OFFS, AND FIRE HYDRANTS MAY BE FIELD ADJUSTED 50 FEET IN EITHER DIRECTION WITH THE PERMISSION OF THE ENGINEERING AND WATER RESOURCES DEPARTMENTS.

RIGHT-OF-WAY NOTES

1. RIGHT-OF-WAY LINES AND PROPERTY LINES ARE SHOWN ON THE DESIGN DRAWINGS AND ARE FOR REFERENCE ONLY. FOR EXACT LOCATIONS REFER TO THE SURVEY PLATS BY THE CITY OF CONCORD'S CONSULTING REGISTERED LAND SURVEYOR OR BY THE CITY SURVEYOR.

2. REFER TO STANDARDS AND SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION FOR FURTHER DETAILS CONCERNING THE RIGHT-OF-WAY.

TRAFFIC CONTROL

1. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR WORK ZONE TRAFFIC SAFETY AND CONTROL.

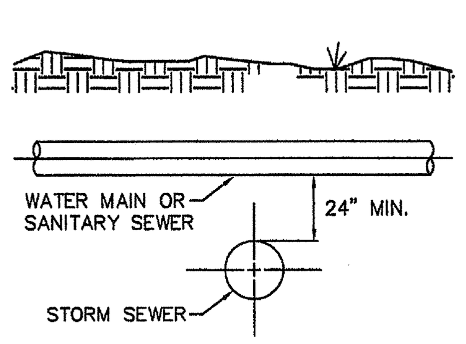
2. ALL WORK ZONE TRAFFIC CONTROL DEVICES AND OPERATIONS USED ON STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY OR INCIDENT MANAGEMENT SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS IN THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD).

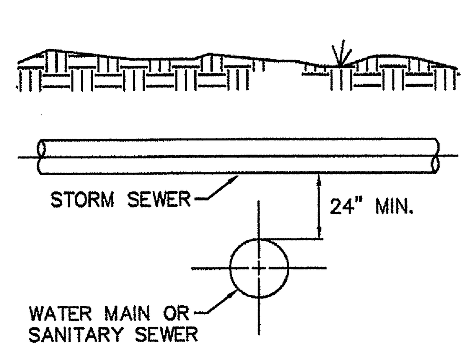
3. ALL TRAFFIC/SAFETY CONTROL DEVICES SHALL BE IN GOOD REPAIR AND SHALL BE POSITIONED AT ALL TIMES IN THE APPROPRIATE LOCATIONS FOR THE WORK OPERATION. THE CONTRACTOR SHALL CAREFULLY MONITOR SITE CONDITIONS SUCH AS LIGHT, WEATHER, TRAFFIC VOLUME, ETC. TO ENSURE THAT ALL TRAFFIC/SAFETY CONTROL MEASURES ARE OPERATING EFFECTIVELY.

4. THE CONTRACTOR SHALL PREPARE A PROPOSAL ON THE TRAFFIC CONTROL OPERATIONS AND PRESENT THEM TO THE CITY OF CONCORD'S ENGINEERING DEPARTMENT CONSTRUCTION ADMINISTRATOR (PHILLIP KINGSLAND) @ 920-5404 AT LEAST 48 HOURS BEFORE BEGINNING WORK.

UTILITY NOTE

THERE WILL BE A MINIMUM 10-FOOT HORIZONTAL SEPARATION BETWEEN THE SEWER LINE AND THE WATER MAIN. WHEN THE 10-FOOT MINIMUM HORIZONTAL SEPARATION CANNOT BE MAINTAINED, AND WHEN THE WATER MAIN IS ABOVE THE SEWER, BUT WITH LESS THAN 24 INCHES OF CLEARANCE, OR WHEN THE SEWER IS ABOVE THE WATER MAIN, BOTH THE WATER MAIN AND THE SEWER LINE SHALL BE CONSTRUCTED OF FERROUS MATERIALS WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM LATERAL DISTANCE, MEASURED AT RIGHT ANGLES TO THE SEWER, OF 10 FEET ON EACH SIDE OF THE CROSSING. (SEE DETAIL BELOW)





G:\Engineering Projects\Projects\2009\064 George Liles Pky Ext\2009-064 (R-2) George Liles 24inch Water Line.dwg Feb 07, 2013 - 2:51pm

LEGEND

PROPOSED SEWER LINE, MANHOLE & CLEAN-OUT (SS, CO)
PROPOSED WATER LINE
PROPOSED FIRE HYDRANT
PROPOSED WATER VALVE
PROPOSED AIR RELEASE VALVE (A.R.)
SEDIMENT FENCING
PROPOSED ABANDONED UTILITY PIPE
DA-GLO ORANGE PERSONNEL FENCING
PROPOSED ENCASEMENT
EXISTING SEWER AND MANHOLE
EXISTING SEWER FORCE MAIN (FM)
EXISTING WATER LINE
EXISTING GAS LINE (OVERHEAD OR UNDERGROUND)
EXISTING TELEPHONE (OVERHEAD OR UNDERGROUND) (UT, OT)
EXISTING ELECTRIC (UE, OE)
PROPERTY LINE AND IRON PIN (EIP)
TEMPORARY CONSTRUCTION EASEMENT
RIGHT OF WAY/PERMANENT EASEMENT
WATERWAY/DITCH LINE
EXISTING BARBED WIRE FENCE
EXISTING WOVEN WIRE FENCE
EXISTING CHAIN LINK FENCE
TREE/WOODS LINE
EXISTING FIRE HYDRANT
EXISTING WATER VALVE (WV)
EXISTING WATER METER (WM)
EXISTING WELL
EXISTING TELEPHONE/POWER RISER
EXISTING LIGHT POLE (LP)
EXISTING POWER POLE/GUY WIRE (PP)
EXISTING STREET OR LOCATION SIGN
EXISTING CONCRETE R/W MONUMENT (CONC. MON.)
BENCHMARK/TEMPORARY BENCHMARK
EXISTING RCP OR CMP
EXISTING MAILBOX (MB)

RESTRAINED LENGTH CHART		
SIZE	FITTING	LENGTH
24"	45° BEND HORZ.	3 JOINTS EA. SIDE
24"	45° BEND VERT. DN.	6 JOINTS EA. SIDE
24"	45° BEND VERT. UP	3 JOINTS EA. SIDE
24"	22 ½ ° BEND HORZ.	2 JOINTS EA. SIDE
24"	22 ½ ° BEND VERT. DN.	3 JOINTS EA. SIDE
24"	22 ½° BEND VERT. UP	2 JOINTS EA. SIDE
24"x6"	TEE-BRANCH	6 JOINTS

REQUIRED BEARING BLOCK AREA FOR 24" DEAD END = 39 SQ. FT.

PROTECTION OF EXISTING UTILITIES

THE CONTRACTOR SHALL CONTACT THE APPROPRIATE AGENCY FOR THE EXACT FIELD LOCATIONS OF ALL WATER, SEWER, ELECTRIC, TELEPHONE, TELEVISION AND ANY OTHER UNDERGROUND AND OVERHEAD UTILITY BEFORE STARTING CONSTRUCTION. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE CONTRACT DRAWINGS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF WORK.

THE FOLLOWING LISTING OF UTILITY COMPANIES (WHICH MAY OR MAY NOT BE COMPLETE) MAY HAVE EXISTING UNDERGROUND OR OVERHEAD UTILITIES IN THE CONTRACT VICINITY.

COMPANY NAME	OFFICEAFTER	HOURS EMERGENCY
Amtrak	N/A	**1.800.331.0008**
AT&T	1.678.627.5335	**1.800.252.1133**
Cabarrus County Emergency Mgmt	704.920.2143	**704.920.3000**
Carolina Water – Utilities Inc. (Zemosa Acres)	704.525.7990	**704.525.7990**
City of Concord Electric Systems	704.920.5315	**704.920.5555**
City of Concord Emergency Mgmt	704.920.5528	**704.920.5555**
Colonial Pipeline Company	704.392.8610	**704.392.8610**
CSX Railroad	N/A	**1.800.232.0144**
Duke Energy	1.800.769.3766	**1.800.769.3766**
NC Dept. of Transportation	704.982.0104	**704.986.3700 Stanly Co Comm**
NC One Call Center Area Rep	1.336.855.5760	**1.800.632.4949**
Norfolk Southern Railway	N/A	**1.800.453.2530**
North Carolina Railroad Company	919.954.7601	**N/A**
Piedmont Natural Gas (fka NCNG)	704.364.3120	**1.800.752.7504**
Plantation Pipeline	N/A	**1.800.510.5678**
PSNC Energy Concord	704.723.4310	**1.877.776.2427**
Sprint Embarq	N/A	**1.888.723.8010**
Time Warner Cable Concord	704.378.2856	**704.378.2626 Option 5, 2, 1**
Union Power	N/A	**1.800.922.6840**
UtiliQuest Locator Concord	704.864.8333	**1.800.632.4949 NC One Call**
Water & Sewer Authority of Cabarrus Co.	704.786.1783	**704.788.4164 RRWWTP**
Windstream	704.722.2000	**1.800.800.6609**

NOTE: SOME OF THE ABOVE COMPANIES DO NOT SUBSCRIBE TO CAROLINA ONE CALL (FORMERLY ULOCO)

NORTH CAROLINA ONE CALL ______ 1-800-632-4949

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-2

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES UNIT
UTILITIES ENGINEERING SECTION
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
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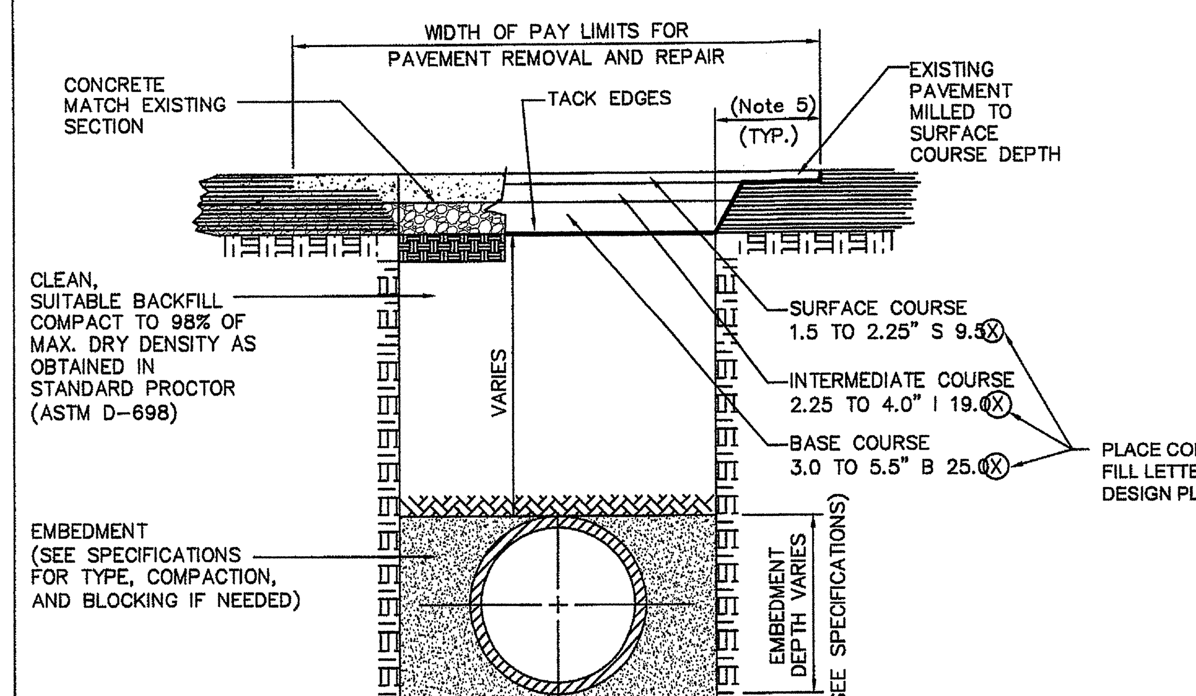
UTILITY CONSTRUCTION

Concord NORTH CAROLINA High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE
M. Sue Hyde 2/7/13

Engineer's Seal

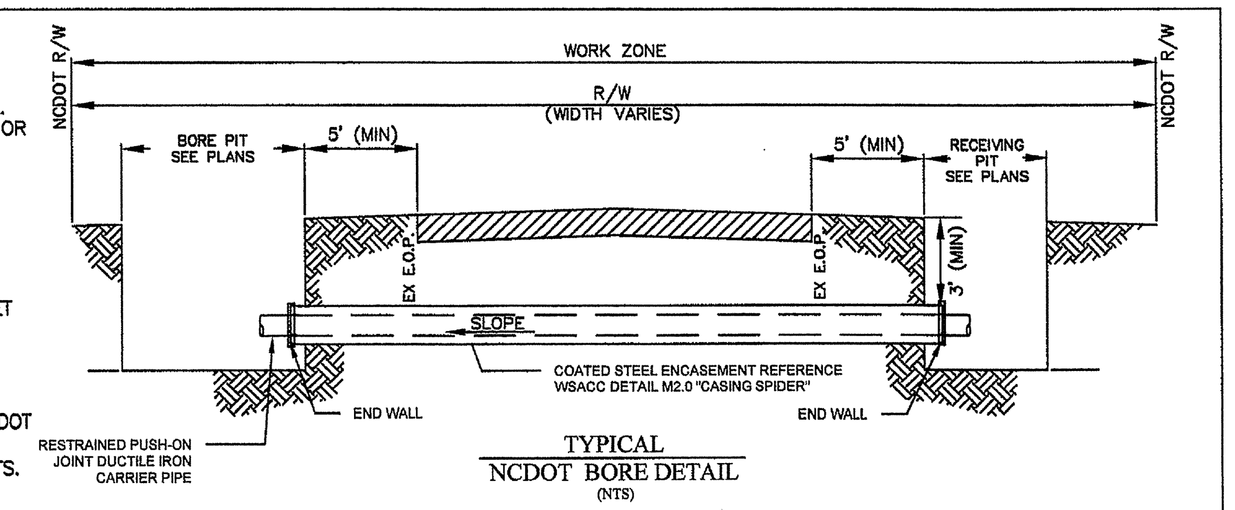


NOTES:

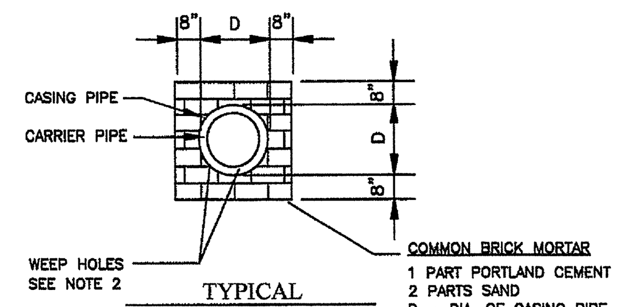
1. NEW PAVEMENT SHALL HAVE SECTION THICKNESS DESIGNED TO NCDOT SUPERPAVE STANDARDS AS PROVIDED BY ENGINEER OR MATCH EXISTING CONSTRUCTION, WHICH EVER IS GREATER OR AS SPECIFIED BY THE CONTRACT DOCUMENTS.
2. TRENCH IS TO BE BACKFILLED IN COMPACTED 6" LAYERS BEFORE PAVEMENT REPAIRS ARE MADE.
3. REFER TO EARTHWORK SPECIFICATIONS FOR EMBEDMENT AND FILL REQUIREMENTS.
4. THIS DETAIL SHOWS ASPHALT PAVEMENT REPLACEMENT. THE WIDTH OF PAY LIMITS SHALL APPLY TO STONE AND CONCRETE PAVEMENT AS WELL.
5. 18" MIN. AROUND PATCHES AND 36" MIN. AT CURB CUTS.

UTILITY CUT REPLACEMENT DETAIL
SCALE: NONE

GENERAL NOTES:
1. SEE DRAWINGS FOR LOCATION, SIZE AND LENGTH OF STEEL PIPE CASINGS.
2. INSTALL TWO (2) 1-INCH DRAINS EACH SIDE OF CARRIER PIPE IN DOWNHILL END WALL.
3. ENCASEMENT PIPE IS TO EXTEND OUTSIDE OF THEORETICAL 1:1 SLOPE FROM EXISTING OR PROPOSED EDGE OF PAVEMENT AND 5 FEET BEHIND THE CURB AND/OR 5 FT BEYOND THE TOE OF THE SLOPE.
4. ALL EXCAVATIONS SHALL BE OUTSIDE THE PROJECTED 1:1 THEORETICAL SLOPE FROM EDGE OF PAVEMENT (E.O.P) LINE OR A MINIMUM OF 5 FEET FROM THE EDGE OF PAVEMENT TO THE NEAREST EDGE OF TRENCH.
5. ALL TRAFFIC WILL BE EXCLUDED FROM THE 1:1 SLOPE AREA UNTIL BACKFILL IS COMPLETE.
6. IN ANY EVENT SHOULD THE 1:1 SLOPE AREA BE UNPROTECTED, ACTIVE SHORING (SHEET PILINGS, SOLDER PILES AND/OR LAGGING, ETC) SHALL MEET THE APPROVAL OF NCDOT DIVISION ENGINEER.
7. ACTIVE SHORING SHALL BE IN ACCORDANCE WITH OSHA TRENCHING STANDARD 1926 SUBPART "P" OR AS AMENDED.
8. RESTRAINED PUSH-ON JOINT DUCTILE IRON CARRIER PIPE SHALL EXTEND THROUGH NCDOT ROW AND CASING PIPE ASSEMBLY.
9. SEE WSACC DETAIL M2.0 "CASING SPIDER" FOR CASING PIPE AND SPIDER REQUIREMENTS.

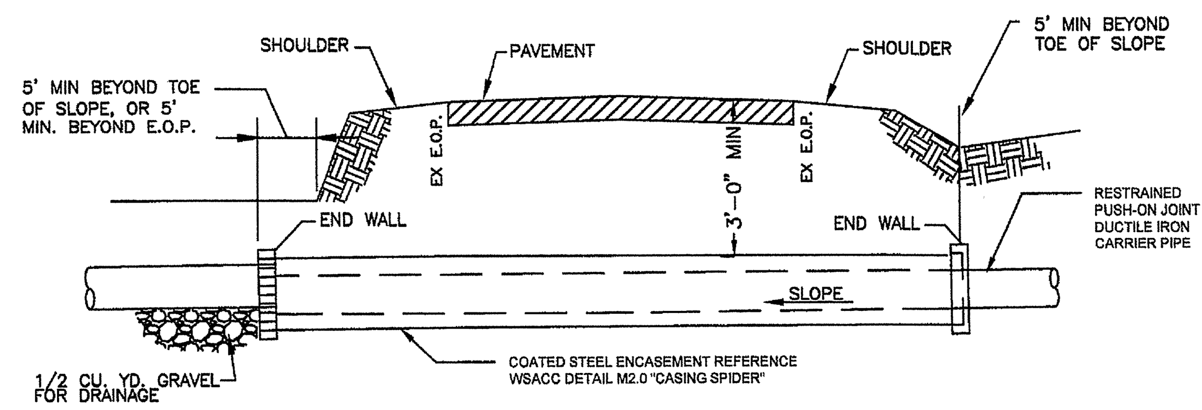


TYPICAL
NCDOT BORE DETAIL
(NTS)



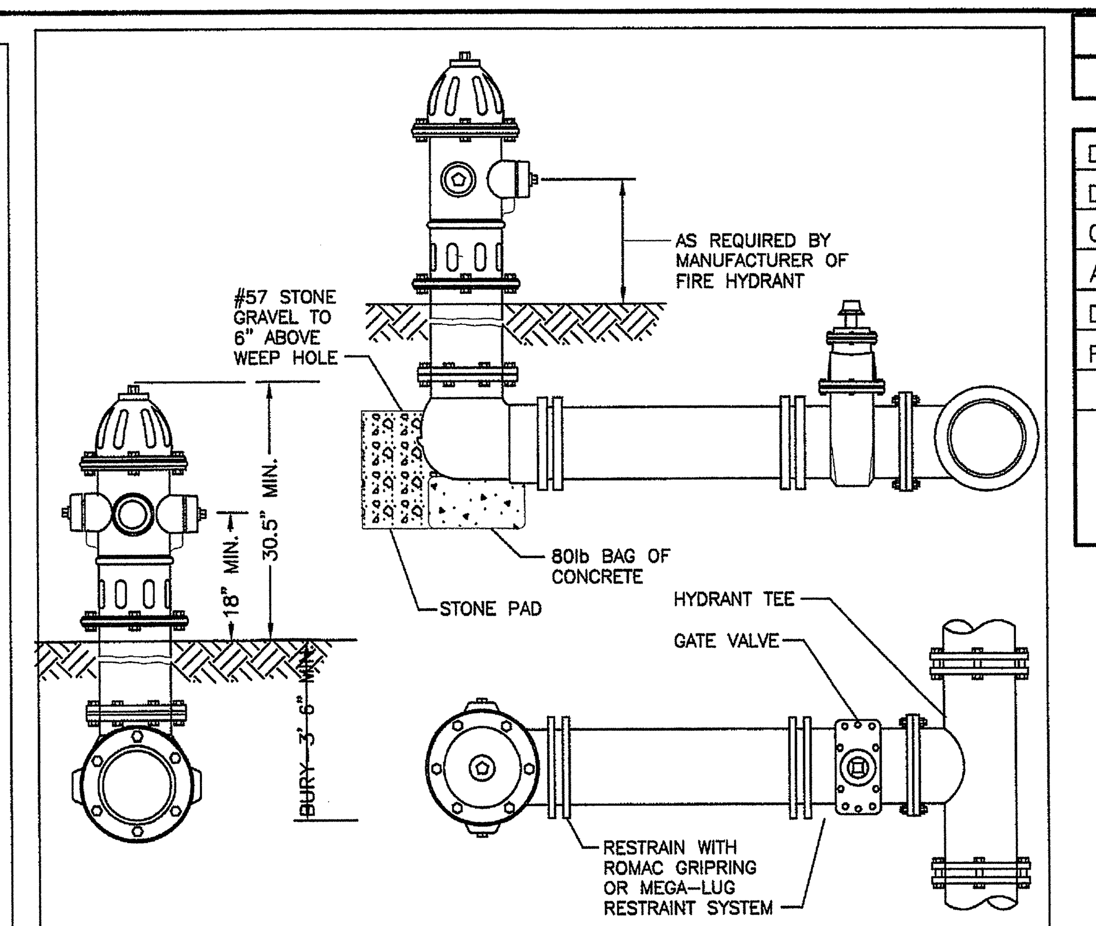
TYPICAL
END WALL SECTION
(NTS)

COMMON BRICK MORTAR
1 PART PORTLAND CEMENT
2 PARTS SAND
D = DIA. OF CASING PIPE



TYPICAL
PIPE CROSSING UNDER HIGHWAYS
(NTS)

TYPICAL PIPE BORE ROADWAY CROSSING
N.T.S.



GENERAL NOTES:
1. HYDRANTS SHALL BE MUELLER COMPANY – MODEL: SUPER CENTURION 250; AMERICAN FLOW CONTROL – MODEL 5¼" B-84-B; CLOW VALVE COMPANY – MODEL: MEDALLION; OR EQUAL WITH BLACK PRIMER FINISH.
2. HYDRANT SHALL HAVE INTEGRAL SNAP-TIGHT STYLE STORZ CONNECTION WITH 5¼" VALVE OPENING, OPEN LEFT,
1½" PENTAGON NUTS, TWO-2 ½" NST CONNECTIONS, ONE-5" STORZ CONNECTION, DRAIN HOLES OPEN, AND 6" MJ SHOE.
3. MINIMUM BURY DEPTH OF 3'-6".
4. ALL HYDRANTS SHALL STAND PLUMB. HYDRANTS WITH PUMPER NOZZLES SHALL HAVE HOSE NOZZLES PARALLEL WITH, AND THE PUMPER NOZZLE PERPENDICULAR TO, THE CURB LINE. ALL HYDRANTS SHALL BE ORIENTED SO THAT THE PUMPER NOZZLE FACES THE CURB OR AS DIRECTED BY THE CITY.
5. HYDRANT SHALL BE LOCATED AT LEAST 3' BEHIND THE CURB AND LESS THAN 10' FROM THE EDGE OF THE ROAD PAVEMENT OR AS DIRECTED BY THE CITY.
6. ALL OTHER MATERIALS AND INSTALLATION MUST CONFORM WITH THE TECHNICAL STANDARDS OF WSACC AND CITY OF CONCORD.

FIRE HYDRANT PAINT COLOR CODE REQUIREMENTS:
ALL NEW FIRE HYDRANTS INSTALLED IN THE CITY OF CONCORD SHALL BE PAINTED IN ACCORDANCE WITH THE FOLLOWING COLORS:
1. HYDRANTS ON PUBLIC WATER MAINS SHALL BE PAINTED SAFETY YELLOW, SHERWIN WILLIAMS STEEL MASTER 9500 B56-300 SERIES LRV 30% OR EQUAL.
2. PRIVATE HYDRANTS ON PRIVATE WATER MAINS SHALL BE PAINTED SAFETY RED, SHERWIN WILLIAMS SW4081 LVR 11% OR EQUAL.

FOR ALL FIELD PAINTING, ALL SURFACES SHALL BE SANDBLASTED AND PROPERLY PREPARED ACCORDING TO THE PAINT MANUFACTURER'S RECOMMENDATION PRIOR TO PAINTING. ALL FIRE HYDRANTS AND ANY PORTIONS OF THE HYDRANT ASSEMBLY EXPOSED TO VIEW (ABOVE ADJACENT GROUND ELEVATION) SHALL BE PAINTED WITH TWO (2) OR MORE EVENLY APPLIED COATS OF HYDRANT ENAMEL PAINT. HYDRANTS WILL BE RETOUCHED / REPAINTED AS NECESSARY AFTER INSTALLATION AND PRIOR TO ACCEPTANCE.

TYPICAL FIRE HYDRANT
N.T.S.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-3

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

UTILITIES UNIT
UTILITIES ENGINEERING SECTION

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UTILITY CONSTRUCTION

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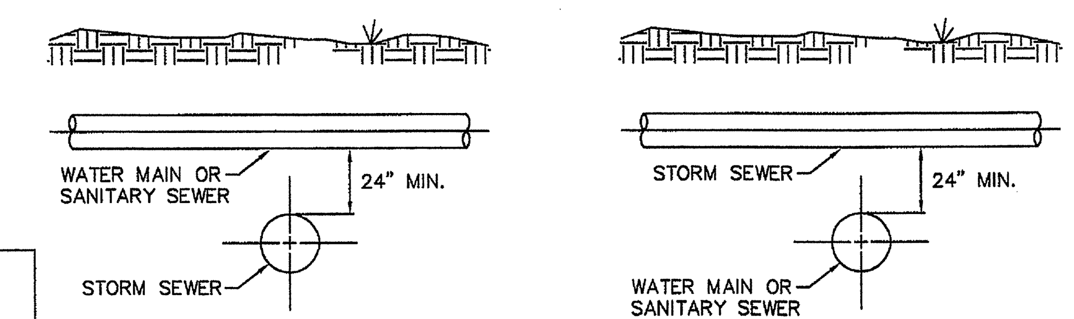
(704) 920-5425

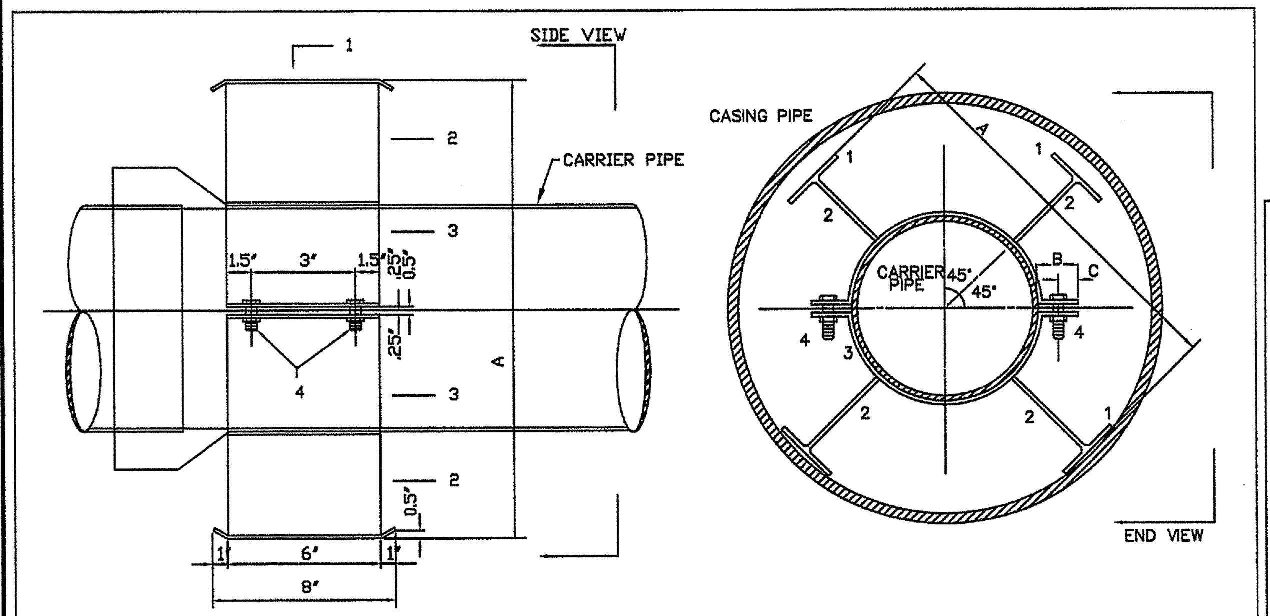
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE
M. Sue Hyde 2/7/12

Engineer's Seal

UTILITY NOTE

WHEN A WATER MAIN OR SANITARY SEWER MAIN CROSSES OVER OR UNDER A STORM SEWER AND CONDITIONS PREVENT THE REQUIRED 24" MIN VERTICAL SEPARATION, THE WATER MAIN OR SANITARY SEWER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. (SEE DETAIL BELOW)





LEGS ROTATED OUT OF POSITION FOR CLARITY

CARRIER PIPE		CASING PIPE				SPIDER DIMENSIONS		
		HIGHWAY		RAILROAD				
NOMINAL DIA.	O. D.	O. D.	WALL	O. D.	WALL	A	B	C
6"	6.90"	12.75"	0.188"	12.75"	0.250"	11"	1 1/4"	6/8"
8"	9.05"	18"	0.250"	18"	0.312"	16 1/2"	2 1/4"	1"
12"	13.20"	24"	0.250"	24"	0.406"	22 1/2"	3"	1 1/4"
16"	17.40"	30"	0.312"	30"	0.500"	28 1/2"	3 1/2"	1 1/2"
24"	25.80"	36"	0.375"	36"	0.5625"	34 1/2"	4"	2"

	PIPE SUPPORT ASSEMBLY MARK NUMBER			
NOMINAL DIA	1	2	3	4
6"	8" X 2" X 1/4" PL	6" X 1 1/2" X 1/4" PL	6" X 1/4" PL	3/8" NUT & BOLT
8"	8" X 3" X 1/4" PL	6" X 3 1/4" X 1/4" PL	6" X 1/4" PL	1/2" NUT & BOLT
12"	8" X 4" X 1/4" PL	6" X 3 5/8" X 3/8" PL	6" X 3/8" PL	1/2" NUT & BOLT
16"	8" X 4" X 3/8" PL	6" X 4 3/4" X 3/8" PL	6" X 3/8" PL	1/2" NUT & BOLT
24"	8" X 4" X 3/8" PL	6" X 5 1/2" X 3/8" PL	6" X 3/8" PL	1/2" NUT & BOLT

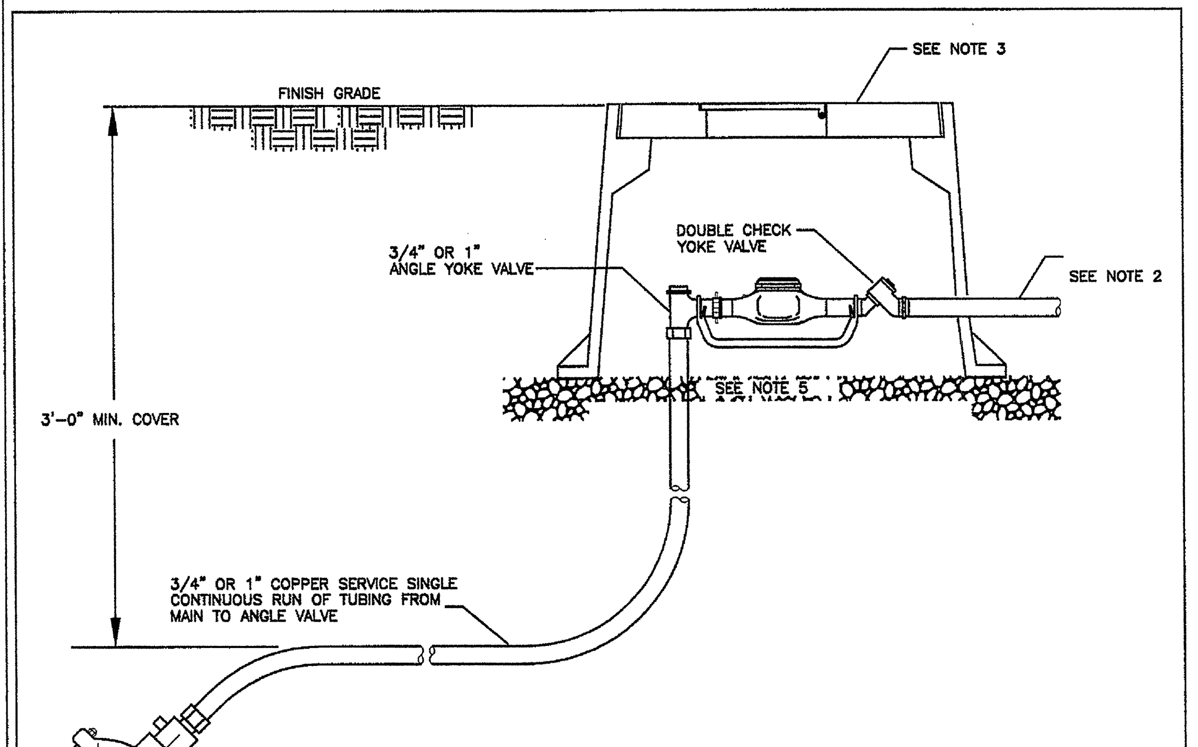
NOTES:
1. SEE WSACC SPEC 02240 FOR REQUIRED CASING DIAMETER AND MINIMUM THICKNESS.
2. CARRIER PIPE IS RESTRAINED PUSH-ON JOINT DIP, PROVIDE TWO SPIDERS PER JOINT OF CARRIER PIPE.
3. SPIDERS, NUTS, BOLTS & WASHERS SHALL BE STAINLESS STEEL.
4. ADJUST HEIGHT OF SPIDERS AS NECESSARY TO MAINTAIN SPECIFIED SLOPE.
5. CASING PIPE MATERIAL IS STEEL.

REVISION NO.	DATE	BY	CHKD
1	11/09	SVM	TAB

WSACC
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

CASING SPIDER

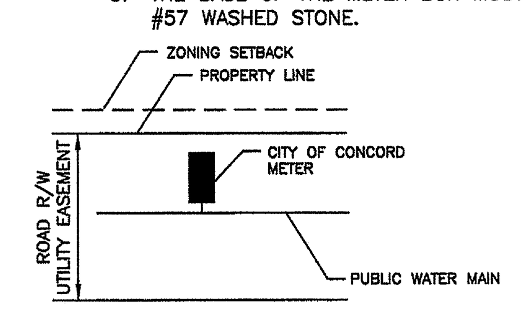
FILE NAME: M2.0 | DATE: 07/08



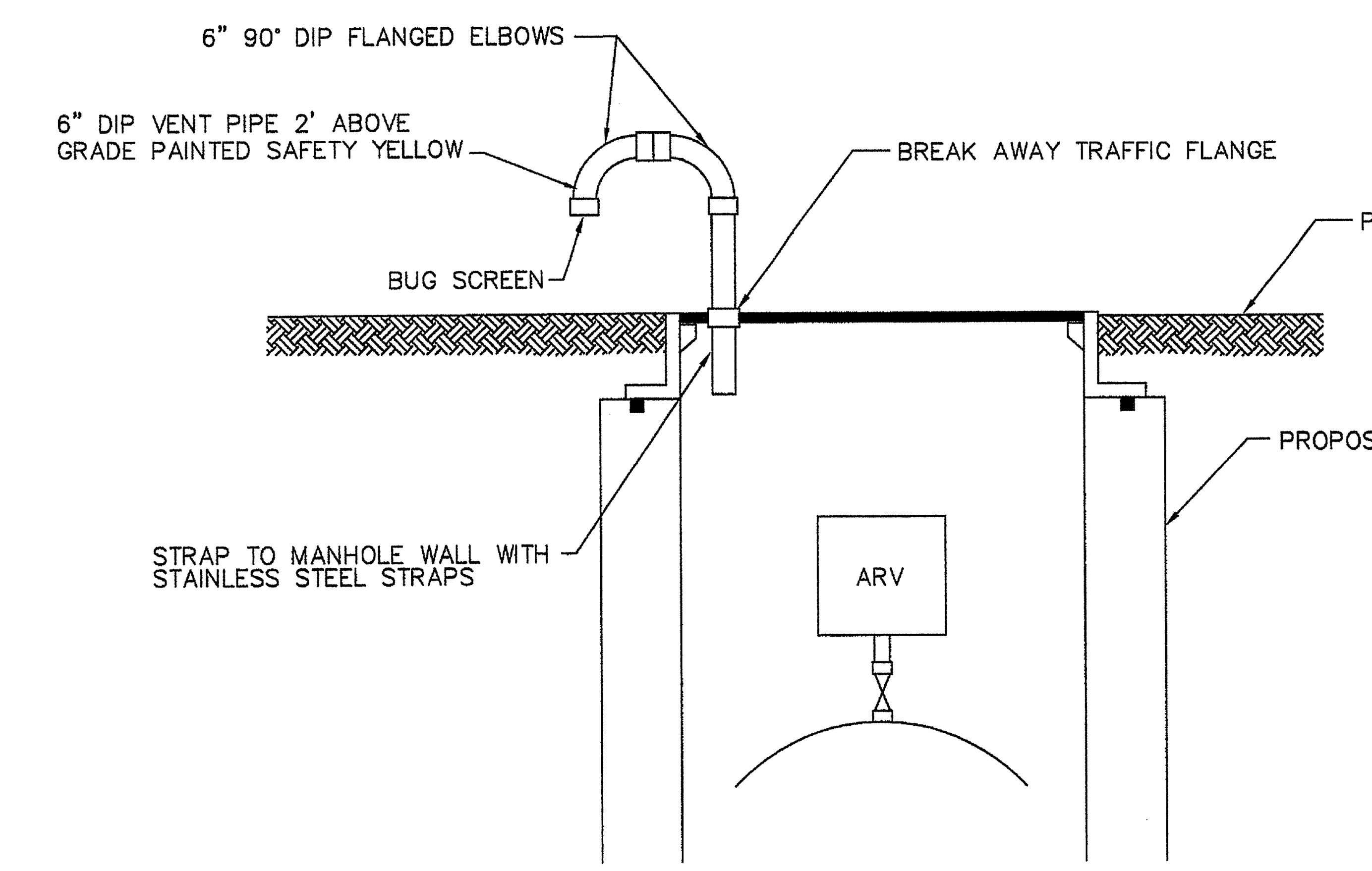
SIDE VIEW
NOT TO SCALE

GENERAL NOTES:

1. REFER TO THE CITY OF CONCORD SPECIFICATIONS FOR ACCEPTABLE MANUFACTURES OF MATERIALS.
2. PROVIDE 12" BRASS NIPPLE PAST BOX
3. THE METER HOUSING SHALL BE MID STATE PLASTICS OR EQUAL; 3/4-INCH BOX MSBCF – 1118-12XL AND LID MSCBC-1118- RTR; AND 1-INCH BOX MSBCF -1324-12XL AND LID MSCBC-1324- RTR. METER BOX RIM SHALL BE SET FLUSH WITH FINAL GRADE. THE WATER METER BOX ASSEMBLY SHALL NOT BE LOCATED WITHIN A ROAD, STREET, DRIVEWAY, SIDEWALK OR DRAINAGE FEATURE.
4. ALL APPURTENANCES FOR THE INSTALLATION OF THE WATER METER; THE METER, BRASS GROUND LOCKABLE METER CUTOFF, GASKETS, AND EXPANSION CONNECTION; SHALL BE INSTALLED BY THE CITY OF CONCORD, IF CONNECTION IS TO AN EXISTING MAIN.
5. THE BASE OF THE METER BOX MUST HAVE AT LEAST 6-INCHES TO 8-INCHES OF #57 WASHED STONE.



3/4" & 1" RESIDENTIAL WATER SERVICE DETAIL
N.T.S.



PLACE ON #57 WASHED STONE BASE TO SPRING LINE OF WATER LINE.

DUAL BODY COMBINATION AIR VALVE
NO SCALE

1. MANHOLE SHALL BE RATED FOR NCDOT SH-20 LOADING
2. ALL CONCRETE SHALL BE MINIMUM 4000 PSI COMPRESSIVE STRENGTH.
3. STEEL REINFORCING DESIGN SHALL CONFORM TO ASTM C857
4. REBARS SHALL BE GRADE 60 PER ASTM 185
5. DIAGONAL REINFORCING SHALL BE ADDED TO ALL OPENINGS.
6. VALVE TO LOCATED AT THE CENTER LINE OF MANHOLE.
7. FRAME TO BE FLUSH WITH THE GROUND IN MAINTAINED ROAD OR YARD R/W.
8. ALL JOINTS SHALL BE MADE WATERTIGHT USING 2 RINGS OF BUTYL RUBBER JOINT MASTIC

COMBINATION VALVE SIZES			
STA.	AIR/VACUUM VALVE	AIR RELEASE VALVE	AIR RELEASE ORIFICE
2+00	6"	1"	5/32"
26+75	4"	1"	5/32"
57+25	6"	1"	5/32"
154+70	6"	1"	5/32"

G:\Engineering Projects\Projects\2009\064 George Liles Pky Ext\2009-064 (R-2) George Liles 24inch Water Line.dwg Feb 07, 2013 - 3:53pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-3a

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

UTILITIES UNIT
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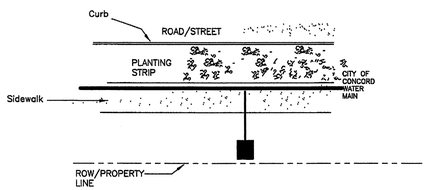
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal



TYPICAL LOCATION REQUIREMENT
LONG SIDE TAP
N.T.S.

GENERAL NOTES:

1. PUBLIC UTILITY EASEMENT SHALL BE LOCATED AT LEAST 3-FEET BEYOND THE BACK EDGE OF THE SIDEWALK ON THE PRIVATE SERVICE SIDE OF THE WATER METER.
2. SERVICE PIPE MATERIAL SHALL BE K-COPPER WITH BRASS FITTINGS FROM WATER MAIN TO WATER METER.
4. WHEN WATER AND SEWER SERVICES ARE EXTENDED FROM MAINS LOCATED WITHIN THE ROAD RIGHT-OF-WAY, SEWER SERVICE LATERALS SHALL BE LOCATED AT THE CENTER OF THE LOT AND THE WATER SERVICE SHALL BE LOCATED FIVE FEET TO THE RIGHT OF THE SEWER SERVICE LATERAL.
5. UNDER NO CIRCUMSTANCE SHALL THE WATER METER BE LOCATED IN A DRIVEWAY.

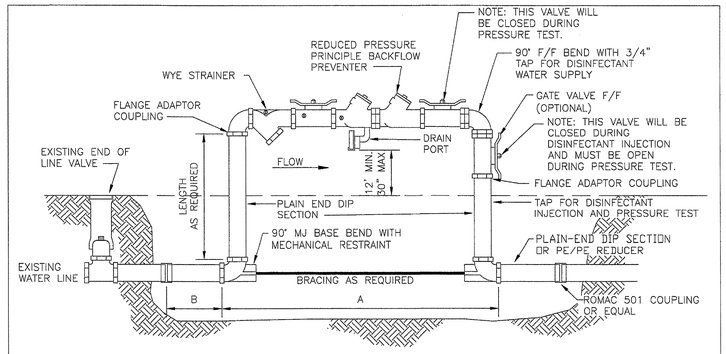
CONCORD CITY OF CONCORD a city meeting the future...

WATER METER STANDARD DETAIL

3/4-INCH OR 1-INCH DOMESTIC WATER METER TYPICAL LOCATION

No.	Date	By	REVISION

Drawn By:	Checked By:	Approved By:	Date	Sht	of
SM			02/05		



BACKFLOW DEVICE	A
4"	6'-3"
6"	9'
8"	11'-2"

WATER MAIN SIZE	B
6"	17"
8"	19"
12"	22"
16"	26"
24"	32"

WATER MAIN SIZE	MIN. BACKFLOW DEVICE SIZE	MIN. END OF LINE BLOWOFF
6" OR 8"	2"	2"
12"	4"	2.5
16"	6"	4"
24"	8"	6"

REVISION NO.	DATE	BY	CHKD

WSACC
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

BACKFLOW PREVENTOR BY-PASS CONNECTION FOR FILLING NEW WATER MAINS

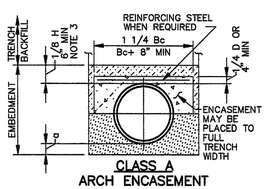
FILE NAME: W2.0 DATE: 8/06

TABLE OF EMBEDMENT DEPTHS BELOW PIPE

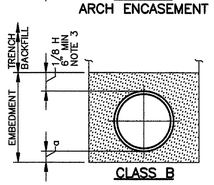
D	a MIN SOIL	a MIN ROCK
27" & SMALLER	6"	6"
30" TO 60"	6"	9"
66" & LARGER	6"	12"

NOTES:

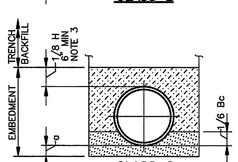
1. GRANULAR EMBEDMENT MATERIAL SHALL BE CRUSHED ROCK, PEA GRAVEL COARSE AGGREGATE SIZE NUMBER 57. EMBEDMENT MATERIAL SHALL BE PLACED IN LAYERS NOT MORE THAN 6" DEEP AND COMPACTED AS SPECIFIED.
2. HAND PLACED EMBEDMENT SHALL BE COMPACTED FINELY DIVIDED MATERIAL FREE FROM DEBRIS AND STONES.
3. EMBEDMENT ABOVE THE TOP OF THE PIPE SHALL BE AN UNCOMPACTED LAYER FOR ALL INSTALLATIONS.
4. REFER TO SPECIFICATIONS FOR GEOTECHNICAL FABRIC OR SPECIAL EMBEDMENT REQUIREMENTS FOR TRENCHES IN FINE SOILS EXTENDING BELOW GROUNDWATER LEVEL.
5. TRENCH OUTLINES DO NOT INDICATE ACTUAL TRENCH EXCAVATION SHAPE, SOIL CONDITIONS, OR PRESENCE OF SHEETING LEFT IN PLACE. EMBEDMENT MATERIAL SHALL EXTEND THE FULL WIDTH OF THE ACTUAL TRENCH EXCAVATION.



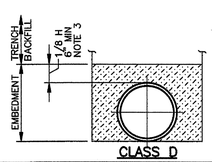
CLASS A
ARCH ENCASEMENT



CLASS B



CLASS C



CLASS D

LEGEND

Bc OUTSIDE DIAMETER OF PIPE
H COVER ABOVE TOP OF PIPE
D NOMINAL PIPE SIZE
a EMBEDMENT BELOW PIPE (SEE TABLE)

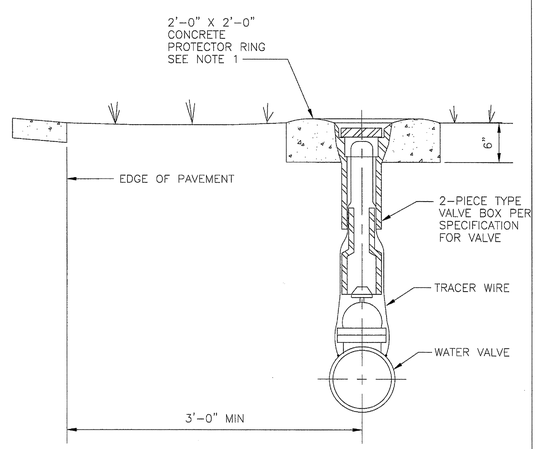
HAND PLACED EMBEDMENT
GRANULAR EMBEDMENT
CONCRETE

REVISION NO.	DATE	BY	CHKD

WSACC
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

EMBEDMENTS FOR MAINS

FILE NAME: WS 1.0 DATE: 8/06



NOTE:

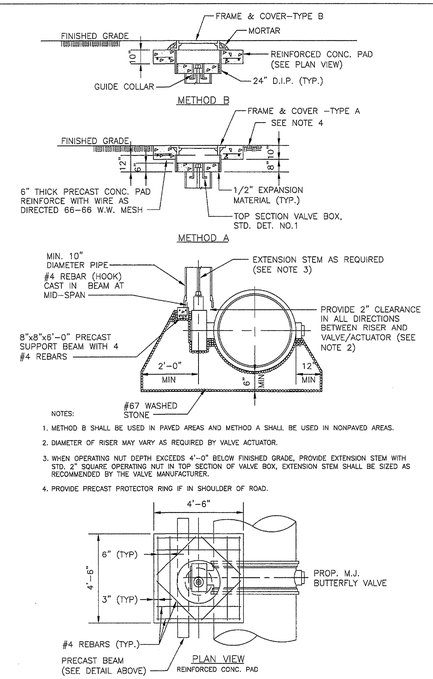
1. USE PROTECTION RING IN SHOULDER OF ROAD.

REVISION NO.	DATE	BY	CHKD

WSACC
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

VALVE BOX INSTALLATION

FILE NAME: W1.0 DATE: 8/06



NOTES:

1. METHOD B SHALL BE USED IN PAVED AREAS AND METHOD A SHALL BE USED IN NONPAVED AREAS.
2. DIAMETER OF RISER MAY VARY AS REQUIRED BY VALVE ACTUATOR.
3. WHEN OPERATING NUT DEPTH EXCEEDS 4'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STD. 2" SQUARE. OPERATING NUT IN TOP SECTION OF VALVE BOX, EXTENSION STEM SHALL BE SIZED AS RECOMMENDED BY THE VALVE MANUFACTURER.
4. PROVIDE PRECAST PROTECTOR RING IF IN SHOULDER OF ROAD.

REVISION NO.	DATE	BY	CHKD

WSACC
WATER AND SEWER AUTHORITY OF CABARRUS COUNTY

DIRECT BURY BUTTERFLY VALVE INSTALLATION

FILE NAME: W5.0 DATE: 8/06

G:\Engineering Projects\Projects\2009\004 Georgia Lilas Phy Exh\2009-004 (R-2) Georgia Lilas 24inch Water Line.dwg, Feb 07, 2013 - 4:02pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-3b

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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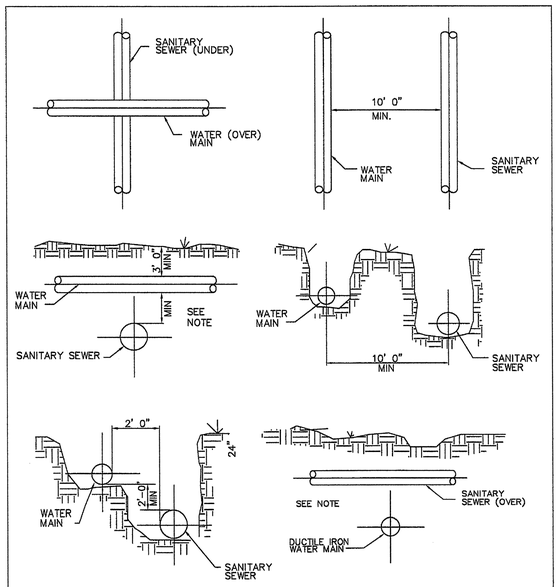
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE
M. Sue Hyde 2/7/13

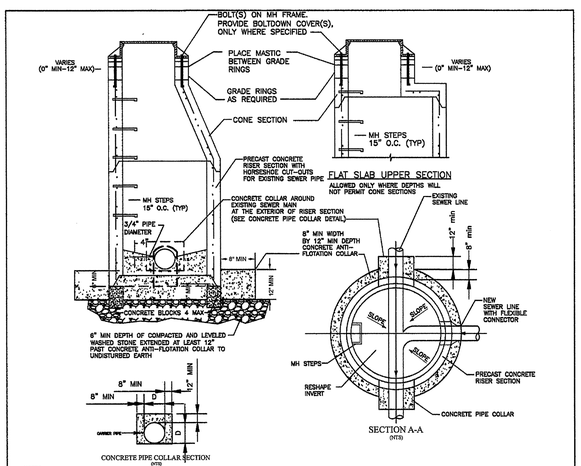
Engineer's Seal



NOTE:
WHEN THE WATER MAIN IS ABOVE THE SANITARY SEWER, BUT WITH LESS THAN 24" CLEARANCE, OR WHEN THE SANITARY SEWER IS ABOVE THE WATER MAIN, BOTH THE WATER MAIN AND THE SANITARY SEWER LINE SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM LATERAL DISTANCE, MEASURED AT RIGHT ANGLES TO THE SEWER, OF 10 FEET ON EACH SIDE OF THE CROSSING.

RELATION OF WATER MAINS TO SANITARY SEWER MAINS

NOT TO SCALE



NOTES:
1. MANHOLE RISERS AND CONE SECTIONS SHALL CONFORM TO ASTM-478, LATEST REVISION. MANHOLE RISER BASE SHALL HAVE HORSESHOE CUT-OUTS FOR EXISTING PIPE.
2. TRANSITION RINGS SHALL HAVE A MINIMUM CLEARANCE OF 2'-0" ABOVE THE EFFLUENT OVERT ELEVATION.
3. FLEXIBLE WATERTIGHT SYNTHETIC RUBBER SLEEVES, WITH STAINLESS STEEL CLAMP, DRAW BOLT AND NUT; OR CAST-IN SLEEVE; OR "A" LOCK CONNECTION SHALL BE FURNISHED FOR EACH NEW PIPE TO DOCKED MANHOLE CONNECTION.
4. MAXIMUM HEIGHT OF GRADE ADJUSTMENT RINGS SHALL NOT EXCEED 12".
5. ALL MANHOLE COMPONENTS SHALL BE H-20 TRAFFIC LOAD RATED.
6. MANHOLE RIM SHALL BE 2" ABOVE FINISHED GRADE IN OUTFALL CONDITIONS AND IN 100-YEAR FLOOD AREAS.
7. MANHOLES SHALL NOT BE LOCATED WITHIN ANY FEATURE CONVEYING OR POOLING STORMWATER.
8. SANITARY SEWER LINES ENTERING AND EXITING A MANHOLE SEPARATED BY AN ANGLE OF 225°—275° OR 85°—135°, THE INVERT-IN AND INVERT-OUT ELEVATIONS SHALL HAVE A VERTICAL SEPARATION OF AT LEAST FIVE-TENTHS OF ONE FOOT.
9. 5' DIAMETER INSIDE DROP MANHOLES SHALL BE PROVIDED WHERE INVERT SEPARATIONS EQUAL 2' OR GREATER FOR 12" DIAMETER PIPES OR SMALLER. IF THREE 12" DIAMETER OR SMALLER PIPE DROPS ARE NEEDED AT A MANHOLE, A 6' INSIDE DROP MANHOLE SHALL BE PROVIDED. IF THE INVERT SEPARATION IS 2' OR GREATER AND A PIPE DIAMETER LARGER THAN 12", AN OUTSIDE DROP MANHOLE SHALL BE PROVIDED. (SEE DROP MANHOLE DETAIL.)
10. AT LEAST 6" OF COMPACTED WASHED STONE SHALL BE PROVIDED UNDER EXPOSED EXISTING PIPE, MANHOLE, CONCRETE BLOCKS AND CONCRETE ANTI-FLOTATION COLLAR.
11. PLACE CONCRETE ANTI-FLOTATION COLLAR OVER COMPACTED WASHED STONE AND PLACE HORSESHOE MANHOLE BASE SECTION IN WET CONCRETE (4000 PSI MIN.)
12. AFTER THE CONCRETE HAS SET AND CURED TO 28 DAY STRENGTH, POUR THE FORMED CONCRETE COLLARS OVER THE EXISTING SEWER PIPE.
13. INSIDE THE MANHOLE, FORM TROUGH WITH GROUT. FINISH INVERTS & WATER PROOF ALL COLD JOINTS AND AROUND ALL PIPES.

PIPE DIAMETER (INCHES)	MANHOLE DIAMETER (FEET)
8 TO 16	4
18 TO 36	5
39 TO 54	6
54 AND LARGER	8

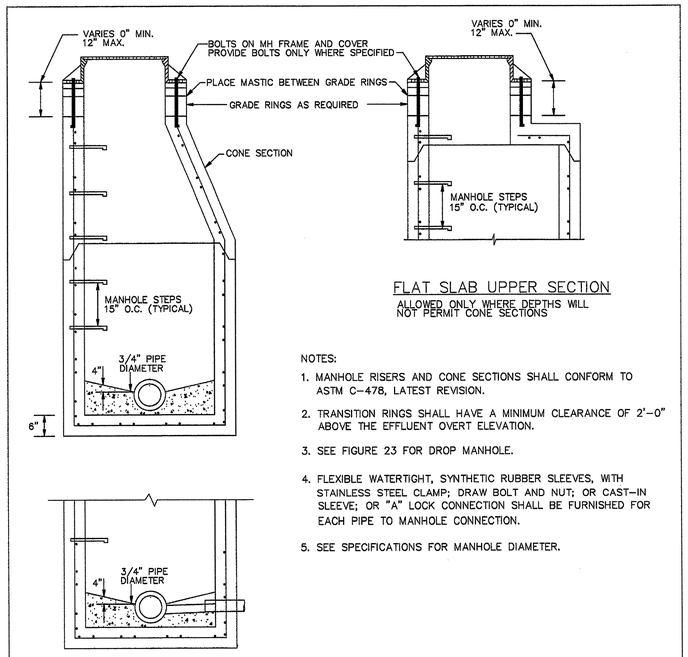
Concord NORTH CAROLINA

CITY OF CONCORD
STANDARD DETAIL

DOGHOUSE CONCRETE MANHOLE

No.	Date	By	REVISION

Drawn By:	Checked By:	Approved By:	Date	Sht.	of
SVM	PK	MSH	09/12	1	1



NOTES:
1. MANHOLE RISERS AND CONE SECTIONS SHALL CONFORM TO ASTM C-478, LATEST REVISION.
2. TRANSITION RINGS SHALL HAVE A MINIMUM CLEARANCE OF 2'-0" ABOVE THE EFFLUENT OVERT ELEVATION.
3. SEE FIGURE 23 FOR DROP MANHOLE.
4. FLEXIBLE WATERTIGHT, SYNTHETIC RUBBER SLEEVES, WITH STAINLESS STEEL CLAMP; DRAW BOLT AND NUT; OR CAST-IN SLEEVE; OR "A" LOCK CONNECTION SHALL BE FURNISHED FOR EACH PIPE TO MANHOLE CONNECTION.
5. SEE SPECIFICATIONS FOR MANHOLE DIAMETER.

STANDARD PRECAST CONCRETE MANHOLE

NOT TO SCALE

G:\Engineering Projects\Projects\2009\004 George Liles Pky Ext\2009-004 (R-2) George Liles 24inch Water Line.dwg Feb 07, 2013 - 3:54pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-4

DESIGNED BY: MSH	
DRAWN BY: BCC	
CHECKED BY: MSH	
APPROVED BY:	
DATE: 12/12/12	
REVISED:	

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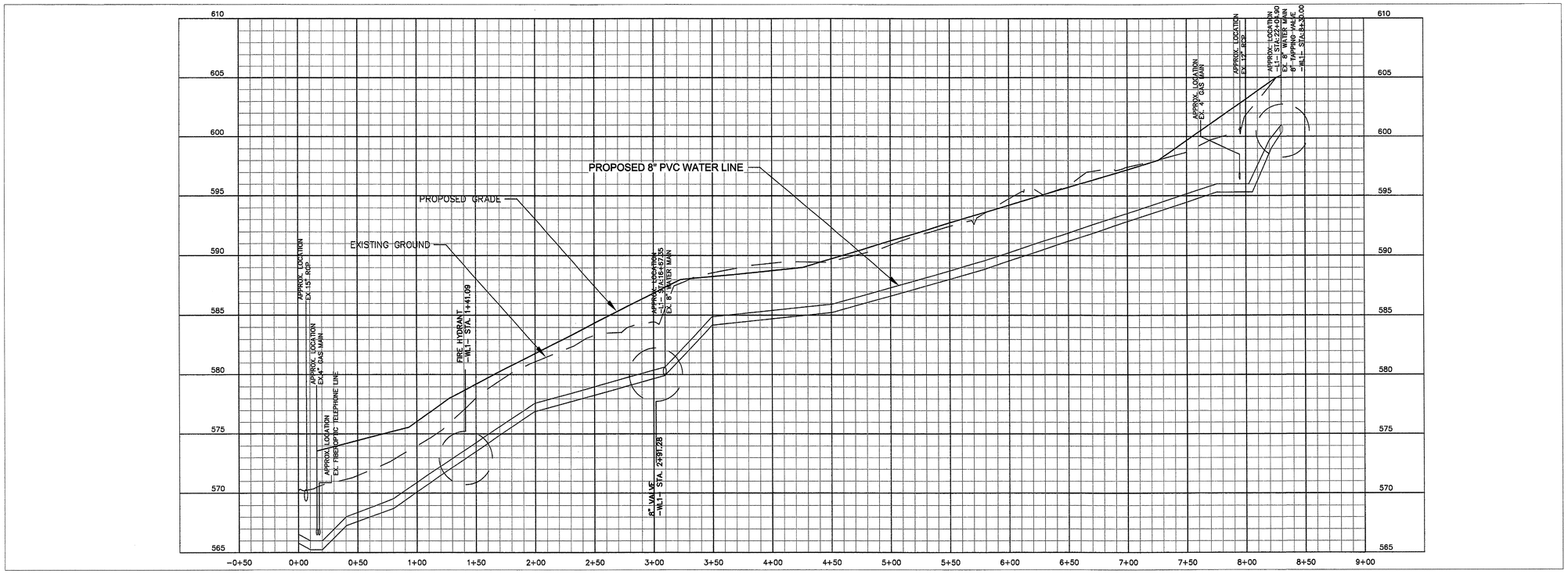
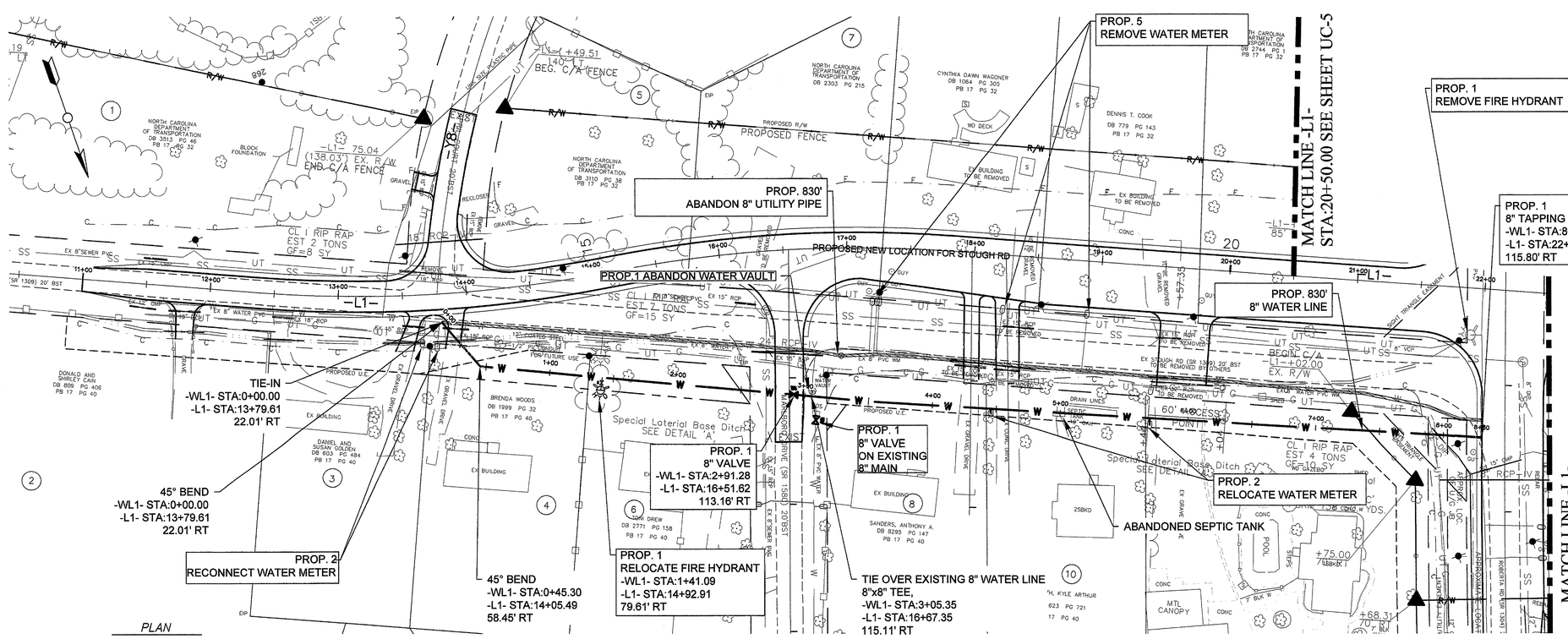
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal





GENERAL UTILITY NOTES

1. ABANDON WATER AND SEWER SERVICES TO PROPERTIES ON THE SOUTH SIDE OF STOUGH ROAD. PARCELS 1, 5, 7, 9, AND 11.
2. 8" MAIN LINE VALVES LOCATED APPROX. 342 FEET EAST OF TIE-IN AT STATION 13+79.61 AND 300 FEET WEST OF TIE-IN AT STATION 13+79.61.
3. ALL CITY OF CONCORD PUBLIC UTILITY EXTENSION AND SERVICE MATERIALS, EQUIPMENT, LABOR, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AND SUBJECT TO THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATIONS; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS, AND THE NORTH CAROLINA ADMINISTRATIVE CODE FOR WASTEWATER COLLECTION AND WATER DISTRIBUTION SYSTEMS. IN THE EVENT OF CONFLICT BETWEEN THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY'S STANDARD SPECIFICATIONS; THE CITY OF CONCORD'S ORDINANCES, POLICIES, AND STANDARD SPECIFICATIONS, OR THE NORTH CAROLINA ADMINISTRATIVE CODE, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY."

   THE CONTRACTOR MUST CONTACT THE CITY OF CONCORD ENGINEERING CONSTRUCTION MANAGER, PHILLIP KINGSLAND, AT 704-920-5425 AT LEAST 24-HOURS PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITY."
5. THE EXISTING WATER MAIN VALVE RIMS AND STEMS AND THE EXISTING SEWER MAIN MANHOLES RIMS ARE TO BE RAISED OR LOWERED TO FINAL GRADE ,AS APPLICABLE AND AT LEAST 3-FT OF GROUND COVER IS TO BE MAINTAINED OVER THE EXISTING UTILITIES AT ALL TIMES."
6. CONTRACTOR TO RELOCATE SANITARY SEWER SERVICES ON PARCELS 10 AND 4

G:\Engineering Projects\Projects\2009\004 Georgia Liles Proj Est\2009-004 (R-2) Georgia Lilles Proj\Utility Water Line.dwg Feb 07, 2013 - 4:16pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-5

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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UTILITIES ENGINEERING SECTION

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P.O. BOX 308
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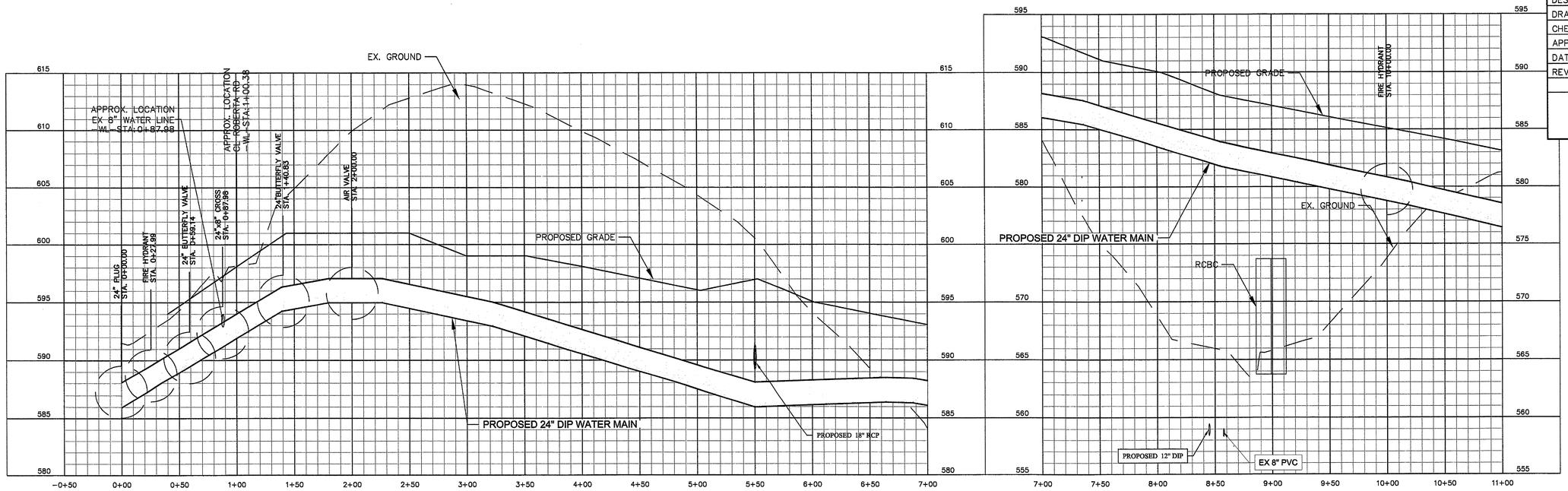
(704) 920-5425

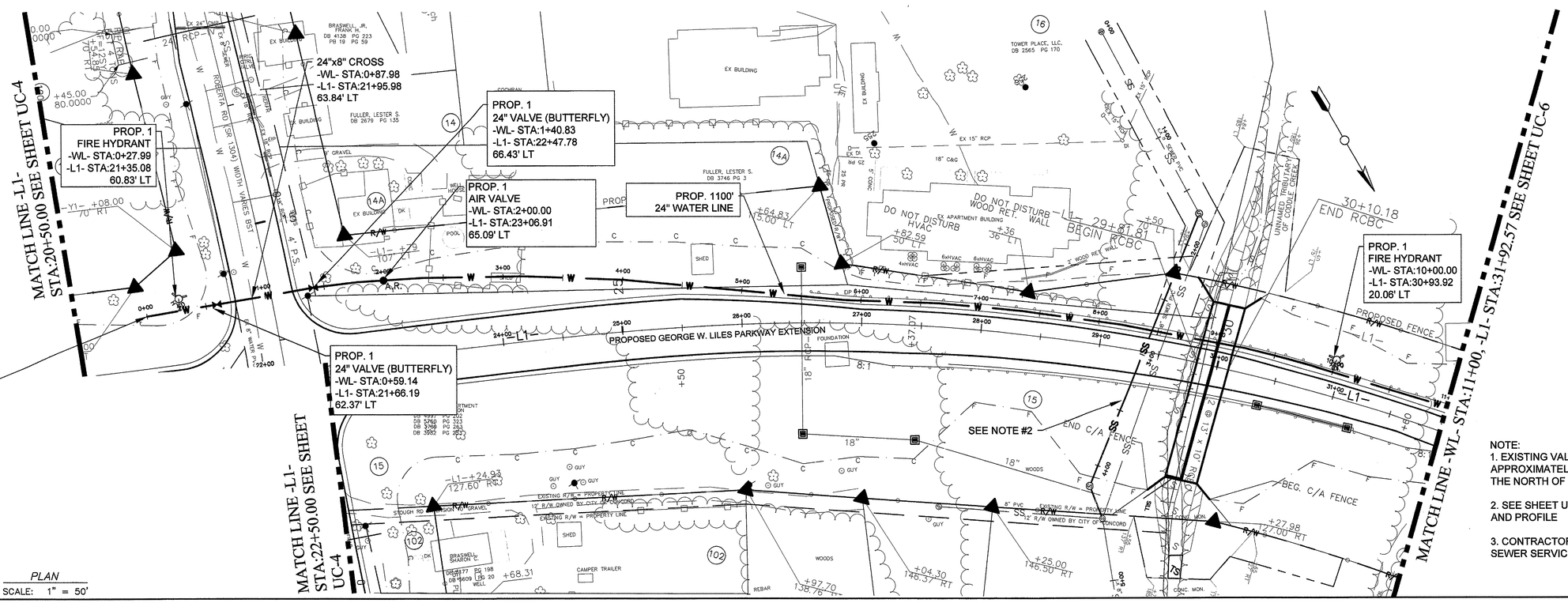
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

SCALE: 1" = 50'

NOTE:
1. EXISTING VALVES ON THE 8" LINE ARE LOCATED APPROXIMATELY 680' TO THE SOUTH AND 150' TO THE NORTH OF TIE-IN AT STATION -WL- 0+87.98

2. SEE SHEET UC-20 FOR SANITARY SEWER PLAN AND PROFILE

3. CONTRACTOR TO REMOVE EXISTING SANITARY SEWER SERVICES 5 EACH

G:\Engineering Projects\Projects\2009\064 (R-2) Georgia Liles Pky Ext\2009-064 (R-2) Georgia Liles 24inch Water Line.dwg Feb 06, 2013 - 1:06pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-6

DESIGNED BY: MSH	
DRAWN BY: BCC	
CHECKED BY: MSH	
APPROVED BY:	
DATE: 12/12/12	
REVISED:	

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CONCORD N.C. 28026
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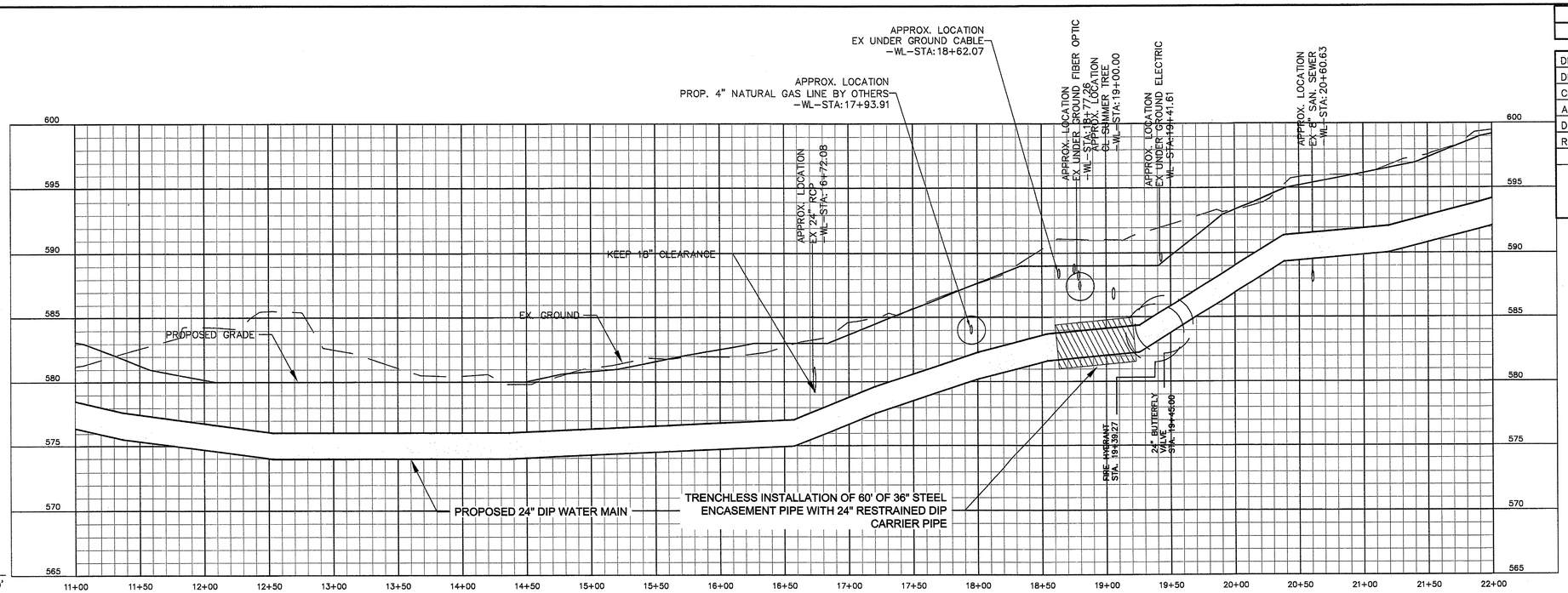
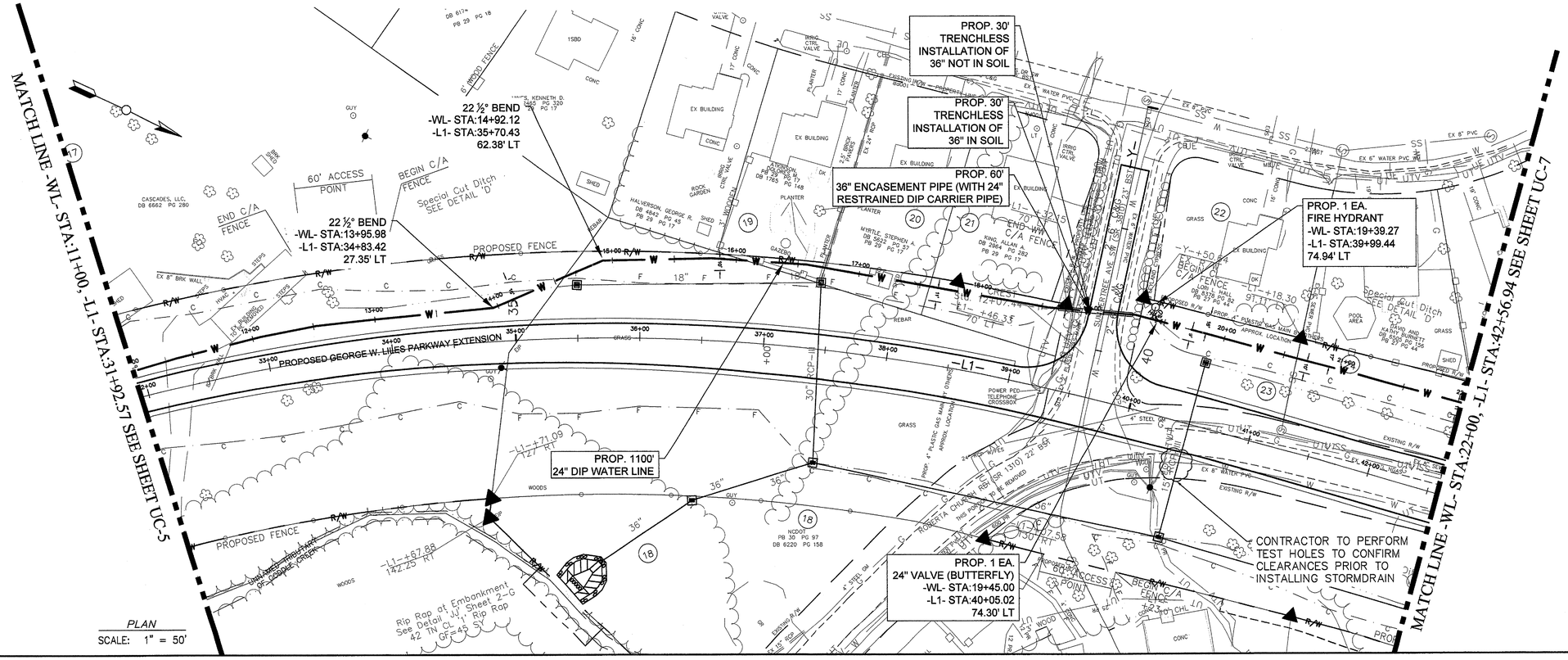
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER SUE HYDE 2/7/13

Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

SCALE: 1" = 50'

C:\Engineering Projects\Projects\2000004 Concord\2000004 (R-2) George Liles Pkwy Bu\R2000-004 (R-2) George Liles 24inch Water Line.dwg Feb 06, 2013 - 1:05pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-7

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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PHONE (919) 707-6690
FAX (919) 250-4151

UTILITY CONSTRUCTION

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PREPARED BY
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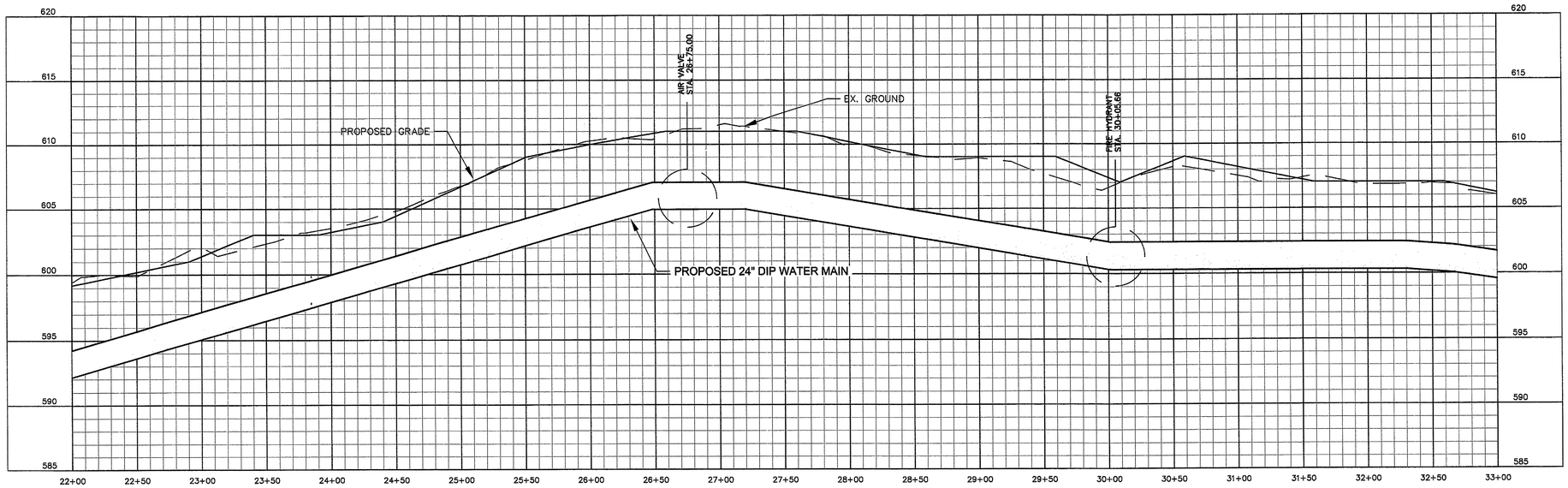
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

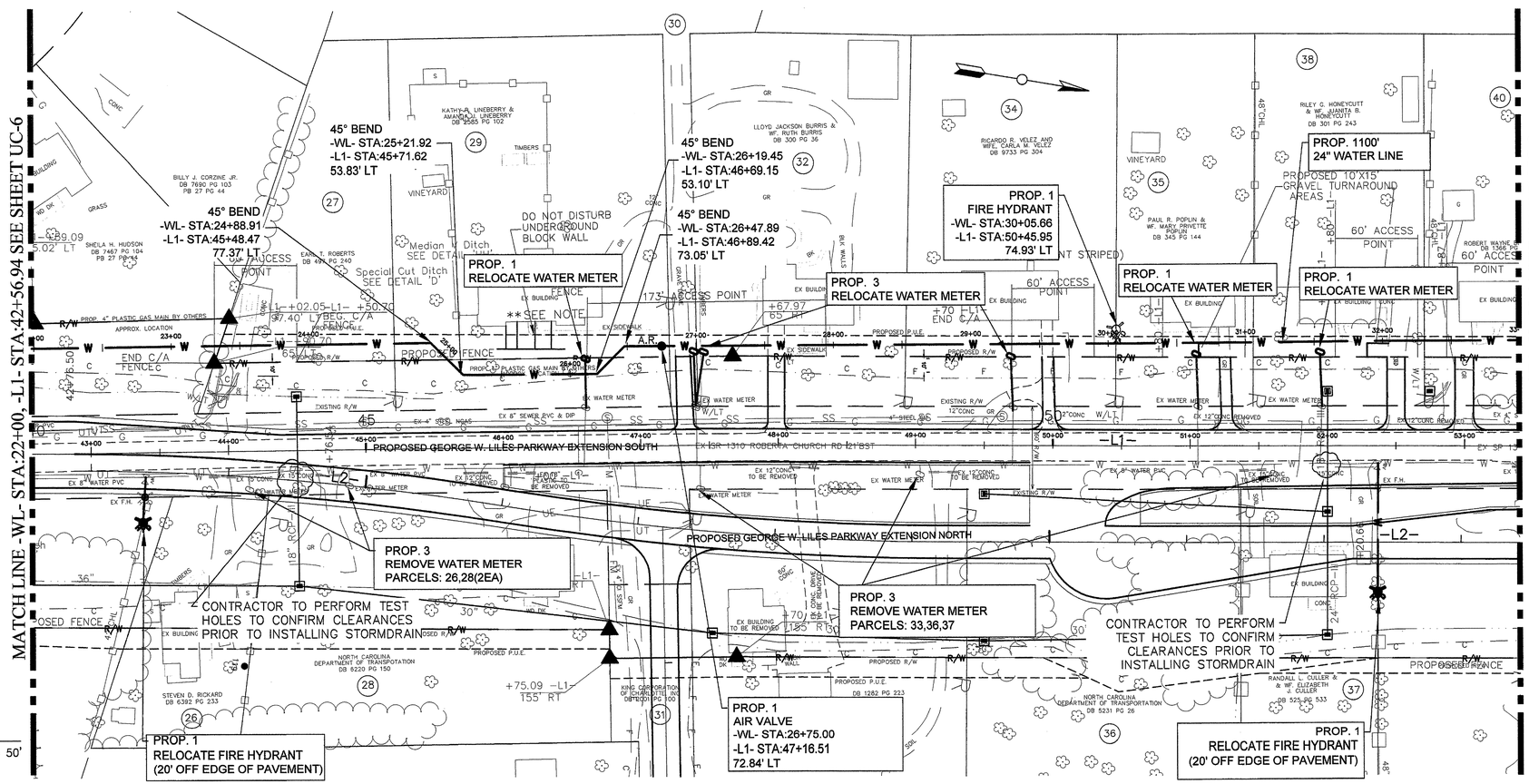
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

SCALE: 1" = 50'

NOTE: CONTRACTOR TO REMOVE SANITARY SEWER SERVICE PARCEL: 29

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-8

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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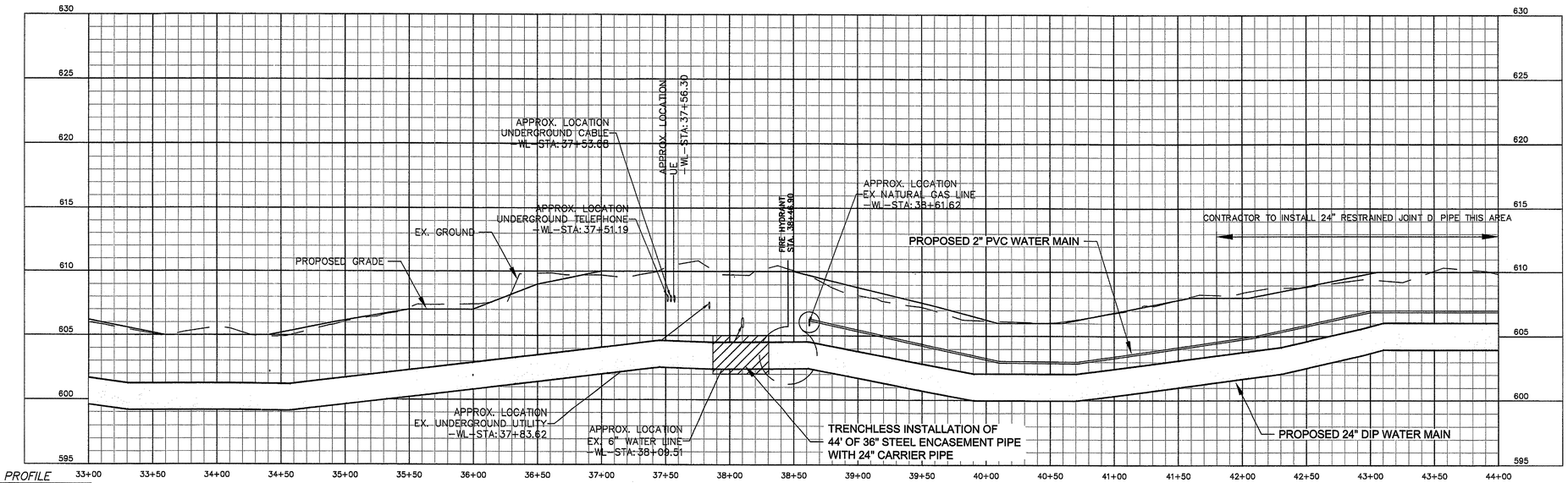
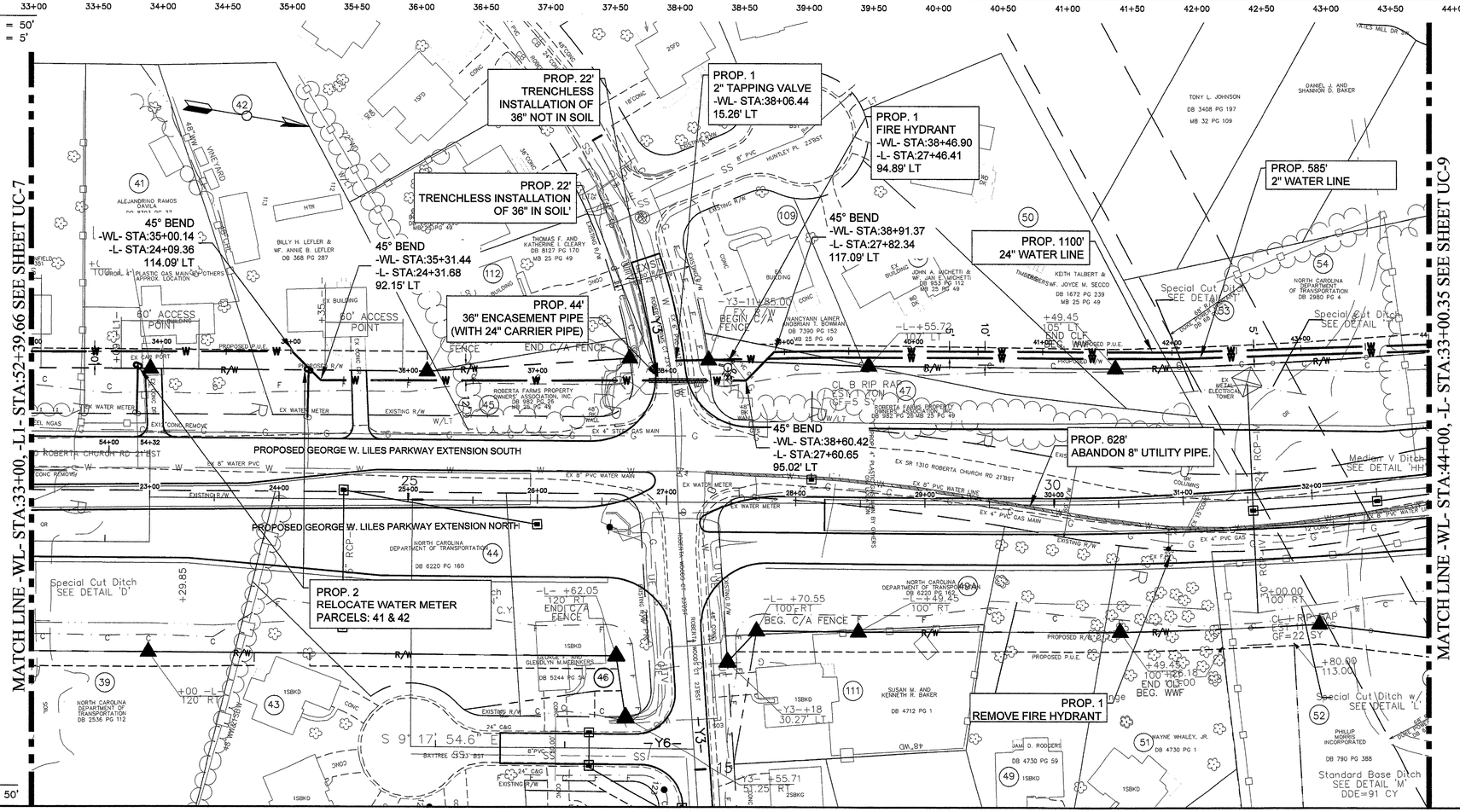
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



NOTE: CONTRACTOR TO USE RESTRAINED JOINT PIPE BETWEEN ROADWAY STATIONS 30+00 - 34+00

G:\Engineering\Projects\Projects\50030004 George Liles Pky Ext\50030-004R (R-2) George Liles 24inch Water Line.dwg Feb 07, 2013 - 4:18pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-9

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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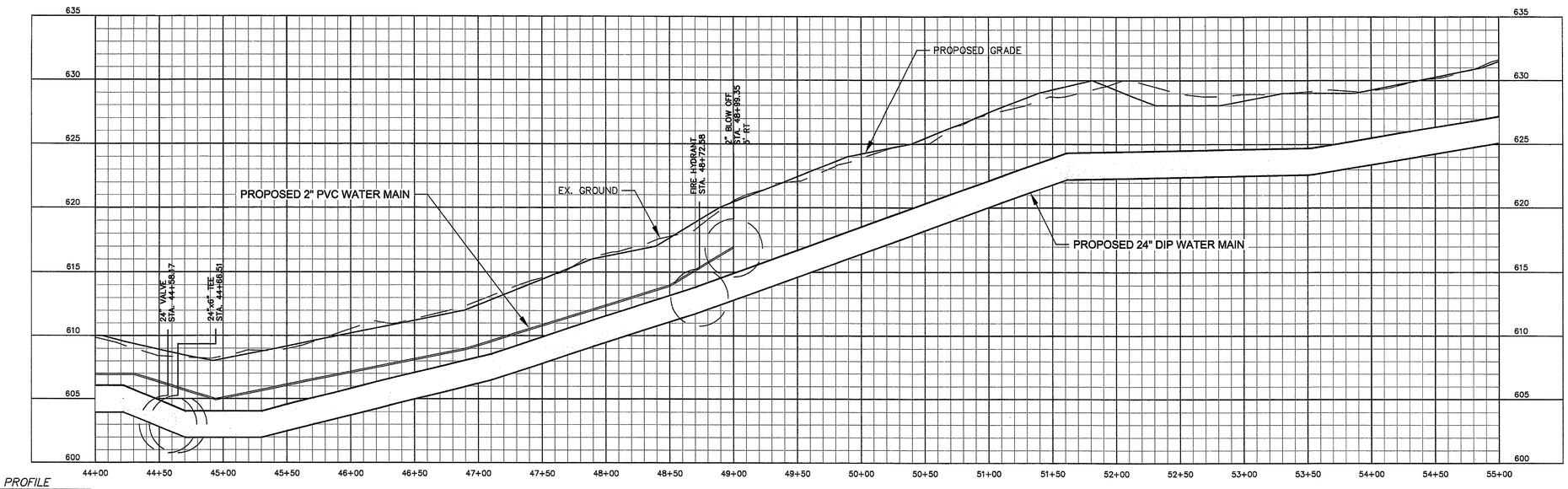
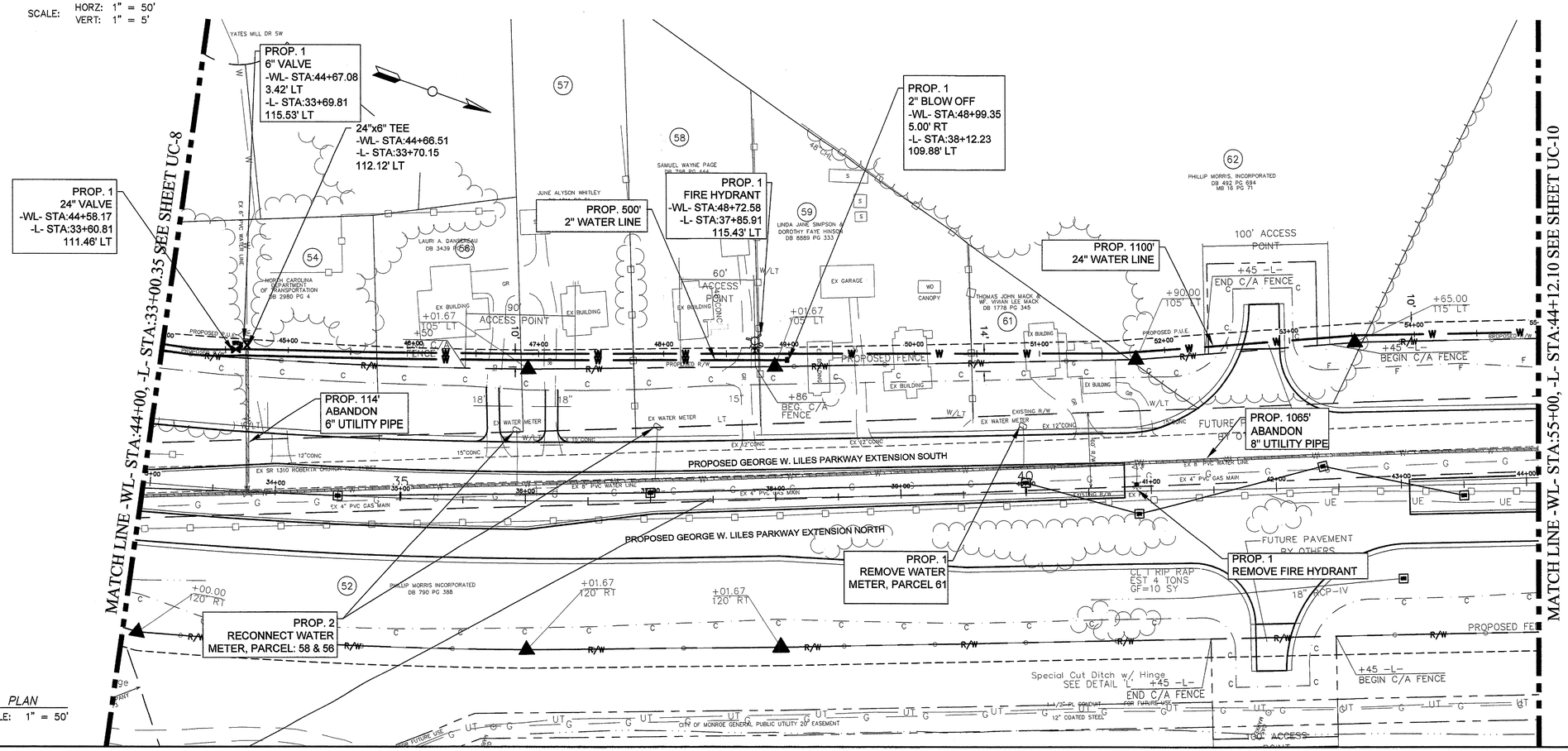
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-10

DESIGNED BY: MSH	
DRAWN BY: BCC	
CHECKED BY: MSH	
APPROVED BY:	
DATE: 12/12/12	
REVISED:	

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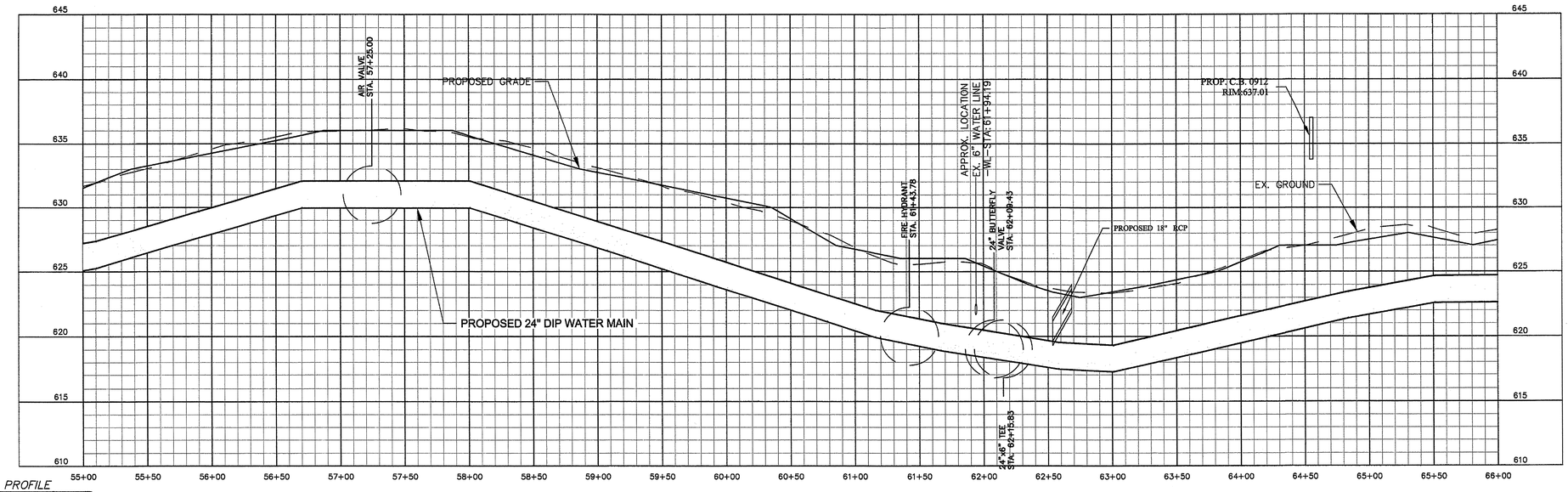
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER SUE HYDE 2/7/13

Engineer's Seal



PROFILE
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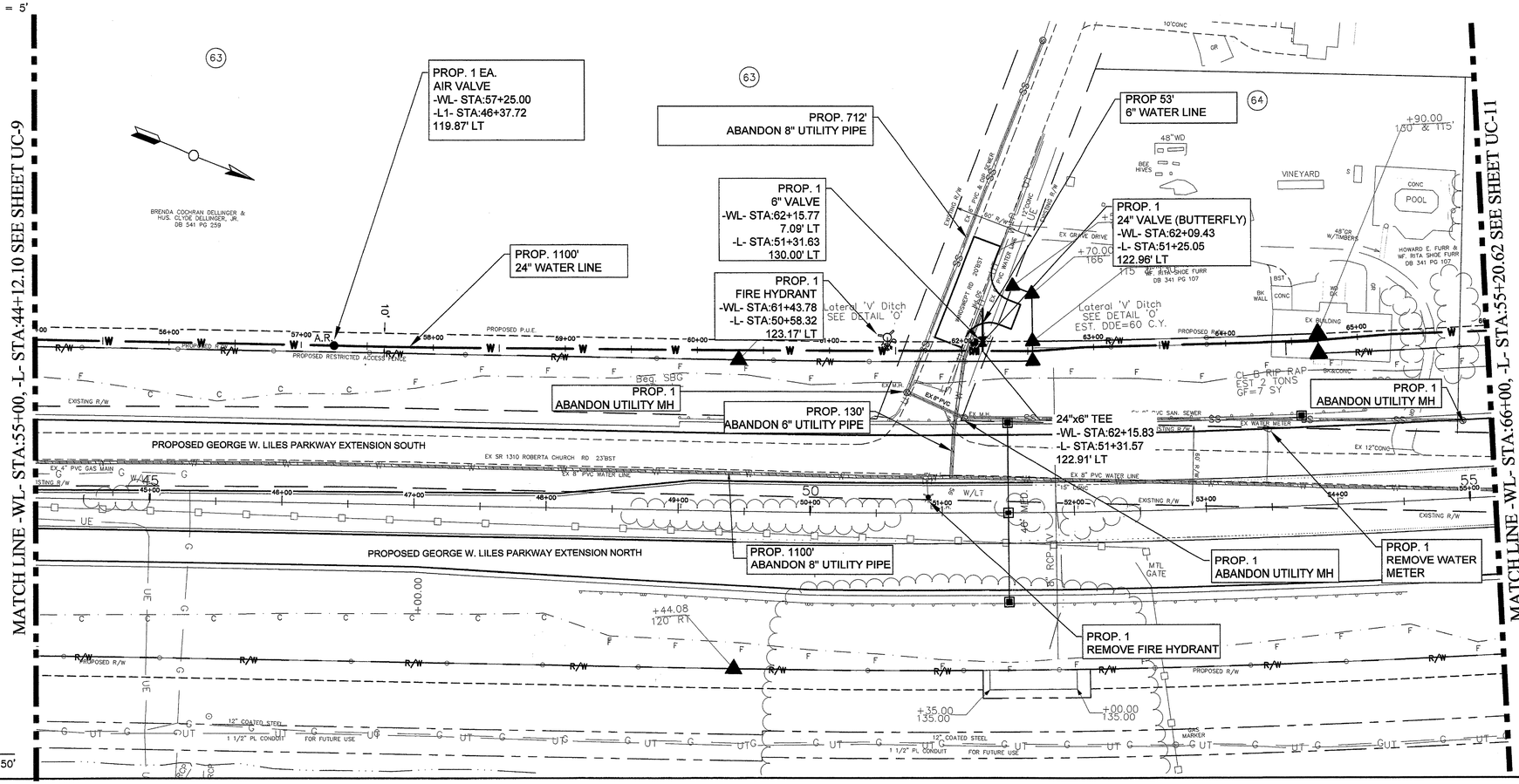
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

D:\Engineering Projects\Projects\03200504 (R-2) George Liles Pky Ext\03200504 (R-2) George Liles 24inch Water Line.dwg Feb 06, 2013 - 1:09pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-11

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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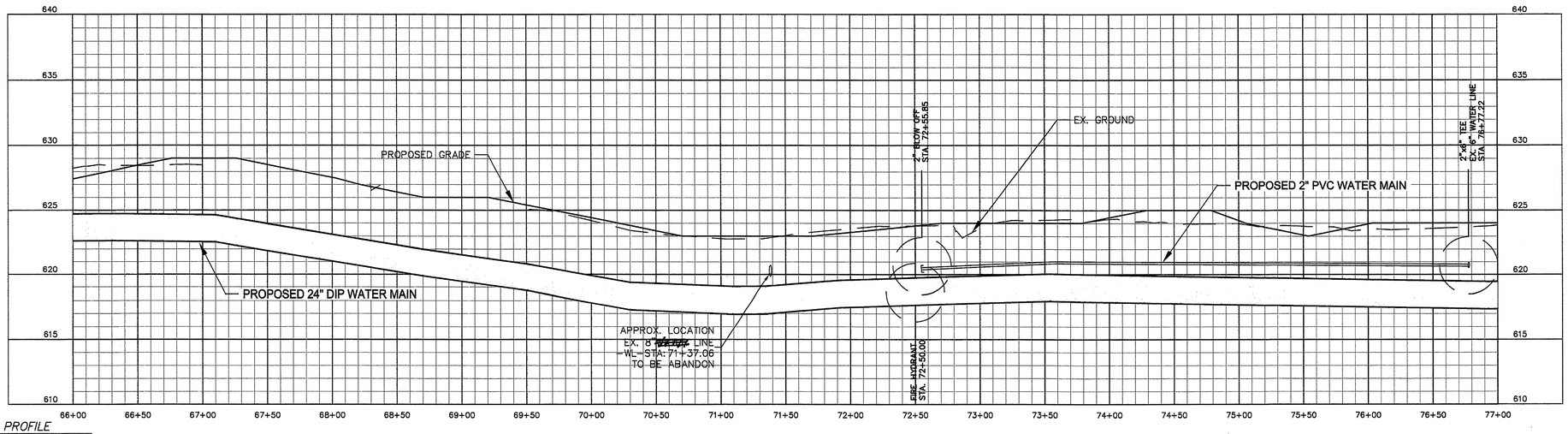
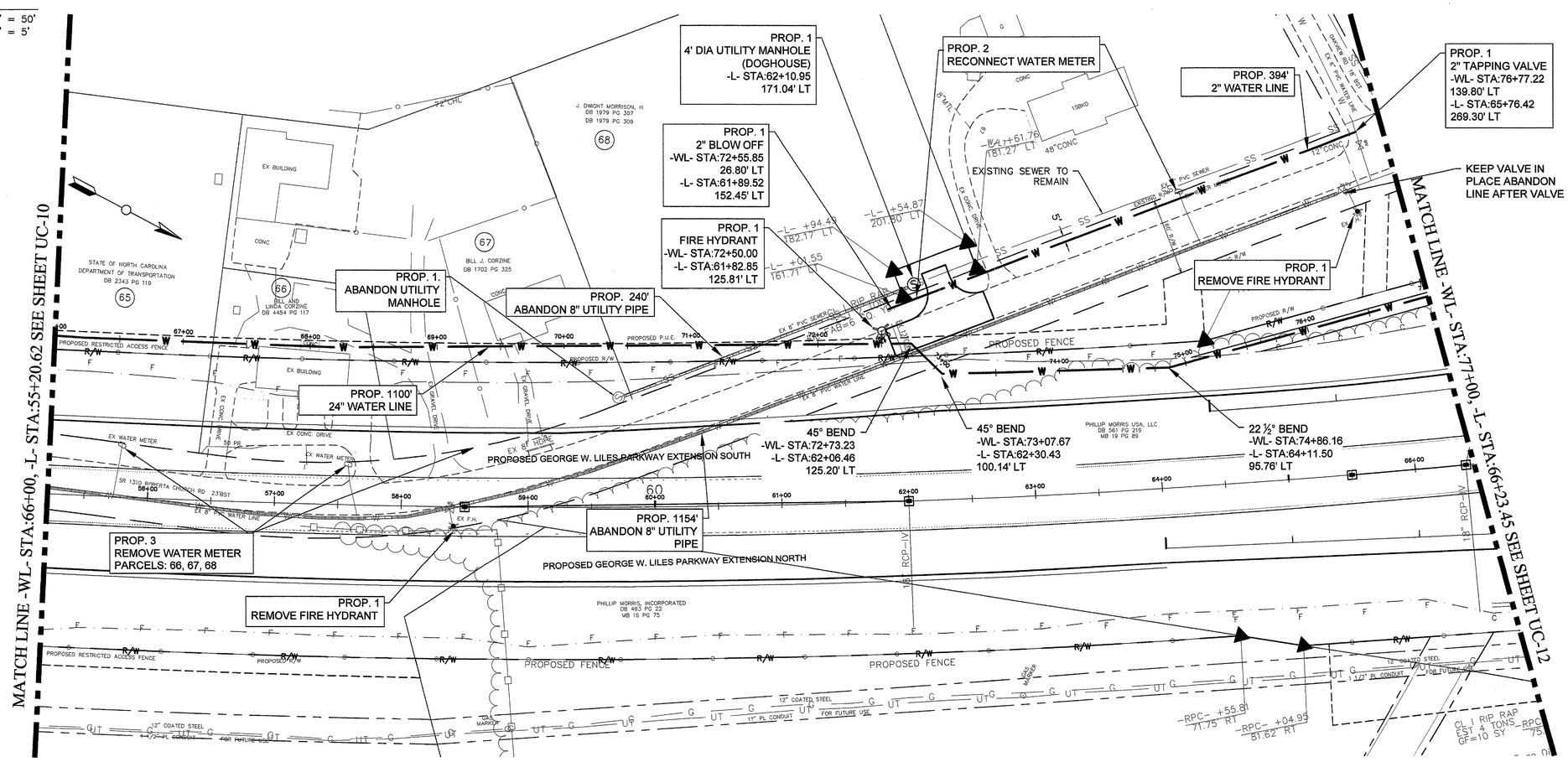
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

G:\Engineering Projects\Projects\2009\064 George Liles Pky Ext\2009-064 (R-2) George Liles 24inch Water Line.dwg Feb 06, 2013 - 1:05pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-12

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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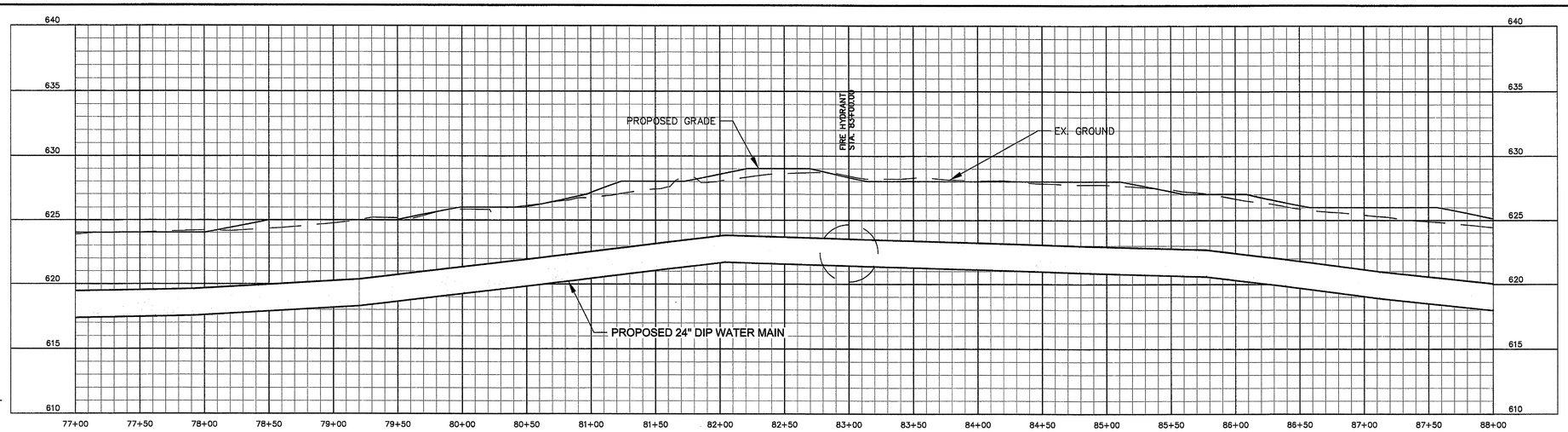
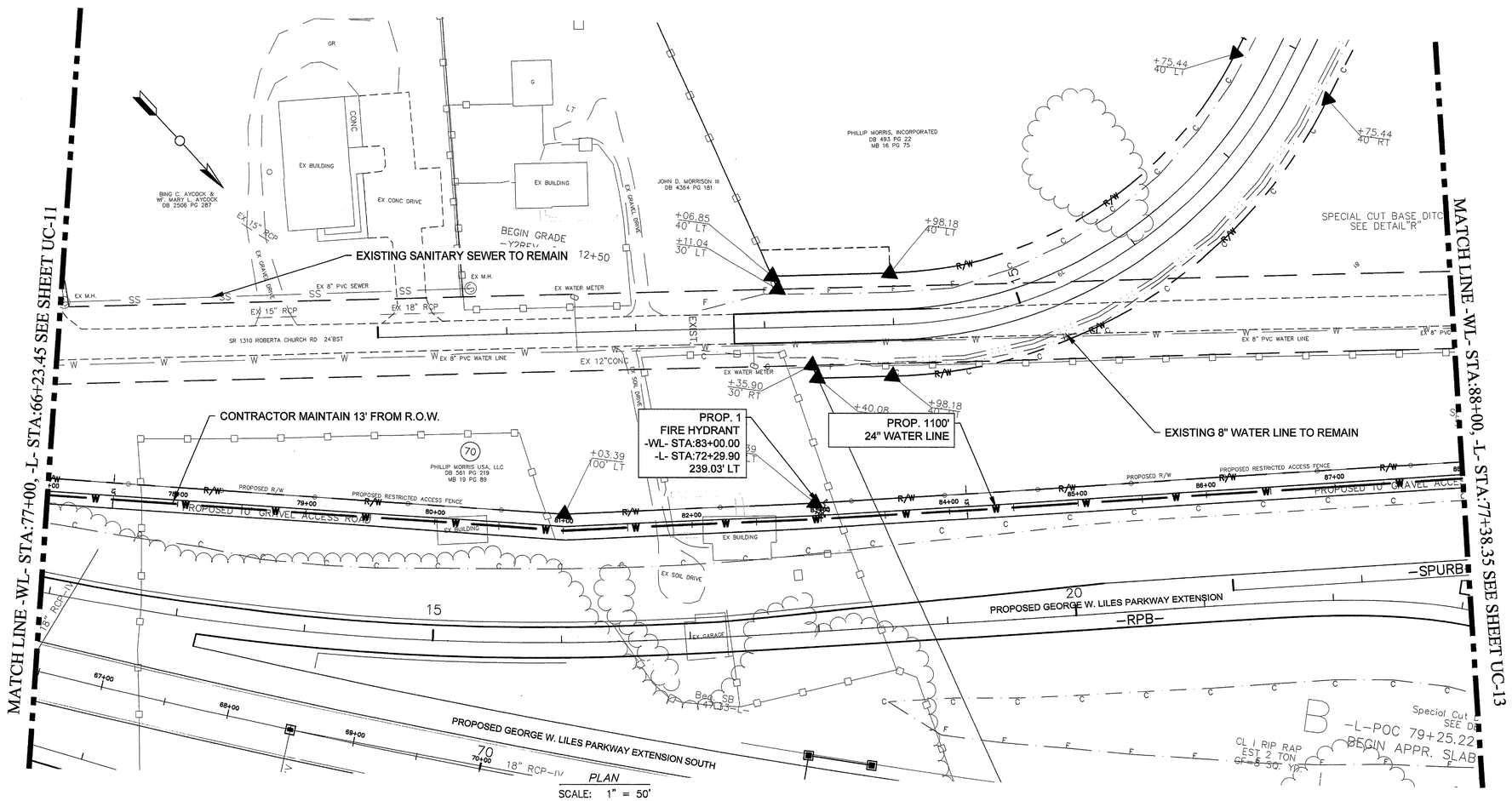
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE
M. Sue Hyde 2/7/13
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-13

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED: 02/14/13
ADDED ENCASEMENT PIPE AND 16" WATER LINE

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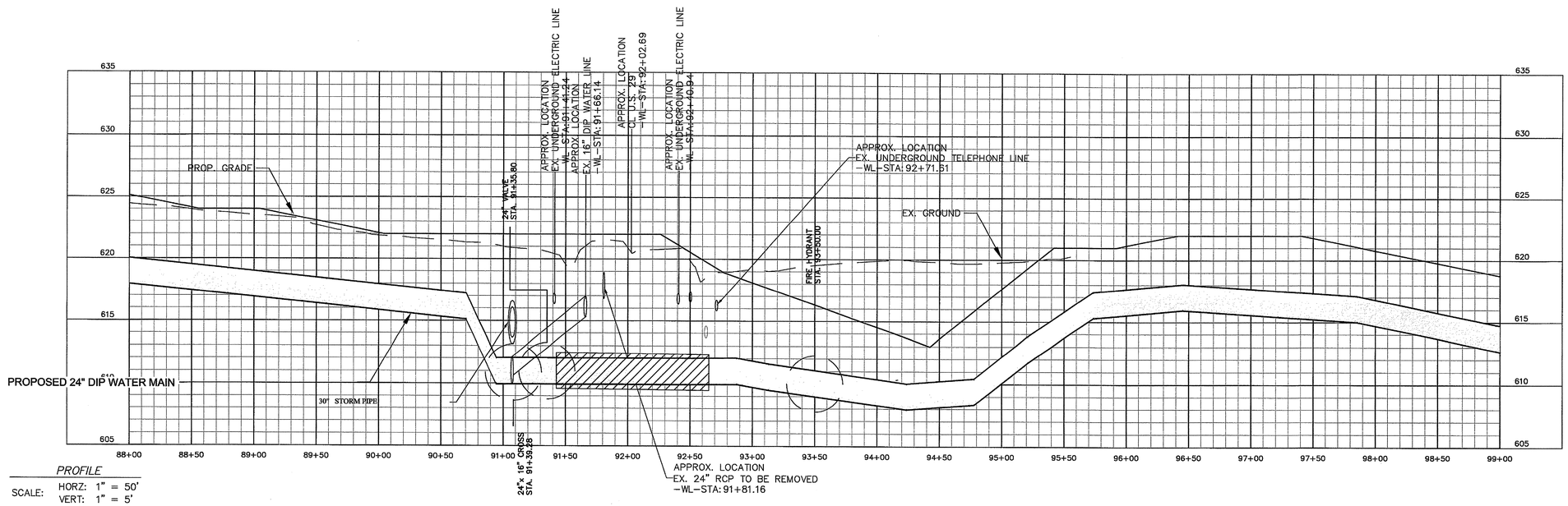
M. Sue Hyde 2/19/13
Engineer's Seal



NOTE:
1. EXISTING 16" VALVES LOCATED APPROX. 1875' NORTH AND 1125' SOUTH OF TIE-IN AT STA:91+65.94

2. PART OF EXISTING 16" WATER MAIN WILL NEED TO BE RELAYED TO MATCH PROPOSED GRADES ON 24" WATER MAIN

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-14

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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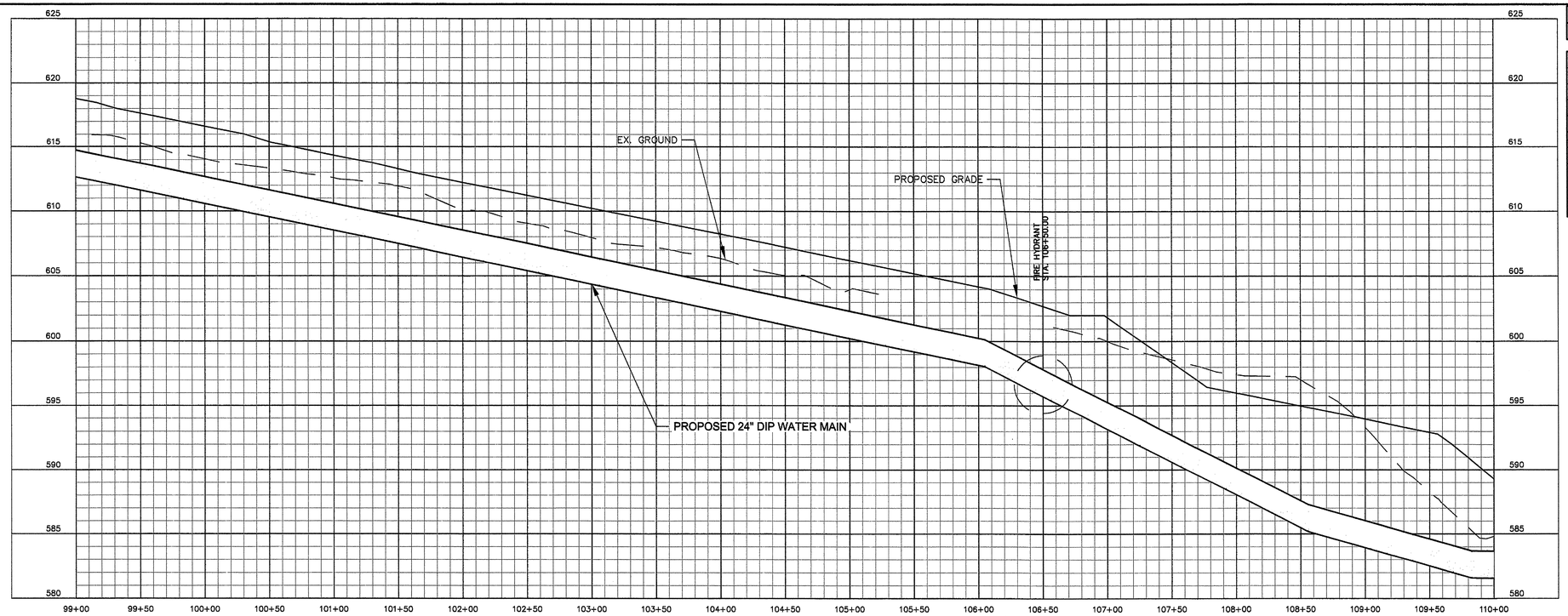
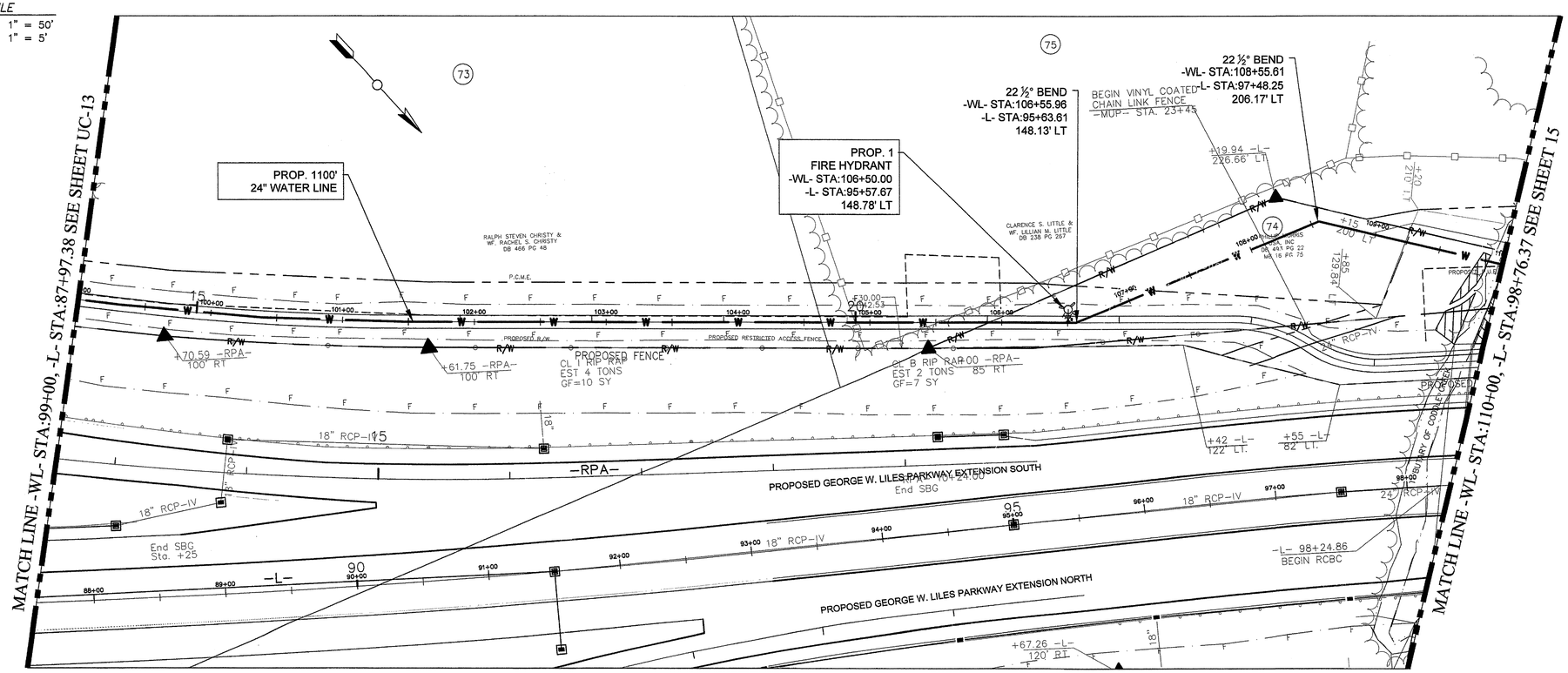
M. Sue Hyde 2/7/13

Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-15

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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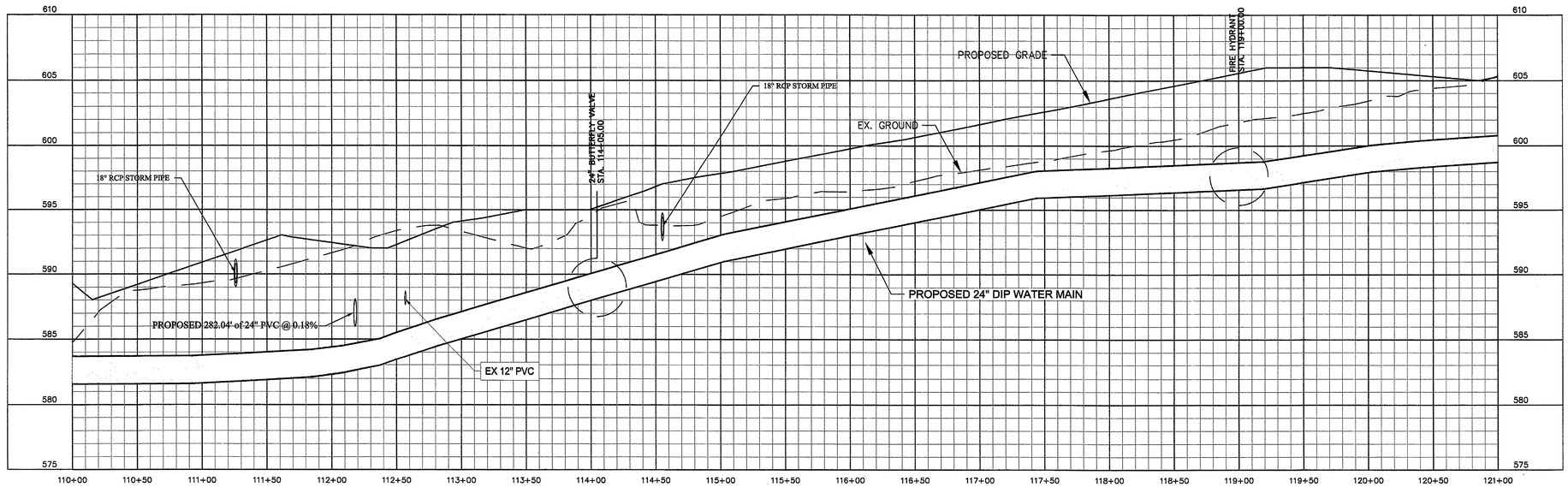
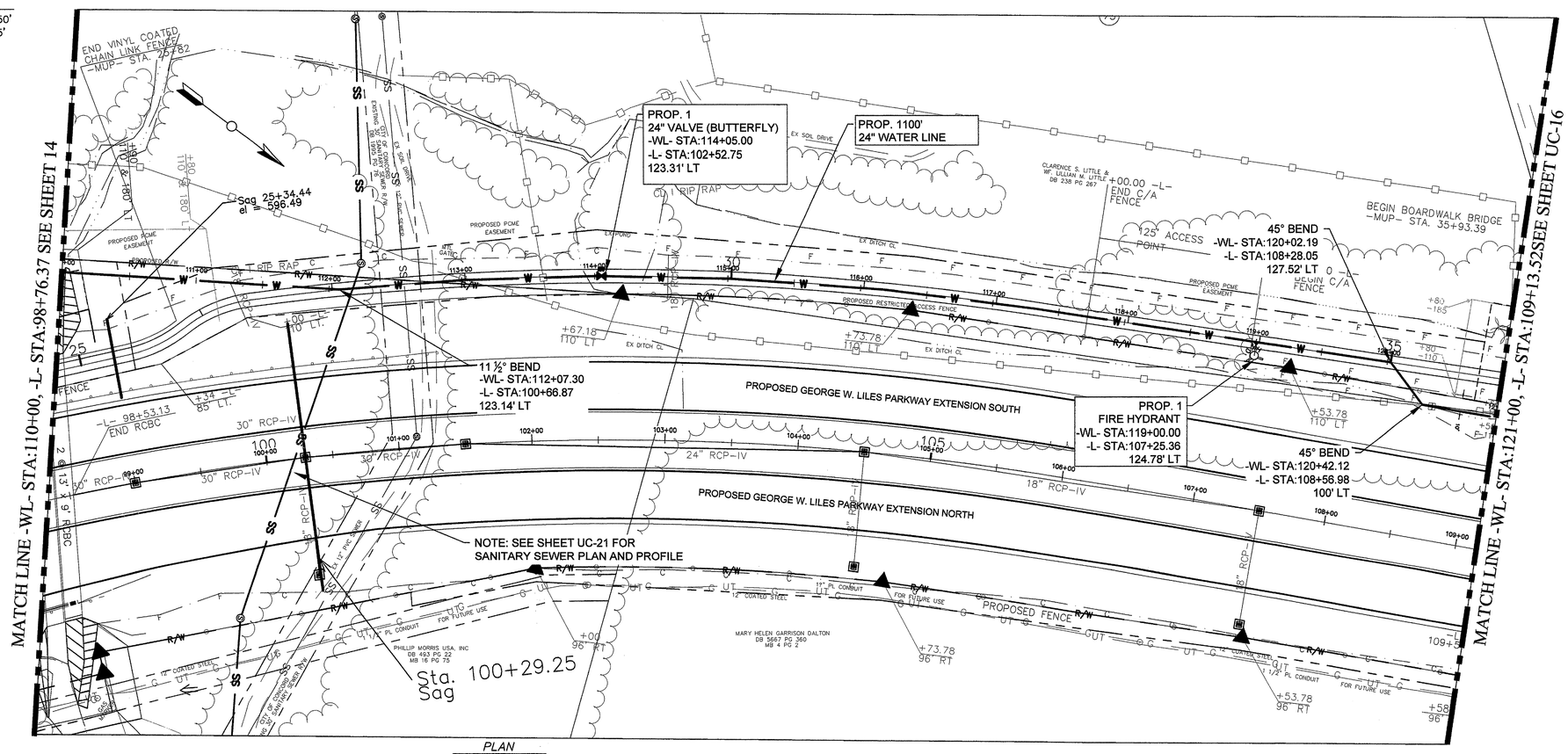
M. Sue Hyde 2/7/13
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN
SCALE: 1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-16

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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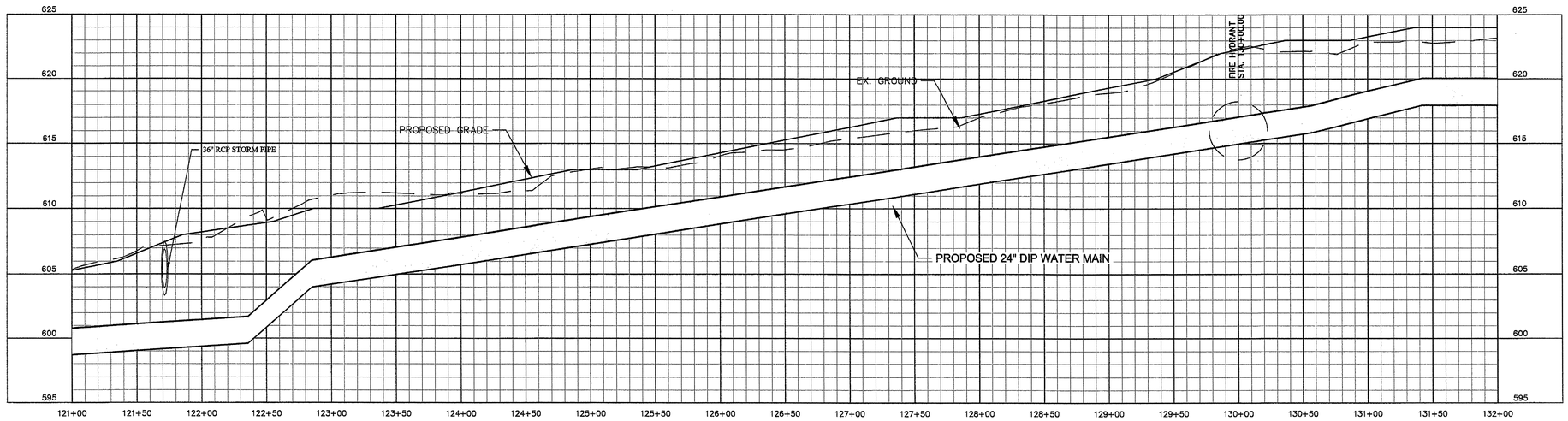
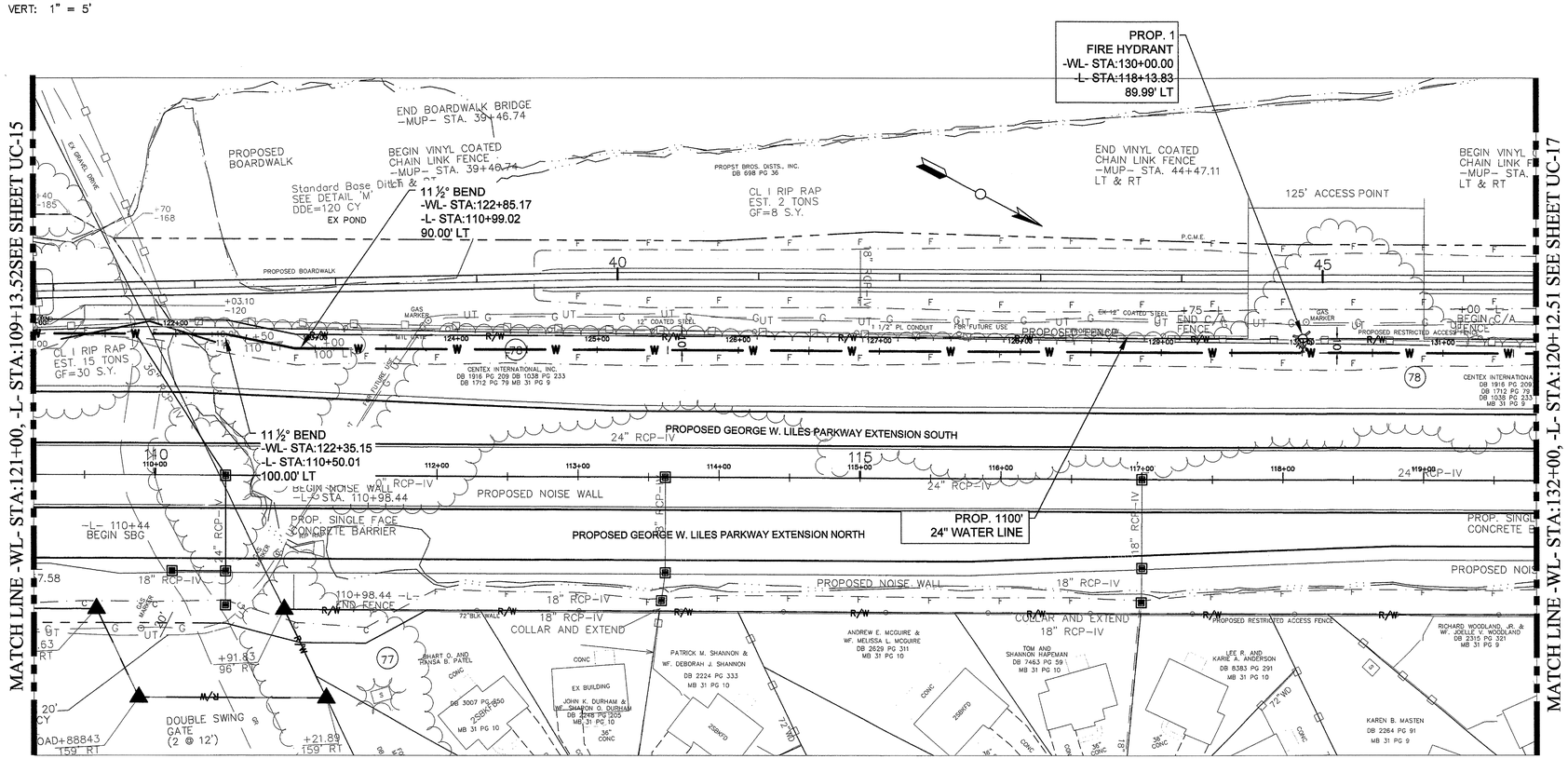
Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

SCALE: 1" = 50'

G:\Engineering Projects\Projects\2009\04-Georgia Lilies Pkg Eu\2009-004-R-23 Georgia Lilies 24inch Water Line.dwg Feb 05, 2013 - 1:13pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-17

DESIGNED BY: MSH	
DRAWN BY: BCC	
CHECKED BY: MSH	
APPROVED BY:	
DATE: 12/12/12	
REVISED:	

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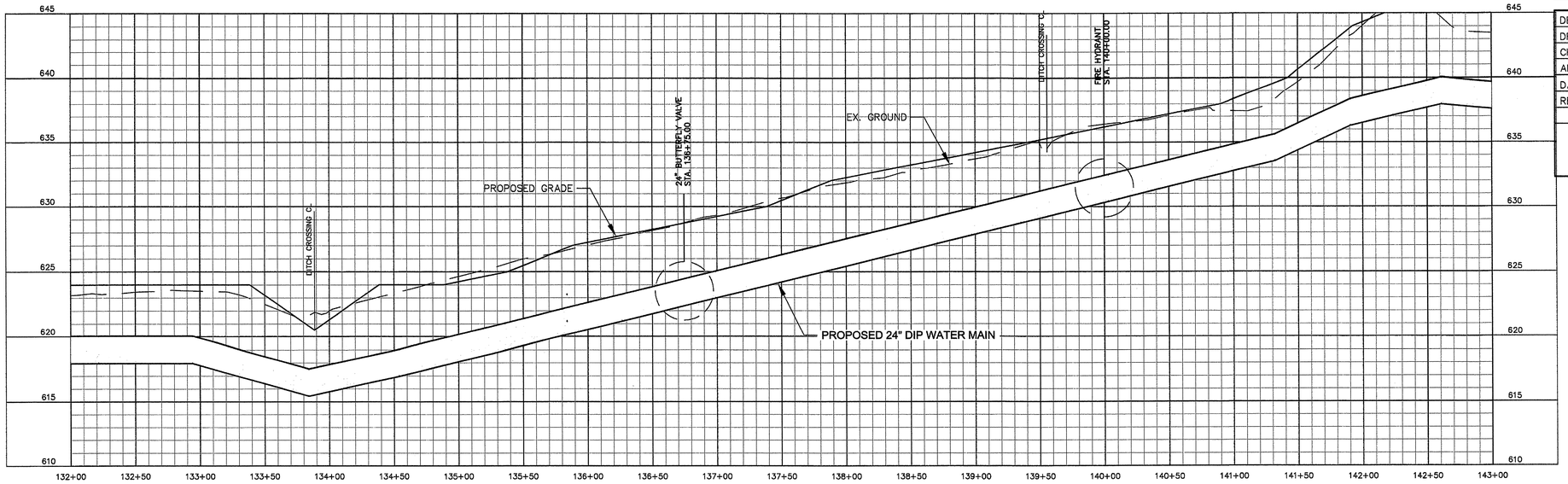
M. Sue Hyde 2/7/13

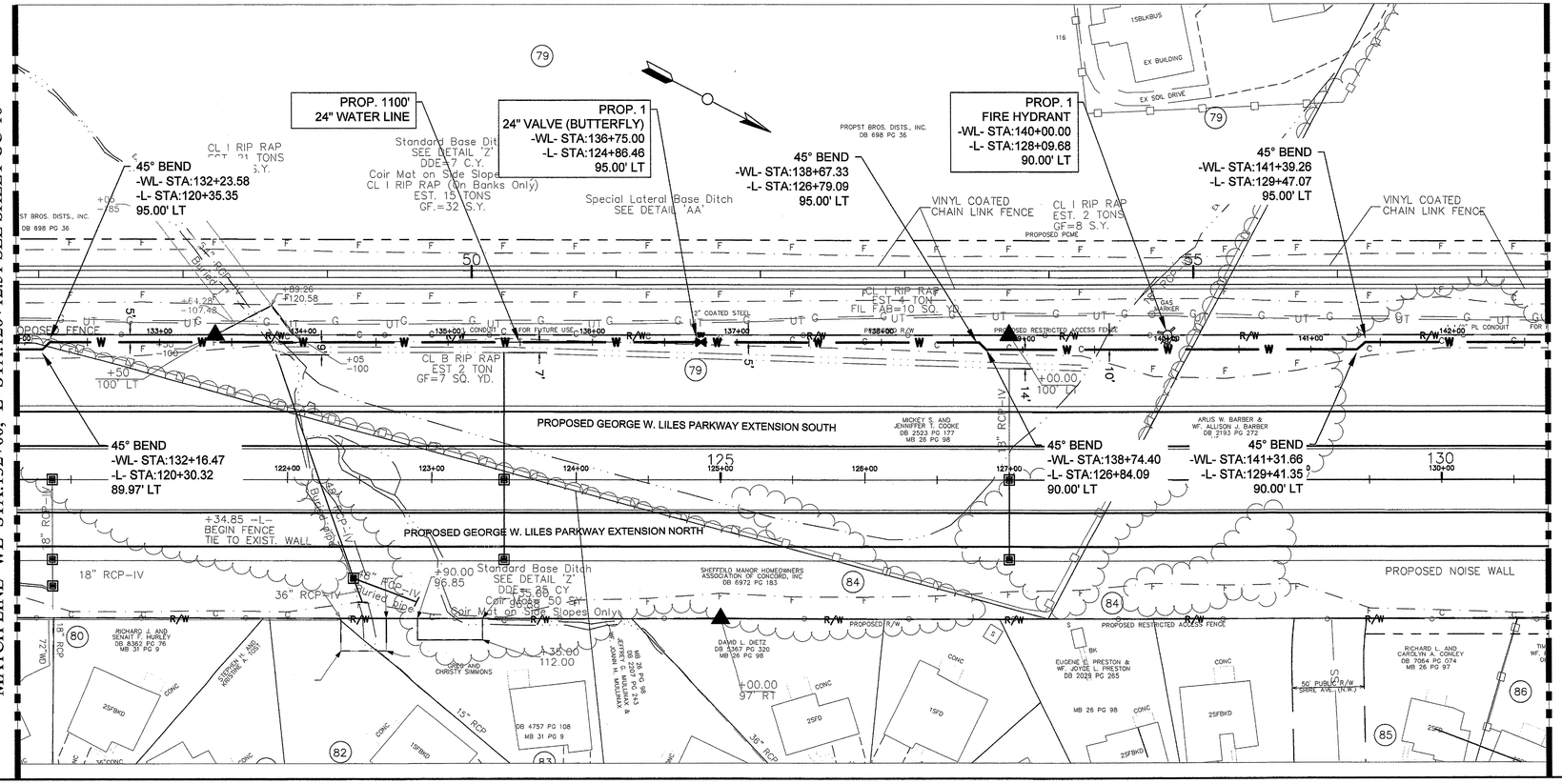
Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'

MATCH LINE -WL- STA:132+00, -L- STA:120+12.51 SEE SHEET UC-16



PLAN

SCALE: 1" = 50'

MATCH LINE -WL- STA:143+00, -L- STA:131+06.48 SEE SHEET UC-18

G:\Engineering Projects\Projects\2009\004 George Liles Pky Ext\2009-004 (R-2) George Liles 24inch Water Line.dwg Feb 05, 2013 - 1:14pm

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-18

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
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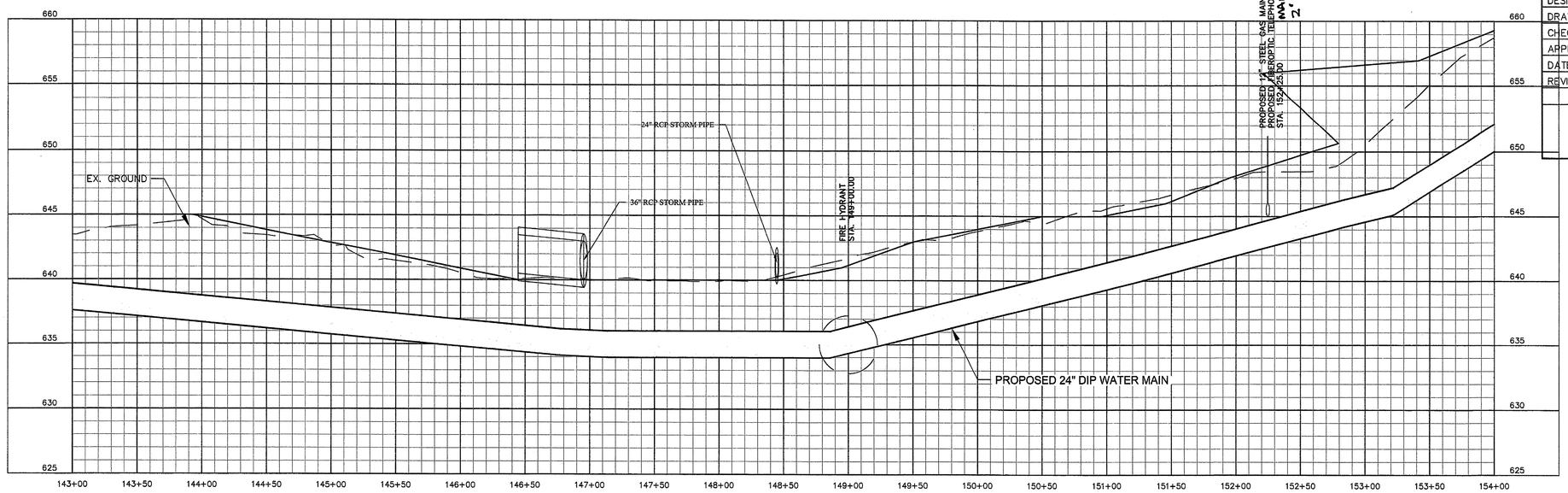
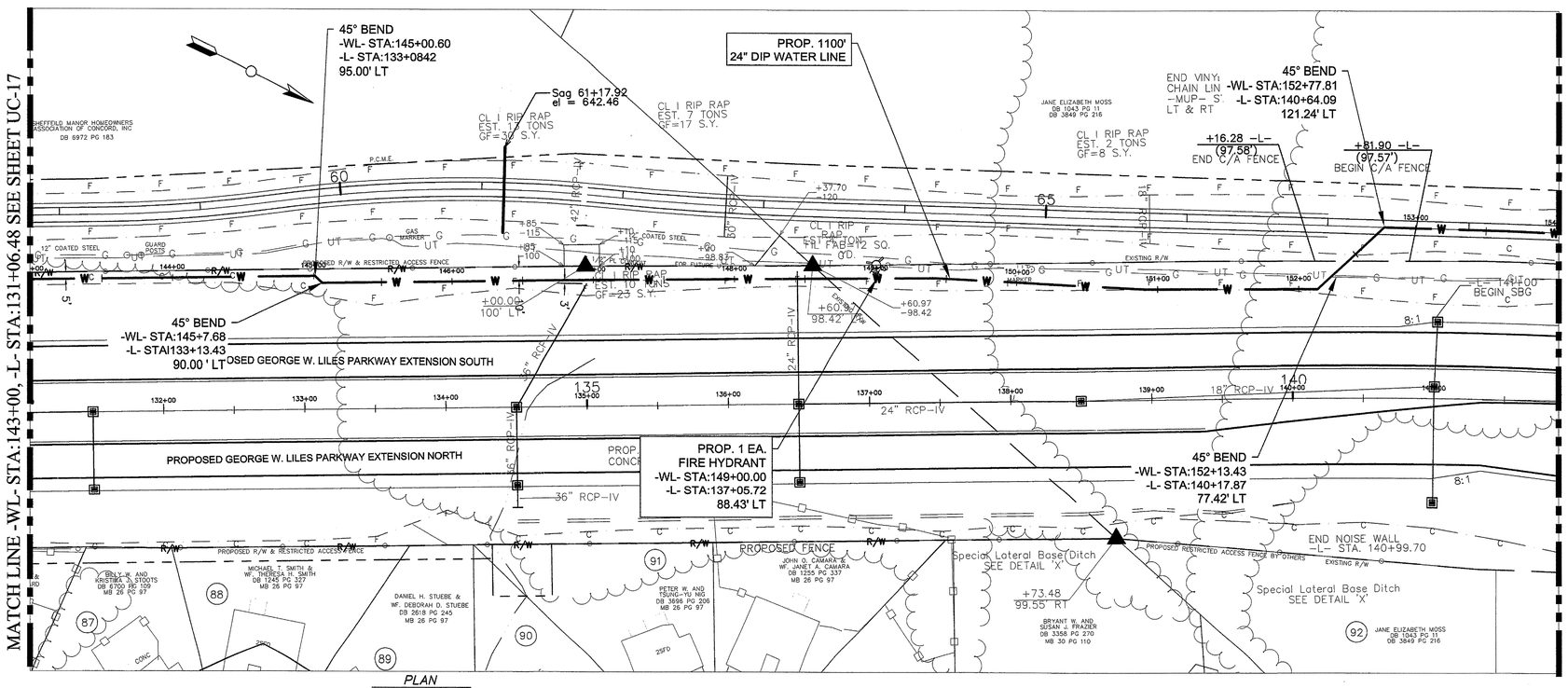
M. Sue Hyde 2/7/13
Engineer's Seal



PROFILE
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'

MATCH LINE -WL- STA:143+00, -L- STA:131+06.48 SEE SHEET UC-17



PLAN
SCALE: 1" = 50'

MATCH LINE -WL- STA:154+00, -L- STA:141+83.90 SEE SHEET UC-19

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-19

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

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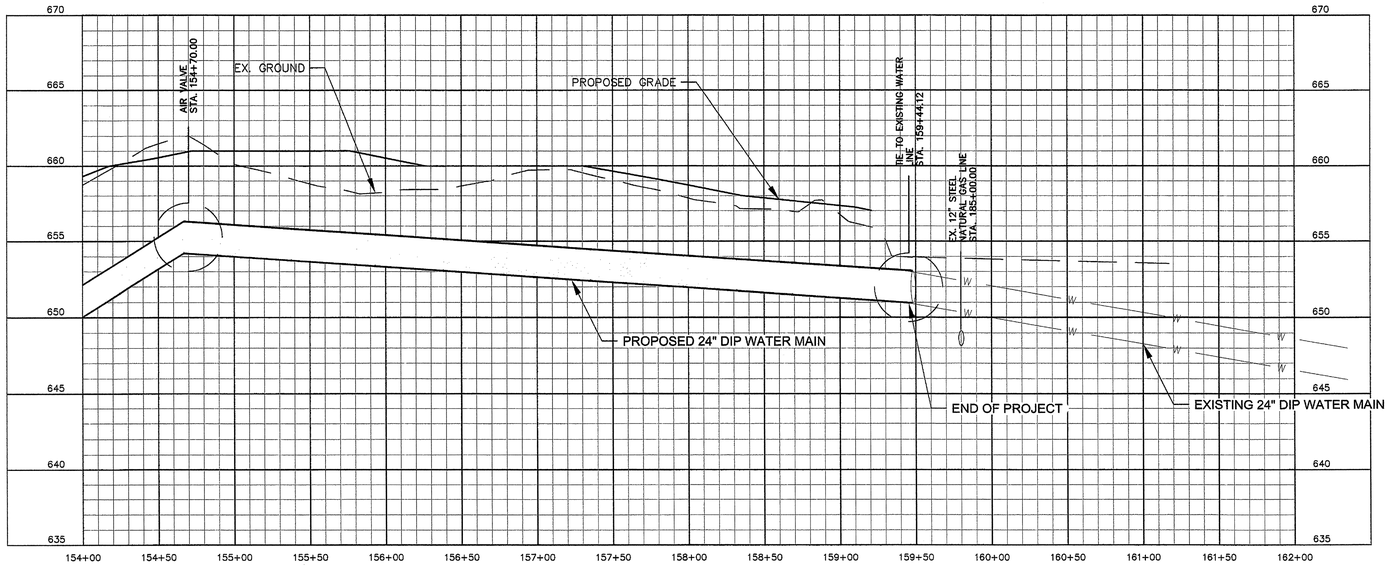
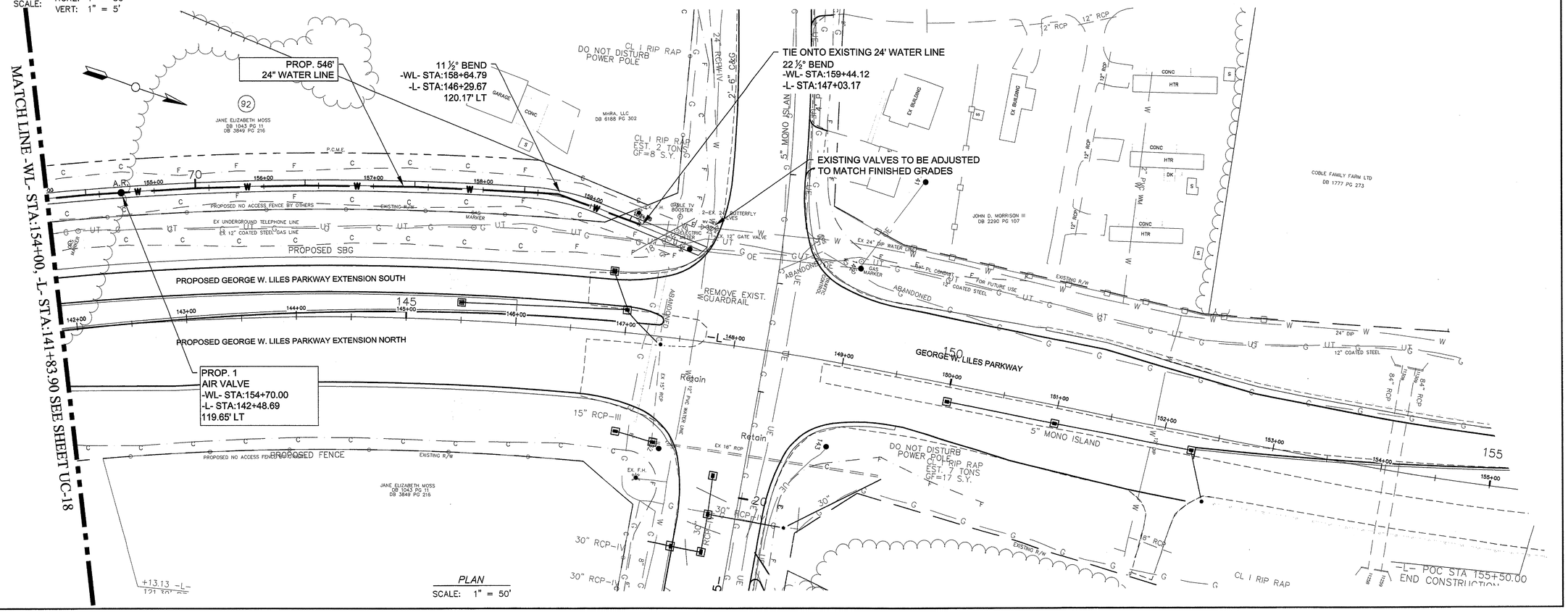
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal



PROFILE

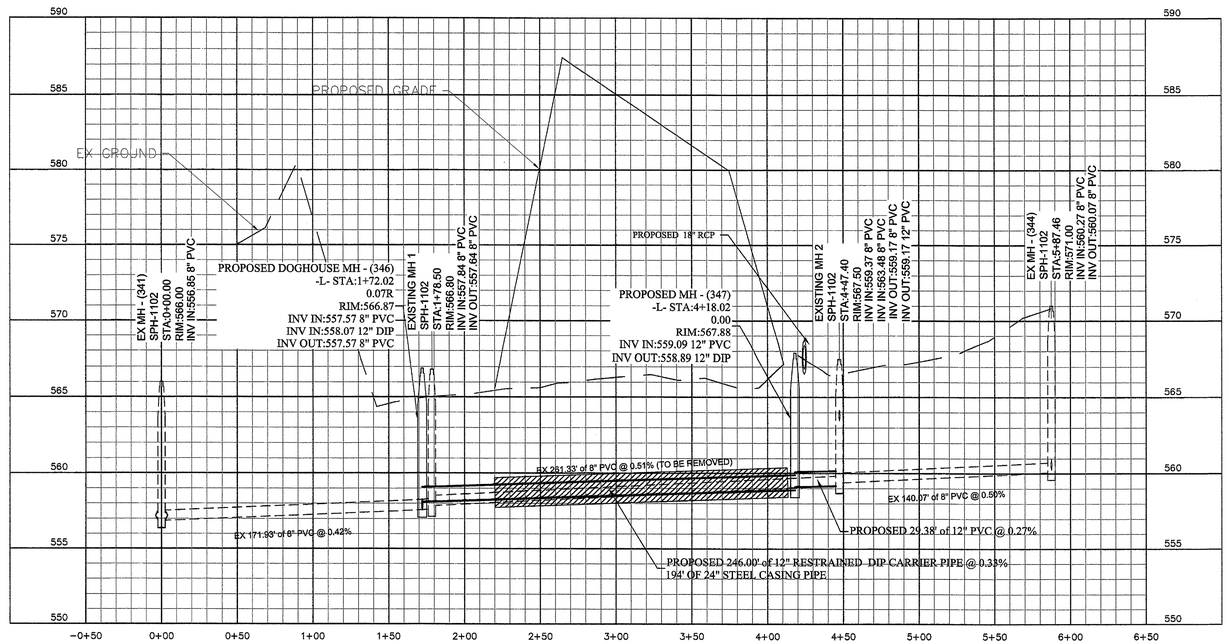
SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

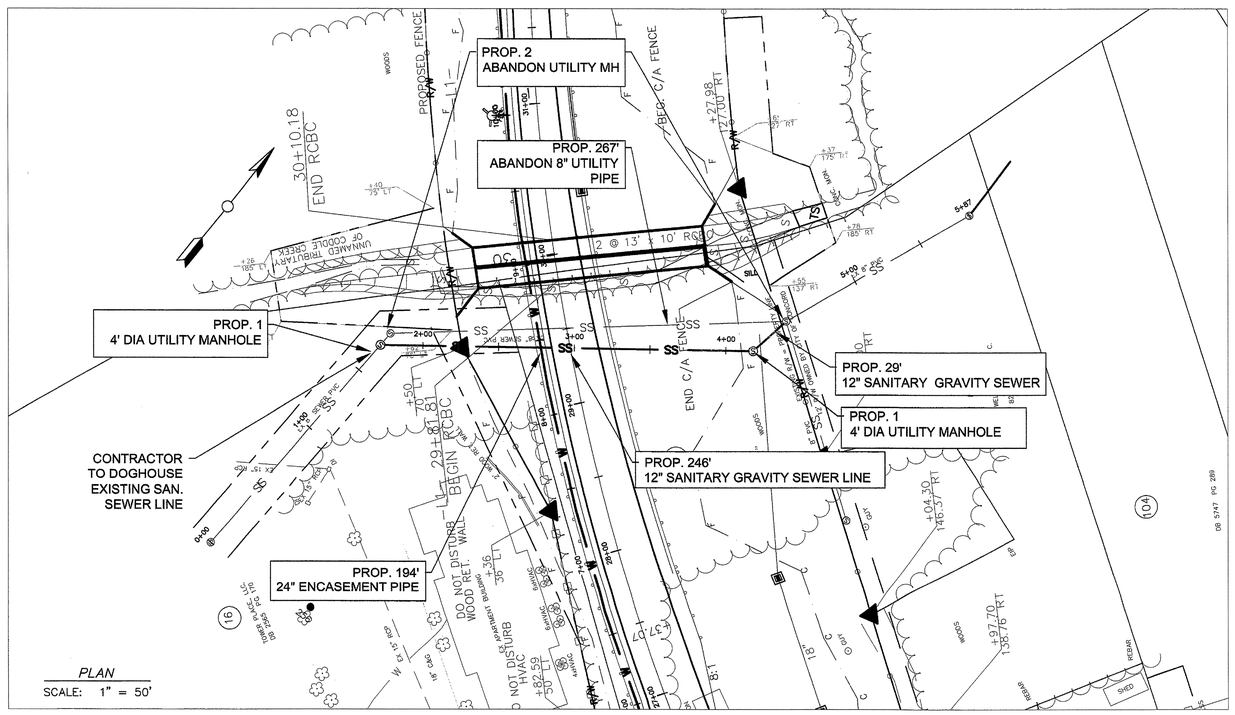
SCALE: 1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-20



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

SCALE: 1" = 50'

CONSTRUCTION SEQUENCING

1. BUILD NEW DOGHOUSE MANHOLE
2. LAY CASING PIPE
3. INSTALL CARRIER PIPE
4. INSTALL NEW MANHOLE
5. LAY PIPE TO EXISTING MANHOLE
6. BREAKOUT TOP OF NEW DOGHOUSE MANHOLE
7. MAKE CONNECTION TO EXISTING MANHOLE
8. PLUG OLD INVERT OUT PIPE
9. ABANDON EXISTING MANHOLE

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

UTILITIES UNIT
UTILITIES ENGINEERING SECTION
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

UTILITY CONSTRUCTION

Concord NORTH CAROLINA High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE
2/4/13

Engineer's Seal

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UC-21

DESIGNED BY: MSH
DRAWN BY: BCC
CHECKED BY: MSH
APPROVED BY:
DATE: 12/12/12
REVISED:

UTILITIES UNIT
UTILITIES ENGINEERING SECTION

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

UTILITY CONSTRUCTION

Concord NORTH CAROLINA High Performance Living

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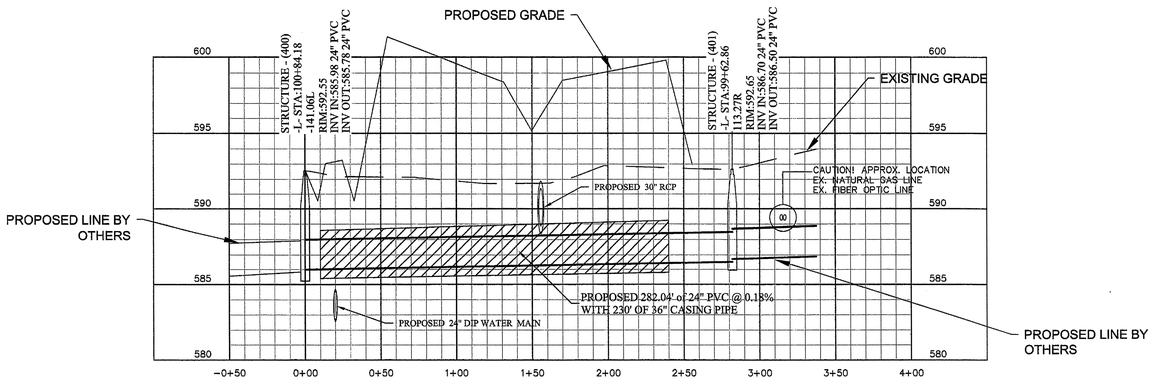
CONCORD N.C. 28026
(704) 920-5425

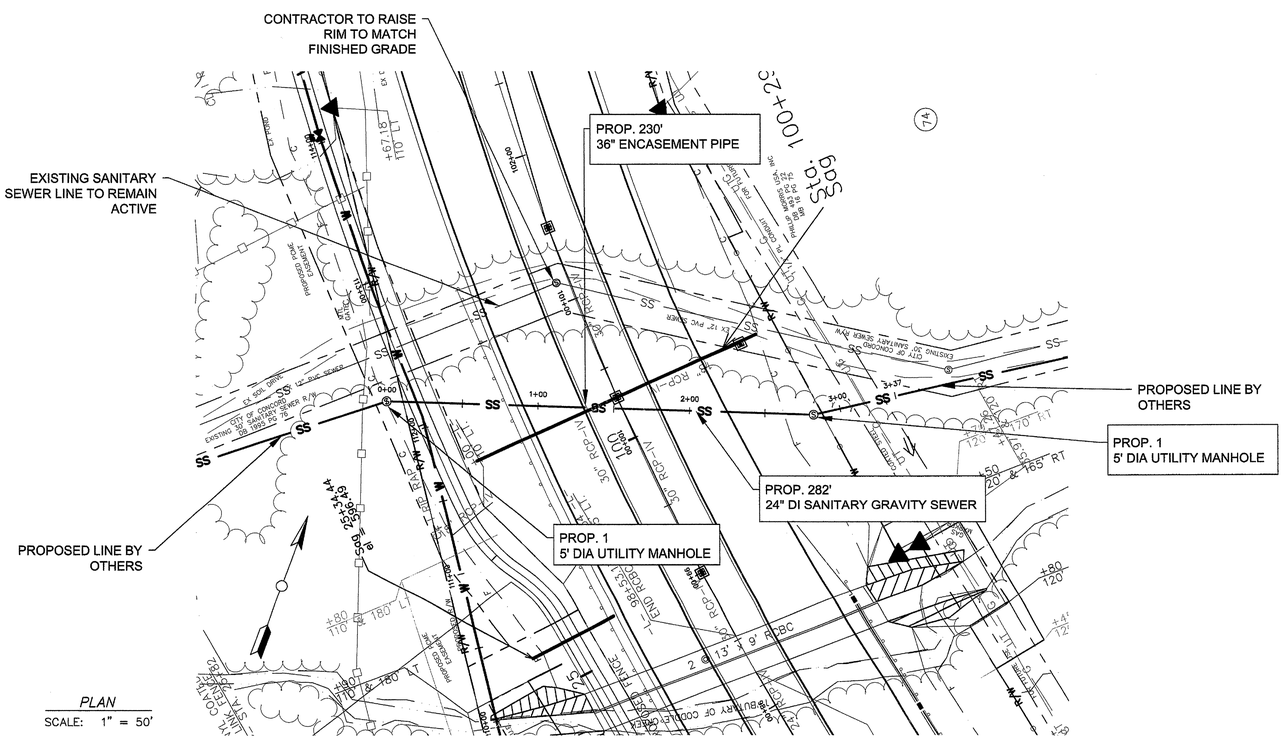
NORTH CAROLINA PROFESSIONAL SEAL 19754 ENGINEER M. SUE HYDE 2/7/13

Engineer's Seal



PROFILE

SCALE: HORZ: 1" = 50'
VERT: 1" = 5'



PLAN

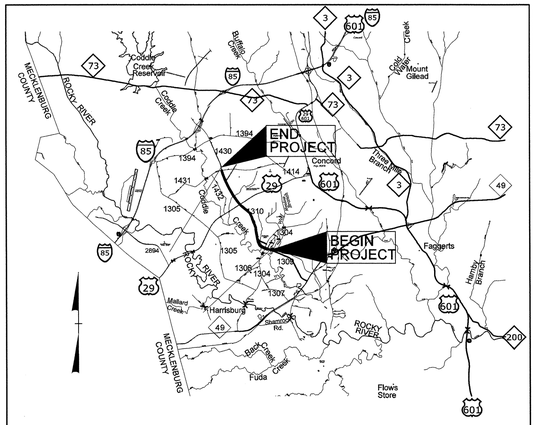
SCALE: 1" = 50'

TIP PROJECT: R-2246B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
R-2246B	UO-1

UTILITIES BY OTHERS PLANS
CABARRUS COUNTY

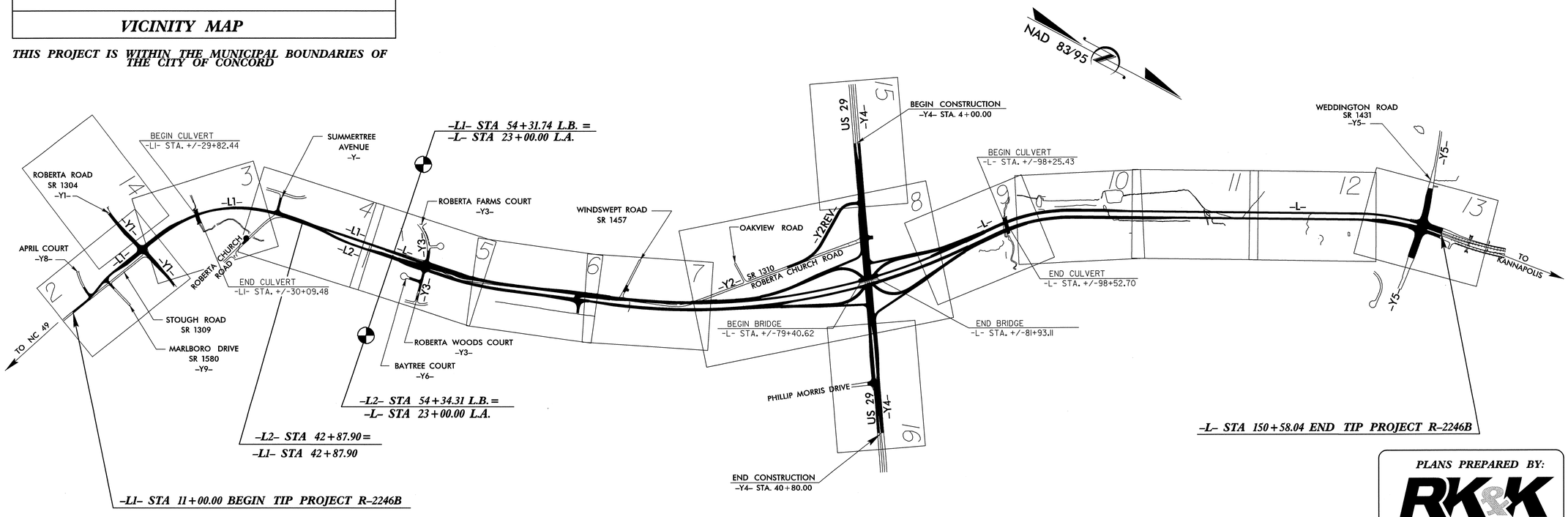


VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CONCORD

LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF R 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

TYPE OF WORK: POWER, GAS, TELEPHONE, AND CATV



NOTE: PART OF THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS AND THE OTHER PART IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

PLANS PREPARED BY:

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-16	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) DUKE ENERGY - POWER (DISTRIBUTION)
(2) WINDSTREAM - TELEPHONE
(3) CITY OF CONCORD - POWER (TRANSMISSION AND DISTRIBUTION)
(4) PSNC - NATURAL GAS
(5) TIME WARNER CABLE - CATV
(6) MCI - FIBER OPTIC COMMUNICATION
(7) CITY OF MONROE - GAS TRANSMISSION & FIBER OPTIC
(8) DUKE ENERGY - POWER (TRANSMISSION)
(9) NCDOT - ITS, FIBER OPTIC

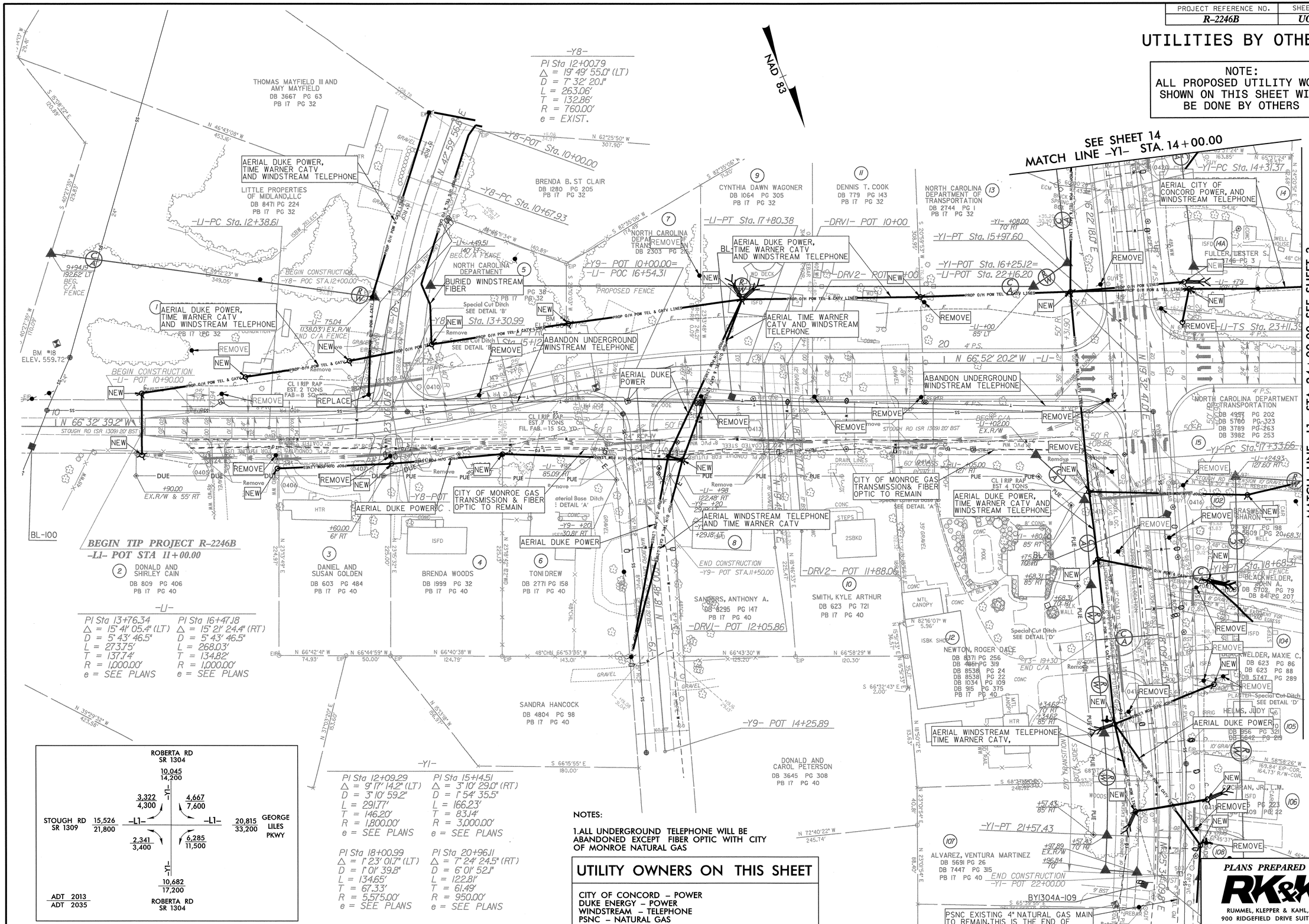
PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

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

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-2

UTILITIES BY OTHERS

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



-L1-

PI Sta 13+76.34	PI Sta 16+47.18
Δ = 15° 41' 05.4" (LT)	Δ = 15° 21' 24.4" (RT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"
L = 273.75'	L = 268.03'
T = 137.74'	T = 134.82'
R = 1,000.00'	R = 1,000.00'
e = SEE PLANS	e = SEE PLANS

-Y1-

PI Sta 12+09.29	PI Sta 15+14.51
Δ = 9° 17' 14.2" (LT)	Δ = 3° 10' 29.0" (RT)
D = 3° 10' 59.2"	D = 1° 54' 35.5"
L = 291.77'	L = 166.23'
T = 146.20'	T = 83.14'
R = 1,800.00'	R = 3,000.00'
e = SEE PLANS	e = SEE PLANS

PI Sta 18+00.99	PI Sta 20+96.11
Δ = 1° 23' 01.7" (LT)	Δ = 7° 24' 24.5" (RT)
D = 1° 01' 39.8"	D = 6° 01' 52.1"
L = 134.65'	L = 122.81'
T = 67.33'	T = 61.49'
R = 5,575.00'	R = 950.00'
e = SEE PLANS	e = SEE PLANS

NOTES:

1. ALL UNDERGROUND TELEPHONE WILL BE ABANDONED EXCEPT FIBER OPTIC WITH CITY OF MONROE NATURAL GAS

UTILITY OWNERS ON THIS SHEET

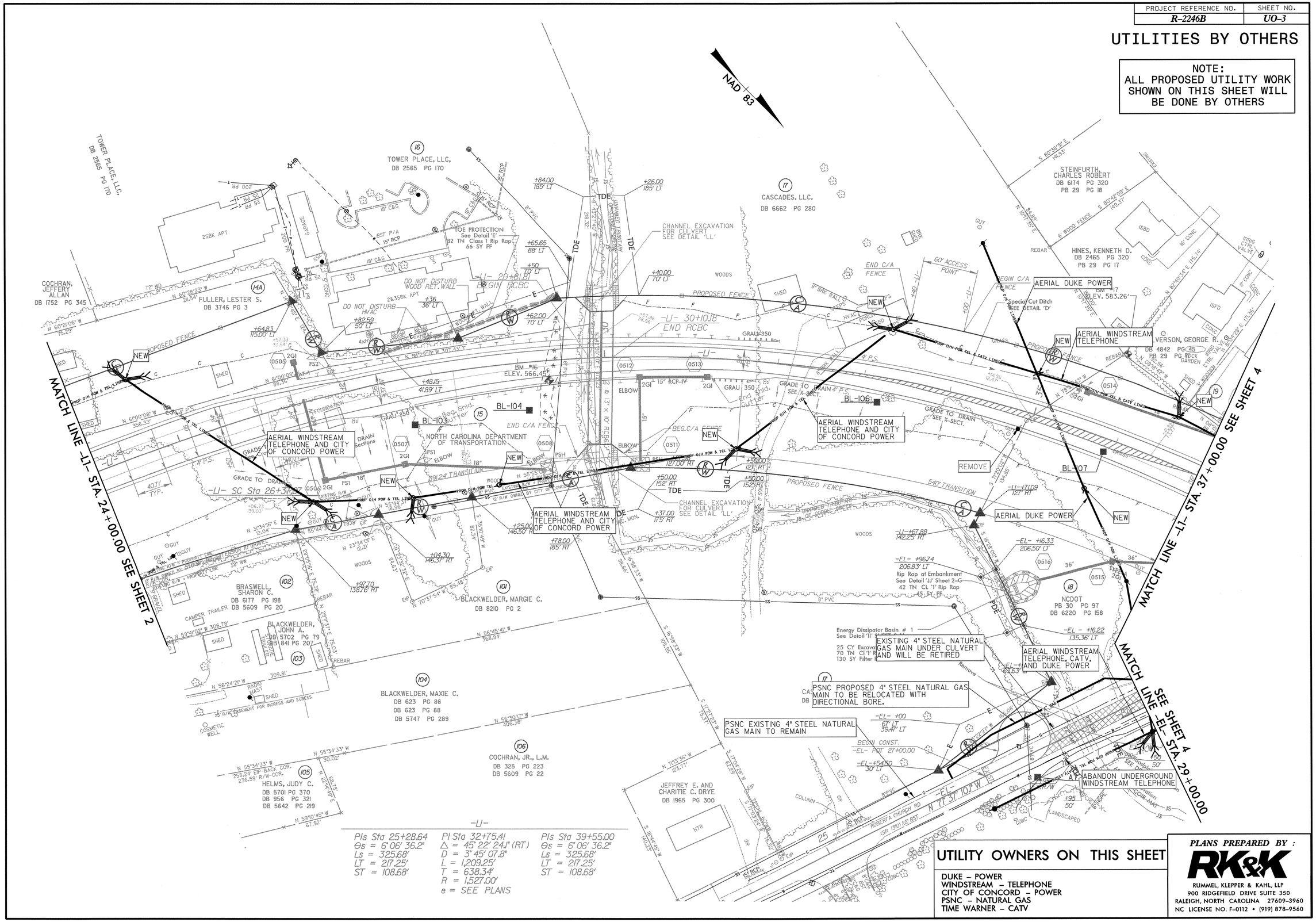
CITY OF CONCORD – POWER
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
PSNC – NATURAL GAS
TIME WARNER – CATV
CITY OF MONROE – GAS TRANSMISSION & FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-3

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

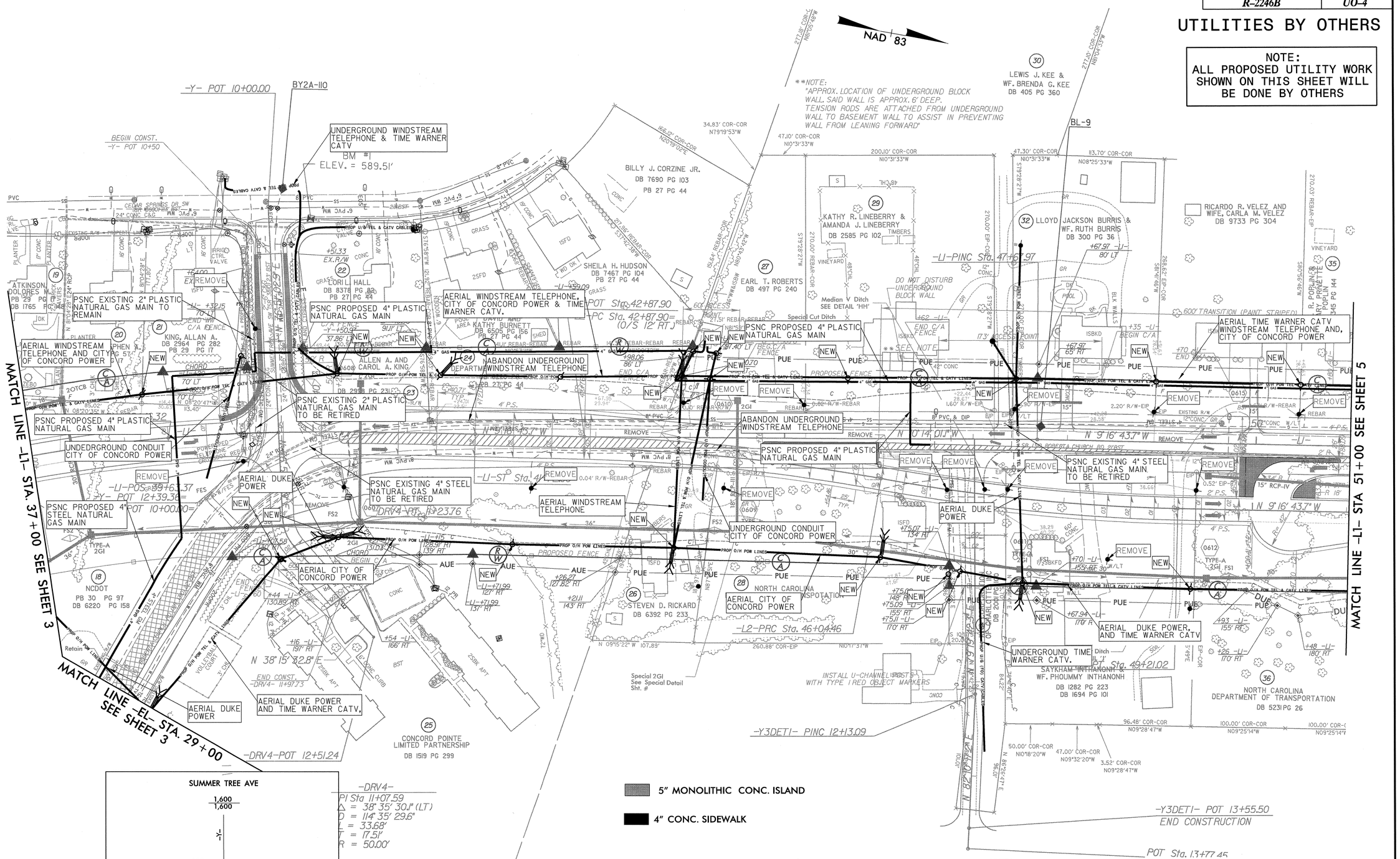
DUKE – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
PSNC – NATURAL GAS
TIME WARNER – CATV

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-4

UTILITIES BY OTHERS

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



NOTES:

1. ALL UNDERGROUND TELEPHONE WILL BE ABANDONED.

UTILITY OWNERS ON THIS SHEET

DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
PSNC – NATURAL GAS
TIME WARNER – CATV

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

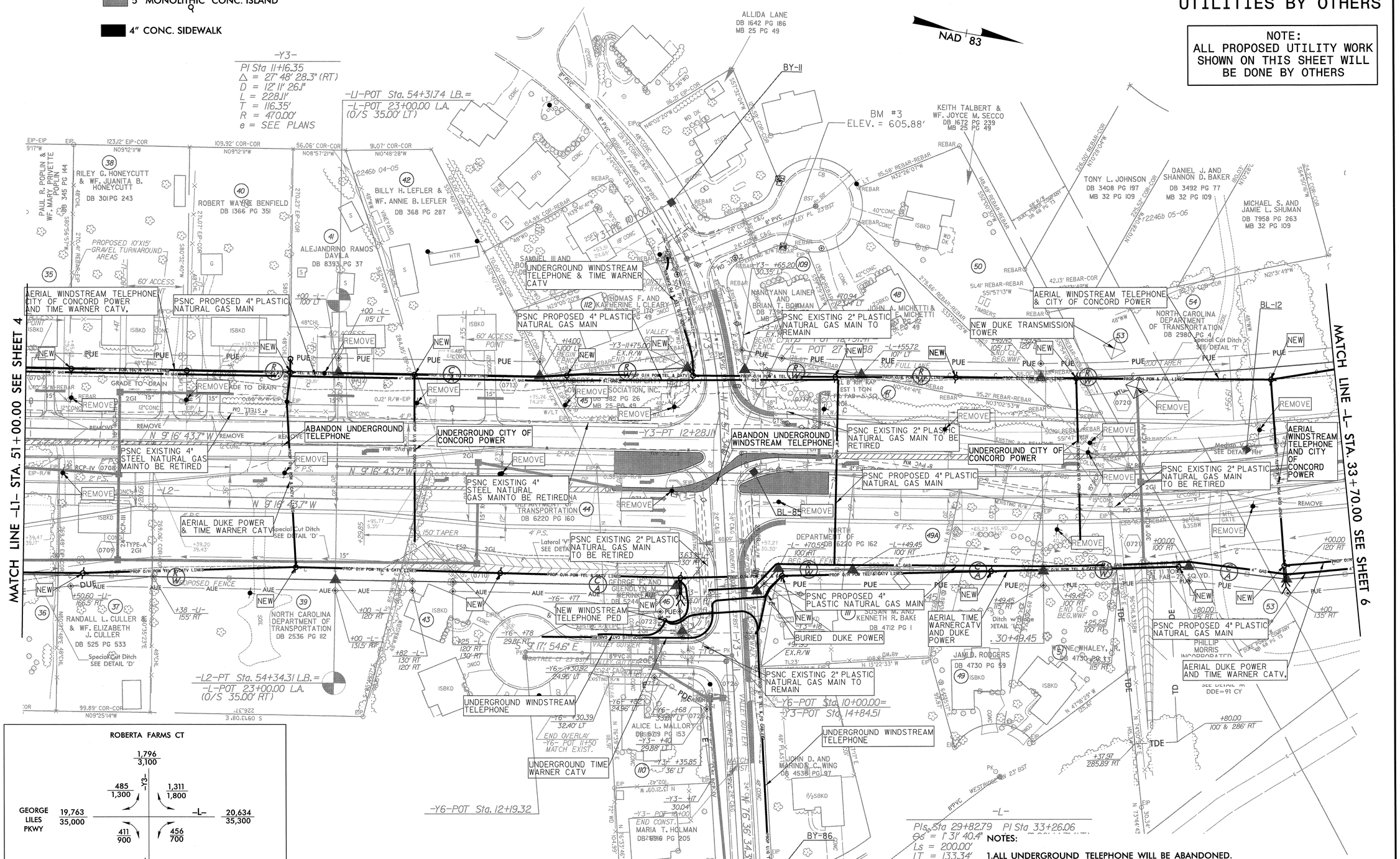
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-5

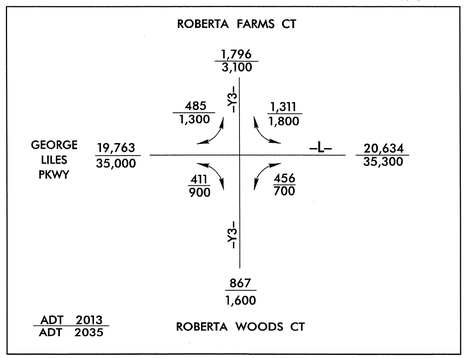
UTILITIES BY OTHERS

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

5" MONOLITHIC CONC. ISLAND

4" CONC. SIDEWALK





NOTES:

1. ALL UNDERGROUND TELEPHONE WILL BE ABANDONED.

UTILITY OWNERS ON THIS SHEET

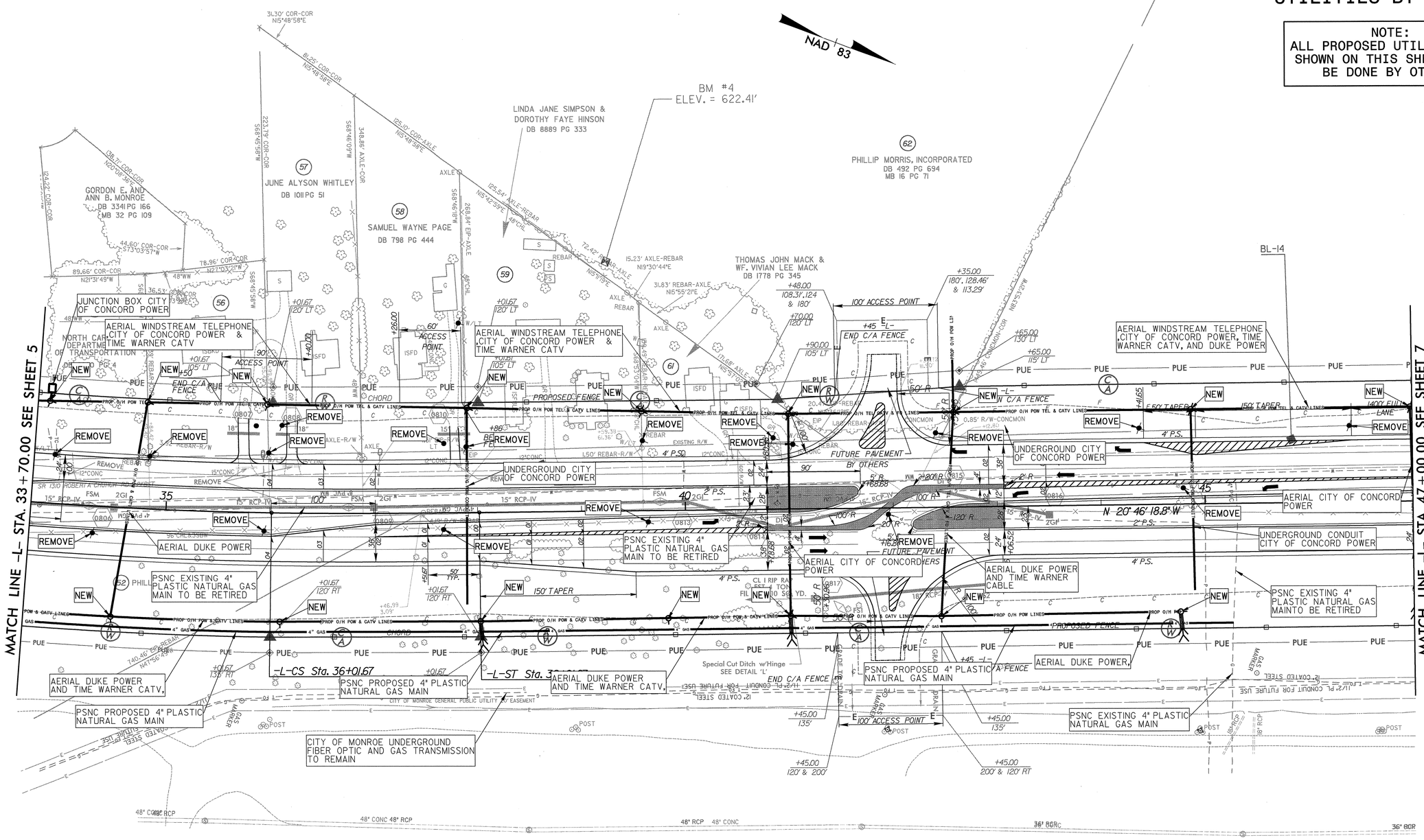
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
PSNC – NATURAL GAS
TIME WARNER – CATV

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-6

UTILITIES BY OTHERS

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



-L-

PI Sta 33+26.06	PIs Sta 36+68.34
Δ = 8° 26' 14.3" (LT)	Θs = 1° 31' 40.4"
D = 1° 31' 40.4"	Ls = 200.00'
L = 552.22'	LT = 133.34'
T = 276.61'	ST = 66.67'
R = 3,750.00'	
e = SEE PLANS	

(60)
PHILLIP MORRIS USA, INC
DB 493 PG 26
DB 538 PG 81
DB 538 PG 79
MB 16 PG 71

5" MONOLITHIC CONC. ISLAND

UTILITY OWNERS ON THIS SHEET

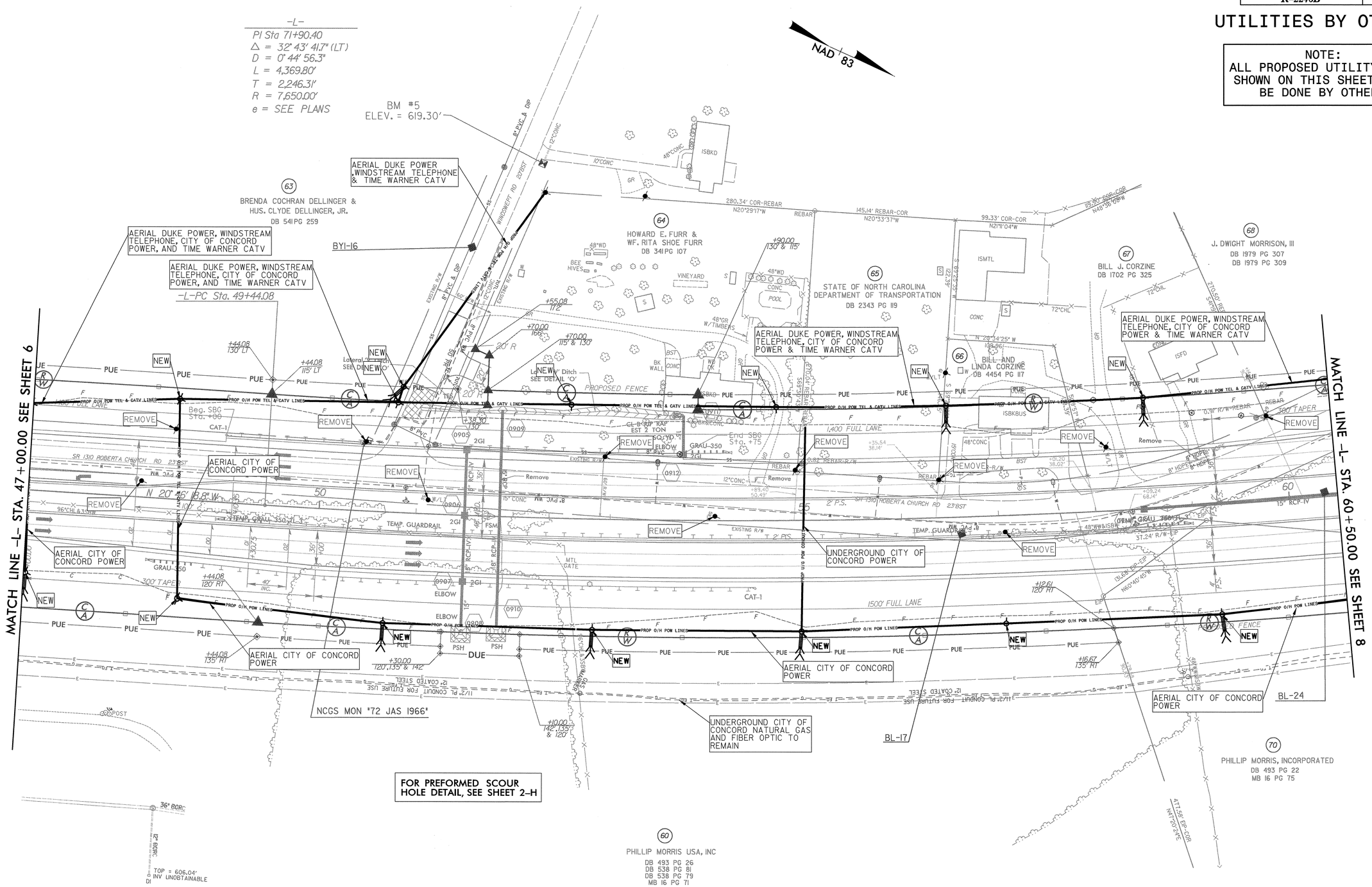
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
PSNC – NATURAL GAS
TIME WARNER – CATV
CITY OF MONROE – GAS TRANSMISSION & FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-7

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

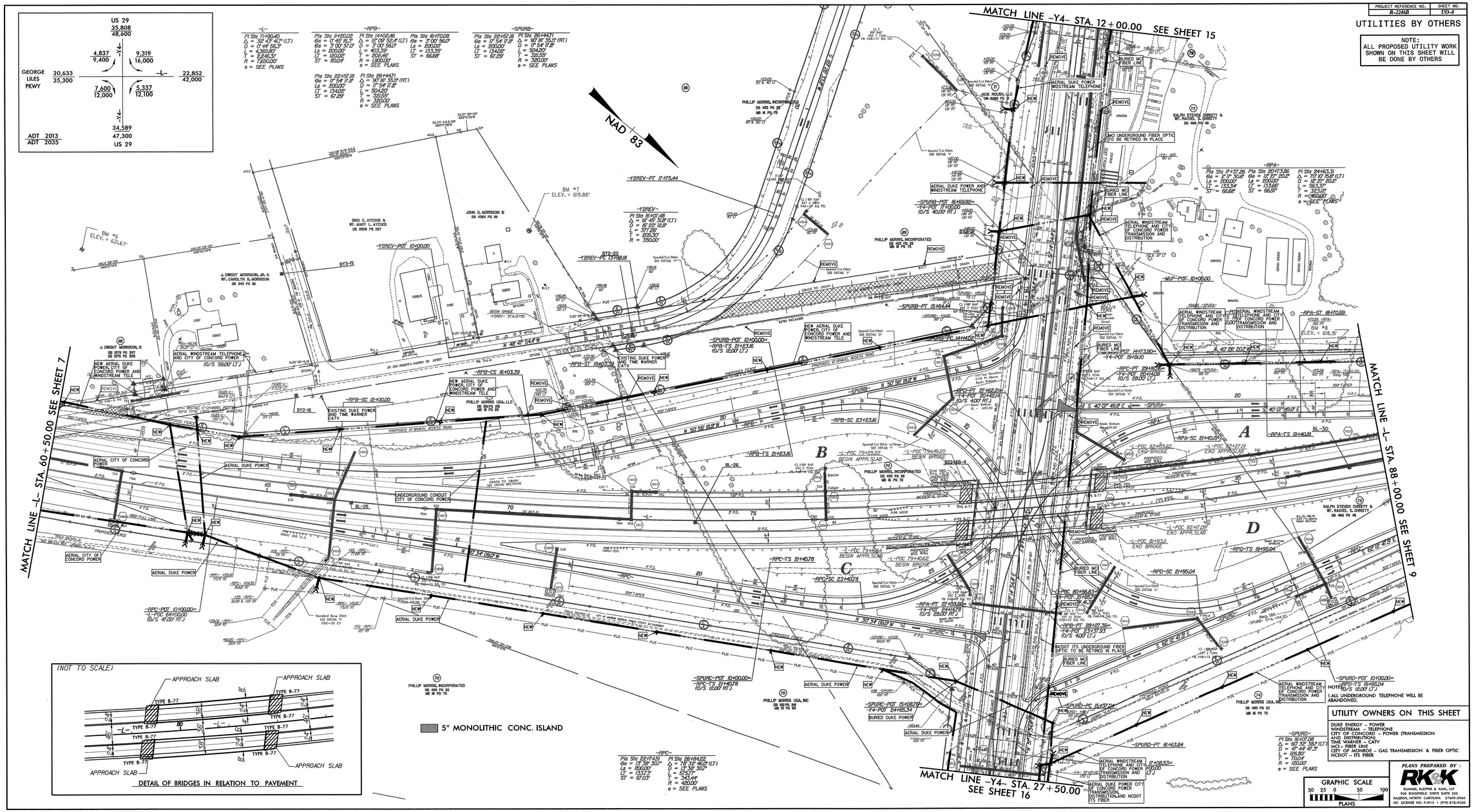
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
TIME WARNER – CATV
CITY OF MONROE – GAS TRANSMISSION & FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2248	TU-1

UTILITIES BY OTHERS

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



NOTES:
1. ALL UNDERGROUND TELEPHONE WILL BE ABANDONED.

UTILITY OWNERS ON THIS SHEET

DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER (TRANSMISSION AND DISTRIBUTION)
TIME WARNER CABLE – CATV
MCI – FIBER ONLY
CITY OF MONROE – GAS TRANSMISSION & FIBER OPTIC
NCDOT – ITS FIBER

GRAPHIC SCALE
50 25 0 50 100
PLANS

PLANS PREPARED BY:
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-9

UTILITIES BY OTHERS

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

-RPA-

PI Sta 15+66.23
Δ = 4° 47' 10.4" (RT)
D = 2° 17' 30.6"
L = 208.84'
T = 104.48'
R = 2,500.00'
e = SEE PLANS

Pls Sta 13+95.09
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

-MUP-

PI Sta 15+49.67
Δ = 6° 51' 40.0" (LT)
D = 3° 10' 59.2"
L = 215.55'
T = 107.90'
R = 1,800.00'
e = 02

PI Sta 25+60.24
Δ = 26° 21' 46.7" (LT)
D = 57° 17' 44.8"
L = 46.01'
T = 23.42'
R = 100.00'
e = 02

PI Sta 23+16.86
Δ = 33° 08' 27.0" (RT)
D = 57° 17' 44.8"
L = 57.84'
T = 29.76'
R = 100.00'
e = 02

PI Sta 26+11.00
Δ = 31° 27' 19.2" (RT)
D = 57° 17' 44.8"
L = 54.90'
T = 28.16'
R = 100.00'
e = 02

PI Sta 23+77.52
Δ = 36° 05' 14.8" (LT)
D = 57° 17' 44.8"
L = 62.98'
T = 32.58'
R = 100.00'

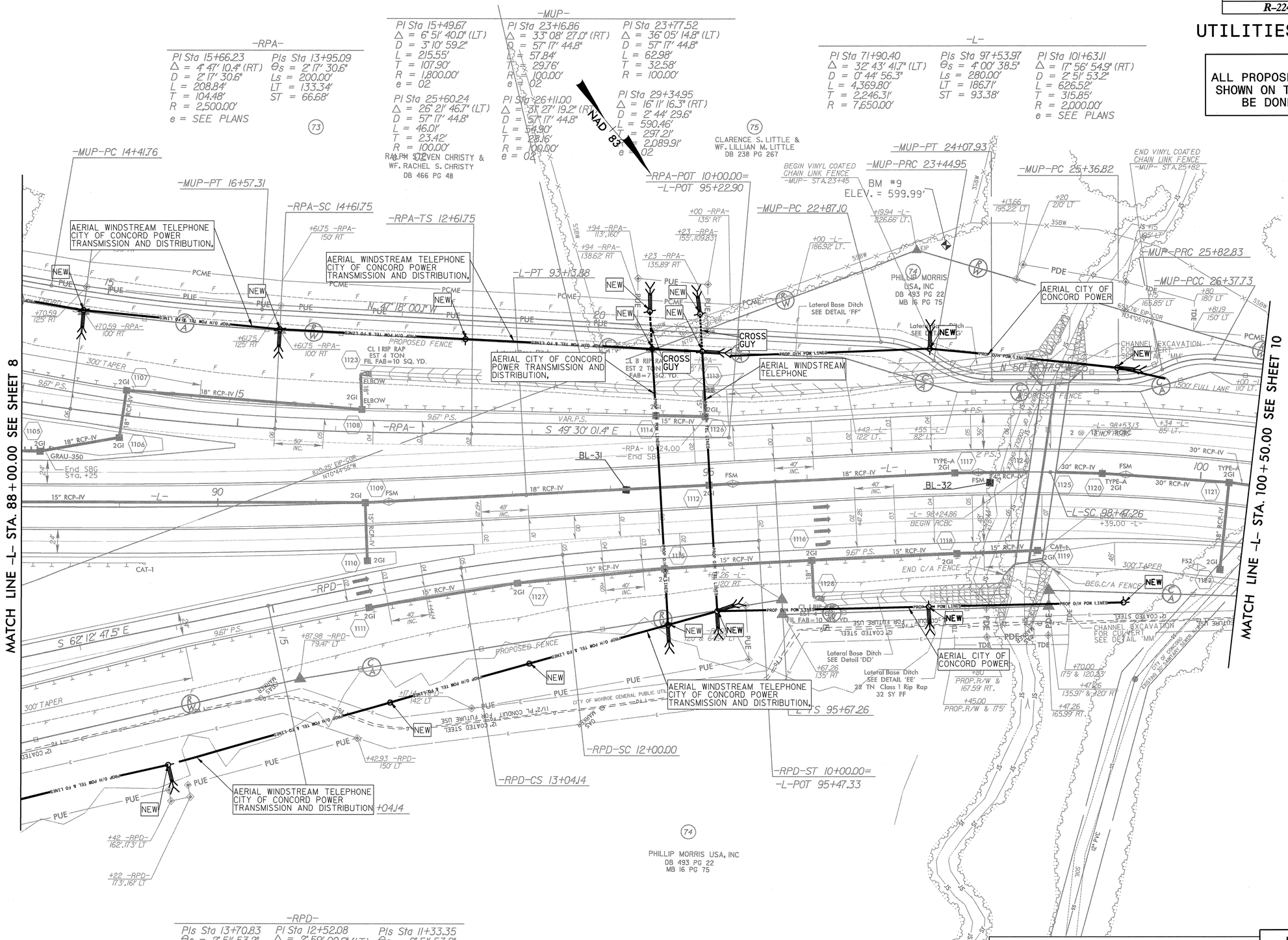
PI Sta 29+34.95
Δ = 16° 11' 16.3" (RT)
D = 2° 44' 29.6"
L = 590.46'
T = 297.21'
R = 2,089.91'
e = 02

-L-

PI Sta 71+90.40
Δ = 32° 43' 41.7" (LT)
D = 0° 44' 56.3"
L = 4,369.80'
T = 2,246.31'
R = 7,650.00'

Pls Sta 97+53.97
Θs = 4° 00' 38.5"
Ls = 280.00'
LT = 186.71'
ST = 93.38'

PI Sta 101+63.11
Δ = 17° 56' 54.9" (RT)
D = 2° 51' 53.2"
L = 626.52'
T = 315.85'
R = 2,000.00'
e = SEE PLANS



-RPD-

Pls Sta 13+70.83
Θs = 2° 51' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

PI Sta 12+52.08
Δ = 2° 59' 00.6" (LT)
D = 2° 51' 53.2"
L = 104.14'
T = 52.08'
R = 2,000.00'
e = SEE PLANS

Pls Sta 11+33.35
Θs = 2° 51' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

UTILITY OWNERS ON THIS SHEET

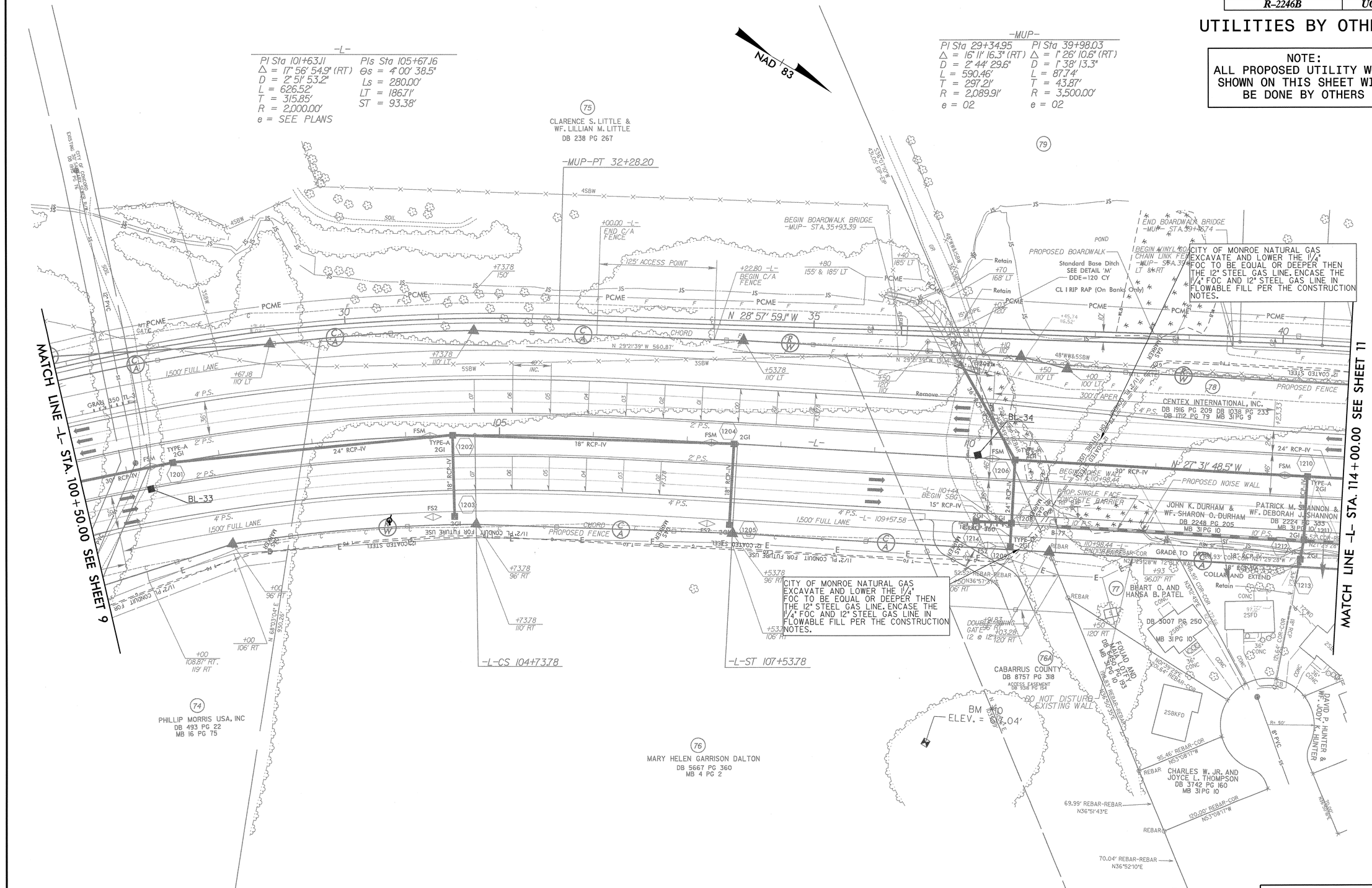
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER (TRANS & DIST)
CITY OF MONROE – GAS TRANSMISSION & FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-10

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

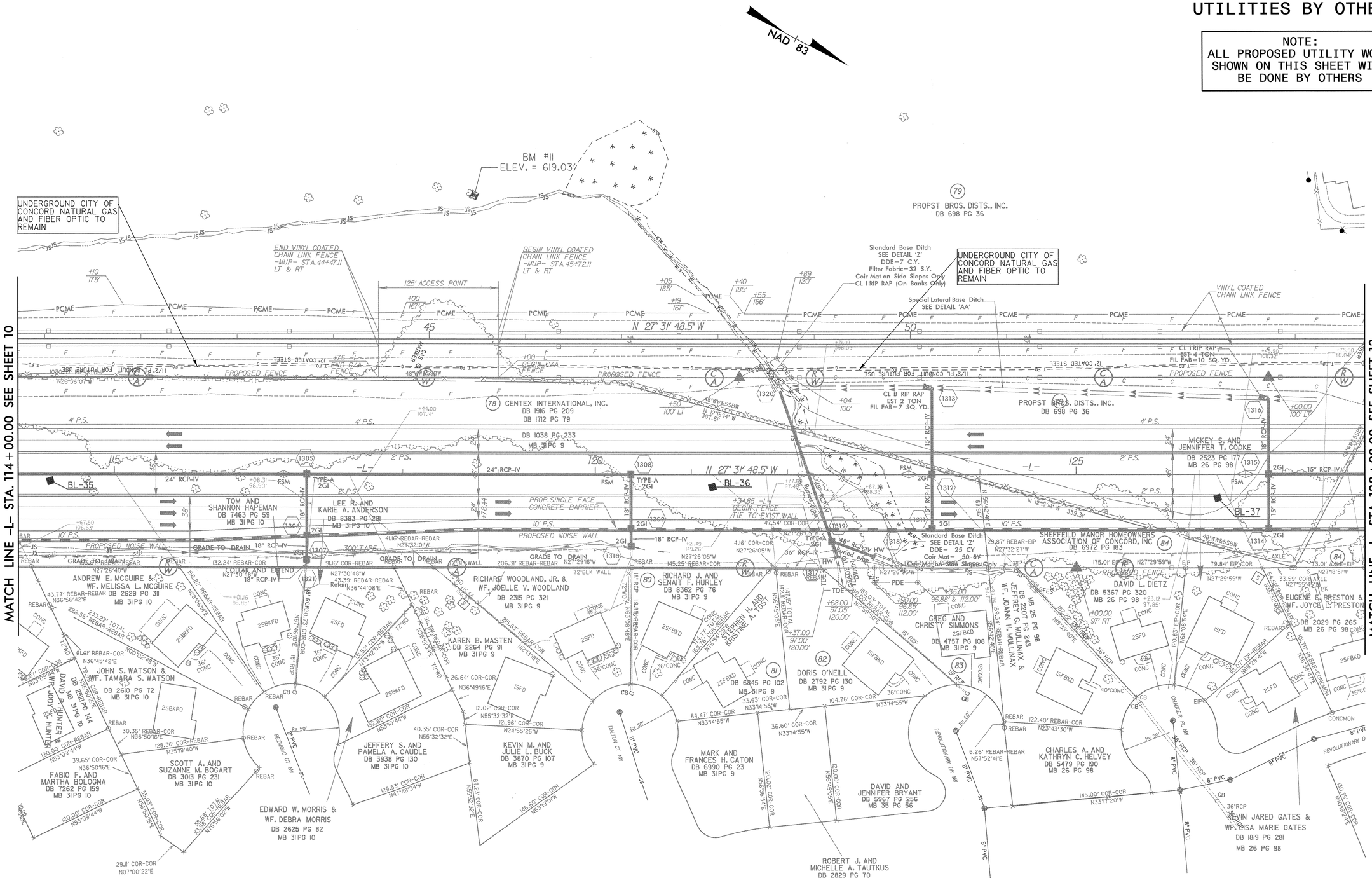
CITY OF MONROE – GAS TRANSMISSION& FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-11

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

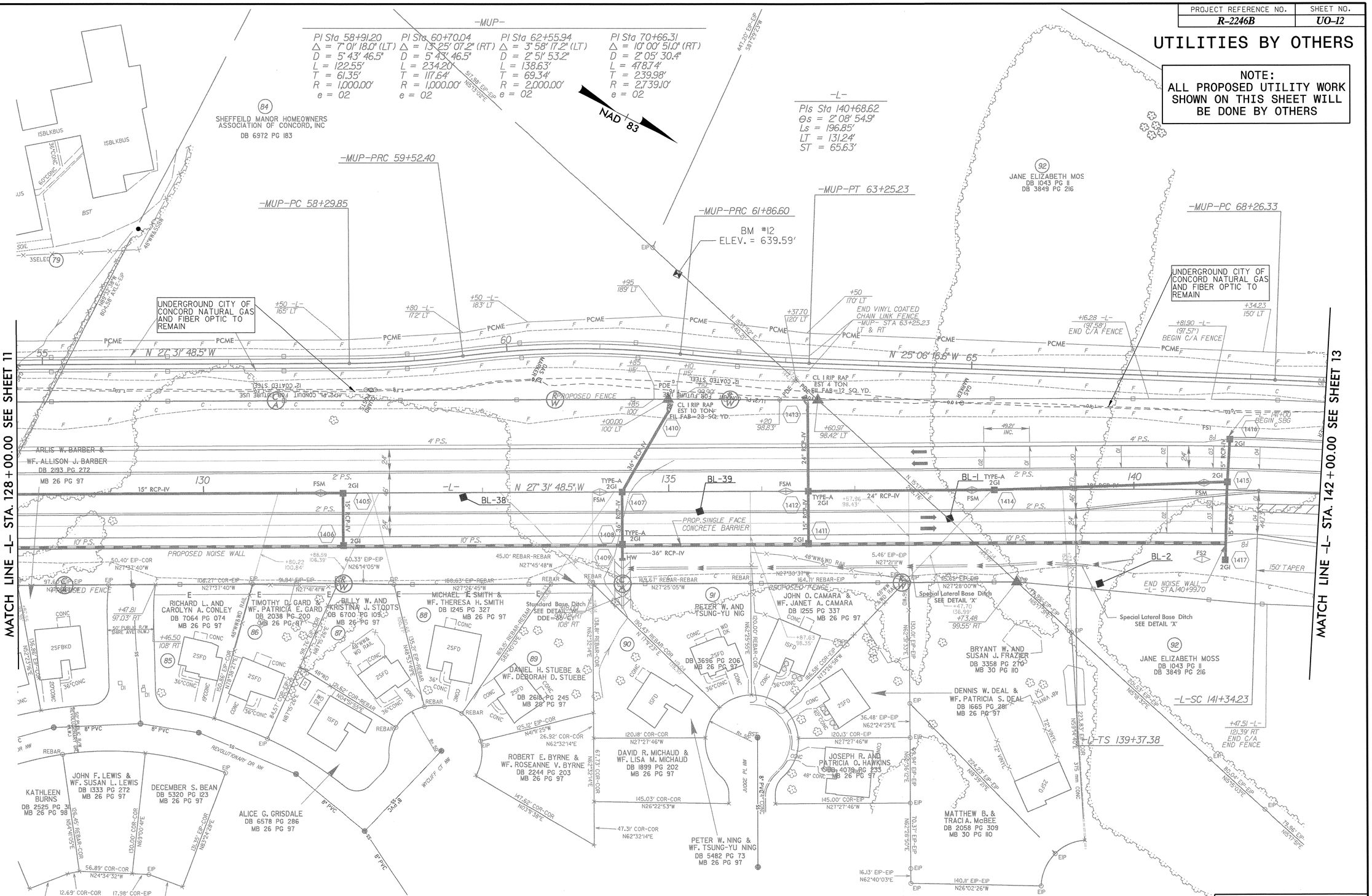
CITY OF MONROE GAS – NATURAL GAS
CITY OF MONROE – FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-12

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

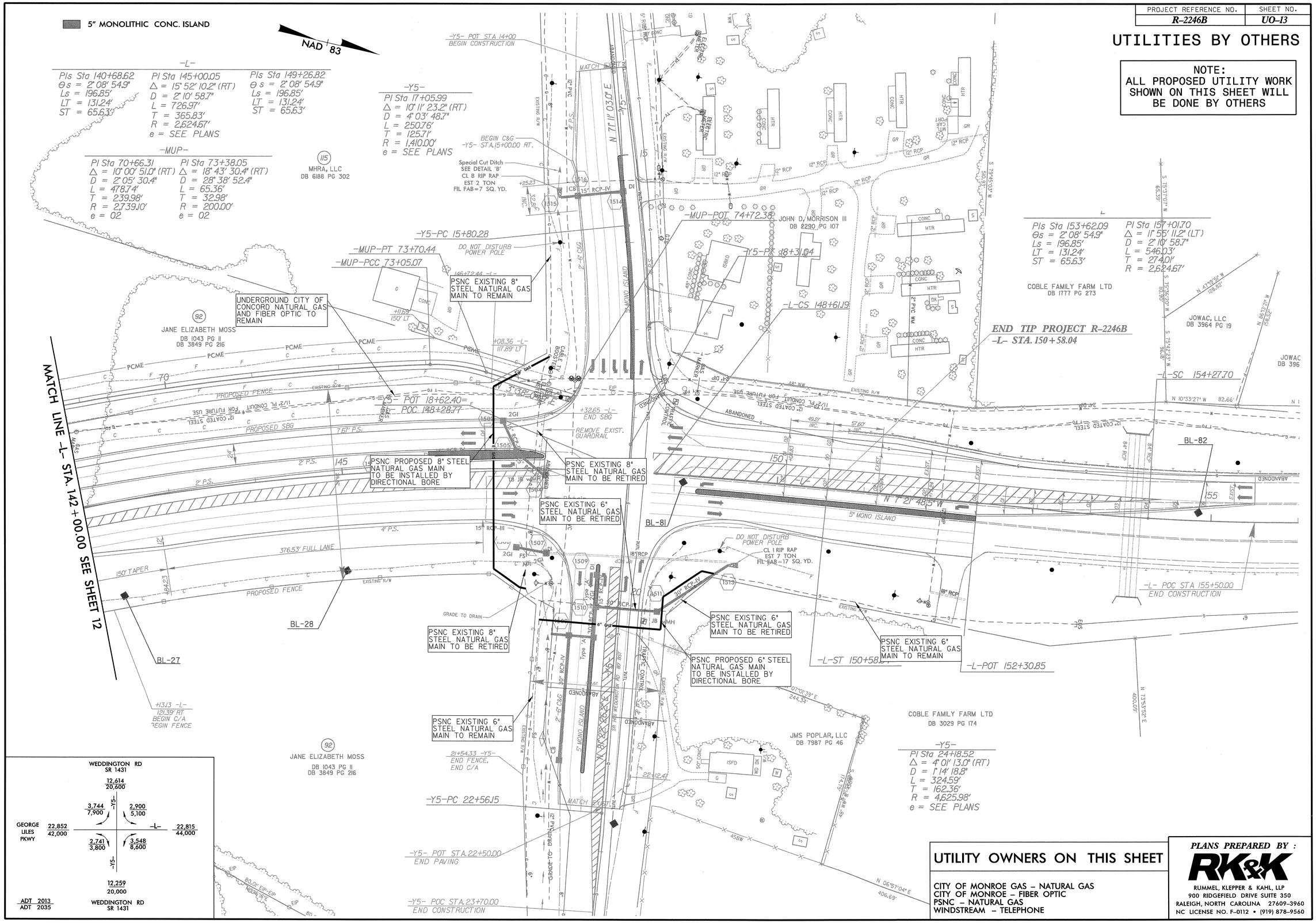
CITY OF MONROE GAS – NATURAL GAS
CITY OF MONROE – FIBER OPTIC

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-13

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

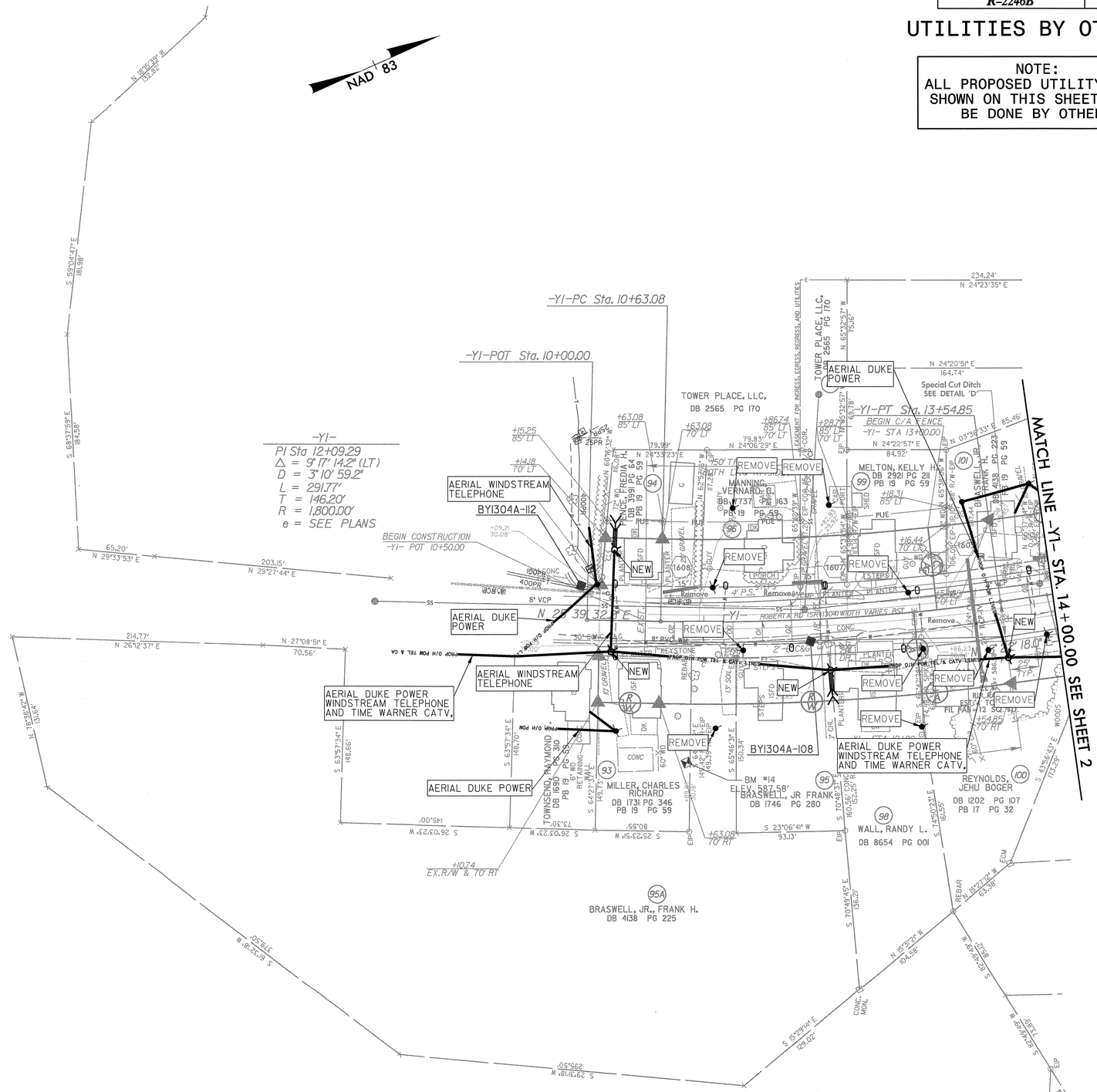
CITY OF MONROE GAS – NATURAL GAS
CITY OF MONROE – FIBER OPTIC
PSNC – NATURAL GAS
WINDSTREAM – TELEPHONE

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-14

UTILITIES BY OTHERS

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



UTILITY OWNERS ON THIS SHEET

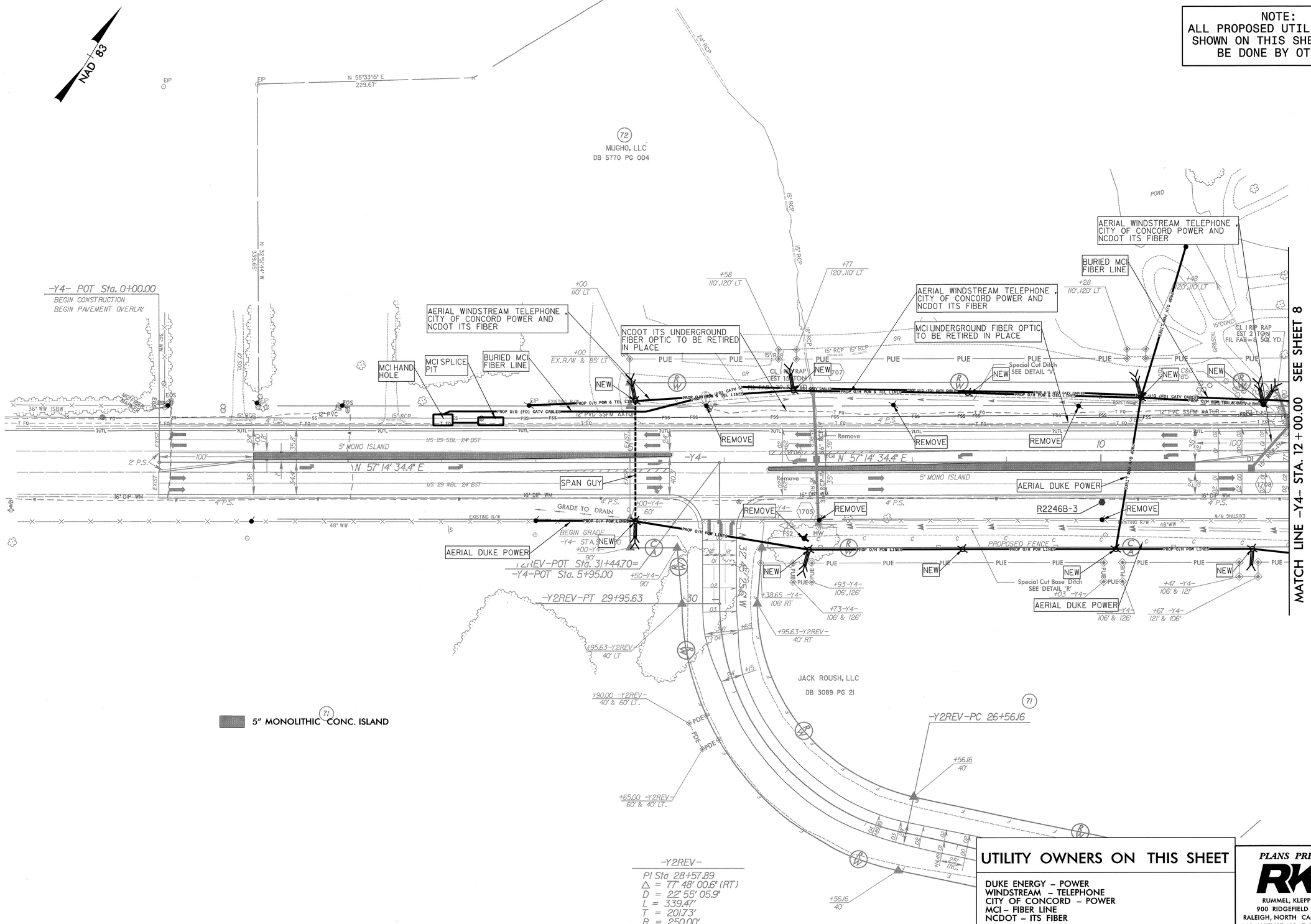
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
TIME WARNER – CATV

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-15

UTILITIES BY OTHERS

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



5" MONOLITHIC CONC. ISLAND

-Y2REV-
PI Sta 28+57.89
Δ = 77° 48' 00.6" (RT)
D = 22° 55' 05.9"
L = 339.41'
T = 201.73'
R = 250.00'

UTILITY OWNERS ON THIS SHEET

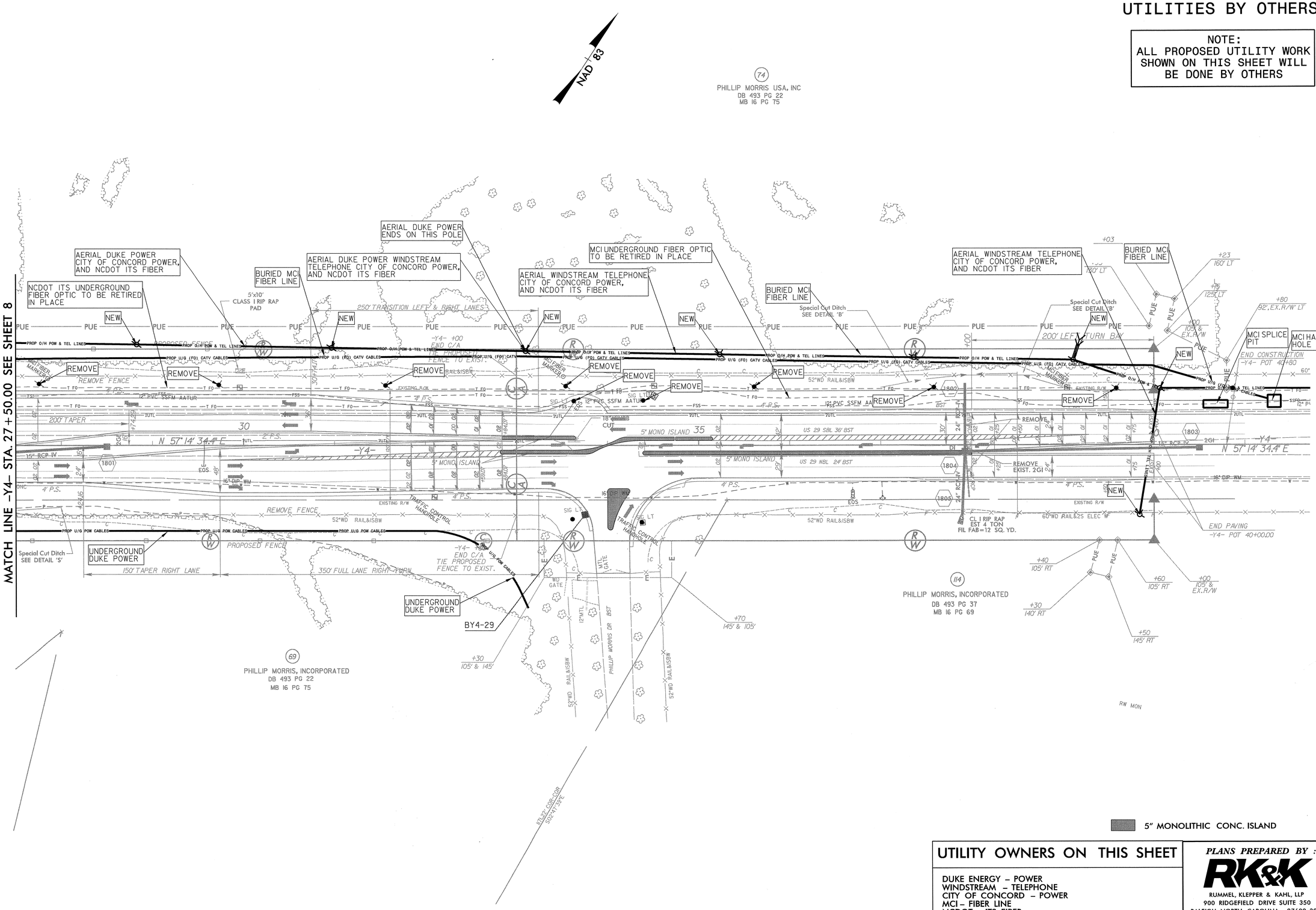
DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
MCI – FIBER LINE
NCDOT – ITS FIBER

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	UO-16

UTILITIES BY OTHERS

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



5" MONOLITHIC CONC. ISLAND

UTILITY OWNERS ON THIS SHEET

DUKE ENERGY – POWER
WINDSTREAM – TELEPHONE
CITY OF CONCORD – POWER
MCI – FIBER LINE
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