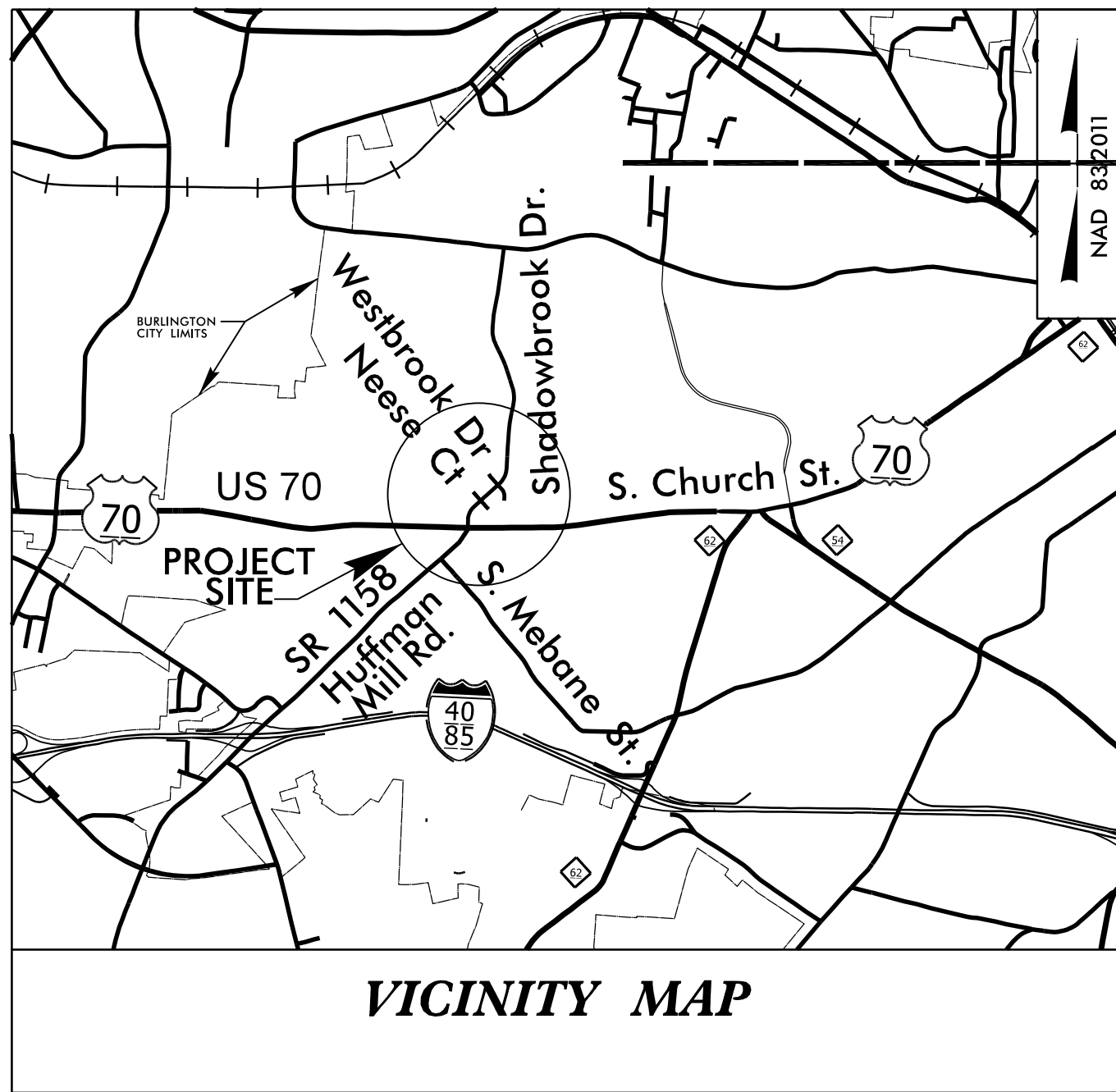


TIP PROJECT: U-6011



VICINITY MAP

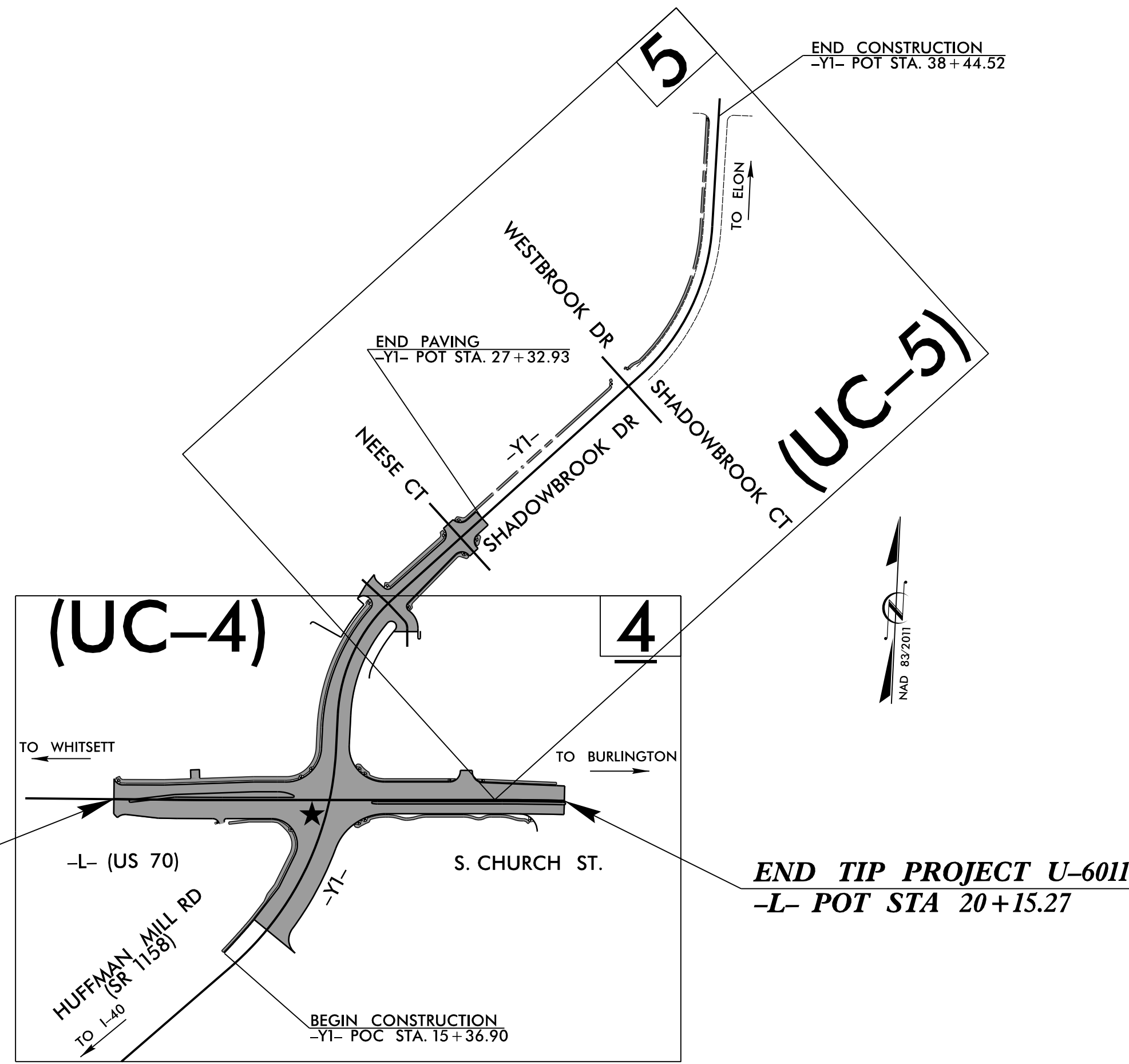
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS
ALAMANCE COUNTY**

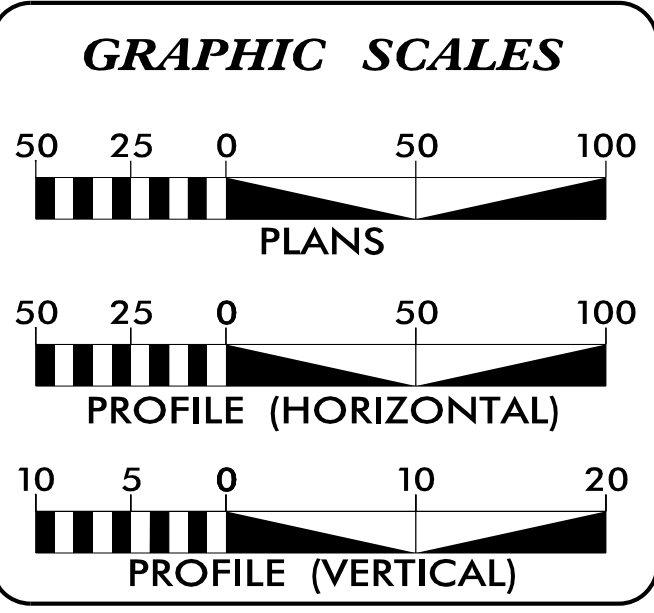
LOCATION: US 70 AT HUFFMAN MILL ROAD IN BURLINGTON
TYPE OF WORK: WATER LINE RELOCATION

T.I.P. NO.	SHEET NO.
U-6011	UC-1

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



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INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS

WATER OWNER ON PROJECT

(A) CITY OF BURLINGTON

PREPARED IN THE OFFICE OF:

License No. C-2639
401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513
Ph. (919) 653-0001

Clint L. Stevens, P.E. UTILITIES PROJECT MANAGER
Jordan K. Chapman, E.I. UTILITIES PROJECT ENGINEER
James N. Arnold UTILITIES PROJECT DESIGNER

SEAL

**DIVISION OF HIGHWAYS
DIVISION 7**
1584 YANCEVILLE STREET
GREENSBORO, NC 27415-4996
PHONE (336) 487-0000
FAX (336) 334-3637

Brian K. Ketner, P.E. PROJECT ENGINEER
Patty Eason, P.E. DIV. CONSTRUCTION ENGINEER
Chris Smitherman, P.E. PROJECT TEAM LEAD
Wright R. Archer, P.E. DIVISION ENGINEER

HINDE ENGINEERING
 License No. C-2639
 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO.	SHEET NO.
U-6011	UC-3
DESIGNED BY: JKC	
DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.

2. THE EXISTING UTILITIES BELONG TO CITY OF BURLINGTON. THE CONTACT PERSON IS:

W. TODD LAMBERT, PE
 CITY ENGINEER
 336-222-5050

IN THE EVENT OF A CONFLICT BETWEEN THE UTILITY OWNER'S TECHNICAL SPECIFICATIONS AND NCDOT STANDARD SPECIFICATIONS/PROJECT SPECIAL PROVISIONS, THE MOST STRINGENT SHALL GOVERN.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

10. ALL WATER LINE INSTALLED ON THIS PROJECT SHALL MEET THE REQUIREMENTS OF THE RULES GOVERNING PUBLIC WATER SYSTEMS. VERTICAL SEPARATION BETWEEN PROPOSED WATER MAINS AND STORM DRAINAGE SHALL BE A MINIMUM OF 18-INCHES PER RECOMMENDED STANDARDS OF WATER WORKS. ALL PROPOSED WATER LINE SHALL HAVE A MINIMUM COVER OF 36-INCHES. PROPOSED WATER MAINS SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 10- FEET FROM SEWER MAINS (REF. RULE .0904, RULE.0906). UTILITIES BEING RELOCATED OR INSTALLED AS SHOWN ON THE UTILITY CONSTRUCTION PLANS MUST BE ADJUSTED ACCORDINGLY TO MEET THESE CRITERIA.

11. ALL PROPOSED WATER PIPE SHALL HAVE A MANUFACTURE DATE NO GREATER THAN 12 MONTHS PRIOR TO INSTALLATION.

UTILITY CONSTRUCTION

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 336-222-5050

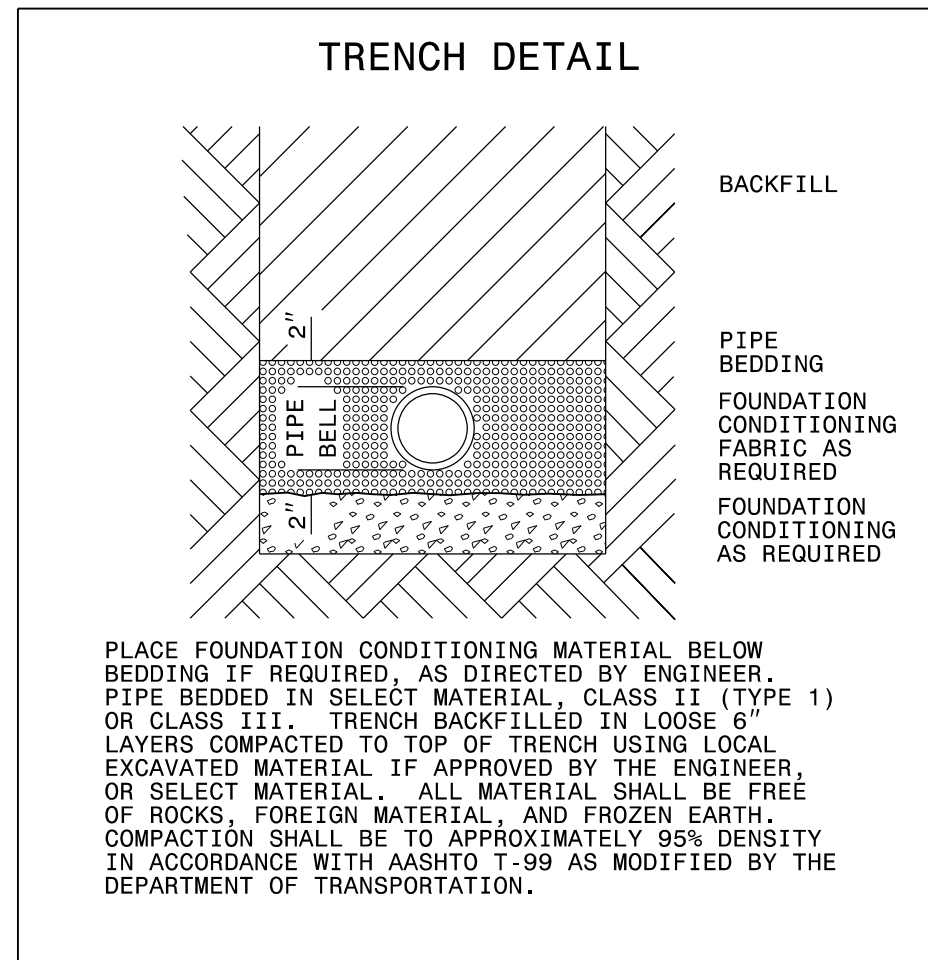
STANDARD WATER DETAILS

HINDE ENGINEERING
 License No. C-2639
 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

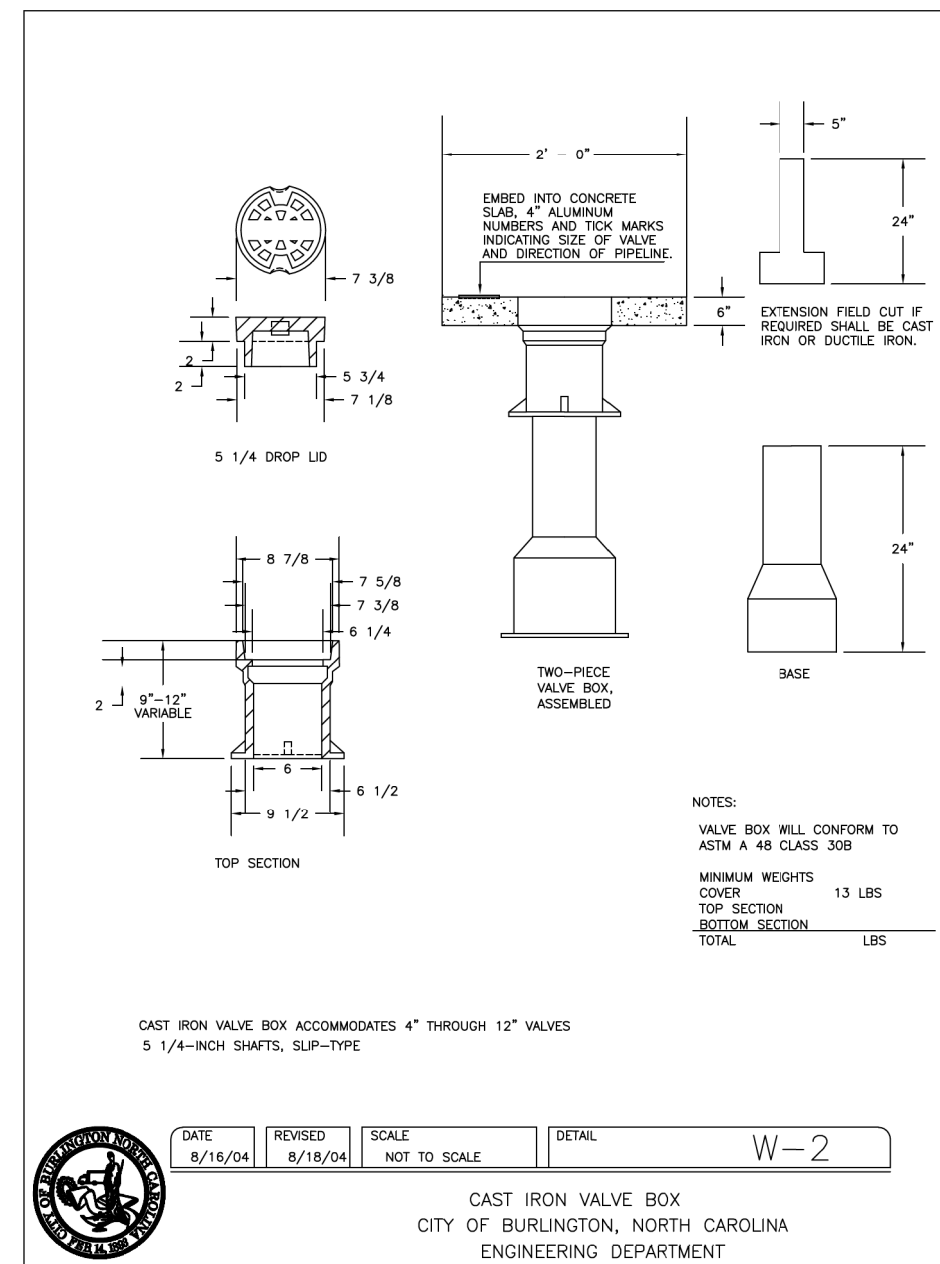
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO. U-6011	SHEET NO. UC-3A
DESIGNED BY: JKC	
DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
5/7/2024 UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



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



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

BASED ON TEST PRESSURE OF 200 P.S.I. (ALL AREA IN SQUARE FEET)

PIPE SIZE AND WEIGHT	STEEL THURST IN	EMBED 100 LB/FT ² SAND	EMBED 150 LB/FT ² SAND	EMBED 200 LB/FT ² SAND	EMBED 250 LB/FT ² SAND	EMBED 300 LB/FT ² SAND	EMBED 350 LB/FT ² SAND	EMBED 400 LB/FT ² SAND	EMBED 450 LB/FT ² SAND	EMBED 500 LB/FT ² SAND
11 1/4"	1.108	1	1	1	1	1	2	2	1	
11 1/2"	1.322	1	2	1	1	1	4	1		
12 1/2"	1.684	2	4	5	1	2	8	1		
14"	1.973	4	8	9	2	4	15	7		
16"	2.655	2	1	4	1	1	2	6	1	
18"	3.922	1	1	2	1	1	1	2	1	
20"	5.284	2	4	5	1	1	2	8	1	
22 1/2"	6.646	4	8	9	2	4	15	7		
24"	8.008	3	6	6	2	2	3	10	1	
26"	9.370	2	2	3	1	1	2	5	1	
28"	10.732	2	2	3	1	1	2	5	1	
30"	12.094	4	8	10	2	2	6	18	2	
32"	13.456	6	12	14	3	3	8	24	3	
34"	14.818	2	4	5	1	1	2	8	1	
36"	16.180	4	8	10	2	2	6	18	2	
38"	17.542	6	12	14	3	3	8	24	3	
40"	18.904	2	4	5	1	1	2	8	1	
42"	20.266	4	8	10	2	2	6	18	2	
44"	21.628	6	12	14	3	3	8	24	3	
46"	22.990	2	4	5	1	1	2	8	1	
48"	24.352	4	8	10	2	2	6	18	2	
50"	25.714	6	12	14	3	3	8	24	3	
52"	27.076	2	4	5	1	1	2	8	1	
54"	28.438	4	8	10	2	2	6	18	2	
56"	29.800	6	12	14	3	3	8	24	3	
58"	31.162	2	4	5	1	1	2	8	1	
60"	32.524	4	8	10	2	2	6	18	2	
62"	33.886	6	12	14	3	3	8	24	3	
64"	35.248	2	4	5	1	1	2	8	1	
66"	36.610	4	8	10	2	2	6	18	2	
68"	37.972	6	12	14	3	3	8	24	3	
70"	39.334	2	4	5	1	1	2	8	1	
72"	40.696	4	8	10	2	2	6	18	2	
74"	42.058	6	12	14	3	3	8	24	3	
76"	43.420	2	4	5	1	1	2	8	1	
78"	44.782	4	8	10	2	2	6	18	2	
80"	46.144	6	12	14	3	3	8	24	3	
82"	47.506	2	4	5	1	1	2	8	1	
84"	48.868	4	8	10	2	2	6	18	2	
86"	50.230	6	12	14	3	3	8	24	3	
88"	51.592	2	4	5	1	1	2	8	1	
90"	52.954	4	8	10	2	2	6	18	2	
92"	54.316	6	12	14	3	3	8	24	3	
94"	55.678	2	4	5	1	1	2	8	1	
96"	57.040	4	8	10	2	2	6	18	2	
98"	58.402	6	12	14	3	3	8	24	3	
100"	59.764	2	4	5	1	1	2	8	1	

DATE: 8/16/04 REVISION: 8/18/04 SCALE: NOT TO SCALE DETAIL: W-10

CITY OF BURLINGTON, NORTH CAROLINA ENGINEERING DEPARTMENT

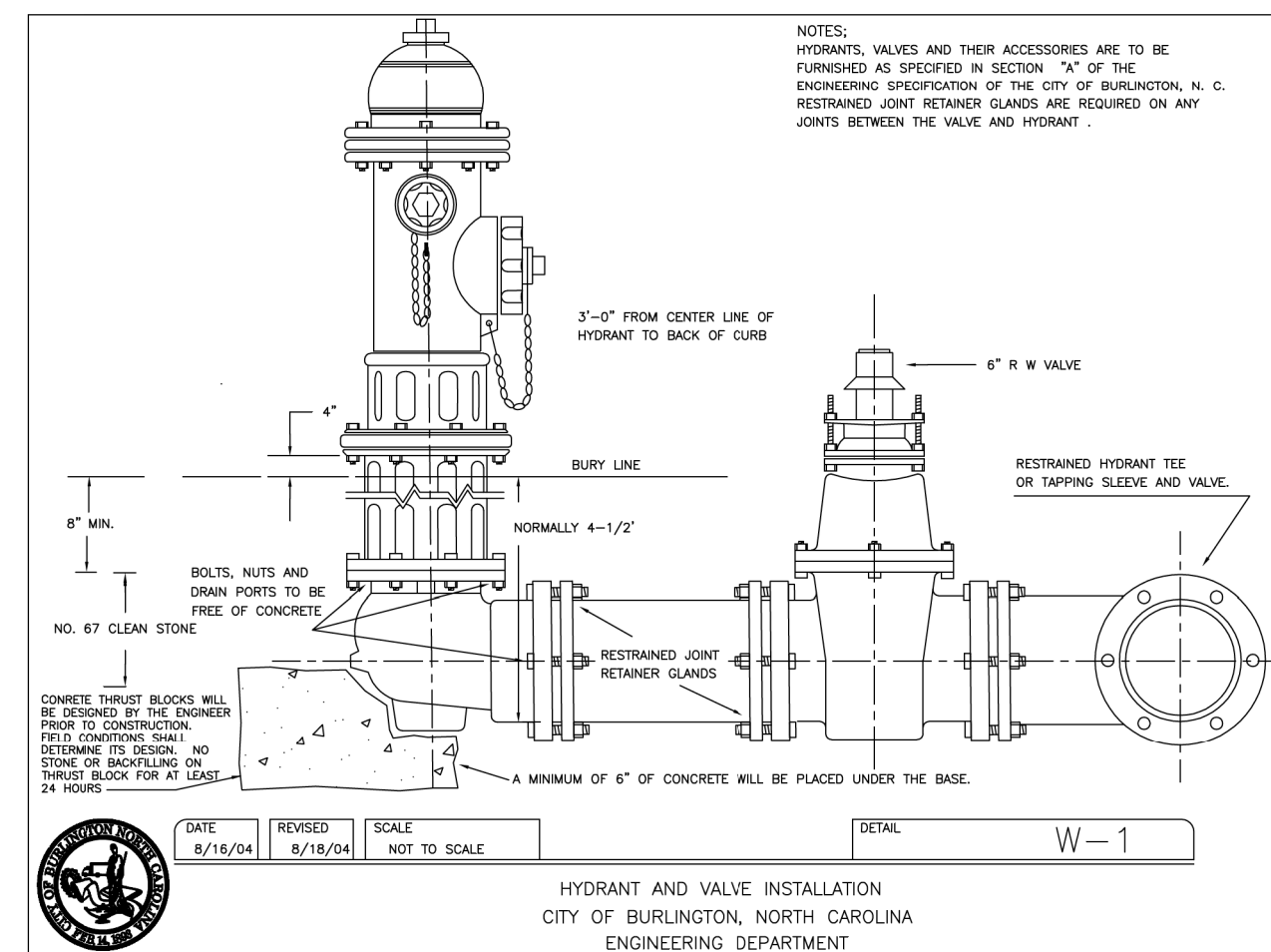
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

BASED ON TEST PRESSURE OF 200 P.S.I. (ALL AREA IN SQUARE FEET)

PIPE SIZE AND WEIGHT	STEEL THURST IN	EMBED 100 LB/FT ² SAND	EMBED 150 LB/FT ² SAND	EMBED 200 LB/FT ² SAND	EMBED 250 LB/FT ² SAND	EMBED 300 LB/FT ² SAND	EMBED 350 LB/FT ² SAND	EMBED 400 LB/FT ² SAND	EMBED 450 LB/FT ² SAND	EMBED 500 LB/FT ² SAND
11 1/4"	1.315	3	7	8	2	2	3	13	2	
11 1/2"	1.529	7	13	15	4	4	7	32	2	
12 1/2"	1.891	15	24	28	8	8	12	48	5	
14"	2.180	23	42	50	12	12	23	81	9	
16"	2.862	16	32	38	8	8	16	63	7	
18"	4.129	8	16	18	5	5	9	36	4	
20"	5.491	18	36	42	12	12	18	72	6	
22 1/2"	6.853	10	20	24	6	6	10	40	4	
24"	8.215	20	40	48	12	12	20	80	8	
26"	9.577	30	60	72	18	18	30	120	12	
28"	10.939	40	80	96	24	24	40	160	16	
30"	12.301	50	100	120	30	30	50	200	20	
32"	13.663	60	120	144	36	36	60	240	24	
34"	15.025	7	14	17	4	4	7	28	2	
36"	16.387	14	28	34	7	7	14	56	6	
38"	17.749	28	56	68	14	14	28	112	11	
40"	19.111	50	100	120	24	24	50	200	20	
42"	20.473	60	120	144	30	30	60	240	24	
44"	21.835	7	14	17	4	4	7	28	2	
46"	23.197	14	28	34	7	7	14	56	6	
48"	24.559	28	56	68	14	14	28	112	11	
50"	25.921	50	100	120	24	24	50	200	20	
52"	27.283	60	120	144	30	30	60	240	24	
54"	28.645	7	14	17	4	4	7	28	2	
56"	29.999	14	28	34	7	7	14	56	6	
58"	31.361	28	56	68	14	14	28	112	11	
60"	32.723	50	100	120	24	24	50	200	20	
62"	34.085	60	120	144	30	30	60	240	24	
64"	35.447	7	14	17	4	4	7	28	2	
66"	36.809	14	28	34	7	7	14	56	6	
68"	38.171	28	56	68	14	14	28	112	11	
70"	39.533	50	100	120	24	24	50	200	20	
72"	40.895	60	120	144	30	30	60	240	24	
74"	42.257	7	14	17	4	4	7	28	2	
76"	43.619	14	28	34	7	7	14	56	6	
78"	44.981	28	56	68	14	14	28	112	11	
80"	46.343	50	100	120	24	24	50	200	20	
82"	47.705	60	120	144	30	30	60	240	24	
84"	49.067	7	14	17	4	4	7	28	2	
86"	50.429	14	28	34	7	7	14	56	6	
88"	51.791	28	56	68	14	14	28	112	11	
90"	53.153	50	100	120	24	24	50	200	20	
92"	54.515	60	120	144	30	30	60	240	24	
94"	55.877	7	14	17	4	4	7	28	2	
96"	57.239	14	28	34	7	7	14	56	6	
98"	58.601	28	56	68	14	14	28	112	11	
100"	59.963	50	100	120	24	24	50	200	20	

DATE: 8/16/04 REVISION: 8/18/04 SCALE: NOT TO SCALE DETAIL: W-11

CITY OF BURLINGTON, NORTH CAROLINA ENGINEERING DEPARTMENT



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