

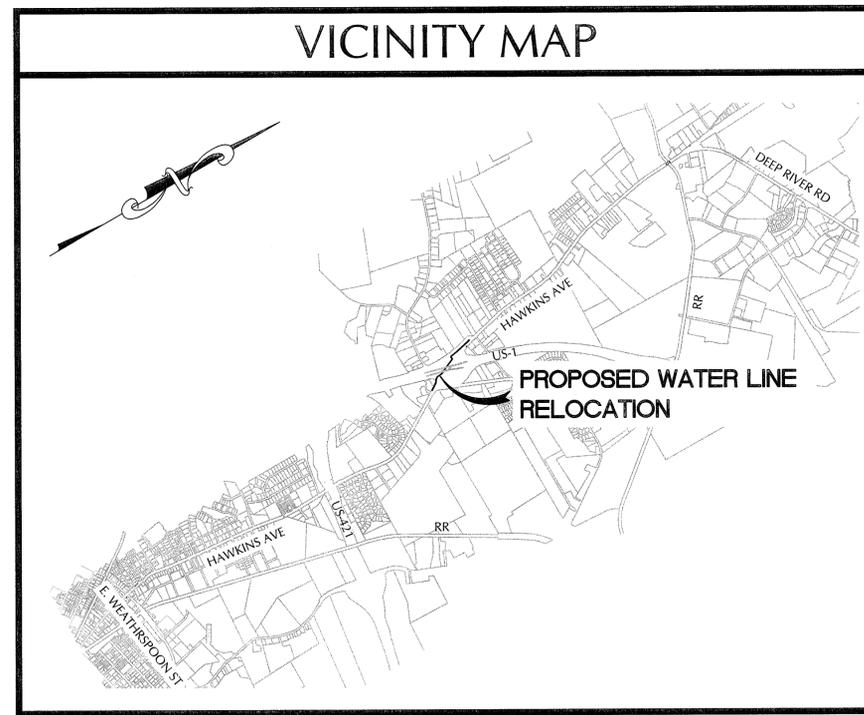
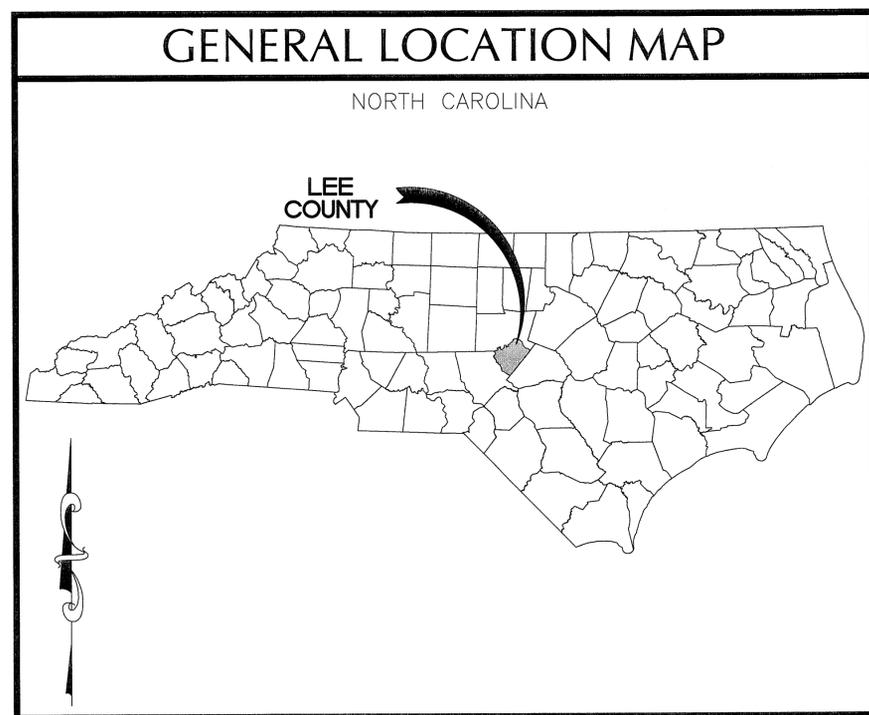
CONSTRUCTION PLANS

CITY OF SANFORD

HAWKINS AVE/US-1 WATER LINE RELOCATION

LEE COUNTY, NORTH CAROLINA

4/3/2014



INDEX OF SHEETS

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K:\1\15-0200\150200-Hawkins Avenue Water Main\CON\2014\COVER.ncd\07.dwg - Friday, April 04, 2014 1:28:08 PM - PETERSON, PATRICK

FINAL PLANS
 APPROVED FOR CONSTRUCTION

PREPARED BY:

WITHERS & RAVENEL

ENGINEERS | PLANNERS | SURVEYORS

115 MacKenan Drive Cary, North Carolina 27511 tel: 919-469-3340 www.withersravenel.com License No. C-0832

OWNER

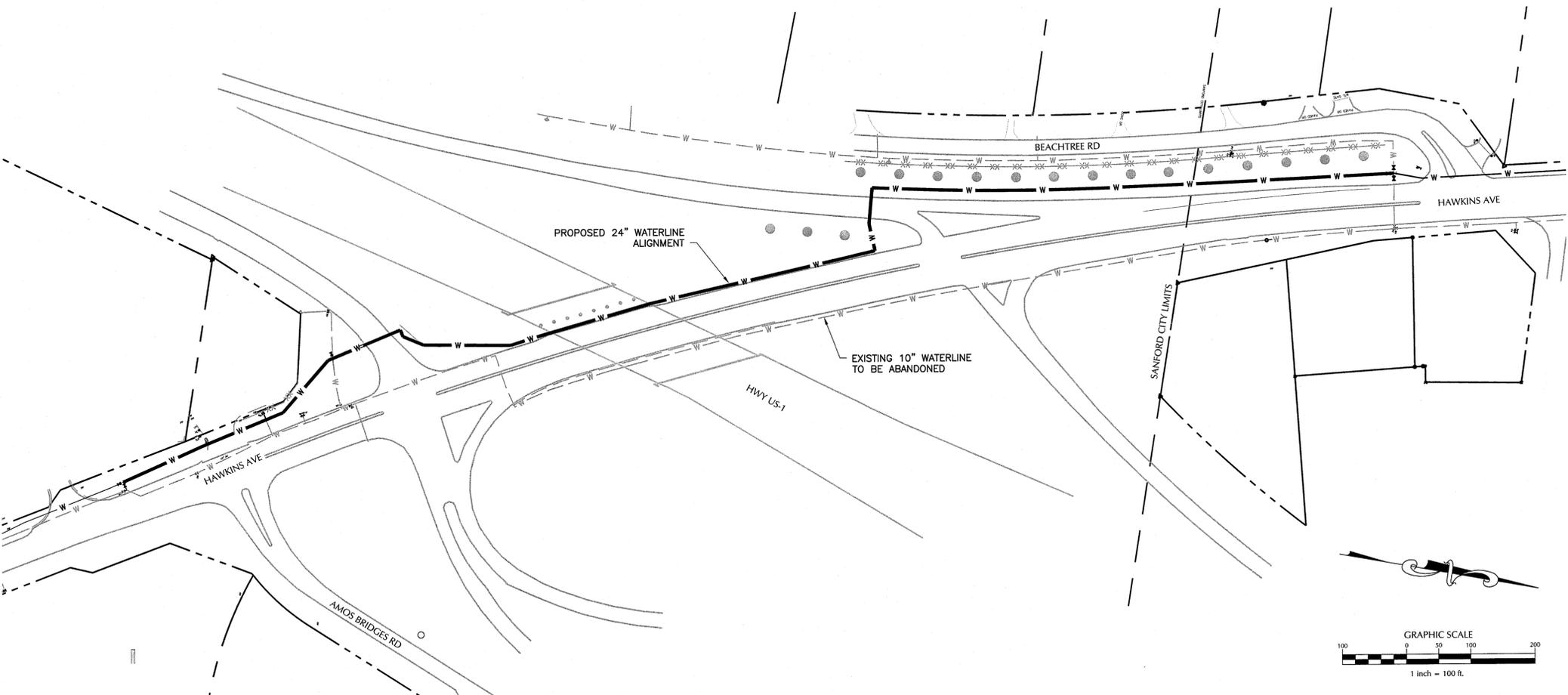
CITY OF SANFORD
 225 E. WEATHERSPOON ST
 SANFORD, NC 27330
 (919) 777-1133
 ATTN: PAUL WEEKS

ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE	MIN	MINIMUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MJ	MECHANICAL JOINT
AV	AIR VALVE	N	NORTH
BFP	BACKFLOW PREVENTER	NIC	NOT IN CONTRACT
BM	BENCH MARK	N.I.C.	NOT IN CONTRACT
BO	BLOW OFF	NO.	NUMBER
BOP	BOTTOM OF PIPE	NTS	NOT TO SCALE
BW	BOTTOM OF WALL	O.C.	ON CENTER
CATV	CABLE TELEVISION	OD	OUTSIDE DIAMETER
CIP	CAST IRON PIPE	OH	OVERHEAD
CML&C	CEMENT MORTAR LINED AND COATED	PE	PLAIN END
CO	CLEAN OUT	PP	POWER POLE
CLR	CLEAR SPACE	PS	PUMP STATION
CMP	CONCRETE METAL PIPE	PSI	POUNDS PER SQUARE INCH
CMU	CONCRETE MASONRY UNIT	PVC	POLYVINYL CHLORIDE PIPE
CONC	CONCRETE	R	RADIUS
CONN	CONNECTION	RCBC	REINFORCED CONCRETE BOX CULVERT
CONST	CONSTRUCTION	RCP	REINFORCED CONCRETE PIPE
DET	DETAIL	REQ'D	REQUIRED
D, DIA, Ø	DIAMETER	RJ	RESTRAINED JOINT
DI	DUCTILE IRON	RMJ	RESTRAINED MECHANICAL JOINT
DIMJ	DUCTILE IRON MECHANICAL JOINT	RT	RIGHT
DIP	DUCTILE IRON PIPE	ROW	RIGHT OF WAY
DIPS	DUCTILE IRON PIPE SIZE	R/W	RIGHT OF WAY
DWG	DRAWING	S	SEWER, SOUTH
E	ELECTRIC, EAST	SCH	SCHEDULE
EA	EACH	SDR	STANDARD DIMENSION RATIO
ECC	ECCENTRIC	SE	SOUTHEAST
ELEC	ELECTRICAL	SF	SQUARE FEET
EL	ELEVATION	SIM	SIMILAR
EP	EDGE OF PAVEMENT	SMH	SEWER MANHOLE
EX.	EXISTING	SS	STAINLESS STEEL
FG	FINISHED GRADE	STA	STATION
FL	FLOWLINE	STL	STEEL
FLG	FLANGED	STRUCT	STRUCTURAL
FM	FORCE MAIN	T	TELEPHONE
FT.	FOOT	TC	TOP OF CURB
GA	GAUGE	T/P	TOP OF PIPE
GALV	GALVANIZED	TOC	TOP OF CONCRETE
GV	GATE VALVE	TOP	TOP OF PAVEMENT
HDD	HORIZONTAL DIRECTIONAL DRILL	TRANSV.	TRANSVERSE
HDPE	HIGH DENSITY POLYETHYLENE PIPE	TS	TOP OF SLAB
HORIZ	HORIZONTAL	TYP.	TYPICAL
HP	HIGH PRESSURE, HIGH POINT	U.G.	UNDERGROUND
I.E.	INVERT ELEVATION	U.N.O.	UNLESS NOTED OTHERWISE
ID	IMPERIAL IRRIGATION DISTRICT	USGS	UNITED STATES GEOLOGICAL SURVEY
IN.	INCH	WWF	WOVEN WIRE FABRIC
INV.	INVERT	VCP	VITRIFIED CLAY PIPE
IPS	IRON PIPE SIZE	VERT.	VERTICAL
LONG	LONGITUDINAL	W	WEST
LF	LINEAR FEET	W/	WITH
LT	LEFT	WM	WATER METER
MAX	MAXIMUM	@	AT
MFR	MANUFACTURER	&	AND
MFG	MANUFACTURING	⊕	CENTER LINE
MFR'D	MANUFACTURED		
MH	MANHOLE		

LEGEND

	MAILBOX		NEW WATERLINE
	AIR RELEASE VALVE		NEW FORCE MAIN
	FIRE HYDRANT		NEW SEWERLINE
	WATER VALVE		WELL
	TV CABLE PEDESTAL		SEWER MANHOLE
	UTILITY POLE		SANITARY CLEANOUT
	GUY WIRE		STORM DRAIN
	LIGHT POLE		STORM DRAIN JUNCTION BOX
	IRON PIPE		SOIL BORING
	SIGN		RIGHT-OF-WAY PROPERTY LINE
	OVERHEAD ELECTRIC		EASEMENT LINE
	UNDERGROUND ELECTRIC		TEMPORARY CONSTRUCTION EASEMENT LINE
	UNDERGROUND CABLE TV		CATCH BASIN
	UNDERGROUND GAS		GAS VALVE
	FENCELINE		FLARED END SECTION
	WATERLINE		CLEANOUT
	FORCE MAIN		SILT FENCE
	SEWERLINE		TREE PROTECTION
	WELL		SILT FENCE/TREE PROTECTION
	SEWER MANHOLE		ROCK DAM
	SANITARY CLEANOUT		INLET PROTECTION
	STORM DRAIN		SILT FENCE OUTLET
	STORM DRAIN JUNCTION BOX		
	SOIL BORING		
	RIGHT-OF-WAY PROPERTY LINE		
	EASEMENT LINE		
	TEMPORARY CONSTRUCTION EASEMENT LINE		
	CATCH BASIN		
	GAS VALVE		
	FLARED END SECTION		
	CLEANOUT		
	SILT FENCE		
	TREE PROTECTION		
	SILT FENCE/TREE PROTECTION		
	ROCK DAM		
	INLET PROTECTION		
	SILT FENCE OUTLET		



GENERAL NOTES:

- CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND SHALL INSTALL TRAFFIC SAFETY MEASURES IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- ROADWAY CROSSINGS SHALL BE IN ACCORDANCE WITH NCDOT'S BORING AND JACKING SPECIAL PROVISIONS AND ATTACHMENTS AS DESCRIBED IN THE APPROVED ENCROACHMENT AGREEMENT.
- PIPE TRENCHES SHALL BE NO STEEPER THAN 1:1 FROM THE EDGE OF THE EXISTING PAVEMENT.
- SITE SHALL BE STABILIZED, SEEDED AND MULCHED, AND PAVED AS INDICATED IN THE EROSION CONTROL NOTES PRIOR TO FINAL INSPECTION.
- ALL PLANT PROTECTION FENCING SHALL BE MAINTAINED ON THE SITE UNTIL ALL OTHER WORK IS COMPLETED WITH THE EXCEPTION OF THE FINAL INSPECTION. FENCING SHALL BE REMOVED FOLLOWING FINAL INSPECTION.
- FIELD SURVEY INFORMATION PERFORMED BY WITHERS & RAVENEL.
- PROPERTY LINE INFORMATION OBTAINED VIA LEE COUNTY TAX MAPS AND DO NOT NECESSARILY REPRESENT ACTUAL PROPERTY LINE LOCATIONS.
- INFORMATION ON SUBSURFACE UTILITY LINES IS APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE EXACT LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING EXCAVATION AND ORDERING MATERIALS.
- POSITIVE DRAINAGE SHALL BE PROVIDED FOR ALL AREAS THROUGHOUT THE CONSTRUCTION PERIOD.
- CONTRACTOR SHALL PROVIDE PROPER OIL POLLUTION PREVENTION MEASURES TO MINIMIZE THE IMPACT OF DIESEL FUEL TO THE ENVIRONMENT. MEASURES SHALL BE IN ACCORDANCE WITH STATE AND LOCAL LAWS.
- CONTRACTOR SHALL MAINTAIN EXISTING UTILITIES AT ALL TIMES. EXISTING WATER AND SEWER SERVICES THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED.

PROJECT DATUM:

HORIZONTAL DATUM: NC GRID NORTH NAD 83 (2001)
 VERTICAL DATUM: NAVD 88

RELATION OF WATER MAINS AND SEWERS

- LATERAL SEPARATION OF SEWERS AND WATER MAINS:** WATER MAINS SHALL BE LAID AT LEAST 10 FEET Laterally FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION--IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER; OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
- CROSSING A WATER MAIN OVER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION--IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.
- CROSSING A WATER MAIN UNDER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

WATER LINE BELONGS TO CITY OF SANFORD. COORDINATE ALL EXISTING WATER VALVE, HYDRANT, TESTING WITH PUBLIC WORKS DEPARTMENT.
 WATER LINE SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF SANFORD STANDARD SPECIFICATIONS PWS SERIAL #5348 & NCDOT STANDARD SPECIFICATIONS.
 PHONE: (919) 777-1118

FINAL PLANS
 APPROVED FOR CONSTRUCTION



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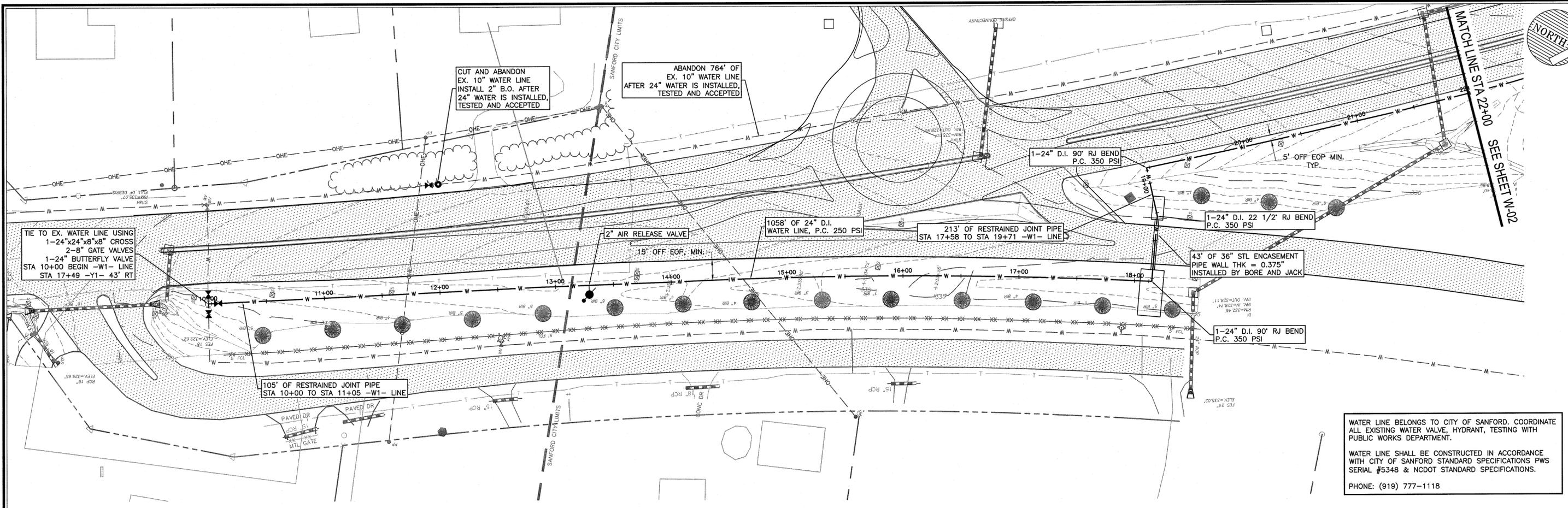
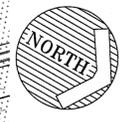
No.	Revision	Date	By	Designer	Scale
				DAM	N/A
				PAP	04/03/14
				MCW	02130266.00

CITY OF SANFORD
HAWKINS AVE WATER LINE
 LEE COUNTY NORTH CAROLINA

NOTES

WITHERS & RAVENEL
 ENGINEERS | PLANNERS | SURVEYORS
 111 MacKenan Drive Cary, North Carolina 27511 tel: 919-469-3340 www.wITHERSRAVENEL.COM License No. C-0382

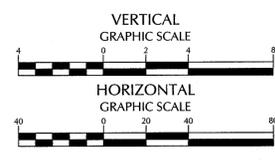
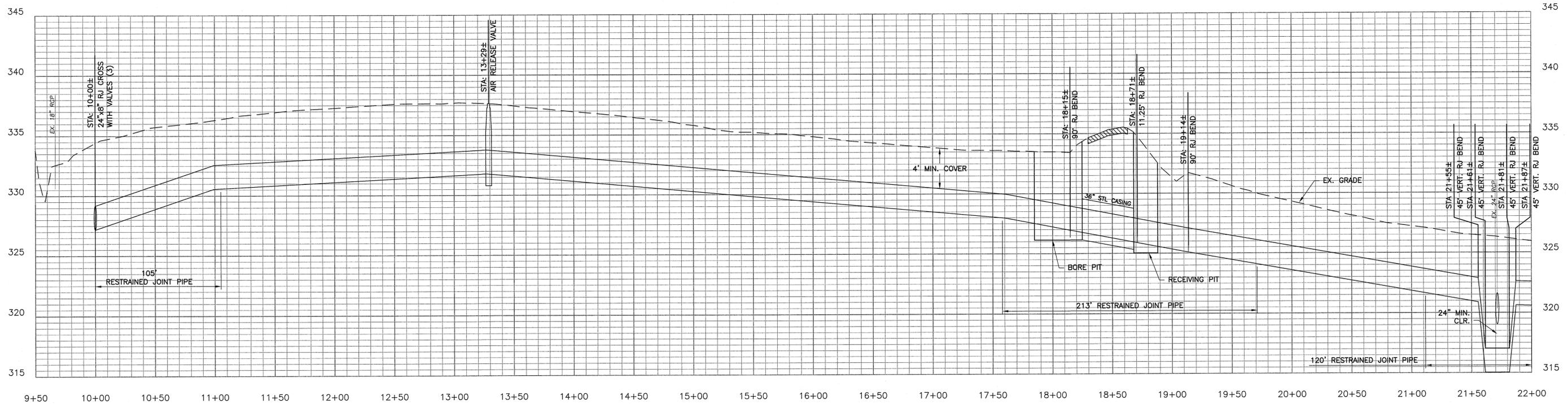
Sheet No.
G-01



WATER LINE BELONGS TO CITY OF SANFORD. COORDINATE ALL EXISTING WATER VALVE, HYDRANT, TESTING WITH PUBLIC WORKS DEPARTMENT.

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PHONE: (919) 777-1118



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No.	Revision	Date	By	Designer	Scale 1" = 40'
				Drawn By	Date 04/03/14
				Checked By	Job No. 02130266.00

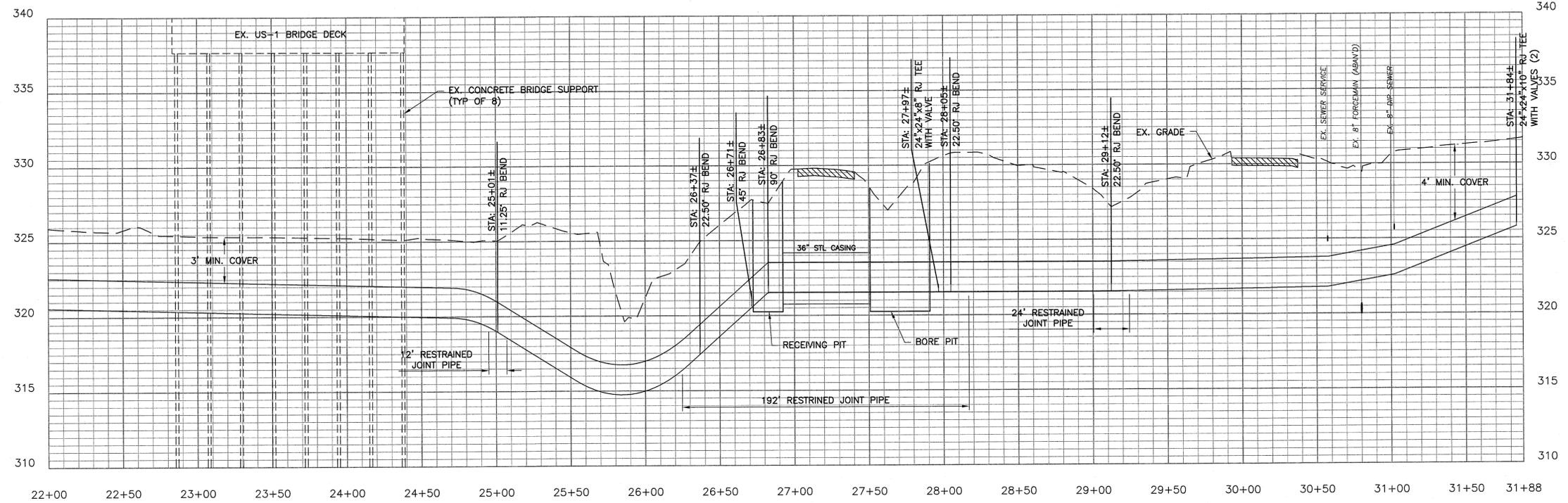
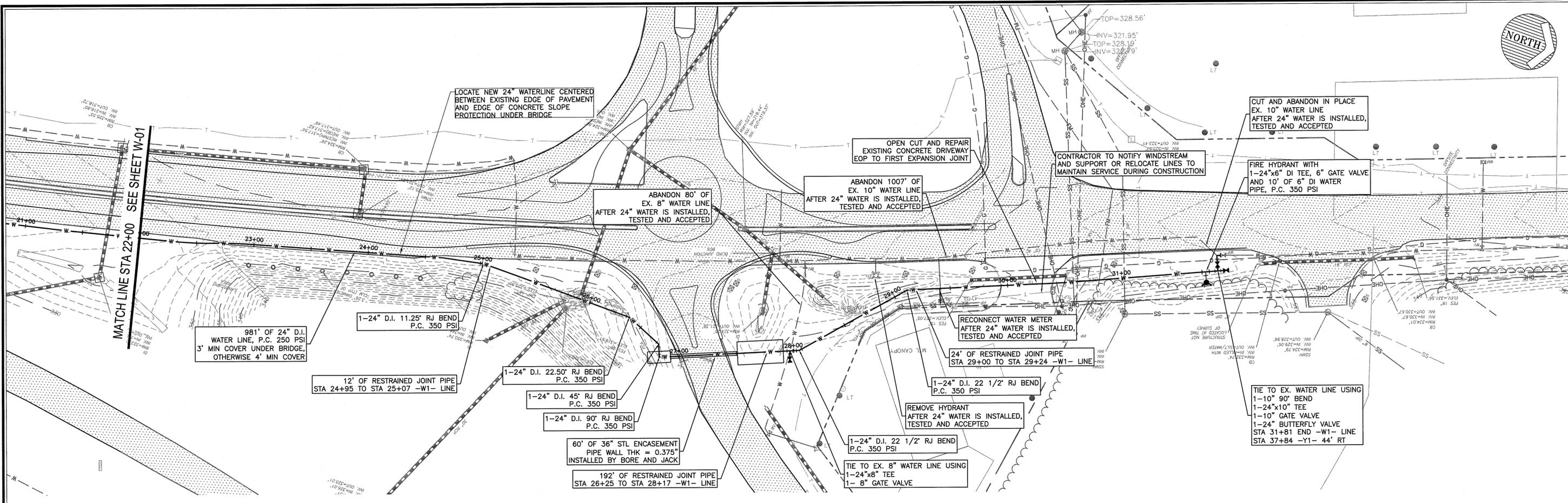
CITY OF SANFORD
HAWKINS AVE WATER LINE
LEE COUNTY
NORTH CAROLINA

**WATER LINE
PLAN AND PROFILE**

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Sheet No.
W-01

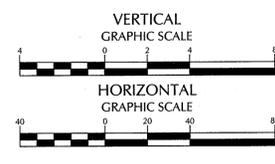
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WATER LINE BELONGS TO CITY OF SANFORD. COORDINATE ALL EXISTING WATER VALVE, HYDRANT, TESTING WITH PUBLIC WORKS DEPARTMENT.

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PHONE: (919) 777-1118



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No.	Revision	Date	By

Designer	Scale
Drawn By	Date 04/03/14
Checked By	Job No. 02130266.00

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LEE COUNTY
NORTH CAROLINA

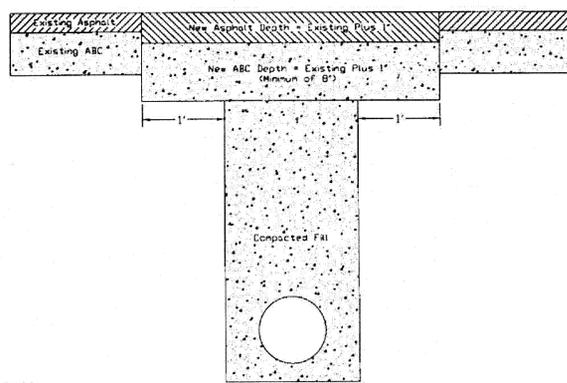
**WATER LINE
PLAN AND PROFILE**

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Sheet No.
W-02

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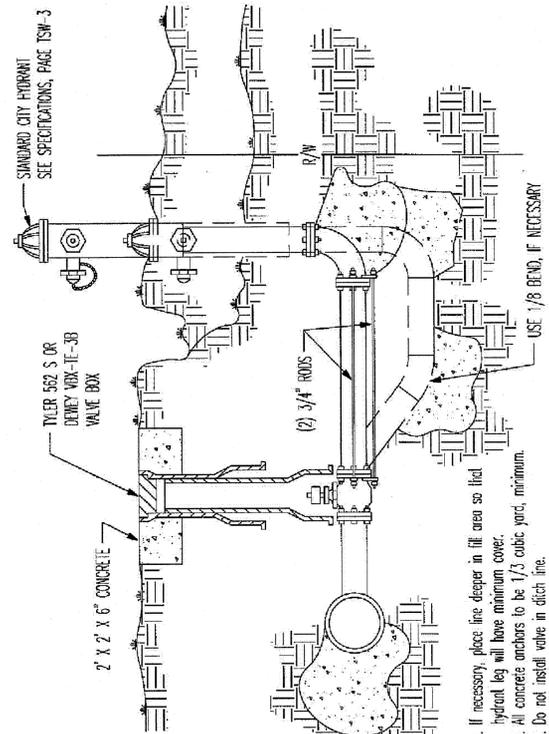
ASPHALT PAVEMENT PATCH



- NOTES:
1. THE PAVEMENT SHALL BE DEFINED BY A STRAIGHT EDGE, PREFERABLY A MACHINED SAW CUT.
 2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH ASSHTO T-99 AS MODIFIED BY NCDDT.
 3. THE NEW ABC FILL SHALL BE COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH ASSHTO T-80 AS MODIFIED BY NCDDT. BITUMINOUS BASE OR BINDER MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.
 4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED.
 5. THE ASPHALT PATCH DEPTH SHALL BE EXISTING ASPHALT PLUS 1", BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 2" THICK.
 6. THE THICKNESS OF THE ABC LAYERS SHALL BE THE EXISTING DEPTH PLUS 1" BUT IN NO CASE LESS THAN 8".
 7. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY TO ACHIEVE A SMOOTH LEVEL PATCH.

Scale: NTS Date: 03/10/09 CADD By: AMJ

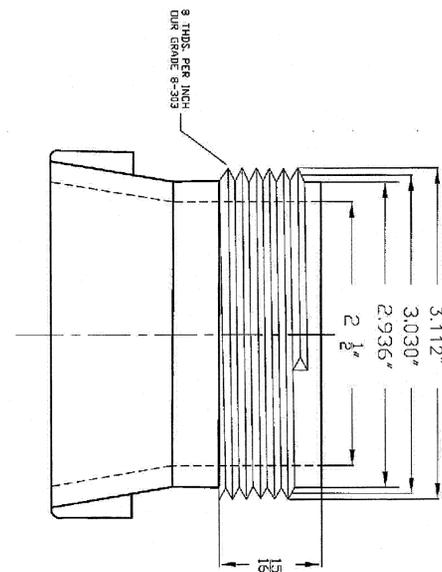
City of Sanford ASPHALT PAVEMENT PATCH



1. If necessary, place line deeper in fill area so that hydrant leg will have minimum cover.
2. All concrete anchors to be 1/3 cubic yard, minimum.
3. Do not install valve in ditch line.
4. Rod valve on main line for future extensions when plugged at valve.

Scale: NTS Date: 9/17/91 CADD By: LLA

City of Sanford HYDRANT AND VALVE INSTALLATIONS WITH HYDRANT TEE

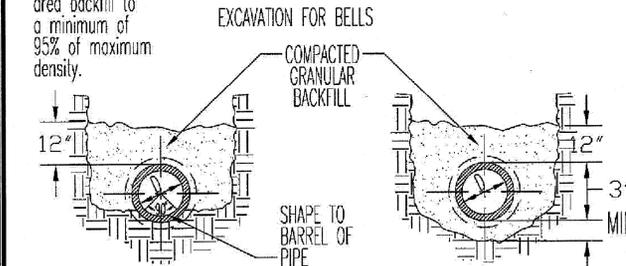


Scale: NTS Date: 9/26/03 CADD By: AMJ

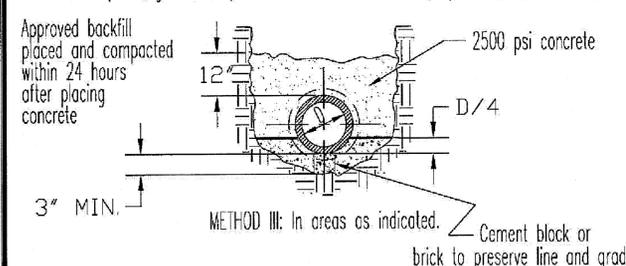
City of Sanford 2 1/2" HOSE NOZZLE DETAIL



NOTE: Compact bedding area backfill to a minimum of 95% of maximum density. Bell hole excavations required for methods I and II.

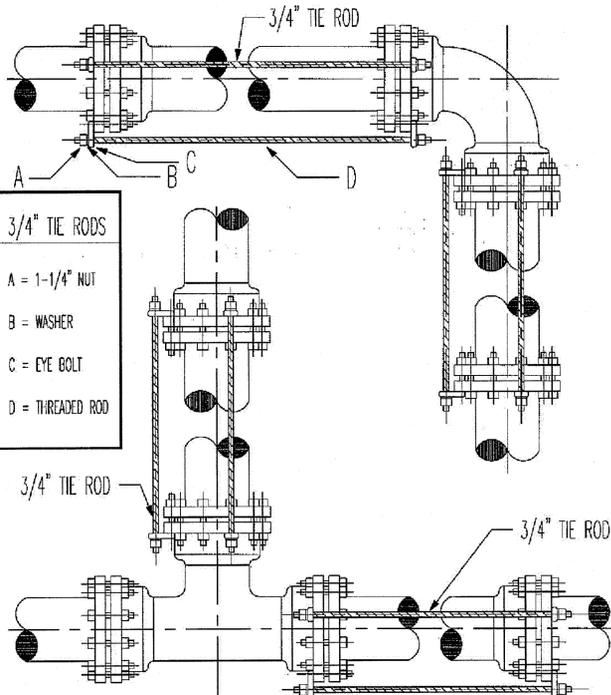


METHOD I: In areas of unconsolidated soils (sand, gravel, etc.)
 METHOD II: In areas of consolidated soils (clay, hardpan, rock, etc.)



Scale: NTS DATE: 11/19/91 CADD By: LLA

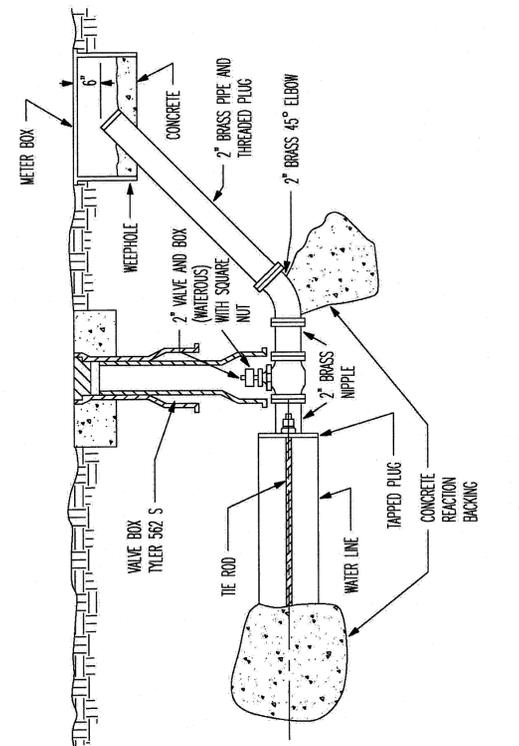
City of Sanford METHODS OF BEDDING PIPE



- 3/4" TIE RODS
- A = 1-1/4" NUT
 - B = WASHER
 - C = EYE BOLT
 - D = THREADED ROD

Scale: NTS Date: 9/17/91 CADD By: LLA

City of Sanford TYPICAL PIPE TIE RODS



NOTE: Blow-offs are not to be located in street. Any exception is to be approved by city engineer prior to construction.

Scale: NTS Date: 9/17/91 CADD By: LLA

City of Sanford 2" BLOW-OFF DETAIL

No.	Revision	Date	By	Designer	Scale	NO SCALE
				Drawn By	Date	04/03/14
				Checked By	Job No.	02130266.00

CITY OF SANFORD
 HAWKINS AVE WATER LINE
 LEE COUNTY
 NORTH CAROLINA

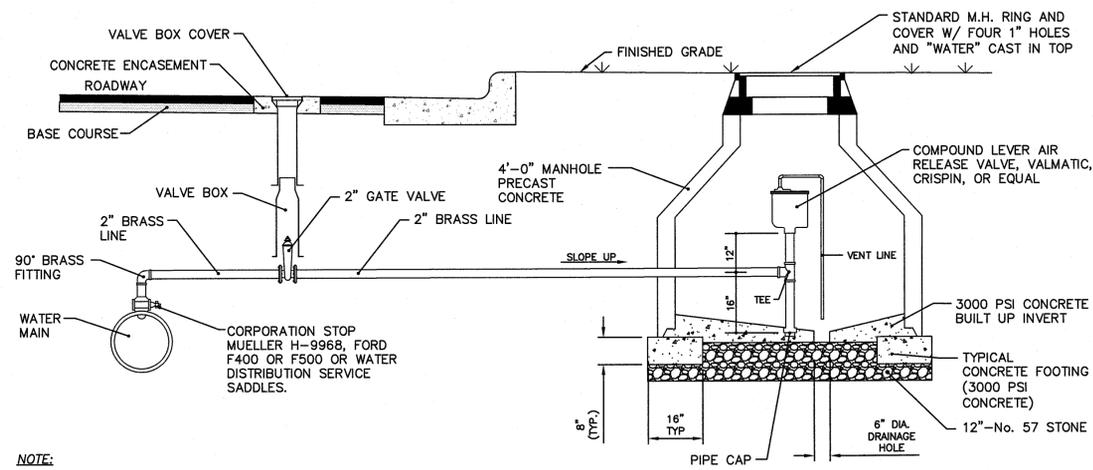
DETAILS

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Sheet No.
D-01

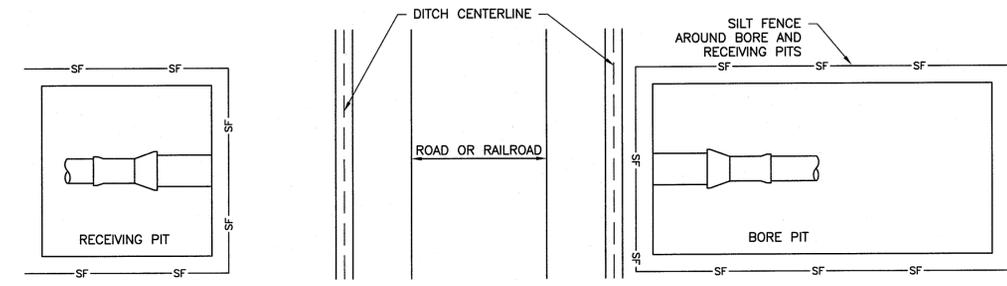
K:\13\13-0260\130260-Details\Drawings\ASPHALT PAVEMENT PATCH.dwg - Friday, April 04, 2014 1:36:18 PM - PETERSON, PATRICK



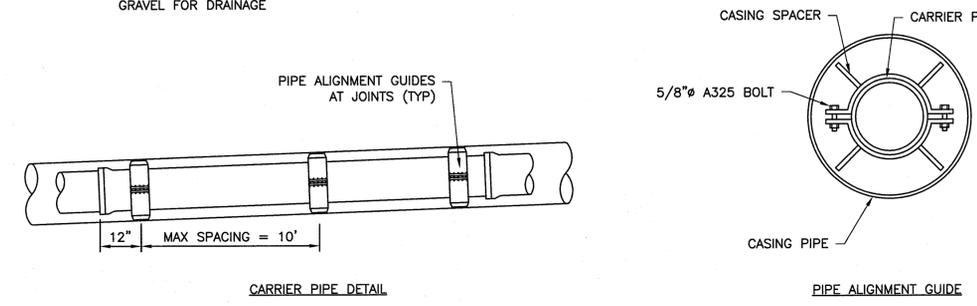
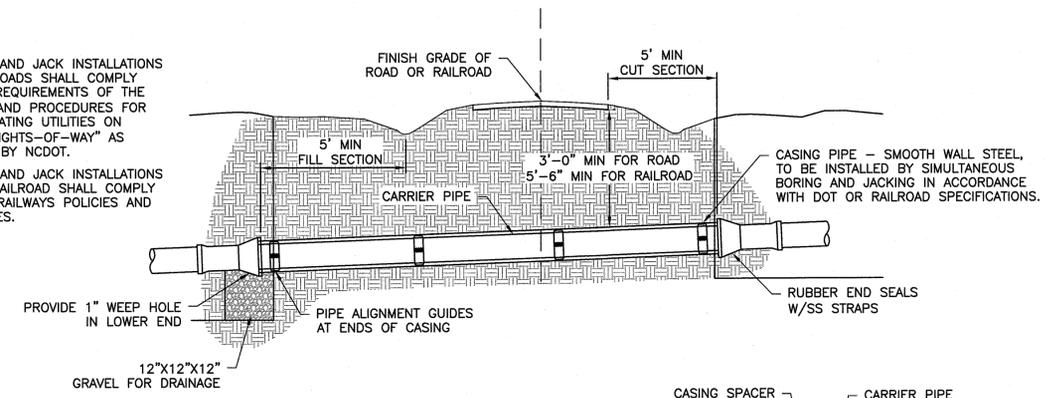
NOTE:
CORPORATION STOP SHALL BE LOCATED IN THE TOP OF WATER MAIN.
MANHOLE STEPS SHALL BE PLACED 16" O.C. WHEN DEPTH OF MANHOLE EXCEEDS 3 FEET.

NOTE:
ALL PIPING AND FITTINGS, IN THE MANHOLE, SHALL BE GALVANIZED IRON

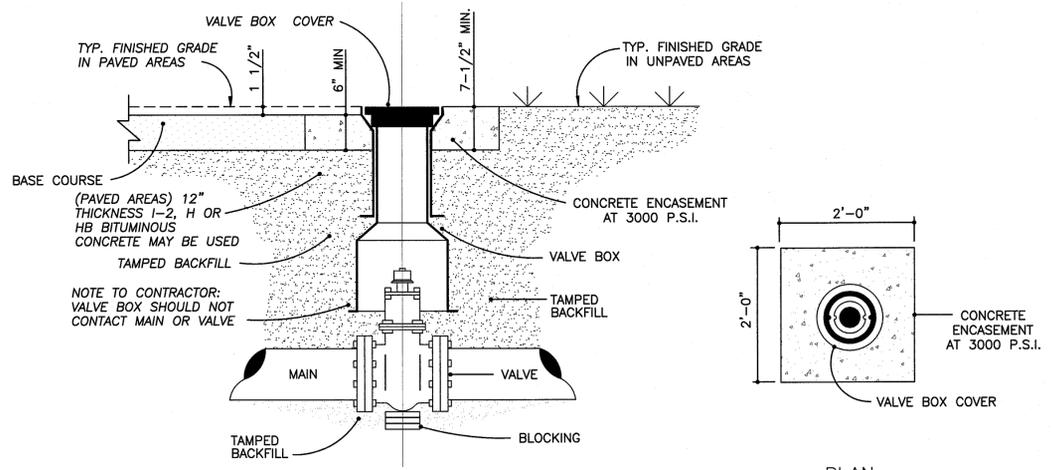
AIR RELEASE VALVE
NOT TO SCALE



- NOTES:**
1. ALL BORE AND JACK INSTALLATIONS BENEATH ROADS SHALL COMPLY WITH ALL REQUIREMENTS OF THE "POLICIES AND PROCEDURES FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHTS-OF-WAY" AS PREPARED BY NCDOT.
 2. ALL BORE AND JACK INSTALLATIONS BENEATH RAILROAD SHALL COMPLY WITH THE RAILROADS POLICIES AND PROCEDURES.



BORE & JACK
NOT TO SCALE



SECTION
STANDARD VALVE BOX INSTALLATION
NOT TO SCALE

PLAN

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No.	Revision	Date	By	Designer	Scale
					NO SCALE
				Drawn By	Date 04/03/14
				Checked By	Job No. 02130266.00

CITY OF SANFORD
HAWKINS AVE WATER LINE
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Sheet No.
D-02

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