

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: March 18, 2009

Subject: Water Line Extensions – Painted Woods / Old Hickory Estates and Camp Judea

Attachments: 1. Painted Woods & Old Hickory Estates Request
2. Camp Judea Request

Summary of Request:

The City of Hendersonville has requested that the County comment on two proposed water line extensions for Painted Woods & Old Hickory Estates in the Fletcher area and Camp Judea in Edneyville.

Details for each request are enclosed and both requests are consistent with the 2020 Comprehensive Plan.

Board Action Request:

Action by the Board of Commissioners is needed to either grant or deny these requests. If the Board decides to approve the requested extensions the following motion has been provided.

Suggested Motion:

I move that the Board approve the Painted Woods & Old Hickory Estates water line extension and the Camp Judea water line extension and direct Staff to convey the County's comments to the City of Hendersonville.

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: March 18, 2009

Subject: Water Line Extension –Painted Woods & Old Hickory Estates

Attachments: Vicinity Map
Engineer's Report
Project Summary
Project Map
County Review Sheet

Summary of Request:

The City of Hendersonville has requested that the County comment on the proposed water line extension for Painted Woods & Old Hickory Estates. The proposed water line is 2,016 linear feet. The projects' location within the urban services area is consistent with the Henderson County 2020 Comprehensive Plan. A City of Hendersonville Project Summary Sheet, with backup documents and County Review Sheet with Staff comments, are attached for Board review and action.

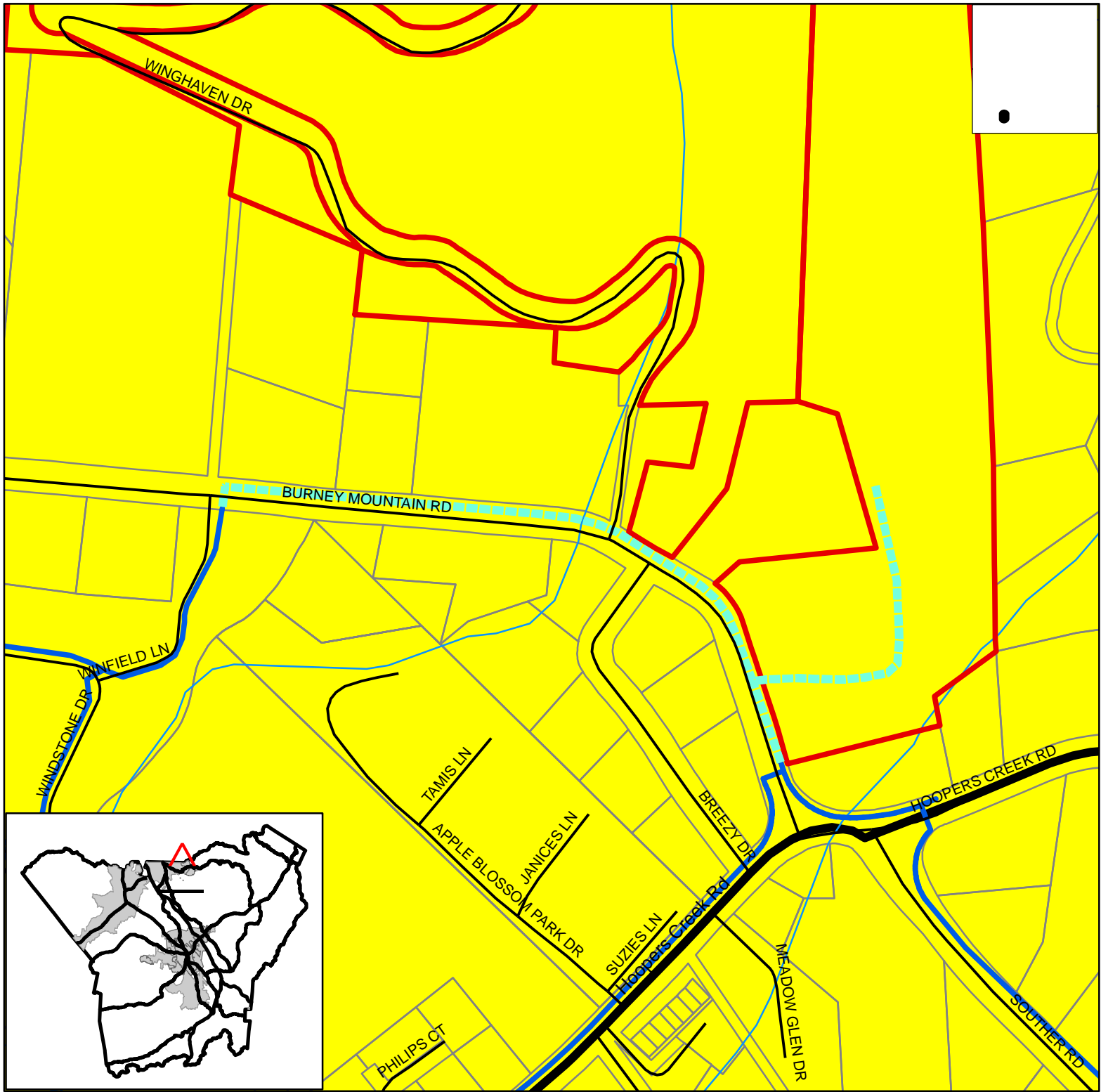
Painted Woods and Old Hickory Estates is located within the jurisdiction of the Town of Fletcher. Both of these developments have been reviewed and approved by the Town of Fletcher. Painted Woods was approved by the Town of Fletcher Zoning Board of Adjustment and Old Hickory Estates, a major subdivision, was reviewed by the Town of Fletcher Planning Board. The Town of Fletcher is aware of the waterline extension request.

Board Action Request:

Action by the Board of Commissioners is needed to either grant or deny this request. If the Board decides to approve the requested extension the following motion has been provided.

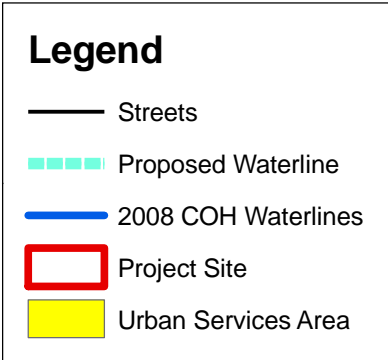
Suggested Motion:

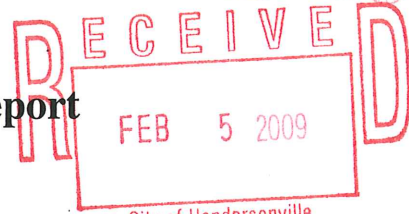
I move that the Board approve the Painted Woods & Old Hickory Estates water line extension and direct Staff to convey the County's comments to the City of Hendersonville.



Painted Woods & Old Hickory Estates

OWNER/DEVELOPER: Camenzind Trust





City of Hendersonville
Water & Sewer Department

Preliminary Engineering Report

for

Joe DiGeronimo and Rick McFalls

Concerning

PAINTED WOODS SUBDIVISION

&

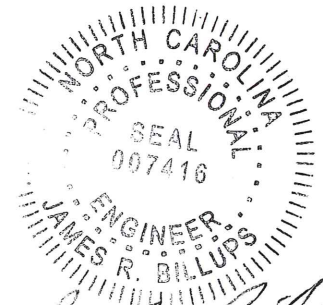
OLD HICKORY ESTATES

**WATER DISTRIBUTION SYSTEM
EXTENSION**

November, 2008

by

Anderson & Associates, Inc.
406 Gallimore Dairy Road
Greensboro, North Carolina 27409-9725
www.andassoc.com



James R. Billups
1-30-2009

Table of Contents

I.	Project Description	p.2
II.	Existing Facilities	p.2
III.	Project Need	p.2
IV.	Alternatives Considered	p.2
	A. Description and Design Criteria	
	B. Environmental Impacts & Land Requirements	
	C. Construction Problems	
	D. Preliminary Estimates of Probable Construction Costs	
	E. Advantages/Disadvantages	
V.	Conclusions and Engineering Recommendation	p.4
VI.	Appendices	
	A. Location Map	
	B. Preliminary Estimate of Probable Construction Cost	
	C. Alternative Probable Cost Estimates	

- I. **Project Description:** Two single family home subdivisions are being designed off Burney Mountain Road (SR-1552) in Fletcher, North Carolina. The two developments are named Painted Woods and Old Hickory Estates and portions of the developments are directly adjacent to one another. This has afforded the developers opportunity to combine their efforts in the development of the water feeder system for the two. Old Hickory Estates; however, is further along in design and roadway construction and the decision has been made to install the water system in phases. This first phase will interconnect two City of Hendersonville area mains by the installation of a 12" main along Burney Mountain Road and branching off an 8" main near the future (Phase II) proposed booster pumping station and up into Old Hickory Estates on Hickory Cove Road to serve the first 9 lots in the subdivision. Stub-outs with valves will be installed off the 8" main at the location of the future (Phase II) booster pump station for the suction and discharge lines. With the installation of the proposed 12" main on Burney Mountain Road, adequate pressure and supply will be afforded to serve this lower section of the development. Phase II water (to be permitted at a later date) will install the booster pumping station and extend mains up through both subdivisions to a storage tank at the upper reaches of the development. (A project location map is attached in Appendix A)
- II. **Existing Facilities:** The adjacent area is currently served by the City of Hendersonville water distribution system. Their North Carolina Public Water System Identification Number is 01-45-010. The City of Hendersonville's offices are located at 305 Williams Street, Suite 119, Hendersonville, NC 28792. Two existing City of Hendersonville water main sections are close to the site. The first is an 8" main located near the intersection of Burney Mountain Road (SR-1552) and Hoopers Creek Road (SR-1553). The second is an 8" main on the east shoulder of Winfield Lane which currently terminates just south of the intersection of Winfield Road and Burney Mountain Road. Tying these two main sections together will help the Hendersonville system's ability to serve either direction and afford feeder duplicity to the proposed development sites.
- III. **Project Need:** The development of the two sites into single family home sites is according to the Henderson County- Town of Fletcher planning and zoning. With a North Carolina approved public water supply in such close proximity to the proposed developments it would be unreasonable to utilize any other means of water supply. The installation of the main interconnection along Burney Mountain Road would also provide the closure of another loop in the existing system; thereby, benefiting the system area supply abilities.
- IV. **Alternatives Considered:** In considering alternatives for the water supply for the two developments it was quite easy to rule out the usage of individual

wells. This alternative would be rather cumbersome and the unknown of supply volume, until each well had been drilled and tested, would have created a transitional problem of logistics. A well or system of wells could have also been provided to supply the developments; however, there would still be unknowns (how many wells, would the water test well, would treatment or filtering be necessary) and the developers were not interested in becoming/maintaining a private water supply. This left the decisions to how the City of Hendersonville's system could be utilized for supply. With the development sites being located along the slopes the topography varies a great deal and booster pumping was found to be necessary from the start. The particular type of booster pumping and control seemed to be the only real alternative that presented itself. After finding that the City of Hendersonville requires a certain type of pump and controls for its booster stations (Grunfos multistage vertical turbine with VFD controllers), it became clear that the only design alternative was storage. A hydro-pneumatic tank was first considered, but when the preliminary numbers for fire flow were considered it was quickly deduced that the size of tank needed would have been quite large and very expensive. There was also a possible problem with suction line starvation during the pumping of fire flows which could jeopardize the pumps or, at the least, inconvenience service users immediately below the booster station. This left the only viable storage design to be a ground storage or elevated tank at the upper elevations of the developments that could be designed to store the required fire flow for at least the minimum duration. Since the City of Hendersonville requires the use of Aquastore glass lined tanks in their system, that left the only design variable to be tank sizing.

- A. Description & Design Criteria:** As discussed above the design alternatives were quickly narrowed down based on the type of development, the site conditions and the guidelines of the City of Hendersonville. The remaining design was developed based on the state of North Carolina "Rules Governing Public Water Systems" and the North Carolina Fire Prevention Code.
- B. Environmental Impacts & Land Requirements:** The water main will be installed within roadway rights-of-way and will not require additional land purchases. The environmental impacts are construction related and temporary. Some air pollution from earthmoving dust will be reduced or eliminated by the use of water during excavation and fill operations. The limited amount of grading will help lesson any impacts to the surrounding environment's air space. The necessary excavation will create a temporary erosion and sedimentation possibility; however, designed erosion control measures, implemented correctly should prevent offsite migration of sediment and seeding of the disturbed area will be required within 15 days of finish grading to further prevent erosion problems.
- C. Construction Problems:** The installation of 12" and 8" water mains is fairly routine and the contract calls for a licensed North Carolina utility

contractor to do the work. This should eliminate most problems. The area can be found to have rock near the surface which could pose some difficulty in installation; however, it is usually expected to encounter a percentage of rock during excavation and the remedy of blasting or use of a Ram-hoe attachment is within industry standards.

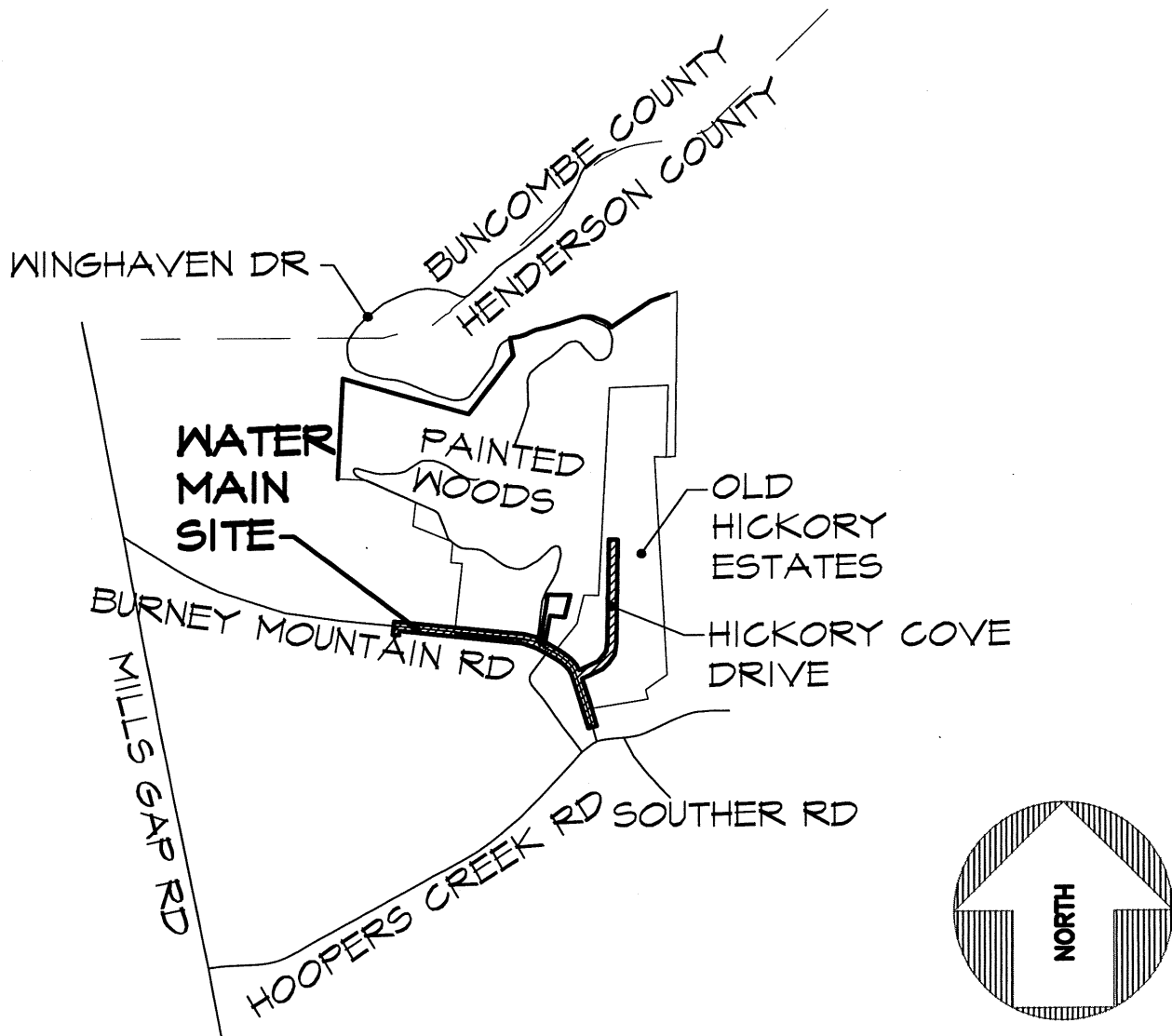
D. Preliminary Estimates of Probable Construction Costs: A construction probable cost estimate was performed for the design of the system connection and branch feeder main for Phase I. This preliminary estimate was developed based on current construction industry trends for the area and the materials used. (The preliminary estimate of probable construction cost is attached in Appendix B)

E. Advantages/Disadvantages: Since the project parameters were largely dictated by current rules, regulations and system extension requirements there were no reasonable alternatives to study for advantage. It really equates down to either developing or not.

V. Conclusion and Engineering Recommendation: Since the alternative were basically only how to implement the design of the distribution main and most of the design parameters were specified, only sizing of the mains to adequately deliver the necessary domestic flows plus the fire flow was left. The build-out of the developments had to be considered in the design and the preliminary sizing spreadsheet is attached to this PER for general information purposes. (This spreadsheet is attached in Appendix C)

APPENDIX A

APPENDIX A



VICINITY MAP Not to Scale

APPENDIX B

Preliminary Estimate of Probable Construction Costs

A&A JN 24403.99		UNIT	UNIT PRICE	UNITS	COST
Mobilization (max. at 3%)	LS	\$ 6,108.36		1	\$ 6,108.36
12" D.I. Pipe Installed	LF	\$ 65.00		1350	\$ 87,750.00
8" D.I. Pipe Installed	LF	\$ 55.00		960	\$ 52,800.00
12" Tapping Sleeve & Valve & Adjustable Valve Box	LF	\$ 50.00		2	\$ 100.00
12" Resilient Seat Gate Valve & Adjustable Valve Box	LS	\$ 2,000.00		2	\$ 4,000.00
8" Resilient Seat Gate Valve & Adjustable Valve Box	EA	\$ 1,000.00		1	\$ 1,000.00
6" Resilient Seat Gate Valve & Adjustable Valve Box	EA	\$ 675.00		2	\$ 1,350.00
Tie-in at the 8" System Main at Sta. 0+00	LS	\$ 5,000.00		1	\$ 5,000.00
Tie-in at the 8" System Main at Sta. 14+00	LS	\$ 5,000.00		1	\$ 5,000.00
Dry Bore Under Driveways	LF	\$ 5.00		25	\$ 125.00
Fire Hydrant Assembly Complete	EA	\$ 3,800.00		3	\$ 11,400.00
Blow-off Assembly Complete	EA	\$ 1,250.00		1	\$ 1,250.00
Water Main Fittings complete with Glands & Bolts	LB	\$ 4.50		500	\$ 2,250.00
Service Tap	EA	\$ 125.00		9	\$ 1,125.00
3/4" Type "K" Copper Service with Meter & Box	EA	\$ 900.00		9	\$ 8,100.00
Piping Stabilization/Bedding Stone	TN	\$ 16.00		90	\$ 1,440.00
Trench Rock Excavation	CY	\$ 75.00		85	\$ 6,375.00
Undercut Excavation	CY	\$ 10.00		45	\$ 450.00
Surface Stone	TN	\$ 16.00		2	\$ 32.00
Inlet Erosion Control Device	EA	\$ 250.00		1	\$ 250.00
Sediment Fencing Erosion Control Device	LF	\$ 4.00		375	\$ 1,500.00
Sediment Fence Stone Outlet EC Device	EA	\$ 200.00		5	\$ 1,000.00
Checkdam Erosion Control Device	EA	\$ 75.00		16	\$ 1,200.00
Type "B" Sediment Trap	EA	\$ 250.00		2	\$ 500.00
Ditchline Excelsior Matting	SY	\$ 5.00		300	\$ 1,500.00
Seeding and Mulching	AC	\$ 3,500.00		0.89	\$ 3,115.00
Traffic Control & Safety Signage, Barricades, Flagmen, etc.	LS	\$ 5,000.00		1	\$ 5,000.00
Construction Costs Total					\$ 209,720.36
Contingency Allowance 15%					\$ 31,458.05
Plus Geotechnical Engineering Services (Initial Bores & Report and Construction Testing Services)					\$ 7,500.00
PROJECT TOTAL:					\$ 248,678.41


 Anderson and
 Associates, Inc.
 Professional Design Services

406 Gallimore Dairy Road
 Greensboro, North Carolina 27409-9725

APPENDIX C

PAINTED WOODS SUBDIVISION & OLD HICKORY ESTATES
 Hendersonville, North Carolina
 WATER BOOSTER & TANK DESIGN
PRELIMINARY SIZING CALCULATIONS (Revised 1-8-09)

JN 26449.00

Elev. at 8" Tie-in	2160	±			
Residual Pressure at Tie-in	30	psi			
Net Positive Suction Head	2229.28	±			
Elev. at Tank Overflow	2593	±			
Static Head	363.72	±			
			C Factor	120	HR 12"
				0.25	Hydraulic Radius 12"
				0.167	Hydraulic Radius 8"
				0.125	Hydraulic Radius 6"

†Booster 12" Suction Length	44.1	X	Pump Rate	334.1667	GPM =	0.017	Ft. Head
†Booster 8" Suction Length	36.3	X	Pump Rate	334.1667	GPM =	0.023	Ft. Head
†Booster 8" Discharge Length	5.0	X	Pump Rate	334.1667	GPM =	0.004	Ft. Head
†Booster 12" Discharge Length	0	X	Pump Rate	334.1667	GPM =	0.000	Ft. Head
†Booster 8" Discharge Length	2602.8	X	Pump Rate	334.1667	GPM =	1.615	Ft. Head
Total Friction Head Losses at Pump Rate =						1.659	Ft. Head

Total Dynamic Head Loss = **365.3754** Feet

Painted Woods Residences at 400 GPD per connection	76	Homes =	30,400.00	GPD
Old Hickory Estates residences at 400 GPD per connection	25	Homes =	10,000.00	GPD
Total Domestic use =	101 Homes		40,400.00	GPD

At 2.5 peak rate Domestic Use Peak Flow = 101,000.00 GPD
 Minimum Pump Sizing for Peak Flow Rate in GPM = 70.14 GPM

*Two Hour Fire Flow at 1,000 GPM = 2 hr X 60 Min. X 1,000 Gal. = **120,000.00** Gal.

Total Theoretical Minimum Storage Needs = **160,400.00** Gal.

Actual Fire Flow Minimum Storage Needs (Fire + Peak minus Pump Rate) = **88,316.67** Gal.

Actual Total Theoretical Minimum Storage Needs = (ADF + Fire Flow Min.) **128,716.67** Gal.

At 25' to Overflow, then Tank would be	16.52	± Radius or	33.04733	Diameter
At 20' to Overflow, then Tank would be	18.47	± Radius or	36.94804	Diameter
At 15' to Overflow, then Tank would be	21.33	± Radius or	42.66393	Diameter

* NC Fire Prevention Code - Appendix B, Section B105, B105.1

† Includes fitting equivalent lengths

Anderson & Associates, Inc.
 406 Gallimore Dairy Road, Greensboro, NC 27409

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Painted Woods / Old Hickory Estates, Phase 1**

February 6, 2009

To: Honorable Mayor and Members of City of Council

From: Water & Sewer Department Staff

RE: STAFF RECOMMENDATION FOR ACCEPTANCE OF
WATER UTILITY EXTENSION AGREEMENT (WUEA)

This is a project to extend lines to provide water service to **phase 1 of the proposed single family subdivisions**. This project is located **along Burney Mountain Road**. This project is under the reviewing jurisdiction of **Henderson County** and is located within the **USA – Urban Services Area**. This project **will not** involve an IBT (Interbasin Transfer) from the French Broad River Basin. The entire cost of the proposed water line extension is to be paid for by **Upper Eastside, LLC & W.R. McFalls Corporation of Hendersonville, NC**.

This project requires approximately **2016** linear feet of water line sized as following:

Approximate Length:	Description:
673 lf	8" DIP CL 350
1343 lf	12" DIP CL 350

Fire Protection will be provided by the installation of **three (3)** fire hydrants.

The Reviewing Jurisdiction, listed below, has completed their review of this utility extension request in regard to their adopted land use plan or in terms of its future impact on existing land uses for that local government.

Reviewing Jurisdiction: **Henderson County**

Approved Disapproved

Narrative Comments Provided: Yes No

Signing Official: _____
(Print)

Date: _____

Based on the above information, the Water & Sewer Department has the capacity to support this additional infrastructure and associated connections and hereby recommends approval of said project contingent upon final approval of construction plans and specifications by the Water & Sewer Department.

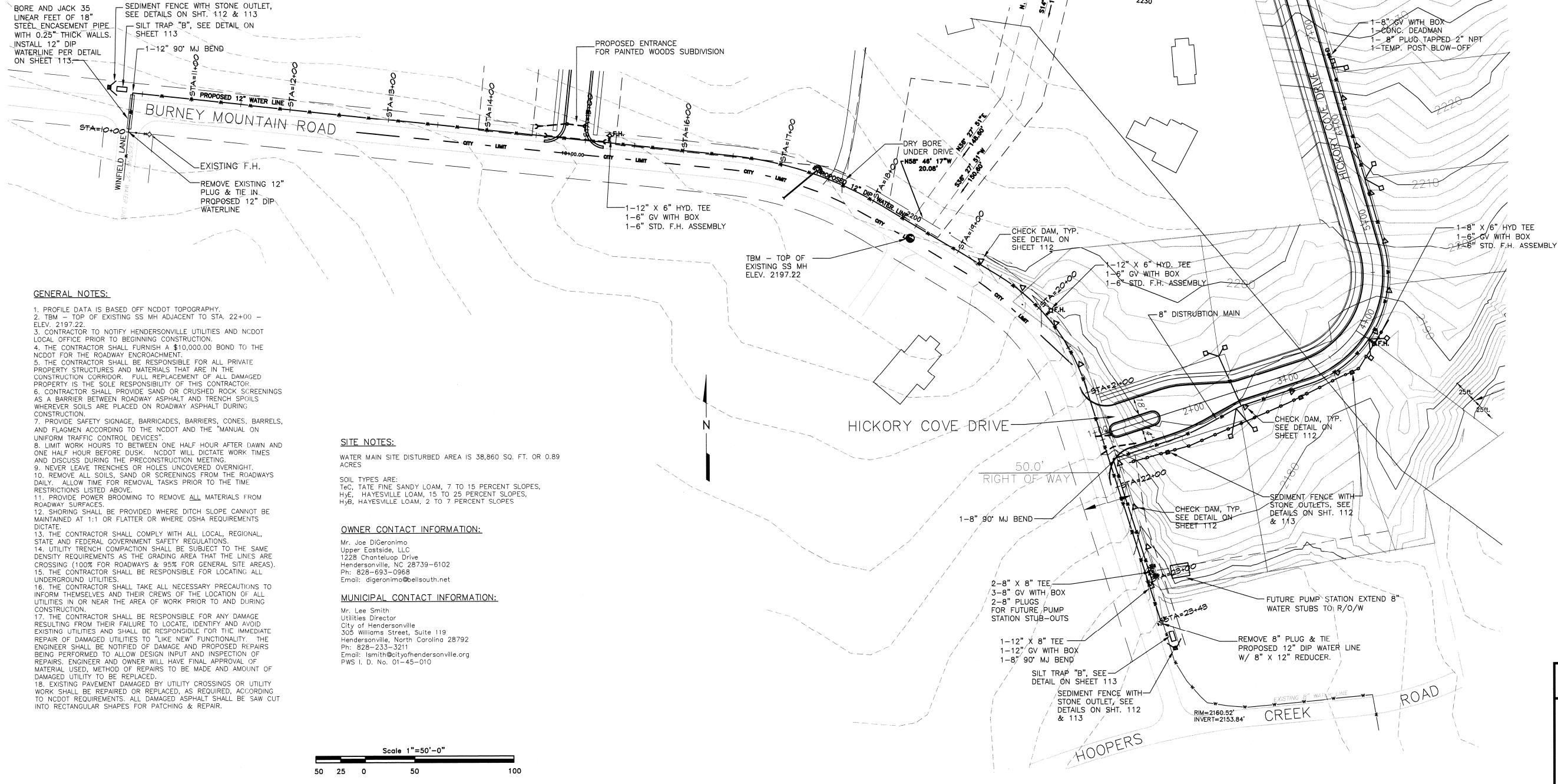
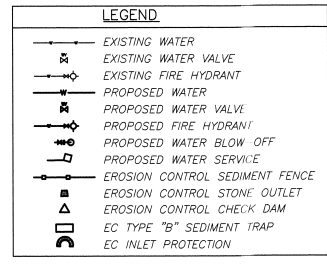
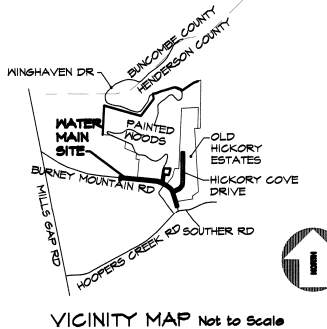
A motion is needed to approve and accept this project. Suggested wording for motion is as follows:

"I move to accept this Water Utility Extension Project and to authorize the City Manager to execute the associated Water Utility Extension Agreement on behalf of the City."

Water and Sewer Department:	<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: 2-6-09
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____

EROSION CONTROL & CONSTRUCTION SEQUENCING

1. PROVIDE SEDIMENT FENCE PROTECTION ON THE DOWNWARD SLOPE FROM THE WATER MAIN INSTALLATION ALIGNMENT, WHERE SHOWN.
2. INSTALL OTHER PERTINENT EROSION CONTROL MEASURES, AS SHOWN, ALONG THE PROJECT PATH AND PROVIDE PROTECTION FOR EXISTING STORM STRUCTURES.
3. BEGIN EXCAVATION OF WATER MAIN TRENCH WHILE PROVIDING ANY NECESSARY DEWATERING OF TRENCH, AS SPECIFIED.
4. PREVENT SEDIMENTATION TRANSFER DURING DEWATERING BY PROVIDING PROTECTION AT THE DISCHARGE END TO TRAP SEDIMENT AND SLOW FLOWS. AT THE SUCTION END, PROVIDE A WELL SLUMP CONSISTING OF A PVC PIPE WELL CASING AND CLEAN WASHED STONE TO MINIMIZE PICKUP OF SEDIMENT.
5. DURING TRENCHING OPERATIONS, SEAL THE SITE DISTURBED AREAS BY BACKFILLING AND SMOOTHING WITH A DOZER AT THE END OF EACH DAY. PROVIDE DIVERSION DITCHING TO PROTECT SLOPES AND CHANNELIZE RUNOFF TO EROSION CONTROL PROTECTION DEVICES.
6. PROVIDE SAND OR CRUSHED ROCK SCREENINGS AS A BARRIER BETWEEN ASPHALT AND TRENCH SPOILS WHEREVER SOILS ARE PLACED ON ASPHALT DURING CONSTRUCTION.
7. MAINTAIN ALL EROSION CONTROL DEVICES IN GOOD OPERATING CONDITION. REMOVE SEDIMENT BUILDUP AS SOON AS BASIN STORAGE AREAS ARE HALF FULL. RECUT DIVERSION DITCHES PERIODICALLY TO MINIMIZE RUNOFF.
8. REVIEW ALL EROSION CONTROL DEVICES AFTER OR DURING EVERY STORM EVENT FOR POSSIBLE DAMAGE AND IMMEDIATELY REPAIR ANY DAMAGE FOUND.
9. INSTALL UNDERGROUND UTILITIES AND BACKFILL PROPERLY TO ESTABLISHED FINISH GRADES.
10. PROVIDE CUT AND FILL SLOPES WITH TEMPORARY OR PERMANENT GROUND COVER AS SOON AS POSSIBLE, BUT NO LATER THAN FIFTEEN (15) DAYS AFTER COMPLETION.
11. KEEP DISTURBED AREAS TO A MINIMUM FOR THE WORK REQUIRED.
12. IF SITE CONDITIONS CHANGE, DUE TO THE WAY CONSTRUCTION IS PERFORMED, THAT EFFECTS THE WAY THIS APPROVED EROSION CONTROL PLAN IS LAID OUT, THEN IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADDED MEASURES TO COMPLY WITH THE "NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL."
13. INSTALL LANDSCAPING AND MULCH OR PERMANENT GROUND COVER AS SOON AS POSSIBLE AFTER FINISH GRADES HAVE BEEN REACHED, BUT NO LATER THAN FIFTEEN (15) DAYS. GROUND COVER SHALL BE AS REQUIRED BY THE SEASONAL SEEDING CHARTS IN THE "NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL."
14. INSTALL EROSION CONTROL MATTING WHERE SHOWN IN DITCHLINES OR WHERE DITCHLINE GRADES EXCEED 2 PERCENT SLOPE TO AID IN ESTABLISHMENT OF VEGETATIVE COVER.
15. MAINTAIN EROSION CONTROL DEVICES THROUGHOUT DURATION OF PROJECT UNTIL ALL AFFECTED AREAS ARE STABILIZED AND RELEASE HAS BEEN GRANTED FOR DEVICE REMOVAL BY THE NCDEM EROSION CONTROL OFFICER AND THE SITE ENGINEER.
16. ONCE REMOVAL OF EROSION CONTROL DEVICES IS AUTHORIZED, REMOVE THE DEVICES TAKING CARE TO DISTURB MINIMAL AREAS. DISBURSE OR LOAD & HAUL OFF SITE ANY BUILDUP OF SEDIMENT, SMOOTH THE DISTURBED AREAS AND APPLY PERMANENT SEEDING AND MULCHING.
17. MAINTAIN GROUND COVER BY REWORKING, RESEEDING AND REMULCHING WHERE NECESSARY TO PROVIDE UNIFORM GROUND COVER.



GENERAL NOTES:

1. PROFILE DATA IS BASED OFF NCDOT TOPOGRAPHY.
2. TBM - TOP OF EXISTING SS MH ADJACENT TO STA. 22+00 - ELEV. 2197.22
3. CONTRACTOR TO NOTIFY HENDERSONVILLE UTILITIES AND NCDOT LOCAL OFFICE PRIOR TO BEGINNING CONSTRUCTION.
4. THE CONTRACTOR SHALL FURNISH A \$10,000.00 BOND TO THE NCDOT FOR THE ROADWAY ENCROACHMENT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PRIVATE PROPERTY STRUCTURES AND MATERIALS THAT ARE IN THE CONSTRUCTION CORRIDOR. FULL REPLACEMENT OF ALL DAMAGED PROPERTY IS THE SOLE RESPONSIBILITY OF THIS CONTRACTOR.
6. CONTRACTOR SHALL PROVIDE SAND OR CRUSHED ROCK SCREENINGS AS A BARRIER BETWEEN ROADWAY ASPHALT AND TRENCH SPOILS WHEREVER SOILS ARE PLACED ON ROADWAY ASPHALT DURING CONSTRUCTION.
7. PROVIDE SAFETY SIGNAGE, BARRICADES, BARRIERS, CONES, BARRELS, AND FLAGMEN ACCORDING TO THE NCDOT AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. LIMIT WORK HOURS TO BETWEEN ONE HALF HOUR AFTER DAWN AND ONE HALF HOUR BEFORE DUSK. NCDOT WILL DICTATE WORK TIMES AND DISCUSS DURING THE PRECONSTRUCTION MEETING.
9. NEVER LEAVE TRENCHES OR HOLES UNCOVERED OVERNIGHT.
10. REMOVE ALL SOILS, SAND OR SCREENINGS FROM THE ROADWAYS DAILY. ALLOW TIME FOR REMOVAL TASKS PRIOR TO THE TIME RESTRICTIONS LISTED ABOVE.
11. PROVIDE POWER BROOMING TO REMOVE ALL MATERIALS FROM ROADWAY SURFACES.
12. SHORING SHALL BE PROVIDED WHERE DITCH SLOPE CANNOT BE MAINTAINED AT 1:1 OR FLATTER OR WHERE OSHA REQUIREMENTS DICTATE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, REGIONAL, STATE AND FEDERAL GOVERNMENT SAFETY REGULATIONS.
14. UTILITY TRENCH COMPACTION SHALL BE SUBJECT TO THE SAME DENSITY REQUIREMENTS AS THE GRADING AREA THAT THE LINES ARE CROSSING (100% FOR ROADWAYS & 95% FOR GENERAL SITE AREAS).
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES.
16. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO INFORM THEMSELVES AND THEIR CREWS OF THE LOCATION OF ALL UTILITIES IN OR NEAR THE AREA OF WORK PRIOR TO AND DURING CONSTRUCTION.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THEIR FAILURE TO LOCATE, IDENTIFY AND AVOID EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR THE IMMEDIATE REPAIR OF DAMAGED UTILITIES TO "LIKE NEW" FUNCTIONALITY. THE ENGINEER SHALL BE NOTIFIED OF DAMAGE AND PROPOSED REPAIRS BEING PERFORMED TO ALLOW DESIGN INPUT AND INSPECTION OF REPAIRS. ENGINEER AND OWNER WILL HAVE FINAL APPROVAL OF MATERIAL USED, METHOD OF REPAIRS TO BE MADE AND AMOUNT OF DAMAGED UTILITY TO BE REPLACED.
18. EXISTING PAVEMENT DAMAGED BY UTILITY CROSSINGS OR UTILITY WORK SHALL BE REPAIRED OR REPLACED, AS REQUIRED, ACCORDING TO NCDOT REQUIREMENTS. ALL DAMAGED ASPHALT SHALL BE SAW CUT INTO RECTANGULAR SHAPES FOR PATCHING & REPAIR.

SITE NOTES:

WATER MAIN SITE DISTURBED AREA IS 38,860 SQ. FT. OR 0.89 ACRES

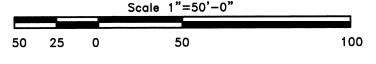
SOIL TYPES ARE:
 Tc, TATE FINE SANDY LOAM, 7 TO 15 PERCENT SLOPES,
 HyE, HAYESVILLE LOAM, 15 TO 25 PERCENT SLOPES,
 HyB, HAYESVILLE LOAM, 2 TO 7 PERCENT SLOPES

OWNER CONTACT INFORMATION:

Mr. Joe DiGermino
 Upper Eastside, LLC
 1228 Chanteloup Drive
 Hendersonville, NC 28739-6102
 Ph: 828-693-0968
 Email: digeronimo@ellsouth.net

MUNICIPAL CONTACT INFORMATION:

Mr. Lee Smith
 Utilities Director
 City of Hendersonville
 305 Williams Street, Suite 119
 Hendersonville, North Carolina 28792
 Ph: 828-233-3211
 Email: lsmith@cityofhendersonville.org
 PWS 1, D. No. 01-45-010



17/30/2009 3:29 PM / u:\26449\26449.dwg Design\26449-base_revmake_1-13-2009.dwg Ph: 1 - Cover

ANDERSON & ASSOCIATES, INC.
 Professional Design Services
 www.andassoc.com
 406 Gallimore Dairy Rd.
 Greensboro, NC 27409
 336-931-0910

DATE	REV.#	COMMENTS	DATE
JUN-6-08			
DESIGNED: BHH			
DRAWN: WJF			
CHECKED: RSH			
QA/QC: JRB			

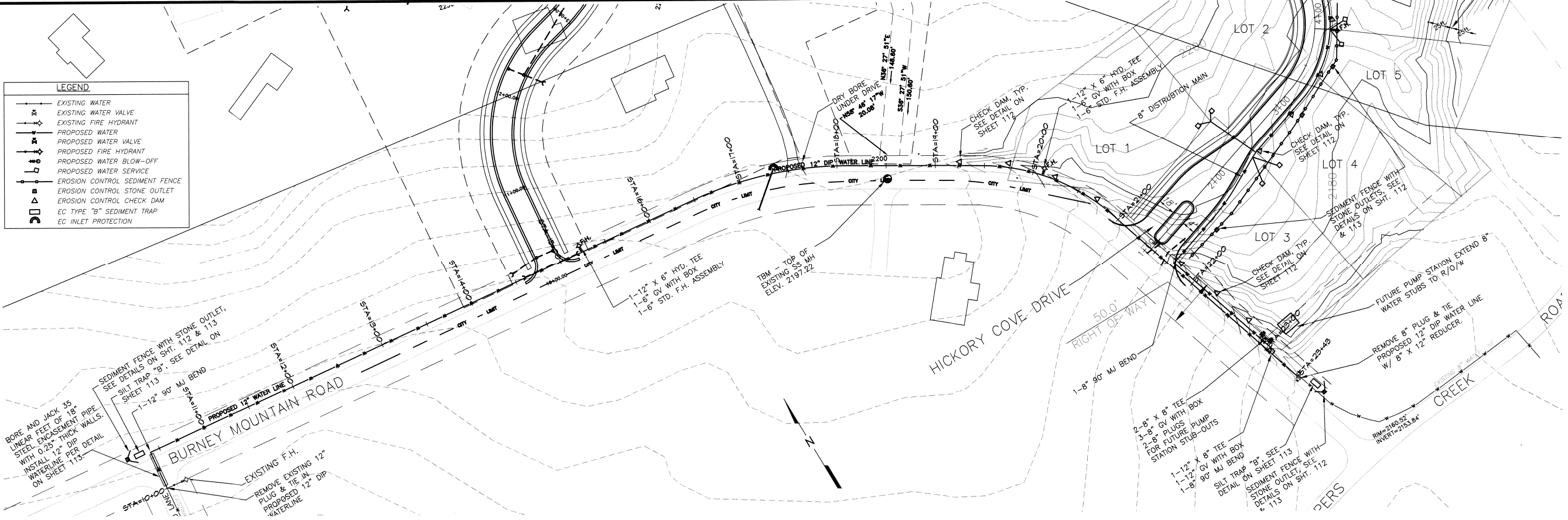
OLD HICKORY ESTATES PHASE 1
 WATER
 TOWN OF FLETCHER, NC & HENDERSON COUNTY

PHASE 1 - COVER/UTILITIES

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

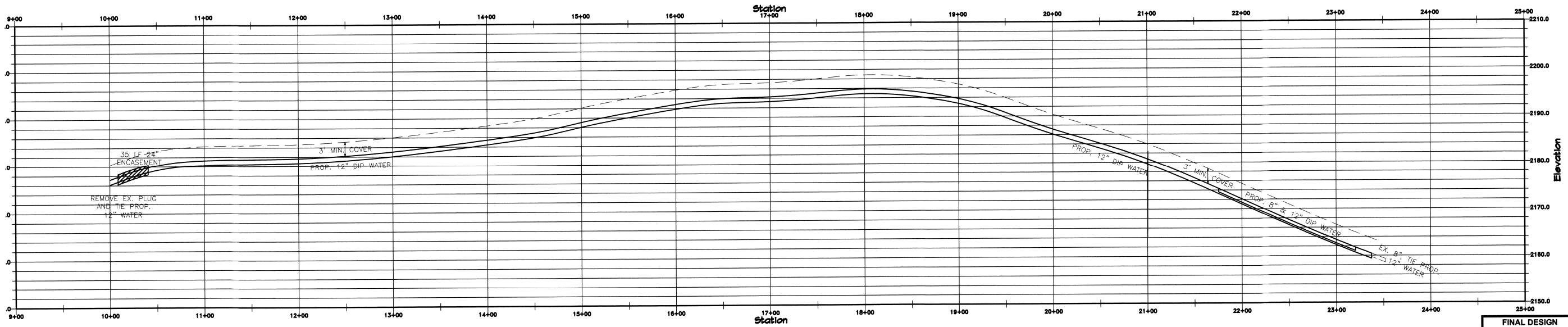
DOCUMENT NO.	26449 - 110
1 SHEET	OF 4

LEGEND	
	EXISTING WATER
	EXISTING WATER VALVE
	EXISTING FIRE HYDRANT
	PROPOSED WATER
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER BLOW-OFF
	PROPOSED WATER SERVICE
	EROSION CONTROL SEDIMENT FENCE
	EROSION CONTROL STONE OUTLET
	EROSION CONTROL CHECK DAM
	EC TYPE "B" SEDIMENT TRAP
	EC INLET PROTECTION

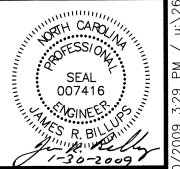


WATER LINE
 Horizontal Scale 1"=50'-0"
 Vertical Scale 1"=10'-0"

- NOTES:
 1. TBM - TOP OF EXISTING SS MH ADJACENT TO STA. 22+00 - ELEV. 2197.22
 2. FURNISH & INSTALL 4 FOOT WIDE EXCELSIOR MATTING IN DITCHLINE FROM STA. 19+00 TO STA. 23+50.



FINAL DESIGN
 NOT RELEASED
 FOR CONSTRUCTION



U:\30\26449\26449.dwg 1/30/2009 3:29 PM

U:\30\26449\26449.dwg 1/30/2009 3:29 PM / u:\30\26449\26449.dwg Ph. 1 - Plan and Profile 1

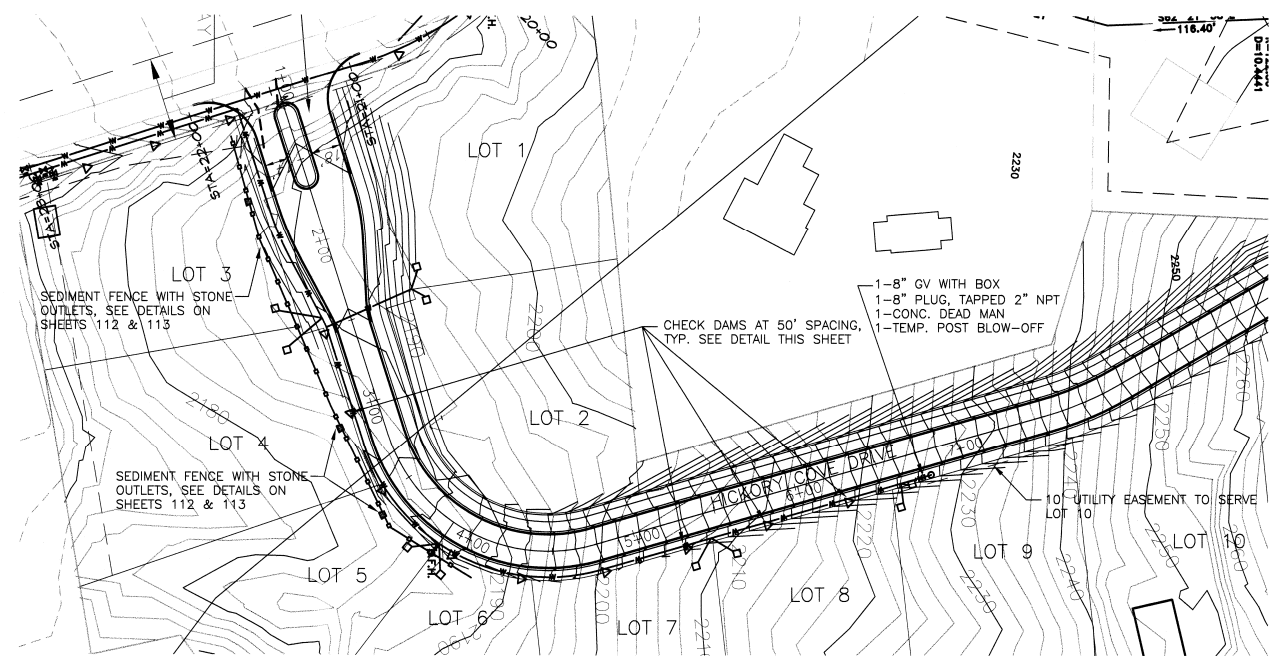
ANDERSON & ASSOCIATES, INC.
 Professional Design Services
 www.andassoc.com
 VA - NC - TN - WV

DATE	DESIGNED	DRAWN	CHECKED	QA / QC
JUN-6-08	BHH	WJF	RSH	JRB

OLD HICKORY ESTATES PHASE 1
 WATER
 TOWN OF FLETCHER, NC & HENDERSON COUNTY

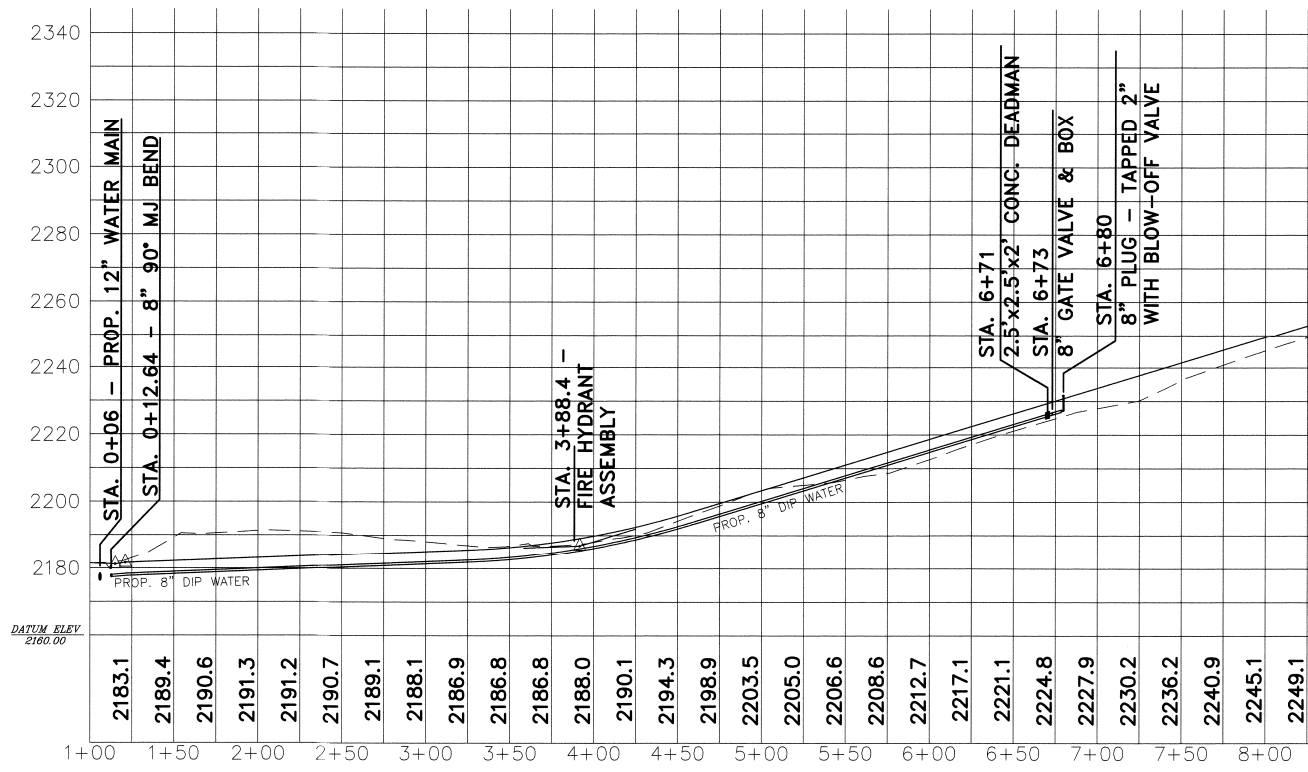
PHASE 1 - PLAN & PROFILE
BURNEY MOUNTAIN ROAD

DOCUMENT NO.	SHEET	OF
26449 - 111	2	4



WATER LINE
 Horizontal Scale 1"=50'-0"
 Vertical Scale 1"=10'-0"

NOTE:
 FURNISH & INSTALL 4 FT. WIDE EXCELSIOR MATTING IN DITCHLINE FROM STA. 1+20 TO STA. 2+00 AND STA. 2+50 TO STA. 6+80



LEGEND

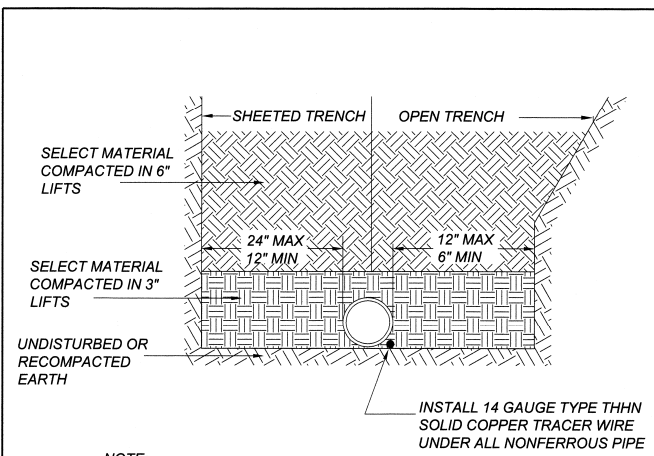
- EXISTING WATER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED WATER
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER BLOW-OFF
- PROPOSED WATER SERVICE
- EROSION CONTROL SEDIMENT FENCE
- EROSION CONTROL STONE OUTLET
- EROSION CONTROL CHECK DAM
- EC TYPE "B" SEDIMENT TRAP
- EC INLET PROTECTION

VALUES FOR "A"

SIZE	11 1/4° BEND	22 1/2° BEND	45° BEND	90° BEND	TEE
6"	12	12	12	16	16
8"	12	12	16	22	22
10"	12	14	20	28	28
12"	12	18	24	32	32
14"	14	20	28	38	38
16"	16	22	32	42	42
18"	18	26	36	48	48
20"	20	28	40	52	52
24"	24	34	46	64	64

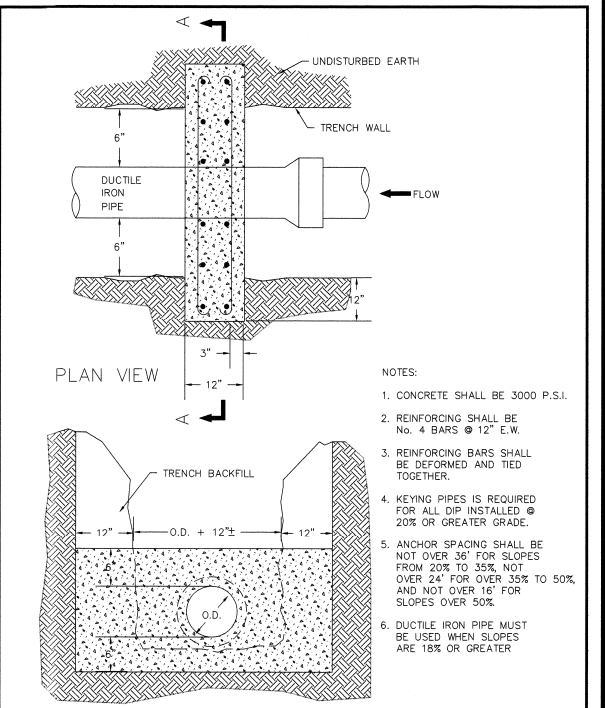
CITY OF HENDERSONVILLE

NOTES:
 CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATION OF ALL PUBLIC UNDERGROUND UTILITIES.
 PRIOR TO EXCAVATION CALL NORTH CAROLINA ONE CALL FOR LOCATIONS AT 1-800-632-4949.
 CONTRACTOR IS RESPONSIBLE FOR RESEEDING ALL DISTURBED AREAS.
 CONTRACTOR IS REQUIRED TO COMPLY WITH THE NORTH CAROLINA ADMINISTRATIVE CODE, RULES GOVERNING PUBLIC WATER SYSTEMS, TITLES 15A NCAC 18C.0906
 CITY OF HENDERSONVILLE



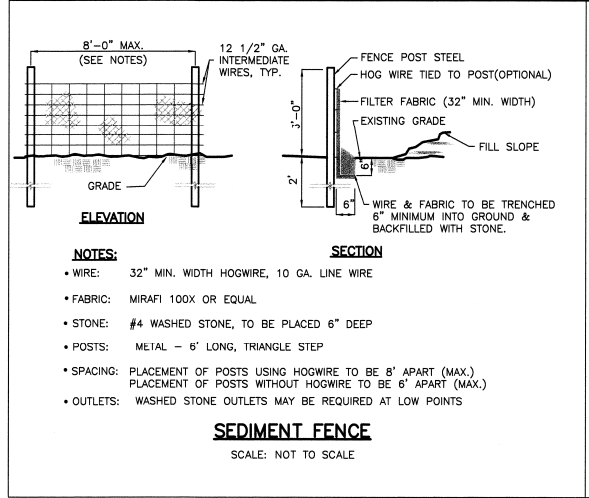
NOTE:
 1. ALL SHORING & TRENCHING SHALL COMPLY WITH OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY
 2. BELL HOLES NOT SHOWN.

TYPICAL TRENCHING DETAIL
 NTS City of Hendersonville



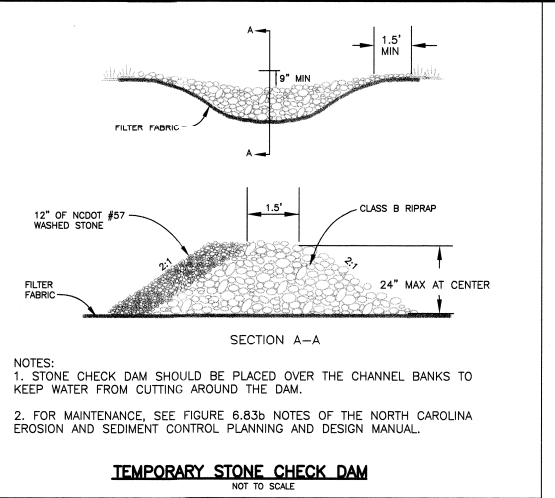
NOTES:
 1. CONCRETE SHALL BE 3000 P.S.I.
 2. REINFORCING SHALL BE No. 4 BARS @ 12" E.W.
 3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
 4. KEYING PIPES IS REQUIRED FOR ALL DIP INSTALLED @ 20% OR GREATER GRADE.
 5. ANCHOR SPACING SHALL BE NOT OVER 36" FOR SLOPES FROM 20% TO 35%, NOT OVER 24" FOR OVER 35% TO 50%, AND NOT OVER 16" FOR SLOPES OVER 50%.
 6. DUCTILE IRON PIPE MUST BE USED WHEN SLOPES ARE 18% OR GREATER

STANDARD DETAIL
 Metropolitan Sewerage District
 Buncombe County, North Carolina
 KEYING PIPES ON SLOPES
 APPROVED: MAY 6, 1998 # DMSD-10
 Rev. 10/31/02 - Change verbiage re: spacing @ slope 35%+



NOTES:
 • WIRE: 32" MIN. WIDTH HOGWIRE, 10 GA. LINE WIRE
 • FABRIC: MIRAFI 100X OR EQUAL
 • STONE: #4 WASHED STONE, TO BE PLACED 6" DEEP
 • POSTS: METAL - 6" LONG, TRIANGLE STEP
 • SPACING: PLACEMENT OF POSTS USING HOGWIRE TO BE 8' APART (MAX.) PLACEMENT OF POSTS WITHOUT HOGWIRE TO BE 6' APART (MAX.)
 • OUTLETS: WASHED STONE OUTLETS MAY BE REQUIRED AT LOW POINTS

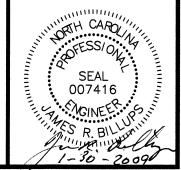
SEDIMENT FENCE
 SCALE: NOT TO SCALE



NOTES:
 1. STONE CHECK DAM SHOULD BE PLACED OVER THE CHANNEL BANKS TO KEEP WATER FROM CUTTING AROUND THE DAM.
 2. FOR MAINTENANCE, SEE FIGURE 6.83b NOTES OF THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

TEMPORARY STONE CHECK DAM
 NOT TO SCALE

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION



ANDERSON & ASSOCIATES, INC.
 Professional Design Services
 www.andassoc.com
 VA - NC - TN - WV
 406 Gallimore Dairy Rd.
 Greensboro, NC 27409
 336-931-0910

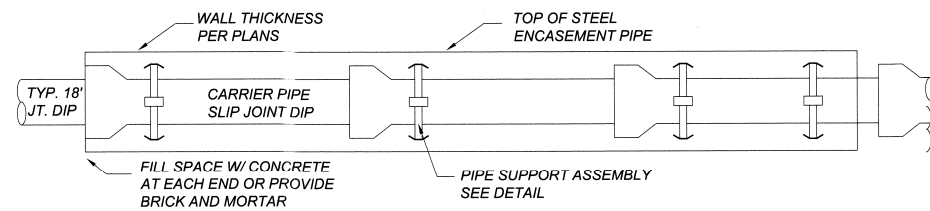
DATE	REV. #	COMMENTS	DATE
JUN-6-08			
DESIGNED: BHH			
DRAWN: WJF			
CHECKED: RSH			
QA/QC: JRB			

OLD HICKORY ESTATES PHASE 1
 WATER
 TOWN OF FLETCHER, NC & HENDERSON COUNTY

PHASE 1 - PLAN & PROFILE & DETAILS
 HICKORY COVE ROAD

DOCUMENT NO.	26449-112
SHEET	3
OF	4

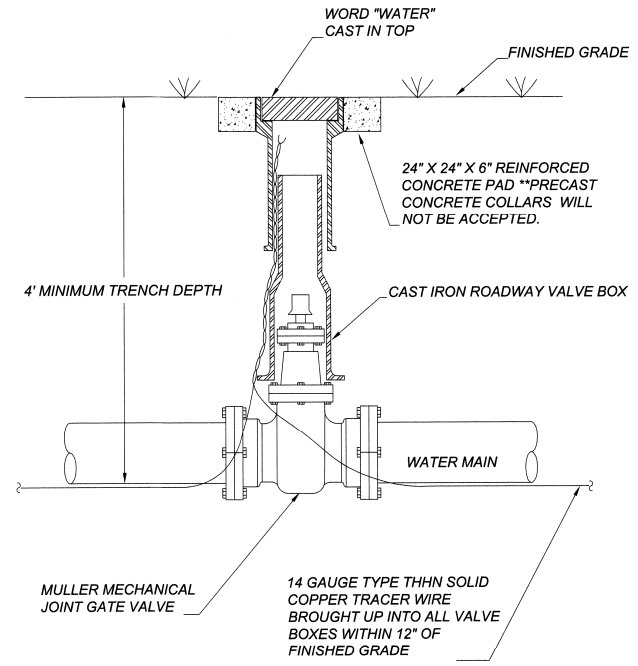
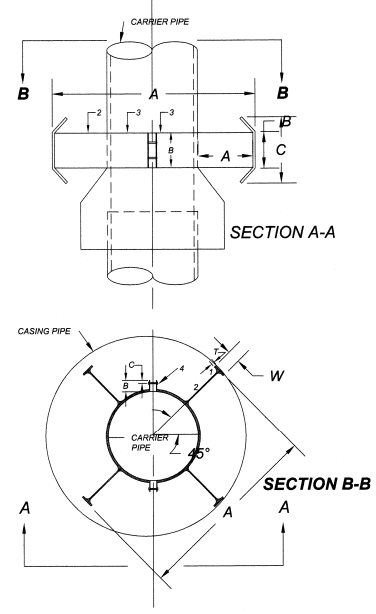
1-13-2009.dwg/Ph. 1 - Plan and Profile 2
 us\26\26449\26449emp\design\26449-base_revhoke_1-13-2009.dwg/Ph. 1 - Plan and Profile 2
 1/30/2009 3:29 PM



CARRIER PIPE NOMINAL	CARRIER PIPE O.D.	CASING PIPE		PIPE SUPPORT ASSEMBLY MARK NUMBER												DIMENSIONS		
		RAILROAD O.D.	HIGHWAY WALL	1			2			3			4			A	B	C
6"	6.90"	12"	.251"	12"	.375"	5"	2"	3/8"	3"	1"	3/8"	3"	3/8"	1/2" DIA 1 REQ'D	10.40"	1 7/8"	3/4"	
8"	9.05"	16"	.282"	16"	.375"	6"	2"	3/8"	4"	1 1/4"	3/8"	3"	3/8"	1/2" DIA 1 REQ'D	14.05"	1 7/8"	3/4"	
10"	11.10"	24"	.407"	24"	.375"	6"	2"	3/8"	4"	1 1/4"	3/8"	4"	3/8"	1/2" DIA 1 REQ'D	22.20"	3"	1 3/8"	
12"	13.20"	24"	.407"	24"	.375"	6"	2"	3/8"	4"	1 1/4"	3/8"	4"	3/8"	1/2" DIA 1 REQ'D	22.20"	3"	1 3/8"	
14"	15.30"	24"	.407"	24"	.375"	6"	2"	3/8"	4"	1 1/4"	3/8"	4"	3/8"	1/2" DIA 1 REQ'D	22.30"	3"	1 3/8"	
16"	17.40"	30"	.469"	30"	.375"	8"	3"	3/8"	6"	1 1/4"	3/8"	6"	3/8"	1/2" DIA 1 REQ'D	27.40"	3"	1 3/8"	
18"	19.50"	30"	.469"	30"	.375"	8"	3"	3/8"	6"	1 1/4"	3/8"	6"	3/8"	1/2" DIA 1 REQ'D	27.50"	3"	1 3/8"	
30"	32.00"	42"	.563"	42"	.469"	12"	4"	3/8"	10"	1 1/4"	1/2"	10"	1/2"	1/2" DIA 1 REQ'D	38.75"	3"	1 3/8"	

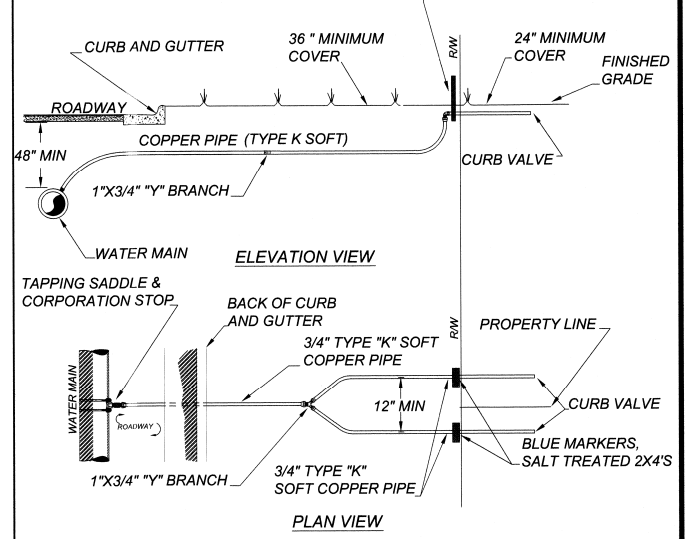
NOTES:
 1. GREASE ENCASUREMENT PIPE AS REQUIRED FOR EASE OF INSTALLATION
 2. INSTALLATION BY DRY BORE AND JACKING
 3. STEEL PIPE TO BE 35,000 PSI MIN. YIELD STRENGTH
 4. SEE SECTION 07400

PIPE ENCASUREMENT DETAIL
 NTS CITY OF HENDERSONVILLE



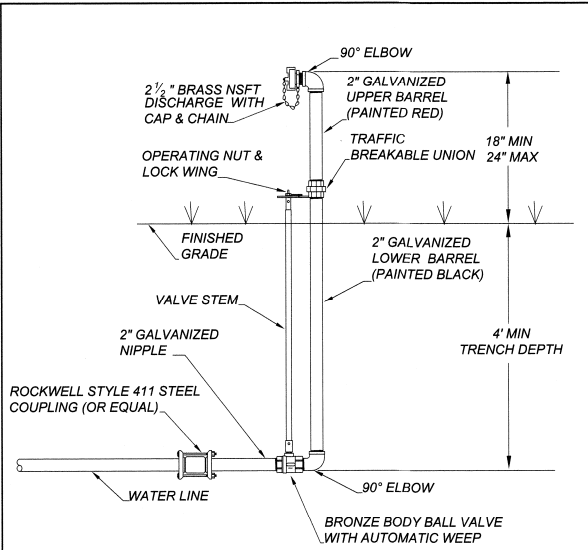
IN GROUND GATE VALVE DETAIL
 NTS CITY OF HENDERSONVILLE

INSTALL A 2X4" TREATED WOOD MARKER, PAINTED BLUE. DRILL A 1" HOLE 4" FROM THE BOTTOM, CENTER AND INSERT A 3/8" BRASS NIPPLE THROUGH THE HOLE TO A 3/8" CURB VALVE. SEE SERVICE LATERAL DETAIL FOR METER LOCATION.



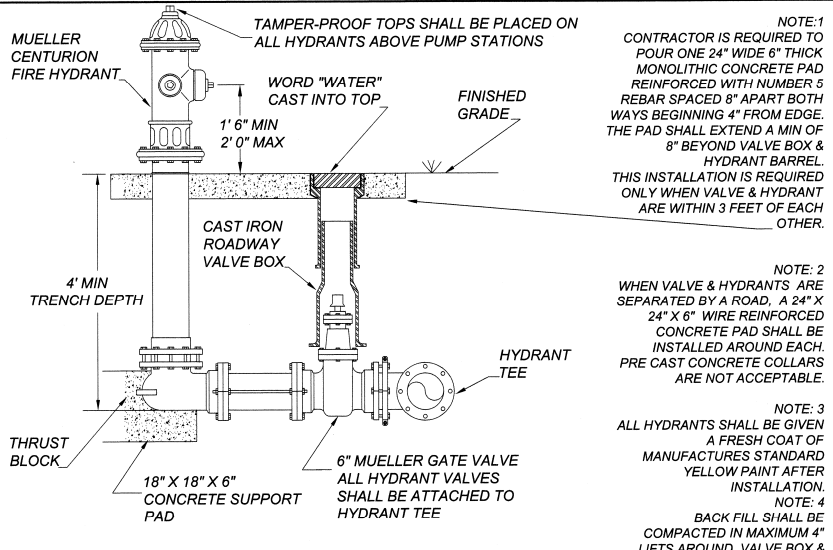
NOTES:
 MAXIMUM ALLOWABLE SERVICES IS 2 - 5/8" METERS SERVED BY A 1 INCH TAP AND SERVICE LINE.
 METERS SHALL BE EQUALLY OFF-SET FROM PROPERTY LINE. MINIMUM LENGTH OF BRASS NIPPLE SHALL BE 12 INCHES (12").
 INSTALL 14 GAUGE TYPE THIN SOLID COPPER TRACER WIRE ALONG SERVICE LATERAL, TIED TO THE WATER MAIN TRACER WIRE & END WITH A 3' COIL ANCHORED TO THE TOP OF THE PRESSURE TREATED WOOD MARKER.
 ALL TRACER WIRE CONNECTIONS MUST BE TIED USING SPLIT BOLT CONNECTORS & WRAPPED WITH ELECTRICAL PUTTY & WATERPROOF TAPE.

MULTI-BRANCH SERVICE LATERAL
 NTS CITY OF HENDERSONVILLE



NOTE:
 1. PLACEMENT SHALL BE IN FRONT OF PROPERTY CORNERS IN CUL-DE-SACS
 2. 14 GA., TYPE "THIN" SOLID COPPER TRACER WIRE SHALL BE INSTALLED, BROUGHT TO SURFACE & END WITH 3' COIL ON TOP OF THE BLOW-OFF VALVE.

BLOW OFF VALVE
 NTS CITY OF HENDERSONVILLE



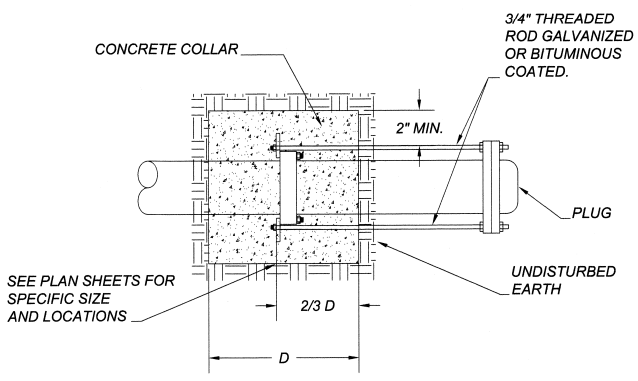
NOTE: 1
 CONTRACTOR IS REQUIRED TO POUR ONE 24" WIDE 6" THICK MONOLITHIC CONCRETE PAD REINFORCED WITH NUMBER 5 REBAR SPACED 8" APART BOTH WAYS BEGINNING 4" FROM EDGE. THE PAD SHALL EXTEND A MIN OF 8" BEYOND VALVE BOX & HYDRANT BARREL. THIS INSTALLATION IS REQUIRED ONLY WHEN VALVE & HYDRANT ARE WITHIN 3 FEET OF EACH OTHER.

NOTE: 2
 WHEN VALVE & HYDRANTS ARE SEPARATED BY A ROAD, A 24" X 24" X 6" WIRE REINFORCED CONCRETE PAD SHALL BE INSTALLED AROUND EACH. PRE CAST CONCRETE COLLARS ARE NOT ACCEPTABLE.

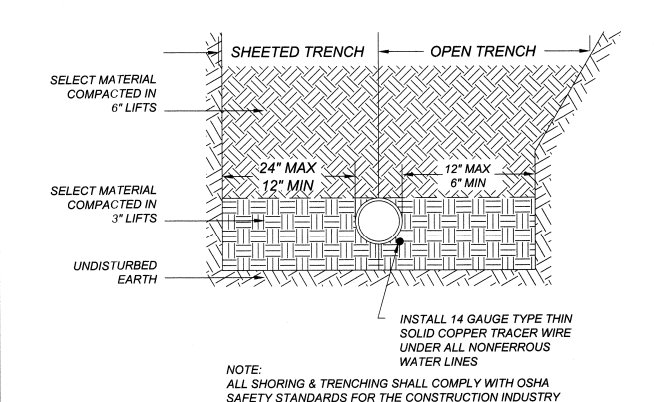
NOTE: 3
 ALL HYDRANTS SHALL BE GIVEN A FRESH COAT OF MANUFACTURES STANDARD YELLOW PAINT AFTER INSTALLATION.

NOTE: 4
 BACK FILL SHALL BE COMPACTED IN MAXIMUM 4" LIFTS AROUND VALVE BOX & HYDRANT BARREL.

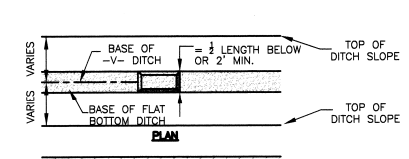
FIRE HYDRANT INSTALLATION
 NTS CITY OF HENDERSONVILLE



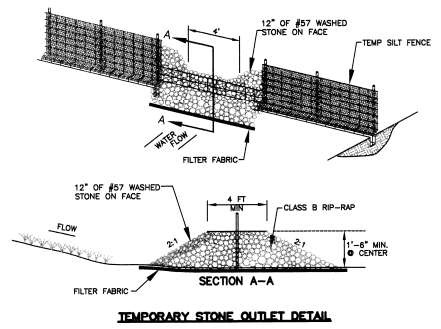
PLUG DEADMAN
 NTS CITY OF HENDERSONVILLE



UNDERCUT TRENCH EXCAVATION
 NTS CITY OF HENDERSONVILLE



SILT BASIN TYPE "B"
 NTS



TEMPORARY STONE OUTLET DETAIL

U:\26\26449\26449.dwg (1/30/2009 3:29 PM) / u:\26\26449\design\26449.dwg (1/30/2009 3:29 PM) / u:\26\26449\design\26449.dwg (1/30/2009 3:29 PM) / u:\26\26449\design\26449.dwg (1/30/2009 3:29 PM)

ANDERSON & ASSOCIATES, INC.
 Professional Design Services
 www.andassoc.com
 VA - NC - TN - WV
 406 Gallimore Dairy Rd.
 Greensboro, NC 27409
 336-931-0910

DATE	REV.#	COMMENTS	DATE
JUN-6-08			
DESIGNED: BHH			
DRAWN: WJF			
CHECKED: RSH			
QA/QC: JRB			

OLD HICKORY ESTATES PHASE 1
 WATER
 TOWN OF FLETCHER, NC & HENDERSON COUNTY

DETAILS

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

PROFESSIONAL SEAL
 SEAL 007416
 ENGINEER
 JAMES R. BILLINGS
 1-30-2009

DOCUMENT NO. **26449 - 113**
 SHEET **4** OF **4**

HENDERSON COUNTY REVIEW OF CITY WATER LINE EXTENSIONS

Project Name: Painted Woods & Old Hickory Estates
 Size of Water Line (Main & Distribution Pipe Size): 673 LF of 8" DIP CL350; 1343 LF of 12" DIP CL350
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshal; Parker Sloan, Planner; Autumn Radcliff, Senior Planner

Has the project been reviewed under the **County Subdivision Regulations of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Manufactured Park Regulations of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Zoning Regulations (i.e. Special-Use or Conditional-Use Permit) of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Is the project subject to **any other County Land Use Regulations?** Yes No N/A

If yes, explain: _____

Does the project conform with the **2020 Henderson County Comprehensive Plan (CCP)?** Yes No N/A

Does the project have **adequate hydrant location and spacing?** Yes No N/A

Description of **hydrant type and thread:** Mueller Centurion – National Standard Thread

Does the estimated flow rate (gpm) meet **fire protection standards?** Meets standard for structure spacing of more than 100 feet. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- Approved Date of Board Review: _____
- Not Approved Comments: _____
- Conditional Approval (See Comments)

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: March 18, 2009

Subject: Water Line Extension – Camp Judaea

Attachments: Vicinity Map
Engineer's Report
Project Summary
Project Map
County Review Sheet

Summary of Request:

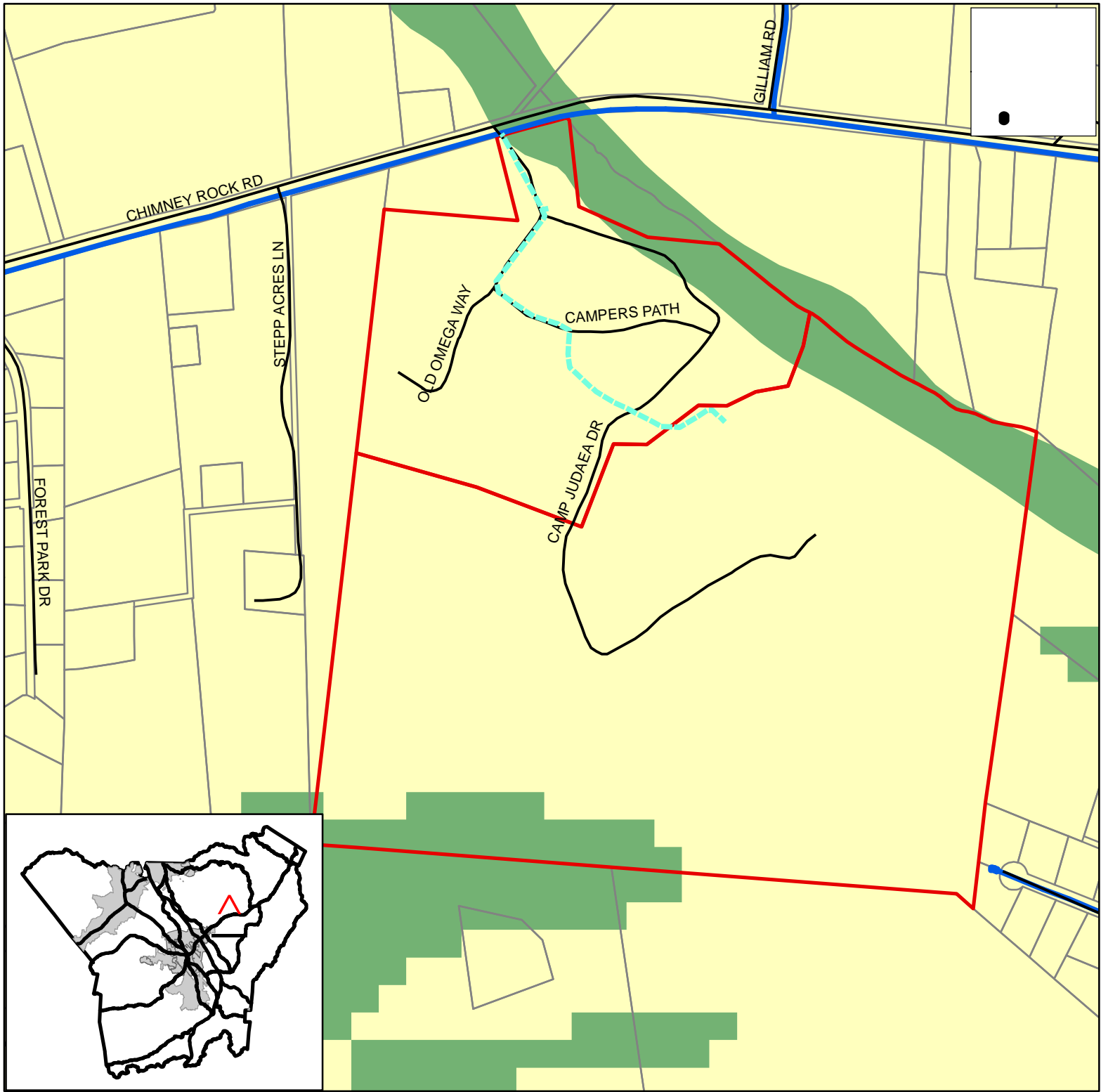
The City of Hendersonville has requested that the County comment on the proposed water line extension for Camp Judaea. The proposed water line is 1,859 linear feet. The projects' location within the rural transition area is consistent with the Henderson County 2020 Comprehensive Plan. A City of Hendersonville Project Summary Sheet, with backup documents and County Review Sheet with Staff comments, are attached for Board review and action.

Board Action Request:

Action by the Board of Commissioners is needed to either grant or deny this request. If the Board decides to approve the requested extension the following motion has been provided.

Suggested Motion:

I move that the Board approve the Camp Judaea water line extension and direct Staff to convey the County's comments to the City of Hendersonville.



Camp Judaea

OWNER/DEVELOPER: Camp Judaea, Inc.
 ZONING: R2-MH
 ROAD SYSTEM: Private

Legend

- - - Proposed Waterline Extension
- Streets
- 2008 COH Waterlines
- Project Site
- Conservation Areas
- Rural Transition Area



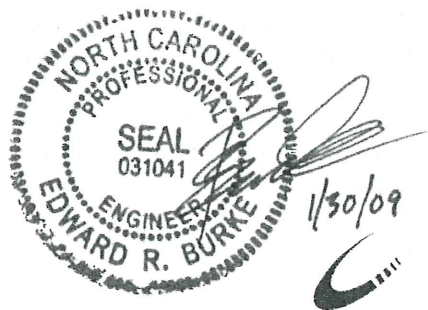


**CAMP JUDAEA
PHASE I DEVELOPMENT**

**HENDERSON COUNTY,
NORTH CAROLINA**

**WATER DISTRIBUTION SYSTEM
ENGINEERING REPORT**

January 30, 2009



CAVANAUGH

Solutions through integrity and partnership

We provide superior client service and environmentally sound designs through integrity, communication and partnership.

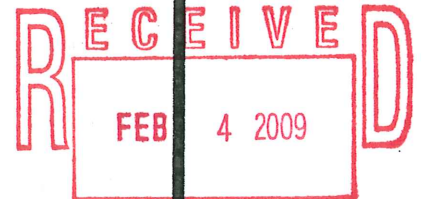
Consulting Engineers
Environmental Professionals

Land Surveyors
Design Professionals

1200 Centrepark Drive, Suite 100, Asheville, North Carolina 28805, Phone 828/255-7596, Fax 828/255-0770



COPY



City of Hendersonville
Water & Sewer Department

III. Applicant

The applicant is as follows:

City of Hendersonville
305 Williams Street
Hendersonville, NC 28792

IV. Service Area for Proposed Project

The proposed extension will serve the Phase I Development and future phases of development for Camp Judaea with domestic water service and fire protection. Phase I Development consists of four (4) cabins that bunk eleven (11) campers each for a total of 44 campers. The existing camp infrastructure and water supply system will remain active and will remain the water supply for the existing camp features. However, the existing water system infrastructure, served by the wells described above, will not be connected to the proposed Phase I Development.

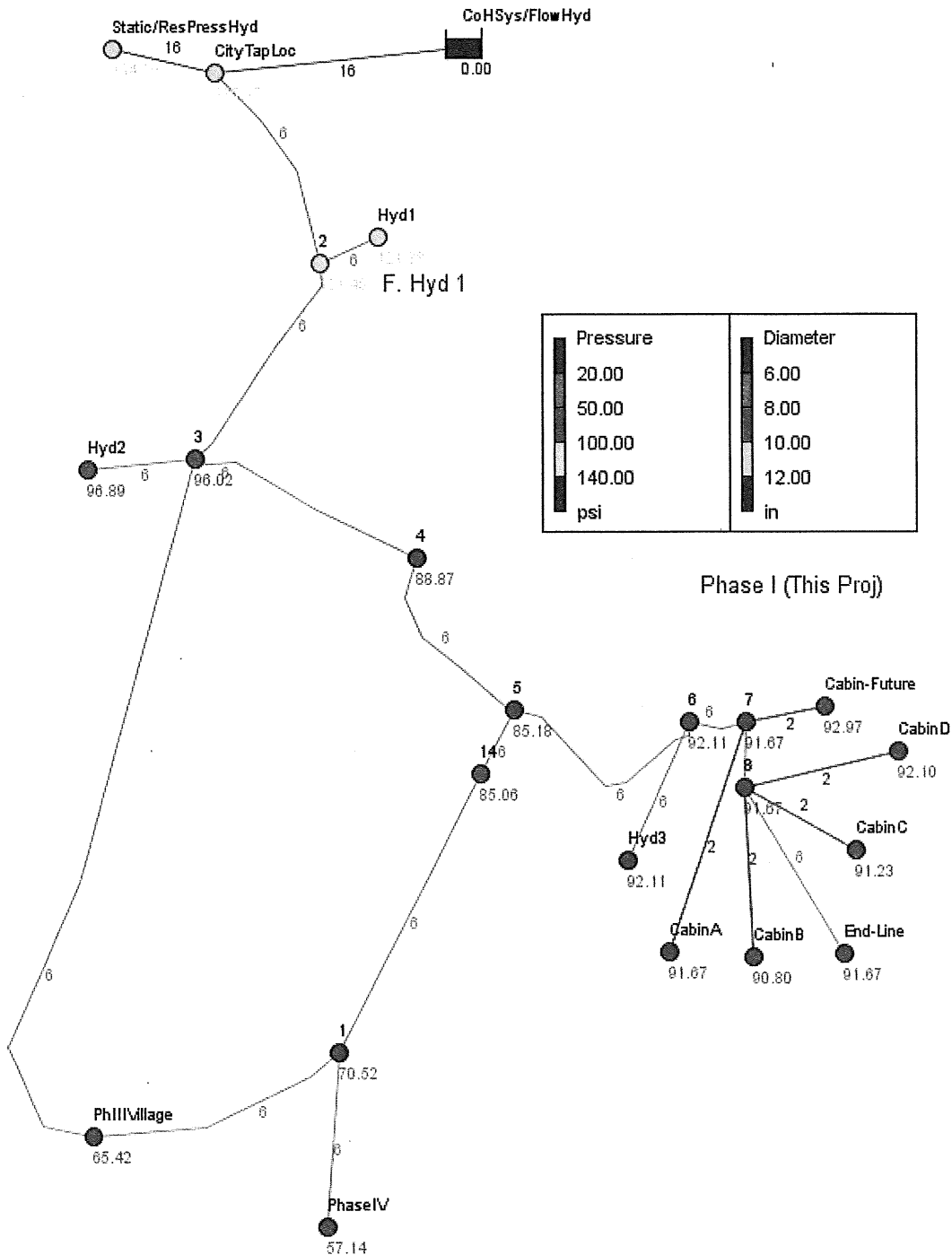
Over the next 20 years, Camp Judaea expects to construct additional buildings to slowly phase out the existing structures. Overall, the Camp's capacity (500 campers and staff) is not expected to grow in the next 20 years. However, as new phases of development take place, the existing structures will be phased out and the new structures will be placed on the municipal water system. The proposed Phase I Development water system was designed in anticipation of these future phases.

V. Alternatives

The only reasonable alternatives for the project, including connection to the City of Hendersonville public water system are as follows:

1. Private Well (Existing System) – The proposed development could tie into the Camp's existing water supply system. Fire flow regulations have advanced, however, since the construction of the existing system. Neither the existing wells nor the existing distribution system are capable of providing adequate fire protection to the proposed cabins. This alternative is, therefore, neither permitted nor feasible.
2. City of Hendersonville Water System – The City of Hendersonville has an existing 16 inch waterline that is adjacent to the proposed project site. An additional water storage tank is currently under construction that will provide increased pressure and flow in the area of the proposed project. This alternative is the only alternative that is capable of providing adequate fire protection to this project and future phases. Therefore, this is the only feasible alternative.

Figure 6.2 Model Network – Camp Judaea Phase I Development & Future Phases



Fire Flow Demand = 1,000 gpm

Total Maximum Instantaneous Demand:

$$1,000 \text{ gpm} + 93.8 \text{ gpm} = 1,093.8 \text{ gpm}$$

The projected maximum daily water demand by this project is approximately 45,000 gallons per day (gpd) as calculated above. The total maximum instantaneous demand is approximately 1,094 gallons per minute (gpm) including 1,000 gpm for fire flow. No expansion or other significant increase of demand beyond the future phases described above is anticipated to be served by this extension.

The Camp's water demand will be asymmetric in that the Camp currently operates generally from April until August. Therefore the demands calculated above apply during these months. The Camp's demand (minus fire protection) from September through March is effectively zero. As a result, stagnation and water quality are valid concerns for this extension.

To manage this risk, a double check detector will be installed near the tie-in location for this project to the existing 16-in supply main. The apparatus will be contained in an above ground heated enclosure to protect against freezing conditions.

Two options were considered to manage the water quality in the line. First, an automated end-of-line blow-off valve was considered to open on a schedule for a set amount of time to turnover the water in the proposed extension and thus maintain water quality.

The second option is remove the water meters at the end of each season to prevent usage of the water in the down season. Then, prior to the Camp's activation in April, the line will be flushed and tested for water quality. Upon obtaining satisfactory water quality, the meters will be reinstalled by CoH for use.

It was calculated that the automated system would need to open for approximately 7 minutes every three days to maintain water quality. This would result in flushing approximately 2,600 gallons every three days. This would result in approximately 182,000 gallons of water lost to flushing a year. The second option would result in a flushing loss of only 6,000 gallons (approximately). Therefore, the second option was selected to ensure the water quality in the extension.

IX. Character of Water Supply

The City of Hendersonville (01-45-010), as mentioned above from the City's 2002 LWSP, draws water from Bradley Creek, Mills River, and North Fork Mills River which is all treated at the City of Hendersonville's WTP. The City's WTP can generate 12 MGD and

XIII. Maximum Supply and Demand

Calculations for estimating the water demands for the proposed Camp Judaea are included in Section VIII. Total maximum instantaneous demand including domestic service and fire protection is projected to be approximately 1,094 gallons per minute (gpm) for Camp Judaea.

According to information provided by the City's 2002 Local Water Supply, the City has approximately 38% of their 12 MGD supply available. The City projects that in 2010 31% of the 12 MGD supply will be available. Further discussion of water supply can be found in Section IX.

XIV. Infrastructure Improvements

This project includes the addition of domestic and fire service lines to serve the referenced residential development that range in size from 6 to 10 inches.

XV. Appendix

- A. City of Hendersonville 2002 Local Water Supply Plan
- B. Supporting Calculations and Water Model Output – Phase I Development
- C. Supporting Calculations and Water Model Output – Anticipated Full Build Out

Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	18,766	4.296	0	0.000
Commercial	1,844	1.370	0	0.000
Industrial	48	0.787	0	0.000
Institutional	96	0.166	0	0.000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? **0.150 MGD**

System process water was assumed to be about two percent of portable water produced.

Water Sales

Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract		Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				Expiration	Recurring			
City of Asheville	01-11-010	0.000	0	0.000			18	Emergency
Town of Laurel Park	01-45-030	0.111	365	0.000			6	Regular
Town of Saluda	01-75-020	0.151	365	0.197			12	Regular

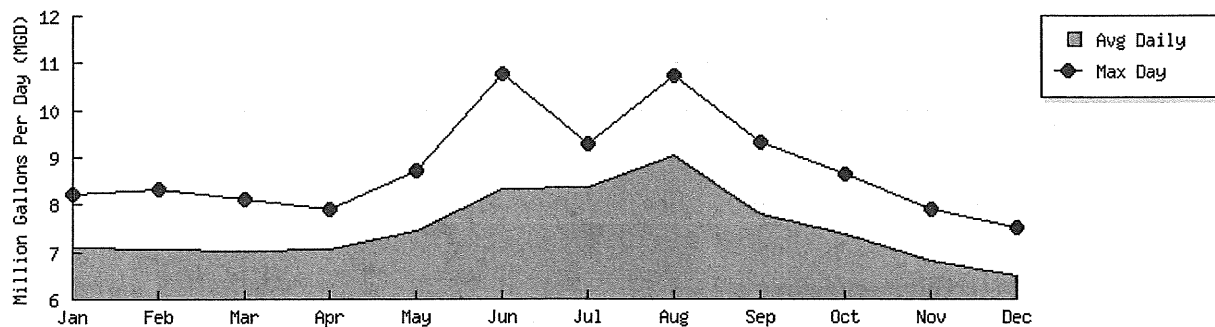
Water sales contract with Saluda expires in 2011 and is assumed to be renewed and continue.

3. Water Supply Sources

Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	7.089	8.212	May	7.443	8.727	Sep	7.800	9.334
Feb	7.063	8.326	Jun	8.342	10.750	Oct	7.386	8.648
Mar	7.008	8.105	Jul	8.381	9.292	Nov	6.805	7.900
Apr	7.076	7.917	Aug	9.022	10.716	Dec	6.509	7.501

Hendersonville's 2002 Monthly Withdrawals & Purchases



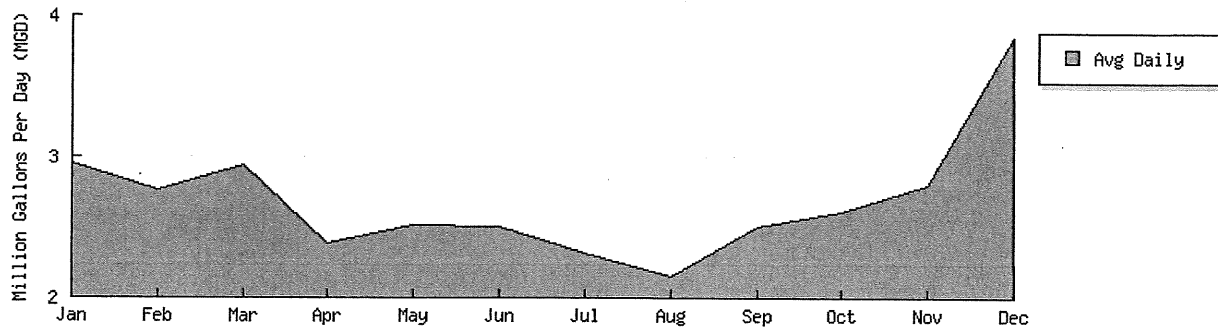
Surface Water Sources

Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	Qualifier	
Bradley Creek	Bradley Creek Reservoir	1.312	280	2.452	0.000		3.000
Mills River		5.433	365	9.441	12.000	F	0.000
North Fork Mills River	North Fork Reservoir	1.312	280	2.452	0.000		4.000

Surface Water Sources (continued)

Drainage Area	Year	Use
---------------	------	-----

Hendersonville's 2002 Monthly Discharges



How many sewer connections does this system have? 6,967

How many water service connections with septic systems does this system have? 12,500

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

Wastewater Permits

Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0025534 WWTP	4.800	4.800	2.692	4.800	Mud Creek	French Broad River (05-2)
NC0042277 WTP	0.180	0.180	0.150	0.000	Brady Branch	French Broad River (05-2)

System process water was assumed to be about two percent (0.150 mgd) of portable water produced.

5. Planning

Projections

	2002	2010	2020	2030
Year-Round Population	47,405	50,818	55,392	60,377
Seasonal Population	50,000	53,359	58,162	63,396
Residential	4.296	4.610	5.020	5.470
Commercial	1.370	1.400	1.500	1.600
Industrial	0.787	0.800	0.800	0.800
Institutional	0.166	0.200	0.300	0.300
System Process	0.150	0.150	0.165	0.180
Unaccounted-for	0.415	0.508	0.554	0.604

System process water was assumed to be about two percent of portable water produced. Unaccounted-for water about 6%.

Future Water Sales

Purchaser	PWSID	MGD	Contract Year Begin	Contract Year End	Pipe Size(s) (Inches)	Use Type
Laurel Park	01-45-030	0.100			6	Regular
Town of Saluda	01-75-020	0.197	2001		12	Regular

Future sales to Saluda ending in 2011 is assumed to be renewed and continue.

Laurel Park's LWSP 2002 has additional purchase supply (future) of 100,000 gpd from Hendersonville.

Demand v/s Percent of Supply

Year	2002	2010	2020	2030
------	------	------	------	------

APPENDIX B

SUPPORTING CALCULATIONS AND WATER MODEL OUTPUT PHASE I DEVELOPMENT

Node Results: (continued)

Node ID	Demand GPM	Head ft	Pressure psi	Quality
FutureCxn	0.00	2326.38	72.96	0.00
Hyd2	0.00	2387.07	102.72	0.00
Hyd1	0.00	2417.77	125.56	0.00
Hyd3	1000.00	2292.55	65.23	0.00
Cabin-Future	2.10	2293.41	66.47	0.00
CityTapLoc	0.00	2447.59	136.74	0.00
Static/ResPressHyd	0.00	2447.59	135.88	0.00
CoHSys/FlowHyd	-1010.51	2470.00	0.00	0.00 Reservoir

Link Results:

Link ID	Flow GPM	Velocity fps	Headloss ft/Kft	Status
1	1010.51	1.61	22.41	Open
2	1010.51	11.47	87.70	Open
3	0.00	0.00	0.00	Open
4	1010.51	11.47	87.70	Open
5	0.00	0.00	0.00	Open
6	1010.50	11.47	87.70	Open
7	1010.50	11.47	87.70	Open
8	0.00	0.00	0.00	Open
9	1010.50	11.47	87.70	Open
10	1000.00	11.35	86.01	Open
11	10.50	0.12	0.02	Open
12	2.10	0.02	0.00	Open
13	6.30	0.07	0.01	Open
14	0.00	0.00	0.00	Open
15	2.10	0.02	0.00	Open
16	2.10	0.02	0.00	Open
17	2.10	0.02	0.00	Open
18	2.10	0.02	0.00	Open
19	0.00	0.00	0.00	Open

```

*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                *
*****
  
```

Input File: Camp J Water System-FBO-Residual.net

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in
1	CoHSys/FlowHyd	CityTapLoc	1000	16
2	CityTapLoc	2	340	6
3	2	Hyd1	15	6
4	2	3	350	6
5	3	Hyd2	20	6
6	3	4	382	6
7	4	5	310	6
8	5	14	10	6
9	5	6	376	6
10	6	Hyd3	10	6
11	6	7	30	6
12	7	CabinA	20	2
13	7	8	30	6
14	8	End-Line	15	6
15	8	CabinB	35	2
16	7	Cabin-Future	2	2
17	8	CabinD	50	2
18	8	CabinC	50	2
20	3	PhIIIVillage	850	6
22	14	1	511	6
23	1	PhaseIV	204	6
19	PhIIIVillage	1	333	6
21	Static/ResPressHyd	CityTapLoc	10	16

Node Results:

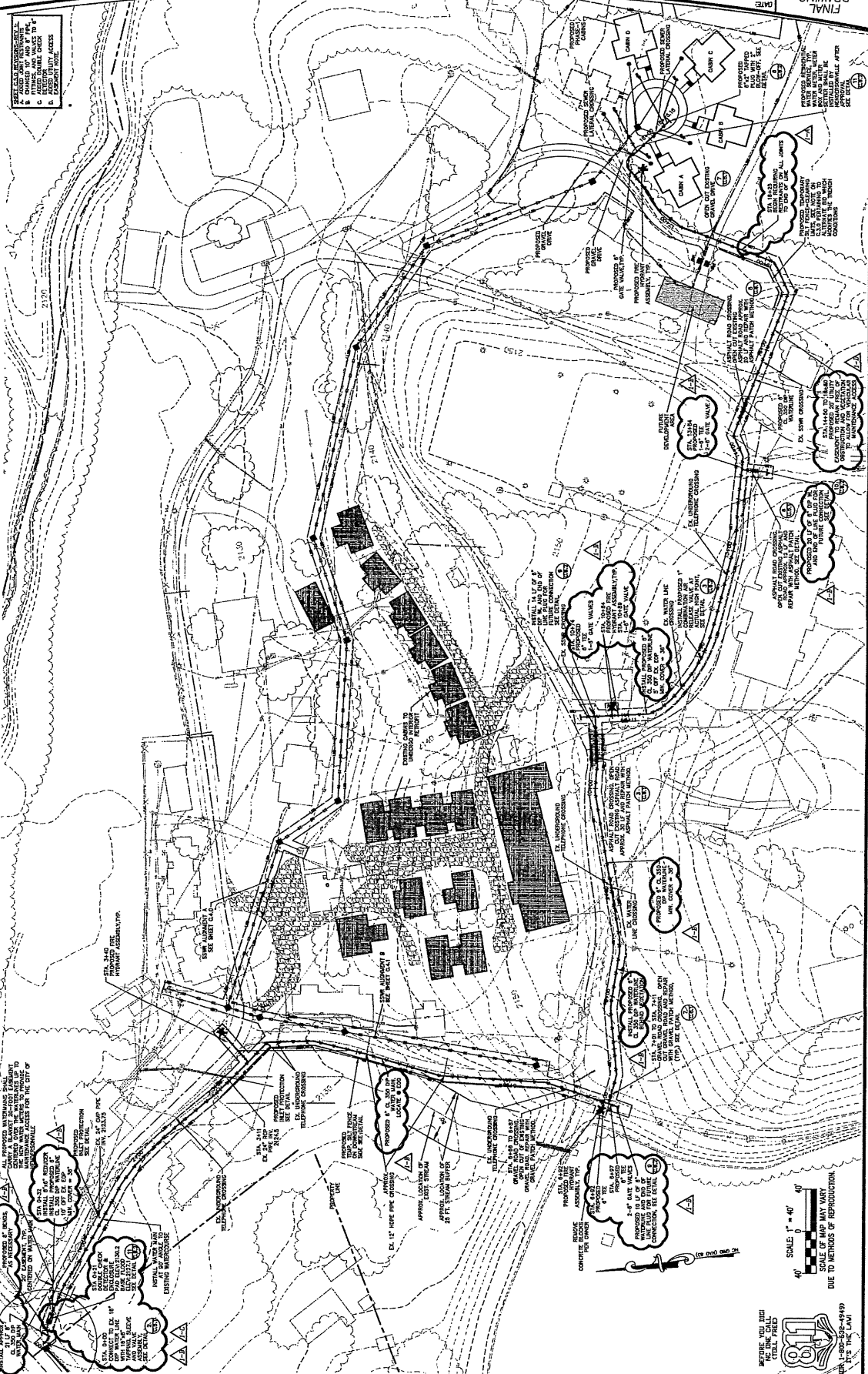
Node ID	Demand GPM	Head ft	Pressure psi	Quality
2	0.00	2409.29	121.45	0.00
3	0.00	2373.61	96.02	0.00
4	0.00	2363.10	88.87	0.00
5	0.00	2354.57	85.18	0.00
6	0.00	2354.57	92.11	0.00
7	0.00	2354.57	91.67	0.00
8	0.00	2354.57	91.67	0.00
End-Line	0.00	2354.57	91.67	0.00

DATE	NOVEMBER 2008
PROJECT NO.	031.08.013
DESIGNED BY	LTL
CHECKED BY	ERB
SCALE	AS NOTED
FOR CONSTRUCTION	

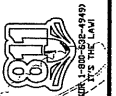
- GENERAL NOTES:**
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF HENDERSON COUNTY SPECIFICATIONS, THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS AND BRIDGES, LATEST EDITIONS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF HENDERSON COUNTY AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

- GENERAL NOTES: (1) THROUGH (10) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (11) THROUGH (15) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (16) THROUGH (20) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (21) THROUGH (25) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (26) THROUGH (30) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (31) THROUGH (35) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (36) THROUGH (40) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (41) THROUGH (45) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (46) THROUGH (50) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (51) THROUGH (55) SHALL BE CONSIDERED AT THE POINT OF CROSSING.

- GENERAL NOTES: (56) THROUGH (60) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (61) THROUGH (65) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (66) THROUGH (70) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (71) THROUGH (75) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (76) THROUGH (80) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (81) THROUGH (85) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (86) THROUGH (90) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (91) THROUGH (95) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (96) THROUGH (100) SHALL BE CONSIDERED AT THE POINT OF CROSSING.
- GENERAL NOTES: (101) THROUGH (105) SHALL BE CONSIDERED AT THE POINT OF CROSSING.



SCALE: 1" = 40'
SCALE OF MAP MAY VARY
DUE TO METHODS OF REPRODUCTION



IF YOU DO NOT
SEE THIS PLAN

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Camp Judaea, Phase 1**

February 9, 2009

To: Honorable Mayor and Members of City of Council

From: Water & Sewer Department Staff

RE: STAFF RECOMMENDATION FOR ACCEPTANCE OF
WATER UTILITY EXTENSION AGREEMENT (WUEA)

This is a project to extend lines to provide water service to **phase 1 development of the existing camp**. This project is located **at the intersection of Hwy 64 East and Camp Judaea Lane**. This project is under the reviewing jurisdiction of **Henderson County** and is located within the **USA – Urban Services Area or RTA**. This project **will not** involve an IBT (Interbasin Transfer) from the French Broad River Basin. The entire cost of the proposed water line extension is to be paid for by **Camp Judaea, Inc.**

This project requires approximately **1859** linear feet of water line sized as following:

Approximate Length:	Description:
32 lf	8" DIP CL350
1827 lf	6" DIP CL350

Fire Protection will be provided by the installation of four (4) fire hydrants.

The Reviewing Jurisdiction, listed below, has completed their review of this utility extension request in regard to their adopted land use plan or in terms of its future impact on existing land uses for that local government.

Reviewing Jurisdiction: **Henderson County**

Approved Disapproved (See attached form provided to the City by the Reviewing Jurisdiction)

Narrative Comments Provided: Yes No

Signing of Official: _____

Date: _____

Printed Name: _____

Based on the above information, the Water & Sewer Department has the capacity to support this additional infrastructure and associated connections and hereby recommends approval of said project contingent upon final approval of construction plans and specifications by the Water & Sewer Department.

A motion is needed to approve and accept this project. Suggested wording for motion is as follows:

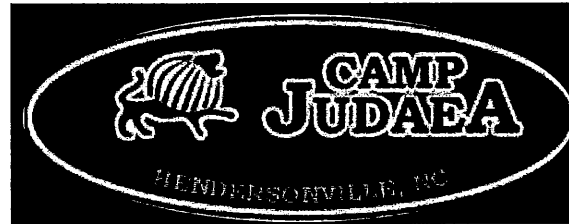
"I move to accept this Water Utility Extension Project and to authorize the City Manager to execute the associated Water Utility Extension Agreement on behalf of the City."

Water and Sewer Department:	<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: 2-5-09
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____

CAMP JUDAEA, INC.

CAMP JUDAEA PHASE I DEVELOPMENT

HENDERSON COUNTY, NORTH CAROLINA



OWNER

CAMP JUDAEA, INC.
2700 NE EXPRESSWAY, C-500
ATLANTA, GA 30345
(404) 634-7884 (PH)
(404) 325-2743 (FAX)
CONTACT: SANDRA BASS
EMAIL: sandra@campjudaea.org

ARCHITECT

schmidtcopelandparkerstevens
1220 W. SIXTH STREET
SUITE 300
CLEVELAND, OHIO 44113
(216) 696-6767 EXT. 102 (PH)
CONTACT: RICHARD PARKER, AIA

CIVIL ENGINEER

CAVANAUGH & ASSOCIATES, P.A.
1200 CENTREPARK DR., SUITE 100
ASHEVILLE, NORTH CAROLINA 28805
(828) 255-7596 / (828) 255-0770 (FAX)
CONTACT: EDWARD "TED" BURKE, P.E.

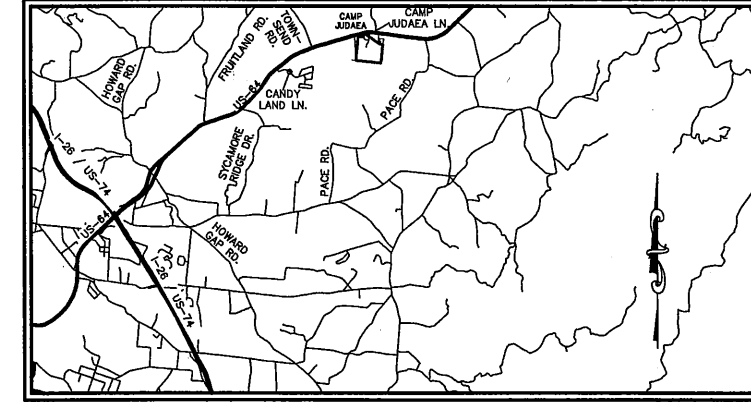
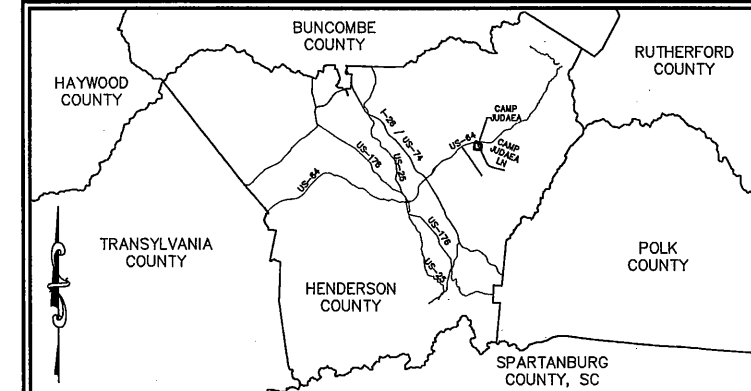
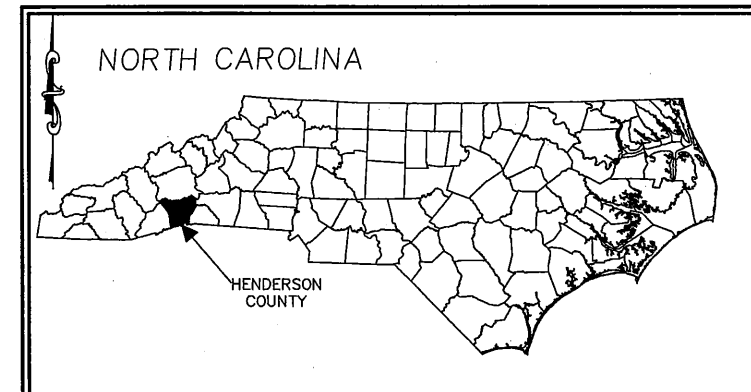
SURVEYOR

CAVANAUGH & ASSOCIATES, P.A.
1200 CENTREPARK DR., SUITE 100
ASHEVILLE, NORTH CAROLINA 28805
(828) 255-7596 / (828) 255-0770 (FAX)
CONTACT: CHRIS GAGNE, PLS

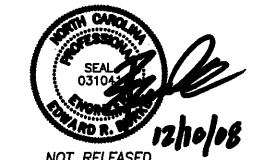
SHEET INDEX

- C.1.0 - COVER
- C.2.0 - OVERALL SITE PLAN & SHEET REFERENCE
- C.3.0 - ROADWAY, GRADING, STORMWATER AND EROSION & SEDIMENT CONTROL PLAN
- C.4.0 - SANITARY SEWER ALIGNMENT A PLAN & PROFILE, STA. 0+00 TO STA. 10+85.04
- C.4.1 - SANITARY SEWER ALIGNMENT B PLAN & PROFILE, STA. 0+00 TO STA. 3+00.35
- C.5.0 - WATER MAIN EXTENSIONS PLAN, STA. 0+00 TO STA. 18+41.72
- C.5.1 - WATER MAIN EXTENSIONS PROFILE, STA. 0+00 TO STA. 18+41.72
- C.6.0 - PAVING, EROSION & SEDIMENT CONTROL DETAILS
- C.6.1 - SANITARY SEWER DETAILS
- C.6.2 - WATER MAIN DETAILS
- C.6.3 - STORM DRAINAGE DETAILS

EXISTING	LEGEND	PROPOSED
	STREAM/CREEK	
	PROPERTY LINE	
	PROPERTY CORNER (EIP, NIR)	
	WETLANDS	
	MAJOR CONTOURS	
	MINOR CONTOURS	
	TREE LINE	
	CENTERLINE OF ROAD	
	ROW	
	SANITARY SEWER	
	SILT FENCE	
	FORCE MAIN	
	WATER	
	STORM DRAIN	
	UNDERGROUND POWER	
	POWER	
	UNDERGROUND TELEPHONE	
	TELEPHONE	
	NATURAL GAS	
	IRRIGATION	
	CONSTRUCTION FENCE	
	CHAINLINK FENCE	
	100-YR FLOOD LINE	
	ASPHALT ROAD	
	GRAVEL ROAD	
	TEMPORARY DIVERSION	
	PERMANENT DIVERSION	
	LIMIT OF DISTURBANCE	
	POWER POLE	
	LIGHT	
	WATER METER	
	VALVE	
	5' SEWER MANHOLE	
	SEWER CLEANOUT	
	FIRE HYDRANT	
	BUILDING	
	BUILDING (INTERIOR RENOVATION)	
	FUTURE BUILDING	
	COIR FIBER ROLLS	
	DROP INLET	
	DROP INLET PROTECTION	
	FLARED END SECTION	



FINAL DRAWING VICINITY MAP (NTS)



NOT RELEASED FOR CONSTRUCTION



CAVANAUGH

Solutions through integrity and partnership



GENERAL NOTES

- (1) TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAGNE P.L.S. # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY, NOT FOR RECORDATION.
- (2) CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
- (3) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH ACTIVITIES SHOWN.
- (4) CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING; NOT TO EXCEED 200 LF. INTERVALS.
- (5) ALL DISTURBED AREAS TO BE SEEDED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
- (6) SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1, ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 13A 51-68) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY HENDERSON COUNTY. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.

- (9) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION, UNLESS OTHERWISE SHOWN, FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.
- (10) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION — IN WHICH CASE:
 - (A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
 - (B) 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- (11) CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- (12) 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 TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

- (14) NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SOD SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
- (15) CONTRACTOR TO INSTALL NEW LATERALS FROM SEWER LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
- (16) WETLAND DELINEATION PERFORMED BY LAND MANAGEMENT GROUP, INC. ON 8/7/07. US ARMY CORPS OF ENGINEERING APPROVAL. PENDING.

SITE LOCATIONS	NORTHING	EASTING
SSWR ALIGNMENT A STA. 0+00	808168.19	891665.90
SSWR ALIGNMENT B STA. 0+00	808126.76	891626.55
GRAVEL ROAD ALIGNMENT STA 0+00	808530.87	892227.80
WATER ALIGNMENT STA 0+00	809422.14	891417.06

BASIS OF BEARING	NORTHING	EASTING
NGCS MONUMENT "POISON"	808298.095	894307.443

LINE	BEARING	DISTANCE
L1	S 38°02'20" E	110.54'
L2	S 85°24'49" E	24.73'
L3	S 31°21'36" E	119.23'
L4	S 74°05'13" E	68.33'
L5	S 49°58'41" E	111.16'
L6	S 49°17'10" E	166.38'
L7	S 55°10'11" E	149.60'
L8	S 85°01'08" E	59.12'
L9	S 39°33'18" E	92.56'
L10	S 77°41'28" E	54.84'
L11	S 49°27'44" E	216.77'
L12	S 67°20'58" E	78.18'
L13	S 62°07'36" E	111.35'
L14	S 43°19'05" E	41.87'
L15	S 62°15'55" E	82.77'
L16	S 63°42'53" E	124.16'
L17	S 34°12'59" E	60.42'
L18	S 77°50'16" E	106.84'
L19	S 76°08'15" E	133.24'
L20	S 81°45'53" E	60.48'



CAVANAUGH
Solutions through integrity and partnership

CAMP JUDEA, INC.
CAMP JUDEA PHASE I DEVELOPMENT PLAN
HENDERSON COUNTY, NORTH CAROLINA

OVERALL SITE PLAN & SHEET REFERENCE

REV.	DESCRIPTION	DATE

SHEET NUMBER
C.2.0

DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
DESIGNED: RLH
CHECKED: ERB
SCALE: AS NOTED

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION

BEFORE YOU DIG
WE ONE CALL
(TOLL FREE)

811

SCALE: 1" = 100'
SCALE OF MAP MAY VARY
DUE TO METHODS OF REPRODUCTION.

(OR 1-800-632-4949)
IT'S THE LAW!

GENERAL NOTES

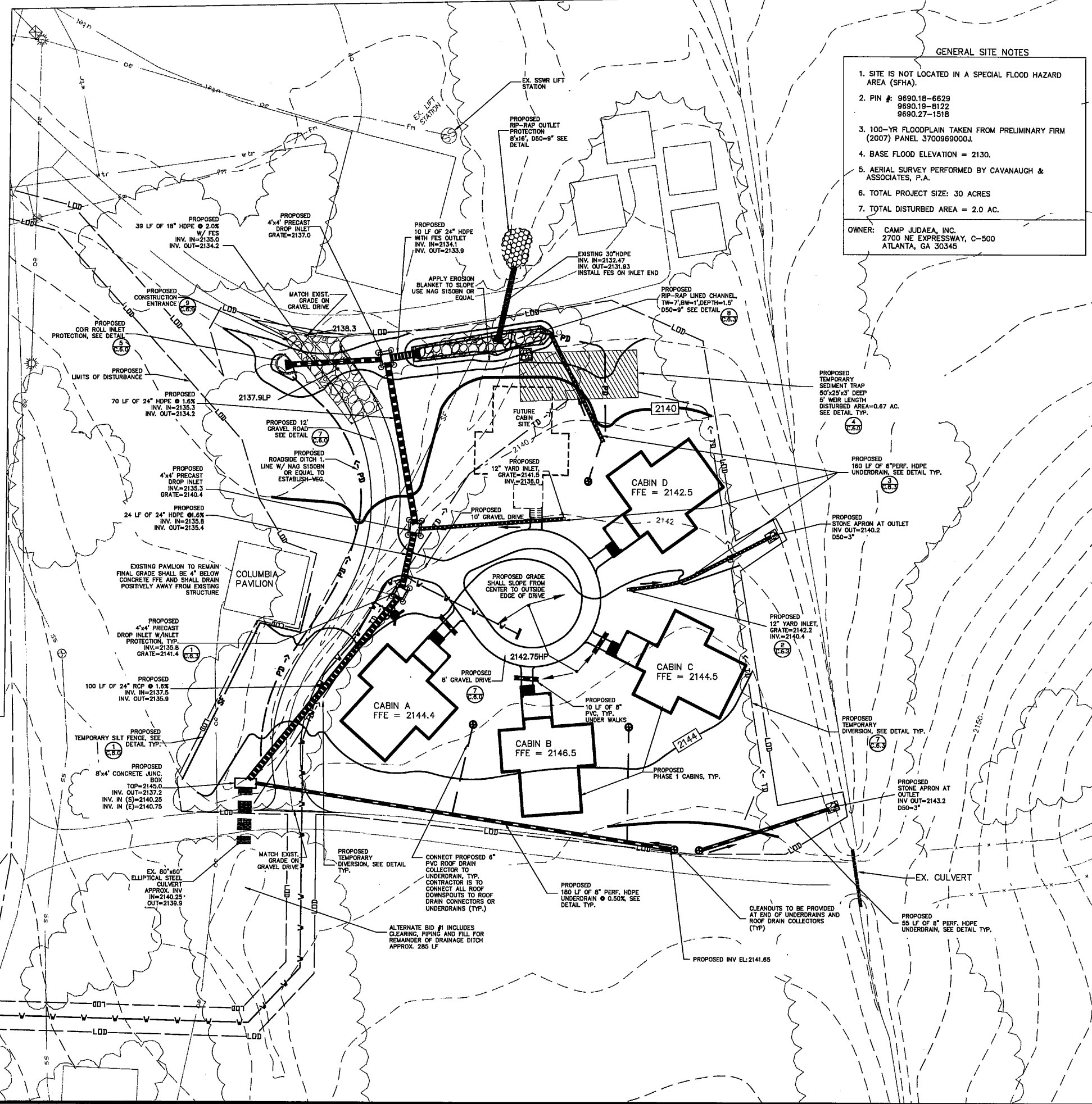
- TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAGNE P.L.S. # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY, NOT FOR RECORDATION.
- CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH DEMOLITION AND GRUBBING ACTIVITIES SHOWN.
- CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING NOT TO EXCEED 200 LF INTERVALS.
- ALL DISTURBED AREAS TO BE SEED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
- SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1.
- ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 113A, 51-56) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY NCDENR. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.
- SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION, UNLESS OTHERWISE SHOWN, FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.
- LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION -- IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE (1) FOOT ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
- NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SEED AND MULCH SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
- CONTRACTOR TO INSTALL NEW LATERALS FROM PROPERTY LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
- CONTRACTOR TO ENSURE THAT SEWER SERVICE TO ALL EXISTING STRUCTURES IS UNINTERRUPTED.
- TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND AMENDMENTS OR SUPPLEMENTS THERETO. PROPER TRAFFIC CONTROL DEVICES, SIGNS, ETC., SHALL BE INSTALLED TO INSURE PUBLIC SAFETY.
- CONTRACTOR TO ENSURE THAT SEWER SERVICE TO ALL EXISTING STRUCTURES IS UNINTERRUPTED.

**HENDERSON COUNTY EROSION CONTROL DIVISION
EROSION CONTROL CONSTRUCTION SEQUENCE**

- GENERAL:**
ALL EROSION CONTROL MEASURES ARE TO BE PERFORMED IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE EROSION CONTROL DIVISION OF HENDERSON COUNTY. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE COMPLIED WITH FOR ALL WORK.
- OBTAIN GRADING PERMIT FROM HENDERSON COUNTY-EROSION CONTROL DIVISION AND ALL APPLICABLE PERMITS.
 - INSTALL EROSION CONTROL MEASURES AS SHOWN ON PLAN SHEET C.3.0.
 - OBTAIN APPROVAL TO PROCEED THROUGH ON-SITE INSPECTION (IF REQUIRED) BY A REPRESENTATIVE OF THE HENDERSON COUNTY EROSION CONTROL DIVISION.
 - INSTALL TEMPORARY CONSTRUCTION ENTRANCE CONSTRUCTION VEHICLES SHALL ENTER AND LEAVE SITE VIA TEMPORARY CONSTRUCTION ENTRANCE.
 - INSTALL TEMPORARY DIVERSIONS AND TEMPORARY SEDIMENT TRAP AS SHOWN ON PLAN SHEET C.3.0 EROSION.
 - PROCEED WITH CLEARING AND GRUBBING.
 - INSTALL REMAINING EROSION CONTROL DEVICES.
 - PROCEED WITH GRADING, ANY DEPOSITS OF UNSTABLE SOIL SHALL BE REPORTED TO THE ENGINEER. UNDERCUTS SHALL BE PERFORMED TO REMOVE ANY UNSUITABLE SOIL DEPOSITS.
 - SEED AND MULCH DENUDE AREA WITHIN 15 WORKING DAYS OR 30 CALENDAR DAYS AFTER FINISHED GRADES ARE ESTABLISHED. SEED AND SOIL AMENDMENTS SHALL BE PLACED ON A PREPARED SEEDBED AT THE RATES PER ACRE. NOTE ON SHEET C.1.0.
 - IF HYDROSEEDING IS USED, WOOD CELLULOSE MAY BE SUBSTITUTED FOR STRAW MULCH AT THE RATE OF 2,000 LBS PER ACRE.
 - ALL SEEDING SHALL BE MAINTAINED, WATERED ETC., UNTIL A PERMANENT VEGETATIVE GROUND COVER IS ESTABLISHED OVER ALL DISTURBED AREAS.
 - ALL EROSION CONTROL MEASURES TO BE INSPECTED AND CLEANED OUT OR REPAIRED IF NECESSARY AFTER EVERY RAINFALL EVENT.
 - CONSTRUCTION OPERATIONS TO BE CARRIED OUT SUCH THAT EROSION AND WATER POLLUTION IS MINIMIZED. CONTRACTOR TO COMPLY TO STATE AND LOCAL REGULATIONS CONCERNING POLLUTION ABATEMENT.
 - TEMPORARY SEEDING SHALL BE APPLIED ON ALL GRADED AREAS THAT ARE TO REMAIN UNALTERED FOR MORE THAN 15 DAYS.
 - NO GRADING SHALL BE PERMITTED ON ADJACENT PROPERTY WITHOUT PRIOR APPROVAL FROM PROPERTY OWNER(S).
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ADDING DEVICES REQUIRED BY REGULATORY AGENCIES THROUGHOUT CONSTRUCTION AS OUTLINED BY THESE PLANS.
 - WHEN GROUND COVER IS ESTABLISHED AND SITE IS STABILIZED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
 - REQUEST FINAL APPROVAL BY HENDERSON COUNTY EROSION CONTROL DIVISION (IF REQUIRED).

GENERAL SITE NOTES

- SITE IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (SFHA).
 - PIN #: 9690.18-6629
9690.19-8122
9690.27-1518
 - 100-YR FLOODPLAIN TAKEN FROM PRELIMINARY FIRM (2007) PANEL 3700969000J.
 - BASE FLOOD ELEVATION = 2130.
 - AERIAL SURVEY PERFORMED BY CAVANAUGH & ASSOCIATES, P.A.
 - TOTAL PROJECT SIZE: 30 ACRES
 - TOTAL DISTURBED AREA = 2.0 AC.
- OWNER: CAMP JUDAEA, INC.
2700 NE EXPRESSWAY, C-500
ATLANTA, GA 30345



CAVANAUGH
Solutions through integrity and partnership

CAMP JUDAEA, INC.
CAMP JUDAEA PHASE 1 DEVELOPMENT
HENDERSON COUNTY, NORTH CAROLINA
PHASE 1
ROADWAY, GRADING, STORMWATER
AND EROSION & SEDIMENT CONTROL PLAN

DATE	DESCRIPTION	REV.	SHEET NUMBER
NOVEMBER 2008			C.3.0
PROJECT NO.:	031.08.013	DESIGNED:	LJL
CHECKED:	ERB	SCALE:	1"=20'

DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
DESIGNED: LJL
CHECKED: ERB
SCALE: 1"=20'

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION



CAVANAUGH

Solutions through integrity and partnership

Cavanaugh & Associates, P.A., 1200 Courthouse Dr., Suite 100, Asheville, NC 28803 828/255-7396 fax 828/255-0770 www.cavanaughinc.com

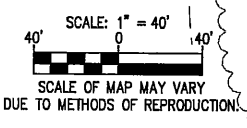
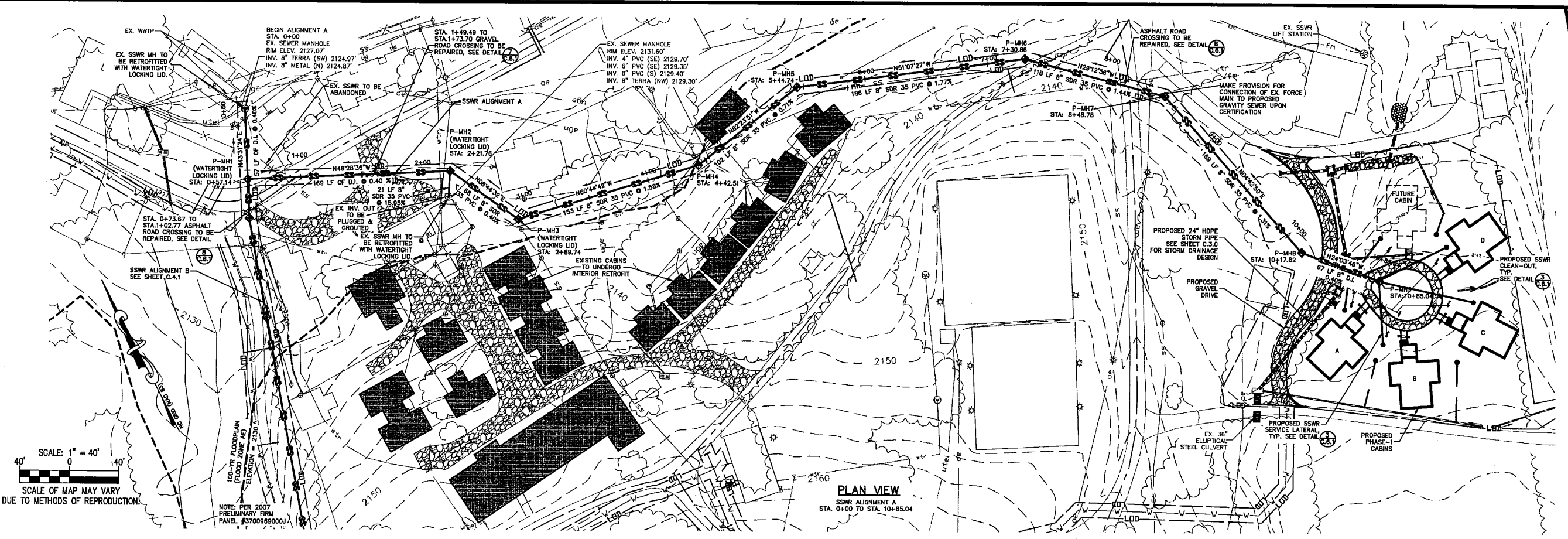
CAMP JUDEA, INC.

CAMP JUDEA PHASE I DEVELOPMENT
HENDERSON COUNTY, NORTH CAROLINA

SANITARY SEWER ALIGNMENT A

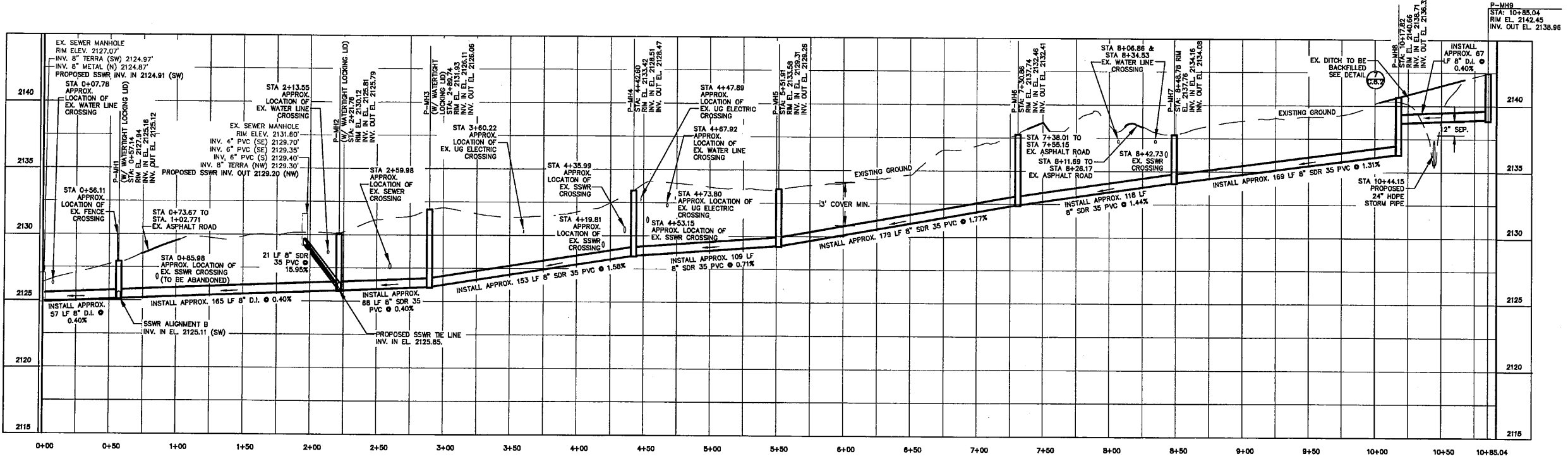
PLAN & PROFILE

STA. 0+00 TO STA. 10+85.04



GENERAL NOTES

- (1) TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAGNE P.L.S., # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY. NOT FOR RECORDATION.
- (2) CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
- (3) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH ACTIVITIES SHOWN.
- (4) CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING NOT TO EXCEED 200 LF. INTERVALS.
- (5) ALL DISTURBED AREAS TO BE SEEDED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
- (6) SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1.
- (7) ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 113A 51-56) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY HENDERSON COUNTY. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.
- (8) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24\"/>
- (9) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION -- IN WHICH CASE:
(A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
(B) 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- (10) CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- (11) 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 TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
- (12) NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SOD SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
- (13) CONTRACTOR TO INSTALL NEW LATERALS FROM PROPERTY LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
- (14) WETLAND DELINEATION PERFORMED BY LAND MANAGEMENT GROUP, INC. ON 8/7/07. US ARMY CORPS OF ENGINEERING APPROVAL PENDING.



BEFORE YOU DIG
NC ONE CALL
(TOLL FREE)
811
(COR 1-800-632-4949)
IT'S THE LAW!

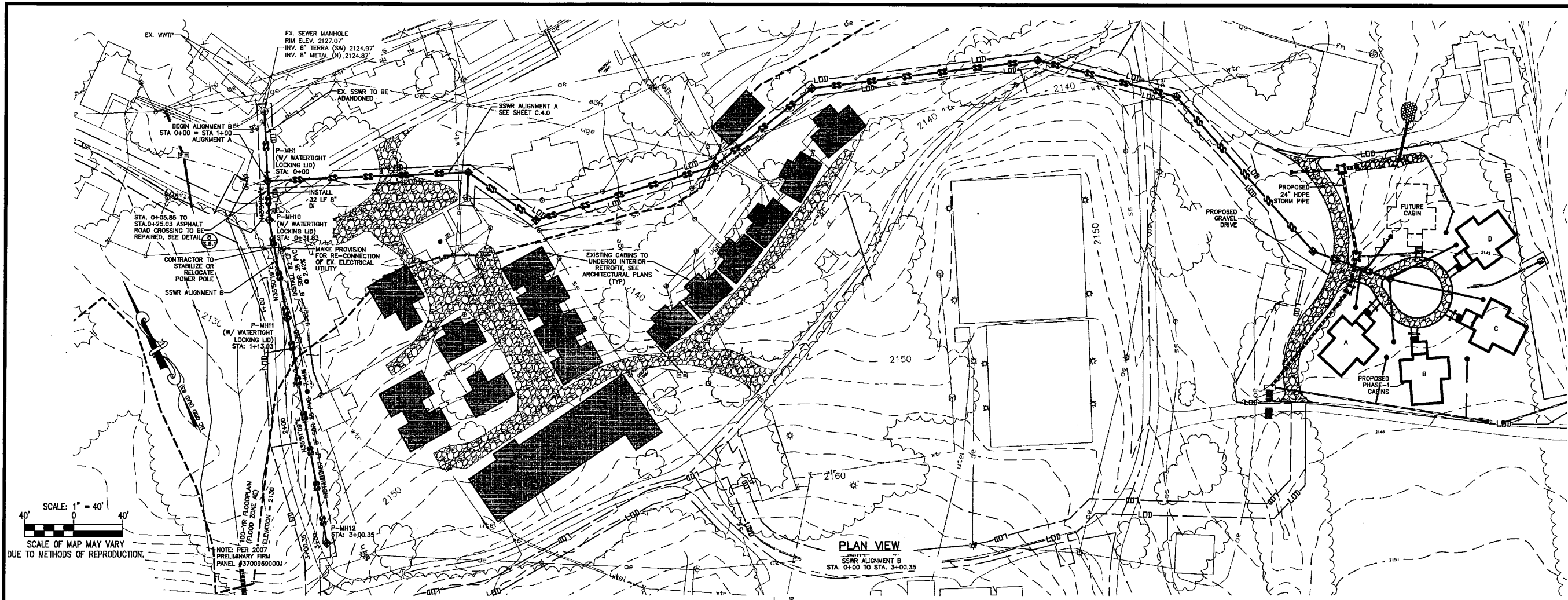
PROFILE VIEW
SSWR ALIGNMENT A
STA. 0+00 TO STA. 10+85.04
VERTICAL SCALE 1"=4' ; HORIZONTAL SCALE 1"=40'

REV.	DESCRIPTION	DATE

SHEET NUMBER
C.4.0

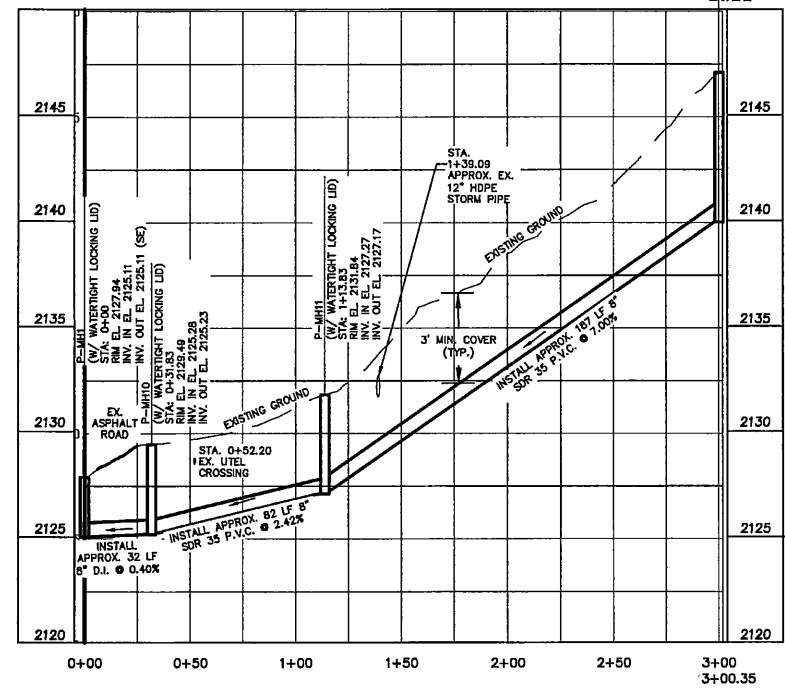
DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
DESIGNED: RLH
CHECKED: ERB
SCALE: AS NOTED

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION




SCALE: 1" = 40'
 SCALE OF MAP MAY VARY
 DUE TO METHODS OF REPRODUCTION.

PLAN VIEW
 SSWR ALIGNMENT B
 STA. 0+00 TO STA. 3+00.35



PROFILE VIEW
 SSWR ALIGNMENT B
 STA. 0+00 TO STA. 3+00.35
 VERTICAL SCALE 1"=4' ; HORIZONTAL SCALE 1"=40'

- GENERAL NOTES**
- (1) TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAGNE P.L.S. # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY; NOT FOR RECORDATION.
 - (2) CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
 - (3) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH ACTIVITIES SHOWN.
 - (4) CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING NOT TO EXCEED 200 LF. INTERVALS.
 - (5) ALL DISTURBED AREAS TO BE SEED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
 - (6) SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1.
 - (7) ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 113A 51-66) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY HENDERSON COUNTY. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.
 - (8) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION, UNLESS OTHERWISE SHOWN, FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.
 - (9) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION -- IN WHICH CASE:
 - (A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
 - (B) 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
 - (10) CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
 - (11) 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 TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
 - (12) NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SOD SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
 - (13) CONTRACTOR TO INSTALL NEW LATERALS FROM PROPERTY LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
 - (14) WETLAND DELINEATION PERFORMED BY LAND MANAGEMENT GROUP, INC. ON 8/7/07. US ARMY CORPS OF ENGINEERING APPROVAL PENDING.




CAVANAUGH
 Solutions through integrity and partnership

Cavanaugh & Associates, P.A. 1200 Commerce Dr., Suite 100, Asheville, NC 28805 828/255-7398 fax: 828/255-0770 www.cavanaughhonda.com

CAMP JUDEA, INC.	
CAMP JUDEA PHASE I DEVELOPMENT HENDERSON COUNTY, NORTH CAROLINA	
SANITARY SEWER ALIGNMENT B PLAN & PROFILE	
STA. 0+00 TO STA. 3+00.35	
DATE: NOVEMBER 2008	PROJECT NO.: 031.08.013
DESIGNED: RLH	CHECKED: ERB
SHEET NUMBER	
C.4.1	
SCALE: AS NOTED	

FINAL DRAWING



NOT RELEASED FOR CONSTRUCTION

BEFORE YOU DIG
 NC ONE CALL
 (TOLL FREE)

 (COR 1-800-632-4949)
 IT'S THE LAW!

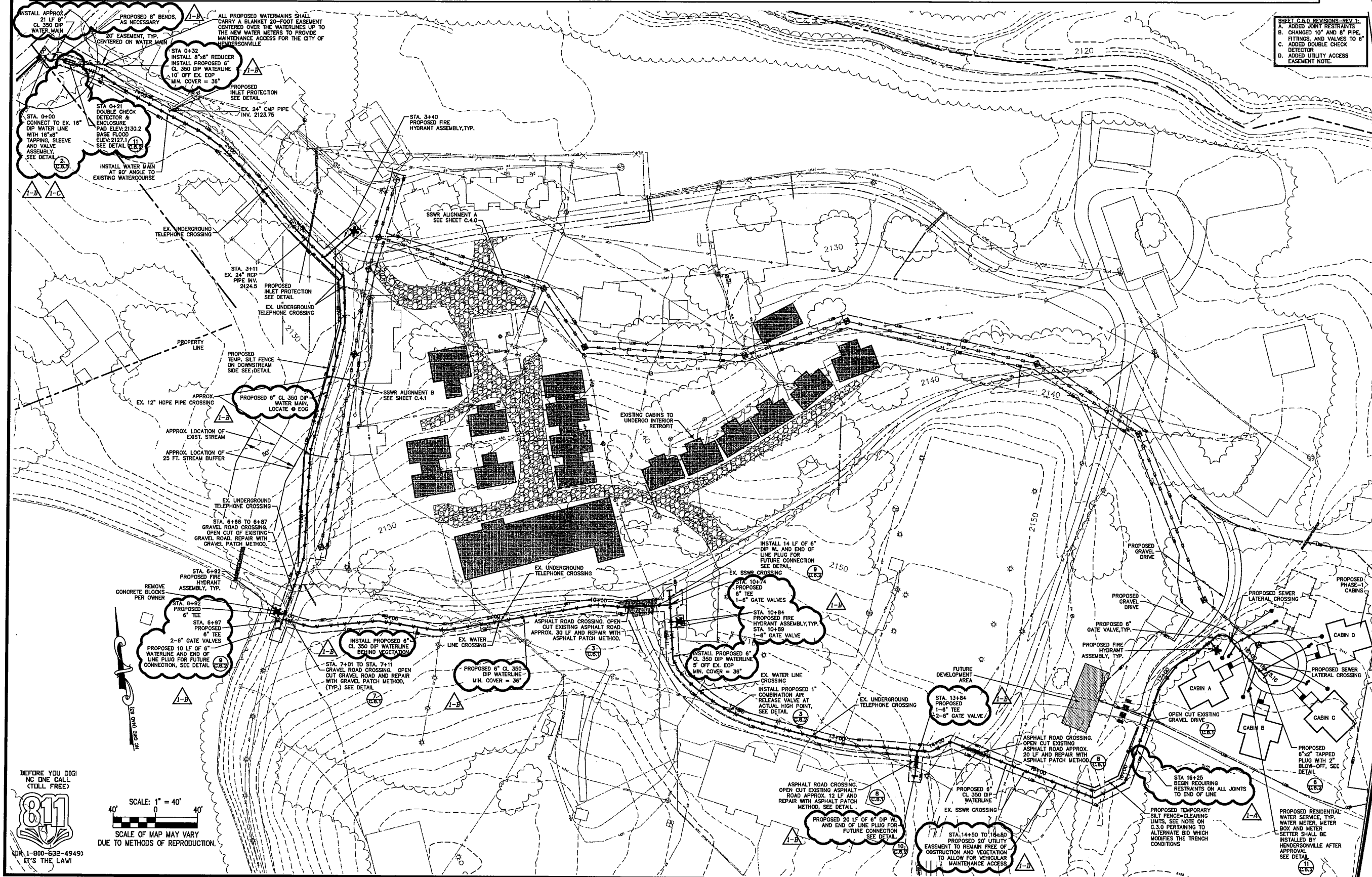
GENERAL NOTES

- (1) TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAIGNE P.L.S. # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY. NOT FOR RECORDATION.
- (2) CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
- (3) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH ACTIVITIES SHOWN.
- (4) CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING NOT TO EXCEED 200 L.F. INTERVALS.
- (5) ALL DISTURBED AREAS TO BE SEEDED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
- (6) SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1.
- (7) ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 113A 91-66) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY HENDERSON COUNTY. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.

- (8) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION, UNLESS OTHERWISE SHOWN, FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.
- (9) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION -- IN WHICH CASE:
 - (A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
 - (B) 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- (10) CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- (11) 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 TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING.

- (12) NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SOD SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
- (13) CONTRACTOR TO INSTALL NEW LATERALS FROM PROPERTY LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
- (14) WETLAND DELINEATION PERFORMED BY LAND MANAGEMENT GROUP, INC. ON 8/7/07. US ARMY CORPS OF ENGINEERING APPROVAL PENDING.
- (15) ALL WATERLINE AND ALL ASSOCIATE APPURTENANCES SHALL BE INSTALLED ACCORDING TO THE MOST RECENT CITY OF HENDERSONVILLE WATER AND SEWER STANDARDS AND SPECIFICATIONS.
- (16) ALL FITTINGS AND VALVES TO BE MECHANICALLY RESTRAINED.

SHEET C.5.0 REVISIONS-REV. 11
 A. ADDED JOINT RESTRAINTS
 B. CHANGED 10" AND 8" PIPE, FITTINGS, AND VALVES TO 6"
 C. ADDED DOUBLE CHECK DETECTOR
 D. ADDED UTILITY ACCESS EASEMENT NOTE



CAVANAUGH
 Solutions through integrity and partnership
 Cavanaugh & Associates, P.A. 1200 Courthouse Dr., Suite 100, Asheville, NC 28805 828.255.7506 fax 828.255.0770 www.cavanaughpa.com

CAMP JUDEA, INC.
 CAMP JUDEA PHASE I DEVELOPMENT
 HENDERSON COUNTY, NORTH CAROLINA

WATER MAIN EXTENSIONS PLAN
 STA. 0+00 TO STA. 18+42

REV.	DESCRIPTION	DATE
1	PER HENDERSONVILLE 07/20/09	

SHEET NUMBER
C.5.0

DATE: NOVEMBER 2008
 PROJECT NO.: 031.06.013
 DESIGNED: L/JL
 CHECKED: ERB
 SCALE: AS NOTED

FINAL DRAWING

NOT RELEASABLE FOR CONSTRUCTION

BEFORE YOU DIG
 NO ONE CALLS
 (TOLL FREE)

811

SCALE: 1" = 40'
 0 40'

SCALE OF MAP MAY VARY
 DUE TO METHODS OF REPRODUCTION.

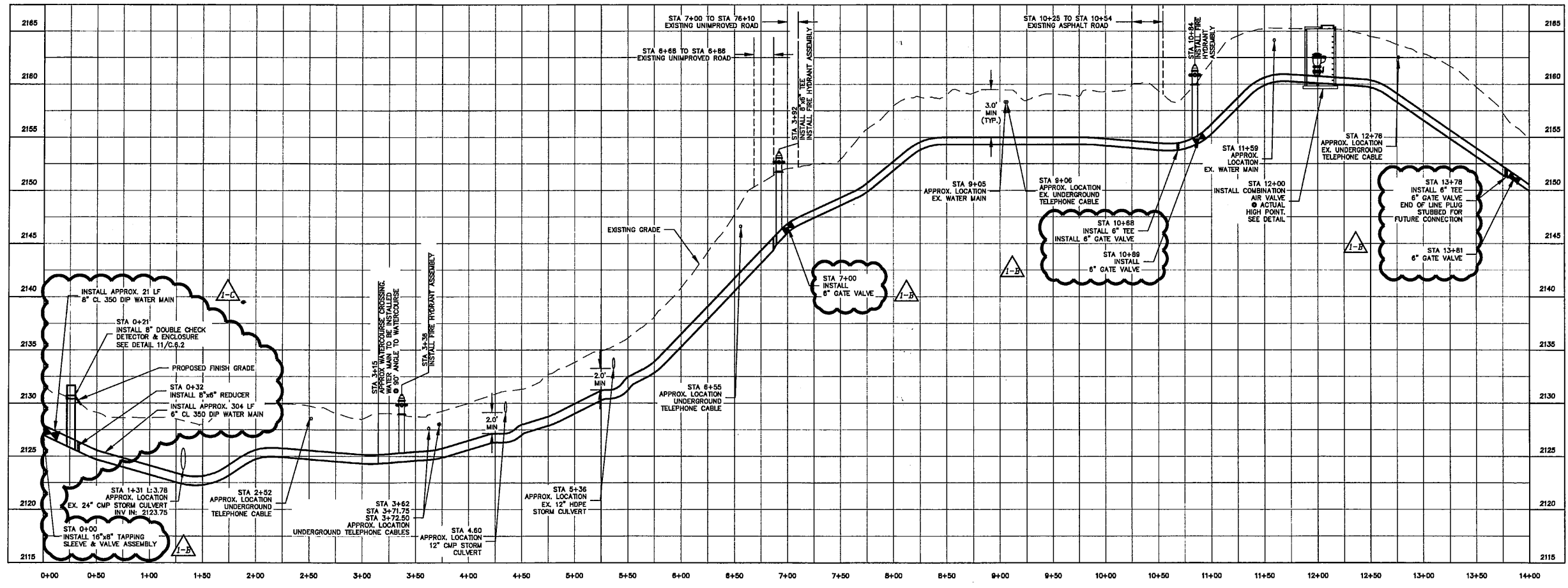
1-800-632-4949
 IT'S THE LAW!

GENERAL NOTES

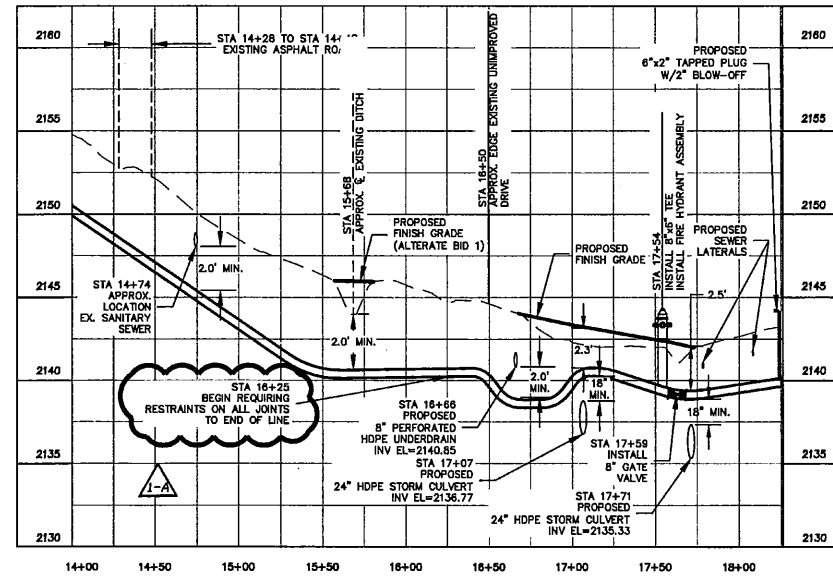
- (1) TOPOGRAPHICAL SURVEY INFORMATION PROVIDED BY CAVANAUGH & ASSOCIATES, CHRIS GAGNE P.L.S. # L-4700. INFORMATION PROVIDED FOR ENGINEERING DESIGN PURPOSE ONLY. NOT FOR RECORDATION.
- (2) CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION.
- (3) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIALS GENERATED THROUGH ACTIVITIES SHOWN.
- (4) CONTROLLED SEDIMENTATION OUTLETS TO BE PLACED AT LOW SPOTS ALONG SEDIMENT FENCING NOT TO EXCEED 200 LF. INTERVALS.
- (5) ALL DISTURBED AREAS TO BE SEEDED, FERTILIZED, AND MULCHED WITHIN 15 CALENDAR DAYS OF GRADING ACTIVITIES.
- (6) SEWER AND STORMWATER PIPES TO BE INSTALLED IN TRENCHES ACCORDING TO STANDARD SPECIFICATIONS AND DETAILS ON SHEETS C.6.0 AND C.6.1.
- (7) ACCORDING TO THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973 (NORTH CAROLINA GENERAL STATUTE 113A 01-86) THIS PROJECT IS SUBJECT TO AN APPROVED SEDIMENTATION AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ADHERE TO ALL OF THE CONDITIONS SET FORTH IN THE APPROVED PLAN, AS PRESCRIBED BY HENDERSON COUNTY. A COPY OF THE APPROVED SEDIMENTATION AND EROSION CONTROL PLAN SHALL BE DISPLAYED AT THE JOB SITE AT ALL TIMES.

- (9) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION, UNLESS OTHERWISE SHOWN, FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.
- (10) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION -- IN WHICH CASE:
 - (A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR
 - (B) 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- (11) CROSSING A WATER MAIN OVER A SEWER. WHENEVER 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 EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH 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 TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- (12) 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 TEN (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

- (14) NORTH AMERICAN GREEN FABRICS MATTING AND SEEDING TO BE USED ON SLOPES STEEPER THAN 2:1. SOD SHALL BE USED FOR ALL SLOPES FLATTER THAN 2:1.
- (15) CONTRACTOR TO INSTALL NEW LATERALS FROM PROPERTY LINE TO CABIN IN ACCORDANCE WITH LOCAL AND STATE BUILDING/PLUMBING CODES. CLEANOUTS TO BE PLACED AT PROPERTY LINES FOR ALL SERVICE LATERALS. LOCATIONS SHOWN FOR SEWER LATERALS ARE GENERIC AND ONLY INTENDED TO CONVEY INSTALLATION FOR SERVICE REQUIRED. EXACT LOCATION OF CLEANOUTS AND ALIGNMENT OF LATERAL TO HOUSE CONNECTION TO BE DETERMINED IN FIELD BY CONTRACTOR/ENGINEER BASED ON MOST DIRECT ALIGNMENT WITH LEAST BENDS, AND APPROPRIATE SEPARATION FROM PROPOSED WATER SERVICES.
- (16) WETLAND DELINEATION PERFORMED BY LAND MANAGEMENT GROUP, INC. ON 8/7/07. US ARMY CORPS OF ENGINEERING APPROVAL PENDING.
- (17) ALL WATERLINE AND ALL ASSOCIATE APPURTENANCES SHALL BE INSTALLED ACCORDING TO THE MOST RECENT CITY OF HENDERSVILLE WATER AND SEWER STANDARDS AND SPECIFICATIONS.
- (18) ALL FITTINGS AND VALVES TO BE MECHANICALLY RESTRAINED.



PROFILE VIEW
WATER MAIN EXTENSION ALIGNMENT
STA. 0+00 TO STA. 14+00
VERTICAL SCALE 1"=5'; HORIZONTAL SCALE 1"=50'



PROFILE VIEW
WATER MAIN EXTENSION ALIGNMENT
STA. 14+00 TO STA. 18+42
VERTICAL SCALE 1"=5'; HORIZONTAL SCALE 1"=50'

BEFORE YOU DIG
NC ONE CALL
(TOLL FREE)
811
(OR 1-800-632-4949)
IT'S THE LAW!

SHEET C.5.1 REVISIONS-REV. 1:
A. ADDED JOINT RESTRAINTS
B. CHANGED 10" AND 8" PIPE, FITTINGS, AND VALVES TO 6"
C. ADDED DOUBLE CHECK DETECTOR & ENCLOSURE

CAVANAUGH
Solutions through integrity and partnership
Cavanaugh & Associates, P.A. 1200 Campground Dr., Suite 100, Asheville, NC 28805 626.252-7398 fax: 626.252-0770 www.cavanaughassociates.com

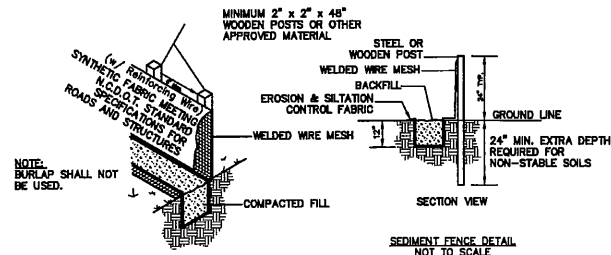
CAMP JUDEA, INC.
CAMP JUDEA PHASE I DEVELOPMENT
HENDERSON COUNTY, NORTH CAROLINA
WATER MAIN EXTENSIONS PLAN & PROFILE
STA. 0+00 TO STA. 18+42

REV.	DESCRIPTION	DATE
1	PER HENDERSVILLE	01/29/08

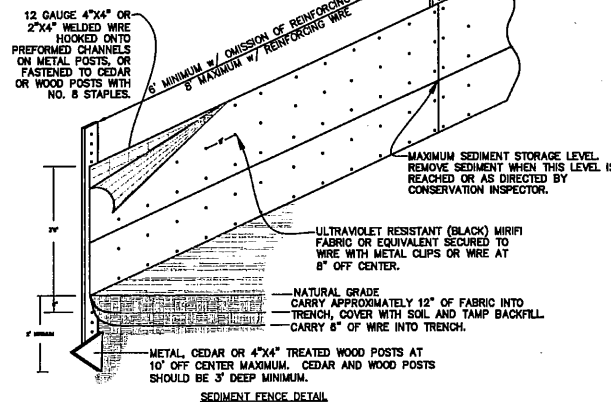
SHEET NUMBER
C.5.1

DATE: NOVEMBER 2008
PROJECT NO.: 031.06.013
DESIGNED: L/JL
CHECKED: ERB
SCALE: AS NOTED

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION



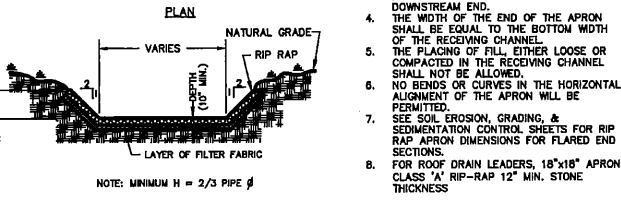
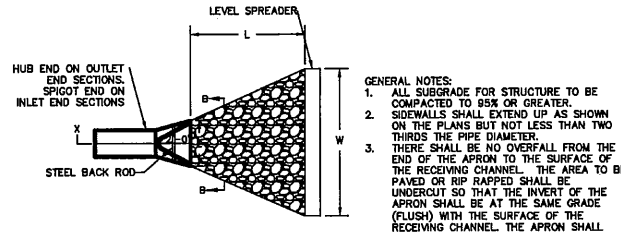
ALTERNATE: IN LIEU OF BURYING SKIRT, 6" OF NO.6 STONE MAY BE USED TO ANCHOR SKIRT.



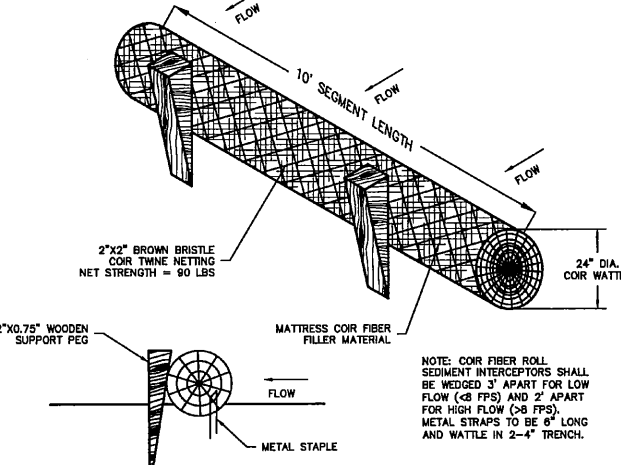
GENERAL NOTES:

- FENCE FABRIC SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
 - FILTER FABRIC SHALL BE MIRAFI 100 FABRIC OR EQUIVALENT. BURLAP CANNOT BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD MORE THAN 30 DAYS.
 - STEEL POSTS SHALL BE 1.33 LBS./L.F. HAVE A MIN. LENGTH OF 5' AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
 - WOOD POST SHALL BE 6 FEET IN HEIGHT AND BE 4 INCHES IN DIAMETER. WIRE FABRIC SHALL BE FASTENED TO WOODEN POST WITH NOT LESS THAN 1 1/2" LONG.
- MAINTENANCE NOTES:
- FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
 - SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
 - SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY 0.5 FT. IN DEPTH.
 - ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.
 - PROVIDE OUTLETS IN SEDIMENT FENCE AT LOW SPOTS FOR DEWATERING LARGE AREAS (USE CLASS B STONE).

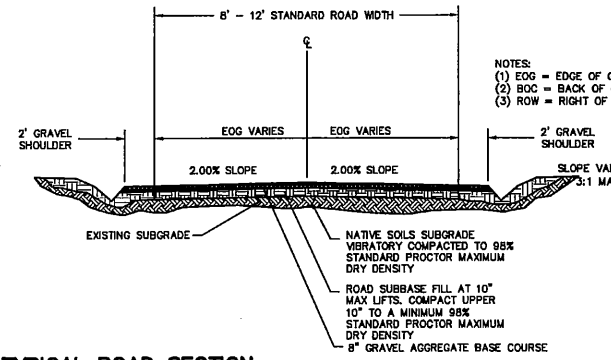
TEMPORARY SEDIMENT FENCE DETAIL
SCALE: NOT TO SCALE



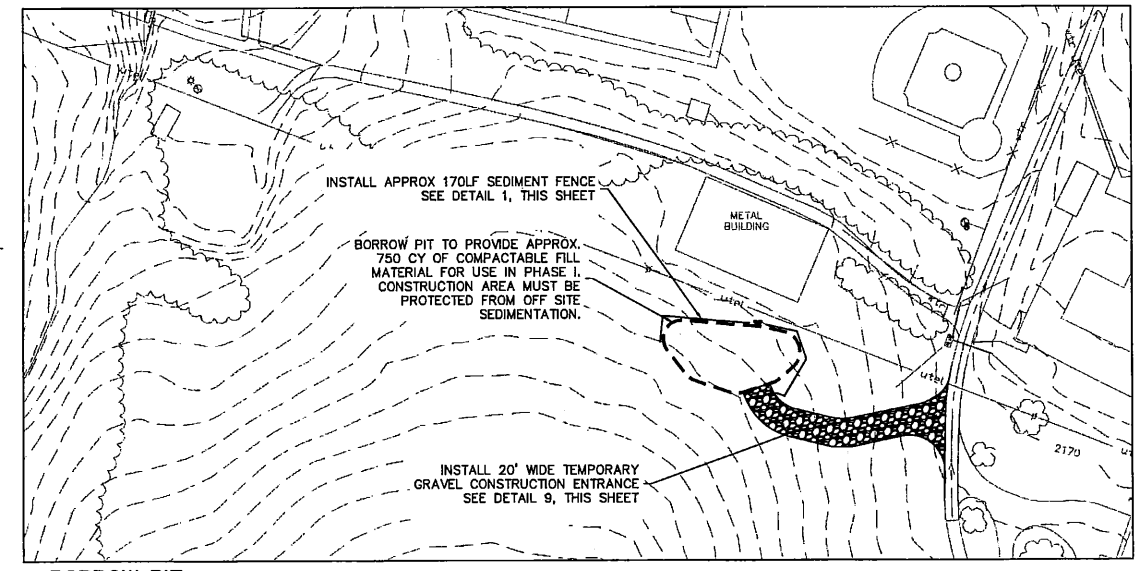
RIP-RAP OUTLET PROTECTION DETAIL
SCALE: NOT TO SCALE



COIR FIBER ROLL SEDIMENT INTERCEPTOR DETAIL
SCALE: NOT TO SCALE



TYPICAL ROAD SECTION DETAIL
SCALE: NOT TO SCALE



BORROW PIT DETAIL
SCALE: NOT TO SCALE

SEEDING SPECIFICATIONS

PERMANENT SEEDING SPECIFICATIONS

SEEDING MIXTURE
Species Rate (lb/acre)
Fescue 100
Sericea lespedeza 20
Korean lespedeza 10
Redtop 10
Kentucky bluegrass 10

SEEDING NOTE: After Aug 1, use unscarified seed for sericea lespedeza.

NURSE PLANTS
Between May 1 and Aug. 15 add 10 lb/Acre German millet or 15 lb/Acre Sudangrass. Prior to May 1 or after Aug. 15, add 40 lb/Acre rye (grain). It may be beneficial to plant the grasses in late summer and overseed the lespedeza in March.

SEEDING DATES
Best Acceptable
Below 2500 ft.: Aug. 15 to Sept. 1 July 25 to Sept. 15
Mar. 1 to Apr. 1 Mar. 1 to May 10
Above 2500 ft.: July 25 to Aug. 15 July 15 to Aug. 30
Mar. 20 to Apr. 20 Mar. 5 to May 15

Complete seeding earlier in fall, and start later in spring on north and east facing slopes.

SOIL AMENDMENTS
Follow recommendations of soil tests or apply 4,000 lb/Acre ground agricultural limestone and 1000 lb/Acre 5-10-10 fertilizer.

MULCH
Apply 4,000-5,000 lb/Acre grain straw or equivalent cover of another suitable mulching material. Anchor mulching by tacking with asphalt, riving, or netting. Netting is the preferred anchoring method on steep slopes.

MAINTENANCE
Mow no more than once a year. Refertilize in the second year unless growth is fully adequate. Reseed, refertilize and mulch damaged areas immediately.

TEMPORARY SEEDING SPECIFICATIONS

WINTER - EARLY SPRING

SEEDING MIXTURE
Species Rate (lb/Acre)
Rye (grain) 120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains) 50
Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

SEEDING DATES: Below 2500 ft.: Feb. 1 to May 1
Mountains - Above 2500 ft.: Feb. 15 to May 15

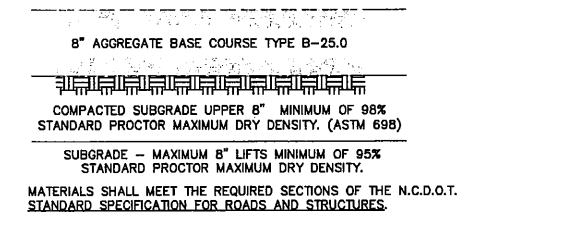
Piedmont - Jan. 1 to May 1
Coastal Plain - Dec. 1 to Apr. 15

SOIL AMENDMENTS
Follow recommendations of soil tests or apply 2,000 lb/Acre ground agricultural limestone and 750 lb/Acre 5-10-10 fertilizer.

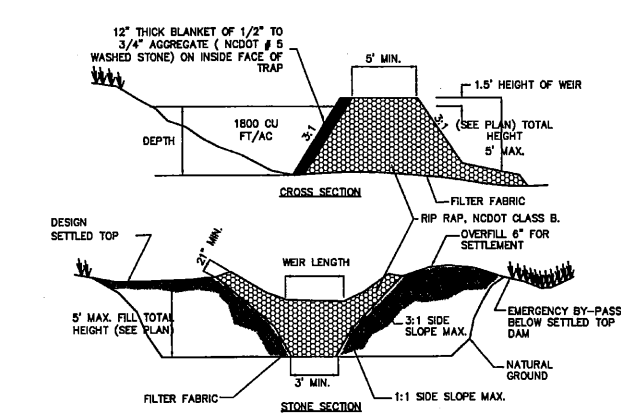
MULCH
Apply 4,000 lb/Acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

MAINTENANCE
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

SEEDING SCHEDULE DETAIL
SCALE: NOT TO SCALE

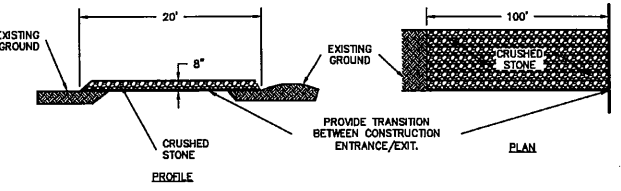


GRAVEL PAVEMENT DETAIL
SCALE: NOT TO SCALE



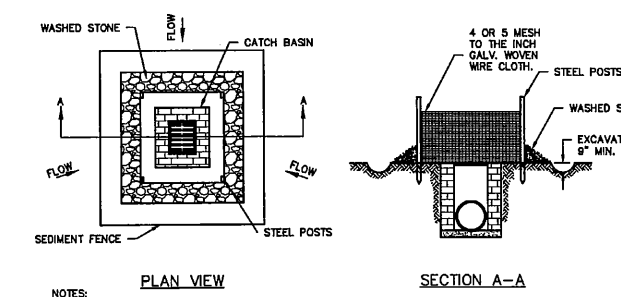
TRAP	BASIN [NUM]	SIZE [ACRE]	LENGTH [FT]	WIDTH [FT]	TOTAL DEPTH [FT]	WEIR LENGTH [FT]
1	1	0.66	50	25	3.00	5.0

TEMPORARY SEDIMENT TRAP DETAIL
SCALE: NOT TO SCALE



- NOTES:
- STONE SIZE - 1"-2" COURSE AGGREGATE. CRUSHED STONE MAY BE USED.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE PERFORMED ON A SURFACE STABILIZED WITH CRUSHED STONE, DRAINING INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH THE USE OF SANDBAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.
 - THE ENTRANCE/EXIT SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS THE TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
 - MINIMUM DIMENSIONS: LENGTH AS EFFECTIVE BUT NOT LESS THAN 50 FEET. THICKNESS NOT LESS THAN EIGHT (8) INCHES. WIDTH NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS

CONSTRUCTION ENTRANCE/EXIT DETAIL
SCALE: NOT TO SCALE



- NOTES:
- SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE SEDIMENT FENCE. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
 - THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
 - CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
 - THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

TEMPORARY INLET PROTECTION DETAIL
SCALE: NOT TO SCALE

CAVANAUGH
Solutions through integrity and partnership

CAMP JUDEA, INC.
CAMP JUDEA DEVELOPMENT PLAN
HENDERSON COUNTY, NORTH CAROLINA

PHASE I
PAVING, EROSION & SEDIMENT CONTROL DETAILS

DATE	DESCRIPTION	REV.
NOVEMBER 2008 <td></td> <td></td>		

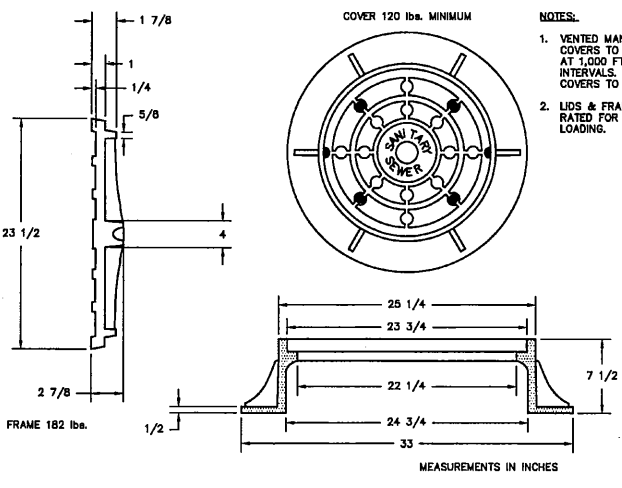
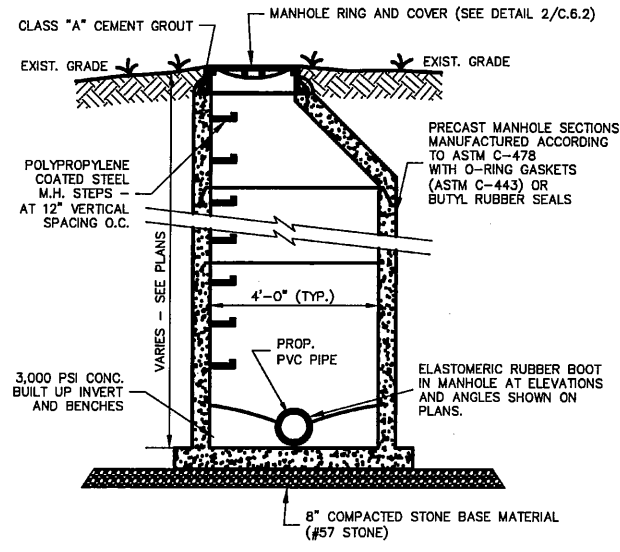
SHEET NUMBER
C.6.0

DESIGNED: RLH
CHECKED: EFB
SCALE: NTS

DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
SCALE: NTS

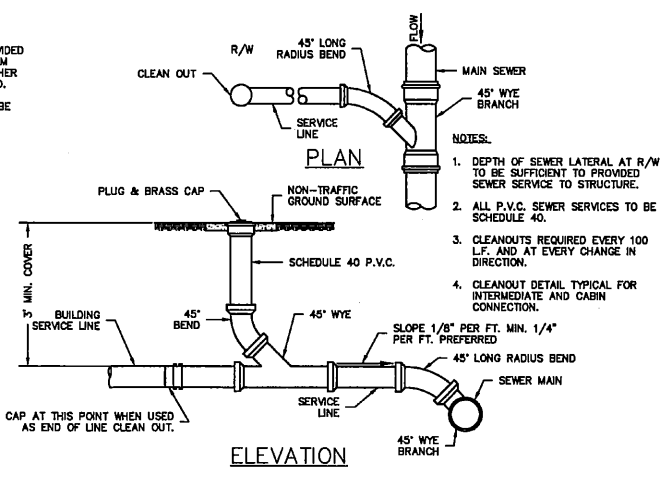
FINAL DRAWING

NOT RELEASED FOR CONSTRUCTION

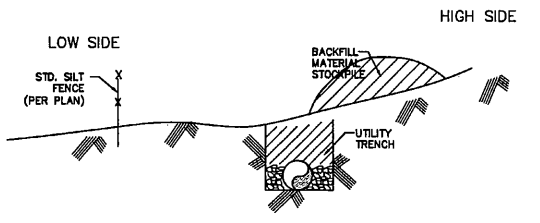


TYPICAL MANHOLE COVER DETAIL
SCALE: NOT TO SCALE
2
C.6.1

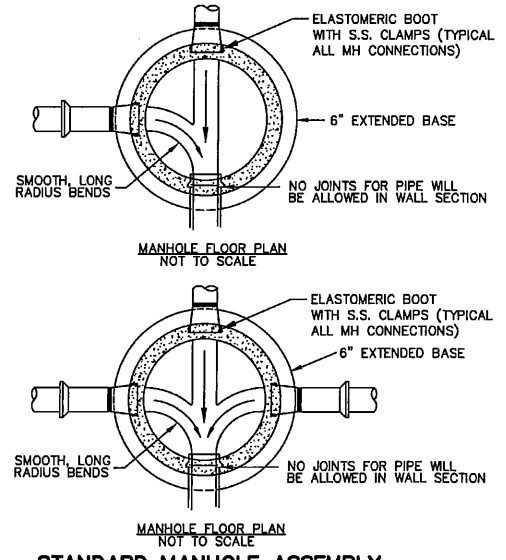
- NOTES:
1. VENTED MANHOLE COVERS TO BE PROVIDED AT 1,000 FT MAXIMUM INTERVALS. ALL OTHER COVERS TO BE SOLID.
 2. LIDS & FRAMES TO BE RATED FOR H-20 LOADING.



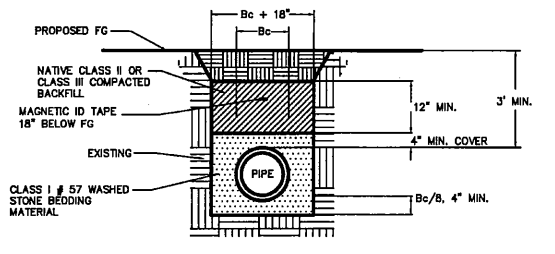
SERVICE LATERAL AND CLEANOUT DETAIL
SCALE: NOT TO SCALE
3
C.6.1



UTILITY TRENCH EXCAVATION DETAIL
SCALE: NOT TO SCALE
4
C.6.1

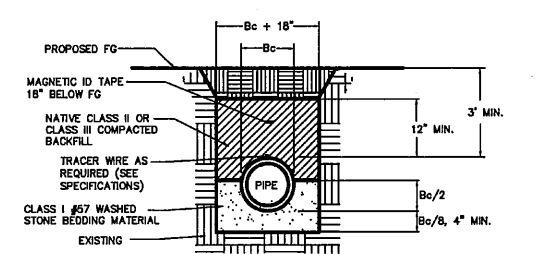


STANDARD MANHOLE ASSEMBLY DETAIL
SCALE: NOT TO SCALE
1
C.6.1



CLASS B BEDDING FOR GRAVITY SEWER DETAIL
SCALE: NOT TO SCALE
5
C.6.1

- NOTE:
1. USE FOR ALL GRAVITY SEWER PVC PIPE.
 2. USE SUITABLE TAMP RODS TO ENSURE BEDDING IS THOROUGHLY TAMPED UNDER THE PIPE HAUNCHES.
 3. Bc = DIAMETER OF PIPE BARREL.



CLASS C BEDDING DETAIL
SCALE: NOT TO SCALE
6
C.6.1

- NOTE:
1. USE FOR ALL PVC PRESSURE LINES WHEN EXCAVATION OF TRENCH BOTTOM RESULTS IN UNSTABLE CONDITIONS.
 2. USE FOR ALL GRAVITY SEWER DUCTILE IRON PIPE.
 3. USE SUITABLE TAMP RODS TO ENSURE BEDDING IS THOROUGHLY TAMPED UNDER THE PIPE HAUNCHES.
 4. Bc = DIAMETER OF PIPE BARREL.

DEFINITIONS

CLASS I: CRUSHED STONE CONFORMING TO N.C.D.O.T. #57.

CLASS II: COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 40 MM (1-1/2 IN.), INCLUDING VARIOUSLY GRADED SANDS AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NON-COHESIVE, EITHER WET OR DRY. CLASS II MATERIALS ARE DEFINED AS SOIL TYPES GM, GP, SW, AND SP.

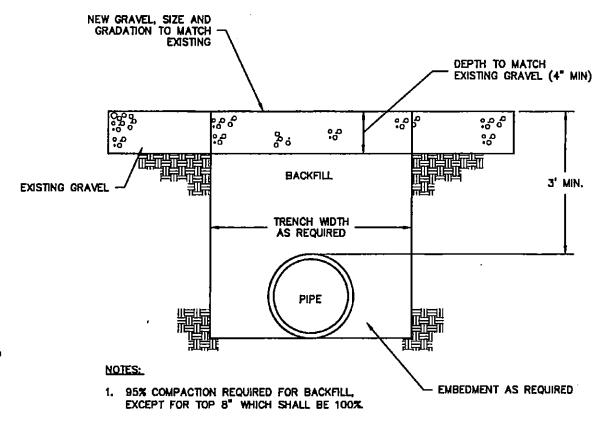
CLASS III: FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. CLASS III MATERIALS ARE DEFINED AS SOIL TYPES GM, GC, SM, AND SC.

BACKFILLING AT SIDES OF PIPE: BACKFILL BY HAND OR ACCEPTABLE MECHANICAL MEANS FROM THE TOP OF THE BEDDING TO THE CROWN OF THE PIPE USING NATIVE CLASS II OR CLASS III MATERIALS. LAYERS OF BACKFILL MATERIAL SHALL BE PLACED IN EVEN LIFTS ON BOTH SIDES OF THE PIPE. DO NOT MOVE, INJURE, OR DISTURB THE PIPE. INSURE THAT UNIFORM SIDE SUPPORT IS PROVIDED THROUGHOUT THE LENGTH OF PIPE. USE ONLY HAND TAMPING FOR COMPACTION.

BACKFILLING OVER THE PIPE: BACKFILL WITH CLASS II AND CLASS III MATERIAL FROM TOP OF PIPE OR TOP OF BEDDING TO A MINIMUM DEPTH OF 12" ABOVE THE CROWN OF THE PIPE PROVIDING SUFFICIENT CARE TO PREVENT INJURING OR MOVING THE PIPE. PLACE BACKFILL IN EVEN LAYERS AND COMPACT TO SPECIFIED DENSITY BY HAND OR APPROVED MECHANICAL MEANS.

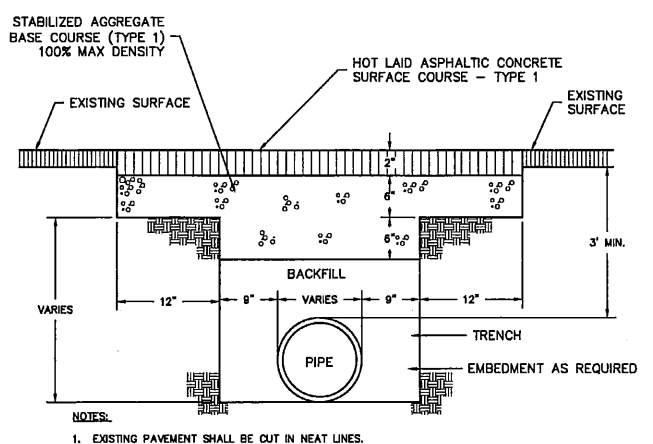
BACKFILLING TO GRADE: BACKFILL AND COMPACT FROM 12" ABOVE THE CROWN OF THE PIPE TO FINISHED GRADE WITH NATIVE SOIL MATERIAL, COMPACTING SAME TO THE DENSITY REQUIRED FOR THE AREA CLASSIFICATION. THE FINISHED GRADE SHALL CONFORM TO ELEVATIONS, SLOPES, AND CONTOURS AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR SETTLEMENT OVER ALL TRENCHES AND HE SHALL BE REQUIRED TO ADD MATERIAL AND COMPACT AS DIRECTED IF SUCH SETTLEMENTS OCCUR.

PIPES AND RELATED APPURTENANCES: BACKFILL AND COMPACT TRENCHES IN UNIFORM LAYERS TO 1" ABOVE THE CROWN OF THE PIPE OR BEDDING TO 90% MAXIMUM DRY DENSITY. BACKFILL FROM 1" ABOVE THE CROWN OF THE PIPE TO FINISH GRADE AS REQUIRED FOR THE AREA CLASSIFICATION OR TO 95% MAXIMUM DRY DENSITY.



GRAVEL DRIVE REPAIR DETAIL
SCALE: NOT TO SCALE
7
C.6.1

- NOTES:
1. 95% COMPACTION REQUIRED FOR BACKFILL, EXCEPT FOR TOP 6" WHICH SHALL BE 100%.



ASPHALT PAVEMENT REPAIR DETAIL
SCALE: NOT TO SCALE
8
C.6.1

- NOTES:
1. EXISTING PAVEMENT SHALL BE CUT IN NEAT LINES.
 2. 95% COMPACTION REQUIRED FOR BACKFILL, EXCEPT FOR TOP 6" WHICH SHALL BE 100%.

CAVANAUGH
Solutions through integrity and partnership

CAMP JUNEK, INC.
CAMP JUDGEA DEVELOPMENT PLAN
HENDEKSON COUNTY, NORTH CAROLINA

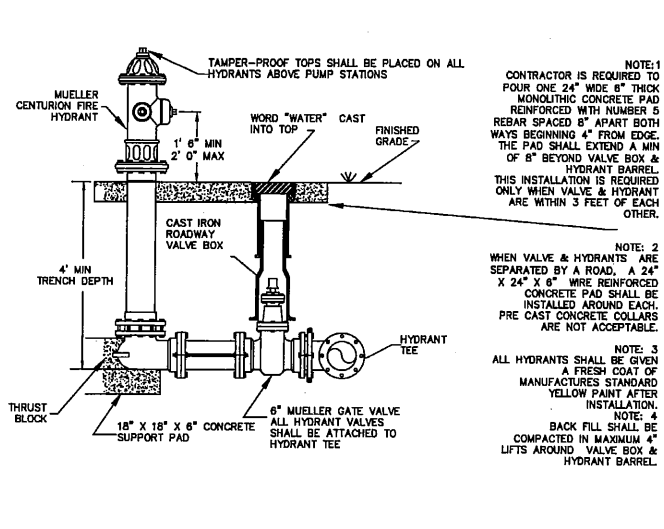
PHASE I
SANITARY SEWER DETAILS

REV.	DESCRIPTION	DATE

SHEET NUMBER
C.6.1

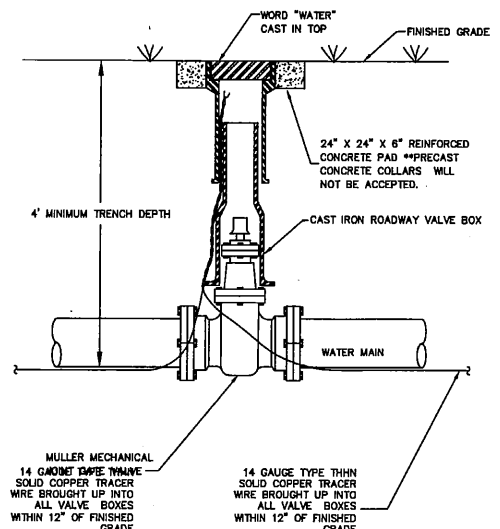
DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
DESIGNED: RLH
CHECKED: EFB
SCALE: NTS

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION



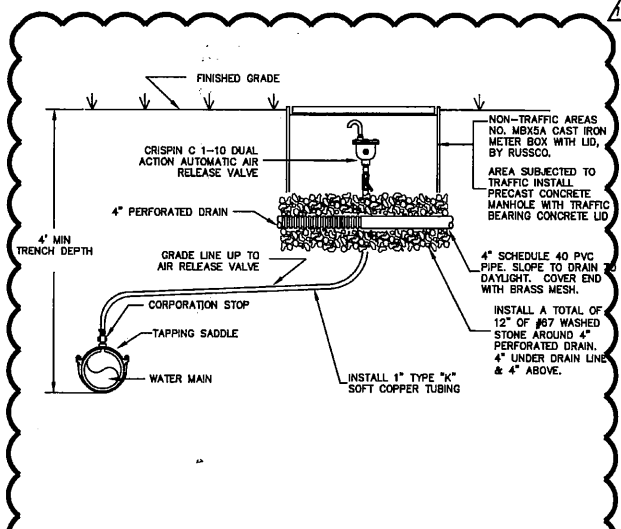
COH-STANDARD FIRE HYDRANT INSTALLATION DETAIL
SCALE: NOT TO SCALE

1
C.6.2



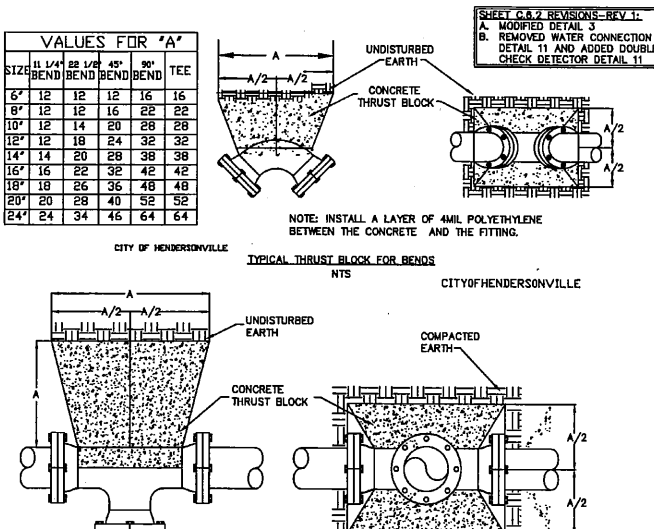
COH-IN GROUND GATE VALVE DETAIL
SCALE: NOT TO SCALE

2
C.6.2



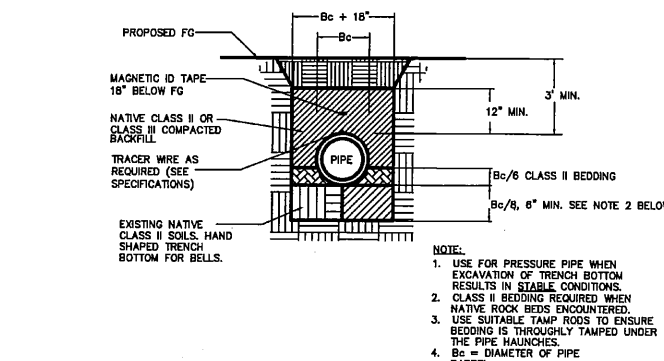
COH-TYPICAL AIR RELEASE VALVE DETAIL
SCALE: NOT TO SCALE

3
C.6.2



COH-STANDARD THRUST BLOCKING FOR FITTINGS DETAIL
SCALE: NOT TO SCALE

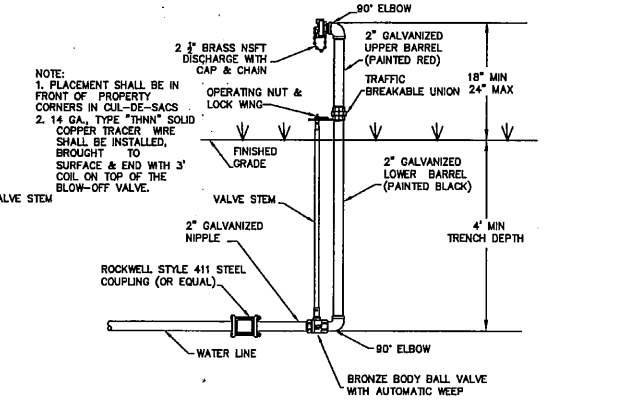
4
C.6.2



CLASS 'D' BEDDING DETAIL
SCALE: NOT TO SCALE

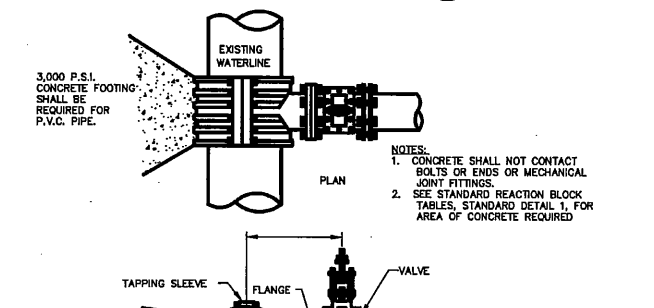
5
C.6.2

DEFINITIONS
CLASS I: CRUSHED STONE CONFORMING TO N.C.D.O.T. #57.
CLASS II: COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 40 MM (1-1/2 IN.), INCLUDING VARIOUSLY GRADED SANDS AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NON-COHESIVE, EITHER WET OR DRY. CLASS II MATERIALS ARE DEFINED AS SOIL TYPES GW, GP, SW, AND SP.
CLASS III: FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. CLASS III MATERIALS ARE DEFINED AS SOIL TYPES GM, GC, SM, AND SC.
BACKFILLING AT SIDES OF PIPE: BACKFILL BY HAND OR ACCEPTABLE MECHANICAL MEANS FROM THE TOP OF THE BEDDING TO THE CROWN OF THE PIPE USING NATIVE CLASS II OR CLASS III MATERIALS. LAYERS OF BACKFILL MATERIAL SHALL BE PLACED IN EVEN LIFTS ON BOTH SIDES OF THE PIPE. DO NOT MOVE, INJURE, OR DISTURB THE PIPE. INSURE THAT UNIFORM SIDE SUPPORT IS PROVIDED THROUGHOUT THE LENGTH OF PIPE. USE ONLY HAND TAMPING FOR COMPACTION.
BACKFILLING OVER THE PIPE: BACKFILL WITH CLASS II AND CLASS III MATERIAL FROM TOP OF PIPE OR TOP OF BEDDING TO A MINIMUM DEPTH OF 12" ABOVE THE CROWN OF THE PIPE PROVIDING SUFFICIENT CARE TO PREVENT INJURING OR MOVING THE PIPE. PLACE BACKFILL IN EVEN LAYERS AND COMPACT TO SPECIFIED DENSITY BY HAND OR APPROVED MECHANICAL MEANS.
BACKFILLING TO GRADE: BACKFILL AND COMPACT FROM 12" ABOVE THE CROWN OF THE PIPE TO FINISHED GRADE WITH NATIVE SOIL MATERIAL, COMPACTING SAME TO THE DENSITY REQUIRED FOR THE AREA CLASSIFICATION. THE FINISHED GRADE SHALL CONFORM TO ELEVATIONS, SLOPES, AND CONTOURS AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR SETTLEMENT OVER ALL TRENCHES AND HE SHALL BE REQUIRED TO ADD MATERIAL AND COMPACT AS DIRECTED IF SUCH SETTLEMENTS OCCUR.
PIPES AND RELATED APPURTENANCES: BACKFILL AND COMPACT TRENCHES IN UNIFORM LAYERS TO 1" ABOVE THE CROWN OF THE PIPE OR BEDDING TO 90% MAXIMUM DRY DENSITY. BACKFILL FROM 1" ABOVE THE CROWN OF THE PIPE TO FINISH GRADE AS REQUIRED FOR THE AREA CLASSIFICATION OR TO 95% MAXIMUM DRY DENSITY.



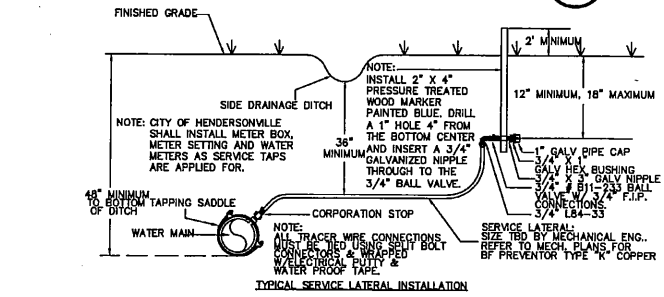
COH-STANDARD BLOW OFF VALVE DETAIL
SCALE: NOT TO SCALE

6
C.6.2



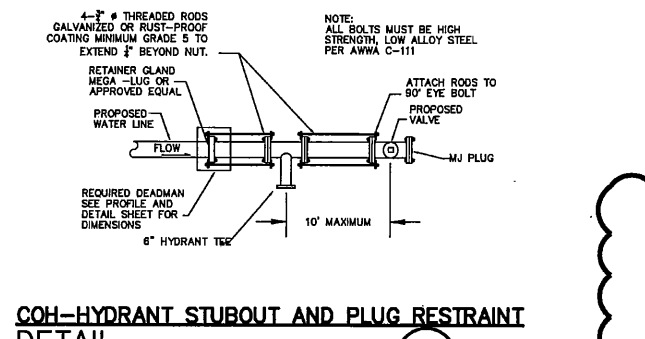
STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY DETAIL
SCALE: NOT TO SCALE

7
C.6.2



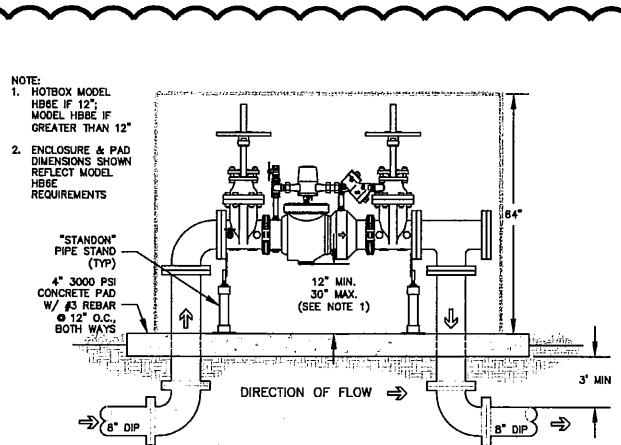
COH-STANDARD WATER SERVICE LATERAL DETAIL
SCALE: NOT TO SCALE

8
C.6.2



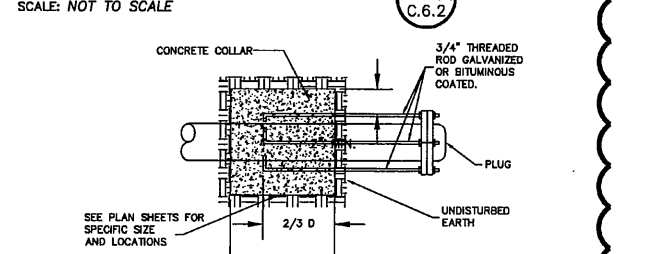
COH-HYDRANT STUBOUT AND PLUG RESTRAINT DETAIL
SCALE: NOT TO SCALE

9
C.6.2



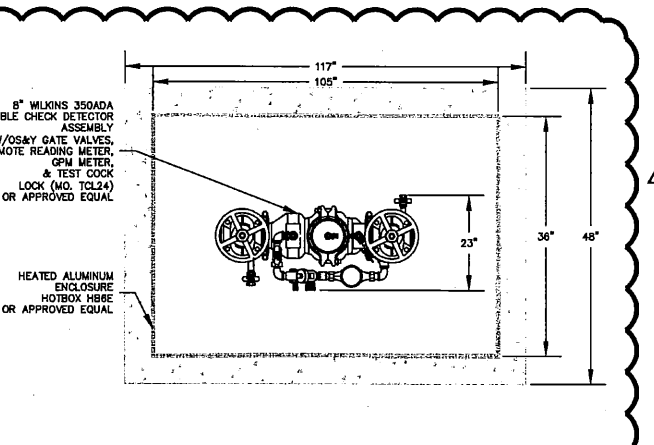
DOUBLE CHECK DETECTOR & ENCLOSURE DETAIL
SCALE: NOT TO SCALE

11
C.6.2



COH-STANDARD PLUG DEADMAN DETAIL
SCALE: NOT TO SCALE

10
C.6.2



COH-STANDARD WATER SERVICE LATERAL DETAIL (continued)
SCALE: NOT TO SCALE

CAVANAUGH
Solutions through integrity and partnership
Cavanaugh & Associates, P.A., 1200 Commonwealth Dr., Suite 100, Asheville, NC 28805 828.255.7598 fax 828.255.0770 www.cavanaughassociates.com

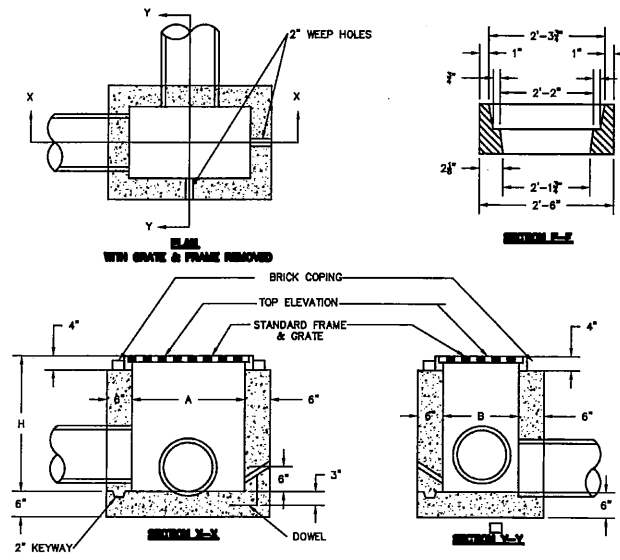
CAMP JUDEA, INC.
CAMP JUDEA DEVELOPMENT PLAN
HENDERSON COUNTY, NORTH CAROLINA
WATER MAIN DETAILS

REV.	DESCRIPTION	DATE
1	PER HENDERSONVILLE	01/20/09

SHEET NUMBER
C.6.2

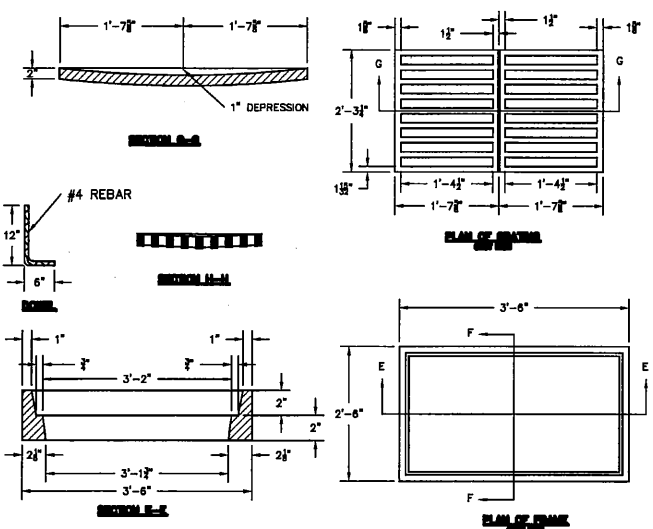
DATE: NOVEMBER 2008
PROJECT NO.: 031.08.013
DESIGNED: RLH
CHECKED: ERB
SCALE: NTS

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION



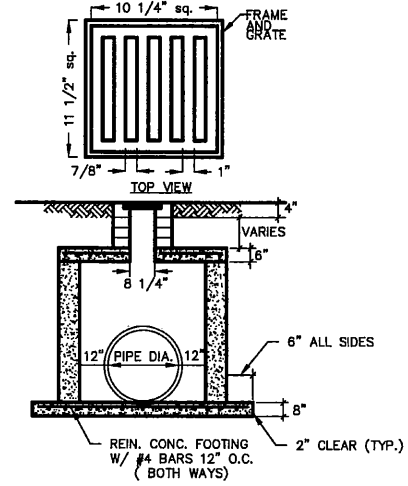
**CONCRETE DROP INLET WITH FRAME AND GRATE
DETAIL**
SCALE: NOT TO SCALE

1
C.6.3



**12" YARD INLET
DETAIL**
SCALE: NOT TO SCALE

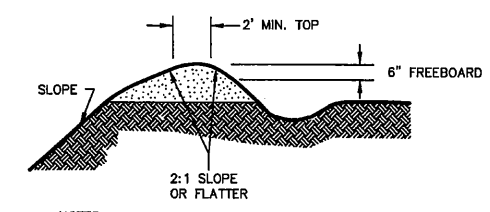
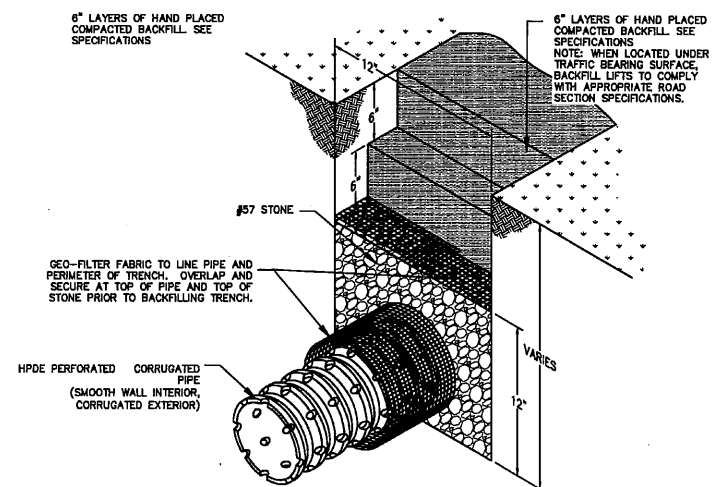
2
C.6.3



**UNDER DRAIN
DETAIL**
SCALE: NOT TO SCALE

3
C.6.3

- GENERAL NOTES:
- 1) USE CLASS "B" CONCRETE THROUGHOUT.
 - 2) PROVIDE ALL DROP INLETS OVER 3'-8" IN DEPTH WITH STEPS 12" ON CENTER.
 - 3) OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 - 4) USE FORMS FOR THE CONSTRUCTING OF THE BOTTOM SLAB
 - 5) CONSTRUCT WITH PIPE CROWNS MATCHING.
 - 6) INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.
 - 7) INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 76M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
 - 8) CHAMFER ALL EXPOSED CORNERS 1"

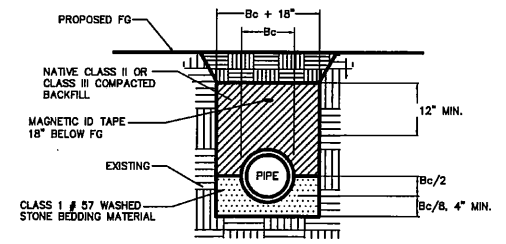


- NOTES:
1. REMOVE AND PROPERLY DISPOSE OF ALL TREES, BRUSH, STUMPS, OR OTHER OBJECTIONABLE MATERIAL. FILL AND COMPACT ALL DITCHES, SWALES, OR GULLIES THAT WILL BE CROSSED TO NATURAL GROUND LEVEL OR ABOVE.
 2. EXCAVATE, SHAPE, AND STABILIZE THE DIVERSION TO LINE, GRADE AND CROSS SECTION.
 3. COMPACT THE RIDGE TO PREVENT UNEQUAL SETTLEMENT AND TO PROVIDE STABILITY AGAINST SEEPAGE.
 4. VEGETATIVELY STABILIZE THE DIVERSION AFTER ITS INSTALLATION.

MAINTENANCE
IF THE PRACTICE IS TO REMAIN IN USE FOR MORE THAN ONE DAY, AN INSPECTION WILL BE MADE AT THE END OF EACH WORK DAY AND REPAIRS MADE TO THE MEASURE IF NEEDED. THE CONTRACTOR SHOULD AVOID THE PLACEMENT OF ANY MATERIAL OVER THE STRUCTURE WHILE IT IS IN USE. CONSTRUCTION TRAFFIC SHOULD NOT BE PERMITTED TO CROSS THE DIVERSION.

**TEMPORARY DIVERSION DITCH
DETAIL**
SCALE: NOT TO SCALE

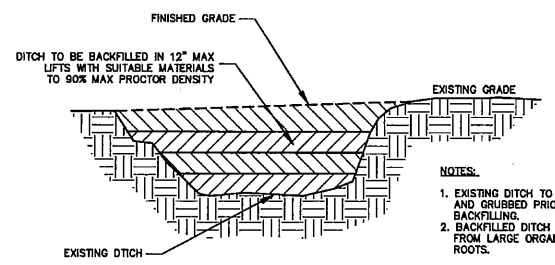
7
C.6.3



- NOTE:
1. USE FOR ALL STORM DRAIN PIPING.
 2. USE SUITABLE TAMP RODS TO ENSURE BEDDING IS THOROUGHLY TAMPED UNDER THE PIPE HAUNCHES.
 3. Bc = DIAMETER OF PIPE BARREL.

**CLASS C BEDDING FOR STORM DRAIN PIPING
DETAIL**
SCALE: NOT TO SCALE

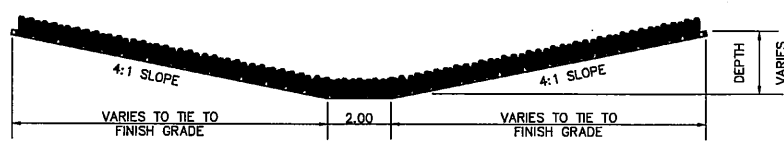
4
C.6.3



- NOTES:
1. EXISTING DITCH TO BE CLEARED AND GRUBBED PRIOR TO BACKFILLING.
 2. BACKFILLED DITCH TO BE FREE FROM LARGE ORGANICS AND ROOTS.

**DITCH BACKFILL
DETAIL**
SCALE: NOT TO SCALE

5
C.6.3



- NOTE:
- (1) USE PENSACOLA BERMUDAGRASS AS VEGETATED COVER
 - (2) USE WOVEN PAPER NET AS CHANNEL LINER

**GRASS LINED SWALE
DETAIL**
SCALE: NOT TO SCALE

6
C.6.3

**RIP RAP LINED DITCH
DETAIL**
SCALE: NOT TO SCALE

8
C.6.3

CAVANAUGH
Solutions through integrity and partnership

Cavanaugh & Associates, P.A. 1200 Campmead Dr., Suite 100, Asheville, NC 28806 (828)256-7500 fax: (828)256-0770 www.cavanaughjohns.com

CAMP JUDEA, INC.
CAMP JUDEA DEVELOPMENT PLAN
HENDEYSON COUNTY, NORTH CAROLINA
PHASE I
STORM DRAINAGE
DETAILS

REV.	DESCRIPTION	DATE

SHEET NUMBER
C.6.3

DATE: NOVEMBER 2008	PROJECT NO.: 031.08.013	DESIGNED: RLH	CHECKED: ERB	SCALE: NTS
---------------------	-------------------------	---------------	--------------	------------

FINAL DRAWING

NOT RELEASED FOR CONSTRUCTION

HENDERSON COUNTY REVIEW OF CITY WATER LINE EXTENSIONS

Project Name: Camp Judaea, Ph 1
 Size of Water Line (Main & Distribution Pipe Size): 32 LF of 8" DIP CL350; 1827 LF of 6" DIP CL350
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshal; Parker Sloan, Planner; Autumn Radcliff, Senior Planner

Has the project been reviewed under the **County Subdivision Regulations of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Manufactured Park Regulations of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Zoning Regulations (i.e. Special-Use or Conditional-Use Permit) of the Land Development Code?** Yes No N/A

Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Is the project subject to **any other County Land Use Regulations?** Yes No N/A

If yes, explain: _____

Does the project conform with the **2020 Henderson County Comprehensive Plan (CCP)?** Yes No N/A

Does the project have **adequate hydrant location and spacing?** Mueller Centurion – National Standard Thread Yes No N/A

Description of **hydrant type and thread:** _____

Does the estimated flow rate (gpm) meet **fire protection standards?** Meets standard for structure spacing of more than 100 feet. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- | | | |
|--------------------------|-------------------------------------|-----------------------------|
| <input type="checkbox"/> | Approved | Date of Board Review: _____ |
| <input type="checkbox"/> | Not Approved | Comments: _____ |
| <input type="checkbox"/> | Conditional Approval (See Comments) | |