

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: February 4, 2008

Subject: Water Line Extensions

Attachments:

1. Cummings Cove Sports Complex
2. Fox Glen
3. Mitchem Commercial Park, Phase I
4. Oak Knoll

Summary of Request:

The City of Hendersonville has requested that the County comment on four proposed water line extensions for the Cummings Cove Sports Complex, Fox Glen, Mitchem Commercial Park, Phase I, and Oak Knoll. The proposed water line extensions are located within the urban service area and the rural/urban transition area and are generally consistent with the Henderson County 2020 Comprehensive Plan. A City of Hendersonville Project Summary Sheet, with supporting documents and County Review Sheet with Staff comments, is attached for each project for the Board's review and action.

Board Action Request:

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

Suggested Motion:

I move that the Board approve the proposed water line extensions for the Cummings Cove Sports Complex, Fox Glen, Mitchem Commercial Park, Phase I, and Oak Knoll 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: February 4, 2008

Subject: Water Line Extension – Cummings Cove Sports Complex

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

Summary of Request:

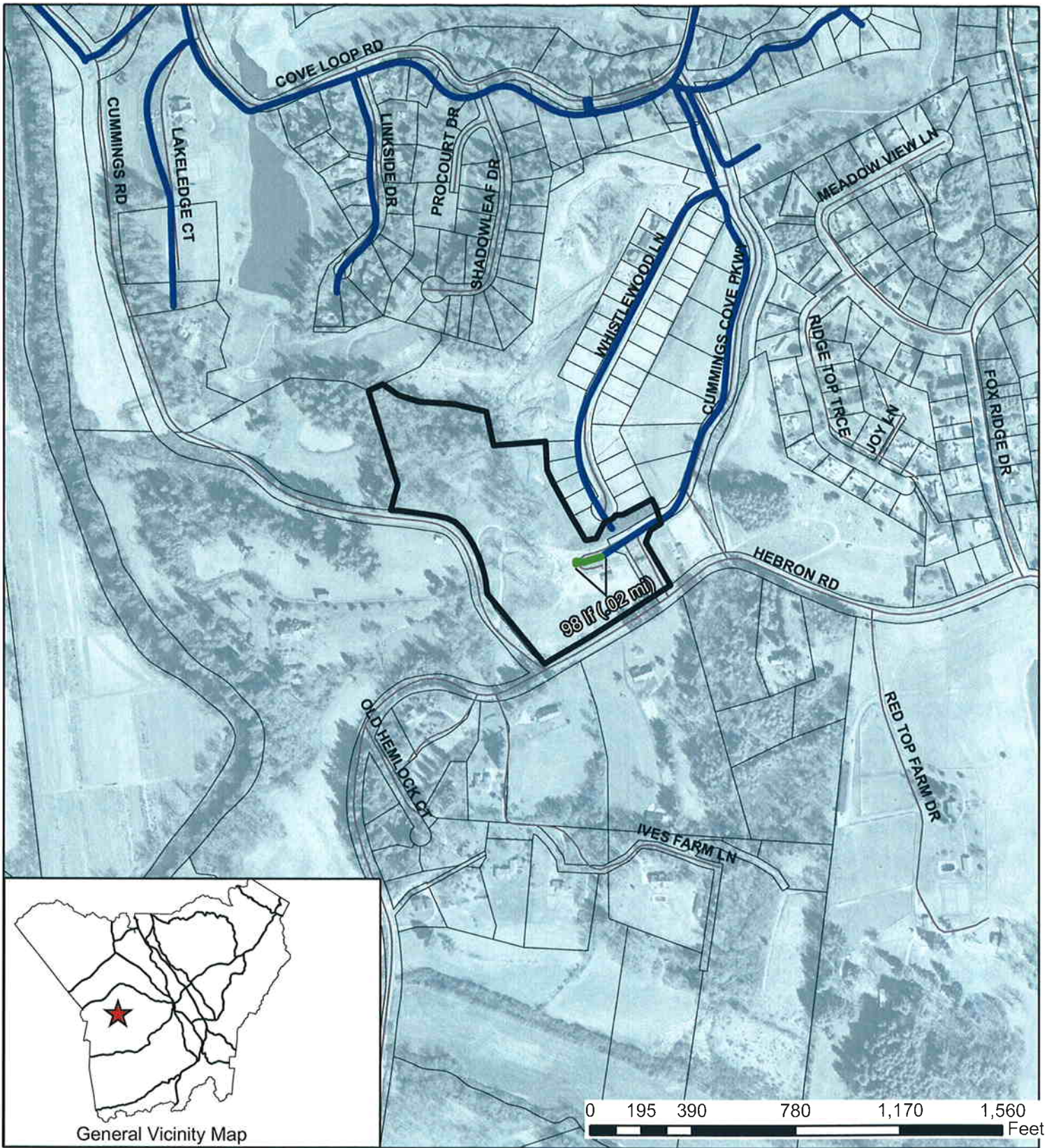
The City of Hendersonville has requested that the County comment on the proposed water line extension for Cummings Cove Sports Complex. The proposed water line is 98 lf of 6" DIP and includes 1 fire hydrant assembly. It is located within the rural/urban transition area as designated by the Henderson 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 Cummings Cove Sports Complex water line extension and direct Staff to convey the County's comments to the City of Hendersonville.



Cummings Cove Sports Complex

DEVELOPER: CUMMINGS COVE COMPANY, LLC

OWNER: CUMMINGS COVE COMPANY, LLC

AGENT: CIVIL DESIGN CONCEPTS

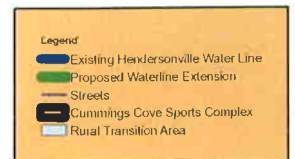
NEW ZONING: R2-MH

WATERSHED: NONE

WATER SYSTEM: PUBLIC

SEWER SYSTEM: PRIVATE

ROAD SYSTEM: PRIVATE



HCPD 12.28.07

See Master Plan for exact location of project and additional information.

**Addendum to Engineer's Report
Proposed Water Line Improvements
For
Cummings Cove – Sports Complex
Henderson County, North Carolina**

The proposed project is an extension of the existing public water distribution system owned and maintained by The City of Hendersonville Water and Sewer Department. The project will include approximately **98 lf of 6" DIP waterline, 1 fire hydrant assembly, and all appurtenances necessary to serve the Sports Complex portion of the proposed subdivision.**

This project entails connecting to the existing public water system located off of Cummings Cove Parkway within Cummings Cove in Henderson County. The proposed water system extension will provide domestic service and fire protection for the proposed development, and will also provide service to three off-site residences.

Existing water systems

An existing 6" water line is located on the shoulder of Cummings Cove Parkway in Hendersonville, NC which is owned and maintained by The City of Hendersonville Water and Sewer Department.

Name and address of the applicant

Cummings Cove Parkway, LLC
20 Cummings Cove Parkway
Hendersonville, NC 28792

Description of future service areas

The proposed water line extension is to provide both domestic and fire service for the proposed Cummings Cove sports complex, which includes a clubhouse, pool, and 3 tennis courts. Water service for the future phases of Cummings Cove will also be served by The City of Hendersonville.

Financial Considerations

NA

Present and anticipated water demand

The anticipated **total** domestic water demand at build out for development along this water line is approximately 37800 GPD with a peak demand of 273 GPM.

Source of supply

NA

Agreements to purchase water

NA

Useful life of sources

Proposed improvements are to be constructed of ductile iron with a design life of 50 years.

Demand

The anticipated domestic water demand for the development is approximately 2200 GPD with a peak demand of 148 GPM.

Existing System Expansion Considerations

NA

Existing Pressure and Flow at the Point of Connection

The calculated pressures at the most deficient points in the system (for peak daily domestic demands) in the development for fire flow and domestic flow conditions are **112 PSI** while flowing **500 GPM** and **147 PSI** while flowing **148 GPM**.

Identification of service area

The proposed service area is 13.99± acres.

Description of area

The subdivision is 13.99± acres in size and is located in Henderson County, off of Cummings Cove Parkway.

Considerations to Alternatives

NA

Population trends

NA

Present and future yield from supply

NA

Proposed water treatment processes

NA

Design basis of the source, treatment and distribution systems

NA

Prioritized list of infrastructure improvements

NA

The above information is believed to be accurate for the proposed development entitled **Cummings Cove – Sports Complex** as designed and specified in the construction documents entitled Water Extension Plans prepared by **Mark D. Cathey, P.E.** of Civil Design Concepts, Inc. and dated **December 3, 2007**.



Engineer's Signature

Engineer's Seal & Date



06100.1 SCOPE

These specifications shall apply to the materials to be furnished and installed to complete the water line installations in accordance with the plans. All pipe and appurtenances shall be of the class and type as indicated on the plans, within the approved materials list and designated herein.

6100.2 GENERAL

No unapproved materials will be delivered to the job site.

All materials shall be first quality with smooth interior and exterior surfaces, free from cracks, blisters, honeycombs, and other imperfections, and true to theoretical shapes and forms throughout. All materials shall be subject to the inspection of the Engineer at the plant, trench, or other point of delivery, for the purpose of culling and rejecting material which does not conform to the requirements of these specifications. Such material shall be marked by the Engineer, and the Contractor shall remove it from the project site upon notice being received of its rejection.

Specifications cited shall refer to the latest revision under the same specification number, or to superseding specifications under a new number, except provisions in revised specifications which are clearly inapplicable.

06900.3 HANDLING AND STORING MATERIALS

The Contractor shall use care unloading materials to avoid damage. Material shall not be rolled or dragged over gravel or rock during handling. The Contractor shall store the fittings, valves and appurtenances on sills above storm drainage level and deliver for installation after the trench is excavated. All valves shall be drained and so stored as to protect them from freezing. When any material is damaged during transporting, unloading, handling or storing, the undamaged portions may be used or, if damaged sufficiently, the Engineer will reject the material as being unfit for installation.

If any defective material is discovered after installation, it shall be removed and replaced with sound material or shall be repaired by the Contractor in an approved manner at his own expense.

06100.4 PIPE

A. Ductile Iron Pipe

Ductile Iron Pipe shall be manufactured in accordance with ANSI Specification A

21.51. All Ductile Iron Pipe shall be Class 350 unless otherwise specified and shall be lined with cement mortar not less than 1/16 inch thick conforming to ANSI Specification A 21.4.

1. Flanged Joints

Flanged pipe shall have flanges with long hubs, shop fitted on the threaded end of the pipe.

Where required, flanges shall be tapped for stud bolts. Flanges shall be accurately faced at right angles to the pipe axis and shall be drilled smooth and true, and covered with coal tar pipe varnish or otherwise protected against corrosion of flange

06100-1

faces. Flange faces shall be cleaned to bare metal with wire brushed before installation of pipe.

Ductile Iron Flanged joint pipe shall be thickness Class 53 minimum and shall have Ductile Iron flanges conforming to ANSI B 16.1, 125 pound template. Pipe shall be ordered in lengths needed as no pipe shall be cut, threaded or flanged in the field.

In general, flanged joints shall be made up with through bolts of the required size. Stud or tap bolts shall be used only where shown or required. Steel or tap bolts shall be cadmium plated, with good and sound, well fitting threads, so that the nuts may be turned freely by hand. Cadmium plating shall be by an approved process with a plate thickness of 0.0001 to 0.0005 inches

2. Mechanical Joints

All mechanical joints shall be manufactured in accordance with ANSI Specification A 21.11. All bolts shall be torqued to manufacturer's specifications. If effective sealing is not obtained by tightening the bolts to the specified torques, the joint shall be disassembled and reassembled after thorough cleaning.

3. Slip Joints

Slip or push-on joints shall be manufactured in accordance with ANSI Specification A 21.11.

Bells of "slip" joint pipe shall be contoured to receive a bulb shaped circular rubber gasket, and plain ends shall have a slight taper to facilitate installation. The lubricant used in making up the joints shall be furnished by the pipe manufacturer.

B. Polyvinyl Chloride Pipe (AWWA C-900)

Polyvinyl Chloride Pipe under this subsection shall meet the requirements of AWWA C-900. All PVC pipe shall be tested to four times the rated working

pressure of the pipe and be approved by the National Sanitation Foundation. The pipe shall be furnished in standard laying lengths of 20 feet +/- 1 inch.

All PVC pipe joints shall be of an integral bell and spigot of the same material as the pipe with a solid cross-section rubber "O" ring.

All non-ferrous waterline shall have a 14 gauge copper tracer wire Type "THNN" laid beneath the waterline for the purpose of locating such lines. At all valves the tracer wire shall be run into the valve box to a distance of no more than 18 inches below the top of the valve box. The wire in the valve box shall be cut, stripped and the ends tied together.

C. Polyvinyl Chloride Pipe (Other than AWWA C-900)

Polyvinyl Chloride (PVC) pipe under this subsection shall meet the requirements of ASTM specifications D-2241, and be approved by the National Sanitation Foundation for potable water use. It shall be extruded from virgin, PVC II20 compounds conforming to ASTM Specification D1784. The standard dimension ratio (DR) shall be 13.5 unless otherwise specified.

All PVC pipe joints shall be of an integral bell and spigot of the same material as the pipe with a solid cross-section rubber "O" ring.

Where PVC pipe is furnished in IPS sizes, IPS transition gaskets shall be furnished with each fitting for compatibility.

06100-2

All non-ferrous waterline shall have a 14 gauge copper tracer wire Type "THNN" laid beneath the waterline for the purpose of locating such waterlines. At all valves the tracer wire shall be run into the valve box to a distance of no more than 18 inches below the top of the valve box. The wire shall be cut, stripped and the ends tied together.

D. Steel Casing Pipe

See Section 7400.

E. Galvanized Steel Pipe

Galvanized Steel Pipe shall conform to ASTM Specification A 120. Joints and fittings shall be cast iron, screwed, Class B meeting Federal Specification WW-P-21, ASTM Specification A 197 and ANSI Specification B2.1.

06100.5 Fittings

Cast Iron and Ductile Iron Fittings

All cast iron and ductile iron pipe fittings shall be mechanical joint in accordance with ANSI Specification A 21.10 for underground piping. All ductile iron and cast iron pipe fittings shall be flanged in accordance with ANSI Specification B 16.1 for exposed piping.

All fittings shall be lined with cement mortar not less than 1/16 inch thick in conformance with ANSI Specification A 21.4 and suitable for a minimum of 250 psi working pressure unless otherwise specified.

All mechanical joints shall be manufactured in accordance with ANSI Specification A21.11.

06100.6 **Gate Valves**

All gate valves shall be designed for a working pressure of 200 psi unless otherwise specified and shall have a clear waterway equal to the full nominal diameter of the pipe and shall be opened by turning counterclockwise. Each valve shall have the initials of the maker, pressure rating and year of manufacture cast on the body. Prior to shipment from the factory, each valve shall be tested by hydraulic pressure equal to twice the specified working pressure. Valves shall be operated by hand wheel or operating nut as herein specified and shall have an arrow cast in the metal indicating the direction of opening. Valves to be installed underground shall be non-rising stem type while valves installed above ground or in buildings and structures shall have rising stems.

A. Gate Valves Up To 2 Inches

Gates valves up to 2 inches shall be all brass, conforming to AWWA C-800.

Each valve shall have a tee handle or hand wheel, whichever is applicable, for valve operation.

B. Gate Valves 3 Inches and Larger

Gate valves 3 inches and larger shall be iron body, resilient-seated meeting the requirements set forth in AWWA Specification C-509.

06100-3

06100.7 **Butterfly Valves**

Butterfly valves shall be Mueller Linesal III valves, self-adjusting, disk seal, Class 150B. Butterfly valves shall conform to AWWA C504 designed for minimum operating pressure of 150 psi with higher pressure valves as needed for each location. Both ends shall be mechanical joint in compliance with AWWA C111 and ANSI A21.11. Valves shall be at least the same class of pipe with which they are used.

06100.8 **FIRE HYDRANTS**

Fire hydrants shall be Mueller Centurion, which is the City standard. Refer to the detail **FIRE HYDRANT INSTALLATION** shown on the plans.

06100.9 **BLOW OFF VALVES**

Blow off valves shall be as shown on the detail **BLOW OFF VALVE** shown on the plans.

06100.10 **AIR RELEASE VALVE**

Air release valves shall be as shown on the detail **TYPICAL AIR RELEASE VALVE** as shown on the plans.

06100.11 **TAPPING SADDLE**

Tapping saddle shall be Mueller #H-615 or approved equal. See detail **TAPPING SADDLE** on the plans.

06100-4
SECTION 06200 **WATER PIPE**
INSTALLATION

06200.1 **APPLICABLE AWWA STANDARDS**

C600: Installation of Ductile-Iron Water Mains and Their Appurtenances

C605: Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

C651: Disinfecting Water Mains (Preventive and Corrective Measures During Construction)

06200.2 **TRENCH DEPTH AND COVER**

The minimum allowable soil cover over a water main must be 30". The minimum trench depth must be 4'.

06200.3 SAW CUTTING ASPHALT

Refer to Section 05050 Bituminous Pavement Repairs.

06200.4 PREPARATION OF PIPE FOUNDATION

The preparation of the pipe bedding shall be in accordance with the typical trench cross-sections as shown on the plans for the type of pipe being installed.

The pipe foundation shall be prepared to be uniformly firm and shall be true to the lines and grades as shown on the plans. Any deviation or field adjustment will require the approval of the Engineer.

A space shall be excavated under and around each bell to sufficient depth to relieve it of any load and to allow ample space for filling and finishing the joint.

Where rock or boulders are encountered in the bottom of the trench, the same shall be removed to such depth that no part of the pipe, when laid to grade, will be closer to the rock or boulders than six (6) inches. A suitably tamped and shaped foundation of approved material shall be placed to bring the bottom of the trench to proper subgrade over rock or boulders.

Where the foundation material is found to be of poor supporting value, the Engineer may make minor adjustments in the location of the pipe to provide a more suitable foundation. Where this is not practical, the foundation shall be conditioned according to the undercut detail as shown on the plans or as directed by the Engineer. The selection of the type of backfill material to be used for foundation conditioning will be made by the Engineer.

The Contractor shall remove all water by pumping or bailing. No pipe shall be laid until the water has been removed from the trench. Water removed from the trench must be disposed of in such a manner as not to cause damage to work completed or in progress. All necessary measures will be taken to prevent erosion due to the dewatering process.

06200.5 LAYING PIPE

All pipe and appurtenances are to be installed in strict accordance with the manufacturer's specifications and the contract material specifications. No pipe shall be laid except in the presence of the Engineer or his inspector or with special permission from the Engineer.

06200-1

Water lines shall have thrust blocks constructed at all tees, "Y's", bends, and valves

as shown on the plans.

Proper tools, implements and facilities satisfactory to the Engineer shall be provided and used for the safe and proper laying of the pipe. All pipe and appurtenances will be lowered into the trench piece by piece in such a manner as to provide safe working conditions. The pipe shall be laid on the prepared foundation providing a uniform flow line along the pipe. Pipe shall be removed if broken, damaged or displaced during the laying of pipe or backfilling the trench.

When cutting short lengths of pipe, a pipe cutter as approved by the Engineer will be used and care will be taken to make the cut at right angles to the center line of the pipe or on the exact skew as shown on the plans. In the case of push-on pipe, the cut ends shall be tapered with a portable grinder, or coarse file to match the manufactured taper.

The maximum deflection per joint of flexible joint pipe shall meet manufacturer's specifications. No deflection shall be allowed in galvanized steel pipe joints or concrete pressure pipe joints.

The interiors of pipes, fittings, and valves shall be protected from contamination. Pipe delivered for construction shall be strung to minimize the entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used when watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means.

06200.6 RELATIONSHIP OF WATER AND SEWER SYSTEMS

The contractor is required to comply with the North Carolina Administrative Code, Rules Governing Public Water Systems, Title 15A NCAC 18C.0906. Per the City of Hendersonville, Storm Water Collection Systems are to be given the same consideration as Sanitary Sewer Systems.

Lateral separation of water and sewer lines shall be a minimum of 10 feet unless existing conditions prevent a 10 foot lateral separation in which case:

1. The water line is laid in a separate trench, with the elevation of the bottom of the water line at least 18 inches above the top of the sewer line.
2. The water line is laid in the same trench, with the water line located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water line at least 18 inches above the top of the sewer line.

When the water line crosses over a sewer line, the water line shall be laid with the bottom of the water line at least 18 inches above the top of the sewer line. When existing conditions prevent an 18 inch minimum separation both the water and sewer lines shall be ferrous material for a distance of 10 feet on both sides of the point of crossing.

When the water line crosses under a sewer line both the water and sewer lines shall be ferrous material for a distance of 10 feet on both sides of the point of crossing. The water line shall be laid in such a manner as to maximize the distance between the crossing point and any joints.

06200.7 **BACKFILLING**

Methods of backfilling shall be in strict accordance with pipe manufacturer's specifications and these specifications. Where there is a conflict between the two, the manufacturer's specifications will be followed.

All backfill shall be from the excavated trench and shall be free from organic material and rocks larger than three inches in the largest dimension and shall contain more than 50 percent of $\frac{3}{4}$ inch or smaller material. Backfill shall be moisture conditioned to achieve a moisture content at or near the laboratory optimum moisture content. Backfill placed around pipes shall be placed in such a manner that the pipes will not be displaced or damaged. Backfill shall be placed in loose 6 inch layers, and compacted by mechanical means to ninety five (95) percent of the Standard Proctor Test. Backfill placed adjacent to pipes or appurtenances shall be compacted by hand operated power tampers. Jetting will not be allowed. All backfill material shall be approved by the Engineer.

06200.8 **SELECT BACKFILL**

When the Engineer determines that material from the excavation is not suitable for backfill, select backfill shall be utilized and compensation will be negotiated under a change order.

06200-2

SECTION 06900
TESTING

WATER APPURTENANCE INSTALLATION,
AND DISINFECTION

06900.1 **SCOPE**

This section covers the installation of all necessary fittings, valves and appurtenances for the water distribution system as shown on the plans and specified herein, testing and chlorination.

06900.2 **THRUST BLOCKS**

All plugs, caps, tees, bends, and other fittings shall be provided with adequate thrust blocks. Thrust blocks shall be constructed to the minimum dimensions shown on the drawings or as directed. Thrust blocks shall be made of concrete having a compressive strength of twenty-eight (28) days of 3000 psi when tested in accordance with ASTM Specification C39 or C42 and shall bear directly against the undisturbed trench wall. Where possible, the backing shall be so placed that the fitting joints will be accessible for repair. All bolts and pipe joints shall be protected against contact with thrust block concrete by the installation of a polyethylene film placed between the fittings and the poured concrete. Where any section of a main is provided with concrete thrust blocks, the hydrostatic pressure test shall not be made until three (3) days after installation of the concrete thrust blocks unless otherwise approved by the Engineer. Where trench conditions are, in the opinion of the Engineer, unsuitable for thrust blocks, the Contractor shall provide steel tie rods and socket clamps to adequately anchor the piping. All tie rods and clamps shall be given a bituminous protective coating or shall be galvanized. Sakrete or any similar material will not be permitted under any circumstances.

06900.3 **GATE VALVE INSTALLATION**

Before setting each valve the Contractor shall make sure the interior is clean and test opening and closing. Valves shall be set with stems plumb, unless horizontal installation is called for on the plans, and at the exact locations shown. Trench backfill shall be tamped thoroughly for a distance of three (3) feet on each side of valve boxes.

06900.4 **GATE VALVE BOX INSTALLATION**

A valve box shall be installed over each underground valve. All boxes shall be set plumb with their top flush with finished grade.

06900.6 **FIRE HYDRANT INSTALLATION**

Fire hydrants shall be located as shown. Each hydrant shall be connected to the

main with a six (6) inch branch line having at least as much cover as the distribution main. Hydrants shall be set plumb with the pumper nozzle facing the roadway and with the center of the lowest outlet not less than eighteen (18) inches above the finished grade. Hydrants shall be thoroughly blocked with concrete or shall be rodded to the six (6) inch branch tee. Unless otherwise specified, the backfill around hydrants shall be thoroughly compacted to the final grade immediately after installation in order to put the hydrant into service as soon as practicable. Not less than seven (7) cubic feet of clean crushed stone shall be placed around the base of the hydrant to insure drainage of the hydrant barrel. A cap block shall be set under the fire hydrant foot for a solid bottom.

06900-1

06900.7 AIR RELIEF VALVE INSTALLATION

Each air relief valve shall be installed at the exact location shown per the detail. Meter boxes shall be set plumb and on a firm foundation. When meter boxes are precast concrete, each joint between sections and all wall openings shall be sealed inside and out with a 2:1 sand-cement mortar and made watertight. When so directed, the Contractor shall install a flat slab top, precast with a standard frame and cover. Flat slab tops shall be traffic bearing as appropriate.

06900.8 BLOWOFF VALVES

Blowoff valves shall be installed as shown on the contract drawings.

06900.9 LINE FLUSHING

Reference is made to AWWA C651. Prior to testing of any sections of water main, the Contractor, using an approved water source, shall completely flush out all lines at a minimum velocity of 2.5 feet per second to clean out any sediment or debris.

06900.10 TESTING

After the pipeline has been satisfactorily constructed complete with the required fire hydrants, services, and all other appurtenances, and the trench backfilled satisfactorily, and after line flushing and approval by the Engineer, the newly constructed pipeline and valved sections shall be subjected to a hydrostatic pressure leakage test. The Contractor shall notify the Engineer when the work is ready for testing with all testing done in the presence of the Engineer. All labor, equipment, water and materials, including meters and gauges shall be furnished by the Contractor at his own expense.

Ductile iron pipe will be tested in accordance with AWWA C600. PVC pipe will be tested in accordance with AWWA standard C-605 and Manual M-23.

Each completed section of the pipeline shall be plugged at both ends and slowly

filled with water. As the main is being filled with water in preparation of the tests, all air shall be expelled from the pipe. The main shall be subjected to hydrostatic pressure of 200 pounds per square inch for a period of two (2) hours unless otherwise specified. Pressure shall be applied to the main by means of a hand pump for small lines or by use of a gasoline pump or fire engine for larger lines.

The rate of leakage shall be determined at fifteen (15) minute intervals by means of volumetric measurement of the water added during the test until the rate has stabilized at the constant value for three (3) consecutive fifteen (15) minute periods.

Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. No piping installation will be accepted until the leakage is less than ten (10) gallons per inch of pipe diameter per mile of pipe per twenty-four (24) hours.

No leakage will be allowed under the above tests for piping in buildings and structures.

Cracked or defective pipe, joints, fittings, valves, or hydrants discovered in consequence of this test shall be removed and replaced with sound materials, and the test shall be repeated until the test results are satisfactory. Precautions shall be taken to remove or otherwise protect equipment in, or attached to, pipe to prevent damage or injury.

06900-2

Tests of insulated and concealed piping shall be made before the piping is covered or concealed. No leakage will be allowed under the above tests for piping in buildings.

06900.11 DISINFECTION

After the pressure-leakage test is completed and prior to being put into service, new waterline shall be disinfected in strict accordance with AWWA Standard C651. The contractor shall submit a plan at least two weeks prior to the planned start of disinfection that describes in detail the following:

- Proposed form of chlorine to be used
- Proposed method of chlorination
- Final Flushing, including disposal of chlorinated water
- Bacteriological testing, including the name and address of the State approved lab to be used
- Redisinfection as necessary

Disinfection will not be permitted to begin until the plan is approved by the Engineer.

06900-3



PROJECT NARRATIVE

TO: Lee Smith, Utilities Director
Water & Sewer Department
City of Hendersonville

FROM: **Mark D. Cathey**

DATE: **Monday, December 3, 2007**

SUBJECT: **Cummings Cove – Sports Complex**
9538-74-8603
WATER UTILITY EXTENSION

An extension of the existing water main(s) located **along Cummings Cove Parkway within Cummings Cove** is required to provide water service to the above referenced project. This project is proposed to be a **public facility (fitness center)** for the existing residential subdivision. The water extension will serve a **sports complex that includes 2 tennis hydro-courts, one pool, and a clubhouse (and 3 off-site single-family residences)**. The proposed site is currently owned and being developed by:

Cummings Cove Company, LLC
20 Cummings Cove
Hendersonville, NC 28739
Shannon Ginn
(828)-891-1512

The sewer service for this project will be private.

At the present time, **Shannon Ginn** will be responsible for signing the Water Utility Extension Agreement (WUEA) with the City of Hendersonville.

The project will consist of **98 LF 6" DIP , 1 fire hydrant (at an estimated flow rate of 500 gpm for each fire hydrant)**. For more information regarding this proposed project see the accompanying preliminary plans.

This project is estimated to be completed (**60**) days after final grading has been completed, assuming favorable weather conditions. I, or an authorized representative of my company, will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please feel free to contact me.

Engineer's Signature

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Cummings Cove Sports Complex**

December 7, 2007

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 the **Sports Complex portion of the proposed subdivision**. This project is located **within Cummings Cove**. 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 **Cummings Cove Parkway, LLC of Hendersonville, NC**.

This project requires approximately **98** linear feet of water line sized as following:

Approximate Length:	Description:
98 ‘	6” DIP CL350

Fire Protection will be provided by the installation of **1** fire hydrant .

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 letter provided to the City by the Reviewing Jurisdiction)

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.”

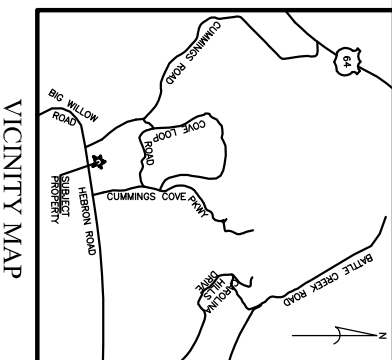
Water and Sewer Department:	<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: 12-11-07
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____

LEGEND	
EXISTING WATER LINE	---
PROPOSED WATER LINE	—
PROPOSED WATER SERVICE LINE	—V—V—
PROPOSED WATER VALVE	—V—
PROPOSED FIRE HYDRANT	—H—
PROPOSED WATER METER	—M—
PROPOSED STORM DRAINAGE LINE	- - -
EXISTING SEWER MANHOLE	⊗
EXISTING SEWER LINE	—S—
PROPOSED SEWER MANHOLE	⊗
PROPOSED SEWER LINE	—

SITE DATA
 PIN: 9538-74-9803
 SITE AVERAGE: 13,982 ACRES

WATER LINE SUMMARY
 LINE A - 98 LF 6" DP
 1 - FIRE HYDRANT ASSEMBLY
 1 - 6" END OF LINE FLUG

DEVELOPMENT DATA
 OWNER/DEVELOPER: CUMMINGS COVE COMPANY, LLC
 HENDERSONVILLE, NC 28729
 CONTACT: SHANNON OWEN
 (828) 891-1912
 CIVIL ENGINEER: CIVIL DESIGN CONCEPTS, P.A.
 200 SWANNANOA RIVER ROAD
 ASHEVILLE, NORTH CAROLINA 28805
 CONTACT: MARK D. GATHEY, P.E.
 (828) 522-5388
 SURVEYOR: DAVID HUNTLEY & ASSOCIATES
 HENDERSONVILLE, NORTH CAROLINA 28722
 CONTACT: DAVID HUNTLEY, P.L.S.
 (828) 893-8077



PROPOSED 1 1/2" TYPE "C" COPPER SINGLE WATER SERVICE WITH STUB AND BLUE WANNER (SEE DETAIL) (5/4" DROP-IN WATER METER TO BE INSTALLED BY CITY OF HENDERSONVILLE)
 NOTE: CONTRACTOR RESPONSIBLE FOR INSTALLING 1 1/2" LINE TO WITHIN 5' OF COURT AND THING INTO METER ONCE SET BY CITY OF HENDERSONVILLE. SEE TENNIS COURT DESIGN PLANS FOR CONTINUATION.

1 - 1" WATTS FOR REDUCED PRESSURE (OR APPROVED EQUIVALENT) ASSEMBLY ENCLOSURE
 NOTE: CONTRACTOR TO BE RESPONSIBLE FOR CONTAINING ELECTRICAL FOR ENCLOSURE

PROPOSED 1" TYPE "C" COPPER SINGLE WATER SERVICE WITH STUB AND BLUE WANNER (SEE DETAIL) (5/4" DROP-IN WATER METER TO BE INSTALLED BY CITY OF HENDERSONVILLE)
 NOTE: CONTRACTOR RESPONSIBLE FOR RECONNECTING 1" LINE TO THE INTO METER ONCE SET BY CITY OF HENDERSONVILLE

PROPOSED 10" WATER EASEMENT FOR FUTURE MAINTENANCE OF WATER SERVICE LINE
 PROPOSED WATER SERVICE LINE TO BE PLACED BELOW EXISTING CUMMINGS COVE ROAD VIA FRENCH WILLOW FARM PROPERTY THROUGH FRENCH WILLOW FARM RESPONSIBLE FOR FURTHER EXTENSION OF SERVICE LINE)

PROPOSED STORM DRAINAGE (TYP)
 FRENCH WILLOW FARM, LLLP
 PIN 9538-63-9847
 DB: 1223
 PG: 0593

1 - 1" WATTS FOR REDUCED PRESSURE (OR APPROVED EQUIVALENT) ASSEMBLY ENCLOSURE
 NOTE: CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING ELECTRICAL FOR ENCLOSURE

PROPOSED 6" CLASS 300 DP WATER LINE (5'-0" MIN. COVER)(TYP)

PROPOSED 3/4" TYPE "C" COPPER SINGLE WATER SERVICE WITH STUB AND BLUE WANNER (SEE DETAIL) (5/4" DROP-IN WATER METER TO BE INSTALLED BY CITY OF HENDERSONVILLE)
 NOTE: CONTRACTOR RESPONSIBLE FOR INSTALLING 3/4" LINE TO WITHIN 5' OF BUILDING AND THING INTO METER ONCE SET BY CITY OF HENDERSONVILLE. SEE ARCHITECTURAL PLAN FOR CONTINUATION WITHIN BUILDING.

EXISTING 6" GATE VALVE AND BOX
 EXISTING FIRE HYDRANT ASSEMBLY (TYP)
 EXISTING 6" DP WATER LINE (TYP)
 EXISTING 8" DP SEWER LINE (TYP)

EXISTING MANHOLE (TYP)

ETOWAH HORSE SHOE VOL. FIRE/RESCUE DEPT.
 PIN 9538-83-5729
 DB: 1203
 PG: 0477

TWO PROPOSED 4" RAINWATER SEWER MANHOLES WITH CAST IRON CLEAN OUTS (TYP) (SEE DETAILS)

PROPOSED STA. 10+00 LINE "A" CONNECT TO EXISTING 6" STUBOUT
 NOTE: CONTRACTOR TO FIELD VERIFY END OF LINE FLUG (SEE DETAILS)

PROPOSED 1" TYPE "C" COPPER SINGLE WATER SERVICE WITH STUB AND BLUE WANNER (SEE DETAIL) (5/4" DROP-IN WATER METER TO BE INSTALLED BY CITY OF HENDERSONVILLE)
 NOTE: CONTRACTOR RESPONSIBLE FOR INSTALLING 1" LINE TO WITHIN 5' OF HENDERSONVILLE. SEE ARCHITECTURAL PLAN FOR CONTINUATION

PROPOSED 2" PVC FORCEMAIN INSTALLED TO WITHIN 5' OF THE HENDERSONVILLE (SEE ARCHITECTURAL PLAN FOR CONTINUATION)

- NOTES**
- ALL WATER LINE INSTALLATION SHALL BE IN ACCORDANCE WITH CITY OF HENDERSONVILLE AND NORTH CAROLINA DESIGN GUIDELINES AND UNDER THE INSPECTION OF THE CITY OF HENDERSONVILLE AND THE ENGINEER.
 - ALL WORK MUST BE PERFORMED BY A NORTH CAROLINA LICENSED UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR BEFORE CONSTRUCTION BEGINS.
 - CONTRACTOR TO CORROBORATE EXACT LOCATION OF EXISTING UTILITIES.
 - SEE WATER DETAILS SHEET FOR GENERAL NOTES CONCERNING WATER MAIN INSTALLATION AND SEPARATION REQUIREMENTS.
 - SINGLE-PHASE CONSTRUCTION.
 - A 3" COPPER DEPTH SHALL BE MAINTAINED FOR ALL PROPOSED WATER LINES, EXCEPT IN AREAS WHERE IT IS NECESSARY TO INCREASE OR DECREASE THE COVER DEPTH TO AVOID UTILITY CONFLICTS. THE DEPTH OF COVER SECTIONS WHERE IT IS NECESSARY TO AVOID UTILITY CONFLICTS.
 - WATER LINE AND METER ASSEMBLY LOCATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO FINAL VERIFICATION. WATER METERS ARE TO BE PLACED IN RELATIVELY FLAT AREA.
 - PROPOSED ROADS TO BE PRIVATE.
 - ALL WATER SERVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS PER LOCAL AUTHORITIES.
 - SAFETY AND TRAFFIC ROUTING TO BE CORROBORATED WITH GUIDELINES FOR CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS.
 - CONTRACTOR TO INSTALL BRASS TAGS ON METER IN WHICH METER SERVICES.
 - CONTRACTOR TO DETERMINE CORRESPONDING PHYSICAL ADDRESS IN WHICH METER SERVICES.
 - BRASS FITTINGS MUST BE LEAD FREE PER CITY OF HENDERSONVILLE REQUIREMENTS.
 - DROP-IN WATER METERS TO BE INSTALLED BY THE CITY OF HENDERSONVILLE. WATER MAINTENANCE DEPARTMENT ENDS AT WATER METERS. WATER SYSTEM BEYOND METERS IS TO BE PRIVATELY OWNED AND MAINTAINED.
 - RETAINED JOINT PIPE TO BE INSTALLED WHEN SLOPE OF WATERLINE EXCEEDS 12%.
 - SPECIFICATIONS AND REQUIREMENTS OF HOUSING STANDARDS SUPERSEDE ALL OTHERS IN THE INSTALLATION OF THE PROPOSED SEWER SERVICE. ALL CONSTRUCTION TO BE UNDER THE INSPECTION OF THE ENGINEER AND INSPECTOR.

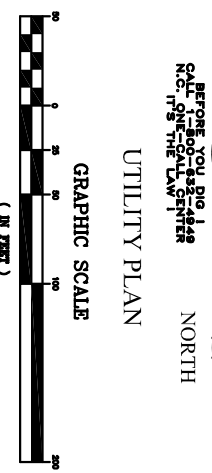
NO.	DATE	DESCRIPTION	BY
1.	10-18-07	TRC SUBMITTAL	MAD
2.	11-20-07	CITY OF HENDERSONVILLE WATER SUB.	MAD
3.	11-29-07	REV. FOR BIDDING PURPOSES	MAD
4.	12-3-07	CITY OF HENDERSONVILLE WATER SUB.	MAD
5.	12-11-07	REVISED FOR PLANNING BOARD	MAD

200 SWANNANOA RIVER ROAD
 ASHEVILLE, NC 28805
 PHONE (828) 252-5388
 FAX (828) 252-5365
 www.civildesignconcepts.com

PRELIMINARY NOT FOR CONSTRUCTION

CUMMINGS COVE - SPORTS COMPLEX

CUMMINGS COVE COMPANY, LLC - HENDERSON COUNTY, NORTH CAROLINA



UTILITY PLAN FOR:
CUMMINGS COVE - SPORTS COMPLEX
 DATE: SEPTEMBER 10, 2007
 DRAWN BY: AMP
 CDC PROJECT NO.: 10728

33 SHEET

HENDERSON COUNTY REVIEW OF CITY WATER LINE EXTENSIONS

Project Name: Cummings Cove Sports Complex
 Size of Water Line (Main & Distribution Pipe Size): 98' of 6" DIP CL350
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshal; Alexis Baker, 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: 12/20/2007

Action: Approved by Planning Board

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**? 500 gpm does not meet the needed fire flow for this complex, however the problem is systemic. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- Approved
- Not Approved
- Conditional Approval (See Comments)

Date of Board Review: _____
 Comments: _____

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: February 4, 2008

Subject: Water Line Extension – Fox Glen

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

Summary of Request:

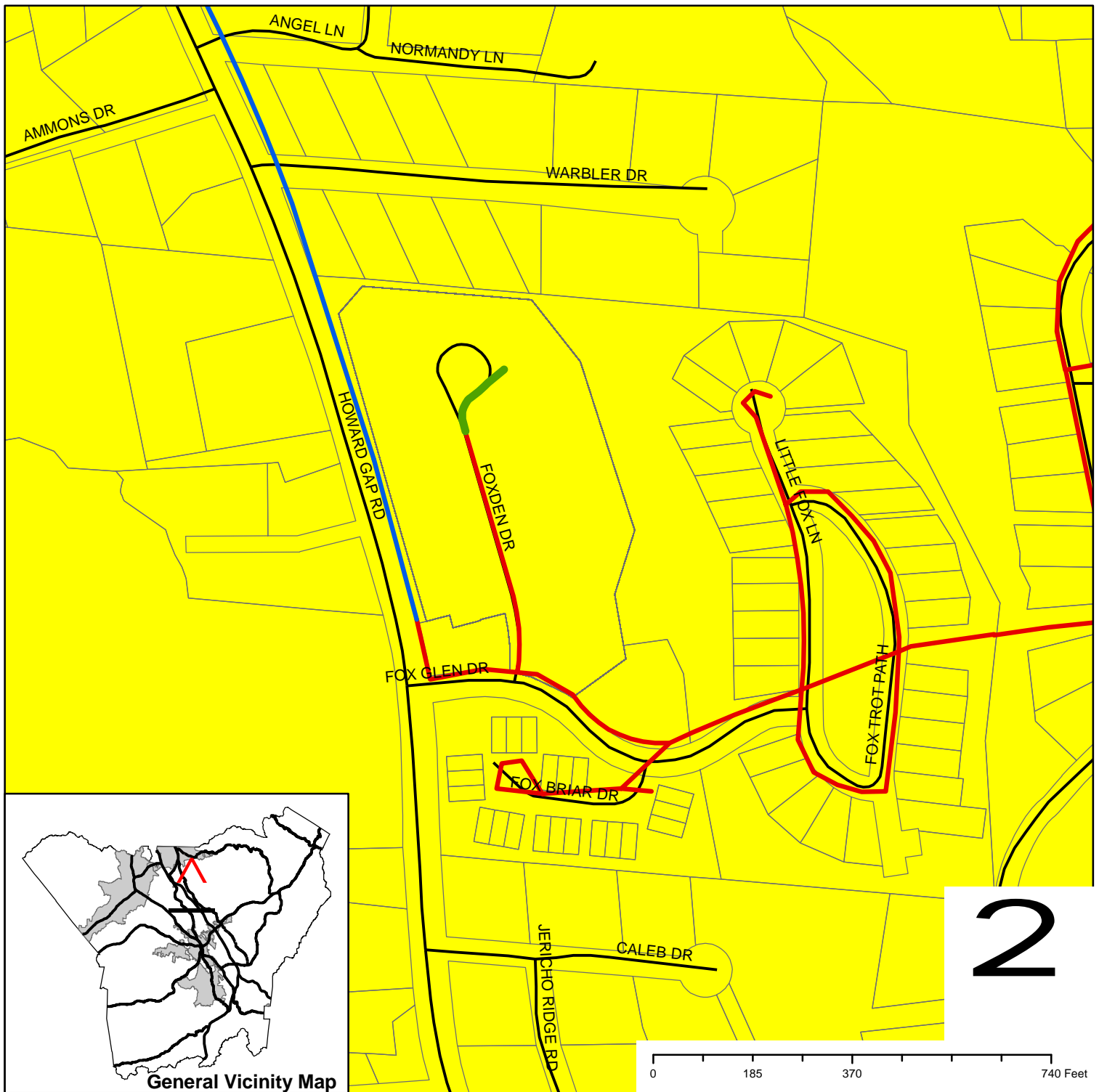
The City of Hendersonville has requested that the County comment on the proposed water line extension for Fox Glen subdivision. The project is located in the Urban Services Area determined by the Comprehensive Plan. The project requires approximately 330 linear feet of water line. A City of Hendersonville Project Summary Sheet, with supporting 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 Fox Glen water line extension and direct Staff to convey the County's comments to the City of Hendersonville.








Fox Glen Phase One

OWNER/DEVELOPER: Glade Resedential, LLC
 ZONING: R-1
 SEWER SYSTEM: Public Sewer

Both the streets and existing water lines on this map are inaccurate and/or not up to date so therefore the proposed water line is drawn in the most accurate way possible.

Legend

-  Proposed Water Line
-  Existing Hendersonville Water Line
-  Proposed and Approved Waterlines
-  Streets
-  Urban Services Area

MOUNTAIN ENGINEERING COMPANY
CIVIL ENGINEERING + SITE PLANNING



COPY

121 Third Avenue West Suite 2 Hendersonville North Carolina 28792
Telephone (828) 697-2122 Facsimile (828) 697-8458

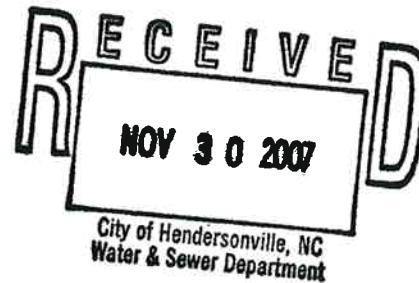
PROJECT NARRATIVE

TO: **Lee Smith, Utilities Director**
Water & Sewer Department
City of Hendersonville

FROM: John B. Jeter

DATE: Thursday, 21 November 2007

SUBJECT: **FOX GLEN (Phase 1 – Section 2) AMENDED**
PIN: 9652-92-7461
Water Main and Fire-line Extensions



Extensions from the existing **six -inch** (6) water-main located in the project are required to provide water (and fire-line) service to the above referenced project. This project phase is proposed to be a Commercial and Residential development. The water main extensions will serve a total of four (4) buildings on four lots. The proposed site is currently owned by Chestnut Land Fund and being developed by:

GLADE HOLDINGS, INC.

475 South Church Street, Suite 100 Hendersonville North Carolina 28792
Developer's Contact: Mr. Gaston "Gus" Campano
Contact's Telephone Number: (828) 698-3923
Contact's Email Address:

The sewer service for this project will be private; provided by the developer and Property Owners Association (POA).

At the present time, **Gus Campano**, will be responsible for signing the Water Line Extension Agreement (WLEA) with the City of Hendersonville.

The project will consist of : **Water main: ^{100'}60.0 linear feet of six (6) inch line (D.I.P/CL.350) and; Fire main: 255.0 linear feet of six (6) lines (D.I.P/CL.350) and, control valves.** For more information regarding this proposed project see the accompanying final plans.

This project should be completed within **thirty (30) days**, assuming favorable weather conditions. An authorized representative of my company (or I) will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please contact me.

John B. Jeter, P.E.

**FOX GLEN
(PHASE 1 – SECTION 2)
AMENDED**

**HENDERSONVILLE
NORTH CAROLINA**

ENGINEER'S REPORT

**WATER DISTRIBUTION SYSTEM
FIRE-LINE
IMPROVEMENTS**



Prepared by:
MOUNTAIN ENGINEERING COMPANY
121 Third Avenue West Suite 2
Hendersonville North Carolina 28792

Telephone No. (828) 697-2122

Facsimile No. (828) 697-8458

FOX GLEN
(Phase 1 – Section 2) AMENDED

ENGINEER'S REPORT

WATER DISTRIBUTION SYSTEM IMPROVEMENTS

APPLICANT NAME and ADDRESS

CITY of HENDERSONVILLE
Post Office Box 1760
Hendersonville, North Carolina 28793

PROJECT DESCRIPTION AND NARRATIVE

Fox Glen is a proposed residential community. The project has frontage on **Howard Gap Road** (SR # 1006) and is located on the east side; across from the Fletcher Elementary School. The property is outside the city limits of both Fletcher and Hendersonville.

The current plan and permit provides for the development of eighty-eight (88) residential units as condominiums in ten (10) buildings and one (1) commercial building on **6.61** acres.

CURRENT PROJECT NARRATIVE

The proposed water distribution system includes water-main and fire-line extensions (**6-inch/D.I.P** water-line: **60.0** linear feet as water-line and **255.0** linear feet as fire-lines) and required appurtenances to serve only the Phase 1 - Section 2 neighborhood of Fox Glen.

PROJECT SUMMARY

Water Lines	
6" D.I.P./CL.350	60 lf.
6" D.I.P./CL.350 : Fire-line	255 lf.
Water Valves	
6" Gate Valve w/box	4 ea.
Water Services (additional)	8 ea.

IDENTIFICATION and DESCRIPTION of the SERVICE AREA

The service area for this project is only the Fox Glen – Phase 1 Section 2 community.

FUTURE SERVICE AREAS

Future water-line extensions around the project will serve the surrounding area. This Water system extension is proposed to serve only the **Fox Glen Apartment** community.

PRESENT and ANTICIPATED WATER DEMAND

There is minimal current water use. When this phase is completed, the anticipated water demand for this Section will be **35,600** GPD (89 units @ 400 GPD).

CHARACTER of the WATER SUPPLY SOURCE

The water supply for this project is from the City of Hendersonville Water Treatment Plant.

AGREEMENTS to PURCHASE WATER

Not applicable.

FACILITIES USEFUL LIFE

For this project, the expected useful life of the water lines is at least thirty (30) years.

MAXIMUM DAILY TREATED WATER SUPPLY and MAXIMUM DAILY DEMAND

The maximum daily treated water supply for the City of Hendersonville Water Treatment Plant is 12.0 MGD. The average demand is 7.2 MGD with a daily peak of 9.5 MGD.

CONSIDERATION of ALTERNATIVES to CONSTRUCTING A NEW WATER-SYSTEM

Not applicable.

POPULATION RECORDS and TRENDS

In 1998, the population of Hendersonville was 9,538 and the growth rate from 1990 to 1998 was almost 31 percent.

PRESENT and FUTURE YIELD FROM the SOURCE of SUPPLY

Hendersonville's Water Treatment Plant draws water from the Mills River. Both present and future yield from this source is expected to be adequate for the City's needs.

PROPOSED WATER TREATMENT PROCESSES

Not applicable.

DESIGN BASIS

The design basis for this project is to provide adequate flow and a minimum pressure of 40 psi throughout the system.

PRIORITIZED LIST of INFRASTRUCTURE IMPROVEMENTS

Not applicable.

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Fox Glen, Phase 1, Section 2 - AMENDED**

December 17, 2007

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 a residential community. This extension will provide water & fire line service to a total of four (4) buildings on four lots. This project is located **on Howard Gap Road near Fletcher Elementary School**. 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 **Glade Holdings, Inc., of Hendersonville, NC**.

This project requires approximately **330'** linear feet of water line sized as following:

Approximate Length:	Description:
100'	6" DIP CL 350
230'	3" DIP CL 350

Fire Protection will be provided by the installation of **0** - fire hydrant(s).

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 letter provided to the City by the Reviewing Jurisdiction)

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: 12-12-07
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____

HENDERSON COUNTY REVIEW OF CITY WATER LINE EXTENSIONS

Project Name: Fox Glen Phase 1 & 2
 Size of Water Line (Main & Distribution Pipe Size): 100LF of 6" DIP CL 350, 230LF DIP CL 350
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshall; 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?** Flow rate is less than 1000 gpm minimum for multi-family dwellings, however the problem is systemic and will improve with system improvements. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- Approved
- Not Approved
- Conditional Approval (See Comments)

Date of Board Review: _____
 Comments: _____

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: February 4, 2008

Subject: Water Line Extension – Oak Knoll

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

Summary of Request:

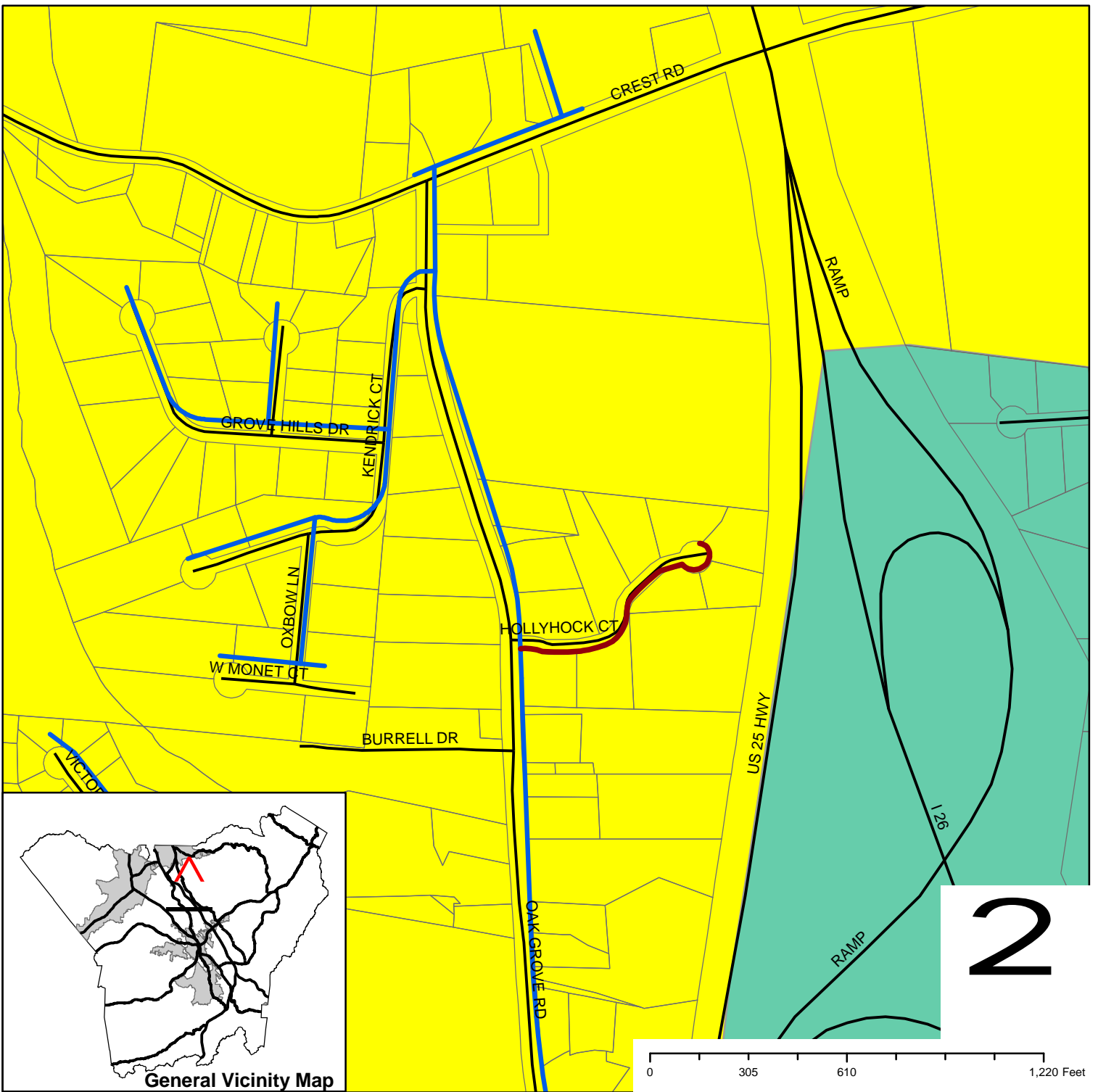
The City of Hendersonville has requested that the County comment on the proposed water line extension for Oak Knoll subdivision. The project is within the Urban Services Area determined by the County Comprehensive Plan. This project requires approximately 775 linear feet of water line. A City of Hendersonville Project Summary Sheet, with supporting 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 Oak Knoll water line extension and direct Staff to convey the County's comments to the City of Hendersonville.



Oak Knoll

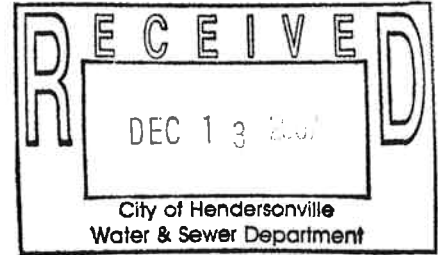
OWNER/DEVELOPER: Zach King
 ZONING: R-1
 SEWER SYSTEM: Private Individual

Legend

- Proposed Water Line
- Existing Hendersonville Water Line
- Streets
- Urban Services Area
- Rural/Agricultural Area

Map Created by the Henderson County Planning Department on 12/28/07
 See Master Plan for exact location of project.

ERIC E. MONTEITH, P.E. ENGINEER
Post Office Box 807
Horse Shoe, North Carolina 28742
Phone/Fax (828) 891-7060 Cell (828) 329-2888



PROJECT NARRATIVE

TO: Lee Smith, Utilities Director
Water & Sewer Department
City of Hendersonville
FROM: Eric Monteith, P.E.
DATE: Friday, December 7, 2007
SUBJECT: Oak Knoll Subdivision, a minor subdivision
PIN# 9587466212
WATER UTILITY EXTENSION

An extension of the existing water main located on Oak Grove Road is required to provide water service to the above referenced project. This project is proposed to be a single family and multi-family development. The water extension will serve a total of seven (7) lots. Two (2) lots along Oak Grove Rd. will tap into the existing 8" Water main and the new Lot # 2 existing tap will remain in service. The proposed site is currently owned and being developed by:

Zack T. King, Owner
219 Daniel Drive, Hendersonville, NC 28739
(828)-778-1400

The sewer service for this project will be provided by individual on-site disposal systems.

At the present time, Zachery King will be responsible for signing the Water Utility Extension Agreement (WUEA) with the City of Hendersonville.

The project will consist of 185 LF of 8" DIP, 490LF of DIP, 100LF of PVC, SDR 13.5, two (2) fire hydrants, and one (1) blow-off valve serving seven (7) water service connections. For more information regarding this proposed project see the accompanying preliminary plans.

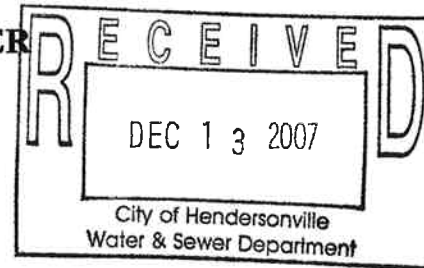
This project is estimated to be completed 60 days after final grading has been completed, assuming favorable weather conditions. I, or an authorized representative of my company, will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please feel free to contact me.

Engineer's Signature

ERIC E. MONTEITH, P.E. ENGINEER

Post Office Box 807
Horse Shoe, North Carolina 28742
Phone/Fax (828) 891-7060 Cell (828) 329-2888

December 7, 2007



SUBJECT: Cover Memo for Waterline Extension, Oak Knoll Lane, Oak Grove Rd., Blue Ridge TWP, Henderson County, North Carolina

Lee Smith, Utilities Director
c/o Rhonda Wiggins, Project Coordinator
305 Williams Street
Hendersonville, NC 28793

Dear Mr. Smith:

Please find one (1) review copy of the plans, Engineer's Report and specifications for the 8" DIP extension into the Oak Knoll Subdivision, a minor subdivision of ten (10) building lots, Oak Grove Road, in Henderson County.

This is a water line extension project to build a segment of the City of Hendersonville's Distribution System on the existing State Road (SR) 1807, Oak Grove Rd. 8" water main. This water main extension will serve a total of 7 new single family dwellings and follow in the easement the new subdivision road alignment. This project will include approximately 185 LF of new 8" DIP water main to the first new fire hydrant, approximately 490 LF of new 6" DIP water main to the second new fire hydrant and approximately 100 LF of 2" PVC, SDR 13.5 water line to serve one (1) "Wye" branch tap connection and a terminal end blow-off valve. A total of three (3) "Wye" branch tap connections & 1 single service connection will supply 7 private single units.

Three (3) water service connections will be connected to an existing portion of the water main. The two (2) new lots abutting SR1807 will tap into the existing 8" DIP water main. The remaining Lot #2 will keep its existing tap in service.

Each service connection will include, meter, valves, pressure reducer & backflow preventer per City of Hendersonville Utility Technical Specifications.

If you have any questions, please do not hesitate to contact me at (828) 891-7060.

Sincerely,

Eric E. Monteith, P.E.
Consulting Engineer

Enclosures

CC:
Mr. Zackery King Owner/Contractor
219 Daniel Drive
Hendersonville, NC 28739
828-778-1400

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Oak Knoll Subdivision**

January 2, 2008

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 a **proposed single family and multi-family development consisting of seven (7) lots**. This project is located on **Oak Grove 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 **Zack T. King, of Hendersonville, NC**.

This project requires approximately **775** linear feet of water line sized as following:

Approximate Length:	Description:
185'	8" DIP CL 350
490'	6" DIP CL 350
100'	2" PVC SDR 13.5

Fire Protection will be provided by the installation of **2** fire hydrant(s).

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 letter provided to the City by the Reviewing Jurisdiction)

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.

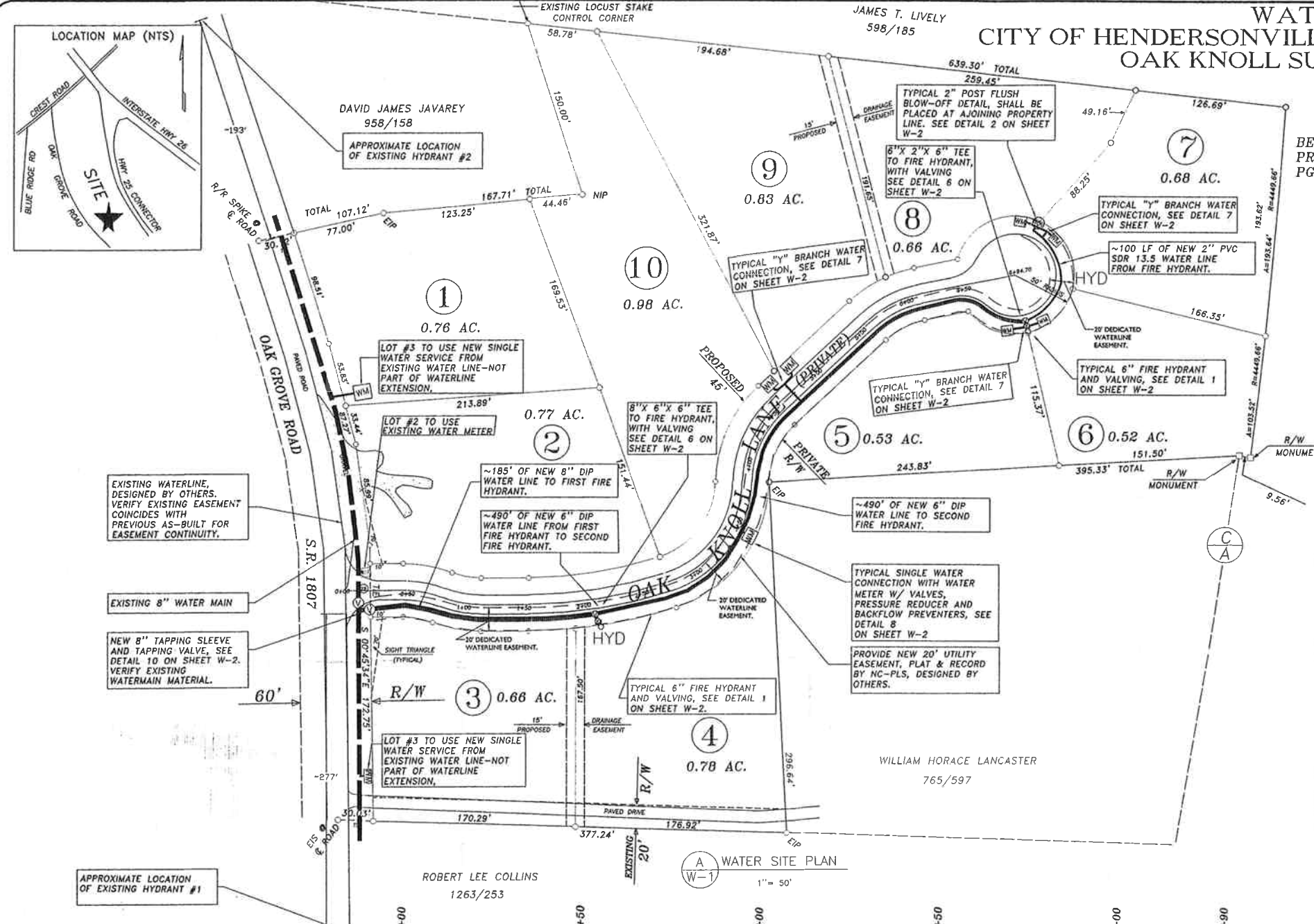
A motion is needed to approve and accept this project. Suggested wording for motion is as follows:

"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: 12-17-07
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____

**WATERLINE EXTENSION
CITY OF HENDERSONVILLE PUBLIC UTILITIES
OAK KNOLL SUBD. OAK GROVE RD.**

**PLAT OF
OAK KNOLL
BEING A MINOR SUBDIVISION OF THE
PROPERTY DESCRIBED IN D.B. 1325,
PG. 79**



NOTE: RELATION OF WATER MAIN TO SEWERS

(a) Lateral Separations of Sewers and Water Mains. Water mains shall be laid at least 10 feet laterally from existing or proposed sewers unless local conditions or barriers prevent a 10-foot lateral separation--in which case:

(1) The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the sewer; or

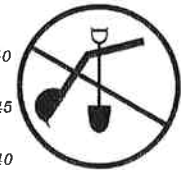
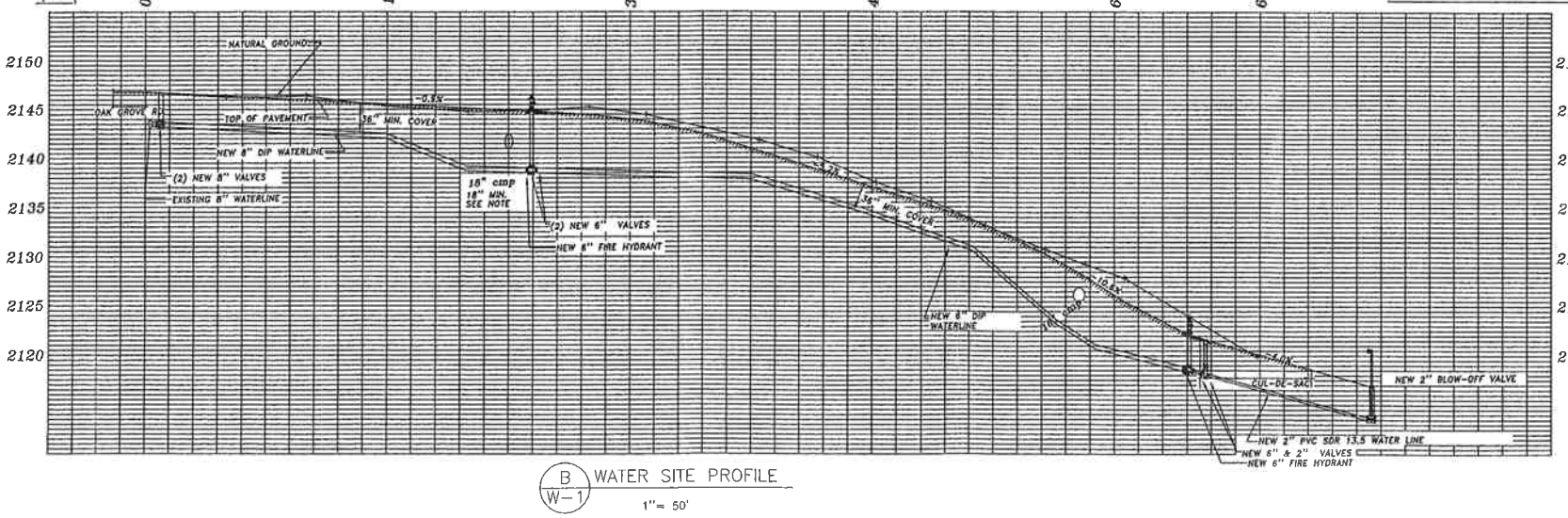
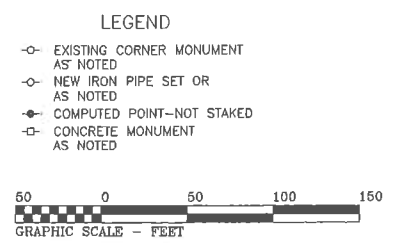
(2) The water main is laid in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 18 inches above the top of the sewer, unless local conditions or barriers prevent an 18 inch vertical separation--in which case both the water main and sewer shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing.

(b) Crossing a Water Main Over a Sewer. Whenever it is necessary for a water main to cross over a sewer, the water main shall be laid at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer, unless local conditions or barriers prevent an 18 inch vertical separation--in which case both the water main and sewer shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing. A section of water main pipe shall be centered at the point of crossing.

(c) Crossing a Water Main Under a Sewer. Whenever it is necessary for a water main to cross under a sewer, both the water main and the sewer shall be constructed of ferrous materials and with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing. A section of water main pipe shall be centered at the point of crossing.

SURVEYOR'S NOTES:

- 1) AREA DETERMINED BY COORDINATE COMPUTATION.
- 2) THE CURRENT OWNER OF RECORD IS ZACK T. KING AS PER D.B. 1325, PG. 079.
- 3) THE PRIVATE ROADS INDICATED ON THIS FINAL PLAT MAY NOT MEET THE REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FOR ACCEPTANCE INTO THE STATE ROAD SYSTEM.
- 4) THE SUBJECT PROPERTY IS LOCATED WITHIN ONE-HALF MILE OF A FARMLAND PRESERVATION DISTRICT.
- 5) THERE IS RESERVED A 30' BUILDING SETBACK FROM ALL PERENNIAL STREAMS.
- 6) THE SUBJECT PROPERTY IS CURRENTLY ZONED R-20 WITH THE FOLLOWING BUILDING SETBACK DIMENSIONS:
FRONT 50' (FROM CENTERLINE OF STREET BUILDING FRONTS ON)
SIDE 25'
REAR 25'



**BEFORE YOU DIG!
CALL 1-800-632-4949
N.C. ONE-CALL CENTER
IT'S THE LAW!**

DEED: D.B.1325 PG.079	SURVEY BY: STEVEN LLOYD WAGGONER
PLAT: D.B.1325 PG.079	NC PLS 2874
TAX ID REFERENCE: 9587466212	WAGGONER & RHODES LAND SURVEYORS, INC.
SCRN FILE: 07-041MS	545 OLD SPARTANBURG ROAD
DWG FILE: 07-041MS	HENDERSONVILLE, NORTH CAROLINA 28792
REVISIONS:	PHONE: 828-693-1022
	FAX: 828-693-4019
DATE: JULY 30th, 2007	DRAWN BY: SLW/DKS
	JOB NUMBER: 07-041

NOTES:

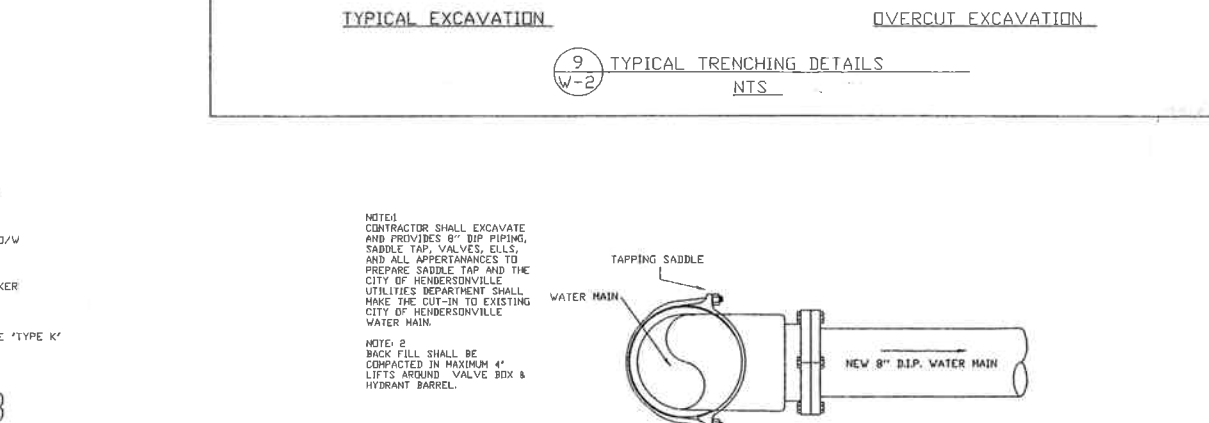
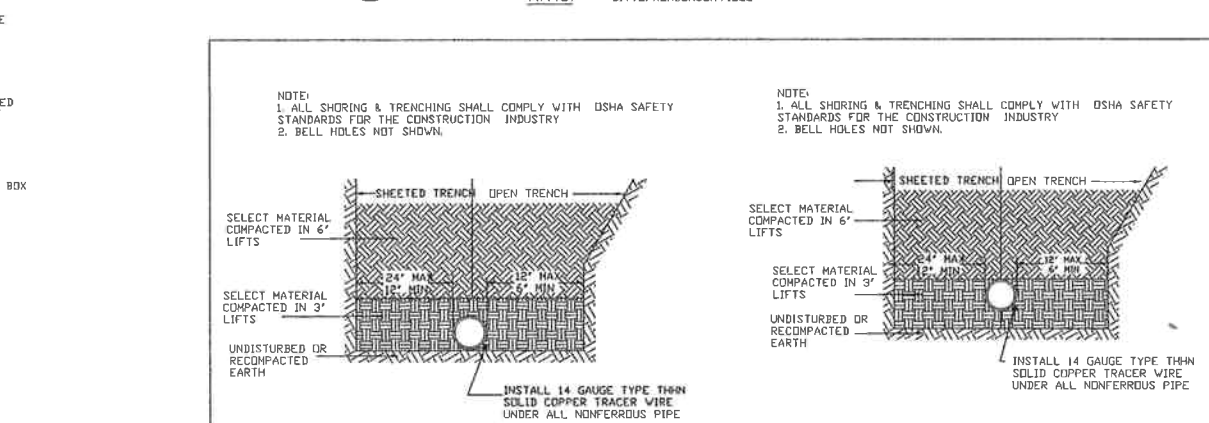
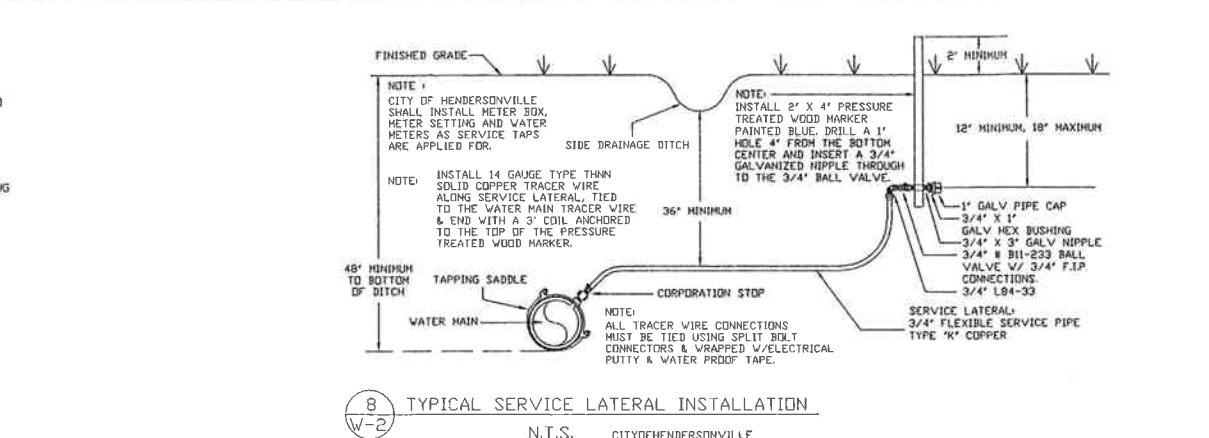
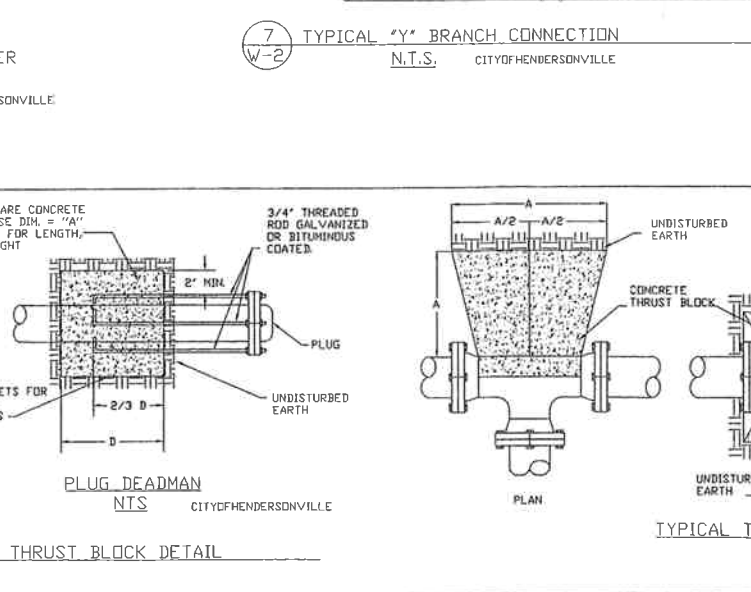
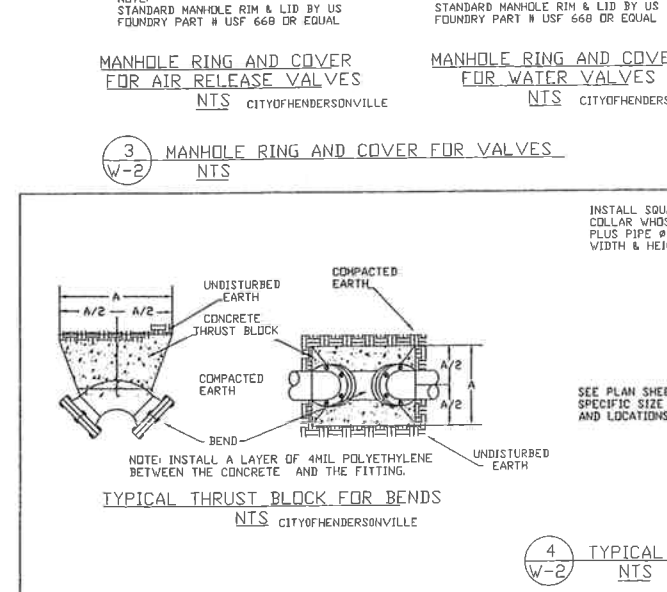
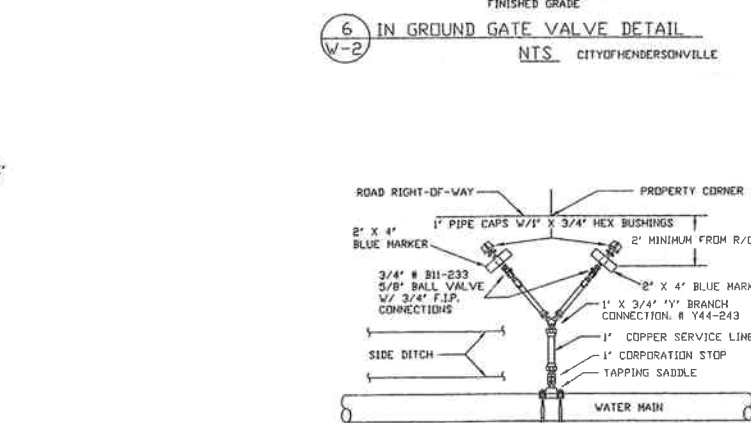
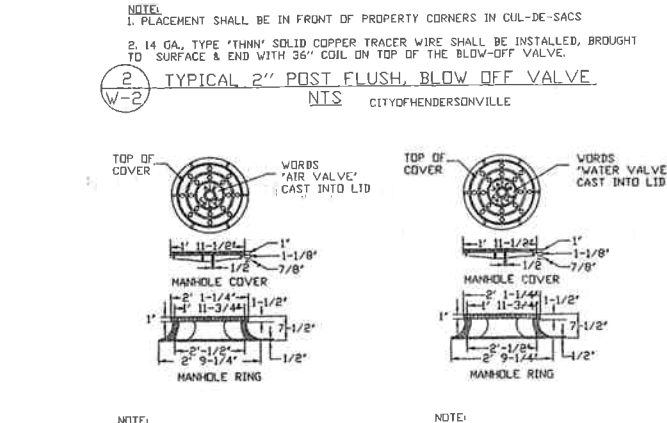
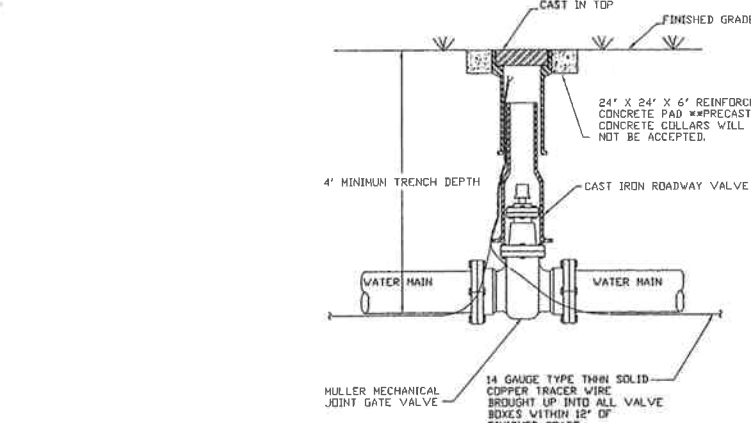
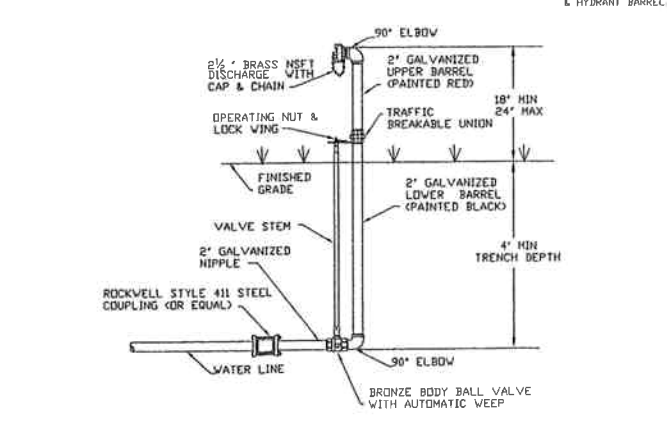
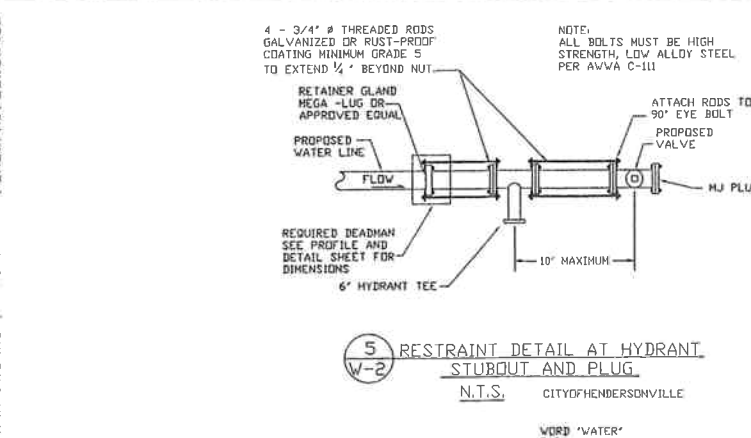
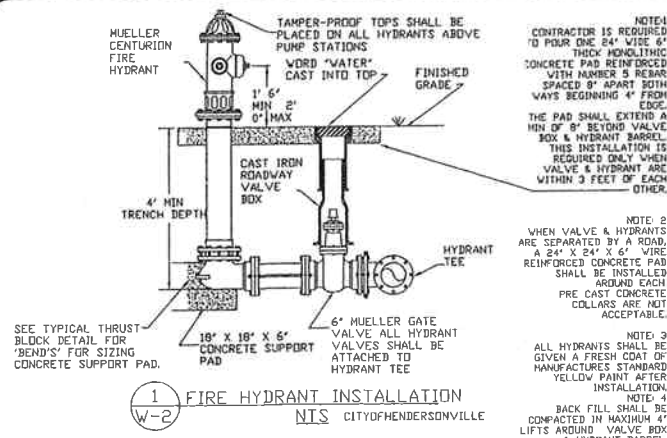
1. All work shall be performed in accordance with the latest edition of the North Carolina State Building Code, 15A NCAC 2H, North Carolina Plumbing Code, City of Hendersonville Utilities Department Technical Specifications and all other applicable codes, ordinances, and requirements. Contractor shall obtain all required permits, Right-of-Way Encroachment Agreements, and rights-of-entry, prior to beginning work. All work within the NCDOT Right-of-Way will require a R-O-W Encroachment Agreement prior to beginning work. Coordinate R-O-W encroachments with the local NCDOT District Office.
2. All work is to be installed in previously disturbed areas. The total land disturbing area for this project is not expected to exceed 1.0 acres. Where land disturbing activities exceed 100 square feet, the local Contractor shall obtain an Erosion & Sedimentation Control Permit from the Henderson County Sedimentation and Erosion Control Division.
3. Verify and flag all underground utilities prior to beginning work. Verify and flag all property line set-backs, sewer & well set-backs, easements, encroachments, and rights-of-way prior to beginning work. Do not locate any part of the new work within any set-back, easement, R-O-W, etc., unless the proper R-O-W encroachment agreement has been obtained.
4. Contractor shall provide all required equipment, material, labor, and supervision necessary to install a complete and functional system as described in the Plans & Specifications.
5. Ductile Iron Pipe (DIP C1.350) - All pipe 6" and larger shall be DIP. DIP Pipe shall conform to ANSI/AWWA C151/A21.51, Pressure Class 350. All 2" water line shall be PVC 1120 in accordance with ASTM D-2241 and with a SDR of 13.5. See Technical Specifications for additional requirements.
6. System Flushing - System shall be flushed with potable water. In general, sufficient water water shall be used to produce a minimum water velocity of 2.5 feet per second through piping being flushed. Flushing shall be continued until entrained dirt and other foreign materials have been removed and until discharge water shows no discoloration.
7. Disinfection - After operational tests are complete, the entire potable water distribution system shall be disinfected. System shall be flushed as specified, before introducing chlorinating material. The chlorinating material shall be hypochlorites or liquid chlorine. Water chlorination procedure shall be in accordance with AWWA M20 & C651. The chlorinating material shall be fed into the water piping system at a constant rate and at a concentration of at least 50 ppm. A properly adjusted hypochlorite solution injected into the main with a hypochlorinator, or liquid chlorine injected into the main through a solution-feed chlorinator and booster pump, shall be used. The chlorine residual shall be checked at intervals to ensure that the proper level is maintained. Chlorine application shall continue until the entire main is filled. The water shall remain in the system for a minimum of 24 hours. Each valve in the system being disinfected shall be opened and closed several times during the contact period to ensure its proper disinfection. Following the 24 hour period, no less than 25 ppm chlorine residual shall remain in the system. Water tanks shall be disinfected by adding chlorine directly to the filling water. Following a 6 hour period, no less than 50 ppm chlorine residual shall remain in the tank. If after the 24 hour and 6 hour holding periods, the residual solution contains less than 25 ppm and 50 ppm chlorine respectively, flush the piping and tanks with potable water and repeat the above procedures until the required residual chlorine levels are satisfied. The system including tanks shall then be flushed with clean water until the residual chlorine level is reduced to less than 1 ppm. During the flushing period each valve and faucet shall be opened and closed several times.
8. Backflow Preventers - Backflow preventers shall be provided at all services in the potable water plumbing system, and at all possible direct and indirect connections. Backflow preventers shall be approved and listed by the Foundation for Cross-Connection Control & Hydraulic Research. Reduced pressure principle assemblies, double check valve assemblies, atmosphere (nonpressure) type vacuum breakers, and pressure type vacuum breakers shall be tested, approved and listed in accordance with FCCOHR-01. Backflow preventers with intermediate atmosphere vent shall conform to ASSE 1012. Reduced pressure principle backflow preventers shall conform to ASSE 1013. Hose connection vacuum breakers shall conform to ASSE 1011. Pipe applied atmospheric type vacuum breakers shall conform to ASSE 1001. Air gaps in plumbing system shall conform to ASME A112.1.2.
9. Existing Utilities, Designed by others.
10. Culvert sizes & location are on waterline plan to show proximity. Verify all waterline to culvert relations outlined on this sheet.
11. More Notes on Sheet W-2. See Water Technical Specifications, under separate cover.



ERIC MONTEITH, ENGINEER
SITE, WATER, ENVIRONMENTAL DESIGN • CONSULTING ENGINEER
PO BOX 807
HORSE SHOE, NORTH CAROLINA 28742
PHONE & FAX (828) 891-7060
MOBILE (828) 329-2888
E-mail : ericfeng@bellsouth.net

**WATERLINE EXTENSION PLAN
CITY OF HENDERSONVILLE UTILITIES
OAK KNOLL SUBD. OAK GROVE RD.
OWNER/DEVELOPER: ZACK T. KING
BLUE RIDGE TOWNSHIP HENDERSON COUNTY, NC**

Vertical Scale: NONE
Horizontal Scale: 1"=50'
Issue Date: 12-17-2007
W-1
SHEET 1 OF 2



VALUES FOR "A"

SIZE	11 1/4" BEND	22 1/2" BEND	45" BEND	90" BEND	TEE	PLUG
6"	12	12	12	16	16	14
8"	12	12	16	22	22	18
10"	12	14	20	28	28	22
12"	12	18	24	32	32	28
14"	14	20	28	38	38	32
16"	16	22	32	42	42	36
18"	18	26	36	48	48	40
20"	20	28	40	52	52	44
24"	24	34	46	64	64	54



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WATERLINE EXTENSION DETAILS
CITY OF HENDERSONVILLE UTILITIES
OAK KNOLL SUBD. OAK GROVE RD.
OWNER/DEVELOPER: ZACK T. KING
BLUE RIDGE TOWNSHIP HENDERSON COUNTY, NC

Vertical Scale:
NONE

Horizontal Scale:
NONE

Issue Date:
12-17-2007

W-2
SHEET 2 OF 2

**HENDERSON COUNTY
REVIEW OF CITY WATER LINE EXTENSIONS**

Project Name: Oak Knoll Subdivision

Size of Water Line (Main & Distribution Pipe Size): 185LF of 8" DIP CL 350, 490LF of 6" DIP CL 350, 100LF of 2" PVC SDR 13.5

County Staff Reviewing Extension: Rocky Hyder, Fire Marshall; 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: 10/9/07

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 30 feet. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- Approved
- Not Approved
- Conditional Approval (See Comments)

Date of Board Review: _____
Comments: _____

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: February 4, 2008

Subject: Water Line Extension – Mitchem Commercial Park, Phase I

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

Summary of Request:

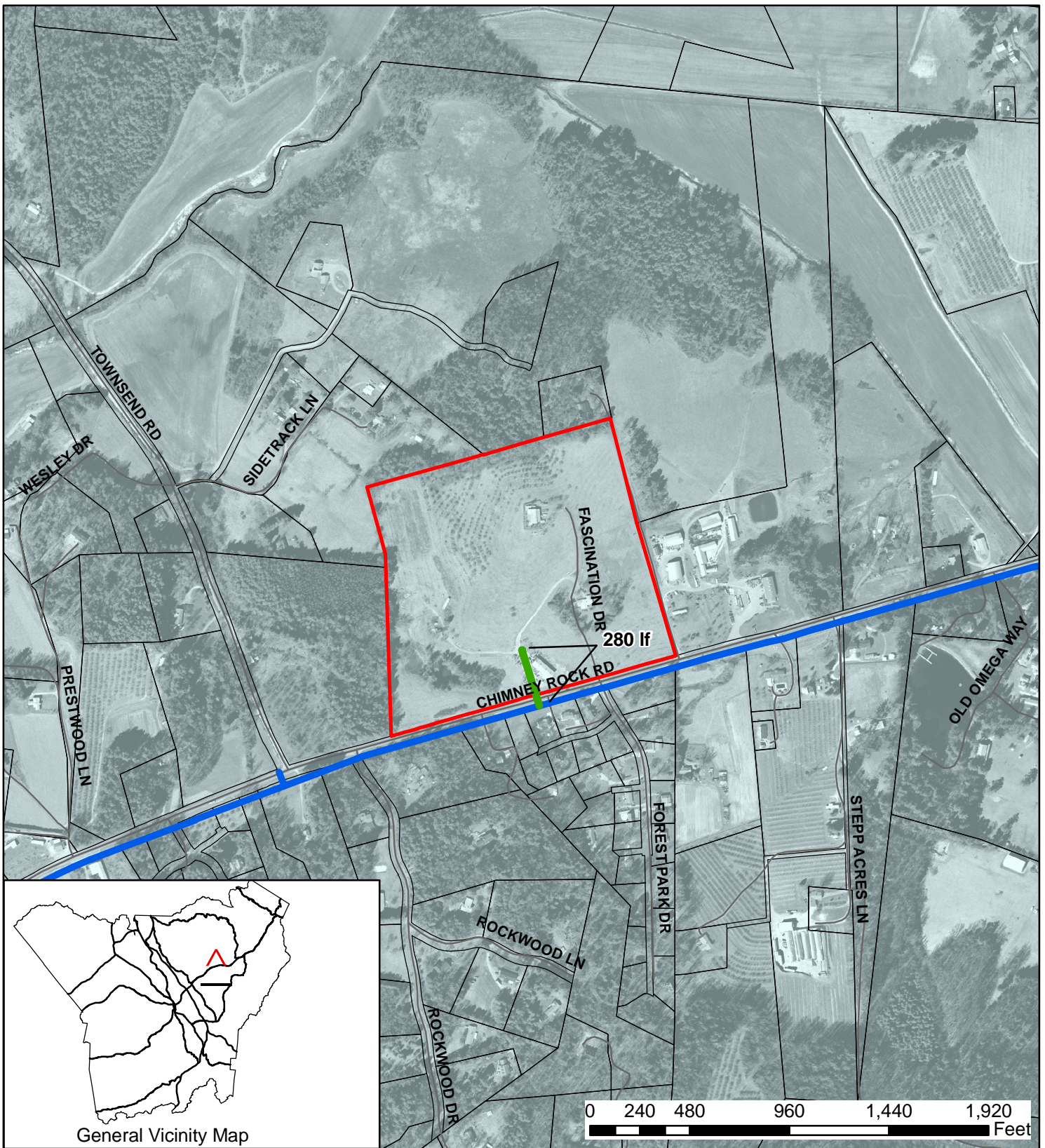
The City of Hendersonville has requested that the County comment on the proposed water line extension for Mitchem Commercial Park, Phase I. The proposed water line is 280 linear feet of 6" ductile iron pipe and includes 1 fire hydrant assembly. Its location within the rural/urban transition area is consistent with the Henderson County 2020 Comprehensive Plan. A City of Hendersonville Project Summary Sheet, with supporting 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.

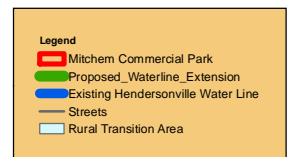
Suggested Motion:

I move that the Board approve Mitchem Commercial Park, Phase I water line extension and direct Staff to convey the County's comments to the City of Hendersonville.



Mitchem Commercial Park, Phase I

OWNER: AJ & DOROTHY MITCHEM
 NEW ZONING: LC
 WATERSHED: NONE
 WATER SYSTEM: PUBLIC
 SEWER SYSTEM: PRIVATE
 ROAD SYSTEM: PUBLIC AND PRIVATE





MIKE ANDERSON ENGINEERING, P.A.

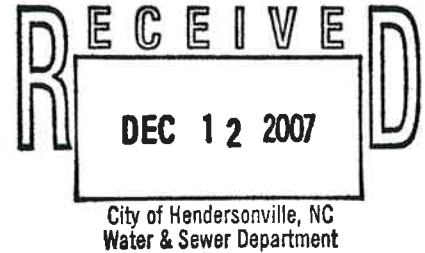
PROJECT NARRATIVE

TO: Lee Smith, Utilities Director
 City of Hendersonville Water & Sewer Department
 305 Williams Street, Suite 119
 Hendersonville, NC 28792

FROM: Mike Anderson Engineering, PA
 206 E. Chestnut St., Ste. C
 Asheville, NC 28801

DATE: Wednesday, December 5, 2007

SUBJECT: Mitchem Commercial Property – Phase I
 9680-99-1300
 Water Utility Extension



An extension of the existing water main located on Chimney Rock Road (HWY 64) across from Forest Park Drive is required to provide water service to the above referenced project. This project is proposed to be a commercial subdivision consisting of six (6) lots of mixed use commercial divided into phases. The water extension will serve a total of two (2) lots for the first phase of this project. The proposed site is currently owned and being developed by:

Jarrett Mitchem
 175 Fascination Drive
 Hendersonville, NC 28792
 (828) 243-1856



The sewer service for this project will be provided by individual septic systems.

At the present time, Jarrett Mitchem will be responsible for signing the Water Utility Extension Agreement (WUEA) with the City of Hendersonville.

The project will consist of 280lf of 6” DIP waterline, 2-6” gate valves, 1-fire hydrant assembly (1000gpm at 37psi), 2-5/8” type “K” water services, 1-16”x16”x6” tapping sleeve, and all other necessary appurtenances. For more information regarding this proposed project see the accompanying preliminary plans.

This project is estimated to be completed 14 calendar days after start of installation, assuming favourable weather conditions. I, or an authorized representative of my company, will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please feel free to contact me.

Sincerely,

Mike Anderson, P.E.

206 E. CHESTNUT STREET STE. C - ASHEVILLE, NC 28801
 828 252-4880 f - 828 252-4881 f - www.mandersoneng.com

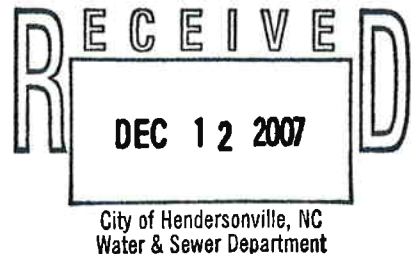
ADDENDUM TO ENGINEER'S REPORT
Proposed Water Line Improvements
for
Mitchem Commercial Property Ph 1
Henderson County, North Carolina
December 4, 2007

The proposed project is an extension of the existing public water distribution system owned and maintained by the City of Hendersonville. The existing water system is located adjacent to Chimney Rock Road (HWY64). The project will include a **public** portion that consists of installing approximately **280 lf of 6" DIP waterline, 2-6" gate valves, 1-fire hydrant assembly, 2-5/8" type "K" water services, 1-16"x16"x6" tapping sleeve, and all other necessary appurtenances.**

Additional information as described in 15A NCAC 18C.0307 is as follows:

1. The proposed extension will tie into the existing **16"** water main located on **Chimney Rock Rd**, which is owned by the City of Hendersonville.
2. Phase 1 of the proposed water line extension is located in the **northern** portion of Henderson County and will serve **2 lots within the commercial subdivision**. The surrounding property on the east, south, north and west side of the project is served by the City of Hendersonville Water System.
3. The applicant is: **Jarrett Mitchem**
175 Fascination Drive
Hendersonville, NC 28792
4. The proposed project is located on approximately **±35** acres of land, which will be developed into a **6 lot commercial subdivision**.
5. The future service area for the proposed extension will remain unchanged since the new line will be located at the end of the existing water system. **Future Development will potentially consist of providing water service to 4 additional lots.**
6. Not applicable.
7. Not applicable.

 **COPY**

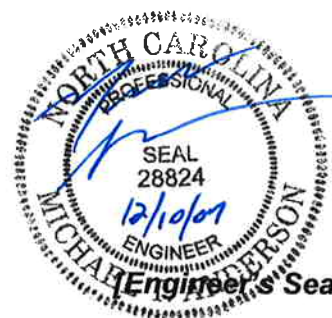


The anticipated future peak water usage is **5,900** gallons per day. The proposed project involves the construction of a public portion that consists of installing approximately **280 lf of 6" DIP waterline, 2-6" gate valves, 1-fire hydrant assembly, 2-5/8" type "K" water services, 1-16"x16"x6" tapping sleeve, and all other necessary appurtenances.**

8. Water is to be supplied to this extension by the City of Hendersonville Water System.
9. Not applicable.
10. Not applicable.
11. The proposed water line extension is to be constructed of ductile iron pipe with a minimum design service life of 50 years.
12. The maximum daily treated water supply for the City of Hendersonville water system is about 31 M.G.D. The maximum daily demand is 22 M.G.D.
13. Not applicable.
14. The calculated pressures at the highest point in the development for peak domestic and fire flow demands are **102 gpm @ 54.4 psi and 602 gpm @ 37.6 psi** respectively. (Please attach supporting calculations).

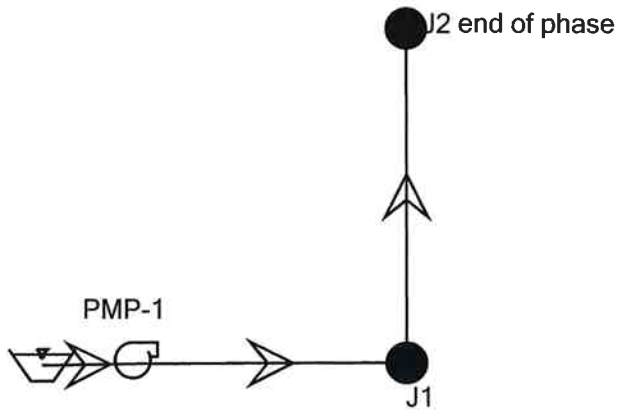
The above information is believed to be accurate for the proposed development entitled **Mitchem Commercial Property Ph1** as designed and specified in the construction documents entitled Water Distribution Plans prepared by **Michael T. Anderson, P.E. of Mike Anderson Engineering, PA** and dated **Dec. 4, 2007**.


[Engineer's Signature]



[Engineer's Seal & Date]

Scenario: Base



**FlexTable: Pump
Table (Current Time:
0.000 hours) (Mitchem
flow calcs dom.wtg)**

Id	Label	Elevation (ft)	Pump Definition
22	PMP-1	2,084.0	28: Pump Definition - 1

Status	Intake Grade (ft)	Discharge Grade (ft)	Discharge (gpm)	Pump Head (ft)
On	2,084.0	2,228.1	102.00	144.09

**FlexTable: Pipe Table
(Current Time: 0.000
hours) (Mitchem flow
calcs dom.wtg)**

Id	Label	Scaled Length (ft)	Start Node
23	P-1		20 21: R-1
25	P-2		56 22: PMP-1
27	P-3		70 24: J-1

Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?
22: PMP-1	24.0	Ductile Iron	130.0	False
24: J-1	16.0	Ductile Iron	130.0	False
26: J-2	6.0	Ductile Iron	130.0	False

Minor Loss	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?
0.000	102.00	0.07	0.000	True
0.000	102.00	0.16	0.000	True
0.000	102.00	1.16	0.001	True

Length (User Defined) (ft)
1
676
280

**FlexTable: Junction
Table (Current Time:
0.000 hours) (Mitchem
flow calcs dom.wtg)**

Id	Label	Elevation (ft)	Zone
24	J-1	2,104.0	<None>
26	J-2	2,102.0	<None>

Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
<Collection: 0 items>	0.00	2,228.1	53.7
<Collection: 1 item>	102.00	2,227.8	54.4

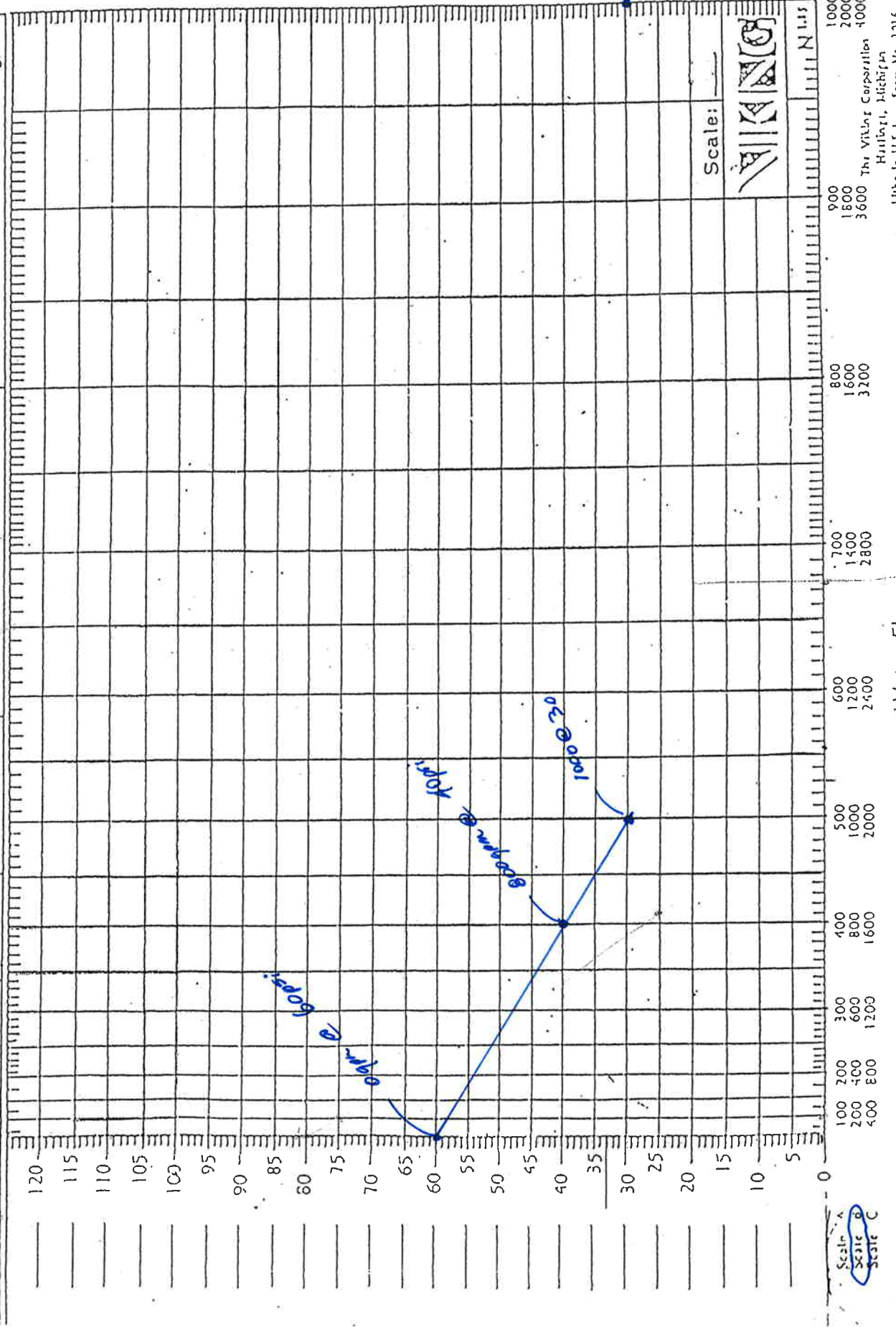
**FlexTable: Junction
Table (Current Time:
0.000 hours) (Mitchem
flow calcs fire.wtg)**

Id	Label	Elevation (ft)	Zone
24	J-1	2,104.0	29: Zone - 1
26	J-2	2,102.0	29: Zone - 1

Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
<Collection: 0 items>	0.00	2,197.1	40.3
<Collection: 1 item>	602.00	2,189.0	37.6

WATER FLOW TEST SUMMARY SHEET

Hydrant No.	Outlet I.D. inches	Pitot Press. psi	Flow gpm	Residual psi	Date:	Time:	Cont. No.
1							
2					Cont. Name:		
3					Address:		
Total Flow				Static Press.:	psi	Flow @ 20 psi	gpm



**PROJECT SUMMARY
WATER UTILITY EXTENSION
Mitchem Commercial Subdivision, Phase 1**

January 9, 2008

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 a **proposed commercial subdivision consisting of six (6) lots of mixed use commercial divided into phases**. This project is located on **Chimney Road Rd (Hwy 64) across from Forest Park Drive**. 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 **Jarrett Mitchem of Hendersonville, NC**.

This project requires approximately **600** linear feet of water line sized as following:

Approximate Length:	Description:
280'	6" DIP CL350

Fire Protection will be provided by the installation of **1**-fire hydrant(s).

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 letter provided to the City by the Reviewing Jurisdiction)

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."

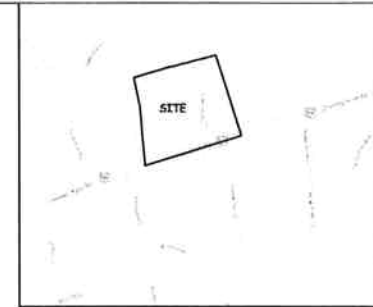
Water and Sewer Department:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Henderson Co. Commissioners:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Date: _____
Hendersonville City Council:	<input type="checkbox"/> Approved	<input type="checkbox"/>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

MITCHEM COMMERCIAL PROPERTY - PHASE I

HENDERSON COUNTY, NORTH CAROLINA
NOVEMBER 13, 2007

PREPARED FOR:
JARRETT MITCHEM
175 FASCINATION DRIVE
HENDERSONVILLE, NC 28792
(828) 243-1856

Sheet No.	Title
C1	COVER SHEET
D1	WATER EXTENSION PLAN AND PROFILE WATER EXTENSION DETAILS



SITE LOCATION
NOT TO SCALE

DEVELOPMENT DATA

OWNER/DEVELOPER: JARRETT MITCHEM
175 FASCINATION DRIVE
HENDERSONVILLE, NC 28792
(828) 243-1856

LAND PLANNER/
LANDSCAPE ARCHITECT: LUTHER E. SMITH & ASSOCIATES, P.A.
129 3RD AVENUE WEST
HENDERSONVILLE, NC 28792
CONTACT: JON CANNON
(828) 697-2307

CIVIL ENGINEER: MIKE ANDERSON ENGINEERING, PA
206 E. CHESTNUT STREET, STE. C
ASHEVILLE, NC 28801
CONTACT: MIKE ANDERSON
(828) 252-4880

SURVEYOR: ASSOCIATED LAND SURVEYORS & PLANNERS PC
P.O. BOX 578
HORSE SHOE, NC 28742
(828) 696-3507

NO. DATE DESCRIPTION BY
1 12-19-07 REVISION PER C.O.H. COMMENTS DMM

MIKE ANDERSON ENGINEERING, PA
206 E. CHESTNUT STREET STE. C
ASHEVILLE, NC 28801
828 252-4880
828 252-4881 f
mike@mandersoneng.com
www.mandersoneng.com

MITCHEM COMMERCIAL PARK - PHASE I
HENDERSON COUNTY, NORTH CAROLINA

COVER



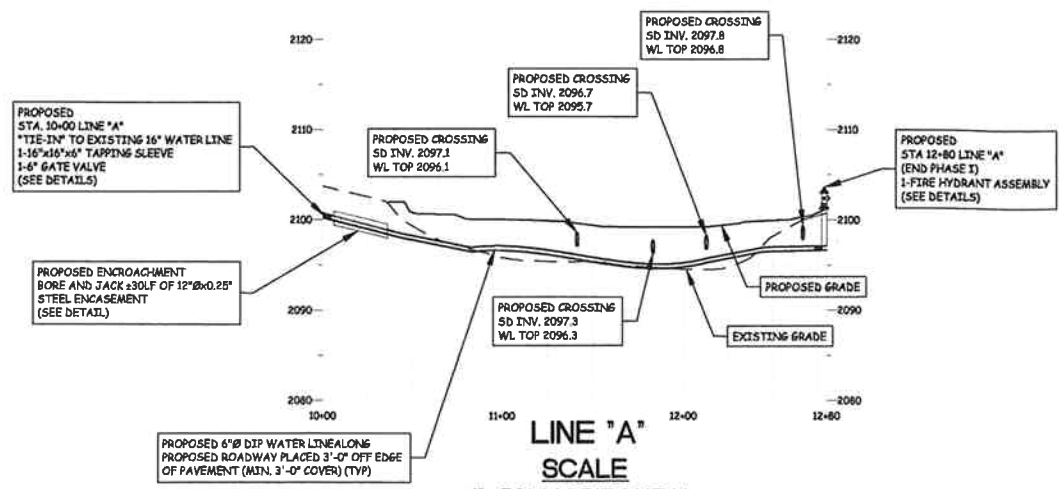
BEFORE YOU DIG, I
CALL 1-800-85-4888
N.C. ONE-CALL CENTER
IT'S THE LAW!

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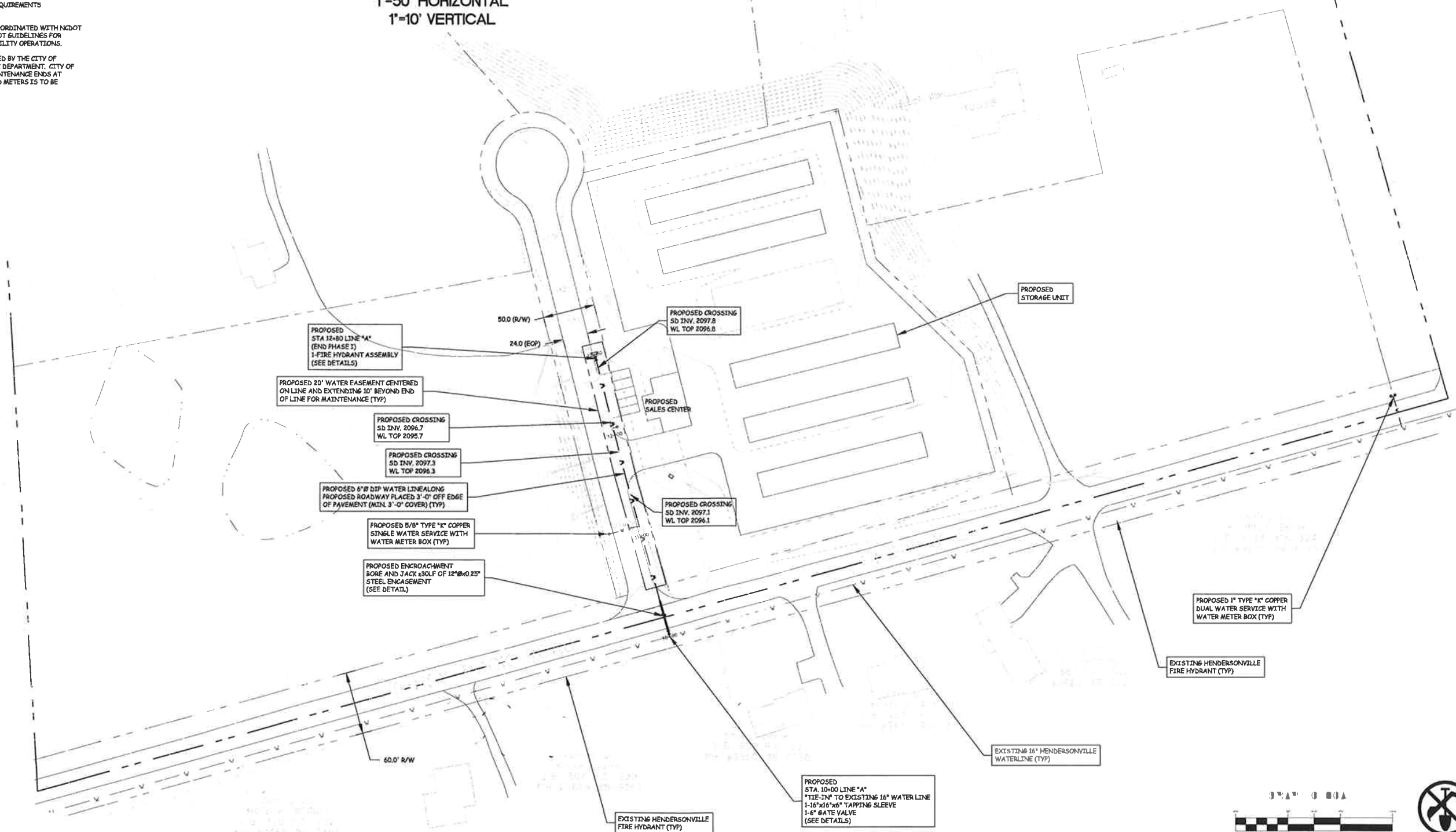
CVR

NOTES:

1. ALL WATER LINE INSTALLATION SHALL BE IN ACCORDANCE WITH CITY OF HENDERSONVILLE AND NCDOT CURRENT DESIGN GUIDELINES AND UNDER THE INSPECTION OF THE CITY OF HENDERSONVILLE AND THE ENGINEER.
2. ALL WORK MUST BE PERFORMED BY A NORTH CAROLINA LICENSED UTILITY CONTRACTOR.
3. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR BEFORE CONSTRUCTION BEGINS.
4. CONTRACTOR TO COORDINATE EXACT LOCATION OF PROPOSED AND EXISTING UTILITIES.
5. SEE WATER DETAILS SHEET FOR GENERAL NOTES CONCERNING WATER MAIN INSTALLATION AND SEPARATION REQUIREMENTS.
6. MULTI PHASE CONSTRUCTION.
7. A 3' COVER DEPTH SHALL BE MAINTAINED FOR ALL PROPOSED WATER LINES, EXCEPT IN AREAS WHERE IT IS NECESSARY TO INCREASE OR DECREASE THE COVER DEPTH TO AVOID UTILITY CONFLICTS. THE MAXIMUM COVER DEPTH IS 5' AND THE MINIMUM COVER DEPTH IS 2' IN SECTIONS WHERE IT IS NECESSARY TO AVOID UTILITY CONFLICTS.
8. WATER LINE AND METER ASSEMBLY LOCATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO FINAL VERIFICATION. WATER METERS ARE TO BE PLACED MAXIMUM OF 5' OFF EDGE OF PAVEMENT/SIDEWALK. METERS AND FIRE HYDRANTS ARE TO BE PLACED IN A RELATIVELY FLAT AREA.
9. PROPOSED ROADS TO BE PRIVATE.
10. ALL WATER SERVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH N.C. PLUMBING CODES AND ANY REQUIREMENTS PER LOCAL AUTHORITIES.
11. SAFETY AND TRAFFIC ROUTING TO BE COORDINATED WITH NCDOT AND IN STRICT ACCORDANCE WITH NCDOT GUIDELINES FOR CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS.
12. DROP-IN WATER METERS TO BE INSTALLED BY THE CITY OF HENDERSONVILLE WATER MAINTENANCE DEPARTMENT. CITY OF HENDERSONVILLE OWNERSHIP AND MAINTENANCE ENDS AT WATER METERS. WATER SYSTEM BEYOND METERS IS TO BE PRIVATELY OWNED AND MAINTAINED.



LINE "A"
SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL



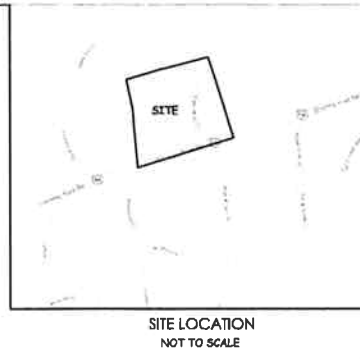
DEVELOPMENT DATA

OWNER/DEVELOPER: JARRETT MITCHEM
178 FASCINATION DRIVE
HENDERSONVILLE, NC 28792
(828) 243-1856

LAND PLANNER/
LANDSCAPE ARCHITECT: LUTHER E. SMITH & ASSOCIATES, P.A.
129 3RD AVENUE WEST
HENDERSONVILLE, NC 28792
YON GANNON
(828) 697-2307

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mike@manderoneering.com
www.manderoneering.com

NO. DATE DESCRIPTION BY
1 12-19-07 REVISED PER C.O.H. COMMENTS DWG

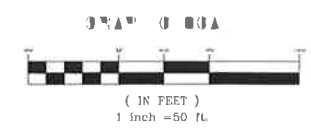


MITCHEM COMMERCIAL PARK - PHASE I
HENDERSON COUNTY, NORTH CAROLINA
WATER EXTENSION PLAN AND PROFILE



DRAWN BY: MTA

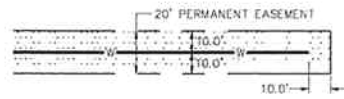
C1



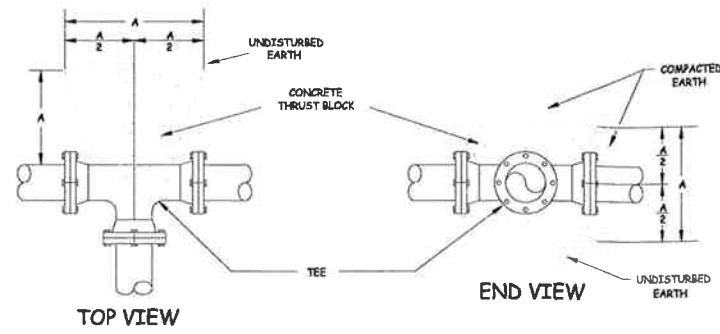
BEFORE YOU DIG
CALL 1-800-832-8848
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GENERAL NOTES FOR WATER

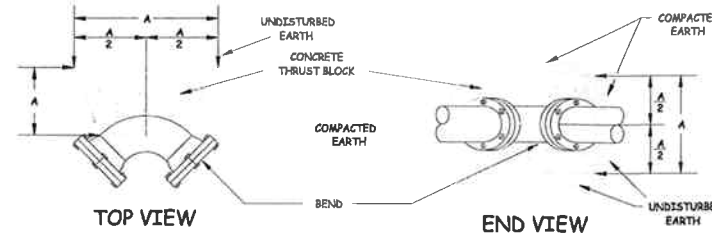
- WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF THE ENVIRONMENT AND NATURAL RESOURCES (NCDENR), AND THE CITY OF HENDERSONVILLE. THE WORK IS SUBJECT TO INSPECTIONS AT ALL TIMES BY REPRESENTATIVES OF NCDENR, THE CITY OF HENDERSONVILLE, THE OWNER, OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE ENGINEER PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL BY THE CITY OF HENDERSONVILLE.
- CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND ELEVATION FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES BOTH EXISTING AND PROPOSED, AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.
- INSTALL FERROUS PIPING FOR BOTH WATER AND SEWER WITHIN 10 FT. OF A CROSSING IF:
 - SEWER LINE CROSSES OVER WATER, OR
 - VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18 INCHES.
 MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAID IN SEPARATE TRENCHES WITH THE BOTTOM OF THE WATER LINE AT LEAST 18 INCHES ABOVE THE TOP OF SEWER.
- MAINTAIN 12 INCHES VERTICAL SEPARATION BETWEEN STORM DRAIN AND WATER, OR INSTALL FERROUS MATERIAL ON WATER LINE WITHIN 10 FEET EACH SIDE OF CROSSING.
- COORDINATE EXACT LOCATIONS OF VAULTS, METERS, BACK FLOW PREVENTION DEVICES, AND SERVICE LINES WITH THE CITY OF HENDERSONVILLE WATER AND SEWER ORDINANCE, AND THE DETAILED ARCHITECTURAL, PLUMBING, LIGHTING, AND LANDSCAPING PLANS.
- ALL WATER MAINS SHALL HAVE 3 FEET MINIMUM COVER.
- MATERIALS AND INSTALLATION FOR WATER LINES SHALL CONFORM TO THE CITY OF HENDERSONVILLE'S STANDARD SPECIFICATIONS AND DETAILS AND SHALL BE INSTALLED UNDER THE INSPECTION OF THE CITY OF HENDERSONVILLE AND INSTALLED BY A NORTH CAROLINA LICENSED UTILITY CONTRACTOR. UPON COMPLETION AND ACCEPTANCE, WATER LINES SHALL BE MAINTAINED BY THE CITY OF HENDERSONVILLE.
- CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL NOTIFY ULOOC & APPROPRIATE UTILITY AGENCY PRIOR TO PERFORMING ANY WORK.
- TYPICAL EASEMENTS FOR WATER LINES LOCATED OUTSIDE ESTABLISHED UTILITY EASEMENTS OR ROAD RIGHT-OF-WAYS SHALL BE A 20 FEET IN WIDTH AND LOCATED IN EASEMENT PER SKETCH.



- SERVICE WILL BE PROVIDED ONCE FINAL CLOSEOUT SUBMITTALS HAVE BEEN APPROVED BY THE CITY OF HENDERSONVILLE'S ENGINEERING DEPARTMENT.
- ALL WATER LINES SHALL BE DUCTILE IRON CLASS 350 WATER PIPE, TESTING/INSPECTION
- NOTIFY THE ENGINEER AT LEAST 48 HOURS BEFORE STARTING CONSTRUCTION OF SEWER AND WATER FACILITIES. THE ENGINEER SHALL PERIODICALLY INSPECT THE PROGRESS OF INSTALLATION AND SHALL COMPLETE A FINAL WATER AND SEWER INSPECTION. THE CONTRACTOR SHALL FURNISH, SECURE, AND PROVIDE ALL NECESSARY TESTING MATERIALS, EQUIPMENT, PROCEDURES, AND CERTIFIED LABORATORY TEST RESULTS FOR USE WITH ENGINEER'S FINAL CERTIFICATION OF COMPLETION.
- PRESSURE TEST WATER MAINS TO 200 PSI MIN. AND 250 PSI MAX. AS PER CITY OF HENDERSONVILLE REQUIREMENTS. DESINFECT WATER LINES AND PROVIDE ACCEPTABLE BACTERIOLOGICAL TEST FROM A CERTIFIED TESTING LABORATORY FOR USE WITH THE ENGINEER'S CERTIFICATION OF COMPLETION.
- SECURE FINAL OPERATIONAL APPROVAL FROM THE CITY OF HENDERSONVILLE PRIOR TO ACTIVATION OF THE SYSTEM.
- TRENCH BACKFILL AND COMPACTION TESTING SHALL BE PERFORMED BY A CERTIFIED SOILS LABORATORY UNDER ALL PAVED AREAS. BACKFILL MATERIAL FROM THE BOTTOM OF TRENCH TO WITHIN SIX (6) INCHES OF THE SUBGRADE SHALL HAVE A MINIMUM DRY DENSITY OF 95% AS DEFINED BY THE STANDARD PROCTOR TEST. ALL MATERIAL WITHIN THE TOP 6 INCHES OF THE SUBGRADE LEVEL SHALL HAVE AN IN PLACE DENSITY OF 100%.
- THE CONTRACTOR SHALL SUPPLY THE ENGINEER WITH WATER SERVICE MEASUREMENTS SUITABLE FOR PREPARATION OF FINAL RECORD DRAWINGS.



TYPICAL THRUST BLOCK FOR TEES
NTS

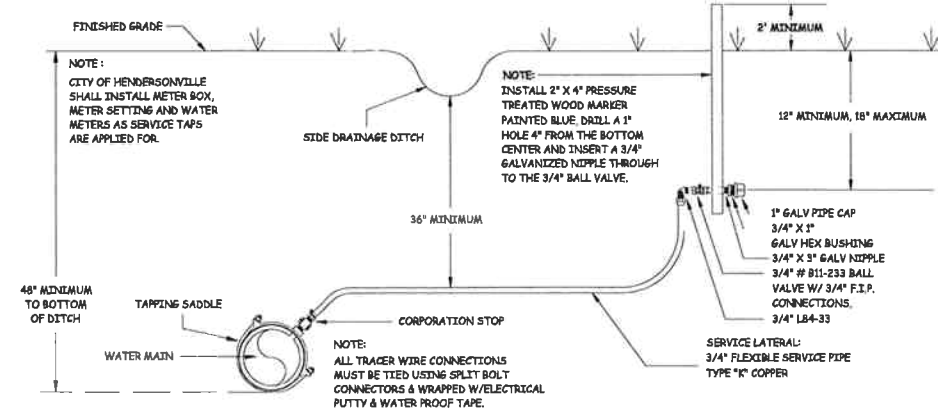


TYPICAL THRUST BLOCK FOR BENDS
NTS

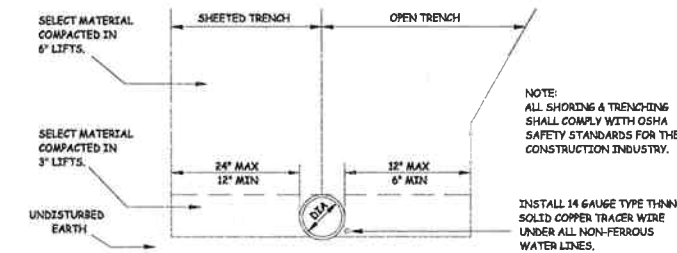
NOTE: FOR PROTECTION OF THE JOINTS, INSTALL A LAYER OF A MIL POLYETHYLENE BETWEEN THE CONCRETE AND THE FITTING.

SIZE	1 1/4" BEND	2 1/2" BEND	45° BEND	90° BEND	TEE	PLUG
6"	12	12	12	16	16	14
8"	12	12	16	22	22	18
10"	12	14	20	28	28	22
12"	12	18	24	32	32	26
14"	14	20	28	36	36	30
16"	16	22	32	42	42	34
18"	18	26	36	48	48	40
20"	20	28	40	52	52	44
24"	24	34	46	64	64	54

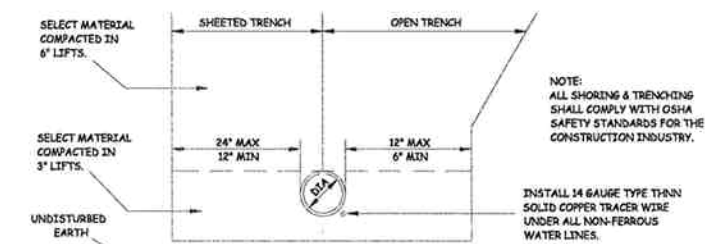
VALUES FOR "A"



TYPICAL SERVICE LATERAL INSTALLATION
NTS

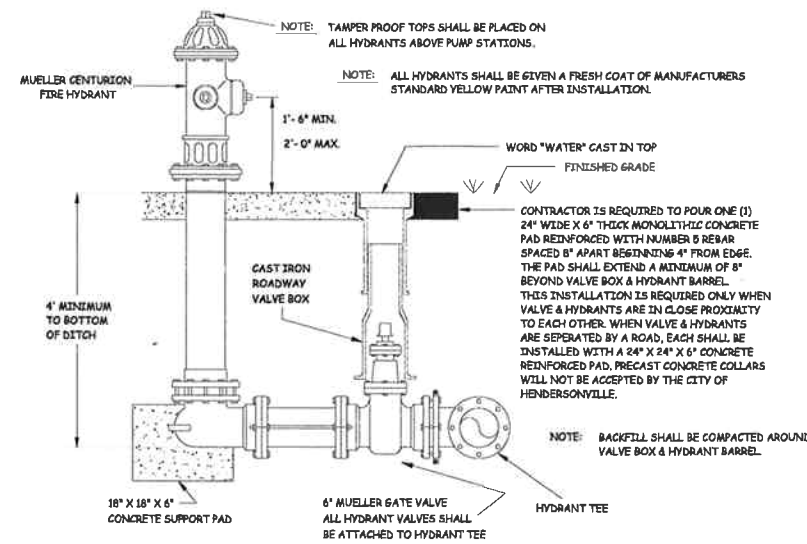


TYPICAL EXCAVATION
NTS

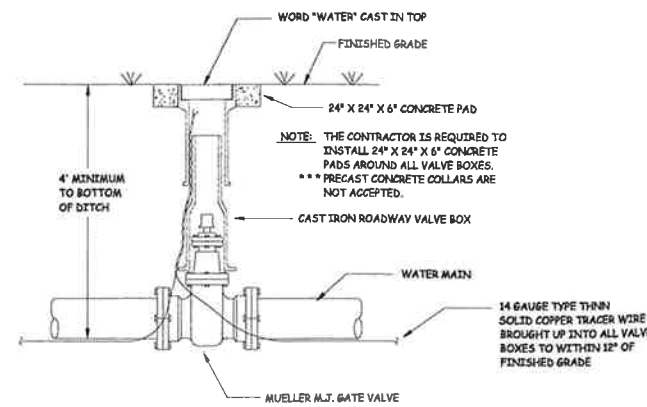


OVERCUT EXCAVATION
NTS

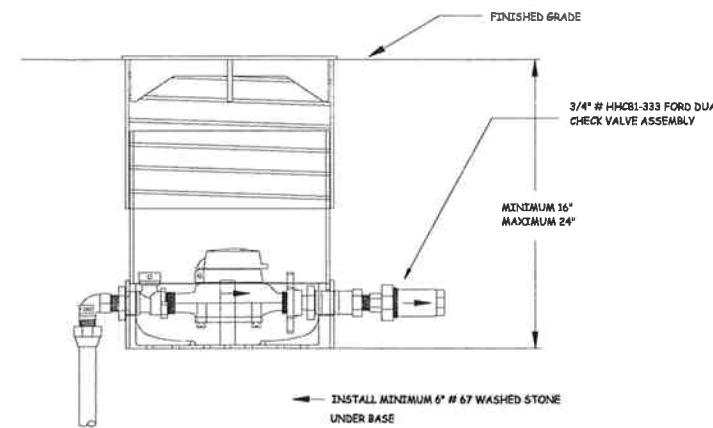
TYPICAL TRENCHING DETAILS
NTS



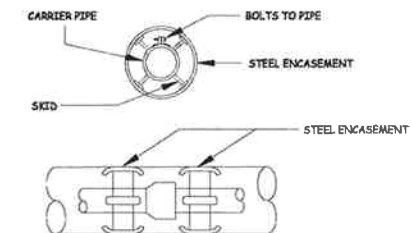
TYPICAL RODED FIRE HYDRANT
INSTALLATION DETAIL
NTS



TYPICAL IN-GROUND INSTALLATION
OF ALL 2" AND LARGER GATE VALVES
NTS



TYPICAL METER SETTING DETAIL
NTS



TYPICAL ENCASUREMENT OF
WATER AND SEWER LINES
NTS

MIKE ANDERSON ENGINEERING, PA
206 E. CHESTNUT STREET, C
ASHEVILLE, NC 28601
828 252-4880
828 252-4881
mike@andersoneng.com
www.andersoneng.com

NO. DATE: 1-12-19-07
DESCRIPTION: REVISION PER C.O.H. COMMENTS: DMM



MITCHEM COMMERCIAL PARK - PHASE I
HENDERSON COUNTY, NORTH CAROLINA
WATER EXTENSION DETAILS

DRAWN BY: MTA

D1

**HENDERSON COUNTY
REVIEW OF CITY WATER LINE EXTENSIONS**

Project Name: Mitchem Commercial Park, Phase I
 Size of Water Line (Main & Distribution Pipe Size): 280' 6" DIP CL350
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshal; Alexis Baker, 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: 7.23.07
 Action: Planning Board Approved
 Conditions: Notice from NCDENR for soil and erosion, approval for individual septic and public water from appropriate authorities before final plat approval
 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**? All commercial structures must have a fire hydrant within 400 feet of any portion of the building. Yes No N/A

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

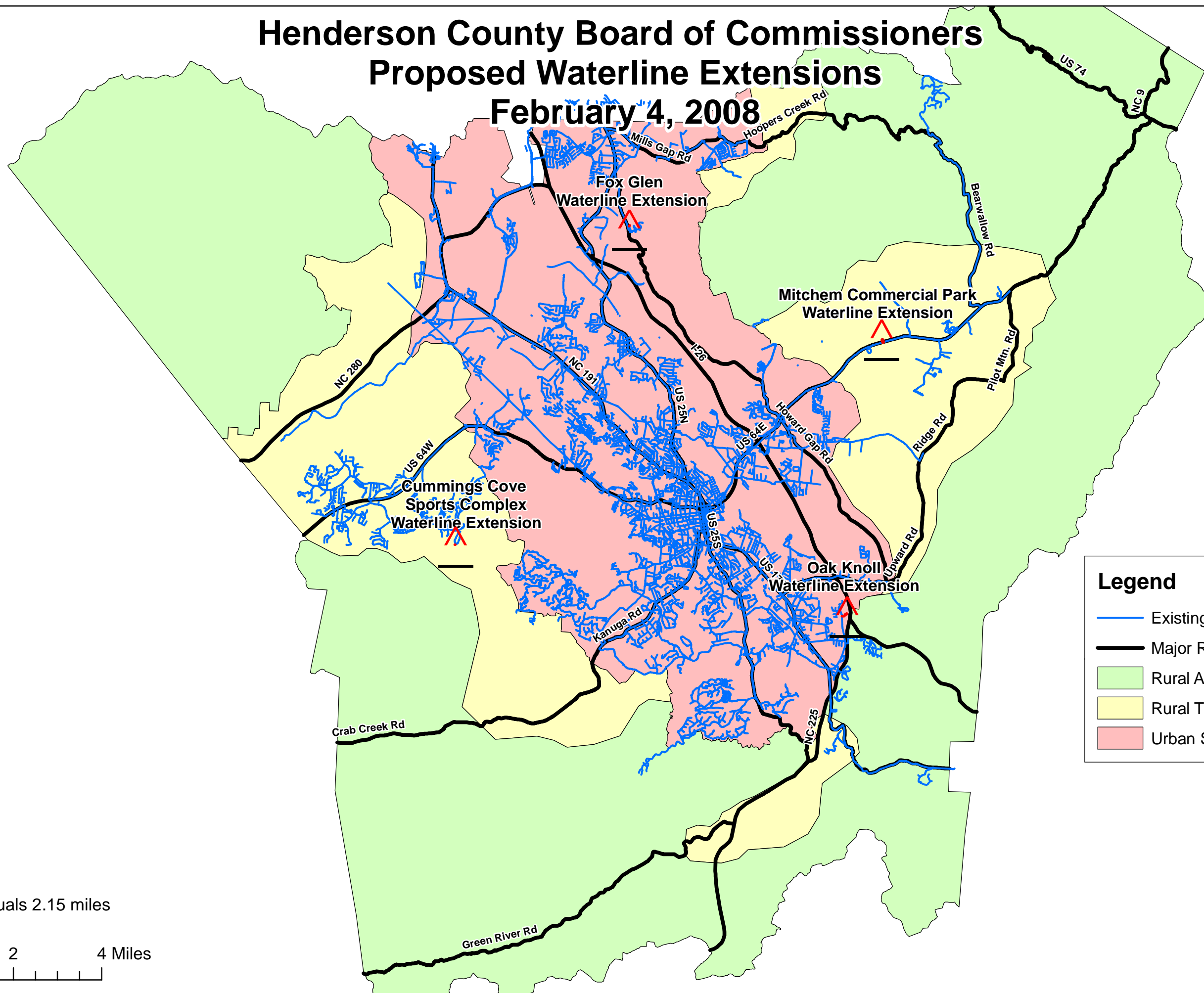
Does the estimated flow rate (gpm) meet **fire protection standards**? Meets standard for structure spacing of more than 30 feet. Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

Approved
 Not Approved
 Conditional Approval (See Comments)

Date of Board Review: _____
 Comments: _____

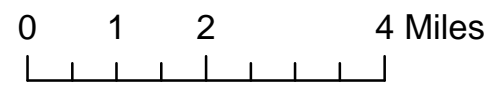
Henderson County Board of Commissioners Proposed Waterline Extensions February 4, 2008



Legend

- Existing and Approved Waterlines
- Major Roads
- Rural Agricultural Area
- Rural Transition Area
- Urban Services Area

1 inch equals 2.15 miles



This map is prepared from the inventory of real property found within this jurisdiction, and is compiled from recorded deeds, plats, and other public records and data. Users of this map, are hereby notified that the aforementioned public primary information sources should be consulted for verification of the information contained on this map. The County and mapping company assume no legal responsibility for the information contained on this map.