



Engineer's Packet

Water and Sewer

The White House Utility District engineer's packet has been created to help streamline the plan review and plan approval of projects within the White House Utility District service area. This packet contains information that will help you to understand the plan review and approval process.

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WHUD Engineering Department			
P.O. Box 608, White House, TN 37188 (USPS Mail)			
3303 Hwy 31W, White House, TN 37188 (FedEx, UPS, etc.)			
Email: whudengineering@whud.org			
Phone: 615-672-4110 x262			
Fax: 615-672-8098			
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Process for Water & Sewer Utility Plan Approval and Construction

1. Digital files (PDF & DWG) of water and/or sewer plans need to be submitted to the White House Utility District (WHUD). The items that should accompany your plans are:
 - a. The “[Development Information Form](#)”, completely filled out.
 - b. A check made payable to White House Utility District for \$1,000 to pay for the Plan Review Fee for each utility. (\$2,000 total if Water & Sewer Plans)

The plans and the documents above will need to be emailed to whudengineering@whud.org.

Payments for plan review need to be sent to:

Attention: Engineering
White House Utility District
P.O. Box 608 (USPS)
3303 Hwy 31W (Other carriers)
White House, TN 37188

2. Once all of the items listed above have been received by WHUD, an initial review of the plans will be conducted. Your engineer will be notified by email within 21 business days if plan corrections are needed.
3. WHUD will forward a Development Agreement to the developer that outlines the developer's obligations as well as our own. **Approved plans will NOT be released until this agreement is executed.**
4. The engineer should make corrections to the plans and send revised plans back to WHUD. Within 21 business days of receipt, WHUD will review the revised plans and notify the engineer by email of approval if all corrections have been made. If WHUD issues comments after this review, the engineer may be required to have a meeting with WHUD to discuss the comments and any concerns. This must be done before WHUD will review any additional plan submittals.

Should a review meeting be required, the engineer will need to submit revised plans for review after WHUD's review meeting has been held. WHUD will respond to plan submittal within 21 business days of receipt. If WHUD issues comments after this review, the developer will be notified of deficiencies in the plans and informed that an additional nonrefundable fee of \$1,000 will be required before WHUD will continue the review process. The fee will cover three additional plan reviews. Each plan review will be completed within 21 business days of receipt.

5. Once the digital plans (PDF and DWG) have been reviewed and approved, WHUD will request the engineer to submit a minimum of ten sets of plans for each utility with all final corrections made for WHUD to stamp “Approved for Construction”.

***Reminder - The approved plans will not be released to the engineer or the developer until the digital files have been received by WHUD and the Development Agreement is executed.**

Hard copies of the plans will need to be sent to:

Attention: Engineering
White House Utility District
P.O. Box 608 (USPS)
3303 Hwy 31W (Other carriers)
White House, TN 37188

6. After WHUD has approved construction plans and **notified the developer in writing**, the developer or engineer will need to pick up the plans from WHUD and send them to the Tennessee Department of Environment and Conservation for approval by the Division of Water Supply (water plans) and the Division of Water Pollution Control (sewer plans). WHUD is not responsible for fees associated with TDEC's review.
7. After State approval, one set of plans is kept by the State of Tennessee, four sets of plans bearing the state agency's approval stamp per utility being installed (four for water and four for sewer) are to be sent to WHUD by the developer, and the remaining sets are for the developer's use. **Remember, the contractor will be required to keep State approved plans on the job site at all times.** The developer also needs to provide a copy of the state approval letter(s) to WHUD prior to scheduling a pre-construction meeting.

DEVELOPMENT INFORMATION FORM

Development Information		
Development Name:		
Location of Property:		
Phase:	Section:	City:
County:	Tax Map #:	Parcel:
Area in Acres:	Development Type: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
Number of Lots/Units:	Estimate of when construction will begin:	
	Estimate of when service will begin:	
Fire protection flow requirements: <i>(gallons per minute required for sprinkler system, fire hydrants, etc. Do not leave blank.)</i>		
<b style="text-align: center;">Water Provider: <input type="checkbox"/> White House Utility District <input type="checkbox"/> Hendersonville Utility District		<b style="text-align: center;">Sewer Provider: <input type="checkbox"/> White House Utility District <input type="checkbox"/> City of Goodlettsville <input type="checkbox"/> City of Millersville <input type="checkbox"/> City of Ridgetop <input type="checkbox"/> City of White House <input type="checkbox"/> Hendersonville Utility District <input type="checkbox"/> None / Septic

Developer Information		
Company Name:	Contact Name:	
Address: <i>(This is the address you wish all correspondence from WHUD to be sent.)</i>		
Phone:	Fax:	Email:

Engineer Information		
Company Name:	Contact Name:	
Address: <i>(This is the address you wish all correspondence from WHUD to be sent.)</i>		
Phone:	Fax:	Email:

GUIDELINES AND CHECKLIST FOR WHITE HOUSE UTILITY DISTRICT WATER WORK

I. Master Plan

A. General Criteria for Master Plans

1. A Master Plan is required for developments with two or more phases.
2. A Master Utility Plan shall be submitted a minimum of 30 days prior to plan submittal or with the first phase of any project. The review of the proposed development plans will not take place until the Master Plan has been submitted.
3. Proposed utility layout sheet and water mains must be in agreement with the WHUD approved Master Plan. If the submitted plans do not match with the Master Plan, a revised Master Plan must be submitted for WHUD approval prior to the completion of the phase review.

B. Master Plan Requirements

The Developer/Consultant shall assure that the following criteria are met prior to submitting plans for review:

1. Plans submitted to WHUD must meet all of the WHUD rules and regulations and any other governing agency's rules and regulations that may apply to the project.
2. Plan shall be on 24" x 36" sheets.
3. Plan shall be a minimum of 1"=100' scale.
4. A North Arrow is required on all plan sheets.
5. Plan shall include all proposed and existing utilities within the proposed development.
6. Plan shall include the approximate location of all proposed and existing drainage channels with flow arrows.
7. Plan shall show where the development will be split into phases/sections.
8. Plan shall include a chart noting the number of lots per phase and/or sections.
9. Plan shall include topography with 10' major contours and 2' minor contours.
10. Plan shall show approximate location of all fire hydrants and sanitary sewer manholes.
11. Plan shall notate the approximate linear footage of water mains (total and broken down by size per phase).
12. Plan shall notate the approximate linear footage of sewer mains (total and broken down by type and size per phase).
13. Engineer's Seal with signature needs to be on the final plan for WHUD acceptance.

II. General Design Criteria for Proposed Water Main Installation

A. New Water Main Installation can take place within a PUDE, private easement, or as specified by WHUD depending on the following conditions (**please note, no water lines will be installed in Right-of-way**):

1. Proposed water main design must comply with WHUD Specifications and any other governing entity ordinance or codes. These agency requirements supersede any of the requirements listed in this guideline.
2. Unless otherwise noted, water mains shall be Ductile Iron.
3. Maintain a three foot (3') minimum separation distance between the new water main and the existing water main. Water mains are not to be replaced in place.
4. Whenever possible the new water main shall not be constructed under existing or proposed sidewalks, curbs, and pavements.
5. Each dwelling unit is to be within 500 feet of a fire hydrant or as directed by applicable ordinances. The 500 foot distance is to be measured along the R.O.W.
6. As a general rule, size on size tapping sleeve is not allowed. For size on size mains, propose cut-in tees.
7. Permanent dead-end assemblies are required at the end of 25 feet or longer pipe sections.
8. The top of pipe elevation of the water main must maintain a minimum 1.5 foot (1.5') vertical clearance where the water main crosses under existing and proposed utilities.
9. Steel casing pipe shall be proposed where water mains cross under Box Culverts or large Storm Drain Pipes. Casing sizes shall be in accordance with WHUD specifications.
10. Where applicable, Developer/Consultant must consider the need to maintain water service to residential and commercial establishments. Developer / Consultant may request temporary water system or non-standard working hours, subject to WHUD approval.
11. Valves are to be placed every 1,000 feet and at locations deemed necessary by WHUD to isolate the water distribution system.
12. Water mains are to be a minimum of 36" below grade.
13. Water mains are to be installed inside the PUDE at level grade.

III. General Criteria for Water Mains, Service Lines, and Meter Box Adjustments

A. Water Mains shall be replaced/adjusted/relocated/installed within the parkway depending on the following conditions:

1. Water Master Plan or Capital Improvement Program requires a new/upgraded water main. WHUD to inform Developer/Consultant.
2. At the discretion of WHUD, if the existing top of pipe elevation of the water main is less than 30" below the proposed subgrade elevation. Existing top of pipe elevations can be determined by the following:

- a) Gate Valves
 - i. When gate valves are present, calculate the top of pipe elevation by adding the field-measured existing valve stem depth below the existing grade and the stem length.
 - b) Pot-holing
 - i. The Developer/Consultant shall request in writing the exposure of the water facilities to identify potential conflicts with the proposed design work.
 - ii. For developer driven projects, WHUD will review request to determine if Developer will be allowed to pot-hole area. Developer will be responsible for all costs associated with the pot-holing and repair.
 - iii. For capital improvement projects, WHUD will coordinate any excavation if necessary. WHUD **may** allow the Consultant handle this step.
 - iv. **Regardless of project type, written requests must be submitted four (4) weeks in advance in order to avoid delays with the design schedule.**
 - 3. Existing water mains located in the Right-of-Way that are to remain in service must be at least 30" below the proposed subgrade elevation under proposed driveways or roadways. Existing water mains may be replaced/adjusted/ concrete encased depending on the type of pipe material and proposed coverage.
 - 4. New water main extension will require WHUD approval.
 - 5. Visit WHUD's web page at <https://www.whud.org/construction-support/construction-support-for-engineers> for the latest specification and revisions for water and sanitary sewer construction and WHUD Standard Details.
- B. Water service lines are installed, relayed, relocated, or replaced as described below:
- 1. All services needing to be replaced will be Rehau Municipex A.
 - 2. Long and short service lines are relayed when the water main is proposed for replacement. All long services will be installed inside 2" PVC casing.
 - 3. If existing water mains are in the parkway and not being replaced but the long service lines cross the proposed street, the replacement of the long service is required.
 - 4. All residential lots shall be provided a minimum of ¾" service line.
- C. Meter Boxes are relocated or replaced (with meter) as described below:
- 1. From on-site field investigations, existing meter boxes within private property, behind fences, and those that are in conflict with the proposed sidewalks, and street widening/improvements must be relocated.
 - 2. A damaged or substandard meter box must be replaced.

IV. Water Distribution Plan Requirements

- A. The Developer/Consultant shall assure that the following criteria are met prior to submitting plans for review:
1. Plans submitted to WHUD must meet all of the WHUD rules and regulations and any other governing agency's rules and regulations that may apply to the project.
 2. Plan shall be on 24" x 36" sheets.
 3. Plan scale shall be as follows:
 - a) For developer driven projects, the scale shall be no smaller than 1"=50'.
 - b) For capital improvement projects, the scale shall be no smaller than 1"=20'.
 4. Project name must match the name used on the approved Master Plan.
 5. A WHUD cover sheet with the applicable General Water Notes, Job Numbers, Location Map and any other notes pertinent to the project. The Location Map must show the project limits. The Job Numbers will be supplied during WHUD's initial review of the project.
 6. For Capital Improvement Projects, detailed Estimated Quantities are to be submitted with the plans.
 7. WHUD Job Numbers are to be shown on all plan sheets.
 8. Plans must show Lot Numbers, Addresses (if known), existing and proposed street names, and R.O.W. Adjoining property owner information is also required.
 9. Show all property lines, turnarounds, creeks, existing and proposed easements (both permanent and temporary).
 10. A North Arrow is required on all plan sheets.
 11. Existing and proposed sanitary sewer, storm sewer, and all utilities are shown on plan and profile views.
 12. For Capital Improvement Projects, the length of proposed mains from fitting to fitting is required. Length is to be rounded to the nearest 1' increment. For Subdivision Projects, this will be required in the As-builts.
 13. Plans must have match lines that correspond to the proposed mains on other sheets.
 14. Show fire hydrant, water services, air release, dead-end, and trenching details on plans.
 15. Show cut and replace existing asphalt or sidewalk, if applicable.
 16. Size of service lines larger than 3/4" shall be indicated for each service line.
 17. For water mains 12" or larger, a profile is required.
 18. Visit WHUD's web page at <https://www.whud.org/construction-support/construction-support-for-engineers> for the latest specification and revisions for water and sanitary sewer construction and Standard Details.
 19. Engineer's Seal with signature needs to be on the final plan for WHUD acceptance.
 20. For developer driven projects, a block with the required information shall be included on each plan sheet. The following information in the block is required:
 - a) Developer's name

- b) Developer's address
- c) Developer's phone number
- d) Developer's fax number
- e) Engineer's name
- f) Engineer's address
- g) Engineer's phone number
- h) Engineer's fax number
- i) Project Name
- j) WHUD Job Number
- k) Number of Lots
- l) Linear Footage of Pipe on page
- m) Total Linear Footage of Pipe

Example

Project Name: _____		
WHUD Job #: _____	Total Number of Lots: _____	
Page Total of Linear Footage of Pipe: _____	Total Linear Footage of Pipe: _____	
Developer's Name: _____		
Address: _____		
City: _____	State: _____	Zip Code: _____
Phone #: (____) _____	Fax #: (____) _____	
Engineer's Name: _____		
Address: _____		
City: _____	State: _____	Zip Code: _____
Phone #: (____) _____	Fax #: (____) _____	

GUIDELINES AND CHECKLIST FOR WHITE HOUSE UTILITY DISTRICT SEWER WORK

I. Master Plan

A. General Criteria for Master Plans

1. A Master Plan is required for developments with two or more phases.
2. A Master Utility Plan shall be submitted a minimum of 30 days prior to plan submittal or with the first phase of any project. The review of the proposed development plans will not take place until the Master Plan has been submitted.
3. Proposed utility layout sheet and sewer mains must be in agreement with the WHUD approved Master Plan. If the submitted plans do not match with the Master Plan, a revised Master Plan must be submitted for WHUD approval prior to the completion of the phase review.

B. Master Plan Requirements:

The Developer/Consultant shall assure that the following criteria are met prior to submitting plans for review:

1. Plans submitted to WHUD must meet all of the WHUD rules and regulations and any other governing agency's rules and regulations that may apply to the project.
2. Plan shall be on 24" x 36" sheets.
3. Plan shall be a minimum of 1"=100' scale.
4. A North Arrow is required on all plan sheets.
5. Plan shall include all proposed and existing utilities within the proposed development.
6. Plan shall include the approximate location of all proposed and existing drainage channels with flow arrows.
7. Plan shall show where the development will be split into phases/sections.
8. Plan shall include a chart noting the number of lots per phase and/or sections.
9. Plan shall include topography with 10' major contours and 2' minor contours.
10. Plan shall show approximate location of all fire hydrants and sanitary sewer manholes.
11. Plan shall notate the approximate linear footage of water mains (total and broken down by size per phase).
12. Plan shall notate the approximate linear footage of sewer mains (total and broken down by type and size per phase).
13. Engineer's Seal with signature needs to be on the final plan for WHUD acceptance.

II. General Design Criteria for Proposed Sanitary Sewer Main Installation

A. New Sanitary Sewer Main Installation can take place within the street Right-of-Way, private easement, or as specified by WHUD depending on the following conditions:

1. Proposed sewer main design must comply with WHUD Specifications and any other governing entity ordinance or codes. These agency requirements supersede any of the requirements listed in this guideline.

2. Sanitary sewer shall be laid in straight alignment with uniform grade between manholes.
3. If the sanitary sewer main is shallow, Developer/Engineer shall insure that all building laterals can be laid at a minimum of 2% slope to Right-of-Way.
4. On any sewer main aligned parallel to a proposed or existing underground utility, the Developer/Consultant must assure that all lateral services can be installed with a minimum of 2% slope and do not conflict with the existing/proposed underground utilities.
5. Developer/Consultant to field verify the existing sanitary sewer invert elevations.
6. Proposed sewer mains and service laterals to be a minimum of 3 feet of cover from top of pipe to finish grade.
7. Unless otherwise noted, sewer mains shall be
 - a) SDR 26 – PVC for mains with a depth of cover 18' or less.
 - b) Ductile Iron for mains with a depth of cover greater than 18'.
 - i. Ductile Iron mains must have Protecto 401 Coating or other WHUD approved coating system.
8. Whenever possible the new sewer main shall be aligned in the center of the proposed pavement section.
9. Pump Stations shall comply with current WHUD specifications.

III. General Design Criteria for Proposed Sanitary Sewer Force Main Installation

- A. New Sanitary Sewer Force Main Installation can take place within a PUDE, private easement, or as specified by WHUD depending on the following conditions (please note, no sewer force mains to be installed in Right-of-way):
 1. Proposed sewer main design must comply with WHUD Specifications and any other governing entity ordinance or codes. These agency requirements supersede any of the requirements listed in this guideline.
 2. Maintain a three foot (3') minimum separation distance between the new force main and the existing sewer mains and 10' minimum separation distance between existing water mains. Force mains are not to be replaced in place.
 3. Whenever possible the new force main shall not be constructed under existing or proposed sidewalks, curbs, and pavements.
 4. The top of pipe elevation of the force main must maintain a minimum two foot (2') vertical clearance where the force main crosses under existing and proposed utilities.
 5. Steel casing pipe shall be proposed where force mains cross under Box Culverts or large Storm Drain Pipes. Casing sizes shall be in accordance with WHUD specifications.
 6. Valves are to be placed every 1,000 feet and at locations deemed necessary by WHUD to isolate the sewer distribution system.
 7. Force main is to be a minimum of 36" below grade.

IV. General Criteria for Relocation of Sanitary Sewer Mains, Service Laterals, and Sanitary Sewer Manholes:

A. Sanitary Sewer services shall be installed or replaced as described below:

1. Replace service laterals if the main is to be replaced.
2. Insure all platted lots are provided with a gravity fed sewer lateral to the property line (if appropriate).
3. Laterals shall be centered on proposed lots.
4. If sanitary sewer main does not require replacement, check with WHUD contact person to determine if laterals need replacement.

B. Sanitary Sewer Main and laterals are to be protected as follows:

1. Concrete encasement to be proposed if there is less than 3 feet of cover between the top of the proposed sewer main to the subgrade of the road.
2. Concrete encasement shall be used if there is less than 2 feet (horizontal distance) between outside diameters of proposed sanitary sewer and storm sewer.

C. Sanitary Sewer Manholes are replaced, installed, or adjusted as follows:

1. Existing Sanitary Sewer Manholes to be adjusted/reconstructed/replaced if located within the proposed street reconstruction boundaries.
2. Install a manhole at the end of a proposed sewer main.
3. Install a manhole at each angle point.
4. Maximum distance between manholes is 300 feet.
5. Install a manhole if the distance between existing manholes is greater than 300 feet.
6. Provide Internal Drop Assemblies and show a detail when the difference in the inlet to outlet elevation is 24" or greater.
7. For inlet/outlet invert elevations between 0.2' and 2', a smooth transition between in and out inverts are required.
8. Where applicable, investigate the possibility of eliminating any unnecessary manholes in the proposed line, while meeting the above criteria.

V. Sanitary Sewer Plan Requirements:

A. The Developer/Consultant shall assure that the following criteria are met prior to submitting plans for review:

1. Plans submitted to WHUD must meet all of the WHUD rules and regulations and any other governing agency's rules and regulations that may apply to the project.
2. Plan shall be on 24" x 36" sheets.
3. Plan scale shall be as follows:
 - a) For Subdivision Projects, the scale shall be no smaller than 1"=20' (horizontal) and 1"=5' (vertical). Scale must be consistent on all plan and profile sheets
 - b) For Capital Improvement Projects, the scale shall be no smaller than 1"=20' and 1"=5' (vertical). Scale must be consistent on all plan and profile sheets.

4. A WHUD cover sheet with the applicable General Sanitary Sewer Notes, Job Numbers, Location Map and any other notes pertinent to the project. The Location Map must show the project limits. The Job Numbers will be supplied during WHUD's initial review of the project.
5. Plans and Profiles are drawn from low point to high point, left to right.
6. In the profile view, invert elevations shall be shown every 50 feet along the gravity sewer main sections and at all manhole main penetrations.
7. Stationing shall be shown at every manhole and at 50 foot intervals.
8. For Capital Improvement Projects, detailed Estimated Quantities are to be submitted with the plans.
9. WHUD Job Numbers are to be shown on all plan sheets.
10. Plans must show Lot Numbers, Addresses (if known), existing and proposed street names, and R.O.W. Adjoining property owner information is also required.
11. Show all property lines, turnarounds, creeks, existing and proposed easements (both permanent and temporary).
12. A North Arrow is required on all plan sheets.
13. Existing and proposed sanitary sewer, storm sewer, and all utilities are shown on plan and profile views.
14. Indicate sewer main lengths, slopes, and pipe diameter and material between manholes on all profile sheets.
15. Plans must have match lines that correspond to the proposed mains on other sheets.
16. Show manhole details and trenching detail in plans.
17. Show standard manhole, drop manhole, sewer service laterals, concrete encasement/cap, and trenching details on plans.
18. Visit WHUD web page at www.whud.org for the latest specification and revisions for water and sanitary sewer construction and Standard Details.
19. For developer driven projects, a block with the required information shall be included in the lower right corner on each plan sheet. The following information in the block is required:
 - a) Developer's name
 - b) Developer's address
 - c) Developer's phone number
 - d) Developer's fax number
 - e) Engineer's name
 - f) Engineer's address
 - g) Engineer's phone number
 - h) Engineer's fax number
 - i) Project Name
 - j) WHUD Job Number
 - k) Number of Lots
 - l) Linear Footage of Pipe on page
 - m) Total Linear Footage of Pipe

Example

Project Name: _____		
WHUD Job #: _____	Total Number of Lots: _____	
Page Total of Linear Footage of Pipe: _____	Total Linear Footage of Pipe: _____	
Developer's Name: _____		
Address: _____		
City: _____	State: _____	Zip Code: _____
Phone #: (____) _____	Fax #: (____) _____	
Engineer's Name: _____		
Address: _____		
City: _____	State: _____	Zip Code: _____
Phone #: (____) _____	Fax #: (____) _____	

GENERAL WATER NOTES TO BE INCLUDED ON ALL WATER PLANS

1. The Contractor shall not proceed with any pipe installation work until a Pre-Construction Meeting has been held and they have been notified by the White House Utility District to proceed with the work. The contractor will also need to provide a WHUD subgrade letter for approval before pipe installation will take place.
2. The locations and depths of existing utilities, including service laterals, and drainage structures shown on the plans are approximate only. The Contractor shall verify the exact location and depths of underground utilities at least 48 hours prior to construction whether shown on plans or not, and to protect the same during construction.
3. The Contractor will be responsible for restoring to its original or better condition from damage done to existing fences, curbs, streets, driveways, landscaping and structures.
4. No meter boxes to be set in driveways. Any meter boxes set in driveways will be relocated at the Contractor's and/or Developer's expense.
5. The Contractor shall maintain service to existing utilities at all times during construction.
6. All water mains greater than two (2) inches in diameter shall be Ductile Iron Class 52 Pipe.
7. All water mains shall be installed at a minimum depth of 36 inches unless otherwise noted on the construction plans.
8. Mechanical joint restraints are to be added on all tees, valves, bends, and hydrants (mega lug type). A minimum of 40 FT length of restrained joint pipe shall be on each side of all valves and fittings.
9. Restrained joint pipe will be developed with field installed locking gaskets.
10. All dead end lines will receive a minimum of 60 FT of restrained joint pipe at ends.
11. All bends 45 degrees and under will receive restrained joint pipe 40 FT up & downstream.
12. All 90 degree bends will receive restrained joint pipe 60 FT up & downstream.
13. Water mains and sewer mains must maintain a minimum of ten (10) foot horizontal clearance and/or eighteen (18) inches vertical clearance at all times.
14. The Contractor will keep the area on top of and around the water meter box free of all objects and debris.

15. All testing will be done in accordance with the most recent White House Utility District standards.
16. In no case are valves to be located within paved areas.
17. Adequate space shall be provided for the installation and maintenance of meter vaults, backflow prevention assemblies and water mains.
18. Contractor is responsible for removal of all waste materials upon project completion. The Contractor shall not permanently place any waste materials in the flood plain without first obtaining required permits.
19. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project by the White House Utility District.

BLASTING

20. When allowable, blasting shall be performed in accordance with the appropriate criteria established by the National Fire Protection Association or applicable local codes.
21. When blasting is allowing, blasting for sewer line excavation must be done in such a manner as to minimize the fracturing of rock beyond the required excavation. The Contractor shall consider the elevation of the existing water main in relation to the blasting charge and the relative direction of existing and proposed trenches. Blasting within such areas shall be accomplished only by qualified blasting contractors who hold blasting licenses from a qualified agency. Any damage to existing water mains resulting from blasting shall be repaired and retested by the contractor at his own expense.
22. **Work completed by the Contractor which has not received a Notice to Proceed by the White House Utility District will be subject to removal and replacement by and at the expense of the Contractor.**

GENERAL SEWER NOTES TO BE INCLUDED ON ALL SEWER PLANS

1. The Contractor shall not proceed with any pipe installation work until a Pre-Construction Meeting has been held and they have been notified by the White House Utility District to proceed with the work.
2. The locations and depths of existing utilities, including service laterals, and drainage structures shown on the plans are approximate only. The Contractor shall verify the exact location and depths of underground utilities at least 48 hours prior to construction whether shown on plans or not, and to protect the same during construction.
3. The Contractor will be responsible for restoring to its original or better condition from damage done to existing fences, curbs, streets, driveways, landscaping and structures.
4. The Contractor shall maintain service to existing utilities at all times during construction.
5. All residential gravity fed sewer service laterals shall be extended to the property line and capped and sealed.
6. Water mains and sewer mains must maintain a minimum of ten (10) foot horizontal clearance and/or eighteen (18) inches vertical clearance at all times.
7. On all manholes to be abandoned, the rings and covers shall be salvaged in accordance with the most current White House Utility District standards. The hole should be backfilled to the satisfaction of the Inspector.
8. Contractor is responsible for removal of all waste materials upon project completion. The Contractor shall not permanently place any waste materials in the flood plain without first obtaining required permits.
9. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project by the White House Utility District.
10. After construction is complete, testing will be done by TV camera by the Contractor and observed by the Inspector, as the camera is run through all lines. Any abnormalities, such as broken pipe, misaligned joints or non-uniform slope, must be replaced by the Contractor at his expense. All testing will be done in accordance with the most recent White House Utility District standards.

BLASTING

11. When allowable, blasting shall be performed in accordance with the appropriate criteria established by the National Fire Protection Association or applicable local codes.
12. When blasting is allowing, blasting for sewer line excavation must be done in such a manner as to minimize the fracturing of rock beyond the required excavation. The Contractor shall consider the elevation of the existing sanitary sewer main in relation to the blasting charge and the relative direction of existing and proposed trenches. Blasting within such areas shall be accomplished only by qualified blasting contractors who hold blasting licenses from a qualified agency. Any damage to existing sanitary sewers resulting from blasting shall be repaired and retested by the contractor at his own expense.

SUPPLEMENTARY

13. Unless otherwise noted on the plans, all Sewer Pipe shall conform to the following chart:

	Depth of Main	Pipe Material
1	0 to 18'	SDR 26
2	18' to 24'	C900
3	>24'	Ductile Iron

- 14. Work completed by the Contractor which has not received a Notice to Proceed by the White House Utility District will be subject to removal and replacement by and at the expense of the Contractor.**

AS-BUILT REQUIREMENTS

November 2016

AS-BUILT SURVEYS:

As-built surveys are required for all newly constructed facilities to be accepted by the White House Utility District for ownership and/or operation. As-built surveys shall be prepared by a Professional Surveyor licensed in the State of Tennessee. Each page of the as-built survey shall include the name, original signature, date, and seal of the Professional Surveyor. The signature shall certify that the as-built survey reflects the true as-built conditions as located under direct supervision of the Professional Surveyor. Record drawings are not an acceptable substitution for an as-built survey but may be submitted in addition to the as-built survey.

GENERAL INFORMATION:

1. Initial digital As-built drawings (PDF and DWG) should be submitted via email to whudengineering@whud.org. Paper copies are no longer required. The digital files should include the following:
 - A. Overview of Water in AutoCAD (.dwg) with all survey points in the file that is spatially referenced for use in our GIS department. A separate file should be sent for Sewer if the project has WHUD sewer.
 - B. An AutoCAD (.dwg) file for Water that matches, sheet by sheet, the construction plans approved by WHUD with each sheet labeled "Asbuilt" in 1" high, block printed letters and formatted for printing on 24" x 36" paper. A separate file should be sent for Sewer if the project has WHUD sewer.
 - C. A .pdf file for Water that matches, sheet by sheet, the construction plans approved by WHUD with each sheet labeled "Asbuilt" in 1" high, block printed letters and formatted for printing on 24" x 36" paper. A separate file should be sent for Sewer if the project has WHUD sewer.
 - D. As-built surveys shall be prepared at the same scale as the approved construction plans.
 - E. A vicinity map and street names shall be shown for all streets and right-of-ways.
 - F. The project name in full, lot and block numbers, and street names.
 - G. Elevation information, where required, shall be referenced to the North American Vertical Datum of 1988 (NAVD 88). A complete description, including material, location, and elevation of at least one benchmark shall be shown on the as-built plans. The horizontal survey information shall be

referenced to the State Plane Coordinate System, Tennessee, North American Datum of 1983 (NAD 83). A description of the control points upon which the as-built survey is based shall be included with the plans.

- H. The following items are to be stationed and located using GPS with XYZ coordinate technology to integrate with the WHUD GIS mapping system:

<p><u>Water and Sewer Force Main</u> Valve Box Fire Hydrant Flushing Assembly Bends or Sleeves Air Release Valve Meter Box Locations Begin/End of Casing Pipe</p>	<p><u>Gravity Sewer</u> Manhole Wye/Tee End of Service Lateral Stub-outs Service Lateral Vertical Bends Begin/End of Casing Pipe Cleanouts</p>
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These should shall at minimum, include the following information:

<u>Position/Column</u>	<u>Description</u>
1	Point Reference Number
2	X Coordinate (Easting)
3	Y Coordinate (Northing)
4	Z Coordinate (Utility Elevation)
5	Point Type (Manhole, Valve, Meter, Cleanout, Sewer Lateral Plug, Bend, Fire Hydrant, Etc.)
6	Point Description

- I. At least two (2) ties to all valves, air release valves, and fire hydrants from permanent points (manholes, power poles, phone pedestals, electrical boxes, catch basins, headwalls, etc.). Ties shall be taken by range finder or tape measure. Ties recorded with a measuring wheel, GPS, or step-off method will not be accepted.
- J. Location of mains from property or easement lines and alignment distance from centerline of road at 300 ft intervals.
- K. Size, length, and type of material used to construct each main segment.
- L. Distance of mains from buildings or structures within 20' of the main.
- M. Special detail drawings where installations are not as shown on the contract drawings due to the field conditions or where required for clarity.
- N. Right-of-way, easements, lot lines, and pertinent easement information, showing official record book and page number.

- O. Show actual location, size, and type of material of all sleeves and casing pipes.
- P. Elevation and horizontal location of all storm sewers, gravity sewers, gravity sewers including laterals, force mains, water mains, etc. which are crossed; including clearance dimension at all conflicts or crossings.
- Q. Top of pipe elevation and horizontal location of all water and force main stub-outs.
- R. Horizontal location of all services at the termination point.

WATER MAIN

1. The location of all valves, fittings, fire hydrants, casings and points of connection to the existing system shall be referenced in two perpendicular directions. Horizontal dimensions shall be to the nearest tenth of a foot and vertical dimensions shall be to the nearest hundredth of a foot.
2. Horizontal locations will be required perpendicular to the right-of-way at 100' intervals.
3. Elevations on the main and finished grade will also be required at all pipe dead ends, intersections, size changes, points of connection to existing system, at fittings, at intersections of pipe, at 100' intervals, and where the depth of cover is less than 36" or greater than 60".
4. Clearance dimension at all conflicts or crossings of the water main.
5. Distance from fire hydrant to hydrant valve.

GRAVITY SEWER

1. The location of all piping, wyes, tees, manholes, cleanouts and points of connection to the existing system shall be referenced in two perpendicular directions (upstream manhole to downstream manhole). Horizontal dimensions shall be to the nearest tenth of a foot and vertical dimensions shall be to the nearest hundredth of a foot. Runs of gravity sewers shall be identified (e.g., 300' of 8" PVC SDR 26 at S=.004). Elevations shall be given for the north rim of the top of all manhole covers and all manhole inverts.
2. Elevations on the service piping and finished grade will be required at the end of service stub-out. Location of the end of sewer services shall be given to the plug and be located from the side property line(s).
3. Manhole types and numbering shall be identified.

4. Elevation of manhole top rim and invert of each line shall be listed.
5. Show length distances from center of manhole, tee, or wye to end of stub-outs and elevation of stub-outs.

Example: Lot 35
 1 – Tee
 200' - Upstream
 100' – Downstream
 25' – 6" pipe
 805 – Finished Grade Elev.
 799 – Invert Elev.

FORCE MAIN

1. The location of all valves, fittings, casings and points of connection to the existing system shall be referenced in two perpendicular directions. Horizontal dimensions shall be to the nearest tenth of a foot and vertical dimensions shall be to the nearest hundredth of a foot.
2. Horizontal locations will be required perpendicular to the right-of-way at 100' intervals.
3. Elevations on the main and finished grade will also be required at all pipe dead ends, intersections, size changes, points of connection to existing system, at fittings, at intersections of pipe, at 100' intervals, and where the depth of cover is less than 36" or greater than 60".
4. Clearance dimension at all conflicts or crossings of the water main.

CAPITAL IMPROVEMENT PROJECT CONSULTANT CHECKLIST

1. Consultant to submit sets of WHUD plans to TDOT, city and/or county engineers' depending on project.
2. Plans should include:
 - a. WHUD Layout Plan Sheets for water and sewer. Layout will need to show existing water and sewer mains and proposed water and sewer mains.
 - b. WHUD General Notes will need to be included.
 - c. Estimated Quantities. Quantities will need to be separated for water and sewer.
 - d. A Construction Phasing Plan if applicable.
3. Bid Packages should include the following:
 - a. WHUD proposals. Proposals will need to be separated for water and sewer.
 - b. Contract documents. Include special provisions if applicable.
 - c. Contract Addendums if applicable
4. Cost Estimates:
 - a. Consultant to submit separate detailed Cost Estimates for Water and Sewer Design Phase plan submittals
5. Payment:
 - a. Payment shall follow outline setup in Engineering Services Attachment II – Compensation for Professional Services in the contract.