HENRICO COUNTY DPU
DOMESTIC METER SIZING FORM

Project Name: WaWa at Parham and Three Chopt

Address: 9100 Three Chopt Road

Parcel No. 754-747-0694

Subdivision: N/A

Type of Occupancy: Convenience store with automotive fuel pumps

Fixture	Fixture Value (60 psi)		No. of Fixtures		Fixture Value
Bathtub	8	x		=	
Bedpan Washers	10	x		=	
Bidet	2	x		=	
Dental Unit	2	x		=	
Drinking Fountain- Public	2	x		=	
Kitchen Sink	2.2	x	3	=	6.6
Lavatory	1.5	x	5	=	7.5
Shower Head (Shower Only)	2.5	x		=	
Service Sink	4	x	1	=	4
Toilet - Flush Valve	35	x	3	=	105
- Tank Type	4	x		=	
Urinal - Pedestal Flush Valve	35	x	1	=	35
- Wall Flush Valve	16	x		=	
Wash Sink (Each Set of Faucets)	4	x		=	
Dishwasher	2	x		=	
Washing Machine - 1/2" Connection	5	x		=	
- 3/4" Connection	12	x		=	
- 1" Connection	25	x		=	
Hose Connection (50 Ft Wash Down) - 1/2"	5	x		=	
- 5/8"	9	x		=	
- 3/4"	12	x	2	=	24

Combined Fixture Value Total 182.1

Maximum Demand 58 **GPM**

Meter Size 1.5"

I certify that the above is true and correct.

Signature: _____

12/13 Form F-8

HENRICO COUNTY DPU
FIRE FLOW ESTIMATE FORM

ISO (Insurance Service Office) Method of Calculating Needed Fire Flow NFF (Needed Fire Flow)

ENGINEER: Kimley-Horn and Associates DATE: 6/12/2018

PROJECT NAME: WaWa at Parham and Three Chopt CALC. BY: KEC

TYPE OF CONSTRUCTION: WOOD FRAME C-1

Class of Construction Coefficient = F: 1.5

GROUND FLOOR AREA: 4,736 # OF STORIES 1

Total Floor Area = A_f (effective area) 4,736

FIRE AREA CONSIDERED

Construction Factor $C_f = 18 (F) (A_f)^{0.5}$ (ROUNDED TO NEAREST 250 GPM) C_f : 1,750

TYPE OF OCCUPANCY: COMBUSTIBLE C-3

(Worst Case) Occupancy Factor = O_f : 1

EXPOSURE (X) AND COMMUNICATION (P):

$X_1 + P_1 =$ 0.00 $X_4 + P_4 =$

$X_2 + P_2 =$ $X_5 + P_5 =$

$X_3 + P_3 =$ $X_6 + P_6 =$

$(X+P)_T = 1.0 + \Sigma(X_i+P_i) =$

(Max X +P) = 1.75) 1.00

(n = NUMBER OF SIDES OF SUBJECT BUILDING)

NEEDED FIRE FLOW

$NFF = (C_f) (O_f) (X+P)_T$ NFF = 1,750

Automatic Sprinklers: NO Reduction Factor: 0% % X NFF = - 0

TOTAL: 1,750

Required Fire Flow - Rounded: 1,750 gpm

Fire Hydrants Required*: 2

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT

SIGNATURE: _____ P.E.

* COMMERCIAL AREA REQUIRES 350 F.F. MAXIMUM HOSE LAY

References: NFF calculation procedure described in A.W.W.A. M-31, I.S.O.'s 1980 Commercial Fire Rating Schedule and I.S.O.'s 1986 Fire Suppression Rating Schedule

-9/94 FormF-9

WATER AND SEWER NOTES

1. All construction materials and installation shall conform to the latest edition of "Standards, Department of Public Utilities" (DPU), County of Henrico, Virginia.
2. Contractor shall be responsible for notifying the DPU Construction Division to schedule a pre-construction meeting at least 48 hours prior to starting any work on this project. Contractor shall obtain all necessary permits.
3. Contractor shall include in applicable bid price, cost of locating and uncovering all sewer manholes and valve boxes after completion of all paving and to adjust them to the final road grades. Contractor shall also be responsible for cleaning out sewer mains for final inspection, if necessary.
4. Existing utilities across or along the line of the proposed work are shown only in an approximate location on the plans. Contractor shall, on his own initiative and no additional cost, locate all underground lines and structures as necessary. Contractor shall call "Miss Utility" at 811 prior to construction. Contractor will be responsible for any damage to underground lines or structures.
5. Datum for all elevations shown is National Geodetic Survey NAVD 88.
6. Minimum cover over top of water pipe must be 3.50 feet.
7. Service saddles must be used on water connections to PVC mains less than 6" in diameter.
8. Fire hydrants shall be installed in accordance with DPU Standard Drawing D-495-1 and D-495-2.
9. Engineer shall certify that unpaved streets are to subgrade prior to Contractor installing water system. Curb and gutter, if required, shall be installed prior to acceptance of water system by County.
10. No structures or planting of trees shall be permitted in utility easements.
11. Vandal proof/watertight covers shall be used on all manholes in easements and in flood plains. The manhole covers shall be in accordance with DPU Standard Drawings D-150, D-155, and D-160.
12. Final Acceptance by County shall not be made until all work shown on approved utility plans is completed including paving, grading, and all required adjustments.
13. A Wetlands Permit may be required from the U.S. Army Corps of Engineers for this project. For information concerning such requirement, contact the Corps at (804) 462-5...
14. DPU will inspect all water and sanitary sewer mains, connections and appurtenances thereto, as shown on the approved utility plans, located within dedicated easements and/or Public Rights-of-Way. Furthermore, DPU will inspect all private sewer mains through the last manhole. All other lines to be installed on site to serve roof drainage, water supply, and sanitary sewers shall be approved by the Department of Building Inspections prior to installation and shall be inspected by Building Inspections before covering.
15. Concurrent inspections by Building Inspections and DPU will be performed for the following: Mainline backflow preventers; mainline manholes; grease traps; irrigation meters; irrigation meters. DPU will inspect to insure that the proper type facility is shown on the approved utility plans has been installed and tested in accordance with DPU Standards.

6/14 Form F-6

MATERIAL NOTES

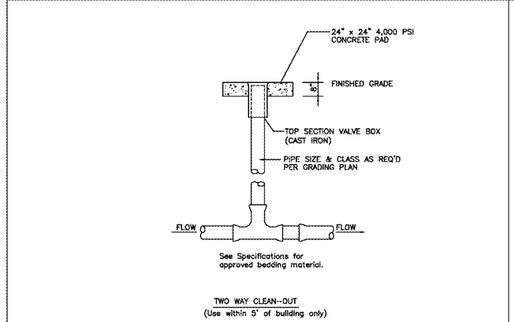
Sanitary Sewer Line

1. PVC plastic pipe shall meet requirements of ASTM D-3034 type PSM SDR-35 for sizes 4-inch through 15-inch and ASTM F-679 for pipe sized 18-inch through 27-inch with elastomeric gasket joints meeting requirements of ASTM D3212.
2. Ductile iron pipe (D.I.) shall meet the requirements of AWWA C-151 for the pressure and thickness classes shown on the Drawings. Pipe shall have a cement-mortar lining and asphaltic seal coat. Thickness classes shall meet the requirements of AWWA C-150, Class 50.
3. Pipe bedding for gravity sewer lines shall be in accordance with D-710-1, D-710-2, D-720, or D-730 as required for the pipe material.

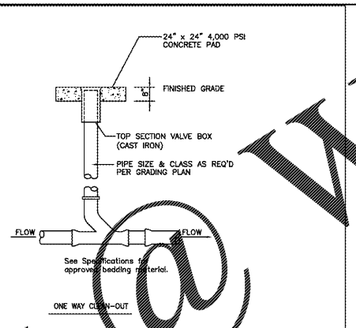
Water Line

1. PVC plastic pipe shall meet the requirement of AWWA C-900, Table 2, (Cast Iron OD) Class 150 except that all connections shall be made using elastomeric gasket joints. No PVC pipe larger than 12-inch shall be used on water lines.
2. Ductile iron pipe shall be AWWA C-151 for pressure and thickness class shown on the Drawings. Thickness classes shall meet the requirements of AWWA C-150. All pipe shall have cement-mortar lining on the interior and an asphaltic seal coat on the exterior. Minimum thickness shall be Class 52 for 12-inch and smaller, and Class 51 for 16-inch and larger.
3. Pipe bedding for pressure lines shall be in accordance with D-710-1, D-710-2, D-720, or D-730 as required for the pipe material.

6/14 Form F-6



CLEAN OUT DETAIL



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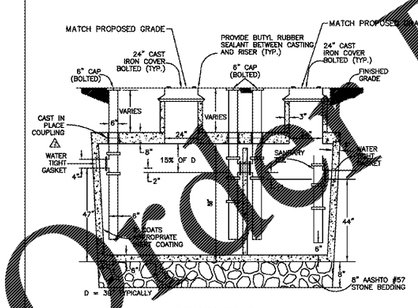
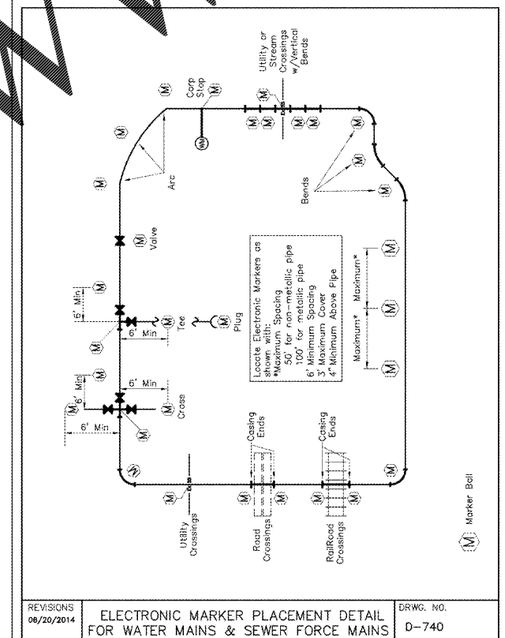


GREASE TRAP
1500 GALLON (2 COMPARTMENT) TANK

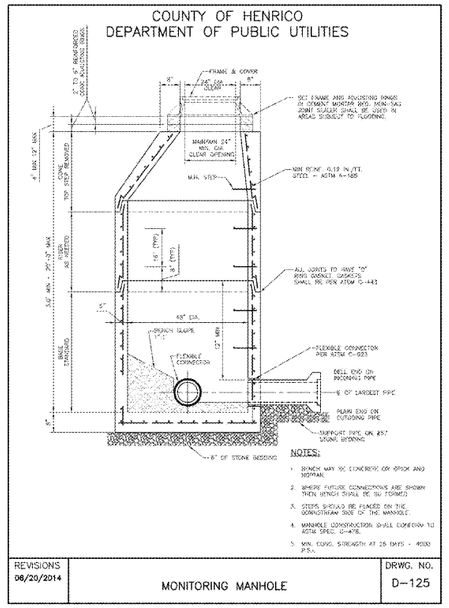
ALL INLET AND OUTLET PIPES SHALL BE INSTALLED NO MORE THAN 6" FROM THE BOTTOM OF THE GREASE TRAP. TANK TAPERED FROM TOP TO BOTTOM AND IS TRAPEZOIDAL IN CROSS SECTION.
TANK IS 6"5000 PSI CONCRETE-STEEL REINFORCED (@ 28 DAYS) CONCRETE CONFORMS TO ACI 318-18-4.2.1 AND 318-19-4.5.2, ASTM A615 AND A185
-DIMENSION: 151" INTERIOR/ 163" EXTERIOR LENGTH x 72" INTERIOR/ 84" EXTERIOR WIDTH

NOTES:
1) WHEN LOCATED IN DRIVEWAYS OR PAVED AREAS, GREASE TRAP TO BE DESIGNED FOR APPROPRIATE LOAD BEARING CONDITIONS. GREASE TRAP SHALL BE CAPABLE OF WITHSTANDING 10-20 LOADING.
2) ALL PIPE PENETRATIONS SHALL BE WATERTIGHT.
3) GREASE TRAP SHALL BE PROVIDED WITH GAS-TIGHT MANHOLE COVERS, IN ACCORDANCE WITH TOWNSHIP STANDARD SPECIFICATIONS.
4) PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH 5000 PSI.
5) EXTERIOR CONCRETE SURFACES BELOW GRADE SHALL HAVE 3 COATS OF COAL TAR EPOXY.
6) SPECIFIC SEALANT DETAIL AT CONCRETE RISER TO CONCRETE VAULT INTERFACE SHALL BE WATERTIGHT. AT A MINIMUM, THE JOINT SHALL BE SEALED WITH BUTYL RUBBER SEALANT (KENT SEAL #2 OR APPROVED EQUIVALENT) AND THE EXTERIOR OF THE JOINT SHALL BE SEALED WITH NON-SHRINK GROUT IN CONFORMANCE WITH THE TOWNSHIP STANDARD GREASE TRAP DETAIL.
7) TANK SHALL BE TESTED FOR WATER TIGHTNESS BY FILLING FOR 24 HRS. TO SOAK, THEN TOPPED OFF, AND THEN WATCHED FOR 24 HRS. NO DROP IN WATER IS ALLOWED.
8) CAST IRON SHALL BE BOLTED TO CONCRETE WITH MASTIC TAPE (KENT SEAL OR APPROVED EQUIVALENT) SEALANT.
9) MINIMUM EARTH COVER=3.0', HS-20 LOADING.
10) INLET AND OUTLET EQUIPPED WITH PIPE SEALS.



REVISIONS	ELECTRONIC MARKER PLACEMENT DETAIL FOR WATER MAINS & SEWER FORCE MAINS	DRWG. NO.
08/20/2014		D-740

COUNTY OF HENRICO
DEPARTMENT OF PUBLIC UTILITIES



NOTES:
1. 3000PSI WAY 19C CONCRETE OR APRON AND MORTAR.
2. WHERE FUTURE CONNECTIONS ARE SHOWN THEN BENCH SHALL BE SU FORMED
3. STEPS SHOULD BE PLACED ON THE DOWNSTREAM SIDE OF THE MANHOLE.
4. MANHOLE CONSTRUCTION SHALL CONFORM TO ASTM SPEC. C-478.
5. MIN. CONC. STRENGTH AT 28 DAYS - 4000 P.S.I.

REVISIONS	MONITORING MANHOLE	DRWG. NO.
08/20/2014		D-125

No.	REVISIONS	DATE	BY
1	OIL WATER SEPARATOR REVISIONS	11/07/18	RRP
2	OIL WATER SEPARATOR REVISIONS	01/02/19	RRP
3	UNDERGROUND PIPE CONNECTION REVISIONS	01/03/19	RRP
4	PHASE II E&S REVISIONS	01/14/19	RRP
5	BID SET REVISIONS	01/17/19	RRP

Kimley»Horn
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COMMONWEALTH OF VIRGINIA
RYAN R. PERKINS
Lic. No. 046585
11/09/2018
PROFESSIONAL ENGINEER

POD# 2018-00101 & 00196

KHA PROJECT 113160005
DATE 11/09/2018
SCALE AS SHOWN
DESIGNED BY KRW
DRAWN BY KRW
CHECKED BY RRP

UTILITY DETAILS

WAWA AT PARHAM AND THREE CHOPT

PREPARED FOR
REBKEE CO.

HENRICO COUNTY VIRGINIA

SHEET NUMBER
CU-502