Town of Montville Planning & Zoning Commission
Site Plan or Special Permit Application

☐ Site Plan Number _____ Plan Date _____

☒ Special Permit Fee paid _____ Revision _____

Assessors Map 005 Lots 023-00A and 024-00A
Project Address 1499 and 1505 Hartford New London Turnpike (Route 85)
Name of Applicant Deer Run Stable, LLC
Address of Applicant 96 Route 32, Franklin, CT 06254
Project Name Proposed gasoline/convenience store facility
Tel # (860) 287-7181 Fax # n/a Email asifman500@gmail.com
Name of Property Owner Asif Choudhry (1499 Hartford-New London Turnpike) and Deer Run Stable, LLC (1505 Hartford New London Turnpike)
Name of Attorney Heller, Heller & McCoy
Tel # (860) 848-1248 Fax # (860) 848-4003 Email hellermccoy@sbcglobal.net
Name of Engineer Angus McDonald Gary Sharpe & Associates, Inc.
Tel # (860) 388-4671 Fax # (860) 388-3962 Email almgps-sjf@snet.net

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Zoning District C-1 Lot Size 2.48 acres Total Acres 2.48

☒Yes ☐No Regulated Wetlands Acreage 0.68 Permit Date July 16, 2020
☐Yes ☒No Flood Plain Flood Hazard Area X
☒Yes ☐ No A-2 Survey Name of Surveyor Angus McDonald Gary Sharpe & Associates, Inc.
Building size 4,960 s.f. Building height 22 feet
Number of acres to be disturbed 1.6
Applicable Zoning Regulation(s) 10.3.1 and 4.11.10
Project description Development of a 4,960 square foot gasoline/convenience store facility

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Waiver(s) requested ☐yes ☒ no **Regulation section(s)** _____

This project will use:
☒ Septic system ☐ Municipal sewer
☐ Individual well ☒ Public water supply well ☐ SCWA well ☐ Municipal water

☒Yes ☐No This project is located in a **Public Water Supply Watershed**
Pending ☐ Yes ☐ No This project has received approval from the Uncas Health District
Pending ☐ Yes ☐ No This project has received approval from the appropriate Water Authority

**** Attach Copy of All Approvals**

☐ Yes ☒ No This project requires a State General Stormwater Quality Permit.
Registration # _____

☐ Yes ☒ No This project requires a permit from the Army Corps of Engineers.

☐ Yes ☒ No This project requires a Water Diversion Permit.

☐ Yes ☒ No This project requires a Dam Permit.

☐ Yes ☒ No This property is subject to a Conservation Restriction and/or a Preservation Restriction. If yes, attach a copy of certified notice.

☒ Yes ☐ No Drainage calculations submitted:
Date 10/1/2019 Rev. date 3/11/2020 Rev. date _____

☐ Yes ☒ No This project requires a State Traffic Commission Permit.

☒ Yes ☐ No This project requires a DOT Encroachment Permit.

☒ Yes ☐ No The plan has been submitted to the DOT District 2 Office.

Number of parking spaces provided 42

Number of vehicle trips per day generated by this project 280 (weekday morning peak hour); 190 (weekday afternoon peak hour)

APPLICANTS:
DEER RUN STABLE, LLC

By: _____
Asif Choudhry, its Member

_____
Asif Choudhry

OWNERS:
DEER RUN STABLE, LLC

By: _____
Asif Choudhry, its Member

_____
Asif Choudhry

DEER RUN STABLE, LLC GASOLINE/CONVENIENCE STORE FACILITY

Site Plan Review Checklist

Site plans are required for all commercial and industrial uses and residential special permits. Site plans shall comply with Section 18.3 of the Zoning Regulations and shall be drawn at a scale of 1"=40' or at a scale approved by the Planning Director. (Maximum size 24" x 36")

- ☑ A site plan shall be prepared by either an architect, professional engineer and/or land surveyor licensed and registered to practice in Connecticut as deemed appropriate by the Commission. The Commission shall have the right to require that a site plan be prepared by a professional engineer if the proposed development will include the design of roads, storm drainage facilities, water systems and sewerage systems. If the proposed development includes wetlands, the Commission shall have the right to require that a certified soil scientist delineate the wetlands. The signed seal(s) of those who prepared the site plan shall be included on the site plan. A site plan shall conform with class A-2 standards for accuracy in accordance with "**Code of Recommended Practice for Accuracy of Surveys and Maps**", a publication approved for use by the Connecticut State Board of Examiners for professional engineers and land surveyors, unless otherwise modified by the town planner.
- ☑ A written statement describing the proposed use or uses in sufficient detail will be submitted with each site plan to determine compliance with the permitted uses or special permits in the applicable district.
- ☑ A location map at a scale of one inch (1") equals 2,000 feet shall be submitted showing the subject property, streets, lot lines, and zoning district boundaries within 1,000 feet of the subject property. If space permits, the location map may be included as an insert on the site plan as required in section 8.3. An 8-½ x 11 inch photocopy of a USGS quad map with the project outlined must accompany the site plan.
- ☑ The name and address of the applicant and owner of record.
- ☑ North arrow, scale, date of the drawing or its revision and the name(s) and seal(s) of those persons preparing the site plan.
- ☑ Property boundaries, dimensions, and area in acres and square feet and all existing monuments, pipe markers and other physical evidence concerning property boundaries.
- ☑ Zoning districts and dimensions of all yards as required by these regulations. This information will be shown in both mapped and tabular form.
- ☑ Existing and proposed contour lines at 5 ft. Intervals. The Planning Director may require a 2 ft. Contour interval in order to clearly show topography and drainage.
- ☑ Location, width, and purpose of all existing and proposed easements and rights-of-way on the property.
- ☑ Location of all existing watercourses, wetlands, public water supply watershed boundaries, bedrock outcrops, and where appropriate, the mean high water line, flood hazard areas, and channel encroachment lines.
- ☑ Location and size in square feet of all existing and proposed structures including underground storage tanks and uses on the property and the approximate locations and size of all existing structures on the abutting properties which are within 100 feet of the property lot lines.
- ☑ Location of all storage areas for materials, supplies, products, vehicles and equipment that will not be kept inside a structure as required by the zoning regulations.
- ☑ Location, size, and arrangement of all parking and loading areas including existing and proposed driveway entrances and exits. The Planning Director may require the applicant to submit a traffic evaluation report prepared by a traffic engineer if the proposed development will significantly impact traffic flow.
- ☑ Location, size, and arrangement of all pedestrian walkways and sidewalks.
- ☑ Location, layout, type, and size of buffer or landscape area, plant materials, fencing, screening devices, or other materials proposed for use.

- [x] Location, size, height, lighting, and orientation of all signs.
- [x] Location, size, height, and orientation of all outdoor lighting facilities.
- [x] The stormwater drainage system, including the location and elevations of all existing and proposed street drainage facilities within 100 feet of the property. The Planning Director may require additional information and/or details regarding off-site drainage features affected by, or impacting upon the proposed development.
- [x] Location, size, and type of all water and fire protection facilities.
- [x] Location, size, and type of all sewerage disposal facilities.
- [x] Building elevations or preliminary architectural drawings showing the general type of building proposed for construction.
- N/A [ ] In cases where the applicant intends to develop in stages, an overall site staging plan shall be required.
- N/A [ ] The Commission may require the applicant to submit an environmental evaluation report for a proposed development located in an environmentally sensitive area. Evaluation reports by independent professionals and other experts such as hydrologists, geologists and soil scientists may be required at the expense of the applicant.
- [x] All signature and waiver blocks must be located in the lower right corner.

Waivers

The Commission may waive one or more of the site plan ingredient requirements of Section 18.3 if it finds that the information is not necessary to reach a decision on the application. A waiver of the applicable section or sections must be requested in writing by the applicant.

Please refer to the Zoning Regulations to insure that you meet all requirements for setbacks, parking, signs, etc.

ANGUS McDONALD
GARY SHARPE
& ASSOCIATES, INC.
SINCE 1966

Drainage Analysis

1499 and 1505 Hartford – New London Turnpike

Montville, Connecticut

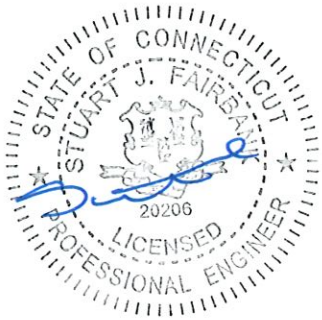
Prepared for

Deer Run Stable, LLC.

Date: October 1, 2019

Supplemental information added:

January 24, 2020 & March 11, 2020



233 BOSTON POST ROAD, PO BOX 608 OLD SAYBROOK, CT 06475
860-388-4671 PHONE 860-388-3962 FAX

Existing Conditions

The properties located at 1499 and 1505 Hartford New London Turnpike (Route 85) are located in the C-1 Zone and currently are occupied by residential homes. The majority of the soils on the site are made up of Agawam fine sandy loam, 0 to 3 percent slopes (29A) and Hinckley loamy sand, 15 to 45 percent slopes (38E) which have a hydrologic soil group rating of A and B respectively. Surface cover on the site ranges from developed impervious areas around the homes to undisturbed woodland areas further back on the site. Inland wetlands are found along the northern boundary of both properties; however 1499 Hartford New London Turnpike (Route 85) has a significant wetland area encompassing approximately 1/3 of the northern portion of the lot.

Storm water on both existing sites generally drains from the higher elevations along Route 85 on the southern boundaries of the properties, toward the Inland wetlands on the northern boundaries of the properties.

Existing Drainage Data

The soil properties and qualities of the soils present on the site were determined using mapping provided by the United States Department of Agriculture's, Natural Resources Conservation Survey – Web Soil Survey.

Analysis of the existing conditions at the site was done using the TR-55 method. The tables below identify the different cover type and soil group combinations present at the site, the Weighted Runoff Curve Number that has been calculated to the drainage design point, as well as the Time of Concentration from the most hydraulically remote location on the site. In both existing and developed conditions the drainage design point is the edge of the Inland wetlands along the northern edge of the property.

Area 1 (Existing)

Overall Area 1.82 Ac

Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods/Grass Combination	Fair	38E	A		0.5	Ac	43
Grass (Lawn)	Good	38E	A		0	Ac	39
Gravel	Good	38E	A		0.07	Ac	76
Impervious	Good	38E	A		0	Ac	98
Woods	Good	29A	B		0.26	Ac	55
Grass (Lawn)	Good	29A	B		0.7	Ac	61
Gravel	Good	29A	B		0.08	Ac	85
Impervious	Good	29A	B	+	0.21	Ac	98
			Total =		1.82		
			Weighted Curve Number =				**61**

Time of Concentration

Segment	Surface Description	Flow Type	Slope (%)	Flow Length (ft)	Average Velocity (ft / sec)	Tt (hours)
AB	Dense Grass	Sheet	5.5	100	-	0.15
BC	Unpaved	Shallow Concentrated	11	145	5.5	0.01

Time of Concentration = 0.16 hours

The previous information was run through a drainage model in Haestad Methods – Pondpack. The following table is a drainage summary for the site in existing conditions.

Return Event	Total depth *in*	Hydrograph Volume *Ac-ft*	Q_{peak} *cfs*
2	3.3	0.074	0.59
10	5	0.208	2.21
25	5.6	0.264	2.89
50	6.3	0.335	3.73

Proposed Development

The proposed development at the site will include the demolition of the existing structures on the sites, the combination of the two individual lots (1.22 Ac and 1.26 Ac) into a single 2.48 Ac parcel. The proposed construction will consist of a 4,960 sf Convenience Store / Gas Station with a drive thru, 12 gasoline fueling points and 4 diesel fueling points, and two fueling canopies. In addition to the main structures supporting parking, septic and drainage facilities will be constructed on the property.

Developed Drainage Data

In developed conditions there will be an increase in impervious surfaces on the site which will increase runoff. In order to counteract this increase a subsurface stormwater detention/retention basin will be constructed. This subsurface basin, which will be located north of the proposed building, will consist of 112 Stormtech SC-740 Stormwater chambers constructed on a 4' deep crushed stone pad.

Once the site is developed, it will be divided into two drainage areas, the Developed area and the Developed Remaining Area. The Developed area will include the Main portion of the site including the building parking areas and gas pumps. Stormwater from this area will be captured in catch basins around the property and diverted to the proposed subsurface basin. The developed remaining area will be the down gradient areas outside the main proposed development which will remain undisturbed or as lawn area following development and will sheet flow to the inland wetlands on the northern portion of the site.

The table below shows the different cover type and soil group combinations present at the site in developed conditions:

Developed Remaining

Overall Area 0.53 Ac

Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods	Good	38E	A		0.13	Ac	30
Grass (Lawn)	Good	38E	A		0.24	Ac	39
Gravel	Good	38E	A		0	Ac	76
Impervious	Good	38E	A		0	Ac	98
Woods	Good	29A	B		0	Ac	55
Grass (Lawn)	Good	29A	B		0.16	Ac	61
Gravel	Good	29A	B		0	Ac	85
Impervious	Good	29A	B	+	0	Ac	98
			Total =		0.53		

Weighted Curve Number = 43

Time of Concentration

Segment	Surface Description	Flow Type	Slope (%)	Flow Length (ft)	Average Velocity (ft / sec)	Tt (hours)
AB	Dense Grass	Sheet	5.5	100	-	0.15
BC	Unpaved	Shallow Concentrated	11	145	5.5	0.01

Time of Concentration = 0.16 hours

Developed

Overall Area 1.36 Ac

Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods	Good	38E	A		0	Ac	30
Grass (Lawn)	Good	38E	A		0	Ac	39
Gravel	Good	38E	A		0	Ac	76
Impervious	Good	38E	A		0.21	Ac	98
Woods	Good	29A	B		0	Ac	55
Grass (Lawn)	Good	29A	B		0.21	Ac	61
Gravel	Good	29A	B		0	Ac	85
Impervious	Good	29A	B	+	0.94	Ac	98
			Total =		1.36		

Weighted Curve Number = 92

Time of Concentration

Segment	Surface Description	Flow Type	Slope (%)	Flow Length (ft)	Average Velocity (ft / sec)	Tt (hours)
AB	Pavement	Sheet	2	100	-	0.08

Time of Concentration = 0.08 hours

As with the existing conditions analysis the previous information was modeled in Haestad Methods – Pondpack. The following table is a drainage summary for the site in developed conditions.

Return Event	**Total depth** *in*	**Hydrograph Volume** *Ac-ft*	**Q_{peak}** *cfs*
2	3.3	0.067	0.12
10	5	0.268	0.9
25	5.6	0.343	1.69
50	6.3	0.432	2.87

Storm Water Collection and Treatment Train

The stormwater collection and treatment system will be a multi-tiered system that has been designed to ensure hydrocarbon and sediment removal, good stormwater quality and ease of maintenance. The system will be comprised of a series of catch basins located around the developed drainage area that will capture storm water and divert it through the treatment train to the existing drainage design point.

After leaving the catch basins stormwater will pass through an Oil / Water separator to remove floating debris and hydrocarbons that may have been picked up from the parking areas.

Storm water leaving the oil / water separator will enter the second phase of the treatment train, an inlet man hole to the subsurface basin. This man hole will be fitted with an overflow weir that will divert low flow storm events to the Stormtech Isolator Row. The Isolator row is the first row of chambers within the subsurface basin that has been wrapped in filter fabric. The isolator row acts as a filter for the subsurface basin by trapping Total Suspended Solids within the first chamber where they can easily be removed through the inlet manhole, thus protecting the remaining rows from becoming clogged by deposited sediement. Larger storm events will fill the isolator row and storm water will crest the over flow weir in the inlet manhole and fill the remaining rows chambers through a header manifold.

Once the basin is filled, an outlet structure in the outlet manhole will restrict flow leaving the basin to ensure peak rates of runoff do not exceed pre-development values.

Flows leaving the basin will pass through the final element of the stormwater treatment train a rip rap plunge pool, which will resist erosion, reduce exit velocity of storm water leaving the outlet and help to disperse the concentrated pipe flow leaving the outlet.

In addition to the stormwater retention capabilities of the proposed subsurface basin, and additional 4' deep crushed stone pad will be constructed below the Stormtech Chambers that will capture and retain stormwater entering the system. This crushed stone pad will be constructed below the lowest outlet of the detention basin and will retain stormwater onsite and allow it to infiltrate back into the surrounding soils.

Conclusion

Through the use of Best Management Practices the proposed combination and development of 1499 and 1505 Hartford – New London Turnpike will result in storm water of a good quality leaving the site and Peak Rates of runoff will be reduced to below pre-development values.

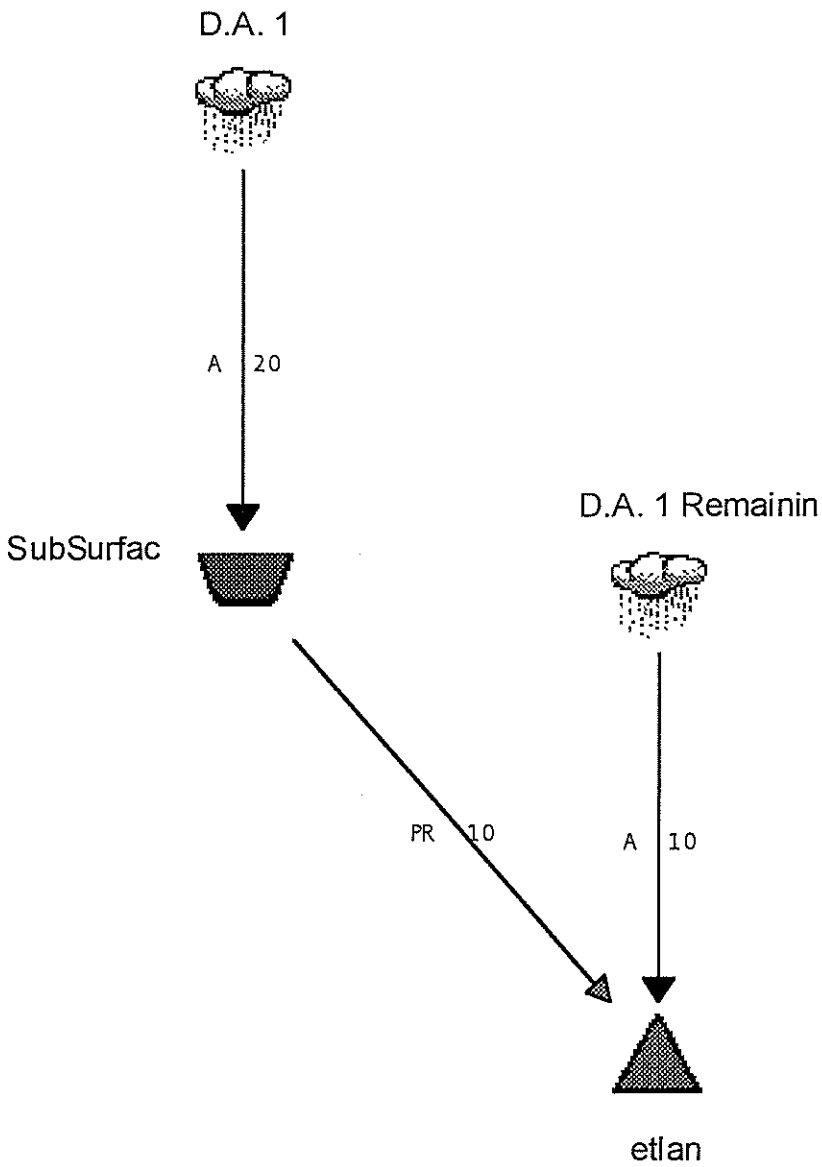
LAND & MARINE
ENGINEERING
SURVEYING
PLANNING

ANGUS McDONALD
GARY SHARPE
& ASSOCIATES, INC.
SINCE 1966

Supplemental Materials

January 24, 2020

1. Falling Head Permeability Results
2. Catch Basin Drainage Areas and Runoff Coefficients
3. StormCAD – Pipe Network Models
4. Pond Pack – Basin Volume Rating Table
5. Water Quality Volume Calculations
6. Oil Stop Valve Details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PR 10
A 10
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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID CT STORM.RNQ All Storms

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2	3.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
10	5.0000	Synthetic Curve	SCSTYPES	TypeIII 24hr
25	5.6000	Synthetic Curve	SCSTYPES	TypeIII 24hr
50	6.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
100	7.1000	Synthetic Curve	SCSTYPES	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
EXISTING D.A.	AREA	2	.074		12.2000	.59		
EXISTING D.A.	AREA	10	.208		12.1500	2.21		
EXISTING D.A.	AREA	25	.264		12.1500	2.89		
EXISTING D.A.	AREA	50	.335		12.1500	3.73		
EXISTING D.A.	AREA	100	.421		12.1500	4.74		
*WETLAND	JCT	2	.074		12.2000	.59		
*WETLAND	JCT	10	.208		12.1500	2.21		
*WETLAND	JCT	25	.264		12.1500	2.89		
*WETLAND	JCT	50	.335		12.1500	3.73		
*WETLAND	JCT	100	.421		12.1500	4.74		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 2
Description: 2 yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
EXISTING D.A.	AREA	.074		12.2000	.59	
Outfall WETLAND	JCT	.074		12.2000	.59	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 10
Description: 10 year

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 5.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
EXISTING D.A.	AREA	.208		12.1500	2.21	
Outfall WETLAND	JCT	.208		12.1500	2.21	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 25
Description: 50 year

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.6000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
EXISTING D.A.	AREA	.264		12.1500	2.89	
Outfall WETLAND	JCT	.264		12.1500	2.89	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 50
Description: 100 yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
EXISTING D.A.	AREA	.335		12.1500	3.73	
Outfall WETLAND	JCT	.335		12.1500	3.73	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.1000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
EXISTING D.A.	AREA	.421		12.1500	4.74	
Outfall WETLAND	JCT	.421		12.1500	4.74	

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10	5.0000	Synthetic Curve	SCSTYPES	TypeIII 24hr
25	5.6000	Synthetic Curve	SCSTYPES	TypeIII 24hr
50	6.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
100	7.1000	Synthetic Curve	SCSTYPES	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
D.A. 1	AREA	2	.277		12.1000	3.30		
D.A. 1	AREA	10	.463		12.1000	5.34		
D.A. 1	AREA	25	.530		12.1000	6.05		
D.A. 1	AREA	50	.608		12.1000	6.88		
D.A. 1	AREA	100	.697		12.1000	7.82		
D.A. 1 REMAINING	AREA	2	.001		14.5500	.00		
D.A. 1 REMAINING	AREA	10	.016		12.3500	.07		
D.A. 1 REMAINING	AREA	25	.024		12.2500	.13		
D.A. 1 REMAINING	AREA	50	.035		12.2000	.25		
D.A. 1 REMAINING	AREA	100	.049		12.1500	.41		
SUBSURFACE IN	POND	2	.277		12.1000	3.30		
SUBSURFACE IN	POND	10	.463		12.1000	5.34		
SUBSURFACE IN	POND	25	.530		12.1000	6.05		
SUBSURFACE IN	POND	50	.608		12.1000	6.88		
SUBSURFACE IN	POND	100	.697		12.1000	7.82		
SUBSURFACE OUT	POND	2	.066		15.8000	.12	198.73	.225
SUBSURFACE OUT	POND	10	.252		12.5500	.85	199.54	.276
SUBSURFACE OUT	POND	25	.319		12.4500	1.58	199.92	.300
SUBSURFACE OUT	POND	50	.397		12.3500	2.65	200.23	

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
SUBSURFACE	OUT POND	100	.486		12.2500	4.04	200.54	.339
*WETLAND	JCT	2	.067		15.8000	.12		
*WETLAND	JCT	10	.268		12.5500	.90		
*WETLAND	JCT	25	.343		12.4500	1.69		
*WETLAND	JCT	50	.432		12.3500	2.87		
*WETLAND	JCT	100	.536		12.2500	4.41		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.1000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
D.A. 1	AREA	.697		12.1000	7.82	
D.A. 1 REMAINING	AREA	.049		12.1500	.41	
SUBSURFACE IN	POND	.697		12.1000	7.82	
SUBSURFACE OUT	POND	.486		12.2500	4.04	200.54
Outfall WETLAND	JCT	.536		12.2500	4.41	

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND (NO SURFACE TEST).PPW

USER DEFINED VOLUME RATING TABLE

Elevation (ft)	Volume (ac-ft)
194.00	.000
195.00	.048
196.00	.096
197.00	.145
198.00	.193
198.50	.210
201.00	.368
201.50	.385

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND (NO SURFACE TEST).PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 194.00 ft
Increment = .10 ft
Max. Elev.= 201.50 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Circular		--->	TW	198.500	201.500
Orifice-Circular		--->	TW	199.500	201.500

TW SETUP, DS Channel

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND (NO SURFACE TEST).PPW

OUTLET STRUCTURE INPUT DATA

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 198.50 ft
Diameter = .5000 ft
Orifice Coeff. = .600

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 199.50 ft
Diameter = 1.0000 ft
Orifice Coeff. = .600

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 2
Description: 2 yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
D.A. 1	AREA	.277		12.1000	3.30	
D.A. 1 REMAINING	AREA	.001		14.5500	.00	
SUBSURFACE IN	POND	.277		12.1000	3.30	
SUBSURFACE OUT	POND	.066		15.8000	.12	198.73
Outfall WETLAND	JCT	.067		15.8000	.12	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 10
Description: 10 year

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 5.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
D.A. 1	AREA	.463		12.1000	5.34	
D.A. 1 REMAINING	AREA	.016		12.3500	.07	
SUBSURFACE IN	POND	.463		12.1000	5.34	
SUBSURFACE OUT	POND	.252		12.5500	.85	199.54
Outfall WETLAND	JCT	.268		12.5500	.90	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 25
Description: 50 year

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.6000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
D.A. 1	AREA	.530		12.1000	6.05	
D.A. 1 REMAINING	AREA	.024		12.2500	.13	
SUBSURFACE IN	POND	.530		12.1000	6.05	
SUBSURFACE OUT	POND	.319		12.4500	1.58	199.92
Outfall WETLAND	JCT	.343		12.4500	1.69	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = CT STORM.RNQ All Storms

Storm Tag Name = 50
Description: 100 yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
D.A. 1	AREA	.608		12.1000	6.88	
D.A. 1 REMAINING	AREA	.035		12.2000	.25	
SUBSURFACE IN	POND	.608		12.1000	6.88	
SUBSURFACE OUT	POND	.397		12.3500	2.65	200.23
Outfall WETLAND	JCT	.432		12.3500	2.87	

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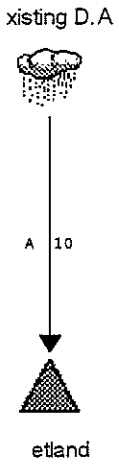

xisting D.A
A 10
etland

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID CT STORM.RNQ All Storms

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2	3.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
10	5.0000	Synthetic Curve	SCSTYPES	TypeIII 24hr
25	5.6000	Synthetic Curve	SCSTYPES	TypeIII 24hr
50	6.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
100	7.1000	Synthetic Curve	SCSTYPES	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
EXISTING D.A.	AREA	2	.074		12.2000	.59		
EXISTING D.A.	AREA	10	.208		12.1500	2.21		
EXISTING D.A.	AREA	25	.264		12.1500	2.89		
EXISTING D.A.	AREA	50	.335		12.1500	3.73		
EXISTING D.A.	AREA	100	.421		12.1500	4.74		
*WETLAND	JCT	2	.074		12.2000	.59		
*WETLAND	JCT	10	.208		12.1500	2.21		
*WETLAND	JCT	25	.264		12.1500	2.89		
*WETLAND	JCT	50	.335		12.1500	3.73		
*WETLAND	JCT	100	.421		12.1500	4.74		

Deer Run Stable, LLC

Route 85, Montville CT

Exisiting Drainage Areas

Area 1 (Existing)

Overall Area 1.82 Ac

Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods/Grass Combination	Fair	38E	A		0.5	Ac	43
Grass (Lawn)	Good	38E	A		0	Ac	39
Gravel	Good	38E	A		0.07	Ac	76
Impervious	Good	38E	A		0	Ac	98
Woods	Good	29A	B		0.26	Ac	55
Grass (Lawn)	Good	29A	B		0.7	Ac	61
Gravel	Good	29A	B		0.08	Ac	85
Impervious	Good	29A	B	+	0.21	Ac	98
			Total =		1.82		

Weighted Curve Number = 61

Time of Concentration

Segment	Surface Description	Flow Type	Slope (%)	Flow Length (ft)	Average Velocity (ft / sec)	Tt (hours)
AB	Dense Grass	Sheet	5.5	100	-	0.15
BC	Unpaved	Shallow Concentrated	11	145	5.5	0.01

Time of Concentration = 0.16 hours

Deer Run Stable, LLC

Route 85, Montville CT

Developed Drainage Areas

Area 1 Remaining (Developed)

Overall Area 0.53 Ac

Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods	Good	38E	A		0.13	Ac	30
Grass (Lawn)	Good	38E	A		0.24	Ac	39
Gravel	Good	38E	A		0	Ac	76
Impervious	Good	38E	A		0	Ac	98
Woods	Good	29A	B		0	Ac	55
Grass (Lawn)	Good	29A	B		0.16	Ac	61
Gravel	Good	29A	B		0	Ac	85
Impervious	Good	29A	B	+	0	Ac	98
			Total =		0.53		

Weighted Curve Number = 43

Time of Concentration

Segment	Surface Description	Flow Type	Slope (%)	Flow Length (ft)	Average Velocity (ft / sec)	Tt (hours)
AB	Dense Grass	Sheet	5.5	100	-	0.15
BC	Unpaved	Shallow Concentrated	11	145	5.5	0.01

Time of Concentration = 0.16 hours

Area 1 (Developed)

Overall Area 1.36 Ac

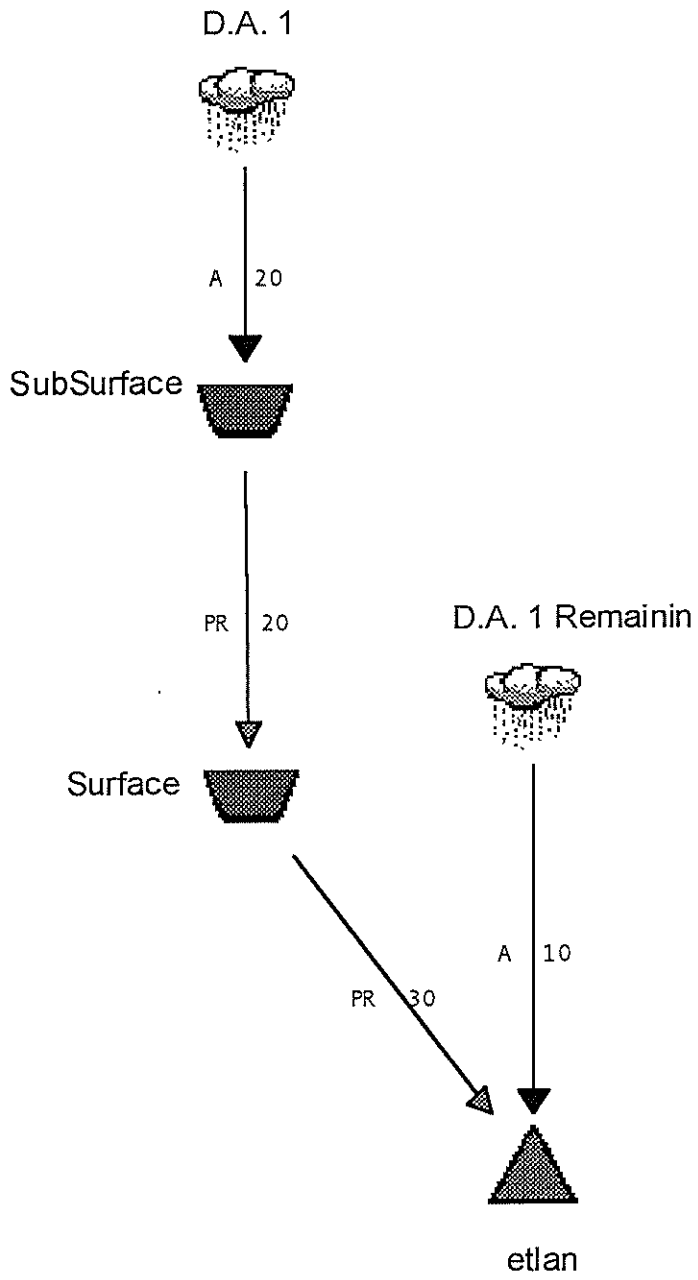
Cover Type	Condition	Soil Types	Soil Group		Area		CN
Woods	Good	38E	A		0	Ac	30
Grass (Lawn)	Good	38E	A		0	Ac	39
Gravel	Good	38E	A		0	Ac	76
Impervious	Good	38E	A		0.21	Ac	98
Woods	Good	29A	B		0	Ac	55
Grass (Lawn)	Good	29A	B		0.21	Ac	61
Gravel	Good	29A	B		0	Ac	85
Impervious	Good	29A	B	+	0.94	Ac	98
			Total =		1.36		

Weighted Curve Number = 92

Time of Concentration

Segment	Surface	Flow Type	Slope (%)	Flow Length	Average	Tt
AB	Pavement	Sheet	2	100	-	0.08

Time of Concentration = 0.08 **hours**


D.A. 1
A 20
SubSurface
PR 20
D.A. 1 Remainin
Surface
A 10
PR 30
etlan

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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID CT STORM.RNQ All Storms

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2	3.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
10	5.0000	Synthetic Curve	SCSTYPES	TypeIII 24hr
25	5.6000	Synthetic Curve	SCSTYPES	TypeIII 24hr
50	6.3000	Synthetic Curve	SCSTYPES	TypeIII 24hr
100	7.1000	Synthetic Curve	SCSTYPES	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
D.A. 1	AREA	2	.277		12.1000	3.30		
D.A. 1	AREA	10	.463		12.1000	5.34		
D.A. 1	AREA	25	.530		12.1000	6.05		
D.A. 1	AREA	50	.608		12.1000	6.88		
D.A. 1	AREA	100	.697		12.1000	7.82		
D.A. 1 REMAINING	AREA	2	.001		14.5500	.00		
D.A. 1 REMAINING	AREA	10	.016		12.3500	.07		
D.A. 1 REMAINING	AREA	25	.024		12.2500	.13		
D.A. 1 REMAINING	AREA	50	.035		12.2000	.25		
D.A. 1 REMAINING	AREA	100	.049		12.1500	.41		
SUBSURFACE IN POND		2	.277		12.1000	3.30		
SUBSURFACE IN POND		10	.463		12.1000	5.34		
SUBSURFACE IN POND		25	.530		12.1000	6.05		
SUBSURFACE IN POND		50	.608		12.1000	6.88		
SUBSURFACE IN POND		100	.697		12.1000	7.82		
SUBSURFACE OUT POND		2	.172		12.4000	1.01	199.67	.142
SUBSURFACE OUT POND		10	.358		12.1500	4.30	200.63	.172
SUBSURFACE OUT POND		25	.424		12.1500	4.93	200.88	.180
SUBSURFACE OUT POND		50	.502		12.1500	5.72	201.25	

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
SUBSURFACE	OUT POND	100	.616		12.1000	6.20	201.50	.193
SURFACE	IN POND	2	.172		12.4000	1.01		
SURFACE	IN POND	10	.358		12.1500	4.30		
SURFACE	IN POND	25	.424		12.1500	4.93		
SURFACE	IN POND	50	.502		12.1500	5.72		
SURFACE	IN POND	100	.616		12.1000	6.20		
SURFACE	OUT POND	2	.170		13.0000	.59	186.64	.034
SURFACE	OUT POND	10	.356		12.5500	1.64	187.69	.100
SURFACE	OUT POND	25	.423		12.4500	2.36	187.95	.118
SURFACE	OUT POND	50	.501		12.4000	2.99	188.23	.138
SURFACE	OUT POND	100	.615		12.4500	4.24	188.71	.175
*WETLAND	JCT	2	.171		13.0000	.59		
*WETLAND	JCT	10	.372		12.5000	1.70		
*WETLAND	JCT	25	.446		12.4500	2.48		
*WETLAND	JCT	50	.535		12.4000	3.18		
*WETLAND	JCT	100	.664		12.4500	4.50		

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND DRAINAGE ANALYSIS.PPW

USER DEFINED VOLUME RATING TABLE

Elevation (ft)	Volume (ac-ft)
194.00	.000
195.00	.024
196.00	.048
197.00	.072
198.00	.096
198.50	.105
201.00	.184
201.50	.193

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND DRAINAGE ANALYSIS.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
186.00	-----	.0497	.0000	.000	.000
187.00	-----	.0607	.1654	.055	.055
188.00	-----	.0717	.1985	.066	.121
189.00	-----	.0846	.2343	.078	.199
190.00	-----	.0975	.2730	.091	.290

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND DRAINAGE ANALYSIS.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 194.00 ft
Increment = .10 ft
Max. Elev.= 201.50 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Circular		--->	TW	198.500	201.500
Orifice-Circular		--->	TW	199.500	201.500

TW SETUP, DS Channel

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND DRAINAGE ANALYSIS.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 198.50 ft
Diameter = .5000 ft
Orifice Coeff. = .600

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 199.50 ft
Diameter = 1.0000 ft
Orifice Coeff. = .600

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND DRAINAGE ANALYSIS.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 186.00 ft
Increment = .01 ft
Max. Elev.= 190.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Circular		--->	TW	186.000	190.000
Orifice-Circular		--->	TW	187.250	190.000
Orifice-Circular		--->	TW	188.250	190.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 186.00 ft
Diameter = .5000 ft
Orifice Coeff. = .600

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 187.25 ft
Diameter = .7500 ft
Orifice Coeff. = .600

Structure ID =
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 188.25 ft
Diameter = .7500 ft
Orifice Coeff. = .600

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

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FALLING HEAD PERMEABILITY TEST

Project Name: DEER RUN STABLES, LLC

Project Number: 186333

Date: 1/6/2020

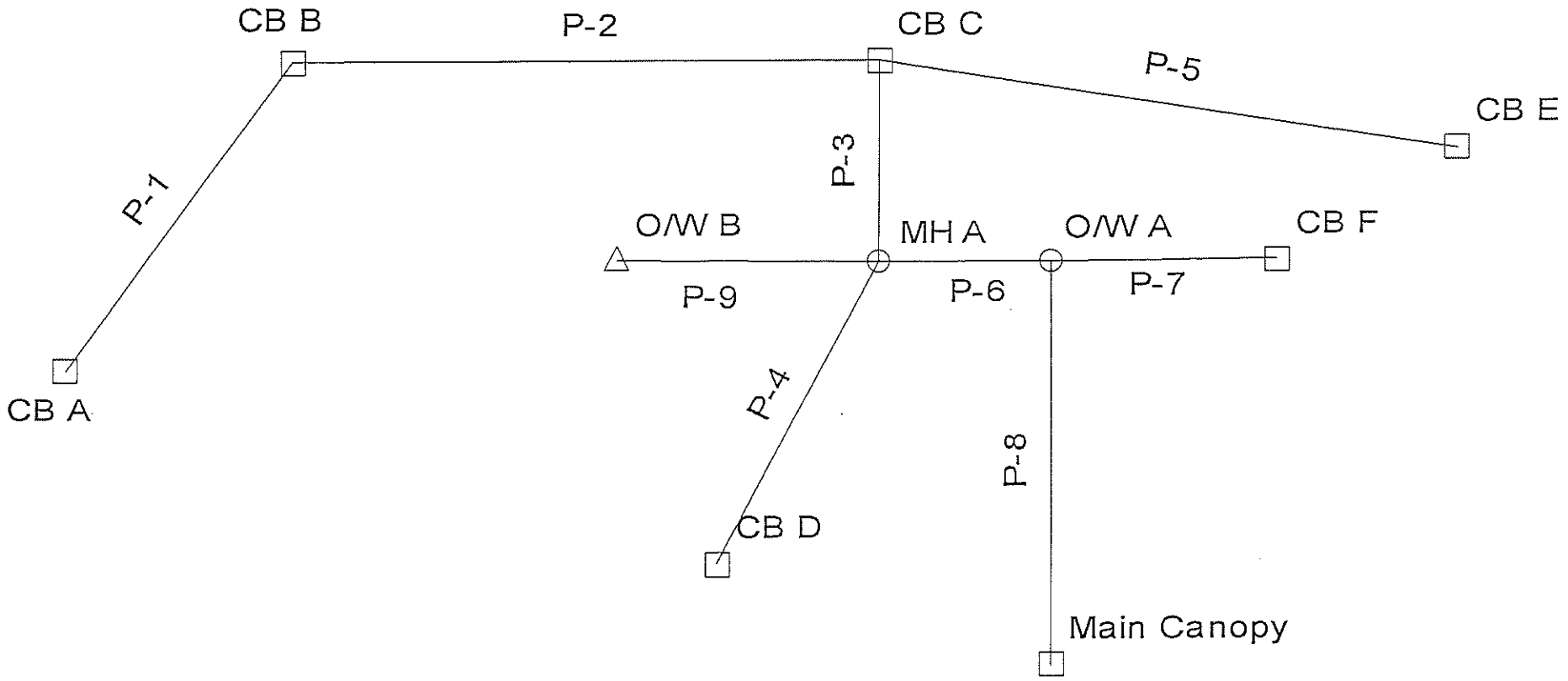
Test Hole	Description	Depth, in	Tube, in (T)	T-L	L in	H1 in	H2 in	H1-H2 in	T min	H1+H2/2	K ft/min	K ft/day
TH 1		18"	12	8.75	3.25	11.25	10.5	0.75	20	10.9	0.0	1.3
TH 2		26"	12	7.625	4.375	11.375	8.5	2.875	20	9.9	0.0	7.6
TH 2		42"	11.75	6	5.75	11	8.625	2.375	20	9.8	0.0	8.4
TH 3		18"	12	9.125	2.875	11	5.5	5.5	10	8.3	0.0	23.0
TH 3		46"	12.125	7.75	4.375	11.5	7.25	4.25	10	9.4	0.0	23.8

Deer Run Stable, LLC
Catch Basin Drainage Areas and Coverage

C Lawn	0.15
C Impervious	0.9

CB Area	Total Area (sf)	Lawn Area (sf)	Impervious Area (sf)	Total Area (Ac)	C_{ave}
A	7366	482	6884	0.17	0.85
B	6407	0	6407	0.15	0.90
C	11188	0	11188	0.26	0.90
D	8767	1828	6939	0.20	0.74
E	8894	0	8894	0.20	0.90
F	9320	2946	6374	0.21	0.66
Main Canopy	3992	1189	2803	0.09	0.68

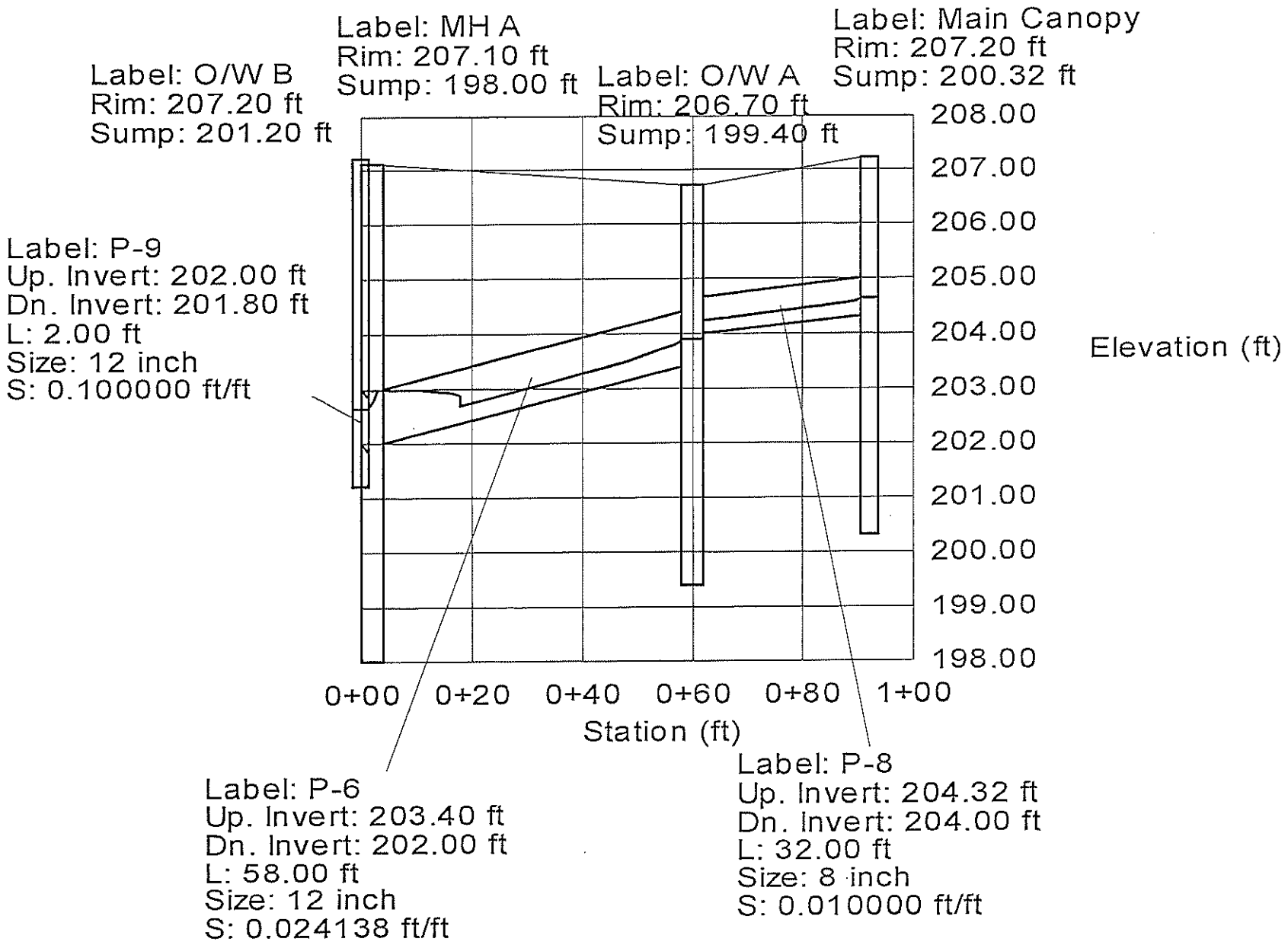
Scenario: Base



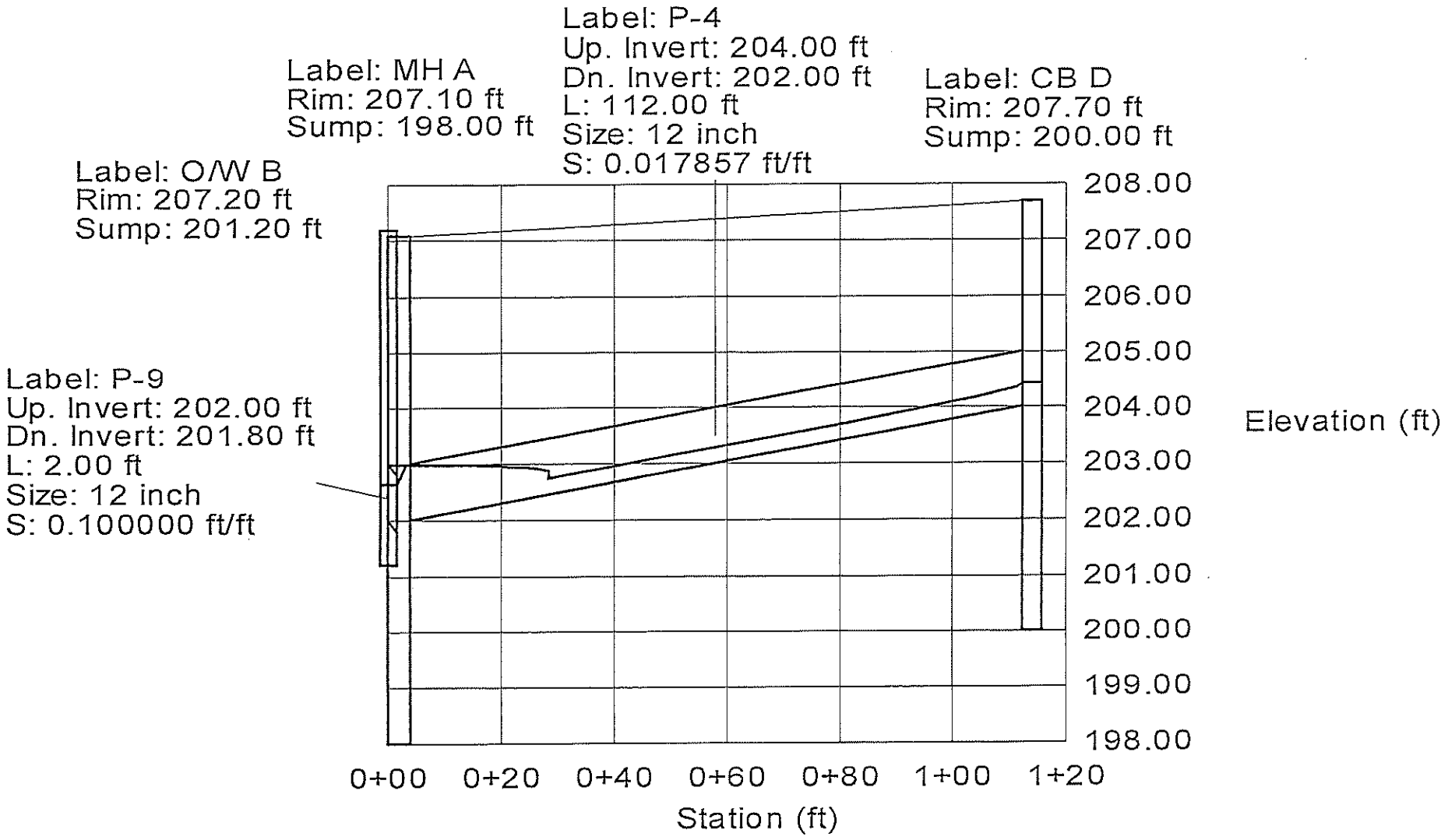
Combined Pipe\Node Report

Label	Up. Node	Dn. Node	L (ft)	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	Up.Inlet Rat. Q (cfs)	Size	System Q (cfs)	Q Full (cfs)	Avg. v (ft/s)	Up. Invert (ft)	Dn. Invert (ft)	S (ft/ft)
P-1	CB A	CB B	119.00	0.17	0.85	0.14	0.14	0.98	12 inch	0.98	5.00	2.63	205.50	203.50	0.016807
P-2	CB B	CB C	138.00	0.15	0.90	0.14	0.28	0.91	12 inch	1.84	3.29	3.21	203.50	202.50	0.007246
P-5	CB E	CB C	134.00	0.20	0.90	0.18	0.18	1.22	12 inch	1.22	2.79	2.53	203.20	202.50	0.005224
P-7	CB F	O/W A	62.00	0.21	0.66	0.14	0.14	0.94	8 inch	0.94	1.57	4.18	204.62	204.00	0.010000
P-8	Main Canopy	O/W A	32.00	0.09	0.68	0.06	0.06	0.41	8 inch	0.41	1.57	3.25	204.32	204.00	0.010000
P-3	CB C	MH A	24.00	0.26	0.90	0.23	0.69	1.58	12 inch	4.44	5.57	5.87	202.50	202.00	0.020833
P-4	CB D	MH A	112.00	0.20	0.74	0.15	0.15	1.00	12 inch	1.00	5.16	2.24	204.00	202.00	0.017857
P-6	O/W A	MH A	58.00	N/A	N/A	N/A	0.20	N/A	12 inch	1.34	6.00	2.61	203.40	202.00	0.024138
P-9	MH A	O/W B	2.00	N/A	N/A	N/A	1.04	N/A	12 inch	6.64	12.20	9.05	202.00	201.80	0.100000

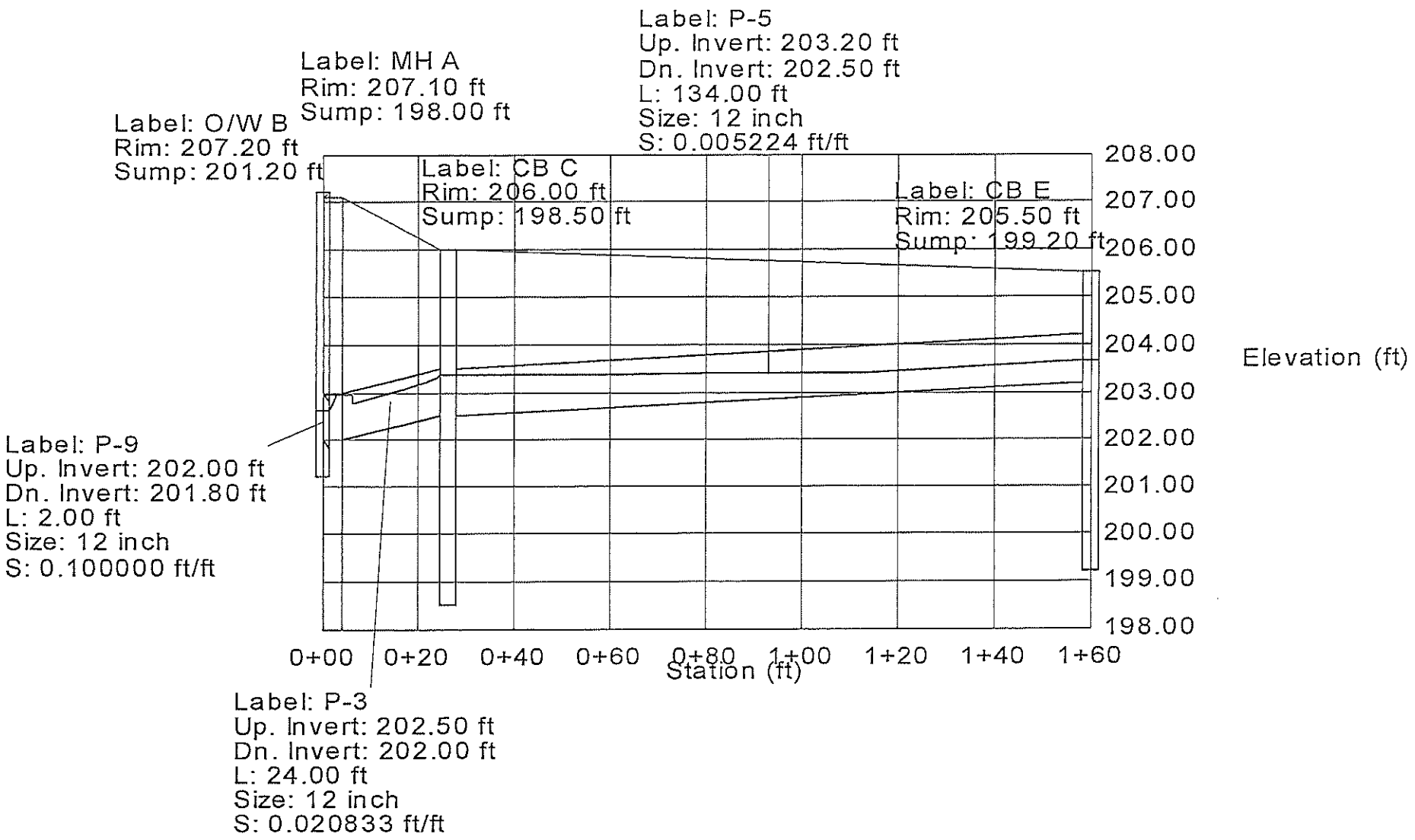
Profile
Scenario: Base



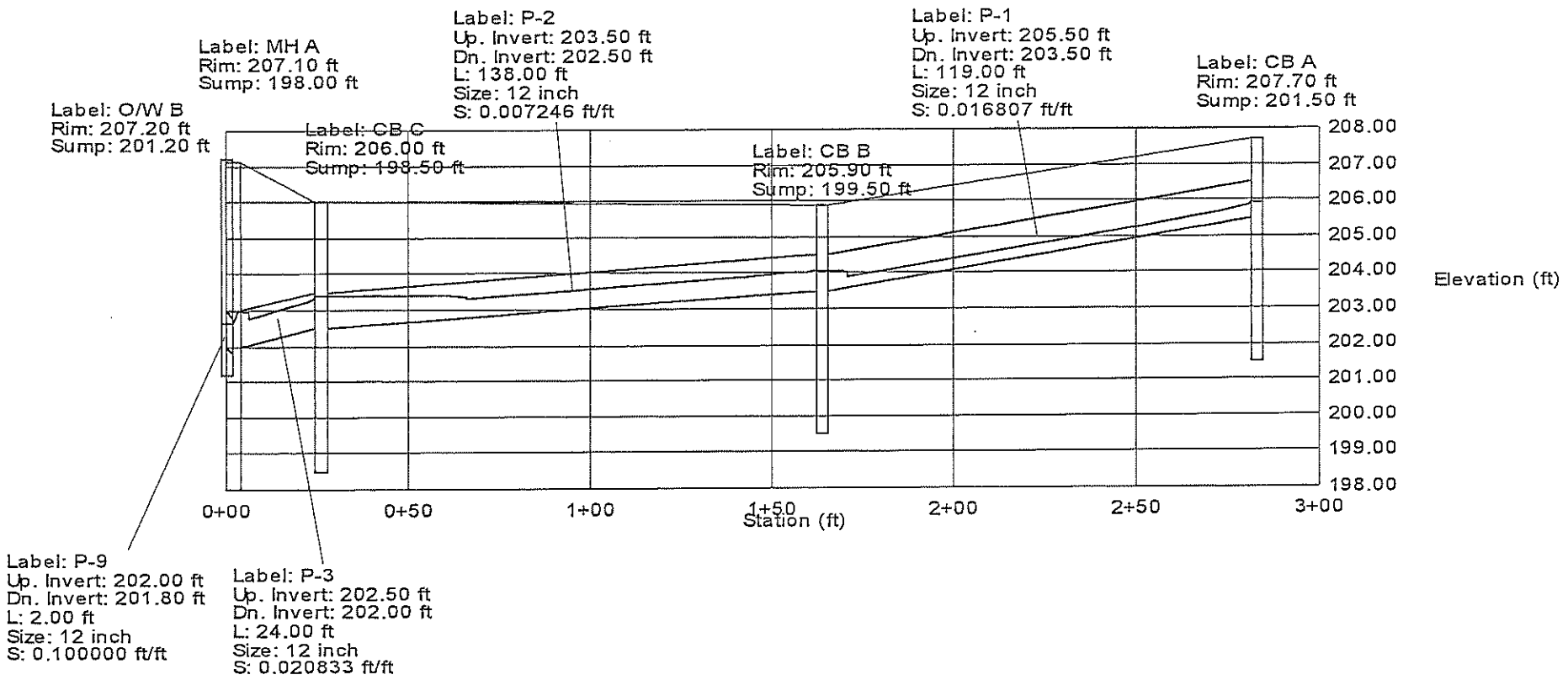
Profile
Scenario: Base



Profile
Scenario: Base



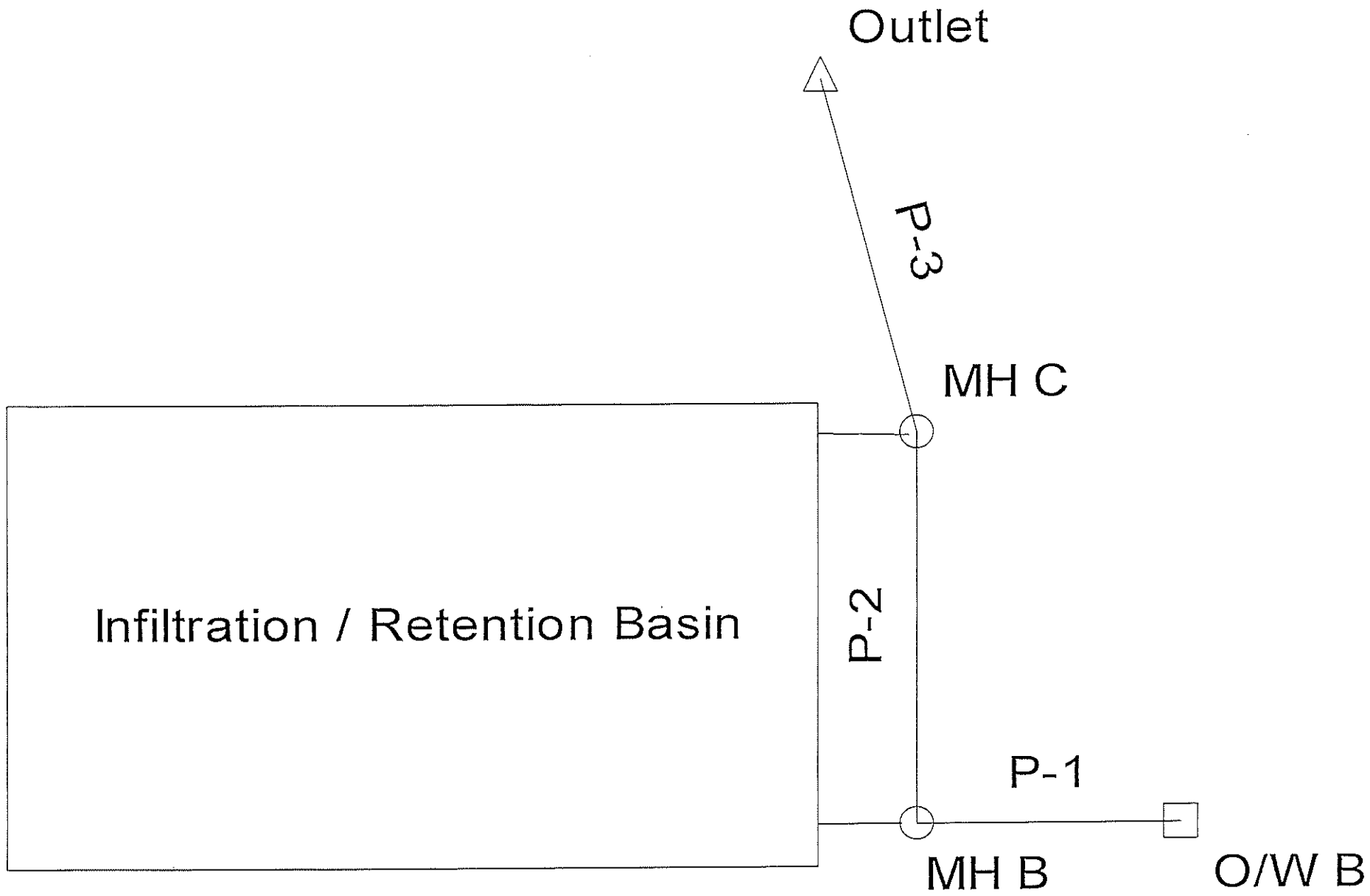
Profile
Scenario: Base



C Lawn	0.15
C Impervious	0.9

CB Area	Total Area (sf)	Lawn Area (sf)	Impervious Area (sf)	Total Area (Ac)	C_{ave}
A	7366	482	6884	0.17	0.85
B	6407	0	6407	0.15	0.90
C	11188	0	11188	0.26	0.90
D	8767	1828	6939	0.20	0.74
E	8894	0	8894	0.20	0.90
F	9320	2946	6374	0.21	0.66
Main Canopy	3992	1189	2803	0.09	0.68

Scenario: Base



Combined Pipe\Node Report

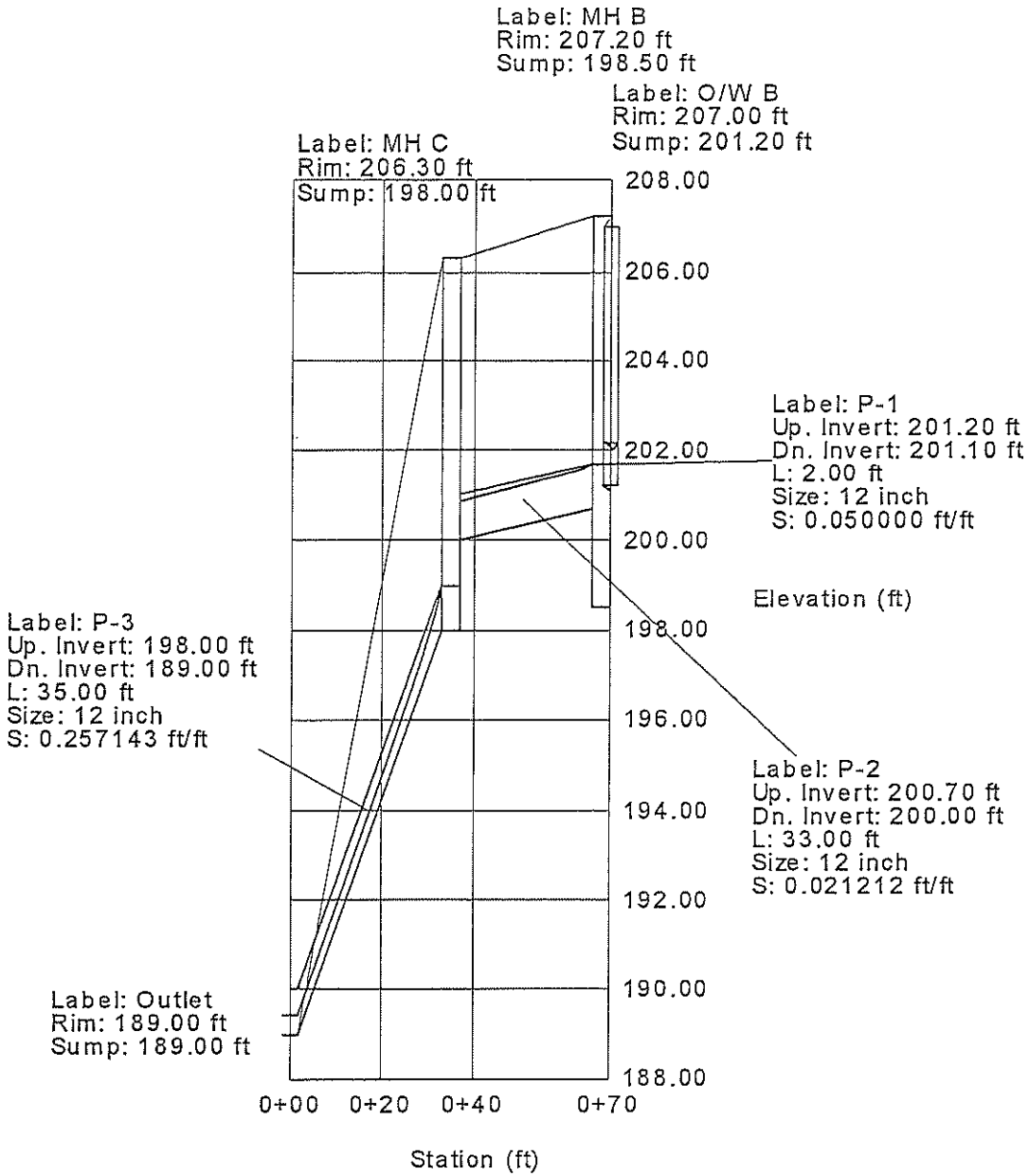
Label	Up. Node	Dn. Node	L (ft)	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	Up.Inlet Rat. Q (cfs)	Size	System Q (cfs)	Q Full (cfs)	Avg. v (ft/s)	Up. Invert (ft)	Dn. Invert (ft)	S (ft/ft)
P-1	O/W B	MH B	31.00	0.00	0.00	0.00	0.00	0.00	12 inch	6.64	0.00	8.45	0.00	0.00	0.000000
P-2	MH B	MH C	33.00	N/A	N/A	N/A	0.00	N/A	12 inch	6.64	6.75	8.90	200.70	200.00	0.021212
P-3	MH C	Outlet	35.00	N/A	N/A	N/A	0.00	N/A	12 inch	6.64	19.57	14.48	198.00	189.00	0.257143

Scenario: Base

Combined Pipe\Node Report

Label	Up. Node	Dn. Node	L (ft)	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	Up.Inlet Rat. Q (cfs)	Size	System Q (cfs)	Q Full (cfs)	Avg. v (ft/s)	Up. Invert (ft)	Dn. Invert (ft)	S (ft/ft)
P-1	O/W B	MH B	2.00	0.00	0.00	0.00	0.00	0.00	12 inch	6.64	8.63	8.77	201.20	201.10	0.050000
P-2	MH B	MH C	33.00	N/A	N/A	N/A	0.00	N/A	12 inch	6.64	6.75	8.90	200.70	200.00	0.021212
P-3	MH C	Outlet	35.00	N/A	N/A	N/A	0.00	N/A	12 inch	6.64	19.57	14.48	198.00	189.00	0.257143

Profile
Scenario: Base



File.... C:\HAESTAD\PPKW\186333 - DEER RUN STABLES, LLC\DEVELOPED WITH POND (NO SURFACE TEST).PPW

USER DEFINED VOLUME RATING TABLE

Elevation (ft)	Volume (ac-ft)
194.00	.000
195.00	.048
196.00	.096
197.00	.145
198.00	.193
198.50	.210
201.00	.368
201.50	.385

Project: Deer Run Stable, LLC.
Address: 1499 & 1505 Hartford New London Turnpike, Montville
Date: 12/17/2019

Water Quality Volume

$$WQV = \frac{(1") \times R \times A}{12}$$

WQV = Water Quality Volume (Ac-ft)
R = volumetric runoff coefficient = 0.05+0.009 (I)
$Area_{Imp}$ = Area of Impervious Surface within Drainage Area
I = Percent Impervious Cover
A = Drainage Area in Acres

WQV Basin

Basin Size:

101.4' x 39.5' x 4' - Crushed Stone Bed with 40% Porosity below StormTech Chambers

101.4' x 39.5' x 4' = 16,021.2 ft^3

16,021.2 ft^3 x 0.4 = 6,408.5 ft^3 Storage Volume Available

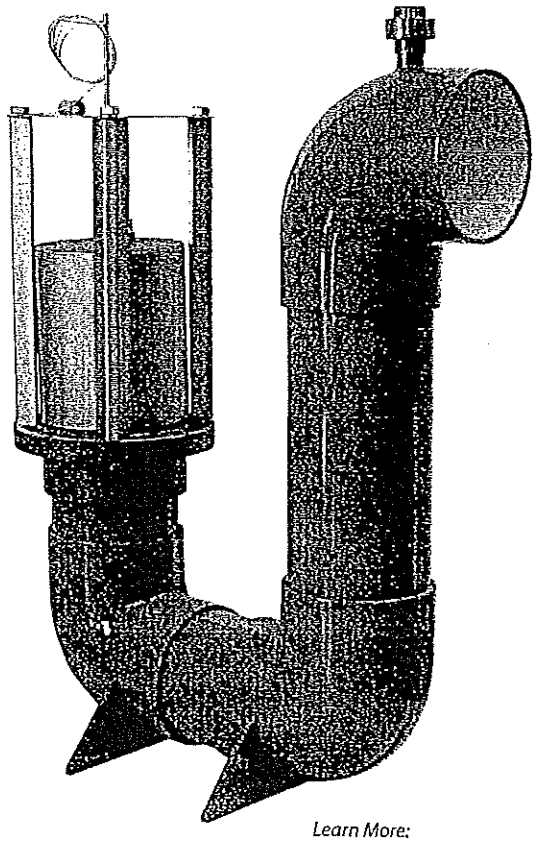
WQV Calculation

A =	1.89	Acres
$Area_{Imp}$ =	1.15	Acres
I =	60.8	% of Drainage Area is Impervi
R =	0.598	

WQV = 0.094 Ac-ft = 4,100 ft^3

6,408.5 ft^3 / 4,100 ft^3 S= 1.56 times the Required Water Quality Volume

Oil Stop Valve (OSV)

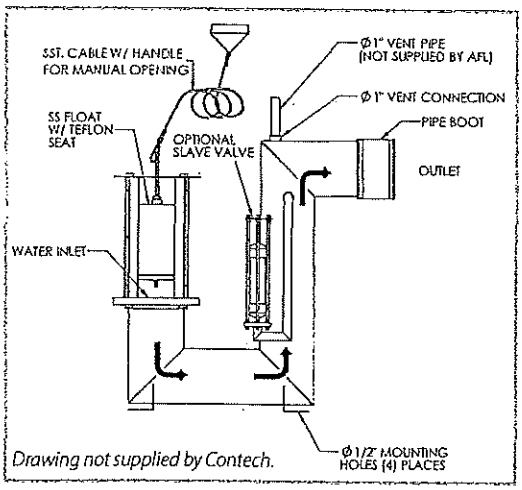


Large, unpredictable oils spills can defeat even the most conservatively designed pollution control systems. The OSV is an economical option used to confine hydrocarbon spills to the premises for safe disposal. Contech's OSV is fabricated from either non-corrosive Stainless Steel or PVC and has only one moving part, the ballasted float. When an oil spill occurs, the float loses buoyancy as the free-floating oil depth increases until it finally seats on the discharge port, closing and confining the spill.

Applications

Consider the OSV for those applications where oil spills are possible, but unpredictable.

- Electric power plants, transformer yards, substations
- Crude oil, biodiesel, petroleum processing & storage facilities
- Transportation fueling systems and equipment wash pads
- Airports and aircraft services
- Railyards
- Truck & marine terminals
- Post oil water separator
- Military and government facilities
- Fleet maintenance facilities
- Commercial filling station
- Auto part recyclers/salvage yards



Drawing not supplied by Contech.

Learn More:
www.ContechES.com/osv

FEATURE	BENEFIT
Dependable, gravity operation	Can be used as part of a Spill Prevention Control and Countermeasure (SPCC) plan
Large flow capacity	Eliminates the need for additional structures
Only one moving part, and no power requirement	Low operation and maintenance costs
Self-operating options (slave valve)	Ease of operation
Corrosion resistant construction	Increased longevity and service life
Outlet sizes: 4", 6", 10" & 12"	Design flexibility

Reduce the risk of catastrophic oil spills.

Oil Stop Valve (OSV) Options

SLAVE VALVE – Recommended option to ensure automatic valve re-opening if residual water evaporates.

FREEZE PROTECTION - Eliminates sump water freezing where environmental conditions exist.

HOW TO SELECT THE RIGHT VALVE TYPE AND SIZE FOR YOUR APPLICATION:

PVC – PVC models represent an economical option to prevent bulk hydrocarbon spills. Corrosion-resistant PVC construction is ideal for warmer climates.

Stainless Steel – Stainless steel models are recommended in colder climates or where greater durability is desired.

Stainless Steel Extended Outlet – Stainless steel extended outlet models reduce fire risk by extending the outlet pipe through the sump wall so there is no connection inside the sump to burn and fail.

VALVE SIZE (dia)	CONSTRUCTION	MAX FLOW RATE
4"	PVC/SS	160 GPM
6"	PVC/SS	360 GPM
8"	PVC/SS	600 GPM
10"	SS	900 GPM
12"	SS	1400 GPM

WARNING: Exceeding these flow rates may cause premature closing.

AFL recommends a 4-ft diameter catch basin for the OSV-4 and OSV-6, and a 5-ft diameter basin for the OSV-8, OSV-10 and OSV-12

TYPE	MODEL #	MATERIAL	PIPE SIZE IN	PIPE SIZE MM	RIM TO E OUT (MIN) FT	RIM TO E OUT (MIN) MM	MAX FLOW RATE GPM	MAX FLOW RATE L/M
STANDARD	OSV-4	PVC	4	101	2'-3"	686	160	606
	OSV-6		6	152	2'-6"	762	360	1362
	OSV-8		8	203	2'-10.5"	876	600	2274
	OSV-4SS	STAINLESS STEEL	4	101	2'-3"	686	160	606
	OSV-6SS		6	152	2'-6"	762	360	1362
	OSV-8SS		8	203	2'-10.5"	876	600	2274
	OSV-10SS		10	254	3'-1"	940	900	3408
	OSV-12SS		12	304	3'-5"	1042	1400	5298
EXTENDED	OSV-4SST	STAINLESS STEEL	4	101	2'-3"	686	160	606
	OSV-6SST		6	152	2'-6"	762	360	1362
	OSV-8SST		8	203	2'-10.5"	876	600	2274
	OSV-10SST		10	254	3'-1"	940	900	3408
	OSV-12SST		12	304	3'-5"	1042	1400	5298
STANDARD W/ SLAVE VALVE	OSV-4SV	PVC	4	101	2'-3"	686	160	606
	OSV-6SV		6	152	2'-6"	762	360	1362
	OSV-8SV		8	203	2'-10.5"	876	600	2274
	OSV-4SSSV	STAINLESS STEEL	4	101	2'-3"	686	160	606
	OSV-6SSSV		6	152	2'-6"	762	360	1362
	OSV-8SSSV		8	203	2'-10.5"	876	600	2274
	OSV-10SSSV		10	254	3'-1"	940	900	3408
	OSV-12SSSV		12	304	3'-5"	1042	1400	5298
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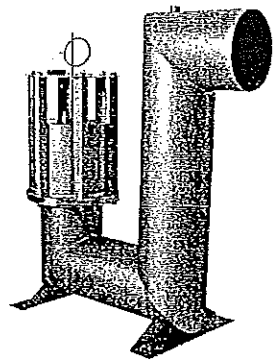
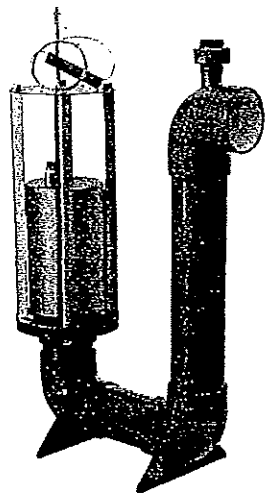




LAND & MARINE
ENGINEERING
SURVEYING
PLANNING

ANGUS McDONALD
GARY SHARPE
& ASSOCIATES, INC.
SINCE 1966

Supplemental Materials

March 11, 2020

1. Existing Conditions Drainage Area Map
2. Catch Basin Drainage Area Map
3. Existing Conditions Drainage Area Map

Traffic Impact Study

1499 and 1505 Hartford-New London Turnpike
Montville, Connecticut
November 19, 2019

Prepared for:
Mr. Asif Choudhry
96 CT Route 32
North Franklin, Connecticut 06254

MMI #6886-01

Prepared by:
MILONE & MACBROOM, INC.
195 Church Street, 7th Floor
New Haven, Connecticut 06510
203-344-7887
www.mminc.com

MILONE & MACBROOM

MILONE & MACBROOM

November 19, 2019

Mr. Asif Choudhry
96 CT Route 32
North Franklin, CT 06254

RE: Traffic Impact Study
Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike
Montville, Connecticut
MMI #6886-01

Dear Mr. Choudhry:

At your request, Milone & MacBroom, Inc. (MMI) has completed a traffic impact study for the proposed gas station at 1499 and 1505 Hartford-New London Turnpike in Montville, Connecticut. The gas station will include 16 service pumps and a convenience market. Figure 1 shows the location of the site.

This traffic study involved a number of tasks including data collection, the determination of future background traffic, an estimation of site traffic volumes for the proposed development, and an evaluation of safety as well as expected traffic impacts and improvements. This report summarizes our data collection, analyses, and findings.

Proposed Development

The proposed gas station at 1499 and 1505 Hartford-New London Turnpike will include 16 fuel stations (service pumps). The development will introduce two driveways on the north side of Hartford-New London Turnpike, just southeast of the intersection of Hartford-New London Turnpike (Route 85) and Route 161 (Flanders Road).

Study Area Roadway and Site Environs

Hartford-New London Turnpike (Route 85) is classified as a minor urban arterial, running from the town of Bolton to the northwest of the site into the city of New London to the southeast of the site. In the vicinity of the site, the roadway is characterized by a single southbound and northbound travel lane with 8- to 9-foot shoulders off to either side. No sidewalks are currently present on this section of Hartford-New London Turnpike (Route 85). The posted speed limit is 40 miles per hour (mph).

For the purpose of this traffic study, the following intersections were included in the study area for analysis:

- Hartford-New London Turnpike (Route 85) at the western site driveway
- Hartford-New London Turnpike (Route 85) at the eastern site driveway

Intersection Sight Distance

Visibility from the site driveway for the proposed development was reviewed using minimum intersection sight distance (ISD) guidelines from the Connecticut Department of Transportation (CTDOT). For the posted speed limit of 40 mph, the CTDOT minimum ISD guideline is 445 feet. The sight distances looking left and right from the location of the site driveway exceed the 445-foot ISD guidelines. In fact, they have been measured at 500 feet or greater, the guideline for 5 mph greater than the posted speed limit.

Accidents

Traffic accident data for the latest 3-year period on record, May 1, 2016, through May 1, 2019, for the adjacent intersections to the project site were obtained from the University of Connecticut's Connecticut Crash Data Repository. The accident data collected for this 3-year period is depicted in Table 1 and is summarized by intersection, accident severity, and collision type.

TABLE 1
Accident Summary

LOCATION	ACCIDENT SEVERITY				TYPE OF COLLISION						
	SUSPECTED MINOR INJURY	POSSIBLE INJURY	PROPERTY DAMAGE ONLY	TOTAL	ANGLE	FIXED-OBJECT	NON-FIXED OBJECT	REAR-END	SIDESWIPE, OPPOSITE DIRECTION	SIDESWIPE, SAME DIRECTION	TOTAL
Hartford-New London Turnpike (Route 85) and Route 161 (Flanders Road)	1	5	26	**32**	3	2	1	22	1	3	**32**
Hartford-New London Turnpike (Route 85) and Turner Road	0	2	6	**8**	1	0	1	6	0	0	**8**
TOTAL	**1**	**7**	**32**	**40**	**4**	**2**	**2**	**28**	**1**	**3**	**40**

Source: University of Connecticut's Connecticut Crash Data Repository from May 1, 2016, through May 1, 2019

A total of 40 accidents were reported during the latest 3-year period on record at the intersections within the study area. Eighty percent of reported collisions resulted in property damage only with the remaining resulting in suspected minor injury (one) or possible injury (seven). No fatalities were reported. The most common collision type was rear-end collisions, accounting for 70 percent of all collisions.

Existing Traffic Volumes

Manual turning movement traffic counts were previously conducted at the adjacent intersections to capture peak travel periods in May 2019. The counts were conducted from 7:00 a.m. to 9:00 a.m. for the weekday morning peak period and 4:00 p.m. to 6:00 p.m. for the weekday evening peak period. The existing weekday morning and weekday afternoon peak-hour traffic volumes are illustrated in Figures 2 and 3, respectively.

New Site Traffic

The site traffic for the proposed gas station was estimated using standard statistical data published by the Institute of Transportation Engineers (ITE)[1] and applying an adjustment factor for pass-by trips. "Pass-by trips" refer to site trips made by patrons who were already on the roadway with an original destination other than to the site. Based on CTDOT guidelines, a 20 percent pass-by trip reduction in total vehicle trips was applied.

TABLE 2
New Site Traffic

LAND USE	NUMBER OF VEHICLE TRIPS					
	WEEKDAY MORNING PEAK HOUR			WEEKDAY AFTERNOON PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Market/Gas Station	140	140	280	119	119	190
Pass By-Trips	30	30	60	20	20	40
Net Total Trips:	***110***	***110***	***220***	***99***	***99***	***150***

Source: *Trip Generation, 10th Edition*, Institute of Transportation Engineers, 2017 (ITE #960 – Super Convenience Market/Gas Station)

New Site Traffic Distribution

After adjusting for expected pass-by trips, it is estimated that the site will generate 220 new trips (110 entering and 110 exiting) during a typical weekday morning and 190 new trips (95 entering and 95 exiting) during a weekday afternoon. The anticipated directional distribution of site-generated traffic was based on the review of census data and travel patterns observed from existing traffic volumes. It is estimated that approximately 65 percent of the new site traffic will make trips to/from the west and 35 percent to/from the east.

Figure 4 illustrates the site traffic distribution for the proposed gas station including the expected bypass distribution based on peak-hour travel times. Figures 5 and 6 show the assignment of the anticipated site traffic on the adjacent road network during the weekday morning and weekday afternoon, respectively.

[1] *Trip Generation, 10th Edition*, Institute of Transportation Engineers, 2017

Future Background Traffic

For the purpose of this study, a future horizon year of 2020 was used for analysis. It is anticipated that the proposed gas station will be opened by this time. The existing traffic volumes were projected to the year 2020 using an annual growth rate of 1 percent. Discussions with the CTDOT indicate that there are no other approved significant developments within the study area at this time to include in background traffic volumes. The future background (no-build) volumes for the weekday morning and weekday afternoon peak hours are shown in Figures 7 and 8, respectively.

Future Combined Traffic

The estimated site traffic volumes were then added to the 2020 background traffic volumes to derive the future combined (build) traffic volumes. The combined traffic volumes constitute future volumes with the proposed gas station in place. Figures 9 and 10 depict the 2020 combined traffic volumes at the study intersections for the weekday morning and weekday afternoon peak hours, respectively.

Traffic Impact

The study intersections were evaluated by means of capacity analysis techniques. Levels of Service (LOS) were then determined, which are qualitative measures of the efficiency of operations in terms of delay and inconvenience to motorists. A description of the various LOS designations, A through F, is given in the Appendix. LOS A describes operations with very short average control delay per vehicle while LOS F describes operations with longer than average delays. LOS D is generally considered acceptable in urban environments.

Table 3 summarizes the findings of LOS at the study intersections under future (2020) conditions without (background) and with (combined) the estimated new site traffic generated by the proposed development.

TABLE 3
Capacity Analysis Summary

INTERSECTION	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	BACKGROUND	COMBINED	BACKGROUND	COMBINED
Hartford-New London Turnpike and Eastern Site Driveway				
Eastbound Left	--	A	--	A
Southbound Left/Right	--	C	--	C
Hartford-New London Turnpike and Western Site Driveway				
Eastbound Left	--	A	--	A
Southbound Left/Right	--	C	--	C

Findings and Recommendations

Based on the LOS analysis conducted, the following are our findings and recommendations with regard to traffic operations at the study intersections under the proposed gas station.

- Egress from both driveways is characterized by appropriate geometry and ample sightlines in excess of the distance required for speeds of 10 mph in excess of the posted speed limit.
- Generally good levels of service would be expected with some peak hour delay for vehicles exiting the site in peak hours, but very good levels of service for those entering the site from Route 85.
- The geometry of Route 85 provides for bypass of left-turning vehicles into the site, thus minimizing disruption to through traffic that would otherwise be created by vehicles stopped to take a left turn into the site.
- The adjacency of Deer Run, a private road just west of the westerly driveway, will likely not be impacted by this development. However, to fully eliminate the potential that left turners into the western driveway would conflict with motorists exiting Deer Run, we suggest that the westerly driveway be limited to exit only. Simultaneous exiting turns from Deer Run and the northern driveway should not pose a concern, since visibility between driveways and the 70-foot +/- distance between the two would allow for orderly movement of vehicles.

Summary and Conclusions

A study was conducted to assess the traffic impacts of the proposed gas station in Montville, Connecticut. Traffic generated by the planned development was estimated based on a review of industry standards. Future traffic conditions were estimated with and without the gas station in place, and capacity analysis of future scenarios were performed.

Based on our analysis, it is our opinion that the surrounding roadway system would be able to accommodate traffic that would be generated by the proposed gas station. The design of the driveways is safe, relative to sight distances. The one recommendation is to restrict entering traffic to the southern driveway to minimize the conflict potential of vehicles exiting Deer Run, a private street just west of the site.

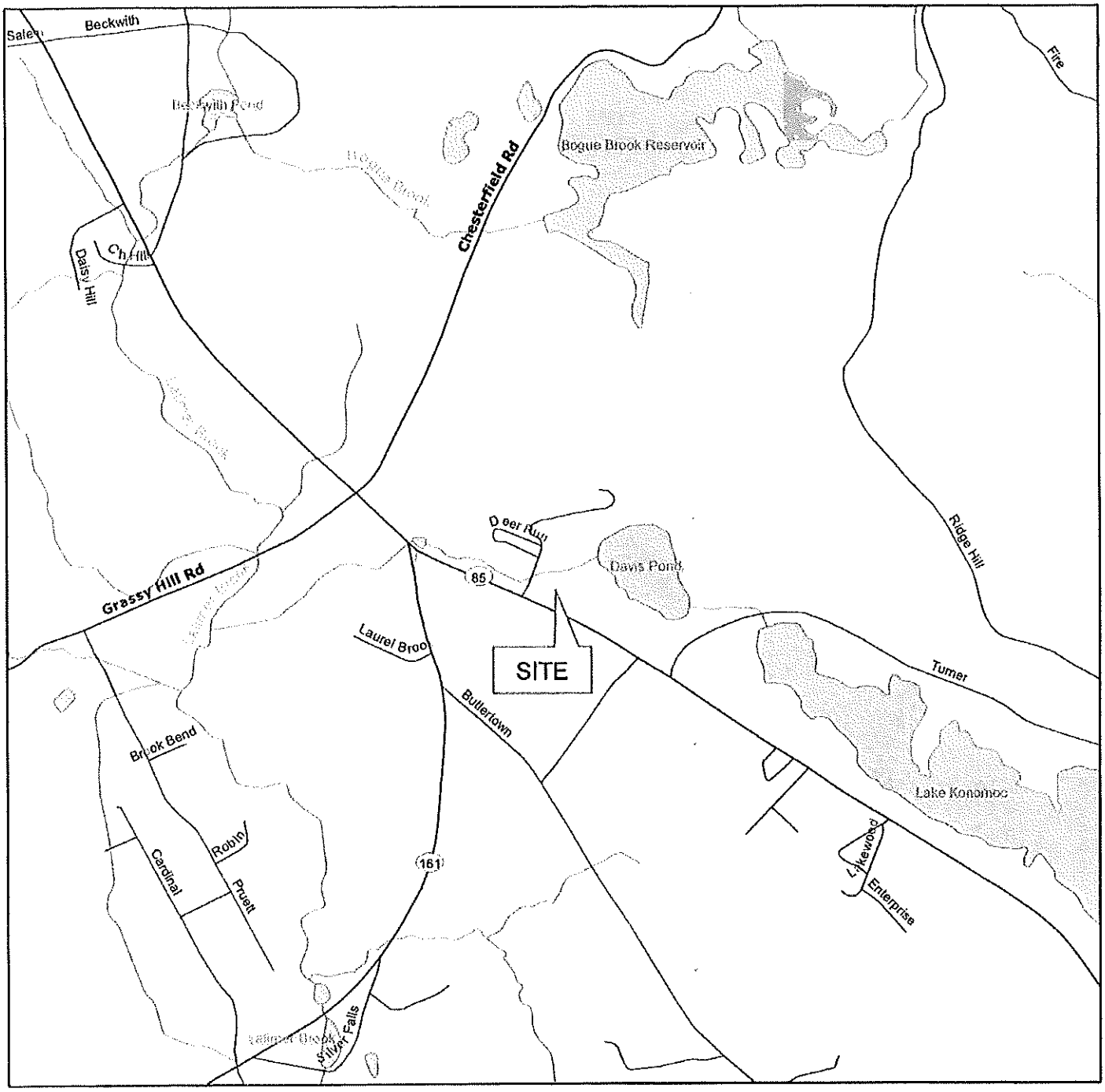
We hope this report is useful to you and the Town of Montville in assessing the traffic impact from this development. If you have any questions or need any further information, please do not hesitate to contact me.

Very truly yours,

MILONE & MACBROOM, INC.

David G. Sullivan, PE, Associate
Manager of Traffic and Transportation Planning

Enclosures
6886-01-s319-rpt



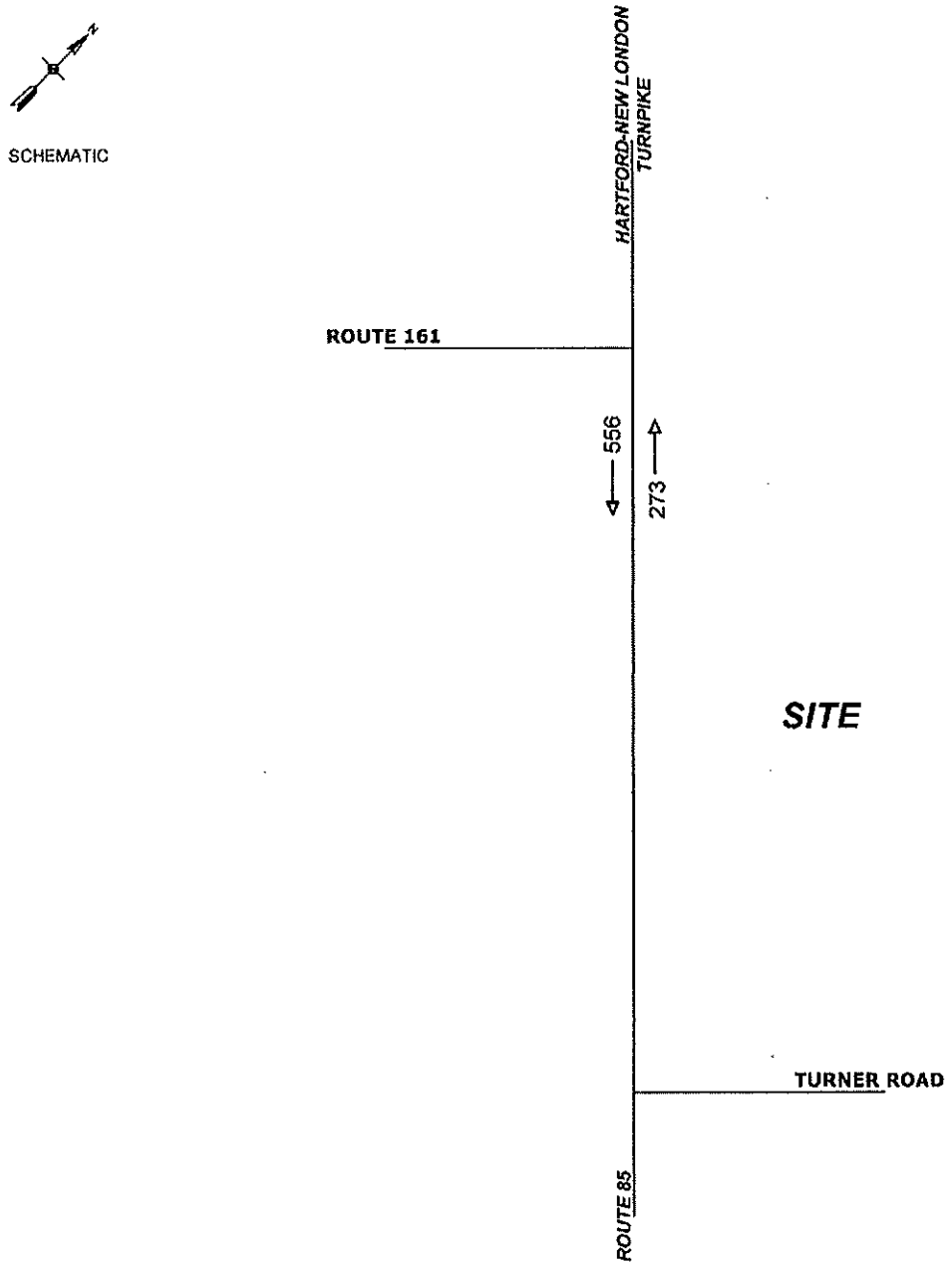
SITE LOCATION

1499 and 1505 Hartford - New London Turnpike
Proposed Gas Station

Montville, Connecticut

MILONE & MACBROOM

FIGURE 1



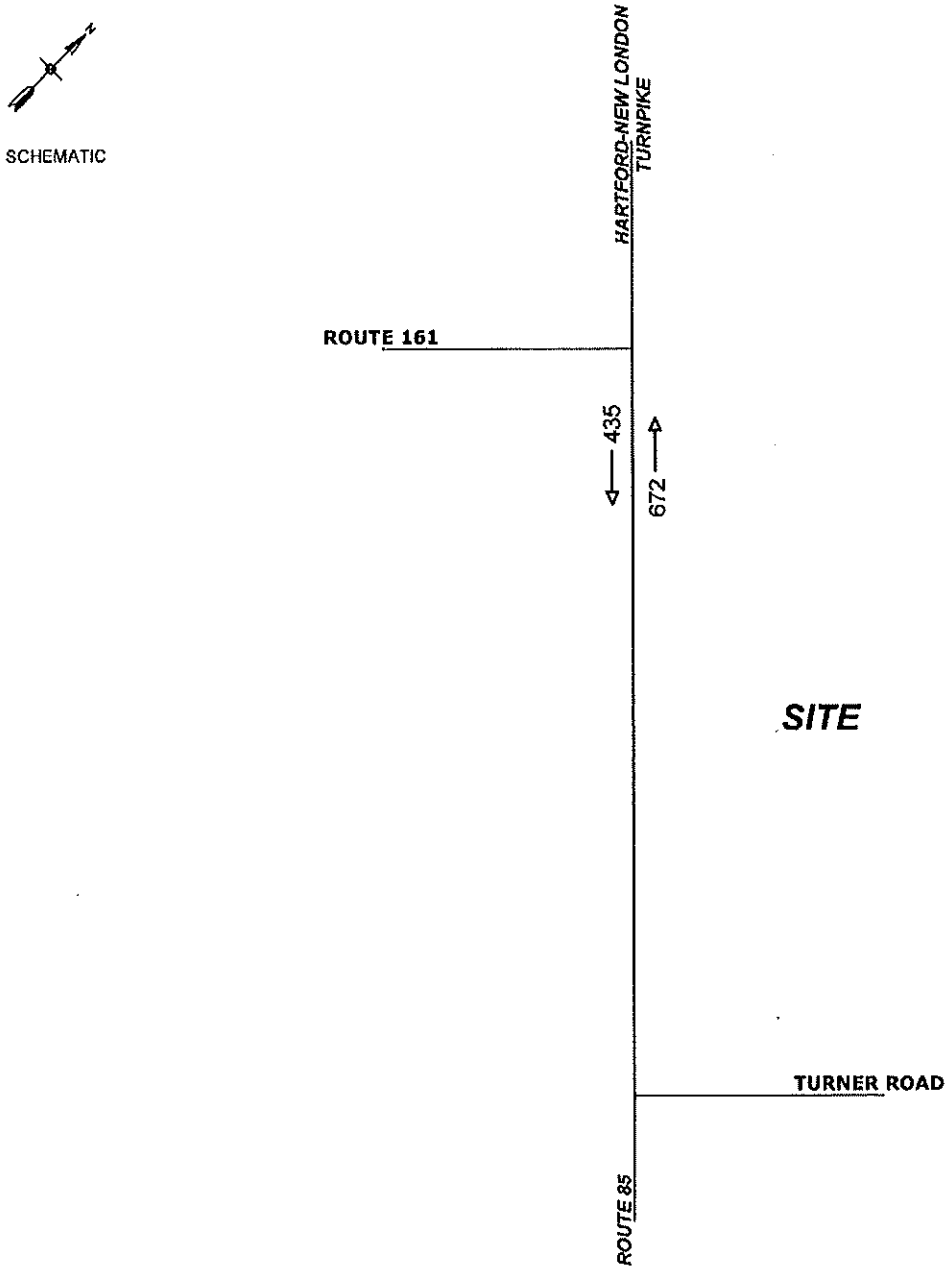
EXISTING TRAFFIC VOLUMES
WEEKDAY MORNING PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 02



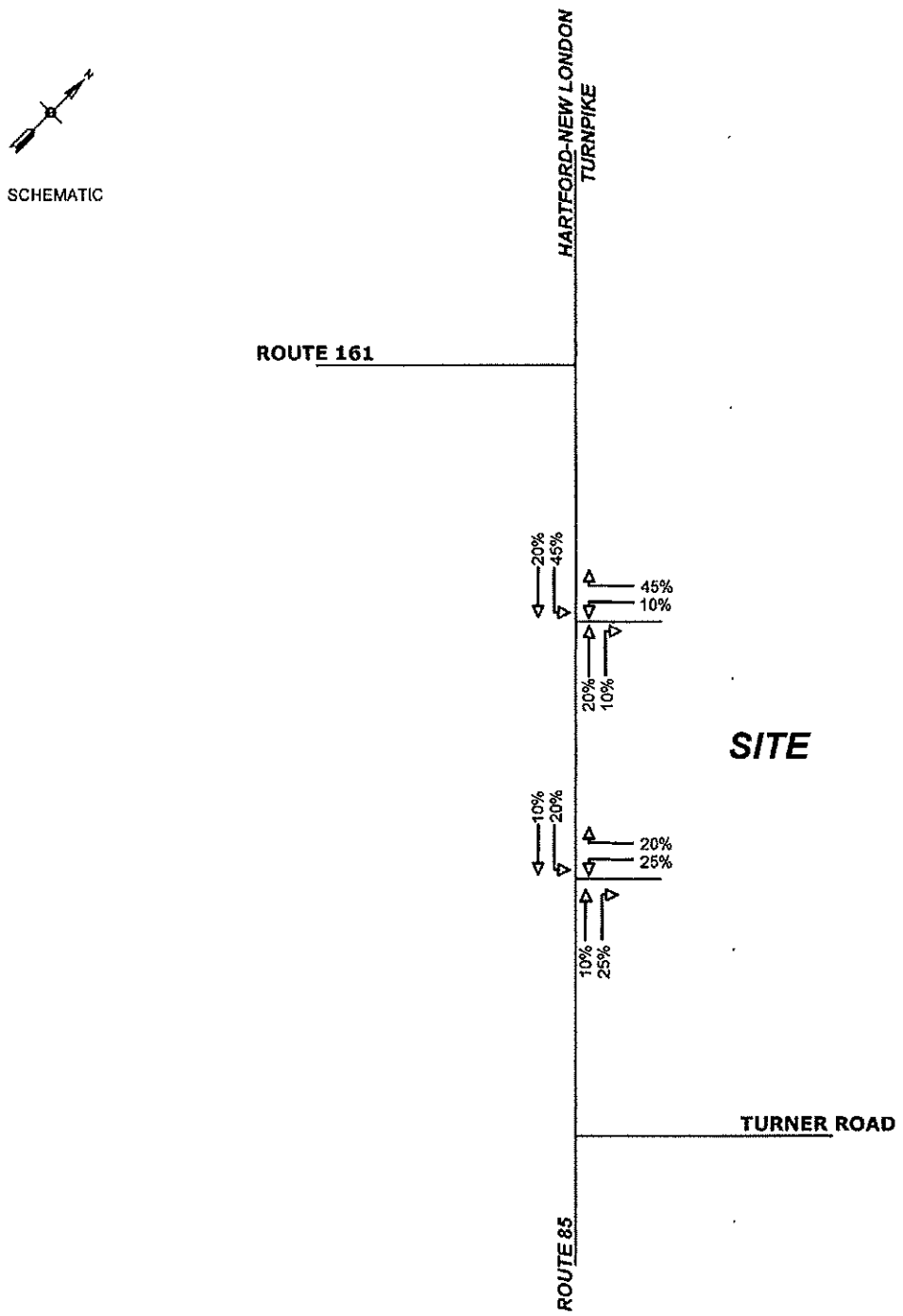
EXISTING TRAFFIC VOLUMES
WEEKDAY AFTERNOON PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 03



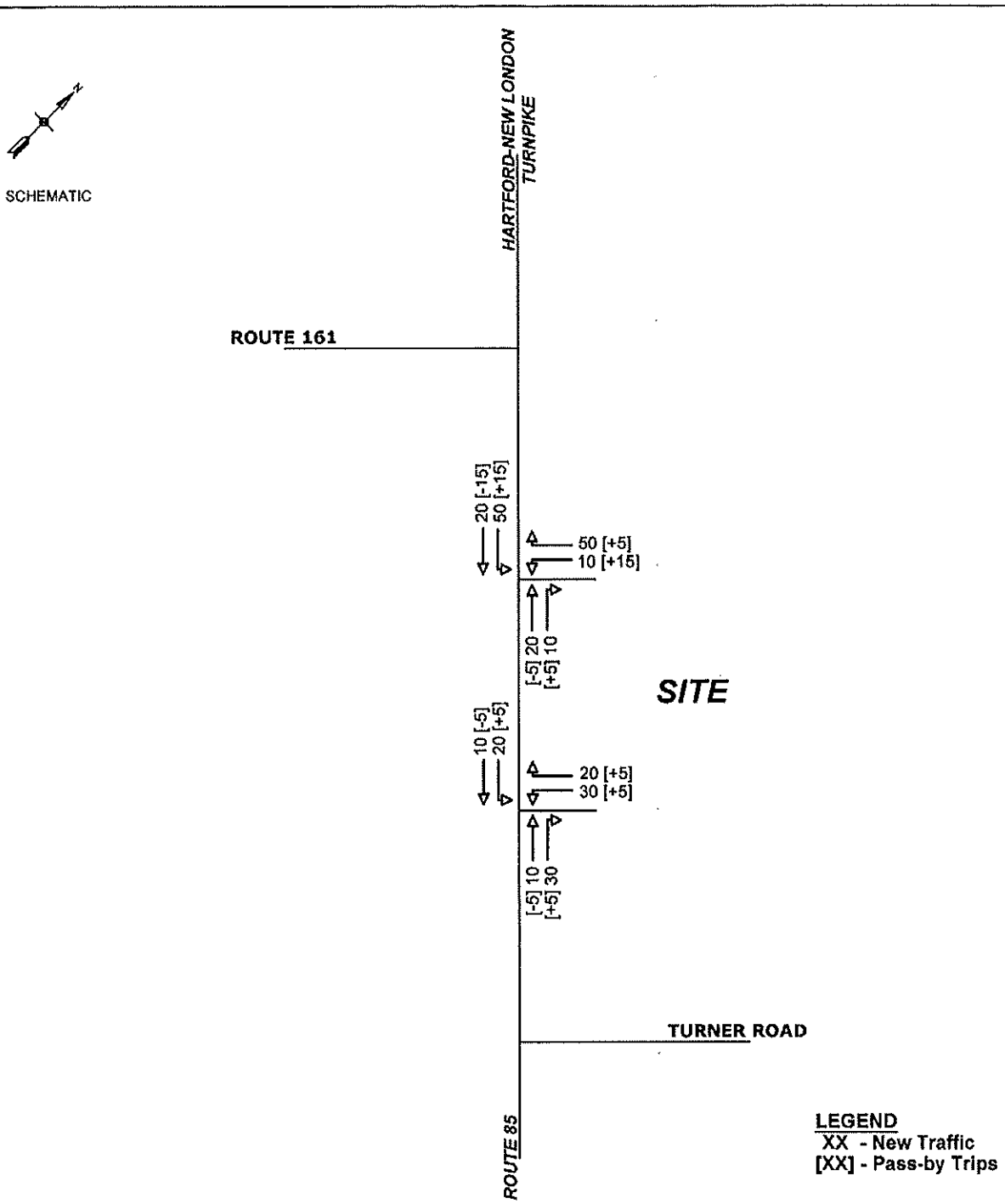
SITE TRAFFIC DISTRIBUTION

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 04



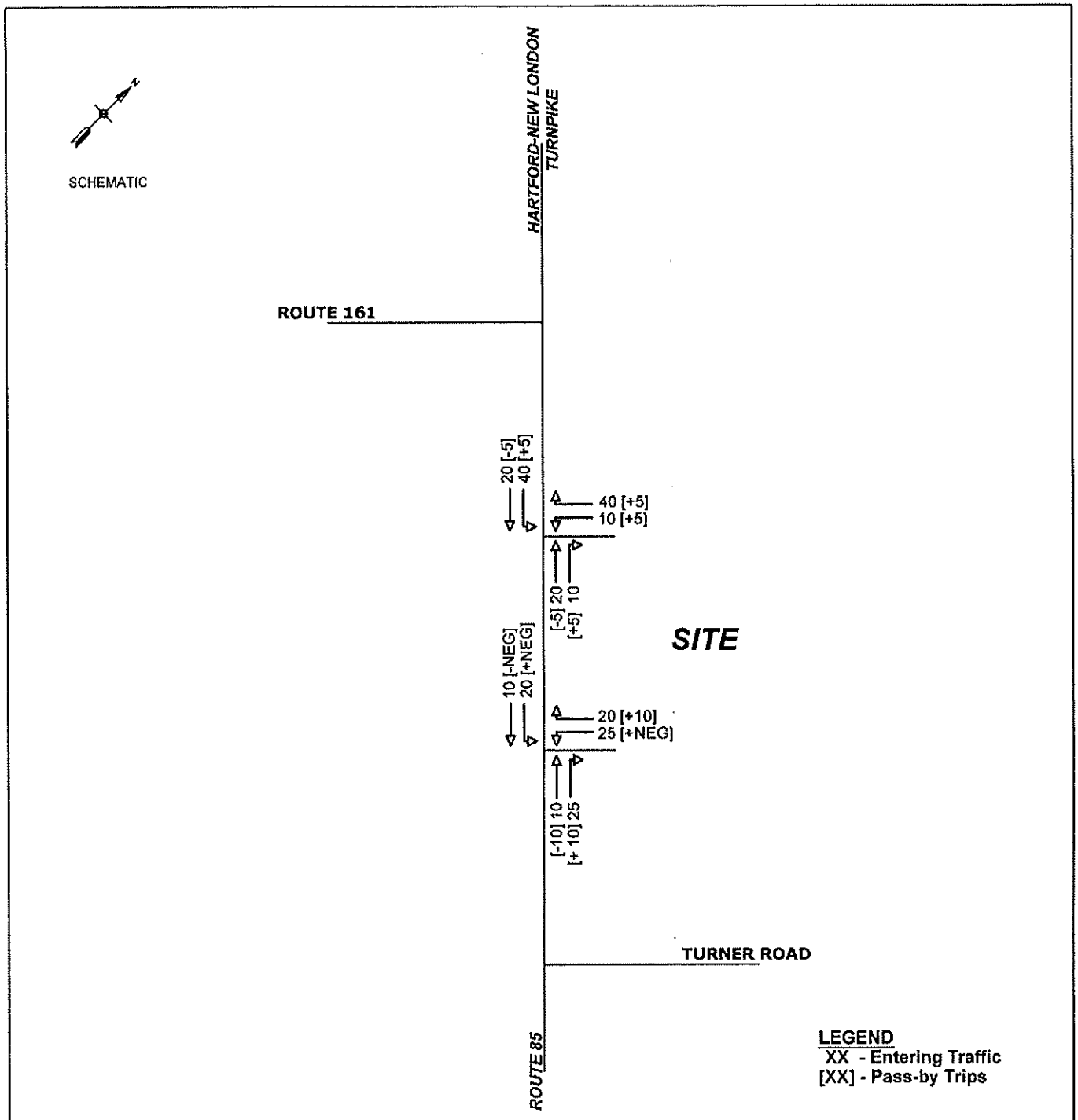
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY MORNING PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 05



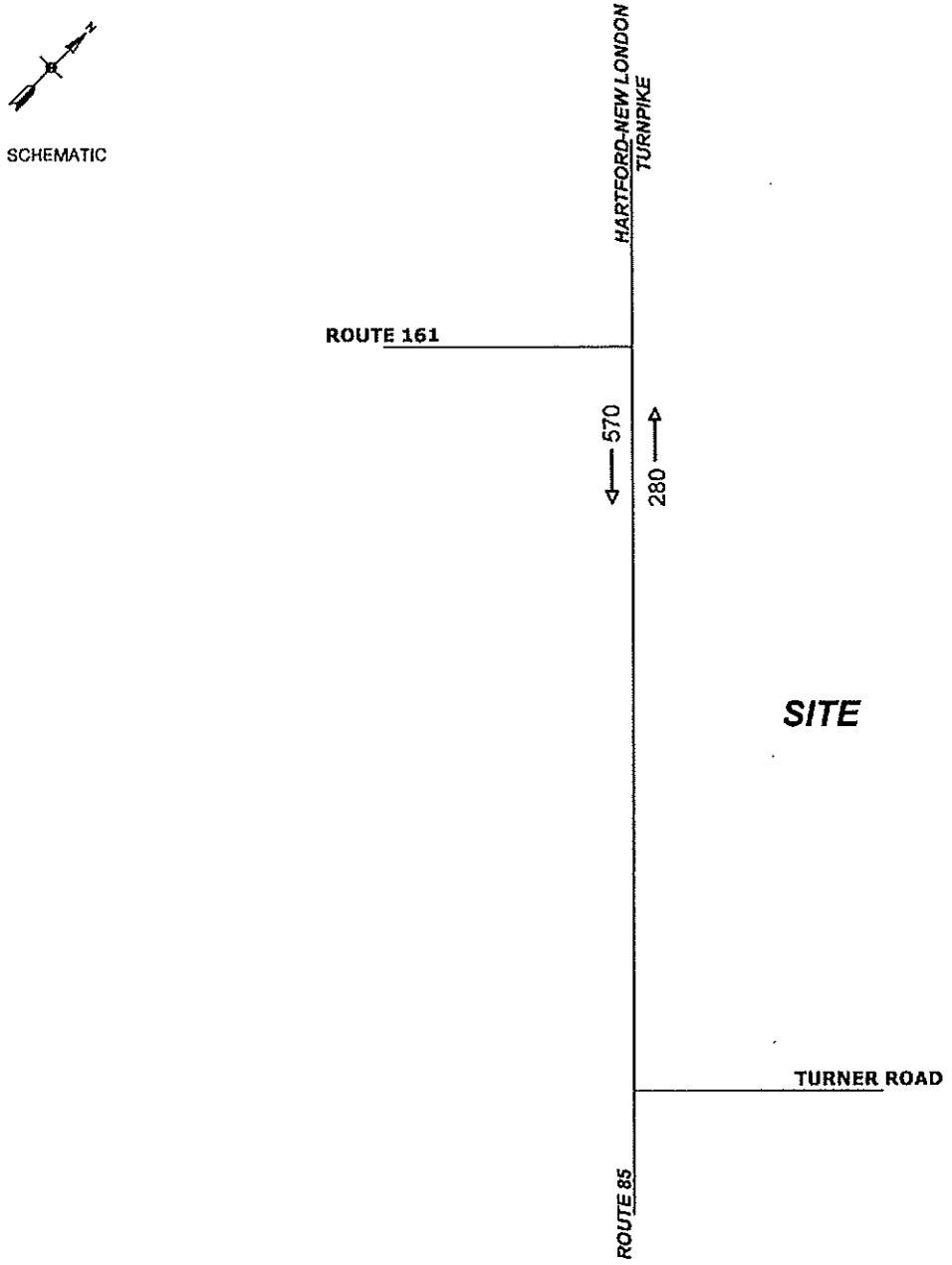
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY AFTERNOON PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 06



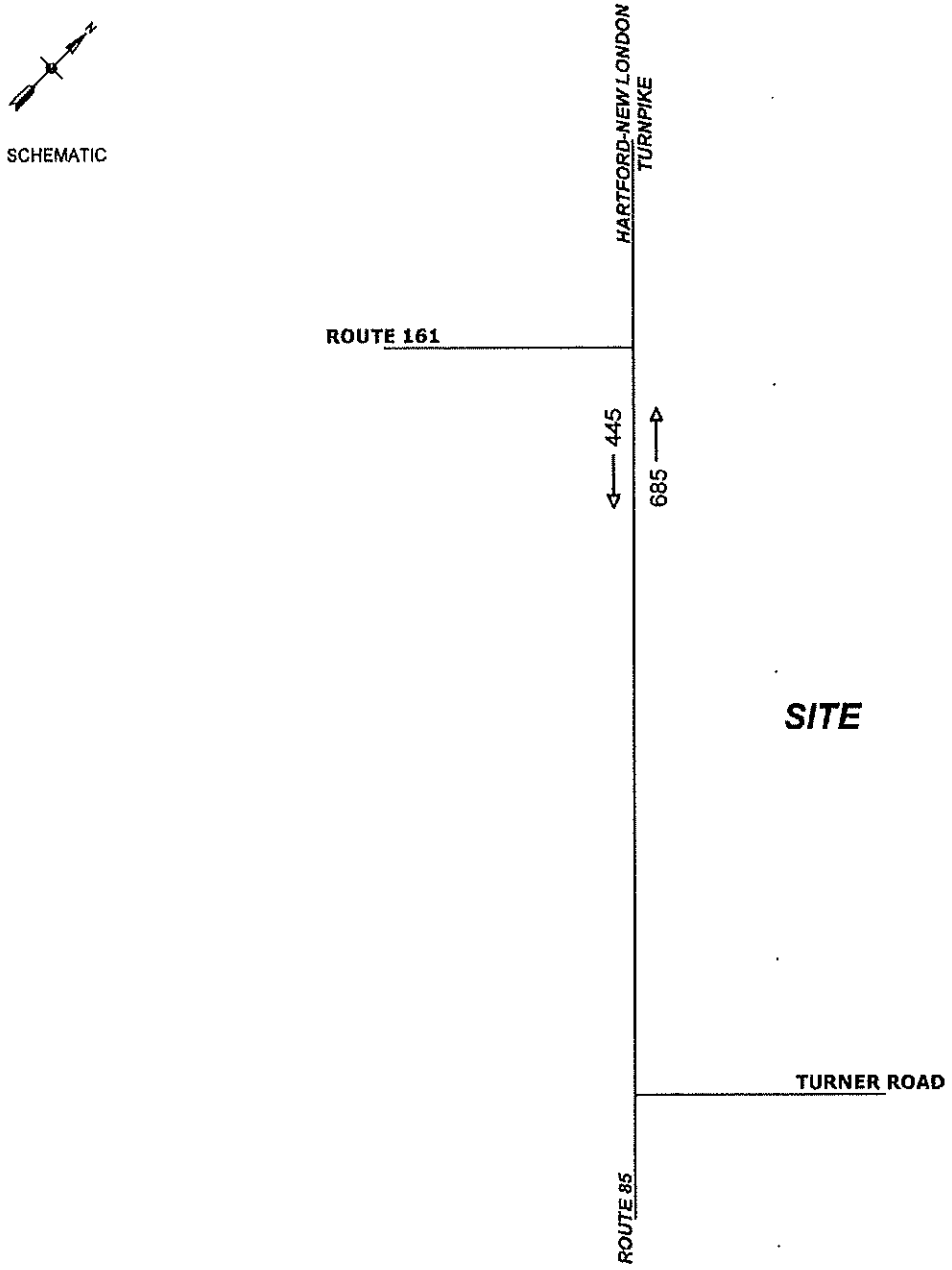
2020 BACKGROUND TRAFFIC VOLUMES
WEEKDAY MORNING PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 07



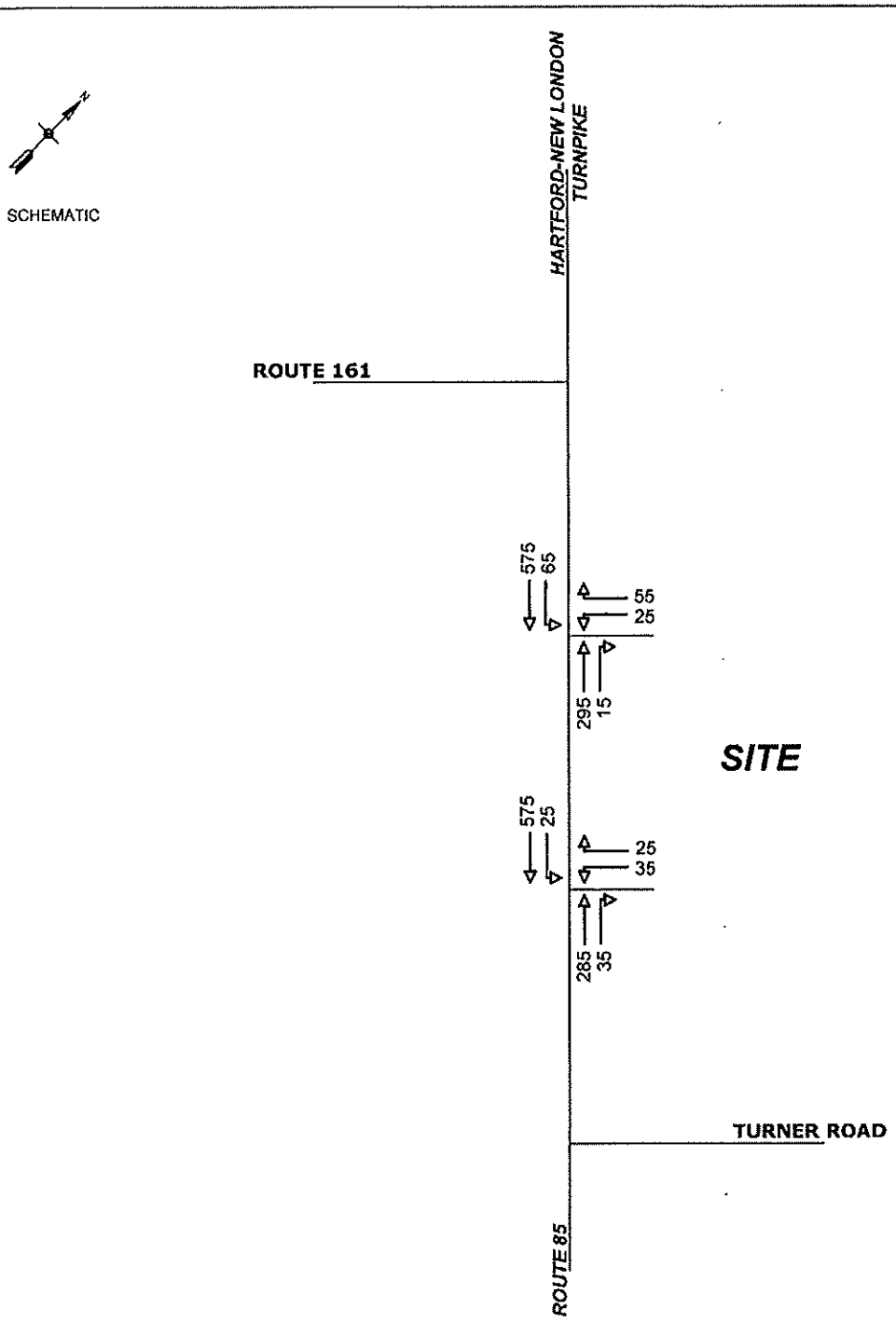
2020 BACKGROUND TRAFFIC VOLUMES
WEEKDAY AFTERNOON PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 08



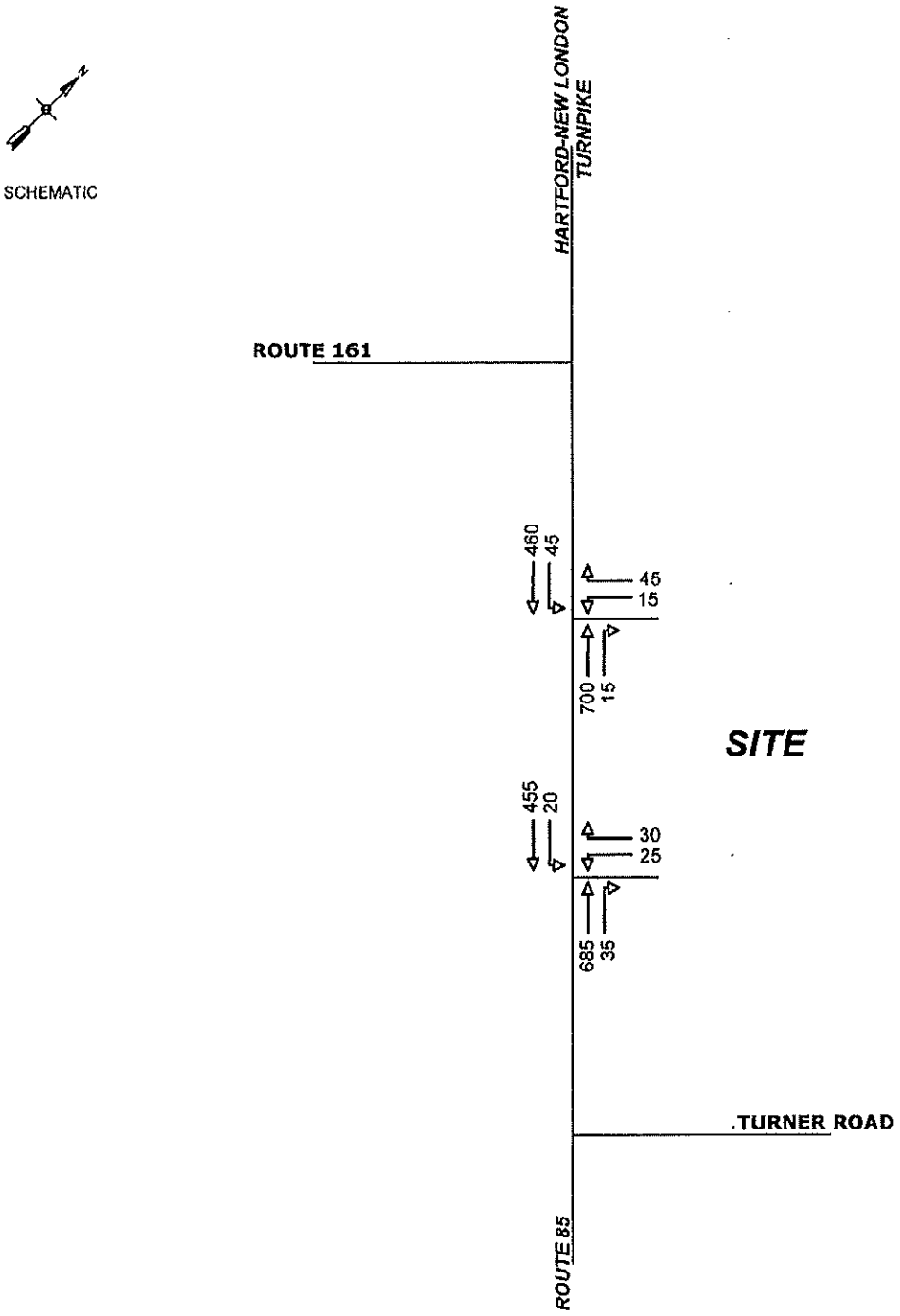
FUTURE 2020 COMBINED TRAFFIC VOLUMES
WEEKDAY MORNING PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 09



FUTURE 2020 COMBINED TRAFFIC VOLUMES
WEEKDAY AFTERNOON PEAK HOUR

Proposed Gas Station
1499 and 1505 Hartford-New London Turnpike

Montville, Connecticut

MILONE & MACBROOM

FIGURE 10

APPENDIX

LEVEL OF SERVICE
FOR TWO-WAY
STOP SIGN CONTROLLED INTERSECTIONS

The level of service for a TWSC (two-way stop controlled) intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. LOS criteria are given in the Table. LOS criteria are given below:

LEVEL-OF SERVICE CRITERIA FOR AWSC INTERSECTIONS	
LOS[1]	**CONTROL DELAY (s/veh)**
A	**≤ 10**
B	**> 10 AND ≤ 15**
C	**> 15 AND ≤ 25**
D	**> 25 AND ≤ 35**
E	**> 35 AND ≤ 50**
F	**> 50**

Note: LOS criteria apply to each lane on a given approach and to each approach on the minor street.
LOS is not calculated for major-street approaches or for the intersection as a whole.
LOS F is assigned to a movement if the volume-to-capacity ratio exceeds 1.0, regardless of the control delay

Reference: Highway Capacity Manual Version 6.0, Transportation Research Board, 2016.

HCS7 Two-Way Stop-Control Report

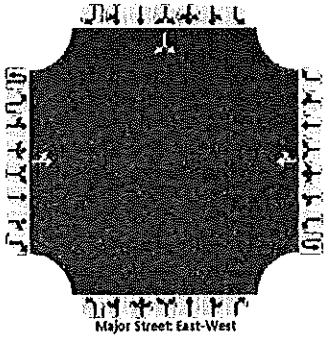
General Information

Analyst	WKF
Agency/Co.	MMI
Date Performed	9/3/2019
Analysis Year	2020
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Monvtille Gas Station

Site Information

Intersection	Route 85 at East Driveway
Jurisdiction	Montville
East/West Street	HFTD- NL Turnpike Route85
North/South Street	Site Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		25	575				285	35						35		25
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		27													65	
Capacity, c (veh/h)		1206													349	
v/c Ratio		0.02													0.19	
95% Queue Length, Q_{95} (veh)		0.1													0.7	
Control Delay (s/veh)		8.1													17.7	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.6												17.7			
Approach LOS													C			

HCS7 Two-Way Stop Control Report

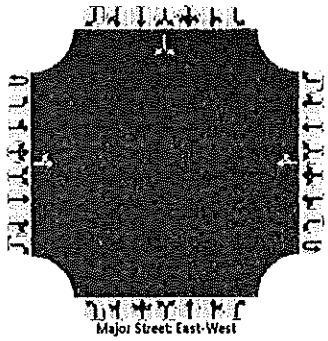
General Information

Analyst	WKF
Agency/Co.	MMI
Date Performed	9/3/2019
Analysis Year	2020
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Monvtille Gas Station

Site Information

Intersection	Route 85 at West Driveway
Jurisdiction	Montville
East/West Street	HFTD- NL Turnpike Route85
North/South Street	Site Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		65	575				295	15						25		55
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71													87	
Capacity, c (veh/h)		1217													412	
v/c Ratio		0.06													0.21	
95% Queue Length, Q_{95} (veh)		0.2													0.8	
Control Delay (s/veh)		8.1													16.1	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	1.5												16.1			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

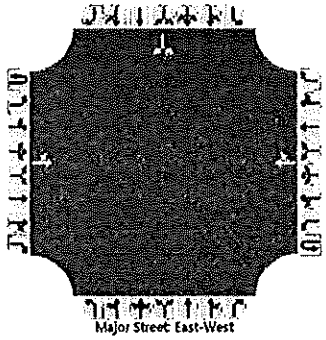
General Information

Analyst	WKF
Agency/Co.	MMI
Date Performed	9/3/2019
Analysis Year	2020
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Monvtille Gas Station

Site Information

Intersection	Route 85 at East Driveway
Jurisdiction	Montville
East/West Street	HFTD- NL Turnpike Route85
North/South Street	Site Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		20	455				685	35						25		30
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		22													60	
Capacity, c (veh/h)		831													248	
v/c Ratio		0.03													0.24	
95% Queue Length, Q_{95} (veh)		0.1													0.9	
Control Delay (s/veh)		9.4													24.1	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.7												24.1			
Approach LOS													C			

HCS7 Two-Way Stop Control Report

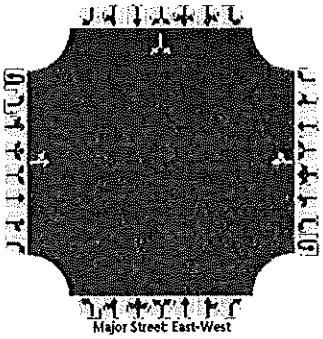
General Information

Analyst	WKF
Agency/Co.	MMI
Date Performed	9/3/2019
Analysis Year	2020
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Monvtille Gas Station

Site Information

Intersection	Route 85 at West Driveway
Jurisdiction	Montville
East/West Street	HFTD- NL Turnpike Route85
North/South Street	Site Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		45	460				700	15						15		45
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		49													65	
Capacity, c (veh/h)		835													281	
v/c Ratio		0.06													0.23	
95% Queue Length, Q_{95} (veh)		0.2													0.9	
Control Delay (s/veh)		9.6													21.7	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	1.6												21.7			
Approach LOS													C			

AUTHORIZATION

I, Asif Choudhry, owner of real property located at 1499 Hartford-New London Turnpike (Route 85), Montville, Connecticut hereby authorize Deer Run Stable, LLC, a Connecticut limited liability company, to file an application on my behalf with the Town of Montville Planning and Zoning Commission for a special permit for the development, use and operation of a gasoline/convenience store facility in conjunction with the combined development of properties located at 1499 and 1505 Hartford-New London Turnpike (Connecticut Route 85).

I do hereby further authorize Deer Run Stable, LLC, as well as its professional consultants, Angus McDonald Gary Sharpe & Associates, Inc., Heller, Heller & McCoy, CMG Environmental Services and Milone & MacBroom to represent my interests, as property owner, in all proceedings before the Town of Montville Planning and Zoning Commission with respect to said special permit and site plan application.

Dated at Montville, Connecticut this 7th day of August, 2020.

Asif Choudhry

AUTHORIZATION

Deer Run Stable, LLC, hereby authorizes the law firm of Heller, Heller & McCoy to file an application on its behalf with the Town of Montville Planning and Zoning Commission seeking a special permit and site plan approval for the development of properties located at 1499 and 1505 Hartford-New London Road (Connecticut Route 85) for a 4,960 square foot gasoline/convenience store facility.

Deer Run Stable, LLC does hereby further authorize the law firm of Heller, Heller & McCoy, the civil engineering firm of Angus McDonald Gary Sharpe & Associates, Inc., the environmental engineering firm of CMG Environmental Services and Milone & MacBroom (traffic consultants) to represent its interests in all proceedings before the Town of Montville Planning and Zoning Commission with respect to said special permit and site plan application.

Dated at Montville, Connecticut this 7th day of August, 2020.

DEER RUN STABLE, LLC

By: _____
Asif Choudhry, its Member

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
Harry B. Heller (hellermccoy@sbcglobal.net)
William E. McCoy (hhm-bill@sbcglobal.net)

Mary Gagne O'Donal (hhm-mary@sbcglobal.net)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 14, 2020

Town of Montville Planning and Zoning Commission
Attn: Ms. Marcia Vlaun, Director of Planning
310 Norwich-New London Turnpike
Uncasville, CT 06382

RE: Deer Run Stable, LLC - 1499 & 1505 Hartford-New London Turnpike (Route 85), Montville, Connecticut proposed gasoline/convenience store facility

Dear Marcia:

Enclosed herewith please find an application, filed on behalf of our client, Deer Run Stable, LLC, for the re-development of combined real properties located at 1499 and 1505 Hartford-New London Turnpike (Route 85), Montville, Connecticut for a 4,960 square foot gasoline/convenience store facility. The gasoline/convenience store facility is a use permitted by special permit in the C-1 Zoning District pursuant to the provisions of Section 10.3.1 of the Town of Montville Zoning Regulations. The special permit application is submitted in compliance with the requirements contained in Section 4.11.10 of the Montville Zoning Regulations.

Submitted herewith and constituting the application to the Town of Montville Planning and Zoning Commission for special permit and site plan approval with respect to this project are the following:

1. Original and nine (9) copies of the Special Permit and Site Plan Application.

2. Original and nine (9) copies of the Town of Montville Site Plan Review.

3. Authorization signed by Asif Choudhry (the owner of property located at 1499 Hartford-New London Turnpike, Montville, Connecticut) thereby authorizing Deer Run Stable, LLC to file the special permit and site plan application with the Town of Montville Planning and Zoning Commission for consideration.

4. Authorization signed by Deer Run Stable, LLC authorizing the law firm of Heller, Heller & McCoy, the civil engineering firm of Angus McDonald/Gary Sharpe & Associates, Inc.,

CMG Environmental Services and Milone & MacBroom (traffic consultant) to represent its interests in all proceedings before the Town of Montville Planning and Zoning Commission with respect to the special permit and site plan application.

5. Ten (10) prints of the site development plan entitled "Improvement Location Survey Prepared For Deer Run Stable, LLC 1499 & 1505 Hartford New London Turnpike Oakdale/Montville, Connecticut Date: January 10, 2019 Revisions: 1-23-20 Updated, 2-20-20 Updated, 2-27-20 Per Town Planner Scale: 1" = 20' Sheets 1 of 11 to 11 of 11 Job No. 186333 Angus McDonald Gary Sharpe & Associates, Inc. P.O. Box 608, 233 Boston Post Road Old Saybrook, Connecticut 06475 Tel. (860) 388-4671 Fax (860) 388-3962".

6. Three (3) copies of the Drainage Analysis for the project dated October 1, 2019 with supplemental information added on January 24, 2020 and March 11, 2020 prepared by Angus McDonald Gary Sharpe & Associates, Inc. with supporting drainage area maps attached thereto.

7. Ten (10) prints of the petroleum storage, transmission and dispensing facilities incorporated into the site development plan entitled "Underground Storage Tanks Installation Proposed Filling Station 1499 & 1505 Hartford-New London Turnpike, Oakdale, CT 06370 Owner Deer Run Stable LLC 96 Route 32 Franklin, CT 06254 Prepared For Service Station Equipment, Inc. 20 Murphy Road Franklin, CT 06254 Sheets T-1.0, UST-1.0 and UST-2.0 Issue Date: 12/17/2019 Revision No. 1 08/04/2020 Relocated Diesel Island By SH Ck'd By MS Drawn By: SH Checked By: MS Project No. 2019-236 CMG Environmental Services Engineering Services 67 Hall Road Sturbridge, MA 01560 Phone: 774-241-0901 Fax: 774-241-0906".

8. Ten (10) copies of the traffic impact study for the project entitled "Traffic Impact Study 1499 and 1505 Hartford-New London Turnpike Montville, Connecticut November 19, 2019 Prepared For: Mr. Asif Choudhry 96 CT Route 32 North Franklin, Connecticut 06254 Prepared By: Milone & MacBroom, Inc. 195 Church Street, 7th Floor, New Haven, Connecticut 06510 203-344-7887 www.mminc.com MMI#6886-01".

9. A copy of our notice of the filing of this application dated contemporaneously herewith and forwarded to the City of New London Department of Public Utilities by certified mail.

10. A copy of our notice of the filing of this application dated contemporaneously herewith and forwarded to the State of Connecticut Commissioner of Public Health by certified mail.

11. Our check in the amount of $510.00 payable to "Town of Montville" representing payment of the special permit and site plan review application fee in the amount of $450.00 together with the State fee in the amount of $60.00.

Please be advised that licenses to conduct regulated activities in conjunction with the development of this project were granted by the Town of Montville Inland Wetlands and Watercourses Commission at its regularly scheduled meeting of July 16, 2020. The Town of Montville Zoning Board of Appeals approved a Certificate of Location Approval for a motor vehicle fueling facility for the combined properties located at 1499 and 1505 Hartford-New London Turnpike, Montville, Connecticut at its regularly scheduled meeting of March 6, 2019.

Request is hereby made that you place this matter on the agenda of the Town of Montville Planning and Zoning Commission for its regularly scheduled meeting of Tuesday, August 25, 2020. We hereby further request that a public hearing on this special permit and site plan application be scheduled for a date convenient to the Planning and Zoning Commission thereafter.

Should you have any questions concerning this application or need any additional information, please feel free to contact the undersigned.

Very truly yours,

Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
Harry B. Heller (hellermccoy@sbcglobal.net)
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Mary Gagne O'Donal (hhm-mary@sbcglobal.net)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 14, 2020

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED
City of New London Department of Public Utilities
120 Broad Street
New London, CT 06320

Re: Deer Run Stable, LLC
Site Plan and Special Permit Application to the Town of Montville Planning and Zoning Commission for the development of a proposed gasoline/convenience store facility in a C-1 Zoning District
Montville Assessor's Designation: Map 005, Lots 023-00A and 024-00A
Address: 1499 and 1505 Hartford-New London Turnpike (Route 85), Montville, Connecticut

Gentleperson:

Please be advised that this office represents Deer Run Stable, LLC and Asif Choudhry, the owners of a 1.22 and 1.26 acre parcel of land, respectively, situated on the northeasterly side of the Hartford-New London Turnpike (Connecticut Route #85) in Montville, Connecticut. Our client has filed a site plan and special permit application with the Town of Montville Planning and Zoning Commission for the redevelopment of the combined properties for a gasoline/convenience store facility.

The land which is the subject of the site plan and special permit application is located within the watershed area of the City of New London Department of Public Utilities. We are providing notice to the City of New London Department of Public Utilities as well as the Commissioner of Public Health in accordance with the requirements of §8-3i of the Connecticut General Statutes. A copy of this notice is also being provided contemporaneously herewith to the Commissioner of Public Health of the State of Connecticut.

I enclose herewith for your reference a copy of the site plan and special permit application which has been filed with the Town of Montville Planning and Zoning Commission as well as a

copy of our transmittal to the Montville Planning and Zoning Commission delineating the supplemental information which has been provided with the application, together with copies of the supplemental information.

Should you require further information, please feel free to contact the undersigned.

Very truly yours,

COPY

Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
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Mary Gagne O'Donal (hhm-mary@sbcglobal.net)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 14, 2020

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED
State of Connecticut Commissioner of Public
Health
410 Capitol Avenue
Hartford, CT 06134

Re: Deer Run Stable, LLC
Site Plan and Special Permit Application to the Town of Montville Planning and Zoning Commission for the development of a proposed gasoline/convenience store facility in a C-1 Zoning District
Montville Assessor's Designation: Map 005, Lots 023-00A and 024-00A
Address: 1499 and 1505 Hartford-New London Turnpike (Route 85), Montville, Connecticut

Dear Commissioner:

Please be advised that this office represents Deer Run Stable, LLC and Asif Choudhry, the owners of a 1.22 and 1.26 acre parcel of land, respectively, situated on the northeasterly side of the Hartford-New London Turnpike (Connecticut Route #85) in Montville, Connecticut. Our client has filed a site plan and special permit application with the Town of Montville Planning and Zoning Commission for the redevelopment of the combined properties for a gasoline/convenience store facility.

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I enclose herewith for your reference a copy of the site plan and special permit application which has been filed with the Town of Montville Planning and Zoning Commission as well as a copy of our transmittal to the Montville Planning and Zoning Commission delineating the

supplemental information which has been provided with the application, together with copies of the supplemental information.

Should you require further information, please feel free to contact the undersigned.

Very truly yours,

Harry B. Heller

HBH/rmb