

VII. REQUIREMENTS FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT

A. TRAFFIC IMPACT REPORT

A traffic impact report may be required by the County in order to adequately assess the impact of a proposed development on the existing or planned highway network. The primary responsibility for assessing the traffic impacts associated with a proposed development rests with the developer, with the County serving in a review capacity.

The report should describe in quantitative terms how the traffic generated by the proposed development will affect the surrounding transportation system. Furthermore, the report should discuss what, if any, transportation improvements are needed and who's responsible for the cost of these improvements. A traffic impact report may be required for development equal to or exceeding the traffic generated as shown below or as requested by the County Superintendent of Highways, his/her designee, the town or village.

<u>TYPE</u>	<u>SIZE</u>
<u>Residential</u>	
Single Family Houses & Condominiums or Townhouses	100 Dwelling Units(or more)
Apartments	150 Dwelling Units(or more)
<u>Commercial</u>	
Restaurants	All
Shopping Centers	All
Theaters	All
Banks	3,000 square feet (or more)
Car Wash - Automatic	All
Convenience Store Gas Station	All
<u>Industrial & Offices</u>	
General	Over 50,000 square feet
Medical	Over 30,000 square feet
Industrial	Over 100,000 square feet
<u>Institutional</u>	
Hospital	All
School	All
Church with Day Care Facility	All
Parks	All

The developer shall obtain the services of a qualified transportation engineer familiar with preparing traffic impact reports. **The transportation engineer should discuss the scope of the study with the County Superintendent of Highways**

or his/her designee prior to starting the report.

An acceptable traffic impact report normally includes:

1. Develop Scope and Identify Study Area

A phone conversation or meeting should occur with the developer/traffic consultant and the affected agencies (Town, County, State) to determine the scope and study area that needs to be reviewed. At that meeting the agencies and consultant should agree upon the trip distribution patterns and trip generation land use code to utilize.

The size of the area to be studied should be based on sound engineering judgement and shall be mutually agreed upon by all involved. A verbal and pictorial description of the area should be included in the report.

Our rule of thumb is if the proposed development is adding 100 trips (entering & exiting) during one of the peak hours, to an intersection, that intersection should be studied as part of the scope of the traffic study for that project.

2. Existing Transportation System

Briefly describe the highway network in the study area including traffic volumes (ADT & Peak Hour, turning movement count diagrams), number of lanes, shoulders, speed limit, level of service, (using the *Highway Capacity Manual*, etc.). Describe the existing land use and identify any existing traffic problems. A review of the accident history may be appropriate.

3. Previously Approved Development

Discuss any planned improvements by others. Note the type, size, location and year of previously approved developments and any planned improvements to the transportation system by these developers or by others. Describe any future traffic problems that these developments may produce. Show background growth between actual count date and proposed full development using the growth rates recommended in the latest MCDOT background growth rate memo.

4. Proposed Development

Describe the proposed development, size, location, etc. Utilize the *ITE Trip Generation Manual*, latest edition, as a resource guide and estimate the number of additional trips generated by the proposed development during the peak travel periods. The times analyzed are usually the AM/PM weekday peak hour. For restaurant and retail development, the weekday noon, Friday PM and Saturday midday should be analyzed. If the proposed development is part of a chain that has other similar local developments, it is desirable to

count an existing similar development in lieu of using the ITE data.

5. Proposed Conditions

Describe how trips were assigned/distributed to the highway network and prepare a diagram showing the routes utilized by the traffic destined to/from this development. Analyze the affects the additional traffic has on the study area - identify the level of service and any problems. Consideration should be given to active transportation alternatives. Conduct any other traffic analyses needed based on the findings, (i.e.: signal warrants, auxiliary lane warrants, etc.). Consider safety concerns from queueing on or near controlled approaches.

6. Recommendations

Discuss the findings of the study including what improvements, if any, are necessary to maintain a reasonable level of service. Explore the feasibility of encouraging development to utilize alternative modes of transportation, (transportation demand management), (i.e., buses, walking, bicycling, ridesharing, etc.), and stagger work hours to minimize the impact on adjacent highways. Evaluate internal queueing arrangements for drive through sites.

B. VARIOUS TRAFFIC CONSIDERATIONS

1. Accesses - driveways, dedicated roadways

It is the County's goal to minimize the number of driveways and possible conflict points onto County highways. The following are some general guidelines as to number, location, width, etc. of the accesses. However, each location may have specific circumstances and problems, therefore, we reserve the right to modify our guidelines.

a. Number of:

- 1) For existing developments that are being expanded/modified, we recommend a thorough analysis be conducted of the existing accesses. Our intent is to minimize the number of accesses by consolidating them with ones under the developers control, or combining them with accesses of adjacent properties.
- 2) For multiple lot developments on high traffic volume highways or where the sight distance is limited, we encourage the use of frontage roads in lieu of individual or common driveways.
- 3) For commercial developments in urban settings, cross access agreements with adjacent properties should be considered to limit the number of access points.

- 4) If the projected traffic volumes entering and exiting the site result in excessive delays or queues, a Traffic Impact Report (TIR) may be required to study factors such as traffic volumes of the development and adjacent street(s), existing and proposed levels of service, delays, and proximity to intersections and traffic signals. A second access may be allowed or required by Monroe County based on the findings of our review of the TIR. However, since we encourage cross-access connections between adjacent properties and subdivisions, an existing access from an adjacent development may serve the same function of a second access. The location of the driveways will be a function of sight distance and traffic volumes at the nearest intersection.
- 5) For developments located on corner parcels, one access per road may be allowed, depending on the type of use. Accesses shall be located as far from the cross street as feasible.

b. Location:

When streets or commercial driveways result in offset intersections, a minimum of 200' shall be provided between offset centerlines. A minimum of 15' shall be provided between driveways adjacent to each other, from outside edge to outside edge.

It is not desirable to locate an access directly opposite another access unless there is a reasonable chance that the location could be signaled in the future. Otherwise, they are competing for the same gaps in traffic to enter and exit.

c. Width:

- 1) When the two way average daily entrance road/driveway traffic volume exceeds 1,000 vehicles, then two outbound lanes shall be provided. When delays to left turning exiting vehicles are excessive and/or right turn exiting traffic volumes are significant, then two outbound lanes shall be provided.
- 2) Residential streets shall conform to town standards or be a minimum of 20' in width uncurbed or 24' curbed at the approach, where they intersect the County highway. (Minimum 100' from the edge of County highway pavement).
- 3) Driveways
 - Residential - The minimum width is 10', maximum width is 20' per Monroe County's standard detail.

- Commercial - For a two way two lane driveway, the standard width shall be 24'. Driveways in excess of 30' in width will be considered on an individual basis.

d. Accesses on curbed County highways:

1) Radius curb will be considered for subdivision streets and commercial accesses:

Residential Street	Radii 20-35' *
Commercial	Radii 10-50' **

* 30' is the preferred radius, although this may be adjusted based on existing or proposed conditions.

** Radii should be determined by the largest type of vehicle frequently using the proposed access.

If the proposed roadways will be a dedicated Town road, and may become a bus route, then the radius may be adjusted to 35' based on the surrounding conditions. Similarly, for all cases, each intersection must be reviewed to determine the existing conditions with respect to vehicle turning movement types and frequency, turning lane and shoulder widths, approach angles, traffic movements.

The point of tangency or curvature of the radii shall meet the line of the existing curb on the County highway. Where radius curbing is used at driveways, drop curbing is not needed unless the driveway slopes away from the roadway. However, when accesses will have curbed radii on County highways without curbs, the point of tangency or curvature must be located at least 17 feet offset of the centerline to the front face of the curb.

2) Drop curb will be approved for residential driveways and commercial accesses as follows:

	DRIVEWAY WIDTH	APRON	TOTAL WIDTH AT CURB LINE
Residential	10' minimum - 20' maximum	5' each side of driveway	20'- 30' max.
Minor Commercial	10' minimum - 30' maximum	5' - 10' each side of driveway	20'- 50' max.

If it is determined that the width of the access must be wider than the maximum allowed, we will consider them on an

individual basis.

2. Auxiliary Lanes:

Left turn lanes on the County highway shall be installed when traffic volumes exceed those in Table I. Left turn lane warrants for four-lane, at-grade intersections shall be determined from the nomograph following this section.

However, for 2 lane roads, if a traffic study, gap study, etc., determines that a left turn lane is not justified, the County Superintendent of Highways or designee will consider alternatives, such as:

- a. A bypass lane, constructed with a minimum of a 10' wide travel lane, and maintaining the existing paved shoulder width, long enough to accommodate the peak hour left turn volumes with tapers in accordance with MCDOT standard details, and the National Manual on Uniform Traffic Control Devices and the New York State Supplement (MUTCD).
- b. A full depth asphalt shoulder, 8' wide, 200' long, 100' each side of the centerline of access with 25' tapers. Refer to Monroe County's standard detail for Full Depth Asphalt Shoulder.

If a left turn lane or a right turn lane is justified and recommended, then the consultant must determine the proposed transitions and storage lengths. For left turn lanes, the taper lengths shall be in conformance with the *Federal Manual of Uniform Traffic Control Devices*, latest edition. The storage length of a left turn pocket should be calculated by considering both the volume of left turn traffic, gaps in traffic, and the queue of the through traffic.

For right turn only lanes, the transition may be 50-75 feet in length. Similar to left turn lanes, the length of the right turn lane shall consider the right turn volume and the queue of the through vehicles.

3. Geometric Modifications:

If the County Superintendent of Highways determines that the proposed development requires geometric modifications to the County highway network, a 1" = 20' plan and specifications shall be prepared by the developer in accordance with County standards showing the modifications. The highway modifications will be completed by the developer at their cost, with all work subject to the review and approval of the County Superintendent of Highways. Record plans will be required to be prepared and submitted to the Monroe County Department of Transportation for review and approval.

If the modifications include traffic signalization, the traffic signal plans and specifications shall be prepared in accordance with County of Monroe standards. Record plans will be required to be prepared and submitted to the Monroe County Department of Transportation for review and approval.

4. Traffic Signal Analysis

The study should evaluate if a specific intersection meets the warrants for a traffic signal in accordance with the MUTCD. As part of the analyses, the non-conflicting right turn volumes should be removed.

TABLE I

WARRANTS FOR LEFT TURN LANES ON 2 LANE ROADS

Advancing Volume (V.P.H.) per lane

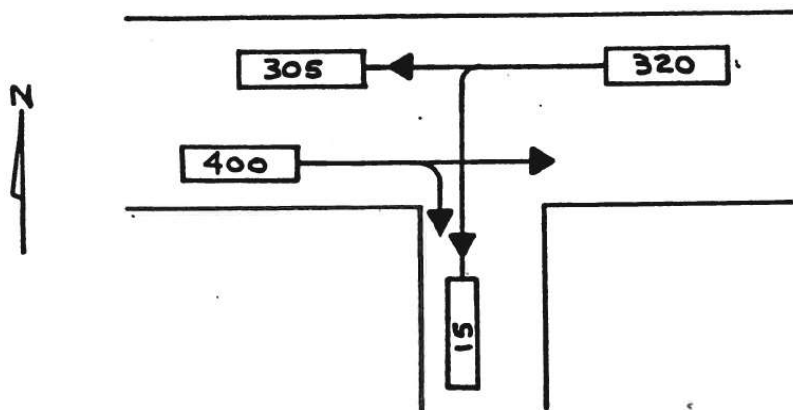
V.P.H. per lane Opposing Volume	40 mph Operating Speed			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	575	390	340

50 mph Operating Speed				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295

60 mph Operating Speed				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

Example:

85th percentile speed is 50 mph, with the following volumes:



1. Use the table #1 for the corresponding speed, therefore, since the speed was 50 mph, use the middle

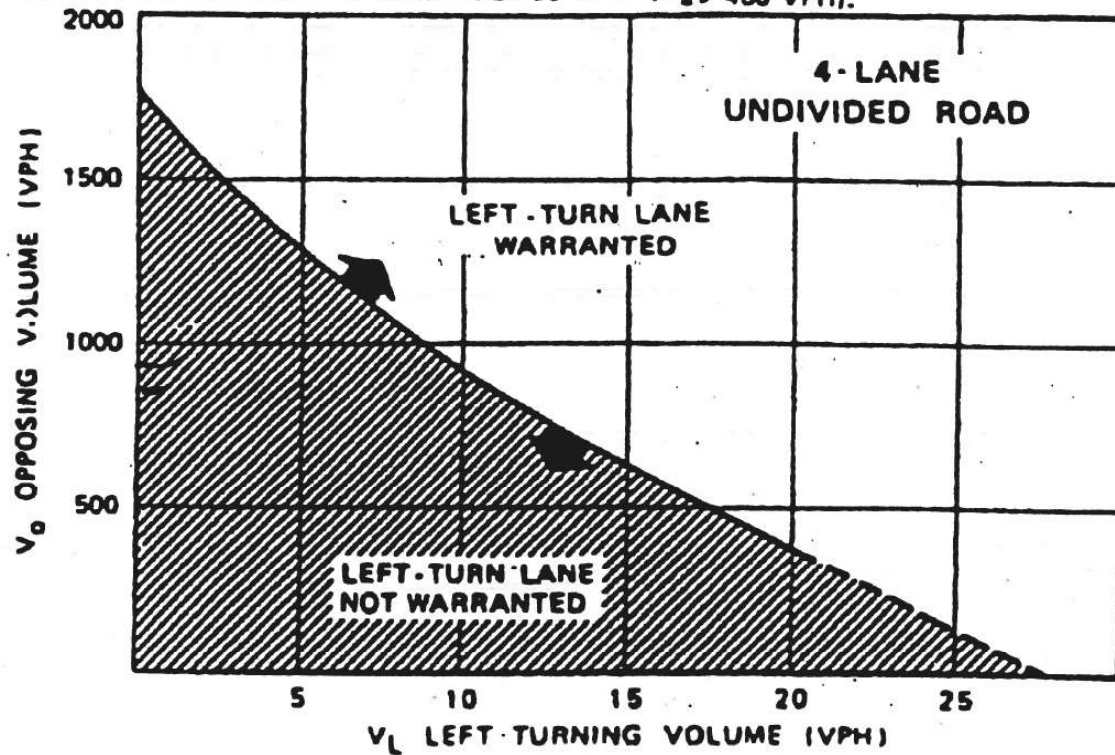
table.

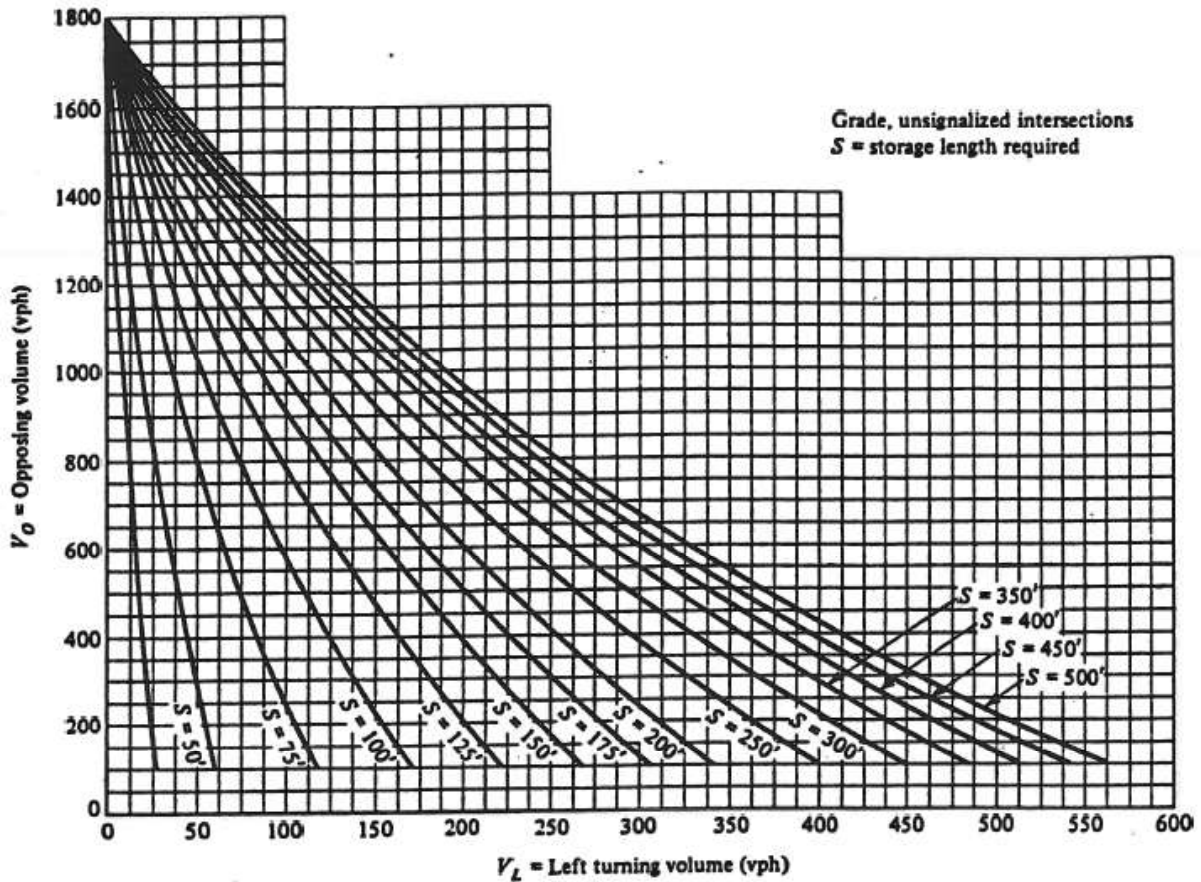
2. Find the volume opposing the left turns into the proposed subdivision in Column 1 opposing volume = 400 - Column 1, Row 3.
3. Find the advancing volume (thrus and lefts) on Row 3 of either Column 2, 3, 4 or 5. Advancing volume = 320 - Column 3, Row 3.
4. The heading for Column 3 is 10% left turns, therefore in order for a left turn lane to be warranted, at least 10% of the advancing volume must be turning left. 10% of 320 = 32, however our generated left turning volume is 15, therefore, a left turn lane is not warranted.

TABLE II

WARRANTS FOR LEFT TURN LANES ON 4 LANE ROADS

NOTE : WHEN $V_o < 400$ VPH (dashed line). A LEFT-TURN LANE IS NOT NORMALLY WARRANTED UNLESS THE ADVANCING VOLUME (V_a) IN THE SAME DIRECTION AS THE LEFT-TURNING TRAFFIC EXCEEDS 400 VPH ($V_a > 400$ VPH).





Nomograph for left-turn storage at nonsignalized intersections. The nomograph is used by reading horizontally from the opposing traffic volume, V_O , on the vertical axis and reading vertically from the left-turn volume, V_L , on the horizontal axis and locating the minimum storage length, S , at the point where the horizontal and vertical lines cross. For example, 100 left-turning vehicles per hour, V_L , with an opposing through volume, V_O , of 950 vph, will require a minimum storage length of about 150 feet.

C. **PROJECT DRAFTING, DESIGN AND CONSTRUCTION GUIDELINES**

1. DRAFTING GUIDELINES

The developer/engineer shall submit, as a minimum, a 17" x 22" with a maximum of 22" x 34" drawing, using a minimum scale of 1" = 50', for the proposed development. At a minimum the following should be shown:

- a. Development frontage, plus 500' for major development or 200' for minor development, in each direction, on both sides of the County highway showing driveways and intersecting roads.
- b. All roadways where improvements are proposed by the applicant.
- c. Property lines, tax account numbers, owners name and addresses of adjacent properties.
- d. Names of roadways with right-of-way lines and widths including reservations for highway purposes.
- e. Curb lines - existing and proposed.
- f. Drainage structures, headwalls, etc., existing and proposed.
- g. Sidewalks, existing and proposed (where applicable).
- h. Intersection sight distances for proposed accesses. Trees, bushes and other obstructions that may affect sight distance.
- i. Utilities - overhead (pole #'s) and underground, existing and proposed (type, dimension and location).
- j. Storm and sanitary sewers - rim and invert elevations and dimensions of all cross culverts, existing and proposed. Show directional flow arrows.
- k. Permanent easement descriptions to Monroe County (if required).
- l. A MCDOT approval stamp is required on all sheets showing proposed work on a county road or applicable details. If the stamp is not provided, a 3 inch wide by 2 inch tall space shall be reserved near the title block on each sheet of the plans for the MCDOT project approval stamp. The stamp is available on MCDOT website.
- m. Existing traffic signs and pavement markings.
- n. Show north arrow on all site, demolition, utility, etc. plans as up or to the right on the plan sheet.

2. DESIGN AND CONSTRUCTION GUIDELINES

- a. Storm sewer connections may be allowed to County storm sewers, however, it is the developer's responsibility to determine if the post development runoff rate is less than or equal to or greater than the pre development rate. If the post development rate is greater than the pre development rate, it is the

developer's responsibility to perform a drainage study to determine if the downstream County storm sewer system has the capacity to accept additional (greater than pre development rate) flows from any proposed storm sewer connection.

In the event the sum of the pre-existing drainage run off and the additional run off as a result of the development requires the existing storm sewer to be replaced, the costs for such will be borne by the developer. If, in the opinion of the County Superintendent of Highways, our existing system is in need of an upgrade, MCDOT may participate in a share of the upgrade. A cost estimate shall be prepared by the developer showing both the developer's and the County's share breakdown.

- b. It is desirable that linear storm sewer systems be installed along the frontage of County roads for all residential developments larger than one lot and all commercial developments bordering a County Highway. The size and type of the storm sewer will be determined by the County Superintendent of Highways, or his/her designee, upon review of drainage calculations submitted by the developer. Specific requirements are noted below in Item (c.) Field inlets (MCDOT Type A, or NYSDOT Type S) shall be required at the upstream side of all access points and at 200' intervals, or as directed by MCDOT. All storm sewer systems and driveway culverts must be installed on a line and grade with existing upstream and downstream systems to adequately maintain existing roadside drainage.

When enclosed drainage systems are being constructed for roadway drainage, existing storm drainage systems from private residences will be connected to the County system provided the runoff is storm drainage only and does not contain household or sanitary runoff. Individual driveway culverts and enclosed drainage systems that encompass less than 3 properties must be maintained by the property owner. MCDOT will assume maintenance responsibility for all permitted enclosed drainage systems that encompass three or more properties once they are constructed to MCDOT standards.

If a storm sewer system is not deemed feasible based on a review by the MCDOT, regrading of the existing drainage ditches/swales, and use of practices to enhance stormwater quality shall be considered. If regrading is required, grading work may be needed both upstream and downstream of the property by the developer; or possibly MCDOT. The swales/ditches should conform to the following parameters:

- 3 rod (49.5') R.O.W.- maximum depth = 3'.
- 4 rod (66.0') R.O.W.- maximum depth = 4'.
- All ditch front slopes should be a maximum of 1 on 3.
- The cross sectional capacity of the ditch shall be maintained to be equal to or greater than the capacity of all upstream systems.
- Considerations for stormwater quality enhancement shall be shown on plans for all development.

- c. Drainage along the frontage on County highways must be maintained. The owner will furnish and place a culvert or storm sewer system, if required, of a

size and type as determined by the County Superintendent of Highways or his/her designee. The minimum standard culvert size is 12" in diameter, however, smaller sizes may be considered in specific situations with MCDOT Highway Maintenance approval.

Projects which require a driveway culvert, and/or piping in the right-of-way will need the following:

- Documentation as to how the proposed pipe grade, proposed inverts and size were obtained.
- Upon submitting a site plan for review with a proposed culvert pipe, the plan must also show the invert elevations of the first existing culvert that exists upstream and downstream, or for all culverts 200' upstream and downstream, whichever is greater.
- If a cross culvert exists within 200' up or downstream of the proposed culvert and the project is changing the invert elevation, the project may be required to collect, and show invert elevations on the opposite side of the road as well, to ensure proper storm water flow is maintained.
- A minimum of 20' between adjacent driveway culverts should be maintained; otherwise a linear system should be considered (See Section 2.b. above).
- A culvert certification form must be completed certifying that the culvert was installed to the designed culvert elevations. This certification form should be completed, and signed by the engineer, surveyor or contractor. In the event a culvert was installed by the contractor without engineered plans, the contractor must complete the certification form to certify that the culvert was installed on the existing line and grade between the existing upstream and downstream culverts. Note that all driveway culverts must extend 10' beyond the edge of the driveway and have galvanized end sections in accordance with standard MCDOT details.

A Type A field inlet shall be placed upstream of each driveway or access where a roadside ditch is enclosed with storm pipe. When pipe for roadside ditch enclosures are 24" diameter or greater, a Type "S" drop inlet must be installed instead of the smaller field inlet.

All drop inlets in paved areas of County highways must be Type "S" for pipe sizes up to 24" in diameter. All drainage grates in paved areas must be reticulate type grates. Manholes must be used for pipe sizes larger than 24" in diameter.

Any enclosed drainage system that encompasses less than three parcels shall be maintained by the individual property owners. Any enclosed drainage system that encompasses three or more parcels will be taken over and maintained by MCDOT upon acceptance by permits and highway maintenance.

On County highways with curbs where the curb lane width is 13' or less, recessed Type "S" drop inlets shall be used.

Maximum spacing of drop inlets shall be no more than 200 feet without curbs or gutters and 300 feet with curb and gutters. All drop inlets or field inlets must be precast or cast in place concrete. Manhole spacing shall be a

maximum of 300 feet.

- d. Detention and retention pond outlets shall discharge into an existing drainage channel, not the County roadside drainage ditch, unless the runoff rate can be maintained at the undeveloped rate.
- e. All subdivision streets that do not slope away from a County road shall have a sag vertical curve acceptable to the County Superintendent of Highways.
- f. All subdivision street curbs and gutters shall end a minimum of 20 feet from the centerline of pavement or as directed by the County Superintendent of Highways.
- g. All utilities are preferred to be located in easement, out of the County right-of-way. If easements cannot be obtained, the utilities should be located within 5' of the right-of-way line, depending upon a review of the existing conditions (i.e., conflicts with other utilities, impacts to trees, etc.). Any conflicts will be reviewed on an individual basis.
- h. All construction of underground utilities shall be completed in accordance with the New York State Requirements for the Design and Construction of Underground Utility Installations within the State Highway Right of Way, latest revision. All references to the New York State Department of Transportation or State shall be construed as the Monroe County Department of Transportation.
- i. If modifications to the approved plans are necessary, then revised plans shall be submitted for MCDOT approval before work commences.
- j. On projects requiring extensive and complex construction procedures, the County may require full time inspection and documentation. These expenses will be the responsibility of the applicant.
- k. "As-Built" record drawings shall be submitted by the engineer to Monroe County for all major utility projects (i.e., sanitary sewer mains, water mains, storm sewer mains, gas mains) and/or projects that improve the County highway (both residential subdivisions and commercial/industrial developments).

SEE THE GENERAL REQUIREMENTS SECTION FOR ADDITIONAL DESIGN GUIDELINE REQUIREMENTS.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MONROE COUNTY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DETAILS IN EFFECT WHEN INSTALLED.