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# WWC News

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# Road Planning & Maintenance



## Introduction

Regardless of the type of project, roads are a major consideration. Counties, municipalities, mining facilities, oil & gas facilities, subdivisions and other entities all depend on roads for access and transportation flow. So, what steps are necessary in road planning? In this issue we will take a brief look at three areas of road planning that will include: traffic planning and impacts, road design and construction, and road maintenance.

## Traffic Planning and Impacts

Often, Traffic Planning results in the development of a Traffic Impact Study (TIS). A TIS may be necessary for increased road usage, new approach permits or the construction of new facilities. The results of a TIS can help communities determine necessary improvements that may be required to support a new facility, assist them in making land use decisions, identify areas that may pose a problem and assist them in allocating funds for necessary road improvements.

The TIS will determine how many trips per day a proposed facility will have and how these trips will affect the surrounding traffic network, including other forms of transit and pedestrian traffic. The results of the TIS along with the proposed use of land will determine what type of road will be necessary in order to provide an adequate level of service. There are several different types of road classifications, each designed and built to withstand a specific amount of traffic. The classifications identified by the Institute of Traffic Engineers (ITE) are as follows: **Major Arterial** - designed for more than 15,000 trips per day, **Minor Arterial** - designed for 5,000-15,000 trips per day, **Collector** - designed for 2,000-5,000 trips per day, **Industrial Collector** - designed for primarily industrial traffic, and **Local Access Street** - designed for less than 2,000 vehicles per day.

| Contents of a Traffic Impact Study | Description of Section Content |
|---|---|
| Background | Description of proposed new or redevelopment use. Identify peak hours to be used; provide a description of the study area and location of proposed access points. |
| Base Traffic Conditions | Description of road network and intersections adjacent to site and access points. Counts during peak hours. |
| Site Traffic Generation | Trip generation rates used and source of rates. Traffic Generated during peak impact hours. |
| Site Traffic Distribution | Methods used to distribute traffic. Table showing estimated traffic movement by direction. Discussion of method used for traffic assignment and assumptions for assignment of traffic to network. |
| Non- Site Traffic Projections | Definition of design year-opening of proposed new use or redevelopment. Identification of new use or redevelopment in study area whose traffic is used in the calculations. Adjustment of off-site through traffic volumes. Assembling of off-site traf- |
| Traffic Assignments | Assignment of peak-period traffic to intersections and access points. Figures for existing peak impact traffic hours, site traffic, and total traffic. Recommended design improvements. |
| Review of Site Plan | Internal Review at access points. Parking layout. Loading dock locations and access, including design truck used. Recommended changes. |
| Discussion of Future Traffic Conditions | Other new use or redevelopments in the area. |

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*WWC Engineering (WWC) is a full service corporation that has been serving the Rocky Mountain region since 1980. WWC's range of consulting services is broad and our corporate experience is extensive. With over 85 employees and offices in Sheridan, Laramie, and Casper, Wyoming and Helena, Montana, we have an exceptional staff of professionally licensed engineers, hydrologists, surveyors, and geologists with a full complement of highly skilled field technicians, CADD and GIS specialists, and clerical staff. WWC prides itself on producing the highest quality of work for our clients in a time-and-cost-efficient manner.*

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It is important to realize that these classifications and descriptions are a general recommendation by ITE that typically vary from community to community based on local conditions. Therefore, it is important to know the local regulations concerning these classifications.

## Road Design and Construction

The design and construction of a road must be completed in an organized, step-by-step approach. For new roads the first critical step is route selection; this is based on local, federal, and state design guidelines for curves, grades, drainage, etc. Depending on the type of road project, route selection will play a very significant role in the layout and overall function of the road. Design of underground utilities should be considered carefully when planning new transportation routes or upgrades. Sanitary sewer, storm sewer and water mains are typically placed within roadway corridors. Additional utility planning, such as cable, electrical, and telephone, must also be included in this process. Next we move to site surveying to get the exact site elevations and locations. Surveying will consist of a complete site topographic (combining planimetric and contours-elevation and configuration of the ground) and a planimetric survey (horizontal location of man-made and natural structures) that will identify grades, site features, existing utilities, and other critical items. The next step will be to design the final horizontal and vertical alignments to meet all applicable local, state, and federal design criteria. Road construction plans and bid documents are then drawn up and finalized. At this point it may be necessary depending on the type of project to obtain various environmental permits prior to construction. Once the correct environmental permits are obtained and approved, construction can begin.

## Road Maintenance

Once roads are constructed, road maintenance is very important for extending the life of your road. Good maintenance will not only protect the individuals driving on the road but will also prevent costly repairs. Ongoing maintenance is a must to ensure the road's integrity and to prevent costly reconstruction costs. In spring, summer, and fall, maintenance includes checking storm drains and culverts for blockage; clearing and repairing ditches; smoothing out shoulders; clearing out tall weeds and grass from road, grading of dirt and gravel roads; spraying for noxious weeds; and trimming any trees or branches that are in the right-of-way. In winter, snow and ice removal is necessary not only to protect motorists, but to prevent rough or undulating road conditions that can lead to increased road degradation. Whether you are using de-icing materials or you are dropping sand, street sweeping or cleaning should follow once the snow melts. If your road has signs, snow poles, delineators and winter warning signs these should be inspected and/or installed before the first storm. A consistent road maintenance schedule will go a long way to extend the life of your road and preserve your investment.

## Conclusion

Whether you are looking at traffic impacts, the construction or reconstruction of a road or road maintenance activities, planning is your key to success. For more information on road planning please contact your local planning/road department or WWC Engineering at (406) 443-3962.