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3-3A Legal Speed Limits

CHAPTER THREE

PROJECT DESIGN COORDINATION

During the development of a road or bridge design project, the designer must coordinate with many units internal and external to the Plan Development Sections. Chapter One discusses the functional responsibilities of the various units within the Indiana Department of Transportation. Chapter Two presents a network which describes the project development sequence for the design process. Chapter Three discusses specific coordination responsibilities between the designer and other units. Together, the three chapters will provide an understanding of the necessary interaction among the various units in project development.

3-1.0 INTERNAL INDOT UNITS

This Section discusses the specific coordination responsibilities between the designer and other INDOT units.

3-1.01 Design Division

3-1.01(01) Hydraulics Unit

The Design Division's Engineering Services Section's Hydraulics Unit is responsible for hydrologic and hydraulic analyses for both roadway drainage appurtenances and bridge waterway openings. The coordination between the designer and Hydraulics Unit is summarized as follows:

1. Bridge Waterway Openings. In coordination with the designer, the Hydraulics Unit performs the hydrologic/hydraulic analyses for bridge waterway openings. This includes the following:

    a. selecting the design storm frequency;

    b. selecting the hydrologic method;

    c. coordinating with agencies external to the Department (e.g., Indiana Department of Natural Resources);

    d. performing all hydraulic analyses; and

e. determining the size of the bridge waterway opening subject to any structural constraints.

2. Culverts. For all box culverts and pipe culverts, the Hydraulics Unit will perform all hydraulics work on the culvert design for in-house projects and "Small Structure Replacement" consultant projects. This includes the following:

   a. hydrological analysis to calculate design flow rate based on the drainage basin characteristics;

   b. hydraulic analysis to select culvert dimensions and layout (e.g., longitudinal slope); and

   c. selection of culvert options (smooth and corrugated sizes) or material (e.g., reinforced concrete, corrugated metal) as appropriate.

3. Roadway Drainage. The designer is responsible for the hydrologic/hydraulic analysis of open channels and pavement surface drainage. This includes determining a design discharge, selecting a channel lining, determining allowable ponding on the roadway, determining inlet locations, etc.

4. Closed Drainage System. The designer will present the proposed roadway design to the Hydraulics Unit documenting, for example, pavement widths, cross slopes, longitudinal grades, location of intersecting roads and approaches, location of inlets, etc. Based on this information, the Hydraulics Unit is responsible for the design of the closed drainage system (in-house projects only). This includes the following:

   a. flow calculations in the system;
   b. hydraulic grade line calculations;
   c. pipe size and material;
   d. pipe slopes; and
   e. outfall location and design.

5. Temporary Erosion Control During Construction. The designer has the primary responsibility to develop the plan for temporary erosion control during construction. Where necessary, the designer may seek technical guidance from the Hydraulics Unit.

6. FEMA Regulations. The Hydraulics Unit is responsible for determining that the project design is consistent with regulations promulgated by the Federal Emergency Management Agency (e.g., development within delineated flood plains).

7. Documentation. The following will apply to drainage appurtenances and bridge waterway openings.

   a. The Hydraulics Unit will submit the necessary information documenting its recommendations for the hydraulic design.

   b. The designer will incorporate all details into the road and/or bridge design plans.

   c. The designer will calculate all quantities for the roadway drainage appurtenances.

8. Coordination with County Surveyors on Legal Drains. The Hydraulics Unit will usually make initial contact during the hydraulic analysis, but the designer is responsible for coordination during the grade review stage of the design process.

See Chapter Twenty-eight for more information on the relative responsibilities of the designer and Hydraulics Unit.

3-1.01(02) Specialty Projects Group

The Design Division's Specialty Projects Group is primarily responsible for the design of traffic engineering projects (e.g., intersections, interchanges, signals, signs, lighting, Intelligent Transportation System (ITS)) and bridge rehabilitation projects. The group is responsible for the selection, design and placement of all permanent traffic control devices within the project limits on projects for which the Section is the lead unit. The group is also responsible for the structural design of supports for signs, traffic signals and highway lighting appurtenances. Where the Plan Development Sections are the lead unit in project development, the road or bridge designer must coordinate with the Specialty Projects Group to ensure that the traffic engineering features are properly incorporated into the road or bridge project.

For a road or bridge design project, the designer is typically responsible for determining the location and design of the permanent pavement markings. The Specialty Projects Group is responsible for the design of any traffic signals, highway lighting and ground-mounted overhead/cantilever signs. For these traffic control items, the Specialty Projects Group will submit the plans, quantities and special provisions directly to the Division of Design's Records Unit or incorporate the design within the road or bridge plans.

Where railroad crossings are located within the project limits, coordination between the designer, the Specialty Projects Group and the Engineering Services Section's Railroad Unit will be necessary to ensure that an agreement with the railroad company for signing/signalization at the crossing is secured.

For bridge rehabilitation projects, the Specialty Projects Group is typically the lead unit. However, this group may coordinate with the Plan Development Sections for any work on the roadway approaches (e.g., alignment, guardrail-to-bridge-rail transitions).

Some projects may require the development of a Transportation Management Plan (TMP). See Chapter Eighty-one. The designer and Specialty Projects Group, among several other units, will coordinate in the preparation of a TMP.

3-1.01(03) Surveying Unit

The Engineering Services Section's Surveying Unit is responsible for conducting route survey work for the Plan Development Sections, including in-house design projects and some consultant-design projects. The following summarizes the coordination with the road or bridge designer:

1. Field surveys. The Surveying Unit performs the route survey work using its own field survey crews, typically after the Engineer's Report (Scope of Work Report) is complete but occasionally sooner if the information is needed to adequately define the project scope. The Surveying Unit reviews and processes the raw data for transmittal to the designer in electronic format. If the designer determines that additional survey data is needed, the designer must make a request for and coordinate with the Surveying Unit as needed.

2. Route Plats. If the project requires purchase of right-of-way, the Surveying Unit will locate all physical evidence of property lines and corners in the field. The Unit then prepares a route survey plat in electronic format suitable for inclusion in the project plans and for use by the Land Acquisition Division for recording the route survey at the county court house.

3. Control Traverse Diagram. The Surveying Unit will perform the control traverse survey to establish the existing centerline or survey baseline for the project and will provide that information in electronic format to the designer for inclusion in the design project plans.

4. Aerial Surveys. The Surveying Unit does not perform aerial surveys. If the scope of the project or schedule is such that an aerial survey is needed, the designer must coordinate with the Photogrammetry Unit in the Graphics Engineering Section of the Information Services Division as needed and/or obtain the services of an aerial surveying consultant. The Surveying Unit may, if feasible, perform the ground control survey to provide the aerial targets and other needed ground survey information. However, the aerial surveyor will be responsible for integrating the ground survey data and the aerial data into a finished survey in an electronic format suitable for use by the designer.

3-1.01(04) Consultant Services Section

The Department may use a consultant on road and/or bridge design projects. When a consultant is used, the Consultant Services Section Project Coordinator is the primary contact for scheduling plan submittals. The Plan Development Section Project Manager will be the primary contact for technical support and will review the plans prepared by the consultant.

***** PRACTICE POINTER *****

Consultants having questions regarding the *Indiana Design Manual* and design policy in general should contact their INDOT reviewer and not the FHWA.

3-1.01(05) Utilities Unit

The Engineering Services Section's Utilities Unit is the lead unit for contacts with utility companies. The designer places all utility topography on the construction plans. Coordination with utilities typically begins at the preliminary field check stage. The designer sends field check notification and plans to all affected utilities and to the Utilities Unit. On projects where utility conflicts could be significant, the designer may choose to contact the Utilities Unit at an earlier stage in the plan development process. After design approval is obtained, the Utilities Unit will request plans from the designer for transmittal to the utilities. Using these plans, the utilities will develop their own relocation plans, which are then sent to the Utilities Unit for approval. The designer, as needed, incorporates utility information into the design features, project plans and specifications. The Utilities Unit will obtain agreements and cost estimates as needed from the utilities for reimbursable utility work and authorize them to proceed with design and/or construction activities as needed.

3-1.01(06) Railroad Unit

The Engineering Services Section's Railroad Unit is the lead unit for contacts with railroad companies. The designer places all railroad facilities (tracks, bridges, drainage structures, trackside equipment, communication and signal systems, warning devices, electrical/mechanical housings, etc.) and railroad rights-of-way information on the construction plans. The Railroad Unit must review all projects that impact railroad facilities, that encroach on railroad right-of-way, or that

potentially affect railroad operations (such as highway construction operations and/or traffic maintenance, etc.). The designer initiates the railroad coordination process by providing the Railroad Unit with a set of plans denoting the project impacts on railroad facilities. Typically, this is done at the preliminary field check stage. However, projects that involve significant alteration of or encroachment upon railroad facilities (e.g., altering horizontal or vertical track profile, construction of an overpass or underpass) should be evaluated during the Scoping phase of the project. The designer, as needed, incorporates railroad information into the design features, project plans and specifications. The Railroad Unit will obtain agreements, plans and cost estimates as needed from the railroad and authorize them to proceed with design and/or construction activities as needed.

3-1.02 Environment, Planning and Engineering Division

The Environment, Planning and Engineering Division is responsible for a variety of activities related to project scoping, environmental impacts and environmental procedures. The following summarizes the coordination between the road or bridge designer and the Environment, Planning and Engineering Division:

1. Project Scope of Work. The Environment, Planning and Engineering Division determines for all expansion and some preservation projects the overall Project Scope of Work; i.e., the basic highway improvement parameters (e.g., number of lanes, warrants for truck-climbing lanes, level of access control). The road or bridge designer is responsible for developing the detailed project design within the Scope of Work established by the Environment, Planning and Engineering Division. In some cases, the designer may need to contact the division for clarification or if, for some reason, it is necessary to revisit the Project Scope of Work. The designer must secure concurrence from the division for fundamental, consequential changes to the scope of work.

2. NEPA/IDEM Requirements. The road or bridge designer may work with the Environment, Planning and Engineering Division to ensure that the project meets environmental requirements pursuant to the National Environmental Policy Act and the Indiana Department of Environmental Management Regulations. This includes project documentation (i.e., categorical exclusion, EA, EIS), water quality impacts, biological impacts, historical impacts and archeological impacts. In general, the Environment, Planning and Engineering Division makes its environmental determination of impacts based on the Engineer's Report (Scope of Work Report) prepared for the project.

3. Section 4(f). A Section 4(f) approval is required from the Federal Highway Administration if a project will use land from a publicly owned park, recreational area or wildlife/waterfowl refuge or from a significant historic site. An approval will be granted only if there is no feasible and prudent alternative to the use of land from the property. Where a Section 4(f)

approval is required, the Environment, Planning and Engineering Division will secure the approval. If a change in scope occurs in the design phase, the designer should notify the Environment, Planning and Engineering Division so that a proper evaluation can be made.

4. Section 6(f). Federal law places restrictions on the use of land acquired with funds authorized by the Land and Water Conservation Fund Act of 1965 as administered by the U.S. Department of Interior (Section 6(f) of the 1965 Act). Where a Section 6(f) approval is required, the Environment, Planning and Engineering Division will secure the approval.

5. Mitigation Features. The Environment, Planning and Engineering Division and designer work together on the plan for mitigation of environmental impacts.

6. Early Coordination. The Environment, Planning and Engineering Division determines the need for early coordination on environmental issues with other State, Federal and public entities and makes all direct contacts. The designer receives copies of the early coordination so that the designer is aware of the comments from the various entities and problems may be resolved early in the design process.

7. Contaminated Sites. The Environment, Planning and Engineering Division identifies known contaminated sites. The division will provide the Indiana Department of Environmental Management with information on the site with the intent that IDEM will remediate the site before INDOT purchase. The division will provide the designer with any necessary special provisions. The designer is responsible for incorporating these special provisions into the contract documents if the contamination removal or site remediation will be accomplished by the highway contractor.

8. Section 106. For all Federally funded projects, INDOT must identify archeological and historic sites in the vicinity of the project. The identified sites must be evaluated to determine if they are eligible for the National Register of Historic Places (NRHP). INDOT submits information to the State Historic Preservation Officer (SHPO) for review and comment. If a site is considered eligible by SHPO for the NRHP and if the project will affect the site, the Department is required to follow the proper Federal procedures. The Environment, Planning and Engineering Division is responsible for the Section 106 process.

3-1.03 Land Acquisition Division

The Land Acquisition Division is responsible for all activities related to the legal right-of-way for the State highway system. This includes appraisals, acquisitions, relocation and property management. The following summarizes the coordination between the designer and Land Acquisition Division:

1. Coordination. The designer provides the Division with the needed design information to determine the right-of-way impacts.

2. Plan Preparation. In coordination with the Land Acquisition Division requirements in Chapter Eighty-five, the designer is responsible for determining the R/W design. The designer prepares a separate set of right-of-way plans for each project where right-of-way impacts exist and submits the plans to the Land Acquisition Division where the plans are modified to become Final Right-of-Way Plans. See Part IX for information on the preparation of right-of-way plans.

3. Acquisition. The Land Acquisition Division performs all right-of-way work and procures all takings and easements needed for the project. The division notifies the designer of any design considerations resulting from negotiations with the property owners.

3-1.04 Materials and Tests Division

The Materials and Tests Division is responsible for testing and certifying all materials used on Department projects. This includes geotechnical analyses and materials for pavements and structures. Normally, the District materials personnel perform the field sampling. The coordination between the designer and the Materials and Tests Division is summarized as follows:

1. Geotechnical. The Geotechnical Section prepares a Geotechnical Report for roadway and/or bridge projects when necessary. The Report presents the soil and rock types, recommended foundation type (e.g., pile type, spread footings), boring logs, bearing capacities, slope stability, rock cut recommendations, peat excavation, subsurface drainage needs, waste products, etc. The designer comments on the Report and works with the Geotechnical Section to resolve any conflicts. The designer incorporates the geotechnical recommendations into the project design plans.

2. Pavement Design. The Materials and Tests Division determines the pavement type (concrete or bituminous) and rehabilitation treatments (e.g., recycling, crack and seat) and designs the pavement structure and subsurface drainage. The designer incorporates the pavement design into the project design plans.

3. Walls. Where needed, the designer is responsible for preparing the design of retaining walls, reinforced earth walls, bin walls and gabions. The designer, if necessary, will seek technical assistance from the Materials and Tests Division.

4. Special Provisions/Specifications. For those special provisions, supplemental specifications or specifications related to materials, the designer coordinates with the Materials and Tests Division in their preparation.

5. New Materials/Experimental Items. The use of any new materials and/or experimental items in the project may be initiated by several sources (e.g., the road or bridge designer, the traffic engineer, the New Products Committee). Depending upon the type of new material or experimental item, the Materials and Tests Division may be responsible for monitoring the post-construction performance. In these cases, there will be coordination between the designer and the division.

3-1.05 Contract Services Section

The Contract Services Section, among its duties, is responsible for preparing the construction contract documents and administering the highway contract lettings. The designer will coordinate with the section as follows:

1. Project Design Plans. After the project plans have been finalized, the designer submits the final tracings to the Project Coordinator who submits the tracings to the Design Division's Records Unit. The Records Unit will use the tracings for printing of the contract plans. The prints are forwarded to the Contract Services Section by the Records Unit for sale to interested contractors. The original final tracings are maintained permanently in the Records Unit files.

2. Special Provisions. The designer is responsible for the development of any necessary special provisions for the project. The Contract Services Section ensures that these are included within the final contract document.

3. Engineer's Estimate. The designer is responsible for preparing the estimated construction costs for all roadway and bridge items. The Contract Services Section will review the designer's estimate and check it for errors and/or omissions. If significant discrepancies are noted, the two units will resolve any differences. The Contract Services Section will prepare the final Engineer's Estimate for the bid opening.

4. Contract Proposal Book Certification. Within one week after receipt, the designer should review the plans and proposal book for each contract for which the designer is signing and sealing some or all of the plan sheets. The designer should complete the Contract Proposal Book Certification form (See www.ai.org/dot/design/consult.htm for revised form) and send the original to the appropriate district construction engineer with copies to the Contracts and Construction Division's Contracts Section and the Design Division's project coordinator. If

errors are noted, the designer should also contact the appropriate district construction engineer to determine how the errors should be handled (revision before open bids, construction change after bids opened, etc.). This determination should be documented in a memorandum to the appropriate district construction engineer with copies to the Contracts Section and the project coordinator.

3-1.06 INDOT District Offices

The Department's District Offices (Crawfordsville, Fort Wayne, Greenfield, LaPorte, Seymour, and Vincennes) provide the field services needed within each geographic area. Their responsibilities include maintenance of the State highway system, construction inspection services and contacts with county and city governments. Specifically for preconstruction activities, the coordination between the designer and district offices is summarized as follows:

1. Coordination. In general, for all design projects, the Central Office will maintain a steady contact with the district office. The district office, for example, will be invited to all field reviews and may receive some project-related correspondence.

2. Aerial Survey. When an aerial survey is conducted, the district office may provide the control traverse and "pick-up" field survey to locate items which may be missed by the aerial survey (e.g., underground utilities). The district conveys this information to the Information Services Division 's Graphics Engineering Section's Photogrammetry Unit or to the aerial survey consultant for inclusion in the aerial survey.

3. Soils. The district office is responsible for testing soils to be used in embankments to determine soil characteristics. Its report is submitted to the Materials and Tests Division in the Central Office. The district office may also provide recommendations for shrink/swell factors for project soils. The designer must reflect this information in the project design.

4. Transportation Management Plan (TMP). On those projects where a TMP is prepared, the district's Traffic, Development, and Construction Sections, and the designer, among several other INDOT units, may collaborate on the design and implementation of the TMP.

3-1.07 Project Management Section

The Project Management Section begins project oversight and guidance when the Preliminary Engineering/Environmental Phase begins. The Project Manager is responsible for ensuring a schedule is agreed to and that project development maintains this schedule throughout the project

development process. If, during the development phase, a scope or design change is required, any proposed corresponding schedule changes must be approved by the Project Management Section. Proposed schedule changes are not automatic.

3-1.08 Information Services Division

The Information Services Division, among many other functions, is responsible for providing project-related CADD services. The designer must coordinate with the division in the preparation of all CADD-generated project plan sheets.

3-2.0 EXTERNAL UNITS

This Section discusses the specific coordination activities between the designer and units external to INDOT.

3-2.01 Federal Agencies

3-2.01(01) Federal Highway Administration (FHWA)

The Federal Highway Administration (FHWA) administers the Federal-aid program which funds eligible highway improvements nationwide. Their basic responsibility is to ensure that the State DOTs comply with all applicable Federal laws in their expenditure of Federal funds and to ensure that the State DOTs meet the applicable engineering requirements for their proposed highway projects. FHWA maintains a Division Office within each State, and this is the primary point of contact for a State DOT.

The 1991 *Intermodal Surface Transportation Efficiency Act* (ISTEA), in addition to a realignment of the Federal-aid system, revised the role of the Federal Highway Administration on individual projects. The *Transportation Equity Act for the 21st Century* (TEA-21) of 1998 further revised the role of the FHWA on individual projects. FHWA involvement is based on the following:

1. Highway System. FHWA involvement is only on Interstate projects.

2. Project Scope of Work. FHWA involvement is only on Interstate new construction/ reconstruction (4R)/partial reconstruction (4R) projects.

3. Project Cost. FHWA involvement is only on Interstate-route projects with an estimated construction cost exceeding $1 million. If the estimated construction cost at the beginning of scoping is under $1 million, but increases to over $1 million during the design process, the FHWA should be notified of their now-required oversight.

If a project is not subject to FHWA oversight, FHWA will not be involved with the normal day-to-day project activities, including field reviews, design approval, public hearing certification, design exceptions, PS&E submittal, etc. However, it is understood that all Federally funded projects will conform to the appropriate criteria in the *Indiana Design Manual*, regardless of FHWA review.

The FHWA Oversight Agreement indicates that FHWA will normally only provide oversight and approval on Interstate-route new construction/reconstruction (4R)/partial reconstruction (4R) projects with a construction cost greater than $1 million. However, INDOT may request FHWA oversight on any Federal-aid project. In addition, FHWA is not precluded from reviewing or investigating any phase of the Federal-aid program including control documents or any Federal-aid projects, especially those that contain unique features or those with unusual circumstances such as projects with special structure designs, experimental features, warranty work, Intelligent Transportation Systems (ITS) features, design-build projects, etc., which would make it desirable to have FHWA oversight. The oversight determination for these special feature projects will be made at the meeting discussed in Section 40-6.02, Item 3.

3-2.01(02) United States Forest Service (USFS)

The USFS is responsible for the management of all national forests. The USFS and INDOT currently have a Memorandum of Understanding (MOU) and approved procedures that describe the coordination between the two agencies for the planning and the development of projects having USFS involvement. If a proposed project will impact a national forest, the designer must coordinate the project development with the USFS. The USFS will, for example, be invited to any field reviews and receive copies of major project reports. In some cases, project actions will require USFS approval (e.g., right-of-way acquisition).

3-2.01(03) United States Postal Service (USPS)

Coordination with the USPS may be necessary to determine location of mail delivery points and mailbox turnouts and to ensure that crash-tested mailboxes are installed on the project.

3-2.01(04) Federal Aviation Administration (FAA)

Coordination may be necessary with the FAA when road or bridge projects are located in the vicinity of airports. The anticipated development of the airport and existing traffic patterns which involve the airport should be considered during the design process.

3-2.01(05) National Park Service (NPS)

Coordination with the NPS will be necessary where road or bridge projects are in the vicinity of land under the jurisdiction of the NPS. Although the Department has no formal agreement with the NPS, the level of involvement on projects will be similar to that between INDOT and the USFS.

3-2.01(06) Department of Defense (DOD)

Coordination with the DOD and concurrence by the Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) is required where the vertical clearance over Interstate roadways does not meet applicable standards.

3-2.02 Local Governments

The coordination between the designer and local governments is descried as follows:

1. Design. The designer, through the district office, solicits input from the local government on State highway projects in that locality and, in general, keeps the local governments up-to-date on any current or planned activities. For example, the decision on whether to provide open or closed drainage on an urban street is significantly influenced by input from the locality. In addition, larger municipalities may have their own design criteria, which must be considered during the design process.

2. Coordination. The designer typically invites the local government to any field reviews and provides the local government with copies of major project reports.

3. Local Transportation Projects. The designers are usually consultants under contract to the Local Public Agency. Coordination with the Local Public Agency is administered by the Local Transportation Section of the Division of Roadway Management. INDOT designers perform only limited reviews of Local Public Agency plans.

3-3.0 SPEED

3-3.01 Definitions

1. Design Speed. Design speed is the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern. A design speed is selected for each project which will establish criteria for several design elements including horizontal and vertical curvature, superelevation and sight distance. Section 3-3.02 discusses the selection of design speed in general. Chapter Fifty-three presents specific design speed criteria for new construction and reconstruction projects. Chapters Fifty-four through Fifty-six provide the design speed criteria for projects on existing highways.

2. Low Speed. For geometric design purposes, low speed is defined as 45 mph or less.

3. High Speed. For geometric design purposes, high speed is defined as greater than 45 mph.

4. Average Running Speed. Running speed is the average speed of a vehicle over a specified section of highway. It is equal to the distance traveled divided by the running time (the time the vehicle is in motion). The average running speed is the distance summation for all vehicles divided by the running time summation for all vehicles.

5. Average Travel Speed. Average travel speed is the distance summation for all vehicles divided by the total time summation for all vehicles. (Note: Average running speed only includes the time the vehicle is in motion. Therefore, on uninterrupted flow facilities which are not congested, average running speed and average travel speed are equal.)

6. Operating Speed. Operating speed, as defined by AASHTO, is the highest overall speed at which a driver can safely travel a given highway under favorable weather conditions and prevailing traffic conditions while at no time exceeding the design speed. Therefore, for low-volume conditions, operating speed equals design speed. The designer should note that this term has little or no usage in geometric design.

7. 85th-Percentile Speed. The 85th-percentile speed is the speed below which 85 percent of vehicles travel on a given highway. The most common application of the value is its use as one of the factors, and usually the most important factor, for determining the posted, regulatory speed limit of a highway section. In most cases, field measurements for the 85th-percentile speed will be conducted during off-peak hours when drivers are free to select their desired speed.

8. Posted Speed Limit. If needed, the INDOT District Offices conduct the traffic engineering studies on the State highway system to select a posted speed limit. When a study is performed, on either the State or local system, the posted speed limit is based on the factors as follows:

   a. the 85th-percentile speed;

   b. the design speed used during project design;

   c. road surface characteristics, shoulder condition, grade, alignment and sight distance;

   d. functional classification and type of area;

   e. type and density of roadside development;

   f. the accident experience during the previous 12 months; and

   g. parking practices and pedestrian activity.

   On new construction/reconstruction projects, the posted speed limit will typically be equal to the design speed used in design, if this does not exceed the legal limit. A traffic engineering study may be conducted for various reasons to assist in the determination of the posted speed limit. This procedure applies to both State and non-State facilities.

9. Legal Speed Limit. Legal speed limits are those set by the Indiana Statutes which apply, in general, to those public roads which do not have a posted speed limit. Section 3-3.02 presents specific legal speed limits adopted by the State of Indiana.

3-3.02 Design Speed Selection

3-3.02(01) Geometric Design Considerations

From a geometric design perspective, the selected design speed is based on the road design elements as follows:

1. Functional Classification. In general, the more important facilities are designed with a higher design speed than the less important facilities.

2. Urban/Rural. Design speeds in rural areas are generally higher than those in urban areas. This is consistent with the typically fewer constraints in rural areas (e.g., less development).

3. Terrain. The flatter the terrain, the higher the selected design speed will be. This is consistent with the typically higher construction costs as the terrain becomes more rugged.

4. Traffic Volumes. For some facilities, design speed varies by traffic volumes; i.e., as traffic volumes increase, higher design speeds are used. For example, design speeds on rural collector roads vary according to traffic volumes.

5. Project Scope of Work. In general, higher design speeds are more applicable to new construction/reconstruction projects than to 3R projects.

For geometric design application, the relationship between these road design elements and the selected design speed reflects general cost-effective considerations. For example, the higher the traffic volumes, the more benefits to the traveling public from a higher design speed.

3-3.02(02) Regulatory Speed vs. Design Speed

All public roads in Indiana are controlled by regulatory speed limits, either through posted speed limit signs or with legal speed limits contained in the Indiana statutes (see Section 3-3.02(03)). The following statements summarize the relationship between the project design speed and the regulatory speed limit:

1. General. The design speed should equal or exceed the anticipated posted speed limit after construction or the State legal speed limit on non-posted highways.

2. Non-Posted Facilities (Rural). In rural areas, the maximum legal speed limit is 55 mph on non-posted facilities. Projects on these facilities must be designed for 55 mph, or a traffic engineering study must be conducted to determine if a lower design speed is appropriate. If the project is designed for less than 55 mph, the road must be posted at the selected design speed between logical termini.

3. Non-Posted Facilities (Urban). In urban areas, the maximum legal speed limit, and corresponding minimum design speeds, on non-posted facilities are as follows:

    a. on State highways, 30 mph (30 mph minimum design speed); and

    b. on non-State highways, 55 mph (day) and 50 mph (night) (55 mph minimum design speed).

As in rural areas, the minimum design speed must meet these criteria, unless a traffic engineering study indicates otherwise.

To avoid a potential conflict, the Environment, Planning and Engineering Division should, early in project development, coordinate the design speed selection with the district office to assist in establishing the anticipated posted speed limit of the completed facility. If the proposed design speed from the Geometric Design Tables is less than the established posted speed limit, one of the methodss must be selected as follows:

1. increase the project design speed to equal or exceed the established or anticipated posted speed limit; or

2. seek a design exception for the individual geometric design element(s) (e.g., a horizontal curve) which do not meet the established speed limit.

3-3.02(03) Legal Speed Limits

This Section summarizes the legal speed limits established by the *Indiana Statutes*. Figure 3-3A, Legal Speed Limits, presents the legal limits for rural and urban areas and for State and non-State facilities.

1. Maximum Speed Limits. IC9-21-5-2 and IC9-21-5-6 of the *Statutes* sets maximum speed limits which apply to vehicular speeds on all public roads in the State. Note that these maximum limits do not establish upper limits for geometric design speeds. The speed limits are as follows:

    a. 30 mph on State highways in an urban district;*

    b. 65 mph on Interstates, except within urbanized areas;

    c. 60 mph for a vehicle (other than a bus) having a gross weight greater than 13,000 lb when operating on the Interstate system outside of an urbanized area;

    d. 15 mph in alleys (absolute maximum = 30 mph);*

    e. 55 mph on all rural facilities; and

    f. 30 mph on non-State highways in urban areas, with absolute maxima of 55 mph (daytime) and 50 mph (night). These maxima require an engineering and traffic

investigation study to establish a maximum speed limit that is different from the value shown.

2. Absolute Minimum Speed Limits (Non-State Facilities). IC9-21-5-6 of the *Statutes* sets minimum speed limits which apply to non-State roads and streets which are not posted with a regulatory speed limit sign. The minimum speed limits on these facilities are as follows:

a. Alleys. The minimum speed limit is 5 mph.**

b. Urban Areas. Except as noted in Items d and e, the minimum speed limit is 20 mph.**

c. Rural Areas. Outside of urban districts, the minimum speed limit is 30 mph, except as noted in Item d.**

d. School Zones. A local authority may establish speed limits within school zones on State highways, if the conditions are met as follows:

(1) The limit is not less than 20 mph;

(2) The limit is imposed only in the immediate vicinity of the school;

(3) Children are present;

(4) The speed zone is properly signed; and

(5) The Department has been notified of the limit imposed by certified mail.

e. Parks/Playgrounds. A local authority may decrease the speed limit on an urban street to not less than 15 mph, if the conditions exist as follows:

(1) The street is located within a park or playground established under IC 36-10. The board established under IC 36-10-3, the board established under IC 36-10-4, or the park authority established under IC 36-10-5 requests the local authority to decrease the limit; and

(2) The speed zone is properly signed.

** Requires an engineering and traffic investigation study to establish a speed limit that is below the maximum. However, the lower limit cannot be less than the minimum value shown.