

## CHAPTER 105

---

# Railroad Coordination

<b>Design Memorandum</b>	<b>Revision Date</b>	<b>Sections Affected</b>
13-14	Aug. 2013	Ch. 11 superseded by Ch. 105

## TABLE OF CONTENTS

LIST OF FIGURES .....	2
105-1.0 INTRODUCTION .....	3
105-1.01 General .....	3
105-1.02 Project Schedule and Railroad Coordination Activities .....	3
105-1.03 Responsibilities.....	4
105-2.0 RAILROAD COORDINATION PROCESS.....	5
105-2.01 General .....	5
105-2.02 Initiating and Completing Railroad Coordination .....	6
105-2.03 Process Steps .....	7
105-2.03(01) Scoping .....	7
105-2.03(02) Stage 1 .....	8
105-2.03(03) Preliminary Field Check .....	9
105-2.03(04) Stages 2 and 3 .....	10
105-2.03(05) Final Tracings .....	11
105-2.04 Definitions .....	12
FIGURES .....	17

## LIST OF FIGURES

<b><u>Figure</u></b>	<b><u>Title</u></b>
----------------------	---------------------

<u>105-1A</u>	<u>Railroad Coordination Process</u>
---------------	--------------------------------------

# RAILROAD COORDINATION

## 105-1.0 INTRODUCTION

This chapter discusses common considerations in the railroad-coordination process. The various responsibilities of the Department and railroad companies (Railroads) are specified by State and Federal laws and regulations. The *Indiana Design Manual* does not repeat, replace, or modify these laws or regulations. Any conflict between the information presented in the *Manual* and State/Federal laws and regulations should be brought to the attention of the Division of Utilities and Railroads Director.

### **105-1.01 General**

The Department and Railroads are each generally responsible for constructing, maintaining, and operating their own facilities. Each includes its own unique set of design, construction, operational, and maintenance considerations. Where highways and railroads intersect, are adjacent to, or otherwise encroach upon each other coordination and cooperation is needed to ensure that the design, construction, operation, and maintenance of both are compatible.

Potential changes to the railroad facilities or operations by the Railroad, such as a need for future additional tracks, may have a significant impact on the proposed highway project. A project crossing or adjacent to a railroad may impact the railroad facilities or operation. This includes work on the right of way such as roadway widening or earthwork operations; and work which may impact the safe operations of the rail line such as maintenance of traffic or contractor work activities. For these reasons, the project manager should include the Railroad Coordination activity line in the Scheduling and Project Management System (SPMS) when there is a railroad in the vicinity of the project.

### **105-1.02 Project Schedule and Railroad Coordination Activities**

Coordination with the Railroad up front will guide informed decisions regarding the project scope and schedule. Each Railroad has a different organizational structure with differing abilities to respond in a timely manner to the preliminary engineering requests and construction activities needed to accommodate a highway project. Because of the variety of potential

conflicts, and the internal variations among Railroads, no single railroad-coordination process or timetable is applicable to every highway project.

The railroad work may control the overall highway project schedule, and it may set controlling limits on how and when the highway contractor may proceed with construction of the highway project and what type or sequences of construction activities are permissible. It may take up to two years for the Railroad to perform its engineering design and construction activities relative to the overall highway project. The Department reimburses the Railroad for these costs.

The highway project manager must communicate with the railroad coordinator to ensure that the anticipated project design, letting, and construction schedules are compatible with the probable timetable expected from the Railroad for a specific project. The railroad coordinator refers to either the Capital Program Management Division of Utilities and Railroads railroad coordinator or the district utilities coordinator.

### **105-1.03 Responsibilities**

The railroad coordinator is responsible for coordinating with each Railroad affected by a proposed highway project administered by the Department. This is true regardless of whether the project is designed by the Department, a consultant, or a local public agency. The railroad coordinator's responsibilities include the following:

1. initiating contact with the Railroad;
2. providing technical advice and guidance to both the highway and the Railroad designers;
3. facilitating a mutually-satisfactory resolution of any conflicts or problems between the highway project and the Railroad facilities;
4. obtaining a railroad agreement and overseeing the reimbursement process for each Railroad involved in a highway project; and
5. acquiring an order from the Rail Office if an existing crossing on a state road is being widened or a new crossing is being installed. If a local road is involved, the local agency must petition the Rail Office for an order.

## 105-2.0 RAILROAD COORDINATION PROCESS

### 105-2.01 General

The following information applies to the railroad-coordination process.

1. Reimbursement. If a highway agency initiates a proposed project, the agency must coordinate with any Railroad that might be affected by the highway project and, in most cases is responsible for reimbursing any legitimate costs the Railroad incurs in adjusting its facilities or operations to accommodate the highway project. One of these exceptions, as defined under 23CFR 646.210 (b)(3) when a signalized at-grade crossing is replaced by a grade separation structure, the Railroad has a 5% cost sharing obligation based on an equivalent structure.

Likewise, if the Railroad initiates the work, it generally is responsible for coordinating with the affected highway agency and for reimbursing any costs incurred by the highway agency.

2. Maintenance. For an at-grade crossing the Railroad is responsible for maintaining the crossing the crossing surface extending two (2) feet beyond the end of the tie, the crossbucks, any train-activated warning devices, and its own track, ties, ballast, communication lines, or other facilities. The highway agency is responsible for maintaining the approach roadway at the crossing, advance warning signs, pavement markings, signs, or other highway traffic control devices located outside of the railroad right of way at the crossing. For a bridge, usually the sub-structures and super structures are maintained by the Railroad or highway agency whose road or track is supported by the structure.
3. Right of Way. At a highway-railroad crossing, the Railroad typically has been granted rights to the right of way, either by fee simple title, a land grant, or has been given an easement prior to the roadway having been constructed. There are some exceptions however, such as an industrial spur-track crossing. Although this does not prevent one party from crossing the other, it is an important consideration for any highway project.
4. Regulatory Authority. For INDOT, regulatory authority resides with the Multi-Modal Planning & Programs Division, Rail Office. This includes the authority to order, approve or deny construction of a new highway-railroad crossing, modifications to an existing crossing such as a widening or relocation of an existing crossing. The Rail Office may submit an “order” requiring the elimination of a crossing, and to change the type of warning devices at a crossing. Therefore, a highway project may occasionally require review and approval of the Rail Office before proceeding to construction. The Rail

Office can also advise and assist the highway designer when this approval is needed. The Rail Office can be contacted at:

Rail Office  
100 N. Senate Avenue, ICGN 955  
Indianapolis, IN 46204  
317-232-1491

### **105-2.02 Initiating and Completing Railroad Coordination**

Railroad coordinator activities are typically initiated on a project 18 to 24 months prior to the letting date shown in SPMS. Activities may also be initiated at the request of the designer or project manager early in the planning or scoping process. SPMS assigns default start and completion dates for Railroad Coordination that may need to be adjusted for the project.

The railroad coordinator will review any plans, discuss the project with the designer, briefly discuss it with the Railroad, and advise the designer what information is needed, and at what point in design, before the railroad coordinator can formally begin the coordination process with the Railroad.

When the railroad coordinator determines there is sufficient agreement with the Railroad to proceed with construction they advise the project manager to mark Railroad Coordination as complete. Completed Railroad Coordination indicates the following:

1. the highway plans and specifications are acceptable to the Railroad;
2. all information needed from the Railroad for the highway project to proceed to letting has been received;
3. the Railroad has either executed, or has agreed to the conditions, and in the process of executing, the Railroad Force Account (RRFA) Agreement; and
4. regulatory approval for new or relocated highway-railroad crossing, or downgrade of protection has been received.

Changes to the project after railroad coordination has begun must be communicated to the railroad coordinator to ensure the railroad-coordination process remains on schedule.

## **105-2.03 Process Steps**

Figure [105-1A](#), Designer's Railroad Coordination Process, provides a flowchart of the typical railroad-coordination process. The following gives an explanation the railroad coordination steps within each stage of project development.

### **105-2.03(01) Scoping**

1. Scoping documents. Assumptions regarding Railroad involvement should not be made without consulting the railroad coordinator. Even though involvement may appear to be minimal or non-existent due to a proposed project scope, if there is a railroad within or near the proposed highway project, the designer should request a review by the railroad coordinator. If the project construction limits are within 50 feet of the nearest rail, or if there is the possibility of the maintenance of traffic (MOT) plan involving a rail crossing, there will be Railroad involvement.

If a project includes construction of a railroad bridge over a roadway, involves changes to the alignment or profile of existing railroad tracks, or the consolidation of multiple tracks to reduce structure costs or otherwise improve the roadway, railroad coordination should begin during the project scoping stage. With the proper information from the Railroad up front, informed decisions can be made on the project scope.

2. Designer and railroad coordinator assess level of Railroad involvement. The railroad coordinator will determine if the project scope is one that will only require flagging from the Railroad. If so, the railroad coordinator will work with the designer to determine a preliminary estimate of the cost for the project and also the number of days the contractor will likely be required to be working within 25 feet of the tracks. Once the estimates are complete, it is not necessary to complete the coordination activities associated with Stage 1 or Preliminary Field Check. The designer may proceed to Stages 2 and 3. See Figure 105-1A and Section 105-2.03(04) for coordination activities associated with Stages 2 and 3.

If Railroad involvement extends beyond flagging services, the railroad coordinator will provide the Railroad with the pertinent scoping information to allow the Railroad to provide input on the various project alternatives. The railroad coordinator will also obtain, if necessary, preliminary Railroad cost estimates to evaluate project alternatives, and any information on changes in facilities or operations that the Railroad may have independently planned that could affect the highway project design.

If after review, the designer and railroad coordinator determine that there is no Railroad involvement, the project manager is directed to have SPMS updated to reflect this. The designer shall provide an email to the railroad coordinator stating there is no involvement by any Railroad. At this point the railroad coordination portion of this project is complete.

### **105-2.03(02) Stage 1**

The designer should communicate with the railroad coordinator to obtain Railroad information needed to properly select a structure size and type and to establish the line and grade of the highway or railroad. Horizontal and vertical clearances for a highway bridge over a railroad are discussed in Section 402-6.02. The general design criteria for a railroad bridge are discussed in Chapter 413.

The process steps include the following:

1. Designer provides an electronic copy of Stage 1 plans to the railroad coordinator. The designer should provide hard copies as requested.
2. Railroad coordinator provides Stage 1 plans to Railroad for review and comment and for use in developing their force account estimate. Some project preliminary design issues can be addressed directly by the railroad coordinator based on its overall experience and knowledge of specific Railroads. Other issues will require coordination with the specific Railroad, e.g. if rail traffic must be maintained during construction or if it can be detoured or halted.

The railroad coordinator facilitates contact between designer and the Railroad for a major project. For a minor project, the railroad coordinator may advise the designer to communicate directly with the Railroad. The railroad coordinator should be copied on all correspondence.

3. For projects that involve a new or modified at-grade crossing, the railroad coordinator must submit a petition to request regulatory approval from the Rail Office. For local agency routes, the railroad coordinator will advise the LPA of the require petition and provide contacts assistance. For a private crossing not located on a public road, the owner of the private crossing must contact the Railroad to arrange for any required modifications to its agreement. Either INDOT, or the LPA, will be responsible for any out of pocket expenses incurred by the owner of the private crossing because of the project work.

4. Railroad coordinator assesses the magnitude of Railroad involvement and completes the following activities:
  - a. Submits funding request form for estimated funds necessary for the Railroad to perform its assessment and preliminary engineering work.
  - b. Provides authorization to the Railroad to begin preliminary engineering work.
5. Designer and railroad coordinator receive comments from Railroad regarding plans.
6. Designer and railroad coordinator review comments and determine acceptable revisions. Any major changes that can impact costs or schedule must be coordinated with the project manager.

### **105-2.03(03) Preliminary Field Check**

The preliminary field check is an opportunity to become familiar with and confirm the existence of the Railroad's facilities on site, including any underground facilities. An assessment should also be made regarding the surrounding environment and features including but not exclusive to; drainage, crossing surface, grading issues, active warning devices, and signal and communication lines. Attention should also be given to the impact the MOT plan will have on the Railroad operations and safety.

The process steps include the following:

1. Designer notifies the railroad coordinator of the Preliminary Field Check date and location in sufficient time to facilitate invitation of the Railroad's representative and to allow for travel arrangements and lodging. It is recommended that a minimum of four weeks notice prior to the preliminary field check be provided to the Railroad as railroad personnel travel long distances. If less than 4 weeks is provided, involve the railroad coordinator to ensure the Railroad can be in attendance if needed.
2. Railroad coordinator determines need for Railroad attendance at field check. If the Railroad's attendance is needed, the railroad coordinator invites Railroad representative.
3. Designer provides the railroad coordinator and the Railroad with a set of plans, including any revisions based on initial comments from the Railroad, with the preliminary field check notice. Designer provides a drawing for any at-grade crossings using 1"=20' scale

4. If a signalized crossing is being replaced by a grade separation, the designer must provide a cost estimate for grade-separation structure as defined in Federal Aid Policy Guide 23 CFR 646.20 c(1) to assist in determining the Railroad contribution. The cost must be reviewed and accepted by the Railroad before an RRFA can be processed.
5. The railroad coordinator will prepare the necessary agreements for facilities encroaching on the Railroad's right of way
6. Designer revises plans according to feedback from the Railroad and issues discussed at the Preliminary Field Check.

### **105-2.03(04) Stages 2 and 3**

1. Stage 2. The Railroad should submit all needed information and comments back to the railroad coordinator prior to the Stage 2 submittal. If comments have not been received by the Stage 2 submittal, the designer should communicate with the railroad coordinator and the project manager to determine if the Railroad has any significant concerns with the overall design.

If there are no major concerns or objections from the Railroad, the project can proceed through Stage 3. If the Railroad has major concerns on the acceptability of the plans, they should be addressed and the plans resubmitted to the railroad coordinator and the Railroad prior to proceeding to the Stage 3 plan development. This is more likely to occur with a bridge project or a project that requires changes to railroad alignment and grade.

2. Stage 3. The designer must submit Stage 3 plans and specifications for items that affect the Railroad to the railroad coordinator. The plans should incorporate the signal design for any at-grade crossings based on input from the Railroad.

The railroad coordinator will submit the plans and specifications to the Railroad for final approval. If the Railroad does not approve the plans, the designer and railroad coordinator must address and reconcile the Railroad's concerns with the design plans. The designer must not agree to changes without consulting the railroad coordinator or project manager. For a grade-separated structure, the railroad coordinator must receive *written* correspondence from the Railroad granting their final approval of the plans.

Once the Railroad approves the plans, the railroad coordinator may proceed with the execution of the agreement. Lacking full acceptance from the Railroad, the letting and construction process may proceed, if there is assurance that items still in dispute are

relatively minor and that they can be addressed satisfactorily and without subsequent delay to the contractor. However, FHWA will not participate in any costs associated with delays when INDOT proceeds to construction prior to Railroad final acceptance and an executed railroad agreement.

3. Provisions. The railroad coordinator will provide the designer with a copy of the Railroad Special Provisions also referred to as the Provisions for Protection of Railroad Interests. For some projects, involving major railroad work, the Railroad may provide additional unique special provisions to be included in the contract.
4. Railroad Coordination Activities. During Stage 2 and Stage 3 plan development, a number of railroad coordination activities must also be completed for the overall project to remain on schedule and be ready to proceed with highway letting activities.
  - a. If not previously submitted, the Railroad must submit its detailed project cost estimates and drawings and details of its proposed work to INDOT. The railroad coordinator will use this and other information to prepare a legal agreement between the State and the Railroad for the necessary railroad work to accommodate the highway project. The agreement requires both Railroad and INDOT approval to proceed.
  - b. If not previously submitted, the Railroad must submit its detailed information on railroad flagging and insurance requirements for the INDOT highway project for highway construction work at or near the railroad.
  - c. Any project with a new or relocated at-grade highway-railroad crossing should not proceed beyond Stage 3 until regulatory approval for the new crossing is received from the Rail Office.
  - d. Railroad coordinator is responsible for the RRFA agreement between the State and the Railroad including any facilities encroaching on the Railroad's right-of-way.

### **105-2.03(05) Final Tracings**

When the plan approval, railroad special provisions and the agreement activities are completed, the Railroad Coordination Task in the highway project schedule in SPMS is marked complete. This represents the end of the design phase of railroad coordination and indicates that it is reasonable to proceed to the letting and construction phases of the highway project.

The designer must include the Railroad Special Provision and any unique provisions required by the Railroad with the Final Tracings submittal.

#### **105-2.04 Definitions**

Abandonment. Formal process used by the Railroad to relinquish right-of-way.

Advance preemption. The notification of an approaching train that is forwarded to the highway traffic signal controller unit or assembly by the railroad equipment in advance of the activation of the railroad warning devices.

Advance preemption time. The period of time that is the difference between the required maximum highway traffic signal preemption time and the activation of the railroad warning devices.

AREMA – The American Railway Engineering and Maintenance-of-Way Association. The technical manual often referred to by most railroads in North America. The manual includes practices for design, construction and maintenance of railway infrastructure.

At-grade intersection (crossing). An intersection (crossing) where roadways (and railroads) join or cross at the same level.

Ballast. Material placed on a track roadbed to hold the track in alignment and elevation; it consists of hard principles that are stable, easily tamped, permeable, and resistant to plant growth.

Constant Warning Time. System used by the railroad that determines the train speed and calculates the arrival time. It reduces waits at crossing gates.

Construction. The actual physical accomplishment of building, improving, or changing a highway-rail grade crossing, or other finite facility.

Contract. The written agreement between the contracting agency and the contractor setting forth the obligations of the parties thereunder for the performance of the prescribed work. The contract includes the invitation for bids; proposal; contract form and contract bond; specifications; supplemental specifications; special provisions; general and detailed plans; and notice to proceed. The contract also includes any change orders and agreements required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contractor. The individual, partnership, firm, corporation, or any acceptable combination thereof, or joint venture, contracting with an agency for performance of prescribed work.

Crossing angle. The angle of 90 degrees or less at which a railroad and a highway intersect.

DOT Number. Unique identifying number assigned to every railroad crossing by the US Department of Transportation.

Encroachment. Authorized or unauthorized use of highway or railroad right of way for signs, fences, buildings, or other uses.

Force Account Estimate. An estimate of reimbursable costs to be incurred by the railroad for work associated with a highway construction project.

Force account work. Out-of-pocket expense to be reimbursed for prescribed work on the basis of actual costs and appropriate additives.

Functional classification. Division of a transportation network into classes or systems, according to the nature of the service they are to provide.

Grade. The rate of ascent or descent of a roadway, expressed as a percent; the change in roadway elevation per unit of horizontal length.

Grade separation. A crossing of two highways, or a highway and a railroad, at different levels.

Highway-rail at-grade crossing. The general area where a highway and a railroad cross at the same level, within which are included the railroad, roadway, and roadside facilities for traffic traversing that area.

Interconnection. The electrical connection between the railroad active warning system and the highway traffic signal controller assembly for the purpose of preemption.

Milepost. Locations along the railroad tracks are assigned milepost numbers that are used by the railroad to locate facilities.

Pavement markings. Markings set into the surface of, applied upon, or attached to the pavement for the purpose of regulating, warning, or guiding traffic.

Plans. Contract drawings that show the location, character, and dimensions of the prescribed work, including layouts, profiles, cross sections, and other details.

Preliminary engineering. The work necessary to produce construction plans, specifications, and estimates to the degree of completeness required for undertaking construction thereunder, including locating, surveying, designing, and related work.

Private crossing. A highway-rail grade crossing that is not a public highway-rail grade crossing, such as grade crossings that are on privately-owned roadways utilized only by the owner's licensees and invitees.

Public crossing. A highway-rail grade crossing that is on a roadway or a pathway under the jurisdiction of and maintained by a public authority and open to the traveling public.

Main track. A track extending through yards and between stations, upon which trains are operated by timetable or train order or both, or the use of which is governed by block signals or by centralized traffic control.

MUTCD – Manual of Uniform Traffic Control Devices. This publication is incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655m Subpart F and is recognized as the national standard for all traffic control devices installed on any street, highway, or bicycle trail open to the public.

Pedestrian crossing. A highway-rail grade crossing used by pedestrians but not by vehicles.

Preemption. The transfer of normal operation of highway traffic signals to a special control mode.

Queue clearance time. The time required for the design vehicle of maximum length stopped just inside the minimum track clearance distance to start up, move through, and clear the entire minimum track clearance distance. If pre-signals are present, this time shall be long enough to allow the vehicle to move through the intersection or to clear the tracks if there is sufficient clear storage distance. If a four-quadrant gate system is present, this time shall be long enough to permit the exit gate arm to lower after the design vehicle is clear of the minimum track clearance distance.

Right of way (ROW). A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

1. Operating ROW. The minimum width of railroad right of way the Railroad considers required to allow them to effectively operate their trains.
2. Non-operating ROW. The additional Railroad property that falls outside the operating right of way. Abandoned depots, warehouses, and watering ponds are examples of non-operating right of way. As with all railroad easements, railroads

typically only grant a quitclaim deed for acquisition of their non-operating right of way.

Roadway. The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

Short Line. A small or mid-sized Railroad operates over a relatively short distance relative to larger, national railroad networks. The term is used primarily to categorize the railroads by operating revenue. Most shortline railroads fall into the Class II or Class III categories as defined by the Surface Transportation Board.

Simultaneous preemption. Occurs when notification of an approaching train is forwarded to the highway traffic signal controller unit or assembly and railroad active warning devices at the same time.

Temporary runaround track. A track, or set of tracks, that are constructed for the purpose of rerouting trains around a construction area required to build an undergrade railroad bridge that will span over the roadway. The horizontal and vertical curvature design is critical with regard to train maximum speeds. Significant shoring plans are often required due to the excavations required in constructing the grade-separation structure so close to the runaround track. The temporary track is removed upon completion of the work on the permanent track, and the materials are then credited back to the project at salvage costs.

Track. 1) An assembly of rails, ties, and fastenings over which cars, locomotives, and trains are moved, or 2) the width of a wheeled vehicle from wheel to wheel and usually from the outside of the rims.

1. Double or multiple. Two or more main tracks over which trains may travel in both directions.
2. Single. 1) The main track on a roadbed having one main track upon which trains are operated in both directions, or 2) in multiple-track territory, the process of running all trains, regardless of direction on one track while at least one other track is temporarily out of service.

Traffic control device. A sign, signal, marking, or other device placed on or adjacent to a street or highway by authority of a public body or official having jurisdiction to regulate, warn, or guide traffic.

1. Active traffic control device. Traffic control device activated by the approach or presence of a train, such as flashing light signal, automatic gate, and similar

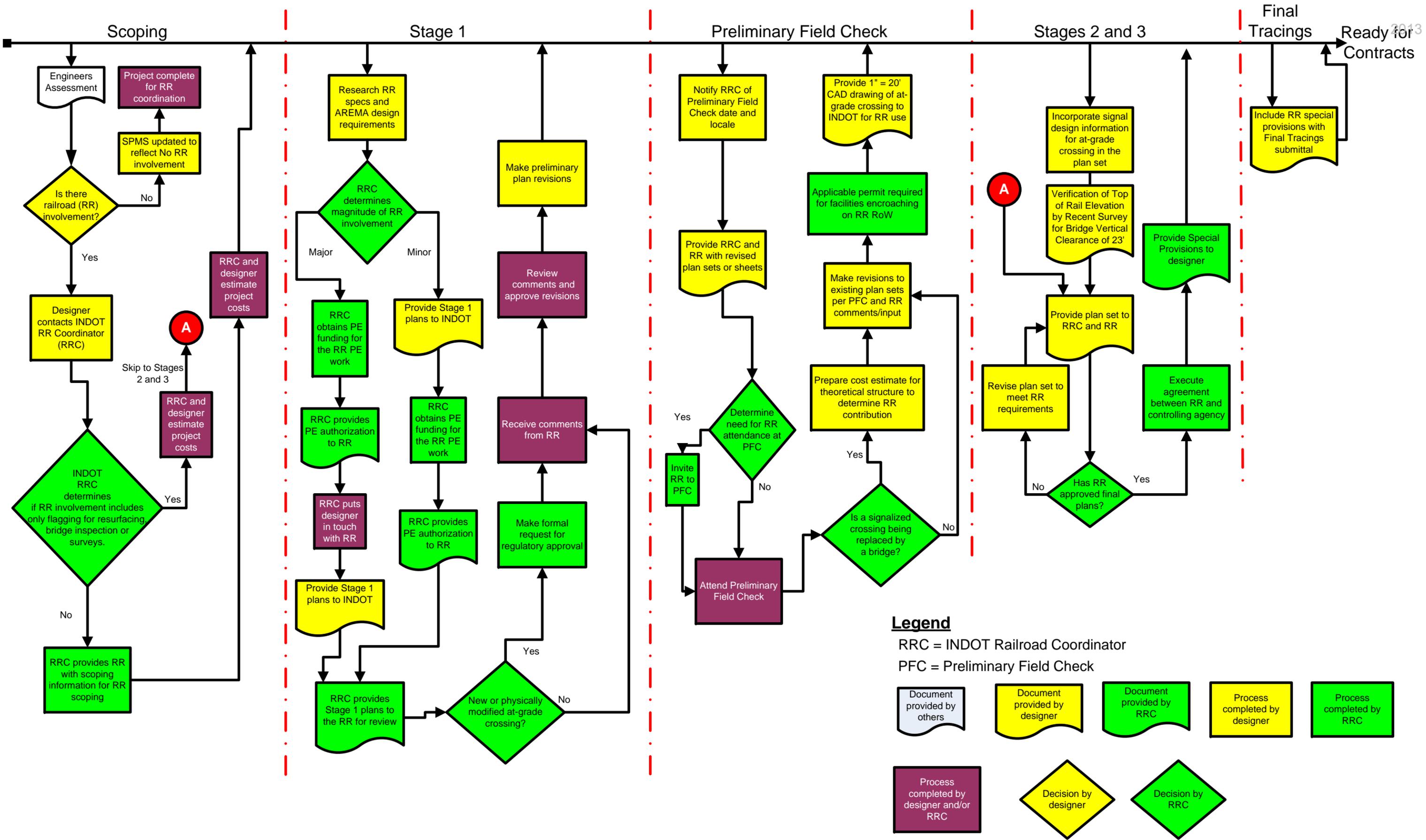
- devices, as well as manually-operated devices and crossing watchmen, all of which display to motorists positive warning of the approach or presence of a train.
2. Passive traffic control device. Type of traffic control devices, including signs, markings, and other devices, located at or in advance of a grade crossing to indicate the presence of a crossing but that does not change aspect upon the approach or presence of a train.
  3. Traffic control signal. Any device, whether manually, electrically, or mechanically operated, by which traffic is alternately directed to stop or permitted to proceed.
  4. Traffic markings. All lines, patterns, words, colors, or other devices, except signs, set into the surface of, applied upon, or attached to the pavement or curbing or to the objects within or adjacent to the roadway, officially placed for the purpose of a regulating, warning, or guiding traffic.

Train. 1) One or more locomotive units with or without connected cars, or 2) two or more vehicles physically connected and operated as a unit.

1. Through. A freight train operating between major classification yards and serving non-local traffic.
2. Unit. A freight train moving great tonnage of single bulk products between two points coupled with a system of efficient, rapid loading and unloading facilities.

Valuation Map. Map kept by the individual railroad companies that indicates their right of way in relationship to their mileposts and crossings.

Vehicle intrusion detection device. A detector or set of detectors used as a part of a system incorporating processing logic to detect the presence of vehicles within the minimum track clearance distance and to control the operation of the exit gates.



Railroad Coordination Process  
Figure 105-1A