

## **SECTION 30 – INSPECTION PROCEDURES FOR RAILROAD FORCE ACCOUNT**

### **30.1 INTRODUCTION** *(Rev. 10-20-09)*

Responsibility for the inspection of the Railroad Force Account (RRFA) work, the review of the work being accomplished to ensure adherence to the agreement and the approval of the railroad bills will be at the District level. The Railroad Team for the District or Central Office (RT) will be available for consultation involving interpretation of the plans, administrative procedures, RT and District instruction procedures, and salvage values.

Outlined briefly herein are the functions which should be performed by the PE/S in making a satisfactory inspection and administration of the Railroad Force Account work.

### **30.2 AUTHORIZATION** *(Rev. 10-20-09)*

Do not authorize a railroad to begin work until a copy of the authorization letter has been received from the RT.

The existence of an executed agreement in itself does not constitute authority to proceed with the work. The value of any Railroad work accomplished, special materials ordered, or any other cost incurred prior to the date of FHWA authorization will be cited and deducted from reimbursement by the FHWA. This applies whether the mistake in making an early start is the fault of the Railroad or a mistake by a State or local government employee in authorizing the Railroad to start in advance of FHWA approval.

### **30.3 RAILROAD GRADE CROSSINGS** *(Rev. 10-20-09)*

Prior to receiving bids on a contract, those railroads having grade crossings are advised of the planned highway construction by the RT. However, upon award of the contract, the PE/S, in cooperation with the District Construction Director, must contact the appropriate railroad officials and arrange a meeting on the site. The railroad should always be invited to the pre-construction conference. This may eliminate the need for a separate meeting on the site. At this meeting, the railroad officials should be advised of the Contractor's schedule of operations. Coordination of the railroad company's work with that of the road contractor should also be reviewed.

A Railroad agreement will cover all work between our headers and, if applicable, installation of active grade crossing warning devices. The PE/S must give sufficient inspection of the railroad construction work so he can state at its completion, that the work substantially complies with the plans.

Normally, when work is performed by a highway contractor within the railroad right-of-way, or within 25 feet of the nearest track, Railroad Protective Insurance is required. An insurance policy must be received from the highway contractor's insurer before the notice to proceed will be issued.

Some railroads will adjust their tracks exactly to the planned road grade, and others may have a policy of leaving the tracks slightly high in anticipation of subsequent settlement.

When power-tamping equipment is used to compact the ballast it should not be necessary to make any allowance for settlement, and this method should be encouraged. In either event it is important that the PE/S give the track foreman the necessary exact grade stakes and inspect their work sufficiently to insure a smooth riding crossing. A poor crossing is not only unpleasant, but can result in damage to the adjacent pavement from the impact of heavy motor vehicles.

Sufficient profiles and cross sections should be taken at all railroad crossings in order to lay a smooth grade. Skew crossings and tracks on super-elevated curves are often difficult to meet. Crossings where there are two or more tracks at different elevations should be adjusted to the same elevation, if possible. When the track adjustment is an appreciable amount, the Railroad should make the change as early as possible. In this manner their roadbed will have had an opportunity to become stabilized prior to paving. The final adjustment, if necessary, would then be only minor and the tracks would maintain their permanent elevation. If it appears that the Railroad will be required to lower its track to meet the planned grade, the Project Manager must be notified so that adjustments to the design can be made. It is very undesirable to attempt to lower the grade of an existing railroad.

If a crossing is to be installed as a part of the project work, a copy of the current General Specifications for Construction of Highway Railway Grade Crossings will be included in the railroad agreement. These are to be treated the same as contract specifications for the project. The Scope of the Work Exhibit should be reviewed for any other work to be done at the crossing. Certain pre-manufactured crossing surfaces will be indicated, "to be installed in accordance with the manufacturer's specifications." There should be a copy of these specifications on file in the District office and the PE/S should obtain a copy for his use and to be included in the project files.

Become familiar with those sections of the specifications titled "Railroad-Highway Provisions", Section 107.09, and "Contractors Responsibility for Utility Property and Services", Section 107.20. Quite often the road contract will provide for placing drainage culverts through the railroad embankment, either by open cut or jacking. Although features of this nature are a part of the Railroad Agreement and have been cleared with the Railroad Company during the design stage, the Contractor is not relieved of his responsibilities as set out in the specifications and contract.

The specifications require that protection arrangements must be approved by the Railroad. It is the PE/S's responsibility to determine that the Contractor complies with this specification requirement. In addition to the normal procedure for approval of cofferdams at Railroad structures, this requirement for notification to and approval from the Railroad will also apply on construction and maintenance contracts for installation of new grade crossing headers, widening of an existing grade crossing, installation of a pipe under the tracks or any other operation likely to affect the tracks or operation of the railroad. It will not apply on resurface contracts in which the surface feathers into the existing grade outside of the headers and no change is made in the grade crossing.

Notification and approval by the Railroad of said protection arrangements will be

required regardless of whether there is a formal railroad agreement between the State and the Railroad. On a County or City Federal-Aid project there will be a written crossing agreement between the county or municipality and the Railroad with the State as agent and the same specifications apply.

If the minutes of the pre-construction conference document that a Railroad representative was present to discuss construction involving the Railroad, these minutes will suffice for notification by the Contractor to the Railroad. However, written approval for the method of work to be used must be obtained by the Contractor from the Railroad and verified by the PE/S.

At crossings where active warning devices are to be installed, the Railroad Agreement will contain the current General Specifications for Installation of Active Warning Devices at Highway-Railway Grade Crossings. These specifications contain sufficient information to stake out the location of the signal hardware listed in the Scope of Work Exhibit in the agreement. When the agreement indicates "Signals", this may also include cantilever signals when the number of lanes or restricted sight distance warrant their inclusion. Normally, the crossing layout in the Force Account Exhibit will show, by symbol, the use of additional light pairs, cantilevers, and any other equipment to be installed outside of the control cabinet.

### **30.4 PRE-CONSTRUCTION CONFERENCE** *(Rev. 10-20-09)*

Where Railroads are involved in a project, it is essential that they be called together to discuss a workable schedule that will be coordinated with the construction contractor's schedule. The Railroad conference should be held in conjunction with the usual pre-construction conference, and the RT is to be informed of the pre-construction conference date. The PE/S should prepare minutes of the Railroad conference for inclusion in the pre-construction conference minutes. Special emphasis should be given to the review of the existing, temporary, and proposed new location of communication lines as to possible conflicts with the Contractor's construction equipment, such as cranes, backhoes, pile driving equipment, etc. The RT would not know about these conflicts at the time of the railroad plans formulation or the review of such plans.

Each Railroad company supervisor should be cautioned at the conference against starting work prior to receipt of proper authority or making any substantial change in the scope of work without prior approval as previously noted. Failure to get such approval will restrict reimbursement for such advance or substantially revised work.

A copy of the minutes of the pre-construction conference involving the utility phase should be forwarded to the RT for their file and use in the engineering review of the Railroad billings. The proposed scheduled starting dates, anticipated completion dates and any applicable or intermediate date, must be recorded.

The date the Railroad was contacted regarding starting their work, the date the Railroad actually started work and any adverse conditions causing delay in the sequence of operations should be recorded in the minutes. The PE/S should note specific items of assistance that he or she gives the Railroad such as locating the centerline of the road,

establishing grade stakes in advance of normal staking, etc. A comprehensive review of the work to be performed should be made at the start of the Railroad Force Account work unless covered at a recent pre-construction conference.

### **30.5 INSPECTION** *(Rev. 10-20-09)*

The degree of inspection of Railroad Force Account construction will vary considerably with the nature and location of the work and the type of contract involved. Judgment must be exercised regarding the manner and regularity of inspections. This will vary from spot checks on some installations to detailed inspections of crossing construction and grade separation projects.

The following items should be noted:

1. Ensure that proposed grade and alignment are according to approved Railroad plans and are compatible with the road structures, and construction features, etc.
2. Ensure that proper backfill methods and materials are used where proposed and future road surfaces and berms are involved.
3. Be observant for any substantial change in methods and materials from those approved, such as the use of sheeting, special backfill, etc. The PE/S should immediately contact the Railroad representative to determine whether the Railroad or its contractor expects to get extra compensation for doing such work. Such a change, if compensable, can be approved by the RT. However, such approval must be obtained prior to starting the procedure change.
4. Be sure that the Railroad foreman is familiar with symbols furnished on the construction stakes, such as cut and fill information, and that both the Railroad and State use the same data.
5. Spot checks should be made to ensure that depths are compatible with highway plans, vertical clearance of overhead installations are sufficient to insure proper clearance distance from highway structures, and horizontal alignment is compatible with construction limits, access lines, etc.

Railroads are authorized, after the PE/S has obtained the verbal approval of the District Office, to do all necessary work involving minor changes in quantities or additions of minor items not included in any approved estimate. These changes are those deemed necessary to accomplish the intent of the approved agreements and do not require formal approval from the RT. However, adequate documentation and justification of such minor changes, items of material and work performed, must be attached to the PE/S's record to aid the Audit Section in its review.

RT approval must be secured for substantial changes in the scope of work that may affect the cost, such as a change in width of the crossing, change in elevation of wire, (causing different length poles to be used), special footage, extra guying, bracing, sheeting, dewatering, and changes in location or alignment. In non-emergency situations, the

proposal for such a change must be submitted in writing by the Railroad to the RT, and shall give as much detailed information as practical. Sketches, estimates (if work is being performed by the Contractor, the engineer's estimate should be made prior to the Contractor's proposal for same), costs and other documentation should be required and transmitted.

The RT will base its approval, or denial, of the Railroad's request on the PE/S's opinion of the necessity or desirability for the change. The request should indicate whether the changes result from (1) unusual field conditions not considered by the designer, (2) changes made by the State's contractor, or (3) mutual agreement that a change is desirable.

After approval by the RT the RT will send copies of the approved design changes to the District, the PE/S, and the Railroad. The PE/S must inform the Railroad in writing of approval of field changes with a copy to the District and the RT. If timing is of essence, the RT may be contacted by telephone for their assistance followed by a memorandum for the record. In these emergency situations where the RT has been asked for assistance by the PE/S, the appropriate RT personnel will contact the FHWA, review the problem with them and request their concurrence in the change, subject to receiving the above described documentation from the field. The RT will confirm the approval for the record after receipt of the appropriate documents from the field with a copy to the Railroad.

It is recognized that it is essentially impossible to define or otherwise describe the limits of "substantial change" due to variations in cost of work, its complexity, the variable situations, and terrain encountered. It is also undesirable to request RT Section approval for every recognizable change. However, in case of doubt and where appreciable amounts of money are involved, the RT should be contacted for approval as directed above.

### **30.6 RECORDS** *(Rev. 10-20-09)*

The PE/S's record for the Force Account work should be kept in sufficient detail to show that the several stages of the work were done in conformance with the plans or scheduling. This record will also be used in preparing the final letter recommending acceptance and payment for the Force Account work performed. The difference in the several methods of payment of the Force Account relocation work results in a difference in the records needed to be kept at the construction level. These are described below:

- a. On projects performed entirely by the Railroad with Railroad forces only, the PE/S's record should include the number and class of employees, major equipment on site, principal materials used and materials removed from the site. Also, pertinent data such as weather conditions, ground conditions, breakdown of equipment, delays due to conflicts with other Railroad forces or general contractor's operations, should be recorded. Any conversations with the Railroad or the RT should be recorded in the project files.
- b. On the few projects where part or all of the Railroad work is being done by a contractor having a continuing contract with the Railroad, the same records are required as in (a) above, unless the agreement clearly established that the work

- being done under a continuing contract is on a unit of work basis, rather than a manpower and equipment basis. If it is clearly on a unit of work basis, only the units of work completed per day by the Contractor need be recorded. Records on any work performed by the Railroad's forces in conjunction with a continuing contract should follow (a) above.
- c. On projects being done in part or completely by outside contractors, on a unit of work basis, the record should cover the units of work performed on a daily basis. On projects being done in part or completely by an outside Contractor, on a lump sum basis, the items of recording labor and equipment used by the Contractor can be deleted from the record, except in those instances when extra work performed by the contractor on a per hour or per diem basis is involved. The units of work completed should be recorded daily to form a basis for checking payment to the Railroad for their contractor's work. This should include such things as the number of poles installed, amount of wire strung, the lineal footage of pipe installed, the length of line removed, the amount of trenching, tons of ballast placed, number of ties laid, length and weight (size) of rail installed or changed, number of crossing sections installed, lineal footage of track resurfaced, or any other work unit.
  - d. On lump sum agreements, between the State and the Railroad, where the construction work is being done either by the Railroad forces or by the contract method the daily checks on the manpower, equipment, and material can be omitted. However, a detailed review needs to be made at the final Railroad inspection to ensure conformance with the agreement. In these instances the Railroad will be paid the exact amount of the original or duly modified agreement regardless of the actual cost incurred by the Railroad, as long as they have satisfactorily performed all work covered by the approved plan.
  - e. Records should be kept showing the hours for the Railroad's inspection personnel with particular emphasis on those not on the Railroad payroll.

### **30.7 SALVAGE MATERIAL** *(Rev. 10-20-09)*

If salvageable materials are encountered, the PE/S should immediately contact the District Office. The necessity for accounting for all materials removed from the site cannot be overemphasized. The Railroad must have the scrap or salvage materials available for inspection. In the interest of cooperation and liaison with the Railroad, the PE/S should remind the Railroad representative of this requirement since the Railroad will be held responsible for the full value of the item, whether of salvageable quality or not, if it is disposed of without first notifying and getting approval to do so from the Engineer.

The following definitions are provided as a general guideline:

**SALVAGE.** Materials, which have been recovered from project work by the Railroad or Contractor and are accepted for re-use and return to company storage. The State is to receive reimbursement for all salvage material and said amount shall be credited to

project cost. In determining salvage values, the following criteria should be followed: (1) For all materials recovered from temporary project use, the Railroad or Contractor shall give credit to the total project cost, less a depreciation allowance of 10 percent for rails, angle bars, tie plates, and metal turnout materials and 15 percent for all other materials. (2) All materials recovered from the permanent installation will be credited to the total project cost at current stock prices.

**SCRAP OR SALABLE.** Materials which have been recovered by the Railroad or Contractor from project work and are not acceptable for re-use, however, are salable items and too valuable to junk. If said materials have a net sale value, then the State shall inspect the materials and authorize for sale. The State or the Railroad shall advertise for bids and sell the materials to the highest bidder or allow the company to retain the materials if the company has periodic sales. If sold in a company sale, credit given for these materials will be based on company records of these periodic sales. If lengths or quantities of any materials installed are less than those removed and if such removal increases operating costs to the Railroad, then the amount of credit given to the State may be reduced.

**JUNK.** Junk is a material that has no salvage or scrap value. Such junk material is to be destroyed by the Railroad under the State's supervision.

When the custom or practice call for abandonment in place of parts or all of the facility, but such abandonment will, in the opinion of the District representatives, constitute a hazard or liability to the State, the Railroad, the General Contractor, or in the opinion of the Engineer adversely affect the work of the General Contractor, it shall be treated as a substantial change and approval to remove the facility must be requested from the RT. Abandonment in place of rails within the roadway must not be permitted, and their removal will be considered incidental to the project. After approval by the RT, the Railroad should be instructed to remove the facility and the project record shall be noted as to the reason for the change. It is the opinion of the RT, concurred in by the Design Section and the FHWA that in general all pipe 12 in. or less in diameter may be abandoned in place and poles, after being pulled and hardware removed, may be abandoned on the Railroad's right-of-way. The final decision to abandon, however, shall be the responsibility of the District and/or the railroad concerned.

After a review by the PE/S of recovered poles, pipes, rails, ties, and other material, which the Railroad has declared to be non-salvageable, (non-usable) the material shall be disposed of by the Railroad through invitational bids, if the estimate of value or amount of material warrants such action: otherwise it shall be taken to an established disposal yard, abandoned outside construction limits, or otherwise disposed of and the record noted accordingly. It should be noted that any pipe over 12 in. diameter to be abandoned under tracks must first be adequately filled with sand or other suitable material and the ends plugged with concrete.

### **30.8 FINAL INSPECTION OF RRFA** *(Rev. 01-21-14)*

At the conclusion of the Railroad work, a final inspection shall be made by the RT in the presence of the Railroad representative and its contractor, to determine conformity with

the approved original or modified plan. The final inspection should be recorded on Rail Crossing Final Inspection Report form 40908 which is available to the RT in electronic form.

When the RT Section is advised by the Railroad that a project has been placed in service, a final inspection meeting is scheduled with representatives of the Railroad, INDOT District Office, and the FHWA.

The following procedure is followed:

#### A. MODERN ACTIVE FLASHING LIGHT SIGNALS

1. The location and lateral clearance is checked to determine if it complies with the plan and FHWA requirements.
2. The signal assembly, mast, instrument case and battery well are checked to determine if all construction is done in a workmanlike manner.
3. The painting of all units is inspected.
4. The road is driven from both approaches with the flashing light signals in operation to determine if the flashing light units are properly focused.
5. If a train crosses the intersection during the inspection period the time elapsed from the start of flashing operation until the arrival of the train is determined.
6. The lengths of circuits are checked to determine that the warning devices will be in operation a minimum of 20 seconds before the arrival of the fastest train.
7. Note is made of any highway obstructions to the visibility of the flashing signals.

#### B. MODERN ACTIVE FLASHING LIGHT SIGNALS WITH SHORT ARM GATES

In addition to the above procedure, tests are conducted to determine if the installation complies with the following requirements:

1. Gate arm lights shall operate in conjunction with the highway-crossing signal. The light nearest the tip of arm shall burn steady and the remaining two lights shall flash alternately in unison with lights on the signal.
2. The gate shall start its downward movement not less than 3 seconds after the signal starts to operate.
3. The gate arm shall reach the horizontal position before arrival of any train and remain in this position until the rear of the train has cleared crossing.
4. The bell shall sound a warning from the time the signal lights start to operate



- (minimum of 20 seconds before arrival of the train) until the gate arm is in the horizontal position.
5. The gate arm shall return to the 90° vertical position.
  6. The time of operation from full horizontal position to raised position shall be from 9 to 12 seconds.
  7. Two sources of power shall be provided for the operation of the grade crossing warning devices.
  8. If the signals are interconnected with traffic signals for railroad pre-emption of the highway signals, the District Traffic Maintenance shall be requested to attend the final inspection and ascertain that the pre-emption is functioning as specified in the railroad agreement. The amount of advance warning time provided shall be recorded on the form 4098 as "Pre-emption time".

### C. ADVANCE WARNING SIGNS AND STANDARD PAVEMENT MARKINGS

Crossing is checked in regard to the following:

1. Pavement markings as shown in the MUTCD shall be used on all paved approaches to Railroad crossings. Such markings are the responsibility of the public authorities.
2. Advance warning signs are usually off the Railroad right-of-way and are properly the responsibility of the public authorities.

#### **30.9 TRANSMITTING RECORDS** *(Rev. 10-20-09)*

The PE/S must keep the Force Account record at the project office until he receives the final Railroad billing from the RT. The record will be used in reviewing the partial and final billings, after which it must be attached to the recommendation for approval letter for final billing. The RT will then transmit the billing to the Contract Audit Section for audit and payment and retain the PE/S's record in their files.

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