Removal of Existing Bridges

The removal of existing bridges is a significant element of the total program. The cost of bridge removal, the working days needed, the degree of inconvenience to public traffic and exposure to hazard is to a great extent, dependent upon decisions made during the planning stage. Provisions for detours or construction staging that permit greater freedom for bridge removal should be given primary consideration.

The three general methods used to remove bridges are as follows:

1) No Traffic

Unrestricted use of wrecking equipment (wrecking balls, explosives etc.) is permitted. This method can be employed only when traffic is completely diverted from the site and there are no adjacent improvements. When these conditions can be provided, the cost and times are minimal. Costs in the range of $5 to $10 per square foot and working days roughly in the range of one day per 2,000 square feet of deck can be expected. Both costs and times are influenced by the type of bridge and the amount of substructure which must be removed. The Standard Specifications are generally adequate for this method and special provisions are minimal.

2) Traffic Diverted

Public traffic is allowed to run under the bridge being removed except for a short period (generally 5 to 8 hours during one or two nights) when it is either diverted across the median and through an adjacent span or off onto a frontage road or ramp. Preliminary work which could not cause debris to fall onto the traveled way is allowed prior to diversion of traffic. During the period of traffic diversion, an earth pad is placed to protect existing pavement under the bridge and the span is dropped with wrecking balls etc., or, as an alternative, large units of the span which have been previously cut free from the substructure are lifted to the ground and hauled away. Before the end of the traffic diversion period, all debris and the earth protective pad are removed so that no obstruction to traffic remains. Cost for this method would be expected to be in the range of $10 to $15 per square foot and working days would be about 2 days per 2,000 square feet of deck. Considerable flagging and traffic control cost would also be expected. Special "maintaining traffic" requirements must be used in the special provisions for this method.

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3) Traffic Protected (Intermittent Closures)

Falsework and a protective cover is placed under the bridge to be removed so that nothing can fall onto traffic and the bridge is removed without interruption to traffic except during periods of falsework erection and removal. This requires intermittent closures of 10 to 30 minutes during erection and removal of falsework girders. This system can be used only when the existing structure clearances are sufficient so that the falsework can provide the temporary clearances required by Section 10 of the Bridge Design Aids Manual. Heavy demolition equipment cannot be employed with this system. Costs and times required for this method are quite high. Cost in the range of $15 to $22 per square foot and working days roughly in the range of 4 days per 2,000 square feet of deck can be expected. Special "maintaining traffic" requirements must be used in the special provisions for this method.

The decision as to which of these, or other, methods is to be used should be made during early planning stages in order that reasonable accurate cost and time estimates can be made. The Preliminary Bridge Report, or supplemental information from the Districts, should include all data needed to prepare construction specifications for this portion of the work. This data should include:

1. Order of work.
2. Allowed traffic diversion and/or closure periods.
3. Falsework opening requirements.
4. A listing of any elements of the structure that are to be salvaged. Substantiation of the need for the salvaged material should also be provided.
5. Special restrictions on work, storage or disposal areas.
6. Noise abatement requirements.
7. Other requirements of local agencies or railroads.

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