the RFP provision, the amount is usually omitted, to be proposed later by the selected design-builder. Some RFPs specify the maximum contract amount so that the bid price does not exceed the funds available to the agency and to enhance design competition on a fixed price.

In addition to the contract amount, there are many other issues that should be explained in the provision:

- Declaration of initial contract price
- Reimbursable amount and description of reimbursable items
- Compensation for changes to the project scope
- Retention and right to withhold payment
- Progress payment (schedule, measurement, etc.)
- Limitations on payment
- Invoicing and payment
- Project acceptance and final payment
- Payment for design
- Retainage on design and construction

The design-builder proposes the initial contract price in its price proposal. This price is the compensation for all products and services specified in the RFP, the proposal, and any changes made prior to the contract award including alternative technical concepts and betterments that the agency accepts. In the language of the provision, the scope and definition of the total price should be clearly stated.

An allowance is a sum of money set aside for any items that have not been specified in the contract. The amount of allowance tends to be higher and more important in designbuild due to the early stage of design development.

In the case that reimbursable items are required, the payment provisions must be specified. For example, utility relocation and new utility installation cost is often reimbursable from the utility owner. For such items, the RFP provision should specify the list of reimbursable items, their amount, and the requesting and reviewing process.

The payment provision also specifies the amount and process for additional compensation for agency-proposed, consented, or unavoidable changes of scope. Often, the extra payment due to scope change is handled along with others issues, such as change orders, in the change provision. The issue of extra payment should be mentioned in the payment clause, even if it is repeated, or directed to the appropriate section.

The retention clause permits the agency to hold some percentage of the total price (usually 5 percent to 10 percent) until the project is completed and accepted to ensure the continuous effort of the design-builder until the completion of the project. However, retention on design service fee should be released when all plans and specifications have been issued for construction. Also, the right-to-withhold-payment clause should include a list of occasions that are applicable, such as defects.

Once the design-builder has completed the project (or a significant item in the project), an invoice is sent to the agency requesting final payment. This clause specifies the format and contents of the invoice. Some RFPs supply a standard form for the use of the proposers. The clause also specifies how many days after the receipt of a responsive invoice the actual payment will be made.

When the project is completed and accepted by the agency, the final payment is made. For the project to be accepted, and to receive final payment, the design-builder should supply all necessary products, documents, permits, and applications for examination.

See Appendix C, Examples 40 through 42.

7.2.18 Price Adjustment

The use of price indexes or price adjustment clauses is not unique to design-build. Many transportation agencies use price adjustment clauses in design-bid-build contracts for construction items with cost volatility, including fuel, asphalt, steel, and concrete. However, the use of these clauses in a lump-sum payment method is unique and challenging.

Development of an index or price adjustment clause for a design-build contract should be coordinated with industry to help ensure that risk is appropriately balanced between the contracting agency and the design-build team. Consideration should be given to adjusting the price higher or lower to reflect the actual positive or negative fluctuation during the contract period. Alternatively, an agency may provide for adjustments only if the price index fluctuates by more than a specified percentage, such as plus or minus five or ten percent. An agency may also set a maximum limit for compensation related to price increases, either in total or for each individual item, to help protect it from skyrocketing cost increases.

See Appendix C, Example 43.

7.2.19 Progress Schedule

Overview

The RFP schedule provision typically requires the design-builder to prepare a baseline schedule and continuously update and report on progress, which is referred to as a progress schedule. This progress schedule relates to the schedule of values mentioned in the previous section.

Similar to design-bid-build delivery, the design-builder submits a base-line schedule shortly after receiving the notice to proceed. Upon the approval of the contracting agency, the schedule becomes the official contract schedule. The main functions of the contract schedule are to plan for efficient contract execution, monitor the project for payments, and provide communication between parties.

As the project progresses, the base-line schedule needs to be updated. The progress schedule provision defines the submission timing, coverage, and associated payment procedures. Of particular interest in the progress schedule is the payment. The designbuilder's progress schedule is used to identify the quantity of materials and associated cost for each major work task, thus establishing the basis for measuring completion of work and making payments to the design-builder. It is important to include a detailed set of design activities and relate them to their associated construction activities to ensure that the design-builder is properly managing the project and that disruptions in the design process can be tracked to potential delays in the completion of construction.

Provision Development

The schedule provision consists of three parts—scheduling, measurement, and invoice procedures.

- Scheduling method
- Measurement of work completed
- Procedure for invoicing/receiving payment

The scheduling method applies to both contract and progress schedules. The transportation agency requires the design-builder to provide a cost and resource-loaded schedule to establish critical construction operations. All activities should be identified in terms of precedence relationship, duration, estimated and actual start/finish dates, and float.

The measurement provision describes how the work will be measured and paid for. The provision specifies the measuring formula and units to which the design-builder should conform in order to receive partial payment.

The procedures for submitting a progress schedule, invoicing for payment, and conditions for receiving payment should be included in the provision. In contracts that have separate payment plans for contingency/allowable items, this provision also should specify both procedures separately if there is any difference in measuring and compensating.

See Appendix C, Example 44.

7.2.20 Project Acceptance

Overview

When all work is completed, the work shall be reviewed by the agency to ensure the desired quality and performance in accordance with the RFP requirements. All work completed should be accepted by the contracting agency prior to the design-builder's eligibility for full payment for the work performed. In design-build, the design also must be accepted to be eligible for payment for design service.

Provision Development

Upon the substantial completion of the project, the design-builder notifies the contracting agency of the need for examination and acceptance of the project. The acceptance of design, materials, and construction process occurs throughout the project. However, acceptance after the completion of the entire project carries the special meaning of final acceptance, and the design-builder is thereby entitled to final payment and is free from obligations other than warranted work.

The project acceptance provision should include the following in progression:

- Conditions of substantial completion
- Procedure and required documents for reporting substantial completion
- Examination method and basis of acceptance
- Non-conforming work
- Delivery of as-built plans

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- Notice of final acceptance
- Final payment

Substantial completion means that the project is completed in the design-builder's perspective. It does not mean that the project is truly completed. The project is completed when the contracting agency accepts it. The provision specifies what conditions have to be met for the project to be considered substantially completed and ready to be reported. The conditions can vary due to their dependency upon the project scope and expectations, but, in most cases, the criteria for substantial completion are met when the design-builder can ensure the following:

- The project is completed except for final clean-up and check up items originally scheduled to follow final acceptance.
- All work specified in the contract document has been correctly performed.
- All work has been performed at or above the levels specified by the contract document and industry standards.
- All necessary government permits have been acquired.
- The project is free from off-site problems such as damage to other properties and injury of any person.
- The project is ready to be opened to the public.

The basis of acceptance also are explained in the provision. The test method and minimum performance levels are mostly based on the performance criteria specified in the RFP, the design-builder's proposal, and the approved contract design documents.

As a result of the examination on the project, either final acceptance or partial acceptance is issued to the design-builder. When all work is determined complete by the contracting agency and the project is accepted, the design-builder is notified in writing and relieved of further responsibilities. In cases of partial payment, the contracting agency notifies the design-builder of specific defective items. Partial acceptance and non-conforming work will be discussed further in the next section.

See Appendix C, Examples 45 through 47.

7.2.21 Non-Conforming Work

Overview

Non-conforming work is any work performed that does not meet the requirements of the contract documents. "Work" refers to all products and services the design-builder has agreed to perform including design, materials, construction process, equipment and non-physical-product services such as permit acquisition, traffic control, etc. The contract documents in design-build refer to drawings and specifications in the RFP and proposal, referenced standards, applicable codes, and other contractual requirements.

The major function of the non-conforming work provision is to specify what has to be done to the non-conforming works that are discovered prior to acceptance of the project. AASHTO highway specifications identify three possible remedies for the defects discovered:⁵

- If the work fails to meet the contract requirements but is adequate to serve the design purpose,
 - The agency decides that the item serves the purpose although it does not meet the requirement
 - The work remains in place
 - The agency decides the extent to which the work will be accepted
 - The agency documents the basis of acceptance by change order and adjustment of contract price
- If the work fails to meet the contract requirements and is inadequate to serve the design purpose,
 - The agency decides that the item does not serve the design purpose.
 - The item is removed and replaced or corrective work is done at no cost to the agency.
- If there are contract provisions to accept an item not fully complying with the requirement,
 - The pay-adjustment factor should be included in the appropriate subsections on measurement and payment.
 - The price is adjusted according to the pay adjustment factor.

Provision Development

The non-conforming work provision specifies what has to be done in the following three cases:

- Non-inspected work
 - This refers to work completed but not inspected.
 - Prior to final acceptance, the non-inspected work should be uncovered and inspected.
 - The design-builder is responsible for any delay.
- Unauthorized work
 - This refers to the work done by the design-builder but not pre-approved by the agency and not included in the contract documents.
 - The contracting agency is not liable for extra cost and time for such work.
 - If the work does not conform to the minimal requirements, the design-builder is liable for corrective work without compensation.
- Unaccepted work
 - The work is complete (authorized, performed, and inspected) but does not conform to the quality, purpose, or contractual functions.

There are two possible remedies for non-conforming work.

• Corrective work

Upon the engineer's or contracting agency's decision to take corrective action, the design-builder is responsible for repair, removal, reinstallation, and re-inspection in terms of cost and time.

• Accepted at adjusted payment—deducted from total price The contracting agency may choose to accept the work in place but at an adjusted (lower) price. This provision should specify an appropriate pay adjustment factor to be used in such a circumstance.

The non-conforming work provision also should specify appropriate remedies for damages to the agency and to the public.

- Damages to the agency Environmental cost, penalties, missed opportunities, compensation for extra work by department staff, etc.
- Damages to the public User cost, inconvenience, disadvantage business compensation, etc.

See Appendix C, Examples 48 through 51.

7.2.22 Traffic Control

Overview

Traffic control is particularity important in an expansion project where significant traffic exists during construction. As the number of expansion projects is increasing, the importance of traffic control also is increasing. It can minimize user cost, inconvenience, and accidents. In addition to temporary traffic control during construction, designing permanent traffic control features is an important factor to project performance. Efficient traffic flow should be one of the main considerations in design decisions.

The traffic control plan often is included in the technical proposal and evaluated as part of the selection decision in order to encourage proposers to put the necessary effort into developing a viable plan. If the full plan is not reasonable to include in the proposal, partial plans or an overall approach to the maintenance of traffic may be substituted.

Provision Development

The traffic control provision includes the following:

- Submittal of traffic management plan
 - Scored as a part of the selection decision
 - Reviewed for agency's approval

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- Contents and method of traffic management planning
 - Plan for after-construction permanent traffic flow
 - Plan for during-construction temporary traffic flow
- Traffic control analysis
 - Worksite and detour route
 - Simulation, traffic volume forecast
- Traffic control devices
 - Permanent and temporary signing, pavement markings,
 - intelligent transportation system (ITS) devices, etc.
- Restrictions
 - Time restrictions (peak hour, holiday, etc.)
 - Space restrictions (spacing from opened lane to construction site)
- Required mitigation services
 - Patrolling
 - Accident, emergency management
- Lane rental
 - Liquidated damage clause

See Appendix C, Examples 52 and 53.

7.2.23 Warranty

Overview

The FHWA's design-build rule leaves the decision authority of warranty purchase to the contracting agency under the condition that the purchased warranties:

- are short-term;
- are not the sole means of acceptance;
- do not include items of routine maintenance that are ineligible for Federal participation; and
- include the quality of workmanship, materials, and other specific tasks identified in the contract.

Therefore, the contracting agency may purchase warranties on desired items, periods, conditions, and criteria. However, the contracting agency must confirm if any of the state governing regulations requires or limits the use of warranties in the project.

The one significant difference in using a warranty in design-build from design-bidbuild is the use of performance criteria. A warranty identifying specific pieces of work may limit innovation opportunity and shift the risk to the contracting agency, thereby nullifying critical benefits of design-build. Therefore, the warranty criteria should be performance-based and provided in the RFP documents.

Provision Development

The warranty provision includes the following:

- List of warranty item(s)
 - Facility type (pavement, painting, etc.)
 - Location (section, street name, etc.)
 - Warranty coverage (material, workmanship, performance, etc.)
 - Warranty period (each warranty may have a different period)
- Warranty bond
 - Required bond submittals (certificate, bond type, etc.)
 - Coverage amount
- Performance warranty criteria
 - Testing, measuring method
 - Allowable level
 - Corrective action
- Inspection
 - Period
 - Defect reporting, appealing, dispute resolution procedures

See Appendix C, Examples 54 and 55.

7.3 Conclusion

As noted previously, this Guide is based on current best practices in design-build from experienced state transportation agencies and other public sector agencies. However, it should be noted that design-build procedures are continually evolving within individual state and local agencies. Each state has its own laws and regulations related to design-build that need to be reviewed prior to embarking upon, modifying, or expanding a design-build program. The examples of agency practices included in this Guide are meant to assist with implementing and/or improving the procurement of design-build transportation projects including the preparation of requests for qualifications (RFQ), the preparation of requests for proposals (RFP), and the selection of the successful proposer. By using the basic four-step approach outlined in this Guide—defining project goals, allocating project risks, planning the evaluation and award, and writing the contract documents—and communicating these critical concepts when procuring design-build contracts, agencies will be well on their way to project success.

Notes

1. 23 CFR 636.

2. Available from Federal Highway Administration's website at http://www.fhwa .dot.gov/realestate/act.htm (1970).

3. Beard, J. L., M. C. Loulakis, and E. C. Wundram. *Design-build: Planning through Development*. McGraw-Hill Professional, New York, NY, 2001.

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4. U.S. Department of Transportation, Federal Highway Administration, "Design-Build Contracting; Final Rule." *Federal Register*, Vol. 67, No. 237, December 10, 2002.

5. American Association of State Highway and Transportation Officials. *Guide Specifications for Highway Construction*. American Association of State Highway and Transportation Officials, Washington, DC, 1998.

APPENDIX A

Referenced Design-Build Guidelines, Bid Proposals, Requests for Proposals, and Requests for Qualifications

Design-Build Guidelines

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