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Section 4

PROJECT TEAM

The project team for construction projects includes the municipality, the professional consultant and the contractor. Each plays an important role in the satisfactory completion of the project. It is important that there be mutual trust and a high level of confidence of each in their respective roles.

Although not a new concept, the Association of General Contractors (AGC) has been encouraging the use of the partnering process by its members to improve the relationships among all parties involved in a construction project. This process requires a commitment by top management to invest both time and some money towards fostering a relationship that can result in a reduction of adversarial and costly claims while increasing productive communication and cooperation on a construction project. By taking time at the start of a project to identify common goals, common interests, lines of communication and a commitment to cooperative problem solving, participants have seen a reduction in conflict among all parties involved in the project. This process is most effective when the project costs are \$1 million or more. Additional information about this concept and how it works can be obtained by contacting the AGC's office in Montpelier at (802) 223-2374.

4.1 MUNICIPALITY (OWNER)

The owner, by definition, is a person or entity having an interest in real property on which work is performed. When a construction project is located on property that is municipally owned, then the municipal entity (town, city, village or district) is the owner. The legislative body is responsible for all major decisions on the project. While there may be some reliance on the professional consultants to make recommendations, nonetheless the legislative body is ultimately accountable to the voters. The significance of this responsibility makes it important that the municipality be involved in each phase of the project.

If it is determined that, due to the other responsibilities of the legislative body, such involvement cannot reasonably be provided, the municipality may consider hiring an authorized representative to represent their interests. This person would report directly to the legislative body and provide oversight throughout the project. A town/city manager can serve in this role. If there is to be an authorized representative, his or her scope of authority should be clearly defined. This is especially important during the construction phase. The authority may include the ability to agree to time extensions, change orders up to a certain amount, and possibly accept the completed project.

Some legislative bodies are fortunate to have members who have construction knowledge. How to best utilize this special expertise should be carefully discussed. Expecting this board member to donate services for work he or she is normally paid to do

is not realistic. On the other hand, offering compensation has the potential of being misunderstood by both residents and people in the construction industry.

Creative ways to take advantage of this expertise while being sensitive to these concerns can benefit the community. This board member could be involved in evaluating alternatives, preparing the request for proposals, reviewing the consulting service proposals and, most importantly, helping to ask the right questions. This assistance can benefit the community and at the same time avoid concerns of conflict of interest.

If the member of the legislative body is a potential bidder for the consulting services or the construction of the project, then he or she should excuse him or herself from any discussion related to the project. This conduct will serve to avoid any perception of impropriety. It may be appropriate for the member to not attend the meetings when the project will be discussed.

When the legislative body has not hired a project manager, it should appoint one of its members to be the spokesperson on the project. This individual should attend all the project meetings and keep the other members apprised of the progress. While this person can serve as the authorized representative on the project, the full legislative body will still be required to approve all agreements and/or amendments.

Designating this spokesperson for the municipality will be very helpful to the professional consultant and the contractors as well. When legislative body members speak independently to those involved in the project, it tends to confuse the professional consultant and contractor. It is particularly troublesome when there may be contradictory and/or inconsistent direction to that of contract documents. For clarity, a single member of the legislative body or an authorized representative should be the designated spokesperson.

4.2 PROFESSIONAL CONSULTANT

It is common practice for municipalities to hire either an architect or engineer (professional consultant) depending on the nature of the project. Having them available when the scope of work is being developed will help in identifying all elements of a project and result in a better understanding of the costs. Consultants come with experience in design, familiarity with the permit process, and knowledge of construction industry personnel.

If the primary function of the project is to construct a building, an architect is the most appropriate choice. Most architects will have developed a working relationship with engineers who can provide related mechanical and electrical design services that will be part of the project. In allowing the architect to make such arrangements, the community will benefit from an established working relationship that is likely to exist and perhaps avoid conflicts between the professionals.

Road design, water, wastewater and stormwater projects will likely require the assistance of a licensed environmental or civil engineer. Depending on the size of the firm, it may have in-house expertise to provide a full range of engineering services. Firms that do not have the various engineering disciplines on staff are likely to have established a working relationship with others in the profession to provide all the services needed for a particular project. It is a matter of choice by the municipality as to which option they would feel most comfortable using. Nonetheless, it is important that there be a good, open relationship with any consultant selected that continues throughout the project.

Once the scope of work is clearly defined, the consultant may be responsible for preliminary and final design, permit acquisition, preparation of the bid document, assistance in the bid process and the evaluation of the contracts and/or proposals received. He or she should also be involved during the construction phase. The level of involvement should be defined in the consultant's agreement.

The municipality will benefit from the information provided and relationships developed with retention of the design consultant for construction services. Failure to retain the design consultant can result in additional costs and may place the municipality in the position of having to assign responsibility in the event of conflict.

When state or federal funding is involved, the municipality should inquire about the selection process to be followed for the services of a professional consultant. It is important that the specific requirements from the funding agency be identified since they vary among agencies. It should be noted that the Agency of Transportation (VTrans) requires that, depending on the dollars involved, the resident engineering services be a separate contract with a firm other than the one involved in the design work.

4.2.1 PROCURING THE SERVICES OF A PROFESSIONAL CONSULTANT

Once the project is defined and the need for the services of a professional consultant is determined, a selection process that includes a specific scope of services and a procedure for evaluating potential applicants is developed.

Choosing the right design professional is vitally important to the success of the project. Unlike other purchases that a community makes, the cost, although important, should not be the primary concern. Factors that should be considered include: trust, experience in similar projects, project approach, responsiveness, schedule, communication skills, individual experience, technical management, quality control, and design excellence. If there is a balanced assessment of each firm's ability to satisfy these elements, the final selection should provide confidence to the legislative body that sustains itself throughout the project.

First, contact the funding agency to identify any specific requirements in the procurement of professional services. If the municipality needs assistance in defining more specifically the consultant services required for the project, it is appropriate to ask for the

assistance of a professional engineer or architect. As long as the consultant understands in advance what he or she is being asked to do, he or she is usually willing to help.

There are several different approaches to follow in the professional consultant selection process. The three most commonly used are qualification-based selection (QBS), request for qualification (RFQ), and request for proposal (RFP). The size and nature of the project, as well as the legislative body's intent, will largely determine what will best meet the community's needs. In deciding what process to follow, it is important to understand that there are time and cost factors related to each process.

Depending on the requirements included in a specific selection process, it can be costly to those submitting proposals. Preparing meaningful and reliable price information is costly and time consuming for the consultant to develop. Developing a process that recognizes these factors will benefit both the municipality and the consultant.

Qualification-Based Selection (QBS). The municipality, through the issuance of a request for qualifications (RFQ), initiates the qualification-based selection (QBS) process. The RFQ should include a brief description of the type of project, a contact name, address and telephone number, and a list of items required by the municipality to adequately review the qualifications of each firm. A legal notice of invitation is placed in newspapers of wide circulation and/or a group of qualified firms is asked to submit letters of qualification.

Those interested in being selected should be asked to submit the following:

- Name, address and brief history and description of the firm.
- Resumes of key personnel to be assigned to the project.
- Related projects/areas of expertise/experience (including a brief description of the projects and reference contact information).
- Description of budgeting, cost and quality control procedures.
- A brief description of the firm's approach to planning, designing and implementing the project.
- Professional liability insurance coverage, if appropriate.
- Description of the services that the firm can provide.

The review of these submittals includes an evaluation of the letters of qualification, reference checks, a ranking of firms and the selection of approximately three firms for interviews. Those firms not selected for interview should be notified in writing. Prior to the actual interview, a pre-interview site visit may be arranged with the selected firms to provide the opportunity for a better understanding of the project requirements.

When these interviews take place, it is important that each firm is asked to respond to the same set of questions so that a fair comparison can be made. Individual interviews should take no more than an hour. The firms are then ranked based on developed criteria, and the number one ranked firm is asked to participate in the preparation of a detailed scope of services and to negotiate conditions of the agreements including a fair and

equitable fee. If a satisfactory agreement cannot be reached, then the negotiations are suspended and the municipality begins negotiations with the firm ranked second. Once an agreement is finalized, the remaining firms are notified of the municipality's results.

In the review process, the legislative body can serve in the role of the review panel or it may appoint a committee to perform this function. If a selection review committee is appointed, it may include staff, members of the legislative body and possibly a few interested citizens. If a committee process is followed, the committee can be asked to make the selection and negotiate an agreement and then give their recommendation to the legislative body, or the committee could recommend the professional consultant and have the legislative body negotiate the agreement.

Request for Qualification (RFQ)/Request for Proposal (RFP). For the consultant selection, the municipality may decide to follow a two-step process that first selects several consultants through a request for qualification (RFQ) process and then asks for a selected group to respond to a more detailed request for proposal (RFP). Narrowing the group responding to a more detailed RFP reduces the costs involved in the preparation and review of the proposals.

In this RFQ process, a notice is published related to a specific project in a widely circulated newspaper, and a selected group of firms is notified by mail as well. This notice should include the criteria to qualify for selection, the project schedule and the expected budget for construction. Those responding will submit a letter of interest and other information as noted above in the QBS process.

A review process similar to that described above, may be used to develop a "short list," or group of three to five, that will then be asked to respond to a more detailed RFP.

The RFP should include:

- Brief narrative describing the basics of the project.
- List of state and federal agencies involved in the project.
- Information enabling bidders to adequately review the submitted proposals.
- The selection process schedule that includes the date, time and location for delivery of the proposal.
- Name of the contact person and his or her mailing address, telephone number, fax numbers and e-mail addresses.
- The number of copies of the proposal required.

The professional consultant's submittal should include the following:

- The proposed scope of services to be performed by the firm. If the firm is selected, this proposal will be the basis for an agreement.
- A list of sub-consultants to be used on the project.
- Key individuals within the firm who will be involved in the project and their roles.

- Total number of hours estimated to complete the project as well as a breakdown of those hours for each individual by task.
- Number of public meetings they will attend.

The municipality may use the same review team as in the RFQ process, or appoint a separate committee to review the proposals submitted. Interviews of the selected group of consultants should take place. Adequate time should be allowed for each firm to make a presentation.

Prior to the interviews and review of the proposals, a specific rating system should be developed so that each member of the team is using the same criteria in evaluating the proposals. Once interviews are concluded, the team should rank the proposals based on the quality of the proposal and the interview and make a recommendation to the legislative body.

Request for Proposal (RFP). Many communities will only use the request for proposal (RFP) process. The municipality should only use this process when it already has pre-qualified several consulting firms. For smaller projects, this may be all that is necessary. However, keep in mind that there are costs involved in the preparation and review of proposals.

The RFP process is similar to that detailed in the RFQ/RFP process described above.

Professional Consultant Fees. While the selection of a consultant should be based primarily on qualifications, given the financial responsibility of the municipality, the professional consultant fees need to be included in the overall project cost. There are several different approaches to deriving and evaluating professional consultant fees. Regardless of the approach, it is important for the review team to examine the number of hours allocated to each of the tasks to determine the number of hours each member of the consulting team is prepared to devote to the project. A comparison of the level of commitment of each of the professional consultant proposals is helpful in understanding the level of service being proposed.

The following are recommended approaches:

- 1. Negotiated Price.** This is a collaborative approach detailing the specific services to be provided and responsibilities of both parties. After the professional consultant has been selected, the municipality can negotiate a detailed scope of services and associated fees. This approach is used in the QBS process.
- 2. Two-Envelope Selection Process.** The community may request that those firms responding to the RFP submit two separately sealed envelopes. One envelope contains the proposal and all of the information as noted above. The second envelope contains an estimated fee proposal that corresponds to the scope of services outlined in the proposal contained in the first envelope. Only after the proposals have been opened, reviewed and prioritized are the fee proposal envelopes opened and

reviewed. The municipality can then evaluate the scope of service and associated fees with the estimated project budget. If necessary to stay within budget, the municipality may revise the scope of services and fees. Once this is decided, the municipality will meet with the consultant to negotiate a final scope of service and associated fee. This approach is used in the RFQ/RFP process.

- 3. Inclusion of Estimated Cost in RFP.** In this process the municipality includes in the RFP the amount that the community has allocated for professional services on the project. All potential consultants are then aware of the amount the community has allocated and can then develop a proposal that works within this budget. Alternatively, consultants may decide that insufficient money is allocated to provide the necessary services. The municipality should be made aware of such a situation so that it can re-evaluate the project.

The approach used in obtaining and evaluating consulting fees should be discussed and resolved before the agreement is signed. The relationship throughout the project must be one of mutual trust. The municipality should feel free to question the consultant when they do not totally understand the service to be provided and the associated fee. Failure to clearly understand the services and cost has the potential to negatively affect the relationship between the two parties during the project.

4.2.2 CONTRACTING FOR CONSULTING SERVICES

When the selection process for a professional consulting firm is complete, the municipality should meet with the firm to negotiate an agreement. The main components of the agreement should include a scope of services and agreed-upon fees for these services. The professional service agreement must clearly state the responsibilities of the professional consultant and those of the municipality. If funding agencies are involved, they should be consulted prior to negotiations of the agreement for specific contract language and format.

In addition to determining the scope of services, compensation for services and method of payment are critical in the agreement. Common fee methods of payment for a consultant include lump sum amounts, cost plus fixed fee, and hourly rate.

The lump sum method should only be used with a clearly defined scope of services. If it is not possible to incorporate within the agreement the specific number of meetings or specific deliverables required, then a lump sum method is not appropriate. For example, if the consultant is required to obtain *all permits*, it would be very difficult to estimate in advance all the permits required and the time and meetings that may be involved in satisfying this requirement. However, when only design services are involved, it is possible to define a specific scope of services, and therefore the lump sum method is appropriate.

The cost plus fixed fee method provides the professional consultant with reimbursement of costs, both direct labor and indirect costs for the project, while providing the firm with

a specific profit margin. It is appropriate to negotiate the anticipated fixed costs for the scope of services and the profit margin. When funding agencies are involved they will advise as to appropriate percentages for indirect labor costs and profit.

The hourly rate method requires the professional consultant to provide the municipality with an hourly rate that will include the direct labor, indirect costs, and profit for each of the employee categories that will be involved in the project. Typically, indirect expenses such as mileage, photocopying, and telephone are paid outside of this hourly rate. In the event that sub-consultants are involved in the project, their fees should be determined and included in the professional services agreement.

The agreement should address *ownership of documents* created within the project. The municipality may wish to own copies of the documents after full payment to the professional consultant. The *media on which the documents are to be provided* should be stated clearly within the agreement. For example, specific computer software to be used should be stated.

Insurance requirements should be stated and a *copy of the insurance certification* attached to the professional service agreement. The insurance may include general liability, automobile and professional liability insurance. These limits should be reviewed with the municipality's insurance carrier prior to execution of the agreement.

The *anticipated project schedule* should be included. The schedule should either include specific dates or time duration for specific tasks of the scope of services. This will provide all parties with an understanding of the required level of effort to maintain these milestones throughout the project.

After successful negotiation of the agreement, *originals* should be executed by both parties and provided to each. If funding agencies are involved, they may require original copies of the agreement as well.

If an agreement cannot be negotiated with the selected firm, then a formal letter should be sent to the firm notifying them that negotiations have terminated. Negotiations should then be initiated with the next most qualified firm.

4.3 CONTRACTOR

The contractor is a person or entity that contracts with a municipality to perform work on real property. The contractor is responsible for constructing the project in accordance with the plans and specifications supplied by the municipality. The municipality will be required to enter into a written agreement with the contractor to complete the project for an agreed upon price in a timely manner.

The responsibilities of the contractor during construction include providing a safe work place, maintaining good site housekeeping, prompt payment to workers, good workman-like performance, coordination and representation of subcontractors and suppliers,

selection of means, methods, techniques, sequences and procedures, timely ordering and schedule control.

In some instances, the contractor will arrange to have a subcontractor complete some aspects of the work. In this case, there is a contractual relationship between these two entities that is separate from the relationship of the contractor to the municipality. The subcontractor will take direction from and be paid by the contractor.

See Section 8 for a more detailed discussion of the tasks.

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Section 5 PRELIMINARY DESIGN

5.1 GENERAL

After defining the scope of the project and the project team members, it is important to develop a preliminary design of the project. This effort can vary depending upon the project's complexity. The intent of this task is to further define the project by exploring various alternatives, obtaining more site-specific information and gaining a greater understanding of the project constraints. This information will lead to a more inclusive project cost estimate, which can be used to secure funding for the project. Also, the timelines of the various tasks necessary for the project can be refined.

The level of effort expended during this phase should be enough to provide a clear direction for the remainder of the project. Insufficient effort can result in delays and cost overruns later. This phase creates the foundation for the project's design and construction and ultimate success.

The following tasks should be completed during the preliminary design phase of the project:

- Topographic surveys
- Conceptual planning
- Evaluation of alternatives
- Subsurface investigation
- Cost estimate development
- Schedule refinement

Topographic surveys provide the project team with a detailed look at the area of the project. Depending upon the scope and area of the project, the survey can include aerial photographs and maps, U.S. Geological Survey (USGS) maps, geographic information service (GIS) mapping or detailed topographic site surveys. The level of detail in each of these surveys is commensurate with its cost. The most detailed topographic survey may not be required at this phase. However, obtaining this information at this time may accelerate the project schedule later and save project costs. The consultant can help to make this decision.

Using the site map, **conceptual plans** can be developed. The location of structures, utility routing and site constraints—such as wetlands, historical districts and existing easements—can be mapped to assist in evaluating alternatives. Many factors can be considered when **evaluating alternatives**, including aesthetics, environmental impacts, costs, proximity to residents, schedule effects and funding impacts. After narrowing the number of feasible alternatives, further site examination through subsurface investigation may be warranted.

Subsurface investigation can include the use of hand augers or drilling rigs to assess the subsurface soil and ledge existing on the site. Depending on the project's impact and the need to know the composition of the subsurface material, the program for subsurface investigation can be developed. Typically for utility projects, the depth to ledge has the most significant impact to a project. Soil pH does have an effect on the type of pipe and conduit materials. In addition, depth to groundwater and potential seasonal fluctuations can affect the timing of a project and the type of dewatering procedures that should be employed by a contractor.

Upon obtaining all known site constraints, it may be necessary to re-evaluate the alternatives. The selection of the preferred alternative should be documented and the reason for the selection understood by all project team members. This information will be helpful during public hearings.

5.2 COST ESTIMATES

A construction cost estimate and a total project cost estimate should be developed based on the preferred alternative. The construction cost estimate should include all the contractor costs necessary to complete the project. These include labor and materials, administration, permit fees, coordination with utility companies, and other costs associated with the operation of the construction company. The total project cost includes construction cost, professional consultant fees, other permit fees, administrative and legal fees, financing costs, such as bridge loan and application fees, and land purchasing costs. The total project cost should also include a project contingency amount to account for potential unknown costs at this phase of the project. Contingency amounts at the preliminary design phase of the project range from 20 to 30 percent of the project cost.

5.3 SCHEDULE

It is important during the preliminary design phase to assess the time requirements of each of the remaining project tasks. This assessment can be developed into a better defined project schedule. The project schedule should consider the time of year for the project's construction. If the construction duration is intended to take longer than a year, a winter shutdown should be considered. Depending on the necessity of the project and the available funding, it may be advantageous to complete the final design of the project before the public bond vote, if necessary. Sufficient time should be given to each task and time between tasks (float time) when warranted.

Section 6
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Section 6

PERMITS, RIGHTS-OF-WAY AND PUBLIC VOTE

6.1 PERMITS

Depending on the nature and extent of the project, there may be permit requirements. Identifying and applying for these permits in the initial stages of the project will facilitate its implementation. A consultant can help to identify and obtain applicable permits. The consultant contract should include this very important phase as a requirement.

While some permit applications cannot be submitted until detailed engineering is complete, it is still important to identify all required permits early in the project. The environmental permits are specific to a particular site where construction is being proposed.

6.1.1 HOW TO APPROACH THE PERMIT PROCESS

Information Sources. When state/federal funding is involved, required environmental assessments may identify other needed permits. Funding sources will generally not help to obtain permits for the municipality. They will, however, assist in the identification and will participate in meetings scheduled by the municipality or consultant where the various permitting departments are in attendance. It is, however, the municipality's responsibility to be aware of and apply for all necessary permits.

Readers may obtain a *Permit Handbook* from the Department of Environmental Conservation of the Vermont Agency of Natural Resources (ANR). This manual provides a comprehensive listing of permits required by ANR and other state agencies, as well as a brief description of the nature of each permit and the related fees. The manual is available at each town/city office in the state as well as each regional planning office.

ANR has five regional offices throughout the state to assist in identifying the permits required for a specific project. They will also have a copy of this handbook.

6.1.2 STRATEGIES

Joint Meeting. In addition to state permits, federal permits may also be involved. While state and federal agencies try to coordinate the process in issuing these permits, do not be assume this will happen automatically.

When both state and federal governmental units are involved, it is useful to schedule a meeting to discuss the project in general. Included should be the municipality, consultant, representative(s) of the funding sources, and staff from each of the permitting departments/agencies (federal and state).

Discussion should include the coordination of these overlapping jurisdictions. It should not be surprising that there may be conflicts among the various agencies. Each represents its own field of interest and, on the surface, it may appear there is no way to satisfy both.

Municipality attendance at this joint meeting is important. By articulating the community objectives that will be met, it can help put a “face” on the project. This helps the permitting agencies obtain a better understanding of the need and timelines and often results in a spirit of cooperation.

The presence of representatives of the funding sources can help to reassure those issuing the permits that the state is in support of the project. Since those issuing the permits are often familiar with the funding sources’ criteria for providing financial assistance to a project, they would understand that this project is likely satisfying some state objective or the state would not be putting money into it.

For example, upgrading a wastewater treatment plant improves water quality. Since this objective has wide support within state government, it is in the best interests of the state/federal permitting agencies to do what they can to facilitate the process.

Follow-up. In most instances, permitting agencies are understaffed and juggle many different applications at any one time. Check periodically to see what might be delaying the permit application. It may be that a simple question has caused the application to be set aside and a phone call by the municipality or the consultant can provide an answer to that question and put the permit back into the active stack. The permitting agent also is receiving a message that this project is time sensitive.

6.1.3 SPECIFIC PERMITS

This manual will not attempt to list each permit issued by the state and federal government that could apply to a project because there is always the risk that something would be left out. However some space has been allowed for three requirements that are often misunderstood and are of major consideration for a project: the State of Vermont Act 250 requirement, the National Environmental Policy Act (NEPA), and Section 106 of the National Historic Preservation Act of 1966.

Act 250. Act 250 is Vermont’s development and control law administered by nine district environmental commissions. District coordinators are appointed to manage these offices. Citizens are appointed by the Governor to serve on the various commissions located throughout the state. In addition a nine-member environmental board, also composed of citizens appointed by the Governor, serves as an appeal body.

Municipal projects are subject to Act 250 review when more than ten acres is involved. Land incidental to the use of the project—such as parking lots, driveways, leach fields and accessory buildings—must be included in the acreage to determine jurisdiction.

Municipal road projects can be subject to Act 250 when the following characteristics are in place:

- Involves more than ten acres of land, including driveways, parking lots, lawns and other areas.
- Constructed in conjunction with plans to sell or lease any adjacent land.
- Provides access to more than five parcels, or the access is longer than 800 feet.

A more detailed explanation of the Environmental Board rulings that have affected municipal projects can be found in Cindy Corlett Argentine's *Vermont Act 250 Handbook*, Putney Press, Brattleboro, Vt. (© 1993), or by contacting the district commission.

The district coordinator at the regional office can assist in an initial review of the project to determine if Act 250 applies. When making the initial visit, the applicant should be prepared to provide sufficient detail of a project to allow the coordinator to make an informed decision.

National Environmental Policy Act (NEPA). Projects with federal funding must be examined under NEPA. The granting agency provides assessment sheets to the municipality to evaluate if any significant environmental attributes will be impacted by the project. These issues include wetlands; storm water runoff; endangered species; wildlife; historic and archaeological resources; human heritage; floodplains; aesthetics; traffic and safety; geology; and air, noise, and water quality.

Three classifications of environmental impact prescribe the level of documentation required in the NEPA process:

- **Class I, Environmental Impact Statement (EIS)**, applies to projects where there is a significant impact.
- **Class II, Categorical Exclusion (CE)**, applies to projects that have no significant impact.
- **Class III, Environmental Assessment (EA)**, applies to projects having limited or uncertain impacts.

Detailed reports are required for both the EA and EIS determinations. The CE determination requires a statement signed by the municipality that there is no impact. When it is determined that there will be limited or no impact on the environment, the EA report will identify how these limited impacts will be mitigated.

When the assessment finds significant serious impacts, a complete EIS is prepared that includes an examination of the proposed project and alternatives. These alternatives must include a *no build* situation. After the report is complete, a public hearing is held. From that hearing process another report is prepared to document all of the comments and responses provided. Once this is completed, then one of the alternatives is selected.

Considerable time may be involved in preparing the EIS and, depending on what is found the project timelines could be extended considerably. It is therefore very important to start early and allow for such an eventuality.

Section 106 of the National Historic Preservation Act of 1966. The receipt of federal funds also requires an evaluation of any impact on historic and archaeological resources. This is required by Section 106 of the National Historic Preservation Act of 1966. Potential resources may include houses, bridges, historic districts, and historic and prehistoric sites. Due to the history and presence of many natural bodies of water in Vermont, it is likely that something will be encountered. The level of significance will have to be determined by a professional.

This evaluation should be completed very early in the planning stages of the project. Depending on what is found, the design may need to be modified or the site location altered.

For projects with Agency of Transportation (VTrans) funding, a staff person is directly responsible for providing a preliminary review of the site to determine if additional information is required. This person will also coordinate with the Vermont State Historic Preservation Office (SHPO). If a more detailed evaluation is required, the municipality will have to hire a private consultant. SHPO can provide a list of qualified consultants who have registered with the state to perform archaeological/historic evaluations.

In projects with other sources of funding, a qualified consultant will be hired to provide both preliminary and detailed evaluations if warranted. Careful selection of the consultant can help to move the project along. SHPO will not become directly involved in a project unless the municipality questions the conclusions made by the private consultant.

Depending on the preliminary evaluation, more study may be required. This can add time and expense to the project. Since some of this work cannot be done when the ground is snow covered or frozen, this can contribute to delays. The community may wish to consider relocating the project if that is possible. With road improvement projects this is not an option, and the community will have to propose some form of mitigation of the impact.

6.1.4 FEES

The municipality should expect to pay application fees for many of the permits. These fees are intended to cover the costs of processing an application. The fees assessed vary depending on the nature of the project and the type of applicant.

The Department of Labor and Industry assesses one of the largest permit fees that a community should expect to pay. A construction permit is required for new construction and alterations of public buildings to ensure that the building plans meet the requirements for fire prevention and safety and that access for persons with disabilities is provided.

Except when the project is part of a state legislative capital construction bill, these fees can be significant. The Legislature has exempted or reduced the fees required when municipal projects have been included in the capital construction bill.

6.2 RIGHTS-OF-WAY AND UTILITIES

6.2.1 ACQUISITION OF RIGHTS-OF-WAY AND EASEMENTS

Early in the process it is important to identify ownership of the land where the project is to be located. Rights-of-way must be sufficient for performing construction operations and maintaining the completed improvements. If either permanent or temporary easements are necessary, build this acquisition time into the project schedule.

The municipality should be involved in any decisions as to the type of acquisition to be made. It should also be the first contact with the property owner involved. This will help clarify for the property owner exactly what is involved and that the legislative body is in support of the project.

Permanent rights-of-way are owned in fee, whereas permanent easements are generally limited to the life or special purpose of the easement. Permanent easements, if abandoned, generally revert back to the grantor, whereas, rights-of-way would be sold. While the municipality may consider a permanent easement option for installing a sewer line across private property, if a building is to be constructed on the property, a permanent right-of-way should be acquired. The permanent easement allows the property owner use of the land for non-conflicting uses.

If the municipality only needs access during construction, a temporary construction easement would be obtained. This limits the municipalities' right of access only during construction and avoids a long-term encumbrance of the property. This is usually welcome to the property owner and less difficult to negotiate.

When direct purchase is to be made, the municipality should, after obtaining a verbal agreement from the property owner, have an independent appraiser establish a fair value. Depending on the circumstances, fees may be paid for permanent, temporary or special purpose easements. In some instances, a trade-off is arranged with the property owner for an exchange of another service, such as paving a gravel driveway access. Any such arrangements should be in writing so that there are no misunderstandings.

Some caution should be exercised in negotiating a trade-off since it may obligate the municipality far into the future for a service that may become a burden to provide. Commitments that go many years into the future are problematic since someone will need to ensure that the terms of the agreement continue to be met.

Care should be given to any interaction with the property owner. Each owner will view the situation differently. Do not assume there is universal support for a project. An uncooperative property owner can prolong the acquisition process considerably.

If there appears to be no way to reach agreement, then the municipality can either decide to relocate the project, or, if this is not possible, court action may be necessary. There is authority within state law for the legislative body to take this action of condemnation when public necessity is clearly demonstrated. Once the legislative body determines necessity, the court would be required to establish the value of compensation. Due to time delays involved and the possible unpleasantness of such an action, this should be the last alternative. Obtain legal advice before initiating such action.

6.2.2 UTILITIES IN THE RIGHT-OF-WAY

It is important to identify and coordinate any utilities that may be located in the construction area. The general rule is that utilities are in the right-of-way at the pleasure of the municipality. The utility owner should therefore be notified early on that there will be a conflict and that it is to relocate their utility at its own expense by a certain date. Coordinating this can be challenging and could delay the project without proper scheduling. Failure to provide proper coordination could result in increased costs if the general contractor is affected. This will also raise concern from the abutting property owners who are being disrupted during construction. The more advance notice that can be given to the utility owner the better chance of their cooperation.

6.3 BOND VOTES

After deciding to bond for a project, a town meeting vote is required. Since a bonding commitment will impact future budgets for the term of the bond, voter authorization is required. Once approved, this bond payment becomes an annual line item in the budget until the loan is paid off.

State law defines the process to be followed in seeking voter approval for bonding. 24 V.S.A. § 1786. If the project is to be financed for five years or less, the vote will be taken at an annual or special meeting warned for this purpose. Discussion of the project and a vote takes place at that time. 17 V.S.A. Chapter 55.

Projects to be funded with bonds to be paid off over a period longer than five years require an Australian ballot vote. Under this requirement (24 V.S.A. §§ 1755-1757), a special or annual town meeting is warned and on the evening prior to the vote an informational meeting will take place to discuss the item. This meeting is then adjourned to the next day when there is a written ballot vote.

There is always a question as to the best time to take a project to the voters for bonding. If an outside funding source is involved, this may help the legislative body decide. Absent requirements, the more developed a project, the better. This will allow for more realistic cost estimates and provide greater assurance that the authorized amount of the bond will cover the construction costs.

The ideal timing would be to include the costs for the preliminary professional consulting expenses for the design of a specific project in one budget year. Once a more realistic estimate of project cost is developed, the legislative body could schedule a special town meeting for a public discussion and bond vote. With a more developed project, the legislative body will be better prepared to respond to questions raised, and the voters will appreciate the fact that the legislative body has done its homework.

While a special town meeting can be scheduled at any time by following the process outlined in 17 V.S.A. §§ 2643 and 2644, timing the vote to assure the greatest participation of the voters will add credibility to the results of the vote. Consider holding the vote at the annual town meeting in March, or when the general election is scheduled in the fall.

Different sections of state law apply, depending on the nature of the lending institution. When the Vermont Municipal Bond Bank and/or the State Revolving Loan Fund are involved, the scheduling of this meeting is specified in 24 V.S.A. §§ 1751-1759.

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FINAL DESIGN AND CONTRACTOR SELECTION

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Section 7

FINAL DESIGN AND CONTRACTOR SELECTION

7.1 FINAL DESIGN

The final design of a project includes the necessary calculations and technical plans and specifications required for contractor selection. To minimize risk of project disruption and contractor claims, specifications and drawings must be clear and concise. Discrepancies between them will require resolution during construction.

Depending on the size of the project and the level of detail desired, final design can vary. For Design-Bid-Build projects, technical specifications and plans must show the exact intent of the consultant. The documents act not only as a measure for equal bidding by all contractors, but also as the basis for scheduling a project. Revisions to the documents after the contract is awarded may result in justifiable claims. However, the municipality needs to understand that all documents are not perfect and that site conditions, scheduling, equipment delivery and weather can have an effect on a project resulting in contractor claims.

Various formats exist for technical specifications and plans. The format selected for a project can depend on the type of project and the level of detail required. Projects that are locally funded can request specific equipment with no competition. Municipalities should negotiate a cost with the manufacturer before requiring non-competitive purchase by the contractor. In some instances, it is more beneficial for the municipality to pre-purchase the equipment before selecting the contractor. On larger projects or those with federal and/or state funding, a competitive process is required. Technical specifications and plans require that more than one manufacturer can supply the equipment on the project. While the final design may only show one manufacturer's piece of equipment, the consultant must assure the funding agencies that other manufacturers can provide the equipment with minor modifications. The term "or equal" typically is required within the specifications and plans of these funded projects.

Refer to Sections 7.4.17 and 7.4.18 for further discussion on technical specifications.

Technical plans ranging from hand sketches to computer-aided design drafting (CADD) can be used on projects depending on the level of detail required. Smaller projects over limited areas, such as culvert replacements, can be well documented with a topographic survey and hand drawing. Larger projects, with more detailed design and intensive coordination, are better served by CADD-generated plans. The CADD-generated drawings require more computer equipment and are more costly. However, for projects requiring repetitious floor or site plans, CADD-generated drawings can reduce costs. In organizing plans for a project, it is important to convey to the contractors a clear, concise path from existing site conditions to completion. Coordination of technical plans is essential for proper construction.

7.2 VALUE ENGINEERING

Value engineering can yield savings on larger projects. This process includes a peer review of the consultant's design and is conducted with other consultants and contractors before selecting a contractor for the project. It is important that proposed revisions to the final design by another consultant or contractor do not provide short-term savings at the expense of long-term costs. Proposed revisions that increase the operation and maintenance of the system can be more costly to a municipality. The value engineering process can provide cost savings and increased confidence in the original design, even if major savings cannot be realized. The value engineering process should be limited to a specific time period depending on the size of the project. The original consultant should be included in all value-engineering discussions to explain design intent and municipal preferences expressed during final design meetings.

7.3 SELECTION OF CONSTRUCTION SERVICES

Once the funding, easements and permits are all in place, and the final design has been completed; the professional consultant will prepare the detailed design specifications needed for the project to be placed out to bid. These specifications and plan drawings, together with other information that will be needed by a contractor to submit a responsible bid, are assembled and referred to as the bid document. This is explained further in Section 7.4.

The bid document should be reviewed by various parties (staff, legal counsel, insurance providers, project manager, etc.) to ensure that everyone agrees with all the terms and conditions.

The consultant should provide a final estimate of construction costs based on the completed set of plans, specifications and all other information included in the bid document. When a project is placed out to bid, it is expected that there is intent to build. If there are any funding shortfalls, they should be resolved before beginning the bid process. The estimate will also be used as a measuring stick against the submitted bids. Bids within ten percent of the estimate are considered reasonable.

As a final step, the municipality should verify that all permits, acceptance from funding sources, rights-of-way, and utility clearances are in place before authorizing initiation of the bid process.

7.4 BID DOCUMENTS

Included in the bid document are:

- Invitation to bid
- Instruction to bidders
- Sealed bid forms
- Various forms of bid notification, bid award, an agreement and amendments

- Requirement for the use of subcontractors
- Construction specifications
- Restrictive specifications
- General conditions
- Copies of all permits related to the project

7.4.1 INVITATION TO BID

The invitation to bid is intended to provide a brief but clear description of the technical requirements for the project, including the key information related to the project and the bid process. It should include the specific date, time and location of the bid opening as well as any requirements directly related to the particular project.

The source of funding should be identified if it has an impact on the regulations to be followed, e.g., “Project is funded with federal highway dollars and therefore contractor will be expected to comply with all federal regulations as enumerated in the specification.”

The bid notice should include a clause that states, “The municipality reserves the right to waive formalities in proposals submitted by bidders, and to accept the proposal that in the opinion of the governing body is in the best interest of the citizens.” This *right to reject* is broad, and should be exercised carefully, for the public benefit, so as not to jeopardize the competitive bid process. It may be warranted in situations where there is some irregularity or questionable action on the part of a bidder. It should not be used to show favoritism to one bidder over another or if it will affect the amount of any bid.

Information regarding the viewing and purchasing of the bid documents should be provided. You can check www.agc.org or www.aia.org for sample documents.

This notice can be used as the newspaper advertisement. To ensure that there will be several contractors interested in submitting bids, it is common practice to mail out the invitation to bid notice to a list of potential contractors. This list can include companies who have previously expressed interest in doing work for the community, those who have been through a pre-qualification process, or those who the municipality believes have the capacity to handle the project being proposed. The consultants, as well as some of the funding sources, will also be able to provide names of potential contractors.

In setting the dates for the bid opening, consideration should be given to both the needs of the legislative body and that of the contractors. A realistic amount of time should be allowed so that a thorough review of the project can be completed. In projects where subcontractors are involved, the contractor will need to obtain quotes from them to include in the bid form. This will add to the time the contractor will need. If there is not sufficient time, errors can be made that may result in invalidating some bids, or a contractor could decide not to bid if it is felt there is not adequate time to present a responsible bid. Some funding sources have set specific time frames from the actual date the notice appears in the newspaper to the date of bid opening.

Timing relative to the construction season is also important. Advertising for a large project should be scheduled in mid-winter. This allows the contractor to take full advantage of the construction season by getting an early start. It may also attract more contractors, since many will not have fully scheduled all their workers for the coming construction season. Advertising the project when contractors have already established work schedules will reduce the number of potential bids and may also increase the contractors' bids.

The date and location of bid opening should be reasonable so that those submitting proposals can attend if they desire to do so. Opening the bids at the end of a board meeting in the middle of the week will likely make it difficult for the bidders to attend. The goal of government should be to make the process as open and fair as possible.

Whether a community will accept a bid via fax or e-mail should be stated in the invitation to bid. There are some limitations to the technology today that would discourage its use for this purpose. There is always the risk of equipment failure at either end of the transmission, and when working with defined deadlines this could be problematic. In large projects the contractor is usually working up to the last minute finalizing quotes from suppliers and other subcontractors. If the transmission is by fax and several are trying to fax at the same time someone runs the risk of missing the filing deadline. The municipality should not be placed in the difficult position of deciding whether one is accepted and another is not. More problematic are the process issues since an electronic transmission eliminates the sealed bid concept. Also some of the information required for a bid filing, such as checks to cover the bid bond, may not be transferable by fax.

7.4.2 INSTRUCTION TO BIDDERS

The instruction to bidders provides useful information to the contractor regarding the rules to be followed throughout the bid process. Legislative bodies and staff should review the instructions, but should refer all questions regarding the bid documents directly to the consultant to avoid any questions of impropriety or misunderstandings.

Included in the instructions are:

- Information regarding pre-bid conferences or site review
- Information on how any addendum to the contract document will be handled
- Funding sources and the required regulations
- Insurance and bonding requirements
- Liquidated damages
- Permit conditions
- Tax-exempt status
- The basis on which a bid will be awarded
- Type of bid (lump sum or unit price)
- Included bid alternates
- Unsolicited bid alternates

7.4.3 PRE BID CONFERENCE AND SITE REVIEW

Pre-bid conferences and site reviews are useful to both the consultant and the contractor. At the meeting, the consultant reviews and highlights significant work elements in the project. The bid process, as well as any permit or other requirements, are enumerated. Opportunity is given to the contractors to ask questions regarding the bid document. From this exchange, the consultant is able to clarify specific issues and in some instances may follow up with the issuance of an addendum. Site review allows the contractor the opportunity to visit the construction site with the consultant and municipal representative.

Such reviews reduce telephone calls to the consultant, and the contractor benefits by obtaining a better understanding of the project. Scheduling such a meeting is worthwhile. Pre-bid conference attendance can be required of the contractor.

7.4.4 ADDENDUM

To clarify, revise, and to add/delete items in the bid document, the municipality, through the consultant, will issue an addendum. The addendum is used to clarify ambiguities, answer questions the consultant has received through telephone calls or at the pre-bid conference, and to make revisions to the bid document. If an addendum needs to be issued within four days before the bid opening, it is appropriate to extend the bid opening date. This time extension should be handled by an addendum.

When an addendum is issued, all bidders must acknowledge its receipt in writing in the submittal of a bid proposal. Failure to do so normally renders a bid non-responsive.

7.4.5 FUNDING SOURCES AND REGULATIONS

When state or federal funding is involved, all conditions required of the municipality and contractor should be included in the documents. There are different procedures to follow depending on the state agency. Since this criterion is used in evaluating the responsiveness of the contractor, clear direction is required.

7.4.6 INSURANCE AND BONDING REQUIREMENTS

Important to any construction project is the contractor's requirement to provide sufficient insurance and bonding.

Insurance requirements. During construction, the contractor is considered to be the owner of and responsible for the worksite. The contractor is therefore required to insure all elements of the project from the time their construction equipment is on site until the entire project is complete. This includes workers compensation, contractors' public liability and property damage insurance, automobile liability insurance, and where appropriate, railroad protective liability insurance and builders' risk.

Exception for products and completed operations coverage carried under the contractors' public liability and property damage insurance, coverage shall remain in force until the municipality accepts the completed project. The products and completed operations coverage remain in force for one year after the date of acceptance of the project.

Types of insurance and the coverage amounts need to be discussed with the municipality's insurance carrier prior to final approval of the bid document.

The contractor's insurance carrier will be required to provide a proof of insurance that covers the municipality and its agents as an additional insured for the possible liabilities resulting from the contractor's actions or omissions. The municipality should insist on the receipt of this proof before allowing any construction to begin. A standard form is used by insurance companies and is issued on behalf of their client, the contractor.

Bonding Requirements. With the exception of VTrans construction projects over \$100,000, state law does not require bonding for construction projects. However, particularly in large projects, it is important to require some form of security to protect the municipality against poor or non-performance.

Costs to the contractor for obtaining these bonds will be passed along to the municipality in the bid proposal. Rates for construction surety bonds vary but generally range between one to three percent of the contract price. All rates are predicated on the contract price. The rates decrease as the contract size increases, and for very large contracts the premiums can be less than one percent.

For projects not receiving state/federal funding, or with value of less than \$100,000, the community may decide to accept a letter of credit instead of a bond. The letter of credit is a letter generated by the bank and issued to a municipality to whom credit is given. It authorizes the municipality to draw on the issuing bank up to a certain sum and guaranteeing to accept the drafts if duly made. The municipality is authorized to draw upon that letter of credit if the contractor has not completed all elements outlined in the contract document for the project. Before drawing on the letter of credit, the municipality must provide adequate notice to the contractor to make specific improvements enumerated by a specified date. Failure to do so will allow the municipality to proceed to draw on the letter of credit.

The contractor may be required to provide several different types of bonds during a project. In addition to protecting against some default in the contract, the requirement of bonds serves to eliminate unqualified contractors and ensures fairness in the bidding and award procedures. Failure to provide a bid bond or other security indicates the bid is non-responsive and is sufficient reason to reject the bid.

A surety company issues the bonds. These companies are licensed and are willing to commit their assets to support the contractor. Their commitment is based on their own review of the contractor's finances, experience and capacity to perform the contract. The

municipality has the ability to contact the surety company to assist in resolving the contractors financing problems.

The **bid bond** guarantees that the bidder will enter into a contract at the bid price submitted on the sealed bid form, and that a performance and payment bond will be provided when the bid is awarded. The bond covers either actual or liquidated damages that would occur if the contractor does not follow through and sign the contract. The actual damage is the difference between the contractor's bid price and the next low bidder. The liquidated damage bid bond is a fixed amount the municipality is entitled to receive.

While a bid bond form is usually included in the bid document, it is not uncommon for the bonding (surety) company to use its own form. As an alternative to the bid bond, the contractor may submit a certified check or other negotiable instrument in the amount of 5-10% of the bid. The instructions should state what would be acceptable to the municipality. Once the contractor has been selected, the bid bond or checks received from the other bidders should be returned. After the contract is signed and the performance bonds received, the municipality returns the selected contractor's bid bond.

The **performance bond** protects the municipality from financial loss caused by any failure of the contractor to build the project in accordance with the terms and conditions of the contract.

The **payment bond** guarantees that the contractor will pay certain labor and material bills associated with the project. This is particularly important to prevent liens being filed against the municipality when the contractor has not paid the supplier or subcontractor.

If the contractor defaults on a project, a surety has several ways to respond, depending upon the circumstances. The surety company may assist in a change of contractors. In such cases, the company, not the municipality, suffers the loss. The income to a surety company comes from the fact that the great majority of municipality/contractors never have the occasion to call a bond. When a default occurs, the company will need to investigate. The size and complexity of the default, the duration of the project and the point at which the default occurred will all have a direct bearing on the time it takes to complete a settlement.

7.4.7 LIQUIDATED DAMAGES

If the municipality wants to protect against unnecessary delays in project completion, it must include a clause related to liquidated damages in the bid document. Both parties agree in the contract that, if a delay occurs, the municipality will suffer pre-established financial damages. Once the agreed upon date for completion has been reached, a per-day-of-delay penalty will be deducted from the amount due to the contractor.

The amount of the liquidated damages should be realistic and have some relationship to the level of hardship the municipality would experience. Included in these calculations

could be increased administrative costs, quantifiable public inconvenience, interest expenses, delay penalties the municipality may experience, loss of income or other identifiable items.

Setting unrealistically high figures could cause the potential bidder to either increase the bid proposal significantly or simply discourage contractors from submitting bids. On the other hand, if the liquidated damages are too low to actually cover the expenses of a delay, the municipality may be criticized for not properly protecting the community.

7.4.8 PERMITS

The various permits obtained related to the project should be noted in the instructions and included in the bid document. Inclusion of the permits requires the contractor to be responsible for all the conditions of the permits and will also assist him in determining the cost of the project.

7.4.9 TAX-EXEMPT STATUS

The contractors should be informed that they might use the tax-exempt status of the municipality to avoid the imposition of state sales tax on the purchase of all building materials related to the project. The selected contractor should be provided this identification at the pre-construction meeting.

7.4.10 LUMP SUM OR UNIT PRICE

A lump sum price establishes a fixed price that the contract will not exceed. While this may be more desirable to a municipality, since it places a cap on the costs, it is less attractive to the contractor. This type of contract price does not allow for unforeseeable circumstances that may arise on the project such as poor site conditions, weather changes, delays in the delivery of materials, or other such conditions not previously identified. To protect against such unforeseen occurrences, the contractor will likely include a large contingency. Due to the nature of renovation or repair projects, a lump sum price is not recommended. While the municipality may feel this is the only way to have predictability in a project, it is likely that the bids will be very high or this will discourage contractors from submitting proposals.

The more common approach is to have a unit price bid. The contractor submits a cost per unit for the estimated number of the materials specified on the bid form. In calculating the total project cost, both parties understand that the *total price* on the bid form is based on the estimated number of units for a particular material. For example, the bid form might indicate 100 linear feet of a certain type of pipe is required, but during construction 120 linear feet is actually needed. The total price will be adjusted accordingly.

7.4.11 BASIS OF BID AWARD

State the criteria to be used in determining the basis of bid award in the instructions. The generally expected practice is to award the contract to the lowest responsive, responsible bidder on the basis of the total base bid. If a municipality intends to apply a preference to a local contractor, it should be stated in the instruction and the criteria that will be applied.

7.4.12 BID ALTERNATES

Bid alternates are a way to obtain more information about the cost of the project. When a project budget is limited and the consultant indicates that it is unlikely the bids will come within the budget, it is common for the municipality and the consultant to agree to the removal of certain elements of the project that will not sacrifice the project as a whole. The deleted element can be removed from the base bid, but added as alternates. Bid alternatives allow the ability to obtain costs for the deleted items should extra funding become available or if the bids are lower than expected.

An example might be that the municipality prefers the use of granite curbs but realizes this will be more costly. The bid document may specify asphalt curbs but also invite the bidder to submit the cost of granite as a bid alternate. In the event that the bids were lower than expected or, that once the project is underway savings are realized, this alternate can be added back to the project by a change order.

If alternates are included, the instruction should clearly state how the alternates would be used in determining the low bidder. The use of alternates should be done in good faith and not with intent to manipulate or discriminate among bidders. *AIA A501*, 1995 Ed.

7.4.13 UNSOLICITED BID ALTERNATE

On occasion, the contractor may submit an unsolicited alternate. The intention is to make the municipality aware that there is another way to do something or a different material that could result in cost savings. This serves to complicate the bid process since the bid comparisons will become more difficult. If alternates are to be accepted, they should be proposed in the bid document so that all have an equal opportunity to submit a price. The appropriate action would be to ignore the alternate for the comparison of bids and bid award. Only after the contract is awarded should the municipality discuss the merits of this unsolicited alternate.

7.4.14 SEALED BID FORMS

Included in the bid document should be a bid form that all prospective bidders will be required to use in submitting their bid proposal. Clearly state in the instructions that failure to use the bid form will make the bid unresponsive and the bid will not be opened. The bid form sets forth in clear, objective fashion the methodology to be used for determining the lowest bidder. In a unit price bid, bidders are asked to indicate the unit

price for each item listed both in numeric and written form. This will be useful in the event there is a question of clarity.

The bidder is required to total the items and indicate the total bid price in both an alpha and numeric format. Additional spaces may be provided for some or all of the following: if alternates are included, if disadvantaged businesses are to be noted and if certification is required that the site has been reviewed, the bid document has been reviewed, or that all laws and policies have been observed.

The contractor is required to have the form signed by the owner or duly authorized agent of the company and to affix the corporate seal. Included as well is the address and telephone number of the company. When signed, the bid form is considered to be a legal contract that binds the contractor to the figures noted on the form.

Once completed, the bid form should be placed in a sealed envelope and submitted on or before the date/time indicated for the bid award. Bids received after the established time are considered unresponsive and should not be opened. This is difficult to do, but **if the competitive bid process is to have any credibility, this action must be followed.**

7.4.15 FORMS IN BID DOCUMENT

Included in the bid document are forms to be used for various steps of the process. These are standard forms that include meaningful information to establish good documentation in the event that something goes awry in the project. One of these forms is the agreement that will be executed by both parties before the project begins. Since all of the forms are included in the bid document it is understood that these will be used and the content should not be open to discussion at a later date.

Sample forms can be found on the web at www.agc.org or www.aia.org. Additional information on standard forms used in bid documents can be obtained by contacting the AGC office in Montpelier or through its publications department at 800-242-1767.

7.4.16 USE OF SUBCONTRACTORS

Depending on the size and nature of a project, the contractor may use subcontractors for some aspects of the project. In building construction, subcontractors may include electricians, plumbers and other skilled contractors. In road reconstruction projects, the paving contract is likely to be subcontracted.

Opinions differ on whether there should be a requirement to submit a list of subcontractors with the bid form. Such a list will assure the municipality that the desired materials will be used and/or the contractor proposes to use an experienced firm. Particularly with federally funded projects, the municipality needs to determine how the minority requirements have been met as part of the evaluation of the responsiveness of the bid.

Since a requirement to include a list of the subcontractors at the bid opening obligates the contractor to use those listed, he may prefer not to include them. It is possible that a more suitable subcontractor might be found or a better arrangement negotiated once the bid is awarded. It is entirely possible that the subcontractor will have submitted prices to several contractors who are bidding on a particular project.

One compromise is that the list not be provided at the bid opening, but that the apparent low bidder be required to identify the subcontractors prior to notice of bid award.

7.4.17 CONSTRUCTION SPECIFICATIONS

This section details construction specification for every aspect of the project. These specifications, together with the site plans, instruct the contractor as to exactly what construction method should be followed for each element of the project. It is important to pay close attention to the accuracy, completeness and coordination with both the plans and other parts of the specifications.

7.4.18 RESTRICTIVE SPECIFICATIONS

It is possible that the consultant, with concurrence from the municipality, has determined that a specific manufacturer's product is important to the project. This is considered to be a *restrictive specification* and should be handled carefully in the document. The bid document should be specific with respect to whether a substitution or equal will be permissible. The language will allow for substitutions only if it is demonstrated that the results will be as good as, or better than, the specified product. Funding sources should be consulted since this is not permitted except under unusual circumstances.

7.4.19 GENERAL CONDITIONS

The *general conditions* enumerate the rights and responsibilities of the contract administration and the municipality-contractor relationship. These conditions are considered standard practice within the construction industry and, as such, should be in printed form. Any changes should be typed and addressed by supplementary conditions or annotations on the printed version. This will alert the contractors that there is a variation to the standard general conditions section of the bid document.

7.5 BID PROCESS

Depending on the size of a project, there may be considerable expense in printing the bid document. It is not uncommon to require that potential contractors pay a specified amount for these documents. This will help in defraying some of the reproduction costs and also will discourage those who have no intention of bidding. While not required, the fee may be considered as a deposit that is returned when the documents are returned.

The documents are placed in the municipal office as well as at the consulting firm. There are also clearinghouses within the state that will hold and make available for viewing

copies of all projects that are out to bid within the state. This offers the contractor an opportunity to review the plans and decide whether this is a project of interest to the firm. The more available the document the better opportunity the municipality has for obtaining a number of proposals.

Since it is possible that changes will need to be made to the bid document prior to the bid opening, it is important to have a single issuing point for the bid document. The municipality should decide if they or the consultant should distribute the documents. The name, address and telephone number of those purchasing documents should be obtained. It is important that all those who have the document receive any changes in a timely manner. This information is public and should be made available to subcontractors who may call to ask what construction firms have purchased bid documents. This facilitates a dialogue between subcontractors and contractors.

7.6 BID OPENING

Bid opening is held at a public place at the time stated in the bid document. The consultant and authorized representative are present at the opening as are representatives from most, if not all, of the companies who have submitted bids. The bids are opened at the specified time. Any sealed bid forms presented after the time set in the invitation to bid should not be opened.

The municipal representative and the consultant should decide, prior to the bid opening, who will open and read the bid schedules. The person not opening the bid should make sure the bid form is filled out completely and signed, bonding certification is provided, receipt of any issued addendum is acknowledged, and any other requirement specified in the instructions has been met. Bids are opened and read aloud. Contractors often record the information submitted on the various bid forms so that they can make comparisons with their own bid.

The consultant or municipality will identify the apparent low bidder, but will indicate that the final bid award will not be made until an evaluation of the bids has been completed. The municipality should indicate the process and schedule for bid award.

Subsequent to the bid opening, the consultant or municipality should prepare a bid tally that is mailed out to all contractors who participated in the bid process. The bid tally indicates the names of each of the contractors who submitted bids and the detail of each of their bids as it was presented on the bid form. This provides useful information to the contractors about the current pricing within the industry.

7.7 BID EVALUATION

During bid evaluation the consultant/municipality needs to determine that the low bid is responsive and responsible. A responsive bidder will have complied with all the terms of the bid document. The dollar amounts submitted on the bid form must be validated to make sure no errors have been made. The bidder will have made no exceptions to the bid

document. When federal funding is involved, the municipality must validate the contractor's ability to satisfy the affirmative action and Davis-Bacon Wage requirements.

Determining if a contractor is responsible allows more discretion in determining the ability of the contractor to perform the work described in the bid document. Bidder responsibility has, to some extent, been demonstrated by the satisfaction of the bonding requirement. Consideration should be given to the bidder's honesty and integrity, experience, skill, business judgment, ability to perform the work, prior contract conduct and prior contract quality. References of other work completed by the contractor should be checked. If bonding has not been required, be sure that the contractor has adequate finances and can realistically meet the construction schedule.

Bids should be evaluated individually and as a group. What is the relationship of the low bidder to the consultant's final cost estimate? Are there large gaps between the low bid and a grouping of higher bids? Understanding the bid, to the greatest extent possible, will help in making that final decision. Full supporting documentation in the records of the legislative body should be provided when bids are rejected based on non-responsiveness or non-responsibility.

7.8 BID IRREGULARITIES

Some occurrences could be categorized as bid irregularities. Such irregularities are generally reason to either exclude the particular company from the bid process or to re-bid the entire project.

7.8.1 CONTRACTOR ERROR

It would be considered a bidder irregularity if, subsequent to opening the bids, the low bidder claims a serious and honest error in the bid preparation. The error could include math calculation, clerical, omission of an important item in the bid, or a transposition of numbers. If the claim is supported by satisfactory evidence, the bid withdrawal should be permitted and the bid guarantee returned. **The bidder should not be permitted to correct the error.**

If the low bidder is 10-15% below the other bids, it is reasonable for the municipality to ask the low bidder to verify its bid. If a mistake is realized in this process, the bidder should be allowed to withdraw from the process.

7.8.2 BID DOCUMENT ERROR

If a question regarding the bid document is raised after bids are opened that would materially affect any or all of the bids submitted, reject all bids and re-bid the entire project.

7.8.3 UNBALANCED BID

A bid may be unbalanced if there are multiple bid items and several appear to be abnormally high or low. A contractor may have adjusted the unit price for one or more items while compensating with higher or lower prices for others with the intent to win the bid award. Whether this is a problem depends on the particular nature of the unbalancing.

Mathematical unbalancing is sometimes done to improve cash flow by generating more income during the early stages of the work. This can affect the municipality's cash flow and may be avoided by having a mobilization lump sum item on the bid form.

When unbalancing appears to have occurred, the dollar amounts should be carefully checked and an assessment made as to the overall impact on the contract price. Unless a bid is so materially unbalanced as to prejudice the municipality, it should not be rejected.

7.8.4 HIGH BIDS

When all bids received are substantially higher than the final estimate, serious questions are raised on how to proceed. Possible strategies to follow are:

Negotiations. Depending on the consent of funding sources and legal review, the municipality may enter into negotiation with the low bidder to eliminate, reduce or modify elements of the project to bring the project within budget. The low bidder must be agreeable to negotiating a change order as part of the bid award. Such change orders may raise objections from the unsuccessful bidders and/or public or political controversy and should not be done without discussion of the repercussions. Federally funded projects generally do not permit such negotiations.

New Bid Process. The municipality could reject all bids and begin the bid process all over with the same plans and specifications. This may be appropriate when external factors appear to have had an impact on the high bid levels, e.g., too many projects bid at one time, labor problems, or sudden price inflation. This action may result in some of the bidders withdrawing from the process since dollar amounts previously submitted in the bid have been revealed.

Cost Reduction Revisions. The municipality could reject all bids and proceed to make cost reduction changes to the plans and specifications. Once the changes are made the project could be advertised again by following the same process previously observed. There will be additional time and costs associated with this action, but it may result in saving the project. Because changes have been made, the previous bidders may still be willing to participate.

Additional Funding. Additional money can be obtained to proceed with the project in spite of the high bids. This is generally not viewed as a viable option for most municipal projects.

7.8.5 BIDDER PROTEST

Protests may come from other bidders, labor organizations and community groups. Their appeal is made to the legislative body, often without prior warning. The legislative body would be well advised to listen to the concerns raised, but defer any decision until a subsequent meeting. This will give the staff the opportunity to study the issue, meet with the protesting party and prepare a detailed report. A full record of such protests should be maintained in the event that future legal action is taken.

7.9 CONTRACT AWARD

While there is a need to be careful during bid evaluation, it should be timely. In most instances, the contractor has guaranteed the bid for 30 days from the date of bid opening. This is done since prices can change and the contractor may also be considering other projects and does not want to over commit the company. If this 30-day time frame cannot be met, the municipality will need to obtain the consent, in writing, from the contractor to extend the review time.

Once the municipality and consultant are satisfied that the apparent low bidder is responsive and responsible, a recommendation to the legislative body will be made to proceed with award of the bid. If other sources of funding are involved, the granting agencies may also be required to approve the bid award.

Contract award is an important public action, since it represents acceptance under the basic tenets of contract law. It should be made at a publicly warned meeting. If the funding agency has yet to consent to the award, the legislative body should condition the award on the basis of approval from this other entity.

The notice of bid award is then sent to the contractor. This form requires the contractor to sign and date the notice and return it to the municipality.

7.10 CONTRACT SIGNING

After the contractor has signed the notice of bid award and returned it to the municipality, the contract documents, including all addenda, should be compiled. Copies of all materials provided by the selected contractor—including bid schedule, insurance certificates, payment and performance bonds, notice of bid award and other documents required by the funding agency—should be bound in the contract documents. The municipality, contractor, professional consultant, and funding agencies should each receive an original signed copy of the “confirmed documents.” The agreement, included within the confirmed documents, should be signed and witnessed by appropriate parties.

7.11 NOTICE TO PROCEED

Once the municipality has received the bond and insurance confirmation and the agreement has been executed, a formal notice to proceed is issued. The contract time usually starts with issuance of the notice or at a definite time following that action. Both parties should agree to these date so that there are no misunderstandings.

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Section 8

CONSTRUCTION MANAGEMENT

When all contracts are signed and bonds and insurance certificates are in place, project construction is ready to begin. While all preparation to this point contributes to the project's success, responsible management in this final phase is crucial to that success. Understanding the key elements of construction management should help the municipality participate more responsibly in this phase. The following topics will be discussed in this section:

- Project Team Responsibilities
- Communication During the Construction Project
- Schedule/Time
- Project Payment & Cash Flow
- Documentation and Subcontractor Submittals
- Quality Control

8.1 PROJECT TEAM RESPONSIBILITIES

Individual responsibilities of project team members during construction of the project should be clearly understood in order to avoid unfortunate mistakes.

8.1.1 MUNICIPALITY

The municipality plays a key role in the construction phase by exercising proper authority over the project and ensuring that there is compliance with contract documents. The spokesperson for the municipality is a designated, authorized representative of the community. Whoever is designated must be given a degree of authority in order to avoid unnecessary delays to the project. Lack of a designated person will lead to confusion if the appropriate lines of authority are not defined. This could result in misunderstandings that will delay the project and/or increase costs.

The municipality should ensure cooperation of municipal staff that has knowledge of the site in responding to questions raised by the contractor. For example, during the project, the contractor may need assistance from the water foreman in identifying location of the water infrastructure in the construction area. Failure to appear could delay the project or result in expensive mistakes. At the same time, the municipal staff should not interfere with the project or make requests contrary to the plan documents.

Clerk of the Works. When the consultant on the project is an architect, it is common for the community to also hire an authorized representative to serve as "clerk of the works" (construction manager or inspector) for the project. This clerk must be experienced in contract management and familiar with the construction methods specified in the contract document. He or she is present to ensure quality control and progress of the project, as

well as to coordinate communication, payments, and problem resolution. Previous construction management experience is important.

8.1.2 PROFESSIONAL CONSULTANT

It is important to maintain the consultant's professional responsibility for the plans and specifications throughout the construction phase. The consultant should advise and support the municipality in making decisions related to review of payment requests, determinations, document drafts, contractor submittals and change orders. The designer must be available to clarify interpretation of the plans and specifications and to respond to unforeseen conditions that may require modifications to the specifications.

Project Engineer/Architect. During the construction process, the professional consultant will hire a project engineer/architect to oversee the administrative and office-related tasks. Depending on the size of the project, this individual could also be required to handle all funding applications and administrative requirements, shop drawing submittal review, and bonding and financial requirements. The project engineer/architect should be familiar with the engineering design of the project and act as primary contact between the municipality and the construction team.

Resident Inspector. When selecting an engineering or architectural firm for project design, it is not uncommon to include resident inspection services in the contract. For the purposes of this discussion, a resident inspector can mean either a resident engineer or resident architect, depending upon the type of project. The responsibilities for this person are similar to that of the clerk of the works.

Some question if it is better to have the design consultant and the resident inspector come from different firms. When the same firm serves in both roles, it may be more difficult to avoid conflicts of interest should questions arise about the adequacies of the specification. This should be weighed against the benefit realized when the resident inspector comes from the same firm and has a better understanding of all the design elements.

The size and complexity of the project will determine the amount of inspection time required. A large project will require the services of a full-time inspector. Part-time inspection is sometimes used on smaller projects to reduce costs for the municipality. However, it is important to note that, with reduced inspection, comes reduced oversight and the potential for future problems. Part-time inspection may be appropriate when a contractor is selected who is knowledgeable and reputable for the particular type of project. The municipality should be aware of any permit conditions that require full-time inspection of a project. The level of effort for inspection services should be discussed with the professional consultant when the agreement is negotiated.

8.1.3 CONTRACTOR

The contractor controls all job activity and is responsible for accomplishing the required work as specified in the contract document. Included in that control is coordination of the subcontractors' performance and delivery of materials and supplies.

Project Manager. Depending on the size of the project and availability of staff at the contracting firm, a project manager may be directly responsible for the overall management of the project and serve as a spokesperson for the contractor. This person must be familiar with the details of the contract document, ensure that the project is on schedule, and, provide administrative support to the superintendent in a timely manner. This person also coordinates payment requests, tracks submittals and material orders and is involved in problem resolution.

Superintendent. The superintendent plays a key role in planning and supervising all daily construction activity. This person is responsible for preparing and coordinating the scheduling of the various elements of the project in a logical sequence and ensuring that materials are available when needed. This person also coordinates subcontractor activity to make sure they are on site when their participation is required. Compliance with the contract document is the superintendent's responsibility.

8.2 COMMUNICATION DURING THE CONSTRUCTION PROJECT

Communication between the municipality and the contractor is vital to reaching project completion on time and within budget. It is important to maintain effective communication with all parties involved that may be directly impacted, including the public. The better the communication among the parties, the greater chance of avoiding unnecessary claims during or after the project is complete. Establishing and following procedures throughout the construction phase will help to ensure effective interaction between project team members.

8.2.1 PRE-CONSTRUCTION MEETING

Scheduling a pre-construction meeting with required attendance of the entire project team is an important first step in establishing channels of communication. Participants at this meeting should include all those who will be important to the successful completion of this phase of the project, including:

- Municipality and construction manager (clerk of the works).
- Municipal representative(s), public works staff (include utility staff if appropriate).
- Consultant, resident project engineer/architect and inspector.
- Contractor's project manager.
- Superintendent and contractor support staff.
- Subcontractors and major suppliers.
- Representatives of funding sources and other affected public agencies,
- Law enforcement and traffic safety authorities.

Exchange of Contact Information and Job Meeting Date. The pre-construction meeting is scheduled to identify and become acquainted with the members of the project team as well as to address a number of housekeeping aspects of the project. To establish clear channels of communication, there should be an exchange of day/evening telephone numbers, email addresses, fax numbers, and addresses for all those who will have direct or indirect involvement with the project. This will facilitate contact after hours or on the weekends, if necessary.

Establish a regularly scheduled job meeting date acceptable to all the parties. The municipality should identify the authorized representative or contact person.

Construction Schedule. The contractor submits a construction schedule enumerating each element of work activity and estimated timelines. This schedule is usually in a bar chart or a similar format readily understandable to all project team members. All should have the opportunity to review and comment on the schedule. The schedule indicates how the dates agreed to for project completion will be met. If any of the timelines appear to be unrealistic, this should be discussed and resolved. Team members should be familiar with the schedule and ensure it is followed or that adjustments are made to make up the time. The contractor will update this schedule throughout the project and it will be discussed at subsequent job meetings.

Construction Trailer. The contractor will bring a construction trailer to the site for the use of the superintendent and other staff. For a project with a lengthy construction schedule, the contractor is usually required to also provide a construction trailer for the municipality's construction manager and resident inspector. When the project involves road—as opposed to building—construction, locating the trailer near the work area may be a problem. While not required, it is helpful if the municipality can offer some suggestions as to possible locations for the trailer. Locating the trailer on municipal property without interfering with existing operations will help the contractor.

Project Safety and Road Closure. It is extremely important to pay careful attention to project safety. The municipality should respect and comply with on-site safety procedures established by the contractor. Providing a safe work area for the contractor's employees and for others who require site access is the responsibility of the contractor. When public access must be maintained, extra care is needed to ensure safety.

For the most part, public access issues should be addressed in the contract document so that the contractor will anticipate these disruptions when costs are assigned. For road construction projects, the legislative body should have discussed when and under what circumstance the road would be closed. Preferred alternate routes should be identified if road closure is necessary. When a major route is involved, reasonable compromises will have to be made to provide some means of access while at the same time keeping the project on schedule. A compromise may involve intermittent closures.

Storage of Materials and Disposal Areas. Contractors will frequently ask about possible storage areas for materials and the location of disposal areas for fill generated from the project. While the contractor is responsible to make such arrangements, suggestions from the municipality will help facilitate this project detail. When private property is involved, it is particularly important that the municipality not allow itself to be placed in the middle of such discussions. There is often some discussion of compensation by the contractor and the property owner, and municipal officials should not be a part of those agreements.

Off-site storage is another issue that may be discussed. On some occasions, the construction site may restrict or make difficult storage of all the materials prior to their installation. To stay on schedule, the contractor may have ordered the materials for early delivery. **The municipality should exercise restraint in agreeing to the payment for materials stored off-site.** Before payment is made, the municipality should be assured that: the contractor has no other storage alternatives, the materials stored off-site have been separated and clearly identified for this specific project, and appropriate insurance coverage is in place.

Payments. It is important to discuss payment procedures at the pre-construction meeting. The legislative body's procedure for signing of the warrants will determine when a contractor can expect payment. If the warrant is signed only at scheduled legislative body meetings, the contractor and consultant should plan around these meeting dates. The delivery of the invoice should be made far enough in advance of these dates to allow for an appropriate review and check preparation.

Monitoring of Permit and other Requirements. The municipality should review its procedures for monitoring compliance with the various permits and funding source requirements. This may include payment of prevailing wages, hours of work, overtime payment, affirmative action, disadvantaged business enterprise (DBE) participation, stormwater compliance and so forth.

Any other issues or possible problems related to the project should be raised at the pre-construction meeting. Every project team member should have the same information about the project so that there are no surprises later on.

8.2.2 JOB MEETINGS

Depending on the type and duration of the project, job meetings should be regularly scheduled to update all members of the team of progress, problems or issues. Included in the meeting should be the municipality/representative, consultant/resident inspector, funding agency representative (if he expects to be included), and the superintendent and other contractor representatives. As previously mentioned, these meetings should take place on a consistent day and time so team members can plan to attend. Consistent attendance is important to maintaining open communication.

Prepare and follow a standard agenda that allows time for each of the parties to report or comment on the project status. The superintendent should report on the progress to date and immediate future plans. Raise any problems that have occurred or are anticipated, and discuss prior unresolved issues. If change orders are being considered, this is the time to discuss them. The superintendent should also provide any updates to the schedule.

Take minutes at these meetings and distribute them to all attendees. They should be reviewed, and any changes that need to be made should be discussed at subsequent meetings. These minutes are useful to document events and verify those who participated in the discussions.

8.2.3 PUBLIC CONTACT

The key to having a successful project is to maintain open communication with all parties involved. Since public projects are usually in the public right-of-way, this communication is extended to include the public in general and more specifically those who will likely be directly impacted. The municipality, resident inspector and contractor will need to assure the public of reasonable access to their property, emergency vehicle access, and noise and dust control.

If the work area directly impacts a specific neighborhood, schedule a meeting prior to the commencement of construction. Attendees should include the municipality, the superintendent on the project and the residents. Understanding what can be expected, the level of disruption, contact persons, and a sense of the timeframe will help in obtaining cooperation from the residents affected. By scheduling the meeting, the municipality makes a statement to the citizens and the contractor that these residents are important.

At the meeting, the municipality should stress the importance of maintaining the property owner's access to his or her property. The municipality should also emphasize the significance of the work being done for the community and the need for the contractor to stay on schedule.

Outlining lines of communication that a resident should follow if he or she needs to make contact is critical. Residents, for the most part, do not understand the construction site hierarchy. It is not uncommon for a resident to raise a concern to one of the workers at the site and then believe that person will take care of it. In reality, unless the resident speaks to the project manager, resident inspector or the superintendent, the communication will likely go no further, the problem is not solved, and the resident will grow more disenchanted with the project.

If a meeting is not held, notice should be sent to directly affected property owners and tenants that summarizes information communicated at the public meeting. Press releases to newspapers, radio stations and local access television are also effective in informing the public of the schedule of events. Adequate advance notice is important so the public can anticipate disruptions or delays.

All municipal staff should obtain names and telephone numbers when someone calls to register concerns about the project. Any concern should be passed along to the municipal representative on the project. If a resident has had a bad experience on a municipal project, they will be less inclined to be cooperative the next time a construction project comes to their neighborhood. The fact that there is a different contractor or even different municipal staff will make no difference.

8.2.4 BONDING COMPANY INQUIRIES

The municipality should expect to receive periodic requests from the bonding company to report on the progress of the project. A standard form asks the municipality to report on the amount paid to date on the contract, the percent of completion, and progress to date. The municipality is not required to respond and should be careful in doing so to be sure that it does not take an action that would cause the bond to be released prematurely. It is in the municipality's interest that the performance bonds not be released until after the municipality has accepted the project as being complete.

8.3 SCHEDULE/TIME

Completing the project on time is important to both the contractor and the municipality. The contractor has estimated the costs of the project based on a certain number of days. Delays or changes to the project that interfere with those estimates could be costly to the contractor. The contractor may also have other projects scheduled for which delays could be costly.

In the planning stages of the project, the municipality developed a timeline that set a completion date. Setting that date may have been based on several factors, such as permit requirements, scheduled community events, minimizing public disruption, or anticipated adverse weather conditions.

When the contractor is confronted by an event that delays, disrupts or accelerates the work, prompt notice should be given to the municipality. The notice should include evidence of how and to what extent this will impact the schedule. The municipality should be thoughtful in granting any extensions, and should always include them in a formal change order process.

8.3.1 EXCUSABLE DELAYS

Delays that result from circumstances beyond the contractor's control are considered to be excusable. They may include, weather, labor stoppages, owner act or negligence, error in the design, and acts of God (fire, earthquake, floods, etc.). The general rule is that contractors are not liable for time overruns resulting from these unforeseeable causes. In such circumstances the municipality may agree to a time extension, reimbursement of additional costs incurred and no assessment of liquidated damages.

8.3.2 NON-EXCUSABLE DELAYS

Delays attributed directly to the contractor's acts are considered non-excusable delays. They may include failure to order materials in a timely manner, failure to schedule or coordinate subcontractor work in a timely manner, insufficient number of employees and failure to manage the project appropriately. Such delays generally result in the contractor absorbing any additional costs and being liable for actual or liquidated damages that the municipality experiences.

8.3.3 FLOAT TIME

Generally, several different operations take place at the same time at a construction site. When there is a particular sequence to these activities, controlling that sequence is known as the *critical path*. Delays in one of the operations in that sequence can result in a delay of the total project. Other operations may be scheduled for completion in advance of the next related operation. The difference of time between those not in the critical path and its coordination with the critical path is referred to as the float time. It is important to document such delays in the critical path in case this results in a future claim.

8.3.4 MUNICIPALITY-CAUSED DELAYS

The municipality should take steps to ensure that it is not responsible for delays in the project. Delays can occur when the municipality:

- Fails to respond in a timely manner to review of shop drawings and other submittals.
- Fails to review change order requests.
- Does not provide timely access to the project site.
- Fails to make available in a timely manner material or equipment previously agreed to be furnished by the municipality.
- Provides incorrect plans or specifications.
- Fails to coordinate the work of separate municipal contractors on site.
- Fails to make timely inspection of a work element.
- Fails to make progress payments in a timely fashion.

8.4 PROJECT PAYMENTS AND CASH FLOW

The municipality is responsible for promptly paying for completed work. The Vermont Prompt Payment of Construction Invoices Act (9 V.S.A. §§ 4001-4009) requires that, in the absence of an agreement to the contrary, payment for construction work within the state be made within 20 days after the end of the billing period or 20 days after delivery of the invoice, whichever is later. This applies to “all construction contracts defined as any agreement (written or oral) to perform work on any real property located within the state. Work includes all types of construction as well as design or other professional or skilled services rendered by architects, engineers or surveyors.”

The contractor has an obligation to notify the subcontractor of any agreement with the municipality as to the date of payment. Lacking such notification, the contractor is obligated to meet the 20 days specified in statute. Both the contractor and subcontractor can assess interest charges on the 21st day if payment has not been made.

The municipality must keep the funding source informed of any discussions related to payments for materials before a final commitment is made. The municipality's goal is to have as many of the project costs as possible eligible for reimbursement. While the final eligibility decision is the funding agencies, the municipality may wish to proceed at its own expense.

8.4.1. SCHEDULE OF PAYMENT

The size and nature of the project will dictate the frequency of invoices. If a project is of limited duration, the contractor may prefer to bill only once when the project is complete. In other instances, when the project is of short duration but there are significant initial supply or material expenses, it is not uncommon for the contractor to request a cash advance to cover these costs. The municipality should be careful to ensure that the proper surety forms are in place in the event that the delivery does not take place. An alternative may be for the municipality to purchase the specialty item directly and have the contractor only responsible for the labor of installation costs.

For projects of a longer duration, progress payments are made throughout the project at agreed upon intervals. Invoices are presented to the consultant's representative and reviewed for accuracy before any payment is made. When the consultant is satisfied that the invoice represents the actual delivery of materials and/or work completed, the invoice is signed and submitted to the municipality for payment.

Application for Payment. A standard form is customarily used for the application for payment and is generally accepted within the construction industry. It is important that all parties agree to the type of form to be used early in the project. This form provides a common record of the financial status of the project. If an alternative form is used, the municipality should request that it contain similar information provided in the standard form.

The cover sheet of the application for payment contains places to note the contract price, any contract amendments, previous payments, amount requested in this payment less retainage, and the current amount due. The application for payment should be numbered sequentially and include the date of submittal. It should also provide space for all three parties (contractor, consultant and municipality) to sign indicating their acceptance of the payment request.

The following pages of the application for payment provide a detailed breakdown of the individual work elements, the quantity of units, unit price, amount billed as of this invoice, amount previously billed and the amount remaining to be installed/billed.

8.4.5 MECHANIC'S LIEN

The consultant and municipality must ensure that the contractor has paid all subcontractors and suppliers. Each time an application for payment is made, the contractor should use a form in the contract documents that asserts all subcontractors and suppliers have been paid for completed work.

The municipality must protect against a subcontractor or supplier mechanic's lien being filed against the community. While a mechanic's lien cannot be filed on property owned by a municipality in its governmental capacity, it can be filed on property owned by a municipality in its proprietary capacity. Utilities such as water, sewer and electrical are generally considered proprietary functions.

8.4.6 CASH FLOW MANAGEMENT

An important part of project planning is the consideration of cash flow issues. Once the contract is signed, there is a contractual obligation to pay an invoice within a specified period of time. Projects with state/federal funding will, with few exceptions, require that the municipality pay the consultant or contractors' invoices when received and then seek reimbursement. Depending on the funding agency and careful attention given to satisfying the administrative requirements of the grant/loan, reimbursement can take from as little as two weeks to several months. Recognizing the problems this can create for a municipality, several state agencies have placed requirements upon themselves to make these reimbursements within a certain time frame.

Due to the time between payment and actual reimbursement, the municipality will have to arrange to have cash available to cover this interim period so that all bills can be paid in a timely manner. The failure by the board and the treasurer to meet their contractual obligations can affect the reputation of a community. If the community develops a reputation for non-payment of bills, it will adversely affect future relationships.

Once cash flow charts are developed, arrangements should be made with a lending institution for a loan in anticipation of the state's reimbursement. The financial institution will expect the community to enter into an agreement to guarantee the repayment of these cash advances.

8.5 DOCUMENTATION AND SUBMITTALS

8.5.1 DOCUMENTATION AND RECORD KEEPING

Throughout the construction phase, make a conscious effort to ensure that there is careful documentation of the project. Maintaining a written and/or video record that details the history of a construction project will be useful during the project. This will also provide a permanent record should questions related to compliance with the provisions of the contract be raised at a later time. These records should be readable and in a format that

8.4.2 CONTRACTOR'S REQUEST/REVIEW

The contractor is responsible for submitting an application for payment that includes the billing for all completed work not previously billed and invoices from the subcontractor and vendors. In a unit price contract, the units of completed work are counted and multiplied by the accepted unit price.

While lump sum items are easy to count and record, partial completions will require a fair proportioning for proper payment. Other housekeeping items not directly related to construction such as mobilization, demobilization, and traffic control should be handled fairly. The mobilization should be paid initially when the activity occurs, the other items can be pro-rated over the life of the project.

It is the responsibility of the architect or engineer to review the request to make sure that it includes only completed work elements. Proper monitoring of material quantities by the inspector will assist the consultant in this review. There is usually some discussion between the contractor and architect/engineer to validate the method of estimating quantities. When there is disagreement on a particular item, it should be removed from the current request for further discussion. Payment for undisputed items should not be held up until the issue is resolved.

When the consultant is satisfied with the application for payment, it is signed and submitted to the municipality.

8.4.3 PAYMENT FOR STORED MATERIALS

Early payment for materials delivered to the site should be discussed so misunderstandings can be avoided later. The contractor will want to be reimbursed for any materials purchased for the project. The municipality should decide what is fair to the contractor and to the community. While the municipality benefits if the materials are available and possible delays due to late delivery are avoided, the acceptability of materials can't be determined until they are actually installed and operating.

The municipality may allow payment for those materials delivered to the site once the temporary storage is secure as long as the invoice includes only the cost of manufacture and transportation to the site and does not include the installation and testing.

8.4.4 RETAINAGE

The municipality retains a percentage of each payment request to ensure that the contractor will complete the project. It is common practice to retain 10% of each progress payment for the first half of the project. The amount retained is reduced as the project nears completion. A large portion of the retainage is released to the contractor when the notice of substantial completion is issued. The municipality may withhold sufficient money to cover the cost of incomplete work and unsettled claims against the contractor.

would be understandable in the future. A standard agreed-upon format will ensure that relevant information is consistently recorded.

Video of the Site. When the project involves renovation or new construction on an occupied site, the contractor should be required to videotape the area prior to beginning construction. This will provide a record of existing conditions and will be useful for site restoration purposes. The video will also be of use if misunderstandings develop later in the project. Both the municipality and contractor will benefit from such documentation.

Daily Diary. The municipality's representative should keep a daily diary to record the progress of work, weather and working conditions, start up and shut down times, delivery of materials, safety issues, any problems encountered and their resolution. It should also identify issues where follow-up is needed. This diary is useful in evaluating requests for progress and final payment, contractor claims for extra payment, project extensions and other deviations from the contract. When an incident occurs that is out of the ordinary, special effort should be made to document the details of the event, the date and time as well as noting all the individuals who were present.

Weekly and Other Reports. A weekly report may be prepared that summarizes overall flow of the project and includes any change orders, accumulated costs, performance and work accomplished relative to the schedule. Periodic reports that summarize overall project progress should be provided to the municipality. These reports may be used for public information on the status of the project and therefore should be prepared to reflect fairness to all involved.

Plan Markup. It is also common to require the contractor to maintain a marked-up set of the project plans noting any deviations from the plan. These plans will be the basis for the preparation of the final "as-built" plans that are critical to the municipality for future reference purposes.

Other Records. Other types of records that serve to document the project include:

- Field survey books.
- Material books (notes when materials are delivered to and used on the site).
- Forms that record material samples and tests.
- Personnel and labor records (if the projects requires Davis-Bacon recording, the contractor is required to submit these records to the municipality on a weekly basis).
- Work orders.
- Contractor compliance forms.
- Annotated plan sheets or drawings/shop drawings.

With the constantly expanding technology of computers, digital photography and videos, more options are available to the municipality and contractor for documenting events at a project site that are extremely helpful in resolving problems quickly.

Regardless of the size of the project, the municipality should require that certain records be maintained for future reference. Properly documented records will be valuable to both the contractor and the municipality.

8.5.2 SHOP DRAWING SUBMITTALS

The contractor will be required to submit information for municipality/consultant review/approval at various times as the project progresses. It is important to distinguish which of them require the municipality's approval before this work element is begun. Both parties must be timely in their response to these requests to avoid delays that could result in claims if either party has not responded in a timely manner.

The contractor's project manager coordinates the receipt of these submittals from the subcontractor and passes them along to the design consultant. Developing an effective way to track these submittals will benefit all team members.

Typical submittals may include:

- Items furnished and installed such as equipment, materials, furnishings, finish, color, plantings, signs and other graphics.
- Mix design for concrete, paving materials.
- Shop drawings of materials and equipment.
- Construction methodology such as trench support, electrical, plumbing.
- Traffic control arrangements.
- Erosion and drainage control plans.
- Safety measures.
- Other submittals required in the contact document.

Depending on the contract specifications, the contractor may have to provide several alternatives for a specific item. This can be time consuming, and designers will likely name one or more alternative products but allow for an "equal," if the contractor chooses to submit one. The municipality must then evaluate the "equal" and accept or reject the submittal.

8.6 QUALITY CONTROL AND MONITORING

For a project to succeed, there must be a fundamental goal of quality. For public projects it is critical that the quality of the project be maintained since the reputation of both the contractor and the legislative body are at stake. To assure quality, the municipality has the responsibility of inspecting the project regularly and consistently to ensure that the plans and specifications are being followed. Project size will dictate the level of inspection required and will determine if an individual is hired specifically for this purpose.

8.6.1 INSPECTOR RESPONSIBILITIES

Characteristics of a good inspector include qualified, observant, objective, ethical, energetic, prompt and present. The primary responsibility of the inspector is to ensure compliance with the contract documents. When more professional skills are required, the municipality should ensure that the individual with that expertise is on site when that work element is underway.

Included in the responsibilities of the inspector are:

- Familiarity with contract documents.
- Presence on-site when work is underway that requires monitoring
- Maintains records of all events related to the project.
- Facilitates progress of the project by being available to inspect when work is underway.
- Notifies contractor promptly when work is not acceptable.
- Does not interfere with contractor responsibilities for inspection.
- Ensures that on-site testing is conducted properly and in a timely manner.
- Advises the contractor when safety issues are in question.
- Provides follow up when issues are raised in the work area so that they are not overlooked.
- Notifies municipality or designer of any problem beyond his/her ability to manage.
- Uses fairness and common sense in the performance of responsibilities.
- Ensures that all permit conditions and state and federal requirements are being observed.

To maintain the quality of the project, the inspector should look ahead and anticipate when more complex work will be performed and discuss it in advance with the contractor. He or she should ensure that there is a timely flow of project-related paperwork. The inspector should be attentive to contractor furnished items before, during and following installation. Any substitutions or noted deficiencies should be brought to the contractor's attention immediately. The inspector should be encouraged to raise issues where cost savings could be realized. Through experience on a number of jobs, the inspector may be familiar with a practice that the designer may not be aware of that could result in cost savings.

8.6.2 TESTING AND LABORATORIES

Appropriate testing of selected materials will be required prior to and/or following installation. A certified laboratory, selected by the municipality, can assist in this testing. Selecting an individual laboratory should be based on the lab's previous experience. If there is a difference of opinion on the results supplied by the lab, the contractor may elect to have further testing at another lab. If this difference cannot be resolved, the municipality should maintain their lab results. Equipment items may be subject to performance tests after installation.

8.6.3 OTHER ON-SITE INSPECTIONS

In addition to the municipality's inspector, the project may require professional inspection by code enforcers (plumbing, electrical or mechanical), safety, fire and public health; technical specialties (welding, masonry, soils, concrete, asphalt etc.), or utility inspectors. Any conflicts between the on-site inspector and those previously listed should be resolved with respect for both parties' opinions.

8.6.4 OFF-SITE INSPECTION TESTING

Concrete and paving materials are usually tested off-site, either at the batch-plants or at a laboratory. To verify the strength of concrete, it is customary to fill cylinders with concrete during the pour and have them tested at an off-site facility. For paving materials, testing is required both on and off site. Proper gradation and addition of bitumen must be verified at the plant site while the temperature, thickness, consistency and compaction are checked as the material is placed.

To avoid or minimize problems with off-site inspections, the municipality should:

- Carefully select qualified personnel.
- Ensure that the materials and equipment inspected and tested are representative of the total quantity being provided.
- Review and inspect all materials upon delivery to detect any damage in transit.
- Insist on proper storage if materials arrive sooner than needed for installation.
- Maintain the contractor's full responsibility for providing, transporting, storing and installing conforming materials and equipment.

8.6.5 JOB LAYOUT

Accurate and adequate control points—monuments and benchmarks, whether the municipality or contractor is responsible—are essential to the final quality of the project. Proper staking will provide basic line and grade for footings, curbs, flow lines, and many other construction elements throughout the project. When these markers are set is important to avoid the risk of movement or loss due to delays.

8.6.6 COMPLIANCE REMEDIATION

Decisions to accept or reject compliance are within the municipality's authority, and such decisions should be issued in writing with supporting documentation. Delays in issuing decisions, or evidence of poor judgment, can be the source of future claims. The contractor must be afforded reasonable correction options. Final judgment regarding the acceptability of these corrections should be the responsibility of the designer.

8.6.7 MUNICIPALITY INTERFERENCE

If the municipality occupies the site prior to acceptance, operators should refrain from troubleshooting on their own. Such actions can be interpreted as interference with the contractor's responsibilities. The inspector should ensure that such actions by the municipal staff do not take place.

8.7 CHANGES IN THE WORK

The contractor is obligated to observe the contract document and carefully follow the plans and specifications for work performance. However, particularly on larger projects, it is rare that a project is completed without some changes. Those less familiar with the design and construction industry may have an unrealistic expectation that there should never be changes and, if it is necessary, some fault must be assigned. The need for changes to the original plans is not necessarily anyone's fault. It is more likely that better information has become available about the conditions or requirements of a project. This results in a request to amend the original plans. It is typical that such changes may represent two to five percent of the original contract amount.

Some changes may be necessary due to unpredicted site conditions, such as the discovery of certain conditions that had not been detected in the design phase. The municipality and consultant may have decided in the design phase that it would be cost prohibitive to do test borings of the entire site. While selective test borings were taken, an untested area proved to have more ledge than estimated.

Unpredictable weather may extend the completion date. Or, from the time of design to actual construction, a new product or a different installation method may become available which would result in a better project and possibly even cost savings.

Communication between the municipality and the contractor should be such that the contractor feels comfortable suggesting changes to the project, and the municipality is willing to listen. On occasion, such changes can result in an improved project. When such interaction takes place, the funding source should be included in the discussion. The funding source may agree to the extra costs and then the municipality can be assured that the cost is eligible for reimbursement. But if not consulted, it may not agree and the extra cost becomes the responsibility of the municipality.

When a change is suggested, the municipality should ask pointed questions of both the contractor and the design consultant to verify if the change will be an improvement over the existing work and if the added cost is justifiable.

8.7.1 AUTHORIZATION FOR CHANGE ORDERS

During the initial stages of the project, the municipality and resident engineer should discuss the process for handling changes to the project. Changes or substitutions for materials or work performance should not be permitted unless agreed upon through

appropriate channels. Authorization for change must be in writing. Except in an emergency, changes should not be implemented until written authorization is in place.

Prior to commencement of the project, the legislative body should approve a procedure for handling change orders that defines what the authorized representative can handle and what requires approval by the legislative body. When developing a policy, the intent should be to ensure that the project is not unnecessarily delayed while awaiting authorization. The board may commit to phone conferencing in the event that an immediate decision is needed.

In most instances, there is sufficient advance notice of a change so that obtaining legislative body approval is not a problem. Often the contractor will raise the issue to the resident engineer and the authorized representative. If the suggestion has merit, the contractor will be asked to obtain cost estimates for the change and submit a proposal to the municipality that outlines the work method and costs. Some discussion and negotiation takes place and, once there is full agreement, the contractor prepares the change order in final form and presents it to the municipality and consultant for signed approval. The formal change order will include sufficient information to indicate exactly how the contract document and price is being amended.

Section 9
PROJECT CLOSEOUT

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Section 9 PROJECT CLOSE OUT

9.1 FINAL INSPECTION

Key to a successful project is how it is finished. Each party involved in the project must ensure that their tasks are finished in their entirety. Other responsibilities and changes in personnel from those originally assigned to the project can affect its completion. Since all project team members rely on each other, lack of closure by one member affects the entire project.

As major components are installed and the project becomes operational, the project is substantially complete and the municipality takes responsibility for maintenance and operation. At this time, the project team develops a list of outstanding items needed to bring the project to full completion. Known as the *punch list*, it includes major and minor items for the contractor to complete. It is the responsibility of the municipality or its consultant to prepare the punch list. It is the contractor's responsibility to complete the items on the list.

After completing all punch list items, the contractor requests a final inspection. The municipality, consultant, contractor, regulatory and funding representatives should be included in the final inspection. The entire project site should be reviewed and all discussions noted. Each participant should be satisfied with the work performed and the final condition. More limited final inspections may need to be conducted if it appears that additional work is necessary.

9.2 EQUIPMENT AND TRAINING

Municipal staff responsible for operation and maintenance of the project should receive all necessary equipment and training. Failure to receive it will lead to premature deterioration of the final product. The municipality should provide qualified staff for maintenance and operation of the equipment. The assessment of proper staff for the completed project should be made during formulations of the project team.

The municipality may decide to purchase necessary equipment on its own to match existing equipment currently supplied by a specific manufacturer. Alternatively, the municipality may wish to include the equipment in project specifications. This will require the contractor to purchase the equipment as part of his responsibility. The names, addresses and telephone numbers of all manufacturers should be provided to the municipality upon substantial completion.

9.3 WARRANTIES AND MANUALS

Typically, larger construction contracts require the contractor to warrant the work performed for a period of one year after substantial completion. Individual components

of the project may have warranty periods, which last longer. For example, roofs may be warranted for 10 to 20 years. These individual warranties should be given to the municipality for storage in a safe location. The exact dates of the warranty should be noted on the document.

Manufacturers supply operation and maintenance manuals with their equipment to instruct municipalities on methods for proper care. It is very important that the municipal operators carefully read and understand the operation and maintenance requirements for the equipment. If possible, municipal operators should review the manuals before receiving equipment training. These manuals should be properly stored in an accessible location for reference.

9.4 RELEASE OF LIENS

It is essential that the municipality request a release of liens from the contractor, assuring that all workers, suppliers and subcontractors have been paid for the project. You can check for sample forms at www.agc.org or www.aia.org.

9.5 RECORD DRAWINGS

If necessary, the contractor and consultant need to prepare record drawings of as-built project conditions for the municipality. They can be a real asset if properly organized. It is important for the municipality to understand and request the level of detail required of the record drawings. The record drawings should be completed immediately following the final inspection so that information is still fresh in the minds of those on-site, and prior to final payment. Ensure that sufficient copies of the record drawings are provided for the municipality's use. In addition to a set of mylars of the record drawings, the municipality should be provided sufficient copies for their use. The mylars should be filed in the land records to ensure their availability for future use.

9.6 FINAL PAYMENT

After the final inspection, completion of all punch lists and providing the release of liens, the contractor is entitled to final payment for the project. At this time, all remaining work not yet paid and any amounts held for retainage should be released to the contractor. The amount of retainage withheld during the course of construction can vary depending on the type and quality of the work. Retainage ranges from 0 to 30 percent and decreases during the course of the project, with 5 percent withheld at the time of completion.

All other project team members should be paid after receipt of their final invoices for the project. The municipality must be certain that they have received all the required documentation for regulatory and funding requirements.

State law requires that the retainage be released within 30 days after final acceptance of the project. If the owner withholds such payments and the matter goes to court, the

owner will be liable for not only the amount withheld but also penalties and contractor attorney fees.

9.7 FUNDING COMPLETION

As soon as possible after final payment, final payment requests for reimbursement should be submitted to funding agencies. It may also be appropriate to request a final audit of the project, if required, by a mutually agreed upon time. This ensures speedy completion to the project and allows the municipality an opportunity to address concerns or contest eligibility determinations by the funding agencies. The municipality should follow-up with the funding agencies until final closeout of the project.

9.8 CELEBRATE THE PROJECT

At the completion of a project, it is always beneficial to celebrate its success. Many factors and people make a project a success. Recognize that a successful project solves a problem or situation, uses municipal funds wisely and creates the least amount of disruption. The municipality should formally recognize its achievement through newspaper articles, an open house or at a public meeting. Individual or firm accomplishments should also be recognized through a reference letter or community newsletter.

GLOSSARY OF TERMS

Allowance. A reasonable estimated value set aside in the bid document for miscellaneous purchases (e.g. landscaping, carpeting, fixtures, etc.). Once the actual item is selected, the contract price is adjusted by the difference between the estimate and the actual cost of the item.

American with Disabilities Act (ADA). A federal law that requires accommodations to individuals with disabilities when any new construction or major renovation takes place. This is a requirement that must be met regardless of the source of funding.

Bid Bond. Bond provided by the contractor that insures the low bidder will execute the contract if it is awarded. It is returned to the successful bidder once a performance bond is provided.

Bid Form. A standard form provided by the owner and used by all contractors in submitting the price quotation for a project. The use of the same form provides a uniform arrangement of pricing that enables the municipality to make a fair comparison of the bids. Once signed, the form is considered a legally binding document and is considered to be an offer to enter into a contract on the terms and conditions stated in the bid document.

Bid Shopping/Bid Peddling. Shopping around for lower bids once the bids have become public. This practice is unfair to all involved parties and may be illegal.

Bid Tabulation. A summary sheet of all bids received which includes the names of all the responsive bidders and both unit and total bid price for the project.

Categorical Exclusion (CE). A categorical exclusion is prepared when it is determined that a project receiving federal funding will not have significant environmental impacts.

Change Order. Mechanism to allow the owner to make changes in the work and, once signed, obligates the contractor to perform the changed work at an adjusted price and with a time adjustment where appropriate. This could reflect increases or decreases in the total contract price. The change order document must be in writing, describe the change and the dollars involved and must be signed by all parties.

Competitive Bid Process. A structured process that solicits bids for a specific project based on a detailed description of the work to be completed. All contractors are given the opportunity to compete.

Construction Easement. When land adjacent to the construction area will be disrupted during the project, written permission is obtained from the property owner to enter onto his or her land. The agreement should define the area to be used, how it will be used, and the condition that it will be restored to after project completion.

Contingency. A dollar amount included in cost estimates to account for unforeseen expenditures. Contingency is usually expressed as a percent of the known costs at the time the estimate is prepared. The contingency percentage is reduced as a project moves from conceptual design through to construction.

Contract. A legal document that lists procedures, references standard specifications, establishes work to be performed, details amount and method of payment, lists duties and responsibilities of all parties and outlines procedures for change orders.

Critical Path. Used in scheduling; the critical path defines the specific order in which the tasks which must take place for the project to meet the anticipated completion date.

Davis-Bacon Wages. Federal regulation establishing rules that must be followed when a construction project uses federal funding. Minimum wage rates and benefits are established for the various worker classifications that may be involved in a construction project. The wages are set regionally. There are also specific reporting and monitoring requirements while the project is under construction.

Deliverables. Reports, drawings and documentation delivered to the municipality during a project. A list of deliverables should be provided in the request for proposals and in agreements with professional consultants.

Direct Labor. The salary wage paid to an employee.

Documentation. Daily record of construction activity, weather, number of crew on the job and types of equipment and materials being used; record of significant conversations and directions given to the contractor; record of problems; record of test results.

Easement. An interest in land owned by another that entitles its holder to a limited use or enjoyment. This interest is described in writing, notarized and recorded in the land records of the community where the land is located.

Environmental Assessment (EA). A classification of a project's environmental assessment that indicates there is limited environmental impact of uncertain significance.

Environmental Impact Statement (EIS). A classification of a project's environmental assessment that indicates a significant environmental impact. It requires the preparation of a special report to compare several alternatives and the holding of a public hearing.

Fee. The profit made by a professional consultant or contractor on a project.

Field Order. Written minor changes to a contract document that does not affect the cost or time involved with a project.

Indirect Labor. The overhead costs incurred by a company, such as utility expenses, rents and employee benefits.

Inspector. Town representative who is responsible for inspecting construction activities on a daily basis and notifying the contractor and municipality when work or material is not satisfactory.

Liquidated Damages. Compensation assessed against the contractor for each day any work remains uncompleted after the time specified for project completion. The amount should be representative of the cost of inconvenience that is experienced and should be stated in the contract.

Lump Sum. Set price for the entire construction contract.

Maintenance Bond. Required prior to final payment and remains in effect for a year from final acceptance date

National Environmental Policy Act of 1969 (NEPA). Requires consideration of the environmental impacts of all projects involving federal funds. Requires the preparation of an environmental document describing all environmental considerations involved in a project.

Non-Responsive Bid. A bid that does not comply with all requirements specified in the bid document.

Notice to Proceed. A formal notice issued by the municipality to the contractor authorizing the project to begin. Includes the specific dates for the construction period.

Partnering Process. A process intended to establish working relationships among the parties (stakeholders) involved in a construction project through a mutually developed, formal strategy of commitment and communication. In an environment of trust and teamwork, disputes are prevented and a process is in place to facilitate the completion of a successful project.

Payment Bond. Issued by a surety company on behalf of the contractor. Ensures prompt payment by the contractor for materials, labor, and equipment rental used in performing the work.

Performance Bond. Issued by a surety company on behalf of the contractor. Guaranties that work will be performed in full compliance with the terms of the contract and protects the municipality against liability for expenses incurred through failure of the contractor to complete the work as specified.

Public Right-of-Way. Land owned by the municipality by deed reference.

Record Drawing. Drawings prepared with information provided by the contractor to show the as-built conditions.

Request for Proposal (RFP). A means of securing professional services (such as engineering, program management, construction management, studies, surveys, mapping and architectural) and providing for some competition.

Resident Engineer. Individual provided by the engineering firm to be on-site throughout the construction phase to ensure the project is built as designed.

Responsive Bid. A bid that substantially complies with all requirements of a bid document.

Retainage. An amount of money withheld from a contractor during a construction project. Typically retainage is 10% of the partial payment request amount.

Shop Drawing. Manufacturer information submitted by a contractor to a professional consultant in order to show compliance with the design of a project. The professional consultant is required to review the shop drawing and return it to the contractor prior to it being ordered for the project.

Unit Price. Price per unit of work in which an item is measured. Most commonly used for the materials (e.g. gravel, pipe, paving treatments) that will be used during construction; or for those work activities where the costs are more difficult to estimate in advance (e.g. ledge removal).

Unit Price Contract. Parties agree that the purchase price will be determined by multiplying the quantity of earth removal by an agreed upon unit price. The method of measurement must be stated in the contract document.

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