CANT STRIPS

By the CRCA

The *CRCA Roofing Specification Manual* defines a cant strip as "...a strip of material of triangular section placed at the intersection of a roof deck with a higher wall or other vertical surface." Cant strips have been and continue to be widely used as a component of built-up roofing. However, with the advent of many new types of membrane systems, some confusion has arisen as to when and where cant strips are required. In addition, there is a large variety of materials being used in the fabrication of cant strips. This bulletin discusses the use of cant strips and the various types available.

Built-up (Asphalt) Roofing Systems

The reinforcing felts used to construct built-up roofs are relatively stiff materials, particularly at lower temperatures. Bending them sharply creates stress at and adjacent to where they are bent, creating the possibility of mechanical fatigue or rupture of the reinforcing fibers at the bend. Many of these reinforcements, such as fiberglass, have a property that is referred to as "memory." This attribute makes them want to straighten out and return to their original shape upon being bent. When installed in a tight bend, they can pull away from the transition before the asphalt has cooled and set, leaving a void or gap at the change in plane. As a result, the membrane at this location is left unsupported and susceptible to damage due to thermal and moisture induced stress or mechanical impact.[1]

A cant strip at horizontal/vertical junctions reduces the stress by changing the angle of the bend from 90° to 135°, providing a smoother and less acute transition (See *Figure 1*). It also serves to act as a support for the membrane, reducing the potential for damage from mechanical impact from rooftop traffic.

Modified Bitumen Membranes

Some manufacturers of modified bitumen membranes have eliminated cant strips from their design detail requirements in torch-applied assemblies. They claim that due to the mechanical properties of the reinforcements – typically polyester – and the polymer modified asphalt coatings, the membranes are not subject to potential stress-related problems as are traditional reinforcement materials. Other manufacturers continue to show cant strips in their design details. Designers and contractors should consult the product manufacturer to determine if cants are required on a specific project.

Single Ply Membranes

Elastomeric and plastomeric singly ply roofing systems do not require cant strips nor are they recommended. Single ply membranes are flexible enough to easily conform to an acute (<90°) angle without stressing the membrane. While cant strips serve no purpose on a single ply roofing system, a membrane fixation strip or bar should be installed at the roof/wall intersection. Due to relatively weak peel strength of some bonding adhesives, securing the membrane at the angle change by adhesive alone cannot be relied on to resist its tearing or pulling away at the transition from thermally induced, seismic, or wind loads. Manufacturers recommend attaching the membrane at transitions with suitable fixation strips or bars that are mechanically fastened to supporting members.

Cant Strip Materials

Almost any material can be used to form cant strips – concrete, wood, steel, insulation, and insulation composites. The appropriate type for use on a particular project depends on the membrane system being installed and the specific performance requirements.

Cants made of hard materials, such as wood, concrete, or metal, are typically used where resistance to mechanical damage

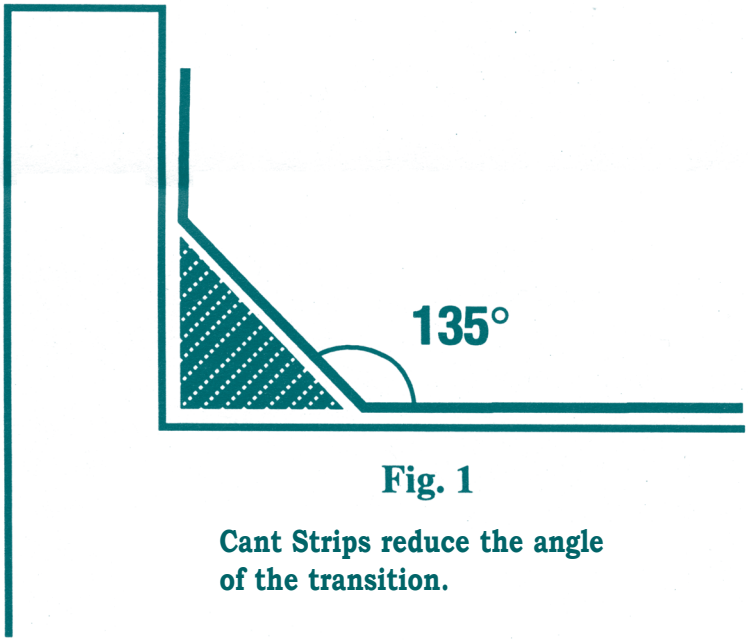


Fig. 1

Cant Strips reduce the angle of the transition.

is required. Membranes secured to hard substances are less likely to incur puncture damage than are softer materials. Wood cant strips can also be used where structural support may be required, such as to reinforce field-fabricated curbs or skylights. They can also be used for attaching vertical membranes to horizontal ones, or to add rigidity to the assembly. Wood cants are the most suitable for use at shallow perimeters (where there is no parapet) to provide a nailing base for the membrane termination and metal edge flashing.

Wood cants are typically nailed, screwed, bolted, or otherwise mechanically attached. When properly installed, membrane terminations and metal flashings attached to wood cants can provide the necessary wind uplift resistance at perimeters and edges to meet FM requirements.[2] Where wood cants are used, they should be constructed from dry and seasoned lumber, resistant to fungal and insect attack. Care must be taken to ensure that the base flashing material will not be adversely affected when in contact with pressure-treated lumber or wood that has been treated with chemical preservatives.

Wood fiber cants have been used in the construction of low-sloped, built-up roofs for decades. Wood fiber cants should be adhered to the supporting substrate with hot or cold-applied bitumen. They should not be used where a nailing base or solid support are required.

Other cants made of flame resistant or noncombustible materials (i.e., perlite, mineral fiber) are also available. Designed primarily for open flame applications, these are being promoted for use in modified bitumen systems where the membrane is torch-applied. It should be noted that although these products may be flame resistant, they might not provide sufficient protection to combustible components behind them during application of the membrane. Extreme caution should always be exercised when torching membranes.

Conclusion

It is widely accepted that flashings at openings, transitions, and edges are the most vulnerable areas of the roof, accounting for the majority of all problems. Depending on the configuration of the roof and the type of membrane materials used, cant strips may be required at locations where the roof meets a vertical surface at walls, curbs, and projections or at edges. Numerous types of cant strips are available to the contractor and roof designer. The appropriate type of cant strip will depend on the nature of the membrane and flashing materials, the specific details, and the performance requirements. ■

1 Kirby, J.R., "Cant Strips for Bituminous Roofing," *Professional Roofing,* March 1997.
2 Data Sheet 1-49, Perimeter Flashing, Factory Mutual Research Corp.

EDITOR'S NOTE: This article, Technical Bulletin Volume 52 of the Canadian Roofing Contractors' Association (CRCA), published in July 2002, is reprinted with permission. For further information on the CRCA, phone 613-232-6724.

The Design Process – the 75% Rule

By Richard L. Cook, Jr., RRC, CPWC, RRO

Introduction

The development and ongoing use of an established "design process" is a dynamic effort (constantly evolving and improving), but once initiated, it is simple to establish, cost effective to maintain, and critical to consistently providing quality projects.

Similar to many equations and calculations, "constants" exist in the design process, with the focus and effort needing to be applied to the unique or varying portion of the effort. Considering this, it would be most efficient to apply the 75% Rule to one's design process.

The 75% Rule sounds good, but what is it? The 75% Rule is this writer's philosophy that the majority of what we do on our typical designs is repetitive, with minimal changes. By establishing a "design process" for one's firm, 75% of the work may be streamlined, thus allowing the majority of efforts to be focused on the remaining unique or varying 25% of the design. It is similar to the Pareto Principle: "The Pareto Principle, named after an Italian economist-sociologist of the late nineteenth and early twentieth centuries, states that the significant items in a given group normally constitute a relatively small portion of the total items in the group. Sometimes it is referred to as the concept of the 'vital few' and the 'trivial many,' or the 80/20 rule...So whenever you are faced with the difficult task of choosing from among a number of alternatives, keep the Pareto Principle in mind. By asking yourself which items are the really significant ones, you avoid getting sidetracked on secondary activities."[1]

The major phases in this process are:

1. The investigation,
2. The design (specifications and drawings),
3. Bidding; and
4. Construction administration.

To attain a quality project, one must establish procedures, standards, and guides for each phase with an equally weighted effort. Overemphasis (or lack of emphasis) in any one given phase will imbalance the overall effort and result in problems in the other phases of the process.

Based on current "design process," simple standards, procedures, and guides in each of these four phases would substantially improve the quality of the design process, thus allowing a consultant to focus more of his or her time on the remaining portion of the project which is unique or varying.

The result is a more thorough and consistent investigation, a quality design, proper bid procedures, smoother construction administration, and a quality project for the owner. Moreover, a quality, streamlined project only adds to a consultant's reputation, workload, and profit.

Additional Benefits

One additional benefit is the ability (with some initial effort) to efficiently handle more work consistently. In larger or multiple offices, the process provides continuity and uniformity in designs generated by different individuals or offices.

A major benefit once the design process is established is the ability to incorporate changes or additions and accountability specific to individual client requirements. A simple improvement picked up at the RCI convention, a change in an industry standard, or a lesson learned can easily be incorporated into the design process.

An established design "process" provides even greater benefit when a change needs to be made that affects several phases and multiple documents. The incorporation, recently, at this writer's office (ADC Engineering, Inc.) of a specific process for closeout documents affected several Division 1 sections, numerous technical specifications, and the submittal process. The ease of identifying, editing, and incorporating an addition of this nature is hard to believe.

Phase I - The Investigation

All design projects are completed based on an established methodology. Printed guidelines and procedures exist for the systematic completion of all required fieldwork.

All projects are field measured, core samples taken, and all necessary testing completed (moisture, asbestos, pull tests, etc.) by ADC personnel. Standardized forms exist for collection of all critical data, such as core samples, asbestos testing, and pull test results.

Standard guide letters exist to send asbestos samples to laboratory for testing. Others are used to forward the field-measured roof plan to the owner to review and comment on existing, abandoned, and any new penetrations, along with any other issues unique to the project.

Phase II - The Design

Upon completion of the fieldwork, two standard "request" forms – "ACAD" and "Specifications" – must be completed to initiate the firm's in-house effort.

The ACAD request form lists the needed format, drawing size, roof system selection, owner, and required dates. Listings of required drawings such as title sheet, general notes sheet, complex layout/sequence sheet, existing roof plan, new roof plan, tapered roof plan, and repair plan exist and are simply identified for development.

Once the roof system selection is made, the ACAD forms for the details can also be developed. Standard isometric guide details

exist for all typical terminations and penetrations for each roof system type. The detail numbering and type are consistent for the roof system (all low-sloped roofs have the same detail numbering). Custom details require a photograph and basic hand sketch for development.

A similar procedure exists for specifications. A standard form is completed, indicating the scope of work for the base bid, any alternates, and unit price items. Based on the type of client (private, school district, state agency, or federal), specific front-end guide specifications and supplementary conditions are used. The specification request form then lists all ADC Engineering, Inc. developed guide specifications through all divisions, based on CSI format. Section 01300-Submittals and Section 01700-Close Out Documents are tailored to create job-specific checklists within the documents for the submittal review and close-out procedure.

The result of the "field investigation" and "design development" phase is a 95% submittal, which is forwarded to the owner for review, while ADC simultaneously completes an in-house review by at least one other project manager. Upon receipt of any comments and completion of the in-house review, the Contract Documents are completed.

Phase III - The Bid

Although this is the shortest phase of the design process, it is where the most substantial improvements can be made, especially once the initial design process is established. The keys are standard procedures, guidelines, and guide letters for the bidding procedure, including Mandatory Pre-Bid Minutes, Addendum, Documents Register, Bid Opening, Tabulation, Verification, and Award.

A mandatory pre-bid meeting for all projects is strongly recommended. This ensures all potential bidders are familiar with the project and provides the opportunity to ensure all are familiar with the contract documents.

An established method exists to receive questions within specific timeframes that will be incorporated into the Addendum. This provides equal clarification to all potential bidders, making for a better design. The established guide Specifications and Details can then be developed further, based on these questions, to improve future projects.

With different levels of knowledge and experience within an organization, different client needs, and different project requirements, having guides for standard meetings, pre-bid meetings, bid openings, and pre-construction conferences provides consistency. It ensures all critical issues are raised and provides an efficient way to provide professional services. A process that is standardized and formal also substantially reduces problems and is less likely to be challenged.

Phase IV - Construction Administration

The most significant aspects of the design process for this phase are:

1. Submittal reviews,
2. Pre-construction conference minutes,
3. Field observation reports (including First Day Start Up Form and Pre-Final Inspections), and
4. Contract close-out documents.

Once again, guide procedures, forms, and letters are the key elements to this phase.

As noted previously, Section 01300, Submittals is customized to streamline the submittal process and improve the chances of getting a complete submittal review package. Standard review forms with standard comments for individual specification sections can be easily created. Guide letters exist for reviewing contracts, performance and payment bonds, and insurance certificates.

The pre-construction conference is the opportunity for the entire construction team (including the foreman) to overview the contract requirements, the approved submittals, and the actual jobsite condition. This meeting can resolve, reduce, and/or eliminate more potential issues than any other meeting and can transition a good design into a good project.

A standard set of pre-construction conference minutes concerning all the general and administrative issues can have a detailed "installation" section inserted for each roof system type on a particular project.

The contract documents should require that the request for substantial completion or pre-final inspection have attached the Summary of Work listed in Section 01011, Scope of Work, with all work items checked off as complete.

The successful closure to a project requires that all documents (warranties, change orders, legal releases, "as-builts," maintenance requirements, roof information cards, and final applications for payments) are completed and turned over to the owner. Previously mentioned Section 01700, Close-Out Documents, provides a list of the required documents customized for the specific project. Specifications can require those documents to be provided in a notebook with the form from Section 01700, Close-Out Documents, provided as the table of contents.

Conclusions

Creating an established "design process" is not hard to do, is not complicated, and does not take a tremendous amount of time. The benefits are innumerable and the value (in dollars and reputation) is immeasurable.

Step One – Do not reinvent the wheel. Establish the framework (or skeleton) of how to organize existing documents/methods. Use RCI and/or CSI as a basis, if needed.

Step Two – Based on your framework, create forms and indices for each particular area.

Step Three – Insert or sort existing documents (letters and specifications) into the established framework. Mark each document with a dollar sign ($) at the end of the file name to indicate a non-edited guide letter. As time permits, or the next time that particular document is needed, spend the extra couple of minutes to create a "guide" letter that can be used on future projects, and delete the dollar sign ($) from the file name.

Step Four – A similar framework needs to be established for CAD work for the drawings – borders, layouts, and details for the various systems and sheet metal.

Step Five – Continue to update and build the design process. It is easier than one would think. ■

1. Bliss, Edwin C., *Getting Things Done*, Bantam Books, December 1977.

GUIDE LETTERS INDEX

PROPOSAL FOLDER

ADC Amendment Consulting Agreement – ADC Engineering, Inc. is requested by client to provide additional services to the original Design Contract (proposal with signature location).

ADC Project Status – ADC Engineering, Inc. prepared a fee proposal for the above subject facility on [date], and is requesting the status of this project from the client.

ADC Project Status with Ongoing Work – ADC Engineering, Inc. prepared a fee proposal for the above subject facility on [date], currently has work ongoing for the project, but still needs signed proposal for accounting and filing purposes.

ADC Proposed Schedule – ADC Engineering, Inc. is providing a tentative (proposed) schedule for the subject project, after receiving written authorization to proceed.

ADC Standard Fee – Letter used to establish billing hourly rates until a defined scope of work is established.

ADC Standard 3-Page Contract – ADC Engineering, Inc. standard 3-page contract for clients.

DESIGN FOLDER

Asbestos Testing – Letter to asbestos testing facility requesting testing of core samples and providing timeframe for return of test results.

Design Documents Preliminary Submission – Cover letter for design submission with summary of documents that will assist in client review and allow the firm to better tailor the documents to clients' needs and requirements.

Design Documents Submission to Architect – Cover letter for design submission to architect with recommended front-end items, items for common specifications, roof specifications, and drawings.

Design Initial Drawings – Letter sent to owner with preliminary roof plan asking for input.

Final Review of Specs – Letter to owner to accompany final revision of specifications requesting owner to review and comment on specifications by certain date.

Invitation for Bid – List of selected contractors being requested to provide pricing (bid) for private sector project.

Notice of Intent to Award – notice that the [Owner] intends to award a contract to [Contractor/Company Name] for subject work.

Pre-Qualification Approval – Letter to potential bidder that firm has received the pre-qualification questionnaire for the above referenced project and is tentatively approved. However, the following clarification or additional information is requested.

Mandatory Pre-Bid with Pre-Qualification – Contractors tentatively approved for the project with Mandatory Pre-Bid date listed.

Response to Substitution Request During the Design – Letter to contactor with responses to their substitution request(s).

CONSTRUCTION/ADMINISTRATION FOLDER:

Application for Payment – Cover letter for processing Contractor's Application for Payment.

Returned Application for Payment – Cover letter for returning Contractor's Application for Payment, with common reasons.

Bid Certification/Verification – Letter to the apparent low bidder of the above-referenced project requesting confirmation of his bid in writing.

Bid Package Return (Owner) – Returns to client the bid packages that were submitted for the subject project, including name of the apparent low bidder.

Bid Results – Notifies owner/contractor of the preliminary bid results of the above-referenced project.

Response to Bonding Company – Letter to contractor responding to bonding company letter about status of project and information.

Bonding – Letter to low bidder, prior to or with notice to proceed, starting off project. Gives reminder of bonds/contracts/insurance certificates and submittal list.

Certificate of Substantial Completion (Owner) – Letter forwarding Submittal Completion to owner.

Change Order (Contractor) – Asks contractor to sign all copies and return to ADC Engineering, Inc. for signature.

Change Order (Owner) – Change order has been signed by contractor. Asks for owner's signature on change order forms, then to forward one copy to ADC Engineering, Inc. and one copy to contractor. The remaining copy to be retained by owner.

Close-Out Notice to Contractor – This letter is written as a summary of the close-out documents needed for the subject project.

Close-Out Request to Contractor – Initiating close out process from contractor, with close-out checklist.

Close-Out Documents – Cover letter to contractor listing the required documents to be provided to ADC Engineering, Inc. for project closeout.

Failure to Complete – Contractor chooses not to complete the work within the contract requirements.

Invoice Returned to Contractor – Letter to contractor with comments on why invoice is unapproved/returned to their office.

Notice to Proceed – Letter forwarding the owner's written approval to commence actual physical work on the project.

Phase Built Up Roof Assembly Installation and Temporary Protection – Details concerns and the potential hidden, industry-recognized effects of delayed roof assembly installation.

Phase Modified Bitumen (No. 1) – Cap sheet installation and temporary protection.

Phase Modified Bitumen (No. 2) – Phasing, generic.

Phase Modified Bitumen (No. 3) – Phasing, Johns Manville.

Inspection Phase in Modified Bitumen (No. 4) – Cap sheet installation – Letter to owner explaining concerns with delays in cap sheet installation and potential moisture intrusion.

Request for Proposal (RFP) with Unit Prices – Letter to contractor for ongoing project requesting proposal for additional services, including unit prices.

Request for Proposal – Letter to contractor for ongoing project requesting proposal for additional services.

Submittals/Insurance/Bonds – List of all contract required submittals, and confirmation that the contracts and all insurance and bonding requirements have been forwarded.

Submittal Review of Contract Legal Documents – General liability, automobile liability, excess liability, workers' compensation and employee liability certificate, DHEC asbestos abatement project license, AIA 101 contract between owner and contractor, payment bond, and labor and material payment bond.

Submittals, Schedule, Values, & Drawings – ADC Engineering's typical comments pertaining to submittals for schedule of values and progress schedule submittals on the subject project.

Submittals, Sheet Metal Color Chart – Letter to contractor confirming owner's selection of colors.

Submittals, Sheet Metal Color Selection – Letter forwarding owner's written color selection chart for the sheet metal to be installed on the subject project.

Submittals Tapered Insulation – ADC Engineering's typical comments pertaining to tapered insulation submittal.

Submittals, Technical Submittal Review Comments – ADC Engineering's typical cover letter with comments on the contractor's submittals for the subject project.

Substantial Completion Inspection – Substantial completion of subject project was requested and verified by ADC Engineering, Inc. Subject inspection was conducted for the purpose of reviewing work status with all parties. Request to review and sign attached form.

Substantial Completion Inspection Status – Letter to contractor requesting status of items noted in pre-final inspection in order to process substantial completion.

Substantial Completion Reminder – Letter to contractor reminding him that when he considers the work to have reached substantial completion, he must notify ADC Engineering as stated in the contract so that an inspection may be scheduled.

Substantial Completion Request – Letter to contractor requesting substantial completion documents in order to complete project/close out documents.

Unapproved Weather Days – Response to inclement weather days requested for the project.

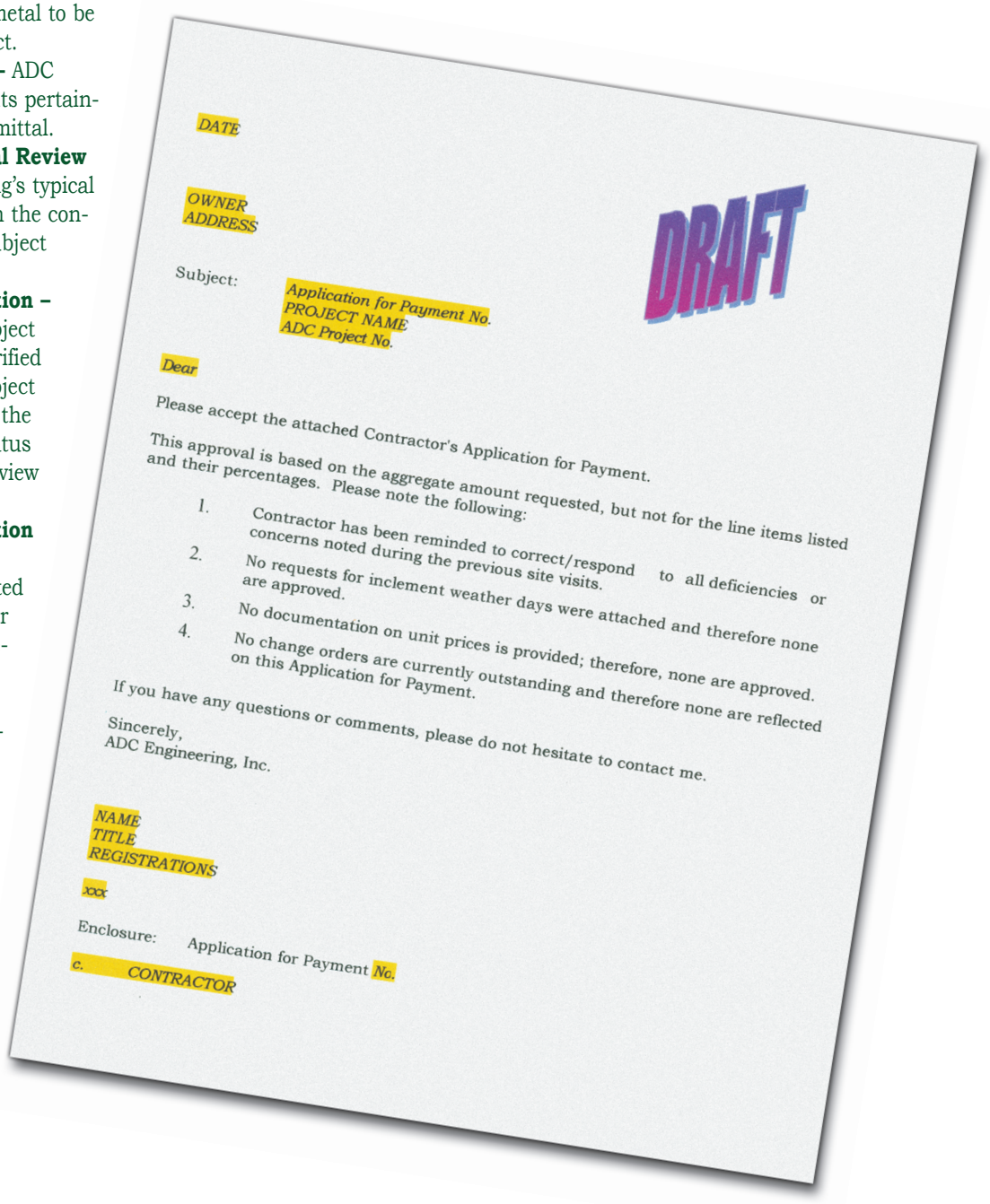
Warranty Information – Letter to owner responding to request to review/comment on manufacturer's warranty.

TECHNICAL SUPPORT FOLDER

Test Core Sample Summary to Client – Letter to client summarizing the roof membrane extractions revealed the following roof assembly components, and the testing asbestos content revealed the following results.

Design Review Comments to Architect – Cover letter for design review of the subject documents, Scope of Work and Design Guideline Checklist, to also be incorporated into this review.

Pull Test Summary – Letter to owner with results of pull test performed at project site/facility.



DATE

OWNER
ADDRESS

DRAFT

Subject: Application for Payment No.
PROJECT NAME
ADC Project No.

Dear

Please accept the attached Contractor's Application for Payment.

This approval is based on the aggregate amount requested, but not for the line items listed and their percentages. Please note the following:

1. Contractor has been reminded to correct/respond to all deficiencies or concerns noted during the previous site visits.
2. No requests for inclement weather days were attached and therefore none are approved.
3. No documentation on unit prices is provided; therefore, none are approved.
4. No change orders are currently outstanding and therefore none are reflected on this Application for Payment.

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,
ADC Engineering, Inc.

NAME
TITLE
REGISTRATIONS

xxx

Enclosure: Application for Payment No.

c. CONTRACTOR

Page 32
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Project Name: _____

Project No.: _____

Private Project? Y/N **School?** Y/N

State Project? Y/N **Project No.:** _____

Submission: 35% / 65% / 95% **Other:** _____

Submission Date: _____

Needed By: _____

GUIDE SPECIFICATION REQUEST FORM & SPEC CRITERIA FORM

DIVISION 1 GENERAL REQUIREMENTS

- ❑ 01100 - Summary of Work
- ❑ 01011 - Scope of Work
- ❑ 01205 - Unit Prices and Allowances
- ❑ 01210 - Alternates
- ❑ 01300 - Submittals
- ❑ 01305 - Coordination
- ❑ 01321 - Network Analysis Schedules
- ❑ 01400 - Quality Control
- ❑ 01405 - Cutting and Patching
- ❑ 01406 - Project Meetings
- ❑ 01500 - Construction Facilities and Temporary Controls
- ❑ 01525 - Safety Requirements
- ❑ 01600 - Materials and Equipment
- ❑ 01700 - Contract Close-out

DIVISION 2 SITE WORK

- ❑ 02040 - Cutting and Patching
- ❑ 02050 - Demolition and Removal
- ❑ 02070 - Selective Demolition
- ❑ 02080 - Hazardous Material Abatement
- ❑ 02220 - Site Demolition

DIVISION 3 CONCRETE

- ❑ 03510 - Cementitious Wood Fiber Deck
- ❑ 03520 - Lightweight Insulating Concrete/Gypsum Deck Repair
- ❑ 03522 - Thermosetting Insulating Fill Repairs
- ❑ 03601 - Concrete Deck Grout Repair
- ❑ 03900 - Concrete Restoration
- ❑ 03910 - Structural Concrete Deck Restoration

DIVISION 4 MASONRY

- ❑ 04251 - Re-pointing and Repair of Brick Masonry
- ❑ 04500 - Masonry Restoration and Cleaning

DIVISION 5 METALS

- ❑ 05120 - Structural Steel
- ❑ 05125 - Steel Structure Paints/Coatings
- ❑ 05130 - Structural Steel Cleaning and Painting

- ❑ 05210 - Steel Joists
- ❑ 05311 - Steel Roof Deck Repair
- ❑ 05400 - Cold Formed Metal Framing
- ❑ 05500 - Metal Fabrications
- ❑ 05501 - Metal Cable Tray System/Metal Fabrications

DIVISION 6 WOODS & PLASTICS

- ❑ 06100 - Rough Carpentry
- ❑ 06200 - Finish Carpentry

DIVISION 7 THERMAL & MOISTURE PROTECTION

- ❑ 07001 - Roofing Warranty Repairs
- ❑ 07002 - Two Year Warranty - Roofing
- ❑ 07120 - Fluid Applied Waterproofing
- ❑ 07124 - Coatings for Reconditioning Metal Roof Systems
- ❑ 07125 - Waterproofing System
- ❑ 07126 - Bitumen-based, Fluid Applied Waterproofing System
- ❑ 07175 - Water Repellents
- ❑ 07190 - Clear Water Repellents
- ❑ 07220 - Thermal Roof Insulation
- ❑ 07240 - Exterior/Insulation and Finish Systems
- ❑ 07310 - Asphalt Shingles
- ❑ 07311 - Slate Shingle Roofing
- ❑ 07312 - Repairs to Asphalt Shingle Roofs
- ❑ 07317 - Residential 3-Tab Shingle Replacement
- ❑ 07318 - Residential Architectural Shingle Replacement
- ❑ 07319 - Slate Roofing Repair
- ❑ 07320 - Clay Tile Roof
- ❑ 07321 - Clay Tile Roof Repair
- ❑ 07411 - Preformed Metal Siding
- ❑ 07413 - Metal Roof Repairs
- ❑ 07415 - Preformed Standing Seam Roofing
- ❑ 07460 - Siding
- ❑ 07500 - Roof Repairs/Maintenance
- ❑ 07501 - 3.03 Installation of New Equipment Curb Only
- ❑ 07503 - Thermoset Membrane Repairs
- ❑ 07505 - Modified Bitumen Membranes Repair
- ❑ 07508 - Thermoplastic Alloy (TP) Roofing Mechanically Fastened Repairs
- ❑ 07511 - Aggregrate Surfaced Asphalt Built-Up Roofing
- ❑ 07512 - Aggregate Surfaced Coal Tar Pitch Built-Up Roofing
- ❑ 07519 - Roof Repairs/Maintenance
- ❑ 07530 - Elastomeric Sheet Roofing System (EPDM Ballasted)
- ❑ 07535 - Modified Bitumen Sheet Roofing
- ❑ 07537 - Modified Bitumen and Felt Roofing System
- ❑ 07538 - Thermoplastic Alloy (TP) Roofing Mechanically Fastened
- ❑ 07550 - SBS Modified Bituminous Membrane Roofing
- ❑ 07551 - SBS Modified Bituminous Sheet
- ❑ 07552 - Modified Bitumen Sheet Roofing
- ❑ 07570 - Traffic Coatings
- ❑ 07600 - Sheet Metal
- ❑ 07610 - Copper Roofing System
- ❑ 07611 - Custom Fabricated Metal Roofing
- ❑ 07612 - Sheet Copper Roofing
- ❑ 07613 - Sheet Terne Roofing
- ❑ 07613 - Lead Coated Copper Standing Seam
- ❑ 07617 - Terne Metal Roof Repairs
- ❑ 07622 - Copper Flashing and Trim
- ❑ 07720 - Roof Ventilators
- ❑ 07920 - Sealants/Caulking

DIVISION 8 DOORS & WINDOWS

- ❑ 08401 - Aluminum Storefront Systems
- ❑ 08600 - Sky Lights
- ❑ 08610 - Wood Windows
- ❑ 08801 - Stained Glass Repairs
- ❑ 08810 - Glass and Glazing
- ❑ 08811 - Glazing Repairs
- ❑ 08818 - Glazing Protection
- ❑ 08819 - Stained Glass Protection
- ❑ 08900 - Glazed Curtain Wall

DIVISION 9 FINISHES

- ❑ 09226 - Stucco Repair
- ❑ 09229 - Layman's Stucco Guide
- ❑ 09900 - Painting

DIVISION 10 SPECIALTIES

- ❑ 10530 - Metal Walkway Covers

DIVISION 13 SPECIAL CONSTRUCTION

- ❑ 13000 - Pre-Engineered Building Design Criteria
- ❑ 13120 - Metal Building Systems
- ❑ 13281 - Engineering Control of Asbestos Containing Materials
- ❑ Drain - Roof Drains Guide Spec

About the Author

Richard L. Cook Jr., RRC, CPWC, RRO, is a principal of ADC Engineering, Inc, Hanahan, SC. Rick has authored numerous papers on the subject of roofing systems and wind related damages. He has presented several papers at national symposiums and conferences, including the American Society of Civil Engineers, the Construction Specifications Institute, the Roof Consultants Institute, and the Federal Construction Committee in Washington, DC. Cook has also presented dozens of papers at local and regional meetings and conferences related to roofing and waterproofing in the construction industry. He is a faculty member for RCI, RIEI, and teaches at several colleges and universities on a regular basis.

Richard L. Cook Jr., RRC, CPWC, RRO

