



PURCHASING DIVISION

901 Broadway, N.E. • Knoxville, TN 37917-6699
865.403.1133 • Fax 865.594.8858
800.848.0298 (Tennessee Relay Center)
Email: purchasing@kcdc.org
<http://www.kcdc.org/en/DoingBusiness.aspx>

Invitation for Bids

Roofing Services at Isabella Towers

Due Date: June 18, 2014

Check KCDC's web page for addenda and changes before submitting your bid.

Due Time: By 11:00 a.m. (as shown by KCDC's clock)

Bid Number: C14027

Deliver Bids to: Knoxville's Community Development Corporation
Purchasing Division
901 Broadway N.E.
Knoxville, Tennessee 37917

Faxed/Emailed Responses are acceptable: **Yes** **No**

Site Visit: June 9, 2014 at 8:30 a.m. The meeting will start in the Commons Room at Isabella Towers.

Please read this document before the meeting and be prepared to ask your questions about it.

Award Results: KCDC posts the award decision to its web page at:
<http://www.kcdc.org/en/DoingBusiness/SolicitationStatus.aspx>.

General Information for Vendors

1. **BACKGROUND AND INTENT**

- a. Knoxville's Community Development Corporation (KCDC) is the public housing and redevelopment agency for the City of Knoxville and for the County of Knox in Tennessee. KCDC's public housing property portfolio includes seventeen housing properties with approximately 3,500 dwelling units. KCDC also administers approximately 3,700 vouchers through our Section 8 department and has three tax credit properties.
- b. One of KCDC's properties, Isabella Towers (1515 Isabella Circle 37915), needs the "low rise building" re-roofed as detailed herein.
- c. The architect in charge of this project is Thomas Caldwell.

2. **BONDS**

Bid, payment and performance bonds will be required upon award if the bid exceeds \$100,000 in value. Bonding requirements include:

- a. A bid guarantee from each vendor equivalent to five percent (5%) of the bid price. Such bid bond must accompany the bid. Bid bonds will not be returned until a contract is signed.
- b. One of the following is required (upon award):
 1. A performance and payment bond for 100% of the contract price; or
 2. 25% cash escrow; or
 3. 25% irrevocable letter of credit.
- c. All bonding companies must be listed in the Federal Register, Department of the Treasury Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies; Notice. All required bonds must be issued through companies licensed to do business in the State of Tennessee.

3. **CHANGES AFTER AWARD**

It is possible that after award the KCDC may need to revise the service needs or requirements specified in this document. KCDC reserves the right to make such changes after consultation with the vendor. Should additional costs arise, KCDC reserves the right to consider accepting these charges provided the vendor can document the increased costs. KCDC reserves the right to make such changes after consultation with the vendor.

4. **CODES AND ORDINANCES**

All work covered by these contract documents is to be done in full accord with national, state and local codes, ordinances, and orders that are in effect at the time the work is performed. All requirements of the local building department and fire jurisdiction are to be fulfilled by the successful vendor and any sub-contractors.

5. **DAMAGE**

The awarded vendor is responsible for any and all damage to buildings, equipment, grounds, premises and all other types of potential resulting from the provision of the services requested herein.

6. **EMPLOYEES**

Vendor shall:

- a. Only allow personnel thoroughly trained and skilled in the tasks assigned them to work on the job. Any employee found to be untrained or unskilled shall be removed from the job.
- b. Have sufficient personnel to complete the work in a timely manner.
- c. Enforce strict discipline and good order among his/her employees and shall not employ or permit to remain on the worksite any unfit person. Vendor shall enforce all instructions relative to use of water, heat, power, smoking prohibitions and control any use of fires as required by law. Employees must not be allowed to loiter on the premises before or after job working hours.
- d. Provide at least one employee on every job assignment with the ability to clearly speak, read, write, and understand the English language in order that KCDC's representatives may effectively communicate with the vendor.

7. **ENTRANCE TO KCDC SITES**

Only those vendor employees working on a KCDC project are allowed on KCDC's premises. Vendor employees are not to be accompanied in their work area by acquaintances, family members, assistants or any person unless said person is an authorized employee of the vendor.

8. **EQUIPMENT:**

Vendor shall provide all necessary equipment, materials, supplies, et cetera needed for the performance of the work.

9. **EVALUTION:**

KCDC will primarily evaluate the responses to this solicitation on the factors shown below. However, KCDC will arrive at the "lowest and best" solution for the final award. This may or may not entail simply awarding to the vendor quoting the lowest cost.

FACTORS	MAXIMUM POINTS
Cost	100
Total	100

All responses are subject to a determination of “responsive” and “responsible” prior to award. KCDC is the sole judge as to “responsiveness” and “responsibility” of vendors.

KCDC reserves the right to request additional information from vendors to assist in the evaluation process.

10. **GENERAL INSTRUCTIONS**

KCDC no longer inserts “General Instructions to Vendors” in the solicitation document. Instead, these instructions may be found at www.kcdc.org. Click on “Doing Business With KCDC” where you will find a link to the instructions. By submitting a response to this solicitation, the vendor accepts the responsibility for downloading, reading and abiding by the terms and conditions set forth in KCDC’s “General Instructions to Vendors.” The vendor may wish to review certain applicable HUD instructions which can also be found on KCDC’s web site.

11. **IDENTIFICATION**

The vendor’s employees shall have proper identification displayed, at all times, while on KCDC property. All employees must wear a company uniform or have picture identification badges or other company identification at all times. Vendor vehicles are to have placards (on the doors or in the windshield) that identify the company name.

12. **INSURANCE**

The contractor shall maintain, at contractor’s sole expense, on a primary and non-contributory basis, at all times during the life of the contract insurance coverages, limits, and endorsements described herein. All insurance must be underwritten by insurers with an A.M. Best rating of A-:VI or better. Upon award, the contractor shall provide Certificate(s) of Insurance to KCDC evidencing said insurance coverages.

The contractor agrees the insurance requirements herein as well as KCDC’s review or acknowledgement, is not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the contractor under this contract

- a. ***Commercial General Liability Insurance:*** occurrence version commercial general liability insurance with a limit of not less than \$2,000,000 each occurrence for bodily injury, personal injury, property damage, and products and completed operations. If such insurance contains a general aggregate limit, it shall apply separately to the work/location in this contract or be no less than \$3,000,000.
- b. Such insurance shall contain or be endorsed to contain a provision that includes KCDC, its officials, officers, employees, and volunteers as additional insureds with respect to liability arising out of work or operations performed by or on behalf of the contractor including materials, parts, or equipment furnished in connection with such work or operations. The coverage shall contain no special limitations on the scope of its protection afforded to the above-listed insureds.

The Additional Insured shall read "Knoxville's Community Development Corporation (KCDC)".

If necessary, umbrella/excess liability insurance can be used in conjunction with the general liability insurance to meet these requirements. Unless the umbrella/excess liability insurance provides coverage on a pure/true follow-form basis, or KCDC is automatically defined as an additional insured, the contractor shall add by endorsement, KCDC as an additional insured.

- c. **Automobile Liability Insurance:** including vehicles owned, hired, and non-owned, with a combined single limit of not less than \$1,000,000 each occurrence. Such insurance shall include coverage for loading and unloading hazards.
- d. **Workers' Compensation Insurance and Employers Liability Insurance:** with statutory limits as required by the State of Tennessee or other applicable laws.
- e. **Builder's Risk:** coverage shall be written on an All-Risk, Replacement Cost, and Completed Value Form basis in an amount at least equal to one-hundred percent (100%) of the projected completed value of the Work, as well as subsequent modifications of that sum due to Change Order(s). Contractor agrees to be responsible for reporting increases in the projected completed value of the work due to Change Order(s).

Coverage shall insure against the perils of fire and extended coverage and physical loss or damage including, but not limited to, theft, vandalism, malicious mischief, collapse, temporary building and debris removal including demolition occasioned by enforcement of any applicable legal requirements and shall cover reasonable compensation for architect's services and expenses required as a result of such insured loss. Insurance is to cover all property of contractor (and its subcontractors) and KCDC at the construction site. Coverage shall cover the completed value of the construction including without limitation, slab on grade, excavations, foundations, caissons, tenant finish work, and retaining walls around the perimeter of the project. Any exclusion of so-called underground damage to pipes, collapse of structure, or damage resulting from explosion or blasting shall be deleted. Such policy shall provide that any loss thereunder shall be payable to the contractor, KCDC, and others as their interests may appear and shall also have a replacement cost endorsement.

- f. **Pollution Liability Insurance:** pollution liability coverage, providing defense and indemnity coverage for bodily injury, property damage, and environmental investigation and clean-up costs for pollution conditions arising from the contractor's operations. Limit of liability not less than \$1,000,000 each occurrence and \$2,000,000 annual aggregate. The policy shall include a minimum three (3) year Discovery (tail) reporting period, and a Retroactive Date that equals or precedes the effective date of this contract or the performance of work hereunder. Coverage may be provided on a per project basis.

g. **Other Insurance Requirements:** Contractor shall:

1. Upon award, furnish KCDC with original Certificates of Insurance and amendatory endorsements effecting coverage required by this section. Certificates of Insurance shall provide a minimum 30-day endeavor to notify KCDC of cancellation when available by contractor's insurance. If the contractor receives a non-renewal or cancellation notice from an insurance carrier affording the required coverage, or receives notice that coverage no longer complies with the insurance requirements herein, contractor shall notify KCDC by email or fax within five (5) business days and provide a copy of the non-renewal for cancellation notice or written specifics as to which coverage is no longer in compliance.

The certificate holder address shall read:

Knoxville's Community Development Corporation
Attn: Contracting Officer
901 Broadway, NE
Knoxville, TN 37917

2. Provide certified copies of endorsements and policies if requested by KCDC in lieu of or in addition to Certificates of Insurance.
3. Replace certificates, policies, and endorsements for any such insurance expiring prior to completion of services.
4. Maintain such insurance from the time services commence until services are completed. Failure to maintain or renew coverage or to provide evidence of renewal may be treated by KCDC as a material breach of contract.
5. Require all subcontractors to maintain during the term of the resulting contract commercial general liability insurance, automobile liability insurance, and workers' compensation/employers liability insurance (unless subcontractor's employees are covered by contractor's insurance) in the same manor and limits as specified for the contractor with the exception of the following limits:

General Liability – limits of not less than \$1,000,000 each occurrence. If such insurance contains a general aggregate, it shall apply separately to the work/location for this contract or be no less than \$2,000,000.

Contractor shall furnish subcontractor(s)' Certificates of Insurance to KCDC without expense prior to subcontractor(s) commencing work.

6. Any deductibles and/or self-insured retentions greater than \$50,000 must be disclosed to and approved by KCDC prior to the commencement of services. Use of large deductibles and/or self-insured retentions will require proof of financial ability as determined by KCDC.
7. Provide a waiver of subrogation for each required policy herein. When required by the insurer, or should a policy condition not permit contractor to enter into a pre-loss agreement to waive subrogation without an endorsement, the policy should be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This waiver of subrogation requirement shall not apply to any policy which includes a condition specifically prohibiting such an endorsement, or voids coverage should contractor enter into such an agreement on a pre-loss basis.
8. All policies must be written on an occurrence basis.
9. Right to Revise or Reject: KCDC reserves the right, but not the obligation, to review or revise any insurance requirement, not limited to limits, coverages and endorsements based on insurance market conditions affecting the availability or affordability of coverage; or changes in the scope of work / specifications affecting the applicability of coverage.
10. No Representation of Coverage Adequacy: The coverages, limits or endorsements required herein protect the primary interests of KCDC, and the contractor agrees in no way should these coverages, limits or endorsements required be relied upon when assessing the extent or determining appropriate types and limits of coverage to protect the contractor against any loss exposures, whether as a result of the project or otherwise.

13. **INVOICING/ORDERING**

- a. All invoices are to be reflective of the awarded price structure so that KCDC can quickly compare the rates charged with the approved rates. Invoices will show the date that the work was completed on and show it accurately.
- b. Work is not to be performed until a purchase order or contract is in place. Performing work without a purchase order or contract in place may jeopardize your award.

14. **LICENSING**

Vendors must be properly licensed by the State of Tennessee and all other authorities having jurisdiction. Throughout the term of this contract, the vendor shall maintain the required licenses.

In addition to any City or County licenses that may be required, all bidders must be licensed contractors as required by the “Contractor’s Licensing Act of 1994” as mandated by the State of Tennessee. The bidder must have the necessary licensing classifications as required by the Rules of the Tennessee Board for Licensing General Contractors. An envelope coversheet is provided at the end of this document for your convenience in providing this information.

The State of Tennessee Contractor Licensing Board has told KCDC that one of the following licenses is required for this work if the project cost is \$25,000 or more. However, KCDC will abide by any opinions or rulings that the State Contractor Licensing Board issues irrespective of this initial ruling. Any subsequent ruling by the State Licensing Board automatically revises these specifications.

- BC
- BC-21
- BC-A
- BC-A,B
- BC-B
- BC-b(sm)

15. **LIQUIDATED DAMAGES**

Liquidated damages shall apply at \$100.00 per calendar day for each day beyond the scheduled completion date and such provision shall be included in the contract for construction. However, KCDC will consider explanatory information if it provides a valid reason for delays in schedule.

16. **PERMITS**

The vendor shall obtain and pay for or cause its subcontractors to obtain and pay for all permits required to complete required work. In addition, vendor shall arrange, schedule, and pay for or cause its subcontractors to arrange, schedule and pay for all required final inspections by state, local, or independent certified inspecting authorities necessary for issuance of all required KCDC utilization permits in regard to completed work.

17. **QUESTIONS**

Questions pertaining to this document should be submitted to purchasing@KCDC.org at least five days prior to the due date via email with “Questions about Roofing” in the subject line.

18. **REPORTING**

HUD requires that for federal grant awards of \$25,000 or more made after October 1, 2010, prime grant awardees (i.e. KCDC) must report associated first –tier sub-grants or sub-contracts of \$25,000 or more and prime awardee executive compensation data (of the top five paid executives) to the federal government. At this time, this applies only to “capital” funds. Upon award and if KCDC has the need, the successful vendor will be required to report this information to KCDC so that KCDC can then properly record it as the federal government requires.

19. **SAFETY**

- a. The vendor shall be responsible for providing and for the placement of barricades, tarps, plastic, flag tape and other safety/traffic control equipment required to protect the public, surrounding areas, equipment and vehicles.
- b. The vendor shall ensure that the flow of vehicular traffic be impeded as little as possible during the project. The safety of the public is of prime concern to KCDC and all costs associated are the responsibility of the vendor.
- c. The vendor shall ensure that its employees exercise all necessary caution and discretion to avoid injury to persons or damage to property.
- d. All buildings, appurtenances and furnishings shall be protected by the vendor from damage, which might be done or caused by work performed under this contract. Such damages to the foregoing shall be repaired and/or replaced by approved methods so as to restore the damaged areas to their original condition at the sole expense of the vendor.
- e. Vendor shall use caution signs as required by OSHA Regulation 1910.144 and 1910.145 at no cost to the KCDC. Caution signs shall be on-site on commencement of contract.
- f. Vendor shall comply with all other OSHA and TOSHA safety and worker safety standards that apply.

20. **SECTION 3 OF THE HUD ACT OF 1968**

Section 3 is a provision of the Housing and Urban Development Act of 1968 which requires that programs of direct financial assistance administered by the U.S. Department of Housing and Urban Development (HUD) provide, to the greatest extent feasible, opportunities for job training and employment to lower income residents in connection with projects in their neighborhoods. Further, to the greatest extent feasible, contracts in connection with these projects are to be awarded to local businesses. Section 3 is a tool for fostering local economic development, neighborhood economic improvement and individual self-sufficiency.

- a. Recipients and vendors must make a good faith effort to utilize Section 3 area residents as trainees and employees in connection with the project. Targeted recruitment and the selection of Section 3 area residents for available positions are two examples of good faith efforts to meet this requirement.
- b. Recipients and vendors must make a good faith effort to award contracts to Section 3 business concerns for work in connection with the project. An example of a good faith effort to meet this requirement is the implementation of an affirmative action plan, which includes targets for the number and dollar value for awarding contracts to Section 3 business concerns.

- c. Recipients and vendors must keep records and submit reports to HUD documenting the good faith efforts taken and the results of these actions. Examples of such documentation include letters to community organizations, employment development and business development centers, copies of solicitations for bids or proposals; and copies of affirmative action plans.
 - d. How can businesses find Section 3 residents to work for them? By recruiting in the neighborhood and public housing developments to tell about available training and job opportunities. Distributing flyers, posting signs, placing ads, and contacting resident organizations and local community development and employment agencies to find potential workers are a few effective ways of getting jobs and people together.
 - e. All contracts awarded are subject to Section 3 requirements. Vendor shall seek to fill any and all position that are needed and unfilled with residents of KCDC communities. For additional information, please go to <http://www.hud.gov/offices/fheo/section3/Section3.pdf>. The successful vendor will supply KCDC with job announcements for any position that must be filled as a result of the award of KCDC work. Additionally the successful vendor will supply the same job announcement to the Knoxville-Knox County Committee Action Committee's Workforce Connections group. These can be faxed to 544-5269.
 - f. A Section 3 resident is one who lives within a public housing authority's site. It is also people who live in an area with a HUD assisted program and whose income is below HUD's low income requirements.
 - g. A Section 3 business is one that:
 - 1. Is at least 51% owned by a Section 3 resident; or
 - 2. Employs Section 3 residents for at least 30% of its employee base; or
 - 3. Makes a commitment to sub contract at least 25% of the project's dollars to a Section 3 business.
21. **SECURITY**
The successful vendor is responsible for providing (if necessary) any and all security to equipment, materials, personnel, tools and the site that are required for this job. KCDC is not responsible for damage or losses to equipment, materials, personnel, tools or the site.
22. **SITE EXAMINATION**
- a. Vendors are required to visit the site and become fully acquainted and familiar with conditions as they exist and the operations to be carried out. The vendor shall make such investigations as necessary so that they may fully understand the scope of the work and related facilities, and complexities that may be encountered when executing the work.

- b. The failure or omission of the vendor to receive or examine the solicitation document or any part of the specifications, or to visit the site(s) and acquaint themselves as to the nature and location of the work, the general and local conditions and all matters which may in any way affect performance shall not relieve the vendor of any obligation to perform as specified herein. Vendor understands the intent and purpose hereof and its obligations hereunder and that it shall not make any claim for, or have any right to damages resulting from any misunderstanding or misinterpretation of the resulting agreement, or because of any lack of information.
- c. By submitting a response to this solicitation, each vendor is certifying that they have inspected the site and have read and are familiar with the solicitation and all appendices and addenda. The failure or omission of any vendor to receive or examine any form, instrument or document shall in no way relieve the vendor from any obligation in respect to its bid.

23. **STORAGE**

KCDC sites have very limited storage space for vendors to access. Accordingly, vendors are responsible for the storage of materials and their security. If possible, KCDC will allow vendors to use space but the safety and security of the items stored is solely the responsibility of the vendor.

24. **STORM WATER AND STREET ORDINANCES**

The City of Knoxville's Storm Water and Street Ordinances apply to this solicitation. The successful vendor will comply with all aspects of the City's ordinances. Compliance includes but is not limited to:

- a. Retaining all sediments on the project site using structural drainage controls. The cost of all drainage controls shall be considered incidental to the work.
- b. No construction or demolition related materials, wastes, spills, or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff.
- c. Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site.
- d. Eliminate erosion from slopes and channels by implementing Best Management Practices (BMPs) that may include, but not limited to, limiting grading scheduled during the wet season, inspecting graded areas during rain events, planning and maintaining vegetation on slopes, and covering erosion susceptible slopes.
- e. Additional information about NPDES, BMPs, and Land Development Manual can be found at the City of Knoxville's Storm water Engineering Division webpage:
(<http://www.cityofknoxville.org/engineering/stormwater/npdes.asp>).

- f. Vendor shall be responsible for all work, remediation, repair, and monetary penalties or fines arising out of a Notice of Violation of the City of Knoxville's Storm water and Street Ordinances. Any cost incurred by KCDC to install structural drainage controls or remedy a Notice of Violation shall be charged to the vendor and deducted from funds due for the work. KCDC shall also charge a \$50 fee per violation for related administrative costs.

25. **SUBCONTRACTORS**

- a. Subcontractors must be approved by KCDC prior to beginning work. They must not be on the Debarment List as published by the United States Department of Housing and Urban Development.
- b. Vendors may not use the services of other vendors/subcontractors not named in the bid without prior written permission from KCDC. If at any time during the term of the resulting contract, a vendor adds or changes any subcontractor, he or she shall promptly notify KCDC, in writing, of the names and addresses of each new subcontractor. The vendor shall be completely responsible for the actions of its subcontractors, the same as if the vendor directly employed them.
- c. Subcontractors must also carry the same insurance coverages as outlined herein.

26. **WAGE COMPLIANCE**

As a federally funded project, Davis Bacon Wage Requirements will apply to this work. This means:

- a. The successful vendor is required to submit certified payrolls that show compliance with the Davis Bacon requirements detailed herein. Failure to do so will be sufficient cause for withholding payment and/or termination of the contract.
- b. The successful vendor's employees must be paid at least weekly pursuant to the Davis Bacon determination listed herein.
- c. Wage Posters must be displayed at the job site. These are available at <http://www.kcdc.org/Pages/Purchasing/Purchasing.aspx>.
- d. KCDC personnel will conduct on-site interviews of the vendor's employees to ascertain that Davis Bacon provisions are being followed. KCDC will use HUD forms and record the information.

e. General Decision Information

General Decision Number	TN140093
Date	01-03-14
State	Tennessee
Construction Types	Building
Counties	Knox
Building	Building construction projects (does not include single family homes or apartments up to and including 4 stories).
Modification Number	0

f. Classifications and rates:

Classifications and Rates	Rate	Fringes
Boilermaker	\$25.73	\$17.07
Bricklayer	\$22.86	\$1.78
Carpenter (includes drywall hanging but excludes cabinet installation and scaffold building).	\$14.79	\$0.25
Drywall Finisher/Taper	\$14.09	\$0.24
Electrician (including alarm installation).	\$22.99	\$8.72
Glazier	\$14.89	\$2.69
HVAC Mechanic (Installation of HVAC unit only. Excludes the installation of HVAC Pipe and Duct).	\$12.75	\$1.49
Laborer: Common or General	\$12.62	\$2.45
Ironworker, Structural and Reinforcing	\$23.42	\$10.86
Laborer: Mason Tender-Brick	\$12.74	\$0.00
Laborer: Roof Tear Off	\$9.75	\$0.49
Operator: Bobcat/Skid Steer/Skid Loader	\$17.05	\$0.00
Operator: Mechanic	\$18.33	\$3.67
Operator: Paver (Asphalt, Aggregate and Concrete)	\$13.50	\$0.00
Operator: Roller	\$13.98	\$0.00
Pipefitter (includes HVAC Pipe Installation)	\$27.24	\$10.95
Plumber (excludes HVAC pipe installation)	\$18.73	\$4.23
Roofer: Built Up Roof	\$12.74	\$0.00
Roofer: Rubber Roof	\$16.82	\$4.77
Roofer: Single Ply Roof	\$16.50	\$0.32
Sheet Metal Worker (includes HVAC duct and metal roof installation but excludes siding/wall panel installation on metal buildings).	\$14.88	\$1.48
Tile Finisher	\$10.00	\$0.74
Truck Driver (includes dump truck, material truck and pickup truck)	\$12.56	\$0.00
Welders: Receive rate prescribed for craft performing operation to which welding is incidental.		

- g. Unlisted Classifications needed for work not included within the scope of the classifications listed above may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)). To request an additional classification:
1. Write a brief letter to KCDC (upon award) stating the title needed and the proposed pay rate. Indicate that the employees have been consulted by the rate and are in agreement with the rate.
 2. The rate bears a reasonable resemblance to other rates on the classification.
 3. If the additional classification is for a subcontractor, the subcontractor writes a similar letter to the General Contractor who then sends a cover letter to KCDC officially requesting the classification.
 4. KCDC will review the request and forward it to HUD and officially request it or KCDC will suggest that the vendor revise the request.
 5. HUD will review the request and approve it (or decline it) and send it to the Department of Labor for final approval.
 6. The Department of Labor will either approve the request or recommend a different minimum rate.
 7. HUD will notify KCDC of the decision.
 8. Should either HUD or the Department of Labor require a higher minimum rate, KCDC will notify the vendor. The higher minimum rate, if any, must be paid for work completed (back wages) and for all future work under this project.
- h. These requirements apply to all subcontractors that may be used by the successful vendor.
- i. Davis Bacon rates are locked in at the bid opening provided that a contract is awarded within 90 days. If a contract is not awarded within 90 days after the bid opening and if a new decision is released, it will apply. Modifications released 10 days or less before a bid opening are not applicable as there is not time to incorporate the changes in the bid. In all cases however, KCDC is required to adhere to Davis Bacon standards as the Department of Labor determines - irrespective of any announcements KCDC may have made.

27. **WEATHER**

Since this solicitation calls for liquidated damages if the vendor exceeds the guaranteed number of days for completion, allowances are needed for excessive inclement weather. This section is intended to provide for that.

a. EXTENSIONS OF CONTRACT TIME

If the basis exists for an extension of time in accordance with this solicitation, then an extension of time based on weather may be granted only for the number of weather delay days in excess of the number of weather days listed as the Standard Baseline for that month.

b. STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

1. The owner has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the State of Tennessee.
2. The Standard Baseline shall be regarded as the normal and anticipated number of calendar days for each month during which activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of activity for the number of days each month as listed in the Standard Baseline is to be included in the work and not eligible for an extension of the contract time.
3. The Standard Baseline is as follows:

JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
10	10	10	10	11	8	11	7	9	7	8	12

c. ADVERSE WEATHER AND WEATHER DELAY DAYS

1. Adverse weather is defined as the occurrence of one or more of the following conditions which prevents only exterior activity or access to the site within a twenty-four hour period:
 - a. Precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10”) liquid measure.
 - b. Temperatures which do not rise above 32 degrees Fahrenheit by 10:00 a.m.
 - c. Standing snow in excess of one inch (1.00”).
2. Adverse weather may include, if appropriate, “dry-out” or “mud” days when all of the following are met:
 - a. For rain above the Standard Baseline.
 - b. Only if there is a hindrance to site access or site work, such as excavation, backfill, and footings.
 - c. At a rate no greater than one make-up day for each day or consecutive days or rain beyond the Standard Baseline that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the owner.

3. A weather delay day may be counted only if adverse weather prevents work on the project for 50 percent or more of the vendor's scheduled workday, including a weekend day or holiday if the vendor has scheduled construction activity that day.

d. **DOCUMENTATION AND SUBMITTALS**

1. Submit Daily Jobsite Work Log showing which and to what extent activities have been affected by weather on a monthly basis.
2. Submit actual weather data to support a claim for the time extension obtained from nearest NOAA weather station or other independently verified source approved by the owner at the beginning of the project.
3. Maintain a rain gauge, thermometer, and clock at the jobsite. Keep daily records of precipitation, temperature, and the time of each occurrence throughout the project.
4. Use the Standard Baseline data provided in this section when documenting actual delays due to weather in excess of the average.
5. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods, and submit in accordance with the procedures for claims established by the owner.

e. **APPROVAL BY OWNER**

1. If the extension of the contract time is appropriate, it shall be affected in accordance with the provisions of this solicitation.
2. Extra costs shall not be incurred by the owner for any extra time increase to the contract.

28. **WORK HOURS**

Acceptable work hours are Monday through Friday from 7:30 a.m. until 4:00 p.m. To work additional hours or days, discuss the request with the Senior Asset Manager (Beck Fetters).

Scope of Work

SECTION 00850 – LIST OF CONTRACT DRAWINGS

The following drawings, identified as “Reroofing of: Isabella Towers Low Rise, Knoxville, Tennessee,” comprise the list of Contract Drawings:

ARCHITECTURAL

C COVER SHEET

A1 ROOF PLAN, DETAILS, AND NOTES

A2 ROOF DETAILS

SECTION 01010 - SUMMARY OF THE WORK

1.1 **WORK INCLUDED:**

- A. Furnish all labor, materials and equipment, and perform all work to construct "Reroofing of: Isabella Towers Low Rise in Knoxville, Tennessee", as specified herein and shown on the accompanying drawings. The replacement of masonry, and the removal and replacement of all roofing materials and edge metal shall be constructed complete and ready for occupancy except for the items specifically excluded in "Work Not Included".
- B. The work shall include masonry, plumbing, heating, ventilating, and air-conditioning; electrical work; special equipment as specified; and site improvements as shown and specified.
- C. Patch any existing paving, curbs, grass, or existing work damaged by construction.

1.2 **WORK NOT INCLUDED:**

- A. The following items of work will be provided by the Owner or by others under separate contracts:
 - 1. Relocation of existing wiring and equipment, if necessary.
 - 2. Any other items noted on the drawings as “N.I.C.” or “Not In Contract”.
- B. The following work in connection with the items listed in paragraph 1.2A preceding shall be part of the General Contract work:
 - 1. Notification of the Owner prior to reroofing to coordinate relocation or removal of existing electrical wiring and weatherheads, telephone and cable wiring, and similar roof mounted utilities.
 - 2. Coordination of all tree trimming by the Owner as required for all reroofing work.

1.3 OCCUPANCY OF THE EXISTING BUILDING DURING CONSTRUCTION:

- A. The operation of the existing building must be maintained continuously during the performance of the contract.
- B. The contractor shall schedule and organize his work in such a manner and use such methods that will interfere as little as possible with the continuous operation of the existing building. The work schedule shall be submitted to the owner or owner's representative for approval and shall be continuously updated as required during the course of the work, keeping the owner apprised of all changes.
- C. Access for service vehicles must be maintained to the existing building.

1.4 CONTRACTOR'S USE OF PREMISES:

- A. Before construction is started the contractor shall confer with the architect and the owner and arrange for available trucking and storage space for the delivery of materials, storage space for materials and equipment, and parking space for his workmen.
- B. Construction operations and storage of materials and equipment shall be restricted to areas of the site mutually agreed upon and in such a manner as not to block access of fire-fighting equipment to the existing building and facilities.
- C. Construction vehicular traffic and the operation of construction equipment such as cranes, bulldozers, and other similar equipment shall be carefully supervised and controlled to avoid damage to existing structures and facilities which are to remain in place.
- D. Maintain all existing utilities indicated to remain. Do not interrupt existing utilities except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to owner and governing authorities.

1.5 VERIFICATION OF DIMENSIONS:

- A. Dimensions, elevations, and locations shown on the drawings in reference to existing structures and utilities are the best available data obtainable but are not guaranteed by the Architect or the owner and the architect and the owner will not be responsible for their accuracy.
- B. Before proceeding with any work dependent upon the data involved, the contractor shall field check and verify all dimensions, grades, line levels, or other conditions of limitations at the site and building to avoid construction errors. If any work is performed by the contractor or by his subcontractors prior to adequate verification of applicable data, any resultant extra cost for adjustment of work to conform to existing limitations shall be borne by the contractor without reimbursement or compensation by the owner.

1.6 CONTROL POINTS AND LAYOUT:

- A. The initial lines, grades, and dimensions necessary for the location and control of the work under the contract are shown on the contract drawings.
- B. The contractor shall provide for himself all additional and supplementary lines and grades as may be necessary to layout the work and insure proper control of the work until completed. It shall be the Contractor's responsibility to satisfy himself as to the accuracy of all measurements before construction.

1.7 SUBSTANTIAL COMPLETION OF THE WORK:

- A. Upon substantial completion of any phase of the work, the owner shall assume complete responsibility for the maintenance and operation of the heating, ventilating and air conditioning system and service utilities in that portion of the project.
- B. The owner shall also become responsible for all other maintenance and damage and ordinary wear and tear and, with the exception of items under guarantee, the cost of repairs or restoration during the period between substantial and final completion.
- C. The owner shall have the responsibility to have in effect all necessary insurance for protection against any losses not directly attributable to the contractor's negligence.
- D. Upon substantial completion, payments for work in the substantially complete portion of the work shall be released to the contractor, except for the retainage and an amount to cover the cost of the incomplete or deficient items included in the punch list made at the inspection to determine substantial completion. This amount shall be approximately the value of the punch list items as estimated by the architect.
- E. The contractor shall arrange a schedule so that punch list items are completed in the designated time by working during regular working hours. The contractor shall be afforded access to the occupied portion of the building to perform this work during regular working hours.

1.8 BUILDING PRODUCTS USE:

- A. It is the responsibility of the contractor to inform himself concerning the application of the products he uses to follow the directions of the architect and manufacturer.
- B. In the event of disagreement between the contract documents and the manufacturer's directions, the contractor will obtain written instructions from the architect before proceeding with the installation.
- C. If the contractor has knowledge of or reason to believe the likelihood of failure, he will transmit such knowledge to the architect, and ask for written instructions before proceeding with the work.

1.9 OWNERSHIP OF REMOVED MATERIALS AND EQUIPMENT:

All removed existing materials and equipment designated to be removed which are not to remain the property of the owner or are not noted to be reused in the new work shall become the property of the contractor and shall be removed from the premises and site and disposed of by him.

1.10 SEPARATE CONTRACTS:

A. The owner may award separate contracts, including but not limited to: temporary relocation and reinstallation of cable television conduit, removal of abandoned electrical weatherheads and wiring, relocation and painting of utility or cable lines, and removal of abandoned roof curbs in connection with the project. The work in these separate contracts will proceed simultaneously with the execution of this contract. The contractor shall coordinate operations with the separate contractors. The contractor will be required in the arrangement for the storage of materials and in the detailed execution of the work. The contractor, including his subcontractors, shall keep himself informed of the progress and the detailed work of the separate contractors and shall notify the owner immediately of the lack of progress or defective workmanship that will interfere with his own operations. Failure of the contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by the separate contractors shall be construed as acceptance of the separate contractors progress, and of the state of the work as being satisfactory for proper coordination with his own work.

B. The scope of the work of the contractor and the separate contractor(s) shall be as follows:

All coordination of new work that must interfere with the work of separate contracts is included in this contract. The contractor shall be responsible for coordination and ample notification and scheduling of any and all work of separate contractors in connection with all new construction. The contractor shall receive and store equipment for the security, telephone and computer equipment subcontractor(s).

C. The separate contractors will provide competent foreman or supervisors for the installation of their materials and they are to confer with the contractor and his subs and other separate contractors where required in regard to connections and installations.

SECTION 01030 - SPECIAL PROJECT PROCEDURES

1.1 PROGRESS SCHEDULE:

A. In addition to the progress schedule required by Paragraph A of Clause 6 of the most current edition of General Conditions of the Contract for Construction Public Housing Programs (HUD-5370), the contractor shall also submit his proposed scheme of work for approval, describing proposed methods and sequences of work from beginning to completion of the work and their correlation with the owner's requirements.

B. When the contractor's proposed sequence of work has been approved by the owner, it shall become the time schedule for the work and shall be adhered to as closely as possible by both the contractor and the owner, except that mutually agreeable modifications may be made from time to time to meet unforeseen exigencies.

1.2 WORK HOURS:

Acceptable work hours are Monday through Friday from 7:30 a.m. until 6:00 p.m. Work on Sundays or holidays will require advance approval by KCDC.

1.3 OBSTRUCTIONS:

All obstructions encountered during the construction of the contract work shall be overcome by the contractor by removal or alteration of work in place, by adjustments in the new work, or by temporary removal and reinstallation of existing work.

1.4 CLEANING UP:

- A. Upon completion of the work, remove spots, stains, dirt, and dust from finished surfaces, both new and existing, including the surfaces of all existing machinery, equipment, and exposed piping that have been soiled by the construction.
- B. Clean and mop hard surface flooring and resilient flooring and vacuum clean carpet flooring affected or soiled by the work under this contract.
- C. Wash all glass and clean plumbing fixtures, lighting fixtures, and mechanical equipment affected or soiled by the work under this contract.
- D. Comply with all special cleaning instructions contained in Section 01710 - Cleaning and in the various other sections of the specifications.

SECTION 01040 - COORDINATION

1.1 COORDINATION OF WORK OF SUBCONTRACTORS:

- A. It is the responsibility of the contractor to coordinate the work of his subcontractors. To this end the contractor shall require that the subcontractors examine and familiarize themselves with the architectural drawings as well as the shop drawings and that they frequently consult with each other and all other trades so that the work can be properly coordinated.
- B. The contractor shall carefully check the work of his subcontractor in order to deliver to the owner the contract work complete and properly installed in conformance with the contract requirements.

1.2 CUTTING AND PATCHING:

- A. Cut and patch existing work that is to remain in place as necessary for the installation of new work.
- B. It is the intention of the contract that conduit, sleeves, thimbles, and chases for the mechanical (including new roof drain leaders) and electrical work be installed in new concrete, masonry or stud wall work as the work progresses. The applicable subcontractors shall respectively install the required conduit, sleeves and thimbles in concrete forms and in masonry work and shall inform the contractor of the size and location of any required chases to be formed in the concrete and masonry work. If this procedure is not followed, the subcontractors shall do all cutting of new concrete and masonry work required to install their work.
- C. Cutting of new work shall be held to the minimum necessary and shall be done neatly. The contractor shall be responsible for the proper patching and finishing of all cut work whether or not cut by his own workmen or by subcontractors.

1.3 PRECONSTRUCTION CONFERENCE:

Prior to beginning work under the contract, the contractor, together with representatives of his major subcontractors, shall meet with the owner's representatives and the architect to discuss scheduling the work, procedures, use of site and other matters pertaining to construction administration.

SECTION 01060 - REGULATORY REQUIREMENTS

1.1 CODES:

- A. Work shall conform to the requirements of the latest edition of the International Building Code, A.C.I., A.I.S.C., A.W.S., A.P.A., and all other applicable codes and standards referenced in this and other sections of the specifications or on the drawings. Whether or not a particular edition is referenced, it is the intention that these be the latest editions as adopted by the governing agency under whose jurisdiction the project is to be constructed. The latest edition in effect on the date approval is granted for construction to begin.
- B. Plumbing and gas piping work shall conform to the requirements of the International Plumbing Code and Fuel and Gas Code and the Southern Standard Plumbing and Gas Codes, latest revisions.
- C. Electrical work shall conform to the requirements of the International Electrical Code and the National Electric Code, NFPA No. 70-2005.
- D. Copies of Regulations: Obtain copies of the following regulations and retain at the Project site to be available for reference by parties who have a reasonable need:

1. 2012 International Building Code
2. 2012 International Plumbing Code
3. 2012 International Mechanical Code
4. 2012 International Fire Prevention Code
5. 2009 ICC/ ANSI A117.1 Accessible Buildings Code (By Reference)
6. 2012 International Existing Building Code
7. 2008 National Electric Code
8. 2012 International Energy Conservation Code

1.2 CODE STANDARDS:

- A. Fire doors shall conform to requirements of NFPA No. 80, Standards for Fire Doors and Windows.
- B. Heating, ventilating and air conditioning work shall conform to requirements of NFPA NO. 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

1.3 REGULATIONS:

- A. Electrical work shall conform to applicable regulations of the State of Tennessee, Department of Insurance, Division of Fire Prevention; and to applicable regulations of the Local Utility Company.
- B. All coatings shall comply with the Consumer Protection Safety Commission "Ban of Lead Containing Paint" (16CFR1303).
- C. All workmen applying paint shall be equipped with respirators in accordance with the applicable NIOSH/MSHA Schedule.
- D. All work shall be performed in accordance with National Emissions standards, and all local, state, federal, OSHA, EPA, and NIOSH regulations.

1.4 MATERIAL AND TESTING STANDARDS:

Components of the work shall conform to the most current editions of the requirements of American Society for Testing and Materials (ASTM) Standards, American National Standards Institute (ANSI) standards, and Trade Association Standards, as listed in the various other sections of the specifications.

1.5 ASBESTOS REGULATIONS:

The removal, handling, and disposal of all asbestos containing materials shall conform to the requirements of all federal, state, and local agencies, including but not limited to: the United States Environmental Protection Agency (USEPA), the United States Occupational Safety and Health Administration (OSHA), and the Tennessee Occupational Safety and Health Administration (TOSHA). The regulations of the agency having jurisdiction over the project shall take precedence.

1.6 PERFORMANCE STANDARDS:

- A. All ferrous metal surfaces shall be prepared in accordance with all applicable sections of the Steel Structures Painting Council (SSPC), 4400 Fifth Avenue, Pittsburgh, Pennsylvania, 15213.
- B. Application of coatings shall comply with all applicable standards of the National Paint and Coatings Association (NPCA). 1500 Rhode Island Ave., N.W. Washington D.C., 20005.
- C. See Section 07540 for additional performance standards relating to the new roofing system.

1.7 MANUFACTURER'S RECOMMENDATIONS:

When work in accordance with the manufacturer's recommendation is specified, a copy of these recommendations shall be kept in the job site office

1.8 SUBMITTALS:

Permits, Licenses, and Certificates: For the owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

SECTION 01300 - SUBMITTALS

1.1 SCHEDULE OF VALUES:

The schedule of values specified in Paragraph C, Clause 27 of the HUD-5370 (01/2013) General Conditions shall be divided into no less than one line item for each section of the specifications (except Division 1 sections).

1.2 APPLICATIONS FOR PAYMENTS:

Applications for payments shall be submitted on AIA Document G702, Application and Certificate for Payment, supported by AIA Document G703, continuation sheet, and by separate lists of materials stored at the site and materials stored off the site.

1.3 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

- A. GENERAL: See Paragraphs d, e, f, g, h, and i of Clause 9 of the HUD-5370 (01/2013) General Conditions for provisions pertaining to shop drawings, product data and samples.
- B. IDENTIFICATION: All submittals shall be clearly identified with the name of the project, the supplier's name, the contractor's name, and the location of material or equipment in the building. All shop drawings shall be dated and numbered. All samples shall have a label or tab containing the required information firmly affixed thereto.
- C. DELIVERY: All submittals shall be accompanied by a letter of transmittal containing an enumeration and description of the submittals and, unless otherwise specified, shall be delivered to:

Thomas Caldwell, Architect
6500 Papermill Drive, Suite 211
Knoxville, Tennessee 37919

Shop drawings shall be submitted to the Architect only through the General Contractor. Samples will be accepted directly from suppliers, provided that the Architect is notified by the Contractor that such delivery has been authorized by the Contractor.

- D. CONTRACTOR'S REVIEW: Shop drawings submitted without evidence that they have been reviewed by the contractor, as specified in Paragraph e, Clause 9 of the HUD-5370 (01/2013) General Conditions, or without proper identification as specified herein, will be returned to the contractor without action by the architect and shall be properly resubmitted. When the phrase "by others" appears on a shop drawing, the contractor shall indicate on the shop drawing who is to furnish the material or operation so noted, before submitting the drawing.
- E. NUMBER OF SHOP DRAWINGS REQUIRED: Not less than six copies of shop drawings and product data for mechanical and electrical work and not less than five copies of shop drawings for other work shall be submitted to the architect for approval and a like number of such submittals requiring corrections shall be resubmitted until final approval.

Additional copies of approved shop drawings shall be furnished as required for coordination of the work of the various trades.

- F. SHOP DRAWINGS AND SAMPLES REQUIRED: Shop drawings, product data and samples will be required for items listed hereinafter in the various sections of the specifications. The architect reserves the right to request samples of proposed substitutions for materials or equipment specified, whether or not samples of the materials and equipment specified are called for.
- G. ARCHITECT'S REVIEW OF SHOP DRAWINGS: In checking shop drawings, the architect will not check dimension, quantities, electrical characteristics of equipment, details as strictly set forth in the specifications, nor coordination of work between various trades, these being the responsibility of the contractor. The architect may call attention to obvious discrepancies between the shop drawings and the contract drawings and specifications concerning such items as dimensions and quantities but shall assume no responsibility for the accuracy thereof.
- H. TIME REQUIRED FOR ARCHITECT'S REVIEW: Shop drawings shall be submitted in time to allow not less than two weeks for processing by the architect, plus an additional week for mechanical and electrical drawings.
- I. ARCHITECT'S ACTION: The stamps of the architect on returned shop drawings shall be interpreted as follows:

- (1) PROCEED AS SUBMITTED: No corrections. Proceed with the work.
- (2) PROCEED AS NOTED: May proceed with work as corrected; shop drawings bearing this stamp must be revised and resubmitted for final approval.
- (3) REVISE AND RESUBMIT: No work shown shall be fabricated or furnished until shop drawings have been revised and resubmitted for further checking or approval.
- (4) REJECTED-RESUBMIT: Work shown is not in accordance with Contract requirements and is rejected. Make new submittals.

1.4 RECORD DRAWINGS:

In addition to the record drawings specified in Clause 10 of the HUD – 5730 (01/2013) General Conditions, the contractor shall assure that the record drawings for the mechanical and electrical work, as specified under Division 15 and 16 respectively, are properly maintained by his subcontractor and upon completion of the work shall deliver them to the architect for the owner.

1.5 CONTRACT CLOSE-OUT SUBMITTALS:

As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, including the Release of Retainage, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the architect, in the form and number of copies specified, prior to or with the contractor's request for final payment. Submittals shall include but not be limited to:

- (1) General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, as specified in Clause 27, Paragraph (i) of the HUD-5370 (01/2013) General Conditions. These documents shall be addressed to the Owner, and shall be original signed documents and not reproduced copies.
- (2) Written guarantees and warranties as specified in the various other sections of the specifications.
- (3) Record drawings as specified in the General Conditions and in Divisions 15 and 16.
- (4) Three copies of operation and maintenance data for mechanical equipment and electrical equipment.

- (5) Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project.

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.1 UTILITIES SERVICES FOR CONSTRUCTION PURPOSES:

- A. The contractor may establish temporary utilities as required for construction purposes. The utility costs will be paid by the contractor.
- B. The Contractor shall furnish and install all temporary piping and wiring required for the use of these services during construction and upon completion of the work shall remove such temporary piping and wiring.
- C. If necessary, with prior approval, the use of existing services shall be in such a manner and by such methods that will not interrupt the services to any of the existing building's facilities that are to remain in operation during construction.

1.2 BARRICADES AND SPECIAL CONTROLS:

- A. Provide temporary barriers, fences, and warning signs around the sites of new buildings to control access of unauthorized persons to work areas, and as required by law. Special care shall be taken to provide adequate barriers and warning signs to prevent access of unauthorized persons to work areas where hazardous work is being performed.
- B. Provide temporary barriers and warning signs at excavations that might be left open during non-working hours, including warning lights at night.

1.3 CONSTRUCTION AIDS:

Provide necessary staging, scaffolding, and hoisting equipment and temporary walkways and ladders required for installation of the work under the Contract.

1.4 TEMPORARY BUILDINGS:

- A. Provide temporary field office and storage sheds as required to carry on the work. Adequate space shall be provided in the field office for convenient use and storage of Contract Drawings and Specifications, approved shop drawings, samples, and field records. Truck trailers may be used for temporary field office and storage enclosures.

- B. Upon completion of the work, all temporary buildings shall be removed and the area of the site that they occupied shall be restored to its condition at the commencement of work under the Contract.

1.5 SANITARY FACILITIES:

- A. Provide adequate temporary toilet facilities for the use of workmen, conforming to applicable laws, ordinances, and governmental regulations.
- B. Upon completion of the work, temporary toilet facilities shall be removed from the site.
- C. If approved by the Owner in advance, the Contractor may utilize the existing toilet facilities within the existing building instead of temporary facilities.

1.6 TEMPORARY ENCLOSURES:

Provide temporary weathertight closures for all exterior openings during demolition and reroofing of the existing building when it is necessary to protect the work from the weather and to maintain egress from the building. Provide weathertight and security protection of the existing building until such time as the new construction is able to provide weathertightness and security. Provide safety barriers as required to protect the occupants of the existing building.

1.7 TEMPORARY HEAT AND VENTILATION:

- A. Provide temporary heat and ventilation as necessary for protection and drying out of the work and to allow work to be prosecuted in cold weather.
- B. Heat shall be provided by means of approved temporary heating equipment which in installation and operation will not damage the work. Provide adequate and proper fuels and all services required to furnish heat as required. Salamanders shall not be used inside the building. Heaters used to dry out or protect freshly placed concrete shall be of a type and shall be so ventilated as to prevent carbon dioxide from damaging concrete.
- C. Costs of providing temporary heat shall be borne by the Contractor.

1.8 RODENT AND VERMIN CONTROL:

- A. Provide on the project site ample and suitable refuse containers with covers. The Contractor shall be responsible for containing and removing from the site all refuse from meals eaten on the site and other rodent or vermin attracting refuse.
- B. During the construction period precaution shall be taken as necessary to control the entry and breeding of rodents and vermin in the existing building.

- C. If, within three months after occupancy of the building, any portion of the new or existing building is found to be infested by rodents or vermin, the Contractor shall bear the cost of extermination.

1.9 PROTECTION:

- A. Weather Protection: Provide at all times protection against rain, wind, storms, frost, or heat so as to maintain all work, materials, equipment and fixtures free from injury or damage. At end of days work, all new work likely to be damaged by weather conditions shall be covered.
- B. Water Protection: Provide at all times protection of excavation, trenches, and building from damage by rain water, spring water, ground water, backing up of drains or sewers, and all other water. Provide all pumps, equipment, temporary drains or dams, and enclosures necessary to provide this protection.

1.10 TELEPHONE:

The Contractor shall provide a single party telephone for the use of all of the Contractor's personnel concerned with the construction of the project and service shall be maintained from start to completion of the work. The cost of the telephone service shall be paid by the Contractor. The Contractor shall provide the phone number(s) to the Owner and the Architect at the beginning of the project.

SECTION 01600 - MATERIALS AND EQUIPMENT

1.1 STORAGE OF MATERIALS AND EQUIPMENT:

- A. Storage of materials and equipment, location of field office, space for truck deliveries and parking of workmen's cars shall be restricted to areas of the site mutually agreed upon by the Contractor and the Owner prior to commencement of construction.
- B. Storage of materials and equipment and truck deliveries shall not interfere with normal pedestrian and vehicular traffic.
- C. Upon completion of the work, all damage to existing ground cover, grass, paving, site improvements, or existing structures resulting from the storage of materials and equipment, construction vehicular traffic, or other construction operations under the Contract shall be repaired by the Contractor to its condition at commencement of work under the Contract.

1.2 PROTECTION OF MATERIALS AND EQUIPMENT:

- A. Materials and equipment stored on the site that are to be incorporated in the work shall be adequately protected from damage by the weather or by construction operations.
- B. Materials subject to damage by water shall be blocked off the ground and protected with waterproof coverings, stored in weathertight floored sheds or in the building after it is enclosed.

- C. Material that is subject to damage by soiling or by exposure shall be stored as to prevent physical damage to the materials and equipment.
- D. Materials and equipment shall be so transported, handled, and stored as to prevent physical damage to the materials and equipment.
- E. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.
- F. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.
- G. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.3 **SUBSTITUTIONS:**

All materials and equipment incorporated in the work shall be as specified, except such substitutions that are approved as provided by the provisions for substitutions set forth in the General Conditions and in Section 01630 Product Options and Substitutions.

1.4 **REPAIRS AND REPLACEMENTS:**

- A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

SECTION 01630 – PRODUCT OPTIONS AND SUBSTITUTIONS

1.1 **SUMMARY:**

- A. This section describes product options available to bidders and the Contractor, plus procedures for securing approval of proposed substitutions.
- B. Related work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions and sections in Division 1 of these specifications.
 - 2. Solicitation Document C provides space for the bidders to propose substitutions prior to award of the Contract.

3. The "Substitution Request Form" in Solicitation Document D shall be used by the Contractor to propose substitutions after award of the Contract. Other types of forms are not acceptable.
4. Make submittals in accordance with pertinent provisions of Section 01300.

1.2 PRODUCT OPTIONS:

- A. The Contract is based on standards of quality established in the Contract Documents.
 1. In agreeing to the terms and conditions of the Contract, the Contractor has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
 2. Neither the Owner nor the Architect has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.
- B. Materials and/or methods specified by name:
 1. Where materials and/or methods are specified by naming one single manufacturer and/or model number, without stating that equal products will be considered, only the material and/or method named is approved for incorporation into the work.
 2. Should the Contractor demonstrate to the approval of the Architect that a specified material or method was ordered in a timely manner and will not be available in time for incorporation into this work, the Contractor shall submit to the Architect such data on proposed substitute materials and/or methods as are needed to help the Architect determine suitability of the proposed substitution.
- C. Where materials and/or methods are specified by name and/or model number, followed by the words "or an equal approved in advance by the Architect":
 1. The material and/or method specified by name establishes the required standards of quality;
 2. Materials and/or methods proposed by the Contractor to be used in lieu of materials and/or methods so specified by name shall in all ways equal or exceed the qualities of the named materials and/or methods;
 3. Proposed substitutions by bidders shall be described on Solicitation Document C submitted at time of General Contract bid.

4. Proposed substitutions by the Contractor shall be described on the "Substitution Request Form" in Solicitation Document "D" after the award of the General Contract.

D. The following products do not require further approval except for interface within the work:

1. Products specified by reference to standard specifications such as ASTM and similar standard;

2. Products specified by manufacturer's name and catalog model number.

E. Where the phrase "or equal," or "or equal as approved by the Architect," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this work by the Architect.

F. The decision of the Architect shall be final.

1.3 REIMBURSEMENT OF ARCHITECT'S COSTS:

A. In the event substitutions are proposed to the Architect after the Contract has been awarded, the Architect will record all time used by the Architect and the Architect's consultants in evaluating each such approved substitution.

B. Whether or not the Architect approves a proposed substitution, the Contractor promptly upon receipt of the Architect's billing shall reimburse the Owner via a credit to the Contract at the direct cost to the Architect and the Architect's consultants for all time spent by them in evaluating the proposed substitution.

1.4 SUBSTITUTIONS PROPOSED AFTER AWARD OF CONTRACT:

A. Substitutions will not be considered when indicated on shop drawings or product data submittals without separate formal request complying with "submittal procedures" specified in this section.

B. Substitutions will not be considered unless submitted through the General Contractor.

C. Additional studies, investigations, submittals, redesign and/or analysis by the Architect caused by the requested substitutions shall be paid by the Contractor at no expense to the Owner via a credit to the Contract.

D. Substitute products shall not be ordered or installed without written acceptance.

E. Only one request for substitution for each product will be considered. When substitution is not accepted by the Architect, provide the specified product.

F. Architect's decision shall be final concerning the acceptability of all substitutions.

1.5 DELAYS:

Delays in construction arising by virtue of the non-availability of a specified material and/or method will not be considered by the Architect as justifying an extension of the agreed time of completion.

SECTION 01710- CLEANING

1.1 SUMMARY:

- A. Throughout the period of work under this contract, maintain the building and site in a standard of cleanliness as described in this Section.
- B. Related work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
 - 2. In addition to standards described in this section, comply with requirements for pre-cleaning, preparation, and final cleaning as described in Section 09900 - Painting, and in pertinent other sections of these specifications.

1.2 QUALITY ASSURANCE:

- A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.
- B. In addition to the standards described in this section, comply with pertinent requirements of governmental agencies having jurisdiction.

1.3 CLEANING MATERIALS AND EQUIPMENT:

Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

1.4 COMPATIBILITY:

Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

1.5 PROGRESS CLEANING:

- A. General:
 - 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.

2. Do not allow accumulation of scrap, debris, waste materials, and other items not required for construction of the Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designed for their storage.
2. Weekly, and more often if necessary, inspect all arrangements of subparagraph 1.5-a-1 above.
3. Maintain the site in a neat and orderly condition at all times.

C. Structures:

1. Weekly, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep interior spaces clean.
 - a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held- broom.
3. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.
 - a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material which, in the opinion of the Architect, may be injurious to the finish floor material.

1.6 FINAL CLEANING:

- A. "Clean," for the purpose of this article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- B. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 1.5 above.
- C. Site:
 - 1. Unless otherwise specifically directed by the architect, broom clean paved areas on the site and public paved areas adjacent to the site.
 - 2. Completely remove resultant debris.
- D. Structures:
 - 1. Exterior:
 - a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, paint droppings, paint overspray, and other foreign matter.
 - b. Remove all traces of splashed materials from adjacent surfaces.
 - c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
 - d. In the event of stubborn stains not removable with water, the architect may require light sandblasting or other cleaning at no additional cost to the owner.
 - 2. Interior :
 - a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
 - b. Remove all traces of splashed material from adjacent surfaces.
 - c. Remove paint droppings, spots, stains, and dirt from finished surfaces.
 - 3. Glazing: Clean outside surface of all glass, plexiglass, et cetera inside surfaces that have been soiled as a direct result of work under this contract.
 - 4. Polished Surfaces: To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

- E. Schedule final cleaning as approved by the Architect to enable the Owner to accept a completely clean work.

SECTION 02110 – GENERAL DEMOLITION

2.1 GENERAL:

Applicable provisions of the General Conditions, and Division 1, General Requirements, apply to the work under this section.

2.2 WORK INCLUDED:

- A. Do all demolition work required to core drill existing concrete roof deck and brick walls, remove existing coping, remove existing counterflashing, termination bars, conductor heads, downspouts, existing skylights, and any other necessary items to install the new work.
- B. Contractors submitting proposals shall determine the quantities of demolition work required by personal observation at the building and on the site.

2.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Remodeling construction work and patching is included within the respective sections of specifications, including removal of materials for re-use and incorporated into remodeling or new construction.
- B. Relocation of pipes, conduits, ducts, other mechanical and electrical work are specified by respective trades.

2.4 REQUIREMENTS OF REGULATORY AGENCIES:

Demolition work shall conform to requirements of the International Building Code, all Federal Regulations, and Requirements, and regulations of HUD, KCDC, and the City of Knoxville.

2.5 JOB CONDITIONS:

- A. Coordinate with owner and architect and provide detailed sequence of demolition and removal work to ensure uninterrupted progress of owner's on site operations. The owner will be continuously occupying areas of the existing building and site immediately adjacent to areas of selective demolition. Conduct selective demolition work in a manner that will minimize need for disruption of the building's normal operations. Provide a minimum of 72 hours advance notice to owner of demolition activities which will severely impact the owner's normal operations.
- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished. Conditions existing at time of commencement of contract will be maintained by the owner insofar as practicable. However, variations within structure may occur by owner's removal and salvage operation prior to start of selective demolition work.

- C. Provide temporary barricades, warning signs, and other forms of protection as required to protect owner's personnel and general public from injury due to selective demolition work.

Provide protective measures as required to provide free and safe passage of owner's personnel and general public to and from occupied portions of the existing building.

Erect temporary covered passageways as required by authorities having jurisdiction.

Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain.

Protect from damage existing finish work in the existing building that is to remain in place during demolition operations.

Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip temporary partitions with dustproof doors and security locks if required.

- D. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to the owner.

- E. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with road, streets, walks, and other adjacent occupied or used facilities.

Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations. No removed debris shall be deposited or temporarily stored on walks, drives, adjacent buildings, or roofs.

- F. Utility Services: Maintain existing utilities indicated to remain and protect against damage during demolition operations. Do not interrupt existing utilities except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities and the owner.

2.6 PREPARATION:

- A. Verify that areas to be demolished are unoccupied and discontinued in use and that any active utilities supported by the structures have been relocated.
- B. Arrange for and verify termination of utility services that are to be discontinued in use, including removing meters and capping lines.
- C. Verify that the owner has removed all equipment that they intend to salvage themselves.

2.7 DEMOLITION:

- A. Perform demolition in such a manner and by such methods that will avoid and prevent spread of dust and flying particles and hazard to persons and property. Do not use explosives for any demolition work.
- B. Wet debris as necessary to limit dust to lowest practicable level. Do not use water to extent causing flooding, contaminated runoff, or icing.
- C. All existing fixtures designated for relocation should be removed and stored in such a manner as to preserve the finish and condition so that the fixtures can be relocated without damage.

2.8 DISPOSAL OF DEBRIS

- A. Provide for disposal of all existing materials designated to be removed.
- B. Remove demolition debris from the site and premises as soon as practicable.
- C. Transport demolition debris to an off-site disposal area, or make arrangements with local waste disposal company for on-site trash receptacles.
- D. Do not burn, store, or dispose of demolition debris on the site.

SECTION 02490 - SEEDING

2.1 GENERAL:

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

2.2 WORK INCLUDED:

Furnish all labor, materials, equipment and services to seed all areas indicated on the site plan to be grass and any areas disturbed by construction.

2.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Cleaning is specified in Section 01710.
- B. Roof Removal and Demolition is specified in Section 02051.
- C. General Demolition is specified in Section 02110.

2.4 SEED:

Seed mix shall be 100% Kentucky 31 Fescue (95% pure). Seed mix shall be free from noxious weed seeds, and re-cleaned; Grade A recent crop seed; treated with appropriate fungicide at time of mixing. Deliver seed to site in sealed containers with dealer's guaranteed analysis.

2.5 SEEDING:

- A. Remove stones, clods, debris, and other refuse from surface of area to be seeded and do all additional grading and trimming required to remove surface irregularities. Then rake and harrow to loosen soil to a depth of not less than 3".
- B. Apply a mixture of one part commercial fertilizer and two parts ground limestone at a rate of 50 pounds per 1,000 square feet and mix into topsoil. Spread grass seed uniformly at a rate of 4 pounds per 1,000 square feet. Lightly cover the seed by raking and compact the surface by rolling. Cover seeded areas with a light layer of straw and sprinkle with water. Keep areas watered and moist until grass is established.
- C. Protect turf areas by erecting temporary fences, barriers, signs, and similar protection as necessary to prevent trampling.

2.6 MAINTENANCE:

Maintain seeded areas for not less than 60 days after sowing and then until final completion of the contract if the contract is not completed within the 60-day period.

SECTION 02051 - ROOF REMOVAL AND DEMOLITION

2.1 GENERAL:

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

2.2 SCOPE OF THE WORK

- A. The contractor shall completely remove the existing roofing felt and built-up roof system to the structural deck of each roof specified and hand broom clean the existing roof deck completely.
- B. Perform demolition in such a manner and by such methods that will avoid and prevent: spread of dust and flying particles, hazards to persons and property, and loud or prolonged noise. Avoid interference with the operation of the facility.
- C. Protect existing work that is to remain in place from damage by demolition operations. Any owner's equipment and furniture that cannot be temporarily removed from the work areas shall be covered with drop cloths, tarpaulins, or other adequate protective coverings.
- D. Work areas in the building shall be cleaned daily after the rubbish and debris is removed. Walks and drives shall be kept in a neat and clean condition, free from rubbish and debris.
- E. It is noted that the existing fabric/asphalt/felt roofing and/or parapet flashing on the original building may contain asbestos fibers. Any and all removal of the existing asbestos/asphalt flashing as part of the work under this contract shall be conducted in accordance with NESHAPS publication EPA-340/1-92-013 (TRC Ref. No. 1-456-019) "A Guide to Normal Demolition Practices

Under the Asbestos NESHAP" as published by the Stationary Source Compliance Division of the U.S. Environmental Agency, Washington D.C. 20460, September 1992 and The Environmental Protection Agency's "Interpretive Rule for Roof Removal Operations Under the Asbestos NESHAP," 40 CFR Part 61, published June 17, 1994.

2.3 WORK INCLUDED:

- A. Carefully remove the existing roofing felt built-up roof systems, existing insulation, and flashings as noted on the drawings.
- B. Underlying materials: If during the performance of the work under this section, water damaged decking, sheathing, and/or framing are discovered, the architect and the owner shall be notified immediately and the quantity of water-damaged materials to be removed and replaced shall be determined in accordance with measurements made by the contractor with the architect present. Damaged underlying materials shall be replaced as required to restore the roof deck to level; true, and damp-proofed condition.
- C. Provide all labor, material, equipment, and tools as required to remove the existing roof system and existing fans and curbs and prepare the existing roof deck for complete reroofing. Correct all deficiencies and prepare roof deck to receive the new EPDM Roof Systems as specified in Section 07540.
- D. Some existing roof drains may be scheduled to be abandoned as indicated on the drawings. The contractor shall remove the drain body and any piping above the deck and cap the abandoned remaining piping below the deck. The contractor shall cover the opening in the deck with 20 gauge galvanized sheet metal 12 inches larger than the opening. Attach sheet metal to deck at the corners with screws or nails.
- E. Provide for the proper disposal of all existing materials designated to be removed. Use approved trash receptacles in an area designated by the owner's representative.
- F. Coordinate the roof preparation work with the new roofing work in such a manner as to keep the new roofing materials, building, and building interior absolutely clean, dry, and watertight.

2.4 RELATED WORK:

- A. Rubber Membrane Roofing is specified in Section 07540.
- B. Carpentry is specified in Section 06100.
- C. General Demolition is specified in Section 02110

2.5 QUALITY ASSURANCE:

- A. The contractor shall take all necessary precautions during roof removal preparation to protect the building and adjacent surfaces from being soiled or damaged.
- B. WARNING: It is required that the contractor include in his pricing, laying a plastic sheet cover to catch all dirt and falling objects during the tear-off process and reinstalling the new replacement deck material as needed.
- C. The contractor should realize the importance of safety training for his employees during the removal of the existing roof. The danger of a workman falling is always present during the operation.
- D. When weather threatens, cease work under this section and return roof to a watertight condition.
- E. The contractor shall restore to original condition any damages caused to the old roof, during work performed in this section if not completely removed. The contractor must keep the building dry during construction.
- F. Do not store debris on the roof. Contractor shall take care not to overstress roof deck. Properly dispose of all debris from roof preparation on a daily basis. Plywood panels or an appropriate substitute are to be loose laid over the existing roof if necessary to use as a runway for transporting debris over the old roof for safety.
- G. Provide closed trash chutes or other approved means of removal of debris.

2.6 JOB CONDITIONS:

- A. Perform removal work in accordance with ANSI/NFPA 241-1975 or latest edition Building Construction and Demolition Operations.
- B. The old existing roof and accessories will become property of the contractor, and the contractor will assume responsibility of disposal in accordance with all model codes.
- C. Roof removal shall not be started during precipitation and shall not be started in the event there is a probability of precipitation during application.
- D. No moisture should be present on the roof deck when the roofing operation is in progress.

2.7 PREPARATION

- A. The existing roofing, roof insulation, and roof curbs are to be removed to the structural roof deck.

- B. Care is to be taken not to cut into the existing roof deck or subframing when using a power saw or a power roof remover.
- C. In the event a power saw cuts into the roof deck a repair will be mandatory at the Roofing Contractor's expense.
- D. Roof removal is required on the entire project in the specific locations specified in the contract documents.

SECTION 04200 - BLOCK WORK

4.1 **GENERAL:**

Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

4.2 **WORK INCLUDED:**

Furnish all labor, materials and equipment, and perform all work required to install masonry work, masonry cavity flashing, block plugger, and water repellent coating as shown on the drawings and specified herein, including concrete block, bond beams, cap blocks, and all necessary incidental work in connection therewith as needed for a complete and proper installation.

4.3 **RELATED WORK SPECIFIED ELSEWHERE:**

- A. Roof Removal and Demolition is specified in Section 02051.
- B. General Demolition is specified in Section 02110.
- C. Rubber Membrane Roofing is specified in Section 07540.
- D. Flexible Flashing / Drainage System is specified in Section 07651.
- E. Painting for interior and exterior walls is specified in Section 09900, "Painting".

4.4 **PRECONSTRUCTION CONFERENCE:**

- A. A preconstruction conference directed by the architect, will be held after the award of the General Contract, but prior to beginning of masonry work to discuss:
 - 1. Method and sequence of masonry construction
 - 2. Special masonry details
 - 3. Standard of workmanship
 - 4. Quality control requirements
 - 5. Job organization

B. Attendance is mandatory for:

1. General contractor job superintendent
2. Masonry subcontractor job superintendent
3. Masonry subcontractor foreman
4. At least two (2) masons
5. Authorized representative of the masonry supplier
6. Mortar materials suppliers

4.5 SUBMITTALS:

A. Comply with pertinent provisions of Section 01300.

B. Product Data: Within 30 calendar days after the contractor has received the owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this section.
2. Manufacturer's specifications, technical data, MSDS, and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when approved by the architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

C. Applicator Certificates: Signed by water repellent coating manufacturer certifying that the applicator complies with requirements.

D. Third-party report confirming that recommended water repellent coating system has been tested in accordance with ASTM E514 on similar CMU substrate and reduced water absorption by a minimum of 90 percent in comparison to untreated specimen.

E. Certification by water repellent manufacturer that products supplied comply with local regulations controlling VOC emissions.

4.6 QUALITY ASSURANCE:

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

- B. Mock-Ups: Before any exterior masonry is laid up, the contractor shall erect a sample panel, including concrete block, mortar, flashing drainage pans, cleaning, and water repellent coating approximately 4 feet wide by 4 feet high. When approved, the panel shall be left in place until masonry work is completed to serve as a standard for all work. One corner of the building can be started up and used as the sample panel upon prior approval from owner.
- C. Provide water repellents with the following properties based on testing manufacturer's standard products, according to test methods indicated, applied to substrates simulating project conditions using same materials and application methods to be used for project.
- D. Water Repellent Field Sample:
1. Install at Project site or pre-selected area of building an area for field sample, as directed by architect.
 2. Provide mockup of at least 100 square feet (9.3 sm) to include surface preparation, sealant joint, and juncture details and allow for evaluation of repellent performance and finish.
 3. Conduct RILEM test before and after field sample has cured three days. Adjust application until required repellent performance is achieved.
 4. Apply material in strict accordance with manufacturer's written application instructions.
 5. Obtain Architect's written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.
 6. Manufacturer's representative will review surface preparation, application, and workmanship.
 7. Field sample will be standard for judging workmanship on the remainder of the project.
 8. Field sample must be maintained during construction for workmanship comparison.
 9. Field sample must not be altered, moved, or destroyed until work is completed and approved by architect.

4.7 ENVIRONMENTAL REGULATIONS:

- A. Comply with applicable federal, state, and local environmental regulations including testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents.

4.8 MASONRY CLEANER TEST PANELS:

- A. Before full-scale application, review manufacturer's product data sheets to determine the suitability of each product for the specific surfaces. Apply each masonry cleaner to test panels to determine dilution rates, dwell times, number of applications, compatibility, effectiveness, application procedures, effects of pressure rinsing, and desired results.
- B. Apply masonry cleaners to test panels in accordance with manufacturer's written instructions. Allow 48 hours or until test panels are thoroughly dry before evaluating final appearance and results. Do not begin full-scale application until test panels are inspected and approved by the architect.
- C. Test Panel Requirements:
 - 1. Size: Minimum 4 feet by 4 feet each.
 - 2. Locations: As determined by the Architect.
 - 3. Masonry Cleaners: Number of test panels as required to completely test each.
- D. Test all cleaning effluents generated by the masonry cleaning of the test panels to determine any hazardous characteristics. Comply with applicable federal, state, and local environmental regulations including testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes.
- E. Retain and protect test panels approved by the architect in undisturbed condition during the work of this section, to be used as a standard for judging the masonry cleaning work.

4.9 COORDINATION WITH OTHER WORK:

- A. Coordinate with other trades to ensure that they have ample opportunity to build in their work as the masonry work progresses. Build in frames, anchors, and other incidental items furnished under other sections of the specifications. Set loose steel lintels and construct chases and recesses as required. Verify dimensions and locations of anchors, chases, etc., with the other trades involved.
- B. Furr out around piping and electrical panels and other items wherever the existing wall or proposed walls are not thick enough to accommodate items that are scheduled to go in them.

4.10 HANDLING AND STORAGE:

- A. Concrete block shall be dry when delivered to the site and shall be kept dry until installed in the building.
- B. Cementitious mortar materials shall be stored in rain tight enclosures. Steel masonry reinforcing shall be stored under cover until installed in the work.

- C. Comply with water repellent manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- D. Deliver water repellent materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- E. Store water repellent in unopened containers in a cool, dry area. Keep material from freezing in the container; do not store below 35 degrees F (2 degrees C) or above 100 degrees F (43 degrees C).

4.11 PROJECT CONDITIONS :

- A. Weather and Substrate Conditions: Do not proceed with application of water repellent under any of the following conditions, except with written instructions from the manufacturer:
 - 1. Ambient air and surface temperature is less than 50 degrees F.
 - 2. Concrete surfaces and mortar have cured less than 28 days.
 - 3. Rain or temperatures below 50 degrees F are predicted within 24 hours.
 - 4. Application is earlier than 24 hours after surface has been wet.
 - 5. Substrate is frozen or surface temperature is less than 50 degrees F.
 - 6. Windy conditions exist that may cause water repellent to be blown onto surface not intended to be coated.

4.12 WARRANTY :

- A. General Water Repellent Warranty: The special warranty specified in the article shall not deprive the owner of other rights the owner may have under other provisions of the contract documents and shall be in addition to, and run concurrent with, other warranties made by the contractor under requirements of the contract documents.
- B. Special Warranty: Submit a written warranty, executed by the water repellent applicator and water repellent manufacturer, covering materials, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. Warranty does not include deterioration or failure of coating due to unusual weather phenomena, failure of prepared and treated substrate, formation of new joints and cracks in excess of .75 mm (1/32 inch) wide, fire, vandalism or abuse by maintenance equipment.
- C. Water Repellent Warranty Period: Five (5) years from date of substantial completion.

- D. Contractor Verification – Water repellent applicator must comply with manufacturer’s warranty requirements providing written verification of total size of surface area covered and total gallons of product applied. This document will be accompanied with copies of invoices for product applied to project, including credits for any returned merchandise.
- E. Final Inspection – Water repellent manufacturer will issue the Special Warranty after completing final inspection of the project confirming that the performance of the sealer is equal to the test wall and after receiving the completed Contractor Verification documents.

4.13 MASONRY MATERIALS:

Concrete block shall be hollow load-bearing concrete masonry units, conforming to ASTM C90-75, Grade N-1, made with Shalite, or equal, light-weight aggregate. Units shall be steam cured at atmospheric pressure for not less than 12 hours at temperatures between 160 and 190 degrees F., and then shall be air dried and cured at least 28 days. When delivered to the site, units shall have a moisture content of not more than specified in ASTM C90-75. Units generally shall be 8" x 16" or 12" x 16" nominal face size and thicknesses shown on the drawings. Furnish all special sizes, scored block, retaining wall block, lintel blocks and other special shapes required by job conditions.

4.14 MORTAR MATERIALS:

Portland Cement shall conform to ASTM C150-77, Type 1. Masonry cement shall conform to ASTM C91-75, and shall be equal to Flamingo, Volunteer, Signal Mountain, Southdown Cement Co., Blue Circle, or Solomon Grind - Chem Service Inc. Hydrated lime shall conform to ASTM C207-76, Type S. Sand shall be manufactured sand, graded in accordance with ASTM C144-76 and shall be uniform in color for all masonry work. Mixing water shall be clean and free from harmful amounts of acids, alkalis, and organic materials.

4.15 MORTAR:

- A. Mortar shall conform to requirements of ASTM C270-73. Mortar for masonry work below grade shall be one part Portland Cement, 1/4 part hydrated lime or lime putty, and not less than 2-1/4 nor more than 3 parts sand, by volume, or any other mix conforming to ASTM requirements for Type M or Type S mortar. Mortar for masonry work above grade shall be one part masonry cement not less than 2-1/4 nor more than 3 parts sand, by volume, or any other mix conforming to ASTM requirements for Type N mortar.
- B. Sand for mortar shall be measured in a damp loose condition. Mix mortar with the maximum amount of water consistent with satisfactory workability for a minimum of 3 minutes in a drum type mechanical mixer. Mixer shall be thoroughly cleaned between batches. No re-tempered or partially hardened mortar shall be used. Sand used for exposed concrete block mortar shall be clean natural dark brown sand to match existing house and shall be uniform in color. Sand for colored mortar shall be as specified by the manufacturer. Manufactured sand will be permitted in block work and concealed locations only.

- C. Hydrated lime shall be made into a putty by soaking at least 16 hours before use, or as recommended by the manufacturer if a quick-soaking lime is used.

4.16 MASONRY REINFORCING:

- A. Masonry wall reinforcing for all masonry walls and partitions shall be Dur-O-Wal Ladur design AA Block Ladder Type, Masonry Reinforcing Corporation of America Wire Bond Ladder type Series 200, Southern Construction Products, Heckmann, or approved equal, and shall have product approval of the Southern Building Code Congress. Reinforcing shall be manufactured from cold drawn steel wire conforming to ASTM A82-72 and shall consist of two deformed longitudinal rods welded at 15" intervals to a cross rod forming a ladder design. Out-to-out spacing of side rods shall be approximately 2" less than the nominal thickness of the wall or partition. Cross rods and side rods shall be not less than No. 9 gauge.
- B. Reinforcing and anchors for use in exterior walls shall have Hot dipped galvanized finish conforming to ASTM A153, Class B-2. Reinforcing for use in interior walls and partitions shall have mill galvanized finish.
- C. Install reinforcing in all walls and partitions, including exterior walls faced with brick. Generally, reinforcing shall be installed in the first and second concrete block bed joints (8" apart) immediately above lintels and below sills of openings and in every second bed joint (16" apart) elsewhere. Reinforcing in the second bed joint above and below openings shall extend 2 feet beyond each jamb; all other reinforcing shall be continuous.
- D. Use prefabricated "L" and "T" joints at corners and intersections, or fabricate corners and intersections in the field strictly in accordance with the manufacturer's instructions. Lap end joints in reinforcing not less than 6".
- E. Reinforcing shall be properly positioned so that not less than 5/8" mortar coverage over the side rods is obtained at the face of masonry.
- F. Provide Dur-O-Wal Seismic Ladur reinforcing where shown on the drawings.
- G. Refer to Structural Drawings for reinforcing bar specifications.

4.17 WATER REPELLENT COATING:

- A. Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, the following:

1. OKON PLUGGER WATER REPELLENT SEALER AND
OKON W-2 WATER REPELLENT SEALER
Zinsser Co. Inc.
173 Belmont Dr.
Somerset, NJ 08875
732-469-8100 or Facsimile 732-652-2491
Internet Web Sites: www.okoninc.com or www.zinsser.com

- B. Substitutions: Comply with Section 01300 Submittals and 01630 Product Options and Substitutions.
- C. Water-based acrylic micro-emulsion containing (20) percent solids minimum by weight.
- D. Minimum performance requirements for water repellent:
1. VOC compliant in SCAQMD - < 100 g/L
 2. ASTM E514 Standard Test Method for Water Penetration and Leakage through Masonry tested on like substrate - >90% reduction in water penetration compared to unsealed surface. Two coats may be required to achieve this level of performance on porous block.

4.18 ACCESSORIES:

- A. The tube weeps for all cmu cavity terminations shall be Hohmann & Barnard #341 W/S tube weeps with wick and stainless steel screen insert as manufactured by Hohmann & Barnard, Inc. installed @ 32" o.c. maximum.
- B. Control joint shall be "Wal-Joint", wide flange type, as manufactured by Hohmann & Barnard, Inc., Wire-Bond Regular pvc control joint #2901 by Masonry Reinforcement Corporation of America. Approved equals of Duro-Wal, Carter-Waters, Bo Metals, Vinylex, Tywal Accessories, or Southern Construction Products are acceptable.

4.19 WORKMANSHIP:

- A. Masonry work shall be sound, straight, true, and complete in every respect, and exterior walls shall be so constructed as to preclude the penetration of water. Avoid over-plumbing and pounding of masonry units after they are set in place; where adjustments must be made after mortar has started to set, the mortar shall be removed and replaced with fresh mortar.
- B. Joints shall be thickness to conform to coursing specified or shown and shall be uniform and bond shall be true. Joints in exposed faces of concrete block on interior and exterior shall be tooled with a round steel jointer just before the mortar hardens, with sufficient force to press the mortar against the masonry units on each side of the joint. Face joints in concealed locations shall be struck flush.

- C. Chases for ducts, pipe, and conduit shall be plumb and smooth on the inside with offsets formed where required, kept free of obstructions and cleaned upon completion. At least 8" of masonry shall be maintained between chases and jambs of openings. Where pipes and conduit are to be built into the masonry, the partitions have been detailed thick enough to allow not less than 1-3/4" of masonry over face of pipes; if pipe and conduit are not located accurately enough to permit this, the partitions shall be made thicker or furred to cover pipes, without additional cost to the owner.
- D. Where nails or line pins have been used, they shall be removed when they have served their purpose and the holes left by their removal shall be filled immediately with fresh mortar.

4.20 PROTECTION:

- A. No masonry shall be laid in freezing weather. Protect exposed concrete block work against staining and mortar droppings. Keep top of walls covered with non-staining waterproof paper or plastic sheet when work is not in progress and during precipitation of rain or snow. When work is resumed, clean top surface of walls free of loose mortar and in dry weather wet the surface before proceeding.
- B. Turn scaffolding plank every night and when wet to prevent spattering mortar on face of walls.

4.21 LAYING CONCRETE BLOCK:

- A. Lay with full mortar coverage on vertical and horizontal face shells. Vertical joints in exposed concrete block work shall break at center of stretcher above and below; otherwise, bond each course at corners and intersections and break vertical joints at least 4".
- B. Broken or split block shall not be used. All cutting required shall be done with a masonry saw. The mortar bedding for anchors for door bucks and frames shall be spread on strips of 1/8" mesh hardware cloth about 12" long.
- C. Install steel masonry reinforcing in all concrete block walls and partitions. Partitions abutting exterior walls shall be anchored thereto with steel masonry reinforcing unless otherwise noted.
- D. Partitions enclosing pipe and duct chases shall be built after the piping and ducts are in place and have been tested and approved.
- E. All partitions shall extend from concrete floor slabs to underside of roof deck except where specifically noted or shown otherwise. All partitions shall be not less than 1-hour fire-resistive construction and the concrete blocks shall be UL listed or shall conform to requirements of the Southern Building Code for number of hour fire-resistance rating called for on the drawings.
- F. Install precast lintels or bond beams over all openings greater than 24" wide in concrete block walls and partitions, including openings for panel boards, ducts, and grills unless otherwise detailed.

- G. At all exterior walls install Blok Flash Single Wythe Concrete Masonry Unit Drainage System as manufactured by Mortar Net USA, Ltd., Harbor, IN, (800) 664-6638 (www.mortarnet.com) at base of walls, above window and door openings, and above bond beams in accordance with manufacturer's installation instructions to expel moisture from the masonry cavity. Drainage mattes and bug guards shall be included.

4.22 POINTING

After masonry work is completed, remove all line pins and point up all holes and open joints.

4.23 CLEANING OF MASONRY:

- A. Face of masonry work shall be kept clean of mortar droppings, stains, and soil as the work progresses insofar as possible. The completed work shall be cleaned by methods approved by the architect, equivalent to the following:
 - 1. Cleaning shall not be started until mortar is thoroughly set and cured. Then surfaces shall be dry cleaned by removing large particles of mortar with wood paddles and scrapers, using a chisel or wire brush where necessary.
 - 2. Presoak wall by saturating the masonry with clean water and flush off all loose mortar and dirt.
 - 3. While the surface is still saturated, starting at top of wall, scrub down with a solution mixed in the proportions of one-half cup of trisodium phosphate (Calgon) and one-half cup household detergent (All) dissolved in one gallon of clean water. Scrub with stiff fiber brushes only. Keep wall area below work area wet down at all times.
 - 4. After scrubbing thoroughly, rinse off all cleaning solution, dirt and mortar crumbs, using pressurized water from a hose.
- B. In areas where the preceding procedure is not adequate, use a similar procedure, but substitute an acid solution instead of the cleaner solution for scrubbing. Acid solution shall be mixed one part clean, stain-free commercial grade of hydrochloric (Muriatic) acid to nine parts clean water, mixed in a non-metallic container. Keep all brick work below the area being cleaned, soaked and flush free of acid and dissolved mortar before it becomes dry. Do not use wire brushes or metal tools and do not allow acid solution to come in contact with any metal or cast stone work. Acid solution shall be used only as a last resort and where expressly permitted by the Architect.
- C. Exposed concrete block surfaces shall be kept clean of mortar droppings as the work progresses and the completed work shall be dry-cleaned to remove remaining mortar spots and dirt. Surface shall be brushed free of dust before painting.

4.24 WATER REPELLENT APPLICATION:

- A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Remove all dust, dirt, paint, bitumens, efflorescence, oil, pollution deposits, and curing, forming, and parting compounds, other contaminants prior to application. Use abrasive brush blast or high pressure water as necessary to achieve the required surface condition.
- B. Allow power washed surfaces to dry three days prior to coating. Surface should be dry to touch and show no visible signs of moisture prior to application of water repellent.
- C. Protect adjoining work, including sealant bond surfaces, from spillage or over spray of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces.
- D. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water repellent treatment have been installed and cured.
- E. Water repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.
- F. Revisions of planned application, if any, as requested by Architect, will be by Change Order if application method constitutes a departure from requirements of Contract Documents at the time of contracting.
- G. Apply a heavy saturation spray coating of water repellent on surfaces indicated for treatment using pressure spray equipment. Comply with manufacturers written instructions for using airless spraying procedure, unless otherwise directed.
- H. Follow application method and rate established by Test Area. Apply a second saturation spray coating, if required, repeating first application. Comply with manufacturers written instructions for limitations on drying time between coats. Consult manufacturer's technical representative if written instructions are not applicable to project conditions.
- I. Manufacturers Field Service: Provide service of a factory authorized technical service representative to inspect and approve the substrate before application and to instruct the applicator on the product and application method to be used.
- J. Protective Covering: Remove protective coverings from adjacent surfaces and other protective areas.
- K. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water repellent application as work progresses. Repair damage caused by water repellent application. Comply with manufacturers written cleaning instructions.

SECTION 05500 - SHOP FABRICATED METAL

5.1 **GENERAL:**

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

5.2 **SCOPE OF WORK:**

- A. See drawings for location, quantities, and details of work required.
- B. See Section 05600 for metal specialties.
- C. See Section 09900 Painting for field painting specifications.
- D. Submit Shop Drawings (4 copies minimum) of Partial Roof Plan specifying the proposed locations of new anchors for wood nailers.

5.3 **MATERIALS:**

- A. Cast Iron: Clean, tough gray iron free from blow holes, cinder spots or cold shuts. Conforming to ASTM Specifications.
- B. Wrought Iron: (1) Plates, ASTM A52; Sheet, ASTM A162; and Bolts, Rods, Bars, ASTM A141.
- C. Structural Steel: ASTM A36.
- D. Aluminum: Type recommended by manufacturer unless specifically noted.
- E. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.

5.4 **SHOP PAINT:**

All ferrous metal items shall be painted with one coat of rust inhibitive oil based primer, as preparation for application of two additional coats of field painting as specified in Section 09900.

5.5 **BOLTS AND ANCHORS:**

Furnish and install all bolts, anchors, expansion bolts, etc., as needed to properly install all items of work, including woodwork, etc. including the following as applicable:

A. **Hilti HIT HY 150 MAX Adhesive Anchor for solid concrete or masonry:**

- 1. Injectable Adhesive: Shall be used for installation of all reinforcing steel dowels or threaded rods and inserts into new or existing solid concrete or masonry. For hollow base materials an injectable adhesive shall be used with a cylindrical mesh screen tube per the adhesive manufacturer's specifications.

2. Adhesive: Shall be furnished in containers which keep component A and component B separate. Containers shall be designed to accept static mixing nozzle which thoroughly blends component A and component B and allows injection directly into drilled hole. Only injection tools and static mixing nozzles as recommended by manufacturer's shall be used. Manufacturer's installation instructions shall be followed. Injection adhesives shall be formulated to include resin and hardener to provide optimal curing speed as well as high strength and stiffness. Typical curing time at 68°F shall be 30 minutes. Injection adhesive shall be HIT HY 150 MAX, as furnished by Hilti.
3. 1/2" x 12" HAS-E Hilti Anchor Rods: Shall be furnished with chamfered ends so that either end will accept a nut and washer. Alternatively, anchor rods shall be furnished with a 45-degree chisel point on one end to allow for easy installation into the adhesive-filled hole. Anchor rods shall be manufactured to meet the following requirements:
 - a. ISO 898 Class 5.8;
 - b. ASTM A 193, Grade B7 (high-strength carbon steel anchor);
 - c. AISI 304 or AISI 316 stainless steel, meeting the requirements of ASTM F 539 (condition CW). Special order of HAS or HIT rods may vary from standard product.
4. Mesh Screen Tube: Shall be formed into a cylindrical shape, with one end closed to prevent extrusion of adhesive through that end. Screen tube shall be manufactured with a mesh size, length, and diameter as specified by the adhesive manufacturer. Mesh shall be manufactured from:
 - a. Low carbon steel with zinc electroplating or
 - b. AISI 304 stainless steel or
 - c. Plastic. Anchor rods and screens shall be the Hilti HIT system as manufactured by Hilti.
5. Nuts and Washers: Shall be furnished to meet the requirements of the above anchor rod specifications.

B. Hilti HIT HY 20 for Hollow Masonry Construction:

1. Adhesive anchors shall consist of a threaded anchor rod, nut, and washer; a mechanical mesh screen tube, and an injectable adhesive material.

Injection adhesive shall be packaged in side by side refill packs which keep separate component A and component B. Side by side packs shall be designed to compress during use to minimize waste volume. Side by side packs shall also be designed to accept static mixing nozzle which thoroughly blends component A and component B and allows injection directly into a mesh screen tube. Alternately, product may be furnished in large rigid cartridges for high volume work. Only injection tools and static mixing nozzles as recommended by the manufacturer shall be used. Manufacturer's instructions shall be followed.

Injection adhesive shall be formulated to include resin, hardener, cement, and water to provide optimal curing speed as well as high strength and stiffness. Typical curing time at 68°F shall be 60 minutes.

Injection adhesive shall be HIT HY 20, as manufactured by Hilti.

2. 1/2" x 4 1/2" Anchor Rods: Furnish with chamfered ends so that either end will accept a nut and washer. Manufactured to meet the following requirements: ISO 898 Class 5.8.2 AISI 304 or AISI316 stainless steel, meeting the requirements of ASTM F 593 (condition CW).

Special order length HAS or HIT Rods may vary from standard product.

Furnish Nuts and Washers to meet the requirements of the above anchor rod specifications.

3. Mesh Screen Tube: Shall be formed into a cylindrical shape, with one end closed to prevent extrusion of adhesive through that end. Screen tube shall be manufactured with a mesh size, length, and diameter as specified by the adhesive manufacturer. Mesh shall be manufactured from: 1. Low carbon steel with zinc electro-plating, 2. AISI 304 stainless steel, or 3. Plastic.

Anchor rods and screens shall be the Hilti HIT system as manufactured by Hilti.

C. Hilti Kwik Bolt 3 Expansion Anchor for solid concrete:

1. Guide Specifications:

Torque controlled expansion anchors shall be Kwik Bolt 3 supplied by Hilti meeting the description in Federal specification A-A 1923A, Type 4. The anchor bears a length identification mark embossed into the impact section (dog point) of the anchor identifying the anchor as a Hilti Kwik Bolt 3 in the installed condition. Anchors are manufactured to meet one of the following conditions:

- a. The carbon steel anchor body, nut and washer have an electroplated zinc coating conforming to ASTM B 633 to a minimum thickness of 5µm.
- b. The carbon steel hot-dip galvanized anchor body, nut and washer conform to ASTM A 153. The expansion sleeve conforms to AISI 316.
- c. The anchor body, nut and washer conform to AISI 304. The expansion sleeve conforms to AISI 316.
- d. The anchor body, nut, washer, and expansion sleeve conform to AISI 316.

2. Product Features:

- a. Length identification code facilitates quality control and inspection after installation.
- b. Through fixture installation and variable thread lengths improve productivity and accommodate various base plate thicknesses.
- c. Raised impact section (Dog Point) prevents thread damage during installation.
- d. Anchor size is same as drill bit size for easy installation. For temporary applications anchors may be driven into drilled holes after usage.
- e. Mechanical expansion allows immediate load application.

3. Installation:

- a. Drill hole in concrete, structural lightweight concrete, or grout-filled concrete masonry using a Hilti carbide tipped drill bit and a Hilti rotary hammer drill. Remove dust from the hole with oil free compressed air or vacuum. Alternately for 1/2, 5/8, 3/4, and 1 inch diameter Kwik Bolt 3 anchors, the hole may be drilled using a matched tolerance Hilti DD-B or DD-C wet diamond core bit for anchoring applications. The slurry must be flushed from the diamond cored hole prior to anchor installation. The minimum hole depth must exceed the anchor embedment prior to torquing by one hole, diameter. Drive the anchor into the hole using a hammer. A minimum of six threads must be below the surface of the fixture. Tighten the nut to the recommended installation torque.
- b. Joints: Tightly fitted, finished smooth and even concealed where possible, rivets countersunk on exposed surfaces. No drifting.
- c. Steel: Riveted or welded.
- d. Castings: Concealed bolts or cap screws counter-sunk on face.
- e. Wrought Iron: Welded or machine screws.

f. Exterior Work: Shed water and prevent entrance to hollow work.

g. Aluminum: Welded, ground and buffed for flush machine screws.

5.6 EQUIPMENT SUPPORTS:

Provide equipment supports of structural shapes where shown and as detailed and where not furnished by equipment contractors.

5.7 LOOSE LINTELS AND MISCELLANEOUS SHAPES:

Unless otherwise shown, loose lintels shall be 16 inches longer than the masonry to masonry openings over which they occur. Unless otherwise shown, they shall be 5" X 3-1/2" X 3/8" angles, one for each 4 inches of wall thickness. Furnish other miscellaneous structural shapes to be built in by masons or other trades which are not elsewhere specified.

5.8 OTHER MATERIALS:

Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

5.9 FABRICATION:

- A. Except as otherwise shown on the drawings or the approved shop drawings, use materials of size, thickness, and type required to produce reasonable strength and durability in the work of this section.
- B. Fabricate with accurate angles and surfaces which are true to the required lines and levels, grinding exposed welds smooth and flush, forming exposed connections with hair-line joints, and using concealed fasteners wherever possible.
- C. Prior to shop painting or priming, properly clean metal surfaces as required for the applied finish and for the proposed use of the item.
- D. On surfaces inaccessible after assembly or erection, apply two coats of the specified primer. Change color of second coat to distinguish it from the first.

5.10 INSTALLATION:

- A. General:
 - 1. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
 - 2. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3. Set work accurately into position, plumb, level, true, and free from rack.
 4. Anchor firmly into position.
 5. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
 6. Grind exposed welds smooth and touchup shop prime coats.
 7. Do not cut, weld, or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or screwed field connections.
 - B. Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with the same material used for shop priming. Apply final finish coats as specified in Section 09900.
- 5.11 WASTE MANAGEMENT:
Collect metal cutoffs and scrap, and place in designated area for recycling.

SECTION 05600 - STOCK FABRICATED METAL

- 5.1 GENERAL:
Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.
- 5.2 WORK INCLUDED:
- A. Furnish and install miscellaneous metal items as shown on the drawings and specified herein. The items included under this section are stock manufactured items that require little or no custom shop fabrication. They are listed together merely for convenience and it is not the intent of the specifications to require the contractor to procure them all from the same vendor.
 - B. Provide all anchors, fastenings, and incidental work required to properly install the items specified.
- 5.3 RELATED WORK SPECIFIED ELSEWHERE:
- A. Custom fabricated metal items are specified in Section 05500, Shop Fabricated Metal.
 - B. Field painting is specified in Section 09900, Painting.
 - C. Wood Grounds and nailers for elastic sheet roofing are specified in Section 07530.
 - D. Rough and finished carpentry are specified in Section 06100.

5.4 SHOP DRAWINGS:

Submit shop drawings or installation diagrams for items that require measurements to be verified or established at the building and submit schedules and/or catalog cuts of other items.

5.5 SHOP PAINTING:

Items which are usually factory finished or prime painted shall have manufacturer's standard finish. Shop painting is not required on other items unless specifically noted.

5.6 MATERIALS:

- A. Materials shall be as specified in the detailed descriptions of the various items. Where no material is specifically called for, material shall conform to the respective published specifications of the manufacturers listed. Exposed fastenings for aluminum items shall be aluminum or stainless steel, unless otherwise specified.
- B. In locations where 2x perimeter coping and/or gravel stop/fascia wood nailers must be anchored to existing solid concrete, expansion anchors equal to or exceeding Hilti Kwik Bolt 3 Expansion Anchor System or Hilti HIT-HY 150 Adhesive Anchors shall be utilized as specified in Section 05500.
- C. In locations where 2x perimeter coping and/or gravel stop/fascia wood nailers must be anchored to existing or new hollow masonry or brick, anchors equal to Hilti HIT-HY 20 epoxy adhesive anchors shall be utilized as specified in Section 05500.

SECTION 06100 - CARPENTRY

6.1 GENERAL:

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

6.2 SCOPE OF WORK:

- A. The work required under this section includes all work traditionally performed by carpenters including finishing and installing rough and finish carpentry, installation of millwork and/or herein specified as necessary to complete the work.
- B. Not included in this Division: Items of work listed in this paragraph are included in other Divisions of the Specifications as noted:
 - 1. Anchor Fasteners and other Stock Fabricated Metal: Division 5.
 - 2. Wood Grounds for elastic sheet roofing: Division 7
 - 3. Caulking: Division 7.
- C. Submit shop drawings in four (4) copies.

6.3 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work under this Section.
- B. Codes and Standards:
 - 1. In addition to complying the pertinent codes and regulations of governmental agencies having jurisdiction, unless otherwise specifically directed or permitted by the Architect comply with:
 - a. "Product Use Manual" of the Western Wood Products Association for selection and use of products included in that manual;
 - b. "Plywood Specification and Grade Guide" of the American Plywood Association;
 - c. "Standard Specifications for Grades of California Redwood Lumber" of the Redwood Inspection Bureau for Redwood, when used.

6.4 DELIVERY, STORAGE, AND HANDLING:

- A. Comply with pertinent provisions of Section 01600.
- B. Protection:
 - 1. Deliver the materials to the job site and store, in a safe area, out of the way of traffic, and shored up off the ground surface.
 - 2. Identify framing lumber as to grades, and store each grade separately from other grades.
 - 3. Protect metals with adequate waterproofing outer wrapping.
 - 4. Use extreme care in offloading of lumber to prevent damage, splitting, and breaking of materials.
 - 5. All lumber shall be stacked in a manner which insures proper ventilation and drainage and shall be covered to protect it from the elements.

6.5 MATERIALS:

- A. Lumber Standards and Grade-Marking: Each piece of framing lumber and each board shall comply with the American Lumber Standards, SPR 16, and with specific grading requirements of the association recognized as covering the species used and under whose grading rules it is produced. Each piece of framing lumber and each board shall be identified by the grade mark of a recognized association or independent inspection agency.

- B. Softwood Plywood shall conform to Product Standards PS-1-74 issued by the U. S. Department of Commerce. Each standard size panel shall be stamped or branded to show the type and grade of the panel. When used structurally, all plywood shall meet performance standards for its type as described in PS-1-74 for Softwood Plywood. It shall be identified as to species, grade, and glue type by means of appropriate grade-marks on each panel. In addition to the above requirements, all plywood permanently exposed in outdoor applications shall be of exterior type.
- C. Moisture content of framing lumber and boards shall not exceed 19% at time of installation.
- D. Dressed lumber shall be surfaced 4 sides.

6.6 GRADES AND SPECIES:

- A. Lumber for framing, plates, blocking, furring, etc., may be of any of the following species provided the grade for each is not lower than the minimum shown:
 - 1. Fir, Douglas - Standard Pine, Southern Yellow Leaf or Short Leaf - No. 2.

6.7 WOOD PRESERVATIVE TREATMENT:

- A. Pressure Treated Lumber: Lumber in contact with the ground; beams, sills, plates, grounds, nailers, wood cants and all other wood used relative to the roof fascia and canopy construction, copings, caps, etc.; all wood in contact with concrete or inaccessible enclosures; and wherever else called for on the drawings shall be pressure treated as called for by Federal Specifications TT-W-571, or the published standards of the American Wood Preserver's Association, and the following:
 - 1. Moisture content of lumber at time of treatment shall not be more than 30 percent.
 - 2. Preservative used for treating lumber to be painted or which will come in contact with finish materials shall be paintable type. Preservative used for treating lumber used in connection with elastomeric sheet roofing shall be salt type.
 - 3. All treated lumber shall be suitably identified as to name of treater, preservative used, and retention of preservative in pounds per cubic foot of lumber.
 - 4. All lumber shall be seasoned after treatment to the moisture content required for non-treated lumber.

6.8 ROOF SHEATHING:

Roof sheathing shall be 19/32" thick APA Structural 1 rated sheathing, Index 40/20 and an EXPOSURE I durability classification. Plywood shall be 8' – 0" x 4' – 0" panels laid with long dimension at right angle to rafters, with end joints staggered. Nail sheathing to rafters or trusses with 10D common nails, 6" on centers at panel edges and 12" on centers at intermediate supports. Use clips, a minimum of one per span, to provide edge support between rafters or trusses. Provide and install 2x4 wood blocking at all plywood edges between trusses or rafters.

6.9 SURFACE CONDITIONS:

Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

6.10 DELIVERIES:

- A. Stockpile materials sufficiently in advance of need to assure their availability in a timely manner for this work.
- B. Make as many trips to the job site as are needed to deliver materials of this section in a timely manner to ensure orderly progress of the work.

6.11 COMPLIANCE:

- A. Do not permit materials not complying with the provisions of this section to be brought onto or to be stored at the job site.
- B. Promptly remove non-complying materials from the job site and replace with materials meeting the requirements of this section.

6.12 WORKMANSHIP:

- A. Produce joints which are tight, true, and well nailed, with members assembled in accordance with the drawings and with pertinent codes and regulations.
- B. Selection of lumber pieces:
 - 1. Carefully select the members.
 - 2. Select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing, and will allow making of proper connections.
 - 3. Cut out and discard defects which render a piece unable to serve its intended function.
 - 4. Lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- C. Do not shim any framing component.

6.13 FRAMING GENERAL

- A. All lumber shall be SP. No. 2 (M. C. = 19%) or equal unless noted otherwise.
- B. All continuous nailer plates shall be pressure treated 2x WD. Anchored to wall with 1/2" diameter anchor bolts @ 48" o.c. unless otherwise noted.
- C. All wood in contact with concrete or masonry shall be pressure treated.

6.14 ROUGH HARDWARE

- A. Furnish all items of rough hardware such as nails, screws, bolts, hangers, anchors, or other accessories shown or required to properly secure the work in place. Items required to be built-in with concrete or masonry shall be finished in ample time for inclusion of the work.
- B. Fastening into concrete or masonry walls shall be made with adhesive anchors, toggle bolts, expansion shields, or Molly Bolts as specified in Section 05500. Wood plugs will not be permitted.

6.15 TEMPORARY ENCLOSURES AND PROTECTION:

Temporary enclosures shall be provided at door, window, and other openings in exterior walls, as necessitated by weather and good conditions. Enclosures shall be maintained in good repair and removed when no longer needed. Door and window frames and stone and other types of finished masonry sills shall be properly protected.

6.16 WOOD BLOCK NAILING STRIPS, GROUND AND FURRING:

Provide all wood blocks, nailing strips, and furring as conditions require to be embedded in or anchored to concrete, built into masonry, anchored to masonry, bolted to stud and elsewhere whether specifically mentioned herein or not. Provide wood blocking for anchorage of any items that require wood for adequate anchorage.

6.17 INSTALLATION OF ITEMS NOT FURNISHED UNDER THIS SECTION:

Install all items of millwork and architectural woodwork, metal frames, and other items in accordance with details and approved shop drawings.

6.18 MILLWORK AND TRIM (INSTALLATION):

- A. Exterior millwork and trim shall be installed with tight joints, securely nailed. Hot Dip Galvanized siding nails shall be used. Interior trim shall be fastened in place with finishing nails, the heads of which shall be set for putty. Interior woodwork shall be sanded as necessary to remove irregularities and machine marks. All work shall be left free of blemishes and defects.

- B. Joints in all work shall be tight and formed to conceal shrinkage. Joints in exterior work shall be made to exclude water and shall be bedded in white lead paste. Door and window trim shall be in single lengths without splicing, and corners shall be mitered unless otherwise called for by the drawings. Running trim shall be in long lengths and jointed only where solid fastenings can be made. End joints in built-up members shall be well distributed. Exterior corners shall be mitered and interior corners and/or angles shall be coped. Wherever necessary, woodwork shall be scribed to masonry or other adjacent work.
- C. All exterior millwork and trim shall be back-primed with one coat of paint specified for exterior wood priming in the Painting Division 9. Interior millwork and trim shall be back-primed with one coat of the paint specified for interior wood priming.

6.19 INSTALLATION OF OTHER ITEMS:

Install items in strict accordance with the drawings and the recommended methods of the manufacturer as approved by the Architect, anchoring firmly into position at the prescribed locations, straight , plumb and level.

6.20 FASTENING:

A. Nailing:

1. Use only common wire nails or spikes of the dimension shown on the Nailing Schedule, except where otherwise specifically noted on the Drawings.
2. For conditions not covered in the Nailing Schedule provide penetration into the piece receiving the point of not less than 1/2 the length of the nail or spike, provided however, that 16d nails may be used to connect two pieces of 2" (nominal) thickness.
3. Nail without splitting wood.
4. Pre-bore as required.
5. Remove split members and replace with members complying with the specified requirements.

B. Bolting:

1. Drill holes 1/16" larger in diameter than the bolts being used.
2. Drill straight and true from one side only.
3. Do not bear bolt heads on wood, but use washers under head and nut where both bear on wood, and use washers under all nuts.

C. Screws:

1. For lag screws and wood screws, pre-bore holes same diameter as root of threads enlarging holes to shank diameter for length of shank.

6.21 FINISHING:

- A. Sandpaper finished wood surfaces thoroughly as required to produce a uniformly smooth surface, always sanding in the direction of the grain; except do not sand wood which is designed to be left rough.
- B. No coarse grained sandpaper mark, hammer mark, or other imperfection will be accepted.

6.22 CLEANING UP:

- A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut-ends and debris.
- B. Sweeping:
 1. At the end of each working day, and more often if necessary, thoroughly sweep surfaces where refuse from this portion of the work has settled.
 2. Remove the refuse to the area of the job site set aside for its storage.
 3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

SECTION 07311 ASPHALT FIBERGLASS SHINGLE ROOFING SYSTEM

7.1 GENERAL:

Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 WORK INCLUDED:

- A. Granule surfaced asphalt shingle roofing.
- B. Moisture shedding underlayment, eaves, valley and ridge protection.
- C. Associated metal flashing.

7.3 RELATED SECTIONS:

- A. Section 06100 – Carpentry: Plywood Roof Sheathing.

- B. Section 07540 – Rubber Membrane Roofing – Adhered System
- C. Section 07600 – Flashing and Sheet Metal.
- D. Section 07700 – Roofing Specialties and Accessories (for ridge vent, gutters, and downspouts)
- E. Section 07920 – Sealants and Caulking

7.4 REFERENCES:

- A. ASTM A 653 / A 653M – Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
- B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- C. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.
- D. ASTM D 225 - Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.
- E. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- F. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- G. ASTM D 3018 - Standard Specification for Class A Shingles Surfaced with Mineral Granules.
- H. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
- I. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
- J. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- K. ASTM D 4869 - Standard Specification for Asphalt-Saturated Organic Felt Shingle Underlayment Used in Roofing.
- L. ASTM D 6757 – Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products.
- M. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.

7.5 SUBMITTALS:

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Provide published instructions that indicate preparation required and installation procedures.
- D. Certificate of Compliance: Provide Certificate of Compliance from an independent laboratory indicating that the asphalt fiber glass shingles made in normal production meet or exceed the requirements of the following:
 - 1. ASTM E 108/UL 790 Class A Fire Resistance.
 - 2. ASTM D 3161/UL 997 Type I Wind Resistance.
 - 3. ASTM D 3462.
- E. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations, and installation details, as required by project conditions indicated.

7.6 QUALITY ASSURANCE:

- A. Maintain one copy of manufacturer's application instructions on project site.
- B. Verify that manufacturer's label contains reference to specified ASTM standards.
- C. Entire roofing system as specified herein shall be installed by a CertainTeed credentialed contractor.

7.7 ENVIRONMENTAL REQUIREMENTS:

- A. Take special care when applying WinterGuard Shingle Underlayment and shingles when ambient or wind chill temperature is below 45 degrees F (7 degrees C). Tack WinterGuard in place if it does not adhere immediately to the deck.

7.8 EXTRA MATERIALS:

- A. Furnish additional shingles.
- B. Provide 30 square feet of extra shingles of each color specified.

7.9 WARRANTY:

- A. Manufacturer's Warranty: Furnish shingle manufacturer's warranty for products of this section as follows:

ASPHALT FIBER GLASS SHINGLES

1. CertainTeed Independence AR: lifetime limited warranty.
- B. Warranty Supplement: Provide manufacturer's supplemental "CertainTeed SureStart Plus" warranty to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:
1. First ten years.
- C. Extended Warranty Protection: Provide non-pro-rated SureStart Plus protection as follows:
1. 5-Star Coverage (50 years): material and labor costs for repair or replacement, tear off protection, disposal costs, and workmanship defects.
- D. Warranty Transferability Clause: Make available to Owner shingle manufacturer's standard option for transferring warranty to a new owner.

7.10 MANUFACTURER:

- A. Provide products manufactured by CertainTeed Corporation, Architectural Support Group, P.O. Box 860, Valley Forge, PA 19482. Tel: (800) 233-8990, Fax: (610) 341-7940.
- B. Substitutions: Not permitted.

7.11 ASPHALT FIBER GLASS SHINGLES:

- A. **CertainTeed Independence AR:** Conforming to ASTM D 3018 Type I - Self-Sealing; UL Certification of ASTM D 3462, UL 997 110-mph Wind Resistance, and UL Class A Fire Resistance; glass fiber mat base; ceramic ally colored/UV resistant mineral surface granules across entire face of shingle; three-tab type with random laminated tabs and random shadow line; algae resistant.
1. Weight: 300 pounds per square (100 square feet) (14.6 kg/sq m).
 2. Color: As selected by Architect from manufacturer's standards

7.12 SHEET MATERIALS:

- A. Eaves Protection: CertainTeed "WinterGuard"; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and "split" back plastic release film; provide material with warranty equal in duration to that of shingles being applied.
 - 1. CertainTeed WinterGuard HT (High Tack, High Temperature)
- B. Underlayment: Asphalt saturated 30# felt (ASTM D226) or CertainTeed "Roofers Select" ASTM D6757 asphalt impregnated fiberglass reinforced organic felt.
- C. Waterproofing Underlayment: CertainTeed "WinterGuard"; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and "split" back plastic release film; Use in 'low-slope' areas (below 4:12, but no less than 2:12) and all other locations specified on the drawings; provide material with warranty equal in duration to that of shingles being applied.
 - 1. CertainTeed WinterGuard HT (High Tack, High Temperature)

7.13 FLASHING MATERIALS:

Sheet Flashing: ASTM A 361/A 361M; 26 gauge (0.45 mm) Prefinished steel with minimum G115/Z350 galvanized coating. Color as selected by Architect.

7.14 ACCESSORIES:

- A. Nails: Standard round wire type roofing nails, corrosion resistant; hot dipped zinc coated steel, aluminum, or chromated steel; minimum 3/8 inch (9.5 mm) head diameter; minimum 11 or 12 gage (2.5 mm) shank diameter; shank to be of sufficient length to penetrate through roof sheathing or 3/4 inch (19 mm) into solid wood, plywood, or non-veneer wood decking.
- B. Asphalt Roofing Cement: ASTM D 4586, Type I or II.
- C. Furnish and install CertainTeed Shadow Ridge shingles over all hip ridges, where specified – Color as selected by architect.

7.15 FLASHING FABRICATION:

- A. Form flashing to profiles indicated on Drawings, and to protect roofing materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

7.16 EXAMINATION:

- A. Verify existing site conditions.
- B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- C. Verify roof openings are correctly framed prior to installing work of this section.
- D. Verify deck surfaces are dry and free of ridges, warps, or voids.

7.17 ROOF DECK PREPARATION:

- A. Follow shingle manufacturer's recommendations for acceptable roof deck materials.
- B. Broom clean deck surfaces under eave protection and underlayment prior to their application.

7.18 INSTALLATION - EAVE ICE DAM PROTECTION:

- A. Place eave edge and gable edge metal flashing tight with fascia boards. Weather-lap joints 2 inches (50 mm). Secure flange with nails spaced 8 inches (200 mm) on center.
- B. Apply CertainTeed "WinterGuard" Waterproofing Shingle Underlayment as eave protection in accordance with manufacturer's instructions.
- C. Extend eave protection membrane minimum 48 inches (1,220 mm) up slope beyond interior face of exterior wall.

7.19 INSTALLATION - PROTECTIVE UNDERLAYMENT:

- A. Roof Slope 4:12 or Greater: Install one layer asphalt felt shingle underlayment perpendicular to slope of roof and lap minimum 4 inches (100 mm) over eave protection.
- B. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof. Avoid contact of solvent-based cements with WinterGuard.

7.20 INSTALLATION - METAL FLASHING:

- A. Weather-lap joints minimum 2 inches (50 mm).
- B. Seal work projecting through or mounted on roofing with asphalt roofing cement and make weather-tight.

7.21 INSTALLATION - ASPHALT SHINGLES:

- A. Install shingles in accordance with manufacturer's instructions for product type and application specified.
- B. Install Shadow Ridge shingles on all hip ridges in accordance with manufacturer's instructions.
- C. Install flashing for roof-mounted fans, plumbing vent stacks, ridge vents, and power ventilators in accordance with manufacturer's instructions.

7.22 FIELD QUALITY CONTROL:

- A. Field inspection will be performed as directed by the architect.
- B. Visual inspection of the Work will be provided by owner. If conditions are unacceptable, owner will notify the architect.

7.23 PROTECTION OF FINISHED WORK:

- A. Protect finished work.
- B. Do not permit traffic over finished roof surface.

SECTION 07540 - RUBBER MEMBRANE ROOFING - ADHERED SYSTEM

7.1 GENERAL:

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 WORK INCLUDED:

- A. Furnish and install Carlisle Sure-Seal 60-mil EPDM membrane Fully Adhered Roofing System as specified herein and as indicated on the drawings over roof areas of the buildings where shown on the drawings, including Carlisle HP-H Polyisocyanurate insulation, prefinished edge metal, wood grounds, and wood cleats required to secure roofing in place in accordance with the manufacturer's most current specifications and details. Prior to installing new roofing, remove existing roofing including flashing, insulation lightweight concrete, and cant strips. Replace existing deteriorated wood with new wood of equal type dimension and, if exposed, finish.
- B. The roofing contractor shall be fully knowledgeable of all requirements of the Contract Documents and shall make themselves aware of all job site conditions that will affect their work.
- C. The roofing contractor shall confirm all given information and advise the building owner, prior to bid, of any conflicts that will affect their cost proposal.

- D. Any contractor who intends to submit a bid using a roofing system other than the approved manufacturer must submit for pre-qualification in writing fourteen (14) days prior to the bid date. Any contractor who fails to submit all information as requested will be subject to rejection. Bids stating “as per plans and specs” will be unacceptable.

7.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Demolition is specified in Section 02051, Roof Removal and Demolition.
- B. New Concrete Masonry Units are specified in Section 04200, Block Work.
- C. Adhesive and Expansion Anchor Bolts are specified in Section 05500, Shop Fabricated Metal.
- D. Pressure Treated Wood is specified in Section 06100, Carpentry.
- E. Roofing sheet metal items are specified in Section 07600, Flashing and Sheet Metal.
- F. Roofing Specialties and Accessories are specified in Section 07700.

7.4 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 25 calendar days after the Contractor has received the Owner’s Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this section;
 - 2. Manufacturer’s specifications and other data needed to prove compliance with the specified requirements;
 - 3. Shop drawings to scale and in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this section with the work of adjacent trades. Submit layout drawing showing sheet layout, identification of materials, and locations of specific details. Submit separate scale drawing of tapered insulation layout.
 - 4. Manufacturer’s recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
 - 5. A sample of the manufacturer's Total Systems Warranty covering all components of the roofing system.

6. Submit a letter of certification from the manufacturer, which certifies the roofing contractor is authorized to install the manufacturer's roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.
 7. Certification of the manufacturer's warranty reserve.
- C. Upon completion of the installed work, submit copies of the manufacturer's final inspection report to the specifier prior to the issuance of the manufacturer's warranty.

7.5 REMOVAL OF EXISTING ROOFING:

- A. Perform removal in such a manner and by such methods as to avoid hazards to persons and property and to prevent the spread of dust and flying particles.
- B. Removal of existing roofing shall be performed when the areas below where the work is to be done are not occupied.
- C. Carefully lower removed materials and debris from the roof to the ground by such methods that will prevent hazards to persons or damage to existing work that is to remain (i.e., existing roofing, coping, and downspouts).
- D. All rubbish and debris from demolition shall be removed from the premises and site as the work progresses and shall not be allowed to accumulate on the premises. Tear off materials may be recycled, contact Nationwide Foam, Inc. (888) 820-2760 for details. The driveways and walks adjacent to the buildings shall be kept in a neat and clean condition at all times.
- E. See Section 02051 for additional Roof Removal Notes.

7.6 REPLACEMENT OF TERMITE, WATER & VERMIN DAMAGED WOOD:

- A. Wood damaged by termites, vermin and water shall be replaced by the Contractor.
- B. When damaged wood is encountered the contractor shall immediately notify the architect so that the quantity of damaged wood to be replaced can be determined. A change order will be prepared to adjust the contract sum for replacement of damaged, concealed existing wood provided based upon quantities verified by the architect.
- C. All existing perimeter nailers shall be replaced as specified in the Contract Drawings.

7.7 QUALITY ASSURANCE:

- A. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.

- B. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least five (5) years successful experience installing single-ply EPDM roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year. The applicator shall, upon request, be able to document three (3) installations completed more than two years prior to issuance of the Contract Documents, utilizing components of the proposed manufacturer, that are comparable to those required for the work and similar in scope and complexity. Provide complete contact information, warranty history for previous installations and demonstrate in-service performance.
- C. There shall be no deviations made from this specification or the approved shop drawings without the prior written approval of the specifier. Any deviation from the manufacturer's installation procedures must be supported by a written certification on the manufacturer's letterhead and presented for the specifier's consideration.
- D. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether or not corrective work will be required before the warranty will be issued. Notify the building owner and the Architect seventy-two (72) hours prior to the manufacturer's final inspection.
- E. The Inspector shall be employed and trained by the manufacturer and have received product-specific training from the manufacturer of the products.
- F. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced superintendent on the job at all times roofing work is in progress.
- G. The EPDM membrane roofing system must achieve a UL Class A and must have been successfully tested by a qualified testing agent to meet or exceed the calculated uplift pressure required by the International Building Code (IBC) and American Society of Civil Engineers (ASCE-7) or ANSI/SPRI WD-1 and FM I-90 wind criteria.
- H. The membrane must be manufactured by the material supplier. Manufacturer's supplying membrane made by others are not acceptable.
- I. The manufacturer must have a minimum of 20 years' experience in the manufacturing of vulcanized thermoset sheeting.

- J. Gravel stops, metal fascia's, and copings related to roofing system shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI Standard ES-1. Metals shall meet performance design criteria according to the following test standards:
1. ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum 100 lbs/ft in accord with the ANSI/SPRI ES-1 Test Method RE-1. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 2. ANSI/SPRI ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 3. ANSI/SPRI ES-1 Test Method RE-3 for coping. The coping system shall be tested simultaneously on horizontal and vertical surfaces and shall exceed horizontal and vertical design wind pressure as calculated in accord with the ANSI/SPRI ES-1 Test RE-3. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 4. The metal products shall be listed in current Factory Mutual Research Corporation Approval Guide approved for FM 1-90.
 5. The roof edge product shall be UL Classified by Underwriters Laboratories, Inc.® or other 3rd party verification of compliance with the ANSI/SPRI ES-1 Wind Design Standard. Manufacturer and certification shall be submitted with product submittals.

7.8 DELIVERY AND STORAGE:

- A. Materials shall be delivered in their original, unopened containers, clearly labeled with manufacturer's name, brand name, such identifying numbers as are appropriate, and installation instructions intact and legible. Comply with the manufacturer's written instructions for proper material storage. All materials furnished by the roofing manufacturer shall be stored between 60 degrees F. and 80 degrees F in dry areas protected from water and direct sunlight. Should they be exposed to lower temperatures, restore to above-mentioned temperature range prior to use. Do not use materials damaged in handling or storage. All cardboard containers should be stored in a dry area. Deliver in sufficient quantity to permit work to continue without interruption.
- B. Store materials containing solvents in dry, well-ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

- C. Insulation and underlayment products must be on pallets, off the ground and tightly covered with waterproof materials. Manufacturer's wrap does not provide sufficient waterproofing. Insulation and underlayment products that become wet or saturated are to be discarded.
- D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

7.9 WORK SEQUENCE:

- A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.
- B. Do not disrupt activities in occupied spaces.

7.10 USE OF THE PREMISES:

- A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:
 - 1. Areas permitted for personnel parking.
 - 2. Access to the site.
 - 3. Areas permitted for storage of materials and debris.
 - 4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.
- B. Interior stairs or elevators may not be used for removing debris or delivering materials, except as authorized by the building superintendent.

7.11 EXISTING CONDITIONS:

If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

7.12 TEMPORARY FACILITIES AND CONTROLS:

- A. Temporary Utilities:
 - 1. Water, power for construction purposes and lighting if available at the site, will be made available to the roofing contractor.

2. Provide all hoses, valves and connections for water from source designated by the owner when made available.
3. When available, electrical power should be extended as required from the source. Provide all trailers, connections and fused disconnects.

B. Temporary Sanitary Facilities:

Sanitary facilities will not be available at the job site. The roofing contractor shall be responsible for the provision and maintenance of portable toilets or their equal.

C. Building Site:

1. The roofing contractor shall use reasonable care and responsibility to protect the building and site against damages. The contractor shall be responsible for the correction of any damage incurred as a result of the performance of the contract.
2. The roofing contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or the functions of the building. Tear off materials may be recycled, contact Nationwide Foam, Inc. (888) 820-2760 for details.

D. Security:

Obey the owner's requirements for personnel identification, inspection and other security measures.

7.13 JOB SITE PROTECTION:

- A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.
- B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.
- C. Do not overload any portion of the building, either by use of or placement of equipment, storage of debris, or storage of materials.
- D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

- E. Take precautions to prevent drains from clogging during the roofing application. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.
- F. Store moisture susceptible materials above ground and protect with waterproof coverings.
- G. Remove all traces of piled bulk materials and return the job site to its original condition upon completion of the work.

7.14 SAFETY:

The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. Safety shall be the responsibility of the roofing contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

7.15 WORKMANSHIP:

- A. Applicators installing new roof, flashing and related work shall be factory trained and approved by the manufacturer they are representing.
- B. All work shall be of highest quality and in strict accordance with the manufacturer's published specifications and to the building owner's satisfaction.
- C. There shall be a supervisor on the job site at all times while work is in progress.
- D. All field seams and flashing details are to be completed according to manufacturer's specifications and details by the end of each work day.

7.16 JOB CONDITIONS, CAUTIONS AND WARNINGS:

- A. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.
- B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.
- C. When loading materials onto the roof, the Manufacturer's Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

- D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.
- E. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.
- F. Provide protection, such as 3/4inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.
- G. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.
- H. New roofing shall be complete and weathertight at the end of the work day.
- I. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane. An overlay of Epichlorohydrin membrane must be adhered around units which have the potential to emit solvents, grease or oil.

7.17 WARRANTY (MANUFACTURER'S 20-YEAR TOTAL SYSTEM WARRANTY):

- A. The roofing installation shall be guaranteed against defective materials and workmanship and against leaks for a period of 20 years from the inspection and final acceptance of the roofing installation. Warranty shall cover both labor and materials including all edge metal, insulation, insulation attachment and flashing with No Dollar Limitation. The maximum wind speed coverage shall be peak gusts of 72 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage. Edge metal is to be included in system warranty for duration of warranty.
- B. Pro-rated System Warranties shall not be accepted.
- C. Evidence of the manufacturer's warranty reserve shall be included as part of the project submittals for the specifier's approval.

7.18 ROOFING MATERIALS - GENERAL:

- A. All roofing materials shall be by Carlisle SynTec, a Division of Carlisle Corporation, Carlisle, Pa., or accepted by Carlisle SynTec as compatible.
- B. Unless otherwise approved by the specifier and accepted by the membrane manufacturer, all products (including adhesives, insulation, fasteners, fastening plates, and edgings) must be manufactured and supplied by the roofing system manufacturer and covered by the warranty.

Manufacturer of roof membrane shall also manufacture all polymeric components for the roofing system, including, but limited to, membrane, adhesives, primers, flashings, caulks and tapes.

7.19 MEMBRANE:

- C. Furnish Sure-Seal 60-mil.045 inches is not acceptable, maximum ten (10) feet wide, length determined by job condition, fire rated EPDM (Ethylene, Propylene, Diene Terpolymer) in the largest sheet possible with 3" or 6" Factory-Applied Tape (FAT). The membrane shall conform to the minimum physical properties of ASTM D4637. When a 10 foot wide membrane is to be used, the membrane shall be manufactured in a single panel with no factory splices to reduce splice intersections.

7.20 INSULATION / UNDERLAYMENT:

- A. When applicable, insulation shall be installed in multiple layers. The first and second layer of insulation shall be mechanically fastened to the substrate in accordance with the manufacturer's published specifications. Thickness shall be as called for on the drawings. Provide tapered boards at areas indicated on the drawings.
- B. Insulation shall be Polyisocyanurate as supplied by Carlisle SynTec 2.0pcf density, in 48" x 96" or 48" x 48" sheets.. Minimum R-value required is 25 R-Value

Carlisle HP-H Polyiso – A foam core insulation board covered on both sides with a medium weight fiber-reinforced felt facer meeting ASTM C 1289-06, Type II, Class 1, Grade 3 (25 psi).

7.21 FASTENING COMPONENTS:

To be used for mechanical attachment of insulation and to provide additional membrane securement:

A. **Fasteners, Plates and Bars**

1. **InsulFast Fasteners:** A threaded #12 fastener with #3 phillips drive used for insulation attachment into steel or wood decks.
2. **Insulation Fastening Plates:** a nominal 3 inch diameter plastic or metal plate used for insulation attachment.
3. **Sure-Seal Pressure-Sensitive RUSS™** (Reinforced Universal Securement Strip): a 6" or 9" wide, nominal 45-mil thick clean, cured black reinforced EPDM membrane with 3" or 6" wide Factory-Applied Tape (FAT) laminated along one edge. The 6" or 9" wide Pressure-Sensitive RUSS is used horizontally or vertically at the base of walls, curbs, etc., in conjunction with 2" diameter securement plates or bars below the EPDM deck membrane for additional membrane securement.

7.22 ADHESIVES, CLEANERS, AND SEALANTS:

All products shall be furnished by Carlisle and specifically formulated for the intended purpose.

- A. **90-8-30A Bonding Adhesive:** A high-strength, yellow colored, synthetic rubber adhesive used for bonding Sure-Seal/Sure-White EPDM membranes to various surfaces.
- B. **EPDM Primer:** A solvent-based primer used to prepare the surface of EPDM membrane for application of Splice Tape or Pressure-Sensitive products.
- C. **Lap Sealant:** A heavy-bodied material used to seal the exposed edges of a membrane splice. Available in tubes. Sure-Seal Lap Sealant is a black sealant for use with Sure-Seal (black) Roofing Systems.
- D. **Water Cut-Off Mastic:** A one-component, low viscosity, self-wetting, Butyl blend mastic used to achieve a compression seal between the EPDM membrane or Elastoform Flashing and applicable substrates. Available in tubes.
- E. **Pourable Sealer:** A black, two-component, solvent-free, polyurethane based product used for tie-ins and as a sealant around hard-to-flash membrane penetrating objects such as clusters of pipes and for a daily seal when the completion of flashings and terminations cannot be completed by the end of each work day.
- F. **One-Part Pourable Sealer:** Available in black or white, a one-component, moisture curing, elastomeric polyether sealant used for attaching lightning rod bases and ground cable clips to the membrane surface and as a sealant around hard-to-flash penetrations such as clusters of pipes.
- G. Universal Single-Ply Sealant **A one-part polyether, non-sagging sealant designed for sealing expansion joints, control joints and counterflashings.**

7.23 METAL EDGING AND MEMBRANE TERMINATIONS:

- A. **General:** All metal edgings shall be tested and meet ANSI/SPRI ES-1 standards and comply with International Building Code. All metal work is to be supplied and warranted by the manufacturer.
- B. SecurEdge 400 Fascia Cover: Decorative metal Fascia Cover with continuous 22 Gauge Cleat. Cleat to be pre-punched by Carlisle Metal Products for precise attachment.
 - 1. Construction:
 - a. SecurEdge 400 Fascia Cover Material:
 - 1) 24 gauge Galvalume coated steel.
 - b. SecurEdge 400 Fascia Cover Finish:
 - 1) 35 year color as selected by the Architect from Carlisle Metal Product's color chart.

- c. SecurEdge 400 Fascia Cover Length:
 - 1) 20'-0" (6.096m) maximum.
- d. SecurEdge 400 Fascia Cover Attachment:
 - 1) #10 Pancake Head Woodscrew Stainless Steel provided by Carlisle Metal Products attached to substrate at 12" on center through Cleat.

Certified per ANSI/SPRI ES-1 Standard to a design pressure of 135 lbs./ft² (24GA Steel) and 135 lbs./ft² (.040" AL) to comply with the International Building Code.

7.24 WALKWAYS:

Protective surfacing for roof traffic shall be Sure-Seal Pressure-Sensitive 30" x 30" black molded rubber Walkway Pads with slip resistant surface and factory rounded corners, (with Factory-Applied Tape on the underside of the walkway) adhered to the membrane surface in conjunction with Sure-Seal Primer.

7.25 OTHER ACCESSORIES:

- A. Flashing: Elastoform .060 inches thick, furnished by membrane manufacturer.
- B. Splicing Cement: Furnished by membrane manufacturer.
- C. Molded Pipe Flashing: Compatible with materials with which it is used, furnished by membrane manufacturer.
- D. Nite (Daily) Seal: Compatible with materials with which it is used, furnished by membrane manufacturer.
- E. Rubber nailing strips and fasteners: Extruded nailing strips and fasteners furnished by membrane manufacturer.
- F. Wood Nailers: Pressure treated with salt preservatives.
- G. Termination Bar shall be a 1" wide and .098 inch thick extruded aluminum bar pre-punched 6" on center; incorporates a sealant ledge to support Lap Sealant or Universal Sealant and provide increased stability for membrane terminations.

7.26 PREPARATION OF SUBSTRATE:

- A. Roofing contractor shall be responsible for providing proper substrate to receive the Roofing System. All existing roofing, in the areas of new roofing, including flashing, felt, insulation, cant strips, and abandoned roof penetrations, and rotted wood, shall be removed prior to installing the new roofing and insulation. Any rotted wood encountered shall be replaced with new treated wood.

- B. Repair substrate joints and wall joints greater than one quarter (1/4) inch with Sure-Seal Pourable Sealer.
- C. Roofing contractor shall include in his bid an allowance for a withdrawal resistance test to be conducted by an independent laboratory, the fastener manufacturer, or their designated representative to determine the pullout resistance of the existing deck if required by the roofing manufacturer. The results of the pullout test must be designated on a roof plan to indicate the areas at which the tests were conducted. Results of the tests must be forwarded to the roofing manufacturer for review. Acceptable decks and minimum pullouts are as follows:

Structural concrete, rated 3000psi or greater	800 pounds pullout
Wood planks	360 pounds pullout
Minimum 15/32 inch thick APA Grade CDX plywood	360 pounds pullout
Minimum 7/16 inch thick non-veneer APA rated Oriented Strand Board (OSB)	250 pounds pullout

The following minimum trial fastener samples must be installed and tested over the roof deck at each level:

- a. For each roof level of 5,000 square feet or less, conduct a minimum of 3 pullouts
- b. For each roof level greater than 5,000 square feet and less than 20,000 square feet, conduct a minimum of 10 pullouts.
- c. For each roof level greater than 20,000 square feet and less than 50,000 square feet conduct a minimum of 15 pullouts.
- d. For each roof level greater than 50,000 square feet and less than 100,000 square feet conduct a minimum of 20 pullouts.
- e. For each roof level greater than 100,000 square feet, conduct a minimum of 1 pullout per each 5,000 square feet

Note: On projects with multiple roof levels, when roof levels are conducted on the main roof level, smaller canopies, overhangs, penthouses, etc., of 1,000 s.f. or less will not require pullout tests providing these areas consist of the same decking as the main roof level.

Trial fastener installations must be tested in various locations of the roof deck, such as:

- a. Roof corners

- b. At least 3 tests must be conducted at perimeter areas (parallel to the edge of the roof with a width which is 0.4 times the building height).
- c. Field of the roof (with at least 2 conducted at low areas of the roof deck).

7.27 INSULATION ATTACHMENT - ROOF SYSTEM:

- A. Install insulation over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints both horizontally and vertically if multiple layers are provided.
- B. Mechanically fasten insulation to roof deck with Carlisle-Syntec insulation fasteners. Pattern of fasteners as per the manufacturer's recommendations. Quantity shall be (1) fastener for every (2) square feet of insulation unless otherwise specified by the manufacturer. Fasteners shall penetrate deck a minimum of (1) inch.

7.28 MEMBRANE PLACEMENT AND BONDING:

- A. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.
- B. Apply the Bonding Adhesive in accordance with the manufacturer's published instructions and coverage rates, to both the underside of the membrane and the substrate. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.
 - 1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
 - 2. Fold back the unbonded half of the membrane sheet and repeat the bonding procedure.
- C. Install adjoining membrane sheets in the same manner, overlapping edges approximately 4 inches. Do not apply bonding adhesive to the splice area.

7.29 MEMBRANE SPLICING:

- A. Position membrane sheet to allow for required splice overlap. Mark the bottom sheets with an indelible marker approximately 1/4" to 1/2" from the top sheet edge. The pre-marked line on the membrane edge can also be used as a guide for positioning splice tape.

- B. When the membrane is contaminated with dirt, fold the top sheet back and clean the dry splice area (minimum 3" wide) of both membrane sheets by scrubbing with clean natural fiber rags saturated with Sure-Seal Weathered Membrane Cleaner. When using Sure-Seal (black) PRE-KLEENED membrane, cleaning the splice area is not required unless contaminated with field dirt or other residue.
- C. Apply EPDM Primer to splice area and permit to flash off.
- D. When adhering Factory Applied Tape (FAT), pull the poly backing from FAT beneath the top sheet and allow the top sheet to fall freely onto the exposed primed surface. Press top sheet on to the bottom sheet using firm even hand pressure across the splice towards the splice edge
- E. For end laps, apply 3" or 6" SecurTAPE to the primed membrane surface in accordance with the manufacturer's specifications. Remove the poly backing and roll the top sheet onto the mating surface.
- F. Tape splices must be a minimum of 2-1/2" wide using 3" wide SecurTAPE extending 1/8" minimum to 1/2" maximum beyond the splice edge. Field splices at roof drains must be located outside the drain sump.

Note: For projects where a 90-mil membrane OR 20-year or longer System Warranty is specified, splice enhancements are required. Refer to Carlisle Sure-Seal/Sure-White Roofing System Specification.

- G. Immediately roll the splice using positive pressure when using a 2" wide steel roller. Roll across the splice edge, not parallel to it. When FAT is used, Carlisle's Stand-Up Seam Roller can be used to roll parallel to the splice edge.
- H. At all field splice intersections, apply Lap Sealant along the edge of the membrane splice to cover the exposed SecurTAPE 2" in each direction from the splice intersection. Install Carlisle's Pressure-Sensitive "T" Joint Covers or a 6" wide section (with rounded corners) of Sure-Seal Pressure-Sensitive Flashing over the field splice intersection.

7.30 PERIMETER NAILER INSTALLATION:

- A. A wooden nailer (pressure-treated with salt preservatives) shall be installed at the perimeter of the roof, curb flashing, roof hatch, skylight, and similar penetrations unless otherwise noted or specified by the manufacturer.
- B. Wood nailers shall be pressure-treated with salt preservatives (Creosote and asphaltic preservatives are not acceptable), #2 or better pink species.
- C. Nailers shall be firmly anchored to resist a force of 200 pounds per lineal foot in any direction. The thickness of the nailer shall be such that the top of the nailer is flush with the surface to which the membrane is attached at the horizontal plane.

7.31 FLASHING:

- A. When feasible, flash all penetrations and walls with cured EPDM membrane. Uncured Elastoform Flashing shall be limited to overlay vertical seams (as required at angle changes) or to flash inside and outside corners, scuppers, pourable sealer pockets, and other penetrations or unusually shaped walls where use of cured membrane flashing is not practical.
1. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Splice shall extend at least (3) inches beyond the fasteners which attach the membrane to the horizontal surface.
 - a. Apply bonding adhesive to both flashing and surface to which it is being bonded at a rate covering approximately 60 sq. ft. of finished surface.
 - b. After the bonding adhesive has dried to the point where it does not string or stick to a dry finger, roll the flashing into the adhesive. Care must be taken to assure that the flashing does not bridge where there is any change of direction (e.g., where the parapet meets the roof deck).
 - c. Nail installed flashing at top of flashing every (12) inches on center maximum under metal counterflashing, cap flashing, or mechanical termination.
 2. Flash all penetrations (pipes, conduits, etc.) passing through the membrane.
 - a. Flash pipe with molded pipe flashings where installation is possible.
 - b. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
 - c. Remove existing lead pipe flashing.
 3. Seal clusters of pipes and unusual shaped penetrations with 2" minimum Sure-Seal or Firestone Pourable Sealer. Use pitch pocket type seal as shown in the manufacturer's standard details.
- B. Drip edge fascia shall be installed in accordance with the manufacturer's specifications and SMACNA PLATES 38-47 (1987 edition or most current edition). Contractor shall provide all splice plates, anchors, seal strips, and all accessories required for a complete installation as required for a 20-year total system warranty.

7.32 DAILY SEAL:

- A. Care should be exercised to ensure that the water does not flow beneath any completed sections of roof. Temporarily seal loose edge of membrane with Sure-Seal Nite Seal when weather is threatening.

- B. Mix the two components thoroughly according to the instructions on the label.
- C. Apply the Nite Seal at a rate of 100 lineal feet per gallon, (on smooth surface) (12) inches back from edge of sheet onto exposed substrate surface. If necessary, use a trowel to spread material in order to achieve complete seal. Onto existing built-up roof surface, this coverage will be reduced according to surface preparation.
- D. After embedding membrane in Nite Seal, check for continuous contact. Then weight the edge, providing continuous pressure over the length of the cutoff. The recommended weight for the continuous pressure is a ten (10) foot length of 2-1/2 inch Sure-Seal Lay Flat Tubing filled with dry sand.
- E. When work is resumed, pull sheet free before continuing installation.

7.33 CAUTIONS:

- A. Do not use oil base or plastic roof cement.
- B. Do not adhere EPDM membrane to low melting point asphalt.
- C. Do not allow waste products (petroleum, grease, oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with Sure-Seal Roofing System.
- D. Do not expose membrane and accessories to a constant temperature in excess of 180 degrees **F**.
- E. Cements and bonding adhesives contain petroleum distillates and are extremely flammable. Do not breathe vapors or use near fire.
- F. HP-250 primer used in the splicing procedure is extremely flammable; do not use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.
- G. Splicing and bonding surfaces shall be dry and clean.
- H. Cold temperatures will not restrict installation of Sure-Seal Roofing System. Follow specified precautions for storage of materials and expose only enough cement and adhesive to be used within a four (4) hour period.
- I. Roof surface shall be free of ponded water, ice, or snow to eliminate future condensation problems.

7.34 INSTALLATION OF WALKWAY PADS:

- A. Remove excess dust and dirt, when applicable, from the membrane by wiping with a clean rag. To remove accumulated dirt, footprints, etc., scrub the membrane sheets with warm water and a low sudsing soap; rinse with clean water.

- B. Clean the dry membrane surface by scrubbing with Sure-Seal/Brite-Ply Splice Cleaner or HP-250 Primer as recommended by the manufacturer.
- C. Apply Splicing Cement to one side on the walkway pad and to the cleaned EPDM membrane at a minimum coverage rate of 100 square feet (9.3 m²) per gallon (3.78 l) on each surface. Both surfaces must have continuous coverage.
- D. Allow the Splicing Cement to dry until it is tacky but will not string or stick to a dry finger touch and will not move when pushed with a dry finger.
- E. Place the coated walkway pad onto the coated membrane area. The molded walkway pad should be walked in place.

7.35 INSPECTION OF COMPLETED MEMBRANE:

An inspection shall be made by a representative of the membrane manufacturer in order to ascertain that the Roofing System has been installed properly.

SECTION 07600 - FLASHING AND SHEET METAL

7.1 GENERAL:

Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 WORK INCLUDED:

Furnish all labor, materials and equipment, and perform all work to install thru-wall flashing, and all other flashing items and sheet metal not specifically described in other sections of these Specifications but required to prevent penetration of water through the exterior shell of the building as shown on the Drawings and specified herein.

7.3 RELATED WORK NOT INCLUDED IN THIS SECTION:

- A. Block Work is specified in Section 04200.
- B. Roofing Specialties and Accessories are specified in Section 07700.
- C. Rubber Membrane Roofing (Adhered System) is specified in Section 07540.
- D. Flexible Flashing / Drainage System is specified in Section 07651.
- E. Sealants and Caulking are specified in Section 07920.

7.4 COORDINATION WITH WORK OF OTHER TRADES:

Coordinate the installation of sheet metal work with the work of other trades, e.g., flashing and counterflashing with installation of EPDM roofing.

7.5 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 45 calendar days after the contractor has received the owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Shop drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this section with the work of adjacent trades;
 - 4. Manufacturer's recommended installation procedures which, when approved by the architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

7.6 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations contained in current edition of "Architectural Sheet Metal Manual" published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- C. Standard commercial items may be used for flashing, trim, reglets and similar purposes provided such items meet or exceed the quality standards specified.
- D. Where sheet metal is required, and no material or gage is indicated on the drawings, provide the highest quality and gage commensurate with the referenced standards.

7.7 MATERIALS:

- A. Non-hardening sealant shall be Tremco Mono 1-part acrylic terpolymer sealant, or approved equal.
- B. All sheet flashing shall be prefinished 26 gauge hot-dip galvanized steel 16 oz. Copper or .032 prefinished aluminum finished to match the prefabricated roof accessories such as coping specified elsewhere.

- C. Nails and Fastening: All nails and other devices for securing sheet metal shall be best grade copper or brass, or manufacturer's approved fasteners.
- D. Flashing thru roof shall be sheet lead, galvanized steel or other approved material.
- E. All sheet metal work shall comply with the standards of the Architectural Sheet Metal Manual of SMACNA.
- F. Masonry thru-wall flashing shall be Copper Fabric Flashing as manufactured by York Manufacturing, Inc., Stanford, ME 04073, as specified in Section 07651, Flexible Flashing / Drainage System.
- G. Master sealing laps and penetrations in thru-wall flashing shall be Cop-R-Tite Mastic as manufactured by York Manufacturing, Inc., Stanford, ME 04073.
- H. Aluminum for mechanical terminations shall be .050 x 1" aluminum bent bar.
- I. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the contractor subject to the approval of the architect.

7.8 SURFACE CONDITIONS:

Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

7.9 WORKMANSHIP & INSTALLATION:

- A. Sheet metal work exposed to the weather shall be permanently weathertight, with suitable provisions made for free expansion and contraction without causing leaks. Anchorage and installation of preformed metal roofing shall be as recommended by the manufacturer.
- B. Work shall be accurately formed to sizes, shapes and dimensions indicated and detailed, with all angles and lines in true alignment, straight, sharp, erected plumb, level, and in proper plane, without bulges or waves. Cope flange intersections to accurately fit and solder together.
- C. Work shall be installed as detailed and in accordance with the specifications, unless otherwise approved by the architect in writing. Requests for permission to use alternate materials, methods, and details shall be submitted to the architect, in writing, and shall fully describe the proposed alternatives and the reasons for such proposed changes.
- D. Form, fabricate, and install sheet metal so as to adequately provide for expansion and contraction in the finished work

E. Weatherproofing:

1. Finish watertight and weathertight where so required.
2. Make lock seam work flat and true to line, sweating full of solder.
3. Make lock seams and lap seams, when soldered, at least 1/2" wide.
4. Where lap seams are not soldered, lap according to pitch, but in case less than 3".
5. Make flat and lap seams in the direction of flow.

F. Joints:

1. Join parts with rivets or sheet metal screws where necessary for strength and stiffness.
2. Provide suitable watertight expansion joints for runs of more than 40'-0", except where closer spacing is indicated on the Drawings or required for proper installation.

G. Nailing:

1. Whenever possible, secure metal by means of clips or cleats, without nailing through the exterior metal.
2. In general, space nails, rivets, and screws not more than 8" apart and, where exposed to the weather, use lead washers.
3. For nailing into wood, use barbed roofing nails 1-1/4" long by 11 gauge.
4. For nailing into concrete or masonry, use drilled plugholes and plugs or use tapcon screws.

7.10 SOLDERING:

- A. Clean and roughen edges to be soldered. Apply non-corrosive flux and precoat the surfaces to be joined with solder alloy for a distance of 1-1/2" back from edge of metal. Remove flux residue with clean water. Assemble the parts and solder, using regular non-corrosive rosin flux.
- B. Soldering shall be used for sealing only and joints that must withstand mechanical stresses shall be riveted or screwed in addition to soldering.
- C. Solder shall be 50-50 tin lead type.

7.11 EMBEDMENT:

- A. Embed metal in connection with roofs in a solid bed of sealant, using materials and methods described in Section 07920 of these specifications or other materials and methods approved in advance by the architect.

7.12 TESTS:

- A. Upon request of the architect, demonstrate by hose or standing water that the flashing and sheet metal are completely watertight.

7.13 WARRANTY:

- A. Provide manufacturers standard 20 year limited warranty on prefinished metal coatings.
- B. Flashing shall be guaranteed to be weathertight for a minimum of 1 year. Any leakage or damage during the one year warranty period shall be repaired and paid for by the contractor.

SECTION 07651 - FLEXIBLE FLASHING/DRAINAGE SYSTEM

7.1 GENERAL:

Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 WORK INCLUDED:

- A. Section includes combination flashing, mortar deflection, and weep as complete one step system. Using this system deletes requirement for mortar deflection devices and may lessen requirements for weep spacing.
- B. Furnish all labor, materials and equipment, and perform all work to install thru-wall flashing, and all other flashing items and sheet metal not specifically described in other sections of these specifications but required to prevent penetration of water through the exterior shell of the building as shown on the drawings and specified herein.

7.3 RELATED WORK NOT INCLUDED IN THIS SECTION:

- A. Roofing Specialties and Accessories are specified in Section 07700.
- B. Block Work and Weep Tubes are specified in Section 04200.
- C. Flashing and Sheet Metal are specified in Section 07600
- D. Sealants and Caulking are specified in Section 07920.
- E. Carpentry is specified in Section 06100.

7.4 COORDINATION WITH WORK OF OTHER TRADES:

Coordinate the installation of sheet metal work with the work of other trades, e.g., flashing with soffit and roof panel work.

7.5 REFERENCES:

A. Standards of the following as referenced:

1. ASTM.
2. Brick Industry Association (BIA).
3. Copper Development Association, Inc. (CDA).

B. Industry standards:

1. *BIA Technical Notes on Brick Construction No. 7, Water Penetration Resistance-Design and Detailing*, December 2005.
2. *BIA Technical Notes on Brick Construction No. 21, Brick Masonry Cavity Walls – Introduction*, August 1998
3. *BIA Technical Notes on Brick Construction No. 21A, Brick Masonry Cavity Walls – Selection of Materials*, February 1999
4. *BIA Technical Notes on Brick Construction No. 21B, Brick Masonry Cavity Walls – Detailing*, April 2002
5. *BIA Technical Notes on Brick Construction No. 21B, Brick Masonry Cavity Walls – Construction*, October 1989

7.6 DEFINITIONS:

A. Terms:

1. Cavity wall flashing: Same as flexible flashing.
2. Foundation sill flashing: Same as flexible flashing.
3. Flexible flashing: Water-proof material typically used in cavity wall construction to contain and assist in the proper water drainage that may penetrate wall system veneer. Other materials may be required to constitute the system.
4. Head and sill flashing: Same as flexible flashing.
5. Through-wall flashing:
 - a. Generally considered the same as flexible flashing.
 - b. Rare definition referred to full width cap flashing under copings or wall caps.

7.7 SUBMITTALS:

- A. Product data: Indicate material type, composition, thickness, and installation procedures.
- B. Samples: 3" by 5" flashing material.
- C. Product Quality & Environmental submittals:
 - 1. Certificates:
 - a. Indicate materials supplied or installed are asbestos free.
 - b. Indicate recycled content: 90% total recycled material; based on 80% Post Industrial Recycled Content and 10% Post-Consumer Recycled Content.
 - 2. Critical Performance Attributes:
 - a. Tensile Strength, 31,500 psi minimum average
 - b. Puncture Resistant, >285 pound average
 - c. When tested as manufactured, product resists growth of mold pursuant to test method ASTM D 3273-94.

7.8 QUALITY ASSURANCE:

- A. Qualification Manufacturer: Provide flashing materials by single manufacturer with not less than ten years of experience in manufacturing flexible flashing products.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- C. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations contained in current edition of "Architectural Sheet Metal Manual" published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- D. Standard commercial items may be used for flashing, trim, reglets and similar purposes provided such items meet or exceed the quality standards specified.
- E. Where sheet metal is required, and no material or gage is indicated on the Drawings, provide highest quality and gauge commensurate with the referenced standards.

7.9 WARRANTY:

Special warranty:

- 1. Manufacturer: Warrant flexible flashing/drainage system material for life of the wall.

2. Begin warranty at Date of Substantial Completion.

7.10 MANUFACTURED UNITS – THROUGH WALL FLASHING:

A. Copper core flexible flashing with wicking fabric:

1. Product standard of quality:

- a. York Manufacturing, Inc.; York Flash-Vent, (www.yorkmfg.com)
- b. STS Coatings: Gorilla Flash FV, (www.stscoatings.com)
- c. Building Materials West Co.: Evacu-Flash, (www.evacuflash.com)

2. Characteristics:

- a. Type: Copper core with non-asphalt adhesive fabric laminated to one copper face and non-woven wicking fabric laminated to opposing face with non-asphalt adhesive.
- b. Copper type, ASTM B248-06: CDA Alloy 110, 060 temper.
- c. Fabrics:
 - 1) Fiberglass or polypropylene fabric; laminated back face copper core with core weight manufacturer identified on product with color coded laminate.
 - 2) Non-woven wicking fabric: Fabric laminated to front face.
- d. Size: Manufacturer's standard width rolls.
- e. Polyether sealant: Suggested manufacturers: York Manufacturing UniverSeal LT, Sonneborn: Sonolastic 150, STS Coatings GreatSeal LT-100
- f. Corner and splice material: York Multi-Flash 500/Gorilla Flash MF/Evacu-splice, 3 ounce, or purchase pre-manufactured corners.

7.11 INSTALLATION:

A. Through-Wall Flashing:

1. Install where indicated, specified, or required in accord with flashing manufacturer's written instructions and as follows.
 - a. Splicing material on material width to manufacture wider pieces is prohibited unless flashing detail requires material wider than normally manufactured.
 - b. Prohibited practice: Bonding or splicing copper to non-woven wicking fabric or non-woven wicking fabric to non-woven wicking fabric.

2. Extend flashing 6" minimum, beyond opening, each side without stretching flashing material. Fold flashing ends at end of openings or horizontal flashing terminations to form end dam.
3. Flashing width: Width required starting flush with outside face of exterior wythe, extending through cavity, rising height required to extend above lintel steel at least 2".
4. Splice end joints by butting ends together over 12" wide piece of Multi-Flash copper flashing and sealing lap joint with UniverSeal LT polyether sealant.
5. Masonry back up:
 - a. Surface apply after damp proofing installation specified in Damp proofing Section in accord with manufacturer's installation instructions.
 - b. Apply flashing with wicking surface to outside.
 - c. Fasten to masonry back-up surface at top by embedding in layer of UniverSeal LT polyether sealant using manufacturer's recommended nozzle and plastic termination bar.
6. Concrete back up:
 - a. Surface apply after damp proofing installation specified in Damp proofing Section in accord with manufacturer's installation instructions.
 - b. Apply flashing with wicking surface to outside.
 - c. Fasten to concrete surface at top by embedding in bead of UniverSeal LT polyether sealant using manufacturer's recommended nozzle.
7. Stud back up with sheathing:
 - a. Apply flashing with wicking surface to outside.
 - b. Fasten to stud back-up at top by embedding in bead of UniverSeal LT polyether sealant using manufacturer's recommended nozzle.
8. Leave ready for building felt or air barrier installation lapping flashing top installed in another section.
9. Lay flashing in continuous bead of UniverSeal LT polyether sealant on masonry supporting steel.
10. Fold ends of flashing at end of opening to form dam; seal with UniverSeal LT polyether sealant.

11. Inside corners: Make in industry accepted manner using corner and splice material or purchase manufactured corners from manufacturer.
12. Outside corners: Make in industry accepted manner using corner and splice material or purchase manufactured corners from manufacturer.
13. Work shall be installed as detailed and in accordance with the specifications, unless otherwise approved by the architect in writing. Requests for permission to use materials, methods, and details shall be submitted to the architect, in writing, and shall fully describe the proposed alternatives and the reasons for such proposed changes.

7.12 **SCHEDULES:**

Locations for flexible flashing/drainage system (through-wall flashing):

1. Exterior door heads.
2. Window heads and sills.
3. Between masonry and precast concrete roof planks at the top of perimeter walls.
4. Horizontal control joints.
5. Changes in veneer materials, vertically.
6. Other wall openings.
7. Other locations indicated.

SECTION 07700 - ROOFING SPECIALTIES AND ACCESSORIES

7.1 **GENERAL:**

Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 **WORK INCLUDED:**

Furnish all labor, materials and equipment, and perform all work to install all roofing specialties as specified herein and as shown on the drawings.

7.3 **RELATED WORK NOT INCLUDED IN THIS SECTION:**

- A. Anchors for pressure treated perimeter gravel/ stop fascia and coping wood nailers are specified in Sections 05500 and 05600.
- B. Coping and drip edge/fascia wood nailers are specified in Section 06100.
- C. Rubber Membrane Roofing (Adhered System) and prefinished edge metal are specified in Section 07540.
- D. Flashing and Sheet Metal are specified in Section 07600.

7.4 **COORDINATION WITH WORK OF OTHER TRADES:**

Coordinate the installation of roofing specialties and accessories with the work of other trades, e.g., roof drain installation with installation of EPDM roofing.

7.5 SUBMITTALS:

- A. Product Data: Based on the contractor's approved Schedule of the Work, allowing sufficient time for review of submittals by the architect but not less than twenty-one (21) Calendar Days, prior to beginning work of this Section, submit:
1. Materials list of items proposed to be provided under this Section;
 2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements;
 3. Shop Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of the section with the work of adjacent trades;
- Submit small scale layouts of expansion joint coping and gravel stop/ fascia; and large-scale details of edge conditions, joints, corners, custom profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory and field assembly work.
- B. Samples: Submit samples of each exposed finish material and each component of the fastening system for the spill out scuppers, counterflashing, and gravel stop fascia.
- C. Warranty: Submit sample copies of the manufacturer's standard warranty for material, color, and finish for all roofing accessories. All specialties and accessories shall be guaranteed to be weather tight for a minimum of one year. Any leaks or damage during the one-year warranty period shall be repaired and paid for by the contractor.

7.6 MATERIALS:

- A. Non-hardening sealant shall be Tremco Mono 1-part acrylic terpolymer sealant, or approved equal.
- B. New roof drain at E.P.D.M. roofs shall be a Zurn Z-100-EA of proper diameter and length to fit the existing and new drain pipe, as manufactured by Zurn Industries, Inc., or approved equal. New overflow roof drains, if specified, shall be Zurn Z166-EA as manufactured by Zurn Industries, Inc. The new overflow outlet, if specified, shall be a Zurn Z180-FS as manufactured by Zurn Industries, Inc., or approved equal.
- C. Roof drain inserts shall be U-Flow "P.C. Pet Retrodrain" proper diameter and length to fit the existing drain pipe, as manufactured by Olympic Manufacturing Group, Inc. (1-800-633-3800), or approved equal.
- D. Reglet Counterflashing:
1. Reglet counterflashing shall be 24 ga. G-90 galvanized steel with a manufacturer's standard color 70% Kynar 500 (SuperCote 1) fluoropolymer finish (color choice by

Architect), 16 oz. Copper or FR-2 extruded aluminum 6063-T5 alloy (if approved in advance by the Architect), as manufactured by MM System Corporation, or approved equal of W.P. Hickman or Firestone Metal Products, Inc.

2. Install in accordance with the manufacturer's recommendations with backer rod and caulking as required.

E. New exhaust fan roof cap ventilators shall be fabricated from 22-gauge type 304 stainless steel (to fit over the existing curbs and match the existing stainless steel ventilators) as specified in PLATE 148 (Figs. A and B) of the 1987 4th ed. of the SMACNA Architectural Manual. W.P. Hickman Company, Asheville, NC; and Firestone Metal Products, Inc. are approved fabricators.

7.7 WORKMANSHIP & INSTALLATION:

A. Sheet metal work exposed to the weather shall be permanently weathertight, with suitable provisions made for free expansion and contraction without causing leaks.

B. Work shall be accurately formed to sizes, shapes and dimensions indicated and detailed, with all angles and lines in true alignment, straight, sharp, erected plumb, level, and in proper plane, without bulges or waves. Cope flange intersections to accurately fit and solder together.

C. Work shall be installed as detailed and in accordance with the specifications, unless otherwise approved by the architect in writing. Requests for permission to use alternate materials, methods, and details shall be submitted to the architect, in writing, and shall fully describe the proposed alternatives and the reasons for such proposed changes.

D. Roof drains shall be installed in accordance with manufacturer's instructions. Remove existing drain components and cut existing leader as required to enable the new roof drain to lie flush on the roof membrane and connect to the existing or new roof drain leader.

E. Roof drain inserts shall be installed in accordance with manufacturer's instructions. Remove existing drain components as required to enable the drain insert flange to lie flush on the roof membrane.

F. New exhaust fan roof cap ventilators shall be installed in accordance with PLATE 148 (Figs. A and B) of the 1987 4th ed. of the SMACNA Architectural Manual. Weld and seal all corners, and furnish and install a stainless steel bug screen over the ventilator openings.

7.8 SOLDERING:

A. Clean and roughen edges to be soldered. Apply non-corrosive flux precoat to the surfaces to be joined with solder alloy for a distance of 1-1/2" back from edge of metal. Remove flux residue with clean water. Assemble the parts and solder, using regular non-corrosive rosin flux.

B. Soldering shall be used for sealing only and joints that must withstand mechanical stresses shall be riveted or screwed in addition to soldering.

C. Solder shall be 50-50 tin lead type.

7.9 WARRANTY:

A. Provide manufacturers standard 20 year limited warranty on prefinished metal coatings.

B. Flashing shall be guaranteed to be weathertight for a minimum of 1 year. Any leakage or damage during the one-year warranty period shall be repaired and paid for by the contractor.

SECTION 07920 - SEALANTS AND CAULKING

7.1 GENERAL:

Applicable provisions of the General Conditions and Division 1, General Requirements, apply to the work under this section.

7.2 WORK INCLUDED:

A. Completely seal with caulking compound all joints around door frames, window frames and louver frames in interior and exterior walls; openings around pipes projecting through interior and exterior walls; and expansion joints in exterior walls and interior walls where shown on the drawings and elsewhere as required to provide a positive barrier against the passage of moisture and passage of air.

B. Caulk vertical joints at intersection of gypsum board walls and masonry walls.

C. Caulk all other joints noted on the drawings to be caulked and which are not specified to be caulked under other sections of the specifications.

D. Caulk joints at intersections of gypsum board and concrete block or brick.

7.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 07600, Flashing and Sheet Metal

B. Section 07700, Roofing Specialties and Accessories.

7.4 ENVIRONMENTAL QUALITY ASSURANCE:

A. Do not use products containing methylene chloride or chlorinated hydrocarbons.

B. Avoid products containing bactericides and fungicides that are classified as phenol mercury acetates, phenol phenates, or phenol formaldehyde

C. Avoid products containing aromatic and aliphatic solvents.

D. Avoid products containing styrene butadiene.

7.5 INDOOR AIR QUALITY:

- A. The following sealants are considered safe for indoor use:
 - 1. Oleoresinous (small amounts of aliphatic hydrocarbons)
 - 2. Acrylic emulsion latex (water based)
 - 3. Polysulfide (small amounts of toluene vapors)
 - 4. Polyurethane (small amounts of xylene and other solvents)
 - 5. Silicone (small amounts of xylene and other solvents)
- B. The use of the following sealants should be avoided indoors:
 - 1. Butyl rubber (aliphatic hydrocarbons)
 - 2. Solvent based acrylic (xylene)
 - 3. Neoprene (xylene)

7.6 SUBMITTALS:

- A. Comply with Section 01300.
- B. Product Data: Submit manufacturer's technical bulletins and MSDS on each product.
- C. Samples:
 - 1. Initial Selection Purposes: For each product exposed to view, manufacturer's standard bead consisting of strips of actual products showing full range of colors available.
 - 2. Verification: 2 sets of each type and color of joint sealant required. Install joint sealant samples in 1/2 inch wide joints formed between two 6 inch long strips of material matching appearance of exposed surfaces adjacent to joint sealants.
- D. Submit laboratory tests or data validating product compliance with performance criteria specified.
- E. Submit list of references from 5 projects similar in scope to this Project. Include contact name and phone number of person charged with oversight of each project.

7.7 QUALITY ASSURANCE:

- A. Comply with Section 01400.

- B. Manufacturer Qualifications: Company regularly engaged in manufacturing and marketing of products specified in this Section.
 - 1. Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.
- C. Installer Qualifications: Qualified to perform Work specified by reason of experience or training provided by product manufacturer.
- D. Mock-Ups:
 - 1. At start of Project, perform mock-up of required sealant Work at 1 area of building. Perform minimum of 1 mock-up for each different combination of substrates to be sealed. Coordinate mock-up areas with Architect.
 - 2. Install mock-ups and test in presence of sealant manufacturer's authorized representative and Architect to assure installation procedures are consistent with warranty requirements.
 - 3. After sealant has achieved sufficient cure as coordinated with manufacturer's representative, conduct adhesion pull-tests, or non-destructive testing, at discretion of Architect. Conduct tests per ASTM C1521.
 - a. Confirm results of adhesion tests as acceptable by Architect, Owner or Owner's representative, and sealant manufacturer prior to proceeding with Work.
 - 4. Leave approved mock-ups in place to establish standards and guidelines for acceptable installation of sealant Work and acceptable appearance.

7.8 DELIVERY, STORAGE, AND HANDLING:

- A. Comply with Section 01600.
- B. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.
- C. Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight per manufacturer's recommendations.
- D. Condition products to approximately 60 degrees F (16 degrees C) to 70 degrees F (21 degrees C) for use per manufacturer's recommendations.
- E. Handle products with appropriate precautions and care as stated on Material Safety Data Sheet.

7.9 PROJECT CONDITIONS:

Do not use products under conditions of precipitation, or in inclement or freezing weather. Verify that substrates are clean, dry, and frost-free. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions per manufacturer's recommendations if application during inclement weather occurs.

7.10 WARRANTY:

- A. Provide manufacturer's 5 year standard material warranty.
- B. Include coverage for replacement of sealant materials which fail to achieve water tight seal, exhibit loss of adhesion or cohesion, or do not cure, provided sealant has been installed per manufacturer's recommendations.
- C. Warranty Exclusions: Failure resulting from concrete shrinkage, excessive movement structural cracks or defects, faulty construction, faulty design, faulty materials (other than joint sealants), improper installation, misuse of structure, settlement, or accident, fire, or other casualty or physical damage.

7.11 MATERIALS:

- A. Sealant for all exterior caulking shall be a two-component or one-component non-sagging polyurethane sealant conforming to Federal Specification TT-S-00227E, Class A, Type II, for two component and TT-S-00230C, Class A, Type II, for one-component sealants. Acceptable manufacturers include Pecora and Sonneborn NP-1 and NP-2.
- B. Sealant for interior use shall be a paintable type equal to DAP Acrylic Latex Caulk, or Pecora AC-20 Acrylic Latex Caulk or Sonneborn Sonolac.
- C. Primer shall be the type recommended by the sealant manufacturer and shall be supplied by the manufacturer of the sealant used (equal to Sonneborn primer 733).
- D. Backup material and joint fillers shall be non-staining, compatible with sealant and primer used, and of a resilient nature. Raveled strands of non-staining rope fiber or cotton wicking may be used as filler in deep joints but the filler backing up the sealant shall be rod shaped foam neoprene, foam polyethylene, or hollow vinyl extrusions. Filler material impregnated with oil, bitumen, or similar substances shall not be used in any case.
- E. Bond breakers shall be polyethylene tape, pressure sensitive masking tape, or equal, as recommended by the sealant manufacturer.
- F. Sealant for interior use in sound insulated partitions, if specified, shall be USG Acoustical Sealant.
- G. For other services, provide products especially formulated for the proposed use and approved in advance by the Architect.

H. Do not retain at the job site material which has exceeded the shelf life recommended by its manufacturer.

7.12 COLOR:

A. Caulking in connection with existing brick veneer shall be a color to match the mortar joints as closely as possible unless otherwise noted. Other colors shall be selected by the Architect from the specified manufacturer's standard colors.

B. Should such standard color not be available from an approved substitute manufacturer except at additional charge, provide such colors at no additional cost to the Owner.

C. In concealed installations, and in partially or fully exposed installations where so approved by the Architect, use standard gray or black sealant.

7.13 PREPARATION OF JOINTS:

A. Surfaces to receive sealant shall be clean, dry, sound, and above 40 degrees F. temperature. Remove oil, grease, wax, tar, asphalt, corrosion, laitance, dust, and similar foreign substances.

B. Porous materials such as concrete and brick shall be cleaned by grinding, blast cleaning, mechanical abrading, acid washing, or a combination of these methods. Remove loose particles present or resulting from grinding, abrading, or blast cleaning by blowing out joints with oil-free compressed air.

C. Non-porous surfaces such as metal and glass shall be cleaned either mechanically or chemically. Protective coatings on metal shall be removed by a solvent. Wipe off solvent with clean, white lintless cloths or paper towels; do not allow solvent to air dry without wiping. Joint surfaces protected by masking tape or strippable film shall be cleaned as described after removal of tape or coating.

D. Prime surfaces before caulking where recommended by sealant manufacturer.

7.14 APPLICATION:

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.

C. Equipment:

1. Apply sealant under pressure with power-actuated hand-gun or manually-operated hand-gun, or by other appropriate means.

2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.
- D. Fill caulked joints with sealant to same depth as width of joint, but in no case less than 1/4" deep, except that joints wider than 1/2" shall be filled to a maximum depth of 1/2". Joints with greater depths than required shall be filled to the required depth from surface with approved joint filler. Apply sealant with gun, have proper size nozzle, and fill all voids solidly; superficial sealing with skin bead will not be acceptable.
 - E. Sealant shall be mixed, handled and applied strictly in accordance with the manufacturer's instructions. Do not add foreign substances of any kind to the sealant material.
 - F. Apply masking tape on adjacent surfaces, where required, in continuous strips in alignment with joints. Remove tape immediately after joints have been sealed and tooled.
 - G. Tool joints to the profile shown on the drawings, or as otherwise required if such profiles are not shown on the drawings.
 1. Provide uniformly smooth joints with slightly concave surface.
 2. Do not use tooling agent unless specifically so recommended in writing by the manufacturer of the sealant.

7.15 INSTALLATION OF BACKUP MATERIAL:

- A. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Installation tool:
 1. For installation of backup material, provide a blunt-surfaced tool of wood or plastic, having shoulders designed to ride on the adjacent finished surface and a protrusion of the required dimensions to assure uniform depth of backup material below the sealant.
 2. Do not, under any circumstances, use a screwdriver or similar tool for this purpose.
 3. Using the approved tool, smoothly and uniformly place the backup material to the depth indicated on the drawings or otherwise required, compressing the backup material 25% to 50% and securing a positive fit.

7.16 CLEANING:

- A. Remove masking tape immediately after joints have been tooled.
- B. Clean adjacent surfaces free of sealant or soiling resulting from caulking. Leave all work in a neat and clean condition.

- C. Upon completion of the work of this section, promptly remove from the job site all debris, empty containers and surplus material derived from this portion of the Work.

7.17 WASTE MANAGEMENT:

- A. Separate waste in accordance with a Waste Management Plan.
- B. Close and seal tightly all partly used sealant containers and store protected in well-ventilated fire-safe area at moderate temperature.
- C. Place used sealant tubes and containers in areas designated for hazardous materials.

SECTION 09900 - PAINTING

9.1 GENERAL:

- A. Applicable provisions of the General Conditions and Division 1- General Requirements, apply to the work under this section.
- B. The Painting Contractor agrees to save the Owner and Architect harmless from all liens or damages to persons or property arising from or caused by his work and to carry sufficient liability and property damage insurance on the job, in an amount satisfactory to the Architect. The Painting Contractor shall comply with all other federal and state laws as required.

9.2 SUMMARY:

- A. Painting is required on all new and existing surfaces as scheduled and noted on the drawings and herein as specified and as needed for a complete and proper installation.
- B. The term "paint" as used herein is all inclusive, meaning emulsions, enamels, oil paints, sealers, stains, varnishes, polyvinyl emulsions, latex emulsions and similar coatings, whether used as prime, intermediate, or finish coats.
- C. Before any paint material has been delivered to the job, the Supplier shall submit a complete list of materials proposed for use, identifying each type of material by manufacturer's brand name, and no material shall be delivered to the job until the Architect's approval has been secured in writing. Approval will be of brands and quality, but not for results obtained.
- D. Painting will not be required on putty or glazing compound, or on factory finished items including prefinished metal fascia; equipment; moving parts of operating units; sensing devices; motor shafts; required labels or equipment identification; galvanized wire work, and prefinished metal gutters and downspouts except as may be specifically required elsewhere in the specifications or on the drawings.
- E. The Painting Contractor shall furnish all material, labor, and equipment required to complete all painting and finishing as shown on drawings, plans, and specifications.

- F. The Painting Contractor shall examine the specifications for the various other trades and shall thoroughly familiarize himself with all their provisions regarding their painting. All surfaces that are left unfinished by the requirements of other specifications shall be painted or finished as a part of this contract.
- G. Copper, bronze, chromium plate, nickel, stainless steel, aluminum, Monel metal, lead, and lead-coated copper shall not be painted or finished, except as otherwise specified.
- H. The Painting Contractor shall be responsible for inspecting the work of others prior to the application of any paint or finishing material. If any surface to be finished cannot be put in proper condition for finishing by customary cleaning, sanding, and puttying operations, the Painting Contractor shall immediately notify the Owner or the Architect in writing or assume responsibility for and rectify any unsatisfactory finish resulting.

9.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Performance standards are specified in Section 01060 - Regulatory Requirements.
- B. Cleaning is specified in Section 01710 - Cleaning.
- C. Caulk is specified in Section 07920 - Sealants and Caulking.

9.4 SUBMITTALS, COLORS, AND SPECIMENS FOR APPROVAL:

- A. Comply with pertinent provisions of Section 01300.
- B. Product Data: Within five calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Submit a list of equivalent products proposed for use when other than the products named. Cross-reference named products for comparison and include product data for each proposed equivalent product.
- C. Samples:
 - 1. The Architect will prepare a color schedule showing colors to be used and locations of use with color chip samples provided by the paint supplier for guidance in painting.
 - 2. The Architect may select, allocate, and vary colors on different surfaces throughout the Work. Following the selection of colors and glosses by the Architect, the Contractor shall submit samples for the Architect's review as follows:

- a. Prepare three samples at the job of each color and each gloss for each material on which the finish is specified to be applied. Successive coats on these sample panels shall be applied in such a way that portions of all preceding coats remain exposed. Prepare wood samples on a piece of wood that matches the species and texture of wood to which the coating will be applied.
- b. Except as otherwise directed by the Architect, make Samples approximately 8"X10" in size.
- c. Revise and resubmit each Sample as requested until the required gloss, color, dry mil thickness, and texture is achieved. Such Samples, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
- d. After approval of 8"X10" samples by the Architect, the Contractor shall provide at least 100 sq. ft. of each finish on actual wall surfaces and other building components.
 1. Provide full-coat finish samples in areas as directed by the Architect.
 2. Provide required sheen, color, texture, materials, and workmanship.
 3. If necessary, simulate finished lighting condition for review of in-place work.

After approval these sample areas and building components shall serve as the standard for similar work throughout the complex.

- e. The Contractor shall not commence finish painting until approved Samples are on file at the job site.

9.5 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Paint Coordination:
 1. Provide finish coats which are compatible with the prime coats actually used.
 2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
 3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
 4. Provide barrier coats over non-compatible primers, or remove the primer and re-prime as required.

- C. No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce satisfactory results therewith will be considered unless such claim is made in writing to the Architect before the Contract is signed.

9.6 DELIVERY, STORAGE, AND HANDLING:

- A. Comply with pertinent provisions of Section 01600.
- B. Deliver products to the Site in original sealed containers with labels intact.
- C. All materials used on the job shall be stored in a single place designated by the Owner or the Architect. Such storage place shall be kept neat and clean and all damage thereto or to its surroundings shall be made good by the Painting Contractor.

9.7 PROJECT CONDITIONS:

- A. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45° F, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
- B. Weather conditions:
 - 1. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces, unless otherwise permitted by the manufacturer's printed instructions as approved by the Architect.
 - 2. Applications may be continued during inclement weather only within the temperature limits specified by the paint manufacturer as being suitable for use during application and drying periods.
 - 3. Apply paint only when temperature of surfaces to be painted and surrounding air temperature are within the range permitted by manufacturer's printed instruction for the product used. No paint shall be applied when the outside air temperature is less than 50 degrees.
- C. Do not apply paint until concrete and mortar has cured 60 days minimum.
- D. Ensure lighting level of 80-ft. candles, measured at substrate surface and mid-height of vertical surfaces, is provided during paint application.
- E. All soiled or used rags, waste, and trash must be removed from the day's work area(s) each night, and every precaution taken to avoid the danger of fire.
- F. The Painting Contractor shall protect surfaces and objects inside and outside the building, as well as the grounds, lawns, shrubbery, and adjacent properties against damage. The Painting Contractor shall hold himself responsible for damage to adjacent furnishings.

G. At completion of work, the Painting Contractor shall remove from the premises all surplus painting materials and all debris created by him; he shall remove all spatters and leave his part of the work in a clean and finished condition.

H. Before starting paint application in enclosed areas broom clean areas and remove excess dust. After installation has started, do not broom or otherwise generate dust.

9.8 EXTRA STOCK:

Upon completion of the work of this Section, deliver to the Owner an extra stock equaling a minimum of a one-gallon unopened container of each product in each color, type, and gloss of paint used in the Work. Each container shall be tightly sealed and clearly labeled with the contents and the location where used.

9.9 MATERIALS:

A. Acceptable manufacturers:

1. The Painting Schedule in this Section is based, in general, on products of Pittsburgh Paints, PPG Industries, Inc. For Paint Materials, acceptable manufacturers shall be one of the following:

- a. Pittsburgh Paints, PPG Industries, Inc.
- b. The Sherwin-Williams Company
- c. The Glidden Company, ICI Paints
- d. Pratt & Lambert, Inc.
- e. Devoe & Reynolds Co.
- f. Courtaulds Coatings, Inc., Porter Paint Division

2. Ready mixed Latex Wood Filler and resin based, ready mixed Exterior Spackling Paste shall be manufactured by Synko.

3. Paint remover shall be a methylene chloride paint remover equal to Dad's Easy Spray Contractor Grade Paint and Varnish Remover as manufactured by Sansher Corporation, 8005 N. Clinton Street, Fort Wayne, IN 46825.

4. Mildewcidal / Algicidal Multi-Purpose wash equal to Mildew Check as manufactured by Pittsburgh Paints, PPG Industries, Inc. shall be applied over all areas subject to mold / algae / mildew growth.

5. No substitutions shall be allowed except under the provisions of Section 01600.

6. Where products are proposed other than those specified by name and number in the Painting Schedule, provide under the product data submittal required by Article 9.4 of this Section a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.

7. Accessory Materials: As required to perform the work and achieve specified results.

8. Spackling Putty: Duraboard Spackling Putty, manufactured by United States Gypsum Company.
 - B. Undercoats and thinners:
 1. Provide undercoat paint produced by the same manufacturer as the finish coat.
 2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
 3. Insofar as practicable, use undercoat, finish coat, and thinner material as parts of a unified system of paint finish.
 - C. Accessory Materials: As recommended by the manufacturer(s) to perform the work and achieve specified results.
 - D. All paint shall be “best grade” or “first quality” for the use specified.
 - E. All paint shall be ready-mixed, except that tinting and thinning may be done at the job. All paint materials shall be delivered in original unopened containers with labels intact and legible. The paint shall be suitable for spraying when thinned by not more than 12 percent by volume of thinner.
 - F. All materials shall be used strictly in accordance with manufacturer’s label directions.
 - G. All materials such as linseed oil, shellac, and turpentine shall be pure and of highest quality and approved by the Architect. They shall bear identifying labels on the containers.
 - H. Any necessary materials required for a complete and proper installation not specifically covered and specified in this contract shall be subject to the Architect’s approval and the Contractor shall submit to the Architect, before any materials are delivered, the name and the brand of the materials which he proposes to use and shall receive an approval of same in writing from the Architect.
- 9.10 EQUIPMENT:
- A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Architect.
 - B. For application of mildewcide, paint stripper, and washing solutions, use only such equipment and pressure settings as is recommended for washing the particular surface by the manufacturer of the cleaning solutions, the equipment, and the material to be washed.
 - C. Prior to use of application equipment, verify that the proposed equipment is actually compatible with the material to be applied, and that integrity of the finish will not be jeopardized by the use of the proposed equipment.

9.11 SURFACE CONDITIONS:

- A. It shall be the responsibility of the Painting Contractor to carefully inspect and examine surfaces or areas prepared to receive his work. Should he consider such surfaces or areas not proper or satisfactory for the installation or application of his work, he shall notify the Owner in writing, with copy to the Architect. Should he proceed before proper corrections have been made, it shall be at his own risk and any subsequent corrections that may be ordered or required shall be at his expense. The starting of work on any surface shall imply that the surface has been inspected and approved by the Painting Contractor.
- B. Verify that defects in surfaces to be finished can be corrected by customary cleaning, sanding, and puttying operations.
- C. Measure moisture content of substrate. Do not apply finishes when moisture content of concrete, masonry, and gypsum board exceeds 12 percent and when moisture content of exterior wood exceeds 15 percent.
- D. Measure alkalinity of concrete, plaster, and masonry surfaces. Do not apply finishes when alkaline is sufficient to cause blistering of finish paint.

9.12 SURFACE PREPARATION:

A. General:

- 1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's recommendations as approved by the Architect.
- 2. Remove removable hardware and items which are in place and are not scheduled to receive paint finish; or provide surface applied protection prior to surface preparation and painting operations. Remove doors if necessary to paint the bottom edge. Remove casework hardware, electrical device plates, light fixture trim, and fittings.
- 3. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
- 4. Clean each surface to be painted prior to applying paint or surface treatment.
- 5. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees F, prior to start of mechanical cleaning.
- 6. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet, newly painted surfaces.
- 7. Remove any foreign materials which will adversely affect adhesion or appearance of applied coating.
- 8. Remove mildew and neutralize surface.

9. Any and all damage to interior or exterior of all buildings resulting from surface preparation shall be repaired at the Contractor's expense.
 10. Efflorescence should be removed from all masonry surfaces after causes have been corrected.
 11. Remove electrical panel box covers and doors before painting walls. Paint separately and reinstall when paint is dry.
 12. Provide drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- B. Preparation of wood surfaces:
1. Clean wood surfaces until free from dirt, oil, and other foreign substances.
 2. Smooth finished wood surfaces exposed to view using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
 3. All voids in exterior wood such as nail holes, cracks, etc. shall be filled with a resin based exterior spackling paste. Larger voids, up to 2 inches in diameter, shall be filled with a latex wood filler. All wood with voids larger than two (2) inches in diameter shall be replaced.
 4. Prime all surfaces (face, edges, ends, and back side) of new wood as soon as possible.
 5. Apply paste wood filler by wiping across the grain, then in a circular motion to obtain a smooth filled surface. Allow to dry overnight and sand with the grain, to obtain a smooth surface before applying finish.
 6. To prevent bleeding or discoloration, all knots, pitch steaks, and sappy spots shall be sealed before application of the prime coat.
 7. Unless specifically approved by the Architect, do not proceed with painting of wood surfaces until the moisture content of the wood is 15% or less as measured by a moisture meter approved by the Architect.
 8. For natural finish work, filler (if required) shall be colored to match wood.
 9. Between coats of polyurethane prime coat, rub with steel wool and allow overnight drying.
- C. Preparation of metal surfaces:
1. Thoroughly clean surfaces until free from dirt, oil, and grease.

2. On new unfinished galvanized surfaces use solvent for the initial cleaning, and then treat the surface thoroughly with phosphoric acid etch in accordance with the manufacturer's directions for use. Remove etching solution completely before proceeding. Repair galvanized surfaces and coat welds with zinc-rich primer.
3. Clean all new unfinished or exposed existing ferrous metal surfaces with mineral spirits to remove soil, grease, and dirt. Wipe dry. Remove all rust, scale, and defective paint by scraping and wire brushing. Where steel or iron has a heavy coating of scale it shall be removed by sandblasting if necessary.
4. Allow all metal surfaces to dry thoroughly before application of paint.

D. Preparation of Concrete and Masonry Surfaces:

1. Remove form oil from cast-in-place concrete.
2. Patch large holes with pointing mortar and finish flush with adjacent surface. Fill small holes, after priming, with prepared patching material.
3. Acid etch concrete floor surfaces, scheduled to have paint finish, with solution of 1 part 32 percent muriatic acid to 4 parts water. Flush floor with clean water and allow to dry thoroughly.

E. Other Previously Painted Surfaces:

Remove all blistered, peeling, and scaling paint to a sound substrate. Remove heavy chalk by scrubbing with soap and water. Sand any glossy areas and dust clean. Clean and spot prime any failed areas. Use soap and water on protected areas such as eaves and ceilings to remove invisible residues. Rinse, clean, and let dry. Any existing mildew on the surface must be completely killed and removed before applying paint.

F. Preparation of Gypsum Board Surfaces:

1. Fill scratches and uneven areas with spackling compound and sand to a smooth, level surface. Exercise care to avoid raising nap of paper.
2. For surfaces scheduled to receive epoxy, semi-gloss or gloss enamel finish, apply skim coat of joint compound to entire surface.

9.13 MATERIALS PREPARATION:

A. General:

1. Mix and prepare paint materials in strict accordance with the manufacturers' recommendations as approved by the Architect.
2. When materials are not in use, store in tightly covered containers.

3. Store and mix paint materials only in spaces designated and assigned for the purpose. Do not permit painter oil soaked rags to accumulate. Exercise strict precautions at all times against fire.
4. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.

B. Stirring:

1. Stir materials before application, producing a mixture of uniform density.
2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain the material before using.

9.14 APPLICATION:

A. General:

1. Touchup shop-applied prime coats which have been damaged, and touchup bare prior to start of finish coats application.
2. Slightly vary the color of succeeding coats from light to dark.
 - a. Do not apply additional coats until the completed coat has been inspected and approved.
 - b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat work in question. The Painting Contractor shall furnish the Architect a report of each coat applied, when completed, for inspection, and approval to comply with the above.
3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five feet.
4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
5. All work shall be done by skilled mechanics in accordance with the manufacturer's directions and the best standard practice and in a manner acceptable to the Architect. Any work not conforming to these specifications shall be corrected to the satisfaction of the Architect. Such corrections shall be made at the expense of the Painting Contractor.
6. All finishes shall be evenly applied and free from sags, runs, crawls, brush marks, skips, or other defects.
7. Products shall be applied at the proper consistency and shall be thinned, tinted, or otherwise altered only in accordance with the manufacturer's printed directions.

8. All materials shall be applied to surfaces that are dry and properly prepared and when weather conditions are favorable for painting. Exterior surfaces shall not be painted in damp, frosty, or cold weather. Latex paints shall not be applied when surface or air temperature is below 50° F. If any paint is applied to a damp material or improperly prepared surfaces, the Contractor shall use such corrective measures as determined by the Architect.
9. Use applicators and techniques best suited for substrate and type of material being applied. Apply paint systems to metal surfaces by spraying. Brush applications are unacceptable for metal surfaces.
10. Apply materials at not less than manufacturer's recommended spreading rate to provide a total dry film thickness not less than 1.5 mil per coat or that recommended, for the system used, by the specific manufacturer, whichever is greater.
11. Protect all adjacent work and materials by suitable covering, or other methods, during the progress of the work. Upon completion, remove all paint spots from the floors, glass, and other surfaces.

B. Drying:

1. Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.
2. Consider oil-base and oleo-resinous solvent-type paint as dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and when the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Brush Applications:

1. Brush out and work the brush coats onto the surface in an even film.
2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.

D. Spray Application:

1. Except as specifically otherwise approved by the Architect, confine spray application to metal framework and similar surfaces where hand brushwork would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

- E. Sand lightly between coats to achieve a uniform finish.

- F. Covering shall be complete. Apply additional coats when undercoats, soil, or other conditions show through the final coat of paint, until paint film is of uniform finish, color, and appearance and coverage is complete.
- G. Apply stain and varnish smoothly to produce surface free of laps, runs, cloudiness, brush marks, or other surface imperfections.
- H. Apply transparent and semi-transparent finishes to produce surface uniform in shading with only the color variations being those caused by natural wood grain.
- I. Painting is not required in concealed areas and generally inaccessible areas, such as foundation spaces, attic spaces, furred areas, utility tunnels, pipe chases, duct shafts, and elevator shafts.
- J. Where existing work is cut, patched, or added to, paint or touch-up surfaces to match existing work as closely as possible.
- K. For completed work, match the approved Samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.
- L. Miscellaneous surfaces and procedures:
 - 1. Exposed mechanical items:
 - a. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
 - b. Paint visible duct surfaces behind vents, registers, and grilles flat black.
 - c. Wash metal with solvent, prime, and apply two coats of DTM industrial enamel.
 - 2. Exposed pipe and duct insulation:
 - a. Apply one coat of latex paint on insulation which has been sized or primed under other Sections; apply two coats on such surfaces when unprepared.
 - b. Match color of adjacent surfaces.
 - c. Remove band before painting, and replace after painting.
 - 3. Hardware:
 - a. Paint prime coated hardware to match adjacent surfaces.
 - b. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.

4. Wet areas:
 - a. In pool areas and contiguous areas, add an approved fungicide to paints.
 - b. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
 - c. For water emulsion and glue size surfaces, use 4% sodium tetrachlorophenate.
5. Exposed vents: Apply two coats of heat-resistant paint approved by the Architect.
6. Paint exterior doors on tops, bottoms, and side edges, same as exterior face.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Paint exposed conduit, boxes, gas lines, and electric equipment, except prefinished items.
9. Paint exposed ducts, pipes, hangers, and supports, except prefinished items.
10. Paint interior surfaces of ducts that are visible through grilles and louvers, to limit of sight line.
11. Paint louvers, grilles, covers, and access panels except prefinished items. Paint dampers to match face of grilles.
12. Paint surfaces behind movable equipment and furnishings same as similar exposed surfaces.

9.15 SCHEDULE OF PAINTING:

Note:

1. All items listed in the following paint schedule may not apply to this project.
2. Numbers of coats listed in this schedule are minimum. If coverage is not complete and uniform, additional coats must be added until the finished surface is satisfactory and accepted by the Architect.

A. Exterior Metal, Ferrous:

1. First coat (exposed metal): PPG PITT-TECH Exterior Primer DTM Industrial Enamel 90-712.
2. Second coat: PPG PITT-TECH High Performance Waterborne High Gloss DTM Industrial Enamel 90-374. Existing painted metal shall receive second coat only.

B. Exterior Metal, Galvanized:

1. First coat (exposed metal): PPG Speedhide Galvanized Steel Primer, 6-209.
2. Second coat: PPG PITT-TECH High Performance Waterborne High Gloss DTM Industrial Enamel 90-374.

3. Third Coat: PPG PITT-TECH High Performance Waterborne High Gloss DTM Industrial Enamel 90-374.

C. Aluminum:

1. First coat (unfinished aluminum): PPG PITT-TECH Exterior Primer DTM Industrial Enamel 90-712.
2. Second coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.
3. Third coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.

D. Exterior Wood:

1. First coat (unpainted wood): PPG Sun-Proof Universal Exterior Oil Based Primer 1-70.
2. Second coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.
3. Third coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.

E. Concrete and Masonry:

1. First coat (new unpainted block only): PPG Speedhide Latex Masonry Block Filler, 6-7.
2. Second coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.
3. Third coat: PPG Manor Hall Exterior Eggshell 100% Acrylic Latex House and Trim 79 Line.

F. Concrete Floors :

1. First Coat : PPG Speedhide Masonry Paint Surface Sealer, 6-8.
2. Second and Third Coats : PPG Alkyd / Oil Floor and Deck Enamel, #3-Series.

G. Interior Woodwork (PAINTED) :

1. First Coat : PPG Speedhide Quick-Drying Enamel Undercoat, 6-6.
2. Second Coat : PPG Speedcraft Interior Eggshell Latex Enamel, 5-411 Series.

H. Interior Woodwork (STAINED) :

1. First Coat : PPG Interior Semi-Transparent Satin Rez, 77-302.

2. Second and Third Coats : PPG Rez Polyurethane Clear Varnishes, 77-Series.

I. Drywall (LATEX FINISH) :

1. First Coat : PPG Speedcraft Interior Latex Primer-Sealer, White 5-2 Series.

2. Second and Third Coats : PPG Speedcraft Interior Eggshell Enamel, 5-411 Series.

J. Equipment and Other Metal Surfaces :

1. First Coat : PPG Speedhide Rust Inhibitive Steel Primer, #6-208 Series.

2. Second and Third Coats : PPG Speedhide Gloss-Oil Interior / Exterior Enamels, #6-282 Series.

K. PVC Pipe and Insulated Pipe Covering :

1. First and Second Coats : PPG Pitt-Tech One Pack Interior / Exterior High Performance, High Gloss, DTM Industrial Waterborne Acrylic Enamel, 90 Series.

L. Interior Ferrous Metals (CONVENTIONAL ALKYD SYSTEM) :

1. First Coat: PPG Multiprime Inhibitive Primer 97-682.

2. Second and Third Coats: PPG Speedhide Interior Enamel, #6-1110.

M. Interior Galvanized Metal (CONVENTIONAL ALKYD):

1. First Coat: PPG Speedhide 6-209 Galvanized Steel Primer.

2. Second and Third Coats: PPG Speedhide Gloss-Oil Interior / Exterior Enamels, #6-252 Series.

9.16 WASTE MANAGEMENT:

- A. Separate wastes in accordance with a Waste Management Plan. Set aside extra paint for future color matches, or reuse by Owner, Habitat for Humanity, etc. Where paint recycling is available, collect all waste paint by type and provide for delivery to recycling or collection facility.
- B. Close and seal tightly all partly used paint and finish containers and store protected in well-ventilated fire-safe area at moderate temperature.
- C. Place empty containers of solvent-based paints in areas designated for hazardous materials.
- D. Do not dispose of paints or solvents by pouring on the ground. Place in designated containers for proper disposal.

THIS AND THE PREVIOUS PAGES DO NOT NEED TO BE RETURNED.

General Information about the Vendor

Sign Your Name to the Right of the Arrow	
Printed Name and Title	
Company Name	
Street Address	
City/State/Zip	
Contact Person (Please Print Clearly)	
Telephone Number	
Fax Number	
Cell Number	
Vendor's e-mail address (Please Print Clearly)	

Please acknowledge addenda have been issued by checking below as appropriate:

None: Addendum 1 Addendum 2 Addendum 3 Addendum 4 Addendum 5

Addenda are not mailed but posted at www.kcdc.org. Click on "Doing Business With KCDC" and then on "Open Solicitations" to find addenda. Please check for addenda prior to submitting a bid.

Statistical Information

This business is owned & operated by persons at least 51% of the following ethnic background

White 1 Black 2 Native Americans 3
 Hispanic 4 Asian/Pacific 5 Hasidic Jew 6

As defined on KCDC's webpage (see the "General Instructions to Vendors"), this business qualifies as being:

Small Business Section 3 Woman Owned

Total Project Cost _____

\$ _____

Write the Total Project Cost in words below. In the event that there is a discrepancy between the numeric and written cost, the written cost will prevail.

The undersigned agrees that the following conditions are or will be met.

NON-COLLUSION AFFIDAVIT

1. Vendor fully understands the preparation and contents of the attached offer and of all pertinent circumstances respecting such offer;
2. Such offer is genuine and is not a collusive or sham offer;
3. Neither the said vendor nor any of its officers, partners, owners, agents, representatives, employees or parties interest, including this affiant, has in any way colluded conspired, connived or agreed, directly or indirectly, with any other responder, firm, or person to submit a collusive or sham offer in connection with the contract or agreement for which the attached offer has been submitted or to refrain from making an offer in connection with such contract or agreement, or collusion or communication or conference with any other firm, or, to fix any overhead, profit, or cost element of the offer price or the offer price of any other firm, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against KCDC or any person interested in the proposed contract or agreement; and
4. The price or prices quoted in the attached offer are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the firm or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

AFFIDAVIT OF ELIGIBILITY

1. The vendor is not ineligible for employment on public contracts as a result of a conviction or guilty plea or a plea of nolo contendere to violations of the Sherman Anti-Trust Act, mail fraud or state criminal violations with a contract let by the State of Tennessee or any political subdivision of the State of Tennessee.
2. No commissioner or officer of KCDC or other person whose duty it is to vote for, let out, overlook or in any manner superintend any of the work for KCDC has a direct interest in the responder.

CONFLICTS OF INTEREST CERTIFICATION

No employee, officer or agent of the grantee or subgrantee shall participate in selection, or in the award or administration of a contract supported by Federal funds if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when:

1. The employee, officer or agent,
2. Any member of his immediate family,
3. His or her partner, or
4. An organization which employs, or is about to employ, any of the above, has a financial or other interest in the firm selected for award.

The grantee's or subgrantee's officers, employees or agents will neither solicit nor accept gratuities, favors or anything of monetary value from vendors, potential vendors, or parties to subagreements.

By submission of this form, the vendor is certifying that no conflicts of interest exist.

The undersigned hereby acknowledges receipt of the above applicable laws and verifies that the bid submitted in response to this solicitation is in full compliance with the listed requirements.

ITEM	RESPONSE
Signed by _____→	
Printed Name _____→	
Title _____→	
Subscribed and sworn to before me this date _____→	
By (Notary Public) _____→	
My Commission Expires on _____→	

**Representations, Certifications,
and Other Statements of Bidders**
Public and Indian Housing Programs

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1. Certificate of Independent Price Determination

(a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

insert

full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization;

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[] [Contracting Officer check if following paragraph is applicable]

(d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding \$50,000)

(1) Each bidder shall execute, in the form provided by the PHA/IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" [] is, [] is not included with the bid.

2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) [] has, [] has not employed or retained any person or company to solicit or obtain this contract; and

(2) [] has, [] has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding \$100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

- (a) Result in an unfair competitive advantage to the bidder; or,
- (b) Impair the bidder's objectivity in performing the contract work.

[] In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of 90 calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a) [] is, [] is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b) [] is, [] is not a women-owned business enterprise. "Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c) [] is, [] is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

- | | |
|---|---|
| <input type="checkbox"/> Black Americans | <input type="checkbox"/> Asian Pacific Americans |
| <input type="checkbox"/> Hispanic Americans | <input type="checkbox"/> Asian Indian Americans |
| <input type="checkbox"/> Native Americans | <input type="checkbox"/> Hasidic Jewish Americans |

9. Certification of Eligibility Under the Davis-Bacon Act

Act (applicable to construction contracts exceeding \$2,000)

- (a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

10. Certification of Nonsegregated Facilities (applicable to contracts exceeding \$10,000)

- (a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.
- (b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.
- (c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.
- (d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:
 - (1) Obtain identical certifications from the proposed subcontractors;
 - (2) Retain the certifications in its files; and
 - (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Note: The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

11. Clean Air and Water Certification (applicable to contracts exceeding \$100,000)

The bidder certifies that:

- (a) *Any facility to be used in the performance of this contract [] is, [] is not listed on the Environmental Protection Agency List of Violating Facilities:*
- (b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,
- (c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

12. Bidder's Signature

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

(Signature and Date) _____

(Typed or Printed Name) _____

(Title) _____

(Company Name) _____

(Company Address) _____

Bidders are to provide the information requested below so that KCDC can determine their capacity to perform the required work.

1 EXPERIENCE:

Years in business		
Years in business under this name		
Years performing this type of work		
Value of work now under contract		
Value of work in place last year		
Number of Clients		
Would this contract make KCDC your largest client?		
Percentage (%) of work usually self-performed (not sub contracted)		
Has your firm:		
Failed to complete a contract?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Been involved in bankruptcy or reorganization?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Pending judgment claims or suits against firm?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
What company do you use for pre-employment criminal background checks?		

2. SAFETY:

Have you had any OSHA fines within the last three (3) years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you had any job related fatalities within the last five (5) years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If you have answered YES to either of the above questions, you MUST submit, on a separate sheet, the details describing the circumstances surrounding each incident.		

3. PERSONNEL, EQUIPMENT & MATERIALS:

How many total employees does your company employ?		
Area	Fulltime	Part Time
Clerical		
Management		
Laborers		

Roofing Services at Isabella Towers C14027

Solicitation Document E References

Provide three references as similar as possible to this project. A firm may only be listed as a reference once even if you have done multiple jobs for them.

One

Name of the business that was serviced →			
Contact person →			
Contact person title →			
Contact person's telephone number →			
Contact person's email address →			
Description of the service provided →			
Contract began →		Contract ended	
Approximate Dollar Value of the Contract	\$		

Two

Name of the business that was serviced →			
Contact person →			
Contact person title →			
Contact person's telephone number →			
Contact person's email address →			
Description of the service provided →			
Contract began →		Contract ended	
Approximate Dollar Value of the Contract	\$		

Three

Name of the business that was serviced →			
Contact person →			
Contact person title →			
Contact person's telephone number →			
Contact person's email address →			
Description of the service provided →			
Contract began →		Contract ended	
Approximate Dollar Value of the Contract	\$		

**CAUTION!!**

State Law requires certain bidder license information be on the front of your bid envelope-if the bid exceeds \$25,000. As a condition of holding your license, you are to know these requirements. KCDC provides the following page, the envelope cover sheet, as a courtesy. You are ultimately responsible for providing the correct information that is required to be on the front of your envelope. Failure to supply such information as is required by the State of Tennessee will invalidate your offer.

For more information go to: <http://www.tn.gov/regboards/contractors/index.shtml>

Attach the following page, when properly completed, to the front of your bid envelope.

Do not put it inside the envelope.

Do not put it on the USPS/Fed Ex/UPS envelope

Bid/Contract Name	Roofing Services at Isabella Towers
Bid/Contract Number	C14027
Bid Due Date/Time	06-18-14 at 11:00 a.m.

Bidder's/Firm's Name	
State of Tennessee Contractor's License Holder Name	
State of Tennessee Contractor's License Number (matching the name above)	
State of Tennessee Contractor's License Classification Code Pertaining to this bid	
State of Tennessee Contractor's License Expiration Date	

Subcontractors to be used on this project (If subcontract work is not required, write "none required")

Electrical Subcontractor Name on the State of Tennessee's Contractor's License		State of Tennessee Contractor License Number	
State of Tennessee Contractor License Classification(s)		Expiration Date of State Contractor's License	
HVAC Subcontractor Name on the State of Tennessee's Contractor's License		State of Tennessee Contractor License Number	
State of Tennessee Contractor License Classification(s)		Expiration Date of State Contractor's License	
Masonry Subcontractor Name on the State of Tennessee's Contractor's License		State of Tennessee Contractor License Number	
State of Tennessee Contractor License Classification(s)		Expiration Date of State Contractor's License	
Plumbing Subcontractor Name on the State of Tennessee's Contractor's License		State of Tennessee Contractor License Number	
State of Tennessee Contractor License Classification(s)		Expiration Date of State Contractor's License	
Geothermal Subcontractor Name on the License issued by the Department of Environment & Conservation		Department of Environment & Conservation Contractor License Number	
Department of Environment & Conservation License Classification		Expiration Date of Department of Environment & Conservation License	

Advisement: Notes written on the bid envelope changing the bid will not be considered. Such notes must be inside the envelope.

GENERAL:

This form is part of the substitution requirements specified in Section 01630. This form shall be utilized for all substitutions proposed by the Contractor after award of the contract.

PROJECT TITLE & NO.: _____

TO: Terry McKee
Purchasing Director
KCDC
901 Broadway NE
Knoxville, TN 37917

Specified Item: _____
Section: _____ **Paragraph:** _____
Proposed Substitute: _____

Attach complete description, catalog, spec data, and laboratory tests, if applicable.

1. What effect will substitution have on dimensions, gauges, weights, et cetera, indicated in the Contract Documents?

2. What effect will substitution have on wiring, piping, ductwork, et cetera, indicated in the Contract Documents?

3. What effect will substitution have on other trades? _____

4. What effect will substitution have on the construction schedule? _____

5. What are the differences in quality and performance between proposed substitute and specified product? _____

6. Manufacturer's guarantee of the specified products and proposed products are:
Same: _____
Different (Explain): _____

