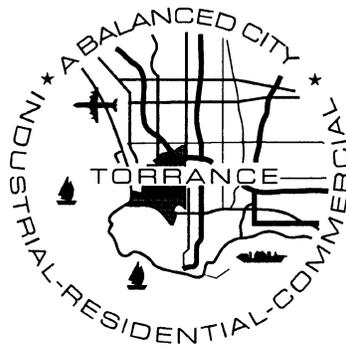


**PROJECT MANUAL FOR TRANSIT FACILITY
ROOF REPLACEMENT
B 2015- 33**



SEPTEMBER 2015

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PART A
NOTICE INVITING BIDS

**CITY OF TORRANCE
CALIFORNIA**

NOTICE INVITING BIDS

Notice is hereby given that sealed proposals for performing the following described work will be received at the office of the City Clerk of the City of Torrance, California, until **3:00 p.m. on Wednesday, October 28, 2015** after which time they will be publicly opened and read at 3:15 p.m. in the Council Chambers of said City:

Bid for Transit Facility Roof Replacement

B2015-33

Plans, Bid Proposal (for reference only) and Specifications are available for viewing and printing from the City's website at <http://www.torranceca.gov/25079.htm>.

There will be a mandatory pre-bid conference held on Tuesday, October 6, 2015 at 10:00 a.m. commencing at Transit Facility, located at the City Yard 20500 Madrona Avenue Torrance, CA 90503. The City of Torrance will consider the bidder as non-responsive if the bidder does not attend the mandatory pre-bid conference. **Addenda will be issued only by email and only to those attended the mandatory pre-bid conference.** All addenda must be acknowledged. Failure to acknowledge addenda on the bid forms provided may render the proposal non-responsive and cause it to be rejected.

An official bid proposal packet, which includes: bid proposal forms, and a bound Specifications booklet may be obtained at the Office of the City Clerk (310) 618-2870, \$ 20.00 if picked up at City Hall, or payment of \$ 30.00 if requested by mail. Both amounts include tax. Neither amount is refundable. A prospective bidder must provide to the City Clerk's office, the firm's name, address, telephone and fax number, a contact person and a valid email address.

If requesting any item(s) by mail, please send check to the following:

**CITY OF TORRANCE
OFFICE OF THE CITY CLERK
3031 TORRANCE BLVD
TORRANCE, CA 90503-2970
ATTN: B2015-33**

The project estimate is between \$ 400,000 - \$500,000. The work shall be completed within sixty (60) calendar days of receipt of the Notice to Proceed (NTP). The sixty (60) calendar day schedule includes: completion of contractual paperwork, submittal review and 30 calendar day onsite work. Bids are required for the entire work described herein.

The City has determined the bidder must have or "C-39" Roof Contracting license. Bidder must have a minimum of 5 years experience under the current license and company organization. Bidder, as the prime contractor, must have successfully completed at least four (4) roofing projects of a similar size and scope using TPO roofing system and application on size larger

than 25,000 square feet (each) or a dollar value exceeding \$ 200,000 (each) within the last five (5) years. References must reflect this experience
Per Division 2, Chapter 2 of the Torrance Municipal Code, the Torrance City Council may reject any and all bids, waive any informality or irregularity in such bids, and determine the lowest responsible bidder.

No Facsimile Bids shall be accepted by the City.

By order of the City Council of the City of Torrance, California.

This contract is subject to California State Prevailing Wage- Pursuant to Section 1771 and 1773 of the Labor Code, the general prevailing wage rates in the county in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, are attached and available from the California Department of Industrial Relations' internet site at <http://www.dir.ca.gov/Public-Works/Prevailing-Wage.html>. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

APPRENTICESHIP EMPLOYMENT STANDARDS. Attention is directed to the provisions in Sections 1776 and 1777.5 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under them.

One of the legal requirements for working on a public works project is the employment of apprentices. The Division of Apprenticeship Standards provides assistance to contractors in employing apprentices on public works sites.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, <http://www.dir.ca.gov/das/PublicWorksForms.htm>

Contractor Registration with the Department of Industrial Relations (SB 854)

- No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
- No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement). For additional information and to register online go to <http://www.dir.ca.gov/Public-Works/Contractors.html>

For further information, please contact Diane Megerdichian, Sr. Business Manager General Services Department at 310-781-7151 or dmegerdichian@torranceca.gov. If emailing questions, please put project title in the subject line.

PART B
INSTRUCTIONS TO BIDDERS

**CITY OF TORRANCE
CALIFORNIA**

INSTRUCTIONS TO BIDDERS

A. QUALIFICATION OF BIDDERS

1. Competency of Bidders

The Bidder shall be thoroughly competent and capable of satisfactorily performing the Work covered by the Bid. As specified in the Bid Documents, the Bidder shall furnish statements of previous experience on similar work. When requested, the Bidder shall also furnish a plan of procedure proposed; organization, machinery, plant and other equipment available for the Work; evidence of financial condition and resources; and any other documentation as may be required by the City to determine if the Bidder is responsible.

2. Contractor's License

At the time of submitting the Bid, the Bidder shall be licensed as a contractor in accordance with the provisions of Chapter 9, Division 3, of the California Business and Professions Code. The required prime contractor license class for the Work is shown in the project Notice Inviting Bids. However, the City reserves the right to award the Contract to a contractor with another class if the City determines that the license is proper for the work.

B. BIDDER RESPONSIBILITY

A responsible Bidder is a Bidder who has demonstrated the attribute of trustworthiness, as well as ability, fitness, capacity and experience to satisfactorily perform the work.

Bidders are notified that, in accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council may determine whether the Bidder is responsible based on a review of the Bidder's performance on other contracts.

If, based on the provision and criteria in Division 2, Chapter 2 of the Torrance Municipal Code, the General Services Director proposes not to recommend the award of contract to the apparent low bidder, the Director shall notify the Bidder in writing of its intention to recommend to the City Council that the Council award the contract to the next lowest responsible bidder. If the Bidder presents evidence in rebuttal to the recommendation, the Director shall evaluate the merits of such evidence, and based on that evaluation, make a recommendation to the City Council.

C. ADDENDA TO THE CONTRACT DOCUMENTS

The City reserves the right to revise or amend these specifications prior to the date set for opening bids. Revisions and amendments, if any, will be announced by an addendum to this bid. If the revisions require additional time to enable Bidders to respond, the City may postpone the opening date accordingly. In such case, the addendum will include an announcement of the new opening date.

All addenda must be attached to the bid. Failure to attach any addendum may render the bid non-responsive and cause it to be rejected.

D. PREPARATION OF THE BID

1. Examination of Site, Plans and Specifications

Bidders shall examine the site of the work and acquaint themselves with all conditions affecting the work. By submitting a bid, the bidder shall be held to have personally examined the site and the drawings, to have carefully read the specifications, and to have satisfied itself as to its ability to meet all the difficulties attending the execution of the proposed contract before the delivery of this proposal, and agrees that if awarded the contract, will make no claim against the City based on ignorance or misunderstanding of the plans, specifications, site conditions and/or contract provisions.

The Contractor shall have included in the contract price a sufficient sum to cover all items, including labor, materials, tools, equipment and incidentals, that are implied or required for the complete improvements as contemplated by the drawings, specifications, and other contract documents.

2. Bid Instructions and Submissions

The Bid shall be submitted on the Bid Proposal forms included in the Specifications. All Bid Documents must be completed, executed and submitted with Bid by Bidder. Required seven (7) Bid Proposal Documents:

1. Bidder's Proposal
2. Addenda Acknowledgment
3. Contractor's Affidavit
4. Bid Bond (10% of Bid)
5. List of Subcontractors and DIR Registration
6. References (1 pages)
7. Bidder's Information (2 pages)

All prices submitted will be considered as including any and all sales or use taxes. In case of a discrepancy between a unit bid price and total bid, the unit price shall prevail.

E. BID FORM/BOND

The Bid must be accompanied by cash, a certified or cashier's check, or a surety bond (bid bond) payable to the City of Torrance. Bids must be submitted on the proposal forms furnished by the City Clerk's office. The Bid Guaranty shall be in an amount equivalent to at least 10% of the Total Contract Bid Price.

Within ten (10) days after the award of the contract, the City Clerk will return the proposal guarantees accompanying those proposals, which are not to be considered in making the award. All other proposal guarantees will be held until the contract has been finally executed, after which they will be returned to the respective bidders whose proposals they accompany.

F. AFFIDAVIT

An affidavit form is enclosed. It must be completed signifying that the bid is genuine and not collusive or made in the interest or on behalf of any person not named in the bid, that the bid has not directly or indirectly induced or solicited any other Bidder to put in a sham bid or any other person, firm, or corporation to refrain from bidding, and that the Bidder has not in any manner sought by collusion to secure for itself an advantage over any other Bidder. Any bid submitted without an affidavit or in violation of this requirement will be rejected.

G. NONRESPONSIVE BIDS AND BID REJECTION

1. A Bid in which bid proposal documents are not completed, executed and submitted may be considered non-responsive and be rejected.
2. A Bid in which the Contract Unit Prices are unbalanced, which is incomplete or which shows alteration of form or irregularities of any kind, or which contains any additions or conditional or alternate Bids that are not called for, may be considered non-responsive and be rejected.

H. AWARD OF CONTRACT

In accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council reserves the right to reject any and all bids received, to take all bids under advisement for a period not-to-exceed sixty (60) days after date of opening thereof, to waive any informality or irregularity in the Bid, and to be the sole judge of the merits of material included in the respective bids received.

This bid does not commit the City to award a contract or to pay any cost incurred in the preparation of a bid. All responses to this bid become the property of the City of Torrance.

I. NOTICE OF INTENT TO AWARD

Approximately two (2) weeks prior to the anticipated City Council meeting awarding a contract as a result of the RFP or bid, results will be posted on the City of Torrance Web site www.Torranceca.gov and may be found by clicking on the following:

- Government
- Current Bids and RFPs
- View evaluated results of Bids and RFPs tentatively scheduled for recommendation of award to the City Council [here](#).

J. BID PROTEST PROCEDURES

Please refer to City of Torrance website link below to obtain the City's Protest Procedures. [http://www.torranceca.gov/PDF/Bid RFP Protest Procedures.pdf](http://www.torranceca.gov/PDF/Bid_RFP_Protest_Procedures.pdf)

K. EXECUTION OF CONTRACT

After the Contract is awarded, the awarded bidder shall execute the following five (5) documents:

1. Performance Bond (100% of Bid)
2. Labor and Material Bond (100% of Bid)
3. Contract – Public Works Agreement
4. Verification of Insurance Coverage (Certificates and Endorsements)
5. Business License Application Form

The contract shall be signed by the successful bidder and returned, together with the contract bonds and evidence of required insurance coverage, **within ten (10) working days**, not including Sundays, after the bidder has received notice that the contract has been awarded. Failure to execute the contract as specified above shall be just cause for annulment of the award and forfeiture of the proposal guarantee. The Contract shall not be considered binding upon the CITY until executed by the authorized CITY officials.

Bond amounts shall be as provided in Section 2-4 of the Standard Specifications for Public Works Construction. The Performance Bond shall be required to remain in effect for one (1) year following the date specified in the City's Notice of Completion, or, if no Notice of Completion is recorded for one (1) year following the date of final acceptance by the City Manager.

L. PERMITS, LICENSES AND CONTRACT SERVICES AGREEMENT

The Contractor shall procure and execute all permits, licenses, pay all charges and fees, and give all notices necessary and incidental to completion of Work. The Contractor shall execute a Contract Services Agreement. No fee is charged for a permits issued by the City of Torrance for a City project. The Contractor shall obtain a City of Torrance Business License. To obtain a Torrance Business License please call 310-618-5923.

M. INSURANCE

The Contractor shall maintain Automobile Liability, General Liability and Workers' Compensation Insurance as specified in the Contract Services Agreement included in the Project Specifications.

N. SUBCONTRACTS

B. Each Bidder shall comply with the Chapter of the Public Contract Code including sections 4100 through 4113. The Contractor shall perform, with its own organization, Contract work amounting to at least 75 percent of the Contract price. When a portion of an item is subcontracted, the value of the work subcontracted will be based on the estimated percentage of the Contract Unit Price, determined from information submitted by the Contractor, subject to approval by the City Manager (or his designated representative). This percentage will be based on direct labor hours used on the project. Supervision and overhead are not included in this calculation.

O. TRAFFIC CONTROL- Not applicable

P. PRE-BID INQUIRIES

Bidders with pre-bid inquiries must submit questions in writing to the General Services Department. Any and all questions must be emailed to Diane Megerdichian, Business Manager at DMegerdichian@torranceca.gov. Please list **"Transit Facility Roof Replacement"** in the subject line of the email. For questions of a general nature, bidders may contact Diane Megerdichian directly at 310-781-7151

Q. RESPONSIBILITY OF CITY.

The City of Torrance shall not be held responsible for the care or protection of any material or parts of the work prior to final acceptance, except as expressly provided in these specifications.

R. CONSTRUCTION SCHEDULE AND PRECONSTRUCTION CONFERENCE.

The office staff of the City is currently operating on a 9/80 work week; therefore, City Hall is closed every other Friday.

In accordance with the herein Special Provisions, after notification of award and prior to start of any work, **the Contractor shall submit to the City for approval its proposed Construction Schedule within ten (10) working days from the date of Notice of Proceed.** At least two (2) days, exclusive of Saturdays, Sundays and holidays, prior to commencement of work, the Contractor shall attend a pre-construction conference.

The Contractor will provide all product and equipment submittals to the City of Torrance or designated consultant within ten (10) working days from the date of Notice to Proceed. The Contractor shall immediately order materials requiring a delivery delay upon receipt of a written notice from the City that the City Council has approved an Award of Contract. Contractor shall provide written proof(s) of timely material order(s) and shall include any delivery delays in the Construction Schedule.

S. PROGRESS OF THE WORK AND TIME FOR COMPLETION

The Contractor shall begin work after the mailing, from the City Manager to the Contractor, by first class mail, postage prepaid, of a Notice to Proceed. **The Contractor shall diligently prosecute the same to completion within sixty (60) calendar days of the start date specified in said Notice.** The sixty calendar schedule includes, completion of contractual paper work, equipment material submittal review, the lead time for materials and equipment, and on site work which will be no more than 30 calendar days.

During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose acceptable quality or efficiency will be affected by any unfavorable conditions shall be constructed while those conditions exist. It is expressly understood and agreed by and between the Contractor and the City that the Contract time for completion of the work described herein is a reasonable time taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

T. LIQUIDATED DAMAGES

The Contractor agrees that failure to complete work within the time allowed will result in damages being sustained by the City. Contractor and City agree that failure to complete the project will result in inconvenience to the citizens of Torrance and the City of Torrance and their customers using the affected areas. Such delay will also result in the necessity of several inspections each day to ensure that the project is properly progressing. The parties also agree that failure to complete the project on time will prevent the City from having the use of the facility. Therefore, the parties agree such damages among others are, and will continue to be, impracticable and extremely difficult to determine, but that **five hundred (\$500) per calendar day** is the minimum value of such costs to the City and is a reasonable amount that the Contractor agrees to reimburse the City for each calendar day of delay in finishing the work in excess of the time specified for completion, plus any authorized time extensions.

Execution of the contract under these specifications shall constitute agreement by the Contractor and the City that five hundred Dollars (\$500) per calendar day is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs. Said amount may be reduced by the City if work is sufficiently completed within the allotted time so that the damages are minimized.

The Contractor will not be assessed liquidated damages for any delay in completion of the work when such delay was caused by the failure of the City or the owner of a utility to provide for removal or relocation of the existing utility facilities; provided, however, that the Contractor shall have given the City and the owner of a utility timely notice of the interference. "Timely notice" shall be defined as a verbal notice (to be followed up in writing) no later than one (1) hour after initial discovery of the interference unless the

City Representative is present, in which case notice shall be given immediately in writing to the City Manager.

U. GENERAL PREVAILING WAGE RATE

Pursuant to Section 1771 and 1773 of the Labor Code, the general prevailing wage rates in the county in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, are attached and available from the California Department of Industrial Relations' internet site at <http://www.dir.ca.gov/Public-Works/Prevailing-Wage.html>. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

APPRENTICESHIP EMPLOYMENT STANDARDS. Attention is directed to the provisions in Sections 1776 and 1777.5 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under them.

One of the legal requirements for working on a public works project is the employment of apprentices. The Division of Apprenticeship Standards provides assistance to contractors in employing apprentices on public works sites.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, <http://www.dir.ca.gov/DAS/DASApprenticesOnPublicWorksSummaryOfRequirements.htm>

Contractor Registration with the Department of Industrial Relations (DIR)

- No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
- No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
- All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

For additional information and to register online go to <http://www.dir.ca.gov/Public-Works/Contractors.html>

DIR provides a searchable database of registered contractors and subcontractors on its website <https://efiling.dir.ca.gov/PWCR/Search>, so that all contractors can comply with the requirement to only use registered contractors and subcontractors

Labor Code Section 1813

The contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25) for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.

Labor Code Section 1815

Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of this code, and notwithstanding any stipulation inserted in any contract pursuant to the requirements of said sections, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than 1¹/₂ times the basic rate of pay.

V. PRELIMINARY NOTICES

Preliminary Notices should be mailed to the following address.

Diane Megerdichian
General Services Department
3350 Civic Center Drive
Torrance, CA 90503

PART C
SPECIAL PROVISIONS

SECTION A. GENERAL

The Project Specifications for all work on this project are the specifications contained in the "Project Manual for Transit Facility Roof Replacement", prepared by Firestone Building Industries, Inc. and the City of Torrance.

These Specifications are intended to govern all aspects of the appurtenant construction including, but not limited to, materials, methods and details, except as modified herein or as inconsistent with the provisions hereof.

DEFINITIONS

Whenever the following terms are used, they shall be understood to mean and refer to the following:

Agency or City - City of Torrance.

Board- The City Council of the City of Torrance herein referred to as City Council.

City Manager- The General Services Director of the City of Torrance, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Consulting Representative – Paul Hatch
Firestone Building Industries, Inc.
1300 Bristol North Suite 185
Newport Beach, CA 92660
949-261-5479
paul@fbiroofing.com

Laboratory - The designated laboratory authorized by the City of Torrance to test materials and work involved in the contract.

SECTION B. REFERENCE TO STANDARDS OR PUBLICATIONS

Any reference made in the Contract Documents to any specification, standard, or publication of any organization shall, in the absence of a specific designation to the contrary, be understood to refer to the latest edition of the specification, standard, or publication in effect as of the date of advertising the work, except to the extent that said standard or publication may be in conflict with applicable laws, ordinances, or governing codes. Contractors should be aware of all new code requirements (such as Cal-Green) when dealing with HVAC and other general building work. No requirements of these specifications or the drawings shall be waived because of any provisions of, or omission from, said standards or publications.

SECTION C. DESCRIPTION OF THE WORK

1. Scope of the Work. The work to be done consists of furnishing all labor, materials, tools, equipment and incidentals complete the Transit Facility Roof Replacement as shown in the specifications prepared by Firestone Building Industries, Inc. and the City of Torrance.

SECTION D. GENERAL PROCEDURES

1. Specifications and Drawings Complementary. The Specifications and Drawings are complementary, and what is called for in one shall be as binding as if called for in both.
2. Order of Precedence of Contract Documents. In resolving conflicts resulting from conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:
 1. Change Orders (including Plans and Specifications attached thereto).
 2. Permits Issued by other agencies.
 3. Contract Services Agreement
 4. Addenda
 5. Special or General Provisions.
 6. Plans
 7. City Standard Plans
 8. Instructions to Bidders
 9. Reference Specifications

Within the Specifications the order of precedence is as follows:

1. Addenda/Change Orders
2. Permits from other agencies/supplemental agreements
3. Special or General Provisions
4. Instructions to Bidders
5. Referenced Standard Plans
6. Referenced Specifications

With reference to the Plans/Drawings the order of precedence is as follows:

1. Change Orders plans govern over Addenda and Contract Drawings
 2. Addenda plans govern over Contract plans.
 3. Contract plans govern over standard plans
 4. Detail plans govern over general plans
 5. Figures govern over scaled dimensions
3. Discrepancies in the Contract Documents. Any discrepancies, conflicts, errors or omissions found in the Contract Documents shall be promptly reported in writing to the City Manager, who will issue a correction in writing. The Contractor shall not take advantage of any such discrepancies, conflicts, errors or omissions, but shall comply with any corrective measures regarding the same prescribed by the City Manager, and no additional payment or time shall be allowed therefor.

If discrepancies are discovered between the drawings and the specifications, and no specific interpretation is issued prior to bidding, the decision regarding this interpretation shall rest with the City Manager. The Contractor shall be compelled to act on the City Manager's decision as directed. In the event the installation is not in compliance with the direction of the City Manager, the installation shall be corrected by and at the expense of the Contractor at no additional cost to the City.

See Section E of these Special Provisions for "Claims".

4. Errors and Omissions. If the Contractor, in the course of the work, becomes aware of any claimed errors or omissions in the contract documents or in the City's field work, he shall immediately inform the City Manager. The City Manager shall promptly review the matter, and if the City Manager finds an error or omission has been made the City Manager shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the Contract, the City shall issue an appropriate Change Order. After discovery of an error or omission by the Contractor, any related work performed by the Contractor shall be done at its risk unless authorized by the City Manager.

5. Changed Conditions. The plans for the work show conditions as they are believed by the City Manager to exist, but it is not intended or to be inferred that the conditions as shown thereon constitute a representation by the City that such conditions are actually existent, nor shall the City be liable for any loss sustained by the Contractor as a result of any variance of the conditions as shown on the plans and the actual conditions revealed during the progress of the work or otherwise. The word "conditions" as used in this paragraph includes, but is not limited to, site conditions, both surface and subsurface.

The Contractor shall examine the site, compare it with the drawings and specifications and shall satisfy itself as to the conditions under which the work is to be performed. The Contractor shall ascertain and check the location of all existing structures, utilities and equipment, which may affect its work. The Contractor shall be responsible to re-examine the site, as necessary, for performance of change orders or other proposed changes, which may affect its work. No allowance shall subsequently be made on the Contractor's behalf for any extra expense or loss of time, which is incurred due to failure or negligence on its part to make such examination.

6. As-built Drawings. The Contractor shall maintain a control set of Plans and Specifications on the Work site at all times. All final locations determined in the field, and any deviations from the Plans and Specifications, shall be marked in red on this control set to show as-built conditions. Upon completion of the Work, the Contractor shall submit the control set to the Engineer for approval. Final payment will not be made until this requirement is met.

7. Construction Staking. The Contractor is responsible for all construction staking and shall be responsible for the cost of any restaking required due to disturbance caused by its operations, failure to protect the work site from vandalism or other causes of loss.

8. Notice to Proceed. Notwithstanding any other provisions of the Contract, the Contractor shall not be obligated to perform any work and the City shall not be obligated to accept or pay for any work performed by the Contractor prior to delivery of a Notice to Proceed. The City's knowledge of work being performed prior to delivery of the Notice to Proceed shall not obligate the City to accept or pay for such work. The Contractor shall provide all required contract bonds and evidences of insurance prior to commencing work at the site.
9. Delay in Obtaining Materials. No extension of time will be granted for a delay caused by the inability to obtain materials unless the Contractor either obtains advance written approval from the City Manager or obtains from the supplier and furnishes to the City Manager documentary proof that such materials could not be obtained due to war, government regulations, labor disputes, strikes, fires, floods, adverse weather necessitating the cessation of work, or other similar action of the elements. The Contractor is required to order materials in a timely manner as specified in the "Instruction to Bidders".
10. Inspection and Testing. The Work is subject to inspection and approval by the CITY or any authorized representative. It is the duty of the Contractor to notify the inspector that specific work is ready for inspection. Requests for inspections should be made through the automated phone system at 310-618-5901, using the permit number and following the prompts. Request can be made up to 11pm the night before an inspection is required. The inspection will be typically made the next day.

All rough Mechanical, Electrical and Plumbing should be inspected by the City Specialty Inspectors and approved prior to any framing inspection. 2. All framing, fire-blocking and bracing shall be in place prior to ordering a framing inspection. 3. Gypsum board shall only be installed after approved framing inspection and then order a gypsum board nailing inspection prior to tape and finishing.

The CITY will make, or have made, such inspections and tests, as he deems necessary to see that the Work is in conformance with the Contract Documents. The contractor will responsible for coordinating all inspections/tests and pay for all related costs. In the event such inspections or tests reveal noncompliance with the Contract Documents, the Contractor shall bear the cost of such corrective measures as deemed necessary by the CITY, as well as the cost of subsequent re-inspection and re-testing.

Work done in the absence of inspection by the CITY may be required to be removed and replaced under the inspection of the CITY, and the entire cost of removal and replacement, including the cost of all materials which may be furnished by the CITY and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered without the approval of the CITY shall, if so directed, be uncovered to the extent required by the CITY, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, including all costs for additional inspection.

The CITY and any authorized representatives shall at all times have access to the Work during its construction at shops and yards as well as the Work site. The Contractor

shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with the Contract Documents.

Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

11. Project Schedule

Within ten (10) working days after the receipt of the Notice to Proceed, the Contractor shall submit a proposed construction schedule to the CITY for approval. The schedule shall be in accordance with section 11 and shall be in sufficient detail to show chronological relationship of all activities of the Work. These include, but are not limited to: estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials and scheduling of equipment.

No work may be started until the Schedule has been approved in writing. The work shall be scheduled to assure that construction will be completed within the specified time. The Contractor shall be responsible for coordination of all phases of the operation so that the time schedule can be met.

During construction, the Contractor shall also submit to the CITY, a two-week "look ahead" construction schedule during the construction progress meetings held biweekly.

If the Contractor decides to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the Contractor shall submit to the CITY a revised construction schedule in advance of beginning revised operations.

Sequence of Construction - The Contractor shall sequence the Work in a manner to expeditiously complete the project with a minimum of inconvenience to the CITY or adjacent owners.

The construction schedule shall conform to the following criteria:

- 1) The schedule shall be prepared using the latest version of Microsoft Project or approved equal.
- 2) Work activities shall be based on the following:
 - a) Contract Unit Price items shall be subdivided into those portions to be constructed during each stage or phase of construction. (if applicable)
 - b) Lump sum items shall be subdivided into those portions to be constructed during each stage or phase of construction.
- 3) Utility relocations and/or coordination by the Contractor per section 14 of these Special Provisions shall be considered as activities.
- 4) Required submittals, working and shop drawings shall be included as activities.

- 5) The procurement of construction materials and equipment with long lead times for deliveries shall be included as activities.
- 6) Work to be performed by subcontractors shall be identified and shown as work activities.
- 7) Start and completion dates of each activity shall be illustrated.
- 8) Completion of all Work under the Contract shall be within the time specified in these Special Provisions and in accordance with the Plans and Specifications.

12. Mobilization

12.1 Scope. Mobilization shall include the provision of the Construction Schedule; Best Management Practices and Safety Plan, site review; obtaining all permits, insurance, and bonds; moving onto the site all materials and equipment; furnishing temporary construction facilities, and removal of same at completion of the project; all as required for the proper performance and completion of the work.

Mobilization shall include, but not be limited to, the following principle items.

- (a) Submittal and modification, as required, of the Construction Schedule.
- (b) All associated documentation and submittals as required.
- (c) Installing temporary construction power and wiring.
- (d) Have the Contractor's superintendent at the job site full-time.
- (e) Developing construction water supply.
- (f) Providing on-site sanitary facilities and portable water facilities, as required.
- (g) Arranging for and erection of Contractor's work and storage yard.
- (h) Submittal of all required insurance certificates and bonds, including subcontractors.
- (i) Obtaining all required permits.
- (j) Posting all OSHA required notices and establishment of safety programs.
- (k) Pot-holing and other research and review as necessary to verify site conditions and utility locations, including research and review as necessary for change orders.
- (l) Demobilization.

13. Markup.

The markups mentioned hereinafter shall include, but are not limited to, all costs for the services of superintendents, project managers, timekeepers and other personnel not working directly on the change order, and pickup or yard trucks used by the above personnel. These costs shall not be reported as labor and equipment elsewhere except when actually performing work directly on the change order and then shall be reported at the labor classification of the work performed.

The following percentages shall apply for additional work:

Profit	5% maximum
Overhead	5% maximum

Subcontractor markup: maximum allowed is 5% for profit and overhead on the subcontractor's costs.

To the sum of the costs and markups provided for in this subsection, one (1) percent shall be added as compensation for bonding and one (1) percent for insurance.

14. Utilities. The Contractor shall provide coordination with all the utility companies involved and shall provide protection from damage to their facilities. The Contractor shall be responsible for repair or replacement to said facilities made necessary by its failure to provide required protection. The Contractor is required to include utility requirements in the Construction Schedule.

The Contractor shall be solely responsible to check all utility record maps, books, and/or other data in the possession of the CITY, other agencies, and/or all utility companies, and no allowance shall be made for any failure to have done so.

The Contractor shall utilize the services of "Underground Service Alert - Southern California" for utility locating in all public right-of-ways by calling 1-800-227-2600 at least 48 hours prior to any excavation.

15. Completion, Acceptance and Warranty. If, in the CITY's judgment, the Work has been completed and is ready for acceptance, the CITY will so certify and will determine the date when the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect the Work. The CITY may cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office. At the CITY's option, the CITY may certify acceptance to the City Council who may then cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office.

Manufacturer's warranties and guaranties furnished for materials used in the Work and instruction sheets and parts listed supplied with materials shall be delivered to the CITY prior to acceptance of the Work. The duration of the warranty or guaranty shall be the standard of the industry with a minimum of 1 year from the date of Notice of Completion or Date of Acceptance.

The prime contractor will be required to warranty the entire project regardless of whether warranties from subcontractors are also required. Coordination and correction of any issue related to project scope that arises during that one (1) year warranty period will be the responsibility of the prime contractor.

Manufacturer's warranties shall not relieve the Contractor of liability under these Specifications. Such warranties only shall supplement the Contractor's responsibility.

The CITY may require a manufacturer's warranty on any product offered for use.

16. Superintendent. Contractor shall employ a superintendent to be in attendance at all times on the Project site during the performance of the work. Superintendent shall represent the Contractor, and communications given to the superintendent shall be binding as if given to the Contractor. The superintendent must be able to communicate verbally and in writing to both City Representatives and all contract labor regarding all aspects of work. The superintendent shall be approved by the CITY prior to the start of the Work. If the designated superintendent is rejected, the Contractor shall immediately designate another superintendent in writing and submit to the City for consideration. A replacement must be provided before work continues. The CITY shall have the authority to require the Contractor to remove its superintendent and/or alternate superintendent at any time and at no cost to the CITY.

17. Requirements for Recycling Construction Materials

The City of Torrance requires that all demolition projects and construction or remodeling projects valued at \$100,000 or more must recycle or reuse at least 50% of the materials that leave the project site and 100% of excavated soil and land-clearing debris. A Waste Management Plan (WMP) form is part of the permit process for projects that meet these criteria. The WMP form is available at the permit counter or a downloadable form is available here:

<http://www.torranceca.gov/PDF/WMPFormRevised2012onestop.pdf>

Step 1 - when applying for the permit, you must complete the WMP form stating that at least 50% of the waste generated by the project will be recycled or reused and that 100% of excavated soil and land-clearing debris will be recycled or reused.

Step 2 - collect and keep all receipts and records of the disposal, recycling, donations, and reuse of the materials from your project. Receipts must show material type, tonnage or weight, how the materials were treated, the facility used, and the address of the jobsite.

Step 3 - complete the WMP by attaching the receipts listing the actual disposal and recycling that occurred and submitting the WMP to Public Works for approval. This is required before your project can get its final inspection.

Failure to fulfill the requirements of the WMP process will result in penalties of \$5,000 for construction projects and \$10,000 for demolition projects, as per the Torrance Municipal Code.

For additional information concerning recycling or recycling facilities please visit the City of Torrance Public Works Department website at <http://www.torranceca.gov/8614.htm>

SECTION E. PAYMENTS TO CONTRACTOR AND CLAIMS

1. Breakdown of Contract Prices. The Contractor shall, within ten (10) working days of receipt of a request from the City, submit a complete breakdown of lump sum bid prices showing the value assigned to each part of the work, including a separate line item for profit and overhead. The breakdown shall include separate line for each subcontractor's bid and/or contract amount. For each part of the work where an application for payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the schedule of values. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents its estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the City Manager as one of the bases for evaluating requests for payment. No extra costs shall be allowed for these breakdowns.
2. Payment for Labor and Materials. The Contractor shall pay and cause the subcontractors to pay any and all accounts for labor, including Worker's Compensation premiums, State Unemployment and Federal Social Security payments and all other wage and salary deductions required by law. The Contractor also shall pay and cause the subcontractors to pay any and all accounts for services, equipment and materials used by it and the subcontractors during the performance of work under this contract. All such accounts shall be paid as they become due and payable. If requested by the City Manager, the Contractor shall immediately furnish the City with proof of payment of such accounts.
3. Additional Work. Payment for additional work and all expenditures in excess of the bid amount must be authorized in writing by the City Manager. Such authorization shall be obtained by the Contractor prior to engaging in additional work. It shall be the Contractor's sole responsibility to obtain written approval from the City Manager for any change(s) in material or in the work proposed by suppliers or subcontractors. No payment shall be made to the Contractor for additional work which has not been approved in writing, and the Contractor hereby agrees that it shall have no right to additional compensation for any work not so authorized.
4. Claims. The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the City, or the happening of any event, thing or occurrence, unless he shall have given the City due written notice of potential claim as hereinafter specified.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. Said notice shall be submitted on a form approved by the City at least forty-eight (48) hours (two working days) in advance of performing said work, unless the work is of an emergency nature, in which case the Contractor shall notify and obtain approval from the Inspector prior to commencing the work. The City Manager may require the Contractor to delay

construction involving the claim, but no other work shall be delayed, and the Contractor shall not be allowed additional costs for any said delay but may be allowed on extension of time if the City Manager agrees that the work delayed is a controlling element of the Construction Schedule. The Contractor shall be required to submit any supporting data (or a detailed written explanation justifying further delay) within five (5) Work Days of a request from the City Manager and shall be responsible for any delays resulting from late and/or incomplete submittals. By submitting a Bid, the Contractor hereby agrees that this Section shall supersede Sections 6-6.3 and 6-6.4 of the Standard Specifications.

The City shall be the sole authority to interpret all plans, specifications and contract documents, and no claim shall be accepted which is based on the Contractor's ignorance, misunderstanding or noncompliance with any provision or portion thereof. The Contractor shall be responsible to provide all data and to obtain all approvals required by said Specifications. No claims or extras shall be approved by the City unless all work was done under the direction of and subject to the approval of the Inspector.

It is the intention of this Subsection that differences between the parties arising under and by virtue of the Contract be brought to the attention of the City Manager at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that it shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

5. Noncompliance with Plans and Specifications. Failure of the Contractor to comply with any requirement of the Plans and Specifications, and/or to immediately remedy any such noncompliance upon notice from the City Manager, may result in suspension of Contract Progress Payments. Any Progress Payments so suspended shall remain in suspension until the Contractor's operations and/or submittals are brought into compliance to the satisfaction of the City Manager. No additional compensation shall be allowed as a result of suspension of Progress Payments due to noncompliance with the plans or specifications. The Contractor shall not be permitted to stop work due to said suspension of Progress Payments.
6. Request for Payment. Contractor shall submit all requests for payment on AIA Document G702 – Application and Certificate for Payment and G703- Continuation Sheet. For each item provide a column for listing: Item Number; Description of Work; Scheduled Value, Previous Application; Authorized Change Orders; Total completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.

Prior to submittal of said form, all items for which payment is requested shall be checked and approved in writing by the City Manager (or authorized representative). No payments will be made unless all back-up data (below) is submitted with the payment request and the Progress Payment Invoice is signed by both Contractor and Manager.

Back up data required to process payment shall include but not limited to the following:

- Copies of Certified payroll covering the payment period and proof of submission to the Department of Industrial Relations (DIR). Although this project is subject to

- compliance monitoring and enforcement by the DIR. The City reserves the right to review the certified payroll for compliance, request additional clarification and require the contractor to provide proof of payment such as cancelled checks prior to payment of invoice.
- Conditional and unconditional lien releases from contractor, subcontractor and suppliers from which the contractor is expecting payment. Release forms must reflect amount of draw and through date of invoice payment.
 1. Conditional releases for the current pay period shall be provided with the current payment request.
 2. Unconditional releases for the immediate prior pay period shall be provided with the current payment request. Unconditional lien release forms must match the preceding Conditional release form in amount and through date and must be signed authorized company representative. Unconditional Lien Release on Final Payment with a zero balance is required from all material suppliers and subcontractors with the request for final payment (retention). All Unconditional Lien Release on Final Payments will be signed authorized company representative and notarized. Release forms can be found at the Contractors State License Board website at http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2012/July_11.aspx. The most update current lien release forms must be used.
 - Any required outside agency reports and/or written observations.

The City will retain 5 percent of the value of all work done and materials installed as part security for fulfillment of the contract by Contractor. The full 5 percent retention will be retained on all payments for 35 days after the filing of the Notice of Completion. In addition 125% of the amount of the “unreleased” STOP notice will be withheld.

There shall be no separate payment for any relocations, barriers or forms, grading or temporary construction required to construct the improvements herein. Payment for these items shall be absorbed in the Bid Prices for the applicable work to which they are appurtenant, and no extra costs shall be allowed.

The payment of amounts due to the Contractor shall be contingent upon the Contractor furnishing the City with a release of all claims against the City arising by virtue of the Contract related to said amounts. It is the contractor’s responsibility to provide the correct releases in order to obtain payment by the City.

7. Preconstruction Meeting. The City will hold a preconstruction meeting with awarded contractor and discuss procedural, and mobilization issues. The contractor needs to have key administrative staff attend such as: project manager, superintendent, administrative personnel who handle the certified payroll and pay requests. Attendees can also include subcontractors and major suppliers/fabricators.

In addition to staffing preconstruction meeting, the awarded contractor will need to bring the following to the preconstruction meeting for review and discussion.

- Project Schedule (see section D General Procedures #11 for details)
- Schedule of Values (see section E, Payment to Contractors #1 for details)
- Submittal Log, list all the submittals you plan to submit for review regardless of whether you are submitted them the day of the meeting.
- Long lead equipment/product submittals, and shop drawings etc.

- List of subcontractors and contact information
- List of principal suppliers and fabricators
- Prime Contractor's Safety Plan
- Example of Daily Project Report and Daily Sign In Sheet for Review (see #8 below for details)
- Prime contractors' signed contract, performance and labor and material bonds, insurance certificates with endorsements, workers compensation certificate and Torrance Business License. The exact verbiage of additionally insured clause for the insurance is found Item 17C of the contract. The certificate needs to be endorsed as well naming the City as additional insured.
- Signed contracts for subcontractors, insurance certificates with endorsements, workers compensation certificates. Subcontractor's insurance must also meet the contract limits and language and be endorsed.

8. Daily Project Report and Contractor Daily Sign In Sheets.

The contractor will provide daily project reports and/or contractor daily sign in sheets on a daily basis (next working day) during the entire project's onsite work. At minimum the report/sign in sheets consist of the following:

Daily Project Report

- Date, Day of the Week, and Weather
- List all staffing by prime and subcontractors each, include classification and count of persons within the specific classification and denote journeyman vs. apprentice.
- List all deliveries of equipment and materials to site.
- List onsite discussions, meetings any resolution or direction given.
- List progress of the project (i.e. was scheduled and completed).
- List all visitors to the site.

Daily Sign In Sheet

- Date and Day of the Week
- Employee Name (printed), company and classification of work, denote journeyman vs. apprentice for each classification.
- Time started and time completed, any breaks.
- Employee signature of the individual worker (confirming reported time)

PART D
BID DOCUMENTS

BIDDER'S PROPOSAL

BID FOR TRANSIT FACILITY ROOF REPLACEMENT

B2015-33

In accordance with the Notice Inviting Bids pertaining to the receiving of sealed proposals by the City Clerk of the City of Torrance for the above titled improvement, the undersigned hereby proposes to furnish all work to be performed in accordance with the Plans, Specifications and Contract Documents, prepared by Firestone Industries, Inc. and City of Torrance for the bid as set forth in the following schedules.

Assignment of Contractor's values:

Item	Description	Total Amount In Figures*
Division 01	General Requirements:	
Division 02	Site Work:	
Division 03	Concrete:	
Division 04	Masonry:	
Division 05	Metals:	
Division 06	Wood and Plastics:	
Division 07	Thermal and Moisture Protection:	
Division 08	Openings:	
Division 09	Finishes:	
Division 10	Specialties:	
Division 11	Equipment:	
Division 12	Furnishings:	
Division 13	Specialty Structure:	

Bidder's Proposal- B2015-33

Item	Description	Total Amount In figures*
Division 22	Plumbing:	
Division 23	Mechanical:	
Division 26	Electrical:	
	B2015-33 -BID TOTAL- in figures*	

BASE BID TOTAL: _____
(In Words)*

***BID MAY BE REJECTED IF TOTAL IS NOT SHOWN IN FIGURES AND WORDS.**

The City of Torrance awards to the lowest responsible bidder per the Torrance Municipal Code. Based on the funding available, the City reserves the right to select any combination of base bid and bid alternate(s) to determine the lowest responsible bidder for award.

The undersigned furthermore agrees to enter into and execute a contract, with necessary bonds, at the prices set forth herein and in case of default in executing such contract, with necessary bonds, the check or bond accompanying this bid and the money payable thereon shall be forfeited thereby to and remain the property of the City of Torrance.

The above prices include all work appurtenant to the various items as outlined in the specifications and all work or expense required for the satisfactory completion of said item.

The undersigned declares that it has carefully examined the Specifications, and Contract Documents, and has investigated the site of the work and is familiar with the conditions thereon.

Company Name

Signature of principal in company

Date

Name and Title of Signer

Address: _____

Phone: _____ DIR Registration #: _____

License No. & Classifications _____

ACKNOWLEDGMENT OF ADDENDA RECEIVED

B2015-33

The Bidder shall acknowledge the receipt of addenda by placing an "X" by each addendum received.

Addendum No. 1 _____

Addendum No. 2 _____

Addendum No. 3 _____

Addendum No. 4 _____

Addendum No. 5 _____

Addendum No. 6 _____

Addendum No. 7 _____

Addendum No. 8 _____

If an addendum or addenda have been issued by the City and not noted above as being received by the Bidder, the Bid Proposal may be rejected.

Bidder's Signature

Date

CONTRACTOR'S AFFIDAVIT B2015-33 (CONTINUED)

7. That the Contractor did not, directly or indirectly, submit the Contractor's bid price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any individual or group of Individuals, except to the City of Torrance, or to any person or persons who have a partnership or other financial interest with said Contractor in its business.

Dated this _____ day of _____, 20_____.

Subscribed and Sworn to
before me this _____
of _____, 20_____

(Contractor)

(Title)

Notary Public in and for said
County and State.
(Seal)

BID BOND

B2015-33

KNOW ALL MEN BY THESE PRESENTS: That we, _____

_____ as principal, and _____ as sureties, are held and firmly bound unto the City of Torrance, State of California, in the penal sum of _____ dollars (\$_____), for the payment whereof we hereby bind ourselves, our successors, heirs, executors or administrators jointly and severally, firmly by these presents.

The condition of this obligation is such that, whereas the above bounded principal is about to file with and submit to the City of Torrance a bid or proposal for the performance of certain work as required in the City of Torrance, Project No. B2015-33, said work being: Transit Facility Roof Replacement, in compliance with the Specifications therefore under an invitation of said City contained in a notice or advertisement for bids or proposals; now if the bid or proposal of said principal shall be accepted and if said work be thereupon awarded to the principal by said City and if the said principal shall enter into a contract with the said City in accordance with said bid or proposal, or if the bid or proposal of the said principal is rejected, then this bond shall be void and of no effect and otherwise in full force and effect.

WITNESS our hands this _____ day of _____, 20 _____.

Principal

Surety/Attorney-in-Fact

Signature

Name: _____
Local Address: _____
Phone No.: _____
Fax No.: _____

LIST OF SUBCONTRACTORS

The Bidder is required to fill in the following blanks in accordance with the provisions of the Subletting and Subcontracting Fair Practices Act (Chapter 2 of Division 5, Title 1 of the Government Code of the State of California) and should familiarize itself with Section 2-3 of the Standard Specifications.

1. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

2. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

3. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

4. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

5. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

6. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

7. Name Under Which Subcontractor is Licensed: _____

Subcontractor's Address: _____

Specific Description of Sub-Contract: _____

License Number: _____ CA License Classification/Type: _____

DIR Registration #: _____

Subcontractors must be properly licensed under the laws of the State of California for the type of work which they are to perform. Do not list alternate subcontractors for the same work.

The Bidding Contractor must include each subcontractor's contract license number (AB 44). An inadvertent error in listing the subcontractor's license number shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, if the corrected contractor's license number is submitted to the public entity by the prime contractor within 24 hours after the bid opening-provided that the correct license number corresponds to the submitted name and location of the subcontractor.

No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

REFERENCES

(Bidder must have completed at least four (4) roofing projects using TPO roofing system and application on projects of a similar size and scope within the last five (5) years). The references must reflect this requirement. (See Notice Inviting Bids for full qualifications of experience).

1. Name (Firm/Agency): _____

Address: _____

Contact Person: _____ Telephone No.: _____

Title of Project: _____

Project Location: _____

Date of Completion _____ Contract Amount: \$ _____

2. Name (Firm/Agency): _____

Address: _____

Contact Person: _____ Telephone No.: _____

Title of Project: _____

Project Location: _____

Date of Completion _____ Contract Amount: \$ _____

3. Name (Firm/Agency): _____

Address: _____

Contact Person: _____ Telephone No.: _____

Title of Project: _____

Project Location: _____

Date of Completion _____ Contract Amount: \$ _____

4. Name (Firm/Agency): _____

Address: _____

Contact Person: _____ Telephone No.: _____

Title of Project: _____

Project Location: _____

Date of Completion _____ Contract Amount: \$ _____

Bidder's Information

The bidder must provide a detailed list of the trades and the description of the work they will perform with their own company for this project.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

Contractor's License No.: _____ Class: _____

Date first obtained: _____

Has License ever been suspended or revoked? _____

If yes, describe when and why _____

Any current claims against License or Bond? _____

If yes, describe claims: _____

Type of entity (check one)

_____ Incorporated _____ Partnership _____ Sole Proprietorship

If incorporated, in what state _____

Federal Tax ID Number # _____

Principals in Company (List all - attach additional sheets if necessary):

<u>NAME</u>	<u>TITLE</u>	<u>LICENSE NO.</u> (If Applicable)
_____	_____	_____
_____	_____	_____
_____	_____	_____

PART E

**DOCUMENTS TO BE COMPLETED
AND DELIVERED TO CITY AS PART
OF CONTRACT WITH THE CITY**

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ as Principal(s) and ____ a _____ corporation, incorporated, organized, and existing under the laws of the State of _____, and authorized to execute bonds and undertakings and to do a general surety business in the State of California, as Surety, are jointly and severally held and firmly bound unto the City of Torrance, a municipal corporation, located in the County of Los Angeles, State of California, in the full and just sum of: _____ Dollars (\$ _____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, representative, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that: WHEREAS, said Principal(s) have/has entered into, or are/is about to enter into, a certain written contract or agreement, dated as of the _____ day of _____, 20____, with the said City of Torrance for the **TRANSIT FACILITY ROOF REPLACEMENT B2015-33** , all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

NOW, THEREFORE, if the said Principal(s) shall faithfully and well and truly do, perform and complete, or cause to be done, performed and complete, each and all of the covenants, terms, conditions, requirements, obligations, acts and things, to be met, done or performed by said Principal(s), including any guarantee period as set forth in, or required by, said contract or agreement, all at and within the time or times, and in the manner as therein specified and contemplated, then this bond and obligation shall be null and void; otherwise it shall be and remain in full force, virtue and effect.

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration or addition to said contract or agreement, or of any feature or item or items of performance required therein or there under, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or there under.

PERFORMANCE BOND B2015-33 (CONTINUED)

In the event any suit, action or proceedings is instituted to recover on this bond or obligation, said Surety will pay, and does hereby agree to pay, as attorney's fees for said City, such sum as the Court in any such suit, action or proceeding may adjudge reasonable.

EXECUTED, SEALED AND DATED this _____ day of _____, 20____

CORPORATE SEAL

PRINCIPAL(S):

BY _____

BY _____

CORPORATE SEAL

SURETY:

BY _____

Name: _____
Local Address: _____
Phone No.: _____
Fax No.: _____

LABOR AND MATERIAL BOND
B2015-33

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
As Principal(s) and _____ a
corporation, incorporated, organized, and existing under the laws of the State of
_____, and authorized to execute bonds and undertakings and to do a general
surety business in the State of California, as Surety, are jointly and severally held and firmly
bound unto:

- (a) The State of California for the use and benefit of the State Treasurer, as ex-officio Treasurer and custodian of the Unemployment Fund of said State; and
- (b) The City of Torrance, California; and
- (c) Any and all persons who do or perform or who did or performed work or labor upon or in connection with the work or improvement referred to in the contract or agreement hereinafter mentioned; and
- (d) Any and all materialmen, persons, companies, firms, association, or corporations, supplying or furnishing any materials, provisions, provender, transportation, appliances or power, or other supplies used in, upon, for or about or in connection with the performance of the work or improvement contracted to be executed, done, made or performed under said contract or agreement; and
- (e) Any and all persons, companies, firms, associations, or corporations furnishing, renting, or hiring teams, equipment, implements or machinery for, in connection with, or contributing to, said work to be done or improvement to be made under said contract or agreement; and
- (f) Any and all persons, companies, firms, associations, or corporations who supply both work and materials;

and whose claim has not been paid by said Principal(s), in full and just sum of _____ Dollars (\$ _____), lawful money of the United States of America, for the payment of which will and truly to be made, said Principal(s) and said Surety do hereby bind themselves and their respective heirs, executors, administrators, representatives, successors and assigns, jointly and severally, firmly by these presents.

LABOR AND MATERIAL BOND (CONTINUED)

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, THAT: WHEREAS, said Principal(s) have/has entered into or are/is about to enter into a certain written contract or agreement, dated as of the _____ day of _____ 20 ____, with the City of Torrance for the TRANSIT FACILITY ROOF REPLACEMENT, B2015-33, all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

NOW, THEREFORE, if the said Principal(s) (or any of his/her, its, or their subcontractors) under said contract or agreement fails or fail to pay:

- (1) For any materials, provisions, provender, transportation, appliances, or power, or other supplies; or
- (2) For the hire of any teams, equipment, implements, or machinery; or
- (3) For any work or labor; supplies, furnished, provided, used, done or performed in, upon, for or about or in connection with the said work or improvement; or
- (4) For amounts due under the Unemployment Insurance Act of the State of California with respect to such work or improvement;

the Surety on this bond will pay the same in an amount not exceeding the sum hereinabove specified in this bond; and, also, in case suit is brought upon this bond, said Surety will (and does hereby agree to) pay a reasonable attorney's fee, to be fixed and taxed as costs, and included in the judgment therein rendered.

This bond shall (and it is hereby made to) insure to the benefit of any and all persons entitled to file claims under Section 1192.1 of the Code of Civil Procedure of the State of California, so as to give a right of action to them or their assigns in any suit brought upon this bond, all as contemplated under the provisions of Section 4205 of the Government Code, and of Chapter 1 of Title 4 of Part 3 of the Code of Civil Procedure, of the State of California.

This bond is executed and filed in connection with said contract or agreement hereunto attached to comply with each and all of the provisions of the laws of the State of California above mentioned or referred to, and of all amendments thereto, and the obligors so intend and do hereby bind themselves accordingly.

LABOR AND MATERIAL BOND B2015-33 (CONTINUED)

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration, or addition to said contract or agreement, or of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or thereunder.

EXECUTED, SEALED AND DATED this _____ day of _____, 20 _____

CORPORATE SEAL

PRINCIPAL:

BY _____

CORPORATE SEAL

SURETY:

BY _____

Name: _____
Local Address: _____
Phone No.: _____
Fax No.: _____

CONTRACT SERVICES AGREEMENT

This CONTRACT SERVICES AGREEMENT ("Agreement") is made and entered into as of Date (the "Effective Date"), by and between the CITY OF TORRANCE, a municipal corporation ("CITY"), and Contractor Name, type of entity ("CONTRACTOR").

RECITALS:

- A. The CITY wishes to retain the services of an experienced and qualified CONTRACTOR to Description of Project Project Name & Bid Number;
- B. In order to obtain the desired services, The CITY has circulated a Notice Inviting Bids for the Description of Notice Inviting Bid Project Name & Bid Number (the "NIB"); and
- C. CONTRACTOR has submitted a Bid (the "Bid") in response to the NIB. CONTRACTOR represents that it is qualified to perform those services requested in the Plans and Specifications. Based upon its review of all Bids submitted in response to the NIB, The CITY is willing to award the contract to CONTRACTOR.

AGREEMENT:

1. SERVICES TO BE PERFORMED BY CONTRACTOR

CONTRACTOR will provide the services and install those materials listed in the Plans and Specifications, which are on file in the General Services Department. The NIB and the Plans and Specifications are made a part of this Agreement. A copy of the Bid is attached as Exhibit A.

2. TERM

Unless earlier terminated in accordance with Paragraph 4 below, this Agreement will continue in full force and effect for One/Two Year(s) from the Effective Date.

3. COMPENSATION

A. CONTRACTOR's Fee.

For services rendered pursuant to this Agreement, CONTRACTOR will be paid in accordance with CONTRACTOR's Bid; provided, however, that in no event will the total amount of money paid the CONTRACTOR, for services initially contemplated by this Agreement, exceed the sum of \$Insert Dollar Amount ("Agreement Sum"), plus a contingency of \$Insert Dollar Amount, if first approved in writing by the CITY.

B. Schedule of Payment.

Provided that the CONTRACTOR is not in default under the terms of this Agreement, upon presentation of an invoice, CONTRACTOR will be paid monthly, within 30 days after the date of the monthly invoice.

4. TERMINATION OF AGREEMENT

A. Termination by CITY for Convenience.

1. CITY may, at any time, terminate the Agreement for CITY's convenience and without cause.
2. Upon receipt of written notice from CITY of such termination for CITY's convenience, CONTRACTOR will:
 - a) cease operations as directed by CITY in the notice;
 - b) take actions necessary, or that CITY may direct, for the protection preservation of the work; and
 - c) except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
3. In case of such termination for CITY's convenience, CONTRACTOR will be entitled to receive payment for work executed; and costs incurred by reason of such termination, along with reasonable overhead and profit on the work not executed.

B. Termination for Cause.

1. If either party fails to perform any term, covenant or condition in this Agreement and that failure continues for 15 calendar days after the nondefaulting party gives the defaulting party notice of the failure to perform, this Agreement may be terminated for cause; provided, however, that if during the notice period the defaulting party has promptly commenced and continues diligent efforts to remedy the default, the defaulting party will have such additional time as is reasonably necessary to remedy the default.
2. In the event this Agreement is terminated for cause by the default of the CONTRACTOR, the CITY may, at the expense of the CONTRACTOR and its surety, complete this Agreement or cause it to be completed. Any check or bond delivered to the CITY in connection with this Agreement, and the money payable thereon, will be forfeited to and remain the property of the CITY. All moneys due the CONTRACTOR under the terms of this Agreement will be retained by the CITY, but the retention will not release the CONTRACTOR and its surety from liability for the default. Under these circumstances, however, the CONTRACTOR and its surety will be credited with the amount of money retained, toward any amount by which the cost of completion exceeds the Agreement Sum and any amount authorized for extra services.
3. Termination for cause will not affect or terminate any of the rights of the CITY as against the CONTRACTOR or its surety then existing, or which may thereafter accrue because of the default; this provision is in

addition to all other rights and remedies available to the CITY under law.

C. Termination for Breach of Law.

In the event the CONTRACTOR or any of its officers, directors, shareholders, employees, agents, subsidiaries or affiliates is convicted (i) of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of a contract or subcontract; (ii) under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a public consultant or contractor; (iii) under state or federal antitrust statutes arising out of the submission of bids or proposals; or (iv) of violation of Paragraph 19 of this Agreement; or for any other cause the CITY determines to be so serious and compelling as to affect CONTRACTOR's responsibility as a public consultant or contractor, including but not limited to, debarment by another governmental agency, then the CITY reserves the unilateral right to terminate this Agreement or to impose such other sanctions (which may include financial sanctions, temporary suspensions or any other condition deemed appropriate short of termination) as it deems proper. The CITY will not take action until CONTRACTOR has been given notice and an opportunity to present evidence in mitigation.

5. **FORCE MAJEURE**

If any party fails to perform its obligations because of strikes, lockouts, labor disputes, embargoes, acts of God, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or hostile governmental action, civil commotion, fire or other casualty, or other causes beyond the reasonable control of the party obligated to perform, then that party's performance shall be excused for a period equal to the period of such cause for failure to perform.

6. **RETENTION OF FUNDS**

CONTRACTOR authorizes the CITY to deduct from any amount payable to CONTRACTOR (whether or not arising out of this Agreement) any amounts the payment of which may be in dispute or that are necessary to compensate the CITY for any losses, costs, liabilities, or damages suffered by the CITY, and all amounts for which the CITY may be liable to third parties, by reason of CONTRACTOR's negligent acts or omissions or willful misconduct in performing or failing to perform CONTRACTOR's obligations under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by CONTRACTOR, or any indebtedness exists that appears to be the basis for a claim of lien, the CITY may withhold from any payment due, without liability for interest because of the withholding, an amount sufficient to cover the claim. The failure of the CITY to exercise the right to deduct or to withhold will not, however, affect the obligations of CONTRACTOR to insure, indemnify, and protect the CITY as elsewhere provided in this Agreement.

7. THE CITY'S REPRESENTATIVE

City Representative is designated as the "City Representative," authorized to act in its behalf with respect to the work and services specified in this Agreement and to make all decisions in connection with this Agreement. Whenever approval, directions, or other actions are required by the CITY under this Agreement, those actions will be taken by the City Representative, unless otherwise stated. The City Manager has the right to designate another City Representative at any time, by providing notice to CONTRACTOR.

8. CONTRACTOR REPRESENTATIVE(S)

The following principal(s) of CONTRACTOR are designated as being the principal(s) and representative(s) of CONTRACTOR authorized to act in its behalf with respect to the work specified in this Agreement and make all decisions in connection with this Agreement:

Representative 1
Representative 2

9. INDEPENDENT CONTRACTOR

The CONTRACTOR is, and at all times will remain as to the CITY, a wholly independent contractor. Neither the CITY nor any of its agents will have control over the conduct of the CONTRACTOR or any of the CONTRACTOR's employees, except as otherwise set forth in this Agreement. The CONTRACTOR may not, at any time or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of the CITY. CITY has no duty, obligation, or responsibility to CONTRACTOR's agents or employees under the Affordable Care Act. CONTRACTOR is solely responsible for any tax penalties associated with the failure to offer affordable coverage to its agents and employees under the Affordable Care Act and any other liabilities, claims and obligations regarding compliance with the Affordable Care Act with respect to CONTRACTOR's agents and employees. CITY is not responsible and shall not be held liable for CONTRACTOR's failure to comply with CONTRACTOR's duties, obligations, and responsibilities under the Affordable Care Act. CONTRACTOR agrees to defend, indemnify and hold CITY harmless for any and all taxes and penalties that may be assessed against CITY as a result of CONTRACTOR's obligations under the Affordable Care Act relating to CONTRACTOR's agents and employees.

10. BUSINESS LICENSE

The CONTRACTOR must obtain a City business license prior to the start of work under this Agreement, unless CONTRACTOR is qualified for an exemption.

11. OTHER LICENSES AND PERMITS

CONTRACTOR warrants that it has all professional, contracting and other permits and licenses required to undertake the work contemplated by this Agreement.

12. FAMILIARITY WITH WORK

By executing this Agreement, CONTRACTOR warrants that CONTRACTOR (a) has thoroughly investigated and considered the scope of services to be performed, (b) has carefully considered how the services should be performed, and (c) fully understands the facilities, difficulties and restrictions attending performance of the services under this Agreement. If the services involve work upon any site, CONTRACTOR warrants that CONTRACTOR has or will investigate the site and is or will be fully acquainted with the conditions there existing, prior to commencement of services set forth in this Agreement. Should CONTRACTOR discover any latent or unknown conditions that will materially affect the performance of the services set forth in this Agreement, CONTRACTOR must immediately inform the CITY of that fact and may not proceed except at CONTRACTOR's risk until written instructions are received from the CITY.

13. CARE OF WORK

CONTRACTOR must adopt reasonable methods during the life of the Agreement to furnish continuous protection to the work, and the equipment, materials, papers, documents, plans, studies and other components to prevent losses or damages, and will be responsible for all damages, to persons or property, until acceptance of the work by the CITY, except those losses or damages as may be caused by the CITY's own negligence.

14. CONTRACTOR'S ACCOUNTING RECORDS; OTHER PROJECT RECORDS

Records of the CONTRACTOR's time pertaining to the project, and records of accounts between the CITY and the CONTRACTOR, will be kept on a generally recognized accounting basis. CONTRACTOR will also maintain all other records, including without limitation specifications, drawings, progress reports and the like, relating to the project. All records will be available to the CITY during normal working hours. CONTRACTOR will maintain these records for three years after final payment.

15. INDEMNIFICATION

CONTRACTOR will indemnify, defend, and hold harmless CITY, the City Council, each member thereof, present and future, its officers, agents and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages whatsoever, including, but not limited to, those arising from breach of contract, bodily injury, death, personal injury, property damage, loss of use, or property loss however the same may be caused and regardless of the responsibility for negligence. The obligation to indemnify, defend and hold harmless includes, but is not limited to, any liability or expense, including defense costs and legal fees, arising from the negligent acts or omissions, or willful misconduct of CONTRACTOR, its officers, employees,

agents, subcontractors or vendors. It is further agreed, CONTRACTOR's obligations to indemnify, defend and hold harmless will apply even in the event of concurrent negligence on the part of CITY, the City Council, each member thereof, present and future, or its officers, agents and employees, except for liability resulting solely from the negligence or willful misconduct of CITY, its officers, employees or agents. Payment by CITY is not a condition precedent to enforcement of this indemnity. In the event of any dispute between CONTRACTOR and CITY, as to whether liability arises from the sole negligence of the CITY or its officers, employees, agents, subcontractors or vendors, CONTRACTOR will be obligated to pay for CITY's defense until such time as a final judgment has been entered adjudicating the CITY as solely negligent. CONTRACTOR will not be entitled in the event of such a determination to any reimbursement of defense costs including but not limited to attorney's fees, expert fees and costs of litigation.

16. NON-LIABILITY OF THE CITY'S OFFICERS AND EMPLOYEES

No officer or employee of the CITY will be personally liable to CONTRACTOR, in the event of any default or breach by the CITY or for any amount that may become due to CONTRACTOR.

17. INSURANCE

- A. CONTRACTOR must maintain at its sole expense the following insurance, which will be full coverage not subject to self insurance provisions:
- (1) Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
 - (a) Primarily Bodily Injury with limits of at least \$500,000 per person, \$1,000,000 per occurrence; and
 - (b) Primary Property Damage of at least \$250,000 per occurrence; or
 - (c) Combined single limits of \$1,000,000 per occurrence.
 - (2) General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$2,000,000 per occurrence.
 - (3) Workers' Compensation with limits as required by the State of California and Employers Liability with limits of at least \$1,000,000.
- B. The insurance provided by CONTRACTOR will be primary and non-contributory.
- C. The CITY of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official,

employee and volunteer must be named as additional insureds under the automobile and general liability policies.

- D. CONTRACTOR must provide certificates of insurance and/or endorsements to the City Clerk of the City of Torrance before the commencement of work.
- E. Each insurance policy required by this Paragraph must contain a provision that no termination, cancellation or change of coverage can be made without thirty days notice to the CITY.
- F. CONTRACTOR must include all subcontractors as insureds under its policies or must furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors will be subject to all of the requirements of this Paragraph 17.

18. SUFFICIENCY OF INSURERS

Insurance required by this Agreement will be satisfactory only if issued by companies admitted to do business in California, rated "B+" or better in the most recent edition of Best's Key Rating Guide, and only if they are of a financial category Class VII or better, unless these requirements are waived by the Risk Manager of the CITY ("Risk Manager") due to unique circumstances. In the event the Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the CITY, the CONTRACTOR agrees that the minimum limits of any insurance policies and/or the performance bond required by this Agreement may be changed accordingly upon receipt of written notice from the Risk Manager; provided that CONTRACTOR will have the right to appeal a determination of increased coverage by the Risk Manager to the City Council of the CITY within 10 days of receipt of notice from the Risk Manager.

19. CONFLICT OF INTEREST

- A. No officer or employee of the CITY may have any financial interest, direct or indirect, in this Agreement, nor may any officer or employee participate in any decision relating to the Agreement that effects the officer or employee's financial interest or the financial interest of any corporation, partnership or association in which the officer or employee is, directly or indirectly interested, in violation of any law, rule or regulation.
- B. No person may offer, give, or agree to give any officer or employee or former officer or employee, nor may any officer or employee solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any way pertaining to any program requirement, contract or subcontract, or to any solicitation or proposal.

20. NOTICE

- A. All notices, requests, demands, or other communications under this Agreement will be in writing. Notice will be sufficiently given for all purposes as follows:
1. Personal delivery. When personally delivered to the recipient: notice is effective on delivery.
 2. First Class mail. When mailed first class to the last address of the recipient known to the party giving notice: notice is effective three mail delivery days after deposit in an United States Postal Service office or mailbox.
 3. Certified mail. When mailed certified mail, return receipt requested: notice is effective on receipt, if delivery is confirmed by a return receipt.
 4. Overnight delivery. When delivered by an overnight delivery service, charges prepaid or charged to the sender's account: notice is effective on delivery, if delivery is confirmed by the delivery service.
 5. Facsimile transmission. When sent by fax to the last fax number of the recipient known to the party giving notice: notice is effective on receipt. Any notice given by fax will be deemed received on the next business day if it is received after 5:00 p.m. (recipient's time) or on a non-business day.

7. Addresses for purpose of giving notice are as follows:

CONTRACTOR: Contractor's Name and Address

Fax: Insert Fax Number

CITY: City Clerk
City of Torrance
3031 Torrance Boulevard
Torrance, CA 90509-2970
Fax: (310) 618-2931

with a copy to: Attn: Project Manager's Name
Department Name
Address
Torrance, CA 90503
Fax: Insert Fax Number

- B. Any correctly addressed notice that is refused, unclaimed, or undeliverable because of an act or omission of the party to be notified, will be deemed effective as of the first date the notice was refused,

unclaimed or deemed undeliverable by the postal authorities, messenger or overnight delivery service.

- C. Either party may change its address or fax number by giving the other party notice of the change in any manner permitted by this Agreement.

21. PROHIBITION AGAINST ASSIGNMENT AND SUBCONTRACTING

This Agreement and all exhibits are binding on the heirs, successors, and assigns of the parties. The Agreement may not be assigned or subcontracted by either the CITY or CONTRACTOR without the prior written consent of the other.

22. INTEGRATION; AMENDMENT

This Agreement represents the entire understanding of the CITY and CONTRACTOR as to those matters contained in it. No prior oral or written understanding will be of any force or effect with respect to the terms of this Agreement. The Agreement may not be modified or altered except in writing signed by both parties.

23. INTERPRETATION

The terms of this Agreement should be construed in accordance with the meaning of the language used and should not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction that might otherwise apply.

24. SEVERABILITY

If any part of this Agreement is found to be in conflict with applicable laws, that part will be inoperative, null and void insofar as it is in conflict with any applicable laws, but the remainder of the Agreement will remain in full force and effect.

25. TIME OF ESSENCE

Time is of the essence in the performance of this Agreement.

26. GOVERNING LAW; JURISDICTION

This Agreement will be administered and interpreted under the laws of the State of California. Jurisdiction of any litigation arising from the Agreement will be in Los Angeles County, California.

27. COMPLIANCE WITH STATUTES AND REGULATIONS

CONTRACTOR will be knowledgeable of and will comply with all applicable federal, state, county and city statutes, rules, regulations, ordinances and orders.

28. WAIVER OF BREACH

No delay or omission in the exercise of any right or remedy by a nondefaulting party on any default will impair the right or remedy or be construed as a waiver. A party's consent or approval of any act by the other party requiring the party's consent or approval will not be deemed to waive or render unnecessary the other party's consent to or approval of any subsequent act. Any waiver by either party of any default must be in writing and will not be a waiver of any other default concerning the same or any other provision of this Agreement.

29. ATTORNEY'S FEES

Except as provided for in Paragraph 15, in any dispute, litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party will be awarded reasonable attorney's fees, together with any costs and expenses, to resolve the dispute and to enforce any judgment.

30. EXHIBITS

All exhibits identified in this Agreement are incorporated into the Agreement by this reference.

31. CONTRACTOR'S AUTHORITY TO EXECUTE

The persons executing this Agreement on behalf of the CONTRACTOR warrant that (i) the CONTRACTOR is duly organized and existing; (ii) they are duly authorized to execute this Agreement on behalf of the CONTRACTOR; (iii) by so executing this Agreement, the CONTRACTOR is formally bound to the provisions of this Agreement; and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which the CONTRACTOR is bound.

CITY OF TORRANCE,
a municipal corporation

Firm Name
Type of Entity

Patrick J. Furey, Mayor

By: _____
Signer Name, Title

ATTEST:

Rebecca Poirier, MMC
City Clerk

APPROVED AS TO FORM:

JOHN L. FELLOWS III
City Attorney

By: _____

Attachment: Exhibit A: Bid
Revised 12/11/14

EXHIBIT A
Bid

PART F
PREVAILING WAGE RATES

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
 PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1
 FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS

LOCALITY: LOS ANGELES COUNTY
 DETERMINATION: LOS-2015-2

	CRAFT (JOURNEY LEVEL)	ISSUE DATE	EXPIRATION DATE	EMPLOYER PAYMENTS						STRAIGHT-TIME				OVERTIME HOURLY RATE		
				BASIC HOURLY RATE	HEALTH AND WELFARE	PENSION	VACATION/HOLIDAY	TRAINING	OTHER PAYMENTS	HOURS	TOTAL HOURLY RATE	DAILY	SATURDAY	SUNDAY AND HOLIDAY		
#	PLASTER CLEAN-UP LABORER	08/22/2015	08/02/2016**	30.160	7.000	5.900 AH	5.050	1.020	1.020	1.020	8.0	50.150	AL	65.230 AM	80.310	
	PLUMBER:															
	PLUMBER, INDUSTRIAL AND GENERAL PIPEFITTER	08/22/2015	06/30/2016**	Y 42.930	7.110	AN 11.050 AO	3.030	2.550	AP 1.000	8.0	67.670	AQ	89.850 AQ	89.850	110.520	
	SEWER AND STORM DRAIN PIPELAYER	08/22/2015	06/30/2016**	Y 33.110	7.110	AN 8.200 AO	1.000	2.170	AP 1.000	8.0	52.590	AR	68.850 AR	68.850	84.600	
AS	SEWER AND STORM DRAIN PIPE TRADESMAN	08/22/2015	06/30/2016**	Y 17.060	7.110	0.380	-	1.600	AP 0.850	8.0	27.000	AR	34.730 AR	34.730	42.460	
	LANDSCAPE/IRRIGATION FITTER	08/22/2015	06/30/2016**	Y 27.620	7.110	AN 11.050 AO	2.490	1.940	AP 0.800	8.0	51.010	AR	66.070	66.070	79.880	
AT	LANDSCAPE/IRRIGATION TRADESMAN (HVACR)	08/22/2015	06/30/2016*	Y 13.390	2.000	AN 0.880	-	0.100	AP 0.750	8.0	17.120	AR	23.820	23.820	30.510	
	REFRIGERATION SERVICE AND REPAIR TRADESMAN (HVACR)	08/22/2014	08/31/2015*	H 41.290	9.530	AU 8.830 R	-	1.300	AV 0.560	8.0	61.510	AW	82.150 AW	82.150	101.650	
AX	FIRE SPRINKLER FITTER (PROTECTION AND CONTROL SYSTEMS, OVERHEAD AND UNDERGROUND)	08/22/2014	08/31/2015*	H 10.900	9.530	1.400 R	-	0.500	AV 0.440	8.0	22.770	AW	28.220 AW	28.220	33.220	
	FIRE SPRINKLER FITTER (PROTECTION AND CONTROL SYSTEMS, OVERHEAD AND UNDERGROUND)	08/22/2015	12/31/2015**	35.570	8.520	AY 10.900	-	0.450	0.250	8.0	55.690	BZ	73.470	73.470	91.260	
AZ	FIRE SPRINKLER FITTER (PROTECTION AND CONTROL SYSTEMS, OVERHEAD AND UNDERGROUND)	08/22/2015	12/31/2015**	40.460	8.670	14.150 R	-	1.350	BA 0.550	8.0	65.180	BB	85.410 BB	85.410	105.640	
#	ROOFER	08/22/2014	07/31/2015*	BC 35.020	7.560	BD 5.590 W	-	0.400	BE 0.520	8.0	49.090	AQ	64.800 AQ	64.800	80.510	
	PITCH WORK PREPARER	08/22/2014	07/31/2015*	BC 36.770	7.560	BD 5.590 W	-	0.400	BE 0.520	8.0	50.840	AQ	67.430 AQ	67.430	84.010	
	SHEET METAL WORKER	08/22/2014	07/31/2015*	BC 36.020	7.560	BD 5.590 W	-	0.400	BE 0.520	8.0	50.090	AQ	66.300 AQ	66.300	82.510	
# BF	SHEET METAL WORKER	08/22/2015	06/30/2016**	L 41.260	9.870	BG 14.710	-	0.820	0.650	8.0	67.310	BH	87.940 BH	87.940	108.570	
# BI	SHEET METAL WORKER LIGHT COMMERCIAL SHEET METAL WORKER UP TO AND INCLUDING 10,000 SQUARE FEET.	08/22/2015	06/30/2016**	H 31.530	9.870	BJ 13.720	-	1.670	0.350 C	8.0	57.140	BK	72.900 BK	72.900	88.670	
BI	TERRAZZO FINISHER	08/22/2015	06/30/2016**	H 25.220	9.870	BJ 13.720	-	1.670	0.350 C	8.0	50.830	BB	63.440	63.440	63.440	
#	TERRAZZO FINISHER	08/22/2014	08/31/2015*	H 27.530	7.510	3.270 R	-	0.490	0.120	8.0	38.920	AA	52.690 AB	52.690	66.450	
#	TILE FINISHER	08/22/2014	08/31/2015*	H 34.570	8.300	3.270 R	-	0.570	0.120	8.0	46.830	AA	64.110 AB	64.110	81.400	
#	TILE FINISHER	08/22/2015	05/31/2016**	Y 23.780	8.430	1.800	-	0.750	0.280 Z	8.0	35.040	AA	46.930 AB	46.930	58.820	
#	TILE LAYER	08/22/2015	05/31/2016**	Y 35.140	9.250	5.680	-	0.910	0.370 Z	8.0	51.350	AA	68.920 AB	68.920	86.490	

FOOTNOTES

GENERAL PREVAILING WAGE APPRENTICE RATES

APPRENTICE INFORMATION

Determination: 2015-2 Issue Date: 08-22-2014 Expire Date: 07-31-2015 * Page: 1

Craft/Classification: Roofer

Counties: Los Angeles, Orange, Riverside, San Bernardino, Ventura

Period	Duration Months	OJT Hours	Hourly Basic Rate	Health & Welfare	Pension	Vacation /Holiday	Training	Other	Hourly Total Rate
1	6		\$19.310	\$7.560	\$2.490		\$.400	\$.520	\$30.280
2	6		\$20.880	\$7.560	\$2.490		\$.400	\$.520	\$31.850
3	6		\$22.450	\$7.560	\$2.490		\$.400	\$.520	\$33.420
4	6		\$24.020	\$7.560	\$2.490		\$.400	\$.520	\$34.990
5	6		\$25.590	\$7.560	\$2.490		\$.400	\$.520	\$36.560
6	6		\$28.740	\$7.560	\$2.740		\$.400	\$.520	\$39.960
7	6		\$31.880	\$7.560	\$2.740		\$.400	\$.520	\$43.100

Footnote(s):

Basic Hourly Rate --include amounts for Vacation and Dues Check Off. Dues Check Off is \$0.85 for all periods. Vacation is \$2.00 for 1st Period, \$2.25 for 2nd Period, \$2.50 for 3rd Period, and \$2.75 for 4th to 7th period. Vacation and Dues Check Off are not factored into overtime.

Other- \$0.52 - includes amounts for Administration Fund (\$0.05), Industry Fund (\$0.20), Compliance Fund (\$0.25), and Research and Education Trust Fund (\$0.02).

\$1.75 shall be added to the Apprentices and Journeymen Basic Hourly Wages whenever they are exposed to Pitch Fumes, or required to handle Pitch Base or Pitch Impregnated Products.

Apprentice Prevailing Wage Rates are paid only to apprentices registered with the State of California, Division of Apprenticeship Standards, for work the registered apprentice performs in his/her specific craft or trade. You may check whether an Apprentices is registered at <http://www.dir.ca.gov/DAS/appcertpw/AppCertSearch.asp>

GENERAL PREVAILING WAGE APPRENTICE RATES

APPRENTICE INFORMATION

Determination: 2015-2 Issue Date: 08-22-2015 Expire Date: 06-30-2016 ** Page: 1

Craft/Classification: Sheet Metal Worker

Counties: Kern, Los Angeles (Portions North Of A Straight Line Drawn Through Gorman And Big Pines)

Period	Duration Months	OJT Hours	Hourly Basic Rate	Health & Welfare	Pension	Vacation /Holiday	Training	Other	Hourly Total Rate
1	6		\$14.190	\$5.750	\$1.960		\$1.670	\$.350	\$23.920
2	6		\$15.770	\$5.750	\$2.070		\$1.670	\$.350	\$25.610
3	6		\$17.340	\$5.750	\$2.180		\$1.670	\$.350	\$27.290
4	6		\$18.920	\$5.750	\$2.280		\$1.670	\$.350	\$28.970
5	6		\$20.490	\$5.750	\$2.390		\$1.670	\$.350	\$30.650
6	6		\$22.070	\$5.750	\$2.500		\$1.670	\$.350	\$32.340
7	6		\$23.650	\$5.750	\$2.610		\$1.670	\$.350	\$34.030
8	6		\$25.220	\$5.750	\$2.710		\$1.670	\$.350	\$35.700
9	6		\$26.800	\$5.750	\$2.820		\$1.670	\$.350	\$37.390
10	6		\$28.380	\$5.750	\$2.930		\$1.670	\$.350	\$39.080

Footnote(s):

BASIC HOURLY RATE: Includes an amount for Dues Check-off.

PENSION includes amounts for National Pension, Local Pension and 401(a) plan. Pursuant to Labor Code sections 1773.1 and 1773.8, the amount paid for this employer payment may vary resulting in a lower taxable basic hourly wage rate, but the total hourly rates for straight time and overtime may not be less than the general prevailing rate of per diem wages.

****Journeyman Predetermined Increases**

Effective 7/1/2016: \$1.25 to be allocated to wages and/or employer payments

Effective 7/1/2017: \$1.35 to be allocated to wages and/or employer payments

There may be corresponding predetermined increase(s) to the apprentices associated with this journeyman craft/classification. Please fax a request to (415) 703-4771 or send to the following address:

Department of Industrial Relations
Office of the Director - Research Unit
P.O. Box 420603
San Francisco, CA 94142-0603

Apprentice Prevailing Wage Rates are paid only to apprentices registered with the State of California, Division of Apprenticeship Standards, for work the registered apprentice performs in his/her specific craft or trade. You may check whether an Apprentices is registered at <http://www.dir.ca.gov/DAS/appcertpw/AppCertSearch.asp>

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1

FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS

CRAFT: #LABORER AND RELATED CLASSIFICATIONS

DETERMINATION: SC-23-102-2-2015-2

ISSUE DATE: August 22, 2015

EXPIRATION DATE OF DETERMINATION: July 3, 2016** The rate to be paid for work performed after this date has been determined. If work will extend past this date, the new rate must be paid and should be incorporated in contracts entered into now. Contact the Office of the Director – Research Unit for specific rates at (415) 703-4774.

LOCALITY: All localities within Imperial, Inyo, Kern, Los Angeles, Mono, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, and Ventura counties.

Classification ^a (Journey person)	Basic Hourly Rate	Employer Payments					Straight-Time		Overtime Hourly Rates		
		Health and Welfare	Pension	Vacation/ and Holiday ^d	Training	Other Payment	Hours	Total Hourly Rate	Daily ^b 1 1/2X	Saturday ^{bc} 1 1/2X	Sunday and Holiday

CLASSIFICATION GROUPS

Group 1	\$31.39	6.86	6.50	4.47	0.64	0.62	8	50.48	66.175	66.175	81.87
Group 2	31.94	6.86	6.50	4.47	0.64	0.62	8	51.03	67.00	67.00	82.97
Group 3	32.49	6.86	6.50	4.47	0.64	0.62	8	51.58	67.825	67.825	84.07
Group 4	34.04	6.86	6.50	4.47	0.64	0.62	8	53.13	70.15	70.15	87.17
Group 5	34.39	6.86	6.50	4.47	0.64	0.62	8	53.48	70.675	70.675	87.87

Indicates an apprenticeable craft. The current apprentice wage rates are available on the Internet @ <http://www.dir.ca.gov/OPRL/PWAppWage/PWAppWageStart.asp>. To obtain any apprentice wage rates as of July 1, 2008 and prior to September 27, 2012, please contact the Division of Apprenticeship Standards or refer to the Division of Apprenticeship Standards' website at <http://www.dir.ca.gov/das/das.html>.

^a For classification within each group, see page 14.

^b Any hours worked over 12 hours in a single workday are double (2) time.

^c Saturdays in the same work week may be worked at straight-time if job is shut down during work week due to inclement weather or similar Act of God, or a situation beyond the employers control.

^d Includes an amount per hour worked for supplemental dues

RECOGNIZED HOLIDAYS: Holidays upon which the general prevailing hourly wage rate for Holiday work shall be paid, shall be all holidays in the collective bargaining agreement, applicable to the particular craft, classification, or type of worker employed on the project, which is on file with the Director of Industrial Relations. If the prevailing rate is not based on a collectively bargained rate, the holidays upon which the prevailing rate shall be paid shall be as provided in Section 6700 of the Government Code. You may obtain the holiday provisions for the current determinations on the Internet at <http://www.dir.ca.gov/OPRL/PWD>. Holiday provisions for current or superseded determinations may be obtained by contacting the Office of the Director – Research Unit at (415) 703-4774.

TRAVEL AND/OR SUBSISTENCE PAYMENT: In accordance with Labor Code Sections 1773.1 and 1773.9, contractors shall make travel and/or subsistence payments to each worker to execute the work. You may obtain the travel and/or subsistence provisions for the current determinations on the Internet at <http://www.dir.ca.gov/OPRL/PWD>. Travel and/or subsistence requirements for current or superseded determinations may be obtained by contacting the Office of the Director – Research Unit at (415) 703-4774.

DETERMINATION: SC-23-102-2-2015-2

CLASSIFICATION GROUPS

GROUP 1

Boring Machine Helper (Outside)
Certified Confined Space Laborer
Cleaning and Handling of Panel Forms
Concrete Screeding for Rough Strike-Off
Concrete, Water Curing
Demolition Laborer, the cleaning of brick if performed by an employee performing any other phase of demolition work, and the cleaning of lumber
Fiberoptic Installation, Blowing, Splicing, and Testing Technician on public right-of- way only
Fire Watcher, Limbers, Brush Loaders, Pilers and Debris Handlers
Flagman
Gas, Oil and/or Water Pipeline Laborer
Laborer, Asphalt-Rubber Material Loader
Laborer, General or Construction
Laborer, General Cleanup
Laborer, Jetting
Laborer, Temporary Water and Air Lines
Plugging, Filling of Shee-Bolt Holes; Dry Packing of Concrete and Patching
Post Hole Digger (Manual)
Railroad Maintenance, Repair Trackman and Road Beds; Streetcar and Railroad Construction Track Laborers
Rigging and Signaling
Scaler
Slip Form Raisers
Tarman and Mortar Man
Tool Crib or Tool House Laborer
Traffic Control by any method
Water Well Driller Helper
Window Cleaner
Wire Mesh Pulling - All Concrete Pouring Operations

GROUP 2

Asphalt Shoveler
Cement Dumper (on 1 yard or larger mixer and handling bulk cement)
Cesspool Digger and Installer
Chucktender
Chute Man, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundations, footings, curbs, gutters and sidewalks
Concrete Curer-Impervious Membrane and Form Oiler
Cutting Torch Operator (Demolition)
Fine Grader, Highways and Street Paving, Airport, Runways, and similar type heavy construction
Gas, Oil and/or Water Pipeline Wrapper-Pot Tender and Form Man
Guinea Chaser
Headerboard Man-Asphalt
Installation of all Asphalt Overlay Fabric and Materials used for Reinforcing Asphalt
Laborer, Packing Rod Steel and Pans
Membrane Vapor Barrier Installer
Power Broom Sweepers (small)
Riprap, Stonepaver, placing stone or wet sacked concrete
Roto Scraper and Tiller
Sandblaster (Pot Tender)
Septic Tank Digger and Installer (leadman)

GROUP 2 (continued)

Tank Scaler and Cleaner
Tree Climber, Faller, Chain Saw Operator, Pittsburgh Chipper and similar type Brush Shredders
Underground Laborer, including Caisson Bellower

GROUP 3

Asphalt Installation of all fabrics
Buggymobile Man
Compactor (all types including Tampers, Barko, Wacker)
Concrete Cutting Torch
Concrete Pile Cutter
Driller, Jackhammer, 2 1/2 ft. drill steel or longer
Dri Pak-it Machine
Gas, Oil and/or Water Pipeline Wrapper - 6-inch pipe and over by any method, inside and out
High Scaler (including drilling of same)
Impact Wrench, Multi-Plate
Kettlemen, Potmen and Men applying asphalt, lay-kold, creosote, lime caustic and similar type materials
Laborer, Fence Erector
Material Hoseman (Walls, Slabs, Floors and Decks)
Operators of Pneumatic, Gas, Electric Tools, Vibrating Machines, Pavement Breakers, Air Blasting, Come-Alongs, and similar mechanical tools not separately classified herein; operation of remote controlled robotic tools in connection with Laborers work
Pipelayer's backup man, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services
Power Post Hole Digger
Rock Slinger
Rotary Scarifier or Multiple Head Concrete Chipping Scarifier
Steel Headerboard Man and Guideline Setter
Trenching Machine, Hand Propelled

GROUP 4

Any Worker Exposed to Raw Sewage
Asphalt Raker, Luteman, Ironer, Asphalt Dumpman, and Asphalt Spreader Boxes (all types)
Concrete Core Cutter (walls, floors or ceilings), Grinder or Sander
Concrete Saw Man, Cutting Walls or Flat Work, Scoring old or new concrete
Cribber, Shorer, Lagging, Sheeting and Trench Bracing, Hand-Guided Lagging Hammer
Head Rock Slinger
Laborer, Asphalt-Rubber Distributor Bootman
Laser Beam in connection with Laborer's work
Oversize Concrete Vibrator Operator, 70 pounds and over
Pipelayer
Prefabricated Manhole Installer
Sandblaster (Nozzleman), Water Blasting, Porta Shot-Blast
Traffic Lane Closure, certified

GROUP 5

Blasters Powderman
Driller
Toxic Waste Removal
Welding, certified or otherwise in connection with Laborers' work

DEPARTMENT OF INDUSTRIAL RELATIONS
Office of the Director – Research Unit
455 Golden Gate Avenue, 9th Floor
San Francisco, CA 94102

ADDRESS REPLY TO:
P.O. Box 420603
San Francisco CA 94142-0603



PREDETERMINED INCREASES FOR

LABORER AND RELATED CLASSIFICATIONS (SC-23-102-2-2015-2)

ALL LOCALITIES WITHIN IMPERIAL, INYO, KERN, LOS ANGELES, MONO,
ORANGE, RIVERSIDE, SAN BERNARDINO, SAN LUIS OBISPO, SANTA
BARBARA, AND VENTURA COUNTIES

These predetermined increases for the above named craft applies only to the current determination for work being performed on public works projects with bid advertisement dates on or after **September 1, 2015**, until this determination is superseded by a new determination or a predetermined increase modification notice becomes effective.

When referencing our prevailing wage determinations, please note that if the prevailing wage rate determination which was in effect on the bid advertisement date of a project has a single asterisk (*) after the expiration date, the rate will be good for the life of the project. However, if a prevailing wage rate determination has double asterisks (**) after the expiration date, the rate must be updated on the following date to reflect the predetermined rate change(s).

LABORER

Determination SC-23-102-2-2015-2 is currently in effect and expires on July 3, 2016**.

Effective July 4, 2016, there will be an increase of \$1.60 allocated as follows: \$0.25 to Pension and 1.35 to be allocated to wages and/or employer payments

Effective July 3, 2017, there will be an increase of \$1.65 allocated as follows: \$0.25 to Pension and 1.45 to be allocated to wages and/or employer payments

There will be no further increases applicable to this determination.

Issued 8/22/2015, Effective 9/1/2015.

This page will be updated when wage rate breakdown information becomes available.
Last Updated: September 1, 2015

GENERAL PREVAILING WAGE APPRENTICE RATES

APPRENTICE INFORMATION

Determination: 2015-2 Issue Date: 08-22-2015 Expire Date: 07-03-2016 ** Page: 1

Craft/Classification: Laborer

Counties: Imperial, Inyo, Kern, Los Angeles, Mono, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Ventura

Period	Duration Months	OJT Hours	Hourly Basic Rate	Health & Welfare	Pension	Vacation /Holiday	Training	Other	Hourly Total Rate
1		500	\$17.200	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$27.690
2		500	\$18.910	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$29.400
3		500	\$20.630	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$31.120
4		500	\$24.070	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$34.560
5		500	\$27.510	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$38.000
6		500	\$29.230	\$4.800	\$1.300	\$3.130	\$.640	\$.620	\$39.720

Footnote(s):

Note: Apprentice rates are based on JM Laborer Group V rates.

Vacation -- Includes an amount for supplemental dues.

Other -- Includes amounts for Center for Contract Compliance, Industry Fund, and Administrative Trust Fund, Contract Administration Fund and Partnership for Jobs Industry Advancement Fund.

**Journeyman Predetermined Increases

Effective 7/4/2016: \$0.25 to Pension and 1.35 to be allocated to wages and/or employer payments

Effective 7/3/2017: \$0.25 to Pension and 1.45 to be allocated to wages and/or employer payments

There may be corresponding predetermined increase(s) to the apprentices associated with this journeyman craft/classification. Please fax a request to (415) 703-4771 or send to the following address:

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Office of the Director - Research Unit
P.O. Box 420603
San Francisco, CA 94142-0603

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PART G
ROOF SPECIFICATIONS

Substitution Requests

Submit any substitutions 10 days before the bid due date. Substitution requests must include complete specification sheets (cut sheets) for the proposed product. Bidder must provide sufficient information on the product to show how product is equal to or exceeds specified product. Late or incomplete substitution proposals may not be reviewed.

Inspect Site Conditions

Inspect all site conditions prior to mobilization to include but not limited to all equipment and materials currently in the project work area. Note any damaged conditions to existing equipment and materials to remain.

Impacts to City Facilities

The project site is a working Transit Maintenance and Operations Facility that will continue to work during the project. The Transit Building is located within the City Services Yard. These areas are occupied 7 days a week. The contractor will coordinate with the City to schedule work and locate material laydown areas so as to not negatively impact work within the City Yard.

Scope of Work

Remove and replace the existing City of Torrance Transit Facility roof to include coping, skylights and walk pads. The approximate roof size is 35,000 square feet of roofing, 900 linear feet of coping and 44 skylights along with various, expansion joints, HVAC, ventilation, plumbing and skylights penetrations. Installation of 500 linear feet of walk pad is also included. The scope of work includes all labor, equipment, materials and accessories for a complete and usable project acceptable to Firestone resulting in a **25** year warranty upon completion. It includes specifically but not limited to work to:

1. Protect all existing building elements and equipment during all phases of work.
2. Remove of existing roofing materials, metal coping, gravel stops and expansion joints. Protect existing lightweight concrete decking under existing roof. Patch lightweight concrete decking as needed or directed due to damage by tear off.
3. Properly dispose of all removed roofing materials.
4. Remove all existing skylights and associated materials.
5. Install Firestone ISO Guard HD Cover Board (TIS# 916) using I.S.O. Stick Insulation adhesive (TIS# 819). If adhesion tests to concrete roof deck fall outside recommended parameters, the contractor shall use a Firestone approved alternate adhesion method. Such modifications shall be at no additional cost.
6. Install Firestone UltraPly TPO Membrane roofing, 0.060 inch (1.52 mm) thickness (TIS# 201) with Firestone Single-Ply LVOC bonding Adhesive – (TIS# 824)
7. Install new galvanized caps under 2 exhaust fans, install counter flashing for three (3) A/C Units and one (1) large exhaust hood for paint booth and reseal penetrations for one boiler and one (1) pump on two (2) approximate 10' x 10' (approximate) platforms. Have adequate labor to roof/flash under caps during this abbreviated time.

8. Install Firestone SunWave Roof Curb (TIS# 1802) and Firestone SunWave Daylighting System and integrated Safety-Security Guard (SSG) Screen (TIS# 1801).
9. Install Firestone UnaClad metal to match existing coping dimensions per Firestone Specifications. details UT-T-12 or UT-RE-19B as applicable.
10. Install expansion joints per Firestone Specifications and details UT-E-6 or UT-E-4 as applicable.
11. Complete all flashings, pipe boots, inside/outside corners, t-joint patches per Firestone Specifications (TIS# 203, 205, 206, 215, and others as applicable).
12. Reset and seal roof drains per Firestone Specifications and detail UT-D-1 to ensure proper drainage and water tightness.
13. Provide and install walkway pad per Firestone Specifications and details UT-M-1. Provide and install **500 linear feet** of walkway pad as located by City General Service Building Maintenance staff
14. Install walkway pad under all existing stands or blocking. These pads are not included in the 500 linear foot total above. Contractor to verify at job walk prior submitting bid.

Meet all Federal, State and Local safety regulations and ordinances.

All materials and methods used shall be approved by the Firestone Building Products representative, Paul Hatch or City approved designee.

At mandatory job walk/pre-bid conference Contractors may verify existing concrete roof materials and decking. Any and all penetrations must be appropriately patched at this time.

Contractors are responsible to investigate existing rooftop conditions, equipment and penetrations prior to submitting a bid.

Contractor must have experience, labor and financial resources to accomplish the project within the project time period.

SECTION 07540

FULLY ADHERED THERMOPLASTIC OLEFIN (TPO) ROOFING SYSTEM

PART 1 GENERAL

1.01 GENERAL NOTES

- A. Preceding job start up, contractor shall decide to his satisfaction that all specifications contained herein are workable.
- B. Contractor will perform all work by competent, trained, and properly equipped personnel in strict accordance with good roofing practices and applicable industry standards and apply Firestone TPO LVOC 1168 Bonding Adhesive where required.
- C. Contractor will observe all published safety prevention policies and practices relating to application of roofing system and related work. All federal, state, and local codes shall be followed.
- D. Contractor will follow application, safety, etc. information as published in the most current edition of the Manufacturers TPO Roofing System Technical Specification.

1.02 WORK INCLUDED

- A. Work under this section covers the installation of a new FULLY ADHERED TPO roofing system on **CITY OF TORRANCE**. In addition contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work.
- B. Contractor will dispose of all materials properly. Any material removal shall comply with state and local codes and requirements and shall be disposed of in a legal manner.
- C. If replacing an existing roof system, contractor shall remove the existing roof down to the roof deck. Contractor will dispose of all materials properly. Any asbestos removal shall comply with state and local codes and requirements and shall be disposed of in a legal manner.

1.03 SECTION INCLUDES

- A. Substrate preparation
- B. Wood nailer installation
- C. Membrane installation
- D. Membrane flashing installation

1.04 RELATED SECTIONS

- A. Section 02500 - Selective Demolition
- B. Section 06100 - Rough Carpentry
- C. Section 07220 - Roof Insulation
- D. Section 07600 - Sheet Metal, Flashing and Trim
- E. Section 07700 - Roofing Specialties and Accessories
- F. **Section 07800 – Skylights (Replacement of all skylights; FIRESTONE SKYLIGHTS included in the warranty.)**
- G. Section 07900 - Joint Sealers
- H. Section 15400 - Plumbing Specialties

1.05 DEFINITIONS

- A. American Society for Testing and Materials (ASTM)

1.06 SYSTEM DESCRIPTION

- A. Reinforced TERMOPLASTIC OLEFIN sheet roofing, fully adhered over acceptable substrate and held in place with TPO bonding adhesive.

1.07 SUBMITTALS

- A. Product Data:
- B. Samples:
- C. Application Information:

1.08 QUALIFICATIONS

- A. Manufacturer:
 - 1. Company providing a no dollar limit, single source roof system warranty that is backed by corporate assets in excess of one billion dollars.
 - 2. System supplier must have ISO 9002 certification.
 - 3. Manufacturer must be able to provide the project with the Isocyanurate insulation that is produced in their facilities.
- B. Applicator:
 - 1. Shall be a Manufacturers No Dollar Limit (NDL) Licensed Contractor.
 - 2. Shall have a fully staffed office within 100 miles of the job site.
 - 3. Shall have at least five years experience in installing heat welded system.

1.09 REGULATORY REQUIREMENTS

- A. Conform to applicable local building code requirements.
- B. Underwriters Laboratories, Inc. (UL): Class A Fire Hazard Classification.
- C. Factory Mutual Corporation (FM): Roof Assembly Classification, FM Construction Bulletin 1-28, meeting listed in minimum requirements FM 1-90.

1.10 QUALITY INSPECTION/OBSERVATION

- A. Inspection by Manufacturer: Provide a final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer.
 - 1. Technical representative shall not perform any sales functions.
 - 2. Contractor shall complete any necessary repairs required for issuance of warranty.

1.11 PRE-INSTALLATION CONFERENCE

- A. Before start of roofing work, attend a conference to discuss the proper installation of materials. Attendees shall include all parties directly affecting work of this Section.

1.12 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact and legible.
- B. Store all materials clear of ground and moisture with weather protective covering.
- C. Keep all combustible materials away from ALL ignition sources.

1.13 ENVIRONMENTAL REQUIREMENTS

- A. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice.
- B. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult Manufacturers Technical Specifications on cold weather application.

1.14 WARRANTY

- A. Type/Term:
 - 1. Provide **25-year** Manufacturers Roofing System Limited Warranty. Warranty shall include membrane, roof (and membrane accessories or membrane accessories, and metal edging and coping.
 - 2. Provide a separate ISO Insulation Warranty (Insulation Warranty term shall coincide with Roofing System Warranty.)
- B. Coverage
 - 1. Roofing System Warranty:
 - a. Limit of liability: No Dollar Limitation
 - b. Scope of coverage
Repair any leak in the TPO Roofing System caused by the ordinary wear and tear of the elements, manufacturing defect in materials, and the workmanship used to install these materials.
 - 2. Insulation Warranty:
 - a. Limit of liability: No Dollar Limitation

PART 2 PRODUCTS

2.01 NAILERS FOR FLANGES AND ROOF ACCESSORIES

- A. Description: Structural Grade No. 2 or better Southern Pine, Douglas Fir or Exterior Grade plywood. All wood shall be pressure treated for rot resistance.
 - 1. Nailer width: Minimum 3-1/2 in. (nominal) wide or as wide as the nailing flange of each roof accessory.
 - 2. Nailer thickness: Thickness of roof insulation.
- B. Reference Standards:
 - 1. Southern Pines: PS 20; SPIB Grading Rules.
 - 2. Western Woods: PS 20; WWPA Grading Rules
 - 3. Plywood: PS 1; APA Grade Stamps.
 - 4. Pressure preservative treatment: AWPB LP2.

2.02 MANUFACTURERS - MEMBRANE MATERIALS

- A. Firestone fully adhered single-ply membrane system: Reinforced ULTRAPLY TPO sheet roofing securely attached to the gypsum board with Firestone 1168 LVOC CALIFORNIA COMPLIANT adhesive.
- B. Acceptable Manufacturers as Listed. Listing of the manufacture does not relieve manufacture from meeting the requirements of the specification.
 - 1. FIRESTONE

2.03 ULTRAPLY TPO SHEET ROOFING AND FLASHING MEMBRANE

- A. Description: Reinforced, ULTRAPLY TPO synthetic single-ply membrane composed of Thermoplastic Polyolefin polymer, and Ethylene Propylene Rubber.
 1. Membrane Type: **.060 Reinforced TPO**

Testing	Minimum Values	Typical values (SI Units)
Thickness, min, mm (in.)		
Sheet-overall	1.0 (0.039)	0.060± 10%
Coating over scrim	0.381 (0.015)	0.018± 10%
Tensile strength, min, MPa (psi)	NA	
Breaking strength, min, kN (lbf)	1.0 (225)	300
Elongation, ultimate, min, %	NA	
Elongation at break, min, %	15 ^A	25 ^A
Tensile set, max, %	NA	
Tear strength, min, kN/m (lbf/in.)	NA	
Tearing strength, min, N (lbf)	245 (55)	245 (55)
Brittleness point, max, °C (°F)	-30 (-22)	-60 (-51)
Ozone resistance, no cracks	Pass	Pass
Properties after heat aging: (retained values)		
Tensile strength, % min	NA	
Breaking strength, % min	90%	90%
Elongation, ultimate, % min	NA	
Elongation at break, % min	90% ^A	90%
Tear strength, % min	NA	
Tearing strength, % min	90%	90%
Weight Change (Mass), max %	±4 ^B	±4 ^B
Linear dimensional change, max, %	±2	-1.0
Water absorption, max, mass %	±4 ^B	+1.0 ^B
Factory seam strength, min, kN/m (lbf/in.)	75% of Sheet strength	75% of Sheet strength
Weather resistance:		
Visual inspection	Pass	Pass
Tensile strength, % min	NA	
Breaking strength, % min	90%	90%
Elongation, Ultimate, % min	NA	
Elongation at break, min, %	90% ^A	90% ^A
PRFSE, min, %	N/A	

B. Reference Standards

- D 412 Test Methods for Vulcanized Rubber and Thermo-plastic Rubbers and Thermoplastic Elastomers--Tension
- D 471 Test Method for Rubber Property--Effect of Liquids
- D 573 Test Method for rubber--Deterioration in an Air Oven
- D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- D 751 Test Methods for Coated Fabrics
- D 1149 Test Method for Rubber Deterioration--Surface Ozone Cracking in a Chamber
- D 1204 Test Method for linear Dimensional Changes of Non-rigid thermoplastic Sheeting or Film at Elevated Temperature
- D 1822 Test Method for Tensile-Impact Energy To Break Plastics and Electrical Insulating Materials
- D 2137 Test Methods for Rubber Property--Brittleness Point of Flexible polymers and Coated Fabrics
- D 5538 Practice for Thermoplastic Elastomers Terminology and Abbreviations
- G 155 Practice for Operating Light Exposure Apparatus (Xenon-arc Type) With and Without Water for Exposure of non-metallic Materials
- G 154 Practice for Operating Light and Water-Exposure Apparatus (Fluorescent UV Condensation Type) for Exposure of Nonmetallic Materials

2.04 ROOF COMPONENTS

A. BASE LAYER

GEORGIA PACIFIC ¼" DENS DECK PRIMED or USG SECUROCK

A. Description: Roof Board

1. Thickness 1/4"
2. Nominal Size 48 in x 48 in

B. Reference Standards:

1. FS HH-I-1972/Gen.
2. FS HH-I-1973/3.
3. ASTM C 209 - Water Absorption.
4. ASTM E 96-Water Vapor Transmission of Materials.
5. ASTM D 1621 - Compressive Strength.
6. ASTM D 1622 - Density
7. ASTM D 2126 - Dimensional Stability.
8. ASTM E 84 - Flame Spread.

C. Product/Producer: Georgia Pacific or USG purchased through Firestone.

**B. INTERMEDIATE LAYER (IF NECESSARY TO ATTAIN SLOPE)
TAPERED POLYISOCYANURATE ROOF INSULATION AS CRICKETS**

- A. Description: Roof insulation consisting of closed cell polyisocyanurate foam core and a perforated black glass reinforced mat laminated to the face.
1. Slope: $1/4$ "
 2. Nominal Size 48 in x 48 in
- B. Reference Standards:
1. FS HH-I-1972/Gen.
 2. FS HH-I-1973/3.
 3. ASTM C 209 - Water Absorption.
 4. ASTM E 96-Water Vapor Transmission of Materials.
 5. ASTM D 1621 - Compressive Strength.
 6. ASTM D 1622 - Density
 7. ASTM D 2126 - Dimensional Stability.
 8. ASTM E 84 - Flame Spread.
- C. Product/Producer: ISO 95+ Polyisocyanurate Insulation Tapered 4'x4' boards by Firestone.

2.05 TPO SHEET ROOFING SYSTEM COMPONENTS

- A. Roof Membrane
1. Description: .060 TPO membrane
- B. TPO unsupported Flashing
1. Description: Non-reinforced, TPO, single-ply flashing composed of Thermoplastic Polyolefin polymer, and Ethylene Propylene Rubber
 - a. Nominal Thickness: .060 inch
- C. TPO Bonding Adhesive:
1. Description: Firestone 1168 Bonding Adhesive, formulated for compatibility with the ULTRAPLY TPO membrane and a wide variety of substrate materials, including masonry, wood, insulation facings.
 2. Product:
 - a. TPO Bonding Adhesive 1168 LOW VOC CALIFORNIA COMPLIANT.
- D. Pourable Sealer:
1. Description: 2-Part urethane, 2-color reliable mixing.
- E. Seam Plates:
1. Description: Steel with barbs and a Galvalume coating.
 2. Reference Standard: Corrosion-resistant to meet FM-4470 criteria.
- F. Termination Bar:
- a. Description: 1.3" x 0.10" thick aluminum bar with integral caulk ledge.
- G. Membrane Fasteners
1. Description: Heavy duty threaded fastener with 3-coat waterborne fluorocarbon polymer coating and drill point tip capable of penetrating 20 gauge steel. Fastener shall meet minimum thread size of .260" and 13 threads per inch. Length shall be sufficient to penetrate deck a minimum of 3/4" for steel and 1" for wood and concrete. Structural concrete decks must be pre-drilled with a 7/32" carbide drill bit to a depth 1/2" deeper than the fastener engagement. Perimeter to metal pan.

- 2. Reference Standard:
SAE 1022, Heat Treated
- 3. Product:
 - a. Heavy Duty (HD) fasteners.
- H. TPO Cut Edge Sealant
 - a. Polymeric sealant for use where exposed reinforcement is encountered.
- I. TPO General Purpose Sealant
 - a. Polymeric one part general purpose sealant.
- J. TPO Coated Metal
 - a. Galvanized Steel with Manufacturers bonded TPO Coating.
- K. TPO Molded Flashing Accessories
 - a. Unreinforced TPO membrane Pre-Molded for a variety of flashing details (i.e.; Pipe Boots, Inside-Outside corners, etc.)

2.06 METAL FLASHING ~~(OPTIONAL)~~

- A. Edge Metal and/or Coping
 - 1. Description: Provide prefabricated **24 gauge Steel** with **Kynar** finish in manufacturers standard colors to be selected by specifier.
 - 2. Product/Producer: **Firestone UnaClad or Metal Era**

2.07 MISCELLANEOUS

- A. Roof Walkway Pads:
 - 1. Description: Non-reinforced TPO Walkway Pads, .130" x 30" x 50' with Patterned traffic bearing surface.
- B. TPO molded inside corners
- C. TPO Molded outside corners
- D. TPO Molded pipe boots
- E. TPO T-Joint Covers

PART 3 INSTALLATION

3.01 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support roofers and their mechanical equipment and that deflection will no strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Start work with sealants and adhesives at 60° - 80° F.
- E. Fumes from adhesive solvents may be drawn into the building during installation through rooftop intakes. Appropriate measures must be taken to assure that fumes from adhesive solvents are not drawn into the building through air intakes.
- F. For reroofing applications only: remove existing roof system components as specified.

- G. The surface must be clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the membrane, All roughened surfaces, which could cause damage, shall be properly repaired before proceeding.
- H. All surface voids of the immediate substrate greater than 1/4" wide must be properly filled with an acceptable insulation or suitable fill material.

3.02 PROTECTION OF OTHER WORK

- A. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- B. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings and from damage related to roofing work.
- C. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trade.

3.03 MATERIAL STORAGE AND HANDLING

- A. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- B. Consult container labels and material Safety Data Sheets (MSDS) for specific safety instructions.
- C. Deliver materials to job site in their original containers as labeled by the manufacturer.

3.04 WOOD NAILER LOCATION AND INSTALLATION

- A. Total wood nailer height shall match the total thickness of insulation being used and shall be installed with a 1/8" gap between each length and at each change of direction.
- B. Wood nailers shall be firmly fastened to the deck. Mechanically fasten wood nailers to resist a force of 200 lbs. Per linear foot.

3.05 VAPOR RETARDER

None

3.06 ROOF INSULATION APPLICATION: GENERAL

- A. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
- B. Seal deck joints, where needed, to prevent bitumen drippage.
- C. Lay roof insulation in courses parallel to roof edges.
- D. Neatly fit insulation to all penetrations, projections, and nailers. Insulation shall be fit tightly, with gaps not greater than 1/4". All gaps greater than 1/4" shall be filled with acceptable insulation. Under no circumstances shall the roofing membrane be left unsupported over a space greater than 1/4". Tapered insulation shall be installed around roof drains so as to provide proper slope for drainage. Miter roof insulation edges at ridge, valley and other similar non-planar conditions.
- E. When installing multiple layers of insulation, all joints between layers shall be staggered at least 6 in.

3.07 INSULATION ATTACHEMENT

- A. Base Layer: **Firestone ISOSTICK 12"o.c.**

3.08 MEMBRANE PLACEMENT AND ATTACHMENT

- A. Starting at the low point of the roof, place the membrane panels without stretching over the acceptable substrate. Position subsequent membrane sheets in the same manner, overlapping the ends of adjoining sheets a minimum of 3" and side laps a minimum of 6". Install panels to insure that laps shed water.
 - a. Where TPO Membrane has been cut to expose reinforcing membrane, TPO Cut Edge Sealant or TPO General Purpose Sealant must be used to encapsulate exposed edge.
- C. Fully adhere with Firestone bonding adhesive LVOC 1168.

3.09 MEMBRANE LAP SPLICING

- A. Lap splice areas that have been contaminated must be wiped down with a dry or damp (water only) clean cloth prior to heat welding and allow to completely dry.
- B. All field and flashing splices on the horizontal surface shall be completed using an automatic heat welder that has been designed for hot air welding of thermoplastic Olefin membranes.
- C. Hand held welders are only to be used on vertical welds or where an automatic welder is not practical or cannot be used.
- D. Seams made with the automatic welder shall be a minimum of 1-1/2" wide. Seams made with hand welders shall be a minimum of 2" wide. Use 2" side silicone or silicone coated steel hand rollers to assure proper mating of surfaces as hand heat welding proceeds.
- E. Probe all completed welds using a slotted screwdriver or cotter pin puller type tool to verify seam integrity. Do not probe welds until they have had time to cool to ambient conditions. Any welds found to be insufficiently welded need to be repaired on a daily basis.

3.10 MEMBRANE SECUREMENT

- A. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 1" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
 - 1. Fully adhere with Firestone TPO bonding adhesive LVOC 1168 in accordance with Manufacturers Details.
 - 2. Install TPO membrane as flashing.

3.11 FLASHING - PENETRATIONS

- A. General:

1. If project is retrofit or Tear-Off remove all existing flashings (i.e., lead, asphalt, mastic, etc.)
 2. Flash all penetrations passing through the membrane.
 3. The flashing seal must be made directly to the penetration.
- B. Pipes, Round Supports, etc.
1. Flash with Pre-Molded TPO Pipe Flashings where practical
 2. Flash using TPO unsupported Flashing membrane when Pre-Molded Flashing is not practical.
- C. Structural Steel Tubing
1. Use a field fabricated pipe-flashing detail provided that the minimum corner radius is greater than 1/4" and the longest side of the tube does not exceed 12". When the tube exceeds 12: use a standard curb detail.
- D. Roof Drains
1. If project is Retrofit or Tear-Off remove all existing flashings, drain leads, roofing materials and cement from the existing drain in preparation for membrane Water Block Seal.
 2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
 3. Taper insulation around the drain to provide a smooth transition from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed Manufacturers recommendations.
 4. Position the TPO membrane, then cut a hole for the roof drain to allow 1/2" - 3/4" of membrane extending inside the clamping ring past the drain bolts.
 5. Make round holes in the TPO membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
 6. Place Water Block Seal on top of drain bowl where the clamping ring seats below membrane.
 7. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.
- E. Pipe Clusters and Unusual Shaped Penetrations
1. Fabricate penetration pockets to allow a minimum clearance of 1" between the penetration and all sides.
 2. Secure penetration pockets per Manufacturers Details.
 3. Fill penetration pockets with Pourable Sealer, so as to shed water.
- F. Hot Pipes
1. Protect the TPO components from direct contact with steam or heat sources when the in-service temperature is in excess of 140°F. In all such cases flash to an intermediate insulated "cool" sleeve per Firestone details.
- G. Flexible Penetrations
1. Provide a weathertight gooseneck set in Water Block Seal and secured to the deck.
 2. Flash in accordance with Manufacturers Details.
- H. Scuppers
1. Remove existing scupper and ~~provide a new welded watertight scupper or~~ clean the existing scupper for reuse.

2. Set welded watertight scupper in Water Block Seal and secure to the structure.
 3. Flash in accordance with Manufacturers Details.
- I. Expansion Joints
 1. Install as shown on roof drawings in accordance with Manufacturers details.

3.12 FLASHING - WALLS, PARAPETS, MECHANICAL EQUIPMENT CURBS, SKYLIGHTS, etc.

- A. General:

Using the longest pieces practical, flash all walls, parapets, curbs, etc., a minimum of 8" high per Manufacturers Details.
- B. Evaluate Substrate:

Evaluate the substrate and overlay per Manufacturers specifications as necessary.
- C. If project is Retrofit or Tear-Off remove all flashings.
- D. Remove excessive asphalt to provide a smooth, sound surface for new flashings.
- E. Apply TPO Bonding Adhesive at about the same time to both the membrane flashing and the surface to which it is being bonded so as to allow approximately the same drying time. Apply Bonding Adhesive by rolling the adhesive on to the mating surfaces evenly, avoiding globs or puddles.
- F. Allow TPO Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating. Flash off time will vary depending on ambient air conditions.
- G. Roll the flashing into the adhesive evenly and carefully so as to minimize wrinkles.
- H. To ensure proper contact, compress the flashing to the substrate with a stiff push broom.
- I. Complete the splice between membrane flashing and the main roof sheet by hot air welding. Provide lap splices in accordance with Manufacturers Details.
- J. Provide termination directly to the vertical substrate as shown in Manufacturers Details.
- K. Install TPO T-Joint covers at field and flashing splice intersections as required by Manufacturer.
- L. Install intermediate flashing attachment as required by Manufacturers Specifications and Details.

3.13 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

- A. Flash all gravel stops or roof edges using materials as outlined in Manufacturers Details.

3.14 TEMPORARY CLOSURE (NOT WARRANTED BY MANUFACTURER)

- A. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the roofing contractor. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

3.15 ROOF WALKWAYS

- A. Walkways may consist of TPO Walkway material. Heat weld the perimeters of the walkway material to the TPO membrane per Manufacturers specifications.

3.16 SHEET METAL WORK

- A. Field inspection and testing will be performed as required by the manufacturer
- B. Correct identified defects or irregularities.

3.17 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed as required by the manufacturer.
- B. Correct identified defects or irregularities.

3.18 CLEAN-UP

- A. Clean all contaminants from building and surrounding areas.
- B. Remove trash, debris, equipment from project site and surrounding areas.
- C. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.

END OF SECTION

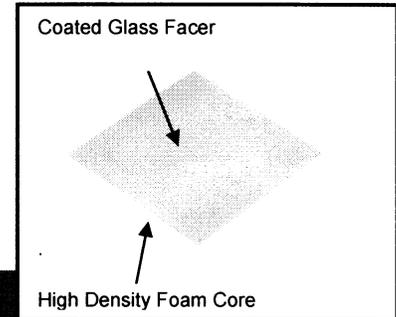
ISOGARD™ HD Cover Board

Item Description

4' x 4' (1.2 m x 1.2 m)
4' x 8' (1.2 m x 2.4 m)

Item Number

W8H3GG0504
W8H3GG0508



Product Information

Description:

Firestone ISOGARD HD Cover Board is a half-inch (12.7 mm) thick polyiso insulation designed to prevent heat loss from a building and for use as a cover board. It is a high density, closed-cell, polyisocyanurate foam core that has been manufactured with coated glass facers. Firestone ISOGARD HD Cover Board provides the highest thermal performance when compared to other high density insulations or cover boards.

All Firestone polyisocyanurate insulations use EPA accepted blowing agents. Firestone ISOGARD HD Cover Board with ISOGARD foam technology incorporates a HCFC-free blowing agent that does not contribute to the depletion of the ozone layer (ODP-free).

Fire Rated Over a Combustible (Wood) Deck

Firestone ISOGARD HD cover board material has been rated Class B when used in approved roof assemblies.

Superior Hail Resistance

ISOGARD HD cover boards have been given a Severe Rating by Factory Mutual (FM) Global. ISOGARD HD Cover Board has also received approvals for 2.5" diameter hail with mechanically attached .060 TPO with a kinetic energy of 57.48 ft-lbs and 2.0" diameter hail with mechanically attached .045 EPDM with a kinetic energy of 23.65 ft-lbs. (source: National Bureau of Standards 23)

Method of Application:

Insulation shall be neatly fitted to all roof penetrations, projections and nailers. No more insulation shall be installed than can be covered with membrane and completed before the end of each day's work or before the onset of inclement weather.

Firestone ISOGARD HD Cover Board can be applied over existing roof surfaces and under fully adhered or mechanically attached Single-Ply and Modified Bitumen systems applied in Multi-Purpose MB Cold Adhesive and BASEGARD™ SA base sheets with a Torch Applied Cap or SBS sand backed Cap Sheet in hot asphalt.

ISOGARD HD Cover Board must be installed using Firestone Fasteners and Plates or one of the following Firestone insulation adhesives:

- I.S.O. Twin Pack™
- I.S.O. Stick™
- I.S.O. Spray™ S
- I.S.O. FIX™ II

TECHNICAL INFORMATION SHEET

ISOGARD™ HD Cover Board

Storage:

- Keep insulation dry at all times.
- Elevate insulation above the deck or ground.
- Cover insulation with waterproof tarps.

Precautions:

- Elevate insulation above the deck or ground.
- Combustible. Refer to SDS for more information.
- Do not install over wet, damp or uneven substrates.
- Do NOT torch apply membranes to ISOGARD HD cover boards
- Do NOT use hot asphalt to attach or apply asphalt roofing systems to ISOGARD HD cover boards

LEED® Information:

Recycled Content: approximately 9%*
*Contains post industrial recycled content.

Manufacturing Location: Corsicana, TX Youngwood, PA Jacksonville, FL
DeForest, WI Florence, KY Bristol, CT

Manufactured in an ISO 9000 Registered Facility
FM Global Approved when applied with the fastening pattern shown.



ASTM C1289 Type II, Class 4, Grade 2

Typical Properties

Property	ASTM Standard	Units	Value	Units	Value
Compressive Strength	D 1621	psi	120	kPa	827
Pull Through Resistance	D 473 modified	lbf	210	N	934
Dimensional Stability	D 2126	%	<0.5	%	<0.5
Water Absorption	C209	% by volume	<3	% by volume	<3
Service Temperature	---	°F	-100 to 250	°C	-73 to 121
Resistance to Mold	D3273	--	pass	---	pass
Flute Span over metal decks	---	inches	2.625		

Product Data

Property	Thickness inches	Thickness mm	R-Value
Thermal Resistance	0.5	12.7	2.5

R-Value shown are based on ASTM Test C518 2 75 °F mean

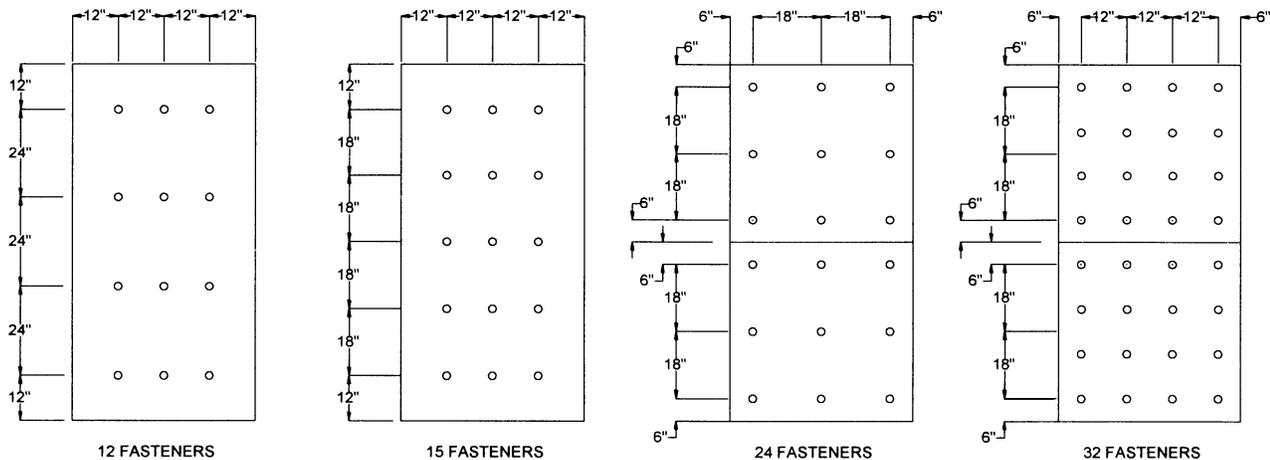
TECHNICAL INFORMATION SHEET

ISOGARD™ HD Cover Board

Acceptable Substrates

Property	Notes:
Structural Concrete, 3000 psi (New & Existing)	Please consult Membrane Design Guides on line at www.firestonebpco.com to review specific information regarding fastener types appropriate for the type of deck and insulation in use.
Steel, min. 22 gauge	
Lightweight Concrete ¹	
Plywood and OSB, min. ½"	
Gypsum, min. 2"	
NOT ACCEPTABLE:	Do not use hot asphalt to adhere ISOGARD HD cover boards. Firestone ISOGARD HD cover board is not suitable as an immediate substrate for a ballasted roof system.

¹ A vapor retarder is required to be installed under systems with insulation. A properly prepared, existing, dry and sound, uninsulated built-up roof system (all splits and blisters repaired) can be used as a vapor retarder.



Please contact Quality Building Services Technical Department at 1-800-428-4511 for further information.

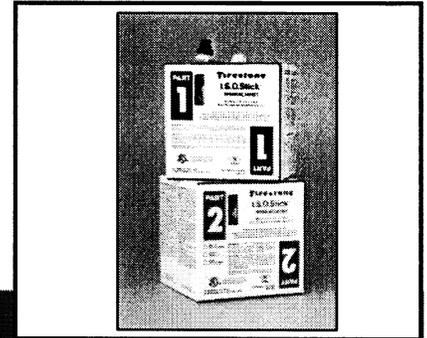
This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

I.S.O.Stick™ Insulation Adhesive

Item Numbers

Part 1 W56RAC1A5B1

Part 2 W56RAC1A5B2



Product Information

Description:

I.S.O.Stick is a two-component, low-rise polyurethane insulation adhesive applied in beads for adhesive attachment of Firestone-approved roof insulations to acceptable substrates as allowed by Firestone specifications. I.S.O.Stick is specifically designed to be dispensed using the Pace Cart 2™ dispenser, which simultaneously pumps I.S.O.Stick Parts 1 and 2 to a static mixer, allowing a properly mixed bead of adhesive to be applied to the receiving substrate. Firestone Building Products standard warranties are available up to a 30-year warranty period. Please refer to the Firestone website at www.firestonebpc.com for specific warranty requirements. *Note: Pace Cart 2 is a registered trademark of OMG, Inc.*

Method of Application:

1. Install only as much roof insulation as can be covered and made watertight during that working day.
2. The substrate must be clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminants.
3. The Pace Cart 2 must be used to install I.S.O.Stick Insulation Adhesive.
4. Install I.S.O.Stick only when ambient conditions, bonding substrates and insulations exceed 40 °F (4 °C) and rising.
5. To mix and dispense I.S.O.Stick with the Pace Cart 2, properly install the I.S.O.Stick Parts 1 and 2 onto the Pace Cart 2 per manufacturer's instructions. To install the adhesive, open both valves located on the Pace Cart 2 applicator gun to start application of the adhesive to the substrate. The adhesive should be properly mixed in a 1:1 ratio through the attached static mix tip. When properly mixed, there should be no marbling in the adhesive.
6. Apply the adhesive on the substrate in bands spaced a minimum of 12" (300 mm) on center, as specified to meet wind uplift requirements. Allow adhesive to rise ¾" - 1" (19.0 mm – 25.4 mm) and then lay the suitable insulation into position. Continue to place pressure using weighty objects such as adhesive pails on the insulation until the adhesive sets (typically 4 - 8 minutes) to ensure proper adhesion.
7. To ensure that the insulation makes adequate contact with the I.S.O.Stick adhesive during the critical set-up period, set the insulation board [4' x 4' (1.22 m x 1.22 m) maximum] in fresh I.S.O.Stick before a skim coat develops.
8. Thoroughly walk on each insulation board immediately after setting it to ensure the substrate and insulation is in complete contact while the I.S.O.Stick sets. Ballast, such as full pails of bonding adhesive or fasteners, can be used to ensure adequate contact between the Insulation and substrate during the set-up period.
9. To store previously opened I.S.O.Stick containers, close the valves located on the gun and turn off the pump on the Pace Cart 2. Remove and discard the static mixing tip. Relieve pressure in the adhesive lines by opening and closing the valves on the adhesive gun. Keep Part 1 and Part 2 containers of I.S.O.Stick connected to the Pace Cart 2.

Storage:

- Store in original unopened containers between 60 °F (16 °C) and 80 °F (27 °C) until ready for use.
- Do not store in direct sunlight.
- Do not allow I.S.O.Stick to freeze.
- Ship and store product with handle side up and keep caps of nozzle closed tightly.
- Do not expose to moisture.

I.S.O.Stick™ Insulation Adhesive

- The shelf life is 18 months when stored according to these recommendations.

Precautions:

- Review applicable Safety Data Sheet prior to use.
- Personnel who are sensitive/allergic to isocyanate or polyurethane should not work with I.S.O.Stick.
- At the start and throughout each workday, test samples made with I.S.O.Stick should be created to verify that proper mixing, set-up and overall adhesion of insulation to substrate is being achieved before proceeding.
- Avoid contact with eyes. Wear safety glasses with side shields.
- Avoid breathing vapors. A Self-Contained Breathing Apparatus or Respirator should be used for limited ventilation.
- Avoid contact with skin. Wear gloves when dispensing. Wash hands thoroughly after handling.
- Use caution when removing caps from cartons.
- Do not burn empty kit containers. Dispose in accordance with local, federal, and state regulations.
- Insulation boards shall not exceed 4' x 4' (1.2 m x 1.2 m).

LEED® Information:

Post Consumer Recycled Content: 0%
 Post Industrial Recycled Content: 0%
 Manufacturing Location: Rockford, MN



Typical Properties

	Part 1	Part 2
Base:	Polymeric MDI	Polyurethane Component
Color:	Dark brown	Red
Viscosity:	150 - 350 cP	390 - 530 cP
Density:	10.16 lb/gal (1.22 kg/L)	8.50 lb/gal (1.02 kg/L)
Specific Gravity:	1.22	1.02
V.O.C. Content:	11 grams/Liter	

Packaging Data

Pail:	5 gal (19 L) each, Part 1 & Part 2		
Reaction Time:	Boards must be placed into the I.S.O.Stick before it reaches tack-free state. Boards may be placed into adhesive shortly after it has reached its maximum rise, typically within 2 minutes. Substrate Temperature: 40 – 90 °F (4 – 32 °C) Tack-Free State: 3 – 5 minutes Set-up: 10 – 12 minutes		
Coverage:	These coverage rates are applicable when the I.S.O.Stick is mixed with 1:1 ratio and applied in the proper bead spacing (serpentine pattern) at a bead width of 5/8" - 1" (0.6 - 25.4 mm). Coverage rates will vary if spacing is increased. Coverage rate may be reduced due to irregularities in substrate. The coverage rate for I.S.O.Stick at roof perimeter and corner sections may vary per roof system design requirements.		
	Application Substrate	Coverage (ft ² /gal)	Bead Spacing (field of roof)
	Insulation, Wood, Concrete	170 - 200	12" (305 mm) o.c.
	Smooth BUR, Modified Bitumen	150 - 170	12" (305 mm) o.c.
	Metal, Gypsum	100 - 120	12" (152 mm) o.c.

I.S.O.Stick™ Insulation Adhesive

Acceptable Substrates

<u>Substrate:</u>	<u>Notes:</u>
Structural Concrete (New)	New poured decks must have a minimum 28 day cure time.
Structural Concrete (Existing)	Positive adhesion test required.
Steel	New steel decks may require cleaning to remove processing oils.
Gypsum	Positive adhesion test required.
Cementitious Woodfiber	Positive adhesion test required.
Existing Asphalt and Modified Bitumen Roofs (Mineral or Smooth Surfaced)	Positive adhesion test required.
Lightweight Concrete	Acceptable Lightweight concrete substrates include cellular or air-entrained concrete. Lightweight concrete substrates with aggregate (such as perlite or vermiculite) are not acceptable.
Plywood	5/8" thick min.
Coal Tar Pitch	Positive adhesion test required.
ISO95+ GL, RESISTA, ISOGARD™ HD, FiberTop, Dens-Deck Products, Expanded Polystyrene, Extruded Polystyrene, Polyiso, Woodfiber	Non-Firestone brand insulations require a positive adhesion test.
Existing Single Ply roofs	Not acceptable
Fiberglass insulation	Not acceptable
Perlite insulation	Not acceptable

Existing substrates containing residual asphalt must be cleaned and scraped smooth as possible. The substrate shall be smooth, flat, clean, dry, free of sharp fins, or foreign materials All perimeters, deck seams and all penetrations must be sealed to prevent air infiltration through the deck. Firestone recommends an expanding foam or similar product be used.

Necessary Equipment:

The Pace Cart 2 and Pace Cart Static mixing tips are required for application of I.S.O. Stick insulation adhesive. They both are available for purchase through local distribution, not from Firestone. *Note: The Roofing Contractor is responsible for inspecting and maintaining Pace Cart 2.*

Please contact the Quality Building Services Technical Department at 1-800-428-4511 for further information.

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TECHNICAL INFORMATION SHEET



UltraPly™ TPO Membrane

Item Description

1 Roll

Item Number

Various

Meets or exceeds ASTM D 6878.

Product Information

Description:

Firestone UltraPly™ TPO is a flexible Thermoplastic Polyolefin roofing membrane that is produced with polyester weft-inserted reinforcement. UltraPly TPO membrane meets or exceeds all requirements for ASTM D 6878 Specification. This heat weldable TPO membrane is available in 45 mil (1.14 mm) and 60 mil (1.52 mm) thicknesses. This reflective membrane is suitable for a variety of low-slope applications.

Method of Application:

1. Substrates must be clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane.
2. All roughened surfaces that can damage the membrane shall be repaired as specified to offer a smooth substrate.
3. All surface voids greater than 1/4" (6.3 mm) wide shall be properly filled with an acceptable fill material.
4. Firestone UltraPly TPO membrane is installed as continuous roofing or waterproofing layer on the roof. Rolls are overlapped (side laps and end laps) prior to the heat welding of the seam areas.
5. Install the UltraPly TPO Roofing System in accordance with current Firestone UltraPly TPO specifications, details and workmanship requirements.

Storage:

- Store away from sources of punctures and physical damage.
- Assure that structural decking will support the loads incurred by material when stored on rooftop. The deck load limitations should be specified by the project designer.
- Store away from ignition sources as membrane will burn when exposed to open flame.

Precautions:

1. Refer to Material Safety Data Sheets (MSDS) for safety information.
2. Exercise caution when lifting, moving, transporting, storing or handling membrane rolls to avoid sources of punctures and possible physical damage.
3. Contact your Technical Coordinator at 1-800-428-4511 for specific recommendations regarding chemical or waste product compatibility with Firestone UltraPly TPO Membrane.

LEED® Information:

Post Consumer Recycled Content: 0%
Pre Consumer Recycled Content: 15%
Manufacturing Location: Wellford, SC
Tuscumbia, AL



ICC-ES
ESR-2831

CCMC 13348-R

TECHNICAL INFORMATION SHEET

UltraPly™ TPO Membrane

Product Sizes

Membrane Thickness: 0.045" (1.14 mm) Membrane Weight: 0.23 lb/ft ² (1.1 kg/m ²)			Membrane Thickness: 0.060" (1.52 mm) Membrane Weight: 0.31 lb/ft ² (1.5 kg/m ²)		
Available Sizes		Available Colors	Available Sizes		Available Colors
5' x 100'	(1.5 x 30.5 m)	White, Tan, Gray	5' x 100'	(1.5 x 30.5 m)	White, Tan, Gray
5' x 200'	(1.5 x 61 m)	White	5' x 200'	(1.5 x 61 m)	White
6' 2" x 100'	(1.9 x 30.5 m)	White, Tan, Gray	6' 2" x 100'	(1.9 x 30.5 m)	White, Tan, Gray
8' x 100'	(2.4 x 30.5 m)	White, Tan, Gray	8' x 100'	(2.4 x 30.5 m)	White, Tan, Gray
8' x 200'	(2.4 x 61 m)	White	8' x 200'	(2.4 x 61 m)	White
10' x 100'	(3.0 x 30.5 m)	White, Tan, Gray	10' x 100'	(3.0 x 30.5 m)	White, Tan, Gray
10' x 200'	(3.0 x 61 m)	White	10' x 200'	(3.0 x 61 m)	White
12' 4" x 100'	(3.8 x 30.5 m)	White, Tan, Gray	12' 4" x 100'	(3.8 x 30.5 m)	White, Tan, Gray
12' 4" x 200'	(3.8 x 61 m)	White	12' 4" x 200'	(3.8 x 61 m)	White

Physical Properties (Meets or exceeds ASTM D 6878 Specification.)

Property	ASTM Standard	Performance Minimum	Typical Performance 45 mil	Typical Performance 60 mil
Overall Thickness:	D 751	0.039" (1 mm)	0.045" (1.14 mm) ± 10%	0.060" (1.52 mm) ± 10%
Coating over Scrim:	D 7635	0.015" (0.38 mm)	0.017" (0.43 mm)	0.021" (0.53 mm)
Breaking Strength:	D 751, Grab Method	220 lbf (979 N)	340 lbf (1,512 N)	390 lbf (1,735 N)
Elongation of Reinforcement Break:	D 751, Grab Method	15%	25%	25%
Tearing Strength:	D 751	55 lbf (245 N)	120 lbf (534 N)	120 lbf (534 N)
Brittleness Point:	D 2137	-40 °F (-40 °C)	Pass	Pass
Ozone Resistance, No Cracks:	D 1149	Pass (No Cracks)	Pass	Pass
Properties After Heat Aging (Retained Values) (ASTM D 573 670 h at 240 °F (116 °C)):				
Breaking Strength:	D 751, Grab Method	90% Minimum	> 90%	> 90%
Elongation at Break:	D 751, Grab Method	90% Minimum	> 90%	> 90%
Tearing Strength:	D 751	60% Minimum	> 60%	> 60%
Weight of Change:		± 1% Maximum	< 1%	< 1%
Linear Dimension Change:	D 1204, 6 h at 158 °F (70 °C)	± 1% Maximum	< 1%	< 1%
Water Absorption:	D 471	± 3% Maximum	< 3%	< 3%

Physical Properties (Continued)

Firestone Building Products | Sales: (800) 428-4442 | Technical (800) 428-4511 | www.firestonebpc.com

TECHNICAL INFORMATION SHEET

UltraPly™ TPO Membrane

Property	ASTM Standard	Performance Minimum	Typical Performance 45 mil Membrane	Typical Performance 60 mil Membrane
Weather Resistance, 80 °C Black Panel, no cracking, crazing when wrapped around a 3" mandrel and inspected at 7X magnification:	G 155	10,800 kJ/m ² Minimum	> 20,160 kJ/m ²	> 20,160 kJ/m ²
Puncture Resistance:	FTM 101C, Method 2031	_____	265 (1,180)	300 (1,300)
Dynamic Puncture Resistance MD:	D 5635	_____	Pass (20 J)	Pass (40 J)
Dynamic Puncture Resistance CD:	D 5635	_____	Pass (35 J)	Pass (50 J)
Static Puncture Resistance:	D 5602	_____	Pass (25 kg)	Pass (25 kg)

Radiative Properties

Cool Roof Rating Council (CRRC): Initial / 3 yr	White	Tan	Gray
Solar Reflectance	0.79 / 0.68	0.61 / 0.55	0.34 / Pending
Thermal Emittance	0.85 / 0.83	0.81 / 0.84	0.89 / Pending
Solar Reflectance Index (SRI)	98 / 81	71 / 63	37 / Pending
Rated Product ID	0008		
Licensed Manufacturer ID	0608		
Classification	Production Line		
ENERGY STAR®: Initial / 3 yr	White	Tan	
Solar Reflectance	0.79 / 0.78*	0.60 / 0.54	
Thermal Emittance	0.85	0.81	
* White membrane sample cleaned prior to age test.			
LEED®	White	Tan	Gray
Solar Reflectance – ASTM E 903	0.81	0.63	0.37
Thermal Emittance – ASTM E 408	0.95	0.95	0.95
Solar Reflectance Index (SRI) – ASTM E 1980	102	77	43



ENERGY STAR is only valid in the United States



Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

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TECHNICAL INFORMATION SHEET**Single-Ply LVOC Bonding Adhesive-1168**

TIS # 824

ITEM NUMBER: W56358705LC

Description:

Firestone Single-Ply LVOC Bonding Adhesive - 1168 is a bonding adhesive designed for adhering RubberGard™ EPDM and UltraPly™ TPO membranes and flashings to substrates such as: insulation, wood, metal, masonry and other acceptable substrates.

**Method of Application:**

1. Surfaces to receive Firestone Single-Ply LVOC Bonding Adhesive - 1168 must be clean, smooth, dry, and free of sharp edges, loose and foreign materials, oil, grease, and other contaminants. Sweep the mating surface of the membrane with a stiff broom to remove excess dusting agent, if present, and remove other contaminants from the mating surface.
2. Stir the adhesive thoroughly before and during use, achieving a uniform mix with no sediment on the bottom and no marbling evident. Apply the bonding adhesive evenly, avoiding globs and puddles, at about the same time to both the membrane and the receiving substrate to allow similar flash-off time.
3. **Take care not to apply Firestone Single-Ply LVOC Bonding Adhesive - 1168 over any lap area that will be spliced to adjacent membrane panels.**
4. Allow Firestone Single-Ply LVOC Bonding Adhesive - 1168 to flash-off until tacky. Touch the adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. Push down and forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating. **Flash off time will vary significantly depending on ambient conditions, and will be extended during cool, cloudy conditions. Use when ambient and substrate temperatures exceed 45° F (7° C).**
5. Starting at the fold, roll the adhesive coated portion of the membrane into the adhesive coated substrate slowly and evenly to minimize wrinkles. To ensure mating of the membrane to substrate, broom the surface of the mated membrane with a stiff bristle push broom immediately after mating the membrane to the substrate.

Storage:

- Store in original unopened containers at temperatures between 60 °F (15.6 °C) and 80 °F (26.7 °C) until ready for use.
- For optimum results, rotate your stock to ensure stored material has not exceeded the shelf life of one year.
- Shelf life of one year can be expected if stored in original sealed container at temperatures between 60 °F (15.6 °C) and 80 °F (26.7 °C). If exposed to lower temperatures, restore to room temperature prior to use.
- Storage below 50°F (10°C) will cause solids portion of adhesive to separate. To alleviate separation, bring adhesive to room temperature and stir to smooth state.
- Shelf life will be shortened if exposed to elevated temperatures. Rotate stock to insure stored material will not go beyond the shelf life of one year.

Precautions:

- Review the Material Safety Data Sheet prior to use.
- Use when ambient and substrate temperatures exceed 45° F (7° C).
- Flammable. Keep away from fire and open flame and other possible ignition sources during storage and use. Do not smoke when using.
- Harmful or fatal if swallowed
- Avoid prolonged inhalation.
- Avoid prolonged contact with skin. Gloves should be worn (OSHA approved).
- Avoid eye contact by wearing safety goggles with side shields.
- Do not thin the adhesive.
- Do not use for splicing.
- Do not use with UltraPly TPO XR membrane.
- Use only in well ventilated areas.
- Cover tightly when not in use.
- Recommended cleaner for the liquid adhesive is acetone.

Compliance:

Post Consumer Recycled Content: 0%
Pre Consumer Recycled Content: 0%
Manufacturing Location: South Bend, IN



TECHNICAL INFORMATION SHEET

Packaging:	
<i>Unit:</i>	5 Gallon (19 L)
<i>Coverage:</i>	Coverage rate of 45-60 square feet per gallon (1.1 – 1.5 m ² /Liter) shall be obtained, depending on the substrate. Uneven and porous substrates may yield lower coverage rates. Smooth, non-porous substrates may yield higher coverage rates. Coverage rates are based on roller application to both mating surfaces.
<i>Weight:</i>	≈47 lb (21 kg)
<i>Units Per Pallet:</i>	45
Physical Properties:	<i>Minimum Performance</i>
<i>Base:</i>	Polychloroprene Rubber
<i>Color:</i>	Yellow
<i>Solvents:</i>	Acetone; Toluene; Methyl Acetate; 4-Chlorobenzotrifluoride
<i>Solids Content:</i>	22-23%
<i>Viscosity:</i>	4000-6000 Centipoise
<i>Weight/Gallon:</i>	9.2 lb/gal (1.1 kg/L)
<i>Specific Gravity:</i>	1.1
<i>V.O.C. Content:</i>	< 250 g/L ; VOC content is less than 250 g/L in accordance with South Coast Air Quality Management District (SCAQMD).

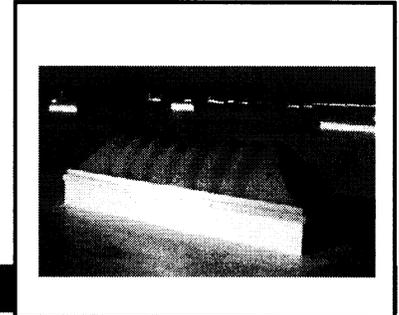
Please Contact your Firestone Technical Coordinator at 1-800-428-4511 for further information.

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SunWave™ Daylighting System

Item Description

Daylighting Domes



Product Information

Description:

Firestone SunWave Daylights are used in industrial, retail, commercial, and educational buildings as a source of daylighting, either in conjunction with or in place of electrical lighting. The lighting performance of SunWave Daylights provide superior visible light transmittance as well as optimal 100% diffused light distribution without causing glare, ultraviolet (UV) radiation, and hot spots. The proprietary design of the SunWave dome allows it to draw up to 50% more light at low sun angles than standard bubble style skylights. The SunWave Daylighting System consists of a fixed industrial double-glazed domed skylight of impact modified acrylic or polycarbonate plastic lenses, with a thermally insulated, extruded, weather-tight aluminum frame. The SunWave dome passes a 200 lb (91 kg) drop test from 2' (0.6 m) above highest part of dome and installed domes can support 500 lb/ft² (227 kg/0.9 m²).

Method of Application:

1. Install in accordance with current Firestone specifications, details, and workmanship requirements.
2. Fasteners packaged with SunWave Daylights include #12 x 1½" (38 mm) 300 series stainless steel screws with neoprene/stainless steel bonded washers.
3. Substrates must be clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, and grease.

Storage:

- Store products in manufacturer's unopened packaging until ready for installation.
- Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

Precautions:

To provide fall protection, a Safety-Security Guard (SSG) Screen is integrated into all SunWave curbs; see SunWave Roof Curb TIS #1802. Installer shall be responsible for fall protection when SunWave curbs are not used.

LEED® Information:

Post Consumer Recycled Content: 50%

Pre Consumer Recycled Content: 25%

Manufacturing Location: Sacramento, CA

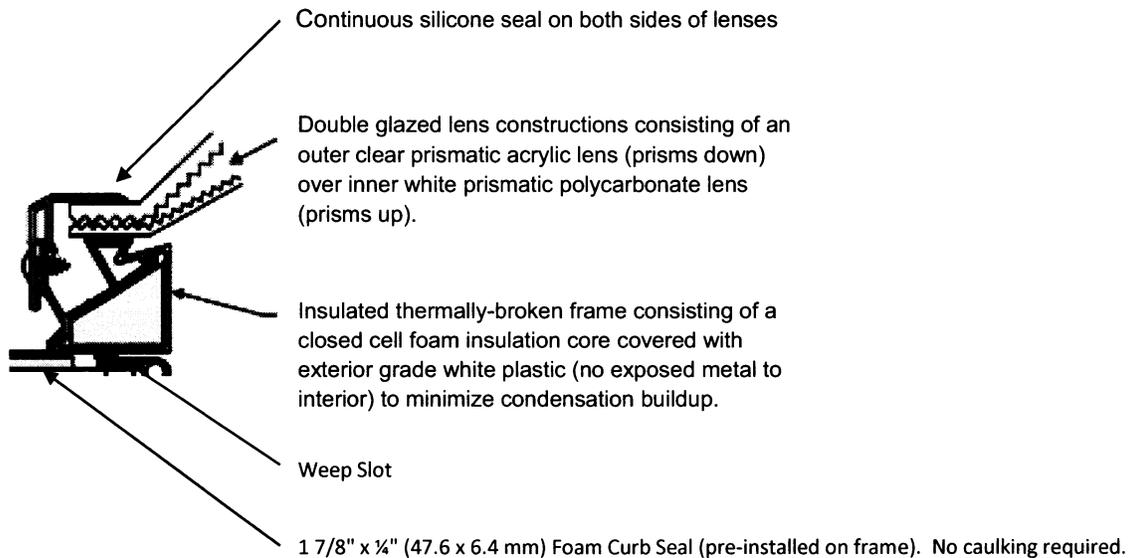
TECHNICAL INFORMATION SHEET

SunWave™ Daylighting System

- High Velocity Hurricane Zone Approved FBP-1650
- National Fenestration Rating Council (NFRC)
- Florida Building Code: FL #14199
- Tested in accordance to AAMA/WDMA/CSA101/I.S.2/A440-08: North American Fenestration Standard/Specification for windows, doors, and skylights.

Typical Properties		
Thermal and Optical Performance	Standard	Value
R-Value	ASTM C 1363	1.56
U-Value	ASTM C 1363	0.64
SHGC (Solar Heat Gain Coefficient)	NFRC 201	0.45
Light Diffusion	---	100%
Flame Spread Value **	CAN/ULCS 102.2	64.1
Smoke Development Value	CAN/ULCS 102.2	399.4
VLT* (Visible Light Transmittance)	Product	VLT*(%)
	Class 1 - Hail Rated Double Glazed Acrylic SunWave	68
	Class 3 - Hail Rated Double Glazed Acrylic SunWave	68
	HVHZ Approved Polycarbonate	65
	FM Approved Polycarbonate	62
*Values reported for flat pre-formed plastic glazing.		
** Values reported for polycarbonate glazing.		

Design Specifications:



TECHNICAL INFORMATION SHEET

SunWave™ Daylighting System

Product Data		
<u>Item Number</u>	<u>Dimensions</u>	<u>Curb Dimensions (inside; outside)</u>
Class 1 Hail Rated, Acrylic over Acrylic:		
W56RACDL05	2' X 4' (0.6 X 1.2 m)	23" x 47" ID; 26" x 50" OD
W56RACDL06	4' X 4' (1.2 X 1.2 m)	47" x 47" ID; 50" x 50" OD
W56RACDL43	4' X 8' (1.2 X 2.4 m)	47" x 95" ID; 50" x 98" OD
W56RACDL07	5' X 5' (1.5 X 1.5 m)	59" x 59" ID; 62" x 62" OD
W56RACDL08	5' X 6' (1.5 X 1.8 m)	59" x 71" ID; 62" x 74" OD
W56RACDL65	5' X 8' (1.5 X 2.4 m)	59" x 95" ID; 62" x 98" OD
Class 3 Hail Rated, Acrylic over Acrylic:		
W56RACDL44	2' X 4' (0.6 X 1.2 m)	23" x 47" ID; 26" x 50" OD
W56RACDL45	4' X 4' (1.2 X 1.2 m)	47" x 47" ID; 50" x 50" OD
W56RACDL46	4' X 8' (1.2 X 2.4 m)	47" x 95" ID; 50" x 98" OD
W56RACDL52	5' X 5' (1.5 X 1.5 m)	59" x 59" ID; 62" x 62" OD
W56RACDL53	5' X 6' (1.5 X 1.8 m)	59" x 71" ID; 62" x 74" OD
W56RACDL64	5' X 8' (1.5 X 2.4 m)	59" x 95" ID; 62" x 98" OD
High Velocity Hurricane Zone (HVHZ) Approved, Polycarbonate over Acrylic:		
W56RACDL49	2' X 4' (0.6 X 1.2 m)	23" x 47" ID; 26" x 50" OD
W56RACDL50	4' X 4' (1.2 X 1.2 m)	47" x 47" ID; 50" x 50" OD
W56RACDL51	4' X 8' (1.2 X 2.4 m)	47" x 95" ID; 50" x 98" OD
W56RACDL47	5' X 5' (1.5 X 1.5 m)	59" x 59" ID; 62" x 62" OD
W56RACDL48	5' X 6' (1.5 X 1.8 m)	59" x 71" ID; 62" x 74" OD
W56RACDL66	5' X 8' (1.5 X 2.4 m)	59" x 95" ID; 62" x 98" OD
FM Global Approved, Polycarbonate over Polycarbonate:		
W56RACDL81	2' X 4' (0.6 X 1.2 m)	23" x 47" ID; 26" x 50" OD
W56RACDL82	4' X 4' (1.2 X 1.2 m)	47" x 47" ID; 50" x 50" OD
W56RACDL83	4' X 8' (1.2 X 2.4 m)	47" x 95" ID; 50" x 98" OD
W56RACDL84	5' X 5' (1.5 X 1.5 m)	59" x 59" ID; 62" x 62" OD
W56RACDL85	5' X 6' (1.5 X 1.8 m)	59" x 71" ID; 62" x 74" OD
W56RACDL86	5' X 8' (1.5 X 2.4 m)	59" x 95" ID; 62" x 98" OD

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TECHNICAL INFORMATION SHEET

SunWave™ Roof Curb

TIS #1802

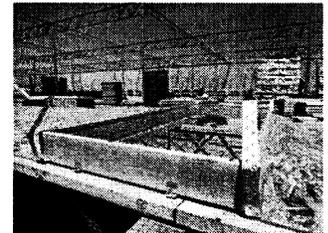
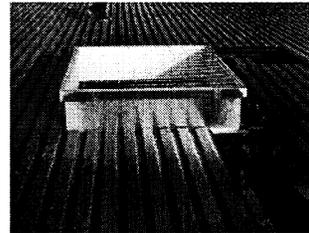
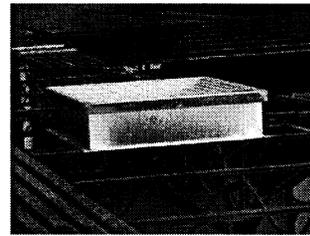
ITEM NUMBER:

Metal

W56RACDL67	ARC 6 14 gauge 5'x8'- 14" H	1.5x2.4 m - 355 mm
W56RACDL68	ARC 6 14 gauge 5'x8'- 12" H	1.5x2.4 m - 305 mm
W56RACDL69	ARC 6 14 gauge 5'x8'- 9" H	1.5x2.4 m - 229 mm
W56RACDL09	ARC 6 14 gauge 5'x6'- 14" H	1.5x1.8 m - 355 mm
W56RACDL10	ARC 6 14 gauge 5'x6'- 12" H	1.5x1.8 m - 305 mm
W56RACDL11	ARC 6 14 gauge 5'x6'- 9" H	1.5x1.8 m - 229 mm
W56RACDL54	ARC 6 14 gauge 4'x8'- 14" H	1.2x2.4 m - 355 mm
W56RACDL55	ARC 6 14 gauge 4'x8'- 12" H	1.2x2.4 m - 305 mm
W56RACDL56	ARC 6 14 gauge 4'x8'- 9" H	1.2x2.4 m - 229 mm
W56RACDL12	ARC 3 18 gauge 2'x4'- 9" H	0.6x1.2 m - 229 mm
W56RACDL13	ARC 3 18 gauge 2'x4'- 12" H	0.6x1.2 m - 305 mm
W56RACDL14	ARC 3 18 gauge 2'x4'- 14" H	0.6x1.2 m - 355 mm
W56RACDL15	ARC 3 18 gauge 4'x4'- 9" H	1.2x1.2 m - 229 mm
W56RACDL16	ARC 3 18 gauge 4'x4'- 12" H	1.2x1.2 m - 305 mm
W56RACDL17	ARC 3 18 gauge 4'x4'- 14" H	1.2x1.2 m - 355 mm
W56RACDL57	ARC 3 18 gauge 4'x8'- 9" H	1.2x2.4 m - 229 mm
W56RACDL58	ARC 3 18 gauge 4'x8'- 12" H	1.2x2.4 m - 305 mm
W56RACDL59	ARC 3 18 gauge 4'x8'- 14" H	1.2x2.4 m - 355 mm
W56RACDL18	ARC 3 18 gauge 5'x5'- 9" H	1.5x1.5 m - 229 mm
W56RACDL19	ARC 3 18 gauge 5'x5'- 12" H	1.5x1.5 m - 305 mm
W56RACDL20	ARC 3 18 gauge 5'x5'- 14" H	1.5x1.5 m - 355 mm
W56RACDL21	ARC 3 18 gauge 5'x6'- 9" H	1.5x1.8 m - 229 mm
W56RACDL22	ARC 3 18 gauge 5'x6'- 12" H	1.5x1.8 m - 305 mm
W56RACDL23	ARC 3 18 gauge 5'x6'- 14" H	1.5x1.8 m - 355 mm
W56RACDL70	ARC 3 18 gauge 5'x8'- 9" H	1.5x2.4 m - 229 mm
W56RACDL71	ARC 3 18 gauge 5'x8'- 12" H	1.5x2.4 m - 305 mm
W56RACDL72	ARC 3 18 gauge 5'x8'- 14" H	1.5x2.4 m - 355 mm

Wood

W56RACDL24	WC - 2'x4': 2" Thick x 8" H	0.6x1.2 m: 51x203 mm
W56RACDL25	WC - 4'x4': 2" Thick x 8" H	1.2x1.2 m: 51x203 mm
W56RACDL26	WC - 4'x8': 2" Thick x 8" H	1.2x2.4 m: 51x203 mm
W56RACDL27	WC - 2'x4': 2" Thick x 10" H	0.6x1.2 m: 51x254 mm
W56RACDL28	WC - 4'x4': 2" Thick x 10" H	1.2x1.2 m: 51x254 mm
W56RACDL29	WC - 4'x8': 2" Thick x 10" H	1.2x2.4 m: 51x254 mm



Safety Security Guards (SSGs)

W56RACDL38	2'x4' (0.6x1.2 m)
W56RACDL39	4'x4' (1.2x1.2 m)
W56RACDL42	4'x8' (1.2x2.4 m)
W56RACDL40	5'x5' (1.5x1.5 m)
W56RACDL41	5'x6' (1.5x1.8 m)
W56RACDL79	5'x8' (1.5x2.4 m)

Description:

SSGs are included and pre-installed with SunWave Roof Curbs. SSGs are also sold separately for retrofit applications with the following item numbers: WC = Wood Curb, ARC 3 = Insulated Non-structured Metal Curb, or ARC 6 = Non-insulated Structured Metal Curb

TECHNICAL INFORMATION SHEET

Method of Application:

1. Install in accordance with current Firestone specifications, details, and workmanship requirements.
2. Substrates must be clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, and grease.

Storage:

- Store products in manufacturer's unopened packaging until ready for installation.
- Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

Design Specifications:

Notes

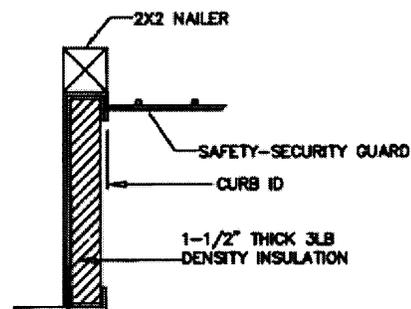
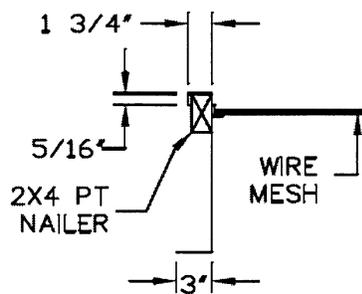
Color
Metal

White

- Galvalume steel construction and liners
 - Full height mitered and welded corners
 - Factory installed 3/16" (4.7 mm) galvanized steel Safe-Security Guard 4" x 4" (101.6 x 101.6 mm) grid pattern
 - 1 1/2" (38 mm) thick 3 lb (1.3 kg) density fiberglass insulation

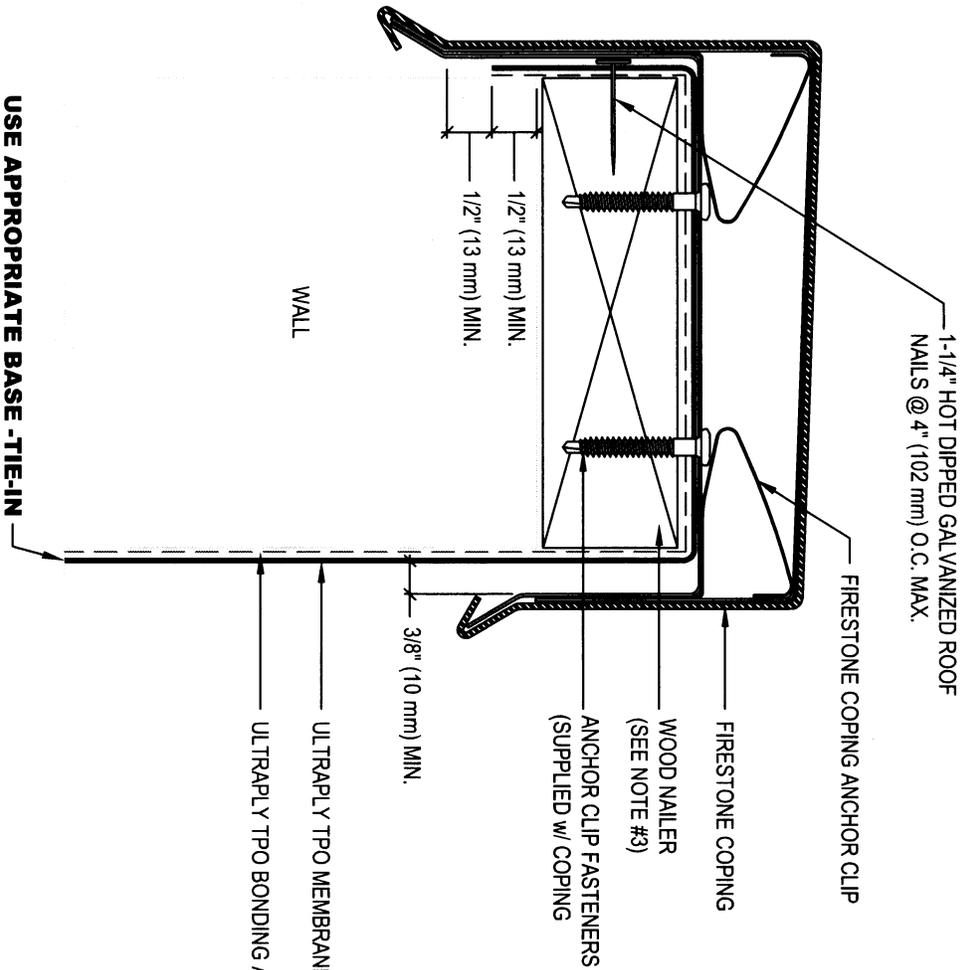
Wood

- Douglas fir #2 and better
 - Mechanically attached corners
 - Safe-Security Guard may be attached to the inside of the curb
 - 1 1/2" (38 mm) polyisocyanurate insulation board attached to the exterior of the curb with adhesive



Please Contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

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- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. NON-FIRESTONE METAL COPING IS ACCEPTABLE FOR USE IN THIS DETAIL PROVIDED FABRICATION AND INSTALLATION IS IN ACCORDANCE WITH CURRENT SMACNA RECOMMENDATIONS, HOWEVER, WATERTIGHT INTEGRITY OF WALL AND METAL COPING SHALL BE ENSURED OTHERS AND BE EXCLUDED FROM WARRANTY COVERAGE IN THE EVENT NON-FIRESTONE COPING IS UTILIZED.
 3. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT IN ANY GIVEN DIRECTION.
 4. FASTEN COPING CLEAT AS PER SUPPLIED INSTRUCTIONS.

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TERMINATION AT TOP OF WALL WITH FIRESTONE COPING

ULTRAPLY™ TPO

ACCEPTABLE SYSTEMS: ALL

MAXIMUM WARRANTY: **20 YEARS**

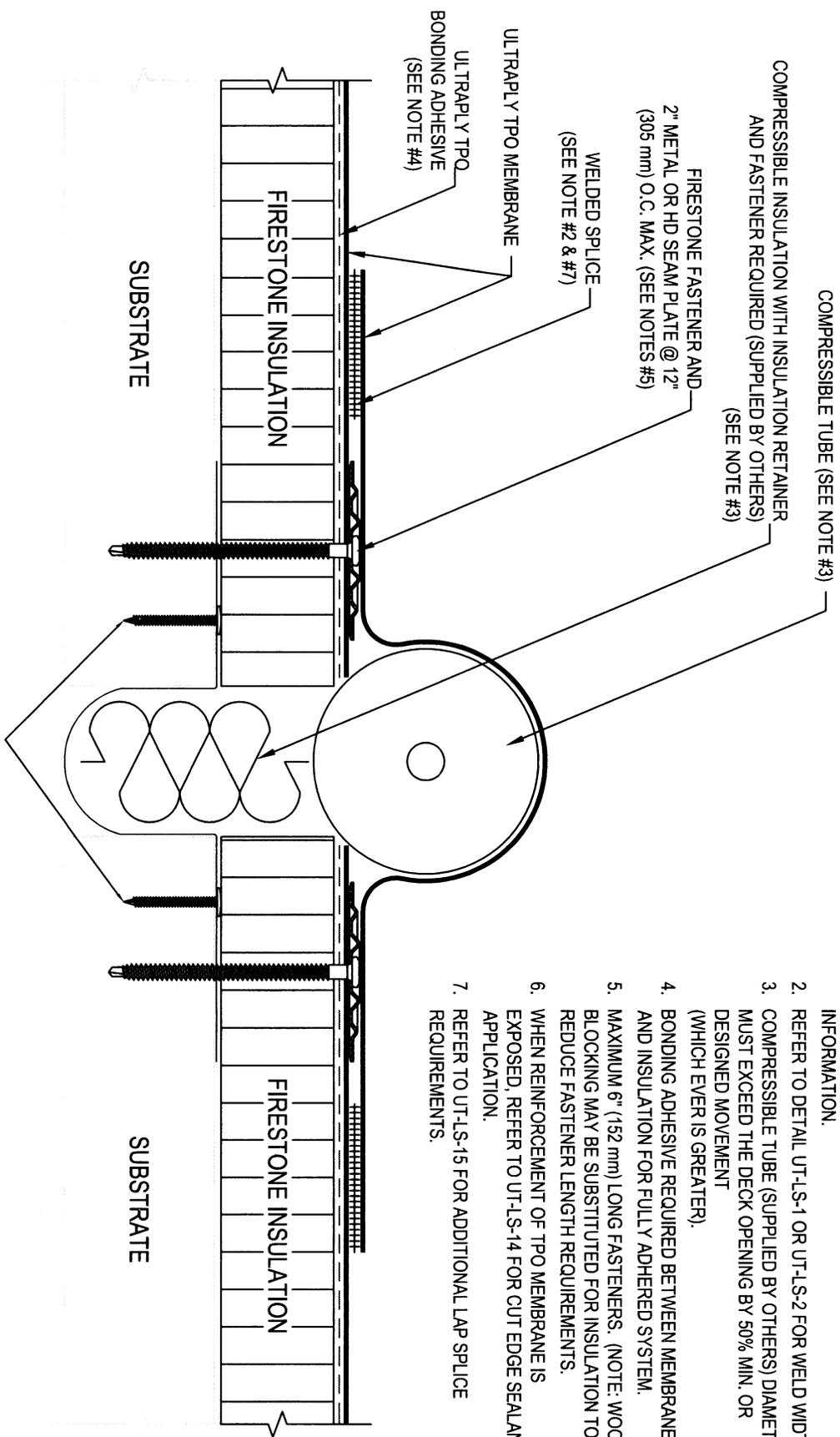
ISSUE /REVISION
DATE:

7/22/2014

NOT TO SCALE

DETAIL NO.

UT-T-12



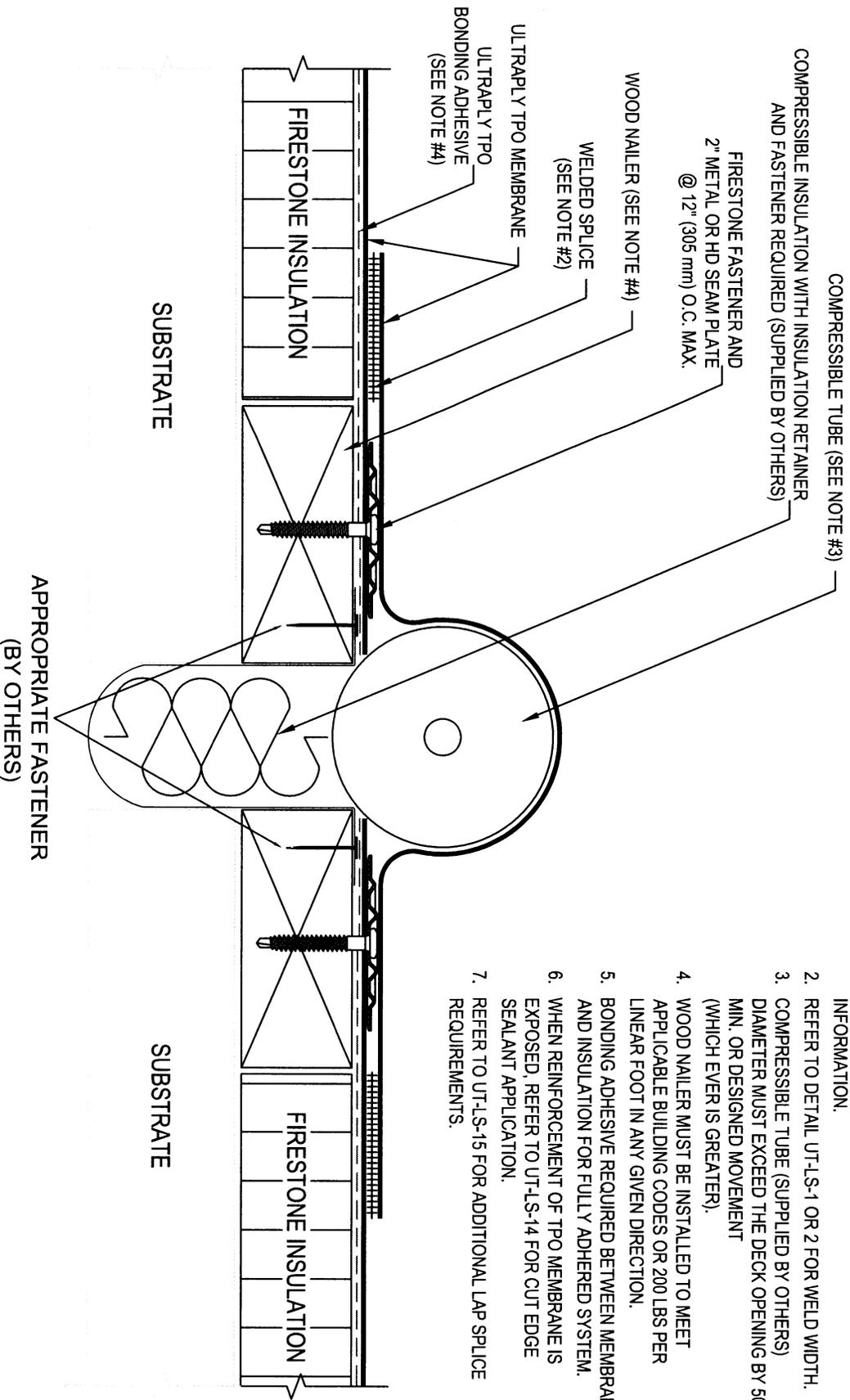
- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO DETAIL UT-LS-1 OR UT-LS-2 FOR WELD WIDTH.
 3. COMPRESSIBLE TUBE (SUPPLIED BY OTHERS) DIAMETER MUST EXCEED THE DECK OPENING BY 50% MIN. OR DESIGNED MOVEMENT (WHICH EVER IS GREATER).
 4. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEM.
 5. MAXIMUM 6" (152 mm) LONG FASTENERS. (NOTE: WOOD BLOCKING MAY BE SUBSTITUTED FOR INSULATION TO REDUCE FASTENER LENGTH REQUIREMENTS.
 6. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.
 7. REFER TO UT-LS-15 FOR ADDITIONAL LAP SPlice REQUIREMENTS.

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EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPlice - ROOF TO ROOF
 ULTRAPLY™ TPO ACCEPTABLE SYSTEMS: ALL

ISSUE /REVISION DATE:
 7/22/2014
 NOT TO SCALE

MAXIMUM WARRANTY: **20 YEARS**
 DETAIL NO. **UT-E-6**



COMPRESSIBLE TUBE (SEE NOTE #3)

COMPRESSIBLE INSULATION WITH INSULATION RETAINER AND FASTENER REQUIRED (SUPPLIED BY OTHERS)

FIRESTONE FASTENER AND 2" METAL OR HD SEAM PLATE @ 12" (305 mm) O.C. MAX.

WOOD NAILER (SEE NOTE #4)

WELDED SPLICE (SEE NOTE #2)

ULTRAPLY TPO MEMBRANE

ULTRAPLY TPO BONDING ADHESIVE (SEE NOTE #4)

FIRESTONE INSULATION

SUBSTRATE

APPROPRIATE FASTENER (BY OTHERS)

FIRESTONE INSULATION

SUBSTRATE

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
 3. COMPRESSIBLE TUBE (SUPPLIED BY OTHERS) DIAMETER MUST EXCEED THE DECK OPENING BY 50% MIN. OR DESIGNED MOVEMENT (WHICH EVER IS GREATER).
 4. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT IN ANY GIVEN DIRECTION.
 5. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEM.
 6. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.
 7. REFER TO UT-LS-15 FOR ADDITIONAL LAP SPLICE REQUIREMENTS.

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EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE AND WOOD NAILER - ROOF TO ROOF
ULTRAPLY™ TPO ACCEPTABLE SYSTEMS: ALL

ISSUE / REVISION DATE:
7/22/2014
NOT TO SCALE

MAXIMUM WARRANTY: **20 YEARS**
DETAIL NO.
UT-E-4

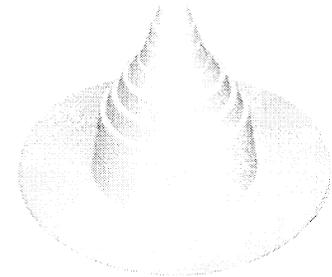
TECHNICAL INFORMATION SHEET

UltraPly™ TPO Universal Pipe Boot

TIS #215

Item Numbers:

White W56TPO301U
Tan W56TPOT01U
Gray W56TPOG01U



Description:

UltraPly TPO Universal Pipe Flashing is specifically designed for the flashing of round penetrations. UltraPly TPO Universal Pipe Flashing fits various penetrations from 1" (25 mm) to 6" (150 mm). The UltraPly TPO Universal Pipe Flashing must be cut to correct size before installation.

Method of Application:

1. UltraPly TPO membrane shall be clear of all dust, dirt and other contaminants prior to installation of the UltraPly TPO Universal Pipe Flashing.
2. Penetration shall be clean of foreign material and any old flashing materials.
3. Cut out a circle, above the rib, on the outside of a level ring of the UltraPly TPO Universal Pipe Flashing that is smaller than the penetration.
4. Cut the extra material from the pipe flashing base around the indented circle.
5. Heat-weld the flashing into place and install the clamp and sealant per current UltraPly TPO specifications.

Storage:

- Store material in its original unopened packaging away from sources of physical damage or chemical contamination.

Precautions:

- Do not install over uneven substrates.
- Refer to Material Safety Data Sheet for ReflexEON TPO systems.

Packaging:

Units per Carton	10 with 10 stainless steel clamps included
-------------------------	--

Compliance:

Post Consumer Recycled Content: 0%
 Pre Consumer Recycled Content: 0%
 Manufacturing Location: Wellford, SC

Product Data:

Material	Thermoplastic Polyolefin (TPO)
Colors	White, Tan, Gray
Clamp	Stainless steel - worm gear type
Pipe Flange	13" (330 mm) diameter
Thickness	0.055"-0.075" (1.4 mm-1.9 mm)

Fits the Pipe Outside Diameters listed below:

1"	25 mm
1 ½"	38 mm
2"	50 mm
3"	76 mm
4"	102 mm
5"	127 mm
6"	152 mm

Please Contact your Firestone Technical Coordinator at 1-800-428-4511 for further information.

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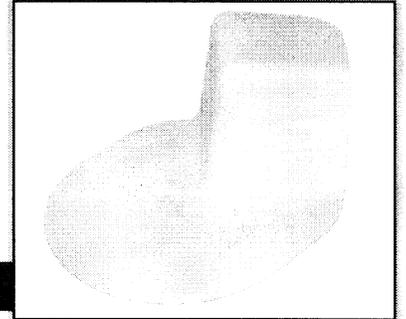
UltraPly™ TPO Inside/Outside Corner

Item Description

White
Tan
Gray

Item Number

W56TPO301C
W56TPOT01C
W56TPOG01C



Product Information

Description:

Firestone UltraPly™ TPO Inside/Outside Corners are molded from a flexible thermoplastic polyolefin. The TPO Inside/Outside Corners were specifically designed for flashing either inside or outside corners on curbs, parapets and scuppers.

Product Packaging

Units per Carton	20	Weight per Carton	8 lb (3.6 kg)
------------------	----	-------------------	---------------

Method of Application:

1. Prepare TPO Inside/Outside Corner areas by removing all dirt and debris from the membrane surface. Clean the surface area of the field sheet and the inside and outside corners with Firestone Splice Wash SW-100 prior to installation of the TPO Inside/Outside Corner.
2. By cutting the TPO Inside/Outside Corner on the appropriate guideline, the TPO Inside/Outside Corner can be used to complete the flashing of either an inside or an outside corner.
3. All cut corners must be rounded off prior to being heat welded per current Firestone UltraPly TPO Specifications. Care should be taken during the heat welding process to prevent heat build up that could damage the TPO Inside/Outside Corner.

Storage:

Store material in its original unopened packaging away from sources of physical damage or chemical contamination.

Precautions:

1. Refer to Material Safety Data Sheet for TPO systems for safety information.
2. Contact your Firestone Technical Coordinator at 1-800-428-4511 for specific recommendations regarding chemical or waste product compatibility with Firestone UltraPly TPO Inside/Outside Corner.
3. Transitions may require additional heat to conform to step-off.

LEED® Information:

Post Consumer Recycled Content: 0%
Post Industrial Recycled Content: 0%
Manufacturing Location: Wellford, SC

TECHNICAL INFORMATION SHEET

UltraPly™ TPO Inside/Outside Corner

Product Data

Material:	Thermoplastic Polyolefin (TPO)
Thickness:	0.070" (1.8 mm)
Colors:	White, Tan, Gray
Overall Size:	6" (150 mm) x 8" (200 mm)
Corner Size:	3" x 3" x 3.25" (75 mm x 75 mm x 83 mm) with 0.5" (12 mm) radius on all edges of the raised corner

Physical Properties

<u>Property</u>	<u>Test Method – ASTM Standard</u>	<u>Firestone Typical Performance</u>
Membrane Thickness:	D 751	0.070" (1.78 mm)
Tensile Strength:	D 638	1,780 psi (12.3 MPa)
Elongation at Break:	D 638	750%
Tearing Strength:	1004 (Die C)	11 lbf (49 N)
Brittleness Point:	D 2137	-40 °F (-40 °C)
Properties After Heat Aging (Retained Values) (166 h at 240 °F (116 °C)):		
Tensile Strength:	D 638	1,550 psi (10.7 MPa)
Elongation at Break:	D 638	650%
Tearing Strength:	1004 (Die C)	9 lbf (40 N)

Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

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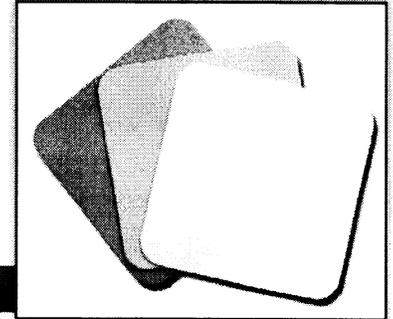
UltraPly™ TPO T-Joint Cover

Item Description

White
Tan
Gray

Item Number

W56TPO2027
W56TPOT027
W56TPOG027



Product Information

Description:

Firestone UltraPly TPO T-Joint Covers are made from flexible, non-reinforced, thermoplastic polyolefin membrane. They are designed to cover and seal T-joints formed at seam intersections and at angle changes 1:12 or greater for UltraPly TPO membranes greater than 0.045" (1.14 mm) thick.

Method of Application:

1. Prepare T-joint area by removing all dirt and debris from membrane surface. Clean the surface area of the field sheet and the T-Joint Cover with Firestone Splice Wash SW-100 or a Firestone approved membrane wash prior to installation of Firestone UltraPly TPO T-Joint Covers.
2. Install UltraPly TPO T-Joint Covers in accordance with current Firestone UltraPly TPO roofing specifications and details.

Storage:

Store material in its original unopened packaging away from sources of physical damage or chemical contamination.

Precautions:

1. Refer to Safety Data Sheet (SDS) for TPO systems for safety information.
2. Contact your Firestone Technical Coordinator at 1-800-428-4511 for specific recommendations regarding chemical or waste product compatibility with Firestone UltraPly TPO T-Joint Covers.

LEED® Information:

Post Consumer Recycled Content: 0%
Pre Consumer Recycled Content: 0%
Manufacturing Location: Wellford, SC

Product Packaging

Units per Carton	100	Cartons per Pallet	100
Weight per Carton	9 lb (4.1 kg)	Weight per Pallet	900 lb (408 kg)

Product Data

Material:	Thermoplastic Polyolefin (TPO)
Colors:	White, Tan, Gray
Nominal Thickness:	0.060" (1.52 mm) ± 10%
Width:	4" x 4" (102 x 102 mm) with 1/2" (13 mm) radius corners

TECHNICAL INFORMATION SHEET

UltraPly™ TPO T-Joint Cover

Physical Properties

Property	Test Method – ASTM Standard	Firestone Typical Performance
Membrane Thickness:	D 751	0.060" (1.52 mm)
Tensile Strength:	D 638	1,780 psi (12.3 MPa)
Elongation at Break:	D 638	750%
Tearing Strength:	1004 (Die C)	16 lbf (71 N)
Brittleness Point:	D 2137	-40 °F (-40 °C)
Properties After Heat Aging (Retained Values) (166 h at 240 °F (116 °C)):		
Tensile Strength:	D 638	1,550 psi (10.7 MPa)
Elongation at Break:	D 638	650%
Tearing Strength:	1004 (Die C)	12 lbf (53 N)

Please contact your Firestone Building Systems Advisor at 1-800-428-4511 for further information.

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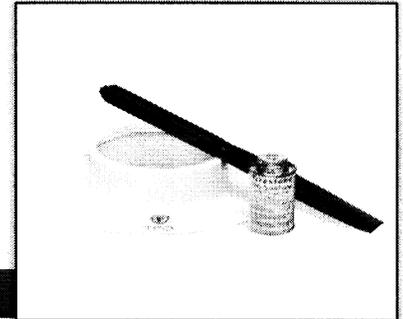
UltraPly™ TPO Penetration Pocket Kit

Item Description

White
Tan
Gray

Item Number

W56TPO301L
W56TPOT01L
W56TPOG01L



Product Information

Description:

The Firestone UltraPly™ TPO Penetration Pocket Kit is designed for use with Firestone UltraPly TPO systems to seal around odd shaped penetrations or a small cluster of penetrations. The UltraPly TPO Penetration Pocket fits penetrations up to 3 ½" (90 mm) in diameter.

Product Packaging

Each Carton Contains	6 TPO Penetration Pockets 6 PVC Rings 1 Can of Single-Ply LVOC Primer – 4 fl oz (118 mL) 2 Heavy Duty Stir Sticks
Weight Per Carton	7 lb (3.2 kg)
Note: Firestone Pourable Sealer is not packaged with the kit but must be used to complete the installation.	

Method of Application:

1. Remove existing flashing materials, rust, dirt, etc. from penetration area prior to installing the TPO Penetration Pocket.
2. Seal around the penetration prior to installation to prevent Pourable Sealer from flowing into the roof system and possibly into the building.
3. Open the PVC ring and place around the penetration.
4. Install the TPO Penetration Pocket over the PVC ring so that the ring fits completely inside the top overhang of the pocket. The TPO Penetration Pocket may be cut in order to place around the penetrating obstacle. Place the cut on the downward slope side of the penetration.
5. If penetration pocket is cut in the previous step, cover the cut area with a piece of UltraPly TPO Unsupported Flashing. Weld the flashing on the vertical cut in the pocket and to the lip inside the cavity.
6. Center the TPO Penetration Pocket over the penetration, and weld the flange to the membrane. If needed, weld the flashing onto the flange and membrane. Weld and roll the flange step-off thoroughly.
7. After the welded seams cool, apply the Firestone Single-Ply LVOC Primer to all surfaces that the Pourable Sealer will contact. Ensure that the top of the TPO Penetration Pocket is primed.
8. Allow the primer to dry, then mix and add Pourable Sealer. Carefully allow the Pourable Sealer to form a mound from the penetration to the top of the pocket to shed water away from the penetration.

Storage:

- Store in original unopened cartons at temperatures between 60 °F (16 °C) and 80 °F (27 °C) indoors.
- When exposed to lower temperatures, restore to room temperature prior to use.
- Keep the material out of direct sunlight.

UltraPly™ TPO Penetration Pocket Kit

Shelf Life:

Shelf life of Single-Ply LVOC Primer is twelve (12) months, if stored in original unopened container at temperatures between 60 °F (16 °C) and 80 °F (27 °C) indoors. Shelf life will be shortened if exposed to elevated temperatures.

Precautions:

1. Refer to Material Safety Data Sheet (MSDS) for the TPO Penetration Pocket Kit and for the Single-Ply LVOC Primer for additional precautionary data.
2. Do not thin the Single-Ply LVOC Primer.
3. Single-Ply LVOC Primer is flammable.
4. Keep away from fires (open flame) and other possible ignition sources during storage and use.
5. For professional use only.
6. Use only in well ventilated areas.
7. Stir Single-Ply LVOC Primer thoroughly before and during use.

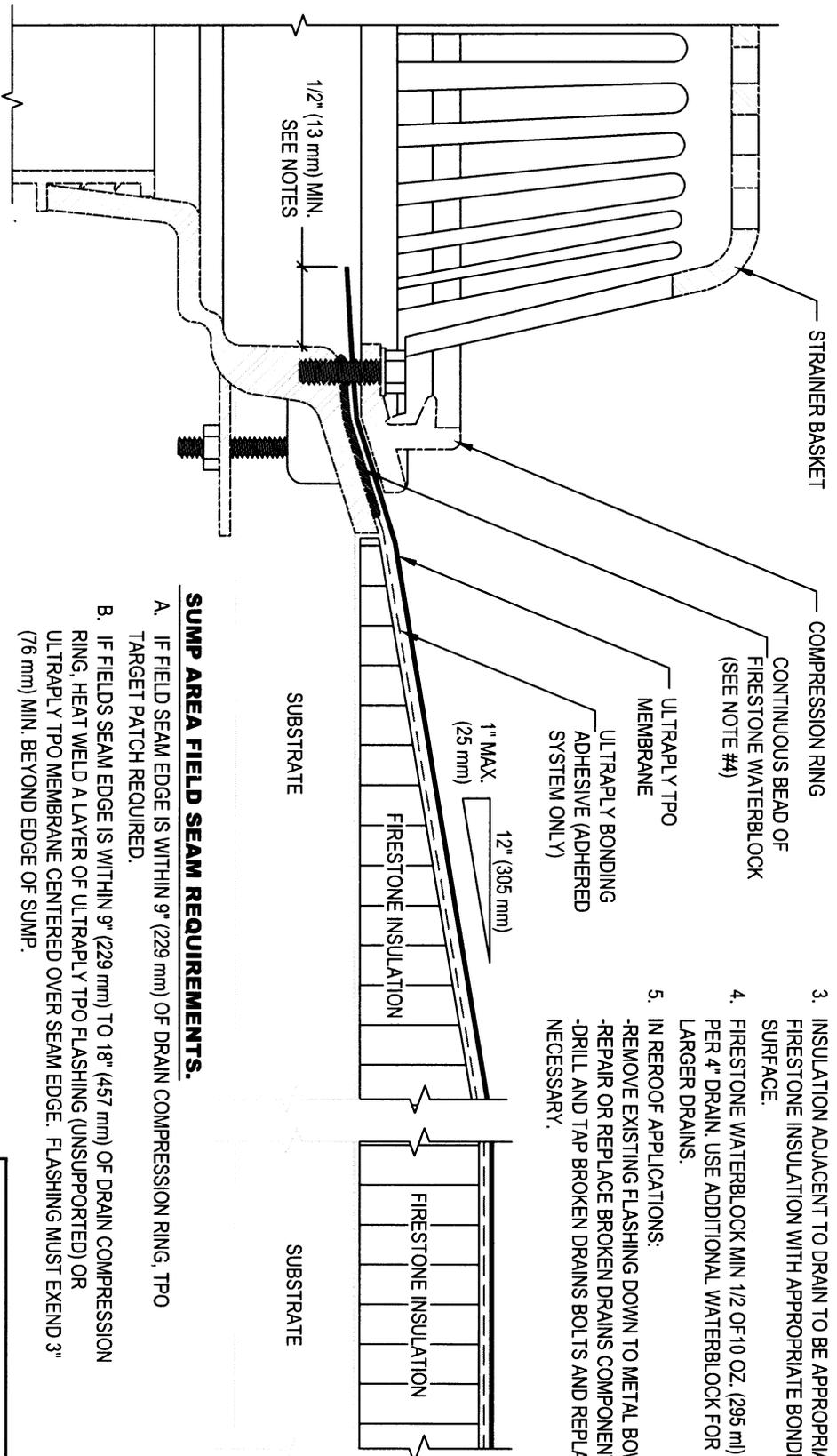
LEED® Information:

Post Consumer Recycled Content: 0%
 Pre Consumer Recycled Content: 0%
 Manufacturing Location: Wellford, SC

Product Data	
<u>TPO Penetration Pocket</u>	
Material:	Thermoplastic Polyolefin (TPO)
Colors:	White, Tan, Gray
Size:	12.1" (307 mm) flange diameter; 6" (152 mm) inside diameter; 0.045" (1.14 mm) minimum thickness
Coverage:	Fits up to 3 1/2" (89 mm) diameter penetration or penetration cluster
<u>PVC Ring</u>	
Material:	PVC
Color:	White
Shape:	Round, pre-cut in one piece
Inside Diameter:	6" (152 mm)
Wall Thickness:	0.32" (8 mm)
Height:	2" (51 mm)
<u>Stir Stick (For Pourable Sealer)</u>	
Material:	Plastic
Size:	1 1/2" (38 mm) wide paddle, with 3/4" (19 mm) by 3/4" (19 mm) handle, by 15" (381 mm) overall length
<u>Single-Ply LVOC Primer</u>	
Base:	Synthetic Rubber Polymers
Viscosity:	Thin, free flowing
Solvents:	Naphtha, Acetone, PCBTF (Parachlorobenzotrifluoride)

Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

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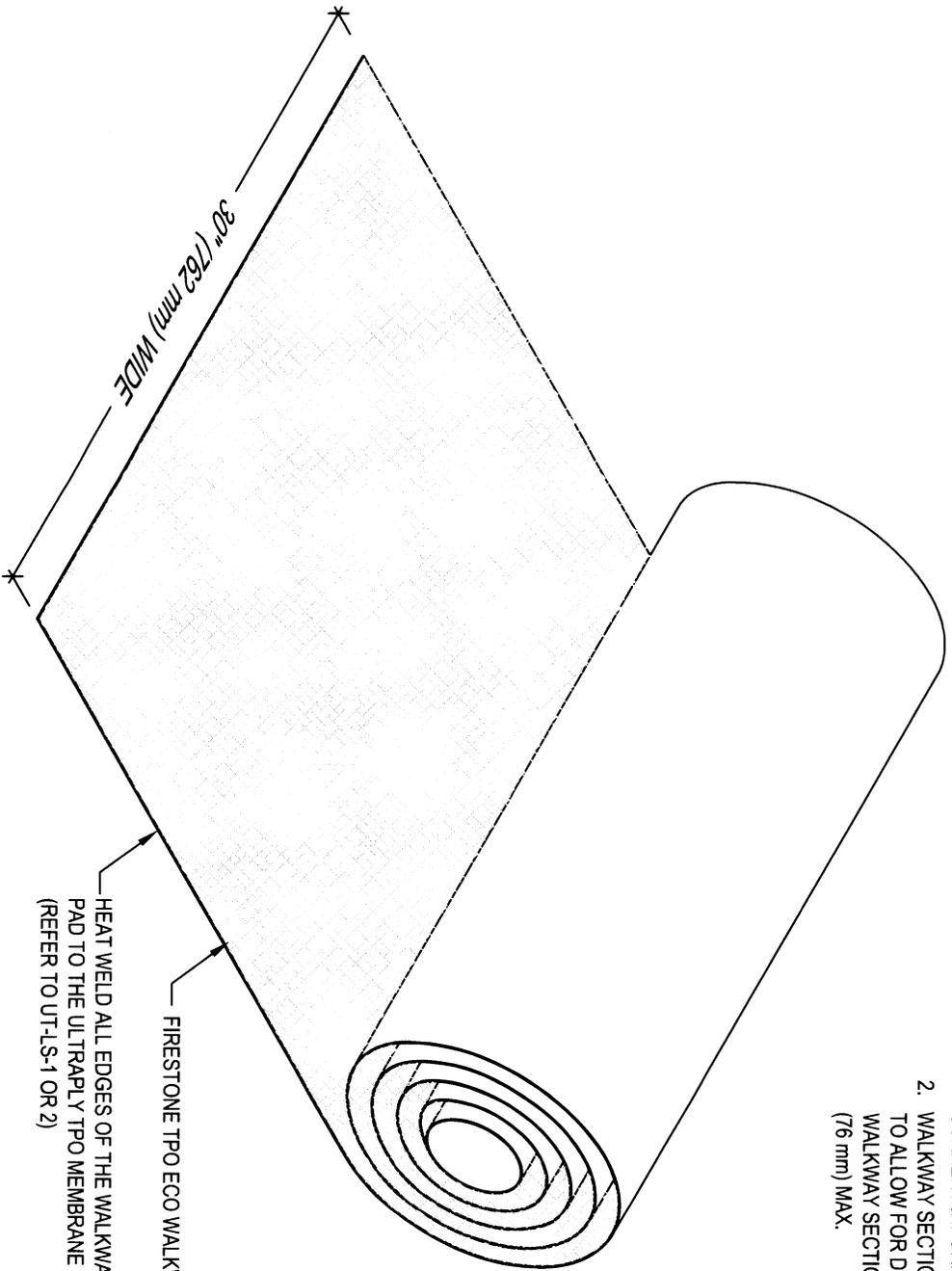
SUMP AREA FIELD SEAM REQUIREMENTS.

- A. IF FIELD SEAM EDGE IS WITHIN 9" (229 mm) OF DRAIN COMPRESSION RING, TPO TARGET PATCH REQUIRED.
- B. IF FIELDS SEAM EDGE IS WITHIN 9" (229 mm) TO 18" (457 mm) OF DRAIN COMPRESSION RING, HEAT WELD A LAYER OF ULTRAPLY TPO FLASHING (UNSUPPORTED) OR ULTRAPLY TPO MEMBRANE CENTERED OVER SEAM EDGE. FLASHING MUST EXTEND 3" (76 mm) MIN. BEYOND EDGE OF SUMP.

- NOTES:**
1. REFER TO FIRESTONE WEBSITE FOR THE MOST CURRENT INFORMATION.
 2. HOLE IN MEMBRANE SHOULD EXTEND A MINIMUM OF 1/2" (13 mm) BEYOND CLAMPING RING AND SHOULD NOT BE SMALLER THAN THE DIAMETER OF THE LEADER PIPE.
 3. INSULATION ADJACENT TO DRAIN TO BE APPROPRIATE FIRESTONE INSULATION WITH APPROPRIATE BONDING SURFACE.
 4. FIRESTONE WATERBLOCK MIN 1/2 OF 10 OZ. (295 ml) TUBE PER 4" DRAIN. USE ADDITIONAL WATERBLOCK FOR LARGER DRAINS.
 5. IN REROOF APPLICATIONS:
 - REMOVE EXISTING FLASHING DOWN TO METAL BOWL.
 - REPAIR OR REPLACE BROKEN DRAINS COMPONENTS.
 - DRILL AND TAP BROKEN DRAINS BOLTS AND REPLACE IF NECESSARY.

<p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebpco.com</p>	<p>ROOF DRAIN</p>
<p>ULTRAPLY™ TPO</p>	<p>ACCEPTABLE SYSTEMS: ALL</p>
<p>ISSUE /REVISION DATE: 7/22/2014</p>	<p>MAXIMUM WARRANTY: 20 YEARS</p>
<p>NOT TO SCALE</p>	<p>DETAIL NO. UT-D-1</p>

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. WALKWAY SECTION SHOULD BE SPACED PROPERLY TO ALLOW FOR DRAINAGE. SPACE BETWEEN WALKWAY SECTIONS SHALL BE 1" (25 mm) MIN. TO 3" (76 mm) MAX.



Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebpco.com		WALKWAY PAD		MAXIMUM WARRANTY: 20 YEARS
ULTRAPLY™ TPO		ACCEPTABLE SYSTEMS: ALL		ISSUE / REVISION DATE: 7/22/2014
				DETAIL NO. UT-M-1

NOT TO SCALE



CITY YARD ROOFS (TRANSIT + SERVICES)

Forensic Analytical Laboratories **FIRE #) 2ND FLOOR** Final Report
CEILING TILES + MASTIC

Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

City of Torrance
Rod Steffler
3031 Torrance Blvd.

Torrance, CA 90509

Client ID: 5781
Report Number: B206129
Date Received: 05/29/15
Date Analyzed: 06/01/15
Date Printed: 06/01/15
First Reported: 06/01/15

Job ID/Site: Asbestos Testing

FALI Job ID: 5781
Total Samples Submitted: 4
Total Samples Analyzed: 4

Date(s) Collected: 05/29/2015

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
SAMPLE #1	50933778						
Layer: Stones			ND				
Layer: Black Tars			ND				
Layer: Black Felts			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Fibrous Glass (45 %)							
SAMPLE #2	50933779						
Layer: Stones			ND				
Layer: Black Tars			ND				
Layer: Black Felts			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Fibrous Glass (45 %)							
SAMPLE #3	50933780						
Layer: Tan Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (5 %)							
SAMPLE #4	50933781						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (95 %)							

Tiffani Ludd, Laboratory Supervisor, Rancho Dominguez Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.



Forensic Analytical

Analysis Request Form

Client Name & Address:
 CITY OF TORRANCE
 3031 TORRANCE BLVD.
 TORRANCE CA. 90503

P.O. #: CASH Date: 5/29/15
 Turn Around Time: 1 day / 2 days / 3-5 days
 Due Date: / / Due Time: : am/pm
 PLM: Standard / Point Count PCM: NIOSH 7400

Contact: ROD STEFFLER

TEM Air: AHERA / Yamate2 / NIOSH 7402
 TEM Bulk: Quantitative / Qualitative / Chatfield
 TEM Water: Potable / Non-Potable / Wt %
 TEM Microvac

Phone #: (310) 625-7930

Special Project:

Fax#: () RSTEFFLER@TORRANCE.CA.GOV

Site:

Metals Analysis: Method _____

Job: ASBESTOS TESTING

Matrix: _____
 Analytes: _____

Comments:

Sample ID	Date/Time	Sample Location/Description	FOR AIR SAMPLES ONLY				Sample Area or Air Volume
			Type	Time On/Off	Avg. LPM	Total Time	
SAMPLE #1		CITY YARD-SERVICES BLDG. ROOF	A				
			P				
			C				
SAMPLE #2		CITY YARD-TRANSIT BLDG. ROOF	A				
			P				
			C				
SAMPLE #3		FIRE #) 2ND FLOOR OLD STYLE CEILING TILE MASTIC	A				
			P				
			C				
SAMPLE #4		FIRE #) 2ND FLOOR OLD STYLE CEILING TILES	A				
			P				
			C				

Sampled by: _____ Date: / / Time: :

Shipped via: Fed Ex Airborne UPS US Mail Courier Drop Off Other:

Relinquished by: *[Signature]*
 Date / Time: 5-29-15

Relinquished by: _____
 Date / Time: _____

Relinquished by: _____
 Date / Time: _____

Received by: *[Signature]*
 Date / Time: 5-29-15 11:15 AM
 Condition Acceptable? Yes No

Received by: _____
 Date / Time: _____
 Condition Acceptable? Yes No

Received by: _____
 Date / Time: _____
 Condition Acceptable? Yes No

