



**City of Pompano Beach, Purchasing Division
1190 N.E. 3rd Avenue, Building C
Pompano Beach, Florida, 33060**

January 31, 2012

**ADDENDUM #2, BID H-08-12
WATER TREATMENT PLANT ELECTRICAL MASTER PLAN PHASE I IMPROVEMENTS**

To Whom It May Concern,

Please review the following question and answer:

Q: Can you please tell me what the Time Completion is and the Liquidated Damages are?

A: The completion time is specified on the Proposal form, and there is a schedule specified in Section 01110, Summary of work. The Liquidated Damages provision is included in the Agreement form.

Please see next pages for clarifications issued by the City's Consulting Engineer.

As stated in Addendum #1, the deadline for acceptance of sealed bids in the Purchasing office, 1190 N.E. 3rd Avenue, Bldg. C, Pompano Beach, 33060, has been extended until 2:00 p.m. (local), February 7, 2012.

The remainder of the solicitation is unchanged at this time. Acknowledge receipt of this Addendum in the area provided on Page 14 of the bid.

Very truly yours,

Leeta Hardin
General Services Director

enclosure

cc: website
file

City of Pompano Beach
Bid H-08-12
Water Treatment Plant Electrical Master Plan
Phase I Improvements

Addendum No. 2

Answers to Questions Received:

1. Photo A on Drawing C-SP-03 show removing the handrail at the exterior deck and stairs. However, Drawing S-HSP-01 shows only removing the handrail at the deck, not the stairs. Which drawing is correct? Answer: All handrail (deck and stairs) should be removed and replaced.
2. Drawing C-SP-02 shows planting on the South and West sides of the screen wall. Do you also want plantings on the East side of the screen wall? Answer: Plantings on the east side of the screen wall are not required.
3. Is the existing duct bank shown to be demo to be completely removed? Answer: See specification section 16050-1.04-A-5 and see additional requirements in this addendum for specification section 16050-3.07 (DEMOLITION).
4. What is the type & size of the existing cable to be spliced shown on E-SP-03. Answer: The size of existing 8 kV cable in manhole MH-1 is No. 4/0 and it is same size as the new cable shown in the conduit schedule.
5. Are there spare conduits available for feeders M201, M210, M211, M220, M221, M230, M231 or do existing conductors must be removed before installing new conductors? Answer: The size of existing spare and available conduit is shown in the conduit schedule.
6. Will there be any other live feeders in any manholes where plans are calling for existing feeders to be replaced? Answer: Manhole 5 contains two 5 kV (three phase) cable circuits.
7. Will temporary feeder (M-130) need to be removed? Answer: Temporary feeder will not be removed in this Contract.
8. Where is M-050 and M-106? Answer: See conduit schedule and "DWG" reference.

9. Where is detail EL704? Sheet E-LC-01 is referring to this detail. Answer: See addendum below for revision to drawing E-LC-01.
10. Does bid alternate "A" need temp power? Answer: Not applicable.
11. Does bid alternate "B" need temp power? Answer: Not applicable.
12. What type of system is currently installed on the roof? Thickness of insulation and deck type? See specification included in this addendum.
13. Drawing S-HSP-02 calls for a secondary overflow scupper but, drawing P-RP-01 says there is no need for one which is it? Yes, the secondary overflow scupper is required.
14. Will an asbestos survey be required? All commercial work over 100 sq ft requires a survey. Answer: The City has demolished and removed all items in the work areas that would have been suspect for asbestos. An asbestos survey is not deemed necessary.
15. Referencing Bid items A: The conduit schedule lists several conduits as spare that appear to traverse in the same duct banks as the cables that are to be replaced under these separate bid items. Are we to assume that the spare conduits would be utilized for the cables in these bid items. Then the old cables removed after termination? Answer: Per conduit schedule, there are spare/empty conduits adjacent to units with cable to replace. The method and approach to work shall be by Contractor.
16. Drawing P-RP-01 shows modifications to the existing Lightning Protection System. Are we just performing the modifications or does Owner expect system to be UL re-certified? Answer: The existing segment of lightning protection cables shall be modified with UL listed products as necessary to suit the roof drain modifications. Re-certification of lightning protection system not required.

Changes to the Specifications

1. Bid Proposal, page 18, paragraph 10.1: add words at end of the question "or Electrical Contractor".

2. Instructions to Bidders. Paragraph 3. Qualifications of Bidders. Insert at the end of the paragraph "and within seven days after the Bid opening".
3. Supplementary Conditions. Paragraph 1. Relevant Project Experience. Delete the first paragraph and insert the following: Bidders shall show specific project experience as described herein and as specified in Specification Section 16050.
4. Supplementary Conditions. Insert the following paragraphs:

Paragraph 3. REQUIRED CONTRACTOR AND SUBCONTRACTOR DIVISION OF WORK

- a. The Bidder for this Water Treatment Plant Electrical Master Plan Phase I Improvements project shall be a licensed *General Contractor* or licensed *Electrical Contractor* in accordance with State of Florida Statutes, Chapter 489.
 - i. If the Bidder is solely a licensed *General Contractor*, then the work of required trades shall be subcontracted to licensed *Subcontractor* trades in accordance with State of Florida Statutes, Chapter 489.
 - ii. If the Bidder is a licensed *General Contractor* and a licensed *Electrical Contractor* and does not have the specified *General Contractor* experience (Paragraph 4), then all non electrical trade work shall be subcontracted to a licensed *General Contractor*, who shall subcontract to licensed *Subcontractor* trades in accordance with State of Florida Statutes Chapter 489. The licensed *General Contractor* shall have the specified experience.
 - iii. If the Bidder is a licensed *General Contractor* and a licensed *Electrical Contractor* and does not have the specified *Electrical Contractor* experience (Paragraph 5), then all electrical trade work shall be subcontracted to a licensed *Electrical Contractor* in accordance with State of Florida Statutes Chapter 489 who shall have the specified experience.
 - iv. If the Bidder is solely a licensed *Electrical Contractor*, then all non electrical trade work shall be subcontracted to a licensed

General Contractor, who shall subcontract to licensed Subcontractor trades in accordance with State of Florida Statutes Chapter 489. The licensed General Contractor shall have the specified experience (Paragraph 4).

Paragraph 4. EXPERIENCE REQUIREMENTS FOR BIDDER OR LICENSED GENERAL CONTRACTOR

The following requirements shall apply to the Bidder (if licensed Electrical Contractor) or licensed General Contractor (if acting as either Bidder or Subcontractor):

- a. Ten years of successful working experience in projects related to water or wastewater treatment plants, including at least five projects of similar or larger scope of work during the last ten years. The project experience shall include the following:
 - i. Coordination of momentary equipment shutdowns to avoid interruption of the plant water or wastewater treatment process.
 - ii. Performing construction management duties including, but not limited to, planning of field work; project scheduling; coordination/handling of shop drawings, change orders, and requests for information; coordination and supervision of multiple trades; quality control of field work; and interfacing directly with Owner and Engineer.
- b. Experience shall include at least five projects that include installation of centrifugal water pumps rated for 250 horsepower (hp) or larger.
- c. Experience shall include at least five projects that include installation of underground water or wastewater pipes that are 24 inches or larger diameter, underground manholes, coordination of multiple underground utilities, sequencing and scheduling of work, and coordination of field constraints to avoid interruption to the plant water or wastewater treatment process.

Paragraph 5. EXPERIENCE REQUIREMENTS FOR LICENSED ELECTRICAL CONTRACTOR OR LICENSED ELECTRICAL SUBCONTRACTOR

Licensed Electrical Contractor or licensed Electrical Subcontractor shall have project related experience specified in the Specifications, Section 16050, page 12, Quality Assurance 1.06 B.

5. Specification Section 01110-1.05-B, page 2, add paragraph 7 to read as follows:
"7. Owner will provide programming of software in existing SCADA PLC-3 and SCADA computers as necessary for monitoring and control of new equipment".
6. Specification Section 01110-1.05-C, page 2, add paragraph 12 to read as follows:
"12. Contractor shall provide services for testing all control and communication wiring (loops) that terminate in existing SCADA and PLC-3 panel, and submit a test report certifying adequate and ready functioning, as necessary for (Owner furnished) programming of software in existing SCADA PLC-3 and SCADA computers, for monitoring and control of new equipment".
7. Insert new Specification Section 07590, Maintenance of Membrane Roofing, included as part of this addendum.
8. Specification Section 09910, paragraph 3.08 EXTERIOR PAINT SCHEDULE, insert paragraph "C" :

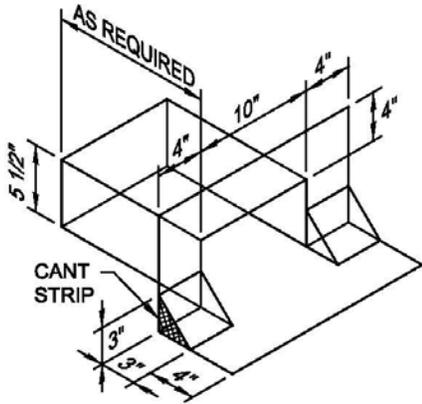
Paragraph C. The following areas shall be painted:

1. Existing walls that have unpainted masonry block over previous window. Paint color shall match existing.
2. Entire outside walls located on the west side of the pump station (1-4) building, and located to the west side of the new electrical room, including stairs and adjacent areas.
3. All walls located around the location of air conditioning condensers.
4. All exterior walls with patching of new penetrations.
5. All exterior exposed conduits and exposed electrical pull boxes.

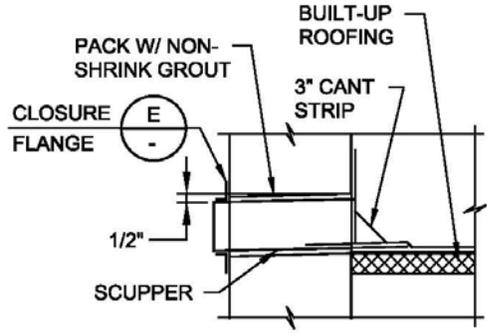
Changes to the Drawings

1. Drawing C-SP-03
 - a. Key note 3 "replace existing handrails" applies to all handrails that are indicated to be demolished.
2. Drawing C-SP-05

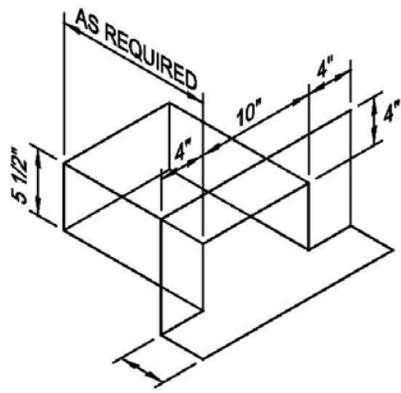
- a. Electrical power for temporary trailers is available from nearby electrical buildings. Contractor shall provide his own conduit and wiring for connection.
3. Drawing P-RP-01 delete the *General* note which says that secondary drainage is not necessary.
4. Drawing S-HSP-01
 - a. Key note 7 "remove existing galv stl guardrail and replace with new galv stl guardrail to match existing" shall apply to all handrails that are annotated by Key note 3 on C-SP-03.
5. Drawing S-HSP-02
 - a. At the end of key note 1, add the following text "as specified in Section 07590 Maintenance of Membrane Roofing".
 - b. At the end of key note 5, delete the text "Reroof over patch with insulation and roofing material to match existing.
 - c. Add key note 6 to read as follows: Photo detail 1: Provide lightning protection conductor No. 2/0 gauge or larger to match existing size, with necessary UL listed fittings for lightning protection applications and install as necessary around the new roof drains, for maintaining continuity of existing lighting protection system.
6. Drawing E-SP-03
 - a. Add a key note "9" call-out pointing at each of the ground rod symbol.
 - b. Add key note "9", to read as follows: Provide a No. 4/0 bare copper in 1.5 inch conduit from each indoor 5 kV MCC-A and MCC-B to the respective outdoor *Grounding* rod.
7. Drawing E-LC-01
 - c. Delete symbol for wall mounted "MD" and delete call-out for typical detail "EL-704".
8. Drawing T-00-T3
 - a. A340 *Guardrail/Handrail* Notes. Note 3 should read as follows: "Handrail shall be provided at both sides of every stair having two or more risers. See Detail A 343"
9. Drawing T-00-T3
 - a. Insert detail A 725 included with this addendum.



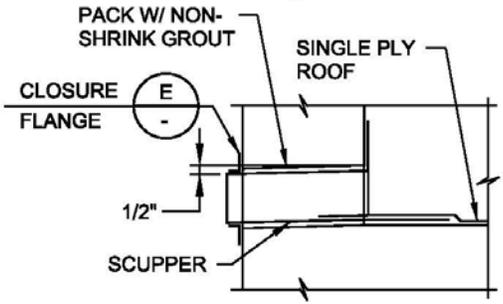
A ISOMETRIC -
BUILT-UP ROOFING



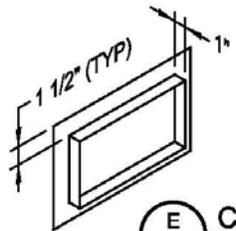
B SECTION



C ISOMETRIC -
SINGLE PLY ROOFING



D SECTION



E CLOSURE
FLANGE

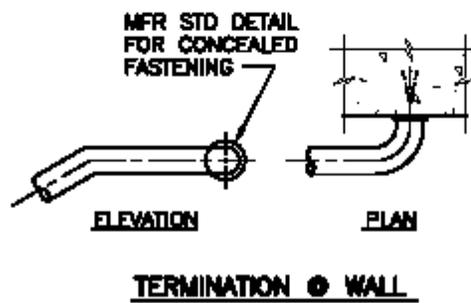
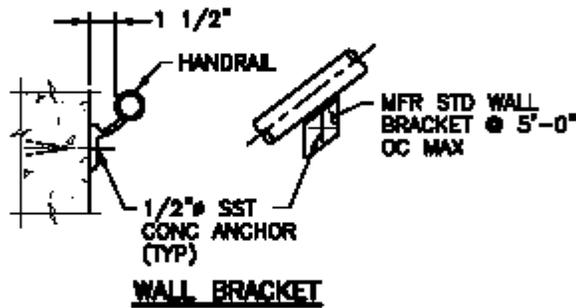
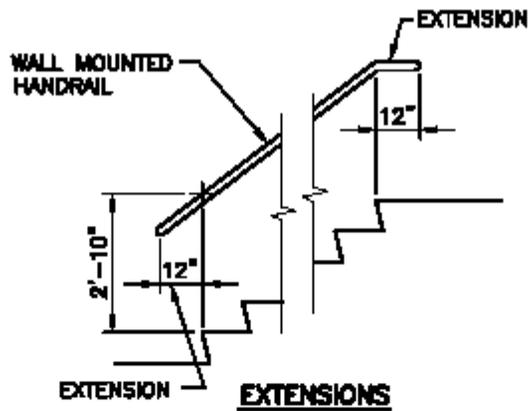
NOTES:

1. PROVIDE FLASHING AS REQUIRED BY ROOFING MANUFACTURER.
2. FABRICATE SCUPPER AND FLANGE FROM MIN 0.108" THICK AL. COAT AL IN CONTACT WITH CONC AS SPECIFIED. FINISH PER PAINTING SCHEDULE.
3. PROVIDE CLOSURE FLANGE AT EXTERIOR WALL. SET FLANGE IN SEALANT.

A725 ROOF DRAIN SCUPPER FOR BUILT-UP AND
TYP SINGLE-PLY ROOFING

08/01/05





A343 HANDRAIL DETAILS

TYP

03-01-08



SECTION 07590

REPAIR OF MEMBRANE ROOFING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for roof repairs.
- B. Related Sections
 - 1. Section 01330 Submittals
 - 2. Section 01410 Regulatory Requirements

1.02 SUBMITTALS

- A. Submit shop drawings in accordance with section 01330
- B. Submit shop drawing with proposed modifications to existing roof, including:
 - 1. Proposed elevation of new primary and secondary scupper in accordance with pertinent building Codes.
 - 2. Drawings detailing the elevation of existing concrete deck, lightweight insulating concrete, supplemental insulation and roof membrane
 - 3. Submit statement certifying compliance with requirements and showing coordination with existing roof installer so as not to void warranty.

PART 2 PRODUCTS

2.01 MATERIALS

- A. As required to match existing roofing, which is being modified and reworked to remove a roof drain and install new scuppers.
- B. See additional information of roof (record) shop drawings attached at the end of this specification, as reference for matching and coordination with existing materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect existing roofing to identify the new work.

1. Existing drawings indicate that existing roofing system is a mineral cap sheet over modified bitumen membrane over cover board over rigid insulation over lightweight insulating concrete and over precast concrete deck.

3.02 REPAIRING ROOFING

- A. Establish elevations of new scuppers so as to comply with building codes and to avoid a low spot where existing roof drain is being removed.
- B. Repair alterations, attachments, new openings, and other disturbances in existing roof for new construction features in manner that will satisfy original manufacturer's warranty.
- C. Remove and replace mineral cap sheet as required to remove existing roof drain.
- D. Patch insulation as required due to removal of roof drain. Slope new insulation as required to drain to new scupper.
- E. Install new roofing and flashing as required to match existing roofing, which is to remain.
- F. Complete new roofing in manner that maintains a watertight installation.
- G. Repair areas of existing roof damaged by new work.
- H. Recoat minor damage with surfacing to match existing.
- I. Conduct leakage test to prove integrity of new roof.

Existing Roof Shop Drawings

Deck Type 4: Lightweight Concrete, Non-Insulated
Deck Description: Cellular or Aggregate Lightweight Concrete, 300 psi. min.
System Type E(6): Base sheet mechanically fastened.

All General and System Limitations apply.

Base Sheet: One ply of Sopra-G, Soprabase, GAFGLAS #75 or GAFGLAS Stratavent, Flex-I-Glas Base, All Weather/Empire, Parabase Plus or Vapor Chan fastened to the deck as described. Attach base sheet using ES Products Twin Loc-Nails spaced 9" o.c. in a 4" lap and 9" o.c. in two staggered rows in the center of the sheet.

Ply Sheet: (Optional)

One ply of Elastophene Flam*, Elastophene Flam 2.2*, Sopralene (180) 250 or 350 Flam*, or Sopralene (180, 250 or 350) SP, heat welded.

Or

One ply of Elastophene Sanded, Elastophene FR, Elastophene 180 Sanded, Elastophene PS*, Elastophene PS 3.0*, Elastophene 180 PS*, Sopralene (180, 250 or 350) PS*, or Sopralene (180, 250 or 350) Sanded one or more plies of ASTM D 2178 Type IV or VI ply sheets, adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq. to sand surfaced base membrane.

*Requires heat welded cap membrane.

Membrane: Elastophene SP 2.2mm*, Elastophene SP 3.0mm*, Elastophene Flam GR, Elastophene Flam FR GR, FR+GR, Elastophene Flam LS FR GR, Soprarstar Flam, Sopralene (180, 250, 350) Flam GR, Sopralene (180, 250, 350) Flam FR GR, FR+GR, or Sopralast 50 TV Alu, heat welded

Or

Elastophene Sanded*, Elastophene FR*, Elastophene 180 Sanded*, Sopralene (180, 250, 350) Sanded*, Elastophene FR GR, Elastophene LS FR GR, Elastophene GR, Sopralene (180, 250, 350) GR, or Sopralene (180, 250, 350) FR GR, adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq. to sand surfaced base or ply membrane.

*Requires approved Surfacing.

Surfacing: **Surfacing is Optional on granular surfaced field cap membranes.**
Surfacing is Required for smooth or sanded surfaced field cap membranes.
Refer to Underwriters Laboratories or Intertek Testing Services listings for applicable fire classifications
Apply any coating listed in Table 4 above, or any Miami-Dade approved coating system

Maximum Design Pressure: -60 psf (See General Limitation #7)



NOA No.: 07-1217.10
Expiration Date: 02/22/11
Approval Date: 04/24/08
Page 25 of 44



SOPRALENE FLAM & SP BASES

SOPRALENE FLAM 250 (31)	Order No. 00434
SOPRALENE FLAM 250 3.5 (31A)	Order No.*
SOPRALENE FLAM 180 (32)	Order No. 00410
SOPRALENE FLAM 180 2.7 (32B)	Order No.*
SOPRALENE 180 SP 3.5 (34)	Order No. 00621
SOPRALENE 180 SP 3.0 (34A)	Order No. 00622

*Contact Customer Service for order number and availability.

DESCRIPTION & APPLICATION

Sopralene base ply is composed of selected SBS modified bitumen applied onto a non-woven polyester reinforcement with a sanded underside and high brush sanded topside surfaces.

The Sopralene field and flashing base membrane plies is adhered to a properly prepared, clean, dry and/or primed (where required) substrate by using hot asphalt or cold adhesive. Optional inner ply(s) or the field cap membrane ply is bonded to the properly prepared, clean, dry and/or primed (where required) Sopralene 180 top surface with hot asphalt, cold adhesive or heat welding application methods. A COLSTIX™ self-adhesive cap sheet can also be installed when the Sopralene surface is properly prepared with Soprema SA Primer and Soprema Sealant is applied to all side and end lap edges not having a bitumen bleed-out prior to application.

See published Specifications and Approved Details.

COMPOSITION & PACKAGING

	Sopralene Flam 250	Sopralene Flam 250 3.5	Sopralene Flam 180	Sopralene Flam 180 2.7	Sopralene 180 SP 3.5	Sopralene 180 SP 3.0
Reinforcement	non-woven polyester					
Elastomeric Bitumen	selected blend of bitumen and SBS thermoplastic polymers					
Topside	plastic film			lightly sanded		
Underside	plastic film					
Approx. Nominal Thickness	158 mils (4.0 mm)	138 mils (3.5 mm)	118 mils (3.0 mm)	106 mils (2.7 mm)	138 mils (3.5 mm)	118 mils (3.0 mm)
Approximate Roll Coverage	97.5 ft ² (9.1 m ²)					
Side Lap	3" (76 mm)					
End Lap	6" (152 mm)					
Roll Length	33 feet (10 m)					
Roll Width	39" (1 m)					
Approx. Roll Wt.	99 lbs (45 kg)	89 lbs (40.4 kg)	81 lbs (37 kg)	75 lbs (34 kg)	95 lbs (43 kg)	79 lbs (36 kg)
Rolls per Pallet*	25		30		25	

* Rolls stocked upright on pallet.

310 QUADRAL DRIVE • WADSWORTH, OHIO 44281 • TEL.: (330) 334-0066 • TOLL FREE: (800) 356-3521 • FAX: (330) 334-4289

SOPREMA MAY MODIFY THE COMPOSITION AND/OR UTILIZATION OF ITS PRODUCT WITHOUT PRIOR NOTICE. CONSEQUENTLY ORDERS WILL BE FILLED ACCORDING TO THE LATEST SPECIFICATIONS. General information is provided on this Product Data Sheet. Physical property average values are based on accepted test standards conducted under controlled laboratory conditions. These values are not minimum standards since they can vary due to normal manufacturing processes. Soprema is not obligated to manufacture Product(s) to particular Project Specification requirements unless agreed to in advance by Soprema. It is the roofing contractor's (Purchaser's) responsibility to order and purchase materials that meet a particular Project Specification.



PRODUCT DATA SHEET

PDS-112
Rev 02/09

SOPRABASE TG

SOPRABASE TG (05B)

Order No. 00136

DESCRIPTION

Soprabase TG is an ASTM D 5147 polyester base sheet. This base sheet is suitable for use to form BUR roof assemblies or are used in combination with SBS membranes when they are completely adhered either by hot mopping or cold adhesive or installed by mechanical attachment. See published Specifications and Approved Details.

COMPOSITION & PACKAGING

Product/Property	Soprabase TG
Reinforcement	Polyester
Elastomeric Bitumen	Selected SBS
Topside	Film
Underside	Film
Approx. Nominal Thickness	1.5 mm (60 mils)
Approximate Roll Coverage	18.6 m ² (200 ft ²)
Side Lap	76 mm (3")
End Lap	152 mm (6")
Roll Length	20 m (65')
Roll Width	1 m (3')
Approximate Roll Weight	28 kg (62 lbs.)
Rolls per Pallet*	25

*Rolls stocked upright on pallet

Product/ Physical Property per ASTM D 5147	Soprabase TG
Max Load at 0 ± 3.6 °F lbf/in	50
Elongation at 0 ± 3.6 °F %	33
Max Load at 73.4 ± 3.6 °F lbf/in	49
Elongation at 73.4 ± 3.6 °F %	41
Tear Strength at 73.4 ± 3.6 °F lbf	71
Low Temperature Flex at °F max	-15
Dimensional Stability % max	<0.5
Compound Stability Temperature °F	215

Minimum values before and after Heat Conditioning
Test results for manufacturing plant in Wadsworth, OH

SHOP DRAWING REVIEW

WARRANTY	NO EXCEPTIONS TAKEN <input checked="" type="checkbox"/>	REJECTED <input type="checkbox"/>
	NOTE COMMENTS <input type="checkbox"/>	RE - SUBMIT <input type="checkbox"/>

Contact your local SOPREMA representative for project warranty offerings.
REVIEW FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS.

APPROVALS

See Underwriters Laboratories Inc. File #R11436 FM Approvals, ICCES Miami-Dade County of Florida Building Code Product Approval Listings for current Approved Roof Assembly combinations. Soprema is in safe manner.

By MEJ Date 4-03-09

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General product information is provided on this Product Data Sheet. The physical property values reported herein are based on testing conducted under controlled laboratory conditions according to accepted test standards.

AUDICE GRAY ASSOCIATES, INC.



PRODUCT DATA SHEET

PDS-389
Rev 04/08

SOPRALENE FLAM 250 GR

SOPRALENE FLAM 250 GR (51)

Order No. 02065*

*Cap sheet order numbers are for WHITE CAP SHEETS ONLY. Contact Customer Service or your Sales Representative for other available cap sheet colors and special order requirements.

DESCRIPTION & APPLICATION

Sopralene Flam 250 GR cap ply is composed of selected SBS modified bitumen applied onto a non-woven polyester reinforcement with film on the underside and a colored granule topside surface.

The Sopralene Flam 250 GR field and flashing cap membrane ply is adhered to a properly prepared, clean, dry and/or primed (where required) base or ply membrane by using the heat welding application method.

See published Specifications and Approved Details.

COMPOSITION & PACKAGING

Product/ Property	SOPRALENE FLAM 250 GR		
Reinforcement	polyester		
Elastomeric Bitumen	selected blend of bitumen and SBS thermoplastic polymers		
Topside	colored granules		
Underside	sanded		
Approximate Nominal Thickness	160 mils (4.0 mm)		
Approximate Roll Coverage	97.5 ft ² (9.1 m ²)		
Side Lap	3" (76 mm)		
End Lap	6" (152 mm)		
Roll Length	33 ft (10 m)		
Roll Width	39" (1 m)		
Approximate Roll Weight	16.5 lbs (7.5 kg)		
Rolls per Pallet*	NO EXCEPTIONS TAKEN <input checked="" type="checkbox"/>	REJECTED <input type="checkbox"/>	
* Rolls stocked upright on pallets	NOTE COMMENTS <input type="checkbox"/>	RE - SUBMIT <input type="checkbox"/>	

SHOP DRAWING REVIEW

WARRANTY

Contact your local SOPREMA representative for details.

REVIEW FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. Markings or comments shall not be construed as relieving the CONTRACTOR from compliance with the project plans and specifications. The CONTRACTOR remains responsible for details and accuracy, for confirming and correlating all quantities, job conditions and dimensions, for selecting fabrication processes, for techniques of assembly and construction, and for performing his work in a safe manner.

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SIGNATURE

Date: 1-23-08



PHYSICAL PROPERTIES

Physical Property per ASTM D 6164, Type II, Grade G	MD	XD
Tensile - Max Load at 0 ± 3.6°F lbf/in	159	111
Elongation at 0 ± 3.6°F %	33	28
Tensile - Max Load at 73.4 ± 3.6°F lbf/in	136	99
Elongation at 73.4 ± 3.6°F %	54	59
Tear Strength at 73.4 ± 3.6°F lbf	164	121
Low Temperature Flex °F max	-15	-15
Dimensional Stability % max	<0.5	<0.5
Compound Stability Temp F	230	230
Granule Embedment g/max	0.8	0.8

Minimum values before and after Heat Conditioning
Test results for manufacturing plant in Wadsworth, OH

APPROVALS

See Underwriters Laboratories Inc. File #R11436, FM Approvals, ICC/ES, Miami-Dade County or Florida Building Code Product Approval Listings for current Approved Roof Assembly combinations. Soprema is ISO-9001:2000 Certified.

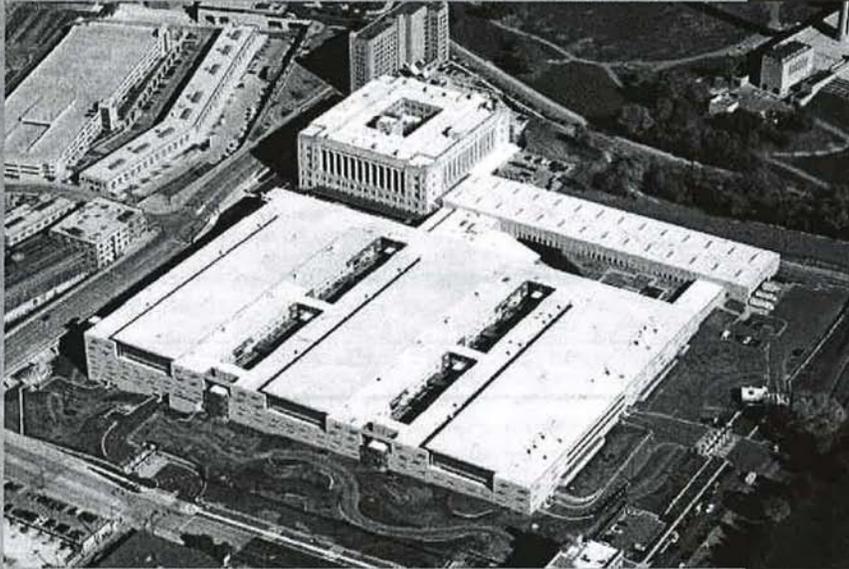
GENERAL

SOPREMA is a Certified ISO 9001:2000 worldwide producer of bituminous membranes with factories in Europe and North America. Waterproofing sheets have been produced by SOPREMA since 1908. Today, through a special mixture of components, SOPREMA membranes redefine the qualities indispensable to a high performance roof membrane: elasticity, flexibility, heat & fatigue resistance.

SOPREMA SBS modified bitumen membrane assemblies typically consist of base and top ply membranes that have specific type reinforcements in order to meet specific ASTM Standards. The two ply system provides a resistance to punctures and tears, as well as ensuring an effective distribution of stress points. The two ply system operates in a homogeneous fashion. The bitumen in each layer moves uniformly to offer continuous protection.

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SOPREMA MAY MODIFY THE COMPOSITION AND/OR UTILIZATION OF ITS PRODUCT WITHOUT PRIOR NOTICE. CONSEQUENTLY ORDERS WILL BE FILLED ACCORDING TO THE LATEST SPECIFICATIONS. General information is provided on this Product Data Sheet. Physical property average values are based on accepted test standards conducted under controlled laboratory conditions. These values are not minimum standards since they can vary due to normal manufacturing processes. Soprema is not obligated to manufacture Product(s) to particular Project Specification requirements unless agreed to in advance by Soprema. It is the roofing contractor's (Purchaser's) responsibility to order and purchase materials that meet a particular Project Specification.



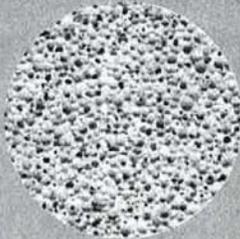
IRS Midwest Service Center - Kansas City, MO (R-24, 558,000 sq ft)

**QUALITY ROOF DECKS FOR
NEW CONSTRUCTION
AND
REROOFING APPLICATIONS**

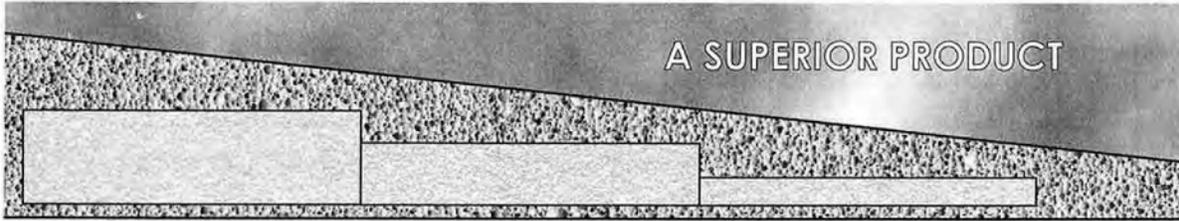
NO EXCEPTIONS TAKEN REJECTED
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 By M.G. Date 4-03-09
 SIGNATURE

MAURICE GRAY ASSOCIATES, INC.

- Slope-to-Drain
- Lightweight
- High R-Value
- Superior to Insulation Board
- Low Cost



ELASTIZELL
**COMPOSITE INSULATING
 ROOF DECK SYSTEMS**



THE ELASTIZELL ADVANTAGE

Elastizell Roof Decks are:

- ▶ Permanent ▶ Approved ▶ Easily Re-roofable ▶ Compatible with Roofing
- ▶ Insulative ▶ Economical ▶ Dimensionally Stable ▶ Positive Slope-to-Drain
- ▶ Strong ▶ Non-Combustible ▶ Resistant to Wind Uplift ▶ Air Barrier Improves R-Value

Elastizell Composite Insulating Roof Decks are superior to rigid board systems. In the past, roofing systems utilized rigid board insulation because its apparent low cost seemed to outweigh its many disadvantages. Economical Elastizell Roof Decks have many advantages over rigid board systems. Elastizell Roof Decks solve roofing problems! They have performed in the marketplace for over 50 years. When compared to insulation board systems, Elastizell Roof Decks are superior in every way! We've been green for 50 years!

Architects and Consultants have become increasingly aware of the many difficulties inherent with insulation board roof decks. Rigid insulation does not actually provide their claimed product LTTR-values and their thermal bridging in steel deck systems and product shrinkage results in an additional loss of system R-value - as much as a 30% reduction.

PROBLEMS INHERENT WITH INSULATION BOARD

	RIGID INSULATION BOARD	ELASTIZELL ROOF DECKS
ReRoofability	Expensive since insulation must be removed, disposed, and replaced	Simply replace the membrane
Slope-to-Drain over a Level Substrate	Expensive as positive slope & drainage is difficult and time consuming	Simple, positive slope-to-drain
Life Cost	Expensive when materials, labor and maintenance costs are added	Low cost with minimum maintenance required
Installation Over Metal Deck	Fasteners are a thermal bridge that reduces R-Value of system	Flutes are filled and perimeters are sealed with slurry (air barrier).
Insulation Reduction	Board shrinkage and thermal drift reduce R-Value of system over 30%.	Metal fasteners do not penetrate insulation so no thermal bridge

ELASTIZELL ADVANTAGES OVER INSULATION BOARD



Customized Slope-to-Drain

The purpose of a roof system is to protect the interior of a building from the outside environment. Proper slope-to-drain eliminates ponding which is the cause of membrane aging leading to roof leaks. Tapered insulation is only effective on simple drainage patterns with few penetrations.

The Elastizell Composite Insulating Roof Deck System provides positive drainage in new construction and reroofing applications. The insulation system is cast with a positive slope to correct and adjust field differences which always occur between drawings and actual rooftop conditions.

Few roof decks have regular drainage patterns or built-in slopes for positive drainage. Elastizell achieves positive drainage by combining a stair-stepped, EPS insulation board with custom sloping of the Elastizell. Standard rigid board cannot do this and tapered board systems are costly and inefficient.

Low Cost

An Elastizell Composite System is less costly than rigid insulation board. EPS insulation is bonded to the substrate. Once the Elastizell Roof Deck is cast, installation of the membrane is continuous and fast.

Wind Uplift

Elastizell Roof Decks perform as an air retarder providing excellent wind uplift performance. Elastizell bonds the EPS board to the structural deck, filling depressions and deck flutes.

Elastizell Roof Decks have UL, FM and Miami-Dade County wind uplift ratings. See Page 6 for web links.

Integral System

The Elastizell Composite System encapsulates EPS board within the system. EPS board is bonded to the deck in new construction or to the existing roof membrane in reroofing applications. Elastizell bonds the EPS to the deck and completely fills depressions and deck flutes which are not filled with insulation board systems. Elastizell encapsulates EPS insulation for resistance to uplift, fire and seismic forces. Cast-in-place Elastizell sandwiches the EPS insulation board to the deck creating an integral system. Deck penetrations do not weaken the system and stress-causing joints directly under the roofing membrane are eliminated.

Permanent Insulation

An Elastizell Roof Deck is permanent insulation which performs better than rigid insulation. Rigid insulation acts like a sponge, soaking up moisture and reducing its insulation value. Once a roof leaks over rigid board, the wet insulation must be replaced. This is not the case with Elastizell and encapsulated EPS insulation. With an Elastizell Roof Deck, only the membrane is replaced.

Elastizell fills the flutes of metal deck systems so that air infiltration is eliminated. Elastizell Roof Decks have neither the joint problems nor the thermal drift characteristics associated with rigid board insulation.

Fasteners

Mechanically attached insulation board systems have an extensive number of fasteners that result in thermal breaches reducing the system's R-value up to 30%.

Re-Roofability

No roof system lasts forever. When a membrane fails over insulation board, the entire system must be torn off and replaced exposing the building's interior. Rigid insulation board is damaged by water. An Elastizell Composite System is not damaged by water. Encapsulated EPS board is completely protected with an Elastizell Composite System - only the roofing membrane need be replaced.

Heat Sink

Elastizell and EPS board provide a heat sink beneath the roofing membrane moderating temperature changes which cause thermal shock twice daily - heat from the sun and cooling at nighttime or by rain.

Insulation board next to and under the roofing membrane cannot absorb this heat, resulting in greater thermal shock eventually causing fatigue and splits in the membrane.

Fire Rated

Elastizell Roof Decks have many fire ratings. Elastizell is non-combustible and does not require fireproofing of the underside of the steel deck or the addition of a separate thermal barrier necessary with rigid board systems - i.e. faster construction. The flutes are filled, eliminating the fire channel.

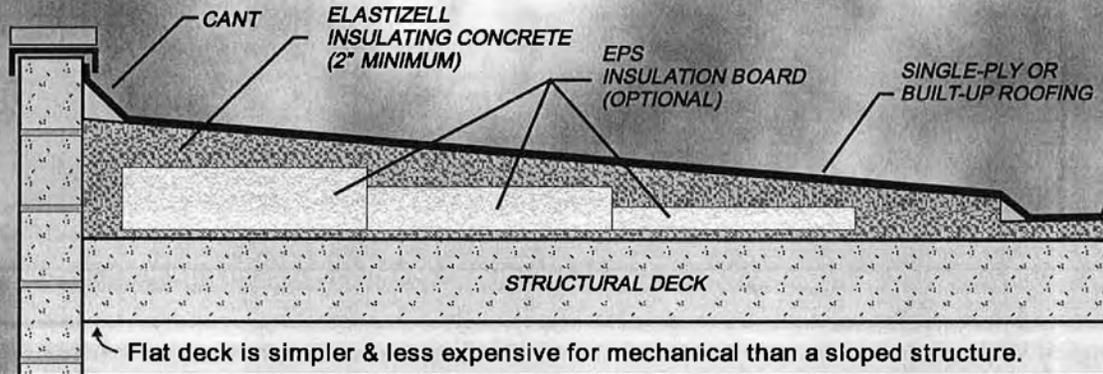
Elastizell Roof Decks have numerous UL fire ratings listed on Page 5.

Low Weight

System weights as low as 8 to 9 psf for most R-values.

Over Precast
or Structural
Concrete

Elastizell is an excellent composite insulating system over precast and cast-in-place concrete. Since bottom-side venting provisions are difficult, perimeter venting should be considered at the flashing/counter flashing detail.



Flat deck is simpler & less expensive for mechanical than a sloped structure.



DESIGNED AND TESTED TO MEET THE HIGHEST INDUSTRY STANDARDS

For more than 50 years, the Elastizell Corporation of America has researched, developed, tested, improved and perfected the Elastizell Composite Insulating Roof Deck System.

ACCEPTED BY THE EXPERTS AND THE INDUSTRY

Elastizell systems have numerous wind uplift, fire and seismic ratings. Major roofing manufacturers accept Elastizell Composite Insulating Roof Deck Systems with their warranted membranes.

THE BASIC SYSTEMS

Elastizell Composite Insulation can be placed over precast or cast-in-place concrete, and galvanized steel decking. In both of these systems, the EPS insulation board increases R-values and reduces dead load. System weights as low as 8 to 9 psf.

EPS INSULATION BOARD

When combined with EPS, Elastizell Roof Decks have advantages over other roofing systems:

- ▶ A solid base for roofing membranes
- ▶ Reduced dead weight
- ▶ Slope-to-drain capability
- ▶ Fire, seismic and wind uplift ratings
- ▶ Permanent LTTR

ROOFING

Roofing may begin when the roof deck can withstand foot traffic which is from two to three days after the deck is cast. The Elastizell deck should not be left exposed for longer than five to seven days -- especially in dry climates. The presence of crazing or cracking is not detrimental to the roofing system.

THE ROOFING BASE SHEET

The roofing base sheet is attached with an approved base sheet fastener to the Elastizell Roof Deck in a pattern recommended by the roofing manufacturer. Fastener pullout values increase with the age of the roof deck. Typical nail withdrawal is 40 pounds.

PERIMETER VENTING

Perimeter venting at the flashing/counter flashing detail should be a part of the roof system although it is not necessary in low humidity regions. Special bottom-side venting provisions are not normally required unless local practice includes it.

FOR SINGLE-PLY ROOFING

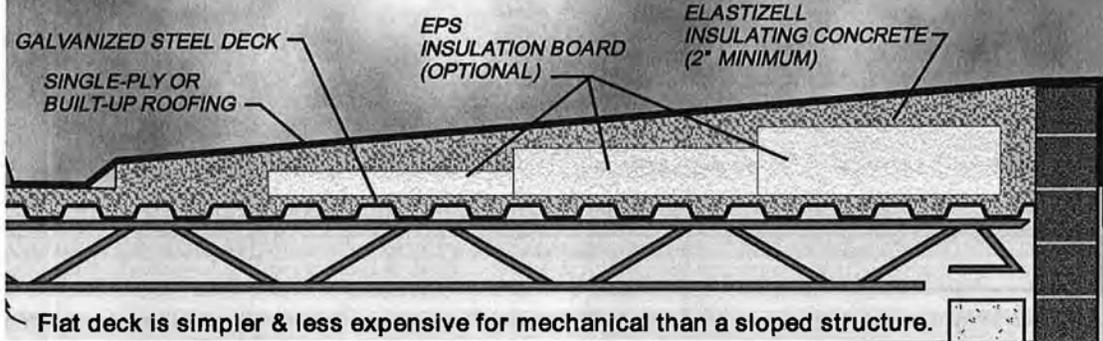
For single-ply roofing consult the manufacturer for specific recommendations. Modified bitumens may be torched or mopped to a nailed base sheet.

FULLY ADHERED MEMBRANES

Singly Ply membranes are either plain or fleece-back and are adhered to the Elastizell Roof Deck by a roofing membrane designated adhesive.

Over Galvanized Steel Decks

Elastizell does not require the slotted steel decks demanded by wet aggregate concretes. Elastizell may be cast over either slotted or non-slotted steel decks according to local conditions. Specify Elastizell over G-60 or G-90 galvanized steel centering since painted steel deck is unsuitable for the direct application of any concrete.



NEW CONSTRUCTION

Flat deck is simpler & less expensive for mechanical than a sloped structure.

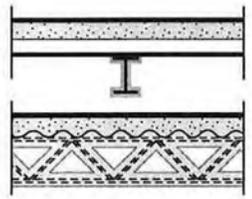
ELASTIZELL UL FIRE-RATED SYSTEMS



UL Rated

Unprotected Steel Deck

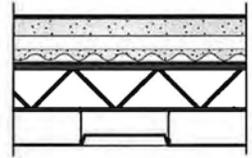
- ▶ Built-up or single-ply roofing
- ▶ Elastizell Composite Insulating Roof Deck System
- ▶ EPS insulation board (optional)
- ▶ Exposed steel deck
- ▶ Sprayed beam or joist



- P902, P903, P907, P908, P919, P920, P921, P922, P923, P925, P926, P927, P928, P929, P930, P936, P937

Protected Steel Deck

- ▶ Built-up or single-ply roofing
- ▶ Elastizell Composite Insulating Roof Deck System
- ▶ EPS insulation board (optional)
- ▶ Steel deck over bar joists
- ▶ Suspended ceiling

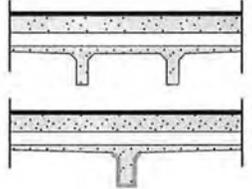


- Armstrong Ceilings
- Other Tile Ceilings
- Plaster Ceiling
- Gypsum Board Ceiling

- P215, P216, P231, P251
- P214, P241, P246, P255, P261, P264
- P405, P406, P407, P410, P411
- P501, P503, P509, P511, P513, P514, P520

Precast Concrete Deck

- ▶ Built-up or single-ply roofing
- ▶ Elastizell Composite Insulating Roof Deck System
- ▶ EPS insulation board (optional)
- ▶ Precast single or double Tees



- Exposed
- Sprayed Fireproofing

- P905, P910, P913, P916
- P708, P737, P810, P812

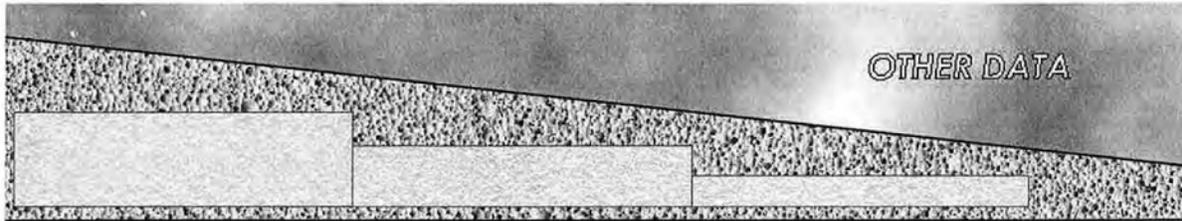
Structural Concrete & Protected Steel Deck

- D708, D750, D755, D759, D768, D775, D832

Structural Concrete & Unprotected Steel Deck

- D902, D916, D919, D922, D923, D925, D927, D929

Hollow Core Concrete Deck (PCA Studies)



PHYSICAL PROPERTIES

	Cast Density (pcf)	Air Dry Density (pcf)	28 day Minimum Compressive Strength (psi)	R-value (per inch*)	Average Weight (psf)
RANGE II	34 - 42	26 - 34	160 - 250	1.20 - 1.34	~6.9
RANGE III	42 - 48	34 - 40	250 - 350	0.86 - 1.00	~ 8.2

NOTES: R-Value is based on the minimum dry density measured at a mean temperature of 75°F per ASTM C518.
Average Weight is 2- 3/4" at average dry density.

Typical R-Values & Loads over 1-1/2" 22 gauge steel deck

Average Thicknesses		Range II Elastizell Nailed Base & Mod Bit or BUR		Range III Elastizell Fully Adhered Single-Ply	
Elastizell	EPS				
2.75"	0"	R ~ 3.3	6.9 psf	R ~ 2.8	8.2 psf
2.75"	4"	R ~ 19.3	7.2 psf	R ~ 18.8	8.5 psf
2.75"	7"	R ~ 31.3	7.5 psf	R ~ 30.8	8.8 psf

Notes: This data is a general guideline only, and not for a specific project.
Roof Deck System weight is for the Elastizell & EPS only (EPS = 1.0 pcf, R4/inch).
Average membrane Dead Loads should be confirmed by specific manufacturer
BUR = ~2.0 psf, Mod Bit = ~ 1.0 psf, Single Ply = ~ 0.5 psf

GUIDES and APPROVALS

Underwriters Laboratories:
Wind Uplift Class 90 - Construction No. 155
Fire Ratings - Multiple listings (see previous page)
Factory Mutual Approval Guide
Non-combustible & Class I Roof Deck Construction
ICBO
Report Nos. 1381 and 3081
Federal Construction Guide Specification
Section 03501 - May, 1975, Insulating Concrete Roof Decks
Corps of Engineers Guide Specification
CEGS-03501 - June, 1988

California State Fire Marshall
Listing 1060-510:2
City and County of San Francisco
General Approval 121 E2.4
City of Los Angeles
Research Report No. 23982
Army Corps of Engineers
September, 1970, CE 204 - Class F
Miami-Dade County (Florida)
NOA No. 08-0331.03
(Expiration: 08/28/2013)

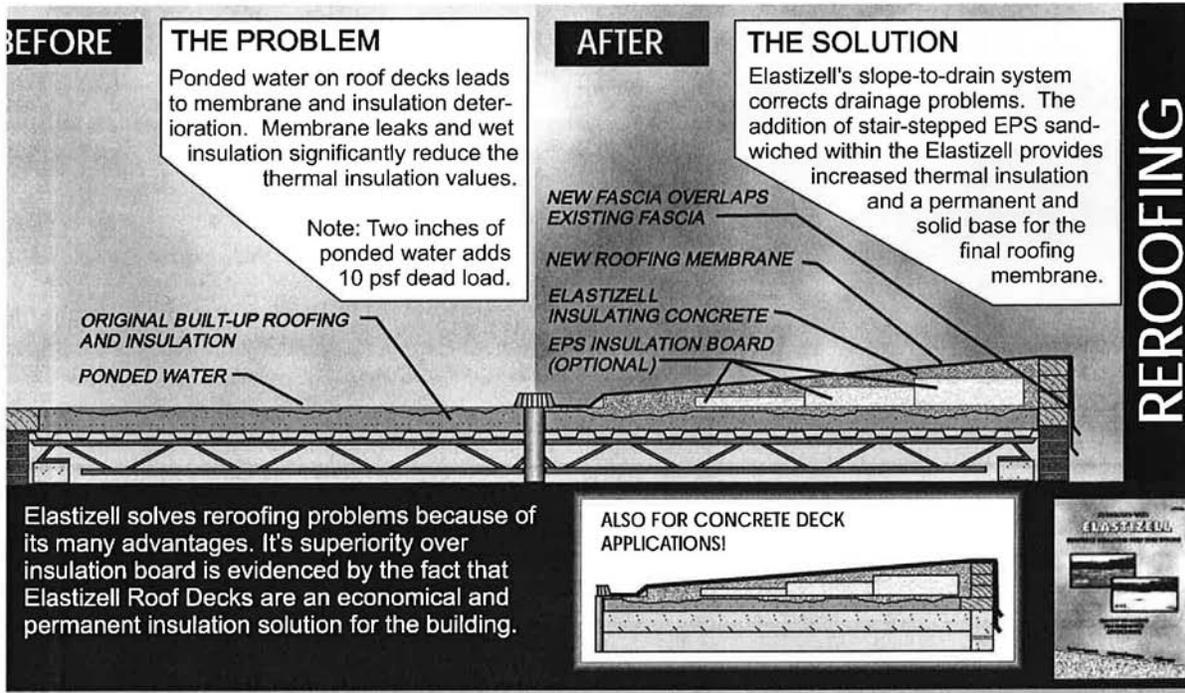
Web links for specific system information

Uplift - FM Global's RoofNav: www.RoofNav.com

Uplift - Miami-Dade County, FL:
<http://www.miamidade.gov/buildingcode/library/productcontrol/noa/08033103.pdf>

Uplift - Florida Building Code (FBC): www.floridabuilding.org/pr/pr_app_srch.aspx

Seismic - ICBO ER 3081: http://www.icc-es.org/reports/pdf_files/UBC/3081.pdf



SUSTAINABILITY: Reducing Environmental Impact

Elastizell Insulating Concrete Roof Decks are accepted as a "Green" product by BuildingGreen Inc., publishers of *Environmental Building News*, *Green Building Advisor*, and *GreenSpec*. This is because Elastizell Roof Decks reduce energy load requirements and facilitate renovations by resloping and increasing R-values. Elastizell Roof Decks are a durable, sustainable, and low-maintenance system. Elastizell Insulating Concrete Roof Decks are listed in the GreenSpec Directory.

Elastizell Insulating Concrete Roof Decks help reduce overall energy consumption by providing permanent insulation that does not suffer from the thermal drift characteristics associated with rigid board insulation. Elastizell Insulating Concrete combined with EPS insulation board provides a heat sink beneath the roofing membrane. This reduces thermal shock from solar heat and then cooling at night or by rain. The reduction of thermal shock lengthens the life of the roofing membrane.

When re-roofing over rigid insulation board, the insulation must be replaced. This is not the case with the Elastizell Insulating Concrete System since only the roofing membrane is replaced.

Elastizell and LEED

Elastizell Insulating Concrete Roof Decks have been used on many LEED approved projects. Elastizell Insulating Concrete Roof Decks may assist with the following LEED points (LEED-NC Green Building Rating System for New Construction and Major Renovation Version 2.2 - October 2005):

Materials & Resources:

MR Credits 1.1 and 1.2: Consider reuse of existing, previously occupied buildings, including structure, envelope, and elements. Maintain 75% of existing walls, floors & roof (Maintain 95% for MR Credit 1.2). (1 or 2 points possible)

MR Credits 3.1 and 3.2: Use salvaged, refurbished, or reused material, products, and furnishings for at least 5% (10% for Credit 3.2) of building materials. (1 or 2 points possible)

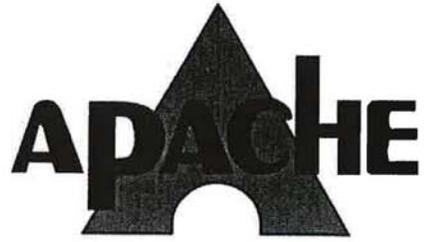
MR Credits 4.1 and 4.2: Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (for MR Credit 4.1, 20% for MR Credit 4.2) of the total value of materials on the project (based on cost). (1 or 2 points possible)

MR Credits 5.1 and 5.2: Use building materials or products that have been extracted, harvested, or recovered, as well as manufactured within 500 miles of the project site for a minimum of 10% (for MR Credit 5.1, 20% for MR Credit 5.2) of the total materials value (based on cost). (1 or 2 points possible)

Energy & Atmosphere:

EA Prerequisite 2: Design the building to comply with ASHRAE/IESNA Standard 90.1-1999 (without amendments) or the local energy code, whichever is more stringent. (Required)

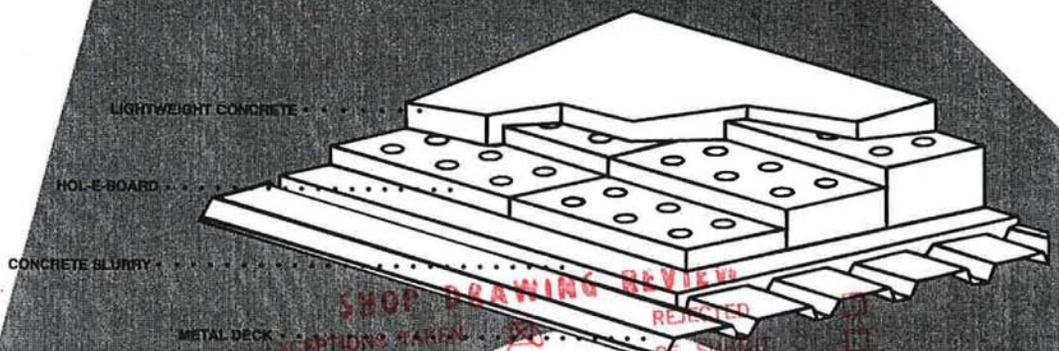
EA Credit 1: Reduce design energy cost compared to the energy cost budget for energy systems regulated by ASHRAE/IESNA Standard 90.1-1999 (without amendment), as demonstrated by a whole building simulation using the Energy Cost Budget Method. (1-10 points possible, depending on improvement in proposed building performance rating over baseline building performance rating).



APACHE PRODUCTS COMPANY

Hol-E-Board

Vented Expanded Polystyrene Insulation
For All Lightweight Concrete Roof Decks



SHOP DRAWING REVIEW
REJECTED

EXCEPTIONS TAKEN

NOTE COMMENTS

REVIEW FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. **ADVANTAGES**

markings or comments shall not be construed as indicating non-compliance with the project plans and specifications. The CONTRACTOR remains responsible for details and accuracy of estimating and correlating all quantities, conditions and dimensions, for selecting fabrication processes, for methods of assembly and construction, and for performing his work in safe manner.

- ▼ Lightweight
- ▼ Fire and Wind Uplift Ratings
- ▼ Easy Installation
- ▼ Slope to Drain Capability
- ▼ Varied Thicknesses
- ▼ Low Moisture Absorption

MEG
SIGNATURE

Date: 4-03-09

MAURICE GRAY ASSOCIATES, INC.

Hol-E-Board

R - V A L U E S

NOM. DENSITY lb. / cu. ft.	N O M I N A L T H I C K N E S S					
	3/4"	1"	2"	3"	4"	5"
1.0#* @40°F	3.13	4.17	8.30	12.50	16.60	20.80
@75°F	2.89	3.85	7.69	11.49	15.38	19.23

*Other nominal densities available on request. Contact Apache plants for price and delivery information.

C O M P L I A N C E S

- ▲ ASTM C-578-92
- ▲ UL Classified Foamed Plastic, R12579
- ▲ Model Building Codes:
ICBO 1712, BOCA 1317, SBCCI 717
- ▲ U.S. Army Corps of Engineers
- ▲ FM 4450



A P A C H E
P R O D U C T S
C O M P A N Y

HEADQUARTERS

107 Service Road
Anderson, South Carolina 29625
(800) 777-3707
FAX (864) 964-2721

PLANT LOCATIONS

Anderson

107 Service Road
Anderson, South Carolina 29625
(800) 922-8043
FAX (864) 964-2783

Lakeland

4500 South Frontage Road
Lakeland, Florida 33801
(800) 242-8879
FAX (813) 682-1702

Miami

1020 South West 69th Avenue
P. O. Box 440488
Miami, Florida 33144
(800) 433-5551
FAX (305) 281-3934

Union

Industrial Park
P. O. Box 160
Union, Mississippi 39365
(800) 530-7762
FAX (601) 774-8330



CORPORATION OF AMERICA

P.O. BOX 1462 ANN ARBOR, MICHIGAN 48106
(734) 761-6900 FAX (734) 761-8016
www.elastizell.com

April 29, 2008

Cellucrete Corporation
11905 NW 99th Avenue
Hialeah Gardens, FL 33018

To Whom It May Concern:

Cellucrete Corporation of Hialeah Gardens, FL is an approved applicator of Elastizell insulating concrete roof decks. Cellucrete installs Elastizell insulating concrete roof decks according to the recommendations and specifications of the Elastizell Corporation of America tempered by their local operating and specific job requirements.

Their personnel have been trained in mix design and application procedures for Elastizell insulating concrete. We are very pleased with their professional attitude, workmanship and general conduct of their business.

Cellucrete Corporation has been an installer of Elastizell insulating concrete roof decks since 1984 -- over twenty-four (24) years of experience.

Very truly yours,
Elastizell Corporation of America

Leo A. Legatski
Leo A. Legatski
President

SHOP DRAWING REVIEW

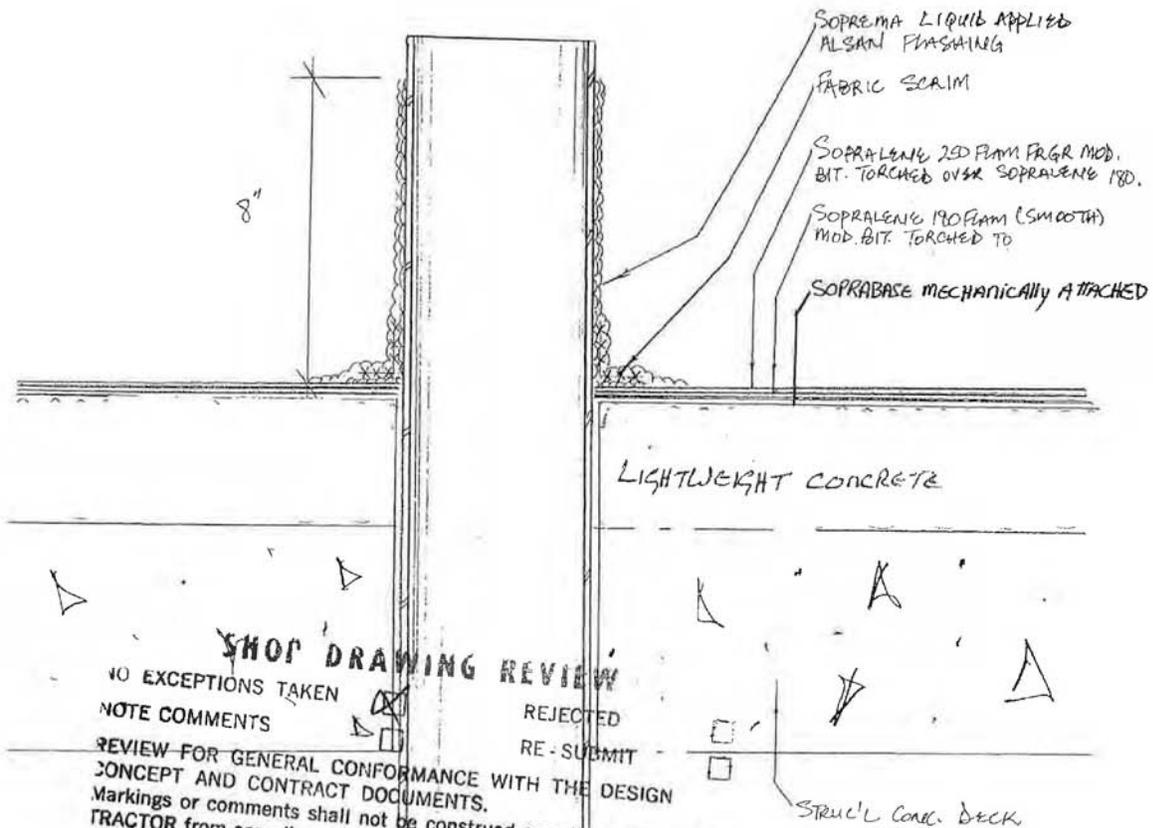
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By *MDG* Date 4-23-08
SIGNATURE

MAURICE GRAY ASSOCIATES, INC.

SOPREMA PIPE PENETRATION DETAIL



SHOP DRAWING REVIEW

NO EXCEPTIONS TAKEN

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Signature: MEY Date: 4-03-09

MAURICE GRAY ASSOCIATES, INC.

END OF SECTION