INVITATION TO BID #2017-16
Public Safety Training Center Roof Replacement ("BID")
RESPONSE TO CLARIFYING QUESTIONS
April 17, 2017

Note that these are questions submitted by interested firms to the above referenced solicitation. The below answers are for clarification purposes only and in no way alter or amend the BID as published.

1. **Question:** What is the current deck framed with?

   Answer: Range area is concrete topping slab over pan (metal) deck. Other areas plywood sheathing on TJI and open joist trusses.

2. **Question:** What type of roof are we to replace the existing with?

   Answer: TPO with Firestone Building Product as the design basis.

3. **Question:** Are there specific hours that the contractor is allowed to work?

   Answer: Work hours are varied. This is an active training and public shooting range with Monday and Tuesday closures, Thursday and Friday early afternoon openings. Additionally, police training may be scheduled on 'closed' days. No work will be permitted while the range is open. The County proposes full standard hour work days during complete range closures, and an early start and end time on other days. Specific times will be discussed and approved at the pre-con meeting.

4. **Question:** Are there specific completion dates?

   Answer:
   Key Dates:
   Commencement Date: Upon issuance of Notice to Proceed
   Substantial Completion Date: September 01, 2017
   Final Completion Date: September 30, 2017

5. **Question:** Will you approve a substitution for the TPO Single Ply Mem with JM TPO 80-Mil Roofing System mechanically attached?

   Answer: Yes, please find the attached approved substitution request.

End of Clarifying Questions

Advancement of Construction Technology

The Construction Specifications Institute
Northwest Region

SUBSTITUTION REQUEST

TO: Clackamas County Procurement - Steven Bloemer, Ryan Rice

PROJECT: Public Safety Training Center Roof Replacement Project - #2017-16

SPECIFIED ITEM: TPO 80mil Firestone ASTM D6878

07 54 23	2	2.2 (A.)	Roofing System: Thermoplastic poleolefin (TPO) single ply mem
Section	**Page**	**Paragraph**	**Description**

PROPOSED SUBSTITUTION: JM TPO 80-Mil Roofing System Mechanically Attached

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request. Applicable data is clearly identified.

Attached data also includes description of changes to Contract Documents the proposed substitution requires for its proper installation.

Undersigned certifies following items, unless modified by attachments, are correct:

1. Proposed substitution does not affect dimensions shown on drawings.
2. Undersigned will pay for changes to building design, including engineering design, detailing, and construction costs caused by proposed substitution.
3. Proposed substitution has no adverse effect on other trades, construction schedule, or specified warranty requirements.
4. Maintenance and service parts are available locally or are readily obtainable for proposed substitution.

Undersigned further certifies the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Undersigned agrees, if this page is reproduced, the terms and conditions for substitutions found in Bidding Documents apply to this proposed substitution.

Submitted by:

Michael Minturn

Signature

Roofing Solutions Group - JM Representative

Firm Name

P.O. Box 226

Address

Washougal, WA 98671

City, State, Zip

4/10/2017

Date

360-335-1680 Telephone

360-336-1670 Fax

General Contractor (if after award of Contract)

For use by A/E

Approved (circled) Approved as Noted

Not Approved Received Too Late

By Steven Bloemer CCFM Coordinator

Date 11APR17

Remarks Mechanical fasten only

1995 Edition

List of Attachments:

April 10, 17

Steven Bloemer, Ryan Rice
Clackamas County Procurement Division
Clackamas County Public Services Building
2051 Kaen Road
Oregon City 97045

Re: Public Safety Training Center Roof Replacement #2017-16 Project
Johns Manville Substitution Request - Section 07 54 23 – TPO Roofing

Dear Steven and Ryan:

At the request of bidding contractors, I am submitting a Johns Manville (JM) Substitution Request for the roofing system on the above referenced project. Included with this cover page is a Substitution Request Form and accompanying data for the roofing system. After careful review of the project specifications and plans, I am able to confirm with certainty that the proposed JM substitution will meet and/or exceed the specified system. No changes to the project are required as a result of the approval of the JM system.

JM TPO 80-mil Roofing System Mechanically attached:

- **JM TPO 80-mil membrane:** No changes to the project are required as a result of the approval of the JM system.
- **JM Invinsa FR Roof Board:** JM Invinsa FR Roof Board shall be installed – as specified. (High-Density Polyiso ¼-inch 150 psi)

The completed system will satisfy JM requirements for the specified Manufacturer 20 year “Full System No Dollar Limit” Guarantee.

I hope you find the above information helpful. Should you have any questions regarding this substitution request, please do not hesitate to call. And thank you for your time in consideration of this matter.

Respectfully,

Michael Minturn – JM Representative
Roofing Solutions Group
Tel: 360-335-1680
E-mail: mmint@roofingsg.com

cc: JM Technical Department

Attachments:

- Substitution Request Form
- JM Cover Letter
- JM TPO 80-mil Sheet Membrane – Data Sheet
- JM Invinsa FR ROOF BOARD – Data Sheet

JM TPO — 80 MIL

Thermoplastic Polyolefin Membrane

Meets or exceeds the requirements of ASTM D 6878

Features and Components

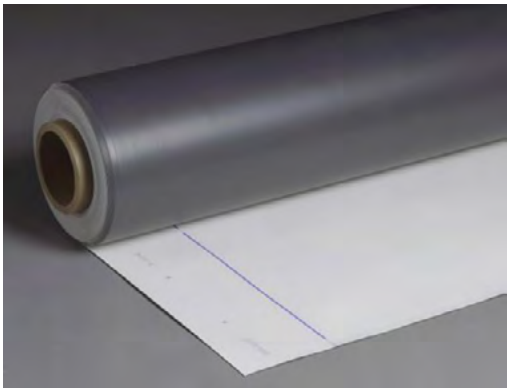
Thickness Over Scrim: Optimized and tested on a continual basis with a state-of-the-art thickness gauge to verify that the thickness valued by our customers is incorporated into the sheet.

One of the Widest Melt Windows: Promotes better welds over a wider variety of speeds and temperatures, and leads to a softer, more flexible and workable sheet.

Reinforced fabric scrim layer and top-ply thickness: Lends to durable physical properties including:

- Long-term weathering, UV resistance and heat-aging properties
- High breaking and tearing strength

Optimized TPO formulation: delivers high-performance ozone resistance, cool roof reflectivity and overall weather resistance.



Component

M
Membrane

Single Ply

Colors

Grey*	White	Tan*

**Grey and Tan lead times are subject to availability and may require an upcharge for smaller projects.*

System Compatibility

This product may be used as a component in the following systems. Please reference product application for specific installation methods and information.

Multi-Ply	BUR		APP		SBS			
	HA	CA	CA	HW	HA	CA	HW	SA
	Do not use with Multi-Ply systems							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Compatible with the selected Single Ply systems above						

Key: **HA** = Hot Applied **CA** = Cold Applied **HW** = Heat Weldable **SA** = Self Adhered **MF** = Mechanically Fastened **FA** = Fully Adhered **BA** = Ballasted

Energy and the Environment

Standard			Reflectivity	Emissivity
CRRC®	White	Initial	0.77	0.87
		3 Yr. Aged	0.70	0.86
	Tan	Initial	0.67	0.87
		3 Yr. Aged	0.62	0.90
	Gray	Initial	0.35	0.87
		3 Yr. Aged	Pending	Pending
CA Title 24	White	Pass	0.77	0.87
ENERGY STAR®	White	Initial	0.78	0.87
		3 Yr. Aged	0.68	
	Tan	Initial	0.67	0.87
		3 Yr. Aged	0.62	
LEED® (SRI)	White	Initial	101	
		3 Yr. Aged	85	
	Tan	Initial	81	
		3 Yr. Aged	75	
	Gray	Initial	39	
		3 Yr. Aged	Pending	
Recycled Content	Post-consumer		0%	
	Post-industrial		5%	

The LEED® Solar Reflectance Index (SRI) is calculated per ASTM E1980.

Peak Advantage® Guarantee Information

Product	Guarantee Term
JM TPO 80	5, 10, 15, 20, 25, or 30 yrs

Codes and Approvals

CLASSIFIED UL US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Installation/Application

Fully Adhered | Mechanically Fastened | Hot Air Weld

Refer to JM TPO application guides and detail drawings for instructions.

Packaging and Dimensions

Roll Widths	5' (1.52 m)	8' (2.44 m)	10' (3.05 m)
Roll Lengths	75' (22.86 m)		
Roll Coverage	375 ft² (34.84 m²)	600 ft² (55.74 m²)	750 ft² (69.68 m²)
Rolls per Pallet	8		
Pallet Weight	1,384 lb (627.8 kg)	2,210 lb (1,002 kg)	2,760 lb (1,251.9 kg)
Pallets per Truck*	36	24	16
Producing Location	Scottsboro, AL		

*Assumes 48' flatbed truck and does not reflect pallets of accessories or impact of mixed sizes.

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

RS-8634 1-16 (Replaces 9-15)

JM TPO – 80 MIL

Thermoplastic Polyolefin Membrane

Meets or exceeds the requirements of ASTM D 6878

Tested Physical Properties

Physical Properties		ASTM Test Method	Standard for ASTM D 6878 (Min.)	JM TPO – 80 mil	
				MD*	XMD**
Strength	Breaking Strength, min, lbf (N)	D 751	220 (976)	464 (2,064)	439 (1,953)
	Elongation at Break, min %	D 751	15	29	31
	Tearing Strength, min, lbf (N)	D 751	45 (200)	65 (289)	179 (796)
	Factory Seam Strength, min, lbf (N)	D 751	66 (290)	137 (609)	
Longevity	Thickness, min, in.	D 751	+/- 10% from Nominal	0.080 (Nominal)	
	Thickness Over Scrim, min, in. (mm)	D 7635	0.015	0.033 (0.84)	
	Water Absorption, max, %	D 471	3.0	0.03	
	Brittleness Point, max, -40°F	D 2137	No Cracks	Pass	
	Ozone Resistance	D1149	No Cracks	Pass	
Heat Aged Performance	Properties after Heat Aging @ 240°F	D 573	Pass/Fail	Pass	
	Breaking Strength, % (after aging)	D 751	90	>90	>90
	Elongation, % (after aging)	D 751	90	>90	>90
	Tearing Strength, % (after aging)	D 751	60	>60	>60
	Weight Change, max, % (after aging)	D 751	±1.0	0.22	
	Linear Dimensional Change, max, % (after 6 hrs @ 158°F)	D 1204	±1.0	<0.1	
Weather Performance	Accelerated Weathering, min	G 151 & G 155	10,080 kj/m^2•nm @ 340 nm (4,000 hrs @ 0.70 W)	>20,160 kj/m^2 (>8,000 hrs)	
	Cracking (@ 7x magnification)	G 155	No Cracks	Pass	

*MD = Machine Direction
**XMD = Cross-Machine Direction
Note: All data represents tested values.

Supplemental Testing

Physical Properties	ASTM Test Method	Standard for ASTM D 6878 (Min.)	JM TPO – 80 mil Result
Dynamic Puncture	D 5635	N/A	Pass @ 25 Joules
Static Puncture	D 5602	N/A	Pass @ 44 lb (20 kg)
Impact Resistance of Bituminous Roofing Systems	D 3746	N/A	Pass - minor indentations
Reflectance	C 1549	N/A	78%
Emittance	C 1371	N/A	0.87
Resistance of Synthetic Polymer Material to Fungi	G 21	N/A	0 rating
Puncture Resistance (FTMS 101C, Method 2031)	N/A	N/A	526 lb (239 kg)
Moisture Vapor Transmission	E 96	N/A	0 g/m^2 per 24 hours
Hydrostatic Resistance, Mullen	D 751	N/A	474 PSI (3268 kPa)

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

INVINSA® FR ROOF BOARD

High-Density Polyiso for Combustible Decks

Meets the requirements of ASTM C 1289, Type II, Class 4, Grades 1, 2, and 3

Features and Components

High-Density Polyisocyanurate Foam Core: Closed cell polyisocyanurate foam technology provides additional insulation value, with lightweight and low water absorption characteristics.

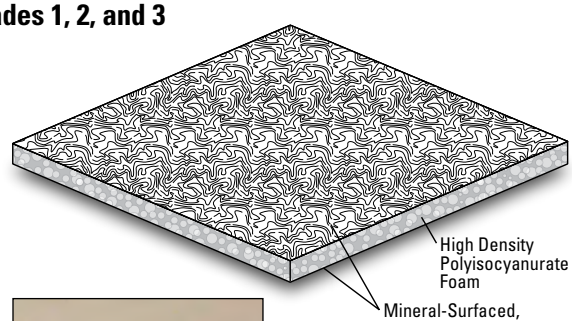
Mineral Coated Fiber Glass-Reinforced Facers: Bonded in-line to the polyisocyanurate foam core to provide a smooth, strong surface for better membrane adhesion without the need for priming, with enhanced water resistance that will not support mold growth. The premium tan facer allows for UL Class A wood deck applications.

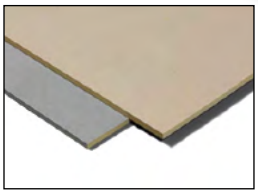
Lightweight: Offers labor and installation efficiencies and allows more options for situations where the overall weight is a concern. This also means easy hoisting, staging and maneuvering around the roof.

Flexibility: Means less breakage during handling, and in re-roof applications it allows Invinsa to accommodate minor irregularities in existing roof decks.

User Friendly: Invinsa allows easy & efficient scoring, cutting and snapping which permits fast, tight fabrication and all in a low dust environment.

Resistance To Damage: High impact, flexural and compressive strength provides a protective layer for insulation while working with the membrane above to ensure maximum performance and longevity.





Note: Tan premium facer must be orientated downward on the roof deck. Grey facer is always installed up.

Component

B Cover Board

Single Ply

Type

PF Poly Foam

LT Low Thermal

HD High Density

System Compatibility

This product may be used as a component in the following systems. Please reference product application for specific installation methods and information.

Multi-Ply								
BUR		APP		SBS			
HA	CA	CA	HW	HA	CA	HW	SA
Compatible with the selected Multi-Ply systems above							

Single Ply						
TPO		PVC		EPDM		
MF	FA	MF	FA	MF	FA	BA
Compatible with the selected Single Ply systems above						

Key: **HA** = Hot Applied **CA** = Cold Applied **HW** = Heat Weldable **SA** = Self Adhered **MF** = Mechanically Fastened **FA** = Fully Adhered **BA** = Ballasted

Energy and the Environment

LEED®	Recycled Content	Pre-Consumer: 3.7%
		Post-Consumer: 0%

Peak Advantage® Guarantee Information

Systems	Guarantee Term*
When used in most JM single ply systems	10, 15 or 20 years

* Contact JM Technical Services for specific systems or terms over 20 years.

Codes and Approvals

CLASSIFIED C UL US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Installation/Application

Urethane Adhesive

Mechanically Fastened

Refer to the Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Sizes	4' x 4' x ¼" (1.22 m x 1.22 m x 6.35 mm)	4' x 8' x ¼" (1.22 m x 2.44 m x 6.35 mm)
Board Weight	6.5 lb (2.95 kg)	13 lb (5.9 kg)
Coverage/Pallet	480 ft²	960 ft²
Boards/Pallet	30	30
Pallet Weight	200 lb (90.7 kg)	400 lb (181 kg)
Pallets per Truck*	192	96
Producing Locations	Cornwall, ON	Fernley, NV

* Assumes 48' flatbed truck.

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

INVINSA® FR ROOF BOARD

High-Density Polyiso for Combustible Decks

Meets the requirements of ASTM C 1289, Type II, Class 4, Grades 1, 2, and 3

Typical Physical Properties

Test		ASTM	Invinsa FR Roof Board
Strength	Compressive Strength, psi (kPa), *nom*	D 1621	150 (1,034)
	Flexural Strength Modulus of Rupture, psi (kPa), *nom* Breakload, lbf (kN), *nom*	D 1037	 1500 (10,343) 25 (0.111)
	Dimensional Stability, % Linear Change, *max*	D 2126	<1
Moisture	Moisture Vapor Permeance, perm (ng/(Pa•s•m²)), *max*	E 96	<1 (<57.5)
	Water Absorption, % by vol, *max*	C 209	<4.0
	Surface Water Absorption, gram, *max*	C 473	<1
	Mold Resistance	D 3273	Pass
Installation	Weight, lb-ft² (kg-m²), *nom*	N/A	0.406 (1.96)
	Weight per board (4' x 8'), lb (kg), *nom*	N/A	13 (5.9)

Thermal Performance

Thickness		Nominal R-Value (Resistance)	
in	mm	(hr•ft²•°F)/BTU	m²•°C/W
¼	6.35	1.2	0.21

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.