

## THE ULTIMATE STRUCTURAL SYSTEM

JANUARY 2013

# Roof Deck Systems

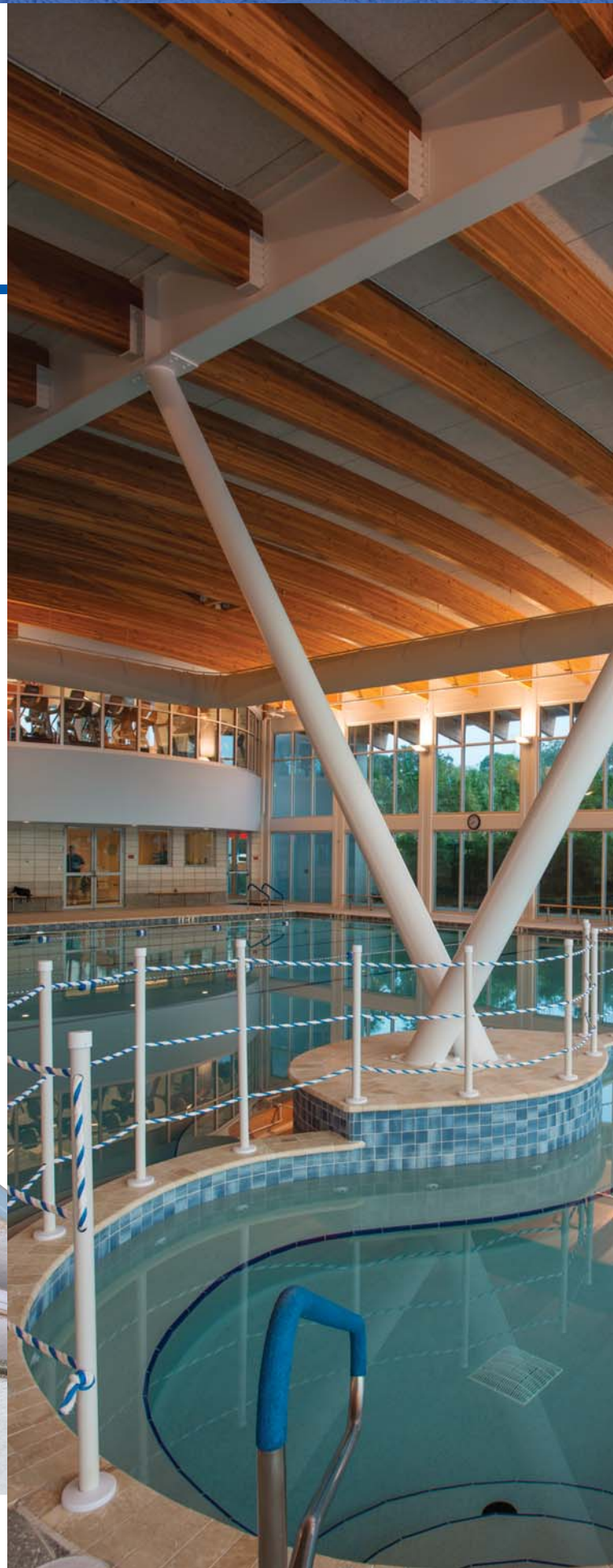
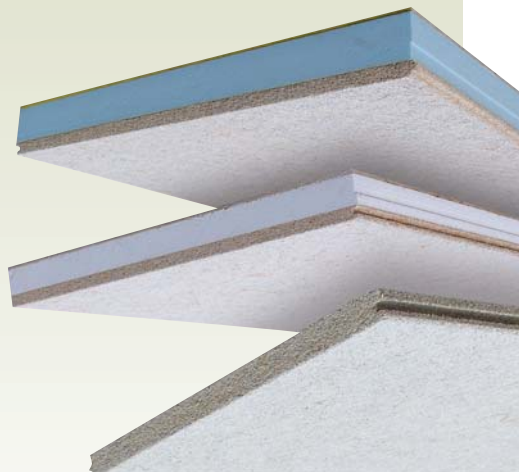
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*Tectum panels are made from renewable and sustainable raw materials.*



## ROOF DECK PANELS

Tectum™ panels are composed of aspen wood fibers (excelsior) bonded with an exclusive inorganic hydraulic cement and are formed in a continuous process under heat and pressure. Tectum panels combine several materials to create a decorative product that provides excellent sound absorption, abuse resistance, insulation and a textured interior finish. These panels are structurally sound and lightweight and can be used either alone or as the underside of a composite panel to form a limited combustible roof deck system. A silicone treatment to the panel resists water and water migration. There are no urea formaldehydes or CFCs in any Tectum product or composite.

Tectum roof deck panels are available in natural (color may vary), white or custom colors.

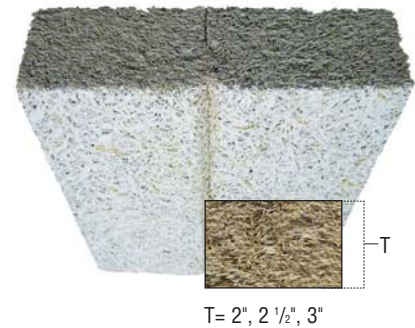
**NOTE: There is no asbestos, nor has there ever been any asbestos, used in Tectum products.**

**Tectum is a registered trademark of Tectum Inc.**

### TECTUM I

Tectum I roof deck is typically used in low slope applications and provides a thermal barrier for field-applied foam plastics. It is compatible with virtually all roof installation materials. Underside exposed joints have attractive beveled edges. LS (long span) panels available with steel channel reinforcement.

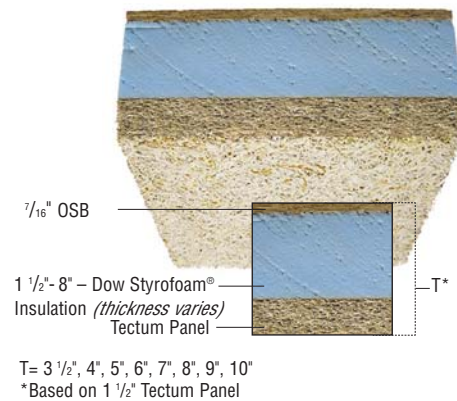
The Tectum I roof deck system consists of standard TECTUM panels in either plank or tile configurations. *See pgs. 3 and 5 for more about Tectum Roof Deck Systems.*



### TECTUM III

The Tectum III roof deck panel is a composite of a 1 1/2" or thicker Tectum I substrate, Dow Styrofoam® brand XPS (extruded polystyrene) insulation 1 1/2" to 8" thick and 7/16" OSB (oriented strand board) sheathing with a slip-resistant surface (*see pg. 3*). Components are bonded with code-listed structural adhesives.

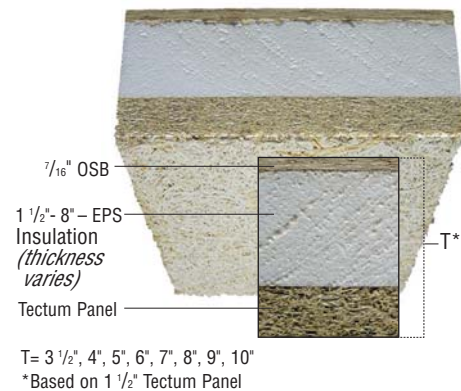
Tectum III panels are typically used in sloped applications where insulation and a nailable surface are required.



### TECTUM E

The Tectum E roof deck panel is a composite of a 1 1/2" or thicker Tectum I substrate, EPS (expanded polystyrene) insulation and 7/16" OSB sheathing with a slip-resistant surface (*see pg. 3*). Components are bonded with code-listed structural adhesives.

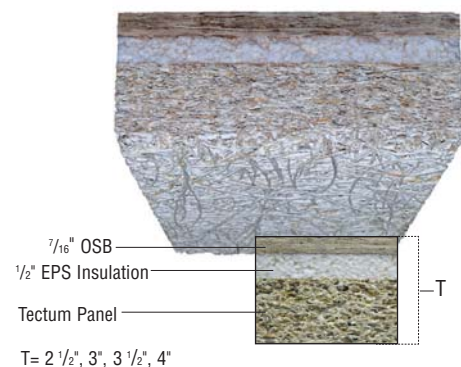
The EPS core exceeds the requirements of ASTM C-578 Type I and bears the UL classification mark.



### TECTUM NS

The Tectum NS (nailable surface) roof deck panel is a composite of a 1 1/2" or thicker Tectum substrate, 1/2" thick EPS (expanded polystyrene) insulation and 7/16" OSB sheathing with a slip-resistant surface (*see pg. 3*). Components are bonded with code-listed structural adhesives.

Tectum NS Panels are typically used in sloped applications where minimal insulation is required, such as outdoor pavilions.



## TECTUM ROOF DECK PANELS AT WORK

Tectum Roof Deck Systems are delivering attractive noise- and abuse-resistance in thousands of installations every day. Chosen for superior performance, Tectum delivers the best in commercial design, longevity and acoustical function to schools and civic applications throughout the country.



**NORTHSIDE CHRISTIAN, NEW ALBANY, IN**  
*(Tectum I Roof Deck painted black)*



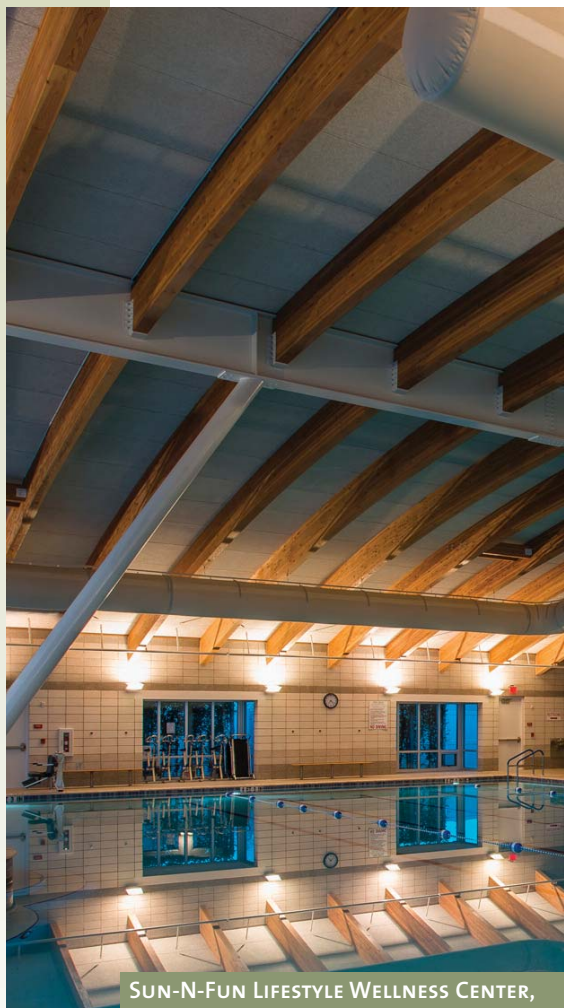
**LORAIN COUNTY METRO PARK, LA GRANGE, OH**  
*(Tectum III Roof Deck over steel)*

### LIMITED WARRANTY

We at Tectum Inc. believe the information and recommendations herein to be accurate and reliable and the products mentioned herein are fit for the recommended purposes. However, as use conditions are not within its control, Tectum Inc. does not guarantee results from use of such products or other information herein.

Tectum Inc. assumes full responsibility for its products and systems when installed and erected by an approved contractor in accordance with the published recommendations at the time of the purchase. No responsibility will be assumed for other applications not referred to in the literature. Liability is limited to a refund of the purchase price or replacement of the material.

As governmental regulations and use conditions may change, it is the buyer's responsibility to determine the appropriateness of the seller's products for the buyer's specific end uses.



**SUN-N-FUN LIFESTYLE WELLNESS CENTER, SARASOTA, FL**  
*(Tectum IIIIP Roof Deck over wood)*  
*Dickinson Studios, Sarasota, FL*



**DURANES ELEMENTARY, ALBUQUERQUE, NM**  
*(Tectum E Roof Deck painted custom colors)*



**LA ROMANA AIRPORT, CASA DE CAMPO, DOMINICAN REPUBLIC**  
*(Tectum III Roof Deck in a covered outdoor application)*

## TECTUM ROOF DECK DESIGN GUIDELINES

### DESIGN LOAD DATA\*\*

SPAN IN INCHES BASED ON NOMINAL 3" WIDE STRUCTURAL SUPPORT MEMBERS DEFLECTION L/240 OR LESS.  
CONTACT TECTUM INC. FOR RECOMMENDED SPANS WHEN USED IN HIGH-HUMIDITY APPLICATIONS.

System	Thickness***	Wt. (psf)***	Product	24"	30"	36"	38"	40"	42"	44"	48"	50"	52"	54"	60"	66"	72"	84"	96"		
Plank	2"	3.5	I	130	75	50	45	40	35												
	2 1/2"	4.5	I	150	120	80	70	60	50	45	35										
	3"	5.3	I	200	125	102	91	82	74	65	50	45	40	35							
LS Plank	2"	3.8	I	130	75	75	75	70	64	57	50	45	40	35							
	2 1/2"	4.7	I	150	120	120	120	114	103	93	77	70	65	60	50	35					
	3"	5.5	I	200	125	125	125	125	120	115	110	104	96	88	71	58	50				
Comp. Plank	3 1/2"	4.4	III	200	180	165	150	135	125	115	95	85	75	70	60	55	50				
	4"	4.4	III		200	195	175	155	140	120	110	100	95	85	70	60	50	35			
	5"	4.6	III						200	175	135	125	115	105	85	70	60	50	35		
	6", 7"	4.8, 4.9	III								200	180	170	160	150	125	105	75	60		
NS Plank	2 1/2"	4.1	NS	200	125	100	90	80	74	65	50										
	3"	5.1	NS	200	195	135	120	110	100	90	75	70	65	60	50						
	3 1/2", 4"	6.1, 6.9	NS		200	195	175	155	140	120	110	100	95	85	70	60	50				
E Plank	2 3/4"	4.2	E	200	125	100	90	80	74	65	50										
	3 1/2"	4.2	E	200	150	135	120	110	100	90	75	70	65	60	50						
	4"	4.3	E	200	180	165	150	135	125	115	95	85	75	70	60	55	50	35			
	5"	4.4	E		200	195	175	155	140	120	110	100	95	85	70	65	60	45			
	6", 7"	4.4, 4.5	E								200	180	170	160	150	125	105	75	60		
	8", 9", 10"	4.6, 4.7, 4.8	E												200	165	130	100	75		

\* Contact Tectum Inc. when designing high-humidity environments such as pools and ice arenas.

\*\* All published design loads are based on minimum safety factor of four. For example, 50 psf design load has an ultimate load of 200 psf.

\*\*\* Thickness and weight are nominal. For loads greater than 200 lbs., contact Tectum Inc.

### DIAPHRAGM DESIGN DATA

#### TECTUM ROOF DECK FASTENER SPACING SCHEDULE

Type	Panel Size Depth x Width x Length	Test No.	Joist	Span <sup>4</sup>	Fasteners	Field Spacing <sup>2</sup>	Perimeter	Adhesive <sup>1,3</sup>	Grout	ULT/ LF	DSN/ LF
T-I Plank	3"x31"x96"	88-3113-1	Steel	48"	S-25/2" Washer	3/Joist/Panel	16" o.c.	No	None	825	275
T-I Plank	3"x31"x96"	88-3113-1	Steel	48"	S-25/2" Washer	3/Joist/Panel	16" o.c.	T&G + Joist	None	1350	450
T-I LS	2 1/2"x31"x120"	94-30037D	Wood	60"	3 1/4" 14 Gauge Scr/2"w	2/Joist/Panel	10" o.c. sides + ends	T&G + Joist	None	1170	389
T-I LS	3"x31"x144"	94-30037D	Wood	72"	4 1/2" 14 Gauge Scr/2"w	2/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	860	286
T-I LS	2"x31"x96"	94-30270	Wood	48"	3 1/4" 14 Gauge Scr/2"w	2/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	964	321
T-I LS <sup>5</sup>	3"x31"x144"	02-030070B	Wood	72"	4 1/2" 14 Gauge Scr/2"w	2/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	1631	542
T-I Tile	2"x23 1/2"x143"	88-3113-1	Steel	72"	112 Ts/112 x Ts	24" o.c.	112 Ts	No	4 Sides	925	313
T-I Tile	2"x31 1/2"x95"	88-3113-1	Steel	96"	168 Ts/112 x Ts	32" o.c.	168 Ts	No	4 Sides	575	200
T-I RT/TG	2"x31 1/2"x96"	91-3222	Steel	96"	000-5-14-2+S-25/2"w	32" o.c. + 2/Joist	S-25@16" + 3/End	T&G + Per	Long Edge	696	231
T-I Tile	2"x31 1/2"x95"	94-30037H	Steel	96"	000-5-14-2+S-25/2"w	2/Joist	10 1/2" o.c.	Joist	Long Edge	835	278
T-I Tile <sup>5</sup>	2"x31 1/2"x96"	02-030070A	Steel	96"	218 Ts/3 1/4" 14 Gauge/2"w	2/Joist/panel	12" o.c. sides + ends	Joist	Long Edge	1530	509
T-III Plank	3 1/2"x47"x144"	94-30037A	Wood	72"	6" 14 Gauge Sip Scr	3/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	1068	355
T-III Plank	3 1/2"x47"x120"	94-30037B	Wood	60"	6" 14 Gauge Sip Scr	3/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	1093	363
T-III Plank	5"x47"x144"	94-30037E	Wood	72"	6" 14 Gauge Sip Scr	3/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	964	320
T-III Tile	3 1/2"x47 1/2"x96"	95-30060	Steel	96"	000-3-14-3 1/2"+14GA/1 1/2" w	3/Joist/Panel	12" o.c. sides + ends	Joist	Long Edge	939	312
T-E Plank	4"x47"x144"	94-30037C	Wood	72"	6" 14 Gauge Sip Scr	3/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	1042	346
T-E Plank	5"x47"x168"	98030199	Wood	84"	6" 14 Gauge Sip Scr	3/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	1012	336
T-E Plank	5"x48"x96"	98030321	Wood	96"	6" 14 Gauge Sip Scr	4/Joist/Panel	12" o.c. sides + ends	T&G + Joist	None	604	201
T-III Plank/ Overlay	5"x47"x144"		Wood	72"	6" 14 Gauge Scr/1 1/2" w	6/Joist/Panel	6" o.c. sides + ends	T&G + Joist	None		
T-E Plank/ Overlay	7/16"x48"x144"	92-3777	OSB	—	2"x 16 Gauge Staples	8"@24" Centers	4" o.c. sides + ends	Per&24" o.c.	None	2363	786
T-E Plank/ Overlay	5"x47"x96"		Wood	96"	6" 14 Gauge Sip Scr	4/Joist/Panel	8" o.c. sides + ends	T&G + Joist	None		
T-E Plank/ Overlay	7/16"x48"x96"	98030262	OSB	—	2"x 16 Gauge Staples	8"@24" Centers	4" o.c. sides + ends	Per&24" o.c.	None	1315	437

NOTES: 1. Adhesive is to meet the requirements of AFG-01. A 3/8" bead of adhesive is to be used. Approximately 50 linear feet of adhesive per quart tube.

2. All panels were installed with staggered ends except Tectum I tile with 168 bulb tees and Tectum III tile on truss tees.

3. Specific adhesive used on test assemblies was Miracle Construction adhesive SFA-66.

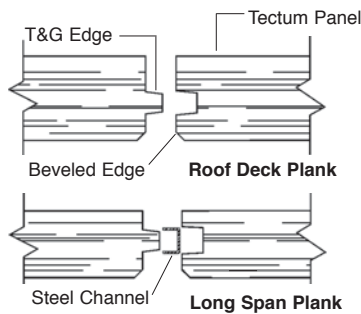
4. Values over wood joists are conservative when supports are steel.

5. Visit our Web site to download technical bulletin T-77 for more information. Call for assistance when designing and detailing this Tectum roof deck system.

For Technical Assistance Call: 888-977-9691

## TECTUM I PLANK, TILE, CTD AND TECTUM IIIP

### TECTUM I ROOF DECK PLANK AND LONG SPAN PLANK



Tectum **Roof Plank** with a T&G edge is available in all Tectum roof deck systems.

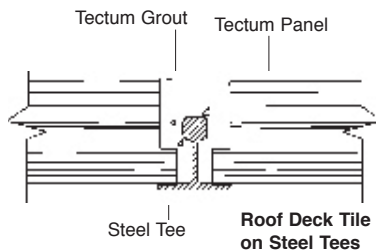
Tectum **Long Span Plank**, available only in Tectum I panel, uses a 16 gauge galvanized steel channel for increased spans.

These products are typically used in low-slope applications.

## TECTUM PANEL SIZES

Edge Detail	Thickness	Width x Length	Tectum Panels
T&G Sides w/ Square Ends	All	23" x 48 - 144"	I, III, E, NS

### ROOF DECK TILE

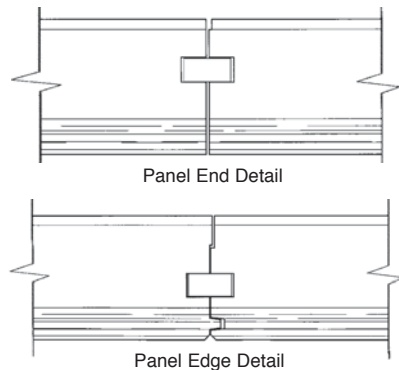


Tectum **Roof Deck Tile** uses any of the Tectum panels to span between steel bulb tees.

The rabbeted edges of Tectum tile rest on steel tee flanges. Spaces between tile and tees are filled with Tectum grout for excellent anchorage and wind uplift resistance. Custom lengths allow roof design with no exposed end joints.

Edge Detail	Thickness	Width x Length	Tectum Panels
Rabbeted Sides w/ Square Ends	All	23 1/2" x 48 - 144"	I, III, E, NS
	All	31 1/2" x 48 - 144"	I
	Over 2 1/2"	47 1/2" x 48 - 144"	I, III, E, NS
Rabbeted Sides w/ T&G Ends	All	23 1/2" x 48 - 96"	I
	All	31 1/2" x 48 - 96"	I
	Over 2 1/2"	47 1/2" x 48 - 96"	I, III, E, NS

### TECTUM IIIP\*



Tectum **IIIP** roof deck has an edge detail specifically designed for use over high-humidity applications such as swimming pools and ice arenas. This detail, when properly sealed with urethane adhesive, provides for a continuous vapor retarder from panel to panel in all directions.

\* Contact Tectum Inc. when designing high-humidity environments such as pools and ice arenas.

Edge Detail	Thickness	Width x Length	Tectum Panels
T & G sides with spline	5" up to 10"	47" x 48 - 144"	IIIP

WHAT-A-BURGER,  
CORPUS CRISTI, TX  
(Tectum E Roof Deck)



## PRODUCT SELECTOR

	TECTUM I PLANK	TECTUM III/E/NS	TECTUM LS	ROOF DECK – LWIC	TECTUM I – CTD
<b>SPANS</b>					
Up to 48"	✓	✓	✓	✓	✓
Up to 72"		✓	✓	✓	✓
Up to 96"		✓			✓
Up to 120"	✓ ( Bulb tee and tile)				✓
<b>DIAPHRAM/SHEER</b>					
Up to 312 dsn/lf	✓	✓	✓	✓	✓
Up to 389 dsn/lf	✓	✓	✓	✓	
Up to 450 dsn/lf	✓	✓		✓	
Up to 542 dsn/lf		✓		✓	
Up to 786 dsn/lf		✓			
<b>ACOUSTICS (NRCs)</b>					
Up to .60	✓	✓	✓	✓	
Up to .70	✓		✓	✓	
Up to .80	✓		✓	✓	✓
<b>R-VALUE</b>					
Up to 5.25	✓	✓	✓	✓	✓
Up to 44		✓			
<b>AVAILABLE SURFACE</b>					
		✓		✓*	
<b>SLOPED APPLICATION</b>					
		✓			

\* Special fasteners for roofing felt attachment

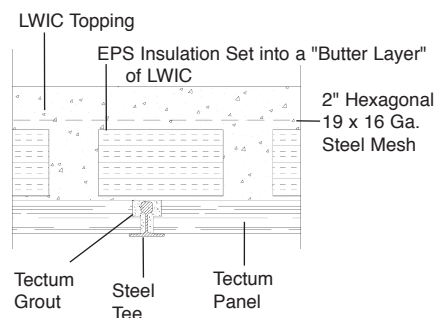
## TECTUM ROOF DECK – LIGHTWEIGHT INSULATING CONCRETE

Tectum Roof Deck – LWIC System uses Tectum roof plank and tile to provide a unique and structural substrate for LWIC (Lightweight Insulating Concrete) topping. This system can be used over steel or wood structural systems.

The porous nature of Tectum decks allows the LWIC to dry from the underside of the LWIC slurry. The result is a structural, acoustical deck with permanent insulation. The deck can be re-roofed without costly replacement and disposal of the existing insulation.

This roof deck system has proven long lasting and economical for flat and low slope roof decks. It is an ideal solution in areas where higher allowable shear values are required.

### Structure of Tectum Roof Deck with LWIC



INSTALLATION OF LIGHTWEIGHT INSULATING CONCRETE OVER A TECTUM I ROOF DECK.

## TECTUM ROOF DECK DESIGN DATA

### ROOF DECK TILE SYSTEMS LOAD CHARACTERISTICS – PSF

Tile Thickness	Wt. (psf)	Product	Spacing of Bulb Tees***			Span*
			24" Nom.	32" Nom.	48" Nom.	
1 1/2"	2.4	I	50	–	–	**
2"	3.5	I	90	50	–	**
2 1/2"	4.5	I, NS	140	80	–	**
3"	5.3	I, NS	150	100	50	**
3 1/2"	4.4	III, E, NS	150	–	70	**
4"	4.6	III, E, NS	150	–	100	
5"	5.0 + up	III, E	150	–	120	

- \* Spans up to 12" as determined by size of bulb tee.
- \*\* Spans must be determined from subpurlin manufacturer's design catalog. The limiting design load is the smaller span capacity of the design loads for either the Tectum panel or the bulb tee. See bulb tee spacing at right.
- \*\*\* Special tile widths available to fit existing bulb tee spacings.

### SUBPURLINS SPACING <sup>2</sup>

Nom. Tile Width	Actual Tile Width <sup>3</sup>	Bulb Tee Spacing					
		112"	158"	168"	178"	218"	228"
24"	23 1/2"	24"	24"	24"	24"	24"	24 1/2"
32"	31 1/2"	31 3/4"	31 3/4"	31 3/4"	32"	32"	32 1/4"
48"	47 1/2"	47 3/4"	47 3/4"	47 3/4"	48"	48"	48"

1. Available in 3" Tectum I only or Tectum II/E any thickness.
2. See manufacturers' literature for additional selection data on bulb tee.
3. See \*\*\* below, in Technical Support Data.
4. Special order schedule dependent upon accumulated orders.

### TECHNICAL SUPPORT DATA

#### TOTAL SAFE UNIFORM LOAD – PSF

Style	Bulb Tees***	Weight	MOI* in	Height	SPAN **													
					5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"
158 <sup>1</sup>	1.68	0.0170	1 5/8"	92	76	64	54	47										
168 <sup>1</sup>	1.87	0.291	2"		109	91	78	67	58	51								
178 <sup>1</sup>	2.15	0.353	2"			119	101	87	76	66	59	52						
218	3.19	0.598	2 1/8"				119	103	91	80	72	64	58	52	48			
228 <sup>1</sup>	3.87	0.868	2 5/16"						129	114	102	91	82	74	68	64	57	

- \* Moment of Inertia based on tees acting alone.
- \*\* Spans are based on three-span condition, 32" nominal spacing. For 24" nominal spacing, multiply total safe uniform load by a factor of 1.32, for 48" nominal multiply by .67. For two-span condition, multiply total safe uniform load by .88, for single-span condition multiply by .64.
- \*\*\* Only 218 Bulb tees are distributed by Western Fireproofing of Kansas, Kansas City, MO, 800-659-6577. Call for complete information. The designer/specifier is urged to check theoretical deflection of any section, under the loads, and support conditions which are expected to be encountered.
- 1 Historical information. Not available for new construction.

YMCA OUTDOOR POOL HOUSE (NEWARK, OH)  
(Tectum E Roof Deck)



JUDGE B. DAVIES HIGH SCHOOL (FARGO, ND)  
(Tectum III Roof Deck)

## TECTUM ROOF DECK DESIGN GUIDELINES

### SOUND AND NOISE

#### CONTROL—TECTUM I, E, III

The unique open texture of the Tectum roof deck system provides an effective acoustical treatment demonstrated by tests in accordance with ASTM C423. The use of a Tectum roof deck may eliminate the necessity of using other acoustical treatments such as lay-in tile ceilings or acoustical baffles. Tectum roof deck compares favorably with products designed exclusively for sound absorption.

### EXPANSION

Tectum roof deck, when tested from 70°F (21°C)–50% RH to 90°F (32°C)–90% RH has maximum linear expansion of 0.2 of 1%.

Tectum plank does not require expansion or control joints to compensate for temperature-induced movement. However, when designing and locating control joints, engineers should consider the linear expansion of Tectum plank due to changes in relative humidity, as well as the recommendations of manufacturers of adjoining materials which may have potential for expansion/ contraction due to temperature changes.

### VENTILATION REQUIREMENTS

The ventilation recommendations of the current edition of the ASHRAE Handbook—Fundamentals should be followed. In particular, adequate ventilation should be provided to remove construction moisture. Where Tectum roof deck is concealed by a suspended ceiling, venting must be provided. Ventilation may be mechanically induced by drawing some return air through the ceiling openings and across the plenum area into the return air duct or by providing a sufficient number of ceiling grilles to promote uniform gravity air movement through the plenum area.

### SOUND ABSORPTION

THICKNESS	MTG.	SOUND ABSORPTION COEFFICIENTS (HZ)						
		125	250	500	1000	2000	4000	NRC
1 1/2"	A	.07	.22	.48	.82	.64	.96	.55
2"	A	.15	.26	.62	.94	.64	.92	.60
2 1/2"	A	.20	.31	.72	.84	.77	.90	.65
3"	A	.21	.41	1.00	.75	1.00	.97	.80
3 1/2"								
(1 1/2" + 1 1/2") Tectum III	A	.16	.23	.49	.78	.88	.88	.60
2" Tectum 2" EPS	A	.19	.34	.71	1.00	.83	.93	.70
2 1/2" Tectum 2" EPS	A	.28	.38	.82	.91	.90	.92	.75
3" Tectum 2" EPS	A	.22	.48	1.02	.79	.99	.97	.80

### R VALUES OF FIELD-APPLIED INSULATION TO TECTUM I

REQUIRED TO PREVENT CONDENSATION WITHIN THE TECTUM I DECK (2", 2 1/2" OR 3")

JANUARY OUTSIDE MEAN TEMPERATURE		INSIDE RELATIVE HUMIDITY AT 70°F					
°F	°C	10%	20%	30%	40%	50%	60%
-20	-29	R-2	R-5	R-8	R-12	R-18	R-26
-10	-23	R-1	R-4	R-7	R-10	R-15	R-22
0	-18	—	R-3	R-5	R-8	R-12	R-19
+10	-12	—	R-2	R-4	R-6	R-10	R-16
+20	-7	—	—	R-2	R-4	R-7	R-12
+30	-1	—	—	—	R-2	R-5	R-9
+40	+4	—	—	—	—	R-2	R-5

### UPLIFT RESISTANCE OF TECTUM SCREW ASSEMBLIES

USED WITH TECTUM I, E, NS, III PLANK

SPAN	PLANK WIDTH	FASTENERS PER FRAME INTERSECT	UPLIFT RESISTANCE** (psf)	PRODUCTS
36"	31"	2	150	I, LS
36"	47"	2	100	I, LS, NS, E, III
36"	47"	3	150	I, LS, NS, E, III
42"	31"	2	133	I, LS
42"	47"	2	89	I, LS, NS, E, III
42"	47"	3	133	I, LS, NS, E, III
48"	31"	2	117	I, LS
48"	47"	2	77	I, LS, NS, E, III
48"	47"	3	116	I, LS, NS, E, III
60"	31"	2	92	LS
60"	31"	3	138	LS
60"	47"	2	60	NS, E, III
60"	47"	3	90	NS, E, III
72"	31"	2	77	LS
72"	31"	3	116	LS
72"	47"	2	50	NS, E, III
72"	47"	3	75	NS, E, III
72"	47"	4	100	NS, E, III
96"	47"	2	50	E, III
96"	47"	3	75	E, III
96"	47"	4	100	E, III

\* Single Span

\*\* A safety factor of 2 has been used to determine uplift resistance. Screws to be a minimum of 1" longer than panel thickness.

For Technical Assistance Call: 888-977-9691



## TECHNICAL DATA

With various edge treatments, Tectum panels are used as the substrate for all Tectum **roof deck** systems. Tectum roof plank panels have T&G long edges and square ends. Plank is designed to span structural supports. Tectum **roof tile** systems have rabbeted long edges and either square or T&G ends. Tiles span between structural tees. Tees span between supports.

### LIMITATIONS – TECTUM I, III, E, NS

When designing for high-humidity applications such as pools or ice arenas, please contact the Tectum Inc. technical department for assistance and Tectum IIIP use detail.

### COMBUSTIBILITY

**WARNING:** All foam insulation should be adequately protected. Styrofoam brand and EPS insulation are combustible and may constitute fire hazards if improperly used or installed. Use only as directed by the specific instructions for these products. Styrofoam brand and EPS insulation contain a flame retardant additive to inhibit accidental ignition from small fire sources. During shipping, storage, installation and use, this material should not be exposed to flame or other ignition sources.

## THERMAL PERFORMANCE FOR TECTUM PANELS

### TECTUM THERMAL PERFORMANCE

Panel Type	Substrate Thickness (Inches)	Insulating Foam Thickness	Total Panel Thickness (Inches)	R-Value for Tectum Substrate	Heat Flow Up*	Heat Flow Down*	Weight PSF
Tectum I Roof Deck	2"	N/A	2"	3.50	4.62	5.01	3.5
	2 1/2"	N/A	2 1/2"	4.38	5.50	5.89	4.5
	3"	N/A	3"	5.25	6.37	6.76	5.3
Tectum III Roof Deck	1 1/2"	1 1/2"	3 1/2"	10.63	11.92	12.31	4.4
	1 1/2"	2"	4"	13.13	14.42	14.81	4.4
	1 1/2"	3"	5"	18.13	19.42	19.81	4.6
	1 1/2"	4"	6"	23.13	24.42	24.81	4.8
	1 1/2"	5"	7"	28.13	29.42	29.81	4.9
	1 1/2"	6"	8"	33.13	34.42	34.81	5.1
	1 1/2"	7"	9"	38.13	39.42	39.81	5.3
Tectum E Roof Deck	1 1/2"	3/4"	2 3/4"	6.02	7.31	7.70	4.2
	1 1/2"	1 1/2"	3 1/2"	8.91	10.20	10.59	4.2
	1 1/2"	2"	4"	10.83	12.12	12.51	4.3
	1 1/2"	3"	5"	14.68	15.97	16.36	4.4
	1 1/2"	4"	6"	18.53	19.82	20.21	4.4
	1 1/2"	5 1/4"	7 1/4"	23.34	24.63	25.02	4.5
	1 1/2"	6 1/2"	8 1/2"	28.16	29.45	29.84	4.6
	1 1/2"	7"	9"	30.08	31.37	31.76	4.7
Tectum NS Roof Deck	1 1/2"	1/2"	2 1/2"	5.06	6.35	6.74	4.1
	2"	1/2"	3"	5.93	7.22	7.61	5.1
	2 1/2"	1/2"	3 1/2"	6.81	8.10	8.49	6.1
	3"	1/2"	4"	6.18	7.47	7.86	6.9

#### Notes for Thermal Performance Data:

- \* Includes air films and roofing
- \*\* R-values based on the following k-factors:  
k for Tectum Panels is .57  
k for Dow Styrofoam is .20  
k for Expanded Polystyrene (EPS) is .26

### DOW STYROFOAM® INSULATION

Property	Test	Result
Water Vapor Permeability*	E96-80	0.6
Compressive Strength	D1621-04a	40 lb. sq. in. Min. 20 lb./sq. in.
Water Absorption	D2842-06	1% by Volume
Linear Coef. of Thermal Expansion (in/in°F)		3.5 x 10 <sup>-5</sup>
Thermal Resistance		R=5.0/inch

\* Styrofoam brand insulation qualifies as a vapor retarder as defined by ASHRAE Fundamentals Handbook 1989.

### EPS INSULATION

Property	Test	Result
Nominal Density		1.0 lb./ft <sup>3</sup>
Thermal Resistance (R-Value*)	C177/C518	4.17 @ 40°F
Per Inch of Thickness		3.85 @ 75°F

\* Typical tested R-values based on data from BASF Corp. and Huntsman Chemical Co.

### OSB SHEATHING\*

Property	Result
Internal Bond	50 p.s.i.
Average Roofing Nail Withdrawal	50 lbs.
Average Roofing Staple Withdrawal	137 lbs.
Average Screw Withdrawal*	355 lbs.
Maximum Linear Expansion (50 to 90% RH)	0.20%

\* Structural Board Association Note: OSB meets the requirements of PS2-04 performance standard for wood-based structural use panels.

## MANUFACTURER

## TECTUM ROOF DECK INSTALLATION GUIDELINES

### TECTUM INC.

For over a half century, the commercial and institutional construction industry has depended on Tectum Inc.'s unique, cost-effective solutions to meet their acoustical challenges. Easy to work with and install, Tectum acoustical roof deck treatments are not only sound absorbing, they are tough enough to stand up to architectural structural demands.

Painted or unpainted, they provide an attractive acoustical finish for the interior. Manufactured at the Tectum Inc. plant in Newark, Ohio, Tectum performance products have stood the test of time. Today, Tectum panels are combined with other construction materials to form composite panel deck systems. These systems provide superior roof deck solutions that are fully compatible with most other roofing products.



TECTUM E INSTALLED OVER STEEL.

### INSTALLATION INSTRUCTIONS

Tectum panels may be installed over steel, wood and concrete framing and are applicable to flat or pitched roof construction. Maximum joist spacings are shown in the load tables on page 4. Tectum panels should have sufficient length to span multiple purlin spacings whenever possible. They must be laid with staggered ends and must be mechanically attached to all framing members of substrate per recommendations. Support is required at all transitions. Tectum panels can easily be cut, to fit irregular spaces, with tools used to cut wood.

Tectum tile is available with rabbeted edges and square ends. Maximum spans are determined by the size and spacing of the bulb tee. If the ends of Tectum tile do not fall on the structural member, a lightweight cross tee or T&G ends must be used to conceal the end joints. Spaces between the tile and tees are filled with Tectum grout at least to the top of the tee. The remaining void should be filled with a foam filler strip.

### ROOFING OVER TECTUM I, III, E AND NS

Tectum I panels are designed to accept all field-applied insulations and roofing membranes.

Tectum III and Tectum E panels are ideal roof deck bases for shingle, standing seam, slate or tile roofs. Slate and tile roofs may require a field-applied second layer of OSB or plywood. Tectum III and Tectum E can be used for single-ply or built-up systems.

Use of solvent-based adhesives for attachment of roofing to Tectum III, E and NS deck is not permitted.

Representatives of roofing systems manufacturers should be consulted for recommendations on the specification and system best suited to the deck and conditions pertinent to each roof. **Attaching shingles to Tectum I is not recommended.**

### VAPOR RETARDER

Styrofoam brand insulation used in the Tectum III panel qualifies as a vapor retarder under the ASHRAE Handbook definition, with Perm ratings of 1.0 or less.

### ATTACHING INSULATION TO TECTUM ROOF DECK

For more information about attaching additional insulation to a Tectum roof deck, contact Tectum Inc. to request Bulletin T-38 or visit our website at [www.tectum.com](http://www.tectum.com).

### ATTACHING ROOFING FELT TO TECTUM I ROOF DECK

Tube-Lok roofing nails are available from Simplex Nails, Inc., Americus, GA, 1" up to 6 1/2". E.S. Roofing nails are available from E.S. Products Inc., Bristol, RI.

### FASTENING TECTUM PLANK TO WOOD JOIST

14-gauge screw with 2" diameter washers for Tectum I panels and 5/8" diameter head 14-gauge screws for Tectum III, E and NS. A minimum 1 1/2"-penetration is required.

### FASTENING TECTUM PLANK TO STEEL JOIST

To attach a Tectum I roof deck, use 14-gauge or Tectum S-25 screws with 2" washers. The washers and screws are available from Tectum Inc. Screws should be located approximately 6" from edges and 1" from ends. When using 14-gauge screws, pre-drill with a 7/32" drill bit.

For Tectum composite panels, use TruFast HD self-drilling screws with a 5/8" diameter head, or 14-gauge screws with 1 1/2" diameter washers. When using 14-gauge screws, pre-drill with a 7/32" drill bit.

**CODE COMPLIANCE AND CERTIFICATIONS**

**CODE COMPLIANCE/STANDARDS**

- **International Code Council Evaluation Service**  
ICC-ES Report ESR-1112
- **New York City Board of Standards & Appeals**  
Calendar No. L391-52-SM
- **Underwriters' Laboratories – Canada**

**UNDERWRITERS LABORATORIES, CLASS 90 WIND UPLIFT RESISTANCE.**

Tectum I, III and E plank have been tested in roof assemblies in accordance with standard UL 580, resulting in UL Class 90 uplift resistance.

Design No. NM504–Tectum I Tile–Nominal 2" on bulb tees, not to exceed 7'1".

Design No. NM511–Tectum Tile–Nominal 2" to 3". T&G on bulb tees, spans not to exceed 8'.

Design No. NM512–Tectum Tile–with filler strips on bulb tees, spans not to exceed 7'6".

Design NM517–Tectum III T&G plank on bar joist 48" o.c.

Design 474 & 475 Tectum E/III plank on steel 84".

Design 451 Tectum E/III plank/tile on steel 96".

Underwriters' Laboratories – Canada

**RATED ASSEMBLIES FIRE ENDURANCE TEST ASTM E 119-HOURLY RATED SYSTEMS**

Tested in roof/ceiling assemblies. Tectum products are used in achieving the following:

2-HR U.L. Design No. P402–Tectum plank 2" (50.8mm) thick on steel joists with metal lath and perlite plaster ceiling.

2-HR U.L. Design No. P403–Tectum plank 3" (76.2mm) thick on steel joists with metal lath and perlite plaster ceiling.

1 or 1 1/2 HR U.L. Design P253–Tectum

Plank 2 1/2" and 3" thick with listed acoustical ceiling.

1 HR U.L. Design P675–Tectum Formboard 2" thick with gypsum concrete and truss tee subpurlins.

1 HR U.L. Design P678–Tectum Formboard 2" thick with vermiculite or perlite concrete on bulb or truss tee subpurlins.

**THERMAL BARRIER**

Tectum panels 1 1/2" or thicker are a thermal barrier for foam plastic insulation.

**SURFACE BURNING CHARACTERISTICS**

<b>3" Tectum Roof Deck*</b>	
Flame Spread Index	5
Flame Spread Index (30 min)	5
Smoke Developed Value	5
<b>8" Tectum III Panels**</b>	
Flame Spread Index	5
Smoke Developed Value	10

The flame spread did not progress more than 10 1/2 ft. during the 30-minute test.

\* United States Testing Co. Inc. No. 090168  
\*\* Underwriters' Laboratories of Canada

**LIGHT REFLECTION**

Typical Range:  
Natural–60%.  
Field painted white–70%.

**PAINTING**

Tectum panels can be field painted up to six times. For details, see Marketing Bulletin M-77, available at [www.tectum.com](http://www.tectum.com).

## GENERAL INFORMATION

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. TECTUM INC. ASSUMES NO RESPONSIBILITY FOR TYPOGRAPHICAL ERRORS. THE TABLES CONTAINED HEREIN ARE PROVIDED FOR YOUR CONVENIENCE. DESIGN INFORMATION SHOULD BE VERIFIED.

### Tectum Acoustical Products For Walls & Ceilings

Find us on the Sweets Network at: [products.construction.com](http://products.construction.com)

MasterFormat number: 098400

Or visit our website at [tectum.com/interior](http://tectum.com/interior)



JOHN HEINZ NATIONAL WILDLIFE REFUGE, PHILADELPHIA, PA

### ENVIRONMENTAL INFORMATION

The wood fibers (excelsior) used in Tectum panels come from Wisconsin Aspen trees. The Wisconsin Aspen is a self-propagating tree. When cut, a new tree will begin to grow back from its root structure. In addition, all Wisconsin Aspen used for Tectum is air-dried. No drying kilns are used. The wood is stored in ranks to age naturally. No chemicals are used in the production of any excelsior purchased by Tectum Inc.

All excelsior used in Tectum products comes from a single source that is affiliated with both the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI) programs. These programs are a comprehensive system of objectives and performance measures that integrate the perpetual growing and harvesting of trees with the protection of wildlife, plants, soil and water quality. All loggers are trained to adhere to FSC and SFI principles.

Magnesium oxide is mixed with magnesium sulfate (Epsom salts) to form the primary binder. The magnesium sulfate solution has been manufactured on site by reclaiming waste materials since production began in 1949. The secondary binder is composed of sodium silicate and calcium carbonate (limestone). All of the water used in the manufacture of Tectum is captured and recycled.

### TECTUM PRODUCTS AND LEED

Tectum Inc. fully endorses the LEED Green Building Rating System.

Our products may contribute to the following LEED credit areas:

EA Prerequisite 2: Minimum Energy Performance

EA Credit 1: Optimized Energy Performance

MR Credits 2: Construction Site Waste Management

MR Credits 4: Recycled Content

MR Credit 5: Regional Materials

MR Credit 7: Certified Wood

EQ Prerequisite 3 (LEED for Schools): Minimum Acoustical Performance

EQ Credit 3.1 and 3.2: Construction IAQ Plans

EQ Credit 4.1: Low-Emitting Materials, Adhesives and Sealants

EQ Credit 4.4: Low-Emitting Materials, Composite Wood & Agrifiber Products

EQ Credit 10 (LEED for Schools): Mold Prevention

EQ Credit 11 (LEED for Schools): Low-Impact Cleaning and Maintenance Equipment Policy

ID Credit 1: Innovation in Design

Tectum products are listed in the GreenSpec Directory\*\* published by Building Green from the editors of *Environmental Building News*.

For complete information about Tectum products and LEED, please see our Marketing Bulletins M-81 (Tectum Products and LEED Certification) and M-83 (Tectum Products and LEED Q & A) or our Environmental Statement. All of these materials are available online at [www.tectum.com/leed](http://www.tectum.com/leed).

\*Trademark of The U.S Green Building Council

\*\*Trademark of Building Green, Inc.

## TECTUM<sup>INC.</sup>

P.O. Box 3002  
NEWARK, OH 43058-3002  
PHONE: 888-977-9691  
FAX: 800-832-8869  
EMAIL: [info@tectum.com](mailto:info@tectum.com)  
[www.tectum.com](http://www.tectum.com)