



TRANSMITTAL

Transmittal No:	Date: 3/29/2019
Contract Number:	1805001
Project Name:	2018 Pavement Rehab. Contract Nantasket Ave. H St. to Y St.
Location:	Hull, MA

T.L. Edwards, Inc.
 100 Wales Ave- Rear
 PO Box 507,
 Avon MA 02322
 508-583-2029* Fax 508-588-7048

To:
 Chris Roy
 Beta Group, Inc.
 315 Norwood Park South, 2nd FL.
 Norwood , Ma. 02062

We are sending you attached

Copies	Date	No.	Description
1	3/29/2019	222.3	Frames and Grates(or Covers) Municipal Standard
1	3/29/2019	701.2	Handi-Cap Ramp "Detectable Warning Panels"
1	3/29/2019	460/472/702/703	Bit. Concrete , Mass DOT Mix Designs

These are transmitted for review and approval

Lenny Stewart



PRODUCT DATA SHEET

CAST-IN-PLACE TACTILE

Inline Dome Pattern: Tactile Warning Surface

View additional photos, drawings and specifications on our website: www.adatale.com.
Call (800) 372-0519 with any questions.

- DOME GEOMETRY** *In accordance with ADA Regulations for Detectable Warning on Curb Ramps: raised truncated domes with a diameter of nominal 0.9", a height of nominal 0.2", and a center-to-center spacing of 1.67" minimum and 2.35" maximum.*
- TWS UNIT DIMENSIONS** TWS Units are available in 24"x36", 24"x48", 24"x60", 36"x48", and 36"x60" sizes. TWS Units may also be custom configured to accommodate specific project requirements. TWS Units measure 0.20" nominal thickness and feature embedment ribs at 3" on center.
- MATERIAL** A homogenous glass and carbon reinforced composite which is colorfast and UV stable. Truncated domes are fiberglass reinforced for enhanced durability. The color of the TWS Unit is uniform throughout and does not rely on any type of paint coating to achieve color stability. Standard colors include: Federal Yellow, Brick Red, Clay Red, Safety Red, Gray, Black, and Blue.
- INSTALLATION** TWS Units are to be used on new curb ramp locations. The TWS Units can be pre-filled with concrete and set in place or pressed into place in the freshly poured concrete.

PHYSICAL CHARACTERISTICS:

Compressive Strength	28,900 psi	ASTM D 695
Flexural Strength	29,300 psi	ASTM D 790
Water Absorption	.07%	ASTM D 570
Slip Resistance	1.18 Dry, 1.05 Wet	ASTM C 1028
Flame Spread Index	20	ASTM E 84
Salt Spray	No Change (200 hours)	ASTM B 117
Chemical Stain Testing	No Deterioration	ASTM 1308
Abrasion Resistance	549	ASTM C 501
Accelerated Weathering	Delta E<5.0 (2,000 hours)	ASTM G 155
Tensile Strength	11,600 psi	ASTM D 638
Load Bearing at 16,000#	No Damage	AASHTO-H20
Freeze/Thaw/Heat	No Disintegration	ASTM C 1026

ADA SOLUTIONS, INC.

P.O. Box 3, North Billerica MA 01862 Tel: 800.372.0519 Fax: 978.262.9125
www.adatale.com

CAST IN PLACE TACTILE / DETECTABLE WARNING SURFACE TILES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This Section includes Specifications for furnishing and installing permanently embedded Cast In Place Tactile / Detectable Warning Surface Tiles (CIP) with an in-line truncated dome pattern embedded in all curb ramps at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Engineer.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specifications, apply to this Section.
- B. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.
- C. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.
- D. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20.
- E. California Code of Regulations (CCR 2007) Title 24 Part 1 Articles 2, 3 and 4, and Part 2 Section 205 definition of "Detectable Warning", Section 1127B.5 for "Curb Ramps", and Section 1133B.8.5 for "Detectable Warnings at Hazardous Vehicle Areas". California Department of Transportation Detectable Warning Surface Authorized Material List. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11). IR 11B-4 (1/01/11) removed the requirement for a "staggered" pattern and now calls for the "square grid" (in-line) pattern.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's literature describing products, installation procedures and maintenance instructions.

- B. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8" x 8" of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer's Name, and Catalog Number.
- C. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Composite Shell Cast In Place Tactile Warning Surface Tile (CIP), including profile, sound on cane contact amplification feature and installation methods.
- D. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Composite Shell Cast In Place Tactile Warning Surface Tile (CIP) delivered to the Project.
- E. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

1.04 QUALITY ASSURANCE

- A. Provide Cast In Place Tactile Warning Surface Tiles (CIP) and accessories as produced by a single manufacturer with a minimum of five years experience in manufacturing Cast In Place Composite Shell Tactile Warning Surface Tiles.
- B. Installer's Qualifications: Engage an experienced installer certified in writing by the Tactile Warning Surface manufacturer, who has successfully completed Tactile Warning Surface installations similar in material, design, and extent to that indicated for the Contract.
- C. Cast In Place Tactile Warning Surface Tiles (CIP) must be compliant with ADAAG, PROWAG, and California Title 24 requirements. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11). IR 11B-4 (1/01/11) removed the requirement for a "staggered" pattern and now calls for the "square grid" (in-line) pattern.
- D. Cast In Place Tactile Warning Surface Tiles (CIP) shall meet or exceed the following test criteria using the most current test methods:
 - 1. Compressive Strength: 28,900 psi minimum, when tested in accordance with ASTM D695.
 - 2. Flexural Strength: 29,300 psi minimum, when tested in accordance with ASTM D790.
 - 3. Water Absorption: Not to exceed 0.10%, when tested in accordance with ASTM-D570.
 - 4. Slip Resistance: 1.05 minimum wet and 1.18 dry static coefficient of friction when tested in accordance with ASTM C1028.
 - 5. Flame Spread: 25 maximum, when tested in accordance with ASTM E84.

6. Salt and Spray Performance of Tactile Warning Surface: No deterioration or other defects after 200 hours of exposure, when tested in accordance with ASTM-B117.
7. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, motor oil, calcium chloride, gum, soap solution, bleach, and antifreeze, when tested in accordance with ASTM D543.
8. Abrasion Resistance: 500 minimum, when tested in accordance with ASTM C501.
9. Accelerated Weathering of Tactile Warning Surface when tested by ASTM-G155 or ASTM G151 shall exhibit the following result: $\Delta E < 5.0$ at 2,000 hours minimum exposure.
10. Tensile Strength: 11,600 psi minimum, when tested in accordance with ASTM D638.
11. AASHTO-H20 Load Bearing Test: No Damage at 16,000# loading.
12. Freeze/Thaw/Heat: No deterioration when tested in accordance with ASTM C 1026.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Cast In Place Tactile Warning Surface Tiles (CIP) shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy wrappings.
- B. Storage Facility
 1. Store CIP Tiles in an area that is within an acceptable temperature range (40-90 degrees).
 2. Maintain Storage Facility in a clean dry condition to prevent contamination or damage to CIP Tiles.

1.06 GUARANTEE

- A. CIP Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage, and deformation.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Composition: CIP Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

- B. Color: Color shall be homogeneous throughout CIP Tile.
1. Federal Yellow (Y) per Federal Standard 595B Table IV, Color No. 33538.
 2. Brick Red (R) per Federal Standard 595B Table IV, Color No. 20109.
 3. Clay Red (CR) per Federal Standard 595B Table IV, Color No. 22144.
 4. Safety Red (SR) per Federal Standard 595B, Table IV, Color No. 31350.
 5. Black (B) per Federal Standard 595B Table IV, Color No. 37038.
 6. Dark Gray (G) per Federal Standard 595B Table IV, Color No. 36118.
 7. Safety Blue (B) per Federal Standard 595B Table IV, Color No. 15187.
 8. White (W) per Federal Standard 595B Table IV, Color No 37925.
 9. Seattle Yellow (SY) per Federal Standard 595B Table IV, Color No. 23594.
 10. Houston Beige (Pantone #7529C).
- C. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.
- D. Configuration: CIP Tile sizes shall be as indicated on the Contract Drawings. For superior load bearing capacity, CIP Tile shall feature internal embedment ribs at 3" on center maximum. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, CIP Tile thickness shall measure 0.20" (nominal).
1. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.
- E. Truncated Dome Surface of Composite CIP Tile shall be protected with factory installed plastic sheeting for cleanliness during the installation process. Basic Installation Guidelines shall be printed on the plastic sheeting in both English and Spanish for customer convenience.
- F. Dimensions: Cast In Place Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

Specifiers Note: Edit section below by selecting desired length and width. Delete non-relevant dimensions.

2. Length and Width:

1.67" Dome Spacing: [24"x36"] [24"x48"] [24"x60"] [36"x48"] [36"x60"]

2.35" Dome Spacing: [24"x36"] [24"x48"] [24"x60"] [36"x48"] [36"x60"]

- G. Cleaning materials used on site shall have code acceptable low VOC solvent content and low flammability.
- H. The Specifications of the concrete, sealants and related materials shall be in accordance with the Contract Documents and the guidelines set by their respective manufacturers.

2.02 MANUFACTURERS

- A. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:
 - 1. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatale.com , E: info@adatale.com), or approved equal.
 - 2. Requests for Approved Equal Status must be submitted and approved by the Owner during the Bid Phase of the Project.

2.03 EQUIPMENT

- A. Contractor shall provide all tools, equipment and services required for satisfactory installation per manufacturer's instruction as Incidental Work. Equipment, which may be required include typical mason's tools, a 4-foot long level with electronic slope readout, 25-pound weights, vibrator and rubber mallet with 2" x 4" x 10" wood tamping plate, and a device for cutting the Tactile Warning Surface Product.

PART 3 – EXECUTION

3.01 PREPARATION

- A. During all concrete pouring and CIP Tile Installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- B. The physical characteristics of the concrete shall be consistent with the Contract Specifications while maintaining a slump range of 4 - 7 to permit solid placement of the CIP Tile. An overly wet mix will cause the CIP Tile to float. Under these conditions suitable weights such as 2 concrete blocks or sandbags (25 pounds) shall be placed on each CIP Tile.
- C. The concrete shall be poured and finished, true and smooth to the required dimensions and slope prior to CIP Tile placement.

3.02 INSTALLATION

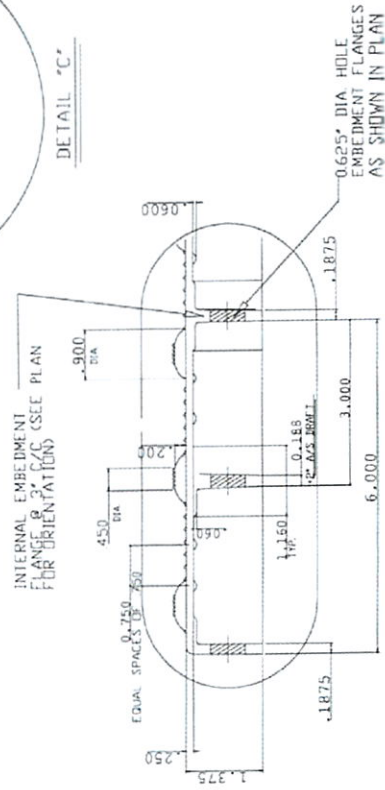
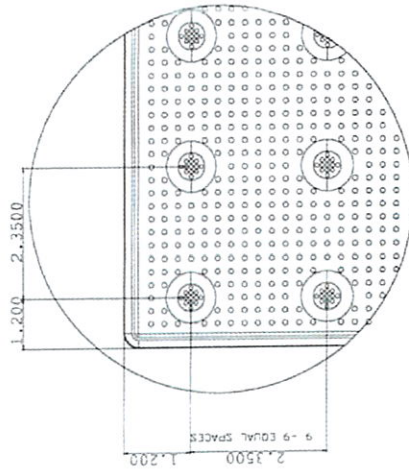
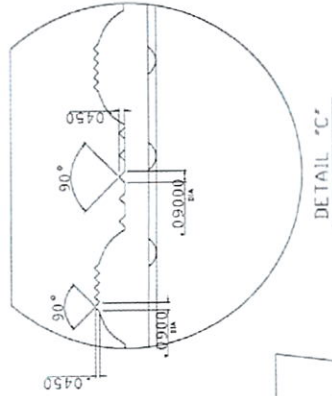
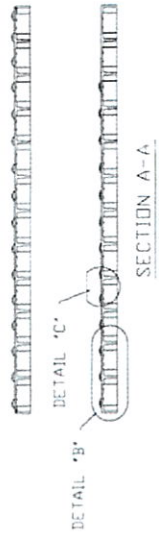
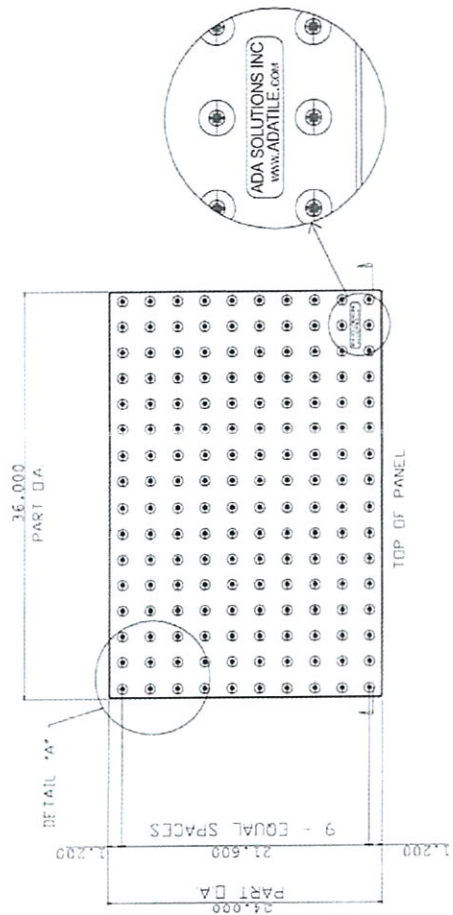
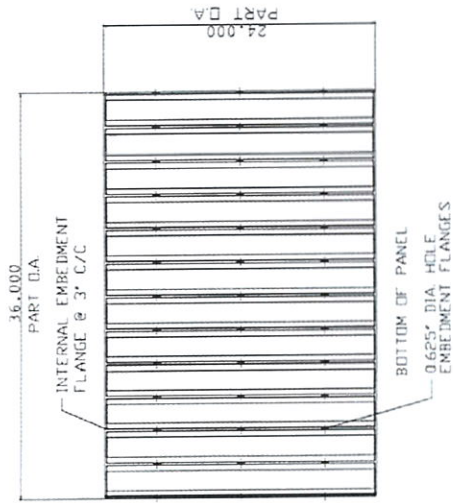
- A. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.
- B. CIP Tile shall be installed per manufacturer's instructions.

- C. To the maximum extent possible, the CIP Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple CIP Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface Tiles and throughout the entire tactile warning surface installation.
- D. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.
- E. CIP Tiles shall be tamped or vibrated into the fresh concrete to ensure that there are no voids or air pockets, and the field level of the CIP Tile is flush to the adjacent concrete surface or as the Drawings indicate to permit proper water drainage and eliminate tripping hazards between adjacent finishes.
- F. Cutting and Setting of CIP Tiles shall be cut into size and configuration indicated on the Drawings using a 60 tooth carbide blade on a table saw or equivalent cutting device. Minimize any cantilever effect (to the maximum extent practicable) when cutting between successive embedment ribs as concrete will tend to flow up and over the CIP Tiles. The top of the body of the CIP Tiles shall be fully seated and flush with the adjacent concrete substrate. For specific instructions for cutting and setting refer to Tactile Warning Surface manufacturer's written instructions.

3.03 CLEANING AND PROTECTING

- A. Protect CIP Tiles against damage during construction period to comply with CIP Tiles manufacturer's Specifications.
- B. During and after the CIP Tiles installation and the concrete curing stage, it is imperative that there are no walking, leaning or external forces placed on the CIP Tiles to rock the CIP Tile, causing a void between the underside of the CIP Tile and the concrete.
- C. Remove Protective Plastic Sheeting from CIP Tile within 24 hours of installation of the CIP Tile. Particularly under hot weather conditions (80 degrees or higher), plastic sheeting will adhere strongly (resulting in difficult removal of same) to Tactile Warning Surface Tile when not removed quickly.
- D. If requested by the Project Manager, clean CIP Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean CIP Tile by method specified by Tactile Warning Surface Products manufacturer.

END OF SECTION
Updated 2-6-2014



TRADE: TACTILE WARNING SURFACE
PART NO. 24361DPAV2

MATERIAL: OPC COMPOSITE

PROJECT

CAST-IN-PLACE TACTILE WARNING SURFACE DN
2.350" IN LINE TECHNICAIED DOME PATTERN
PART SIZE: 24" x 36"
PLANS AND DETAILS

DRAWING NO.

ADA-CIP2436_2

DATE

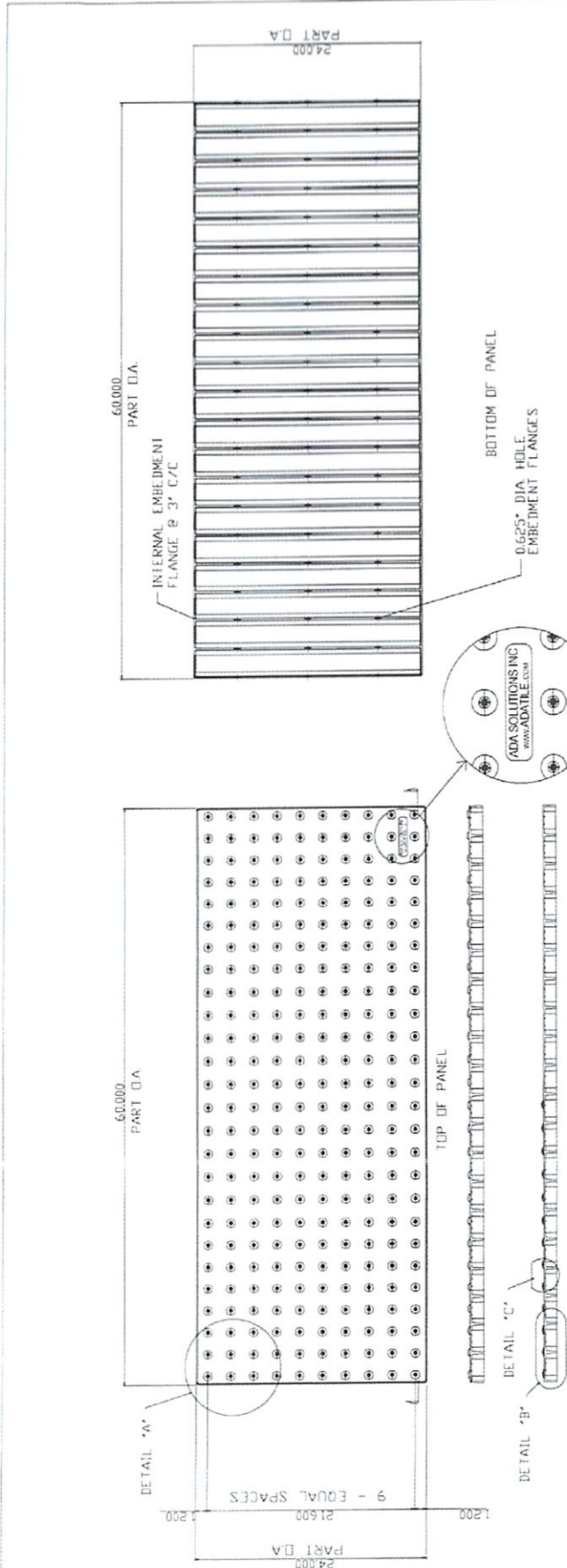
06-11-12



WWW.ADATILE.COM

PHONE: (800) 372-0519

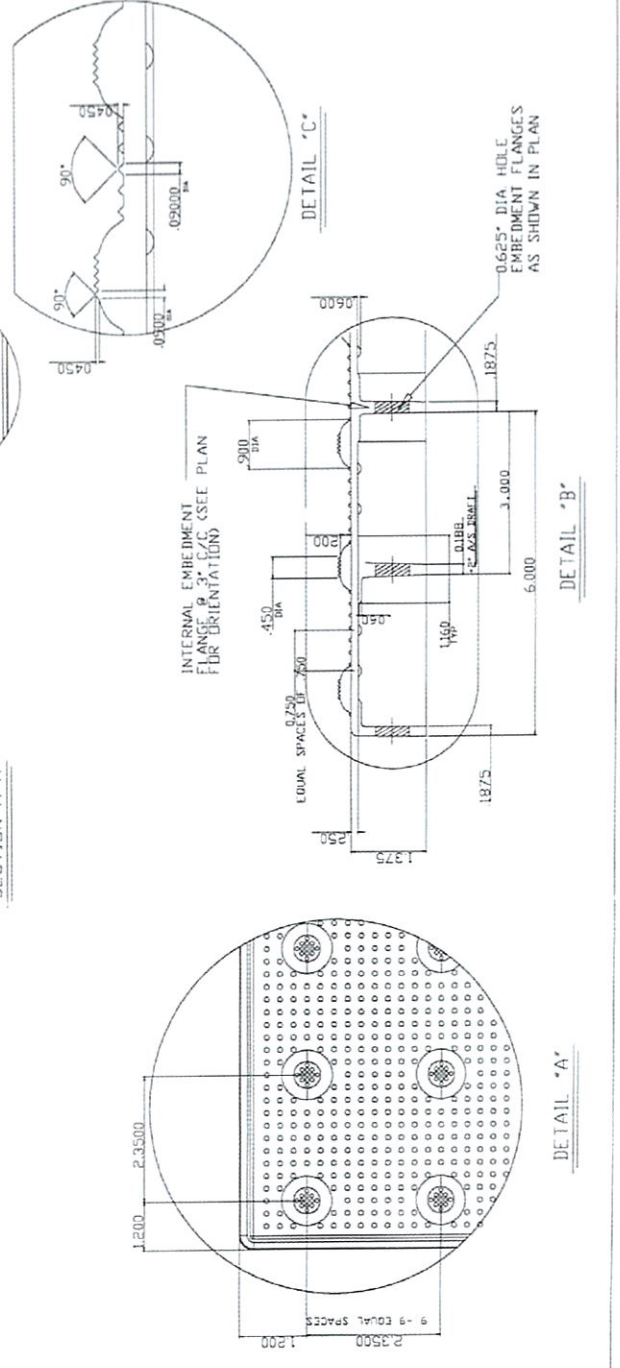
EMAIL: INFO@ADATILE.COM



TRACE	TACTILE WARNING SURFACE	PART NO.	24601DPAV2
MATERIAL	INC. COMPOSITE		
PROJECT			
CAST-IN-PLACE TACTILE WARNING SURFACE UNIT			
2.350" IN LINE TRUNCATED DOME PATTERN			
PART SIZE: 24" x 60"			
PLANS AND DETAILS			
DOCUMENT NO.	ADA-CIP2460_2	DATE	06-11-12



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 PHONE: (800)372-0519
 EMAIL: INFO@ADATILE.COM



24X24X8 FR HD SQ HOLE GRATE 8" 3FLG

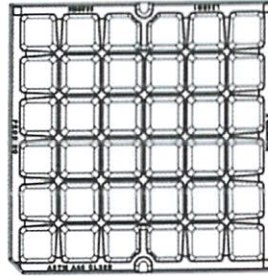
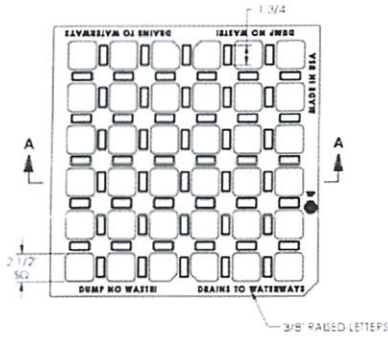
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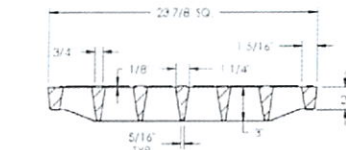
00552060

Quantity: 1

5520M5 Grate



BOTTOM VIEW



SECTION A-A

Product Number
00552060

Design Features

- Materials
-Gray Iron (CL35B)
- Design Load
-Heavy Duty
- Open Area
-217 sq in
- Coating
-Uncoated
- ∕∕ Designates Machined Surface
- Weight
-170 Lbs

Certification

- ASTM A48
- ASHTO H30-45
- M20 Load Rated
- Country of Origin USA

Drawing Revision

- 3/26/2008 Designer TWR
- 10/4/2012 Revised By SDC

Disclaimer
Weights (lbs./kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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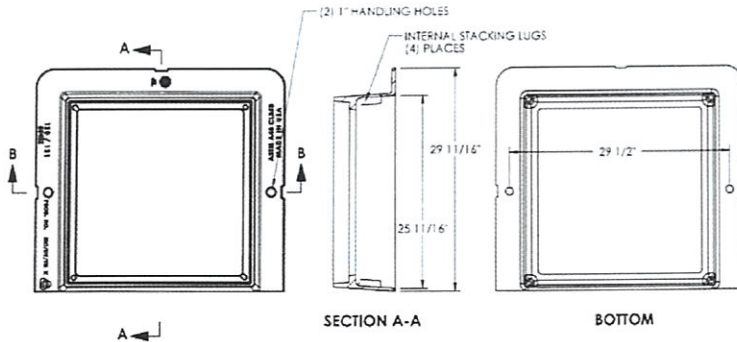
Contact
800 626 4653
ejco.com

5548Z Frame



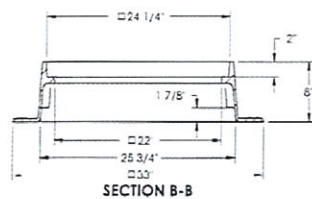
00554813

Quantity: 1



SECTION A-A

BOTTOM



SECTION B-B

Product Number
00554813

Design Features

- Materials
-Gray Iron (CL35B)
- Design Load
-Heavy Duty
- Open Area
-N/A
- Coating
-Uncoated
- ∕∕ Designates Machined Surface

Certification

- ASTM A48
- M20
- ASHTO M306
- Country of Origin USA

Drawing Revision

- 5/13/2009 Designer DEW
- 9/24/2014 Revised By DAE

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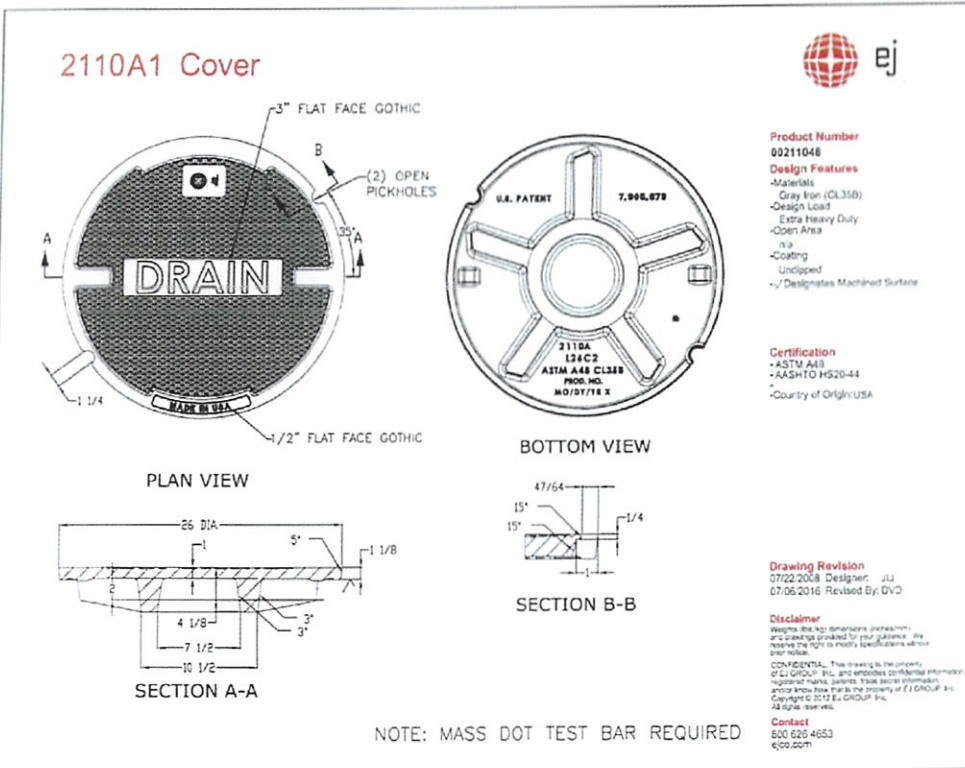
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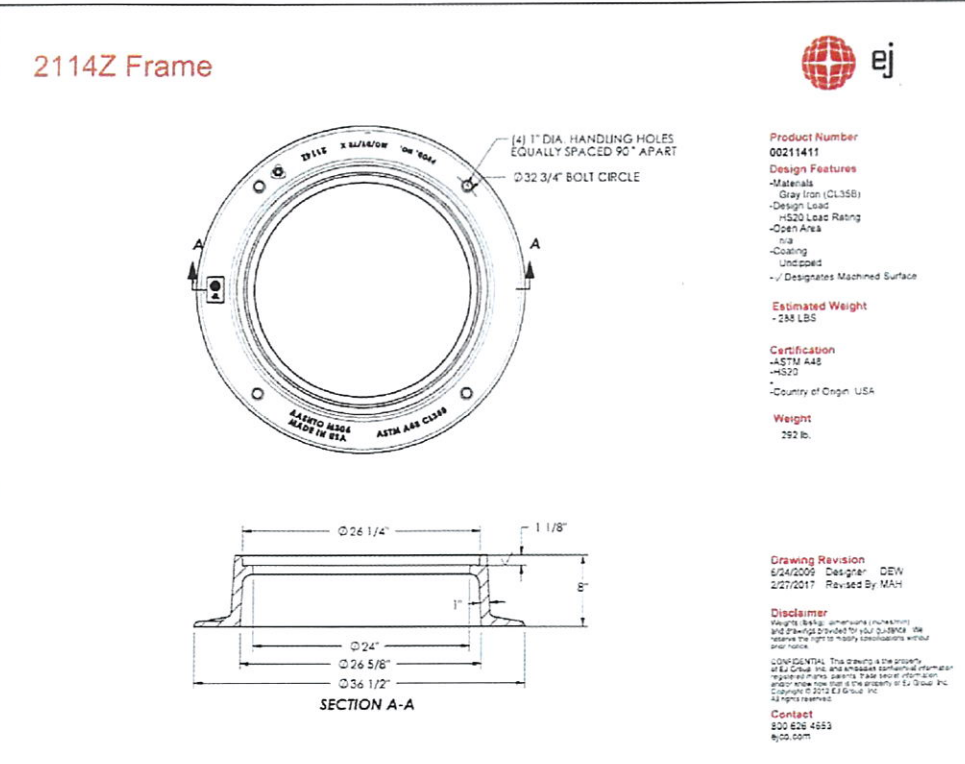
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MassDOT Standard 26 x 8 Frame and Drain Cover

OMA211000059



00211048
 Quantity: 1



00211411
 Quantity: 1

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 Weight (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notices.

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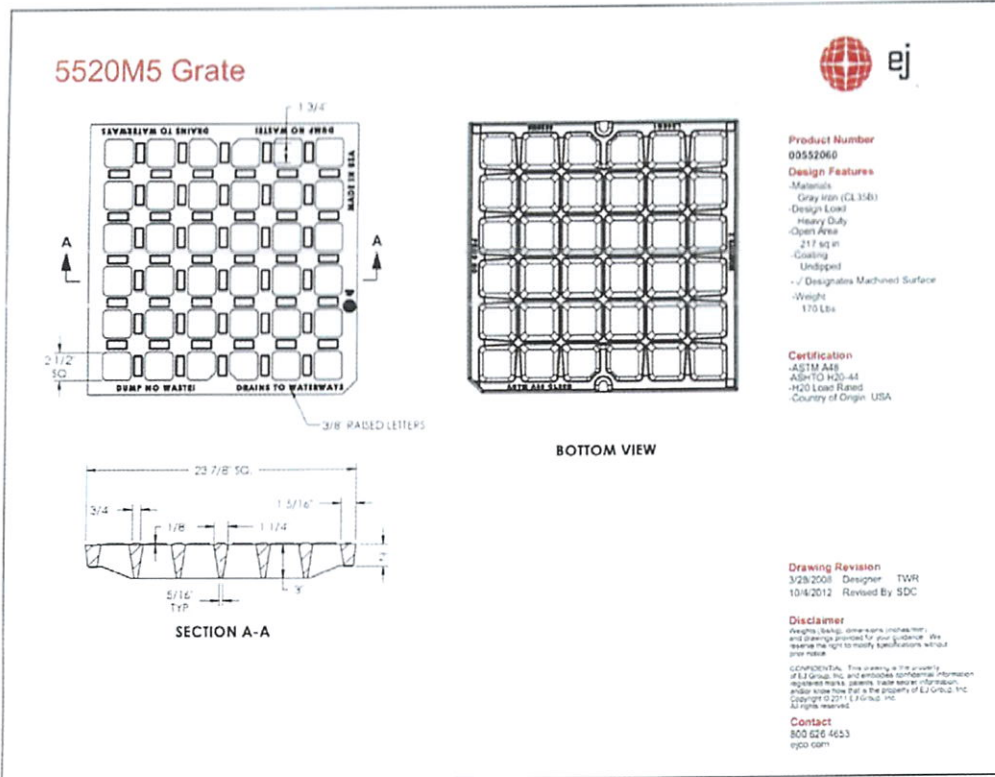
24X24X8 FR HD SQ HOLE GRATE 8" 4FLG

0MA552000029



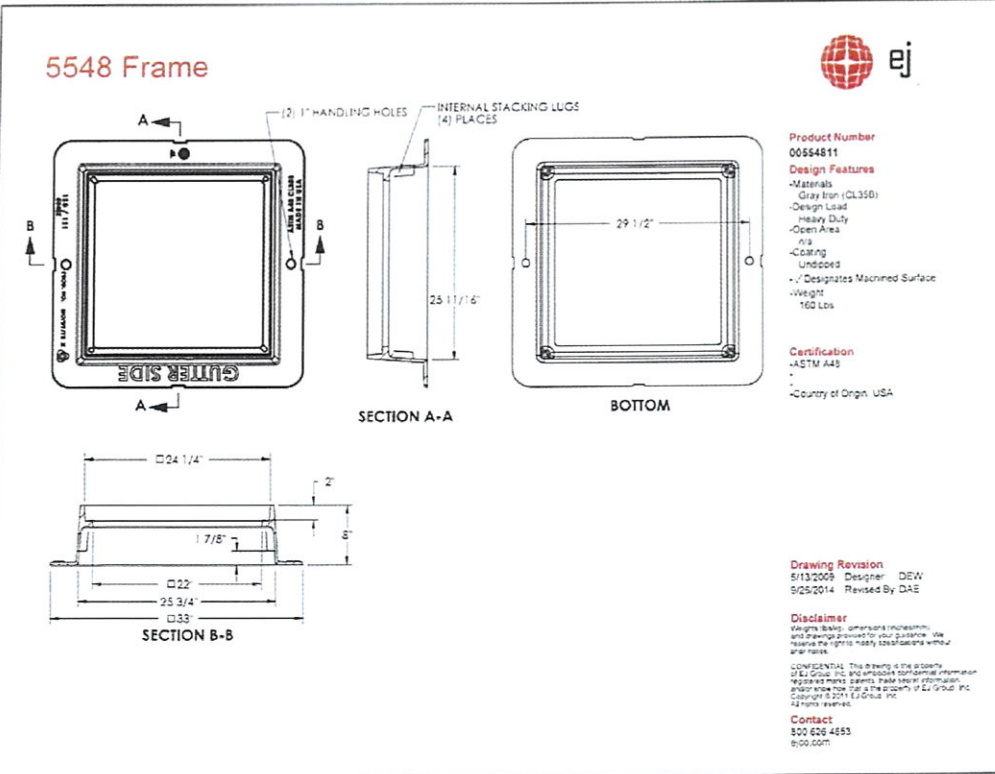
00552060

Quantity: 1



00554811

Quantity: 1



Disclaimer

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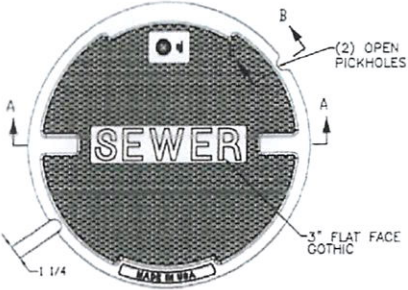
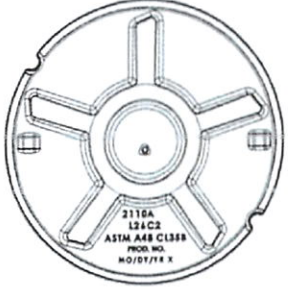
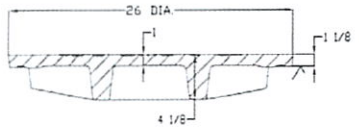
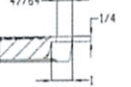
800 626 4653
ejco.com

MassDOT Standard 26 x 8 Frame and Sewer

OMA21100058



2110A Cover

PLAN VIEW

BOTTOM VIEW

SECTION A-A

SECTION B-B

NOTE: MASS DOT TEST BAR REQUIRED

Product Number
00211044

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Extra Heavy Duty
- Open Area
n/a
- Coating
Unpiped
- √ Designates Machined Surface

Certification

- ASTM A48
- ASTM D 1520-44
- Country of Origin: USA

Drawing Revision
03/26/2006 Designer: SBB
07/06/2016 Revised By: DVO


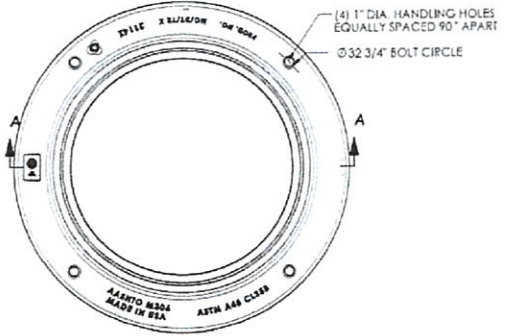
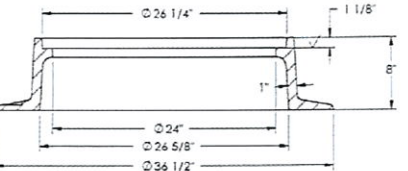
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00211044

Quantity: 1

2114Z Frame

PLAN VIEW

SECTION A-A

Product Number
00211411

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
H-520 Load Rating
- Open Area
n/a
- Coating
Unpiped
- √ Designates Machined Surface

Estimated Weight
-288 LBS

Certification

- ASTM A48
- H-520
- Country of Origin: USA

Weight
292 lb.

Drawing Revision
5/24/2009 Designer: DEW
2/27/2017 Revised By: MAH

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800 626 4653
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00211411

Quantity: 1

Disclaimer

Weight (lbs./kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notices

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Contact

800 626 4653
ejco.com



HOT MIX ASPHALT JOB MIX FORMULAS

DATE: 4/4/2017
 REVISION #: _____
 DATE OF REVISION: _____
 TELEPHONE #: 508-732-9148

CITY: Plymouth

COMPANY: TL Edwards

PLANT LOCATION: Plymouth

RMS-043 Revised: / 2/12/2017

COARSE AGGREGATE		FINE AGGREGATE		PLANTS	
Nom size	Producer & City	Type	Producer & City	PG Binder Tanks	Mix Silos, Insulation / Heated (X)
1 1/2", 3/4"	TL Edwards Sloughton MA	60 Screenings	TL Edwards Sloughton MA	3 @ 20k	3 @ 200 ton, ins. x
1/2", 3/8"	TL Edwards Sloughton MA	40 Natural Sand	TL Edwards Plymouth MA	@	@ @ @

RAP AMOUNT		PG Binder/Modifier	
Mix Type	Amount	Grade	Producer & City
Base***	20 %	64-28	Blumar Providence RI
Intermediate***	20 %	64-28	Aggregate Industries Everett MA
Surface	15 %		

Special Material:		Anti-Strip:	
OGFC: Polymer	Kind	% of Binder	Kind
	Ultrapave Latex	0.75	Parakoate
	Evotherm	1	

Warm Mix Technology:		Mix Temp Range:	
Kind	Kind	°F	Compact Temp Range:
		304-315	283-292
		F	F

Sieve Size	Aggregate Percentages below are proportional percentages of total aggregate for the mix.											
	HMA Base			HMA Interm.			HMA Surface			HMA		
	DR	JM	HMA	DR	JM	HMA	DR	JM	HMA	DR	JM	HMA
2"	100	100	100	100	100	100	100	100	100	100	100	100
1"	64-80	80	100	87-93	88	100	81	87-93	93	100	100	95-100
3/4"		87-93	93	57-69	61	55-58	55	62-73	73	94-100	94	35-45
5/8"				41-45	41	41-45	41	37-42	41	52-55	53	8-12
1/2"	58	62-68	68	72-73	73	72-73	73	24-36	31	40-45	40	50-64
3/8"								18-26	21	28-34	28	30-46
#4								14-17	14	18-23	18	17-27
#8								9-12	9	10-14	10	11-13
#16								4-5	4	6	6	5-6
#30								** 5.4-5.6	6.0	** 5.4-5.6	7.4	7.4-7.6
#50												6.3-6.7
#100												
#200												
% Binder	4.4-4.6	4.5	4.9-5.1	5.0	5.4-5.6	5.5	** 5.4-5.6	6.0	** 5.4-5.6	5.5	7.4-7.6	7.5
Max. Theo												
Sp. Gr.	2.534		2.527		2.516		2.431		2.439		2.416	
												2.411

FORMULAS (DR = Design Range of Specifications, JM = Job Mix Formula)

We agree to furnish mixes to MassDOT projects produced from only above referenced materials, within allowable tolerances of the exact formulas given above. We also understand that formulas are to be submitted annually, prior to production for MassDOT work, and any subsequent changes in materials or formulation will require resubmission for approval.

Authorized Signature and Title: Stephen Edwards e-mail address: sedwards@tl-edwards.net MassDOT Approval: _____



HOT MIX ASPHALT JOB MIX FORMULAS

COMPANY: TL Edwards
PLANT LOCATION: Plymouth

CITY: Plymouth

DATE: 4/4/2017
REVISION #
DATE OF REVISION
TELEPHONE # 508-732-9148

RMS-045 Revised 1/21/2017

COARSE AGGREGATE				FINE AGGREGATE			
Automatic Controls (X)				PG Binder Tanks			
Batch/Drum Size	tons/400	Tph	part	full	x	w/printer	x
1	400		part	full	x	w/printer	x
			part	full		w/printer	
			part	full		w/printer	

RAP AMOUNT			
Mix Type	Amount	Size	Binder
Base***	25	% 1/2"	w/PG 64-28 modifier
Intermediate***	25	% 1/2"	w/PG 64-28 modifier
Surface	15	% 1/2"	w/PG 64-28 modifier

FINE AGGREGATE			
%	Type	Producer & City	PG Binder/Modifier
60	Screenings	TL Edwards Stoughton MA	Producer & City
	Stone Sand		Bitumar Providence RI
40	Natural Sand	TL Edwards Plymouth MA	Aggregate Industries Everett MA

MINERAL FILLER			
% and Kind	Grade	Kind	Kind
2	64-28	64-28	Parakoate
Baghouse Fines	64-28	64-28	Parakoate

ALLOWABLE TOLERANCES			
Sieve Designation	Eng. Limit All Mixes	Eng. Limit for OGFC	JMF Target
Binder Content	+/- 7 %	+/- 7 %	+/- 5 %
Passing No. 4 and larger sieve sizes	+/- 7 %	+/- 7 %	+/- 5 %
Passing No. 8 through No. 100	+/- 4 %	+/- 4 %	+/- 3 %
Passing No. 200	+/- 2 %	+/- 2 %	+/- 1 %
% Binder	+/- 0.4 %	+/- 0.4 %	+/- 0.3 %

NOTE LIMITATIONS
(Unless Data Approved)
Unless authorized by the Engineer, no Job Mix formula for mixes containing RAP will be approved which specifies:
* Less than 6% binder for HMA Surface Course - Standard Top
** Less than 5.5% binder for HMA Surf. Course - Dense Binder and Mod Top
*** Batch plants may not exceed 20% RAP
**** RAP is not allowed in OGFC

FORMULAS
(DR = Design Range of Specifications, JM = Job Mix Formula)
Aggregate Percentages below are proportional percentages of total aggregate for the mix.

Sieve Size	HMA Base		HMA Interm. Dense Binder		HMA Surface Dense Binder		HMA Surface Mod. Top		HMA Dense Mix		HMA Surf. Tmt.		HMA OGFC***		HMA HMA	
	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
2"	100	100														
1"	64-80	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100
3/4"			87-93	93	87-93	93	87-93	93	87-93	93	87-93	93	87-93	93	87-93	93
5/8"																
1/2"	47-58	58	62-68	68	72-73	73	72-73	73	72-73	73	72-73	73	72-73	73	72-73	73
3/8"																
#4	27-38	36	35-43	39	55-58	55	55-58	55	57-69	61	55-61	55	62-73	73	94-100	94
#6	19-29	27	24-34	30	41-45	41	41-45	41	41-45	41	37-42	41	52-55	53	68-81	72
#16									30-36	31	24-36	31	40-45	40	50-64	55
#30	12-13	13	12-18	14	21-26	21	21-26	21	21-25	22	18-26	21	28-34	28	30-46	39
#50	8	8	9-11	9	14-18	14	14-18	14	14-17	14	13-17	13	18-23	18	17-27	22
#100									9-12	9	10-12	10	10-14	10	11-13	12
#200	2	2	2-3	3	2-4	4	2-4	4	4-5	4	4	4	6	6	5-6	6
% Binder	4.4-4.6	4.5	4.9-5.1	5.0	5.4-5.6	5.5	** 5.4-5.6	5.5	* 5.9-6.6	6.0	** 5.4-5.6	5.5	7.4-7.6	7.4	7.4-7.6	7.5
Max. Theo Sp. Gr.	2.534		2.527		2.516		2.516		2.431		2.439		2.416		2.411	

We agree to furnish mixes to MassDOT projects produced from only above referenced materials, within allowable tolerances of the exact formulas given above. We also understand that formulas are to be submitted annually, prior to production for MassDOT work, and any subsequent changes in materials or formulation will require resubmission for approval.

Authorized Signature and Title: Stephen Edwards e-mail address: sewards@tedwards.net MassDOT Approval:



COMPANY: TL Edwards
PLANT LOCATION: Avon

CITY: Avon

DATE OF REVISION:
TELEPHONE #: 508-583-2029

HOT MIX ASPHALT JOB MIX FORMULAS

DATE: 4/4/2017
REVISION #

RMS-043 Revised 1/21/2017

D#	Batch/Drum Size	Automatic Controls (X)				PG Binder Tanks				Mix Silos, Insulation / Heated (X)			
		tons/	Tph	part	full	tons/	20k	gals.	gals.	tons, ins.	tons, ins.	tons, ins.	hid
2	tons/												
	tons/												
	tons/												

Nom size	Producer & City	FINE AGGREGATE	
		%	Type
1 1/2", 3/4"	TL Edwards Stoughton MA	60	Screenings
1/2", 3/8"	TL Edwards Stoughton MA	40	Stone Sand
			Natural Sand
			TL Edwards Plymouth MA

Mix Type	Amount	Size	RAP AMOUNT		Binder
			w/PG	w/PG	
Base***	20	%	1/2"	w/PG	64-28
Intermediate***	20	%	1/2"	w/PG	64-28
Surface	15	%	1/2"	w/PG	64-28

Special Material:	Amount	Size	Kind	Ultrapave Latex	Evotherm	Anli-Strip:	Silicone:	Mix Temp Range:	% of Binder	Kind:	PG Binder/Modifier	Mineral Filler	Grade
OGFC: Polymer	3	%	Kind			0.75	1	304-315	5000	5000	Bitumar Providence RI	2	64-28
Warm Mix Technology:	0.4	%	Kind					*F	Compact Temp Range:	283-292	Aggregate Industries Everett MA	Baghouse Fines	64-28

FORMULAS

(DR = Design Range of Specifications, JM = Job Mix Formula)

Aggregate Percentages below are proportional percentages of total aggregate for the mix:

Sieve Size	HMA		HMA		HMA Interm.		HMA Surface		HMA Surface		HMA Surface		HMA		HMA		HMA	
	Base	Binder	Dense Binder	Dense Binder	HMA Surface	Mod. Top	Dense Mix	Surf. Tmt.	OGFC***	HMA	HMA	HMA	HMA	HMA	HMA	HMA	HMA	HMA
1"	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
3/4"	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
5/8"	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
1/2"	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
3/8"	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#4	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#8	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#16	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#30	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#50	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
#100	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
% Binder	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM
Max. Theo Sp. Gr.	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM	DR	JM

NOTE LIMITATIONS

(Unless Data Approved)
 Unless authorized by the Engineer, no Job Mix formula for mixes containing RAP will be approved which specifies:
 * Less than 6% binder for HMA Surface Course - Standard Top
 ** Less than 5.5% binder for HMA Surf. Course - Dense Binder and Mod Top
 *** Batch plants may not exceed 20% RAP
 **** RAP is not allowed in OGFC

We agree to furnish mixes to MassDOT projects produced from any above referenced materials, within allowable tolerances of the exact formulas given above. We also understand that formulas are to be submitted annually, prior to production for MassDOT work, and any subsequent changes in materials or formulation will require resubmission for approval.

Authorized Signature and Title:

Stephen Edwards

e-mail address:

sedwards@ledwards.net

MassDOT Approval:

[Signature Line]



COMPANY: TL Edwards
Avon

CITY: Avon

DATE: 4/4/2017
REVISION #:
DATE OF REVISION:
TELEPHONE #: 508-589-2029

HOT MIX ASPHALT JOB MIX FORMULAS

RMS-043 Revised 1/21/2017

PLANT LOCATION: Avon

PLANTS

ID #	Batch/Drum Size	Automatic Controls (X)	PG Binder Tanks	Mix Silos (Insulation / Heated (X))
1	400 tons/	Tph part	3 @ 20k gals.	3 @ 200 ton. ins. X
	tons/	Tph part	@ gals.	@ ton. ins. X
	tons/	Tph part	@ gals.	@ ton. ins. X

COARSE AGGREGATE

Nom Size	Producer & City
1 1/2" 3/4"	TL Edwards Stoughton MA
1/2" 3/8"	TL Edwards Stoughton MA

Type	Producer & City
Screenings	TL Edwards Stoughton MA
Natural Sand	TL Edwards Plymouth MA

FINE AGGREGATE

Mix Type	Amount	Size	Kind	Kind
Basse***	25 %	1/2"	W/P/G	64-28
Intermediate***	25 %	1/2"	W/P/G	64-28
Surface	15 %	1/2"	W/P/G	64-28

Mineral Filler	Grade	PG Binder/Modifier
% and Kind	64-28	Producer & City
2	64-28	Blumar Providence RI
Baghouse Fines	64-28	Aggregate Industries Everett MA

Special Material:	Amount	Size	Kind	Kind
OGFC Polymer	3 %		Kind	Ultrapave Latex
Warm Mix Technology	0.4 %		Kind	Evotherm

Arti-Strip:	0.75	% of Binder	Kind:
Silicone:	1	oz per	5000
Mix Temp Range:	304-315	+F	Compacted Temp Range: 283-292

*** Warm mix additives are only to be used as a compaction aide and not to lower the target production or compaction temperatures. Additives shall be listed on the NEAUPG website at <http://www.neaupg.com> and <http://www.neaupg.com> or <http://www.neaupg.com> for more information.

ALLOWABLE TOLERANCES
Sieve Designation/ Binder Content: Eng. Limit All Mixes
Passing No. 4 and larger sieve sizes: JMF Target +/- 7 %
Passing No. 8: JMF Target +/- 4 %
Through No. 100: JMF Target +/- 3 %
Passing No. 200: JMF Target +/- 2 %
% Binder: JMF Target +/- 0.4 %

FORMULAS

(DR = Design Range of Specifications, JM = Job Mix Formula)

Sieve Size	HMA		HMA Interm.		HMA Surface		HMA Surface		HMA		HMA		HMA		HMA		
	Base	Binder	Dense Binder	Dense Binder	Sid. Top	Mod. Top	Dense Mix	Surf. Tmt.	OGFC***	DR	JM	DR	JM	DR	JM	DR	JM
2"	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1"	64-80	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
3/4"			87-93	93	87-93	93	87-93	93	87-93	93	87-93	93	87-93	93	87-93	93	87-93
5/8"																	
1/2"	47-58	58	62-68	68	72-73	73	72-73	73	62-68	68	62-68	68	62-68	68	62-68	68	62-68
3/8"																	
#4	27-38	36	35-43	39	55-58	55	55-58	55	27-38	36	27-38	36	27-38	36	27-38	36	27-38
#8	19-29	27	24-34	30	41-45	41	41-45	41	19-29	27	19-29	27	19-29	27	19-29	27	19-29
#16																	
#30	12-13	13	12-18	14	21-26	21	21-26	21	12-13	13	12-13	13	12-13	13	12-13	13	12-13
#50	8	8	9-11	9	14-18	14	14-18	14	8	8	8	8	8	8	8	8	8
#100																	
#200	2	2	2-3	3	2-4	4	2-4	4	2	2	2	2	2	2	2	2	2
% Binder	4.4-4.6	4.5	4.9-5.1	5.0	5.4-5.6	5.5	5.4-5.6	5.5	4.4-4.6	4.5	4.9-5.1	5.0	4.9-5.1	5.0	4.4-4.6	4.5	4.9-5.1
Max. Theo Sp. Gr.	2.534	2.527	2.516	2.516	2.431	2.439	2.416	2.411	2.534	2.527	2.516	2.516	2.534	2.527	2.516	2.516	2.534

We agree to furnish mixes to MassDOT projects produced from only above referenced materials, within allowable tolerances of the exact formulas given above. We also understand that formulas are to be submitted annually, prior to production for MassDOT work, and any subsequent changes in materials or formulation will require resubmission for approval.

Authorized Signature and Title: Stephen Edwards
e-mail address: sedwards@tlledwards.net
MassDOT Approval: _____