MANAGING ASPHALT PAVEMENTS

CONFERENCE AND TRADE SHOW

MAY 15-17, 2023 ★ WACO, TEXAS

WELCOME!

Please check your App for scheduled Sessions!

MANAGING ASPHALT PAVEMENTS
CONFERENCE AND TRADE SHOW
MARCH 15-17, 2023★WACO, TEXAS

Free Educational Opportunities and Tools of the Trade

General Session

Free Educational Opportunities and Tools of the Trade.

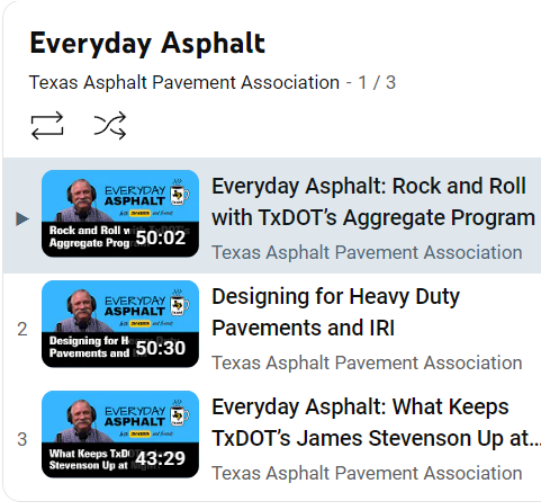
Education

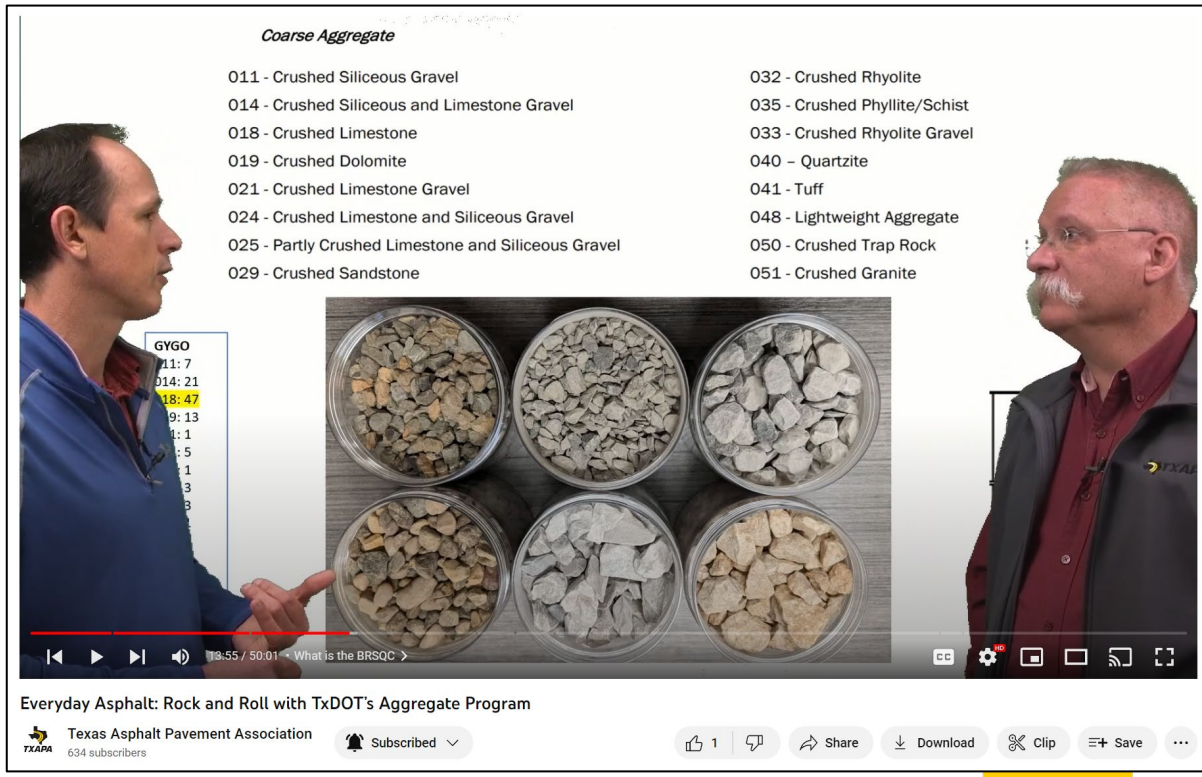
- ❑ Everyday Asphalt (3rd Thursday at 3pm)
- ❑ Inspector: Asphalt Education (almost free)
- ❑ Engineer: Asphalt Essentials
- ❑ Customized Seminars

Free Educational Opportunities

Everyday Asphalt (3rd Thursday at 3pm)

- Monthly Webinar
- New guests each month
- Posted to TXAPA's YouTube Channel
- Deeper Dive into:
  - Maintenance
  - Materials
  - Design
  - Construction





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Free Educational Opportunities and Tools of the Trade.

Education

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- ☐ **Inspector: Asphalt Education**
- ☐ Engineer: Asphalt Essentials
- ☐ Customized Seminars

Free Educational Opportunities

Inspector: Asphalt Education (*almost free*)

- *What does an asphalt inspector need to do their job?*
- Six session series (2.5 hours per session - twice a week for three weeks)
- Topics: Communication, Roles and Responsibilities, Critical Thinking, Plans and Specs, Traffic Control, Surface Preparation, Paving, Compaction, Testing.
- Online interactive lectures tied to a Learning Management System for resources, course materials, and activities.
- Highly rated.
- www.texasasphalt.org click on Resources.

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Apps | Texas Asphalt Pavement... | TXAPA Educat... | TXAPAMedia1 - Synolo... | Home - OneDrive | Workbook: TxDOT.gov | Pavement Interactive –... | Hot Mix Asphalt Center | Whitley & Siddons TxD... | Construction Publications | COVID-19 - Cases | (43) Feed | LinkedIn | Other bookmark

512-312-5043 | MEMBER LOGIN

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- Articles and Updates
- About Asphalt
- Specifications
- Test Procedures
- Safety Shares

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- Videos
- Podcasts

EDUCATION
- Engineer Asphalt Esse
- Inspector Asphalt Education
- Specification Education
- Custom Seminars

LS AND DOWNLOADS
- Definitions and Terms
- Asphalt Pavement User Guide
- HMAC Certification & Training
- Workforce Ranger Resources

search keyword

SEARCH

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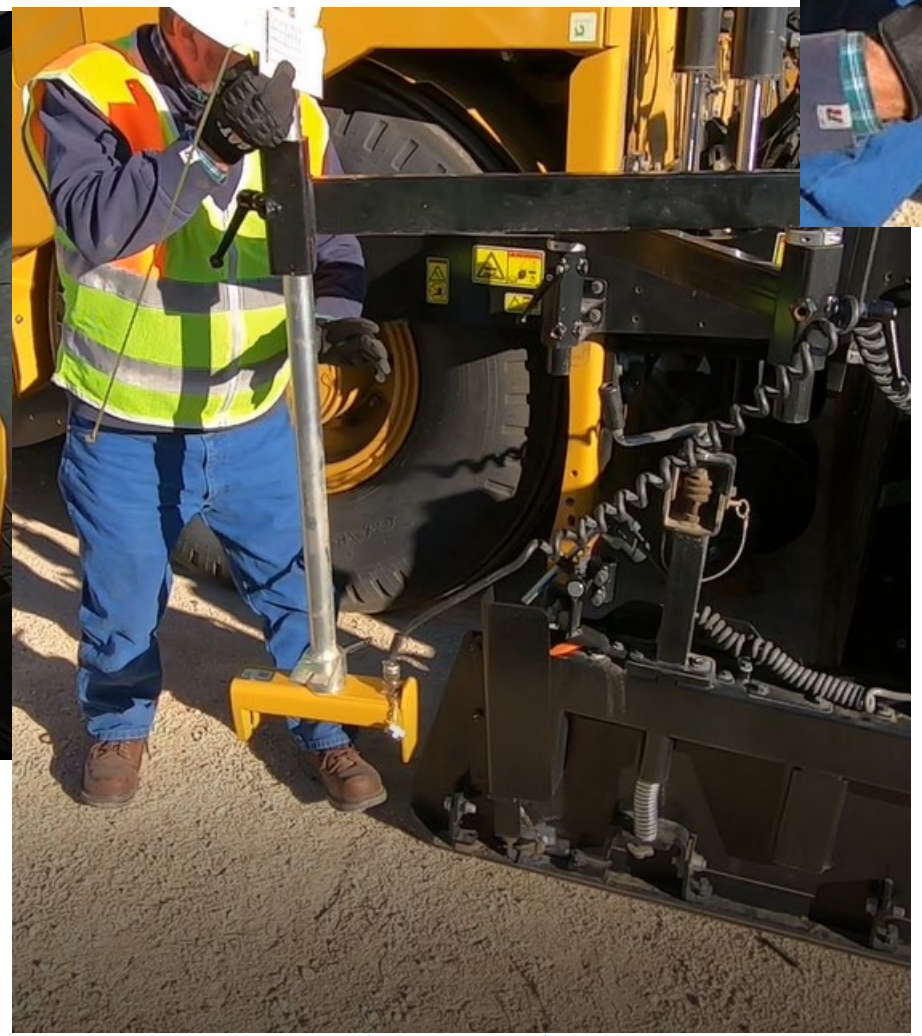
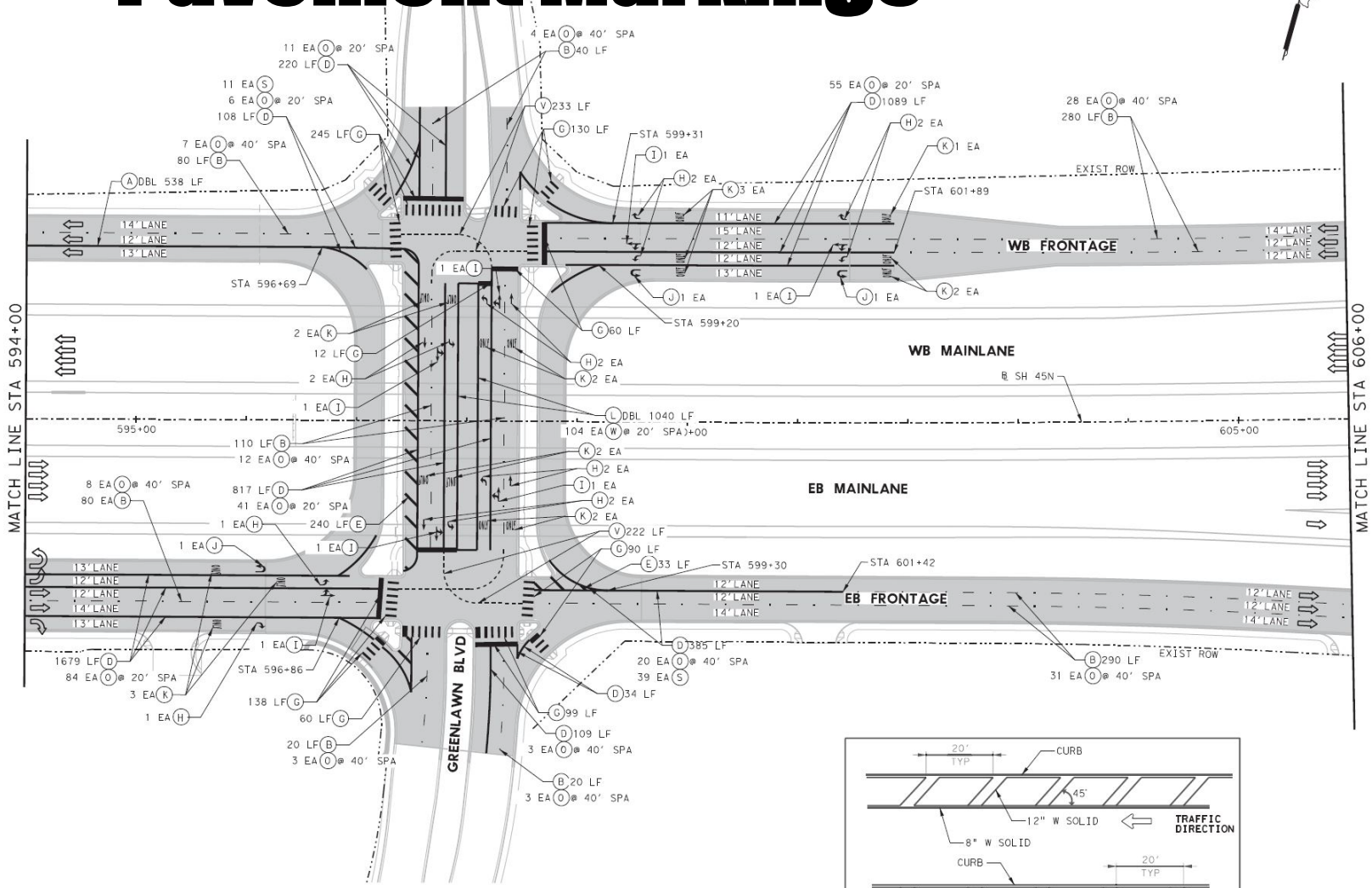
Authority - Article 5-10

- Authorized representatives of the Engineer.
- Examine all work performed and materials furnished.
- Inform the Contractor of failures.
- Inspectors may reject work or materials and may suspend work.
- Cannot alter, add, or waive or issue instructions contrary to the Contract.
- Cannot act as foremen or interfere with the management of the work.

Grade Sensor and Position



Pavement Markings



CROSSHATCHING DETAIL (TYP)

LEGEND:

- (A) RE PM W/RET REQ TY I (W)(4")(SLD)
- (B) RE PM W/RET REQ TY I (W)(4")(BRK)
- (C) REFL PAV MRK TY I (W)(8")(DOT)
- (D) REFL PAV MRK TY I (W)(8")(SLD)
- (E) REFL PAV MRK TY I (W)(12")(SLD)
- (F) REFL PAV MRK TY I (W)(12")(LNPD)
- (G) REFL PAV MRK TY I (W)(24")(SLD)
- (H) REFL PAV MRK TY I (W)(ARROW)
- (I) REFL PAV MRK TY I (W)(DBL ARROW)
- (J) REFL PAV MRK TY I (W)(UTURN ARROW)
- (K) REFL PAV MRK TY I (W)(WORD)
- (L) RE PM W/RET REQ TY I (Y)(4")(SLD)
- (M) REFL PAV MRK TY I (Y)(8")(SLD)
- (N) REFL PAV MRK TY I (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(4")(SLD)
- (Q) REFL PROF PAV MRK (Y)(4")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I (W)(4")(DOT)
- (W) REFL PAV MRK TY II-A-A
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ EXIST DIRECTION OF TRAFFIC

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED PROFESSIONAL ENGINEER

09/25/2020

0 25 50 100
SCALE: 1"=100'

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 45N

FRONTAGE STRIPING LAYOUT

SHEET 5 OF 24

DN: CC	DIST. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: JV	6	TEXAS					SH 45N
DW: CC	STATE DIST.	COUNTY	CONTROL	SECTION NO.	JOB NO.		SHEET NO.
CK DW: JV	AUS	TRAVIS	6359	54	001		70

...\TxDOT-BW-HALF+PDF.pltcfg

Why are In-Place Air Voids Important?

- In place air voids are measured from cores taken from the roadway.
- Random sampling ensures proper distribution of tests since the entire pavement cannot be sampled. It also ensures the entire area has a chance of being sampled, ensuring uniform density throughout the mat.
- Knowing the random number procedure and executing it is key for material acceptance.

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Mix Temperature Measuring

- Calibration
- Correlation

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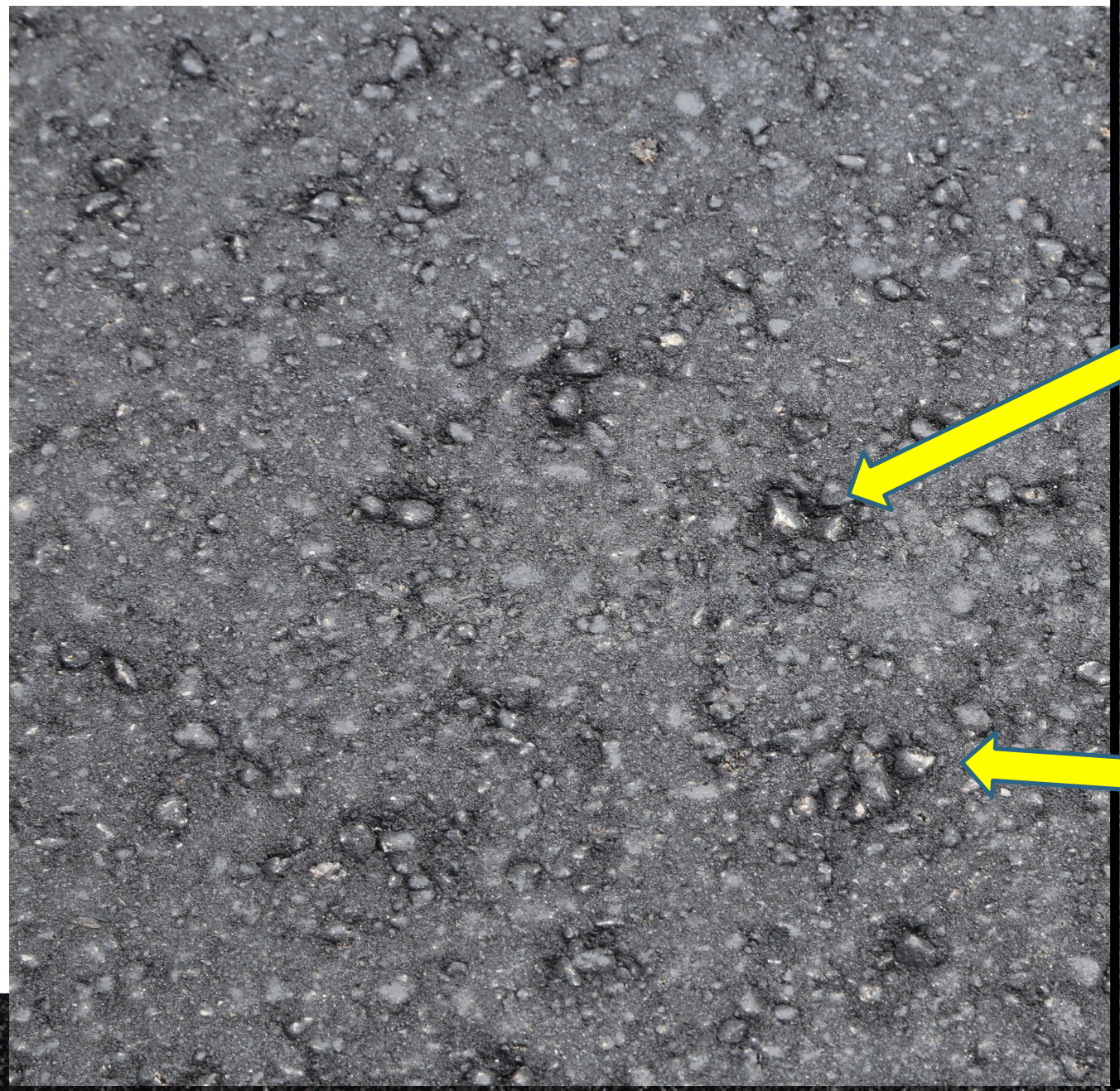
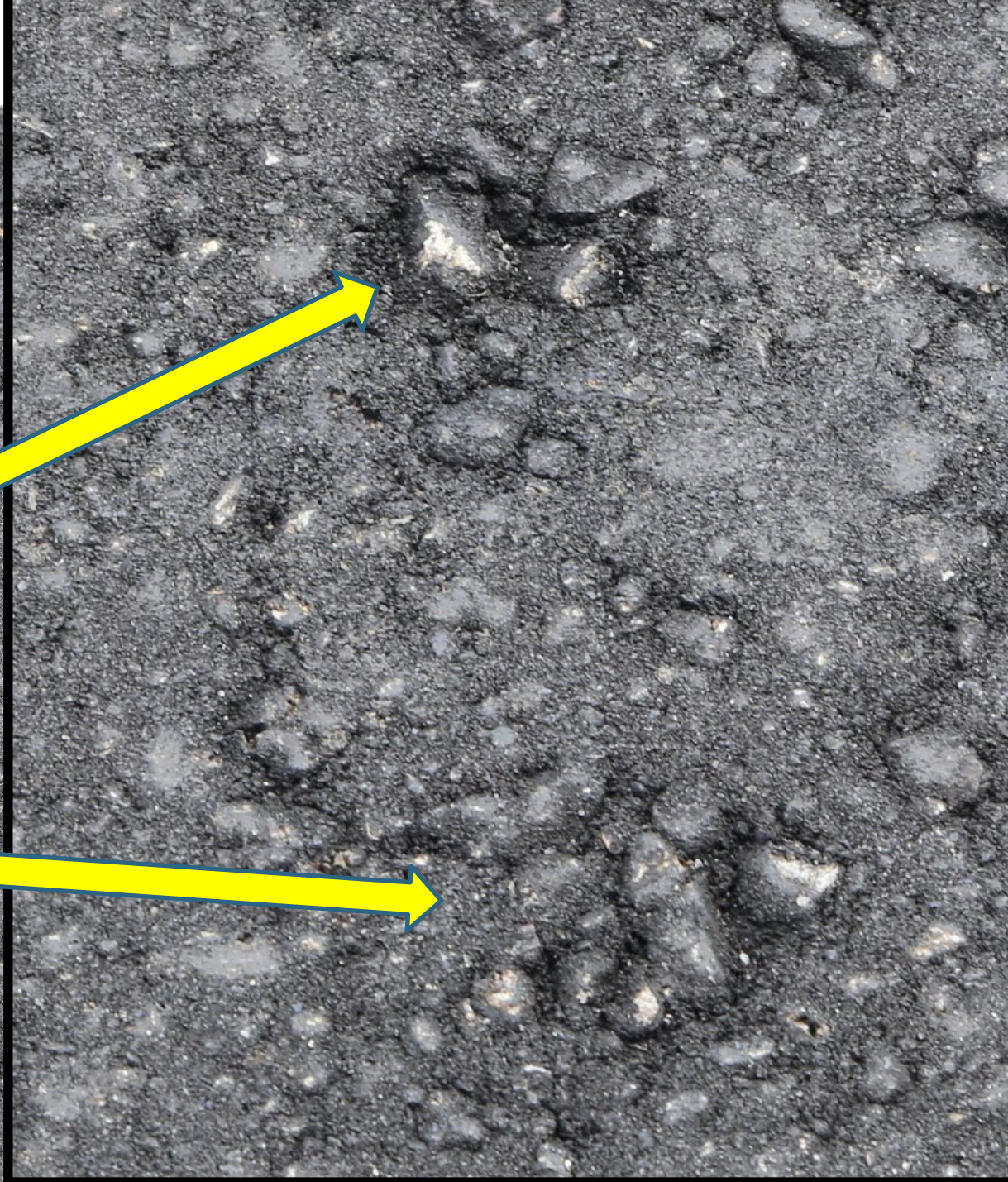
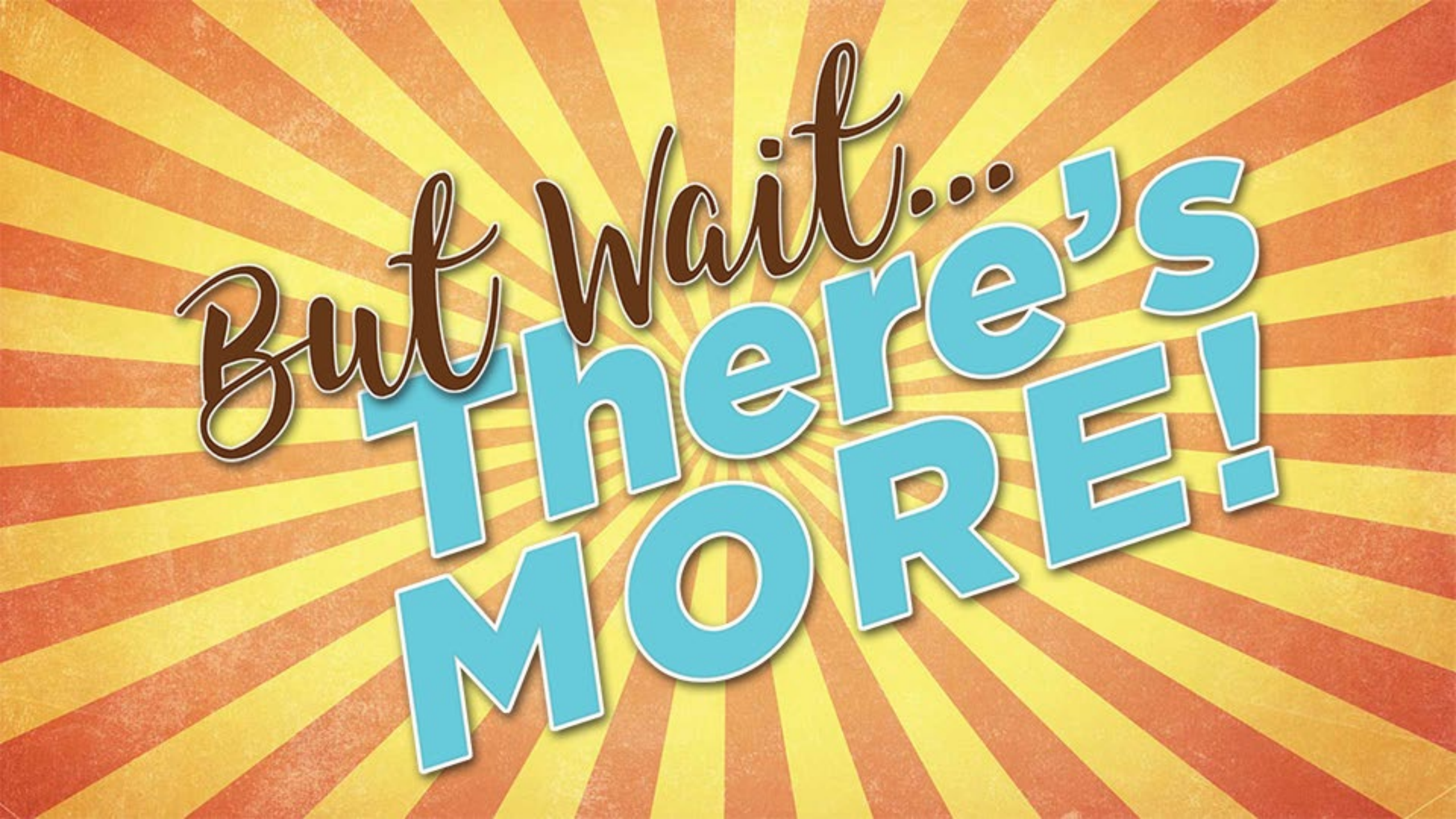
Some Handwork is not

What do you see?





How do these look?


But Wait...
There's
MORE!

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- ☐ Customized Seminars

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Free Educational Opportunities

Engineer: Asphalt Essentials

- Understanding how all the areas work together.
- Six session series (3 hours per session - twice a week for three weeks)
- Topics: Communication, Critical Thinking, Maintenance, Materials, Design, and Construction.
- Online interactive lectures tied to a Learning Management System for resources, course materials, and activities.
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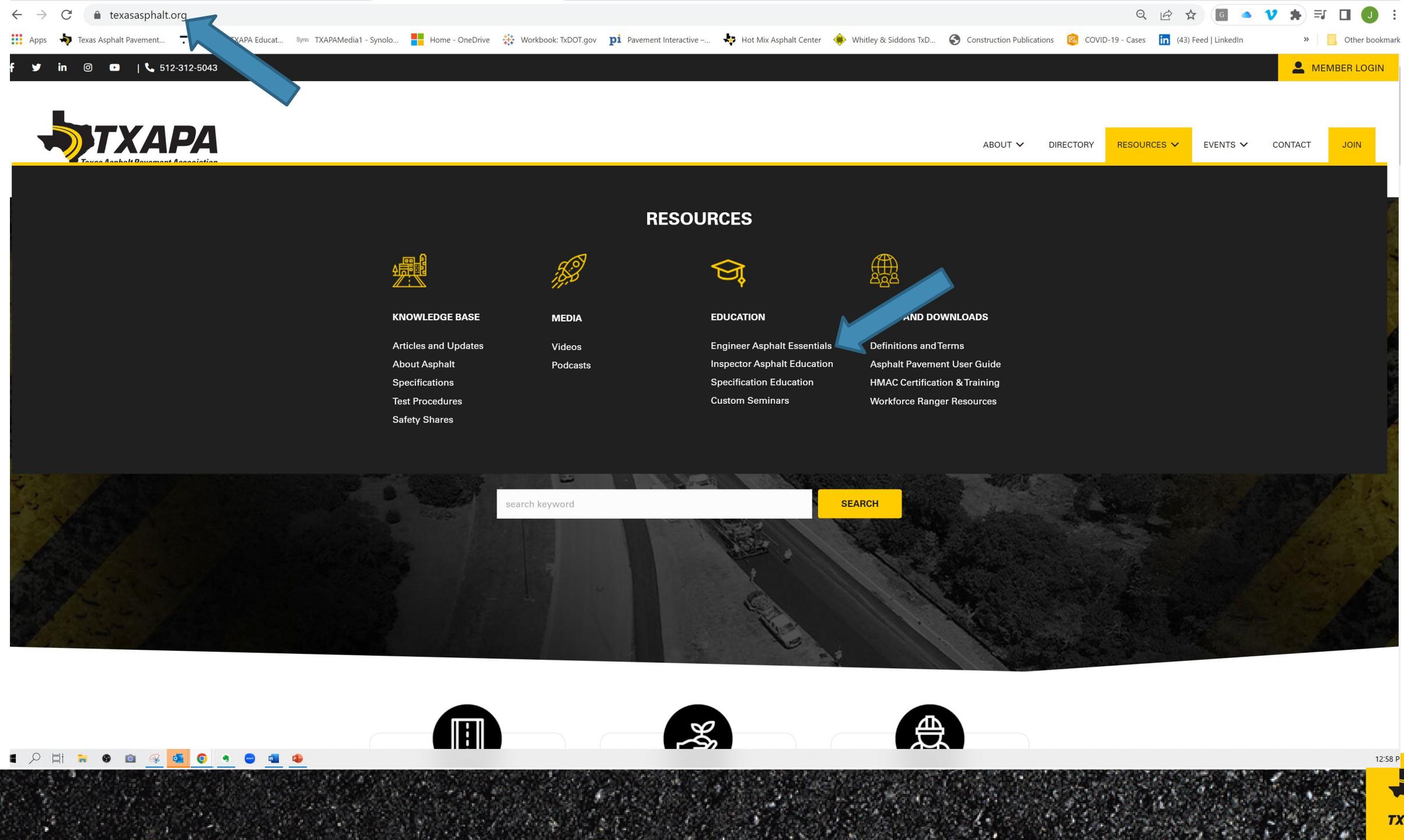
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Understand the symptom, to determine the cause, and then develop the solution(s).

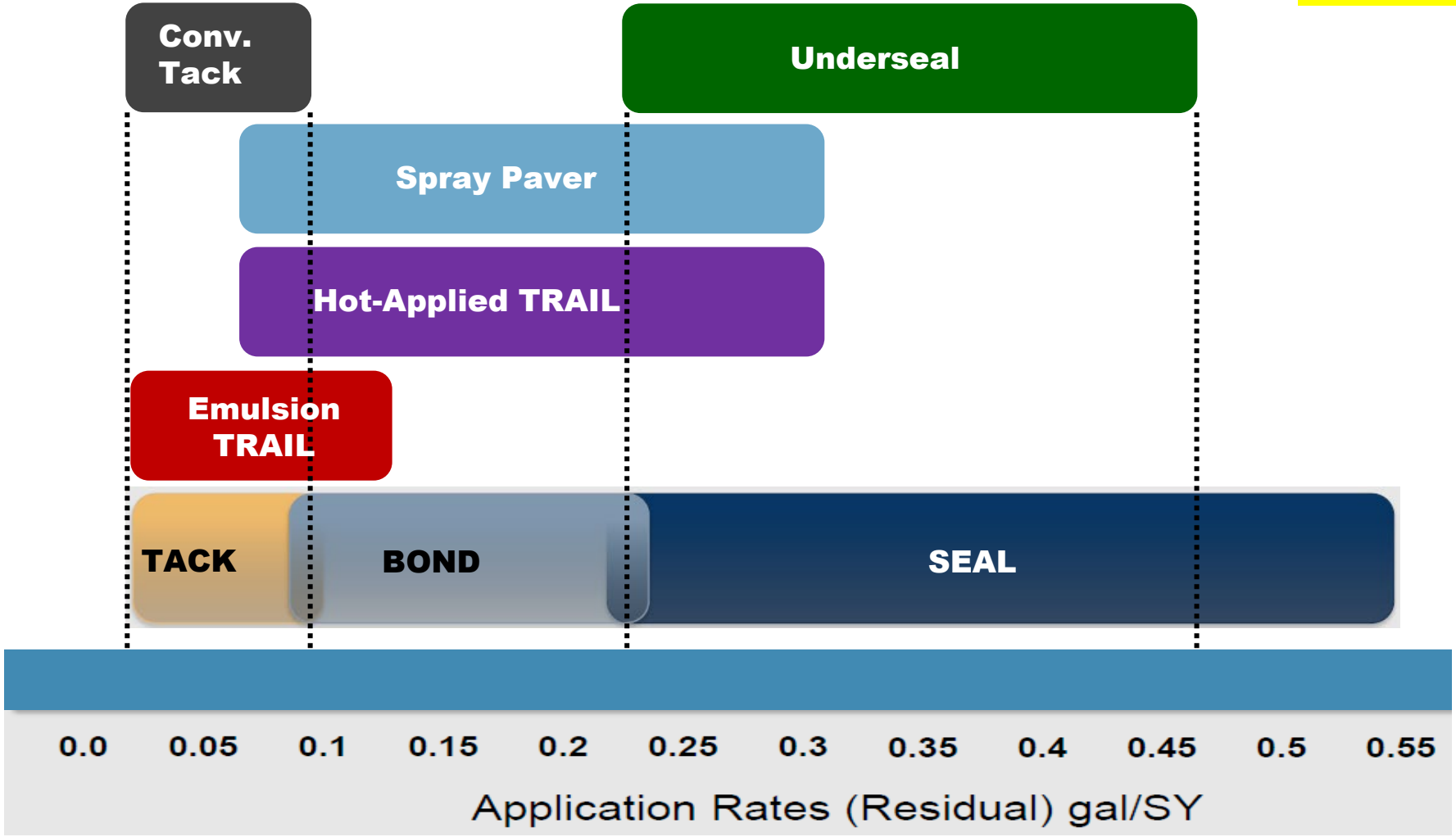
What CAUSED the distress?

- *Is it Design related?*
- *Is it Materials related?*
- *Is it Construction related?*
- *Is it Maintenance related?*
- *Is it Load related?*
- *Is it Environment related?*
- *Is it Drainage related?*

- ✓ *Don't fix the symptom, fix the problem!*
- ✓ *There are often contributing factors – no single cause.*

Tack, Bond, Seal Binder Rates

Binder rate ranges:
- *Just enough, but*
- *Not too much.*



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How do you estimate Level Up on a project?

- Ride the job
- DMI the distance
- Measure the width – full width is better
- Add 10%
- Use an average of 165 lb/sy to calculate quantities

Ex. 1500 SY x 165 lb./sy / 2000 lb./ton = 123.75 >> 125 tons

- How good is your estimate?
- Are you adjusting cross-slope as well? Increase qty.
- How long will these plans sit on the shelf before letting?
- Will the pavement heal itself?

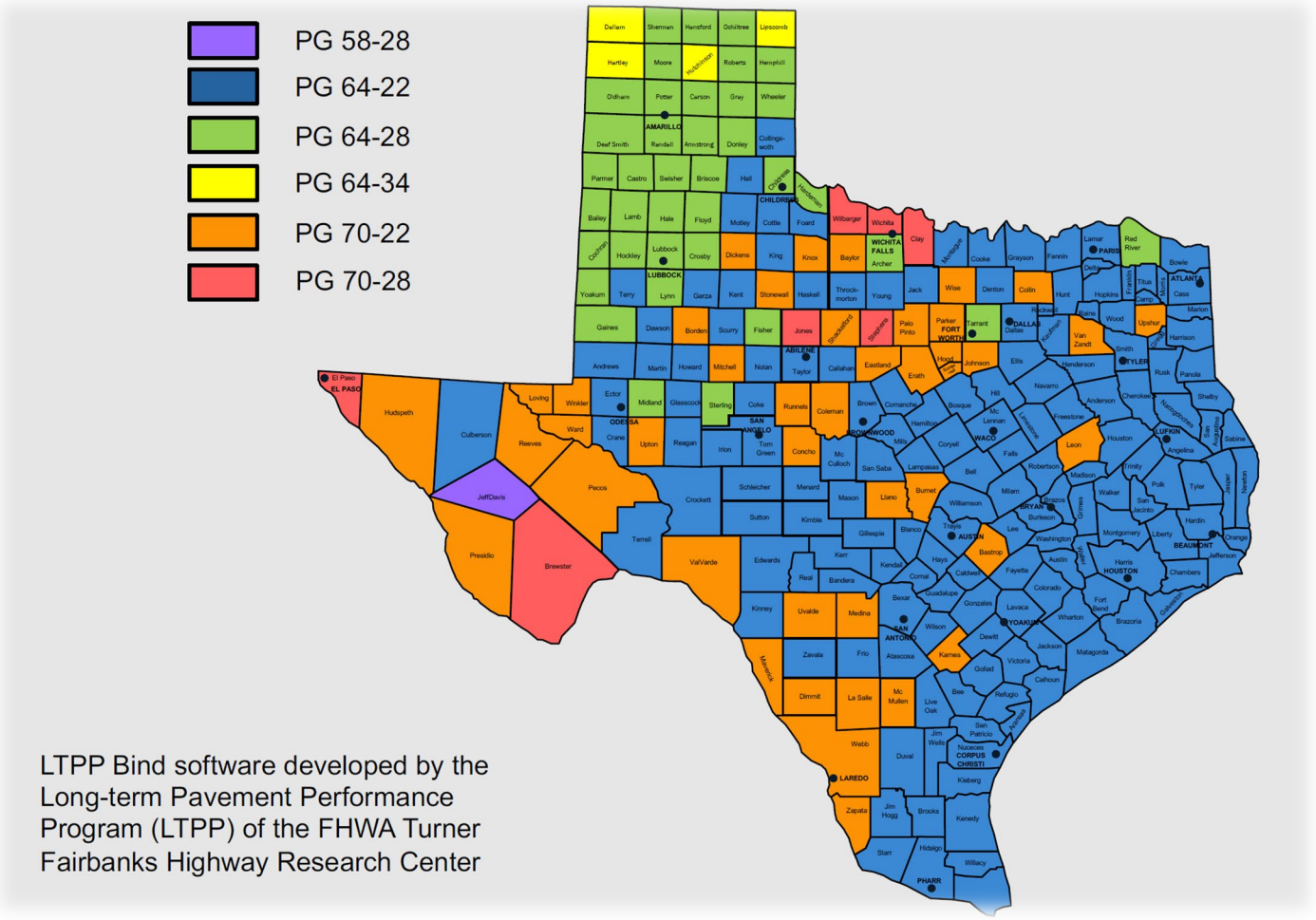
Typical PG Binders in Texas

Unmodified Binders

- PG 58-22
- **PG 64-22**

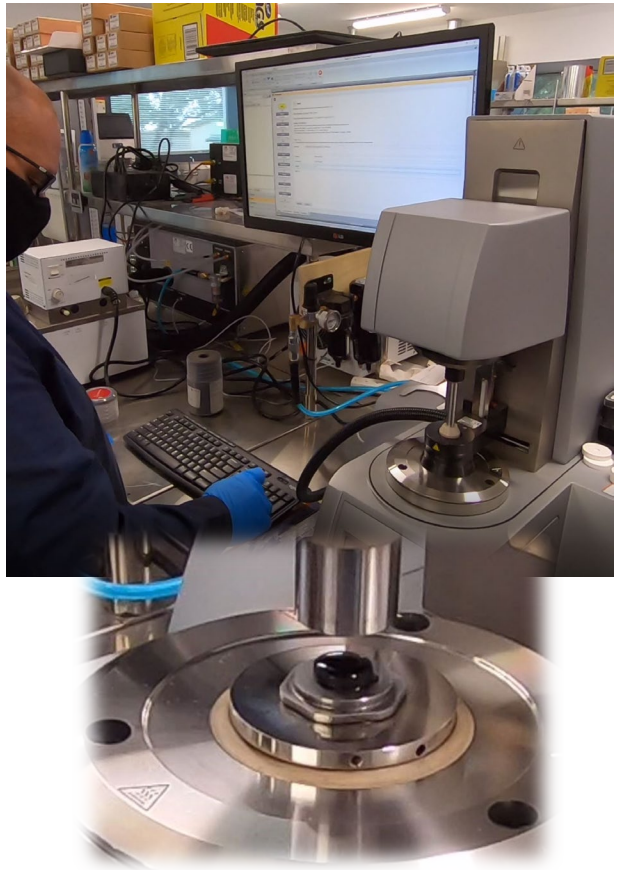
Modified Binders

- PG 64-28
- **PG 70-22**
- PG 76-28
- **PG 76-22**
- PG 76-28

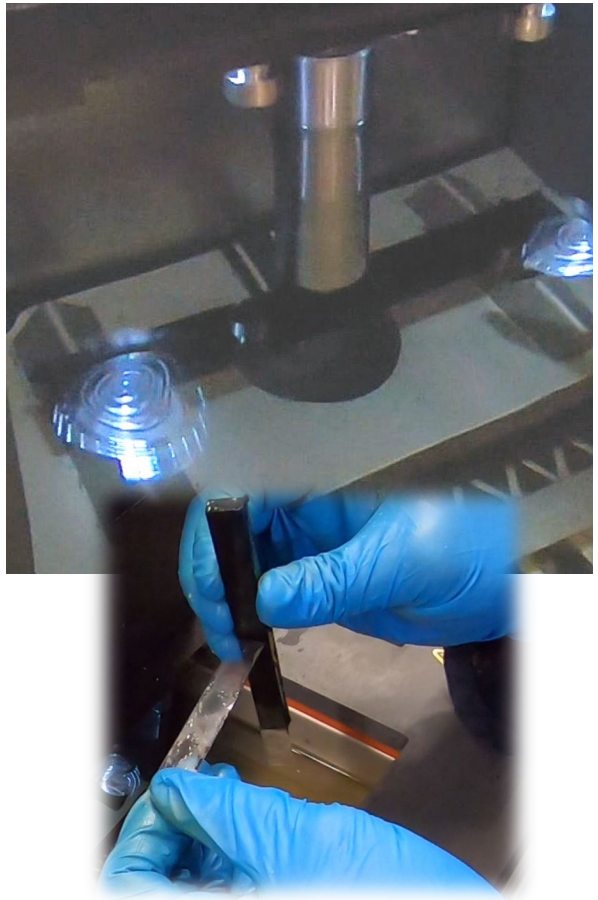


District to set binder grade based on environment, layer, and traffic.

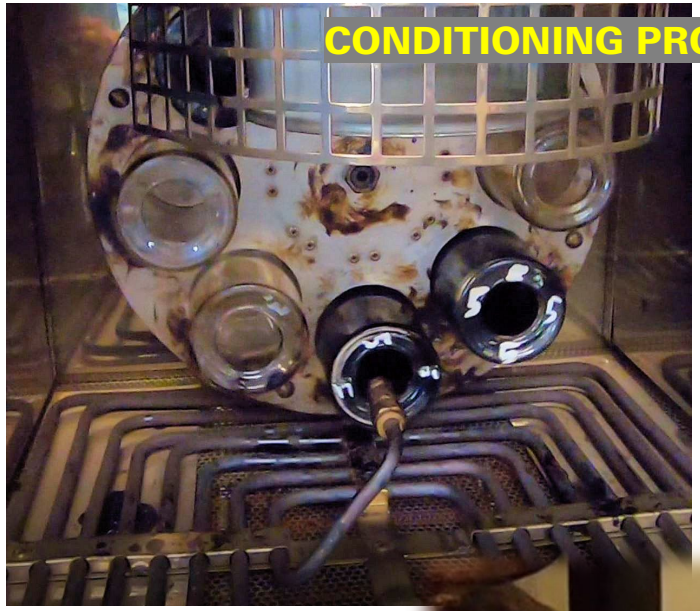
Dynamic Shear Rheometer (DSR)



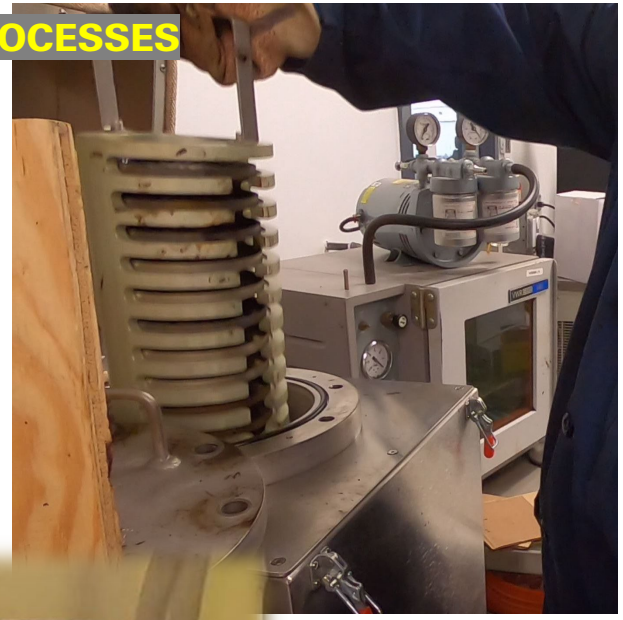
Bending Beam Rheometer (BBR)



Rolling Thin Film Oven (RTFO)



Pressure Aging Vessel (PAV)



DSR = Upper PG Grade > rut resistance
BBR = Lower PG Grade > crack resistance

RTFO = Simulation of Plant Aging of Asphalt
PAV = Simulation of In-Service Aging

Mix Type Take-A-Ways

- **Dense/Superpave**
  - Binder
  - Plant Density
  - Bonus Roadway Air Voids
  - Base, Intermediate, Surface
  - Go To, Everyday mix
- **SMA**
  - Stone-on-Stone
  - Binder rich - Polymer
  - Bonus Roadway Air Voids
  - Intermediate, Surface
  - Top of the line premium
- **TOM**
  - Binder Rich – Polymer
  - Thin Lift
  - SAC aggregate requirements
  - Low Permeability in Field
  - Surface only
  - Great PM Mix
- **PFC**
  - Aggregate Skeleton
  - Binder rich Polymer + Fibers
  - High Roadway Air Voids
  - SAC Aggregate Requirements
  - Surface only
  - Straight line mix – no shear.

Inputs With Most Impact on Thickness Design:

- ✓ Time to First Overlay
- ✓ Serviceability Indices
- ✓ Traffic Loading
- ✓ Reliability Level
- ✓ Modulus of Materials

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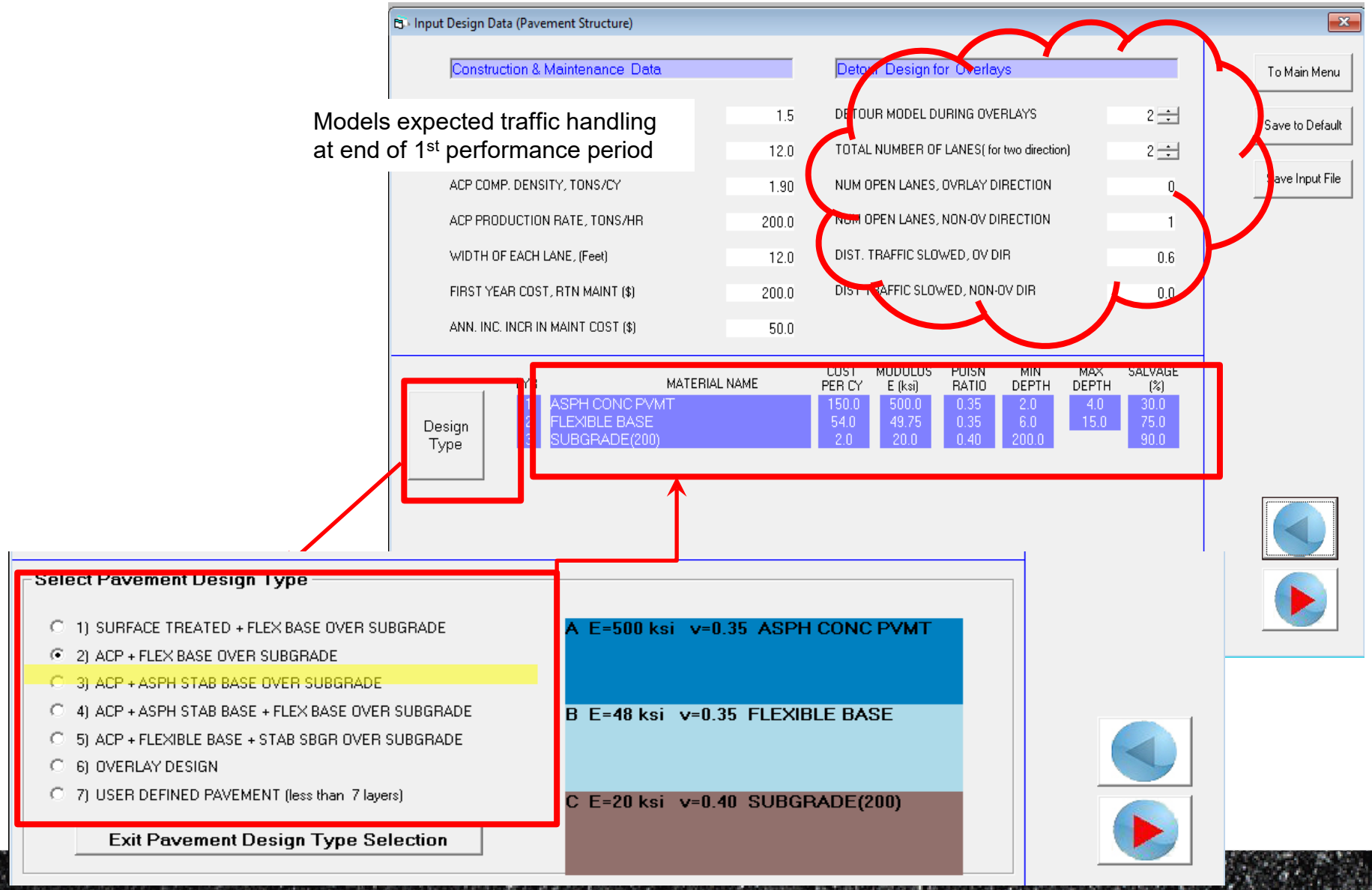
FPS Ex 2: Design Type and Material Inputs



FPS Ex 2: Post Design Mechanistic Checks

FPS Pavement Design Result

Problem	006	District	15	San Antonio	Section	2	Highway	FM	Confidence Level: C
Control	2130	County	133	KERR	Job	046	Date	7/13/2021	No. of Best Designs 6

Design Type PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

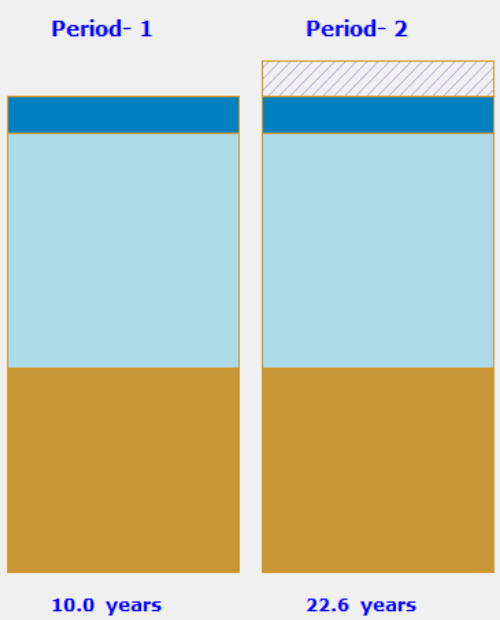
Best Design No.	Design: 1	Design: 2	Design: 3	Design: 4	Design: 5	Design: 6
Material Arrangement	AB	AB	AB	AB	AB	AB
Total Cost	27.81	28.85	29.13	29.84	29.95	34.43
No. of Layers	2	2	2	2	2	2
Layer Depths (inches)	2.0 13.0	4.0 7.5	2.5 12.5	3.0	3.5	4.0
No. of Perf. Periods	2	2	2			
Perf. Time (years)	10, 23	10, 23	10, 23			
Overlay Policy (inches)	2.0	2.0	2.0			

Previous Page

Check Design | Check Design | Check Desig

Best Pavement Design Drawing - 1

DESIGN - 1 PAVEMENT PLOTTING



Thick (in)	Mat.Type
2.00	First Overlay
2.00	ASPH CONC PVMT
13.00	FLEXIBLE BASE
200.00	SUBGRADE(200)

Print | Previous Design | Next Design | All Design Plots | Mechanistic Check | Triaxial Check | Stress Analysis | Exit

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Different Designs... Different Performance

Thick.	Modulus	v	Material Name
2.00	500.0	0.35	ASPH CONC PVMT
13.00	49.8	0.35	FLEXIBLE BASE
200.00	20.0	0.40	SUBGRADE(200)

Pavement Life

Based on design period: 10.0 years the traffic to first overlay is (million) 0.694

HMA Tensile Strain 272.0 Crack Life (million) 0.59

Subgrade Compressive Strain -367.0 Rut Life (million) 3.29

Check Result The Design is Failed by Cracking for the period:1which is 10.0 years

Thick.	Modulus	v	Material Name
4.00	500.0	0.35	ASPH CONC PVMT
7.50	49.8	0.35	FLEXIBLE BASE
200.00	20.0	0.40	SUBGRADE(200)

Pavement Life

Based on design period: 10.1 years the traffic to first overlay is (million) 0.700

HMA Tensile Strain 208.0 Crack Life (million) 1.42

Subgrade Compressive Strain -414.0 Rut Life (million) 1.92

Check Result The Design is OK for the period:1which is 10.1 years

18 kip ESAL 20 YR (1 DIR) (millions) 1.5

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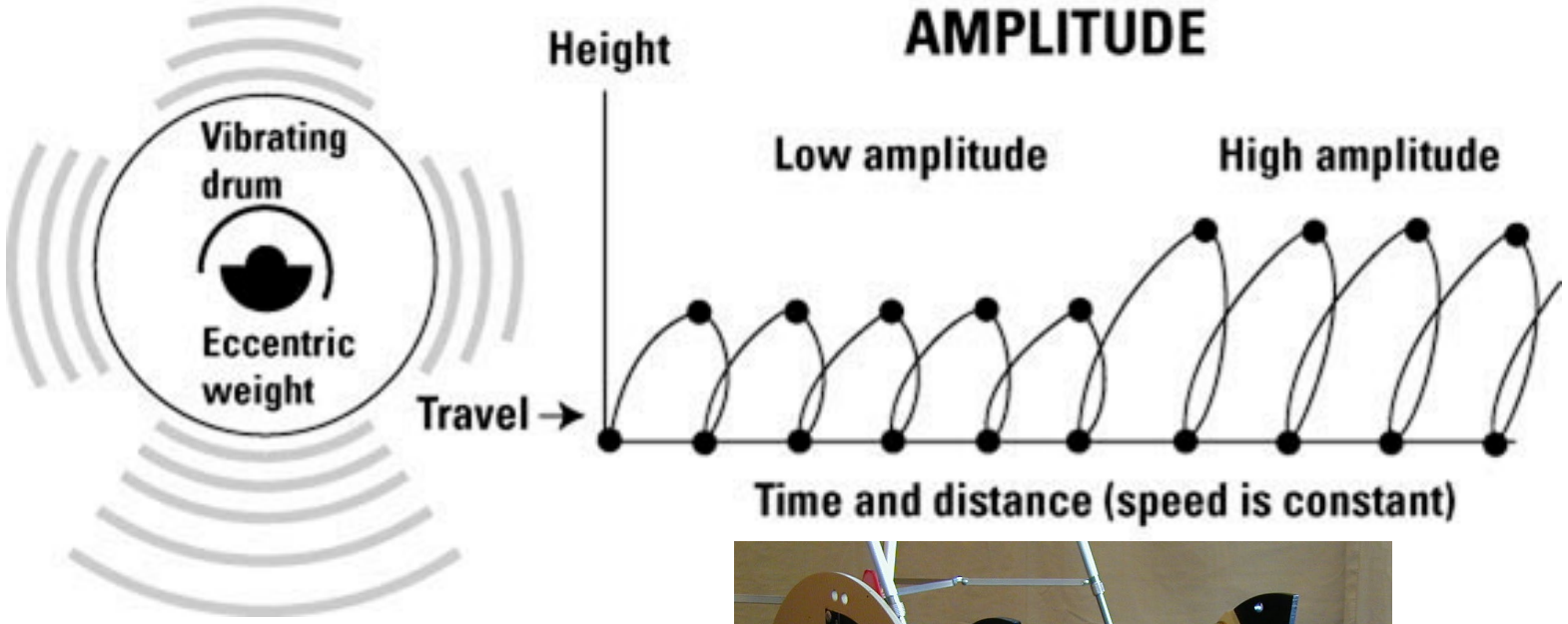
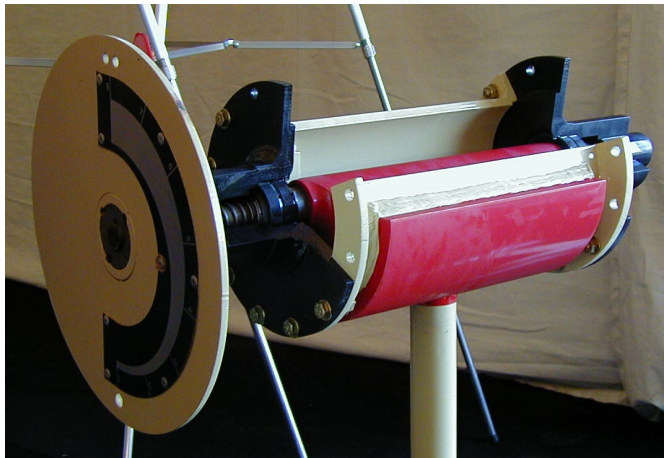
“Tack”

- Where:
  - New construction
  - Rehabilitation with multiple lifts
  - Overlaying new HMA layers
  - Existing pavement in good condition
  - Patching and Level-up
- Materials: Section 300
  - Emulsions, PG, TRAIL
- Typical Application Rates (gal/sy) *Consult your District and Mfg.!*
  - 0.04-0.10
  - Actual vs Residual

Vibratory Roller Amplitude





- ✓ Spinning eccentric weight causes drum movement
- ✓ Falling drum adds to compactive force
- ✓ Distance drum moves is called amplitude
- ✓ Amplitude determines impact force

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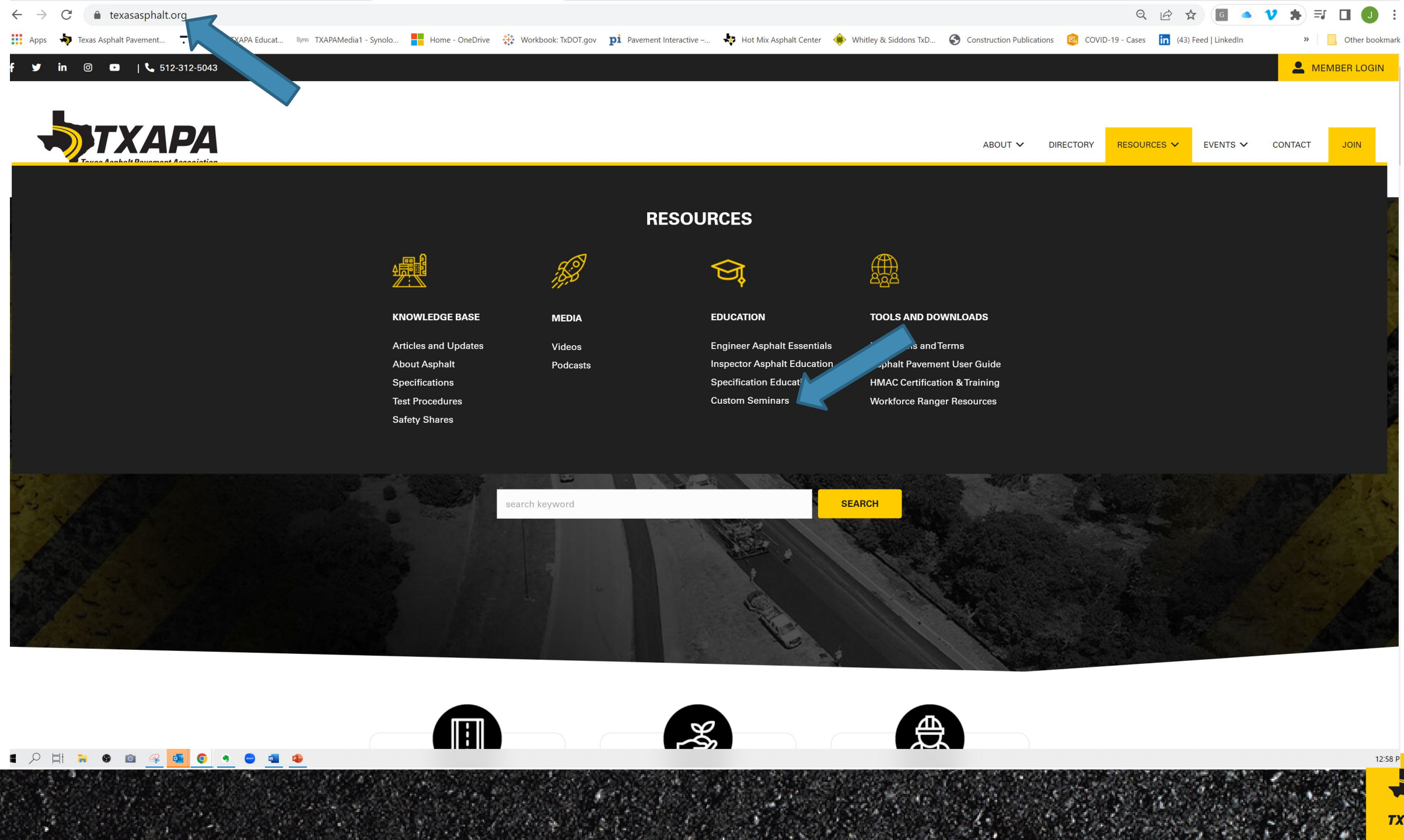
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Free Educational Opportunities

Customized Seminars

- TXAPA offers free seminars to our customers and members.
- From management to field operations
- Basic overview to detailed how to.
- Have worked with large and small cities and counties across the state.
- Chuck Fuller Lead Instructor.

Free Educational Opportunities & Tools of the Trade.

Tools of the Trade:

- ❑ **HMAC Tools**
  - ❑ **Forms, Videos, Quick Facts, Specs**
- ❑ TXAPA Tools
  - ❑ Resources, Videos, Podcasts, Pavement Rating Training
- ❑ Software:
- ❑ What's in your Kit?

TXHMAC.ORG

HMAC Training & Certification
Phone Number 512-312-2099
Physical Address 149 Commercial Drive, Buda, TX 78610
Email Address hmacinfo@texasasphalt.org

QUICK FACTS: LEVEL 1B

TEX-207-F, PART VII

Determining Longitudinal Joint Density using a Density-Testing Gauge

Why

Evaluate density of longitudinal joints.

Low density/high air voids along the joint will allow water to penetrate. This may lead to premature cracking, raveling, and roughness of hot mix asphalt pavements.

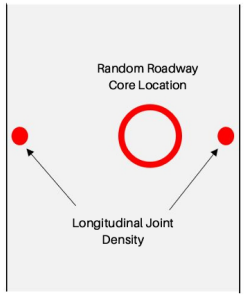
When

After Compaction

1. Engineer one per project.
2. Contractor one per sublot.

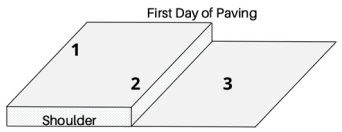
How

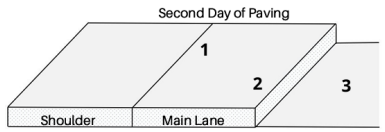
1. Identify the random sample location for in-place air void testing (roadway core location).
2. Mark and record this location.
3. Identify the pavement edge that will become a longitudinal joint.
4. Take density-testing gauge readings at each location.
5. Identify each joint type as 'Confined' or 'Unconfined'.



Confined or Unconfined

- Confined - Pavement edge is next to another pavement or structure, curb & gutter.
- Unconfined - Pavement edge is open and another lane will be paved next to it.





First Day of Paving

1. Unconfined joint, will not become a longitudinal joint, no testing required.
2. Unconfined joint, testing required.
3. Main lane, next day paving, no testing required.

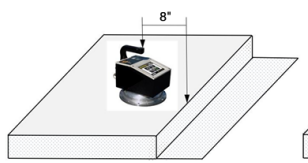
Second Day of Paving

1. Confined joint, testing required.
2. Unconfined joint, testing required.
3. Main lane, next day paving, no testing required.

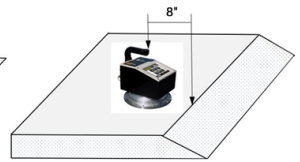
QUICK FACTS: LEVEL 1B

Density-Testing Gauge Readings

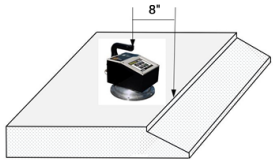
- Position gauge with center placed eight inches from longitudinal joint.
- *Electrical Impedance Gauge (Non-Nuclear)*
  - 2 readings in continuous mode.
- *Nuclear Density Gauge*
  - Three one-minute readings in backscatter mode.
  - Longer dimension of gauge is parallel to joint.



Longitudinal Butt Joint



Longitudinal Tapered Joint



Notched Wedge Longitudinal Joint

Action

1. Record the readings from each location.
2. Determine the difference in density between the readings taken at the random roadway core location and the readings taken at the longitudinal joint.
3. Determine a Correlated Joint Density for each longitudinal joint.
   - Record the average Bulk Specific Gravity (Ga) of the roadway cores.
   - Record the Theoretical Maximum Specific Gravity (Gr) for the sublot from where the cores were taken.
   - Use equation in the test procedure to calculate the Correlated Joint Density for each longitudunal joint.

SPECIFICATION

1. Longitudinal joint density is failing when:
   - Reading at the joint is more than 3.0 pcf below the density reading taken at the random core location **and**
   - Correlated Joint Density is less than 90.0%.
2. Suspend production when the joint density evaluation for two consecutive sublots do not meet this criteria.
3. Resume production after the Engineer approves changes to production or placement methods.

- When the difference in readings between the core location and the joint increases, the density at the joint decreases having higher air voids.
- When the correlated joint density decreases, falls below 90%, the density at the joint decreases having higher air voids.
- Under these circumstances, water is more likely to drain into the joint and lead to cracking and raveling.

Level 1B

- Tex-207-F, Part 3
- Tex-207-F, Part 4
- Tex-207-F, Part 5
- Tex-207-F, Part 7
- Tex-222-F
- Tex-225-F, Part 2
- Tex-244-F
- Tex-246-F
- Tex-251-F
- Tex-500-C

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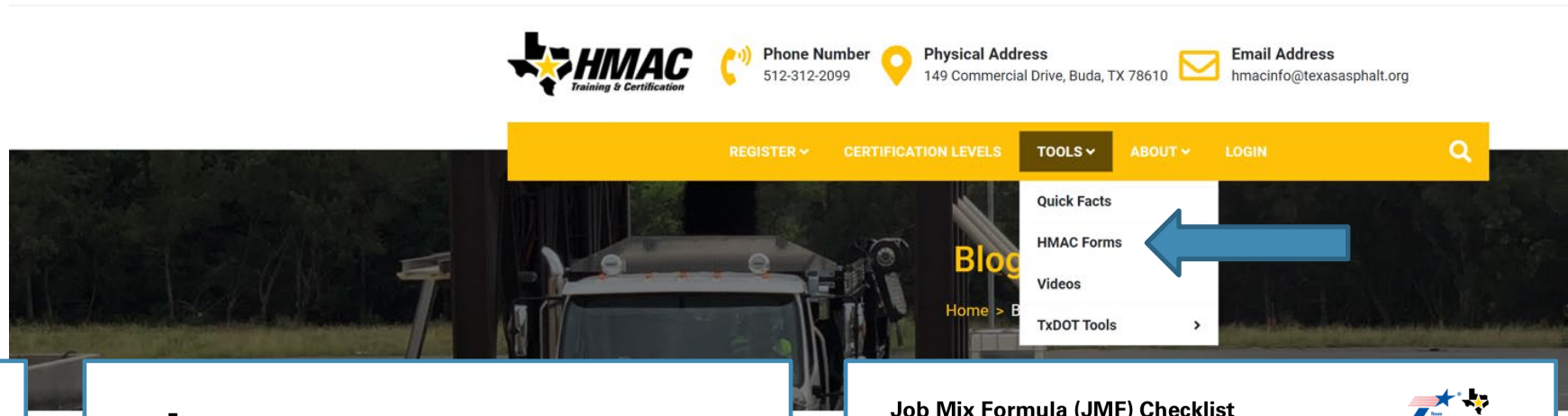

HMAC Training & Certification

.SAMPLE ID:	
HWY:	
TIME SAMPLED:	
CSJ:	
HWY/COUNTY:	
C BATCH #:	
TxDOT SERIAL #:	

TECHNICIAN: _____ DATE: _____

IGNITION OVEN	
Basket Weight:	
Basket Weight & Sample:	
Weight of Sample:	
Basket Weight & Sample after Burn:	
Calculated % AC	
Ignition % AC	

GRADATION				
Sieve Size	Weight in Grams	Individual % Retained	Cumulative % Retained	Total % Passing

RICE	
Sample Weight:	
Calibrated Pyc:	
Material in H20:	
Gr:	

MOLDS	1	2	3
Height:			
Air:			
Water:			
SSD:			
Ga:			
Avg Ga:			

HMAC Training & Certification

Date:		Hwy:	
CSJ:		C Batch #:	

Sample	Sample ID							
	Sampler & Cert. #							
	Time & Temp							
	TxDOT Serial #							
Ignition Oven	Tester & Cert. #							
	Basket							
	Final Basket							
	Original Sample							
	Final Sample							
	Calculated % AC							
	Ignition % AC							
Gradation	Tester & Cert. #							
	#200							
	Pan							
	Total							
Rice	Tester & Cert. #							
	Material							
	Calibrated Pyc.							
	Material in H20							
	Gr							

		A	B	A	B	A	B	A	B
Lab Molds	Tester & Cert. #								
	Height								
	Air								
	Water								
	SSD								
	Ga								
	Avg. Ga								
	Avg. Density								

Job Mix Formula (JMF) Checklist

HMAC

Project Information

Highway: _____ Contractor: _____

CSJ/RMC: _____ Producer: _____

Country: _____ Plant Location: _____

TxDOT Project Representative: _____ Cell Number: _____

Mix Design Information

Producer Mix Design #: _____ TxDOT Mix Design #: _____

JMF #: _____ Spec Item #: _____

Mix Type: _____ Binder Grade: _____

Gyratory Press Type: _____ # of Gyrations (SGC): _____

Target Values

AC Content (%): _____ Density (%): _____ VMA (%): _____ Discharge Temp: _____

Gradation (% passing):

2": _____ #4: _____

1 ½": _____ #8: _____

1": _____ #16: _____

¾": _____ #30: _____

½": _____ #50: _____

⅜": _____ #200: _____

Correction Factors:

2": _____ #4: _____

1 ½": _____ #8: _____

1": _____ #16: _____

¾": _____ #30: _____

½": _____ #50: _____

⅜": _____ #200: _____

Location of Control Charts: _____

Acknowledgement:

By signing below, you acknowledge that you have read and understand the above information and agree to perform all test in accordance with TxDOT Specifications and Test Procedures

QC/QA Technician: _____ Cert #: _____ Date: _____

QC/QA Technician: _____ Cert #: _____ Date: _____

QC/QA Technician: _____ Cert #: _____ Date: _____

QC/QA Technician: _____ Cert #: _____ Date: _____

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Description

The HMAC is a training and certification center managed and operated by the Texas Asphalt Pavement Association to certified individuals in TxDOT Test Procedures.

Stats

Joined Aug 24, 2020

57,337 views

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Phone Number 512-312-2099

Physical Address 149 Commercial Drive, Buda, TX 78610

Email Address hmacinfo@texasasphalt.org

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Tex-200-F

Level 1A

HMAC - 1 / 20

▶	2:17	Tex-200-F	HMAC
2	3:41	Tex -206 -F	HMAC
3	2:00	Tex-207-F, Part 1	HMAC
4	5:49	Tex-207-F, Part 1 Calculations	HMAC
5	2:58	Tex-207-F, Part 6	HMAC
6	2:57	Tex-212-F	HMAC
7	2:06	Tex-221-F Sampling	HMAC
8	2:06	Tex -222-F Method A	HMAC
9	1:30	Tex-226-F	HMAC
10		Tex-227-F	HMAC

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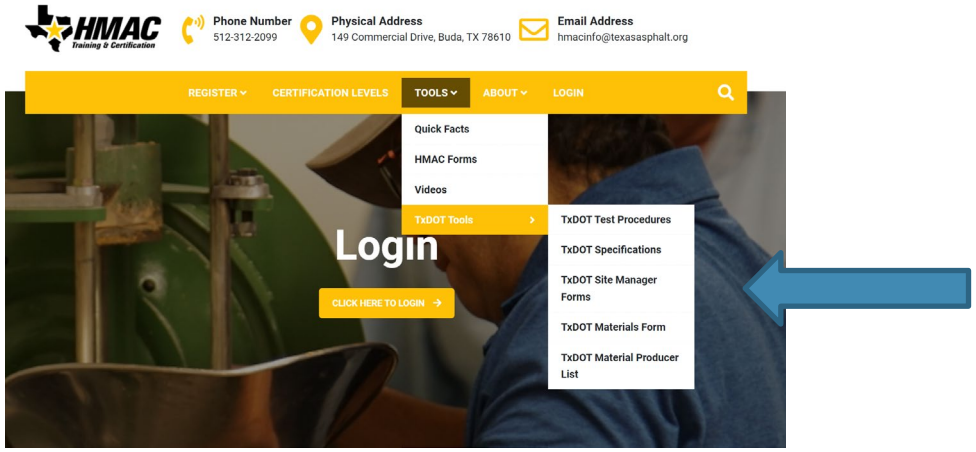
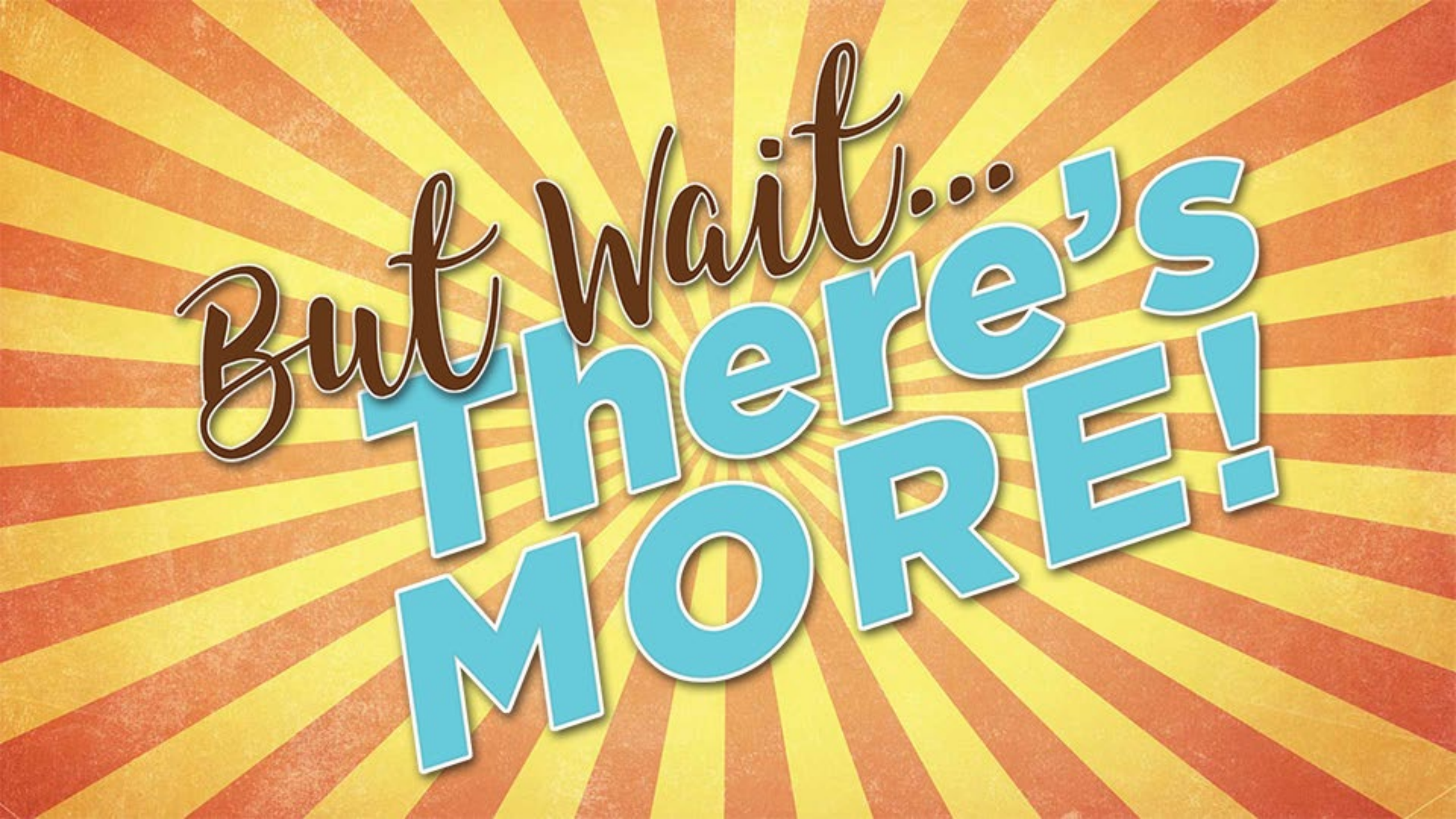
100-E Series	**Soils and Aggregates (100-E Series)** The procedures in this series cover the methods for testing and evaluating soils, aggregates, and flexible base materials.
200-F Series	**Bituminous (200-F Series)** The procedures in this series cover the testing methods for hot-mix asphaltic concrete, black base, cold-mix, patching mix, RAP and crumb rubber, in-plant inspection of limestone rock asphalt aggregates and mixes, aggregates and bituminous materials, and surfacing aggregates.
300-D Series	**Cement (300-D Series)** The procedures in this series cover the sampling and testing methods for hydraulic cement. This series also refers to ASTM specifications and test methods related to portland hydraulic cement, blended Type 1P, Type 1S, and masonry cement.
400-A Series	**Concrete (400-A Series)** The procedures in this series cover the testing methods for portland cement concrete, coarse and fine aggregates, reinforcing steel, seven wire strand, and other related materials.
500-C Series	**Asphalt (500-C Series)** The procedures in this series cover the testing methods for asphalt cements, asphalt cutbacks, asphalt emulsions, performance grades binders, bituminous adhesives, waterproofing and joint materials, crack sealers, joint sealers, rejuvenating agents, and additives.



2192	Forensics Investigation Request
2227	Optimized Aggregate Gradation Worksheet
2273	Signing Material Statement
2388	Seal Coat Material Selection Table
2460	Soil Compactor Adjustment and Soil Compactor Analyzer Report (Tex-113-E/Tex-114-E)
2461	Grooving Tool
2583	Galvanizing Worksheet
2585	TxDOT Fabrication Notification
2586	Steel Non-Bridge Member Worksheet DMS-7380
2684	Fabrication Notification DMS-7370
CST-M-2	Volumetric Sieve Analysis Worksheet
Power45	Power 45 Chart XLSM
PSTR SS-2	PSTR SS-2 Chart XLSM
Tx2mixsolver	Tx 2 Mixsolver
Tx2Performance	Performance Testing Request Form XLSM
TxCC04	Plot Control Chart, Use in Conjunction with the 2004 QC/QA Template XLSM
TxCC14	Plot Control Chart, Use in Conjunction with the 2014 QC/QA Template XLSM
TxRandNum04	Instructions for Generating Random Numbers Using TxRandNum.XLSM (2004) XLSM
	Binder Grade Calculator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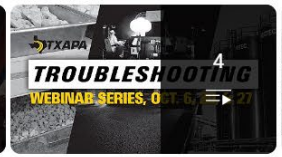

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A Joint Program from the Texas Department of Transportation and Texas Asphalt Pavement Association

	31- 40 POINTS (Exceptional)	21-30 POINTS (Very Good)	10-20 POINTS (Good)
SURFACE APPEARANCE	Uniform and consistent throughout in texture - Clean, tight longitudinal joints - Few, if any, fat spots - Few or no discernible roller marks	Long sections of uniform surface appearance - Isolated areas of minor segregation or surface imperfections - Isolated and minor imperfections in longitudinal joints, i.e., separation, raveling, overlapping, etc.	Random or widely scattered areas of surface imperfections - Noticeable end-load segregation - Discernible roller marks or auger shadows are prevalent - Noticeable problems with longitudinal joints are prevalent
SMOOTHNESS OF RIDE	Consistently smooth ride throughout - Transitions are smooth at pavement ends or bridges - No significant bump at transverse joints - No discernible surface irregularities are affecting the ride, i.e., rutting, roller marks, etc.	Long sections of consistently smooth ride - Isolated areas of minor chatter or uneven surface - Minor roughness in transition areas - Discernible bump at transverse joints	Surface irregularities (i.e., dips, bumps, chatter, etc.) are widespread - Some roughness exists in transition areas - Minor bump at transverse joints

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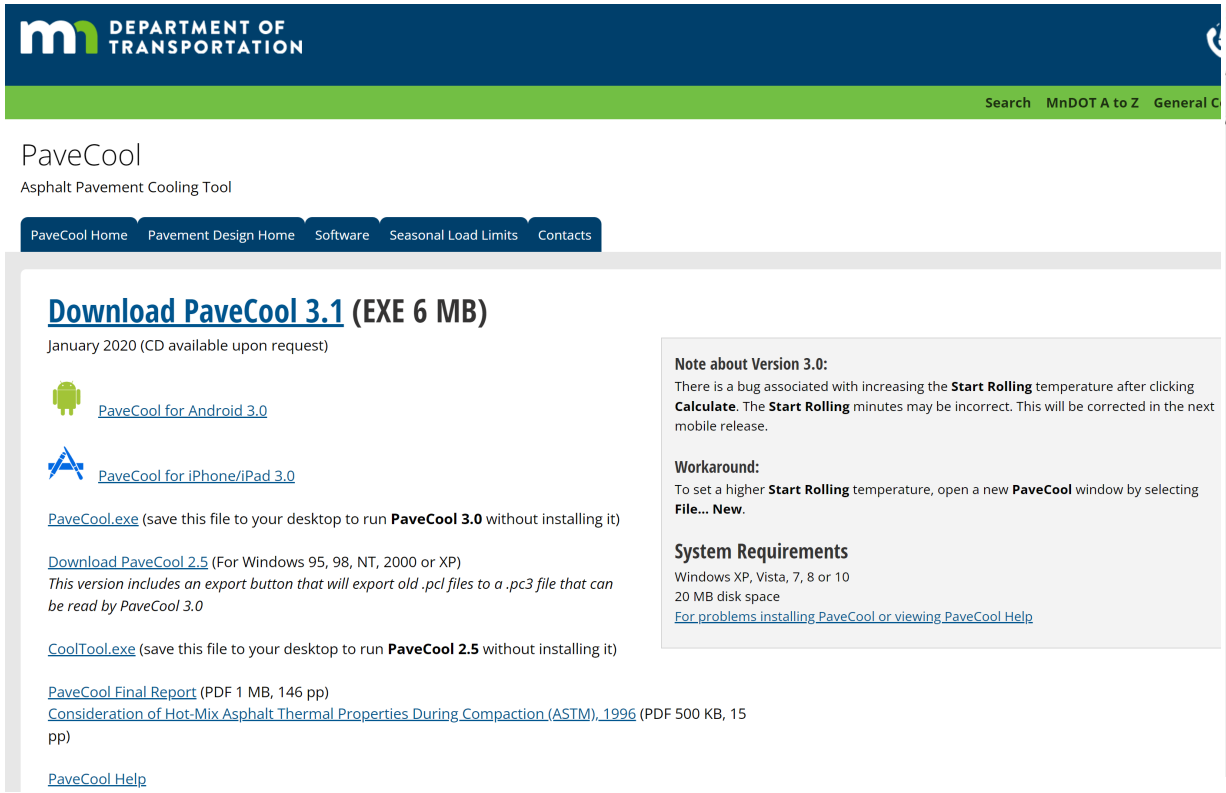

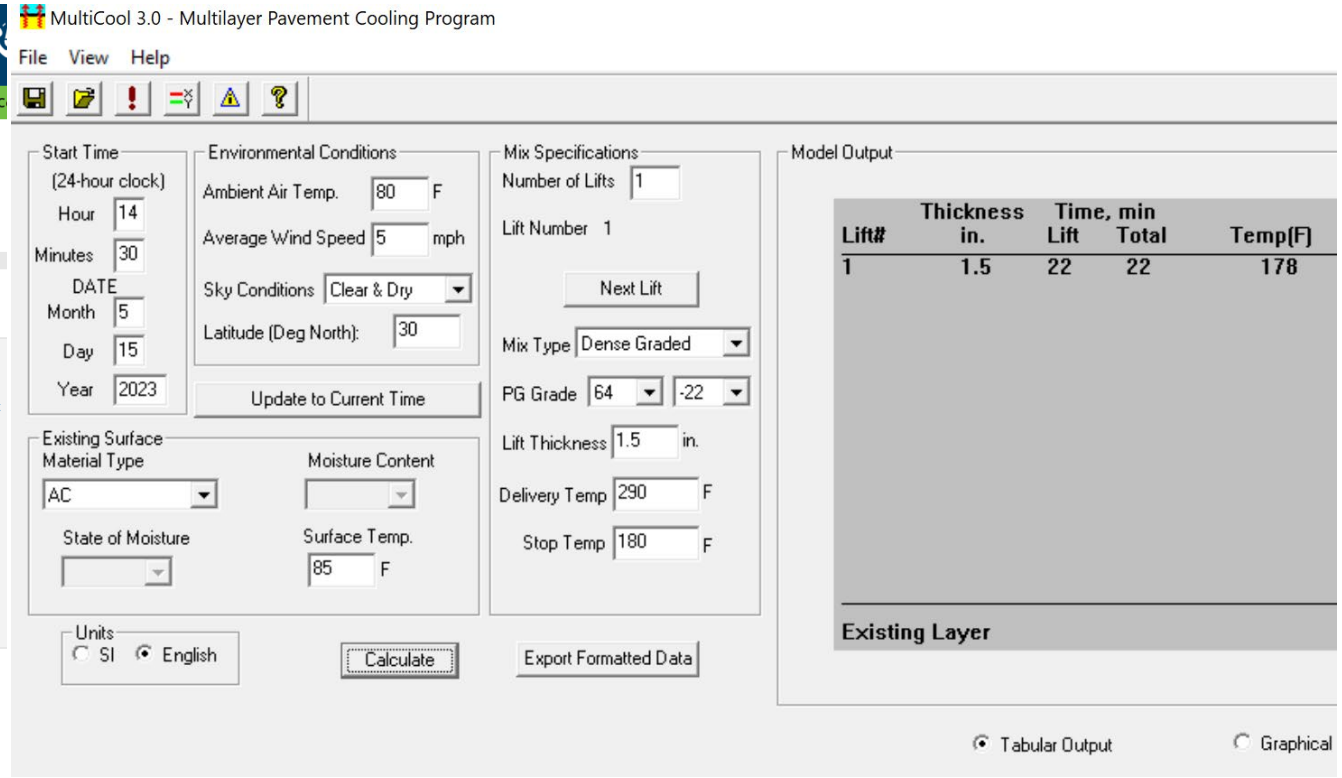

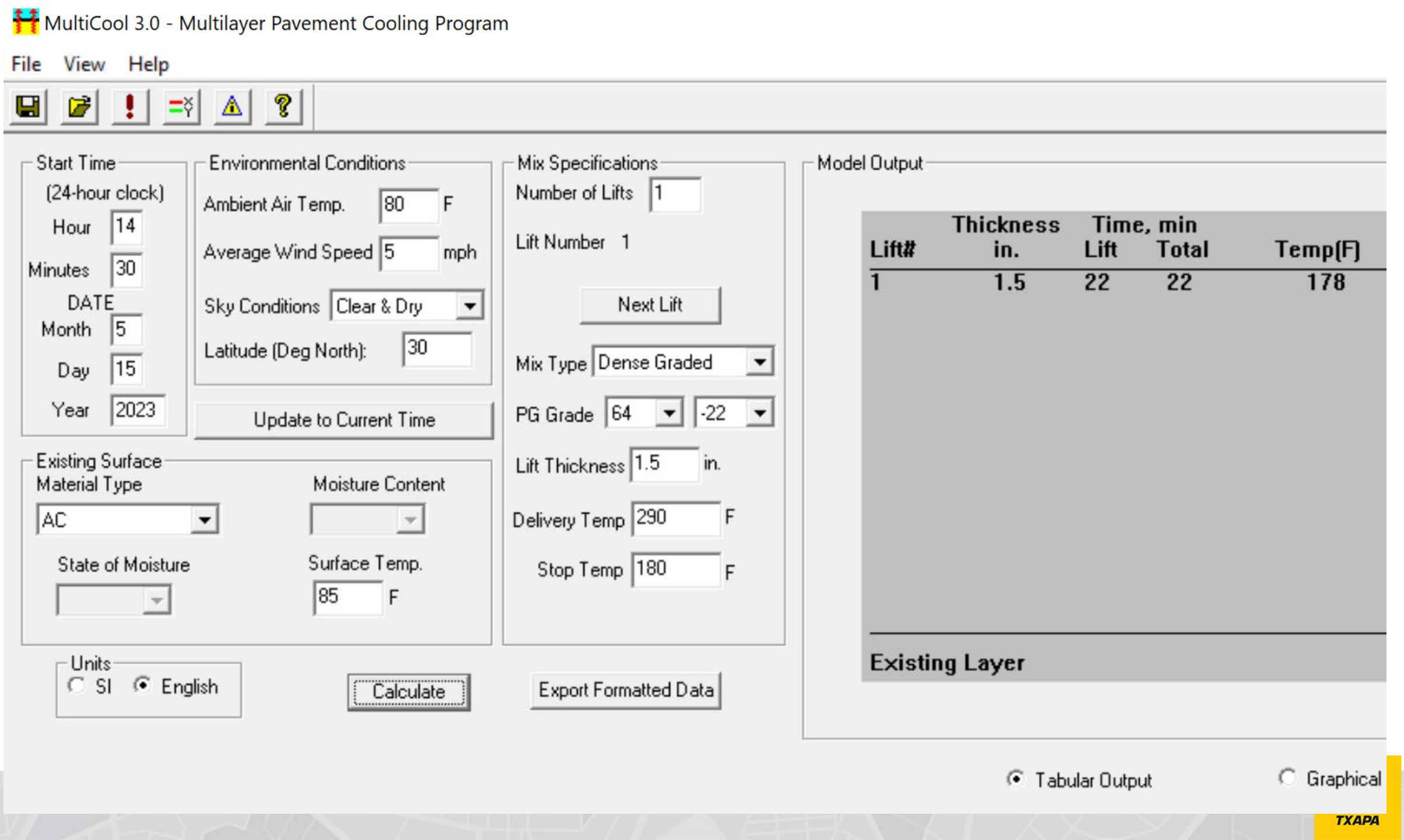
MultiCool 3.0 - Multilayer Pavement Cooling Program
File View Help
Start Time
(24-hour clock)
Hour 14
Minutes 30
DATE
Month 5
Day 15
Year 2023
Update to Current Time
Environmental Conditions
Ambient Air Temp. 80 F
Average Wind Speed 5 mph
Sky Conditions Clear & Dry
Latitude (Deg North): 30
Existing Surface
Material Type
AC
Moisture Content
State of Moisture
Surface Temp.
85 F
Units
SI English
Calculate
Mix Specifications
Number of Lifts 1
Lift Number 1
Next Lift
Mix Type Dense Graded
PG Grade 64 -22
Lift Thickness 1.5 in.
Delivery Temp 290 F
Stop Temp 180 F
Export Formatted Data
Model Output
Lift# Thickness in. Time, min Lift Total Temp(F)
1 1.5 22 22 178
Existing Layer
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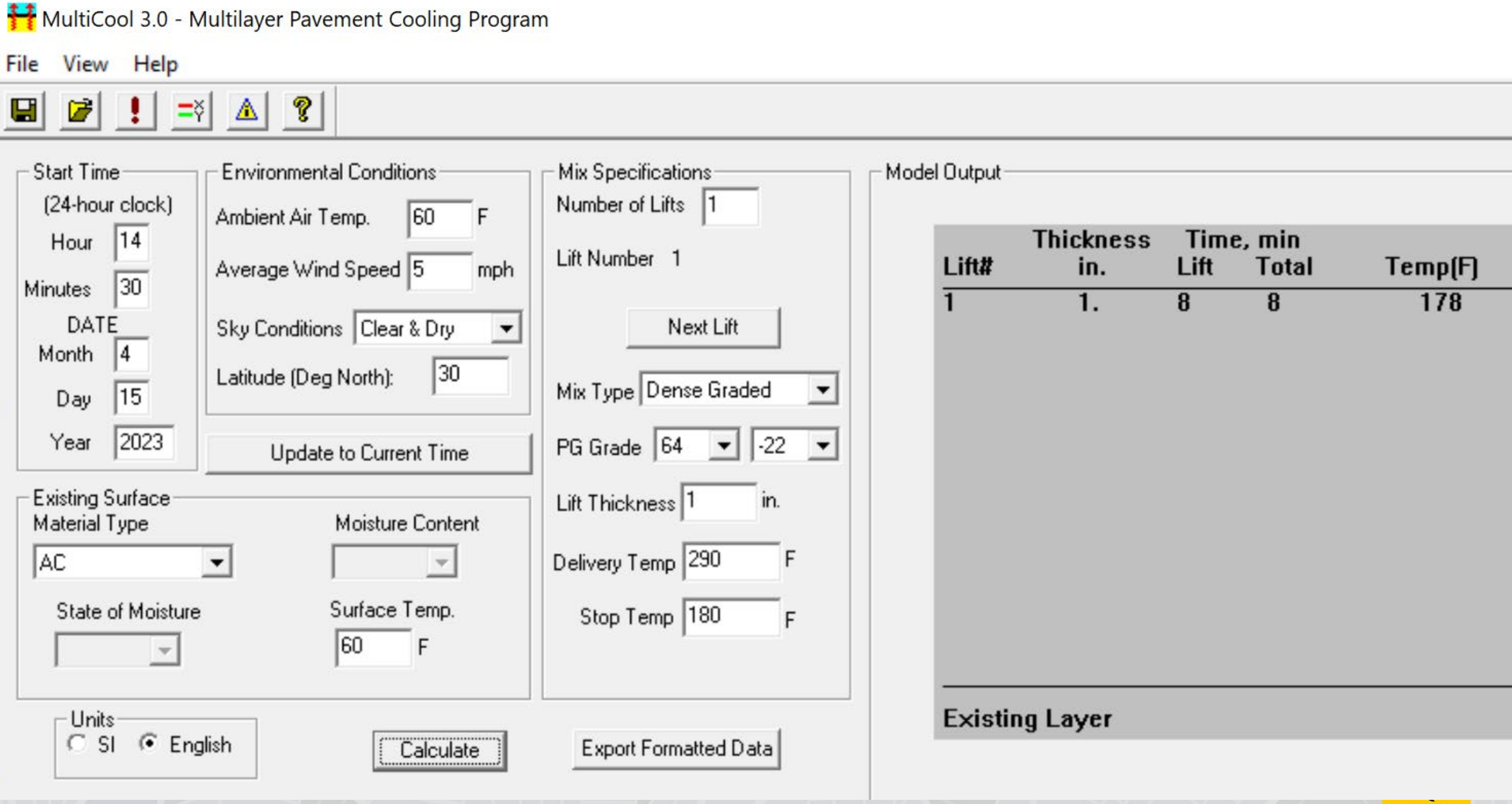
MultiCool 3.0 - Multilayer Pavement Cooling Program
File View Help
Start Time
(24-hour clock)
Hour 14
Minutes 30
DATE
Month 4
Day 15
Year 2023
Environmental Conditions
Ambient Air Temp. 60 F
Average Wind Speed 5 mph
Sky Conditions Clear & Dry
Latitude (Deg North): 30
Update to Current Time
Existing Surface
Material Type
AC
Moisture Content
State of Moisture
Surface Temp.
60 F
Units
SI English
Calculate
Mix Specifications
Number of Lifts 1
Lift Number 1
Next Lift
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Lift Thickness 1 in.
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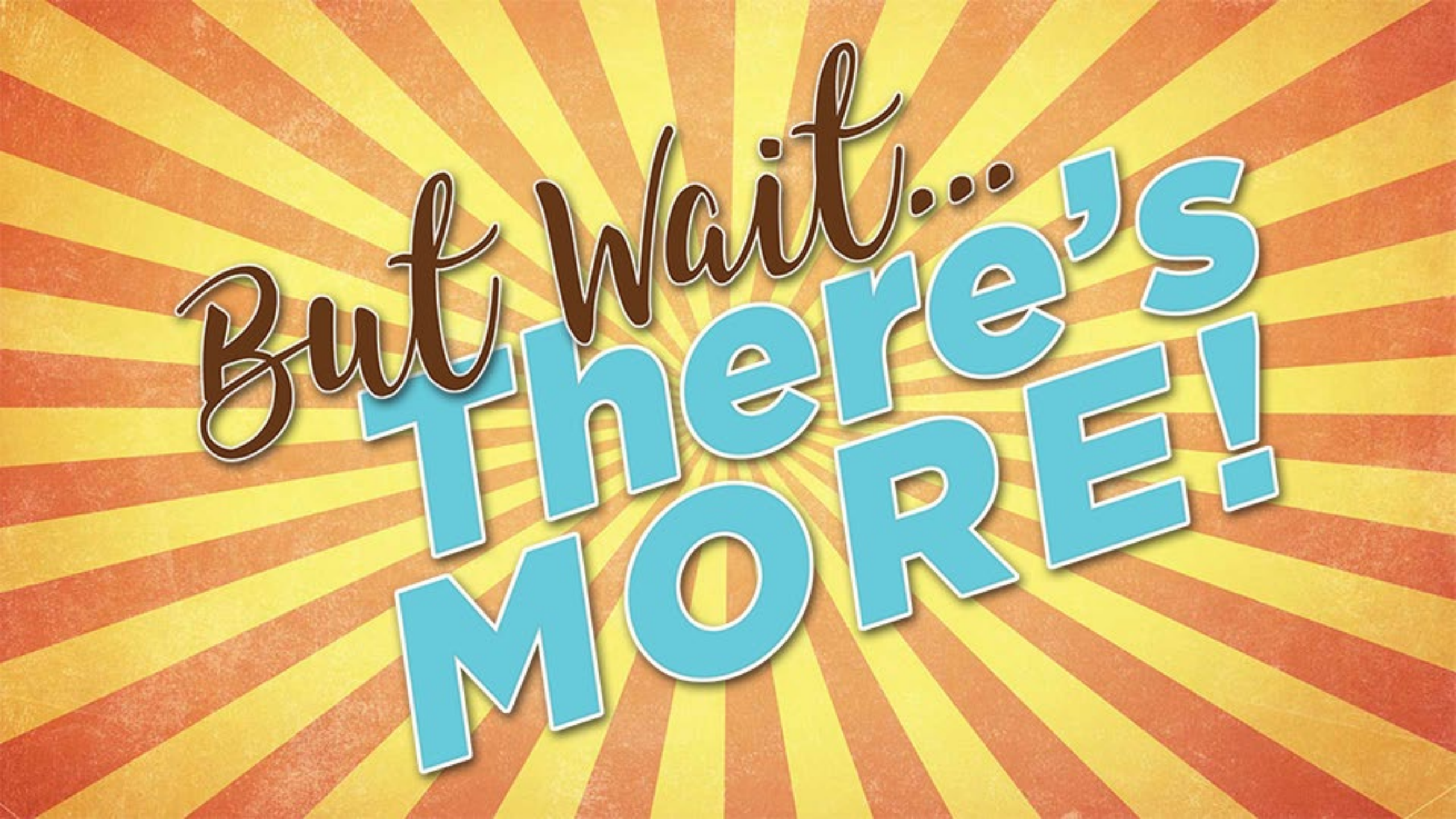
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