



Asphalt Pavement EXchange

A TxDOT Quality Initiative for Asphalt Pavements

Presented by:

Chris Cowen – TxDOT

Cliff Kay – Industry

Jim Warren – APEX





Chris Cowen

District Engineer for San Angelo District

TxDOT



Big Picture of the Program – The Why

- 12 to 15 Million Tons of HMA Used by TxDOT Annually Over Next 10 Years
- Average In-place Cost of >\$100 Per Ton of HMA
- Average Annual Expenditures Approach \$1.5 Billion
- Majority of District employees deal with asphalt
- Thousands of Industry employees deal with asphalt
- Retirements, turnover. *Constant need to educate.*



Big Picture of the Program – The How

- Continuous collaboration of TxDOT/Industry to develop a knowledge-sharing program
- Grassroots effort



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Big Picture of the Program – The Benefits

- Improve Pavement Designs, Mixture Design, Construction Operations and Decision Making
- GOAL: Increase Life One Year + Increase RAP Content
- Annual Savings of \$200-\$250 Million



Program Goal

Develop and deliver a ***dedicated, coordinated, and continuously improved*** asphalt pavement knowledge sharing education program to TxDOT and Industry Professionals.

“Building a program that will live forever at TxDOT.”



Program Objectives

- To educate
- Provide resources
- Foster partnering, collaboration, relationship-building, and support

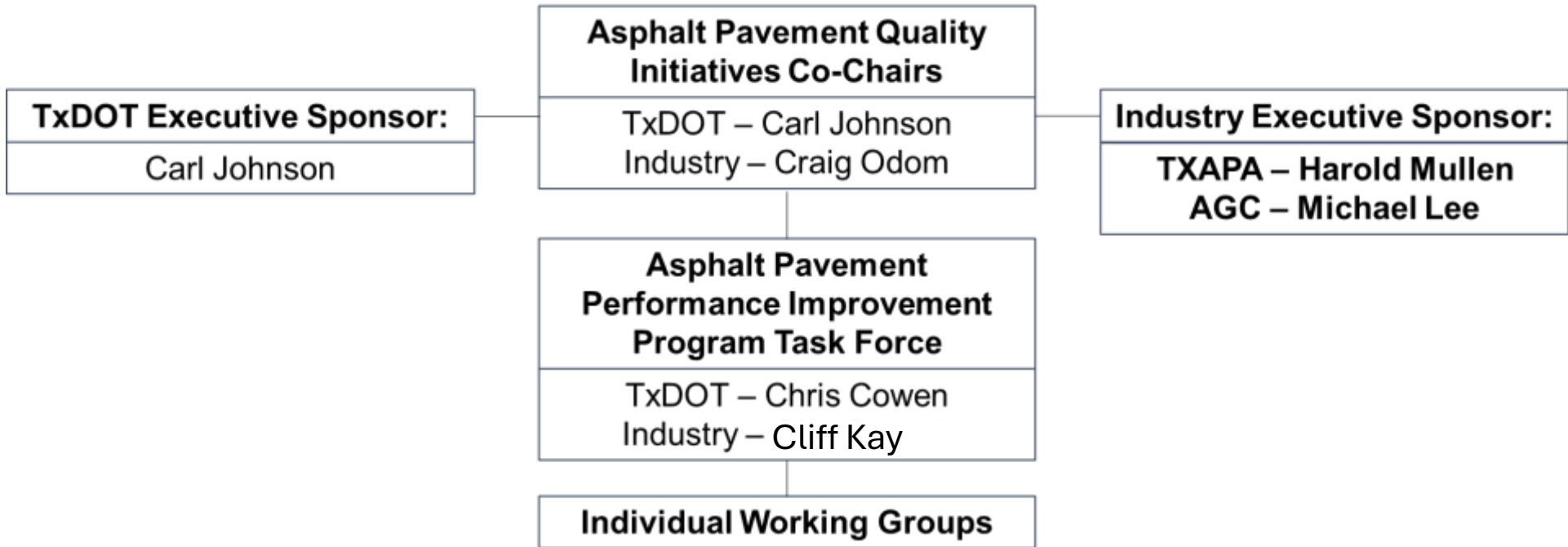


Program Expectations

- Improve engineering and technical knowledge base for decision-makers
- Educate all stakeholders about the engineering and art of designing and constructing asphalt pavements
- Learn from others by sharing experiences
- Provide more consistency for quality
- Provide guidance for “sound engineering and best practices”
- Not “one and done” learning experience



APEX Organizational Structure



Task Force Charge and Objectives

Charge

- Provide overall guidance, direction, timelines, and accountability.

Objectives

- Identify and prioritize key topics
- Identify target audiences – Initially “Decision Makers”
- Identify the working groups and members
- Identify direction for the working groups



Key Topics

Design

- Project Selection
- Pavement Thickness Design
- Pavement Design
- Roadway Design
- Plans and Specifications



Materials

- Material Basics – Binders & Aggregates
- Mix Type Selection and Applications
- Mixture Design - Performance Testing
- HMAC Certifications



Key Topics

Construction/Inspection

- Plant Operations Related to Quality and Performance
- Laydown and Compaction Related to Quality and Performance
- Inspection, Samplings, and Testing
- Quality Assurance Requirements and Tools
- Importance of Testing – What Test Mean, What They are Telling You

Maintenance

- Project Preparation – Rehabilitation and Maintenance Operations

Other Essentials

- Safety
- Communication – Pre-pave and Debrief Meetings
- Expectations – Ride, Quality, and Performance Life (How to Achieve Award-Winning Pavements)
- Forensics
- TxDOT Asphalt Pavement Specialist

Target Audience – TxDOT

District Staff

- Leadership (DE, AE, DOC, DOM, etc.)
- Engineers and EIT
- Roadway Inspectors
- Laboratory Technicians
- Special Groups (Mixture Designers, Pavement Designers, Plans & Specification Developers)



Target Audience – Consultants

CEI Consultants

- Project Managers
- Inspectors
- Laboratory Technicians

Design Consultants

- Plans & Specification Developers
- Pavement Designers
- Mix Design



Target Audience – Industry

Contracting Community

- Prime Contractors
- Placement Contractors
- Material Suppliers
- Production and Placement Technicians



Existing Knowledge Sharing Programs

- 2024 Specification Education
- Materials Academy
- Pavement Thickness Design
- PIQ-Partners in Quality
- Engineering Asphalt Essentials
- Inspector Asphalt Education Program
- Laydown and Compaction
- Hot Mix Asphalt Plants



Existing Knowledge Sharing Programs – Technician Certification

- 1A HMA Plant Production Specialists
- 1B HMA Roadway Specialists
- Level 2 HMA Mix Design Specialists
- SB 101 Materials Property Specialists
- SB 102 Field Specialists
- SB 103 Materials Analysts Specialists
- SB 201 Moisture-Density Specialists
- SB 202 Mix Design



Existing Knowledge Sharing Programs – Technician Certification

- AGG 101 Aggregate Properties Specialists
- SC 101 Seal Coat Inspector
- SC 201 Seal Coat Specialists
- Binder 101 PG/AC Specialists
- Binder 102 Emulsion/Cutback Specialists



Delivery Concept

Essentials Workshop:

- Covering the Key Topics
- Fresh delivery approach.

Specialty Topics, Deeper Dive:

- “A la carte” Workshops
- Technical Briefs
- One-Pagers
- Videos

Locations:

- Statewide
- Regional
- District
- TXAPA/TxDOT Meetings
- Virtual

Instructors:

- APEX
- TxDOT
- Industry
- Consultants
- Universities



Phase 1 Timeline

April to June 2024

- Form APEX Task Force (identify major topics and priorities)

July to October 2024

- Working Group Formation and Kick Off Meetings

November 2024 to present

- Working Groups brainstorming and development
- 40+ meetings held to date

Present - Fall 2025

- Essentials Workshop Development

District Asphalt Pavement Specialists

- Assign, Start monthly education





Cliff Kay

Division Manager

A. L. Helmcamp



Eight APEX Working Groups

- ✓ Asphalt Specialist: *(Duane Milligan, Chad Bohne)*
- ✓ Essentials Workshop: *(Greg Cedillo, Eric Suarez)*
- ✓ Construction & Inspection: *(Lacy Peters, Jason Exum)*
- ✓ Communication: *(Mike Walsh, Kal Kincaid)*
- ✓ Materials & Mix Selection: *(Ryan Barborak, Alex Flores)*
- ✓ Pavement Design: *(James Stevenson, Magdy Mikhail)*
- ✓ Ride Quality: *(Rodney Svec, Josh Houston)*
- ✓ Safety: *(Robert Godina, Darren Poe)*
- ✓ *More groups to be added as needed!*

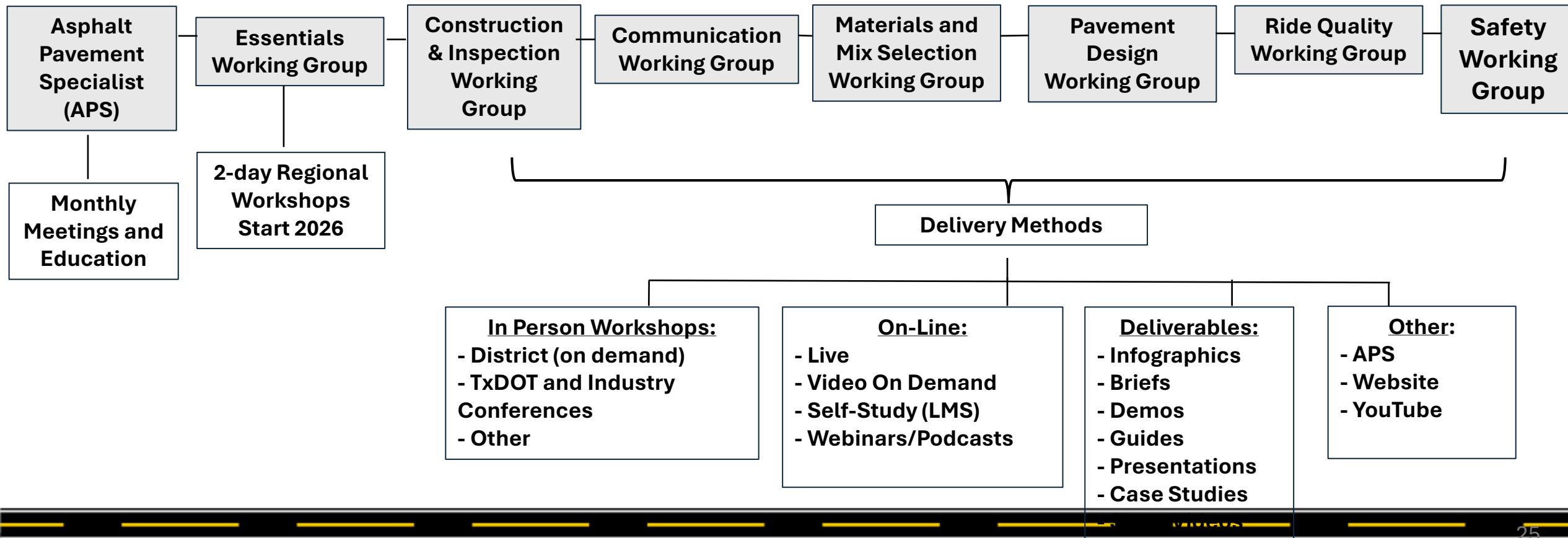


Working Group Responsibilities

- Identify subtopics for their Working Group
- Assist in content development
- Review content
- Identify delivery methods
- Identify instructors
- Feed topics to Essentials Workshop

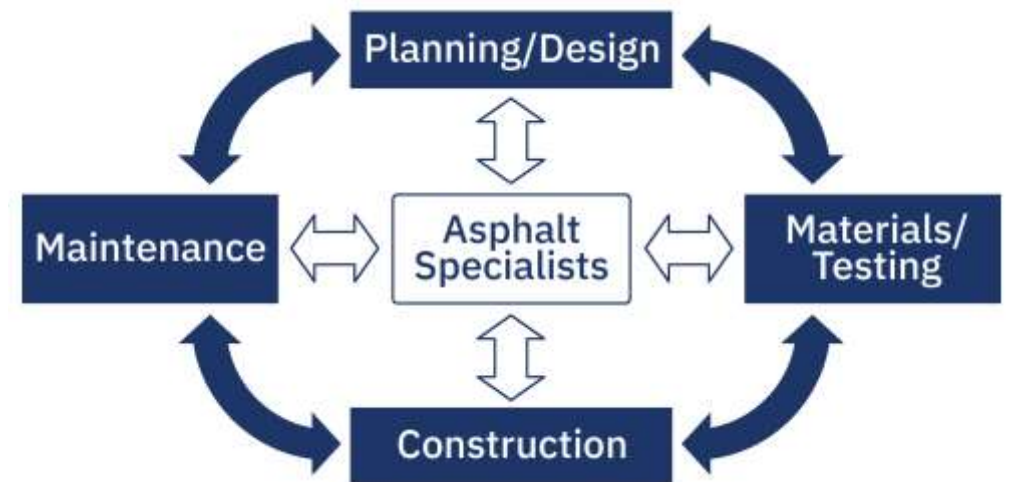


APEX Working Groups



Asphalt Pavement Specialist Program

- Statewide Asphalt Pavement Specialist (CST) and District Asphalt Pavement Specialists
- Mission: *Provide statewide and district level support to TxDOT and Industry for asphalt topics and help promote consistency and quality*
- APEX providing monthly continuing education and support



APEX Asphalt Pavement Specialist (APS)

Abilene	Russell Chapman
Amarillo	Devin Cowart
Atlanta	Lacy Peters
Austin	vacant
Beaumont	Chad Roach
Brownwood	Matthew Mueller
Bryan	John Degelia
Childress	Chad Skelton
Corpus Christi	Gloria Salinas
Dallas	William (Bill) Catching
El Paso	Ramon Camacho
Lufkin	Mathew Nethery
Fort Worth	Ricardo Rico
Houston	Soojun Ha
Laredo	Antonio "Tony" Reyna
Lubbock	Zane Alexander
Odessa	Carlos Garcia
Paris	Cole Stinger
Pharr	Jose Corpus
San Angelo	Bailey Welch
San Antonio	Jose Emilio Ramos
Tyler	Russell Ditto
Waco	Mark Davis
Wichita Falls	Chase Lawson
Yoakum	Jason Ulrich
CST Asphalt Pavement Specialist	Steve Smith



Working Group Status

- **Communication:** Brainstorming Meeting occurred on 9/2
- **Construction and Inspection:** Topics & Notes complete, Next meeting (Topic Ranking) after TXAPA Annual Meeting
- **Essentials:** Brainstorming, Topics, & Notes Complete, Working on Outline for Essentials Workshop.
- **Materials and Mix Selection:** Priorities established 8/28
- **Pavement Design:** Brainstorming Meeting set for 9/22
- **Ride Quality:** Ranking Topics
- **Safety:** Topics complete & Notes in progress.
- **Asphalt Pavement Specialists (APS):** 25 assigned, meeting monthly





Jim Warren

APEX Director



Staffing

- Jennifer Cantu – Administrator
- Keaton Hernandez – Adult Education Director
- Juan Calros Pulido – Visual Content Creator
- Jim Warren – Director
- Jon Epps – Senior Consultant
- Open – Project Engineer



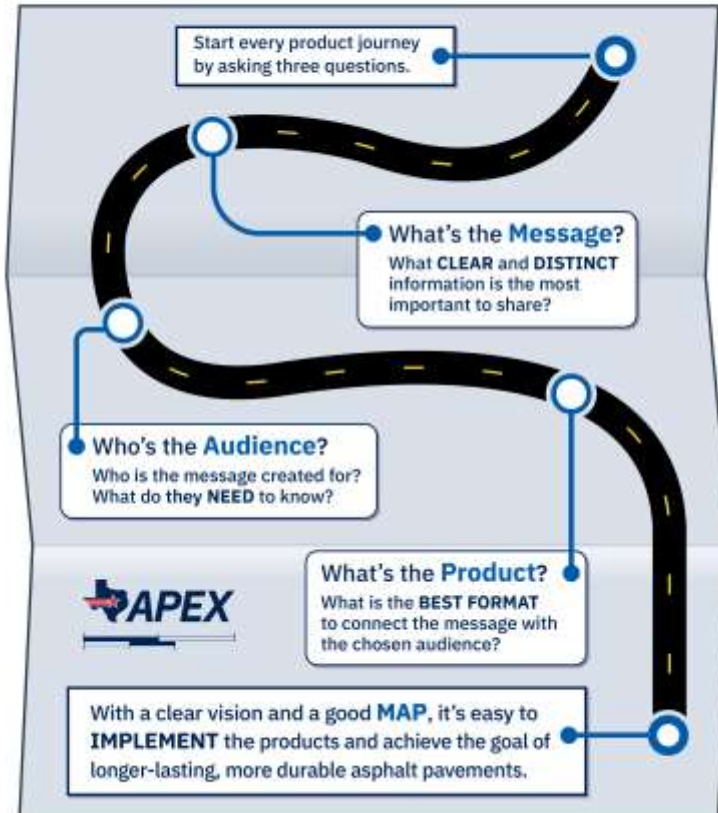
Topics and Notes (Example)

Description of Item	Notes
Ride Schedule	Typical section review, Parabolic crowns, define opportunities for improvement (number of layers for more opportunities, e.g. level up), what do the schedules mean, choosing the right schedule,
Contract Review Process	Include Bid Codes (can one be used as opposed to multiple for mixtures), Small quantities of mix, yield/quantities (lb/sq yd - need the right value, use the specification - tool for calculating actual yields). KISS. Allowable substitutions – use what you got.
Construction Sequence	Lift thickness, min/max thickness per mix type, Level up (C-mix can't have an inch, best practices to address thickness), address specifying lift thickness less than allowed by specification, safety wedge
Traffic Control/Safety	TCP setup and inspection, Equipment Safety, Blind Spots, internal TCP, address ghost striping,
Intersections/Driveways/Transitions	Tie-Ins, drop offs, safety wedge vs shoulder ups,
Pavement Repairs	Full Depth, Permanent/ Temporary, Sequence, Use of Cold Mix, Proximity to overlay
Milled Surface	Opening to traffic, milling profile and texture, planning milling (take cores across width), milling for ride/depth/slope?, scabbing, edge vs full width, curb lip elevation, drainage, field adjustments (milling into base, milling deeper than planned)

How We Do It

Creating impactful
APEX products is as
easy as following a

MAP



APEX PRODUCT TYPE LIST



Brief

Scope ●○○○

Introduction to a Larger Topic

1-2 Pages

Introduces and fosters engagement with a topic.

A one- to two-page document created to give a thorough **introduction** to a **single topic**. They work best when the goal is to **build interest** in a topic.



Infographic

Scope ●○○○

Visualization of a "Big Idea"

Reduces complex concepts into simpler terms and images.

A graphic created to **simplify and organize** a larger concept into an accessible visual. They work best when they boil abstract or highly complex concepts down to a personal level that is **applicable and memorable**.



Poster

Scope ●○○○

Promotion and Reference for a Common Space

Promotes and communicates throughout the day.

A printed item (available in multiple sizes) created to **promote** products or to **provide easily referenceable information** needed to perform one's duties safely and accurately.



Quick Reference

Scope ●○○○

Reference Material for the Individual

1-2 Pages

Reminds of information, processes, or safety procedures.

A one- to two-page document created to **provide easily referenceable information** needed to perform one's duties safely and accurately. They work best when they put the most important information right at the individual's fingertips for **on-the-job use**.



Short-Form Video

Scope ●○○○

Pre-recorded "Bite-sized" Education

1-10 Minutes

Educates/Reinforces small amounts of information.

A short-form video created to communicate **quick-to-absorb** information with brevity. They work best when they demonstrate processes that **align with industry standard practices**.



How-to Guide

Scope ●○○○

Instructional Guide of a Process

Educates/Reinforces the proper steps of a process.

An in-depth illustrated guide created to explain the **step-by-step instructions** of a process.



Podcast Episode

Scope ●○○○

Include topic in the "Everyday Asphalt" Podcast

Explores facets of a topic through conversation.

Suggesting a topic to be covered as part of the **"Everyday Asphalt"** monthly podcast. They work best when a subject has room to be explored **conversationally by a group of industry professionals**.



Presentation

Scope ●○○○

Carefully Guided Expansion of a Concept

Educates/Reinforces through non-interactive learning.

An in-depth PowerPoint **expanding on a concept**. They work best when they are used to lead a viewer through material that benefits from being presented in a **particular sequential order**.



Technical Document

Scope ●○○○

In-Depth Technical Exploration

Explores multiple points of a concept or process.

A long-form document **explaining in extensive detail** aspects of a concept or process. They are the **most in-depth and technical format** that we offer.



LMS Module

Scope ●●●●

Online Self-Paced Exploration

Educates and engages at the participant's pace.

An in-depth **self-paced course** built in our Learning Management System. They work best when educating a participant through a concept or process with a **mixture of text, images, video lectures, and short activities**.



Long-Form Video

Scope ●●●●

Pre-recorded Guided Exploration

10+ Minutes

Educates/Reinforces through non-interactive learning.

A long-form video **guiding the viewer through a concept**. They offer high levels of depth where hands-on engagement is not necessary. They work best when dense material benefits from **pacing and guidance**.



Workshop

Scope ●●●●

Live Guided Exploration

Hours/Days

Educates/Reinforces through interactive learning.

An in-person or live streaming scheduled event **guiding participants through a concept**. They offer high levels of depth and opportunities for hands-on engagement. They work best when dense material benefits from **guidance and interaction**.



Asphalt Pavement EXchange

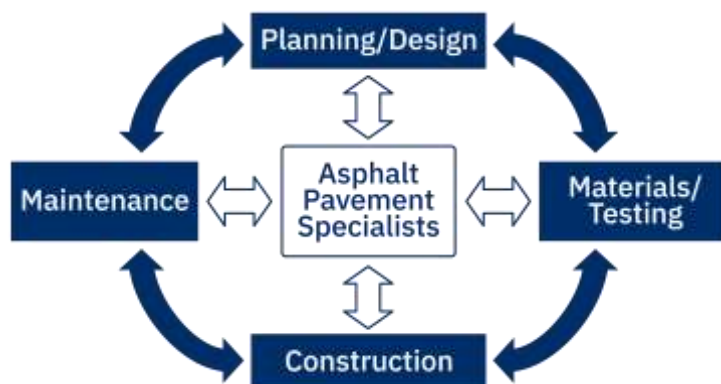
A TxDOT Quality Initiative for Asphalt Pavements

TxDOT's APEX program is a new knowledge-sharing and partnering initiative seeking to connect industry leading resources and tools to asphalt pavement professionals across the state.

Together we can assure the quality, safety, and longevity of Texas roads by providing high quality, more durable asphalt pavements.

We are hard at work building materials for this program. The soft launch and first releases are scheduled for **July 2025**, and we can't wait to share them with you. You'll need to **Sign up** for our mailing list to become part of this epic opportunity to advance your asphalt skill set.

[JOIN US](#)



ASPHALT PAVEMENT EXCHANGE
A TxDOT Quality Initiative for Asphalt Pavement

Introduction

The Asphalt Pavement Exchange (APEX) is a dedicated, coordinated, and continuously improved asphalt pavement knowledge-sharing education program for the Texas Department of Transportation (TxDOT), contractors, materials suppliers, and consultants. The program will develop and deliver a variety of knowledge-sharing workshops, documents, and videos to the individuals that are responsible for planning, designing, constructing, and maintaining our highway system in Texas. This effort will significantly improve the quality, and hence service life, of asphalt pavements across the state.

Background

TxDOT's Unified Transportation Program forecasts highway construction and maintenance expenditures at an annual rate of about \$13 billion for the next 10 years. Annual pavement related expenditures for new construction, reconstruction, rehabilitation, preservation, and maintenance are expected to be in the \$1.9 to 2.4 billion range. These expenditures will be used to "take care of" TxDOT's highway system, which has a replacement value estimated at \$125 billion.

TxDOT is responsible for over 80,000 center line miles (over 200,000 lane miles) of roadways in Texas. All of TxDOT's pavements are "hard surfaced" with about 94 percent surface with materials containing asphalt binders. Hot mix asphalt is commonly used for pavement construction, reconstruction, rehabilitation, and maintenance in Texas.

Based on TxDOT bid tabulations, 12 million tons of hot mix asphalt have been used annually at a cost of about \$1.25 billion per year over the last 10 years. Bid tabulations indicated that hot mix expenditures may be in the range of \$1.5 to \$2.0 billion for future years based on data from 2023 and 2024. Improving the quality of asphalt pavements will extend the life of the pavement and result in annual cost savings in the order of \$150 to \$200 million per year.



APEX

APEX is a program identified and guided by the Asphalt Pavement Quality Initiative (APQI) Steering Committee. The APEX Task Force and their associated Working Groups are responsible for providing detailed guidance and reviews for the development of the various products and implementation efforts associated with the APEX program.

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BRIEF 25.02 – "Asphalt Pavement Specialists"

ASPHALT PAVEMENT EXCHANGE
A TxDOT Quality Initiative for Asphalt Pavement



Introduction

The Asphalt Pavement Specialist (APS) is each District's technical/engineering resource for asphalt pavements. They were identified by District staff in each of TxDOT's 25 districts. The TxDOT Construction Division appointed a statewide Asphalt Pavement Specialist. The Asphalt Pavement Specialists are an integral part of the Asphalt Pavement Exchange (APEX) program to improve the quality of hot mix asphalt pavements.

APEX is one of several programs identified and guided by a joint TxDOT/Industry Asphalt Pavement Quality Initiative Steering Committee. An APEX Task Force and its associated Working Groups are responsible for providing guidance and reviews for the development of the various products and implementation efforts associated with this program.

APEX

APEX is a dedicated, coordinated and continuously improved asphalt pavement knowledge sharing education program for Texas Department of Transportation (TxDOT), industry and consultants. The program will develop and deliver a variety of knowledge sharing presentations, documents and videos to those individuals that are responsible for planning, designing, constructing and maintaining our highway system in Texas.

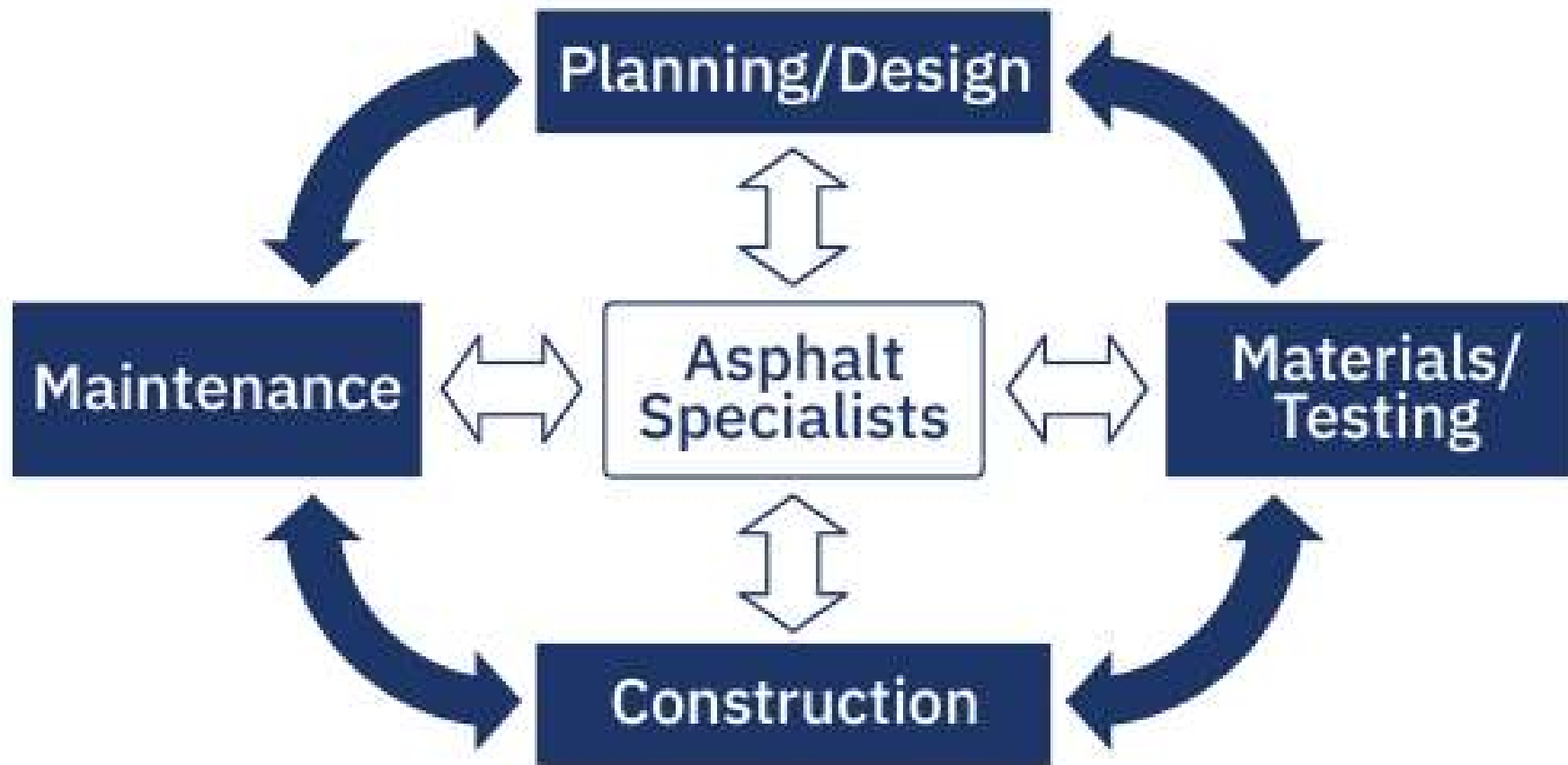
TxDOT will expend in the range of \$1.5 to \$2.0 billion annually on hot mix asphalt materials over the next decade to construct, reconstruct, rehabilitate, preserve and maintain its 80,000-mile highway network. Improving the quality of asphalt pavements will extend the life of the pavement and result in annual cost savings of the order of \$150 million to \$200 million per year.

Asphalt Pavement Specialists

The District Asphalt Pavement Specialists will be the focal point for APEX in the District and will be involved at some level in the District's planning, project selection, plans and specifications preparation, construction operations, quality control, quality assurance, as well as maintenance. The Asphalt Pavement Specialists will be the District's resource for asphalt pavements and assist in technical and engineering information dissemination.



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Welcome to the APEX Mailing List!



Skill Spotlight

Welcome to the Skill Spotlight where we share technical and non-technical skills for everyday, on-the-job use.

Clear Communication

- Clear instructions help your team work efficiently and get it right the first time.
- Don't assume others know what you mean. Take a few additional seconds to be as clear as possible.
- Instead of saying "over there," try saying "on the north curb at Station 125+50."
- After giving instructions, ask, "Does that make sense?" You can even ask the person to reiterate the directions in their own words to ensure their understanding.
- A few extra words in your instructions can save hours later.

Field Test - Challenge Yourself!

Pick one task or a specific step within a project you need to explain this week. Before you speak:

1. Pause for 10 seconds to think: What exactly do they need to know? How can I be as clear as possible here?
2. Use specific terms: Include location, measurements, or material names.
3. Ask for a repeat-back: "Can you tell me what you're going to do, just to make sure I explained that clearly?"

It might feel awkward at first, but you will get more comfortable with practice. Try it out this week and see what happens!

Technical Tip

Get yourself in line for quality! Using a defined edge, stringline, painted dash line and a steering guide for your longitudinal steering control will help provide the tools you need to create straight pulls, high performing joints, and award winning work.



Field Test - Challenge Yourself!

When sampling binder from a tank, how much material do you purge from the line before taking your sample?

- a. One Pint
- b. One Quart
- c. One Gallon
- d. No Purge Required

Answer: Never Guess on a Test Procedure!. Always look it up.
Click the button below to find the answer.

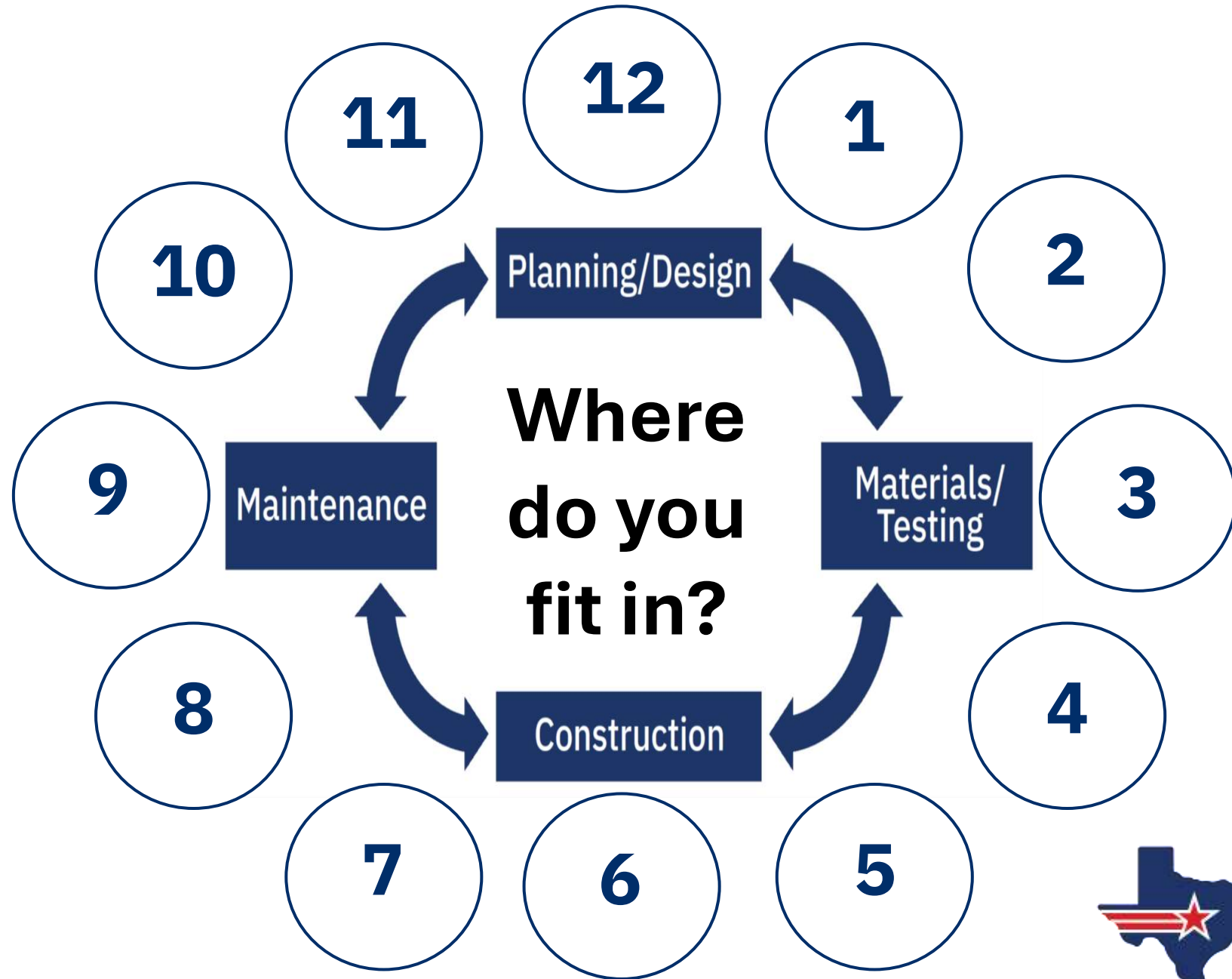
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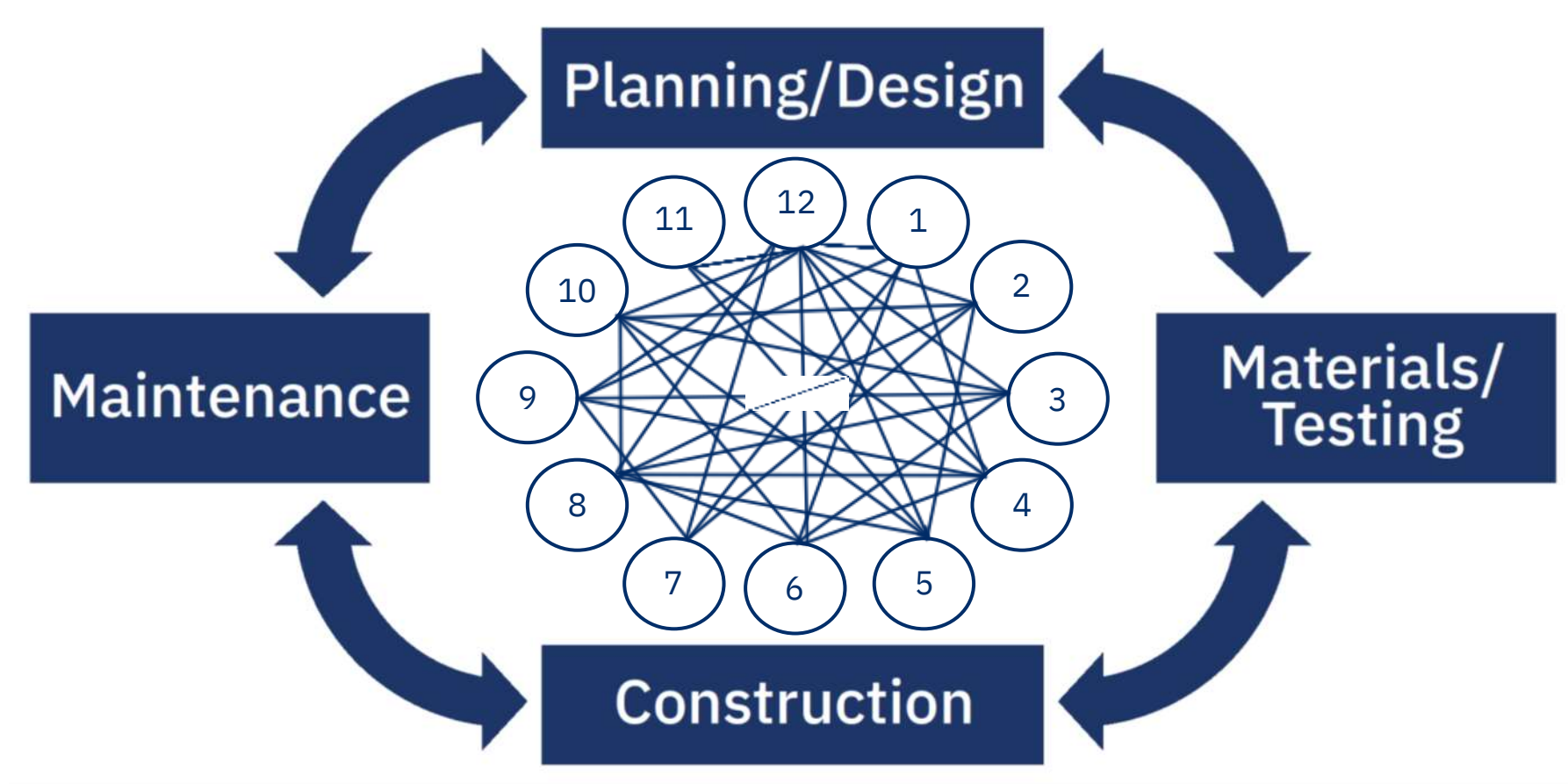
Photo/Project of the Month Submission

The Photo/Project of the Month celebrates the exceptional work being done on asphalt roads across Texas. Submissions are accepted year-round, and each month, the APEX team selects one standout photo or project to feature on the website. The initiative aims to highlight successful projects and share industry standard practices within the asphalt community.

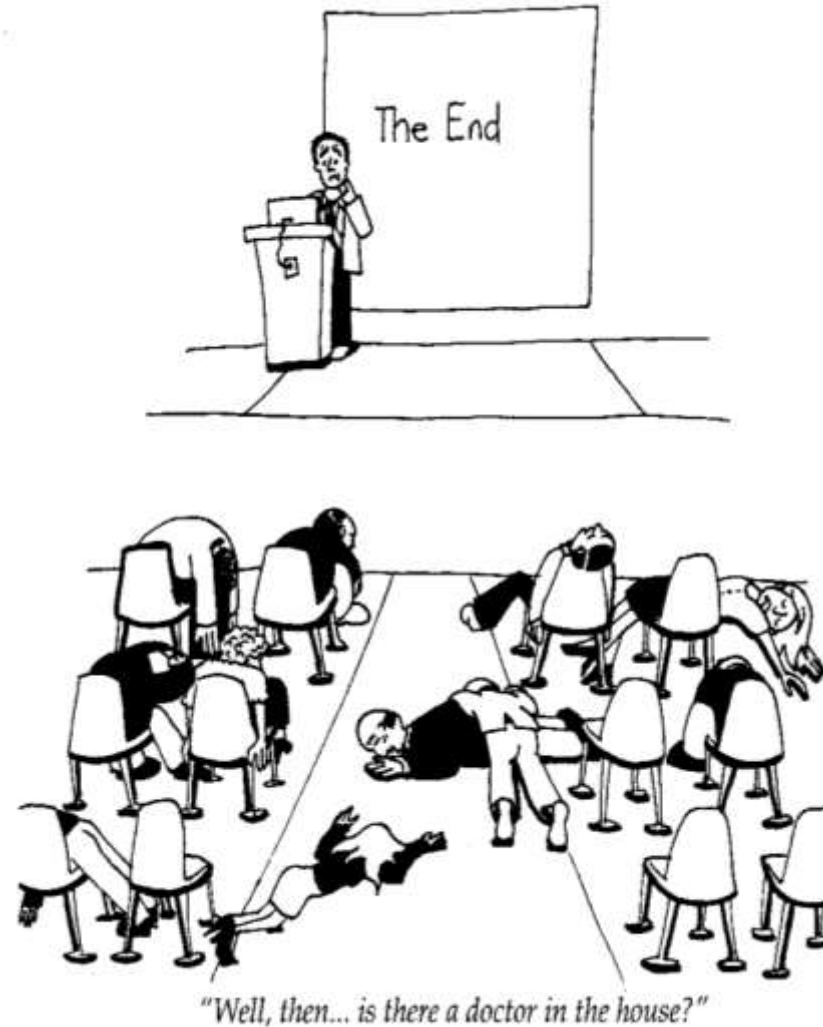
Have a photo or a project you'd like to share for a chance to be featured as Photo or Project of the Month? Submit your work by clicking the button below!

[Submit Your Photos Here](#)





No more Death by PowerPoint!



How many have seen this diagram this before?

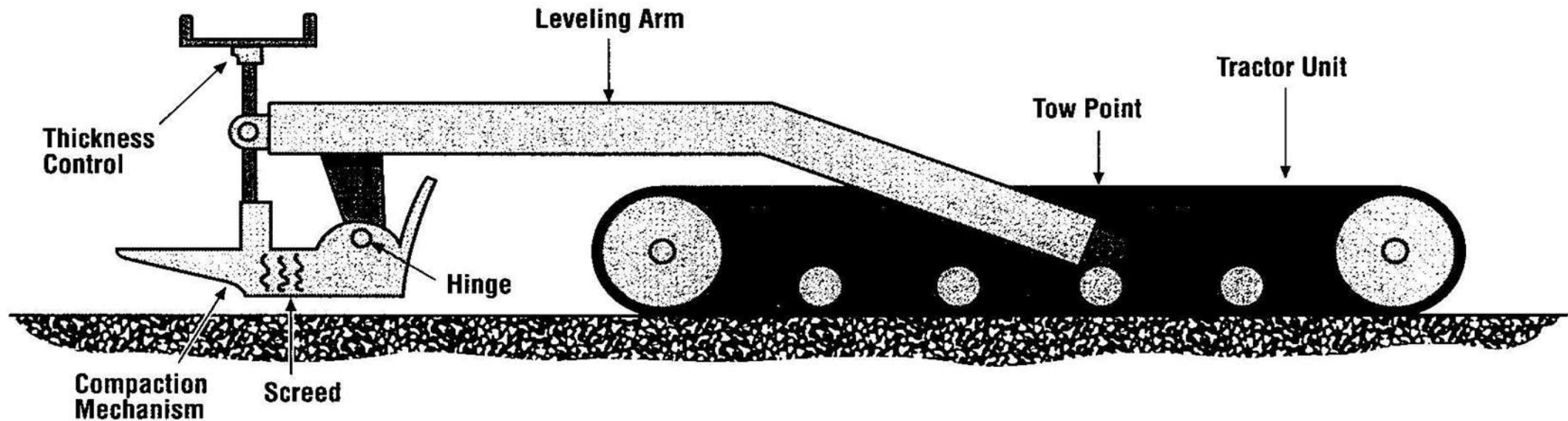
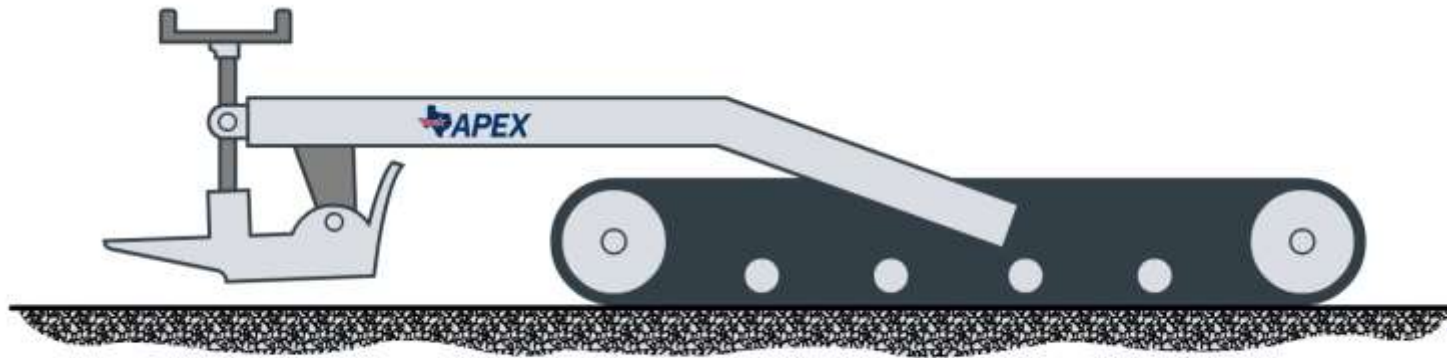
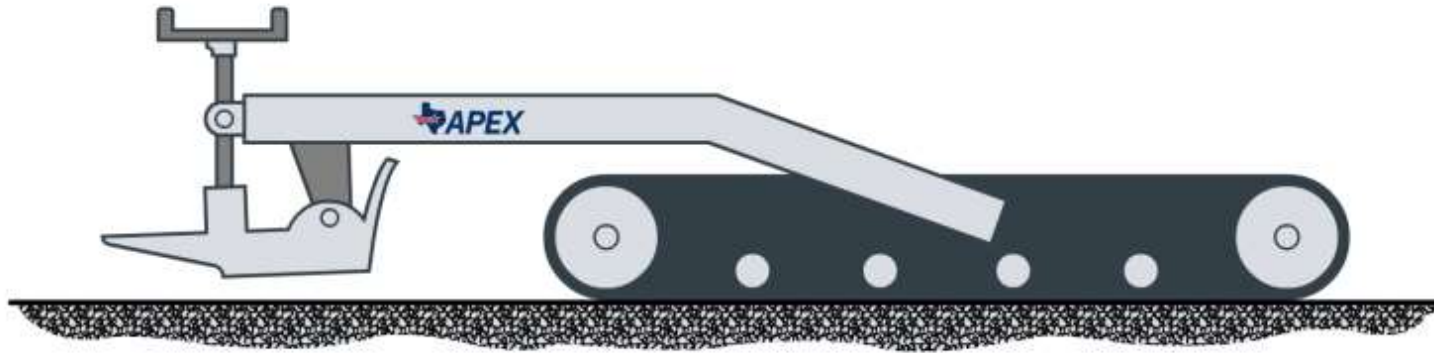
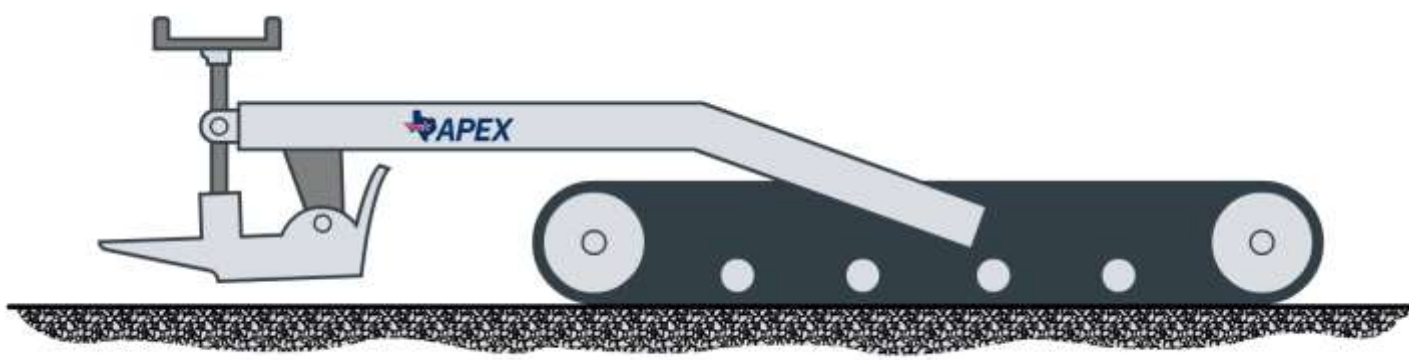


Diagram of Self-Leveling Floating Screed

Doesn't really talk to you... does it?



Let's see some stuff move!





APEX is Hiring!

PROJECT ENGINEER

*Previous TxDOT experience is
a MUST for this position!*

- Collaborate with engineers, industry experts, and academia
- Design and deliver high-quality, engaging learning content
- Drive innovation in technical education across the state

HOW TO APPLY:

Send your resume to
joinus@apextx.org



For More Information:

Visit **www.APEXTX.org**

✓ check for updates

✓ *sign up for the mailing list!!!*

We're just getting started... it's going to be a great ride!

Jim Warren | *APEX Director*

jwarren@apextx.org 512.269.0130