Pavement Triangle: Design/Construction Practice/Preservation

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Traditional Standard Design:
- AASHTO 93 Guide for Design for Pavement Structures - with MCDOT Amendments
- Very conservative Structural Number used
  - Thicknesses used based on roadway type, regardless of actual traffic volumes
    - Arterial 5.5” AC/10” ABC (AC section 2”(1/2” Marshall), 3.5” (3/4” Gyratory))
    - Collector 3.5” AC/ 6” ABC (AC section 3.5” (3/4” Marshall))
    - Residential 3” AC/ 6” ABC (AC Section 3” (3/4” Marshall))

Newly Adopted Design:
- AASHTO 93 Guide for Design of Pavement Structures - with MCDOT Amendments
- Structural number based upon pavement investigation/geotechnical investigation
  - Thickness/Structural Number now reflects actual traffic volumes on street
  - All surface courses are now PMTR+ PG76-22 asphalt binders, with varying underlying base courses marshal or gyratory mixes
  - New Collector and Residential streets as of 2017 will be full depth PMTR+ PG76-22
  - Expanding the use of Cold-In-Place Recycling for structural base course on Arterial segments
Focus is now on performance of materials used and performance of the entire asphalt matrix
- Less focus on constituent materials, but how they function as a unit
- Focus on penalties for continuing inconsistencies of materials, not just every chance possible
- Less focus on overall cost and more focus on performance of the final product
  - Difficult to do in a competitive environment, but will reduce life cycle costs and ultimately reduce overall costs with it

Possibly looking at MSCR test as well as Dynamic Modulus for Mix Design acceptance, focus on the whole not just the parts

Focus on the right binder for the roadway use and aid in life cycle performance/construction placement/pavement preservation
Specifications written for performance, not just to have something to follow (cookbook)

Compaction specifications that are achievable
- In-place air voids from asphalt coring (Max. theoretical)
- Combination of both lab and field attained compaction
- Mesa Standard Specification (3%-8% in-place air voids)
  - Target of 5% desired for maximum life cycle performance

Quality Assurance (owner)/ Quality Control (contractor/supplier) - Team Effort
- Transparency and sharing of timely test results
- More testing = more data = less fliers and less doubt of test results for the Team
- Aids in the issue of “blame” and focuses on finding solutions
  - Success of this is seen on Mesa’s JOC Asphalt Overlay Program as well as our CIP Program - 4 years and running strong

Timely construction schedules = less impact to the public
- Issues resolved on the lowest possible level or in a Team setting
- Communication is a **HUGE** part of the success!
The City of Mesa has been called very progressive/aggressive in our preservation strategies. Multiple “tools” in the pavement preservation toolbox:

- New treatments always being explored/tested
  - CQS-TR for Fog Seals and Slurry Seals
  - LMCQS-TR for Slurry Seals
  - FAST – Fractured Aggregate Surface Treatment - using PMAR as well as PMTR and soon to be blend of both
  - Modified surface seals (special blends) PMMRTU, Liquidroad, HA5 and Onyx

Earlier is better than later - don’t be afraid to put something down in the first year.

- Apply products that meet your life cycle needs, what works best for your streets in your inventory
- Don’t just use a formula/schedule - (year-3 Fog Seal, year-5 Crack Seal, year-7 Slurry Seal, year-15 Overlay, and repeat)

Reach out to fellow Pavement Management people, ask questions, share knowledge.

Right treatment, Right road, Right time...
Preservation - Cont.

- 40% Drop in Quality
- 75% of Life
- 12% of Life
- Spending $1 on preservation here...
- Eliminates or delays spending $6 to $10 on rehabilitation or reconstruction here.
QUESTIONS??