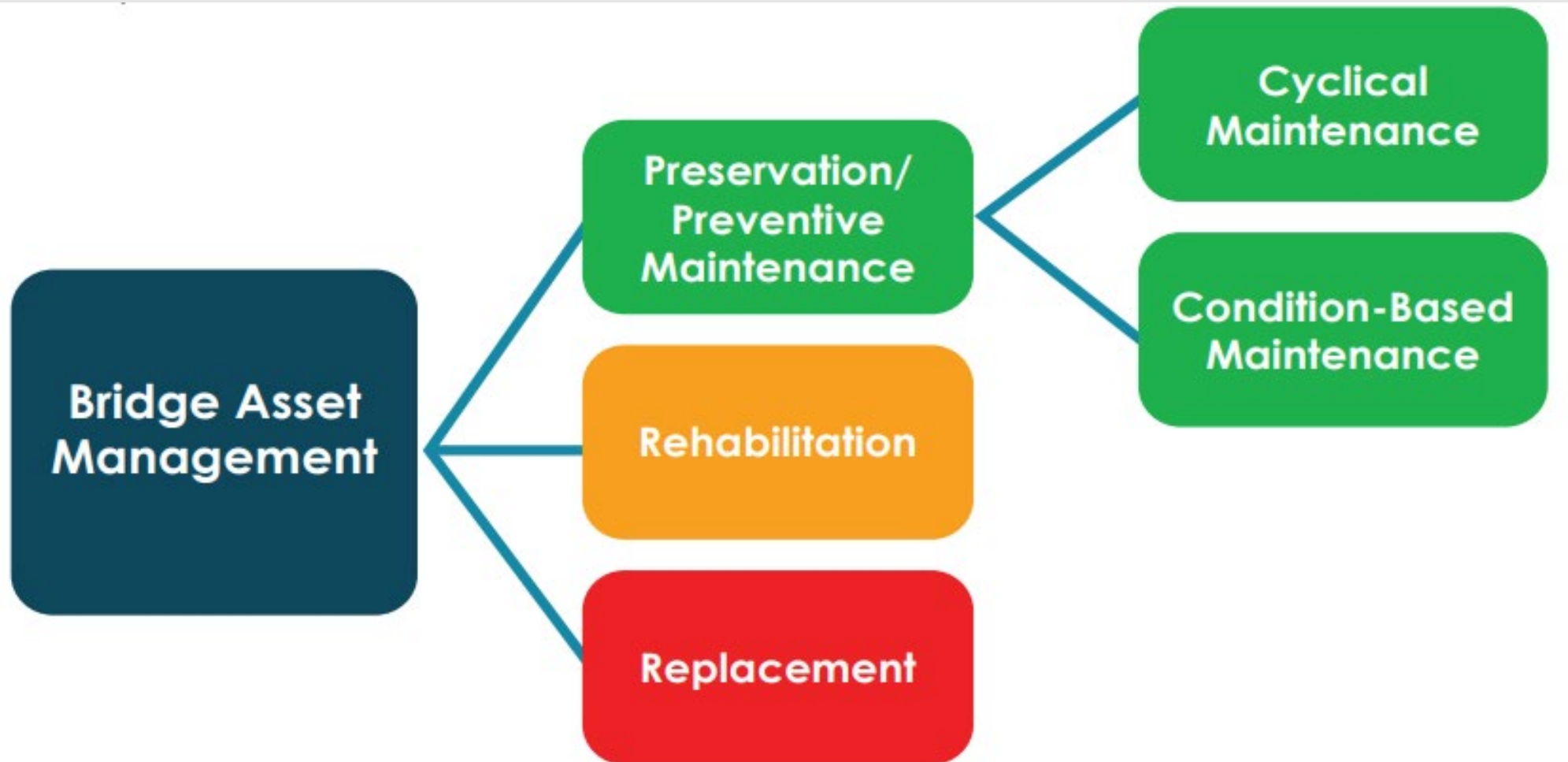




DECK SEALING, THIN OVERLAYS, & WATERPROOFING MEMBRANES

ORREN JENNINGS

ASSET MANAGEMENT





REHABILITATION

- MAJOR WORK
- FIX STRUCTURAL PROBLEMS
- CORRECT SAFETY DEFECTS
- IF COSTS ARE HIGH, CAN TURN INTO FULL REPLACEMENT



PRESERVATION LOW COST LIFE EXTENSION



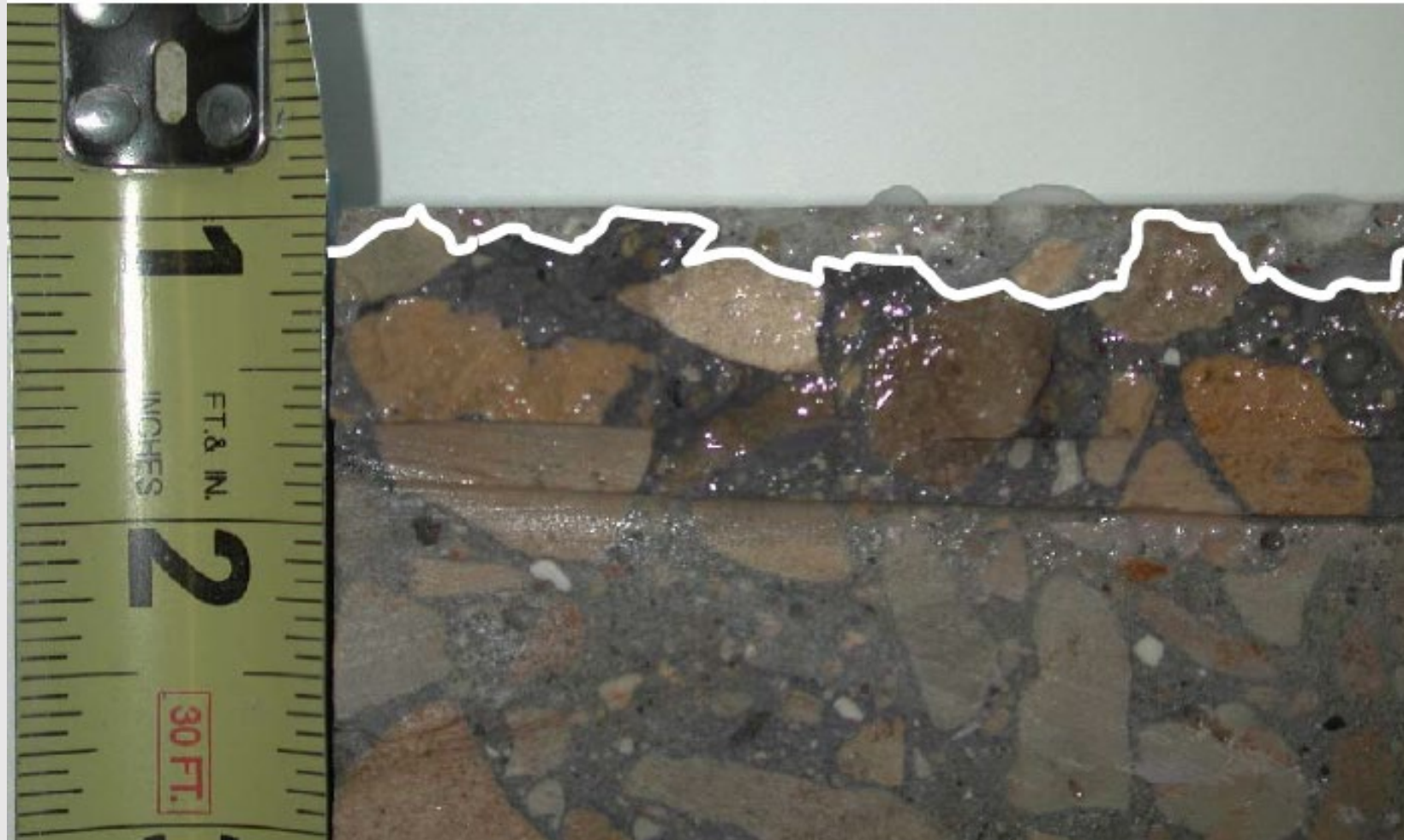
- DELAY REHABILITATION OR REPLACEMENT
- DECKS ARE TYPICALLY HIGHEST VALUE PART OF A BRIDGE
- INEXPENSIVE AND COST EFFECTIVE



PENETRATING SEALER - SILANE



PENETRATING SEALER - SILANE





PENETRATING SEALER - SILANE



PENETRATING SEALER - SILANE

DECK PREPERATION (PICK 1)

- SHOT BLAST
- COLD WATER PRESSURE WASH
 - 7,000 PSI
- HOT WATER PRESSURE WASH
 - 160 DEG WATER @ 2,500 PSI



PENETRATING SEALER - SILANE

APPLICATION

- NO RAIN OR WATER CLEANING 24 HOURS (MINIMUM) BEFORE APPLICATION
- TRIAL AREA TO SET APPLICATION RATE
 - 250 – 300 SQ. FT. PER GALLON



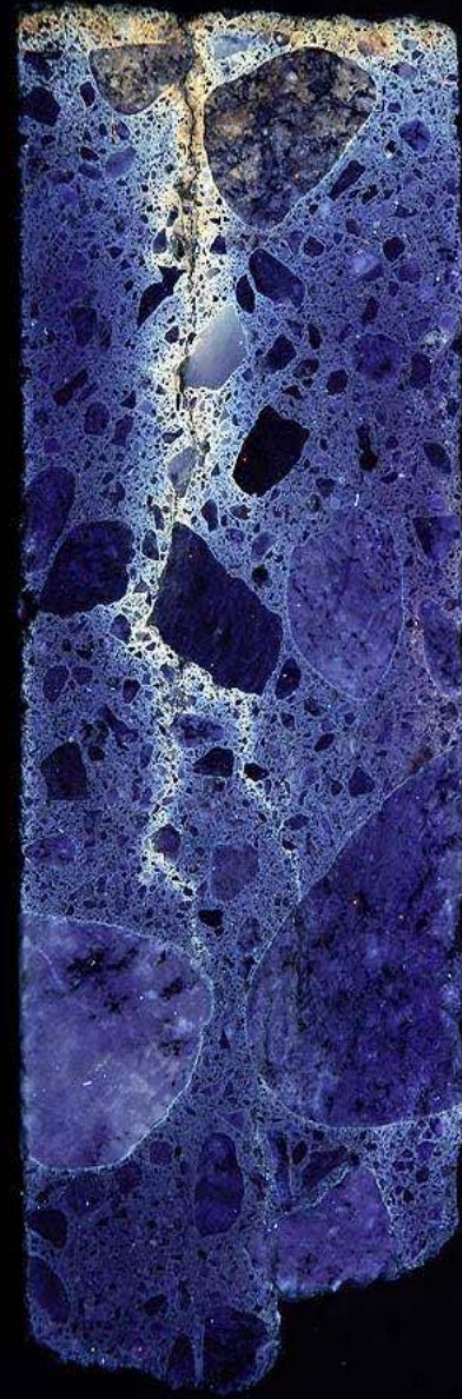
PENETRATING SEALER - SILANE

- \$30 PER GALLON
- 6-12 YEAR SERVICE LIFE
- NOT A CRACK FILLER



DECK SEALS

- EPOXY HEALER SEALER IS MORE COMMON
- HEAVY WEIGHT METHYL METHACRYLATE
- LOW VISCOSITY
- PENETRATES DEEP TO FILL CRACKS
- DOES NOT CREATE A BARRIER BUT SLOWS WATER AND CHLORIDES DOWN



DECK SEALS

DECK PREPERATION

- LIGHT SHOT BLAST
- BLOW DOWN WITH COMPRESSED AIR



DECK SEALS

APPLICATION

- FLOODCOAT
- SQUEEGEE OR BROOM
- BROADCAST SAND
- SWEEP AFTER CURED



DECK SEAL - INSTALLATION VIDEO



DECK SEAL - PROBLEMS

TOPPING SAND APPLIED TOO LATE
OR NOT ENOUGH



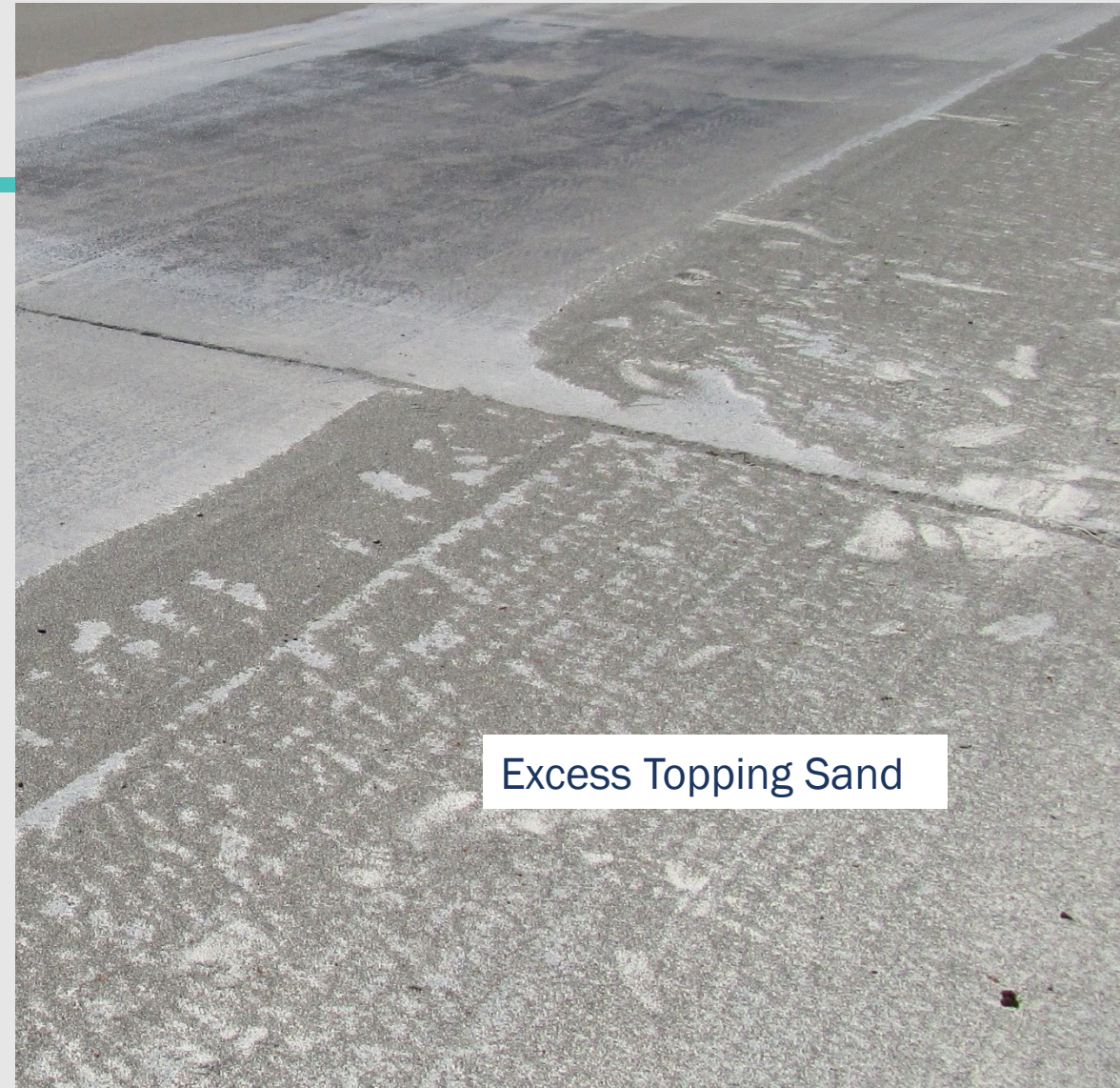
DECK SEAL - PROBLEMS

EXCESS RESIN NOT REMOVED



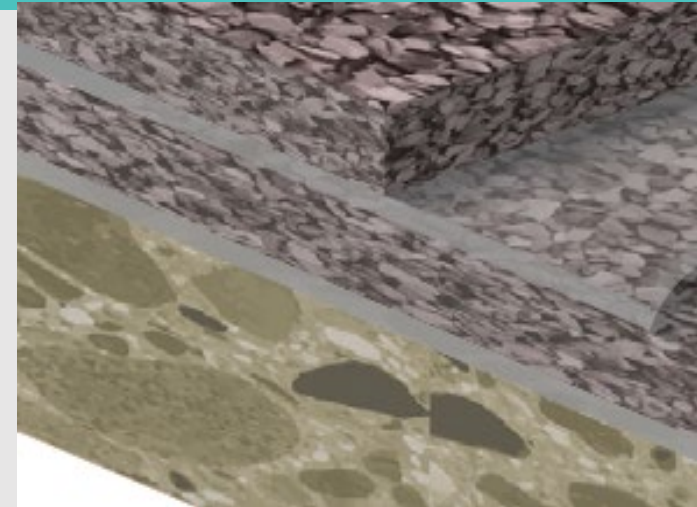
DECK SEAL - PROBLEMS

POOR CLEAN UP



THIN POLYMER OVERLAY (MPCO)

- NEW WEARING SURFACE, ABOUT 3/8" THICK (TOTAL FOR BOTH LIFTS)
- BARRIER THAT WATER AND CHLORIDES CAN'T PENETRATE
- SIGNIFICANTLY INCREASES SKID RESISTANCE (WHEN NEW)
- DOES NOT PENETRATE INTO DECK CRACKS BUT BRIDGES THEM





THIN POLYMER OVERLAY (MPCO)

GOOD CANDIDATES FOR MPCO

- SOUND DECK WITH ONLY MINOR SPALLING
- AREAS WITH HEAVY DEICER APPLICATION

THIN POLYMER OVERLAY (MPCO)

- CONSIDER CHLORIDE TESTING IF THE BRIDGE IS OVER 25 YEARS OLD



THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS



THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS
- HEAVY SHOT BLAST



THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS
- HEAVY SHOT BLAST
- PICK UP EXTRA SHOT



Excess shot is cleaned up

THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS
- HEAVY SHOT BLAST
- PICK UP EXTRA SHOT
- PREP OTHER AREAS



Curb is sandblasted

THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS
- HEAVY SHOT BLAST
- PICK UP EXTRA SHOT
- PREP OTHER AREAS
- BLOW DOWN



Surface is cleaned with high pressure air

THIN POLYMER OVERLAY (MPCO)

DECK PREPERATION

- SPALLS AND DELAMS
- HEAVY SHOT BLAST
- PICK UP EXTRA SHOT
- PREP OTHER AREAS
- BLOW DOWN
- TAPE JOINTS



Deck joints are taped



THIN POLYMER OVERLAY (MPCO)

APPLICATION

- TEMP >50 DEG F
- AVOID TRAFFIC ON SHOT BLASTED DECK
- TIMING AND COORDINATION IS KEY
- CLEARLY MARK MEASURING CONTAINERS
- IMMEDIATELY BEFORE INSTALLATION BLOW DOWN DECK WITH COMPRESSED AIR AND PERFORM FINAL INSPECTION



THIN POLYMER OVERLAY (MPCO)

APPLICATION

Jiffy Mixer



THIN POLYMER OVERLAY (MPCO)

APPLICATION

- PLACE A BEAD THE FULL LANE WIDTH
- USE NOTCHED SQUEEGEE TO SPREAD MATERIAL
- AVOID WALKING IN THE RESIN ONCE IT IS SPREAD



THIN POLYMER OVERLAY (MPCO)

APPLICATION

- BROADCAST AGGREGATE
 - ODOT RECOMMENDS 2 LBS PER SQUARE FOOT OF DECK
 - BEGIN APPLICATION AS SOON AS POSSIBLE BEFORE THE RESIN GELS
 - CONTINUE APPLICATION UNTIL NO WET SPOTS ARE VISIBLE



THIN POLYMER OVERLAY

APPLICATION

- 1ST LIFT CLEANUP
 - ONE THE RESIN IS FULLY CURED, REMOVE ALL OF THE EXCESS AND LOOSE AGGREGATE
 - POWERED BROOMS OR PICKUP SWEEPING TRUCKS ARE OK, BUT AVOID STEEL BRISTLE BROOMS THAT COULD DISLOADE AGGREGATE
 - BLOW DOWN WITH COMPRESSED AIR BEFORE APPLYING 2ND LIFT



THIN POLYMER OVERLAY (MPCO)

APPLICATION

- 2ND LIFT
 - INSTALL THE SECOND LIFT THE SAME AS THE FIRST
 - 2ND LIFT WILL REQUIRE MORE RESIN AND AGGREGATE
 - FINAL COMBINED OVERLAY THICKNESS IS APPROXIMATELY 3/8"





THIN POLYMER OVERLAY (MPCO)

OPENING TO TRAFFIC

- DON'T RETURN TRAFFIC UNTIL RESIN IS FULLY CURED AND EXCESS AGGREGATE HAS BEEN REMOVED
- RULE OF THUMB IS 2 HOURS AFTER RESIN APPEARS TO BE HARDENED

THIN POLYMER OVERLAY (MPCO)



Epoxy liquid applied and spread with squeegees

THIN POLYMER OVERLAY (MPCO)

PROBLEM – MIX RATIO AND / OR NOT THOROUGHLY MIXED





THIN POLYMER OVERLAY (MPCO)

PROBLEM – POOR DECK PREP





ASPHALT MEMBRANES

- POLYMER MEMBRANE (EPOXY)
- ROLLED MEMBRANE (FABRIC)
- SPRAY APPLIED MEMBRANE (POLYUREA)

!!! NOT TO BE USED !!!





ASPHALT MEMBRANES

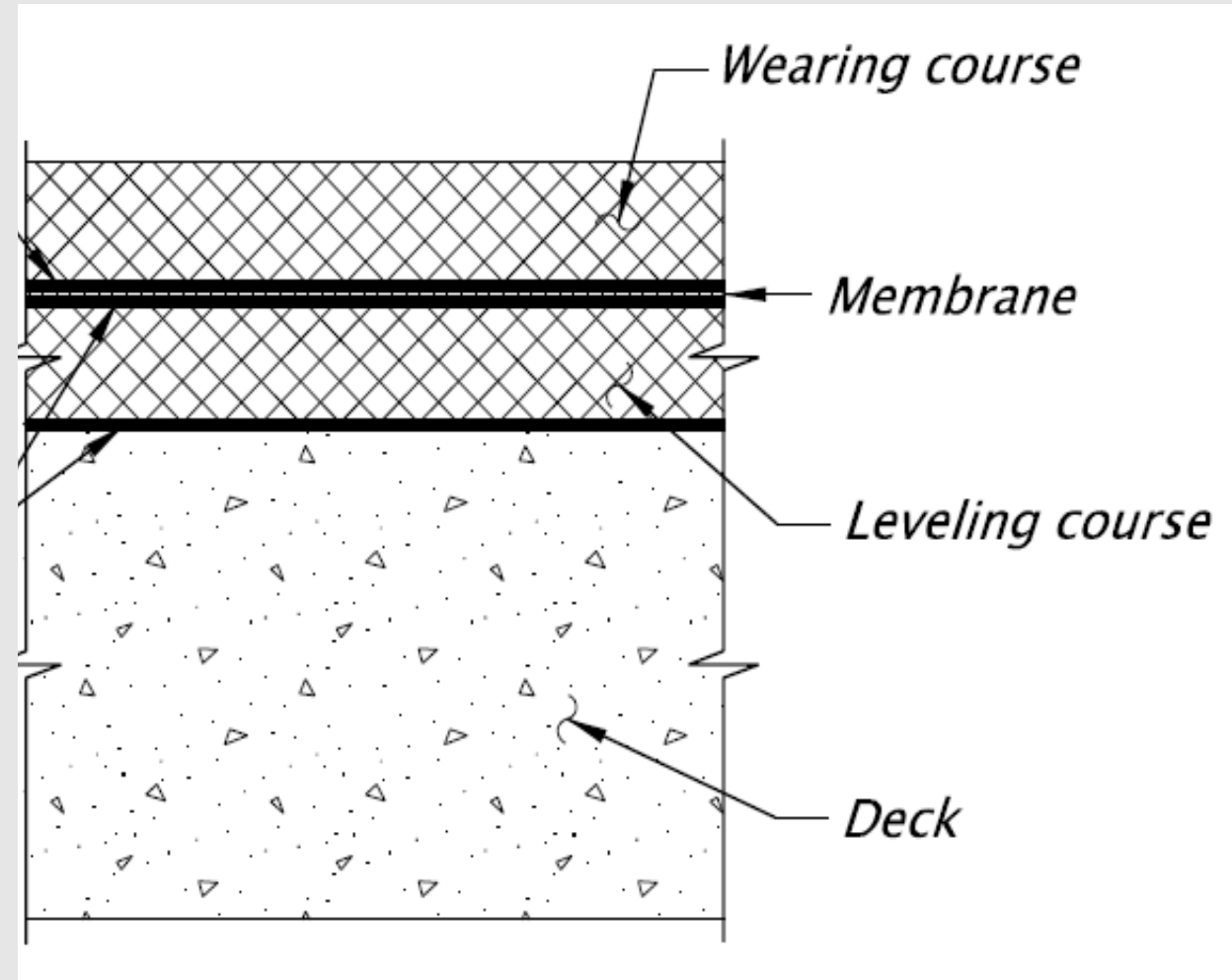
POLYMER MEMBRANE (EPOXY)

- ODOT DEVELOPED MEMBRANE
- EPOXY DECK SEAL WITH SINGLE LIFT OF THIN OVERLAY
- ONLY RECOMMENDED FOR CAST-IN-PLACE CONCRETE DECKS

ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)

- MILL OFF EXISTING ACP
- PERFORM DECK REPAIRS
- HOT TACK DECK
- PAVE 2" LEVELING COURSE
- PLACE ROLLED MEMBRANE
- PAVE 2" WEARING COURSE



ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)



ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)





ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)



ASPHALT MEMBRANES

ROLLED MEMBRANE

- OVERLAP AND OFFSET SEAMS PER MANUFACTURER RECOMMENDATIONS



ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)





ASPHALT MEMBRANES

ROLLED MEMBRANE (FABRIC)

- NO SPECIALTY TOOLS REQUIRED FOR INSTALLATION
- LEAKAGE IS THE WEAK LINK
- CONSTRUCTION TIMELINE IS REDUCED DUE TO LESS DECK PREPARATION
- LACKING DETAILS AT THE CURB & RELY ON CONTRACTOR 'EXPERIENCE'



QUESTIONS?

