

SPECIAL CONCRETE FINISH CONCRETE SURFACES

SILANE / CONCRETE STAIN / NON-SACRIFICIAL ANTI-GRAFFITI SYSTEM SPECIFICATION

GENERAL SECTION INCLUDES

CONSTRUCTION OF COLORED CONCRETE SURFACES USING COLOR STAIN SYSTEM DESIGNED TO DUPLICATE CLOSELY THE APPEARANCE OF ARCHITECTURAL ELEMENTS, BEAMS, RETAINING WALLS AND ANY OTHER CONCRETE SURFACES AS SHOWN ON ENHANCEMENT DETAIL, BRIDGE DETAIL, RETAINING WALL DETAIL, AND / OR OTHER SHEETS INCLUDED IN THE CONTRACT BID PROPOSAL DOCUMENTS.

DESIGN REQUIREMENTS

DESIGN OF THE CONCRETE SURFACE COLOR SCHEME SHALL BE SUPPLIED BY THE STATE AND THE FORMED CONCRETE SURFACE SHALL MATCH FEDERAL COLOR NUMBERS FOR PRIMARY AND SECONDARY COLORS. NO GROUT LINES IN BRICK OR STONE FORM LINER UNLESS OTHERWISE DIRECTED BY THE ENGINEER. NOTE THAT IN PART 3, EXECUTION, A MOCKUP IS REQUIRED FOR EACH WORK ORDER. UPON APPROVAL BY THE RESIDENT ENGINEER, OKLAHOMA DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED TO AS THE ENGINEER), THE MOCKUP SHALL SERVE AS THE QUALITY STANDARD FOR THE PROJECT. THE MOCKUP MUST BE CONSTRUCTED ON SITE TO ASSURE THAT THE FORM LINER AND THE STAIN WORK MATCHES THE PLAN REQUIREMENTS.

QUALITY ASSURANCE

CONTRACTORS SHALL HAVE A MINIMUM OF 5 YEARS EXPERIENCE APPLYING COLOR STAINS TO CREATE COLORED CONCRETE SURFACES TO MATCH ENHANCEMENT DETAIL SHEETS OR PLAN NOTES AS SHOWN ON BRIDGE DETAIL SHEETS, RETAINING WALL DETAIL SHEETS AND / OR OTHER SHEETS INCLUDED IN THE CONTRACT BID PROPOSAL DOCUMENTS AS PROVIDED BY THE ENGINEER.

PRE- INSTALLATION MEETING: THE CONTRACTOR SHALL CONDUCT A MEETING WITH THE ENGINEER AND WITH THE MANUFACTURE'S REPRESENTATIVE TO ENSURE UNDERSTANDING OF STAINED CONCRETE, COLOR APPLICATION, REQUIREMENTS FOR CONSTRUCTION MOCKUP, AND TO COORDINATE THE WORK. INSTALLATION SHALL NOT BEGIN UNTIL THE METHODS AND MATERIALS HAVE BEEN APPROVED IN WRITING BY THE ENGINEER.

PROJECT CONDITIONS

ENVIRONMENTAL REQUIREMENTS: APPLY COLOR STAIN WHEN AMBIENT TEMPERATURES ARE BETWEEN 50 AND 100 DEGREES F. CONSULT MANUFACTURER IF CONDITIONS DIFFER FROM THIS REQUIREMENT.

SEQUENCING

SCHEDULE COLOR STAIN APPLICATION AS DIRECTED BY THE RESIDENT ENGINEER. COORDINATE WORK TO PERMIT COLORING APPLICATIONS WITHOUT INTERFERENCE FROM OTHER TRADES.

PRODUCTS

CONTRACTORS AND SUPPLIERS MUST DEMONSTRATE THE ABILITY AND EXPERTISE TO PROVIDE SPECIFIED MATERIALS AND WORKMANSHIP REQUIRED AND BE APPROVED IN WRITING BY THE ENGINEER. HOWEVER, ALL COMPANIES, SHALL PROVIDE A RESUME OF EXPERIENCE ON SIMILAR PROJECTS AND MUST BE APPROVED IN WRITING BY THE ENGINEER.

PENETRATING WATER REPELLANT TREATMENT

THE PENETRATING WATER REPELLANT SOLUTION SHALL BE A 40% TO 100% SOLUTION BY WEIGHT OF MONOMERIC ALKYTRIALKOXY SILANE. SUBSTITUTION OF THE ALKYTRIALKOXY SILANE BY SILICONES OR SILOXANES WILL NOT BE PERMITTED. THE SOLUTION SHALL NOT STAIN OR DISCOLOR THE CONCRETE SURFACE. THE TREATMENT SOLUTION SHALL NOT ALTER THE SURFACE TEXTURE OR FORM A COATING ON THE CONCRETE SURFACE. THE TREATMENT SOLUTION SHALL BE COMPATIBLE WITH SURFACE FINISHES APPLIED UNDER SUBSECTION 511.385, CLASS 4, SPECIAL SURFACE FINISH. ONLY MATERIAL WHICH WILL BE SURFACE DRY WITHIN 30 MINUTES AFTER APPLICATION SHALL BE USED.

THE TREATMENT SOLUTION SHALL MEET THE PREQUALIFICATION REQUIREMENTS CONTAINED HEREIN AND SHALL BE SELECTED FROM THE DEPARTMENTS LISTING OF "APPROVED PRODUCTS FOR PENETRATING WATER REPELLANT TREATMENT."

PENETRATING WATER REPELLANT TREATMENT (CONTINUED)

PREQUALIFICATION REQUIREMENTS. SUPPLIERS OF THE TREATMENT SOLUTION MATERIALS PROPOSED FOR INCLUSION ON THE DEPARTMENTS "APPROVED PRODUCTS LISTING" SHALL SUBMIT CERTIFICATION FOR APPROVAL BY THE CENTRAL MATERIALS LABORATORY AND THE BRIDGE ENGINEER.

THE CERTIFICATION SHALL BE A SIGNED AND NOTARIZED STATEMENT PREPARED BY THE MANUFACTURER STATING THAT THE MATERIALS PROPOSED FOR USE HAVE BEEN TESTED BY A QUALIFIED LABORATORY, AND THAT THEY MEET OR EXCEED THE REQUIREMENTS LISTED HEREIN.

LABORATORY TESTING DOCUMENTATION SHALL BE ATTACHED AND SUBMITTED ALONG WITH A SAMPLE OF THE MATERIALS AND APPLICATION INSTRUCTIONS. THE SUBMITTAL SHALL ALSO INCLUDE A GENERIC DESCRIPTION OF THE CHEMICAL INGREDIENTS AND THEIR AMOUNTS.

PHYSICAL REQUIREMENTS. CONCRETE SAMPLES TREATED WITH THE PENETRATING WATER REPELLANT SOLUTION SHALL MEET OR EXCEED THE TEST REQUIREMENTS OF TABLE 1.

TABLE 1
PENETRATING WATER REPELLANT TREATMENT WATER REQUIREMENTS

CHARACTERISTIC	REQUIREMENT	TEST METHOD
REDUCTION IN ABSORPTION OF WATER	80% MIN.	NCHRP #244 SERIES I
REDUCTION IN CHLORIDE ION CONTENT	80% MIN.	NCHRP #244 SERIES II
PENETRATION	4.0 MM (0.15 IN)	*NM L-34 MIN
VAPOR PERMEABILITY	99.5%	*NM L-35
*THESE TEST ARE ON FILE AT THE CENTRAL MATERIALS LABORATORY		

SUBMITTALS: A NOTARIZED CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR EACH LOT OR SHIPMENT OF MATERIAL PRIOR TO USE. THE CERTIFICATION PREPARED BY THE MANUFACTURER SHALL INDICATE THAT THE MATERIAL BEING SUPPLIED IS ESSENTIALLY THE SAME AS THE MATERIAL WHICH HAS BEEN PREQUALIFIED.

THE CONTRACTOR SHALL ALSO SUBMIT A 500 ML (1PT) SAMPLE IN A GLASS CONTAINER WITH A NONREACTIVE PLASTIC SCREW ON LID, FROM EACH LOT EVALUATION. THE SAMPLE SHALL NOT BE ALLOWED TO COME INTO CONTACT WITH METAL. NO METAL CANS OR METAL CAPS WILL BE PERMITTED. IN ADDITION, THE TREATMENT SOLUTION SAMPLE SHALL NOT BE ALLOWED TO COME INTO CONTACT WITH MOISTURE, ESPECIALLY ATMOSPHERIC MOISTURE.

THE PROJECT ENGINEER / INSPECTOR MAY TAKE TWO OR MORE SAMPLES OR THE MATERIALS FROM THE SHIPPING CONTAINERS AT THE JOB SITE.

CHEMICAL ANALYSES: THE CENTRAL MATERIALS LABORATORY WILL ANALYZE THE TREATMENT SOLUTION USING INFRARED SPECTROSCOPY. THE SPECTRUM SHALL BE IDENTICAL TO THE STANDARD INFRARED SPECTRUM OF THE MATERIAL ON FILE AT THE CENTRAL MATERIALS LABORATORY.

LABORATORY: THE CENTRAL MATERIALS LABORATORY WILL ANALYZE THE TREATMENT SOLUTION BY CHROMATOGRAPHIC OR OTHER QUANTITATIVE ANALYTIC TECHNIQUES.

COLOR STAIN

COATING SYSTEM: CONCRETE STAIN. SHERWIN WILLIAMS SWD DOT BRIDGE AND HIGHWAY SEALER B-97-100 SERIES ACRYLIC CONCRETE STAIN OR APPROVED EQUIVALENT. WATER REPELLANT SHALL CONFORM TO APPENDIX A; SECTION 532 -PENETRATING WATER REPELLANT TREATMENT.

STAIN COLOR: COLORS SHALL MATCH FEDERAL COLOR NUMBERS SHOWN ON THE PLANS OR SPECIAL PROVISIONS FOR PRIMARY AND SECONDARY COLORS. MOCK UPS WILL BE CONSTRUCTED AND THE STAIN APPLIED AND NO STAIN WORK WILL BE CONDUCTED ON ANY PART OF THE BRIDGES, RETAINING WALL, ABUTMENTS, ETC. UNTIL A MOCK UP HAS BEEN APPROVED BY THE RESIDENT ENGINEER, OKLAHOMA DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED AS THE ENGINEER).

STAIN TESTING

CONTRACTOR SHALL PROVIDE SAMPLES, MANUFACTURER'S CERTIFICATION OF COMPLIANCE AND TEST RESULTS FROM EACH BATCH OR LOT OF STAIN USING INFRARED TECHNIQUES. A SAMPLE WILL ALSO BE PROVIDED FOR THE FIRST BATCH OR LOTS OF STAIN. THIS SAMPLE WILL BE FORWARDED TO ODOT LAB OR THEIR DESIGNATED LAB AS THE STANDARD FOR TESTING.

NON-SACRIFICIAL ANTI-GRAFFITI COATING APPLICATION

CONTRACTOR SHALL APPLY NON-SACRIFICIAL ANTI-GRAFFITI COATING TO THE RETAINING WALLS AND ABUTMENTS AFTER THE STAIN PROCESS IS COMPLETE. NON-SACRIFICIAL ANTI-GRAFFITI COATING SHALL BE SHERWIN WILLIAMS "SWD INVISI-SHEILD" (B65CJ2000) OR APPROVED EQUAL.

COLOR STAIN SYSTEM APPLICATION

MANUFACTURER OR MANUFACTURER'S AUTHORIZED REPRESENTATIVE, FIVE YEARS OR MORE EXPERIENCE REQUIRED IN APPLICATION OF STAIN FOR CONCRETE FORM LINERS. CONTRACTOR SHALL SUBMIT RESUME OF QUALIFIED INSTALLER TO THE ENGINEER FOR WRITTEN APPROVAL CONSTRUCTION.

MOCKUP

BUILD ON SITE BEFORE WORK STARTS, USING SAME MATERIALS, METHODS AND WORK FORCE THAT WILL BE USED FOR THE PROJECT. THE ENGINEER WILL DETERMINE SPECIFIC REQUIREMENTS AND LOCATION, AND WHERE THE MOCKUP SHALL BE LOCATED ON THE PROJECT AND PROVIDE IN WRITING TO THE CONTRACTOR.

1. SIZE. 49 SQUARE FEET, OR LARGER TO ADEQUATELY ILLUSTRATE THE PATTERN AND TEXTURE SELECTED.

2. INCLUDE AN AREA TO DEMONSTRATE WALL MOLD BUTT JOINT AND IF APPROPRIATE, CONTINUATION OF PATTERN THROUGH EXPANSION JOINT. THE MOLD SHALL INCLUDE AN EDGE TO ILLUSTRATE HOW THE JOINTS MATCH UP AROUND A CORNER.

3. AFTER CONCRETE WORK ON MOCKUP IS COMPLETED AND CURED FOR A MINIMUM OF 28 DAYS, AND AFTER SURFACE IS DETERMINED TO BE ACCEPTABLE FOR COLORING, APPLY COLOR STAIN SYSTEM.

4. AFTER COLORING IS DETERMINED TO BE ACCEPTABLE IN WRITING BY THE ENGINEER, CONSTRUCTION OF PROJECT MAY PROCEED, USING MOCKUP AS QUALITY STANDARD. THE MOCKUP MUST REMAIN ON THE SITE WITHIN ONE HUNDRED FEET OF THE ACTUAL WORK BEING PERFORMED.

APPLYING THE PENETRATING WATER REPELLANT SOLUTION

WHERE SPECIAL SURFACE FINISH AND PENETRATING WATER REPELLANT ARE BOTH USED ON A CONCRETE SURFACE, THE SPECIAL SURFACE FINISH SHALL BE APPLIED AFTER THE PENETRATING WATER REPELLANT HAS BEEN APPLIED AND HAS CURED FOR A MINIMUM OF SEVEN DAYS OR PER MANUFACTURER'S RECOMMENDATIONS.

SURFACE PREPARATION

CONCRETE SURFACES SHALL BE CLEANED BY UTILIZING APPROVED BLASTING EQUIPMENT PRIOR TO THE APPLICATION OF THE TREATMENT SOLUTION.

OTHER METHODS AND EQUIPMENT FOR SURFACE PREPARATION MAY BE USED IF PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER.

THE PREPARED SURFACES SHALL BE CLEANED SUCH THAT ALL TRACES OF CURING COMPOUNDS, LAITANCE, DIRT, DUST, SALT, OIL, ASPHALT, OTHER FOREIGN MATERIALS AND DELETERIOUS SUBSTANCES ARE REMOVED.

IF NECESSARY, SOLVENTS AND HAND TOOLS SHALL BE USED IN CONJUNCTION WITH THE BLASTING EQUIPMENT TO REMOVE BONDED MATERIALS DETRIMENTAL TO THE TREATMENT OF THE CONCRETE SURFACE.

THE CLEANING PROCESS SHALL NOT CAUSE UNDOE DAMAGE TO THE CONCRETE SURFACE, REMOVE OR SUBSTANTIALLY ALTER THE EXISTING SURFACE FINISH, OR EXPOSE THE COARSE AGGREGATE OF THE CONCRETE. THE METHOD OF CLEANING SHALL BE PERFORMED IN SUCH A MANNER AS TO PROVIDE IN A REASONABLY UNIFORM APPEARING SURFACE COLOR AND TEXTURE. APPROVAL OF THE PREPARED CONCRETE SURFACES FOR TREATMENT MUST BE OBTAINED FROM THE ENGINEER PRIOR TO THE APPLICATION OF THE TREATMENT SOLUTION.

OKLAHOMA CITY BOULEVARD

OKLAHOMA CO.

DESIGN	KBA	MMPC	OKLAHOMA DEPARTMENT OF TRANSPORTATION SPECIAL CONCRETE FINISH NOTES SHEET 1 OF 2 STATE JOB NO. 17428(88) SHEET NO. 138
DRAWN	ISFM	RWH	
CHECKED	KBA		
APPROVED			
SQUAD	MacArthur		