

LOR-18-(0.00)(1.69)
MED-301-8.189

**LORAIN COUNTY
MEDINA COUNTY**

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NONE REQUIRED


Robert Weaver
District 03 Deputy Director


Pamela Boratyn
Director, Department of Transportation

TITLE SHEET

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig
 OHIO811.org Before You Dig
OHIO811, 8-1-1, or 1-800-362-2764 (Non members must be called directly)

PLANS PREPARED BY:
 OHIO DEPARTMENT OF
TRANSPORTATION
DISTRICT THREE ENGINEERING

[illegible]

ITEM SPECIAL - MALTENE BASED LONGITUDINAL JOINT STABILIZER

THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PERFORM ALL OPERATIONS FOR THE APPLICATION OF A MALTENE BASED LONGITUDINAL JOINT STABILIZATION SYSTEM TO PROVIDE MALTENE BASED LONGITUDINAL JOINT STABILIZER ON ASPHALTIC CONCRETE PAVEMENTS AT THE CENTER LINE JOINT AFTER RUMBLE STRIPES HAVE BEEN PLACED. THE STABILIZATION OF JOINTS SHALL BE BY SPRAY APPLICATION OF A CATIONIC EMULSION COMPOSED OF PETROLEUM OILS, RESINS AND POLYMER EMULSIFIED WITH WATER. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS, THE APPLICABLE DRAWINGS, AND SUBJECT TO THE TERMS AND CONDITIONS OF THIS CONTRACT.

THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE A POLYMERIZED EMULSION COMPOSED OF A PETROLEUM RESIN OIL BASE AND SBR COPOLYMER UNIFORMLY EMULSIFIED WITH WATER. EACH BIDDER MUST SUBMIT WITH THEIR BID A CERTIFIED STATEMENT FROM THE MANUFACTURER SHOWING THAT THE MALTENE BASED LONGITUDINAL JOINT STABILIZER CONFORMS TO THE REQUIRED PHYSICAL AND CHEMICAL REQUIREMENTS.

SPECIFICATIONS

<u>TESTS</u>	<u>TEST METHOD</u>	<u>REQUIREMENTS</u>	
	<u>ASTM</u>	<u>MIN.</u>	<u>MAX.</u>
TESTS ON EMULSION:			
RESIDUE, % W ¹	D-244(MOD.)	39	44
MISCIBILITY TEST ²	D-244(MOD.)	NO COAGULATION	
PARTICLE CHARGE TEST	D-244	POSITIVE	
TESTS ON RESIDUE FROM DISTILLATION:			
FLASH POINT, COC, °C	D-92	200	-
VISCOSITY @ 60°C, CST	D-445	100	200
ASPHALTENES, %W	D-2006-70	-	1.00
MALTENE DIST. RATIO	D-2006-70	0.2	0.8
$\frac{PC + A_1}{S + A_2}$ ³			
LIGHT TRANSMITTANCE	LIGHT TRANSMITTANCE/DDE	30	
PC/S RATIO ⁵	D-2006-70	0.5	-
SATURATED HYDROCARBONS,S ⁵	D-2006-70	21	28
POLYMER:			
CHARGE		POSITIVE	
MONOMER RATIO, BUTADIENE/STYRENE		76/24	
SOLIDS CONTENT, PERCENT BY WEIGHT		63	
COAGULUM ON 80 MESH SCREEN, MAXIMUM PERCENT BY WEIGHT		0.1	
MOONEY VISCOSITY OF POLYMER (ML 4 @ 212°F) MINIMUM		100	
PH OF POLYMER		5.0	
WEIGHT PER GALLON, WET POUNDS @ 63% SOLIDS CONTENT		7.94	

¹ ASTM D-244 EVAPORATION TEST FOR PERCENT OF RESIDUE IS MADE BY HEATING 100 GRAM SAMPLE TO 149°C (300°F) UNTIL FOAMING CEASES, THEN COOL IMMEDIATELY AND CALCULATE RESULTS.
² TEST PROCEDURE IDENTICAL WITH ASTM D-244-60 EXCEPT THAT .02 NORMAL CALCIUM CHLORIDE SOLUTION SHALL BE USED IN PLACE OF DISTILLED WATER.
³ TEST PROCEDURE IDENTICAL WITH ASTM D-244 EXCEPT THAT DISTILLED WATER SHALL BE USED IN PLACE OF TWO PERCENT SODIUM OLEATE SOLUTION.
⁴ TEST PROCEDURE IS ATTACHED.
⁵ CHEMICAL COMPOSITION BY ASTM METHOD D-2006-70:
PC = POLAR COMPOUNDS, A₁ = FIRST ACIDAFFINS
A₂ = SECOND ACIDAFFINS, S = SATURATED HYDROCARBONS

PROCEDURE FOR THE DETERMINATION OF PERCENT LIGHT TRANSMITTANCE OF THE MALTENE BASED LONGITUDINAL JOINT STABILIZER.

- A. APPARATUS
1) CONTAINER MAY BE EITHER GLASS, PLASTIC OR METAL HAVING A CAPACITY OF 6,000 ML.
2) GRADUATED CYLINDER, 1,000 ML, OR GREATER
3) LIGHT TRANSMITTANCE MEASURING APPARATUS, SUCH AS BAUSCH AND LOMB OR LUMETRON SPECTROPHOTOMETER
4) GRADUATED PIPETTE HAVING 1 ML CAPACITY TO 0.01 ML ACCURACY
5) SUCTION BULB FOR USE WITH PIPETTE
6) TEST TUBES COMPATIBLE WITH SPECTROPHOTOMETER, 3/4" X 6, BAUSCH AND LOMB, CATALOG NO. 33-17- 81, (B&L)
- B. CALIBRATION OF SPECTROPHOTOMETER
1) CALIBRATE SPECTROPHOTOMETER AS FOLLOWS: (A) SET WAVELENGTH AT 580 MU, (B) ALLOW SPECTROPHOTOMETER TO WARM-UP THIRTY MINUTES, (C) ZERO PERCENT LIGHT TRANSMITTANCE (%LT) SCALE, (D) RINSE TEST TUBE THREE TIMES WITH TAP WATER AND FILL TO TOP OF CIRCLE MARKING ON B&L TEST TUBE OR APPROXIMATELY 2/3 FULL, (E) PLACE TUBE IN SPECTROPHOTOMETER AND SET %LT SCALE AT 100, AND (F) REPEAT STEPS (C) AND (E) TWO TIMES OR UNTIL NO FURTHER ADJUSTMENTS ARE NECESSARY.
- C. PROCEDURE
1) SHAKE, STIR OR OTHERWISE THOROUGHLY MIX EMULSION TO BE TESTED. PLACE SAMPLE OF EMULSION IN BEAKER AND ALLOW TO STAND ONE MINUTE.
2) PLACE 2,000 ML TAP WATER IN CONTAINER.
3) SUCK 1.00 ML EMULSION INTO PIPETTE USING SUCTION BULB. WIPE OFF OUTSIDE OF PIPETTE.
4) USING SUCTION BULB, BLOW EMULSION INTO CONTAINER.
5) RINSE PIPETTE BY SUCKING IN DILUTED EMULSION SOLUTION AND BLOWING OUT.
6) CLEAN PIPETTE WITH SOAP OR SOLVENT AND WATER. RINSE WITH ACETONE.
7) STIR DILUTED EMULSION THOROUGHLY.
8) RINSE OUT TUBE TO BE USED WITH THE DILUTED EMULSION THREE TIMES AND FILL TO TOP OF CIRCLE.
9) CALIBRATE SPECTROPHOTOMETER.

- 10) PLACE DILUTED EMULSION SAMPLE TUBE IN SPECTROPHOTOMETER, COVER AND READ %LT TO NEAREST TENTH.
11) REPEAT STEPS 9 AND 10 UNTIL THREE IDENTICAL CONSECUTIVE READINGS ARE ACHIEVED.
12) THE ELAPSED TIME BETWEEN ADDITION OF EMULSION TO DILUTION OF WATER AND FINAL %LT READING SHOULD NOT EXCEED 5 MINUTES.

MATERIAL PERFORMANCE:

THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL HAVE THE CAPABILITY TO FULLY PENETRATE THE ASPHALT PAVEMENT SURFACE IN THE AREA AROUND THE CONSTRUCTION JOINT TO BE TREATED. NO SURFACE COATING SHALL REMAIN WITHIN 30 MINUTES OF APPLICATION. THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE ABSORBED AND INCORPORATED INTO THE ASPHALT BINDER. VERIFICATION THAT SAID INCORPORATION OF THE MALTENE BASED LONGITUDINAL JOINT STABILIZER INTO THE ASPHALT BINDER HAS BEEN EFFECTED SHALL BE BY ANALYSIS OF THE CHEMICAL PROPERTIES OF SAID ASPHALT BINDER I.E. VISCOSITY SHALL BE IMPROVED TO THE FOLLOWING EXTENT. THE VISCOSITY SHALL BE REDUCED BY A MINIMUM OF 30% AS DETERMINED BY DYNAMIC SHEAR RHEOMETER (DSR) METHOD FOR ASPHALT TESTING IN ACCORD WITH AASHTO T315-05. THIS ANALYSIS SHALL APPLY TO EXTRACTED ASPHALT BINDER, TAKEN FROM CORES EXTRACTED THIRTY DAYS FOLLOWING APPLICATION, IN THE UPPER 3/8" OF PAVEMENT. IN ADDITION THE TREATED AREAS, 12" ON EITHER SIDE OF THE CONSTRUCTION JOINT AS A MINIMUM, SHALL BE SEALED IN-DEPTH TO THE INTRUSION OF AIR AND WATER AS COMPARED TO ADJACENT PAVEMENT AREAS.

JOINTBOND[®], MANUFACTURED BY D&D EMULSION, INC., MANSFIELD, OHIO, IS A PRODUCT OF KNOW QUALITY AND ACCEPTED PERFORMANCE, OR AN APPROVED EQUAL PRODUCT.

APPLICATION TEMPERATURE/WEATHER LIMITATIONS:

THE TEMPERATURE OF THE MALTENE BASED LONGITUDINAL JOINT STABILIZER AT THE TIME OF APPLICATION SHALL BE AS RECOMMENDED BY THE MANUFACTURER. THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE APPLIED ONLY WHEN THE EXISTING SURFACE TO BE TREATED IS THOROUGHLY DRY AND WHEN IT IS NOT THREATENING TO RAIN. THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL NOT BE APPLIED WHEN THE AMBIENT TEMPERATURE IS BELOW 40°F OR MAY REACH LESS THAN 40°F WITHIN THE NEXT TWELVE HOURS.

APPLICATING EQUIPMENT:

THE DISTRIBUTOR TRUCK OR OTHER APPROVED APPLICATOR FOR SPREADING THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE SELF-PROPELLED, AND SHALL HAVE PNEUMATIC TIRES. THE DISTRIBUTOR TRUCK OR APPLICATOR SHALL BE DESIGNED AND EQUIPPED TO DISTRIBUTE THE MALTENE BASED LONGITUDINAL JOINT STABILIZER UNIFORMLY ON VARIABLE WIDTHS OF SURFACE AT READILY DETERMINED AND CONTROLLED RATES FROM 0.07 TO 0.12 GALLONS PER SQUARE YARD OF SURFACE, AND WITH AN ALLOWABLE VARIATION FROM ANY SPECIFIED RATE NOT TO EXCEED 5 PERCENT OF THE SPECIFIED RATE.

THE DISTRIBUTOR OR APPLICATOR EQUIPMENT SHALL BE COMPUTERIZED SO AS TO CONTROL THE RATE OF APPLICATION SELECTED REGARDLESS OF FORWARD SPEED OF THE APPLICATOR AND SHALL INCLUDE FULL CIRCULATION SPRAY BARS, PUMP TACHOMETER, VOLUME MEASURING DEVICE AND A HAND HOSE ATTACHMENT SUITABLE FOR APPLICATION OF THE MALTENE BASED LONGITUDINAL JOINT STABILIZER MANUALLY TO COVER AREAS INACCESSIBLE TO THE DISTRIBUTOR. THE DISTRIBUTOR OR APPLICATOR SHALL BE EQUIPPED TO CIRCULATE AND AGITATE THE MALTENE BASED LONGITUDINAL JOINT STABILIZER WITHIN THE TANK.

A CHECK OF DISTRIBUTOR OR APPLICATOR EQUIPMENT AS WELL AS APPLICATION RATE ACCURACY AND UNIFORMITY OF DISTRIBUTION SHALL BE MADE WHEN DIRECTED BY THE ENGINEER.

IN THE EVENT THAT BLOTTING OF A MISAPPLICATION OF MALTENE BASED LONGITUDINAL JOINT STABILIZER IS REQUIRED SAND OR ROCK DUST SHALL BE APPLIED. THE TRUCK USED FOR APPLYING SAND OR ROCK DUST SHALL BE EQUIPPED WITH A SPREADER THAT ALLOWS THE SAND TO BE UNIFORMLY DISTRIBUTED ONTO THE PAVEMENT. THE SPREADER SHALL BE ADJUSTABLE SO AS TO ACCOMMODATE VARIOUS TREATMENT WIDTHS. APPLIED SAND OR ROCK DUST WILL BE SWEEPED AND REMOVED PRIOR TO OPENING THE AREA TO TRAFFIC.

APPLICATION OF MALTENE BASED LONGITUDINAL JOINT STABILIZER:

THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHOULD BE APPLIED AFTER PLACEMENT OF THE CENTER LINE RUMBLE STRIPES AND PRIOR TO PLACEMENT OF THE FINAL CENTER LINE PAVEMENT MARKINGS.

THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE APPLIED BY A DISTRIBUTOR TRUCK OR APPROVED APPLICATOR AT THE TEMPERATURE RECOMMENDED BY THE MANUFACTURER AND AT THE PRESSURE REQUIRED FOR THE PROPER DISTRIBUTION. THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE SO APPLIED THAT UNIFORM DISTRIBUTION IS OBTAINED AT ALL POINTS OF THE AREAS TO BE TREATED. DISTRIBUTION SHALL BEGIN WITH A RUNNING START TO INSURE FULL RATE OF SPREAD OVER THE ENTIRE AREA TO BE TREATED. AREAS INADVERTENTLY MISSED SHALL RECEIVE ADDITIONAL TREATMENT AS MAY BE REQUIRED BY HAND SPRAYER APPLICATION.

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE STANDARD APPLICATION WIDTH SHALL BE (12") ON EITHER SIDE OF THE CENTER LINE CONSTRUCTION JOINT AS A MINIMUM.

THE MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE SPREAD AT THE RATE OF 0.07 TO 0.12 GALLONS PER SQUARE YARD, OR AS APPROVED BY THE ENGINEER FOLLOWING FIELD TESTING. TEST STRIPS SHALL BE APPLIED AT VARIOUS RATES OF APPLICATION FOR THE PURPOSE OF SELECTING THE RATE OF APPLICATION THAT WILL BE ABSORBED WITHIN A THIRTY MINUTE PERIOD.

WHERE MORE THAN ONE APPLICATION IS TO BE MADE, SUCCEEDING APPLICATIONS SHALL BE MADE AS SOON AS PENETRATION OF THE PRECEDING APPLICATION HAS BEEN COMPLETED AND THE ENGINEER GRANTS APPROVAL FOR ADDITIONAL APPLICATIONS.

GRADES OR SUPER ELEVATIONS OF SURFACES THAT MAY CAUSE EXCESSIVE RUNOFF, IN THE OPINION OF THE ENGINEER, SHALL HAVE THE REQUIRED AMOUNTS OF MALTENE BASED LONGITUDINAL JOINT STABILIZER APPLIED IN TWO APPLICATIONS AS DIRECTED.

THE CONTRACTOR SHALL FURNISH A QUALITY INSPECTION REPORT SHOWING THE SOURCE, MANUFACTURER, AND THE DATE SHIPPED, FOR EACH LOAD OF MALTENE BASED LONGITUDINAL JOINT STABILIZER. WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL TAKE REPRESENTATIVE SAMPLES OF MATERIAL FOR TESTING.

TRAFFIC CONTROL:

THE CONTRACTOR SHALL SCHEDULE THEIR OPERATIONS AND CARRY OUT THE WORK IN A MANNER TO CAUSE THE LEAST DISTURBANCE AND/OR INTERFERENCE WITH THE NORMAL FLOW OF TRAFFIC OVER THE AREAS TO BE TREATED. TREATED PORTIONS OF THE PAVEMENT SURFACES SHALL BE KEPT FREE FROM TRAFFIC UNTIL PENETRATION, IN THE OPINION OF THE ENGINEER, HAS BECOME COMPLETE AND THE AREA IS SUITABLE FOR TRAFFIC.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SIGNING REQUIRED TO PERMIT SAFE TRAVEL. IF, IN THE OPINION OF THE ENGINEER, PROPER SIGNING IS NOT BEING USED, THE CONTRACTOR SHALL STOP ALL OPERATIONS UNTIL SAFE SIGNING AND BARRICADING IS ACHIEVED.

BASIS FOR PAYMENT:

THE ACCEPTED QUANTITIES, MEASURED AS PROVIDED FOR ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL - MALTENE BASED LONGITUDINAL JOINT STABILIZER.

MALTENE BASED LONGITUDINAL JOINT STABILIZER SHALL BE PAID FOR PER SQUARE YARD, WHICH SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS; EQUIPMENT, LABOR AND INCIDENTALS TO COMPLETE THE WORK AS SPECIFIED AND REQUIRED

$$\text{LOR/MED-18/301-(0.00)(1.69)/8.189}$$

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GENERAL SUMMARY

DESIGN AGENCY	
DISTRICT 3	
	
ENGINEERING TEAM ONE	
DESIGNER	
SMH	
REVIEWER	
ACM 01-30-26	
PROJECT ID	
124016	
SHEET	TOTAL
P.8	10

Removed Item 874 - Longitudinal Joint Preparation item and quantity from plan

PLAN SPLIT	COUNTY	ROUTE	LOG POINT TO LOG POINT		LENGTH		AVERAGE WIDTH	TYPICAL	PAVEMENT AREA	421	421	423	QUANTITIES FOR ITEM 423 CRACK SEALING ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. ITEM 423 CRACK SEALING IS CONSIDERED INCIDENTAL TO THE COST OF ITEM 421 MICROSURFACING ACCORDING TO C&MS 421.16.	618	618	SPECIAL	897		
					MILE	FEET				MICROSURFACING, SURFACE COURSE (FR)	MICROSURFACING, LEVELING COURSE	CRACK SEALING, MISC.: TYPE II (INCIDENTAL TO ITEM 421)		RUMBLE STRIPES, EDGE LINE (ASPHALT CONCRETE)	RUMBLE STRIPES, CENTER LINE (ASPHALT CONCRETE)	MALTENE BASED LONGITUDINAL JOINT STABILIZER	PAVEMENT PLANING, ASPHALT CONCRETE, CLASS A (BUTT JOINTS) (TAPER 0.0" TO 0.5")	PATCHING PLANED SURFACE	
			STRAIGHT LINE MILEAGE	FT			SY		SY										SY
01/NHS	LOR	18	0.00	0.50	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587	83	1	
01/NHS	LOR	18	0.50	1.00	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587			
01/NHS	LOR	18	1.00	1.49	0.49	2,587	30.0	1	8,623	8,623	8,623	8,623		0.98	0.49	575	83	1	
SUSPEND PROJECT AT LOR-18-1.49 AND RESUME AT LOR-18-1.69																			
01/NHS	LOR	18	1.69	2.00	0.31	1,637	30.0	1	5,457	5,457	5,457	5,457		0.62	0.31	364	83	1	
01/NHS	LOR	18	2.00	2.50	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587			
01/NHS	LOR	18	2.50	3.00	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587			
01/NHS	LOR	18	3.00	3.09	0.09	491	24.5	1	1,337	1,337	1,337	1,337		0.18	0.09	110	68	1	
01/NHS	APPROACH SLAB																		
01/NHS	CONCRETE STRUCTURE OVER WEST BRANCH BLACK RIVER																		
01/NHS	APPROACH SLAB																		
01/NHS	LOR	18	3.13	3.17	0.04	211	30.0	1	703	703	703	703		0.08	0.04	47	83	1	
01/NHS	LOR	18	3.17	3.46	0.29	1,531	29.0	2	4,933	4,933	4,933	4,933		0.58	0.29	341			
01/NHS	LOR	18	3.46	4.00	0.54	2,851	30.0	1	9,503	9,503	9,503	9,503		1.08	0.54	634			
01/NHS	LOR	18	4.00	4.50	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587			
01/NHS	LOR	18	4.50	4.82	0.32	1,663	30.0	1	5,543	5,543	5,543	5,543		0.63	0.32	370	83	1	
01/NHS	APPROACH SLAB																		
01/NHS	CONCRETE STRUCTURE OVER CHARLEMONT CREEK																		
01/NHS	APPROACH SLAB																		
01/NHS	LOR	18	4.86	5.00	0.14	739	30.0	1	2,463	2,463	2,463	2,463		0.28	0.14	165	83	1	
01/NHS	LOR	18	5.00	5.50	0.50	2,640	30.0	1	8,800	8,800	8,800	8,800		1.00	0.50	587			
01/NHS	LOR	18	5.50	5.65	0.15	792	30.0	1	2,640	2,640	2,640	2,640		0.30	0.15	176	83	1	
01/NHS	LOR	18	5.65	5.72	0.07	370	30.0	1	1,233	1,233	1,233	1,233							
02/STR	MED	301	8.19	8.50	0.31	1,642	24.0	1	4,379	4,379	4,379	4,379					67	1	
02/STR	MED	301	8.50	9.00	0.50	2,640	24.0	1	7,040	7,040	7,040	7,040							
02/STR	MED	301	9.00	9.50	0.50	2,640	24.0	1	7,040	7,040	7,040	7,040							
02/STR	MED	301	9.50	9.83	0.33	1,742	24.0	1	4,645	4,645	4,645	4,645					67	1	
02/STR	APPROACH SLAB																		
02/STR	CONCRETE STRUCTURE OVER CREEK																		
02/STR	APPROACH SLAB																		
02/STR	MED	301	9.87	10.00	0.13	686	24.0	1	1,829	1,829	1,829	1,829					67	1	
02/STR	MED	301	10.00	10.19	0.19	1,008	24.0	1	2,688	2,688	2,688	2,688					67	1	
SUBTOTALS (01/NHS)										95,235	95,235			10.74	5.37	6,304	651	8	
SUBTOTALS (02/STR)										27,621	27,621						267	4	
TOTALS CARRIED TO THE GENERAL SUMMARY										122,856	122,856			10.74	5.37	6,304	918	12	