

SPECIAL - STRUCTURES: STRUCTURAL DEBRIS NETTING INSTALLATION (SUM-261D-0.664 & SUM-261-10.237R)

THIS WORK SHALL CONSIST OF THE PLACEMENT OF A "STACKED" DEBRIS NETTING SYSTEM TO BE PLACED UNDER SPECIFIED STRUCTURES AND PORTIONS OF STRUCTURES SPANNING FROM FASCIA GIRDER TO FASCIA GIRDER. THE STRUCTURAL DEBRIS NETTING SHALL BE INSTALLED ON SPECIFIED STRUCTURES FOR PROTECTION OF PEDESTRIAN OR VEHICLE TRAFFIC BELOW AND SHALL MEET ALL APPLICABLE GUIDELINES AND FOLLOW MANUFACTURERS SPECIFICATIONS.

THE DEBRIS NETTING SYSTEMS UTILIZED FOR THESE INSTALLATIONS SHALL BE FROM THE FOLLOWING MANUFACTURERS OR AN APPROVED EQUAL.

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ROC BLOC (N820H WITH WS70BK)  
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226 UPTON RD.  
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CONTACT: BRIAN HILLERY

NO EXTRA PAYMENT WILL BE MADE FOR REMOVAL OF ANY DELAMINATED CONCRETE. THIS WORK, IF REQUIRED, SHALL BE PERFORMED UNDER A SEPARATE PAY ITEM.

THE COMBINATION OF THE HEAVY DEBRIS NETTING MESH TOGETHER WITH THE LIGHTWEIGHT NETTING OR DEBRIS LINER SPECIFIED SHALL BE CONSIDERED A "SYSTEM". THE "SYSTEM" SHALL BE UTILIZED AS SPECIFIED IN THESE NOTES AND SHALL BE CONSIDERED A UNIT.

THE CONTRACTOR SHALL UTILIZE THE RECOMMENDED MEANS AS SPECIFIED BY THE MANUFACTURER OF THE NETTING TO ATTACH THE "SYSTEM" TO THE STRUCTURE. IT SHALL BE SECURED USING ANCHORS, CABLES, WIRE ROPE CABLE, EYEBOLTS, THIMBLES, TURNBUCKLES, ETC. AND SHALL INCLUDE ALL ASSOCIATED HARDWARE NECESSARY TO SECURELY FASTEN THE "SYSTEM" TO THE BRIDGE. STRUCTURAL NET HARDWARE SHALL BE DROP FORGED, PRESSED OR FORMED STEEL OR MATERIAL OF EQUAL QUALITY OR BETTER QUALITY. SURFACES SHALL BE SMOOTH AND FREE OF SHARP EDGES. ALL HARDWARE SHALL HAVE A CORROSION RESISTANT FINISH CAPABLE OF WITHSTANDING A FIFTY HOUR SALT SPRAY TEST IN ACCORDANCE WITH ASTM B1117.

SPECIFICATIONS FOR HEAVY DUTY NETTING:  
STYLE: RASCHEL KNOTLESS MONOFILAMENT FIBER NETTING  
FIBER: HIGH TENACITY POLYPROPYLENE (HTPP)  
COLOR: BLACK

NAME/DESCRIPTION	TEST DESIGNATION	ACCEPTANCE RANGE
(IF APPLICABLE)		
CHORD DIAMETER: 3/16"		
MESH SIZE: 2.5" SQUARE OPENING		
MESH BREAK: ASTM D5034 > 700 LBF		
DYNAMIC DROP TEST: ANSI 10. 11350 LB DROPPED 34.5 FEET		
LOAD TEST: 6000 LB		

SPECIFICATIONS FOR LIGHT DUTY NETTING OR DEBRIS LINER:  
STYLE: RASCHEL KNOTLESS MONOFILAMENT FIBER NETTING  
FIBER: HIGH TENACITY POLYPROPYLENE (HTPP)  
COLOR: BLACK

NAME/DESCRIPTION	TEST DESIGNATION	ACCEPTANCE RANGE
(IF APPLICABLE)		
MESH SIZE		1/16"
BREAKING STRENGTH	ASTM D5034	233 PSI WARP/79 PSI FILL
BURSTING STRENGTH	ASTM D3787	210 PSI

EACH NETTING OR DEBRIS LINER SHALL COVER THE ENTIRE AREA BETWEEN THE FASCIA GIRDERS AND SHALL ALLOW FOR A 12" TO 24" OVERLAP AT BORDERS AND EDGES OF NETS, BEAMS, ARCHES, ETC. IN ORDER FOR PLACEMENT OF THE "SYSTEM", NETS SHALL BE CAPABLE OF A MINIMUM SERVICE LIFE OF TEN YEARS UNDER NORMAL ON-THE-JOB EXPOSURE TO WEATHER, SUNLIGHT AND HANDLING, EXCLUDING DAMAGE FROM MISUSE, MISHANDLING AND EXPOSURE TO CHEMICALS AND AIRBORNE CONTAMINENTS. GROMMETS SHALL BE STAINLESS STEEL AND SPACED AT 12" ALONG THE SIDES OF THE NETTING PANEL.

EACH STRUCTURAL NET SHALL BE PERMANENTLY LABELED WITH THE FOLLOWING INFORMATION:  
1) NAME OF MANUFACTURER  
2) IDENTIFICATION OF NET MATERIAL  
3) DATE OF MANUFACTURE  
4) DATE OF PROTOTYPE TEST  
5) NAME OF TESTING AGENCY  
6) SERIAL NUMBER

NETTING SYSTEM HARDWARE SHALL CONNECT TO GIRDER STIFFENER PLATES AND CROSS FRAMES. NETTING SYSTEM HARDWARE SHALL NOT CONNECT TO GIRDER WEB OR FLANGES.

ALL WORK VEHICLES AND EQUIPMENT NECESSARY TO ACCESS THE UNDERSIDE OF THE STRUCTURE, OR THE AREAS WHERE THE NETTING IS TO BE PLACED, SHALL BE INCLUDED IN THE PRICE BID FOR THE STRUCTURAL DEBRIS NETTING INSTALLATION. CARE SHALL BE TAKEN WHEN WORKING AROUND TRAFFIC, ACCESS ROADS, PARKS, METROPARK TRAILS AND ANY AREAS WHERE THE GENERAL PUBLIC MAY HAVE ACCESS TO THE UNDERSIDE OF THE STRUCTURE AND ASSOCIATED RIGHT-OF-WAY. TRAFFIC SHALL BE MAINTAINED ON ALL PARK ROADS, TRAIL PATHS, AND ACCESS ROADS AT ALL TIMES. NO EXTRA PAYMENT WILL BE MADE FOR MAINTAINING TRAFFIC IN THESE AREAS; IT SHALL BE INCLUDED IN THE PRICE BID FOR ITEM SPECIAL STRUCTURAL DEBRIS NETTING INSTALLATION.

THE CONTRACTOR IS REQUIRED TO SUBMIT THEIR PLANS FOR THE INSTALLATION, REMOVAL, AND INSPECTION, INCLUDING THE REMOVAL OF ACCUMULATED DEBRIS, OF THE STRUCTURAL DEBRIS NETTING SYSTEM TO THE DISTRICT AND W&LE RAILROAD BEFORE ANY WORK IS PERFORMED.

PAYMENT FOR THIS ITEM AS DESCRIBED ABOVE SHALL BE MADE UNDER ITEM SPECIAL - STRUCTURAL DEBRIS NETTING INSTALLATION.

SEE STRUCTURE SHEETS 3-9 FOR NETTING LOCATIONS.

SUM-261D-0.664  
ITEM 530, SPECIAL - STRUCTURES: STRUCTURAL DEBRIS NETTING INSTALLATION

5,670 SQUARE YARDS

SUM-261-10.237R  
ITEM 530, SPECIAL - STRUCTURES: STRUCTURAL DEBRIS NETTING INSTALLATION

2,555 SQUARE YARDS

ITEM 847 - MICRO-SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN  
ITEM 847 - MICRO-SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN  
ITEM 847 - FULL DEPTH REPAIR, AS PER PLAN  
ITEM 847 - WEARING COURSE REMOVED, ASPHALT, AS PER PLAN  
ITEM 847 - EXISTING CONCRETE OVERLAY REMOVED, AS PER PLAN

THESE ITEMS SHALL BE PERFORMED PER SUPPLEMENTAL SPECIFICATION BRIDGE DECK REPAIR AND OVERLAY WITH CONCRETE SCARIFICATION AND CHIPPING WITH THE FOLLOWING REVISIONS:

THE THICKNESS OF THE CONCRETE OVERLAY REMOVED, ASPHALT WEARING COURSE REMOVED, PROPOSED OVERLAY, AND THE DEPTH OF REMOVAL BY SCARIFICATION SHALL BE AS SPECIFIED IN THE PLANS.

CONSTRUCTION JOINTS WILL NOT BE PERMITTED IN THE WHEEL LINE.

(SEE 847.11) THE COMPONENTS OF THE MICRO-SILICA MODIFIED CONCRETE SHALL BE PROPORTIONED AS FOLLOWS.

CONCRETE TABLE  
QUANTITIES PER CUBIC YARD  
AGGREGATES (SSD)

AGG TYPE	FINE AGG (LB)	#8 COARSE AGG (LB)*	AGG TOTAL (LB)*	CEMENT CONTENT (LB)	MICRO SILICA (LB)	WATER TO CEMENTITIOUS RATIO	AIR CONTENT +/- 2%	FIBER (1 ¼" POLYPROPYLENE) (LB)**
GRAVEL	1410	1430	2840	600	50	0.4	8	1
LIMESTONE	1410	1450	2860	600	50	0.4	8	1
SLAG	1300	1350	2650	600	50	0.4	8	1

\* ALL COARSE AGGREGATE SHALL HAVE AN ABSORPTION OF 1.00% OR GREATER AS DEFINED PER ASTM C127

\*\* FIBER MESH SHALL BE 100% VIRGIN POLYPROPYLENE IN A FIBRILLATED-NETWORK FORM AND SHALL BE 1 1/4" IN LENGTH.

THE WEIGHTS SPECIFIED IN THE CONCRETE TABLE WERE CALCULATED FOR MATERIALS OF THE FOLLOWING BULK SPECIFIC GRAVITIES (SSD): NATURAL SAND AND GRAVEL 2.62, LIMESTONE SAND 2.68, LIMESTONE 2.65, SLAG 2.30, MICRO-SILICA SOLIDS 2.20, AND PORTLAND CEMENT 3.15. FOR AGGREGATES OF SPECIFIC GRAVITIES DIFFERING MORE THAN PLUS OR MINUS 0.02 FROM THESE, THE WEIGHTS IN THE TABLE WILL BE CORRECTED. FIBER MESH WEIGHTS NOT INCLUDED IN MIX DESIGN.

ALL COARSE AGGREGATE SHALL HAVE AN ABSORPTION OF 1.00% OR GREATER AS DEFINED BY ASTM C127

ALL OTHER REQUIREMENTS OF THE SUPPLEMENTAL SPECIFICATION SHALL REMAIN IN EFFECT.

(SEE 847.18) THE FINAL DECK SOUNDING MAY TAKE PLACE WITHIN 24 HOURS OF A RAIN, AND THE DECK DOES NOT HAVE TO BE COMPLETELY DRY.

(SEE 847.19) FULL DEPTH REPAIR IS NOT REQUIRED IF LESS THAN ONE HALF OF THE DECK ORIGINAL CONCRETE THICKNESS IS SOUND.

(SEE 847.25) THE WET CURE TIME IS REDUCED FROM 72 HOURS TO 24 HOURS OR UNTIL A BEAM BREAK OF 600 PSI IS ACHIEVED, WHICHEVER IS GREATER. AFTER THE 24 HOUR WET CURE, THE FINISHED OVERLAY SURFACE SHALL BE CURED BY SPRAYING A UNIFORM APPLICATION OF CURING MATERIAL OF 705.07, TYPE 1 OR 1D, AS PER CMS 511.14 METHOD (B) MEMBRANE CURING. IF THE CURING COMPOUND CAN NOT BE PLACED WITHIN THE SAME SHORT TERM CLOSURE PERIOD AS THE OVERLAY, THE CONTRACTOR MAY ALLOW TRAFFIC ONTO THE OVERLAY, AND SHALL, AT THE NEXT AVAILABLE SHORT TERM CLOSURE PERIOD, APPLY THE MEMBRANE CURING COMPOUND.

(SEE 847.25) TRAFFIC WILL NOT BE PERMITTED ON THE FINISHED OVERLAY SURFACE UNTIL AFTER THE COMPLETION OF THE 24 HOUR WET CURE, AND AFTER TWO TEST BEAMS HAVE ATTAINED AN AVERAGE MODULUS OF RUPTURE OF 600 PST (4.2 Mpa).

(SEE 847.26) THE OVERLAY SURFACE EVAPORATION RATE REQUIREMENTS ARE IN EFFECT FROM 9:30 AM TO 11:00 PM. THEY ARE NOT IN EFFECT FROM 11:00 PM TO 11:00 AM.

(SEE 847.27) FOR EACH PHASE, THE CONTRACTOR SHALL PROVIDE ENOUGH MATERIAL FOR TWO BEAM BREAKS EACH AT 12 HOURS, 24 HOURS, 36 HOURS, AND 48 HOURS. THE DEPARTMENT WILL PERFORM THE BEAM BREAK TESTS AND DOCUMENT THE TIME OF THE POUR, THE TIME OF THE BEAM BREAK TESTS, AND THE MODULUS OF RUPTURE FOR EACH BEAM UNTIL THE MODULUS OF RUPTURE OF THE TWO TESTS IS NOT LESS THAN 650 PSI (4.5 MPa). TRAFFIC IS ALLOWED ON THE OVERLAY AT 600 PSI (4.5 Mpa).

ALL OTHER REQUIREMENTS OF THE SUPPLEMENTAL SPECIFICATION SHALL REMAIN IN EFFECT.


STRUCTURE IDENTIFICATION SIGNS

STRUCTURE IDENTIFICATION SIGNS (I-H25b) WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

THE SIGNS WILL BE MOUNTED AT THE CURRENT LOCATION OR AT A LOCATION APPROVED BY THE PROJECT ENGINEER. SIGNS WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION.

INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:  
SUM-261D-0.664  
SUM-261D-10.237R

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:  
ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT  
ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 1 EACH

SFN	
VARIOUS	
DESIGN AGENCY	
	
DESIGNER	CHECKER
JF	MJA
REVIEWER	
TJP 01-03-25	
PROJECT ID	
122367	
SUBSET	TOTAL
2	23
SHEET	TOTAL
P.7	28



ESTIMATED QUANTITIES												
BRIDGE NO. / STRUCTURE FILE NO.								ITEM	EXTENSION	UNIT	DESCRIPTION	SEE SHEET
SUM-261D-0.664 7708645 01/NHS/47	SUM-261-10.237R 7708653 01/NHS/47											
LS	LS						201	11001		CLEARING AND GRUBBING, AS PER PLAN, AROUND BRIDGES/STRUCTURES/CULVERTS	1 / 23	
4841	4951						202	75001	FT	FENCE REMOVED, AS PER PLAN	13 / 23	
6777	5498						512	10100	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		
6685	5392						512	74000	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES		
10381	10344						514	00050	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL		
10381	10344						514	00056	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT		
10381	10344						514	00060	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT		
10381	10344						514	00066	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT		
3	3						514	10000	EACH	FINAL INSPECTION REPAIR		
8	8						514	00504	MNHR	GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL		
166	172						516	10010	FT	ARMORLESS PREFORMED JOINT SEAL		
100	50						519	11101	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	1 / 23	
59	66						519	12304	SY	PATCHING CONCRETE BRIDGE DECK - TYPE C		
12	12						SPECIAL	53000400	EACH	STRUCTURES: REFURBISHING AND LUBRICATING STEEL HINGES	1 / 23	
35	35						SPECIAL	53000500	HOOR	STRUCTURES: SALT REMEDIATION FOR STRUCTURAL STEEL PAINTING	1 / 23	
80	100						SPECIAL	53000800	SY	STRUCTURES: CONCRETE SPALL REMOVAL WITH ZINC RICH PRIMER APPLIED	1 / 23	
5670	2555						SPECIAL	53000800	SY	STRUCTURES: STRUCTURAL DEBRIS NETTING INSTALLATION	2 / 23	
	32						847	10001	SY	MICRO SILICA MODIFIED CONCRETE OVERLAY, AS PER PLAN (T=2 1/4")	2 / 23	
	1						847	20001	CY	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY, AS PER PLAN	2 / 23	
	LS						847	30000		TEST SLAB	2 / 23	
	1						847	30201	CY	FULL DEPTH REPAIR, AS PER PLAN		
	32						847	30401	SY	EXISTING CONCRETE OVERLAY REMOVED, AS PER PLAN (T=2")		
	2						847	50000	SY	HAND CHIPPING	2 / 23	
2	2						630	80100	SF	SIGN, FLAT SHEET, 730.20		
2	2						630	84900	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL		
										ALTERNATES		
4841	4951						607	98000	FT	FENCE, MISC.: VANDAL PROTECTION FENCE, 7.50' STRAIGHT, COATED FABRIC (ALTERNATE 1)	13 / 23	
4841	4951						607	39900	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC (ALTERNATE 2)		

CALC:	JF	DATE:	11/27/2024
CHECKED:	MJA	DATE:	11/27/2024


ESTIMATED QUANTITIES

SUM-261D-0.664 & SUM-261-10.237R

OVER LITTLE CUYAHOGA RIVER & WE&MRTA RAILROADS

SFN7708645

SFN7708653

DESIGN AGENCY

DESIGNERJFCHECKERMJA

REVIEWERTJP01-03-25

PROJECT ID122367

SUBSET3TOTAL23

SHEETP.8TOTAL28