STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

HAM-IR 71-0.91

CITY OF CINCINNATI

HAMILTON COUNTY

LOCATION MAP

LATITUDE: N39°05'55" LONGITUDE: W84°30'38"

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2024)	*107,000*
DESIGN YEAR ADT (2036)	*107,000*
DESIGN HOURLY VOLUME (2036)	*14,000*
DIRECTIONAL DISTRIBUTION	*65%*
TRUCKS (24 HOUR B&C)	*10,700*
DESIGN SPEED	*60 MPH*
LEGAL SPEED	*55 MPH*
DESIGN FUNCTIONAL CLASSIFICATION:	
(01) URBAN INTERSTATE	
NHS PROJECT	*YES*

DESIGN EXCEPTIONS

NONE

ADA DESIGN WAIVERS

NONE

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)

PLAN PREPARED BY:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 8 ENGINEERING
505 SOUTH S.R. 741 LEBANON, OHIO 45036

INDEX OF SHEETS:

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STRUCTURE REPAIR	
HAM-IR 71-0.91	*6, 7, 7A, 7B, 8, 9*

FEDERAL PROJECT NUMBER

NON-FEDERAL

RAILROAD INVOLVEMENT

NONE

PROJECT DESCRIPTION

REHABILITATION OF BRIDGE HAM-71-0091 THAT CARRIES WALNUT STREET OVER I-71 IN THE CITY OF CINCINNATI, SFN: 3106314. REHAB WORK INCLUDES SEALING THE BOTTOM OF THE DAMAGED CONCRETE BOX BEAM BRIDGE AND INSTALLATION OF FRP IN UNSOUND AREAS TO MITIGATE DAMAGE FROM A TRUCK FIRE.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	*0 ACRES*
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	*0 ACRES*
NOTICE OF INTENT EARTH DISTURBED AREA:	*0 ACRES*
	N.O.I. NOT REQUIRED

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2023 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS, CHANGES LISTED IN THE PROPOSAL, AND THE SUPPLEMENTAL SPECIFICATION 800 VERSION INDICATED ON THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

DISTRICT DEPUTY DIRECTOR

Tammy K Campbell

DIRECTOR, DEPARTMENT OF TRANSPORTATION

Jack Marchbanks

STANDARD CONSTRUCTION DRAWINGS

MT-95.31	*7/19/19*					
MT-95.45	*1/17/20*					
MT-95.50	*7/21/17*					
MT-104.10	*10/16/15*					
MT-105.10	*1/17/20*					

SUPPLEMENTAL SPECIFICATIONS

800-2023	*10/20/23*
808	*1/18/19*
845	*10/18/19*
832	*7/21/23*

SPECIAL PROVISIONS

ASBESTOS INSPECTION REPORT 8-28-23

ENGINEER'S SEAL

ALL PLAN SHEETS

STATE OF OHIO
CHRISTOPHER A. HOWARD
E-62429
REGISTERED
PROFESSIONAL ENGINEER

TITLE SHEET

DESIGN AGENCY

DESIGNER CAH
REVIEWER JTO MM-DD-YY
PROJECT ID 118710
SHEET 01 TOTAL 09

HAM-IR 71-0.91

MODEL: Sheet_Sun/Ft PAPERSIZE: 17x11 (in.) DATE: 11/9/2023 TIME: 2:55:20 PM USER: choward4
pw:\\ohiodot-pw.bentley.com:ohiodot-pw-02\Documents\01 Active Projects\District 08\Hamilton\118710\400-Engineering\Roadway\Sheets\118710_GT001.dgn

REPAIR - INSTALLATION OF CARBON FIBERWRAP

DESCRIPTION:

THIS WORK SHALL CONSIST OF PROVIDING A CARBON FIBER REINFORCED POLYMER (CFRP) STRENGTHENING AND PROTECTION SYSTEM. THE CFRP SYSTEM IS TO BE APPLIED TO THE PRESTRESSED BOX BEAMS AS DESIGNATED BY THE PROJECT DRAWINGS. CFRP IS BEING APPLIED FOR CONFINEMENT PURPOSES TO PREVENT CONCRETE SPALLS FROM FALLING ONTO TRAFFIC.

THE CONCRETE IS TO BE PATCHED PER ITEM 530 OR 843, THEN CLEANED AND PREPARED TO THE INSTALLERS SATISFACTION PRIOR TO THE INSTALLATION OF THE CFRP SYSTEM.

DESIGN:

THE CFRP SYSTEM SHALL BE DESIGNED TO PROVIDE MINIMUM FACTORED SHEAR AND FLEXURAL CAPACITIES FOR THE AREAS LISTED ON THE DRAWINGS. THE FACTORED SHEAR CAPACITY SHALL BE DESIGNED ACCORDING TO ACI-440.2R-08 WITH A STRAIN LIMITED TO 0.0027 FOR TWO/THREE SIDED APPLICATIONS AND 0.004 FOR COMPLETE WRAP APPLICATIONS. THE FACTORED FLEXURAL CAPACITY SHALL BE DESIGNED ACCORDING TO ACI-440.2R-08 WITH A STRAIN LIMITED TO 0.006.

A MINIMUM E X A VALUE FOR THE INSTALLED CFRP SYSTEM IS 476 KIPS/INCH WIDTH OF INSTALLED CFRP SYSTEM FOR THE PRESTRESSED BOX BEAMS.

MATERIALS:

10,000-SALT WATER, ALKALINE SOIL AND OTHER FACTORS (REFER TO TABLE.)

CFRP MATERIALS SHALL HAVE A CURRENT INTERNATIONAL CODE COUNCIL EVALUATION SERVICE REPORT (ICC ESR #) COMPLIANT WITH THE 2021 IBC. MATERIALS MUST PROVIDE STRUCTURAL AND DURABILITY TESTING AS DEFINED IN ICC AC 125.

TO BE AN APPROVED EQUAL THE INSTALLER MUST PROVIDE A HISTORY OF A MINIMUM OF 5 INSTALLATIONS OF COMPARABLE SIZE COMPLETED IN THE LAST 5 YEARS, DURABILITY TESTING, INDEPENDENT LABORATORY TESTING FOR CORRODED CONCRETE REPAIRS, DESIGN EQUIVALENCE TO THE SPECIFIED SYSTEM, AND ALL PROPOSED MATERIAL DATA.

POLYESTER OR OTHER RESINS WILL NOT BE ALLOWED AS A SUBSTITUTE TO EPOXY RESINS. GLASS COMPOSITE SYSTEMS WILL NOT BE ALLOWED AS A SUBSTITUTE TO CARBON COMPOSITE SYSTEMS UNLESS NOTED IN THE PLANS.

MATERIALS MANUFACTURER:

ONE MANUFACTURER SHALL SUPPLY ALL MATERIALS REQUIRED FOR THE CFRP SYSTEM. THE MANUFACTURER SHALL BE ONE OF THE THREE LISTED BELOW OR APPROVED EQUAL FOR THE CARBON FIBER REINFORCED POLYMER (CFRP) STRENGTHENING AND PROTECTION SYSTEM.

TYFO FIBERWRAP COMPOSITE SYSTEM
MANUFACTURER: FYFE COMPANY, LLC
CIVIL STRUCTURAL COMPOSITES
15341 VANTAGE PARKWAY EAST
HOUSTON, TX 77073
PHONE: (855) 708-3617

MASTER BRACE COMPOSITE STRENGTHENING SYSTEM
MANUFACTURER: MASTER BUILDERS SOLUTIONS CONSTRUCTION SYSTEMS US, LLC
889 VALLEY PARK DRIVE
SHAKOPEE, MN 55379
WWW.BUILDSITE.COM
CUSTOMER SERVICE: 800-433-9517

COMPOSITE CARBON FIBER WRAP
SIKA CORPORATION
201 POLITO AVENUE
LYNDHURST, NJ 07071
TELEPHONE: (201) 933-8800
WWW.USA.SIKA.COM
LOCAL MANUFACTURING CONTACT:
(740) 387-9224

THE CFRP MATERIAL SUPPLIER SHALL HAVE SPECIFIED MATERIALS FOR 5 PROJECTS OF COMPARABLE SIZE WITHIN THE LAST 5 YEARS. THE MANUFACTURER MUST SUBMIT THE NAME OF THE APPLICATORS COMPANY AND THEIR APPROVAL WITH THE BID DOCUMENTS.

SURFACE PREPARATION:

THE REPAIRED CONCRETE SURFACES SHALL BE ALLOWED TO CURE A MINIMUM OF 14 DAYS. THE SURFACES SHALL BE CLEAN AND FREE OF FINS, DEPRESSIONS, OR OTHER CONDITIONS THAT MAY AFFECT THE INTENDED PERFORMANCE OF THE CFRP SYSTEM.

CORNERS PERPENDICULAR TO THE STRONG FIBER DIRECTION SHALL BE ROUNDED TO A MINIMUM RADIUS OF ¾".

THE CERTIFIED AND EXPERIENCED INSTALLER RESPONSIBLE SHALL VERIFY THAT ALL REQUIRED SURFACE PREPARATION HAS BEEN COMPLETED PROPERLY AND THAT THE CFRP SYSTEM IS CLEARED FOR INSTALLATION.

COMPOSITE APPLICATION:

THE CFRP SYSTEM SHALL ONLY BE INSTALLED BY INDIVIDUALS CERTIFIED IN WRITING BY THE MATERIAL SUPPLIER. INSTALLERS WITHOUT THE PROPER CERTIFICATIONS WILL NOT BE ALLOWED TO COMPLETE THIS WORK.

TEMPERATURES OF THE SUBSTRATE TO RECEIVE THE COMPOSITE, AMBIENT TEMPERATURES, AND THE TEMPERATURE OF AT THE TIME OF MIXING OF EPOXY, THE CFRP SYSTEM SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 5°F ABOVE THE DEW POINT. APPLICATIONS OF THE CFRP SHALL BEGIN WITHIN ONE HOUR OF THE MIXING OF EPOXIES.

THE MANUFACTURER SHALL DESIGNATE THE PROPER MIXING PROCEDURE FOR THE EPOXY RESINS.

APPLY A PRIMER COATING OF EPOXY TO SURFACES OF THE SUBSTRATE TO RECEIVE THE CFRP SYSTEM.

SATURATE THE CARBON FIBER IN A DOCUMENTED SUCCESSFUL MANNER THAT ENSURES FULL SATURATION OF THE CARBON FIBER PRIOR TO THE INSTALLATION OF THE CFRP. SATURATION OF THE CARBON FIBER IN PLACE IS NOT ALLOWED. APPLY THE CFRP TO THE PREPARED AND PRIMERED SUBSTRATE USING METHODS THAT PROVED A UNIFORM TENSILE FORCE OVER THE WIDTH OF THE SATURATED CARBON FABRIC. STRONG FIBERS SHALL NOT DEVIATE FROM THE INTENDED FIBER DIRECTION MORE THAN ½" PER 12" LENGTH OF COMPOSITE. INSPECTION OF THE INSTALLED COMPOSITE SHALL BE COMPLETED PRIOR TO THE CURING OF THE CFRP TO ENSURE THAT ALL EDGES, SEAMS, AND OTHER AREAS ARE PROPERLY ADHERED. DURING THIS INSPECTION PROCESS, RELEASING OF ENTRAPPED AIR AND OTHER IDENTIFIED DEFICIENCIES SHALL BE ADDRESSED.

AFTER THE CFRP SYSTEM HAS BEEN INSTALLED, USE THICKENED EPOXY TO DETAIL ALL EDGES AND SEAMS TO PROVIDE A SMOOTH FINISH. APPLY A FINAL LAYER OF THICKENED EPOXY TO THE INSTALLED CFRP SYSTEM FOR PROTECTION.

COATING SYSTEM APPLICATION:

AREAS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT, ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS, AND FABRIC TEARS) MORE THAN 1 SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH:

1. SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.

2. BUBBLES LESS THAN 12" IN DIAMETER SHALL BE REPAIRED BY INJECTING THE EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF THE ENTRAPPED AIR.

3. BUBBLES, DELAMINATIONS, AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATINGS. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

4. THE URETHANE TOP COAT SHALL THEN BE APPLIED TO THE FINAL EPOXY COAT, AS DETERMINED BY MANUFACTURER.

QUALITY CONTROL:

INSTALLER MUST FOLLOW THE QUALITY CONTROL MANUAL FOR THE INSTALLATION OF THE CFRP SYSTEMS, PRODUCED BY THE MANUFACTURER.

MEASUREMENT AND PAYMENT:

THIS ITEM WILL BE PAID FOR BY (SQUARE FOOTAGE COVERED x ONE LAYER) AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

ITEM	EXTENSION	UNIT	DESCRIPTION
519	00100	SF	COMPOSITE FIBER WRAP SYSTEM

PROPERTY	REQUIREMENT	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI, MIN. IN PRIMARY FIBER DIRECTION	121,000 PSI	D309, AVERAGE OF 25 1" BY 10" NORMALIZED TO 0.04" THICKNESS
ULTIMATE TENSILE STRENGTH, PSI, MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D309, AVERAGE OF 25 1" BY 10" NORMALIZED TO 0.04" THICKNESS
10,000 HOURS EXPOSURE TO 100% HUMIDITY	121,000 PSI	C 581
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO OZONE	121,000 PSI	D1149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO ALKALI	121,000 PSI	D 3083 USING SOIL BURIAL BURIAL - WATER CONTENT
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO SALT	121,000 PSI	C 581 AND D 1141 OMITTING ADDITION OF HEAVY METAL
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE AT 140 DEGREES F.	121,000 PSI	D 3045
TENSILE STRENGTH (MIN AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	121,000 PSI	G 53 USING FS 40 UV-B BULBS FOR A MINIMUM 38 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION PERCENT, MIN PERCENT, MAX	0.85% 1.7%	
TENSILE MODULUS, PSI MIN, OF PRIMARY FIBERS, E	11,900,000 PSI	D3039, AVERAGE OF 25 1" BY 10" NORMALIZED TO 0.04" THICKNESS
VISUAL DEFECTS	ACCEPTANCE LEVEL III	D 2563
COEFFICIENT OF THERMAL EXPANSION IN PRIMARY DIRECTION	3.6 PPM/DEG F (+ 15%)	D696

STRUCTURE NOTES
BRIDGE No.: HAM-71-0091
IR-71 UNDER WALNUT ST.

SFN 3106314
DESIGN AGENCY
DESIGNER CAH | CHECKER GTF
REVIEWER AS MM-DD-YY
PROJECT ID 118710
SUBSET 02 | TOTAL 04
SHEET 07A | TOTAL 09

HAM-IR 71-0.91

REPAIR - INSTALLATION OF GLASS FIBERWRAP

DESCRIPTION:

THIS WORK SHALL CONSIST OF PROVIDING A GLASS FIBER REINFORCED COMPOSITE (GFRC) STRENGTHENING AND PROTECTION SYSTEM. THE GFRC SYSTEM IS TO BE APPLIED TO THE THE PRESTRESSED BOX BEAMS AS DESIGNATED BY THE PROJECT DRAWINGS. GFRC IS BEING APPLIED FOR CONFINEMENT PURPOSES TO PREVENT CONCRETE SPALLS FROM FALLING ONTO TRAFFIC.

THE CONCRETE IS TO BE PATCHED PER ITEM 530 OR 843, THEN CLEANED AND PREPARED TO THE INSTALLERS SATISFACTION PRIOR TO THE INSTALLATION OF THE GFRC SYSTEM.

DESIGN:

THE GFRC SYSTEM SHALL BE DESIGNED TO PROVIDE MINIMUM FACTORED SHEAR AND FLEXURAL CAPACITIES FOR THE AREAS LISTED ON THE DRAWINGS. THE FACTORED SHEAR CAPACITY SHALL BE DESIGNED ACCORDING TO ACI-440.2R-08 WITH A STRAIN LIMITED TO 0.0029 FOR TWO LAYER APPLICATIONS AND 0.004 FOR SINGLE LAYER APPLICATIONS. THE FACTORED FLEXURAL CAPACITY SHALL BE DESIGNED ACCORDING TO ACI-440.2R-08 WITH A STRAIN LIMITED TO 0.006.

A MINIMUM E X A VALUE FOR THE INSTALLED GFRC SYSTEM IS 151.5 KIPS/INCH WIDTH OF INSTALLED GFRC SYSTEM FOR THE DECK SECTIONS.

MATERIALS:

10,000-SALT WATER, ALKALINE SOIL AND OTHER FACTORS (REFER TO TABLE.)

FRP MATERIALS SHALL HAVE A CURRENT INTERNATIONAL CODE COUNCIL EVALUATION SERVICE REPORT (ICC ESR #) COMPLIANT WITH THE 2021 IBC. MATERIALS MUST PROVIDE STRUCTURAL AND DURABILITY TESTING AS DEFINED IN ICC AC 125.

TO BE AN APPROVED EQUAL THE INSTALLER MUST PROVIDE A HISTORY OF A MINIMUM OF 5 INSTALLATIONS OF COMPARABLE SIZE COMPLETED IN THE LAST 5 YEARS, DURABILITY TESTING, INDEPENDENT LABORATORY TESTING FOR CORRODED CONCRETE REPAIRS, DESIGN EQUIVALENCE TO THE SPECIFIED SYSTEM, AND ALL PROPOSED MATERIAL DATA.

POLYESTER OR OTHER RESINS WILL NOT BE ALLOWED AS A SUBSTITUTE TO EPOXY RESINS. CARBON COMPOSITE SYSTEMS WILL NOT BE ALLOWED AS A SUBSTITUTE TO GLASS COMPOSITE SYSTEMS

MATERIALS MANUFACTURER:

ONE MANUFACTURER SHALL SUPPLY ALL MATERIALS REQUIRED FOR THE GFRC SYSTEM. THE MANUFACTURER SHALL BE ONE OF THE THREE LISTED BELOW OR APPROVED EQUAL FOR THE GLASS FIBER REINFORCED COMPOSITE (GFRC) STRENGTHENING AND PROTECTION SYSTEM.

TYFO FIBERWRAP COMPOSITE SYSTEM
MANUFACTURER: FYFE COMPANY, LLC
CIVIL STRUCTURAL COMPOSITES
15341 VANTAGE PARKWAY EAST
HOUSTON, TX 77073
PHONE: (855) 708-3617

MASTER BRACE COMPOSITE STRENGTHENING SYSTEM
MANUFACTURER: MASTER BUILDERS SOLUTIONS CONSTRUCTION SYSTEMS US, LLC
889 VALLEY PARK DRIVE
SHAKOPEE, MN 55379
WWW.BUILDSITE.COM
CUSTOMER SERVICE: 800-433-9517

COMPOSITE CARBON FIBER WRAP
SIKA CORPORATION
201 POLITO AVENUE
LYNDHURST, NJ 07071
TELEPHONE: (201) 933-8800
WWW.USA.SIKA.COM
LOCAL MANUFACTURING CONTACT:
(740) 387-9224

THE GFRC MATERIAL SUPPLIER SHALL HAVE SPECIFIED MATERIALS FOR 5 PROJECTS OF COMPARABLE SIZE WITHIN THE LAST 5 YEARS. THE MANUFACTURER MUST SUBMIT THE NAME OF THE APPLICATORS COMPANY AND THEIR APPROVAL WITH THE BID DOCUMENTS.

SURFACE PREPARATION:

THE REPAIRED CONCRETE SURFACES SHALL BE ALLOWED TO CURE A MINIMUM OF 14 DAYS. THE SURFACES SHALL BE CLEAN AND FREE OF FINS, DEPRESSIONS, OR OTHER CONDITIONS THAT MAY AFFECT THE INTENDED PERFORMANCE OF THE GFRC SYSTEM.

CORNERS PERPENDICULAR TO THE STRONG FIBER DIRECTION SHALL BE ROUNDED TO A MINIMUM RADIUS OF ¾".

WHERE FIBER WRAP EXTENDS ON TO STEEL BEAMS/GIRDERS, COMPLETELY REMOVE PAINT TO BARE STEELS ONLY IN LOCATIONS WHERE APPLICATION IS NECESSARY, ONCE GFRC REPAIR IS MADE, ALL BARE STEEL SHOWN SHALL BE REPAINTED PER REPAIR TYPE 514.A1.

THE CERTIFIED AND EXPERIENCED INSTALLER RESPONSIBLE SHALL VERIFY THAT ALL REQUIRED SURFACE PREPARATION HAS BEEN COMPLETED PROPERLY AND THAT THE GFRC SYSTEM IS CLEARED FOR INSTALLATION.

COMPOSITE APPLICATION:

THE GFRC SYSTEM SHALL ONLY BE INSTALLED BY INDIVIDUALS CERTIFIED IN WRITING BY THE MATERIAL SUPPLIER. INSTALLERS WITHOUT THE PROPER CERTIFICATIONS WILL NOT BE ALLOWED TO COMPLETE THIS WORK.

TEMPERATURES OF THE SUBSTRATE TO RECEIVE THE COMPOSITE, AMBIENT TEMPERATURES, AND THE TEMPERATURE OF AT THE TIME OF MIXING OF EPOXY. THE GFRC SYSTEM SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS F 5°F ABOVE THE DEW POINT. APPLICATIONS OF THE GFRC SHALL BEGIN WITHIN ONE HOUR OF THE MIXING OF EPOXIES.

THE MANUFACTURER SHALL DESIGNATE THE PROPER MIXING PROCEDURE FOR THE EPOXY RESINS.

APPLY A PRIMER COATING OF EPOXY TO SURFACES OF THE SUBSTRATE TO RECEIVE THE GFRC SYSTEM.

SATURATE THE GLASS FIBER IN A DOCUMENTED SUCCESSFUL MANNER THAT ENSURES FULL SATURATION OF THE CARBON FIBER PRIOR TO THE INSTALLATION OF THE GFRC. SATURATION OF THE GLASS FIBER IN PLACE IS NOT ALLOWED. APPLY THE GFRC TO THE PREPARED AND PRIMERED SUBSTRATE USING METHODS THAT PROVED A UNIFORM TENSILE FORCE OVER THE WIDTH OF THE SATURATED GLASS FABRIC. STRONG FIBERS SHALL NOT DEVIATE FROM THE INTENDED FIBER DIRECTION MORE THAN ½" PER 12" LENGTH OF COMPOSITE. INSPECTION OF THE INSTALLED COMPOSITE SHALL BE COMPLETED PRIOR TO THE CURING OF THE GFRC TO ENSURE THAT ALL EDGES, SEAMS, AND OTHER AREAS ARE PROPERLY ADHERED. DURING THIS INSPECTION PROCESS, RELEASING OF ENTRAPPED AIR AND OTHER IDENTIFIED DEFICIENCIES SHALL BE ADDRESSED.

AFTER THE GFRC SYSTEM HAS BEEN INSTALLED, USE THICKENED EPOXY TO DETAIL ALL EDGES AND SEAMS TO PROVIDE A SMOOTH FINISH. APPLY A FINAL LAYER OF THICKENED EPOXY TO THE INSTALLED GFRC SYSTEM FOR PROTECTION.

COATING SYSTEM APPLICATION:

AREAS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT, ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS, AND FABRIC TEARS) MORE THAN 1 SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH:

1. SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.

2. BUBBLES LESS THAN 12" IN DIAMETER SHALL BE REPAIRED BY INJECTING THE EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF THE ENTRAPPED AIR.

3. BUBBLES, DELAMINATIONS, AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATINGS. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

4. THE URETHANE TOP COAT SHALL THEN BE APPLIED TO THE FINAL EPOXY COAT, AS DETERMINED BY MANUFACTURER.

QUALITY CONTROL:

INSTALLER MUST FOLLOW THE QUALITY CONTROL MANUAL FOR THE INSTALLATION OF THE GFRC SYSTEMS, PRODUCED BY THE MANUFACTURER.

MEASUREMENT AND PAYMENT:

THIS ITEM WILL BE PAID FOR BY (SQUARE FOOTAGE COVERED x ONE LAYER) AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

ITEM	EXTENSION	UNIT	DESCRIPTION
519	00100	SF	COMPOSITE FIBER WRAP SYSTEM

PROPERTY	REQUIREMENT	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI, MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D309, AVERAGE OF 7 1" BY 10" NORMALIZED TO 0.80" THICK .01" PER MIN TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI, MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D309, AVERAGE OF 7 1" BY 10" NORMALIZED TO 0.80" THICK .01" PER MIN TESTING SPEED
10,000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C 581
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO OZONE	60,000 PSI	D1149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D 3083 USING SOIL BURIAL BURIAL - WATER CONTENT
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE TO SALT	60,000 PSI	C 581 AND D 1141 OMITTING ADDITION OF HEAVY METAL
TENSILE STRENGTH (MIN AFTER TEST) 10,000 HOURS EXPOSURE AT 140 DEGREES F.	60,000 PSI	D 3045
TENSILE STRENGTH (MIN AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G 53 USING FS 40 UV-B BULBS FOR A MINIMUM 38 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION PERCENT, MIN PERCENT, MAX	1.7% 5.0%	
TENSILE MODULUS, PSI MIN, OF PRIMARY FIBERS, E	3,000,000 PSI	D3039, AVERAGE OF 7 1" BY 10" NORMALIZED TO 0.80" THICK .01" PER MIN TESTING SPEED
VISUAL DEFECTS	ACCEPTANCE LEVEL III	D 2563
COEFFICIENT OF THERMAL EXPANSION IN PRIMARY DIRECTION	4,300,000 PPM/DEG F (+ 15%)	E 11E42

STRUCTURE NOTES
BRIDGE No.: HAM-71-0091
IR-71 UNDER WALNUT ST.

SFN 3106314
DESIGN AGENCY
DESIGNER CAH | CHECKER GTF
REVIEWER AS MM-DD-YY
PROJECT ID 118710
SUBSET 02 | TOTAL 04
SHEET 07B | TOTAL 09

HAM-IR 71-0.91

MODEL: Sheet_SurvFt PAPERSIZE: 17x11 (in.) DATE: 11/9/2023 TIME: 1:28:26 PM USER: chward4
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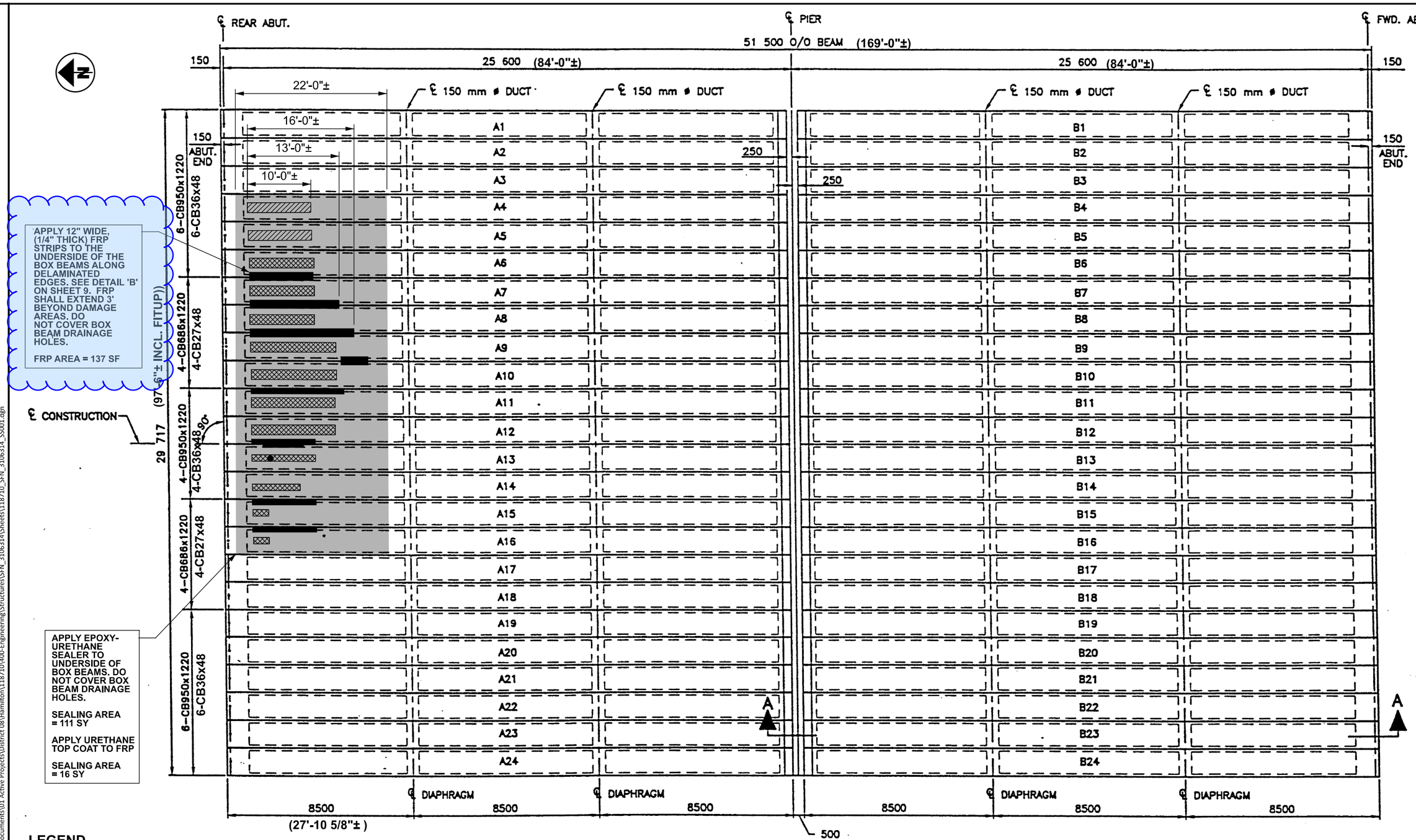

FRAMING PLAN

LEGEND

- LIGHT SPALLS
- HEAVIER SPALLS
- DELAMINATED EDGES
- HOLES
- CONCRETE SEALING & URETHANE TOP COAT

NOTES:

1. PRIOR TO PLACING FRP, DRILL OUT THE EXISTING BOX BEAM DRAIN HOLES DAMAGED BY THE FIRE TO ENSURE POSITIVE BEAM DRAINAGE. PAYMENT FOR THIS WORK SHALL BE INCLUDED WITH ITEM 530 - STRUCTURES: STRUCTURE CLEANING.
2. CLEAN SOOT FROM THE EXISTING UNDERPASS LIGHTS. PAYMENT FOR THIS WORK SHALL BE INCLUDED WITH ITEM 530 - STRUCTURES: STRUCTURE CLEANING.
3. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY.
4. PRIOR TO PLACING TROWELABLE MORTAR, PRESSURE WASH THE BOTTOM OF THE BOX BEAMS AND RETAINING WALL TO REMOVE SOOT AND DELAMINATED CONCRETE. PAYMENT FOR THIS WORK SHALL BE INCLUDED WITH ITEM 530 - STRUCTURES : STRUCTURE CLEANING.
5. PERFORM ONLY THE WORK AS INDICATED IN THE FRAMED TEXT AND/OR DESCRIBED IN THE GENERAL NOTES.
6. TROWELABLE MORTAR SHALL BE APPLIED TO THE BOTTOM OF THE BOX BEAMS TO REPAIR THE HOLE, REPAIR SPALLS GREATER THAN ¾" IN DEPTH WHERE FRP IS INSTALLED AND/OR TO REPAIR EXPOSED REBAR/PRESTRESSING STRANDS AT THE DELAMINATED BOX BEAM EDGES. A MINIMAL QUANTITY OF 20 SF HAS BEEN PROVIDED FOR THIS WORK TO BE USED WHERE NEEDED AND APPROVED BY THE ENGINEER.

SUPERSTRUCTURE DETAILS - 1
BRIDGE No.: HAM-71-0091
IR-71 UNDER WALNUT ST.

SFN	3106314
DESIGN AGENCY	
DESIGNER	CAH
CHECKER	GTF
REVIEWER	AS MM-DD-YY
PROJECT ID	118710
SUBSET	03
TOTAL	04
SHEET	08
TOTAL	09

HAM-IR 71-0.91