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CITY OF HANCOCK

IN CO-OPERATION WITH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FEMA PROJECT NUMBER - 63281
SITE NO. - 90
PW #162
OHM PROJECT NUMBER - 7030-18-0030

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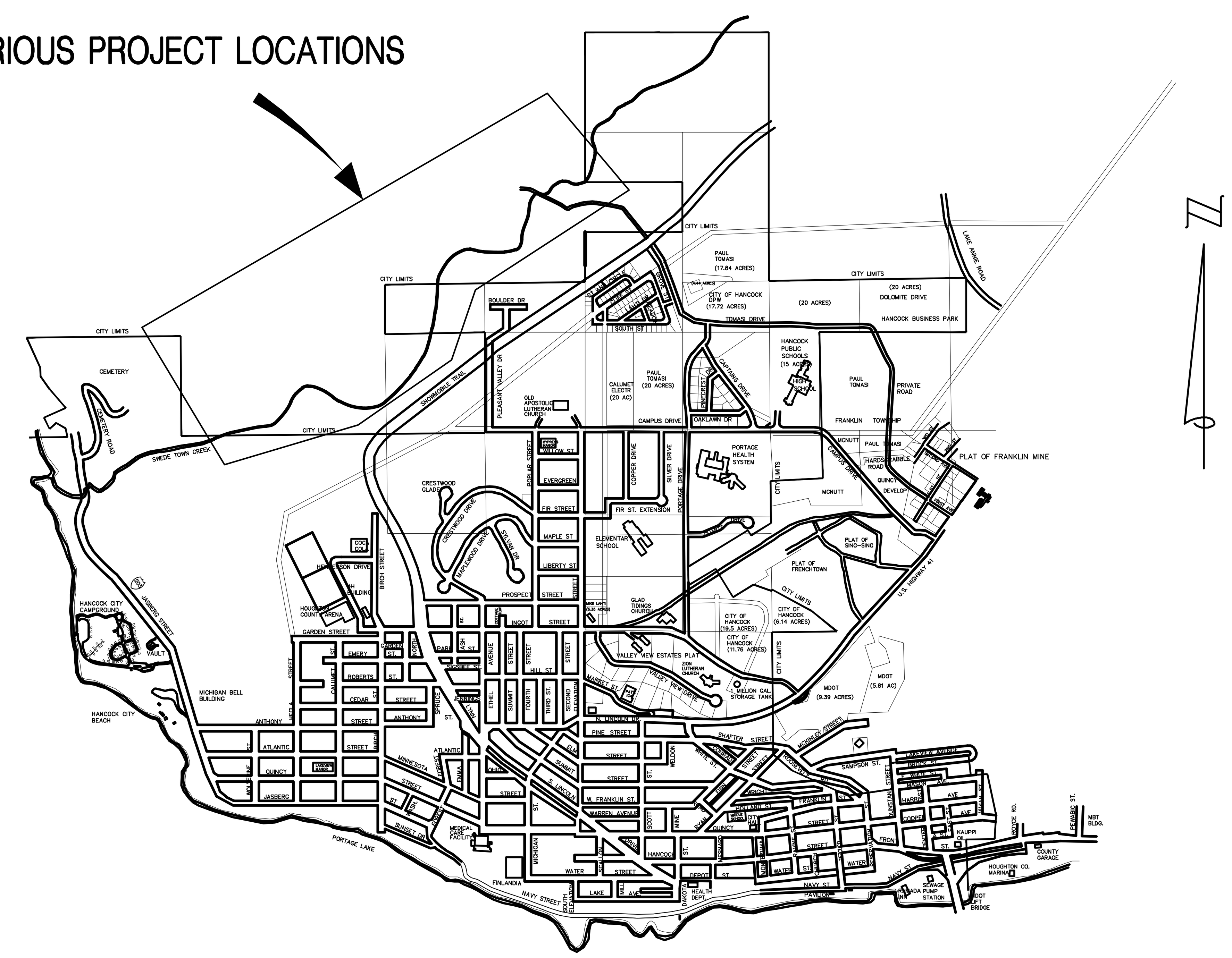
MAASTO HIIHTO TRAIL & BRIDGE REPAIRS

SCALE
FULL SIZE (11"x17")

VARIOUS PROJECT LOCATIONS



VICINITY MAP

NOT TO SCALE

MDOT STANDARD PLANS

SOIL EROSION & SEDIMENTATION CONTROL MEASURES R-96-E

GENERAL PROVISIONS

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL AND ACCOMPANYING SPECIFICATIONS FOR THIS PROJECT INCLUDING THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND A.A.S.H.T.O.; A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011.

PAVEMENT MARKING AND PLACING OF TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, 2011 EDITION. THIS WORK WILL BE DONE PRIOR TO THE FINAL ACCEPTANCE OF THIS PROJECT.

THE LOCATION OF ALL PUBLIC UTILITIES SHOWN ON THESE PLANS IS TAKEN FROM THE BEST AVAILABLE DATA. THE CITY OF HANCOCK WILL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATIONS FROM THE LOCATIONS SHOWN. PURSUANT TO ACT 53 OF THE PA OF 1974 AS A CONDITION OF THIS CONTRACT, A MINIMUM 3 DAYS NOTICE, SHALL BE GIVEN TO MISS DIG PRIOR TO UNDERGROUND WORK TO BE PERFORMED IN ACCORDANCE WITH THIS CONTRACT. PHONE (800)-482-7171 OR (800)-482-7161 OR 811.

THE ELEVATIONS ON THESE PLANS ARE BASED ON NAVD 88 DATUM.

PROJECT NO. 63281 CITY HANCOCK
LOCATION MAASTO HIIHTO TRAILS
CONTRACT FOR TRAIL EROSION REPAIR, NEW TRAIL CONSTRUCTION, AND BRIDGE REPAIR

PREPARED UNDER THE SUPERVISION OF:

MICHAEL J MARKHAM, P.E. DATE
OHM ADVISORS

REGISTRATION NO.: 6201061373

SEAL

REVISIONS	RECOMMENDED FOR APPROVAL		APPROVED	
DESCRIPTION	BY	DATE	BY	DATE

ABBREVIATIONS:

ADJ	ADJUST	R	RADIUS
APPROX	APPROXIMATELY	RES	RESET
ASPH	ASPHALT	RIM	TOP OF UTILITY/DRAINAGE STRUCTURE
B/BANK	BOTTOM OF BANK	ROW	RIGHT-OF-WAY
CONC	CONCRETE	SAN	SANITARY
CT	CURB TRANSITION	SP	SPRING WATER
C&G	CURB AND GUTTER	SQFT	SQUARE FEET
CVT	CITY, VILLAGE, TOWNSHIP	STM	STORM
DIA	DIAMETER	SYD	SQUARE YARD
DW	DOMESTIC WATER	TC	TOP OF CURB
EA	EDGE OF ASPHALT	TELE	TELEPHONE
ELEC	ELECTRIC	TP	TRAVERSE POINT
ELEV	ELEVATION	TS&M	TOPSOIL, SEED & MULCH
EX	EXISTING	TYP	TYPICAL
F/C	FACE OF CURB	T/BANK	TOP OF BANK
FF	FINISH FLOOR	UG	UNDER GROUND
FG	FINISHED GRADE	UNO	UNLESS NOTED OTHERWISE
FT	FEET	WEL	WELL LINES
HDCP	HANDICAP	W#	WELL LINE
INV	INVERT ELEVATION	WM	WATER MAIN
OB	OBSERVATION WELL	WTR	WATER
OBS	OBSERVED	YBT	YELLOW BENCH TIE
OH	OVERHEAD		
OT	OVER TOPPING	D_{50}	RIPRAP SIZE WHERE 50% OF STONES ARE LARGER
PROP	PROPOSED	D_{MAX}	MAX STONE SIZE/AVG DEPTH OF RIPRAP

GENERAL NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS AND POST ALL BONDS PRIOR TO CONSTRUCTION, OR ENSURE THAT ALL REQUIRED PERMITS AND BONDS HAVE BEEN OBTAINED PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING CORNERS WHEN WORKING WITHIN THE ROW OF THE PROJECT AREA.
3. CONTRACTOR SHALL KEEP ALL PUBLIC STREETS ADJACENT TO THE SITE FREE OF CONSTRUCTION DEBRIS AND SEDIMENT. DUST SHALL BE CONTROLLED ON SITE AT ALL TIMES BY WATERING OR OTHER NECESSARY MEANS.
4. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO STREETS, SIDEWALKS OTHER STRUCTURES AND ADJACENT AREAS CAUSED BY DEMOLITION, HAULING, OR OTHER PERFORMANCE OF THE WORK.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY ACTIONS TO ENSURE WORKER SAFETY AND COMPLIANCE WITH MI-OSHA RULES.
6. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS PRIOR TO CONSTRUCTION. ADJUST WORK AS REQUIRED TO MEET FIELD DIMENSIONS AT NO ADDITIONAL COST TO THE OWNER. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AS SOON AS POSSIBLE. ALL QUANTITIES SHOWN ON PLANS ARE FOR REFERENCE ONLY. FINAL LIMITS AND ADJUSTMENTS SHALL BE DISCUSSED WITH THE ENGINEER ON SITE.
7. THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL AND ACCOMPANYING SPECIFICATIONS FOR THIS PROJECT INCLUDING THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, AASHTO'S 2011 POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS. THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND CITY OF HANCOCK.
8. THE CONTRACTOR SHALL CONDUCT OPERATIONS IN SUCH A MANNER AS TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES FOR NOISE LEVELS, HOURS OF OPERATION FOR CONSTRUCTION ACTIVITY, VIBRATIONS, OR ANY OTHER RESTRICTIONS. NO ADDITIONAL COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED TO COMPLY WITH THE CONTRACT DOCUMENTS.
9. COORDINATION BY THE CONTRACTOR; NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO MATERIAL SHORTAGES OR DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE PROPOSAL OR FOR ANY DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OF EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
10. ANY QUANTITIES AND DIMENSIONS SHOWN IN PLANS ARE PROVIDED FOR INFORMATION ONLY, CONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

UTILITY NOTES

1. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING MISS-DIG (811) AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATION.
2. THE UTILITY LOCATIONS ARE BASED ON FIELD OBSERVATIONS AND A CAREFUL REVIEW OF UTILITY RECORDS. HOWEVER, IT IS NOT POSSIBLE TO DETERMINE THE PRECISE SIZE, LOCATION, DEPTH, PRESSURE, OR ANY OTHER CHARACTERISTICS OF UNDERGROUND UTILITIES, TANKS OR SEPTIC FIELDS WITHOUT EXCAVATION. THEREFORE, WE CANNOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE BURIED UTILITY INFORMATION HEREON SHOWN. THE CONTRACTOR SHALL HIRE A PRIVATE UTILITY LOCATOR TO LOCATE UTILITIES ON SITE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THESE UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND MAKE EVERY EFFORT TO PROTECT AND/OR RELOCATE THEM AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER/SURVEYOR AS SOON AS POSSIBLE IN THE EVENT A DISCREPANCY IS FOUND.
3. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE LOCATED BY HAND DIGGING.

CITY OF HANCOCK 399 QUINCY ST HANCOCK, MI 49930 JOHN ERIKSON 906.482.1480 dpwdirector@cityofhancock.net	WATER, SANITARY, & STORM

REMOVAL

1. ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO STARTING REMOVALS.
2. REMOVALS SHALL BE DONE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. SAW CUTTING FOR PAVEMENT REMOVAL AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER SHALL BE TO THE DEPTH REQUIRED FOR NEAT REMOVAL OF PAVEMENT OR CONCRETE. DO NOT OVERCUT PAST ENDS OR CORNERS. REPAIR/RESTORE ALL DAMAGED AREAS.
4. SAW CUTTING DEPTH SHALL BE ADEQUATE TO PREVENT SPALLING, CHIPPING, OR DAMAGE TO EXISTING PAVEMENT EDGES LEFT IN PLACE AS DIRECTED.
5. CLEARING OF ALL VEGETATION WHERE PROPOSED CONSTRUCTION WARRANTS SHALL BE PAID FOR BY CLEARING THE BRUSH AND TREES LESS THAN 30" IN DIAMETER. CONTRACTOR SHALL REVIEW CLEARING LIMITS WITH THE ENGINEER PRIOR TO THE CLEARING OPERATION.
6. ANY ADDITIONAL TREE REMOVALS, CLEARING, GRADING, ETC. NEEDED FOR THE CONTRACTOR'S STAGING AND/OR WORK OPERATIONS SHALL BE COMPLETED AND AREA RESTORED TO THE SATISFACTION OF THE OWNER WITHOUT ADDITIONAL COMPENSATION.
7. ADDITIONAL WORK OUTSIDE OF THE LIMITS AS SHOWN ON THE PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING THE ADDITIONAL WORK.
8. MATERIALS REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND BE PROPERLY DISPOSED OF AT AN OFF SITE LOCATION.
9. PROTECT EXISTING TREES TO REMAIN. DO NOT DISTURB THE CRITICAL ROOT ZONE (CRZ) OF TREES TO REMAIN. CRZ RADIUS = DIAMETER BREAST HEIGHT (TREE DIAMETER MEASURED 4.5' ABOVE THE GROUND) IN INCHES x 12". CRZ RADIUS MEASURED FROM THE TREE TRUNK.

EARTHWORK, GRADING & RESTORATION

1. THE CONTRACTOR SHALL RESTORE ALL ADJACENT AREAS UPON COMPLETION OF THE PROJECT.
2. ALL DISTURBED AREAS SHALL BE BROUGHT TO FINAL GRADE AND STABILIZED AS SOON AS POSSIBLE AFTER BEING DISTURBED. PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED WITHIN FIVE CALENDAR DAYS OF COMPLETING FINAL GRADING.
3. ALL PERMANENT SLOPES LESS THAN 2:1 SHALL BE STABILIZED USING TOPSOIL & MULCH BLANKETS.
4. ALL PERMANENT SLOPES STEEPER THAN 2:1 SHALL BE STABILIZED USING HIGH VELOCITY MULCH BLANKET OR RIPRAP AS INDICATED ON THE PLANS.
5. CONTRACTOR SHALL PLACE SALVAGED AND ADDITIONAL TOPSOIL, SEED AND MULCH ON ALL DISTURBED AREAS NOT UNDER PAVEMENT OR OTHERWISE LABELED, AS DIRECTED BY THE ENGINEER TO PROVIDE A MINIMUM 3" THICKNESS. SEED MIX DESIGN FOR ALL SLOPE RESTORATION SHALL BE PER TABLE 816-1 & 917-1 OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.
6. ALL FILL SHALL BE CLEAN INERT MATERIAL.
7. ALL EXCAVATIONS UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED, SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).
8. SURPLUS EXCAVATED MATERIAL MAY BE USED TO FLATTEN FILL SLOPES AS DIRECTED BY THE ENGINEER. ANY SURPLUS OR UNSUITABLE MATERIAL, INCLUDING PEAT EXCAVATION, UNABLE TO BE USED SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR DISPOSAL.
9. CONTRACTOR SHALL SUBMIT LOCATIONS OF MATERIAL STOCKPILES TO THE ENGINEER FOR APPROVAL. PROTECT ADJACENT AREAS WITH SILT FENCE AS REQUIRED.

MAINTENANCE OF TRAFFIC

1. CONTRACTOR TO PROVIDE NECESSARY SIGNAGE, BARRICADES, AND OTHER DEVICES FOR PROTECTION OF THE PUBLIC AND CONSTRUCTION WORKERS PRIOR TO PERFORMING ANY WORK.
2. CONTRACTOR SHALL COORDINATE STAGING AND ACCESSIBILITY WITH OWNER.
3. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MDOT MAINTAINING TRAFFIC TYPICAL PLANS.
4. TYPE II PEDESTRIAN BARRICADES USED ARE PAID FOR AS TRAFFIC CONTROL.

SOIL EROSION AND SEDIMENTATION CONTROL

1. SOIL EROSION AND SEDIMENTATION CONTROL SHALL BE IN ACCORDANCE WITH THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR CONSTRUCTION, AND THE CONTRACTOR SHALL COMPLY WITH LOCAL RULES AND REGULATIONS FOR SOIL EROSION AND SEDIMENTATION CONTROL.
2. ALL SOIL EROSION AND SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH MDOT STANDARD PLAN R-96 SERIES.
3. THE CONTRACTOR SHALL EMPLOY A MICHIGAN DEPARTMENT OF ENVIRONMENT GREAT LAKES & ENERGY (EGLE) CERTIFIED STORM WATER OPERATOR ON ALL SITES WITH A DISTURBANCE OF FIVE OR MORE ACRES (PERMIT-BY-RULE). THE OPERATOR SHALL COMPLETE ALL INSPECTIONS AND REPORTS TO COMPLY WITH SESC PERMIT REQUIREMENTS. THE PROJECT COVERS APPROXIMATELY 0.6 ACRES.
4. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO MINIMIZE THE AREAS LEFT BARREN DURING CONSTRUCTION AND TO DISTURB ONLY THOSE AREAS ABSOLUTELY REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
5. EROSION CONTROL ITEMS SHALL BE INSTALLED AND MAINTAINED ON A REGULAR BASIS AS DIRECTED BY THE ENGINEER AND SHALL BE REMOVED WHEN NO LONGER EFFECTIVE AS DETERMINED BY THE ENGINEER. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL CONTROL IS IN PLACE AND STABILIZED. NO SEPARATE PAYMENT SHALL BE ALLOWED FOR EITHER MAINTENANCE OF REMOVAL OF THE EROSION CONTROL ITEMS.
6. THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED IN CULVERTS AND SUMPS OF ALL DRAINAGE STRUCTURES IN THE VICINITY OF THE PROJECT WHEN SUCH SEDIMENT EXCEEDS ½ OF THE SUMP DEPTH OR CULVERT DIAMETER. THE ENGINEER WILL INSPECT CULVERTS, SUMPS, AND ALL SESC ITEMS AFTER STORM EVENTS AND DIRECT THE CONTRACTOR TO CLEAN OUT ALL CULVERTS, SUMPS, AND ALL SESC ITEMS. CLEANING PIPING AND SUMPS FOR SEDIMENTATION CONTROL SHALL NOT BE PAID FOR SEPARATELY. DEBRIS REMOVED SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS.
7. THE CONTRACTOR SHALL FOLLOW LOCAL RULES AND REGULATIONS FOR SOIL EROSION AND SEDIMENTATION CONTROL FOR ALL MATERIALS THAT ARE DISPOSED OF OFF THE PROJECT SITE.
8. IF THE PROJECT OR ANY CONSTRUCTION ACTIVITY IS STOPPED FOR ANY LENGTH OF TIME OTHER THAN THAT ENCOUNTERED IN A NORMAL WORK WEEK, EVERY PRECAUTION SHALL BE TAKEN TO PROTECT THE UNCOMPLETED WORK FROM EROSION, INCLUDING THE PLACEMENT OF RIP RAP, HAY BALES OR OTHER ACCEPTABLE TEMPORARY PRECAUTION.
9. THE CONTRACTOR SHALL SWEEP PAVED ROADS AND OTHER PAVED SURFACES DAILY, OR AS REQUESTED BY THE ENGINEER, TO REMOVE TRACKED SOIL AND DEBRIS.
10. THE CONTRACTOR SHALL INSTALL SILT FENCES AND ROCK FILTERS AS TEMPORARY EROSION AND SEDIMENTATION CONTROL IN DISTURBED AREAS AS REQUIRED AND AS SHOWN ON THE PLANS.
11. THE CONTRACTOR SHALL INSTALL NON-WOVEN FILTER FABRIC ON ALL CATCH BASINS DURING CONSTRUCTION TO FILTER MATERIALS ENTERING CATCH BASINS.
12. THE CONTRACTOR SHALL CLEAN OUT ALL CATCH BASINS AND FLUSH OUT ALL LINES AT THE COMPLETION OF THE PROJECT.
13. THE CONTRACTOR SHALL SUBMIT PROPOSED STOCK PILE AND SPOIL PILE LOCATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO STOCKPILING MATERIAL ON SITE.
14. SPOIL PILES SHALL BE GRADED SO THAT THE SLOPES ARE NOT STEEPER THEN 3:1 AND SHALL BE SEEDED AND MULCHED.
15. SPOIL PILES SHALL HAVE SILT FENCE PLACED AT THE BASE OF THE SPOIL PILES TO RETAIN SOIL UNTIL VEGETATION IS ESTABLISHED.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS FOR THE PROJECT INCLUDING THE SOIL EROSION AND SEDIMENTATION CONTROL PERMIT AS REQUIRED BY HOUGHTON COUNTY.

UTILITY TRENCH

1. BEDDING UNDER THE UTILITY SHALL BE AS SPECIFIED AND THE UNDERCUT MATERIAL REPLACED WITH GRANULAR MATERIAL CLASS II. BACK FILLING SHALL BE IN ACCORDANCE TO THE CURRENT STANDARD SPECIFICATION.
2. BACK FILL FOR UTILITY TRENCHES ABOVE GRANULAR MATERIAL CLASS II SHALL BE PLACED AS FOLLOWS:
   - 2.1. GRANULAR MATERIAL MDOT CLASS II SHALL BE USED TO BACKFILL TRENCHES UNDER PAVEMENT AND SHALL BE COMPACTED TO NOT LESS THAN 95% OF ITS MAXIMUM UNIT WEIGHT.
   - 2.2. GRANULAR MATERIAL MDOT CLASS II SHALL BE USED TO BACKFILL UTILITY TRENCHES OUTSIDE THE PAVEMENT BUT WITHIN THE 1:1 ZONE OF INFLUENCE AND SHALL BE COMPACTED TO NOT LESS THAN 95% OF ITS MAXIMUM UNIT WEIGHT.
   - 2.3. ACCEPTABLE MATERIAL EXCAVATED FROM THE UTILITY TRENCHES SHALL BE USED TO BACK FILL UTILITY TRENCHES OUTSIDE THE LIMITS OF THE 1:1 ZONE OF INFLUENCE AND COMPACTED TO NOT LESS THAN 90% OF ITS MAXIMUM UNIT WEIGHT.
3. GRANULAR MATERIAL CLASS I, II, IIA OR IIIA MAY BE USED WHERE GRANULAR MATERIAL CLASS II IS SPECIFIED ON THE PLANS.

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ISSUE: ---
REVISIONS:

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	7030-18-0030	AR	MM	JD/SM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

NOTES
FEMA PROJECT NO. 63281

SHEET C-002

DRAWING PATH: P:\7000_7100\7030180030_Hancock2018StormDamage\Drawings\WO #4\Civil\Misc\180030NOT_WO4.dwg Jun 24, 2022 - 11:35am

WRAPPING CULVERT AND STORM SEWER JOINTS

1. WRAP ALL CULVERT PIPE JOINTS WITH GEOTEXTILE BLANKET REGARDLESS OF SIZE AND MATERIAL TYPE. THE GEOTEXTILE BLANKET MUST BE AT LEAST 36 INCHES WIDE AND INSTALLED ON THE PIPE EXTERIOR, CENTERED ON THE JOINT. THE ENDS OF THE GEOTEXTILE BLANKET MUST OVERLAP BY AT LEAST 12 INCHES.

AGGREGATE SURFACE CONSTRUCTION

1. NEW AGGREGATE MATERIAL FOR ROAD AND TRAIL SURFACE SHALL MEET THE REQUIREMENTS OF SECTION 902 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SHALL BE MDOT CLASS 23A OR AS APPROVED BY THE ENGINEER.

2. AGGREGATE MATERIAL FOR ROAD AND TRAIL SURFACE SHALL BE CONSTRUCTED PER SECTION 306 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

CULVERT TRENCH

1. BEDDING UNDER THE CULVERT SHALL BE AS SPECIFIED AND THE UNDERCUT MATERIAL REPLACED WITH GRANULAR MATERIAL CLASS IIIA. BACKFILLING SHALL BE IN ACCORDANCE TO THE PROJECT SPECIFICATIONS AND MANUFACTURER'S REQUIREMENTS.

2. BACKFILL FOR CULVERT TRENCHES ABOVE GRANULAR MATERIAL CLASS II SHALL BE PLACED AS FOLLOWS:
   - 2.1. GRANULAR MATERIAL MDOT CLASS II SHALL BE USED TO BACKFILL TRENCHES UNDER ROADS/TRAILS AND SHALL BE COMPACTED TO NOT LESS THAN 95% OF ITS MAXIMUM UNIT WEIGHT.
   - 2.2. GRANULAR MATERIAL MDOT CLASS II SHALL BE USED TO BACKFILL CULVERT TRENCHES OUTSIDE THE ROADS/TRAILS BUT WITHIN THE 1:1 ZONE OF INFLUENCE AND SHALL BE COMPACTED TO NOT LESS THAN 95% OF ITS MAXIMUM UNIT WEIGHT.
   - 2.3. SATISFACTORY MATERIAL EXCAVATED FROM THE CULVERT TRENCHES SHALL BE USED TO BACK FILL CULVERT TRENCHES OUTSIDE THE LIMITS OF THE 1:1 ZONE OF INFLUENCE AND COMPACTED TO NOT LESS THAN 95% OF ITS MAXIMUM UNIT WEIGHT.

Miscellaneous Quantities

TOTAL	UNIT	DESCRIPTION
1	LSUM	Mobilization, Pre-Storm
135	Cyd	Non Haz Contaminated Material Handling and Disposal, LM
1	LSUM	Traffic Control
1	LSUM	Contractor Staking, Pre-Storm
1	LSUM	Mobilization, Mitigation
1	LSUM	Contractor Staking, Mitigation

GENERAL STRUCTURAL NOTES

1. THE DESIGN OF THE STRUCTURES ARE BASED ON LRFD PEDESTRIAN BRIDGE DESIGN LOADING AS FOLLOWS.
   - 1.1. LOADS
     - 1.1.1. DEAD LOAD: BRIDGE SELFWEIGHT
     - 1.1.2. PEDESTRIAN LIVE LOAD: 90 PSF
     - 1.1.3. SNOW LOAD: 80 PSF + 12.5% COMPACTION FACTOR
     - 1.1.4. WIND LOAD: 90MPH, 20 PSF MIN LATERAL
     - 1.1.5. GROOMER LOAD: 3,000 LBS
     - 1.1.6. VEHICLE LIVE LOAD: H-10
     - 1.1.7. GUARDRAIL LIVE LOAD: 200 LBS POINT LOAD AND 50 PLF IN ANY DIRECTION AT UPPER RAIL ELEMENTS AND TOP OF RAIL POSTS.
   - 1.2. LOAD CASES (ASD)
     - 1.2.1. 0.6DL + 0.6WL DECK UPLIFT
     - 1.2.2. 1.0 DL + 1.0 VEHICLE LL
     - 1.2.3. 1.0 DL + 1.0 PEDESTRIAN LL + 1.0 GUARDRAIL LIVE LOAD
     - 1.2.4. 1.0 DL + 1.0 SL + 1.0 GROOMER LIVE LOAD
     - 1.2.5. 1.0 DL + 1.0 SL + 0.6 PEDESTRIAN LL + 1.0 GUARDRAIL LIVE LOAD
     - 1.2.6. LOAD CASES 1.2.2 AND 1.2.4 APPLY ONLY TO STEEL BRIDGES AND BOARDWALK.
   - 1.3. MAXIMUM DEFLECTION FOR MEMBERS IS L/500.
   - 1.4. THERMAL: 100 DEGREE DIFFERENTIAL.
   - 1.5. STEEL BRIDGES AND BOARDWALK SHALL HAVE A MINIMUM 12FT CLEAR WIDTH, TIMBER BRIDGES SHALL HAVE A MINIMUM 5 FT CLEAR WIDTH.
   - 1.6. RAILING HEIGHT SHALL BE MINIMUM 48" ABOVE DECK SURFACE.
   - 1.7. ALL DECK SURFACES SHALL PROVIDE ¼" CLEAR SPACE BETWEEN DECK PLANKS/WEAR SURFACE.
2. EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED IN THE PROJECT DOCUMENTS, PERFORM ALL WORK ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2020 EDITION.
3. WATER LEVEL IS SUBJECT TO CHANGE, MAKE A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.
4. IMPLEMENT MEASURES TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, IT SHALL BE REMOVED WITHIN 24 HRS. REMOVAL OF DEBRIS IS INCLUDED IN RELATED ITEMS OF WORK.
5. IMMEDIATELY AFTER THE CONSTRUCTION OF AN ABUTMENT IS COMPLETED, PLACE RIPRAP, SLOPE PROTECTION AND SLOPE RESTORATION MATERIAL ON THE ADJACENT EMBANKMENT SLOPES.
6. THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:
   - 6.1. CONCRETE: GRADE 3500 f'c=3,000 PSI
   - 6.2. CONCRETE: GRADE 4500 f'c=4,000 PSI
   - 6.3. STEEL REINFORCEMENT fy=60,000 PSI
   - 6.4. STRUCTURAL STEEL
     - HIGH STRENGTH, LOW ALLOY
     - ENHANCED CORROSION RESISTANT
     - ASTM A847, A588, A606 OR A242
     - fy= 50,000 PSI
   - 6.5. BOARDWALK SUPERSTRUCTURE TIMBER
     - SOUTHERN PINE NO. 1 fb= 1,850 PSI; E= 1,700,000 PSI
     - DECK BOARDS - TIMBER fb=1,500 PSI; E= 1,600,000 PSI
7. ALL TIMBER MEMBERS SHALL BE S4S UNLESS NOTED OTHERWISE.
8. BEVEL ALL EXPOSED TO CONCRETE CORNERS SHOWN SQUARE ON THE PLANS WITH ¾" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.
9. DESIGN OF THE FOUNDATIONS HAVE BEEN BASED ON A SOIL BEARING STRENGTH OF 3,000 PSF. CONTRACTOR TO VERIFY.

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- FLOW DIRECTION
- CONIFEROUS TREE (CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP)
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- BM# BENCHMARK
- TP# TRAVERSE POINT

PROPOSED

- RIPRAP
- FLOW DIRECTION

HATCH LEGEND

PROPOSED

- DEBRIS
- EXCAVATION, EARTH
- FILL AND GRADING
- TRAIL REROUTE
- RIPRAP
- SLOPE RESTORATION
- TIMBER BOARDWALK
- EXCAVATION/EMBANKMENT

IF NECESSARY FOR CLARITY

- (S) SALVAGE
- (B) BULKHEAD
- (A) ABANDON
- (C) CLEARING
- (R) REMOVE
- (REL) RELOCATE
- (REC) RECONSTRUCT
- (REL B/O) RELOCATE BY OTHERS
- (ADJ B/O) ADJUST BY OTHERS

ROW PATTERN

EXISTING

- ROW
- SECTION
- PROPERTY/PARCEL

PROPOSED

- ROW

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- CENTERLINE OF DITCH
- WETLAND/EDGE OF WATER

PROPOSED

- GRADING LIMIT (SLOPE STAKE)
- CENTERLINE OF DITCH
- FENCE

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DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	7030-18-0030	AR	MW	JD/SM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

NOTES, LEGEND, MISC PROJECT QUANTITIES

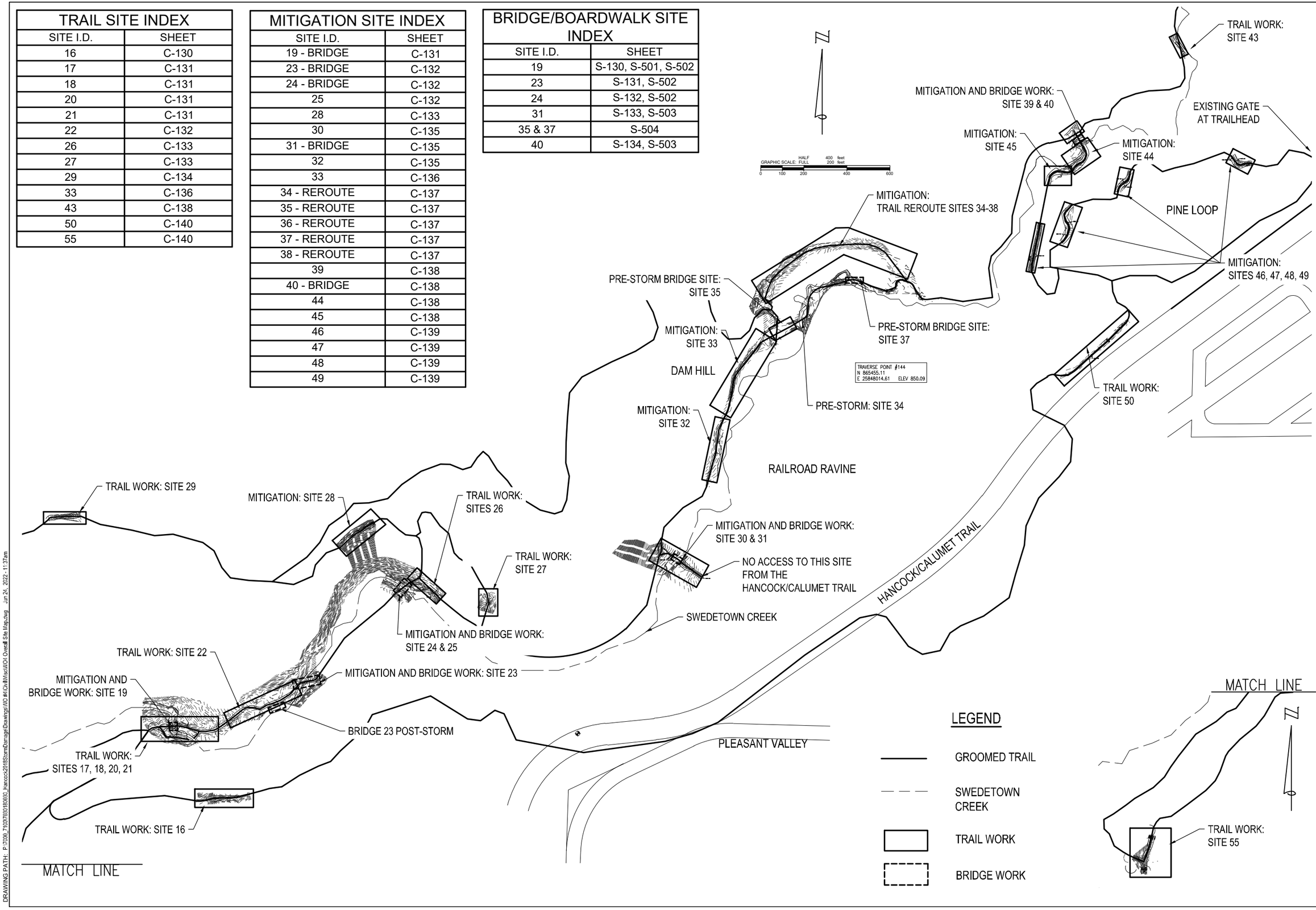
FEMA PROJECT NO. 633281

SHEET C-003

TRAIL SITE INDEX	
SITE I.D.	SHEET
16	C-130
17	C-131
18	C-131
20	C-131
21	C-131
22	C-132
26	C-133
27	C-133
29	C-134
33	C-136
43	C-138
50	C-140
55	C-140

MITIGATION SITE INDEX	
SITE I.D.	SHEET
19 - BRIDGE	C-131
23 - BRIDGE	C-132
24 - BRIDGE	C-132
25	C-132
28	C-133
30	C-135
31 - BRIDGE	C-135
32	C-135
33	C-136
34 - REROUTE	C-137
35 - REROUTE	C-137
36 - REROUTE	C-137
37 - REROUTE	C-137
38 - REROUTE	C-137
39	C-138
40 - BRIDGE	C-138
44	C-138
45	C-138
46	C-139
47	C-139
48	C-139
49	C-139

BRIDGE/BOARDWALK SITE INDEX	
SITE I.D.	SHEET
19	S-130, S-501, S-502
23	S-131, S-502
24	S-132, S-502
31	S-133, S-503
35 & 37	S-504
40	S-134, S-503



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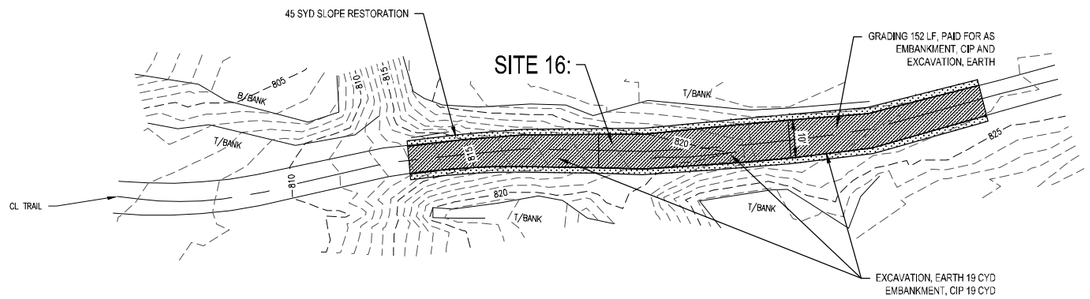
DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
09/24/2022	1936-19-009	AR	MM	ADAM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
OVERALL SITE MAP
FEMA PROJECT NO. 4328-1

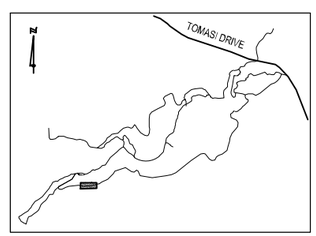
SHEET C-004

DRAWING PATH: P:\7000_7100\7030\1936030_Hancock2018StormDamage\Drawings\WO #4\Civil\Mxds\WO4 Overall Site Map.dwg Jun 24, 2022 - 11:37am



1 **SITE PLAN SITE 16**
1"=20'

SITE 16		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
19	Cyd	Embankment, CIP
19	Cyd	Excavation, Earth
45	Syd	Slope Restoration, Type B



KEY PLAN
NTS

N

GRAPHIC SCALE: HALF 40 feet, FULL 20 feet
0 10 20 40 60

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DATE 09/2/2022 | PROJ NUMBER 1936-19-009 | ENGINEER AR | PROJ MGR MW | CADD JDSM | COUNTY HOUGHTON | MUNICIPALITY CITY OF HANCOCK

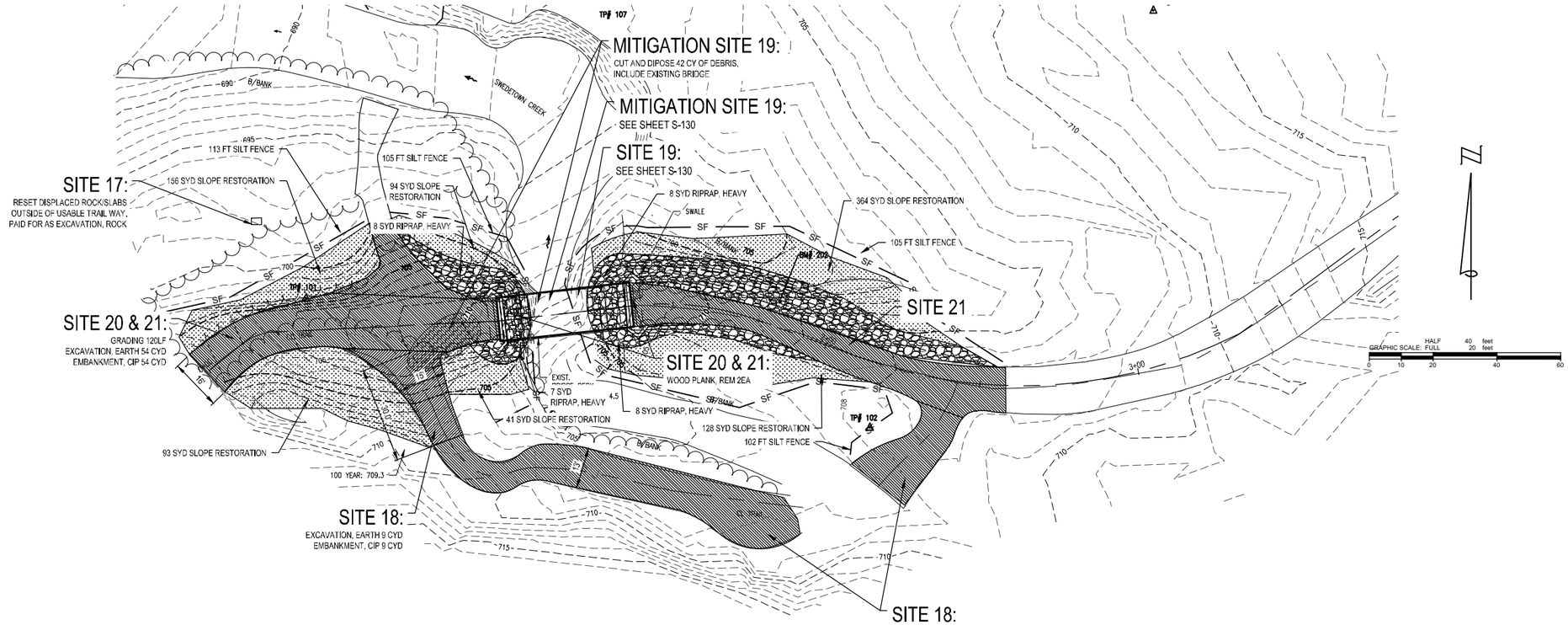
CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

SITE 16 - TRAIL REPAIRS
FEMA PROJECT NO. 83281

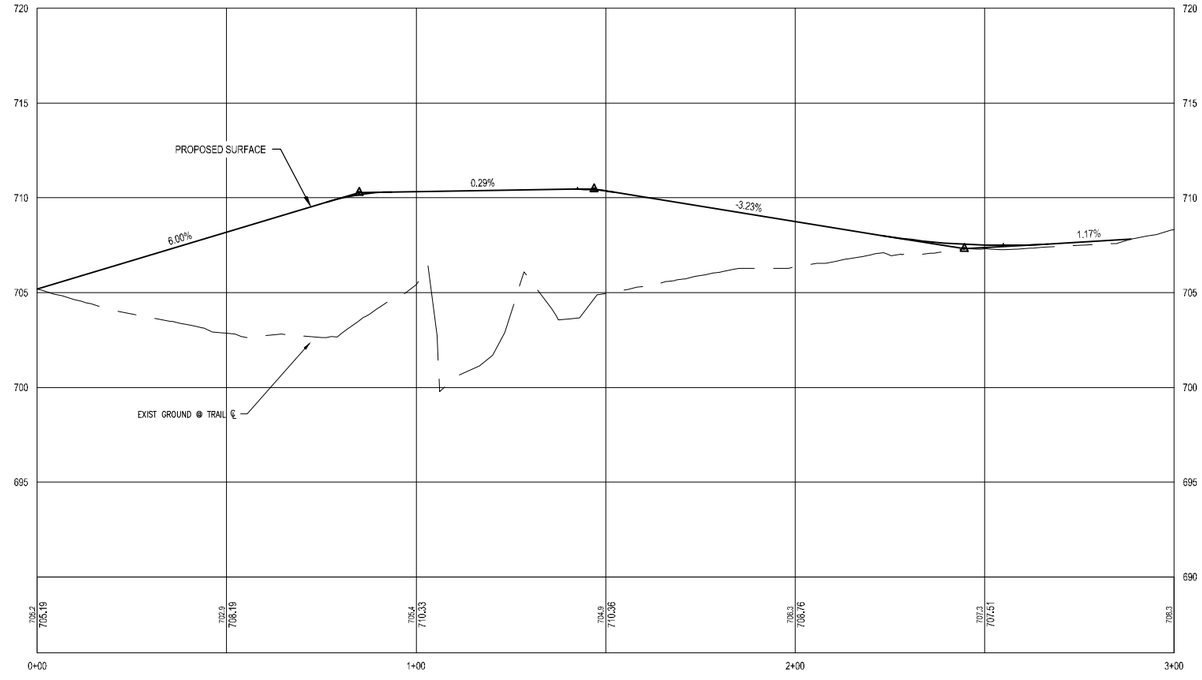
SHEET C-130

DRAWING PATH: P:\7000_7100\7009\9180093_Hancock2018StormDamageDrawings\MO #\CivilPlans_ConstIWO4_CON.dwg Jun 24, 2022 - 11:38am

JOB BENCHMARK #202 YELLOW BENCH TIE IN WESTERN FACE OF DECIDUOUS TREE ELEV 707.78
TRAVERSE POINT #101 N 863888.79 E 25845327.50 ELEV 703.19
TRAVERSE POINT #102 N 863848.44 E 25845504.32 ELEV 708.40
TRAVERSE POINT #106 N 863979.06 E 25845593.21 ELEV 713.20
TRAVERSE POINT #107 N 863981.80 E 25845420.73 ELEV 699.85



1 **SITE PLAN SITES 17-21**
1"=20'



2 **PROFILE SITES 17-21**
H: 1"=20' V: 1"=4'

SITE 17 — **PRE-STORM QUANTITIES**

TOTAL	UNIT	DESCRIPTION
2.0	Cyd	Excavation, Rock

SITE 18 — **PRE-STORM QUANTITIES**

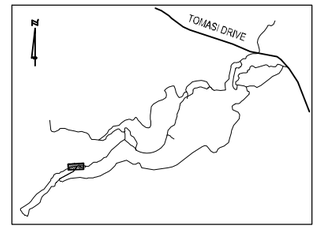
TOTAL	UNIT	DESCRIPTION
9	Cyd	Embankment, CIP
9	Cyd	Excavation, Earth
105	Ft	Erosion Control, Silt Fence

SITE 19 — **MITIGATION QUANTITIES**

TOTAL	UNIT	DESCRIPTION
80.00	Cyd	Embankment, CIP
45	Cyd	Excavation, Earth
160	Ft	Erosion Control, Silt Fence
41	Cyd	Material, Surplus and Unsuitable, Rem, LM
9	Syd	Riprap, Heavy
170	Syd	Slope Restoration, Type B

SITE 20 & 21 — **PRE-STORM QUANTITIES**

TOTAL	UNIT	DESCRIPTION
54	Cyd	Embankment, CIP
54	Cyd	Excavation, Earth
207	Ft	Erosion Control, Silt Fence
492	Syd	Slope Restoration, Type B



KEY PLAN
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06/24/2022	7636-19-0009	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
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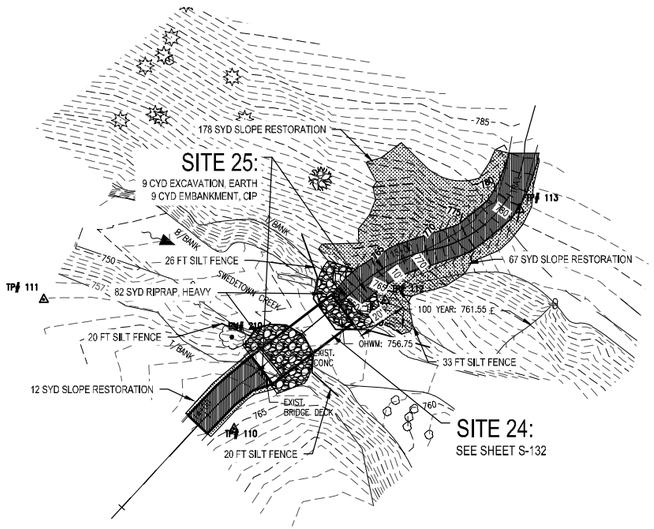
SITES 17-21 - TRAIL REPAIRS
FEMA PROJECT NO. 632B1

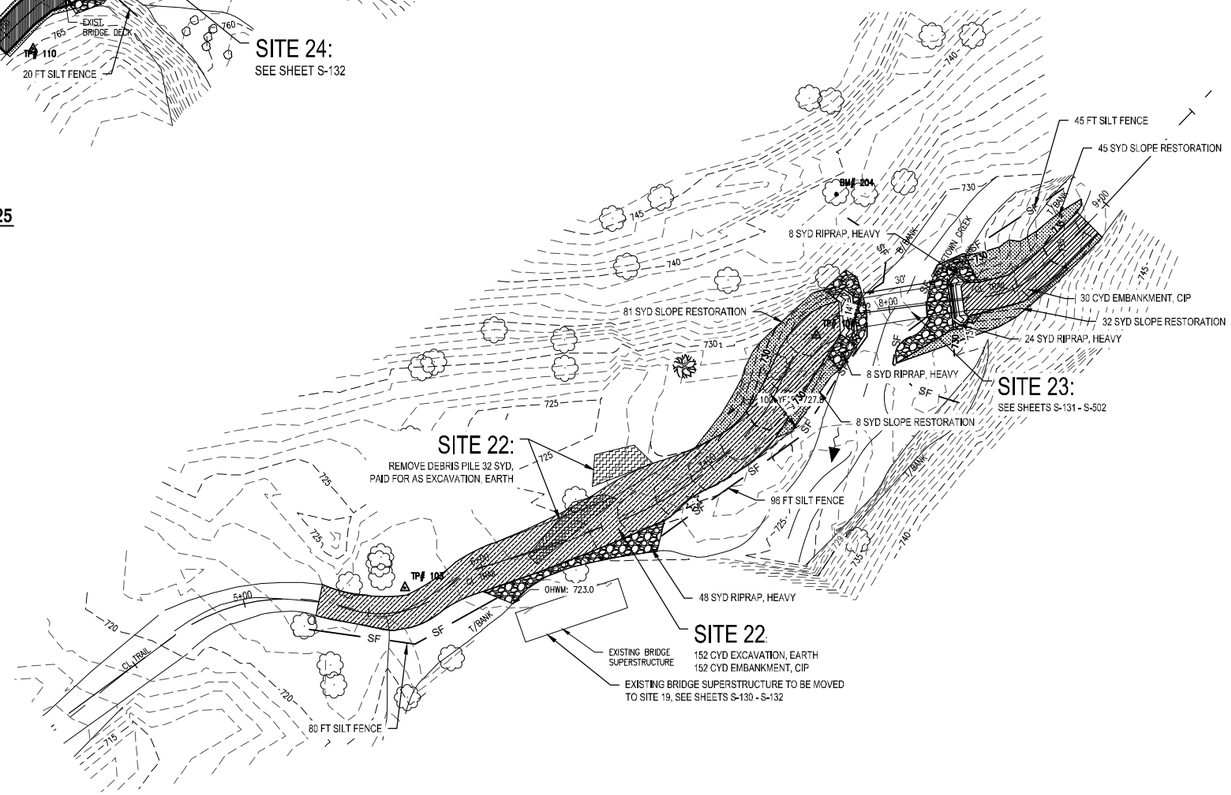
SHEET C-131

DRAWING PATH: P:\7000_7100\7003\8903\0_Hancock2018StormDamage\Drawings\WO #4\Civil\Plans_Coresf\WO4_CON.dwg Jun 24, 2022 - 11:39am

JOB BENCHMARK #210 YELLOW BENCH TIE IN EASTERNLY FACE OF DECIDUOUS TREE ELEV 759.42
JOB BENCHMARK #204 YELLOW BENCH TIE IN SOUTHERNLY FACE OF DECIDUOUS TREE ELEV 741.66
TRAVERSE POINT #103 N 863977.30 E 25845820.39 ELEV 722.15
TRAVERSE POINT #104 N 864077.20 E 25845983.20 ELEV 728.81
TRAVERSE POINT #110 N 864489.93 E 25846448.39 ELEV 765.94
TRAVERSE POINT #111 N 864541.26 E 25846373.18 ELEV 759.19
TRAVERSE POINT #112 N 864540.85 E 25846508.31 ELEV 763.98
TRAVERSE POINT #113 N 864576.94 E 25846561.47 ELEV 780.55



2 **SITE PLAN SITES 24, 25**
1"=30'

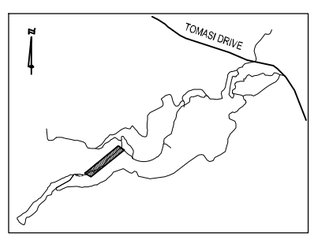


1 **SITE PLAN SITES 22, 23**
1"=30'

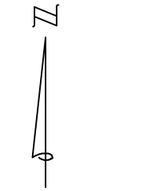
SITE 22		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
152	Cyd	Embankment, CIP
184	Cyd	Excavation, Earth
176	Ft	Erosion Control, Silt Fence
48	Syd	Riprap, Heavy

SITE 23		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
30	Cyd	Embankment, CIP
40	Cyd	Excavation, Earth
45	Ft	Erosion Control, Silt Fence
22	Syd	Riprap, Heavy
10	Syd	Slope Restoration, Type B

SITE 24 & 25		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
9	Cyd	Embankment, CIP
9	Cyd	Excavation, Earth
99	Ft	Erosion Control, Silt Fence
83	Syd	Riprap, Heavy
258	Syd	Slope Restoration, Type C



KEY PLAN
NTS



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DATE	05/24/2022
PROJ NUMBER	1635-19-0003
ENG/ARCH	AR
PROJ MGR	MM
CADD	JDSM
COUNTY	HOUGHTON
MUNICIPALITY	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

SITES 22-25 - TRAIL REPAIRS
FEMA PROJECT NO. 632B1

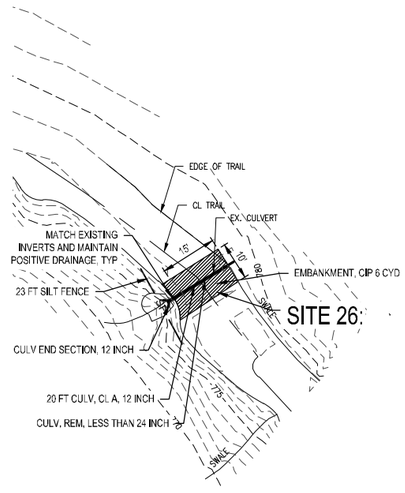
SHEET C-132

TRAVERSE POINT #114	
N 864436.85	
E 25846869.57	ELEV 811.71
TRAVERSE POINT #115	
N 864554.04	
E 25846844.41	ELEV 827.17

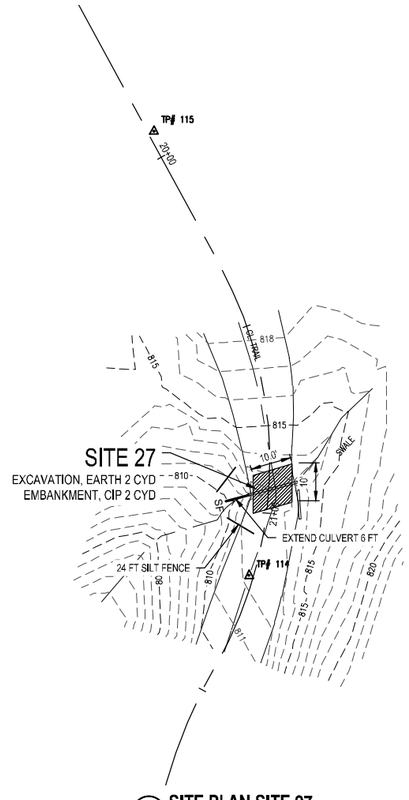
SITE 26		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
1	LSUM	Mobilization, Max
1	Ea	Culv, Rem, Less than 24 inch
6	Cyd	Embankment, CIP
6	Cyd	Excavation, Earth
23	Ft	Erosion Control, Silt Fence
1	Ea	Culv End Sect, 12 inch
20	Ft	Culv, Cl A, 12 inch

SITE 27		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
2	Cyd	Embankment, CIP
2	Cyd	Excavation, Earth
24	Ft	Erosion Control, Silt Fence
6	Ft	Culv, Cl A, 12 inch
12	Syd	Slope Restoration, Type B

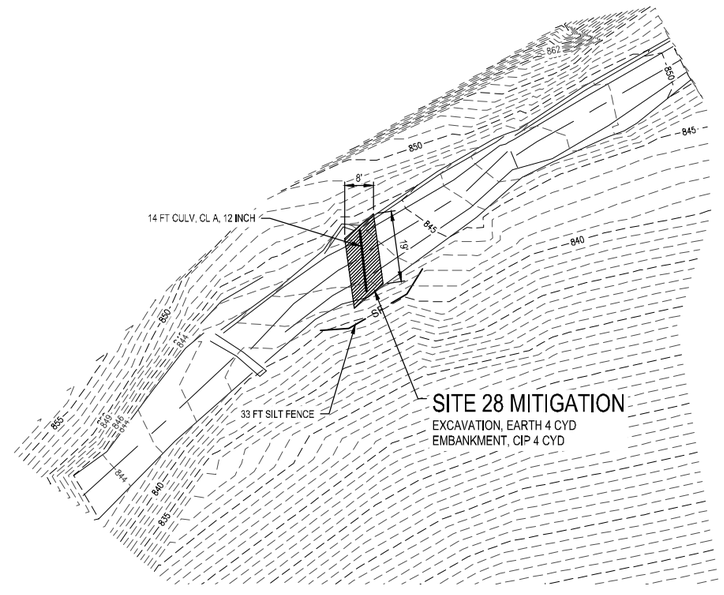
SITE 28		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
4	Cyd	Embankment, CIP
4	Cyd	Excavation, Earth
33	Ft	Erosion Control, Silt Fence
14	Ft	Culv, Cl A, 12 inch
12	Syd	Slope Restoration, Type B
14	Syd	Slope Restoration, Type D



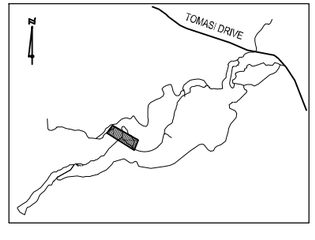
1 SITE PLAN SITE 26
1"=20'



2 SITE PLAN SITE 27
1"=20'



3 SITE PLAN SITE 28
1"=20'



KEY PLAN
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GRAPHIC SCALE: HALF 40 feet, FULL 20 feet
0 10 20 40 60

ISSUE	--
REVISIONS:	

DATE	PROJ NUMBER	ENGR/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	7030-18-0030	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
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SITES 26-28 - TRAIL REPAIRS
FEMA PROJECT NO. 632B1

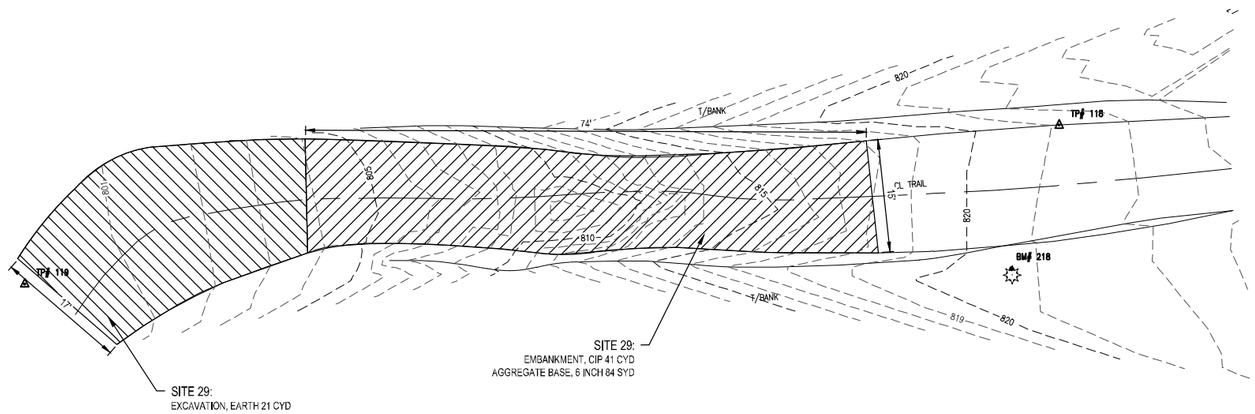
SHEET C-133

DRAWING PATH: P:\7000_7100\7030\18\0030_Hancock2018StormDamage\Drawings\WO #4\Civil\Plans_Const\WO4_CON.dwg Jun 24, 2022 - 11:40am

JOB BENCHMARK #218
YELLOW BENCH TIE IN NORTHERNLY
FACE OF CONIFEROUS TREE
ELEV 821.98

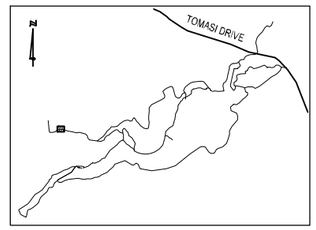
TRAVERSE POINT #118
N 864866.51
E 25844957.76 ELEV 821.57

TRAVERSE POINT #119
N 864845.55
E 25844821.25 ELEV 800.10



1 SITE PLAN SITE 29
1"=20'

SITE 29 TOTAL	UNIT	PRE-STORM QUANTITIES DESCRIPTION
41	Cyd	Embankment, CIP
21	Cyd	Excavation, Earth
84	Syd	Aggregate Base, 6 inch



KEY PLAN
NTS

N

GRAPHIC SCALE: FULL HALF 5 feet Value feet
0 5 10 20 30

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06/24/2022	7030-19-0030	AR	MM	ADSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

SITE 29 - TRAIL REPAIRS

FEMA PROJECT NO. 630281

Know what's below.
Call before you dig.

SHEET C-134

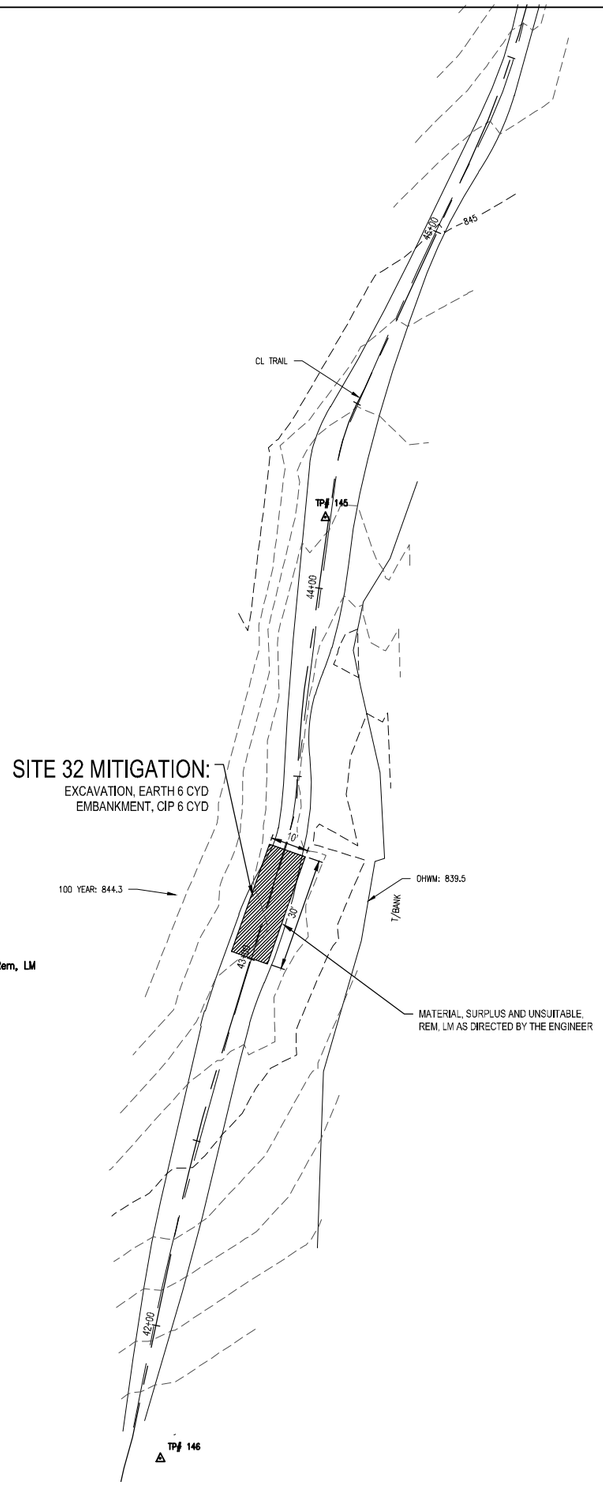
JOB BENCHMARK #256 YELLOW BENCH TIE IN SOUTHERNLY FACE OF 16" MAPLE ELEV 822.33
TRAVERSE POINT #145 N 865239.11 E 25847939.22 ELEV 842.47
TRAVERSE POINT #146 N 864990.75 E 25847895.70 ELEV 835.52
TRAVERSE POINT #156 N 864705.68 E 25847694.37 ELEV 825.01
TRAVERSE POINT #157 N 864602.56 E 25847657.46 ELEV 819.82
TRAVERSE POINT #158 N 864647.63 E 25847781.87 ELEV 825.48

SITE 30 & 31 MITIGATION QUANTITIES

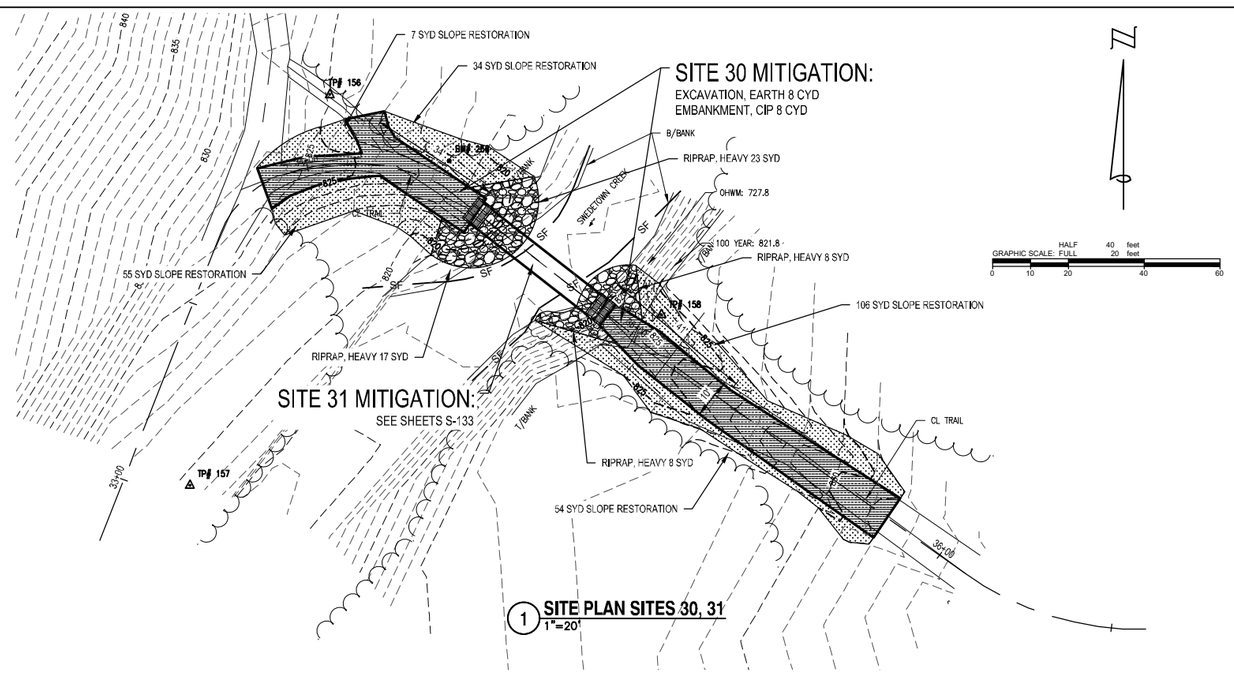
TOTAL	UNIT	DESCRIPTION
8	Cyd	Embankment, CIP
8	Cyd	Excavation, Earth
56	Syd	Riprap, Heavy
249	Syd	Slope Restoration, Type C

SITE 32 MITIGATION QUANTITIES

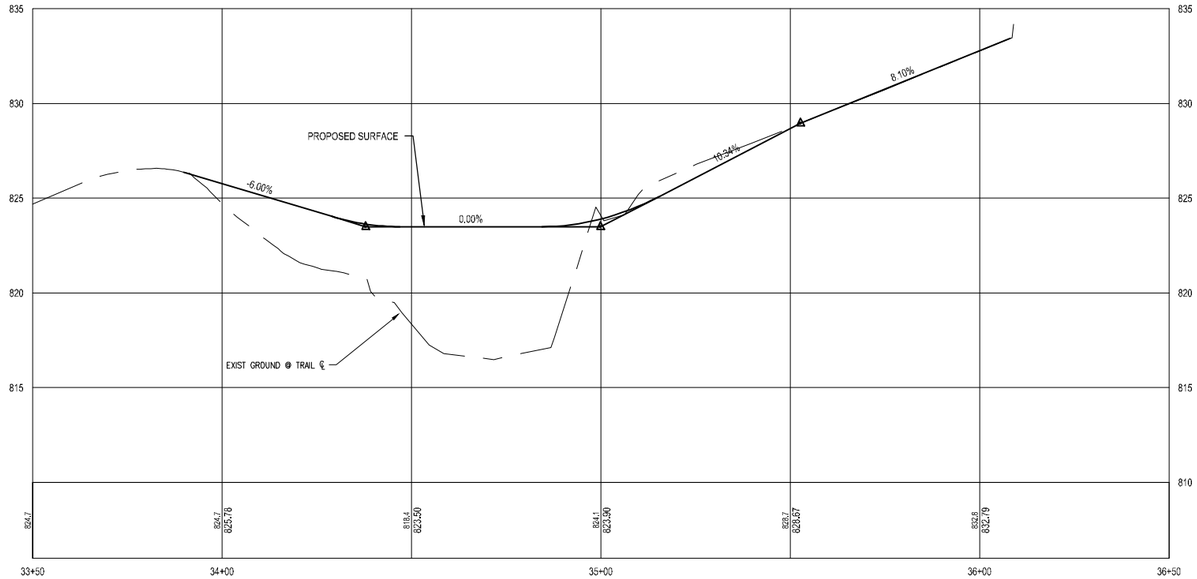
TOTAL	UNIT	DESCRIPTION
6	Cyd	Embankment, CIP
6	Cyd	Excavation, Earth
5	Cyd	Material, Surplus and Unsuitable, Rem, LM



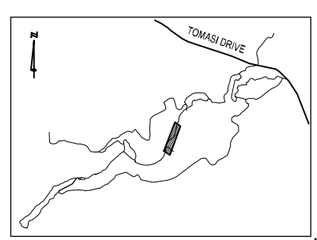
2 **SITE PLAN SITE 32**
1"=20'



1 **SITE PLAN SITES 30, 31**
1"=20'



3 **PROFILE SITES 30, 31**
H: 1"=20' V: 1"=4'



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06/24/2022	7039-19-0030	AR	MM	ADSM	HOUGTON	CITY OF HANCOCK

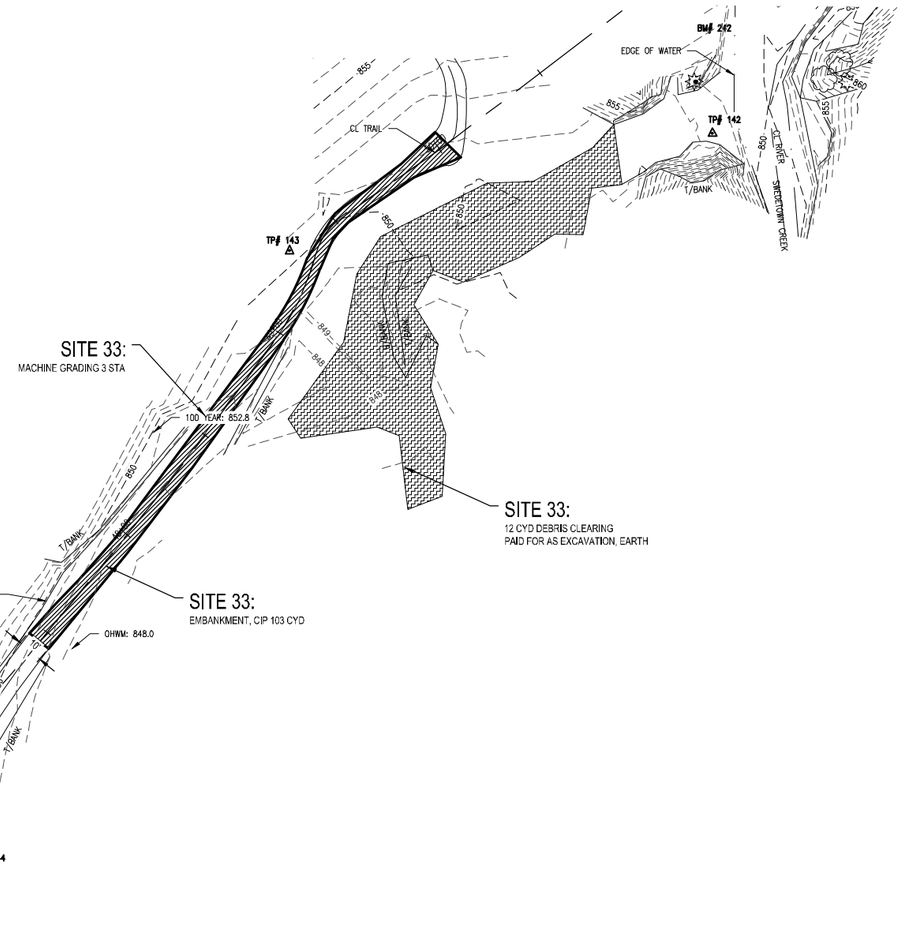
CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITES 30-32 - TRAIL REPAIRS
FEMA PROJECT NO. 6328?

SHEET C-135

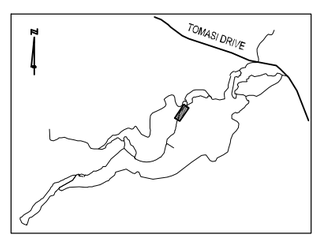
DRAWING PATH: P:\7090_7100\7039\19-0030_Hancock\2016StormDamage\Drawings\AO #4\Civil\Plans_Const\WO4_CON.dwg Jun 24, 2022 - 11:42am

JOB BENCHMARK #242 YELLOW BENCH TIE IN TREE. ELEV 855.24
TRAVERSE POINT #138 N 865960.40 E 25848778.55 ELEV 865.58
TRAVERSE POINT #139 N 865911.50 E 25848703.76 ELEV 863.03
TRAVERSE POINT #140 N 865974.04 E 25848518.40 ELEV 859.09
TRAVERSE POINT #141 N 865881.20 E 25848366.52 ELEV 855.70
TRAVERSE POINT #149 N 866117.72 E 25848687.98 ELEV 878.83
TRAVERSE POINT #150 N 866134.10 E 25848609.83 ELEV 878.19
TRAVERSE POINT #151 N 866119.18 E 25848489.88 ELEV 870.97
TRAVERSE POINT #152 N 866099.03 E 25848356.84 ELEV 877.43
TRAVERSE POINT #153 N 866043.70 E 25848280.00 ELEV 876.12
TRAVERSE POINT #144 N 865455.11 E 25848014.61 ELEV 850.09

SITE 33		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
103	Cyd	Embankment, CIP
12	Cyd	Excavation, Earth
3	Sta	Machine Grading



1 **SITE PLAN SITE 33**
1"=30'



KEY PLAN
NTS

N

HALF 60 feet
GRAPHIC SCALE: FULL 30 feet
0 15 30 60 90

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DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	1636-19-0003	AR	MW	JDSM	HOUGHTON	CITY OF HANCOCK

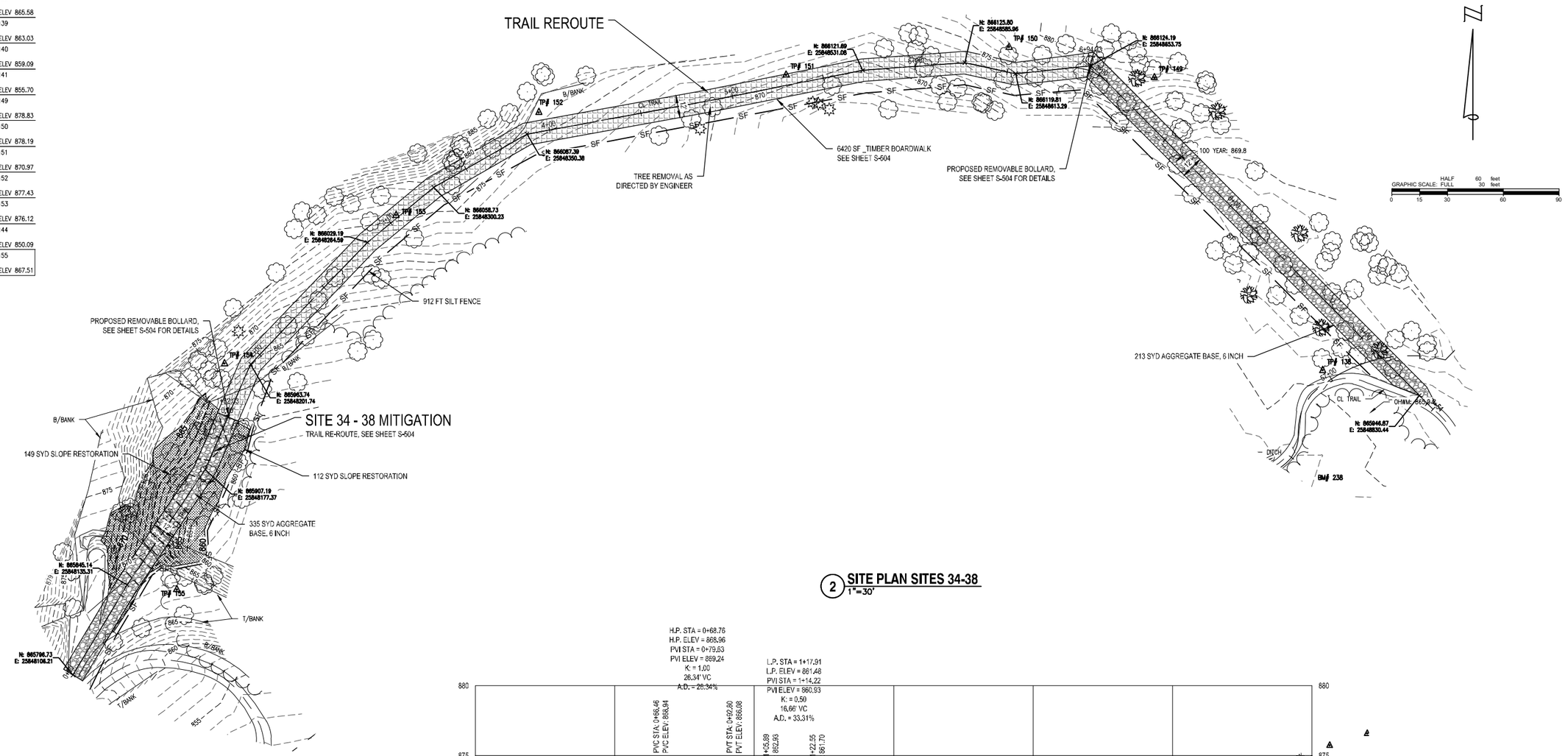
CITY OF HANCOCK
MAASTO HIHTO TRAIL REPAIRS

SITE 33 - TRAIL REPAIRS
FEMA PROJECT NO. 632811

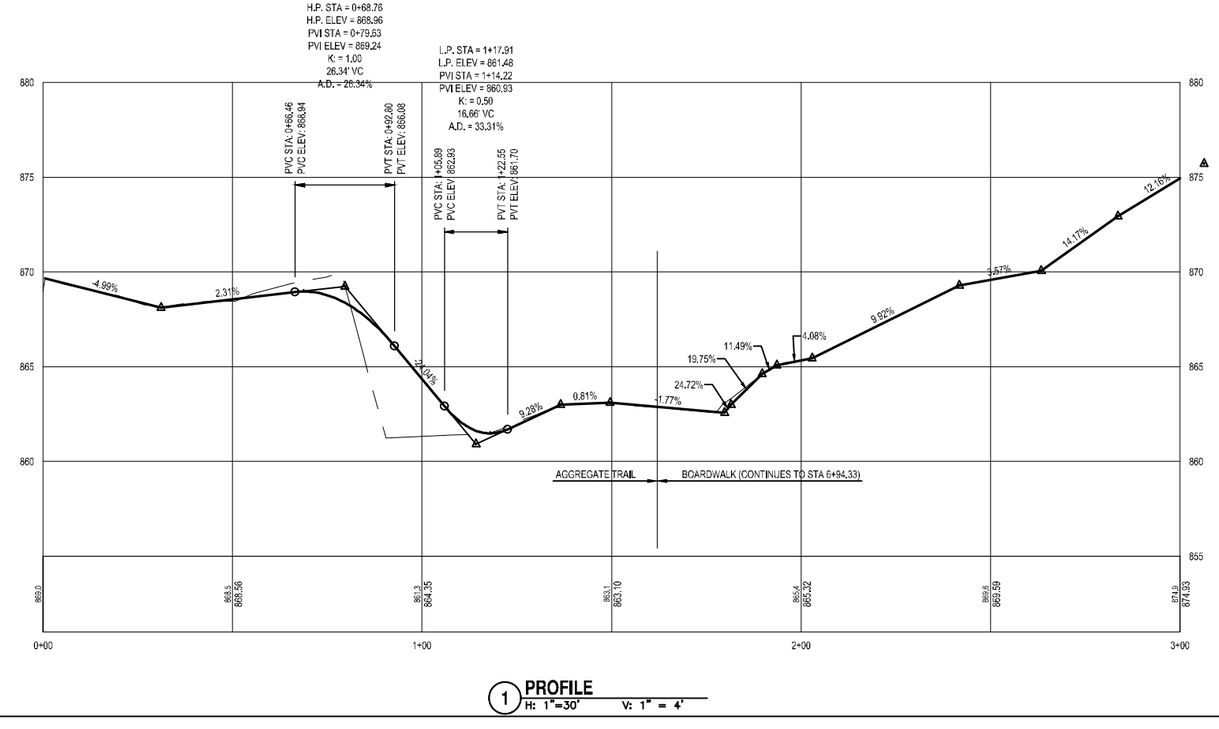
SHEET C-136

DRAWING PATH: P:\7090_7100\7091980080_Hancock\2018StormDamage\Drawings\WO #4\CivilPlans_Coreit\WO4_CON.dwg Jun 24, 2022 - 11:42am

TRAVERSE POINT #138	
N 865960.40	
E 25848778.55	ELEV 865.58
TRAVERSE POINT #139	
N 865911.50	
E 25848703.76	ELEV 863.03
TRAVERSE POINT #140	
N 865974.04	
E 25848518.40	ELEV 859.09
TRAVERSE POINT #141	
N 865881.20	
E 25848366.52	ELEV 855.70
TRAVERSE POINT #149	
N 866117.72	
E 25848687.98	ELEV 878.83
TRAVERSE POINT #150	
N 866134.10	
E 25848609.83	ELEV 878.19
TRAVERSE POINT #151	
N 866119.18	
E 25848489.88	ELEV 870.97
TRAVERSE POINT #152	
N 866099.03	
E 25848356.84	ELEV 877.43
TRAVERSE POINT #153	
N 866043.70	
E 25848280.00	ELEV 876.12
TRAVERSE POINT #144	
N 865455.11	
E 25848014.61	ELEV 850.09
TRAVERSE POINT #155	
N 865842.57	
E 25848162.06	ELEV 867.51

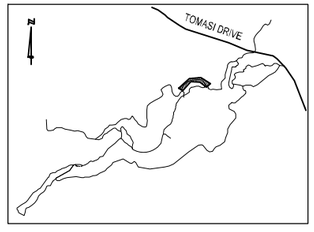


2 SITE PLAN SITES 34-38
1"=30'



1 PROFILE
H: 1"=30' V: 1" = 4'

SITE 34 - 38		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
26	Ea	Tree, Rem, 6 inch to 18 inch
71	Cyd	Embankment, CIP
912	Ft	Erosion Control, Silt Fence
548	Syd	Aggregate Base, 6 inch
399	Cyd	Material, Surplus and Unsuitable, Rem, LM
6420	Sft	_Timber Boardwalk
2	Ea	_ Removable Bollard
261	Syd	Slope Restoration, Type B



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DATE	09/24/2022
PROJ NUMBER	1035-19-003
ENGINEER	AR
PROJ MGR	MW
CADD	ADSM
COUNTY	HOUGHTON
MUNICIPALITY	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITES 34-38 - TRAIL REPAIRS
FEMA PROJECT NO. 632281

SHEET C-137

DRAWING PATH: P:\7000_7100\7035\185035_Hancock2019StormDamageDrawings\MO #4\Civil Plans_Const\MO4_CON.dwg Jun 24, 2022 - 11:43am

JOB BENCHMARK #220 YELLOW BENCH TIE IN 8" MAPLE ELEV 901.39
JOB BENCHMARK #223 YELLOW BENCH TIE IN DECIDUOUS TREE. ELEV 890.52
JOB BENCHMARK #2462 YELLOW BENCH TIE IN 5" MAPLE ELEV 864.16
TRAVERSE POINT #120 N 866908.70 E 25850113.86 ELEV 898.99
TRAVERSE POINT #121 N 866973.82 E 25850122.68 ELEV 899.49
TRAVERSE POINT #122 N 867104.66 E 25850045.77 ELEV 902.70
TRAVERSE POINT #123 N 866638.44 E 25849582.30 ELEV 891.82
TRAVERSE POINT #124 N 866523.16 E 25849659.45 ELEV 888.89
TRAVERSE POINT #125 N 866463.56 E 25849487.43 ELEV 886.52
TRAVERSE POINT #137 N 865874.40 E 25848887.37 ELEV 866.40
TRAVERSE POINT #138 N 865960.40 E 25848778.55 ELEV 865.58
TRAVERSE POINT #139 N 865911.50 E 25848703.76 ELEV 863.03

SITE 39 & 40 MITIGATION QUANTITIES

TOTAL	UNIT	DESCRIPTION
41	Cyd	Embankment, CIP
41	Cyd	Excavation, Earth
105	Ft	Erosion Control, Silt Fence
29	Syd	Riprap, Heavy
113	Syd	Slope Restoration, Type B

SITE 43 PRE-STORM QUANTITIES

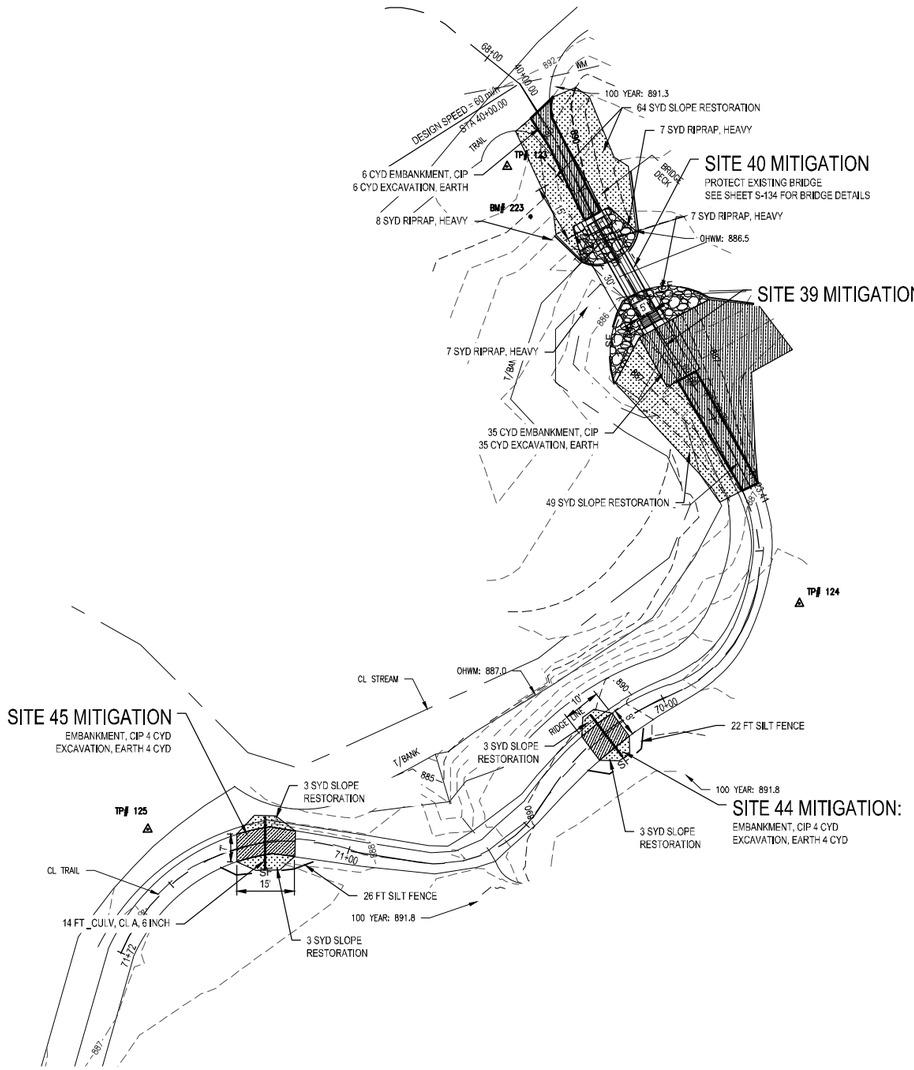
TOTAL	UNIT	DESCRIPTION
37	Syd	Riprap, Plain

SITE 44 MITIGATION QUANTITIES

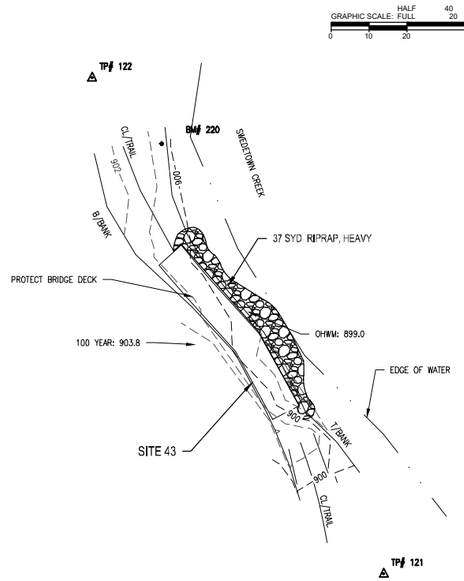
TOTAL	UNIT	DESCRIPTION
4	Cyd	Embankment, CIP
4	Cyd	Excavation, Earth
22	Ft	Erosion Control, Silt Fence
14	Ft	_Culv, Cl A, 6 inch
9	Syd	Slope Restoration, Type B

SITE 45 MITIGATION QUANTITIES

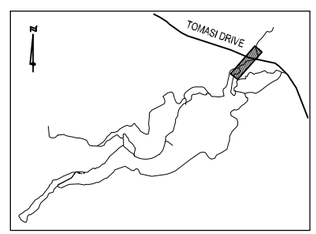
TOTAL	UNIT	DESCRIPTION
4	Cyd	Embankment, CIP
4	Cyd	Excavation, Earth
26	Ft	Erosion Control, Silt Fence
14	Ft	_Culv, Cl A, 6 inch
7	Syd	Slope Restoration, Type B



1 **SITE PLAN SITES 39,40,44,45**
1"=20'



2 **SITE PLAN SITE 43**
1"=20'



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DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
09/2022	7036-19-009	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIHTO TRAIL REPAIRS
SITES 39-40 & 43-45 - TRAIL REPAIRS
FEMA PROJECT NO. 62281

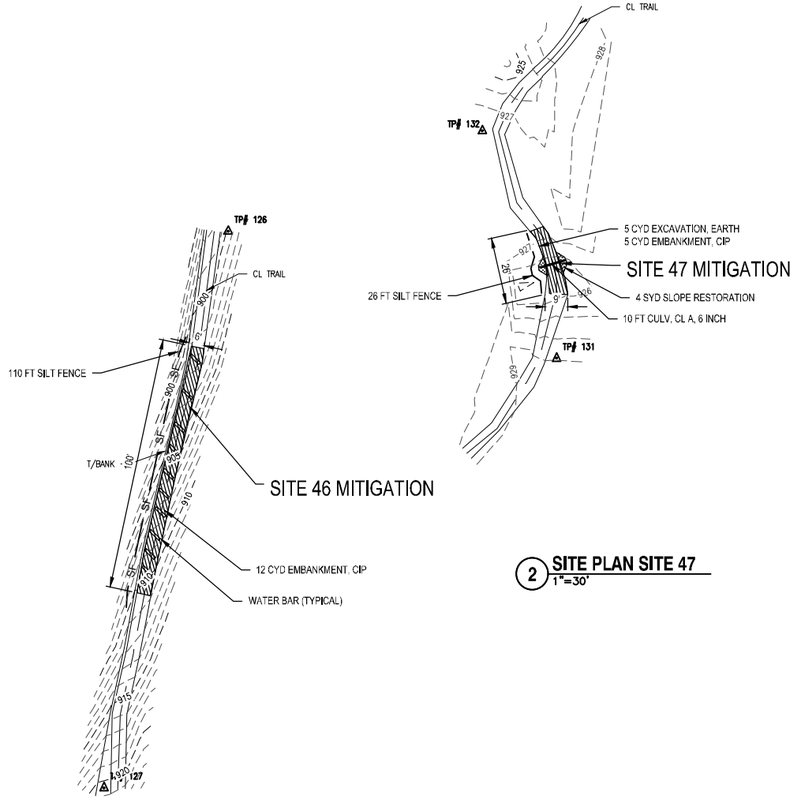
SHEET C-138

DRAWING PATH: P:\7036_7109\7036186030_Hancock2018StormDamage\Drawings\MO #4\CivilPlans_Const\MO4_CON.dwg Jun 24, 2022 - 11:13am

TRAVERSE POINT #126	
N 866217.66	
E 25849440.13	ELEV 900.07
TRAVERSE POINT #127	
N 865997.37	
E 25849391.01	ELEV 920.49
TRAVERSE POINT #131	
N 866167.40	
E 25849570.15	ELEV 929.05
TRAVERSE POINT #132	
N 866257.50	
E 25849540.75	ELEV 927.87
TRAVERSE POINT #133	
N 866374.35	
E 25849792.03	ELEV 931.74
TRAVERSE POINT #134	
N 866432.06	
E 25849856.25	ELEV 931.46
TRAVERSE POINT #135	
N 866484.00	
E 25850349.55	ELEV 944.48
TRAVERSE POINT #136	
N 866502.86	
E 25850401.38	ELEV 944.57

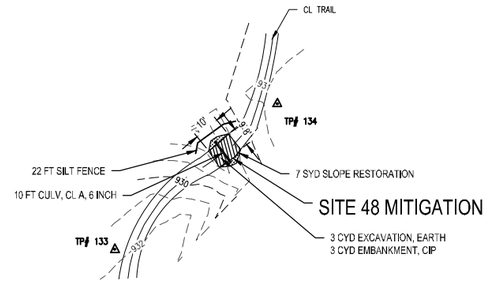
GRAPHIC SCALE: FULL 60 feet; HALF 30 feet
0 15 30 60 90

N

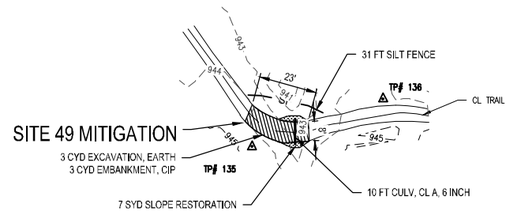


1 SITE PLAN SITE 46
1"=30'

2 SITE PLAN SITE 47
1"=30'



3 SITE PLAN SITE 48
1"=30'



4 SITE PLAN SITE 49
1"=30'

SITE 46 MITIGATION QUANTITIES

TOTAL	UNIT	DESCRIPTION
12	Cyd	Embankment, CIP
110	Ft	Erosion Control, Silt Fence
50	Ft	_Wood, 4 inch x 4 inch waterbar

SITE 47 MITIGATION QUANTITIES

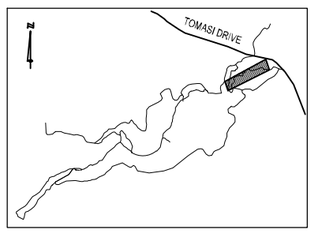
TOTAL	UNIT	DESCRIPTION
5	Cyd	Embankment, CIP
5	Cyd	Excavation, Earth
26	Ft	Erosion Control, Silt Fence
10	Ft	_Culv, Cl A, 6 inch
4	Syd	Slope Restoration, Type B

SITE 48 MITIGATION QUANTITIES

TOTAL	UNIT	DESCRIPTION
3	Cyd	Embankment, CIP
3	Cyd	Excavation, Earth
22	Ft	Erosion Control, Silt Fence
10	Ft	_Culv, Cl A, 6 inch
7	Syd	Slope Restoration, Type B

SITE 49 MITIGATION QUANTITIES

TOTAL	UNIT	DESCRIPTION
3	Cyd	Embankment, CIP
3	Cyd	Excavation, Earth
31	Ft	Erosion Control, Silt Fence
10	Ft	_Culv, Cl A, 6 inch
7	Syd	Slope Restoration, Type B



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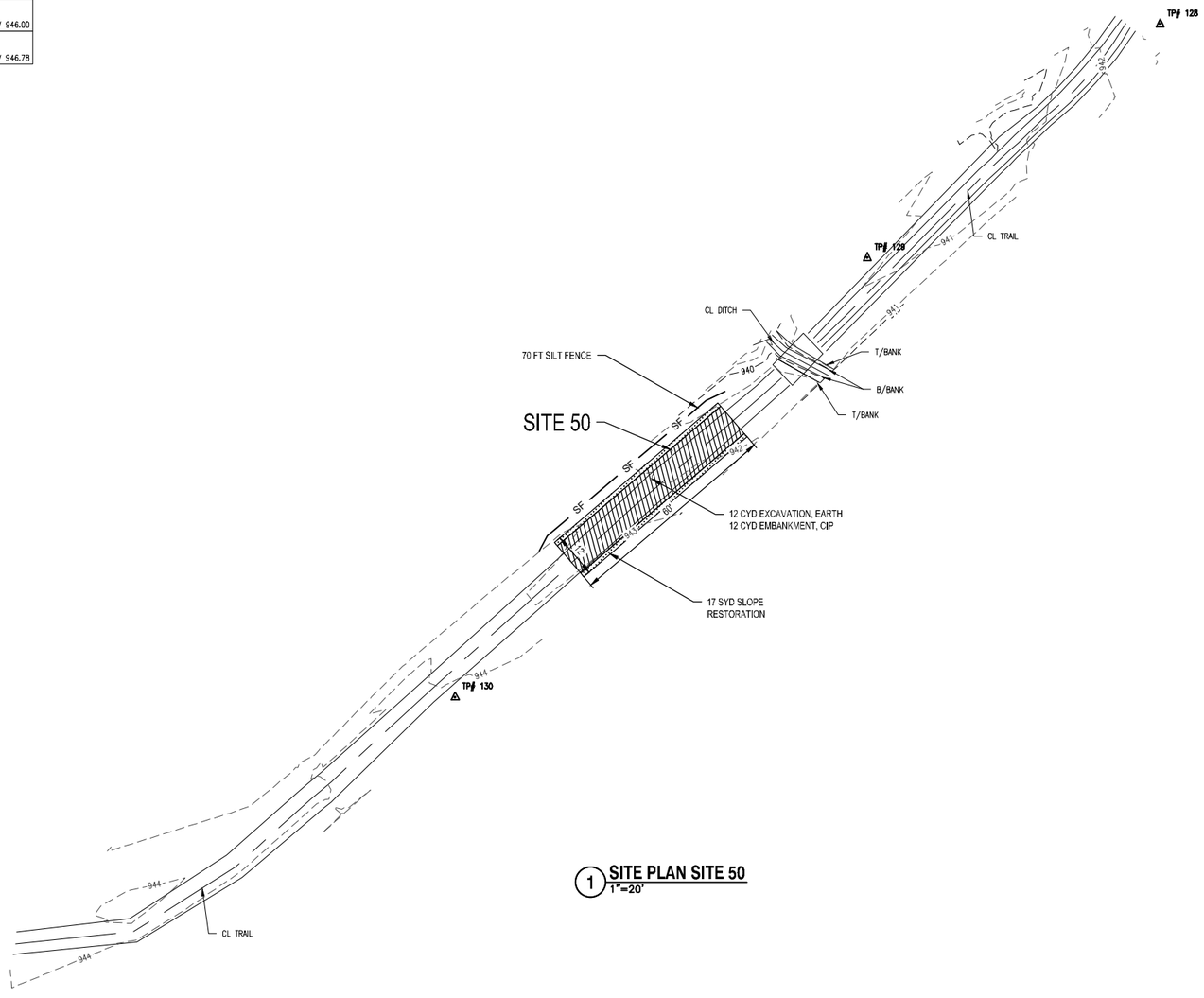
1036-19-009	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITES 46-49 - TRAIL REPAIRS
FEMA PROJECT NO. 632B1

SHEET C-139

DRAWING PATH: P:\7090_7100\7093180093_Hancock\2018StormDamageDrawings\MO #4\CivilPlans_ConstfMO4_CON.dwg Jun 24, 2022 - 11:44am

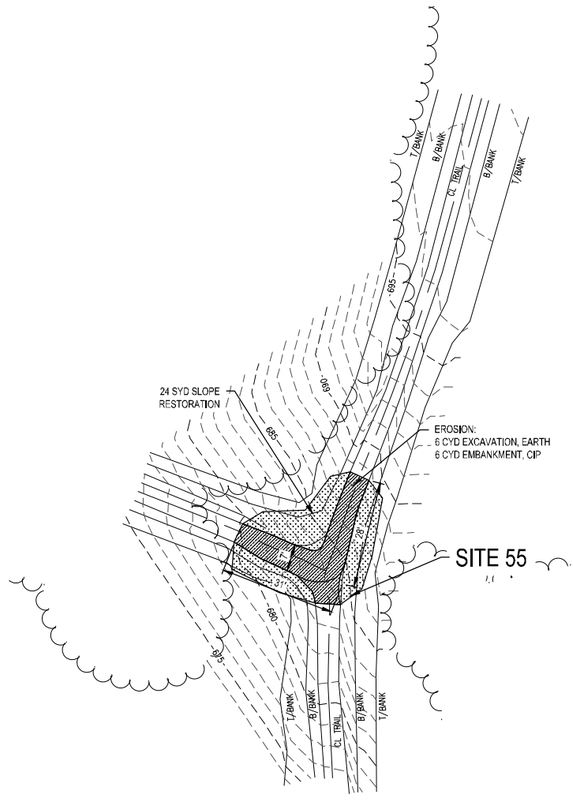
TRAVERSE POINT #128	
N 865768.40	
E 25849851.53	ELEV 943.29
TRAVERSE POINT #129	
N 865703.20	
E 25849769.79	ELEV 940.97
TRAVERSE POINT #130	
N 865580.63	
E 25849654.78	ELEV 943.93
TRAVERSE POINT #147	
N 865355.10	
E 25849435.93	ELEV 946.00
TRAVERSE POINT #148	
N 865329.12	
E 25849434.83	ELEV 946.78



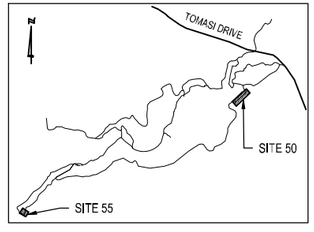
1 **SITE PLAN SITE 50**
1"=20'

SITE 50		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
12	Cyd	Embankment, CIP
12	Cyd	Excavation, Earth
70	Ft	Erosion Control, Silt Fence
17	Syd	Slope Restoration, Type B

SITE 55		PRE-STORM QUANTITIES
TOTAL	UNIT	DESCRIPTION
6	Cyd	Embankment, CIP
6	Cyd	Excavation, Earth
24	Syd	Slope Restoration, Type C



2 **SITE PLAN SITE 55**
1"=20'



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GRAPHIC SCALE: FULL 40 feet; HALF 20 feet
0 10 20 40 60

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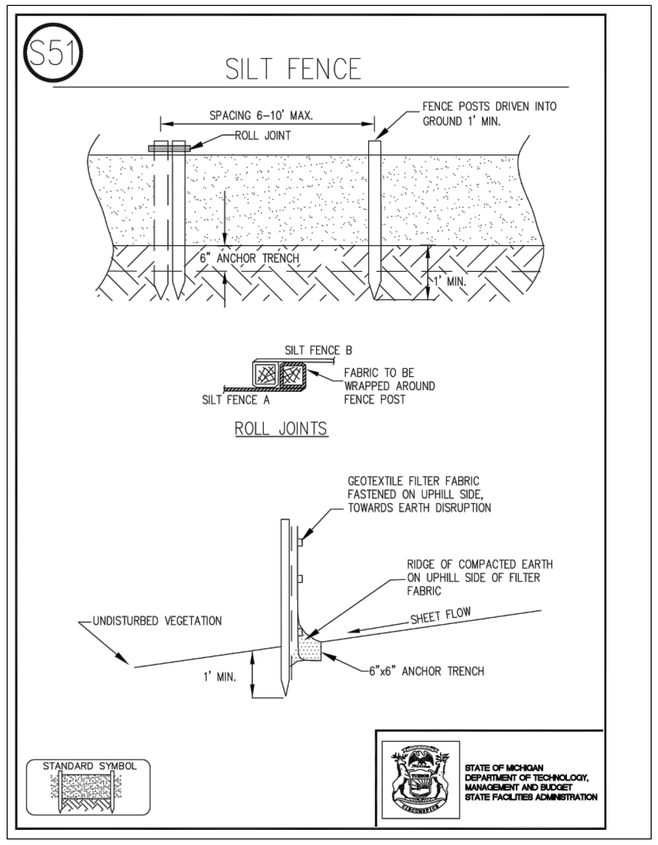
DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
09/26/2022	7030-15-0009	AR	MM	JD-SM	HOUGHTON	CITY OF HANCOCK

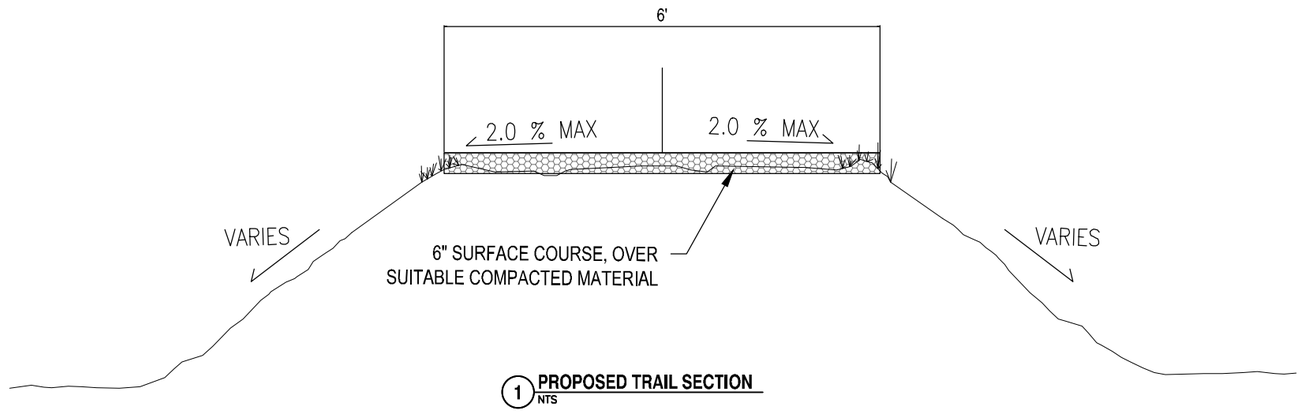
CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS

SITES 50 & 55 - TRAIL REPAIRS
FEMA PROJECT NO. 612121

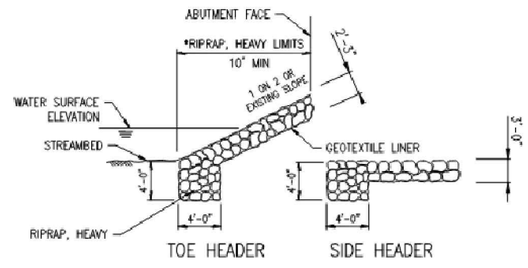
SHEET C-140



3 **SILT FENCE DETAIL**
NTS



1 **PROPOSED TRAIL SECTION**
NTS



RIPRAP HEADER DETAILS

TOP OF RIPRAP MUST BE AT OR BELOW EXISTING STREAMBED/ SLOPE ELEVATION.

AN APPROPRIATE METHOD OF WATER DIVERSION FOR PLACING RIPRAP SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. IF WATER IS SHALLOW (LESS THAN TWO FEET), TEMPORARY CONCRETE BARRIERS OR SANDBAGS MAY BE USED TO DIVERT FLOW.

THE RIPRAP SCHEME SHOWN IS A MINIMUM REQUIREMENT FOR SCOUR.

*RIPRAP LIMITS ARE APPROXIMATE. RIPRAP SHALL EXTEND FROM TOP OF BANK TO BOTTOM OF EXISTING CHANNEL AT A 1 ON 2 SLOPE.

2 **RIPRAP HEADER DETAILS**
NTS

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DATE 9/24/2022
PROJ NUMBER 1035-19-0030
ENGINEER AR
PROJ MGR MM
CADD JDSM
COUNTY HOUGHTON
MUNICIPALITY CITY OF HANCOCK

CITY OF HANCOCK
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TYPICAL DETAILS
FEMA PROJECT NO. 632811

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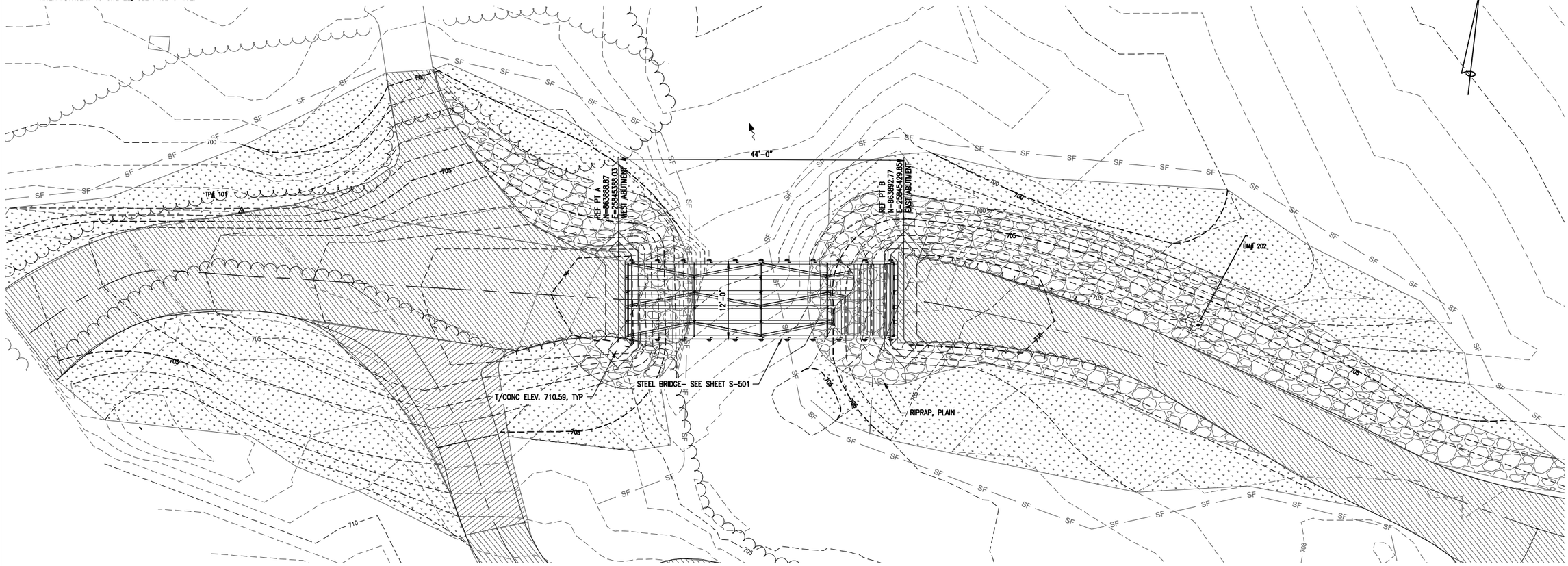
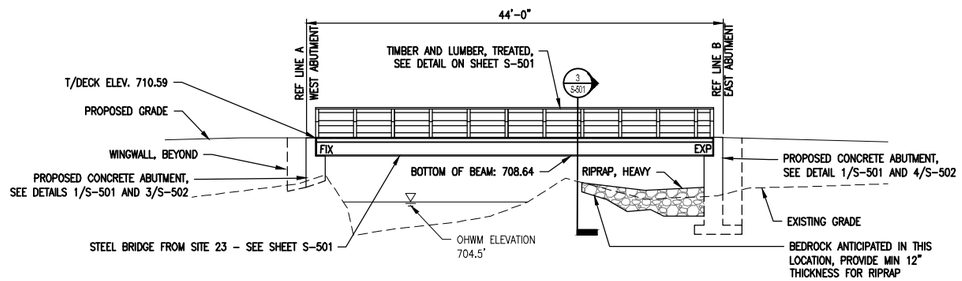
SHEET C-501

NOTES

1. THE SITE 19 BRIDGE IS EXISTING ALONG THE RIVER ADJACENT TO SITE 22, SEE PAGE C-132.



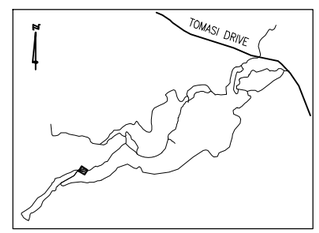
2 PLAN OF STRUCTURE SITE 19
1/8" = 1'-0"



1 STRUCTURE ELEVATION SITE 19
1/8" = 1'-0"

NOTES:
1. 100 YEAR FLOOD ELEVATION IS 709.30

SITE 19		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
41	Cyd	Material, Surplus and Unsuitable, Rem, LM
8	Cyd	Substructure Conc
1	LSUM	_Existing Structure, Remove, Salvage, and Re-install (Site 19)
1	TBF	Timber and Lumber, Treated, Furn and Place
1	LSUM	_Hardware, Misc (Site 19)



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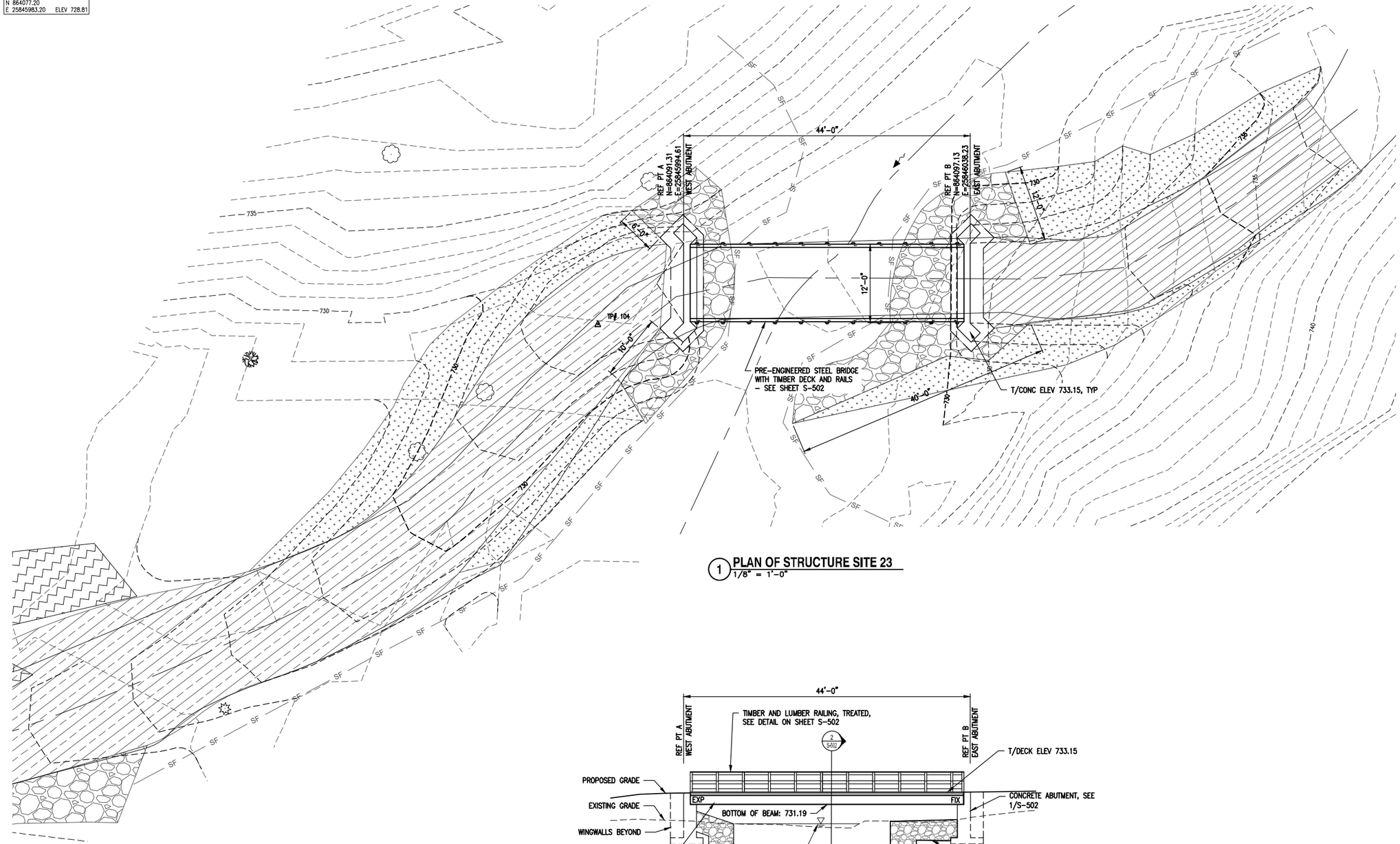
06/24/2022	7030-19-A-0201	AR	MM	JBW	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITE 19 - PLAN OF PROPOSED STRUCTURE
FEMA PROJECT NO. 63281

SHEET S-130

DRAWING PATH: P:\7000_7100\7030\80000_1\Hancock\2018StormDamage\Drawings\WO #4\Civil\Struct\Site 19.dwg Jun 24, 2022 - 11:48am

TRAVERSE POINT #104
N 864077.20
E 25845983.20 ELEV 728.81

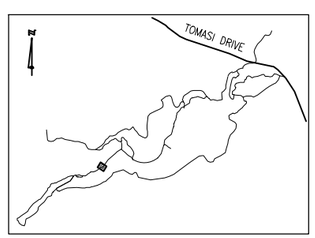


1 PLAN OF STRUCTURE SITE 23
1/8" = 1'-0"

2 STRUCTURE ELEVATION SITE 23
1/8" = 1'-0"

NOTE:
1: EXISTING BRIDGE WHICH WAS WASHED DOWNSTREAM NEAR SITE 22 WILL BE RELOCATED TO SITE 19
3: 100 YEAR FLOOD ELEVATION 733.30

SITE 23		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
10	Cyd	Substructure Conc
5.03	TBF	Timber and Lumber, Treated, Furn and Place
1	LSUM	_Hardware, Misc (Site 23)



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REASONS:
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DATE 06/24/2022
PROJ NUMBER 7100-18-1030
ENGR/SUPV MR
PROJ MGR MM
CADD JDSM
COUNTY HOUGHTON
MUNICIPALITY CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIHTO TRAIL REPAIRS
SITE 23 - PLAN OF PROPOSED STRUCTURE
FEMA PROJECT NO. 63281

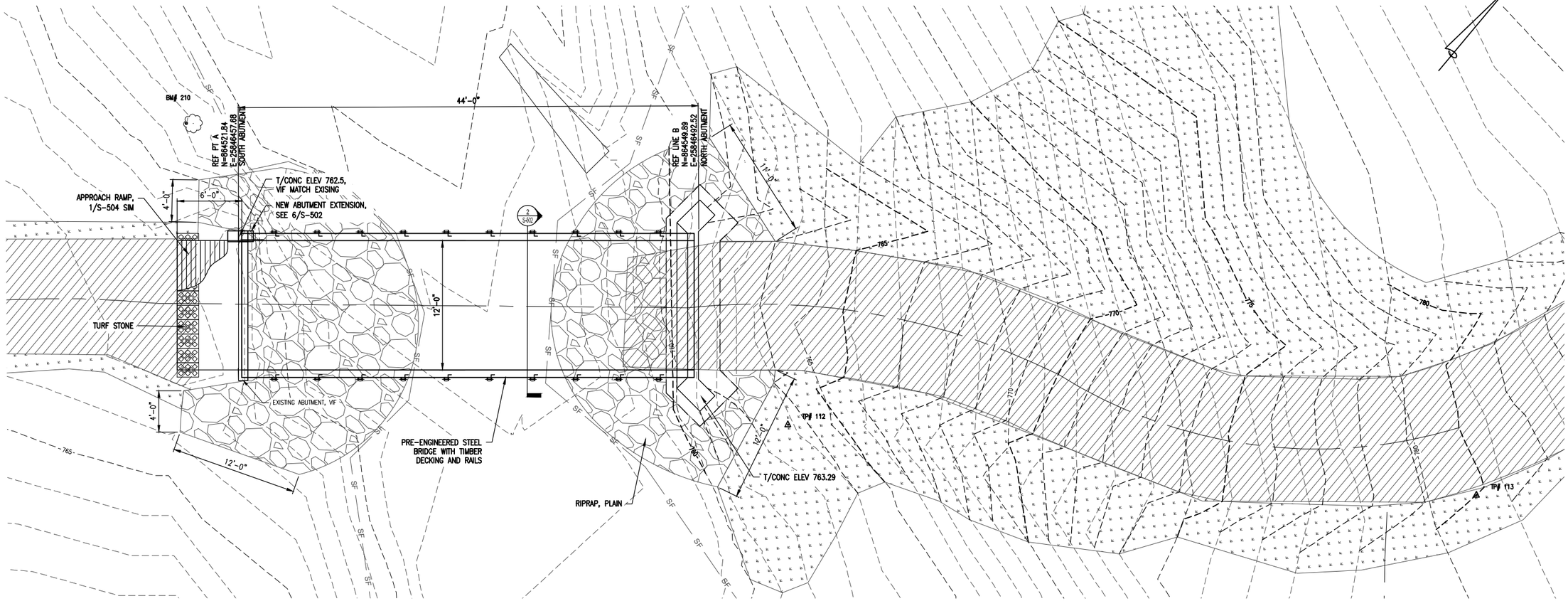
SHEET S-131

DRAWING PATH: P:\7000_7100\7100\7100180030_Hancock2018StormDamage\Drawings\WO #4\Civil\Struct\Site 23.dwg Jun 24, 2022 - 11:47am

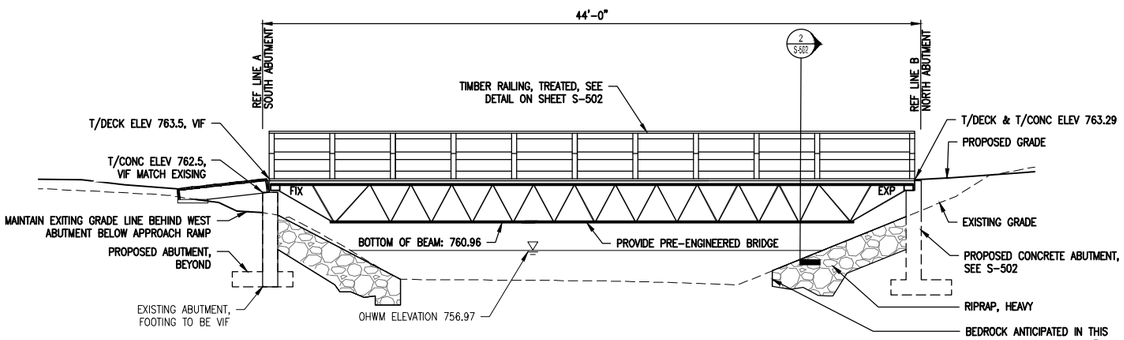
JOB BENCHMARK #210
DESCRIPTION
ELEV 759.42

TRAVERSE POINT #112
N 864540.85
E 25846508.31 ELEV 763.98

GRAPHIC SCALE: HALF FULL 10 feet
0 5 10 20 30



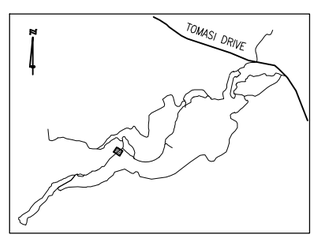
1 PLAN OF STRUCTURE SITE 24
1"=5'



2 STRUCTURE ELEVATION SITE 24
1"=5'

NOTES:
1: 100 YEAR FLOOD ELEVATION 761.55

SITE 24		MITIGATION QUANTITIES
TOTAL	UNIT	DESCRIPTION
5	Cyd	Substructure Conc
1	TBF	Timber and Lumber, Treated, Furn and Place
1	LSUM	_Hardware, Misc (Site 24)
1	LSUM	_Prefabricated Steel Pedestrian Bridge (Site 24)



KEY PLAN
NTS

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ISSUE:	---
REVISIONS:	

DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/14/2022	7100-18-1003	KR	VM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIHTO TRAIL REPAIRS
SITE 24 - PLAN OF PROPOSED STRUCTURE
FEMA PROJECT NO. 4328-1

SHEET S-132

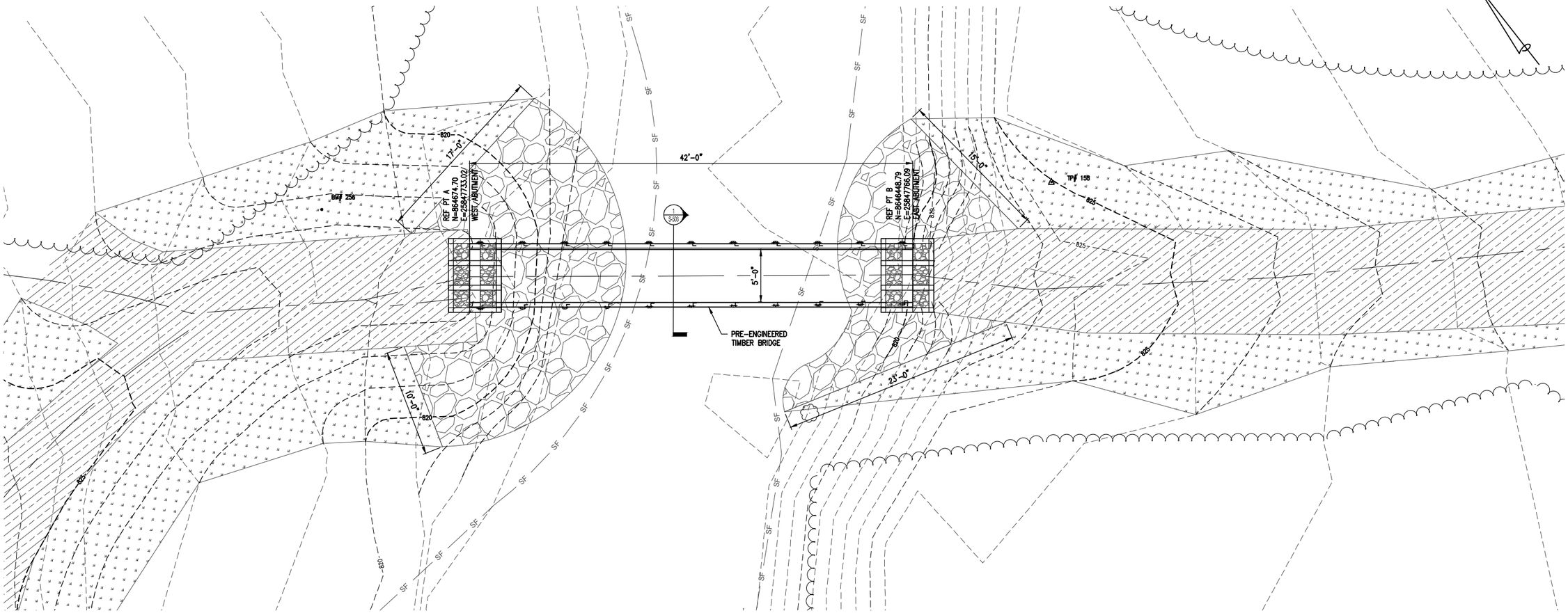
DRAWING PATH: P:\7100\7100\7103180303_Hancock\2018StormDamage\Drawings\WO #4\Civil\Struct\Site 24.dwg Jun 24, 2022 - 11:48am

JOB BENCHMARK #256
DESCRIPTION 16" MAPLE
ELEV 822.33

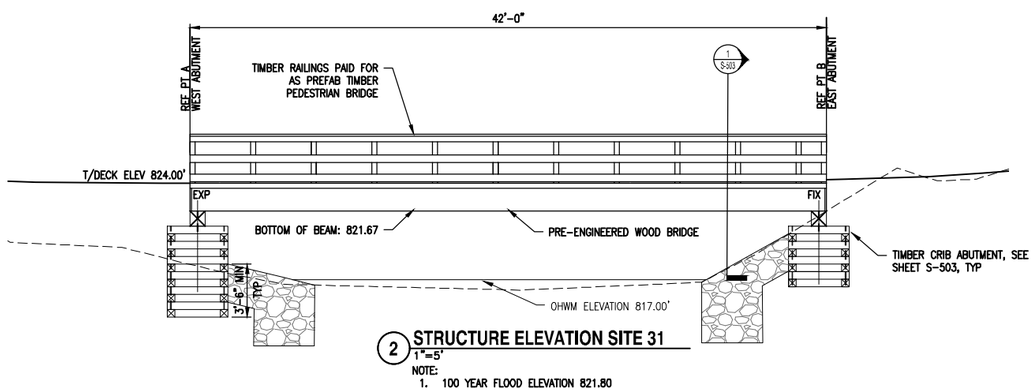
TRAVERSE POINT #158
N 864647.63
E 25847781.87 ELEV 825.48

GRAPHIC SCALE: HALF FULL 10 feet feet
0 2.5 5 10 15

N



1 PLAN OF STRUCTURE SITE 31
1"=5'

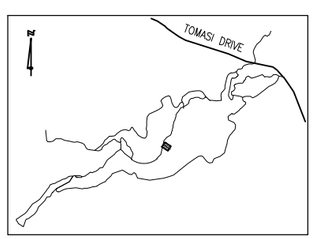


2 STRUCTURE ELEVATION SITE 31
1"=5'

NOTE:
1. 100 YEAR FLOOD ELEVATION 821.80

SITE 31 MITIGATION QUANTITIES

TOTAL	UNIT	DESCRIPTION
1	LSUM	_Hardware, Misc (Site 31)
1	LSUM	_Prefabricated Timber Pedestrian Bridge (Site 31)
1	LSUM	_Timber Cribbing (Site 31)



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ISSUE:	---
REVISIONS:	

DATE	PROJ NUMBER	ENGINEER	PROJ MGR	C/ADD	COUNTY	MUNICIPALITY
06/24/2022	7100-19-503	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITE 31 - PLAN OF PROPOSED STRUCTURE
FEMA PROJECT NO. 83281

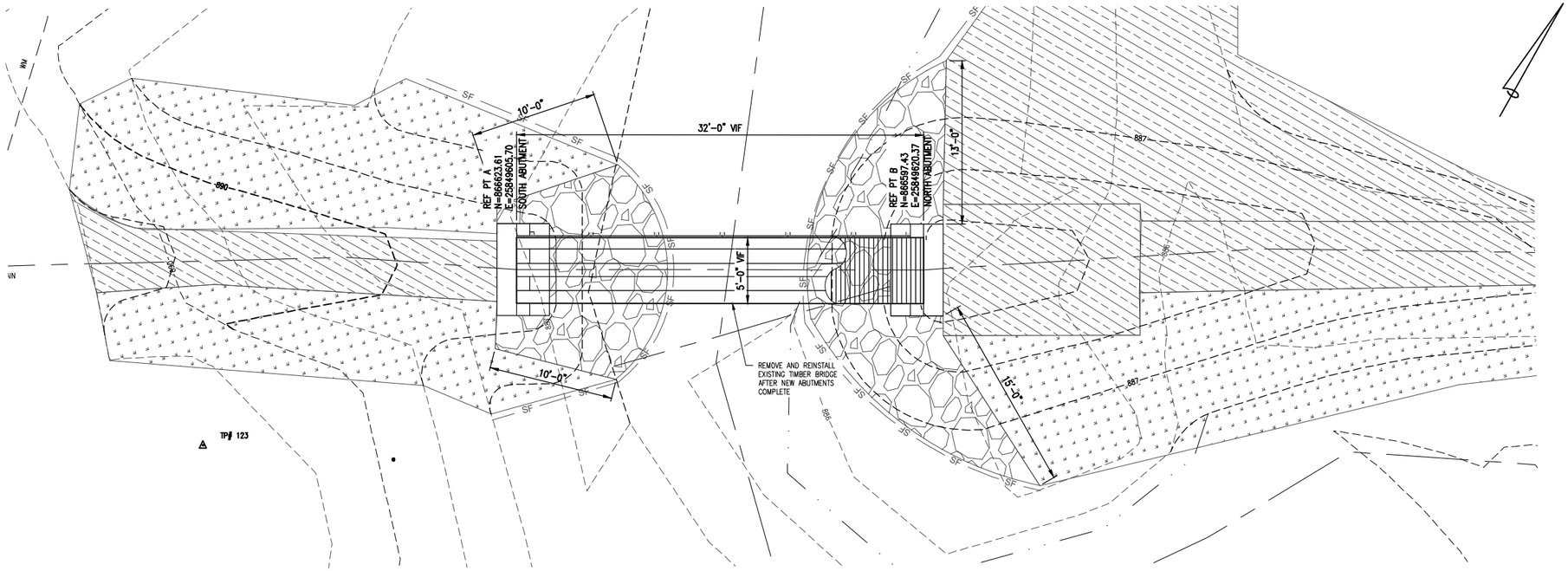
SHEET S-133

DRAWING PATH: P:\7100\7100703180303_Hancock\2018StormDamage\Drawings\WO #4\Civil\Short\Site 31.dwg Jun 24, 2022 - 11:53am

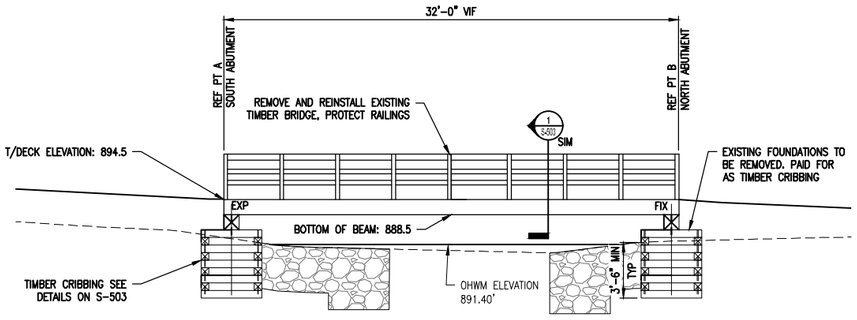
JOB BENCHMARK #223
DESCRIPTION YELLOW
ELEV 890.52

TRAVERSE POINT #123
N 866638.44
E 25849582.30 ELEV 891.82

HALF
GRAPHIC SCALE: FULL 10 feet
0 5 10 20 30



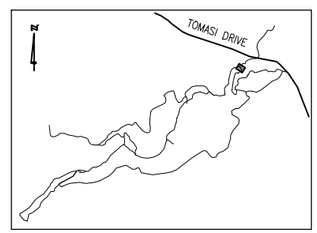
1 PLAN OF STRUCTURE SITE 40
1"=5'



2 STRUCTURE ELEVATION SITE 40
1"=5'

NOTES:
1. 100 YEAR FLOOD ELEVATION 891.40

SITE 40 TOTAL	UNIT	MITIGATION QUANTITIES DESCRIPTION
1	LSUM	_Existing Structure, Remove S
1	LSUM	Hardware, Misc.
1	LSUM	_Timber Cribbing (Site 40)



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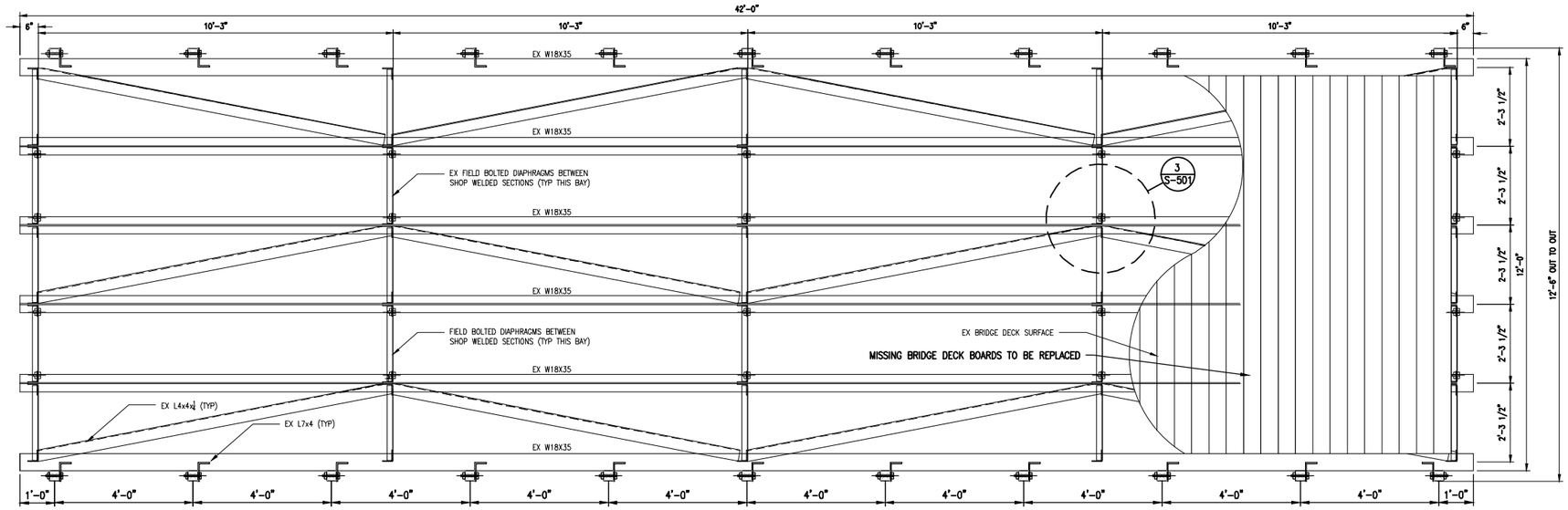
ISSUE ---
REVISIONS

DATE 06/24/2022
PROJ NUMBER 7030-19-000
ENG/ARCH AR
PROJ MGR MM
CADD JDS/M
COUNTY HOUGHTON
MUNICIPALITY CITY OF HANCOCK

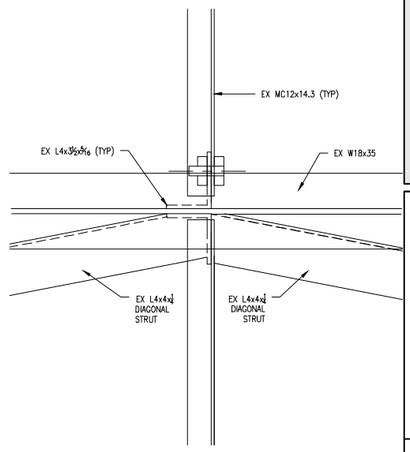
CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITE 40 - PLAN OF PROPOSED STRUCTURE
FEMA PROJECT NO. 83281

SHEET S-134

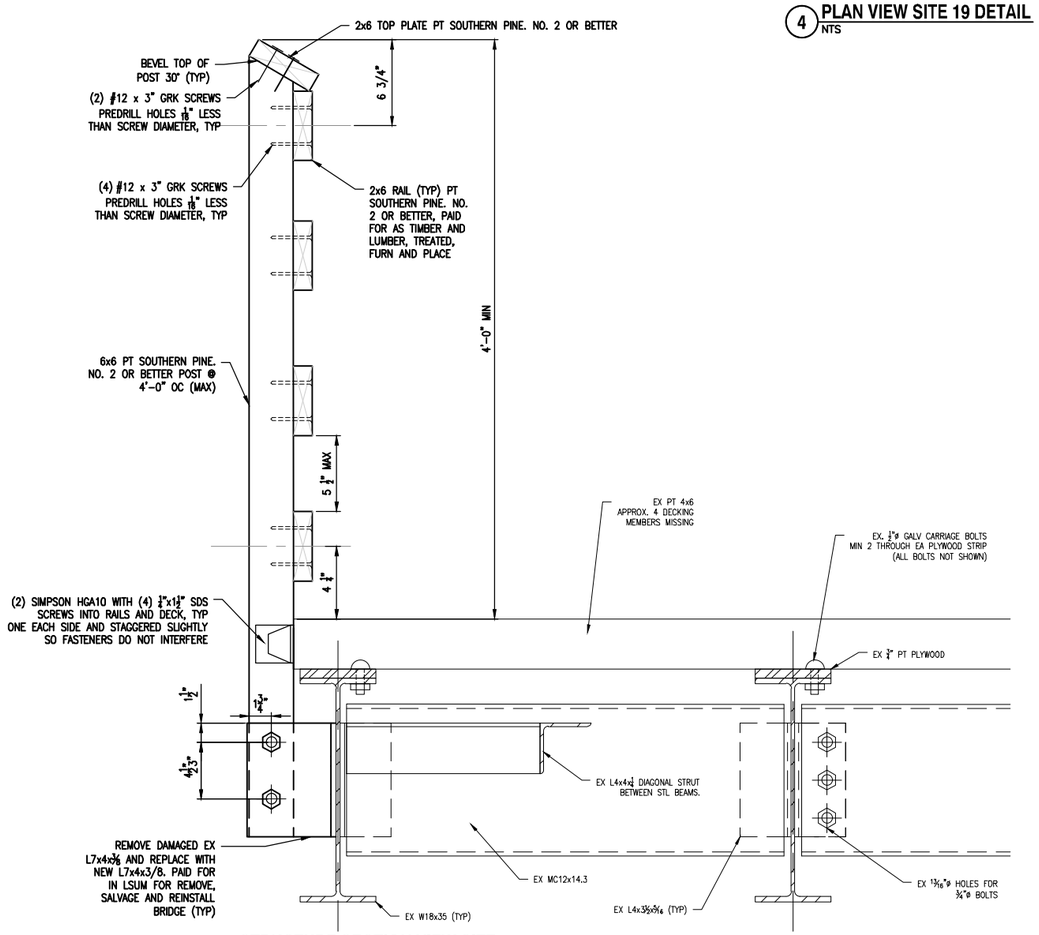
DRAWING PATH: P:\7000_7120\7030180030_Hancock2018Storm\Damage\Drawings\WO #4\Civil\Struct\Site 40.dwg Jun 24, 2022 - 11:51am



4 PLAN VIEW SITE 19 DETAIL
NTS

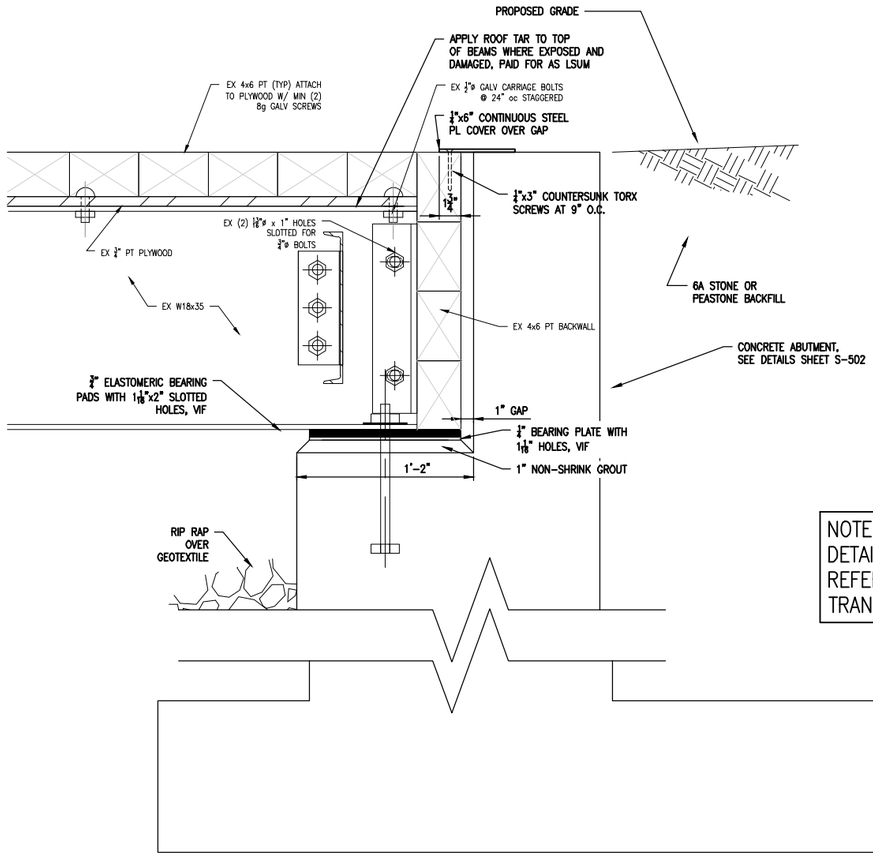


3 BRACING SITE 19 DETAIL
NTS



2 STRUCTURE SECTION VIEW SITE 19
NTS

NOTE: NEW RAILING PAID FOR AS TIMBER AND LUMBER, TREATED FURN AND PLACE. SEE S-130



1 TYPICAL BEARING & BRIDGE END DETAIL
NTS

NOTE:
DETAILS THIS SHEET PROVIDED FOR REFERENCE DURING BRIDGE TRANSPORTATION AND RE-INSTALLATION

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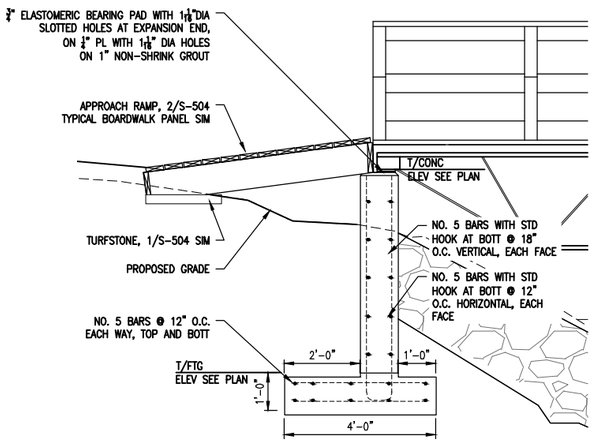
ISSUE	REVISIONS

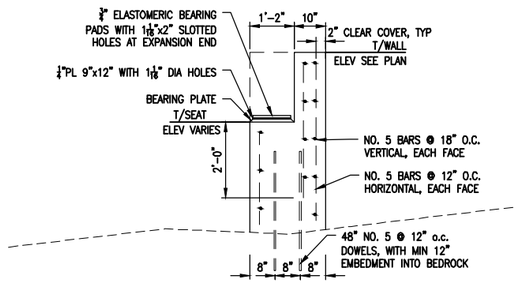
DATE	PROJ NUMBER	ENGR/ARCH	PROJ MGR	CAD	COUNTY	MUNICIPALITY
06/24/2022	7030-18-0030	AR	MM	JDRM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITE 19 - BRIDGE DECONSTRUCTION DETAILS
FEMA PROJECT NO. 632281

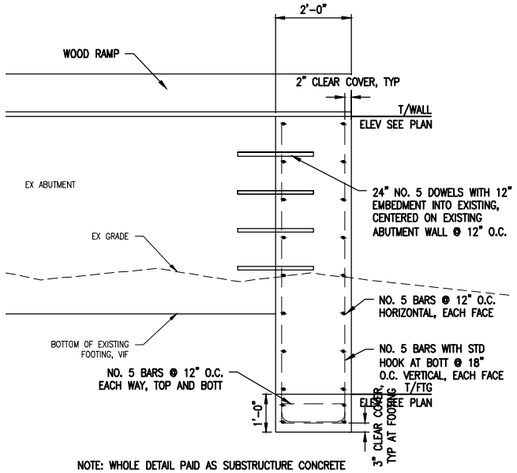
SHEET S-501



5 TYPICAL ABUTMENT SOUTH SIDE SITE 24
1/2"=1'-0"

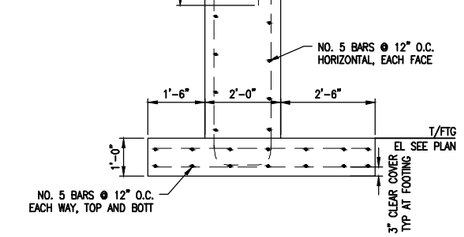


3 FOUNDATION SECTION AT BEDROCK SITE 19 AND 23
1/2"=1'-0"

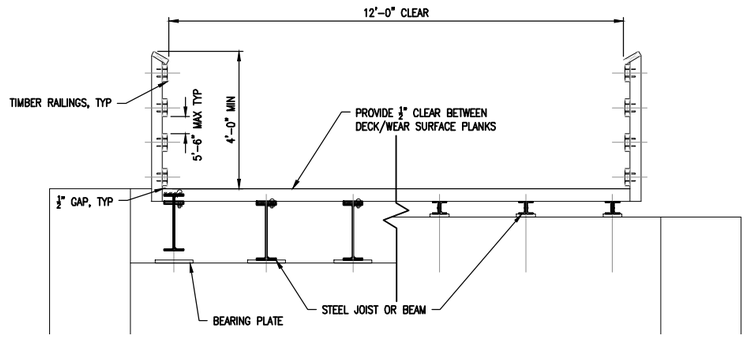


NOTE: WHOLE DETAIL PAID AS SUBSTRUCTURE CONCRETE

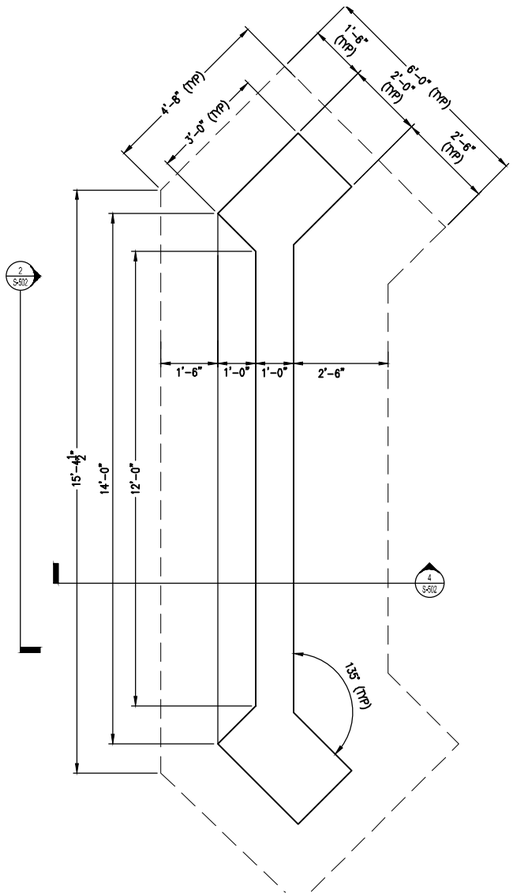
6 EXISTING ABUTMENT REPAIR SITE 24
1/2"=1'-0"



4 TYPICAL FOUNDATION SECTION SITE 19 AND 23
1/2"=1'-0"



2 SKI TRAIL BRIDGE DIMENSIONAL REQUIREMENTS
1/2"=1'-0"



1 TYPICAL CONCRETE ABUTMENT
1/2"=1'-0"

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ISSUE	REASONS
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DATE	PROJ.NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	7030-15-033	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITE 19, 23, & 24 - DETAILS
FEMA PROJECT NO. 63281

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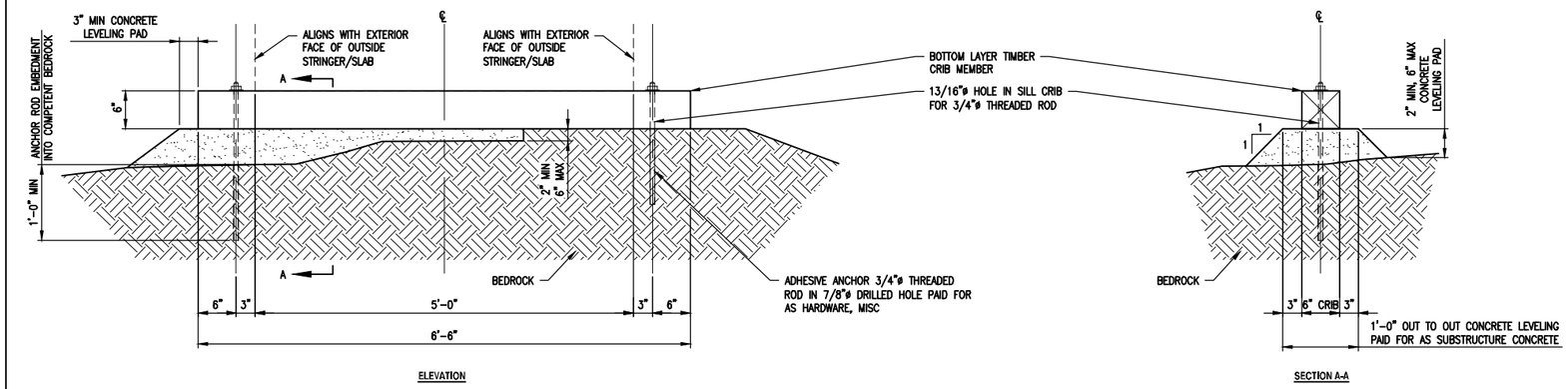
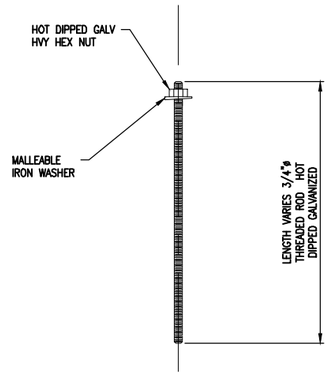
SHEET S-502



ELEVATION

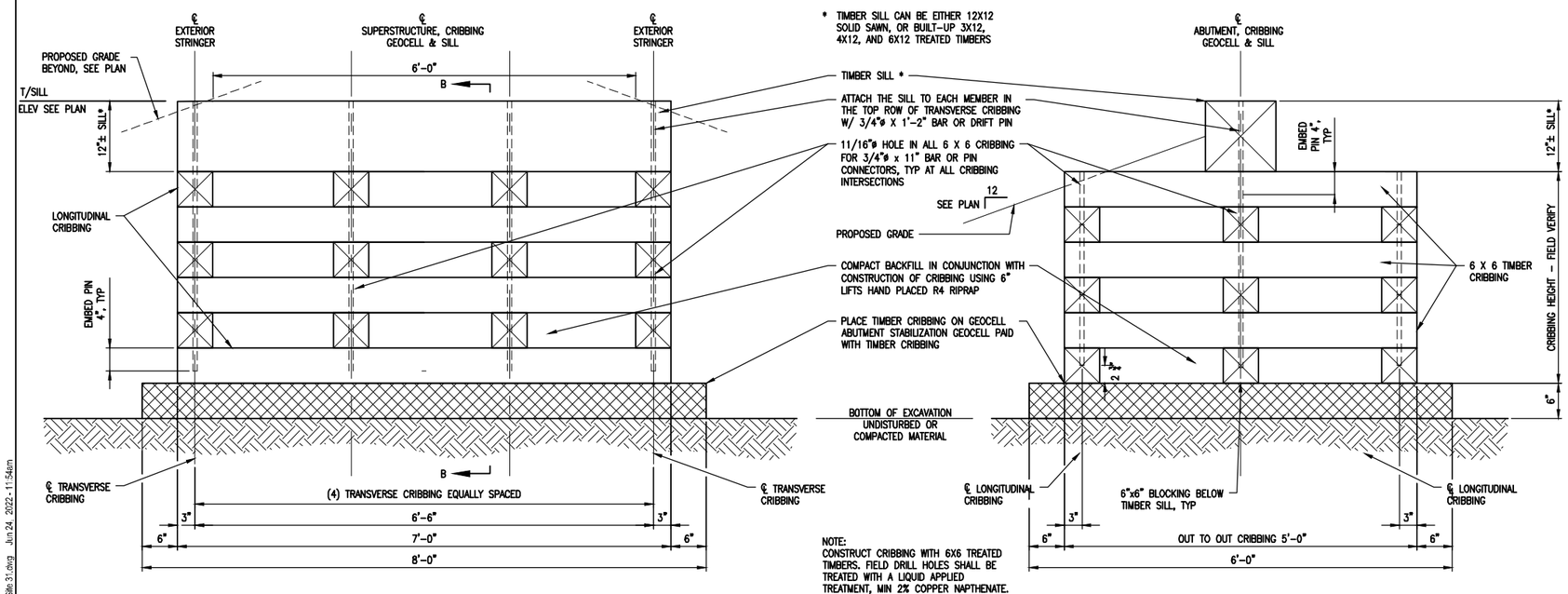
SECTION A-A

4 CONCRETE LEVELING PAD AT BEDROCK FOUNDATION
1"=1'-0"



ELEVATION

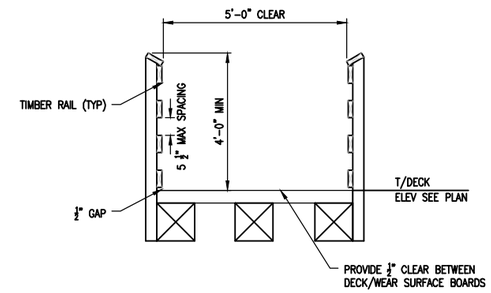
3 ANCHOR ROD DETAIL
NTS



ELEVATION

SECTION B-B

2 TIMBER CRIBBING W/ GEOCELL FOUNDATION
1"=1' - 0"



1 TRAIL BIKE BRIDGE DIMENSIONAL REQUIREMENTS SITE 31
1/2" = 1'-0"

NOTE: EXISTING BRIDGE AT SITE 40 IS SIMILAR

FOUNDATION NOTES:

CRIBBING DETAILS HAVE BEEN MODIFIED FROM THE US FOREST SERVICE "ABUTMENT EXAMPLE – CONCRETE LEVELING PAD/TIMBER CRIBBING TRAIL BRIDGE DESIGN AID" DATED 03/03/2004.

GEOCELL ABUTMENT STABILIZATION: REFER TO THE TIMBER CRIBBING SPECIAL PROVISION SPECIFICATIONS FOR A DESCRIPTION OF THE WORK, MATERIALS, AND INSTALLATION PROCEDURES.

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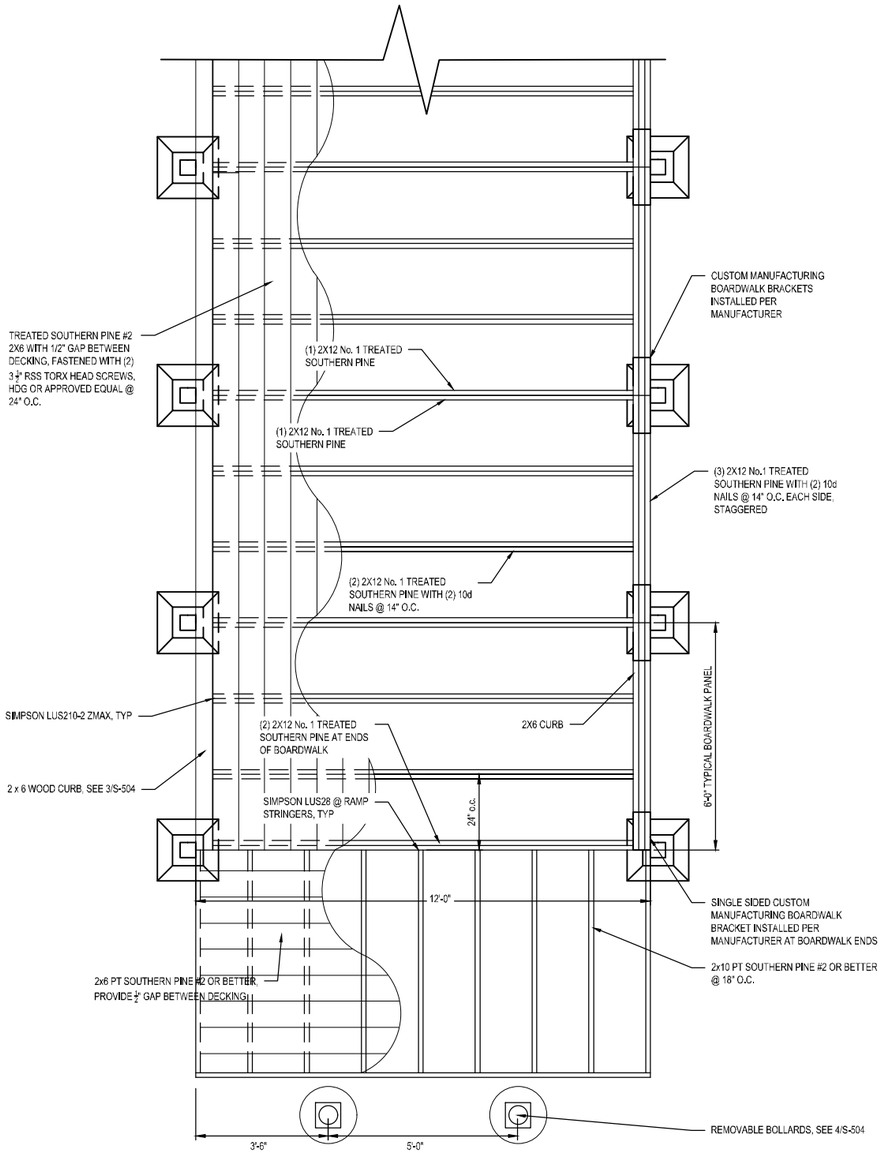
ISSUE	REMARKS

DATE	PROJ NUMBER	ENGR/RSI	PROJ MGR	CADD	COUNTY	MUNICIPALITY
06/24/2022	7030-18-0030	AR	MM	JDSM	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
TIMBER CRIBBING & SITE 31 - DETAILS
FEMA PROJECT NO. 83281

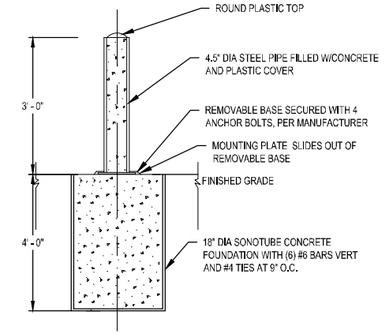
SHEET S-503

DRAWING PATH: P:\7000_7100\7030180030_Hancock2018StormDamage\Drawings\WO #4\Civil\Struct\Site 31.dwg Jun 24, 2022 - 11:54am

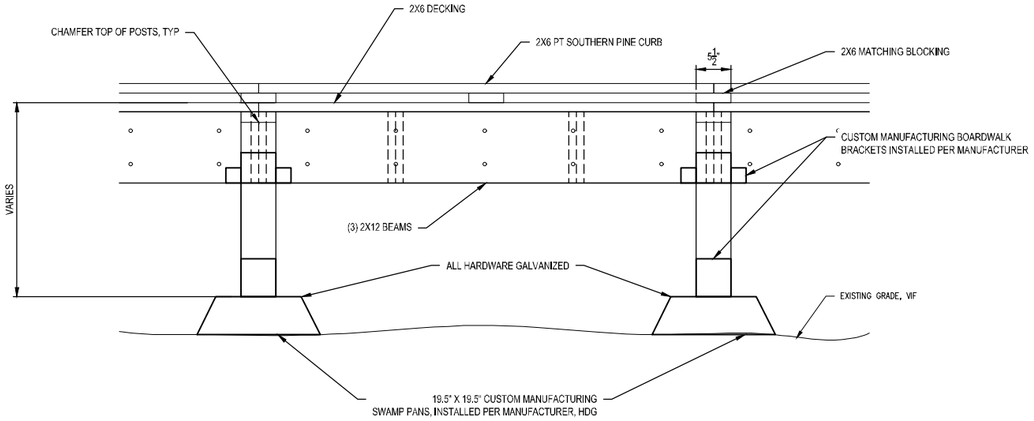


2 TYPICAL BOARDWALK SECTION
1"=1' – 0"

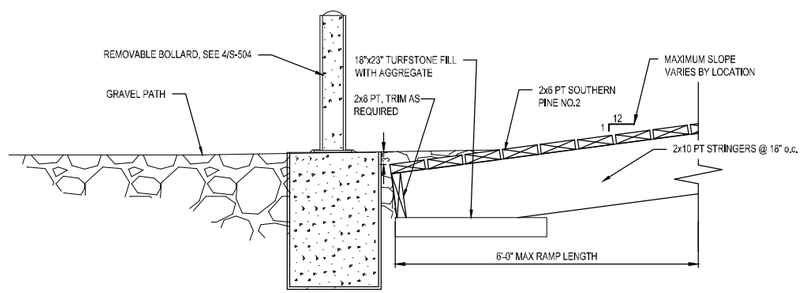
NOTES:
1. SEE SHEET C-137 FOR BOARDWALK QUANTITIES
2. BOARDWALK DESIGNED TO BE INSTALLED IN PANELS. CONTRACTOR TO MINIMIZE ALL IMPACT TO VEGETATION AND SOIL DISTURBANCE OUTSIDE OF THE IMMEDIATE PATH OF THE BOARDWALK.



4 REMOVABLE BOLLARD
NOT TO SCALE



3 BOARDWALK ELEVATION VIEW
NTS



1 END OF BOARDWALK DETAIL
NTS

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06/2/2022	7030-19-003	AR	MM	JDS/M	HOUGHTON	CITY OF HANCOCK

CITY OF HANCOCK
MAASTO HIIHTO TRAIL REPAIRS
SITES 35 & 37 - BOARDWALK DETAILS
FEMA PROJECT NO. 83281

SHEET S-504

DRAWING PATH: P:\7030_7100\7030180030_Hancock\2018StormDamage\Drawings\WO #\Civil\Struct\Sht 37.dwg Jun 24, 2022 - 11:55am