NORTHAMPTON, HADLEY, & AMHERST
NORWOTTUCK RAIL TRAIL

DATE	ISSUE PROJECT	SHEET NO.	TOTAL SHEETS
100	•	1	47
PROJECT FILE NO.			

TITLE SHEET & INDEX

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

Attachment 3

PLAN AND PROFILE OF

NORWOTTUCK RAIL TRAIL REHABILITATION

IN THE CITY/TOWNS OF

NORTHAMPTON, HADLEY, & AMHERST

HAMPSHIRE COUNTY

FEDERAL AID PROJECT NO.

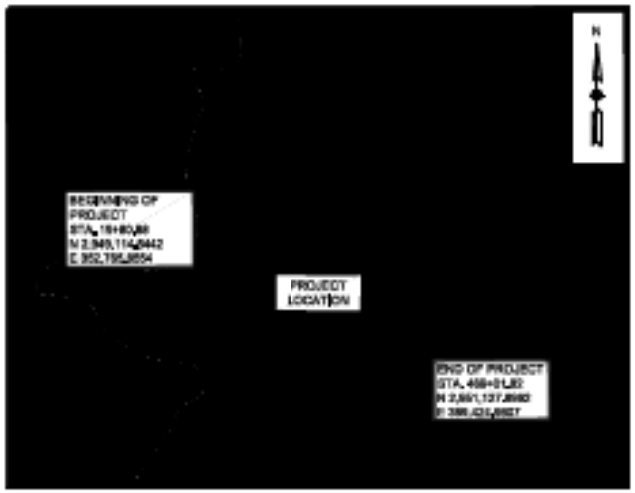
THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED FEBRUARY 22, 2016, THE 2013 CONSTRUCTION STANDARD DETAILS, THE 1988 CONSTRUCTION AND TRAFFIC STANDARD DETAILS (AS RELATED TO TRAFFIC STANDARD DETAILS ONLY), THE 2016 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1988 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1988 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET / INDEX
2	TYPICAL SECTIONS
3-10	CONSTRUCTION PLANS
11	MAIN ROAD/PARKING LOT PLAN
12	BOARDWALK PROFILE
13	MAIN ROAD/ROAD CONNECTOR PROFILE
14	ROUTE 116 ACCESS RAMP PROFILE
15	CONSTRUCTION STAGING PLAN
15A-15D	TRAFFIC MANAGEMENT PLANS
16	TYPICAL ROADWAY CROSSING DETAILS
17	TYPICAL TURNAROUND/LANDING
18-19	BRIDGE ALTERATION PLANS
20-22	BOARDWALK CROSS-SECTIONS
23	MAIN ROAD/ROAD CONNECTOR CROSS-SECTIONS
24	ROUTE 116 ACCESS RAMP CROSS-SECTIONS

CONVENTIONAL SIGNS

COUNTY, CITY, OR TOWN BOUNDARY
COUNTY, CITY, OR TOWN SIDE LINE
FENCE LINE
BASE LINE OR SURVEY LINE — SOUTH BOUND
RIGHT OF WAY LINE
CULVERT
RETAINING WALL
GUARD RAIL
STONE WALL
TREE LINE
POLE
ELEVATIONS — PROPOSED SURFACE, PRESENT SURFACE, PRESENT SURFACE, PROPOSED SURFACE



0 4000 10000 20000
BAR SCALE (FEET)

LENGTH OF PROJECT = 44,800.34 FEET = 8.509 MILES

DESIGN DESIGNATION (NORWOTTUCK RAIL TRAIL)

DESIGN SPEED	20 MPH
ADT (2008)	NA
ADT (2028)	NA
K	NA
D	NA
T (PEAK HOUR)	NA
T (AVERAGE DAY)	NA
DHV	NA
DDHV	NA
FUNCTIONAL CLASSIFICATION	NA

DATE	DESCRIPTION	REV#
MAY 2012	25% SUBMISSION	

PREPARED BY
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
NORTHAMPTON, MA

massDOT

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

DIVISION ADMINISTRATOR DATE

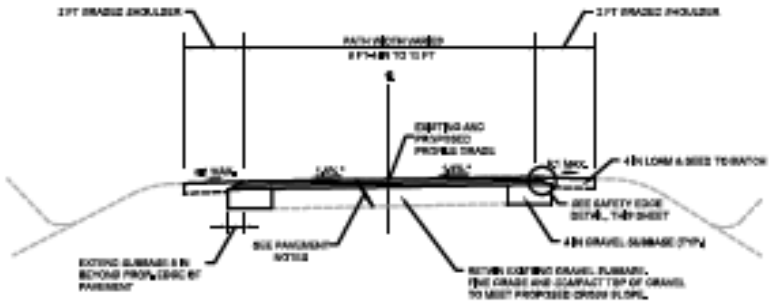
APPROVED

HIGHWAY ADMINISTRATOR DATE

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
BASE	[illegible]	3	[illegible]
PROJECT FILE NO.	[illegible]		

TYPICAL SECTIONS

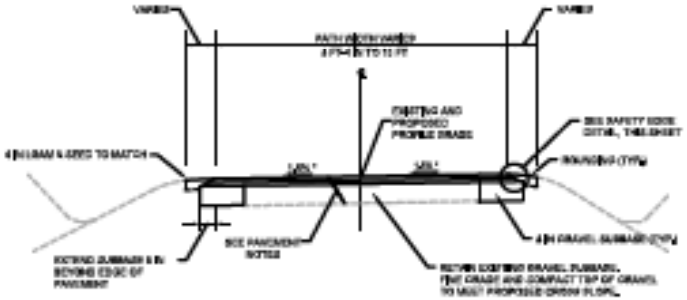


* +/- 1.0% FOR CONSTRUCTION TOLERANCE

PATH CROSS SLOPE IS DRAWN PITCHING TO THE LEFT SIDE. SEE TABLE FOR ACTUAL DIRECTION OF CROSS SLOPE.

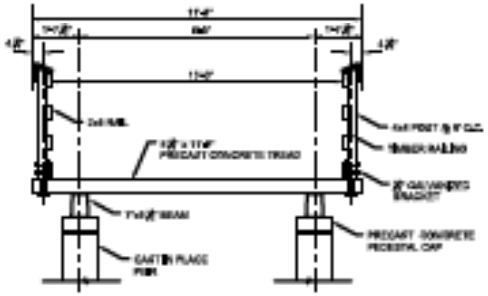
RAIL TRAIL TYPICAL SECTION

PREFERRED SHOULDER WIDTH



RAIL TRAIL TYPICAL SECTION

REDUCED SHOULDER WIDTH IN CRITICAL AREAS



PRECAST CONCRETE BOARDWALK TYPICAL SECTION

SCALE: 3/8" = 1'-0"

PAVEMENT NOTES

PROPOSED RAIL TRAIL PAVEMENT

REMOVE EXISTING PATH PAVEMENT

SIDE PATH SURFACE: 1 1/4 INCH HMA SURFACE COURSE (STATE TOP)
1 1/4 INCH HMA INTERMEDIATE COURSE (BINDER)

SUBBASE: RETAIN EXISTING GRAVEL SUBBASE.
8" GRAVEL BORROW (TYPE C) FOR SUBBASE IN WIDENING AREAS

PROPOSED PULL-OFF AREAS

SURFACE: 1 1/4 INCH HMA SURFACE COURSE (STATE TOP)
1 1/4 INCH HMA INTERMEDIATE COURSE (BINDER)

SUBBASE: 8" GRAVEL BORROW (TYPE C)

PROPOSED PARKING LOTS

SURFACE: 1 1/2 INCH HMA SURFACE COURSE (STATE TOP)
2 INCH HMA INTERMEDIATE COURSE (BINDER)

SUBBASE: 8" GRAVEL BORROW (TYPE C)

SUGGESTED PATH CONSTRUCTION SEQUENCE

1. REMOVE EXISTING PATH PAVEMENT.
2. EXCAVATE FOR PROPOSED PAVEMENT WIDENING WHERE APPLICABLE.
3. PLACE AND COMPACT GRAVEL BORROW FOR WIDENED SUBBASE AREAS.
4. GRADE AND COMPACT TOP OF EXISTING AND/OR WIDENED SUBBASE TO MEET PROPOSED 1.0% CROSS SLOPE.
5. PLACE HOT MIX ASPHALT PAVEMENT IN TWO LIFTS.

1.0% TO LEFT	1.0% TO RIGHT
[illegible]	[illegible]

PATH CROSS SLOPE DIRECTION

PAVEMENT SAFETY EDGE DETAIL

NOT TO SCALE

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERATIONS

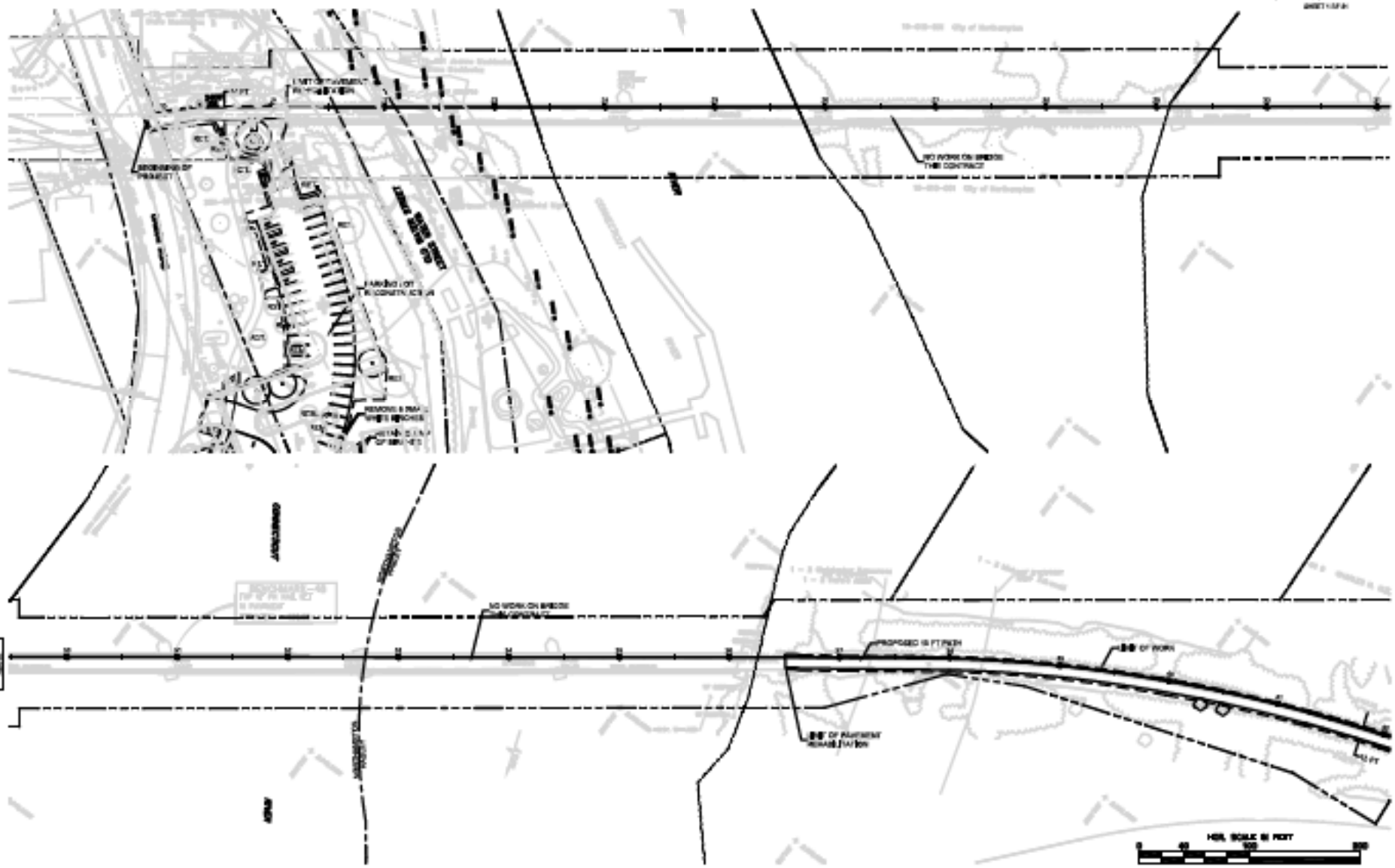
WATER SUPPLY ALTERATIONS

TRAFFIC SIGNAL CONDUIT

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

BASE	-	3	47
PROJECT FILE NO.			

CONSTRUCTION PLANS



NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

CONSTRUCTION PLANS

HIGHWAY GUARD

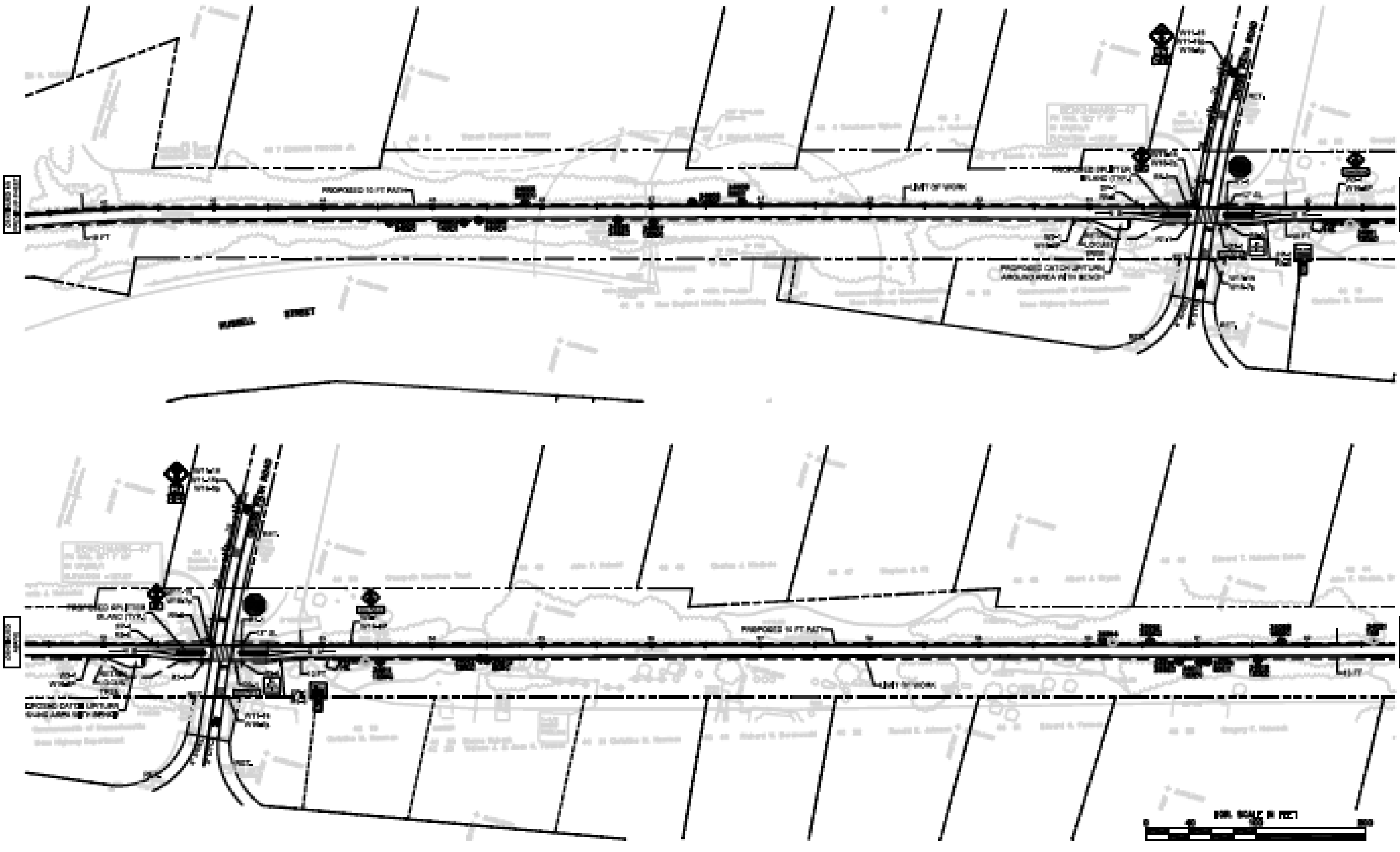
DRAINAGE DETAILS

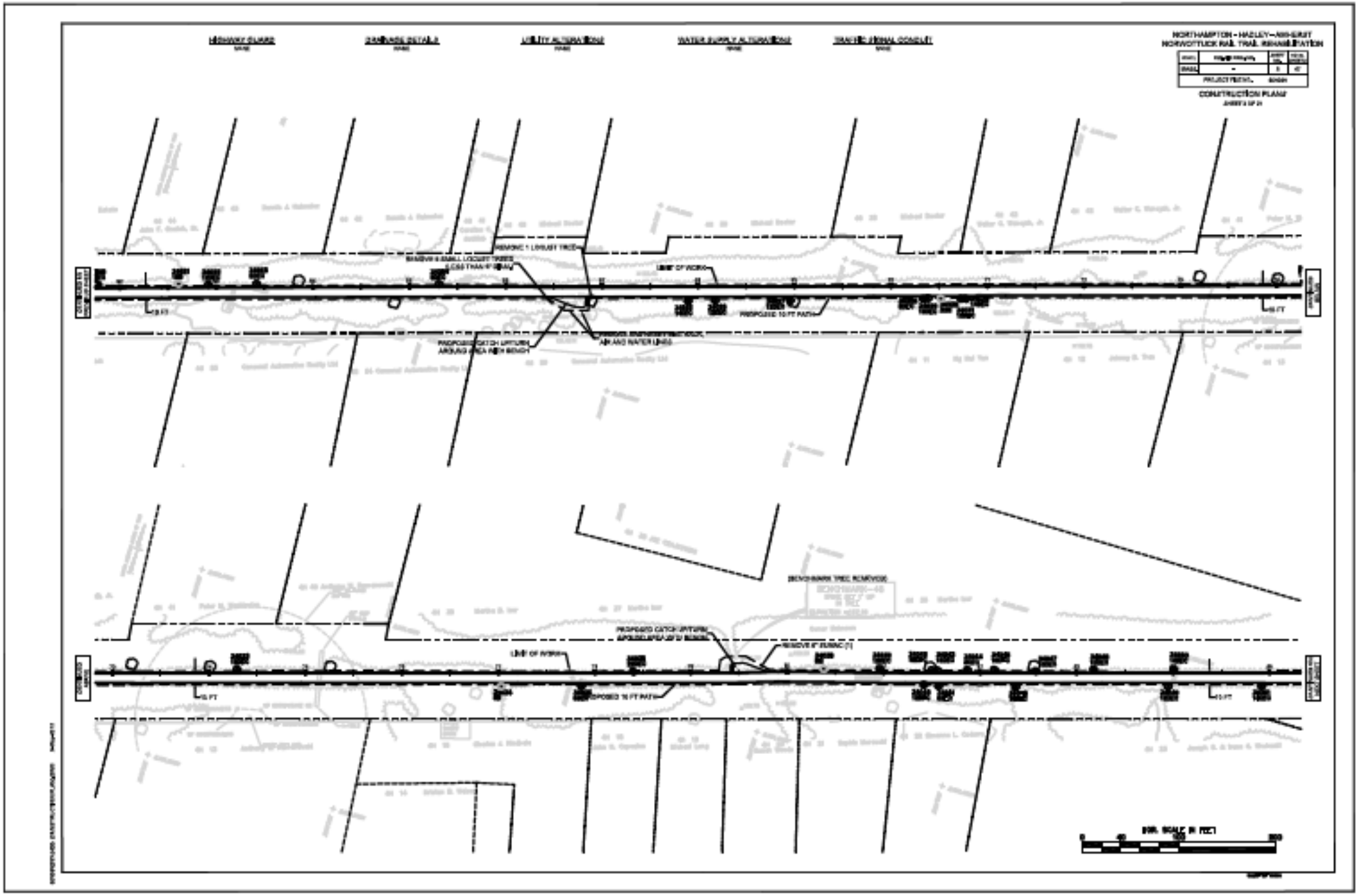
UTILITY ALTERATIONS

WATER SUPPLY ALTERATIONS

TRAFFIC SIGNAL CONDUIT

NOTE: REMOVE EXISTING PAVEMENT TEXT & ARROWS
AND EXISTING SIGNS UNLESS OTHERWISE NOTED.




HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
REMOVE 1 LOCUST TREE
LIMIT OF WORK
PROPOSED 10 FT PATH
AIR AND WATER LINES
PROPOSED CATCH UPTURN AROUND AREA WITH BENCH
BENCHMARK TREE REMOVED
REMOVE 8" SUMAC (T)
PROPOSED 10 FT PATH
SCALE IN FEET

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERNATIVE

WATER SUPPLY ALTERNATIVE

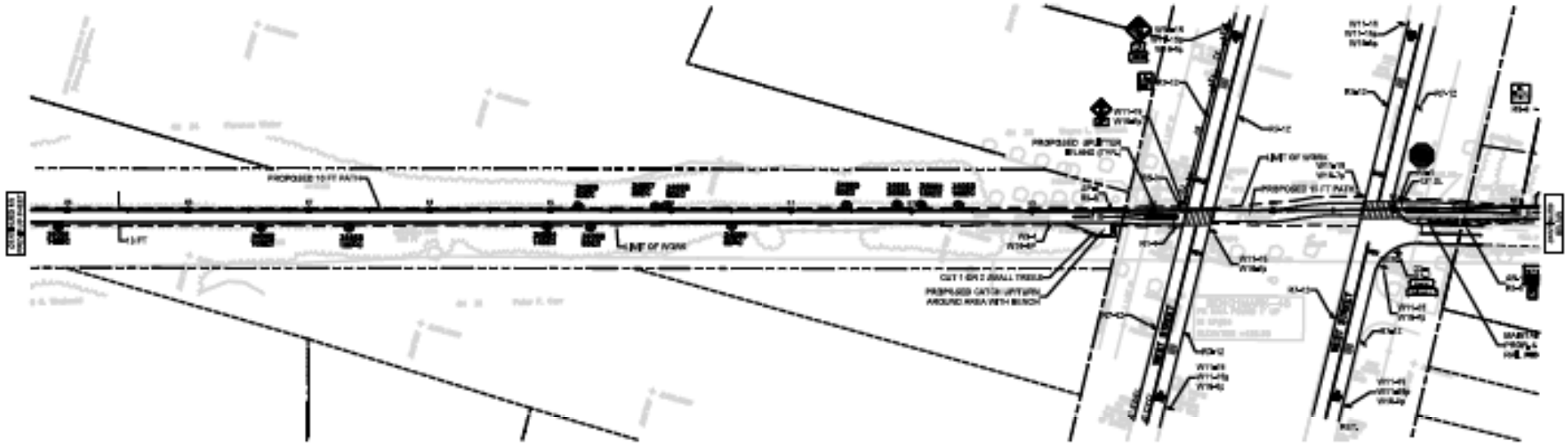
TRAFFIC SIGNAL CONDUIT

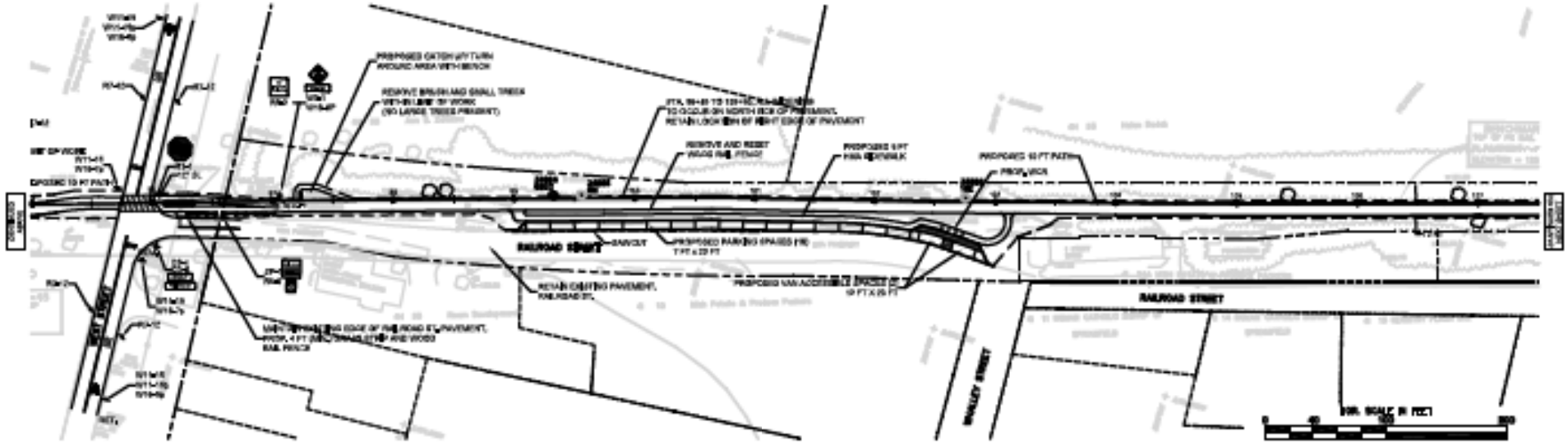
NORTHAMPTON – HADLEY – AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

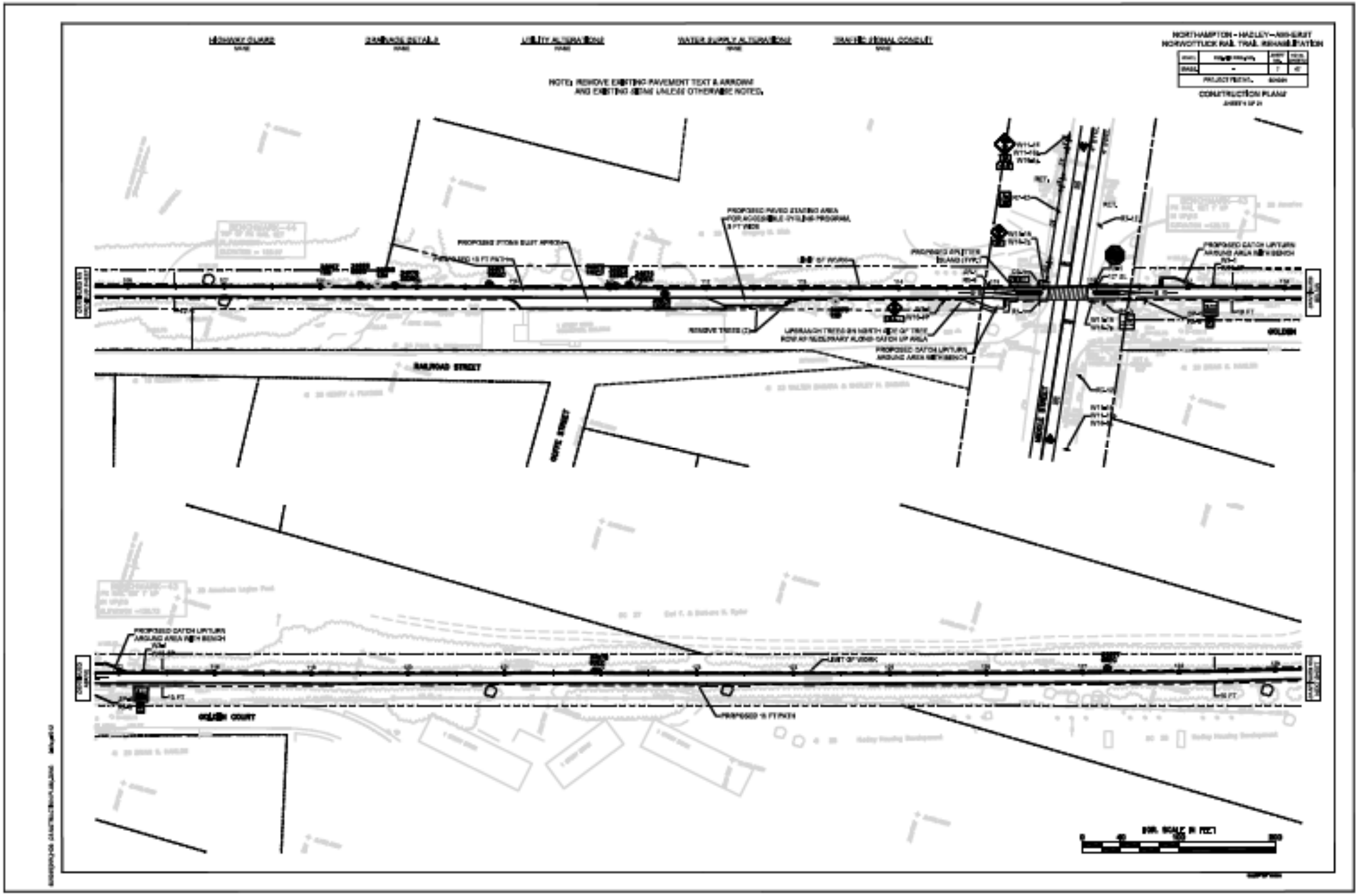
PROJECT NO.			

CONSTRUCTION PLANS

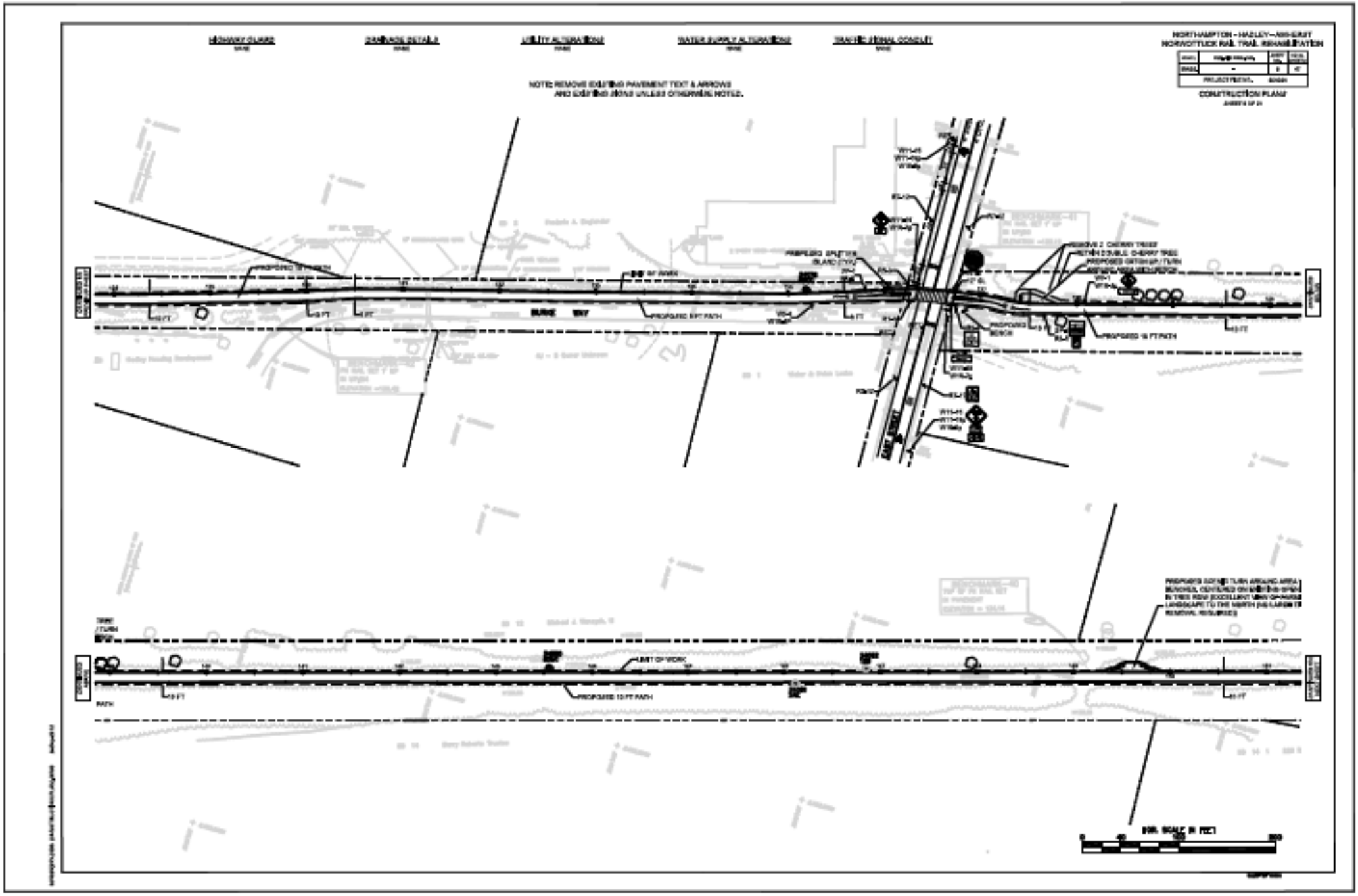
NOTE: REMOVE EXISTING PAVEMENT TEXT & ARROWS AND EXISTING SIGNS UNLESS OTHERWISE NOTED.

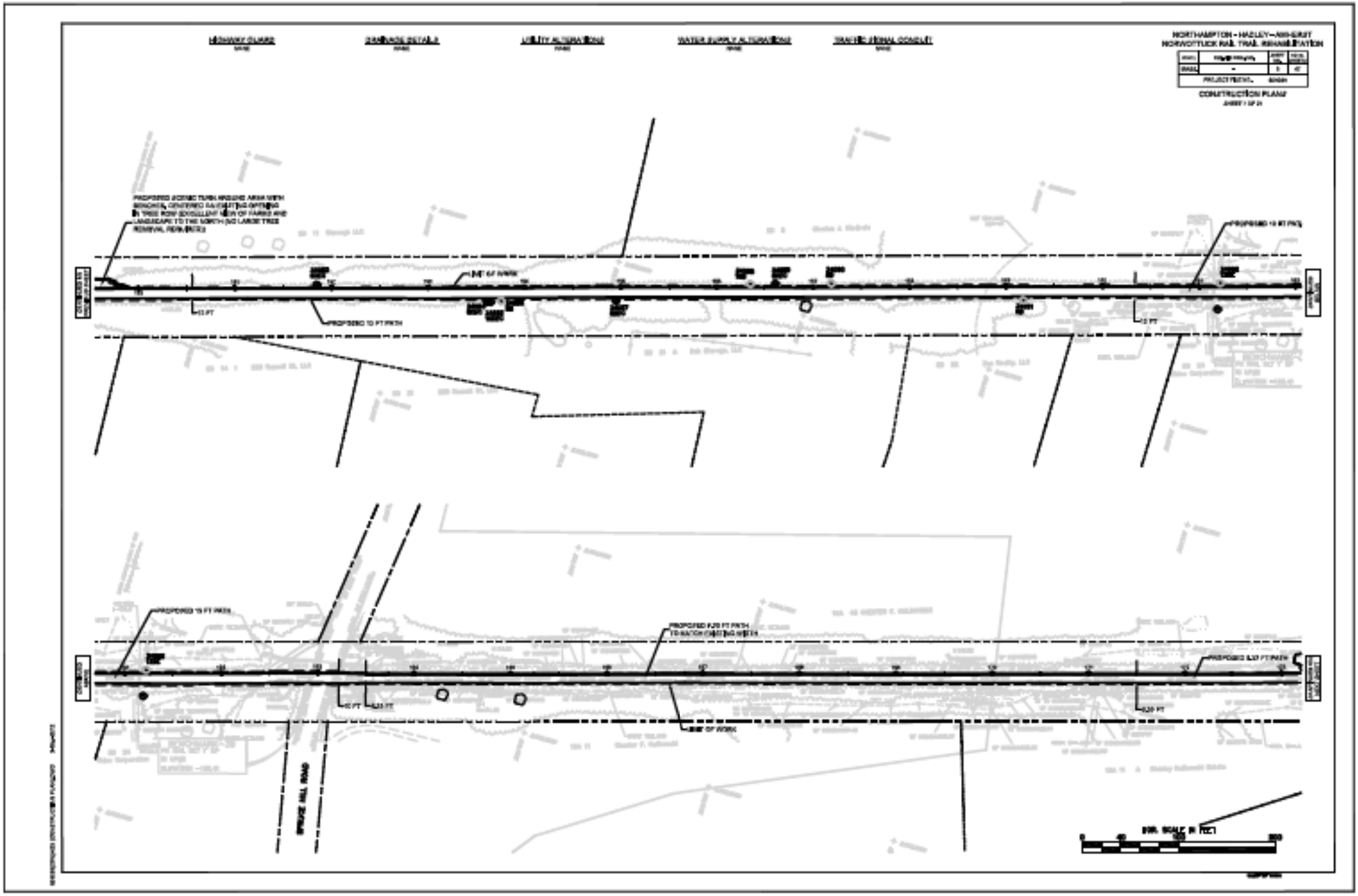


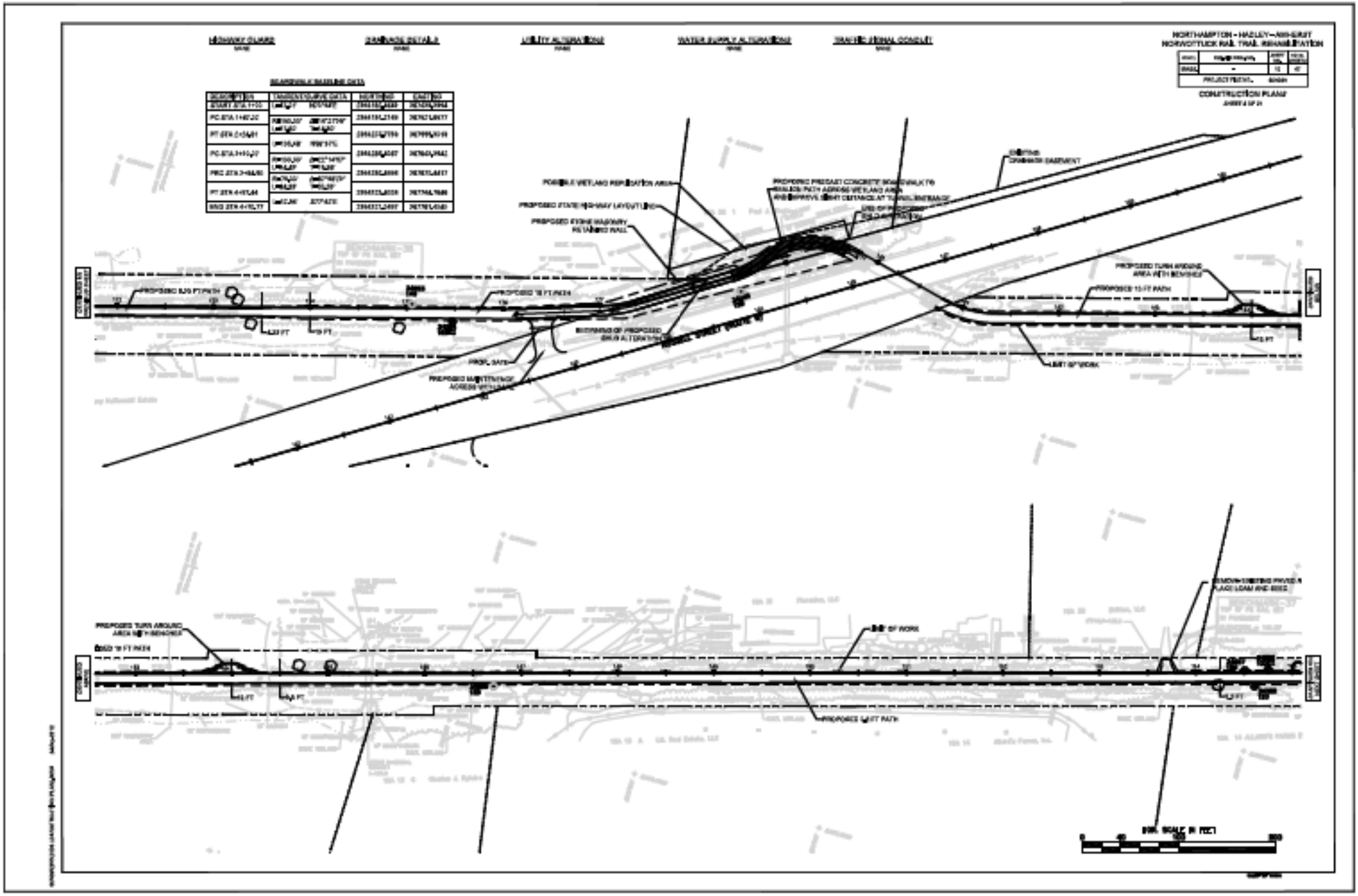


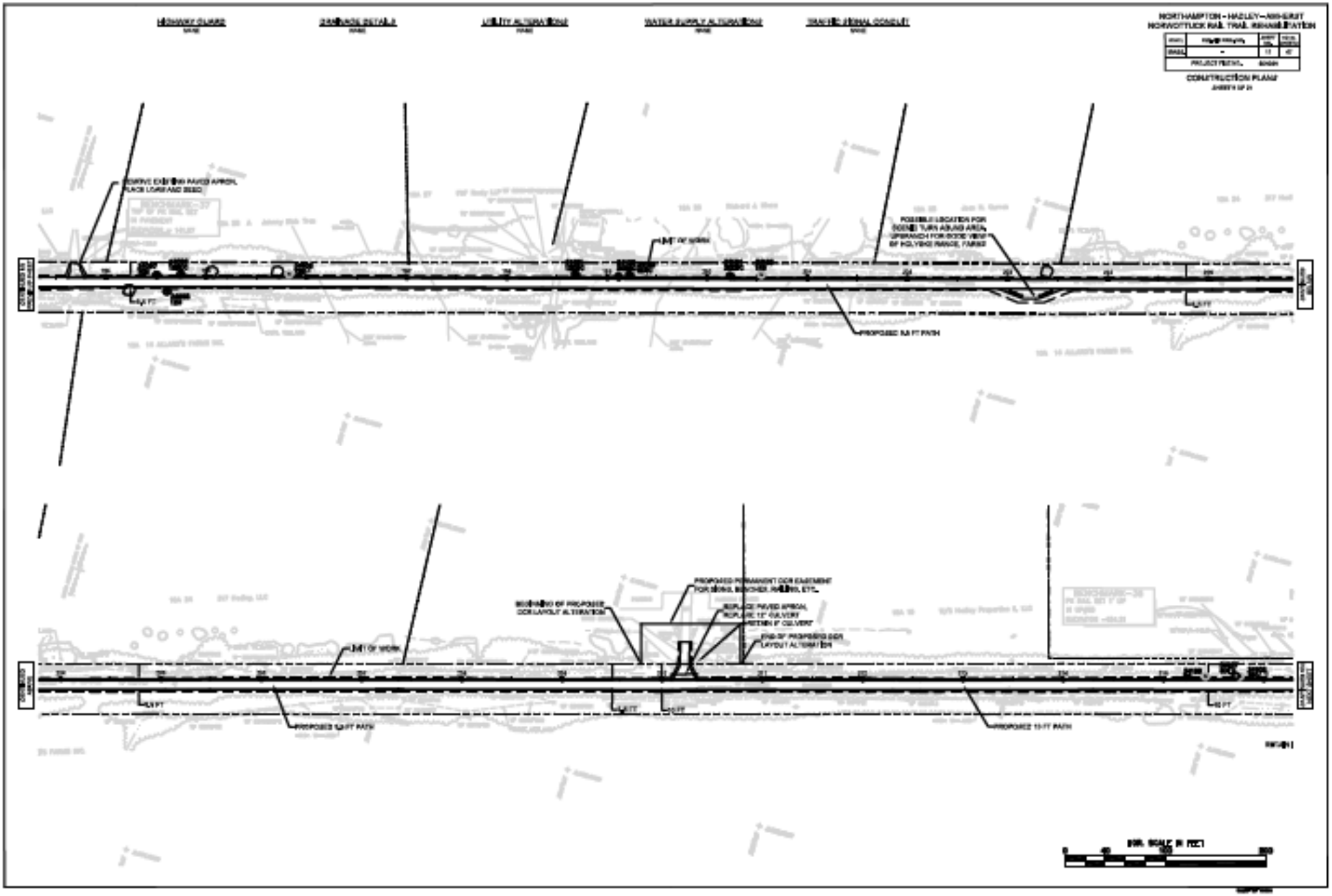


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
NOTE: REMOVE EXISTING PAVEMENT TEXT & ARROWS AND EXISTING SIGNS UNLESS OTHERWISE NOTED.
PROPOSED PAVED STAGING AREA FOR ACCESSIBLE CYCLING PROGRAM, 8 FT WIDE
PROPOSED STONE DUST APRON
PROPOSED 15 FT PATH
LIMIT OF WORK
PROPOSED SPLITTER ISLAND (TYP.)
PROPOSED CATCH UP/TURN AROUND AREA WITH BENCH
REMOVE TREES (2)
UPBRANCH TREES ON NORTH SIDE OF TREE ROW AS NECESSARY ALONG CATCH UP AREA
PROPOSED CATCH UP/TURN AROUND AREA WITH BENCH
RAILROAD STREET
GOLDEN
GOLDEN COURT
PROPOSED 15 FT PATH
HOR. SCALE IN FEET


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY—AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
NOTE: REMOVE EXISTING PAVEMENT TEXT & ARROWS
AND EXISTING SIGNS UNLESS OTHERWISE NOTED.
PROPOSED 8 FT PATH
PROPOSED 10 FT PATH
LIMIT OF WORK
PROPOSED 10 FT PATH
PROPOSED 10 FT PATH
PROPOSED SPLITTER ISLAND (TYP.)
REMOVE 2 CHERRY TREES
RETAIN DOUBLE CHERRY TREE
PROPOSED BENCH
PROPOSED 10 FT PATH
PROPOSED SCENIC TURN AROUND AREA BENCHES, CENTERED ON EXISTING OPEN IN TREE ROW (EXCELLENT VIEW OF PARKS LANDSCAPE TO THE NORTH (NO LARGE TO REMOVAL REQUIRED)
SCALE IN FEET
0
40
100
200


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
PROPOSED 10 FT PATH
LIMIT OF WORK
SPRUCE MILL ROAD
SCALE IN FEET


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
POSSIBLE WETLAND REPLICATION AREA
PROPOSED STATE HIGHWAY LAYOUT LINE
PROPOSED STONE MASONRY RETAINING WALL
PROPOSED PRECAST CONCRETE BOARDWALK TO ENSURE PATH ACROSS WETLAND AREA AND IMPROVE SIGHT DISTANCE AT TUNNEL ENTRANCE
EXISTING DRAINAGE EASEMENT
PROPOSED TURN AROUND AREA WITH BENCHES
PROPOSED 15 FT PATH
PROPOSED 10 FT PATH
PROPOSED 8.25 FT PATH
PROPOSED 5 FT PATH
PROPOSED 4 FT PATH
LIMIT OF WORK
PROPOSED 10 FT PATH
PROPOSED TURN AROUND AREA WITH BENCHES
LIMIT OF WORK
PROPOSED 5 FT PATH
SCALE IN FEET


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
REMOVE EXISTING PAVED APRON, PLACE LOAM AND SEED
LIMIT OF WORK
POSSIBLE LOCATION FOR SCENIC TURN AGUAG AREA, UPBRANCH FOR GOOD VIEW OF HOLYOKE RANGE, FARMS
PROPOSED 10 FT PATH
PROPOSED PERMANENT DCR EASEMENT FOR SIGNS, BENCHES, RAILING, ETC.
BEGINNING OF PROPOSED DCR LAYOUT ALTERATION
REPLACE PAVED APRON, REPLACE 12" CULVERT
RETAIN 8" CULVERT
END OF PROPOSED DCR LAYOUT ALTERATION
LIMIT OF WORK
PROPOSED 10 FT PATH
PROPOSED 10 FT PATH
SCALE IN FEET
0
40
100
200

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERNATIVE

WATER SUPPLY ALTERNATIVE

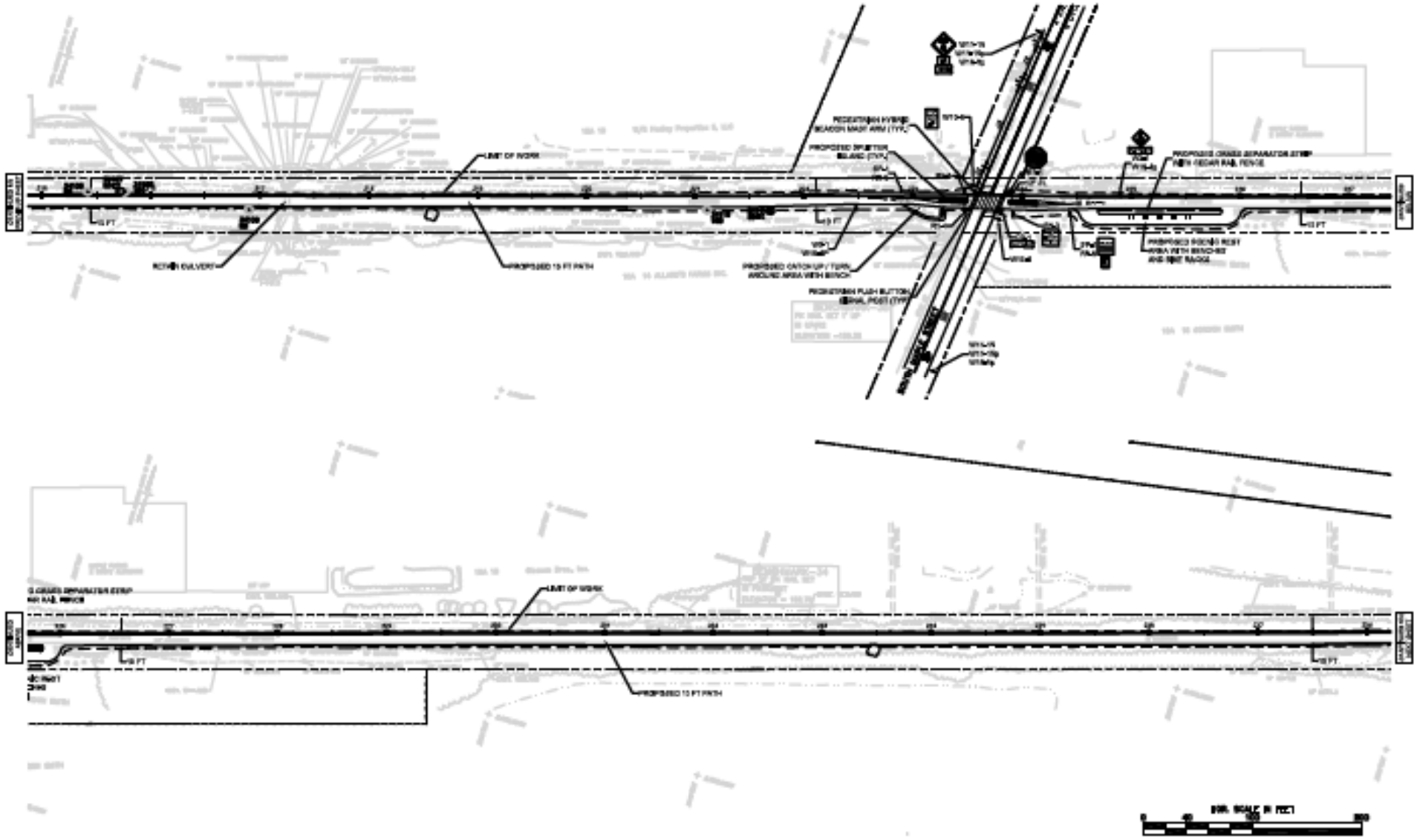
TRAFFIC SIGNAL CONDUIT

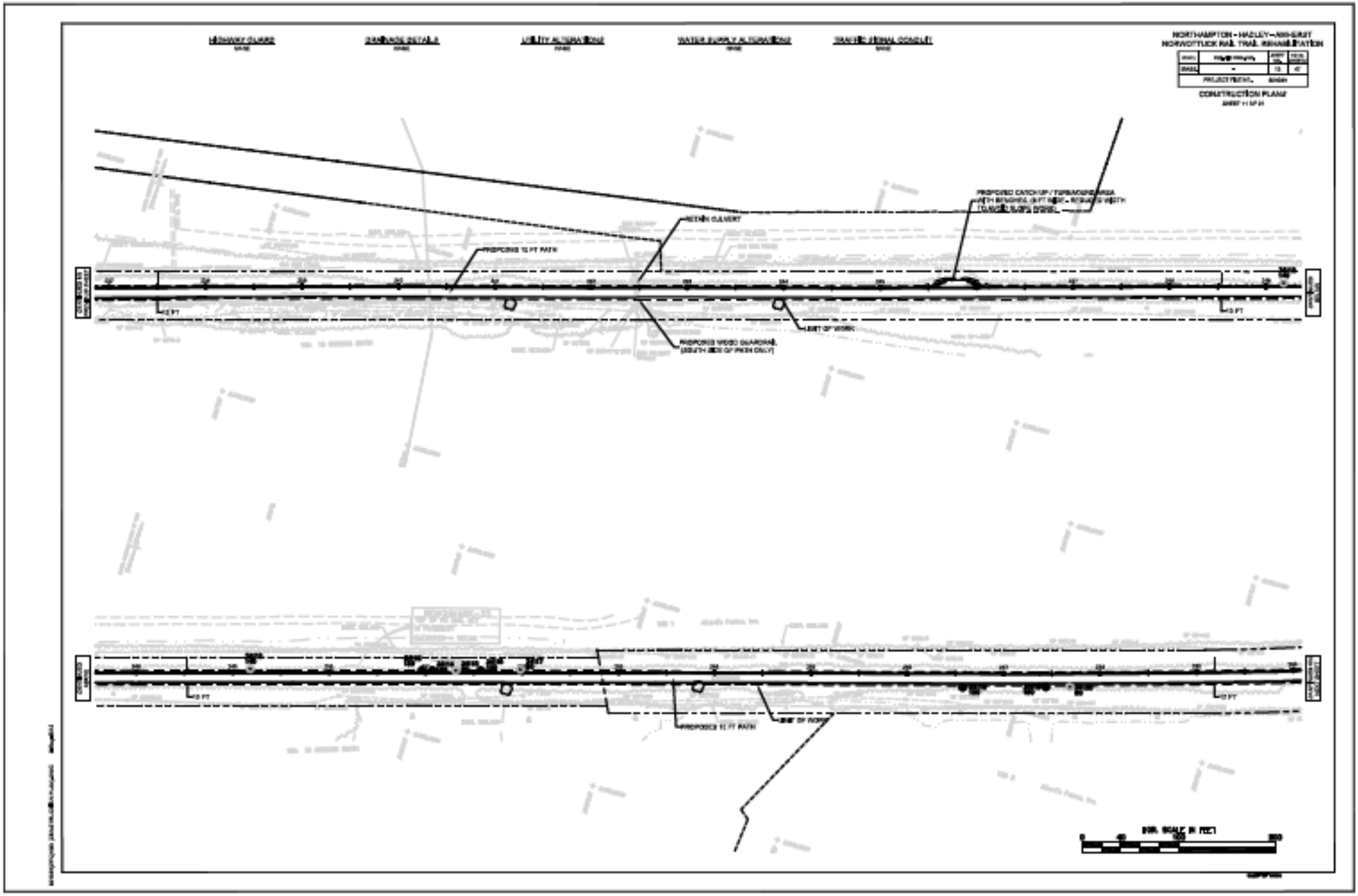
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

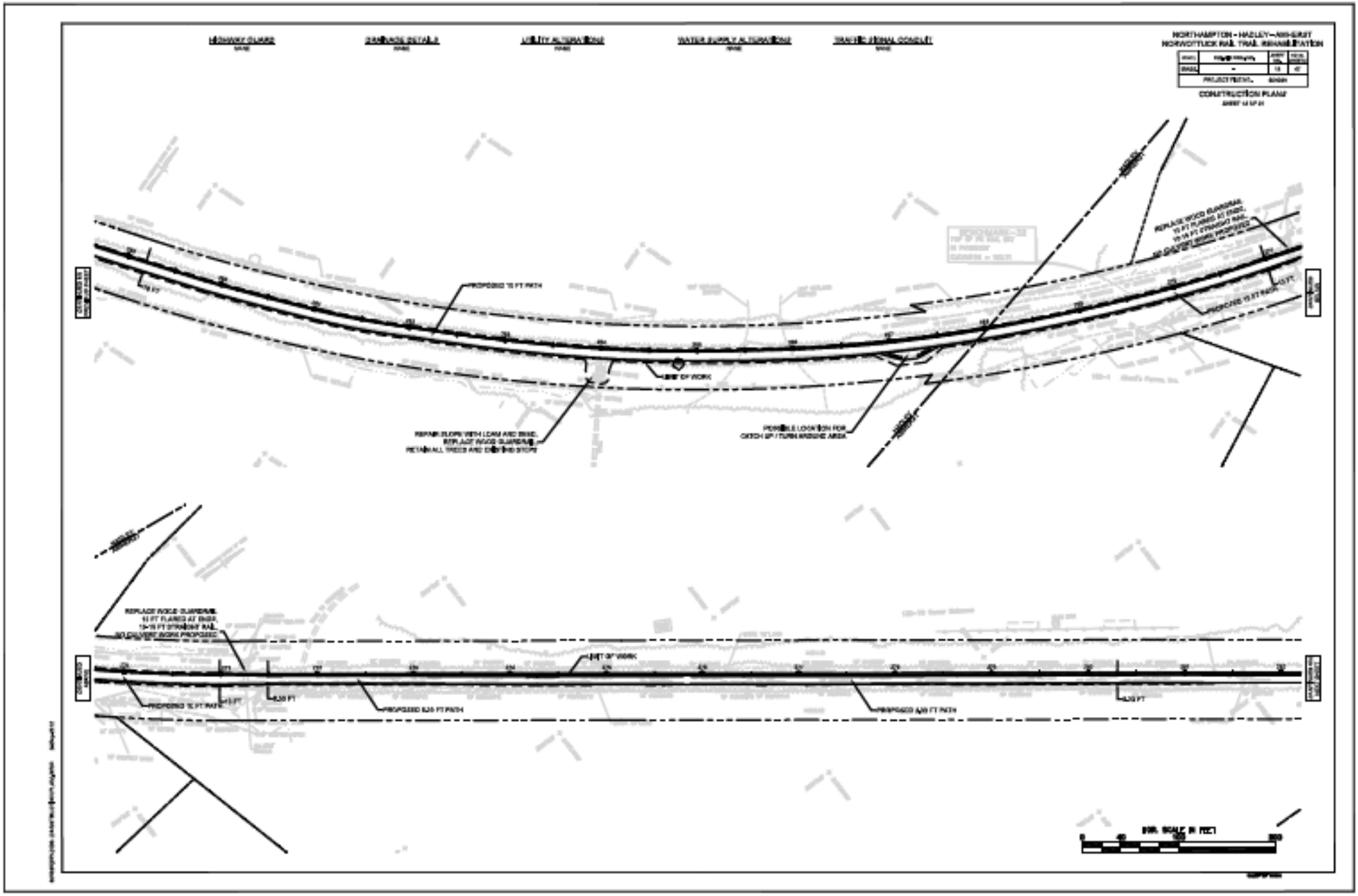
PROJECT NO.			

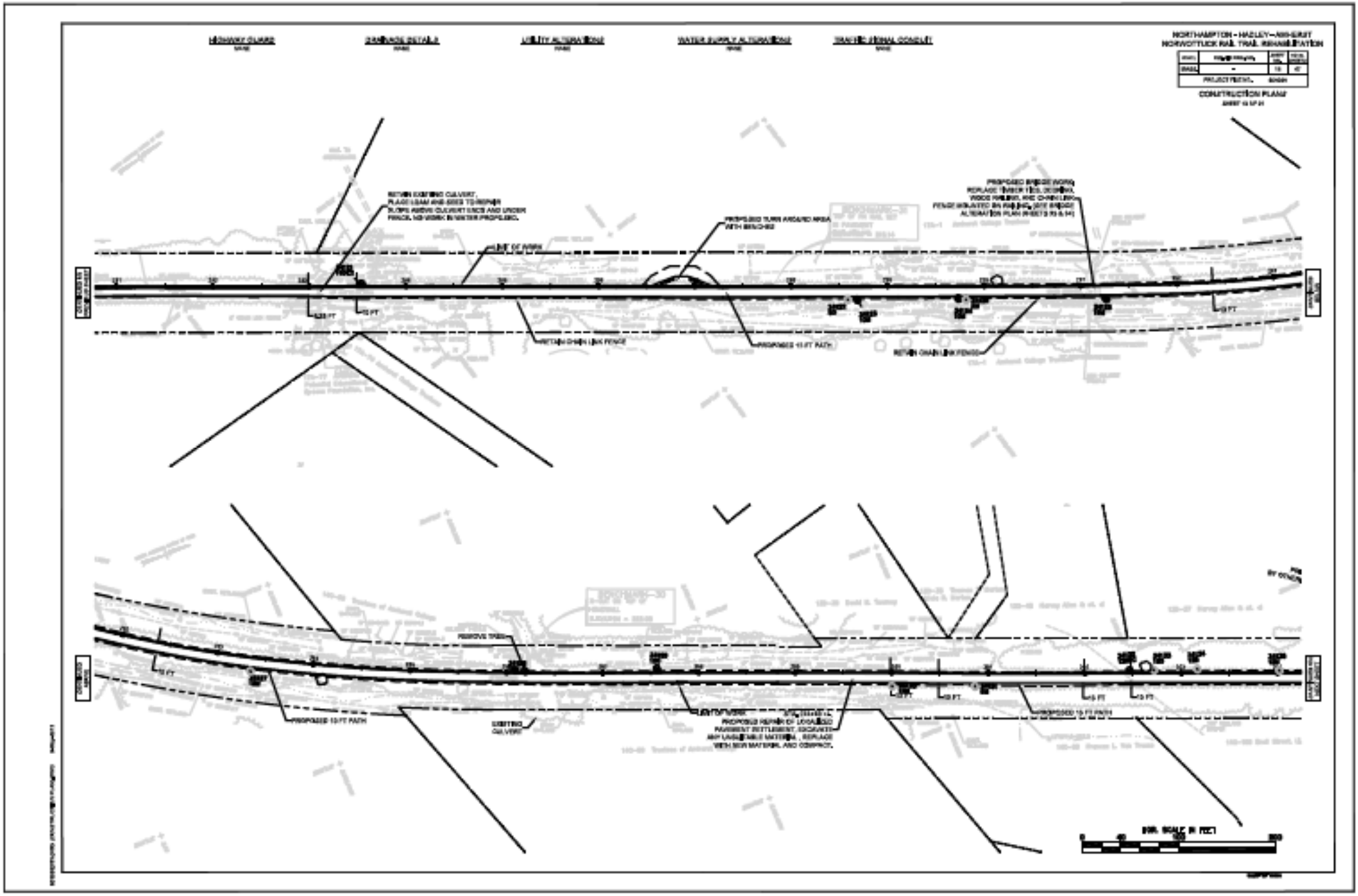
CONSTRUCTION PLANS

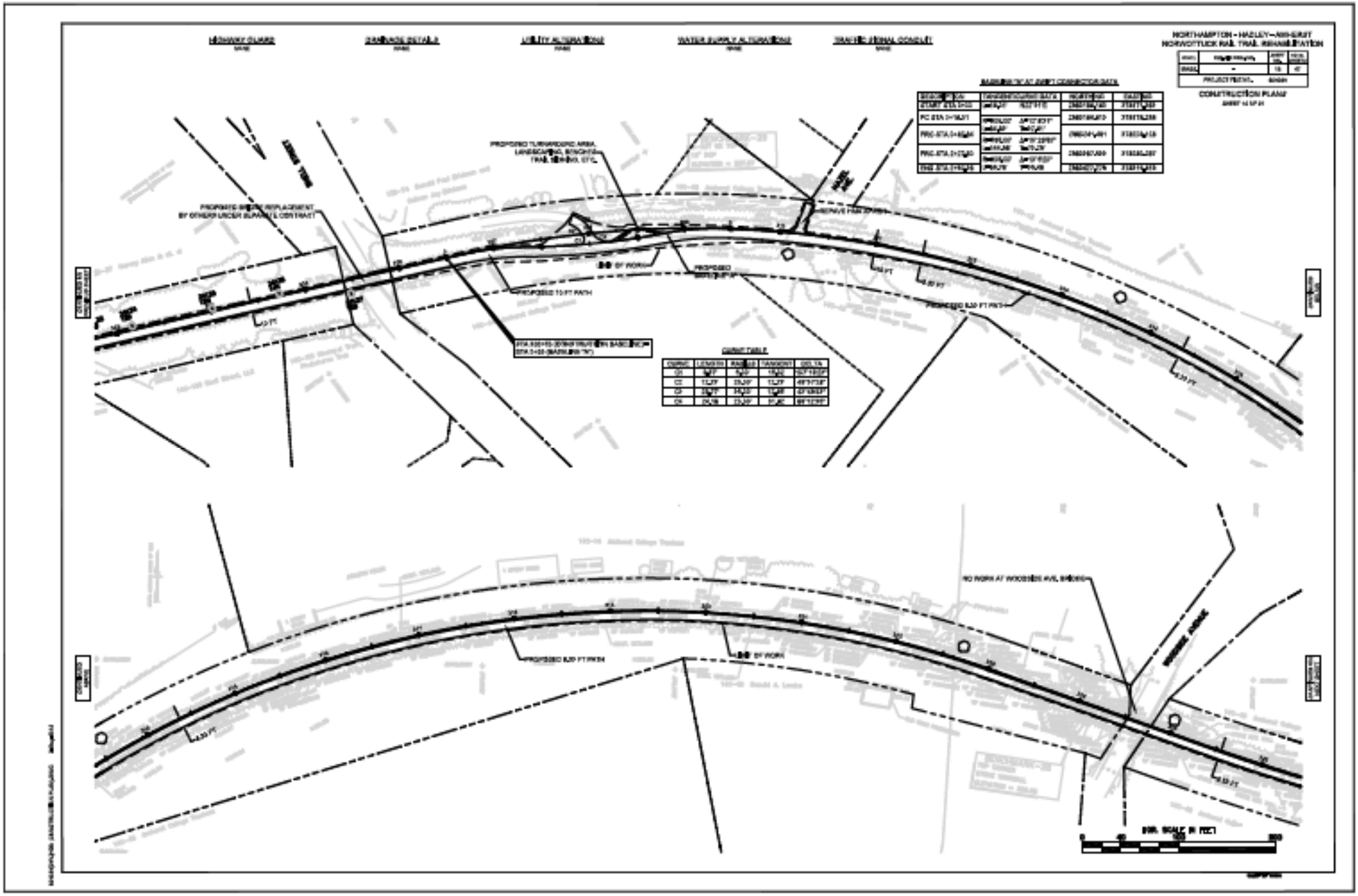
NOTE: REMOVE EXISTING PAVEMENT TEXT & ARROWS AND EXISTING SIGNS UNLESS OTHERWISE NOTED.




HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
RETAIN CULVERT
PROPOSED 12 FT PATH
PROPOSED CATCH UP / TERRACING AREA WITH BENCHES (8 FT WIDE - REDUCES WIDTH TO AVOID SLOPE WORK)
LIMIT OF WORK
PROPOSED WOOD GUARDRAIL (SOUTH SIDE OF PATH ONLY)
PROPOSED 12 FT PATH
LIMIT OF WORK
SCALE IN FEET


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
PROPOSED 15 FT PATH
LIMIT OF WORK
REPAIR SLOPE WITH LOAM AND SEED.
REPLACE WOOD GUARDRAIL
RETAIN ALL TREES AND EXISTING STOPS
POSSIBLE LOCATION FOR
CATCH UP / TURN AROUND AREA
REPLACE WOOD GUARDRAIL
15 FT FLARES AT ENDS,
15-15 FT STRAIGHT RAIL,
NO CULVERT WORK PROPOSED
PROPOSED 15 FT PATH
PROPOSED 8.25 FT PATH
PROPOSED 8.25 FT PATH
8.25 FT
HOR. SCALE IN FEET
0
40
100
200


HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
RETAIN EXISTING CULVERT, PLACE LOAM AND SEED TO REPAIR SLOPE ABOVE CULVERT ENDS AND UNDER FENCE. NO WORK IN WATER PROPOSED.
LIMIT OF WORK
PROPOSED TURN AROUND AREA WITH BENCHES
PROPOSED BRIDGE WORK, REPLACE TIMBER TIES, DECKING, WOOD RAILING, AND CHAIN LINK FENCE MOUNTED ON RAILING. (SEE BRIDGE ALTERATION PLAN SHEETS 13 & 14)
RETAIN CHAIN LINK FENCE
PROPOSED 10 FT PATH
RETAIN CHAIN LINK FENCE
REMOVE TREE
PROPOSED 10 FT PATH
EXISTING CULVERT
LIMIT OF WORK
PROPOSED REPAIR OF LOCALIZED PAVEMENT SETTLEMENT, EXCAVATE ANY UNSUITABLE MATERIAL, REPLACE WITH NEW MATERIAL AND COMPACT.
PROPOSED 10 FT PATH
SCALE IN FEET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CONSTRUCTION PLANS
PROPOSED TURNAROUND AREA, LANDSCAPING, BENCHES, TRAIL SIGNING, ETC.
PROPOSED BRIDGE REPLACEMENT BY OTHERS UNDER SEPARATE CONTRACT
LIMIT OF WORK
PROPOSED 10 FT PATH
PROPOSED 8.50 FT PATH
CURVE TABLE
NO WORK AT WOODSIDE AVE. BRIDGE
WOODSIDE AVENUE
SCALE IN FEET

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERNATIVE

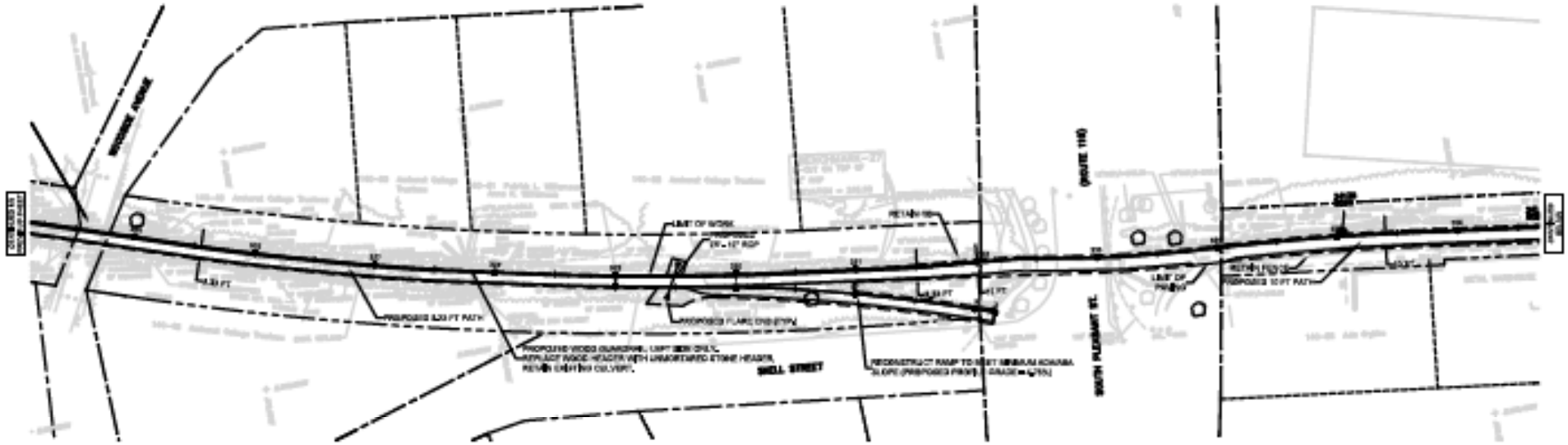
WATER SUPPLY ALTERNATIVE

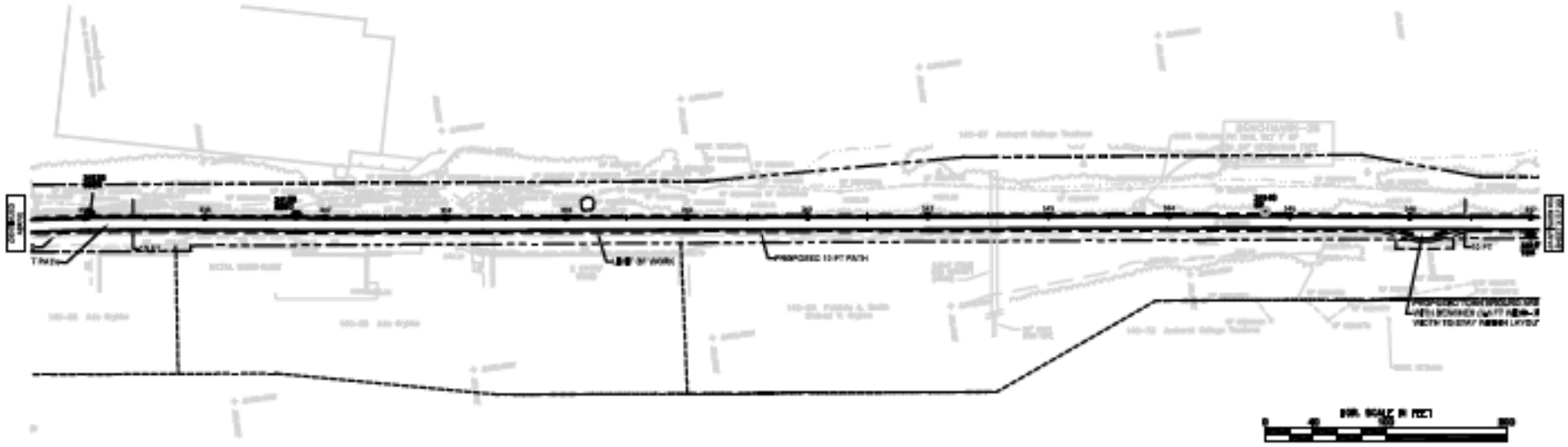
TRAFFIC SIGNAL CONDUIT

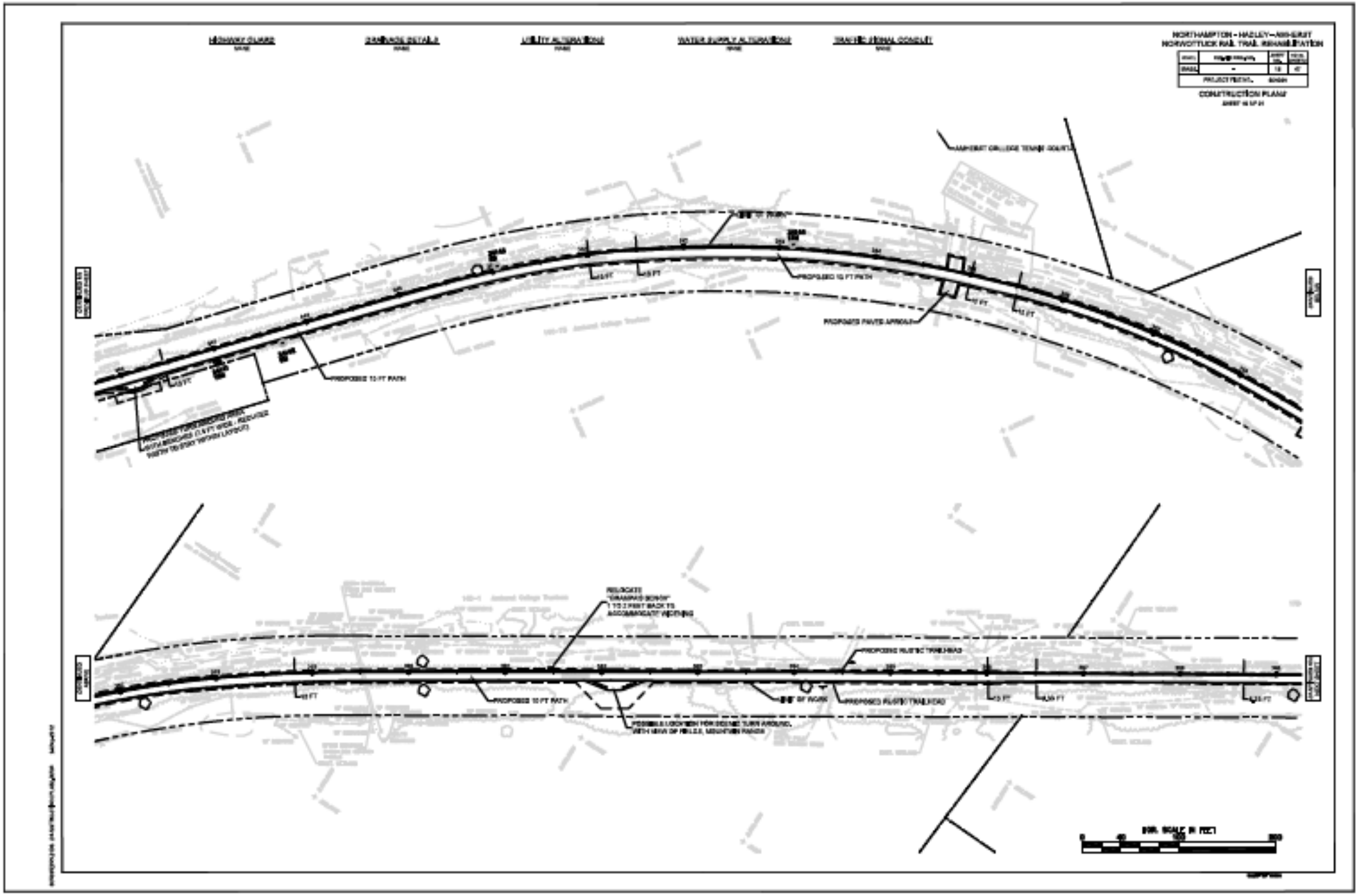
NORTHAMPTON – HADLEY – AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

PROJECT NO.			

CONSTRUCTION PLANS



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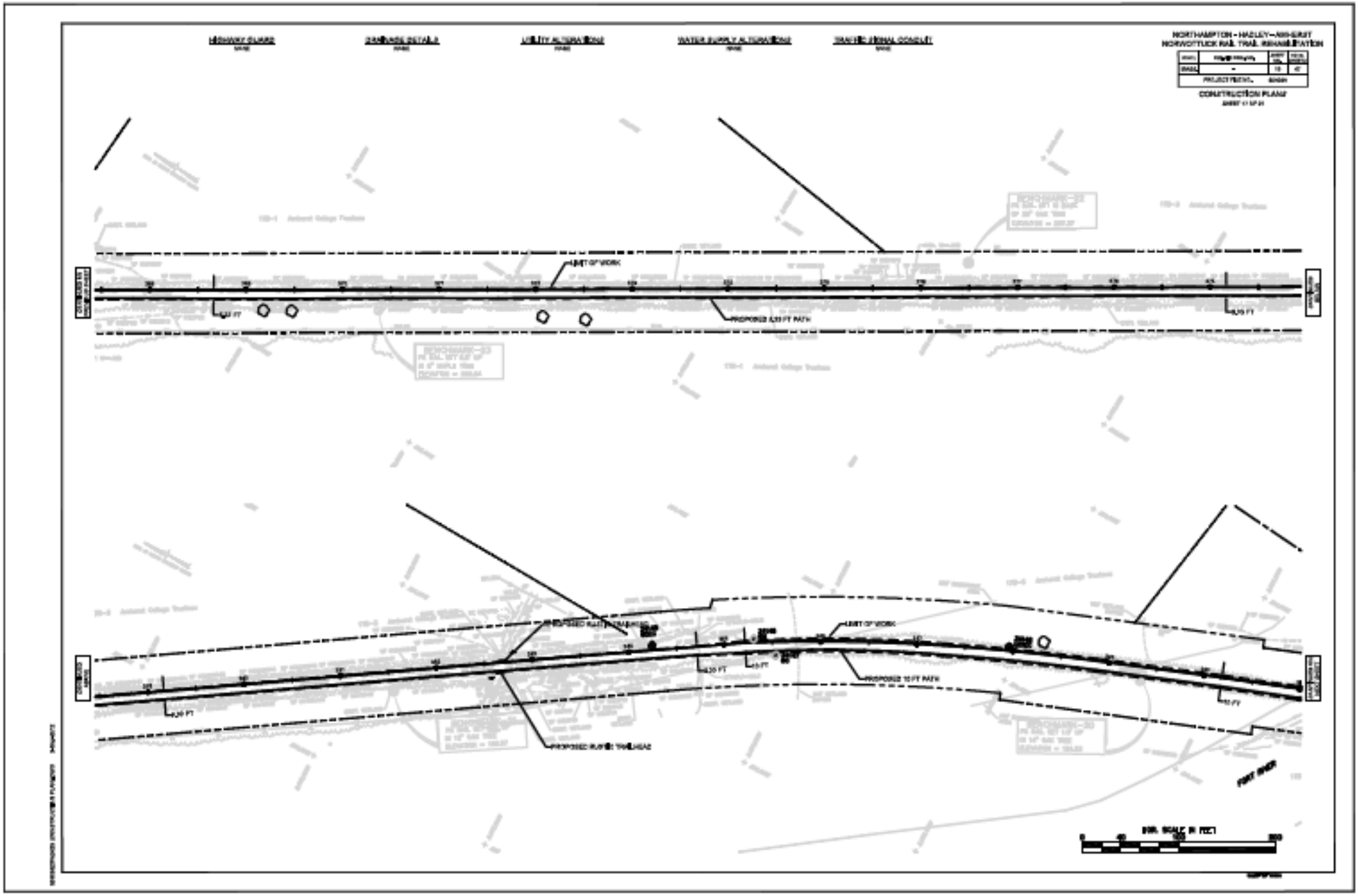
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
AMHERST COLLEGE TENNIS COURTS
PROPOSED 10 FT PATH
PROPOSED PAVED APRON
PROPOSED 10 FT PATH
RELOCATE "DRAMPAS BENCH" 1 TO 2 FEET BACK TO ACCOMMODATE WIDENING
PROPOSED RUSTIC TRAILHEAD
PROPOSED 10 FT PATH
LIMIT OF WORK
PROPOSED RUSTIC TRAILHEAD
POSSIBLE LOCATION FOR SCENIC TURN AROUND, WITH VIEW OF HOLES, MOUNTAIN RANGE
HOR. SCALE IN FEET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DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
LIMIT OF WORK
PROPOSED 8.25 FT PATH
PROPOSED 10 FT PATH
PROPOSED RUSTIC TRAILHEAD
FORT RIVER
SCALE IN FEET

HIGHWAY GUARD
SHEET

DRAINAGE DETAILS
SHEET

UTILITY ALTERATIONS
SHEET

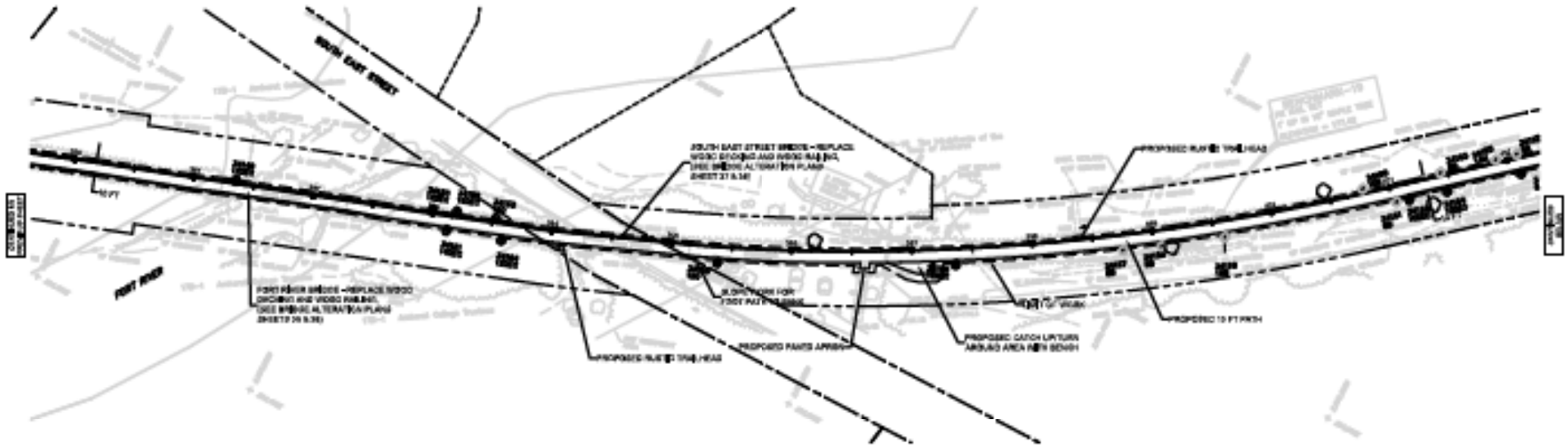
WATER SUPPLY ALTERATIONS
SHEET

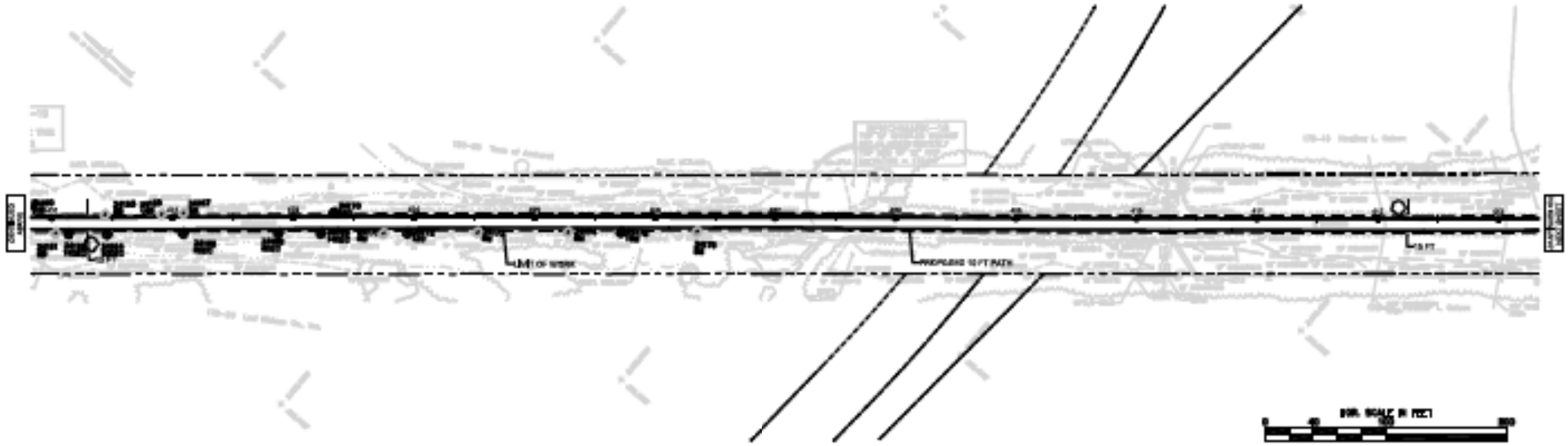
TRAFFIC SIGNAL CONDUIT
SHEET

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

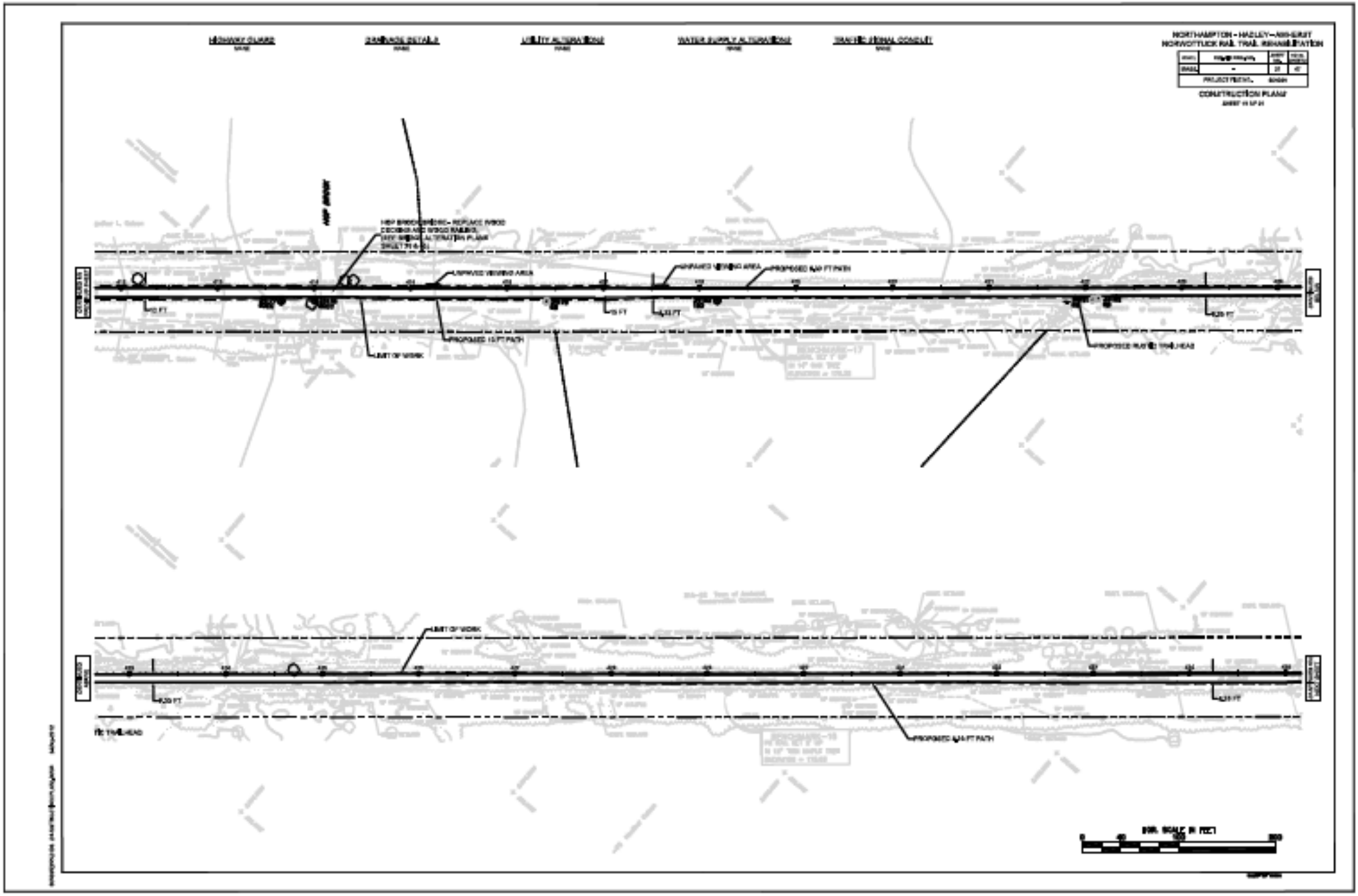
PROJECT NO.			

CONSTRUCTION PLANS
SHEET 14 OF 31





HOR. SCALE IN FEET
0 40 100 200


HIGHWAY GUARD
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NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
CONSTRUCTION PLANS
UNPAVED VIEWING AREA
PROPOSED 15 FT PATH
LIMIT OF WORK
PROPOSED RUSTIC TRAILHEAD
PROPOSED 8.5 FT PATH
SCALE IN FEET

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERNATIVE

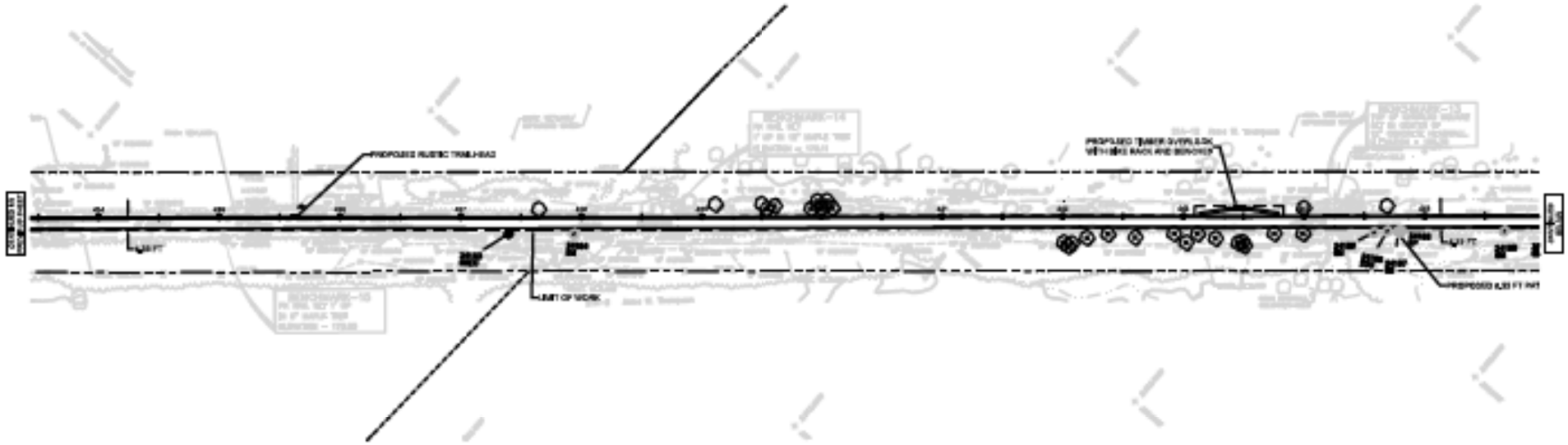
WATER SUPPLY ALTERNATIVE

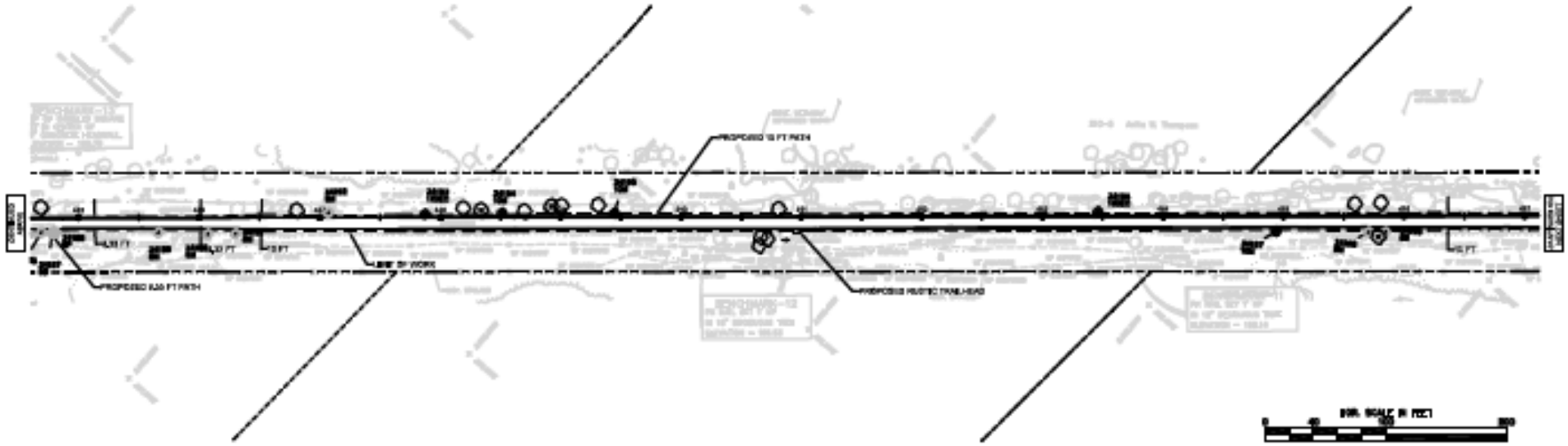
TRAFFIC SIGNAL CONDUIT

NORTHAMPTON – HADLEY – AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

PROJECT NO.			

CONSTRUCTION PLANS





HOR. SCALE IN FEET

0 40 100 200

HIGHWAY GUARD

DRAINAGE DETAILS

UTILITY ALTERNATIVE

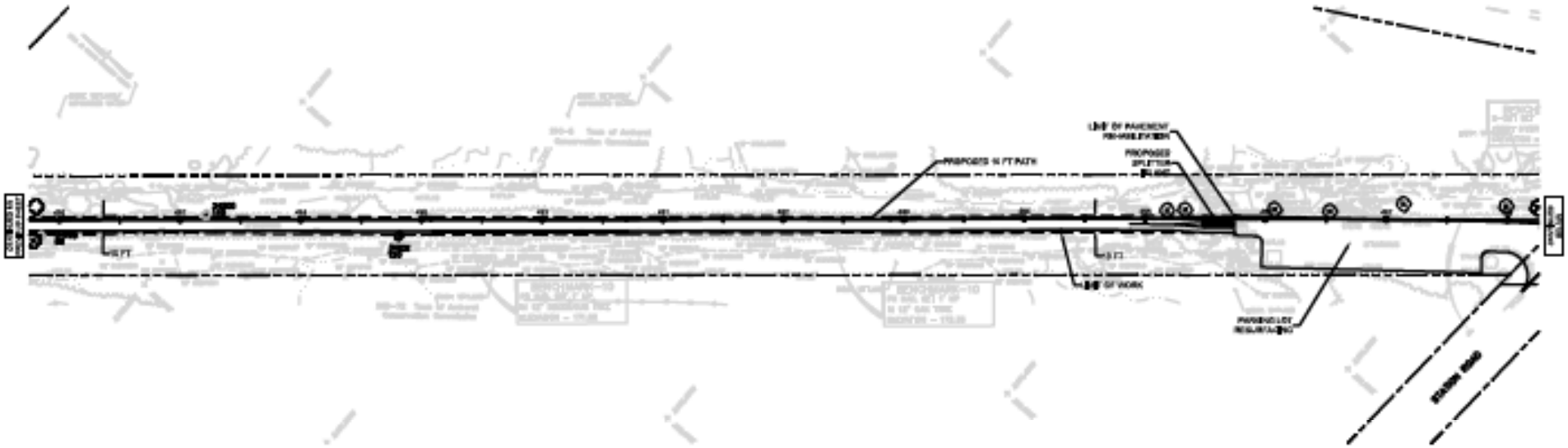
WATER SUPPLY ALTERNATIVE

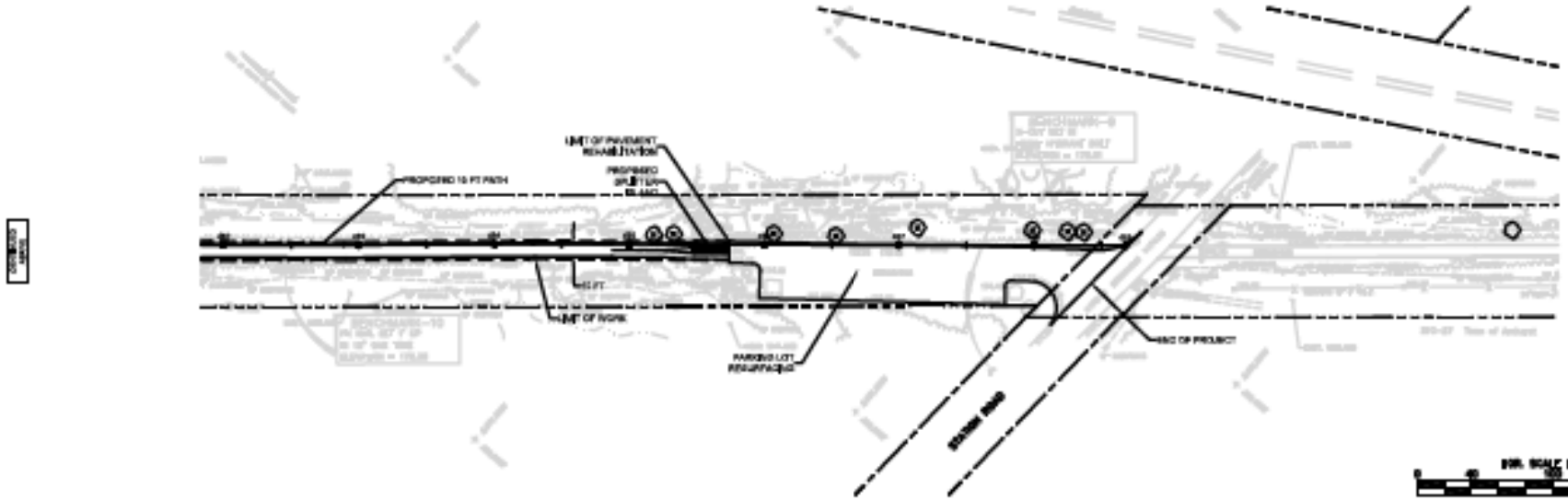
TRAFFIC SIGNAL CONDUIT

NORTHAMPTON – HADLEY – AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

PROJECT NO.			

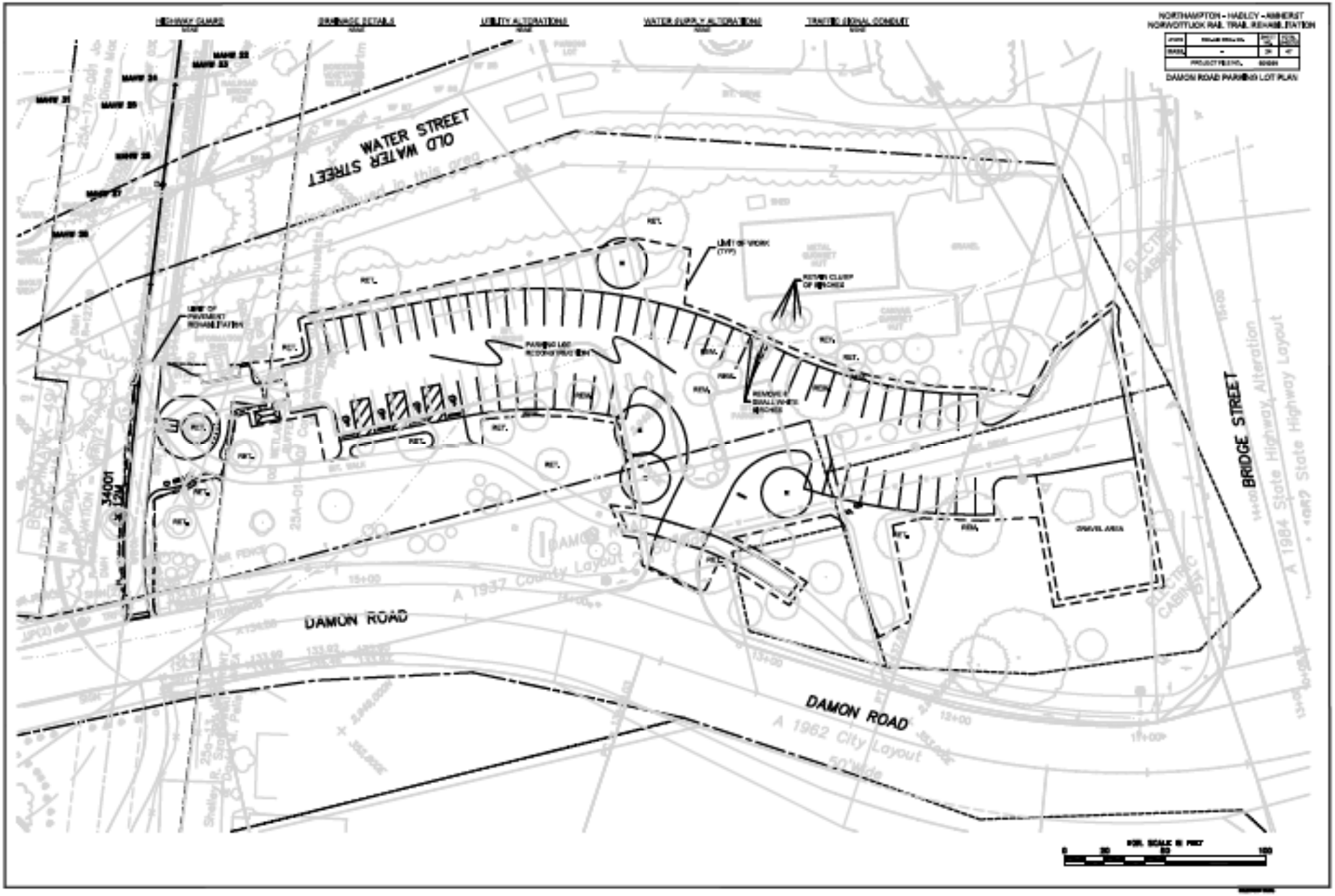
CONSTRUCTION PLANS





HOR. SCALE IN FEET

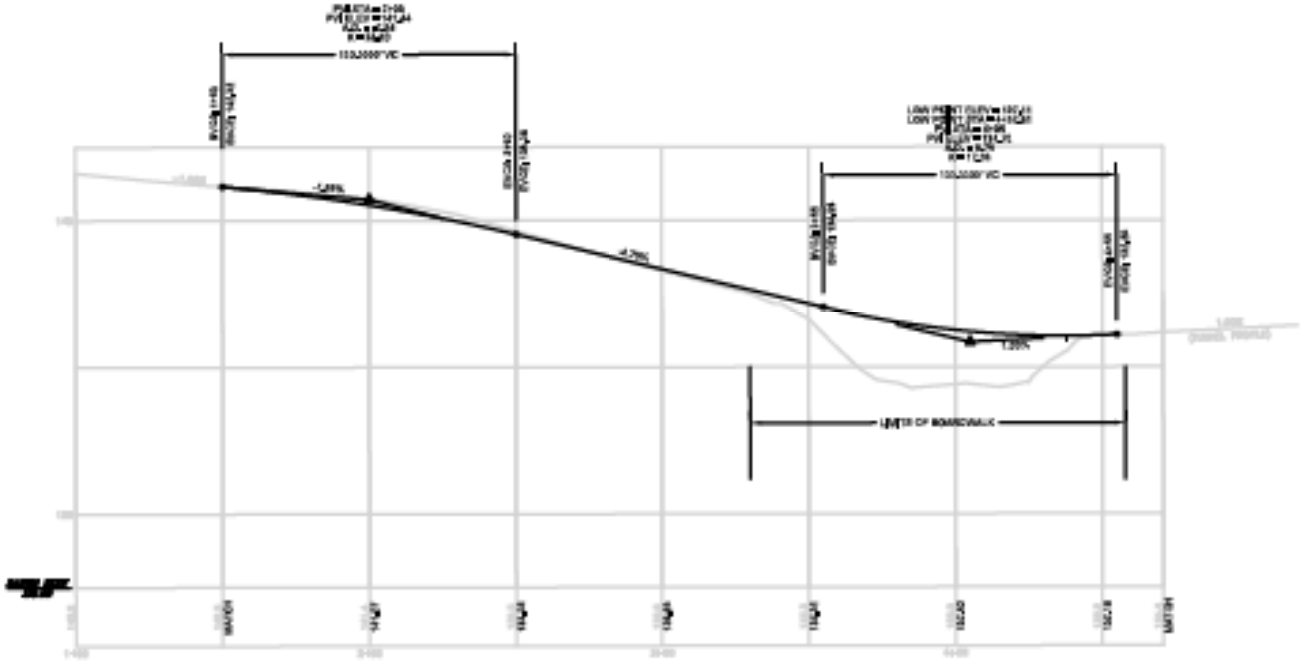
0 40 100 200



NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION
DAMON ROAD PARKING LOT PLAN
HIGHWAY GUARD
DRAINAGE DETAILS
UTILITY ALTERATIONS
WATER SUPPLY ALTERATIONS
TRAFFIC SIGNAL CONDUIT
WATER STREET
OLD WATER STREET
BRIDGE STREET
DAMON ROAD
DAMON ROAD
A 1937 County Layout
A 1962 City Layout
A 1984 State Highway Alteration
A 1982 State Highway Layout
LIMIT OF WORK (TYP)
RETAIN CLUMP OF BUSHES
REMOVE 4 SMALL WHITE BUSHES
PARKING LOT RECONSTRUCTION
LIMIT OF PAVEMENT REHABILITATION
GRAVEL AREA
ELECTRIC CABINET
34001
12M
FOR SCALE IN FEET
0
20
50
100

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

PROFILE



BOARDWALK PROFILE

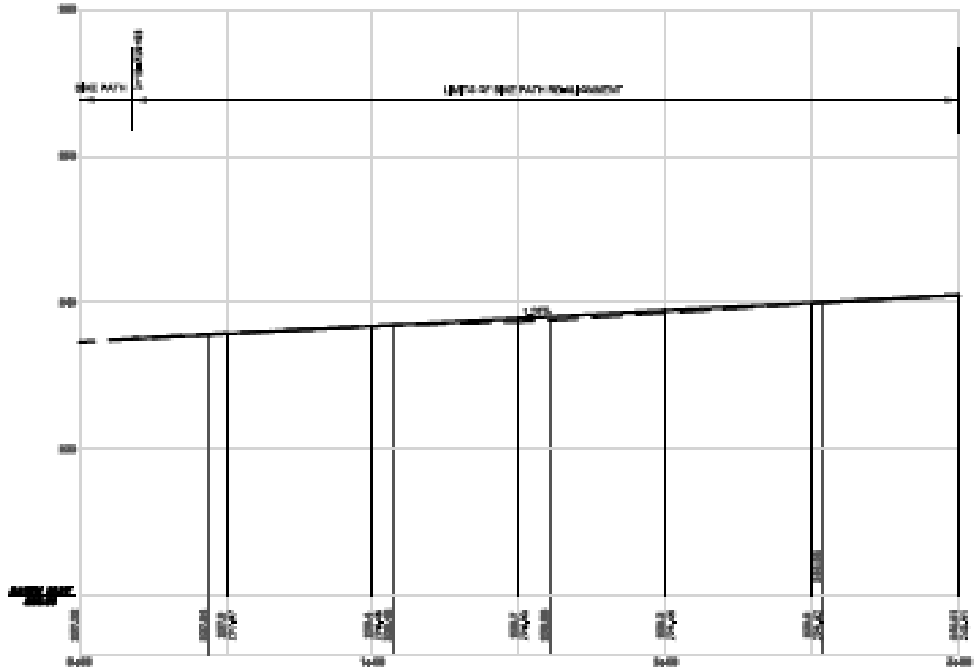
FOR CONSTRUCTION PLANS
SEE SHEET 8 OF 21

HORIZONTAL
0 20 40 80

VERTICAL
SCALE IN FEET
0 2 4 8

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL

PROFILE



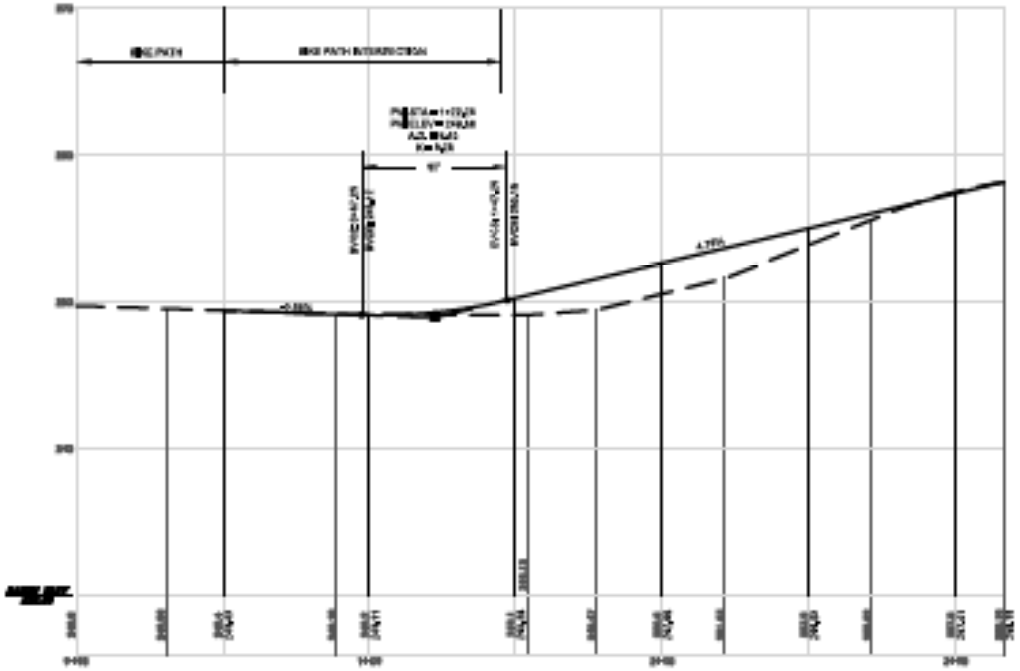
PROFILE - BASELINE "A" AT SWIFT CONNECTOR

FOR CONSTRUCTION PLANS:
SEE SHEET 14 OF 21

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL

DATE	FOLIO PROJ. NO.	SHEET NO.	TOTAL SHEETS
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

PROFILE
ROUTE 116 ACCESS RAMP



ROUTE 116 PROPOSED ACCESS RAMP PROFILE

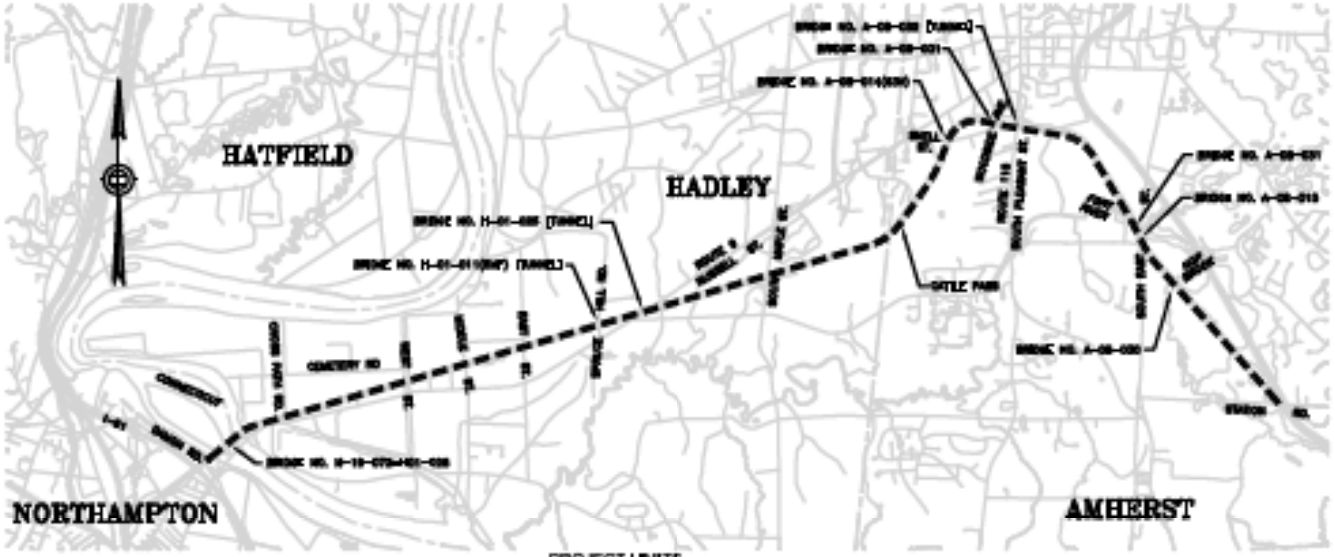
FOR CONSTRUCTION PLANS:
SEE SHEET 15 OF 21

HORIZONTAL
0 20 40 80
0 4 8 12
VERTICAL
SCALE IN FEET

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	-	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

CONSTRUCTION STAGING PLAN

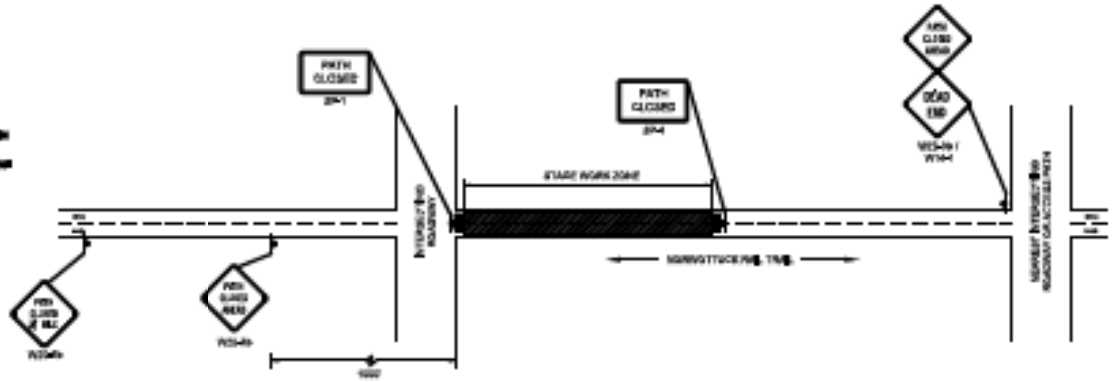


PROJECT LIMITS

SCALE: 1" = 2000'

CONSTRUCTION STAGING REQUIREMENTS

[illegible]



TYPICAL TEMPORARY CONSTRUCTION SIGNS DURING STAGES

NOT TO SCALE

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHAB (TATTON)

DATE	REVISE PROJ. NO.	SHEET NO.	TOTAL SHEETS
SCALE	1	01	07
PROJECT NO.			

TRAFFIC MANAGEMENT PLANS

SHEET 1 OF 7

NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL, WORK ZONE, CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ALL AMENDMENTS.
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]

LEGEND:

- [illegible] REFLECTORIZED PLASTIC DRUM
- [illegible] WORK ZONE
- [illegible] SIGN
- [illegible] TRAFFIC CONE
- [illegible] DIRECTION OF TRAFFIC
- [illegible] TYPE III BARRICADE
- [illegible] PILLAR DRUM.

ESTIMATED WORK ZONE VARIABLE DIMENSIONS

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
URBAN (LOW SPEED)*	100	100	100
URBAN (HIGH SPEED)*	200	200	200
RURAL	500	500	500
EXPRESSWAY/FREEWAY*	1,000	1,000	2,000

* SPEED CATEGORY TO BE DETERMINED BY HIGHWAY AGENCY

** [illegible]

THE "WORK" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TOP SIGNAL. [illegible] THE SIGN [illegible] (E.G. THE SIGN [illegible] WORK ON PC) SIGNS, AND USUALLY SIGNS FOR THE DURATION OF THE PROJECT.

THE "ROAD WORK AHEAD" SIGN IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TOP SIGNAL. [illegible] THE SIGN [illegible] (E.G. THE SIGN [illegible] WORK ON PC) SIGNS, AND USUALLY SIGNS FOR THE DURATION OF THE PROJECT.

[illegible] THE INFORMATION SIGN [illegible] THE INFORMATION SIGN [illegible] THE "ROAD WORK" SIGN [illegible] THE "ROAD WORK" SIGN [illegible] LEGEND.

R2-10a SIGN SHALL BE PLACED BETWEEN THE T-450 AND SECOND SIGN.

Based on Table 6C-1 [illegible]

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (mph)	DISTANCE (ft)
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

* [illegible] SPEED, OR 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

** [illegible] VALUES MAY BE USED TO DETERMINE THE LENGTH OF ADDITIONAL SIGHT DISTANCE.

*** [illegible] THE ABOVE 3-WAY RATIONALE THE MINIMUM VALUES FOR STOPPING SIGHT.

Based on Table 6C-2 [illegible]

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	.67 LWS* L
S-CURVE TAPER	.67 LWS* L.S.
S-CURVE TAPER	.67 LWS* L.S.
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN., 100 FT MAXIMUM
DOWNSTREAM TAPER	50 FT MIN., 100 FT MAX. PER LANE

Source: Table 6C-3 [illegible]

FORMULAS FOR DETERMINING TAPER LENGTHS

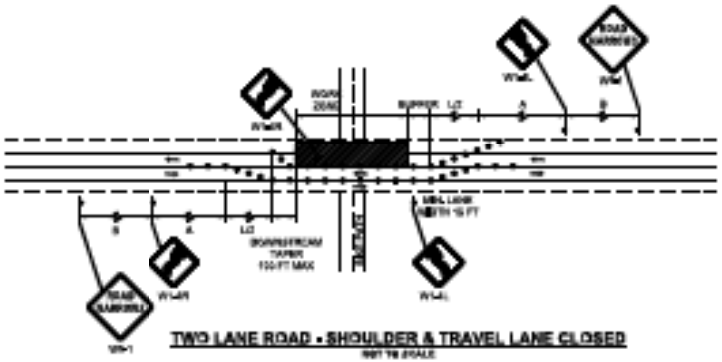
SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

WHERE: L = TAPER LENGTH IN FEET

W = WIDTH OF TAPER IN FEET

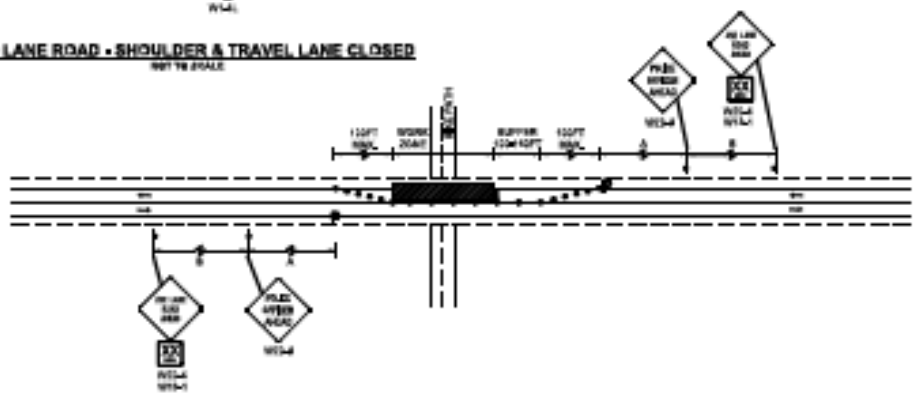
S = POSTED SPEED MPH, OR 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (MUTCD)

Source: Table 6C-1 [illegible]



TWO LANE ROAD - SHOULDER & TRAVEL LANE CLOSED

NOT TO SCALE



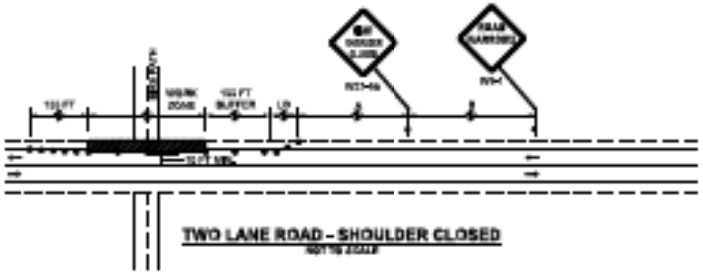
TWO LANE ROAD - ONE LANE ALTERNATING TRAFFIC WITH POLICE DETAIL

NOT TO SCALE

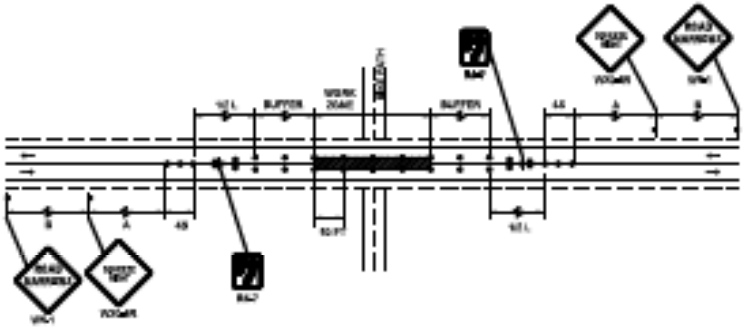
NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

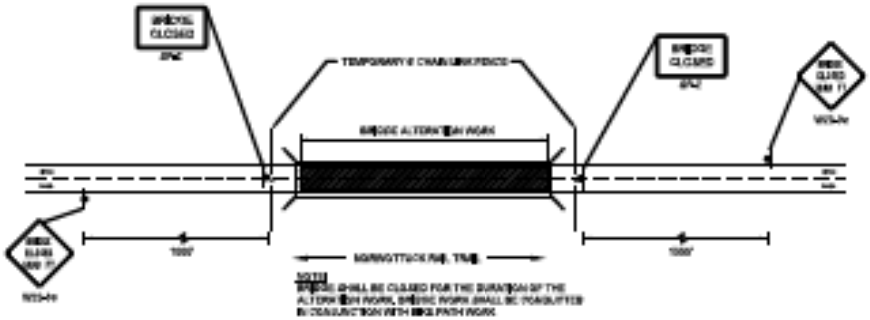
TRAFFIC MANAGEMENT PLANS
SHEET 2 OF 2



TWO LANE ROAD – SHOULDER CLOSED
NOT TO SCALE



TWO LANE ROAD – CENTER CLOSED
NOT TO SCALE



NOTE:
BRIDGE SHALL BE CLOSED FOR THE DURATION OF THE ALTERATION WORK. BRIDGE WORK SHALL BE CONDUCTED IN CONJUNCTION WITH BIKE PATH WORK.

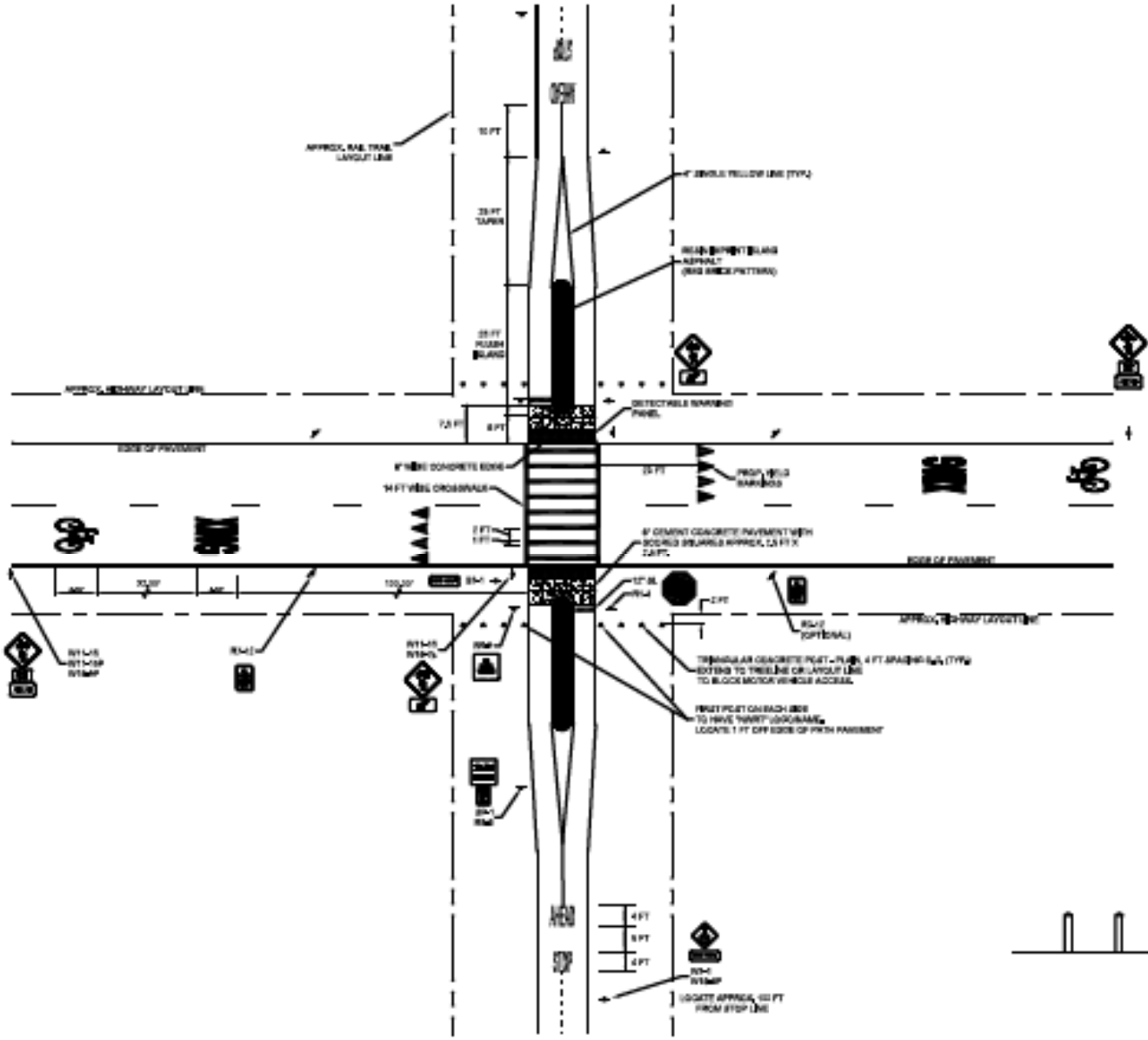
BIKE PATH TEMPORARY BRIDGE CLOSURE
NOT TO SCALE

LEGEND:

- REMOVEABLE PLASTIC DRUM
- 2000 MIN. TRAFFIC CONE
- POLES DECK.
- WORK ZONE
- DIRECTION OF TRAFFIC
- [illegible]
- TYPE III BARRICADE

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

TYPICAL ROADWAY CROSSING DETAILS

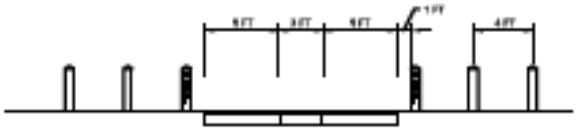


TYPICAL ROADWAY CROSSING

SCALE: 1" = 10'-0"

PROPOSED YIELD MARKINGS

NOT TO SCALE



TYPICAL ISLAND CROSS SECTION

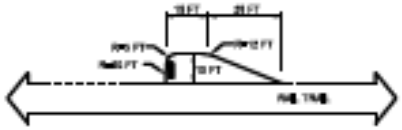
SCALE: 1/4" = 1'-0"

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	-	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

TYPICAL TURNAROUND AREAS

DESCRIPTION
- PULLOFF AREA WITH BENCH
- LOCATED AT ROAD CROSSINGS



CATCH-UP / TURN AROUND AREA

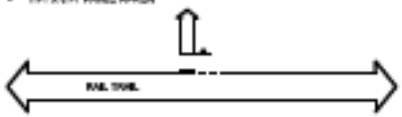
SCALE: 1" = 20'-0"
STA ___+___ RT
STA ___+___ LT

DESCRIPTION
- PULLOFF AREA
- BENCHES AND BOULDERS
- LOCATED MID-BLOCK

TURN AROUND AREA

SCALE: 1" = 20'-0"
STA ___+___ RT
STA ___+___ LT

DESCRIPTION
- SIGNAGE
- ACCESS TO LOCAL TRAILS
- 1 FT X 6 FT PAVED APRON



RUSTIC TRAILHEAD

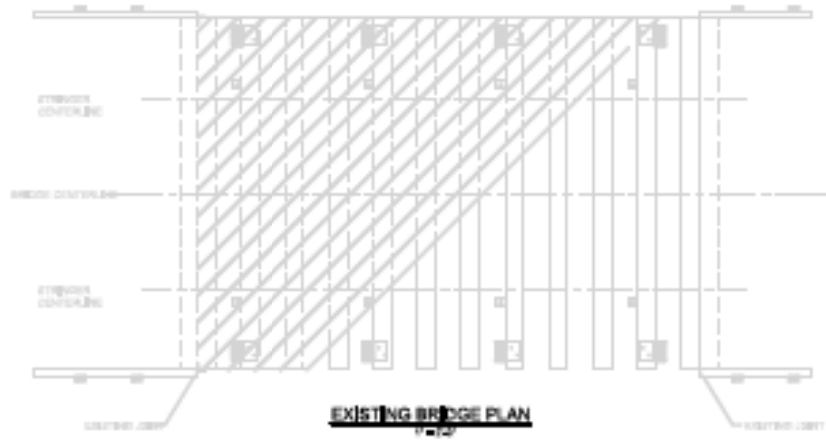
SCALE: 1" = 20'-0"
STA ___+___ RT
STA ___+___ LT

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		

BRIDGE ALTERATION PLAN & SECTION
CATTLE CROSSING BRIDGE

EXISTING TYPICAL SECTION
1" = 2'-0"

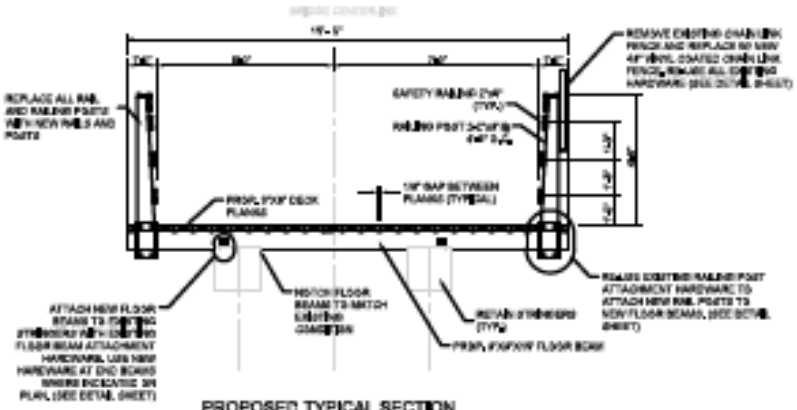


EXISTING BRIDGE PLAN
1" = 2'-0"

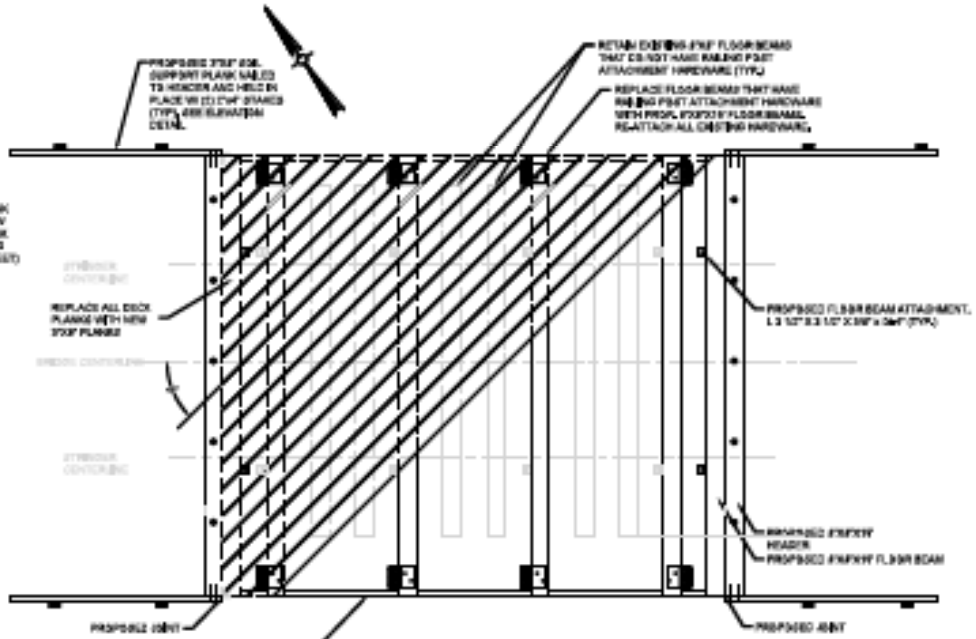
ESTIMATED QUANTITIES

(ALL ITEMS INCLUDED UNDER LUMP SUM PRICE)
(ALL ITEMS ARE ESTIMATED AND NOT GUARANTEED)

ITEM	QTY	UNIT
BRIDGE DEMOLITION ITEMS		
3"x8" DECKING	[illegible]	SF
BRIDGE RAIL W/ CHAIN LINK FENCE	[illegible]	FT
6"x8" DECK SUPPORT BEAMS	[illegible]	EA
BRIDGE ALTERATION ITEMS		
3"x8" DECKING	[illegible]	SF
3"x8" SOIL SUPPORT PLANKS	[illegible]	FT
3"x8" END PLANKS FOR DECKING	[illegible]	FT
2"x4" SOIL SUPPORT STAKES	[illegible]	FT
2"x8" BRIDGE RAIL POSTS (2 PER POST)	[illegible]	FT
2"x8" SAFETY RAILING PLANKS	[illegible]	FT
6"x8" DECK SUPPORT BEAMS	[illegible]	FT
CEMENT MORTAR FOR HEADER	[illegible]	CY



PROPOSED TYPICAL SECTION
1" = 2'-0"



PROPOSED BRIDGE PLAN
1" = 2'-0"

SHEET 1 OF 2 SHEETS BRIDGE NO.

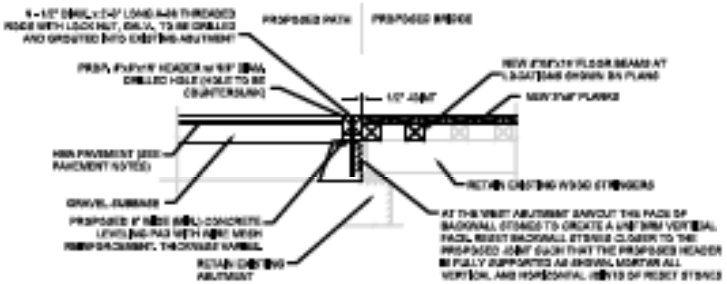
NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

STATE	ROUTE NO.	SHEET NO.	TOTAL SHEETS
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT NO.	[illegible]		

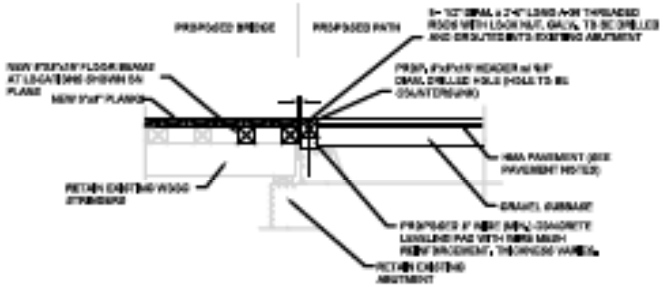
BRIDGE ALTERATION JOINT DETAILS
CATTLE CROSSING BRIDGE

EXISTING DECK JOINT – WEST ABUTMENT
1" = 2'-0"

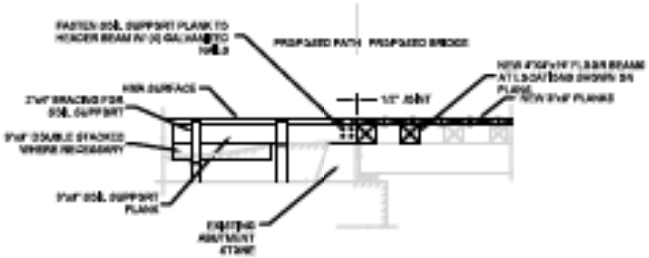
EXISTING DECK JOINT – EAST ABUTMENT
1" = 2'-0"



PROPOSED DECK JOINT – WEST ABUTMENT
1" = 2'-0"



PROPOSED DECK JOINT – EAST ABUTMENT
1" = 2'-0"



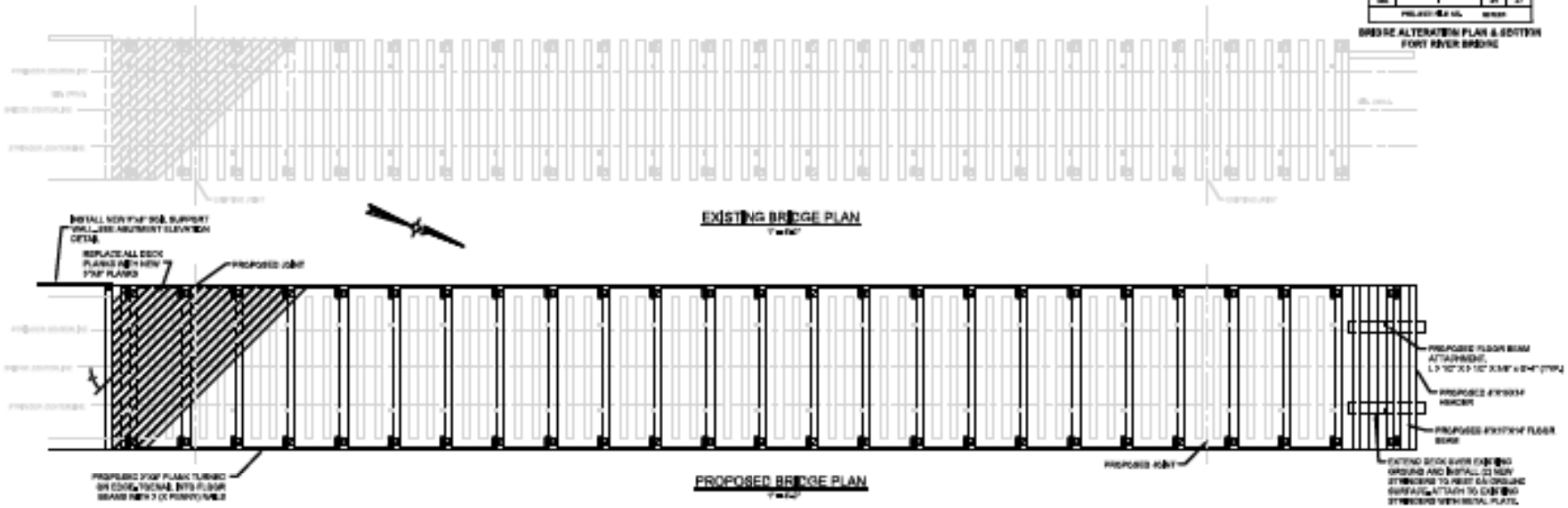
TYPICAL ABUTMENT ELEVATION
1" = 2'-0"

SHEET 2 OF 2 SHEETS BRIDGE NO. 1

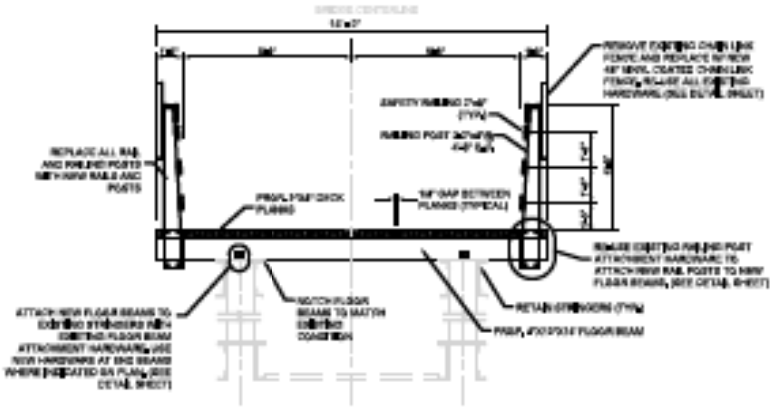
NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT [illegible]	[illegible]		

BRIDGE ALTERATION PLAN & SECTION
FORT RIVER BRIDGE



EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION

ESTIMATED QUANTITIES

(ALL ITEMS INCLUDED UNDER LUMP SUM PRICE)
(ALL ITEMS ARE ESTIMATED AND NOT GUARANTEED)

ITEM	QTY	UNIT
BRIDGE DEMOLITION ITEMS		
1"x6" DECKING	[illegible]	SF
BRIDGE RAIL W/ CHAIN LINK FENCE	[illegible]	FT
4"x4" DECK SUPPORT BEAMS	27	EA
BRIDGE ALTERATION ITEMS		
1"x6" DECKING	[illegible]	SF
1"x6" SOIL SUPPORT PLANKS	[illegible]	FT
1"x6" END PLANKS FOR DECKING	[illegible]	FT
2"x6" BRIDGE RAIL POSTS (2 PER POST)	[illegible]	FT
2"x6" SAFETY RAILING PLANKS	[illegible]	FT
4"x4" DECK SUPPORT BEAMS	[illegible]	FT
4"x10" STRINGERS	[illegible]	FT
GRAVEL BUSHING FOR STRINGERS	[illegible]	CY
BRIDGE HARDWARE	[illegible]	LB

SHEET 1 OF 2 SHEETS BRIDGE NO. [illegible]

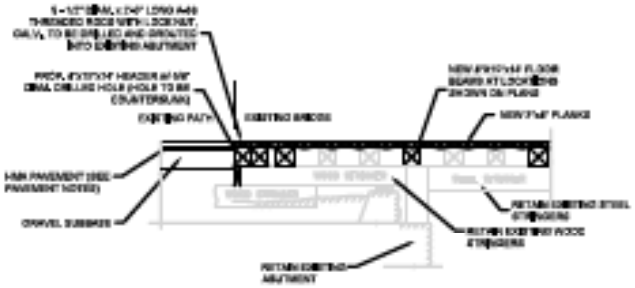
NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

STATE	FEDERAL AID NO.	SHEET NO.	TOTAL SHEETS
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

BRIDGE ALTERATION JOINT DETAILS
FORT RIVER BRIDGE

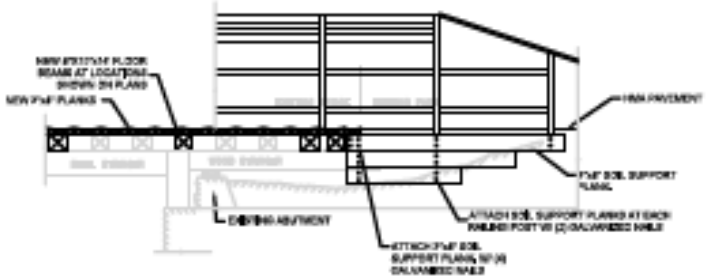
EXISTING DECK JOINT - SOUTH ABUTMENT

EXISTING DECK JOINT - NORTH ABUTMENT



PROPOSED DECK JOINT - SOUTH ABUTMENT

PROPOSED DECK JOINT - NORTH ABUTMENT



PROPOSED ABUTMENT ELEVATION VIEW

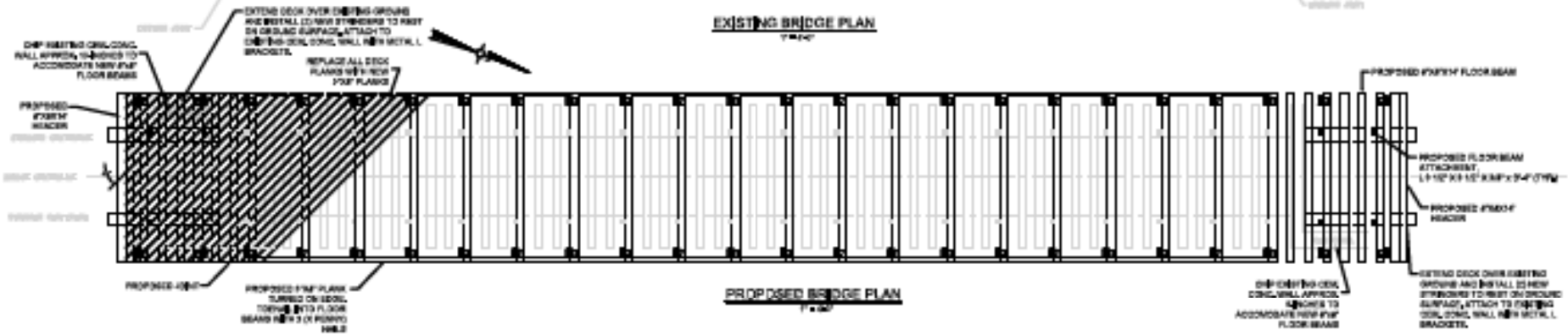
SHEET 2 OF 2 SHEETS BRIDGE NO. A-[illegible]

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

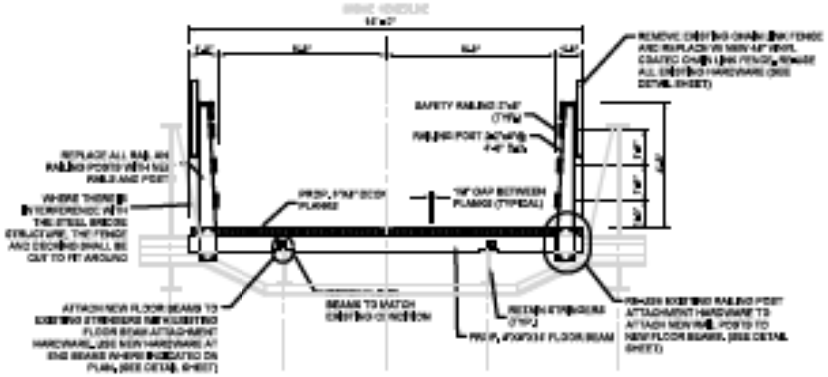
BRIDGE ALTERATION PLAN & SECTION
SOUTHEAST STREET BRIDGE

EXISTING BRIDGE PLAN



PROPOSED BRIDGE PLAN

EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION

ESTIMATED QUANTITIES

(ALL ITEMS INCLUDED UNDER LUMP SUM PRICE)
(ALL ITEMS ARE ESTIMATED AND NOT GUARANTEED)

ITEM	QTY	UNIT
BRIDGE DEMOLITION ITEMS		
3"x6" DECKING	1,086	SF
BRIDGE RAIL W/ CHAIN LINK FENCE	180	FT
4"x6" DECK SUPPORT BEAMS	24	EA
CEMENT CONCRETE EXCAVATION	1.5	CY
BRIDGE ALTERATION ITEMS		
3"x6" DECKING	1,486	SF
3"x6" ERC PLANKS FOR DECKING	180	FT
3"x6" BRIDGE RAIL POSTS (2 PER POST)	288	FT
2"x6" SAFETY RAILING PLANKS	1,200	FT
4"x6" DECK SUPPORT BEAMS	900	FT
4"x12" STRINGERS	40	FT
GRAVEL SUBBASE FOR STRINGERS	16	CY
BRIDGE HARDWARE	40	LB

SHEET 1 OF 2 SHEETS BRIDGE NO. A-04-015

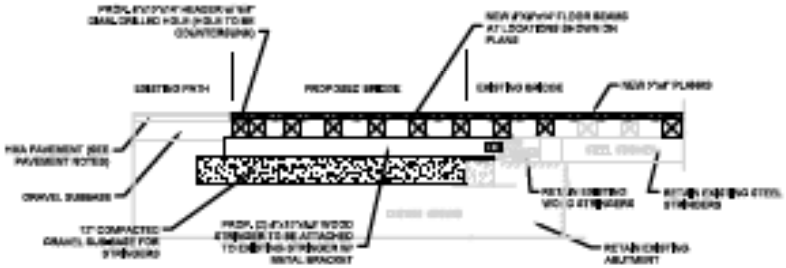
NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			

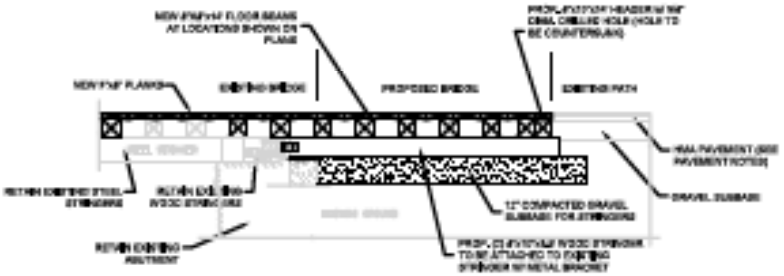
BRIDGE ALTERATION JOINT DETAILS
SOUTHEAST STREET BRIDGE

EXISTING DECK JOINT - SOUTH ABUTMENT

EXISTING DECK JOINT – NORTH ABUTMENT



PROPOSED DECK JOINT – SOUTH ABUTMENT



PROPOSED DECK JOINT – NORTH ABUTMENT

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

BRIDGE ALTERATION PLAN & SECTION
HOP BROOK BRIDGE

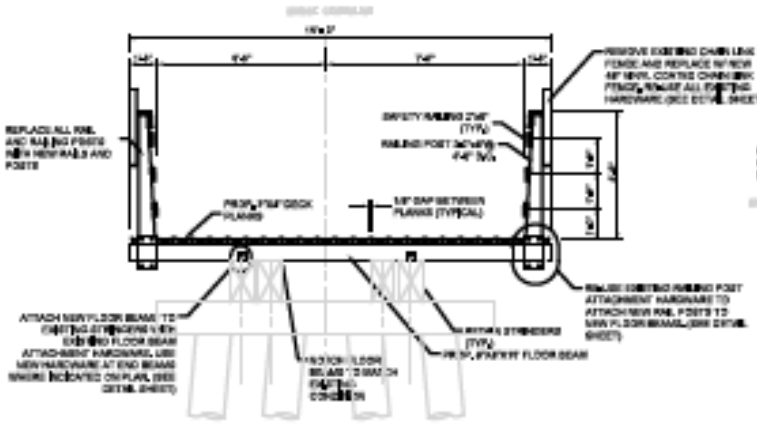
EXISTING TYPICAL SECTION

EXISTING BRIDGE PLAN

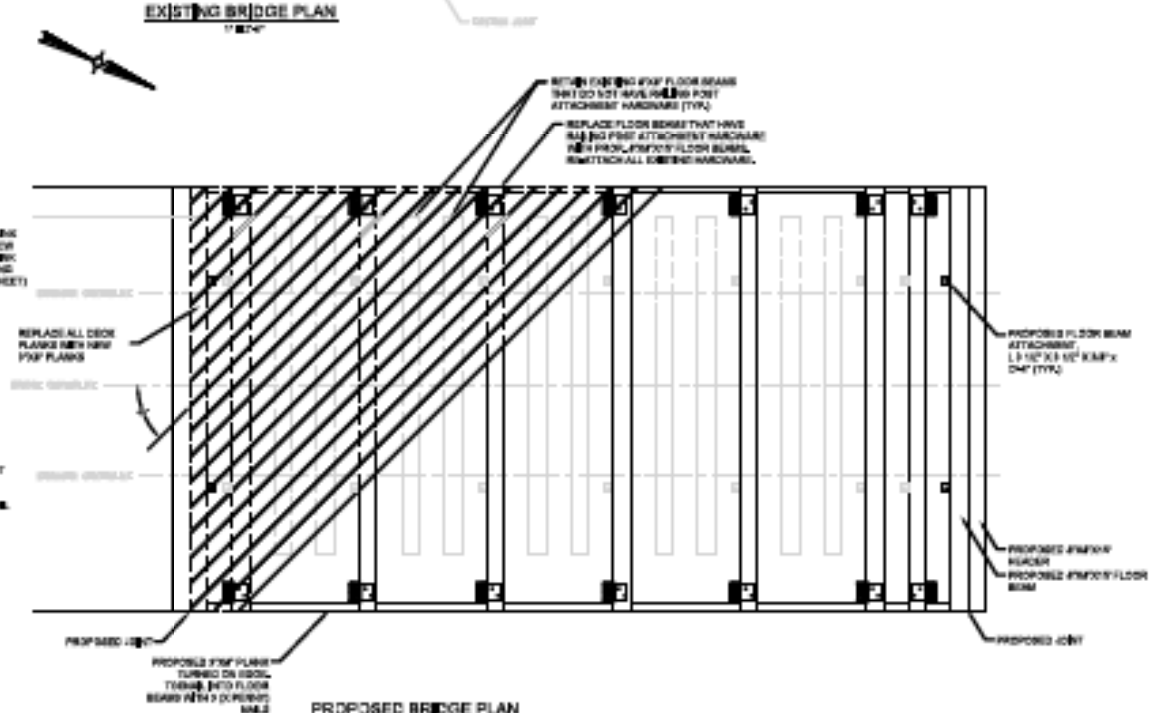
ESTIMATED QUANTITIES

(ALL ITEMS INCLUDED UNDER LUMP SUM PRICE)
(ALL ITEMS ARE ESTIMATED AND NOT GUARANTEED)

ITEM	QTY	UNIT
BRIDGE DEMOLITION ITEMS		
3"x6" DECKING	332	SF
BRIDGE RAIL W/ CHAIN LINK FENCE	107	FT
6"x6" DECK SUPPORT BEAMS	11	EA
BRIDGE ALTERATION ITEMS		
3"x6" DECKING	416	SF
3"x6" STEEL SUPPORT PLANKS	33	FT
3"x6" END PLANKS FOR DECKING	404	FT
2"x4" STEEL SUPPORT STAKES	6	FT
2"x6" BRIDGE RAIL POSTS (2 PER POST)	220	FT
2"x6" SAFETY RAILING PLANKS	615	FT
6"x6" DECK SUPPORT BEAMS	100	FT
CEMENT MORTAR FOR HEADER	0.2	CY



PROPOSED TYPICAL SECTION



PROPOSED BRIDGE PLAN

SHEET 1 OF 2 SHEETS BRIDGE NO. A-[illegible]

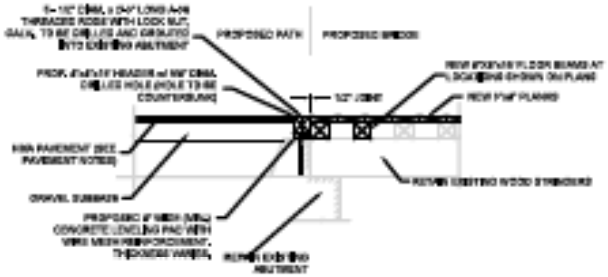
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

DATE	RELEASE FOR	SHEET NO.	SHEET ABOVE
[illegible]	[illegible]	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

BRIDGE ALTERATION JOINT DETAILS
HOP BROOK BRIDGE

EXISTING DECK JOINT - SOUTH ABUTMENT

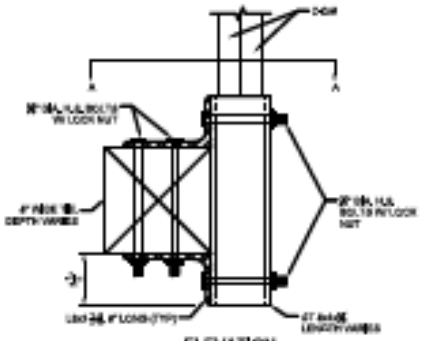
EXISTING DECK JOINT - NORTH ABUTMENT



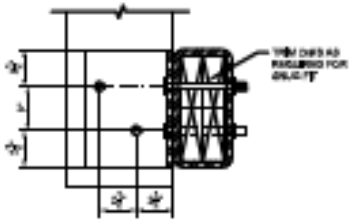
PROPOSED DECK JOINT - SOUTH ABUTMENT

PROPOSED DECK JOINT - NORTH ABUTMENT

SHEET 2 OF 2 SHEETS BRIDGE NO. [illegible]

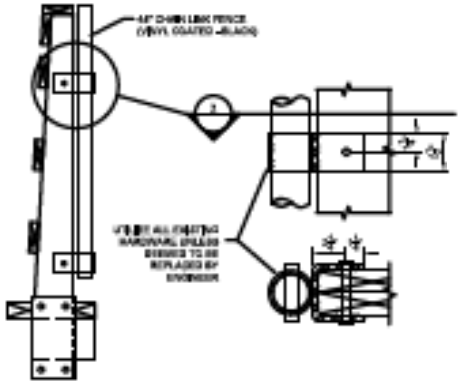


ELEVATION



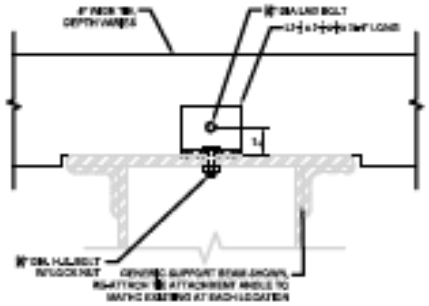
SECTION A-A

RAILING POST ATTACHMENT DETAIL



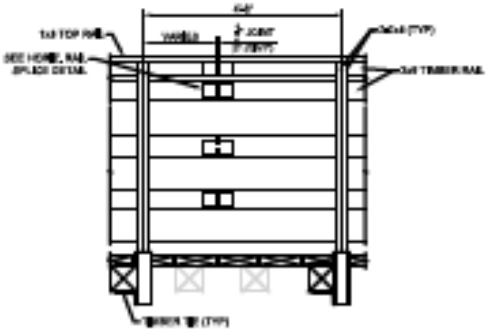
CHAIN LINK FENCE ATTACHMENT DETAIL

NOT TO SCALE

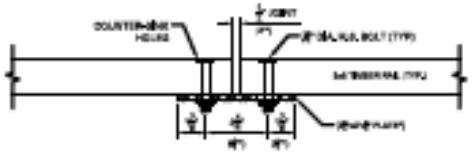


STRINGER TIE ATTACHMENT DETAIL

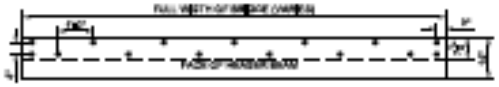
NOT TO SCALE

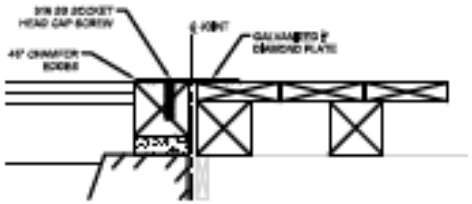


RAIL SPLICE GENERAL ELEVATION



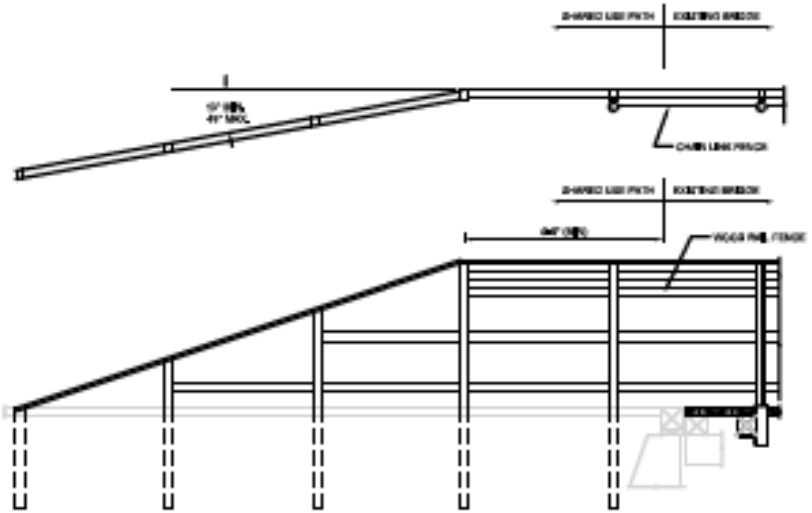
PLAN





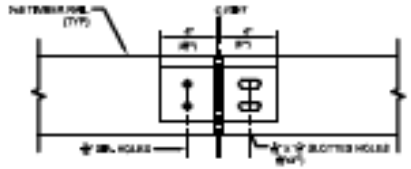
STEEL PLATE AT EXPANSION JOINTS

NOT TO SCALE



TYPICAL LEADING AND TRAILING END OF WOOD RAILING

NOT TO SCALE



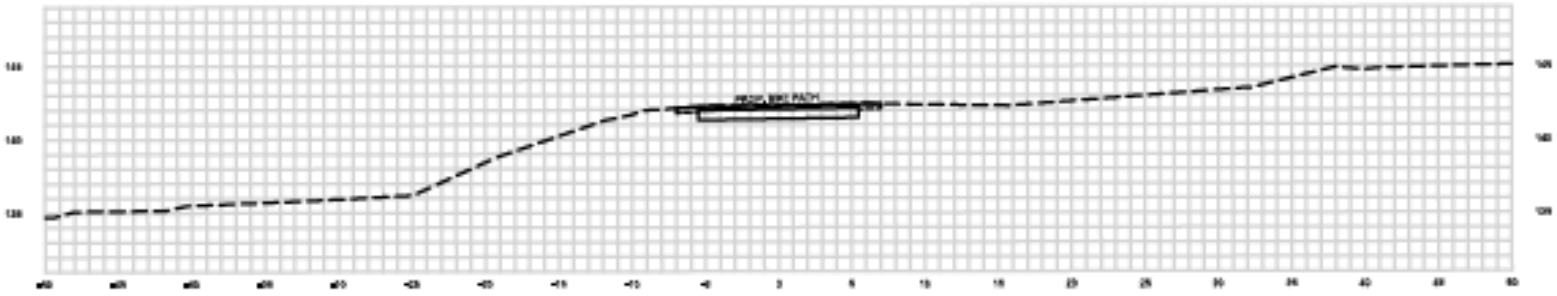
ELEVATION

RAIL SPLICE DETAIL AT BRIDGE JOINTS

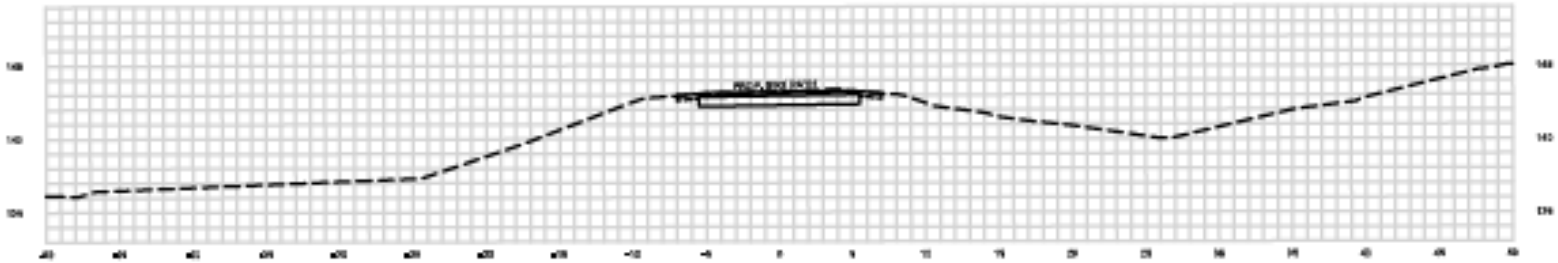
NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	-	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

X-SECTIONS
BEARDWALK AREA



STATION 1+50



STATION 1+00

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

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PROJECT FILE NO.	[illegible]		

X-SECTIONS
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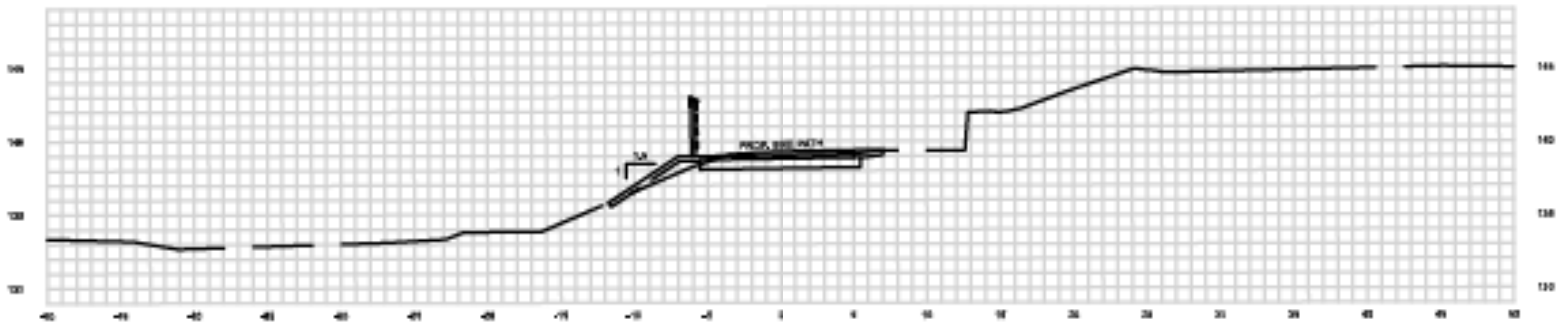
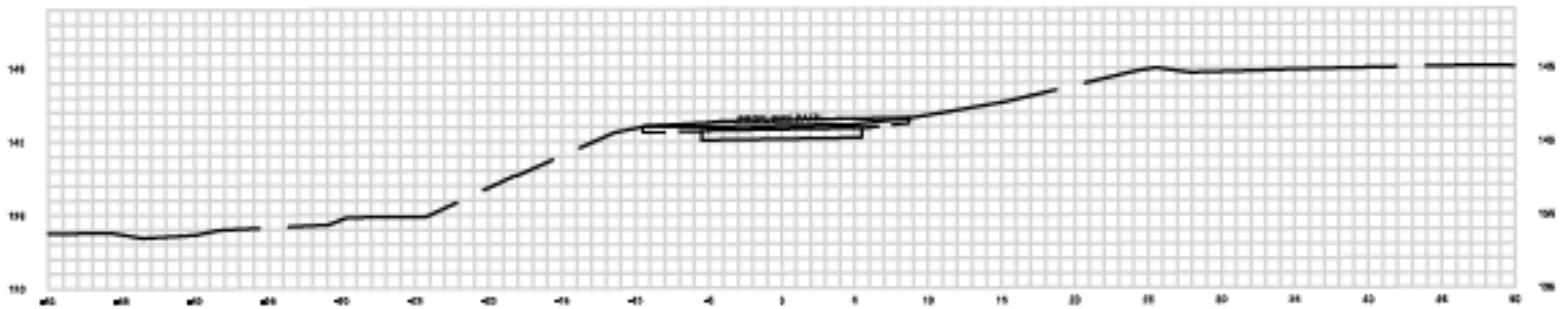


STATION 2+50



STATION 2+00

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

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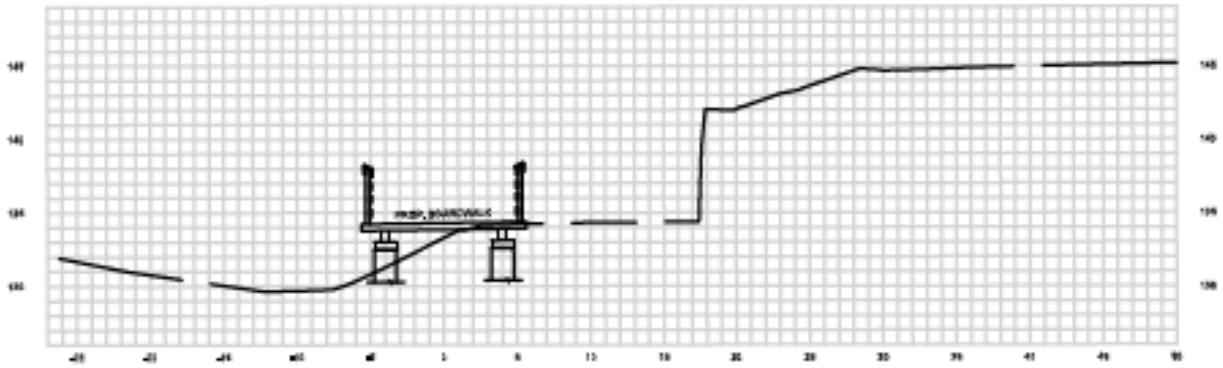
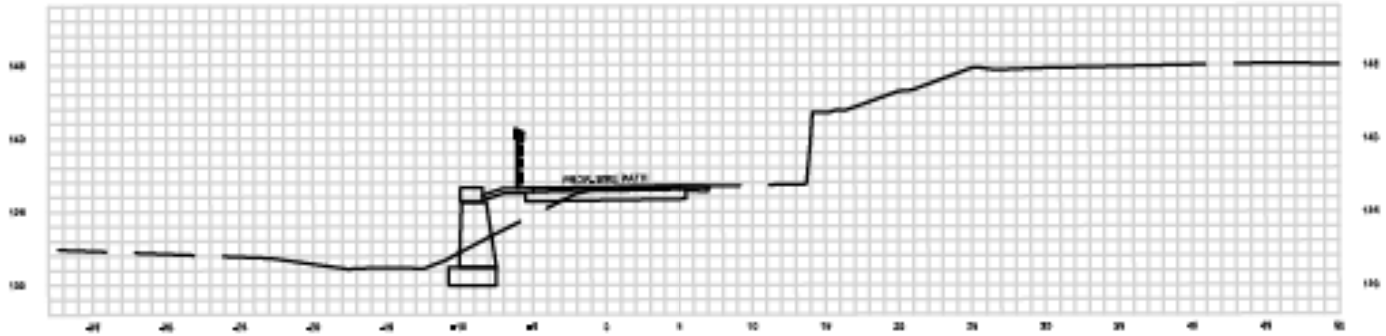
[illegible]	-	[illegible]	[illegible]
PROJECT FILE NO.	[illegible]		

X-SECTIONS
BOARDWALK AREA



STATION 3+50



STATION 3+00

NORTHAMPTON - HADLEY - AMHERST
NORWOTTUCK RAIL TRAIL REHABILITATION

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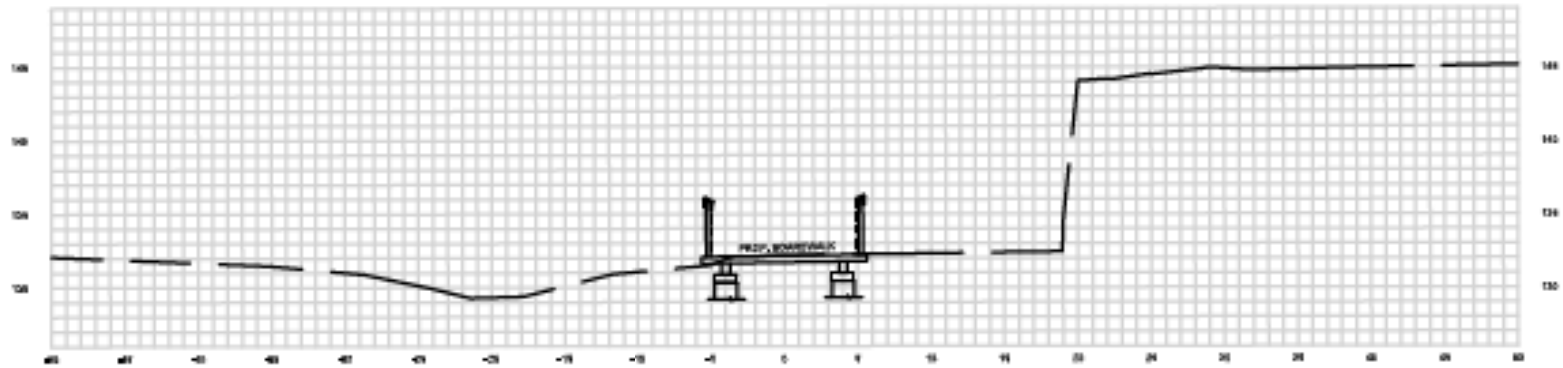
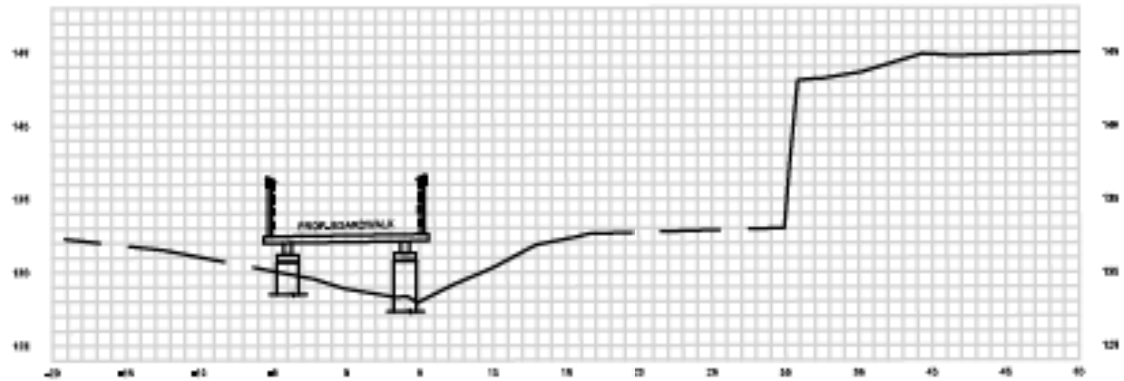
PROJECT FILE NO.	[illegible]		

X-SECTIONS
BOARDWALK AREA



STATION 4+50



STATION 4+00

HORIZONTAL
0 4 8 12
SCALE IN FEET

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL

[illegible]	[illegible]	[illegible]	[illegible]
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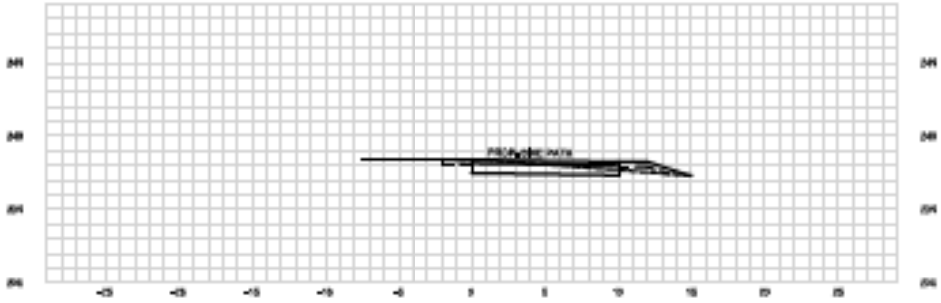
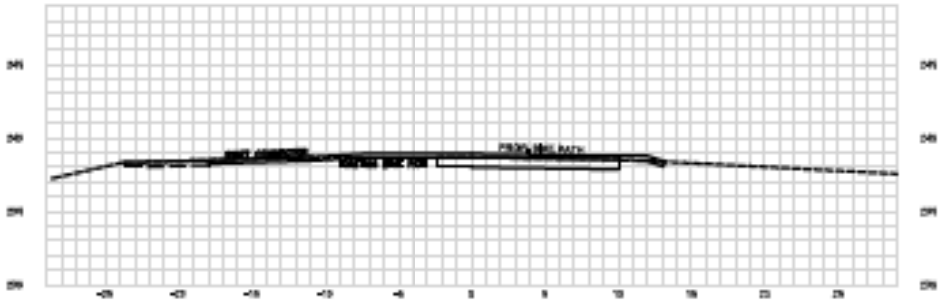
X-SECTIONS
[illegible]



STATION 1+00



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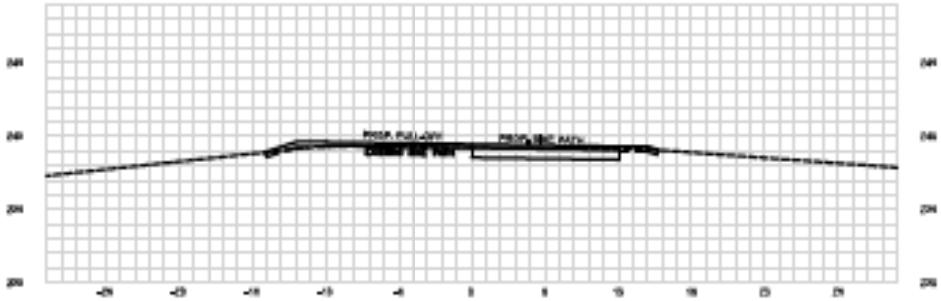
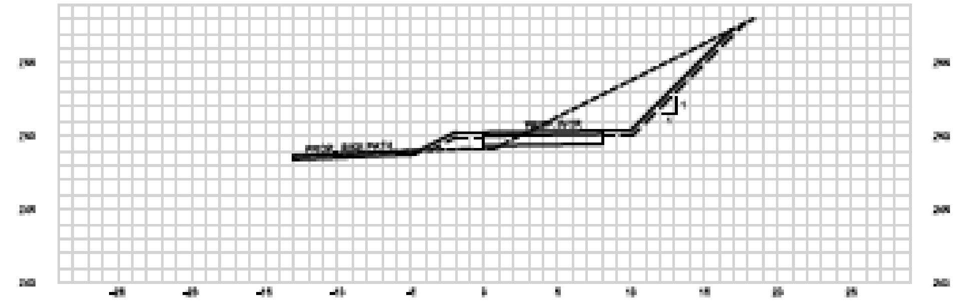


STATION 2+00

NORTHAMPTON • HADLEY • AMHERST
NORWOTTUCK RAIL TRAIL



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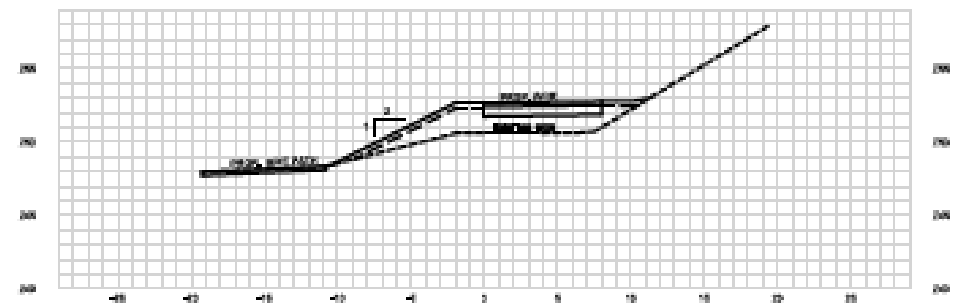
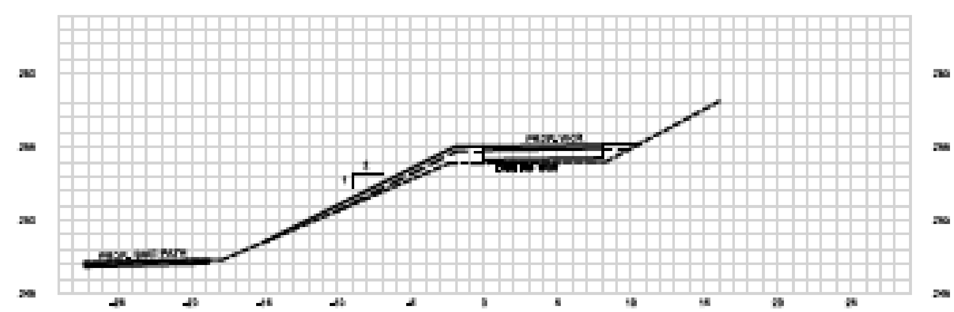


STATION 2+00



STATION 2+63