nationalgrid

PROPOSED
20-INCH GAS MAIN INSTALLATION
IN
SERVICE ROAD
SANDWICH, MASSACHUSETTS

JUNE 19, 2014

DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE
15-646.01-G-001	COVER SHEET & INDEX
15-646.01-G-002	LEGEND & NOTES
15-646.01-G-003	TRENCH & MECHANICAL DETAILS
15-646.01-G-004	MISCELLANEOUS DETAILS
15-646.01-G-005	TIE-IN DETAILS
15-646.01-TMP-001 - 005	TRAFFIC MANAGEMENT PLANS

PHASE I

15-646.01-C-001	SERVICE ROAD ALIGNMENT
15-646.01-C-001A	ROAD CROSSING DETAIL
15-646.01-C-002	SERVICE ROAD ALIGNMENT
15-646.01-C-003	SERVICE ROAD ALIGNMENT
15-646.01-C-004	SERVICE ROAD ALIGNMENT
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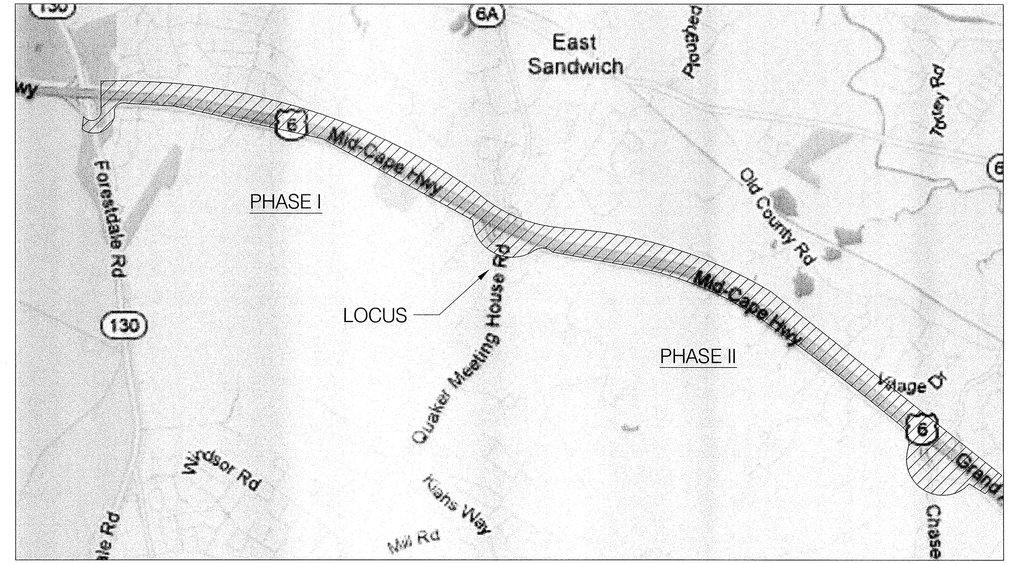
15-646.01-C-007	SERVICE ROAD ALIGNMENT
15-646.01-C-008	SERVICE ROAD ALIGNMENT
15-646.01-C-009	SERVICE ROAD ALIGNMENT
15-646.01-C-010	SERVICE ROAD ALIGNMENT
15-646.01-C-011	SERVICE ROAD ALIGNMENT
15-646.01-C-012	SERVICE ROAD ALIGNMENT
15-646.01-C-013	SERVICE ROAD ALIGNMENT
15-646.01-C-014	SERVICE ROAD ALIGNMENT
15-646.01-C-015	SERVICE ROAD ALIGNMENT
15-646.01-C-016	SERVICE ROAD ALIGNMENT
15-646.01-C-017	SERVICE ROAD ALIGNMENT
15-646.01-C-018	SERVICE ROAD ALIGNMENT
15-646.01-C-019	SERVICE ROAD ALIGNMENT
15-646.01-C-019A	ROAD CROSSING DETAIL

PHASE II

15-646.01-C-020	SERVICE ROAD ALIGNMENT
15-646.01-C-021	SERVICE ROAD ALIGNMENT
15-646.01-C-022	SERVICE ROAD ALIGNMENT
15-646.01-C-023	SERVICE ROAD ALIGNMENT
15-646.01-C-024	SERVICE ROAD ALIGNMENT
15-646.01-C-025	SERVICE ROAD ALIGNMENT
15-646.01-C-026	SERVICE ROAD ALIGNMENT
15-646.01-C-027	SERVICE ROAD ALIGNMENT
15-646.01-C-028	SERVICE ROAD ALIGNMENT
15-646.01-C-029	SERVICE ROAD ALIGNMENT
15-646.01-C-030	SERVICE ROAD ALIGNMENT
15-646.01-C-031	SERVICE ROAD ALIGNMENT
15-646.01-C-032	SERVICE ROAD ALIGNMENT
15-646.01-C-033	SERVICE ROAD ALIGNMENT
15-646.01-C-034	SERVICE ROAD ALIGNMENT
15-646.01-C-035	SERVICE ROAD ALIGNMENT
15-646.01-C-036	SERVICE ROAD ALIGNMENT
15-646.01-C-037	SERVICE ROAD ALIGNMENT
15-646.01-C-038	SERVICE ROAD ALIGNMENT
15-646.01-C-038A	ROAD CROSSING DETAIL



LOCUS PLAN
N.T.S.

REFERENCE DRAWINGS			
DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS						
NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

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REGISTERED PROFESSIONAL ENGINEER
6/19/14

NATIONAL GRID SERVICE COMPANY, USA
COVER SHEET & INDEX
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-G-001

File: W:\NATIONAL GRID\2011 RFP 01\01 SANDWICH\DRAWINGS\15-646.01 ALIGN 1-23_REV 0 (ISSUED FOR FINAL EFSB APPROVAL).DWG
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TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

LEGEND

PROPOSED GAS LINE (100 A 00)
PROPERTY LINE
EASEMENT LINE
EDGE OF PAVEMENT
RAILROAD
LIMIT OF WORK
CONTOUR
FENCE
EXISTING GUARDRAIL
PROPOSED GUARDRAIL
OVERHEAD WIRES (OHW)
DRAIN LINE (D)
SEWER LINE (S)
WATER LINE (W)
GAS LINE (G)
ELECTRICAL LINE (E)
TELEPHONE LINE (T)
CONCRETE BOUND
IRON PIN
UTILITY MANHOLE
UTILITY HANDHOLE
CATCH BASIN
UTILITY POLE
LIGHT POST
GUY ANCHOR
WATER GATE (WV)
GAS GATE (GV)
HYDRANT
MAIL BOX (MB)
TRAFFIC SIGNAL
GATE POST / BOLLARD
TREE
EXISTING STRUCTURE
PROPOSED GAS VALVE (GV)
SPOT GRADE (X 546)
PARKING METER (PM)
CALL BOX

ABBREVIATIONS

ABD.	ABANDON
APPROX.	APPROXIMATE
BND.	BOUND
BIT. CONC.	BITUMINOUS CONCRETE
℄	BASELINE
BLDG.	BUILDING
B.O.	BY OTHERS
B.W.	BOTTOM OF WALL
BWLL	BROKEN WHITE LANE LINE
CTB	CATCH BASIN
C.B.C.I.	CATCH BASIN WITH CURB INLET
CEM.	CEMENT
C.I.	CURB INLET
℄	CENTERLINE
℄ CONST.	CENTERLINE OF CONSTRUCTION
CLDI	CEMENT LINED DUCTILE IRON PIPE
CONC.	CONCRETE
CONST.	CONSTRUCT(ION)
D	DRAIN
DMH	DRAINAGE MANHOLE
DWY	DRIVEWAY
DYCL	DOUBLE YELLOW CENTERLINE
E	ELECTRIC
ELEV. (OR EL)	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST. (OR EX.)	EXISTING
GG	GAS GATE
GRAN.	GRANITE
GRV	GRAVEL
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HMA	HOT MIX ASPHALT
HOR.	HORIZONTAL
HYD.	HYDRANT
L	LENGTH OF CURVE/LEFT
L.P.	LIGHT POLE
MB	MAIL BOX
MH	MANHOLE
MHD	MASS HIGHWAY BOUND
NTS	NOT TO SCALE
PAVT.	PAVEMENT
P.C.	POINT OF CURVATURE
P.C.C.	POINT OF COMPOUND CURVATURE
PGL	PROFILE GRADE LINE
P.I.	POINT OF INTERSECTION
PM	PARKING METER
P.R.C.	POINT OF REVERSE CURVATURE
PROP.	PROPOSED
P.T.	POINT OF TANGENCY
R	RADIUS OF CURVATURE/RIGHT
RCP	REINFORCED CONCRETE PIPE
RD.	ROAD
REM.	REMOVE
RET.	RETAIN
RET. WALL	RETAINING WALL
RMDL	REMODEL
R.O.W.	RIGHT-OF-WAY
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
S.B.	STONE BOUND
SMH	SEWER MANHOLE
ST.	STREET
STA.	STATION
S.W.	SIDEWALK
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
SYCL	SINGLE YELLOW CENTERLINE
T	TANGENT/TRUCK PERCENTAGE
TAN.	TANGENT DISTANCE OF CURVE
TEMP.	TEMPORARY
TMH	TELEPHONE MANHOLE
TS	TEST STATION
TSP	TRAFFIC SIGNAL POLE
T.W.	TOP OF WALL
TYP.	TYPICAL
UTP	UTILITY POLE
VERT.	VERTICAL
WV	WATER VALVE
W.M.	WATER METER/WATER MAIN
WSO	WATER SHUT OFF
GSO	GAS SHUT OFF
ADJ.	ADJUST
L.F.	LINEAR FEET
MP	MARKER POST

GRAPHIC SCALE
20 10 0 20 40 60 FEET

GENERAL NOTES

1. SITE DETAIL SHOWN HEREON IS BASED UPON TOPOGRAPIC DETAIL SURVEY CONDUCTED BY COLER & COLANTONIO, INC. IN JULY 2011 AND DETAIL SURVEY PROVIDED BY BSC.

2. THE SERVICE ROAD RIGHTS-OF-WAY SHOWN HEREON ARE BASED ON MASSACHUSETTS DEPARTMENT OF TRANSPORTATION RECORD PLANS AND DO NOT REPRESENT A PROPERTY LINE RETRACEMENT SURVEY EFFORT.

3. LOCATION OF ANY IDENTIFIED UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR FOR SERVICE, SIZE, INVERT ELEVATIONS, LOCATION, ETC. CONTRACTOR MUST NOTIFY DIG-SAFE MASSACHUSETTS 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.

4. THE PLAN SET IS REFERENCED TO THE MASSACHUSETTS MAINLAND ZONE 2003, NAD83 HORIZONTAL COORDINATE SYSTEM. ELEVATIONS ARE BASED ON NGVD 1988, US SURVEY FEET AND REFERENCED TO TEMPORARY BENCHMARKS AS SHOWN ON THE PLAN.

5. THE LOCUS LIES IN FIRM ZONE "X", DESCRIBED ON COMMUNITY PANEL NUMBERS, PREPARED BY F.E.M.A.: 250012000 5D & 2500120006D, REVISED AUGUST 5, 1991, AND 2500120003G & 2500120002F, REVISED JULY 2, 1992.

6. THE PURPOSE OF THIS PLAN SET IS TO IDENTIFY TO THE APPROPRIATE PERMITTING AGENCY THE PROPOSED LOCATION FOR A GAS PIPELINE AND ITS LOCATION RELATIVE TO EXISTING UTILITIES WITHIN THE LIMITS OF A ROAD RIGHT-OF-WAY, INCLUDING ELEVATION INFORMATION WHERE OBTAINABLE.

REFERENCE DRAWINGS

1. PLAN ENTITLED "SANDWICH ~ 1949 LAYOUT ~ 26 SHEETS", SCALE 1"=40'.

2. PLAN ENTITLED "PROPERTY OF NEW ENGLAND TELEPHONE & TELEGRAPH" LOCATION: SANDWICH, EXCHANGE: SAGAMORE, EXCHANGE CODE: 5363

3. PLAN ENTITLED "WATER SYSTEM MAP, SANDWICH, MASSACHUSETTS" PREPARED BY EARTH TECH, DATED JANUARY 2007, SCALE 1"=225'

4. PLAN ENTITLED "PROPOSED NEW 20" STEEL GAS MAIN, WESTERN SEGMENT PHASE 1, SERVICE ROAD, (BETWEEN ROUTE 130 & QUAKER MEETING HOUSE ROAD) IN SANDWICH, MASSACHUSETTS" PREPARED BY BSC GROUP, DATED 09/16/2000, SCALE 1"=40'.

5. COMCAST, MAP NO. 251-587, 252-586 TO 252-587, 253-585 TO 253-586, AND 254-584 TO 254-585" COVERING SERVICE ROAD FROM QUAKER MEETING HOUSE ROAD TO BOXWOOD LANE, SANDICH, MASS, SCALE 1"=100'.

CONSTRUCTION NOTES

1. THE PROPOSED PIPE IS 20-INCH COATED STEEL AND WILL BE SUPPLIED TO CONTRACTOR BY NATIONAL GRID.

2. ALL CONSTRUCTION WITHIN TOWN OF SANDWICH R.O.W. MUST CONFORM TO FEDERAL SPECIFICATIONS, PART 192 IN TITLE 49 CFR AND APPLICABLE, STATE AND LOCAL REGULATIONS.

3. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH PART VI OF THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.TC.D.) AND AS AMENDED.

4. ALL VEHICLES ARE TO BE HIGHLY VISIBLE USING ROTATING BEACONS AND BE MARKED BY USE OF TRAFFIC CONES.

5. NATIONAL GRID SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY OBSTRUCTION OF ACCESS.

6. CONTRACTOR SHALL MAINTAIN 1-FOOT MINIMUM CLEARANCE BETWEEN PROPOSED PIPELINES AND OTHER UTILITIES.

7. CONTRACTOR SHALL SUPPLY TEMPORARY ROAD SIGNS AS NECESSARY.

8. ALL TRENCH EXCAVATION PROTECTION SYSTEMS SHALL BE IN COMPLIANCE WITH OSHA SPECIFICATIONS.

9. NO TREES WITHIN THE TOWN ROW ARE TO BE REMOVED WITHOUT PRIOR PERMISSION FROM THE PERMIT ENGINEER.

10. CONTRACTOR SHALL CUT EXISTING GRADE TO APPROXIMATE GRADE OF PROPOSED BIKE PATH. SUITABLE MATERIAL REMOVED FROM CUT LOCATIONS ALONG THE PROPOSED BIKE PATH ROUTE ARE TO BE USED, WHERE FEASIBLE, FOR ESTABLISHING PROPOSED GRADES AT FILL LOCATIONS.

11. WHERE CUTTING THE EXISTING GRADE IS IMPRACTICAL, THE CONTRACTOR SHALL CONSIDER OTHER INSTALLATION METHODS TO BE APPROVED BY NATIONAL GRID, MASSDOT AND/OR OTHER APPROVING AUTHORITIES.

BILL OF MATERIAL

SUPPLIER	ITEM	DESCRIPTION	SIZE	QTY
NATIONAL GRID	1	PIPE, CARBON STEEL, 20 IN. SCH 40, 0.375 IN WALL, X-52 API-5L PSL2	20"	23,016 ft. ±
NATIONALGRID	2	CASING PIPE, WRAPPED STEEL, 24 IN. SCH 40, 0.500 IN WALL	24"	301 ft. ±
NATIONALGRID	3	ELBOW, WELD, 22.5 DEGREE, 3DIA RADIUS, 20 IN IPS, STEEL, STD. WALL 0.375IN, X-52 API-5L PSL2 *	20"	67
NATIONALGRID	4	ELBOW, WELD, 45 DEGREE, 3DIA RADIUS, 20 IN IPS, STEEL, STD. WALL 0.375IN, X-52 API-5L PSL2 *	20"	21
NATIONALGRID	5	ELBOW, WELD, 90 DEGREE, 3DIA RADIUS, 20 IN IPS, STEEL, STD. WALL 0.375IN, X-52 API-5L PSL2 *	20"	1
NATIONALGRID	6	TEE, BARRED, STEEL, 20 IN. x 20 IN. x 20 IN.	20"	2
NATIONALGRID	8	REDUCER, CARBON STEEL, 20 IN. x 12 IN.	20" x 12"	2
NATIONALGRID	9	TDW, SPHERICAL 3-WAY TEE	12"	2
NATIONALGRID	10	VENT PIPE, STEEL	2"	136' ±
NATIONALGRID	13	FLANGE, 20", CLASS 300LB, ASTM A105, 19.25 BORE, RFWN	20"	2
NATIONALGRID	14	FLANGE, 20", CLASS 300LB BLIND, ASTM A105, RF	20"	2
NATIONALGRID	15	GASKET, 22 3/4" OD, SOFT CUT, COMPRESSED FIBER, 0.125 THICK FOR 20" CLASS 300LB FLANGE	20"	2
NATIONALGRID	16	STUD BOLT FOR 20" CLASS 300LB FLANGE	1-1/8"	40
NATIONALGRID	17	PIPE, CARBON STEEL, 12 IN., SCH 40, 0.375 IN WALL, X-52 API-5L PSL2	12"	50 ft. ±
NATIONALGRID	19	20" CLASS 300LB INSULATING JOINT, WELD END	20"	1
NATIONALGRID	20	12" CLASS 300LB INSULATING JOINT, WELD END	12"	2
NATIONALGRID	21	CASING DETAILS	---	3
NATIONALGRID	22	12" FILTER SOCK WITH STAKES (PHASE I ONLY) **	12"	5,500 ft. ±
NATIONALGRID	23	SILT SACK (CATCH BASIN CONTROL, PHASE I ONLY)	---	18
NATIONALGRID	24	FILTER SOCK (DRAINAGE SWALE CONTROL, PHASE I ONLY)	---	11

* ADDITIONAL ELBOWS MAY BE REQUIRED DEPENDING ON FIELD CONDITIONS. CONTRACTOR TO DETERMINE IF 45° OR 90° ELBOWS WILL BE USED AT TIME OF CONSTRUCTION.

** LOCATION OF FILTER SOCK INSULATION TO BE DETERMINED BY ENVIRONMENTAL ENGINEER AT CONSTRUCTION.

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

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REGISTERED PROFESSIONAL ENGINEER
6-19-2014

NATIONAL GRID SERVICE COMPANY, USA
LEGEND & NOTES
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-G-002

File: W:\NATIONAL GRID\2011 RFP 01\01 SANDWICH\DRAWINGS\15-646.01 ALIGN 1-23_REV 0 (ISSUED FOR FINAL EFSB APPROVAL).DWG
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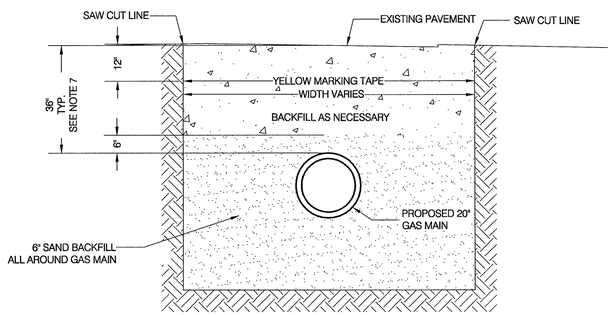


DETAIL 1
SCALE N.T.S.

TRENCH DETAIL

NOTES:

1. ALL TRENCH CONSTRUCTION TO CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

NOTES:
2. BACKFILL MATERIAL WILL CONSIST OF SUITABLE EXCAVATED MATERIAL COMPACTED.

3. CLEAN SAND SHALL BE USED TO BED AND COVER THE PROPOSED PIPES.

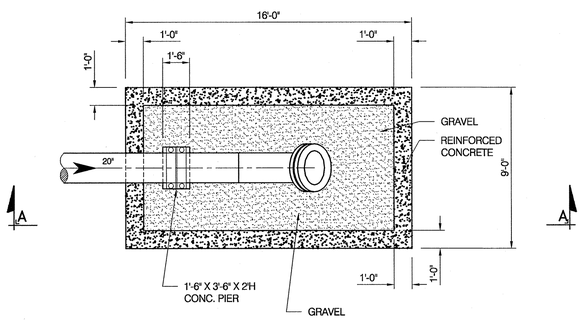
4. ALL BACKFILL MATERIAL SHALL BE COMPACTED AT NEAR OPTIMUM MOISTURE CONTENT IN LAYERS NOT EXCEEDING 6 INCHES IN COMPACTED THICKNESS BY PNEUMATIC TAMPERS, VIBRATOR COMPACTORS, OR OTHER APPROVED MEANS TO THE BASE OF THE MATERIAL SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T 99 METHOD C.

5. THE CONTRACTOR SHALL PROVIDE TESTING TO INSURE THAT THE INPLACE DENSITY OF THE BACKFILL MEETS THE ABOVE REQUIREMENTS.

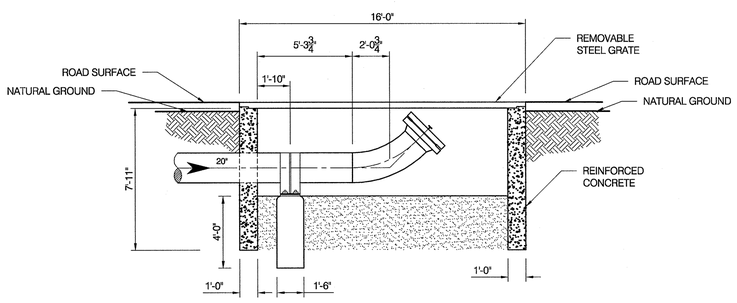
6. PROPOSED PIPE(S) SHALL MAINTAIN A MINIMUM 6" VERTICAL SEPARATION ABOVE / BELOW EXISTING UNDERGROUND UTILITIES / STRUCTURES.

7. THE MINIMUM DEPTH OF BURIAL SHALL BE 36" FOR THE PROPOSED PIPE(S). THE MINIMUM DEPTH OF BURIAL MAY BE REDUCED TO 30" SHOULD EXISTING UNDERGROUND UTILITIES / STRUCTURES BE PRESENT.

8. MWRA PIPE(S) WILL BE EXPOSED TO CONFIRM DEPTH OF COVERAGE PRIOR TO THE INSTALLATION OF THE PROPOSED GAS MAIN.



PLAN VIEW

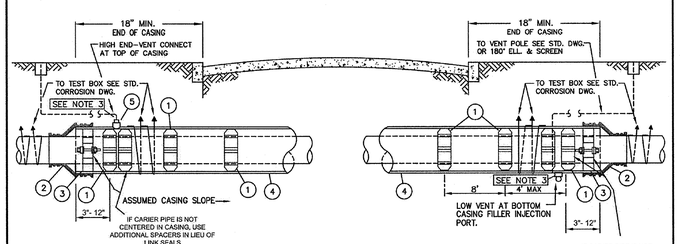


SECTION VIEW - A-A

DETAIL 3
SCALE 1/4"=1'-0"

20" BLOWDOWN DETAIL
NEAR STATION 112+00 & 227+00

CROSSING UNDER HIGHWAY



nationalgrid ALL REGIONS

CASING INSTALLATIONS

REVISIONS: • REVISED NOTES ON MIN. CLEARANCE TO 5.5 FT
REVISED NOTE 1

DATE: 07/01/2003 | EFFECTIVE DATE: 09/15/2013
DESIGN: AJG / M. MATASSA | STD. DWG. NO. **MAIN-6060**
DRAWN: PON / P. DIMAIO / ML

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BILL OF MATERIAL

SUPPLIER	ITEM	DESCRIPTION	SIZE	QTY
NATIONAL GRID	1	INSULATING SPACER #9341031	20"-24"	50 ±
NATIONALGRID	2	END SEAL #9342440	20"-24"	6
NATIONALGRID	3	LINK, SEAL, ASSY. MODEL LS-400-C #9339728	20"-24"	8
NATIONALGRID	4	CASING WRAPPED STEEL #9340800	24"	301' ±
NATIONALGRID	5	THREAD-O-LET #9342054	2"	6

DETAIL 4
SCALE N.T.S.

CASING DETAILS
(ITEM NO. 21)

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

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6-9-2014

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TRENCH & MECHANICAL DETAILS
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 Misc Details.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-G-003

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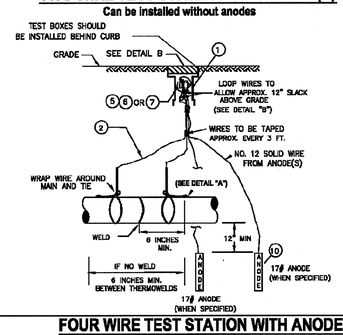
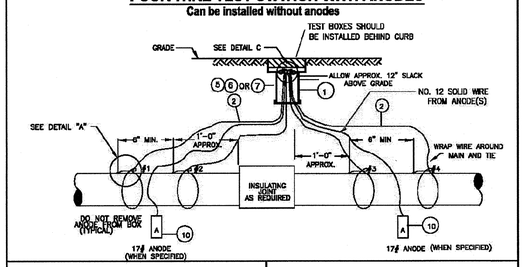
TWO WIRE TEST STATION WITH ANODE(S)

Can be installed without anodes



FOUR WIRE TEST STATION WITH ANODES

Can be installed without anodes



nationalgrid
ALL REGIONS

INSTALLATION OF TEST STATIONS FOR CATHODIC PROTECTION

REVISIONS: ADDED CASING TEST STATION DETAILS

DATE: 07/15/2010	EFFECTIVE DATE: 09/15/2011
DESIGN: PG	STD. DWG. NO. 030026-CS
APPROVED: PS	

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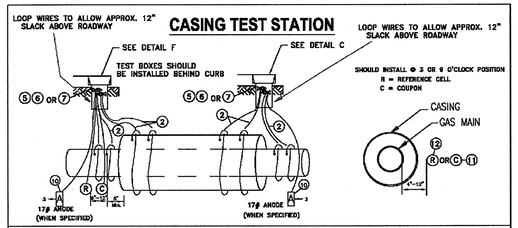
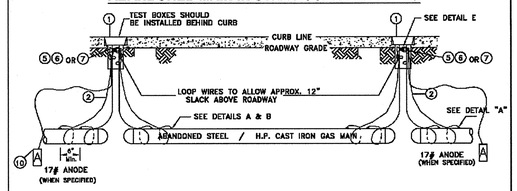
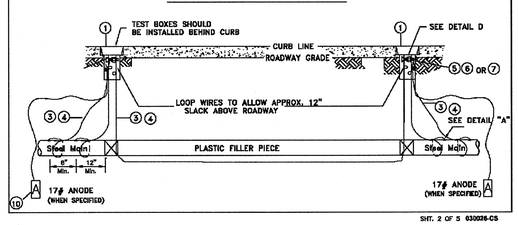
CASING TEST STATION



ABANDONED MAIN IN STRAY CURRENT AREAS

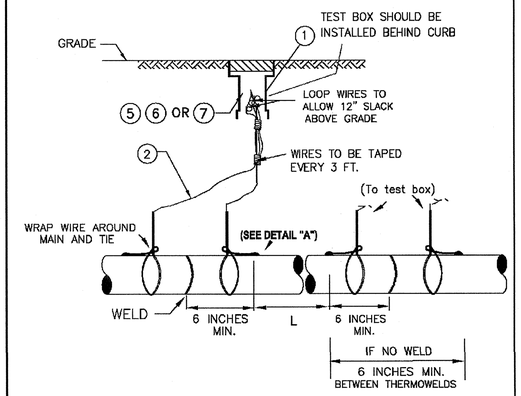


BOND WIRE TEST STATION



SHT. 2 OF 5 030026-CS

CURRENT DROP MEASURING TEST STATION

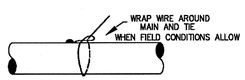


CURRENT DROP MEASURING TEST STATION SPACING

PIPE DIAMETER	"L"
3/4" – 4"	75'
6" – 10"	100'
12" AND OVER	125'

SHT. 3 OF 5 030026-CS

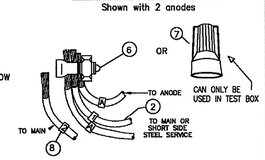
ATTACH WIRE IN ACCORDANCE WITH APPROVED THERMOWELD PROCEDURE



DETAIL "A"

Two wire test station

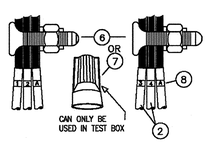
Shown with 2 anodes



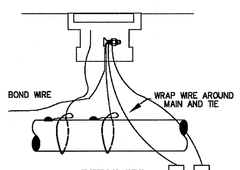
DETAIL "B"

Four wire test station

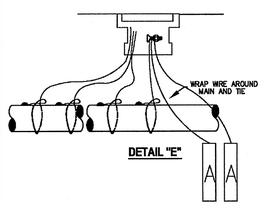
CONNECT ALL WIRES AS NEEDED



DETAIL "C" (typ)



DETAIL "D"



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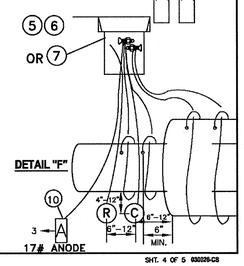

DETAIL "F"

SHT. 4 OF 5 030026-CS

MATERIAL LIST

	Description	Down State ORACLE Item I.D	Upstate PEOPLE SOFT Item I.D	New England ORACLE Item I.D	Rhode Island PEOPLE SOFT Item I.D	MATERIAL NOTES
1	TEST BOX WITH COVER	00308058	60-08-344 UPSTATE BOXES COME IN ONE PIECE	00308058	4800808 (NM - 4) in Cumb & 4800895 (Sm - 445) or 4800897 (Lg - 556) in Prov	NON LOCKING COVER. DISCARD FOOT PIECE.
	TEST BOX 9" SQUARE HEAVY DUTY	00303157		00303157		WEIGHS 95 LBS, STREET USE, WITHOUT COVER
	COVER FOR 9" SQUARE BOX	00308014		00308014		NON-LOCKING COVER
2	WIRE, NO. 8, 7 STRAND	00199229	9202887	00199229	9202887	TEST WIRE ONLY, NOT FOR GROUND BEDS, UPSTATE AND RI WIRE HAS 19 STRANDS.
3	WIRE, NO. 6, 7 STRAND	00199002	9202901	00199002	9202901	BOND WIRE ONLY, NOT FOR GROUND BEDS
4	WIRE 1/0 – 19 STRAND 600 V –1/C	00199429	NON STOCK	00199429	NON STOCK	USE IN STRAY CURRENT AREAS
5	TAPE, PVC - ¾" WIDE	00189008	2005620	00189008	2005620	NOT FOR PIPE COATING.
6	CONNECTOR, SPLIT BOLT, TYPE 6	00124003	20-14-471	00124003	NON STOCK	USE WITH NO. 6 CABLE
	CONNECTOR, SPLIT BOLT, TYPE 1/01	00124016		00124016		USE WITH 1/0 CABLE
7	CONNECTOR, TWIST-ON WIRE NUT	00125663	0811102	00125663	0811102	
8	TAG, ADHESIVE NUMBER 1	00339001	9202349	00339001	9202349	LABEL WITH #1 (N) OR (E), CONSECUTIVELY TO (S) OR (W)
	NUMBER 2	00339002	9202350	00339002	9202350	
	NUMBER 3	00339003	9202351	00339003	9202351	SEE DETAILS "B" AND "C"
	NUMBER 4	00339004	9202352	00339004	9202352	
	LETTER A	00339007	9020353	00339007	9020353	USE TO LABEL ANODES
9	GROUNDING CELL	NON STOCK	60-10-761	NON STOCK	NON STOCK	AS SPECIFIED BY CORROSION ENGINEERING
10	ANODE, MAGNESIUM 17LBS	00304001	48-00-460	00304001	48-00-460	SATURATE WITH WATER BEFORE BACKFILL. ANODE MAY BE INSTALLED VERTICALLY OR HORIZONTALLY.
11	COUPON	00304031	By Corrosion	00304031	By Corrosion	MC MILLER OR EQUAL
12	REFERENCE CELL	00304030	By Corrosion	00304030	By Corrosion	BORIN MFGR INC OR EQUAL

UNCONTROLLED WHEN PRINTED
Effective Date 09/15/2011

5 OF 5

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030026-CS

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
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No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-19-2014

NATIONAL GRID SERVICE COMPANY, USA
MISCELLANEOUS DETAILS
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA

15-646.01-G-004

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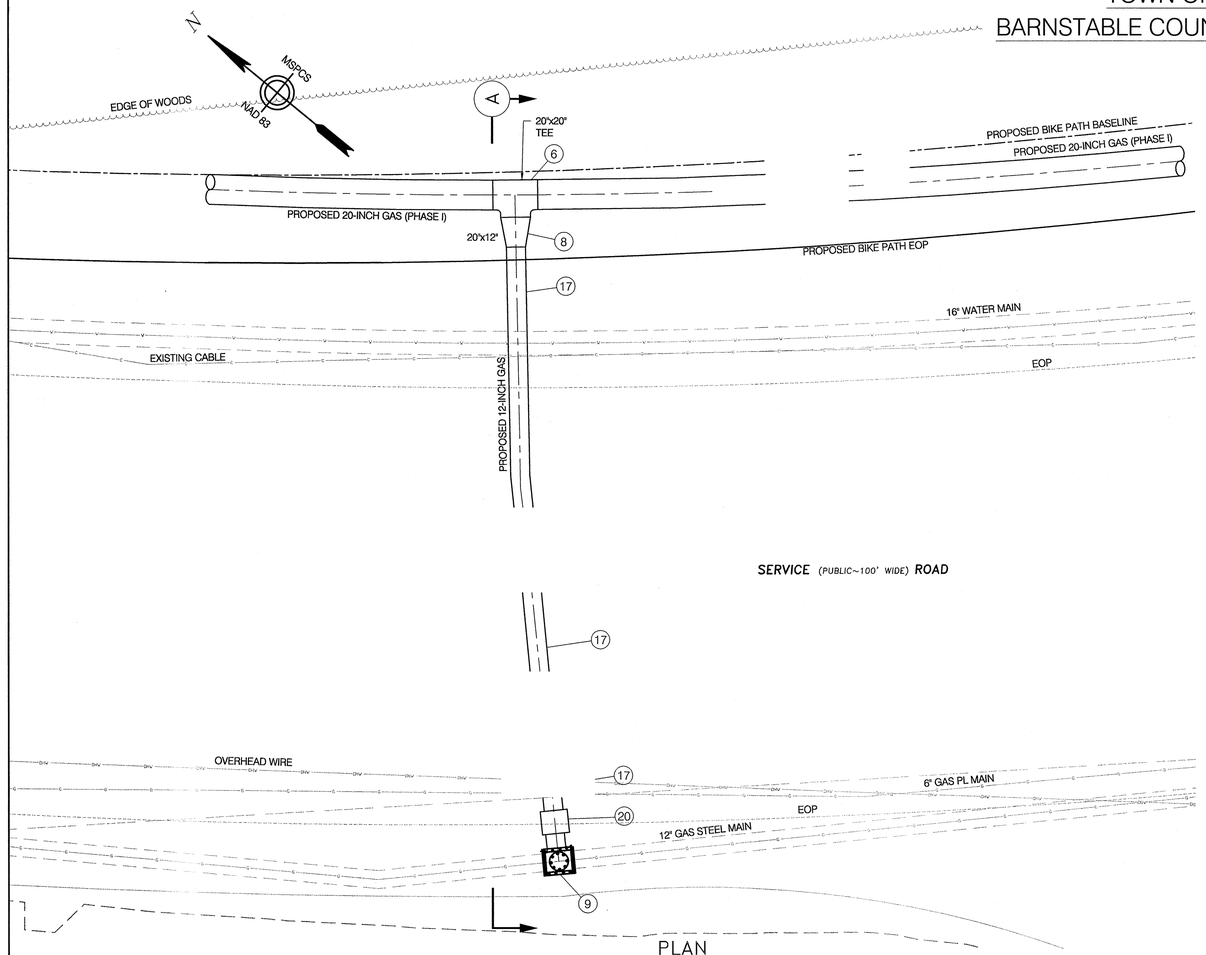
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS



PLAN
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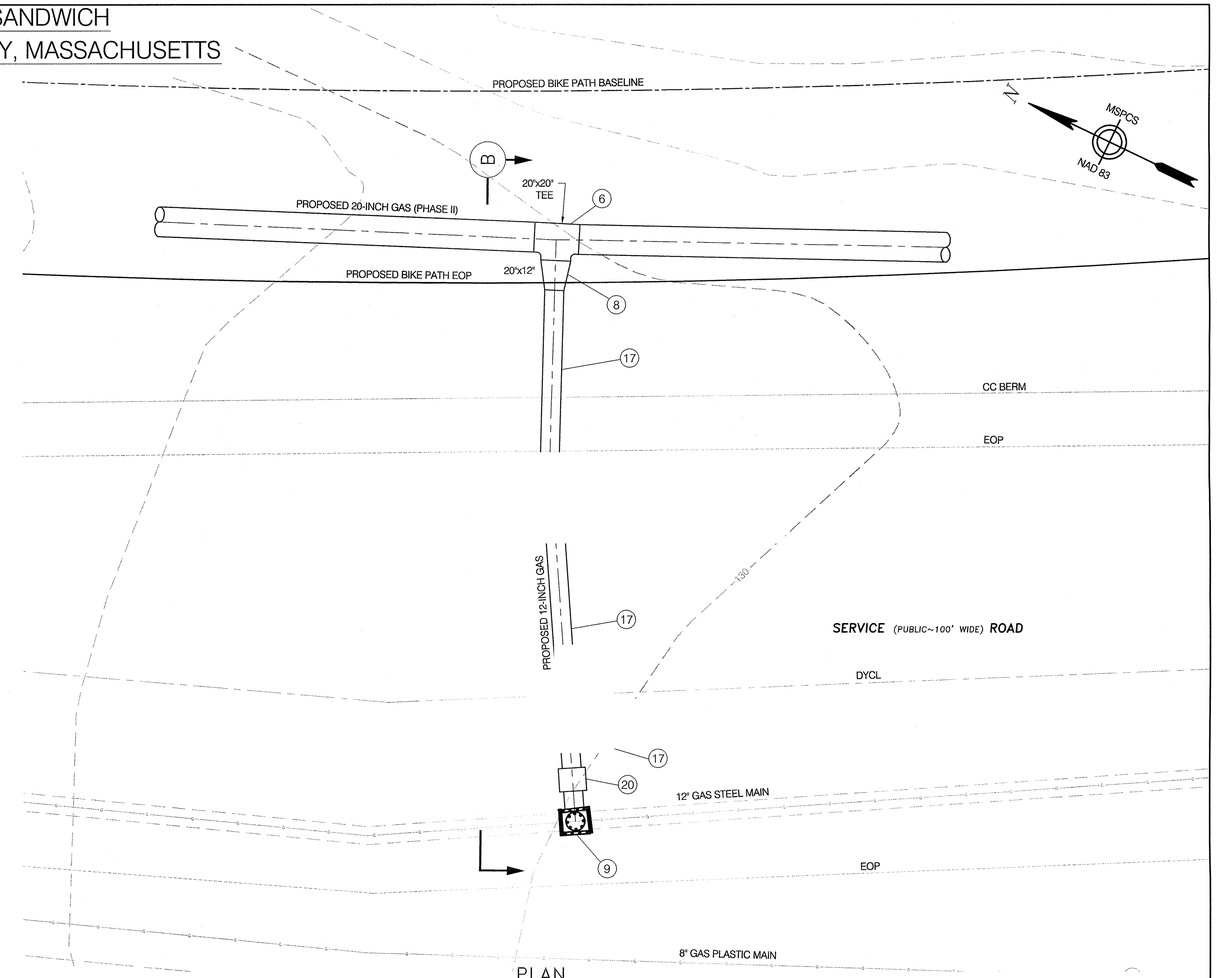

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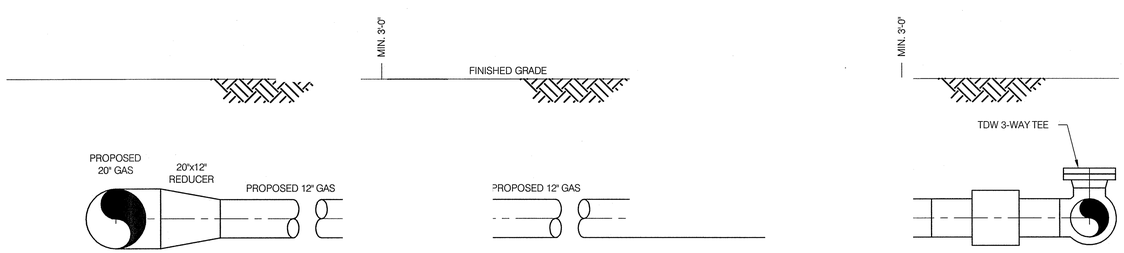

SECTION A
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TIE-IN DETAIL AT STATION 107+23
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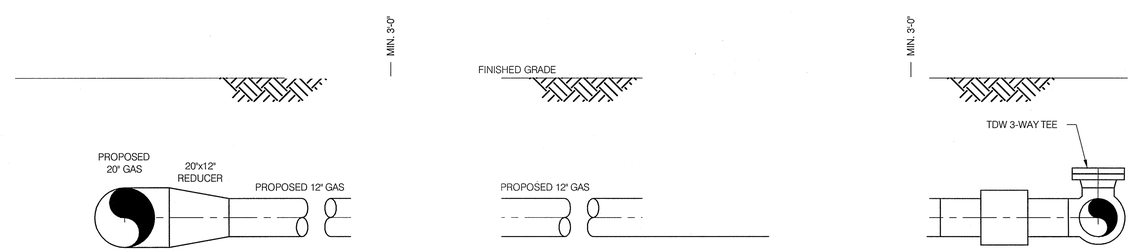

SECTION B
SCALE 1/2"=1'-0"

TIE-IN DETAIL AT STATION 223+09
REF. DRAWING 15-646.01-C-037

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

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NATIONAL GRID SERVICE COMPANY, USA
TIE-IN DETAILS
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 Tie In Details.dwg

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DATE: SEPTEMBER 7, 2012 MANAGER
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15-646.01-G-005

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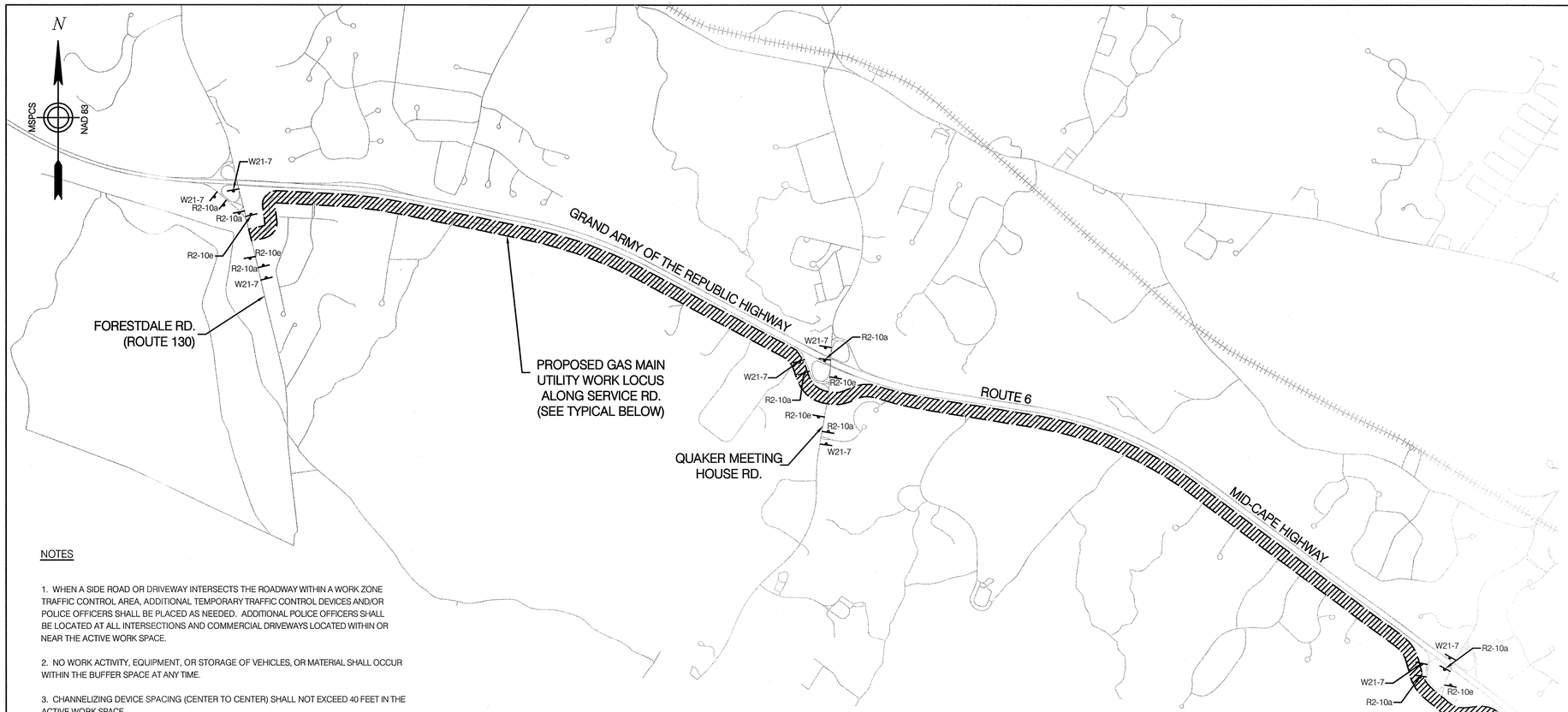


CONSTRUCTION ZONE ADVANCE SIGNING

GRAPHIC SCALE

1000 500 0 1000 2000 3000 FEET

NOTES

1. WHEN A SIDE ROAD OR DRIVEWAY INTERSECTS THE ROADWAY WITHIN A WORK ZONE TRAFFIC CONTROL AREA, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES AND/OR POLICE OFFICERS SHALL BE PLACED AS NEEDED. ADDITIONAL POLICE OFFICERS SHALL BE LOCATED AT ALL INTERSECTIONS AND COMMERCIAL DRIVEWAYS LOCATED WITHIN OR NEAR THE ACTIVE WORK SPACE.

2. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.

3. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40 FEET IN THE ACTIVE WORK SPACE.

4. THE END ROAD WORK SIGN (G20-2) SHALL BE PLACED A MAXIMUM OF 500 FEET PAST THE END OF THE WORK SPACE.

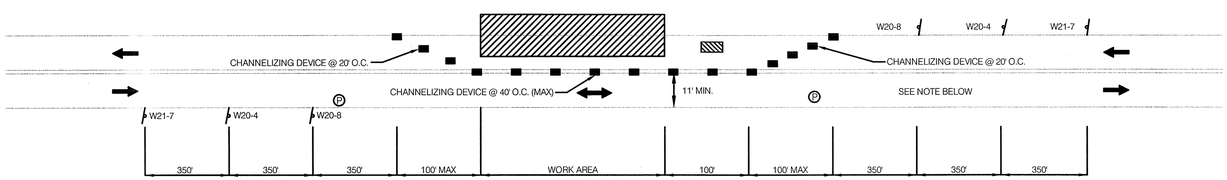
5. WHERE DIRECTED BY THE ENGINEER, A BUFFER SPACE SHALL BE PROVIDED IN ORDER TO LOCATE THE ONE-LANE, TWO-WAY TRAFFIC TAPER PRIOR TO ANY HORIZONTAL OR VERTICAL CURVE, IN ORDER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE POLICE OFFICERS AND/OR A QUEUE OF STOPPED VEHICLES.

6. THE FLAG TREE SHALL BE LOCATED ON THE SHOULDER, AT APPROXIMATELY 1/2 THE DISTANCE BETWEEN THE POLICE OFFICER SIGN (W20-8) AND THE POLICE OFFICER.

7. POLICER OFFICER SIGN (W20-8) AND ONE LANE ROAD AHEAD SIGN (W20-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURING.

8. FLAGGER AND FLAG TREE SHALL BE ILLUMINATED TO LEVEL II ILLUMINATION DURING NIGHT TIME OPERATIONS.

9. CENTERLINE CHANNELIZING DEVICES ARE OPTIONAL AND MAY BE ELIMINATED WHERE SPACE CONSTRAINTS EXIST.



LANE CLOSURE ON 2-LANE 2-WAY ROADWAY
N.T.S.

NOTE:

1. NUMBERS AND LOCATIONS OF POLICE FOR WORK ZONE AND/OR DETOUR MANAGEMENT SHALL BE DETERMINED BY THE FIELD ENGINEER ON A CASE BY CASE BASIS, AS WORK PROGRESSES.

LEGEND

- BARRIER VEHICLE
- CHANNELIZING DEVICE
- CONSTRUCTION SIGN
- DIRECTION OF TRAFFIC
- POLICE OFFICER
- WORK ZONE

TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	HEIGHT	WIDTH
R2-10e	END ROAD WORK / DOUBLE FINES END	24"	30"
R2-10a	WORK ZONE / SPEEDING FINES DOUBLED	24"	30"
W20-4	ONE LANE ROAD AHEAD	36"	36"
W20-8	POLICE OFFICER AHEAD	36"	36"
W21-7	UTILITY WORK AHEAD	36"	36"

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, CHANNELIZING DEVICES, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND ALL REVISIONS.
2. ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE M.U.T.C.D.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. ALL DRUMS OR OTHER TRAFFIC CONTROL DEVICES SHALL BE SET @ 20' O.C. MAX IN TAPER ZONES AND 40' O.C. MAX IN WORK ZONES UNLESS OTHERWISE NOTED OR ADJUSTED BY THE FIELD ENGINEER.
5. ALL TRAFFIC CONTROL DEVICES SHALL BE APPROPRIATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORK HOURS, TO MAINTAIN SUCH ACCESS. TEMPORARY PEDESTRIAN ACCESS SHALL BE IN COMPLIANCE WITH ADA/AAB REGULATIONS.
6. TEMPORARY CONSTRUCTION SIGNING, BARRICADES AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THIS ROADWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
7. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
8. THE CONTRACTOR SHALL NOTIFY THE TOWN OF SANDWICH POLICE, FIRE, AND DPW AT LEAST 48 HOURS IN ADVANCE OF LANE AND ROADWAY CLOSURES. THE CONTRACTOR SHALL NOTIFY MASSDOT AT LEAST 48 HOURS IN ADVANCE OF WORK THAT IMPACTS STATE HIGHWAY.
9. THE WORK AREA SHALL BE BACKFILLED OR PLATED AT THE END OF EACH WORK PERIOD AND ALL LANES RE-OPENED TO TRAFFIC DURING NON-WORKING HOURS.
10. DETOURS FOR ROAD CLOSURES TO THROUGH TRAFFIC MAY BE NECESSARY. ALL DETOURS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION.
11. GRADE SEPARATIONS IN EXCESS OF 2 INCHES DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
12. EXCAVATION EDGES IN EXCESS OF 4 INCHES DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL COMPACTED TO A 4:1 SLOPE.
13. THE FIRST THREE PLASTIC DRUMS OF A TAPER MAY BE MOUNTED WITH TYPE A LIGHTS.
14. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
15. ACCESS TO SIDE STREETS SHALL BE MAINTAINED AT ALL TIMES, UNLESS OTHERWISE NOTED OR APPROVED.
16. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE OUTSIDE EDGE OF THE DRUMS OR OTHER TRAFFIC CONTROL DEVICES.
17. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
18. THE WORK ZONE SHALL BE SWEPT CLEAN AT THE END OF EACH WORK DAY. WATER SHALL BE APPLIED TO THE TRENCH AS NEEDED TO CONTROL DUST.

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

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0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

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REGISTERED PROFESSIONAL ENGINEER
6-19-2014

NATIONAL GRID
TRAFFIC MANAGEMENT PLANS
ADVANCE WARNING & TYPICALS PLAN
SANDWICH, MASSACHUSETTS
File No.: 15-646.01 TMP.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-TMP-001

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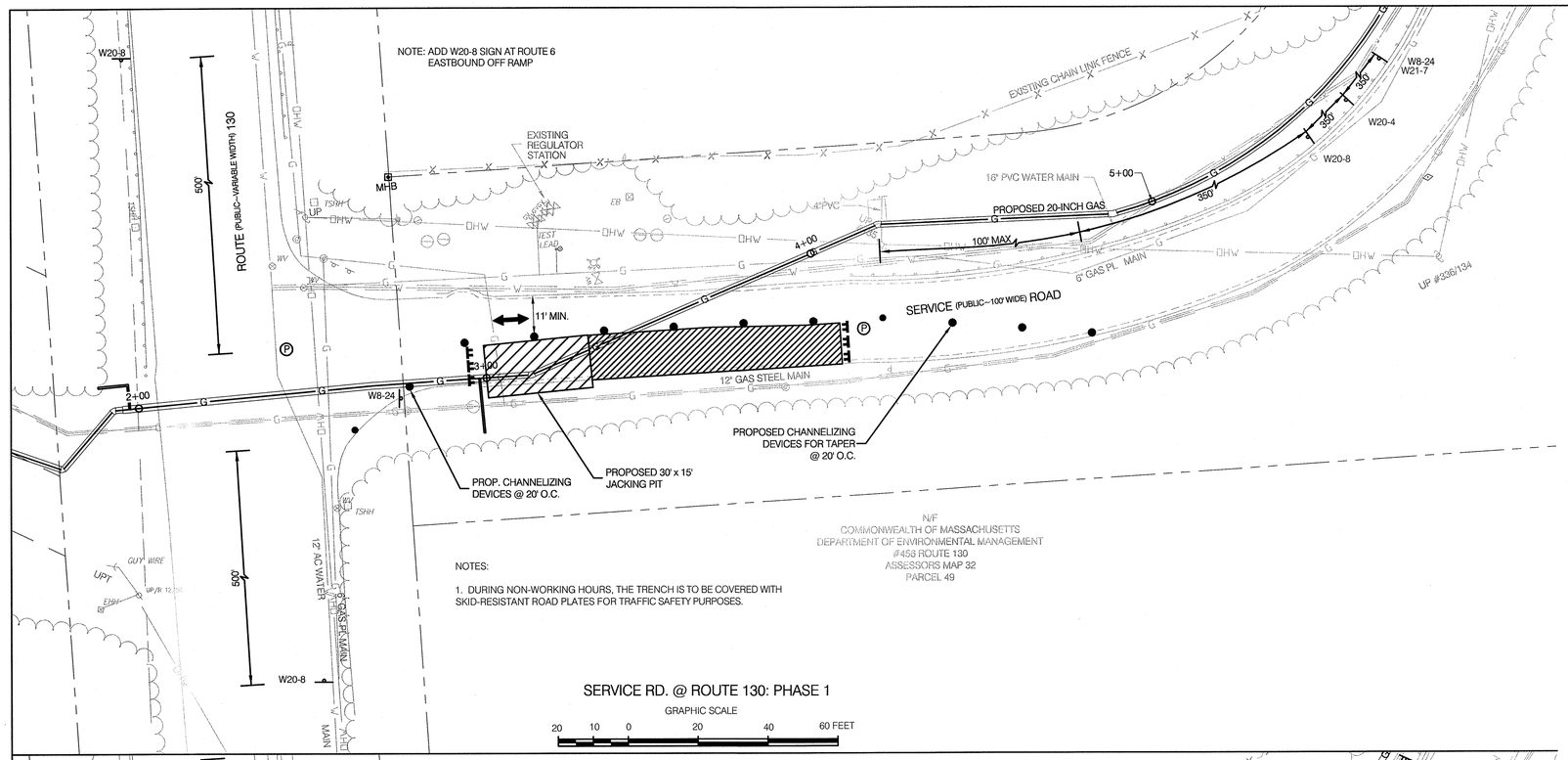


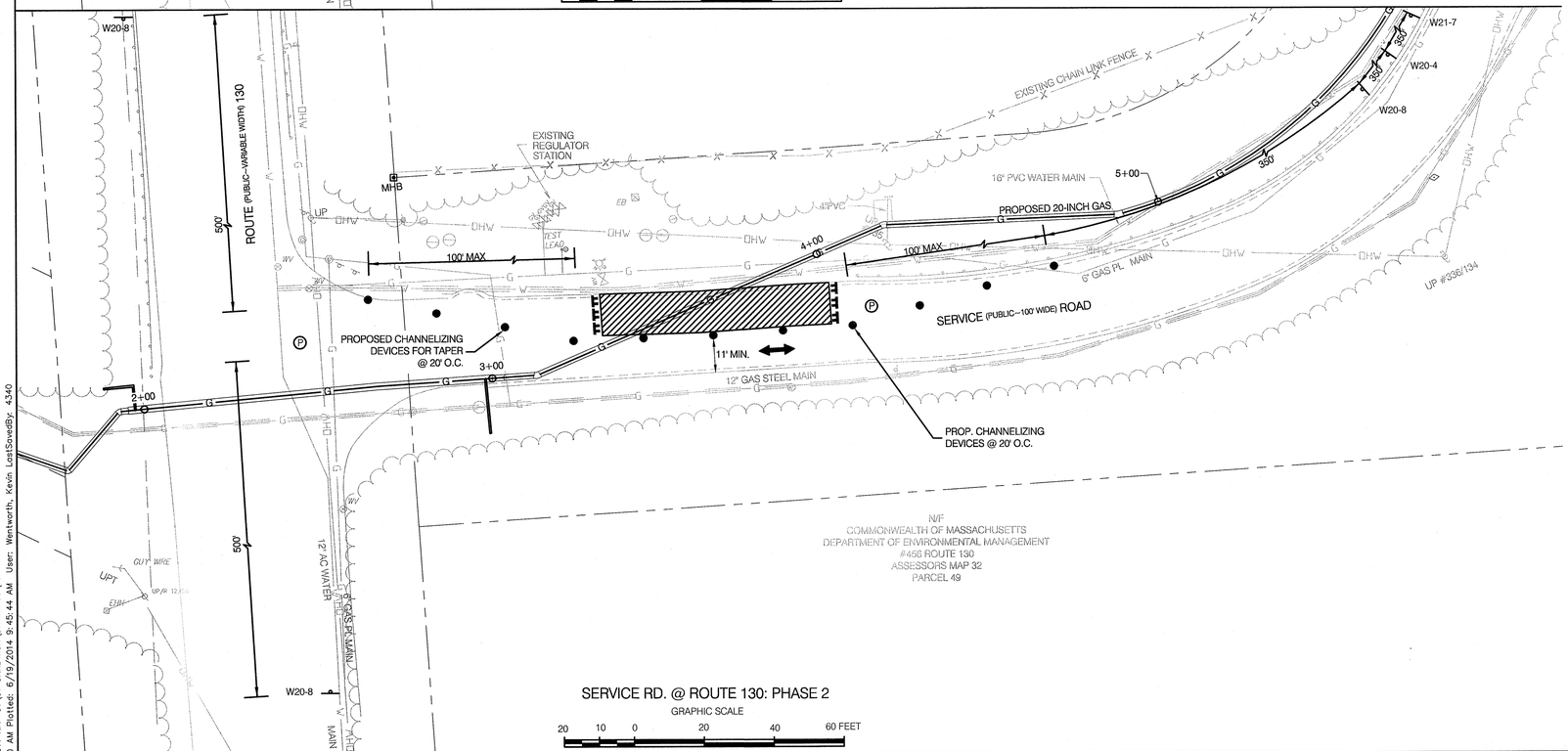
NOTES:

1. DURING NON-WORKING HOURS, THE TRENCH IS TO BE COVERED WITH SKID-RESISTANT ROAD PLATES FOR TRAFFIC SAFETY PURPOSES.

SERVICE RD. @ ROUTE 130: PHASE 1

GRAPHIC SCALE

20 10 0 20 40 60 FEET



SERVICE RD. @ ROUTE 130: PHASE 2

GRAPHIC SCALE

20 10 0 20 40 60 FEET

NOTES:

1. WORK ZONES MAY BE REDUCED TO THE LENGTH OF WORK THAT THE CONTRACTOR IS ABLE TO COMPLETE DURING ONE WORK PERIOD.

2. TRAFFIC CONTROL DEVICE SPACING IS BASED ON A 30 MPH SPEED LIMIT.

TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	HEIGHT	WIDTH
W8-24	STEEL PLATE AHEAD	36"	36"
W20-4	ONE LANE ROAD AHEAD	36"	36"
W20-8	POLICE OFFICER AHEAD	36"	36"
W21-7	UTILITY WORK AHEAD	36"	36"

LEGEND

- CHANNELIZING DEVICE
- PROPOSED TRAFFIC FLOW
- TYPE III BARRICADE
- POLICE DETAIL
- CONSTRUCTION SIGN
- WORK ZONE

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
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6/19/2014

NATIONAL GRID
TRAFFIC MANAGEMENT PLANS
STREET CROSSINGS
SANDWICH, MASSACHUSETTS

File No.: 15-646.01 TMP.dwg

APPROVED BY

DATE: SEPTEMBER 7, 2012 MANAGER

NATIONAL GRID SERVICE COMPANY, USA

15-646.01-TMP-002

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TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

NOTES:

1. WORK ZONES MAY BE REDUCED TO THE LENGTH OF WORK THAT THE CONTRACTOR IS ABLE TO COMPLETE DURING ONE WORK PERIOD.

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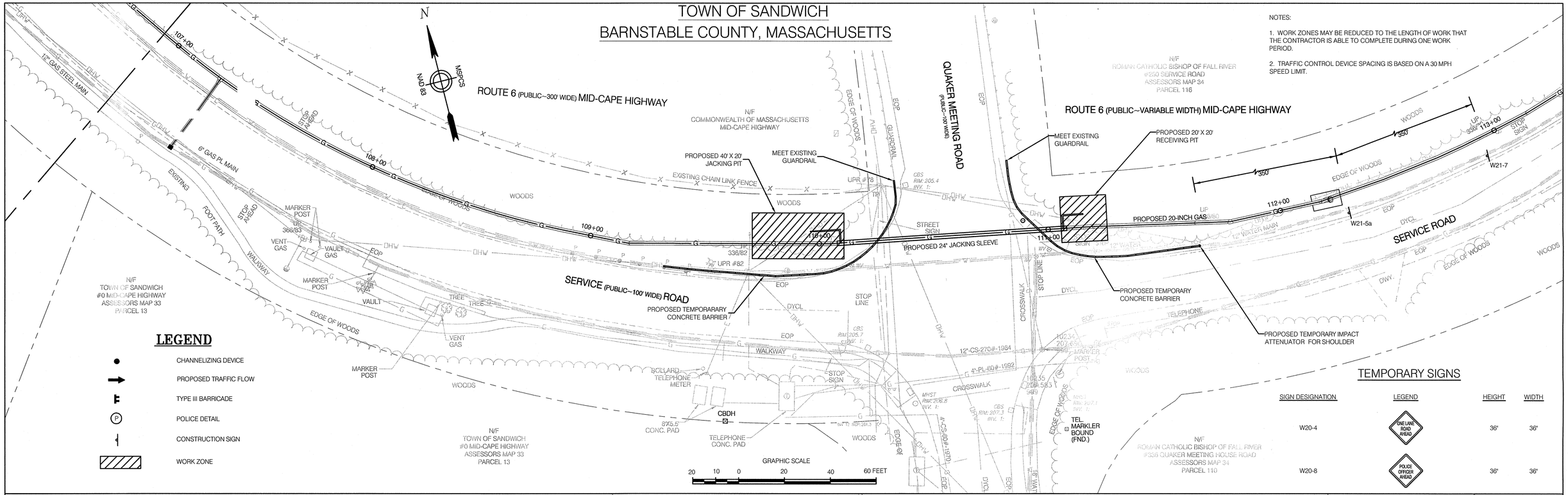
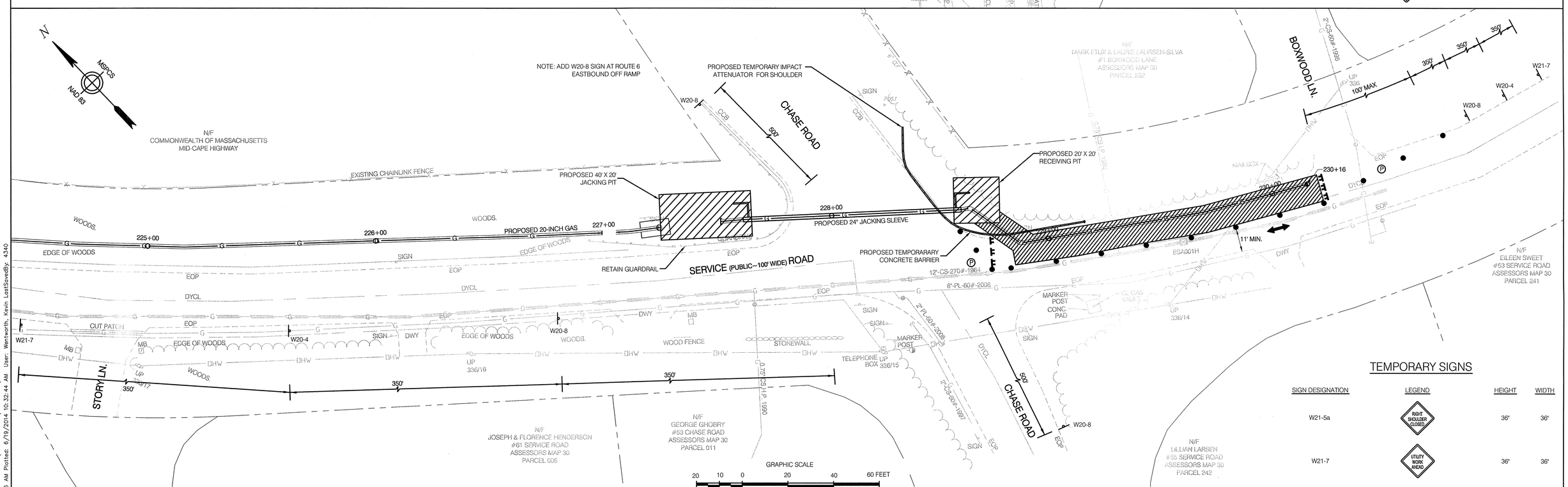


LEGEND

- CHANNELIZING DEVICE
- PROPOSED TRAFFIC FLOW
- TYPE III BARRICADE
- POLICE DETAIL
- CONSTRUCTION SIGN
- WORK ZONE

TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	HEIGHT	WIDTH
W20-4	ONE LANE ROAD AHEAD	36"	36"
W20-8	POLICE OFFICER AHEAD	36"	36"



TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	HEIGHT	WIDTH
W21-5a	RIGHT SHOULDER CLOSED	36"	36"
W21-7	UTILITY WORK AHEAD	36"	36"

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

Design/Engineering

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GAS ENGINEERING DEPARTMENT
40 SYLVAN RD.
WALTHAM, MA 02451

COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-19-2014

NATIONAL GRID
TRAFFIC MANAGEMENT PLANS
STREET CROSSINGS
SANDWICH, MASSACHUSETTS

File No.: 15-646.01 TMP.dwg

APPROVED BY

DATE: SEPTEMBER 7, 2012 MANAGER

NATIONAL GRID SERVICE COMPANY, USA

15-646.01-TMP-003

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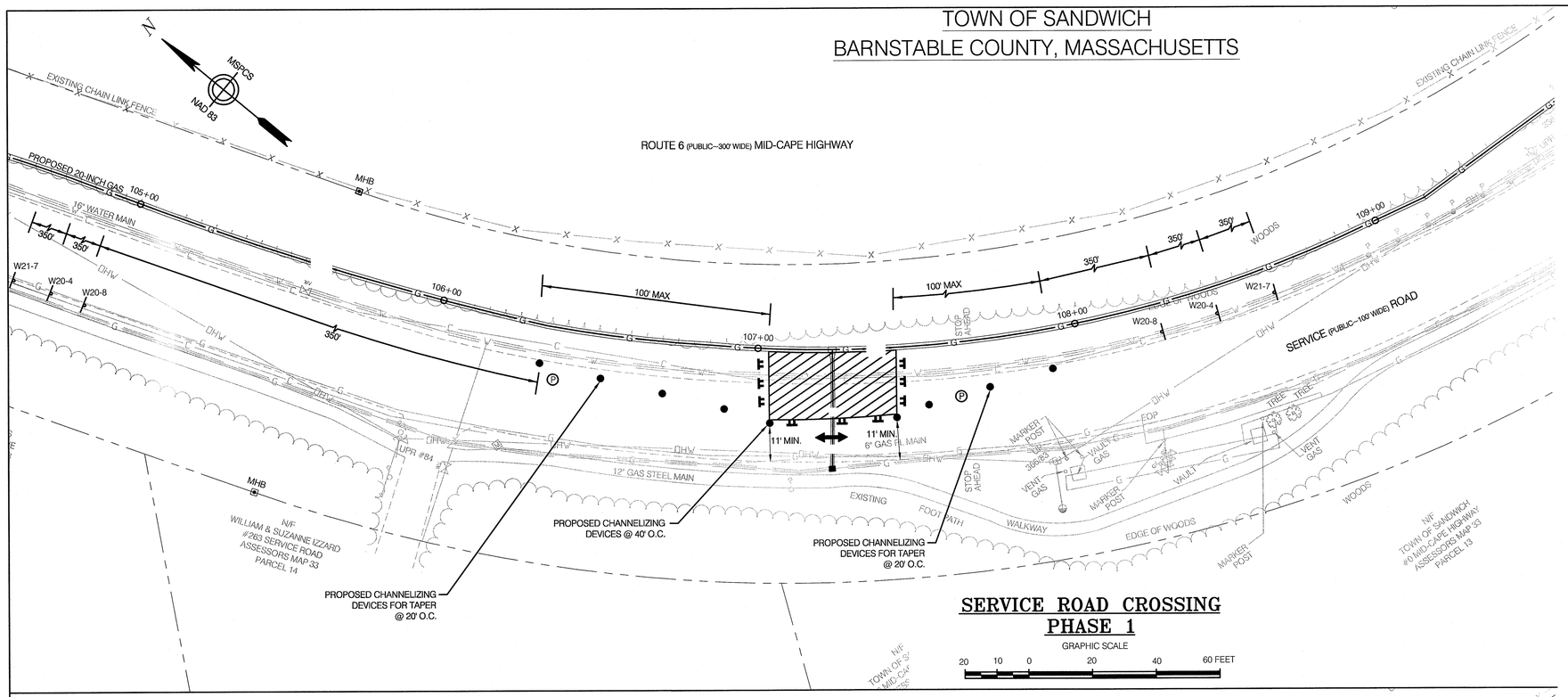
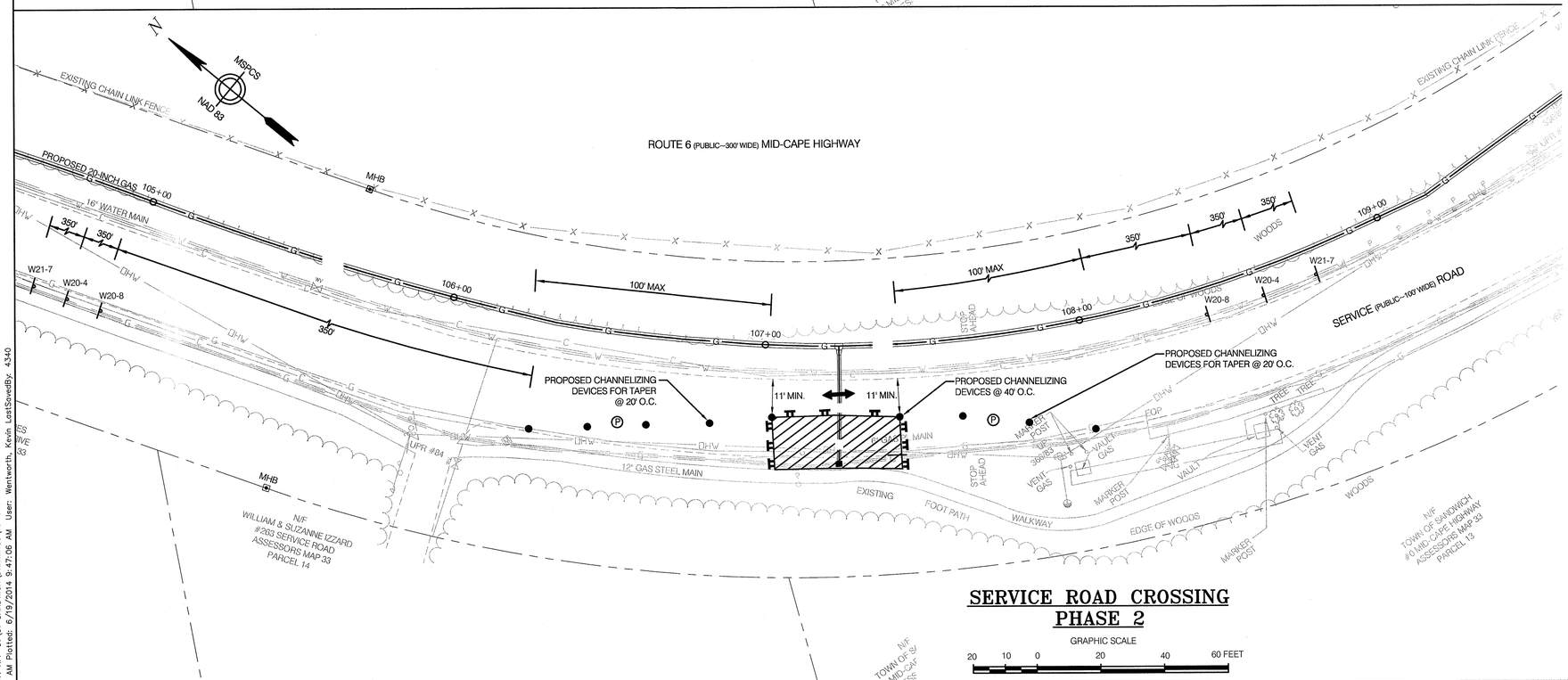
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS



SERVICE ROAD CROSSING
PHASE 1

GRAPHIC SCALE

20 10 0 20 40 60 FEET



SERVICE ROAD CROSSING
PHASE 2

GRAPHIC SCALE

20 10 0 20 40 60 FEET

TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	HEIGHT	WIDTH
W21-7	UTILITY WORK AHEAD	36"	36"
W20-4	ONE LANE ROAD AHEAD	36"	36"
W20-8	POLICE OFFICER AHEAD	36"	36"

LEGEND

- CHANNELIZING DEVICE
- PROPOSED TRAFFIC FLOW
- TYPE III BARRICADE
- POLICE DETAIL
- CONSTRUCTION SIGN
- WORK ZONE

NOTES:

1. WORK ZONES MAY BE REDUCED TO THE LENGTH OF WORK THAT THE CONTRACTOR IS ABLE TO COMPLETE DURING ONE WORK PERIOD.

2. TRAFFIC CONTROL DEVICE SPACING IS BASED ON A 30 MPH SPEED LIMIT.

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

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STREET CROSSINGS
SANDWICH, MASSACHUSETTS
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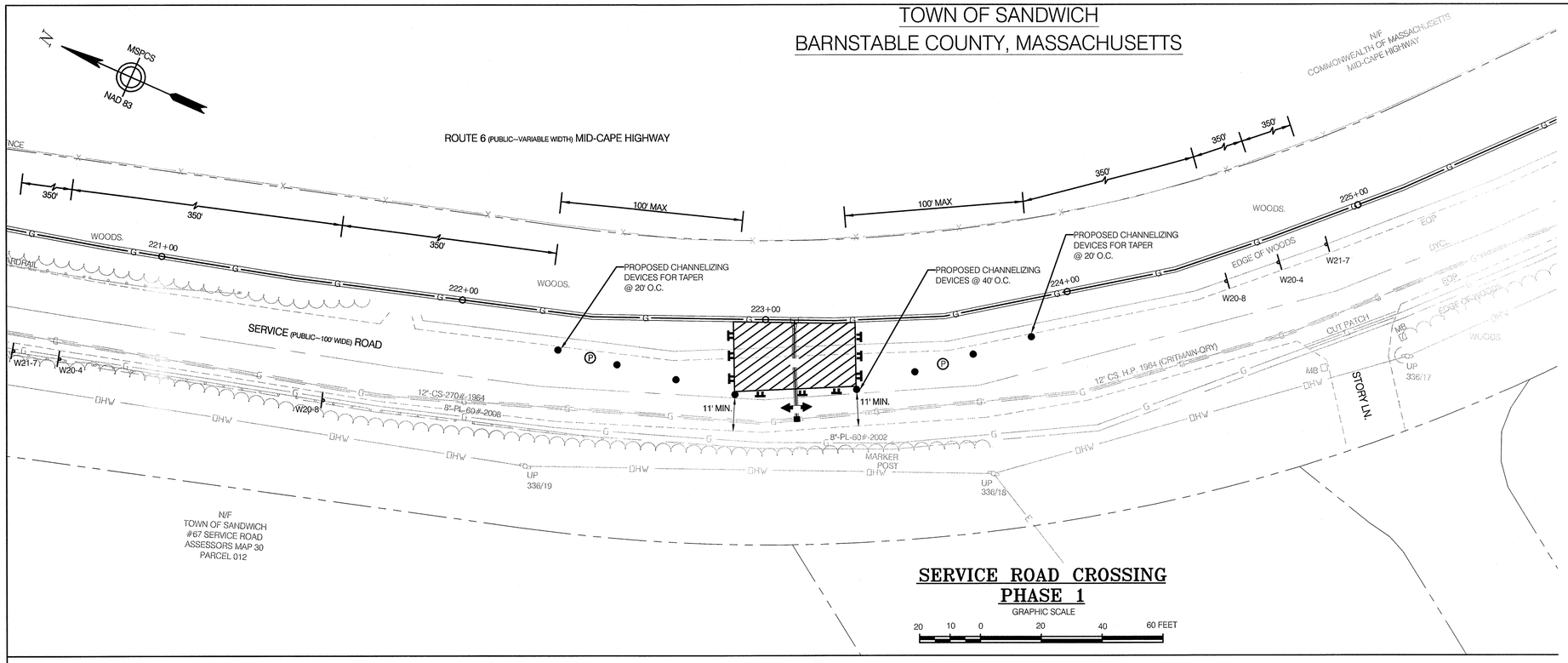
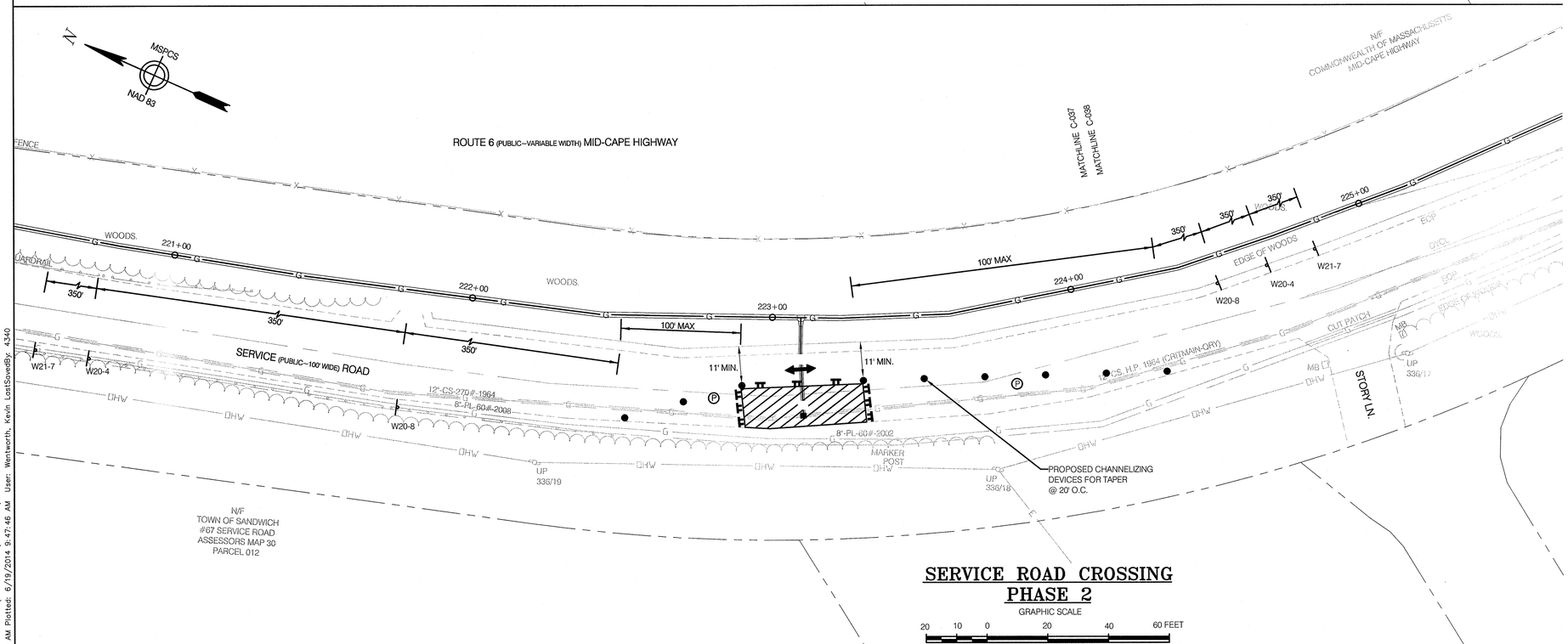


SERVICE ROAD CROSSING PHASE 1

GRAPHIC SCALE

20 10 0 20 40 60 FEET



SERVICE ROAD CROSSING PHASE 2

GRAPHIC SCALE

20 10 0 20 40 60 FEET

TEMPORARY SIGNS

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W20-8	POLICE OFFICER AHEAD	36"	36"

LEGEND

- CHANNELIZING DEVICE
- PROPOSED TRAFFIC FLOW
- TYPE III BARRICADE
- POLICE DETAIL
- CONSTRUCTION SIGN
- WORK ZONE

NOTES:

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TRAFFIC MANAGEMENT PLANS
STREET CROSSINGS
SANDWICH, MASSACHUSETTS

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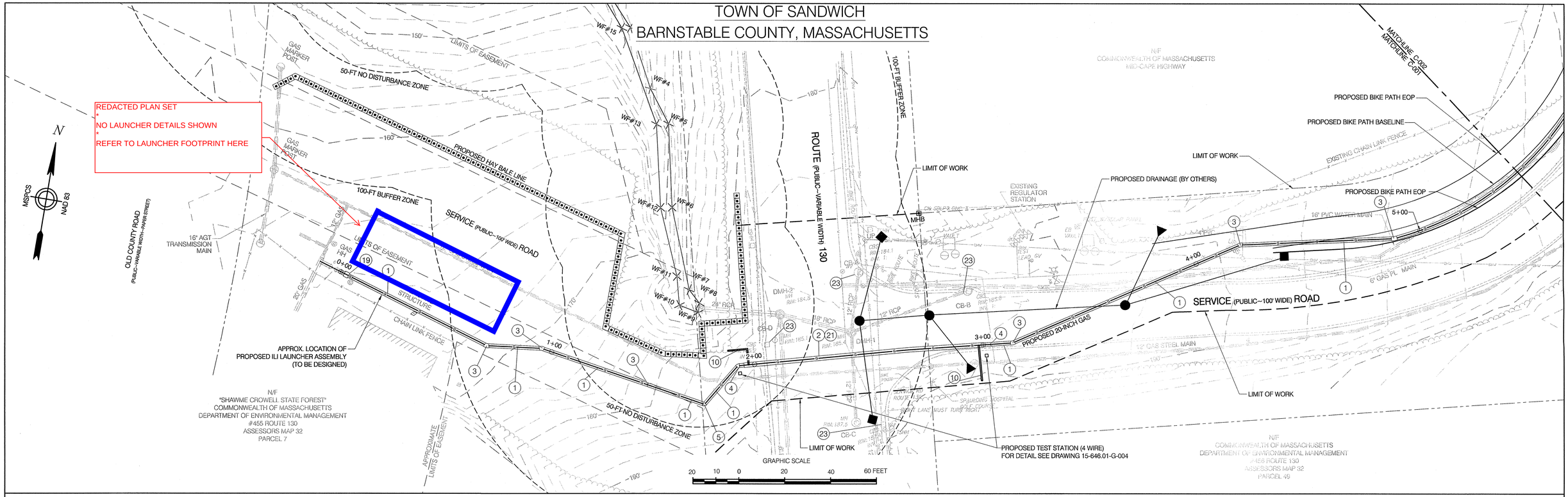
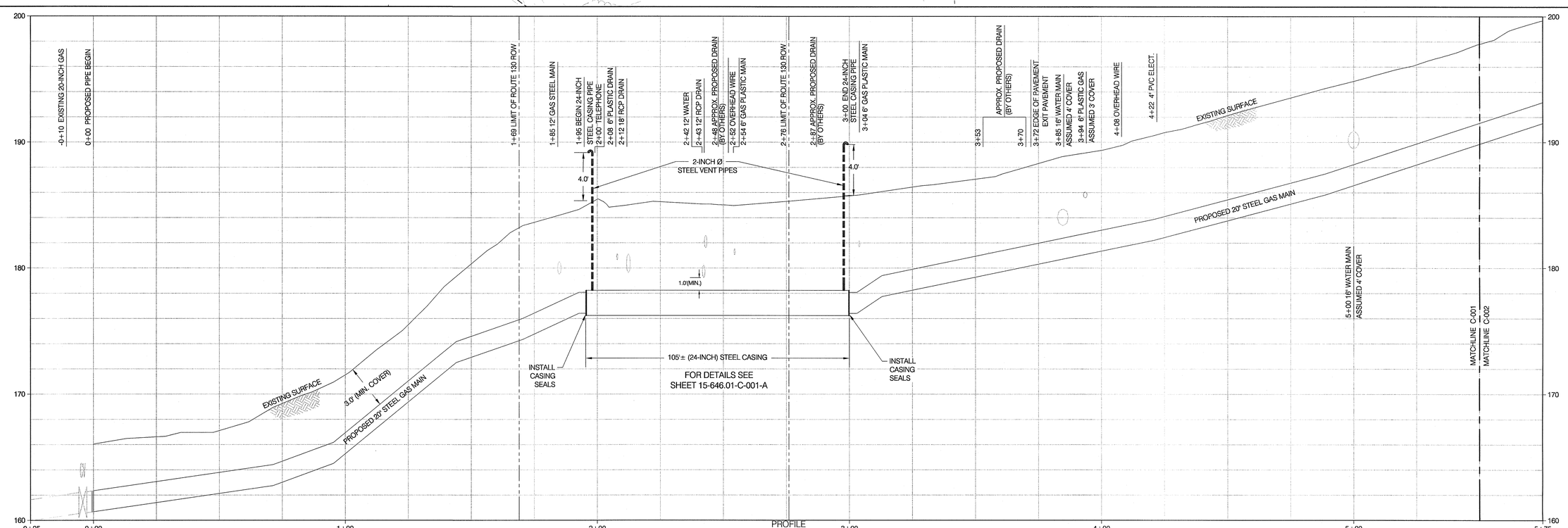
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

REDACTED PLAN SET
*
NO LAUNCHER DETAILS SHOWN
*
REFER TO LAUNCHER FOOTPRINT HERE





PROFILE

HOR. SCALE: 1"=20' VER. SCALE: 1"=4'

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6-19-2014

NATIONAL GRID SERVICE COMPANY, USA
SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
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TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

GENERAL NOTES

1. SITE DETAIL SHOWN HEREON IS BASED UPON TOPOGRAPIC DETAIL SURVEY CONDUCTED BY COLER & COLANTONIO, INC. IN JULY 2011, BY CHA INC. IN MARCH 2014 AND DETAIL SURVEY PROVIDED BY BSC.

2. PROPERTY LINES SHOWN HEREON ARE BASED ON TAX MAP LOCATION AND DO NOT REPRESENT A PROPERTY LINE RETRACEMENT SURVEY EFFORT.

3. LOCATION OF ANY IDENTIFIED UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR FOR SERVICE, SIZE, INVERT ELEVATIONS, LOCATION, ETC. CONTRACTOR MUST NOTIFY DIG-SAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.

4. SURVEY WAS CONDUCTED IN MASSACHUSETTS MAINLAND ZONE 2001, NAD83 HORIZONTAL COORDINATE SYSTEM. ELEVATIONS ARE BASED ON NAVD 1988, US SURVEY FEET. ELEVATIONS WERE TRANSFERRED TO THIS SITE VIA STATIC GPS SURVEY METHODS AND REFERENCED TO TEMPORARY BENCHMARKS AS SHOWN ON THE PLAN.

5. THE PURPOSE OF THIS PLAN IS TO IDENTIFY TO THE APPROPRIATE PERMITTING AGENCY THE PROPOSED LOCATION FOR A GAS PIPELINE AND ITS LOCATION RELATIVE TO EXISTING UTILITIES WITHIN THE LIMITS OF A ROAD RIGHT-OF-WAY, INCLUDING ELEVATION INFORMATION WHERE OBTAINABLE.

6. THE PROPOSED 20-INCH STEEL PIPE ROAD CROSSING WILL BE CONSTRUCTED VIA PIPE JACKING CONSTRUCTION METHODS.

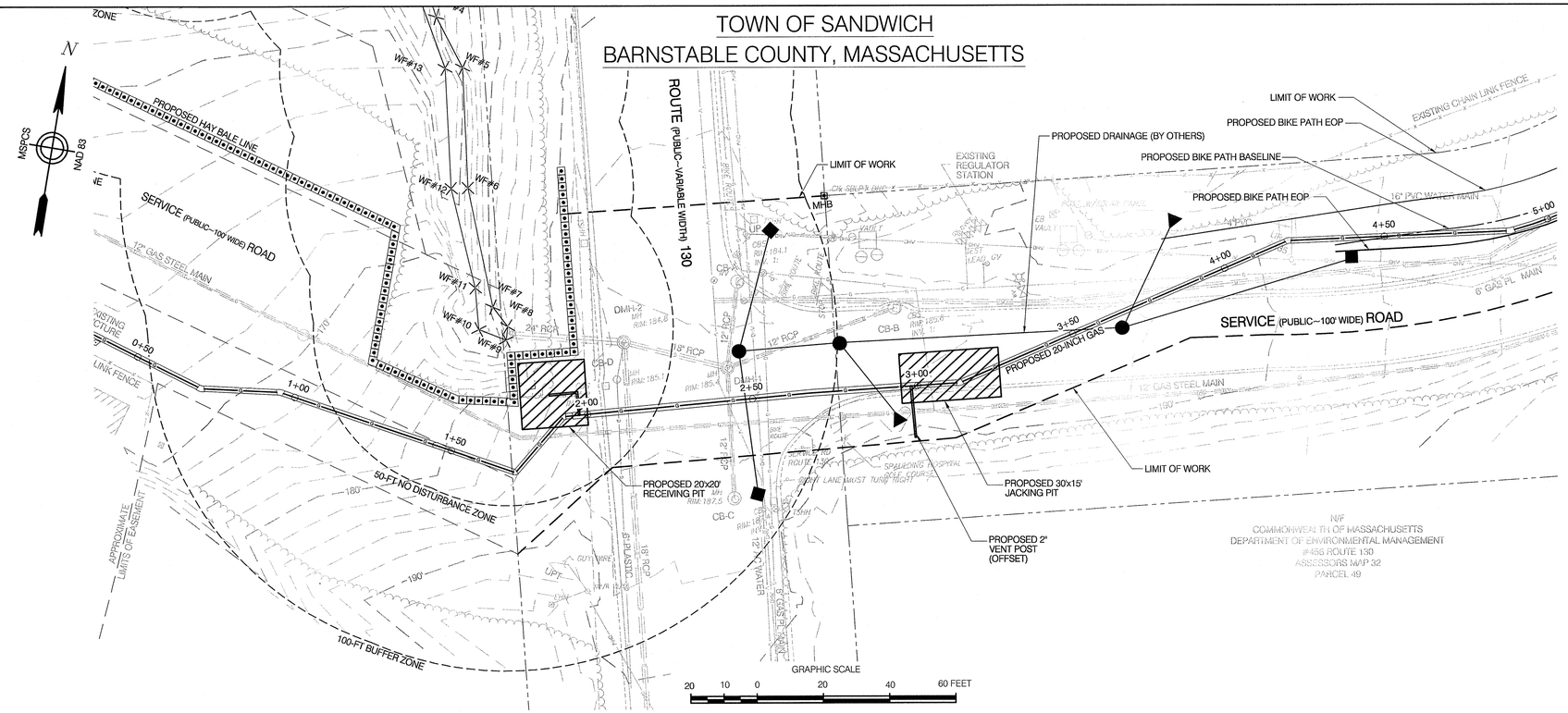
7. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH PART VI OF THE 2003 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.TC.D.) REVISION 3 AND AS AMENDED.

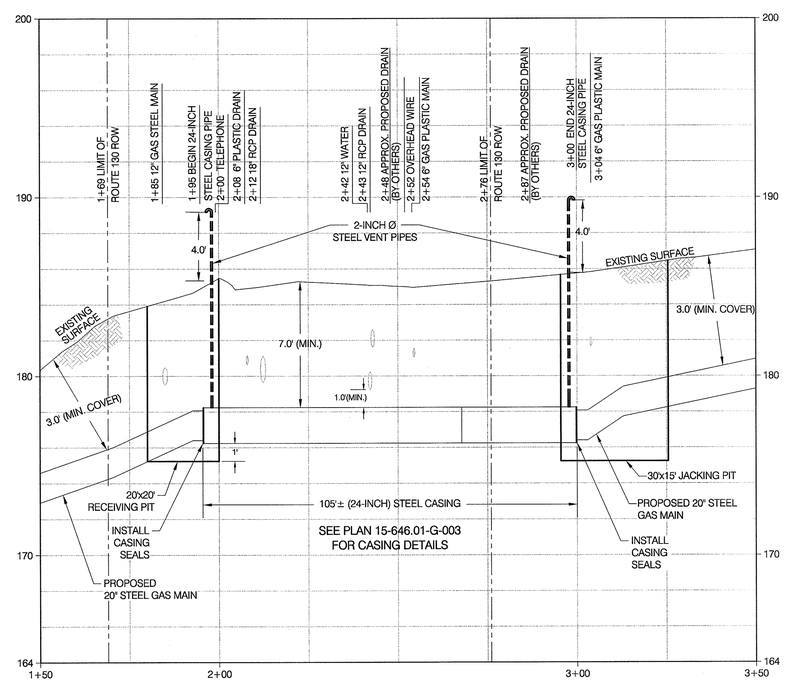
8. ALL VEHICLES ARE TO BE HIGHLY VISIBLE USING ROTATING BEACONS AND BE MARKED BY USE OF TRAFFIC CONES.

9. NATIONAL GRID SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY OBSTRUCTION OF ACCESS.

10. BACKFILL MATERIAL WILL CONSIST OF SUITABLE EXCAVATED MATERIAL COMPACTED.

11. BLASTING NOT PERMITTED.





PROFILE
HOR. SCALE: 1"=20'
VER. SCALE: 1"=5'

JACKING CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL SUBMIT DETAILS OF THE METHOD OF INSTALLATION AND THE SHEETING AND BRACING SYSTEM TO NATIONAL GRID AND ALL APPROPRIATE JURISDICTIONAL AUTHORITIES FOR APPROVAL.
2. UNLESS OTHERWISE ORDERED BY NATIONAL GRID, JACKING OPERATIONS SHALL BE CONTINUOUS AND WITHOUT INTERRUPTION.
3. SHEETING TO EXTEND 4' ABOVE ORIGINAL GROUND ON ALL SIDES FACING TRAFFIC AND MINIMUM 10' RETURN ON SIDES UNLESS OTHERWISE NOTED ON THE DRAWINGS.
4. THE CONTRACTOR SHALL PROVIDE A 4' HIGH SAFETY FENCE AROUND ALL PITS.
5. THE JACKING AND RECEIVING PITS SHALL BE BACKFILLED AND COMPACTED WITH SUITABLE GRANULAR FILL MATERIAL 6" OVER THE TOP OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE SUITABLE EXCAVATED MATERIAL.
6. DO NOT INTERRUPT FLOW OF TRAFFIC DURING WORK.

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6/18/2014

NATIONAL GRID
PROPOSED 20-INCH GAS MAIN
ROUTE 130 CROSSING DETAIL
SANDWICH, MASSACHUSETTS
File No.: 15-646.01 JACK & BORE DETAILS.dwg

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DATE: SEPTEMBER 24, 2012 MANAGER
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15-646.01-C-001A

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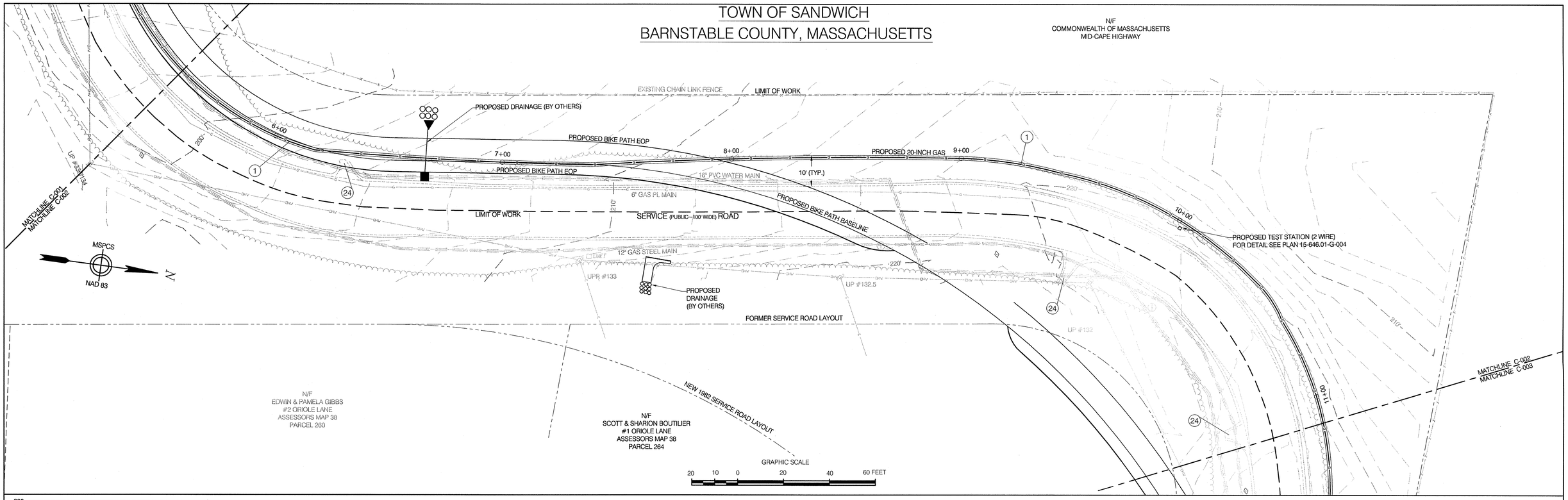

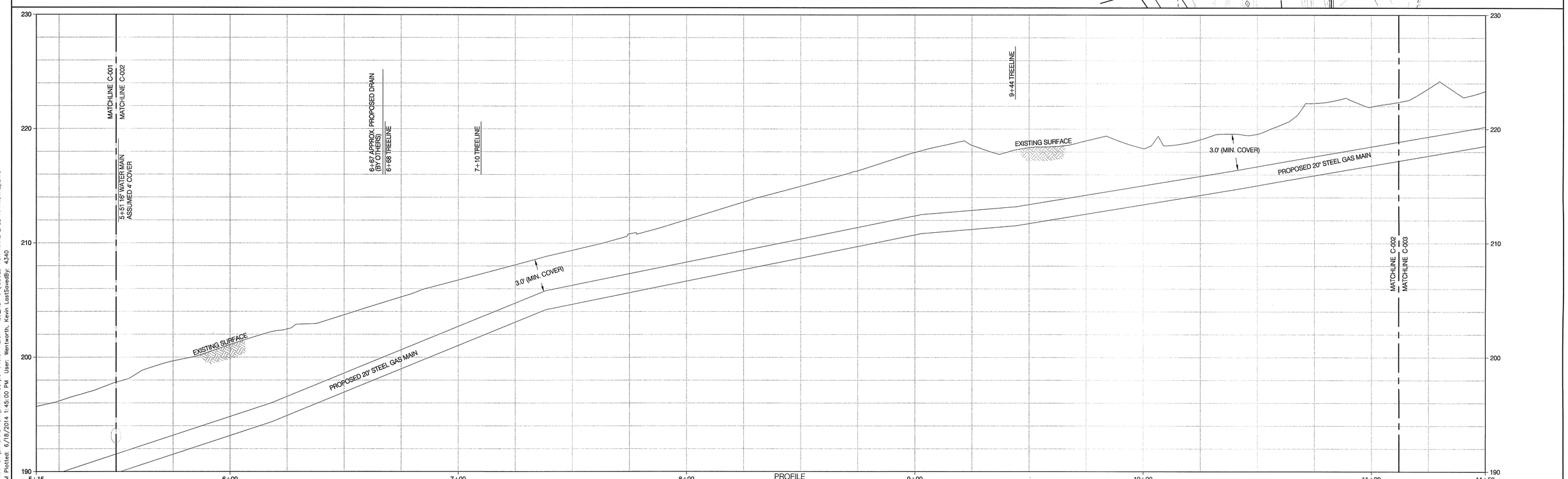

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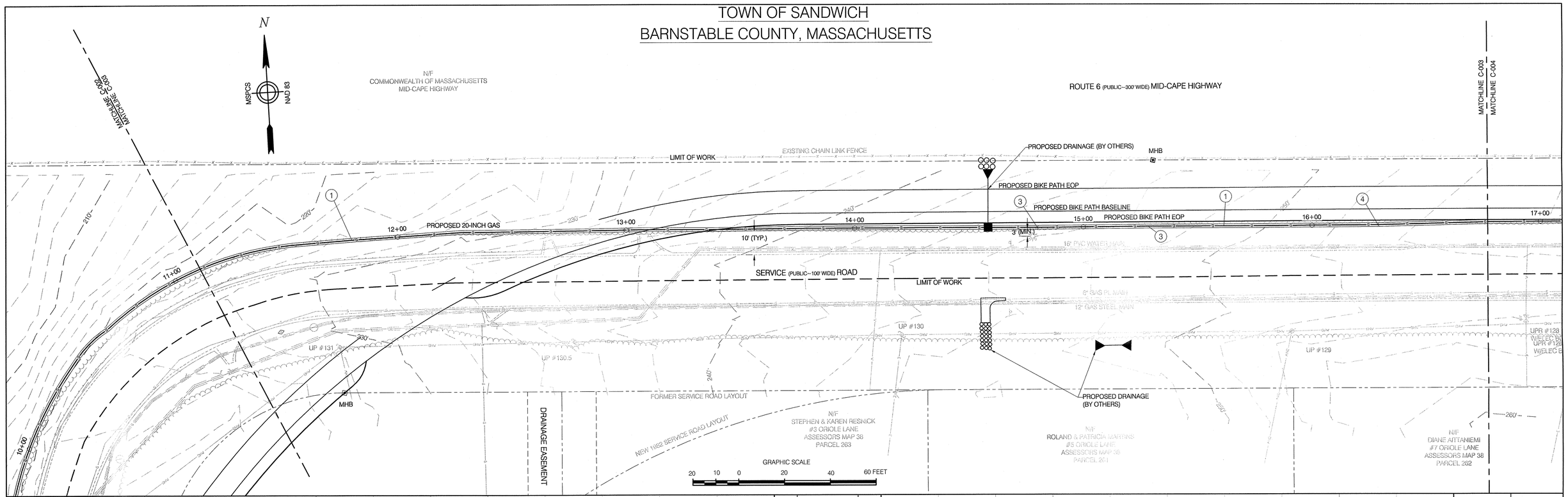

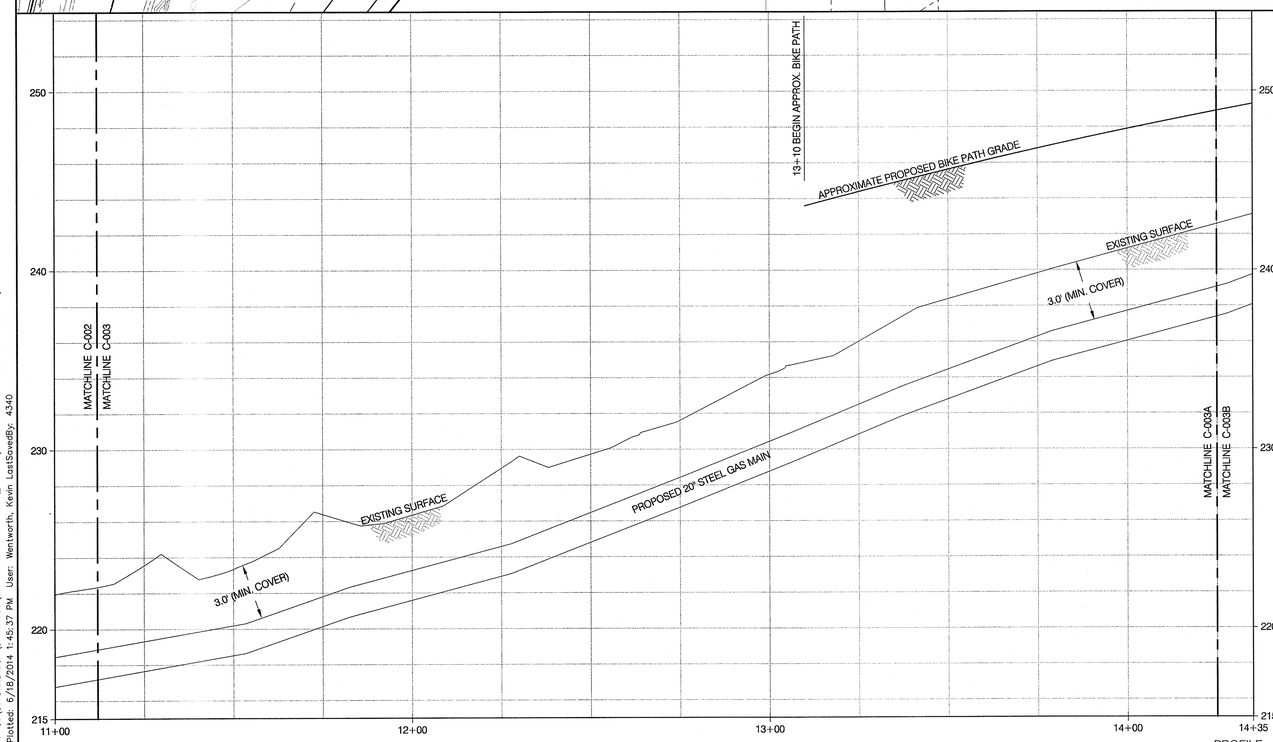

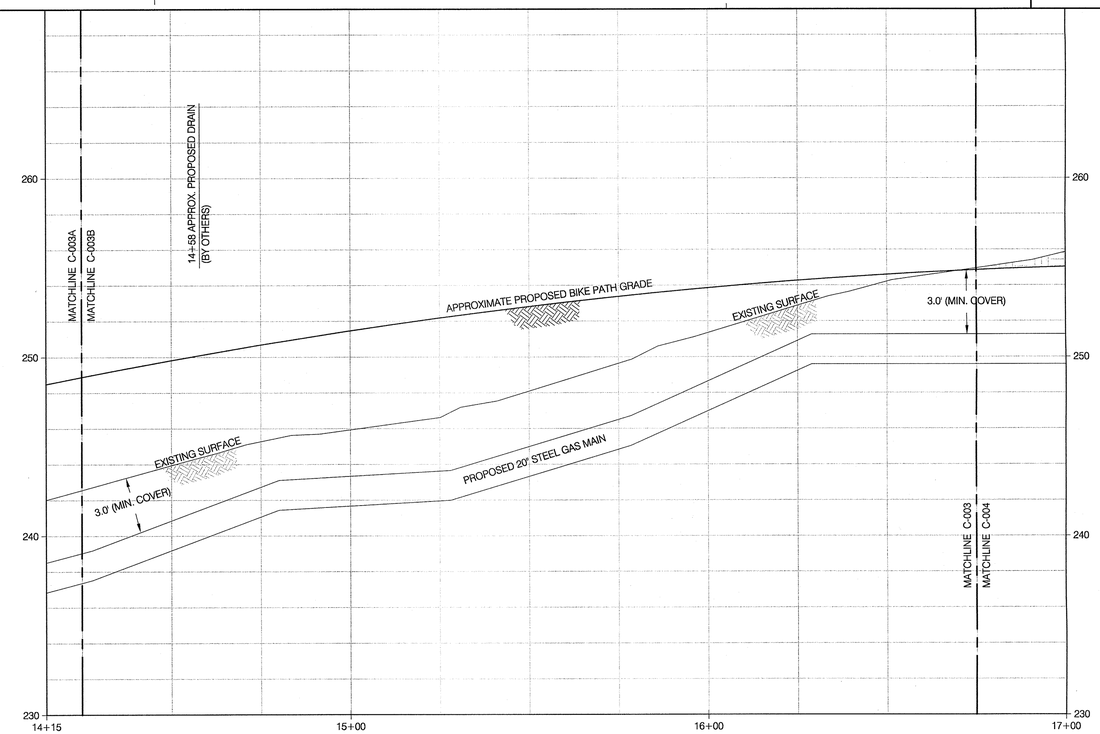

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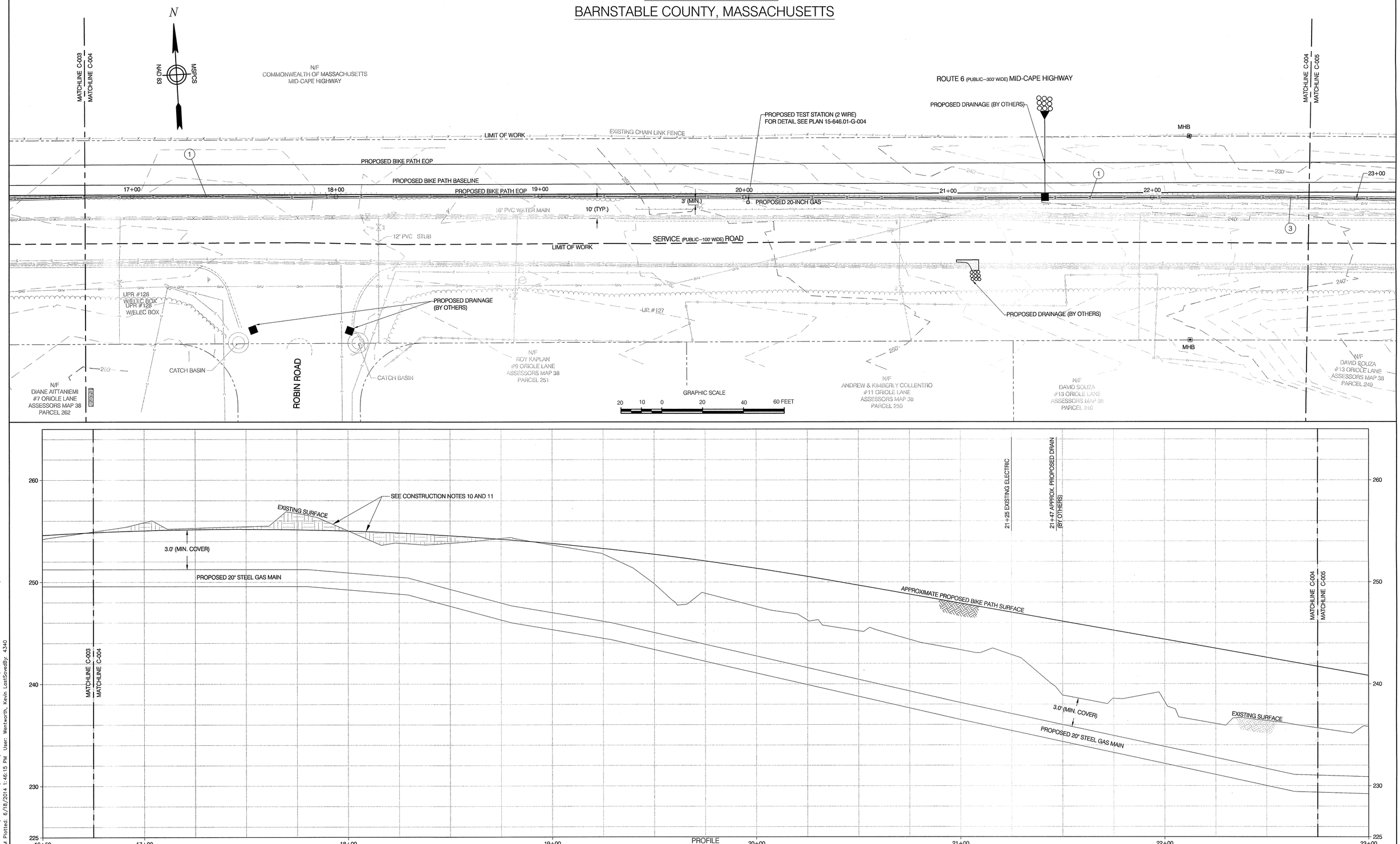

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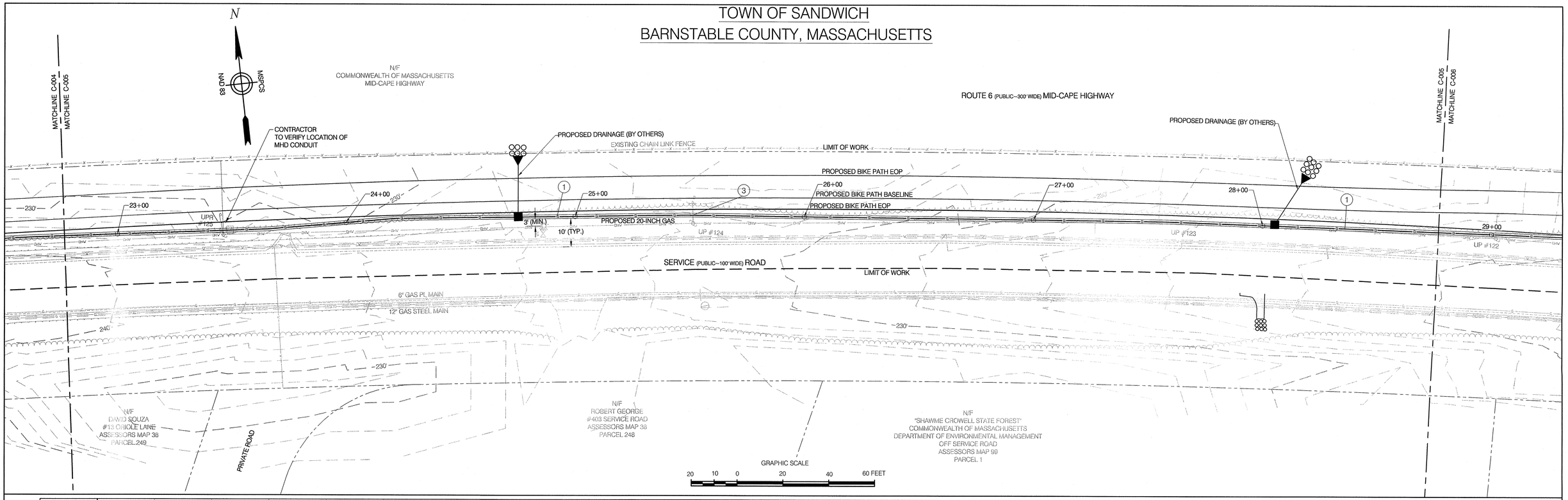

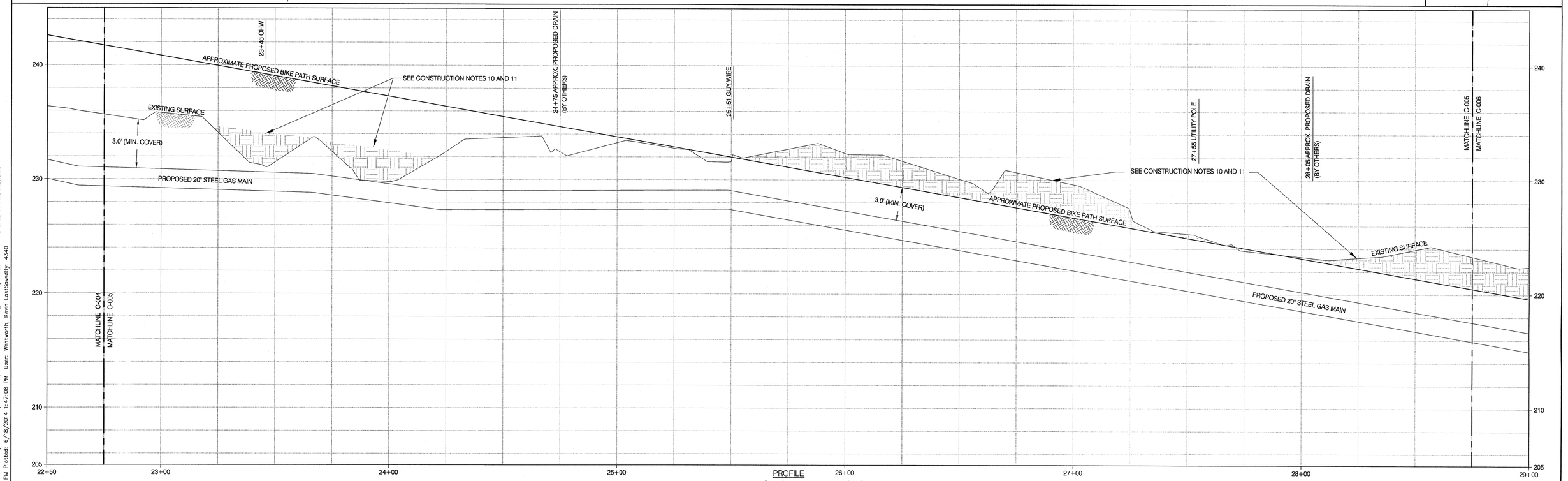

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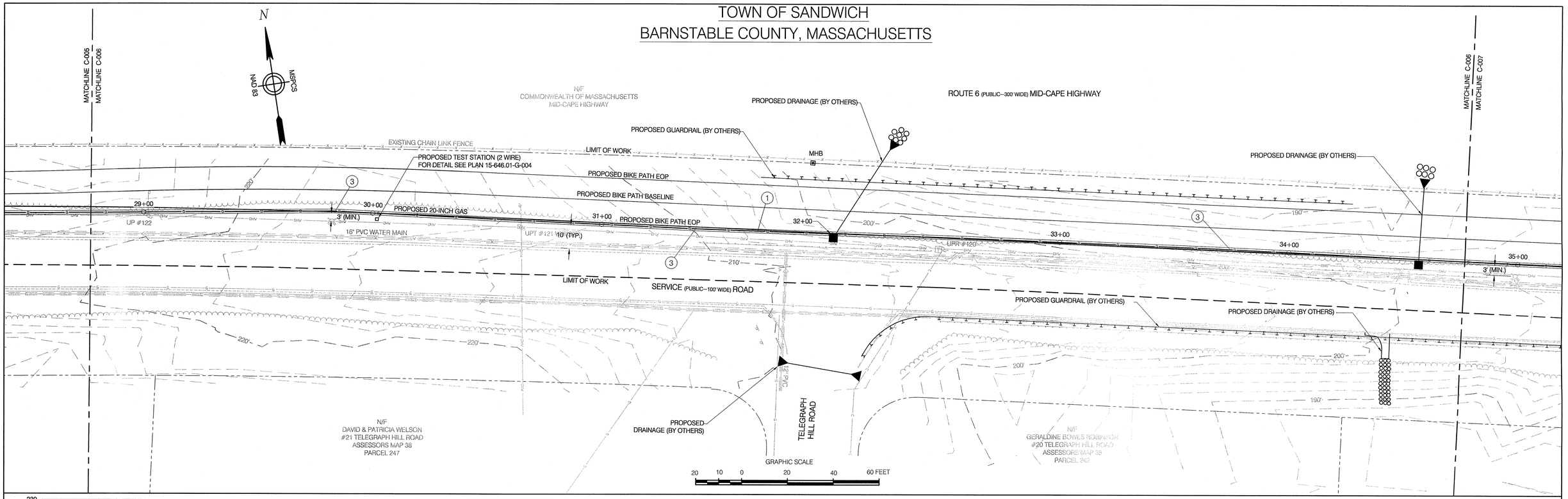
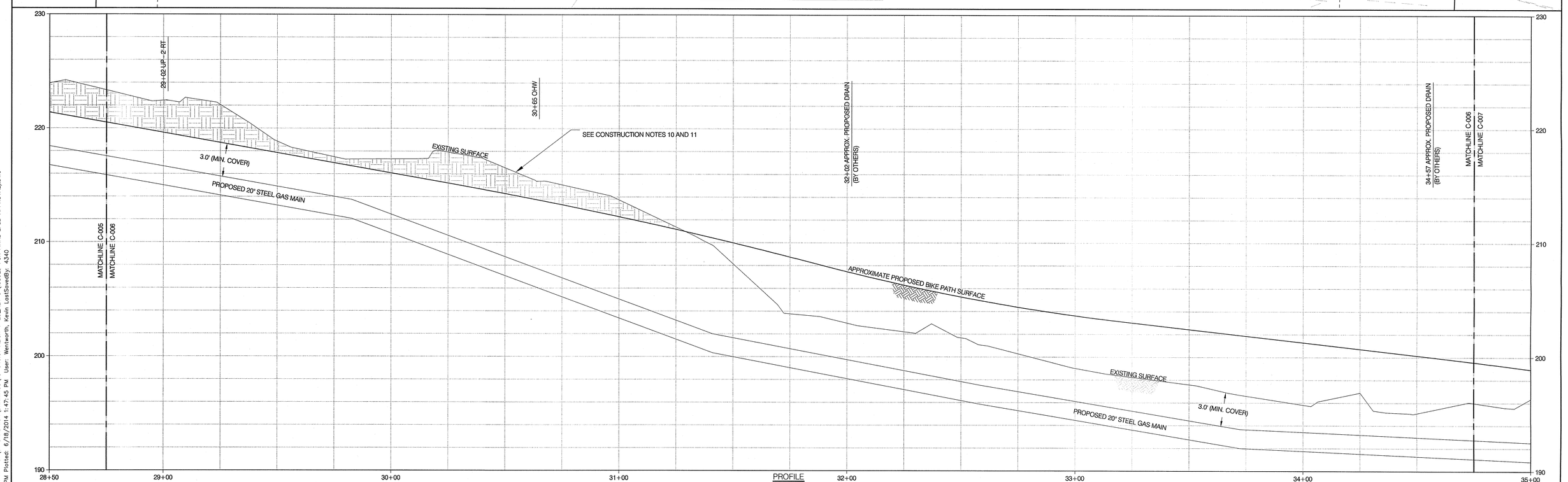
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





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GAS ENGINEERING DEPARTMENT
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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-19-2014

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BARNSTABLE COUNTY, MASSACHUSETTS

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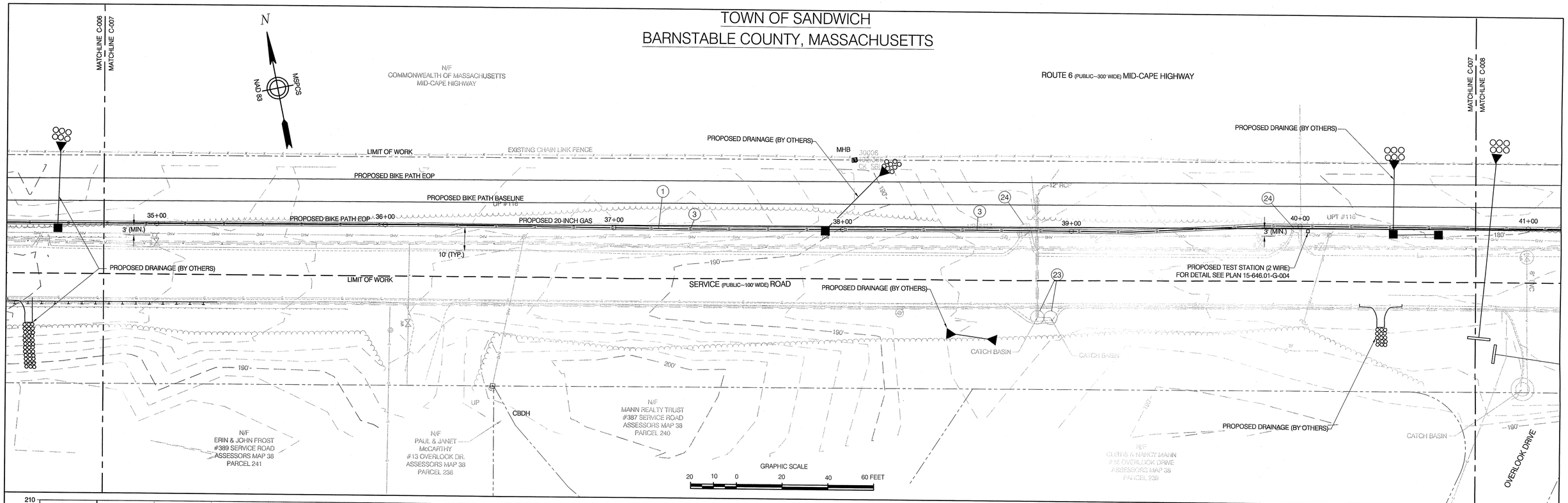

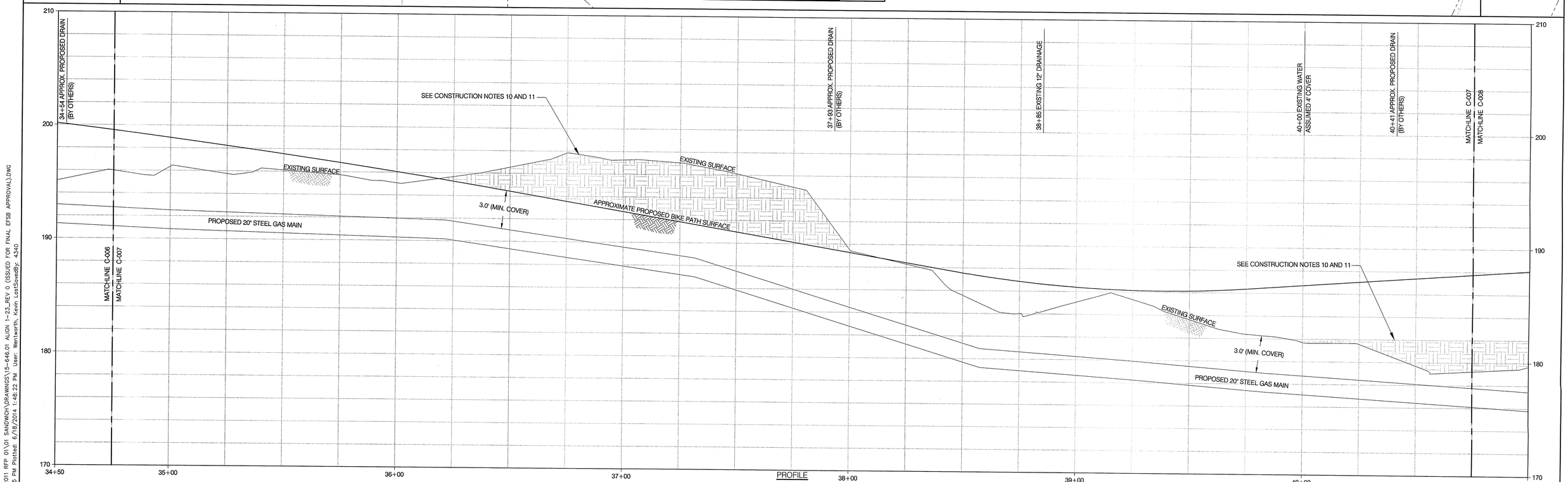

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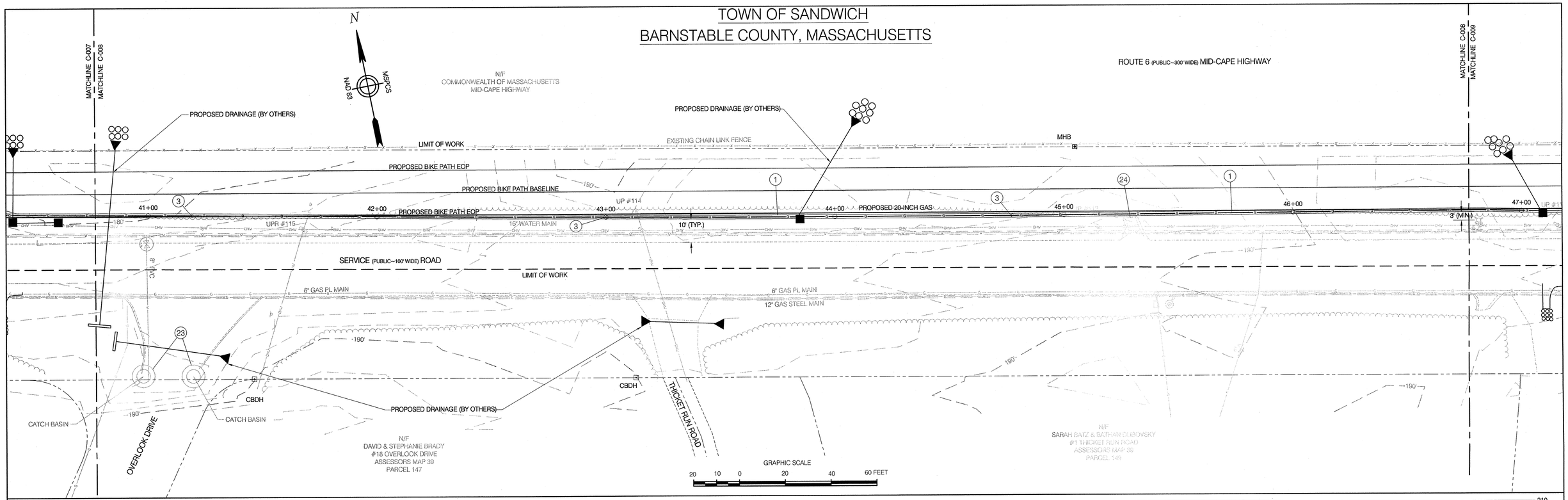

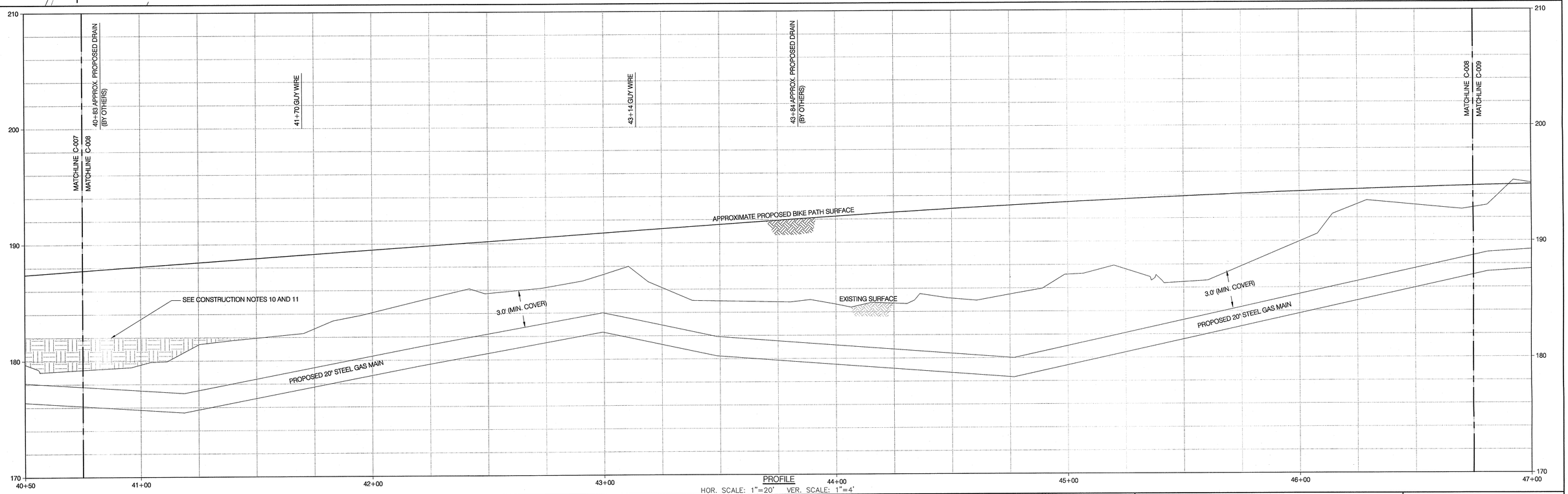

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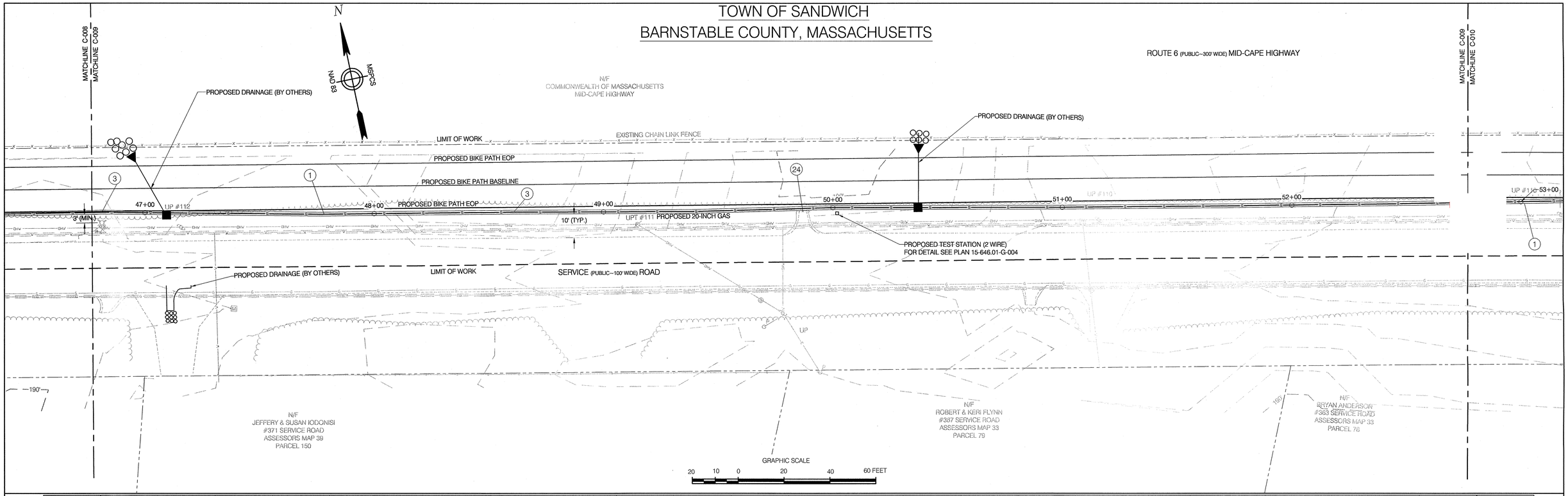

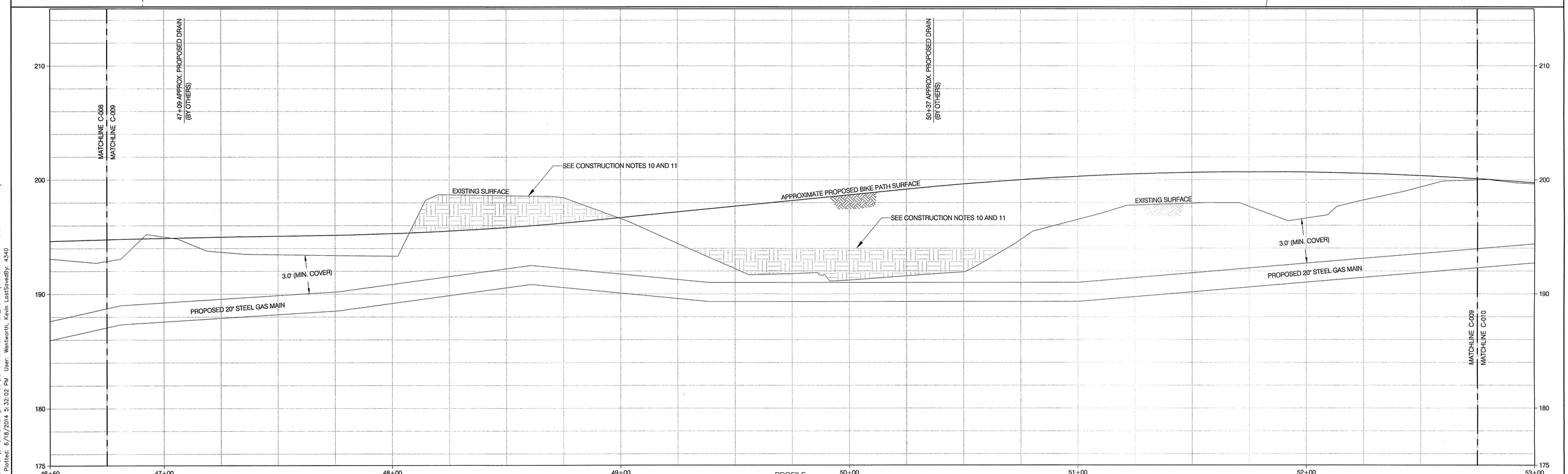

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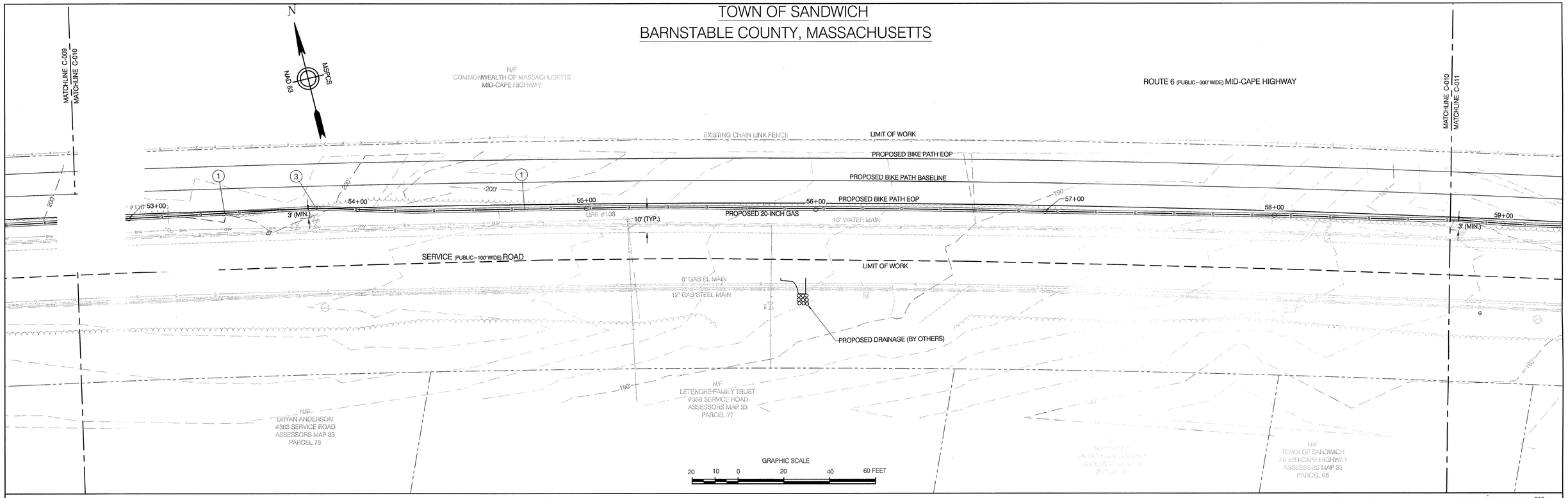

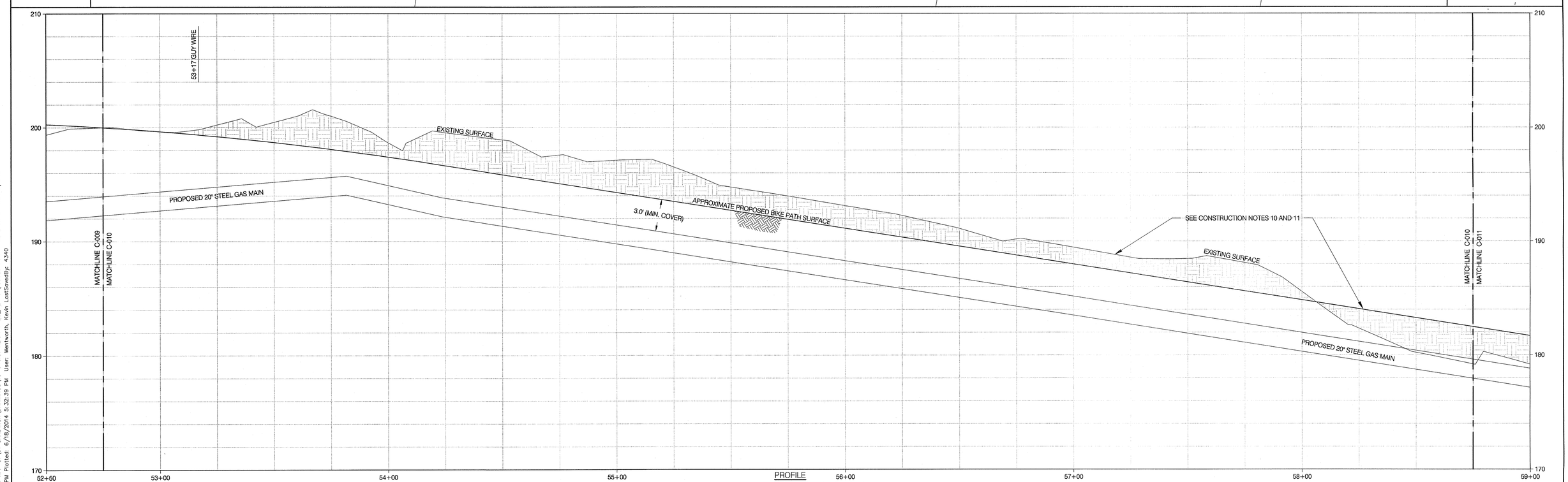

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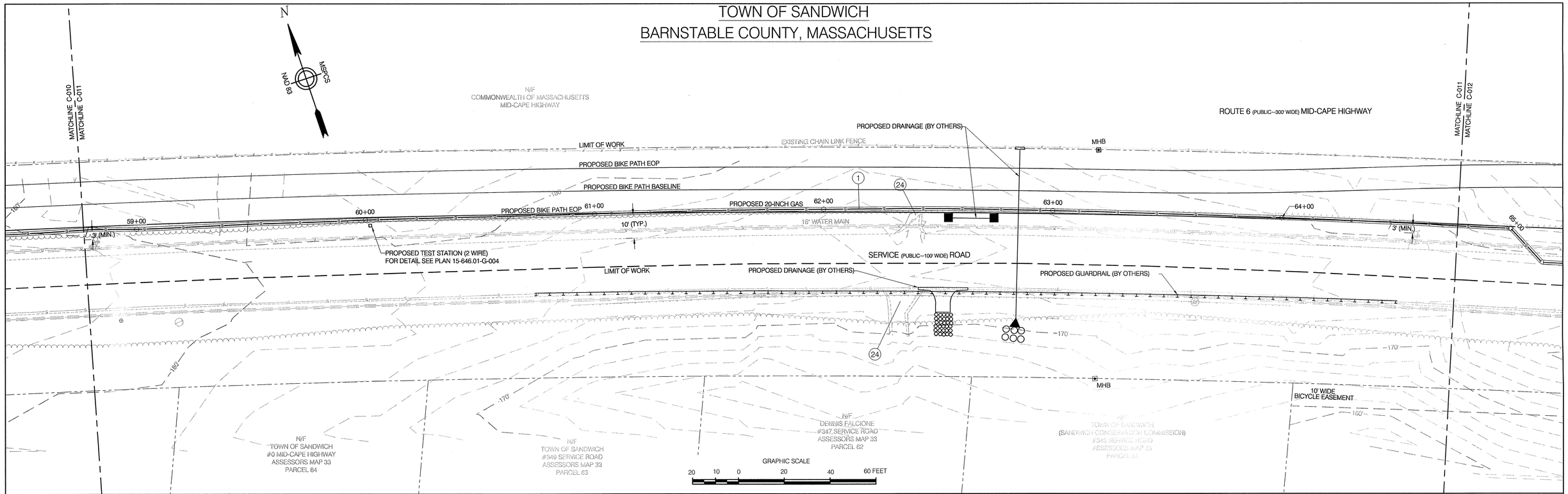

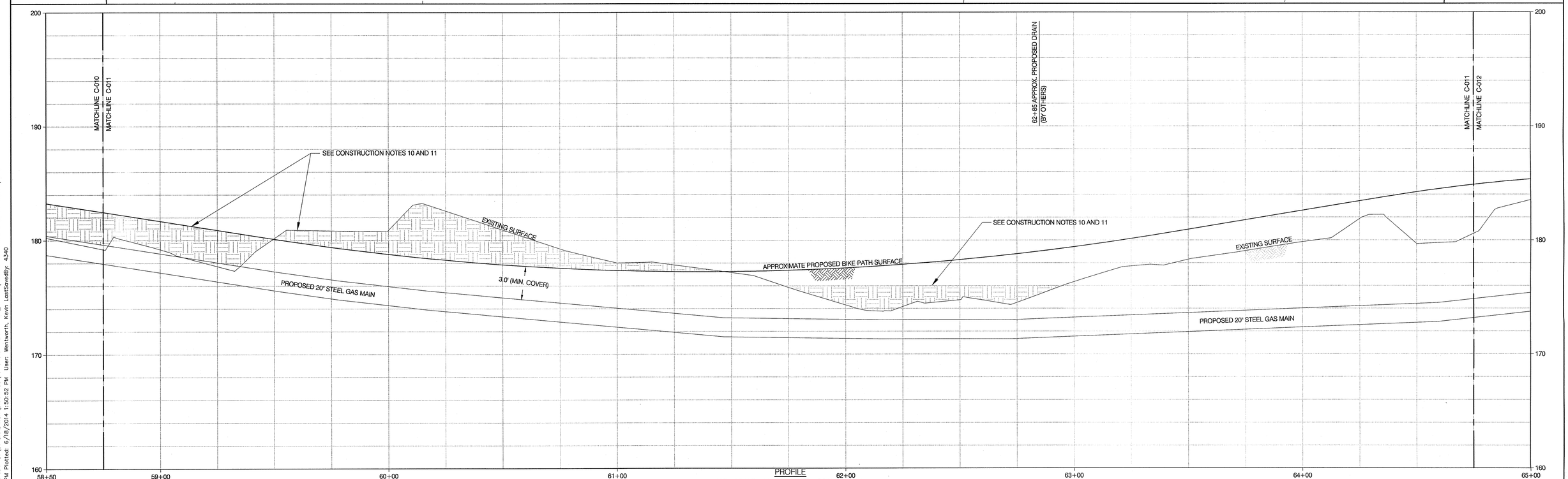

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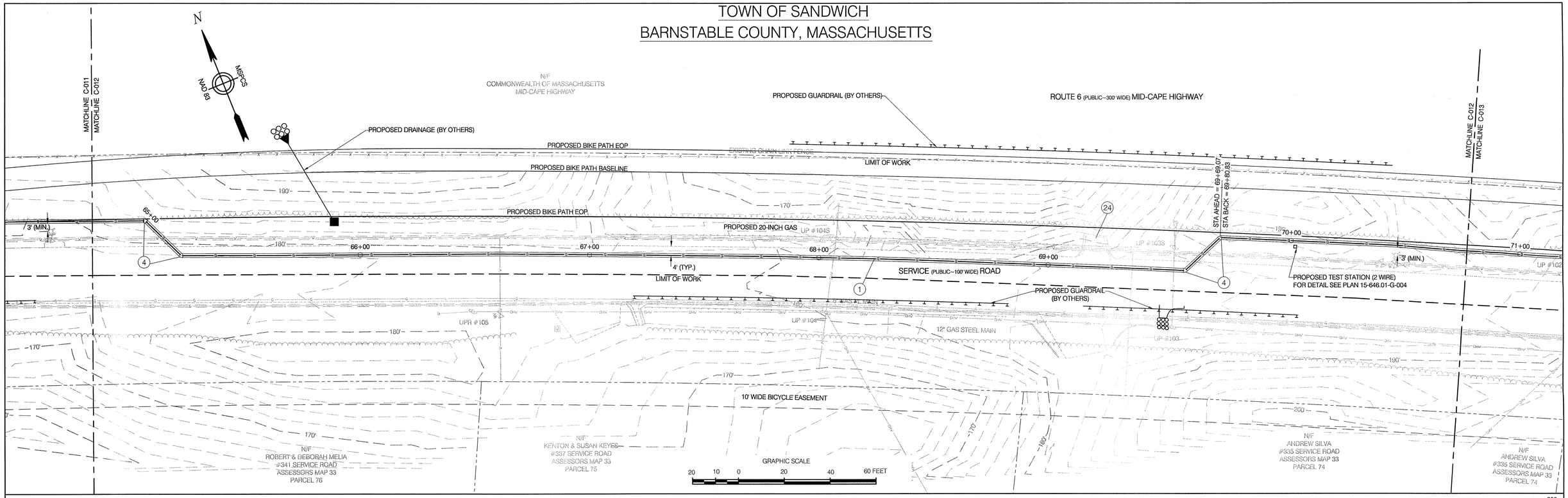

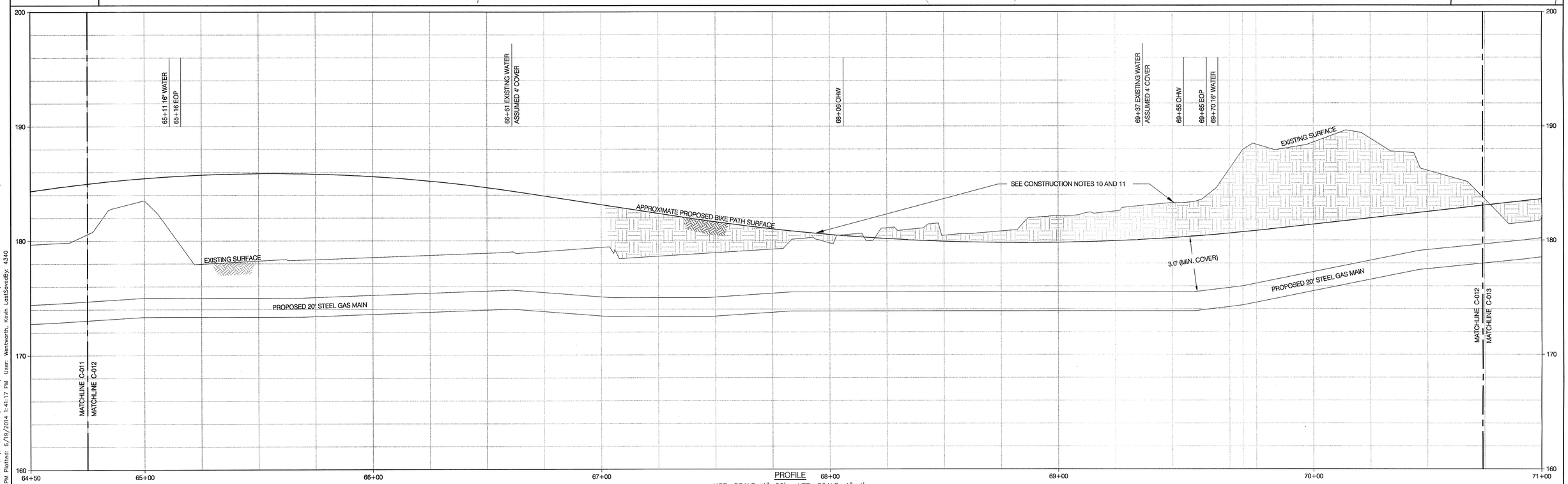

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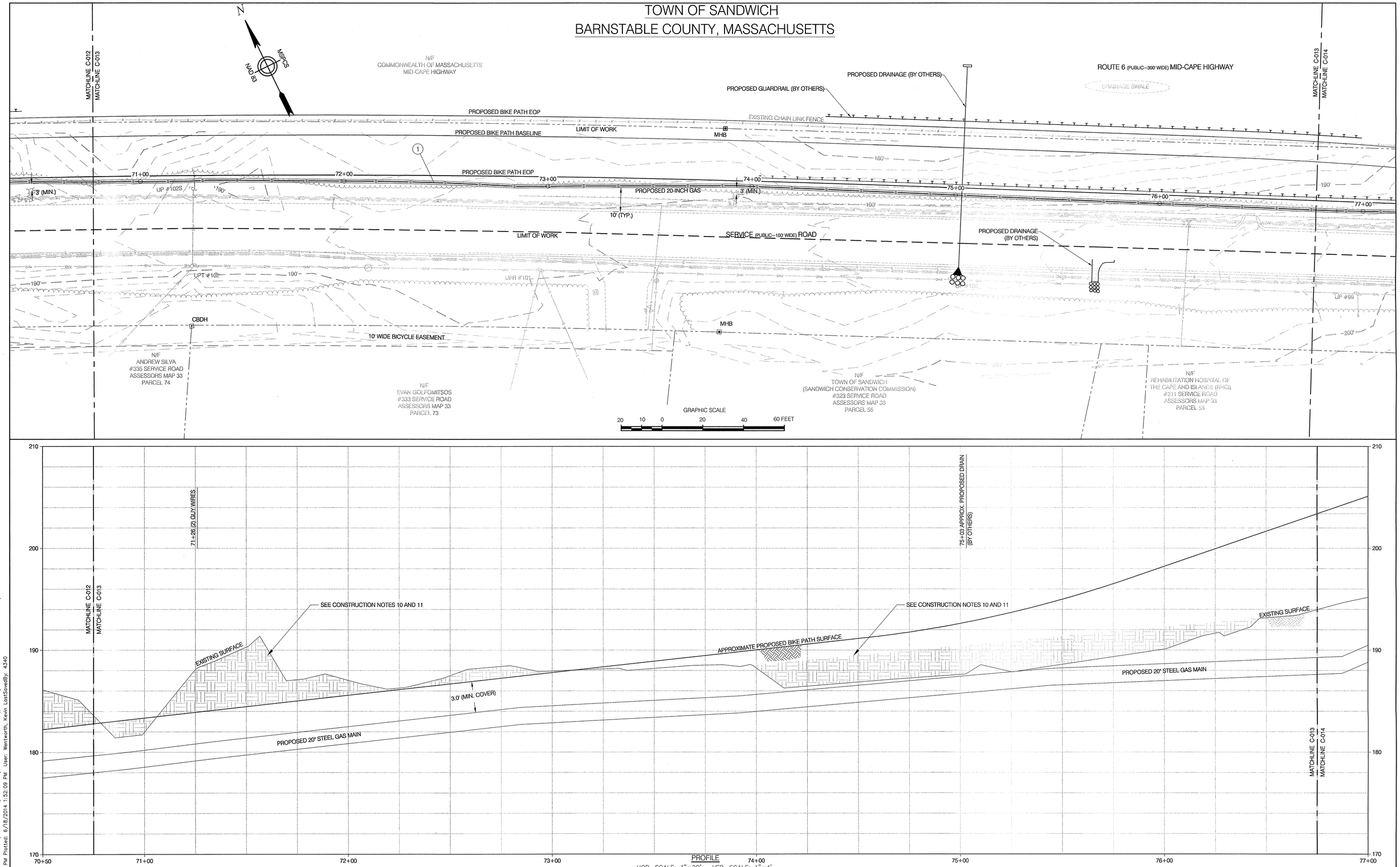

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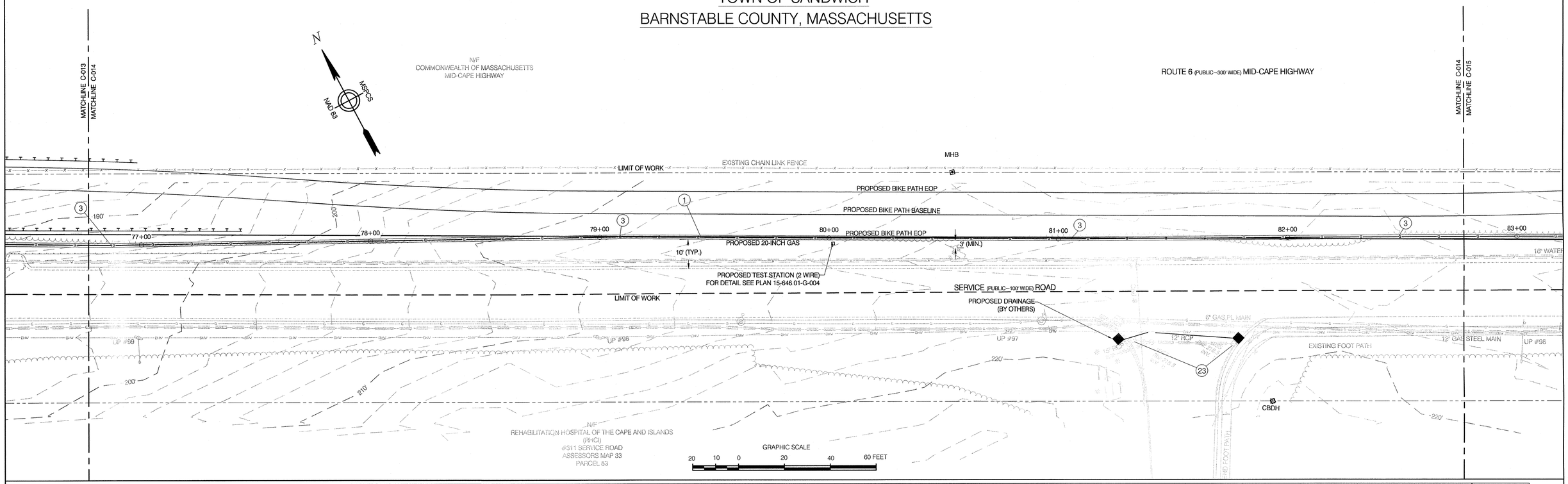

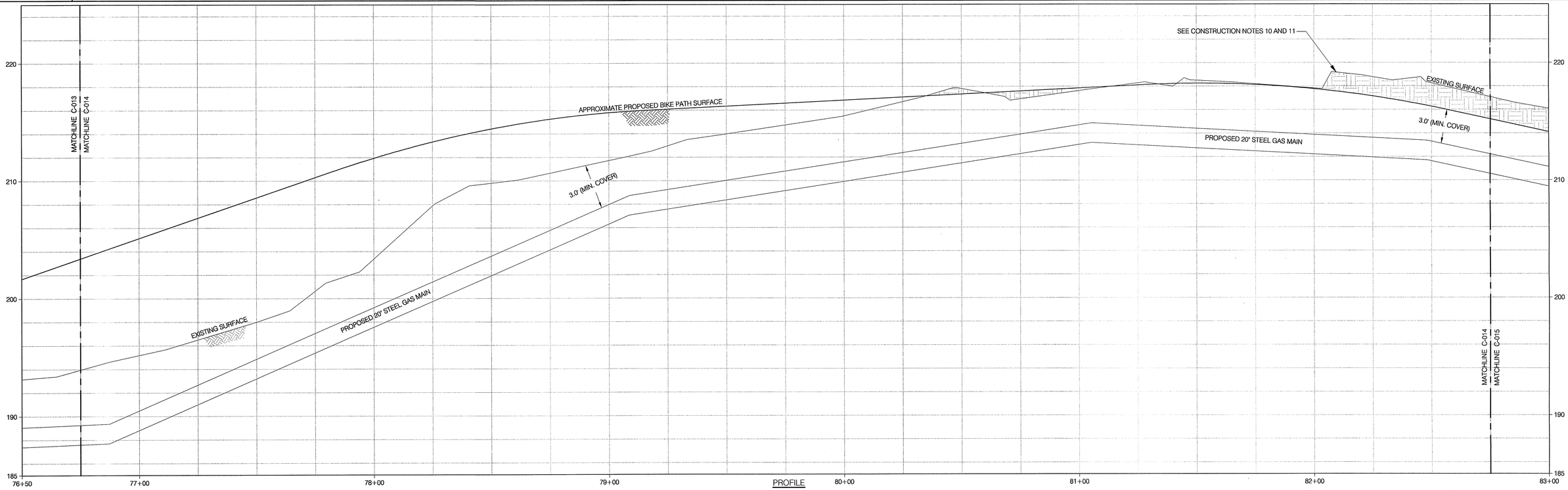

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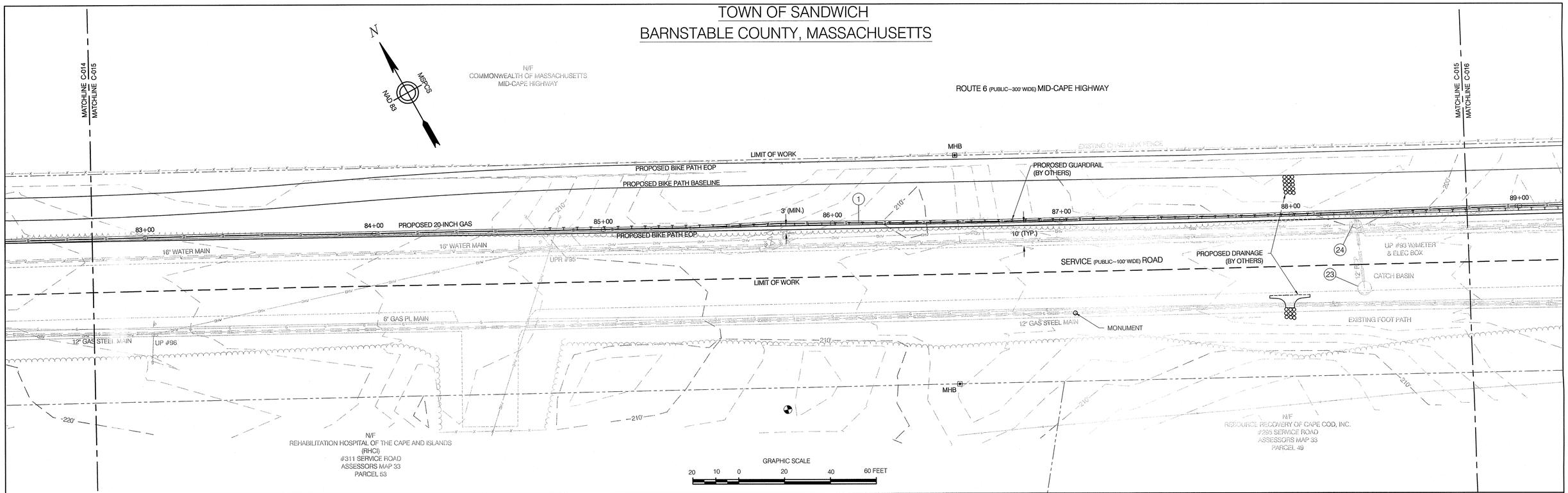

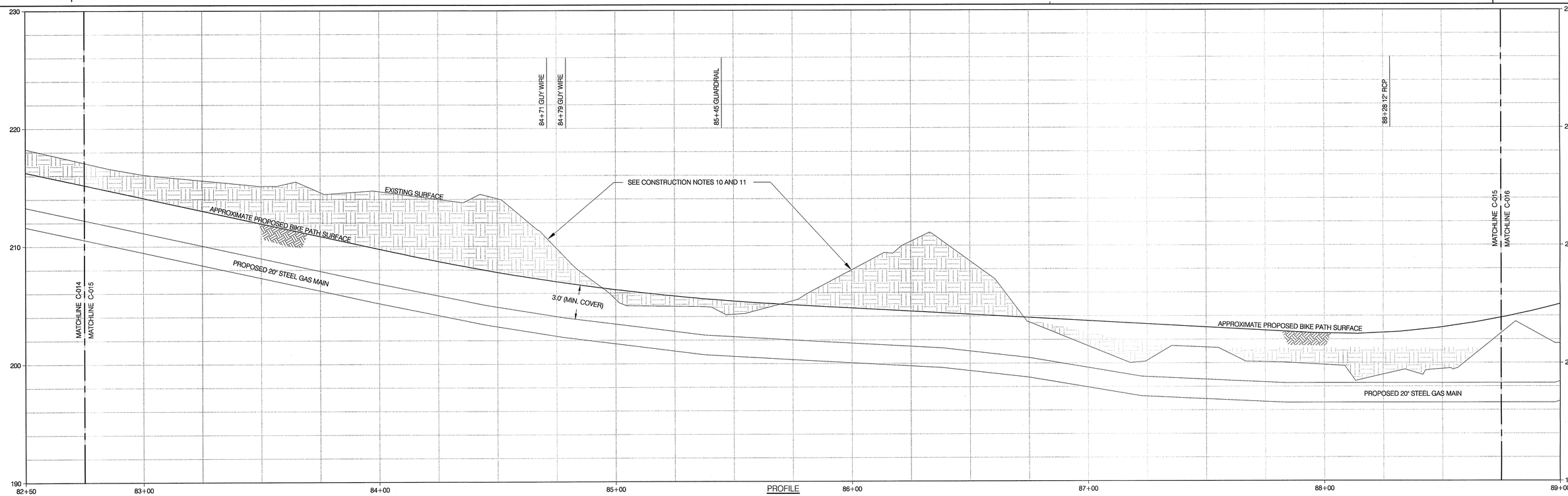

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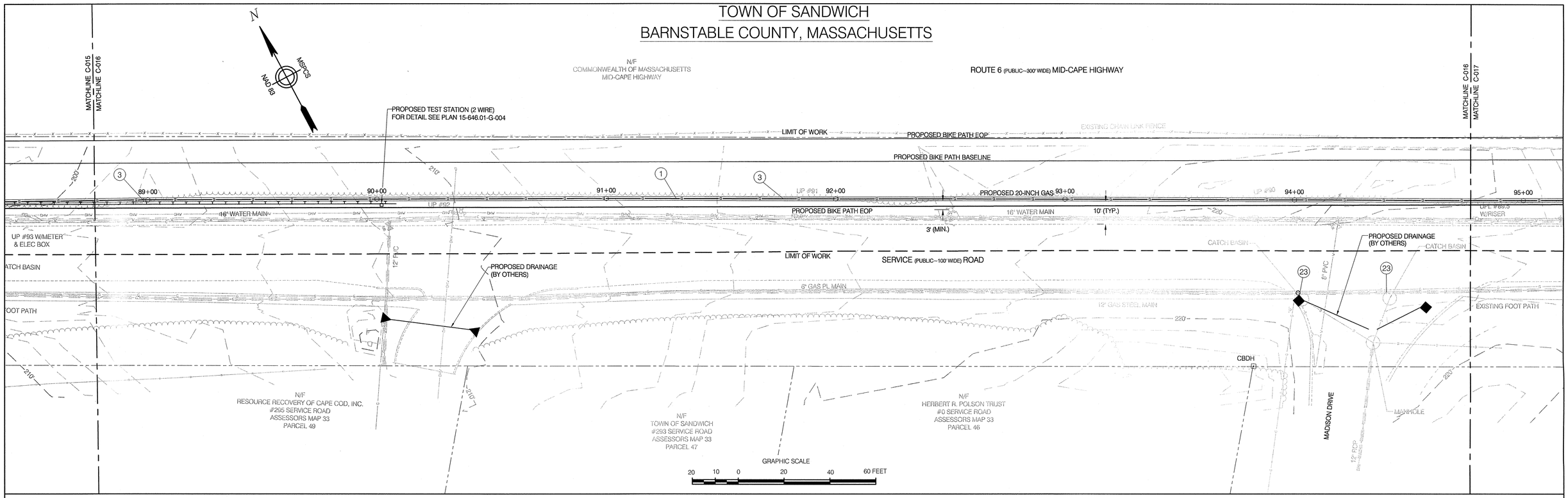

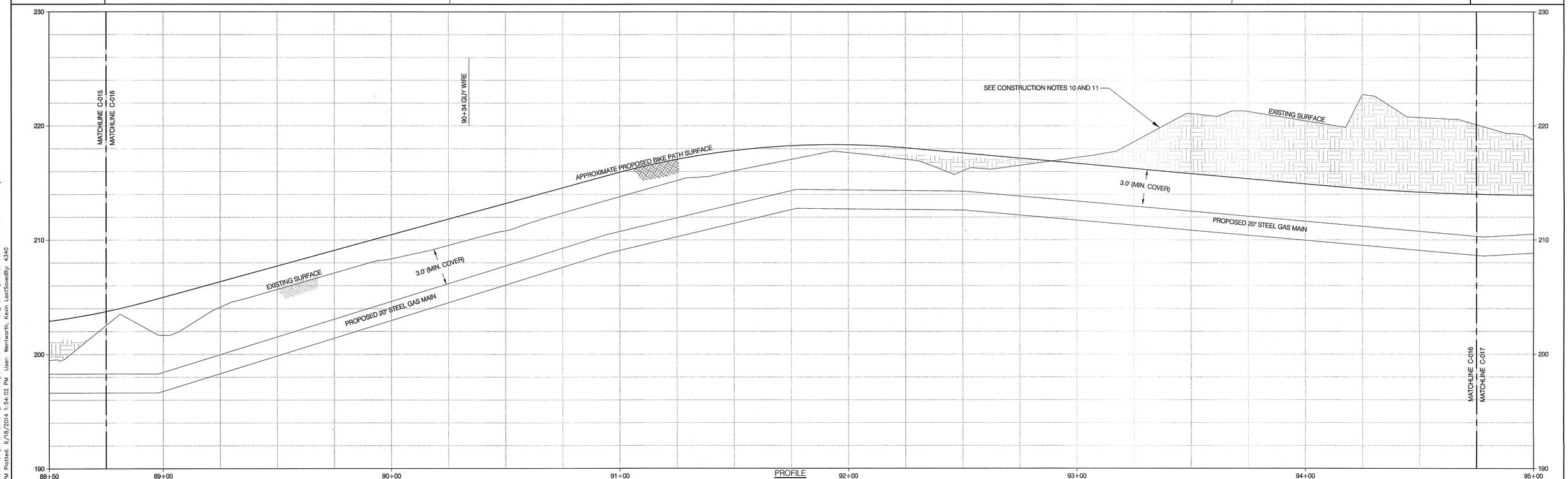

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40 SYLVAN RD.
WALTHAM, MA 02451

COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-9-2014

NATIONAL GRID SERVICE COMPANY, USA
SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

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DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-C-016

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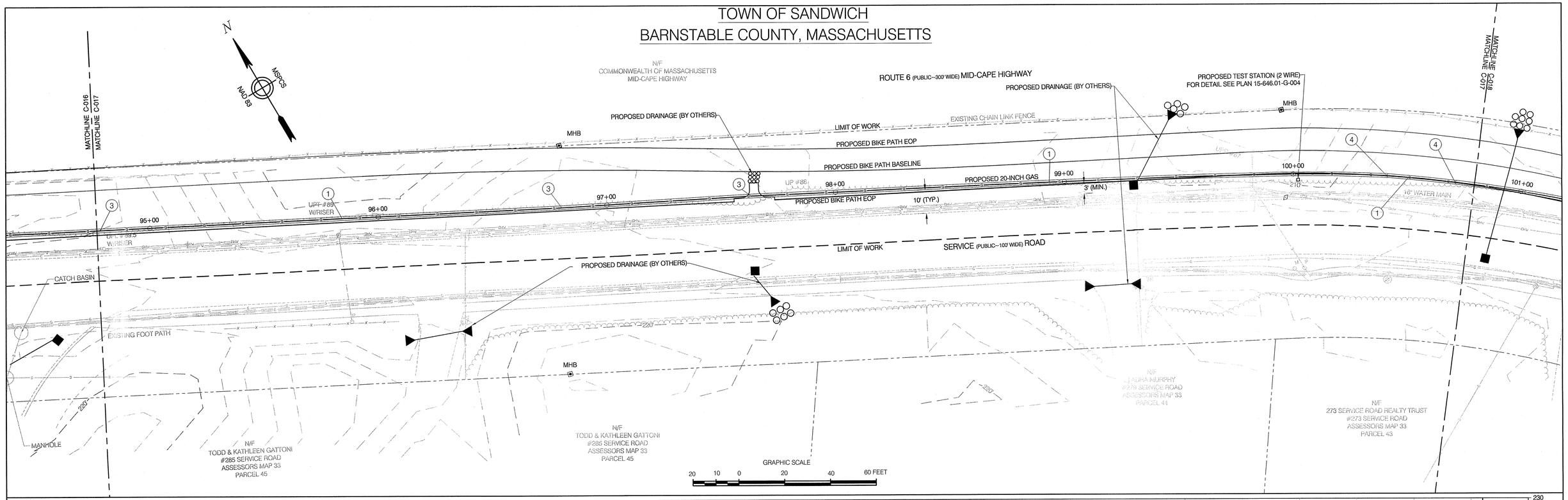
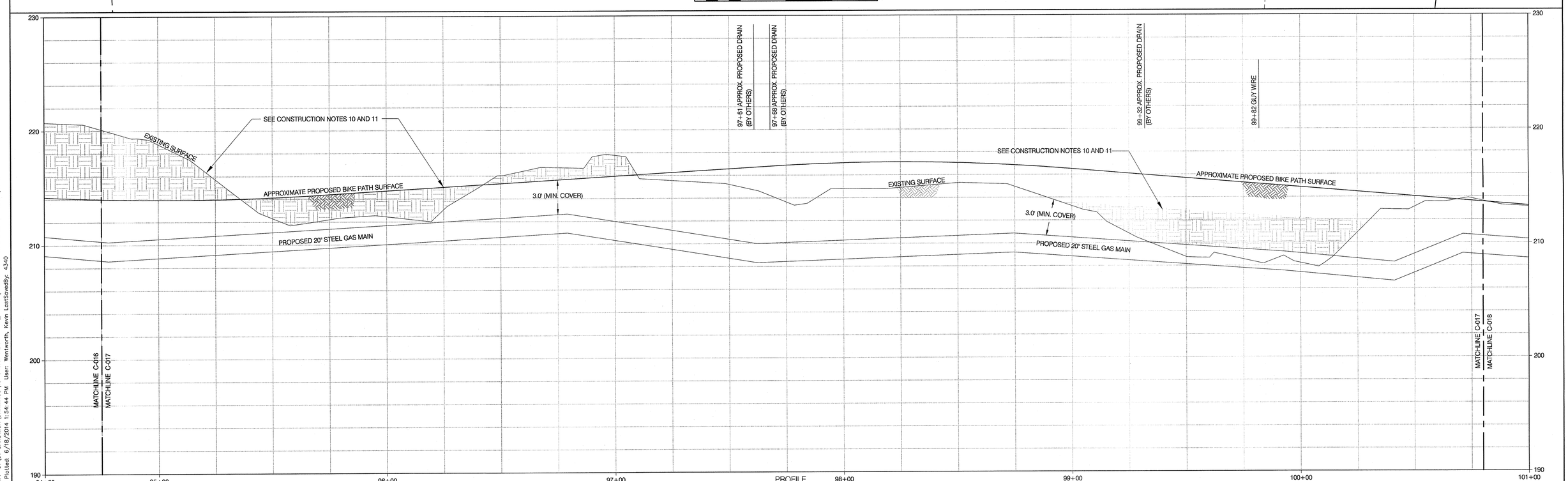
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





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HOR. SCALE: 1"=20' VER. SCALE: 1"=4'

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DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS						
NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

Design/Engineering

CHA
330 Bear Hill Road , Suite 304
Waltham, MA 02451
Main: (781) 982-7650 - www.chacompanies.com

Prepared For:

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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
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6-6-2014

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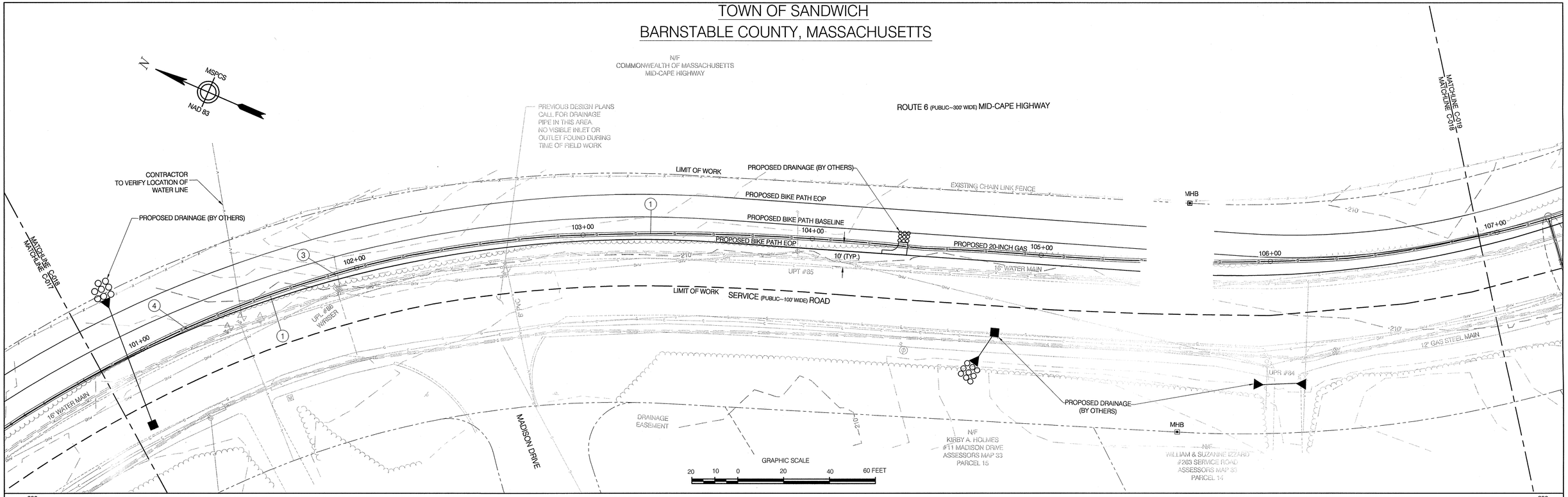
BARNSTABLE COUNTY, MASSACHUSETTS



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SERVICE ROAD ALIGNMENT
SANDWICH, MA
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DATE: SEPTEMBER 7, 2012 MANAGER

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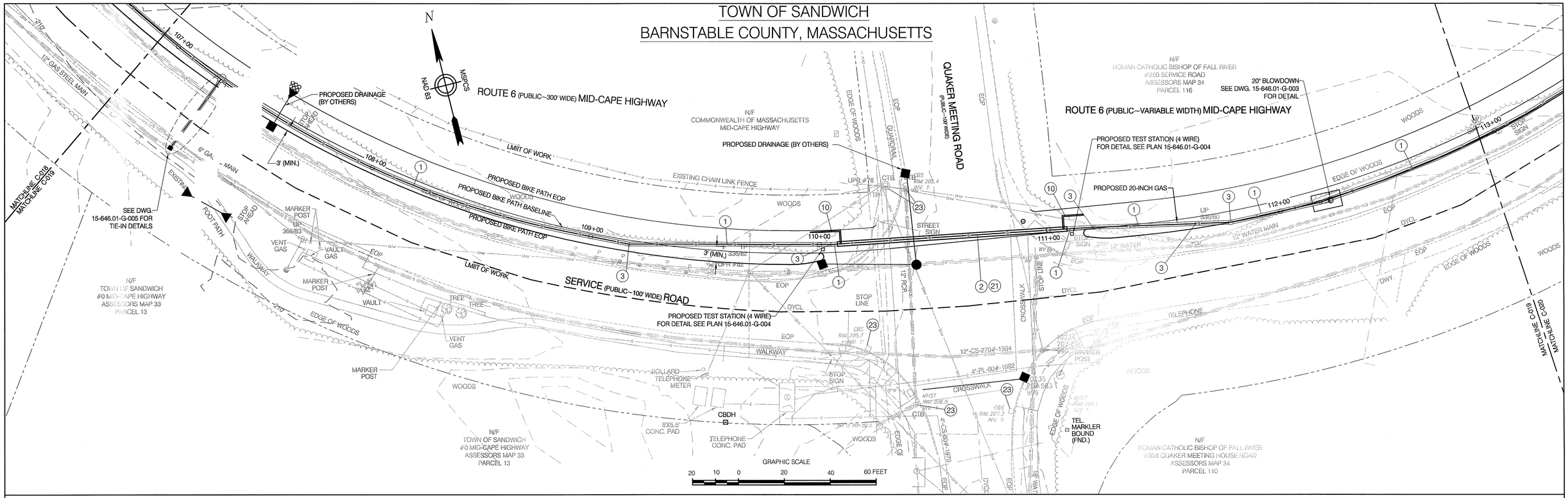
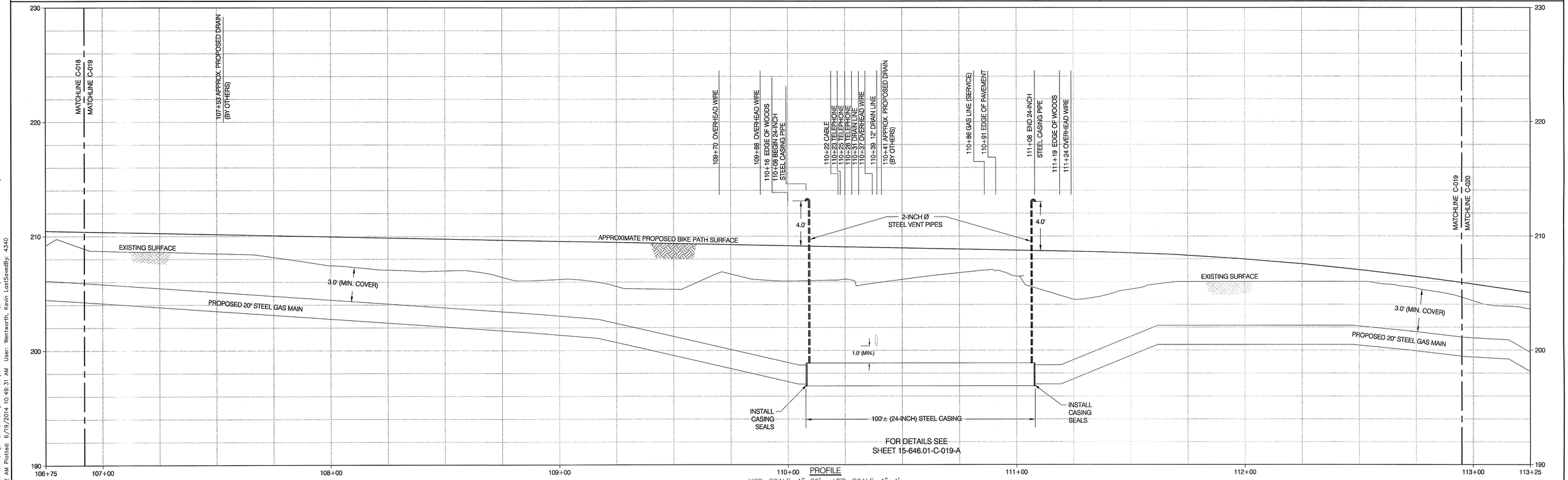
BARNSTABLE COUNTY, MASSACHUSETTS





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BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-C-019

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TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

GENERAL NOTES

1. SITE DETAIL SHOWN HEREON IS BASED UPON TOPOGRAPIC DETAIL SURVEY CONDUCTED BY COLER & COLANTONIO, INC. IN JULY 2011 AND DETAIL SURVEY PROVIDED BY BSC.

2. PROPERTY LINES SHOWN HEREON ARE BASED ON TAX MAP LOCATION AND DO NOT REPRESENT A PROPERTY LINE RETRACEMENT SURVEY EFFORT.

3. LOCATION OF ANY IDENTIFIED UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR FOR SERVICE, SIZE, INVERT ELEVATIONS, LOCATION, ETC. CONTRACTOR MUST NOTIFY DIG-SAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.

4. SURVEY WAS CONDUCTED IN MASSACHUSETTS MAINLAND ZONE 2001, NAD83 HORIZONTAL COORDINATE SYSTEM. ELEVATIONS ARE BASED ON NAVD 1988, US SURVEY FEET. ELEVATIONS WERE TRANSFERRED TO THIS SITE VIA STATIC GPS SURVEY METHODS AND REFERENCED TO TEMPORARY BENCHMARKS AS SHOWN ON THE PLAN.

5. THE PURPOSE OF THIS PLAN IS TO IDENTIFY TO THE APPROPRIATE PERMITTING AGENCY THE PROPOSED LOCATION FOR A GAS PIPELINE AND ITS LOCATION RELATIVE TO EXISTING UTILITIES WITHIN THE LIMITS OF A ROAD RIGHT-OF-WAY, INCLUDING ELEVATION INFORMATION WHERE OBTAINABLE.

6. THE PROPOSED 20-INCH STEEL PIPE ROAD CROSSING WILL BE CONSTRUCTED VIA PIPE JACKING CONSTRUCTION METHODS.

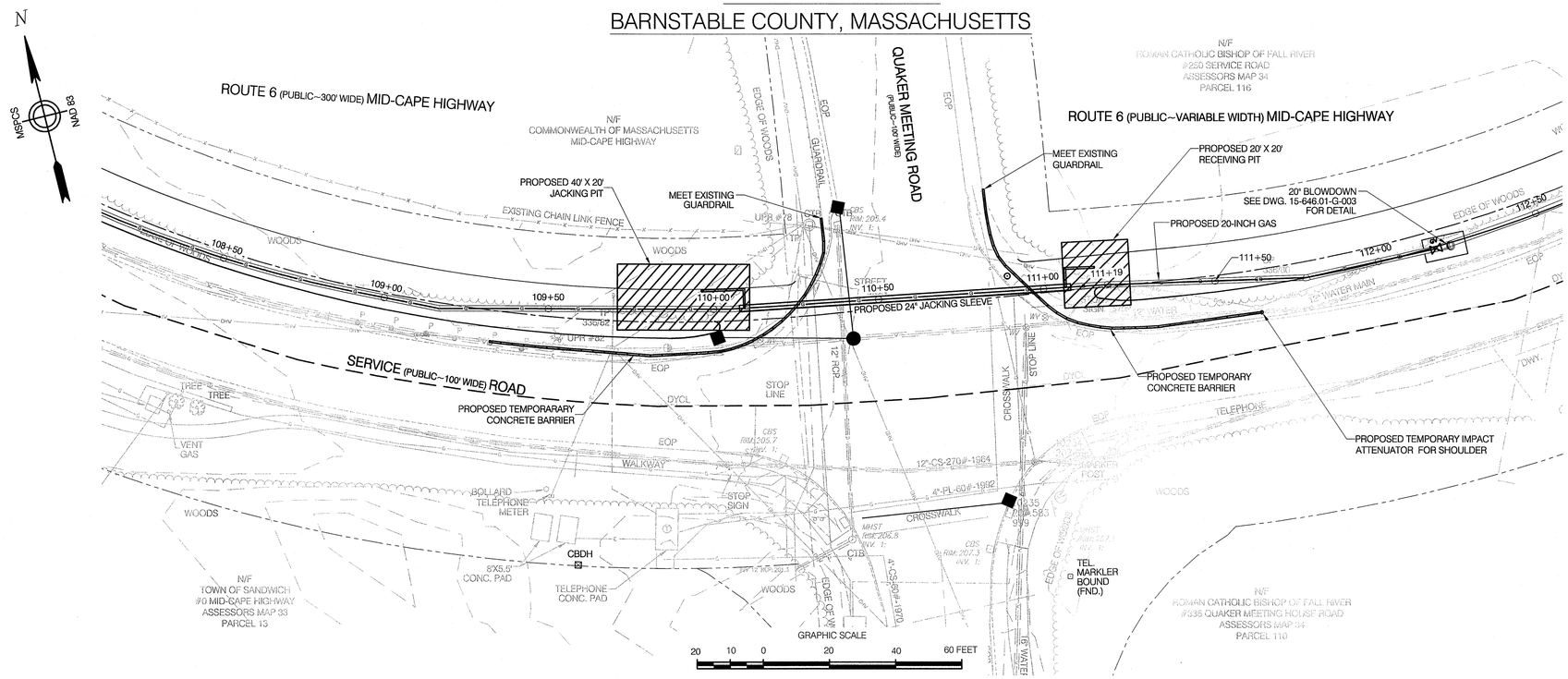
7. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH PART VI OF THE 2003 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) REVISION 3 AND AS AMENDED.

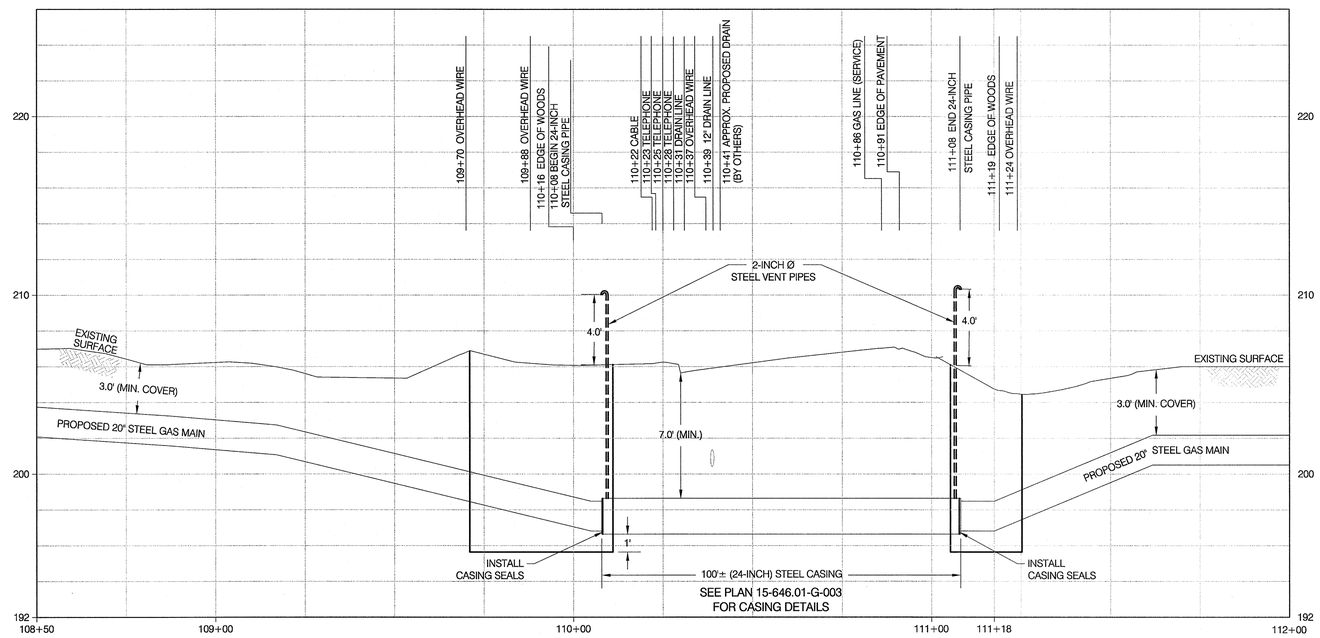
8. ALL VEHICLES ARE TO BE HIGHLY VISIBLE USING ROTATING BEACONS AND BE MARKED BY USE OF TRAFFIC CONES.

9. NATIONAL GRID SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY OBSTRUCTION OF ACCESS.

10. BACKFILL MATERIAL WILL CONSIST OF SUITABLE EXCAVATED MATERIAL COMPACTED.

11. BLASTING NOT PERMITTED.





PROFILE
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VER. SCALE: 1"=5'

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DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS							
NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

Design/Engineering
CHA
330 Bear Hill Road , Suite 304
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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-17-2014

NATIONAL GRID
PROPOSED 20-INCH GAS MAIN
QUAKER MEETING HOUSE ROAD CROSSING DETAIL
SANDWICH, MASSACHUSETTS
File No.: 15-646.01 JACK & BORE DETAILS.dwg

APPROVED BY
DATE: SEPTEMBER 24, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-C-019A

File: W:\NATIONAL GRID\2011 RFP 01\01 SANDWICH\DRAWINGS\ROAD CROSSING DETAILS\15-646.01 JACK & BORE DETAILS.DWG
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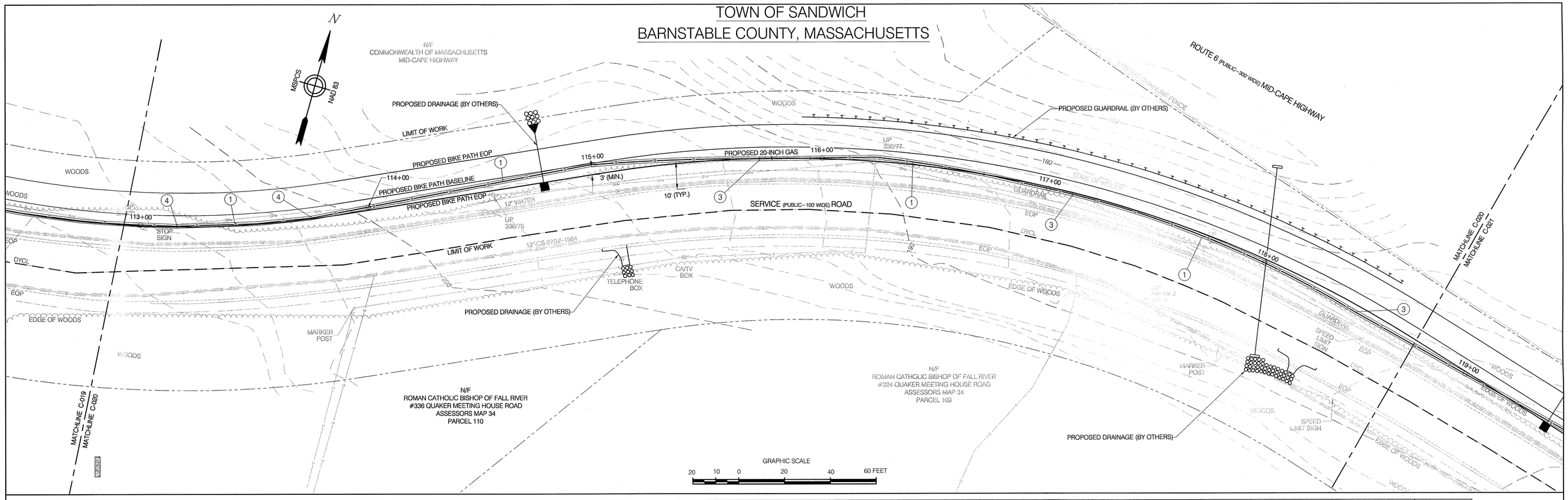
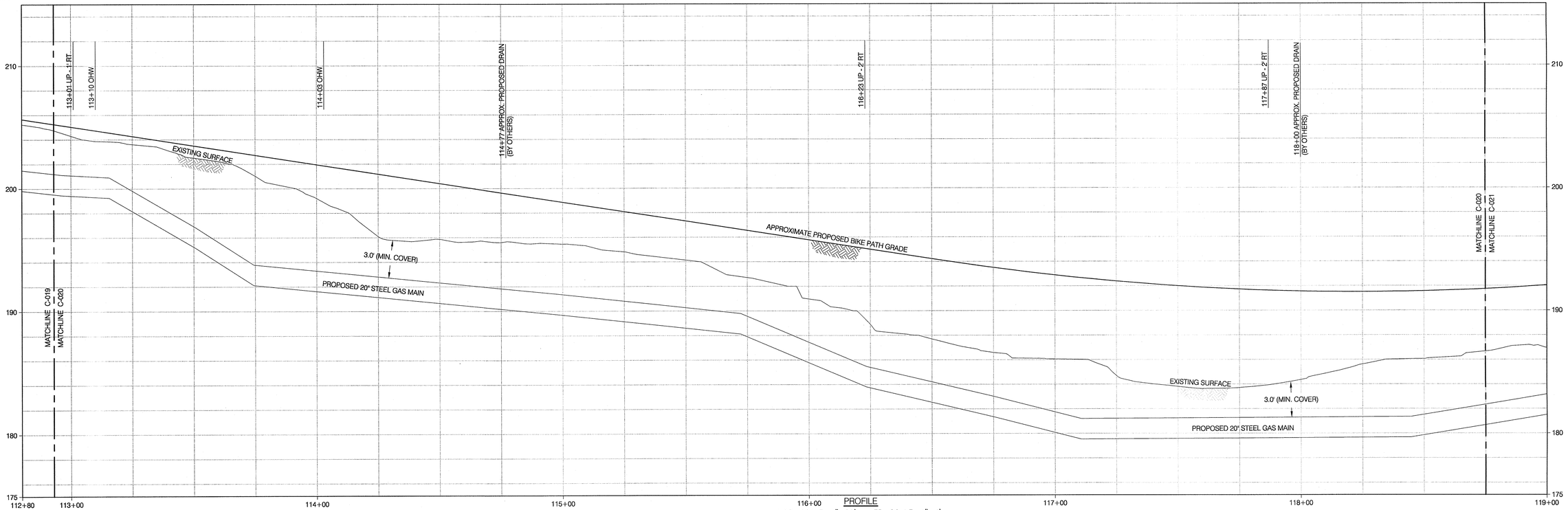
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





PROFILE
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REFERENCE DRAWINGS			
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COMMONWEALTH OF MASSACHUSETTS
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6-19-2014

NATIONAL GRID SERVICE COMPANY, USA
SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
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15-646.01-C-020

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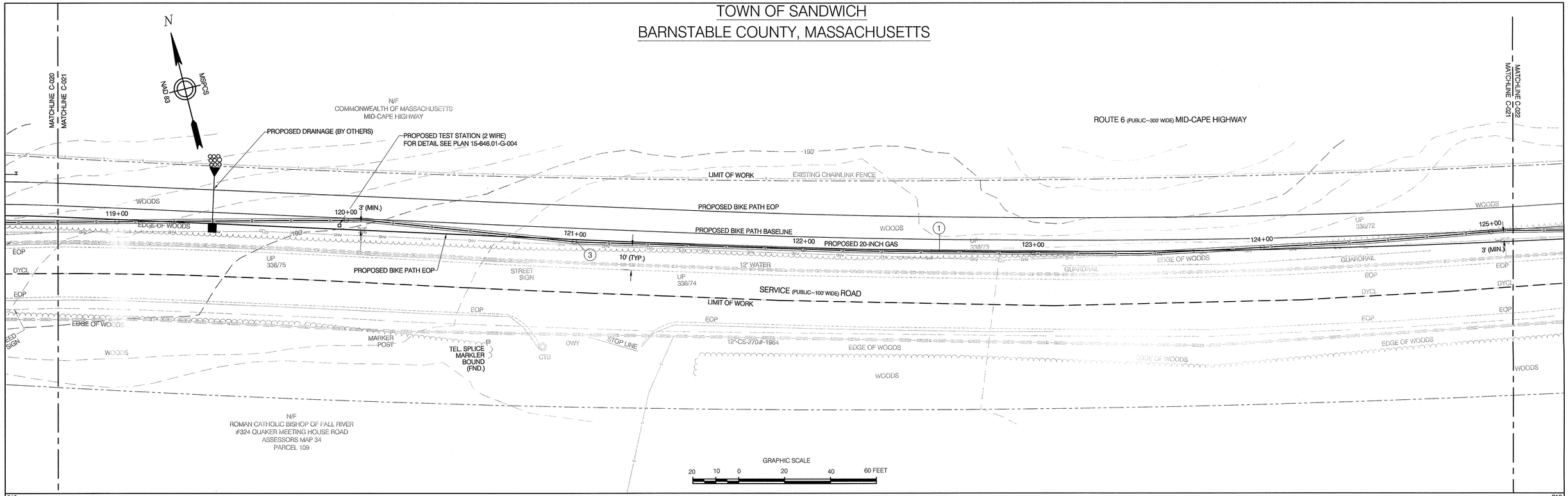
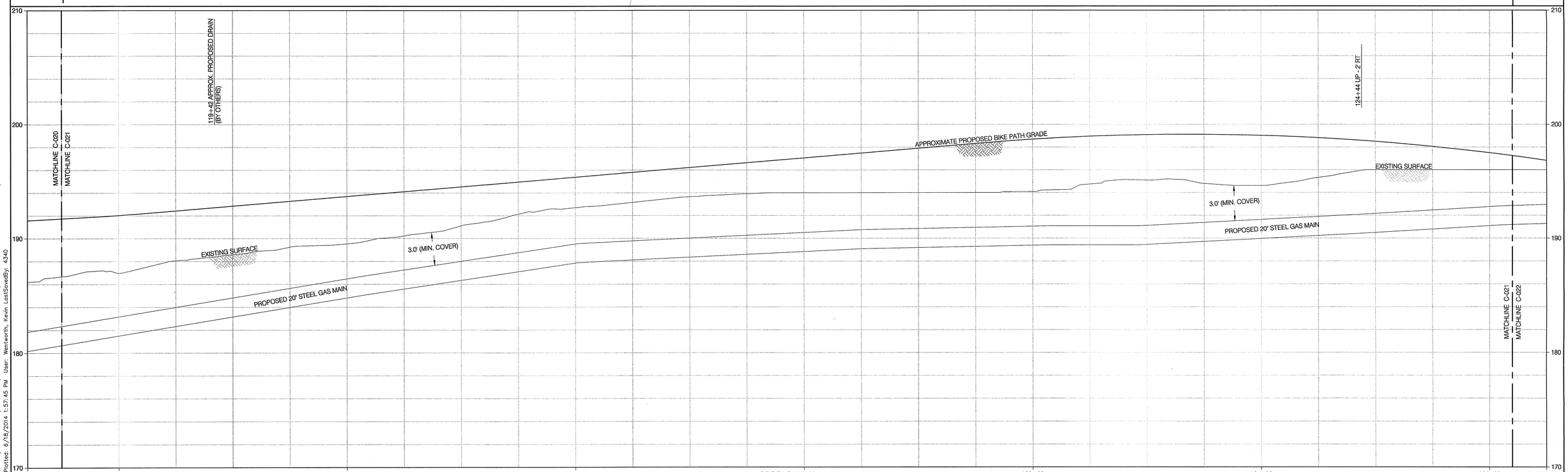
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





PROFILE 122+00

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SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
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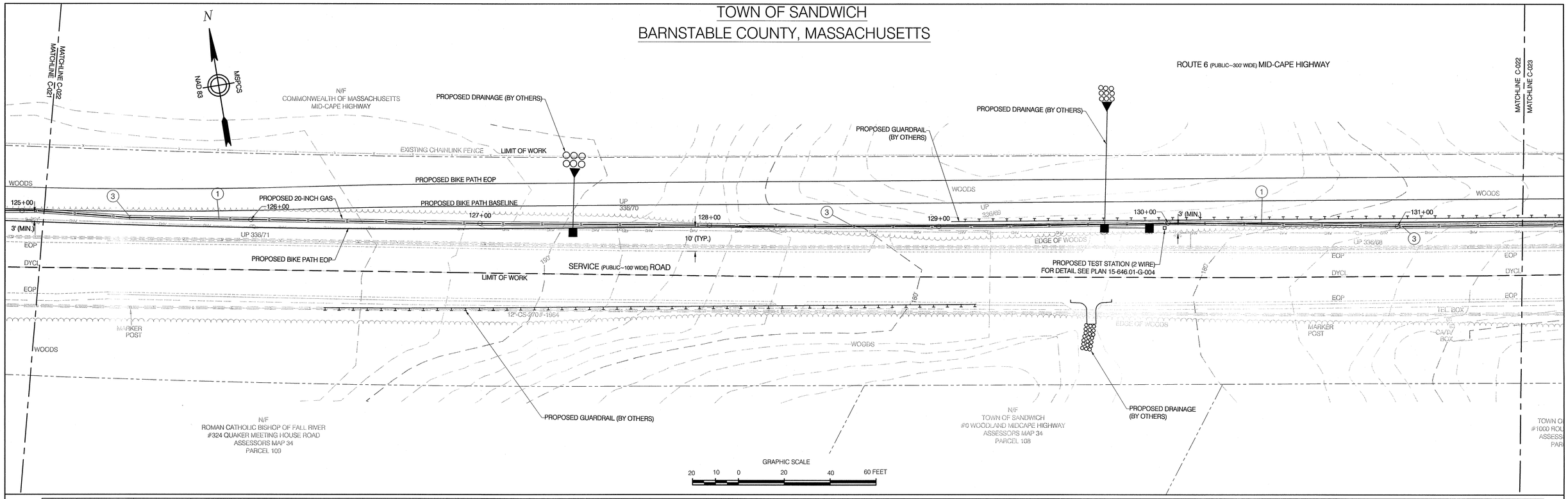
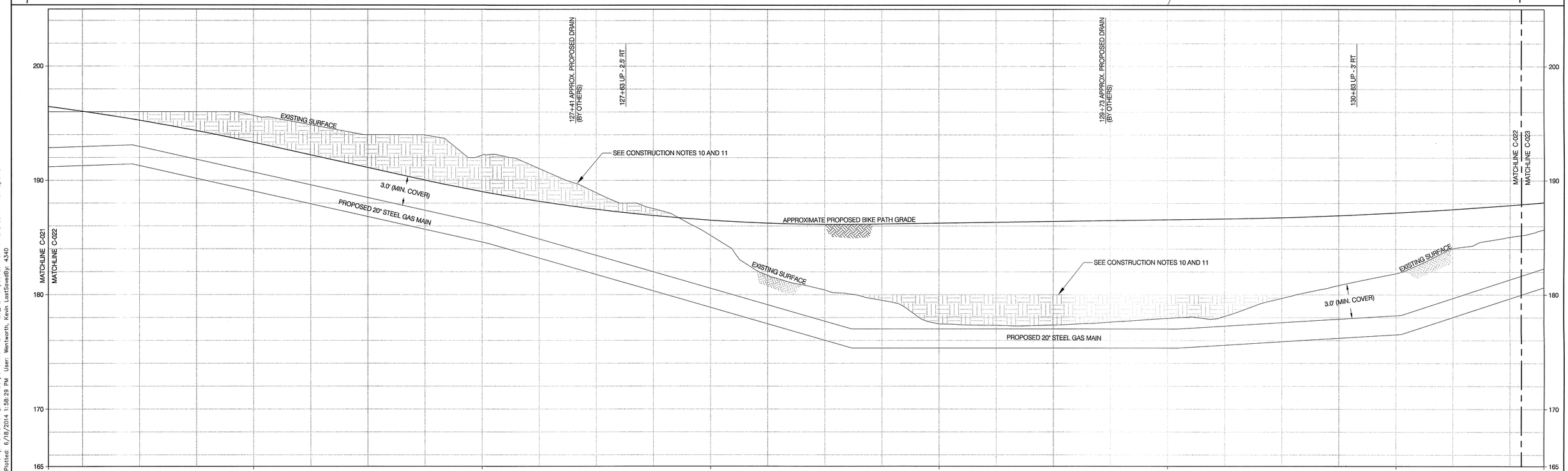
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





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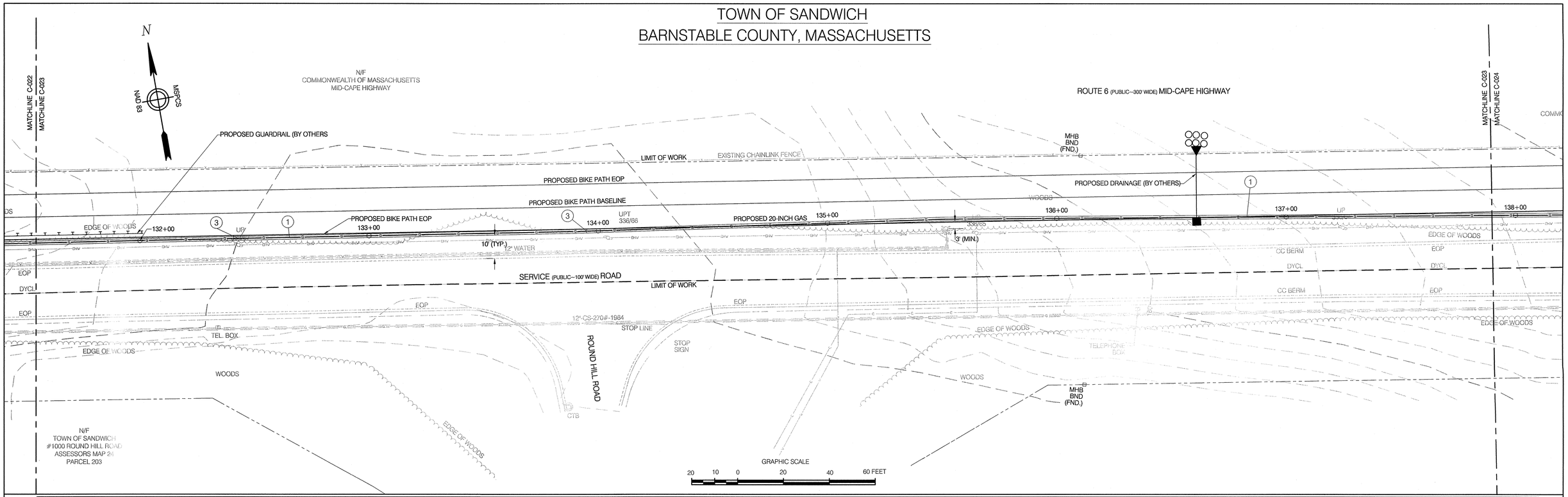
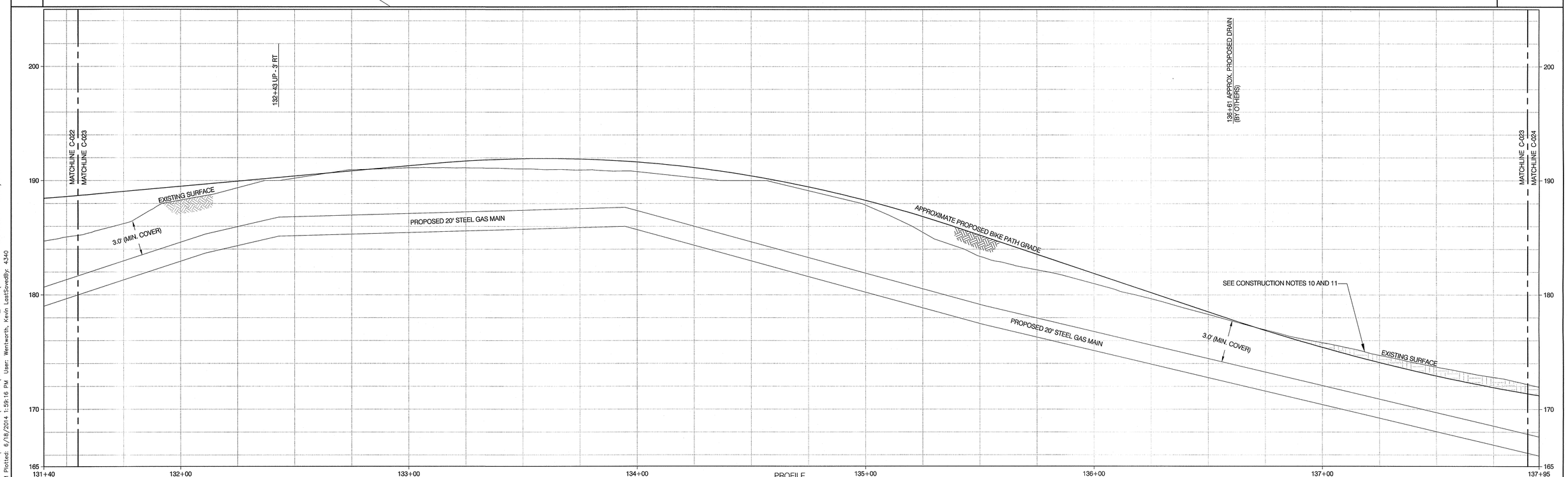
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





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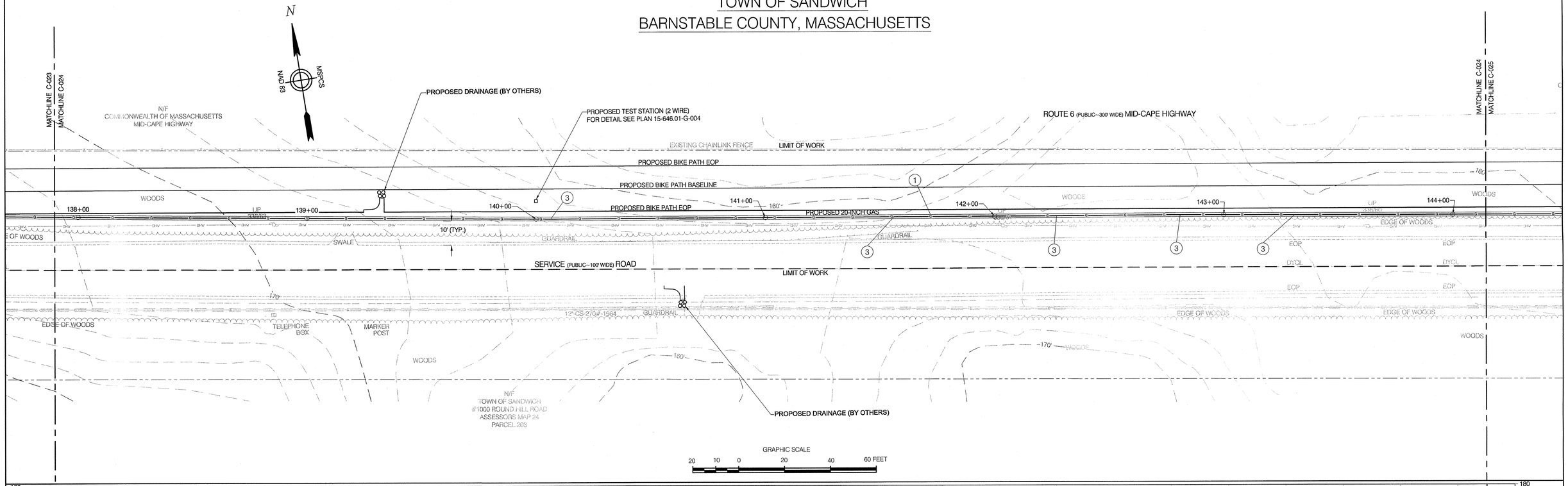

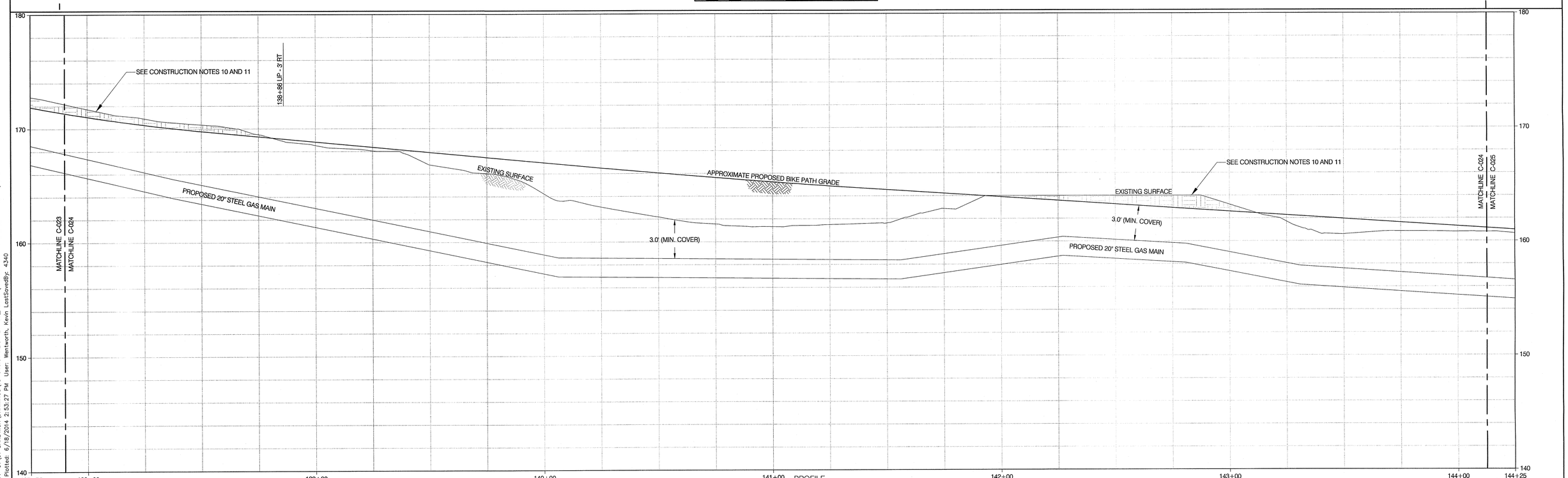

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BARNSTABLE COUNTY, MASSACHUSETTS
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DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA

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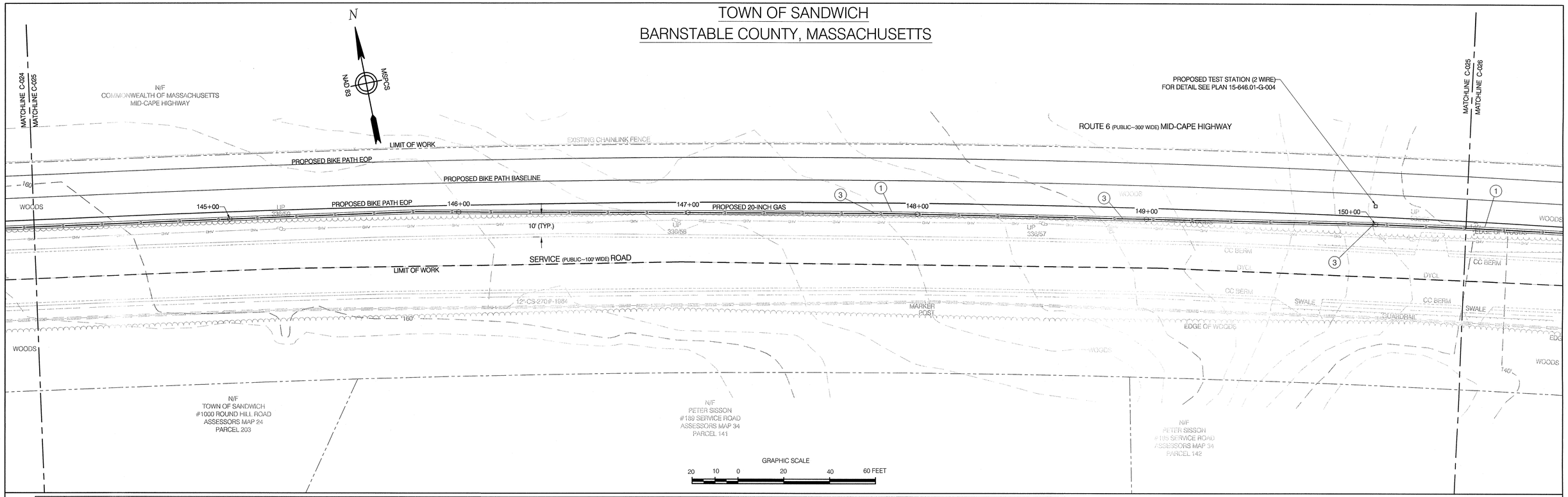
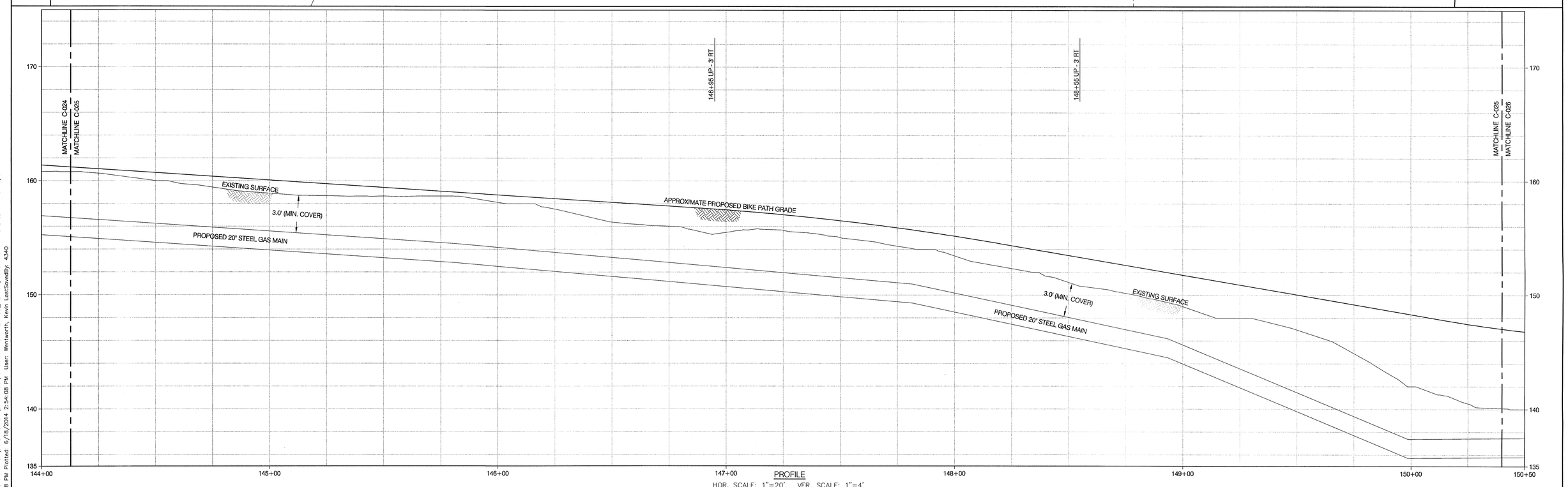
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





PROFILE

HOR. SCALE: 1"=20' VER. SCALE: 1"=4'

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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-19-2014

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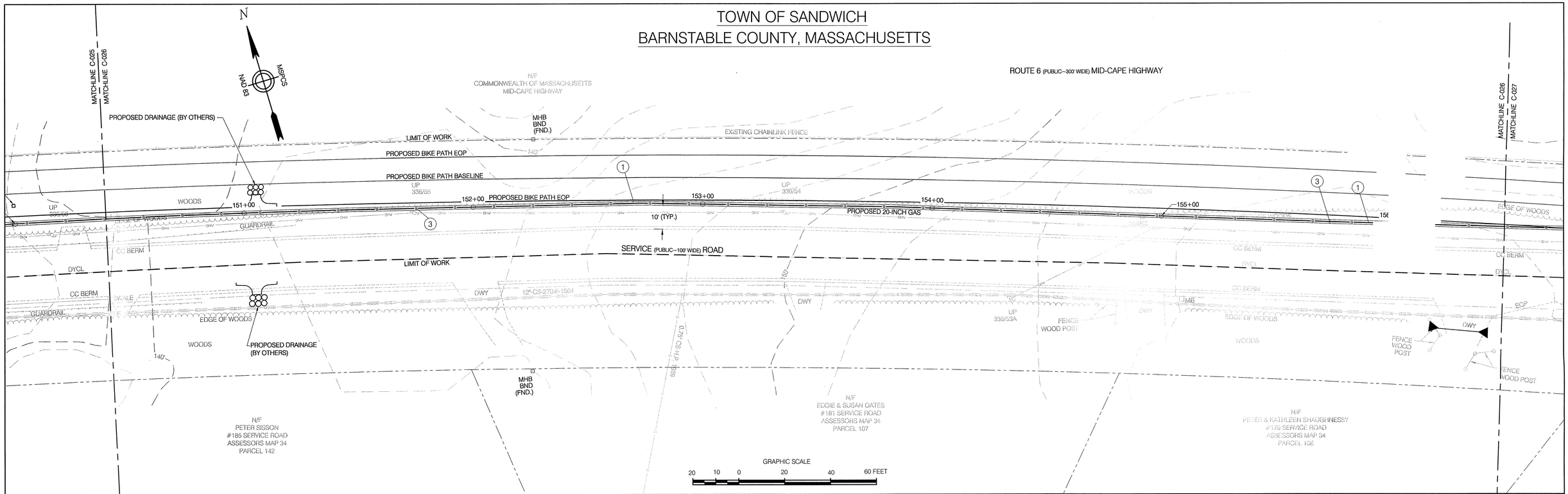

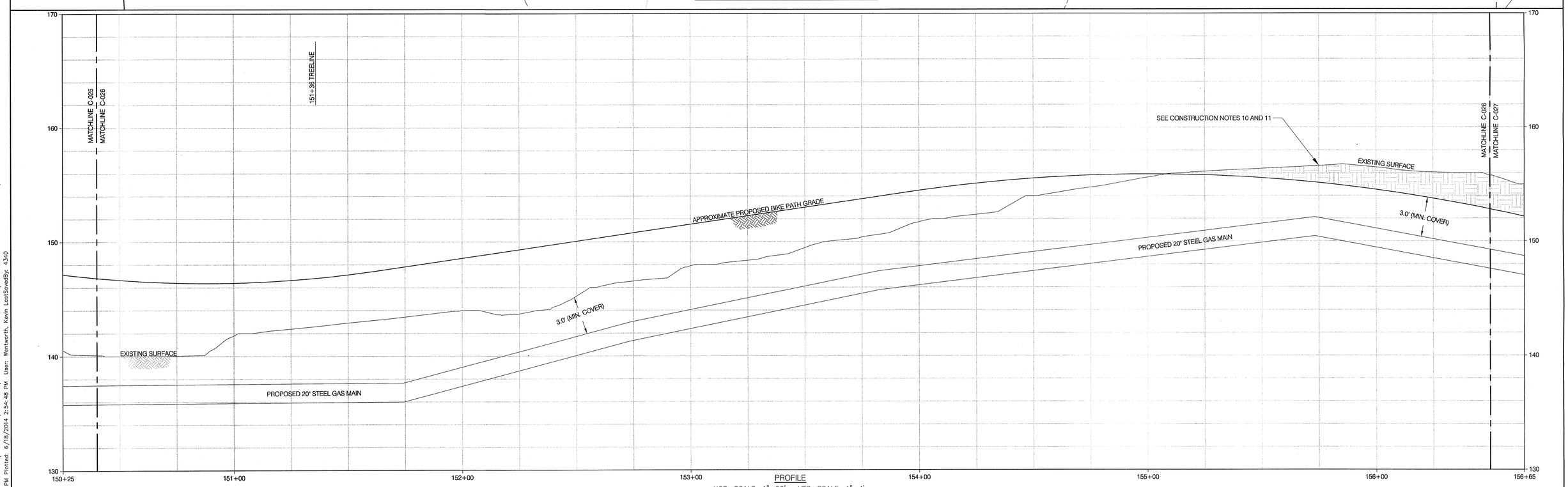

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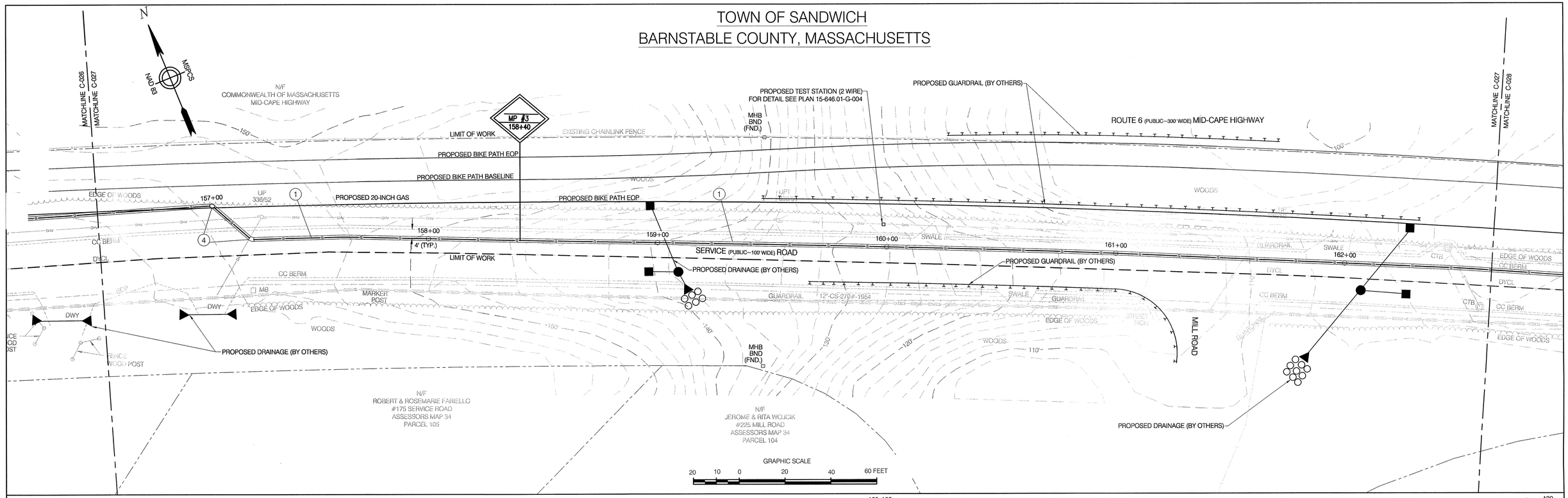

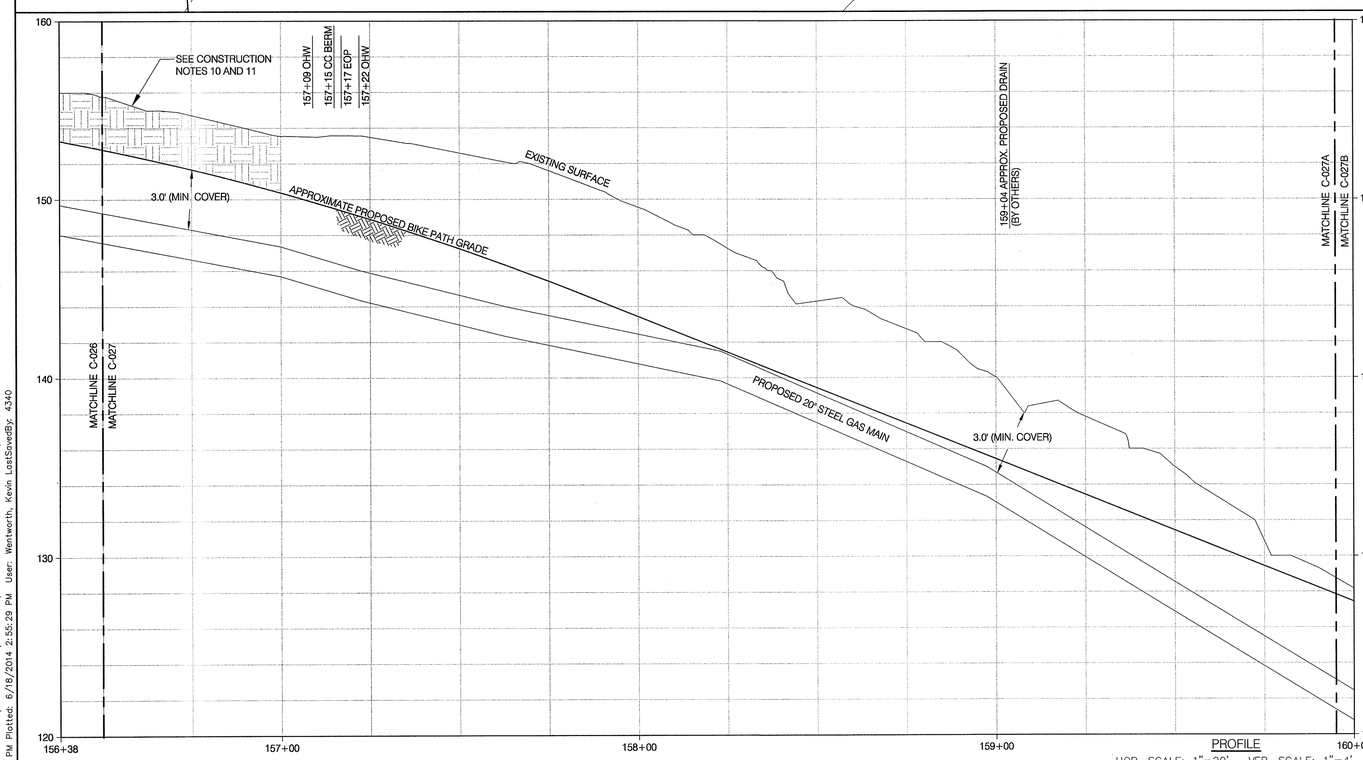

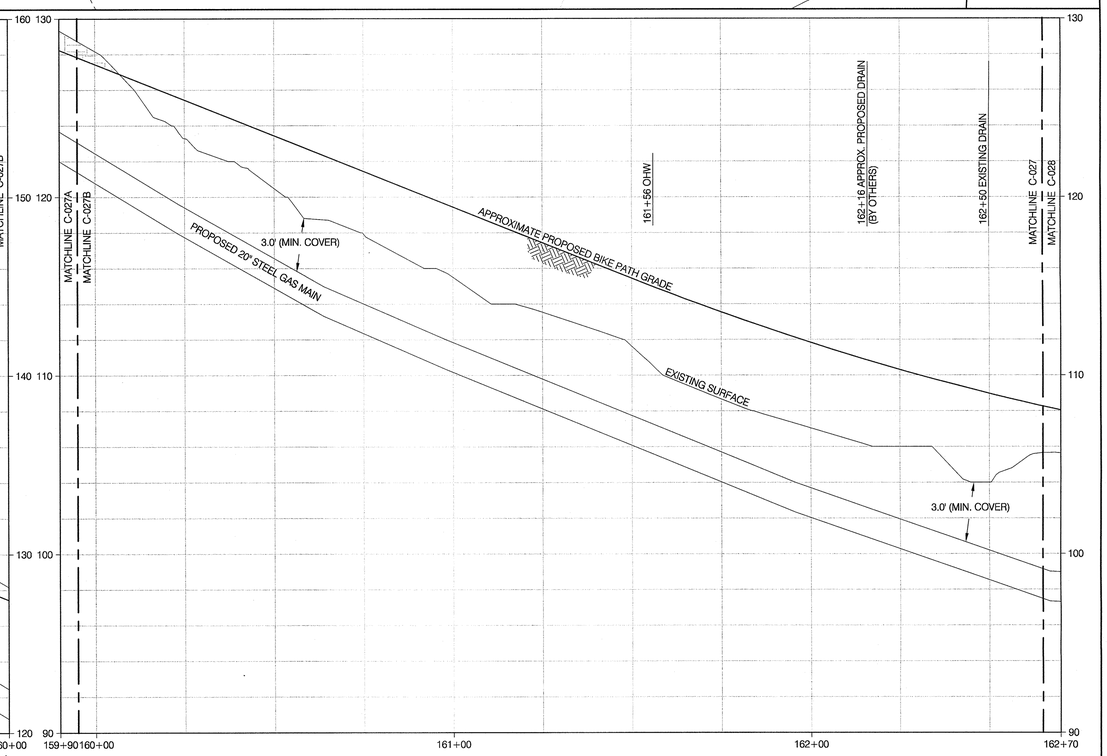

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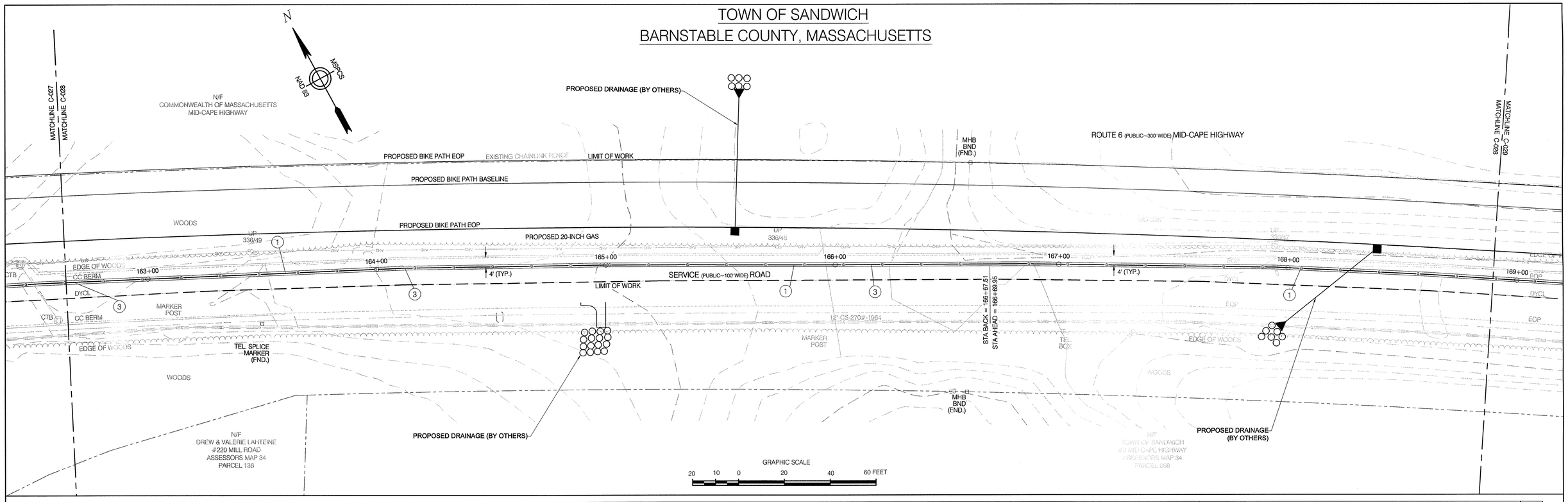

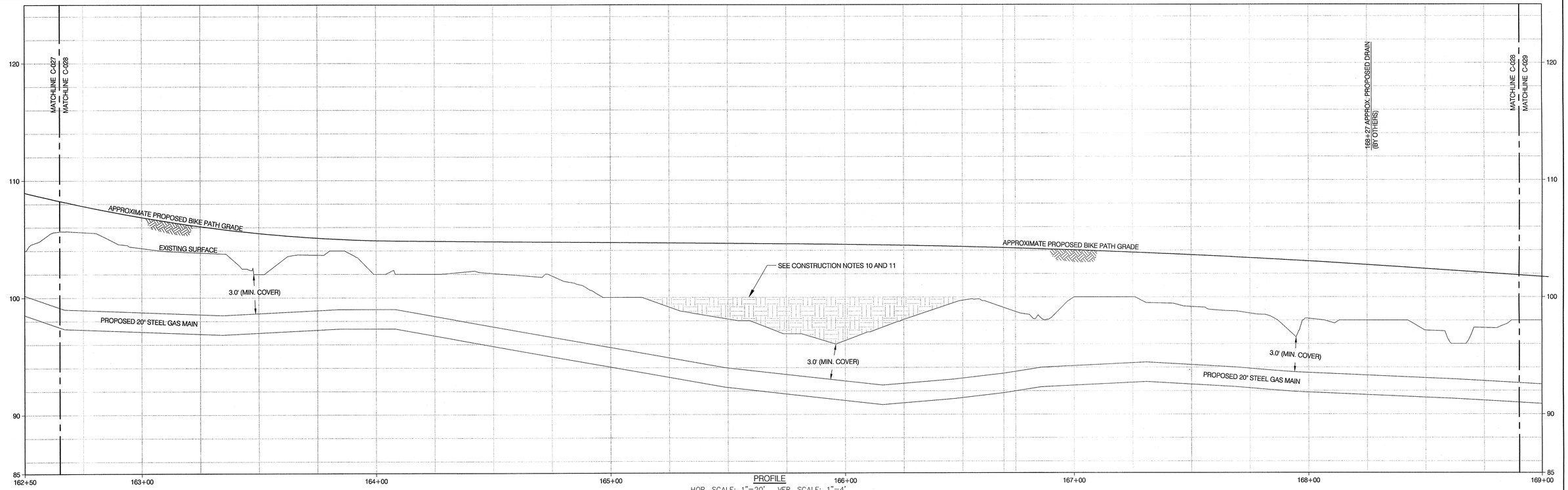

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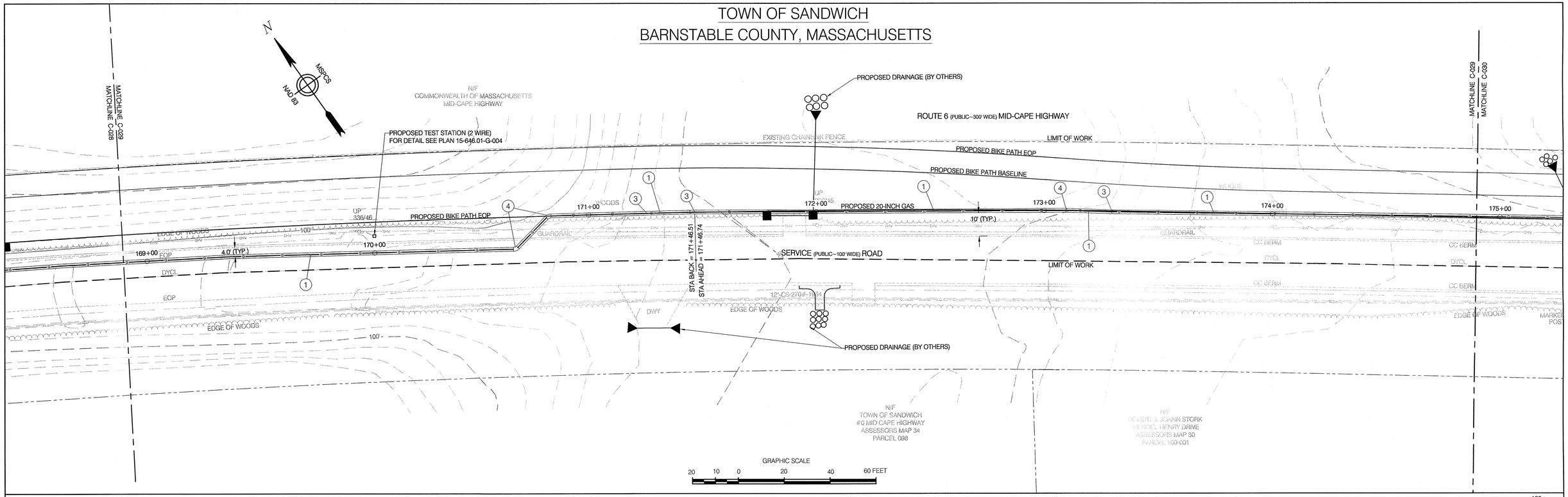

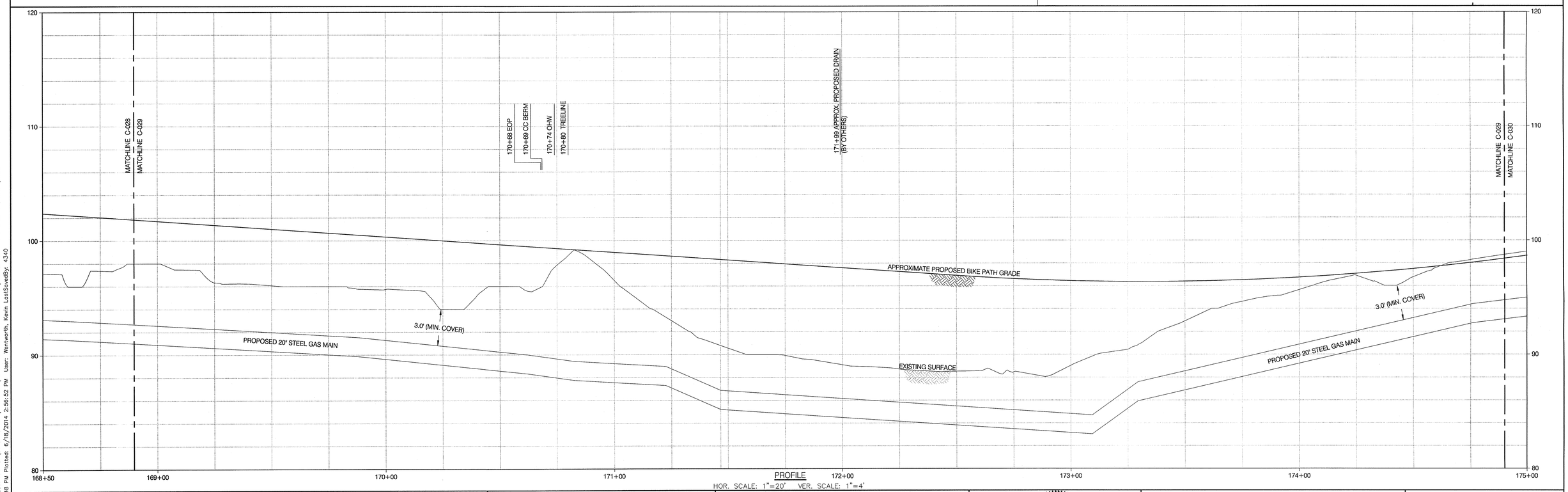

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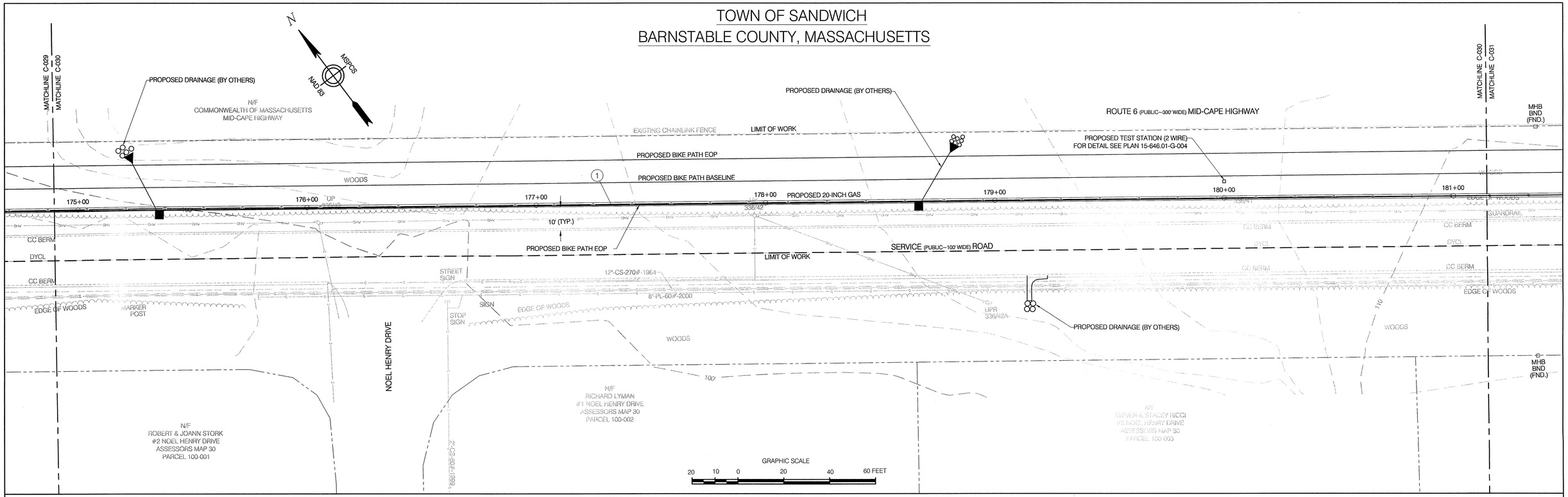

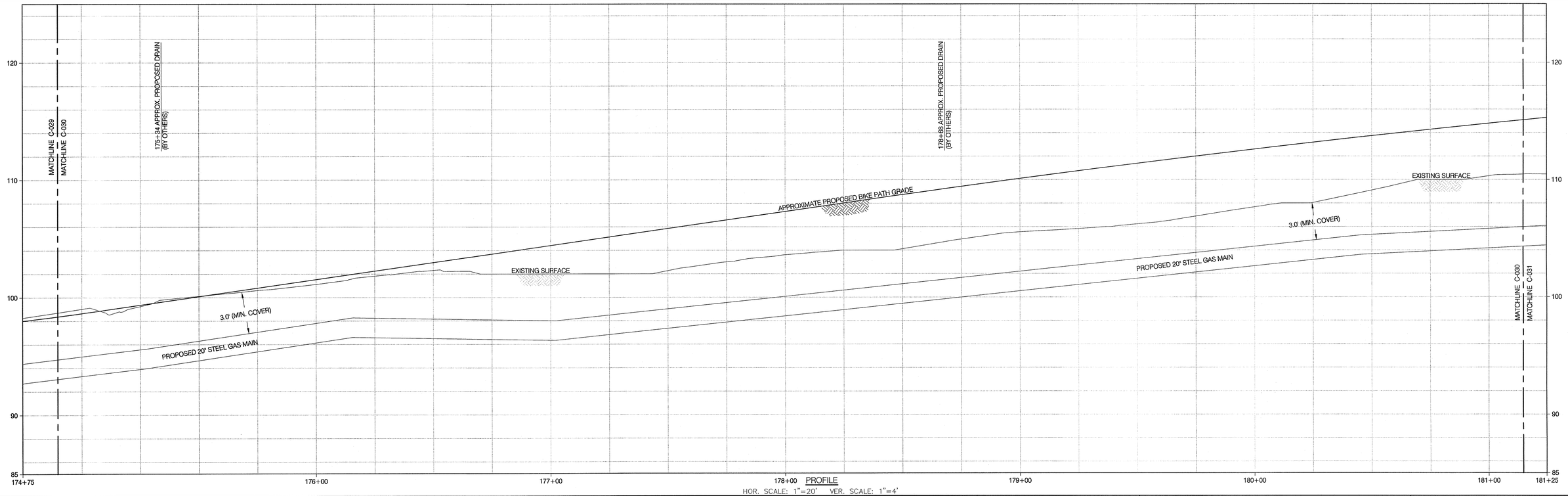

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6-9-2014

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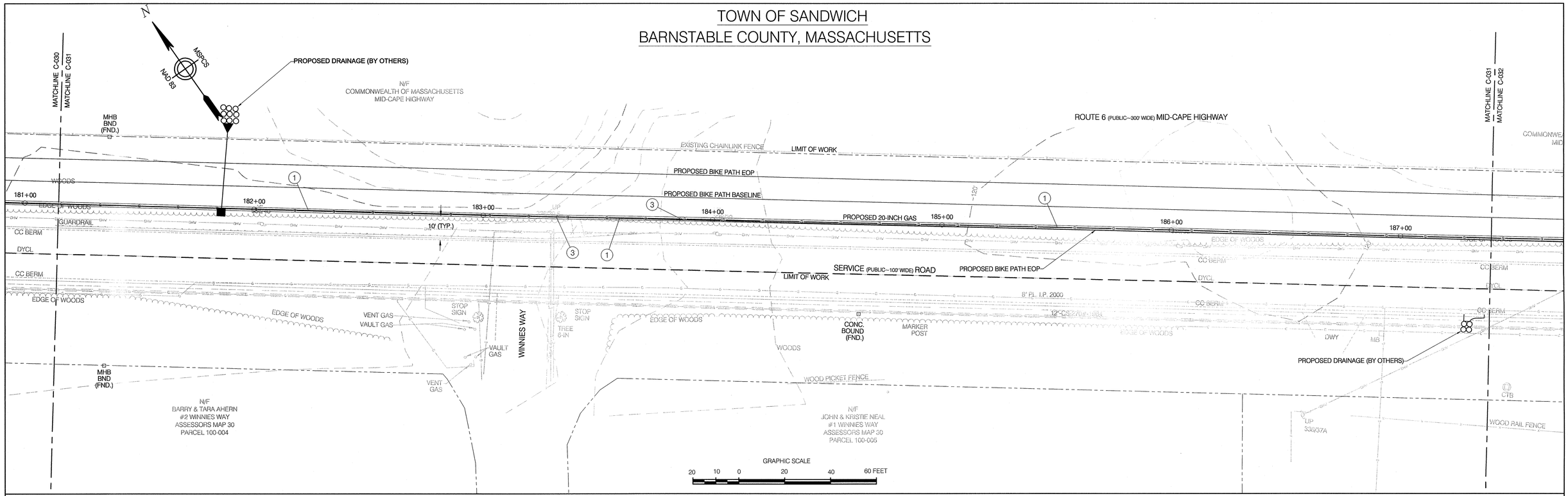

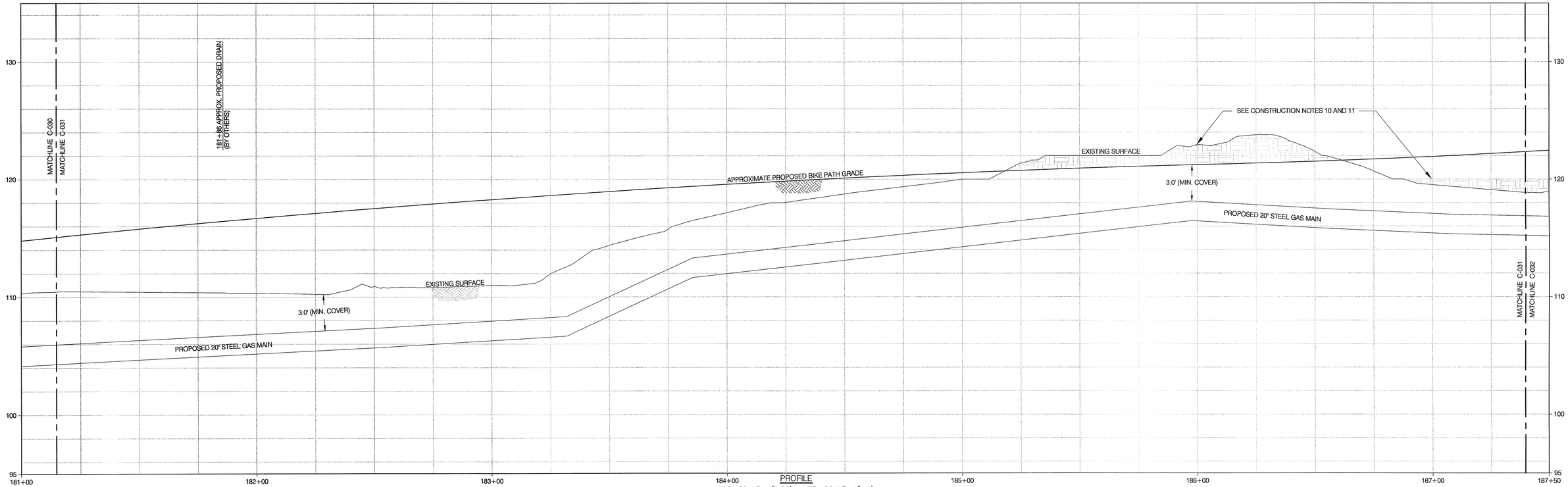

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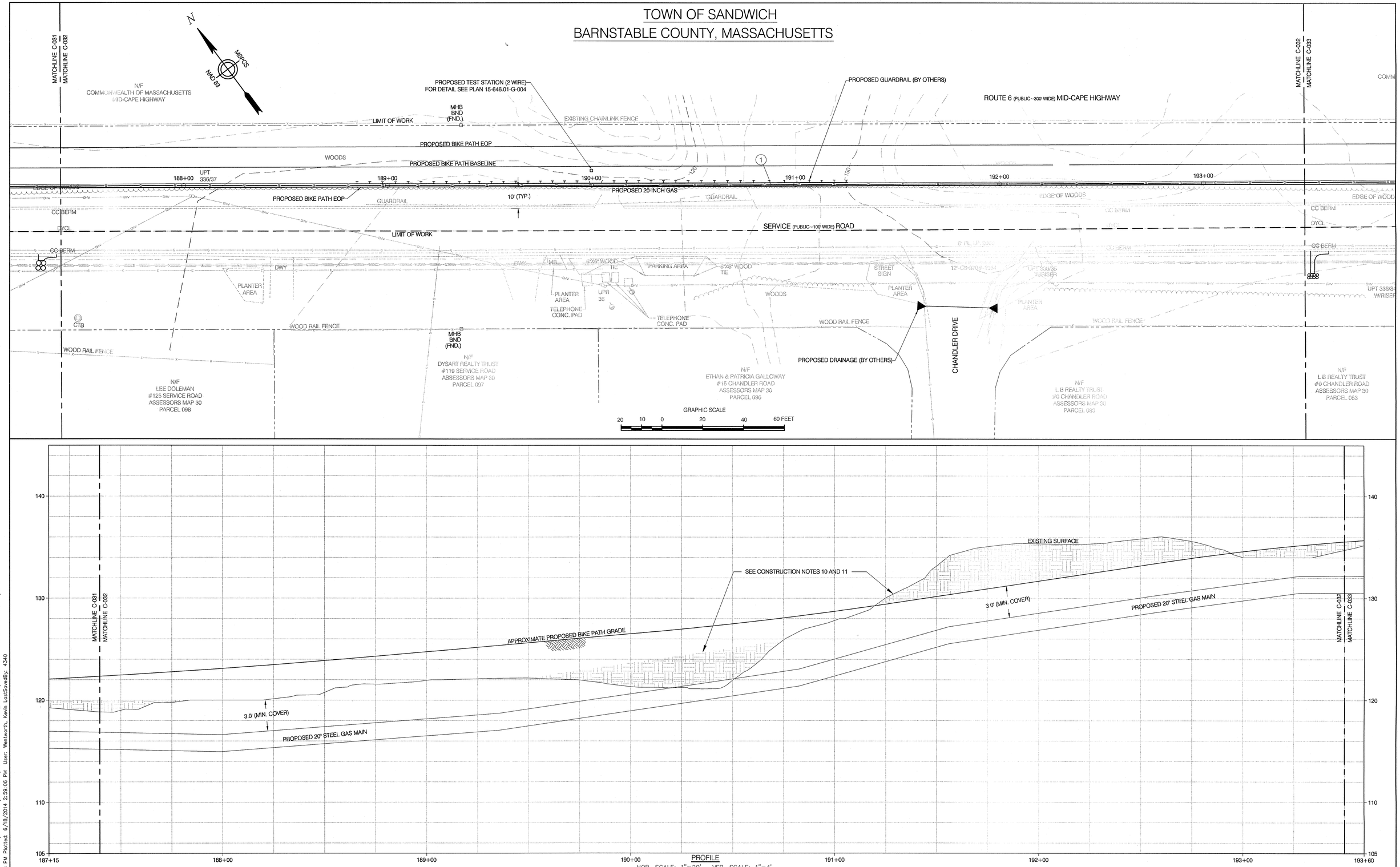

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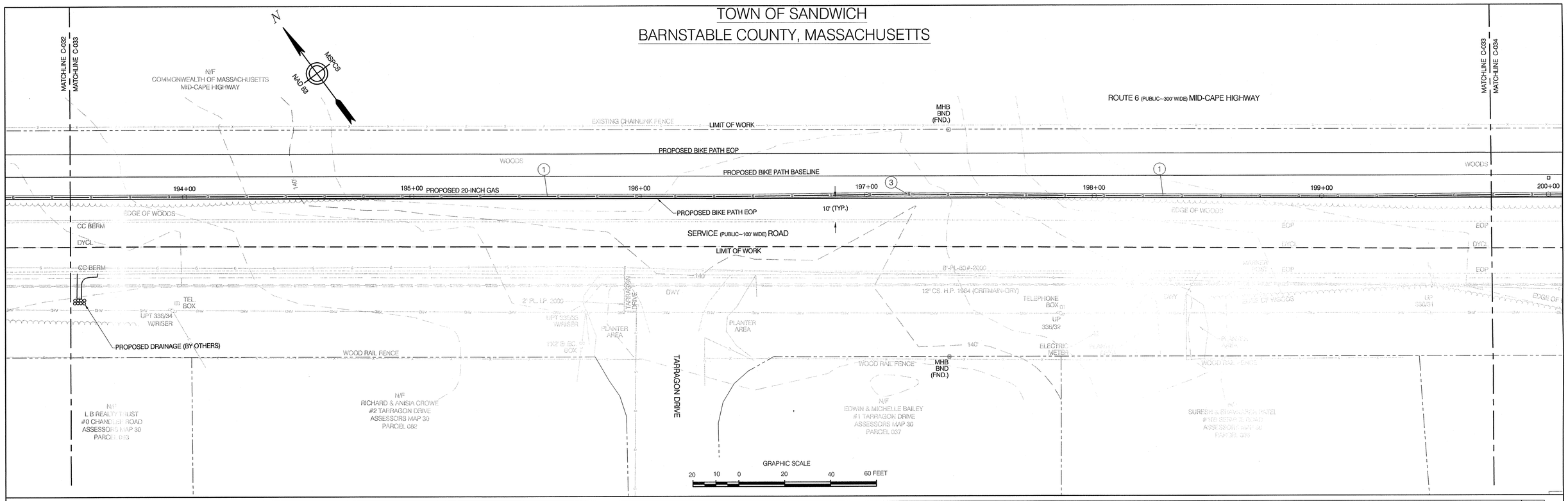

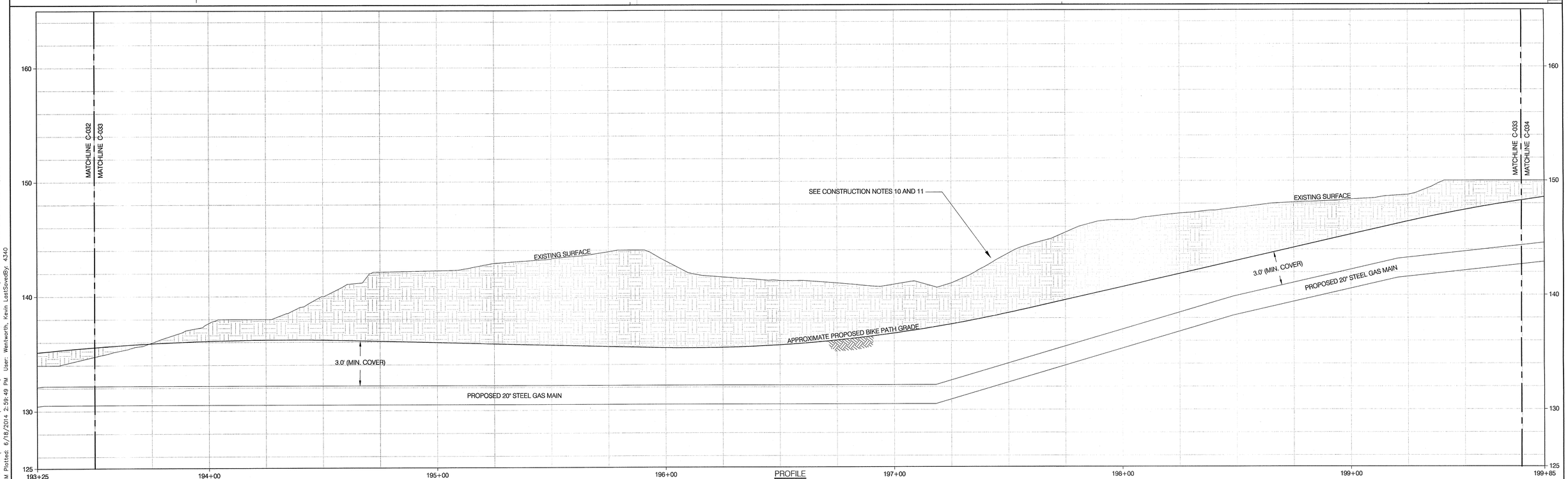

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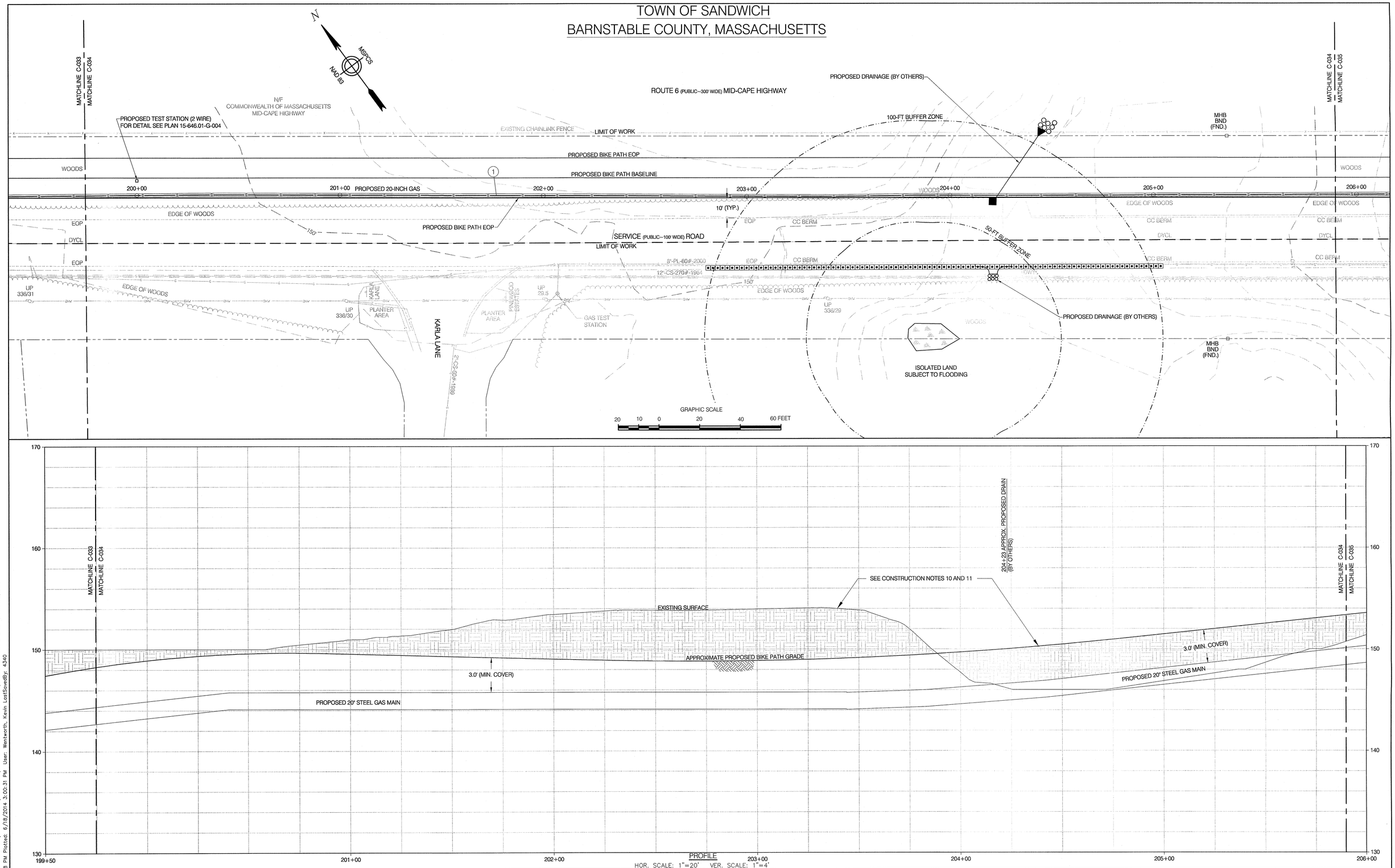

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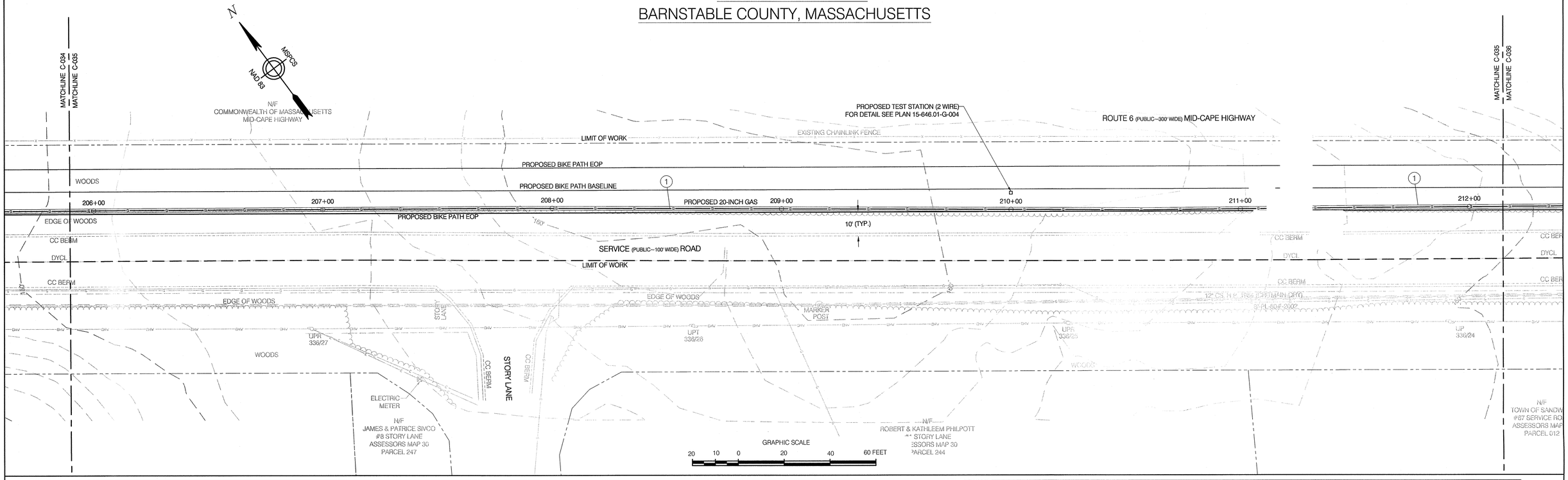

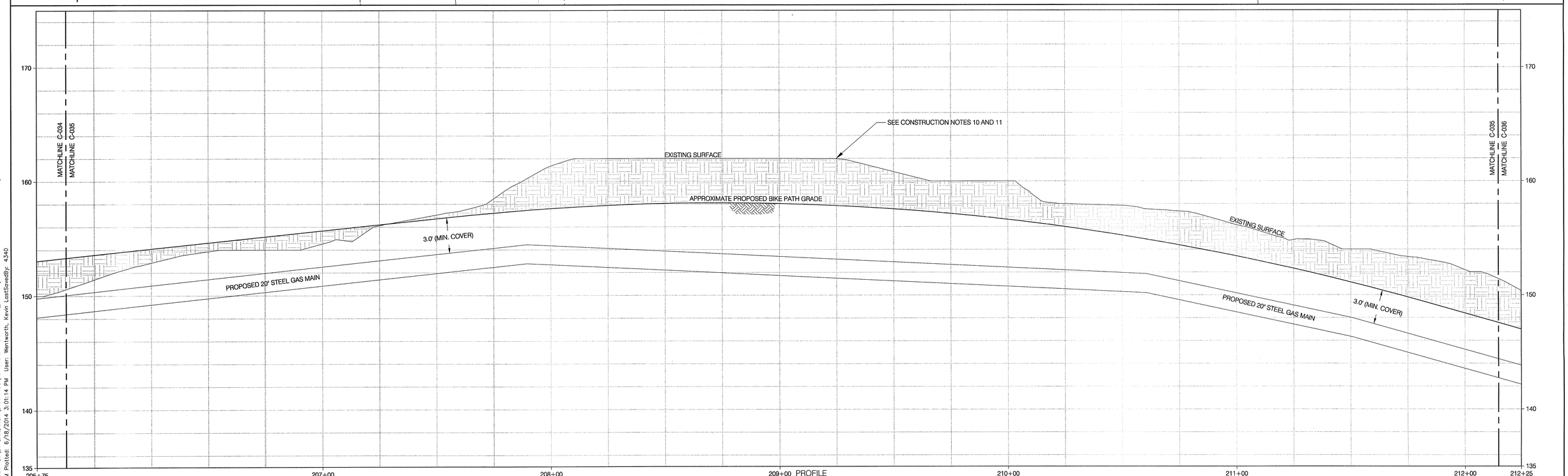

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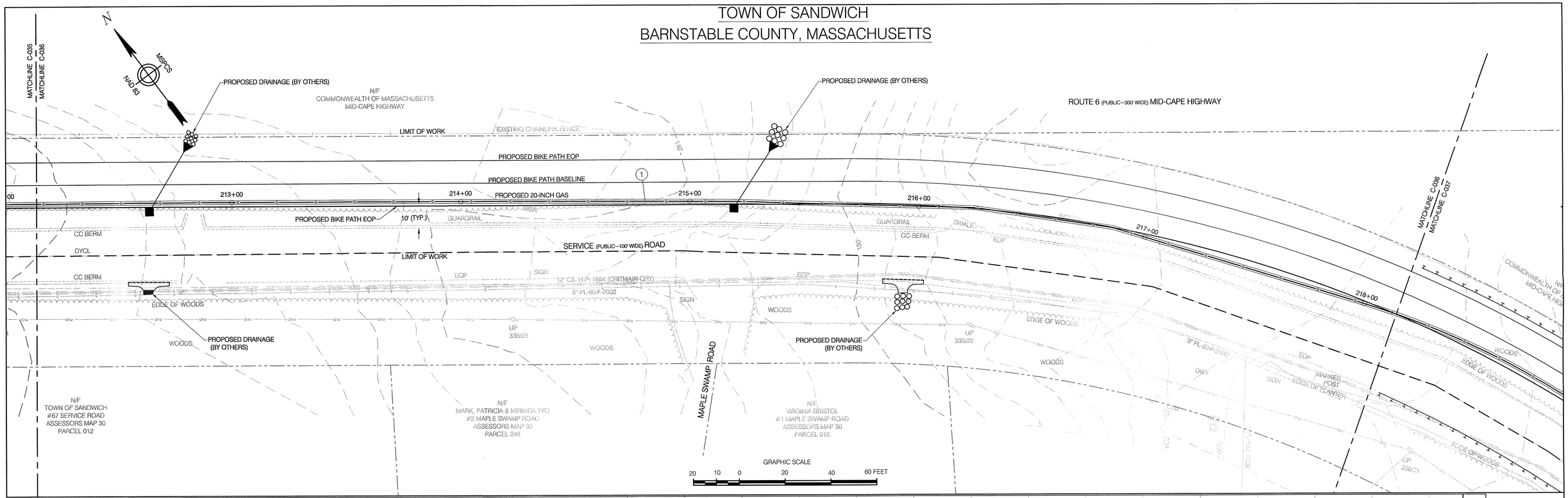
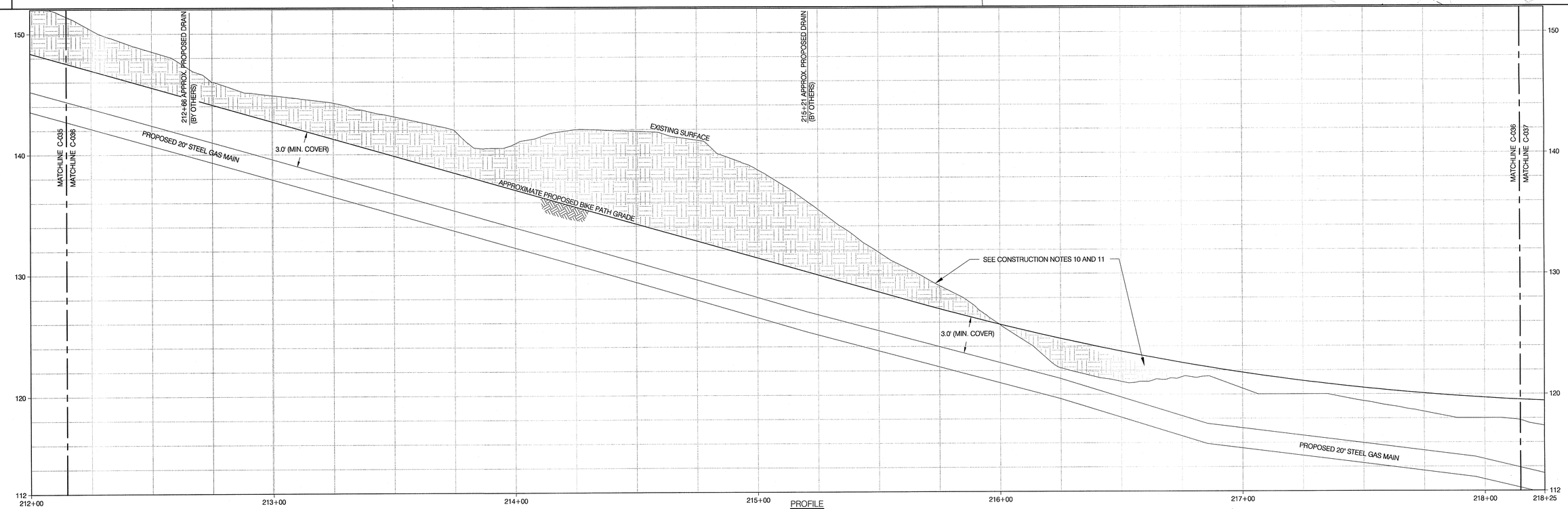
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





PROFILE

HOR. SCALE: 1"=20' VER. SCALE: 1"=4'

REFERENCE DRAWINGS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REVISIONS

NO.	DATE	REMARKS	REV.	CKD.	COR.	APP.
0	6/14	REVISED FOR FINAL EFSB APPROVAL	KDW	SAB	KDW	JEO

Design/Engineering

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330 Bear Hill Road , Suite 304
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Prepared For:

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COMMONWEALTH OF MASSACHUSETTS
JEFFREY E. O'DONNELL
CIVIL
No. 47111
REGISTERED PROFESSIONAL ENGINEER
6-19-2014

NATIONAL GRID SERVICE COMPANY, USA
SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS

File No.: 15-646.01 ALIGN.dwg

APPROVED BY

DATE: SEPTEMBER 7, 2012 MANAGER

NATIONAL GRID SERVICE COMPANY, USA

15-646.01-C-036

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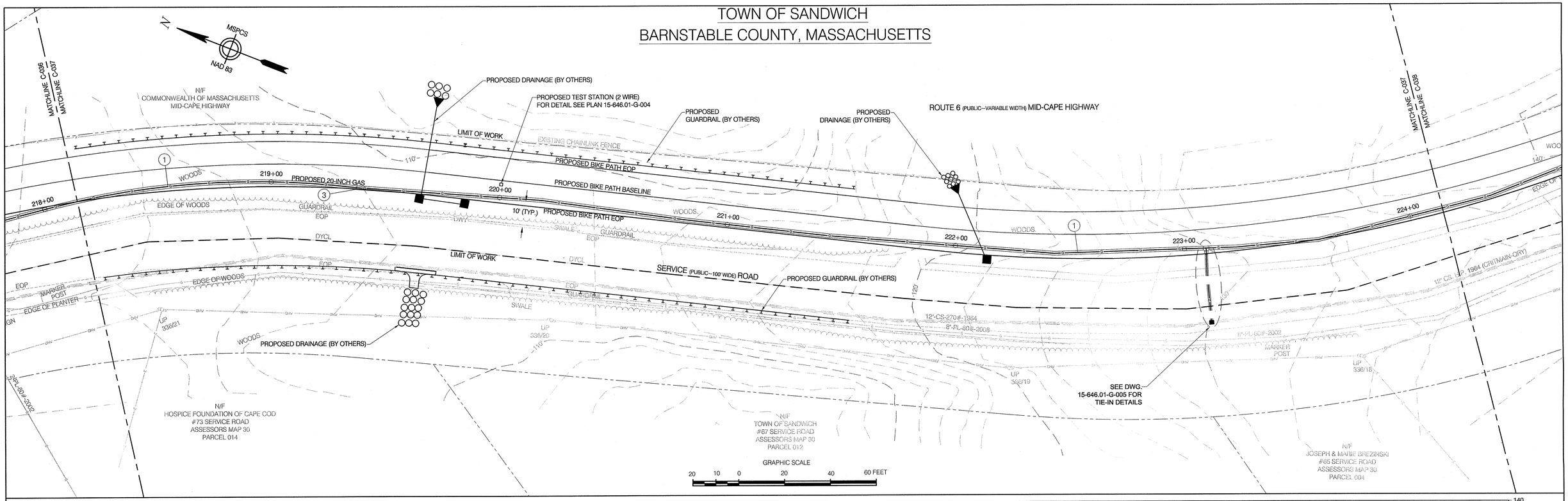
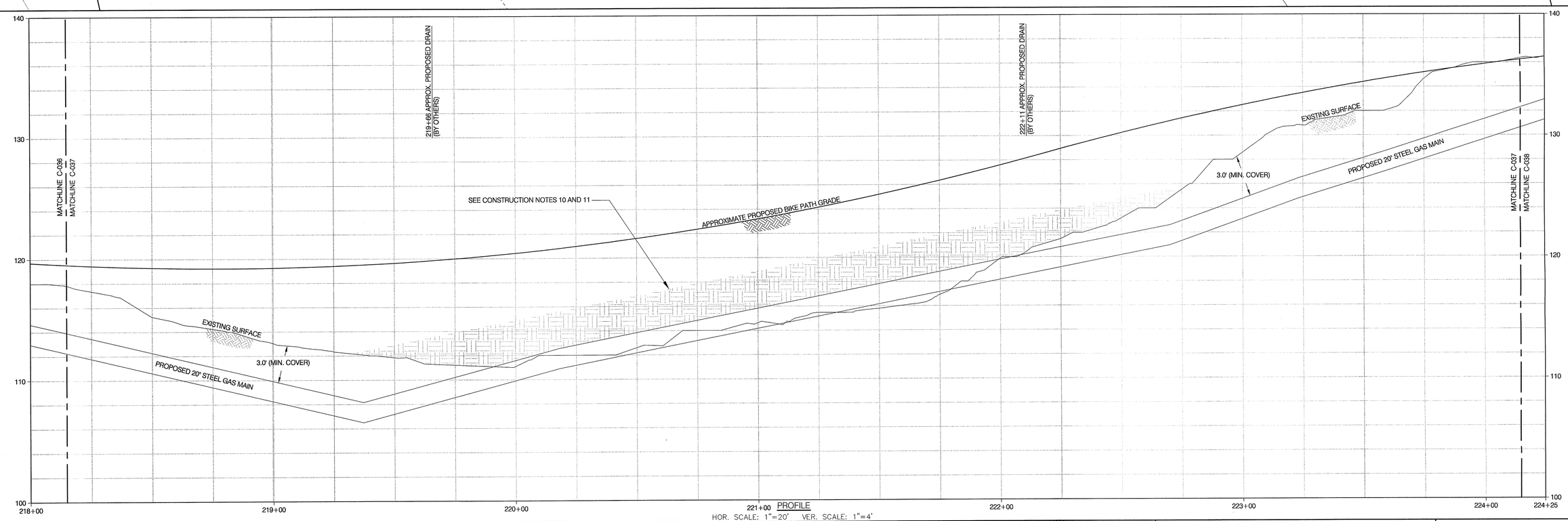
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





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SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
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DATE: SEPTEMBER 7, 2012 MANAGER
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15-646.01-C-037

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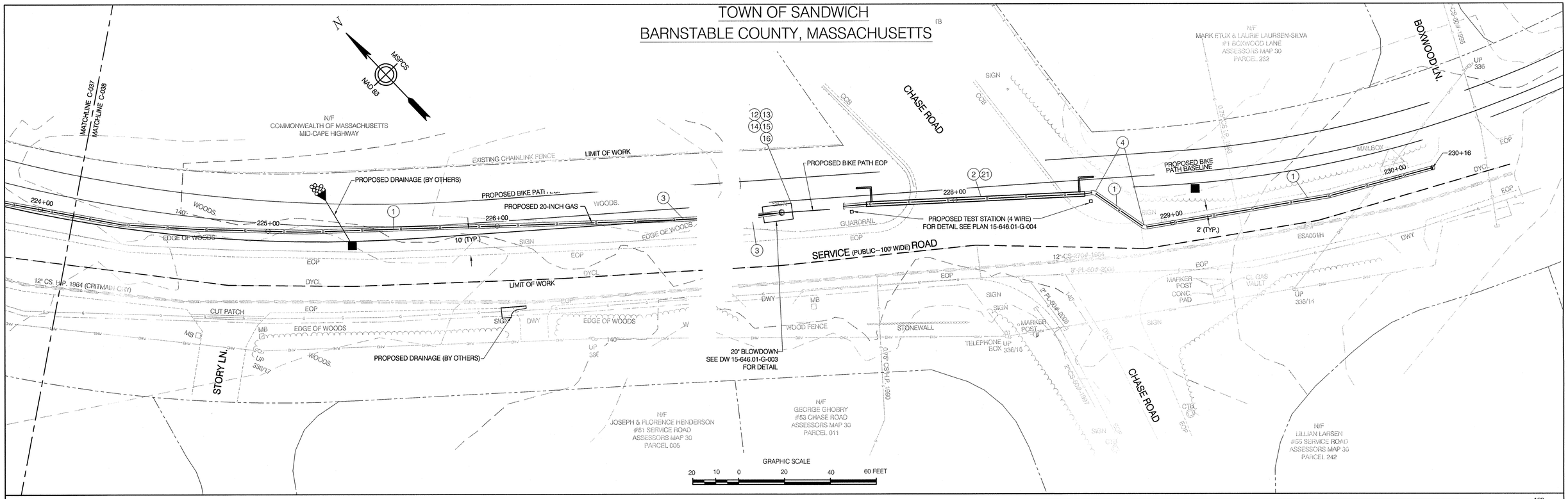
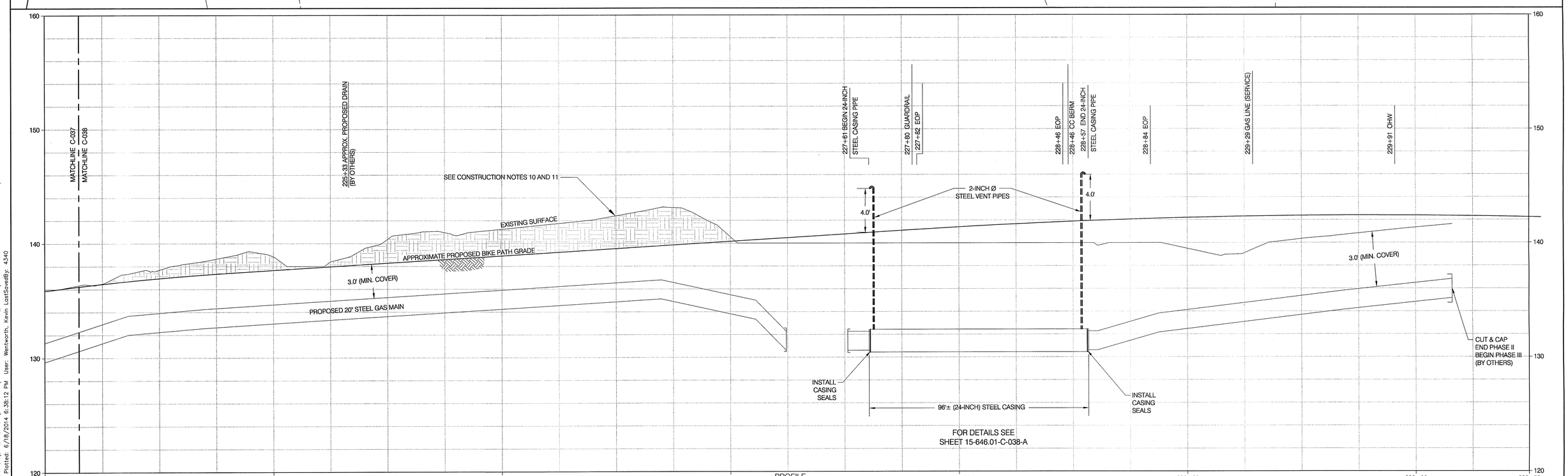
TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS





PROFILE
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6-6-2014

NATIONAL GRID SERVICE COMPANY, USA
SERVICE ROAD ALIGNMENT
SANDWICH, MA
BARNSTABLE COUNTY, MASSACHUSETTS
File No.: 15-646.01 ALIGN.dwg

APPROVED BY
DATE: SEPTEMBER 7, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-C-038

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TOWN OF SANDWICH
BARNSTABLE COUNTY, MASSACHUSETTS

GENERAL NOTES

1. SITE DETAIL SHOWN HEREON IS BASED UPON TOPOGRAPIC DETAIL SURVEY CONDUCTED BY COLER & COLANTONIO, INC. IN JULY 2011 AND DETAIL SURVEY PROVIDED BY BSC.

2. PROPERTY LINES SHOWN HEREON ARE BASED ON TAX MAP LOCATION AND DO NOT REPRESENT A PROPERTY LINE RETRACEMENT SURVEY EFFORT.

3. LOCATION OF ANY IDENTIFIED UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR FOR SERVICE, SIZE, INVERT ELEVATIONS, LOCATION, ETC. CONTRACTOR MUST NOTIFY DIG-SAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.

4. SURVEY WAS CONDUCTED IN MASSACHUSETTS MAINLAND ZONE 2001, NAD83 HORIZONTAL COORDINATE SYSTEM. ELEVATIONS ARE BASED ON NAVD 1988, US SURVEY FEET. ELEVATIONS WERE TRANSFERRED TO THIS SITE VIA STATIC GPS SURVEY METHODS AND REFERENCED TO TEMPORARY BENCHMARKS AS SHOWN ON THE PLAN.

5. THE PURPOSE OF THIS PLAN IS TO IDENTIFY TO THE APPROPRIATE PERMITTING AGENCY THE PROPOSED LOCATION FOR A GAS PIPELINE AND ITS LOCATION RELATIVE TO EXISTING UTILITIES WITHIN THE LIMITS OF A ROAD RIGHT-OF-WAY, INCLUDING ELEVATION INFORMATION WHERE OBTAINABLE.

6. THE PROPOSED 20-INCH STEEL PIPE ROAD CROSSING WILL BE CONSTRUCTED VIA PIPE JACKING CONSTRUCTION METHODS.

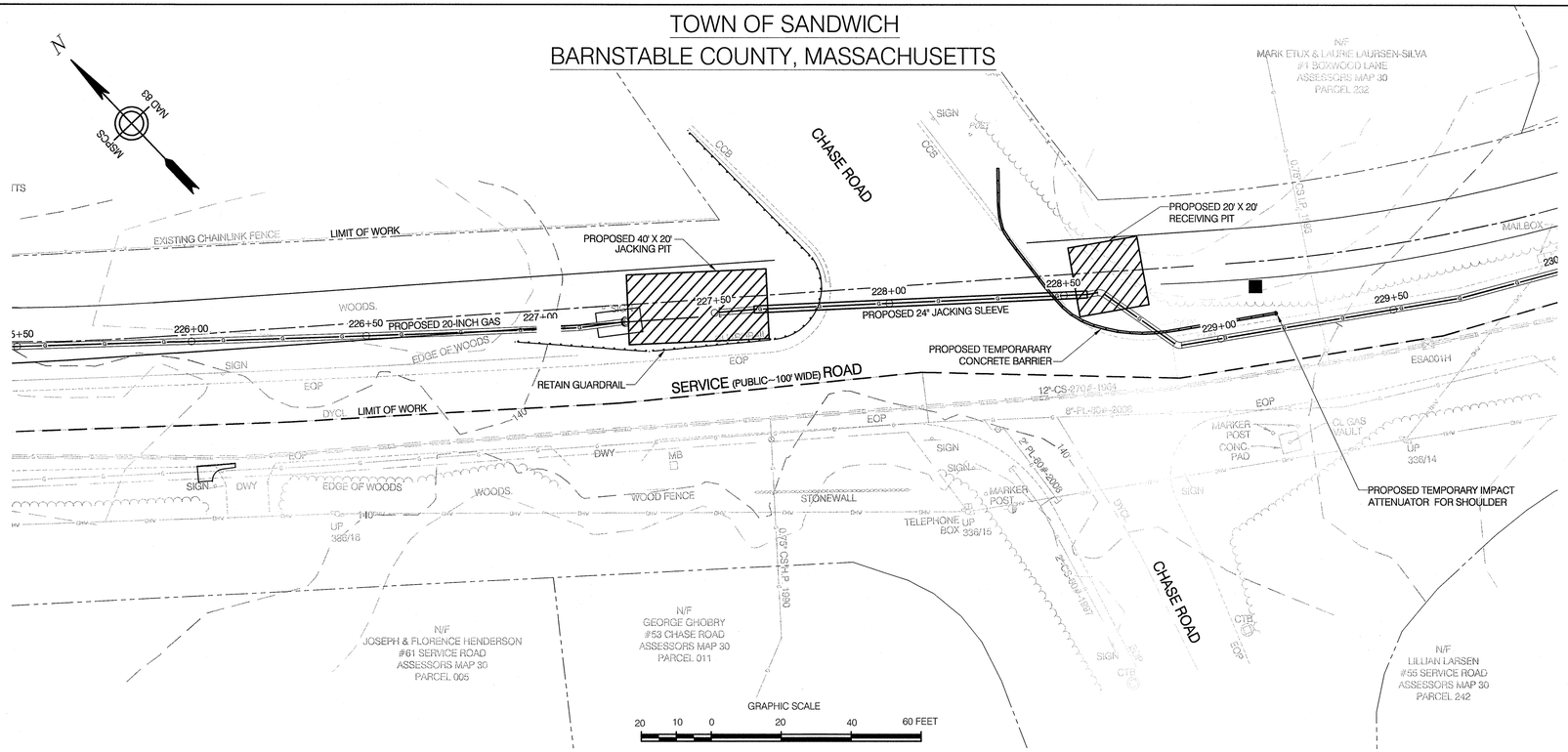
7. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH PART VI OF THE 2003 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) REVISION 3 AND AS AMENDED.

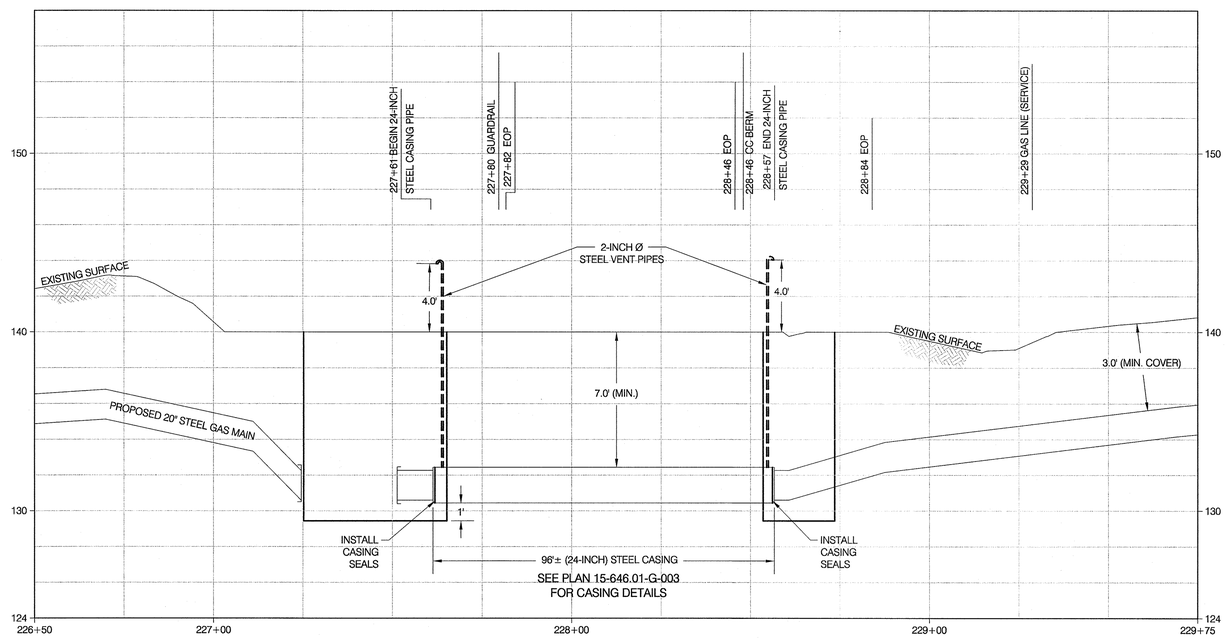
8. ALL VEHICLES ARE TO BE HIGHLY VISIBLE USING ROTATING BEACONS AND BE MARKED BY USE OF TRAFFIC CONES.

9. NATIONAL GRID SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY OBSTRUCTION OF ACCESS.

10. BACKFILL MATERIAL WILL CONSIST OF SUITABLE EXCAVATED MATERIAL COMPACTED.

11. BLASTING NOT PERMITTED.





PROFILE
HOR. SCALE: 1"=20'
VER. SCALE: 1"=5'

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6-9-2014

NATIONAL GRID
PROPOSED 20-INCH GAS MAIN
CHASE ROAD CROSSING DETAIL
SANDWICH, MASSACHUSETTS
File No.: 15-646.01 JACK & BORE DETAILS.dwg

APPROVED BY
DATE: SEPTEMBER 24, 2012 MANAGER
NATIONAL GRID SERVICE COMPANY, USA
15-646.01-C-038A

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