CITY OF NEWTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

OLD FARM ROAD IMPROVEMENTS PROJECT

BID NO. 12-94

DRAWING SET NO. N84-38911

ISSUED FOR BID

JUNE 2012

LIST OF DRAWINGS

SHEET NUMBER	DRAWING TITLE
G-1	GENERAL NOTES, LEGEND & ABBREVIATIONS
G-2	KEY PLAN
RG-1	TYPICAL ROADWAY SECTIONS AND DETAILS
C-1 TO C-4	CONSTRUCTION PLANS
P-1 TO P-3	PROFILES
PDR-1	PEDESTRIAN & DRIVEWAY RAMP DETAILS
CS-1 TO CS-9	CROSS SECTIONS
TMP-1 TO TMP-2	TRAFFIC MANAGEMENT PLANS

LOCUS PLAN

1" = 4000'

DESIGN DESIGNATION

OLD FARM ROAD

DESIGN SPEED	25 MPH: STA 1000+00 TO STA 1025+33
K CREST	25 MPH: 12
K SAG	25 MPH: 26
FUNCTIONAL CLASSIFICATION	SUBURBAN LOCAL

OWNER

CITY OF NEWTON
DEPARTMENT OF PUBLIC WORKS
NEWTON CITY HALL
1000 COMMONWEALTH AVENUE
NEWTON, MA 02459

SETTI D. WARREN - MAYOR

DESIGNER

KLEINFELDER
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COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. CUNNINGHAM
CIVIL
No. 45463
REGISTERED PROFESSIONAL ENGINEER
6/19/12

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GENERAL NOTES

1. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED HEREIN USING NEW MATERIALS OR WHERE APPLICABLE, REUSING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R) OR "REMOVE AND RELOCATE ALL OTHER MATERIALS SHALL BE "REMOVED AND STACKED" (R&S) OR DISPOSED OF OFF SITE.
2. THE CONTRACTOR SHALL PROVIDE FOR THE SAFE AND ORDERLY PASSAGE OF VEHICULAR AND PEDESTRIAN TRAFFIC IN AREAS UNDER CONSTRUCTION.
3. ALL TREES AND SHRUBS WITHIN OR NEAR THE LIMITS OF WORK SHALL NOT BE REMOVED UNLESS OTHERWISE INDICATED ON THE PLANS OR AS DIRECTED BY THE CITY.
4. THE CONTRACTOR SHALL PROTECT TREES LOCATED WITHIN THE PROJECT LIMITS OF WORK.
5. LANDSCAPED AREAS, FEATURES AND PLANTINGS THAT ARE IMPACTED BY THE PROPOSED WORK SHALL BE REMOVED AND RESET TO MATCH THE EXISTING CONDITIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.
6. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED, BY THE CONTRACTOR, TO THEIR ORIGINAL CONDITION, AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR SHALL TAKE CARE NOT TO DISTURB ANY PROPERTY BOUNDS OR LAYOUT BOUNDS. ANY PROPERTY AND LAYOUT BOUNDS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY A LICENSED PROFESSIONAL LAND SURVEYOR IN THE COMMONWEALTH OF MASSACHUSETTS AT NO ADDITIONAL COST TO THE CITY.

EROSION & SEDIMENT CONTROL NOTES

1. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, PUBLISHED BY MADEP.
2. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO ANY EARTH MOVING OPERATION THAT WILL INFLUENCE STORMWATER RUNOFF.
3. INSPECT AND MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ON A WEEKLY BASIS AND AFTER EVERY RAINFALL EVENT.
4. AFTER THE PROJECT IS COMPLETE, REMOVE AND PROPERLY DISPOSE OF TRAPPED SEDIMENT AND REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
5. SILT SACKS SHALL BE INSTALLED AND MAINTAINED IN ALL CATCH BASINS LOCATED WITHIN THE PROJECT AREA. DEBRIS COLLECTED IN SILT SACKS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE.
6. THE CONTRACTOR SHALL STOCKPILE SUFFICIENT EROSION AND SEDIMENT CONTROL MEASURES ON-SITE TO REPAIR ANY AND ALL DAMAGE.

ADDITIVE ALTERNATE

ADDITIVE ALTERNATE 1

ADDITIVE ALTERNATE 1 CONSISTS OF THE REPLACEMENT OF A TOTAL OF 35 PEDESTRIAN RAMPS IN 5 INTERSECTIONS ALONG THE OLD FARM ROAD CORRIDOR. SEE C-1 THROUGH C-4 FOR LOCATIONS AND PDR-1 FOR DETAILS.

SURVEY NOTES

1. EXISTING BASE PLAN INFORMATION SHOWN WAS OBTAINED BY SURVEYING AND MAPPING CONSULTANTS BETWEEN JUNE 24 AND JULY 10, 2010.
2. ELEVATIONS SHOWN REFER TO THE NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD29). THE HORIZONTAL COORDINATES, IN FEET, ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD 83)
3. ALL EXISTING STATE, COUNTY, AND CITY LAYOUT LINES AND PRIVATE PROPERTY LINES ARE BASED ON THE CITY OF NEWTON ASSESSOR MAP AND GIS INFORMATION, AND ARE APPROXIMATE.

UTILITY NOTES

1. THE LOCATIONS OF UNDERGROUND GAS, TELEPHONE, AND ELECTRIC LINES ARE APPROXIMATE ONLY. THE OWNER ASSUMES NO RESPONSIBILITY FOR THE LOCATION, TYPE, AND SIZE OF UNDERGROUND UTILITIES. UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR COMPLETE.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO THE START OF CONSTRUCTION.
3. THE LOCATIONS OF ALL SUBSURFACE STRUCTURES AND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR THROUGH THE APPROPRIATE AGENCY, AND DIG-SAFE (1-888-344-7233) SHALL BE CONTACTED AT LEAST 72 HOURS BEFORE ANY EXCAVATION BEGINS.
4. THE CONTRACTOR SHALL COORDINATE ALL ARRANGEMENTS FOR THE ALTERATION AND/OR ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITY.
5. THE CONTRACTOR SHALL ADJUST ALL SEWER AND DRAIN MANHOLES, CATCH BASINS, WATER VALVE GATE BOXES, CURB STOPS, AND OTHER WATER SERVICE APPURTENANCES TO THE PROPOSED FINISH GRADE.

ABBREVIATIONS

GENERAL

ABAN	ABANDON
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
℄	BASELINE
BO	BY OTHERS
BOS	BACK OF SIDEWALK
CC	CURVE CENTER
CEM	CEMENT
CSE	COBBLESTONE EDGING
℄	CENTERLINE
CONC	CONCRETE
CONST	CONSTRUCTION
Δ	CENTRAL ANGLE
E	EASTING
ELEV / EL	ELEVATION
EXIST	EXISTING
FND	FOUND
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
GRAN	GRANITE
HMA	HOT MIX ASPHALT
L	LENGTH
LT	LEFT
MAG SPIKE	MAGNETIC NAIL
MAX	MAXIMUM
MB	MAILBOX
MIN	MINIMUM
N.T.S.	NOT TO SCALE
N	NORTHING
N/F	NOW OR FORMALLY
PC	POINT OF CURVATURE
PDR	PEDESTRIAN RAMP
PVCC	POINT OF COMPOUND

GENERAL

	VERTICAL CURVATURE
PI	POINT OF INTERSECTION
⅊	PROPERTY LINE
PGL	PROFILE GRADE LINE
PROP	PROPOSED
PVRC	POINT OF REVERSE VERTICAL CURVATURE
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
PVC	POINT OF VERTICAL CURVATURE
PVT	POINT OF VERTICAL TANGENCY
QTY	QUANTITY
R	RADIUS
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SBDH	STONE BOUND DRILLED HOLE
SHLDR	SHOULDER
STA	STATION
SSM	STEEL SURVEY MARKER
T	TANGENT
TOS	TOP (OF SLOPE)
TYP	TYPICAL
TRAN	TRANSITION
VC	VERTICAL CURVE
W/	WITH

TRAFFIC

ADT	AVERAGE DAILY TRAFFIC
VPD	VEHICLES PER DAY
K	PEAK HOUR VOLUME / AVERAGE DAILY TRAFFIC
D	DIRECTIONAL DISTRIBUTION
T	TRUCK TRAFFIC
DHV	DESIGN HOURLY VOLUME
DDHV	DIRECTIONAL DESIGN HOURLY VOLUME
SWEL	SOLID WHITE EDGE LINE – 4" EXC. AS NOTED
SYCL	SOLID YELLOW CENTER LINE – 4" EXC. AS NOTED
DYCL	DOUBLE YELLOW CENTER LINES – 2–4"
SL	STOP LINE (WHITE) – 12" EXC. AS NOTED
CW	CROSSWALK LINES (WHITE) – 2–12" EXC. AS NOTED

UTILITIES

CIT	CHANGE IN TYPE
CIP	CAST IN PLACE
DIP	DUCTILE IRON PIPE
CMP	CORRUGATED METAL PIPE
RCP	REINFORCED CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATERWAY
RIM	RIM ELEVATION
INV	INVERT ELEVATION
UP	UTILITY POLE
LP	LIGHT POLE
D	DRAINAGE
S	SEWERAGE
W	WATER
G	GAS
E	ELECTRIC
EMH	ELECTRIC MANHOLE
TMH	TELEPHONE MANHOLE
T,TELE	TELEPHONE
C	CABLE TELEVISION

LEGEND

EXISTING	PROPOSED	
		SURVEY CONTROL POINT
PK		PARKER KALON, CONCRETE NAIL
CB		CONCRETE BOUND
CB		CONCRETE BOUND
DH		DRILL HOLE
		PK. REBAR, NAIL, SPIKE
H/T		HUB & TACK
(R)		RECORD
GP		GUARD POST
FL		FLOOD LIGHT
		SIGN
P.R.		PEDESTRIAN RAMP
MB		MAIL BOX
(M)		MARKED
		SIDELINE
		STONE WALL
		TREE LINE
6"D		DECIDUOUS TREE
12"E		EVERGREEN TREE
		SHRUB
		BOULDER
		CHAIN LINK FENCE
		WOOD FENCE TYPES
STK		STOCKADE FENCE
PRF		POST & RAIL FENCE
PCK		PICKET FENCE
RET WALL		RETAINING WALL
		DOUBLE FACED WALL
		CURBING(TYPE)

EXISTING	PROPOSED	
FA		FIRE ALARM PULL BOX
HH		HANDHOLE
		GUY WIRE
UP#		UTILITY POLE
UP/LP		UTILITY POLE/LIGHT POLE
LP		LIGHT POLE
GG		GAS SERVICE GATE
GG		GAS MAIN GATE
MH		MANHOLE
TMH		TELEPHONE MANHOLE
EMH		ELECTRIC MANHOLE
SMH		SEWER MANHOLE
WG		WATER SERVICE GATE
		HYDRANT
DMH		DRAIN MANHOLE
CB		CATCH BASIN
WG		WATER MAIN GATE
SH		SPRINKLER HEAD
W		WATER LINE
S		SEWER LINE
T		TELEPHONE LINE
E		ELECTRIC LINE
D		DRAIN LINE
G		GAS LINE
OHW		OVERHEAD WIRE
MW		MONITORING WELL
200.15		SPOT ELEVATION
		INTERMEDIATE CONTOUR
200		INDEX CONTOUR
		APPROX PROPERTY LINE
	1000+00	CONSTRUCTION BASELINE
		APPROX LIMIT OF GRADING

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COMMONWEALTH OF MASSACHUSETTS
MICHAEL P. CUNNINGHAM
No. 45463
REGISTERED PROFESSIONAL ENGINEER

No.	Description	Date

REVISIONS

Scale	NONE
Date	JUNE 2012
Job No.	20100077.01-A
Designed by	JB
Drawn by	GO
Checked by	MC
Approved by	MC

Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: GENERAL NOTES, LEGEND & ABBREVIATIONS

Sheet: G-1

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6/19/12

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Client: CITY OF NEWTON, MA

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Drawing: KEY PLAN

Sheet: G-2

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PAVEMENT NOTES

PROPOSED 4" PAVEMENT REPLACEMENT

EXCAVATE THE EXISTING PAVEMENT.

FINE GRADE AND COMPACT EXISTING SUBBASE MATERIAL.
SHIM WITH DENSE GRADED CRUSHED STONE IF NECESSARY.

PROP HOT MIX ASPHALT: 1.5" HMA SURFACE COURSE OVER
2.5" HMA INTERMEDIATE COURSE OVER
COMPACTED SUBBASE

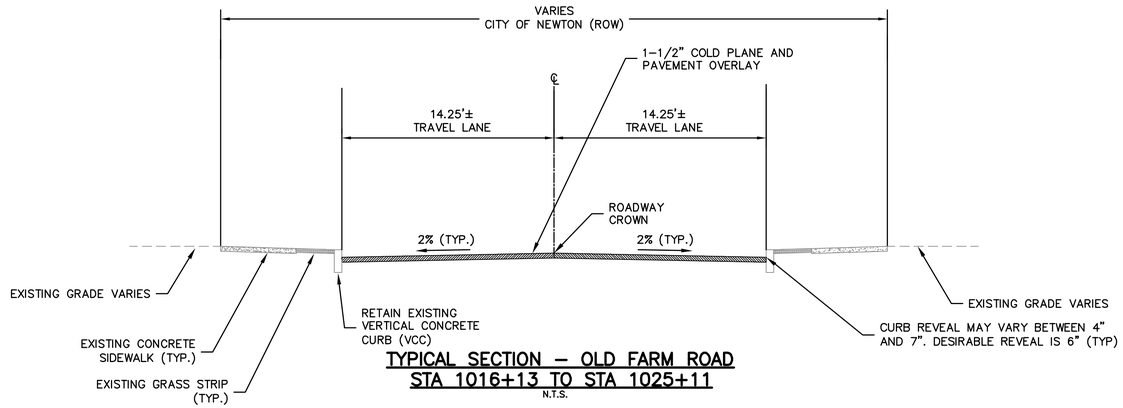
PROPOSED 1½" COLD PLANE AND PAVEMENT OVERLAY

COLD PLANE VARIABLE DEPTH (1½" MAX) EXISTING PAVEMENT.

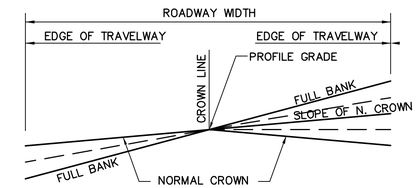
PROP HOT MIX ASPHALT: 1½" HMA SURFACE COURSE

NOTES:

1. TACK COAT SHALL BE APPLIED TO ALL SMOOTH SURFACES PRIOR TO BEING OVERLAID AT 0.05 GALLONS PER SQUARE YARD AND TO ALL MILLED GROOVED SURFACES PRIOR TO BEING OVERLAID AT THE RATE OF 0.10 GALLONS PER SQUARE YARD.
2. TACK COAT SHALL BE APPLIED TO ALL EDGES OF EXISTING PAVEMENT AT SAWCUT LINES.

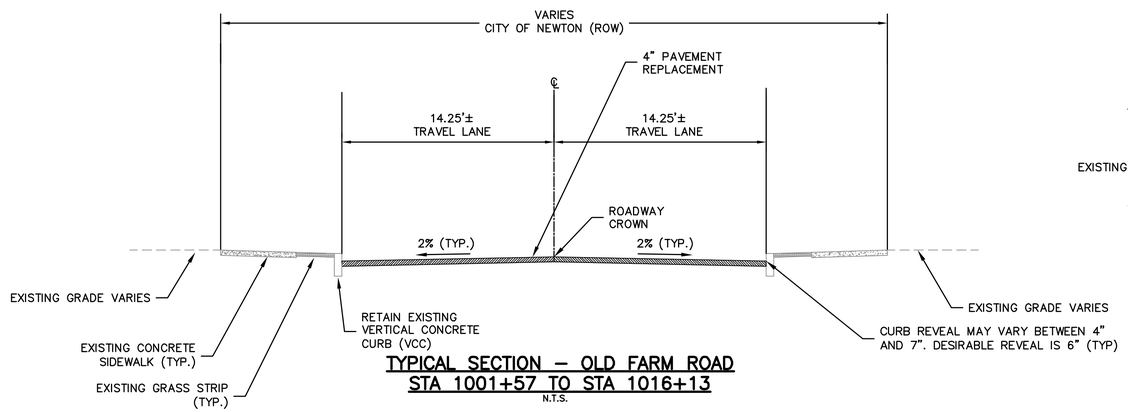


TYPICAL SECTION – OLD FARM ROAD
STA 1016+13 TO STA 1025+11
N.T.S.

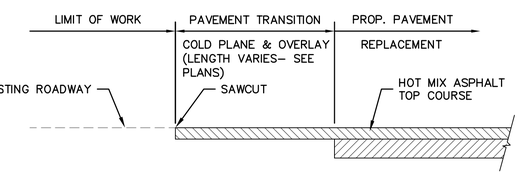


NOTE: ROTATION ABOUT CENTERLINE OF TRAVEL WAY.

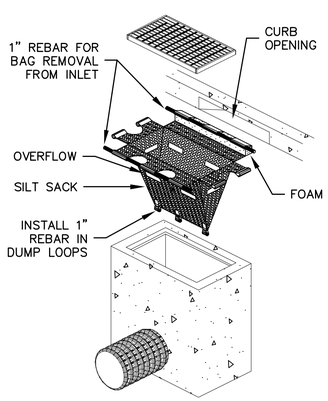
SUPERELEVATION METHOD OF ROTATION
N.T.S.



TYPICAL SECTION – OLD FARM ROAD
STA 1001+57 TO STA 1016+13
N.T.S.



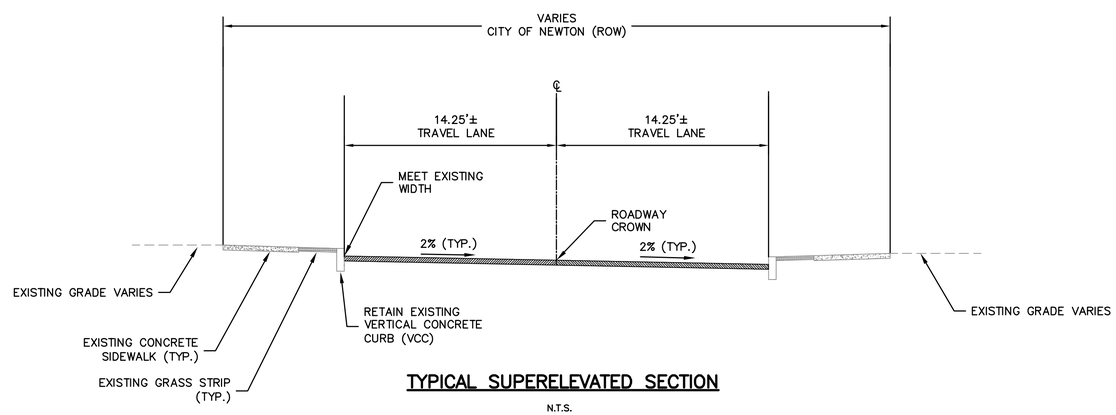
PAVEMENT TRANSITION DETAIL
N.T.S.



SILT SACK
N.T.S.

SILT SACK NOTES:

1. CONTRACTOR SHALL REMOVE SEDIMENT AS NECESSARY TO MAINTAIN LEVEL BELOW OVERFLOW HOLES IN SILT SACK.
2. SILT SACK SHALL BE USED ON ALL EXISTING CATCH BASINS.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SEDIMENTATION BARRIERS THROUGHOUT THE DURATION OF THE PROJECT.
4. CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF SEDIMENT AS REQUIRED.
5. CONTRACTOR SHALL REMOVE SILT SACKS LEGALLY DISPOSE OF THEM OFF-SITE, UPON COMPLETION OF THE PROJECT AND AS REQUIRED.



TYPICAL SUPERELEVATED SECTION
N.T.S.

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COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. CUNNINGHAM
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PROFESSIONAL ENGINEER
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Client: CITY OF NEWTON, MA
Project: OLD FARM ROAD IMPROVEMENTS PROJECT
Drawing: TYPICAL SECTIONS AND CONSTRUCTION DETAILS
Sheet: RG-1
3 OF 22

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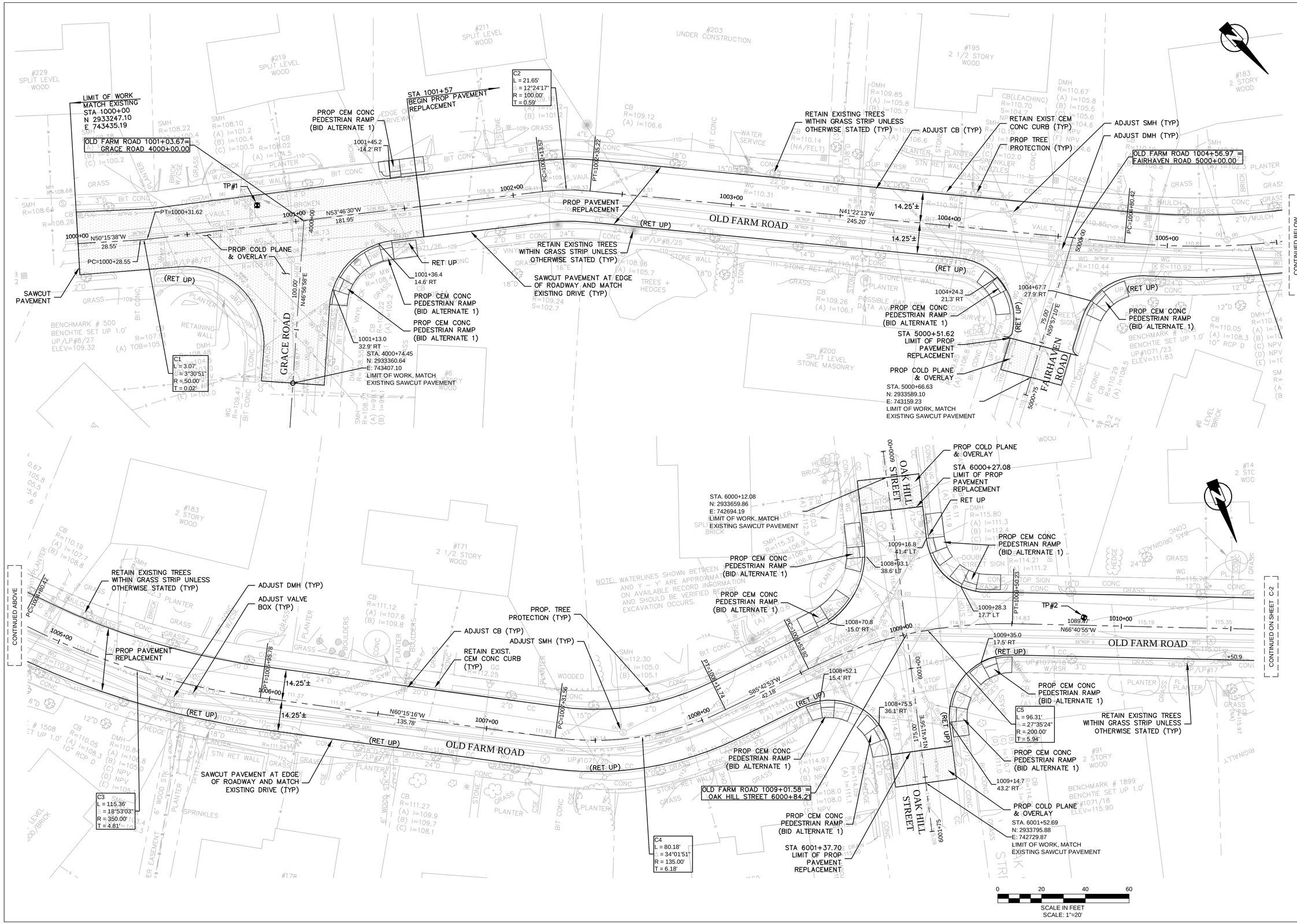

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Drawing: CONSTRUCTION PLANS

Sheet: C-1

4 OF 22

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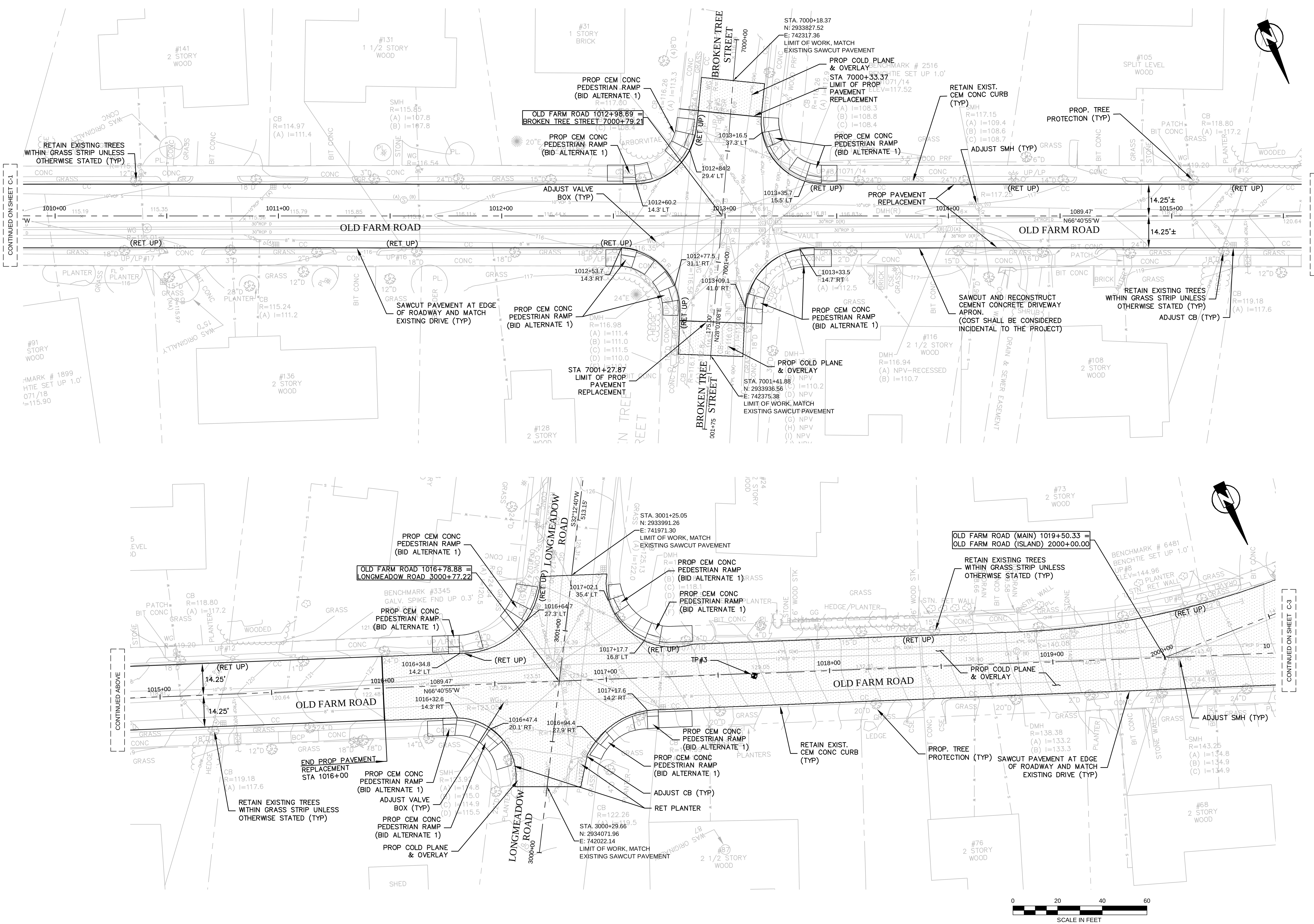

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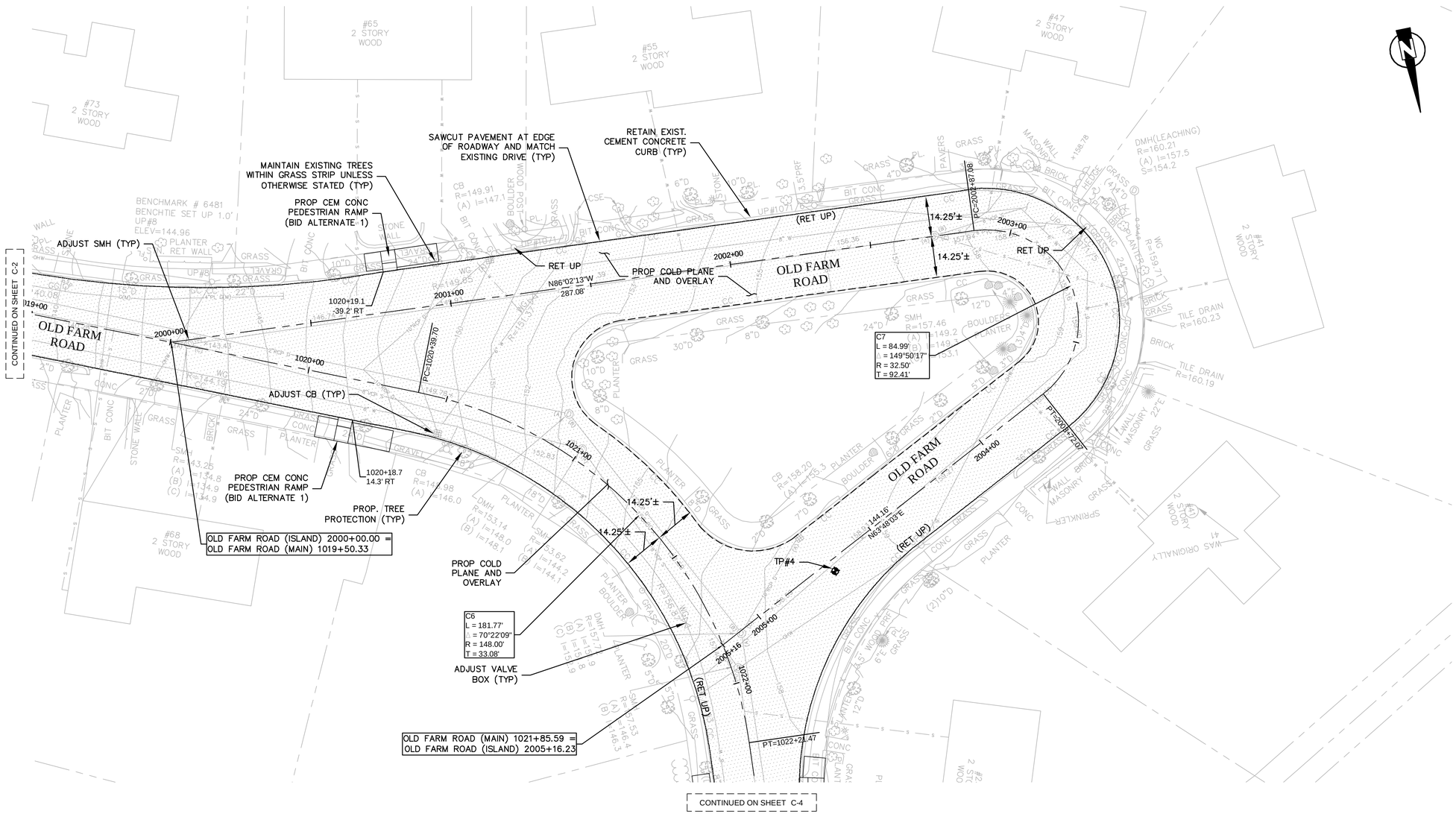
Drawing: CONSTRUCTION PLANS

Sheet: C-2



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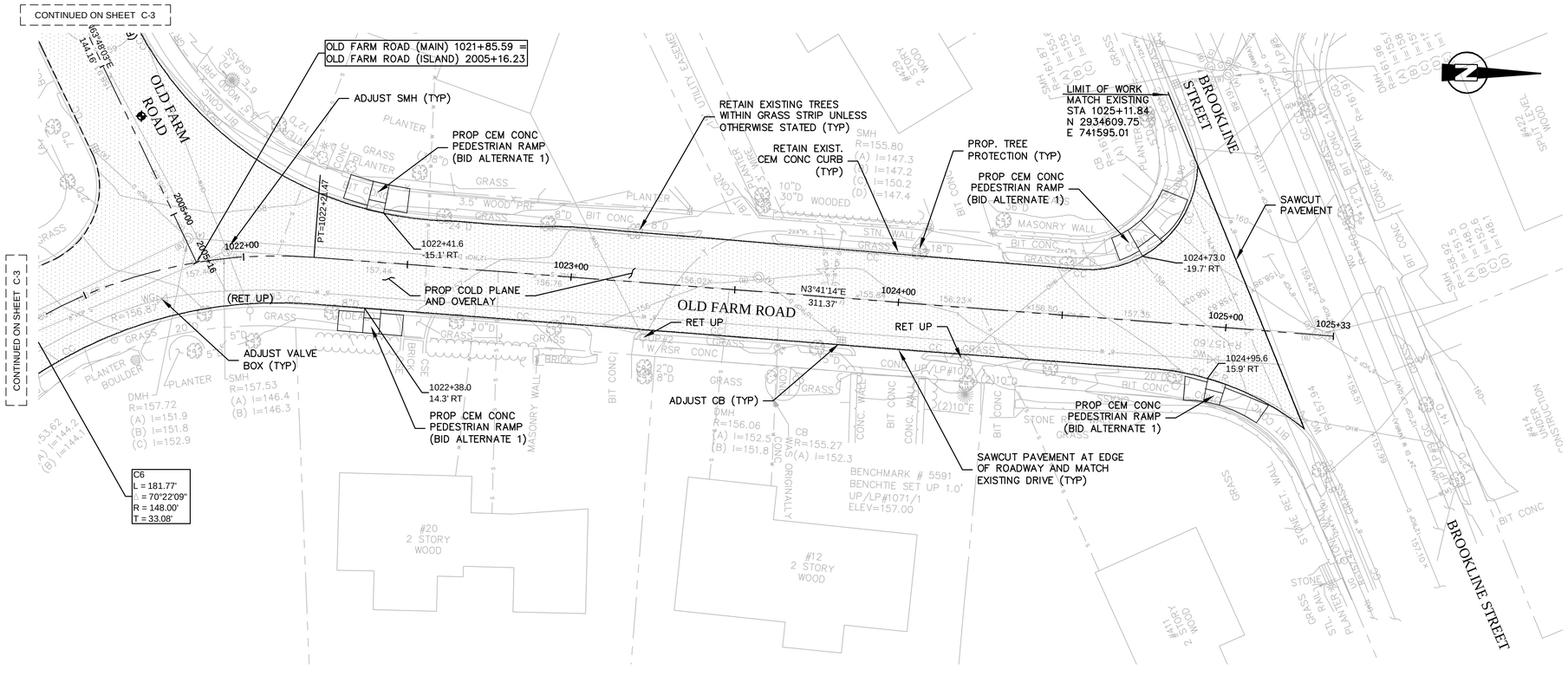
Drawing: CONSTRUCTION PLANS

Sheet: C-3



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Sheet: C-4

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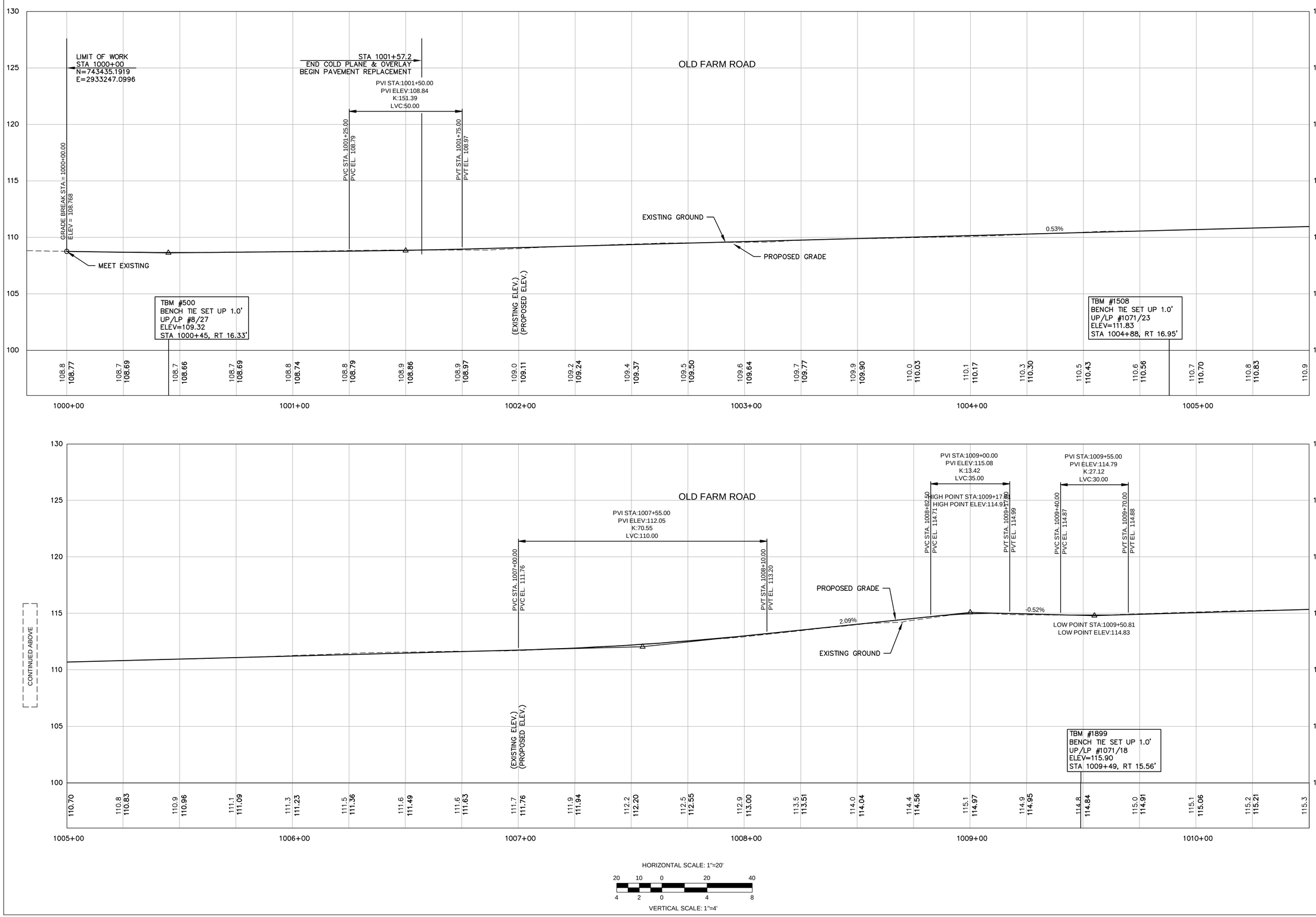

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Drawing: PROFILES

Sheet: P-1

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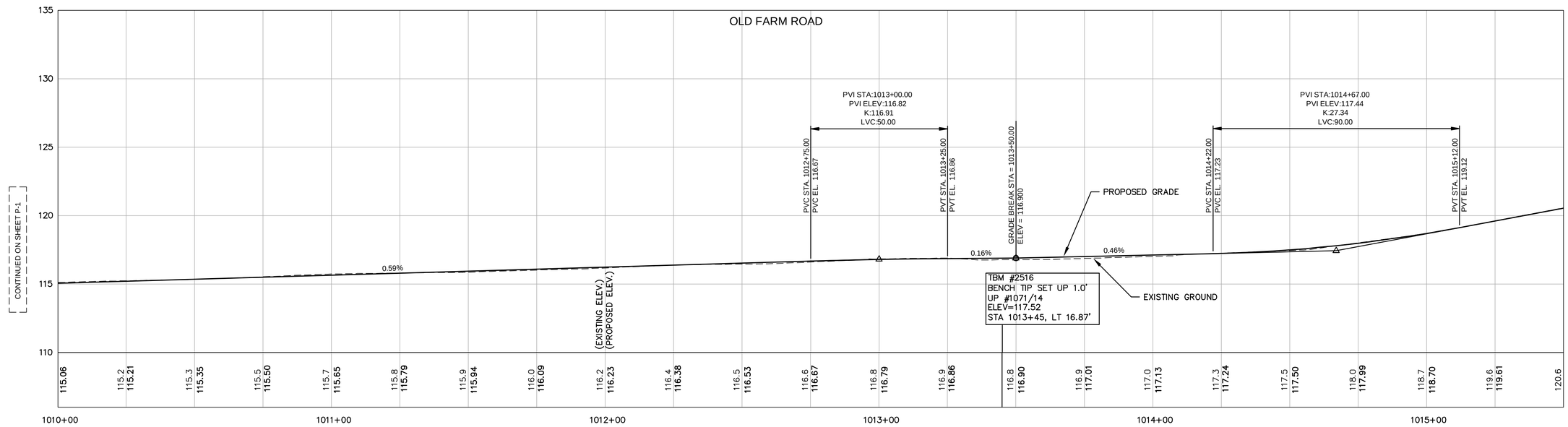

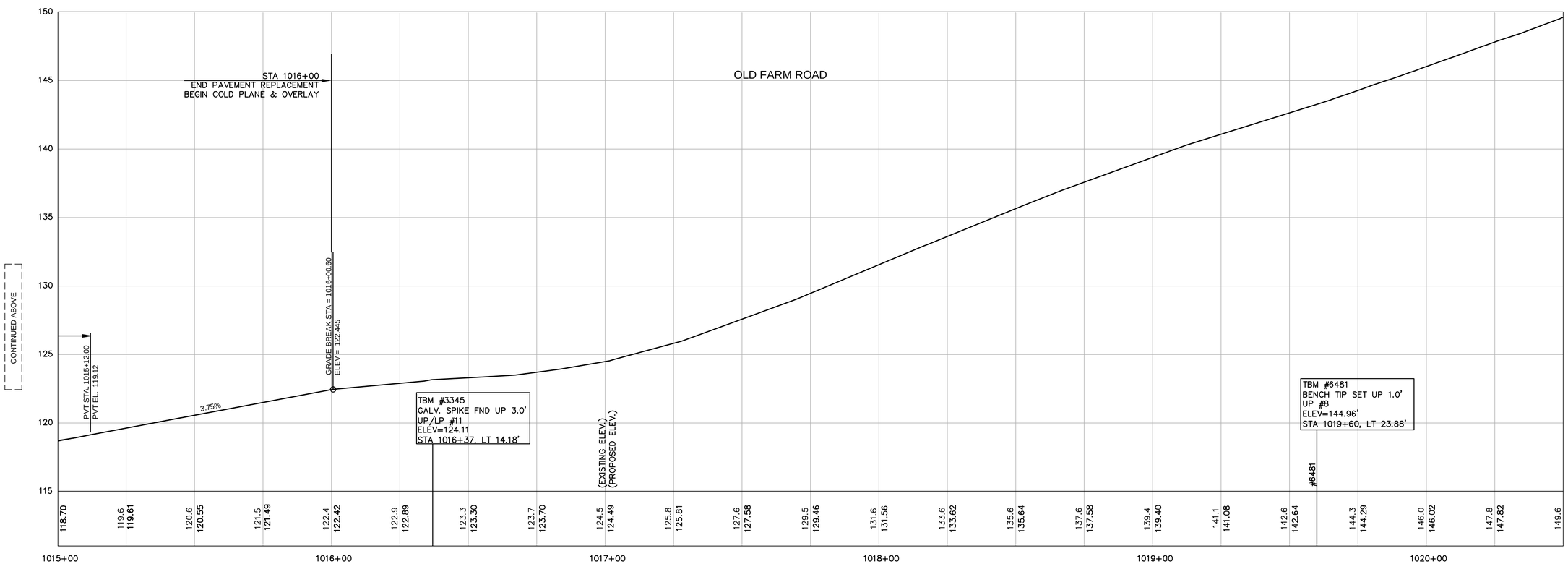

HORIZONTAL SCALE: 1"=20'

VERTICAL SCALE: 1"=4'

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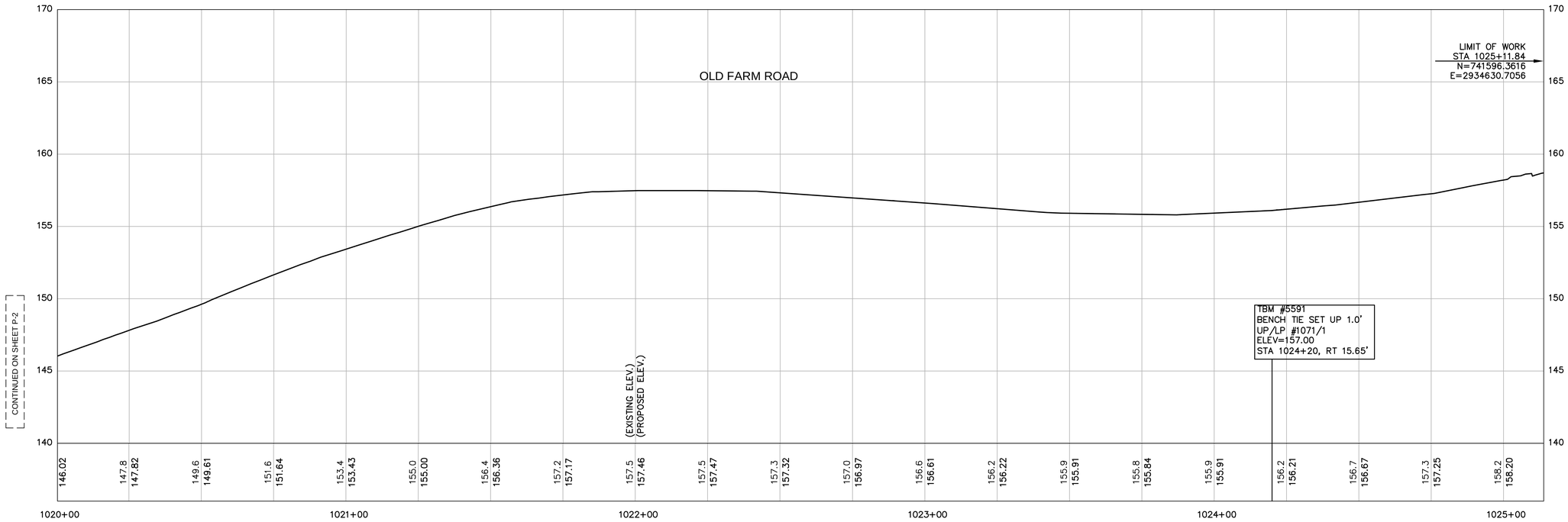
Drawing: PROFILES

Sheet: P-2

PLOT DATE=6/19/2012 12:10:09 PM USER=ANGUS J. O'LEARY FILENAME=G:_clients\Newton MA\2010077.01-A - Old Farm Road Design\Drawings\Roadway\2010077.01-ROADWAY_P-2.dwg



HORIZONTAL SCALE: 1"=20'

20 10 0 20 40

4 2 0 4 8

VERTICAL SCALE: 1"=4'

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COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. CUNNINGHAM
No. 45463
REGISTERED PROFESSIONAL ENGINEER
6/19/12

Scale	AS NOTED
Date	JUNE 2012
Job No.	2010077.01-A
Designed by	JB
Drawn by	GO
Checked by	MC
Approved by	MC

No.	Description	Date

REVISIONS

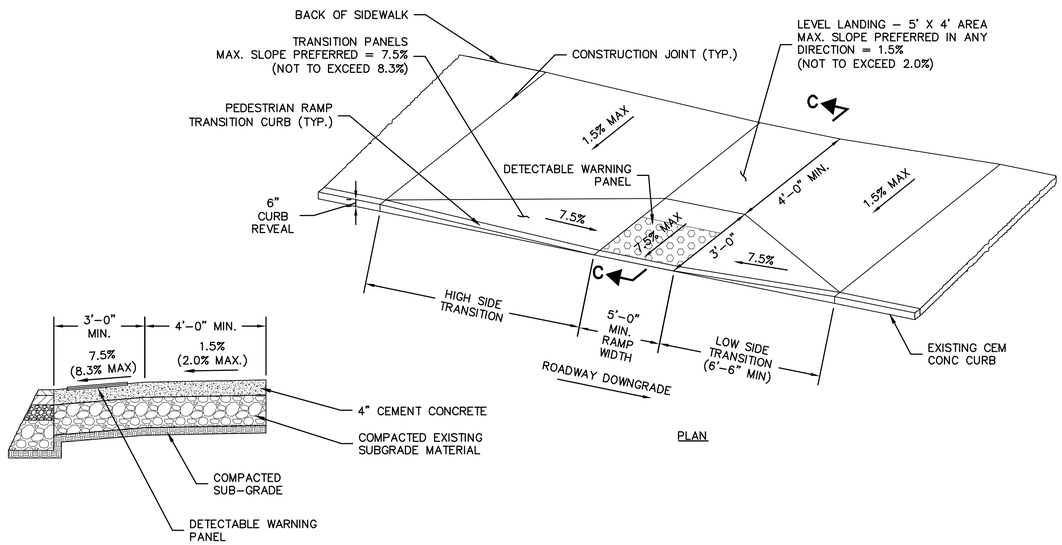
Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: PROFILE

Sheet: P-3

PLOT DATE=6/19/2012 12:10:49 PM USER=ANGUS J. O'LEARY FILENAME=G:_clients\Newton MA\2010077.01-A - Old Farm Road Design\Drawings\Roadway\2010077.01-ROADWAY_P-3.dwg



PEDESTRIAN RAMP DETAIL – BID ALTERNATE 1

N.T.S.

PEDESTRIAN RAMP NOTES

1. ALL RAMPS TO BE CONSTRUCTED PER CITY OF NEWTON AND ADA STANDARDS.
2. ROADWAY SIDEWALK CROSS SLOPES, FOR CEMENT CONCRETE, AND BITUMINOUS CONCRETE, AS INDICATED IN THE CONSTRUCTION STANDARDS, WILL BE 1.5%. A CONSTRUCTION TOLERANCE OF ±0.5% IS ACCEPTABLE ON ROADWAY SIDEWALKS. IN ACCORDANCE WITH 521 CMR THE RULES AND REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD (AAB), THE SIDEWALK CROSS SLOPE CANNOT EXCEED 2.0%.
3. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'–3" (PREFERED MINIMUM WIDTH OF 5'–0" FOR SIDEWALK MAINTENANCE) SHALL BE MAINTAINED PAST ALL OBSTRUCTIONS (UTILITY POLES, SIGNS, SIGNAL FOUNDATIONS, MASTS, MAILBOXES, ALONG DRIVE OPENINGS, ETC.).
4. THE PEDESTRIAN RAMP SLOPES AND SIDE SLOPES (TRANSITIONS) WILL BE 7.5% WITH A CONSTRUCTION TOLERANCE OF ±0.5%. HOWEVER THESE SLOPES MAY BE FLATTER WHEN WARRANTED BY SURROUNDING CONDITIONS.
5. WHERE THE ROADWAY PROFILE EXCEEDS 4%, THE HIGH SIDE TRANSITION LENGTH UNDER ANY CONDITIONS NEED NOT EXCEED 15'–0".
6. IN NO CASE WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED ON THE TRAFFIC APPROACH SIDE OF THAT STOP LINE.
7. AT NO TIME IS ANY PART OF THE PEDESTRIAN RAMP, EXCLUDING CURB TRANSITIONS TO BE LOCATED OUTSIDE THE CROSSWALK. THE PEDESTRIAN RAMP ENTRANCE IS TO BE CENTERED IN THE CROSSWALK WHENEVER POSSIBLE.
8. CATCH BASINS WHICH ARE TO BE LOCATED IN THE VICINITY OF A PEDESTRIAN RAMP SHALL BE LOCATED UPGRADE OF THE RAMP ENTRANCE.
9. THE ENTRANCE OF A PEDESTRIAN RAMP SHALL BE FLUSH WITH THE ROADWAY.
10. TESTING SURFACE: WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF THE SLOPE THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF ¼".
11. SEE LAYOUT SHEETS FOR RAMP REFERENCE POINTS

ROADWAY PROFILE GRADE	*HIGH SIDE TRANSITION LENGTH
%	ENGLISH UNITS
=0%	6'–6"
>0% TO 1%	7'–8"
>1% TO 2%	9'–0"
>2% TO 3%	11'–0"
>3% TO 4%	14'–0"
>4% TO 5%	15'–0" MAX
*BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".	

CURB TRANSITION LENGTH FOR PEDESTRIAN RAMPS

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Client: CITY OF NEWTON, MA
Project: OLD FARM ROAD IMPROVEMENTS PROJECT
Drawing: PEDESTRIAN RAMP & DRIVEWAY DETAILS

Sheet: PDR-1

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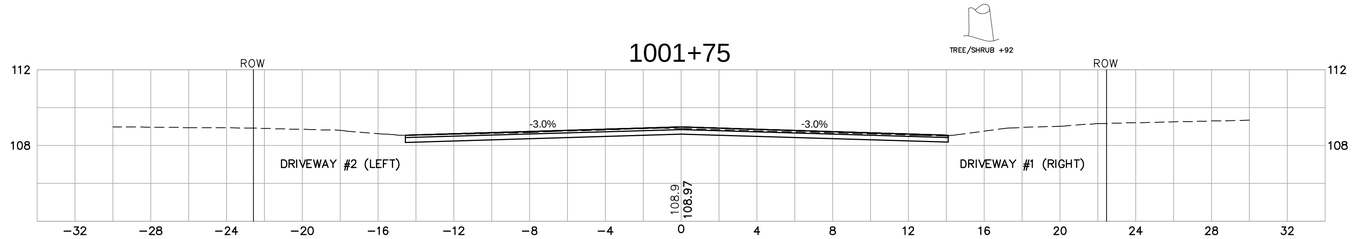

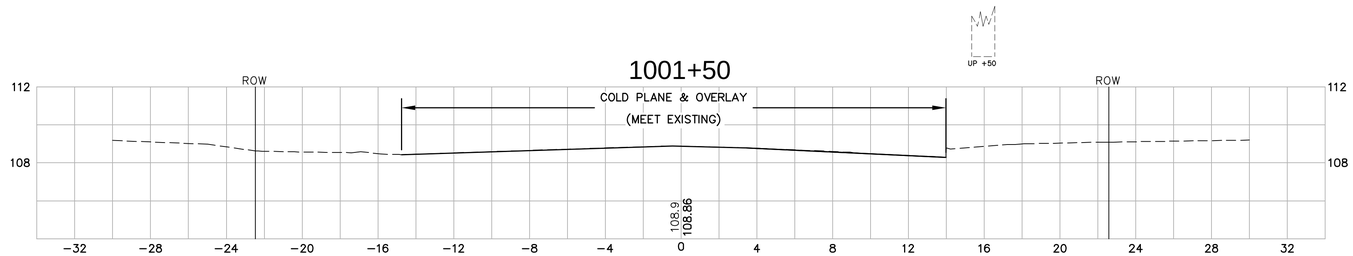

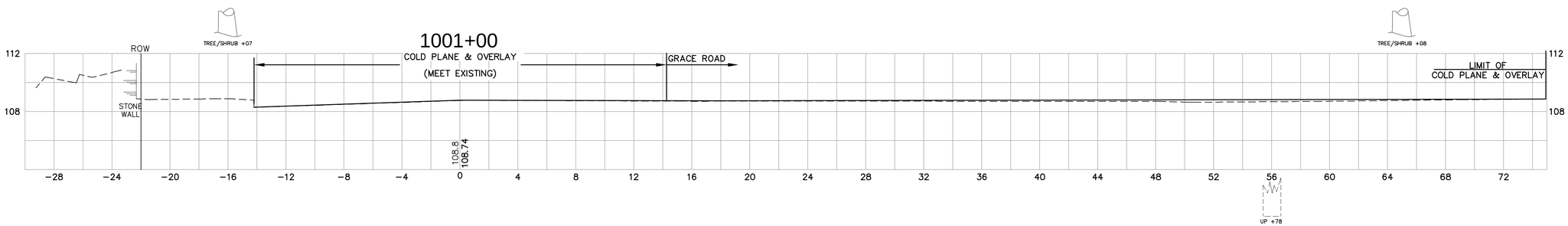

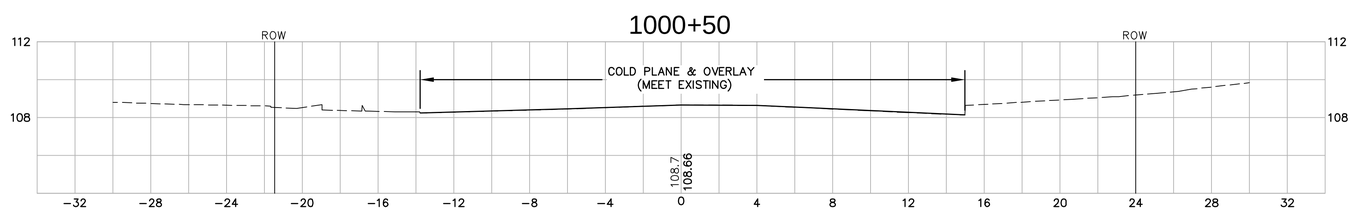

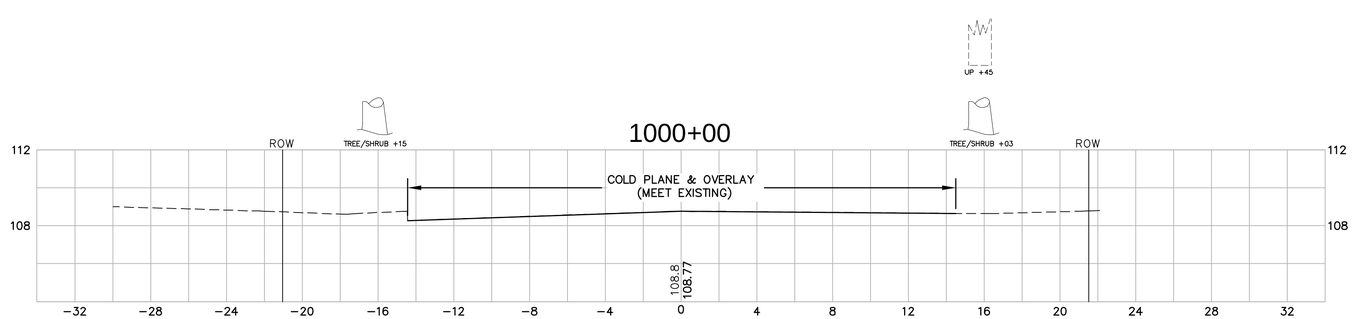

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Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-1

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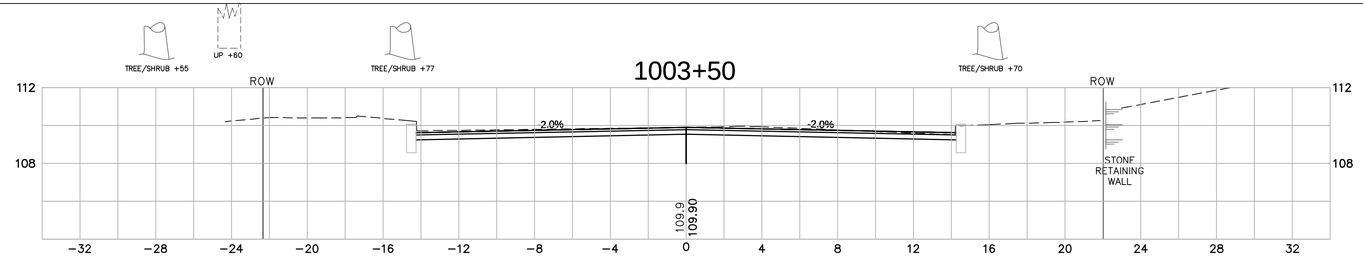

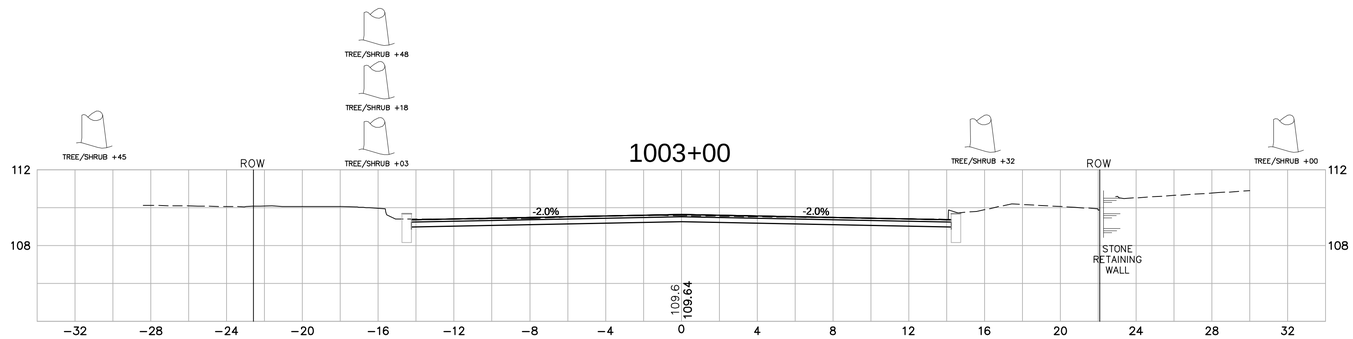

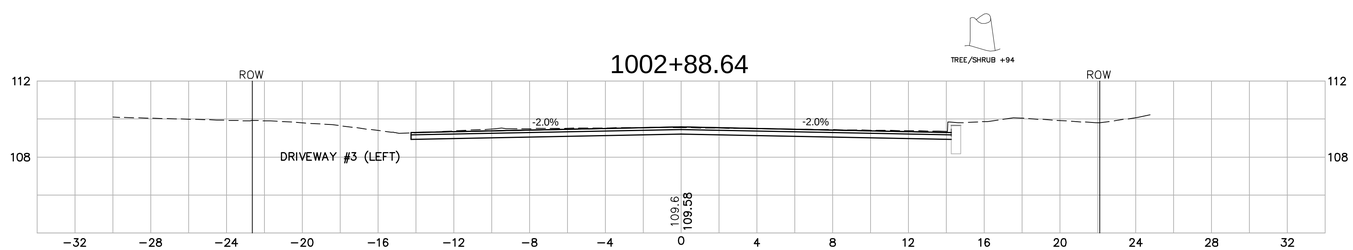

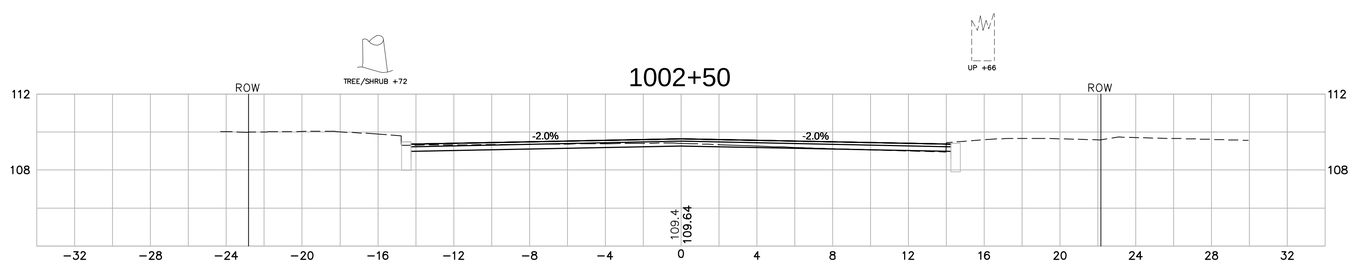

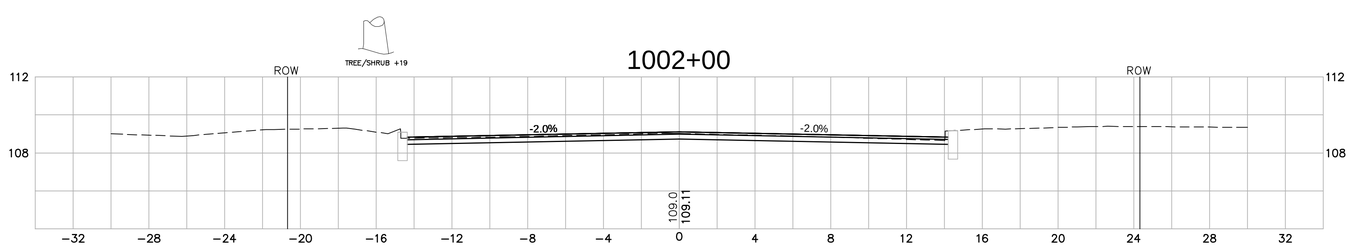

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Drawing: CROSS SECTIONS

Sheet: CS-2

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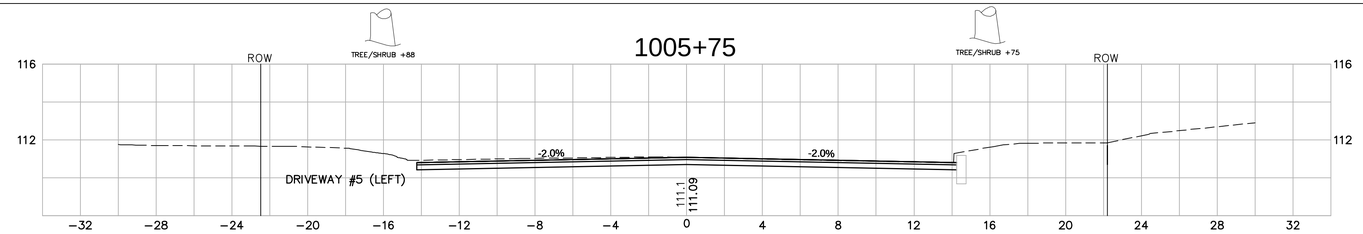

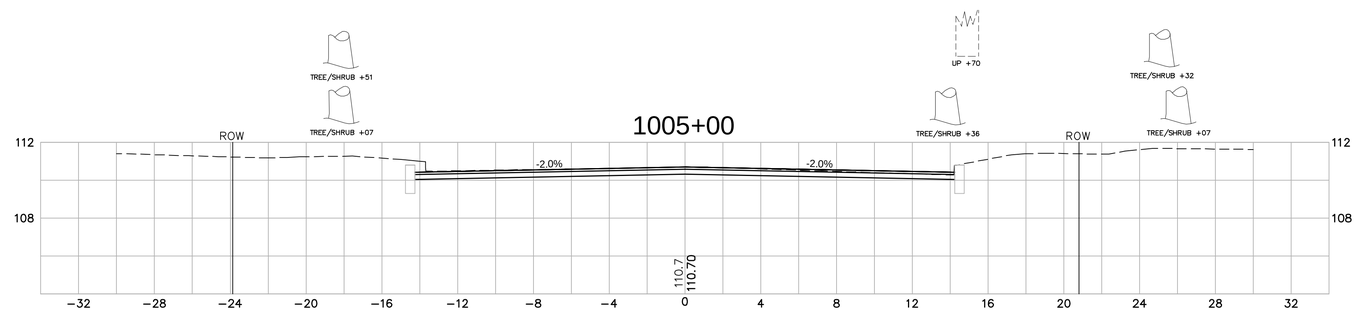

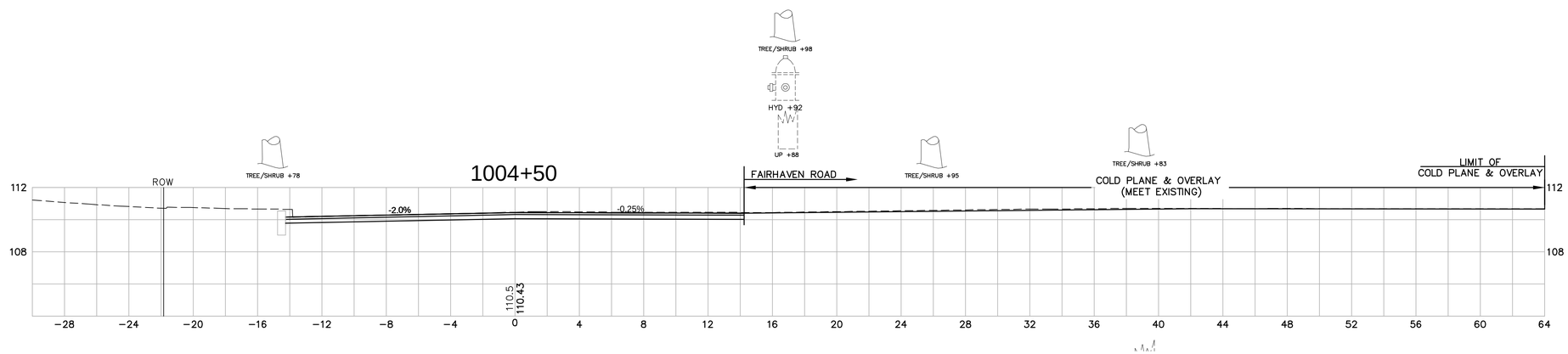

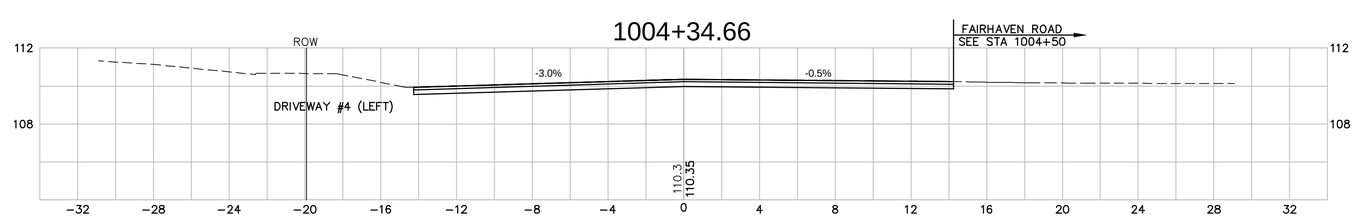

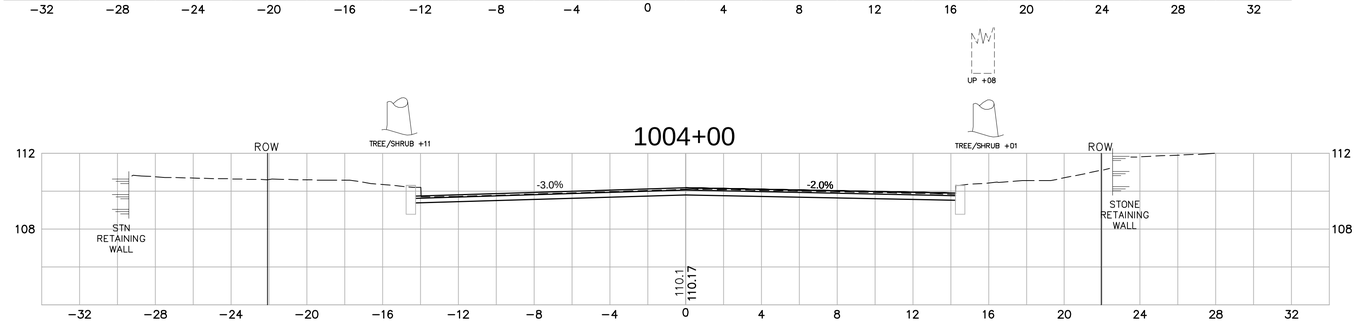

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Drawing: CROSS SECTIONS

Sheet: CS-3

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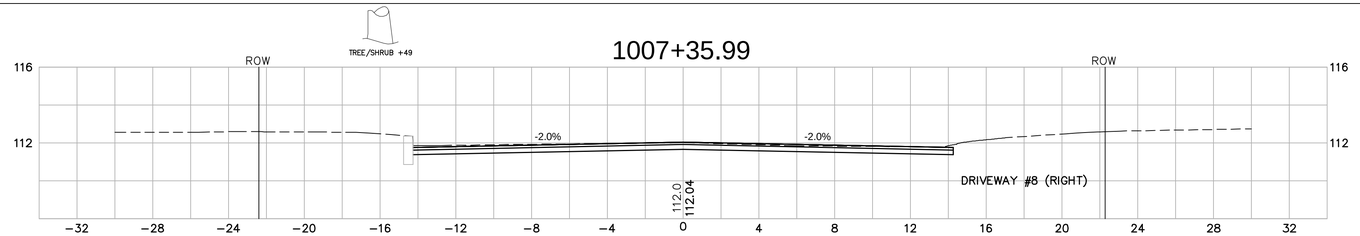

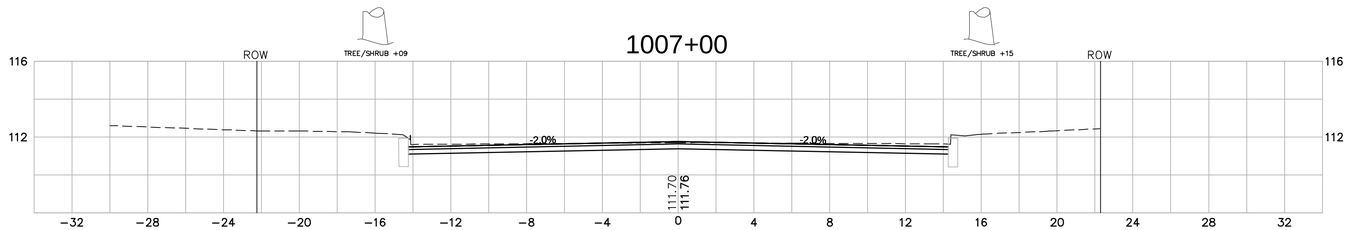

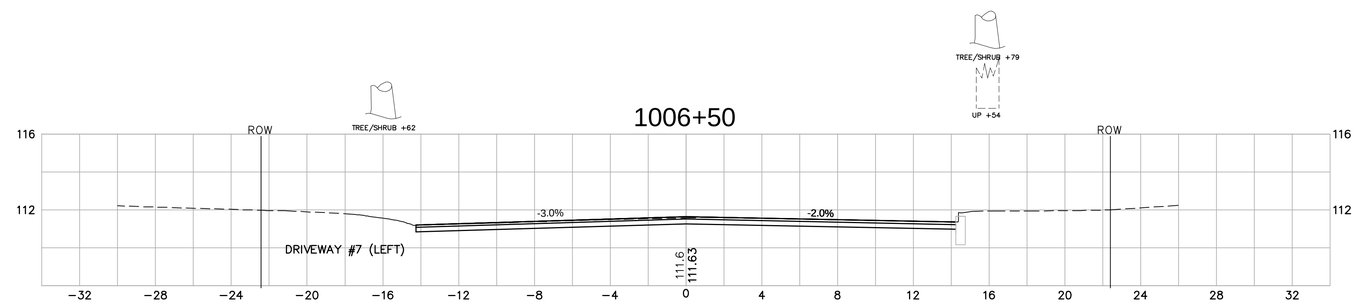

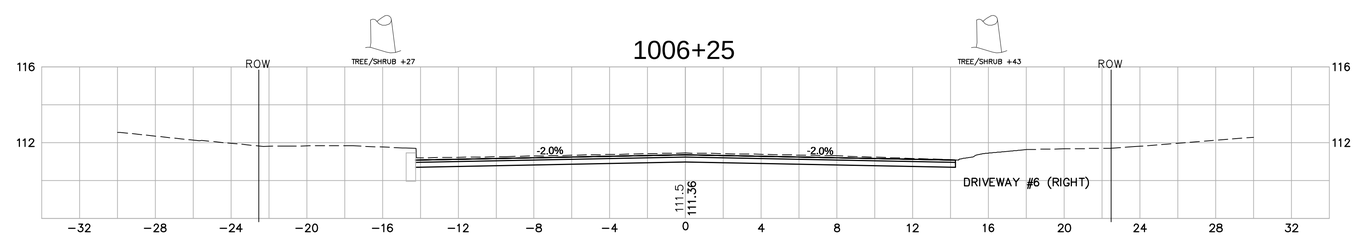

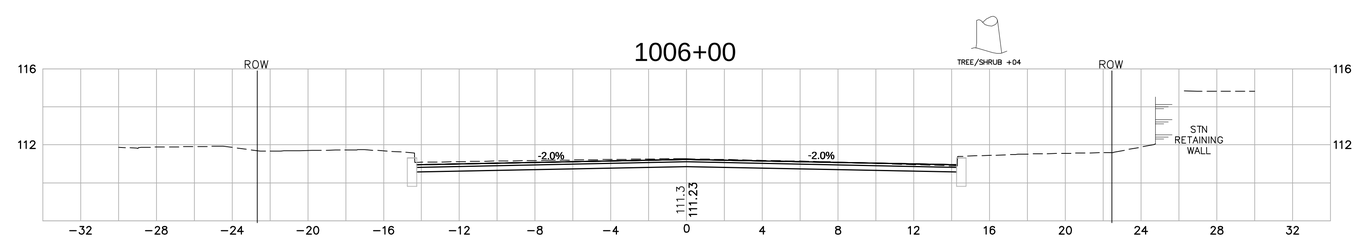

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Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-4

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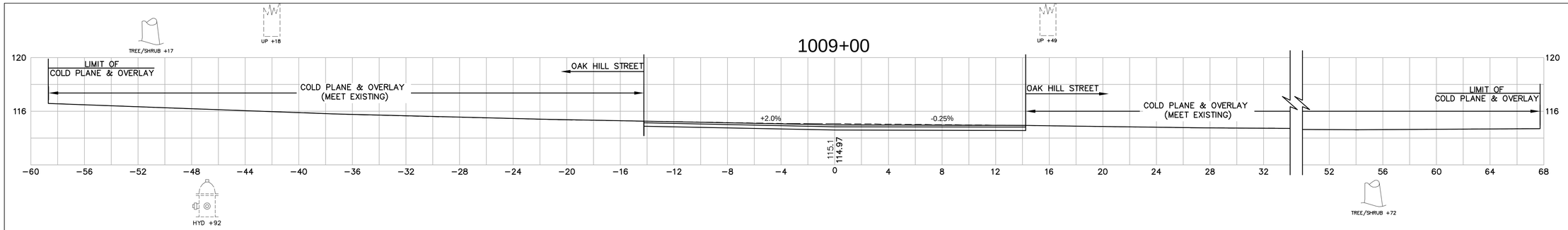

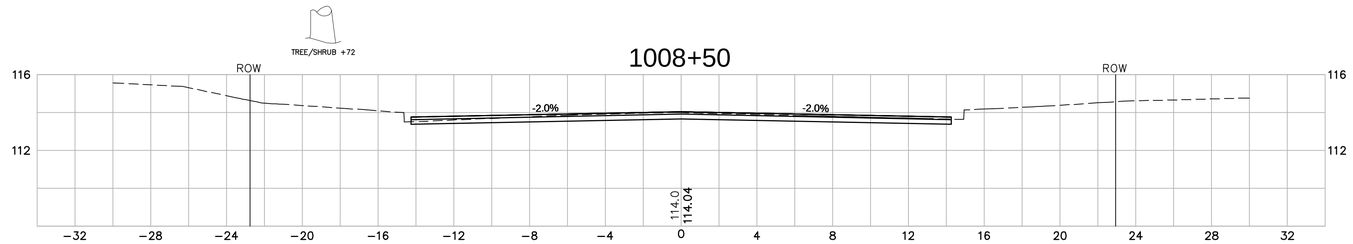

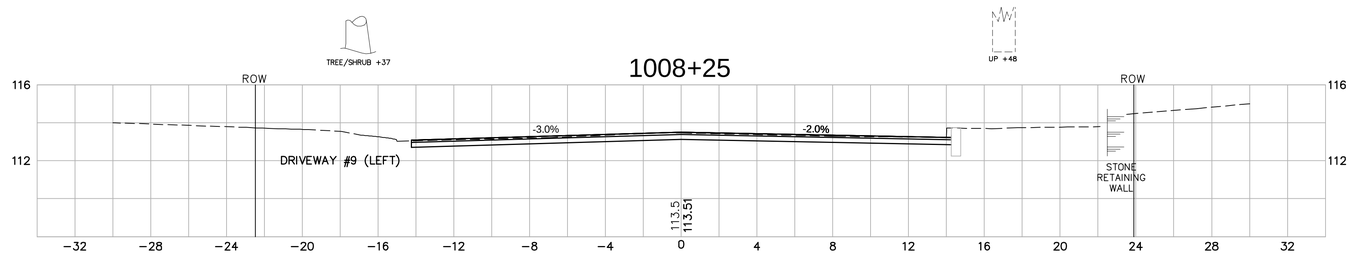

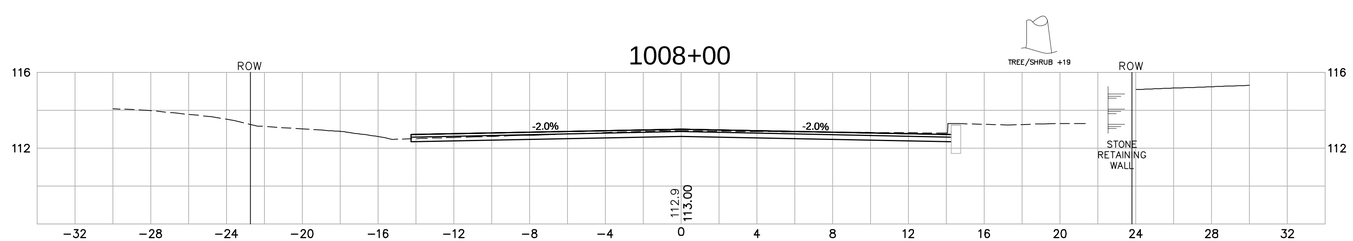

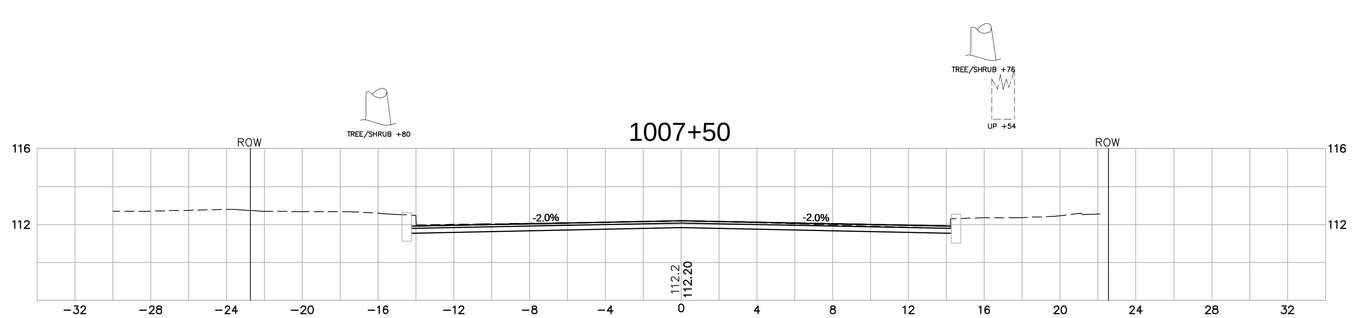

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Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-5

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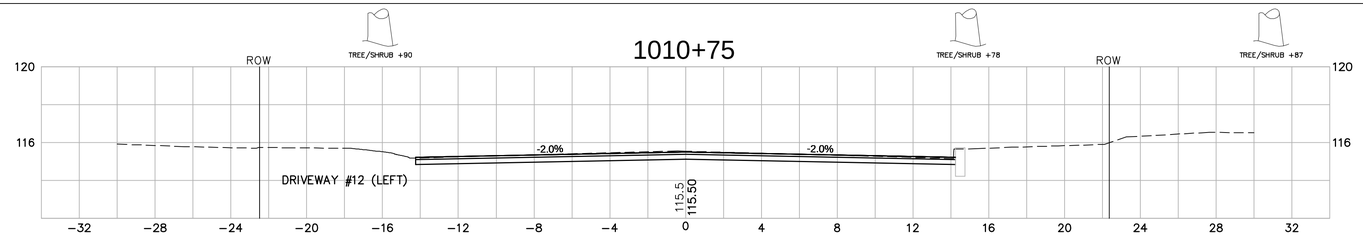

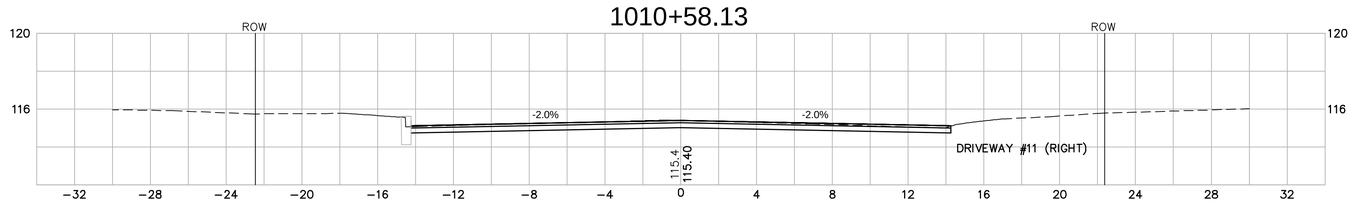

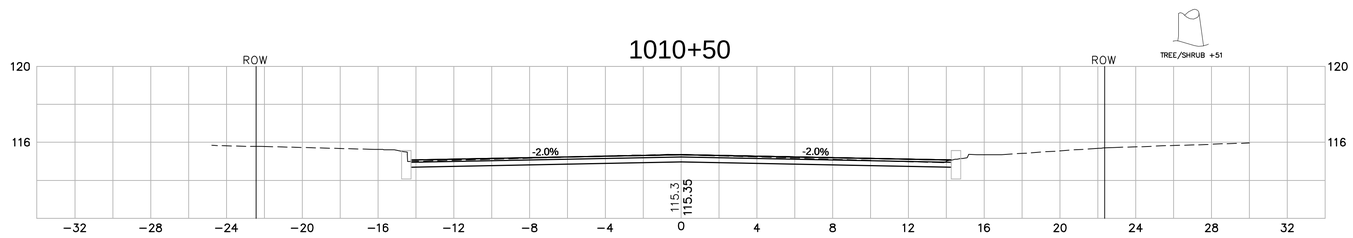

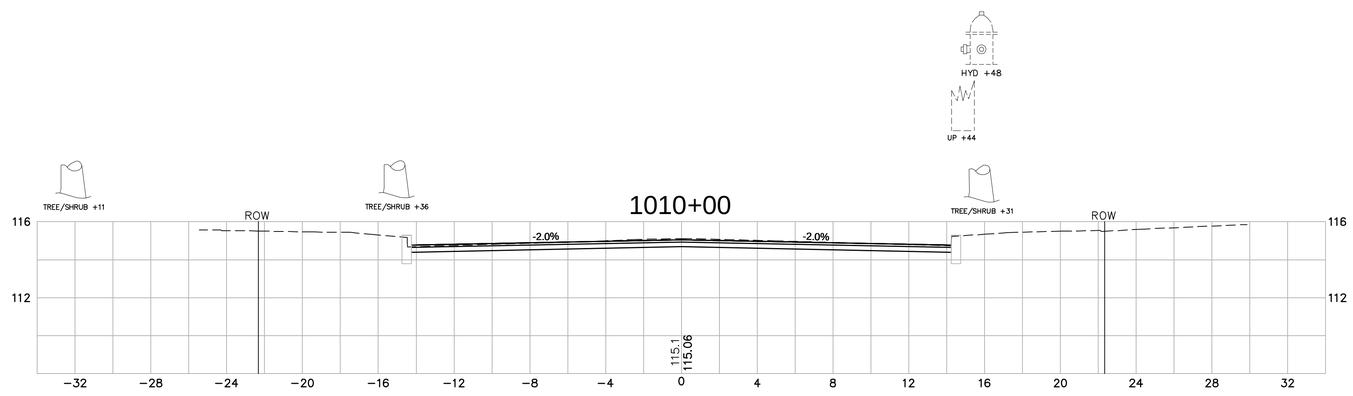

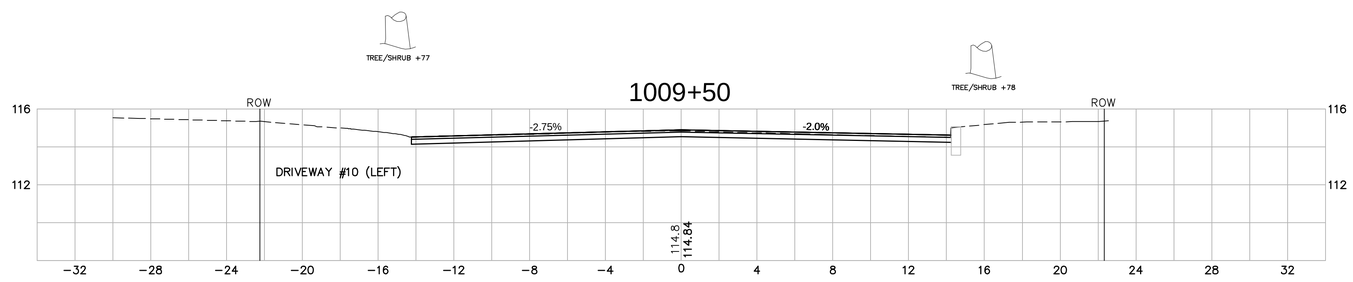

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Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-6

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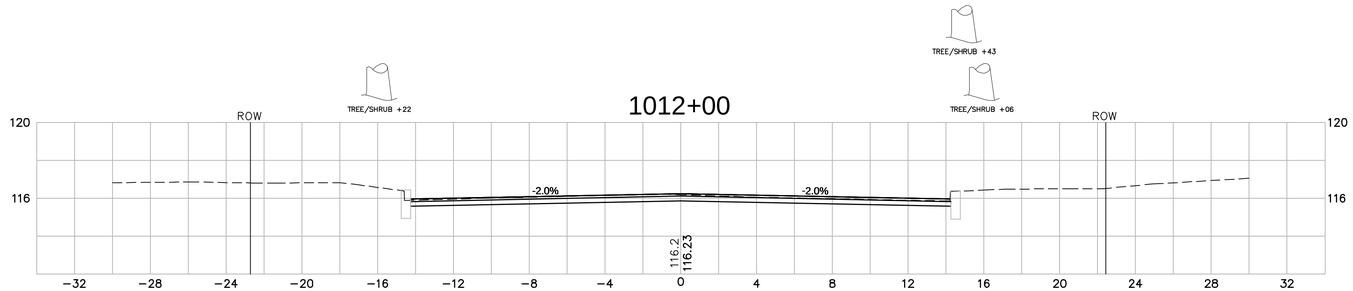

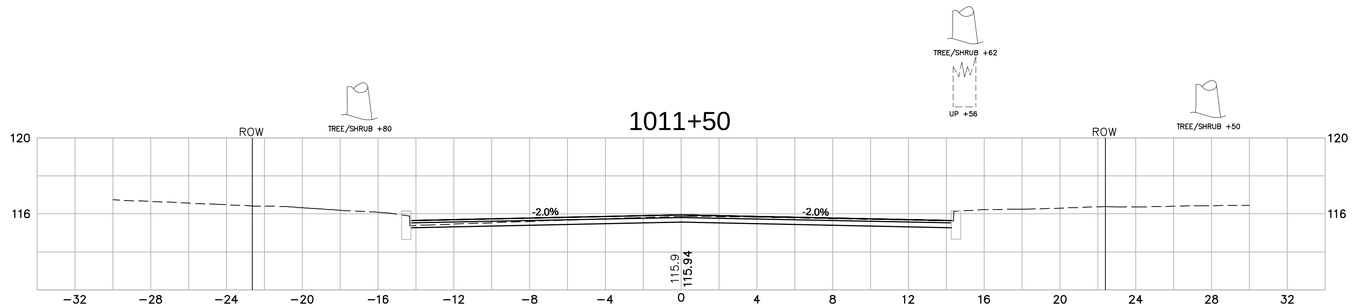

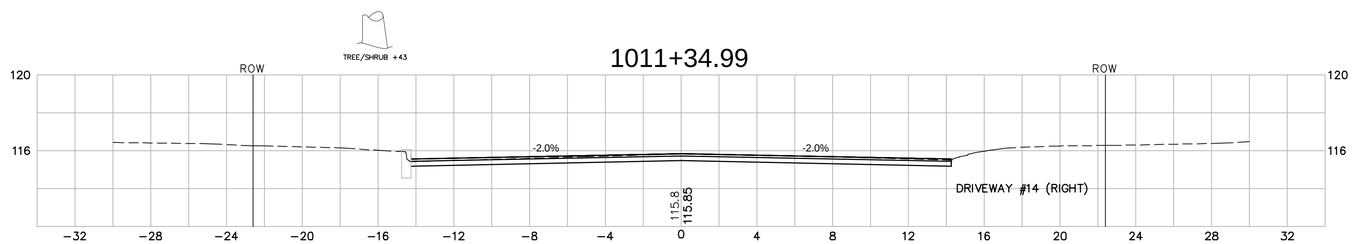

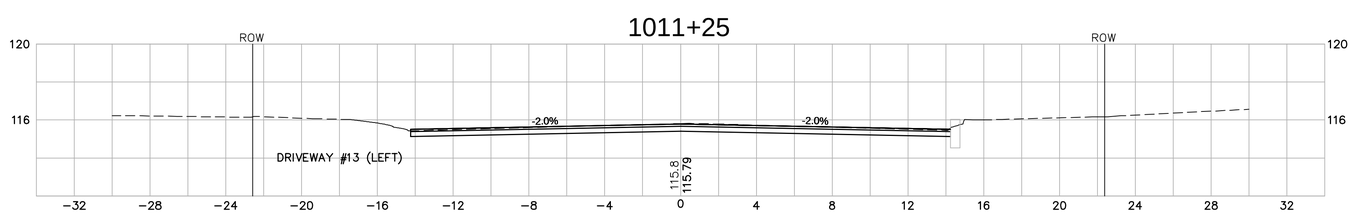

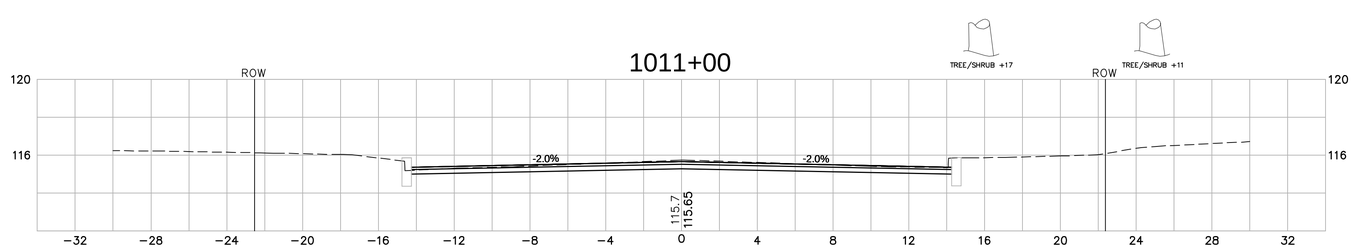

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Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-7

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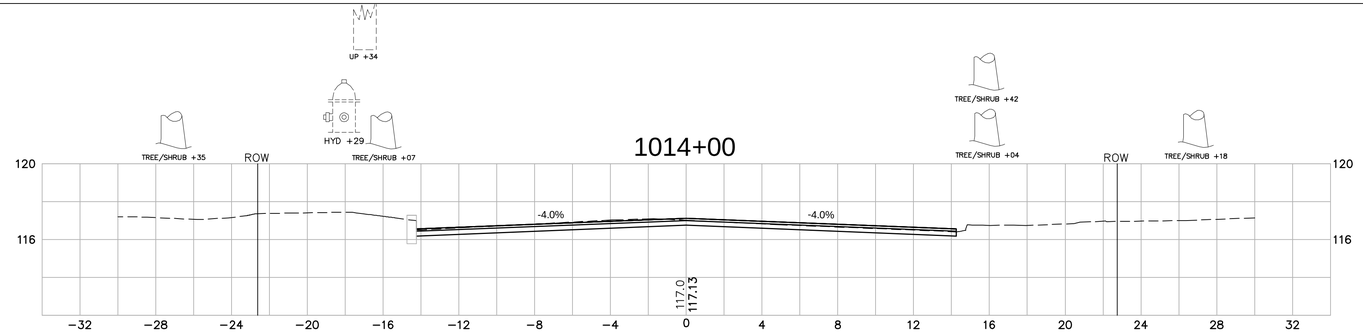

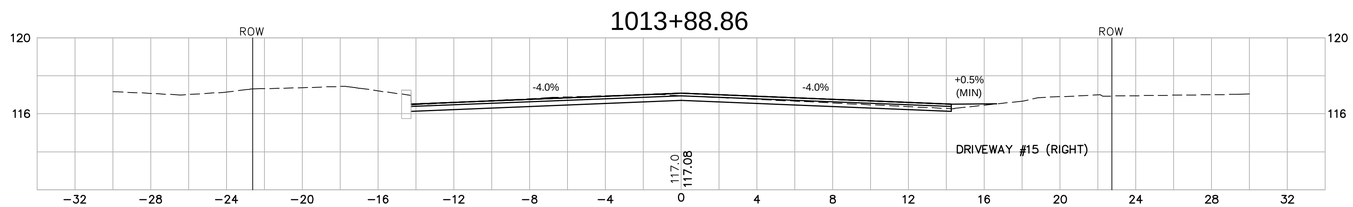

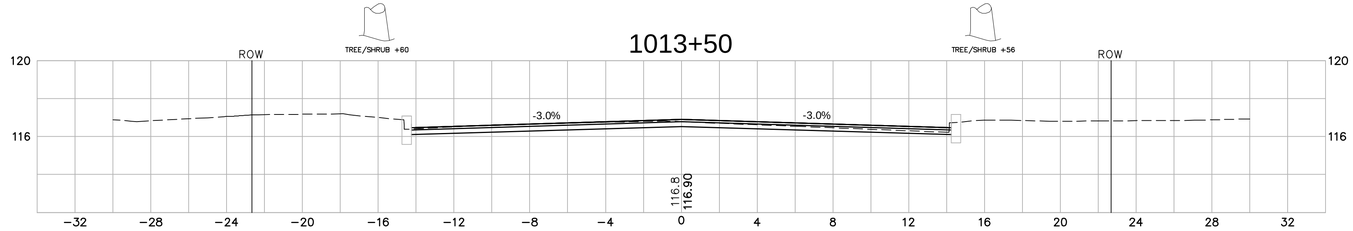

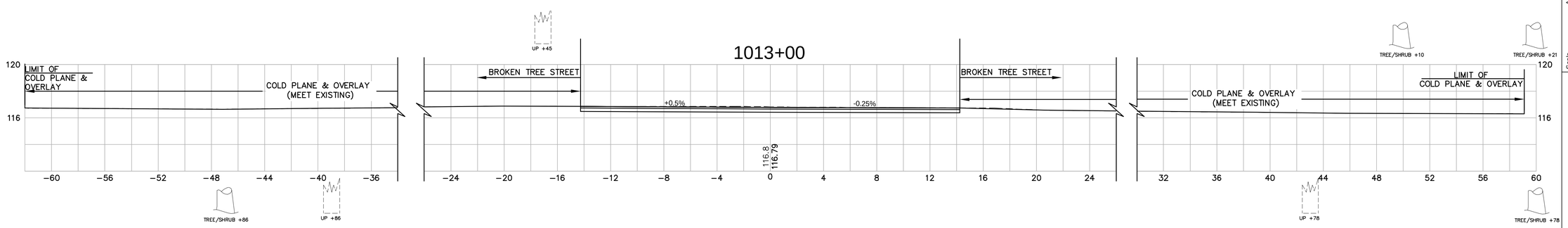

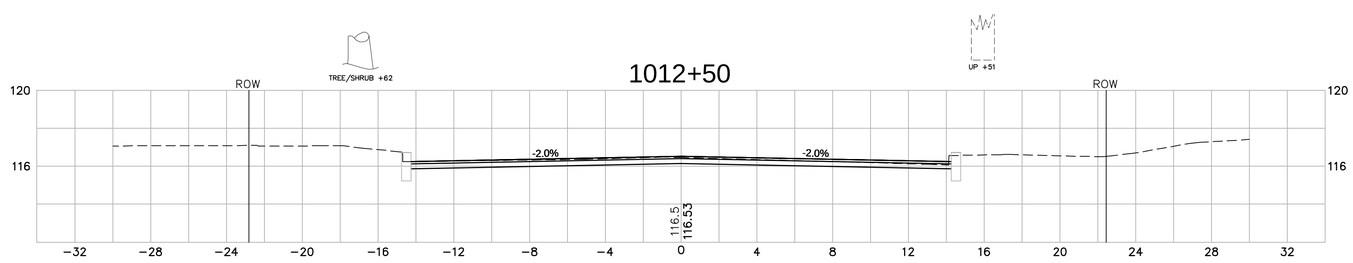

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COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. CUNNINGHAM
No. 45463
REGISTERED PROFESSIONAL ENGINEER
6/19/12

No.	Description	Date
	REVISIONS	

Scale	AS NOTED
Date	JUNE 2012
Job No.	20100077.01-A
Designed by	JB
Drawn by	GO
Checked by	MC
Approved by	MC

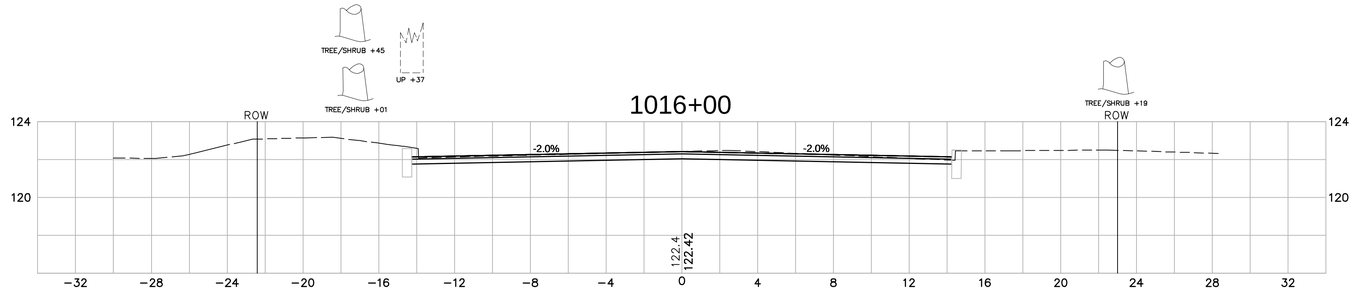
Client: CITY OF NEWTON, MA

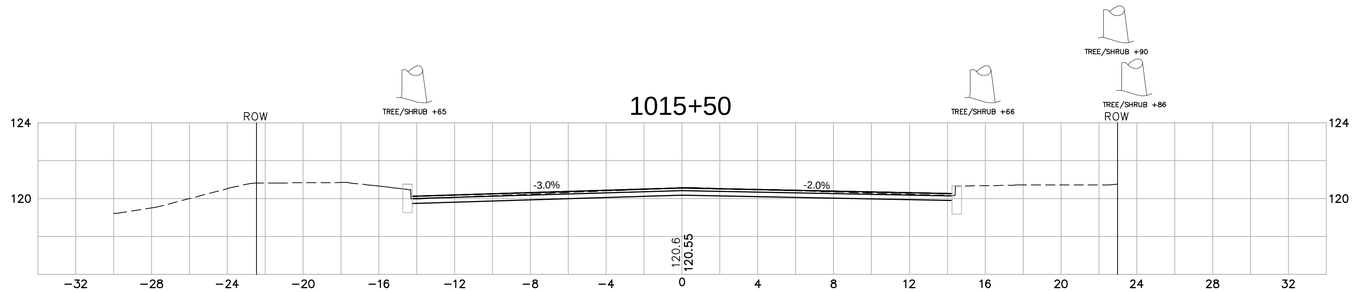
Project: OLD FARM ROAD IMPROVEMENTS PROJECT

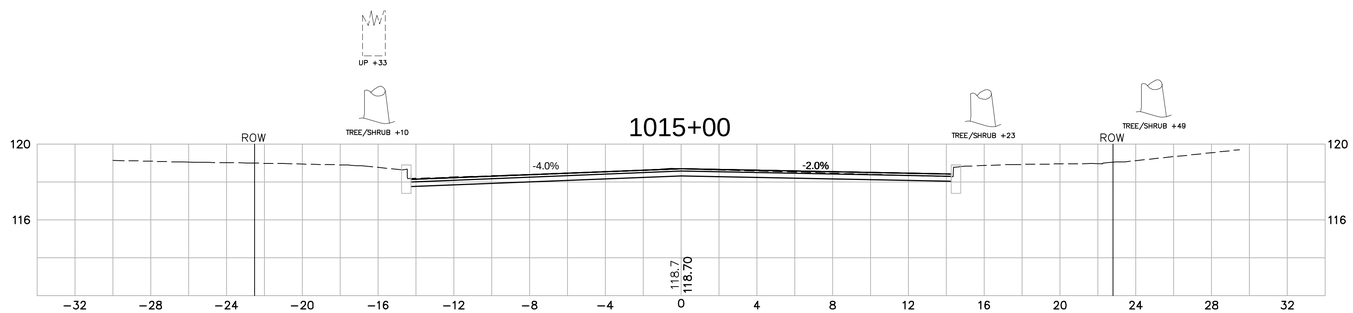
Drawing: CROSS SECTIONS

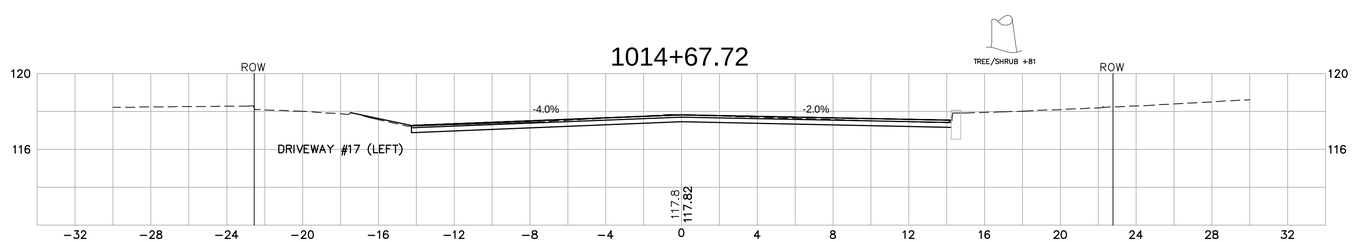
Sheet: CS-8

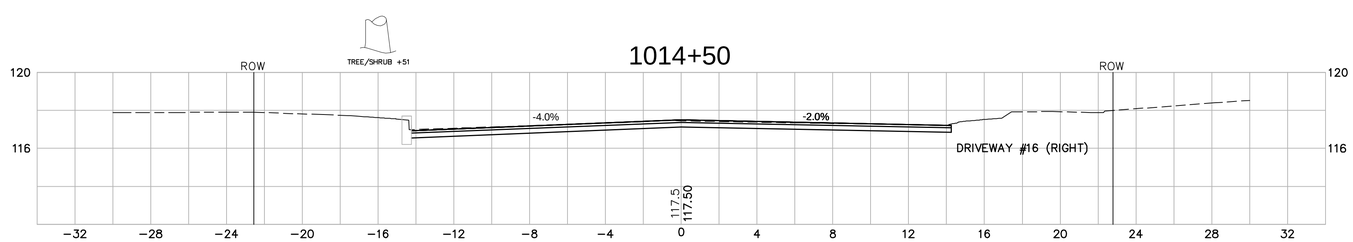
PLOT DATE=6/19/2012 12:21:33 PM USER=ANGUS J. O'LEARY FILENAME=G:_clients\Newton MA\20100077.01-A - Old Farm Road Design\Drawings\Roadway\20100077.01-ROADWAY_CS-08.dwg











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COMMONWEALTH OF MASSACHUSETTS
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Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: CROSS SECTIONS

Sheet: CS-9

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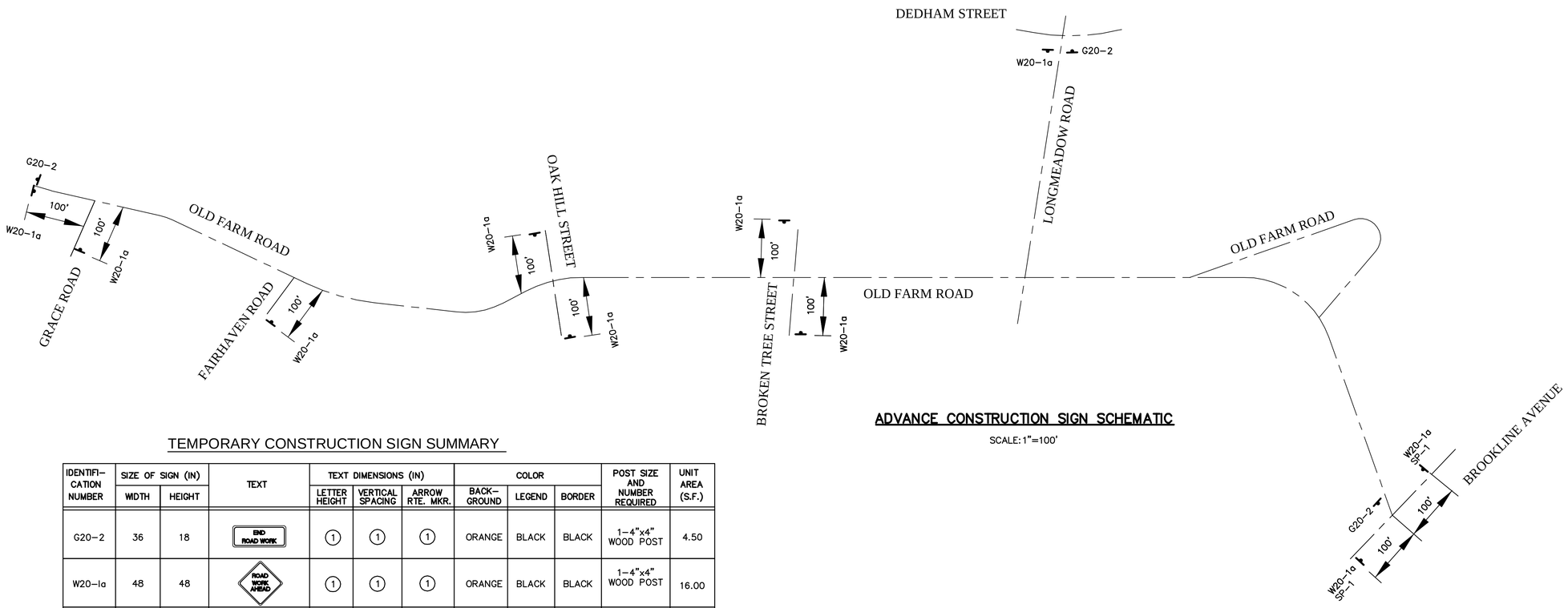

ADVANCE CONSTRUCTION SIGN SCHEMATIC

SCALE: 1"=100'

TEMPORARY CONSTRUCTION SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN (IN)		TEXT	TEXT DIMENSIONS (IN)			COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER		
G20-2	36	18	END ROAD WORK	(1)	(1)	(1)	ORANGE	BLACK	BLACK	1-4"x4" WOOD POST	4.50
W20-1a	48	48	ROAD WORK AHEAD	(1)	(1)	(1)	ORANGE	BLACK	BLACK	1-4"x4" WOOD POST	16.00
SP-1	24	12	OLD FARM RD	(1)	(1)	(1)	ORANGE	BLACK	BLACK	MOUNT WITH W20-1a	2.00

(1) SEE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND "STANDARD HIGHWAY SIGNS" BY FEDERAL HIGHWAY ADMINISTRATION (LATEST EDITIONS) FOR SPECIFICATIONS ON TEXT DIMENSION AND COLOR.

SIGNING NOTES

1. HIGH INTENSITY ENCAPSULATED LENS REFLECTIVE SHEETING CONFORMING TO SECTION 828 AND M9.30.0 TYPE III OR IV, OF THE MHD STANDARD SPECIFICATIONS, SHALL BE USED FOR ALL SIGNS.
2. TRAFFIC MANAGEMENT SIGNS SHALL BE REUSED ACCORDING TO CONSTRUCTION SCHEDULE IN ORDER TO MINIMIZE THE TOTAL NUMBER OF SIGNS NEEDED.

CONSTRUCTION SIGN SUMMARY

SCALE: N.T.S.

GENERAL TRAFFIC MANAGEMENT NOTES

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
2. ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR THE CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, AND REFLECTORIZED PLASTIC DRUMS WITH LIGHTING DEVICES MOUNTED ON THEM, MUST PASS THECRITERIA SET FORTH IN NCHRP 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES".
6. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. DRUMS, SIGNS, AND OTHER WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS.
8. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER WORK ZONE TRAFFIC CONTROL DEVICES, GRADING, AND TEMPORARY PAVEMENT TO PROVED PASSAGE FOR PEDESTRIAN, VEHICULAR, AND EMERGENCY TRAFFIC THROUGH THE WORK ZONE, BOTH DURING AND AFTER WORK HOURS.
9. THE FIRST THREE PLASTIC DRUMS OF A TAPER MAY BE MOUNTED WITH TYPE A LIGHTS.
10. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
11. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
12. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
13. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
14. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
15. SIGNS SHALL BE KEPT CLEAN AND LEGENDS SHALL BE DISTINCTIVE AND UNMARRED.
16. TRAFFIC OFFICER LOCATIONS MAY BE ADJUSTED AS NECESSARY.
17. ALL ADVANCE SIGNS TO BE IN PLACE FOR THE DURATION OF THE PROJECT.
18. W20-1 SIGNS SHALL BE EQUIPPED WITH STANDARD ORANGE FLAGS.

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COMMONWEALTH OF MASSACHUSETTS
MICHAEL P. CUNNINGHAM
No. 45463
PROFESSIONAL ENGINEER
6/19/12

No.	Description	Date
	REVISIONS	

Scale	AS NOTED
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Job No.	20100077.01-A
Designed by	JB
Drawn by	GO
Checked by	MC
Approved by	MC

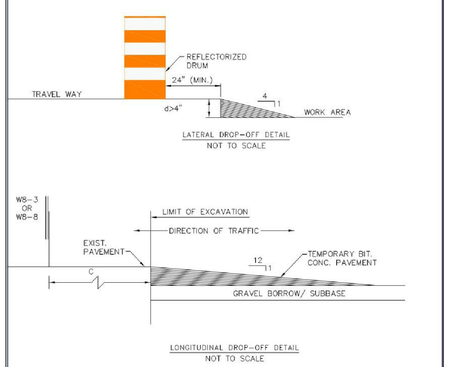
Client: CITY OF NEWTON, MA

Project: OLD FARM ROAD IMPROVEMENTS PROJECT

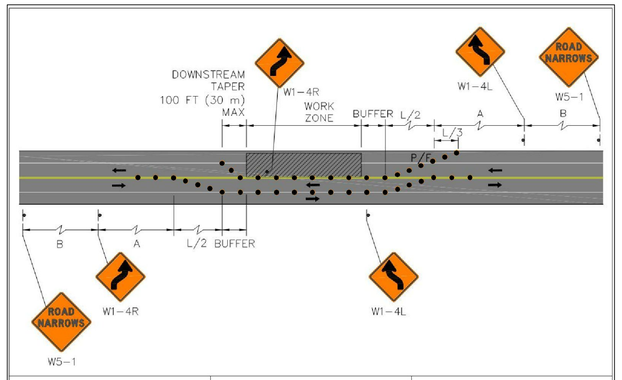
Drawing: TRAFFIC MANAGEMENT PLANS

Sheet: TMP-1

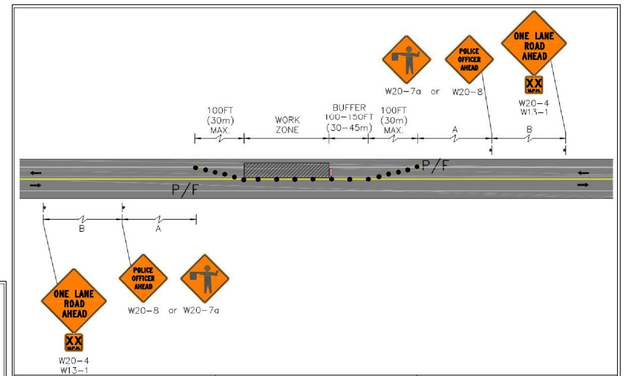
PLOT DATE=6/19/2012 12:23:05 PM USER=ANGUS J. O'LEARY FILENAME=G:_clients\Newton MA\20100077.01-A - Old Farm Road Design\Drawings\Roadway\20100077.01-ROADWAY_TMP-1-TMP-2.dwg



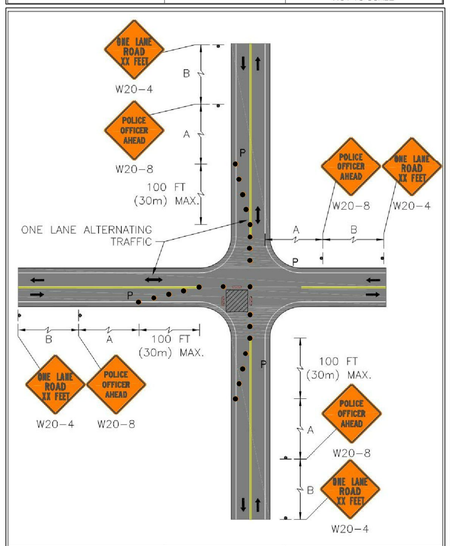
MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE Gen-6 — LATERAL AND LONGITUDINAL DROP-OFF DETAILS — NOT TO SCALE



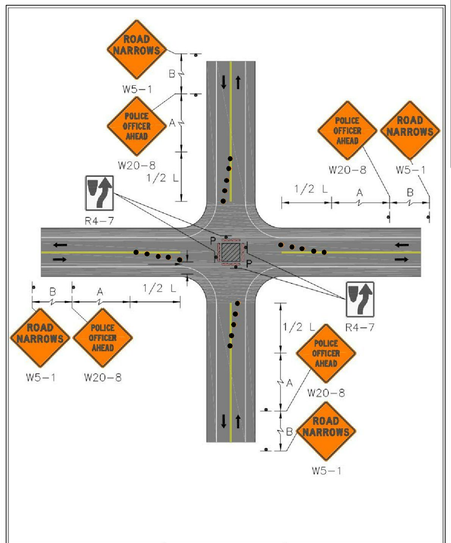
MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE TLR-2 — TWO LANE ROAD SHOULDER AND TRAVEL LANE CLOSED — NOT TO SCALE



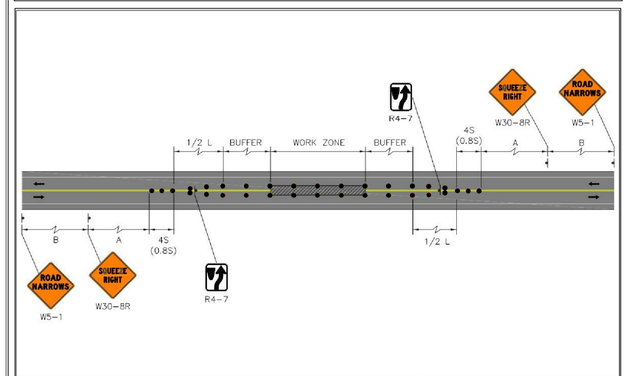
MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE TLR-5 — TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC WITH POLICE DETAIL — NOT TO SCALE



MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE Int-2 — SINGLE LANE APPROACH ONE QUADRANT CLOSURE — NOT TO SCALE



MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE Int-1 — SINGLE LANE APPROACH CENTER CLOSURE — NOT TO SCALE



MASS HIGHWAY | Standard Details and Drawings for the Development of Traffic Management Plans | FIGURE TLR-3 — TWO LANE ROAD CENTER OF ROAD CLOSURE — NOT TO SCALE

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	$L = WS$

Speed Limit (S)	Taper Length (L) Meters
60 KM/H OR LESS	$L = \frac{WS^2}{155}$
70 KM/H OR MORE	$L = \frac{WS}{1.6}$

WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICAPATED OPERATING SPEED IN MPH (KM/H)

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

Type of Taper	Taper Length (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	100 FT (30 m) MAXIMUM
DOWNSTREAM TAPER	100 FT (30 m) PER LANE

SUGGESTED WORK ZONE WARNING SIGN SPACING

Road Type	Distance Between Signs**		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* SPEED CATEGORY TO BE DETERMINED BY HIGHWAY AGENCY

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TMP SETUPS. IT IS THE ONE WHICH MAY OFTEN HAVE THE "STANDARD RED OR RED-ORANGE FLAGS (16 in. X 16 in.)" MOUNTED ON IT. THESE ADVANCE WARNING SIGNS ARE LOCATED AT THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- FLASHING ARROW PANEL
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- MOVEABLE IMPACT ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

NOTES:

1. REFER TO SHEET TMP-1 FOR TRAFFIC MANAGEMENT GENERAL NOTES.
2. REFER TO THE "MASSHIGHWAY STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS" FOR ADDITIONAL INFORMATION.

KLEINFELDER Bright People. Right Solutions.

COMMONWEALTH OF MASSACHUSETTS MICHAEL R. CUNNINGHAM CIVIL No. 45463 REGISTERED PROFESSIONAL ENGINEER 6/19/12

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Project: OLD FARM ROAD IMPROVEMENTS PROJECT

Drawing: TRAFFIC MANAGEMENT PLANS

Sheet: TMP-2

PLOT DATE=6/19/2012 12:23:08 PM USER=ANGUS J. O'LEARY FILENAME=G:_clients\Newton MA\20100077.01-A - Old Farm Road Design\Drawings\Roadway\20100077.01-ROADWAY_TMP-1-TMP-2.dwg