THE TOWN OF BELMONT

PLAN AND PROFILE OF

ROADWAY IMPROVEMENTS

IN THE TOWN OF

BELMONT
MIDDLESEX COUNTY

ALL WORK DONE UNDER THIS CONTRACT SHALL BE IN CONFORMANCE WITH THE PLANS, SPECIAL PROVISIONS, AND THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, THE SUPPLEMENTAL SPECIFICATIONS DATED JUNE 15, 2012, AND THE INTERIM SUPPLEMENTAL SPECIFICATIONS DATED DECEMBER 12, 2014; THE 2012 CONSTRUCTION STANDARD DETAILS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH MASSACHUSETTS AMENDMENTS AND THE STANDARD MUNICIPAL TRAFFIC CODE; THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING; THE LATEST EDITION OF AMERICAN STANDARD FOR NURSERY STOCK.

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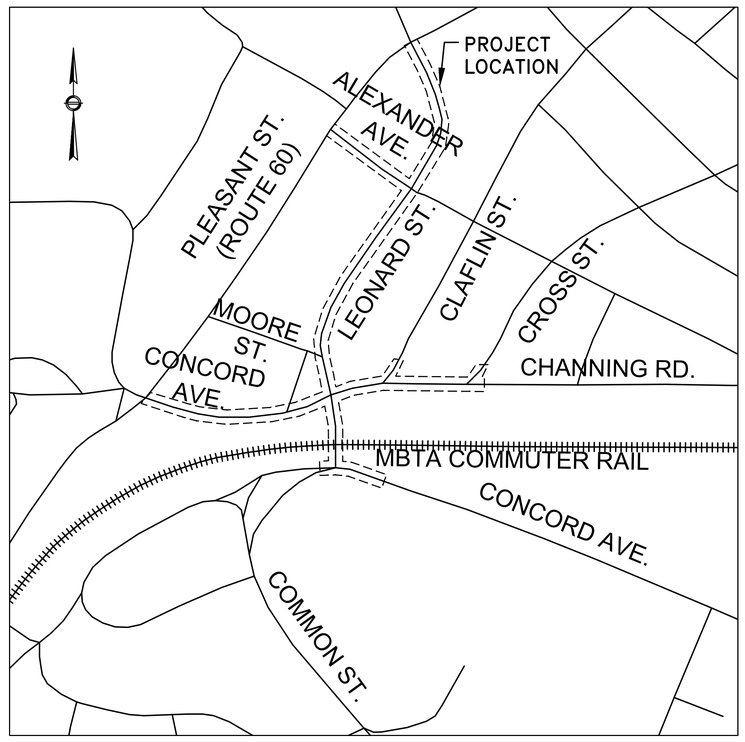

LOCATION MAP
1" = 250'

LENGTH OF PROJECT = 3,841 FEET = 0.73± MILES

COMMONWEALTH OF MASSACHUSETTS
PETER J. BRIERE
No. 22602
REGISTERED PROFESSIONAL ENGINEER
1/29/2015

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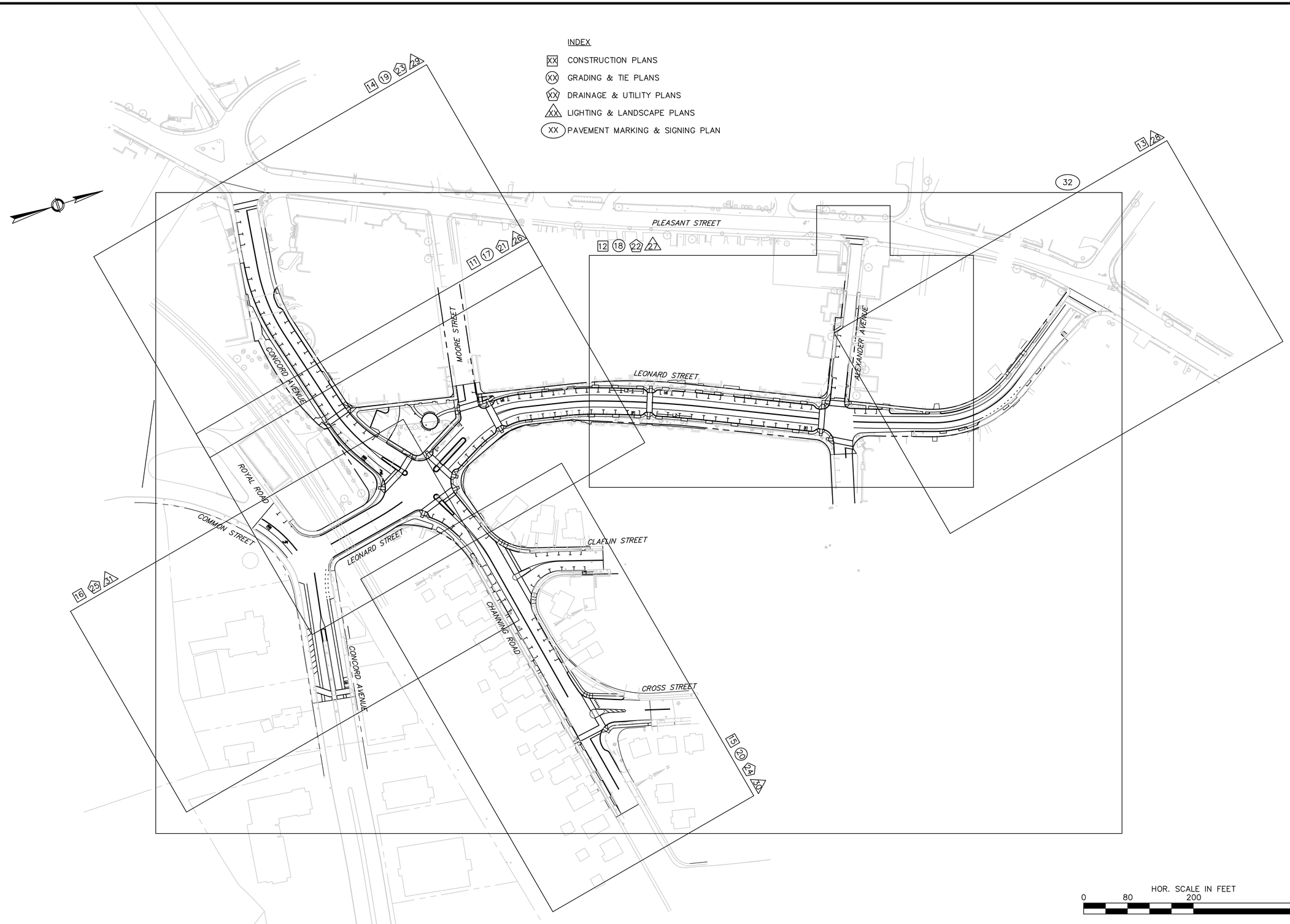
INDEX

- XX CONSTRUCTION PLANS
- XX GRADING & TIE PLANS
- XX DRAINAGE & UTILITY PLANS
- XX LIGHTING & LANDSCAPE PLANS
- XX PAVEMENT MARKING & SIGNING PLAN



HOR. SCALE IN FEET
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DESIGNED BY: K. LEWIS	DWG. NO:
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29692 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:

TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:

BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
KEY PLAN

DATE: JANUARY 23, 2015

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LEGEND

EXISTING	PROPOSED	DESCRIPTION
UTILITIES		
	CB	CATCH BASIN (OR GUTTER INLET)
	CBCI	CATCH BASIN WITH CURB INLET
D	12" R.C.P.	DRAIN PIPE
D	DMH	DRAINAGE MANHOLE
UGE	12" P.V.C. ELEC.	ELECTRIC DUCT
E	EMH	ELECTRIC MANHOLE
	G GG	GAS GATE
G	12" P.V.C. GAS	GAS MAIN
S	12" P.V.C. SEWER	SEWER MAIN
S	SMH	SEWER MANHOLE
D	8" SD	SUBDRAIN
T	12" P.V.C. TELE.	TELEPHONE DUCT
T	TMH	TELEPHONE MANHOLE
		UTILITY PLUG
WV	WG	WATER GATE
W	WMH	WATER MANHOLE
W	12" P.V.C. WATER	WATER MAIN
SURFACE DETAILS/TOPO		
12 N00°00'00"E 57.59	74+00 N57° 18' 41"E 300.00'	BASE/SURVEY LINE
(NAME)		CITY, TOWN OR COUNTY BOUNDARY
		CURB (OR BERM) – TYPE NOTED
		EDGE OF ROAD
		CHANGE IN PVM'T TYPE
		EASEMENT
	x x	FENCE (SIZE AND TYPE NOTED)
		HIGHWAY GUARD (TYPE NOTED)
		HIGHWAY/PROPERTY BOUND (TYPE NOTED)
		PROPERTY LINE
		STATE BOUNDARY
R.O.W	R.O.W	STATE HIGHWAY LAYOUT LINE
R.O.W	R.O.W	TOWN HIGHWAY LAYOUT LINE
		TREE (SIZE AND TYPE NOTED)
		WHEEL CHAIR RAMP
MISCELLANEOUS		
B-#	B-#	BORING
F	F	FIRE ALARM BOX
		HYDRANT
M	M	MAILBOX – COMMERCIAL
M	M	MAILBOX – RESIDENTIAL
P-#	P-#	PROBE
		STREET LIGHT
T-#	T-#	TEST PIT
		WOODEN POLE

EXISTING	PROPOSED	DESCRIPTION
TRAFFIC, PAVEMENT MARKINGS & SIGNING		
		CONDUIT
		CONTROL CABINET – GROUND MOUNTED
		CONTROL CABINET – POLE MOUNTED
ø1	ø1	CONTROLLER PHASE
	CW	CROSSWALK
		DIRECTION OF FLOW
EHH	EHH	ELECTRIC HANDHOLE
		EMERGENCY CONFIRMATION BEACON
		FLASHING BEACON (ALPHA–NUMERIC DESIGNATION NOTED)
		INTERCONNECT CABLE
		INDUCTIVE LOOP DETECTOR
		LIMIT OF VISIBILITY OF OPTICALLY PROGRAMMED SIGNAL HEAD
M	M	MAGNETIC DETECTOR
	30'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		OPTICAL EMERGENCY DETECTOR
OHE	OHE	OVERHEAD CABLE
		PAVEMENT ARROW AND LEGEND
		PEDESTRIAN PUSH BUTTON
		PEDESTRIAN SIGNAL HEAD (ALPHA–NUMERIC DESIGNATION NOTED)
PB		PULL BOX 12" X 12"
PB		PULL BOX 8" X 23", 12" X 24"
		RAISED PAVEMENT MARKER: TWO–WAY YELLOW
		RAISED PAVEMENT MARKER: ONE–WAY WHITE
		RAISED PAVEMENT MARKER: YELLOW/RED
		SIGN AND POST
R1-1	R1-1	SIGN LEGEND
oTS		SIGNAL POST AND BASE
		VEHICULAR SIGNAL HEAD (ALPHA–NUMERIC DESIGNATION NOTED)

ABBREVIATIONS

R	CIRCULAR RED
Y	CIRCULAR AMBER
G	CIRCULAR GREEN
FR	FLASHING CIRCULAR RED
FY	FLASHING CIRCULAR AMBER
	45° ARROW RED
	45° ARROW AMBER
	45° ARROW GREEN
	135° ARROW RED
	135° ARROW AMBER
	135° ARROW GREEN
	LEFT ARROW RED
	LEFT ARROW AMBER
	LEFT ARROW GREEN
	RIGHT ARROW RED
	RIGHT ARROW AMBER
	RIGHT ARROW GREEN
	VERTICAL ARROW GREEN
	WALK – LUNAR WHITE
F	FLASHING DON'T WALK – PORTLAND ORANGE
	DON'T WALK – PORTLAND ORANGE
ABAN.	ABANDON
ADJ.	ADJUST
B.O.	BY OTHERS
BOC	BEGINNING OF CURB
CC	BOTTOM OF CURB ELEVATION
CC	CENTER OF CURVE
C.I.T.	CHANGE IN TYPE
D.I.P.	DUCTILE IRON PIPE
EOC	END OF CURB
F.E.	FLARED END
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FND.	FOUNDATION
H.M.A.	HOT MIX ASPHALT
MA	MAST ARM
N.I.C.	NOT IN CONTRACT
P.B.S.	PAINTED BOTH SIDES
P.W.W.	PAVED WATERWAY
R.C.P.	REINFORCED CONCRETE PIPE
REM.	REMOVE
REMOD.	REMODEL
RET.	RETAIN
R&D	REMOVE & DISCARD
R&R	REMOVE & RESET
R&S	REMOVE & STACK
R&T	REMOVE & TRANSPORT
SGE	SLOPED GRANITE EDGING
TC	TOP OF CURB ELEVATION
VGC	VERTICAL GRANITE CURB
BWLL	BROKEN WHITE LANE LINE, 6" (10' MARK – 30' SKIP)
BYCL	BROKEN YELLOW CENTER LINE, 6" (10' MARK – 30' SKIP)
CW	CROSSWALK
DWLL	DOTTED WHITE LANE LINE, 6" (2' MARK – 4' SKIP)
DYCL	DOUBLE YELLOW CENTER LINE, 6"
SL	STOP LINE, 12", 4' BEHIND CW
SWCHL	SOLID WHITE CHANNELIZATION LINE, 12"
SWEL	SOLID WHITE EDGE LINE, 6"
SWLL	SOLID WHITE LANE LINE, 6"
SYCHL	SOLID YELLOW CHANNELIZATION LINE, 12"
SYEL	SOLID YELLOW EDGE LINE, 6"
WCL	WHITE CHEVRON LINE, 12" (SPACED 10' O.C. UNLESS OTHERWISE NOTED)
WTL	WHITE TRANSVERSE LINE, 12" (SPACED 10' O.C. UNLESS OTHERWISE NOTED)
YTL	YELLOW TRANSVERSE LINE, 12" (SPACED 10' O.C. UNLESS OTHERWISE NOTED)

GENERAL NOTES

1. ALL NEW GRANITE CURB SHALL BE TYPE VB UNLESS OTHERWISE NOTED.
2. ALL GRANITE CURB SHALL BE SET TO HAVE A 6" REVEAL ABOVE FINAL PAVEMENT GRADES UNLESS OTHERWISE NOTED ON THE PLANS.
3. ALL BASELINE TIES FOR CURB CORNERS AND RADII ARE TO THE P.C.'S OR P.T.'S, UNLESS OTHERWISE NOTED. WHERE PROPOSED CURB MEETS EXISTING CURB, BERM, ROADWAY, AND/OR DRIVEWAY PAVEMENT EDGES, MINOR FIELD ADJUSTMENTS TO EITHER THE DESIGNATED RADIUS OR THE DESIGNATED STATION OF THE P.C. OR P.T. FOR THE PROPOSED CURB OR BERM MAY BE REQUIRED. THESE ADJUSTMENTS SHALL BE MADE IN THE FIELD BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER/TOWN.
4. ALL EXISTING MUNICIPAL UTILITY CASTINGS THAT ARE TO REMAIN WITHIN AREAS TO BE REPAVED SHALL BE ADJUSTED ON TO LINE AND GRADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. ALL PRIVATE TELEPHONE, GAS, AND ELECTRICAL CASTINGS SHALL BE ADJUSTED BY OTHERS.
5. CONTRACTOR MUST MAINTAIN EXISTING CLEARANCES UNDER ALL BRIDGES.
6. THE LOCATIONS OF EXISTING SUBSURFACE UTILITIES SHOWN ON THE PLANS WERE COMPILED FROM AVAILABLE RECORD DRAWINGS AND ARE NOT WARRANTED TO BE CORRECT. THE LOCATIONS ARE APPROXIMATE ONLY AND IN SOME CASES MAY BE INCOMPLETE. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES REQUIRED AND VERIFY THE LOCATIONS OF ALL EXISTING SUBSURFACE UTILITIES PRIOR TO PERFORMING ANY WORK.
7. PRIOR TO THE INSTALLATION OF PROPOSED UTILITIES, THE CONTRACTOR SHALL EXCAVATE TEST PITS AT LOCATIONS OF UTILITY CROSSINGS TO VERIFY DEPTHS OF EXISTING PIPES, CONDUITS OR OTHER FACILITIES, AS DIRECTED BY ENGINEER/TOWN.
8. THE CONTRACTOR SHALL ENSURE THAT ALL ROADWAY RUNOFF SHALL BE DIRECTED TO CATCH BASINS.
9. THE CONTRACTOR SHALL VERIFY ALL OUTLET GRADES OF DRAINAGE STRUCTURES PRIOR TO CONSTRUCTING THE DRAINAGE IMPROVEMENTS.
10. THE CONTRACTOR SHALL SAWCUT TO THE FULL PAVEMENT DEPTH AT BOUNDARIES BETWEEN FULL DEPTH CONSTRUCTION OR RECLAMATION AND EXISTING PAVEMENT.
11. EXCEPT AS NOTED, ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
12. BASE MAPPING PREPARED BY THE BSC GROUP, INC. AND SUPPLEMENTED BY WESTON & SAMPSON.
13. THE EXISTING CONDITION BASE MAPPING FOR THE WEST LEG OF CONCORD AVENUE AND LEONARD STREET/CONCORD AVENUE FROM STATION 0+00 TO 13+00 WERE PREPARED USING ON THE GROUND SURVEY. THE EXISTING CONDITION BASE MAPPING FOR THE EAST LEG OF CONCORD AVENUE, LEONARD STREET BETWEEN STATION 13+50 TO 16±, CHANNING ROAD FROM STATION 11+20 TO ITS LIMIT, COMMON STREET, CLAFLIN STREET, CROSS STREET AND PLEASANT STREET WERE PREPARED USING RECORD PLANS.
14. THE CONTRACTOR SHALL BE AWARE THAT THE WORK IN THESE CONTRACT DOCUMENTS HAS BEEN DETAILED IN AN APPROXIMATE NATURE AND THAT THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT VARIOUS TYPES OF PROPOSED IMPROVEMENTS AS EXISTING FIELD CONDITIONS WARRANT.
15. ALL WHEELCHAIR RAMPS SHALL BE CONSTRUCTED TO COMPLY WITH THE LATEST MASSDOT STANDARDS.
16. ALL AREAS OUTSIDE OF THE LIMIT OF WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S OWN EXPENSE.
17. ALL EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM DAMAGE CAUSED BY CONTRACTORS OPERATIONS.
18. EXISTING ROADWAY DRAINAGE SHALL BE MAINTAINED.
19. PAVEMENT CONDITION INVESTIGATION & DESIGN RECOMMENDATIONS BY VANASSE HANGEN BRUSTLIN, INC.

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LEGEND AND GENERAL NOTES

DATE: JANUARY 23, 2015

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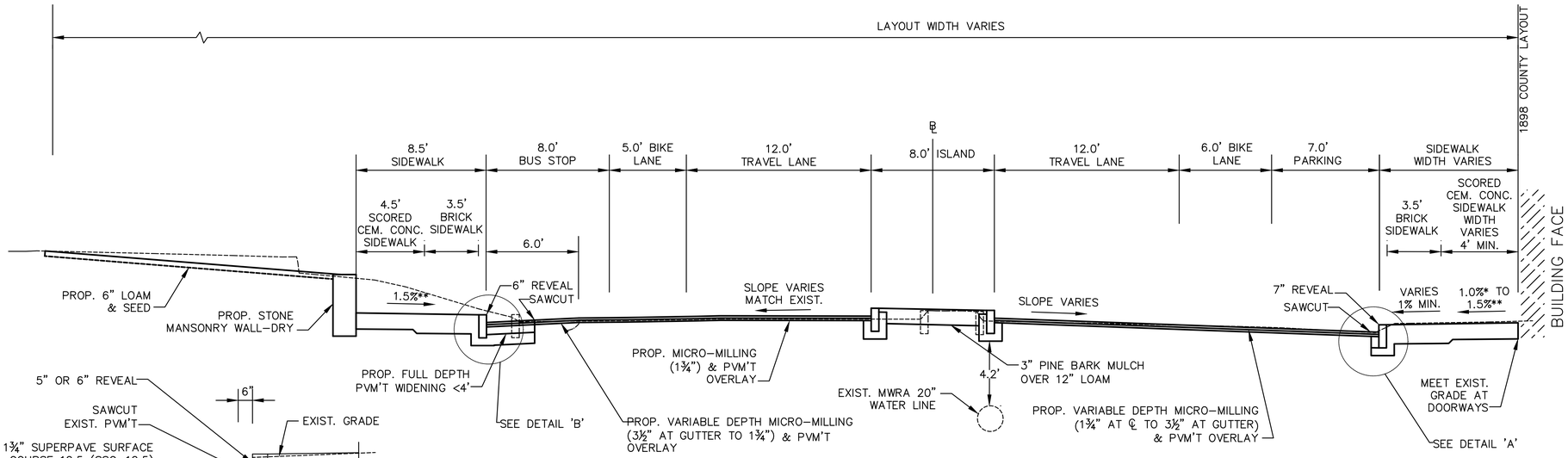
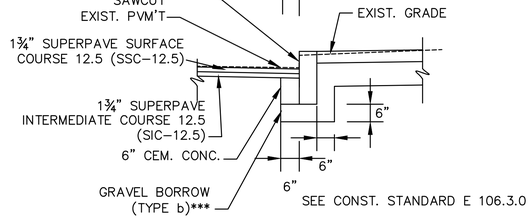


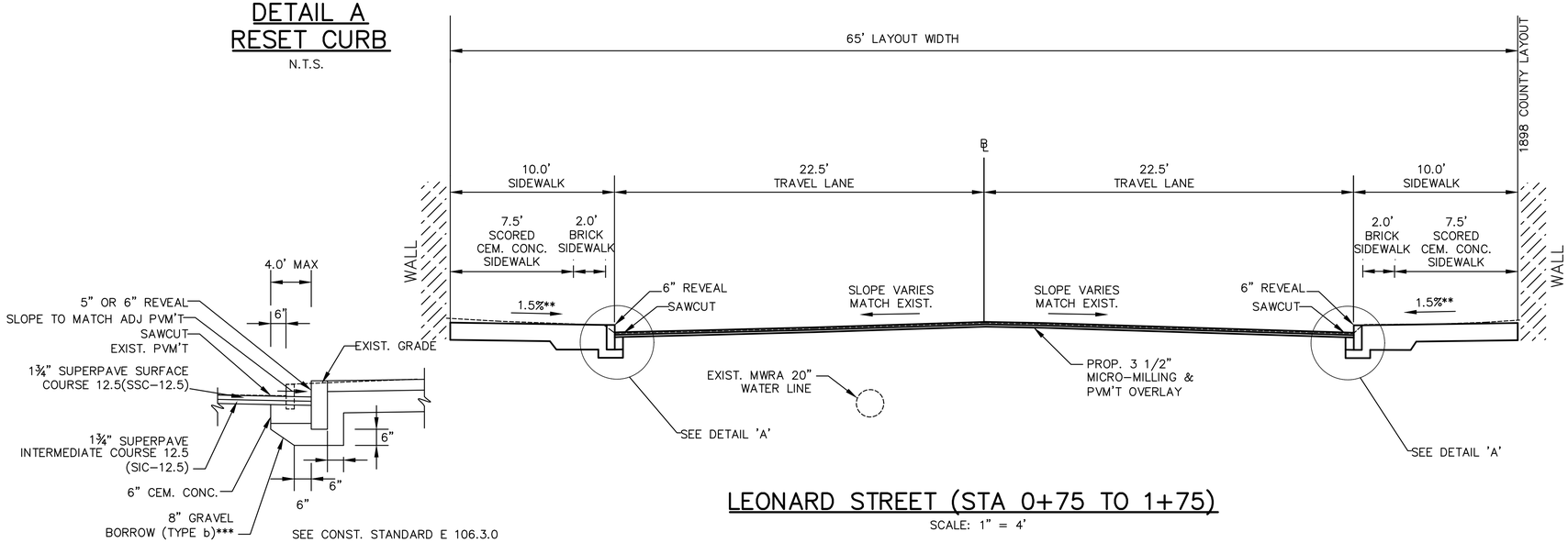
LEONARD STREET (STA 3+40 TO 4+00)

SCALE: 1" = 4'



DETAIL A
RESET CURB

N.T.S.



LEONARD STREET (STA 0+75 TO 1+75)

SCALE: 1" = 4'

DETAIL B
FULL DEPTH PVM'T WIDENING < 4'

N.T.S.

PAVEMENT NOTES

VARIABLE DEPTH PAVEMENT MILLING AND OVERLAY (LEONARD ST. & ALEXANDER AVE. (EAST))

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.07 GAL/SY TACK COAT OVER
VARIABLE DEPTH MICROMILLING (SEE PLANS FOR DEPTH)

PAVEMENT RECLAIM (LEONARD ST.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC-19.0)

FOUNDATION: RECLAIM EXISTING PAVEMENT TO A DEPTH OF 15"
RETAIN 8" (MIN.) OF RECLAIMED MATERIAL

PAVEMENT REMOVAL & REPLACEMENT (LEONARD ST.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC-19.0) OVER
4" DENSE GRADED CRUSHED STONE

FOUNDATION: 8" GRAVEL BORROW TYPE B***

FULL DEPTH PAVEMENT (LEONARD ST.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC-19.0)

FOUNDATION: 12" GRAVEL BORROW TYPE B***

PAVEMENT RECLAIM (CONCORD AVE. (WEST))

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC-19.0) OVER
4" DENSE GRADED CRUSHED STONE

FOUNDATION: RECLAIM EXISTING PAVEMENT TO A DEPTH OF 15"
RETAIN 6" (MIN.) OF RECLAIMED MATERIAL

FULL DEPTH PAVEMENT (CONCORD AVE.(WEST))

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC-19.0) OVER
4" DENSE GRADED CRUSHED STONE

FOUNDATION: 8" RECLAIMED MATERIAL****

PAVEMENT MILLING AND OVERLAY (CONCORD AVE. (EAST))

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
0.07 GAL/SY TACK COAT OVER
3½" MICROMILLING

PAVEMENT MILLING AND OVERLAY (COMMON ST., MOORE ST., CLAFLIN ST., CROSS ST., CONCORD AVE. (WEST END), LEONARD ST. (NORTH END), ALEXANDER AVE. (WEST END))

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
0.07 GAL/SY TACK COAT OVER
1¾" MICROMILLING

CONTINUED ON SHEET 5

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%
***.....NEW FOUNDATION TO BE PLACED ONLY WHERE EXISTING SUBBASE MATERIAL FAILS TO MEET REQUIREMENTS M1.03.0 TYPE b AND AS DIRECTED BY THE ENGINEER. GRAVEL BORROW, TYPE b SHALL BE USED IN PLACE OF RECLAIMED MATERIAL ONLY IF SURPLUS MATERIAL IS NOT AVAILABLE, AND THEN ONLY IF APPROVED BY THE ENGINEER/TOWN.

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28692 REGISTERED PROFESSIONAL ENGINEER 1/23/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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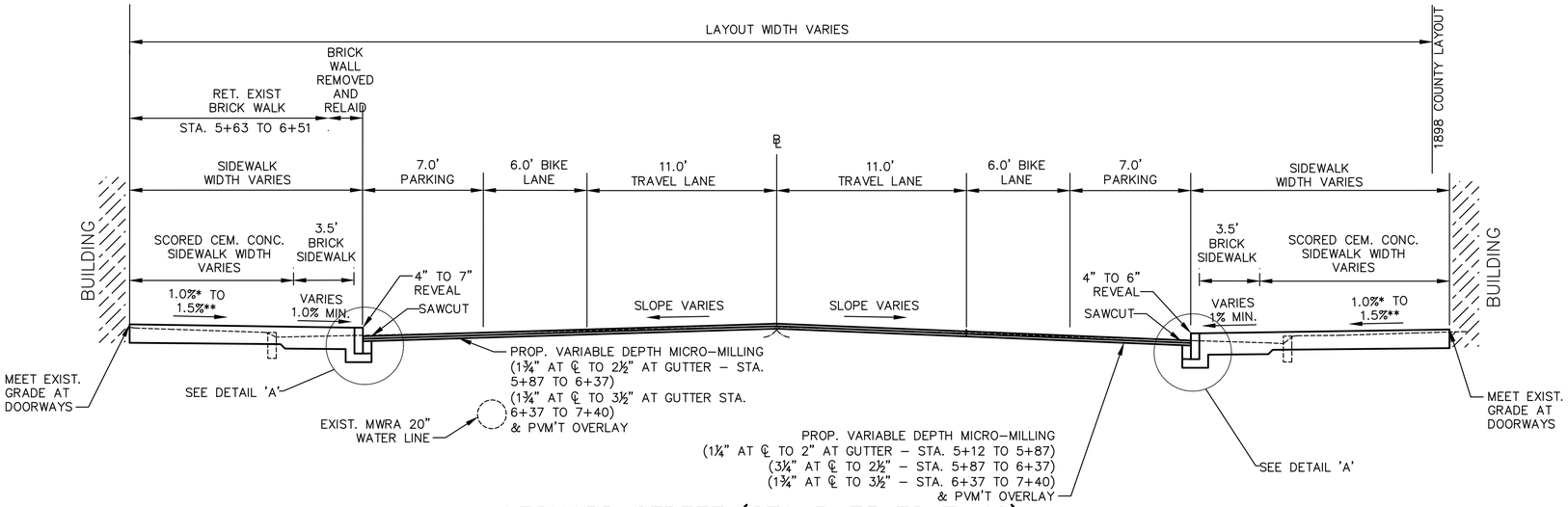
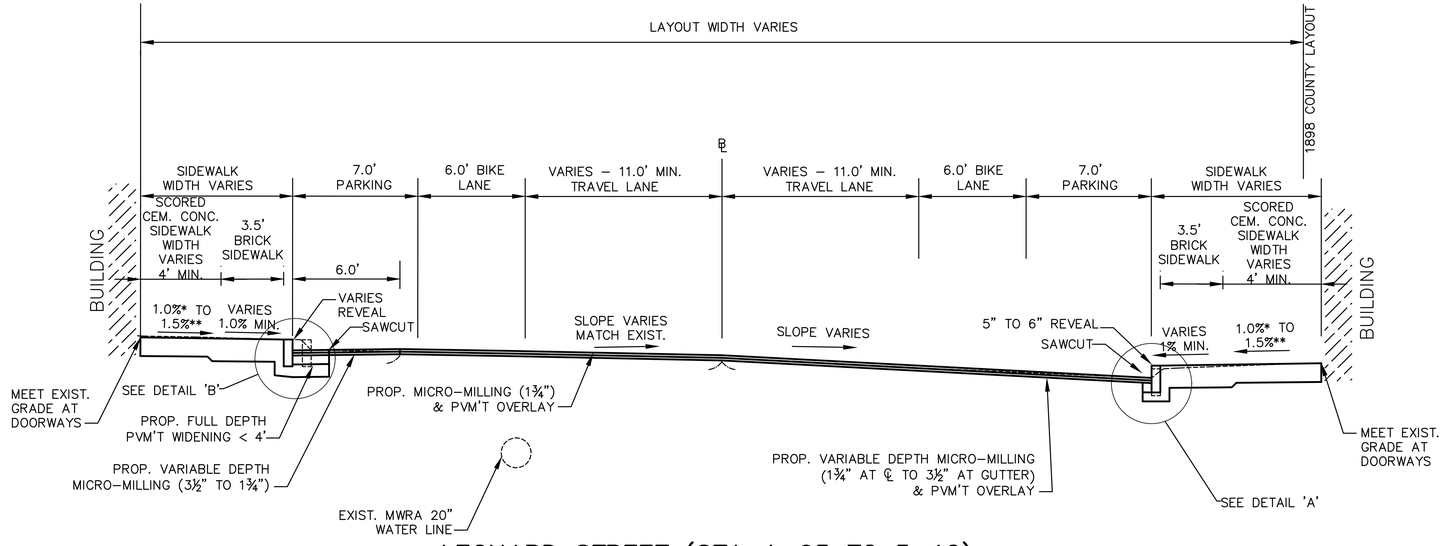


LEONARD STREET (STA 5+75 TO 7+40)

SCALE: 1" = 4'



LEONARD STREET (STA 4+65 TO 5+12)

SCALE: 1" = 4'

PAVEMENT NOTES

CONTINUED FROM SHEET 4

PAVEMENT REMOVAL & REPLACEMENT (ALEXANDER AVE.–WEST)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC–19.0)

FOUNDATION: 12" GRAVEL BORROW TYPE B***
(EXIST. SUB–GRADE MATERIAL OVER MWRA WATER MAIN)

VARIABLE DEPTH PAVEMENT MILLING AND OVERLAY (CHANNING RD.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC–12.5) OVER
0.07 GAL/SY TACK COAT OVER
1¾" MIN (AT ℄) TO 3" MAX (AT GUTTER) MICROMILLING

FULL DEPTH PAVEMENT (CHANNING RD.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
2½" SUPERPAVE BASE COURSE 19.0 (SBC–19.0) OVER

FOUNDATION: 12" GRAVEL BORROW TYPE B***

FULL DEPTH PAVEMENT WIDENING <4'

SURFACE: 1¾" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
1¾" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC–12.5) OVER
0.05 GAL/SY TACK COAT OVER
6" CEMENT CONCRETE

FOUNDATION: 8" GRAVEL BORROW TYPE B***

BRICK SIDEWALK

SURFACE: 2" THICK BRICK PAVERS (SWEEP JOINTS WITH POLYMERIC SAND), OVER
1" MASONRY SAND SETTING BED, OVER
4" DENSE GRADED CRUSHED STONE, OVER
GEOTECHNICAL FABRIC, OVER

FOUNDATION: 8" GRAVEL BORROW TYPE B***

BRICK SIDEWALK AT DRIVEWAY

SURFACE: 2" THICK BRICK PAVERS (SWEEP JOINTS WITH POLYMERIC SAND), OVER
NEOPRENE MODIFIED ASPHALT ADHESIVE, OVER
4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, ¾", 610 LB/CY, OVER

FOUNDATION: 8" GRAVEL BORROW TYPE B***

CEMENT CONCRETE SIDEWALK/WALK

SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, ¾", 610 LB/CY, OVER

FOUNDATION: 8" GRAVEL BORROW TYPE B***

CEMENT CONCRETE SIDEWALK AT DRIVEWAY/WHEELCHAIR RAMPS

SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, ¾", 610 LB/CY, OVER

FOUNDATION: 8" GRAVEL BORROW TYPE B***

CEMENT CONCRETE ISLAND

SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, ¾", 610 LB/CY, OVER

FOUNDATION: 8" GRAVEL BORROW TYPE B***

SCORED CEM. CONC. MEDIAN ISLAND (SD E105.2.0)

SURFACE: 8" CEMENT CONCRETE AIR ENTRAINED 5000 PSI, ¾", 705 LB/CY, OVER

FOUNDATION: 12" GRAVEL BORROW TYPE B***

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%
***.....NEW FOUNDATION TO BE PLACED ONLY WHERE EXISTING SUBBASE MATERIAL FAILS TO MEET REQUIREMENTS M1.03.0 TYPE b AND AS DIRECTED BY THE ENGINEER.
GRAVEL BORROW, TYPE B SHALL BE USED IN PLACE OF RECLAIMED MATERIAL ONLY IF SURPLUS MATERIAL IS NOT AVAILABLE, AND THEN ONLY IF APPROVED BY THE ENGINEER/TOWN.

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DRAWN BY: K. LEWIS
DESIGNED BY: K. LEWIS
CHECKED BY: P. BRIERE
FILE NAME: 2826300TY.dwg
DWG. NO:
JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28950 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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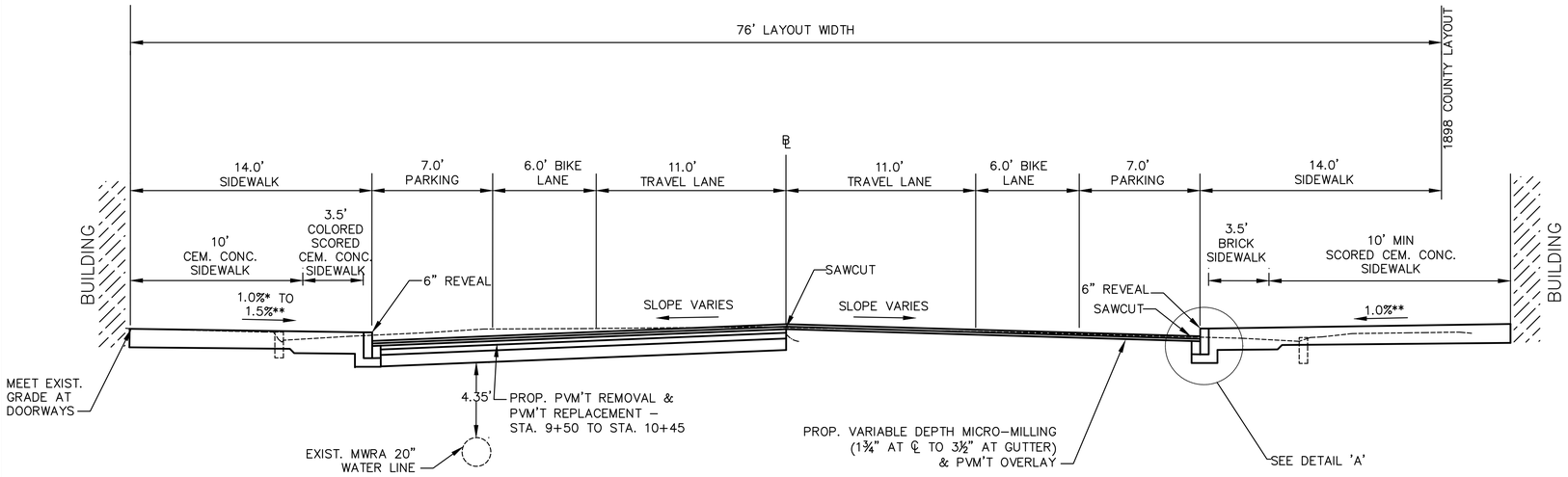
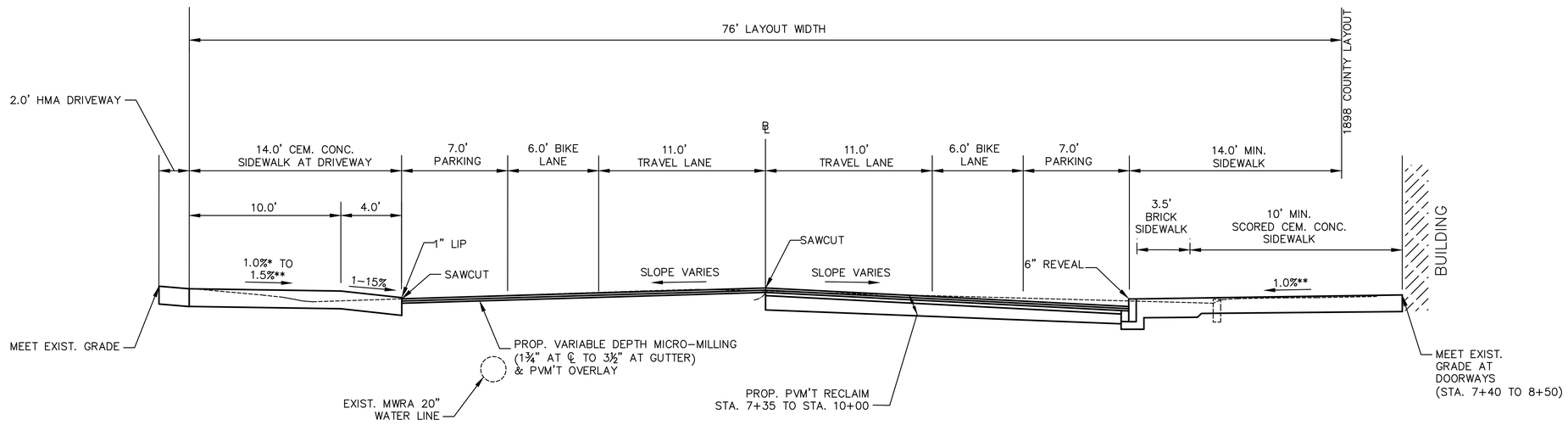


LEONARD STREET (STA 9+50 TO 10+45)

SCALE: 1" = 4'



LEONARD STREET (STA 7+40 TO 9+50)

SCALE: 1" = 4'

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%
***.....NEW FOUNDATION TO BE PLACED ONLY WHERE EXISTING SUBBASE MATERIAL FAILS TO MEET REQUIREMENTS M1.03.0 TYPE B AND AS DIRECTED BY THE ENGINEER. GRAVEL BORROW, TYPE B SHALL BE USED IN PLACE OF RECLAIMED MATERIAL ONLY IF SURPLUS MATERIAL IS NOT AVAILABLE, AND THEN ONLY IF APPROVED BY THE ENGINEER/TOWN.

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29852 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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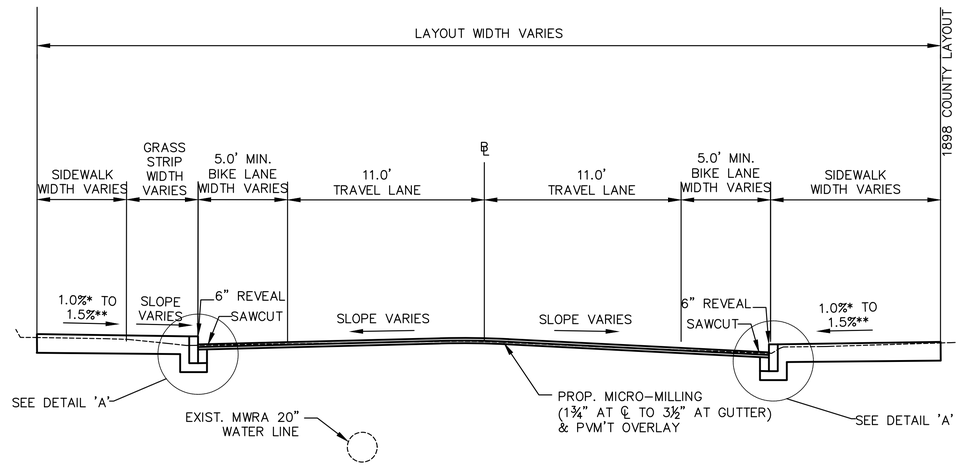
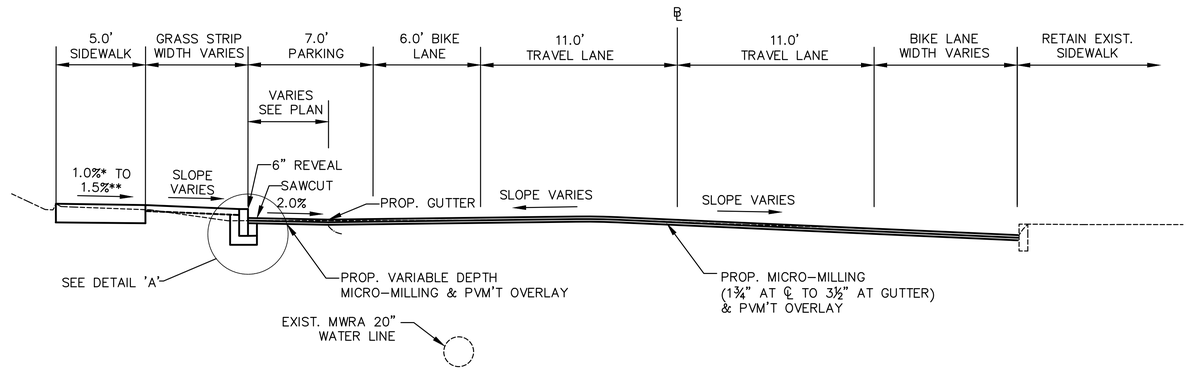


LEONARD STREET (STA 12+40 TO 15+62)

SCALE: 1" = 4'



LEONARD STREET (STA 11+25 TO 12+00)

SCALE: 1" = 4'

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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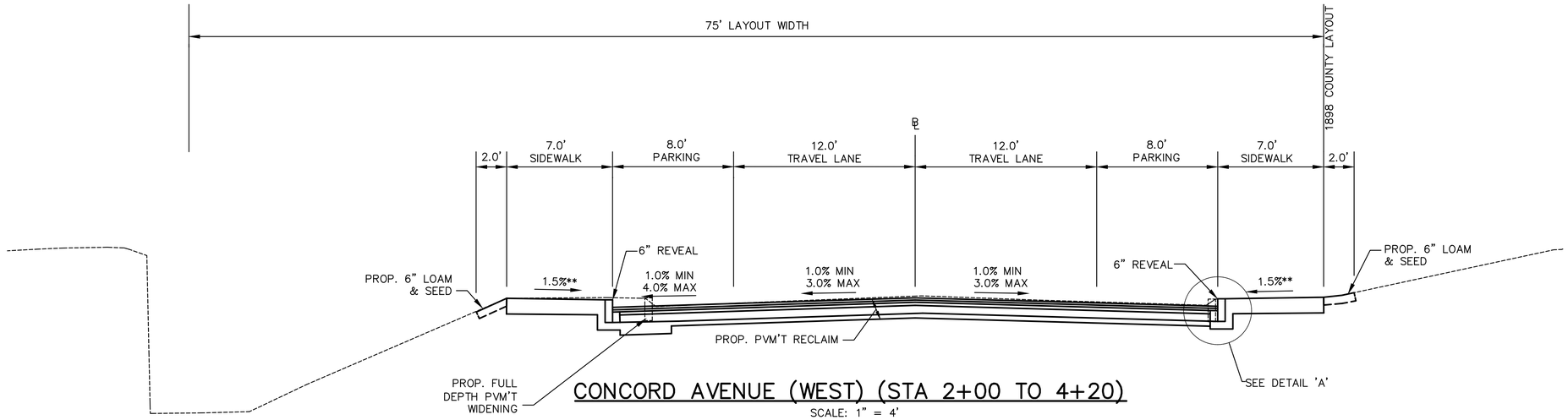
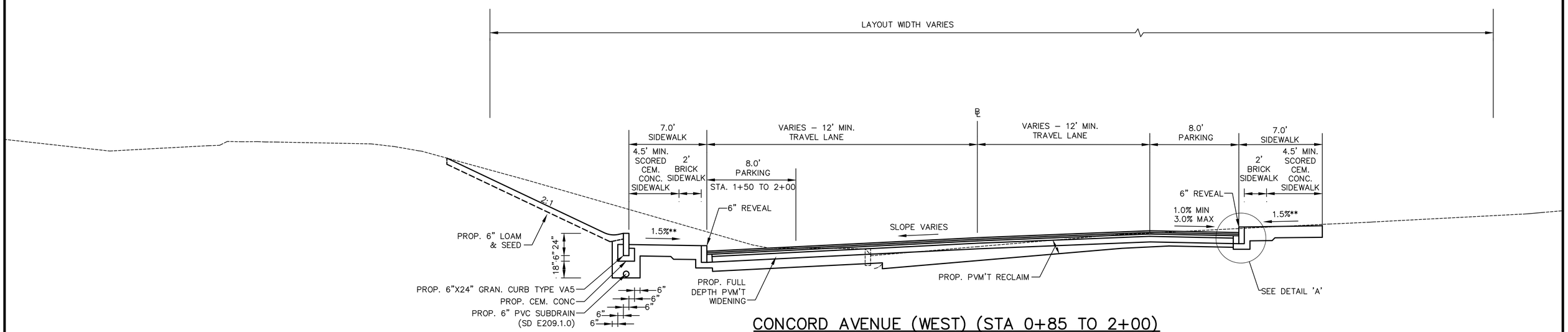


CONCORD AVENUE (WEST) (STA 2+00 TO 4+20)

SCALE: 1" = 4'



CONCORD AVENUE (WEST) (STA 0+85 TO 2+00)

SCALE: 1" = 4'

**.....CONSTRUCTION TOLERANCE ±0.5%

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:

TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:

BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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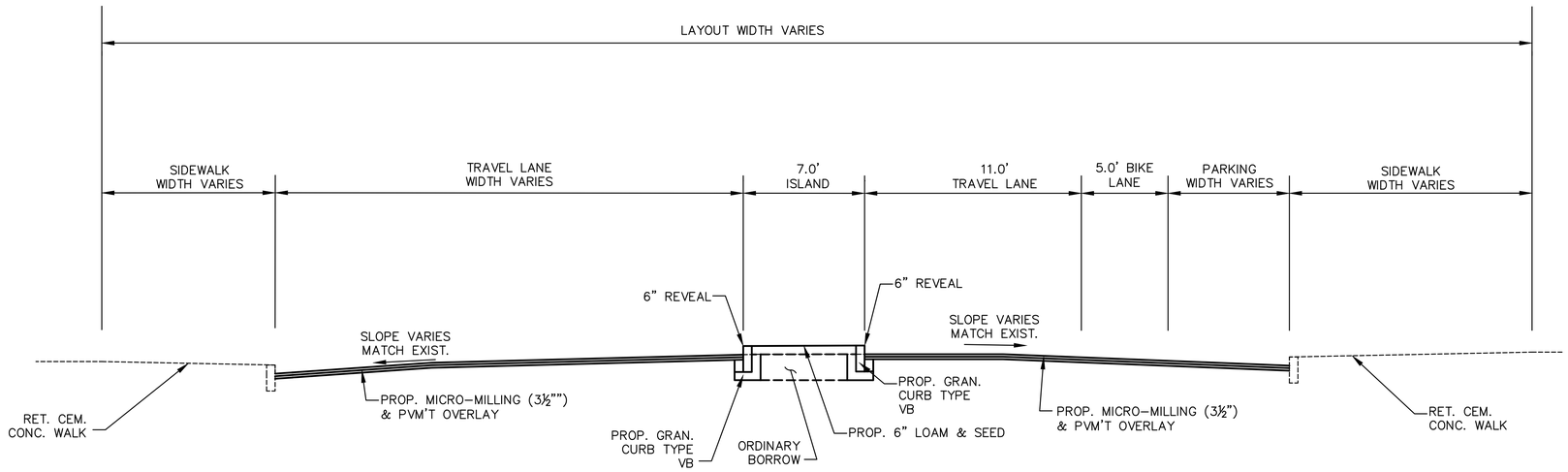
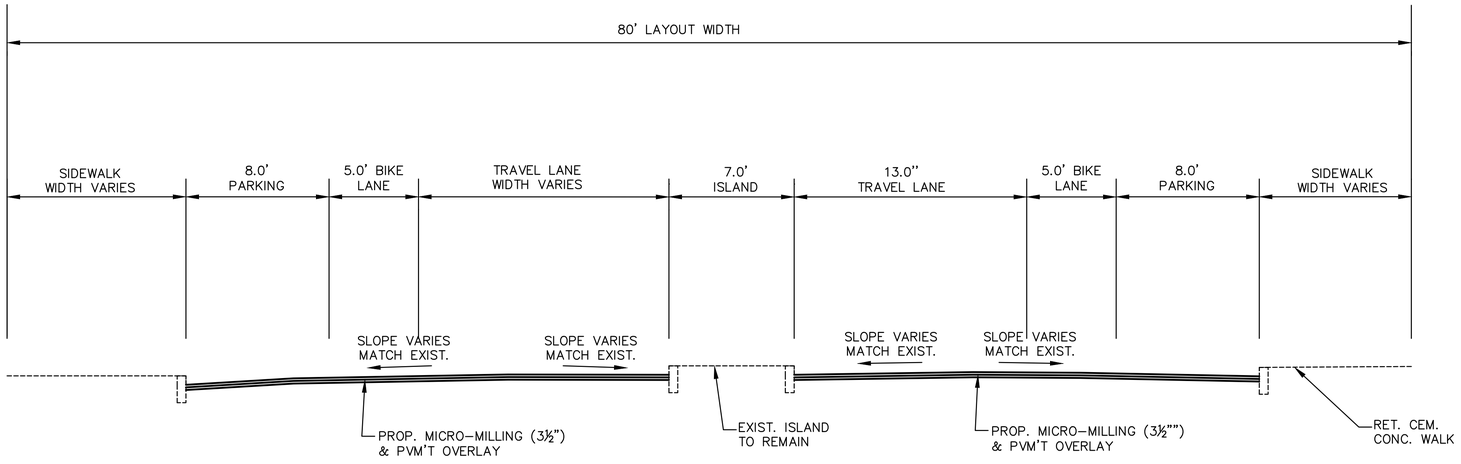


CONCORD AVENUE (EAST)

SCALE: 1" = 4'



CONCORD AVENUE (EAST)

SCALE: 1" = 4'

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: K. LEWIS	FILE NAME: 2826300TY.dwg
DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER E. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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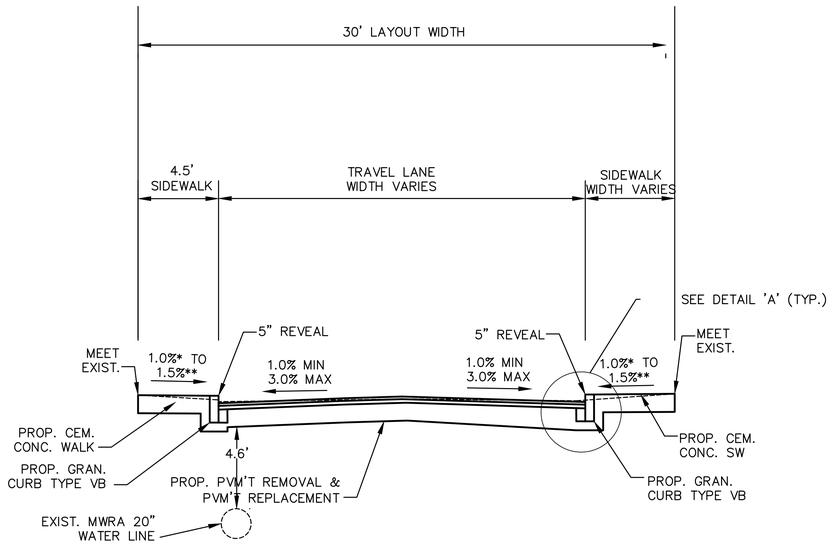
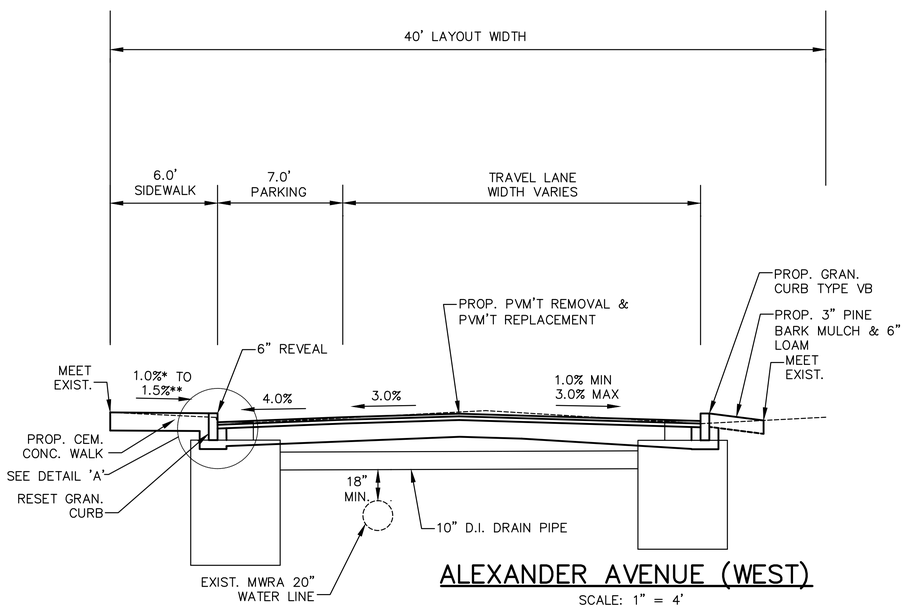


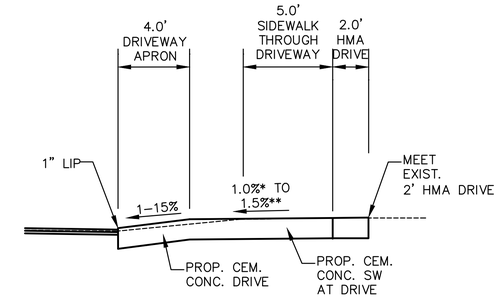
ALEXANDER AVENUE (WEST)

SCALE: 1" = 4'

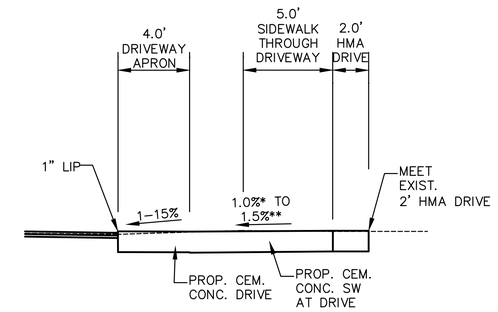


ALEXANDER AVENUE (WEST)

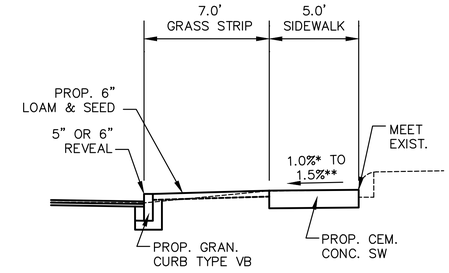
SCALE: 1" = 4'



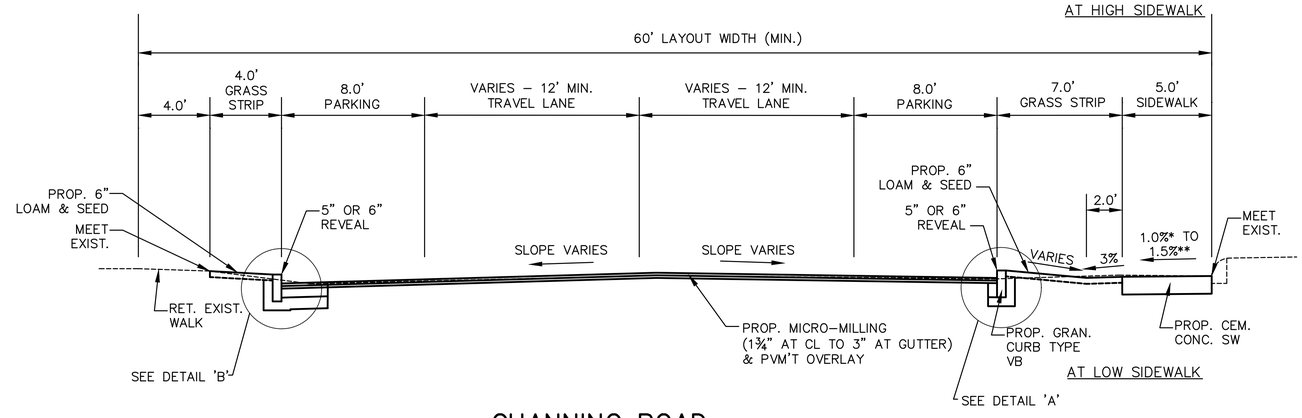
AT HIGH DRIVEWAY



AT LOW DRIVEWAY



AT HIGH SIDEWALK



AT LOW SIDEWALK

CHANNING ROAD

SCALE: 1" = 4'

*.....1.5% PREFERRED
**.....CONSTRUCTION TOLERANCE ±0.5%

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28692 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TYPICAL SECTIONS

DATE: JANUARY 23, 2015

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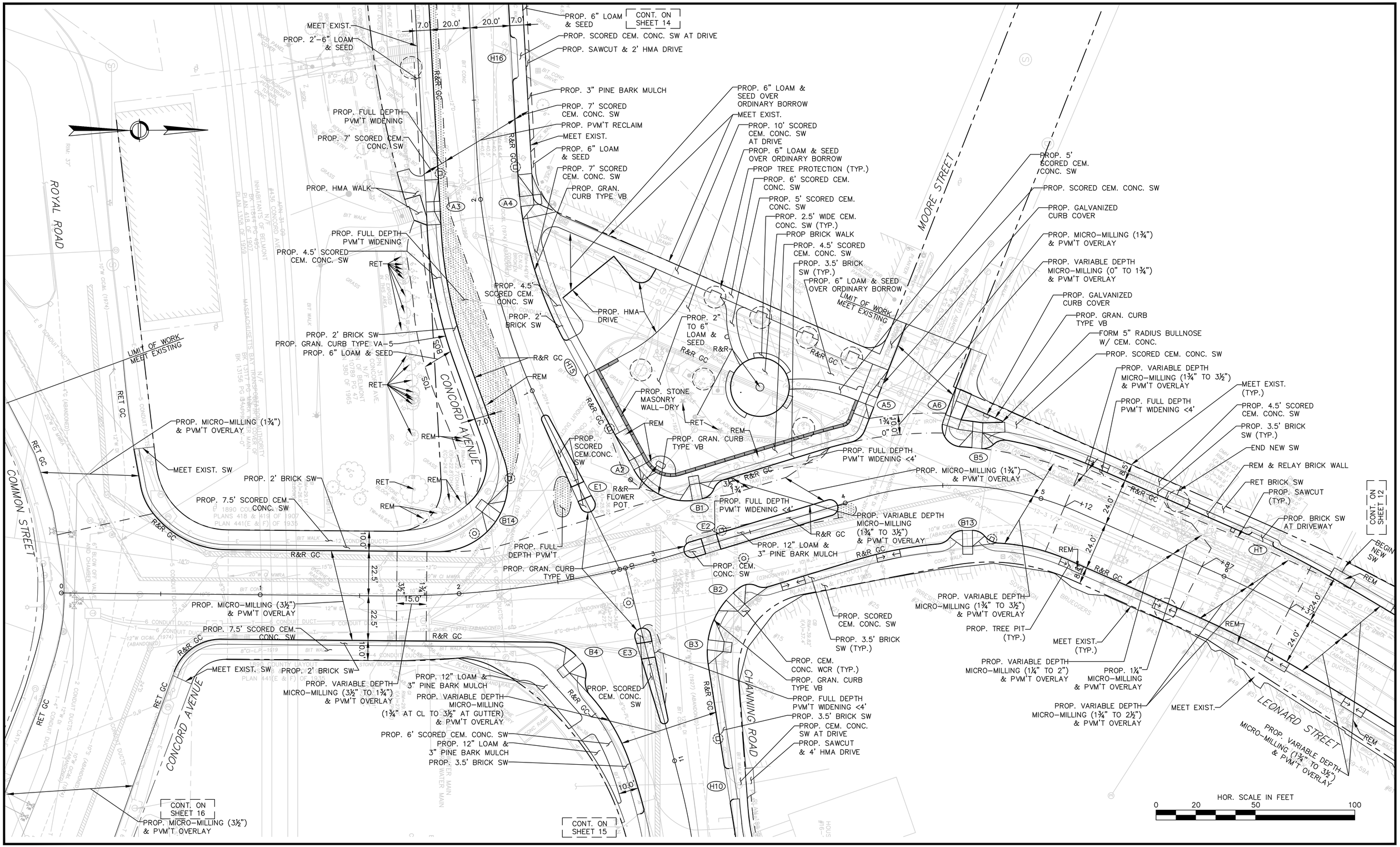

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DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22853 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:

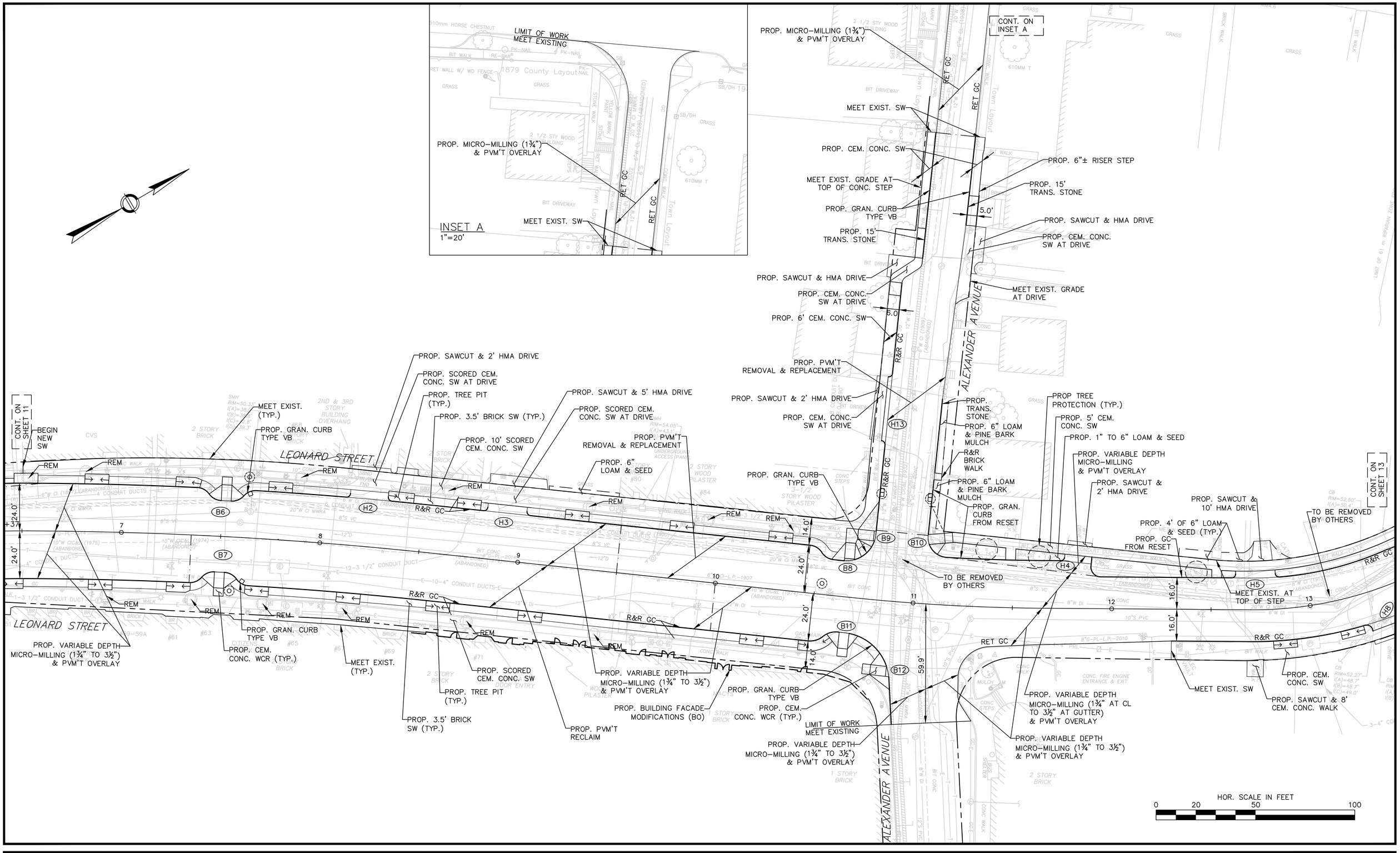
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:

BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

26300\Transportation_Drawings\Progress\2826300 GP.dwg, 1/29/2015 11:43:14 AM, DWG To PDF.pc3



REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: K. LEWIS	FILE NAME: 2826300 GP.dwg
DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28952 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:

TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:

BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

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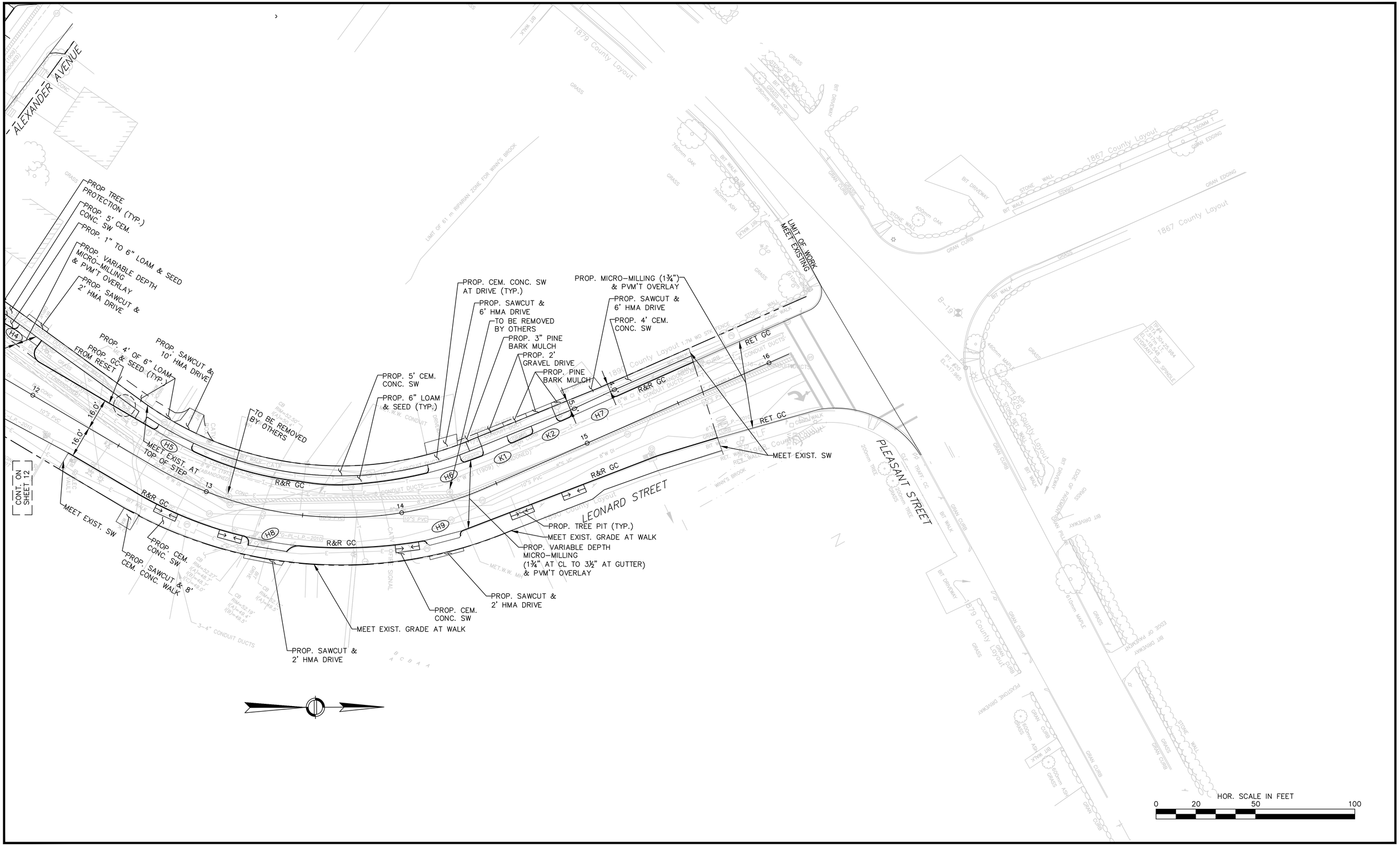

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: K. LEWIS	FILE NAME: 2826300 GP.dwg
DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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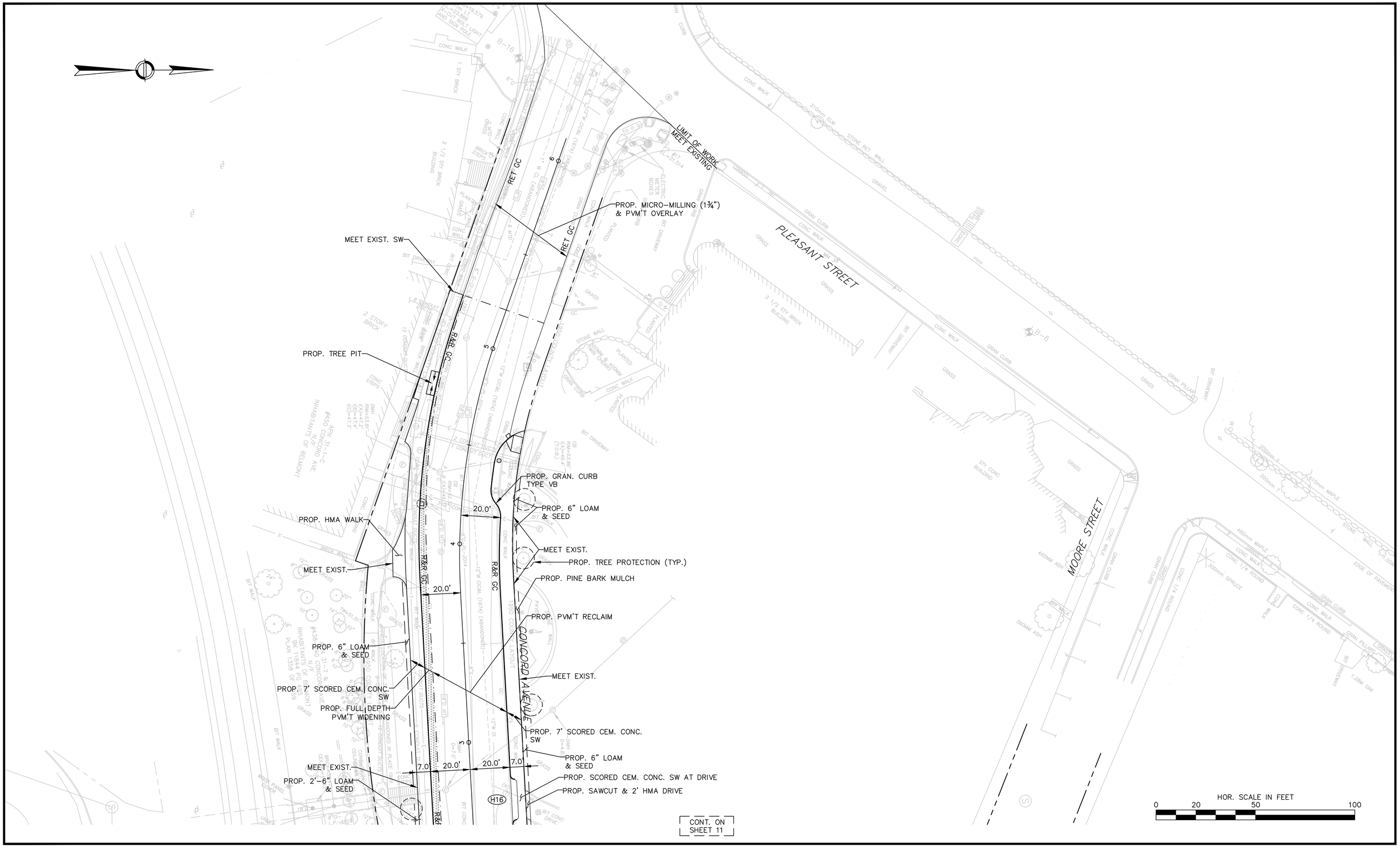
COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28952 REGISTERED PROFESSIONAL ENGINEER 1/23/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

26300\Transportation_Drawings\Progress\2826300 GP.dwg, 1/29/2015 11:43:29 AM, DWG To PDF.pc3



REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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CHECKED BY: P. BRIERE	JOB NO: 28263.00

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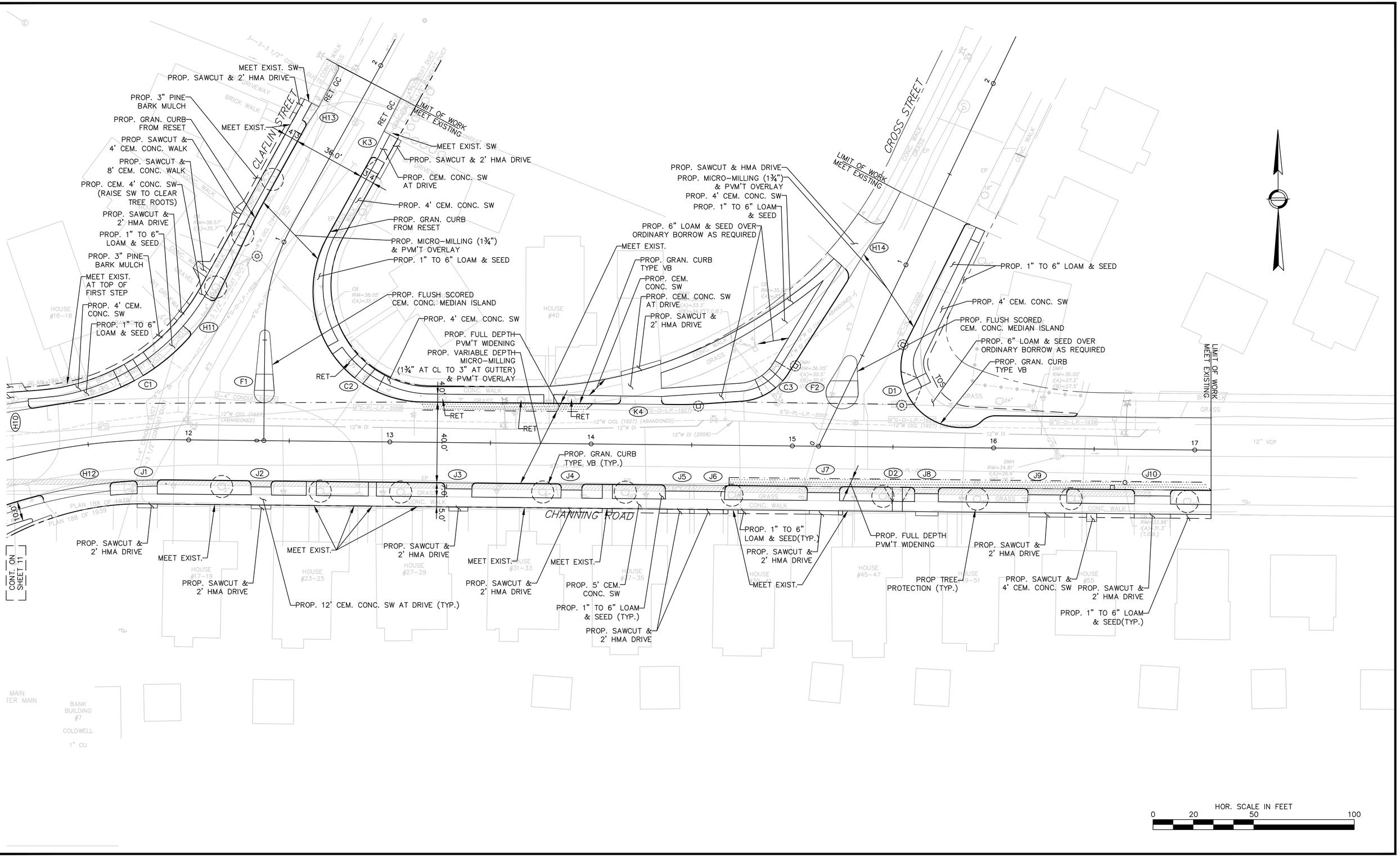
COMMONWEALTH OF MASSACHUSETTS
PETER J. BRIERE
No. 29692
REGISTERED PROFESSIONAL ENGINEER
1/23/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

26300\Transportation_Drawings\Progress\2826300 GP.dwg, 1/29/2015 11:43:34 AM, DWG To PDF.pc3



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CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

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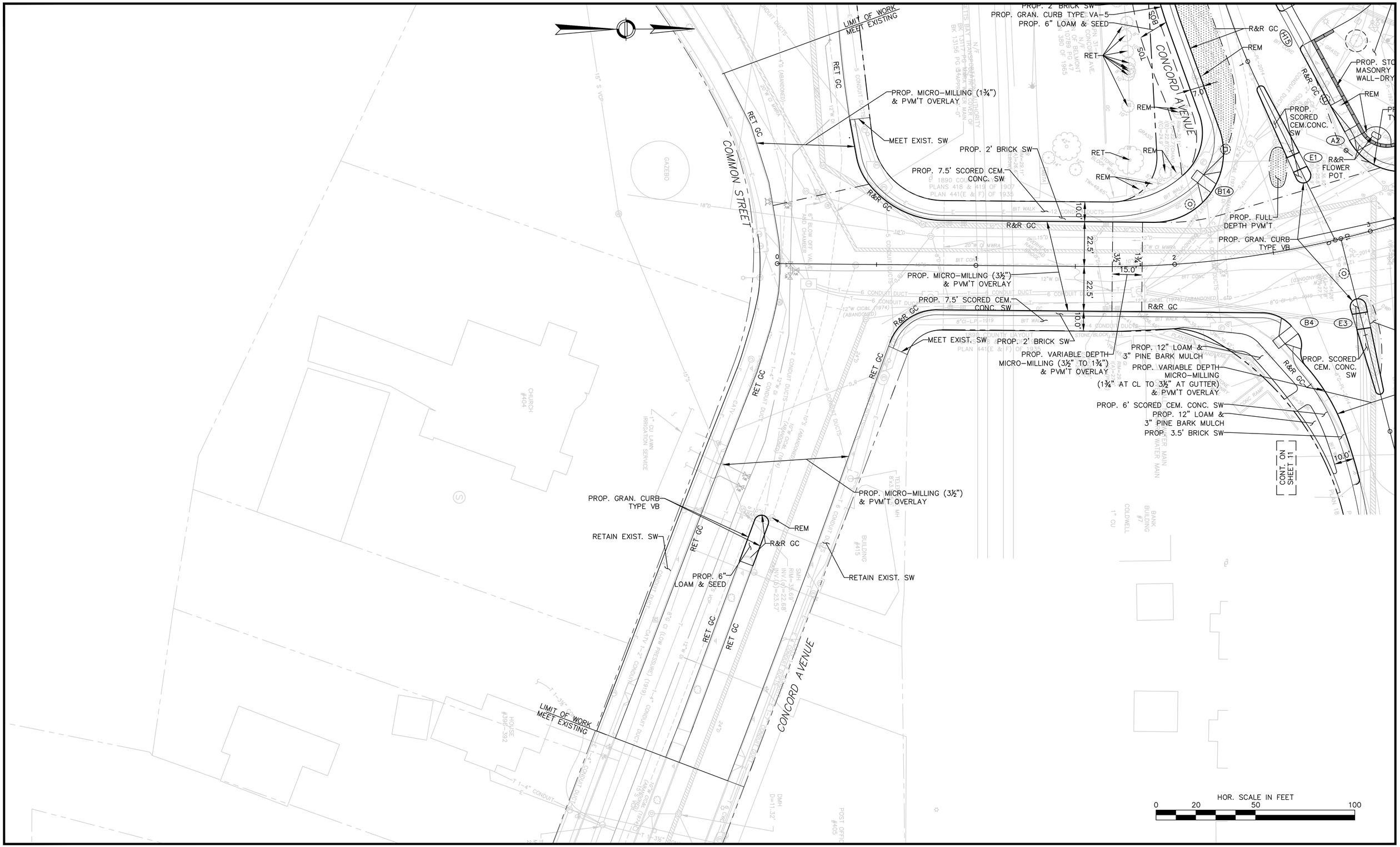

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: K. LEWIS	FILE NAME: 2826300 GP.dwg
DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22855 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION PLAN

DATE: JANUARY 23, 2015

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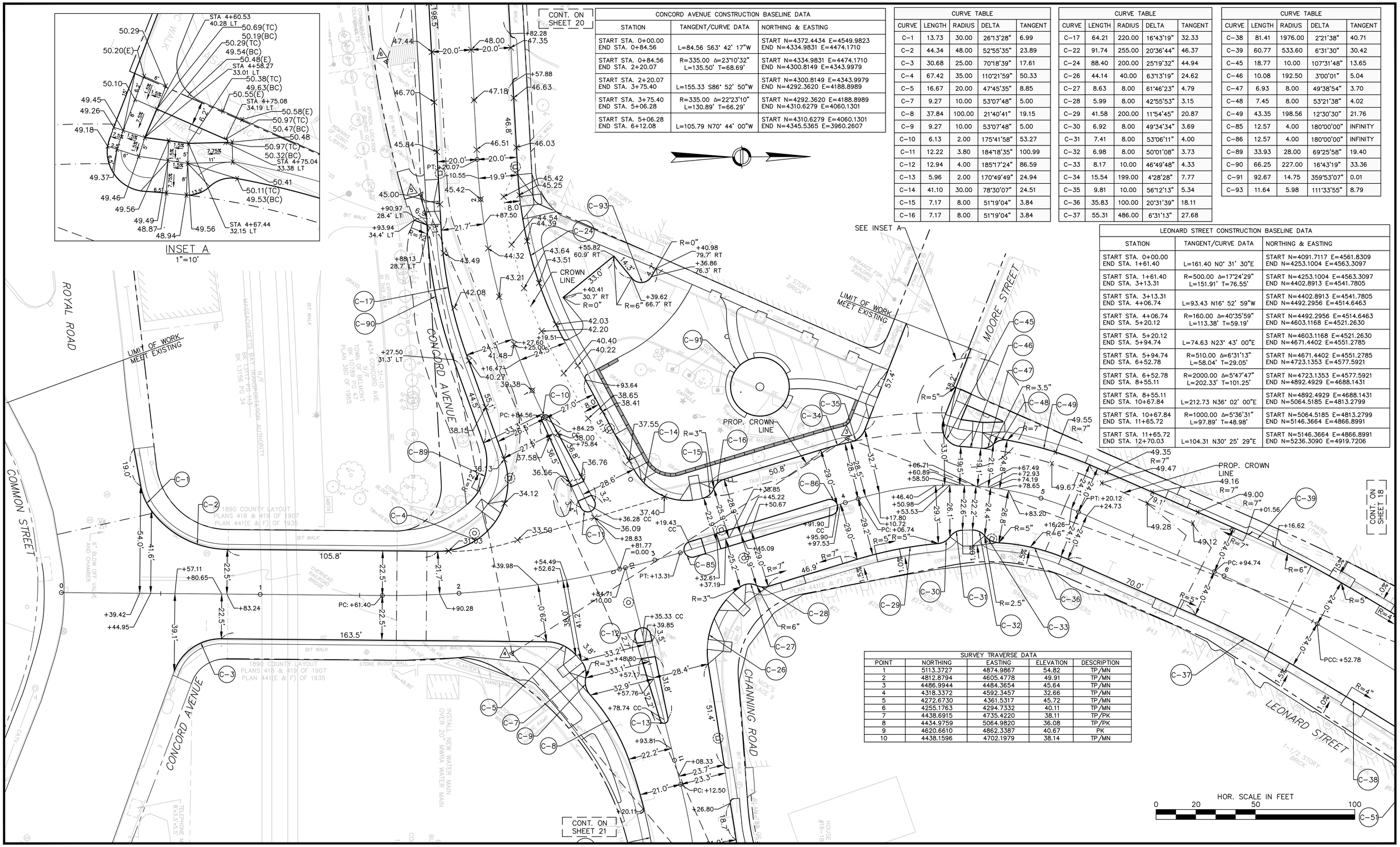

CONCORD AVENUE CONSTRUCTION BASELINE DATA		
STATION	TANGENT/CURVE DATA	NORTHING & EASTING
START STA. 0+00.00 END STA. 0+84.56	L=84.56 S63° 42' 17"W	START N=4372.4434 E=4549.9823 END N=4334.9831 E=4474.1710
START STA. 0+84.56 END STA. 2+20.07	R=335.00 Δ=23°10'32" L=135.50' T=68.69'	START N=4334.9831 E=4474.1710 END N=4300.8149 E=4343.9979
START STA. 2+20.07 END STA. 3+75.40	L=155.33 S86° 52' 50"W	START N=4300.8149 E=4343.9979 END N=4292.3620 E=4188.8989
START STA. 3+75.40 END STA. 5+06.28	R=335.00 Δ=22°23'10" L=130.89' T=66.29'	START N=4292.3620 E=4188.8989 END N=4310.6279 E=4060.1301
START STA. 5+06.28 END STA. 6+12.08	L=105.79 N70° 44' 00"W	START N=4310.6279 E=4060.1301 END N=4345.5365 E=3960.2607

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-1	13.73	30.00	26°13'28"	6.99
C-2	44.34	48.00	52°55'35"	23.89
C-3	30.68	25.00	70°18'39"	17.61
C-4	67.42	35.00	110°21'59"	50.33
C-5	16.67	20.00	47°45'35"	8.85
C-7	9.27	10.00	53°07'48"	5.00
C-8	37.84	100.00	21°40'41"	19.15
C-9	9.27	10.00	53°07'48"	5.00
C-10	6.13	2.00	175°41'58"	53.27
C-11	12.22	3.80	184°18'35"	100.99
C-12	12.94	4.00	185°17'24"	86.59
C-13	5.96	2.00	170°49'49"	24.94
C-14	41.10	30.00	78°30'07"	24.51
C-15	7.17	8.00	51°19'04"	3.84
C-16	7.17	8.00	51°19'04"	3.84

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-17	64.21	220.00	16°43'19"	32.33
C-22	91.74	255.00	20°36'44"	46.37
C-24	88.40	200.00	25°19'32"	44.94
C-26	44.14	40.00	63°13'19"	24.62
C-27	8.63	8.00	61°46'23"	4.79
C-28	5.99	8.00	42°55'53"	3.15
C-29	41.58	200.00	11°54'45"	20.87
C-30	6.92	8.00	49°34'34"	3.69
C-31	7.41	8.00	53°06'11"	4.00
C-32	6.98	8.00	50°01'08"	3.73
C-33	8.17	10.00	46°49'48"	4.33
C-34	15.54	199.00	4°28'28"	7.77
C-35	9.81	10.00	56°12'13"	5.34
C-36	35.83	100.00	20°31'39"	18.11
C-37	55.31	486.00	6°31'13"	27.68

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-38	81.41	1976.00	2°21'38"	40.71
C-39	60.77	533.60	6°31'30"	30.42
C-45	18.77	10.00	107°31'48"	13.65
C-46	10.08	192.50	3°00'01"	5.04
C-47	6.93	8.00	49°38'54"	3.70
C-48	7.45	8.00	53°21'38"	4.02
C-49	43.35	198.56	12°30'30"	21.76
C-85	12.57	4.00	180°00'00"	INFINITY
C-86	12.57	4.00	180°00'00"	INFINITY
C-89	33.93	28.00	69°25'58"	19.40
C-90	66.25	227.00	16°43'19"	33.36
C-91	92.67	14.75	359°53'07"	0.01
C-93	11.64	5.98	111°33'55"	8.79

LEONARD STREET CONSTRUCTION BASELINE DATA		
STATION	TANGENT/CURVE DATA	NORTHING & EASTING
START STA. 0+00.00 END STA. 1+61.40	L=161.40 N0° 31' 30"E	START N=4091.7117 E=4561.8309 END N=4253.1004 E=4563.3097
START STA. 1+61.40 END STA. 3+13.31	R=500.00 Δ=17°24'29" L=151.91' T=76.55'	START N=4253.1004 E=4563.3097 END N=4402.8913 E=4541.7805
START STA. 3+13.31 END STA. 4+06.74	L=93.43 N16° 52' 59"W	START N=4402.8913 E=4541.7805 END N=4492.2956 E=4514.6463
START STA. 4+06.74 END STA. 5+20.12	R=160.00 Δ=40°35'59" L=113.38' T=59.19'	START N=4492.2956 E=4514.6463 END N=4603.1168 E=4521.2630
START STA. 5+20.12 END STA. 5+94.74	L=74.63 N23° 43' 00"E	START N=4603.1168 E=4521.2630 END N=4671.4402 E=4551.2785
START STA. 5+94.74 END STA. 6+52.78	R=510.00 Δ=6°31'13" L=58.04' T=29.05'	START N=4671.4402 E=4551.2785 END N=4723.1353 E=4577.5921
START STA. 6+52.78 END STA. 8+55.11	R=2000.00 Δ=5°47'47" L=202.33' T=101.25'	START N=4723.1353 E=4577.5921 END N=4892.4929 E=4688.1431
START STA. 8+55.11 END STA. 10+67.84	L=212.73 N36° 02' 00"E	START N=4892.4929 E=4688.1431 END N=5064.5185 E=4813.2799
START STA. 10+67.84 END STA. 11+65.72	R=1000.00 Δ=5°36'31" L=97.89' T=48.98'	START N=5064.5185 E=4813.2799 END N=5146.3664 E=4866.8991
START STA. 11+65.72 END STA. 12+70.03	L=104.31 N30° 25' 29"E	START N=5146.3664 E=4866.8991 END N=5236.3090 E=4919.7206

SURVEY TRAVERSE DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	5113.3727	4874.9867	54.82	TP/MN
2	4812.8794	4605.4778	49.91	TP/MN
3	4486.9944	4484.3654	45.64	TP/MN
4	4318.3372	4592.3457	32.66	TP/MN
5	4272.6730	4361.5317	45.72	TP/MN
6	4255.1763	4294.7332	40.11	TP/MN
7	4438.6915	4735.4220	38.11	TP/PK
8	4434.9759	5064.9820	36.08	TP/PK
9	4620.6610	4862.3387	40.67	PK
10	4438.1596	4702.1979	38.14	TP/MN

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BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
GRADING AND TIE PLAN

DATE: JANUARY 23, 2015

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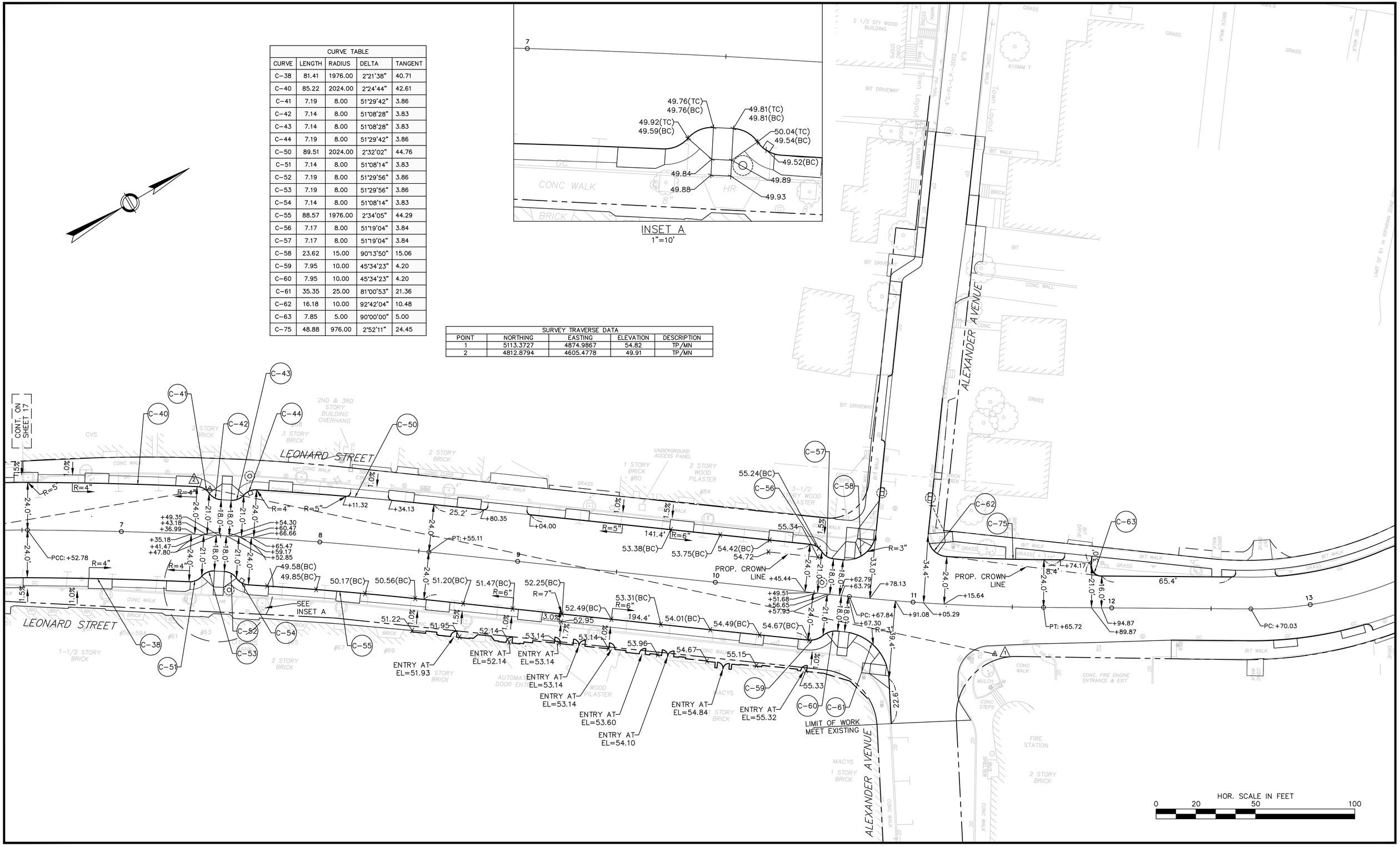
CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-38	81.41	1976.00	2°21'38"	40.71
C-40	85.22	2024.00	2°24'44"	42.61
C-41	7.19	8.00	51°29'42"	3.86
C-42	7.14	8.00	51°08'28"	3.83
C-43	7.14	8.00	51°08'28"	3.83
C-44	7.19	8.00	51°29'42"	3.86
C-50	89.51	2024.00	2°32'02"	44.76
C-51	7.14	8.00	51°08'14"	3.83
C-52	7.19	8.00	51°29'56"	3.86
C-53	7.19	8.00	51°29'56"	3.86
C-54	7.14	8.00	51°08'14"	3.83
C-55	88.57	1976.00	2°34'05"	44.29
C-56	7.17	8.00	51°19'04"	3.84
C-57	7.17	8.00	51°19'04"	3.84
C-58	23.62	15.00	90°13'50"	15.06
C-59	7.95	10.00	45°34'23"	4.20
C-60	7.95	10.00	45°34'23"	4.20
C-61	35.35	25.00	81°00'53"	21.36
C-62	16.18	10.00	92°42'04"	10.48
C-63	7.85	5.00	90°00'00"	5.00
C-75	48.88	976.00	2°52'11"	24.45

SURVEY TRAVERSE DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	5113.3727	4874.9867	54.82	TP/MN
2	4812.8794	4605.4778	49.91	TP/MN



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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29852 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
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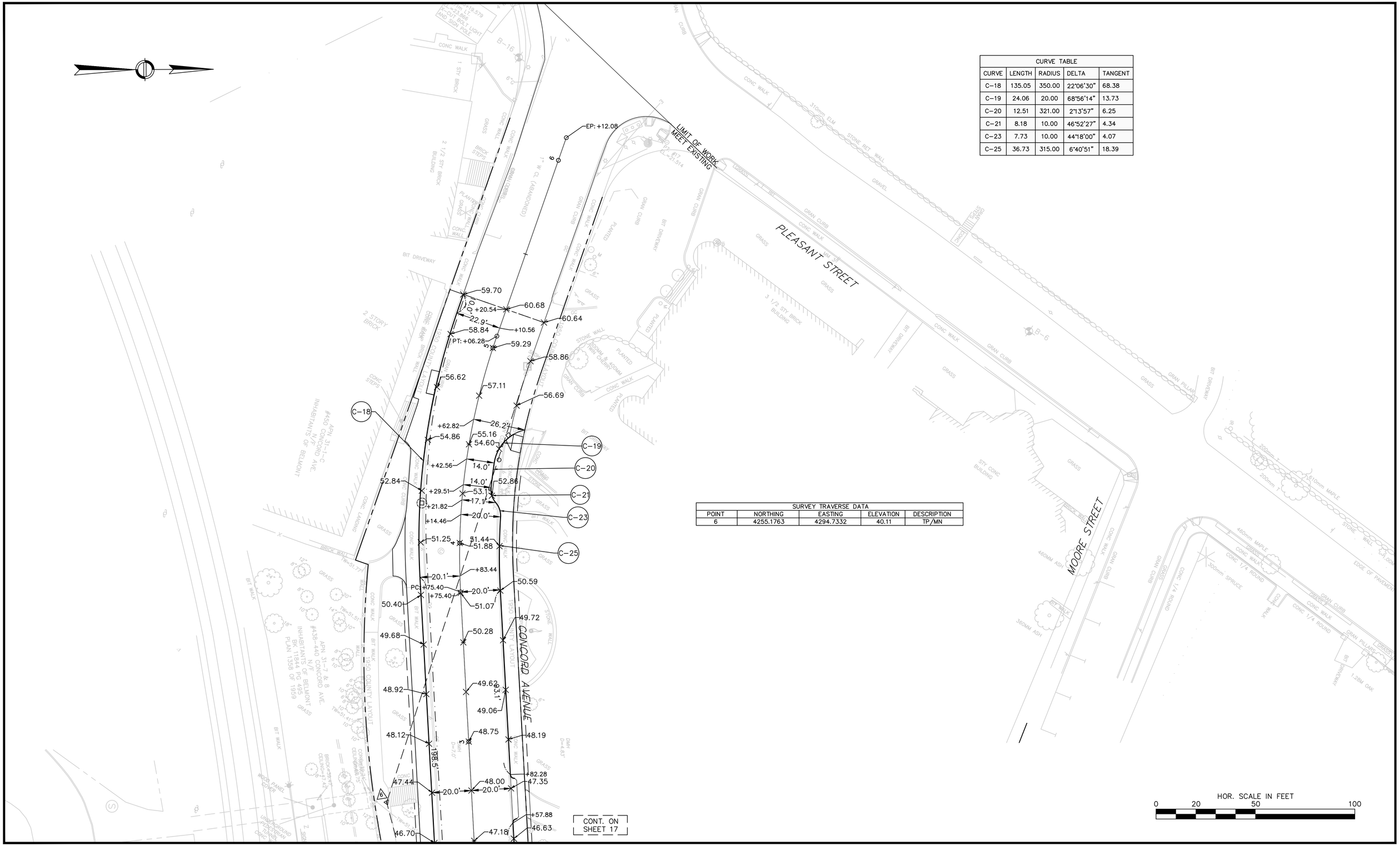
CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-18	135.05	350.00	22°06'30"	68.38
C-19	24.06	20.00	68°56'14"	13.73
C-20	12.51	321.00	2°13'57"	6.25
C-21	8.18	10.00	46°52'27"	4.34
C-23	7.73	10.00	44°18'00"	4.07
C-25	36.73	315.00	6°40'51"	18.39

SURVEY TRAVERSE DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
6	4255.1763	4294.7332	40.11	TP/MN



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BELMONT, MASSACHUSETTS

SHEET TITLE:
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BELMONT, MASSACHUSETTS
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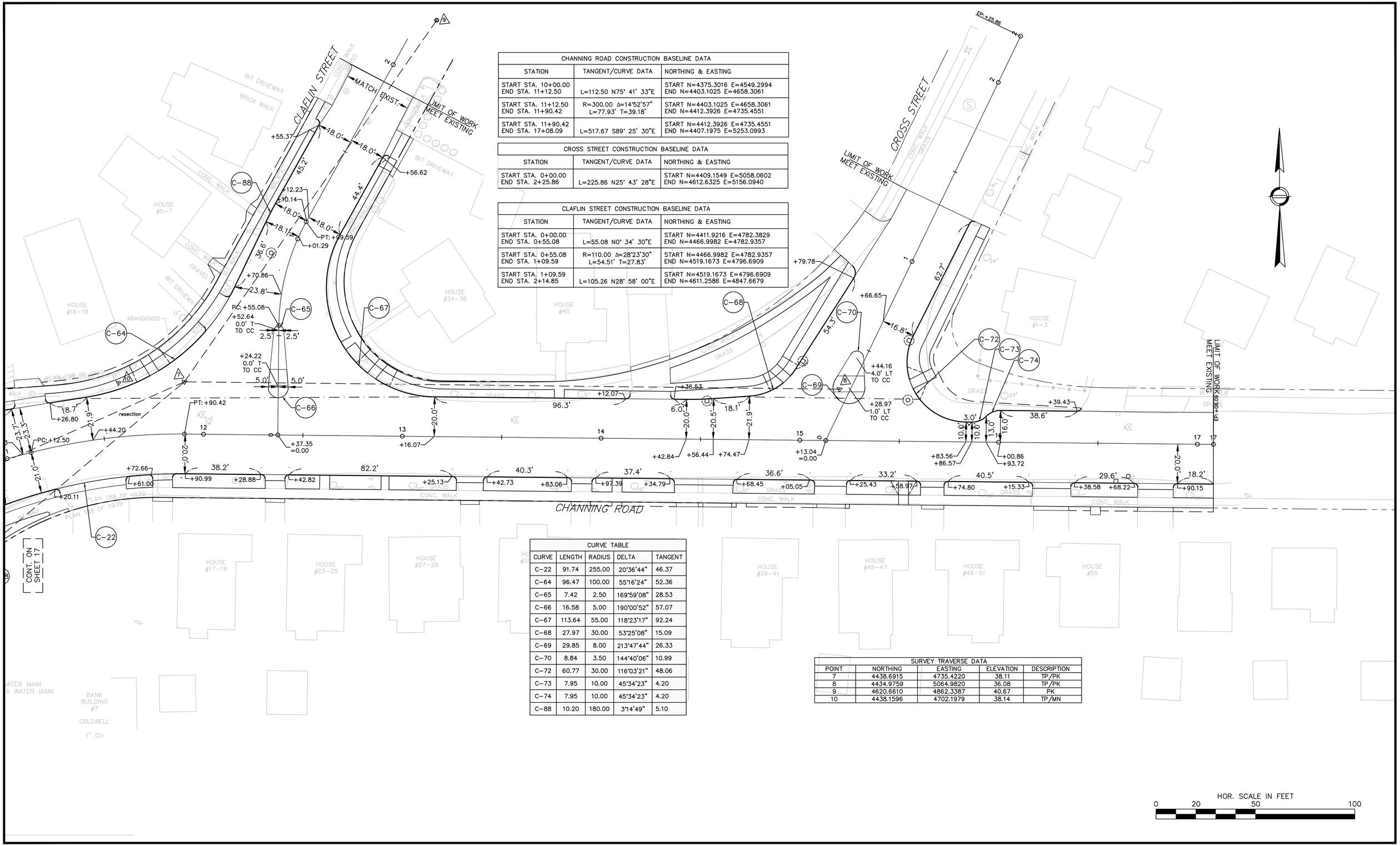

CHANNING ROAD CONSTRUCTION BASELINE DATA		
STATION	TANGENT/CURVE DATA	NORTHING & EASTING
START STA. 10+00.00 END STA. 11+12.50	L=112.50 N75° 41' 33"E	START N=4375.3016 E=4549.2994 END N=4403.1025 E=4658.3061
START STA. 11+12.50 END STA. 11+90.42	R=300.00 Δ=14°52'57" L=77.93' T=39.18'	START N=4403.1025 E=4658.3061 END N=4412.3926 E=4735.4551
START STA. 11+90.42 END STA. 17+08.09	L=517.67 S89° 25' 30"E	START N=4412.3926 E=4735.4551 END N=4407.1975 E=5253.0993

CROSS STREET CONSTRUCTION BASELINE DATA		
STATION	TANGENT/CURVE DATA	NORTHING & EASTING
START STA. 0+00.00 END STA. 2+25.86	L=225.86 N25° 43' 28"E	START N=4409.1549 E=5058.0602 END N=4612.6325 E=5156.0940

CLAFLIN STREET CONSTRUCTION BASELINE DATA		
STATION	TANGENT/CURVE DATA	NORTHING & EASTING
START STA. 0+00.00 END STA. 0+55.08	L=55.08 N0° 34' 30"E	START N=4411.9216 E=4782.3829 END N=4466.9982 E=4782.9357
START STA. 0+55.08 END STA. 1+09.59	R=110.00 Δ=28°23'30" L=54.51' T=27.83'	START N=4466.9982 E=4782.9357 END N=4519.1673 E=4796.6909
START STA. 1+09.59 END STA. 2+14.85	L=105.26 N28° 58' 00"E	START N=4519.1673 E=4796.6909 END N=4611.2586 E=4847.6679

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C-22	91.74	255.00	20°36'44"	46.37
C-64	96.47	100.00	55°16'24"	52.36
C-65	7.42	2.50	169°59'08"	28.53
C-66	16.58	5.00	190°00'52"	57.07
C-67	113.64	55.00	118°23'17"	92.24
C-68	27.97	30.00	53°25'08"	15.09
C-69	29.85	8.00	213°47'44"	26.33
C-70	8.84	3.50	144°40'06"	10.99
C-72	60.77	30.00	116°03'21"	48.06
C-73	7.95	10.00	45°34'23"	4.20
C-74	7.95	10.00	45°34'23"	4.20
C-88	10.20	180.00	3°14'49"	5.10

SURVEY TRAVERSE DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
7	4438.6915	4735.4220	38.11	TP/PK
8	4434.9759	5064.9820	36.08	TP/PK
9	4620.6610	4862.3387	40.67	PK
10	4438.1596	4702.1979	38.14	TP/MN

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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BELMONT, MASSACHUSETTS

SHEET TITLE:
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BELMONT, MASSACHUSETTS
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DATE: JANUARY 23, 2015

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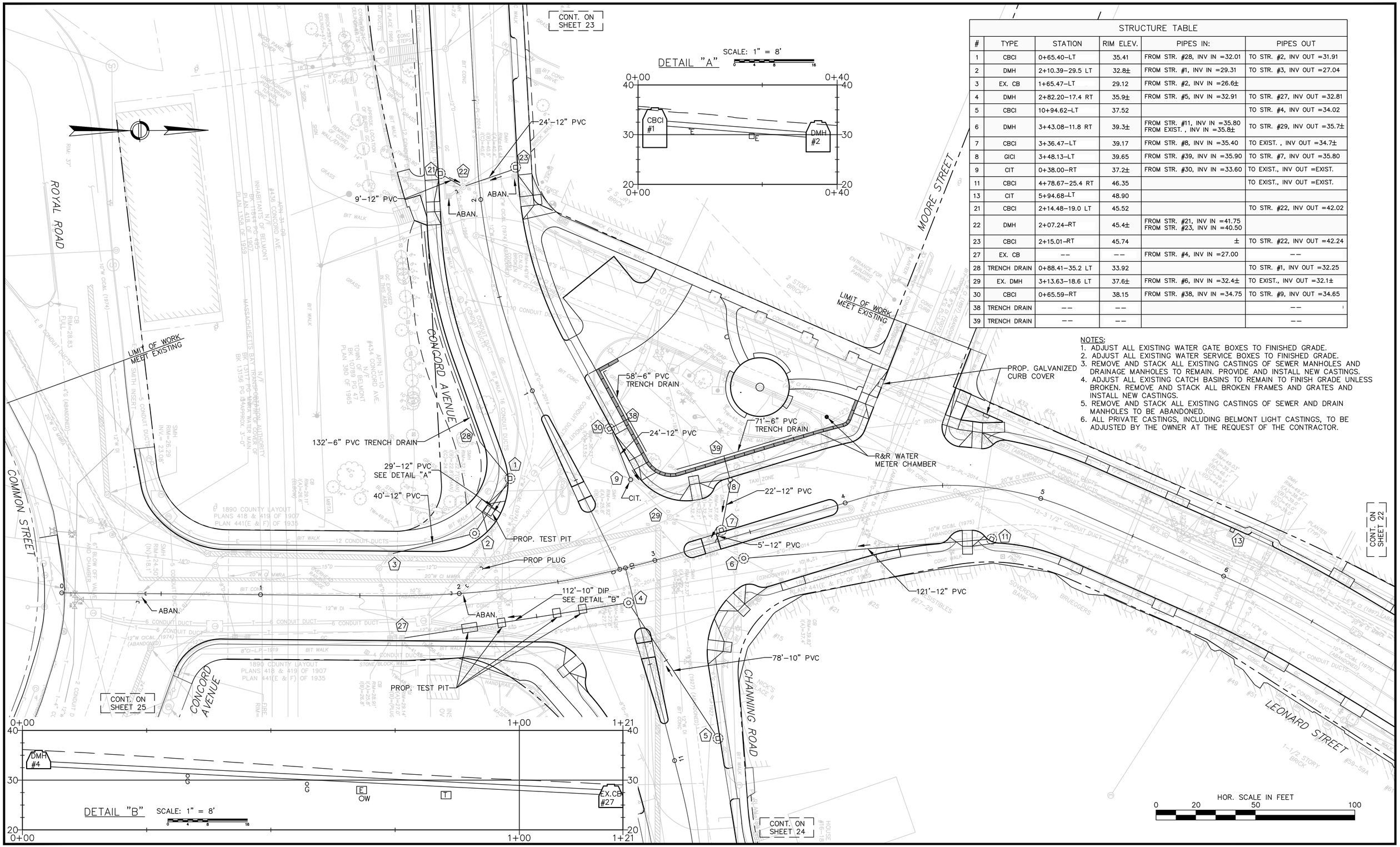

STRUCTURE TABLE

#	TYPE	STATION	RIM ELEV.	PIPES IN:	PIPES OUT
1	CBCI	0+65.40–LT	35.41	FROM STR. #28, INV IN =32.01	TO STR. #2, INV OUT =31.91
2	DMH	2+10.39–29.5 LT	32.8±	FROM STR. #1, INV IN =29.31	TO STR. #3, INV OUT =27.04
3	EX. CB	1+65.47–LT	29.12	FROM STR. #2, INV IN =26.6±	
4	DMH	2+82.20–17.4 RT	35.9±	FROM STR. #5, INV IN =32.91	TO STR. #27, INV OUT =32.81
5	CBCI	10+94.62–LT	37.52		TO STR. #4, INV OUT =34.02
6	DMH	3+43.08–11.8 RT	39.3±	FROM STR. #11, INV IN =35.80 FROM EXIST. , INV IN =35.8±	TO STR. #29, INV OUT =35.7±
7	CBCI	3+36.47–LT	39.17	FROM STR. #8, INV IN =35.40	TO EXIST. , INV OUT =34.7±
8	GICI	3+48.13–LT	39.65	FROM STR. #39, INV IN =35.90	TO STR. #7, INV OUT =35.80
9	CIT	0+38.00–RT	37.2±	FROM STR. #30, INV IN =33.60	TO EXIST., INV OUT =EXIST.
11	CBCI	4+78.67–25.4 RT	46.35		TO EXIST., INV OUT =EXIST.
13	CIT	5+94.68–LT	48.90		
21	CBCI	2+14.48–19.0 LT	45.52		TO STR. #22, INV OUT =42.02
22	DMH	2+07.24–RT	45.4±	FROM STR. #21, INV IN =41.75 FROM STR. #23, INV IN =40.50	
23	CBCI	2+15.01–RT	45.74	±	TO STR. #22, INV OUT =42.24
27	EX. CB	––	––	FROM STR. #4, INV IN =27.00	––
28	TRENCH DRAIN	0+88.41–35.2 LT	33.92		TO STR. #1, INV OUT =32.25
29	EX. DMH	3+13.63–18.6 LT	37.6±	FROM STR. #6, INV IN =32.4±	TO EXIST., INV OUT =32.1±
30	CBCI	0+65.59–RT	38.15	FROM STR. #38, INV IN =34.75	TO STR. #9, INV OUT =34.65
38	TRENCH DRAIN	––	––		––
39	TRENCH DRAIN	––	––		––

NOTES:
1. ADJUST ALL EXISTING WATER GATE BOXES TO FINISHED GRADE.
2. ADJUST ALL EXISTING WATER SERVICE BOXES TO FINISHED GRADE.
3. REMOVE AND STACK ALL EXISTING CASTINGS OF SEWER MANHOLES AND DRAINAGE MANHOLES TO REMAIN. PROVIDE AND INSTALL NEW CASTINGS.
4. ADJUST ALL EXISTING CATCH BASINS TO REMAIN TO FINISH GRADE UNLESS BROKEN. REMOVE AND STACK ALL BROKEN FRAMES AND GRATES AND INSTALL NEW CASTINGS.
5. REMOVE AND STACK ALL EXISTING CASTINGS OF SEWER AND DRAIN MANHOLES TO BE ABANDONED.
6. ALL PRIVATE CASTINGS, INCLUDING BELMONT LIGHT CASTINGS, TO BE ADJUSTED BY THE OWNER AT THE REQUEST OF THE CONTRACTOR.

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22893 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
DRAINAGE AND UTILITY PLAN

DATE: JANUARY 23, 2015

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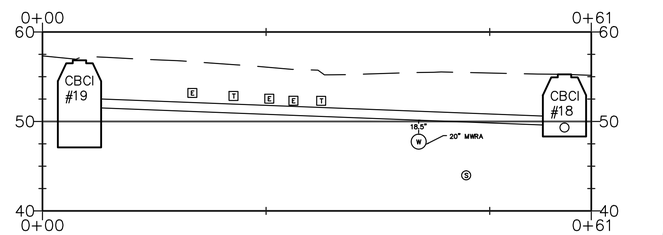
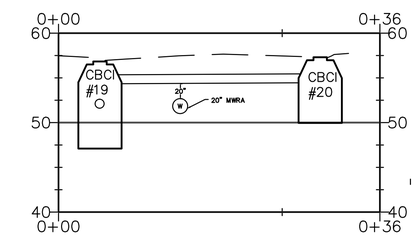
STRUCTURE TABLE					
#	TYPE	STATION	RIM ELEV.	PIPES IN:	PIPES OUT
10	GICI	7+63.60–LT	50.08		TO STR. #16, INV OUT =47.58
14	SUMP MH	7+55.78–27.1 RT	50.5±	FROM STR. #41, INV IN =46.00	TO STR. #15, INV OUT =45.90
15	EX. DMH	7+59.43–7.6 LT	50.3±	FROM STR. #16, INV IN =41.87 FROM STR. #14, INV IN =45.00 FROM STR. #17, INV IN =40.9±	TO EXIST. , INV OUT =40.8±
16	SUMP MH	7+62.86–30.7 LT	49.8±	FROM STR. #10, INV IN =46.32	TO STR. #15, INV OUT =41.99
17	EX. DMH	9+67.27–9.0 LT	53.9±	FROM STR. #18, INV IN =47.55	TO STR. #15, INV OUT =43.10
18	DMH	10+53.40–5.5 LT	55.2±	FROM STR. #19, INV IN =49.51	TO STR. #17, INV OUT =48.82
19	CBCI TYPE 2	10+79.15–53.5 LT	56.84	FROM STR. #20, INV IN =54.34	TO STR. #18, INV OUT =51.60
20	CBCI TYPE 2	11+05.14–52.9 LT	57.31		TO STR. #19, INV OUT =54.46
41	GICI	7+61.97–RT	49.52		TO STR. #14, INV OUT =46.36



DETAIL "E" SCALE: 1" = 8'



DETAIL "D" SCALE: 1" = 8'

DETAIL "C" SCALE: 1" = 8'

NOTES:
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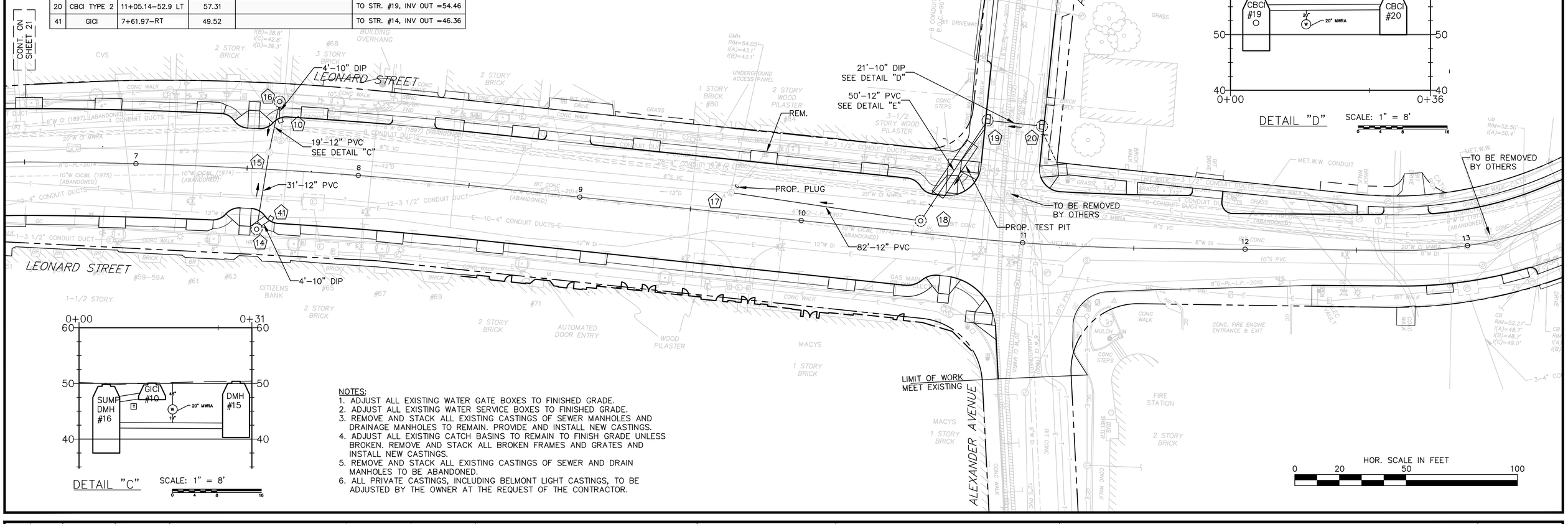

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28963 REGISTERED PROFESSIONAL ENGINEER 1/23/2015

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BELMONT, MASSACHUSETTS

SHEET TITLE:
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BELMONT, MASSACHUSETTS
DRAINAGE AND UTILITY PLAN

DATE: JANUARY 23, 2015

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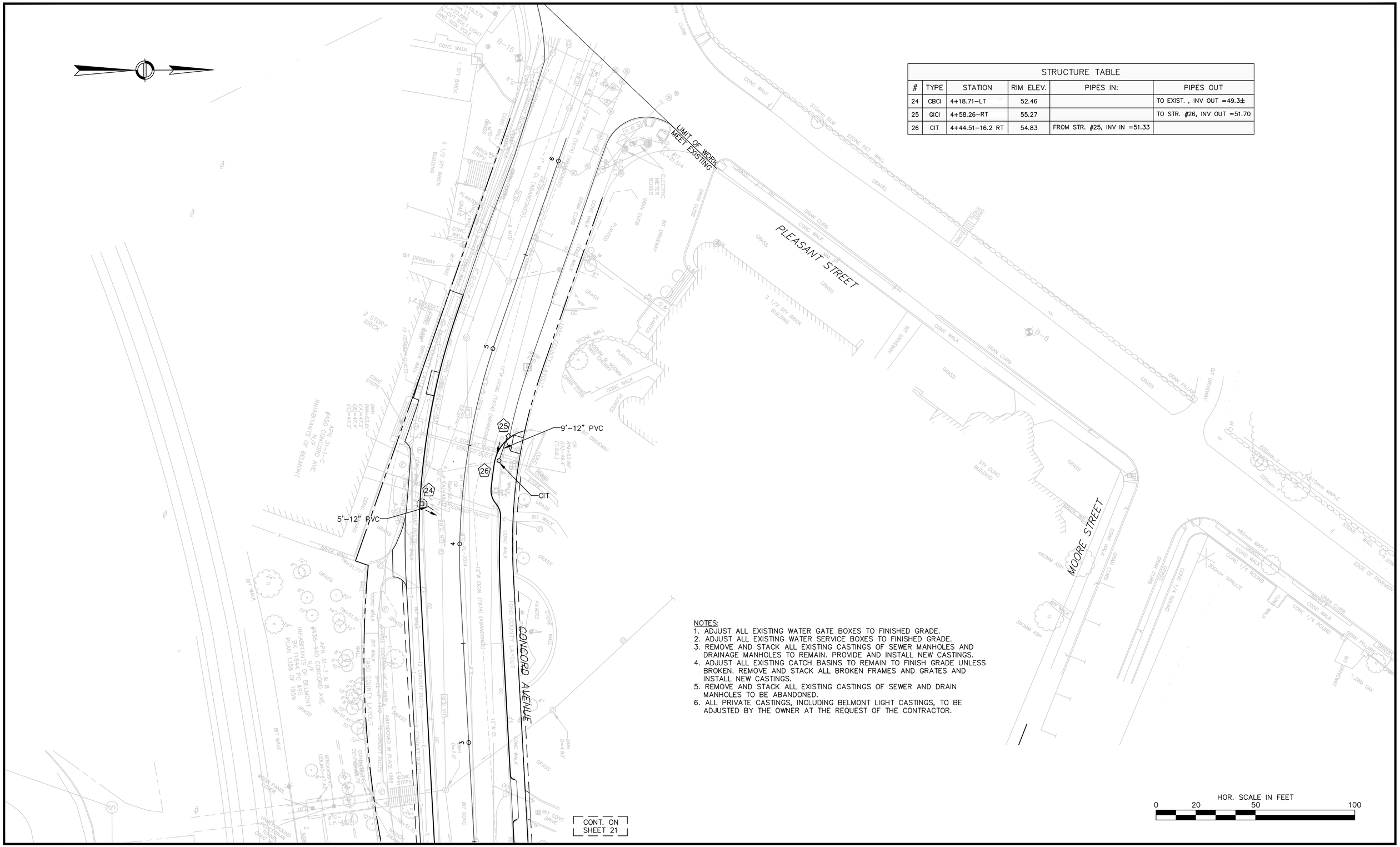
STRUCTURE TABLE					
#	TYPE	STATION	RIM ELEV.	PIPES IN:	PIPES OUT
24	CBCI	4+18.71–LT	52.46		TO EXIST. , INV OUT =49.3±
25	GICI	4+58.26–RT	55.27		TO STR. #26, INV OUT =51.70
26	CIT	4+44.51–16.2 RT	54.83	FROM STR. #25, INV IN =51.33	



NOTES:
1. ADJUST ALL EXISTING WATER GATE BOXES TO FINISHED GRADE.
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22893 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
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455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
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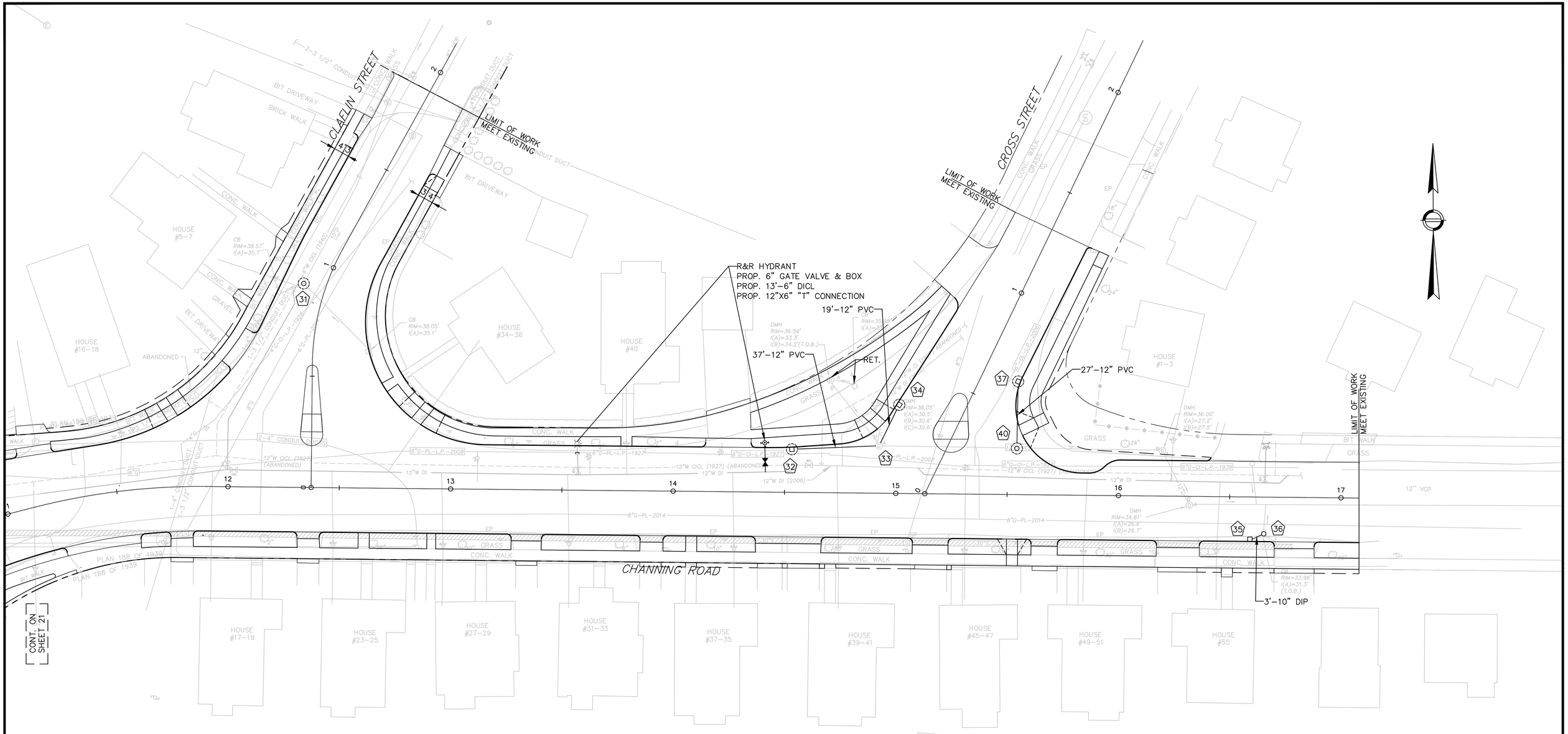

STRUCTURE TABLE					
#	TYPE	STATION	RIM ELEV.	PIPES IN:	PIPES OUT
31	DMH	*	*	*	*
32	CBCI	14+53.13-LT	*		TO STR. #33, INV OUT =R-3.5'
33	EX. DMH	14+92.28-21.3 LT	36.0±	FROM STR. #34, INV IN =32.0± FROM STR. #32, INV IN =30.6±	TO STR. #40, INV OUT =30.5±
34	CBCI	0+30.99-LT	*		TO STR. #33, INV OUT =R-3.5'
35	GICI	16+59.23-RT	*		TO STR. #36, INV OUT =R-3.0'
36	CIT	16+65.46-16.5 RT	33.9±	FROM STR. #35, INV IN =31.4±	TO EXIST. INV OUT =30.5±
37	CBCI	0+63.60-RT	36.0±		TO STR. #40, INV OUT =32.5±
40	DMH	15+54.17-20.7 LT	*	FROM STR. #37, INV IN =31.99 FROM STR. #33, INV IN =29.0±	TO EXIST. INV OUT =29.0±

*TO BE DETERMINED IN THE FIELD
R=RIM ELEVATION

NOTES:
1. ADJUST ALL EXISTING WATER GATE BOXES TO FINISHED GRADE.
2. ADJUST ALL EXISTING WATER SERVICE BOXES TO FINISHED GRADE.
3. REMOVE AND STACK ALL EXISTING CASTINGS OF SEWER MANHOLES AND DRAINAGE MANHOLES TO REMAIN. PROVIDE AND INSTALL NEW CASTINGS.
4. ADJUST ALL EXISTING CATCH BASINS TO REMAIN TO FINISH GRADE UNLESS BROKEN. REMOVE AND STACK ALL BROKEN FRAMES AND GRATES AND INSTALL NEW CASTINGS.
5. REMOVE AND STACK ALL EXISTING CASTINGS OF SEWER AND DRAIN MANHOLES TO BE ABANDONED.
6. ALL PRIVATE CASTINGS, INCLUDING BELMONT LIGHT CASTINGS, TO BE ADJUSTED BY THE OWNER AT THE REQUEST OF THE CONTRACTOR.

HOR. SCALE IN FEET
0 20 50 100

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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DESIGNED BY: K. LEWIS
CHECKED BY: P. BRIERE
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DWG. NO:
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22653 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
DRAINAGE AND UTILITY PLAN

DATE: JANUARY 23, 2015

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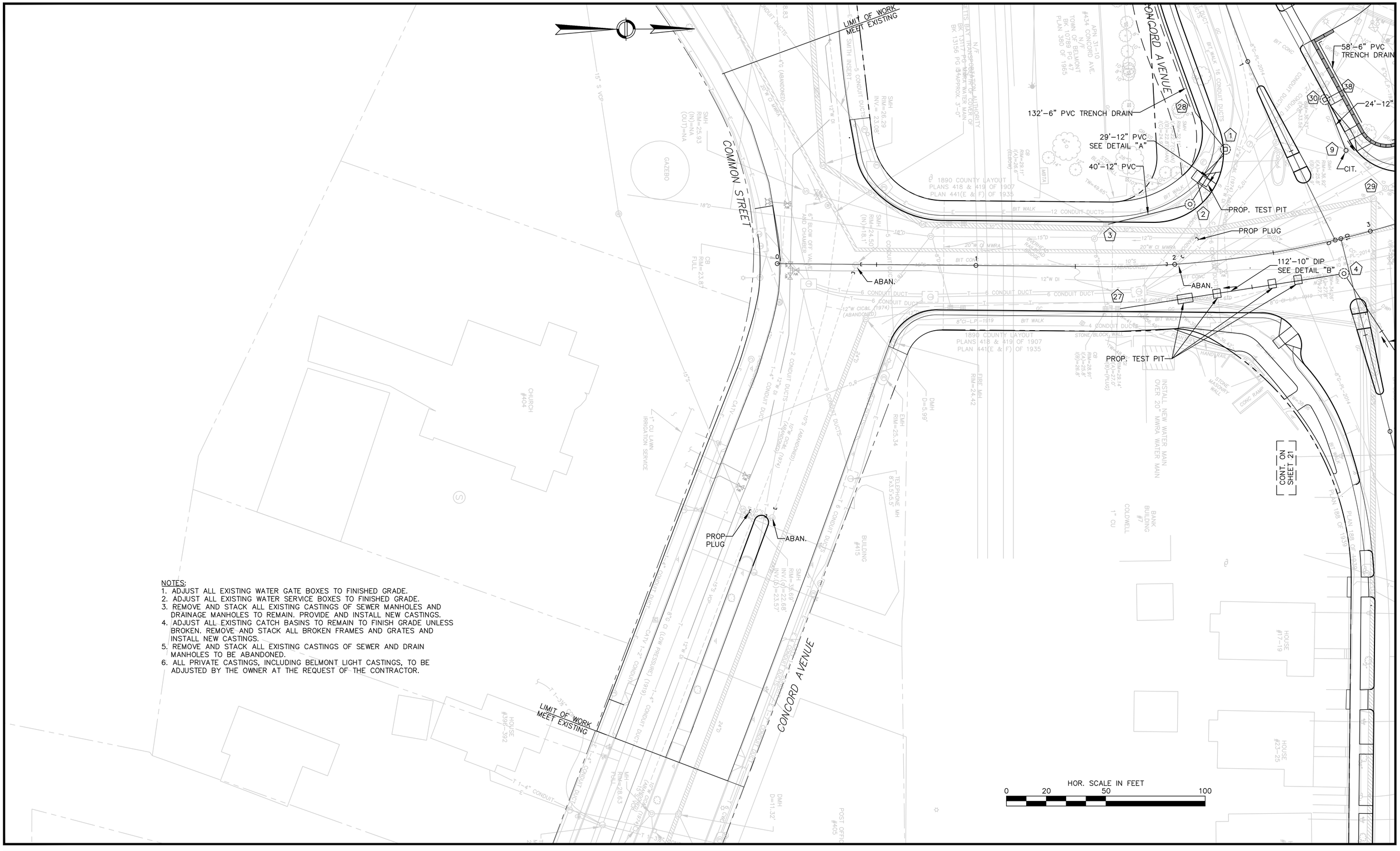

NOTES:
1. ADJUST ALL EXISTING WATER GATE BOXES TO FINISHED GRADE.
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6. ALL PRIVATE CASTINGS, INCLUDING BELMONT LIGHT CASTINGS, TO BE ADJUSTED BY THE OWNER AT THE REQUEST OF THE CONTRACTOR.

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DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS
PETER J. BRIERE
No. 22659
REGISTERED PROFESSIONAL ENGINEER
1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
DRAINAGE AND UTILITY PLAN

DATE: JANUARY 23, 2015

25 OF 46

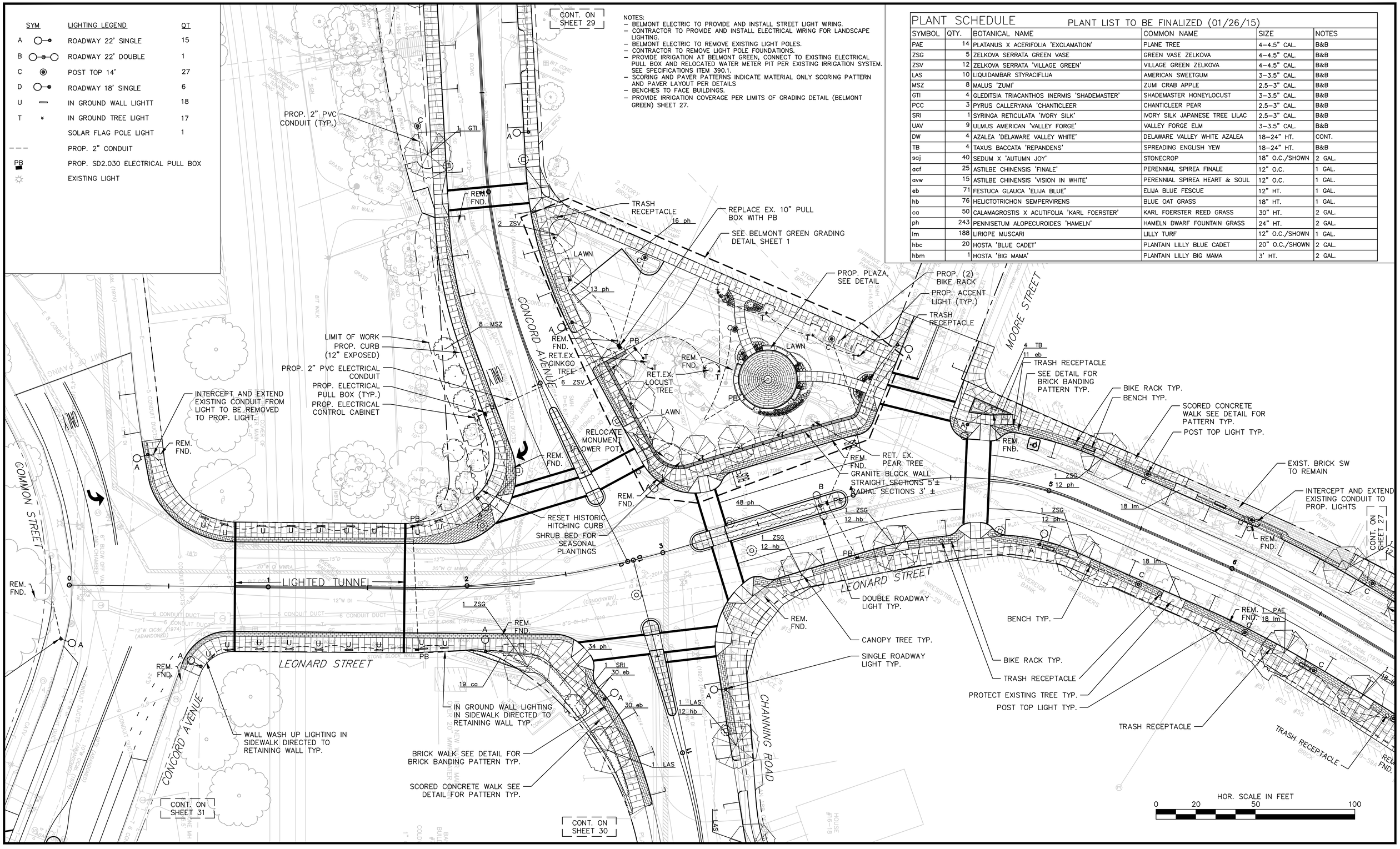
26300\Transportation_Drawings\Progress\2826300 UT.dwg, 1/29/2015 11:45:34 AM, DWG To PDF.pc3

SYM	LIGHTING LEGEND	QT
A	ROADWAY 22' SINGLE	15
B	ROADWAY 22' DOUBLE	1
C	POST TOP 14'	27
D	ROADWAY 18' SINGLE	6
U	IN GROUND WALL LIGHTT	18
T	IN GROUND TREE LIGHT	17
	SOLAR FLAG POLE LIGHT	1
- - -	PROP. 2" CONDUIT	
PB	PROP. SD2.030 ELECTRICAL PULL BOX	
☼	EXISTING LIGHT	

NOTES:
- BELMONT ELECTRIC TO PROVIDE AND INSTALL STREET LIGHT WIRING.
- CONTRACTOR TO PROVIDE AND INSTALL ELECTRICAL WIRING FOR LANDSCAPE LIGHTING.
- BELMONT ELECTRIC TO REMOVE EXISTING LIGHT POLES.
- CONTRACTOR TO REMOVE LIGHT POLE FOUNDATIONS.
- PROVIDE IRRIGATION AT BELMONT GREEN, CONNECT TO EXISTING ELECTRICAL PULL BOX AND RELOCATED WATER METER PIT PER EXISTING IRRIGATION SYSTEM. SEE SPECIFICATIONS ITEM 390.1.
- SCORING AND PAVER PATTERNS INDICATE MATERIAL ONLY SCORING PATTERN AND PAVER LAYOUT PER DETAILS
- BENCHES TO FACE BUILDINGS.
- PROVIDE IRRIGATION COVERAGE PER LIMITS OF GRADING DETAIL (BELMONT GREEN) SHEET 27.

PLANT SCHEDULE — PLANT LIST TO BE FINALIZED (01/26/15)

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
PAE	14	PLATANUS X ACERIFOLIA 'EXCLAMATION'	PLANE TREE	4–4.5" CAL.	B&B
ZSG	5	ZELKOVA SERRATA GREEN VASE	GREEN VASE ZELKOVA	4–4.5" CAL.	B&B
ZSV	12	ZELKOVA SERRATA 'VILLAGE GREEN'	VILLAGE GREEN ZELKOVA	4–4.5" CAL.	B&B
LAS	10	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	3–3.5" CAL.	B&B
MSZ	8	MALUS 'ZUMI'	ZUMI CRAB APPLE	2.5–3" CAL.	B&B
GTI	4	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER'	SHADEMASTER HONEYLOCUST	3–3.5" CAL.	B&B
PCC	3	PYRUS CALLERYANA 'CHANTICLEER	CHANTICLEER PEAR	2.5–3" CAL.	B&B
SRI	1	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2.5–3" CAL.	B&B
UAV	9	ULMUS AMERICAN 'VALLEY FORGE'	VALLEY FORGE ELM	3–3.5" CAL.	B&B
DW	4	AZALEA 'DELAWARE VALLEY WHITE'	DELAWARE VALLEY WHITE AZALEA	18–24" HT.	CONT.
TB	4	TAXUS BACCATA 'REPANDENS'	SPREADING ENGLISH YEW	18–24" HT.	B&B
saj	40	SEDUM X 'AUTUMN JOY'	STONECROP	18" O.C./SHOWN	2 GAL.
acf	25	ASTILBE CHINENSIS 'FINALE'	PERENNIAL SPIREA FINALE	12" O.C.	1 GAL.
avw	15	ASTILBE CHINENSIS 'VISION IN WHITE'	PERENNIAL SPIREA HEART & SOUL	12" O.C.	1 GAL.
eb	71	FESTUCA GLAUCA 'ELIJA BLUE'	ELIJA BLUE FESCUE	12" HT.	1 GAL.
hb	76	HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	18" HT.	1 GAL.
ca	50	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER REED GRASS	30" HT.	2 GAL.
ph	243	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	24" HT.	2 GAL.
lm	188	LIRIOPE MUSCARI	LILLY TURF	12" O.C./SHOWN	1 GAL.
hbc	20	HOSTA 'BLUE CADET'	PLANTAIN LILLY BLUE CADET	20" O.C./SHOWN	2 GAL.
hbm	1	HOSTA 'BIG MAMA'	PLANTAIN LILLY BIG MAMA	3' HT.	2 GAL.



REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: C. BASTIEN
DESIGNED BY: C. BASTIEN
CHECKED BY: P. BRIERE
FILE NAME: 2826300 LSC.dwg
DWG. NO:
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28963 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

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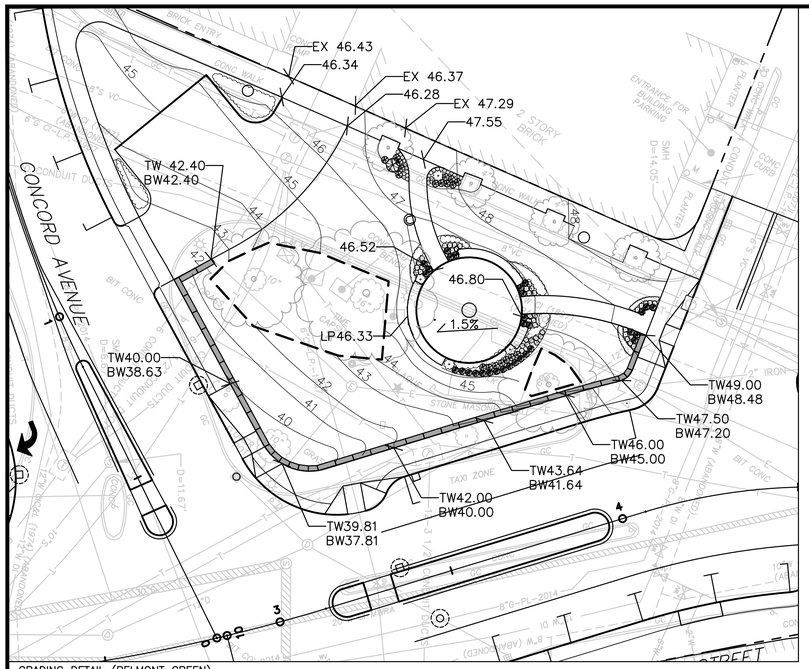
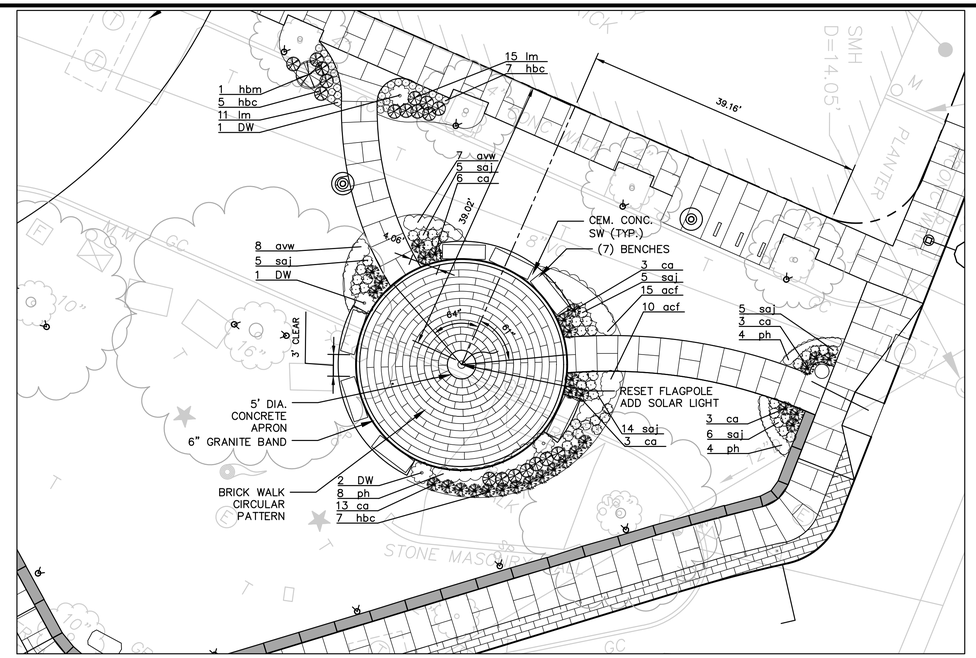
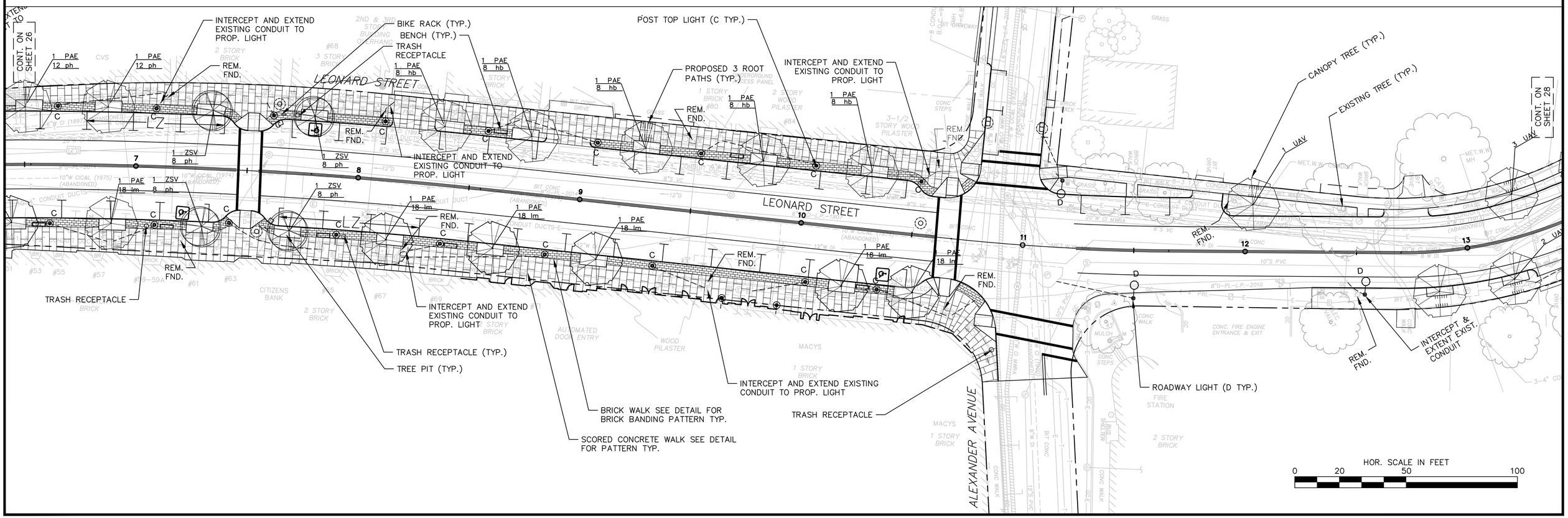


GRADING DETAIL (BELMONT GREEN)
SCALE: 1" = 20'



PLAZA DETAIL (BELMONT GREEN)
SCALE: 1" = 10'



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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

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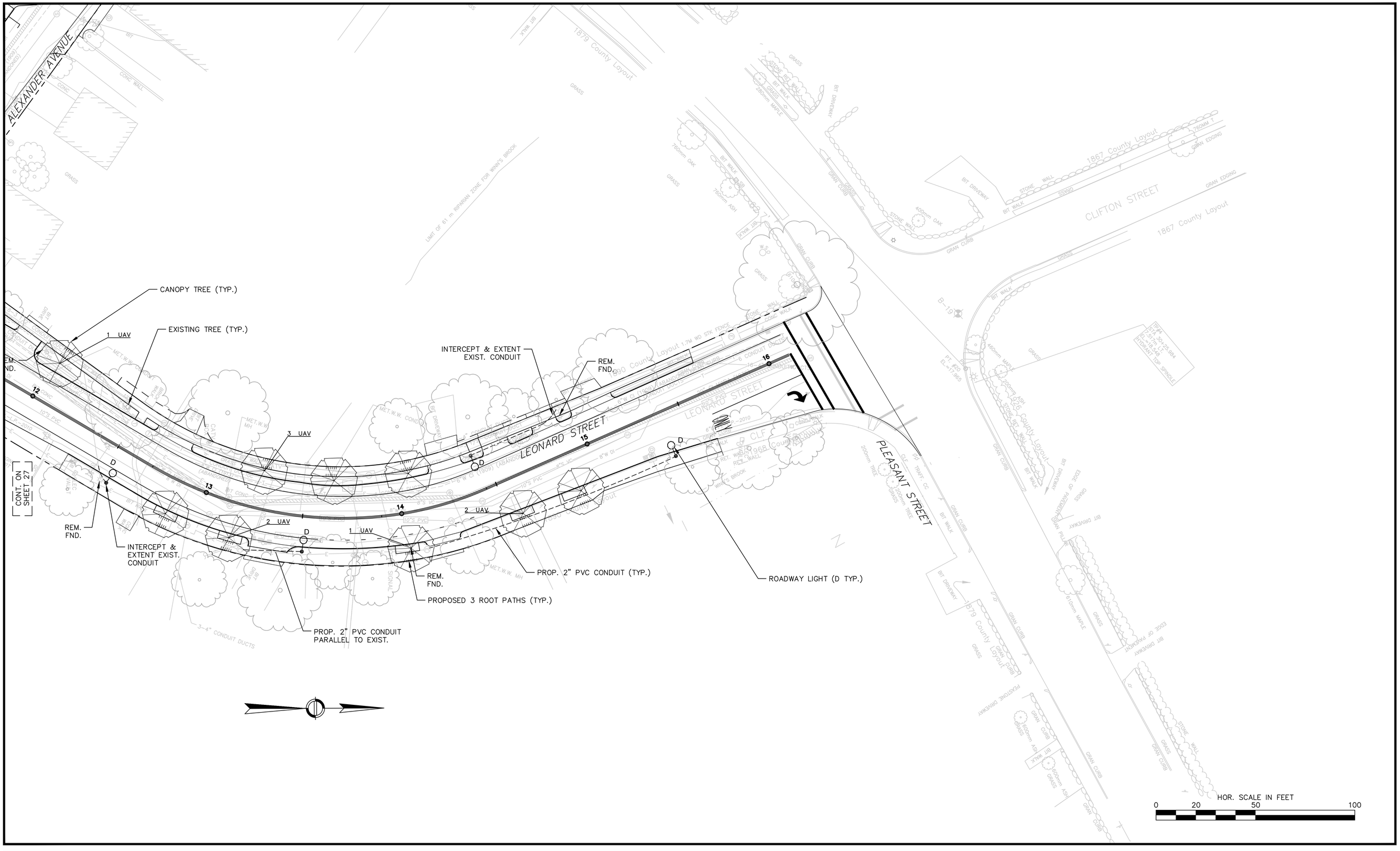

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COMMONWEALTH OF MASSACHUSETTS PETER L. BRIERE No. 28652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

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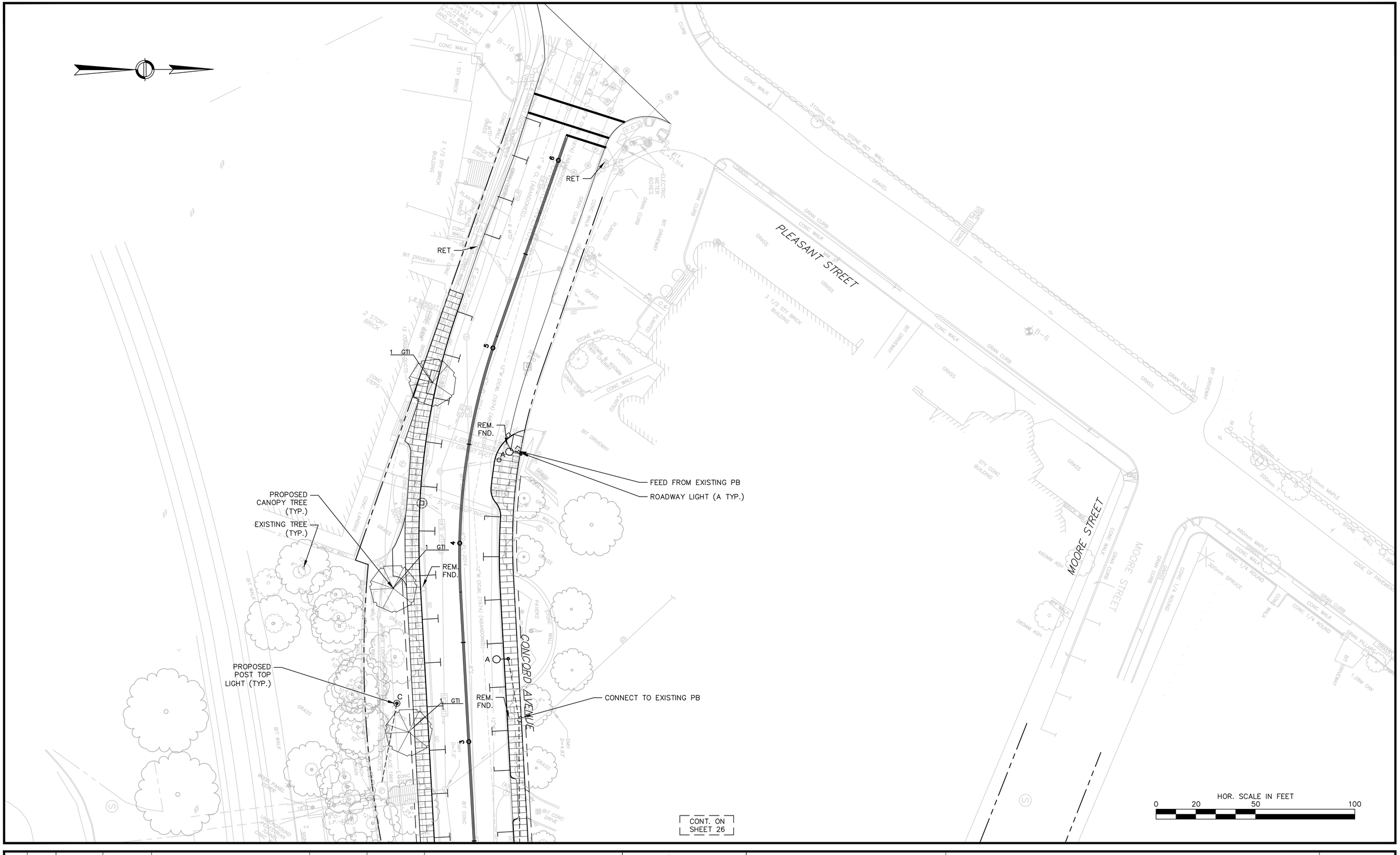

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COMMONWEALTH OF MASSACHUSETTS PETER E. BRIERE No. 28652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

29 OF 46

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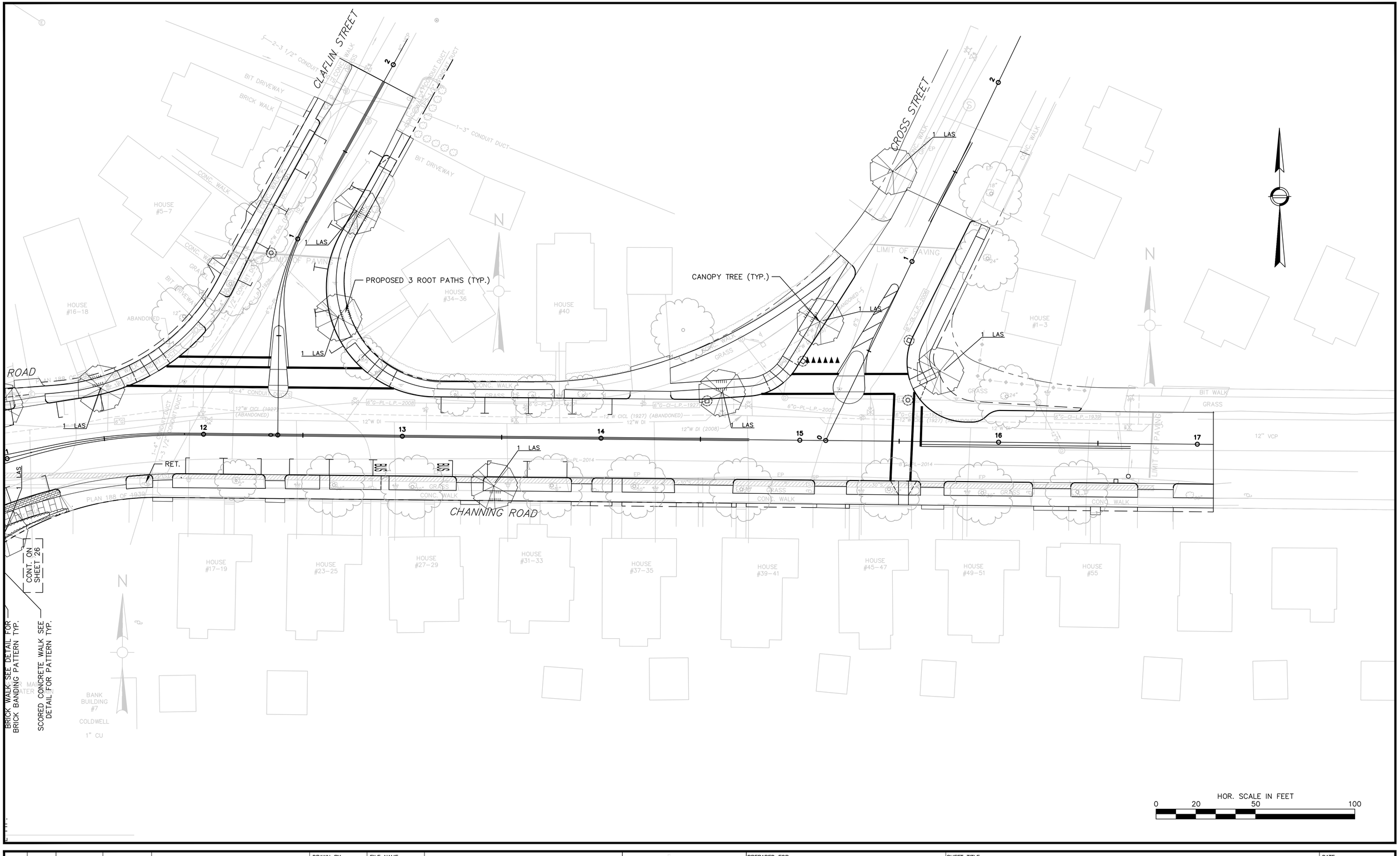

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29692 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

30 OF 46

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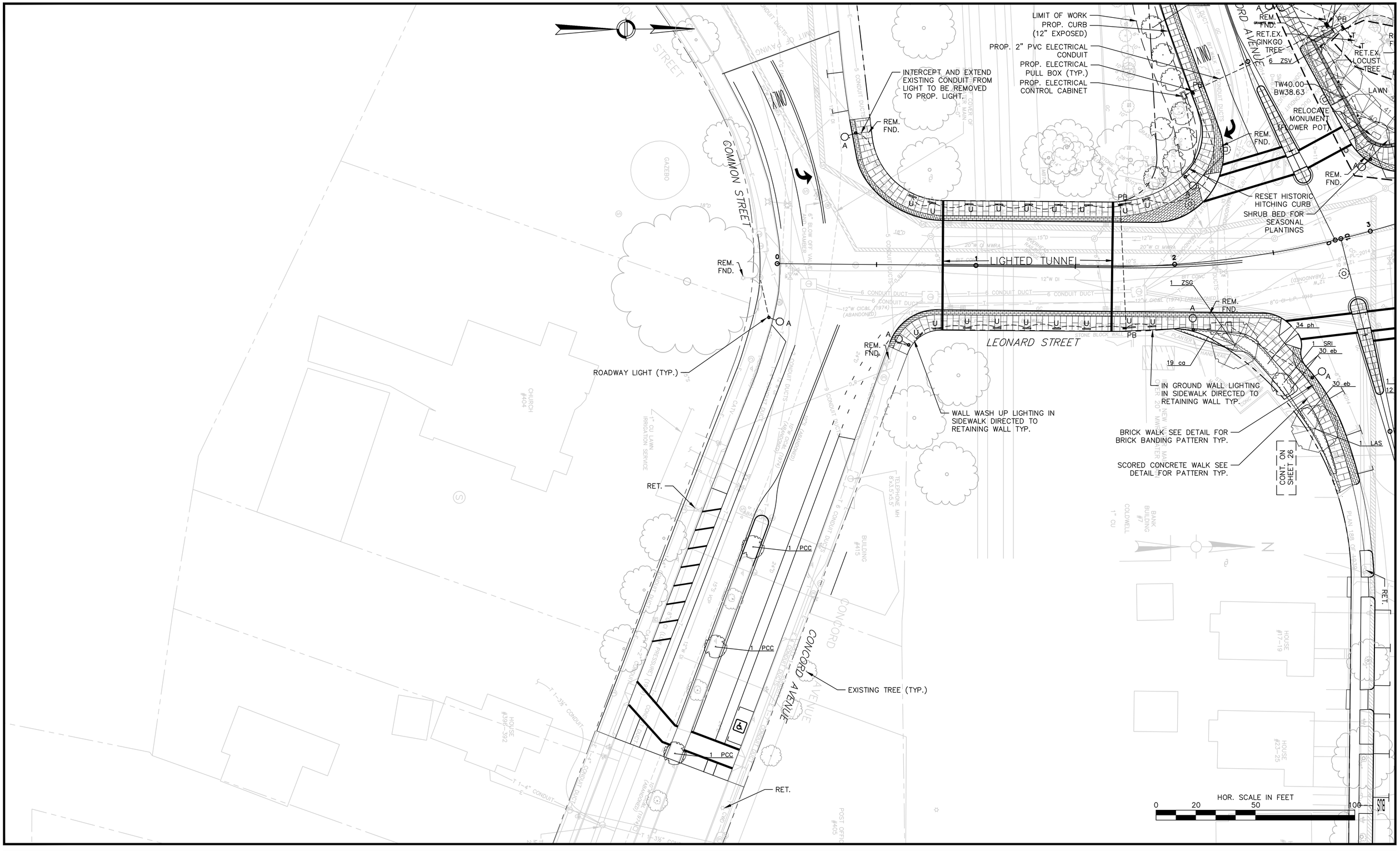

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28263 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE PLAN

DATE: JANUARY 23, 2015

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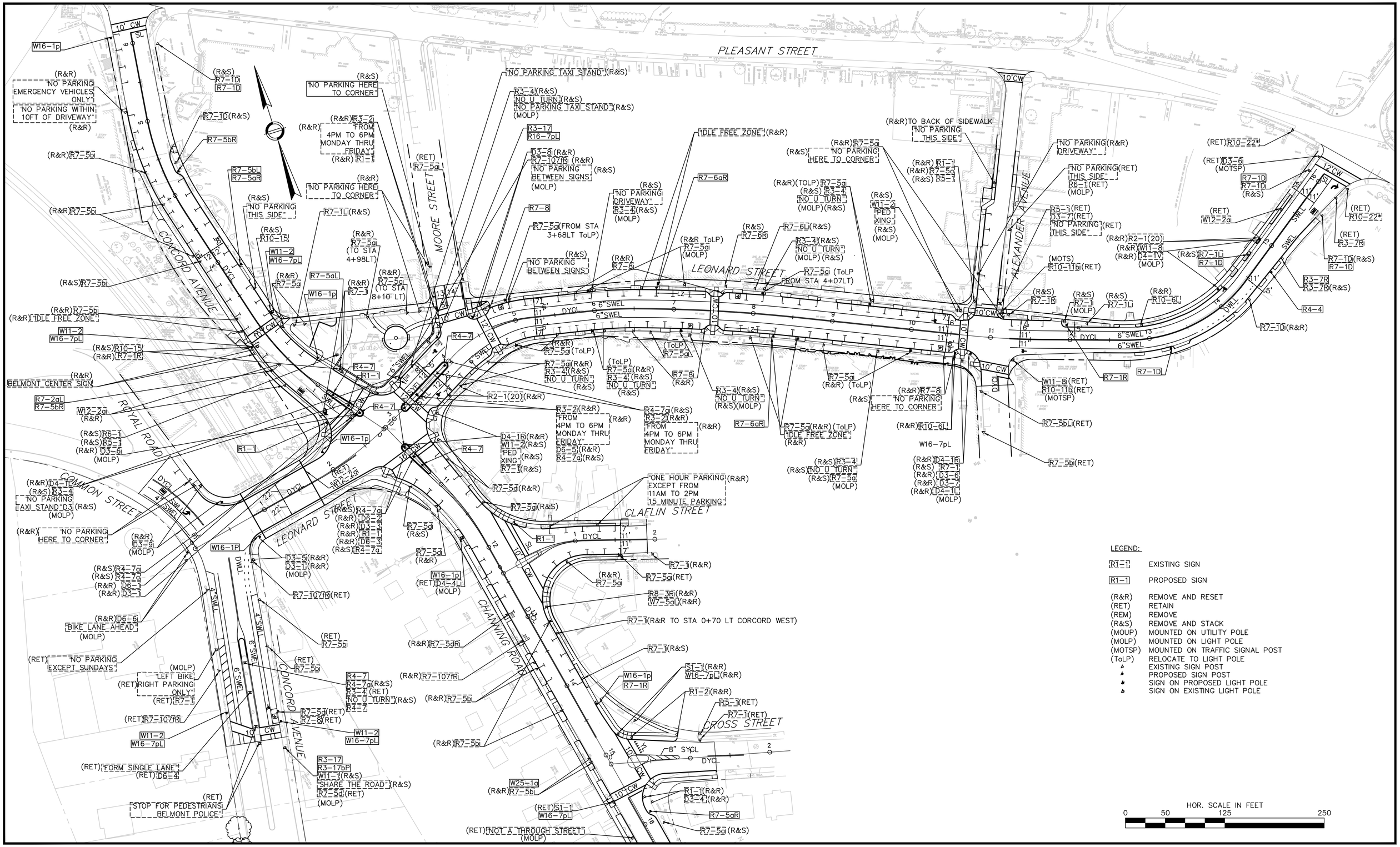

LEGEND:

R1-1	EXISTING SIGN
R1-1	PROPOSED SIGN
(R&R)	REMOVE AND RESET
(RET)	RETAIN
(REM)	REMOVE
(R&S)	REMOVE AND STACK
(MOUP)	MOUNTED ON UTILITY POLE
(MOLP)	MOUNTED ON LIGHT POLE
(MOTSP)	MOUNTED ON TRAFFIC SIGNAL POST
(ToLP)	RELOCATE TO LIGHT POLE
	EXISTING SIGN POST
	PROPOSED SIGN POST
	SIGN ON PROPOSED LIGHT POLE
	SIGN ON EXISTING LIGHT POLE

HOR. SCALE IN FEET
0 50 125 250

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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DESIGNED BY: K. LEWIS	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22959 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
PAVEMENT MARKING & SIGNING PLAN

DATE: JANUARY 23, 2015

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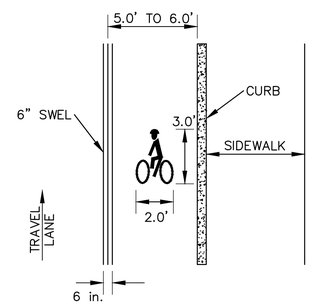
TRAFFIC SIGN SUMMARY

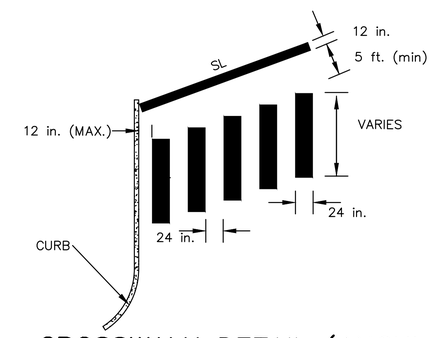
IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (in)				NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA (S.F.)
	WIDTH (in)	HEIGHT (in)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.			BACK-GROUND	LEGEND	BORDER			
R1-1	30	30	STOP	SEE 2009 M.U.T.C.D.				3	SEE 2009 M.U.T.C.D.			P-5 (2)	5.19	15.57
R3-7R	30	30	RIGHT LANE MUST TURN RIGHT					1				P-5 (0)	6.25	6.25
R3-17	24	18	BIKE LANE					2				P-5 (1)	3.00	6.00
R3-17aP	24	8	AHEAD					0				P-5 (0)	1.33	0.00
R3-17bP	24	8	ENDS					2				P-5 (0)	1.33	2.66
R4-4	36	30	BEGIN RIGHT TURN LANE YIELD TO BIKES					1				P-5 (1)	7.50	7.50
R4-7	24	30						5				P-5 (6)	5.00	25.00
R7-1D	12	18	NO PARKING ANY TIME					5				P-5 (1)	1.50	7.50
R7-1R	12	18	NO PARKING ANY TIME					2				P-5 (1)	1.50	3.00
R7-2aL	12	18	NO PARKING 7-9 AM 4-6 PM MON-FRI					1				P-5 (1)	1.50	1.50
R7-5aL	12	18	ONE HOUR PARKING					1				P-5 (1)	1.50	1.50
R7-5aR	12	18	ONE HOUR PARKING					2				P-5 (1)	1.50	3.00
R7-5bL	12	18	TWO HOUR PARKING					1				P-5 (1)	1.50	1.50
R7-5bR	12	18	TWO HOUR PARKING					2				P-5 (1)	1.50	3.00
R7-6aR	12	18	NO PARKING LOADING ZONE 7-11 AM					2				P-5 (2)	1.50	3.00
R7-8	12	18	RESERVED PARKING					1				P-5 (1)	1.50	1.50
W11-1	24	24						0				P-5 (0)	4.00	0.00
W11-2	30	30						4				P-5 (6)	6.25	25.00
W16-1P	18	24	SHARE THE ROAD					6				P-5 (5)	3.00	18.00
W16-7pL	30	18						6				P-5 (0)	3.75	22.50
W25-1a	24	30	ONCOMING TRAFFIC HAS STOP					1				P-5 (0)	5.00	5.00

ESTIMATED TOTAL : 158.98



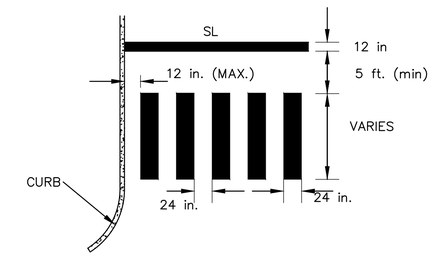
BICYCLE LANE DETAIL

N.T.S



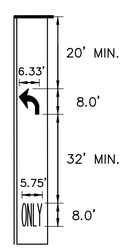
CROSSWALK DETAIL (ANGULAR)

N.T.S



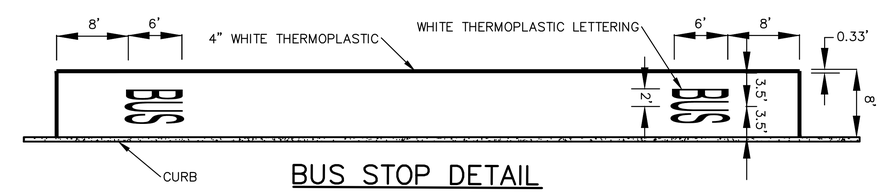
CROSSWALK DETAIL (PERPENDICULAR)

N.T.S



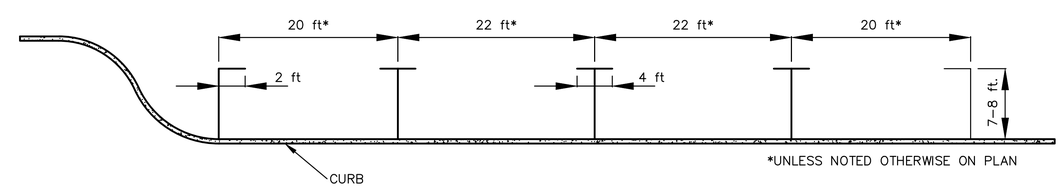
ARROW AND ONLY DETAIL

N.T.S



BUS STOP DETAIL

N.T.S



*UNLESS NOTED OTHERWISE ON PLAN

TYPICAL PARKING STALL LAYOUT

N.T.S

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: M. ROGERSON
FILE NAME: 2826300 PM.dwg
DESIGNED BY: K. LEWIS
DWG. NO:
CHECKED BY: P. BRIERE
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28892 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
PAVEMENT MARKING & SIGNING PLAN

DATE: JANUARY 23, 2015

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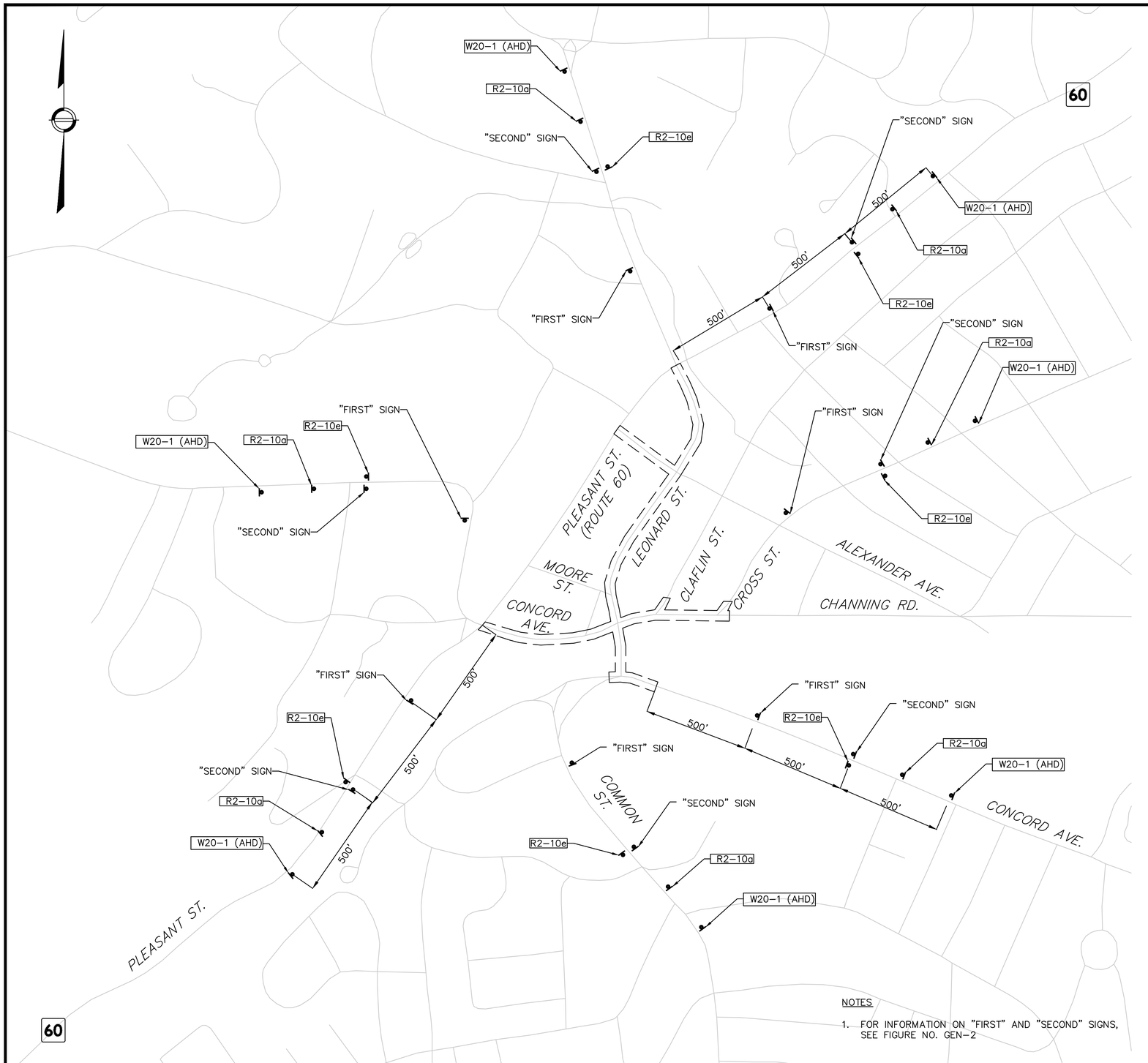
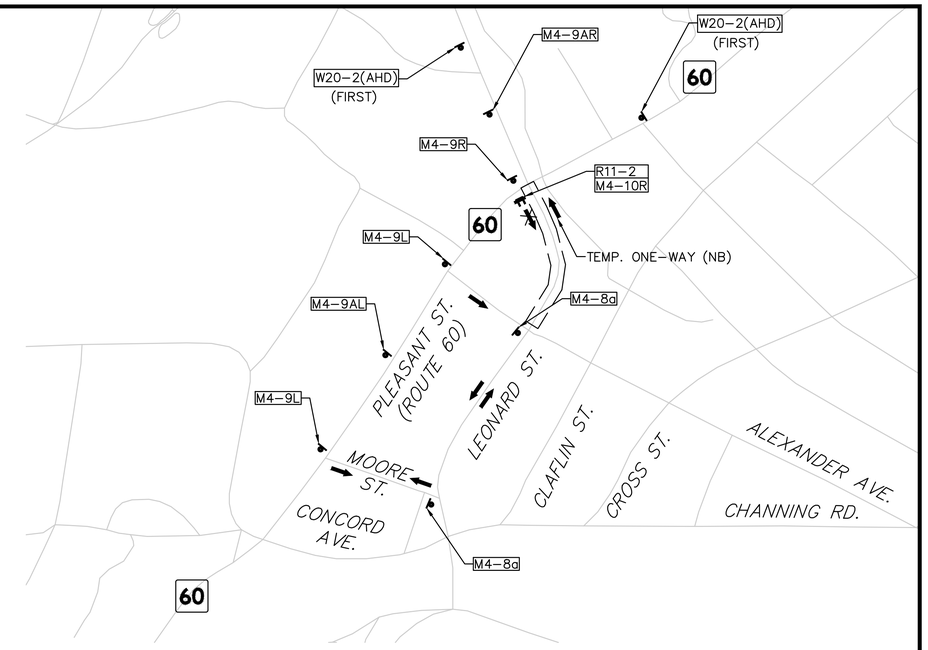


NOTES

1. FOR INFORMATION ON "FIRST" AND "SECOND" SIGNS, SEE FIGURE NO. GEN-2

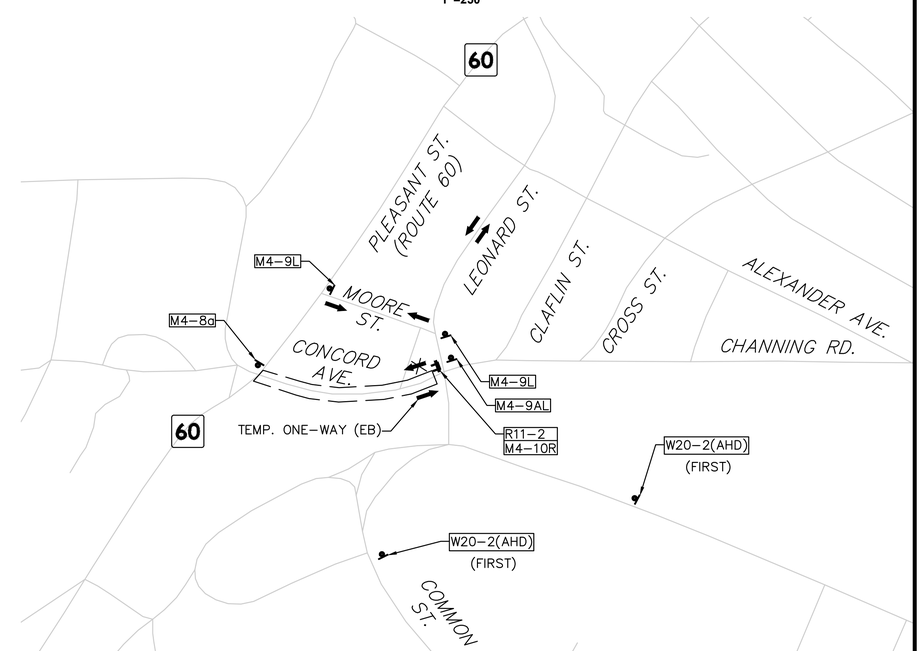
APPROACH SIGNS TO WORK ZONE

1"=250'



DETOUR ROUTE FOR ONE-WAY TRAFFIC ON LEONARD ST.

1"=250'



DETOUR ROUTE FOR ONE-WAY TRAFFIC ON CONCORD AVE.

1"=250'

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DRAWN BY: M. DAVIS	FILE NAME: 2826300 TMP.dwg
DESIGNED BY: G. DRIESSEN	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TRAFFIC MANAGEMENT PLAN

DATE: JANUARY 23, 2015

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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, UNLESS SUPERCEDED BY THESE PLANS.
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 CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. CONTRACTORS 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, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11. MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NUMBER OF LANES		NUMBER OF STUDIES	AVERAGE CAPACITY	
NORMAL (EXISTING)	OPEN (TO TRAFFIC)		VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
5	2	8	2,740	1,370
4	2	4	2,960	1,480
3	2	9	2,980	1,490
4	3	4	4,560	1,520

Source: Dudek, C., Notes on Work Zone Capacity and Level of Service. Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

massDOT Massachusetts Department of Transportation Highway Division | Notes for Traffic Management | FIGURE GEN-1 GENERAL GUIDELINES

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)

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** 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 TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO 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, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (km/h)	DISTANCE (m)
30	35
40	50
50	65
60	85
70	105
80	130
90	160
100	185
110	220
120	250

SPEED* (mph)	DISTANCE (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION

massDOT Massachusetts Department of Transportation Highway Division | Notes for Traffic Management | FIGURE GEN-2 NOTES ON WORK ZONE DISTANCES

CONVENTIONAL ROADWAY- A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.

EXPRESSWAY- A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.

FREEWAY- A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.

LOW-VOLUME ROAD- A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 ADDT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

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	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

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	$L = \frac{WS}{1.6}$

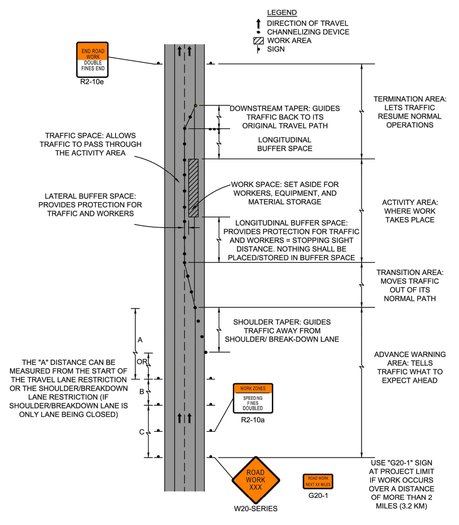
WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

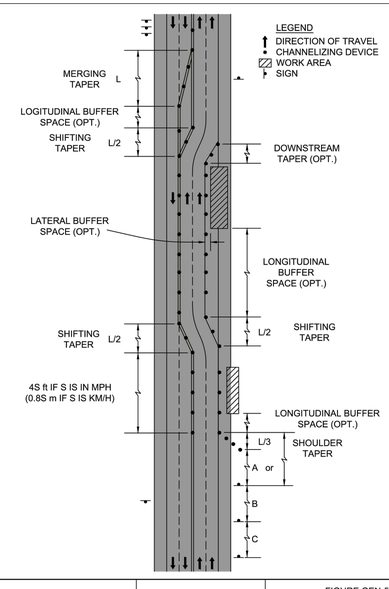
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICAPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION

massDOT Massachusetts Department of Transportation Highway Division | Notes for Traffic Management | FIGURE GEN-3 NOTES ON WORK ZONE DISTANCES



massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE GEN-4 COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE NOT TO SCALE



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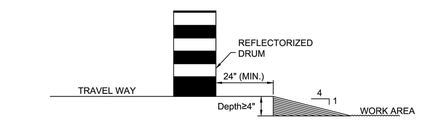
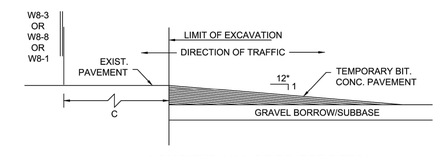


LATERAL DROP-OFF DETAIL

NOT TO SCALE



LONGITUDINAL DROP-OFF DETAIL

NOT TO SCALE

* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE GEN-6 LATERAL AND LONGITUDINAL DROP-OFF DETAILS NOT TO SCALE

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COMMONWEALTH OF MASSACHUSETTS PETER A. BRIERE No. 29692 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:

TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:

BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TRAFFIC MANAGEMENT PLAN

DATE: JANUARY 23, 2015

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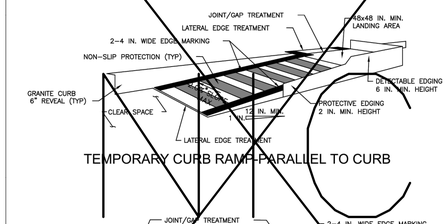
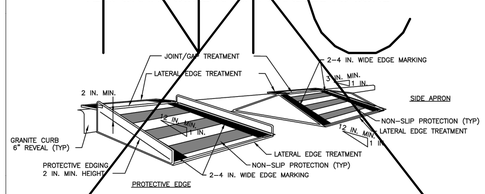
NOTES:

1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
5. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THIS MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.



TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

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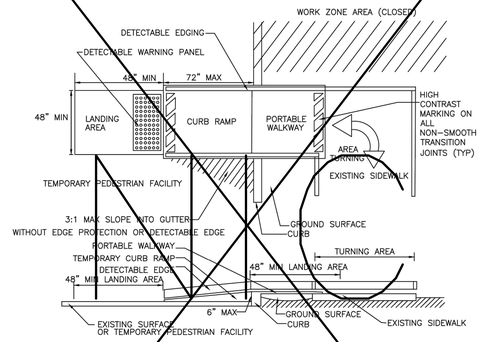

TEMPORARY CURB RAMP-TYPE 2

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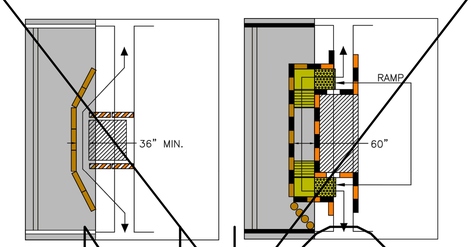
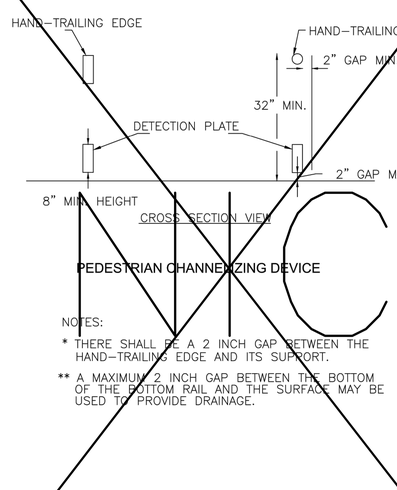


- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, temporary facilities shall be provided and they shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
- A pedestrian channelizing device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- When used, temporary ramps shall comply with Americans with Disabilities Act (see Figures Ped-1 & Ped-2).
- The alternate pathway should have a smooth continuous hard surface for the entire length of the temporary pedestrian facility.
- The protective requirements of a TTC situation have priority in determining the need for temporary traffic barriers and their use in this situation should be based on engineering judgment.
- Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.

AUDIBLE DEVICES

For long term sidewalk closures (at a minimum overnight) a form of speech messaging for pedestrians with visual disabilities shall be provided. Audible information devices such as detectable barriers or barricades and other passive pedestrian activation (motion activated) devices should be considered for these cases. These audible devices can be mountable or stand alone.

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE PED-3 PEDESTRIAN DETAILS NOT TO SCALE



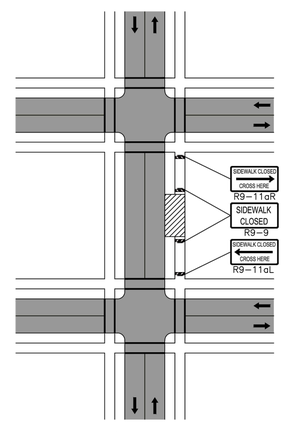
PEDESTRIAN CHANNELIZING DEVICE

NOTES:

* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.

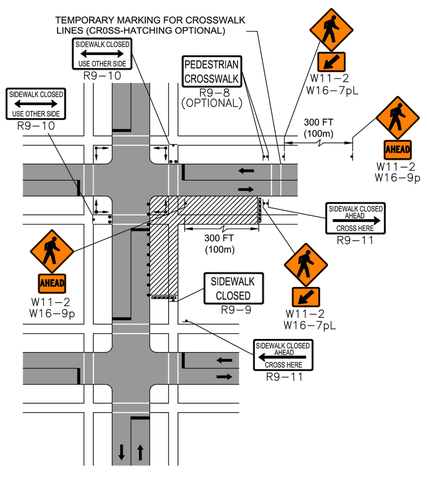
** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE PED-4 PEDESTRIAN DETAILS NOT TO SCALE



NOTE: IF A MINIMUM WIDTH OF 48" OF SOLID SMOOTH UNOBSTRUCTED SURFACE REMAINS ALONG THE WORK AREA THEN THE DETAIL CAN BE DISREGARDED. DELINEATION OF THE WORK AREA WILL STILL BE REQUIRED. All PEDESTRIAN DETOUR ROUTES SHALL BE ADA/MAAB COMPLIANT IN THEIR ENTIRETY.

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE PED-5 SIDEWALK CLOSED WITHOUT DETOUR NOT TO SCALE



NOTE:
FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES SHOULD BE REMOVED BETWEEN THE CROSSWALK LINES.

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE PED-6 PEDESTRIAN DETOUR NOT TO SCALE

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DRAWN BY: M. DAVIS	FILE NAME: 2826300 TMP.dwg
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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22659 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
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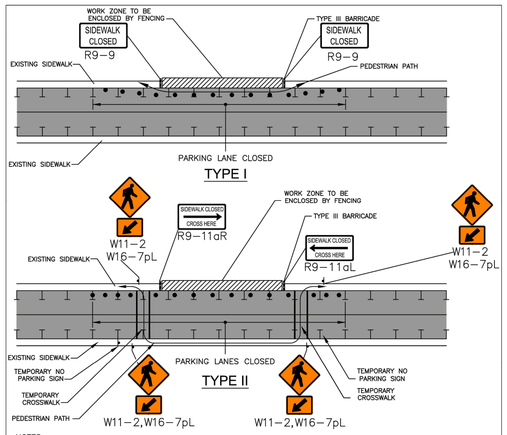
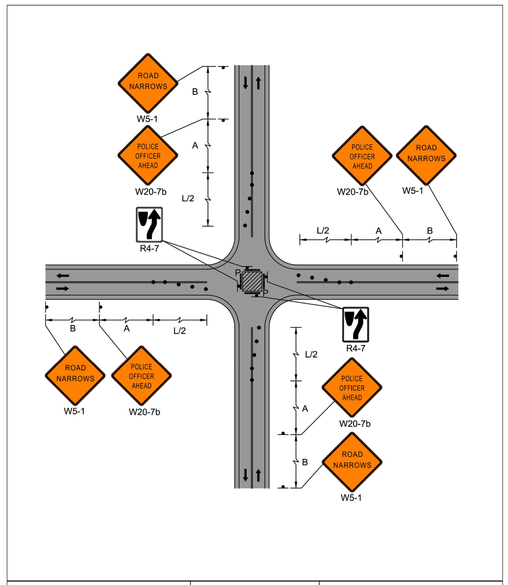
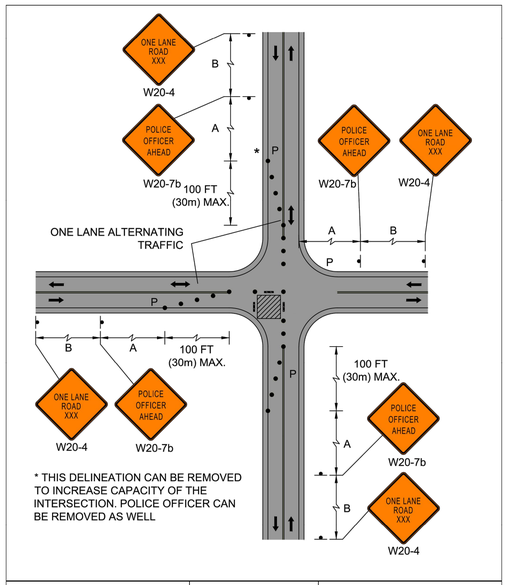


NOTES
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
5. BYPASS IS TO BE USED IN CONJUCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
6. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTCP THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)

massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE PED-7 PEDESTRIAN BYPASS NOT TO SCALE

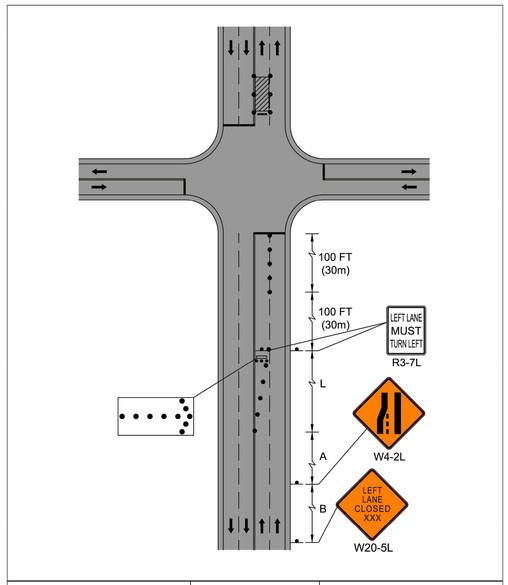


massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE INT-1 SINGLE LANE APPROACH CENTER CLOSURE NOT TO SCALE

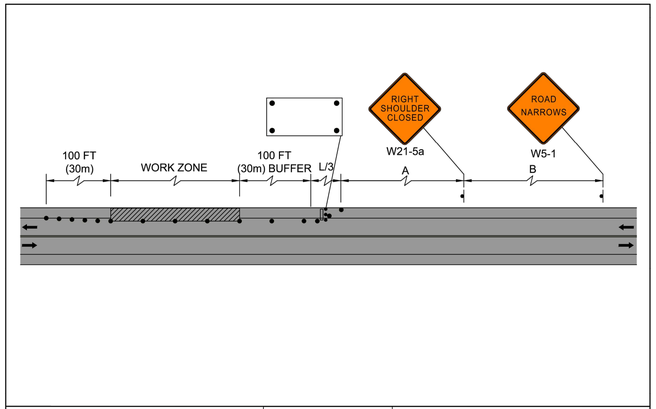


* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL

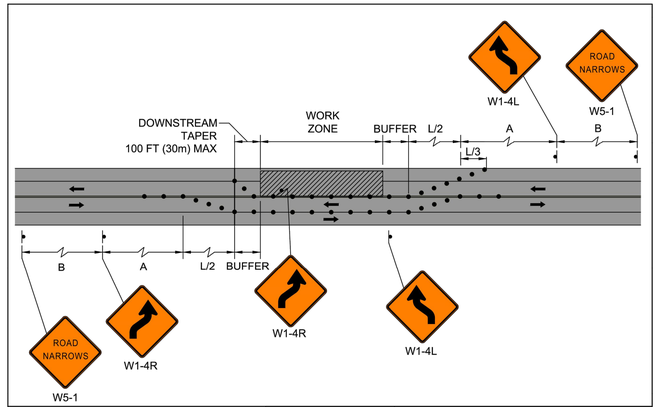
massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE INT-2 SINGLE LANE APPROACH ONE QUADRANT CLOSURE NOT TO SCALE



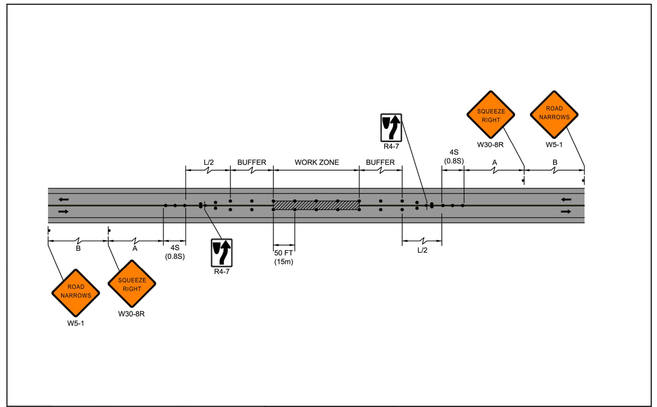
massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE INT-3 DOUBLE LANE APPROACH FAR SIDE CLOSURE INSIDE LANE NOT TO SCALE



massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE TLR-1 TWO LANE ROAD SHOULDER CLOSED NOT TO SCALE



massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE TLR-2 TWO LANE ROAD SHOULDER AND TRAVEL LANE CLOSED NOT TO SCALE



massDOT Massachusetts Department of Transportation Highway Division | Standard Details and Drawings for the Development of Temporary Traffic Control Plans | FIGURE TLR-3 TWO LANE ROAD CENTER OF ROAD CLOSURE NOT TO SCALE

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: M. DAVIS	FILE NAME: 2826300 TMP.dwg
DESIGNED BY: G. DRIESSEN	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 28652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

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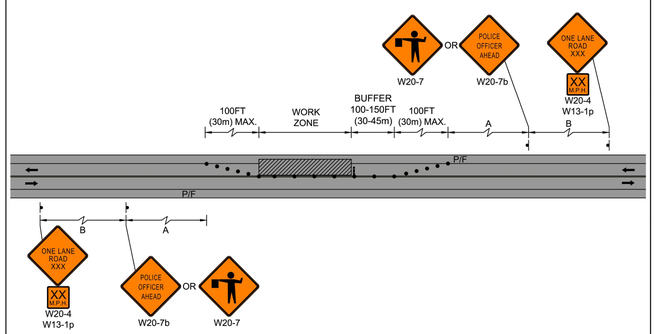
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TRAFFIC MANAGEMENT PLAN

DATE: JANUARY 23, 2015

26300\Transportation_Drawings\Progress\2826300 TMP.dwg, 1/29/2015 11:47:18 AM, DWG To PDF.pc3



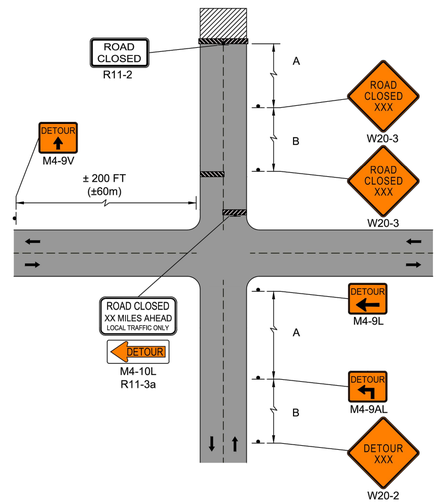
massDOT Massachusetts Department of Transportation Highway Division

Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE TLR-5

TWO LANE ROAD
ONE LANE ALTERNATING TRAFFIC

NOT TO SCALE



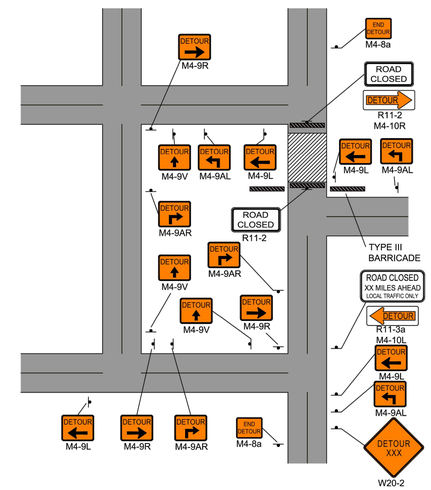
massDOT Massachusetts Department of Transportation Highway Division

Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE D-1

DETOUR
ADVANCE SIGNING

NOT TO SCALE



massDOT Massachusetts Department of Transportation Highway Division

Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE D-2

DETOUR

NOT TO SCALE

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: M. DAVIS
DESIGNED BY: G. DRIESSEN
CHECKED BY: P. BRIERE
FILE NAME: 2826300 TMP.dwg
DWG. NO:
JOB NO: 28263.00

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BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TRAFFIC MANAGEMENT PLAN

DATE: JANUARY 23, 2015

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TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (in)	SIZE OF SIGN HEIGHT (in)	TEXT	TEXT DIMENSIONS (in) LETTER HEIGHT	TEXT DIMENSIONS (in) VERTICAL SPACING	TEXT DIMENSIONS (in) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	UNIT AREA (S.F.)	AREA (S.F.)
M4-8a	24	18	END DETOUR	SEE 2009 M.U.T.C.D.			2	SEE 2009 M.U.T.C.D.			3.00	6.00
M4-9L/R	30	24	DETOUR ← DETOUR →				3				5.00	15.00
M4-9AL/R	30	24	DETOUR ↰ DETOUR ↱				2				5.00	10.00
M4-10L/R	48	18	◄ DETOUR DETOUR ►				1				6.00	6.00
R2-10a	48	36	WORK ZONE / $PEEDING FINES DOUBLED	SEE MASSDOT STANDARDS			7	SEE MASSDOT STANDARDS			12.00	84.00
R2-10e	36	48	END ROAD WORK / DOUBLE FINES END				7				12.00	84.00
R3-7L/R	30	30	LEFT LANE MUST TURN LEFT / RIGHT LANE MUST TURN RIGHT	SEE 2009 M.U.T.C.D.			2	SEE 2009 M.U.T.C.D.			6.25	12.50
R4-7	24	30					2				5.00	10.00
R9-9	24	12	SIDEWALK CLOSED				4				2.00	8.00
R9-10	24	12	SIDEWALK CLOSED / USE OTHER SIDE				3				2.00	6.00
R9-11L/R	24	18	SIDEWALK CLOSED AHEAD CROSS HERE / SIDEWALK CLOSED AHEAD CROSS HERE				4				3.00	12.00
R9-11aL/R	24	12	SIDEWALK CLOSED CROSS HERE / SIDEWALK CLOSED CROSS HERE				4				2.00	8.00
R11-2	48	30	ROAD CLOSED				1				10.00	10.00
W1-4L/R	36	36					2				9.00	18.00

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (in)	SIZE OF SIGN HEIGHT (in)	TEXT	TEXT DIMENSIONS (in) LETTER HEIGHT	TEXT DIMENSIONS (in) VERTICAL SPACING	TEXT DIMENSIONS (in) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	UNIT AREA (S.F.)	AREA (S.F.)
W4-2L/R	36	36		SEE 2009 M.U.T.C.D.			2	SEE 2009 M.U.T.C.D.			9.00	18.00
W5-1	36	36	ROAD NARROWS				4				9.00	36.00
W8-8	36	36	ROUGH ROAD				2				9.00	18.00
W11-2	36	36					4				9.00	36.00
W16-7pL	24	12					4				2.00	8.00
W20-1(AHD)	36	36	ROAD WORK AHEAD				7				9.00	63.00
W20-2(AHD)	36	36	DETOUR AHEAD				2				9.00	18.00
W20-4	36	36	ONE LANE ROAD AHEAD				2				9.00	18.00
W20-5L/R (AHD)	36	36	LEFT LANE CLOSED AHEAD / RIGHT LANE CLOSED AHEAD				2				9.00	18.00
W20-7b	36	36	POLICE OFFICER AHEAD	SEE MASSDOT STANDARDS			4	SEE MASSDOT STANDARDS			9.00	36.00
W21-5aL/R	36	36	LEFT SHOULDER CLOSED / RIGHT SHOULDER CLOSED	SEE 2009 M.U.T.C.D.			2	SEE 2009 M.U.T.C.D.			9.00	18.00
W30-8L/R	36	36	SQUEEZE LEFT / SQUEEZE RIGHT	SEE MASSDOT STANDARDS			2	SEE MASSDOT STANDARDS			9.00	18.00

ESTIMATED: 594.50 SF

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: M. DAVIS
FILE NAME: 2826300 TMP.dwg
DESIGNED BY: G. DRIESSEN
DWG. NO:
CHECKED BY: P. BRIERE
JOB NO: 28263.00

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455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
TRAFFIC MANAGEMENT PLAN

DATE: JANUARY 23, 2015

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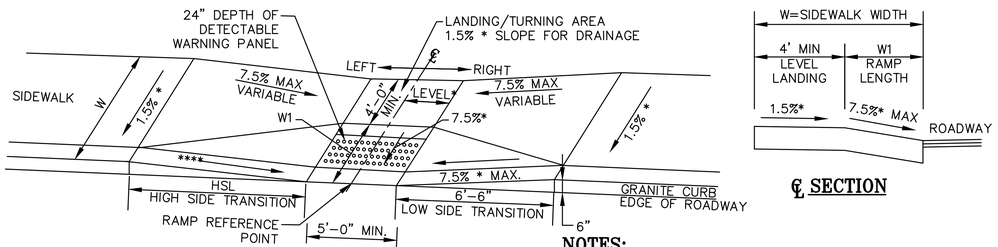
WHEELCHAIR RAMP
STYLE "A" – PARALLEL PERPENDICULAR

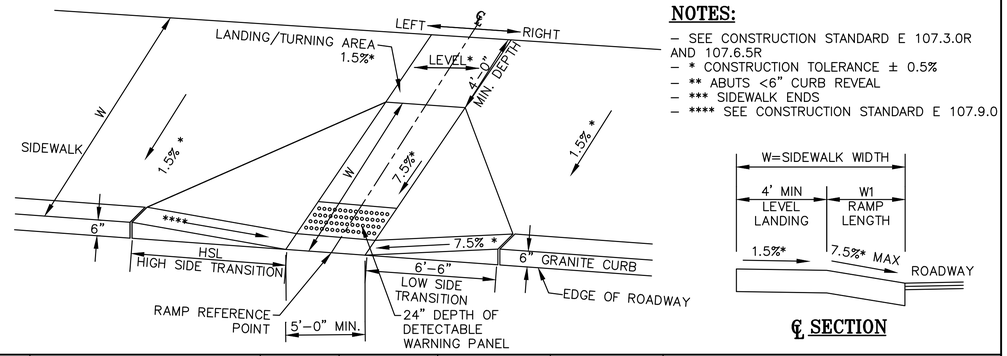


NOTES:

- SEE CONSTRUCTION STANDARD E 107.2.0R AND 107.6.5R
- * CONSTRUCTION TOLERANCE ± 0.5%
- ** ABUTS <6" OR >6" CURB REVEAL
- *** SIDEWALK ENDS
- **** SEE CONSTRUCTION STANDARD E 107.9.0

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF SIDEWALK (W)	LENGTH OF PRIMARY RAMP (W1)	WIDTH OF PRIMARY RAMP	DEPTH OF LEVEL LANDING Min. 4'–0"	TRANSITION LENGTH AND ROADWAY GUTTER SLOPE (%)			
						LEFT SIDE		RIGHT SIDE	
						L	%	L	%
A1	–	–	–	–	–	–	–	–	–
A2	CONCORD AVE.–00+44.24/28.52RT	7.0	3.0	5.0	4.00	15.0	3.3	6.5	2.8
A3	CONCORD AVE.–01+98.96/20.70LT	7.0	3.0	5.0	4.00	6.5	6.2	11.0	3.2
A4	CONCORD AVE.–01+96.40/19.67RT	10.0	6.0	5.0	4.00	11.0	3.3	6.5	3.6
A5	LEONARD ST.–04+24.34/45.15LT	–	–	–	–	–	–	–	–
A6	LEONARD ST.–04+51.04/33.20LT	6.0	2.5	5.0	6.00	15.0	4.8	6.5	5.9

WHEELCHAIR RAMP
STYLE "B" – PERPENDICULAR RAMP FOR WIDE SIDEWALKS

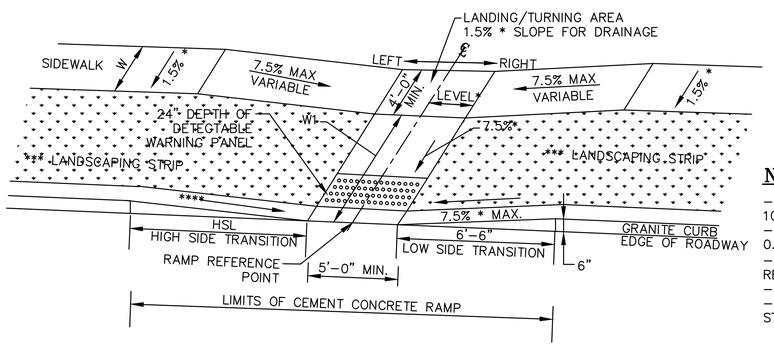


NOTES:

- SEE CONSTRUCTION STANDARD E 107.3.0R AND 107.6.5R
- * CONSTRUCTION TOLERANCE ± 0.5%
- ** ABUTS <6" CURB REVEAL
- *** SIDEWALK ENDS
- **** SEE CONSTRUCTION STANDARD E 107.9.0

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF SIDEWALK (W)	LENGTH OF PRIMARY RAMP (W1)	WIDTH OF PRIMARY RAMP (W1)	DEPTH OF LEVEL LANDING Min. 4'–0"	TRANSITION LENGTH AND ROADWAY GUTTER SLOPE (%)			
						LEFT SIDE		RIGHT SIDE	
						L	%	L	%
B1	LEONARD ST.–03+29.36/23.11LT	14.5	8.0	5.0	4.0	6.5	6.3	15.0	5.1
B2	LEONARD ST.–03+30.71/28.09RT	23.0	8.0	5.0	4.0	19.2	5.1	6.5	4.0
B3	CHANNING RD.–10+47.57/30.50LT	20.0	8.0	5.0	4.0	11.0	2.2	6.5	0.2
B4	CHANNING RD.–10+38.69/33.83RT	18.0	8.0	5.0	4.0	17.4	5.4	6.5	9.1
B5	LEONARD ST.–04+65.71/19.20LT	VARIES	8.0	5.0	5.0	6.5	1.8	13.9	13.9
B6	LEONARD ST.–07+51.82/18.00LT	20.0	8.0	5.0	4.0	7.1	1.5	7.2	0.7
B7	LEONARD ST.–07+50.32/18.00RT	21.0	8.0	5.0	4.0	7.2	0.6	7.2	1.7
B8	LEONARD ST.–10+65.96/18.34LT	20.0	9.0	5.0	4.0	6.5	1.6	3.83**	0.3
B9	LEONARD ST.–10+78.08/31.97LT	N/A	9.0	5.0	4.0	3.25**	0.8	15.0	5.3
B10	LEONARD ST.–11+05.44/32.36LT	N/A	8.0	5.0	4.0	15.0	6.0	6.5	2.6
B11	LEONARD ST.–10+67.10/18.00RT	22.5	8.0	5.0	4.0	4.5**	1.5	6.5	1.8
B12	LEONARD ST.–10+90.23/35.38RT	N/A	9.0	5.0	4.0	6.5	5.7	7.5**	4.5
B13	LEONARD ST.–04+63.79/22.40RT	18.0	8.0	5.0	4.0	15.0	5.0	7.4	4.5
B14	LEONARD ST.–02+23.88/36.32LT	16.0	8.0	5.0	4.0	6.5	7.4	15.0	10.0

WHEELCHAIR RAMP
STYLE "C" – PARALLEL PERPENDICULAR W/ NARROW LANDSCAPPING



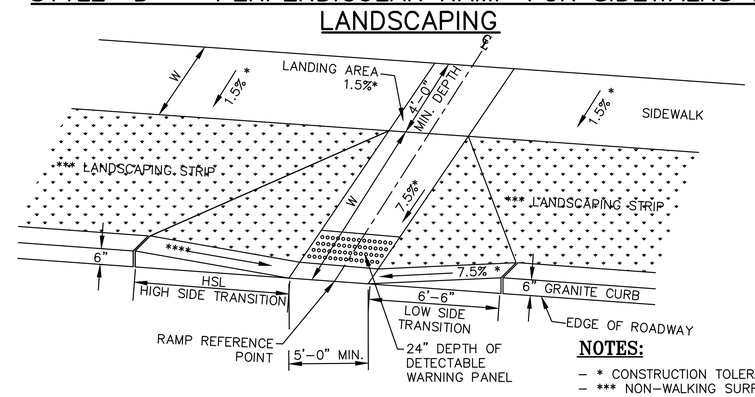
NOTES:

- SEE CONSTRUCTION STANDARD E 107.2.0R AND 107.6.5R
- * CONSTRUCTION TOLERANCE ± 0.5%
- ** ABUTS <6" OR >6" CURB REVEAL
- *** SIDEWALK ENDS
- **** SEE CONSTRUCTION STANDARD E 107.9.0

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF SIDEWALK (W)	LENGTH OF PRIMARY RAMP (W1)	WIDTH OF PRIMARY RAMP	DEPTH OF LEVEL LANDING Min. 4'–0"	TRANSITION LENGTH AND ROADWAY GUTTER SLOPE (%)			
						LEFT SIDE		RIGHT SIDE	
						L	%	L	%
C1	CHANNING RD.–11+76.38/30.80LT	4.0	5.6	5.0	4.0	6.5	–	6.5	–
C2	CHANNING RD.–12+84.21/30.16LT	4.0	5.7	5.0	4.0	6.5	–	6.5	–
C3	CHANNING RD.–14+93.27/30.55LT	4.0	5.0	5.0	4.0	6.5	–	6.5	–

NOTE: DETECTABLE WARNING PANELS ARE REQUIRED ON ALL WHEELCHAIR RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH CONSTRUCTION STANDARD DETAILS, 2012.

WHEELCHAIR RAMP
STYLE "D" – PERPENDICULAR RAMP FOR SIDEWALKS W/ LANDSCAPING



NOTES:

- * CONSTRUCTION TOLERANCE ± 0.5%
- *** NON–WALKING SURFACE
- **** SEE CONSTRUCTION STANDARD E 107.9.0

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF SIDEWALK (W)	LENGTH OF PRIMARY RAMP (W1)	WIDTH OF PRIMARY RAMP (W1)	DEPTH OF LEVEL LANDING Min. 4'–0"	TRANSITION LENGTH AND ROADWAY GUTTER SLOPE (%)			
						LEFT SIDE		RIGHT SIDE	
						L	%	L	%
D1	CHANNING RD.–15+55.73/28.79LT	5.0	8.0	5.0	5.0	6.5	–	6.5	–
D2	CHANNING RD.–15+50.9/20.00RT	5.0	7.0	5.0	5.0	4.0	–	4.0	–

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: R. SULLIVAN
DESIGNED BY: K. LEWIS
CHECKED BY: P. BRIERE
FILE NAME: 2826300 WCR.dwg
DWG. NO:
JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22653 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
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BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
ACCESSIBLE RAMP DETAILS

DATE: JANUARY 23, 2015

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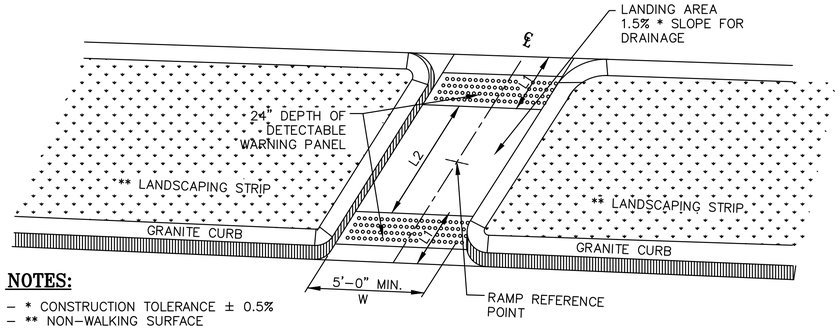
WHEELCHAIR RAMP
STYLE "E" – MEDIAN ISLAND CROSSINGS

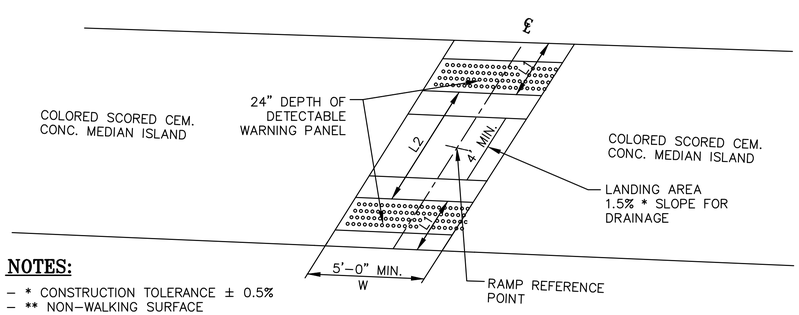


NOTES:

– * CONSTRUCTION TOLERANCE ± 0.5%
– ** NON–WALKING SURFACE

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF OPENING (W)	LENGTH OF RAMP (L1)	LENGTH OF LANDING (L2)
E1	CONCORD AVE.–00+43.71/00.00RT	7.0	2.5	2.0
E2	LEONARD ST.–03+29.43/00.00RT	8.0	2.5	3.0
E3	CHANNING RD.–10+42.66/00.00RT	7.0	2.5	2.0

WHEELCHAIR RAMP
STYLE "F" – MEDIAN ISLAND CROSSINGS



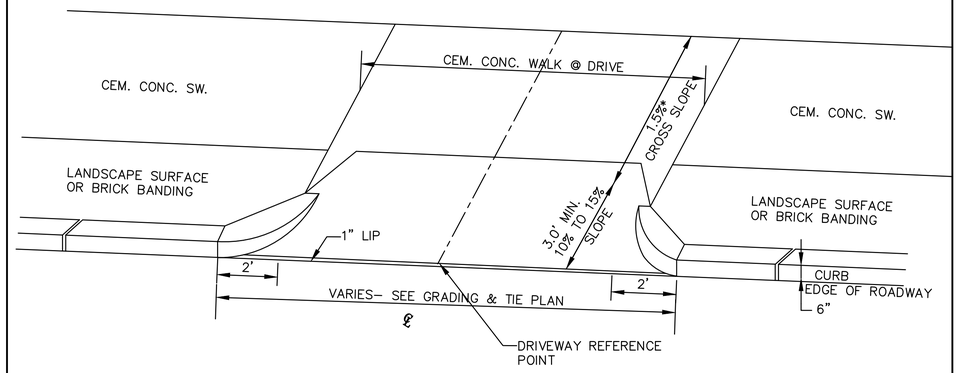
NOTES:

– * CONSTRUCTION TOLERANCE ± 0.5%
– ** NON–WALKING SURFACE

WCR #	℄ RAMP REFERENCE POINT (STATION/OFFSET) Ref Street for Centerline	WIDTH OF OPENING (W)	LENGTH OF RAMP (L1)	LENGTH OF LANDING (L2)
F1	CHAFLIN ST.–00+29.00/00.00RT	8.0	2.5	4.0
F2	CROSS ST.–00+30.76/01.76LT	8.0	2.5	11.0

NOTE: DETECTABLE WARNING PANELS ARE REQUIRED ON ALL WHEELCHAIR RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH CONSTRUCTION STANDARD DETAILS, 2012.

SIDEWALK THROUGH
DRIVEWAYS – TYPE H

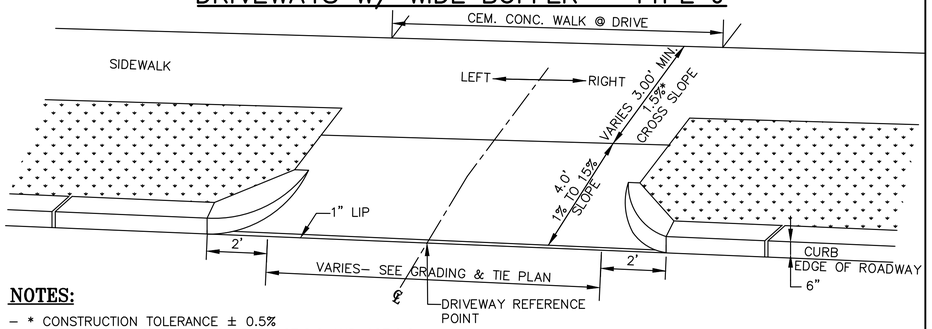


NOTES:

– * CONSTRUCTION TOLERANCE ± 0.5%

DRIVEWAY #	DRIVEWAY REFERENCE POINT		WIDTH OF RAMP	WIDTH OF TRAVEL PATH ACROSS OPENING	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	ROADWAY GUTTER SLOPE
	STATION	OFFSET					
H1	LEONARD ST.–06+09.20	24.00 LT	N/A	5.7	N/A	N/A	N/A
H2	LEONARD ST.–08+22.73	24.00 LT	N/A	10.3	N/A	N/A	N/A
H3	LEONARD ST.–08+92.17	24.00 LT	N/A	10.0	N/A	N/A	N/A
H4	LEONARD ST.–11+82.02	24.00 LT	N/A	5.0	N/A	N/A	N/A
H5	LEONARD ST.–12+72.49	16.00 LT	N/A	5.0	N/A	N/A	N/A
H6	LEONARD ST.–14+28.32	16.59 LT	N/A	5.0	N/A	N/A	N/A
H7	LEONARD ST.–15+10.06	15.42 LT	N/A	4.5	N/A	N/A	N/A
H8	LEONARD ST.–13+37.35	15.59 RT	N/A	5.1	N/A	N/A	N/A
H9	LEONARD ST.–14+17.01	15.66 RT	N/A	5.4	N/A	N/A	N/A
H10	CHANNING RD.–11+17.70	22.80 LT	N/A	5.0	N/A	N/A	N/A
H11	CLAFLIN ST.–00+61.77	35.66 LT	N/A	4.0	N/A	N/A	N/A
H12	CHANNING RD.–11+40.56	20.44 RT	N/A	7.0	N/A	N/A	N/A
H13	CLAFLIN ST.–01+61.29	17.47 LT	N/A	4.0	N/A	N/A	N/A
H14	CROSS ST.–00+97.41	20.95 LT	N/A	N/A	N/A	N/A	N/A
H15	CONCORD AVE.–01+06.63	25.58 RT	N/A	4.0	N/A	N/A	N/A
H16	CONCORD AVE.–02+70.08	20.00 RT	N/A	4.0	N/A	N/A	N/A

SIDEWALK THROUGH DRIVEWAYS W/ WIDE BUFFER – TYPE J

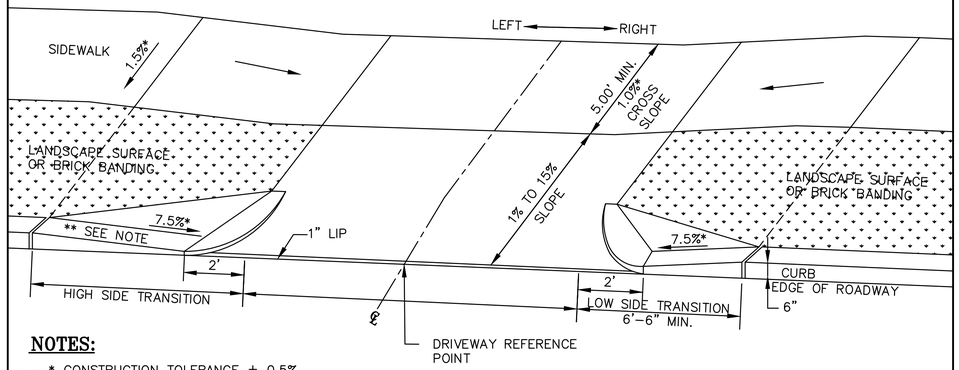


NOTES:

– * CONSTRUCTION TOLERANCE ± 0.5%
– ** SEE CONSTRUCTION STANDARD E 107.8.0 AND 107.9.0 WHERE ABUTTING AREA NOT GRASS

DRIVEWAY #	DRIVEWAY REFERENCE POINT		WIDTH OF SIDEWALK	WIDTH OF TRAVEL PATH ACROSS OPENING	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	ROADWAY GUTTER SLOPE
	STATION	OFFSET					
J1	CHANNING RD.–11+78.76	20.04 RT	5.0	8.8	N/A	N/A	N/A
J2	CHANNING RD.–12+36.19	20.00 RT	5.0	9.0	N/A	N/A	N/A
J3	CHANNING RD.–13+34.22	20.00 RT	5.0	9.0	N/A	N/A	N/A
J4	CHANNING RD.–13+90.52	20.00 RT	5.0	9.0	N/A	N/A	N/A
J5	CHANNING RD.–14+42.07	20.00 RT	5.0	9.0	N/A	N/A	N/A
J6	CHANNING RD.–14+60.04	20.00 RT	5.0	9.0	N/A	N/A	N/A
J7	CHANNING RD.–15+15.71	20.00 RT	5.0	9.0	N/A	N/A	N/A
J8	CHANNING RD.–15+66.96	20.00 RT	5.0	9.0	N/A	N/A	N/A
J9	CHANNING RD.–16+21.93	20.00 RT	5.0	9.0	N/A	N/A	N/A
J10	CHANNING RD.–16+78.52	20.00 RT	5.0	9.0	N/A	N/A	N/A

SIDEWALK THROUGH DRIVEWAYS W/NARROW BUFFER – TYPE K



NOTES:

– * CONSTRUCTION TOLERANCE ± 0.5%
– ** SEE CONSTRUCTION STANDARD E 107.8.0 AND 107.9.0
– *** ABUTS <6" CURB REVEAL
– **** ABUTS >6" CURB REVEAL

DRIVEWAY #	DRIVEWAY REFERENCE POINT		WIDTH OF RAMP	WIDTH OF TRAVEL PATH ACROSS OPENING	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	ROADWAY GUTTER SLOPE
	STATION	OFFSET					
K1	LEONARD ST.–14+58.66	15.32 LT	5.0	5.0	6.5	N/A	N/A
K2	LEONARD ST.–14+84.32	15.41 LT	5.0	5.0	N/A	6.5	N/A
K3	CLAFLIN ST.–01+64.97	17.59 RT	VARIES	VARIES	N/A	6.5	N/A
K4	CHANNING RD.–14+24.59	20.00 LT	VARIES	VARIES	6.5	6.5	N/A

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: R. SULLIVAN
FILE NAME: 2826300 WCR.dwg
DESIGNED BY: K. LEWIS
DWG. NO:
CHECKED BY: P. BRIERE
JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER E. BRIERE No. 29652 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
ACCESSIBLE RAMP DETAILS

DATE: JANUARY 23, 2015

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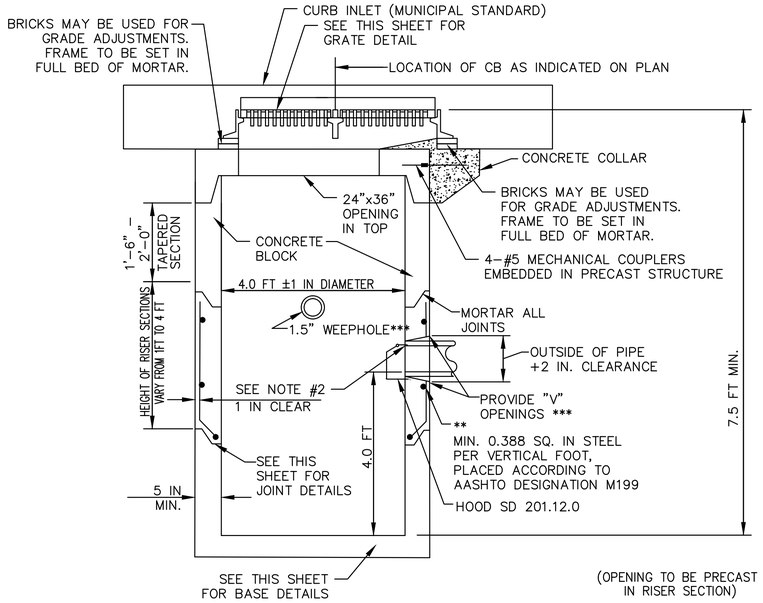
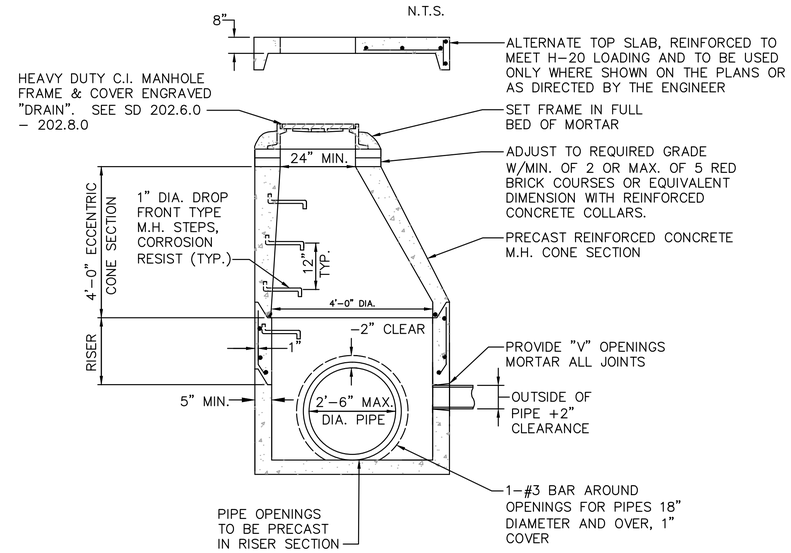


** REINFORCED STEEL BASED ON A WALL THICKNESS OF 5 IN.
*** OPENING TO BE PRECAST IN RISER SECTION.

NOTES:

1. DETAILS NOT INDICATED ABOVE ARE TO BE SIMILAR TO THOSE SHOWN ON 201.3.0
2. FACE OF PIPE FLUSH OR NOT TO PROJECT MORE THAN 4 IN FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
3. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHOD, SEE STANDARD SPECIFICATIONS.
4. ALL CONCRETE TO BE AIR ENTRAINED.
5. DESIGN TO CONFORM TO H.20 LOADING.

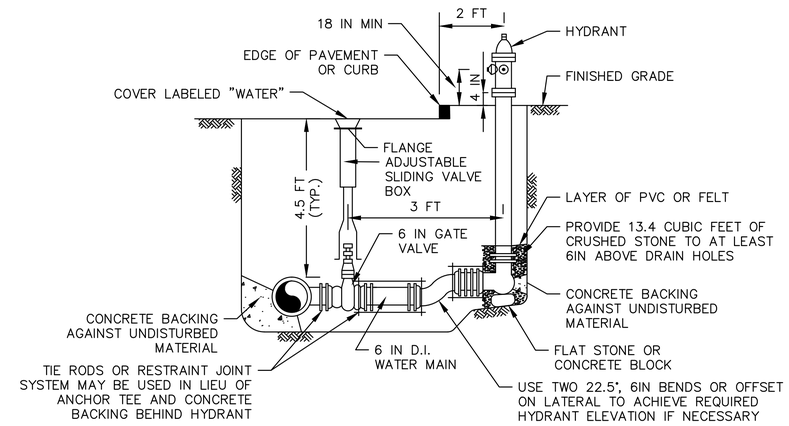
CATCH BASIN MUNICIPAL STANDARD TYPE 2



NOTE:
PREFORMED BITUMASTIC SEALANT AS SPECIFIED. SHALL FILL AT LEAST 75% OF JOINT CAVITY. RUBBER OR "O" RING SET IN RECESS.

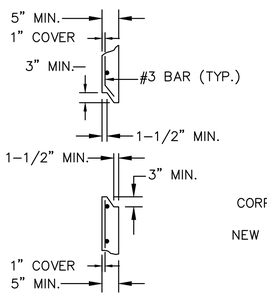
MANHOLE MUNICIPAL STANDARD

N.T.S.



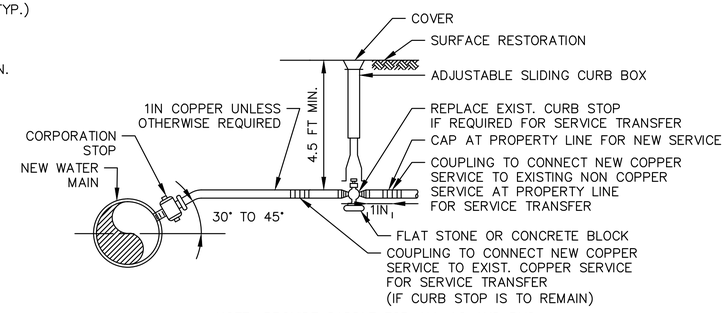
HYDRANT AND VALVE DETAIL

N.T.S.



JOINT DETAILS

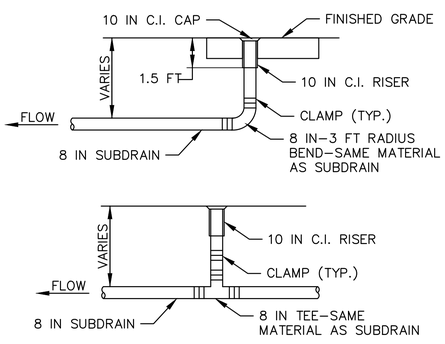
N.T.S.



NOTE: PROVIDE SADDLE FOR ALL AC AND PVC MAINS AND ALL 2 IN OR LARGER STOPS

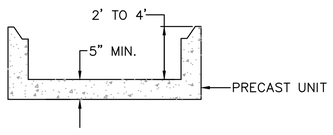
WATER SERVICE DETAIL

N.T.S.

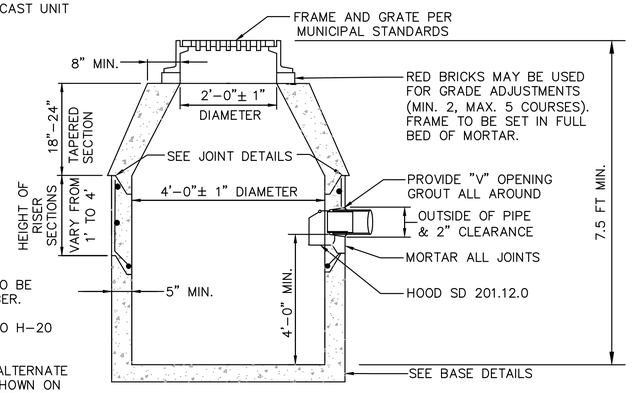


CLEANOUTS FOR 8-INCH SUBDRAIN

N.T.S.



BASE DETAILS

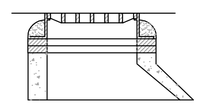


NOTES:

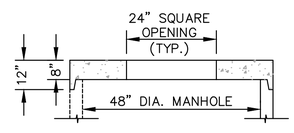
1. ALL PRECAST JOINTS TO BE SEALED WITH BUTYL RUBBER.
2. DESIGN TO CONFORM TO H-20 LOADING.
3. CONTRACTOR TO USE ALTERNATE TOP SLAB ONLY WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

CATCH BASIN MUNICIPAL STANDARD

N.T.S.



ALTERNATE ECCENTRIC CONE SECTION



ALTERNATE TOP SLAB

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: M. DAVIS
DESIGNED BY: K. LEWIS
CHECKED BY: P. BRIERE
FILE NAME: 2826300 DET-CONST
DWG. NO:
JOB NO: 28263.00

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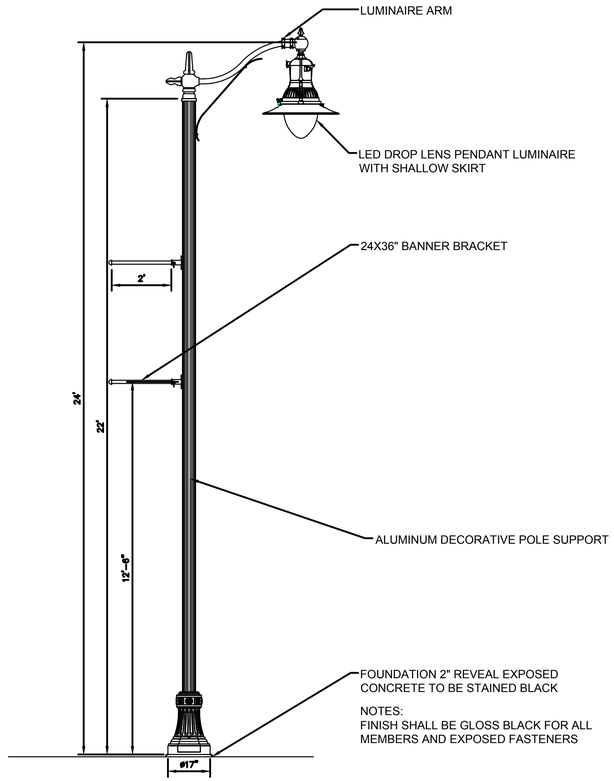
COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 39593 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
CONSTRUCTION DETAILS

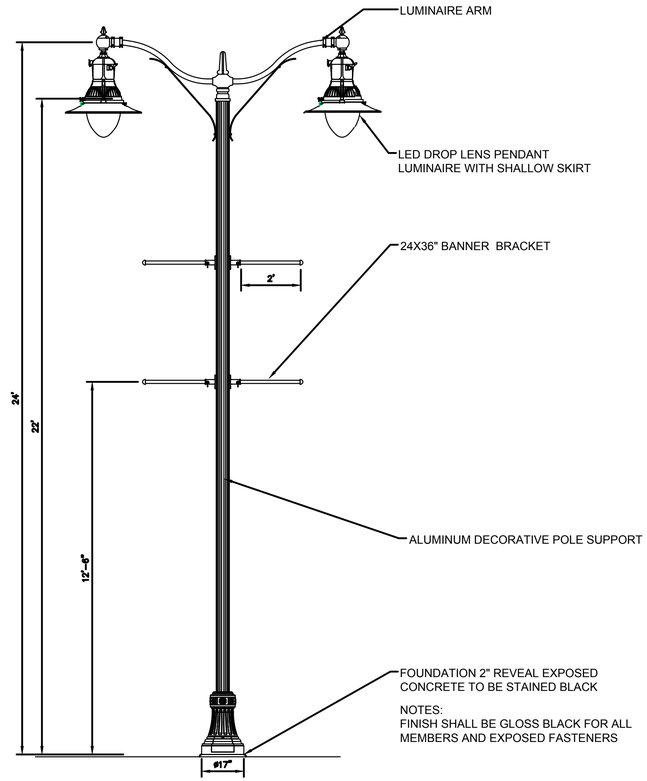
DATE: JANUARY 23, 2015

26300\Transportation_Drawings\Progress\2826300 DET-CONST.dwg, 1/29/2015 11:48:00 AM, DWG To PDF.pc3



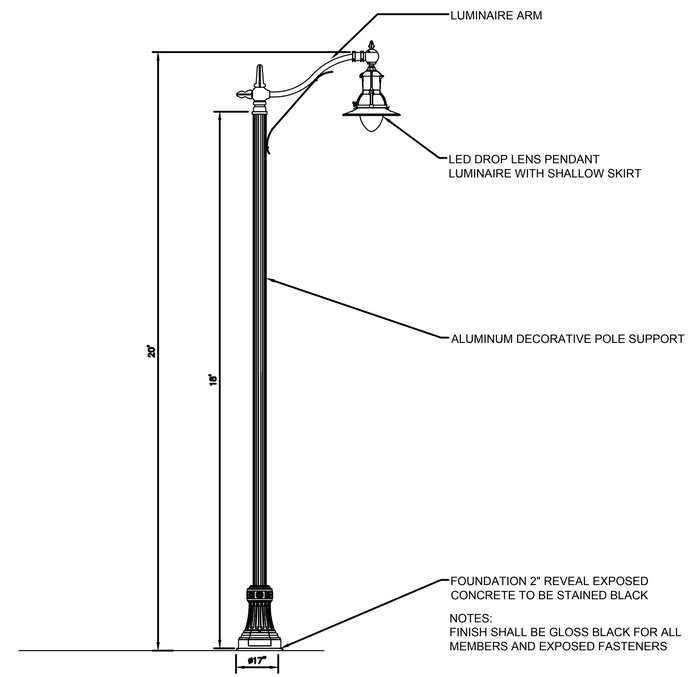
LIGHTPOLE AND LUMINAIRE TYPE (A) SINGLE

SCALE: NONE



LIGHTPOLE AND LUMINAIRE TYPE (B) DOUBLE

SCALE: NONE

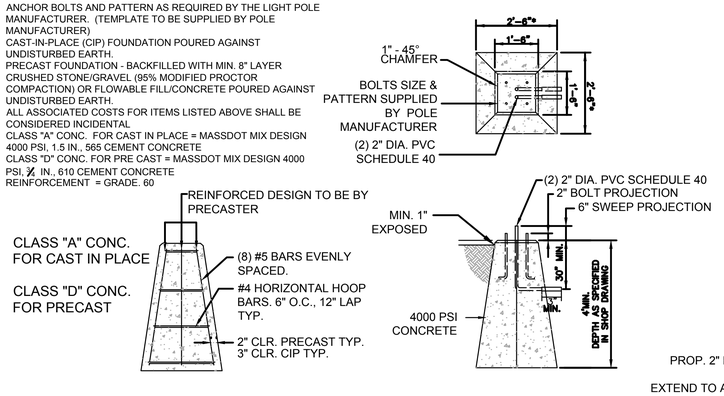


LIGHTPOLE AND LUMINAIRE TYPE (D) RESIDENTIAL

SCALE: NONE

NOTES:

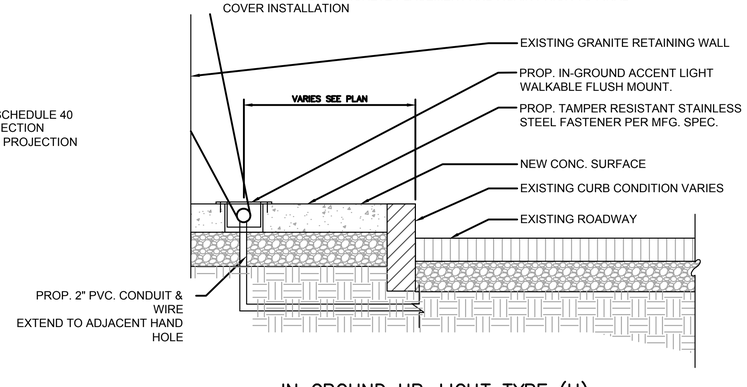
1. CEMENT CONCRETE LIGHT POLE FOOTING PROVIDED FOR BIDDING ONLY CONTRACTOR MUST SUBMIT SHOP DRAWING STAMPED BY STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL BY OWNERS REPRESENTATIVE.
2. ANCHOR BOLTS AND PATTERN AS REQUIRED BY THE LIGHT POLE MANUFACTURER. (TEMPLATE TO BE SUPPLIED BY POLE MANUFACTURER)
3. CAST-IN-PLACE (CIP) FOUNDATION POURED AGAINST UNDISTURBED EARTH.
4. PRECAST FOUNDATION - BACKFILLED WITH MIN. 8" LAYER CRUSHED STONE/GRAVEL (95% MODIFIED PROCTOR COMPACTION) OR FLOWABLE FILL/CONCRETE POURED AGAINST UNDISTURBED EARTH.
5. ALL ASSOCIATED COSTS FOR ITEMS LISTED ABOVE SHALL BE CONSIDERED INCIDENTAL
6. CLASS "A" CONC. FOR CAST IN PLACE = MASSDOT MIX DESIGN 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE
7. CLASS "D" CONC. FOR PRE CAST = MASSDOT MIX DESIGN 4000 PSI, ¾ IN., 610 CEMENT CONCRETE
8. REINFORCEMENT = GRADE. 60



CEMENT CONCRETE LIGHT POLE FOUNDATION

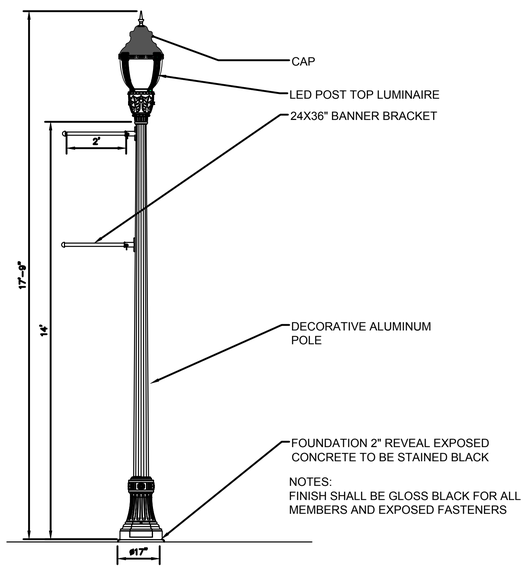
SCALE: NONE

NOTES:
FIXTURE SHALL BE POWERED SO POSITION AND BEAM ANGLE CAN BE ADJUSTED PRIOR CONCRETE PLACEMENT AND AGAIN PRIOR TO FINAL COVER INSTALLATION



IN GROUND UP-LIGHT TYPE (U)

SCALE: NONE



LIGHTPOLE AND LUMINAIRE TYPE (C) POSTTOP

SCALE: NONE

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: C. BASTIEN
DESIGNED BY: C. BASTIEN
CHECKED BY: P. BRIERE
FILE NAME: 2826300 DET.dwg
DWG. NO:
JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22653 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING DETAILS

DATE: JANUARY 23, 2015

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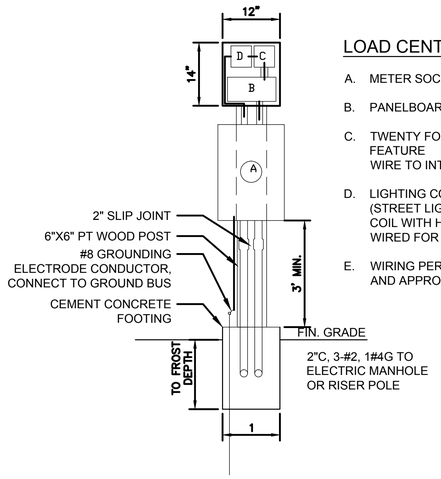


LOAD CENTER COMPONENT DESCRIPTION

A. METER SOCKET - PER BMLD REQUIREMENTS.

B. PANELBOARD - NEMA 1, 100A, 120/240V, SINGLE PHASE, 3 WIRE.

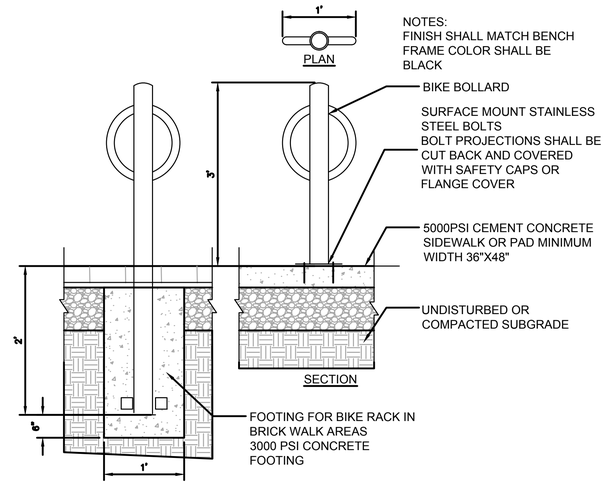
C. TWENTY FOUR HOUR TIME CLOCK WITH RESERVE POWER FEATURE
WIRE TO INTERRUPT CIRCUIT POWER AT PRE-SET TIME.

D. LIGHTING CONTACTOR - NEMA 1 ENCLOSURE, 30 AMP, 1-4 POLE (STREET LIGHTS), 1-4 POLE (RECEPTACLES). 120 VOLT MAGNETIC COIL WITH HAND-OFF-AUTO SWITCH INTEGRAL TO ENCLOSURE, WIRED FOR PHOTOCELL CONTROL IN "AUTO" POSITION.

E. WIRING PER CIRCUIT DIAGRAM TO BE PROVIDED BY ELECTRICIAN AND APPROVED BY ENGINEER.

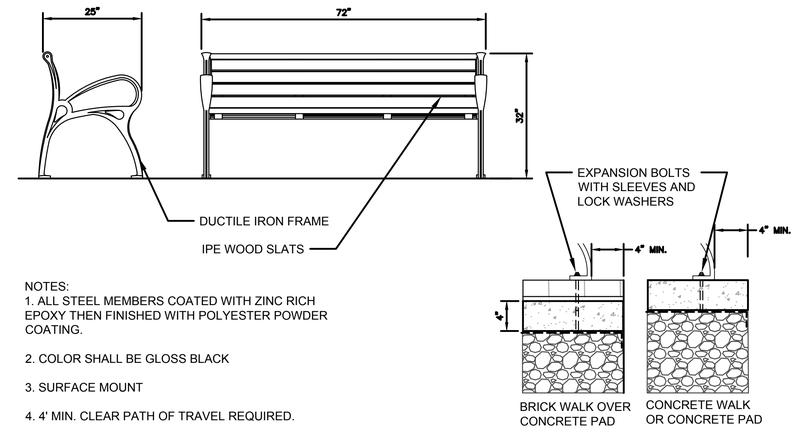
POST MOUNTED LIGHTING LOAD CENTER

N.T.S.



BICYCLE RACK

N.T.S.



NOTES:
1. ALL STEEL MEMBERS COATED WITH ZINC RICH EPOXY THEN FINISHED WITH POLYESTER POWDER COATING.

2. COLOR SHALL BE GLOSS BLACK

3. SURFACE MOUNT

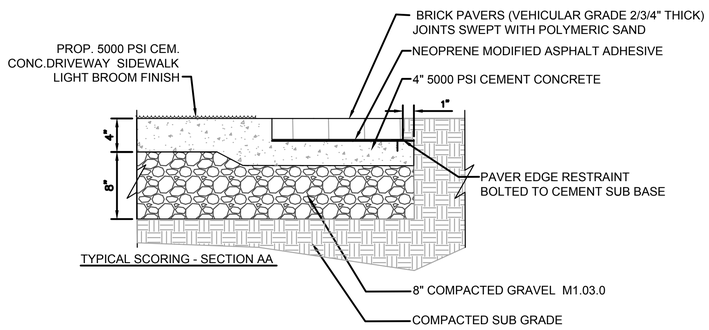
4. 4' MIN. CLEAR PATH OF TRAVEL REQUIRED.

NOTES:
1. MATERIALS SHALL MATCH BENCH.
2. RECEPTACLE TO BE SAME STYLE AS BENCH.
3. ALL STEEL MEMBERS COATED WITH ZINC RICH EPOXY THEN FINISHED WITH POLYESTER POWDER COATING. COLOR SHALL BE BLACK.

BENCH

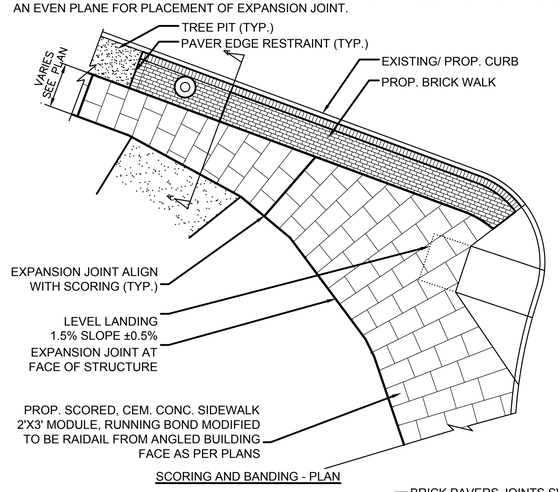
N.T.S.

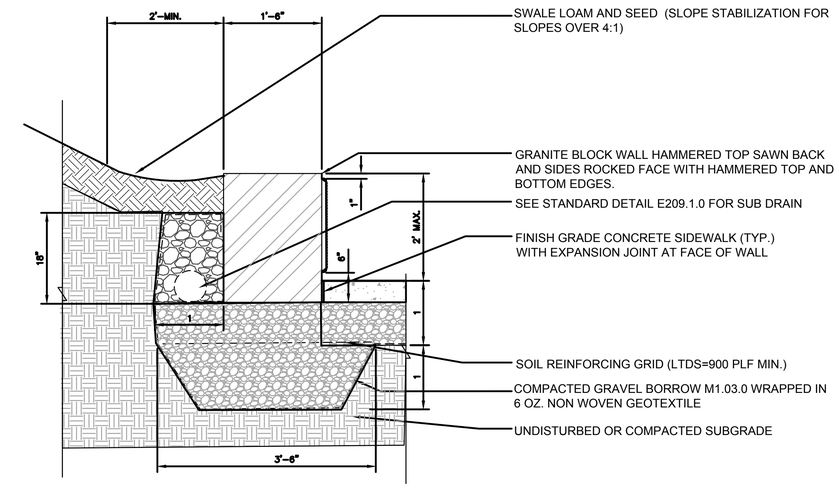
NOTES:
PROVIDE EXPANSION JOINT @ 10' O.C. MAX.IN SIDEWALK, BETWEEN WALK & BANDING AND AT FACE OF STRUCTURES.
EXPANSION JOINTS SHALL BE SEALED, COLOR OF SEALANT TO MATCH CONCRETE.
FILL UNEVEN SURFACES AT BUILDING FACE WHERE SIDEWALK HAS BEEN REMOVED TO CREATE AN EVEN PLANE FOR PLACEMENT OF EXPANSION JOINT.



BRICK DRIVEWAY

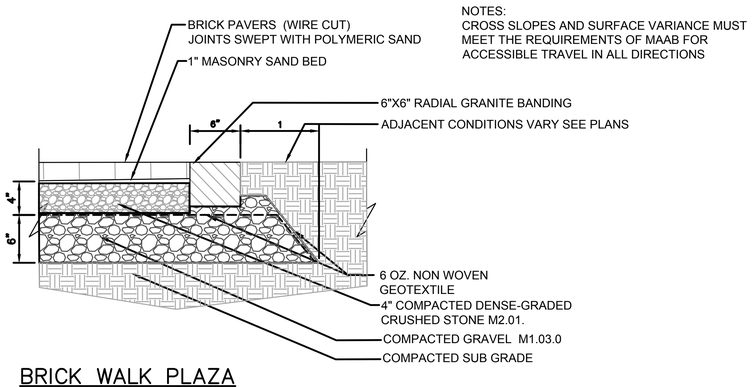
SCALE: NONE





GRANITE BLOCK WALL

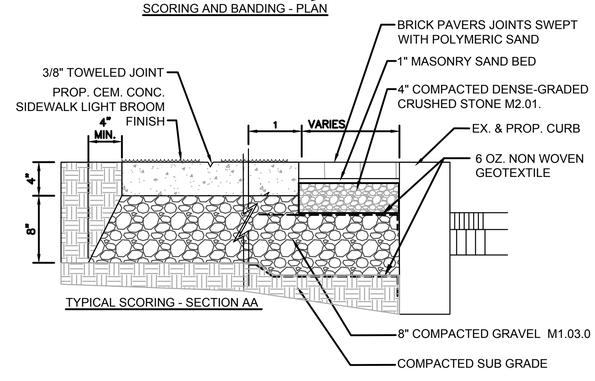
SCALE: NONE



NOTES:
CROSS SLOPES AND SURFACE VARIANCE MUST MEET THE REQUIREMENTS OF MAAB FOR ACCESSIBLE TRAVEL IN ALL DIRECTIONS

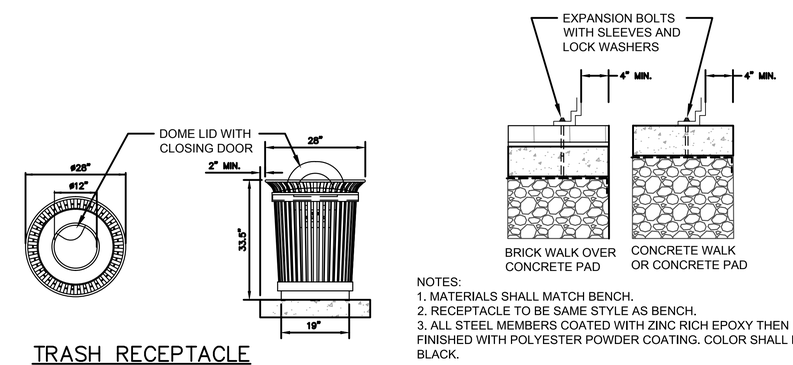
BRICK WALK PLAZA

SCALE: NONE



SIDEWALK SCORING AND BRICK WALK BANDING

SCALE: NONE



NOTES:
1. MATERIALS SHALL MATCH BENCH.
2. RECEPTACLE TO BE SAME STYLE AS BENCH.
3. ALL STEEL MEMBERS COATED WITH ZINC RICH EPOXY THEN FINISHED WITH POLYESTER POWDER COATING. COLOR SHALL BE BLACK.

TRASH RECEPTACLE

SCALE: NONE

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

DRAWN BY: C. BASTIEN	FILE NAME: 2826300 DET.dwg
DESIGNED BY: C. BASTIEN	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER L. BRIERE No. 29852 REGISTERED PROFESSIONAL ENGINEER 1/29/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LIGHTING AND LANDSCAPE DETAILS

DATE: JANUARY 23, 2015

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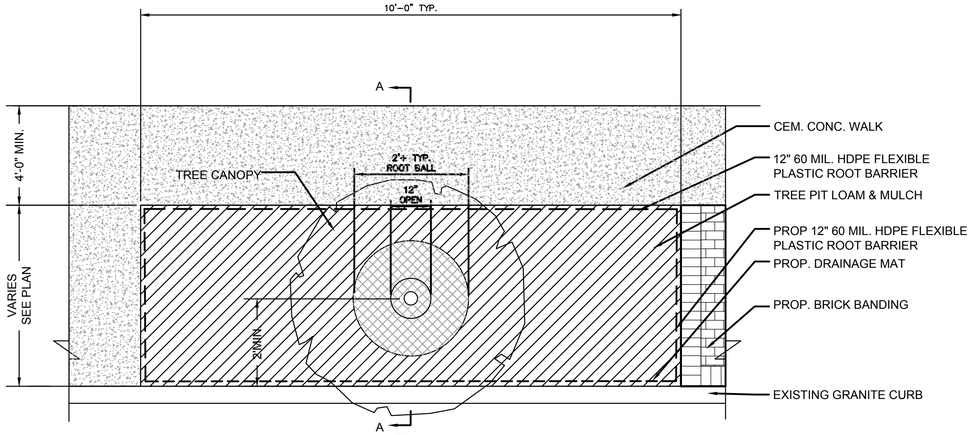
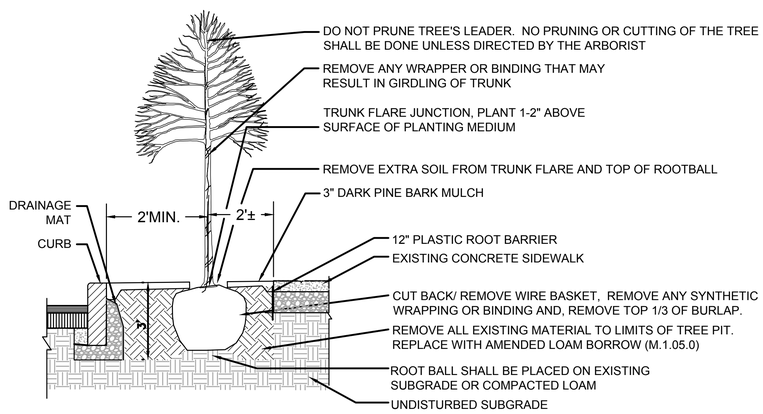


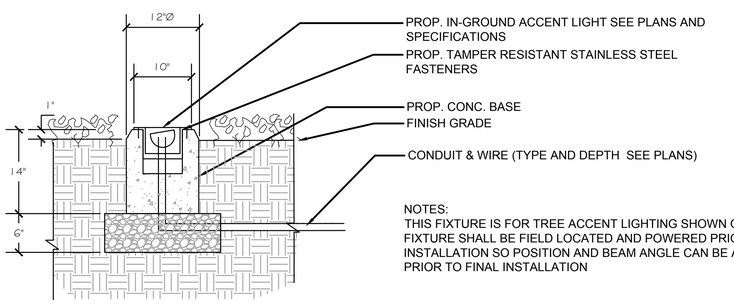
PLAN



SECTION A

TREE PIT PLANTING

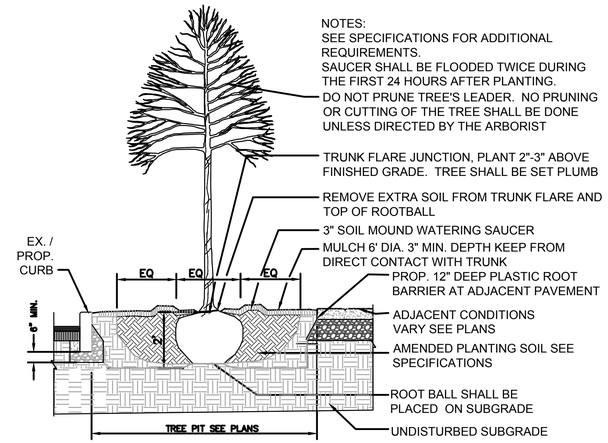
SCALE: NONE



NOTES:
THIS FIXTURE IS FOR TREE ACCENT LIGHTING SHOWN ON PLANS. FIXTURE SHALL BE FIELD LOCATED AND POWERED PRIOR TO INSTALLATION SO POSITION AND BEAM ANGLE CAN BE ADJUSTED PRIOR TO FINAL INSTALLATION

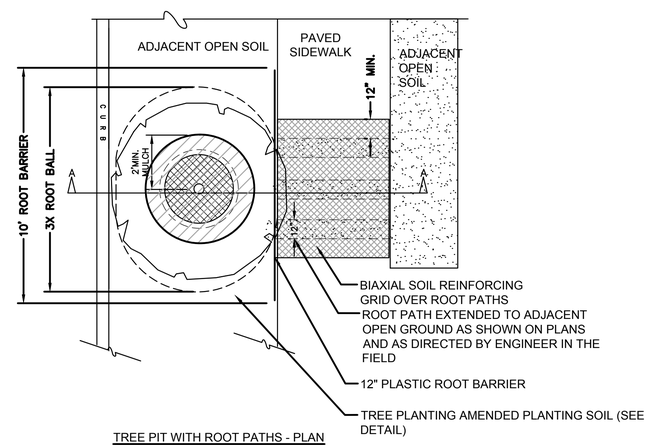
IN GROUND PLANTING ACCENT LIGHT

SCALE: NONE

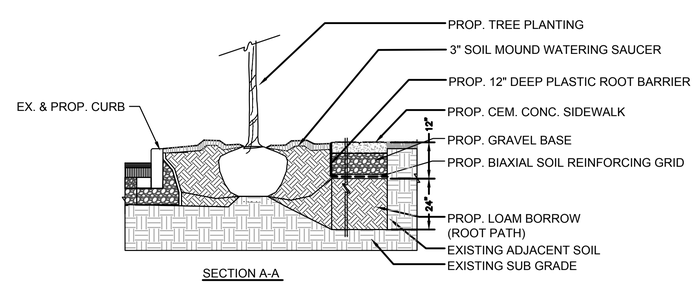


TREE PLANTING TYPICAL

N.T.S.



TREE PIT WITH ROOT PATHS - PLAN

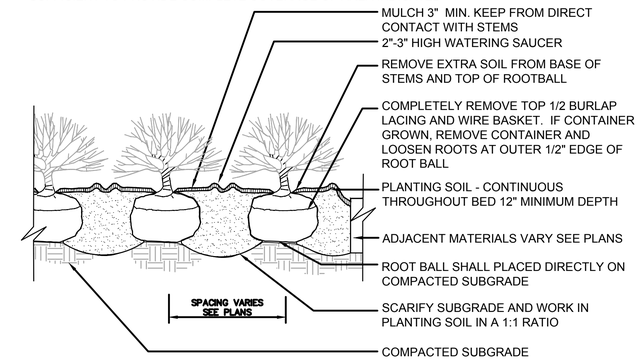


SECTION A-A

ROOT PATHS (AT TREE PIT)

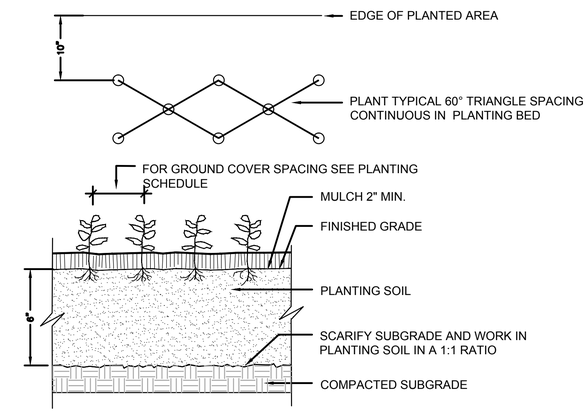
N.T.S.

SHRUB PLANTING NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. NO PRUNING OR CUTTING UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
3. SAUCER SHALL BE FLOODED TWICE DURING THE FIRST 24 HOURS AFTER PLANTING.
4. SHRUBS SHALL BE SET PLUMB AND PLANTED SO THAT THE TOP OF THE ROOTBALL IS 1"-2" ABOVE FINISHED GRADE.
5. FOR HEDGE PLANTING SHRUBS SHALL BE SPACED AS CALLED OUT ON PLANS AT QUANTITIES SUFFICIENT TO PROVIDE COMPLETE COVERAGE OF AREA INDICATED



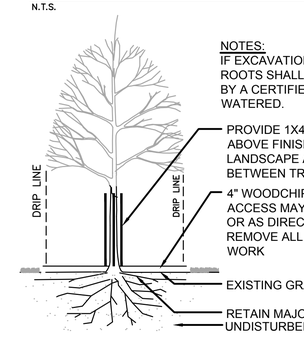
SHRUB PLANTING BED (HEDGE)

N.T.S.



GROUNDCOVER PLANTING

N.T.S.

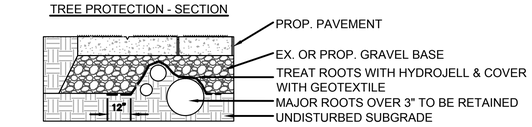


NOTES:
IF EXCAVATION OCCURS WITHIN DRIP LINE, EXISTING ROOTS SHALL BE CLEANLY CUT PRIOR TO EXCAVATION BY A CERTIFIED ARBORIST AND TREES SHALL BE WATERED.

PROVIDE 1X4, EIGHT (8) SLATS PER TREE. 4'-0" MIN. ABOVE FINISH GRADE. TIE SLATS TO TREE WITH LANDSCAPE ARBOR TAPE. ALLOW AIR CIRCULATION BETWEEN TREE TRUNK AND SLATS.

4" WOODCHIP LAYER IN LOCATIONS WHERE VEHICLE ACCESS MAY CROSS OPEN SOIL WITHIN DRIP LINE OR AS DIRECTED BY THE ENGINEER. REMOVE ALL WOODCHIPS UPON COMPLETION OF WORK

TREE PROTECTION - SECTION



EXCAVATE AROUND MAJOR TREE ROOTS - SECTION

EXISTING TREE PROTECTION

N.T.S.

REV.	DATE	DESIGNED BY	CHECKED BY	REVISION DESCRIPTION

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DESIGNED BY: C. BASTIEN	DWG. NO:
CHECKED BY: P. BRIERE	JOB NO: 28263.00

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COMMONWEALTH OF MASSACHUSETTS PETER J. BRIERE No. 22652 REGISTERED PROFESSIONAL ENGINEER 1/23/2015

PREPARED FOR:
TOWN OF BELMONT
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

SHEET TITLE:
BELMONT CENTER IMPROVEMENTS
BELMONT, MASSACHUSETTS
LANDSCAPE DETAILS

DATE: JANUARY 23, 2015

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