

Billerica, MA

Reconstruction of Boston Road (Route 3A)

MassDOT Highway Division Project File # 605178

August 2021

CALCULATION BOOK

100% SUBMISSION

08/03/2021



BETA

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BOSTON ROAD (ROUTE 3A)
TOWN OF BILLERICA
FEDERAL AID NUMBER OR CONTRACT NUMBER
100% COST ESTIMATE (PROJECT FILE NO. 605178)
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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

AREAS (FROM AUTOCAD)

BOSTON ROAD (ROUTE 3A)

DESCRIPTION	AREA
Mill & Overlay	54,900 SF
Good St and all side Streets Mill & Overlay	14,500 SF
Full Depth/Box Widening >4'	190,000 SF
Box Widening <4'	1,800 SF
Leveling Course	0 SF
Cem. Conc. Sidewalk & SUP	51,200 SF
Cem. Conc. Wheelchair Ramp	8,200 SF
Cem. Conc. Sidewalk at Driveway	21,900 SF
Hot Mix Asphalt Driveway	17,100 SF
Hot Mix Asphalt Sidewalk/Walk	100 SF
Brick Pavers for Median	5600 SF
Brick Pavers for sidewalk	4800.00 SF
Loam and Seeding-Grass Areas	56,000 SF
Granite Curb VA-4 -Straight (including Transition)	9,363 LF
Granite Curb - Sloped (SUP)	1,239 LF
Granite Curb - Curved (Including Transition)	1,777 LF
HMA Curb	110 LF

Total Length of the Project		5484 FT
Total number of driveways	Residential	27
	Commercial	21
LENGTH OF PROJECT:		Drain pipe (10"-24")
BOSTON ROAD	3675 ft =	0.70 Miles
HERITAGE ROAD	1017 ft =	0.19 Miles
GOOD STREET	601 ft =	0.11 Miles
FARMERS LANE	191 ft =	0.04 Miles
	5484	TOTAL
		235 10"
		1600 12"
		950 15"
		1650 18"
		260 24"
		4695 FT



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

EARTHWORK QUANTITY SHEET

BOSTON ROAD

STATION	DIST (FT)	CUT			FILL		
		E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)	E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)
12+35		10.00			0.00		
	15.0		19.70	295.50	0.00	0.00	0.00
12+50		29.40			0.00		
	25.0		20.20	505.00	0.00	0.00	0.00
12+75		11.00			0.00		
	25.0		16.45	411.25	0.00	0.00	0.00
13+00		21.90			0.00		
	50.0		19.55	977.50	0.00	0.00	0.00
13+50		17.20			0.00		
	40.0		18.00	720.00	0.00	0.00	0.00
13+90		18.80			0.00		
	10.0		19.15	191.50	0.00	0.00	0.00
14+00		19.50			0.00		
	20.0		21.55	431.00	0.00	0.00	0.00
14+20		23.60			0.00		
	30.0		22.00	660.00	0.00	0.00	0.00
14+50		20.40			0.00		
	15.0		20.00	300.00	0.00	0.00	0.00
14+65		19.60			0.00		
	35.0		60.60	2121.00	0.00	0.00	0.00
15+00		101.60			0.00		
	25.0		102.95	2573.75	0.00	0.00	0.00
15+25		104.30			0.00		
	25.0		102.35	2558.75	0.00	0.00	0.00
15+50		100.40			0.00		
	50.0		102.00	5100.00	0.25	0.25	12.50
16+00		103.60			0.50		
	30.0		111.25	3337.50	0.25	0.25	7.50
16+30		118.90			0.00		
	20.0		116.85	2337.00	0.00	0.00	0.00
16+50		114.80			0.00		
	50.0		107.40	5370.00	0.00	0.00	0.00
17+00		100.00			0.00		
	50.0		97.60	4880.00	0.55	0.55	27.50
17+50		95.20			1.10		
	50.0		93.40	4670.00	2.90	2.90	145.00
18+00		91.60			4.70		
	50.0		93.10	4655.00	6.30	6.30	315.00
18+50		94.60			7.90		
	50.0		95.10	4755.00	5.65	5.65	282.50
19+00		95.60			3.40		
	50.0		99.75	4987.50	2.05	2.05	102.50
19+50		103.90			0.70		
	50.0		105.70	5285.00	0.40	0.40	20.00



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JOB: 4722
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EARTHWORK QUANTITY SHEET

20+00		107.50			0.10		
	35.0		125.65	4397.75		0.05	1.75
20+35		143.80			0.00		
	15.0		146.00	2190.00		0.00	0.00
20+50		148.20			0.00		
	10.0		148.95	1489.50		0.00	0.00
20+60		149.70			0.00		
	40.0		156.65	6266.00		0.00	0.00
21+00		163.60			0.00		
	50.0		156.80	7840.00		0.00	0.00
21+50		150.00			0.00		
	50.0		133.45	6672.50		0.15	7.50
22+00		116.90			0.30		
	30.0		115.40	3462.00		0.15	4.50
22+30		113.90			0.00		
	20.0		105.90	2118.00		1.15	23.00
22+50		97.90			2.30		
	50.0		95.40	4770.00		1.35	67.50
23+00		92.90			0.40		
	50.0		93.05	4652.50		0.70	35.00
23+50		93.20			1.00		
	50.0		94.80	4740.00		0.65	32.50
24+00		96.40			0.30		
	50.0		96.75	4837.50		1.80	90.00
24+50		97.10			3.30		
	50.0		104.30	5215.00		1.80	90.00
25+00		111.50			0.30		
	50.0		125.75	6287.50		0.15	7.50
25+50		140.00			0.00		
	50.0		138.20	6910.00		0.00	0.00
26+00		136.40			0.00		
	50.0		120.05	6002.50		0.00	0.00
26+50		103.70			0.00		
	20.0		111.20	2224.00		0.00	0.00
26+70		118.70			0.00		
	30.0		113.00	3390.00		0.10	3.00
27+00		107.30			0.20		
	50.0		113.95	5697.50		0.10	5.00
27+50		120.60			0.00		
	50.0		127.35	6367.50		0.00	0.00
28+00		134.10			0.00		
	30.0		142.00	4260.00		0.00	0.00
28+30		149.90			0.00		
	20.0		145.65	2913.00		0.00	0.00
28+50		141.40			0.00		
	35.0		137.20	4802.00		0.00	0.00
28+85		133.00			0.00		
	15.0		129.75	1946.25		0.00	0.00
29+00		126.50			0.00		
	50.0		130.45	6522.50		0.20	10.00
29+50		134.40			0.40		



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 BILLERICA, MA

EARTHWORK QUANTITY SHEET

	20.0		139.25	2785.00		0.20	4.00
29+70		144.10			0.00		
	30.0		139.90	4197.00		0.00	0.00
30+00		135.70			0.00		
	50.0		133.70	6685.00		0.00	0.00
30+50		131.70			0.00		
	20.0		128.60	2572.00		0.00	0.00
30+70		125.50			0.00		
	15.0		129.70	1945.50		0.00	0.00
30+85		133.90			0.00		
	15.0		124.35	1865.25		0.15	2.25
31+00		114.80			0.30		
	10.0		116.45	1164.50		0.35	3.50
31+10		118.10			0.40		
	40.0		112.75	4510.00		0.70	28.00
31+50		107.40			1.00		
	10.0		115.35	1153.50		0.50	5.00
31+60		123.30			0.00		
	40.0		120.25	4810.00		0.00	0.00
32+00		117.20			0.00		
	15.0		114.75	1721.25		0.30	4.50
32+15		112.30			0.60		
	35.0		116.10	4063.50		0.30	10.50
32+50		119.90			0.00		
	50.0		113.75	5687.50		0.45	22.50
33+00		107.60			0.90		
	20.0		109.50	2190.00		0.95	19.00
33+20		111.40			1.00		
	30.0		107.70	3231.00		0.80	24.00
33+50		104.00			0.60		
	50.0		102.20	5110.00		0.70	35.00
34+00		100.40			0.80		
	50.0		113.65	5682.50		0.40	20.00
34+50		126.90			0.00		
	15.0		141.70	2125.50		0.00	0.00
34+65		156.50			0.00		
	35.0		142.50	4987.50		0.45	15.75
35+00		128.50			0.90		
	50.0		137.05	6852.50		0.45	22.50
35+50		145.60			0.00		
	50.0		135.60	6780.00		0.30	15.00
36+00		125.60			0.60		
	50.0		127.05	6352.50		0.65	32.50
36+50		128.50			0.70		
	46.0		154.15	7090.90		0.45	20.70
36+96		179.80			0.20		
	4.0		161.15	644.60		0.65	2.60
37+00		142.50			1.10		
	36.0		140.25	5049.00		0.55	19.80
37+36		138.00			0.00		
	14.0		131.30	1838.20		1.00	14.00



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

EARTHWORK QUANTITY SHEET

37+50		124.60			2.00		
	50.0		133.30	6665.00		1.50	75.00
38+00		142.00			1.00		
	27.0		138.40	3736.80		0.50	13.50
38+27		134.80			0.00		
	23.0		127.85	2940.55		0.85	19.55
38+50		120.90			1.70		
	13.0		125.60	1632.80		1.05	13.65
38+63		130.30			0.40		
	37.0		141.20	5224.40		0.90	33.30
39+00		152.10			1.40		
	50.0		148.05	7402.50		2.65	132.50
39+50		144.00			3.90		
	50.0		136.10	6805.00		7.10	355.00
40+00		128.20			10.30		
	35.0		134.85	4719.75		5.40	189.00
40+35		141.50			0.50		
	15.0		136.65	2049.75		7.10	106.50
40+50		131.80			13.70		
	50.0		123.90	6195.00		15.45	772.50
41+00		116.00			17.20		
	20.0		118.25	2365.00		10.25	205.00
41+20		120.50			3.30		
	30.0		115.55	3466.50		8.90	267.00
41+50		110.60			14.50		
	50.0		113.40	5670.00		18.35	917.50
42+00		116.20			22.20		
	40.0		121.25	4850.00		14.35	574.00
42+40		126.30			6.50		
	10.0		124.05	1240.50		9.80	98.00
42+50		121.80			13.10		
	17.4		126.65	2206.24		19.65	342.30
42+67		131.50			26.20		
	32.6		137.45	4478.12		15.05	490.33
43+00		143.40			3.90		
	50.0		146.70	7335.00		7.70	385.00
43+50		150.00			11.50		
	38.0		156.49	5946.62		7.10	269.80
43+88		162.98			2.70		
	12.0		156.24	1874.88		3.35	40.20
44+00		149.50			4.00		
	30.0		150.80	4524.00		2.05	61.50
44+30		152.10			0.10		
	20.0		148.15	2963.00		3.45	69.00
44+50		144.20			6.80		
	50.0		151.90	7595.00		3.40	170.00
45+00		159.60			0.00		
	50.0		155.50	7775.00		0.00	0.00
45+50		151.40			0.00		
	50.0		144.65	7232.50		0.00	0.00
46+00		137.90			0.00		



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

EARTHWORK QUANTITY SHEET

	30.0		124.80	3744.00		0.30	9.00
46+30		111.70			0.60		
	20.0		109.05	2181.00		0.70	14.00
46+50		106.40			0.80		
	30.0		111.70	3351.00		0.40	12.00
46+80		117.00			0.00		
	20.0		111.25	2225.00		0.70	14.00
47+00		105.50			1.40		
	50.0		67.65	3382.50		0.70	35.00
47+50		29.80			0.00		
	50.0		29.30	1465.00		0.90	45.00
48+00		28.80			1.80		
	13.0		39.55	514.15		0.90	11.70
48+13		50.30			0.00		
	37.0		36.55	1352.35		0.30	11.10
48+50		22.80			0.60		
	50.0		28.60	1430.00		0.30	15.00
49+00		34.40			0.00		
	50.0		23.10	1155.00		0.00	0.00
49+50		11.80			0.00		
	50.0		8.55	427.50		0.00	0.00
50+00		5.30			0.00		

TOTAL 412311.36 CF
 15270.79 CY

TOTAL 4935.43 CF
 182.79 CY

HERITAGE ROAD

STATION	DIST (FT)	CUT			FILL		
		E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)	E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)
51+00		60.30			0.80		
	50.0		56.90	2845.00		5.15	257.50
51+50		53.50			9.50		
	50.0		45.80	2290.00		8.05	402.50
52+00		38.10			6.60		
	50.0		37.45	1872.50		7.30	365.00
52+50		36.80			8.00		
	50.0		36.05	1802.50		6.90	345.00
53+00		35.30			5.80		
	20.0		33.05	661.00		5.45	109.00
53+20		30.80			5.10		
	30.0		28.45	853.50		4.95	148.50
53+50		26.10			4.80		
	50.0		21.20	1060.00		5.35	267.50
54+00		16.30			5.90		
	50.0		20.30	1015.00		4.95	247.50
54+50		24.30			4.00		
	50.0		25.60	1280.00		4.45	222.50
55+00		26.90			4.90		



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

EARTHWORK QUANTITY SHEET

	20.0		31.65	633.00		2.45	49.00
55+20		36.40			0.00		
	30.0		36.85	1105.50		2.55	76.50
55+50		37.30			5.10		
	50.0		34.65	1732.50		4.55	227.50
56+00		32.00			4.00		
	10.0		34.00	340.00		2.40	24.00
56+10		36.00			0.80		
	40.0		30.05	1202.00		4.45	178.00
56+50		24.10			8.10		
	50.0		25.50	1275.00		7.65	382.50
57+00		26.90			7.20		
	10.0		30.55	305.50		6.40	64.00
57+10		34.20			5.60		
	40.0		31.80	1272.00		5.40	216.00
57+50		29.40			5.20		
	50.0		24.60	1230.00		2.60	130.00
58+00		19.80			0.00		
	50.0		24.20	1210.00		3.00	150.00
58+50		28.60			6.00		
	50.0		26.60	1330.00		6.60	330.00
59+00		24.60			7.20		
	15.0		31.35	470.25		6.05	90.75
59+15		38.10			4.90		
	35.0		25.40	889.00		3.10	108.50
59+50		12.70			1.30		
	50.0		6.35	317.50		0.65	32.50
60+00		0.00			0.00		

TOTAL 26991.75 CF TOTAL 4424.25 CF
 999.69 CY 163.86 CY

GOOD STREET

STATION	DIST (FT)	CUT			FILL		
		E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)	E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)
70+50		94.00			9.00		
	50.0		105.45	5272.50		4.50	225.00
71+00		116.90			0.00		
	12.0		122.00	1464.00		0.00	0.00
71+12		127.10			0.00		
	38.0		131.95	5014.10		0.05	1.90
71+50		136.80			0.10		
	25.0		125.35	3133.75		0.05	1.25
71+75		113.90			0.00		
	25.0		97.40	2435.00		0.10	2.50
72+00		80.90			0.20		
	50.0		69.85	3492.50		1.70	85.00
72+50		58.80			3.20		
	50.0		57.55	2877.50		3.60	180.00



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

EARTHWORK QUANTITY SHEET

73+00		56.30			4.00		
	30.0		64.65	1939.50		2.15	64.50
73+30		73.00			0.30		
	20.0		82.45	1649.00		0.60	12.00
73+50		91.90			0.90		
	15.0		97.10	1456.50		0.85	12.75
73+65		102.30			0.80		
	35.0		93.65	3277.75		0.80	28.00
74+00		85.00			0.80		
	50.0		89.25	4462.50		0.90	45.00
74+50		93.50			1.00		
	50.0		53.25	2662.50		0.70	35.00
75+00		13.00			0.40		
	50.0		12.85	642.50		0.30	15.00
75+50		12.70			0.20		
	25.0		16.55	413.75		0.10	2.50
75+75		20.40			0.00		
	25.0		14.85	371.25		0.00	0.00
76+00		9.30			0.00		

TOTAL 40564.60 CF
 1502.39 CY

TOTAL 5331.01 CF
 197.44 CY

FARMERS LANE

STATION	DIST (FT)	CUT			FILL		
		E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)	E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)
1+50		53.50			0.00		
	50.0		49.25	2462.50		0.00	0.00
2+00		45.00			0.00		
	50.0		44.90	2245.00		0.00	0.00
2+50		44.80			0.00		
	50.0		41.85	2092.50		0.00	0.00
3+00		38.90			0.00		
	35.7		36.05	1288.07		0.00	0.00
3+36		33.20			0.00		

TOTAL 8088.07 CF
 299.56 CY

TOTAL 0.00 CF
 0.00 CY

CLASS A TRENCH (WALL)

STATION	DIST (FT)	CUT		
		E. AREA (SF)	AVG. AREA (SF)	VOLUME (CF)
20+35		15.80		
	15.0		15.80	237.00
20+50		15.80		
	10.0		16.15	161.50
20+60		16.50		



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

EARTHWORK QUANTITY SHEET

	40.0		17.65	706.00
21+00		18.80		
	50.0		17.65	882.50
21+50		16.50		

TOTAL 1987.00 CF
73.59 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

EARTHWORK QUANTITY SUMMARY SHEET

From Earthwork Quantity Sheets

	<u>CUT</u>
BOSTON ROAD	15270.79 CY
HERITAGE ROAD	999.69 CY
GOOD STREET	1502.39 CY
FARMERS LANE	299.56 CY
	<u>18072.44 CY</u>

	<u>FILL</u>
BOSTON ROAD	182.79 CY
HERITAGE ROAD	163.86 CY
GOOD STREET	197.44 CY
FARMERS LANE	0.00 CY
	<u>544.10 CY</u>

EXCAVATION

Earthwork: 18072.44 CY
Estimated Excavation: 18072.44 CY

EMBANKMENT

Earthwork: 544.10 CY
Estimated Excavation: 544.10 CY

DEDUCT 2.5% (Boulder): 451.81 CY

DEDUCT 5% (Unsuitable): 903.62 CY

DEDUCT 5% (Shrinkage): 903.62 CY

Available for Embankment: 15813.38 CY

PLUS 15% (Swell): 81.61 CY

Embankment Required: 625.71 CY

Available for Embankment: 15813.38 CY

Waste: -15187.67 CY
SAY -15180.00 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

100.

SCHEDULE OF OPERATIONS - FIXED PRICE \$70500.00

LS

Project Value = \$9,265,500

Various Locations Project? No
(using formula)

Lump-Sum Fixed-Price = \$70,500.00

100. Total 1 LS



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

101.

CLEARING AND GRUBBING

A

Limit of Clearing & Gurbbing along the roadway.
Assume 15 ft from EOP

<u>LOCATION</u>	<u>BEG STA.</u>	<u>END STA</u>	<u>LT/RT</u>	<u>LENGTH</u>
BOSTON ROAD	12+22	14+57	LT	275 FT
	14+01	14+15	RT	20
	14+33	14+48	RT	20
	14+82	14+96	RT	20
	15+16	15+31	RT	20
	15+55	15+69	RT	20
	17+55	20+27	LT	325
	20+15	21+74	RT	185
	21+71	22+07	LT	65
	22+91	23+54	RT	20
	30+67	30+75	LT	12
	32+63	33+76	LT	135
	34+11	35+70	RT	195
	35+55	36+53	LT	115
	37+47	37+84	LT	45
	37+99	38+41	RT	120
	39+34	39+54	LT	25
	39+77	40+82	RT	150
	40+91	41+16	LT	30
	41+28	41+62	RT	40
	41+80	42+00	LT	25
	42+69	43+81	LT	145
	43+99	44+18	LT	22
	44+43	44+69	LT	63
	45+07	45+46	LT	55
	45+65	45+80	LT	20
	46+03	46+65	LT	75
	46+38	46+48	RT	38
	46+88	47+10	LT	28
	47+62	48+85	LT	147
	49+48	49+70	LT	28
	50+32	51+05	RT	90
HERITAGE ROAD	50+74	52+61	LT	226
	51+57	55+45	RT	440
	53+23	54+37	LT	156
	56+37	56+74	LT	60
	57+53	57+79	LT	32
	58+26	58+47	RT	58
	58+88	59+17	RT	34
GOOD STREET	58+91	59+10	LT	37
	71+36	71+62	LT	32
	71+83	72+05	RT	28
	72+52	72+95	RT	54
	74+38	74+62	RT	30



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

101.

LASALLETTE ROAD 4+63
5+00
FARMERS LANE 2+56

CLEARING AND GRUBBING

4+78 RT
5+19 LT
3+27 LT

18
25
83

A

Total 2843.0 FT

Assume 15 ft from EOP 42645 SF
Assume 300 SF per Individual trees 2400 SF

Stormwater Basin area 1000 SF

Additional area from LOAM & SEED AREA 56,000 SF
TOTAL 102,045 SF

Total 2.3 A
SAY 3.0 A

101. Total 3 A

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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

102.2

TREE TRIMMING

LS

QUANTITY

Along the project corridor
 Trimming for Tree to be protected

1 LS

41+28 THRU 41+62	36' RT	MULTIPLE TREES	Boston Rd
41+88	81' LT	30" TREE	Boston Rd
45+72	65' LT	16" TREE	Boston Rd
46+45	47' RT		Boston Rd
4+71	31' RT	18" TREE	LASALLETTE ROAD
71+92	38' RT	24" TREE	GOOD STREET
71+97	34' RT	26" TREE	GOOD STREET
74+54	24' RT	10" TREE	GOOD STREET

14+41	29' RT	2-16" TREES	Boston Rd
14+88	29' RT	2-24" TREES	Boston Rd
15+24	28' RT	24" TREE	Boston Rd
15+62	30' RT	24" TREE	Boston Rd
23+28	29' RT	6" TREE	Boston Rd
24+44	33' RT	6" TREE	Boston Rd
24+79	34' RT	6" TREE	Boston Rd
35+01	31' RT	16" TREE	Boston Rd
38+60	31' RT	2-12" TREES	Boston Rd
42+45	42' RT	10" TREE	TOWN HALL
42+83	44' RT	10" TREE	TOWN HALL
43+31	45' RT	8" TREE	TOWN HALL
58+28	87' RT	22" TREE	MONTICELLO CIRCLE

TOTAL 1 LS

SAY 1 LS

102.2 Total 1 LS



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

102.511

TREE PROTECTION – ARMORING & PRUNING

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>		<u>QUANTITY</u>
BOSTON ROAD				
	14+41	29' RT	2-16" TREES Boston Rd	1 EA
	14+88	29' RT	2-24" TREES Boston Rd	1 EA
	15+24	28' RT	24" TREE Boston Rd	1 EA
	15+62	30' RT	24" TREE Boston Rd	1 EA
	23+28	29' RT	6" TREE Boston Rd	1 EA
	24+44	33' RT	6" TREE Boston Rd	1 EA
	24+79	34' RT	6" TREE Boston Rd	1 EA
	35+01	31' RT	16" TREE Boston Rd	1 EA
	38+60	31' RT	2-12" TREES Boston Rd	1 EA
	42+45	42' RT	10" TREE TOWN HALL	1 EA
	42+83	44' RT	10" TREE TOWN HALL	1 EA
	43+31	45' RT	8" TREE TOWN HALL	1 EA
	58+28	87' RT	22" TREE MONTICELLO CIRCLE	1 EA

TOTAL	13 EA
SAY	13 EA

102.511 Total 13 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

102.55

ARBORIST

HR

For Contingency

10 HR

102.55

Total

10 HR



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

120.

EARTH EXCAVATION

CY

From Earthwork Summary Sheets

Boston Road 15270.79 CY

Heritage Road 999.69 CY

Good Street 1502.39 CY

Farmers Lane 299.56 CY

TOTAL 18072.44 CY

SAY 19000.00 CY

120. Total 19000 CY

 CALCULATED BY: JMC/KL
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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

121.

CLASS A ROCK EXCAVATION

CY

Rock excavation as it encounter in roadway For Contingecy 200 CY
 Anticipate rock or boulder below 7 ft +/-

TOTAL 200 CY

SAY 200 CY

121. Total 200 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

127.1

REINFORCED CONCRETE EXCAVATION

CY

For Contingency

Boston Road at Heritage Road area

50.00 CY

Length	width	thckness	CF	CY
200	10	0.67	1333.33333	49.38

Approx STA 25+00 to STA 26+00 Boston Road

TOTAL 50.00 CY

SAY 50.00 CY

127.1 Total 50 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

129.5

TRACK EXCAVATION

FT

Boston Road at Heritage Road area

Heritage Road						
STA 50+50	LT	TO	STA 52+50	LT	250.00	FT
				remove two rails	x2	
					500.00	FT

TOTAL	500.00 FT
SAY	500.00 FT

129.5 Total 500 FT



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

141.

CLASS A TRENCH EXCAVATION

CY

For Retaining Wall or Headwall

STON ROAD

Retaining Wall

20+30 to 21+80

1987.00 CF
 Subtotal

73.59 cy

R&R Balance Wall

20+30	to	21+00	RT	60	FT
34+52	to	35+75	RT	125	FT
			total	185	

R&R Balance Wall	Length	185 ft
Height (including below grade)		2 ft
Width		1.5 ft

Subtotal 555 cf 20.56 cy

Headwalls

See Const Details E 206.4.1

Heritage Road

For 18" Pipe

OF-3 STA 52+26 RT

33.25 CF

Total 33.25 CF

1.23 CY

Say 1.23 CY

Farmers Lane

For 24" Pipe OF-2

STA 3+25 RT

Headwall and Wingwalls

Length = 23.75 ft
 Width = 3.50
 Height = 9.25 ft
 Volume = 28.48 cy

28.48 CY

TOTAL 123.86 CY

SAY 130 CY

141. Total 130 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

141.1

TEST PIT FOR EXPLORATION

CY

<u>TOTAL</u>	<u>AREA (CY)</u>	<u>VOL. (CY)</u>
LENGTH OF PROJECT		5484 FT
SAY EXPLORATION EVERY 200 FT		<u>200 FT</u>
NUMBER EXPLORATIONS		27 EA
SAY ONE TEST PIT ON EACH SIDE		<u>2</u>
TOTAL TEST PITS		55 EA
4.5 CY PER TEST PIT		4.5 CY
TOTAL		247.5 CY

STA 17+33 RT

TOTAL	247.5 CY
SAY	300 CY

141.1 Total 300 CY

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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

142.

CLASS B TRENCH EXCAVATION

CY

All proposed drain pipes are typically less than 5' deep

For Contingecy 40 CY

TOTAL 40 CY

SAY 40 CY

142. Total 40 CY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

144.

CLASS B ROCK EXCAVATION

CY

This item shall include the removal and satisfactory disposal when encountered in the excavation for drainage structures, fences, highway guard, posts, bounds, pipes, ducts, walls, open trenches and bridge structures

Drainage Structures deeper than 5 ft

	Ea	Additional Depth	Area	Vol	CY
Item 201	44	3	20	2640	97.78 CY
For Contingency					80 CY

TOTAL 178 CY

SAY 180 CY

144. Total 180 CY



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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

146.

DRAINAGE STRUCTURE REMOVED

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>R&S?</u>	<u>F+C / F+G</u>	<u>QUANTITY</u>
BOSTON ROAD	EX-CB	15+85.26	LT		F+G	1 EA
	EX-CB	17+43.82	LT		F+G	1 EA
	EX-CB	18+25.16	LT		F+G	1 EA
	EX-CB	20+57.43	LT		F+G	1 EA
	EX-CB	21+61.83	RT		F+G	1 EA
	EX-DMH	25+16.73	LT		F+C	1 EA
	EX-CB	25+58.15	RT		F+G	1 EA
	EX-DMH	25+79.24	LT		F+G	1 EA
	EX-CB	26+35.80	LT		F+G	1 EA
	EX-CB	26+77.02	LT		F+G	1 EA
	EX-CB	26+85.38	LT		F+G	1 EA
	EX-CB	28+76.60	RT		F+G	1 EA
	EX-DMH	28+53.63	LT		F+C	1 EA
	EX-CB	28+67.39	LT		F+G	1 EA
	EX-CB	29+84.85	RT		F+G	1 EA
	EX-DMH	31+46.99	LT		F+C	1 EA
	EX-CB	31+59.13	LT		F+G	1 EA
	EX-DMH	34+66.76	LT		F+C	1 EA
	EX-CB	34+87.69	LT		F+G	1 EA
	EX-DMH	35+72.61	LT		F+C	1 EA
	EX-CB	35+83.06	LT		F+G	1 EA
	EX-DMH	36+21.33	RT		F+C	1 EA
	EX-CB	36+45.54	RT		F+G	1 EA
	EX-DMH	37+45.33	LT		F+C	1 EA
	EX-CB	37+61.68	RT		F+G	1 EA
	EX-CB	37+94.29	LT		F+G	1 EA
	EX-DMH	40+20.24	LT		F+C	1 EA
	EX-CB	40+53.78	LT		F+G	1 EA
	EX-CB	42+25.39	RT		F+G	1 EA
	EX-DMH	42+17.77	LT		F+C	1 EA
	EX-CB	42+66.78	RT		F+G	1 EA
	EX-DMH	45+97.28	LT		F+C	1 EA
EX-CB	46+49.26	RT		F+G	1 EA	
HERITAGE ROAD	EX-CB	56+50.25	LT		F+G	1 EA
	EX-CB	58+38.56	RT		F+G	1 EA

TOTAL 35 EA

146. Total 35 EA

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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

150.1

SPECIAL BORROW

CY

Near wetland areas along Framers Lane and Heritage Road outlets

For Contingency

50 CY

TOTAL	50.00 CY
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SAY	50.00 CY
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150.1	Total	50 CY
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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

151.

GRAVEL BORROW

CY

From Areas Sheet:

	<u>DEPTH (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Cem. Conc. Sidewalk & SUP	8	51200 SF	1264.20 CY
Cem. Conc. Wheelchair Ramp	8	8200 SF	202.47 CY
Cem. Conc. Sidewalk at Driveway	8	21900 SF	540.74 CY
Hot Mix Asphalt Driveway	8	17100 SF	422.22 CY
Hot Mix Asphalt Sidewalk/Walk	8	100 SF	2.47 CY
Brick Pavers for Median	8	5600 SF	138.27 CY
Brick Pavers for sidewalk	8	4800 SF	118.52 CY
Full Depth/Box Widening >4'	8	190000 SF	4691.36 CY
Box Widening <4'	8	1800 SF	44.44 CY
Outlet Sediment Area-Farmers Lane	6	300 SF	5.56 CY
Stormwater Basin-Heritage Rd	6	1600 SF	29.63 CY
	Length	Area	
Backfill for Retaining wall	150	13 SF	72.22 CY
Backfill for Headwalls	45		5 CY
Prop. Curb without sidewalk (parking lot, back of SW)			
Length =	825 FT		
Area =	<u>1.25 SF</u>		
Volume =	1031.25 CF		38.19 CY
	Inch		
for Drainage trench	12	23475 SF	869.44 CY
CDF Conduit	8	0 SF	0.00 CY

Assume 30% unsuitable material for utility trenches	24	7042.5 SF	521.67 CY
		SUBTOTAL	8966.40 CY
		Swell (25%)	2241.60 CY

		TOTAL	11208.01 CY
		SAY	12000.00 CY

151.	Total		12000 CY



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153.

CONTROLLED DENSITY FILL - EXCAVATABLE

CY

For Contingency

50 CY

TOTAL 50.00 CY

SAY 50.00 CY

153. Total 50 CY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

156.

CRUSHED STONE

TON

To be Placed Under Prop. Structures

DMH/CB	Depth (ft)	Area (sf)*	Vol. (cf)	Vol (cy)
Assume 6" Min. =	0.5	19.6349541	10	0.36
		No. Structures = x	<u>78</u>	

					28.36
	Length	Width	Depth	Vol. (cf)	Vol (cy)
At outlets X 2	12	12	1	288.00	10.67

Area of structure* =PI x(2.5')^2
PI =3.14

TOTAL 117.03 TON

SAY 150 TON

156. Total 150 TON



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

170.

FINE GRADING AND COMPACTING - SUBGRADE AREA

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Cem. Conc. Sidewalk & SUP	51200 SF	5688.89 SY
Cem. Conc. Wheelchair Ramp	8200 SF	911.11 SY
Cem. Conc. Sidewalk at Driveway	21900 SF	2433.33 SY
Hot Mix Asphalt Driveway	17100 SF	1900.00 SY
Hot Mix Asphalt Sidewalk/Walk	100 SF	11.11 SY
Brick Pavers for Median	5600 SF	622.22 SY
Brick Pavers for Sidewalk	4800 SF	533.33 SY
Full Depth/Box Widening >4'	190000 SF	21111.11 SY
Box Widening <4'	1800 SF	200.00 SY

TOTAL 33411.11 SY

SAY 34000.00 SY

170. Total 34000 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

180.01

ENVIRONMENTAL HEALTH AND SAFETY PROGRAM

LS

For Contingency

1 LS

180.01

Total

1 LS



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

180.02

PERSONAL PROTECTION LEVEL C UPGRADE

HR

For Contingency

25 HR

180.02

Total

25 HR



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BILLERICA, MA

180.03

LICENSED SITE PROFESSIONAL SERVICES

HR

For Contingency

25 HR

180.03

Total

25 HR



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

181.11

DISPOSAL OF UNREGULATED SOIL

TON

325 Boston Road
East shlder 327, 336, and 340
Sta 18+50 to Sta 21+25 (top foot of soil on eastern shoulder)
Sta 18+29 to 21+85 (highlighted on 25% plans by Hazmat Section) 8346 sf

344-346 Boston Road
Sta 24+00 Eastern Side
Sta 23+50 to 24+21 LT (highlighted on 25% plans by Hazmat Section) 680 sf

9026 sf
x 1 ft (depth)

9026 cf

334.30 cy

334.30 CY
1.5 TON/CY

501.44 TON

Assume 35% unregulated 175.51 TON

SAY 180 TON

181.11 Total 180 TON



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

181.12

DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY

TON

325 Boston Road
East shlder 327, 336, and 340
Sta 18+50 to Sta 21+25 (top foot of soil on eastern shoulder)
Sta 18+29 to 21+85 (highlighted on 25% plans by Hazmat Section) 8346 sf

344-346 Boston Road
Sta 24+00 Eastern Side
Sta 23+50 to 24+21 LT (highlighted on 25% plans by Hazmat Section) 680 sf

9026 sf
x 1 ft (depth)
9026 cf
334.30 cy

334.30 CY
1.5 TON/CY
501.44 TON

Assume 35% unregulated 175.51 TON

SAY 180 TON

181.12 Total 180 TON



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

181.13

DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY

TON

325 Boston Road
East shlder 327, 336, and 340
Sta 18+50 to Sta 21+25 (top foot of soil on eastern shoulder)
Sta 18+29 to 21+85 (highlighted on 25% plans by Hazmat Section) 8346 sf

344-346 Boston Road
Sta 24+00 Eastern Side
Sta 23+50 to 24+21 LT (highlighted on 25% plans by Hazmat Section) 680 sf

9026 sf
x 1 ft (depth)
9026 cf
334.30 cy

334.30 CY
1.5 TON/CY
501.44 TON

Assume 20% unregulated 100.29 TON

SAY 100 TON

181.13 Total 100 TON



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

181.14

DISPOSAL OF HAZARDOUS WASTE

TON

325 Boston Road
East shlder 327, 336, and 340
Sta 18+50 to Sta 21+25 (top foot of soil on eastern shoulder)
Sta 18+29 to 21+85 (highlighted on 25% plans by Hazmat Section) 8346 sf

344-346 Boston Road
Sta 24+00 Eastern Side
Sta 23+50 to 24+21 LT (highlighted on 25% plans by Hazmat Section) 680 sf

9026 sf
x 1 ft (depth)

9026 cf

334.30 cy

334.30 CY
1.5 TON/CY

501.44 TON

Assume Contingency of 10% Hazardous Waste 50.14 TON

SAY 50 TON

181.14 Total 50 TON



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BILLERICA, MA

182.1

INSPECTION AND TESTING FOR ASBESTOS

LS

For Contingency

1 LS

182.1

Total

1 LS



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182.2

REMOVAL OF ASBESTOS

FT

For Contingency

25 FT

182.2 Total 25 FT



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BILLERICA, MA

184.1

DISPOSAL OF TREATED WOOD PRODUCTS

TON

For Contingency

Heritage Road				
STA 50+50	LT	TO	STA 52+50	LT
		Track Removal -	250 FT	25 TON

184.1 Total 25 TON



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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

201.

CATCH BASIN

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>CURB</u>		<u>QUANTITY</u>	
				<u>STRAIGHT</u>	<u>CURVED</u>		
BOSTON ROAD	CBCI-1	16+00.84	L	1		1	EA
	CBCI-2	16+65.29	R	1		1	EA
	CBCI-3	17+36.74	L	1		1	EA
	CBCI-4	18+03.17	R	1		1	EA
	CBCI-5	20+47.67	L	1		1	EA
	CBCI-6	22+90.37	R	1		1	EA
	CBCI-7	22+91.13	L	1		1	EA
	CB-1	24+29.11	R			1	EA
	CB-2	26+85.99	L			1	EA
	CBCI-8	28+12.50	L	1		1	EA
	CBCI-9	30+38.78	L	1		1	EA
	CBCI-10	32+78.56	L	1		1	EA
	CBCI-11	32+86.15	R	1		1	EA
	CB-4	35+84.94	R			1	EA
	CB-5	36+44.24	R			1	EA
	CBCI-13	38+61.40	R	1		1	EA
	CB-6	40.01.32	R			1	EA
	CBCI-18	41+93.34	L	1		1	EA
	CBCI-19	44+31.72	R	1		1	EA
	CB-7	43+67.22	R			1	EA
	CB-8	45+67.70	L			1	EA
CBCI-20	45+72.52	R	1		1	EA	
CB-9	47+21.99	R			1	EA	
CB-10	47+61.32	R			1	EA	
CBCI-21	47+66.71	L	1		1	EA	
CBCI-15	70+53.60	R	1		1	EA	
CBCI-16	71+44.25	L	1		1	EA	
GOOD STREET	CB-35	74+87.72	L			1	EA



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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

201.

CATCH BASIN

EA

LOCATION	STRC. NO.	STA.	LT/RT	CURB		QUANTITY	
				STRAIGHT	CURVED		
HERITAGE ROAD	CBCI-25	52+26.44	L	1		1	EA
	CBCI-26	52+40.14	R	1		1	EA
	CBCI-27	53+88.72	L	1		1	EA
	CBCI-28	53+88.45	R	1		1	EA
	CBCI-29	54+09.99	L	1		1	EA
	CBCI-30	54+09.96	R	1		1	EA
	CBCI-31	56+50.44	L	1		1	EA
	CBCI-32	56+61.87	R	1		1	EA
	CB-33	57+90.88	R			1	EA
	CB-34	59+49.83	L			1	EA

Curbinlet	26
-----------	----

0

CB	38
----	----

Factor = 1.15 (E201.4.0)	Standard Depth = 6.5 ft	38
	Deep Sump CB (4 ft)	1.15
	Total	<u>43.7</u>

TOTAL 44 EA

201. Total 44 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

202.

MANHOLE

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>NOTES</u>	<u>QUANTITY</u>	
BOSTON ROAD	DMH-2	16+65.23	L	DMH		1	EA
	DMH-4	17+32.53	L	DMH		1	EA
	DMH-5	18+14.50	R	DMH		1	EA
	DMH-6	18+62.25	R	DMH		1	EA
	DMH-7	20+47.71	L	DMH		1	EA
	DMH-8	20+49.70	R	DMH		1	EA
	DMH-9	21+61.15	L	DMH		1	EA
	DMH-10	21+61.83	R	DMH		1	EA
	DMH-12	26+24.80	L	DMH		1	EA
	DMH-13	26+87.08	L	DMH		1	EA
	DMH-14	26+86.17	L	DMH		1	EA
	DMH-15	28+10.20	L	DMH		1	EA
	DMH-16	28+12.24	L	DMH		1	EA
	DMH-17	30+36.26	L	DMH		1	EA
	DMH-18	30+38.16	L	DMH		1	EA
	DMH-19	31+47.40	L	DMH		1	EA
	DMH-20	32+75.53	L	DMH		1	EA
	DMH-22	34+59.43	L	DMH		1	EA
	DMH-23	34+65.95	L	DMH		1	EA
	DMH-25	35+02.84	L	DMH		1	EA
	DMH-25A	35+03.04	L	DMH		1	EA
	DMH-26	35+73.34	L	DMH		1	EA
	DMH-27	36+39.64	L	DMH		1	EA
	DMH-28	36+42.20	L	DMH		1	EA
	DMH-29	38+45.26	L	DMH		1	EA
	DMH-30A	39+22.23	L	DMH		1	EA
	DMH-32	40+01.21	R	DMH		1	EA
	DMH-33	39+93.67	L	DMH		1	EA
	DMH-33A	39+94.57	L	DMH		1	EA
	DMH-34	41+91.53	L	DMH		1	EA
	DMH-35	42+03.45	R	DMH		1	EA
	DMH-37	43+45.40	L	DMH		1	EA
	DMH-38	44+27.63	L	DMH		1	EA
	DMH-39	45+68.17	L	DMH		1	EA
	DMH-41	45+99.82	L	DMH		1	EA
	DMH-42	45+97.38	L	DMH		1	EA

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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

<u>202.</u>	<u>MANHOLE</u>						<u>EA</u>
<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>NOTES</u>	<u>QUANTITY</u>	
FARMERS LANE	DMH-21	3+03.34	R	DMH		1	EA
GOOD STREET	DMH-31	70+46.7	R	DMH		1	EA
HERITAGE ROAD	DMH-45	53+98.09	L	DMH		1	EA
	DMH-47	56+49.25	R	DMH		1	EA

 TOTAL 40 EA

202. Total 40 EA

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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

202.15
MANHOLE - 5 FOOT DIAMETER
EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON ROAD	DMH-3	15+99.00	L	DMH	1	EA
	DMH-11	22+85.40	L	DMH	1	EA
	DMH-30	39+21.28	L	DMH	1	EA
	DMH-36	43+44.73	L	DMH	1	EA
	DMH-40	47+11.49	L	DMH	1	EA
HERITAGE ROAD	DMH-44	52+26.44	R	DMH	1	EA

 TOTAL 6 EA

202.15 Total 6 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

202.16

MANHOLE - 6 FOOT DIAMETER

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON ROAD	DMH-24	34+67.23	L	DMH	1	EA
HERITAGE ROAD	DMH-46	54+11.21	L	DMH	1	EA

TOTAL 2 EA

202.16 Total 2 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

203.1

DIVERSION MANHOLE

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>
BOSTON ROAD	DVM-1	45+99.18	L	DVM	1 EA

TOTAL 1 EA

203.1 Total 1 EA

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

203.2

WATER QUALITY INLET

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON ROAD	WQU-1	45+90.90	L	Inlet Struct	1	EA

Include Frame & Cover in this item

TOTAL 1 EA

203.2 Total 1 EA



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

204.11

GUTTER INLET - SPECIAL

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>CURB INLET</u>		<u>QUANTITY</u>	
				<u>STRAIGHT</u>	<u>CURVED</u>		
BOSTON ROAD	GI-1	18+62.31	R	1		1	EA
	GICI-2	20+51.17	R	1		1	EA
	GI-2	26+84.07	R	1		1	EA
	GI-3	28+15.19	R	1		1	EA
	GICI-3	30+42.01	R	1		1	EA
	GI-4	35+03.22	L	1		1	EA
	GICI-4	36+43.57	L	1		1	EA
	GI-5	39+22.97	L	1		1	EA
	GI-6	39+95.51	L	1		1	EA
	GICI-5	42+32.64	R	1		1	EA
	GICI-6	43+46.57	L	1		1	EA
TOTAL					11	0	

TOTAL 11 EA

204.11 Total 11 EA



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

220.

DRAINAGE STRUCTURE ADJUSTED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON RD	12+58.24	LT	DMH	1	EA
	12+71.65	LT	CB	1	EA
	13+53.91	LT	CB	1	EA
	13+54.91	LT	DMH	1	EA
	14+63.80	RT	DMH	1	EA
	14+80.05	RT	CB	1	EA
	14+97.60	LT	DMH	1	EA
	15+00.14	LT	DMH	1	EA
	15+07.09	LT	DMH	1	EA
	15+33.66	LT	CB	1	EA
	18+12.15	RT	DMH	1	EA
41+84.82	RT	CB	1	EA	
HERITAGE RD	54+21.07	LT	CIT	1	EA
	58+39.14	RT	CB	1	EA
	59+44.24	RT	CB	1	EA
GOOD ST	71.65.88	LT	CB	1	EA
	72+01.94	LT	CB	1	EA
	73+52.11	LT	CB	1	EA
	73+54.34	LT	DMH	1	EA
	74+90.39	LT	DMH	1	EA
	74+13.87	LT	CB	1	EA

	SUBTOTAL	21	EA
Additional adjustment to final grade:	X	2	
	SUBTOTAL	42	EA

Additional Adjustments:

New CB (Item 201.)	44	EA
New GI (Item 204.)	11	EA
Change in Type (Item 220.3)	13	EA
Remodeled Structure (Item 220.5)	6	EA

SUBTOTAL 74 EA

TOTAL 116 EA

220. Total 116 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

220.2

DRAINAGE STRUCTURE REBUILT

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>NOTES</u>	<u>F+C / F+G</u>	<u>QUANTITY</u>
				Contingency		10 FT

TOTAL 10 FT

220.2 Total 10 FT



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

220.3

DRAINAGE STRUCTURE CHANGE IN TYPE

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>NOTES</u>	<u>F+C / F+G</u>	<u>QUANTITY</u>	
BOSTON ROAD	CIT-2	23+08.33	R	REMODEL		1	EA
	CIT-3	31+53.86	R		1		
	CIT-4	35+78.03	R		1		
	CIT-5	39+21.37	R		1		
	CIT-6	39+74.24	R		1		
	CIT-7	47+57.24	L		1		
	CIT-8	47+82.32	R		1		
	GOOD STREET	CIT-14	74+81.41		L		
HERITAGE ROAD	CIT-9	54+21.52	L		1		
	CIT-10	54+23.29	R	REMODEL	1		
	CIT-11	56+48.72	R	REMODEL	1		
	CIT-12	57+86.01	R	REMODEL	1		
	CIT-13	59+42.37	L		1		

TOTAL 13 EA

220.3 Total 13 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

220.5

DRAINAGE STRUCTURE REMODELED

EA

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>STA.</u>	<u>LT/RT</u>	<u>NOTES</u>	<u>F+C / F+G</u>	<u>QUANTITY</u>
BOSTON ROAD	CIT-2	23+08.33	R	REMODEL		1 EA
	EX-CB-3	34+84.80	R	REMODEL		1 EA
HERITAGE ROAD	CIT-10	54+23.29	R	REMODEL		1 EA
	CIT-11	56+48.72	R	REMODEL		1 EA
	CIT-12	57+86.01	R	REMODEL		1 EA
GOOD STREET	CIT-14	74+81.41	L	REMODEL		1 EA

TOTAL 6 EA

220.5 Total 6 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

220.6

SANITARY STRUCTURE REBUILT

FT

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>
For Contingency				10 FT

TOTAL 10 FT

220.6 Total 10 FT



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CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

220.7

SANITARY STRUCTURE ADJUSTED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON ROAD	14+00.62	RT	SMH	1	EA
	16+90.56	RT	SMH	1	EA
	17+08.57	RT	SMH	1	EA
	18+77.11	RT	SMH	1	EA
	21+82.61	RT	SMH	1	EA
	23+15.41	RT	SMH	1	EA
	24+87.67	RT	SMH	1	EA
	25+73.99	LT	SMH	1	EA
	26+39.18	LT	SMH	1	EA
	32+37.47	LT	SMH	1	EA
	40+06.28	LT	SMH	1	EA
	41+59.72	LT	SMH	1	EA
	43+69.96	LT	SMH	1	EA
	44+85.01	RT	SMH	1	EA
47+84.99	LT	SMH	1	EA	
49+31.34	RT	SMH	1	EA	
HERITAGE ROAD	52+40.44	RT	SMH	1	EA
	55+51.40	RT	SMH	1	EA
	58+21.33	RT	SMH	1	EA
GOOD STREET	73+76.23	LT	SMH	1	EA
	74+77.03	LT	SMH	1	EA

TOTAL 21 EA

Remodeled Structure (Item 220.8) 4 EA

SUBTOTAL 25 EA

Additional adjustment to final grade: X 2
 Total 50

220.7 Total 50 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

220.8

SANITARY STRUCTURE REMODELED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>TYPE</u>	<u>QUANTITY</u>	
BOSTON ROAD	29+34.00	LT	SMH	1	EA
	34+77.00	LT	SMH	1	EA
	35+39.00	LT	SMH	1	EA
	37+81.81	LT	SMH	1	EA

TOTAL 4 EA

220.8 Total 4 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

221.

FRAME AND COVER

EA

<u>FROM ITEM</u>	<u>TYPE</u>	<u>QUANTITY</u>	
Item 202.	MANHOLE	40	EA
Item 220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	13	EA
Item 202.15	5 FOOT MANHOLE	6	EA
Item 202.16	6 FOOT MANHOLE	2	EA
Item 203.1	Diversion Manhole	1	EA
Item 220.7	Sewer Manhole	21	EA
Item 220.8	Sewer Manhole	4	EA

TOTAL 87 EA

221. Total 87 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

222.1

FRAME AND GRATE - MASSDOT CASCADE TYPE

EA

<u>FROM ITEM</u>	<u>TYPE</u>	<u>QUANTITY</u>
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Item 201. CATCH BASIN		38 EA
Item 204.11 GUTTER INLET-Special		11 EA
Item 220.5 REMODELED CB		1 EA

TOTAL	50 EA
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222.1	Total	50 EA
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BILLERICA, MA

223.2

FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED

EA

<u>FROM ITEM</u>	<u>TYPE</u>	<u>QUANTITY</u>	
Item 146.	DRAINAGE STRUCTURE REMOVED	35	EA
Item 220.5	DRAINAGE STRUCTURE REMODELED	6	EA
Item 220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	13	EA
Existing CB	(Replace Frame & Grate)	1	EA
Item 220.7	Exist Sewer manhole F&C	21	
Item 220.8	Exist Sewer manhole F&C	4	

TOTAL 80 EA

223.2 Total 80 EA

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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

227.3
REMOVAL OF DRAINAGE STRUCTURE SEDIMENT
CY

Existing Drainage Structures:	<u>QUANTITY</u>	
From Item 220- Existing drainage structur	21	EA
CB Remodeled	6	EA
Change in Type	13	EA
	TOTAL	40 EA
	Avg. Depth	4 FT
	Avg. Diameter	4 FT
	Avg. Volume	50.27 CF
		1.86 CY
	TOTAL X VOLUME	74.47 CY

TOTAL	74.47 CY
SAY	100 CY

227.3	Total	100 CY
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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

227.31
REMOVAL OF DRAINAGE PIPE SEDIMENT
FT
QUANTITY

Length of Existing Pipe within Project to Remain =	1200	FT
Say 50% will Require Removal of Drainage Pipe Sediment =	600	FT

 TOTAL 600 FT

SAY 600 FT

227.31 Total 600 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

227.4

MASONRY PLUG

SF

QUANTITY

Plug for existing pipes to be abandoned

SAY

50

SF

TOTAL 50 SF

SAY 50 SF

227.4

Total

50 SF



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

238.1

10 INCH DUCTILE IRON PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>
BOSTON ROAD	EX-CB-2		EX-DMH-2	17 FT
	CBCI-2		DMH-2	17 FT
	CBCI-4		DMH-5	8 FT
	GI-1		DMH-6	3 FT
	CB-1		CIT-2	117 FT
	CB-8		DMH-39	26 FT
HERITAGE ROAD	CBCI-26		DMH-44	10 FT
	CBCI-25		DMH-44	27 FT
	CB-33		CIT-12	7 FT

TOTAL	232 FT
SAY	235 FT

238.1 Total 235 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

241.12

12 INCH REINFORCED CONCRETE PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>
BOSTON ROAD	CBCI-1		DMH-3	16 FT
	CBCI-3		DMH-4	8 FT
	DMH-5		EX-DMH-7A	8 FT
	GI-1		DMH-5	45 FT
	GICI-2		DMH-8	6 FT
	DMH-8		DMH-7	11 FT
	CBCI-5		DMH-7	19 FT
	CIT-2		DMH-10	141 FT
	DMH-11		CBCI-6	35 FT
	CBCI-7		DMH-11	5 FT
	GI-2		DMH-14	15 FT
	DMH-14		DMH-13	10 FT
	CB-2		DMH-13	5 FT
	CBCI-8		DMH-15	3 FT
	GI-3		DMH-16	16 FT
	DMH-16		DMH-15	10 FT
	DMH-17		DM-15	222 FT
	GICI-3		DMH-18	16 FT
	DMH-18		DMH-17	10 FT
	CBCI-9		DMH-17	4 FT
	DMH-19		DMH-17	107 FT
	CIT-3		DMH-19	28 FT
	DMH-20		DMH-19	124 FT
	CBCI-10		DMH-20	3 FT
	CBCI-11		DMH-20	28 FT
	EX-CB-3		DMH-24	26 FT
	GI-4		DMH-25A	3 FT
	DMH-25A		DMH-25	3 FT
	CB-4		CIT-4	11 FT
	GICI-4		DMH-28	5 FT
	DMH-28		DMH-27	3 FT
	CB-5		DMH-27	26 FT
	CBCI-13		DMH-29	42 FT
	CIT-6		CIT-5	49 FT
	GI-5		DMH-30A	3 FT
	DMH-30A		DMH-30A	4 FT
	CB-6		DMH-32	4 FT
	GI-6		DMH-33A	4 FT
	DMH-33A		DMH-33	4 FT
	CBCI-18		DMH-34	12 FT
	GICI-5		DMH-35	27 FT
	DMH-35		DMH-34	31 FT



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

241.12

12 INCH REINFORCED CONCRETE PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>
BOSTON ROAD	CB-7		DMH-36	51 FT
	GICI-6		DMH-37	14 FT
	DMH-37		DMH-36	5 FT
	CBCI-19		DMH-38	28 FT
	CBCI-20		DMH-39	26 FT
	WQU-1		DMH-41	7 FT
	WQU-1		DVM-1	7 FT
	CB-9		DMH-40	28 FT
	CB-10		DMH-40	51 FT
	CBCI-21		CIT-7	6 FT
	HERITAGE ROAD	CIT-10		CBCI-30
CBCI-28			DMH-45	21 FT
CBCI-27			DMH-45	6 FT
DMH-46			DMH-45	12 FT
CBCI-29			DMH-46	3 FT
CBCI-32			DMH-47	9 FT
CB-34			CIT-13	4 FT
GOOD STREET	CBCI-16		DMH-31	99 FT
	CBCI-15		DMH-31	11 FT
	DMH-31		CIT-5	21 FT
	CB-35		CIT-14	18 FT

TOTAL	1588 FT
SAY	1600 FT

241.12 Total 1600 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

241.15

15 INCH REINFORCED CONCRETE PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>
BOSTON ROAD	DMH-7		DMH-4	310 FT
	DMH-9		DMH-7	111 FT
	DMH-10		DMH-9	33 FT
	CIT-5		DMH-30	42 FT
	DMH-38		DMH-36	79 FT
	DMH-39		DMH-38	137 FT
	DMH-40		DMH-39	139 FT
	CIT-8		CIT-7	56 FT
HERITAGE ROAD	CBCI-31		DMH-47	20 FT

TOTAL	927 FT
SAY	950 FT

241.15 Total 950 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
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241.18

18 INCH REINFORCED CONCRETE PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>
BOSTON ROAD	DMH-3		EX-DMH-4	95 FT
	DMH-4		DMH-3	128 FT
	DMH-13		DMH-12	59 FT
	DMH-15		DMH-13	119 FT
	DMH-26		DMH-25	66 FT
	DMH-27		DMH-26	62 FT
	DMH-29		DMH-27	203 FT
	DMH-30		DMH-29	72 FT
	DMH-33		DMH-30	69 FT
	DMH-34		DMH-33	198 FT
	DMH-36		DMH-34	150 FT
	CIT-7		DMH-42	160 FT
HERITAGE ROAD	DMH-12		DMH-44	230 FT

TOTAL	1611 FT
SAY	1650 FT

241.18 Total 1650 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

241.24

24 INCH REINFORCED CONCRETE PIPE

FT

<u>LOCATION</u>	<u>STRC. NO.</u>	<u>TO</u>	<u>STRC. NO.</u>	<u>LENGTH</u>	
BOSTON ROAD	DMH-25		DMH-24	31	FT
FARMERS LANE	DMH-24		DMH-23	16	FT
	DMH-23		DMH-22	143	FT
	DMH-22		DMH-21	23	FT
	DMH-21		OF-2	19	FT
HERITAGE ROAD	DMH-44		OF-3	21	FT

TOTAL	253 FT
SAY	260 FT

241.24 Total 260 FT



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

258.

STONE FOR PIPE ENDS

SY

From Drainage Outlets Say

	AREA		
Heritage Road	375	SF	
Farmers Lane	56	SF	
Total	431		48 SY

TOTAL 48 SY

SAY 50 SY

258. Total 50 SY



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

271.1

DRAINAGE PIPE REMOVED AND DISCARDED

FT

QUANTITY

Existing Pipe within Project to be R&D
Boston Road

15+65 to 17+43=	153'	153	FT
18+12 to 18+35=	25'	25	FT
18+12 to 18+25=	20'	20	FT
18+25 to 21+62=	335'	335	FT
25+19 to 26+35=	117'	117	FT
25+59 to 26+25=	65'	65	FT
26+78 to 28+52=	175'	175	FT
28+52 to 31+46=	291'	291	FT
28+52 to 28+67=	35'	35	FT
28+67 to 29+84=	116'	116	FT
34+67 to 34+87=	24'	24	FT
40+21 to 40+53=	36'	36	FT
40+21 to 42+18=	198'	198	FT
42+18 to 42+40=	39'	39	FT
42+18 to 42+66=	51'	51	FT
45+98 to 46+48=	71'	71	FT
38+50 to 38+80		35	FT

TOTAL	1786 FT
SAY	1800 FT

271.1 Total 1800 FT



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

302.06

6 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)

FT

Connection from Water Main to Hydrant

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	
BOSTON ROAD	23+87	RT	10 FT
	39+08	RT	39 FT
	44+25	RT	20 FT
Heritage	56+43	LT	5 FT

TOTAL	74 FT
SAY	80 FT

302.06 Total 80 FT

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 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

302.12
12 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)
FT

Possible water main conflict at Farmers Lane drain crossing

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	
Farmers Lane	1+60	RT	20 FT

TOTAL	20 FT
SAY	20 FT

302.12	Total	20 FT
---------------	--------------	--------------



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

309.

DUCTILE IRON FITTINGS FOR WATER PIPE

LB

			<u>QUANTITY</u>
New HYD	90 degree	Bend (lb)	
FROM ITEM 376.1	1	85	680 LB
From ITEM 376	<u>7</u>		
Total	<u>8</u>		

TOTAL 680 LB
SAY 680 LB

TOTAL 680 LB
SAY 680 LB

309. Total 680 LB



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

347.1

1 INCH COPPER TUBING TYPE K

FT

All services that are old iron need to be replaced with copper. There are very old services that may break during const
Replace services from main to curb stop

Residential Services

BOSTON ROAD	18					
Heritage	6					
Good St	3	EA	LF			
Total	27	27	20		540	FT

TOTAL 540 FT

SAY 600 FT

347.1 Total 600 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

347.2

2 INCH COPPER TUBING TYPE K

FT

All services that are old iron need to be replaced with copper. There are very old services that may break during const
Replace services from main to curb stop

Commercial

BOSTON ROAD	21			
Heritage				
Good St		EA	LF	
Total	21	21	20	420

TOTAL 420 FT

SAY 500 FT

347.2 Total 500 FT

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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

350.06
6 INCH GATE AND GATE BOX
EA

New Gate & box at each new Hydrant location

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	16+60	LT	1 EA
	23+87	RT	1 EA
	34+72	RT	1 EA
	39+08	RT	1 EA
	44+25	RT	1 EA
	49+30	RT	1 EA
Heritage	56+43	LT	1 EA

 TOTAL 7 EA

SAY 7 EA

350.06 Total 7 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

350.08

8 INCH GATE AND GATE BOX

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	27+10	LT	1 EA
New Hydrant of 8" Service Line			

TOTAL 1 EA

SAY 1 EA

350.08 Total 1 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

358.

GATE BOX ADJUSTED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD			18 EA
Water Manhole (sta 34+10 rt)			1 ea
Heritage Rd			2 EA
Good ST			2 EA

TOTAL 23 EA

SAY 25 EA

358. Total 25 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

371.06

6 INCH COUPLING

EA

new Hydrant location

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	16+60	LT	2 EA
	23+87	RT	2 EA
	34+72	RT	2 EA
	39+08	RT	2 EA
	44+25	RT	2 EA
Heritage	49+30	RT	2 EA
	56+43	LT	2 EA

TOTAL 14 EA

SAY 14 EA

371.06 Total 14 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

371.08

8 INCH COUPLING

EA

For new Hydrant				
<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>		<u>QUANTITY</u>
BOSTON ROAD	27+10	LT		2 EA

TOTAL 2 EA

SAY 2 EA

371.08 Total 2 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

376.

HYDRANT

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	16+60	LT	1 EA
	23+87	RT	1 EA
	34+72	RT	1 EA
	39+08	RT	1 EA
	44+25	RT	1 EA
	49+30	RT	1 EA
Heritage	56+43	LT	1 EA

TOTAL 7 EA

SAY 7 EA

376. Total 7 EA

CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

376.1
HYDRANT - EXCLUDING COST OF HYDRANT
EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	27+10	LT	1 EA

Town of Billerica will provide the Hydrant for this location

TOTAL	1 EA
SAY	1 EA

376.1 Total 1 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

376.3

HYDRANT - REMOVED AND STACKED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	16+60	LT	1 EA
	23+87	RT	1 EA
	27+10	LT	1 EA
	34+72	RT	1 EA
	39+08	RT	1 EA
	44+25	RT	1 EA
	49+30	RT	1 EA
Heritage	56+43	LT	1 EA

TOTAL	8 EA
SAY	8 EA

376.3 Total 8 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

381.

SERVICE BOX

EA

QUANTITY

Abutters along new sidewalk	Say	48	EA
	Say 80% will Require New Service Boxes =	38	EA

TOTAL 38 EA

381. Total 38 EA

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 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

381.1

SERVICE BOX REMOVED AND RESET

EA

		<u>QUANTITY</u>	
Abutters along new sidewalk	Say	48	EA
Say 20% will Require R&R Service Boxes =		9.6	EA

TOTAL	9.6 EA
SAY	10 EA

381.1 Total 10 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

381.2

SERVICE BOX REMOVED AND STACKED

EA

QUANTITY

From Item 381

Deduct for replacement boxes

38 EA

TOTAL 38 EA

381.2 Total 38 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

381.3

SERVICE BOX ADJUSTED

EA

		<u>QUANTITY</u>	
Abutters along new sidewalk	Say	48	EA
Say 20% will Require Adjust Service Boxes =		12	EA

TOTAL	12 EA
SAY	12 EA

381.3 Total 12 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

384.

CURB STOP

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD			Contingency 20 EA

It this existing curb stop not working or due to widening

TOTAL	20 EA
SAY	20 EA

384. Total 20 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

390.01

IRRIGATION SYSTEM REMOVED AND RESET

FT

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD			
Town Hall	STA 42+00 to 44+00		150 FT
354 Boston Road			100 FT
367 Boston Road			50 FT
4 Heritage			100 FT
6 Heritage			80 FT
8 Heritage			40 FT
12 Heritage			70 FT

Contingency 200 FT

TOTAL 790 FT

SAY 800 FT

390.01 Total 800 FT

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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

402.
DENSE GRADED CRUSHED STONE FOR SUB-BASE
CY

From Areas Sheet:

	<u>DEPTH (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Full Depth/Box Widening >4'	4	190000 SF	2345.68 CY

 TOTAL 2345.68 CY

SAY 2400.00 CY

402. Total 2400 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

415.1

PAVEMENT STANDARD MILLING

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Mill & Overlay	54900 SF	6100.00 SY
Good St & all side streets	14,500 SF	1611.11 SY

TOTAL 7711.11 SY

SAY 8000.00 SY

415.1 Total 8000 SY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

431.1

HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE

CY

From Areas Sheet:

Box Widening <4'

AREA

1800 SF

TOTAL 1800.00 SF

TOTAL 200.00 SY

6 inch thick 33.33 CY

TOTAL 33.33 CY

SAY 40 CY

431.1 Total 40 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

440.

CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL

LB

From Areas Sheet:

	<u>AREA</u>
Cem. Conc. Sidewalk & SUP	51200 SF
Cem. Conc. Wheelchair Ramp	8200 SF
Hot Mix Asphalt Driveway	17100 SF
Brick Pavers for Median	5600 SF
Brick Pavers for sidewalk	4800 SF

TOTAL	86900 SF
	9655.56 SY
x 1.5 LB/SY	14483.3 LB

TOTAL	14483.3 LB
SAY	15000.0 LB

440.	Total	15000 LB
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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

443.

WATER FOR ROADWAY DUST CONTROL

MGL

From Areas Sheet:

	<u>AREA</u>
Full Depth/Box Widening >4'	190000 SF
Box Widening <4'	1,800 SF

TOTAL	21311 SY
x 1.5 GAL/SY x 2 APPLICATIONS	63933 GAL
1 MGL = 1000 GAL	63.9 MGL

TOTAL	63.9 MGL
SAY	65 MGL

443. Total 65 MGL



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

450.23

SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)

TON

From Areas Sheet:

	<u>THICKNESS (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Mill & Overlay Boston Rd & Heritage	1.75	54900 SF	96075.00 SF/IN
Good St and all Side Streets	1.75	14,500 SF	25375.00 SF/IN
Full Depth/Box Widening >4'	1.75	190000 SF	332500.00 SF/IN
Box Widening <4'	1.75	1800 SF	3150.00 SF/IN

TOTAL 457100.00 SF/IN

TOTAL 50788.89 SY/IN

x 0.056 TON/(SY/IN) 2844.18 TON

TOTAL 2844.18 TON

SAY 3000.00 TON

450.23 Total 3000 TON



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

450.32

SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)

TON

From Areas Sheet:

	<u>THICKNESS (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Mill & Overlay (Boston Rd & Heritage)	2.25	54900 SF	123525.00 SF/IN
Full Depth/Box Widening >4'	2.25	190000 SF	427500.00 SF/IN
Box Widening <4'	2.25	1800 SF	4050.00 SF/IN

TOTAL 555075.00 SF/IN

TOTAL 61675.00 SY/IN

x 0.056 TON/(SY/IN) 3453.80 TON

TOTAL 3453.80 TON

SAY 3675.00 TON

450.32 Total 3675 TON

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

450.42

SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)

TON

From Areas Sheet:

	<u>THICKNESS (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Full Depth/Box Widening >4'	4.5	190000 SF	855000.00 SF/IN

TOTAL 855000.00 SF/IN

TOTAL 95000.00 SY/IN

x 0.056 TON/(SY/IN) 5320.00 TON

TOTAL 5320.00 TON

SAY 5670.00 TON

450.42 Total 5670 TON

CALCULATED BY: JMC/KL
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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

451.
HMA FOR PATCHING
TON

For Permanent Patch in M&O Areas

	<u>LENGTH (FT)</u>	<u>WIDTH (FT)</u>	<u>DEPTH (IN)</u>	<u>VOL. (SY/IN)</u>	<u>VOL. (TON)</u>
Total Drainage Length in M&O Area	220	5	8.5	1038.9	58.2
Heritage	223	5	8.5	1053.1	59.0
Total Conduit Length in M&O Area	132	3	8.5	374.0	20.9

Boston Road
 Drainage
 STA 12+50 to STA 12+65 LT=17 ft
 STA 47+10 to STA 47+80 RT=28+51+56
 STA 47+00 to STA 47+70 LT = 68 ft

Conduit
 STA 47+90 LT/RT = 50 ft
 STA 48+60 Lt/RT = 52 FT

Heritage Road
 Drainage:
 STA 51+52+40 RT = 140 ft
 STA 52+27 LT/RT = 28 FT
 STA 54+00 LT/RT = 26 FT
 STA 56+50 LT/RT = 29 FT

Traffic Conduit:
 STA 59+05 LT/RT = 30 ft

 TOTAL 138.09 TON

SAY 200 TON

451. Total 200 TON



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

452.

ASPHALT EMULSION FOR TACK COAT

GAL

	<u>AREA (SF)</u>	<u>AREA (SY)</u>	<u>Application Rate (GAL/SY)</u>	<u>QUANTITY</u>
Mill & Overlay	54900	6100.00	0.07	427.0 GAL
Full Depth/Box Widening >4'	190000	21111.11	0.05	1055.6 GAL
(2nd Layer for Full Depth/Box Widening)	190000	21111.11	0.05	1055.6 GAL
Box Widening <4'	1800	200.00	0.05	10.0 GAL

TOTAL 2548.1 GAL

SAY 3000.0 GAL

452. Total 3000 GAL



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

453.

HMA JOINT SEALANT

FT

<u>STREET</u>	<u>LENGTH</u>	<u>PASSES</u>	<u>QUANTITY</u>	
BOSTON ROAD	3675 FT	4	14700	
HERITAGE ROAD	1017 FT	3	3051	
GOOD STREET	601	3	1803	
FARMERS LANE	191	3	573	
		at Limit of Work	948	FT
		at Limit of Driveways	1835	

TOTAL 22910 FT

SAY 23000 FT

453. Total 23000 FT

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

472.

TEMPORARY ASPHALT PATCHING

TON

	<u>LENGTH (FT)</u>	<u>WIDTH (FT)</u>	<u>DEPTH (IN)</u>	<u>VOL. (SY/IN)</u>	<u>VOL. (TON)</u>
Total Drainage Length in roadway	4695	5	3.0	7825.0	438.2
Traffic Conduit Length in roadway	118	1.5	3.0	59.0	3.3
UG Conduit Length in roadway	715	4	3.0	953.3	53.4
Lighting Conduit in roadway (Lt & RT)	3500	2	3.0	2333.3	130.7
CB/MH/CIT Covers	137	16	2.0	487.1	27.3
Testpit 50	4	4	3.0	266.7	14.9
Miscellaneous					200.0

	<u>DWYS (EA)</u>	<u>AREA (SF)</u>			
Residential Driveways (Assume 100 SF)	27	100	3.0	900.0	50.4
Commercial Driveways (Assume 150 SF)	21	150	3.0	1050.0	58.8

	<u>TOTAL</u>	977.0 TON
Contingency	SAY	1000 TON
472.	Total	1000 TON



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

482.5

SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING

FT

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>LENGTH</u>
BOSTON ROAD					1062 FT
HERITAGE ROAD					1797 FT
GOOD STREET					965 FT

TOTAL	3824 FT
SAY	3900 FT

482.5 Total 3900 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

485.01

COBBLESTONE PAVEMENT

SY

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>AREA</u>
BOSTON ROAD	41+55		43+40	LT	132 SY

TOTAL	132 SY
SAY	140 SY

485.01 Total 140 SY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

504.

GRANITE CURB TYPE VA4 - STRAIGHT

FT

From AutoCAD:			<u>LENGTH</u>
TOTAL	(From Areas)	Total Straight Curb	9,363 FT
Deduct			
	From Item 509. (Deduct Transition)		-850
	R&R Curb Item 580		-453

TOTAL	8060 FT
SAY	8100 FT

504. Total 8100 FT

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

504.1

GRANITE CURB TYPE VA4 - CURVED

FT

From AutoCAD:

LENGTH

TOTAL (From Areas)

1,777 FT

Deduct From Item 509.1

333

TOTAL 1444 FT

SAY 1450 FT

504.1 Total 1450 FT

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

504.3

GRANITE CURB TYPE VA4 - SLOPED EDGE

FT

From AutoCAD:

LENGTH

TOTAL (From Areas)

1,239 FT

Breakdown of Sloped curb along the SUP Island

STA	LT/RT	LENGTH	-12' TRANS	LENGTH	
26+24	LT	31	12	19	
27+15	LT	58	12	46	
27+92	LT	48	12	36	
28+91	LT	102	12	90	
30+14	LT	55	12	43	
31+23	LT	52	12	40	
32+99	LT	50	12	38	
33+56	LT	181	12	169	
35+08	LT	34	12	22	
36+38	LT	166	12	154	
37+71	LT	42	12	30	
38+27	LT	54	12	42	
38+92	LT	25	12	13	
39+51	LT	55	12	43	
40+07	LT	37	12	25	
40+12	RT	58	12	46	
41+20	RT	121	12	109	
42+85	RT	132	12	120	
44+56	RT	48	12	36	
45+63	RT	52	12	40	
46+62	RT	50	12	38	
47+10	RT	37	12	25	
47+74	RT	27	12	15	
				1,239	FT
Transition Curb straight to Slope (Item 509.3)		276			FT

TOTAL	1239 FT
SAY	1250 FT

504.3 Total 1250 FT



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 BILLERICA, MA

509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT FT

	<u>PCR #</u>	<u>LT</u>	<u>RT</u>	<u>LENGTH</u>	
Type B	4	11.0	6.5	17.5	FT
	33	6.5	11.0	17.5	
Type C	3	6.5	11.0	17.5	
	11	11.0	9.8	20.8	
	31		15.0	15.0	
Type D	12	15.0		15.0	
Type F	30	6.5			
Type G	18	6.5	6.5	13.0	
	19	6.5	6.5	13.0	
	36	6.5	6.8	13.3	
Type H	28	11.0	6.5	17.5	
Type I	29	14.0	6.5	20.5	
Type J	32		3.3	3.3	

	<u>DWY #</u>	<u>LT</u>	<u>RT</u>	<u>LENGTH</u>	
Type A	1	6.5	7.7	14.2	FT
	15	6.5	6.0	12.5	
	16	6.5	6.5	13.0	
	17	11.0	4.0	15.0	
	18	14.0	6.5	20.5	
	19	14.0	6.5	20.5	
	20	14.0	6.5	20.5	
	21	14.0	6.5	20.5	
	23	14.0	6.5	20.5	
	24	14.0	6.5	20.5	
	25	14.0	6.5	20.5	
	33	6.5	11.0	17.5	
Type B	2	9.0	6.5	15.5	FT
	3	6.5	5.5	12.0	
	4	11.0	6.5	17.5	
	5	11.0	6.5	17.5	
	6	4.0	6.5	10.5	
	7	14.0	4.0	18.0	
	8	6.5	14.0	20.5	
	9	14.0	6.5	20.5	
	10	6.5		6.5	
	11		14.0	14.0	
	12	9.0	6.5	15.5	
	13	6.5	7.7	14.2	
	14	7.7	6.5	14.2	
	22	14.0	6.5	20.5	



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT FT

26	6.5	7.5	14.0
27	3.2	15.0	18.2
28	6.5	11.0	17.5
29	6.5	15.0	21.5
30	6.5	7.0	13.5
31	3.3	14.0	17.3
32	6.5	14.0	20.5
34	6.5	9.0	15.5
35	15.0	6.5	21.5
36	6.5	11.0	17.5
37	7.7	6.5	14.2
38	6.5	7.6	14.1
39	7.6	6.5	14.1
40		10.2	10.2

TOTAL 846 FT

SAY 850 FT

509. Total 850 FT



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 BILLERICA, MA

509.1

GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED

FT

	<u>PCR #</u>	<u>LT</u>	<u>RT</u>	<u>LENGTH</u>	
Type A	5		6.5	6.5	FT
	6		11.0	11.0	
	8		9.0	9.0	
	25		10.0	10.0	
	34		6.5	6.5	
	35		11.0	11.0	
Type B	1		14.0	14.0	
	2	14.0		14.0	
	7		6.5	6.5	
	9	6.5	11.0	17.5	
	26	6.5	11.0	17.5	
	38		9.0	9.0	
Type C	10	9.0	11.0	20.0	
	14	14.0	6.5	20.5	
	15	6.5	7.0	13.5	
	16	15.0	6.5	21.5	
	27	9.0	6.5	15.5	
Type D	13		15.0	15.0	
	20		15.0	15.0	
	21	15.0		15.0	
	23	15.0		15.0	
Type E	12	15.0	15.0	30.0	
Type F	24	6.5	6.5	13.0	
Type G	17	6.5	6.5	13.0	

TOTAL	333 FT
SAY	350 FT

509.1 Total 350 FT



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

509.3

GRANITE TRANSITION CURB - SLOPED

FT

From AutoCAD:

Breakdown of Transition curb from straight to Sloped curb along the SUP Island

<u>STA</u>	<u>LT/RT</u>	<u>-12' TRANS</u>
26+24	LT	12
27+15	LT	12
27+92	LT	12
28+91	LT	12
30+14	LT	12
31+23	LT	12
32+99	LT	12
33+56	LT	12
35+08	LT	12
36+38	LT	12
37+71	LT	12
38+27	LT	12
38+92	LT	12
39+51	LT	12
40+07	LT	12
40+12	RT	12
41+20	RT	12
42+85	RT	12
44+56	RT	12
45+63	RT	12
46+62	RT	12
47+10	RT	12
47+74	RT	12
		276

FT

TOTAL	276 FT
SAY	300 FT

509.3 Total 300 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

514.

GRANITE CURB INLET - STRAIGHT

EA

<u>FROM ITEM</u>	<u>TYPE</u>	<u>QUANTITY</u>	
Item 201.	CATCH BASIN	26	EA
Item 204.11	GUTTER INLET - SPECIAL	11	EA
	EXISTING CATCH BASINS	0	EA
		SUBTOTAL	37 EA

TOTAL	37 EA
SAY	37 EA

514. Total 37 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

570.2

HOT MIX ASPHALT CURB TYPE 2

FT

			<u>LENGTH</u>
Boston Rd	STA 24+00	RT	16 FT
	STA 26+70	LT	16 FT
	STA 30+70	LT	10 FT
Farmers Lane	STA 1+50	LT	45 FT
Good ST	STA 71+70	LT	16 FT
	STA 73+80	LT	10 FT

TOTAL	113 FT
SAY	125 FT

570.2 Total 125 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

580.

CURB REMOVED AND RESET

FT

					<u>LENGTH</u>
Good ST	STA 75+00	LT			10 FT
Boston Rd	STA 15+80	LT			65 FT
	STA 13+0	to	15+40	RT	200 FT
	STA 14+0	to	14+70	LT	65 FT
	STA 29+50	LT			13 FT
	STA 30+00	LT			80 FT
Tom Glavine Way	STA 94+00	RT			20 FT

TOTAL 453 FT

SAY 500 FT

580. Total 500 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

594.

CURB REMOVED AND DISCARDED

FT

LENGTH

Existing Granite Curb - R&R =

500 FT

Assume 10% R&D

50.00

TOTAL 50 FT

SAY 50 FT

594. Total 50 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

620.12

GUARDRAIL, TL-2 (SINGLE FACED)

FT

<u>Heritage Road</u>		<u>LENGTH</u>
	Sta 52+06.9 to Sta 52+82.9 RT	77 FT
Farmers Lane	STA 3+18.6 to 3+59 RT	49 FT

TOTAL 126 FT

SAY 130 FT

620.12 Total 130 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

620.32

GUARDRAIL - CURVED, TL-2 (SINGLE FACED)

FT

Heritage Road

LENGTH

Sta 52+52 to Sta 54+36 LT

90 FT

TOTAL 90 FT

SAY 90 FT

620.32 Total 90 FT



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

627.1

TRAILING ANCHORAGE

EA

Heritage Road

STA 52+84 RT 1 EA
STA 54+35 LT 1 EA
STA 53+52 LT 1 EA

Farmers Lane

STA 3+59 RT 1 EA

TOTAL 4 EA

SAY 4 EA

627.1 Total 4 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

627.82

GUARDRAIL TANGENT END TREATMENT, TL-2

EA

Farmers Lane	STA 52+02 RT	1 EA
Farmers Lane	STA 2+94 RT	1 EA

TOTAL 2 EA

SAY 2 EA

627.82 Total 2 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

670.

FENCE REMOVED AND RESET

FT

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>		<u>LENGTH</u>
BOSTON ROAD	13+51		13+84	LT	Wood	36 FT
	13+99		14+56	LT	Wood	64 FT
	33+89		34+05	LT	CLF	16 FT
	34+33		34+55	LT	CLF	21 FT
	37+83		39+02	RT	CLF & Wood	126 FT
	40+39		40+77	RT	Wood	37 FT
	48+60		48+65	RT	Wood	5 FT
TOM GLAVINE WAY	92+36		92+74	LT	CLF	38 FT
	93+20		93+44	LT	CLF	22 FT
	94+11		94+25	LT	CLF	14 FT
HERITAGE ROAD	58+90		59+00	LT	CLF	13 FT
						392

TOTAL	392 FT
SAY	400 FT

670. Total 400 FT



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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

685.

STONE MASONRY WALL IN CEMENT MORTAR

CY

FROM TABLE E302.2.0

<u>STA.</u>	<u>TO STA.</u>	<u>LT/RT</u>	<u>AVG HEIGHT</u> FT	<u>LENGTH</u> FT	<u>CONCRETE</u> <u>VOL. PER</u> <u>UNIT</u> <u>LENGTH</u> CY/FT	<u>STONE</u> <u>VOL. PER</u> <u>UNIT</u> <u>LENGTH</u> CY/FT	<u>VOLUME</u> CY
20+30	21+80	RT	6.5	150	0.185	0.524	106.35 CY

SUBTOTAL 106.35 CY

Coping (12" x 18" x Length) 150 x 1' x 1.5' = 8.3 CY

TOTAL 114.68 CY

* From 2017 Const. Standard Detail E302.2.0

TOTAL 115 CY

SAY 120 CY

685. Total 120 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

691.

BALANCE STONE WALL REMOVED AND REBUILT

FT

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>LENGTH</u>
BOSTON ROAD	20+30		21+00	RT	60 FT
	34+52		35+75	RT	125 FT

TOTAL 185 FT

SAY 190 FT

691. Total 190 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

697.1

SILT SACK

EA

<u>FROM ITEM</u>	<u>TYPE</u>	<u>QUANTITY</u>	
Item 201.	CATCH BASIN	44	EA
Item 204.	GUTTER INLET	11	EA
Item 220.5	REMODELED CB	6	EA
Existing CB	(temporary during const)	11	EA
	Contingency	8	EA

TOTAL 80 EA

697.1 Total 80 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

698.4

GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL

SY

Heritage Rd & Farmers Lane Outlets
Splash Pad & Check Dam

150 SF
Say 50% Factor for Overlaps 75 SF

225 SF

25.00 SY

TOTAL 25.00 SY

698.4 Total 25 SY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

701.

CEMENT CONCRETE SIDEWALK

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Cem. Conc. Sidewalk & SUP	51200 SF	5688.89 SY
Conc Base for Brick		
Brick Pavers for Sidewalk	4800 SF	533.33 SY
Brick Pavers for Median	5600 SF	622.22 SY

TOTAL 6844.44 SY

SAY 6900.00 SY

701. Total 6900 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

701.1

CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Cem. Conc. Sidewalk at Driveway	21900 SF	2433.33 SY

TOTAL 2433.33 SY

SAY 2500.00 SY

701.1 Total 2500 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

701.2

CEMENT CONCRETE PEDESTRIAN CURB RAMP

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Cem. Conc. Wheelchair Ramp	8200 SF	911.11 SY

TOTAL 911.11 SY

SAY 1000.00 SY

701.2 Total 1000 SY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

702.

HOT MIX ASPHALT SIDEWALK OR DRIVEWAY

TON

From Areas Sheet:

	<u>THICKNESS (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Hot Mix Asphalt Sidewalk/Walk	3	100 SF	300.00 SF/IN
Hot Mix Asphalt Driveway	4	17100 SF	68400.00 SF/IN

TOTAL 68700.00 SF/IN

TOTAL 7633.33 SY/IN

x 0.056 TON/(SY/IN) 427.47 TON

TOTAL 427.47 TON

SAY 450 TON

702. Total 450 TON



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

705.1

FLAGSTONE WALK REMOVED AND RESET

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
#377 Boston Rd STA 49+90 RT	15 SF	1.67 SY

TOTAL	1.67 SY
SAY	5 SY

705.1 Total 5 SY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

706.01

BRICK PAVERS FOR SIDEWALK AND MEDIAN

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Brick Pavers for Sidewalk	4800 SF	533.33 SY
Brick Pavers for Median	5600 SF	622.22 SY

TOTAL 1155.56 SY

SAY 1200 SY

706.01 Total 1200 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

706.1

BRICK WALK REMOVED AND RELAID

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
#372 Boston Rd		
STA 38+25 LT	120 SF	13.33 SY
STA 46+30 LT	25 SF	2.78 SY

TOTAL	13.33 SY
SAY	15 SY

706.1 Total 15 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

707.01

RESIN BOUND PAVEMENT

SF

BOSTON ROAD	26+45		38+45	LT	
All trees in Median	each	4x8 ft	32	sf	
Total Tree pit	18	EA			576 SF

TOTAL	576 SF
SAY	600 SF

707.01 Total 600 SF



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BILLERICA, MA

707.31

TREE GRATE (36" X 72")

EA

	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	34+25	RT	1 EA
	34+77	RT	1 EA
	37+58	RT	1 EA
	38+30	RT	1 EA
	45+31	RT	1 EA
	45+32	RT	1 EA
	45+98	RT	1 EA
	47+28	LT	1 EA
	47+86	LT	1 EA
	48+43	LT	1 EA

TOTAL 10 EA

707.31 Total 10 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

710.4

BOUND - PLAIN GRANITE

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON ROAD	34+69	RT	1 EA
	36+51	RT	1 EA
	37+57	RT	1 EA
	38+79	RT	1 EA
	40+33	RT	1 EA
	40+82	RT	1 EA
GOOD STREET	70+46	LT	1 EA
	70+78	RT	2 EA
	71+63	RT	1 EA
	72+74	LT	1 EA
	72+90	RT	1 EA
LASALLETTE ROAD	4+61	RT	1 EA

TOTAL	13 EA
SAY	13 EA

710.4 Total 13 EA



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

711.

BOUND REMOVED AND RESET

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
Boston Rd	13+96	LT	1 EA
	32+11	RT	1 EA
	39+69	LT	1 EA
Heritage Rd	50+60	RT	1 EA
Lasallete Rd	4+55	RT	1 EA
	4+29	LT	1 EA

TOTAL	6 EA
SAY	6 EA

711. Total 6 EA



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BILLERICA, MA

715.

RURAL MAIL BOX REMOVED AND RESET

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
Boston Rd	20+23	LT	1 EA
	20+75	LT	1 EA
	36+80	RT	1 EA
	40+24	LT	1 EA
	41+08	LT	1 EA
	42+31	LT	1 EA
	44+19	LT	1 EA
	45+04	RT	1 EA
Good St	71+22	LT	1 EA
	71+24	RT	1 EA
	73+50	RT	1 EA
	75+41	RT	1 EA
Heritage RD	55+00	LT	1 EA
	55+62	LT	1 EA
	56+27	RT	1 EA
	56+95	LT	1 EA
	57+83	LT	1 EA

TOTAL	17 EA
SAY	17 EA

715. Total 17 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

740.

ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A)

MO

See Estimate of Project Duration Sheet

30 MO

740. Total 30 MO



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BILLERICA, MA

748.

MOBILIZATION

LS

1 LS

748. Total 1 LS

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

751.

LOAM BORROW

CY

From Areas Sheet:

	<u>DEPTH (IN)</u>	<u>AREA</u>	<u>QUANTITY</u>
Loam and Seeding-Grass Areas	4	56000 SF	691.36 CY

x 1.25 Swell Factor 864.20 CY

TOTAL 864.20 CY

SAY 1000.00 CY

751. Total 1000 CY



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756.

NPDES STORMWATER POLLUTION PREVENTION PLAN

LS

1 LS

756. Total 1 LS



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

761.11

STRUCTURAL SOIL

CY

At tree locations

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>AREA</u>
BOSTON ROAD	26+45		38+45	LT	50 CY

TOTAL	50 CY
SAY	50 CY

761.11 Total 50 CY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

765.

SEEDING

SY

From Areas Sheet:

	<u>AREA</u>	<u>QUANTITY</u>
Loam and Seeding-Grass Areas	56000 SF	6222.22 SY

TOTAL 6222.22 SY

SAY 6300.00 SY

765. Total 6300 SY

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 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

765.553

WETLAND/BASIN MIX - RIPARIAN

SY

	<u>AREA</u>	<u>QUANTITY</u>
Farmers Lane	55 SF	6.11 SY

TOTAL	6.11 SY
SAY	10 SY

765.553 Total 10 SY

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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

767.121
SEDIMENT CONTROL BARRIER
FT

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>LENGTH</u>
BOSTON RD	35+51.30		36+48.05	LT	94 FT
	37+46.53		38+20.33	LT	85 FT
FARMERS LANE	2+24.82		3+43.02	RT	134 FT
HERITAGE ROAD	51+35.83		55+32.68	RT	429 FT

TOTAL	742 FT
SAY	800 FT

767.121 Total 800 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

767.6

AGED PINE BARK MULCH

CY

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>AREA</u>	
BOSTON RD	15+75	LT	250	SF
	26+50	RT	225	SF
	26+50	LT	450	SF
	29+80	LT	72	SF
	36+75	LT	350	SF
FARMERS LANE	1+75	LT	150	SF
HERITAGE ROAD	55+30	LT	50	SF
	56+50	LT	50	SF
	58+90	LT	100	SF
		Total	1697	SF
	(6" mulch)		31.4	CY

TOTAL	31 CY
SAY	50 CY

767.6 Total 50 CY



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

775.148

LINDEN - LITTLE LEAF - 'GREENSPIRE' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

2 EA

TOTAL 2 EA

775.148 Total 2 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

776.045

MAPLE - HEDGE - 'STREETSIDE' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

4 EA

TOTAL 4 EA

776.045 Total 4 EA



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

776.543

MAPLE - RED - 'OCTOBER GLORY' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

1 EA

TOTAL 1 EA

776.543 Total 1 EA

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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

777.673

SWEETGUM 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

2 EA

TOTAL	2 EA
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777.673	Total	2 EA
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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

778.389

CHERRY - SARGENTII 'PINK FLAIR' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

10 EA

TOTAL 10 EA

778.389 Total 10 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

778.468

CRABAPPLE - 'SPRING SNOW' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

10 EA

TOTAL 10 EA

778.468 Total 10 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

783.467

TUPELO 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

5 EA

TOTAL 5 EA

783.467 Total 5 EA

CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

783.649

ZELKOVA - 'CITY SPRITE' 2-2.5 INCH CALIPER

EA

QUANTITY

From Construction Plans and Master Plant List

11 EA

TOTAL 11 EA

783.649 Total 11 EA



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

801.22

2 INCH ELECTRICAL CONDUIT - TYPE NM (DOUBLE)

FT

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	A-17	to	A-19	55	ROAD	LIGHTING	55 FT
	A-17	to	A-19	80	NON-ROAD	LIGHTING	80 FT
	A-19	to	A-21	125	NON-ROAD	LIGHTING	125 FT
	A-21	to	A-23	110	NON-ROAD	LIGHTING	110 FT
	A-23	to	A-25	70	ROAD	LIGHTING	70 FT
	A-23	to	A-25	45	NON-ROAD	LIGHTING	45 FT
	A-25	to	A-27	90	NON-ROAD	LIGHTING	90 FT
	A-27	to	A-29	15	ROAD	LIGHTING	15 FT
	A-27	to	A-29	115	NON-ROAD	LIGHTING	115 FT
	A-29	to	A-31	100	NON-ROAD	LIGHTING	100 FT
	A-31	to	A-33	45	ROAD	LIGHTING	45 FT
	A-31	to	A-33	40	NON-ROAD	LIGHTING	40 FT
	A-33	to	CABINET	6	NON-ROAD	LIGHTING	6 FT
	A-33	to	A-34	36	NON-ROAD	LIGHTING	36 FT
	A-34	to	A-36	120	NON-ROAD	LIGHTING	120 FT
	A-2	to	A-4	64	NON-ROAD	LIGHTING	64 FT
	A-4	to	A-6	110	NON-ROAD	LIGHTING	110 FT
	A-6	to	A-8	125	NON-ROAD	LIGHTING	125 FT
	A-8	to	A-10	100	NON-ROAD	LIGHTING	100 FT
	A-10	to	A-12	106	NON-ROAD	LIGHTING	106 FT
	A-12	to	A-14	128	NON-ROAD	LIGHTING	128 FT
	A-14	to	A-16	121	NON-ROAD	LIGHTING	121 FT
	A-16	to	A-18	35	ROAD	LIGHTING	35 FT
	A-16	to	A-18	85	NON-ROAD	LIGHTING	85 FT
	A-18	to	A-20	128	NON-ROAD	LIGHTING	128 FT
	A-20	to	A-22	125	NON-ROAD	LIGHTING	125 FT

	ROAD	NON-ROAD		
TOTAL	220 FT	1959 FT	TOTAL	2179 FT
SAY	250 FT	2000 FT	SAY	2250 FT

801.22 Total 2250 FT



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CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

801.32

3 INCH ELECTRICAL CONDUIT - TYPE NM (DOUBLE)

FT

PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
SIG LOC 3	SIG CAB	to	PROP UP	8	NON-ROAD	TRAFFIC	8 FT
	SIG CAB	to	MA-4	19	NON-ROAD	TRAFFIC	19 FT
	SUBTOTAL						27 FT
SIG LOC 1	SIG CAB	to	PB-8	12	NON-ROAD	TRAFFIC	12 FT
	PB-8	to	PB-9	27	NON-ROAD	TRAFFIC	27 FT
	PB-9	to	PB-10	63	ROAD	TRAFFIC	63 FT
	SIG CAB	to	PB-18	77	NON-ROAD	TRAFFIC	77 FT
	PB-18	to	PROP UP	44	ROAD	TRAFFIC	44 FT
SUBTOTAL						223 FT	
	ROAD			NON-ROAD			
TOTAL	107 FT			143 FT	TOTAL		250 FT
SAY	125 FT			150 FT	SAY		275 FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	UP 155-1	to	C-3/D-3	55	ROAD	COM./VER.	55 FT
	UP 155-1	to	C-3/D-3	30	NON-ROAD	COM./VER.	30 FT
	PROP UP	to	UP 156/1	50	ROAD	COM./VER.	50 FT
	PROP UP	to	UP 156/1	100	NON-ROAD	COM./VER.	100 FT
	PROP UP	to	C-4/D-4	50	ROAD	COM./VER.	50 FT
	PROP UP	to	C-4/D-4	30	NON-ROAD	COM./VER.	30 FT
	UP 135/10	to	UP 10-135	82	ROAD	NGRID	82 FT
	ROAD						NON-ROAD
TOTAL	237 FT			160 FT	TOTAL		397 FT
SAY	250 FT			175 FT	SAY		425 FT

801.32 Total 700 FT



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CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

801.42

4 INCH ELECTRICAL CONDUIT - TYPE NM (DOUBLE)

FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/</u> <u>NON-ROAD</u>		<u>LENGTH</u>
BOSTON RD	UP 153-1	to	D-2	65	ROAD	VERIZON	65 FT
	UP 153-1	to	D-2	65	NON-ROAD	VERIZON	65 FT
	D-2	to	BLDG #367	20	NON-ROAD	VERIZON	20 FT

	ROAD	NON-ROAD		
TOTAL	65 FT	85 FT	TOTAL	150 FT
SAY	75 FT	100 FT	SAY	175 FT

801.42 Total 175 FT



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CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

804.1

1 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)

FT

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/</u> <u>NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	A-17	to	TREES (2)	93	NON-ROAD	LIGHTING	93 FT
	A-21	to	TREE	19	NON-ROAD	LIGHTING	19 FT
	A-23	to	TREE	60	NON-ROAD	LIGHTING	60 FT
	A-34	to	TREE	80	NON-ROAD	LIGHTING	80 FT
	A-4	to	TREE	44	NON-ROAD	LIGHTING	44 FT
	A-4	to	TREE	30	NON-ROAD	LIGHTING	30 FT
	A-6	to	TREE	26	NON-ROAD	LIGHTING	26 FT
	A-6	to	TREE	46	NON-ROAD	LIGHTING	46 FT
	A-8	to	TREE	32	NON-ROAD	LIGHTING	32 FT
	A-10	to	TREE	30	NON-ROAD	LIGHTING	30 FT
	A-12	to	TREE	30	NON-ROAD	LIGHTING	30 FT
	A-14	to	TREE	74	NON-ROAD	LIGHTING	74 FT
	A-14	to	TREES (3)	92	NON-ROAD	LIGHTING	92 FT
	A-16	to	TREE	20	NON-ROAD	LIGHTING	20 FT
	A-20	to	TREES (2)	60	NON-ROAD	LIGHTING	60 FT
	A-20	to	TREES (2)	60	NON-ROAD	LIGHTING	60 FT
	A-22	to	TREE	64	NON-ROAD	LIGHTING	64 FT
	STA 46+50	to	48+50 LT	200	NON-ROAD	LIGHTING	200 FT
	STA 46+50	to	47+50 RT	120	NON-ROAD	LIGHTING	120 FT

	ROAD	NON-ROAD		
TOTAL	0 FT	1180 FT	TOTAL	1180 FT
SAY	0 FT	1200 FT	SAY	1200 FT

804.1 Total 1200 FT



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

804.2

2 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC (UL)

FT

PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/</u> <u>NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	A-1	to	LP-1	5	NON-ROAD	LIGHTING	5 FT
	A-1	to	A-2	50	ROAD	LIGHTING	50 FT
	A-1	to	A-2	30	NON-ROAD	LIGHTING	30 FT
	A-1	to	A-3	76	NON-ROAD	LIGHTING	76 FT
	A-3	to	LP-3	5	NON-ROAD	LIGHTING	5 FT
	A-3	to	A-5	131	NON-ROAD	LIGHTING	131 FT
	A-5	to	LP-5	2	NON-ROAD	LIGHTING	2 FT
	A-5	to	A-7	123	NON-ROAD	LIGHTING	123 FT
	A-7	to	LP-7	2	NON-ROAD	LIGHTING	2 FT
	A-7	to	A-9	102	NON-ROAD	LIGHTING	102 FT
	A-9	to	LP-9	5	NON-ROAD	LIGHTING	5 FT
	A-9	to	A-11	106	NON-ROAD	LIGHTING	106 FT
	A-11	to	LP-11	5	NON-ROAD	LIGHTING	5 FT
	A-11	to	A-13	130	NON-ROAD	LIGHTING	130 FT
	A-13	to	LP-13	5	NON-ROAD	LIGHTING	5 FT
	A-13	to	A-15	121	NON-ROAD	LIGHTING	121 FT
	A-15	to	LP-15	5	NON-ROAD	LIGHTING	5 FT
	A-15	to	A-17	119	NON-ROAD	LIGHTING	119 FT
	A-17	to	LP-17	6	NON-ROAD	LIGHTING	6 FT
	A-19	to	LP-19	2	NON-ROAD	LIGHTING	2 FT
	A-21	to	LP-21	2	NON-ROAD	LIGHTING	2 FT
	A-23	to	LP-23	4	NON-ROAD	LIGHTING	4 FT
	A-25	to	LP-25	10	NON-ROAD	LIGHTING	10 FT
	A-27	to	LP-27	10	NON-ROAD	LIGHTING	10 FT
	A-29	to	LP-29	10	NON-ROAD	LIGHTING	10 FT
	A-31	to	LP-31	14	NON-ROAD	LIGHTING	14 FT
	A-33	to	E-3	8	NON-ROAD	LIGHTING	8 FT
	A-34	to	LP-33	10	NON-ROAD	LIGHTING	10 FT
	A-36	to	LP-35	11	NON-ROAD	LIGHTING	11 FT
	A-36	to	A-38	68	NON-ROAD	LIGHTING	68 FT
	A-38	to	A-40	277	NON-ROAD	LIGHTING	277 FT
	A-38	to	A-39	55	ROAD	LIGHTING	55 FT
	A-38	to	A-39	10	NON-ROAD	LIGHTING	10 FT
	A-2	to	LP-2	15	NON-ROAD	LIGHTING	15 FT
CABINET		to	UP	4	NON-ROAD	LIGHTING	4 FT
	A-4	to	LP-4	3	NON-ROAD	LIGHTING	3 FT
	A-6	to	LP-6	5	NON-ROAD	LIGHTING	5 FT
	A-8	to	LP-8	4	NON-ROAD	LIGHTING	4 FT
	A-10	to	LP-10	5	NON-ROAD	LIGHTING	5 FT
	A-12	to	LP-12	5	NON-ROAD	LIGHTING	5 FT
	A-14	to	LP-14	5	NON-ROAD	LIGHTING	5 FT
	A-16	to	LP-16	3	NON-ROAD	LIGHTING	3 FT
	A-18	to	LP-18	3	NON-ROAD	LIGHTING	3 FT
	A-20	to	LP-20	3	NON-ROAD	LIGHTING	3 FT
	A-22	to	LP-22	2	NON-ROAD	LIGHTING	2 FT



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

804.2 **2 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC (UL)** **FT**

A-22 to A-24 110 NON-ROAD LIGHTING 110 FT

<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH (FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
A-24	to	LP-24	4	NON-ROAD	LIGHTING	4 FT
A-24	to	A-26	118	NON-ROAD	LIGHTING	118 FT
A-26	to	LP-26	4	NON-ROAD	LIGHTING	4 FT
A-26	to	A-28	87	NON-ROAD	LIGHTING	87 FT
A-28	to	LP-28	6	NON-ROAD	LIGHTING	6 FT
A-28	to	A-30	119	NON-ROAD	LIGHTING	119 FT
A-30	to	LP-30	3	NON-ROAD	LIGHTING	3 FT
A-30	to	A-32	125	NON-ROAD	LIGHTING	125 FT
A-32	to	LP-32	2	NON-ROAD	LIGHTING	2 FT
A-32	to	A-35	114	NON-ROAD	LIGHTING	114 FT
A-35	to	LP-34	2	NON-ROAD	LIGHTING	2 FT
A-35	to	A-37	116	NON-ROAD	LIGHTING	116 FT
A-37	to	LP-36	2	NON-ROAD	LIGHTING	2 FT
A-37	to	A-39	76	NON-ROAD	LIGHTING	76 FT

ROAD		NON-ROAD			
TOTAL	105 FT	2359 FT		TOTAL	2464 FT
SAY	150 FT	2400 FT		SAY	2550 FT

NON-PARTICIPATING

<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH (FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD BLDG #335	to	UP 136	100	ROAD	COMCAST	120 FT
BLDG #335	to	UP 136	80	NON-ROAD	COMCAST	80 FT

ROAD		NON-ROAD			
TOTAL	120 FT	80 FT		TOTAL	200 FT
SAY	150 FT	100 FT		SAY	250 FT

804.2 Total 2800 FT



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

804.3

3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)

FT

PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
SIG LOC 2	PROP UP	to	SIG CAB	13	NON-ROAD	TRAFFIC	13 FT
	SIG CAB	to	MA-1	17	NON-ROAD	TRAFFIC	17 FT
	SIG CAB	to	PB-1	6	NON-ROAD	TRAFFIC	6 FT
	PB-1	to	SIG POST	4	NON-ROAD	TRAFFIC	4 FT
	PB-1	to	PB-2	66	ROAD	TRAFFIC	66 FT
	PB-2	to	SIG POST	2	NON-ROAD	TRAFFIC	2 FT
	PB-2	to	MA-2	27	NON-ROAD	TRAFFIC	27 FT
						SUBTOTAL	<u>135 FT</u>
SIG LOC 3	SIG CAB	to	PB-4	5	NON-ROAD	TRAFFIC	5 FT
	PB-4	to	SIG POST	8	NON-ROAD	TRAFFIC	8 FT
	PB-4	to	PB-5	75	ROAD	TRAFFIC	75 FT
	PB-5	to	SIG POST	8	NON-ROAD	TRAFFIC	8 FT
	PB-5	to	MA-3	17	NON-ROAD	TRAFFIC	17 FT
					SUBTOTAL	<u>113 FT</u>	
RRFB LOC 1	PB-6	to	SIG POST	16	NON-ROAD	TRAFFIC	16 FT
	PB-6	to	PB-7	34	ROAD	TRAFFIC	34 FT
	PB-7	to	PROP UP	4	NON-ROAD	TRAFFIC	4 FT
	PB-7	to	SIG POST	14	NON-ROAD	TRAFFIC	14 FT
					SUBTOTAL	<u>68 FT</u>	
SIG LOC 1	PB-8	to	SIG POST	10	NON-ROAD	TRAFFIC	10 FT
	PB-9	to	SIG POST	10	NON-ROAD	TRAFFIC	10 FT
	PB-10	to	PROP UP	20	NON-ROAD	TRAFFIC	20 FT
	PB-10	to	PB-11	15	NON-ROAD	TRAFFIC	15 FT
	PB-11	to	MA-6	4	NON-ROAD	TRAFFIC	4 FT
	PB-11	to	SIG POST	5	NON-ROAD	TRAFFIC	5 FT
	PB-10	to	PB-12	71	NON-ROAD	TRAFFIC	71 FT
	PB-12	to	PB-13	18	NON-ROAD	TRAFFIC	18 FT
	PB-13	to	SIG POST	3	NON-ROAD	TRAFFIC	3 FT
	PB-13	to	MA-7	3	NON-ROAD	TRAFFIC	3 FT
	SIG CAB	to	PB-17	4	NON-ROAD	TRAFFIC	4 FT
	PB-17	to	PB-14	60	ROAD	TRAFFIC	60 FT
	PB-14	to	PB-15	41	NON-ROAD	TRAFFIC	41 FT
	PB-15	to	SIG POST	3	NON-ROAD	TRAFFIC	3 FT
	PB-15	to	PB-16	11	NON-ROAD	TRAFFIC	11 FT
	PB-16	to	SIG POST	2	NON-ROAD	TRAFFIC	2 FT
	PB-16	to	MA-8	11	NON-ROAD	TRAFFIC	11 FT
SIG CAB	to	SIG POST	90	NON-ROAD	TRAFFIC	90 FT	
					SUBTOTAL	<u>381 FT</u>	
	ROAD		NON-ROAD				
TOTAL	235 FT		462 FT		TOTAL		<u>697 FT</u>



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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

804.4

4 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)

FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/</u> <u>NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	UP 135/10	to	UP 10-135	65	ROAD	VERIZON	65 FT
	UP 135/10	to	UP 10-135	40	NON-ROAD	VERIZON	40 FT
	UP 137-1	to	UP 137	55	ROAD	VERIZON	55 FT
	UP 137-1	to	UP 137	35	NON-ROAD	VERIZON	35 FT
	UP 19X	to	UP 139	55	ROAD	VERIZON	55 FT
	UP 19X	to	UP 139	30	NON-ROAD	VERIZON	30 FT
	UP 141	to	D-1	65	ROAD	VERIZON	65 FT
	UP 141	to	D-1	55	NON-ROAD	VERIZON	55 FT
	D-1	to	UP 142-1	5	NON-ROAD	VERIZON	5 FT
	D-2	to	D-6	150	NON-ROAD	VERIZON	150 FT

	ROAD	NON-ROAD		
TOTAL	240 FT	315 FT	TOTAL	555 FT
SAY	250 FT	350 FT	SAY	600 FT

804.4 Total 600 FT

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

810.3 3 INCH ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL) - CONCRETE ENCASED FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/</u> <u>NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	UP 19X	to	UP 139	55	ROAD	NGRID	55 FT
	UP 19X	to	UP 139	30	NON-ROAD	NGRID	30 FT
	UP 141	to	E-2	55	ROAD	NGRID	55 FT
	UP 141	to	E-2	70	NON-ROAD	NGRID	70 FT
	E-2	to	UP 142-1	5	NON-ROAD	NGRID	5 FT
	UP 153-1	to	E-3	60	ROAD	NGRID	60 FT
	UP 153-1	to	E-3	60	NON-ROAD	NGRID	60 FT
	E-3	to	BLDG #367	30	NON-ROAD	NGRID	30 FT
	E-3	to	E-5	120	NON-ROAD	NGRID	120 FT
	E-5	to	BLDG #371	50	NON-ROAD	NGRID	50 FT
	E-5	to	E-6	95	NON-ROAD	NGRID	95 FT
	E-6	to	BLDG #373	50	NON-ROAD	NGRID	50 FT
	PROP UP 156	to	UP 156/1	50	ROAD	NGRID	50 FT
	PROP UP 156	to	UP 156/1	120	NON-ROAD	NGRID	120 FT
	PROP UP 157	to	E-6	50	ROAD	NGRID	50 FT
	PROP UP 157	to	E-6	25	NON-ROAD	NGRID	25 FT
	E-6	to	UP 157	5	NON-ROAD	NGRID	5 FT

	ROAD	NON-ROAD		
TOTAL	270 FT	660 FT	TOTAL	930 FT
SAY	275 FT	675 FT	SAY	950 FT

810.3 Total 950 FT



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

3 INCH ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL) (DOUBLE) - CONCRETE

810.32

ENCASED

FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH (FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	UP 135/10	to	UP 10-135	65	ROAD	NGRID	65 FT
	UP 137-1/E-1	to	UP 137	80	ROAD	NGRID	80 FT

	ROAD	NON-ROAD		
TOTAL	145 FT	0 FT	TOTAL	145 FT
SAY	150 FT	0 FT	SAY	150 FT

810.32 Total 150 FT



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

4 INCH ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL) (DOUBLE) - CONCRETE

810.42

ENCASED

FT

NON-PARTICIPATING

	<u>STRC.</u>	<u>TO</u>	<u>STRC.</u>	<u>LENGTH</u> <u>(FT)</u>	<u>ROAD/ NON-ROAD</u>	<u>UTILITY</u>	<u>LENGTH</u>
BOSTON RD	UP 454/1	to	UP 145	65	ROAD	NGRID	65 FT
	UP 454/1	to	UP 145	60	NON-ROAD	NGRID	60 FT
	UP 10/148	to	PROP UP	70	ROAD	NGRID	70 FT
	UP 10/148	to	PROP UP	80	NON-ROAD	NGRID	80 FT

	ROAD	NON-ROAD		
TOTAL	135 FT	140 FT	TOTAL	275 FT
SAY	150 FT	150 FT	SAY	300 FT

810.42 Total 300 FT



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

811.31

PULL BOX 12 X 12 INCHES - SD2.031

EA

	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
SIG LOC 2	PB-1	15+78.8	40.5'±	LT	1 EA
	PB-2	15+86.7	26.0'±	RT	1 EA
SIG LOC 3	PB-3	26+59.3	28.8'±	RT	1 EA
	PB-4	26+44.0	45.28'±	LT	1 EA
RRFB LOC 1	PB-6	59+05.2	15.1'±	RT	1 EA
	PB-7	59+05.3	20.3'±	LT	1 EA
SIG LOC 1	PB-8	70+57.8	39.9'±	RT	1 EA
	PB-9	38+95.4	17.3'±	RT	1 EA
	PB-10	38+98.8	45.8'±	LT	1 EA
	PB-11	39+06.3	59.9'±	LT	1 EA
	PB-12	39+71.3	48.3'±	LT	1 EA
	PB-13	39+83.9	61.8'±	LT	1 EA
	PB-14	70+72.6	29.3'±	LT	1 EA
	PB-15	39+87.6	39.0'±	RT	1 EA
	PB-16	39+99.0	33.5'±	RT	1 EA
	PB-17	70+72.0	31.5'±	RT	1 EA
PB-18	71+49.4	28.7'±	RT	1 EA	

TOTAL 17 EA

811.31 Total 17 EA



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

811.91

HANDHOLE TYPE A (STREETLIGHT)

EA

	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	A-1	25+91.8	24.8'±	RT	1 EA
	A-2	26+28.2	36.5'±	LT	1 EA
	A-3	26+71.7	23.5'±	RT	1 EA
	A-4	26+93.6	34.7'±	LT	1 EA
	A-5	28+05.3	20.2'±	RT	1 EA
	A-6	28+05.2	36.7'±	LT	1 EA
	A-7	29+30.5	20.2'±	RT	1 EA
	A-8	29+32.7	34.7'±	LT	1 EA
	A-9	30+33.9	23.8'±	RT	1 EA
	A-10	30+33.8	37.2'±	LT	1 EA
	A-11	31+42.2	23.8'±	RT	1 EA
	A-12	31+42.4	37.1'±	LT	1 EA
	A-13	32+73.6	21.8'±	RT	1 EA
	A-14	32+73.8	34.8'±	LT	1 EA
	A-15	33+97.3	21.9'±	RT	1 EA
	A-16	33+97.2	32.2'±	LT	1 EA
	A-17	35+18.2	21.7'±	RT	1 EA
	A-18	35+18.0	36.9'±	LT	1 EA
	A-19	36+51.4	18.2'±	RT	1 EA
	A-20	36+51.3	41.6'±	LT	1 EA
	A-21	37+78.0	18.3'±	RT	1 EA
	A-22	37+77.9	44.8'±	LT	1 EA
	A-23	38+90.3	21.2'±	RT	1 EA
	A-24	38+89.3	49.6'±	LT	1 EA
	A-25	40+07.9	28.2'±	RT	1 EA
	A-26	40+08.6	53.2'±	LT	1 EA
	A-27	41+00.7	28.4'±	RT	1 EA
	A-28	40+94.5	50.7'±	LT	1 EA
	A-29	42+36.9	28.5'±	RT	1 EA
	A-30	42+11.6	52.2'±	LT	1 EA
	A-31	43+40.0	35.6'±	RT	1 EA
	A-32	43+39.5	48.7'±	LT	1 EA
	A-33	44+23.9	48.5'±	RT	1 EA
	A-34	44+53.4	34.7'±	RT	1 EA
	A-35	44+55.8	46.1'±	LT	1 EA
	A-36	45+77.3	37.9'±	RT	1 EA
	A-37	45+72.7	42.3'±	LT	1 EA
	A-38	46+48.3	31.2'±	RT	1 EA
	A-39	46+48.9	35.4'±	LT	1 EA
	A-40	49+31.3	35.9'±	RT	1 EA
					TOTAL 40 EA
				811.91	Total 40 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

811.94

ELECTRICAL HANDHOLE TYPE C

EA

	<u>ComCast STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	C-1	33+94.0	26.2'±	RT	1 EA
	C-2	44+23.3	66.5'±	RT	1 EA
	C-3	46+60.3	38.3'±	RT	1 EA
	C-4	48+59.9	27.9'±	RT	1 EA
	C-5	49+79.3	37.6'±	RT	1 EA

TOTAL 5 EA

811.94 Total 5 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

811.95

ELECTRICAL HANDHOLE TYPE D

EA

	<u>VERIZON STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	D-1	33+98.7	25.2'±	RT	1 EA
	D-2	44+22.7	69.1'±	RT	1 EA
	D-3	46+66.4	37.1'±	RT	1 EA
	D-4	48+60.1	39.1'±	RT	1 EA
	D-5	49+77.5	41.0'±	RT	1 EA
TOM GLAVINE	D-6	94+17.5	19.4'±	LT	1 EA

TOTAL 6 EA

811.95 Total 6 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

811.96

ELECTRICAL HANDHOLE TYPE E

EA

	<u>NGRID</u>				
	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	E-1	28+98.1	33.0'±	RT	1 EA
	E-2	34+04.2	26.6'±	RT	1 EA
	E-3	44+24.4	64.3'±	RT	1 EA
	E-4	45+66.0	41.2'±	RT	1 EA
	E-5	46+64.6	40.3'±	RT	1 EA
	E-6	48+56.9	32.3'±	RT	1 EA

TOTAL 6 EA

811.96 Total 6 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.811

ELECTRIC SERVICE RISER - STA 26+23 LT

EA

Utility Pole # 134 at STA 26+23 LT (R&R UP By Others) (2-3" Riser)

1 EA

TOTAL 1 EA

813.811 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.812
ELECTRIC SERVICE RISER - STA 26+85 LT
EA

Utility Pole # 135/10 at STA 26+85 LT (R&R UP By Others) (2-3" Riser)

1 EA

 TOTAL 1 EA

813.812 Total 1 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.813

ELECTRIC SERVICE RISER - STA 27+50 RT

EA

Utility Pole # 10-135 at STA 27+50 RT (Exist UP) (2-3" Riser)

1 EA

TOTAL 1 EA

813.813 Total 1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.814

ELECTRIC SERVICE RISER - STA 29+20 LT

EA

Utility Pole # 137 at STA 29+20 LT (R&R UP By Others) (2-3" Riser)

1 EA

TOTAL 1 EA

813.814 Total 1 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.815

ELECTRIC SERVICE RISER - STA 31+50 LT

EA

Utility Pole # 139 at STA 31+50 LT (R&R UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.815 Total 1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.816

ELECTRIC SERVICE RISER - STA 31+55 RT

EA

Utility Pole # 19X at STA 31+55 RT (R&R UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.816 Total 1 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.817

ELECTRIC SERVICE RISER - STA 33+45 LT

EA

Utility Pole # 141 at STA 33+45 LT (R&R UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.817 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.818
ELECTRIC SERVICE RISER - STA 36+75 LT
EA

Utility Pole # 145 at STA 36+75 LT (R&R UP By Others) (2-4" Riser)

1 EA

 TOTAL 1 EA

813.818 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.819

ELECTRIC SERVICE RISER - STA 39+85 LT

EA

Utility Pole # 148 at STA 39+85 LT (R&R UP By Others) (2-4" Riser)

1 EA

 TOTAL 1 EA

813.819 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.82

ELECTRIC SERVICE RISER - STA 43+52 LT

EA

Utility Pole # 152 at STA 44+45 LT (R&R UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.82 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.821

ELECTRIC SERVICE RISER - STA 44+45 LT

EA

Utility Pole # 153-1 at STA 44+45 LT (R&R UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.821 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.822

ELECTRIC SERVICE RISER - STA 46+60 LT

EA

Utility Pole # 155-1 at STA 46+60 LT (R&R UP By Others) (1-3" Riser)

1 EA

 TOTAL 1 EA

813.822 Total 1 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.823

ELECTRIC SERVICE RISER - STA 47+70 LT

EA

Utility Pole # NEW at STA 47+70 LT (NEW UP By Others) (1-3" Riser)

1 EA

TOTAL 1 EA

813.823 Total 1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.824

ELECTRIC SERVICE RISER - STA 48+00 RT

EA

Utility Pole # 156/1 at STA 48+00 LT (Exist UP) (1-3" Riser)

1 EA

TOTAL 1 EA

813.824 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.825
ELECTRIC SERVICE RISER - STA 48+80 LT
EA

Utility Pole # NEW at STA 48+80 LT (NEW UP By Others) (1-3" Riser)

1 EA

 TOTAL 1 EA

813.825 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.826
ELECTRIC SERVICE RISER - STA 50+75 RT
EA

Utility Pole # 1 at STA 50+75 RT (R&R UP By Others) (2-3" Riser)

1 EA

 TOTAL 1 EA

813.826 Total 1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.827

ELECTRIC SERVICE RISER - STA 51+90 RT

EA

Utility Pole # 2 at STA 51+90 RT (R&R UP By Others) (2-3" Riser)

1 EA

TOTAL 1 EA

813.827 Total 1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

813.828

ELECTRIC SERVICE RISER - STA 4+50 LT

EA

Utility Pole # NEW at STA 4+50 LT (NEW UP By Others) (2-4" Riser)

1 EA

TOTAL 1 EA

813.828 Total 1 EA

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

813.829
ELECTRIC SERVICE RISER - STA 70+70 LT
EA

Utility Pole # NEW at STA 70+70 LT (NEW UP By Others) (2-4" Riser)

1 EA

 TOTAL 1 EA

813.829 Total 1 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

815.1

TRAFFIC CONTROL SIGNAL LOCATION NO. 1

LS

Location 1: Boston Road (Route 3A) at Good Street

MAJOR ITEMS - PARTICIPATING		UNIT PRICE	TOTAL
QUANTITY	DESCRIPTION		
1	TRAFFIC SIGNAL CONTROLLER (TS2, TYPE 1), LOCATED IN BASE MOUNTED CABINET W/ FOUNDATION & CONCRETE	\$ 25,000	\$ 25,000
1	45' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION	\$ 35,000	\$ 35,000
1	40' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION	\$ 30,000	\$ 30,000
1	25' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION	\$ 15,000	\$ 15,000
1	TRAFFIC SIGNAL POST AND BASE STANDARD - 15' STEEL	\$ 2,200	\$ 2,200
3	TRAFFIC SIGNAL POST AND BASE STANDARD - 8' ORNAMENTAL (STEEL)	\$ 3,000	\$ 9,000
3	TRAFFIC SIGNAL POST AND BASE STANDARD - 4' (STEEL)	\$ 1,500	\$ 4,500
1	SIGNAL HEAD, 5-SECTION, 12" LENS	\$ 2,500	\$ 2,500
7	SIGNAL HEAD, 3-SECTION, 12" LENS	\$ 1,500	\$ 10,500
1	5" 5-SECTION BACKPLATES W/3" REFL BORDER	\$ 400	\$ 400
7	5" 3-SECTION BACKPLATES W/3" REFL BORDER	\$ 250	\$ 1,750
6	PEDESTRIAN SIGNAL HEAD, 1-WAY, SINGLE SECTION, LED WITH COUNTDOWN TIMER	\$ 1,500	\$ 9,000
6	AUDIBLE & VIBROTACTILE PED PUSHBUTTON	\$ 1,000	\$ 6,000
2	VIDEO PROCESSOR (2 CHANNEL)	\$ 2,500	\$ 5,000
3	VIDEO DETECTION CAMERA	\$ 5,000	\$ 15,000
1	9" VIDEO DETECTION MONITOR	\$ 500	\$ 500
1	SIDE MOUNT BATTERY BACKUP SYSTEM	\$ 10,000	\$ 10,000
1	SERVICE CONNECTION (UNDERGROUND)	\$ 5,000	\$ 5,000
3	OPTICAL DETECTORS, UNIDIRECTIONAL, SINGLE CHANNEL	\$ 500	\$ 1,500
1	4 CHANNEL PHASE SELECTOR, RACK MOUNT	\$ 6,000	\$ 6,000
1	CARD RACK FOR PRE-EMPTION SYSTEM	\$ 500	\$ 500
1	PREEMPTION INDICATOR LIGHT (WHITE)	\$ 500	\$ 500
3	WIRELESS CONTACT CLOSURE TRANSCEIVER & ANTENNA	\$ 1,500	\$ 4,500
3	EMERGENCY PREEMPTION PUSHBUTTON PANEL	\$ 10,000	\$ 30,000
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.		SUBTOTAL	\$ 229,350

Cable, Loop Leads, Misc. Mounting Assemblies, Wiring & Testing, Adjustments \$ 22,935

TOTAL \$ 252,285

SAY \$ 253,000

815.1 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

815.11

TRAFFIC CONTROL SIGNAL LOCATION NO. 1

LS

Location 1: Boston Road (Route 3A) at Good Street

MAJOR ITEMS - NON-PARTICIPATING	
QUANTITY	DESCRIPTION
1	MANAGED FIBER/ETHERNET SWITCH (FOR FUTURE USE)
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

UNIT PRICE	TOTAL
\$ 3,000	\$ 3,000
SUBTOTAL	\$ 3,000

Cable, Loop Leads, Misc. Mounting Assemblies, Wiring & Testing, Adjustments \$ 300

TOTAL \$ 3,300

SAY \$ 4,000

815.11 Total 1 LS

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

815.2

TRAFFIC CONTROL SIGNAL LOCATION NO. 2

LS

Location 2: Boston Road (Route 3A) Sta. 15+84±

MAJOR ITEMS - PARTICIPATING		UNIT PRICE	TOTAL
QUANTITY	DESCRIPTION		
1	TRAFFIC SIGNAL CONTROLLER (TS2, TYPE 1), LOCATED IN BASE MOUNTED CABINET (SIZE 5) W/ FOUNDATION & CONCRETE PAD	\$ 25,000	\$ 25,000
1	35' MAST ARM (STEEL) - TYPE II, STEEL MONOLEVER WITH FOUNDATION	\$ 15,000	\$ 15,000
1	25' MAST ARM (STEEL) - TYPE II, STEEL MONOLEVER WITH FOUNDATION	\$ 12,000	\$ 12,000
2	TRAFFIC SIGNAL POST AND BASE STANDARD - 8' (STEEL)	\$ 1,500	\$ 3,000
4	SIGNAL HEAD, 3-SECTION, 12" LENS	\$ 1,500	\$ 6,000
4	5" 3-SECTION BACKPLATES W/3" REFL BORDER	\$ 250	\$ 1,000
2	PEDESTRIAN SIGNAL HEAD, 1-WAY, SINGLE SECTION, LED WITH COUNTDOWN TIMER	\$ 1,500	\$ 3,000
2	AUDIBLE & VIBROTACTILE PED PUSHBUTTON	\$ 1,000	\$ 2,000
1	SERVICE CONNECTION (UNDERGROUND)	\$ 5,000	\$ 5,000
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.		SUBTOTAL	\$ 72,000

Cable, Loop Leads, Misc. Mounting Assemblies, Wiring & Testing, Adjustments \$ 7,200

TOTAL \$ 79,200

SAY \$ 80,000

815.2 Total 1 LS

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

815.3

TRAFFIC CONTROL SIGNAL LOCATION NO. 3

LS

Location 3: Boston Road (Route 3A) Sta. 26+50±

MAJOR ITEMS - PARTICIPATING		UNIT PRICE	TOTAL
QUANTITY	DESCRIPTION		
1	TRAFFIC SIGNAL CONTROLLER (TS2, TYPE 1), LOCATED IN BASE MOUNTED CABINET (SIZE 5) W/ FOUNDATION & CONCRETE PAD	\$ 25,000	\$ 25,000
1	40' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION	\$ 30,000	\$ 30,000
1	35' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION	\$ 25,000	\$ 25,000
2	TRAFFIC SIGNAL POST AND BASE STANDARD - 8' (STEEL)	\$ 1,500	\$ 3,000
4	SIGNAL HEAD, 3-SECTION, 12" LENS	\$ 1,500	\$ 6,000
4	5" 3-SECTION BACKPLATES W/3" REFL BORDER	\$ 250	\$ 1,000
2	PEDESTRIAN SIGNAL HEAD, 1-WAY, SINGLE SECTION, LED WITH COUNTDOWN TIMER	\$ 1,500	\$ 3,000
2	AUDIBLE & VIBROTACTILE PED PUSHBUTTON	\$ 1,000	\$ 2,000
1	SERVICE CONNECTION (UNDERGROUND)	\$ 5,000	\$ 5,000
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.		SUBTOTAL	\$ 100,000

Cable, Loop Leads, Misc. Mounting Assemblies, Wiring & Testing, Adjustments \$ 10,000

TOTAL \$ 110,000

SAY \$ 110,000

815.3 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.6

HIGHWAY LIGHTING LOAD CENTER

LS

ALLETTE RD 1 26+33.7 51.9± LT 1 LS

TOTAL 1 LS

823.6 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

<u>823.72</u>	<u>LIGHT POST REMOVED AND RESET</u>		<u>EA</u>
	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
TOM GLAVINE WAY	92+75	LT	1 EA
Good St	73+60	LT	1 EA

TOTAL 2 EA

823.72 Total 2 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.73

COBRA HEAD LIGHT REMOVED AND RESET

EA

	<u>STA.</u>		<u>LT/RT</u>		<u>QUANTITY</u>
Boston Rd	15+50	UP#124	LT	FLOOD LIGHT	1 EA
	16+70	UP#125	LT	LIGHT	1 EA
	17+90	UP#126	LT	LIGHT	1 EA
	19+70	UP# 128	LT	relocated light	1 EA
	21+80	UP#130	LT	LIGHT	1 EA
	24+00	UP#132	LT	LIGHT	1 EA
Mulberry Laneq	6+60	UP#154	RT	LIGHT	1 EA
Heritage RD	52+00	UP#2	RT	LIGHT	1 EA
	53+50	UP#3	RT	Relocated Light	1 EA
	54+40	UP#4	RT	Relocated Light	1 EA
	55+30	UP#4-50	RT	Relocated Light	1 EA
	56+30	UP#5	RT	Relocated Light	1 EA
	57++65	UP#6	RT	Relocated Light	1 EA
	58+50	UP#6-50	RT	Relocated Light	1 EA
	59+00	UP#7	LT	Relocated Light	1 EA
	59+65	UP#8	LT	LIGHT	1 EA

TOTAL 16 EA

823.73 Total 16 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.82

FLAG POLE REMOVED AND RESET

LS

	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD			
#335	26+75	RT	1 LS

TOTAL 1 LS

823.82 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.93

ORNAMENTAL STREET LIGHT (TYPE A) 120 W LED (SINGLE)

EA

	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	LP-19	36+51.4	15.0'±	RT	1 EA
	LP-20	36+51.4	37.4'±	LT	1 EA
	LP-21	37+78.0	15.0'±	RT	1 EA
	LP-22	37+78.0	41.1'±	LT	1 EA
	LP-27	41+00.5	17.6'±	RT	1 EA
	LP-28	41+00.4	47.8'±	LT	1 EA
	LP-29	42+35.2	17.8'±	RT	1 EA
	LP-30	42+11.6	47.6'±	LT	1 EA
	LP-31	43+40.4	20.6'±	RT	1 EA
	LP-32	43+39.4	45.2'±	LT	1 EA
	LP-33	44+53.8	23.9'±	RT	1 EA
	LP-34	44+55.7	42.9'±	LT	1 EA
	LP-35	45+82.8	26.4'±	RT	1 EA
	LP-36	45+72.5	38.5'±	LT	1 EA

TOTAL 14 EA

823.93 Total 14 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.94

ORNAMENTAL STREET LIGHT (TYPE A2) 120 W LED (TWIN)

EA

	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	LP-23	38+92.0	16.4'±	RT	1 EA
	LP-24	38+91.6	45.5'±	LT	1 EA
	LP-25	40+07.6	17.4'±	RT	1 EA
	LP-26	40+08.7	48.5'±	LT	1 EA

TOTAL 4 EA

823.94 Total 4 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

823.95

ORNAMENTAL STREET LIGHT (TYPE B) 85 W LED (SINGLE)

EA

	<u>STRC.</u>	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	LP-1	25+91.6	18.8'±	RT	1 EA
	LP-2	26+12.9	34.8'±	LT	1 EA
	LP-3	26+71.5	17.8'±	RT	1 EA
	LP-4	26+93.7	30.5'±	LT	1 EA
	LP-5	28+05.3	17.0'±	RT	1 EA
	LP-6	28+05.3	30.5'±	LT	1 EA
	LP-7	29+30.5	17.0'±	RT	1 EA
	LP-8	29+30.5	30.5'±	LT	1 EA
	LP-9	30+33.9	17.0'±	RT	1 EA
	LP-10	30+33.9	30.5'±	LT	1 EA
	LP-11	31+42.2	17.0'±	RT	1 EA
	LP-12	31+42.5	30.9'±	LT	1 EA
	LP-13	32+73.6	15.0'±	RT	1 EA
	LP-14	32+73.6	28.5'±	LT	1 EA
	LP-15	33+97.2	15.0'±	RT	1 EA
	LP-16	33+97.2	27.6'±	LT	1 EA
	LP-17	35+18.3	15.0'±	RT	1 EA
	LP-18	35+18.3	32.7'±	LT	1 EA

TOTAL 18 EA

823.95 Total 18 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

824.

DUPLEX RECEPTACLE (TREE LIGHT)

EA

	<u>STA.</u>	<u>OFFSET</u>	<u>LT/RT</u>	<u>QUANTITY</u>
BOSTON RD	27+24.4	30.5'±	LT	1 EA
	27+79.0	30.5'±	LT	1 EA
	28+51.5	30.5'±	LT	1 EA
	28+80	30.5'±	LT	1 EA
	29+00.1	30.5'±	LT	1 EA
	30+03.19	30.5'±	LT	1 EA
	31+11.4	30.8'±	LT	1 EA
	31+85	30.1'±	LT	1 EA
	32+10	30.1'±	LT	1 EA
	33+04.5	28.3'±	LT	1 EA
	33+35.4	28.1'±	LT	1 EA
	33+66.3	27.8'±	LT	1 EA
	34+18.3	28.4'±	LT	1 EA
	34+25.2	15.5'±	RT	1 EA
	34+78.1	15.5'±	RT	1 EA
	35+89.9	35.5'±	LT	1 EA
	36+27.4	36.7'±	LT	1 EA
	36+76.2	38.1'±	LT	1 EA
	37+12.3	39.1'±	LT	1 EA
	37+58.0	15.4'±	RT	1 EA
	37+58	41.1'±	LT	1 EA
	38+29.8	14.5'±	RT	1 EA
	42+50	39'±	RT	1 EA
	43+45	43'±	RT	1 EA
	45+32.0	26.2'±	RT	1 EA
	46+00	26.2'±	RT	1 EA
	47+30	30'±	LT	1 EA
	47+70	27'±	LT	1 EA
	47+87	30'±	LT	1 EA
	48+50	30'±	LT	1 EA

TOTAL 30 EA

824. Total 30 EA

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

824.211

RECTANGULAR RAPID FLASHING BEACON (AC POWER), LOCATION 1

LS

Location 1: Heritage Road (Sta. 59+16)

MAJOR ITEMS		UNIT PRICE	TOTAL
QUANTITY	DESCRIPTION		
2	NEMA ENCLOSURES FOR ALL COMPONENTS NEEDED TO MEET FUNCTIONAL REQUIREMENTS PER SPECIAL PROVISIONS	\$ 500	\$ 1,000
2	TRAFFIC SIGNAL POST & BASE STANDARD - 15' STEEL	\$ 3,200	\$ 6,400
4	DUAL RECTANGULAR YELLOW LED BEACONS IN NEMA ENCLOSURES	\$ 500	\$ 2,000
2	APS PUSHBUTTON SYSTEMS	\$ 1,000	\$ 2,000
2	R10-25 SIGNS (9"x12", SEE 2009 MUTCD STANDARD)	\$ 25	\$ 50
4	W11-15 SIGNS (30"x30", SEE 2009 MUTCD STANDARD)	\$ 100	\$ 400
2	W16-7pL (12"x24", SEE 2009 MUTCD STANDARD)	\$ 50	\$ 100
2	W16-7pR (12"x24", SEE 2009 MUTCD STANDARD)	\$ 50	\$ 100
1	SERVICE CONNECTION (UNDERGROUND)	\$ 5,000	\$ 5,000
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.		SUBTOTAL	\$ 17,050

Cable, Loop Leads, Misc. Mounting Assemblies, Wiring & Testing, Adjustments \$ 1,705

TOTAL \$ 18,755

SAY \$ 19,500

824.211 Total 1 LS

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

824.511 FLASHING WARNING BEACON REMOVED AND STACKED - LOCATION 1 LS

Removal, stacking and transporting of the existing flashing school zone signage,
 power supply and span wires for the beacon at Sta. 41+03 1 LS

TOTAL 1 LS

824.511 Total 1 LS

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

824.512
FLASHING WARNING BEACON REMOVED AND STACKED - LOCATION 2
LS

 Removal, stacking and transporting of the existing flashing school zone signage,
 power supply and span wires for the beacon at Sta. 46+55

1 LS

 TOTAL 1 LS

824.512 Total 1 LS

CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

825.01

SERVICE CONNECTION #337 BOSTON ROAD

LS

Electric (Telephone & Cable Overhead)

1 LS

Connect to existing undergrounding service at property line with secondary service from NGRID

TOTAL 1 LS

825.01 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

825.02

SERVICE CONNECTION #349 BOSTON ROAD

LS

Electric, Telephone, Cable

1 LS

Connect to existing undergrounding service at property line with secondary service from NGRID

TOTAL 1 LS

825.02 Total 1 LS

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

825.03
SERVICE CONNECTION #367 BOSTON ROAD
LS

Electric, Telephone, Cable

1 LS

Convert NGID electrical service. Mount boxes and conduit, Remove existing exterior lines on building wall that are no longer needed.

 TOTAL 1 LS

825.03 Total 1 LS

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

825.04

SERVICE CONNECTION #371 BOSTON ROAD

LS

Electric, Telephone, Cable

1 LS

Convert NGID electrical service. Mount boxes and conduit, Remove existing exterior lines on building wall that are no longer needed.

TOTAL 1 LS

825.04 Total 1 LS

 CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

825.05

SERVICE CONNECTION #373 BOSTON ROAD

LS

Electric, Telephone, Cable

1 LS

Convert NGID electrical service. Mount boxes and conduit, Remove existing exterior lines on building wall that are no longer needed.

TOTAL 1 LS

825.05 Total 1 LS



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

825.06

SERVICE CONNECTION #377 BOSTON ROAD

LS

Electric, Telephone, Cable

1 LS

Connect to existing undergrounding service at property line with secondary service from NGRID

TOTAL 1 LS

825.06 Total 1 LS



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

832. WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) SF

From Traffic Sign Summary

LEGEND	TYPE	SIZE	QUANTITY	TOT. AREA	
STOP	R1-1	30" x 30"	9	56.25	6.25 SF
SPEED LIMIT 30	R2-1 (30)	30" x 36"	1	7.5	7.5 SF
SPEED LIMIT 35	R2-1 (35)	30" x 36"	2	15	7.5 SF
NO LEFT TURN	R3-2	24" x 24"	1	4	4.0 SF
LEFT LANE MUST TURN LEFT	R3-7L	36" x 36"	1	9	9.0 SF
ADVANCED INTERSECTION LANE CONTROL	R3-8c	48" x 30"	2	20	10.0 SF
ADVANCED INTERSECTION LANE CONTROL	R3-8d	36" x 30"	2	15	7.5 SF
TWO-WAY LEFT TURN ONLY (OVERHEAD)	R3-9a	30" x 36"	6	45	7.5 SF
TWO-WAY LEFT TURN ONLY (POST-MOUNTED)	R3-9b	24" x 36"	8	48	6.0 SF
BEGIN	R3-9cP	30" x 12"	4	10	2.5 SF
END	R3-9dP	30" x 12"	4	10	2.5 SF
AHEAD	R3-17aP	24" x 8"	2	2.66	1.3 SF
ENDS	R3-17bP	24" x 8"	1	1.33	1.3 SF
BIKE LANE	R3-17	24" x 18"	10	30	3.0 SF
DO NOT ENTER	R5-1	30" x 30"	3	18.75	6.3 SF
ONE WAY	R6-1	36" x 12"	1	3	3.0 SF
NO PARKING ANY TIME	R7-1	12" x 18"	14	21	1.5 SF
NO PARKING - LEFT	R7-1L	12" x 18"	1	1.5	1.5 SF
NO PARKING BIKE LANE	R7-9	12" x 18"	5	7.5	1.5 SF
NO PARKING HERE TO CORNER - RIGHT	R7-11R	12" x 18"	1	1.5	1.5 SF
CROSSWALK STOP ON RED (OVERHEAD)	R10-23	24" x 30"	4	20	5.0 SF
CHEVRON - LEFT	W1-8L	18" x 24"	5	15	3.0 SF
CHEVRON - RIGHT	W1-8R	18" x 24"	5	15	3.0 SF
LANE ENDS - LEFT	W4-2L	36" x 36"	1	9	9.0 SF
LANE ENDS - RIGHT	W4-2R	36" x 36"	1	9	9.0 SF
BICYCLE	W11-1	36" x 36"	2	18	9.0 SF
BICYCLE	W11-1	30" x 30"	1	6.25	6.3 SF
PEDESTRIAN	W11-2	30" x 30"	4	25	6.3 SF
EMERGENCY VEHICLE	W11-8	30" x 30"	1	6.25	6.3 SF
BICYCLE / PEDESTRIAN	W11-15	30" x 30"	6	37.5	6.3 SF
DOWNWARD LEFT DIAGONAL ARROW	W16-7pL	24" x 12"	4	8	2.0 SF
AHEAD	W16-9p	24" x 12"	4	8	2.0 SF
ON ROADWAY	MA-W16-19p	24" x 18"	3	9	3.0 SF
STATE ROUTE SIGN (3 DIGIT)	MA-M1-5a(129)	30" x 24"	1	5	5.0 SF
JUNCTION	M2-1	21" x 15"	1	2.2	2.2 SF
END	M4-6	12" x 6"	1	0.5	.5 SF
BEGIN	M4-14	12" x 6"	1	0.5	.5 SF
DIRECTIONAL ARROW - LEFT	M6-1L	12" x 9"	3	2.25	.8 SF
DIRECTIONAL ARROW - RIGHT	M6-1R	12" x 9"	4	3	.8 SF
DIRECTIONAL ARROW - SLANTED LEFT	M6-2L	12" x 9"	1	0.75	.8 SF
DIRECTIONAL ARROW - SLANTED RIGHT	M6-2R	12" x 9"	2	1.5	.8 SF
DIRECTIONAL ARROW - VERTICAL	M6-3	12" x 9"	1	0.75	.8 SF
DIRECTIONAL ARROW - LEFT/VERTICAL	M6-6L	12" x 9"	2	1.5	.8 SF
DIRECTIONAL ARROW - RIGHT/VERTICAL	M6-6R	12" x 9"	1	0.75	.8 SF
DESTINATION (1 LINE)	D1-1c	33" x 6"	1	1.375	1.4 SF
DESTINATION (2 LINES)	D1-2cA	33" x 12"	1	2.75	2.8 SF



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

832. WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) SF

From Traffic Sign Summary

LEGEND	TYPE	SIZE	QUANTITY	TOT. AREA	
DESTINATION (2 LINES)	D1-2cB	33" x 12"	1	2.75	2.8 SF
DESTINATION (2 LINES)	D1-2cC	33" x 12"	1	2.75	2.8 SF
DESTINATION (3 LINES)	D1-3c	33" x 18"	1	4.125	4.1 SF
ADVANCED STREET NAME (2 LINES)	D3-2a	66" x 30"	2	27.5	13.8 SF
ADVANCED STREET NAME (3 LINES)	D3-2b	66" x 42"	1	19.25	19.3 SF
BIKE ROUTE	D11-1	24" x 18"	9	27	3.0 SF
BIKE ROUTE	D11-1c	24" x 18"	19	57	3.0 SF

TOTAL 676.19 SF

SAY 700 SF

832. Total 700 SF



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

833.7

DELINEATION FOR GUARD RAIL TERMINI

EA

<u>LOCATION</u>	<u>STA.</u>	<u>to</u>	<u>STA.</u>	<u>LT/RT</u>	<u>QUANTITY</u>
FARMERS LANE	3+18.6		3+59.0	RT	2 EA
HERITAGE ROAD	51+95.6		52+82.9	RT	2 EA
	52+50		54+36	LT	2 EA

TOTAL 6 EA

833.7 Total 6 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

840.001

SUPPORT FOR OVERHEAD REGULATORY SIGNS

LS

Boston Road (Sta.39+11 RT)

MAJOR ITEMS	
QUANTITY	DESCRIPTION
1	35' MAST ARM (STEEL) - TYPE II, ORNAMENTAL MONOLEVER WITH FOUNDATION
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

UNIT PRICE	TOTAL
\$ 25,000	\$ 25,000
SUBTOTAL	\$ 25,000

Misc. Mounting Assemblies \$ 2,500

TOTAL \$ 27,500

SAY \$ 28,000

840.001 Total 1 LS



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>SIGN</u>	<u>NEW/R&R</u>	<u>QUANTITY</u>
BOSTON ROAD	11+27	RT	W4-2L	NEW	1 EA
	12+27	RT	R3-17aP, R3-17	NEW	1 EA
	13+15	RT	R3-17	NEW	1 EA
	13+41	LT	R7-1	NEW	1 EA
	14+14	RT	R3-17bP, R3-17	NEW	1 EA
	14+63	RT	R7-9	NEW	1 EA
	15+42	RT	LRTA SIGN	NEW	1 EA
	15+95	LT	R3-17	NEW	1 EA
	16+05	RT	R3-17	NEW	1 EA
	16+67	LT	LRTA SIGN	NEW	1 EA
	17+34	LT	R7-9	NEW	1 EA
	17+60	RT	R5-1	NEW	1 EA
	18+61	RT	R3-9b	NEW	1 EA
	18+63	LT	R3-9b	NEW	1 EA
	19+36	RT	R7-9	NEW	1 EA
	19+39	LT	M2-1, MA-M1-5a(129)	NEW	1 EA
	20+14	LT	R2-1 (30)	NEW	1 EA
	20+27	RT	R2-1 (35)	NEW	1 EA
	21+05	RT	R3-9b	NEW	1 EA
	21+18	LT	R3-9b	NEW	1 EA
	21+93	LT	R3-17	NEW	1 EA
	21+93	RT	R3-17	NEW	1 EA
	22+57	RT	R7-9	NEW	1 EA
	22+98	LT	R7-9	NEW	1 EA
	23+74	RT	R3-9dP, R3-9b	NEW	1 EA
	24+10	LT	R3-9cP, R3-9b	NEW	1 EA
	24+33	RT	R3-7L	NEW	1 EA
	24+46	LT	LRTA SIGN	NEW	1 EA
	24+82	RT	D11-1, M6-2R	NEW	1 EA
	24+94	LT	R3-17	NEW	1 EA
	25+22	LT	MA-D3-1a (2), MA-D3-1c (2)	NEW	1 EA
	25+52	RT	R1-1	NEW	1 EA
	25+88	RT	D11-1, M6-6L	NEW	1 EA
	26+57	LT	D11-1c, M6-1R	NEW	1 EA
	27+05	LT	D1-1c, D11-1c	NEW	1 EA
	27+49	RT	D11-1	NEW	1 EA
	28+09	LT	R7-1	NEW	1 EA
	28+41	RT	LRTA SIGN	NEW	1 EA
	29+14	RT	HISTORIC DISTRICT	R&R	1 EA
	29+18	RT	R7-1	NEW	1 EA
	29+36	LT	R3-9b	NEW	1 EA
	29+51	RT	R3-9b	NEW	1 EA
	31+12	LT	D11-1c	NEW	1 EA
	32+83	LT	R7-1	NEW	1 EA
	33+84	RT	R7-1	NEW	1 EA
	36+52	LT	D11-1c	NEW	1 EA
	37+85	LT	LRTA SIGN	NEW	1 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

847.1

SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>SIGN</u>	<u>NEW/R&R</u>	<u>QUANTITY</u>
BOSTON ROAD	38+33	LT	W4-2R	NEW	1 EA
	34+45	RT	D11-1, M6-6R	NEW	1 EA
	38+52	LT	R7-1	NEW	1 EA
	38+82	LT	D1-2cB	NEW	1 EA
	38+97	RT	MA-D3-1a (2), MA-D3-1f (2)	NEW	1 EA
	39+26	LT	D11-1c	NEW	1 EA
	39+68	LT	D11-1c, M6-1R	NEW	1 EA
	39+97	LT	D11-1c, M6-6L	NEW	1 EA
	40+00	RT	R7-1	NEW	1 EA
	40+37	RT	D11-1	NEW	1 EA
	40+58	RT	LRTA SIGN	NEW	1 EA
	42+80	RT	D11-1	NEW	1 EA
	42+95	LT	R7-1	NEW	1 EA
	44+49	LT	D11-1	NEW	1 EA
	45+08	RT	R7-1	NEW	1 EA
	45+32	LT	M4-14, D11-1, M6-2R	NEW	1 EA
	46+56	RT	M4-6, D11-1, M6-2L	NEW	1 EA
	48+07	LT	R7-1	NEW	1 EA
	48+69	LT	R3-17	NEW	1 EA
	49+85	LT	R3-17aP, R3-17	NEW	1 EA
50+44	LT	R2-1 (35)	NEW	1 EA	
SIMMONS LANE	0+45	LT	R1-1	NEW	1 EA
HERITAGE ROAD	50+44	RT	D1-3c	NEW	1 EA
	50+64	LT	R1-1	NEW	1 EA
	50+54	RT	D11-1c, M6-1L	NEW	1 EA
	51+34	RT	D11-1c, D1-2cC	NEW	1 EA
	53+48	LT	W1-8L	NEW	1 EA
	53+82	LT	W1-8R	NEW	1 EA
	53+83	LT	W1-8L	NEW	1 EA
	54+18	LT	W1-8R	NEW	1 EA
	54+20	LT	W1-8L	NEW	1 EA
	54+24	RT	D11-1c	NEW	1 EA
	54+49	RT	D11-1c	NEW	1 EA
	54+53	LT	W1-8R	NEW	1 EA
	54+54	LT	W1-8L	NEW	1 EA
	54+88	LT	W1-8R	NEW	1 EA
	54+90	LT	W1-8L	NEW	1 EA
	55+26	LT	W1-8R	NEW	1 EA
	57+01	RT	W11-15, W16-9p	NEW	1 EA
	57+56	RT	D11-1c	NEW	1 EA
	58+32	RT	R1-1	NEW	1 EA
	58+91	RT	D11-1c (2), M6-1L	NEW	1 EA
59+15	RT	D11-1c, M6-1R	NEW	1 EA	
59+96	RT	W11-1, MA-W16-19p	NEW	1 EA	
60+59	LT	W11-15, W16-9p	NEW	1 EA	



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>SIGN</u>	<u>NEW/R&R</u>	<u>QUANTITY</u>
FARMERS LANE	1+46	LT	MA-D3-1d (2)	NEW	1 EA
	1+47	LT	R1-1	NEW	1 EA
.ASALLETTE ROAD	4+27	LT	R1-1	NEW	1 EA
GOOD STREET	70+41	LT	D11-1c (2), M6-3	NEW	1 EA
	71+40	RT	W11-8	NEW	1 EA
	71+50	LT	R3-8d	NEW	1 EA
	72+06	LT	D1-2cA	NEW	1 EA
	72+98	LT	R7-1	NEW	1 EA
	72+99	RT	R7-1	NEW	1 EA
	73+80	RT	W11-2, W16-9p	NEW	1 EA
	75+14	LT	D11-1c, M6-1R	NEW	1 EA
	75+15	RT	W11-2, W16-7pL	NEW	1 EA
	75+29	LT	D11-1c, M6-1L	NEW	1 EA
	75+34	LT	W11-2,W16-7pL	NEW	1 EA
	75+98	RT	R7-1	NEW	1 EA
	77+10	LT	W11-2, W16-9p	NEW	1 EA
TOWN HALL DRIVE	90+31	LT	R6-1, R5-1, R3-2	NEW	1 EA
	90+32	RT	R5-1	NEW	1 EA
	90+32	LT	R1-1	NEW	1 EA
	90+57	RT	R7-11R	NEW	1 EA
	91+19	RT	R7-1L	NEW	1 EA
TOM GLAVINE WY	92+35	LT	R1-1	NEW	1 EA
	92+76	RT	R7-1	NEW	1 EA
	92+76	LT	R3-8d	NEW	1 EA
MULBERRY LANE	6+51	LT	R1-1	NEW	1 EA
	6+64	RT	HEAVY TRUCKS EXCLUDED	R&R	1 EA

TOTAL 118 EA

847.1 Total 118 EA



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

848.1 SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>SIGN</u>	<u>NEW/R&R</u>	<u>QUANTITY</u>
BOSTON ROAD	12+39	LT	W11-1, MA-W16-19p	NEW	1 EA
	12+47	RT	MA-D3-1b (2)	NEW	1 EA
	14+87	LT	D3-2b	NEW	1 EA
	25+22	LT	MA-D3-1a (2), MA-D3-1c (2)	NEW	1 EA
	34+13	RT	D3-2a	NEW	1 EA
	40+89	LT	R3-8c	NEW	1 EA
	43+63	RT	MA-D3-1g (2)	NEW	1 EA
	43+66	LT	D3-2a	NEW	1 EA
	44+68	LT	R3-8c	NEW	1 EA
	45+11	LT	MA-D3-1h (2)	NEW	1 EA
	46+99	RT	W11-1, MA-W16-19p	NEW	1 EA
HERITAGE ROAD	58+42	RT	MA-D3-1i (2)	NEW	1 EA
ASALLETTE ROAD	4+33	LT	MA-D3-1e (2)	NEW	1 EA

TOTAL 13 EA

848.1 Total 13 EA



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CALCULATED BY: JMC/KL
 CHECKED BY: GL/DJ
 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

850.41

ROADWAY FLAGGER

HR

2 EA
 4 HR
 6 MO
 5 DAY

Flagger
 Hours
 Months (30 Months for Project)
 Work Days/Month

Per July 2016 Deputy Chief Engineer for Construction Guidance

Project Group	% of Office Estimate for Roadway Flaggers
Multi-Use Paths	1.00%
Bridge Closed - Detour Provided	0.03%
Bridge Kept Open - Construction Phasing	0.10%
Bridge Open - Temporary Signal Installed	0.10%
Interstate Highways	0.00%
Roadway Reconstruction	0.20%
Town Centers	0.10%

TOTAL 240 HR

SAY 240 HR

850.41 Total 240 HR

CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

851.1

TRAFFIC CONES FOR TRAFFIC MANAGEMENT

DAY

Days with more than 50 cones used at once

360 DAY

TOTAL	360 DAY
SAY	375 DAY

851.1 Total 375 DAY

CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

852.

SAFETY SIGNING FOR TRAFFIC MANAGEMENT

SF

From Temporary Traffic Control Plans:

LEGEND	TYPE	SIZE	QUANTITY	UNIT AREA	TOT. AREA
WORK ZONE, SPEEDING FINES DOUBLED	MA-R2-10a	48" x 36"	2	12 SF	24
END ROAD WORK, END DOUBLE FINES	MA-R2-10e	36" x 48"	9	12 SF	108
RIGHT LANE MUST TURN RIGHT	R3-7R	24" x 30"	2	5 SF	10
SIDEWALK CLOSED CROSS HERE	R9-11a	48" x 24"	2	8 SF	16
REVERSE CURVE LEFT	W1-4L	36" x 36"	2	9 SF	18
REVERSE CURVE RIGHT	W1-4R	36" x 36"	2	9 SF	18
LEFT LANE ENDS	W4-2L	36" x 36"	2	9 SF	18
RIGHT LANE ENDS	W4-2R	36" x 36"	2	9 SF	18
THRU TRAFFIC MERGE LEFT	W4-7L	36" x 36"	2	9 SF	18
ROAD NARROWS	W5-1	36" x 36"	2	9 SF	18
BUMP	W8-1	36" x 36"	4	9 SF	36
PAVEMENT ENDS	W8-3	36" x 36"	4	9 SF	36
GROOVED PAVEMENT	W8-15	36" x 36"	4	9 SF	36
STEEL PLATE AHEAD	W8-24	36" x 36"	4	9 SF	36
PEDESTRIAN	W11-2	30" x 30"	4	6.25 SF	25
ADVISORY SPEED	W13-1p	24" x 24"	2	4 SF	8
DOWNWARD LEFT DIAGONAL ARROW	W16-7pL	24" x 12"	4	2 SF	8
ROAD WORK 1500 FT	W20-1A	36" x 36"	2	9 SF	18
ROAD WORK AHEAD	W20-1B	36" x 36"	9	9 SF	81
ONE LANE ROAD AHEAD	W20-4	36" x 36"	4	9 SF	36
ONE LANE ROAD 1000 FT	W20-4C	36" x 36"	4	9 SF	36
LEFT LANE CLOSED 1000 FT	W20-5L	36" x 36"	2	9 SF	18
RIGHT LANE CLOSED 1000 FT	W20-5R	36" x 36"	2	9 SF	18
FLAGGER	W20-7	36" x 36"	4	9 SF	36
POLICE OFFICER AHEAD	MA-W20-7b	36" x 36"	4	9 SF	36
RIGHT SHOULDER CLOSED	W21-5aR	36" x 36"	2	9 SF	18

TOTAL 748 SF

SAY 800 SF

852. Total 800 SF

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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

852.11

TEMPORARY PEDESTRIAN BARRICADE

FT

Temporary Pedestrian Bypasses at one time
 Length of Barricade needed per Bypass

2
 250 FT

TOTAL 500 FT

852.11 Total 500 FT

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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

852.12
TEMPORARY PEDESTRIAN CURB RAMP
EA

Location TBD in the field

Temporary Pedestrian Bypasses at one time	2
Number of curb ramps needed per bypass	2 EA

TOTAL	4 EA
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852.12	Total	4 EA
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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

853.1

PORTABLE BREAKAWAY BARRICADE TYPE III

EA

Number of work zones at one time	4
Number of barricades needed per work zone	2 EA

TOTAL	8 EA
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	853.1	Total	8 EA
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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

853.2

TEMPORARY BARRIER (TL-2)

FT

For use within full depth construction areas

TOTAL 200 FT

853.2 Total 200 FT

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 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

853.21
TEMPORARY BARRIER REMOVED AND RESET
FT

For use within full depth construction areas

Total length of barrier	200 FT
Number of times to be removed and reset	10

TOTAL	2000 FT
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853.21	Total	2,000 FT
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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

853.403

TRUCK MOUNTED ATTENUATOR

DAY

Truck Mounted Attenuators used at once	3
Months (30 Months for Project)	2 MO
Work Days/Month	5 DAY

TOTAL 30 DAY

853.403 Total 30 DAY

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 DATE: 7/30/2021

JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

854.1

PAVEMENT MARKING REMOVAL

SF

Total Length of Pavement Markings to be Removed

#321 Boston Road
 #325 Boston Road

	395 FT
	325 FT
TOTAL	720 FT

Assume 6" lines (for conversion to SF)

0.5

Total Length of Pavement Markings to be Removed

TOTAL 360 FT

	360 SF
SAY	375 SF

854.1 Total 375 SF

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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

854.016
TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED)
FT

Total Length of Project		5484 FT
Number of lines to be striped		6
	Subtotal	32904 FT
Restore SLs		325 FT
Restore CWs		1500 FT
	Subtotal	1825 FT
x 2 (12" line)		x2
	Subtotal	3650 FT
	Total	36554 FT
Assume two applications		x2
	Total	73108 FT

	TOTAL	73108 FT
	SAY	74000 FT

	Total	74,000 FT
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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

854.036
TEMPORARY PAVING MARKINGS - 6 INCH (TAPE)
FT

Total Length of Project	5484 FT
Number of lines to be striped	6 EA
Assume 10% of total project length based on TR.6.8 for short term use	10%

TOTAL	3290 FT
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SAY	3300 FT
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854.036	Total	3,300 FT
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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

856.

ARROW BOARD

DAY

Arrow Boards	2
Months (30 Months for Project)	24 MO
Work Days/Month	30 DAY

TOTAL 1440 DAY

856. Total 1,440 DAY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

859.

REFLECTORIZED DRUM

DAY

Drums used at once	75
Months (30 Months for Project)	24 MO
Work Days/Month	30 DAY

TOTAL 54000 DAY

859. Total 54,000 DAY



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

859.1 REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS DAY

Tapers requiring drums with lights 2
Months (30 Months for Project) 2 MO
Work Days/Month 30 DAY

TOTAL 120 DAY

859.1 Total 120 DAY

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JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

864.04 PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC) SF

		<u>AREA</u>	<u>QUANTITY</u>	<u>TOTAL</u>
Arrows: Left/Right		20 SF	24 EA	480 SF
Legends:		25 SF	6 EA	150 SF
Sharrows:		20 SF	1 EA	20 SF
Bike Lane:		20 SF	10 EA	200 SF

TOTAL 850 SF

SAY 900 SF

864.04 Total 900 SF



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

867.706

PREFORMED PAVEMENT MARKINGS, WET REFLECTIVE (6 INCH YELLOW LINE WITH BLACK CONTRAST)

FT

<u>TYPE</u>	<u>LENGTH</u>		<u>FACTOR</u>	<u>QUANTITY</u>
DYBL:	1520	FT	0.25	380 FT
SYBL:	710	FT	1.00	710 FT

TOTAL	1090 FT
SAY	1100 FT

867.706 Total 1100 FT



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JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

868.106 6 INCH DURABLE RECESSED WET REFLECTIVE WHITE LINE (THERMOPLASTIC) FT

<u>TYPE</u>	<u>LENGTH</u>		<u>FACTOR</u>	<u>QUANTITY</u>
SWL:	12580	FT	1.00	12580 FT
BWL:	2670	FT	0.25	668 FT
DWLEx:	340	FT	0.25	85 FT

TOTAL 13333 FT

SAY 13500 FT

868.106 Total 13500 FT



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

868.112 12 INCH DURABLE RECESSED WET REFLECTIVE WHITE LINE (THERMOPLASTIC) FT

<u>TYPE</u>	<u>LENGTH</u>		<u>FACTOR</u>	<u>QUANTITY</u>
SL:	325	FT	1.00	325 FT
CW:	5015	FT	1.00	5015 FT
SWGL:	490	FT	1.00	490 FT

TOTAL 5830 FT

SAY 6000 FT

868.112 Total 6000 FT

 CALCULATED BY: JMC/KL
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 DATE: 7/30/2021

 JOB: 4722
 BOSTON RD (ROUTE 3A)
 BILLERICA, MA

869.106 6 INCH DURABLE RECESSED WET REFLECTIVE YELLOW LINE (THERMOPLASTIC) FT

<u>TYPE</u>	<u>LENGTH</u>		<u>FACTOR</u>	<u>QUANTITY</u>
SYL:	3260	FT	1.00	3260 FT
DBYL:	4245	FT	2.00	8490 FT
BYL:	2600	FT	0.25	650 FT

TOTAL	12400 FT
SAY	12500 FT

869.106 Total 12500 FT



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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

869.112 6 INCH DURABLE RECESSED WET REFLECTIVE YELLOW LINE (THERMOPLASTIC) FT

<u>TYPE</u>	<u>LENGTH</u>	<u>FACTOR</u>	<u>QUANTITY</u>
SYGL:	490	FT	490 FT

TOTAL 490 FT

SAY 500 FT

869.112 Total 500 FT



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CALCULATED BY: JMC/KL
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DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

874.

STREET NAME SIGN

EA

From Traffic Sign Summary

LEGEND	TYPE	SIZE	QUANTITY
BOSTON RD	MA-D3-1a	48" x 12"	4
SIMMONS LN	MA-D3-1b	54" x 12"	2
HERITAGE RD	MA-D3-1c	54" x 12"	2
FARMERS LN	MA-D3-1d	48" x 12"	2
LASALLETTE RD	MA-D3-1e	54" x 12"	2
GOOD ST	MA-D3-1f	36" x 12"	2
TOM GLAVINE WAY	MA-D3-1g	66" x 12"	2
MULBERRY LN	MA-D3-1h	54" x 12"	2
MONTICELLO CIR	MA-D3-1i	60" x 18"	2

TOTAL 20 EA

874. Total 20 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

874.45

MISCELLANEOUS SIGNS REMOVED AND RESET

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>DESCRIP.</u>	<u>QUANTITY</u>
BOSTON ROAD	29+01	RT	HISTORIC DISTRICT	1 EA
	45+10	LT	HEAVY TRUCKS EXCLUDED	1 EA

TOTAL 2 EA

874.45 Total 2 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

874.51

MISCELLANEOUS SIGNS REMOVED AND DISCARDED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>DESCRIP.</u>	<u>QUANTITY</u>
BOSTON ROAD	12+58	LT	NO PARKING	1 EA
	13+39	LT	SIGNAL AHEAD	1 EA
	13+41	RT	NO PARKING	1 EA
	14+12	LT	NO PARKING	1 EA
	14+83	LT	FLOYD ST NEXT SIGNAL	1 EA
	17+84	LT	ROUTE 129	1 EA
	20+24	LT	SPEED LIMIT 30	1 EA
	20+28	RT	SPEED LIMIT 35	1 EA
	26+21	LT	HERITAGE RD	1 EA
	34+23	RT	EMERGENCY VEHICLE	1 EA
	34+44	RT	CROSSWALK AHEAD	1 EA
	34+48	LT	FARMERS LN/DEAD END	1 EA
	34+94	LT	NO PARKING	1 EA
	38+92	RT	FIRE/POLICE/ICE RINK	1 EA
	39+75	RT	GOOD ST/STOP	1 EA
	39+79	LT	CROSSWALK	1 EA
	40+00	RT	CROSSWALK	1 EA
	42+74	LT	EMERGENCY VEHICLE	1 EA
	43+48	RT	CROSSWALK	1 EA
	43+71	LT	CROSSWALK	1 EA
45+13	LT	CROSSWALK AHEAD/STOP LINE	1 EA	
SIMMONS LANE	0+45	LT	SIMMONS LN/BOSTON RD/STOP	1 EA
HERITGAE ROAD	54+49	LT	CHEVRONS	1 EA
	57+86	RT	MONTICELLO CIR	1 EA
LASALLETTE RD	4+17	LT	LASALLETTE RD	1 EA
	4+36	LT	STOP	1 EA
GOOD STREET	72+86	LT	NO PARKING	1 EA
	73+14	RT	NO PARKING	1 EA
	74+67	LT	BILLERICA FD PARKING ONLY	1 EA
	74+89	RT	VISITORS BUS ENTRANCE	1 EA
	75+56	RT	NO PARKING	1 EA
TOM GLAVINE WAY	92+45	RT	TOM GLAVINE WAY/DO NOT ENTER	1 EA
	92+55	RT	NO PARKING	1 EA
	92+86	RT	NO PARKING	1 EA
MULBERRY LANE	6+59	LT	MULBERRY LN/STOP	1 EA
<hr/>				
TOTAL				35 EA
874.51				Total
				35 EA



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CALCULATED BY: JMC/KL
CHECKED BY: GL/DJ
DATE: 7/30/2021

JOB: 4722
BOSTON RD (ROUTE 3A)
BILLERICA, MA

874.7

MISCELLANEOUS SIGNS REMOVED AND STACKED

EA

<u>LOCATION</u>	<u>STA.</u>	<u>LT/RT</u>	<u>DESCRIP.</u>	<u>QUANTITY</u>
BOSTON ROAD	15+34	RT	LRTA SIGN	1 EA
	15+47	LT	"SAL'S PIZZA" SIGN	1 EA
	16+85	LT	LRTA SIGN	1 EA
	34+32	LT	LRTA SIGN	1 EA
	34+93	RT	LRTA SIGN	1 EA
	44+33	RT	LRTA SIGN	1 EA

TOTAL 6 EA

874.7 Total 6 EA

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 BILLERICA, MA

901. 4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE CY

Headwall at Outlet Sediment Trap
 See Const Details E 206.4.1

Heritage Road	For 18" Pipe	OF-3	STA 52+26 RT	2 CY
Farmers Lane	For 24" Pipe	OF-2	STA 3+25 RT	

Headwall Farmers Lane

Sloped Wingwall

Lower area =	5.78 sf	
Upper area =	8.28 sf	
Avg Area =	7.03 sf	
Sloped Wingwall Length =	3 ft	
Volume =	0.78 cy	0.78

Headwall

Area =	8.28 sf	
Headwall Length =	3 ft	
Void for Pipe =	0.17453293 cy	
Volume =	0.75 cy	0.75

Extended Wingwall

Avg Area =	7.03 sf	
Extended Wingwall Length =	10.5 ft	
Volume =	2.73 cy	2.73

Stepped Wingwall

Estimated Cross-Sectional Area =	7.12 sf	
Estimated Stepped Wingwall Width =	1.25 ft	
Volume =	0.33 cy	0.33

TOTAL	7 CY
SAY	10 CY

901. Total 10 CY



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910.1 STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED LB

Headwall at Outlet Sediment Trap
See Const Details E 206.4.1

Heritage Road For 18" Pipe OF-3 STA 52+26 RT 39 LB

Farmers Lane For 24" Pipe OF-2 STA 3+25 RT

Transverse Bars

Headwall/Wingwall Face Length = 20.00 ft
Spacing of bars = 12.00 in
No. of bars = 21 ea
Length of hooked bar = 2.50 ft
Length of straight bars = 3.00 ft
#3 Bar weight = 0.38 lb/ft
Total weight : 43.43 lb 43.43 LB

Longitudinal Bars

Length of bars = 19.67 ft
No. of bars = 7 ea
#3 Bar weight = 0.38 lb/ft
Total weight : 51.76 lb 51.76 LB

TOTAL	134 LB
SAY	140 LB

910.1 Total 140 LB



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BILLERICA, MA

970.

BITUMINOUS DAMP-PROOFING

SY

Headwall at Outlet Sediment Trap
See Const Details E 206.4.1

Heritage Road For 18" Pipe OF-3 STA 52+26 RT 5 SY

Farmers Lane For 24" Pipe OF-2 STA 3+25 RT

Headwall and Wingwalls (Full height)

Length = 12.42 ft
Height = 6.25 ft
Area = 8.63 sy 8.63 SY

Wingwall at Exist. Granite Headwall

Length = 5.00 ft
Height = 4.15 ft
Area = 2.31 sy 2.31 SY

Sloped Wingwalls

Length = 7.75 ft
Avg height = 5.20 ft
Area = 4.48 sy 4.48 SY

TOTAL	20 SY
SAY	25 SY

970. Total 25 SY



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BOSTON RD (ROUTE 3A)
BILLERICA, MA

988.01

SEDIMENT FOREBAY PAVING

SF

FROM ITEM TYPE

QUANTITY

For Sediment forbay at Heritage Rd

80 SF

TOTAL 80 SF

SAY 80 SF

988.01 Total 80 SF