

**CALCULATION BOOK
NO. 605684**

**INTERSECTION & SIGNAL IMPROVEMENTS
ON BROADWAY,
FROM THIRD STREET TO AMES STREET
(KENDALL SQUARE)**

**Cambridge
Massachusetts**

Prepared for: **Massachusetts Department of Transportation
Boston, Massachusetts**

Prepared by: **Weston & Sampson
Foxborough, Massachusetts**

May 2011

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS**

MAY 2011

TABLE OF CONTENTS

Page	Item No.	Item Description
1		Area Calculation Sheet
2	102.51	Individual Tree Protection
3	103.	Tree Removed - Diameter Under 24 Inches
4	120.1	Unclassified Excavation
5	141.	Class A Trench Excavation
6	141.1	Test Pit For Exploration
7	146.	Drainage Structure Removed
8	151.	Gravel Borrow
9	154.99	Bioretention Soil
10	156.	Crushed Stone
11	170.	Fine Grading And Compacting
12	180.1	Health and Safety Plan
13	180.2	Implementation of Health and Safety Plan
14	180.3	Personnel Protection Level C Upgrade
15	180.4	Monitoring/Handling and Stockpiling of Contaminated Soils
16	180.5	Licensed Site Professional
17	180.6	Miscellaneous Soil Testing
18	181.1	Disposal of Contaminated Soil
19	187.32	Removal and Disposal of Drainage System Sediments
20	201.	Catch Basin
21	202.	Manhole
22	204.	Gutter Inlet
23	220.	Drainage Structure Adjusted
24	220.7	Sanitary Structure Adjusted
25	221.	Frame And Cover
26	222.2	Frame And Grate (or Cover) Munciple Standard
27	223.1	Frame And Grate (Or Cover) Removed And Stacked
28	225.52	Trap and Hood Municipal Standard
29	250.06	6 Inch Polyvinyl Chloride Sanitary Sewer Pipe

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
30	269.06	6 Inch-Slot Perforated Corrugated Plastic Pipe (Subdrain)
31	303.06	6 Inch Ductile Iron Water Pipe (Mechanical Joint)
32	309.	Ductile Iron Fittings for Water Pipe
33	358.	Gate Box Adjusted
34	376.	Hydrant
35	376.3	Hydrant - Removed And Stacked
36	415	Pavement Micromilling
37	450.9	Contractor Quality Control
38	451.	HMA for Patching
39	452.	Asphalt Emulsion for Tack Coat
40	453.	HMA Joint Sealant
41	455.23	Superpave Surface Course 12.5 (SSC-12.5)
42	472.	Hot Mix Asphalt For Miscellaneous Work
43	482.3	Sawing Asphalt Pavement
44	504.	Granite Curb Type VA4 - Straight
45	504.1	Granite Curb Type VA4 - Curved
46	509.	Granite Transition Curb For Wheelchair Ramps-Straight
47	509.1	Granite Transition Curb for Wheelchair Ramps-Curved
48	514.	Granite Curb Inlet - Straight
49	517.	Granite Curb Corner Type B
50	580.	Curb Removed And Reset
51	590.	Curb Removed And Stacked
52	657.51	Temporary Tree Protective Fence
53	701.	Cement Concrete Sidewalk
54	701.1	Cement Concrete Sidewalk At Driveways
55	701.2	Cement Concrete Wheelchair Ramp
56	706.	Brick Walk
57	707.1	Park Bench
58	707.15	Park Chair
59	707.35	Tree Cell

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
60	707.9	Bicycle Ring and Post
61	734.	Sign Removed And Reset
62	741.	Engineers Field Office And Equipment (Type B)
63	748.	Mobilization
64	751.	Loam Borrow
65	765.	Seeding
66	775.431	Locust - Honey - Shademaster - 2 to 2.5 Inch Caliper
67	777.036	Oak - Northern Red 2 to 2.5 Inch Caliper
68	786.091	Juniper - Blue Pacific
69	790.330	Rock Cotoneaster 'Tom Thumb' 18" to 24"
70	796.040	Ivy Vine - English Per Flat
71	796.043	Myrtle Vine Per Flat
72	796.049	Pachysandra Per Flat
73	796.445	Lilyturf 2 Quart
74	799.001	Ginko Bilboa (Male)
75	799.002	Snowhill Sage
76	799.003	White Gayfeather
77	799.004	Switch Grass
78	799.005	Sedium
79	799.006	Blue Flag Iris
80	799.007	Kobold-Lilac Gayfeather
81	799.008	Little Blue Stem
82	799.009	Russian Sage
83	799.010	White False Indigo
84	804.3	3 Inch Electrical Conduit Type NM - Plastic (UL)
85	811.35	Pull Box Adjusted
86	811.36	Electric Manhole Adjusted
87	812.99	Pedestrain Warning Device Precast Foundation
88	813.82	Service Connection (Underground)
89	815.9	Pedestrian Warning Device

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
90	823.715	Highway Lighting pole and Illuminated Sign Removed and Stacked
91	832.1	Warning - Regulatory and Route Marker - Aluminum
92	847.1	Sign Support (N/Guide) and Route Marker w/Breakaway Post
		Assembly - Steel
93	850.41	Roadway Flagger
94	852.	Safety Signing For Construction Operations
95	853.1	Portable Breakaway Barricade Type III
96	854.034	Temporary Pavement Marking
97	859.	Reflectorized Drum
98	868.04	Pavement Arrows And Legends Refl. White (Epoxy)
99	868.06	6 Inch Reflectorized White Line (Epoxy)
100	868.12	12 Inch Reflectorized White Line (Epoxy)
101	868.2	Yield Symbol White (Epoxy)
102	868.24	24 Inch Reflectorized White Line (Epoxy)
103	869.06	6 Inch Reflectorized Yellow Line (Epoxy)
104	874.2	Traffic Sign Removed And Reset
105	874.4	Traffic Sign Removed And Stacked
106	999.001	Police Detail
107		Drainage Calculation
108		Drainage Calculation
109		Drainage Calculation
110		Drainage Calculation
111		Drainage Calculation

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
1		Area Calculation Sheet
2	102.51	Individual Tree Protection
3	103.	Tree Removed - Diameter Under 24 Inches
4	120.1	Unclassified Excavation
5	141.	Class A Trench Excavation
6	141.1	Test Pit For Exploration
7	146.	Drainage Structure Removed
8	151.	Gravel Borrow
9	154.99	Bioretention Soil
10	156.	Crushed Stone
11	170.	Fine Grading And Compacting
12	180.1	Health and Safety Plan
13	180.2	Implementation of Health and Safety Plan
14	180.3	Personnel Protection Level C Upgrade
15	180.4	Monitoring/Handling and Stockpiling of Contaminated Soils
16	180.5	Licensed Site Professional
17	180.6	Miscellaneous Soil Testing
18	181.1	Disposal of Contaminated Soil
19	187.32	Removal and Disposal of Drainage System Sediments
20	201.	Catch Basin
21	202.	Manhole
22	204.	Gutter Inlet
23	220.	Drainage Structure Adjusted
24	220.7	Sanitary Structure Adjusted
25	221.	Frame And Cover
26	222.2	Frame And Grate (or Cover) Municiple Standard
27	223.1	Frame And Grate (Or Cover) Removed And Stacked
28	225.52	Trap and Hood Municipal Standard
29	250.06	6 Inch Polyvinyl Chloride Sanitary Sewer Pipe

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
30	269.06	6 Inch-Slot Perforated Corrugated Plastic Pipe (Subdrain)
31	303.06	6 Inch Ductile Iron Water Pipe (Mechanical Joint)
32	309.	Ductile Iron Fittings for Water Pipe
33	358.	Gate Box Adjusted
34	376.	Hydrant
35	376.3	Hydrant - Removed And Stacked
36	415	Pavement Micromilling
37	450.9	Contractor Quality Control
38	451.	HMA for Patching
39	452.	Asphalt Emulsion for Tack Coat
40	453.	HMA Joint Sealant
41	455.23	Superpave Surface Course 12.5 (SSC-12.5)
42	472.	Hot Mix Asphalt For Miscellaneous Work
43	482.3	Sawing Asphalt Pavement
44	504.	Granite Curb Type VA4 - Straight
45	504.1	Granite Curb Type VA4 - Curved
46	509.	Granite Transition Curb For Wheelchair Ramps-Straight
47	509.1	Granite Transition Curb for Wheelchair Ramps-Curved
48	514.	Granite Curb Inlet - Straight
49	517.	Granite Curb Corner Type B
50	580.	Curb Removed And Reset
51	590.	Curb Removed And Stacked
52	657.51	Temporary Tree Protective Fence
53	701.	Cement Concrete Sidewalk
54	701.1	Cement Concrete Sidewalk At Driveways
55	701.2	Cement Concrete Wheelchair Ramp
56	706.	Brick Walk
57	707.1	Park Bench
58	707.15	Park Chair
59	707.35	Tree Cell

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
60	707.9	Bicycle Ring and Post
61	734.	Sign Removed And Reset
62	741.	Engineers Field Office And Equipment (Type B)
63	748.	Mobilization
64	751.	Loam Borrow
65	765.	Seeding
66	775.431	Locust - Honey - Shademaster - 2 to 2.5 Inch Caliper
67	777.036	Oak - Northern Red 2 to 2.5 Inch Caliper
68	786.091	Juniper - Blue Pacific
69	790.330	Rock Cotoneaster 'Tom Thumb' 18" to 24"
70	796.040	Ivy Vine - English Per Flat
71	796.043	Myrtle Vine Per Flat
72	796.049	Pachysandra Per Flat
73	796.445	Lilyturf 2 Quart
74	799.001	Ginko Bilboa (Male)
75	799.002	Snowhill Sage
76	799.003	White Gayfeather
77	799.004	Switch Grass
78	799.005	Sedium
79	799.006	Blue Flag Iris
80	799.007	Kobold-Lilac Gayfeather
81	799.008	Little Blue Stem
82	799.009	Russian Sage
83	799.010	White False Indigo
84	804.3	3 Inch Electrical Conduit Type NM - Plastic (UL)
85	811.35	Pull Box Adjusted
86	811.36	Electric Manhole Adjusted
87	812.99	Pedestrian Warning Device Precast Foundation
88	813.82	Service Connection (Underground)
89	815.9	Pedestrian Warning Device

**BROADWAY RECONSTRUCTION
CAMBRIDGE, MASSACHUSETTS
MAY 2011
TABLE OF CONTENTS**

Page	Item No.	Item Description
90	823.715	Highway Lighting pole and Illuminated Sign Removed and Stacked
91	832.1	Warning - Regulatory and Route Marker - Aluminum
92	847.1	Sign Support (N/Guide) and Route Marker w/Breakaway Post Assembly - Steel
93	850.41	Roadway Flagger
94	852.	Safety Signing For Construction Operations
95	853.1	Portable Breakaway Barricade Type III
96	854.034	Temporary Pavement Marking
97	859.	Reflectorized Drum
98	868.04	Pavement Arrows And Legends Refl. White (Epoxy)
99	868.06	6 Inch Reflectorized White Line (Epoxy)
100	868.12	12 Inch Reflectorized White Line (Epoxy)
101	868.2	Yield Symbol White (Epoxy)
102	868.24	24 Inch Reflectorized White Line (Epoxy)
103	869.06	6 Inch Reflectorized Yellow Line (Epoxy)
104	874.2	Traffic Sign Removed And Reset
105	874.4	Traffic Sign Removed And Stacked
106	999.001	Police Detail
107		Drainage Calculation
108		Drainage Calculation
109		Drainage Calculation
110		Drainage Calculation
111		Drainage Calculation

Area Calc Sheet

Broadway

HMA Cold Plane and Overlay Station 11+00 to Station 21+69	60626	SF	=	6736	SY
Cement Concrete Sidewalk	22061	SF	=	2451	SY
Cement Concrete Driveway	3870	SF	=	430	SY
Cement Concrete WCR	1000	SF	=	111	SY

All areas taken from AutoCAD

Item 102.51

INDIVIDUAL TREE PROTECTION

EA

12 + 44	42' LT	1	12 + 64	33' RT	1
12 + 42	1' RT	1	12 + 57	2' RT	1
12 + 40	33' RT	1	12 + 73	2' RT	1
12 + 64	41' LT	1	12 + 87	2' RT	1
12 + 97	40' LT	1	13 + 03	2' RT	1
13 + 17	40' LT	1	14 + 30	2' LT	1
13 + 52	40' LT	1	14 + 42	2' LT	1
13 + 72	40' LT	1	14 + 60	2' LT	1
14 + 05	40' LT	1	14 + 74	2' LT	1
14 + 65	40' LT	1	15 + 59	2' RT	1
14 + 85	40' LT	1	15 + 76	2' RT	1
15 + 31	40' LT	1	15 + 90	3' RT	1
15 + 96	40' LT	1	16 + 10	3' RT	1
16 + 16	40' LT	1	16 + 21	3' RT	1
16 + 66	40' LT	1	18 + 73	4' LT	1
16 + 86	40' LT	1	19 + 03	5' LT	1
17 + 27	40' LT	1	19 + 20	5' LT	1
17 + 46	40' LT	1	19 + 48	5' LT	1
17 + 96	40' LT	1	19 + 78	5' LT	1
18 + 16	40' LT	1	19 + 92	4' LT	1
19 + 20	40' LT	1	20 + 08	4' LT	1
19 + 40	40' LT	1	20 + 23	4' LT	1
19 + 80	40' LT	1	20 + 55	40' RT	1
20 + 00	40' LT	1	12 + 97	33' RT	1
20 + 35	36' LT	1	13 + 17	34' RT	1
20 + 54	36' LT	1	13 + 52	35' RT	1
			13 + 72	35' RT	1
			17 + 26	36' RT	1
			17 + 46	37' RT	1
	Sub Total	26			
			Sub Total		29
	Total:	55			

Item 141CLASS A TRENCH EXCAVATIONCY

Assume 5' Width, 5' Deep for all trenches

From Drainage:

Item 250.6 90 LF x 25 SF = 2250 CF

From Water:

Item 303.6 18 LF x 25 SF = 450 CF

2250 CF + 450 CF = 2700 CF
Add 10% 270 CF

Total 2970 CF

2970 CF x 1 CY / 27 CF = 110

Say 110 CY

Weston&Sampson®

PROJECT:

DATE:

5/6/2011

PAGE:

6 of 106

Cambridge, MA

Broadway

BY:

GTS

CHKD BY:

WGP

Item

141.1

TEST PIT FOR EXPLORATION

CY

Say 100 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 7 of 106

BY: GTS

CHKD BY: WGP

Item 146

DRAINAGE STRUCTURE REMOVED

EA

Catch Basins	Stations	Depth (feet)
1	12+00 LT	
1	13+65 LT	
1	15+35 LT	
1	17+25 LT	
1	19+00 LT	
1	16+80 RT	
Total:	<u>6</u>	

<u>Item</u>	<u>151</u>	<u>GRAVEL BORROW</u>					<u>CY</u>	
					Depth (feet)			
Proposed Sidewalk	=	2451	SY	x	0.67	=	547	CY
Proposed Driveway	=	430	SY	x	0.67	=	96	CY
					Total	=	643	CY
					Add	25%	804	CY
					Say	710	CY	

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 9 of 106

BY: GTS

CHKD BY: WGP

Item 154.99 BIORETENTION SOIL CY

For use in Stormwater Planters

Approx Dimensions are 125' L x 2' W x 1' D = 250 CF

250 CF x 1 CY / 27 CF = 9 CY

Add 20% = 1.8 CY

Say 12 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 10 of 106

BY: GTS

CHKD BY: WGP

Item 156

CRUSHED STONE

CY

Say 100 CY for Misc Repair Work
For use in Stormwater Planters
Approx Dimensions are 125' L x 2' W x 1.5' D = 250 CF
375 CF x 1 CY / 27 CF = 9 CY
Add 20% = 14 CY
Say 15 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 11 of 106

BY: GTS

CHKD BY: WGP

Item 170

FINE GRADING AND COMPACTING

SY

Proposed Sidewalk = 2451 SY
Proposed Driveway = 430 SY

Total = 2881 SY
Add 10% 3169 SY
Say 3200 SY

Weston & Sampson

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 12 of 106

BY: GTS

CHKD BY: WGP

Item 180.1

HEALTH AND SAFETY PLAN

LS

Say 1

PROJECT:

Cambridge, MA Broadway

DATE:
5/6/2011

PAGE:
13 of 106

BY: GTS

CHKD BY: WGP

Item 180.2

IMPLEMENTATION OF HEALTH AND SAFETY PLAN

HR

Say 40 Hours

Weston&Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 14of106

BY: GTS

CHKD BY: WGP

Item 180.3

PERSONNEL PROTECTION LEVEL "C" UPGRADE

HR

Say 40 Hours

Item 180.4 MONITORING, HANDLING AND STOCKPILING OF CONTAMINATED SOIL CYDrainage Structures

Assume 4' Dia for Each CB plus 3' for excavation = 7' Dia

Area of a circle = πR^2 = 38.5 SF x 5' depth = 192.5 CF

192.5 CF x 1 CY / 27 CF = 7.2 CY per Basin

7.2 CY per Basin x 9 Basins = 65 CY

Hydrant Removal and Replacement

Assume Excavation @ 5' Wide x 7' Deep x 15' L = 525 CF

525 CF x 1 CY / 27 CF = 19.5 CY

4 Hydrant Removal and Replacements x 19.5 CY = 78 CY

Tree Installation

Assume 5' Dia for Each Tree

Area of a circle = πR^2 = 19.6 SF x 3' depth = 20 CF

60 CF x 1 CY / 27 CF = 2.0 CY per Tree

2.0 CY per Tree x 30 Trees = 60 CY

65 CY + 78 CY + 60 CY = 203 CY

203 CY + 25% = 254 CY

Say 255 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 16 of 106

BY: GTS

CHKD BY: WGP

Item 180.5

LICENSED SITE PROFESSIONAL SERVICES

HR

Say 80 Hours

Item 180.6

MISCELLANEOUS SOIL TESTING

CY

Say 1 CY per 100 CY of Contaminated Soil

From Item 180.4: 255 CY

255 CY / 100 CY = 2.6 CY

Say 3 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 18 of 106

BY: GTS

CHKD BY: WGP

Item 181.1

DISPOSAL OF CONTAMINATED SOIL

TON

Assume 255 CY of Contaminated Soil x 125 pounds per CY = 31875 pounds of soil
31875 pounds x 1 ton per 2000 pounds = 15.9 Tons
15.9 Tons + 10% = 17.5 Tons

Say 18 Tons

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 19 of 106

BY: GTS

CHKD BY: WGP

Item 187.32 REMOVAL AND DISPOSAL OF DRAINAGE SYSTEM SEDIMENTS CY

Say 50 CY

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 21 of 106

BY: GTS

CHKD BY: WGP

Item 202

MANHOLE

EA

Station: 13+56 37' LT	1
Station: 15+21 36' LT	1
Station: 19+46 33' LT	1
Station: 19+56 33' LT	1
Total:	4

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 22 of 106

BY: GTS

CHKD BY: WGP

Item 204

Gutter Inlet

EA

1 at Station 16+75 RT

Say 1

Weston & Sampson	PROJECT: Cambridge, MA Broadway	DATE: 5/6/2011	PAGE: 23 of 106
		BY: GTS	
		CHKD BY: WGP	

<u>Item</u>	<u>220</u>	<u>DRAINAGE STRUCTURE ADJUSTED</u>		<u>EA</u>
	Station	Offset		
	11+76	36'	LT	1
	12+08	43'	LT	1
	12+62	13'	RT	1
	12+71	23'	RT	1
	12+81	30'	RT	1
	13+60	43'	LT	1
	13+61	37'	LT	1
	14+67	34'	LT	1
	15+62	41'	LT	1
	16+63	16'	RT	1
	16+74	24'	RT	1
	16+80	42'	RT	1
	17+44	42'	LT	1
	19+09	34'	RT	1
	19+16	27'	RT	1
	19+15	39'	LT	1
	20+39	7'	RT	1
	20+51	18'	RT	1
	20+58	22'	RT	1
	20+58	33'	RT	1
		Total:		20

Item 220.7

SANITARY STRUCTURE ADJUSTED

EA

Station	Offset		
11+50	42'	RT	1
11+95	17'	RT	1
11+98	60'	RT	1
14+55	20'	RT	1
16+57	21'	RT	1
16+59	48'	RT	1
16+85	22'	RT	1
17+97	21'	RT	1
19+04	46'	RT	1
19+64	27'	RT	1
21+40	24'	RT	1

Total: 11

Weston & Sampson	PROJECT:	DATE:	PAGE:
		5/6/2011	25 of 105
	Cambridge, MA Broadway	BY: GTS	
		CHKD BY: WGP	

<u>Item</u>	<u>221</u>	<u>FRAME AND COVER</u>	<u>EA</u>
	See Item 202 Manholes:	4	

Weston & Sampson®	PROJECT:	DATE:	PAGE:
		5/6/2011	26 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>222.2</u>	<u>FRAME AND GRATE (MUNICIPAL STANDARD)</u>	<u>EA</u>
	9	From Item 201 - Catch Basins	
Total	9		

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 27 of 106

BY: GTS

CHKD BY: WGP

Item 223.1 FRAME AND GRATE (OR COVER) REMOVED AND STACKED EA

From Item 146 Drainage Structures Removed: 6

Say 6

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 28 of 106

BY: GTS

CHKD BY: WGP

Item 225.52

TRAP AND HOOD MUNICIPAL STD

EA

Depth (feet)

Proposed Drain Manholes

9 From Item 201 - Catch Basins

Total 9

Item 250.06 6 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE LF

Structure	Offset	to	Structure	Offset	
CB	11+98 RT		DMH	12+08 RT	23
CB	13+62 RT		DMH	13+59 RT	20
CB	15+31 RT		DMH	15+26 RT	13
CB	17+35 RT		DMH	17+49 RT	16
CB	19+50 RT		DMH	19+52 RT	13
CB	16+80 RT		DMH	16+75 RT	4
					89 LF

Say 90 LF

Weston & Sampson®	PROJECT:	DATE:	PAGE:
		5/6/2011	30 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>269.06</u>	<u>6" HDPE PERFORATED PIPE</u>	<u>FT</u>
	12+30 to 13+56	125 FT	
	14+43 to 15+21	75 FT	
	17+83 to 19+46	160 FT	
	19+56 to 20+60	105 FT	
	Say	465 FT	

Weston & Sampson

PROJECT:

DATE:

5/6/2011

PAGE:

31 of 106

Cambridge, MA

Broadway

BY:

GTS

CHKD BY:

WGP

Item

303.06

6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)

FT

Hydrant @ 12+40 6 LF

Hydrant @ 15+07 6 LF

Hydrant @ 18+00 6 LF

Say 18 LF

Weston&Sampson®	PROJECT: Cambridge, MA Broadway	DATE: 5/6/2011	PAGE: 32 of 106
		BY: GTS	
		CHKD BY: WGP	

<u>Item</u>	<u>309</u>	<u>DUCTILE IRON FITTINGS FOR WATER PIPE</u>	<u>LB</u>
		Assume 325 pounds per Hydrant	
		3 Hydrants	
		Say 1000 Pounds	

Item 358

GATE BOX ADJUSTED

EA

Station	Offset	Gate Boxes
11+68	50' LT	1
11+71	43' LT	1
11+83	23' RT	1
11+83	4' RT	1
11+38	40' RT	1
11+60	68' RT	1
12+45	34' RT	1
17+17	45' RT	1
20+76	32' LT	1
21+00	46' LT	1
21+53	15' RT	1
		11

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 34 of 106

BY: GTS

CHKD BY: WGP

Item 376

HYDRANT

EA

Station	
12+40 RT	1
15+08 RT	1
18+02 RT	1

Say 3

Weston & Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 35 of 106

BY: GTS

CHKD BY: WGP

Item 376.3

HYDRANT-REMOVED AND STACKED

EA

Station	
12+40 RT	1
15+08 RT	1
18+02 RT	1

Say 3

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 36 of 106

BY: GTS

CHKD BY: WGP

Item 415

PAVEMENT MICROMILLING

SY

Depth (feet)

From Area Calc Sheet
Area to be Milled:

= 6736 SY

Add 5% = 7073
Say 7100 SY

Item 450.9

CONTRACTOR QUALITY CONTROL

TON

Testing for HMA Superpave

Depth (feet)

From Area Calc Sheet 6736 SY x 0.056 x 2 IN = 754.46

Total: 754.5
Add 20%: 905.3
Say 910 Tons

Item 451

HMA FOR PATCHING

TON

Depth (feet)

From Area Calc Sheet 6736 SY for Pavement Milling

Item will be used to repair weak areas of Surface after Pavement Milling Operations

Assume 10% of Milled Area in need of repair

10% of 6736 SY is approximately 673 SY

Assume 4" of HMA will be removed and replaced

$$673 \text{ SY} \quad \times \quad .056 \text{ Tons/Sy/Inch} \quad \times \quad 4 \text{ Inches} \quad = \quad 150.8$$

Sub Total: 150.8 Tons

Add 20% 30.2 Tons
181.0

Say 180 Tons

Item 452

ASPHALT EMULSION FOR TACK COAT

TON

Depth (feet)

From Area Calc Sheet 6736 SY for Pavement Milling

0.07 GALLONS OF ASPHALT EMULSION PER SQUARE YARD OF PAVEMENT MILLING

0.07 GAL/SY x 6736.0 SY OF Pavement Milling = 471.5
47.2
518.7

Say 520 Gallons

Weston&Sampson [®]	PROJECT: Cambridge, MA Broadway	DATE: 5/6/2011	PAGE: 40of106
		BY: GTS	
		CHKD BY: WGP	

<u>Item</u>	<u>453</u>	<u>HMA JOINT SEALANT</u>	<u>FI</u>
<p>Total Length of Project = 1000' Two lanes of traffic, two sides per lane Say 4000 LF</p>			

PROJECT:

Cambridge, MA Broadway

DATE:
5/6/2011

PAGE:
41 of 106

BY: GTS

CHKD BY: WGP

Item 455.23 SUPERPAVE SURFACE COURSE 12.5 (SSC 12.5) TON

For Pavement Milling

From Area Calc Sheet 6736 SY x 0.056 x 2 IN = 754

Total: 754
Add 20%: 905
Say 910

Item 472

HOT MIX ASPHALT FOR MISCELLANEOUS WORK

TON

Depth (feet)

For Trench Patch:

For Each Catch Basin and Pipe Connection	3	SY	Per	CB		
	6	SY	Per	Pipe Connection		
Total	9 SY	per CB				
9 Prop CBs	x	9 Sy	=	81 SY		
81 SY	x	0.056	x	4 in	=	18
	18 Tons					
Say	20	Tons				

For Tree Protection

Say 10 Tons

Total 30
Add 20% 36
Say 40 Tons

PROJECT:

Cambridge, MA Broadway

DATE:
5/6/2011

PAGE:
43 of 106

BY: GTS

CHKD BY: WGP

Item 482.3

SAWING ASPHALT PAVEMENT

LF

2800

LF

From

AutoCAD

Depth (feet)

Item 504.1GRANITE CURB TYPE VA4 - CURVEDLF

See Curve Table for Exact Locations on Curb Tie and Grading Plan

<u>Curve No.</u>	<u>Length</u>
C5	8
C6	8
C7	47
C8	10
C9	24
C10	29
C11	7
C12	7
C17	5
C19	6
C20	10
C21	13
C22	4
C23	6
C24	32
C25	18
C26	22
C27	50.2
Subtotal	306
Add 10%	336

Say 336 LF

Item 509 GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - STRAIGHT LF

12 Total Wheel Chair Ramps

12 x 8 x 2 = 192 LF

At Crosswalk at Hotel

8 Total Pieces x 6 LF = 48 LF

192 LF + 48 LF = 240 LF

Weston&Sampson®

PROJECT:

DATE:

5/6/2011

PAGE:

47 of 106

Cambridge, MA Broadway

BY: GTS

CHKD BY: WGP

Item 509.1 GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - CURVED LF

Say 25 LF

Weston & Sampson

PROJECT:

DATE:

5/6/2011

PAGE:

48 of 106

Cambridge, MA Broadway

BY: GTS

CHKD BY: WGP

Item 514

GRANITE CURB INLET-STRAIGHT

EA

Station: 18+44 27' LT 1
Station: 19+35 26' LT 1
Station: 19+88 26' LT 1
Station: 20+38 25' LT 1

Total 4 EA

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 49 of 106

BY: GTS

CHKD BY: WGP

Item 517

GRANITE CURB CORNER - TYPE B

EA

4 Total Driveways x 2 per Driveway

- At Station 16+27
- At Station 16+38
- At Station 18+50
- At Station 18+85

8 Total

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 50 of 106

BY: GTS

CHKD BY: WGP

Item 580

CURB REMOVED AND RESET

FT

From Item 504 - Granite Curb Type VA4 - Straight
1830 FT of Curbing needed
Assume 1/2 of Curbing will be Removed and Reset or Removed and Stacked = 900'

Say 1/2 of 900 FT will be Removed and Reset: 450'

Say 450'

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 51 of 106

BY: GTS

CHKD BY: WGP

Item 590

CURB REMOVED AND STACKED

FI

From Item 504 - Granite Curb Type VA4 - Straight
1830 FT of Curbing needed
Assume 1/2 of Curbing will be Removed and Reset or Removed and Stacked = 900'

Say 1/2 of 900 FT will be Removed and Stacked: 450'

Say 450'

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 52 of 106

BY: GTS

CHKD BY: WGP

Item 657.51

TEMPORARY TREE PROTECTIVE FENCE

FT

From Item 102.51 Individual Tree Protection: 55 Trees

Assume each tree requires 15' of Fence per Tree

15' x 55 Trees = 825' of Fence

Weston & Sampson [®]	PROJECT:	DATE:	PAGE:
		5/6/2011	53 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>701</u>	<u>CEMENT CONCRETE SIDEWALK</u>	<u>SY</u>
	From Area Calc Sheet:	2451	SY
	Add 10%:	2696	
	SAY	2700	SY

Item 701.1 CEMENT CONCRETE SIDEWALKS AT DRIVEWAYS SY

Depth (feet)

From Area Calc Sheet: 430 SY

Add 10%: 473 SY

SAY 475 SY

Item 701.2

CEMENT CONCRETE WHEELCHAIR RAMP

SY

Depth (feet)

From Area Calc Sheet:	111	SY
Add 10%:	122	SY
SAY	125	SY

Item 706

BRICK WALK

SY

Brick Laid in 2' Strip or in Sitting Area

12+08 RT	to	15+01 RT	=	330 LF	x	24" / 12"	=	660	SF
16+42 RT	to	17+71 RT	=	155 LF	x	24" / 12"	=	310	SF
18+22 RT	to	19+30 RT	=	135 LF	x	10" / 12"	=	270	SF
						12+75 RT	=	160	SF
						13+25 RT	=	240	SF
						13+75 RT	=	200	SF
						14+80 RT	=	200	SF
						12+75 LT	=	275	SF
						13+25 LT	=	275	SF
						13+75 LT	=	275	SF
						15+15 LT	=	275	SF
						17+00 LT	=	275	SF
						17+75 LT	=	275	SF
						19+60 LT	=	275	SF
						20+25 LT	=	275	SF

Subtotal	4240	SF
10%	151	SF
Total	4391	SF

4391 SF / 9 SF = 488 SY

Say 500 SY

Item 707.1

PARK BENCHES

EA

Station

12+80	LT	1
13+35	LT	1
13+90	LT	1
15+14	LT	1
17+06	LT	1
17+72	LT	1
19+60	LT	1
20+18	LT	1
12+75	RT	1
12+87	RT	1
13+83	RT	1
13+97	RT	1
14+40	RT	1
14+53	RT	1
	Total	14



PROJECT:
Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 58 of 106

BY: GTS

CHKD BY: WGP

Item 707.15

PARK CHAIR

EA

Station

12+80	LT	2
13+35	LT	2
13+90	LT	2
15+14	LT	2
17+06	LT	2
17+72	LT	2
19+60	LT	2
20+18	LT	2

Total 16

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 59 of 106

BY: GTS

CHKD BY: WGP

Item 707.35

TREE CELL

SF

There are approximately 6 Tree Cells Located within the project limits

	Station	Offset	SF
Tree Cell 1	12+75	RT	160
Tree Cell 2	13+25	RT	240
Tree Cell 3	13+75	RT	200
Tree Cell 4	14+50	RT	200
Tree Cell 5	19+60	LT	200
Tree Cell 6	20+25	LT	270

Total 1270 SF

Weston & Sampson	PROJECT:	DATE:	PAGE:
		5/6/2011	60 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>707.90</u>	<u>BICYCLE RING AND POST</u>	<u>EA</u>
<p>Bicycle Ring and Post will be spaced 2' OC from 13+20 RT to 13+50 RT</p> <p>30' / 2' = 15 Bicycle Ring and Posts</p>			

Weston & Sampson®

PROJECT:

DATE:

5/6/2011

PAGE:

61 of 106

Cambridge, MA

Broadway

BY:

GTS

CHKD BY:

WGP

Item 734

SIGN REMOVED AND RESET

EA

See Signage Plan

Weston&Sampson®

PROJECT:

DATE:

5/6/2011

PAGE:

62of106

Cambridge, MA

Broadway

BY: GTS

CHKD BY: WGP

Item 741

ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE B)

EA

Say 1

Weston & Sampson®

PROJECT:

DATE:

5/6/2011

PAGE:

63 of 106

Cambridge, MA

Broadway

BY:

GTS

CHKD BY:

WGP

Item

748

MOBILIZATION

LS

3% of total construction cost

Item	<u>LOAM BORROW</u>					<u>CY</u>
	Station	Offset	to	Station	Offset	Area
	12+35	30' RT		12+70	30' RT	285 SF
	12+90	30' RT		13+20	30' RT	230.0 SF
	13+50	30' RT		13+80	30' RT	230 SF
	14+00	30' RT		14+35	30' RT	275 SF
	14+60	30' RT		15+00	30' RT	300 SF
	14+12	80' RT		18+20	80' RT	2000
	15+30	2' RT		17+30	2' RT	1500 SF
	16+50	40' RT		18+00	40' RT	1250 SF
	18+20	45' RT		19+00	45' RT	1025 SF
	18+80	60' LT		20+80	60' LT	2300 SF
				Total		9395 SF
				9395 SF x 4" / 12" x 1' x 1 CY/ 27 CF =		116 CY
				Add 10%		12 CY
				Total		128 CY
				Say		130 CY

<u>Item</u>	<u>765</u>	<u>SEEDING</u>				<u>SY</u>
	Station	Offset	to	Station	Offset	Area
	12+35	30' RT		12+70	30' RT	285 SF
	12+90	30' RT		13+20	30' RT	230.0 SF
	13+50	30' RT		13+80	30' RT	230 SF
	14+00	30' RT		14+35	30' RT	275 SF
	14+60	30' RT		15+00	30' RT	300 SF
	14+12	80' RT		18+20	80' RT	2000 SF
	15+30	2' RT		17+30	2' RT	1500
	16+50	40' RT		18+00	40' RT	1250 SF
	18+20	45' RT		19+00	45' RT	1025 SF
	18+80	60' LT		20+80	60' LT	2300 SF
					Total	9395 SF
						9395 SF x 1 SY / 9 SF =
						1044 SY
					Add 10%	104 SY
					Total	1148 SY
					Say	1150 SY

Item 775.431 LOCUST - HONEY - SHADEMASTER - 2 TO 2.5 INCH CALIPER EACH

<u>Station</u>	<u>Offset</u>	<u>Total</u>
16+75	1' LT	1
17+00	1' LT	1
17+23	5' LT	1
	Total:	<u>3</u>

Weston&Sampson®

PROJECT:

DATE: 5/6/2011

PAGE: 67 of 106

Cambridge, MA Broadway

BY: GTS

CHKD BY: WGP

Item 777.036

NORTHERN RED OAK 2 to 2.5 INCH CALIPER

EACH

<u>Station</u>	<u>Offset</u>	Total
13+28	1.5 RT	1
13+53	1.5 RT	1
13+78	1.5 RT	1
14+03	1.5 RT	1
17+48	1.5 RT	1
17+74	1.5 RT	1
17+98	1.5 RT	1
18+23	1.5 RT	1
18+48	1.5 RT	1
	Total:	<u>9</u>

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 68 of 106

BY: GTS

CHKD BY: WGP

Item 786.091 JUNIPER - 'BLUE PACIFIC' - Per Flants EACH

Area from AutoCAD 1207 SF

Assume 1 Plant per SF, 24 Plants per Flat

1207 SF x 1 Plant per SF x 1 Flat per 24 Plants = 51 Flats

Item 790.330 ROCK COTONEASTER 'TOM THUMB' 18" to 24" - PER FLAT EACH

Area from AutoCAD 1065 SF

Assume 1 Plant per 1 SF

Assume 24 Plants per Flat

1065 SF x 1 Plant per 1 SF x 1 Flat per 24 Plants = 44.4

Say 45 Flats

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 70 of 106

BY: GTS

CHKD BY: WGP

Item 796.040

IVY VINE - ENGLISH PER FLAT

EACH

Area from AutoCAD 323 SF

Assume 1 Plant per 1 SF

Assume 24 Plants per Flat

1065 SF x 1 Plant per 1 SF x 1 Flat per 24 Plants = 13.5

Say 14 Flats

Item 796.043

MYRTLE VINE PER FLAT

EACH

Area from AutoCAD 1791 SF

Assume 1 Plant per 1 SF

Assume 24 Plants per Flat

1065 SF x 1 Plant per 1 SF x 1 Flat per 24 Plants = 74.6

Say 75 Flats

Item 796.049

PACHYSANDRA PER FLAT

EACH

Area from AutoCAD 1791 SF

Assume 1 Plant per 1 SF

Assume 24 Plants per Flat

1065 SF x 1 Plant per 1 SF x 1 Flat per 24 Plants = 74.6

Say 75 Flats

Weston & Sampson®

PROJECT:

DATE: 5/6/2011

PAGE: 73 of 106

Cambridge, MA Broadway

BY: GTS

CHKD BY: WGP

Item 796.445

LILYTURF 2 QUART

EACH

Say 106 Plants

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 74 of 106

BY: GTS

CHKD BY: WGP

Item 799.001

GINKO BILOBA (MALE)

EACH

<u>Station</u>	<u>Offset</u>	<u>Total</u>
14+06	35' RT	1
14+32	35' RT	1
14+63	35' RT	1
14+89	35' RT	1
16+57	35' RT	1
16+87	35' RT	1
	Total:	<u>6</u>

Weston&Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 75 of 106

BY: GTS

CHKD BY: WGP

Item 799.002

SNOWHILL SAGE

EACH

12+50	21
18+00	44
20+50	<u>27</u>
Total	92

Weston & Sampson®	PROJECT:	DATE:	PAGE:
		5/6/2011	76 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>799.003</u>	<u>WHITE GAYFEATHER</u>	<u>EACH</u>
	12+50	40	
	18+00	37	
	20+50	<u>18</u>	
	Total	95	
	13+00	19	
	14+75	24	
	15+15	<u>5</u>	
	17+25	22	
	19+75	<u>21</u>	
	Total	91	
	Say	186	

<u>Item</u>	<u>799.004</u>	<u>SWITCH GRASS</u>	<u>EACH</u>
	12+50	20	
	18+00	35	
	20+50	<u>18</u>	
	Total	73	

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 78 of 106

BY: GTS

CHKD BY: WGP

Item 779.005

SEDUM

EACH

12+50	20	13+00	30
18+00	70	14+75	60
19+00	70	15+15	<u>6</u>
20+50	<u>30</u>	17+25	30
		19+75	<u>30</u>
Total	190	Total	156
		Say	346

Weston & Sampson

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 79 of 106

BY: GTS

CHKD BY: WGP

Item 799.006

BLUE FLAG IRIS

EACH

13+50	16
16+00	27
16+50	<u>26</u>
Total	69

Weston & Sampson®

PROJECT:

DATE:

PAGE:

5/6/2011

80 of 106

BY: GTS

Cambridge, MA Broadway

CHKD BY: WGP

Item 799.007

KOBOLD-LILAC GAYFEATHER

EACH

13+50	15
16+00	30
16+50	<u>34</u>

Total	79
-------	----

Weston & Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 81 of 106

BY: GTS

CHKD BY: WGP

Item 799.008

LITTLE BLUE STEM

EACH

13+50	15	13+00	21
16+00	24	14+75	16
16+50	<u>31</u>	15+15	<u>5</u>
		17+25	25
		19+75	<u>15</u>
Total	70	Total	82
		Say	152

Weston&Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 82 of 106

BY: GTS

CHKD BY: WGP

Item 799.009

RUSSIAN SAGE

EACH

13+50	30
16+00	60
16+50	<u>40</u>
Total	130

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 84 of 106

BY: GTS

CHKD BY: WGP

Item 804.3

3" ELECTRICAL CONDUIT TYPE NM - PLASTIC (UL)

LF

Station: 16+40	Offset: 37' LT	6 LF
Station: 16+25	Offset: 34' RT	22 LF
	Total	28 LF
	Say	30 LF

Item 811.35

PULL BOX ADJUSTED

EA

Station: 12+54	Offset: 43 RT	1
Station: 13+33	Offset: 46 RT	1
Station: 13+61	Offset: 44 RT	1
Station: 14+30	Offset: 42 LT	1
Station: 14+51	Offset: 42 LT	1
Station: 14+53	Offset: 47 RT	1
Station: 14+75	Offset: 44 RT	1
Station: 15+39	Offset: 42 LT	1
Station: 15+76	Offset: 47 RT	1
Station: 15+75 RT	Offset: 41 LT	1
Station: 17+35	Offset: 47 RT	1
Station: 16+74	Offset: 48 RT	1
Station: 18+36	Offset: 40 LT	1
Station: 19+60	Offset: 39 LT	1
Station: 19+80	Offset: 39 RT	1

Total 15

Item

811.36

ELECTRIC MANHOLE ADJUSTED

EA

12+21 26' LT	1
13+30 25' LT	1
14+58 24' LT	1
16+09 22' LT	1
16+75 18' LT	1
18+11 22' LT	1
18+45 51' RT	1
19+29 49' RT	1
20+16 16' LT	1
21+01 18' LT	1
21+47 8' LT	1
21+57 12' LT	1

Total: 12

Weston & Sampson	PROJECT:	DATE:	PAGE:
	Cambridge, MA Broadway	5/6/2011	87 of 106
		BY: GTS	
	CHKD BY:	WGP	

<u>Item</u>	<u>812.99</u>	<u>PEDISTRIAN WARNING DEVICE PRECAST WARNING FOUNDATION</u>	<u>EA</u>
		Station: 16+40 Offset: 37' LT	1
		Station: 16+25 Offset: 34' RT	1
		Total:	<u>2</u>

Weston & Sampson

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 88 of 106

BY: GTS

CHKD BY: WGP

Item 813.82

SERVICE CONNECTION (UNDERGROUND)

EA

16+42 42' LT	1
15+75 50' RT	1

Total: 2

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 9 of 106

BY: GTS

CHKD BY: WGP

Item 832.1

Warning - Regulatory and Route Marker - Aluminum

SF

From Sign Summary Sheet:

R3-2	64 SF
R3-8A	69 SF
R3-8	69
R3-7L	69
R6-1R	48
R10-11a	5 SF
W11-2	36 SF
W16-7p	8 SF
Total	368 SF

Weston & Sampson®	PROJECT:	DATE:	PAGE:
		5/6/2011	92 of 106
	Cambridge, MA Broadway	BY: GTS	CHKD BY: WGP

<u>Item</u>	<u>847.1</u>	<u>SIGN SUPPORT (N / GUIDE) AND ROUTE MARKER</u> <u>W/BREAKAWAY POST ASSEMBLY - STEEL</u>	<u>EA</u>
		See Sign Summary Sheet	
		Say 13	

Item 850.41

ROADWAY FLAGGERS

HR

Assume 90 Days for Construction

Assume 8 Hour Work Days

Assume 1 Flagger on Duty

90 x 8 x 1 = 720 Hours

Add 20% 144 Hours

Say: 875 Hours

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 94of106

BY: GTS

CHKD BY: WGP

Item 852

SAFETY SIGNING FOR CONSTRUCTION OPERATIONS

SF

See Traffic Management Details

Say 300 SF

Weston & Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 95 of 106

BY: GTS

CHKD BY: WGP

Item 853.1

PORTABLE BREAKAWAY BARRICADE TYPE III

SF

Say 2



PROJECT:

Cambridge, MA Broadway

DATE:
5/6/2011

PAGE:
96 of 106

BY: GTS

CHKD BY: WGP

Item 854.034

TEMPOARY PAVEMENT MARKING

FT

Assume Marking for Lane Configuration

See Item 868.06 = 2700'

See Item 869.06 = 1800'

Say 3500'

Item 859

REFLECTORIZED DRUM

DD

Assume 90 Days for Construction

Assume 50 Drums per Day

90 Days x 50 Drums per Day = 4500 Drum Days

Say 5000

Item 868.04 PAVEMENT ARROWS AND LEGENDS REFL. WHITE (EPOXY) SF

12+55 LT	2 Arrows	12 SF per Arrow	24
13+10 LT	2 Arrows	12 SF per Arrow	24
13+75 LT	2 Arrows	12 SF per Arrow	24
14+00 LT	"ONLY"	15 SF	15
15+50 LT	2 Arrows	12 SF per Arrow	24
16+90 RT	Shark's Teeth	3 SF	3
17+90 RT	"ONLY"	15 SF	15
18+15 RT	2 Arrows	12 SF per Arrow	12
19+30 RT	"ONLY"	15 SF	15
19+50 RT	3 Arrows	12 SF per Arrow	24
20+50 RT	3 Arrows	12 SF per Arrow	24
			204 SF
	Say		225 SF

Cambridge, MA Broadway

BY: GTS

CHKD BY: WGP

Item **868.06** **6" REFLECTORIZED WHITE LINE (EPOXY)** **FT**

Single White Lane Lines (SWLL)

Station	to	Station	
12+00 LT	to	14+00 LT	320 LF
14+50 LT	to	16+50 LT	180 LF
15+25 LT	to	15+65 LT	40 LF
12+25 RT	to	16+25 RT	800 LF
16+50 RT	to	20+70 RT	420 LF
17+35 RT	to	20+70 RT	326 LF
19+50 RT		20+70 RT	125 LF
16+40 LT	to	20+70 LT	420 LF
Ames Street			<u>100 LF</u>
		<u>Total</u>	<u>2731</u>

Weston & Sampson®

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 100 of 106

BY: GTS

CHKD BY: WGP

Item 868.12 12" REFLECTORIZED WHITE LINE (EPOXY) FT

For Stop Lines

4 Stop Lines at 50 FT each
Say 200 FT

PROJECT:

Cambridge, MA Broadway

DATE: 5/6/2011

PAGE: 101 of 106

BY: GTS

CHKD BY: WGP

Item 868.2

YIELD SYMBOL WHITE (EPOXY)

SF

Say 6 Symbols at 2 SF per Symbol

Say 12 SF

<u>Item</u>	<u>868.24</u>	<u>24" REFLECTORIZED WHITE LINE (EPOXY)</u>	<u>LF</u>
-------------	---------------	---	-----------

For Crosswalks

Sta 11+05

70' L x 10' W
18 Stripes x 10' W = 180 LF

180 LF

Sta 12+15

60' L x 10' W
15 Stripes x 10' W = 150 LF

150 LF

Across Ames Street

75' L x 10' W
20 Stripes x 10' W = 200 LF

200 LF

Sta 16+30

50' L x 10' W
14 Stripes x 10' W = 140 LF

140 LF

Sta 20+75

75' L x 10' W
20 Stripes x 10' W = 200 LF

200 LF

Sta 21+60

60' L x 10' W
20 Stripes x 10' W = 200 LF

200 LF

Across 3rd Street

60' L x 10' W
15 Stripes x 10' W = 150 LF

150 LF

1220 LF

1220 LF + 10% = 1342 LF
Say 1350 LF

Item 869.06 6" REFLECTORIZED YELLOW LINE (EPOXY) FT

Single Yellow Lane Lines (SYLL)

Station	to	Station	
12+00 LT	to	20+70 LT	600 LF
12+00 RT	to	20+70 RT	1200 LF

Sub Total 1800

Item 874.2TRAFFIC SIGN REMOVED AND RESETEA

Station: 20+68	Offset: 39' LT	1
Station: 20+60	Offset: 7' LT	1
Station: 17+34	Offset: 36' RT	1
Station: 17+06	Offset: 36' RT	1
Station: 16+51	Offset: 33 RT	1
Station: 14+55	Offset: 44 RT	1
Station: 13+61	Offset: 31 RT	1
Station: 13+06	Offset: 31 RT	1
Station: 12+54	Offset: 32 RT	1

Say 9

Item 874.4

TRAFFIC SIGN REMOVED AND STACKED

EA

Station: 15+85 Offset: 45' RT	1
Station: 15+90 Offset: 45' RT	1
Station: 14+49 Offset: 39' LT	1
Station: 16+40 Offset: 38' LT	1
Station: 17+04 Offset: 37' LT	1
Station: 18+37 Offset: 37' LT	1
Station: 19+61 Offset: 37' LT	1

Say 7

Item 999.001

POLICE DETAIL (0 TO 8 HOURS)

HR

Assume 90 Days for Construction

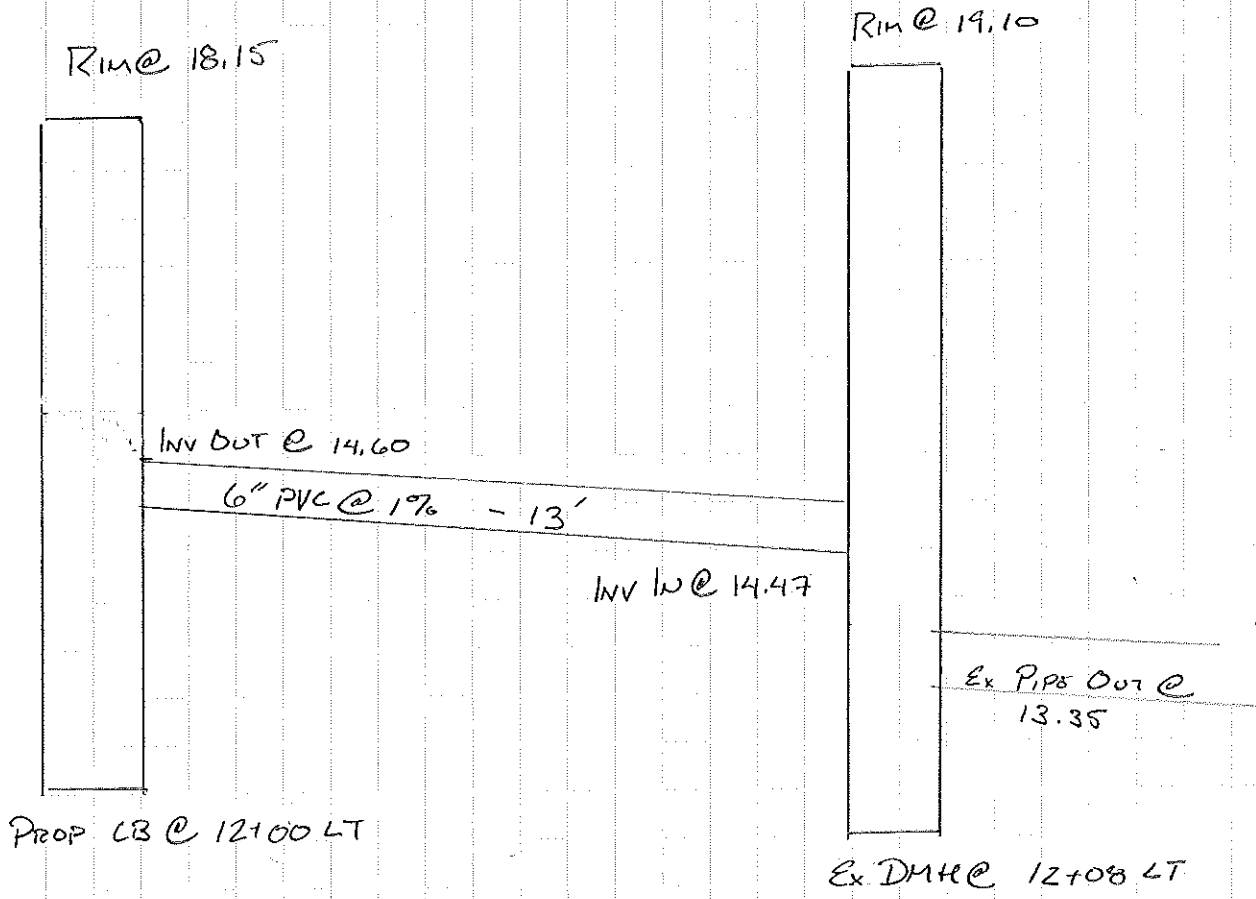
Assume 8 Hour Work Days

Assume 1 Detail on Duty

90 x 8 x 1 = 720 Hours

Add 20% 144 Hours

Say: 875 Hours



PROJECT:

CAMBRIDGE, MA

BROADWAY - 005604

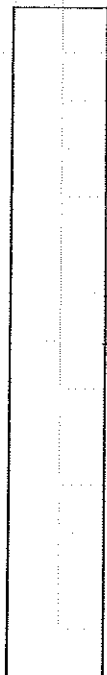
DATE: 4/19/11

PAGE: 100

BY: GTS

CHKD. BY:

Rim @ 18.20



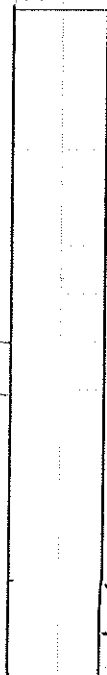
INV OUT @ 14.7

13'-6" PVC @ 1%

INV IN @
14.57

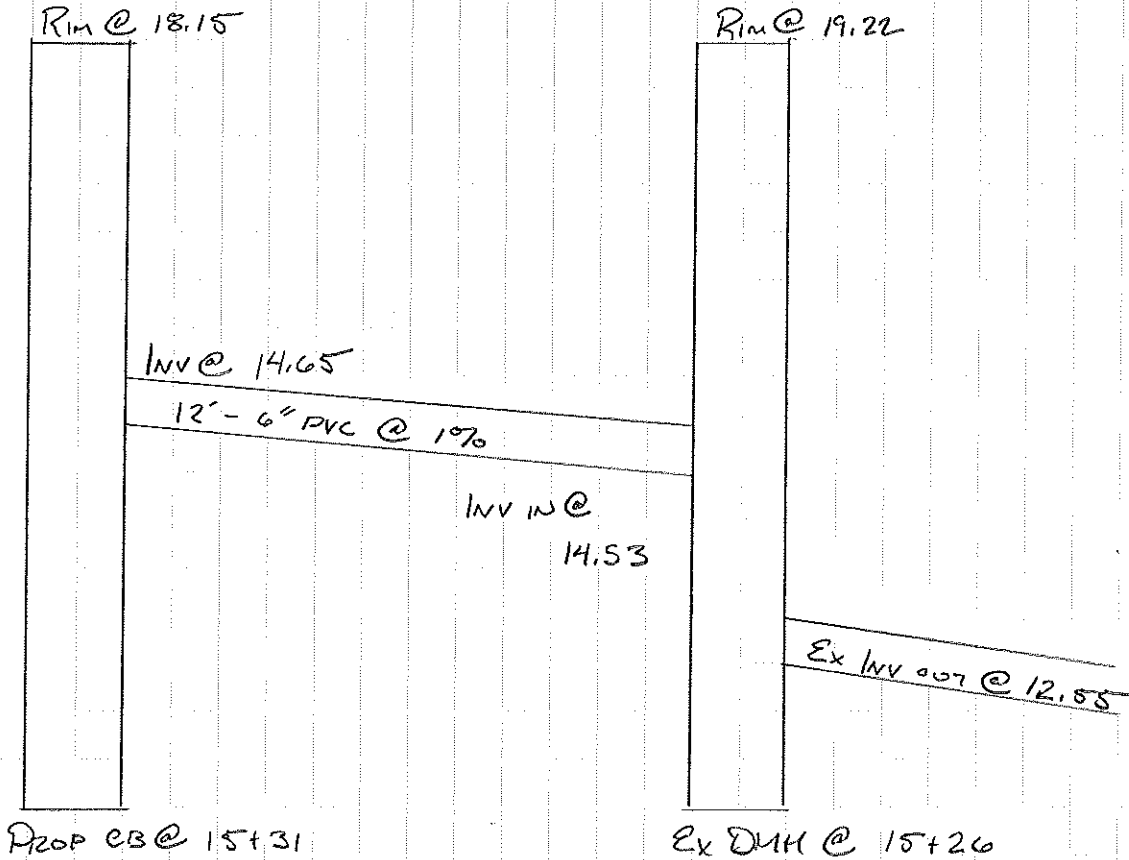
Prop CB @ 13+63

Rim @ 19.33



Ex INV OUT @ 13.00

Ex DMH @ 13+60



PROJECT:

CAMBRIDGE, MA

BROADWAY - 005684

DATE: 4/19/11

PAGE: 110

BY: BTS

CHKD. BY:

