Marion Shared-Use Path
Phase 1

Marion,
Massachusetts

Prepared for **MassDOT**
10 Park Plaza
Boston, MA 02116

Prepared by **Foth Infrastructure & Engineering, LLC**
15 Creek Road
Marion, MA 02738

100% Design Submission
October 2023

Calc Book Items

Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

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100% Route 105 at Spring Street Intersection Calculation Book	Route 105 at Spring St. Calculation Book Index Route 105 at Spring St. 100% Item Calculation Book

Project:	Marion Shared-Use Path Phase 1	Date:	October 2023
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Pavement & Landscape Area, & Earthwork Calculation

SURFACE AREA'S SUMMARY FROM CONSTRUCTION PLANS							
	SUP PAVED SURFACE AREA		FULL ROAD/DRIVEWAY DEPTH PAVED SURFACE AREA		MILL AREA	LOAM AND SEED AREA	
SUP STATION	AREA (SF)	ARE (SY)	AREA (SF)	ARE (SY)	AREA (SY)	AREA (SF)	AREA (SY)
100+11 to 228+32	**129421**	**14380**				**123606**	**13734**
ROUTE 105 @ SPRING STREET INTERSECTION*							
STATION (SUP DEPTH PAVEMENT)							
228+32 to 229+87			**1010**	**112**		**2598**	**289**
STATION (MILL AND OVERLAY)							
228+32 to 229+87					**875**		
STATION (DRIVEWAY DEPTH PAVEMENT)							
228+32 to 229+87				***123***			
SUP STATION							
229+87 to 265+22	**36175**	**4019**				**35139**	**3904**
WASHBURN PARK SUP							
STATION (SUP DEPTH PAVEMENT)							
0+00 to 1+25	**1316**	**146**				**15003**	**1667**
WASHBURN PARK PARKING LOT							
STATION (ROAD DEPTH PAVEMENT)							
1+25 to 2+99			**6419**	**713**		**3320**	**369**
WASHBURN LANE							
STATION (MILL AND ROAD DEPTH PAVEMENT)							
265+62 to 268+42			**10028**	**1114**	**1114**	**9840**	**1093**
SUP STATION							
268+42 to 299+31	**33958**	**3773**				**37061**	**4118**
POINT ROAD PARKING LOT							
STATION							
299+31 to 299+78			**2320**	**258**		**184**	**20**

TOTAL PAVEMENT ITEM AREAS	AREA (SF)	Area (SY)
SUP Pavement	***200870***	***22319***
SUP Road Depth Pavement	***18767***	***2085***
Route 105 @ Spring Street Full Road Depth Pavement	***1010***	***112***
Route 105 @ Spring Street Full Driveway Depth Pavement	***1107***	***123***
Route 105 @ Spring Street SSC Overlay	***7875***	***875***
Pavement Standard Milling	***17903***	***1989***

LOAM AND SEED TOTALS		
LOAM AND SEED TOTALS	AREA (SF)	SY
Loam	***226751***	***25195***
Seed	***226751***	***25195***

PAVEMENT QUANTITIES									
SHARED-USE PATH									
					ASPHALT-TONS/CY:	2.025			
LAYER NAME:	ITEM #	AREA (SF)	AREA (SY)	DEPTH (IN)	VOLUME (CY)	25% SWELL FACTOR (CY)	TONS	**TOTAL:**	UNITS:
SURFACE COURSE - 9.5 (SSC-9.5)	450.22	219637	24404	1.50	1017		***2059***	***2059***	TONS
INTERMEDIATE COURSE 19.0 (SIC-19.0)	450.32	219637	24404	2.50	1695		***3432***	***3432***	TONS
GRAVEL BORROW					GRAVEL BORROW TOTAL VOLUME:		***7069***	***7069***	CY
SHARED USE PATH	151	200870	22319	8.00	4960	6200			
WASHBURN LANE		18767	2085	12.00	695	869			
PAVEMENT STANDARD MILLING	415.1	18767	1114					***1114***	SY
ROUTE 105 @ SPRING STREET INTERSECTION* (FULL DEPTH ROAD/DRIVEWAY PAVEMENT DESIGN)									
LAYER NAME:	ITEM #	AREA (SF)	AREA (SY)	DEPTH (IN)	VOLUME (CY)	25% SWELL FACTOR (CY)	TONS	**TOTAL:**	UNITS:
SURFACE COURSE - 12.5 (SSC-12.5)									
DRIVEWAY DEPTH PAVEMENT	450.23	8885	987	1.75	48		***125***	***140***	TONS
ROAD DEPTH PAVEMENT		1107	123	4.00	14				
INTERMEDIATE COURSE 12.5 (SIC-12.5)	450.31	1010	112	2.25	7		***14***	***14***	TONS
BASE COURSE 25.0 (SBC-25.0)	450.41	1010	112	3.50	11		***22***	***22***	TONS
GRAVEL BORROW	151	2117	235	8.00	52	65		***65***	CY
PAVEMENT STANDARD MILLING	415.1	7875	875					***875***	SY

TOTAL PAVEMENT QUANTITIES			
LAYER NAME:	ITEM #	**TOTALS:**	**UNITS:**
SURFACE COURSE - 9.5 (SSC-9.5)	450.22	***2059***	**TONS**
SURFACE COURSE - 12.5 (SSC-12.5)	450.23	***140***	**TONS**
INTERMEDIATE COURSE 12.5 (SIC-12.5)	450.31	***14***	**TONS**
INTERMEDIATE COURSE 19.0 (SIC-19.0)	450.32	***3432***	**TONS**
BASE COURSE 25.0 (SBC-25.0)	450.41	***22***	**TONS**
GRAVEL BORROW	151	***7134***	**CY**
PAVEMENT STANDARD MILLING	415.1	***1989***	**SY**

LOAM AND SEED TREATMENT AREAS							
SHARED-USE PATH							
LAYER NAME:	ITEM #	AREA (SY)	DEPTH (IN)	IN-FT	IN-YD	VOLUME (CY)	
LOAM BORROW	751	24537	4	0.333	0.111	2726	
SEED	765	**24537**					
ROUTE 105 @ SPRING STREET INTERSECTION*							
LAYER NAME:	ITEM #	AREA (SY)	DEPTH (IN)	IN-FT	IN-YD	VOLUME (CY)	
LOAM BORROW	751	288	4	0.333	0.111	32	
SEED	765	**288**					
TOTAL LOAM AND SEED							
LAYER NAME:	ITEM #	AREA (SY)	DEPTH (IN)	VOLUME (CY)	25%(SWELL)/CONV.	TOTALS	UNITS:
LOAM BORROW	751	**24825**	4	2758	3448	***3448***	CY
SEED	765	**24825**				***24825***	SY

MODIFIED ROCKFILL TREATMENT AREAS							
LAYER NAME:	ITEM #	AREA (SY)	DEPTH (IN)	VOLUME (CY)	25%(SWELL)/CONV.	TOTALS	UNITS:
MODIFIED ROCKFILL	986	**3948**	**12**	1316	1.4985	***1972***	TON
CRUSHED STONE	156	**3948**	**6**	658	1.8	***1184***	TON

*For intersection calculations, please see the McMahon calculation book attached.

**See construction details for Trench Drain information.

SUP LOAM AND SEED (INCLUDES TRENCH DRAIN LOAM AND SEED AREA)					
Location	Station:	to	Station:	Offset	AREA (SF)
SUP	101 + 11.00		130 + 75.00	LT	8540
SUP	106 + 75.00		107 + 75.00	RT	185
SUP	108 + 75.00		109 + 75.00	RT	702
SUP	110 + 75.00		112 + 25.00	RT	290
SUP	114 + 25.00		130 + 75.00	RT	6456
SUP	131 + 75.00		132 + 75.00	RT	708
SUP	131 + 75.00		133 + 75.00	LT	680
SUP	137 + 25.00		140 + 25.00	RT	951
SUP	136 + 25.00		137 + 25.00	LT	138
SUP	142 + 25.00		143 + 25.00	RT	179
SUP	145 + 75.00		149 + 75.00	LT	1186
SUP	145 + 75.00		150 + 25.00	RT	1195
SUP	151 + 75.00		158 + 75.00	LT	2680
SUP	153 + 25.00		160 + 25.00	RT	2218
SUP	160 + 25.00		176 + 25.00	LT	5760
SUP	163 + 25.00		166 + 25.00	RT	645
SUP	167 + 25.00		180 + 25.00	RT	4557
SUP	177 + 75.00		180 + 25.00	LT	649
SUP	189 + 75.00		191 + 25.00	RT	573
SUP	202 + 75.00		204 + 75.00	LT/RT	894
SUP	198 + 25.00		199 + 25.00	RT	50
SUP	207 + 25.00		228 + 32.00	LT	6971
SUP	207 + 25.00		226 + 75.00	RT	11052
Route 105 @ Spring St. Intersection*					
SUP	229 + 87.00		233 + 25.00	LT	1585
SUP	234 + 25.00		241 + 25.00	LT	961
SUP	230 + 0.00		242 + 75.00	RT	10890
SUP	242 + 75.00		249 + 75.00	LT	1906
SUP	244 + 75.00		249 + 75.00	RT	1943

SUP	250 + 75.00		252 + 75.00	LT/RT	1471
SUP	254 + 75.00		268 + 25.00	LT	7355
SUP	256 + 25.00		260 + 75.00	RT	7238
SUP	261 + 75.00		268 + 25.00	RT	5020
SUP	272 + 25.00		280 + 75.00	RT	3546
SUP	272 + 75.00		280 + 75.00	LT	2138
SUP	282 + 25.00		283 + 25.00	LT	216
SUP	292 + 25.00		293 + 25.00	LT/RT	1030
SUP	294 + 25.00		295 + 25.00	LT/RT	733
SUP	296 + 25.00		299 + 77.00	LT/RT	13610

SUP LOAM AND SEED SHOULDER

Location	Station:	to	Station:	Offset	AREA (SF)
SUP Shoulder	101 + 11.00		228 + 32.00	LT/RT	50884
SUP Shoulder	229 + 87.00		265 + 22.00	LT/RT	14140
SUP Shoulder	0 + 0.00		2 + 99.00	LT/RT	1196
SUP Shoulder	265 + 62.00		268 + 42.00	LT/RT	1120
SUP Shoulder	268 + 42.00		299 + 31.00	LT/RT	12356
SUP Shoulder	299 + 31.00		299 + 77.00	LT/RT	184

Trench Drain Loam and Seed Totals		
Area:	196781	SF
Additional Trench Drain Area***:	24055	SF
Total Area:	24537	SY
Total Seed Area:	**24537**	SY
4" Loam Bed:	0.11	YD
Total Volume of Loam:	**2726**	CY
25% Swell (Loam):	**3408**	CY

*For intersection calculations, please see the McMahon calculation book attached.

MODIFIED ROCKFILL						
Location	Station:	to	Station:	Offset	Trench Drain Loam and Seed Area (SF)	AREA (SF)
SUP	101 + 11.00		106 + 75.00	RT	2160	1240
SUP	107 + 75.00		108 + 75.00	RT	305	139
SUP	109 + 75.00		110 + 75.00	RT	306	650
SUP	112 + 25.00		114 + 25.00	RT	705	901
SUP	130 + 75.00		131 + 75.00	LT/RT	612	324
SUP	132 + 75.00		137 + 25.00	RT	1706	2590
SUP	133 + 75.00		136 + 25.00	LT	411	418
SUP	137 + 25.00		145 + 75.00	LT	2234	3945
SUP	140 + 25.00		142 + 25.00	RT	422	704
SUP	143 + 25.00		145 + 75.00	RT	612	900
SUP	149 + 75.00		151 + 75.00	LT	106	503
SUP	150 + 25.00		153 + 25.00	RT	412	550
SUP	158 + 75.00		160 + 25.00	LT	413	278
SUP	160 + 25.00		163 + 25.00	RT	1012	1136
SUP	166 + 25.00		167 + 25.00	RT	305	334
SUP	176 + 25.00		177 + 75.00	LT	506	612
SUP	180 + 25.00		189 + 75.00	RT	1000	1810
SUP	180 + 25.00		202 + 75.00	LT	0	3566
SUP	191 + 25.00		198 + 25.00	RT	612	1057
SUP	199 + 25.00		202 + 75.00	RT	0	463
SUP	204 + 75.00		207 + 25.00	LT/RT	1624	1798
SUP	227 + 75.00		228 + 32.00	RT	0	180
Route 105 @ Spring St. Intersection*						
SUP	229 + 87.00		230 + 0.00	RT	0	5
SUP	233 + 25.00		234 + 25.00	LT	306	114
SUP	241 + 25.00		242 + 75.00	LT	500	327
SUP	242 + 75.00		244 + 75.00	RT	510	621
SUP	249 + 75.00		250 + 75.00	LT/RT	0	816
SUP	252 + 75.00		254 + 75.00	LT	0	242
SUP	252 + 75.00		256 + 25.00	RT	643	902
SUP	260 + 75.00		261 + 75.00	RT	284	258
SUP	268 + 25.00		272 + 25.00	RT	1305	740
SUP	268 + 25.00		272 + 75.00	LT	1612	890
SUP	280 + 75.00		292 + 25.00	RT	1708	3041
SUP	280 + 75.00		282 + 25.00	LT	403	266
SUP	283 + 25.00		292 + 25.00	LT	905	2109
SUP	293 + 25.00		294 + 25.00	LT/RT	106	518
SUP	295 + 25.00		296 + 25.00	LT/RT	310	581
				Area:	35528.00 SF	

Area:	3947.56	SY	
6" Crushed Stone Layer:	657.93	CY	
Crushed Stone:	**1184.27**	**TONS**	
12" Modified Rock Layer:	1315.85	CY	
CY to Tons:	1.4985	CY/TON	
Modified Rockfill:	**1971.80**	**TONS**	

Trench Drain Loam and Seed Totals			
Area:	24055	SF	
Total Area:	2673	SY	
Total Seed Area:	**2673**	SY	
4" Loam Bed:	0.11	YD	
Total Volume of Loam:	**297**	CY	

*For intersection calculations, please see the McMahon calculation book attached.

**See construction details for Trench Drain information.

100% CUT & FILL VOLUMES								Modified Rockfill
STA			Cut Area (SF)	Fill Area (SF)	Length	Cut Volume (CF)	Fill Volume (CF)	
101	+	11	18	0				RT
					39	620.1	13.65	
101	+	50	13.8	0.7				RT
					50	707.5	30	
102	+	0	14.5	0.5				RT
					50	542.5	72.5	
102	+	50	7.2	2.4				RT
					50	240	180	
103	+	0	2.4	4.8				RT
					50	100	235	
103	+	50	1.6	4.6				RT
					50	177.5	167.5	
104	+	0	5.5	2.1				RT
					50	357.5	85	
104	+	50	8.8	1.3				RT
					50	467.5	80	
105	+	0	9.9	1.9				RT
					50	540	115	
105	+	50	11.7	2.7				RT
					50	560	155	
106	+	0	10.7	3.5				RT
					50	542.5	140	
106	+	50	11	2.1				RT
					50	585	67.5	
107	+	0	12.4	0.6				
					50	635	25	
107	+	50	13	0.4				
					34.15	428.5825	25.6125	
107	+	84.15	12.1	1.1				
					15.85	217.145	13.4725	
108	+	0	15.3	0.6				RT
					50	905	15	
108	+	50	20.9	0				RT
					50	1097.5	0	
109	+	0	23	0				
					50	1207.5	0	
109	+	50	25.3	0				
					50	1175	2.5	
110	+	0	21.7	0.1				RT
					50	1027.5	5	
110	+	50	19.4	0.1				RT
					50	597.5	15	
111	+	0	4.5	0.5				
					50	152.5	32.5	
111	+	50	1.6	0.8				
					50	42.5	107.5	
112	+	0	0.1	3.5				
					50	192.5	225	
112	+	50	7.6	5.5				RT
					50	487.5	192.5	
113	+	0	11.9	2.2				RT
					50	440	80	
113	+	50	5.7	1				RT
					50	377.5	52.5	
114	+	0	9.4	1.1				RT
					50	355	125	
114	+	50	4.8	3.9				

					50	120	265	
115	+	0	0	6.7				
					50	0	312.5	
115	+	50	0	5.8				
					50	0	250	
116	+	0	0	4.2				
					50	22.5	202.5	
116	+	50	0.9	3.9				
					50	140	205	
117	+	0	4.7	4.3				
					50	172.5	247.5	
117	+	50	2.2	5.6				
					50	90	342.5	
118	+	0	1.4	8.1				
					50	100	280	
118	+	50	2.6	3.1				
					50	87.5	230	
119	+	0	0.9	6.1				
					12	12	49.2	
119	+	12	1.1	2.1				
					38	121.6	60.8	
119	+	50	5.3	1.1				
					50	220	75	
120	+	0	3.5	1.9				
					50	227.5	75	
120	+	50	5.6	1.1				
					50	295	45	
121	+	0	6.2	0.7				
					50	345	27.5	
121	+	50	7.6	0.4				
					50	365	22.5	
122	+	0	7	0.5				
					50	272.5	35	
122	+	50	3.9	0.9				
					50	162.5	50	
123	+	0	2.6	1.1				
					50	150	47.5	
123	+	50	3.4	0.8				
					50	135	50	
124	+	0	2	1.2				
					50	67.5	65	
124	+	50	0.7	1.4				
					50	55	55	
125	+	0	1.5	0.8				
					50	80	47.5	
125	+	50	1.7	1.1				
					50	52.5	85	
126	+	0	0.4	2.3				
					50	20	117.5	
126	+	50	0.4	2.4				
					50	65	80	
127	+	0	2.2	0.8				
					50	87.5	57.5	
127	+	50	1.3	1.5				
					50	40	105	
128	+	0	0.3	2.7				
					50	15	177.5	
128	+	50	0.3	4.4				
					50	7.5	302.5	
129	+	0	0	7.7				
					50	57.5	295	

129	+	50	2.3	4.1				
					50	122.5	200	
130	+	0	2.6	3.9				
					50	287.5	230	
130	+	50	8.9	5.3				
					13	118.3	38.35	
130	+	63	9.3	0.6				
					37	447.7	53.65	
131	+	0	14.9	2.3				LT/RT
					50	805	80	
131	+	50	17.3	0.9				LT/RT
					50	757.5	70	
132	+	0	13	1.9				
					50	555	77.5	
132	+	50	9.2	1.2				
					50	370	65	
133	+	0	5.6	1.4				RT
					50	265	255	
133	+	50	5	8.8				RT
					50	290	320	
134	+	0	6.6	4				LT/RT
					50	315	267.5	
134	+	50	6	6.7				LT/RT
					50	420	320	
135	+	0	10.8	6.1				LT/RT
					50	577.5	195	
135	+	50	12.3	1.7				LT/RT
					50	592.5	65	
136	+	0	11.4	0.9				LT/RT
					50	590	67.5	
136	+	50	12.2	1.8				RT
					50	600	155	
137	+	0	11.8	4.4				RT
					50	417.5	157.5	
137	+	50	4.9	1.9				LT
					50	197.5	102.5	
138	+	0	3	2.2				LT
					50	157.5	100	
138	+	50	3.3	1.8				LT
					50	225	142.5	
139	+	0	5.7	3.9				LT
					50	427.5	117.5	
139	+	50	11.4	0.8				LT
					50	665	82.5	
140	+	0	15.2	2.5				LT
					50	675	345	
140	+	50	11.8	11.3				LT/RT
					50	795	352.5	
141	+	0	20	2.8				LT/RT
					50	977.5	97.5	
141	+	50	19.1	1.1				LT/RT
					31	447.95	29.45	
141	+	81	9.8	0.8				LT/RT
					19	158.65	19.95	
142	+	0	6.9	1.3				LT/RT
					50	287.5	265	
142	+	50	4.6	9.3				LT
					50	247.5	282.5	
143	+	0	5.3	2				LT
					50	325	117.5	
143	+	50	7.7	2.7				LT/RT

					50	435	310	
144	+	0	9.7	9.7				LT/RT
					50	710	297.5	
144	+	50	18.7	2.2				LT/RT
					50	965	67.5	
145	+	0	19.9	0.5				LT/RT
					50	957.5	25	
145	+	50	18.4	0.5				LT/RT
					50	782.5	12.5	
146	+	0	12.9	0				
					50	710	7.5	
146	+	50	15.5	0.3				
					50	827.5	7.5	
147	+	0	17.6	0				
					50	840	0	
147	+	50	16	0				
					50	705	5	
148	+	0	12.2	0.2				
					50	772.5	7.5	
148	+	50	18.7	0.1				
					50	827.5	15	
149	+	0	14.4	0.5				
					50	635	37.5	
149	+	50	11	1				
					50	460	127.5	
150	+	0	7.4	4.1				LT
					50	267.5	180	
150	+	50	3.3	3.1				LT/RT
					29	104.4	73.95	
150	+	79	3.9	2				LT/RT
					21	95.55	32.55	
151	+	0	5.2	1.1				LT/RT
					50	182.5	107.5	
151	+	50	2.1	3.2				LT/RT
					50	190	197.5	
152	+	0	5.5	4.7				RT
					50	407.5	165	
152	+	50	10.8	1.9				RT
					50	632.5	72.5	
153	+	0	14.5	1				RT
					50	685	55	
153	+	50	12.9	1.2				
					50	615	55	
154	+	0	11.7	1				
					50	622.5	57.5	
154	+	50	13.2	1.3				
					50	575	70	
155	+	0	9.8	1.5				
					50	425	50	
155	+	50	7.2	0.5				
					50	222.5	115	
156	+	0	1.7	4.1				
					50	75	227.5	
156	+	50	1.3	5				
					50	32.5	260	
157	+	0	0	5.4				
					50	0	355	
157	+	50	0	8.8				
					50	0	500	
158	+	0	0	11.2				
					50	0	480	

158	+	50	0	8				
					50	35	400	
159	+	0	1.4	8				LT
					50	70	327.5	
159	+	50	1.4	5.1				LT
					50	135	232.5	
160	+	0	4	4.2				LT
					50	320	177.5	
160	+	50	8.8	2.9				RT
					50	522.5	137.5	
161	+	0	12.1	2.6				RT
					50	655	115	
161	+	50	14.1	2				RT
					50	732.5	77.5	
162	+	0	15.2	1.1				RT
					50	742.5	67.5	
162	+	50	14.5	1.6				RT
					50	750	70	
163	+	0	15.5	1.2				RT
					50	692.5	82.5	
163	+	50	12.2	2.1				
					50	595	115	
164	+	0	11.6	2.5				
					50	557.5	110	
164	+	50	10.7	1.9				
					50	567.5	100	
165	+	0	12	2.1				
					50	520	127.5	
165	+	50	8.8	3				
					50	372.5	202.5	
166	+	0	6.1	5.1				
					50	300	225	
166	+	50	5.9	3.9				RT
					50	380	200	
167	+	0	9.3	4.1				RT
					50	562.5	165	
167	+	50	13.2	2.5				
					50	532.5	127.5	
168	+	0	8.1	2.6				
					50	357.5	150	
168	+	50	6.2	3.4				
					50	320	160	
169	+	0	6.6	3				
					50	345	137.5	
169	+	50	7.2	2.5				
					50	320	157.5	
170	+	0	5.6	3.8				
					50	255	192.5	
170	+	50	4.6	3.9				
					50	257.5	205	
171	+	0	5.7	4.3				
					50	260	240	
171	+	50	4.7	5.3				
					50	250	210	
172	+	0	5.3	3.1				
					50	320	117.5	
172	+	50	7.5	1.6				
					50	355	90	
173	+	0	6.7	2				
					50	370	90	
173	+	50	8.1	1.6				

					50	595	52.5	
174	+	0	15.7	0.5				
					50	557.5	20	
174	+	50	6.6	0.3				
					50	417.5	75	
175	+	0	10.1	2.7				
					50	435	125	
175	+	50	7.3	2.3				
					50	365	110	
176	+	0	7.3	2.1				
					50	307.5	87.5	
176	+	50	5	1.4				LT
					50	305	60	
177	+	0	7.2	1				LT
					50	430	37.5	
177	+	50	10	0.5				LT
					50	360	40	
178	+	0	4.4	1.1				
					50	217.5	42.5	
178	+	50	4.3	0.6				
					50	232.5	45	
179	+	0	5	1.2				
					50	205	65	
179	+	50	3.2	1.4				
					50	172.5	97.5	
180	+	0	3.7	2.5				
					50	147.5	97.5	
180	+	50	2.2	1.4				LT/RT
					50	272.5	47.5	
181	+	0	8.7	0.5				LT/RT
					50	410	15	
181	+	50	7.7	0.1				LT/RT
					50	367.5	7.5	
182	+	0	7	0.2				LT/RT
					50	310	20	
182	+	50	5.4	0.6				LT/RT
					50	265	32.5	
183	+	0	5.2	0.7				LT/RT
					50	317.5	32.5	
183	+	50	7.5	0.6				LT/RT
					50	380	62.5	
184	+	0	7.7	1.9				LT/RT
					50	347.5	125	
184	+	50	6.2	3.1				LT/RT
					50	265	150	
185	+	0	4.4	2.9				LT/RT
					50	152.5	210	
185	+	50	1.7	5.5				LT/RT
					6	8.7	23.4	
185	+	56	1.2	2.3				LT/RT
					44	371.8	85.8	
186	+	0	15.7	1.6				LT/RT
					50	685	67.5	
186	+	50	11.7	1.1				LT/RT
					50	582.5	27.5	
187	+	0	11.6	0				LT/RT
					50	660	0	
187	+	50	14.8	0				LT/RT
					50	785	57.5	
188	+	0	16.6	2.3				LT/RT
					50	662.5	97.5	

188	+	50	9.9	1.6				LT/RT
					50	402.5	112.5	
189	+	0	6.2	2.9				LT/RT
					50	222.5	157.5	
189	+	50	2.7	3.4				LT/RT
					50	87.5	217.5	
190	+	0	0.8	5.3				LT
					50	22.5	297.5	
190	+	50	0.1	6.6				LT
					50	7.5	365	
191	+	0	0.2	8				LT
					50	20	530	
191	+	50	0.6	13.2				LT/RT
					50	45	575	
192	+	0	1.2	9.8				LT/RT
					50	77.5	375	
192	+	50	1.9	5.2				LT/RT
					50	180	177.5	
193	+	0	5.3	1.9				LT/RT
					50	180	75	
193	+	50	1.9	1.1				LT/RT
					50	142.5	62.5	
194	+	0	3.8	1.4				LT/RT
					50	232.5	52.5	
194	+	50	5.5	0.7				LT/RT
					39	282.75	23.4	
194	+	89	9	0.5				LT/RT
					11	102.85	5.5	
195	+	0	9.7	0.5				LT/RT
					50	570	12.5	
195	+	50	13.1	0				LT/RT
					50	687.5	0	
196	+	0	14.4	0				LT/RT
					50	732.5	0	
196	+	50	14.9	0				LT/RT
					50	747.5	0	
197	+	0	15	0				LT/RT
					50	760	0	
197	+	50	15.4	0				LT/RT
					50	700	2.5	
198	+	0	12.6	0.1				LT/RT
					50	617.5	5	
198	+	50	12.1	0.1				LT
					50	525	7.5	
199	+	0	8.9	0.2				LT
					50	355	12.5	
199	+	50	5.3	0.3				LT/RT
					50	200	70	
200	+	0	2.7	2.5				LT/RT
					50	155	92.5	
200	+	50	3.5	1.2				LT/RT
					50	127.5	102.5	
201	+	0	1.6	2.9				LT/RT
					50	120	132.5	
201	+	50	3.2	2.4				LT/RT
					50	137.5	107.5	
202	+	0	2.3	1.9				LT/RT
					50	112.5	90	
202	+	50	2.2	1.7				LT/RT
					50	125	82.5	
203	+	0	2.8	1.6				

					50	150	75	
203	+	50	3.2	1.4				
					50	207.5	45	
204	+	0	5.1	0.4				
					50	175	77.5	
204	+	50	1.9	2.7				
					50	170	105	
205	+	0	4.9	1.5				LT/RT
					50	302.5	120	
205	+	50	7.2	3.3				LT/RT
					50	537.5	87.5	
206	+	0	14.3	0.2				LT/RT
					50	632.5	330	
206	+	50	11	13				LT/RT
					50	622.5	460	
207	+	0	13.9	5.4				LT/RT
					50	355	332.5	
207	+	50	0.3	7.9				
					50	7.5	592.5	
208	+	0	0	15.8				
					50	0	967.5	
208	+	50	0	22.9				
					50	0	1300	
209	+	0	0	29.1				
					50	0	1462.5	
209	+	50	0	29.4				
					50	0	1435	
210	+	0	0	28				
					50	0	1347.5	
210	+	50	0	25.9				
					50	10	1055	
211	+	0	0.4	16.3				
					50	60	447.5	
211	+	50	2	1.6				
					50	117.5	120	
212	+	0	2.7	3.2				
					50	97.5	465	
212	+	50	1.2	15.4				
					50	55	705	
213	+	0	1	12.8				
					50	120	557.5	
213	+	50	3.8	9.5				
					50	285	245	
214	+	0	7.6	0.3				
					50	295	122.5	
214	+	50	4.2	4.6				
					50	150	332.5	
215	+	0	1.8	8.7				
					50	75	485	
215	+	50	1.2	10.7				
					50	202.5	400	
216	+	0	6.9	5.3				
					50	172.5	380	
216	+	50	0	9.9				
					50	0	432.5	
217	+	0	0	7.4				
					50	12.5	285	
217	+	50	0.5	4				
					50	12.5	225	
218	+	0	0	5				
					50	0	385	

218	+	50	0	10.4				
					50	0	437.5	
219	+	0	0	7.1				
					50	47.5	237.5	
219	+	50	1.9	2.4				
					50	167.5	100	
220	+	0	4.8	1.6				
					50	237.5	85	
220	+	50	4.7	1.8				
					50	262.5	87.5	
221	+	0	5.8	1.7				
					50	427.5	80	
221	+	50	11.3	1.5				
					50	620	50	
222	+	0	13.5	0.5				
					50	745	17.5	
222	+	50	16.3	0.2				
					50	870	7.5	
223	+	0	18.5	0.1				
					50	967.5	2.5	
223	+	50	20.2	0				
					50	1360	162.5	
224	+	0	34.2	6.5				
					50	1992.5	285	
224	+	50	45.5	4.9				
					50	2122.5	197.5	
225	+	0	39.4	3				
					50	1522.5	77.5	
225	+	50	21.5	0.1				
					50	820	2.5	
226	+	0	11.3	0				
					50	525	22.5	
226	+	50	9.7	0.9				
					50	465	32.5	
227	+	0	8.9	0.4				RT
					50	272.5	102.5	
227	+	50	2	3.7				RT
					50	50	242.5	
228	+	0	0	6				RT
228	+	50						
229	+	0						
229	+	50						
					50	5	202.5	
230	+	0	0.2	8.1				
					50	27.5	365	
230	+	50	0.9	6.5				
					50	517.5	170	
231	+	0	19.8	0.3				
					50	860	10	
231	+	50	14.6	0.1				
					50	562.5	50	
232	+	0	7.9	1.9				
					50	400	77.5	
232	+	50	8.1	1.2				
					50	457.5	35	
233	+	0	10.2	0.2				
					50	462.5	20	
233	+	50	8.3	0.6				LT

Route 105 @ Spring St. Intersection*

					50	335	292.5	
234	+	0	5.1	11.1				LT
					50	335	305	
234	+	50	8.3	1.1				
					50	410	42.5	
235	+	0	8.1	0.6				
					50	490	17.5	
235	+	50	11.5	0.1				
					50	630	2.5	
236	+	0	13.7	0				
					50	720	0	
236	+	50	15.1	0				
					50	722.5	0	
237	+	0	13.8	0				
					50	720	0	
237	+	50	15	0				
					50	845	0	
238	+	0	18.8	0				
					50	927.5	0	
238	+	50	18.3	0				
					50	807.5	0	
239	+	0	14	0				
					50	662.5	0	
239	+	50	12.5	0				
					50	637.5	5	
240	+	0	13	0.2				
					50	660	7.5	
240	+	50	13.4	0.1				
					50	697.5	7.5	
241	+	0	14.5	0.2				
					50	780	7.5	
241	+	50	16.7	0.1				LT
					50	835	35	
242	+	0	16.7	1.3				LT
					50	737.5	250	
242	+	50	12.8	8.7				LT
					50	840	237.5	
243	+	0	20.8	0.8				RT
					50	972.5	85	
243	+	50	18.1	2.6				RT
					50	832.5	182.5	
244	+	0	15.2	4.7				RT
					50	910	137.5	
244	+	50	21.2	0.8				
					50	797.5	40	
245	+	0	10.7	0.8				
					50	467.5	62.5	
245	+	50	8	1.7				
					50	290	200	
246	+	0	3.6	6.3				
					50	112.5	292.5	
246	+	50	0.9	5.4				
					50	45	260	
247	+	0	0.9	5				
					50	22.5	362.5	
247	+	50	0	9.5				
					50	0	625	
248	+	0	0	15.5				
					50	45	530	
248	+	50	1.8	5.7				
					50	1895	142.5	

249	+	0	74	0				
					50	2400	550	
249	+	50	40.4	0				
249+95 Washburn Parking Lot								
0	+	0						
					50	520	472.5	
0	+	50	20.8	18.9				
					50	950	640	
1	+	0	17.2	6.7				
					50	902.5	185	
1	+	50	18.9	0.7				
					50	1115	27.5	
2	+	0	25.7	0.4				
					50	1230	17.5	
2	+	50	23.5	0.3				
3	+	0						
					50	1560	550	
250	+	0	22.4	0.1				
					50	1110	552.5	
250	+	50	12.6	5.1				
					50	865	677.5	
251	+	0	6.6	1.1				
					50	247.5	600	
251	+	50	3.3	2				
					50	82.5	630	
252	+	0	0	23.2				
					50	0	967.5	
252	+	50	0	15.5				
					50	0	845	
253	+	0	0	18.3				LT/RT
					50	182.5	470	
253	+	50	7.3	0.5				LT/RT
					50	630	12.5	
254	+	0	17.9	0				LT/RT
					50	1170	0	
254	+	50	28.9	0				LT/RT
					50	1945	0	
255	+	0	48.9	0				RT
					50	2407.5	0	
255	+	50	47.4	0				RT
					50	2232.5	0	
256	+	0	41.9	0				RT
					50	1740	0	
256	+	50	27.7	0				
					50	1067.5	162.5	
257	+	0	15	6.5				
					50	550	375	
257	+	50	7	8.5				
					50	402.5	670	
258	+	0	9.1	18.3				
					50	227.5	1077.5	
258	+	50	0	24.8				
					50	0	1212.5	
259	+	0	0	23.7				
					50	0	1022.5	
259	+	50	0	17.2				
					50	0	930	
260	+	0	0	20				

					50	0	1172.5	
260	+	50	0	26.9				
					50	0	1335	
261	+	0	0	26.5				RT
					50	27.5	1040	
261	+	50	1.1	15.1				RT
					50	547.5	377.5	
262	+	0	20.8	0				
					50	1385	0	
262	+	50	34.6	0				
					50	1715	0	
263	+	0	34	0				
					50	1562.5	0	
263	+	50	28.5	0				
					50	1125	0	
264	+	0	16.5	0				
					50	710	10	
264	+	50	11.9	0.4				
					50	692.5	15	
265	+	0	15.8	0.2				
					50	2005	5	
265	+	50	64.4	0				
					50	2487.5	12.5	
266	+	0	35.1	0.5				
					50	1947.5	17.5	
266	+	50	42.8	0.2				
					50	1972.5	17.5	
267	+	0	36.1	0.5				
					50	2035	17.5	
267	+	50	45.3	0.2				
					50	1537.5	5	
268	+	0	16.2	0				
					50	1312.5	0	
268	+	50	36.3	0				LT/RT
					50	1800	0	
269	+	0	35.7	0				LT/RT
					50	1607.5	40	
269	+	50	28.6	1.6				LT/RT
					50	1300	100	
270	+	0	23.4	2.4				LT/RT
					50	1190	82.5	
270	+	50	24.2	0.9				LT/RT
					50	1097.5	55	
271	+	0	19.7	1.3				LT/RT
					50	802.5	67.5	
271	+	50	12.4	1.4				LT/RT
					50	460	345	
272	+	0	6	12.4				LT
					50	167.5	465	
272	+	50	0.7	6.2				LT
					50	95	187.5	
273	+	0	3.1	1.3				
					50	135	82.5	
273	+	50	2.3	2				
					50	57.5	177.5	
274	+	0	0	5.1				
					50	0	495	
274	+	50	0	14.7				
					50	0	782.5	
275	+	0	0	16.6				
					50	0	640	

275	+	50	0	9				
					50	0	412.5	
276	+	0	0	7.5				
					50	22.5	437.5	
276	+	50	0.9	10				
					50	35	392.5	
277	+	0	0.5	5.7				
					50	20	220	
277	+	50	0.3	3.1				
					50	47.5	132.5	
278	+	0	1.6	2.2				
					50	100	90	
278	+	50	2.4	1.4				
					50	117.5	77.5	
279	+	0	2.3	1.7				
					50	200	57.5	
279	+	50	5.7	0.6				
					50	295	22.5	
280	+	0	6.1	0.3				
					50	415	7.5	
280	+	50	10.5	0				
					50	860	0	
281	+	0	23.9	0				LT/RT
					50	1062.5	10	
281	+	50	18.6	0.4				LT/RT
					50	855	32.5	
282	+	0	15.6	0.9				LT/RT
					50	777.5	22.5	
282	+	50	15.5	0				RT
					50	892.5	0	
283	+	0	20.2	0				RT
					50	915	5	
283	+	50	16.4	0.2				LT/RT
					50	725	10	
284	+	0	12.6	0.2				LT/RT
					50	727.5	10	
284	+	50	16.5	0.2				LT/RT
					50	677.5	45	
285	+	0	10.6	1.6				LT/RT
					50	350	205	
285	+	50	3.4	6.6				LT/RT
					50	110	225	
286	+	0	1	2.4				LT/RT
					50	25	207.5	
286	+	50	0	5.9				LT/RT
					50	0	465	
287	+	0	0	12.7				LT/RT
					50	0	845	
287	+	50	0	21.1				LT/RT
					50	0	1112.5	
288	+	0	0	23.4				LT/RT
					50	0	1147.5	
288	+	50	0	22.5				LT/RT
					50	0	1055	
289	+	0	0	19.7				LT/RT
					50	0	652.5	
289	+	50	0	6.4				LT/RT
					50	280	167.5	
290	+	0	11.2	0.3				LT/RT
					50	282.5	572.5	
290	+	50	0.1	22.6				LT/RT

					50	2.5	1007.5	
291	+	0	0	17.7				LT/RT
					50	0	617.5	
291	+	50	0	7				LT/RT
					50	25	377.5	
292	+	0	1	8.1				LT/RT
					50	257.5	285	
292	+	50	9.3	3.3				
					50	1285	82.5	
293	+	0	42.1	0				
					50	1112.5	317.5	
293	+	50	2.4	12.7				LT/RT
					50	75	362.5	
294	+	0	0.6	1.8				LT
					50	25	265	
294	+	50	0.4	8.8				
					50	80	292.5	
295	+	0	2.8	2.9				
					50	562.5	72.5	
295	+	50	19.7	0				LT/RT
					50	597.5	75	
296	+	0	4.2	3				LT/RT
					50	622.5	100	
296	+	50	20.7	1				
					50	1265	52.5	
297	+	0	29.9	1.1				
					50	2862.5	85	
297	+	50	84.6	2.3				
					50	3270	210	
298	+	0	46.2	6.1				
					50	2765	335	
298	+	50	64.4	7.3				
					50	2345	245	
299	+	0	29.4	2.5				
					50	2050	62.5	
299	+	50	52.6	0				
					25	367.5	610	
299	+	75	0	46.3				
					50	1315	0	
300	+	25	0	0				

	Total Cut	Total Fill
Total CF:	224618.1	90346.2
Total CY:	8319	3346
Swell:	0.95	1.15
Total CY:	7903	3848
Disposal of Contaminated Soils CY:	1000	
Total Cut - Contaminated CY:	**6903**	
Total Fill (With Cut Reuse):		**0**

*For intersection calculations, please see the McMahon calculation book attached.

Project:	Marion Shared-Use Path Phase 1	Date:	October 2023
Location:	Marion, MA	Job Number:	0015M268.10
		Project File No:	607979

100% SUP Estimate SUP Calculation Book

Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

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Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

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100	Schedule of Operations	LS

Fixed Price: $58,500

101 **Clearing and Grubbing** **ACRES**

Location	Station:	to	Station:	Area (SF)
SUP	100 + 0.00		228 + 25	35560
SUP	230 + 0.00		265 + 20	106680
SUP	268 + 0.00		300 + 30	93750
			Total:	235990 SF
				5.42 ACRES
			Say:	5.42 ACRES

102.1 **Tree Trimming** **FT**

Location	Station:	to	Station:	Length (FT)
Rt. 105 @ Spring St. Intersection*	102 + 25.00		103 + 00	73.88
			Total:	73.88 FT
			Say:	80.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

102.3	**Herbicide Treatment of Invasive Plans**	**HR**

**Assumed Quantity as Coordinated With MassDOT

Say: 20 HR

102.33	**Invasive Plant Management Strategy**	**HR**

**Assumed Quantity as Coordinated With MassDOT

Say: 2 HR

102.511 **Tree Protection - Armoring and Pruning** **EA**

See Tree Protection Schedule for SUP Tree Locations

Location	Tree (EA)
SUP	40.00
Rt. 105 @ Spring St. Intersection*	8.00
Total:	48.0 EA

*For intersection calculations, please see the McMahon calculation book attached.

120.1 **Unclassified Excavation** **CY**

****Volume Total from Shared-Use Path Earthwork Total Summary Sheet**

Location	Volume (CY)
SUP	6903
Rt. 105 @ Spring St. Intersection*	297

Total Volume: 7200.00 CY

Say: 7250 CY

*For intersection calculations, please see the McMahon calculation book attached.

141.1 **Test Pits for Exploration** **CY**

***Assume 10 test pits at 4' wide and 8' deep, test pits locations to be determined by the Contractor**

Number of Test Pits-SUP:	10	EA
Rt. 105 @ Spring St. Intersection*	7	EA

Area of test pit= $A=\pi r^2$ Volume= $V = A * d$

where: r= 2 FT
d= 8 FT

Area: 12.57 SF

Volume= 213.63 CF
7.91 CY

Total Volume of Test Pits: 79.12 CY

Say: 80.00 CY

*For intersection calculations, please see the McMahon calculation book attached.

150 **Ordinary Borrow** **CY**

****Volumes from Average End Spreadsheet**

****Volume Total from Earthwork Total Summary Sheet**

	Volume (CY)
Total:	3848.0 CY
Rt. 105 @ Spring St. Intersection*	130.0 CY
Reuse Unclassified Excavation:	7200.0 CY
Say:	0.0 CY

*For intersection calculations, please see the McMahon calculation book attached.

151 **Gravel Borrow** **CY**

****Areas from Area Summary**

Location	Area (SY)	Depth (IN)	Volume (CY)
SUP	24404	Varies	5655
Sup Swale for STA 225+50	150	6	2.778
Rt. 105 @ Spring St. Intersection*	-	-	92

Conversion: 0.028 IN/YD

Volume = Area*Depth*Conversion

Total: 5749.8 CY

Assume 25% Swell Factor: 7187.2 CY

Say: 7200.0 CY

*For intersection calculations, please see the McMahon calculation book attached.

151.2 **Gravel Borrow For Backfilling Structures and Pipes** **CY**

Station			Volume of Gavel Borrow	
108	+	65	1.5	
127	+	40	1.5	
132	+	50	1.5	
151	+	50	1.5	
			Total: 6	CY
			Say: 6	CY

156 **Crushed Stone** **TONS**

***Volumes from Surface Area Spreadsheet**

Location	Volume (CY)	
*SUP	658.00	
SUP Drain Swales**	950.00	
Conversions:	1.8	TONS/CY
SUP Total:	2894.4	TONS
Rt. 105 @ Spring St. Intersection Total*:	10.0	TONS
Total:	2904.4	TONS
Say:	3000.0	TONS

*For intersection calculations, please see the McMahon calculation book attached.

**See Typical Sections for Swale Station Limits & Construction Details for Swale Detail

170 **Fine Grading and Compacting** **SY**

****Areas from Area Summary Sheet**

Location	AREA (SY)	
SUP	25162	
Rt. 105 @ Spring St. Intersection*	598	
Washburn Park Rd.	1102	
Total:	26862	SY
Say:	27000	SY

*For intersection calculations, please see the McMahon calculation book attached.

180.01	**Environmental Health and Safety Program**	**LS**

**Assumed Quantity as Coordinated With MassDOT

Say: 1 LS

180.02	**Personal Protection Level C Upgrade**	**HR**

**Assumed Quantity as Coordinated With MassDOT

Say: 40.00 HR

180.03	**Licensed Site Professional Services**	**HR**

**Assumed Quantity as Coordinated With MassDOT

Say: 80.00 HR

181.11 **Disposal of Unregulated Soil** **TON**

**Total Volume of Expected Contaminated Soil found from plan sections Mattapoisett Town Line to Rt. 105 Intersection & Washburn Road to Point Rd.

Total Volume*:	3055	CY
Assume 5% of unused cut volume:	153	CY
CY to TON Conversion: (120 LB/CF for density) * (27CF/CY) / (2000LB/TON)	1.62	TON/CY
Total weight:	247.455	TON
Say:	250	TON

*Total volumes is the quantity of unclassified excavation material less volume of ordinary borrow required

181.12 **Disposal of Regulated Soil - In- State Facility** **TON**

**Total Volume of Expected Contaminated Soil found from plan sections Mattapoisetts Town Line to Rt. 105 Intersection.

Total Volume:	3055	CY
Assume 5% of cut volume:	153	CY
CY to TON Conversion: (120 LB/CF for density) * (27CF/CY) / (2000LB/TON)	1.62	TON/CY
Total weight:	247.455	TON
Say:	250	TON

Total volumes is the quantity of unclassified excavation material less volume of ordinary borrow required

181.13 **Disposal of Regulated Soil - Out - of - State Facility** **TON**

**Total Volume of Expected Contaminated Soil found from plan sections Mattapoisetts Town Line to Rt. 105 Intersection.

Total Volume:	3055	CY
Assume 2.5% of cut volume:	76	CY
CY to TON Conversion: (120 LB/CF for density) * (27CF/CY) / (2000LB/TON)	1.62	TON/CY
Total weight:	123.7275	TON
Say:	130	TON

Total volumes is the quantity of unclassified excavation material less volume of ordinary borrow required

181.14 **Disposal of Hazardous Waste** **TON**

**Total Volume of Expected Contaminated Soil found from plan sections Mattapoisetts Town Line to Rt. 105 Intersection.

Total Volume:	3055	CY
Assume 2.5% of cut volume:	76	CY
CY to TON Conversion: (120 LB/CF for density) * (27CF/CY) / (2000LB/TON)	1.62	TON/CY
Total weight:	123.7275	TON
Say:	130	TON

Total volumes is the quantity of unclassified excavation material less volume of ordinary borrow required

184.1 **Disposal of Treated Wood Products** **TON**

Total Length of Historic Rail Road Converted to Rail Trail:	15476	FT
Rail Road Ties:	5804	EA
EA*Standard 200lb Weight:	1160700	LB
LB to TON Conversion:	580.35	TON
1% of Rail Road Ties Abandoned:	5.8035	TON
Say:	6	TON

201 **Catch Basin** **EA**

Station	Catch Basin
Rt. 105 @ Spring St. Intersection*	4
Total:	4 EA
Say:	4 EA

*For intersection calculations, please see the McMahon calculation book attached.

201.01 **Proposed Equalizing Structure** **EA**

Station	Equilizing Structure
Rt. 105 @ Spring St. Intersection*	2
Total:	2 EA
Say:	2 EA

*For intersection calculations, please see the McMahon calculation book attached.

220 **Drainage Structure Adjust** **EA**

Station	Man Hole (EA)
Rt. 105 @ Spring St. Intersection*	3
Total:	3 EA
Say:	3 EA

*For intersection calculations, please see the McMahon calculation book attached.

220.3 **Drainage Structure Change in Type** **EA**

Location	Drainage Structure (EA)
Rt. 105 @ Spring St. Intersection*	2
Total:	2 EA
Say:	2 EA

*For intersection calculations, please see the McMahon calculation book attached.

220.7 **Sanitary Structure Adjusted** **EA**

Location	Drainage Structure (EA)
Rt. 105 @ Spring St. Intersection*	1
Total:	1 EA
Say:	1 EA

*For intersection calculations, please see the McMahon calculation book attached.

221 **Frame and Cover** **EA**

Station	Catch Basin (EA)
Rt. 105 @ Spring St. Intersection*	2
Total:	2 EA
Say:	2 EA

*For intersection calculations, please see the McMahon calculation book attached.

222.3 **Frame and Grate - MASSDOT Cascade Type** **EA**

Station	Catch Basin (EA)
Rt. 105 @ Spring St. Intersection*	5
Total:	5 EA
Say:	5 EA

*For intersection calculations, please see the McMahon calculation book attached.

223.2 **Frame and Grate (Or Cover) Removed and Discarded** **EA**

Station	Catch Basin (EA)
Rt. 105 @ Spring St. Intersection*	4
Total:	4 EA
Say:	4 EA

*For intersection calculations, please see the McMahon calculation book attached.

227.3 **Removal of Drainage Structure Sediment** **CY**

Location:		Volume (CY)
Rt. 105 @ Spring St. Intersection*		2.8
	Total:	2.8 CY
	Say:	5 CY

227.31 **Removal of Drainage Structure Sediment** **FT**

Location:		Length (FT)
Rt. 105 @ Spring St. Intersection*		25
	Total:	25 FT
	Say:	25 FT

244.12 **12" Reinforced Concrete Pipe Class V** **FT**

Location:		Length (FT)
Rt. 105 @ Spring St. Intersection*		36
	Total:	36 FT
	Say:	40 FT

*For intersection calculations, please see the McMahon calculation book attached.

252.12 **12" HDPE Pipe** **FT**

Location:		Length (FT)
SUP		35
Rt. 105 @ Spring St. Intersection*		39
	Total:	74 FT
	Say:	80 FT

303.06 **6 Inch Ductile Iron Water Pipe (Mechanical Joint)** **FT**

HYD Station	Length of Pipe With Verticles
108 + 65	15
127 + 40	15
132 + 50	20
151 + 50	20
Total:	70 FT
Say:	70 FT

Station	90 Degree Bend Weight
108 + 65	65
127 + 40	65
132 + 50	65
151 + 50	65
Total:	260 LB
Say:	260 LB

357.06 **6 Inch Gate Box** **EA**

Station	6in Gate Box
25% Assumed Frozen	4
Total:	4 EA
Say:	4 EA

357.12 **12 Inch Gate Box** **EA**

Station	12in Gate Box
25% Assumed Frozen	4
Total:	4 EA
Say:	4 EA

358 **Gate Box Adjusted** **EA**

Station	Gate Box (EA)
101 + 38	1
108 + 70	2
117 + 60	2
127 + 40	2
157 + 19	2
167 + 40	2
Rt. 105 @ Spring St. Intersection*	2
Total:	13 EA
Say:	13 EA

*For intersection calculations, please see the McMahon calculation book attached.

369.06 **6 x 6 Inch Tapping Sleeve, Valve, and Box** **EA**

From Station	To Station	Each (EA)
137 + 20	132 + 50	1
147 + 10	151 + 50	1
	Total:	2 EA
	Say:	2 EA

370.4 **12 x 6 Inch Tapping Sleeve, Valve, and Box** **EA**

From Station	To Station	Each (EA)
137 + 20	132 + 50	1
147 + 10	151 + 50	1
	Total:	2 EA
	Say:	2 EA

371.06 **6 Inch Coupling** **EA**

Station	6" Coupling (EA)
108 + 70	1
127 + 40	1
Rt. 105 Intersection	1
Total:	3 EA
Say:	3 EA

376.2 **Hydrant Remove and Reset** **EA**

Station	EA
108 + 70	1
127 + 40	1

From Station	To Station		
137 + 20	132 + 50	1	
147 + 10	151 + 50	1	
	Total:	4	EA
	Say:	4	EA

376.5 **Hydrant Adjusted** **EA**

Station	EA
117 + 60	1
157 + 19	1
167 + 40	1
Total:	3 EA
Say:	3 EA

402 **Dense Graded Crushed Stone For Sub-Base** **CY**

Location:	Volume (CY)
Rt. 105 @ Spring St. Intersection*	12.50
Total Length:	13 CY
Say:	20 CY

*For intersection calculations, please see the McMahon calculation book attached.

415.1 **Pavement Standard Milling** **SY**

Location	Station:			to	Station:			Area (SY)	
Rt. 105 @ Spring St. Intersection*	228	+	32		229	+	87	875	
Washburn Lane	265	+	62		268	+	42	1114	
							Total Area:	1989	SY
							Say:	2000	SY

*For intersection calculations, please see the McMahon calculation book attached.

440.00 **Calcium Chloride for Roadway Dust Control** **LB**

****Areas from Area Summary Sheet**

Location	AREA (SY)	
SUP	24404	
Rt. 105 @ Spring St. Intersection* Total:	448.00	
Total Area	24852	
Conversion:	1.50	LB/SY
Total	37278.17	LB
Say:	37300.00	LB

*For intersection calculations, please see the McMahon calculation book attached.

443.00 **Water for Roadway Dust Control** **MGAL**

****Areas from Area Summary Sheet**

Location		AREA (SY)	
SUP		24404.11	
	Total:	24404.11	
	Conversion:	1.00	GAL/SY
		24404.11	GAL
		0.02	MGL
Rt. 105 @ Spring St. Intersection*	Total:	1.00	MGL
	Say:	24500.00	GAL
		30.00	MGL

*For intersection calculations, please see the McMahon calculation book attached.

450.22 **Superpave Surface Course - 9.5 (SSC - 9.5)** **TON**

****See Surface Area and Pavement Summary**

Location	Tonage (TON)
SUP and Parking	2059.0
Rt. 105 @ Spring St. Intersection* Total:	0.0

Total: 2059.0 TON

Say: 2200.0 TON

*For intersection calculations, please see the McMahon calculation book attached.

450.23 **Superpave Surface Course - 12.5 (SSC - 12.5)** **TON**

****See Surface Area and Pavement Summary**

Location	Tonage (TON)
SUP and Parking	0.0
Rt. 105 @ Spring St. Intersection* Total:	140.0

Total: 140.0 TON

Say: 150.0 TON

*For intersection calculations, please see the McMahon calculation book attached.

450.31 **Superpave Intermediate Course - 12.5 (SSC - 12.5)** **TON**

****See Surface Area and Pavement Summary**

Location	Tonage (TON)
SUP and Parking	0.0
Rt. 105 @ Spring St. Intersection* Total:	14.0

Total: 14.0 TON

Say: 20.0 TON

*For intersection calculations, please see the McMahon calculation book attached.

450.32 **Superpave Intermediate Course 19.0 (SIC 19.0)** **TON**

****See Surface Area and Pavement Summary**

Location	Tonage (TON)
SUP and Parking	3432.0
Rt. 105 @ Spring St. Intersection* Total:	0.0
Total:	3432.0 TON
Say:	3500.0 TON

*For intersection calculations, please see the McMahon calculation book attached.

450.41 **Superpave Base Course 25.0 (SBC 25.0)** **TON**

****Areas from Surface Area Summary**

Location	Tonage (TON)
Rt. 105 @ Spring St. Intersection* Total:	22.00 TON
Say:	30.0 TON

*For intersection calculations, please see the McMahon calculation book attached.

451 **HMA For Patching** **TON**

Location	Area (SY)	
SUP	24404	
Total Area:	24404	SY
1% Surface Area Assumed Patching:	2440	SY
0.056xSY to Tons	136.7	TONS
Rt. 105 @ Spring St. Intersection* Total:	10.00	TONS
Say:	150.0	TONS

*For intersection calculations, please see the McMahon calculation book attached.

452 **Asphalt Emulsion for Tack Coat** **GAL**

****Areas from Area Summary Sheet**

Location	AREA (SY)	
New HMA	24639	
Milled HMA Surface	875	
Total:	25514	SY
Conversion:	0.08	GAL/SY
Total Asphalt Emulsion:	2041.12	GAL
Rt. 105 @ Spring St. Intersection* Total:	100.00	GAL
Say:	2200.00	GAL

*For intersection calculations, please see the McMahon calculation book attached.

453 **HMA Join Sealant** **FT**

Location	Station:			Length (FT)
SUP	265	+	28	70
SUP	267	+	82	70
RT. 105 & Front St. Intersection*				750
			Total Length:	890 FT
			Say:	900 FT

*For intersection calculations, please see the McMahon calculation book attached.

470 **Hot-Mix Asphalt Berm** **TON**

****Length from Constructions Detail**

Location	TON	
Rt. 105 @ Spring St. Intersection*	7.88	TON
Total:	7.88	TON
Say:	10.00	TON

*For intersection calculations, please see the McMahon calculation book attached.

470.2 **Hot-Mix Asphalt Berm, Type A- Modifed** **FT**

STATION	EACH (EA)
228+34	1.00
229+97	1.00
0+05	1.00
1+04	1.00
265+11	1.00
268+15	1.00
299+21	1.00

Number of Splitter Islands:	7.00	EA
Length of Berm*:	16.50	FT
Total Length from Splitter Berm:	115.50	FT
Total:	115.50	FT
Say:	120.00	FT

****Length from Constructions Detail**

472	**Temporary Asphalt Patching**	**TON**

****Length from Constructions Detail**

Location	TON	
Rt. 105 @ Spring St. Intersection*	17.00	TON
Total:	17.00	TON
Say:	20.00	TON

*For intersection calculations, please see the McMahon calculation book attached.

506 **Granite Curb Type VB - Straight** **FT**

Location:	Length (FT)
Rt. 105 @ Spring St. Intersection*	340.00 FT
Total Length:	340.00 FT
Say:	340.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

506.1 **Granite Curb Type VB - Curved** **FT**

Location:	Length (FT)
Rt. 105 @ Spring St. Intersection*	110.00 FT
Total Length:	110.00 FT
Say:	110.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

509 **Granite Transition Curb For Pedestrian Curb Ramps - Straight** **FT**

Location:	Length (FT)
Rt. 105 @ Spring St. Intersection*	40.00 FT
Total Length:	40.00 FT
Say:	40.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

509.1 **Granite Transition Curb For Pedestrian Curb Ramps - Curved** **FT**

Location:	Length (FT)
Rt. 105 @ Spring St. Intersection*	10.00 FT
Total Length:	10.00 FT
Say:	10.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

515 **Granite Curb Inlet - Curved** **EA**

Location:	Each (EA)
Rt. 105 @ Spring St. Intersection*	1.00 EA
Total Length:	1.00 EA
Say:	1.00 EA

*For intersection calculations, please see the McMahon calculation book attached.

580 **Curb Remove and Reset** **FT**

Location:	FEET (FT)
Rt. 105 @ Spring St. Intersection*	109.00 FT
Total Length:	109.00 FT
Say:	110.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

594 **Curb Remove and Discard** **FT**

Location:	FEET (FT)
Rt. 105 @ Spring St. Intersection*	223.00 FT
Total Length:	223.00 FT
Say:	230.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

620.5 **Bicycle Safety Fence-Wood** **FT**

Station:	to	Station:	Side	Length (FT)
130 + 33		130 + 93	LT/RT	120
133 + 25		145 + 25	RT	1200
133 + 75		145 + 25	LT	1150
150 + 50		151 + 25	LT/RT	150
180 + 25		202 + 25	LT/RT	4400
225 + 80		228 + 26.5	LT/RT	493
249 + 75		250 + 75	LT	100
251 + 25		255 + 00	LT	375
286 + 75		291 + 25	RT	450
286 + 75		290 + 25	LT	350
			Total Length:	8788 FT/EA
			Say:	8800 FT

645.20 **180" Chain Link Fence- Vinyl Coated** **FT**

Station:	to	Station:	Side	Length (FT)
1 + 8.00		2 + 99.00	LT	191.00
251 + 25.00		254 + 99.00	RT	374.00

Total Length: 565 FT

Say: 570 FT

657 **Temporary Fence** **FT**

****Assume 35ft Temporary Fence Across Stations**

Station/ Location	Length (FT)
101+10	35
228+34	35
229+87	35
3+10	50
265+22	50
268+03	50
299+77	50
Total:	305.00 FT
Say:	310.00 FT

697 **Sedimentation Fence** **FT**

Location	Station:	to	Station:	Side	Length (FT)
SUP	101 + 10.00		228 + 37.00	LT/RT	25500.00
SUP	229 + 90.00		267 + 82.00	LT/RT	7600.00
SUP	0 + 0.00		2 + 99.00	LT/RT	600.00
SUP	268 + 0.00		299 + 80.00	LT/RT	6400.00
				Total Length:	40100.00 FT/EA
				Say:	41400 FT

697.1 **Silt Sack** **EA**

Location:	Each (EA)
Rt. 105 @ Spring St. Intersection*	4.00 EA
Total Length:	4.00 EA
Say:	4.00 EA

*For intersection calculations, please see the McMahon calculation book attached.

698.2 **Geotextile Fabric for Subsurface Drainage** **SY**

Location:		Area (SY)	
SUP*		12825.00	LF
	SF per LF:	6.00	SF
	Total Area:	76950.00	SF
	Total Area:	8550.00	SY
	Say:	8600.00	SY

*See Typical Sections for Drainage Swale Limits
**See Construction Details for Drainage Swale Details

701.1 **Cement Concrete Sidewalk at Driveways** **SY**

Location:	Area (SY)	
Rt. 105 @ Spring St. Intersection*	51.74	SY
Total Length:	51.74	FT
Say:	60.00	FT

*For intersection calculations, please see the McMahon calculation book attached.

701.2 **Cement Concrete Pedestrian Curb Ramp** **SY**

Location:	Area (SY)
Rt. 105 @ Spring St. Intersection*	50.00 SY
Total Length:	50.00 FT
Say:	60.00 FT

*For intersection calculations, please see the McMahon calculation book attached.

702 **Hot Mix Asphalt Sidewalk For Driveways** **TON**

Location:	Area (SY)	
Rt. 105 @ Spring St. Intersection*	71.40	SY
Total Length:	71.40	FT
Say:	80.00	FT

*For intersection calculations, please see the McMahon calculation book attached.

707.1 **Park Bench** **EA**

Station			Offset	EA
101	+	35	LT/RT	2
115	+	25	LT/RT	2
129	+	60	LT/RT	2
141	+	10	LT/RT	2
158	+	90	LT/RT	2
170	+	00	LT/RT	2
179	+	60	LT/RT	2
203	+	50	LT/RT	2
221	+	05	LT/RT	2
247	+	70	LT/RT	2
252	+	85	LT/RT	2
262	+	70	LT/RT	2
277	+	60	LT/RT	2
299	+	30	LT/RT	2
			Total:	28 EA
			Say:	28 EA

715 **Rural Mail Box Remove and Reset** **EA**

Station			Offset		EA	
299	+	82	RT		1	
				Total:	1	EA
				Say:	1	EA

740 **Engineers Field Office and Equipment (Type A)** **MO**

Time (MO)*	Office	Combined Time (MO)
18	1	18

*Provided by MADOT

Total: 18 MO

Say: 18 MO

748	**Mobilization**	**LS**

*No more than 3% of Total Project Cost
*See CPE

751 **Loam For Roadsides** **CY**

****Areas from Area Summary Sheet**

Loam and Seed Totals		
Area:	196781	SF
Total Area:	24537	SY
4" Loam Bed:	0.11	YD
Total Volume of Loam:	2699	CY
25% Swell:	**3374**	CY
Rt. 105 @ Spring St. Intersection* Total:	**60**	CY
Say Loam Volume:	***3500***	CY

*For intersection calculations, please see the McMahon calculation book attached.

754.23	**Eastern Box Turtle (*Terrapin carolina*) Protection Plan**	**LS**

**Assumed Quantity as Coordinated With MassDOT

Say: 20000 $

755.35 **Inland Wetland Replication Area** **LS**

Item Component	Quantity SM	Unit	Unit Price	Amount
Unclassified Excavation	438	CY	$60.00	$26,280.00
Sand Borrow	320	CY	$80.00	$25,600.00
Straw Mulch	570	SY	$3.00	$1,710.00
Inkberry	12	EA	$230.00	$2,760.00
Highbush Blueberry	16	EA	$122.00	$1,952.00
Sweet Pepperbush	12	EA	$200.00	$2,400.00
Smooth Cordgrass	2581	EA	$19.00	$49,039.00

Total: ***$109,741.00***

Cordgrass Planting Calculation	5050 sq ft of planting x 4.6 plants per square yard
Excavation Calculation	194 sq ft cross sectional area removed from 61 ft long wetland replication are
Sand for Planting	3900sq ft x 1.5 ft depth of sand

755.75 **Wetland Specialist** **HR**

Time (HR)	Specialist (EA)	Combined Time (HR)	
80	1	80	
	Total:	80	HR
	Say:	80	HR

755.76	**Wetland Monitoring Reports**	**LS**

**Assumed Quantity as Coordinated With MassDOT

Say: 10000 $

765 **Seed Area** **SY**

****Areas from Area Summary Sheet**

Area:	220833	SF
Area:	**24537**	SY
Rt. 105 @ Spring St. Intersection* Total:	**288**	SY
Total Seed Area:	**24825**	SY
Say Seed Area:	***24900.00***	SY

*For intersection calculations, please see the McMahon calculation book attached.

767.121 **Sediment Control Barrier** **FT**

Location	Station:	to	Station:	Side	Length (FT)
SUP	101 + 10.00		228 + 37.00	LT/RT	25500.00
SUP	229 + 90.00		267 + 82.00	LT/RT	7600.00
SUP	0 + 0.00		2 + 99.00	LT/RT	600.00
SUP	268 + 0.00		299 + 80.00	LT/RT	6400.00

Total Length: 40100.00 FT/EA

Say: 41400 FT

796.455 **Switch Grass 2 Gallon** **EA**

STATION	EACH (EA)
228+34	1.00
229+97	1.00
0+05	1.00
1+04	1.00
265+11	1.00
268+15	1.00
299+21	1.00

Total:	7	EA
3 Switch Grass at each Splitter Island:	21	EA
Say:	21	EA

804.3 **3 Inch Electrical Conduit Type NM - Plastic - (UL)** **FT**

	Length (FT)	
Rt. 105 @ Spring St. Intersection* Total:	**67**	FT
Total:	67.00	FT
Say:	70.00	FT

*For intersection calculations, please see the McMahon calculation book attached.

811.31 **Pull Box 12X12 Inches - SD2.031** **EA**

Pull Boxes (EA)

Rt. 105 @ Spring St. Intersection* Total:	2	EA
Total:	2.00	EA
Say:	2.00	EA

*For intersection calculations, please see the McMahon calculation book attached.

824.211 **Rectangular Rapid Flashing Beacon** **LS**

Beacons (LS)

Rt. 105 @ Spring St. Intersection* Total:	1	LS
Total:	1.00	LS
Say:	1.00	LS

*For intersection calculations, please see the McMahon calculation book attached.

832 **Warning Regulatory & Rte Mkr- Alum. Panel (Type A)** **SF**

****From Traffic Sign Summary**

	Area (SF)
From Traffic Summary Sheet	127
Total:	127.00 SF
Say:	127.00 SF

847.1 **Sign Support & Rte Mkr w/1 Brkwy Post - Steel** **EA**

****From Traffic Sign Summary**

	Post (EA)
From Traffic Summary Sheet	41
Rt. 105 @ Spring St. Intersection* Total:	4

Total: 45.00 EA

Say: 45.00 EA

850.41 **Roadway Flagger** **HR**

	Hours (HR)	
Rt. 105 @ Spring St. Intersection* Total:	352	EA
Total:	352.00	EA
Say:	355.00	HR

*For intersection calculations, please see the McMahon calculation book attached.

853.1 **Portable Breakaway Barricade Type III** **EA**

Baracades (EA)

Rt. 105 @ Spring St. Intersection* Total:	3	EA
Total:	3	EA
Say:	5	EA

*For intersection calculations, please see the McMahon calculation book attached.

853.22 **Pedestrian Channelizing Device** **EA**

Baracades (EA)

Rt. 105 @ Spring St. Intersection* Total:	50	EA
Total:	50	EA
Say:	50	EA

*For intersection calculations, please see the McMahon calculation book attached.

859 **Reflectorized Drum** **DAYS**

Location	Days (DAYS)	
Rt. 105 @ Spring St. Intersection* Total:	1410	UD
Total:	1410	DAYS

*For intersection calculations, please see the McMahon calculation book attached.

859.1 **Reflectorized Drum With Sequential Flashing Warning Lights** **DAYS**

Location	Days (DAYS)	
Rt. 105 @ Spring St. Intersection* Total:	1410	UD
Total:	1410	DAYS

*For intersection calculations, please see the McMahon calculation book attached.

864.04 **Pavement Arrows and Legends- White/Thermo** **SF**

Location	100' From Warning Panel/ Conc. Sidewalk at Station STATION	"STOP AHEAD" Pavement Marking (EA) SYL (SF)
SUP	227+34	22
SUP	230+90	22
SUP	1+10	22
SUP	264+20	22
SUP	269+00	22
SUP	298+40	22

Location	Handicap Parking Space STATION	Handicap Parking Space Symbol (SF)
Washburn Park	1+47	8
SUP	294+40	8

Total: 148 SF

SAY: 150 SF

866.106 **6" Reflectorized White Line- Thermo** **FT**

Location	Length (FT)
Washburn Parking Lot	320
Point Rd. Parking Lot	317
Total:	637 FT
SAY:	640 FT

*For intersection calculations, please see the McMahon calculation book attached.

866.112 **12" Reflectorized White Line- Thermo** **FT**

Station Stop Line	Length (FT)
228+25	6
229+95	6
0+15	6
265+12	6
268+12	6
299+24	6
Total:	36 FT
Rt. 105 @ Spring St. Intersection* Total:	252 FT
SAY:	290 FT

*For intersection calculations, please see the McMahon calculation book attached.

867.106 **6" Reflectorized Yellow Line- Thermo** **FT**

Solid Yellow Line (90')

Location	STATION		SYL (FT)
SUP	227 + 29	228 + 19	90
SUP	230 + 01	230 + 91	90
SUP	0 + 11	1 + 01	90
SUP	264 + 18	265 + 08	90
SUP	268 + 17	269 + 07	90
SUP	298 + 28	299 + 18	90

Dashed Yellow Line (3' Line, 9' Space)

Location	STATION		DYL (FT)
SUP	101 + 11	227 + 29	3155
SUP	230 + 91	264 + 18	832
SUP	252 + 5	264 + 56	313
SUP	269 + 07	298 + 28	730

Total Length SYL: 5569 FT

Rt. 105 @ Spring St. Intersection* Total: 608 FT

Say: 6200 FT

*For intersection calculations, please see the McMahon calculation book attached.

874	Street Name Sign	EA

****From Traffic Sign Summary**

	SIGN (EA)
From Traffic Summary Sheet	9
Total:	9.00 EA
Say:	9.00 EA

874.4 **Traffic Sign Removed and Stacked** **EA**

Station	Quantity (EA)
Rt. 105 Intersection*	4
Total	4 EA

*For intersection calculations, please see the McMahon calculation book attached.

903 **3000 PSI, 1.5", 470 Cement Concrete** **CY**

Hydrant	Hydrant Backing Volume
108 + 65	0.30
117 + 60	0.30
127 + 35	0.30
132 + 50	0.30
151 + 50	0.30
157 + 19	0.30
167 + 40	0.30
Total:	2.10 CY
Say:	2.10 CY

983.1 **Riprap** **TON**

Area From Overflow Swale @ STA 225+50:	150.00	SF
Total Area:	16.67	SY
12" Rirap:	0.33	YD
Total Volume of Modified Rockfill:	6	CY
Conversions:	1.3500	TONS/CY
Conversion Total:	**7.50**	TON
Say Modified Rockfill Total:	***10.00***	TON

986 **Modified Rockfill** **TON**

****Volumes from Earthwork Quantity Estimate**

Area:	35532.00	SF
Total Area:	3948.00	SY
12" Modified Rockfill:	0.33	YD
Total Volume of Modified Rockfill:	1316	CY
Conversions:	1.4985	TONS/CY
Conversion Total:	**1972.03**	TON
Say Modified Rockfill Total:	***2030.00***	TON

Project:	Marion Shared-Use Path Phase 1	Date:	October 2023
Location:	Marion, MA	Job Number:	0015M268.10
		Project File No:	607979

100% Route 105 at Spring Street Intersection Calculation Book

Provided by McMahon

Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

Project: Marion Shared-Use Path Phase 1
Location: Marion, MA

Date: October 2023
Job Number: 0015M268.10
Project File No: 607979

697.1	EA	Silt Sack	41
701.1	SY	Cement Concrete Sidewalk	42
701.2	SY	Cement Concrete Pedestrian Curb Ramp	43
702	TON	Hot Mix Asphalt Sidewalk or Driveway	44
751	CY	Loam Borrow	45
765	SY	Seeding	46
804.3	FT	3 Inch Electrical Conduit Type NM – Plastic –(UL)	47
811.31	EA	Pull Box 12 X 12 Inches – SD2.031	48
824.21	LS	Flashing Warning Beacon Type A	49
847.1	HR	Sign SUP (N/Guide) + RTE MKR W/1 BRKWAY Post Assembly -Steel	50
850.41	HR	Roadway Flagger	51
853.1	EA	Portable Breakaway Barricade Type III	52
853.22	EA	Pedestrian Channelizing Device	53
859	UD	Reflectorized Drum	54
859	DAY	Reflectorized Drum with Sequential Flashing Warning Lights	55
866.112	FT	12 Inch Reflectorized White Line (Thermoplastic)	56
867.106	FT	6 Inch Reflectorized Yellow Line (Thermoplastic)	57
874.4	EA	Traffic Sign Removed and Stacked	58

Marion Shared Use Path Phase 1
Front St (Rte 105) at Spring St
Marion, MA

MassDOT Proj. #607979
Designed by: AMB
Checked by: AMS

Date: 09/27/2023
Date: 10/02/2023

ITEM NO.	PART. QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	PART. COST
102.1	80	FT	TREE TRIMMING	$25.00	$2,000.00
102.511*	8.00	EA	TREE PROTECTION - ARMORING & PRUNING	$500.00	$4,000.00
120.	300.00	CY	EARTH EXCAVATION	$60.00	$18,000.00
141.1	40	CY	TEST PIT FOR EXPLORATION	$140.00	$5,600.00
150.	130	CY	ORDINARY BORROW	$50.00	$6,500.00
151.	120	CY	GRAVEL BORROW	$70.00	$8,400.00
156.	10	TON	CRUSHED STONE	$70.00	$700.00
170.	600	SY	FINE GRADING AND COMPACTING - SUBGRADE AREA	$15.00	$9,000.00
201.	4	EA	CATCH BASIN	$8,000.00	$32,000.00
220.	3	EA	DRAINAGE STRUCTURE ADJUSTED	$800.00	$2,400.00
220.3	2	EA	DRAINAGE STRUCTURE CHANGE IN TYPE	$1,500.00	$3,000.00
220.7	1	EA	SANITARY STRUCTURE ADJUSTED	$800.00	$800.00
221.	2	EA	FRAME AND COVER	$1,300.00	$2,600.00
222.3	5	EA	FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD (EA)	$1,300.00	$6,500.00
223.2	4	EA	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED	$160.00	$640.00
227.3	5	CY	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT	$400.00	$2,000.00
227.31	25	FT	REMOVAL OF DRAINAGE PIPE SEDIMENT	$20.00	$500.00
244.12	40	FT	12 INCH REINFORCED CONCRETE PIPE CLASS V	$200.00	$8,000.00
358.	2	EA	GATE BOX ADJUSTED	$300.00	$600.00
402.	20	CY	DENSE GRADED CRUSHED STONE FOR SUB-BASE	$100.00	$2,000.00
415.1	900	SY	PAVEMENT STANDARD MILLING	$40.00	$36,000.00
440.	450	LB	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL	$1.00	$450.00
443.	1	MGL	WATER FOR ROADWAY DUST CONTROL	$100.00	$100.00
450.23	100	TON	SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)	$225.00	$22,500.00
450.31	20	TON	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)	$210.00	$4,200.00
450.41	30	TON	SUPERPAVE BASE COURSE - 25.0 (SBC - 25.0)	$200.00	$6,000.00
451.	5	TON	HMA FOR PATCHING	$325.00	$1,625.00
452.	75	GAL	ASPHALT EMULSION FOR TACK COAT	$15.00	$1,125.00
453.	750	FT	HMA JOINT ADHESIVE	$3.00	$2,250.00
470.	10	TON	HOT MIX ASPHALT BERM	$450.00	$4,500.00
472.	20	TON	TEMPORARY ASPHALT PATCHING	$275.00	$5,500.00
506.	400	FT	GRANITE CURB TYPE VB - STRAIGHT	$80.00	$32,000.00
506.1	110	FT	GRANITE CURB TYPE VB - CURVED	$85.00	$9,350.00
509.	40	FT	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT	$85.00	$3,400.00
509.1	10	FT	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED	$100.00	$1,000.00
515.	1	EA	GRANITE CURB INLET - CURVED	$200.00	$200.00
580.	110	FT	CURB REMOVED AND RESET	$50.00	$5,500.00
594.	230	FT	CURB REMOVED AND DISCARDED	$10.00	$2,300.00
697.1*	4	EA	SILT SACK	$250.00	$1,000.00
701.1	100	SY	CEMENT CONCRETE SIDEWALK AT DRIVEWAY	$125.00	$12,500.00
701.2	60	SY	CEMENT CONCRETE PEDESTRIAN CURB RAMP	$150.00	$9,000.00
702.	80	TON	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY	$300.00	$24,000.00
751.	50	CY	LOAM BORROW	$80.00	$4,000.00
765.	290	SY	SEEDING	$4.00	$1,160.00
804.3	70	FT	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)	$75.00	$5,250.00
811.31	2	EA	PULL BOX 12 X 12 INCHES - SD2.031	$1,300.00	$2,600.00
824.21*	1	LS	RECTANGULAR RAPID FLASHING BEACON	$30,000.00	$30,000.00
832.	40	SF	WARNING-REGULATORY AND ROUTE MARKER - ALUM. PANEL (TYPE A)	$20.00	$800.00
847.1	4	EA	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL	$250.00	$1,000.00
850.41	355	HR	ROADWAY FLAGGER	$65.00	$23,075.00
852.	245	SF	SAFETY SIGNING FOR TRAFFIC MANAGEMENT	$25.00	$6,125.00
853.1	5	EA	PORTABLE BREAKAWAY BARRICADE TYPE III	$160.00	$800.00
853.22	50	EA	PEDESTRIAN CHANNELIZING DEVICE	$140.00	$7,000.00
859.	1,410	UD	REFLECTORIZED DRUM	$0.50	$705.00
859.1*	270	DAY	REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHTS	$1.00	$270.00
866.112	260	FT	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	$8.00	$2,080.00
867.106	610	FT	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)	$2.00	$1,220.00
874.4*	4	EA	TRAFFIC SIGN REMOVED AND STACKED	$75.00	$300.00

Subtotal:	**$386,125.00**
5% Police Allowance:	**$19,306.25**
10% Utility Relocation Contingency:	**$38,612.50**
10% Construction Engineering:	**$38,612.50**
10% Construction Contingency:	**$38,612.50**
Total	**$521,268.75**
SAY	**$530,000.00**

102.1 TREE TRIMMING

80.00 FT

Date:

	From		To		
Street Name	**Station**	**Side**	**Station**	**Side**	**Length (FT)**
Front St	102+25	LT	103+00	LT	73.88
				TOTAL:	**73.88** **FT**

102.1 SAY 80.00 FT

102.511 TREE PROTECTION - ARMORING & PRUNING

8.00 EA

Date:

Station	Side	Quantity	
Projectwide		8	EA
	TOTAL:	**8**	**EA**

102.511 SAY **8** **EA**

120. EARTH EXCAVATION

300.00 CY

Date:

Unclassified Excavation for Roadway Reconstruction - See Appendix Sheet "Earthwork Quantity Sheet"

SUBTOTAL:	**297.00**	**CY**
DEDUCTION FOR BOULDERS - SEE APPENDIX SHEET "EARTHWORK SUMMARY SHEET:	**0.00**	**CY**
TOTAL:	**297.00**	**CY**

120. SAY 300.00 CY

141.1 TEST PIT FOR EXPLORATION

40.00 CY

Date:

Assume 1 5'X5'X5' Test pit at all drainage and traffic signal structures

Number of Test Pits	**7**	**EA**
Area of Test Pit	**25**	**SF**
Depth of Test Pit	**5**	**FT**
TOTAL:	**32.41**	**CY**

141.1 SAY	**40.00**	**CY**

150. ORDINARY BORROW

130.00 CY

Date:

Ordinary Borrow for Roadway Reconstruction - See Appendix Sheet "Earthwork Quantity Sheet"

SUBTOTAL:	**200.00**	**CY**
50% FROM CUT	**100.00**	
15% SWELL:	**30.00**	**CY**
ORDINARY BORROW REQUIRED:	**130.00**	**CY**
TOTAL:	**130.00**	**CY**

150. SAY 130.00 CY

151. GRAVEL BORROW

120.00 CY

Date:

Gravel Borrow for Full Depth Reconstruction - See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL: 24.93 CY

Gravel Borrow for new curb

TOTAL: 9.00 CY

Gravel Borrow for R&R curb

TOTAL: 3.00 CY

Gravel Borrow for Cement Concrete Sidewalks - See Appendix Sheet "Cement Concrete Sidewalk Areas"

TOTAL: 0.00 CY

Gravel Borrow for Cement Concrete Sidewalks at Driveways - See Appendix Sheet "Cement Concrete Sidewalk Areas"

TOTAL: 11.50 CY

Gravel Borrow for Cement Concrete Wheelchair Ramp - See Appendix Sheet "Cement Concrete Sidewalk Areas"

TOTAL: 11.11 CY

Gravel Borrow for Hot Mix Asphalt Walk Surfaces - See Appendix Sheet "Hot Mix Asphalt Walk Areas"

TOTAL: 21.73 CY

Gravel Borrow for Hot Mix Asphalt Driveways - See Appendix Sheet "Hot Mix Asphalt Driveway Areas"

TOTAL: 13.69 CY

Gravel Borrow for Brick Walks - See Appendix Sheet "Brick Walk Areas"

TOTAL: 0.00 CY

SUBTOTAL: 94.96 CY
25% SWELL: 23.75 CY
TOTAL: 118.71 CY

151. SAY 120.00 CY

156. CRUSHED STONE

10.00 TON

Date: 10/02/2023

Crushed Stone for Drainage Manholes - See Appendix Sheet "Drainage Manholes"

SUBTOTAL: 4 TON

Crushed Stone for Catch Basins - See Appendix Sheet "Catch Basins"

SUBTOTAL: 0 TON

Crushed Stone for Drop Inlets - See Appendix Sheet "Drop Inlets"

SUBTOTAL: 0 TON

Crushed Stone for Gutter Inlets - See Appendix Sheet "Gutter Inlets"

SUBTOTAL: 0 TON

Crushed Stone for Drainage Pipes - See Appendix Sheet "Reinforced Concrete Pipes"

SUBTOTAL: 5 TON

TOTAL: 9 TON

156. SAY 10.00 TON

170. FINE GRADING AND COMPACTING - SUBGRADE AREA

600.00 SY

Date: 10/02/2023

Beneath Full Depth Reconstruction Areas - See Appendix Sheet "Roadway Areas - Full Depth"

SUBTOTAL: 112.20 SY

Beneath areas of curb installation

SUBTOTAL: 37.22 SY

Beneath Cement Concrete Sidewalks at Driveway Areas - See Appendix Sheet "Cement Concrete Sidewalk

SUBTOTAL: 51.74 SY

Beneath Cement Concrete Wheelchair Ramp Areas - See Appendix Sheet "Cement Concrete Sidewalk Areas"

SUBTOTAL: 50.00 SY

Beneath Hot Mix Asphalt Walk Surface Areas - See Appendix Sheet "Hot Mix Asphalt Walk Areas"

SUBTOTAL: 260.78 SY

Beneath Hot Mix Asphalt Driveway Areas - See Appendix Sheet "Hot Mix Asphalt Driveway Areas"

SUBTOTAL: 123.17 SY

TOTAL: 597.90 SY

170. SAY 600.00 SY

201. CATCH BASIN

4.00 EA

Date: 10/02/2023

See Appendix Sheet "Catch Basin"

TOTAL: 4 EA

201. SAY 4.00 EA

220. DRAINAGE STRUCTURE ADJUSTED

3.00 EA

Date:
10/02/2
023

For structures requiring 6" or less of elevation change

Street Name	Station	Offset	Side	Type	Quantity	
Front Street	102+30	5	LT	DMH	1	
Front Street	102+46	12	LT	CB	1	
Front Street	100+58	4	LT	CB	1	
				TOTAL:	**3**	**EA**

220. SAY **3.00** **EA**

220.3 DRAINAGE STRUCTURE CHANGE IN TYPE

2.00 EA

Date:
10/02/2023

Street Name	Station	Offset	Side	CB to MH Quantity	MH to CB Quantity	
Spring Street	200+44	8	LT	1		
Front Street	102+64	17	RT	1		
			TOTAL:	**2**	**0**	**EA**

220.3 SAY 2.00 EA

220.7 SANITARY STRUCTURE ADJUSTED

1.00 EA

Date:
10/02/2
023

For structures requiring 6" or less of elevation change

Street Name	Station	Offset	Side	Type	Quantity
Front Street	102+67.0	4	LT	SMH	1

TOTAL: 1 EA

220.7 SAY 1.00 EA

221. FRAME AND COVER

2.00 EA

Date:
10/02/202
3

Frame and Cover for Structure Change in Type - See Item 220.3

SUBTOTAL: 2 EA

TOTAL: 2 EA

221. SAY 2.00 EA

222.3 FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD (EA)

5.00 EA

Date:
10/02/202
3

Frame and Grate for Catch Basins - See Appendix Sheet "Catch Basins"

SUBTOTAL: 4 EA

For existing catch basins with new frame and grate

Street Name	Station	Offset	Side	Quantity
Front Street	102+46		LT	1

SUBTOTAL: 1 EA

TOTAL: 5 EA

222.3 SAY 5.00 EA

223.2 FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED

4.00 EA

Date: 10/02/2023

Street Name	Station	Offset	Side	Type	Quantity	
Front Street	102+15.0		RT	F&G	1	
Front Street	102+46.0		LT	F&G	1	
Spring Street	200+23.0		LT	F&G	1	
Spring Street	200+48.0		LT	F&G	1	
				TOTAL:	**4**	**EA**

223.2 SAY **4.00** **EA**

227.3 REMOVAL OF DRAINAGE STRUCTURE SEDIMENT

5.00 CY

Date: 10/02/2023

*assumes X 4'dia cbs @6' deep

For cleaning of catch basins. Assume standard 4-foot diameter basin

Street Name	Station	Offset	Side	Cleaning Depth	Volume (CY)
Contingency				6	2.8

TOTAL: 2.8 CY

227.3 SAY 5.00 CY

227.31 REMOVAL OF DRAINAGE PIPE SEDIMENT

25.00 FT

Date: 10/02/2023

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Contingency					25

TOTAL: 25 FT

227.31 SAY 25.00 FT

244.12 12 INCH REINFORCED CONCRETE PIPE CLASS V

40.00 FT

Date: 10/02/2023

See Appendix Sheet "Reinforced Concrete Pipes"

TOTAL: 36 FT

244.12 SAY 40.00 FT

358. GATE BOX ADJUSTED

2.00 EA

Date: 10/02/2023

Street Name	Station	Offset	Side	Quantity	
Spring Street	200+67.0	13	RT	1	
Spring Street	200+75.0	10	RT	1	
			TOTAL:	**2**	**EA**

358. SAY 2.00 EA

402. **DENSE GRADED CRUSHED STONE FOR SUB-BASE**

20.00 **CY**

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL: **12.47** **CY**

402. SAY **20.00** **CY**

415.1 PAVEMENT STANDARD MILLING

900.00 SY

Date: 10/02/2023

See Appendix Sheet "Cold Plane and Overlay Areas"

TOTAL: 875.38 SY

415.1 SAY 900.00 SY

440. **CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL**

450.00 **LB**

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL: **448.78** **LB**

440. SAY **450.00** **LB**

443. WATER FOR ROADWAY DUST CONTROL

1.00 MGL

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL: 0.45 MGL

443. SAY 1.00 MGL

450.23 SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)

100.00 TON

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

SUBTOTAL: 11 TON

See Appendix Sheet "Cold Plane and Overlay Areas"

SUBTOTAL: 86 TON

TOTAL: 97 TON

450.23 SAY 100.00 TON

450.31 SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)

20.00 TON

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL: 14.14 TON

450.31 SAY 20.00 TON

450.41 SUPERPAVE BASE COURSE - 25.0 (SBC - 25.0)

30.00 TON

Date: 10/02/2023

See Appendix Sheet "Roadway Areas - Full Depth"

TOTAL:	**21.99**	**TON**
450.41 SAY	**30.00**	**TON**

451. HMA FOR PATCHING

5.00 TON

Date: 10/02/2023

See Appendix Sheet "Cold Plane and Overlay Areas"

TOTAL:	**875.38**	**SY**
SUBTOTAL:	**875.38**	**SY**
ASSUME 5% OF AREA REQUIRED PATCHING AT 2" DEPTH	**5.00%**	
TOTAL:	**4.91**	**TON**

See Appendix Sheet "Reinforced Concrete Pipes" - Permanent Trench Repair - New RCP

TOTAL:	**0**	**SY**
PATCHING DEPTH (From Detail & Typical Pavement Section)	**6.00**	**IN**
TOTAL:	**0**	**TON**

See Appendix Sheet "Reinforced Concrete Pipes" - Permanent Trench Repair - Removal of exist RCP

TOTAL:	**0**	**SY**
PATCHING DEPTH (From Detail & Typical Pavement Section)	**6.00**	**IN**
TOTAL:	**0**	**TON**

451. SAY	**5.00**	**TON**

452. ASPHALT EMULSION FOR TACK COAT

75.00 GAL

Date: 10/02/2023

See Appendix Sheet "Cold Plane and Overlay Areas"

SUBTOTAL: 61.28 GAL

See Appendix Sheet "Roadway Areas - Full Depth"

SUBTOTAL: 11.22 GAL

TOTAL: 72.50 GAL

452. SAY 75.00 GAL

453. HMA JOINT ADHESIVE

750.00 FT

Date:
10/02/2023

Front St	**496.00**	**FT**
Spring St	**238.00**	**FT**
TOTAL:	**734.00**	**FT**
453. SAY	**750.00**	**FT**

470. HOT MIX ASPHALT BERM

10.00 TON

Date:
10/02/2023

Street Name	From Station	Side	To Station	Side	Length (FT)	Avg. Width (IN)	Avg. Depth (IN)	Weight (TON)
Front St	100+52.0	LT	102+12.0	LT	160.0	24	2.17	4.31
Front St	102+25.0	LT	103+00.0	LT	75.0	24	2.17	2.02
Spring St	200+19.0	LT	200+76.0	LT	57.0	24	2.17	1.54
							TOTAL:	**7.88** **TON**

470. SAY 10.00 TON

472. TEMPORARY ASPHALT PATCHING

20.00 TON

Date:

For permanent and temporary patching for pipes, driveways, test pits and temporary wheelchair ramps

H.M.A. for Drainage Pipes - See Appendix Sheet "Reinforced Concrete Pipes"

SUBTOTAL:	**3**	**TON**

H.M.A. for Drainage Pipe Removal - See Appendix Sheet "Reinforced Concrete Pipes"

SUBTOTAL:	**0**	**TON**

H.M.A. for Driveway Patch - See Appendix Sheet "Hot Mix Asphalt Driveway Areas"

DRIVEWAY LENGTH:	**58.00**	**FT**
ASSUME 5 FOOT WIDTH:	**5**	**FT**
ASSUME 3 INCH DEPTH:	**3**	**IN**
SUBTOTAL:	**5.413333**	**TON**

H.M.A. for Delaminated Areas - See HMA Driveways and Walkways

SUPERPAVE & HMA TONNAGE:	**0.00**	**TON**
ASSUME 2% TONNAGE:	**0**	**TON**
SUBTOTAL:	**0**	**TON**

H.M.A. for Signal Conduit Crossings - See Electrical Conduit Type NM - Plastic - (UL)

CONDUIT LENGTH	**67.00**	**FT**
WIDTH	**1.5**	**FT**
DEPTH	**2**	**IN**
SUBTOTAL:	**1.25**	**TON**

H.M.A. for Test Pit Patch - See Item 141.1

NUMBER OF TEST PITS:	**7**	**EA**
TEST PIT AREA:	**25**	**SF**
ASSUME 3 INCH DEPTH:	**3**	**IN**
SUBTOTAL:	**3.27**	**TON**

H.M.A. for Temporary Wheelchair Ramps

ASSUMED NUMBER OF RAMPS:	**2**	**EA**
ASSUME 10.50 SY PER RAMP AT 3 INCHES	**10.5**	**SY**
SUBTOTAL:	**3.53**	**TON**

H.M.A. for Steel Plates (3' x 3')

ASSUMED NUMBER OF PLATES:	**2**	**EA**
H.M.A PER PLATE:	**0.17**	**TON**
SUBTOTAL:	**0.34**	**TON**

H.M.A. for Hand Placement Around Utility Structures

ASSUMED NUMBER OF STRUCTURES:	**0**	**EA**
H.M.A PER STRUCTURE:	**0.2**	**TON**
SUBTOTAL:	**0**	**TON**

472. TEMPORARY ASPHALT PATCHING

20.00 TON

TOTAL: 17 TON

472. SAY 20.00 TON

506. GRANITE CURB TYPE VB - STRAIGHT

400.00 FT

Date:
10/02/2023

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Front St	100+53.0	RT	101+20.0	RT	67.0
Front St	100+53.0	RT	101+20.0	RT	67.0
Front St	101+20.0	RT	101+25.0	RT	35.0
Front St	101+60.0	RT	101+69.0	RT	25.0
Front St	101+77.0	RT	102+07.0	RT	30.0
Front St	102+25.0	RT	102+35.0	RT	13.0
Front St	102+84.0	RT	103+00.0	RT	16.0
Spring St	200+49.0	RT	200+79.0	RT	45.0
Spring St	200+66.0	RT	201+07.0	RT	42.0

SUBTOTAL:	**340**	**FT**
ASSUME 50% BREAKAGE OF R&R:	**54.5**	**FT**
TOTAL:	**394.5**	**FT**

506. SAY 400.00 FT

506.1 GRANITE CURB TYPE VB - CURVED

110.00 FT

Date:
10/02/2023

For curb radii 100 feet or less

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Front St	101+20.0	RT	101+25.0	RT	14.0
Front St	102+25.0	RT	102+35.0	RT	11.0
Spring St	200+19.0	RT	200+66.0	RT	47.0
Spring St	200+29.0	RT	200+49.0	RT	20.0
Spring St	201+06.0	RT	201+18.0	RT	18.0

TOTAL: 110 FT

506.1 SAY 110.00 FT

509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT

40.00 FT

Date:
10/02/2023

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Front Street	100+20.0	RT	100+27.0	RT	6.5
Front Street	101+70.0	RT	101+77.0	RT	6.5
Front Street	101+55.0	RT	101+60.0	RT	6.5
Front Street	101+65.0	RT	101+70.0	RT	6.5
Front Street	102+07.0	RT	102+14.0	RT	6.5
Front Street	102+77.0	RT	102+84.0	RT	7.0
				TOTAL:	**39.5 FT**

509. SAY 40.00 FT

509.1 GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED

10.00 FT

Date:
10/02/2023

For curb radii 100 feet or less

Street Name	From Station	Side	To Station	Side	Length (FT)
Front St	102+76	RT	102+80	RT	3.0
Spring St	200+18.0	RT	200+25.0	RT	6.5

TOTAL: 9.5 FT

509.1 SAY 10.00 FT

515. GRANITE CURB INLET - CURVED

1.00 EA

Date:
10/02/202
3

Curb Inlet for Catch Basins - See Appendix Sheet "Catch Basins"

SUBTOTAL: 1 EA

TOTAL: 1 EA

515. SAY 1.00 EA

580. CURB REMOVED AND RESET

110.00 FT

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Front St	100+53.0	RT	101+20.0	RT	67
Spring St	200+66.0	LT	201+07.0	LT	42
				TOTAL:	**109** **FT**

580. SAY 110.00 FT

594. CURB REMOVED AND DISCARDED

230.00 FT

Street Name	From Station	From Side	To Station	To Side	Length (FT)
Front St @ Spring St (Island)	102+00	RT	102+40	RT	98
Front St @ Spring St	101+52	RT	200+66	RT	125
			TOTAL:		**223** **FT**

594. SAY 230.00 FT

697.1 SILT SACK

4.00 EA

Date:
10/02/202
3

Silt Sack for Catch Basins - See Appendix Sheet "Catch Basins"

SUBTOTAL:	**4**	**EA**
TOTAL:	**4**	**EA**
697.1 SAY	**4.00**	**EA**

701.1 CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

60.00 SY

Date: 10/02/2023

See Appendix Sheet "Cement Concrete Sidewalk Areas"

TOTAL: 51.74 SY

701.1 SAY 60.00 SY

701.2 CEMENT CONCRETE PEDESTRIAN CURB RAMP

60.00 SY

Date: 10/02/2023

See Appendix Sheet "Cement Concrete Sidewalk Areas"

TOTAL: 50.00 SY

701.2 SAY 60.00 SY

702. HOT MIX ASPHALT SIDEWALK OR DRIVEWAY

80.00 TON

Date: 10/02/2023

See Appendix Sheet "HMA Driveway Areas"

TOTAL: 27.59 TON

See Appendix Sheet "HMA Sidewalk Areas"

TOTAL: 43.81 TON

702. SAY 80.00 TON

751. LOAM BORROW

50.00 CY

Date:
10/02/202
3

See Appendix Sheet "Loamed Areas"

SUBTOTAL:	**32.20**	**CY**
25% SWELL:	**8.05**	**CY**
TOTAL:	**40.25**	**CY**

751. SAY **50.00** **CY**

765. SEEDING

290.00 SY

Date: 10/02/2023

See Appendix Sheet "Loamed Areas"

TOTAL: 288.68 SY

765. SAY 290.00 SY

804.3 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)

70.00 FT

Date:
10/02/2023

Street Name	From Station	Side	To Station	Side	Length (FT)
Front Street	102+02	LT	102+26	RT	67

TOTAL: 67 FT

804.3 SAY 70.00 FT

811.31 PULL BOX 12 X 12 INCHES - SD2.031

2.00 EA

Date: 10/02/2023

Street Name	Station	Offset	Side	Quantity
Front Street	102+05	16	RT	1
Front Street	102+05	17	LT	1

TOTAL: 2 EA

811.31 SAY 2.00 EA

824.21 RECTANGULAR RAPID FLASHING BEACON

1.00 LS

Date:
10/02/202
3

Project wide - rectangular rapid flashing beacon (RRFB) system

824.21 SAY 1.00 LS

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

4.00 EA

Date: 1(

	Quantity	
Sign Summary	**4**	**EA**
SUBTOTAL:	**4**	**EA**
TOTAL:	**4**	**EA**
847.1 SAY	**4.00**	**EA**

850.41 ROADWAY FLAGGER

355.00 HR

Date: 10/02/2023

Estimated Actual Construction Period (From Appendix Sheet "General Project Information")	**4**	**MO**
Average Working Days Per Month	**22.00**	**UD**
Hours per Day	**8**	**HR**
Assume Flaggers	**2**	**EA**
Assume percentage of time needed	**25%**	
TOTAL:	**352.00**	**HR**

850.41 SAY **355.00** **HR**

853.1 PORTABLE BREAKAWAY BARRICADE TYPE III

5.00 EA

Date: 10

Street Name	TMP Stage	Quantity	
Front Street @ Spring Street	1	3	
SUBTOTAL:		**3**	**EA**
UNASSIGNED:		**0**	**EA**
TOTAL:		**3**	**EA**
853.1 SAY		**5.00**	**EA**

853.22 PEDESTRIAN CHANNELIZING DEVICE

50.00 EA

Date: 1(

Street Name	Quantity
Front Street @ Spring Street	50

SUBTOTAL:	**50**	**EA**
UNASSIGNED:	**0**	**EA**
TOTAL:	**50**	**EA**

853.22 SAY	**50.00**	**EA**

859. REFLECTORIZED DRUM

1410.00 UD

Date: 10/02/2023

Estimated Actual Construction Period (From Appendix Sheet "General Project Information")	**4**	**MO**
Average Days Per Month	**22.00**	**UD**
Assume 1 Drum Per 20 Feet For Length of Project	**16**	**EA**
TOTAL:	**1408.00**	**UD**

859. SAY 1410.00 UD

859.1 REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHTS

270.00 DAY

Date: 10/02/2023

Estimated Actual Construction Period (From Appendix Sheet "General Project Information")	**4**	**MO**
Average Days Per Month	**22.00**	**UD**
Assume 1 unit (10 drums) per approach (3) per day	**3**	**EA**
TOTAL:	**264.00**	**DAY**

859.1 SAY 270.00 DAY

866.112 12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)

260.00 FT

Date:
10/02/2023

Street Name	From Station	Side	To Station	Side	Length (FT)	
Front Street CW	102+19	RT	102+19	RT	108	
Spring Street CW	200+13	RT	200+12	LT	130	
Spring Street SL	200+24	RT	200+24	LT	14	
				TOTAL:	**252**	**FT**

866.112 SAY 260.00 FT

867.106 6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)

610.00 FT

Date:
10/02/2023

Street Name	From Station	Side	To Station	Side	Length (FT)
Front Street	100+53.0		102+12.0		318.0
Front Street	102+25.0		102+43.0		36.0
Front Street	102+68.0		103+00.0		64.0
Spring Street	200+24.0		201+19.0		190.0
				TOTAL:	**608 FT**

867.106 SAY 610.00 FT

874.4 TRAFFIC SIGN REMOVED AND STACKED

4.00 EA

Date: 1(

Street Name	Quantity
Front Street @ Spring Street	4

SUBTOTAL:	**4**	**EA**
TOTAL:	**4**	**EA**
874.4 SAY	**4.00**	**EA**

APPENDIX

	316.00	FT
Duration of Construction	4	MO
Number of Winter periods during construction:	0	
Estimated Actual Construction Period:	4	MO

Street Name	Station	Offset	Side	Curb Inlet	Grate Type	Sump Depth (FT)	Top of Frame	Invert Out
Front St	102+15.0		RT	None	Cascade	3	28.60	26.54
Spring St	200+23.0		LT	None	Cascade	3	28.57	26.10
Spring St	200+48.0		RT	Curved	Cascade	3	28.53	26.44
Spring St	200+62.0		LT	None	Cascade	3	28.37	24.37

Street Name	Structure Depth (FT)	Excavation (CY)	Rock Excavation (%)	Catch Basin Quantity	Frame & Grate Bar Quantity
Front St	6.5	7.9	0%	1.0	0
Spring St	6.5	7.9	0%	1.0	0
Spring St	6.5	7.9	0%	1.0	0
Spring St	6.5	7.9	0%	1.0	0
			TOTAL:	**4**	**0**

Street Name	Frame & Grate Cascade Quantity	Class B Rock Exc. (CY)	Crushed Stone (CY)	Straight Curb Inlet Quantity	Curved Curb Inlet Quantity
Front St	1	0.0	0.4	0	0
Spring St	1	0.0	0.4	0	0
Spring St	1	0.0	0.4	0	1
Spring St	1	0.0	0.4	0	0
TOTAL:	**4**	**0**	**2**	**0**	**1**

CEMENT CONCRETE SIDEWALK AREAS

Date:
10/02/2023

A. Cement Concrete Sidewalk

Street Name	Station Begin	Station End	Side	Cement Concrete Sidewalk Area (SF)	Cement Concrete Sidewalk Area (SY)	Gravel Borrow Subbase Depth (IN)	Gravel Borrow Subbase Volume (CY)
					0.00		0.00
					0.00		0.00
					0.00		0.00
			TOTAL:		**0.00**		**0.00**

B. Cement Concrete Sidewalk at Driveway

Street Name	Station Begin	Station End	Side	Cement Concrete Sidewalk at Area (SF)	Cement Concrete Sidewalk at Area (SY)	Gravel Borrow Subbase Depth (IN)	Gravel Borrow Subbase Volume (CY)
Front St	101+20.0	101+75.0	RT	465.69	51.74	8	11.50
					0.00		0.00
					0.00		0.00
			TOTAL:		**51.74**		**11.50**

C. Cement Concrete Wheelchair Ramp

Street Name	Station Begin	Station End	Side	Cement Concrete Wheelchair Ramp Area (SF)	Cement Concrete Wheelchair Ramp Area (SY)	Gravel Borrow Subbase Depth (IN)	Gravel Borrow Subbase Volume (CY)
Front St	102+12.0	102+25.0	LT	126.00	14.00	8	3.11
Front St	102+12.0	102+25.0	RT	201.00	22.33	8	4.96
Front St	102+26.0	102+35.0	RT	50.00	5.56	8	1.23
Front St	102+71.0	102+88.0	RT	73.03	8.11	8	1.80
			TOTAL:		**50.00**		**11.11**

COLD PLANE AND OVERLAY AREAS

Date: 10/02/2023

Street Name	Station Begin	Station End	Area (SF)	Area (SY)	Type of Mill	Milling Area (SY)	Micromilling Area (SY)
Front St	100+52	102+03	4032.87	448.10	Pavement Millin	448.10	
Front St	102+06	103+00	1900.86	211.21	Pavement Millin	211.21	
Spring St	200+10.0	200+45	669.00	74.33	Pavement Millin	74.33	
Spring St	200+50	201+19	1275.65	141.74	Pavement Millin	141.74	
		TOTAL:	**7878.38**	**875.38**		**875.38**	**0.00**

Street Name	Overlay	Depth (IN)	Weight (TON)	App. Rate (GAL/SY)	Tack Coat Volume (GAL)
Front St	Superpave Surface Course 12.5	1.75	43.91	0.07	31.37
Front St	Superpave Surface Course 12.5	1.75	20.70	0.07	14.78
Spring St	Superpave Surface Course 12.5	1.75	7.28	0.07	5.20
Spring St	Superpave Surface Course 12.5	1.75	13.89	0.07	9.92
TOTAL:			**85.79**		**61.28**

DRAINAGE MANHOLES

Date: 10/02/ 2023

Street Name	Station	Offset	Side	Top of Frame	Invert Out	Pipe Invert Out Size (IN)	Structure Depth (FT)	Excavation (CY)	Rock Excavation (%)
Front St	102+13.0		RT	28.85	26.5	12	2.4	3.6	0%
Front St	102+30.0		LT	28.7	21.62	12	7.1	8.5	0%
Front St	102+64.0		RT	28.64	25.32	12	3.4	4.7	0%
Spring St	200+44.0		LT	28.49	26.02	12	2.5	3.7	0%

Street Name	Manhole Quantity	Manhole (9 To 14 Foot Depth) Quantity	Manhole (14 To 18 Foot Depth) Quantity	Manhole (18 Foot and Over) Quantity
Front St	1			
Front St	1			
Front St	1			
Spring St	1			
TOTAL:	**4**	**0**	**0**	**0**

Street Name	Special Manhole Quantity	Frame & Cover Quantity	Class B Rock Exc. (CY)	Crushed Stone (TON)
Front St		1	0.0	0.8
Front St		1	0.0	0.8
Front St		1	0.0	0.8
Spring St		1	0.0	0.8
TOTAL:	**0**	**4**	**0**	**4**

EARTHWORK QUANTITY SHEET

CUT Date: 10/02/2023

Area of Roadway Removed

Street Name	Begin	End	Side	Area (SF)	Depth (FT)	Volume (CY)
Front St & Spring St	101+57	201+18	RT	3171	1.17	137.41

Existing Off-Road Seeded Area Removed

Street Name	Begin	End	Side	Area (SF)	Length (FT)	Volume (CY)
Spring St	200+22	201+18	LT	4.73	104	18.22
Front St (Rte 105)	100+53	101+94	RT	1.34	141	7.00
Front St (Rte 105)	101+94	103+00	LT	1.84	106	7.22
Front St (Rte 105)	101+94	103+00	RT	8.83	106	34.67
Spring St	200+22	202+18	RT	7.51	196	54.52

Full-Depth Roadway Reconstruction

Street Name	Begin	End	Side	Area (SF)	Depth (FT)	Volume (CY)
Refer to "Roadway Areas - Full Depth"				1010	1	37.40

Total (CY) 297

FILL

Loam and Seed Areas

Street Name	Begin	End	Side	Area (SF)	Depth (FT)	Volume (CY)
Refer to "Loam and Seed Areas"				2598.11	0.83	79.87

Cement Concrete Sidewalk Areas

Street Name	Begin	End	Side	Area (SF)	Depth (FT)	Volume (CY)
Refer to "Cement Concrete Sidewalk Areas"				0.00	1	0.00
Refer to "Cement Concrete Sidewalk Areas"				450.03	1	16.67

Total (CY) 97

Grand Total Cut (CY): 297 **Grand Total Fill (CY): 97**

HOT MIX ASPHALT DRIVEWAY AREAS

Date:
10/02/2023

	Station			HMA Sidewalk		Gravel Borrow Subbase	
Street Name	**Begin**	**End**	**Side**	**Area (SF)**	**Area (SY)**	**Depth (IN)**	**Volume (CY)**
Front St	101+20.0	101+75.0	RT	1108.56	123.17	8	27.37
			TOTAL:		**123.17**		**27.37**
				Depth	**4**	**IN**	
				Weight	**27.59**	**TON**	

HOT MIX ASPHALT SIDEWALK AREAS

Date:
10/02/2023

	Station			HMA Sidewalk		Gravel Borrow Subbase	
Street Name	**Begin**	**End**	**Side**	**Area (SF)**	**Area (SY)**	**Depth (IN)**	**Volume (CY)**
Front St	100+54	101+20.0	RT	397.56	44.17	8	9.82
Front St	101+75.0	102+10.0	RT	342.45	38.05	8	8.46
Front St	102+12.0	102+25.0	LT	59.40	6.60	8	1.47
Front St	102+88.0	103+00.0	RT	57.57	6.40	8	1.42
Spring St	200+23.0	201+18.0	RT	1490.07	165.56	8	36.79
			TOTAL:		**260.78**		**57.95**
				Depth	**3**	**IN**	
				Weight	**43.81**	**TON**	

LOAMED AREAS

Date: 10/02/2023

Street Name	Station Begin	Station End	Side	Seeding Area (SF)	Seeding Area (SY)	Sodding Area (SF)	Sodding Area (SY)	Depth of Loam (IN)	Volume (CY)
Front St	101+19.0	101+27.0	RT	141.90	15.77	0	0.00	4	1.75
Front St	101+70	101+79.0	RT	85.36	9.48	0	0.00	4	1.05
Front St & Spring St	101+79.0	200+85.0	RT	1285.25	142.81	1	0.11	4	15.88
Front St	101+95.0	102+12.0	LT	205.44	22.83	2	0.22	4	2.56
Front St	102+25.0	103+00.0	LT	652.15	72.46	3	0.33	4	8.09
Spring St	200+17.0	200+77.0	LT	192.97	21.44	4	0.44	4	2.43
Spring St	200+96.0	201+12.0	RT	35.04	3.89	0	0.00	4	0.43
			TOTAL:		**288.68**		**1.11**		**32.20**

REINFORCED CONCRETE PIPES

Date:
10/02/20

Note - HMA patch quantity includes both permaner 23

New Drainage Pipes

Street Name	From Station	Side	To Station	Side	Length (FT)	Size (IN)	Full Depth or CP&O	Upstream Ground Elevation	Upstream Invert	Down-stream Ground Elevation	Down-stream Invert	Roadway Exc. Depth (FT)	Avg. Depth (FT)	Street Name	Rock Exc. (%)	12" R.C.P.	15" R.C.P.	18" R.C.P.	24" R.C.P.	30" R.C.P.	36" R.C.P.	42" R.C.P.	48" R.C.P.	Class B Trench Exc. (CY)	Class B Rock Exc. (CY)	Temp HMA (TON)	HMA Repair (SY)	CDF (CY)	Crushed Stone (TON)
Front St	102+15	RT	102+13	RT	4	12	Full Depth	28.60	26.54	28.85	26.50	1	1.21	Front St	0%	4									0.0	0.3	0.0	0.0	0.6
Front St	200+23	LT	102+64	RT	8	12	Full Depth	28.57	26.10	28.64	26.02	1	1.55	Front St	0%	8									0.0	0.6	0.0	0.0	1.1
Spring St	200+48	RT	200+44	LT	19	12	Full Depth	28.53	26.44	28.49	26.28	1	1.15	Spring St	0%	19									0.0	1.5	0.0	0.0	2.6
Spring St	200+62	LT	200+44	LT	5	12	Full Depth	28.37	24.37	28.49	26.28	1	2.11	Spring St	0%	5									0.0	0.4	0.0	0.0	0.7
															TOTAL:	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**5**

Removal of Drainage Pipes

Street Name	From Station	Side	To Station	Side	Length (FT)	Size (IN)	Full Depth or CP&O	Upstream Ground Elevation	Upstream Invert	Down-stream Ground Elevation	Down-stream Invert	Roadway Exc. Depth (FT)	Avg. Depth (FT)	Street Name	Rock Exc. (%)	Class A Trench Exc. (CY)	Class B Rock Exc. (CY)	Temp HMA (TON)	HMA Repair (SY)	CDF (CY)
															TOTAL:	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

ROADWAY AREAS - FULL DEPTH

Notes: Assume 4 Applications of Calcium Chloride and Water for Dust Control
Assume 2 Applications of Tack Coat

	From	To		Full Depth Area		Superpave Surface Course			Superpave Intermediate Course		
Street Name	Station	Station	Side	Area (SF)	Area (SY)	Type	Depth (IN)	Weight (TON)	Type	Depth (IN)	Weight (TON)
Spring St	200+00	200+76	LT	1009.76	112.20	12.50	1.75	11.00	12.5	2.25	14.14
TOTAL:				**1010**	**112.20**			**11.00**			**14.14**

	Superpave Base Course			Cement Concrete Base Course		Dense Graded Crush Stone		Gravel Borrow Subbase	
Street Name	Type	Depth (IN)	Weight (TON)	Depth (IN)	Area (SY)	Depth (IN)	Volume (CY)	Depth (IN)	Volume (CY)
Spring St	25.0	3.5	21.99	0	0.00	4	12.47	8	24.93
TOTAL:			**21.99**		**0.00**		**12.47**		**24.93**

	Calcium Chloride for Roadway Dust Control		Water for Roadway Dust Control		Tack Coat	
Street Name	App. Rate (LB/SY)	Weight (LB)	App. Rate (GAL/SY)	Volume (MGL)	App. Rate (GAL/SY)	Volume (GAL)
Spring St	1	448.78	1	0.45	0.05	11.22
TOTAL:		**448.78**		**0.45**		**11.22**