Steps and Challenges of Getting Rail Trails built at the Community Level

Joe Geller
Chairman, Topsfield Rail Trail Committee

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May 4, 2013 Mass Trail Conference

TOPSFIELD
Linear Common

A place for people to meet and greet one another as they enjoy their outdoor recreation

Topsfield Linear Common

- After 20 years 2 miles of stone dust trails completed on an abandoned MBTA rail corridor **at no cost to the Town.** There are 2 miles to go on the National Grid utility corridor. This is part of the Border-to-Boston and the East Coast Greenway (Florida Keys – Maine)

The **East Coast Greenway** is a developing trail system, spanning nearly 3,000 miles as it winds its way between Canada and Key West, linking all the major cities of the eastern seaboard. Over 25 percent of the route is already on safe, traffic-free paths.

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Recreational trail committee structures

- Official town committee advantages & disadvantages
  - You are speaking officially for the municipality.
  - Have public purchasing, insurance and contract personnel available
  - Prevailing wage requirement
- Non-profit trail advocacy groups
  - Can donate materials and services to the town without going through municipal purchasing
- Funding issues – Non-profits may have more accessibility to non-profit agencies but municipalities also may have access which is restricted to government agencies. Be careful of earmarks!
- **Optimum arrangement is for official and non-profit committees to work together**

- Topsfield ROWs- ½ MBTA and ½ National Grid
- Could not sign lease until new legislation passed such as
  - Ch. 21E (Oil and hazardous Material Release Prevention and Response
  - DEP BMP (Best Management Practices)
  - 161C7, Ch 21 17-C public use of land legislation
- MBTA – signed 99 year lease through Transit Realty.
- National Grid – just now offering a license with hurdles. Lease may be in the future but cannot use state/federal funds without 99 year lease or fee simple ownership

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Accessibility

- ❖Is accessibility necessary? For DCR and federal grants, yes.
- ❖Bradley Palmer State Park accessible trail (stone dust surface)
- ❖Is stone dust considered an accessible surface?

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Regulations:

- ❖Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas
- ❖Final Report September 30, 1999 - http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm as described in Section 16.2.1, two primary measurements of trail accessibility are firmness (i.e., does a surface give way under foot?) and stability (i.e., does a surface shift from side-to-side or when turning?). Firmness and stability are measured using a penetrometer, which measures firmness using penetration depth and stability using the rotation of the device. There are guidelines in place regarding trail accessibility, described as follows:

ANSI/RESNA Standards for Firmness & Stability			
	Very Firm/Stable	Moderately Firm/Stable	Not Firm/Stable
Firmness	0.3 inch or less	>0.3 & <0.5 inch	>0.5 inch
Stability	0.5 inch or less	>0.5 & <1.0 inch	>1.0 inch
ADA Accessible?	Yes	Yes, on trails ½ mile or shorter	No

Source: United States Access Board, "Access Today." Fall 2001.

An accessible trail must have room for passing every 1000 feet, a 1:20 (5%) cross-slope maximum, and surface openings that do not permit passage of a ½ inch diameter sphere. Thus, non-compacted surfaces such as gravel are generally not accessible. Also, shared-use paths that also allow bicycles and equestrians should be designed in accordance with AASHTO guidelines.

Topsfield's rail trail has a fully compacted stone dust surface which is water impervious. There is much less the 0.3" compression from skinny road bike tires and no way a ½" sphere can penetrate the surface.

2006 Mass Highway Manual:

- Both the Massachusetts Architectural Access Board and the ADAAG require that accessible elements be maintained. For example, if stone dust is used as an accessible surface and rain washes a section of it out, the AAB and ADAAG require maintenance to repair the section to meet their minimum accessible design standards.

ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD

- Published in the Federal Register on February 13, 2013.
  36 CFR Part 1190 [Docket No. 2013-02]
  RIN 3014-AA26 Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths – Has no specification on trail surfaces!

Addressing potential soil contamination issues

- ❖Handled clearly and definitely by the Dept. of Environmental Protection Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails

Public notifications and Abutter Relations (maybe including encroachments)

- ❖Not in My Backyard Issues- objections raised and committee responses
- ❖Settled by Town vote – non-binding referendum – 3/2 in favor. The end of opposition.
- ❖After the trail opened some “NIMBYs” who walk the trail everyday say “Well, it is no so bad”!
- ❖Public forums, public meeting law- open meetings, agendas and minutes and newspaper articles

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Environmental Permitting

- Depends upon what the Conservation Commission requires;
  - NoI – Notice of Intent
  - RDA – Request for Determination of Applicability
  - RDNI – Request for Determination of Negative Impact
  - Administrator approval

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Funding

- Funding qualifications
- TIP, CEMAQ, DCR, grants from other organizations.
- Matching grants

Design considerations: Road Surfaces

- ❖Asphalt – much higher initial cost to install, not affected too much by water runoff, lasts long time but expensive to repair. Not good for horses. Road bikes too fast.
- ❖Stone dust
  - ❖Underlayment preparation is key – geo-textile fabric in wet areas
  - ❖Stone dust – if carefully chosen and installed properly it can last a long time. Easy and low cost to repair. Self healing (National Grid tread damage)
  - ❖Water runoff is a key issue for erosion
  - ❖Selection of stone dust
  - ❖Proper compaction – 90% Proctor density & highly moisture condition dependant

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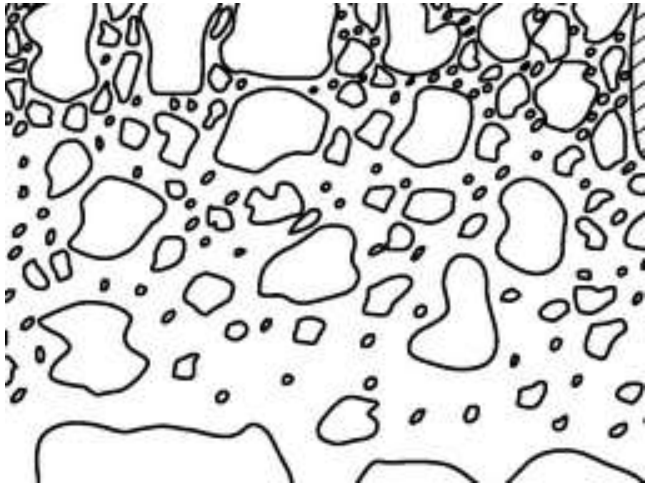
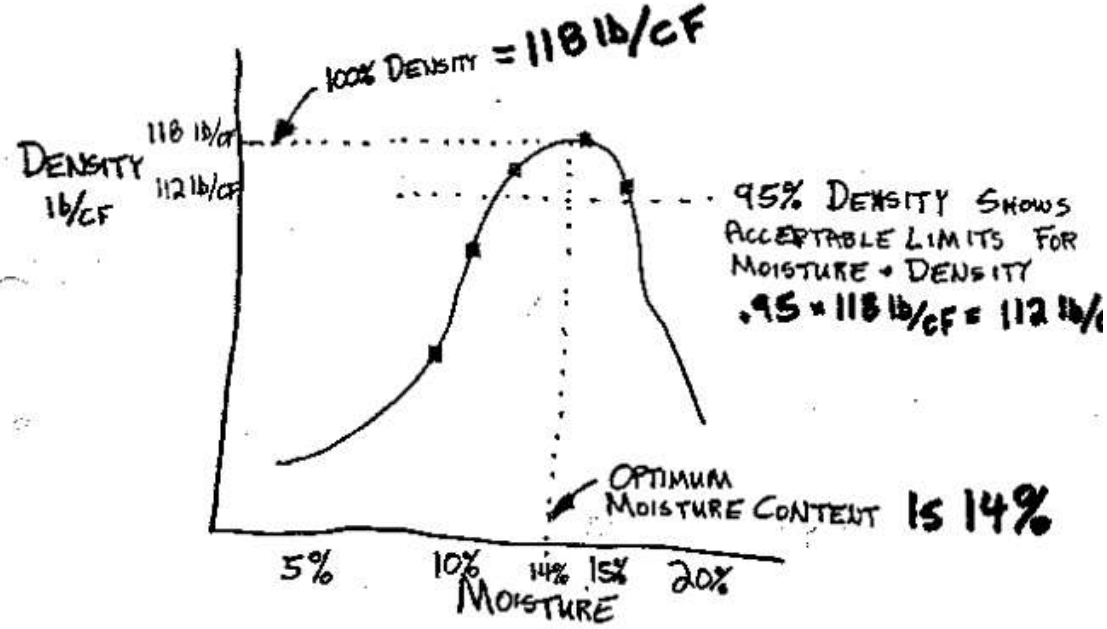


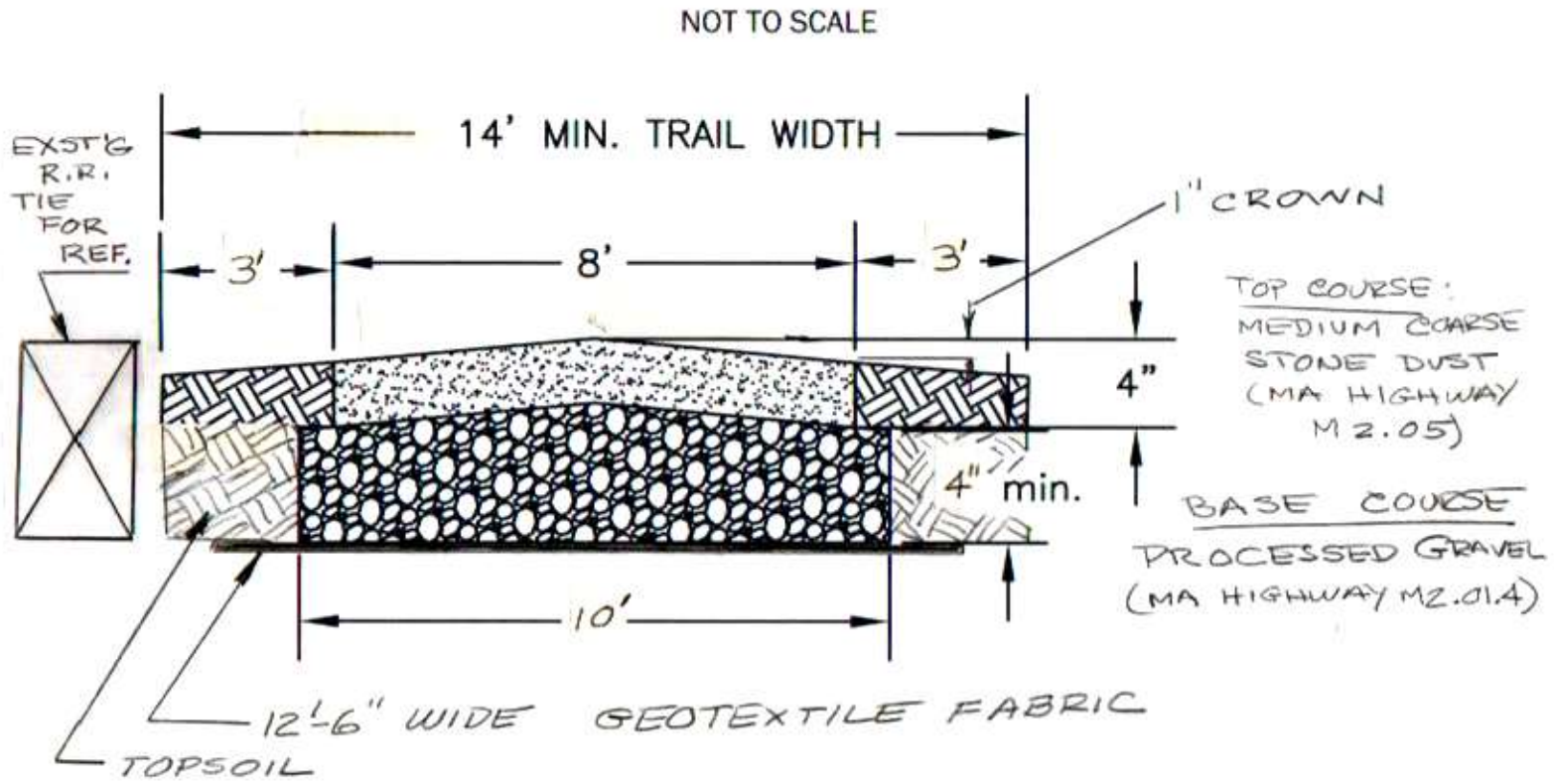
Loosely compacted stone dust

Soil Compaction Testing

Proctor Test - Optimizes Relationship of a Specific Soil Regarding Density + Moisture.



STONE DUST TRAIL CROSS SECTION



❖Value Engineering – not all locations need geo-textile fabric and 4” of coarse gravel. This can greatly reduce the cost.

- Maintenance
  - Mowing
  - Erosion
  - Surface wear
  - Drainage swale cleanouts
  - Water crossings
  - Who is going to do the work? Volunteers? Hire out?
    - High School interns!

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Experience working with Iron Horse Preservation Society

- Keeping to schedules
- Following instructions
- Quality of work
- Do they deliver a “finished” trail?
- Crosswalks, accessibility, stop lights, flashing lights
- Grid powered or solar
- Cost

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Page	Topic
1 – 4	Topsfield
6	Committee structures
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9 - 11	Accessibility regulations
12	Contamination
13	Conservation Commission
14	Funding
15 - 17	Trail surfaces
18	Maintenance
19	Iron Horse Preservation Society experience

Topsfield Linear Common

Safe Crossings
Solar Powered Flashing Light Installations
- at -
U.S. Rt. 1 and at Mass. Rt. 97

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Joe.Geller@GellerMicro.com
Chairman, Topsfield Rail Trail Committee

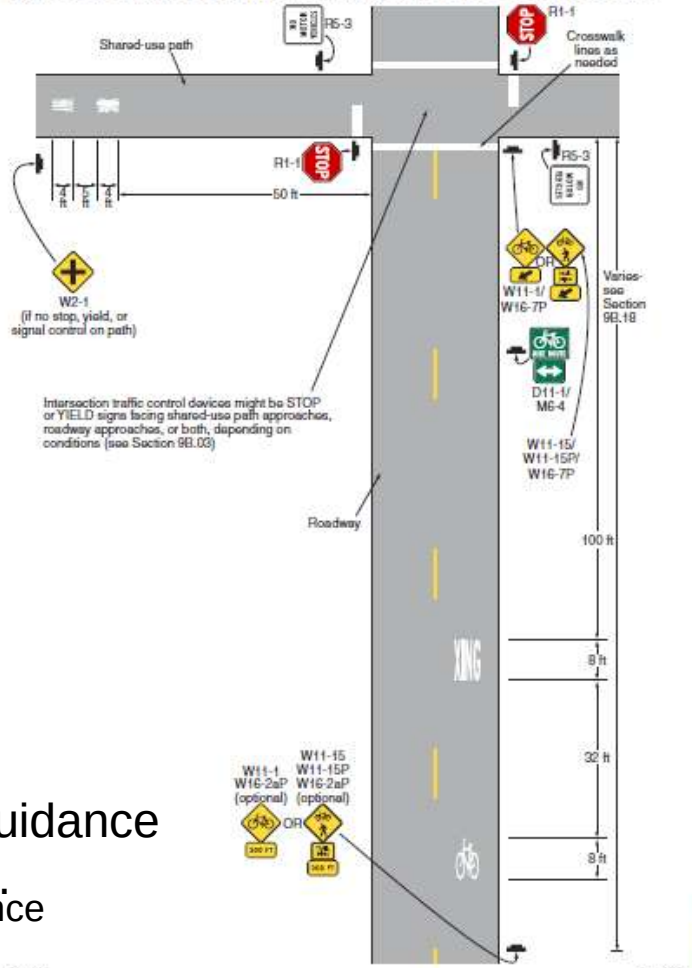
1. Establish a need for the crossing. Get consensus from Public Safety. If crossing is under town control (even though it may be a state numbered route) get approvals from

a) -Selectmen, mayor, town administrator, etc.
b) -Highway Superintendent, ADA buy in
c) -Traffic study to get volume and speeds (local highway dept ?)
d) -Generate design after reading Manual on Uniform Traffic Control Devices (MUTCD). If the trail volume doesn't support a full stop light consider a solar powered RRFB (Rapid Rectangular Flashing Beacon) such as is available from several suppliers (Carmanah, Spot Devices, Cross Alert, and several others).
e) Don't forget DIGSAFE!

2. If MassDOT controlled- hire traffic engineering company for design. They should be on a first name basis with MassDOT personnel that have approval repsonsibility. Have them submit a design along with construction documents for competitive bidding.

a) -Get plan approved by MassDOT
b) -hire MassDOT approved company to do the installation.
c) -use approved control devices

Figure 9B-7. Examples of Signing and Markings for a Shared-Use Path Crossing



Provides the necessary guidance for making safe crossings.

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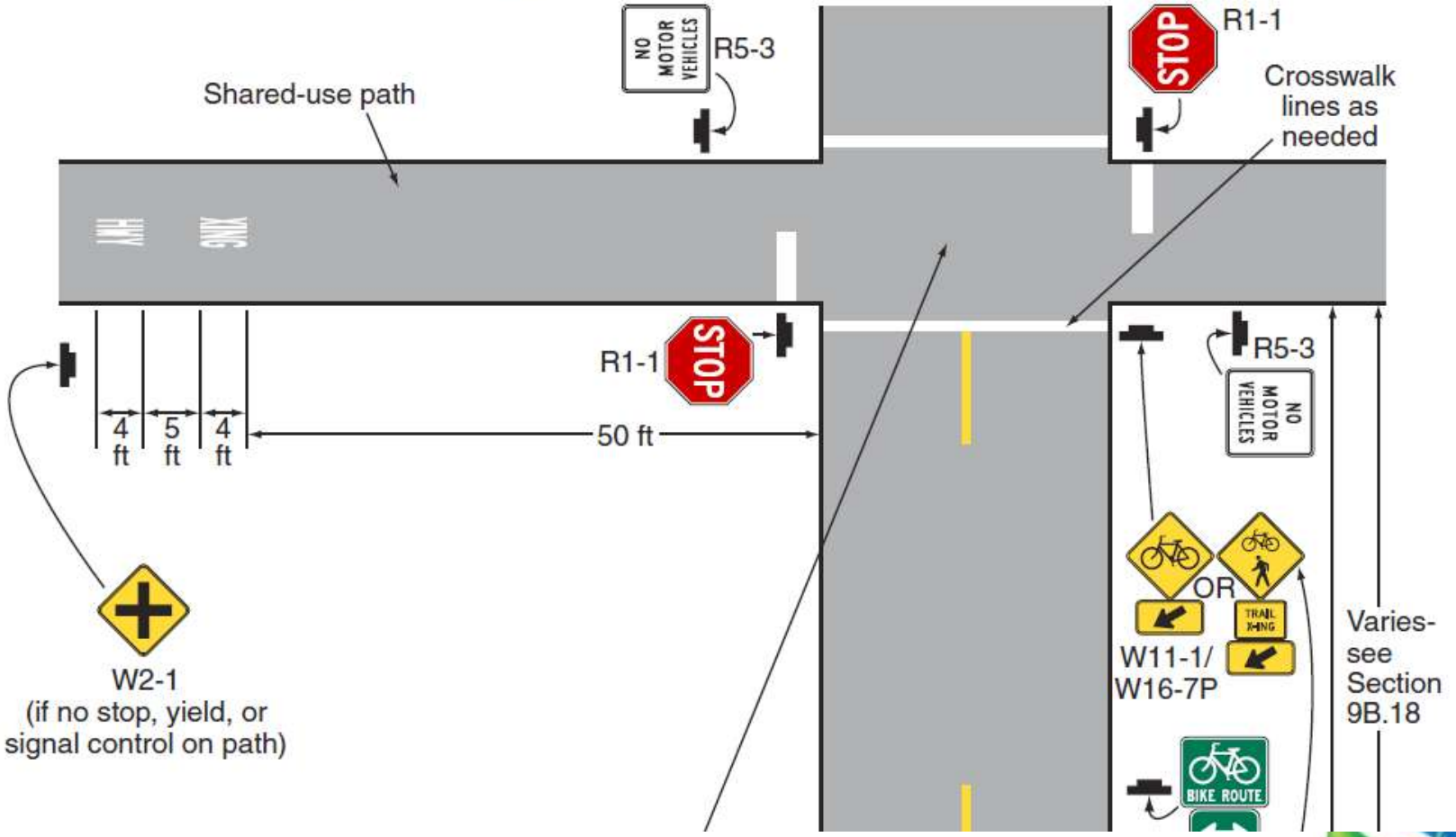
Figure 9B-7. Examples of Signing and Markings for a Shared-Use Path Crossing



In Topsfield we have two very busy trail crossings. One is on U.S. Rt. 1 (45 mph) and the other on Rt. 97 (40 mph) trail crossing of the Topsfield Linear Common. Both have good lines of sight.

- Rt. 1 crossing is under MassDOT control
- Rt. 97 is under the Town of Topsfield control.

U.S. Route 1 Crossing


Topsfield
Linear Common
Central St
Boston St
Boston St

Road Volume

Topsfield Highway Department
279 Boston Street
Topsfield, MA 01983

Site Code: RT1 RAIL TRAIL
Station ID:

Latitude: 0' 0.000 Undefined

Start	09-Aug-10		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	Rte 1 North	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So	Rte 1 No	Rte 1 So
12:00 AM	119	176	190	136	226	123	259	143	217	145	226	179	178	221	202	160
01:00	76	131	136	67	148	86	139	99	155	86	129	144	150	201	133	116
02:00	62	49	63	48	83	45	83	59	128	51	130	117	134	152	98	74
03:00	28	23	33	22	50	23	43	25	71	29	66	47	90	60	54	33
04:00	16	15	17	16	18	18	20	13	27	33	33	30	44	22	25	21
05:00	6	16	14	22	7	13	15	17	17	23	20	16	10	12	13	17
06:00	17	27	16	28	14	25	18	28	19	24	17	25	27	14	18	24
07:00	35	69	29	67	34	77	34	65	30	65	30	23	45	16	34	55
08:00	121	249	115	281	115	290	119	291	130	234	64	77	70	43	105	209
09:00	252	504	253	**544**	266	503	246	470	235	457	154	154	136	89	220	389
10:00	326	490	279	415	**376**	**529**	**419**	459	**352**	**468**	237	215	165	129	308	386
11:00	**356**	**505**	**374**	496	360	493	392	**480**	340	438	**273**	**296**	**248**	**228**	**335**	**419**
12:00 PM	311	451	307	**468**	332	416	298	412	332	387	371	401	328	310	326	406
01:00	302	407	396	373	412	409	314	348	438	**421**	449	391	391	339	386	384
02:00	360	358	363	427	383	382	356	366	396	361	300	256	**507**	419	381	367
03:00	413	432	382	368	380	366	386	436	298	280	**476**	334	436	389	396	372
04:00	313	354	385	400	369	421	394	348	315	322	364	317	427	435	367	371
05:00	411	373	368	361	420	381	407	422	356	295	435	433	464	**497**	409	395
06:00	**536**	386	240	178	445	**457**	466	**443**	436	420	468	397	376	456	424	391
07:00	515	**481**	353	283	492	457	389	414	499	405	451	**484**	333	461	433	**426**
08:00	534	374	483	363	**526**	424	430	335	**515**	375	305	440	313	466	**444**	397
09:00	487	298	**506**	297	506	346	**507**	327	410	379	320	392	257	361	428	343
10:00	317	287	376	282	383	270	411	264	390	253	233	344	230	312	334	287
11:00	231	215	278	176	300	180	285	182	252	217	216	289	185	231	250	213
Lane	6144	6670	5956	6118	6645	6734	6430	6446	6358	6168	5767	5801	5544	5863	6123	6255
Day	12814		12074		13379		12876		12526		11568		11407		12378	
AM Peak	11:00	11:00	11:00	09:00	10:00	10:00	10:00	11:00	10:00	10:00	11:00	11:00	11:00	11:00	11:00	11:00
Vol.	356	505	374	544	376	529	419	480	352	468	273	296	248	228	335	419
PM Peak	18:00	19:00	21:00	12:00	20:00	18:00	21:00	18:00	20:00	13:00	15:00	19:00	14:00	17:00	20:00	19:00
Vol.	536	481	506	468	526	457	507	443	515	421	476	484	507	497	444	426

Vehicle volume – highlighted numbers show maximum/hour

Vehicle Speed

Topsfield Highway Department
279 Boston Street
Topsfield, MA 01983

Site Code: RT1 RAIL TRAIL
Station ID:

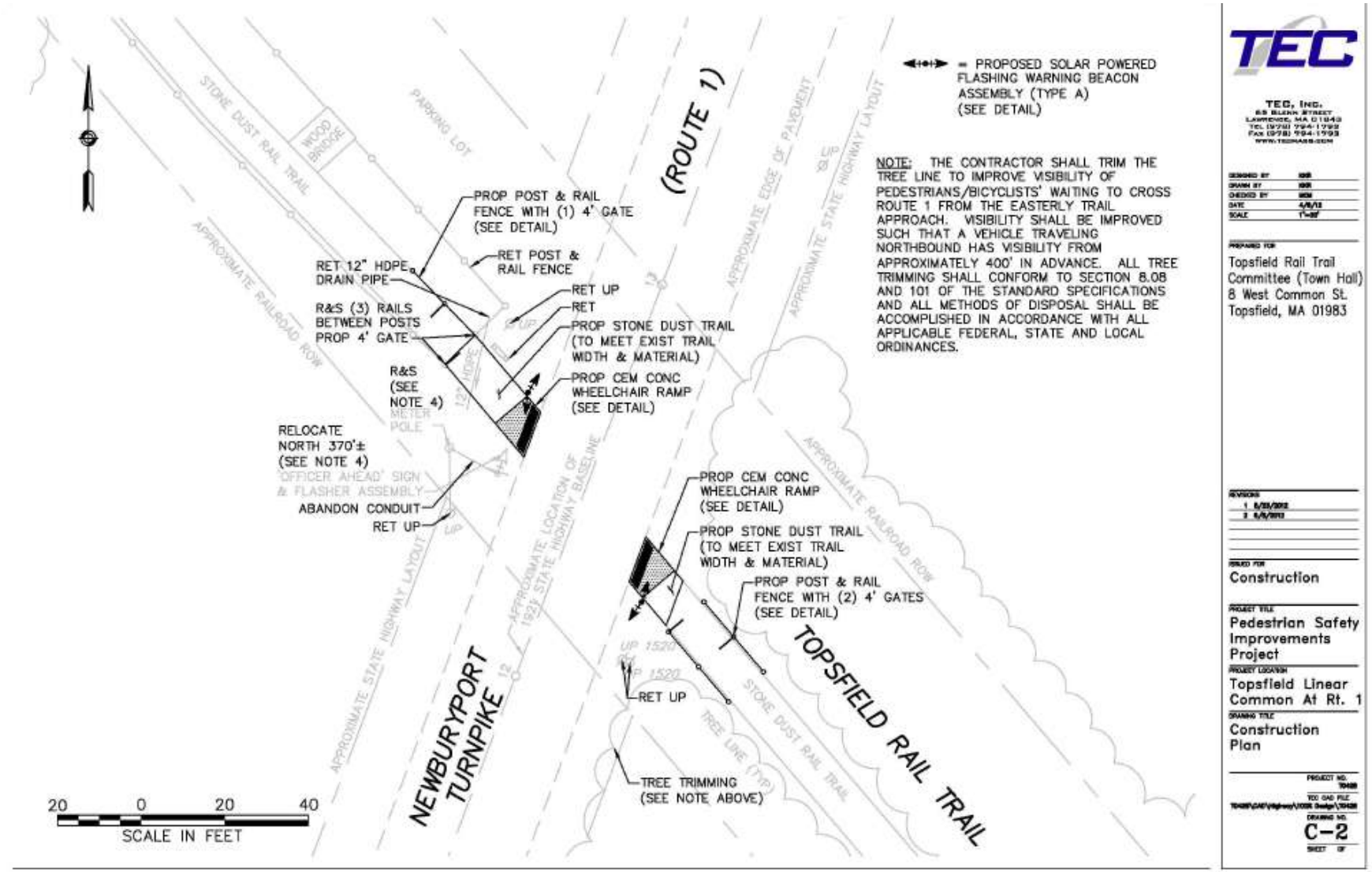
Speed

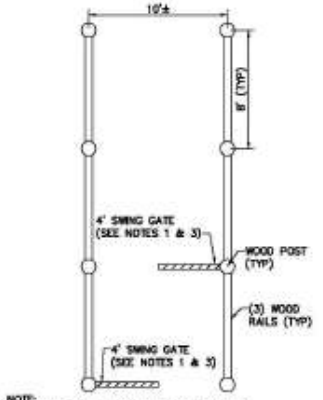
Rte 1 Northbound

Latitude: 0' 0.000 Undefined

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total	Pace Speed	Number In Pace
8/9/10	1	0	0	0	1	16	52	42	4	1	2	0	0	0	119	41-50	94
01:00	0	0	0	0	1	8	34	23	10	0	0	0	0	0	76	41-50	57
02:00	0	0	0	0	1	8	28	14	10	1	0	0	0	0	62	40-49	42
03:00	1	0	0	0	0	3	15	4	5	0	0	0	0	0	28	38-47	19
04:00	0	0	0	0	0	4	3	8	1	0	0	0	0	0	16	42-51	12
05:00	0	0	0	0	0	0	3	2	1	0	0	0	0	0	6	38-47	5
06:00	0	0	1	0	0	2	5	5	2	1	1	0	0	0	17	39-48	10
07:00	0	0	0	0	3	5	11	11	4	1	0	0	0	0	35	41-50	22
08:00	2	1	0	0	1	16	40	45	12	2	0	1	0	1	121	41-50	85
09:00	4	0	0	0	2	36	113	**68**	**19**	**4**	0	0	0	6	252	41-50	181
10:00	5	1	0	7	19	91	114	65	9	1	2	0	0	12	326	36-45	205
11:00	**6**	**2**	1	**11**	**23**	**101**	**132**	49	14	1	1	1	0	**14**	**356**	36-45	233
12 PM	6	1	0	8	68	123	69	18	7	0	0	1	0	10	311	33-42	193
13:00	7	1	2	11	73	101	70	25	2	1	0	0	1	8	302	31-40	174
14:00	5	2	**13**	26	86	135	55	21	1	1	0	0	0	15	360	31-40	221
15:00	3	1	5	**45**	76	144	97	24	1	0	**5**	0	0	12	413	36-45	241
16:00	3	0	4	24	**122**	77	57	13	3	1	1	0	1	7	313	31-40	199
17:00	7	**9**	7	12	46	130	139	46	5	1	0	2	0	7	411	36-45	269
18:00	**15**	2	8	10	53	**158**	194	66	10	1	1	2	1	15	**536**	36-45	352
19:00	9	1	0	1	45	144	202	74	**21**	1	1	**4**	**2**	10	515	36-45	346
20:00	8	1	2	26	50	131	218	70	8	0	1	0	1	**18**	534	36-45	349
21:00	4	0	0	2	14	89	**223**	**126**	20	0	1	1	0	7	487	41-50	349
22:00	3	0	0	0	11	58	137	79	20	1	3	0	0	5	317	41-50	216
23:00	0	0	0	0	2	32	123	59	8	1	0	1	0	5	231	41-50	182
Total	89	22	43	183	697	1612	2134	957	197	20	19	13	6	152	6144		
Percent	1.4%	0.4%	0.7%	3.0%	11.3%	26.2%	34.7%	15.6%	3.2%	0.3%	0.3%	0.2%	0.1%	2.5%			
AM Peak	11:00	11:00	06:00	11:00	11:00	11:00	11:00	09:00	09:00	09:00	00:00	08:00		11:00	11:00		
Vol.	6	2	1	11	23	101	132	68	19	4	2	1		14	356		
PM Peak	18:00	17:00	14:00	15:00	16:00	18:00	21:00	21:00	19:00	13:00	15:00	19:00	19:00	20:00	18:00		
Vol.	15	9	13	45	122	158	223	126	21	1	5	4	2	18	536		

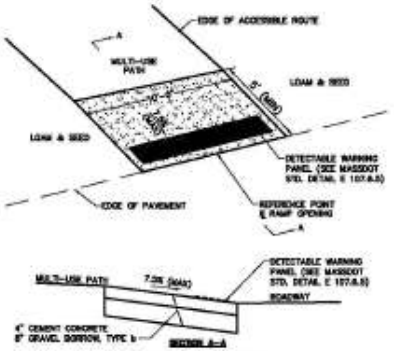
Time of day


= PROPOSED SOLAR POWERED FLASHING WARNING BEACON ASSEMBLY (TYPE A) (SEE DETAIL)
NOTE: THE CONTRACTOR SHALL TRIM THE TREE LINE TO IMPROVE VISIBILITY OF PEDESTRIANS/BICYCLISTS' WAITING TO CROSS ROUTE 1 FROM THE EASTERLY TRAIL APPROACH. VISIBILITY SHALL BE IMPROVED SUCH THAT A VEHICLE TRAVELING NORTHBOUND HAS VISIBILITY FROM APPROXIMATELY 400' IN ADVANCE. ALL TREE TRIMMING SHALL CONFORM TO SECTION 8.08 AND 101 OF THE STANDARD SPECIFICATIONS AND ALL METHODS OF DISPOSAL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES.
PROP POST & RAIL FENCE WITH (1) 4' GATE (SEE DETAIL)
RET POST & RAIL FENCE
RET 12" HDPE DRAIN PIPE
RET UP
RET
R&S (3) RAILS BETWEEN POSTS PROP 4' GATE
PROP STONE DUST TRAIL (TO MEET EXIST TRAIL WIDTH & MATERIAL)
R&S (SEE NOTE 4)
PROP CEM CONC WHEELCHAIR RAMP (SEE DETAIL)
RELOCATE NORTH 370'± (SEE NOTE 4)
'OFFICER AHEAD' SIGN & FLASHER ASSEMBLY
ABANDON CONDUIT
RET UP
PROP CEM CONC WHEELCHAIR RAMP (SEE DETAIL)
PROP STONE DUST TRAIL (TO MEET EXIST TRAIL WIDTH & MATERIAL)
PROP POST & RAIL FENCE WITH (2) 4' GATES (SEE DETAIL)
RET UP
TREE TRIMMING (SEE NOTE ABOVE)
(ROUTE 1)
NEWBURYPORT TURNPIKE
TOPSFIELD RAIL TRAIL
STONE DUST RAIL TRAIL
PARKING LOT
APPROXIMATE RAILROAD ROW
APPROXIMATE EDGE OF PAVEMENT
APPROXIMATE STATE HIGHWAY LAYOUT
APPROXIMATE LOCATION OF 182' STATE HIGHWAY BASELINE
TREE LINE (TYP)
20 0 20 40
SCALE IN FEET
TEC
TEC, INC.
Topsfield Rail Trail Committee (Town Hall) 8 West Common St. Topsfield, MA 01983
Construction
Pedestrian Safety Improvements Project
Topsfield Linear Common At Rt. 1
Construction Plan
C-2

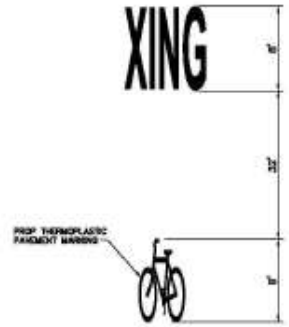


NOTE:
1. SWING GATE SHALL BE MANUFACTURED BY BEHLEN COUNTRY, OR APPROVED EQUIVALENT.
2. PROPOSED POST & RAIL FENCE TO MATCH EXISTING POST & RAIL FENCE TYPE ON NORTHWEST APPROACH.
3. GATES SHALL BE MARKED WITH RETROREFLECTORIZED MATERIAL.

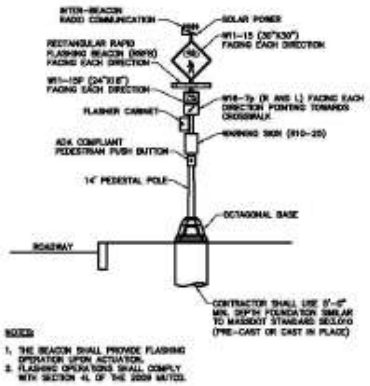
POST & RAIL FENCE WITH SWING GATE
N.T.S.



WHEELCHAIR RAMP
N.T.S.

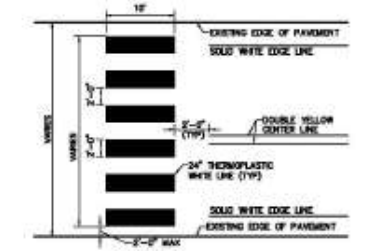


BICYCLE CROSSING PAVEMENT MARKING
N.T.S.



NOTES:
1. THE BEACON SHALL PROVIDE FLASHING OPERATION UPON ACTUATION.
2. FLASHING OPERATIONS SHALL COMPLY WITH SECTION 4L OF THE 2009 MUTCD.

FLASHING WARNING BEACON TYPE A
N.T.S.



NOTE:
REMOVE EXISTING SOLID WHITE EDGE LINE AND DOUBLE YELLOW CENTERLINE WITHIN THE LIMITS OF PROPOSED CROSSWALK.

CROSSWALK PAVEMENT MARKING
N.T.S.

TEC

TEC, INC.
63 BLEAM STREET
LAWRENCE, MA 01843
TEL (978) 794-1792
Fax (978) 794-1793
WWW.TECINCMA.COM

DESIGNED BY	KKR
DRAWN BY	KKR
CHECKED BY	MDH
DATE	4/8/12
SCALE	NOT TO SCALE

PREPARED FOR
Topsfield Rail Trail Committee (Town Hall)
8 West Common St.
Topsfield, MA 01983

REVISIONS
1 5/23/2012
2 2/5/2013

ISSUED FOR
Construction

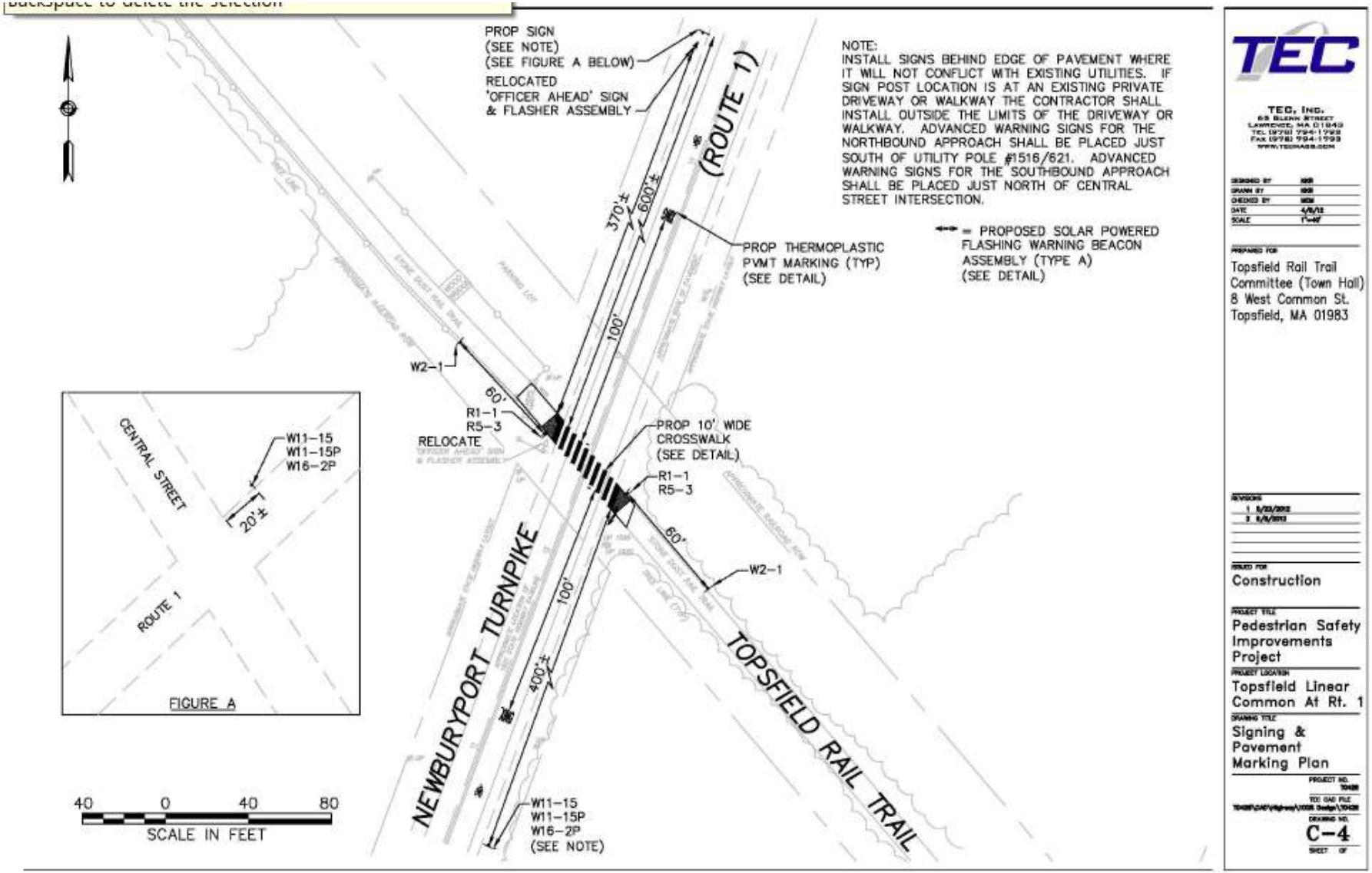
PROJECT TITLE
Pedestrian Safety Improvements Project

PROJECT LOCATION
Topsfield Linear Common At Rt. 1

DRAWING TITLE
Construction Details

PROJECT NO. 10428
TEC CAD FILE
DRAWING NO. C-3
SHEET OF

Linear Common



TOPSFIELD
Linear Common


Signature
MOTOR CARS
TRAIL
X-ING
400
FEET

Gate chicanes instead of bollards to raise awareness

Solar powered rectangular flashing beacons (RRFB)

Push button activated

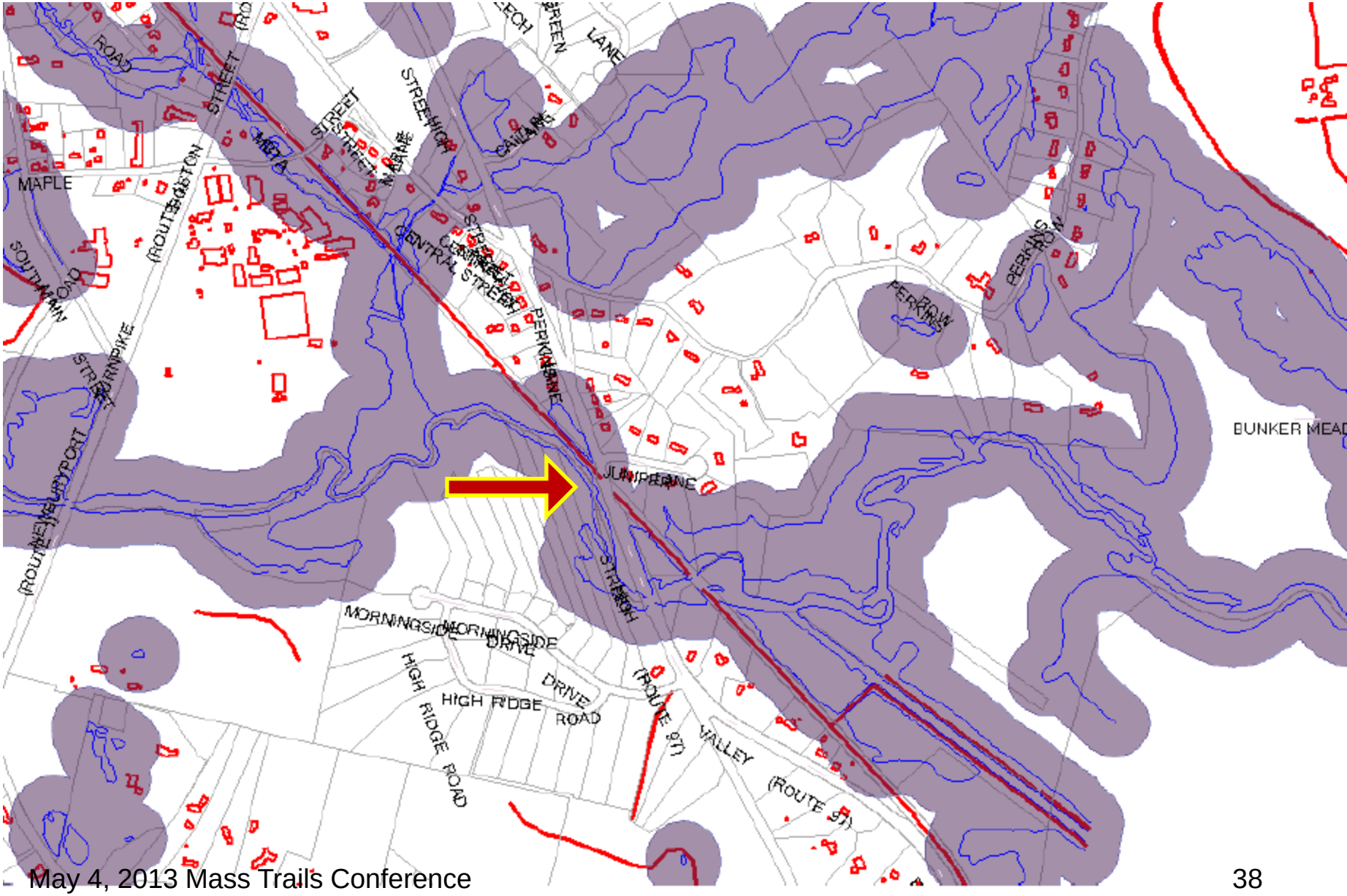
TOPSFIELD Linear Common

We have seen several motion detector systems inoperative
People should not rely on them

Mass state Rt. 97 Crossing

TOPSFIELD Linear Common

Riverfront, Floodzone, Bordering Vegetation Wetland – a Conservation Commission's drea



Linear Common

Diagonal trail crossing– more time in the crossing means highe

Crossing angle reduced to minimum crossing time

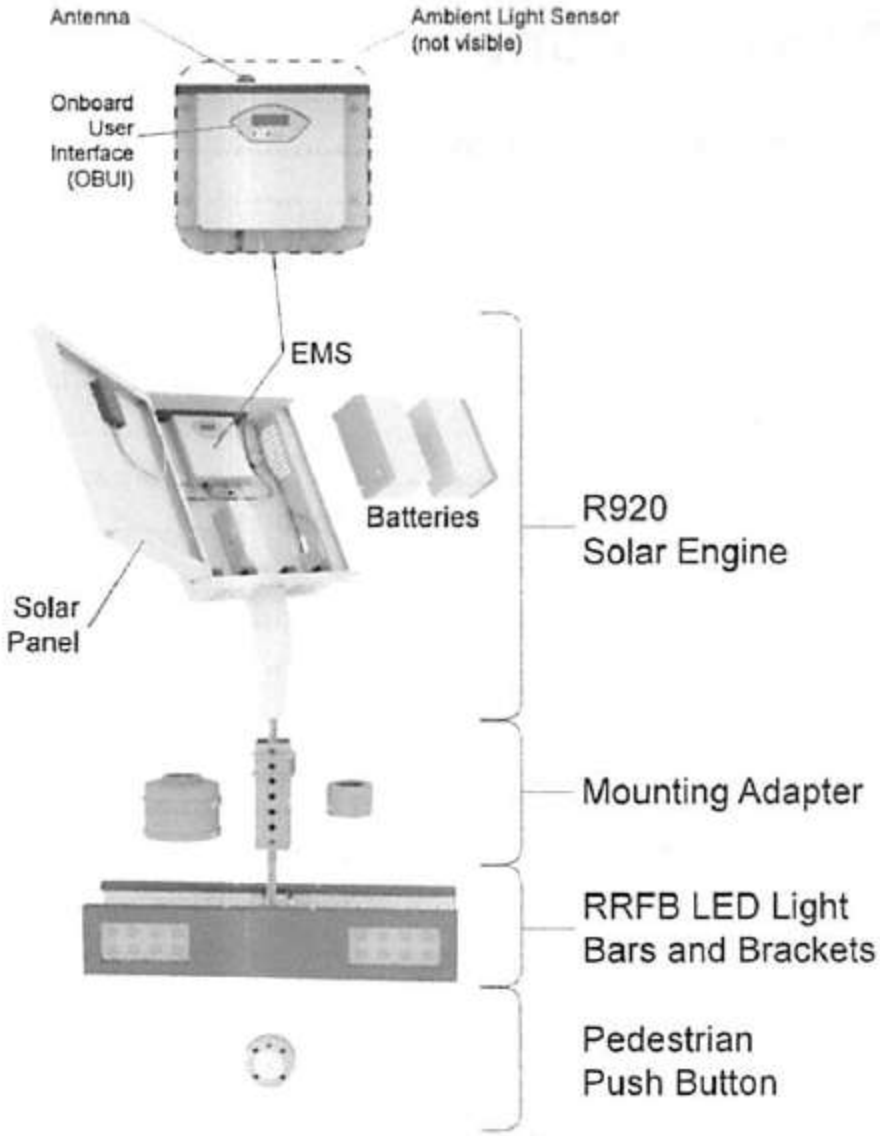
Rt. 97 Carmanah RRFB Construction crew


PUSH
BUTTON
FOR
WAIT FOR
VEHICLES
TO STOP
BEFORE
CROSSING

TOPSFIELD
Linear Common

Carmanah R920 "RRFB" Rapid Rectangular Flashing Beacon

R920 with dual Light Bars and Push Button (Bi-directional)



RRFB Cost Comparisons – Rt. 1 vs. 97

Rt. 1 crossing - $32,905

1. design by Tech, Inc Mass (Lawrence) @ $8,197. Topsfield supplied traffic survey data
2. Spot Devices RRFB ($7868). Two solar powered units with push buttons.
3. Coviello Electric (Medford) for signage & installation @ $15,840
4. Police details @ $1000! (price without lock washers)

Rt. 97 crossing - $5,459 + sweat equity (digging, assembly and erection)

1. design, assembly and installation by Topsfield Rail Trail Committee
2. Digsafe, police details
3. Carmanah R920B RRFB, Two solar powered units with push buttons @ $4340. Either push buttons actuation turns on flashers of both light sets.

Items needed for self install:

1. 6 - 30” fluorescent trail crossing yellow/green signs @ $88.50 - $500
2. 2 - 8 ft. sign posts
3. 4 - Right diagonal arrow signs @ 29.35 - $120
4. 2- Special “push button for walk” @ $21 - $42
5. 2- 2 1/4” square perforated 12 ft. poles from Unistrutohio $417
6. 1- 2 1/2” square perforated 8 ft. pole from Unistrutohio (with above)