



transform your environment

January 19, 2021

Stephen Spink, PE
TJ Blair, PE

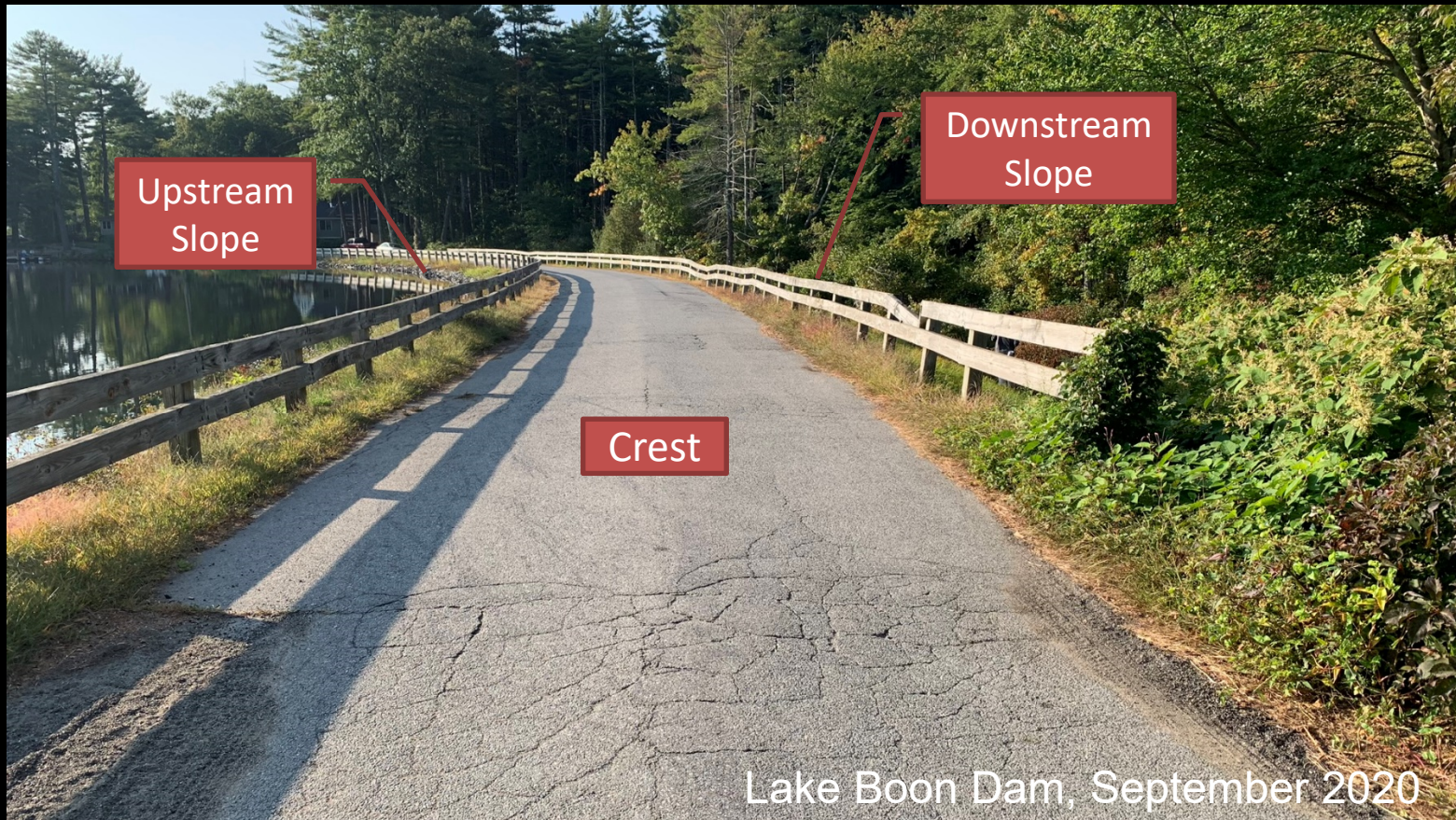
Lake Boon Dam Rehabilitation Project

60% Design Pre-
Application Meeting for
Preliminary Feedback



Agenda

- ❖ Project Introduction
- ❖ Presentation of 60% Design Plans
- ❖ Discussion of Outstanding Project Considerations
- ❖ Anticipated Next Steps/Project Schedule
- ❖ Questions



Dam Safety Overview

- **Large size, Significant hazard potential**
- Constructed ca. 1870
- Rehabilitated in 2000
- Dam is currently structurally deficient and in **Poor** condition
- State order to repair, breach, or remove

dcrc
Massachusetts

April 18, 2017
Certified Mail No. 7013 1090 0000 4863 5724
Return Receipt Requested

Town of Stow
c/o Michael Clayton, Superintendent
88 South Acton Rd
Stow, MA 01775

Subject: CERTIFICATE OF NON-COMPLIANCE and DAM SAFETY ORDER


Dam Name:	Lake Boon Dam
Location:	Stow
National ID No:	MA00137
Known Condition:	Poor
Hazard Potential:	Significant
Middlesex Registry of Deeds:	Book 10194, Page 35

Dear Mr. Clayton:

In accordance with 302 CMR 10.08, the Department of Conservation and Recreation (DCR), Office of Dam Safety (ODS) has determined that Lake Boon Dam does not meet accepted dam safety standards and is a potential threat to public safety. Therefore, DCR hereby issues a **CERTIFICATE OF NON-COMPLIANCE and DAM SAFETY ORDER**.

ODS records indicate that the Town of Stow is the Owner of the Lake Boon Dam, National Inventory of Dams No. MA00137. ODS classifies the dam as a **Large Size, Significant Hazard Potential** Structure. Significant Hazard Potential Dams are dams that may cause the loss of life and property damage in the event of dam failure.

COMMONWEALTH OF MASSACHUSETTS - EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

Department of Conservation and Recreation 251 Causeway Street, Suite 600 Boston MA 02114-2119 617-626-1250, 617-626-1351 Fax www.mass.gov/dcr		Charles D. Baker Governor Karyn Polita Lt. Governor	Matthew A. Beaton, Secretary Executive Office of Energy & Environmental Affairs Leo Roy, Commissioner Department of Conservation & Recreation
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Dam Safety Deficiencies



**Steep slopes and
widespread seepage**



**Evidence of embankment
instability**



Spillway outlet structure in disrepair



April 27, 2007

Photo by Acton Survey & Engineering, Inc.

Inadequate spillway capacity / overtopping risk



**Woody vegetation along
downstream toe**

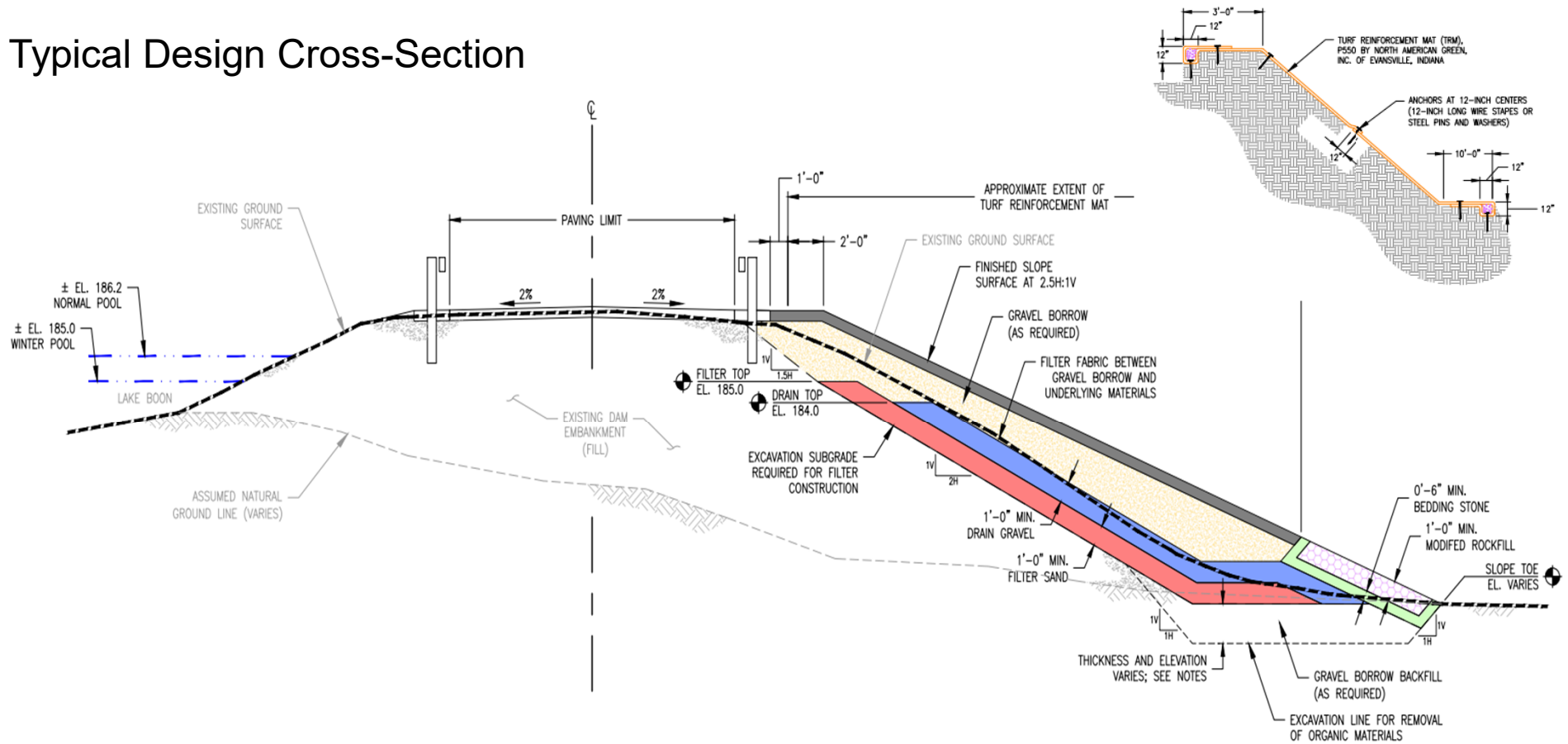


**Scour hole below spillway
along downstream toe**

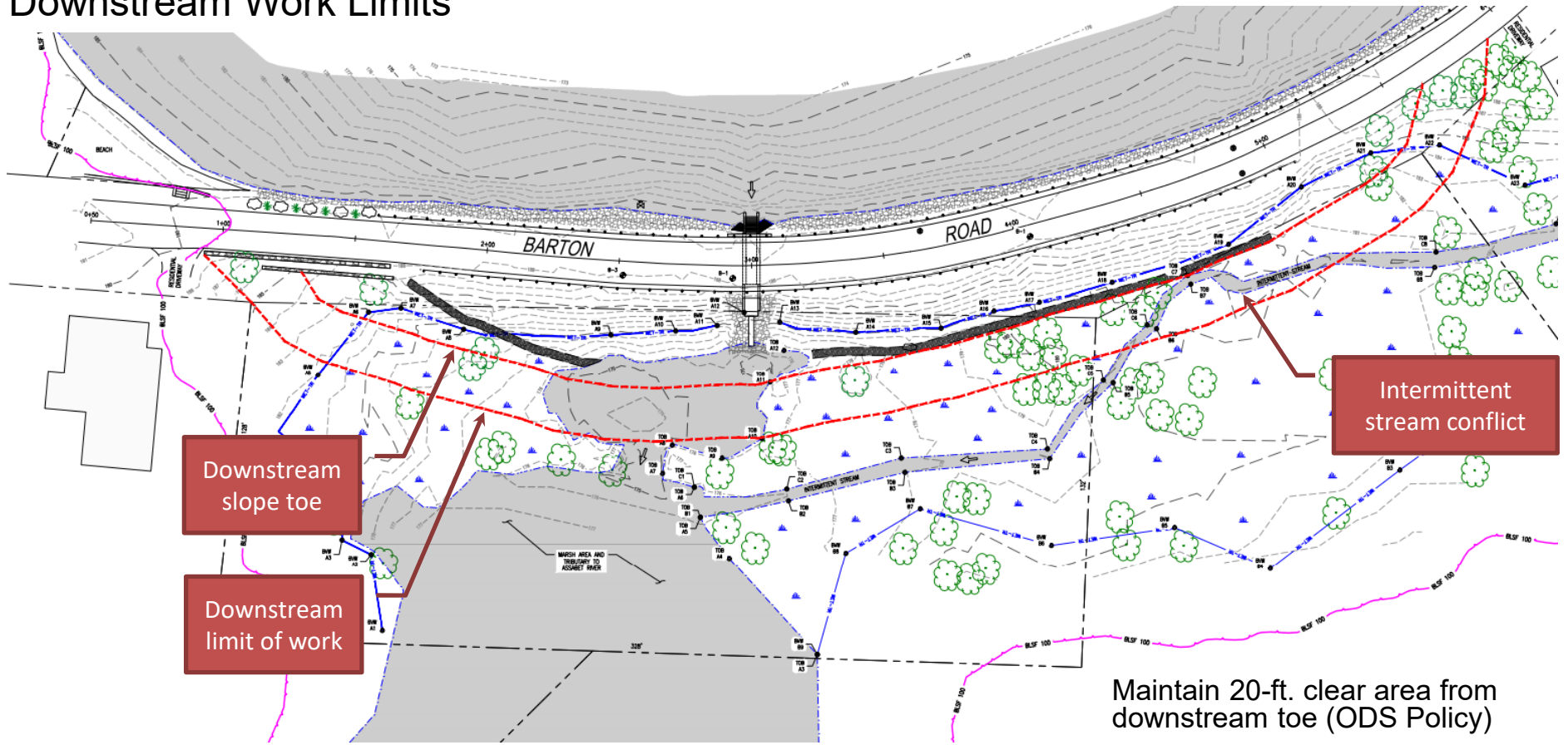
Project Overview

- Clear vegetation from dam and within 20 feet of dam
- Improve spillway condition
- Flatten the downstream slope to improve stability
- Install a downstream seepage filter
- Install an overtopping protection system
- Relocate section of intermittent stream encroaching on embankment
- Repave roadway

Typical Design Cross-Section



Downstream Work Limits



Project Considerations for Discussion

#1

Downstream Resource Impacts

Impact Estimates @ 60% Design (Square Ft.)

	BVW	LUW	Total
Filling	4,000	1,000	5,000
Clearing	7,150	1,600	8,750
Total	11,150	2,600	13,750

Permits and Approvals

- NOI / OOC
(Stow Conservation Commission)
- Section 404, PCN
(U.S. Army Corps)
- Section 401 Water Quality Certification
(MA DEP)
- Section 106, NHPA
(MA Historical Commission)
- MEPA Filing
(MA EEA)
- Chapter 91 Waterways License
(MA DEP)
- Chapter 253 Dam Safety Permit
(MA ODS)

#2

Wetland Replication

- Permanent impacts due to filling and clearing
- Alternatives have been considered
- Limited space on-site for replication
- Replication requirements → 1:1?

#3

Lake Level Management

- Dams are vulnerable during construction
- Seepage through dam needs to be reduced
 - Option 1: Cofferdam upstream, reduce water loading on dam
 - Option 2: Install wellpoints on downstream slope
- Bypass necessary regardless of water control method

#4

Compensatory Flood Storage

- Filling will occur within floodplain
- Compensatory flood storage on this site will be challenging to provide
- Potential exemption if findings support no adverse effects

Anticipated Next Steps / Preliminary Schedule

- Progress design plans to 90% in coordination with Town
- Receive town feedback on design
- Apply for applicable permits
- Receive permits and finalize bid package
- Bid and construct project (Est. 2022)