

**MEMORANDUM**

**TO:** Eric Devlin, City of Melrose  
**FROM:** Brittney Ferber, PE, CFM, Nitsch Engineering  
 Birendra Gurung, PE, PTOE, ENV SP, Nitsch Engineering  
**DATE:** September 19, 2023  
**RE:** Intersection of Melrose Street and Lynn Fells Parkway NOI

Nitsch Engineering submitted a Notice of Intent for proposed work at the intersection of Melrose Street and Lynn Fells Parkway to the Melrose Conservation Commission on August 21, 2023. On August 31, 2023, Nitsch Engineering met with the City of Melrose Conservation Agent, Eric Devlin, to discuss preliminary comments about the Notice of Intent. At that time, Eric requested the following:

- Confirmation if the existing catch basins have deep sumps;
- A table separating the cut/fill volumes for work in the floodplain by interval rather than as an overall number; and
- A memorandum describing the green infrastructure that was considered for the site.

Below are our responses to these information requests:

**Existing Catch Basin Review**

Birendra Gurung, Nitsch Engineering, went onsite after the call on August 31, 2023 and confirmed that some of the existing catch basins have deep sumps. Not all the existing catch basins could be observed to confirm if they have a deep sump because the outlet pipes were submerged.

**Cut/Fill Volumes**

Table 1 below shows the proposed cut/fill volumes for the proposed site within the Bordering Land Subject to Flooding (BLSF). The grading plan was revised as part of the effort to produce this table and is included as an attachment to this memo.

**Table 1: Proposed Cut/Fill in BLSF**

<b>Elevation Interval</b>	<b>Cut Volume (CY)</b>	<b>Fill Volume (CY)</b>	<b>Overall Cut Volume (CY)</b>
<b>46-47</b>	7.10	0.19	6.91
<b>47-48</b>	7.47	7.40	0.07
<b>48-49</b>	14.09	0.50	13.59
<b>49-49.9</b>	7.04	1.46	5.58

**Green Infrastructure**

Nitsch Engineering evaluated the project site for the opportunity to construct green infrastructure in the adjacent landscaped/grass spaces. The design team reviewed areas of the site that were within or directly adjacent to the limit of work and on DCR property. Figure 1- Reviewed Green Infrastructure Locations, below and included as an Attachment to this memo, shows the limits of the DCR owned property and the three main areas that were evaluated for use as green infrastructure.

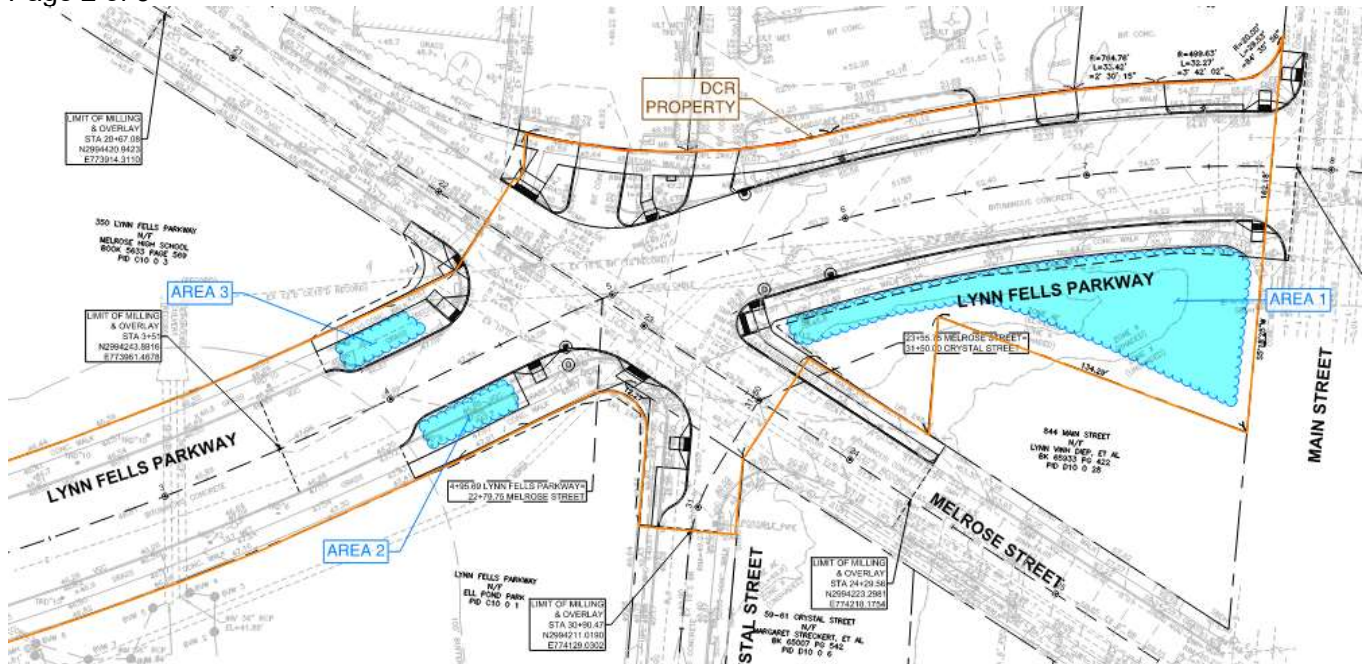


Figure 1- Areas Reviewed for Green Infrastructure

Nitsch evaluated these three areas for use as a swale, rain garden planter, or bioretention basin.

Area 1 was evaluated for the construction of a swale or bioretention basin. A swale would be a linear feature located along the back of sidewalk in Lynn Fells Parkway and a bioretention basin would be located in the triangular area between Lynn Fells Parkway and Main Street. Both options would require extensive regrading because of the grade change at the back of sidewalk and adjacent landscaped area.

Nitsch Engineering eliminated these options because of the mature trees located in this area. Photographs 1 and 2 below show the mature trees adjacent to the existing/proposed sidewalk. Re-grading and introducing stormwater runoff to these areas could damage the health of the existing trees.



Photograph 1: Lynn Fells Parkway at the intersection with Main Street



*Photograph 2: Main Street at the intersection with Lynn Fells Parkway*

### Areas 2 and 3

Areas 2 and 3 were evaluated for the construction of rain garden planters. There were two main elements that led the design team to eliminate them as options, assumed high groundwater and adjacent shallow drainage infrastructure.

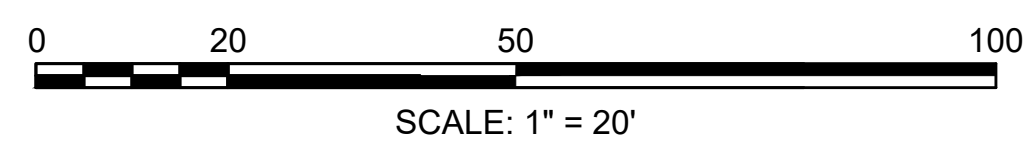
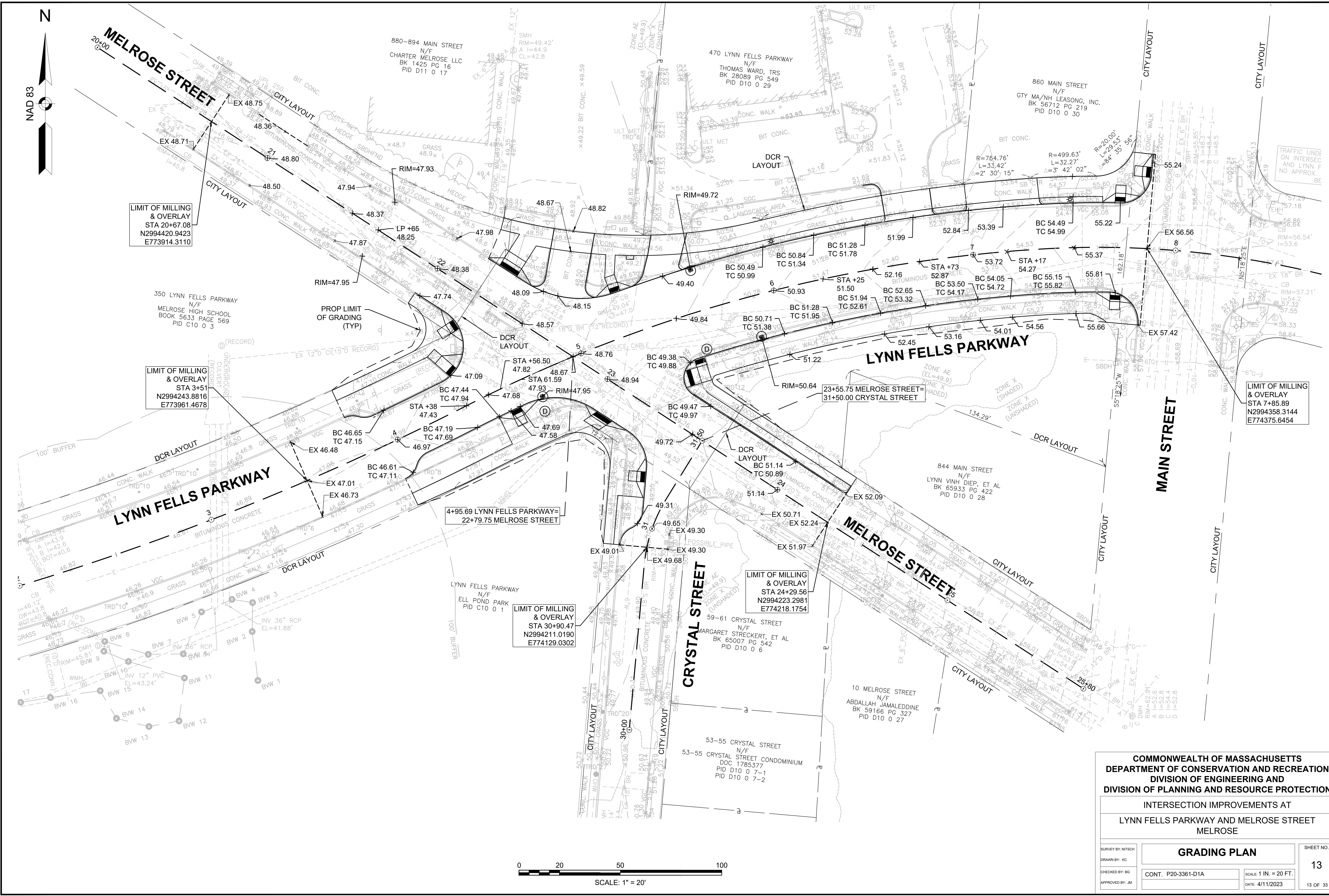
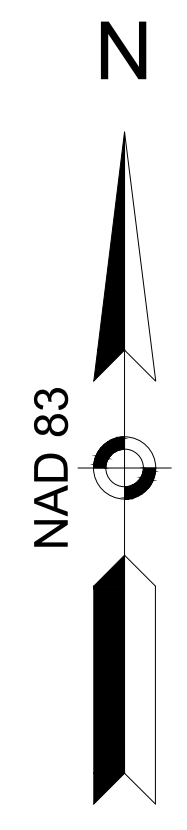
Areas 2 and 3 are both located just over 100 feet from the Bordering Vegetated Wetlands (BVW). Based on the elevations of the wetland flags, approximately elevation 45.7, Nitsch Engineering believes that Estimated Seasonal High Groundwater (ESHGW) could be high in these locations. Any infiltrating green infrastructure would require a minimum of 2-feet of separation between the bottom of the facility and ESHGW. Based on the existing grading and the need to reduce fill within the BLSF area, the bottom of a surface basin in these areas would be around elevation 46 at the highest. Nitsch does not anticipate achieving 2-feet of separation based on these design constraints.

Nitsch Engineering evaluated the option to construct rain gardens that do not rely on infiltration and have an underdrain system. The proposed rain garden section would need a minimum of 3.5-foot depth with an underdrain located at the bottom of the section. The adjacent drainage infrastructure in Lynn Fells Parkway is too shallow to connect an underdrain to, giving the green infrastructure systems no way to drain if infiltration is not feasible or groundwater is high.

### Attachments:

- Figure 1: Areas Reviewed for Green Infrastructure
- Revised Grading Plan





**COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF CONSERVATION AND RECREATION  
DIVISION OF ENGINEERING AND  
DIVISION OF PLANNING AND RESOURCE PROTECTION**

INTERSECTION IMPROVEMENTS AT  
LYNN FELLS PARKWAY AND MELROSE STREET  
MELROSE

<b>GRADING PLAN</b>		SHEET NO.
SURVEY BY: NITSCH DRAWN BY: KC CHECKED BY: BG APPROVED BY: JM		<b>13</b> 13 OF 33
CONT. P20-3361-D1A	SCALE: 1 IN. = 20 FT. DATE: 4/11/2023	