

Town of Uxbridge
Planning Board
21 South Main Street
Uxbridge, MA 01569
(508) 278-8600 ext. 2013

Received by
Uxbridge
Town Clerk

TOWN OF UXBRIDGE
SPECIAL PERMIT FOR MAJOR NONRESIDENTIAL PROJECT
DECISION AND CERTIFICATE OF ACTION

Lots 1 and 4 Campanelli Business Park
FY18-17,612 & 626 Douglas St., 600 High St.

Date: June 27, 2018

Name of Applicant: Campanelli Development, LLC
Address of Applicant: 1 Campanelli Drive
Braintree MA 02184

Owners:

1. Uxbridge Woods Realty Trust
Mark Foss, Trustee
2. Uxbridge Woods Realty Trust
Mark Foss, Trustee
3. Harris Avenue Realty Trust
Mark Foss, Trustee

Addresses of Owner:

1. P.O. Box 425 Linwood, MA 01525
2. P.O. Box 425 Linwood, MA 01525
3. 77 Kelly Road, Northbridge, MA 01588

Location of Property:

1. 612 Douglas Street
2. 600 High Street
3. 626 Douglas Street

Assessors Maps/Parcels:

1. Map 28 Lot 3589
2. Map 33 Lot 0342
3. Map 28 Lot 1746

Deed Books/Pages:

1. Deeds Bk. 18685 Pg. 269
2. Deeds Bk. 52418 Pg. 337
3. Deeds Bk. 43078 Pg. 258

Site Plan Dated: April 23, 2018; Last revised June 25, 2018
Engineer or Land Surveyor: Kelly Engineering Group, Inc.
0 Campanelli Drive
Braintree MA 02184

Zoning District(s): Industrial

BACKGROUND/SUMMARY

On April 25, 2018, an application was received by the Planning Board and duly filed with the Uxbridge Town Clerk, for a Special Permit for Major Nonresidential Project (the "Special Permit") to construct/operate an approximately 799,000 sf warehouse and distribution facility with an approximately 23,245 sf mezzanine (total building area is 822,245 s.f.) and associated car parking, trailer parking, loading and other development features on Lots 1 and 4 Campanelli Drive. The Special Permit is sought pursuant to Article VI, sec. 400-20, Uxbridge Zoning Bylaws ("UZB" or "Zoning Bylaw"), "Special Permit for Major Nonresidential Project" and pursuant to such other applicable provisions of the Zoning Bylaw. A stormwater management permit application was concurrently requested. Campanelli Drive in Campanelli Business Park is a new subdivision roadway concurrently reviewed and approved with this Special Permit application. Notice of the Public Hearing was scheduled and published in the "Worcester Telegram & Gazette" for May 9, 2018 and May 16, 2018 posted in the Uxbridge Town Hall, and abutters were notified by way of certified mail. The Public Hearing was opened on May 23, 2018, continued to June 13, and closed on June 27, 2018.

The properties contain approximately 102.2 acres of land and are shown as Lots 1 and 4 on a plan entitled Definitive Subdivision Plan for Campanelli Business Park being concurrently reviewed with this Special Permit application. The site lies within the Industrial zoning district.

FILINGS

The Planning Board has received the following written materials:

1. The application submitted by Kelly Engineering Group, Inc. on behalf of Campanelli Development LLC consisted of a Special Permit Application Form, Letter to the Board which included a project description and a request for Stormwater Management Permit, a copy of the Deeds, a copy of the Application for Certified Abutters List, a copy of the certified Abutters List, Locus Map, Stormwater Report, Traffic Impact and Assessment Report, associated fees, floor plans and elevations and a Site Plan.
2. Plans, entitled "Site Development Plans for Medline Lots 1 and 4 Campanelli Drive", prepared by Kelly Engineering Group, Inc., dated April 23, 2018 with a final revision date of June 25, 2018, included the following plan sheets:
 - Sheet 1 Cover Sheet
 - Sheet 2 Overall Existing Conditions Plan
 - Sheet 3 Overall Layout Plan
 - Sheet 4 Existing Conditions Plan (Part 1)
 - Sheet 5 Existing Conditions Plan (Part 2)
 - Sheet 6 Existing Conditions Plan (Part 3)
 - Sheet 7 Existing Conditions Plan (Part 4)
 - Sheet 8 Layout Plan (Part 1)
 - Sheet 9 Layout Plan (Part 2)
 - Sheet 10 Layout Plan (Part 3)
 - Sheet 11 Layout Plan (Part 4)
 - Sheet 12 Grading Plan (Part 1)
 - Sheet 13 Grading Plan (Part 2)
 - Sheet 14 Grading Plan (Part 3)

- Sheet 15 Grading Plan (Part 4)
- Sheet 16 Sewer and Drainage Plan (Part 1)
- Sheet 17 Sewer and Drainage Plan (Part 2)
- Sheet 18 Sewer and Drainage Plan (Part 3)
- Sheet 19 Utility Plan (Part 1)
- Sheet 20 Utility Plan (Part 2)
- Sheet 21 Utility Plan (Part 3)
- Sheet 22 to 26 Detail Sheet

3. Related Materials include the following:

- 1.) Photometric Plan, Sheets 1-3, By Exposure 2 Lighting and Printed by Kelly Engineering Group, Inc., dated April 23, 2018 revised June 25, 2018.
- 2.) Landscape Plans, Sheets L1.0 - D.2, by Hawk Design, Inc., dated April 24 2018
- 3.) Stormwater Management Report, by Kelly Engineering Group, Inc. dated April 23, 2018, revised May 30, 2018. (Existing and Proposed Drainage Exhibits dated revised June 25, 2018).
- 4.) Environmental Notification Form and Technical Appendices 1-4 dated February 28, 2018.
- 5.) Traffic Impact and Access Study By MDM Transportation Consultants, Inc. updated April 2018.
- 6.) Erosion Control Plan, Campanelli Business Park, Definitive Subdivision, sheets 1-3, by Kelly Engineering Group, Inc., dated May 30, 2018
- 7.) Letter from Tech Environmental to Campanelli dated May 8, 2018 ("The Sound Study")
- 8.) Architectural Floor Plans(6 Sheets) and Elevations by Ware Malcomb, dated April 20, 2018
- 9.) Reference Photo Exhibit by Ware Malcom,
- 10.) Stream Crossing, Definitive Subdivision, Campanelli Business Park, Uxbridge MA, by Kelly Engineering Group, Inc. dated June 25, 2018.

4. File Correspondence:

- dated 05/01/2018. Email from Board of Health
- dated 05/21/2018. Graves Engineering Inc., Review
- dated 05/28/2018. Department of Public Works Memorandum
- dated 05/30/2018. Letter from Kelly Engineering Group, Inc.
- dated 05/31/2018. Email from William Kessler, Fire Chief.
- dated 06/22/2018. Graves Engineering Inc., Review, Exhibit 1
- dated 06/26/2018. Letter from Kelly Engineering Group, Inc.
- dated 06/26/2018. Department of Public Works Memorandum, Exhibit 2
- dated 06/27/2018. Email from BETA Group, Inc. including Mass DOT Ch. 85 Design Submission Requirements pdf, Exhibit 3

DECISION

MOTION made by Mr. Piccirillo to endorse and grant the Special Permit Application FY18-17, for Campanelli Development LLC, together with Campanelli Uxbridge LLC and their respective successors and assigns for use and development of the property identified as Lots 1 and 4, located on Campanelli Drive with current address 612 & 626 Douglas St., 600 High St, Uxbridge, MA., with Finding #7, that the Board finds that the application, with Conditions, meets each of the required traffic,

environmental, community, and fiscal standards as stated in Findings 1-6. The Planning Board also finds that the application, with Conditions, as a whole, substantially conforms to the intent of the Bylaws and proposes an appropriate and beneficial development to the site and Motion should also include an amendment to Condition #9 which shall replace the word “reviewed” with “reviewed and revised as necessary to comply” with the Fire Dept. and Water Dept. requirements prior to construction” and shall also include an additional condition with the construction hours of operation Monday-Friday 7:00 am to 7:00 pm, Saturdays 8:00 am to 8:00 pm, and other hours by notification of the Police Department.

Motion was seconded by Mr. Desruisseaux. The motion carried 5-0-0. This decision is granted based on the following findings and conditions as noted herein. A waiver of parking numbers per section 400-20.F.1.e of the Zoning Bylaw, scoping session per section 400-20.C.1 of the Zoning Bylaw and of locus plan topography per section 400-20 D.5 of the Zoning Bylaw were requested and granted. A Stormwater Management Permit was also granted. The findings and conditions of approval are set forth below.

FINDINGS

In granting the Special Permit with conditions, the Board finds that any adverse effects of the proposed use of land will not outweigh its beneficial impact to the Town, in view of the particular characteristics of the site, its zoning and the proposal in relation to the site. The Board finds that the standards of 400-20 F of the Zoning Bylaw have been substantially met, that the application as a whole substantially conforms to the intent of the Zoning Bylaws and proposes an appropriate and beneficial development of the site. The Board has also taken into consideration the following:

1. The social, economic and community needs which are served by the proposal are positive.

The proposed warehouse and distribution project based on the submitted materials together with all associated parking, facilities and infrastructure has been located in a manner consistent with the Uxbridge Zoning Bylaw, §400-20, Appendix A Table of Use Regulations (as amended by ATM 2018), and without limitation, Articles VI, IX and X (Definitions) of the Uxbridge Zoning By-Law.

2. There is little to no impact on traffic flow and safety, including parking and loading.

A Transportation Impact and Analysis Study (TIAS) was submitted with the project. The TIAS documents the existing traffic volumes, capacities, controls, road condition, hazards, and level of service on the streets adjacent to the site; projects changes due to the site development and to the background traffic growth or decline; assesses the projected impact of such changes; proposes and discusses management and structural improvements and mitigation measures, both on and off the site. The TIAS has also been prepared to evaluate future development within the adjacent subdivision lots. The TIAS demonstrates that proposed roadway intersections comply with the development standards referenced in section 400-20.F of the Zoning Bylaw, and Massachusetts Department of Transportation Standards. The TIAS analysis concludes that ample roadway capacity is available to support the proposed project with no material degradation of traffic operations relative to no-build conditions. The TIAS was reviewed by the Board’s consultant, Graves Engineering.

Onsite parking and loading was designed consistent with the Uxbridge Zoning Bylaws and are sufficient to meet the needs of the project. A waiver was requested and granted from Bylaw Section 400-20.F.1.e which would require that 1 parking space per 200 sf of building area or approximately 4,111 spaces be constructed. The Board finds that the 450 spaces proposed are sufficient to meet

the needs of the project, that the granted parking waiver is supported by the applicant's presentation and application materials, that the standards in Section 400-20.F are intended as a flexible guide and that providing additional spaces would require more vegetation removal and result in greater stormwater runoff.

The project will include a paved secondary access to/from the property through High Street to/from West Street. The proposed access which includes improvements in High Street is sufficient to meet the needs of this project.

3. There is no impact on utilities and other public services.

The proposed project is a low water user and sewer generator. A sewer main will be extended in Douglas Street from Taft Hill Road through Campanelli Drive to the site. Water and other utilities will be extended from Campanelli Drive to service the project. A water tank will be constructed to provide fire flow needs. Medline will be responsible for site infrastructure maintenance, waste disposal, snow removal, landscaping, maintenance of paved areas, and curbing.

4. There is little to no impact on the neighborhood character and social structures.

The project is located in the industrial zoning district and is an appropriate use for that district. The project has been designed to limit wetlands impacts. Downcast LED lights in combination with the proposed landscaping will prevent light nuisance/spillage onto adjacent properties. A sound study has been prepared demonstrating compliance with DEP noise regulations. That noise study was reviewed by the Board's consultant, Graves Engineering.

5. There will be a positive impact on the natural environment.

The proposed project will have stormwater management, which meets or exceeds the DEP Stormwater Management Standards and Town Bylaw Chapter 290 (Stormwater). There will be erosion and sedimentation controls in place during construction. The landscaped areas will maintain proposed plantings through private contractors and an irrigation system. Large undisturbed wooded areas will be maintained. A Stormwater Management Permit is also granted by the Planning Board acting as the Stormwater Authority for the Project.

6. The potential fiscal impact on town services, tax base and/or employment is positive.

The project will provide revenue for the Town with limited impact to Town services and no impact to the school system. It will provide job opportunities.

7. Pursuant to Uxbridge Zoning Bylaw 400-20G, the Planning Board finds that the application, with Conditions, meets each of the required traffic, environmental, community, and fiscal standards as stated in Findings 1-6. The Planning Board also finds that the application, with Conditions, as a whole, substantially conforms to the intent of the Bylaws and proposes an appropriate and beneficial development to the site.

CONDITIONS

1. The Applicant shall comply with all applicable laws, regulations, and permit conditions required by the Planning Board, Conservation Commission, Board of Health, Building Department, Fire Department, Department of Public Works and all other departments and agencies for this project.

2. The Applicant shall adhere to the conditions noted on the approved Plan.
3. The Applicant shall install and maintain all plantings shown on the site plan or deemed necessary by the Planning Board.
4. The Applicant shall be responsible for all snow management, trash removal and site maintenance.
5. Prior to applying for occupancy building permit from the Building Inspector, the Applicant must notify the Planning Board and schedule a pre-construction meeting.
6. The Special Permit, including any attachments or appendices thereto shall be recorded at the Worcester Registry of Deeds within six (6) months. Said time shall not include such time required to pursue or await the determination of an appeal referred to in M.G.L. Chapter 40A, Section 17. The Applicant shall submit evidence of such recording to the Planning Board.
7. This Special Permit shall lapse in three (3) years on June 28, 2021, if a substantial use thereof has not commenced, except for good cause, or in the case of a permit for construction, if construction has not begun by such date except for good cause. Said time shall not include such time required to pursue or await the determination of an appeal referred to in M.G.L Chapter 40A, Section 17.
8. The secondary access from the site to High Street shall be gated on Lot 4 and may be used for emergency purposes.
9. Details of the water tank and other fire protection measures shall be revised and revised as necessary to comply with the Fire Department and Water Department prior to construction.
10. Plans and documents shall be revised as necessary to comply with outstanding comments in the Graves Engineering, Inc. review letter dated June 22, 2018, Exhibit 1 attached.
11. Plans and documents shall be revised as necessary to comply with outstanding comments in the Department of Public Works memorandum dated June 26, 2018, Exhibit 2 attached.
12. The design and detailing of the proposed arch culvert stream crossing shall conform to MassDOT's Design Requirements for Municipal Bridge Projects subject to MGL Chapter 85 Section 35 for BRI and NBI bridges. The Applicant shall provide final MA PE stamped design plans and supporting calculations to the Department of Public Works for review. In addition, the design and geometry of the arch culvert should consider future inspection and maintenance considerations, Exhibit 3 attached.
13. Construction hours shall be Monday-Friday 7:00 am to 7:00 pm, Saturdays 8:00 am to 5:00 pm, and other hours by notification of the Police Department.

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**Lots 1 and 4 Campanelli Business Park
FY18-17, 612 & 626 Douglas St., 600 High St.**

SAID SPECIAL PERMIT APPROVAL IS GRANTED PURSUANT TO M.G.L. CHAPTER 40A, SECTION 9. APPEALS FROM THIS DECISION SHALL BE MADE PURSUANT TO MASSACHUSETTS GENERAL LAWS CHAPTER 40A, SECTION 17.

UXBRIDGE PLANNING BOARD

James Smith, Chair

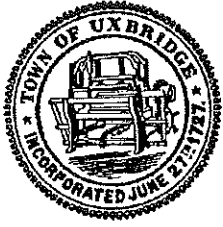
Joseph Leonardo, Member

Barry Desruisseaux, Vice-Chair/Clerk

Justin Piccirillo, Member

Eli Laverdiere, Member

Date



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Lots 1 and 4 Campanelli Business Park
FY18-17, 612 & 626 Douglas St., 600 High St.**

I hereby certify that twenty (20) days has elapsed from the date this decision was filed and that no appeal has been filed in this office.

A true copy: ATTEST


Town Clerk/Assistant Town Clerk
(Town Seal Affixed)

Date

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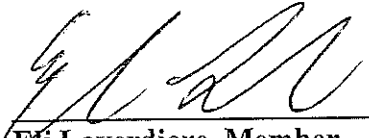
UXBRIDGE PLANNING BOARD



James Smith, Chair

Joseph Leonardo, Member

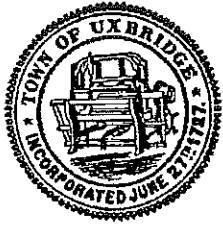
Barry Desruisseaux, Vice-Chair/Clerk

Justin Piccirillo, Member

Eli Laverdiere, Member

6-27-18

Date



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I hereby certify that twenty (20) days has elapsed from the date this decision was filed and that no appeal has been filed in this office.

A true copy: ATTEST

Town Clerk/Assistant Town Clerk
(Town Seal Affixed)

Date



100 GROVE ST. | WORCESTER, MA 01605

June 22, 2018

T 508-856-0321

Attn: Lynn Marchand
Uxbridge Planning Board
21 South Main Street
Uxbridge, MA 01569

F 508-856-0357
gravesengineering.com

**Subject: Campanelli Business Park
612, 626 Douglas Street and 600 High Street
Definitive Subdivision Plan, Special Permit, Fill/Importation Permit &
Stormwater Permit Applications
Peer Review #2**

Dear Members of the Board:

We received the following on June 6, 2018;

- Point-by-point response letter addressed to the Uxbridge Planning Board, dated May 30, 2018, prepared by David Mackwell, Kelly Engineering Group, Inc., with attachments.
- Drawings entitled "Definitive Subdivision Plans for Campanelli Business Park, 612, 626 Douglass Street & 600 High Street, Uxbridge, MA" dated April 23, 2018, revised May 30, 2018 (revision #1), prepared by Kelly Engineering Group, Inc. (17 sheets)
- Drawings entitled "Site Development Plans for Medline, Lots 1 and 4 Campanelli Drive" dated April 23, 2018, revised May 30, 2018 (revision #1), prepared by Kelly Engineering Group, Inc. (26 sheets)
- Bound document entitled "Stormwater Management Report", dated April 23, 2018, revised May 30, 2018, prepared by Kelly Engineering Group, Inc.
- Bound document entitled "Traffic Impact and Access Study", dated February 2018, updated April 2018, prepared by MDM Transportation Consultants, Inc. for Campanelli Companies.
- Letter addressed to Russell Dion, Campanelli, dated May 8, 2018, re: "Sound Study of Medline Distribution Center", prepared by Marc Wallace, Tech Environmental, with attachments.
- Drawings entitled "Erosion Control Plan, Definitive Subdivision, Campanelli Business Park", dated May 30, 2018, prepared by Kelly Engineering Group, Inc. (3 sheets)
- Drawings entitled "Erosion Control Plan, Lot 4, Campanelli Business Park", dated May 30, 2018, prepared by Kelly Engineering Group, Inc. (4 sheets)

This letter is a follow-up to our previous review letter dated May 21, 2018. For clarity, comments from our previous letter are *italicized* and our comments to the Applicant's responses are depicted in **bold**. Previous comment numbering has been maintained. Comments marked as "acknowledged" indicate they have been satisfactorily addressed.

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The Engineer responds that the force main design is not yet complete and will be coordinated with the Department of Public Works. GEI has no further comment at this time.

9. *The proposed Campanelli Drive sag curve at PVI station 26+90.13 shall be revised such that the K-value is a minimum of 37 to provided as required by MassDOT and AASHTO guidance for a 30-mph design speed (similar to all other vertical curves in the project).*
Acknowledged. The sag curve has been revised and now has a K-value of 37.
10. *The plans shall show the required and available sight distance at all proposed roadway intersections (internal and external) calculated utilizing the 85th percentile speed.*
Acknowledged. The plans and Traffic Impact Study (TIS) address the sight distance as calculated using the 85th percentile speed at both site driveway intersection with Route 16 and the internal site driveway intersection; the driveways to the Medline lots were not analyzed. The documents indicate that the minimum required sight distance is available and provided.
11. *Easements shall be provided for all stormwater basins receiving flow from the future public right-of-way for the purposes of the Town's access for maintenance.*
Acknowledged. The layout sheets of the subdivision plans now show that the stormwater basins are located within proposed drainage easements.
12. *The plans call for 12 inches of gravel base beneath the roadways however the Regulations require 18 inches for an Industrial roadway.*
Acknowledged. The roadway details have been revised to specify 18 inches of gravel base.
13. *The plans and Street Cross Section details indicate proposed cut and fill slopes within the right-of-way. The Regulations requires that cut and fill slopes begin at the outside edge of the right-of-way at a minimum such that the grass plots from the back of curbing to the edge of the right-of-way are sloped at 2 percent towards the roadway. One reason for this is to provide adequate space for future utility installations. This comment was raised by GEI during the preliminary subdivision plan review.*
The Engineer responds that cuts and fills are proposed within the right-of-way to minimize wetland and buffer zone impacts, and that the proposed five-foot wide level bench would provide adequate space for utilities. The Engineer also stated that they have requested a waiver from this requirement. GEI understands that waiver requests will be addressed by the Planning Board.
14. *The plans propose retaining walls within the right-of-way and some that cross into and out of the right-of-way. In general, the Town would not want to accept ownership of retaining walls should the roadways become public ways. Thus, understanding that walls are necessary at wetland crossings, to the extent feasible, retaining walls within the right-of-way shall be eliminated or relocated to outside of the right-of-way.*
The Engineer responds that the retaining walls are proposed to limit disturbances to wetlands and buffer zones. None of the retaining walls have been eliminated or relocated; thus, our comment remains.
15. *Vertical granite curbing is required at all proposed intersections and is needed at the intersection roundings of Campanelli Drive and Campanelli Drive Extension. Given that the driveway curb cuts for Lots 1 and 4 are so substantial it may warrant granite curbing at these rounding locations as well.*

22. With regard to the proposed project traffic, GEI has not received nor reviewed any traffic impact study prepared by the Applicant. Should the Planning Board wish to have a peer review of the Applicant's study, GEI can arrange for a traffic engineer subconsultant review. Relative to the traffic impact analysis requirements of the Bylaw, specifically Section 400-20.E and F, GEI has provided comment in this letter where applicable and to the extent of our non-traffic engineer expertise and the materials received.

GEI understands that the Planning Board has not requested a traffic peer review but rather for GEI to conduct a cursory review based on our (non-traffic engineer) experience. GEI has conducted such a review and finds that the Traffic Impact Study (TIS) appears to have been prepared according to the standards for such studies. GEI offers the following comments:

- a. The TIS analyzes three scenarios; no-build, the current proposed Phase 1 (Medline) development, and the full build-out of 1.4 million square feet of warehouse use.
 - b. Under both the Phase 1 and full build-out scenarios, the projected weekday truck trip generation values are the same (488). This seems unlikely considering the vast difference in square footage of development planned in each scenario and GEI requests that the traffic engineer review and revise as necessary.
 - c. Several intersections were included in the TIS and are noted to operate at level of service (LOS) C or better under the no-build conditions. Under the Phase 1 development scenario, the TIS indicates that the LOS is D or better but does not, (at least in the summary), indicate which intersections are so affected. Nevertheless, no mitigation appears proposed at this time.
 - d. The TIS indicates that under the full build-out scenario, improvement warrants are met at the Routes 16 and 146 ramps. The TIS states that this could include dedicated turning lanes and other physical roadway modifications. While the current application is for only Phase 1, such modifications are not yet proposed however the TIS indicates that a traffic monitoring program will be implemented to support any future work. It is expected that future development within the business park will need to include these offsite improvements.
23. Emergency access is proposed to connect to High Street, an unimproved gravel road. GEI notes that the Fire Department in their review of the project should evaluate the condition and adequacy of High Street for emergency access. The Engineer responds that they are coordinating with the Fire Department on this issue; no revisions are apparent on the plans regarding the High Street access. GEI has no further comment at this time.
24. Campanelli Drive is proposed to be constructed in two phases with the termination of phase 1 located at a proposed intersection of the driveways of Lots 1 and 4. GEI notes that the Fire Department in their review should evaluate the adequacy of the proposed temporary dead-end for turnaround of emergency vehicles. Acknowledged. The Fire Department responded that the proposed limit of Phase 1 (60' beyond the Lot 4 entrance up to Station 17+40) is adequate if gated access from High Street is also provided (as currently proposed).
25. The Planning Board shall note that the Applicant has requested a waiver of the required parking calculations to allow approximately 1 space per 1,800 square feet rather than the

Drainage, Hydrology & Stormwater Management

30. *To support the proposed hydrologic design and for the purposes of review, the pre- and post-development drainage area plans must show the boundaries of the NRCS mapped hydrologic soil groups (A, B, C and D).*

Soil group boundaries have been added to the drainage area plans, but they are unclear as they are drawn in dashed lines that have large gaps. The boundaries should be drawn as continuous lines, and labels may be necessary to clarify the boundary interior/exterior. Also, the boundaries on the drainage area plans are not consistent with the boundaries shown in the NRCS soils map in the Stormwater Report. The Engineer shall review and revise as necessary.

31. *The nomenclature of the stormwater BMPs throughout the plans and supporting documents must be consistent and in keeping with the design intent per the Handbook (detention basin, infiltration basin, constructed stormwater wetland, etc.). For example, detention basin #1A is designed to provide a recharge volume to meet the required recharge volume; thus this is a infiltration basin and must be labeled as such. The Engineer shall review and revise as necessary.*

Acknowledged. The stormwater BMP nomenclature has been revised/corrected throughout the documents.

32. *The calculations indicate that there is an increase in peak rate of runoff to design point #1 on the order of about 2.6 cfs; per MassDEP Stormwater Management Standard #2, there must be no increase above the peak pre-development flows. The Engineer notes this increase as due to "wetlands in sub watersheds 1E and 1F" which is unclear. If there are post-development undetained areas that are contributing to this increase in peak flow, then more attenuation shall be provided on the proposed development such that the net peak flow is equal to or less than pre-development. It should be noted that there are no means within MassDEP Stormwater Management (MassDEP) to allow such a proposed increase in peak rate of flows.*

Acknowledged. The Hydraflow model has been revised and now shows a reduction in peak rates of runoff in the post development conditions for each storm event at each design point.

33. *In accordance with MassDEP, the Applicant must conduct test pits on the site to confirm the NRCS Soil Survey data used for the hydrology calculations (i.e. soil textural classification and hydrologic group) and to determine depth to estimated seasonal high groundwater table (ESHGWT) at proposed best management practice (BMP) locations (specifically the proposed basins). This testing is especially critical at proposed infiltration BMP's to assure compliance with the required 2-foot offset to ESHGWT. These test pits must be performed by a "competent soils professional" as defined by MassDEP (i.e. a licensed Soil Evaluator), and included on the site plans. GEI understands that the Engineer is conducting this soil testing and will include the results in a subsequent submittal. Test pit locations must be shown on the plans.*

Soil logs have been included in the Stormwater Report as performed by a "CSE". If this abbreviation denotes a "certified soil evaluator", then the evaluator's license number should also be provided. The test pits are identified as "SE" (ex. "SE-1") on the plans but test pit symbols labelled "TP" are also provided at some locations. Only one symbol should be used, and it must be identified on the legend.

Test pit SE #10 is near the 458 contour as shown on the existing conditions of the site plan. The test pit log shows that test pit ended at 60 inches (5 feet) below ground surface, or near elevation 453. The proposed bottom of Infiltration Basin 1A is at 453, thus the engineer has not demonstrated there is a 2-foot offset to ESHGWT.

38. The Engineer has claimed 5% Total Suspended Solids (TSS) removal for street sweeping which equates to (per MassDEP) minimum quarterly sweeping with a high efficiency vacuum sweeper. Given that normal bi-annual sweeping intervals are often not followed, it is generally not recommended to take credit for TSS removal for sweeping. It should be noted that with the removal of the street sweeping the 80% TSS removal requirement should still be met.

Acknowledged. The TSS calculations have been revised and no longer include TSS removal for street sweeping; 80% TSS removal is still provided.

39. In accordance with MassDEP Stormwater Management Standard #1, provide calculations to demonstrate the proposed drain outfall riprap aprons are adequately sized to prevent erosion during the largest analyzed storm event (length, width and minimum stone diameter).

Acknowledged. The revised Stormwater Report includes riprap sizing calculations.

40. The project includes several proprietary stormwater treatment units and as such the Engineer shall provide backup calculations according to MassDEP guidance for sizing these units based upon the calculated Water Quality Flowrate. Manufacturer's documentation is provided however the "treatment capacity" flowrate shown is unsupported.

Acknowledged. Calculations have been provided to support the treatment capacity flowrates in the manufacturers' documentation.

41. Per MassDEP, the 80% TSS removal for an infiltration basin includes pretreatment measures (forebay, water quality swale etc.). As presented, the Engineer is claiming 80% TSS removal from the basins in addition to claiming TSS removal from the pretreatment devices (double-counting). Either the pretreatment BMP TSS removal shall be removed or the basin TSS removal prorated to account for typical pretreatment (less 25%).

Acknowledged. The TSS calculations have been revised and appear acceptable.

42. The TSS removal calculations claim removal rates of 85 to 95% for the proposed proprietary treatment devices; these rates are derived from the manufacturer's data and not a recognized independent evaluation. In general, a TSS removal rate of 80% for the purposes of design is typical however many treatment technologies have removal rates verified by the (now defunct) UMass Amherst MASTEP program. The Engineer has included the MASTEP report in the submittal which appears to indicate a TSS removal rate of 69.6%. The Engineer shall provide adequate backup documentation to support the claimed TSS removal rates or reduce the rates according to independent evaluation criteria.

Acknowledged. The TSS calculations have been revised and appear acceptable.

43. The Engineer has incorporated "water quality ponds" in the stormwater design that are called "constructed stormwater wetlands" on the TSS removal worksheets. It is unclear which MassDEP Stormwater Handbook BMP these are designed to comply with. If they are indeed constructed wetlands, the design does not appear to include the required elements of the several different types in the Handbook. Also, similar to the infiltration basin comment above, the Engineer is claiming 80% TSS removal from these "ponds" in addition to claiming TSS removal from the pretreatment devices (double-counting). Finally, the orientation of the inlet and outlet spillways directly across from one another and in close proximity is likely to lead to direct "pass through" of stormwater flow with little to no treatment.

Acknowledged. The "water quality ponds" have been omitted in lieu of sediment forebays and constructed wetlands.

44. GEI understands that the Engineer is redesigning the proposed wetland crossings to meet Army Corp. of Engineers Stream Crossing Standards (open bottom, openness ratio, etc.). Thus, the current culvert crossings have not been reviewed. The Engineer shall note that

53. *The structure details (catch basin, manholes) do not specify the materials of construction or reinforcement. Also, the catch basin detail does not indicate the inside diameter of the structure.*

On the subdivision plans, the materials of construction have been specified for these structures, and the catch basin detail now includes an inside diameter (4'). However, the site plans still must include the materials of construction for the catch basins, yard drains, distribution structure, and ejector station manhole. The site plans must also include the inside diameter of the catch basins. The materials of construction should also be added to the outlet control structures on both plan sets to supplement the note regarding the type of structure and manufacturer.

54. *The site plans call out a "security fence" however a matching construction detail was not found.*

The Engineer responds that the security fence will be "per the owner's requirements", and stated that notes were added to the layout plan. No such notes were apparent on the layout plan. The Engineer should provide more details about the fence when they become finalized such as material (ex. chain link, barbed wire, etc.) and height. Gates must include a knox box or other means of access for emergency vehicles if so required.

55. *The site plans call out a "dolly pad" however a matching construction detail was not found. Note C7 on Sheet 22 of the site plans provides more details about the dolly pad, but the note must specify the design strength of the concrete.*

56. *On the site plans, proposed bituminous surfaced areas shall be noted/labeled as such.*
Acknowledged. The bituminous pavement has been labelled as "heavy duty" or "standard".

57. *Proposed parking aisle widths shall be labeled in all Lot 4 vehicle parking lots (scaled at the required 24-feet).*

Acknowledged. Passenger vehicle aisle widths have been labelled as 24'.

58. *The parking lot to the northwest of the Lot 4 building (nearest the office area), and several others, are shown with a cross-hatching that is not identified.*

Acknowledged. The legend identifies this hatching as "standard pavement" (as opposed to "heavy duty pavement").

Waiver Requests

59. *The Applicant requests a waiver from providing sidewalks along the roadway. Although this is a commercial/industrial project in a remote area of Town near the highway, it is still proposed as a public way. The Board may still wish to consider how the project provides for a variety of transportation modes including pedestrian and bicycles. This comment was raised by GEI during the preliminary subdivision plan review.*

The Engineer responds that they presented a waiver request to the Town during the May 23 hearing. GEI understands that waiver requests will be addressed by the Planning Board.

Additional Comments, June 22, 2018

60. *In the subdivision plan, there is a spot grade of 458.0 in Infiltration Basin 1B, but the lowest contour is elevation 457. The spot grades must be removed or revised to agree with the contours.*




TOWN OF UXBRIDGE
DEPARTMENT OF PUBLIC WORKS

147 HECLA STREET
UXBRIDGE, MASSACHUSETTS 01569-1326
508-278-8616 ♦ Fax 508-278-3179

Benn S. Sherman, P.E.
Director

MEMORANDUM

DATE: June 26, 2018
TO: Planning Board
FROM: Benn S. Sherman, P.E. 
RE: Campanelli Business Park-Definitive Subdivision & Special Permit
DPW Review No. 2

The DPW is in receipt of the following revised information and review correspondence.

1. Response letter from Kelly Engineering Group, Inc. dated May 30, 2018.
2. Graves Engineering, Inc. Peer Review #2 letter dated June 22, 2018.
3. Drawings entitled "Definitive Subdivision Plans for Campanelli Business Park, 612, 626 Douglas Street & 600 High Street, Uxbridge, MA" dated April 23, 2018 and prepared by Kelly Engineering Group, Inc. (17 Sheets).
4. Drawings entitled "Site Development Plans for Medline, Lots 1 and 4 Campanelli Drive" dated April 23, 2018 and prepared by Kelly Engineering Group, Inc. (26 Sheets).
5. Graves Engineering peer review letter dated May 21, 2018.

This memorandum serves as a follow up to the May 28, 2018 review performed by the DPW. The applicants response are depicted in **bold** and the numbering is maintained throughout.

Comments

The following comments are in response to the Graves Engineering, (GEI) review letter. The GEI numbering has been maintained for clarity.

6. The DPW recommends the Applicant provide a detail Erosion and Sedimentation Control plan as required.
Acknowledged and the DPW will defer to GEI's response.
7. Based on discussions with the Applicant's design engineer, it is their intention to connect the site sanitary sewer to the existing sanitary collection system in Douglas Street near the Taft Hill development. The DPW requests the Applicant engage our consultants to evaluate the project demands relative to the water and sewer hydraulic models. This will review will be in concert with the in-house DPW review provided.
Acknowledged. The DPW still reserves the right to have the project related water and sewer demands incorporated into the existing hydraulic models to confirm impacts to the existing infrastructure.
8. The proposed force main connections need to be reviewed by the DPW. Furthermore, it is proposed the subdivision roadways and infrastructure will be brought forth for acceptance by the Town. The DPW recommends the Applicant develop an easement for approval by the Town for the proposed



force main within the layout of "Campanelli Drive". The DPW does not wish to operate or maintain the force main prior to the gravity collection system.

Acknowledged. This force main will be considered a "service connection" and will remain the responsibility of the property owner.

11. Easements shall be developed for all stormwater, water and sewer related infrastructure that extend beyond the layout of the proposed roadways.

Acknowledged and request the Applicant develop the applicable easement areas (stormwater, water and/or wastewater) and include them on the final plans prior to approval by the Planning Board..

12. Due to the proposed volume of truck traffic, the DPW recommends the Applicant provide a pavement design sufficient for the proposed use of the site.

The DPW's comment remains relative to the pavement cross section. The proposed pavement section (2 ½" binder, 1 ½" top) is equivalent to a low volume-low truck residential subdivision roadway not heavy truck traffic. The pavement section should be designed in accordance with MassDOT standards sufficient for the proposed loadings.

13. In response to GEI's comment on the cross section, the DPW recommends the Applicant provide additional details relative to the installation of utilities within the roadway layout. Specifically, verify and confirm there are adequate provisions for offsite utilities. If there are adequate provisions for these utilities, the DPW will not have any objections to the modifications of the cross section as long as a waiver is requested by the Applicant.

Acknowledged no further comment.

14. In addition to GEI's comments, the retaining wall located between stations 7+00 and 8+00 appears to be located at the edge of pavement. Please confirm location.

The DPW's comment remains relative to the retaining wall. The plans depict the "line type" for the retaining wall essentially on the edge of pavement. The applicant's response indicates there is an offset of 3 feet to allow for guardrail to minimize wetland impacts. The plans as shown would have additional wetland impacts IF there was in fact 3 feet between the edge of pavement and retaining wall. Please confirm the location of the retaining wall.

17. The DPW requests additional dimension lines be added to the typical cross sections depicting the lane widths.

Acknowledged.

22. The DPW concurs with GEI's comments and requests a third party review of the traffic analysis.

Acknowledged.

23. The DPW concurs with GEI's comments requesting input from the Fire Department on the adequacy of the secondary emergency access. In addition, the DPW understands this portion of High Street has not been abandoned or discontinued. As such, the proposed improvements will establish a secondary emergency access to the Medline facility. The DPW requests the Applicant provide a maintenance plan to include snow and ice activities.

Acknowledged. While the DPW understands this portion of "Old High Street" will be improved to provide Medline with a secondary emergency access, it is not the intent of the DPW to provide winter maintenance activities.



29. The DPW concurs with GEI's comments. In the absence of the stormwater regulations, compliance with the MassDEP Stormwater Handbook is required.
Acknowledged.
33. The DPW concurs with GEI's comments and emphasizes the need for soil testing to confirm design.
The DPW concurs with GEI's June 22, 2018 assessment of the applicant's response.
35. The DPW concurs with GEI's comments. The proposed change would be crucial to future maintenance activities.
Acknowledged.
37. The DPW concurs with GEI's comments and emphasizes the need for an emergency overflow/discharge from the subsurface system.
The DPW concurs with GEI's June 22, 2018 assessment of the applicant's response. The DPW has long term maintenance concerns with the proposed overflow discharge to the Douglas Street ROW.
52. Attached to this memorandum are the cut sheets for Town specified frames and covers.
Acknowledged.
54. The DPW concurs and recommends the security fences around the drainage ponds.
Acknowledged.
59. The DPW concurs with GEI's comments. There is a strong push from MassDOT to provide multimodal provisions (Healthy Transportation Initiative).
Acknowledged. The DPW defers to the Planning Board relative to the waiver request.

ADDITIONAL DPW COMMENTS

- DPW-1. Plan and Profile sheets: Show proposed water main and force main (including manhole penetrations from cross streets and driveways). Also, add cross street ROW at intersection.
Acknowledged. The Campanelli Drive profile still shows the proposed water connection to Douglas Street when there is an existing 3-way valve and stub located in the area of the "Extension" street intersection.
- DPW-2. In addition to the Planning Board, BMP inspection and maintenance reports should be forwarded to both the Conservation Commission and DPW. A condition should be included in the decision Reporting should include both construction and post-construction reporting. This information is required for NPDES MS4 annual reporting.
Acknowledged.
- DPW-3. Sheet 26 of the Special Permit Set includes details for sanitary sewer manhole and two 1000 Industrial wastewater holding tanks. Please confirm the location and/or need for these details.
Acknowledged.



- DPW-4. The details provided for the BMP emergency spillways call for rip rap. The DPW recommends the Applicant provide a "sill" to assist with future maintenance and ensure a consistent elevation can be maintained.
Acknowledged.
- DPW-5. The DPW standard for fire hydrants are the American Darling B-84-B. The details should be updated accordingly.
Acknowledged.
- DPW-6. The subdivision plans depict a 10-inch water main. The DPW reserves comments until the proposed demand can be verified by the DPW's water consultant.
Acknowledged. The DPW still reserves the right to have the project related water and sewer demands incorporated into the existing hydraulic models to confirm impacts to the existing infrastructure.
- DPW-7. The proposed connection to the municipal water system is shown at the intersection of Campanelli Drive and Douglas Street (Rt. 16). There is an existing 8"x8"x16" tee located at the easterly driveway that was marked by the Uxbridge Water Division.
Acknowledged. The Campanelli Drive profile still shows the proposed water connection to Douglas Street when there is an existing 3-way valve and stub located in the area of the "Extension" street intersection.
- DPW-8. The DPW recommends the Applicant add three inline water gate valves downstream at each proposed driveway connection.
Acknowledged.
- DPW-9. Provide a detail for the force main connection to the proposed sanitary manholes.
For maintenance purposes, the DPW request the applicant include an internal drop for the force main connection to the sanitary manhole.
- DPW-10. The retaining wall at approx. Station 0+75 LT appears to terminate in the subsurface infiltration area 0A. Verify location of both the retaining wall and subsurface system.
Acknowledged. Refer to follow comment 14 above.
- DPW-11. There are a number of roadway lighting fixtures that appear to be within the paved surface. Verify and update accordingly.
Acknowledged.
- DPW-12. Special Permit Plans: The DPW recommends the Applicant add a potable water meter pit at the entrance drive to Medline facility.
Acknowledged.

If you have any additional questions, please don't hesitate to contact this office.

CC: Jim Boliver, Water Supervisor
Jim Legg, Wastewater Supervisor
Paul Morante, Highway Supervisor

Exhibit 3

From: Mark Gershman <MGershman@BETA-Inc.com>
Date: June 27, 2018 at 8:28:17 AM EDT
To: Benn Sherman <BSherman@uxbridge-ma.gov>
Subject: RE: Campanelli Business Park

Benn

Would suggest the following review comment:

The Plans indicate the use of several prefabricated box and arch culverts (30 ft wide by 7.1 ft high; 20 ft wide by 4.5 ft high; and 25 ft wide x 8.6 ft rise) to convey stream(s) beneath the proposed Campanelli Business Park roadways. As these roadways will become Public Ways and accepted by the Town, the design and detailing of these structures must conform to MassDOT's Design Requirements for Municipal Bridge Projects subject to MGL Chapter 85 Section 35 for BRI and NBI bridges, see attached. The Applicant is to provide final MA PE stamped design plans and supporting calculations approved by MassDOT's State Bridge Engineer per MGL Chapter 85 Section 35 prior to construction. In addition, the design and geometry of these structures should consider future inspection and maintenance considerations.

Mark

Mark R. Gershman, PE
Vice President

BETA Group, Inc. | 781.255.1982 | C: 508.954.1496
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Municipal Bridge Projects

MGL Chapter 85 Section 35 Review Process

Design Requirements and Submittals for New Bridge and Full Bridge Replacement Projects

NOTE: Design Requirements to be used depend on the Category of the Proposed Structure and not on the Category of the Existing Structure

Note: If the Category of the Proposed Structure is neither BRI nor NBI (i.e., span ≤ 10 feet), a Chapter 85 review is not required

If the Category of the Proposed Structure is a BRI Bridge (10 feet < span ≤ 20 feet)

Roadway Functional Class	Hydraulic Design	Geotechnical Design	Structural Design	Construction Details	Design Review Submittals	Other Considerations
Rural Minor Collector Rural Local Road Urban Collector Urban Local Road	Hydraulic report per Bridge Manual (except as noted below) Less than 2 feet of freeboard Flood frequency: 10 year Design Scour freq.: 25 year Check Scour freq.: 50 year Must be scour stable after Design Scour Event but not necessarily available for use.	Geotechnical Report per Bridge Manual (except as noted below) At least one boring to refusal below bottom of footing or pile tip for every 30 feet of abutment or culvert width. If rock is encountered, a 10 foot core is recommended.	Design in accordance with AASHTO LRFD for HL-93 Design Loading. Bridge Manual DL and LL load distribution procedure if applicable. Seismic: AASHTO Guide Specifications for SDC A requirements. If a pre-fabricated structure that is designed by the fabricator, when the Contractor submits the shop drawings, the municipality's Designer of Record shall review and accept the design.	Need not follow MassDOT Bridge Manual construction details. If not using standard MassDOT bridge railings or barriers and transitions, those used must be crash tested to either NCHRP 350 or MASH, Test Level 2 minimum if roadway speed ≤ 45 mph, minimum Test Level 3 if roadway speed > 45 mph. Provide 42" railing height if pedestrians are allowed on bridge.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer for MassDOT review. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.	Evaluation of structure from a Cultural Resources standpoint. Consider Stream Crossing Standards requirements. Consider "no rise" guidelines for NFIP regulatory floodways. Consider Complete Streets guidelines. Provide for utilities (water, gas, etc.) if it is expected that they will be installed in the future. Environmental permitting may put restrictions on time of year when work can be done in the water.
Rural Major Collector Urban Minor Arterial	Hydraulic report per Bridge Manual Provide 2 feet of freeboard Flood frequency: 25 year Design Scour freq.: 50 year Check Scour freq.: 100 year Must be scour stable and available for limited use after the Design Scour Event.	Geotechnical Report per Bridge Manual Perform a Design Boring program in accordance with Bridge Manual Part 1, Section 1.2. Seismic design per Bridge Manual for a 1000 year return period event. If a pre-fabricated structure that is designed by the fabricator, when the Contractor submits the fabricator design calculations and shop drawings, the municipality's Designer of Record shall review and accept the design.	Design in accordance with AASHTO LRFD for HL-93 Design Loading. Bridge Manual DL and LL load distribution procedure if applicable. Seismic design per Bridge Manual for a 1000 year return period event. If a pre-fabricated structure that is designed by the fabricator, when the Contractor submits the shop drawings, the municipality's Designer of Record shall review and accept the design.	If using MassDOT standard bridge details, follow MassDOT Bridge Manual construction details. Use MassDOT bridge railings and barriers and transitions.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.	Evaluation of structure from a Cultural Resources standpoint. Consider Stream Crossing Standards requirements. Consider "no rise" guidelines for NFIP regulatory floodways. Consider Complete Streets guidelines. Provide for utilities (water, gas, etc.) if it is expected that they will be installed in the future. Environmental permitting may put restrictions on time of year when work can be done in the water.

If the Category of the Proposed Structure is a BRI Bridge (10 feet < span ≤ 20 feet) (Continued)						
Roadway Functional Class	Hydraulic Design	Geotechnical Design	Structural Design	Construction Details	Design Review Submittals	Other Considerations
Rural Principal Arterial Rural Minor Arterial Urban Principal Arterial Or Any structure on the National Highway System (NHS) (See Note 1 Below)	Hydraulic report per Bridge Manual Provide 2 feet of freeboard Flood frequency: 50 year Design Scour freq.: 100 year Check Scour freq.: 200 year Must be scour stable and available for limited use after the Check Scour Event.	Geotechnical Report per Bridge Manual Perform a Design Boring program in accordance with Bridge Manual Part I, Section 1.2.	Design in accordance with AASHTO LRFD for HL-93 Design Loading. Bridge Manual DL and LL load distribution procedure if applicable. Seismic design per Bridge Manual for a 1000 year return period event, or 2500 year return period event for NHS bridges, based on the SDC of the site. If a pre-fabricated structure that is designed by the fabricator when the Contractor submits the fabricator design calculations and shop drawings, the municipality's Designer of Record shall review and accept the design.	If using MassDOT standard bridge details, follow MassDOT Bridge Manual construction details. Use MassDOT bridge railings and barriers and transitions.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.	Evaluation of structure from a Cultural Resources standpoint. Consider Stream Crossing Standards requirements. Consider "no rise" guidelines for NFIP regulatory floodways. Consider Complete Streets guidelines. Provide for utilities (water, gas, etc.) if it is expected that they will be installed in the future. Environmental permitting may put restrictions on time of year when work can be done in the water.
If the Category of the Proposed Structure is a NBI Bridge (20 feet < clear span)						
Roadway Functional Class	Hydraulic Design	Geotechnical Design	Structural Design	Construction Details	Design Review Submittals	Other Considerations
Rural Minor Collector Rural Local Road Urban Collector Urban Local Road	Hydraulic report per Bridge Manual (except as noted below) Provide 2 feet of freeboard Flood frequency: 10 year Design Scour freq.: 25 year Check Scour freq.: 50 year Must be scour stable after Design Scour Event but not necessarily available for use.	Geotechnical Report per Bridge Manual (except as noted below) Perform a Design Boring program in accordance with Bridge Manual Part I, Section 1.2.	Design in accordance with AASHTO LRFD for HL-93 Design Loading and following Bridge Manual guidelines. Seismic design per Bridge Manual for a 1000 year return period event based on the SDC of the site. If a pre-fabricated structure that is designed by the fabricator when the Contractor submits the fabricator design calculations and shop drawings, the municipality's Designer of Record shall review and accept the design.	Need not follow MassDOT Bridge Manual construction details. If not using standard MassDOT bridge railings or barriers and transitions, those used must be crash tested to either NCHRP 350 or MASH, Test Level 2 minimum if roadway speed ≤ 45 mph, minimum Test Level 3 if roadway speed > 45 mph. Provide 42" railing height if pedestrians are allowed on bridge.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.	Evaluation of structure from a Cultural Resources standpoint. Consider Stream Crossing Standards requirements. Consider "no rise" guidelines for NFIP regulatory floodways. Consider Complete Streets guidelines. Provide for utilities (water, gas, etc.) if it is expected that they will be installed in the future. Environmental permitting may put restrictions on time of year when work can be done in the water.

If the Category of the Proposed Structure is a NBI Bridge (20 feet < clear span) (Continued)						
Roadway Functional Class	Hydraulic Design	Geotechnical Design	Structural Design	Construction Details	Design Review Submittals	Other Considerations
Rural Major Collector Urban Minor Arterial	Hydraulic report per Bridge Manual Provide 2 feet of freeboard Flood frequency: 25 year Design Scour freq.: 50 year Check Scour freq.: 100 year Must be scour stable and available for limited use after the Design Scour Event.	Geotechnical Report per Bridge Manual Perform a Design Boring program in accordance with Bridge Manual Part I, Section 1.2.	Design in accordance with AASHTO LRFD for HL-93 Design Loading and following Bridge Manual guidelines. Seismic design per Bridge Manual for a 1000 year return period event based on the SDC of the site. If a pre-fabricated structure that is designed by the fabricator, when the Contractor submits the fabricator design calculations and shop drawings, the municipality's Designer of Record shall review and accept the design.	If using MassDOT standard bridge details, follow MassDOT Bridge Manual construction details. Use MassDOT bridge railings and barriers and transitions.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.	Evaluation of structure from a Cultural Resources standpoint. Consider Stream Crossing Standards requirements. Consider "no rise" guidelines for NFIP regulatory floodways. Consider Complete Streets guidelines. Provide for utilities (water, gas, etc.) if it is expected that they will be installed in the future. Environmental permitting may put restrictions on time of year when work can be done in the water.
	Rural Principal Arterial Rural Minor Arterial Urban Principal Arterial Or Any structure on the National Highway System (NHS) (See Note 1 Below)	Hydraulic report per Bridge Manual Provide 2 feet of freeboard Flood frequency: 50 year Design Scour freq.: 100 year Check Scour freq.: 200 year Must be scour stable and available for limited use after the Check Scour Event.	Geotechnical Report per Bridge Manual Perform a Design Boring program in accordance with Bridge Manual Part I, Section 1.2.	Design in accordance with AASHTO LRFD for HL-93 Design Loading and following Bridge Manual guidelines. Seismic design per Bridge Manual for a 1000 year return period event, or 2500 year return period event for NHS bridges, based on the SDC of the site. If a pre-fabricated structure that is designed by the fabricator, when the Contractor submits the fabricator design calculations and shop drawings, the municipality's Designer of Record shall review and accept the design.	If using MassDOT standard bridge details, follow MassDOT Bridge Manual construction details. Use MassDOT bridge railings and barriers and transitions.	Hydraulic Report (if over water) Geotechnical Report Complete final set of Construction Plans and one set of design calculations checked by a second engineer. If a pre-fabricated structure, submit the shop drawings and fabricator design calculations after they have been reviewed and accepted by the municipality's Designer of Record. After MassDOT accepts the design, a complete final set of Construction Plan mylars with the MassDOT Chapter 85 approval stamp printed on each sheet for Bridge Engineer's signature.
<p>Note 1: The following NHS routes: Eisenhower Interstate, Other NHS Routes and STRAHNET Routes and Connectors, are considered Critical/Essential in that they are the primary routes for emergency use during and after an emergency or natural event. Structures on these NHS routes must be available for limited use after such an event. See MassDOT Bridge Manual for more information on these requirements. A map of NHS Routes in Massachusetts is available on the following website: http://www.fhwa.dot.gov/planning/national_highway_system/nhs_mapof/</p> <p>Note 2: Bridge Railing and Transition and Bridge Railing Retrofit Resources: Federal Highway Administration: http://safety.fhwa.dot.gov/roadway_dept/policy_guides/road_hardware/crimeasures/bridge_railings/ AASHTO AGC ARTBA Task Force 13: http://www.aashtotf13.org/Bridge-Rail.php</p> <p>Note 3: AASHTO LRFD = AASHTO LRFD Bridge Design Specifications, Latest Edition with current interims and errata</p>						