Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

Union Station Suite 219
2 Washington Square
Worcester, MA 01604
508 752-1001
Fax 508 752-1276

Memorandum

To: Karen Galligan, Director
Department of Public Works

Date: February 24, 2011
(Revised September 30, 2011)

Project No.: 10832.01

From: Gregory Russell, P.E.
Project Engineer
Brian Brosnan, P.E.
Project Manager

John J. Bechard, P.E
Principal & Regional Office Manager

Re: Main Street/Route 30
Utility Undergrounding
Feasibility Study

The Town of Southborough contracted with Vanasse Hangen Brustlin, Inc. (VHB) to assist the Town in determining the feasibility of relocating the existing overhead utility infrastructure along Main Street (Route 30) underground. This memorandum provides a summary of how the feasibility study was conducted and the information gathered during the process. The study also presents order of magnitude cost estimates for placing the existing overhead infrastructure underground.

Study Framework

The framework for conducting this Feasibility Study included correspondence with Town personnel, conducting a field visit, corresponding with representatives from each of the impacted utility companies and developing an order-of-magnitude cost estimate. The Town provided VHB with documentation from previous efforts, including previous estimates provided by multiple utility companies. These estimates were utilized to improve the cost estimate presented in this study.

Massachusetts General Law Chapter 166: Section 22

Regulation of overhead utilities within Massachusetts is subject to Massachusetts General Law (M.G.L.) Chapter 166 – Telephone and Telegraph Companies, and Lines for the Transmission of Electricity. M.G.L. Chapter 166: Section 22 discusses the procedure for Massachusetts communities and companies wishing to construct and/or alter transmission lines, including placing them underground. Subsection D lays out the procedure available for Massachusetts communities to require utilities to remove existing overhead utility infrastructure. M.G.L. Chapter 166: Section 22D states, in part, the following:

> *After a report has been filed under section twenty-two B, the municipality may adopt an ordinance or by-law which shall require a utility to remove its poles and overhead wires and associated overhead structures which are located upon, along or across any public way or ways within all or any part or parts of the municipality. Any such ordinance or by-law shall specify whether it applies to all of the municipality or only to a part or parts thereof and, if only to a part or parts, shall describe such part or*

parts with reasonable certainty by reference to the names of any way or ways to all or any designated portions thereof to which it applies, by reference to a map, or by other suitable means.

Such ordinance or by-law may specify in whole or in part the sequence which any utility shall follow in removing its poles and overhead wires and associated overhead structures by specifying the part or parts of the municipality in which removal shall first be affected, then the part or parts in which removal shall next be effected.

Subsections M and N layout a procedure for Towns and utility companies to provide funding for this type of capital improvement stating as follows:

Section 22M. In addition to all other rates, charges and fees it may otherwise be authorized to impose and collect any utility shall impose and collect as a capital contribution towards the cost of construction a surcharge of two per cent on its total billing to each customer located in a city or town which has in force and effect an ordinance or by-law adopted in accordance with section 22D. However, a distribution company, as defined in section 1 of chapter 164, shall impose and collect a surcharge of 7 per cent of retail delivery revenues, plus interest at the rate set by the department, for customer security deposits except in a city or town that before the effective date of this section has enacted an ordinance or by-law under section 22D establishing a 2 per cent surcharge or where construction is in progress or already completed, unless the city or town otherwise agrees to the 7 per cent surcharge by adopting an ordinance or by-law under said section 22D. A surcharge under this section shall apply only if the distribution company is not in violation of the ordinance or by-law and fit the ordinance or by-law has been in effect for a period of at least 1 year.

Section 22N. Any ordinance or by-law adopted under the provisions of section twenty-two C or section twenty-two D shall become effective on the first day of January next following a date nine months subsequent to the date of its enactment.

Study Area

The feasibility study focuses on Main Street (Route 30) between Boston Road and Sears Road. Main Street is a minor arterial that serves as one of the primary east-west corridors within Southborough (with Route 9 and Southville Road being the others). A Study Area Locus Map is provided in Appendix A. This stretch of Main Street is listed on the Massachusetts State Register of Historic Places as two distinct areas. The Park-Main Street Business District, which runs from Boston Road to School Street, contains the easterly portion of the study area. The remainder of the study area, which includes the Town Common, is included in the Main Street Historic Area. In addition to the Town Common, land use along Main Street varies among commercial, educational, residential and public areas. Main Street also serves as one of the primary utility corridors within the Town, with significant infrastructure present within the study area.

The limits of the anticipated undergrounding generally coincide with the Main Street (Route 30) Reconstruction Project currently under design (MassDOT Project #604989). The Main Street project is expected to result in minor widening, intersection and sidewalk reconstruction, and significant utility work between Park Street and Sears Road.

In addition to the area to be covered by the MassDOT Project, the Town has requested that VHB also investigate the feasibility of placing the existing utilities underground between Park Street and Boston Road. This segment of the roadway constitutes the Downtown Commercial area of

Southborough. There is an existing at-grade rail crossing, maintained by CSX Transportation, Inc., located approximately 160-feet west of the intersection of Main Street and Boston Road.

The location and orientation of the existing infrastructure lends itself to breaking down the study area into four segments:

1. Boston Road to Park Street;
2. Park Street to Route 85;
3. Route 85 to Parkerville Road; and
4. Parkerville Road to Sears Road.

The Town has also asked VHB to investigate the feasibility of two additional alternatives. The first of these would have a westerly limit to any undergrounding be located at the main entrance to the Fay School. In this instance, the area of impact would extend from the Fay School to Boston Road. The second alternative would focus on the Town Common with undergrounding restricted to the area of Main Street just east of Route 85 and just west of Common Street. It should be noted here that the utility companies will likely make the final decision as to the specific limits of undergrounding based on both where their main feeds are located and where there is an adequate location to transition back to overhead infrastructure.

Looking at the corridor in segments allows for a more in-depth look at costs and construction phasing of the overall project. The segment analysis will also provide the Town with additional information to make a final decision on whether to move forward with the undergrounding project or perhaps only a portion of the project. These segments were selected to allow for the most efficient method of undergrounding the existing overhead infrastructure. Due to the presence of the Town Common, as well as the anticipated roadway widening as part of the MassDOT project, the segment between Route 85 and Parkerville Road would be considered the most critical of the four noted above. This segment also has the highest density of overhead infrastructure that will need to be placed underground. In addition, Parkerville Road appears to be a break point where multiple utilities intersect Route 30 and move in various directions.

Existing Infrastructure

A total of five utility companies currently have overhead infrastructure within the study area. Companies that currently maintain overhead infrastructure along Main Street are National Grid, Verizon, Verizon Business (formerly MCI), Lightower Fiber Networks and Charter Cable. The setting of utility poles within Southborough is the responsibility of Verizon. Between Sears Road and Park Street there are a total of 55 utility poles, with five additional poles between Park Street and Boston Road. There are a total of 32 street lights mounted on the existing utility poles located within the study area, which are maintained by National Grid. The following is a summary of the services provided by each of the utility companies with existing infrastructure along the Route 30 corridor, as well as the limits of said infrastructure:

National Grid is the principal provider of electric service within the Town of Southborough. National Grid currently maintains an overhead infrastructure system that includes 13 transformers (both one and three phase) and five (5) utility switches. The infrastructure travels along Route 30 in its entirety as well as along each of the side streets that intersect Route 30. Service connections along Route 30 are primarily above ground throughout the study area. National Grid currently maintains 55 private service connections, as well as service connections for the approximately 30 street lights currently located along Main Street, via the existing overhead infrastructure.

Verizon provides phone, cable television and high-speed internet (DSL) service within the Town of Southborough. Verizon's infrastructure, which includes both traditional cable and fiber optic,

runs throughout the study area. Verizon was unable to provide a number of service connections within the study area.

Verizon Business (formerly MCI) provides business-oriented communications services. With respect to the study area, Verizon Business' infrastructure is located along Deerfoot Road and then turns to the west at Main Street and continues to the west along Route 30. At this time, to the best of VHB's knowledge, Verizon Business has no service connections within the study area.

Lightower Fiber Networks provides fiber optic networking for businesses. Lightower's existing overhead infrastructure travels north on Parkerville Road, turns east onto Main Street then north onto Route 85. At this time, to the best of VHB's knowledge Lightower has no service connections within the study area.

Charter Communications provides phone, cable and high-speed internet service within the Town of Southborough. Charter's infrastructure runs along Route 30 throughout the entire study area. Charter was unable to provide a number of service connections within the study area.

Typically the only above ground infrastructure that would be maintained by the Town would be the street lighting system and/or a fire notification system. As noted above, National Grid maintains the existing street light system, while, to the best of VHB's knowledge, the Town does not currently have a fire notification system in place.

A summary of the existing overhead and underground infrastructure is shown in Figures 2 thru 5 in Appendix A.

Underground Infrastructure Requirements

Placing the existing overhead utilities underground will require a significant investment in new infrastructure. A minimum of two subsurface duct-banks will be required for the entire length of the project, with one duct-bank being designated for the electric distribution system and the second bank being shared by the various companies providing communications services (i.e. phone, cable TV, fiberoptic, etc.).

Based on the location of existing subsurface utilities (gas, water, sewer, drainage, etc.) it is likely that the proposed duct banks would be located in the vicinity of the roadway centerline. While in practice the duct bank would typically be placed in the sidewalk and/or shoulder limits, the topography and presence of numerous stone walls would likely not be a feasible option in this instance. If feasible, both duct banks would be located adjacent to each other in a single trench. The duct-banks would run for the entire length of the project and be carried to a designated riser pole (or multiple poles if necessary) to transition back to aerial infrastructure. Duct banks would also be required for short distances (approximately 100- to 200-feet) on side streets in order to transition back overhead, as well.

In addition to duct banks, existing overhead transformers and switches will be replaced with standard pad mount equipment. Each company will require and maintain independent manhole systems along the entire length of the project, with National Grid will requiring service manholes at approximately 300- to 350-foot intervals. In higher density areas such as between Route 85 and Park Street, it may be possible to combine communications service connections into shared utility vaults. Removal of the existing utility poles will also require the removal of the existing pole-mounted street lights. The Town will be required to purchase new stand-alone light poles, either independently or through National Grid, which will be powered via the new underground infrastructure. A

secondary duct bank would likely be installed within the sidewalk limits to provide service connections for the street lighting.

Based on information provided by representatives from multiple utility companies, on a project such as this a single contractor would typically be utilized to construct the entire system, with a single utility company taking the lead with regards to coordination. If the decision is made to move forward with the undergrounding, the Town's representatives should have a joint meeting with representatives of the utility companies to facilitate the coordination between the companies.

In addition to providing an underground path for utilities along Route 30, accommodations will also be required on private property in order to convert existing overhead connections to underground connections. The responsibility for these connections is dependent on a) the setback of the existing buildings and b) the wording of any ordinance requiring that existing overhead utilities be relocated underground. It should be noted that any work that is to occur on private property, such as private utility connections, will require easements. Securing easements would be the Town's responsibility.

The undergrounding of the existing facilities between Park Street and Boston Road will require crossing beneath an existing at-grade rail crossing. National Grid, Verizon and Charter are currently the only companies with overhead infrastructure along this segment. The design of this rail crossing will require the review and approval of CSX Transportation, Inc.

A summary of the minimum underground infrastructure likely to be required is as follows:

- A minimum of two distinct poured concrete duct banks, measuring approximately five-feet in width;
- One electric distribution bank (approximately 2'x2') with four 5" conduit runs with a minimum depth of 27-inches to the top of bank;
- One communications duct bank (approximately 3'x3') with eight 4" conduit runs with a minimum depth of 21-inches to the top of bank;
- Electric manholes (7'x14') located every 350 feet for the length of the duct bank;
- Communications manholes (6' diameter) located every 350 feet for the length of the duct bank (each company will maintain its own manhole system);
- Pull boxes/hand holes to be located at bends in duct bank and as needed for service connections and light poles.

Figures 6 through 8, located in Appendix A, show a conceptual layout of the proposed duct bank and manhole system for the potential undergrounding between the Fay School and Boston Road. The equipment layout is based on information contained in various construction publications provided by National Grid. This layout and the noted infrastructure is strictly conceptual and is subject to change per the requirements and specifications of the various utility companies to be involved in the effort, as well as the Town.

Funding

There are multiple ways of financing a project of this variety. The most efficient way appears to be the surcharge method, where a by-law is passed by a Town/City allowing utility companies to charge monthly fees to pay for the costs of undergrounding the existing utilities. If a bylaw were passed, utility companies will be permitted to collect additional fees on the order of 7-percent for distribution (i.e. electric) companies and 2-percent for communications companies. These fees would be applied to the total monthly billing for each subscriber that the respective company maintains within the Town. This method of payment requires utility companies to carry the underground infrastructure into private property up to the structure (commercial building, house, etc.) or 50-feet,

whichever is less. It should be noted that the overhead utilities would remain in place while the underground infrastructure was constructed, in order to minimize the length of service disruptions.

If the Town were not to pass a bylaw but still consider going forward with the undergrounding, the Town would likely have to cover the total cost of the project up front. Aside from having a significant up-front cost, if this method were chosen, the Town or individual land owners will be required to coordinate the placement of underground infrastructure in order to allow the utility companies to make service connections. There is also the possibility that a combination of payment methods could be employed, with the Town providing a portion of the costs in combination with a surcharge by-law; however any method of combining payments would have to be coordinated with the various utility companies.

Project funding that would fall to the Town could be available through a number of sources. The Town's Community Preservation Act's Historic Conservation funds may be used to pay for restoration/beautification of historic areas, of which Main Street is a part. There are a number of State, Federal and independently funded programs that provide grants of varying amounts for restoration and beautification of historical areas. Potential sources for grants include, among others, the following:

- Massachusetts Historical Commission
  - Massachusetts Preservation Projects Fund (Planning and/or Construction)
- The National Trust for Historic Preservation
  - Johanna Favrot Fund for Historic Preservation (Planning and/or Construction)
  - National Trust Preservation Fund (Planning Only)

Order-of-Magnitude Cost Estimate

As part of this feasibility study, VHB has developed an order-of-magnitude cost estimate for the Town to utilize in determining the best way forward. As part of this effort, VHB requested order-of-magnitude cost estimates from each of the utility companies that currently maintain overhead infrastructure within the study area. These estimates were used to develop the total cost for moving the existing overhead infrastructure underground within each of the four segments. Costs of placing the existing infrastructure underground is impacted by a number of factors, including the location of the existing underground utility infrastructure (i.e. gas, water, drainage, etc.), the infrastructure needs of the various utility companies currently maintaining overhead infrastructure, roadway patching/reconstruction, the number of connections that need to be maintained and the cost to mobilize construction equipment to the site.

As stated in the previous section, based on the infrastructure needs of the various companies, it is anticipated that any undergrounding effort will require a minimum of two duct-banks running the length of the project; one for electric service and a second capable of housing the required communications conduit runs.

While the burden of securing funding for this project ultimately falls on the Town, the costs can be broken down by those incurred directly by the Town, the private utility companies and private landowners who will be impacted by the utility relocation.

Private Utility Costs

Costs that will be incurred by the utility companies include design of the proposed duct bank, labor and materials for construction of the duct bank, converting existing overhead service connections underground and construction coordination. *Table 1* provides a breakdown of the various estimates provided by affected companies for relocating the existing overhead infrastructure underground.

TABLE 1 – Private Utility Costs

Roadway Segments	Length (FT)	Private Utility Company Estimates: National Grid[1]	Verizon[2]	Charter[3]	Lightower[4]	Verizon Business[5]	Total Cost
1. Boston Rd to Park St[6]	450	$437,000	$112,000	$112,000	N/A	N/A	$661,000
2. Park St to Rt. 85	1,200	$1,086,000	$245,000	$245,000	N/A	N/A	$1.58M
3. Rt. 85 to Parkerville Rd	2,750	$2,488,000	$561,000	$561,000	$40,000	N/A	$3.65M
4. Parkerville Rd to Sears Rd	950	$859,000	$194,000	$194,000	N/A	$25,000	$1.28M
Total	4,900	$4,870,000	$1,112,000	$1,112,000	$40,000	$25,000	$7.17M[7]

Note: The above estimates do not include the cost of roadway reconstruction or construction management; those efforts will be estimated once the project limits are determined and scope of work is finalized.
N/A – Company has no overhead facilities present within noted roadway segment
1 Based on estimate for overall corridor provided by National Grid on April 17, 2009.
2 Based on correspondence with Verizon representatives in October 2010
3 Cost per linear foot assumed to be approximately equal to Verizon costs
4 Based on estimate provided by Lightower on November 2, 2010
5 Cost per linear foot assumed to be approximately equal to Lightower costs.
6 Utility costs include encroachment and construction fees required for going under CSX rail crossing.
7 Total costs include the removal of the existing overhead infrastructure including existing street lights and utility poles.

The costs included in Table 1 above are based on estimates of varying levels of accuracy provided by the affected utility companies. At the time of printing, no monetary value had been provided by Charter Communications or Verizon Business. However, based on estimates provided by companies with similar infrastructure along the corridor, assumptions were able to be made. It has been assumed that Charter's costs will be similar to that suggested by Verizon. The same is assumed of the relation between Lightower's and Verizon Business' facilities.

The construction costs shown for the roadway segment from Park Street to Boston Road include fees charged for encroaching on the existing CSX railroad crossing. Prior to the utilities being placed underground in this section, CSX requires the proposed design be sent to them for review and approval. Following approval, CSX would coordinate with the contractor to provide certified flagmen for the duration of construction activities. If the undergrounding were to take place as part of the roadway reconstruction, CSX's consultant would be responsible for the overall design of the railroad crossing, including the utility crossing, at the cost of the Town. Assuming the undergrounding were undertaken independent of the roadway project, a summary of the fees required are as follows:

- Design Review Fees vary from $1,450 to greater than $9,500. For a project of this size, fees would likely be approximately $4,000 for communications companies and $6,000 for National Grid;
- Each crossing utility company would be required to pay a $750 insurance fee;
- Every time the owner of a facility needs to access the railroad right-of-way (i.e. for construction, maintenance, etc) would require a $150 fee;
- CSX will provide flagmen for the duration of construction at a cost of $800 per day.

Town Costs

Direct costs that will be the responsibility of the Town will include the purchase and installation of stand-alone light poles, relocation of existing underground municipal utilities (water & drainage) where necessary, as well as project coordination and construction management. The Town would also be responsible for the cost of adjusting and/or relocating the existing gas lines currently located

along Route 30, although this work would be coordinated and/or conducted by the company owning the affected facilities.

Currently, there are 32 existing street lights (approximately one light every 170-feet) mounted on utility poles within the study area. It has been assumed that the Town will install a new street lighting system as part of the undergrounding process. Due to the elimination of utility poles, the existing street lights will need to be replaced with stand-alone light poles, which will be serviced via the new underground infrastructure. Poles could be purchased by the Town or leased through National Grid. If the Town were to postpone the purchase/installation of new street light poles, it may still be beneficial to install the underground infrastructure as part of this effort. When done in conjunction with roadway projects, MassDOT has provided funding for the underground elements of street lighting systems including conduit, pull boxes and pole foundations. This could offset some of the cost, which if done independently, would be borne solely by the Town. The estimate for lighting is based on costs from recent projects in MassDOT District 3, with poles costing approximately $7,500 per location spaced every 80-feet and installation of conduit costing approximately $24 per foot. A secondary duct bank containing two 5" conduit runs would be placed within the sidewalk limits to provide electric service to the light poles.

The existing underground utility infrastructure includes water, gas and drainage lines. If the proposed duct bank is located in the vicinity of the roadway centerline, it can likely be located at a depth where the bank itself will have minimal impact on the existing infrastructure. National Grid's construction standards call for a minimum clearance of 6-inches between the duct bank and major subsurface pipes, although 12-inches would be preferred. The minimum clearance should be attainable with respect to the gas and water lines. The drainage lines would be the most likely to be located at a similar depth as the duct bank, however the existing drainage system is likely to be changed significantly as part of the MassDOT Project. The primary impact to the existing infrastructure is likely to be due to required locations of the electric manholes, which are 7-feet wide, 14-feet long and over 7-feet deep. It is expected that wherever these manholes are located they will likely require a reconfiguration of the existing underground utility layout. However, the impact to the existing water and gas lines between the Fay School and Sears Road, if the undergrounding were to be continued, would be minimal due to the approximately twenty-foot clearance between the existing lines.

Table 2 provides an estimate of the expected Town costs as a result of undergrounding the existing utilities.

TABLE 2 – Town Costs

Roadway Segments	Length (FT)	Street Lights[1]	Water Line[2]	Gas Line[3]	Total Cost
1. Boston Rd to Park St	450	$56,000	$5,000	$10,000	$71,000
2. Park St to Rt. 85	1,200	$141,500	$10,000	$20,000	$171,500
3. Rt. 85 to Parkerville Rd	2,750	$328,500	$15,000	$30,000	$373,500
4. Parkerville Rd to Sears Rd	950	$113,000	$10,000	$20,000	$143,000
Total	4,900	$639,000	$40,000	$80,000	$759,000

Note: The above estimates do not include the cost of roadway reconstruction or construction management.
1 Based on lighting costs for Worcester Canal District Project.
2 Assumes a unit cost of $100 per linear foot of pipe adjusted.
3 Assumes a unit cost of $200 per linear foot of pipe adjusted.

Private Landowner Costs

Depending on how the Town chooses to move forward with funding for this Project, private property owners could be responsible for an additional portion of the cost required to reconnect

their utility services after the existing infrastructure is placed underground. If the surcharge method is chosen, the utility companies will bring the new underground service to the business/residence or 50-feet into the property, whichever is less. The property owner would then be responsible for materials and labor to cover any additional distance between 50-feet and the service point. If the surcharge method is not chosen, then the utility companies will carry their service 2-feet into the property then it will be the responsibility of the property owner to make the connection to the service stub. The estimate provided by National Grid had an approximate cost of $7,000 per property. As National Grid is assuming the surcharge method would be employed, for the purposes of this estimate it is assumed that $7,000 is the approximate unit cost for 50-feet of work (i.e. $140/foot). It is also assumed that the cost would be similar for both Verizon and Charter as well, although since both offer comparable services within the study area, it is likely that only one company or the other would be providing service to an individual property. The majority of the residential and commercial buildings within the study area are between 25- and 50-feet from the public right-of-way and thus should not be subject to an additional fee, if the surcharge method is used. For properties such as the Fay School, St Marks School and the like, it is assumed that they have a single connection point to the distribution system and then a secondary internal distribution system that is privately maintained. If the surcharge method were not to be employed, the cost for the majority of residential properties to reconnect the utilities would likely be between $8,000 and $14,000 per residence.

TABLE 3 – Private Landowner Costs

Roadway Segments	Length (FT)	Overhead Distance >50′	Total Cost	Total Overhead Distance	Total Cost
1. Boston Rd to Park St	300	0′	$0	150′	$42,000
2. Park St to Rt. 85	1,200	25′	$7,000	425′	$119,000
3. Rt. 85 to Parkerville Rd	2,750	275′	$77,000	975′	$273,000
4. Parkerville Rd to Sears Rd	950	250′	$70,000	300′	$84,000
Total	4,900	550′	$154,000	1,850′	$518,000

Note: Distances shown are the length conduit would have to be carried between the property line and the existing building currently receiving service. The total costs assume a unit price of $280/foot to reflect that both electrical and communications will be connected.

Based on the analysis presented in Table 3 above, the difference in cost for private landowners between utilizing the surcharge method and the lump-sum method would be approximately $364,000.

Total Costs

Based on the costs reviewed in the previous sections, an Order-of-Magnitude cost estimate was developed for placing the existing overhead infrastructure along Route 30 underground. Table 4 provides the overall costs per segment.

TABLE 4 – Order-of-Magnitude Cost Estimate

Roadway Segments	Length (FT)	Utility Cost	Town Cost	Landowner Cost	Total Cost
1. Boston Rd to Park St	450	$661,000	$71,000	$0	$732,000
2. Park St to Rt. 85	1,200	$1.58M	$171,500	$7,000	$1.76M
3. Rt. 85 to Parkerville Rd	2,750	$3.65M	$373,500	$77,000	$4.10M
4. Parkerville Rd to Sears Rd	950	$1.28M	$143,000	$70,000	$1.50M
Total	4,900	$7.17M	$759,000	$154,000	$8.10M

Note: The above estimate assumes surcharge method of funding is utilized and construction is coordinated with the proposed MassDOT Project.

Based on the estimates provided, the cost for placing the existing overhead infrastructure underground along the entire corridor would be approximately $8.10 million. This cost does not include reconstruction of the roadway. This estimate also assumes that the surcharge method of payment will be adopted in the case of National Grid's infrastructure and thus facilities will be carried directly to the buildings they serve.

In order to provide a thorough analysis, it was also necessary to look at the costs of placing the existing overhead infrastructure underground in phases. Costs were broken down into four roadway segments, as is shown in Table 1, based on the orientation of the existing infrastructure, which was described in the previous section. The segment costs, other than that for Lightower, are based on cost per foot breakdowns of the estimates provided for the entire corridor. While this is considered a reasonable means of estimation, it should be noted that costs may vary significantly depending on the number and type of connections for a specific utility company within a particular roadway segment of which data was not made available for this level of analysis.

By constructing the project in phases, short-term construction costs and disturbances could be minimized. However, the overall cost of the project would likely increase due to repeated charges for construction mobilization and potential increases in service connections or costs of various construction items (i.e. paving materials, concrete, conduit, etc.).

Two additional breakdowns have been provided to accommodate the Town's requests for specific impact areas. *Table 5* provides an estimate of the cost required to underground the utilities between Boston Road and the Fay School. This would require the undergrounding of approximately 3,400 feet of overhead utilities along Route 30 (between utility pole 124 on the east side of the railroad crossing and utility pole 35 on the west side of the Fay School's main driveway) and an additional 400 feet along Route 85 (between utility poles 68 and 130). This estimate is based on taking the cost estimates for the overall corridor and applying them on a per foot basis.

TABLE 5 – Order of Magnitude Cost Estimate
Boston Road to Fay School

Roadway Length (FT)	Utility Cost	Town Cost	Landowner Cost	Total Cost
3,800	$4.70M	$492,000	$60,000	$5.25M

Note: The above estimate assumes surcharge method of funding is utilized and construction is coordinatedwith the proposed MassDOT Project.

Table 6 provides an estimate of the cost required to underground the utilities adjacent to the Town Common. This would require the undergrounding of approximately 1,150 feet of overhead utilities along Route 30 (between utility pole 14 on the east side of Route 85 and utility pole 27 west of Common Street), approximately 300 feet along Common Street, and an additional 400 feet along Route 85 (between utility poles 68 and 130). This estimate is based on taking the cost estimates for the overall corridor and applying them on a per foot basis. Due to the close proximity of the buildings in this area to the street, no additional charge would be expected to be borne by landowners for making service connections.

TABLE 6 – Order of Magnitude Cost Estimate
Town Common

Roadway Length (FT)	Utility Cost	Town Cost	Landowner Cost	Total Cost
1,850	$2.47M	$262,000	$0	$2.73M

Note: The above estimate assumes surcharge method of funding is utilized and construction is coordinatedwith the proposed MassDOT Project.

Conclusions

Vanasse Hangen Brustlin, Inc. has conducted a study to assist the Town of Southborough in determining the feasibility of placing the existing overhead utility infrastructure on Main Street underground. Based on information provided by the impacted utility companies, an order-of-magnitude cost estimate was developed for placing the existing overhead infrastructure on Main Street underground between Boston Road and Sears Road. A significant investment on the part of the Town is required for further analysis. National Grid, Verizon and Charter will require non-refundable deposits, potentially upwards of $55,000 depending on the final project scope. These deposits would be applied towards design and construction in the event that the undergrounding was to go forward. The following provides a summary of *Study Findings* and *Next Steps.*

Study Findings

1. Highest density of overhead utilities occur between Route 85 and Parkerville Road and Deerfoot Road and Sears Road;
2. Cost for placing utilities underground along entire corridor is approximately $8.1 million, including design;
3. Cost for placing utilities underground for stretch between Boston Road and the Fay School is approximately $5.25 Million;
4. Cost for placing utilities underground in the area surrounding the Town Common is approximately $2.73 Million;
5. National Grid requires a $5k non-refundable deposit to refine the estimate for the entire corridor, or a $2,000 deposit for the area around the Town Common, beyond the current order-of-cost estimate (+/- 50%). Deposit will be applied towards future design and construction if project moves forward;
6. Verizon requires a $24k non-refundable deposit ($8k for each roadway segment) to provide a preliminary estimate (it is expected that Charter would require a similar deposit);
7. If surcharge method of funding is adopted, National Grid will carry underground connections to the user, rather than 2' into property if done using lump sum method.
8. The fees to be charged by CSX for design review and construction encroachment on the existing railroad crossing are expected to be between $6,000 and $8,000 for each utility company crossing beneath the tracks (National Grid, Verizon and Charter).
9. If the undergrounding is conducted separately from the proposed MassDOT project, the Town would be responsible for repairing the roadway surface, which would increase the cost of doing the entire corridor by approximately $160,000 (two-percent of the total project cost) assuming a five-foot trench with a 3.5-inch pavement section.
10. Coordination between the Town and the various utility companies will be critical in moving the project forward in an efficient manner. The various utilities have different procedures regarding funding, design and construction which must be resolved prior to the project advancing. For instance, Verizon will not typically begin a project until complete funding has been achieved, while National Grid will commence once an adequate funding pool has been established (hence the 9-month waiting period for the surcharge by-law). Through coordination with the various utilities, the Town could potentially provide a lump-sum payment to advance the project prior to typical funding levels being achieved.

Next Steps

1. Develop schedule in order to determine the window of opportunity for undergrounding. For undergrounding to be an option at this time, utility design would need to be complete and ready for construction prior to the beginning of construction for the Main Street (Route 30) Reconstruction Project. Based on information from MassDOT's website the Main Street (Route 30) Reconstruction Project is currently scheduled to go to construction in Winter 2014/2015. If this were to be the case, for utility undergrounding to be a realistic option, the utilities need to be relocated prior to or in conjunction with the MassDOT project. If the objective is to have the undergrounding ready for construction in spring 2014, the Town would realistically have to adopt an ordinance approving the surcharge funding method prior to March 31, 2012. This would allow the ordinance to go into effect on January 1, 2013, providing approximately one year for design, acquiring easements, coordination and completion of the undergrounding project.

2. Further investigate potential funding options, including use of Town Community Preservation Act funds.

3. Finalize focus/scope of undergrounding effort (i.e. entire corridor, Park Street to Town Common, etc.).

4. Determine whether to provide advance deposits to utility companies to get more accurate estimates prior to committing to utility undergrounding (based on conversations with representatives from multiple utility companies, this would likely take between two and four weeks depending on the area requested).

5. If it is determined that the project should advance to the next phase, the Town (or its representative) should coordinate a meeting between all utility companies, specifically communications companies (Verizon, Charter, Lightower, Verizon Business, etc). This should be done to facilitate discussion on facilities layout and cost sharing. This could potentially result in cost reductions. This would also likely require monetary deposits to Verizon and Charter.

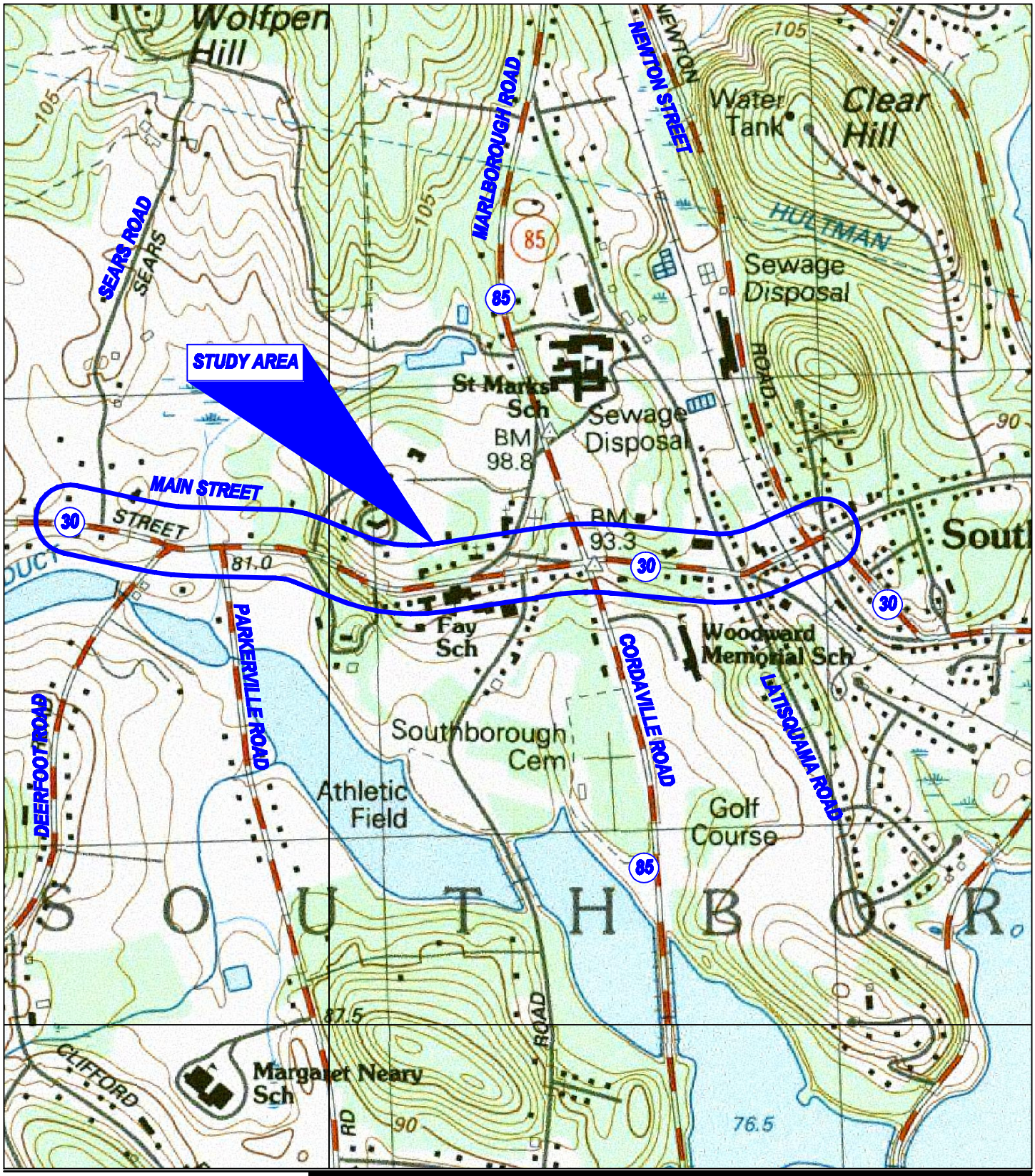
6. If the surcharge method of funding were selected, the Town could potentially provide "start-up" funds to allow the utility companies to begin design or construction activities. This could be necessary to limit scheduling impacts required by the surcharge by-law. Any funding agreement would have to be coordinated through the various utility companies.

APPENDICES

- Appendix A – Figures
- Appendix B – Correspondence

APPENDIX A – FIGURES

APPENDIX B – CORRESPONDENCE



Vanasse Hangen Brustlin, Inc.

Figure 1

Study Area Locus Map
Utility Undergrounding
Route 30/Main Street
Southborough, Massachusetts

W:\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg

LEGEND

OVERHEAD WIRES		UTILITY POLE	UP
GAS LINE	G	CABLE TV LINE	CATV
WATER LINE	W	FIBER OPTIC LINE	FO

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2

Existing Utility Infrastructure
(Sheet 1 of 4)
Route 30/Main Street
Southborough, Massachusetts

W:\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg

LEGEND

OVERHEAD WIRES		UTILITY POLE	UP
GAS LINE	G	CABLE TV LINE	CATV
WATER LINE	W	FIBER OPTIC LINE	FO

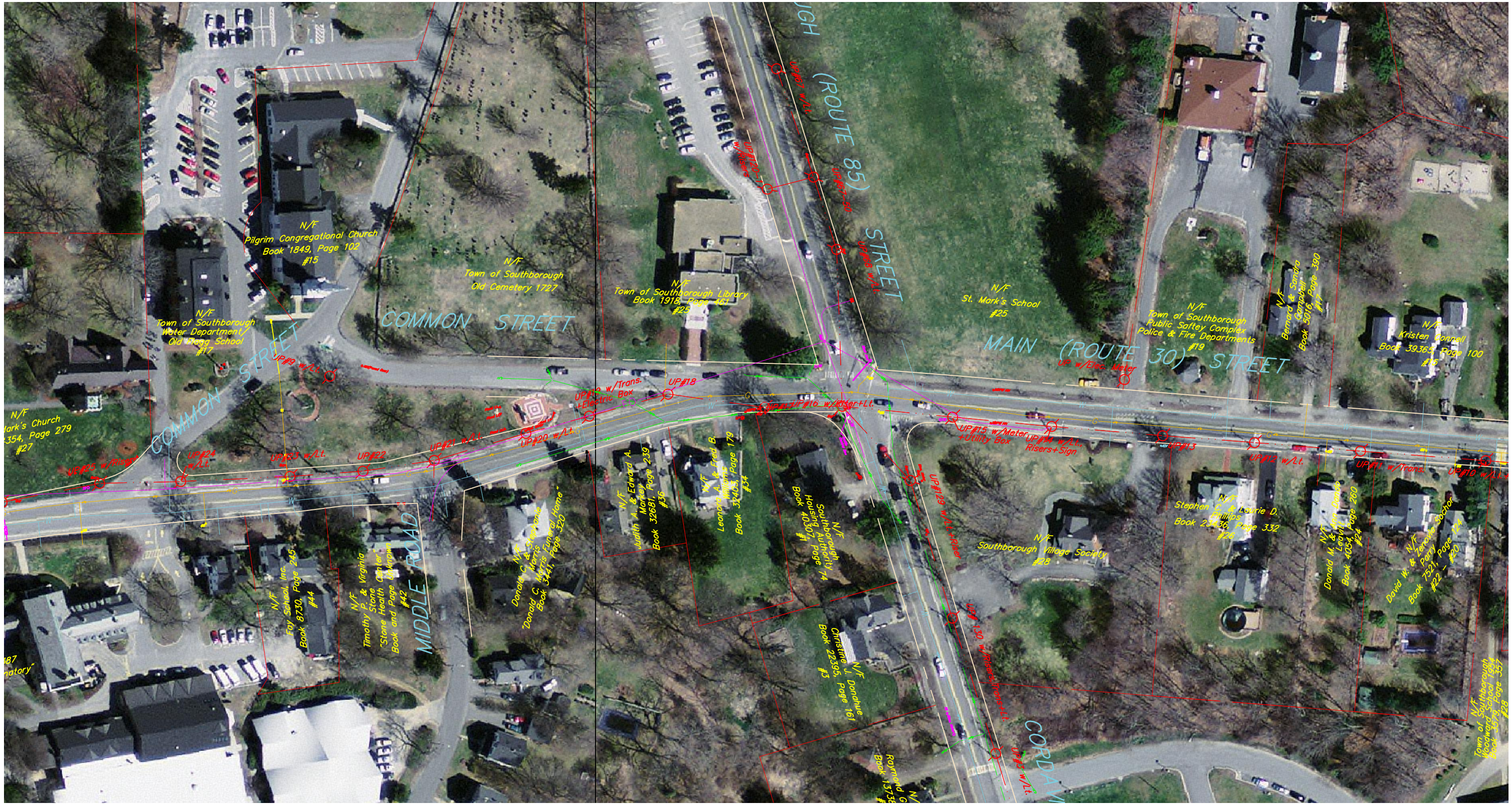
0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3

Existing Utility Infrastructure
(Sheet 2 of 4)
Route 30/Main Street
Southborough, Massachusetts

W:\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg



LEGEND

OVERHEAD WIRES		UTILITY POLE	UP
GAS LINE	G	CABLE TV LINE	CATV
WATER LINE	W	FIBER OPTIC LINE	FO

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4

Existing Utility Infrastructure
(Sheet 3 of 4)
Route 30/Main Street
Southborough, Massachusetts

LEGEND

OVERHEAD WIRES		UTILITY POLE	UP
GAS LINE	G	CABLE TV LINE	CATV
WATER LINE	W	FIBER OPTIC LINE	FO
RAILROAD			

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 5

Existing Utility Infrastructure
(Sheet 4 of 4)
Route 30/Main Street
Southborough, Massachusetts

\\Maworc\projects\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg

LEGEND

OVERHEAD WIRES		ELECTRIC MANHOLE	
GAS LINE	G	COMMUNICATIONS MANHOLE	
WATER LINE	W	UTILITY POLE	UP
FIBER OPTIC LINE	FO		
PROP DUCT BANK			

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 6

Conceptual Duct Bank Layout
(Sheet 1 of 3)
Route 30/Main Street
Southborough, Massachusetts

W:\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg

LEGEND

OVERHEAD WIRES		ELECTRIC MANHOLE	
GAS LINE	G	COMMUNICATIONS MANHOLE	
WATER LINE	W	UTILITY POLE	UP
FIBER OPTIC LINE	FO		
PROP DUCT BANK			

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 7

Conceptual Duct Bank Layout
(Sheet 2 of 3)
Route 30/Main Street
Southborough, Massachusetts

W:\10832.00\docs\VARIOUS\10832.01 Undergrounding\Aerial.dwg

LEGEND

OVERHEAD WIRES		ELECTRIC MANHOLE	
GAS LINE	G	COMMUNICATIONS MANHOLE	
WATER LINE	W	UTILITY POLE	UP
FIBER OPTIC LINE	FO		
PROP DUCT BANK			

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 8

Conceptual Duct Bank Layout
(Sheet 3 of 3)
Route 30/Main Street
Southborough, Massachusetts

lightower
fiber networks

Mr. David LaPointe, RLA
Beals & Thomas, Inc.
144 Turnpike Rd.
Southborough, MA 01719

Greetings,

Please accept the following "Order of Magnitude" estimate for the Southborough Massachusetts, Main Street Reconstruction and Undergrounding Utilities project.

This high level estimate was based on the following assumptions:

A 4" conduit route will be supplied and installed by others from a suitable riser pole on Main St. to a suitable riser pole on Marlboro St. in Southborough, MA.

The conduit will be no longer than 1600'.

The estimated cost for Lightower to provide and install a new fiber optic cable underground in the aforementioned conduit, Splice customer traffic onto new cable, and remove existing overhead cable is approximately $35,000.00.

Please feel free to contact me if you've questions or concerns.

Regards

Robert Powers, RCDD
Engineer
Phone 978 264 6020
Email: bpowers@lightower.com

lightower
fiber networks

2 November 2010

Mr. Gregory Russell, P.E.
Vanasse Hangen Brustlin, Inc.
Union Station, Suite 219
2 Washington Square
Worcester, MA 01604

Greetings Greg,

Please accept the following "Order of Magnitude" estimate for the Southborough Massachusetts, Main Street Reconstruction and Undergrounding Utilities project.

This high-level estimate is based on the following assumptions:

A 4" conduit route shall be supplied and installed by others from a suitable riser pole on Marlboro St. to a suitable riser pole in the area of Parkerville Road, Southborough Ma.

Conduit length shall not exceed 2750'.

The estimated cost for Lightower to provide and install a new fiber optic cable in the aforementioned conduit, splice customer traffic to new cable and remove the existing overhead cable is approximately $40,000.00.

Please feel free to contact me if you've questions or concerns.

Regards,

Robert Powers
Fiber Engineer
Phone 978 264 6020
Email: bpowers@lightower.com

Russell, Gregory

To: File
Subject: FW: Southborough Utility Undergrounding

From: Cullivan, Daryl J (Daryl) [mailto:daryl.j.cullivan@verizon.com]
Sent: Tuesday, October 26, 2010 12:46 PM
To: Russell, Gregory
Subject: RE: Southborough Utility Undergrounding

Hi Greg,

Per our conversation and initial high level research with regards to your work request --

In order for Verizon to provide cost estimates we would require an $8,000.00 deposit for each location. This is due to the complexity and labor that would be involved with providing a concrete price estimate. The deposit would obviously be figured into the final bill of the job. It is fair to say that the total cost for this work effort could range in the $500k to exceeding $1 million. The work effort would involve large spans of cable, Fiber, reconnects of service, conduit runs, high amounts of hourly labor, police details, contracted work,etc. Thanks

---

From: Russell, Gregory [mailto:GRussell@VHB.com]
Sent: Tuesday, October 12, 2010 3:44 PM
To: Cullivan, Daryl J (Daryl)
Subject: Southborough Utility Undergrounding

Mr. Cullivan,

First, I would like to thank you for your assistance with this matter.

As I mentioned previously, VHB is under contract with the Town of Southborough, Massachusetts to assist them in determining the feasibility of placing a portion of the existing overhead utilities within the Town underground. The area of focus is Main Street (Route 30) between Park Street and Sears Road, which also includes the Town Common. This stretch of Route 30 is currently being redesigned as part of a MassDOT project (Project #604989). As the MassDOT project moves forward the Town is interested in potentially placing a portion (or all) of the utilities within the project limits underground.

Based on the layout of the existing utility infrastructure we are looking at the possibility of placing the utilities underground in three segments:

1. Park Street to Marlborough Street (Route 85) – Approximately 1,100 feet
2. Marlborough Street (Route 85) to Parkerville Road – Approximately 2,750 feet
3. Parkerville Road to Sears Road – Approximately 850 feet

We are requesting an Order of Magnitude Cost Estimate for placing Verizon's overhead facilities underground within the above roadway segments. We would request that, if possible, the estimate be broken down into the three segments noted above. The overhead utility infrastructure included within these roadway segments, based on a survey completed as part of the MassDOT project, is provided below for your use:

<u>Park Street to Marlborough Street (Route 85)</u>

- Twelve (12) Utility Poles
- Two (2) Transformers
- Two (2) Utility Boxes

- Two (2) Risers

Marlborough Street (Route 85) to Parkerville Road
- Thirty-three (33) Utility Poles
- Six (6) Tranformers
- One (1) Electric Box
- Eight (8) Risers

Parkerville Road to Sears Road
- Eight (8) Utility Poles
- One (1) Transformer
- Three (3) Risers

Any assistance that you could provide on this matter would be greatly appreciated. For your reference, I've attached comments submitted by Verizon with respect to the 25% Design Submission for MassDOT's Route 30 reconstruction project.

Please feel free to contact me with any questions,

-Greg

Gregory J. Russell, P.E.
Traffic Engineer

VHB | Vanasse Hangen Brustlin, Inc.
Transportation | Land Development | Environmental Services

Union Station, Suite 219
2 Washington Square
Worcester, MA 01604
Phone: 508.752.1001 x1513 | Fax: 508.752.1278

grussell@vhb.com

www.vhb.com

nationalgrid

Donald E. Robinson
Account Executive

Friday, April 17, 2009

VERA KOLIAS
TOWN PLANNER
TOWN OF SOUTHBOROUGH PLANNING BOARD
17 COMMON STREET
SOUTHBOROUGH, MA 01772-1662

Town of Southborough Inquiry Regarding Underground Distribution Service on Main Street

Dear Vera:

In response to your request (*2/24/09 Letter*, *Attachment 1*), National Grid is pleased to work with the Town of Southborough (***the Town***) to explore the possible conversion of overhead (OH) electric distribution lines to underground (UG) service on Main Street in accordance with Massachusetts General Law (MGL) Chapter 166, Section 22 A – N (*Attachment 2*).

We have developed, at no charge to the Town, a quick ***Order-of Magnitude Estimate (+/- 50 %)*** of the project construction costs and fee estimate for design to underground National Grid facilities identified in Peter Wozniak's (Tighe & Bond) email, dated 01/22/09 (*Attachment 3)*.

1. ***Main Street Construction Costs*** - The estimated electric construction cost totals to bring the underground to two feet into each property versus up to the customers' buildings for Main Street between Sears Road and Park Avenue are ***$ 3.95 million*** and ***$ 4.43 million***, respectively. *Note:* These estimates assume that the Massachusetts Highway Department (***MHD***) will be responsible to reconstruct the road after our installation of underground distribution lines is completed. If MHD will not be responsible to reconstruct the road, then National Grid will need to add this additional cost into our estimate. *Additional Note*: If the Town and MHD decide to independently install the manhole and duct system within the road layout of Main Street, the Town will be responsible for paying National Grid's anticipated property tax obligation on this donated property when National Grid assumes ownership. The value of this donated property is anticipated to be approximately $600,000.

2. ***Main Street Design & Supervisory Costs*** – The estimated cost for completing National Grid's design for this proposed project is $ 55,000 and will take approximately 6 months (including easements). In addition, the project, if implemented, is anticipated to require a substantial ongoing commitment of National Grid's project engineer's time (approximately $ 35,000 annually). Finally, if the Town selects the Surcharge Payment Method (described below), National Grid will need to include the cost of hiring an electrical contractor (approximately $ 85,000 annually) to manage the interconnection of private UG services.

3. ***Scope of Work*** - Attachment 4 describes the general scope of work and provides further insight to the assumptions used to develop these cost estimates.

82 Florence Street, Marlborough, MA 01752
T: 508-229-4552 ■ F: 508-229-4572 ■ donald.robinson@us.ngrid.com ■ www.nationalgrid.com

nationalgrid

4. ***Construction Cost Itemization*** - Attachment 5 provides a preliminary itemization of the costs used in this Order-of-Magnitude Estimate.

Should the Town elect to proceed with the underground conversion process, two payment options are available:

1. ***Lump Sum Payment Method*** - Under the "Lump Sum" payment method, the Town would pay National Grid in advance; or,

2. ***7 % Surcharge Payment Method*** - Under the "7 % Surcharge" payment method provided for in Massachusetts General Law Chapter 166, Section 22 M, National Grid would collect a surcharge equal to 7% of its distribution revenues from all of its customers in Marlborough to pay for the work.

If the Town would like to proceed with the project, further steps include:

1. ***The Town Formally Approves Underground Conversion*** – The Town adopts an ordinance in accordance with Mass Law regarding the underground conversion.

2. ***Billing Surcharge Begins*** - If the Billing Surcharge is selected, the provisions become effective on the next January 1st following a 9-month period after the enactment. For example, if the ordinance is adopted in June of 2009, the provisions will not become effective until January of 2011.

3. ***Underground Route Selected*** – The Town confirms underground route(s) selection.

4. ***Study Grade Estimate Completed*** - National Grid completes and reviews the "study grade" estimate with the Town. To initiate the more detailed ***Study Grade Estimate (+/- 25%)***, the Town will be required to pay National Grid a non-refundable engineering fee and provide the comprehensive engineering drawings listed in *Attachment 4.*

5. ***Distribution Construction Documents Prepared*** - National Grid prepares electric distribution construction documents.

6. ***Conversion Project Out To Bid*** - National Grid puts the electric distribution conversion project out to bid.

7. ***Construction Phase Begins*** - Upon award of the project, project enters the construction phase.

Please note that properly executed Easements will be required for all electrical equipment, owned by National Grid, on private property prior to our scheduling any underground conversion construction. It is expected that the Town will assist National Grid obtain such easements. Also, provisions for removal and relocation of other pole attachments will need to be made independently with applicable parties.

82 Florence Street, Marlborough, MA 01752
T: 508-229-4552 ■ F: 508-229-4572 ■ donald.robinson@us.ngrid.com ■ www.nationalgrid.com

nationalgrid

Please let me know if you have any questions. Dave Evans, National Grid Senior Operations Engineer, and I will be happy to meet with you, at your convenience, to discuss.

Sincerely,

Donald E. Robinson

Cc: Beals & Thomas, Inc.

82 Florence Street, Marlborough, MA 01752
T: 508-229-4552 ■ F: 508-229-4572 ■ donald.robinson@us.ngrid.com ■ www.nationalgrid.com

ATTACHMENT 1

Town of Southborough
PLANNING BOARD

SOUTHBOROUGH, MASSACHUSETTS 01772

17 COMMON STREET
SOUTHBOROUGH, MASSACHUSETTS 01772-1662
508-485-0710

February 24, 2009

National Grid
Attn: Donald E. Robinson, Key Account Manager
82 Florence Street
Marlborough, MA 01752

Re: Main Street Reconstruction and Undergrounding Utilities

Dear Mr. Robinson:

The Town of Southborough is asking Town Meeting to consider the feasibility and cost of undergrounding all overhead utilities on Main Street between the new entrance to Fay School and Boston Road. A resident's group, the Main Street Council, is coordinating the undergrounding effort and has raised the necessary funds to have a Feasibility Study conducted by the firm Beals & Thomas, Inc. Mr. David LaPointe, of Beals and Thomas has all the pertinent information as to the exact scope of this work requested and will be coordinating the Study. The Town is assisting the Main Street Council with this effort as the feasibility study is necessary for Town Meeting to determine whether utility undergrounding should be incorporated in the Town's Main Street roadway reconstruction plans.

For this Feasibility Study we will require National Grid's immediate assistance in preparing an "order of magnitude" cost estimate to complete the electrical portion of the work.

Please consider this correspondence as a formal request to initiate that effort.

Since "time is of the essence" for this information, please provide these cost estimates as soon as possible.

Please send all information to:

Beals & Thomas, Inc.
Attn: Mr. David LaPointe, RLA
144 Turnpike Road
Southborough, MA 01772

If you have any questions regarding this request, please feel free to contact me anytime at (508) 485-0710, ext. 3028. Thank you for your anticipated assistance with this project.

Very truly yours,

Vera Kolias, AICP
Town Planner

ATTACHMENT 2

GENERAL LAWS OF MASSACHUSETTS

PART I.
ADMINISTRATION OF THE GOVERNMENT

TITLE XXII.
CORPORATIONS

CHAPTER 166. TELEPHONE AND TELEGRAPH COMPANIES, AND LINES FOR THE TRANSMISSION OF ELECTRICITY

CONSTRUCTION OF LINES FOR TRANSMITTING ELECTRICITY

Chapter 166: Section 22A Definitions

Section 22A. As used in this section and in sections 22B to 22M, inclusive, the following words shall, unless the context requires otherwise, have the following meanings:--

(a) "Municipality", any city or town.

(b) "Department", the department of telecommunications and energy.

(c) "Planning board", the planning board of a city or town.

(d) "Person" shall include individuals, firms, corporations, partnerships, and their agents and employees.

(e) "Poles and overhead wires and associated overhead structures" shall mean poles, towers, supports, wires, conductors, guys, stubs, platforms, crossarms, braces, transformers, insulators, cut-outs, switches, communication circuits, appliances, attachments, and appurtenances located above ground, upon, along or across any public way or ways of a municipality and used or useful in the transmission of intelligence by electricity or otherwise, or for the transmission of television signals, whether by electricity or otherwise, or for the transmission of electricity for lighting, heating or power, or for the construction or operation of a street railway or an electric railroad; provided, however, that said phrase shall not mean or include any of the following: poles, towers, overhead wires and associated overhead structures used exclusively in the transmission but not the distribution of electricity; poles used exclusively for police and fire alarm boxes or any similar municipal equipment installed under the supervision and to the satisfaction of the engineer of any municipality; wires (exclusive of supporting structures) crossing any portion of any underground utility district from which overhead wires have been prohibited, or connecting to buildings on the perimeter of such portion, when such wires originate in an area from which poles and overhead wires and associated overhead structures are not prohibited; overhead wires attached to the exterior surface of a building by means of a bracket or other fixture and extending from one location on the

same building or to an adjacent building without crossing any public street; radio antennae, their associated equipment and supporting structures, used by a utility for furnishing communication services; and service terminals including transformers in pedestals above ground, used to distribute electric or communication service in underground systems.

(f) "Utility", any person who has been or may be granted any license, permission or other authority to construct or maintain poles and overhead wires and associated overhead structures upon, along, under or across any public way or ways.

(g) "Engineer of the municipality", the town engineer or commissioner of public works, or other officer or employee having corresponding duties.

(h) "Transmission", the carrying of electric power in excess of twenty thousand volts, phase-to-phase.

[Paragraph (i) as added by 2004, 480, Sec. 1 effective April 6, 2005.]

(i) "Retail deliver y revenues'", the revenues that a distribution company, as defined in section 1 of chapter 164, receives for transmission and distribution service excluding revenues from power supply, transition charges, renewable charges and demand side management charges.

Chapter 166: Section 22B Program for prohibition or removal of overhead wires

Section 22B. The planning board of any town, if any, or in a town having no such board, the board of selectmen and the city council of any city or a committee designated and appointed for the purpose by it, may (after completing such preliminary consideration and study, including consultation with any utility as it may deem appropriate) at any time by resolution designating the time and place therefor call a public hearing to ascertain whether the public safety, health, convenience or welfare would be advanced by a program (a) prohibiting new installation or construction of or (b) requiring progressive removal of poles and overhead wires and associated overhead structures within all or any part or parts of the municipality. After such hearing the planning board, board of selectmen, city council or committee, as the case may be, shall make a report of its findings, conclusions, and recommendations which shall be filed with the records of the city council or the town meeting of the municipality.

Chapter 166: Section 22C Prohibition and removal of overhead wires; fines and penalties

Section 22C. After such report has been filed, the municipality may adopt an ordinance or by-law which shall forbid a utility to install or construct except by way of replacement or upgrading of existing facilities any poles and overhead wires and associated overhead structures upon, along or across any public way within all or any part or parts of the municipality and shall require a utility to remove immediately any poles and overhead

wires and associated overhead structures installed or constructed by it in violation of such ordinance or by-law. Any such ordinance or by-law shall specify whether it applies to all of the municipality or only to a part or parts thereof and, if only to a part or parts, shall describe such part or parts with reasonable certainty by reference to the names of any way or ways to all or any designated portions thereof to which it applies, by reference to a map, or by other suitable means. Any person who installs or constructs any poles and overhead wires and associated overhead structures in violation of any such ordinance or by-law shall be punished by a fine of not less than one thousand dollars and not more than five thousand dollars. Any person who fails to remove immediately any poles and overhead wires and associated overhead structures in violation of any such ordinance or by-law shall be punished by a fine of not less than one thousand dollars and not more than five thousand dollars for each consecutive fifteen day period during which his failure continues.

Chapter 166: Section 22D Removal of overhead wires; sequence; replacement; fines and penalties

Section 22D. After a report has been filed under section twenty-two B, the municipality may adopt an ordinance or by-law which shall require a utility to remove its poles and overhead wires and associated overhead structures which are located upon, along or across any public way or ways within all or any part or parts of the municipality. Any such ordinance or by-law shall specify whether it applies to all of the municipality or only to a part or parts thereof and, if only to a part or parts, shall describe such part or parts with reasonable certainty by reference to the names of any way or ways to all or any designated portions thereof to which it applies, by reference to a map, or by other suitable means.

Such ordinance or by-law may specify in whole or in part the sequence which any utility shall follow in removing its poles and overhead wires and associated overhead structures by specifying the part or parts of the municipality in which removal shall first be effected, then the part or parts in which removal shall next be effected.

[Third paragraph effective until April 6, 2005. For text effective April 6, 2005, see below.]

Any utility which fails to remove any poles and overhead wires and associated overhead structures as required by such ordinance or by-law shall be punished by a fine of not less than one thousand dollars and not more than five thousand dollars for each consecutive fifteen day period during which such failure continues; provided, however, that no utility shall be deemed to have violated any such ordinance or by-law, provided that (a) if replacement facilities for poles and overhead wires and associated overhead structures required to be removed will be needed in order for it to continue its service, it shall within sixty days after the effective date of such ordinance on by-law petition pursuant to section twenty-two for permission to erect or construct under the public ways of said municipality replacement facilities for said poles and overhead wires and associated overhead structures, and (b) it shall prepare and file with the board of selectmen or city

council of the municipality a plan (which shall be consistent with any removal sequence specified in such ordinance or by-law) for the removal of such poles and overhead wires and associated overhead structures and, if needed for the continuation of its service, for their replacement with underground facilities, and (c) in each calendar year beginning with the calendar year next following the effective date of such ordinance or by-law and until all such overhead wires and associated overhead structures shall have been removed, it shall, in carrying out such plan, allocate and expend for the direct cost of demolition and construction (over and above the reasonable value of any salvage) an amount which shall be not less than two per cent of its gross revenue derived during the next preceding calendar year from its customers in said municipality; provided, however, it may carry over as a credit allocable to any one or more of the next nine subsequent years any amount expended in any year exceeding said two per cent of its gross revenue; and (d) it shall, on or before the last day of March in each year, file with the board of selectmen or city council of such municipality a statement signed, under the penalties of perjury, by its treasurer setting forth in detail: the amounts spent by it during the immediately preceding calendar year in carrying out said plan, the purposes for which such expenditures were made; and the gross revenue derived from its customers in said municipality during the immediately preceding calendar year; and provided, however, that no utility which enters into a cooperation agreement under section twenty-two E shall be deemed to have violated said ordinance or by-law during the term such payments are to be made, so long as said utility shall not be in default of said cooperation agreement.

[Third paragraph as amended by 2004, 480, Secs. 2 - 5 effective April 6, 2005. For text effective until April 6, 2005, see above.]

Any utility which fails to remove any poles and overhead wires and associated overhead structures as required by such ordinance or by-law shall be punished by a fine of not less than one thousand dollars and not more than five thousand dollars for each consecutive fifteen day period during which such failure continues; provided, however, that no utility shall be deemed to have violated any such ordinance or by-law, provided that (a) if replacement facilities for poles and overhead wires and associated overhead structures required to be removed will be needed in order for it to continue its service, it shall within sixty days after the effective date of such ordinance on by-law petition pursuant to section twenty-two for permission to erect or construct under the public ways of said municipality replacement facilities for said poles and overhead wires and associated overhead structures, and (b) it shall prepare and file with the board of selectmen or city council of the municipality a plan (which shall be consistent with any removal sequence specified in such ordinance or by-law) for the removal of such poles and overhead wires and associated overhead structures and, if needed for the continuation of its service, for their replacement with underground facilities, and (c) in each calendar year beginning with the calendar year next following the effective date of such ordinance or by-law and until all such overhead wires and associated overhead structures shall have been removed, it shall, in carrying out such plan, allocate and expend for the direct cost of demolition and construction (over and above the reasonable value of any salvage) an amount which shall be not less than two per cent of its gross revenue or in the case of a

distribution company as defined in section 1 of chapter 164, 7 per cent of retail delivery revenues derived during the next preceding calendar year from its customers in said municipality; provided, however, it may carry over as a credit allocable to any one or more subsequent years any amount expended in any year exceeding said two per cent of its gross revenue or in the case of a distribution company as defined in section 1 of chapter 164, 7 per cent of retail delivery revenues, but any utility may receive interest at the rate set by the department for customer security deposits; and (d) it shall, on or before the last day of March in each year, file with the board of selectmen or city council of such municipality a statement signed, under the penalties of perjury, by its treasurer setting forth in detail: the amounts spent by it during the immediately preceding calendar year in carrying out said plan, the purposes for which such expenditures were made; and the gross revenue or in the case of a distribution company as defined in section 1 of chapter 164, the retail delivery revenues derived from its customers in said municipality during the immediately preceding calendar year; and provided, however, that no utility which enters into a cooperation agreement under section twenty-two E shall be deemed to have violated said ordinance or by-law during the term such payments are to be made, so long as said utility shall not be in default of said cooperation agreement.

If any such ordinance or by-law provides, any utility in providing replacement facilities for any poles and overhead wires and associated overhead structures required to be removed shall install customer's service facilities. Any sums expended by any utility in installing such customer's service facilities in compliance with such ordinance or by-law shall be deemed to have been expended in carrying out the plan of such utility, referred to in this section, for the removal of such poles and overhead wires and associated overhead structures, and for their replacement by underground facilities.

Chapter 166: Section 22E Cooperative agreements to remove overhead wires

[Text of section effective until April 6, 2005. For text effective April 6, 2005, see below.]

Section 22E. Any utility organized and existing under the laws of or doing business in this commonwealth and any municipality may enter into, and from time to time amend, and perform a cooperation agreement pursuant to which (a) the utility shall pay to the municipality in each calendar year for a period of years specified in such agreement an amount which shall be not less than two per cent of such utility's gross revenue derived during the next preceding calendar year from its customers in said municipality and (b) the municipality shall expend during such term as such agreement may specify an amount not exceeding the sums paid to it by the utility pursuant to such agreement to remove (or cause to be removed) any poles and overhead wires and associated overhead structures of such utility and, if needed for the continuation of such utility's service, to replace the same (or cause them to be replaced) with underground facilities. In carrying out its obligations under any such cooperation agreement, a municipality may exercise all of its powers appurtenant to the performance of any public work and may award contracts in the same manner and subject to the same limitations and restrictions as would apply to like contracts in reference to the planning or performance of any public work. Such cooperation agreement may contain any and all such provisions as shall be consistent

with the purposes of this section, including a provision that the municipality shall expend a portion of the sums paid to it by the utility for the provision of customer's service facilities.

[Text of section as amended by 2004, c. 480, Sec. 6 effective April 6, 2005. For text effective until April 6, 2005, see above.]

Section 22E. Any utility organized and existing under the laws of or doing business in this commonwealth and any municipality may enter into, and from time to time amend, and perform a cooperation agreement pursuant to which (a) the utility shall pay to the municipality in each calendar year for a period of years specified in such agreement an amount which shall be not less than two per cent of such utility's gross revenue or in the case of a distribution company as defined in section 1 of chapter 164, 7 per cent of retail delivery revenues derived during the next preceding calendar year from its customers in said municipality and (b) the municipality shall expend during such term as such agreement may specify an amount not exceeding the sums paid to it by the utility pursuant to such agreement to remove (or cause to be removed) any poles and overhead wires and associated overhead structures of such utility and, if needed for the continuation of such utility's service, to replace the same (or cause them to be replaced) with underground facilities. In carrying out its obligations under any such cooperation agreement, a municipality may exercise all of its powers appurtenant to the performance of any public work and may award contracts in the same manner and subject to the same limitations and restrictions as would apply to like contracts in reference to the planning or performance of any public work. Such cooperation agreement may contain any and all such provisions as shall be consistent with the purposes of this section, including a provision that the municipality shall expend a portion of the sums paid to it by the utility for the provision of customer's service facilities.

Chapter 166: Section 22F Notice of hearing or ordinance to remove overhead wires

Section 22F. The municipality shall comply with the following provisions with reference to notice:

(a) When the planning board, board of selectmen, city council or committee of any municipality calls a public hearing pursuant to section twenty-two B, the clerk of the municipality shall publish a copy of said resolution in a newspaper of general circulation in the municipality at least once not more than fifteen nor less than five days prior to said hearing.

(b) When a municipality adopts an ordinance or by-law pursuant to section twenty-two C or section twenty-two D the clerk of the municipality shall, in addition to any other notice required by law, notify all utilities known to have poles and overhead wires and associated overhead structures affected by said ordinance or by-law and all persons known to own real property served by said poles and overhead wires and associated overhead structures, by mailing a copy thereof to said persons and utilities within thirty days after the date it was adopted.

Chapter 166: Section 22G Emergency erection of overhead wires

Section 22G. The board of selectmen or city council of any municipality may grant special permission, for such period and on such terms as it may deem appropriate, in cases of emergency or unusual circumstances, without discrimination as to any person or utility, to erect, construct, install, maintain, use or operate, poles and overhead wires and associated overhead structures, notwithstanding the provisions of any ordinance or by-law adopted pursuant to section twenty-two C or twenty-two D. No person shall be deemed to have violated any ordinance or by-law adopted pursuant to section twenty-two C or section twenty-two D for doing any act authorized by any such special permission.

Chapter 166: Section 22H Underground construction; responsibility of utility

Section 22H. If underground construction is necessary to provide replacement facilities for any poles and overhead wires and associated overhead structures removed pursuant to any ordinance or by-law enacted pursuant to section twenty-two D the utility shall be responsible to furnish in connection with such replacement facilities only that portion of the conduits, conductors and associated equipment required to be furnished by it under its applicable rules, regulations and tariffs on file with the department (hereinafter called the "utility's service facilities"); provided, however, that the utility shall by its tariff offer to carry its lines up to any structure which is to receive service or a distance of fifty feet from the street, whichever is the lesser; and provided, further, that if any ordinance or by-law adopted pursuant to section twenty-two D so provides, any utility in providing underground replacement facilities for any poles and overhead wires and associated overhead structures shall install customer's service facilities. Underground construction by the utility, or by or on behalf of any municipality, pursuant to any cooperation agreement entered into pursuant to section twenty-two E shall be accomplished in accordance with the rules and regulations authorized by the department, and shall be scheduled so as to be completed at or prior to removal of such poles and overhead wires and associated overhead structures as are being removed.

Chapter 166: Section 22I Underground construction; customer service facilities

Section 22I. All underground construction and conduits, conductors and associated equipment necessary to receive utility service between the utility's service facilities referred to in section twenty-two H and the service facilities in the building or structure being served shall be deemed "customer's service facilities".

To the extent required by any ordinance or by-law adopted pursuant to section twenty-two D may provide, any utility in providing underground replacement facilities for any poles and overhead wires and associated overhead structures shall install customer's service facilities. In all other respects the provision of customer's service facilities shall be the responsibility of the person owning, operating, leasing or renting said property, subject to applicable rules, regulations and tariffs of the utility on file with the department and to the requirements of applicable laws, ordinances and by-laws. If the person owning, operating, leasing or renting said property fails to provide such customer's service

facilities which are his responsibility prior to the time for removal of the poles and overhead wires and associated overhead structures of the utility, the engineer of the municipality shall have the authority to order the disconnection and removal of any and all overhead service wires and associated facilities supplying utility service to said property at the expense of the person owning, operating, leasing or renting said property, and the municipality shall have a claim against said person for the cost thereof and a lien against said property to secure said claim. No utility shall be in violation of any such ordinance or by-law in continuing to maintain overhead facilities necessary to serve such person during the period of such person's failure to provide customer's service facilities for which he is responsible and such reasonable time thereafter as may be necessary to remove such overhead facilities. No utility shall be deemed to be in violation of any law, by-law or ordinance or any obligation to the public or to any person by reason of such utility's discontinuing service to any property in the event of failure of the person owning, operating, leasing or renting said property to provide customer's service facilities for which he is responsible prior to the removal by any utility of its poles and overhead wires and associated overhead structures as required by any ordinance or by-law adopted pursuant to section twenty-two D of this chapter.

Chapter 166: Section 22J Removal of municipal equipment from poles

Section 22J. When a municipality adopts an ordinance or by-law pursuant to section twenty-two D, it shall remove its police and fire alarm circuits or any similar municipal equipment at its own expense from all poles required to be removed, and the removal of such circuits shall be completed in such manner and in such time as not to hinder or interfere with action taken by the utility to comply with said ordinance or by-law.

Chapter 166: Section 22K Extension of time for removal

Section 22K. If any act required by an ordinance or by-law adopted pursuant to section twenty-two D cannot be performed within the time provided on account of shortage of materials, war, restraint by public authorities, strikes, labor disturbances, or any other circumstances beyond the control of the person obligated to perform such act, then the time within which such act will be accomplished shall be extended for a period equivalent to the time of such limitations.

Chapter 166: Section 22L Rate differential; adoption of removal ordinance

Section 22L. If at any time one or more but less than all of the municipalities in which the customers of any one utility are located adopt an ordinance or by-law forbidding new installation of overhead facilities under section twenty-two C, the department of telecommunications and energy shall, in accordance with the provisions of section fourteen of chapter one hundred and fifty-nine and section ninety-four of chapter one hundred and sixty-four, after notice to all the municipalities in which such customers are located, and a hearing, establish a differential between the rates charged customers located in municipalities which have adopted such ordinance and those located in municipalities which have not adopted such ordinance, provided that no such differential,

however introduced or effected, shall at any time result in revenues materially exceeding any increased cost of providing service caused solely by adoption of such ordinance by such municipality. The foregoing procedure for establishing such differential shall be exclusive.

Chapter 166: Section 22M Billing surcharge; adoption of removal ordinance

[Text of section effective until April 6, 2005. For text effective April 6, 2005, see below.]

Section 22M. In addition to all other rates, charges and fees it may otherwise be authorized to impose and collect any utility shall impose and collect as a capital contribution towards the cost of construction a surcharge of two per cent on its total billing to each customer located in a city or town which has in force and effect an ordinance or by-law adopted in accordance with the provisions of section twenty-two D, provided said utility is not in violation of the provisions of said ordinance or by-law and provided further said ordinance or by-law has been in effect for a period of at least one year.

[Text of section as amended by 2004, 480, Sec. 7 effective April 6, 2005. For text effective until April 6, 2005, see above.]

Section 22M. In addition to all other rates, charges and fees it may otherwise be authorized to impose and collect any utility shall impose and collect as a capital contribution towards the cost of construction a surcharge of two per cent on its total billing to each customer located in a city or town which has in force and effect an ordinance or by-law adopted in accordance with section 22D. However, a distribution company, as defined in section 1 of chapter 164, shall impose and collect a surcharge of 7 per cent of retail delivery revenues, plus interest at the rate set by the department, for customer security deposits except in a city or town that before the effective date of this section has enacted an ordinance or by-law under section 22D establishing a 2 per cent surcharge or where construction is in progress or already completed, unless the city or town otherwise agrees to the 7 per cent surcharge by adopting an ordinance or by-law under said section 22D. A surcharge under this section shall apply only if the distribution company is not in violation of the ordinance or by-law and if the ordinance or by-law has been in effect for a period of at least 1 year.

Chapter 166: Section 22N Effective date of adopting ordinance

Section 22N. Any ordinance or by-law adopted under the provisions of section twenty-two C or section twenty-two D shall become effective on the first day of January next following a date nine months subsequent to the date of its enactment.

ATTACHMENT 3

Robinson, Donald E.

From: Peter A. Wozniak [PAWozniak@tighebond.com]
Sent: Thursday, January 22, 2009 9:03 AM
To: Robinson, Donald E.
Cc: Mark Hoey
Subject: Utility Undergrounding Feasibility Study- Southborough Massachusetts

Dear Donald, I appreciate all the help you have provided to date and am following up on your suggestion to request information, therefore I am writing to request information and assistance in the preparation of a feasibility study for the undergrounding of utilities along a one mile stretch of Main Street between Sears Road and Park Street in Southborough Massachusetts. Tighe & Bond in partnership with Beals and Thomas have been commissioned to perform this feasibility study. The study will assess the technical requirements for undergrounding the various utilities, evaluate the regulatory issues related to undergrounding the effected utilities and prepare probable costs estimate for relocating the utilities. Tighe & Bond will also be recommending probable funding sources for different tasks associated with the relocation of the utilities. The probable sources of funds would be the Town, the State, the Utilities companies, the property owners and other possible funding opportunities.

The following scope of work defines the work product that will be produced from the feasibility study.

Scope of Work:

1.) Inventory existing overhead lines, including annotations of transformer locations, sizes and types,

2.) Inventory the existing electrical and telecommunications service locations of each property along the route of the project to determine how each service is connected to the property.

3.) Contact all utility companies with equipment on the poles. Where the lines cross the railroad tracks, we include contacting the owning railroad. We will discuss with each company the feasibility of moving the services underground and the probable costs associated with the work. We will evaluate each utility's policy for cost sharing.

4.) Develop a schematic layout of the proposed location of transformers, manholes and junction boxes for utility services. The schematic design will identify the size , type and number of conduit for each utility; duct bank alignment and termination points; typical details of structures; and identify potential utility conflicts. A general description of construction sequencing, methodology and potential outages will be discussed.

5.) Provide opinion of probable cost estimates for design and construction as follows;

Town costs: Costs that may be incurred by the Town such as underground ducts, transformers, manholes, junction boxes, etc. Cost to replace the fire alarm and street lighting will be assessed.

Utility company costs: Costs that may be incurred by the utility companies, such as feeding cables through the ducts, and associated installation and connections.

Property owner costs: Costs that may be incurred by each property owner for connection across private property, if these costs are not included in other categories. Methods to include such cost in other categories shall be examined, and the consultant shall recommend the preferred method.

Stand-alone project cost savings: Provide an estimate of the cost difference if the undergrounding were to be constructed a "stand alone" project, i.e. constructed at a later date (and therefore not simultaneously with

the road reconstruction project). Explain the specific advantages and disadvantages for doing undergrounding simultaneously with the road construction.

Potential use of cost savings: Provide an estimate of cost savings that may occur to the state-funded road reconstruction project, if undergrounding is done simultaneously with the road reconstruction, in which case, for example, some utility poles may not have to be relocated . Provide guidance as to how the Town- funded undergrounding costs can be officially reduced by taking advantage of relevant cost savings in the state-funded road reconstruction project.

6.) Identity potential alternative funding sources and recommend a preferred approach.

7.) Assist and advise the Planning Board in conducting official public hearings and adoption of necessary new bylaws as required by state law, Chapter 166, Section 22.

Tighe & Bond will need to work in conjunction with all of the effected utilities to accomplish this task. We look forward to working with the National Grid to provide a comprehensive study..

If you have any questions please contact Peter Wozniak at 413-572-3289.

Attachment 4

The Town of Southborough has requested an investigation into converting a portion of the existing overhead (OH) electric distribution system (EDS) to an underground (UG) system on Main Street, where the Town plans to reconstruct the roadway. The purpose of converting the OH EDS in this area to UG is to beautify the Town. For the other streets that bisect Main Street, usually only the first 150 feet or first pole span is being considered for conversion, thus keeping cost down and the OH facilities out of the line of sight from the under grounded area.

Determination of Costs

The estimated costs have been developed for installation of the proposed underground system based on estimated material costs, typical National Grid labor rates and general contractor costs to excavate and repair existing pavement and landscaping. These estimates are for electric facilities only, and do not include overall project management or construction to place any attaching companies such as telephone, cable TV, fire alarms or fiber optics underground.

Specific Construction Assumptions

This order of magnitude cost estimate assumes that the existing overhead equipment will be replaced with UG facilities based on the following assumptions:

1. All existing overhead devices will be replaced with standard UG equipment such as:
   - Poles/wires to concrete encased manhole and duct system
   - OH single phase transformers to single phase mini pad mount transformers
   - OH three phase stackers or transformer banks to three phase pad mount transformers
   - OH street lights to UG fed stand alone street lights
   - Pole-mounted switching devices to pad mount switchgear
2. Pad mount switchgear will be installed to create fused sub-loops to new and existing transformers.
3. Manholes will be installed approximately every 350 feet. Risers will be built approximately 150 feet down each side street to make lateral connections from new UG system to existing OH system.
4. The estimates include typical engineering and contingency markups used for general public requirement projects. The estimates do not include premium hourly wages associated with off hours service transfers or increased schedules associated with efforts to mitigate potential environmental concerns and the time needed to obtain private easements.
5. Manhole & Duct System installation ***does not*** include road resurfacing.

Town Infrastructure and Business Considerations

The following issues should also be considered in evaluating these estimates:

- Private property easements, Town and State permits will be obtained prior to placement of equipment. National Grid will require the Town's assistance in obtaining all necessary easements.
- The Town will need to provide detailed engineering drawings to National Grid showing existing underground utilities. Location of the National Grid duct bank will be coordinated with any existing water, sewer, gas, and drainage systems. Relocation of these existing facilities is not included in this estimate.
- Location of the National Grid duct bank will be coordinated with other attaching companies such as telephone, cable TV, fire alarms and fiber optics where applicable.
- Outages will be required to tie commercial and residential customers into the new underground system. These outages may be extensive and may require the assistance from the Town.
- The Town should provide a single point of contact to manage the project and coordinate legal, construction and easement issues.
- Traffic in the affected areas will be impeded and sections of the roadways may need to be closed during construction.

ATTACHMENT 5

Order of Magnitude Estimate for Private UG Services

Item	Description	Quantity	Material Cost	Labor Cost	Subtotal
3 Phase Service	Install new UG Service	2	$3,500.00	$7,000.00	$21,000.00
1 Phase Service	Install new UG Service	45	$2,500.00	$4,500.00	$315,000.00
				Total	**$336,000.00**

Order of Magnitude Estimate for OH to OH Construction

Item	Description	Quantity	Material Cost	Labor Cost	Subtotal
new poles (ea)	xfer primary, secondary,	51	$600.00	$600.00	$61,200.00
	xarms, ptps, etc. to new pole				
15kV switches	xfer of switches to new pole	5	$500.00	$2,500.00	$15,000.00
1ph or 3ph svcs (ea)	xfer of existing 1ph or 3ph	45	$300.00	$200.00	$22,500.00
	OH or siphon service to				
	new pole				
3ph risers (ea)	build new riser and xfer	5	$300.00	$1,300.00	$8,000.00
	UG primary to new pole				
1ph xfmrs (ea)	xfer existing xfmr to new	10	$100.00	$500.00	$6,000.00
	pole				
3ph xfmr banks (ea)	xfer existing 3ph banks to	1	$100.00	$800.00	$900.00
	new pole				
st lights (ea)	xfer st lights to new pole	30	$100.00	$200.00	$9,000.00
guys and anchors (ea)	xfer or relocate guy and	26	$100.00	$200.00	$7,800.00
	anchor				
push braces (ea)	relocate push braces	1	$300.00	$500.00	$800.00
Traffic Protection	Police Detail Days	65	$0.00	$240.00	$15,600.00
				Total	**$146,800.00**

Street	Distance	Xings	Subtotal	SWGR Main	Sub Loops	MHs	3PH Xfrms	3PH Serv	HHs	1PH Xfrms	1PH Serv	Total Serv	SLs	pdmt cap	Sw Mod	Risers
Main	6000'	500'	6500'	7	4	19	2	2	20	10	40	42	30		4	5
Sears	150'		150'									0				
Deerfoot	150'		150'									0				
Parkerville	150'		150'									0				
Faye School (3x)	450'		450'									0				
1ph xngs	150'		150'									0				
3ph xngs	150'		150'									0				
St Marks St	150'		150'									0				
Middle	150'		150'									0				
Common	150'		150'													
Marlboro/Cordaville	300'		300'									0				
School/Latisquama	150'															
		Total	8450'	7	4	19	2	2	20	10	40	42	30	0	4	5

Subtract out 23kV Route	**0'**
	0'
	0'
	0'
New total for 13kv	**8450'**
Add in distance for 2 more risers	**0'**
	0'
23kV Route Distance	**0'**
5 thousand per spand poles + 23 kv no transfer subtract 500 per pole	**10'**

Police Details

OH-OH	='s roughly .75 days per pole in downtown area,		51	x	0.75	=	38.3	65	x		240	$15,600
UG	='s roughly 1 day every 150' plus 2 days per crossing and 1 per MH											
		MH	19	x	1	=	19					
		SC	29	x	2	=	58					
		FT	8450	/	150	=	56.3					
							133	159	x		240	$38,160

CONSTRUCTION COSTS FOR SOUTHBORO UG PROPOSAL - MAIN ST
+/- 50% ORDER OF MAGNITUDE ESTIMATE

UG CONVERSION	$4,097,260.00
PRIVATE UG SVC	$336,000.00
OH-OH CONST. CREDIT	$146,800.00

PRICING OPTION 1
LUMP SUM PROVIDES FOR CREDIT W/O PRIVATE WORK
$3,950,460.00

PRICING OPTION 2
7% SURCHARGE INCLUDES UG WORK
$4,433,260.00

Permitting

Information Packet

Version 1.0
2009.04.01

Presented by:
Corridor Occupancy Services

Review Fees

All requests require a non-refundable review fee payable to CSX Transportation, Inc. Below is the schedule of fees. A "**standard**" proposal meets CSX's specifications, i.e., no design or construction method variation. A "**variance**" proposal does not meet CSX's specifications. Horizontal directional drilling is not a standard approved method of installation and considered a variance.

REVIEW FEE SCHEDULE: UTILITY ENCROACHMENTS		
Per Location		
Aerial Proposals	**Standard**	**Variance**
Crossings		
Wireline	$ 1,250	$ 3,750
Pipeline: Overhead pipe structures not accepted	Contact CSX	Contact CSX
Parallel		
0 to less than 500 lineal feet	$ 1,250	$ 3,750
500 feet to less than 1,000 lineal feet	$ 2,500	$ 4,750
Greater than 1,000 lineal feet	Contact CSX	Contact CSX
Sub-Grade Proposals	**Standard**	**Variance**
Per Location - Based on Casing diameter Size		
Crossings		
0 to less than 10 inches	$ 1,450	$ 3,950
10 inches to less than 24 inches	$ 1,950	$ 5,450
24 inches to less than 30 inches	$ 2,500	$ 6,000
30 inches to less than 42 inches	$ 3,500	$ 7,000
42 inches to less than 66 inches	$ 4,000	$ 7,500
66 inches to less than 96 inches*	$ 6,000	$ 9,500
Greater than 96 inches*	Contact CSX	Contact CSX
Parallel - 0 to less than 500 lineal feet		
0 to less than 10 inches	$ 1,450	$ 3,950
10 inches to less than 24 inches	$ 1,950	$ 5,450
24 inches to less than 30 inches	$ 2,500	$ 6,000
30 inches to less than 42 inches	$ 3,500	$ 7,000
42 inches to less than 66 inches	$ 4,000	$ 7,500
66 inches to less than 96 inches*	$ 6,000	$ 9,500
Greater than 96 inches*	Contact CSX	Contact CSX
Parallel – 500 to less than 1,000 lineal feet		
0 to less than 10 inches	$ 2,150	$ 4,650
10 inches to less than 24 inches	$ 2,650	$ 6,150
24 inches to less than 30 inches	$ 3.200	$ 6,700
30 inches to less than 42 inches	$ 4,200	$ 7,700
42 inches to less than 66 inches	$ 4,700	$ 8,200
66 inches to less than 96 inches*	$ 6,700	$ 10,250
Greater than 96 inches*	Contact CSX	Contact CSX
Parallel – 1,000 lineal feet or greater	Contact CSX	Contact CSX
REVIEW FEE SCHEDULE: OTHER ACTIVITIES		

Towers	Standard	Variance
Tower*	$ 1,750	Contact CSX
Tower Co-location	$ 1,250	Contact CSX
Rights of Entry	**Standard**	**Variance**
General Access	$ 950	Contact CSX
Environmental Investigation	$ 3,500	Contact CSX
Site Assessments	**Standard**	**Variance**
Site Assessment	$ 2,500	Contact CSX
Project Activities	**Standard**	**Variance**
Project Coordination/Scheduling	$ 150	N/A
* Indicates transactions that may require a site assessment or additional fees for consultant services		

Review

CSX reviews each request independently for safety, specification compliance, and both short-term and long-term impacts to railroad operations and property usage. The contact identified on the application will receive:

- **Receipt Notification**
  - Advises request received by CSX
  - Provides estimated timeframe to complete review
- **Engineering Notification**
  - Advises request either:
    - Approved and permit forthcoming
    - Requires additional information for approval
    - Declined – CSX will endeavor to assist you with alternatives to any proposal that is declined
- **Permit Notification**
  - Provides permit/agreement for facility occupation
  - Instructions for scheduling work activity

Scheduling Activity

The Outside Party Request Form (OP Form) is utilized for scheduling all work activities on CSX property.

- **New Installations**
  - Form is provided with permit/agreement
- **Existing Facilities w/ approved Permit/Agreement**
  - Complete the OP Form for maintenance activities (see Appendix: Forms)
  - Provide scheduling fee
  - Provide evidence of insurances (see “Insurance” on page 5)

If you require a copy of the permit/agreement for an existing facility, see “Agreements/Permits” on page 4 for additional information on how to obtain a copy.