JASON L. MAMMONE, P.E.
DIRECTOR OF ENGINEERING

NATHAN S. BUTTERMORE, P.E.
INFRASTRUCTURE ENGINEER

RONALD I. LAWRENCE
PROJECT ENGINEER

EMAN SAYEGH
GIS MANAGER

TOWN OF DEDHAM

Commonwealth of Massachusetts

55 RIVER STREET
DEDHAM, MA 02026-2935

(781) 751-9350
FAX (781) 751-9359

www.dedham-ma.gov

DEPARTMENT OF INFRASTRUCTURE ENGINEERING

MEMORANDUM

TO: James Kern, Town Manager

FROM: Jason L. Mammone, P.E., Director of Engineering

DATE: January 28, 2019

SUBJECT: Update of Engineering Department Projects and Activities

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The following is a brief update on some of the projects that the Engineering Department is currently working on and/or involved with:

- **2018 I/I Inspection Project** – *completed* – This project involved the cleaning & TV inspection of approximately 104,500 linear feet (19.8 miles) of sewer mains, 113 private laterals and 483 sewer manholes. The project was completed in October. The total cost of this project was $125,434.91.

- **2018 I/I Rehabilitation Project**– *completed* – The project was designed to remove an estimated 180,000 gallons of infiltration per day primarily through trenchless technologies. The project involved the installation of approximately 5,900 linear feet of cured-in-place pipe (CIPP), the installation of approximately 25 linear feet of short liners, the installation of 4 full-wrap lateral liners and approximately 335 vertical feet of sewer manholes cementitiously lined and exterior grouted, as well as testing and sealing of associated joints and services and manhole and sewer line root treatment. The total cost of this project was $408,554.00.

- **Inflow and Infiltration Project** – *ongoing* – The Engineering Department has been working to reduce inflow and infiltration using an in-house approach to inspect, assess, design, and oversee improvements to the sanitary sewer system. Over the last twelve years the Town has inspected approximately 1,759,500 linear feet (333 miles) of sewer main, performed approximately 5,775 manhole inspections, installed approximately 175050 linear feet (33 miles) of cured-in-place liners, installed approximately 3,285 feet of short liners, installed approximately 150 full-wrap lateral liners, installed approximately 35 top hat lateral liners, cementitiously lined approximately 6,845 vertical feet of manholes and chemically root treated approximately 284,800 linear feet (54 miles) of sewer main. To date, the project has cost approximately $15.6 million and we estimate that we have conservatively removed 5.8 million gallons per day (MGD) of inflow & infiltration from the system. In addition, the Town's MWRA sewer assessments have

remained stable and our sewer rates have remained unchanged since 2008 as a result of our decreasing flow share. Assuming a no change in flow share scenario, we estimate that Dedham has cumulatively saved $11 million over the past twelve years as a result of these efforts (See Chart 1).

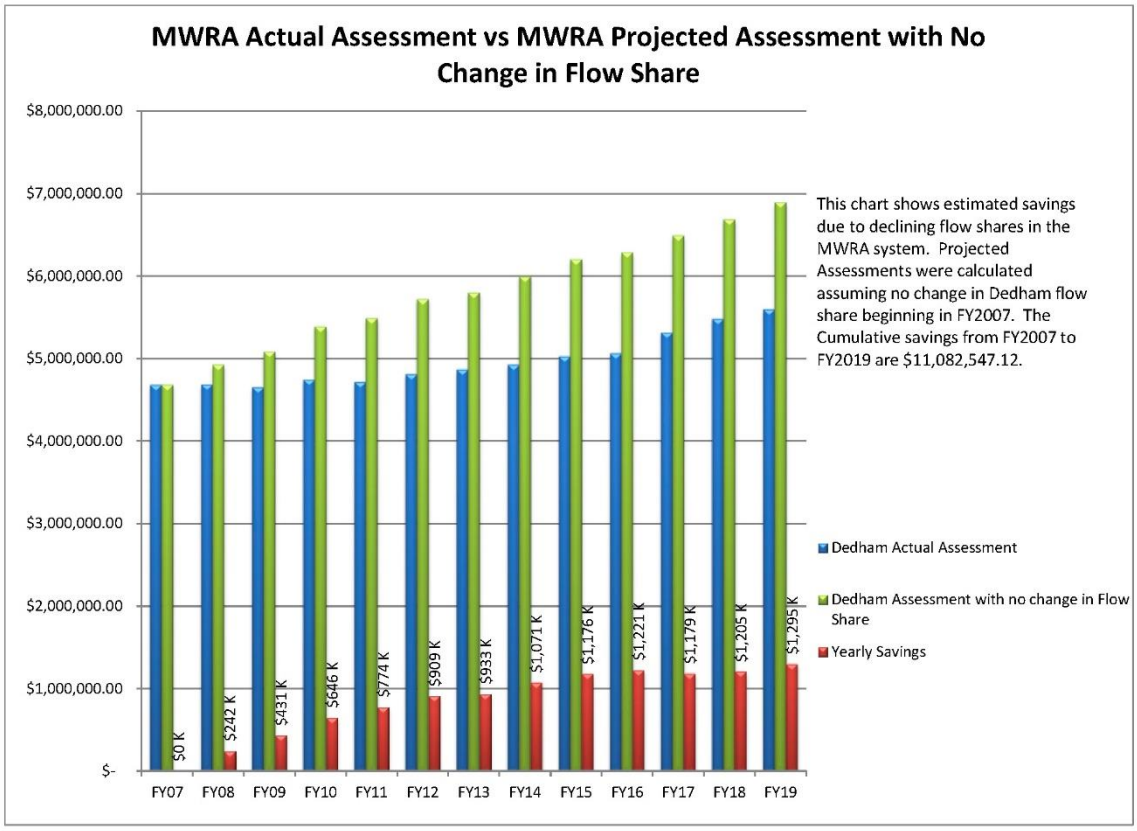

Chart 1

- **Private Infiltration Removal Policy –** *ongoing* – Over the past twelve years, the Engineering Department has been removing inflow and infiltration from our public sewer system. In 2016, Weston & Sampson was hired to perform Town-Wide Flow monitoring of our sanitary system to determine how much of the Town's wastewater, being treated by the MWRA, was actually wastewater versus infiltration and inflow.

  Based upon the data collected, it was determined that of the average 3.3 million gallons per day (MGD) that we send to the MWRA for treatment, approximately 63% of the flow is actually wastewater, 32% is infiltration and 5% is inflow. The data clearly shows that approximately 37% of the total flow is attributed to infiltration and inflow. That translates to 37% ($2 million) of our $5.6 million FY2019 MWRA Assessment being used to treat groundwater and stormwater that should not be in our sewer system.

  Over the past 4 to 5 years, many other MWRA communities have started to implement aggressive sewer rehabilitation programs, similar to Dedham's in an effort to reduce their MWRA sewer assessments by reducing the amount of flow being treated by the MWRA.

As these other communities are improving their systems and reducing their flow share, it is now resulting in the Town's flow share to the MWRA to plateau and soon will likely start increasing resulting in our annual MWRA assessments to increase at a higher rate than typical.

In a continued effort to reduce Dedham's infiltration, stabilize the increase in our annual MWRA assessments and maintain our current flow share to the MWRA, it is important to start looking beyond public sources of infiltration and start identifying private sources of infiltration. The mostly likely source of private infiltration will be groundwater that is leaking into property owner's sewer laterals. During our recent 2018 wet weather investigations, we conducted TV inspections of laterals, that during our mainline inspections, showed indications of infiltration. Based upon the TV inspections, approximately 100,000 gallons per day (GPD) of removable infiltration was observed. This amount shows that private infiltration plays a role in our overall infiltration problem. Therefore, the Engineering Department will be working with our consultant, Town Manager and Board of Selectmen in 2019 to develop a Private Infiltration Removal Policy. Since this policy could potentially have a financial impact to the property owners being serviced by the Town's sanitary system, it will be paramount to get these property owners involved in the policy making discussion. We anticipate having public meetings to get input from property owners prior to presentating to the Town Manager and BOS for approval.

- **2018 Rustcraft Road Sewer Improvements –** *ongoing* - In 2006, the Town hired Vollmer Associates, LLP to design a sanitary pump station and sewer collection system for the proposed Legacy Place development that was being permitted for construction around that time. The design consisted of a pumping station to be constructed in an easement area located between Legacy Place, Avalon Station 250 and Jefferson at Dedham Station along with approximately 2,500 linear feet of 6" Ductile Iron force main and approximately 800 linear feet of 12" PVC gravity main. The design of the pump station was based upon assumed flows to be generated by the proposed Legacy Place development along with flows from the existing properties already connected to the existing sewer system that would need to be redirected to the proposed pump station. The pump station and sewer was installed in 2008.

  In 2013, the Town hired Weston & Sampson to perform an evaluation/study on the pump station to assess its performance and efficiency. Their evaluation concluded that the pump station appeared to be near or at capacity and made recommendations to improve its overall efficiency. Recommendations included installing Variable Frequency Drives (VFD) on the existing pumps, replacing the current level control system with a new system and other small improvements. They also concluded that in order to handle significant increases in daily flows, larger and higher horsepower pumps would be required and that with larger pumps the existing 6 inch force main would have to be replaced with a larger force main to handle the higher velocities from the larger pumps.

  In early 2018, the Engineering Department was contacted by a few engineering companies and developers regarding potential new developments in the area of Legacy Place. These potential developments would have to discharge their sanitary flows to the pump station. Realizing the potential of new developments coupled with the 2013 pump station evaluation concluding that the pump station would likely not be able to handle increased flow, we hired Weston & Sampson to conduct another pump station evaluation/study to assess its condition after 10 years of service and its ability to handle new flows.

Based upon their evaluation/study, they determined that the pump station was handling flows almost 2 times greater than what it was designed for and as a result, the life of the system has been reduced by approximately half. It was stated that any additional flow would only reduce the already shortened useful life of the system and increase the chances of failure. It was recommended that no new flows be allowed to contribute to the pump station without a significant upgrade to the system. Weston & Sampson evaluated what it would take to handle flows from potential new developments along with change in uses at existing developments to come up with recommendations to upgrade the pump station and sewer system. The major recommendations included the following:

- Increasing the size of the pumps to adequately and efficiently handle the current flows and future flows.
- Increase the size of the existing force main from 6" to 10" to be able to handle future flows.
- Upgrade approximately 2,000 linear feet of 12" gravity sewer main to an 18" gravity sewer main. With the increase in flow, the current size of the 12" gravity main which transports the discharge from the pump station discharge to the 21" interceptor located on Fairbanks Road would be insufficient resulting in potential sanitary sewer overflows.

Based upon the results of the 2018 pump station evaluation/study, the Engineering Department has recommended to the Town Manager to implement a moratorium on additional sanitary flows to the pump station from new developments until the upgrades recommended by Weston & Sampson have been designed and installed.

At the Fall Town Meeting in November of 2018, Town Meeting approved an appropriation of $270,000 for the design of the Rustcraft Road Sewer Improvements based upon Weston & Sampson study. The Town hired Weston & Sampson to perform the design in December 2018 and is currently underway with the expectation of having final design plans and specifications in the summer or 2019.

Timing for this project will be critical. The MWRA will be under construction on Rustcraft Road in 2019 as part of their water main project and the Towns' MassDOT TIP project for new sidewalks on Rustcraft Road and Elm Street (discussed in further detail later in this memo) is still scheduled to start in 2021. Therefore, it will be important for the Town to construct the upgrades in 2020 before the State starts their project.

Weston & Sampson estimated a construction cost for this project at $3.2 million. We will be requesting the $3.2 million at the Spring Town Meeting with the intention of completing construction prior to 2021 as to not interfere or potentially postpone the start of our MassDOT TIP project.

- **McDonald Square Sidewalk Improvements –** *ongoing* - At the November 14, 2016 Fall Annual Town Meeting, the Town voted to approve $10,000 for a study to address accessibility and safety issues in the McDonald Square area of the Manor Neighborhood.

  The Engineering Department hired consultant BETA Group, Inc. which conducted its study of the area over the winter of 2016-17. The study concluded that there were sections of sidewalks and numerous accessible ramps that were not in compliance with the American

Disabilities Act (ADA) and Massachusetts Architectural Access Board (MAAB). The study also observed poor pedestrian connectivity through the square and improvements that could be made to line striping at the intersection of Hooper Road and Sprague Street that may mitigate the confusion experienced by motorists trying to negotiate the intersection.

Following the results of the study, the Engineering Department retained the services of BETA Group, Inc. and worked together to develop a plan to remedy the noncompliance and safety issues identified in their study. The Engineering Department paid for the design from its Professional/Technical Services operating account at a cost of $37,500.

The design plans that were developed were presented to the Manor Neighborhood Association and also the residents and business owners of the Manor Neighborhood on few occasions at Public Meetings held at the Endicott Estate. These design presentations were used to solicit input from the neighborhood to be used to revise and adjust the plan so that they met the needs of the neighborhood as best as possible. The final plans include the construction of 5 to 7.5 foot wide asphalt sidewalks with vertical granite curbing, 13 ADA/MAAB accessible concrete ramps, 7 crosswalk locations, and roadway restriping at the intersection of Hooper Road and Sprague Street. The plans also include minor geometric changes to the roadways at the minor intersections throughout the Square to improve sight lines and shorter street crossing distances to improve the safety for pedestrians.

Based upon feedback from the neighborhood, BETA Group, Inc. also explored improving the pedestrian connectivity from McDonald Square to the Striar property. BETA utilized the designs developed for the Manor Fields Recreational Facilities project to design the pedestrian crossing across Sprague Street. The design included the construction of 100 feet of new sidewalk, the installation of a flashing warning crosswalk beacon system and limited amounts of clearing and grubbing to achieve adequate sight line distance for motorists and pedestrians utilizing the crosswalk. This crossing location would not only benefit those going to the future Manor Fields Recreational Facilities, but also provides an important connection to get to the opposite side of Sprague Street. The only other location close to McDonald Square to cross Sprague Street safely is at the ECEC.

The total project cost estimate was $190,000. During the FY2019 budget hearings the scope of the project was downsized to not include the improvements associated with the Manor Fields since that project may not be funded in the near future, resulting in a cost estimate of $120,000. The request of $120,000 was approved at Town Meeting in May 2018. The project is scheduled to start in the Spring of 2019.

- **Dedham Square Pedestrian Signal Evaluation –** *ongoing* - The Engineering Department in conjunction with consultant BETA Group was directed by the BOS to re-evaluate pedestrian safety in Dedham Square. The evaluation was specific to the pedestrian signals for the intersections of High Street at Eastern Avenue and High Street at Washington Street.

  BETA Group evaluated the existing pedestrian signal phasing for the pedestrian signals at those two intersections and also performed traffic and pedestrian counts to obtain current data relating to the average daily flow.

Based upon the data collected and reviewed, BETA Group presented 4 alternatives to the BOS at their November 2018 meeting that would improve pedestrian safety at both intersections. The 4 alterations were:

1. "No Turn on Red" signage on all approaches for both intersections.
2. Combined Exclusive Pedestrian Phase for both intersections.
3. Separate Exclusive Pedestrian Phases for both intersections.

3a. Separate Exclusive Pedestrian Phases for both intersections and "No Turn on Red" signage on all approaches for both intersections.

All alternatives improve pedestrian safety but result in different levels of improved safety along with varying levels of impact to traffic flow through the Square. Of the 4 alternatives, #3a was recommended by BETA as it provides the best combination of pedestrian safety with minimal impacts to traffic flow.

The BOS requested that the Engineering Department place a survey on the Town's website where residents and business owners could read the report drafted by BETA and then select which option they believe to be the best for the Square. The survey has been on the Town's website since December 2018 along with the report. The BOS is anticipated to review the report and results of the survey and select which alternative to proceed with in an upcoming meeting in the beginning of 2019. Once an alternative is selected, BETA will implement the changes and provide observation to verify that the intended improvements to pedestrian safety and vehicle operation have been realized.

- **Gonzalez Field Sewer Design –** *ongoing* – The Engineering Department was approached by the Parks & Recreation Commission to assist in the design and permitting for the sewer service for the future concession stand to be located at Gonzalez Field. The Parks & Recreation Commission were able to save money on the overall project by having our department handle this aspect of the overall project. All work associated with the design and permitting was done in house. We had to collect additional survey data to supplement what was collected for the Gonzalez Field Project since the proposed connection is located outside the project's limits of work. With assistance from the Department of Public Works we also performed test pits within East Street, where the proposed sewer service is to be connected to the Town's sanitary sewer system, to verify the location and depth of all utilities, especially the MWRA's 36" water line. The data collected was utilized to design the sewer connection for the future concession stand (to be constructed in 2019) and for the required 8M permit to the MWRA. To date the design is 75% complete and the 8M permit has been approved by the MWRA. The construction of the sewer service is anticipated to be completed in April 2019. We will also provide on-site observations and inspections as the service is constructed.

- **NPDES Phase II MS4 Permit –** *ongoing* - The Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) issued the new National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater General Permit for Small Municipal Separate Storm Sewer Systems (MS4) for the Commonwealth on April 13, 2016 and became effective on July 1, 2018. This new permit has a significant amount of requirements that the Town will be responsible for annually reporting on. Most of the new requirements affecting the Engineering Department pertain to Illicit Discharge Detection & Elimination (IDDE). IDDE involves the inspection and testing of our stormwater infrastructure for the presence of pollutants (i.e. ammonia, phosphorus, fecal

coliform, surfactants, nitrogen, etc.). If any pollutants discovered exceed tolerable levels in our waterways, the source of the pollutant must be discovered and eliminated.

In our Year 1 submission (due 6/30/19) the Engineering Department will be responsible for providing information and/or confirmation on the following:

- Inventory of all Town owned outfalls/interconnections with required pertinent information. Based upon our existing data we have 176 outfalls/interconnections that will require inspection and testing before the end of Year 3.
- Written IDDE program document
- A written outfall screening and sampling procedure meeting the requirements of the Permit
- Annual IDDE training for all Engineering and DPW Staff

- **Sewer Fats, Oils, and Grease (FOG) Issues** – *ongoing* – As part of our overall inspection program the Engineering Department also has an aggressive FOG program to help eliminate back-ups and maintenance issues related to excessive grease in the sanitary sewer system. The Engineering Department has implemented a biological dosing program at key locations to help digest grease at known trouble spots.

    - **Legacy Place** – *ongoing* – The Engineering Department, in conjunction with the DPW and Health Department, has been monitoring the grease traps at Legacy Place. These grease traps have been improperly maintained to date and have been causing multiple problems at our Rustcraft Road Pump Station. We have been conducting random sampling of the grease traps throughout the year to determine if the establishments have been properly cleaning their grease traps according to their mandated cleaning schedule. When it is determined that an establishment is not cleaning their grease traps properly, the information is provided to the Health Department for their intervention. Our department will continue to monitor the grease traps to determine if the establishments are complying with the Board of Health's cleaning schedule.

- **Colburn Street Dam** – *ongoing* – In the beginning of 2017, our department along with the Town's consultant (Dewberry Engineers, Inc) completed all the required permitting necessary to finish the design of the dam's rehabilitation project. The project was sent out to bid in April with a bid opening on May 2017. The project was awarded to T. Ford Company, Inc. with a project start date of June 2017. Rehabilitation of the dam was completed in October 2017 at a final cost of approximately $727,000.

    The rehabilitation project consisted of the following:
    - Installing a temporary cofferdam to pump Mother Brook around the work area
    - Excavating built up sediment and debris along the upstream face of the dam
    - Installation of a concrete curtain wall extending from the existing bottom of the dam structure to the underlying bedrock.
    - Removing the existing stop log system and installing a new aluminum stop log system.
    - Installing a 4 to 5" inch layer of shotcrete along the upstream face of the dam
    - Filling in the voids along the downstream face of the dam

- Pressure grouting the voids behind the dam face and below the existing dam structure
- Installation of erosion/scour control materials immediately downstream of the dam

We are still working with the consultants on closing out all project associated permits and hope to have the project completed in 2019.

Project updates and photos were updated weekly on the Town's Website and also allowed anyone interested in the project to sign up to receive notifications when new updates or photos were uploaded to the Town's website.

- **MWRA's Southern Extra High Pipeline Project** – *ongoing* – The MWRA's project will be conducted in two phases (North and South Phase). Construction of the North Phase of the project started in December of 2017 and includes the installation of a 36-inch water line from the Town line on Dedham Boulevard to East Street. During construction, our department will be providing daily inspectional services to ensure that our sewer and drainage infrastructure remains intact. We will also be involved in attending construction meetings to stay up to date on construction activities and to address any issues to our infrastructure. The North Phase is anticipated to be completed in 2019. The South Phase was awarded this past summer with construction scheduled to start in 2019. The South Phase will go from East Street, down Rustcraft Road to the train station then under the track towards Route 128 where it will enter Westwood.

- **Greenwood Avenue Study** – *ongoing* – In September, the Town was approached by a concerned resident that resides in the Greenwood Avenue/Depot Avenue neighborhood. Over the past year, the resident has experienced several occasions when he has incurred property damage resulting from semi-tractor trailers trying to make the sharp turn from Greenwood Avenue onto Depot Avenue. These trucks come off the highway entering Dedham to get to their destination not realizing that there is a height restriction to go under the East Street Bridge until they are at the bridge. The easiest and most appealing route for them is to back up slightly and turn onto Greenwood Avenue then onto Depot Avenue then onto Cedar Street so they can re-enter the Endicott Rotary and head back to the highway or to a different route to get to their destination. The resident requested that the BOS look into changing Greenwood Avenue into a one-way street, therefore closing off the option to truck drivers to use Greenwood Avenue as a cut-through turnaround. The BOS requested that our department study the existing conditions and develop recommendations that would mitigate the issue. We designed 3 options for the neighborhood. One option included increased warning signage along East Street heading towards the Endicott Rotary warning truck drivers about the upcoming low clearance restriction and rotary. The other two options dealt with changing Greenwood Avenue into a one-way street heading from Depot Avenue to East Street. The options were presented to the residents at a neighborhood meeting where various opinions were expressed. Since creating a one-way street is a form of traffic calming, the Town's Traffic Calming Policy was followed and a ballot was sent out to all abutters to Greenwood Ave and Depot Avenue, presenting the options and allowing them to select which option they believed to be best for the neighborhood. The results of the ballots indicated that more than 75% of the residents preferred the option for increased signage. The DPW had the signage made and installed by August 2018. We are currently observing the effectiveness of the signage and will be providing the BOS with a 6 month update in February of 2019.

- **Liana Estates Subdivision** – *ongoing* – In recent history, most newly proposed subdivisions that are reviewed by the Planning Board seek waivers and propose to be developed as private ways. The developer for the Liana Estates subdivision located off of East Street proposed to construct a roadway that meets Town Standards in hopes that it would be accepted by the Town as a Public Way. The major obstacle in doing so was the cost associated with hiring a third party engineer to perform the required inspections of all earthwork operations within the right-of-way to verify that the work was performed to Town Standards. Realizing the importance of having this roadway constructed to Town Standards and accepted as a Public Way, the Engineering Department along with the Public Works Department offered to perform all of the required inspections, with in-house staff, of earthwork activities within the right-of-way with the exception of the asphalt testing of the roadway. This cost savings to the developer allowed them to move forward as proposed. The right-of-way construction is 100% complete and was done meeting Town standards. The Town is now working with the developer and Town Counsel to prepare a warrant in an upcoming Town Meeting for the acceptance of Liana Lane as a Public Way.

- **Transportation Improvement Project (TIP) –** *ongoing* - In the winter of 2013/2014 the Engineering Department presented to the BOS four potential projects that could be considered a viable project for funding through the MPO TIP. The BOS selected moving forward with the sidewalk/corridor improvements for Bussey Street and Rustcraft Road/Elm Street. The Engineering Department hired BETA Group as the design consultants for the project.

  In April 2016, our State Representative, Paul McMurtry, Town Manager, Selectmen Mike Butler, Town Planner, Director of Public Works and I attended an MPO meeting in which prospective project proponents were provided an opportunity to speak on behalf of our project for consideration for funding by the MPO. In June 2016, the MPO voted to approve funding for the Rustcraft Road/Elm Street project and programmed the start of the project for 2021.

  To date, we have received the 75% design comments for the Rustcraft Road/Elm Street project back from MassDOT and were approved the required permits from the Conservation Commission. We anticipate submitting 100% design plans to MassDOT in the beginning of 2019. Once we submit 100 % design plans we will then be able to begin the Right-of Way process. The Bussey Street 25% design submitted with MassDOT is still under review awaiting comments from MassDOT's bridge/structural group. MassDOT will schedule a 25% Design Public Hearing for the Bussey Street project once the review is complete. We are anticipating having that hearing in the first half of 2019. In 2018, the MPO approved funding for the Bussey Street project with construction to start in 2023.

- **Pavement Management** – *ongoing* – The Engineering Department, in conjunction with the Department of Public Works, has continued the pavement management program which began in 2007. Through twelve years of the program, the Town completed approximately $24 million worth of repairs and maintenance to approximately 74 miles of roads and 22 miles of sidewalks. During this time the pavement condition index has risen from 70 to 88. A new 3-year road program is currently being generated and is to be considered for approval by the BOS in March or April of 2019.

- **Traffic Calming** – *ongoing* – In 2012, The Board of Selectmen approved the traffic calming policy created by the Engineering Department. The Engineering Department will

continue to work with the Board of Selectmen and the Town Manager to refine and revise the policy, as needed, in order to give clear guidance to residents wishing to implement traffic calming strategies in their neighborhoods through the submission of Traffic Calming Request Forms to the Transportation Advisory Committee (TAC). The Engineering Department sits as an ex-officio member of the TAC responsible for general oversight of the committee and performing preliminary investigations consisting of traffic counts, intersection turning movement counts, and speed surveys using in-house equipment and labor.

To date, the TAC has received and decided on ten (10) traffic calming requests. The majority of the requests were determined not to require traditional traffic calming measures based upon the initial traffic evaluations performed by our department (i.e. speed tables, speed humps, road narrowing). However, for those requests that did not warrant traditional traffic calming measures, the TAC does provide low cost traffic calming alternatives that the concerned neighborhood could implement on their own (i.e. staggered parking, step 2 kid alert). Of the ten requests, only one (Lower East Street) was determined to require traditional traffic calming based upon the results of the initial traffic evaluation. The Engineering Department generated a Needs Assessment for Lower East Street to determine what traffic calming measures would be appropriate. We recommended a combination of roadway width narrowing, sidewalk construction and realigned intersections. A ballot was sent out via certified mail to all affected property owners on the streets that would be impacted by the installation of the proposed traffic calming measures. The ballots returned did not meet the minimum percentage of approvals required to move forward with requesting capital funding to construct the traffic calming measures. All evaluations and decisions are posted on the Town's website.

- **Private Ways** – *ongoing* – The Town By-laws for acceptance of private ways as public ways were updated at the 2014 Annual Town Meeting. The Engineering Department worked with the private ways subcommittee that developed the updated policy/standard by which the residents of a private way would have to adhere to in order to become a public way. The policy also includes the construction standards/specifications by which a private way must be reconstructed. There are 3 phases that must be completed and approved by the BOS in order for a Private Way to be presented at Town Meeting for acceptance as a Public Way. Those phases include the "Public Way Layout Petition Form"(Phase 1), "Acceptance of Conceptual Overlay Plan Form"(Phase 2), and Design and Layout (Phase 3).

  Below is a summary, by year, of those Private Ways that have requested Public Way Petition Forms from the Engineering Department and their to date progress:

  - **2015**
    - Arcadia Ave – Phase 1 ongoing (Stalled due to lack of participation)
    - Birch Street – Completed. Accepted as a Public Way at the 2017 ATM
    - Clough Road – Phase 1 ongoing (Stalled due to lack of participation)
    - Gould Street – Phase 1 ongoing (Stalled due to lack of participation)
    - Manning Road – Phase 1 ongoing (Stalled due to lack of participation)
  - **2016**
    - Quarry Road – Completed. Accepted as a Public Way at the 2018 ATM
  - **2017**

- Argyle Road – Phase 1 complete, Phase 2 ongoing(Stalled due to lack of participation)
- Churchill Place – Phase 1 complete, Phase 2 ongoing
- Lewis Lane – Phase 1 ongoing (Stalled due to lack of participation)
- Mosely Road – Phase 1 ongoing (Stalled due to lack of participation)

- **2018**
  - Coventry Road – Phase 1 ongoing (Stalled due to lack of participation)
  - Hyde Park Street – Phase 1 ongoing
  - Park Street – Phase 1 ongoing

All of these Private Ways that are ongoing in a particular phase have either stalled due to 100% of the abutters to the Private Way not agreeing to have their way become Public or the applicant is still acquiring signatures from all abutters required to move forward in the acceptance process.

- **Sewer Billing Project** – *ongoing* – The Engineering Department has been working with the Collectors Office to identify properties which were likely on sewer but not receiving bills using billing data and GIS information. To date 156 properties have been added to the sewer billing system. Of the 156 properties, 24 are properties located in Westwood and 3 are properties located in Boston. We are currently utilizing our sewer TV inspection data and GIS to plot locations where active sewer connections are made to the Town's system to identify additional properties that are likely connected but not receiving bills. We are hopeful in 2019 to develop another round of lettering, similar to the letters sent in 2010 & 2011 to residents believed to be connected to sewer but not receiving bills. We will be working again with the Collector's Office, Town Manager and Board of Selectmen with this effort.

- **Pump Station Operation** – *ongoing* – The Engineering Department, in conjunction with the DPW, oversees the operation of the three sanitary sewer pumping stations, including the weekly maintenance, routine and emergency repairs, and upgrades of various components. The Engineering Department and DPW monitors alarms at all stations 24 hours a day and responds as needed.

- **Sewer Connection, Extension, and Repair Inspections** – *ongoing* - The Engineering Department reviews, issues, and inspects permits for the installation and satisfactory testing of sewer lines and manholes on a daily basis. We spend a great deal of time responding to questions from residents and builders and we provide them with locations of existing facilities from record plans or television inspections. Over the past year, the Department reviewed, issued and/or inspected 53 permits. In addition to sewer permits, our department administered Drainlayer Licenses to 25 bonded and insured sewer contractors.

- **Storm Drainage Improvements/Inspections** – *ongoing* – The Engineering Department routinely responds to complaints and flooding issues throughout Town. As part of our evaluations of drain lines we have cleaned and inspected approximately 26.5 miles of pipe. In addition, we design improvements as needed. Over the past year the Town has installed 17 new deep sump catch basins.

- **Neponset Stormwater Partnership** – *ongoing* - The Engineering Department sits as one of the representatives from Dedham as part of the regional stormwater collaborative with

14 other Neponset Valley Communities. This partnership was formed through the Community Innovation Challenge Grant awarded to the MAPC and Neponset River Watershed Association. The collaborative is working together to prepare the communities for the challenges that are anticipated to arise from the new MS4 permit to be issued to the Commonwealth from the EPA.

- **Subdivision and Site Plan Review** – *ongoing* - The Engineering Department reviews numerous site plans and subdivisions for consistency with Town regulations and acceptable design standards. We provide written comments to the respective boards on the adequacy of those plans and calculations.

- **Town of Dedham Construction & Design Standards** – *ongoing* – The Engineering Department is responsible for updating the Town's Design and Construction Standards. Every few years we review all the standards and update and/or revise those standards to meet local and state requirements. Our last update/revision of the standards took place in 2018.

- **Geographic Information System (GIS) Administration** – *ongoing* - The GIS Division, led by its GIS Manager, manages the administration of the GIS for the Town. The role of the GIS Division within the Engineering Department is to respond directly to the various needs of the Town's various departments, as they relate to GIS. The responsibilities of the GIS Division include database administration, software application development, generating reports, creating maps and updating the Town's geospatial data. Below is a listing of some of the projects that the GIS division has been involved with:
    - **Addressing** – *ongoing* – The GIS Division is responsible for maintaining an up to date Master Street List and Master Address File (MAF), and for carrying out the duties contained within its regulations. This data is crucial for the First Responders, all departments, residents and the general public. The GIS division continues to add new addresses, modify and update existing addresses and solve conflicts.
    - **Aerial Imagery** – *Completed* **–** Prepared RFQs for bidding and procurement to acquire 3" pixel resolution suitable for producing 1"= 40' scale planimetric data and Aerial Photographs/Images for the Town of Dedham. New Aerial Imagery is to be utilized for updating the Town's planimetric data and is recommended every 2 to 5 years. Aerial imagery is vital in providing a vast amount of data at low cost. The selected consultant has delivered the Town-wide 4-band (color and CIR) orthophotograph with 3 inch pixels or better in the fall of 2018.
    - **Planimetric Update (phase II)** – *ongoing* – Prepare RFQs for bidding and procurement Phase II of The Town of Dedham, MA Spring 2017 (2018) Aerial Photography and Mapping Services Project which will consist of:
        - New DTM to support creation of accurate Orthorectification
        - Set of 1-foot contours and spot elevations
        - New 40 scale Planimetric mapping features from stereo
        - Add new, modify, delete, migrate and consolidate the existing data with the newly collected data while maintaining integrity
    - **Data Integrity –** *ongoing* –The criticality of having and providing accurate data is imperative, and data integrity is key in facilitating that. Therefore, The GIS Division continues to not only conduct deep and thorough evaluation, modification and maintenance of the existing and newly created data, but also continue to embrace and adopt the standard recommended structures by the GIS community.

- **Data Update –** *ongoing* –The GIS Division continues to update the underlying data such as parcels, road centerline, street regulation, right of way…etc. to better represent/replicate the real world.
- **Partnership with ESRI** – *Ongoing* –The Town's GIS Division has recently partnered and collaborated with a GIS consultant (ESRI) to work together to draft a plan to not only leverage ESRI's latest technologies and available services, but also taking into consideration migrating the current Town wide GIS system to be in alignment with the current industry wide path going forward. The contract will end in October/November of 2019.
- **Department Outreach –** *ongoing* – The GIS Division continues to conduct informational sessions with individuals and small groups of departments to focus the discussion and better understand the needs.
- **Department Training –** *ongoing* – The GIS Division continues to train individuals and/or small groups of departments on utilizing the GIS that meet their needs.
- **Departments' Special Projects –** *ongoing* – The GIS Division continues to work closely with many departments to create, and produce data, and maps that can facilitate and support their needs and decision making by migrating, modifying, evaluating and analyzing the available information.
- **Web GIS for Town staff –** *ongoing* **–** The GIS division has been implementing cloud and web based GIS technology called ArcGIS Online. This technology provides GIS capabilities to departments and staff that do not otherwise have GIS. These tools allow sharing and collaboration of information between departments. The GIS Division continues to develop new content on ArcGIS Online to enhance the Town's GIS.
- **Public Web/Mobile GIS –** *ongoing* – The GIS Division continues to maintain, enhance, update and publish mapping content through the Town of Dedham Maps Online application. Information is available as downloadable PDF files, web maps, and applications.
- **Infrastructure Engineering Operations** – *ongoing* – The Engineering Department uses iPad tablets to conduct storm water outfall inspections in the field. Development is underway to expand this process for maintenance of other infrastructures throughout the town.
- **Sewer Billing Project** – *ongoing* – The GIS Division has been working with the Engineering Department and Collectors Office to identify properties which were likely on sewer but not receiving bills.
- **Stormwater Outfall Catchment area** – *Ongoing* – As part of the MS4 report that the Engineering Department is responsible for, the GIS Division performed several data manipulation and analysis to create the outfall network and assign the related structures.
- **Work Order and Asset Management for Public Works –** *ongoing* **–** The GIS Division is surveying, analyzing, categorizing and prioritizing DPW needs in order to implement a new work order and asset management solution allowing Public Works staff to create, assign and track service requests and work orders to completion. The asset management portion of the implementation will allow Public Works Department to track maintenance history on specific items (e.g. signs, stormwater infrastructure, etc.).
- **Citizen Access Service Requests –** *ongoing* - The GIS Division is working with DPW to implement new applications for the public to be able to report issues and for the Public Works department to receive, categorize, assign, resolve and manage all reported issues in a timely manner. The solution will have both a web interface

and mobile application. Applications will integrate directly into the new Public Works work order management system, allowing staff to access all service requests.

- **Cemetery** – *ongoing*– Continue to maintain and enhance the data and web application for the Brookdale Cemetery. The Brookdale Cemetery web application was redesigned for better support on various tablet and mobile devices. This allows the Cemetery Division to access burial record information from the field. The same application was repackaged for the Village Cemetery.
- **Police** – *ongoing* – Automated mapping of incident information from the police database. The process provides the police with a secured web map of incident data updated every six hours. The data is also made available to other GIS users for mapping of accident or other relevant police incident information
- **Safety - School safety** – *ongoing* – In an effort to protect against the threats that Dedham schools may encounter, and to ensure safety for all students, teachers, parents and other individuals involved in the education system, the Police department took proactive and precautionary measures to generate safe escape routes and plans for quick and effective response. The GIS Division is working closely with the Police department to generate these plans that will be used in various scenarios for all Dedham schools. A set of plans has been produced for the escape routes for all Dedham public schools. We are currently working on control plans for Dedham public schools with intentions to expand the solution to the private schools and major malls in the Town.
- **Economic Development & Planning and Zoning** – *ongoing* – Working closely with both departments on various projects to collect, extract, link and analyze data to better assist in decision making
- **Environmental Department** – *ongoing* – Collecting, modifying and validating the Town's Trail Inventory to better serve the resident and be able to evaluate the different areas' needs along with other projects
- **Information Technology** – *ongoing* – Supporting and solving IT related issues during the transition period in an effort to minimize the impact on the GIS database and the availability of GIS applications and data to all of its customers.
- **State/Regional Collaboration –** *ongoing* –
  - **MassGIS** – *ongoing* - Working with MassGIS staff to provide updated standardized structure data for the Town of Dedham to the state. Standardized parcel and structure information are critical data layers for creating statewide address information to support E911 services.

- **Other notable completed projects**:

  - Needham Street Bridge (2017)
  - Dedham Mother Brook BMP Implementation Project (2017)
  - Greenlodge School Parking Lot Expansion (2017)
  - Dedham Square Improvement Project (2016)
  - Town-Wide Flow Monitoring Project (2016)
  - Sewer System Hydraulic Flow Model Project (2016)
  - Vincent Road – Illicit Connection Detection & Elimination (2016)
  - Massachusetts Avenue Stormwater Utility Design (2016)
  - Lancaster Road/Kennsington Road Sewer Design (2016)
  - 2015 Inflow Investigations (2015)
  - Violet Avenue at Pine Street Intersection Realignment (2015)

- 2014 Inflow Investigations (2015)
- Striar Property (2015)
- Private Building Inspections (2014)
- Violet Avenue Drainage Study (2014)
- Gonzalez Field – Accessible Parking Design (2014)
- 2013 Inflow Investigations (2014)
- Washington Street Discontinuance (2013)
- Municipal Building Inspections (2012)
- Town Wide Inflow & Investigation & Rehabilitation Program (2012)
- Lowder Street at Highland Street Intersection Realignment (2012)
- Town-Wide Flow Monitoring Project (2011)
- Highland Street Sidewalk Design (2011)
- High/Lowder/Westfield Street Traffic Calming (2011)
- Stormwater BMP Retrofit Grant (2012)
- Lowder Street Culvert Replacement (2011)
- Cedar Street Culvert Replacement (2011)
- Colburn Street Reconstruction (2011)
- Pacella Drive Illicit Discharge Removal (2010)
- Traffic Regulations Update (2010)
- East Street Reconstruction – Phase II (2009)
- East Street Reconstruction – Lowe's Money (2009)
- Condon Park Parking Lot Design (2009)
- Bussey Street Culvert Abandonment (2009)
- Maverick Street Wall Replacement (2009)
- Zoar Avenue Sewer Replacement (2009)
- Rustcraft Road Sewer Replacement (2009)
- Gaffney Road Sewer Improvements (2009)
- Brookdale Cemetery Expansion (2008)
- Flanagan Place/Orphan Line Drainage (2008)
- Bridge Inspections (2008)
- Intersection Redesign, Greenlodge Street at Sprague Street (2008)
- East Street and Washington Street Sewer Replacement (2007)
- Street Opening Regulations Update (2006)
- Sewer Regulations Update (2006)
- Salt Shed (2006)

Cc: Board of Selectmen
Nancy A. Baker, Assistant Town Manager
Joseph M. Flanagan, Director of Public Works
Nathan S. Buttermore, P.E., Infrastructure Engineer
Ronald I. Lawrence, Project Engineer
Eman Sayegh, GIS Manager
Rose O' Connor, GIS Technician