Digest of Administrative Reports to the Governor 2020 – 2021
Department of Transportation

Administrative Head: Joseph J. Giulietti, Commissioner

Established: October 1, 1969 Statutory authority p.a. 69-768

Central Office: 2800 Berlin Turnpike, Newington, CT 06111

Authorized number of full-time employees: 3,387

Recurring operating expenditures 2020 – 2021: $716 million

Capital Budget 2020 – 2021: $2.18 billion

Organization Structure:

Bureau of Engineering and Construction (BEC)
Bureau of Finance and Administration (BFA)
Bureau of Highway Operations and Maintenance (BHOM)
Bureau of Policy and Planning (BPP)
Bureau of Public Transportation (BPT)
Office of Commissioner
Office of State Traffic Administration

Agency Mission

The mission of the Connecticut Department of Transportation (CTDOT) is to provide a safe and efficient inter-modal transportation network that improves the quality of life and promotes economic vitality for the State and region.

Statutory Responsibility

The agency shall be responsible for all aspects of the planning, development, maintenance, and improvement of transportation in the state (Section 13b-3 C.G.S.). The agency serves its customers by providing safe and efficient systems for the movement of people and goods within, to or from the State, whether by highway, air, water, rail, or other means (Section 13b-2[l]).

Information Reported as Required by State Statute

The agency shall develop and revise, biennially, a comprehensive long-range transportation plan designed to fulfill the present and future needs of the state and to assure the development and maintenance of an adequate, safe, and efficient transportation system (Section 13b-15 C.G.S). The purpose of the Master Transportation Plan is to provide its customers, the Administration, the General

Assembly, local elected officials, and the public with a comprehensive understanding of the transportation projects and programs that the agency will be pursuing over the next 10 years. The strategic goals of the agency are to ensure safety, maintain the existing system, increase system productivity, promote economic development, and provide required capacity.

Affirmative Action Policy

The Connecticut Department of Transportation (CTDOT) is an Affirmative Action/Equal Opportunity Employer. It is the established policy of the CTDOT to assure equal opportunity and to implement affirmative action programs. All services and programs of the CTDOT are administered in a fair and impartial manner, pursuant to the State Code of Fair Practices and all other relevant state and federal laws and regulations including, but not limited to, C.G.S. 46a-60, Title VI and VII of the Civil Rights Act of 1964, and the Americans with Disabilities Act (ADA). The CTDOT continues to work cooperatively with the Connecticut Commission on Human Rights and Opportunities and other state and federal compliance agencies in conducting various reviews and providing requested information.

Organization Structure

The Bureau of Engineering and Construction

The Bureau of Engineering and Construction (BEC) continued to make improvements to Connecticut's transportation infrastructure by maximizing the use of federal and state transportation funds to address the backlog of State of Good Repair work. Other achievements include meeting goals for the number of state bridges in good repair as well as the initiation of select transportation enhancement projects, such as improvements to I-91 and the Charter Oak Bridge. Major areas of planning and engineering included finalizing the congestion mitigation strategies for the I-95 corridor south of New Haven, advancing the environmental assessment for the Route 7/15 interchange in Norwalk, progressing the design for the I-91/I-691/RT15 interchange, developing strategies for the replacement of the I-84/Route 8 Mixmaster in Waterbury, and advancing a comprehensive transportation study of the greater Hartford area known as the Greater Hartford Mobility Study.

Asset Management

Transportation Asset Management (TAM) principles and practices are now a central part of the CTDOT core strategy to address the condition and needs of Connecticut's transportation infrastructure. The CTDOT continues to comply with all Federal TAM requirements, including the June 30, 2021 submittal of TAM Implementation Documentation for Federal Highway Administration (FHWA) Annual Transportation Asset Management Plan (TAMP) Consistency Review, and the continued implementation of the Public Transportation 2018 Transit TAMP for the Federal Transit Administration.

The Highway and Transit TAMPs were created to document the agency's asset management processes, project future needs of our assets, and construct a blueprint for transportation asset management improvements moving forward. The plans meet federal requirements (MAP-21 and FAST-Act).

The Highway TAMP goes beyond addressing all the federal mandates and demonstrates the CTDOT's strong commitment toward achieving a State of Good Repair for the state's transportation system. An asset management strategy for National Highway System (NHS) bridges and pavements is federally mandated and required to be included in the TAMP. The CTDOT Highway TAMP goes beyond what is federally required and covers all CTDOT maintained bridges, pavements, traffic signals, signs, sign supports, pavement markings, and highway buildings. The Highway TAMP contains information on Asset Inventory and Condition, Asset Data Management, Objectives and Performance, Life Cycle Planning, Risk Management, Financial Planning, Investment Strategies, and Process Improvements.

The Transit TAMP was developed in partnership with the CTDOT Public Transportation's service providers to achieve a systematic and comprehensive asset management system for the state's public transportation assets. The public transportation assets include bus rolling stock, rail rolling stock, service vehicles, rail infrastructure, bus facilities, and rail facilities. The Transit TAMP contains information on Goals and Objectives, Asset Inventory and Condition, Analytical Approach, Investment Scenarios, Investment Plan and Implementation, and Monitoring. Both TAMPs guide the CTDOT in its endeavor to deliver better asset performance.

Annual Asset Fact Sheets were updated in 2021 for each of the seven highway assets, and updates are underway for the six transit assets covered in the TAMP. Asset Fact Sheets are available on the CTDOT website. The fact sheets provide updated inventory and condition data as well as performance projections. In addition, CTDOT continues to improve its TAM processes including methods of tracking work conducted throughout the asset lifecycle and development of key information on other assets to be managed.

Preparations are underway for federally required updates to both the Highway and Transit TAMPs in July and October 2022, respectively.

Lean

The Bureau of Engineering and Construction continues to place an emphasis on the state's LeanCT initiative. Lean participation includes tracking and reporting progress, solicitation, selection, and prioritizing topics for the scheduling of upcoming Kaizen events. Past Lean events have resulted in process improvements in targeted areas, including: The Streamlining of Pavement Data Processing and Workflow, early Environmental Permitting for Design-Build and Design-Bid-Build Projects, e-Construction (which led to the development of a submittal document control system),

and several Traffic Signal Program process improvements, including Customer Service for Traffic Inquiries, As-Built Plans, and Power Service Letters. Discussions have been conducted on remote methods to conduct limited and abbreviated remote Lean activities during the COVID-19 pandemic.

Highway Safety

The Bureau of Engineering and Construction (BEC) is continuing its effort to improve safety and drive down the number of fatalities and serious injuries of all road users on Connecticut's highways. This effort is detailed in Connecticut's Strategic Highway Safety Plan (SHSP). The SHSP brings together all of Connecticut's safety stakeholders to collaborate on safety efforts and leverage resources. The current SHSP was published in July 2017 and is being updated for publication within the next year. Similar safety plans are being prepared for each of the nine Councils of Governments in Connecticut. Six of nine plans have been completed. The other three are anticipated to be completed later this year.

The CTDOT submitted a Highway Safety Improvement Program Implementation Plan in September 2020 to the Federal Highway Administration. The plan contains a list of programs and projects to be initiated in Federal Fiscal Year 2021 that are intended to reduce fatal and serious injury crashes on Connecticut's public roadways.

The BEC's highway safety program focuses on implementing systemic transportation safety improvements. These types of projects focus on providing safety improvements over the entire transportation network, while providing the highest safety benefit for each dollar spent. Systemic safety improvements include:

- *Centerline rumble strip initiative.* Rumble strips are grooves within the pavement that produce noise and vibration when traveled over and are a proven safety countermeasure to reduce lane departure crashes. Approximately 67 miles of centerline rumble strips will be installed in 2021.

- *Rectangular Rapid Flash Beacons (RRFBs) initiative on state and municipal roads.* RRFBs are pedestrian-actuated conspicuity enhancements used in combination with a pedestrian, school, or trail crossing warning sign to enhance safety by reducing crashes between vehicles and pedestrians at uncontrolled, marked crosswalks. The device includes rectangular-shaped yellow lights that flash with high frequency when activated. Risk factors are being used to systemically identify uncontrolled marked midblock crosswalks that could benefit from a RRFB. Design is underway for state roads and will be largely completed in 2021. Construction will begin in 2022. Design for locations on municipally-owned roadways will begin later in 2021.

- *Horizontal curve signing project on state and locally-owned roads.* Improved horizontal curve delineation is proven to be a cost-effective approach to reducing roadway departure crashes. The locations are being designed in a consistent

approach in accordance with national standards with the use of signs. The installation of signing is underway in Districts 3 and 4 (state roads). Design was completed in District 1 in 2021 with construction in 2022 and design will be completed for the District 2 (state roads) in 2022.

The BEC's Traffic Engineering Operations unit assisted the Safety Engineering unit in the implementation of these systemic projects as well as assisted in initiating new projects as noted in the Highway Safety Improvement Program Implementation Plan for FY2021. The new initiatives are part of three major program areas, which include implementation of countermeasures to reduce fatal and serious injury roadway departure, pedestrian, and intersection crashes. Some of the new initiatives include:

- *High Friction Surface Treatments (HFST).* HFST involves the application of very high-quality aggregate to the pavement using a polymer binder to increase pavement friction at existing or potentially high frequency crash areas. The higher pavement friction helps motorists maintain better control in both dry and wet driving conditions. State roads were screened for horizontal curves that could benefit from HFST.

- *A statewide clearance interval retiming project on municipally-owned traffic signals.* All state-owned and maintained traffic signals have been revised to update the yellow, red, and pedestrian change intervals to be consistent with the national best practice. The timings are being calculated and the signal plans are being revised. The same best practices will be applied to municipally-owned signals.

- *Signing and pavement markings at unsignalized locations.* This initiative, which is a Federal Highway Administration proven safety countermeasure, involves the systemic installation of multiple low-cost countermeasures, such as enhanced signing and pavement markings, at stop-controlled intersections. The treatment generally consists of doubling up (installation on both left and right side of the road) stop signs and stop ahead signs, retroreflective sheeting on signposts on the stop approach, and doubling up advanced intersection warning signs with street name plaques on the through approach. The treatment is designed to increase driver awareness and recognition of the intersections and potential conflicts and reduce angle crashes.

- *Pedestrian improvements at signalized locations.* The upgrade of pedestrian facilities at signalized intersections to include countdown pedestrian signals with leading pedestrian intervals (LPIs) where appropriate.

The Bureau of Engineering and Construction partnered with the University of Connecticut's Training and Technical Assistance Program (T2 Center) in 2020-2021 to develop a speed display/driver feedback sign program to provide two speed feedback signs to qualifying municipalities. Municipalities will be provided training as part of a broader speed management strategy to address speed management issues. The signs

have proved to be effective in reducing speeds and crashes when used at key locations. The first signs were installed in January 2021. The program has been a very positive reflection on the efforts of the Connecticut Department of Transportation to focus critical resources to local road priorities.

Systemic safety projects to upgrade active railroad devices are ongoing to ensure functionality of system critical components at public railway-highway grade crossings. The projects include upgrading gate arms, gate arm mechanisms, warning lights, and bells on multiple rail lines throughout the state.

Traffic Signal and Sign Management

Traffic signal projects are being completed on a yearly basis to improve operational efficiency and replace outdated equipment which requires frequent maintenance. Under these projects, equipment will be updated to current design practices utilizing the latest standards and guidance from the Manual on Uniform Traffic Control Devices (MUTCD), including adding Accessible Pedestrian Signal equipment at locations where applicable. There are approximately fifteen locations in each of the district projects being designed and constructed each year.

A goal for future traffic signal improvement projects is to include Advanced Traffic Controller equipment along with connectivity to a central office. This will allow the use of Automated Traffic Signal Performance Measures. The safety benefits of ATSPM's include identifying safety concerns in the areas of red light running and pedestrian delay, reducing congestion that results from poor and outdated timings, and improving operations by actively monitoring signals which allows CTDOT to address malfunctions before they become complaints.

Project No. 0007-0250 is the upgrade of the coordinated traffic control signal system on the Berlin Turnpike (U.S. Route 5 and Route 15) in Wethersfield, Newington, and Berlin. The project will install the first state-owned system that uses adaptive traffic signal control and connected vehicle technology with snowplow priority. The contract for construction was awarded in June 2021 with construction anticipated to be completed in late 2022. Project 0007-0262 is the second phase of the project which will upgrade the remaining Berlin Turnpike signals in Berlin and Meriden. The project recently started the design phase, with construction anticipated to begin in Spring 2023.

Operational projects have been initiated to upgrade existing obsolete TRANSYT controllers with modern controllers and cabinets, thereby eliminating the approximately 349 DOS-based controllers that are no longer supported and are problematic to maintain. The projects will also replace existing detectors with radar and camera units compatible with future deployment of ATSPMs and retime the 33 systems to optimize traffic flow along the busiest travel corridors in the state. The work will be phased over three years; funding for the first year was established in Spring 2021.

The CTDOT continues efforts to replace signs on limited-access roadways in the state that have surpassed their effective service life. Multiple signing replacement projects are currently in design or construction. These include projects on Route 2, Route 3, Route 9, Route 11, Route 17, Route 40, Route 72, I-691, SR 702, and sections of I-91 and Route 8. Additionally, the CTDOT has implemented some systemic sign replacement projects targeting specific sign types, such as replacement of speed limit signs on limited-access roadways with the implementation of wrong way signs posted on the reverse side of the speed limit signs to reduce wrong way crashes. Some of these projects are piloting the use of geographic information system (GIS) to improve asset management life cycle tracking and inventory improvements through design, construction, and inspection.

Bicycle / Pedestrian / Trails

The Bureau of Engineering and Construction continues to manage a more flexible approach to the funding of bicycle/pedestrian projects to close some of the existing statewide gaps in the trail network. Toward this goal, the BEC is facilitating the completion of a network of inter-connected, statewide trails under the Multi-use Trail Implementation Plan. This program is focused on the East Coast Greenway (ECG), a trail of statewide significance. The goal is to establish clear priorities that will close the most critical gaps and create long continuous portions of the statewide trail network.

Construction is nearing completion on a segment of the ECG in the towns of Pomfret and Putnam for the construction of two bridges and three underpasses (Project No. 111-124). In addition, construction has begun on a segment of the ECG in New Haven on the Farmington Canal Heritage Trail (Project No. 92-621).

Design activities are underway on the following projects along various segments of the ECG: Project No. 108-189 in Plainfield/Sterling, Project No. 131-203 in Southington, Project No. 30-97 in Columbia/Coventry, and Project No. 109-173 in Plainville. In addition, design activities are just beginning on a portion of the ECG in Pomfret and Putnam (Project No. 111-126) to close a remaining gap. The Bureau of Engineering and Construction is also working with the Towns of Bloomfield and Simsbury to design a segment of the ECG under the Local Transportation Capital Improvement Program (LOTCIP) and with the Town of Killingly to design a segment of the ECG under the Community Connectivity and Connecticut Department of Energy and Environmental Protection (DEEP) recreational trails programs. A planning study has also been approved to establish consensus and define an alignment for the ECG through Hartford, Bloomfield, and East Hartford to close a capitol area gap.

On August 4, 2020, the CTDOT announced new project proposals to the nine Council of Governments (COGs) across Connecticut, selected as part of our 2019 Federal Transportation Alternatives (TA) project solicitation. As a result, and during the fall of 2020, ten new bicycle and pedestrian related projects were initiated across the state under the TA program. Locations included New Britain, Beehive Trail Phase 1, Mansfield, Downtown Pedestrian Loop, Easton, Route 59 Multi-use Path, Weston, Town

Center Pedestrian Improvements, Hamden, Farmington Canal Heritage Trail Improvements, Meriden, Research Parkway Trail, Norwich, New London Turnpike Complete Streets, Pomfret, Airline Trail Road Crossing, Kent, Streetscape Enhancements, and Watertown, Steele Brook Greenway. The CTDOT is currently awaiting new Federal Transportation legislation which may provide additional TA funds. If this occurs, it is expected that other project proposals may be initiated based upon available future TA funding.

The Connecticut Department of Transportation and the Capital Region Council of Governments recently completed a study to identify an alignment for the Farmington Heritage Canal trail / ECG through Plainville. Project No. 109-173 has been initiated, based on the results of the study, to close a five-mile north/south gap in both trail systems through the town of Plainville. The work will be implemented in three phases, starting with the southernmost section to begin construction in late 2023, the northernmost section in 2024, and the downtown Plainville section in 2026. These projects will close the last remaining gap in the Farmington Canal Heritage Trail connecting New Haven to Massachusetts, providing a continuous 54-mile trail through Connecticut. Moving forward, the CTDOT will continue to evaluate and initiate new sections of the regionally significant trails within budgetary constraints to close existing gaps in the ECG across the state.

Local Transportation Capital Improvement Program (LOTCIP)

The Bureau of Engineering and Construction (BEC) continues to oversee the Local Transportation Capital Improvement Program (LOTCIP). LOTCIP allows municipalities to perform capital improvements on smaller, locally-owned roadways that qualify for the Federal Surface Transportation Program – Urban (STGB-U) without needing to adhere to Federal Title 23 requirements that many municipalities are unfamiliar with and find burdensome, time consuming, and expensive. LOTCIP has freed up a significant level of Engineering resources that have historically been devoted to oversight of municipally sponsored Federal-aid projects. LOTCIP also allows the portion of Federal STP-U monies historically dedicated to improvements on municipally-owned facilities to be utilized by the CTDOT for eligible activities, predominantly on state-owned assets. Since November 2013 when LOTCIP was first implemented, the BEC has worked with the regional Council of Governments (COGs) to issue funding commitments for 190 regionally endorsed municipal projects representing approximately $348 million in construction. $31 million in LOTCIP-funded construction projects were awarded in SFY 2020, with $25 million currently programmed to be awarded in SFY 2021. The BEC continues to coordinate with the regional COGs on new location solicitations and enhancing overall project delivery.

Resilience

Resilience is inherent in current engineering design practices, standards, and criteria and the CTDOT continues to pursue best available science in keeping climate-related, design input up to date, incorporating future climate projections (precipitation,

stream flow, sea level rise) and updating design guidance. In cooperation with the U.S. Geological Survey (USGS), the CTDOT co-funded a project to update streamflow estimates and regression equations for estimating flows for hydraulic analysis and design. The USGS project incorporated improved statistical techniques and captured data from several significant flood events that occurred throughout Connecticut since the last update. The project has been completed and the results have been posted on the web and incorporated into the USGS StreamStats web-application. There is currently a knowledge gap on how to incorporate the future climate scenario output predicted by global climate models into the design practices for transportation infrastructure. Research is ongoing to fill this gap.

Highway Program

A $55 million improvement project on I-84 in West Hartford has begun to address concerns with congestion and traffic operations on I-84. Project 155-171 began in the Spring of 2020. The project is being constructed in two major stages and, when complete, will provide safety and operational improvements along the corridor. Improvements include adding an additional auxiliary lane on I-84 westbound (WB) between Exits 39A and 43, and on I-84 eastbound (EB) between Exit 40 and 41. Bridges over Berkshire Road and I-84 WB over Ridgewood Road will be widened or replaced. The I-84 WB bridge over Ridgewood Road is scheduled to be completed one year ahead of schedule. The estimated project completion date is May 30, 2023.

Construction continues for the relocation of I-91 northbound Exit 29 in Hartford to Route 5 North and I-84 East in East Hartford (Project No. 63-703). This exit is being replaced with a major diverge consisting of a two-lane bridge entering the left side of the Charter Oak Bridge. Additional improvements include extending the four-lane section of I-91 northbound from Interchange 27 to Interchange 29 and widening Route 15 northbound to three travel lanes from east of the Charter Oak Bridge to the Silver Lane underpass. Project No. 159-191, which involves pavement rehabilitation and safety improvements of I-91 northbound and southbound in Wethersfield is combined with Project No. 63-703 under one contract. Construction of the new Exit 29 bridge is complete and was opened to one lane of traffic to the public in May 2021. The second lane is anticipated to be open in the summer of. The $213 million contract (Project No.63-703/159-191) began April 1, 2019 and has an estimated completion date of October 22, 2022. The current revised contract value is approximately $240 million.

Construction has started on Route 2 in East Hartford (Project 42-317). The purpose of the project is to extend the service life of the facility by rehabilitating the existing pavement structure and provide safety, bridge, and traffic operational improvements. The limits of the project begin at Maple Street and extend west to the vicinity of Pitkin Street for a length of approximately 2.8 miles. The proposed scope of work includes rehabilitation of the underlying concrete pavement and resurfacing on the mainline and ramps, reconstructing the median to install a concrete barrier and provide wider shoulders, as well as upgrading the drainage systems. Bridge improvements include two bridge deck replacements along with minor deck repairs on other bridges.

Additionally, for safety and traffic operational improvements, the Exit 5B ramps (Cambridge Street WB on-ramp and the Sutton Avenue EB off-ramp) will be permanently closed. Construction began April 2021 and is estimated to be complete in August 2024.

The I-84 Danbury Project, Project No. 34-349, is an initiative to improve safety, reduce congestion, and improve operations and access on I-84. The study limits extend from the NY/CT State Line to Exit 8 in Danbury. This stretch of I-84 is CTDOT's highest priority for reducing congestion on the I-84 corridor. The project planning process is underway and focuses on public engagement and the development and preliminary assessment of alternatives. Subsequent phases will include environmental documentation, identification of a preferred alternative, and preliminary engineering. The project team has been meeting with a variety of stakeholders in Danbury and surrounding towns and launched a project website (i84danbury.com). Other public outreach efforts include newsletters, social media updates, and working closely with the Project Advisory Committee.

Transportation improvements continue on Route 15 (the Merritt Parkway) as part of the Merritt Parkway Corridor Improvement Plan. State Project No. 158-211/207, currently in its fourth year of construction, addresses 4.6 miles in both the east and westbound directions of the Merritt Parkway in Fairfield and Westport. Included within the project are eleven historic structures that are a mix of Parkway over and under other travel ways, as well as the Saugatuck River. Roadway improvements include resurfacing the roadway, correcting roadway cross-slopes, widening existing shoulders to 8 feet (4 feet paved, 4 feet reinforced grassed), upgrading guiderail with the standard Merritt Parkway style railing, installing concrete median barrier where appropriate, and rehabilitating the historic landscape in accordance with the Merritt Parkway Landscape Master Plan. Construction started in April 2017 and is predicted to cost $71 million. This project is substantially complete with some minor items outstanding.

The last major project in the Merritt Parkway Corridor Improvement Plan extends from Route 124 in New Canaan to Newtown Turnpike in Westport for 6.1 miles. During the design of this section (State Project No. 102-296PE), it was decided to separate the project into two halves and complete the work under separate construction projects. The northern project became known as State Project No. 102-368CN and begins at Main Avenue in Norwalk and extends to Newtown Turnpike in Westport for approximately 2.7 miles. State Project No. 102-368 has been advertised for bids and was awarded and began construction on May 12, 2021 with a completion date of December 30, 2022.

The remaining 3.4 miles will be constructed under State Project No. 102-296CN. The design of this project is scheduled for completion in fall 2021. The scope and magnitude of these projects are similar to prior parkway projects including the ongoing section in Westport and Fairfield.

A series of projects have been initiated in the downtown Middletown area that will support the removal of traffic signals from the Route 9 expressway in Middletown. The

first project included the construction of sidewalk “bump-outs” on Main Street to provide better pedestrian visibility, shorten the pedestrian crossing distances, and improve signal timing. In February 2020, construction began on the contract consisting of the major intersection improvements at St. John’s Square (Project No. 0082-0320CN) and the major bridge rehabilitation project for the Arrigoni Bridge (Project No. 0082-0312CN). As of July 2021, Project No. 0082-0320 in downtown Middletown was substantially complete and work on the Arrigoni Bridge under Project No. 0082-0312 is in the final stage of deck reconstruction. Traffic on the Arrigoni Bridge will be opened to two lanes in each direction following this work, which is scheduled to be completed by September 22, 2021. Substructure repair work will continue on the Arrigoni Bridge until the overall project completion date of February 25, 2022.

A project to close the at-grade access from Miller Street to Route 9 by upgrading the Bridge Street railroad crossing is in design (Project No. 0082-0322CN). Also, in design is a project to remove the stop-controlled on-ramp from Route 17 onto Route 9 northbound (Project No. 0082-0316CN). The removal of the traffic signals on Route 9 is its own independent project (Project No. 0082-0318) that, due to public involvement, requires developing a detailed traffic model of the surrounding area to clearly determine how traffic patterns will be changed due to the removal of the traffic signals.

A safety improvement project was initiated along Route 82 in Norwich between I-395 and the Thames River, with the primary purpose of reducing the number and severity of crashes. The project area is approximately 1.5-miles long, locally known as “crash alley” and experiences a higher-than-average crash rate, resulting in nearly 111 crashes and 24 injuries per year. The safety solution involves constructing a raised median and replacing seven signalized intersections with six modern roundabouts. The raised median will improve safety by restricting left turns in and out of the numerous driveways along the corridor. The roundabouts will facilitate U-Turn capability as well as improve safety at the intersections. CTDOT has found an 81 percent reduction in severe crashes and a 49 percent reduction in overall crashes in reviewing five of the roundabout locations constructed so far on state roadways.

The preliminary designs are under way for the I-91/I-691/Route 15 interchange improvements in the City of Meriden to reduce congestion, improve operations and address safety concerns associated with crashes caused by congestion and weaving. Three separate projects were initiated as follows:

- Project 79-240, Interchange Improvements to I-91 SB, I-691 and Route 15 SB in Meriden and Middletown. The project involves widening I-91 SB to provide an auxiliary lane from the vicinity of the Middletown rest area to I-691 WB exit, widening the I-91 SB off-ramp to I-691 WB to two lanes, and widening the I-691 Eastbound off-ramp to Route 15 SB to two lanes.

- Project 79-245, Interchange Improvements from I-691 EB to I-91 NB in Meriden and Middletown. The project involves widening the existing ramp from I-691 Eastbound to I-91 NB to two lanes, improving the ramp curvature, and widening

I-91 NB to accommodate an auxiliary lane from this interchange to the Middletown rest area.

- Project 79-246, Interchange Improvements to I-91 NB, I-691 WB, and Route 15 NB in Meriden. The project proposes to replace the existing ramp connection from I-91 NB to Route 15 NB (Exit 17) with a new two-lane off-ramp from the existing off-ramp to East Main Street (Exit 16).

Final design is progressing for State Project 44-156, improvements on I-95 at interchange 74 and Route 161 in East Lyme. The purpose of the project is to address safety and traffic operational concerns at Interchange 74, between interchanges 74 and 75, and on Route 161. This project will also include the replacement of the I-95 bridge over Route 161 due to its poor condition and to accommodate the widening on Route 161. The proposed improvements on I-95 include full reconstruction and widening to accommodate the revised ramp configurations, auxiliary lanes between exits 74 and 75 in each direction and the full replacement of the bridge over Route 161.

The Greater Hartford Mobility Study (GHMS) is a comprehensive study aimed at addressing mobility challenges in the Greater Hartford Region. The study's vision is to improve mobility by planning an integrated, resilient, multi-modal transportation system, thereby enhancing the quality of life, economic vitality, and opportunity in the region. The data collection and the analyzing of existing conditions phase is almost complete. Identifying and analyzing potential alternatives is expected to start shortly. The study is on-going and expected to be complete by the end of 2022.

Bridge Program / Innovative Bridge Construction

Bridge work is being programmed based on an asset management approach to achieve and maintain established bridge performance targets, as documented in the CTDOT's TAMP. The goal of an asset management system is to systematically and strategically identify and program treatments throughout the bridge's lifecycle, which will, if applied at the appropriate time, result in achieving and sustaining a State of Good Repair, given available funding. Over the last several years, the number of bridges rated poor has been steadily decreasing as the result of additional state funds applied toward bridge projects, additional maintenance staff to perform a myriad backlog of bridge maintenance work, and additional engineering staff to design and implement capital improvements. The CTDOT continues to evaluate, and implement when appropriate, innovative materials and techniques to extend the service life of bridge elements while also reducing future maintenance and rehabilitation costs.

The Bureau of Engineering and Construction (BEC) continued to inspect and inventory the structural condition of more than 5,000 bridges, 1,800 overhead sign supports, and 900 traffic signal mast arm supports. Signs and traffic signal supports are typically inspected at six -year intervals. Bridges are typically inspected at two-year intervals. However, some bridges are inspected more frequently if warranted due to structural deterioration. This critical function helps to ensure the safety of the traveling

public through the identification of deficiencies and needs in a systematic and timely manner. Routine maintenance is also identified to protect the Connecticut's multi-billion-dollar capital investment in bridges.

When a state-maintained bridge becomes poor, steps are taken to address the deficiency, either by Bridge Maintenance performing repairs, or by the BEC initiating a project to repair or replace the structure in a capital project. If the bridge is maintained by a town or another entity, the BEC notifies the owner of the need to correct the deficiency and provides information regarding funding for qualified bridges.

The innovative construction method referred to as Accelerated Bridge Construction (ABC) has been used in many construction projects in Connecticut. ABC is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges. ABC improves site constructability, total project delivery time, and work-zone safety for the traveling public. ABC reduces traffic impacts, onsite construction time, and weather-related time delays. Since 2012, 67 projects have been completed using ABC, 15 others are in construction and another 54 are in various stages of design from pre-design to contract processing.

In 2016, CTDOT's Federal Local Bridge Program initiated a pilot program in which, with the municipality's agreement, the CTDOT administers the design and rights-of-way phases of a Federal Local Bridge Program project, from concept through design completion. This pilot program was initiated due to the CTDOT's recognition of the difficulties faced by many municipalities in carrying out design activities in a timely fashion. Initially eight projects were selected for the pilot program, but due to the overwhelming success of the pilot in reducing typical design durations from 48 months down to 24 months, CTDOT has opened this program to all municipalities, contingent upon availability of state funds. All municipalities have the option to request for CTDOT to administer the design and rights-of-way phase for these projects. For a municipality that opts into this program, CTDOT uses state funds to pay for 20 percent of design costs to match the 80 percent federal funding. The municipality remains responsible for advertising for construction, administering construction of the project, and funding 20 percent of the rights-of-way and construction phases to match the 80 percent federal funding. The program has been very successful and there are currently 30 active projects in design in this program. One added benefit of the program is that it has proven to be cost effective, with an overall engineering cost savings over the traditional town design/advertise process.

A project to replace the existing railroad bridge over Atlantic Street in Stamford is currently in construction. The project incorporates ABC techniques. Self-Propelled Modular Transporters (SPMT) were used to transport and place pre-constructed bridge spans built off site. The new spans were successfully installed during the week of July 4, 2019. With the Atlantic Street bridge work complete in late 2019, on-going work includes catenary replacement and completion of a new station platform on the north

side of the station to use the new Track 7 that will service the New Canaan rail line. Construction completion is scheduled for spring 2022.

Innovative materials and techniques were successfully used to preserve bridge beam ends for structures carrying I-91 in New Haven. The bridge beam ends were encased in ultra-high-performance concrete (UHPC), the first use of this technique in the nation. The procedure was developed by way of a research and design partnership between the CTDOT and UCONN has been featured by FHWA on a national level. Project 42-325 in East Hartford, which is in construction also uses this repair technique. This project involves the rehabilitation of Bridge No. 05844A which carries I-84 Eastbound over Route 15. Approximately 49 beam ends will be repaired with UHPC. The CTDOT has a team of engineers participating in the Lead States Initiative sponsored by the American Association of State Highway and Transportation Officials (AASHTO) to help educate other state departments of transportation on this repair technique.

The Niantic River Drawbridge, which carries Route 156 over the Niantic River between the Towns of East Lyme and Waterford, has undergone a rehabilitation project over the past 15 months in which repairs were performed to the existing 1,827 feet of concrete bridge deck, deck joints were replaced, structural steel was blast cleaned and painted, upgrades to the mechanical and electrical systems, and rehabilitation of the control house interior and exterior. The project is scheduled to finish four months early. This was due, in part, to the CTDOT partnering with the towns. The towns' allowance of the contractors to work during the day instead of at night on bridge deck and joint repairs helped expedite the project.

The northbound Gold Star Memorial Bridge, located on I-95 between Groton and New London, is planned for major bridge rehabilitation. There will be three separate construction projects. The first project, advertised in April 2021, will focus on structural steel strengthening of the truss approach spans, replacement of truss bearings, and concrete repairs to the substructure/piers. The second project, scheduled for advertising in April 2022, will focus on structural steel strengthening and/or replacement of the girder approach spans and the replacement of the girder bearings. The third project, scheduled for advertising in May 2024, will include replacement of the bridge deck, bridge parapets, sign supports and signs, storm drainage, and navigation lighting.

The I-84/Route 8 Interchange in Waterbury is being rehabilitated to provide additional service life in anticipation of a future interchange replacement. The project addresses the mainline I-84 and Route 8 structures and the turning roadways connecting them. The three design projects were awarded as a single $153 million construction contract in April of 2018 and are scheduled for completion in September 2022. The project includes structural steel repair and strengthening, bridge deck repair and resurfacing, and bridge deck replacement on all spans of the Route 8 northbound and southbound interchange bridges. Temporary U-Turn and bypass are in place that will allow for replacement of the Route 8 NB deck replacements.

A preliminary engineering study is underway to investigate alternatives for the design and replacement of the I-84/Route 8 Interchange. Survey and traffic data collection, including traffic volumes and origin/destination statistics, have been completed. Models have been prepared to project future traffic demand for the interchange. The study will consist of developing a broad spectrum of alternatives for reconfiguration of the interchange that will address the needs and deficiencies of the corridor. A “Planning and Environmental Linkage” (PEL) process is being employed to narrow the broad universe of alternatives developed down to a “reasonable range” of alternatives to be further analyzed under the purview of the National Environmental Policy Act (NEPA). The PEL study process will engage stakeholders and the public for early input and will bring analysis of various environmental constraints into consideration earlier in the study to avoid later duplication of effort. Fiscally constrained alternatives, including potential near-term measures for improving operational and safety needs, are also being explored to manage and maintain the existing infrastructure.

A project to rehabilitate Bridge No. 32 on I-95 that spans Metro-North Railroad and local streets in Stamford was awarded in the fall of 2019 and will be completed in the fall of 2021. The project incorporates innovative variable quantity construction items for deck patching. This methodology was employed to limit potential construction cost changes associated with contract deck patch quantities, which are difficult to estimate during the design process.

A PEL Study has been initiated to explore various alternatives for the reconstruction of I-95 between Exits 7 and 9, including the replacement of Bridge No. 00032 carrying I-95 over MetroNorth in the City of Stamford. The PEL Study will evaluate existing needs and deficiencies within the project area, develop a draft purpose and need, and design and evaluate concepts for the replacement of Bridge No. 00032, as well as the realignment of I-95, and identify potential environmental impacts within the study corridor. The PEL Study will also identify the recommended class(es) of action under the National Environmental Policy Act (NEPA) including the prioritization or phasing of those projects with respect to their importance and anticipated available funding. Projects with independent utility and logical termini that improve traffic operations and safety on the mainline and local roadway network will be prioritized.

The proposed rehabilitation of the Heroes Tunnel, carrying Route 15 through West Rock Ridge in Woodbridge and New Haven, is in the preliminary design stage. Construction alternatives are being evaluated that would correct existing tunnel deficiencies, including potentially constructing a new tunnel barrel to maintain traffic during construction. An Environmental Assessment (EA) is being prepared to document impacts and identify a preferred alternate. Currently, engineering progress beyond the EA is not certain. In the interim, a tunnel project to address the most pressing ventilation and fire safety improvement needs was initiated and is scheduled to be advertised for construction in October 2022.

An EA evaluating rehabilitation and replacement alternatives is currently underway for the Cribari Bridge on Route 136 over the Saugatuck River in Westport. In October 2020, the WestCOG Technical Advisory Committee voted to have funding removed from the Cribari Bridge project in the draft Transportation Improvement Plan for 2021-2025, pending a decision from the CTDOT regarding the preferred alternative for this project. This action by the Western Connecticut Council of Governors (WestCOG) appears to be motivated by concerns over impacts to the historic integrity of the Cribari Bridge, as expressed by some of the citizens of Westport. The CTDOT has worked with the public and formed a Project Advisory Committee to ensure that stakeholder concerns are considered in the EA process. Depending on the outcome of the EA, a bridge rehabilitation or replacement project could be scheduled for advertising in late 2024.

A project initiated to rehabilitate the Stratford Avenue movable lift span bridge carrying Route 130 over the Pequonnock River in the city of Bridgeport is in the final design stage. The proposed rehabilitation will consist of concrete deck patching, concrete beam repairs, steel superstructure repairs, and painting. It will also include substructure repairs, repairs of the pier protection fender system, replacement of the lift cables for the lift span, mechanical and electrical systems upgrade, repurposing of the exiting control house, and construction of a new control house. Route 130 will be repaved within the limits of the project. The project is scheduled for advertising in August 2022. Construction duration is anticipated to require two construction seasons with completion in Fall 2024.

Additionally, two bridge preservation projects have just been initiated for repair to the Tomlinson lift span movable bridge carrying Route 1 over the Quinnipiac River in New Haven/East Haven and repair to the double leaf bascule movable bridge carrying Route 130 over the Yellow Mill Channel in Bridgeport. Both projects are scheduled for construction advertising in early 2024.

The Rochambeau Bridges, which carry I-84 over the Housatonic River in Southbury and Newtown, entered the construction phase of the project to replace both bridge superstructures on rehabilitated substructures. These unique structures, one carrying eastbound traffic and the other westbound traffic, will leverage the separate structures to enable a traffic shift from one structure to the other, enabling the replacement of each superstructure with minimal traffic impacts.

The East Haddam swing bridge, which carries Route 82 over the Connecticut River, connecting East Haddam and Haddam, is due for a major rehabilitation starting in 2022. The date was set to avoid any conflicts with the Arrigoni Bridge project. This 104-year-old structure is a historical landmark that has served the local, state, and river traffic communities and industries extremely well. The rehabilitation will include a deck replacement, structural, mechanical, architectural, computer, and software upgrades to ensure proper opening and closing to accommodate high boat traffic during the peak summer months. The project will add a pedestrian sidewalk to serve the existing community and help foster future economic plans for both towns.

Pavement Program

Steps to improve pavement performance across all segments of the CTDOT's pavement inventory continued during 2021, as newly established roles and responsibilities defined in an Annual Resurfacing Program process map were carried out. This resulted in a two-year data-driven pavement resurfacing candidate list that was developed by employing network level, long-term strategies to extend pavement life, while also employing sound judgement and experience of district road crews familiar with roadways within their regions. These unprecedented collaborative efforts between Department Bureaus of Engineering & Construction, and Highway Operations will eventually streamline procedures to minimize inefficiencies.

Strategies to improve Moving Ahead for Progress in the 21st Century (MAP-21) pavement performance metrics (crack percent, smoothness, and rutting/faulting) continued to be used. These strategies included the use of polymer modified asphalt (PMA); surface patching and crack filling of existing pavement prior to paving; the application of thin preservation treatments – ultra-thin bonded overlays (UTBO), and asphalt rubber chip seals (ARCS); and the implementation of improved specifications, and materials and construction methods to strive for the highest quality pavements possible. The continued specified use of material transfer vehicles (MTV) during paving operations, the continued incorporation of incentive/disincentive smoothness requirements into major paving projects, and a requirement for contractors to obtain pavement cores for the determination of asphalt concrete pavement density have resulted in pavements that are smooth, dense, and uniform.

The above specification improvements, which were developed over years of collaboration with industry, are producing positive outcomes. For example, based on pavement condition surveys performed during the past year, the three-year moving average ride quality on Connecticut's State National Highway System (NHS) roadways improved for the eighth consecutive year, and it is worth noting that Connecticut's NHS roadways that are important to the nation's economy, defense, and mobility provide a smoother ride than ever before, as 89.7 percent of them had acceptable or better ride quality. Overall, 83.2 percent of the entire state-maintained network, including non-NHS roadways, had acceptable or better ride quality.

Federal Highway Administration (FHWA) calculated National Performance Management Measures for Assessing Pavement Condition according to a final rule (23 CFR 490 Part C) using Highway Performance Monitoring System (HPMS) data collected during 2020 and submitted in June 2021. These Federal Performance Measures (PMs) combine consideration of roughness, cracking and rutting/faulting. Applying these Federal PMs to Connecticut's Interstate Highways, 76.6 percent of pavements are in Good condition and 0.2 percent are in Poor condition. This meets CTDOT's targets of at least 75 percent Good and less than 5 percent Poor for the Interstates. Applying them to Connecticut's Non-interstate NHS, 39.6 percent are in Good condition and 2.1 percent are in Poor condition. This falls short of CTDOT's goal

of at least 50 percent Good, but easily meets a goal of less than 8 percent Poor. Pavement sections not rated as Good or Poor, are considered in Fair condition.

The 2021 Pavement Preservation Program (PPP) includes two ultra-thin bonded overlays contracts valued at approximately $23.3 million. In addition to being low-cost preservation treatments that will extend the overall life of the pavement, the ultra-thin overlay will also increase skid resistance and decrease storm water spray at the tire-pavement interface compared to traditional overlays. The 2021 PPP also includes two asphalt rubber chip seals (ARCS) contracts valued at approximately $4.25 million. These cost-effective surface treatments are expected to last approximately ten years before these roadways need to be treated or resurfaced, which improves the overall life-cycle performance of the pavements. The ARCS treatments will also improve the skid resistance of pavements.

454 lane-miles covering 89 separate roadway sections will be resurfaced this year under the 2021 Maintenance Resurfacing Program. These projects will be paved under a Vendor-in-Place (VIP) Department of Administrative Services (DAS) contract. These are generally 2-inch mill and overlay treatments that are paved with ½-inch Superpave mixes from various plants throughout the state. Safety improvements are addressed during these paving operations, and include upgrading guiderail, installing 360-degree cameras at signals, tree removal for maintaining clear zones, epoxy markings, rumble strips, and sign replacements.

Highway Maintenance Facilities

Construction on a new East Hampton Maintenance Facility began in August 2019 and is scheduled to be completed in the fall of 2021. This $11.5 million project relocates the Marlborough Maintenance Facility operation and includes the construction of a new salt shed. The functionally obsolete Marlborough facility will be retained for off-season equipment staging and storage.

Construction of a new Brookfield Repair Facility began in October 2020 and is scheduled to be completed in August 2022. This $10.3 million project replaces the existing functionally obsolete repair facility. In addition to the new repair facility a new Stores storage facility will be constructed.

Construction of a new Putnam Repair Facility and a new Putnam Maintenance Facility to replace the existing functionally obsolete facility began in February 2021. This $22.5 million project is scheduled to be completed in August 2023.

Design plans for the construction of a new facilities in Torrington and New Milford will replace the existing functionally obsolete facilities. The combined cost of the two facilities is approximately $35 million. The projects are anticipated to start construction in early 2022.

Design plans are underway for the construction of a new East Hartford Maintenance Facility and East Hartford Signs and Markings Facility to replace the existing functionally obsolete facilities. This $21.5 million project is anticipated to start construction in 2022 and is scheduled to be completed in 2024.

In response to COVID-19, “touch-less” renovations have been completed at the Connecticut Department of Transportation Administrative buildings and are underway at the highway rest areas and maintenance facilities with the goal of being complete in 2021.

Public Transportation

The New Haven Rail Yard (NHRY) Facilities Improvement Program is a comprehensive plan to transform and provide state of the art storage, servicing, and maintenance facilities for the New Haven Line fleet, as well as CT Commuter Rail service (Shoreline East and Hartford line). The $1.178 billion-dollar multi-project program is approximately one-half complete. Completed projects at the NHRY include the M8 Acceptance Facility, Diesel Storage Yard, Traction Power Supply Substation, Independent Wheel Truing Facility, the Component Change-Out Shop, Maintenance of Way Facility, Central Distribution Warehouse, and the Yard Power Upgrade. Active projects at the NHRY include the East End Connection and the West End Yard. Projects currently in design include a second Wheel Mill Facility and the rehabilitation of the Car and Diesel Shop.

Two significant movable bridges, each over 110 years old, have been identified for replacement along the New Haven Line. These bridges are key pieces of infrastructure that carry rail commuter and intercity service over two rivers and are vital to the operation of the Northeast Corridor. The designs for the replacement of the movable bridge over the Norwalk River, known as the “Walk Bridge”, and the movable bridge over the Housatonic River, known as the “Devon Bridge,” are underway. The Walk Bridge program is utilizing the Construction Manager / General Contractor (CM/GC) alternative contracting method. Advance projects for the Walk Bridge, CP243 and Danbury Dockyard, are in construction. The Walk Bridge is anticipated to begin construction in 2022. The Walk Bridge replacement is anticipated to be completed in 2029. The Devon bridge replacement is in the environmental planning phase. The Devon Bridge is anticipated to start construction in 2029.

Shore Line East railroad expansion is continuing to progress. Construction of Clinton Station is underway with completion scheduled for the Spring of 2022. This project includes the construction of elevators with an up and over pedestrian bridge, and a new platform and parking on the North side of the tracks. The Madison Station Improvements are scheduled to begin design in the winter of 2021. The station upgrades are expected to go into construction in 2023.

The Bureau of Finance and Administration

The Bureau of Finance and Administration (BFA) is responsible for the following functions within the CTDOT: Finance, Operations and Support, External Audits, and Contract Compliance, Contracts, and Agreements. The BFA provides the financial, fiscal, and support services necessary for the development and implementation of the CTDOT's programs. In addition, BFA administers fuel distribution for most state agencies and oversees the operation of the twenty-three service plazas on the Governor John Davis Lodge Turnpike and the Merritt and Wilbur Cross Parkways. The following is a summary of some of the key initiatives being undertaken in the Bureau of Finance and Administration:

The 2020-2021 year posed many challenges in dealing with operational issues facing the Bureau of Finance and Administration due to the pandemic. The BFA was able to swiftly adapt to remote work conditions wherever possible, and still was able to immediately refine procedures to meet the demands while continuing to process all the business functions required to continue the operations of the CTDOT.

The Bureau of Finance and Administration processed more physical accounts payable transactions that any previous year. This resulted in the CTDOT’s operations as well as engineering and construction projects to continue without interruption. Additionally, all BFA functions continued at normal pace, including development and passage of the biennial budget, participation in the development and publication of a new five-year capital plan, and a State Treasurer’s Office bond sale which ensures highway and public transportation projects continue as planned for the coming 12 months.

CTDOT has been positioning itself annually for additional Federal funds through the Federal Highway Administration (FHWA) redistribution program. Federal law provides for a redistribution on August 1 of each fiscal year of the obligation limitation, or “ceiling,” from those States and programs unable to obligate their full share of federal highways funding to other States, such as Connecticut, that can obligate more than their initial share of the ceiling. The FHWA reviews every state’s ability to fully utilize their highway obligation limitation and requires that States who cannot fully obligate federal funding return the obligation limitation to the federal agency. This obligation limitation, along with any amounts held back from original distribution by USDOT, is then redistributed to states that can obligate all their federal allocations and can demonstrate the need for additional ceiling to advance eligible projects that are ready to move forward.

Through yearlong strategic planning efforts, CTDOT has positioned itself to be able to submit a robust application – from a typical ask of $10 – $20 million prior to FY2016, to $45 million and up for the last 3 years. Based on a successful demonstration of our ability to fully use all available funds and a plan to quickly utilize additional funding, CTDOT has received $174 million of redistributed ceiling in the past 3 years. For FY2021, CTDOT has submitted a request for an additional $55 million.

A project closeout team was formed in October 2008 to address a backlog of Federal Highway Administration (FHWA) funded projects that were completed but had not been closed. The CTDOT is continuing to make strides in the Project Close process since forming the closeout team. From October 2008, through June 2019, the CTDOT closed 3,493 FHWA-funded projects and released $215 million of unused federal funding for obligation on new projects. In total, the CTDOT has reviewed approximately 6,300 projects with FHWA, FTA, State or Grant funding that met the CTDOT closeout criteria. The CTDOT reviewed approximately 700 projects while working remotely this past year, which is on pace with prior years. The CTDOT plans to continue to address the backlog as well as adhering to a timely closeout process for newly completed projects. Timely closeouts of both federal and state projects result in unutilized funds being released from projects sooner and being available for re-allocation on new projects.

The Connecticut Department of Transportation (CTDOT) and Connecticut Employees Union Independent (CEUI) partnered with the Office of State Comptroller to establish a Diabetes Prevention Program at the CTDOT as part of an ongoing commitment to maintaining a healthy, productive workforce. The goal of this initiative is to provide CTDOT licensed CDL operators the opportunity to volunteer to participate in a Diabetes Prevention lifestyle change program. Employees may attend informational sessions designed to teach employees how to make healthy lifestyle changes focused on diet modification, managing stress, improved exercise, and adopting healthy habits to delay and even prevent the progression of the condition to Type 2 diabetes. Employees are provided resources by trained lifestyle coaches who understand the challenges faced by the CTDOT's work environment, schedule, and hours of work. The program is the first of its kind and will serve as a model for other state agencies.

The Bureau of Highway Operations and Maintenance

The Bureau of Highway Operations and Maintenance (BHOM) provided roadway and roadside maintenance to 5,682 effective two-lane miles of roadway and provided snow removal and other roadway maintenance services to 16 state agencies. With respect to snow and ice control, there were nine winter storms which required the use of 270,961 tons of sodium chloride and 947,187 gallons of liquid magnesium chloride which was applied utilizing 634 state trucks. State forces were assisted by 232 contracted trucks used for plowing purposes only. No sand abrasives were used for winter operations, and the CTDOT constructed four new material storage sheds.

Statewide maintenance of existing roadways included 225 two-lane miles of vendor-applied bituminous concrete overlay, installation of 9,340 linear feet of drainage pipe, replacement, or installation of 645 drainage structures and Connecticut Department of Administrative Services contracts were utilized to reline seven failing pipes. During the past year, maintenance repairs were performed on 825 of the 4,127 state-maintained bridges through the combined efforts of the CTDOT personnel and contractors.

The Bureau of Highway Operations and Maintenance continued an aggressive program of tree pruning and removal, in response to the dead, dying, decaying, or otherwise compromised trees and vegetation in the state-owned right-of-way such as the shoulder area and center-median of highways, roadways, and ramps. The CTDOT has removed 87,447 trees for safety and roadside maintenance. Other roadside safety improvements included 41 guiderail upgrades and 295 ramp installations or improvements in compliance with the Americans with Disabilities Act (ADA).

The Traffic Services Units (TSU) installed 2,757 miles of centerlines and lane lines; erected 976 new traffic regulatory, warning, and directional signs; renewed or removed 7,915 existing signs; continued maintenance of 2,634 traffic signals and performed 3,669 revisions to those signals. TSU also repaired or replaced 1,279 miles of highway illumination, installed 34 new traffic signals, and installed 301 traffic signal vehicle detection cameras.

The Rocky Hill Sign Shop produced 27,685 signs. Of those, 16,406 were COVID-19 related signs including 2,799 for the Department of Motor Vehicles, 9,057 for Connecticut Transit and 226 for the Connecticut Ferry locations.

The Special Services Units reviewed 5,085 encroachment permit applications and issued 3,905 highway encroachment permits. The Oversize/Overweight Vehicle Permit Unit collected $3,923,237 for the issuance of 87,883 oversize/overweight permit trips, 2,759 annual permits, 64 radioactive permits, and 56 industrial permits.

The Operations Centers responded to a total of 4,339 reported incidents on the state's limited access highway system. The Newington and Bridgeport Operations Centers monitor 362 highway cameras and operate 138 variable message signs and 14 highway advisory radio stations. The CTDOT's computerized traffic control signal systems include a total of 962 traffic signals on 56 major arterials in 59 municipalities. The State Farm-sponsored Connecticut Highway Assistance Motorist Patrol (CHAMP) Program provided highway assistance to 8,855 motorists along the I-95 corridor from the New York state line to the Rhode Island State line. Along the I-84 Danbury to greater Hartford area the CHAMP Program aided 6,729 motorists.

The CTDOT is currently in Phase 2 of an advanced technology system project to support and enhance the management of roads during the winter snow season, referred to as Integrated Mobile Observations (IMO). The CTDOT snowplow vehicles are being equipped with sensors to monitor vehicle location, road and air temperature, and spreader controller system data. A state-of-the-art software product will analyze this data, along with atmospheric information, and provide recommendations to the Bureau of Highway Operations and Maintenance managers and supervisors on how to respond to weather events most effectively. This includes the optimal use of roadway anti-icing chemicals. The computer software will also provide future pavement condition forecasts so that CTDOT personnel can better plan for winter storm response including the pre-treatment of roads. Additional benefits of the IMO system include better fleet and route

management, the ability to provide better traveler information to the public, and more efficient application of road salt.

The CTDOT has received a grant from the Federal Highway Administration (FHWA) for the Accelerated Innovation Deployment (AID) Demonstration program to support this initiative. 107 snowplow vehicles will be outfitted with IMO/MDSS technology for the 2021/2022 winter season using current available funding. Funding opportunities for completing the rest of the snowplow fleet, including Phase 3 will include federal grants, as well as other funding sources.

The Bureau of Policy and Planning

The Bureau of Policy and Planning (BPP) collects critical data, conducts planning studies, and associated activities to support the movement of people and goods for all modes of transportation including highway, rail, bus, maritime, pedestrian and bicycle. Documentation, environmental and cultural resource analyses, as well as necessary approvals are developed and sought for all proposed projects in support of the Connecticut Department of Transportation (CTDOT) project delivery. The BPP is responsible for numerous federal and state mandates and compliance. The BPP interacts with Legislative and Congressional members and staff, as well as nationally recognized transportation organizations on various transportation bills including major authorizations and appropriation bills for surface transportation, and intercity passenger rail.

The Bureau of Policy and Planning continues to update and improve the comprehensive digitized road network, a software named EXOR, which includes over 21,000 miles of state and local roadways. This network and associated new Geospatial Linear Reference System support asset and data integration for the CTDOT including via the Transportation Enterprise Development Group (TED). While the Roadway Inventory Unit is primarily focused on the Highway Performance Monitoring System (HPMS) and Model Inventory of Roadway Elements (MIRE) federal mandates, other important CTDOT initiatives benefit from this work such as Public Transportation and Trail network support and development, Asset Management, Financial Management Information System, capital project delivery, VIP paving, pavement condition, Geographic Information System, safety, sign, sign supports, signal work areas and traffic volume data reporting to name a few.

The BPP maintains the state’s traffic counting program, which was pivotal in tracking the return of traffic volumes during the COVID-19 pandemic. The BPP also maintains the Photolog Automated Roadway Analyzer (ARAN) Pavement Data Collection and Processing technologies and continuous inventory of the highway system. All these data collection systems produce critical elements needed and are utilized to estimate future travel demand; identify current and future capacity deficiencies; analyze alternate highway and transit improvements; complete environmental studies; and are utilized for permitting as well as by the public.

Federal mandates related to HPMS and MIRE are critical to federal funding apportionment and Highway Safety requirements, which are also tied to significant funding for the CTDOT.

The Statewide Transportation Improvement Program (STIP) Unit develops, maintains, and coordinates Metropolitan Planning Organizations (MPOs) and USDOT approval of the STIP and periodic revisions. The STIP provides the MPOs/Council of Governments (COGs) and the public the previous fiscal year "Obligated and Granted Projects" list as mandated by Federal Authorization bill and calculates and allocates estimated Federal Authorization funds to Connecticut's eight MPOs and two Rural Planning Organizations for Metropolitan Transportation Plan planning purposes. The STIP develops, maintains, and updates the CTDOT's Public Involvement Process document and coordinates the Bureau of Policy and Planning's Title VI training.

The COG Coordination Unit is the designated CTDOT Liaison for the MPOs, COGs, and local officials regarding planning efforts, and ensures that the planning process is conducted in accordance with the requirements of federal laws and regulations. The COG Coordination Unit assists with the coordination and dissemination of information on various transportation planning programs, activities, and transportation planning documents. It also obtains information on projects and programs from individuals in other CTDOT offices and disseminates information to appropriate parties. The COG Coordination Unit solicits the MPOs/COGs for project proposals under the Congestion Mitigation Air Quality (CMAQ) program, the Transportation Alternatives program, and the corridor study initiative. It also participates in the administration of the MPO/COG transportation studies and the development of Project Authorization Letters.

The Travel Demand/Air Quality Modeling Unit maintains the statewide travel demand model which utilizes current and future socio-economic and demographic projections to estimate travel demand. The Travel Demand/Air Quality Modeling Unit analyzes and prepares Census, American Community Survey, and other demographic data for utilization in the Statewide Travel Demand Model and participates in the development and preparation of alternative analysis for proposed transit and highway projects. It prepares and analyzes air quality emission reduction benefits for regional projects submitted for the CMAQ program. The unit also conducts project and regional level transportation air quality conformity analysis and conducts detailed analysis of air quality emission reductions utilizing EPA required MOVES 2014a software. The Travel Demand/Air Quality Modeling participates in the development of motor vehicle emission budgets for various nonattainment areas within the state of Connecticut per pollutant; and reviews project plans to determine air quality conformity determination status, as well as requirements under NEPA. It prepares boundary adjustments to Federal Aid Urban Areas and to Census Tracts and block groups for the Census Bureau's Participant Statistical Areas Program.

The Highway Safety Office (HSO) develops the Annual Highway Safety Plan and the Annual Highway Safety Report, which ensures compliance with CTDOT policies,

National Highway Traffic Safety Administration guidelines, and relevant federal laws and regulations.

These measures are taken to reduce injuries and fatalities because of traffic crashes related to driver behavior on Connecticut roadways. The enforcement-based program areas include: Impaired Driving, Distracted Driving, Occupant Protection, and Speed and Aggressive Driving. Additional program areas are Child Passenger Safety, Motorcyclist Safety, Non-Motorized Safety, Police Traffic Services, Traffic Records, and Racial Profiling. The HSO also coordinates the Connecticut Drug Recognition Expert program.

The HSO is responsible for collecting and analyzing crash data for all municipal and state police agencies. This data is tracked with the Fatality Analysis Reporting System as well as the Connecticut Crash Data Repository. The HSO partners with the Connecticut Transportation Safety Research Center at the University of Connecticut on the following projects for driver behavior: marijuana use and driving study, a statewide crash data and highway safety data linkage project, behavioral traffic safety tool development, fatal and serious injury black box downloads, and collection and analysis of driver toxicology information.

The Bureau of Policy and Planning's Performance Management Unit implements the transportation performance management requirements of federal law, including reporting and setting targets for 17 national performance measures. This unit coordinates with MPOs in national performance target setting, as they are also required to set corresponding performance targets. The unit publishes performance measures and targets on its webpage for bridge and road conditions, project delivery, highway safety, bicycle and pedestrian accessibility, and rail and bus transit programs. It is also developing a Project Prioritization methodology for performance-based planning and programming.

The Research Program Unit administers the Federal Highway Administration-funded research program as a problem-solving function to assist each bureau in the CTDOT.

The Bureau of Policy and Planning's Policy and Statewide Planning Unit prepares the state's long-range transportation plan, which includes four goal areas of Economic Growth, Deliverability, Quality of Life, and Sustainability. This unit also develops strategic plans and studies regarding congestion reduction, project-financing alternatives, corridor needs and deficiency studies, and assists the Bureau of Public Transportation with required studies and plans.

The Policy and Statewide Planning Unit also leads planning for Transit-Oriented Development, including administering grants, participating in interagency task forces, and assisting municipalities with planning and design technical services. The unit coordinates and leads CTDOT's participation in Connected and Autonomous Vehicle

(CAV) activities within the state, region, and nation, including partnering with municipalities and OPM on implementing the CAV pilot project legislation.

The Trip and Traffic Analysis Unit reviews traffic counts for Major Traffic Generator (new development) submittals for the Office of the State Traffic Administration; develops traffic projections for state transportation projects; and provides efficient public access to this traffic count data via Google Earth.

The Project Coordination Unit assists with implementing the state's Complete Streets law and CTDOT's Complete Streets Policy. Complete Streets is an approach to provide safe access for all transportation users (pedestrians, bicyclists, transit users, and vehicle operators) via a comprehensive, integrated, and connected multi-modal network of transportation options. This unit also administers the Community Connectivity Grant Program, to improve conditions for walking and bicycling to and within urban, suburban, and rural community centers, by providing municipalities with construction funding and oversight for targeted infrastructure improvements. Ninety grants have been approved for various stages of design and construction totaling approximately $30 million.

The Project Coordination Unit helps to implement the actions in the CTDOT's 2019 Active Transportation Plan to improve safety, connections, and accessibility. The unit performs pedestrian and bicycle design reviews, develops project concepts, and corridor studies. It also prepares the multi-modal Statewide Freight Plan, which focuses on economic competitiveness, efficiency, safety, and environmental factors.

The Office of Environmental Planning (OEP) within the Bureau of Policy and Planning (BPP) provides oversight and support for required National and Connecticut Environmental Policy Act (NEPA / CEPA) implementation and proper documentation for all CTDOT activities, including major projects such as the "WALK" bridge program, I-84 Danbury, the Route 7 and 15 Interchange in Norwalk, and the Saugatuck Swing Cribari Bridge in Westport. All projects within the CTDOT are screened for the appropriate level of documentation under NEPA and CEPA and the BPP continues to stay informed and comment on legislative and proposed federal rule changes, as well continuing to seek out efficiencies in process. A new Programmatic Agreement was signed with FHWA for processing of Categorical Exclusions this fiscal year and provides the CTDOT with an improved process.

OEP ensures projects are screened and comply with Section 106 of the National Historic Preservation Act and Section 4(f) of the Department of Transportation Act and updates and maintains a Historic Bridge Inventory for bridges statewide.

The Office of Environmental Planning is the lead liaison with various state and federal regulatory agencies such as the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency and the Connecticut Department of Energy and Environmental Protection regarding water and natural resources issues. The Office of Environmental Planning obtains the necessary federal and state water resource permits

required for all CTDOT initiated projects, and ensures projects properly avoid, minimize, and mitigate for potential impacts to regulated resources. This office is responsible for coordination efforts and compliance under the Endangered Species Act with the U.S. Fish and Wildlife Service and National Marine Fisheries for federally funded projects. Responsibilities also include inspections of active state-controlled construction sites and maintenance projects to ensure construction and reporting compliance with permit conditions, state and federal laws and regulations, and CTDOT Best Management Practices. OEP is the lead for developing mapping for the statewide stormwater system in accordance with the General Permit for the Discharge of Stormwater from CTDOT Separate Stormwater Sewer Systems (MS4 Permit).

OEP is responsible for noise analysis and compliance and responding to noise complaints, which have been at a record high during the COVID –19 pandemic. This unit continues efforts in creating a noise barrier wall inventory for use in asset management, as well as development of a Type II Noise Program.

The Bureau of Policy and Planning created a new Sustainability and Resiliency Unit within OEP during this fiscal year which is responsible for fulfilling the goals and requirements called for in both Governor's Executive Orders (EO) #1 and #3, issued in 2019. EO #1 directs executive branch state office buildings and vehicle fleets to become greener and more energy efficient through an expanded "Lead by Example" sustainability initiative aimed at reducing the state's carbon footprint and reducing the cost of government operations with set goals for the year 2030.

EO #3 expands the responsibilities of the Governor's Council on Climate Change and for that council to monitor and report on the state's progress regarding the implementation of carbon mitigation strategies, as well as the development and implementation of adaptation strategies to assess and prepare for the impacts of climate change in areas including infrastructure. This new unit will also aid in meeting the increasing needs of the CTDOT to engage with private and public stakeholders on climate change, resiliency, adaptation, and sustainability initiatives.

The Bureau of Public Transportation

Prior to the COVID-19 pandemic, bus, rail, and ferry services managed by the Bureau of Public Transportation (BPT) provided approximately 80 million passenger trips annually in Connecticut. During the height of the pandemic, rail ridership was down nearly 90 percent of pre-pandemic levels while bus ridership was down approximately 60 percent. As the state opens back up and the COVID-19 vaccine becomes more widely dispersed, public transportation ridership begins to rebound. As of June 30, 2021, rail ridership was down approximately 65 percent from pre-pandemic levels while bus ridership was down 35 percent. The CTDOT is working on restoring most of the rail service that was reduced in response to the sharp decrease in ridership due to COVID-19. This will be on ongoing effort as the BPT monitors ridership trends on all rail lines.

During the fiscal year, the BPT worked diligently to continue to operate transit and rail service safely during the pandemic, while also planning for the reopening of the state and responding to changing ridership patterns due to continued telework trends. The BPT launched some exciting initiatives to transform public transportation in the state including TIME FOR CT, an actionable plan to deliver safe, reliable, and faster train service in Connecticut. In addition, the BPT held public hearings on the Move New Haven local service expansion plan and a new Express bus service plan that provides right-sized service levels to match ridership, as well reallocating resources to serve additional locations. These new service plans take effect on August 22, 2021.

To connect with communities, the BPT launched "Along the Lines" a transit focused podcast series, that premiered August 10, 2020. The podcast features transit-based conversations focused on the impact transit has on the communities they serve. As of June 2021, there have been 11 podcasts that have been downloaded 1617 times.

The Bureau of Public Transportation applied for numerous federal grant opportunities and was successful in its applications for additional funding during the fiscal year. The Connecticut Department of Transportation (CTDOT) was awarded a $7.4 million grant from the Federal Transit Administration for the purchase of ten battery electric buses and ten DC fast chargers, as well as $6.7 million for CT*transit* Stamford Facility upgrades to deploy battery electric buses. The CTDOT was also the recipient of a COVID-19 Research Demonstration Grant in the amount of $450,000 to conduct a pilot program to include testing of contactless, voice-activated ticket vending machines for seven CT*rail* Shoreline East (SLE) passenger rail stations in Connecticut.

Some additional highlights for the fiscal year include:

<u>COVID-19 Response and Recovery</u>

As part of the effort to help Connecticut recover from the COVID-19 pandemic, CTDOT:

- Provided statewide fare free weekend bus services to all customers from May 29, 2021 – September 6, 2021.
- Implemented a vaccine transportation resource call center hosted by CT*rides* in conjunction with the Connecticut Department of Public Health.
- Conducted several mask giveaways at CT*fastrak* stations and other transit agencies across the state.
- Installed driver barriers in all buses across the state for enhanced safety of all operators and passengers.
- Provided continuous personal protective equipment (PPE) supplies to transit divisions and districts during the COVID-19 pandemic.
- Leveraged decreased ridership on the Danbury and Waterbury Lines to accelerate construction of the Waterbury Signal Project and complete backlogged repairs to bridges and replacement of railroad ties.
- Increased service and cleaning at stations and equipment due to COVID-19 with daily disinfection of rail cars, additional wipe down of high touch points during the day, and increased air filtration in rail cars.

- Worked with the Yale School of Engineering to understand and design realistic solutions for current and future fleet air filtration systems.
- Continually updated the Regulatory and Compliance webpage during the pandemic with information helpful to the industry and the traveling public.
- Public Transit Inspectors continued to inspect and register vehicles for use in livery service and bus service during the pandemic.

Bus

- CTDOT and Connecticut Department of Energy and Environmental Protection created the ParkConneCT program, which identified and enhanced transit connections to Connecticut state parks.
- Kicked off a project testing the deployment of three automated zero emissions 40-foot buses set to operate on Connecticut's own CT*fastrak*. Anticipated to be in revenue service starting January 2023.
- Procured 12 fully electric transit buses for deployment at New Haven and Stamford CT*transit* divisions, anticipated to be delivered August 2021.
- CTDOT supported an initiative that was an early step in the Move New Haven Project for the installation and support of one 32-inch LCD screen to be installed on the New Haven Green and a 13-inch solar display to be installed at a bus stop at Broadway and York in New Haven. The digital displays will provide real-time bus schedule information.
- Entered into an agreement with the University of Connecticut to transfer campus bus operation and maintenance to local transit district Windham Region Transit District. As part of the agreement, the university will transfer to the CTDOT $2.6 million in grant funding for two electric buses.

Ferries

- Completed pier structure replacement projects at all four Connecticut river ferry landing sites in Rocky Hill, Glastonbury, Chester, and Hadlyme for enhanced passenger and vehicle boarding.

Regulatory and Compliance

- Kept the public current on the taxi, livery, and charter bus services that were available near them.
- There are 28 application types for livery, taxi, charter bus, household goods movers, or Transportation Network Companies such as Veyo, Uber, and Lyft. CTDOT created a new electronic process for submitting these applications remotely and processing them for approval.
- Created a new process in conjunction with Department of Motor Vehicles for remote processing of new registrations and plate transfers for customers who hold permits or certificates from the Regulatory and Compliance Unit operating livery, taxi, or charter bus vehicles.

- Assisted in the reactivation of hundreds of permits, certificates, and vehicles that needed to be re-registered for customers who hold permits or certificates from the Regulatory and Compliance Unit operating livery, taxi, or charter bus vehicles who suspended operations, vehicle registrations, and insurance coverage during the COVID-19 epidemic.

Rail

- Completion of the latest $144 million project, managed and financed by CTDOT, modernized the catenary system to enable more reliable and faster train service.
- Substantial Completion of the Danbury Dock Yard.
- Implementing project for Walk Bridge will provide long-term benefits by allowing trains that terminate at South Norwalk to turn back without conflicting with through traffic on the New Haven Line.
- Completion of five power substations along the New Haven Line.
- Design completed for the replacement of the Walk Bridge in Norwalk. The current bridge is over 100 years old and completely severs service on the Northeast Corridor when it fails.
- Design completed for the relocated Windsor Locks Station on the Hartford Line. The new station will be located near the center of town and takes advantage of recent transit-oriented development (TOD) in the Montgomery Mills complex.
- Operation Lifesaver contacted over 4,300 persons through special events and conducted a geo-fencing campaign that made approximately 975,000 phone impressions (ads) all along the rails in CT.
- Took delivery of the first rebuilt P-40 diesel locomotives.
- Kicked off the New Haven Union Station Partnership with the city of New Haven.
- Initiated the Stamford Transportation Center Master Plan that will focus on the customer experience, wayfinding, and ground transportation. In addition, repairs and upgrades were made to the facility including replacing the ceiling system in main concourse, HVAC duct cleaning, and installing four CT*rail* branded device charging stations.
- Awarded the Design Build contract for Stamford Parking Garage. The new parking garage on South State Street will add approximately 900 spaces with direct pedestrian bridge connection to the station over Washington Boulevard.
- Completed Waterbury Line station improvements including new signage, improved landscaping, new pavement, new benches, and sidewalk.