



## TRAFFIC SIGNAL AND ITS SERVICES

With ongoing changes and advancements in the field of transportation, most jurisdictions face many challenges. It is difficult for many jurisdictions to remain current with the latest traffic operations systems and technologies as most cities and municipalities either cannot locate or retain staff with specialized knowledge or their current infrastructure does not warrant dedicated full-time technical staff.

Significant growth in both residential and commercial development are key factors which increase traffic volumes and patterns, directly impacting the often outdated or neglected traffic control systems. In addition, public pressure for improved public safety and traffic signal system reliability remains an issue.



Many traffic engineering firms offered traffic analysis aimed at refining traffic signal operation. These traffic engineering firms, though knowledgeable with respect to traffic studies and capacity analysis often lacked

knowledge of the capabilities and features of today's modern traffic controllers and traffic systems. As a result, the operation of many signals can be optimized through simple timing changes and utilization of features within the traffic controllers.

### How Can We Help?

Our firm bridges this gap by offering traffic engineering services such as capacity analysis and signal timings coupled with our extensive knowledge of the traffic controller and signal design.

DMD offers a unique blend of technical expertise, support and services to compliment a jurisdiction's current staff knowledge. We can provide supplemental technical support to an owner's established in-house group of traffic signal technicians. In cases where this expertise does not exist in-house, we can provide all the required services. Owners can realize cost savings by utilizing DMD's services on an "as and when" basis

Many firms or jurisdictions undertake basic traffic engineering tasks such as capacity analysis and signal timing elements (signal phasing, cycle lengths, etc)

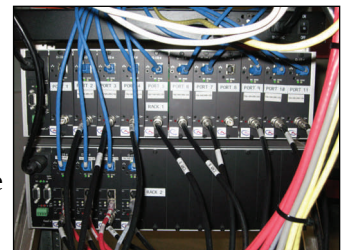
whereas electrical engineering firms undertake the traffic signal design. As a result, gaps typically exist between the traffic engineering, traffic signal design, and traffic controller setup. Furthermore, the controller may be under-utilized resulting in less than optimal performance.

### How can we achieve greater signal operation efficiency?

DMD offers a combination of signal design, controller commissioning and testing expertise. These skills allow us to optimize and test signal timing plans in our shop prior to installation. Today's traffic controller are becoming more complex with additional signal ring configurations and phases and now offer many options and features which can result in improved efficiency and operation. DMD staff understands all features available in traffic controllers and video detection equipment. Therefore, we can offer a turn-key approach including design, setup, testing and field commissioning of traffic controllers to better optimize efficiency.

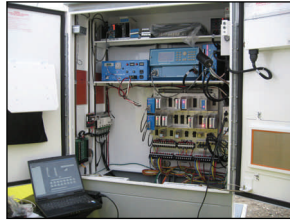
### Typical services offered by DMD include:

- **Traffic Analysis** – DMD staff utilize *Trafficware Synchro Traffic Signal Timing, Capacity Analysis and Simulation* software to develop signal phasing, timing and coordination plans. Many of DMD staff has successfully completed Synchro Level 3 Advanced Training and work with the software on a daily basis. DMD staff understands how to best apply Synchro analysis and maximize its benefit as we can tailor our analysis to the features of the controller.
- **Signal Timing Plans and Shop Testing** – DMD develop timing plans and undertake shop testing of timing and coordination plans on a regular basis. Our fully outfitted traffic signal shop features operating controllers and test racks so testing can be undertaken. By having the required equipment we can test, refine and optimize signal phasing and coordination and incorporate these refinements into the signal design prior to deployment. This improves operation and reduces delays during signal start-up.



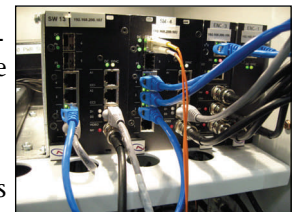
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- Plans, Specifications and Estimates** – DMD undertake over 100 signal designs a year which include plans and specifications specific to installation. By way of a constant interface with suppliers, owners and contractors we have been able to refine our drawing standards and details to the point where they have become a well known industry standard. Our detailed and easy to follow plans are proven in reducing delays and contractor extra work requests. They also make for a great reference when undertaking maintenance and troubleshooting the signal. Our designs include electrical servicing, signal elements along with any required street lighting.
- Specifications and Standards** – DMD routinely develop street lighting and traffic signal design and construction specifications. Such design and construction standards developed by DMD staff include the Ministry of Transportation and Infrastructure Electrical and Material Standards, Standards Specifications for Highway Construction and Electrical and Traffic Engineering Design Manual as well the Master Municipal Construction Document – Division 16 Electrical, the Transportation Association of Canada Roadway Lighting Design Guide and numerous specific Municipal and City standards
- Testing, set-up and commissioning** – DMD test, set-up and commission traffic signal devices such as controllers, video detection equipment, web and CCTV camera systems, pre-emption equipment and audible pushbuttons. This generally involves a two step process. First equipment is shipped to the DMD test facility where they are set-up and tested. By undertaking shop testing we are able to detect and replace faulty parts, upgrade cabinet wiring diagrams, prepare hook-up documentation. Hook-up documentation and controller wiring diagrams are critical when it comes time to troubleshooting a malfunctioning traffic controller after installation. Following the shop testing DMD will attend the system start-up to be on hand to provide technical support.
- Operational Assessments** - In the case of road corridors in area of high traffic volume or with high



commercial development, the flow of traffic is typically only assessed in theoretical terms based on traffic counts run via a traffic modeling software. This is often time consuming and often not effective in optimizing signal timing and coordination. To optimize signal timings DMD utilize TS/PP-Draft arterial-based time-space and platoon progression diagram tool. TS/PP-Draft software allows one to drive the corridor and with the systems GPS device can actually record delay and develop time space model diagrams and thus refine signal timing and coordination plans. The software can be used to assess efficiency, refine timings and measure improvements.

- Condition Assessments** – DMD can provide condition assessments and provide testing and annual check-up on signals and controllers. These check-ups can cover the entire signal or just the controller. Such items can include checking and testing the operation of traffic controllers and video detection equipment, review of intersection operations, review of documentation such a cabinet wiring diagrams, check that controller software is current and upgrade if required, assess the light output of LED signals (as defined by ITE) and provide a complete review of ones signal maintenance program.
- Signal Management Services** – A growing trend in North America is to install a traffic signal system and retain a third party consultant to both monitor system operation and refine signal timings on an on-going basis. On a City wide basis these systems can provide many benefits. These systems do not require full time monitoring and when monitored effort can be reduced by understanding error codes and other system outputs. DMD can provide such expertise on part-time basis and can monitor the system operation and record and document issues and can make recommendations for refinements. Costs and services can be fixed on a year to year basis.



Some or all of these services may be of consideration and value to a City or Municipality. Please contact Don McLean or Daryl Matthews of DMD and Associates Ltd if you wish to discuss further.

