GUILFORDXPRESS

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PRESIDENT'S MESSAGE

The featured contributor to this quarter's President's Message is David A. Nagy, Guilford Rail System's Executive Director of Safety and Training who has recently assumed the responsibilities of this key role here at the Railroad. A graduate of UNH, David spent nine years with Nissen Bakery in the transportation area, then went on to own and operate a restaurant in Dover, New Hampshire. He started with GRS in 1999 and has held several positions within the company in the Engineering and Transportation Departments before being promoted to his current post.

Thomas F. Steiniger
President

I began my career at Guilford Rail System in August 1999 in the Engineering Department during the NNEPRA (Northern New England Passenger Rail Authority) project. As the project drew to a close, I inquired about further employment prospects with GRS, and fortunately found myself training to be a Train Operations Manager (TOM), commonly referred to around the industry as a train dispatcher. A few years of learning the ropes in this capacity provided me a broad knowledge and familiarity with the Railroad and led to another opportunity in the Transportation Department, that of Director of Manpower (June 2004). From this vantage point, I gained a further appreciation for the role that every GRS employee plays in keeping the company moving forward. Presently, as Executive Director of Safety and Training, I look forward to working with all GRS employees relative to the ongoing safety issues confronting the rail industry.

"Safety First" is our perpetual motto here at Guilford Rail System - two critical words with profound meaning. For those regular readers of this publication, it cannot have gone unnoticed that a safety article has appeared in every issue of the Xpress since its inception, and the theme permeates throughout other articles in any given issue. More than just words, it is an attitude ingrained in every employee's sub-conscious on a continuing basis throughout their Railroad career. It is a philosophy that the Safety Department, by means of an ongoing process administered by myself, Kurt W. Bruce, Safety Manager-West End, and Harald ("Skip") S. Pratt, Safety Manager-East End, instills in every Railroad employee. Although the Safety Department is the caretaker of the company's safety program, every department aggressively works to carry out these policies, oftentimes in conjunction with the regulations of outside agencies.

Charged with the dual responsibility of ensuring the safety of our own employees as well as safeguarding the public trust insofar as communities that border our tracks, the Railroad is governed by a complex regulatory system which addresses employee safety. GRS managers and supervisors have all been trained with regard to safety in the workplace and convey this message to each and every employee on a daily basis.

When first employed at GRS, you can expect to participate in safety training classes supplemented by refresher courses as needed. Any time that an employee has a specific safety concern, he or she is encouraged to raise the issue within their own department or call the Safety Department directly. Furthermore, crews will often encounter myself, Kurt, or Skip out in the field observing how our employees and others "work safe" at a wide variety of jobs they perform around the tracks or on Railroad property. The same applies to contractors we hire. We have information readily available to guide and keep employees out of harm's way in their daily operations or any future projects.

In the cities and towns surrounding GRS, we are frequently out teaching safety measures through groups such as Operation Lifesaver, which is perhaps the most well known national organization engaged in teaching rail safety to the public. We educate communities and our employees in a wide variety of topics ranging from Grade Crossing Safety to Hazardous Materials to Personal Protective Equipment. Some of these classes have as many as thirty students, or as few as one. In order to encourage more people to attend classes, training rooms are situated across our rail system to ease any commuting difficulties that may otherwise prevent participation. As you can see, our commitment to rail safety for our employees and our neighbors is constant.

There must always be accountability, in business as well as life. The Safety Department is charged with maintaining an accurate record of safety on Guilford Rail System and filing timely reports; in turn, we have access to the most up-to-date information on rail safety across the United States.

In conclusion, the Guilford Rail System has been the recipient of eight Harriman Awards in recent years. A tangible recognition of the importance of a safe workplace, the Harriman is the rail industry's benchmark for excellence and acknowledges those Railroads whose employees have achieved the least number of injuries and/or fatalities for the year. Through the concerted effort and training of all, however, we must collectively strive each day toward becoming the safest Railroad possible. The ultimate goal of zero injuries will be the most satisfying reward.

Whether it is the new hire or the longstanding employee, the community that surrounds us, or the customer we service, our dedication to maintaining a high level of safety here at Guilford Rail System remains steadfast. Always be mindful that the Safety Department is manned across our system, available whenever the need arises. Be vigilant and safe.

David A. Nagy
Executive Director of Safety and Training

WORKING IN THE COLD

In the world of Railroads, a great deal of time is spent outdoors in all types of weather by train crews, track crews and signal workers, among others. At this time of year, an acute awareness of environmental factors and their potential harmful effects, as well as how to prevent hypothermia and frostbite while working in the cold, are vital prerequisites to venturing out into the elements.

Much of the scientific data gathered on the subject of human response to cold has been collected from mountain climbers that scale Mount Everest and other high peaks where spending weeks in extreme cold while engaged in physically exerting activities is routine.

Four environmental conditions that lead to cold-related problems are: low temperatures, wind, dampness, and cold water. When the air is moving across wet exposed skin, evaporation of moisture prompts the skin temperature to drop, causing wind chill that lowers the body temperature more than would be the case in the absence of wind. In order to prevent excessive cooling of the whole body, it behooves each of us to gain an understanding of this physical reaction so as to prevent the occurrence of dire consequences – inside or outside the workplace.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

Wind Chill (°F) = $35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$

Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

Muscular activity, together with the subsequent breakdown in our body's system of the food we eat, results in the metabolic rate being raised. This, in turn, produces internal heat. A classic way in which the body generates heat to stay warm is through shivering. Undoubtedly we have all witnessed the manner in which athletes engaged in winter sports tend to stay warm by exercising, but need to bundle up when their activity stops. Sweating during exercise dampens the skin so that when air moves over it, evaporation occurs, thus cooling the body well below the comfort level. As skin temperature drops, the blood below the skin is cooled similar to how a car's radiator cools the engine with antifreeze. The cooler blood circulates through the internal organs, causing the body's core temperature to drop. This is the start of hypothermia, a lower than normal body temperature.

The foremost preemptive measure against hypothermia begins with proper protection against low temperatures. To that end, a sensible first step is to dress in layers, preferably insulated attire lined with a nylon shell to safeguard the skin from the wind; the second is to keep clothing dry; while the third is to insure that the skin remains dry. If a job requires heavy lifting, fast motions, or hard work that causes perspiration, the smart thing is to remove the outer garments so as to stay dry and comfortable while expending energy. When the task is complete, immediately replace the layers of apparel to impede the cold air from cooling the skin below normal body temperatures. In a nutshell, the key to guarding against cold trauma is to maintain dry skin and clothing so the wind cannot evaporate condensation from clothing as the body loses that moisture through sweating.

So, in going about the business of railroading during the winter season, think of yourself as a Railroad athlete competing against the elements. Your clothing is a major line of defense that keeps you in the game. The best deterrent to cold stress is to always eat right, dress in warm layered clothing, stay out of the wind, and keep the skin dry. Hypothermia is a serious illness that can be easily prevented when appropriate precautions are taken.

Skip Pratt, CIH
Safety Manager

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By D.M. Cataldo

AN OUNCE OF PREVENTION

Effective this past July, David Bougie was promoted to the position of Director of Freight Claims and Damage Prevention in the Marketing and Sales Department. He is a longtime employee of GRS, initially hired into the Engineering Department's Bridge & Building group. Later in his Railroad career, David served for a time as Executive Director of Safety for GRS, where, in coordination with Richard M. Willey, Senior Vice President of Industrial Development and Customer Service, he helped create our Emergency Response strategy for hazardous materials shipments. Subsequently the program was implemented with GRS shippers, receivers, local law enforcement officials and emergency responders and will ultimately benefit all concerned.

As Director of Freight Claims, David's initiative and diligence will continue to be put to good use. His responsibilities and duties are divided into three main areas:

Freight Claims

This aspect of the job involves the resolution of freight claims by working with shippers, receivers and agents from connecting railroads towards a fair and equitable settlement of damages. Reparation for loss and/or damage that occurs in the handling or transporting of freight, whether in normal day-to-day operations or in extraordinary circumstances such as a derailment or weather related mishap, is a process that requires investigation and negotiation on the part of any freight claim officer, and David Bougie is our point person in these situations.

Salvage

Though every Railroad strives to be accident free, derailments do happen from time to time. And while most are minor in nature, there are those occasional incidents where a customer's freight sustains damage. David's experience around these types of situations while in the Safety Department will be instrumental in his role in Freight Claims as he is called upon to assess actual damages in the salvaging facet of his duties.

Damage Prevention

Of course, the best way to mitigate claims and salvage issues is to prevent them from happening in the first place. Here, too, David's Safety and Engineering Department experience with prevention and training programs should serve the Railroad well in his capacity as Director of Freight Claims and Damage Prevention. He has been actively studying the effects of new loading patterns on our customers' freight and offering suggestions on loading/unloading techniques that are conducive to a better outcome. This has included travel to Michigan, New Jersey and Pennsylvania to meet with offline receivers in partnership with local shippers. These visits have proven successful and will continue in the future. During 2006, David will begin instructing mill personnel at the various pulp and paper companies served by GRS in how to proactively assure a damage free shipment.

RURJ at Brown's Crossing
Photo by Deb Emery

The function of Director of Freight Claims and Damage Prevention is an extremely important one, and we look forward to David Bougie's continued success with our organization in this capacity.

THE LATEST CLASS OF TRAIN CREWS

Recently another group of conductor trainees successfully completed rules class. In keeping with Guilford Rail System's ongoing commitment to both maintain and grow our freight service, these classes are held periodically for the purpose of promoting conductors and engineers; there are currently two classes of conductor trainees in progress, and an engineer's class will soon commence.

Conductor candidates are first initiated into fieldwork alongside a qualified crew where in the course of being shown how to work safely in a potentially hazardous environment the GRS "Safety First" standard is emphasized repeatedly. In the classroom phase that follows, these individuals learn about the operating rules that govern train operations on the Railroad. Next is a week of intensive instruction on the NORAC (Northeast Operating Rules Advisory Committee) rules by Andrew Zompa, Director of Rules, and the conductors-in-training are free to ask for clarification or further explanation on anything they may not understand in preparation for the written test. After the trainees pass this test, back to the field they go to complete their on-the-job training.

Once they have gained knowledge with regard to particular jobs and locations where they might be assigned, the aspiring conductors are ultimately certified by GRS Trainmasters, Road Foremen, and Area Managers who have supervised their field training and now deem them qualified. As these new conductors become available for work, they will be assimilated into the existing workforce where they will continue to learn daily rail operations, gain experience, and expand their qualifications. Through attrition and the need to augment service, these new employees should be kept quite busy.

The newest class of conductor trainees encompassed people from wide-ranging backgrounds - some with Railroad experience, some with none. The most recent rules class consisted of the following individuals:

Nathaniel Bernard from Shelburne Falls, MA
Steven Carey from Turners Falls, MA
Joshua Harker from Turners Falls, MA
Richard Jablonski from Greenfield, MA
Charles McCarthy, Jr. from Tewksbury, MA
Stephen McConely from Bernardston, MA
Brett Moores from Winslow, ME
Robert Ruiz from Townsend, MA
Michael Slocumb from South Deerfield, MA
Kevroy Taylor from Devens, MA
Jonathon Unaitis from Turners Falls, MA
Jeremy Willor from Greenfield, MA

Guilford Rail System is fully committed to instilling within these new employees a proper understanding of safety above all else in the performance of their jobs. In addition to the NORAC rules that provide for the safe and efficient operation of trains, every employee is also governed by the GRS Safety Rulebook, underscoring our objective to safely and efficiently operate the Railroad.

Contributed by:
Steve Belforti

NEW LAWRENCE STATION OPENS

The Massachusetts Bay Transportation Authority (MBTA) and Merrimack Valley Regional Transit Authority (MVRTA) have constructed a new passenger station at Lawrence, Massachusetts. The Senator Patricia McGovern Transportation Center, located at the corner of South Union and Merrimack Streets, replaces the former station platforms about 1,200 feet to the west. The new facility combines a covered parking garage and intermodal facilities for buses, shuttles, trains, and other forms of local transportation and features a high level platform designed to facilitate direct entry and exit from passenger trains to a covered busport and the parking garage.

The MBTA is in the process of upgrading trackage, signals, and facilities along the Andover to Haverhill section of the Guilford Rail System (GRS) Freight Main Line. Opening the Senator Patricia McGovern Transportation Center is the most publicly visible aspect of this work. The new center replaces the old Lawrence station of track level platforms and an open parking lot.

These upgrades will benefit GRS trains as well. The stretch of double track from Lawrence to Plaistow, New Hampshire is currently the last section of directional signaled main line on GRS. This means the signal system is only equipped to move westbound trains on the number one track and eastbound trains on the number two track. For years this has complicated the movements of both freight and passenger trains, limiting the volume of traffic. When the upgrades are completed, both tracks will be signaled for train movement in both directions between Plaistow and Lawrence. The track and signaling changes in the Lawrence area will create more efficient access to the Lawrence freight yard to serve GRS customers' needs in the Greater Boston and Interstate 495 region.

All these improvements are being coordinated between GRS, the MBTA, and the Massachusetts Bay Commuter Railroad Company (MBCR) which operates the rail assets of the MBTA. During major trackwork it had been necessary to change the timing of freight trains to stay clear of the work areas and allow passenger service to operate with little or no interruption. This had disturbed the transit times, crew and power cycles, and affected service in other areas of the GRS system. Now that major trackwork is completed, GRS has shifted back to more normal traffic levels through the affected area.

The new Lawrence high level platform on the north side of the track means clearances are at a minimum through the new station. GRS has installed a wide load detector at Exeter, New Hampshire to determine if there is a clearance issue. This detector checks trains to see if there is a possibility of striking the platform, in which case the train would then be routed to the other track if necessary. Train crews must be extra vigilant to detect equipment that will not clear this new platform.

New Lawrence Station (both photos)

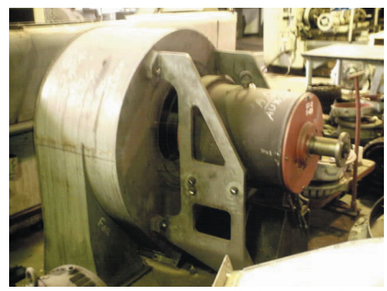
Additionally, during the continuing track improvements, a temporary high level platform has been placed on the south side of the existing number two track. This platform is to facilitate station operations for outbound passenger trains from Boston until the new track alignments are completed. This also means train crews will need to be aware there could be pedestrians crossing the tracks near these platforms. For public safety the MBTA has installed train warning alarms (both visual and audible) to notify patrons of approaching traffic.

Written by
Steve Belforti

LOCOMOTIVE WHEEL SLIP

What is wheel slip, and how can locomotives pull such tremendous trains while maintaining traction between steel wheels on steel rails?

Webster's Dictionary defines 'wheel' as a rotating disk that transmits power or facilitates movement. This simple contraption certainly does that and more. Along with fire, the wheel looms as one of man's most momentous inventions, and its evolution through the ages knows no bounds. So pivotal is the wheel to every aspect of our daily life, that its value is truly immeasurable.

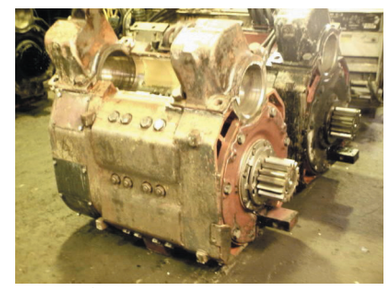


Auxiliary Generator (called "aux gen") supplies auxiliary electricity to lights, heaters, pumps, etc.

In its primitive stages, and augmented by human strength, this basic apparatus was used to push or pull a load. Later, so-called beasts of burden allowed for man himself to eventually become one of the loads being transported by the ubiquitous wheel. Through the ages, man and his machines became more sophisticated. For instance, the advent of the steam engine, electric motor and internal combustion engine presented an assortment of techniques to mechanically apply force directly to the wheel. No longer just the means to carry a load with application of force through pulling or pushing, the wheel is now the medium through which force is transmitted.

For a wheel to transmit the force required to move a load, adhesion or traction are essential factors. While adhesion is the measure of the resistance of friction to slippage between two parallel planes, traction is defined between a foot, or wheel, and a surface. In the case of a locomotive wheel, the parallel plane is the point on the steel wheel where it contacts the steel rail, and this point of contact is quite tiny. The maximum force, or pull, that a locomotive can generate in order to drag a train is limited by the weight of the locomotive and the amount of adhesion that it can maintain without wheel slippage. Once a wheel starts to slip, pulling force is usually lost. And weather notwithstanding, issues such as weight, contaminants on the rail, the profile of the wheel tread and the rail head, design of the locomotive trucks, differences in wheel diameters, and the electrical control systems, can all influence adhesion. Wheel slip has been problematic since the earliest days of railroading. While modern locomotives possess automatic wheel slip control systems to prevent or control unwanted wheel slippage, steam locomotives and early diesel electric locomotives were devoid of such things. It was up to the engineer to cut power on the locomotive whenever he sensed the wheels starting to spin.

Over the years, the locomotive electrical control systems are where the greatest improvements in wheel slip detection have been made. These same principles hold true with our personal automobiles, but adhesion is much greater between a rubber tire and pavement than it is between a steel wheel and steel rail. When driving in rain, snow or ice, adhesion can be significantly reduced. Anyone who has operated a motor vehicle in winter driving conditions can certainly relate to the need for traction or adhesion between the automobile tires and the road; and no doubt we all have experienced firsthand how greatly adhesion increases when sand is applied to a slippery road surface.



D77/78 Traction Motor - 4 or 6 per locomotive, depending on locomotive type (GP or SD)

Maximum adhesion for smooth steel on smooth steel under ideal conditions is forty-two percent; while in less than ideal conditions such as wet rail, cold temperatures or ice and snow, adhesion can dramatically drop to as low as ten percent. Adding sand between the rail and locomotive wheel greatly facilitates adhesion in adverse conditions much like wet rail, and without it the maximum adhesion would likely be the aforementioned ten percent. With sand, this figure can climb as high as thirty percent. Sand on dry track can increase adhesion to about forty percent. This is why locomotives are equipped with sand tanks and a system that sprays the sand between the rail and the wheel when needed to increase traction on wet rail, steep grades, and when other less desirable conditions exist.

Locomotive wheel slip occurs when the wheels spin out because adhesion is not high enough to maintain traction for the amount of force being applied to the wheel. The amount of adhesion that can be maintained is also affected by the acceleration of the locomotive. More force is required to start movement of a train and to accelerate it than is required to maintain movement of speed of the train once it is moving. The physics equation, Force = Mass x Acceleration, applies; but when force exceeds adhesion or traction limits, wheel slip occurs.

LOCOMOTIVE WHEEL SLIP (CONT'D)

The most widely operated locomotive in the United States today is the diesel electric locomotive, which is what Guilford Rail System operates. Typically, diesel electric locomotives have a large diesel engine powering a large main generator, an air compressor and a smaller auxiliary generator. As commonly thought by many people, the diesel engine does not mechanically move the locomotive through a transmission such as in cars or trucks. The main generator provides power for electric motors called traction motors, which drive directly onto each axle of the locomotive. These electric traction motors are actually what move the locomotive and pull the train. The air compressor provides air to operate the air brakes for the entire train, and the auxiliary generator provides power for battery charging, electric cab heat and various other electrical needs.

Earlier designs of wheel slip systems found on older EMD model GP7 and GP9 locomotives detect electrical current imbalances between traction motor circuits when a wheel slip occurs. The system reacts with automatic sand application and by lighting the wheel slip indicator light on the engineer's control stand to alert the engineer that he has lost traction. The system also cuts electrical power to all the traction motors for a second or two, then reapplies the power. If traction is not regained from the application of sand and the brief cut in power to the traction motors, the cut in power and reapplication process will repeat again and again until traction is regained or the engineer lowers the throttle position. Lowering the throttle position reduces power to the traction motors; less power equals less force to the wheels, which requires less adhesion. The success of this type of wheel slip control system is dependent upon proper response from the engineer. Improper - or lack of – response from the engineer can cause significant damage to the locomotive and/or tracks in a relatively short period of time.

Guilford Rail System's 3000 horsepower locomotives, such as the GP40 and GP40-2 models, have much more sophisticated wheel slip systems. The design incorporates electronics and may use an IDAC system or a Module system which detect imbalances of current within the traction motor circuits, but may have several stages of reaction. Depending on the particular wheel slip control system, comparisons in rotational speed of the traction motors may also be used to detect wheel slip. When wheel slip is detected by the wheel slip control system, automatic sand application is the first stage of reaction. The engineer may not even realize he has wheel slip unless he hears the sand application. If traction is not regained with sand application, the next stage of wheel slip correction will begin whereby the wheel slip indicator light on the control stand is lighted to alert the engineer, and electrical power is cut or reduced to the traction motors and reapplied in slow increments to allow the recapture of traction or adhesion. In some cases the engineer may need to lower the throttle position to assist the wheel slip system in recovering traction. This design of control system requires less response from the engineer, is more forgiving, and eases back into adhesion control.

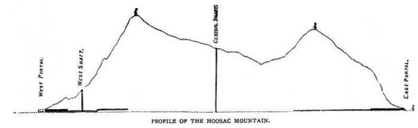
The term "wheel slip" is commonly used by engineers and Mechanical Department personnel of all Railroads. Locomotive event recorders, the Railroad equivalent to the airline's black boxes or flight data recorders, became required by the Federal Railroad Administration (FRA) in the 1990's, and have proven to be a good diagnostic tool for troubleshooting wheel slip complaints from engineers. When downloaded, these event recorders provide a record of most all locomotive functions including location, time, throttle settings, power output, braking functions, sand application, horn and whistle applications, and wheel slip indications. If the download reflects a constant wheel slip, or a wheel slip with low power output, then most likely the wheel slip indication is caused by a problem with the locomotive, usually a traction motor. If the download reveals sporadic or spiking wheel slip indications, especially in conjunction with high power outputs, then the wheel slip control system is most likely working properly and doing what it is designed to do. A wheel slip indication here and there, especially under heavy demand from the locomotive, is not a bad thing and does not indicate any defect with the locomotive. However, multiple true wheel slip indications seen on a download, especially with constant or frequent high power outputs, may be a result of poor train handling, or an indication that locomotive power to tonnage requirements were poorly matched.

AR-10 Alternator is rotated by the diesel engine, producing electrical current to the traction motors

Contributed by:
P. Mike Slaney
Quality Assurance Manager-Mechanical

HOOSAC TUNNEL CHRONICLES

Before reporting about the latest projects undertaken by the Railroad in the Hoosac Tunnel, the following historical account should serve as a primer, or a refresher, for those interested in its evolution.



The Hoosac Tunnel was constructed from 1852 to 1873 through the Hoosac Mountain in northwestern Massachusetts, between North Adams and the Town of Florida. The most important proponent of the northern route and the Hoosac Tunnel was Alvah Crocker (1801-1874), a paper manufacturer in Fitchburg, Massachusetts. The tunnel was conceived as part of a transportation link between the markets of Boston and the Midwest. In 1848 Crocker secured a charter for the Troy & Greenfield Railroad (T&G), from the Massachusetts legislature with provisions for a tunnel through the Hoosac Mountain.

Construction of the tunnel began on January 8, 1851. The first actual digging began on what is called the "Little Tunnel", a 324-foot tunnel through a ledge in North Adams, on the Railroad route leading to the west side of the Hoosac Mountain. An innovative tunneling method was tried on the east side in March of 1853, using a very large diameter cast iron boring machine invented by Charles Wilson. Wilson's stone-cutting machine bored approximately ten feet into the hard rock and then ground to a halt, never to turn again. After that method failed, the tunneling was performed with the traditional hand drill and black powder method.

Historical Poster

In order to speed up the work, a central shaft 1,028 feet deep was begun in 1863 near the center of Hoosac Mountain. Once completed, teams were lowered down to dig eastward and westward from the midpoint toward both portals, while other teams simultaneously worked their way inward from the outside. During the tunnel's construction, many devices utilized nowadays for rock excavation were developed, including the pneumatic drill, nitroglycerin, and electric blasting caps.

Historical Postcard

The 4.7 mile long Hoosac Tunnel was a modern marvel when it was finished in the year 1873. The first train passed through it on February 9, 1875. Regular passenger service between Boston and Troy, New York was instituted in 1876. In 1881 the single track was replaced with double track. From 1876 to 1887 the Hoosac Tunnel and the T&G Railroad were operated by the state until both were acquired by the Fitchburg Railroad.

In 1900, the Boston & Maine (B&M) Railroad bought the Fitchburg Railroad, and in 1910 B&M came under the control of the New Haven Railroad. In the winter of 1910-1911 the electrification process was accomplished, leading to electric train service in the tunnel. After World War II, diesel engines replaced electric trains. The tunnel reverted to single track in 1957, and the last regularly scheduled passenger train went through in 1958.

In 1973, 132-lb. continuous welded rail was installed to replace the 11-lb. jointed rail, which improved the track surface and reduced rail joint maintenance. This now brings us up to the year 1983, when the B&M was purchased by Guilford Transportation Industries.

Who would have imagined that this remarkable edifice would still be deemed the shortest east-west route through the Berkshire Mountains, facilitating the rapid exchange of products and raw materials over ribbons of continuous welded rail? Even now, one hundred and thirty-two years later, it remains a landmark in hard-rock tunneling and a testament to human ingenuity.

The existing tunnel rail was recently replaced with new P-65 KG modified 132-lb. rail. In lengths of 39 feet, the rails were then welded into thirty-four strings of continuous welded rail, each string measuring a length of 1,560 feet. This welded rail was produced at the A&K Railroad Materials, Inc. facility located in Hamden, Connecticut, then loaded onto a special welded rail train. A&K Railroad Materials is a national company that specializes in the purchase and sale of new and used Railroad equipment, and supplies Guilford Rail System with many goods and services.

HOOSAC TUNNEL CHRONICLES (CONT'D)

The welded rail train, with a tie down car positioned in its center, consisted of thirty rail flat cars equipped with roller racks. The unloading end of the train came outfitted with specialized equipment that places the rail where required during the unloading procedure. The train was delivered to North Adams, Massachusetts in June 2005 at the west portal of the Hoosac Tunnel where the plan for unloading the rail train was organized by Walter Rice, Engineer of Track-West District.

Delivering the New Welded Rail for Tunnel Distribution
Photo by Phil Corder

In order to illuminate those pitch black areas of the tunnel where the crew would be working, electric generators and lights were strategically mounted at various positions on the rail train. The entire process was monitored by John Steiniger, Chief Engineer of Track. The track supervisor directly in charge of the track crews was Rodney Brunelle. A&K Railroad Materials provided four rail specialists from their Kansas City operation, Phil Poce, Kevin Hart, James White and Tom Muth, to aid in the overall unloading process and to operate the specialized equipment on the rail train. They were assisted by Ron Johnson, General Manager of the Connecticut A&K facility.

GRS employees working at ground level provided additional track support by removing the connecting joint bars that had been utilized for unloading the strings of welded rail; then, using speed swings, relocated the newly unloaded welded strings away from the existing track to allow clearance for the scheduled passage of freight trains. Even though the Hoosac Tunnel's environment presented a challenge to men and machines, the thirty-four strings of continuous welded rail were unloaded in only one day, over a distance of five track miles, from portal to portal.

Removal and installation of the welded rail commenced on July 25, 2005 at the west portal. Since the tunnel is the gateway between east and west for many GRS freight customers, and the movement of freight is given the highest priority, a 10-hour work window was scheduled and coordinated in close cooperation with the GRS Transportation Department to allow for the passage of trains at the end of each work day.

The actual rail removal and replacement process required various types of equipment such as: a spike puller to remove the spikes from the existing rail strings, three speed swings to remove and replace the old rail with the new, a spiker gager to re-spike the new rail, and an anchor machine to install rail anchors to prohibit longitudinal rail movement.


Installing Welded Rail Deep in the Tunnel
Photo by Phil Corder


Hand Cutting Scrap Rail Strings Removed from the Tunnel Prior to Sale
Photo by Phil Corder

And, since new cross ties were installed as necessary during the rail replacement to insure proper gage spacing, additional tie equipment was also implemented. The crew made use of a ballast cribber to remove the stone ballast between the ties, a tie shear to cut the old ties into pieces for removal from the track structure, and a tie inserter to place the new ties into the track. In the area where tie plates were replaced, a tie adzer was utilized to resurface the ties.

The old welded rail was removed from the tunnel by speed swings. Once outside the tunnel, the long lengths of used welded rail were measured and cut into lengths of forty feet with an acetylene torch before being loaded into gondola cars for sale. Approximately 900 tons of rail and other track material (OTM) were sold to the highest bidder.

The Hoosac Tunnel welded rail installation was completed in 2005 without accident, incident or any significant interruption of service, improving track safety and track speed. Future projects for the tunnel include cleaning and spot replacement of stone ballast at necessary locations, drainage improvements and continued inspection and renewal of cross ties.

The following employees are to be commended for their participation and dedication to quality workmanship and the safe performance of their railroad duties:

- Walter Rice, Engineer of Track / West District.
- Dan Griffiths, Division Engineer / West District.
- Rodney Brunelle, Track Supervisor.
- Track Foremen: Peter Ricardi, David LaFountain Jr., Brian Daigle.
- Equipment Operators: Bruce Wilkins, Phillip Robichaud, William Dooley, Yuriy Kovrizhnykh, Scott Berry, Brian Harrington, Dan Egan, David Pratt.
- Trackmen: Kevin Willbrant, Ian Sisson, James Beckwith, Alexander Miller, William Wade, Daryl Brunelle.
- Tamper Crew: John Bourbeau, Lloyd Sanderson, Robert Williams, Richard Breor Jr.
- Swing Loader Operators: Jamie Smith, Harry Dooley.
- Track Welder: Gary Mazzantini.
- Construction Scrap Removal Crew: Paul Yurkevicz, Shane Sloan.
- Work Equipment Repairmen: Steven Wyman, Jerry Lucier.
- Signalman: Robert W. Decker.

Contributed by:
Phil Corder

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Guilford Rail on the Internet

The Guilford Rail web site (www.guilfordrail.com) is alive and well, offering car location information either through the car movement system (STARR) or the AEI database. CustomerService@GuilfordRail.com is now another option for customers to access car location information, etc.
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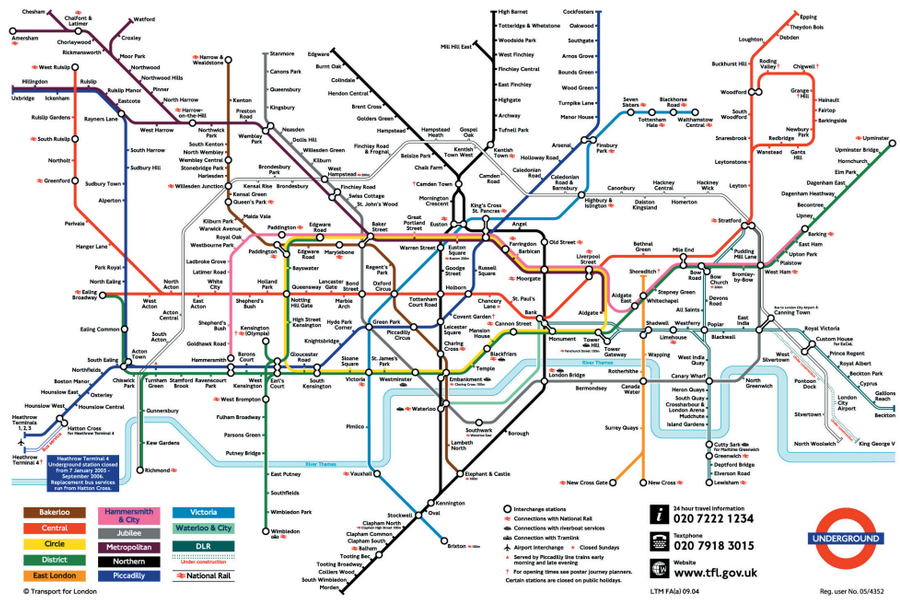
LONDON CALLING

Back in May of 2004, the Boston and Maine Railroad Police welcomed Constable Rob Adamson (see April/May/June 2004 Guilford Xpress) to our shores as he combined business with... business. Well, in the spirit of reciprocity, this past December the Railroad Police Department's Lieutenant Tony DeFrancesco had the rare opportunity to go over to London, England and observe the law enforcement techniques of the British Transport Police, Her Majesty's City of London Police and Metropolitan Police Departments. It probably comes as no surprise that Lieutenant DeFrancesco found the basic police practices of his British counterparts to be comparable in many ways to those in effect here in the United States.

BTP Badge

Generally, British officers deal with much of the same issues as their American cousins. There are, however, slight differences. For example, because the ownership of private firearms is outlawed in the UK (United Kingdom), there is widespread use of edged weapons by the criminal element, which poses a different threat to British officers as they respond to more knife attacks than firearms annually. Nonetheless, lawbreakers still manage to get their hands on traditional firearms. According to many of the officers spoken to, this is in direct correlation to the collapse of the former Soviet Union and has resulted in the influx of several black market arms dealers into the UK. Consequently, handguns are more prevalent now than ever before in Great Britain, causing the longstanding tradition that British officers do not carry firearms to become less and less the norm as many departments must now arm more of their officers in the face of this very real threat.

In the aftermath of the July 2005 subway bombings which were well covered by the news media, several changes have been implemented pertaining to police work and the day-to-day operations of the London transit system. Closed Circuit Television (CCTV), always widely implemented to monitor busy train or subway stations, has taken on a more weighty significance in this age of monitoring to the extreme. At every possible location, the British National Rail System as



"Underground" Map

well as the British subway system (known as the "Underground" or the "Tube") utilize dozens of strategically placed cameras, which also serve the utilitarian purpose of assisting the engineer in determining if the doors are clear to close. As an extra measure of protection against terrorism, blast doors that will only open in synchronization with the arriving trains have been installed along several of the platforms. Noticeably absent are some amenities that we Americans might take for granted, such as trash receptacles, which have been removed altogether from station platforms and premises, effectively eliminating any chance they might contain a concealed device.

"Tube" Station Photo

Out on the streets, the new buses, too, have been equipped with CCTV. Every minute or so there are public service announcements, not unlike those heard in airports across the United States, warning commuters not to leave their bags unattended or run the risk of having them seized and/or destroyed.

The time spent with the BTP (British Transport Police) underscored the tenacity of these public servants who regularly respond to security threats while maintaining a very positive attitude. A tremendous amount of intelligence gathering and networking takes place every single day. The BTP insure that every available resource - from the conductor on the train to the newspaper stand vendor - is employed to thwart potential acts of terrorism. The multitude of eyes and ears of those people passing through the train or Tube stations on a regular basis further provides the police with a continuous source of surveillance; for instance, in this fairly new era of cell phones and camera phones, the BTP is wisely capitalizing on this public 'vice'. They firmly believe that the efforts they are putting forth are paying off in counteracting radical events and will continue doing so well into the future.

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Today's world presents many new challenges, and a global exchange of vital information and ideas is more critical than ever before. There are so many similarities between Americans and the British, not to mention the rest of the world, and much to be gained through an open dialogue about policing methods and tactics.

BTP on Patrol

The hospitality shown Lieutenant DeFrancesco on his trip to London was top notch, and he would like to extend "Cheers" to all his mates in the UK. In summing up his experience with the Brits, Tony would like to share a quote by one of the London Metropolitan officers he was fortunate to spend some time with, "We are right now stuck between where we were and where we need to be, but hopefully we will get there." Once again, this statement rings true for Americans as well.

Contributed by:
Lt. Tony DeFrancesco

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