THE BAY DIMENSION

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In this Edition:

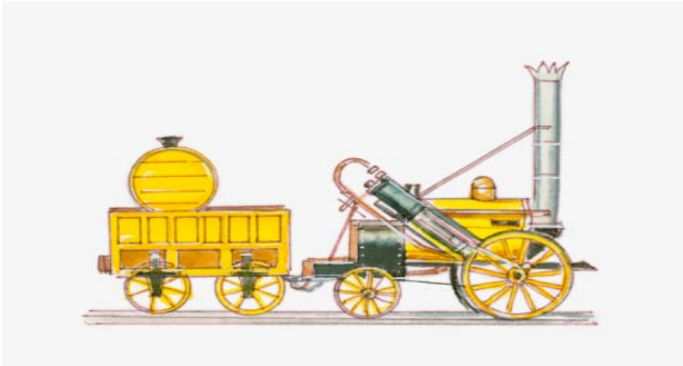
Rainhill Trials' 180th

Geoff Canham, Editor

October will mark the 180th anniversary of the Rainhill Trials, a landmark event in the history of the railroad, so we have a Railroad Special with this edition of the newsletter.

The Rainhill Trials were arranged to see if locomotives could successfully pull trains on the Liverpool and Manchester Railway, or whether stationary steam engines should be used.

The winning entry of the trials was Stephenson's Rocket, which is sometimes erroneously considered to be the first steam locomotive. In a number of ways the Rocket can be compared to the IBM PC, because although many personal computers preceded the IBM PC, it ended up establishing the path that led the technology into the future, and the same can be said for the Rocket in relation to the railroads.



There were five competition entrants in the trials:

The first was Cycloped, which was not a steam locomotive, but it used two horses walking on a belt (like a treadmill) to drive the wheels. It was withdrawn after part of it collapsed under a horse.

Perseverance was the inappropriate name of the second entrant, because it had been damaged in transit to the trials and was unable to achieve the required speed of ten miles per hour and had to be withdrawn. It did receive a consolation prize.

Sans Pareil was of somewhat similar design to the Rocket, but was older technology and considerably heavier, and

was nearly disqualified for being overweight. It performed successfully until a cylinder cracked and it had to withdraw. Nevertheless it was purchased by the Liverpool & Manchester Railway.

The crowd's favorite was Novelty, a light and fast locomotive with a design based on one used for a steam fire engine. Sadly, it suffered some damage to a boiler pipe and ended up being the last to withdraw.

That left the Rocket as the only locomotive to successfully complete the trials, averaging 12 mph and achieving 24.1 mph with a full load and 29 mph running light. Its builders, the Stephensons, were subsequently given the contract to build locomotives for the railway.

The Liverpool & Manchester opened for passenger and freight service in 1830 with trains running to a timetable and with proper stations and signals. It established the pattern for using steam locomotives with steel wheels on steel track, which continued for over a century until diesel and then electric locomotives took their place.

The railroads went on to open up vast areas of the world to commerce, including the continental United States. It also fueled the industrial revolution, allowing people to commute to work, and consequently industries tended to site themselves convenient to the railroad. To this day the bulk of goods are transported across land by the railroads.

The Rocket had one other claim to fame, or perhaps infamy: it was responsible for the first person killed on a public railroad, namely William Huskisson, MP, killed on the opening day of the Liverpool & Manchester Railway. But railroads have proved to be a safe way to travel, with statistics from the 1980's showing railroads being twice as safe as buses, three times as safe as internal air traffic, and twenty four times as safe as cars and taxis.

Heavy and Light Rail

Concern for the planet's ecology, along with recent experience of the way fuel costs can go, has resulted in public transit staging a come-back around the world, largely in the form of light rail and heavy rail transit systems. Rail transit systems are continuing to reshape many of our cities, and new commercial and residential developments frequently emerge around new stations. But what makes light rail light? Do heavy rail transit systems use heavier track or weightier vehicles than light rail systems? Not necessarily, is the answer to the second question, which makes the first question even more of a puzzle.

Basically, the difference between heavy rail (metro systems) and light rail is one of philosophy, not technology. Heavy rail systems are descendants of systems such as the Boston Metro and the London Underground, whereas light rail traces its history back to the trolleys that used to ferry people around our city streets (and still do in places like San Francisco). The two types of rail systems may use virtually identical technology: for instance, Chicago's "L" is one of the oldest metro (heavy rail) networks, but the portion of the same network known as the Skokie Swift (now called the Yellow Line) is considered to be one of the first modern light rail systems.

Light rail systems usually run trains of not more than 2 or 3 carriages (which may be articulated) and which often have overhead pick-up for the power supply. They also frequently, but not necessarily, utilize city streets for part of their route. They may use elevated structures to support the track, but seldom use tunnels (although some do, such as San Francisco's Muni). Stations are frequently little more than raised platforms or sometimes non-existent except for a sign. In some ways light rail is a decendant of Novelty, the people's favorite at the Rainhill Trials.

Heavy rail trains usually have 4 or more carriages (although the above mentioned 'L' sometimes runs two car trains), and usually have pick-up from a third rail. The closest they come to running on streets is sometimes having their track on the median strip of a freeway, and in city centers they normally run in tunnels. Stations are normally significant structures. These differences can often result in costs per

mile of metro systems being around 50% higher than for equivalent light rail.

Where do people-movers fit into these classifications? They are light (often ultra-light) rail systems that ferry people around a limited area, such as a city center (in Detroit), an airport (in Atlanta for instance) or a theme park (as in Disneyland).

Some of the transit projects benefiting from the stimulus package include:

- Central Phoenix/East Valley Light Rail, Phoenix
- Dulles Corridor Metrorail Extension to Wiehle Aveune, Northern Virginia
- Long Island Rail Road East Side Access, New York
- Metro Gold Line Eastside Extension, Los Angeles
- Mid Jordan Light Rail Transit, Salt Lake City
- Northwest/Southeast Light Rail Transit, Dallas
- Pioneer Parkway EmX BRT, Springfield
- Second Avenue Subway Phase I, New York
- South Corridor I-205/Portland Mall LRT, Portland
- University Link Light Rail Transit Extension, Seattle
- West Corridor Light Rail Transit, Denver

California High Speed Rail Project

The stimulus package passed by Congress included $8 billion for high speed rail, and the California High Speed Rail Project is likely to be a major recipient of these funds since it probably the furthest along in design compared to the other (mainly East Coast) planned high-speed rail projects. The California system also got $9 billion funding from Proposition 1A, approved by voters in November 2008, which also provided close to another billion for improvements to existing rail systems that will interface with high-speed rail.

The first phase of the system, running from Los Angeles (Anaheim) to San Francisco, is estimated at around $34 billion. That total includes construction and system costs, as well as soft costs such as design fees. The first phase also includes the only portion of the system that will use track shared with other trains, specifically the somewhat contentious Bay Area section that will use the Caltain Corridor that should ultimately end at the new Transbay Terminal. The total cost for the full system is estimated at around $40 billion.

The full high-speed system is planned to be over 800 miles, running from San Diego, through Los Angeles, following a route almost parallel to the I-5 as far as Sacramento, with the San Francisco section branching off between Fresno and Merced and passing through San Jose en-route.

Image by NC3D

The system will use electric trains with state-of-the-art safety features, and with the well tested steel wheel on steel track that Stephenson's Rocket used. But these trains are designed for speeds up to 250 mph, although the operating speed is planned to be 220 mph, making the 420 mile trip from San Francisco to Los Angeles in about 2 hrs 40 min, for a one-way fare of about $55.

The 15% Design stage, which looked at alternates, leading to a single approved alignment, has now been completed.

The 30% preliminary engineering design (to support procurement of final design and construction services) should be completed by 2013. This stage will identify

all elements of the project, provide a more detailed estimate and schedule, and carry out constructability and bid-ability reviews.

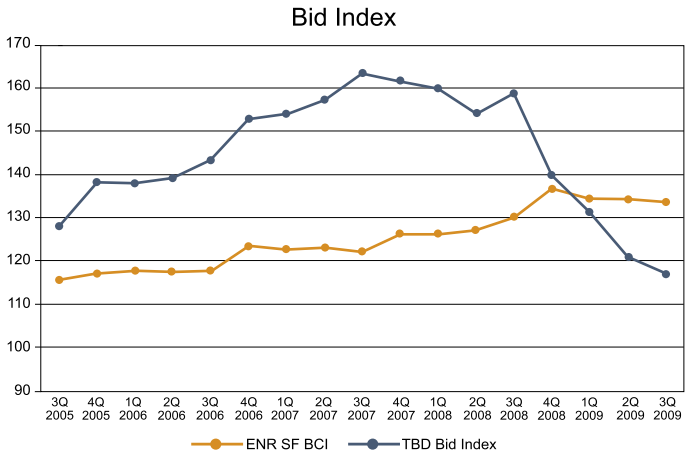
The first phase of the system (Anaheim to San Francisco) is scheduled to start revenue service in 2020, 190 years after the Rocket started revenue service on the Liverpool & Manchester Railway.

Prior to that, we can expect the work on the high-speed rail system, and the associated development work that inevitably occurs in the vicinity of stations on such a major system, will provide its own stimulus package for the California construction industry.

Light at the End of the Tunnel?

We are seeing a fairly consistent upward trend in the stock market, and there are increasing signs that the recession is technically drawing to an end. But what does that mean for the construction industry?

Our bid index doesn't show too many encouraging signs at present:



To get a gauge on how things might progress, we looked back to this newsletter's predecessor, the Hanscomb News, and observed how the recession of the 1990's progressed. That recession officially started in July 1990 and lasted for 8 months, but the effects on the construction market lasted a lot longer.

The current recession officially started in December 2007, and might well be stated as having ended around September 2009 by the time NBER gets around to declaring it over, so that means that the length of this recession will have been far longer than that of the 90's, but let us ignore that for now.

The first edition of the Hanscomb News came out in September 1990, soon after the start of the 90's recession, and it was reporting about a very competitive bidding market. The equivalent date in this recession would be February 2008, but this time around the general construction bidding market was not being hit at that point, although the housing sector certainly was.

By April 1991 it was being said that the competitive but errant bidding market of 1990 had turned into a quest for survival amongst contractors/subcontractors. Counting from the start of the two recessions, the equivalent date in this one would be August 2008, but it was early to mid-2009 that we were seeing the equivalent conditions.

In December 1992 the Hanscomb News was still reporting that the market continues to be depressed, perpetuating the fiercely competitive bidding market. The equivalent date here would be May 2010.

By November 1993 it was being reported that recovery of the construction market was proceeding at a snail's pace. That would be April 2011 counting from the start of this recession.

It wasn't until January 1996 that we were writing about steel prices rising as the construction industry comes out of recession. The equivalent date here would be June 2013. So if you think you are seeing a light at the end of the tunnel now, unfortunately it is probably only the headlights of a train coming at you. But it is possible the train will get us back into the California sunshine a bit sooner than we otherwise would.