

Memorandum



New York City Transit

Date December 4, 2007

To Steven Feil, Senior Vice President, Department of Subways
Judith Pierce, Senior Vice President, Administration

From Cheryl E. Kennedy, Vice President, Office of System Safety

Re Track Safety Task Force Final Report

As you are aware, a Track Safety Task Force was convened by Howard H. Roberts, Jr. after the employee fatalities occurred in April 2007. The task force consisted of two representatives from the Office of System Safety, three representatives from the Department of Subways and three representatives from the Transport Worker's Union Local 100.

The task force has completed numerous evaluations and prepared a summary report outlining the findings and recommendations to address track safety. Attached is the final report.

Please review this report and prepare a joint plan to implement the recommendations. The plan should outline the actions that will be taken to implement each recommendation and include implementation dates. Please submit the implementation plan to my attention by January 11, 2008 and I will submit the plan to the Track Safety Task Force.

cc: H. Roberts
R. Toussaint
Executive Staff



New York City Transit



Joint Track Safety Task Force

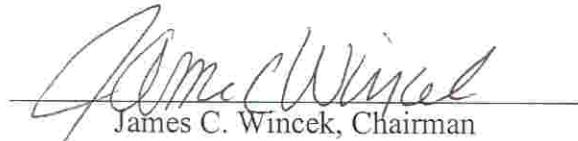


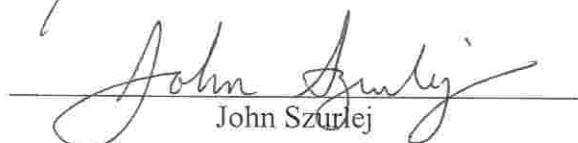
Final Report

November 20, 2007

Track Safety Task Force Members:

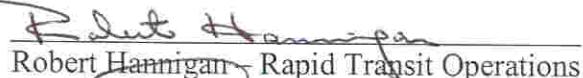
Office of System Safety

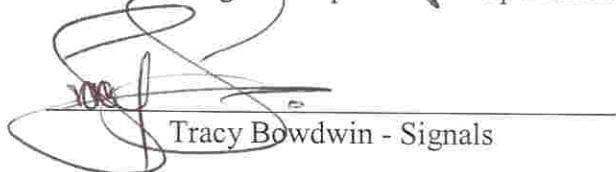

James C. Wincek, Chairman


John Szurlej

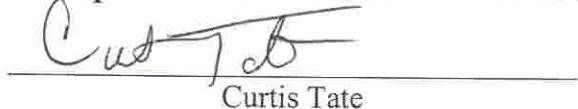
Department Of Subways


Joseph Leader – Track/Infrastructure


Robert Hannigan – Rapid Transit Operations


Tracy Bowdwin - Signals

Transport Worker's Union Local 100


Curtis Tate


Leroy Jardim


Susan O'Brien – replaced by Robin Gillespie on 10/19/07

Table of Contents

Executive Summary	3
I. Background	4
II. Track Safety Survey.....	5
III. Training for Joint Labor/Management Pre-job Inspections of Major Track Construction Projects	7
IV. Board of Inquiry Reports	7
V. Safety Stand Downs.....	9
VI. Joint Labor/Management Inspections of Active Track Projects.....	9
VII. Safety Initiatives Implemented After the Boggs and Franklin Accidents	10
VIII. APTA Standard for Work Zone Safety.....	14
IX. Subway Safety Group Audit of Flagging Operations.....	14
X. Subways Flagging Proposal.....	19
XI. Safety DVD for Employees	21
XII. Summary of Recommendations	21

Attachments

- A. Track Safety Survey Executive Summary and Final Report
- B. Large Construction Project Pre Inspection Training
- C. Large Construction Project Inspection Checklist and Placard
- D. APTA Standard for Work Zone Safety

Executive Summary

A Task Force representing labor and management at New York City Transit was convened in May 2007 to evaluate the safety culture, current perceptions of safety and a series of initiatives to improve track safety conditions, some long-standing and others that were promoted following two worker fatalities in 2007.

In this report, the Task Force identifies deficiencies and strengths in the track safety process. To address the deficiencies, the Task Force recommends following up on the recent initiatives by clarifying work practice improvements and by recommending rule changes as needed to institutionalize the initiatives. Task force recommendations are designed to improve the safety process and culture by defining the role of management and labor in an active safety process, by increasing all parties' commitment to an effective safety culture, and by improving rules to make them more effective and easier to understand.

Recommendations from the task force focused on

- Operational issues in track safety, including flagging, communication and the safety environment
- Training improvements
- Communication of safety initiatives and rules throughout the system
- Specific flagging rule changes
- Response to accidents, including safety stand-downs and Board of Inquiry investigations
- Job planning and safety inspection process, schedule and participation

Management commitment is the foundation of a safety culture. This commitment has been demonstrated at the highest level through the changes instituted in recent months, including the formation of this task force. The same commitment should be generated at the operational level. Recommendations that attempt to address this include requiring supervisors to participate in regular walkthroughs, and to demonstrate an ongoing commitment to safety first. The increased role of union representatives in the analysis of safety hazards and the promotion of a safer environment should also increase the overall commitment of the workforce to safer work practices, and increase confidence in the value of the safety system.

The Task Force recognized that safety hazards continue to be significant. The proposed improvements are expected to address some of the issues. Cultural changes will take longer. The effectiveness of the safety program should be assessed frequently based on joint inspection results, injury and illness data analysis, root cause analysis of accidents and near misses, and an ongoing evaluation of the safety consciousness and culture.

I. Background

In a memorandum dated May 15, 2007, President Howard H. Roberts, Jr. convened a track safety task force to identify system, cultural and behavioral factors that negatively affect track safety and to make recommendations to neutralize or reverse those tendencies.

The task force consisted of the following members:

Office of System Safety

James Wincek, Chairman

John Szurlej

Department of Subways:

Joseph Leader

Robert Hannigan

Tracy Bowdwin

Transport Worker's Union Local 100

Curtis Tate

Leroy Jardim

Susan O'Brien, replaced by Robin Gillespie

Identifying cultural and behavioral factors that influence track safety required that the opinions of the employees that work on the right of way and operate trains be obtained. The task force solicited Global Strategy Group to develop and administer a track safety survey. The target population consisted of Maintenance of Way hourly employees and supervisors, Train Operators, Construction Flaggers, and Train Service Supervisors.

In an effort to educate the task force members on behavior and culture, their effects on an individuals actions and changes that can be initiated to affect the actions, an authority in the field of culture change, Mr. Jose Alvarez, conducted a presentation to the Task Force. The guidance that was provided by Mr. Alvarez was used during the process of identifying, evaluating, and making recommendations to initiate changes at NYC Transit.

The task force also reviewed the following safety initiatives:

- Training for Joint labor/management pre-job inspections of major track construction projects.
- Board of Inquiry reports for fatal employee accidents that occurred over the past 10 years.
- Safety Stand Downs
- Joint labor/management inspections of track construction projects
- Safety initiatives that were implemented after the last two employee fatalities
- The American Public Transportation Association Standard for Work Zone Safety
- The Subway Safety Group Audit of Flagging Operations
- Subways Flagging Proposal

- A video that was made for Con Edison employees to watch with their families at home. The focus of the video is to express to the employees and their families the importance of safety on the job.

The following summarizes the observations of the task force and recommendations to enhance track safety in each of these areas at NYC Transit.

II. Track Safety Survey

In an effort to solicit employee opinions and obtain direction for the survey, 24 employees were randomly selected from the population of employees that operate trains or work on the tracks. Each employee agreed to participate in one of three focus groups that were moderated by Global Strategy Group. The focus groups were conducted on June 27 and 28, 2007. The focus groups expressed concerns in the following general areas:

Work Environment: dirt; heat; poor lighting; water conditions; homeless people; rodents; steel dust; time pressure; tension and distrust between workers and supervisors

Safety: Track work is very unsafe and near miss incidents are frequent; employees that only perform flagging jobs are much better flaggers and flagging for contractors is stronger than flagging for employees; safety rules are thorough but are not followed; train traffic on adjacent tracks is dangerous; supervisors think the work is getting safer and worry that they will lose their jobs for safety breaches; emergency alarms and telephones are not working; radios would improve communications

Rules and Training: Flagging training is weak and not frequent enough; training is conducted by reading rules; employee mentoring would be helpful

The focus groups also offered suggestions for improvement such as: encouraging near miss incident reporting; dedicated flagging personnel; frequent unannounced safety audits; more training; improved radio communication.

Utilizing the information obtained from the focus groups, the task force developed the survey.

The track safety survey was conducted over the telephone by Global Strategy Group between July 12, 2007 and August 2, 2007. The target population consisted of: Maintenance of Way hourly employees, supervisors and managers; Train Operators; Conductor (construction) flaggers, and train service supervisors. The survey took approximately 35 minutes to complete and the consultant made 4 attempts to contact each employee. A toll free call back number was established and maintained for the duration of the survey. Employee bulletins and pay check distributions were used to advertise the survey and the toll free number to maximize employee participation. The total number of surveys completed was 756: 114 supervisors and managers, 247 Train Operators, and 395 right of way workers (including 34 construction flaggers). The executive summary and final report for the survey appears in Attachment A.

The results of the survey indicate that employees are concerned about safety and are very invested in their own safety and the safety of others. Most felt that the work is only somewhat or not very safe. Time pressure to get the job done and supervisor pressure to ignore safety rules are major factors that make it hard to follow the rules. The desire to get off the track or out of the cab is also a pressure. Half of the employees surveyed said that they did not think the work would get done if they followed every safety rule. Respondents were mixed on the sufficiency of flagging with only about half of the employees believing that the attention given to track flagging for inspection and small groups is sufficient. Employees are of the opinion that flagging for contractors and flagging for employees is different. Near miss incidents are not reported because they are afraid they will be disciplined, they do not want their co-workers to get in trouble and they are afraid of losing their job. Near misses may not be reported when nobody is injured.

The task force discussed the results of the survey and made the following recommendations to enhance employee safety on the right of way:

1. The Department of Subways must issue a bulletin reminding employees of the requirement to display 2 yellow lights/flags at the leaving end of stations that are located between the first set of cautions and the end of the work area.
2. The rule of the day should not be divisional as some rules do not apply to all employees within a division. The rule of the day should be provided for subdivisions thus making it more specific to the work that is performed by the employees that receive the rule of the day.
3. During supervisor training, supervisors must be instructed to acknowledge employees that are observed working safely.
4. The Department of Subways must enhance communications to employees via bulletins with verbal communication when they report for duty to ensure that employees receive the information.
5. The flagging for individuals, pairs, and small groups moving from point to point (Rule 3.76) should be modified to require a positive stop (tripper) except when the employee(s) being protected is/are moving and have access to a clear-up space within 15 feet. When the employee(s) that is/are being protected by the flagger stops to perform work or enters an area where a clear-up space is not accessible within 15 feet, the flagger must display the flashing yellow light 650 feet in advance of the work and must position him/her self no closer than 150 feet in advance of the work. The flagger must be equipped with a tripper, red light or flag, and white light. Approaching trains must be stopped and the flagger must receive verification that the employee(s) being protected is/are clear of the track before the train can be signaled to proceed. When the flagger cannot see the flashing yellow light or the employee(s) performing the work, an auxiliary flagger must be used. With this rule change, employees that perform work under point to point flagging will be required to use full flagging only when the work being performed cannot be suspended at any time.
6. A rule, addressing the use of a qualified flagger positioned on the station platform to relay communications between a work gang and the flagger whenever a station

platform is between the flagger and the work gang, must be incorporated into the rules and regulations.

7. Employees must be advised, during stand downs, of their obligation to report near miss incidents to their supervisor.
8. The Department of Subways in conjunction with Human Resources Training must develop a stand down that addresses all rule changes and all other communications that result from this task force.
9. The Department of Subways must identify a date when the revised rules will be implemented and must develop a schedule to provide the stand down to all employees that perform duties before the rule changes go into effect

III. Training for Joint Labor/Management Pre-job Inspections of Major Track Construction Projects

The task force developed a training curriculum for the TWU Safety Representatives and the Track Construction supervisors that are conducting the joint labor/management pre-job inspections. Human Resources Training utilized the curriculum and developed a training course that consists of one day of major track construction specific training. The trainees will also be required to attend 4.5 days of pre requisite training in various courses that already exist. Human Resources has completed the development of the training and Track Construction and the TWU have been advised to schedule the employees to attend. The outline for the training appears in Attachment B. The task force is also recommending that a certificate or completion card be given to members of the job inspection teams to certify completion of the required training.

In addition to the training, the task force developed an inspection checklist and a standard placard that must be signed by the individuals that conducted the pre-job inspection and displayed at the construction site (see Attachment C).

IV. Board of Inquiry Reports

The task force members reviewed the employee fatality Board of Inquiry reports for the last 10 years. The following employee fatalities were reviewed:

Thomas Destefano	July 22, 1998
Samuel McPhaul	July 17, 2001
Christopher Bonaparte	August 9, 2002
Joy Antony	November 21, 2002
Kurien Baby	November 22, 2002
Janell Bennerson	January 18, 2003
Harold Dozier	December 14, 2004
Lewis Moore, Jr.	December 1, 2005
Daniel Boggs	April 24, 2007
Marvin Franklin	April 29, 2007

A number of the Board of Inquiry reports concluded that rules were not followed, without an analysis of why the rules were not followed. Subsequent to the evaluations of the

Board of Inquiry reports and discussions of each incident, the task force recommends that the following actions be implemented to enhance the accident investigation process:

Board of Inquiry Investigations – General Recommendations

1. The Board of Inquiry should evaluate the question of how the workplace behavioral culture affects the decisions that individuals made that lead to the dangerous situation.
2. The Board of Inquiry should consistently evaluate the events preceding the work shift when the accident took place i.e. job preparation
3. In addition to on-site supervision, the Board of Inquiry should review the culpability of the Superintendent and General Superintendent with respect to the conditions at the job site

After evaluating each of the Board of Inquiry Reports, the task force recommends that the following be implemented in an effort to specifically address issues that are believed to have had an impact on the occurrences of the accidents:

Rule Change

4. Rule 3.72(c) should be revised to require that the second qualified flagger that is assigned to accompany the flagger in setting up and removing the flagging, and verifying that the flagging is properly established in accordance with the pre-job meeting must be specifically identified and tasked to watch and warn of approaching trains. For track jobs that are not being performed under General Order protection, a foreman must perform the duties of the second qualified flagger, for the protection of the flagger, until independent flagging is established as described later in this report.

Training

5. Human Resources Training advises employees of the correct method to perform each job. During training, employees should be provided with reasons for avoiding shortcuts that they may learn on the job.
6. The Department of Subways must require refresher track safety training that includes a review of the flagging rules every 2 years for anyone that must attend track safety training. The training must be administered by Human Resources Training Personnel and the training methodology must engage the employee in discussions and other forms of active participation.

Procedural

7. On jobs where a supervisor is on-site, each supervisor must inspect the job location prior to the pre-job meeting with a union designee and discuss all safety concerns during the pre-job meeting. The work must start by addressing the safety issues.
8. The Department of Subways must develop an inspection checklist for the supervisor and the union designee to use during the pre-job inspection. The checklist must include verification that all equipment required for the job is present and in good working order.
9. The supervisor in charge of the job must clarify the layout of each job with the employees that are going to perform the work before it starts thus accounting for absent employees or last minute changes.
10. Every supervisor must demonstrate to the hourly employees that s/he is focused on identifying and resolving safety issues throughout the entire job. Supervisors and a union designee must carry out periodic safety observations and show ongoing safety awareness throughout the job.

Human Resources

11. Supervisors should be evaluated regularly on their ability to communicate safety information effectively to their employees

V. Safety Stand Downs

The task force reviewed the written material that was prepared for the Maintenance of Way Safety Stand Down that was held between Nov. 27, and Dec. 22, 2006. The Task Force also reviewed the written material that was prepared for the most recent Safety Stand Down that was held in April 2007, immediately after the fatal accident involving Marvin Franklin. The stand downs were conducted in an environment where the materials were reviewed by a MOW manager. In many instances the material was read aloud to the group of employees. The duration was approximately 8 hours. The task force discussed the training content, duration, and delivery of the materials. The task force recommends that the following actions be implemented:

1. Each Operating Division must select the topics for their stand downs with input from managers, supervisors, hourly employees and the union. The topics are subject to approval by System Safety.
2. Human Resources Training should prepare interactive training for each subject topic
3. The training must be interactive to the extent that the employees actively participate in the learning process. For example, the instructor introduces a subject and provides basic information then employees use the information for interactive group discussion. Exercises that involve typical activities that occur in the actual working environment should be included in the stand down. Videos should not be used alone. However, videos can be used to introduce a subject and be followed with interactive discussions.
4. Human Resources Training must evaluate and provide training to the operating division employees selected to deliver the stand downs. The employees selected to deliver the stand down material must be dynamic and have the ability to maintain a high level of interest during the stand downs. The training evaluation must focus on this ability.
5. The Stand Down duration should be limited to 8 hours
6. Human Resources Training and the Office of System Safety should audit the stand downs to ensure that the quality of the materials and the delivery is maintained.

VI. Joint Labor/Management Inspections of Active Track Projects

In May 2007, the Office of System Safety and the TWU established two joint inspection teams that were tasked with the responsibility of conducting random unannounced safety inspections on track projects that are in progress. The joint inspection teams conduct inspections on three shifts each week. The inspections are conducted at night and on weekends when most track construction projects are active. Approximately 145 inspections were conducted between May and mid October. It was noted that the average number of negative audit findings per audit each month has ranged from 1.13 in September to 2.46 in August. Some of the common findings are summarized below:

- Many supervisors did not have a good comprehension of the flagging requirements. Flagging deficiencies were noted in the areas of adjacent track flagging, caution lights and portable train trip positioning relative to the work area, and compliance with the flagging requirements identified during the joint labor/management pre-job inspection and noted on the placard.
- General Order limits were not properly established.
- Flagging lights and insulated tools were not properly inspected before being used.
- There is an insufficient number of 3rd rail alarm boxes/red lamps.
- Job site illumination and housekeeping are inadequate.
- Personal protective equipment was not available or improperly utilized
- Pre-job inspections were not consistently conducted and hazards were not corrected before the job started.
- 3rd rail mats were not used where required
- Air monitoring was not conducted when diesel/gasoline equipment was in use in tunnels
- Some supervisors were not aware of the Emergency Alarm/Emergency Telephone outage report

The task force recommends that:

1. The joint labor/management inspections of active track projects must continue.
2. The joint labor/management inspection findings should be analyzed and used to evaluate the effectiveness of the Track Safety Program and the changes implemented.

VII. Safety Initiatives Implemented After the Boggs and Franklin Accidents

The task force received copies of the safety initiatives that were implemented after the Boggs and Franklin fatalities. Each initiative was discussed to determine if the initiative should be continued as it was written or modified to address concerns or confusion that have arisen since the initiative was implemented. The following summary outlines each of the initiatives and the task force recommendations for continuation or modification.

Communication

Initiative: Radios are being issued to work crew supervisors that perform emergency work along the right of way where there may be nonfunctioning EABs or ETs. This program will be expanded to include non-emergency work.

Recommendation:

1. The Department of Subways must continue to issue radios to work crew supervisors that perform emergency work along the right of way where there may be nonfunctioning EABs or ETs.
2. The Department of Subways must develop a plan to provide radios to all work crews for monitoring purposes and emergency communications.

Initiative: When employees call on flagging they must contact the Rail Control Center and the Tower that has jurisdiction over the area where the flagging will be established. The Tower will then notify the trains in their area with periodic announcements between the hours of 10pm and 5am. The task force believes that the

notifications should be conducted on Saturday and Sunday due to the significant construction work that is conducted on weekends.

Recommendation:

3. The Department of Subways must continue to require that when employees call on flagging they must contact the Rail Control Center and the Tower that has jurisdiction over the area where the flagging will be established. The Rail Control Center must authorize the flagging before it can be established. The Towers must notify trains in their areas with periodic announcements, advising of the presence of employees on the right of way and reminding train operators to sound the horn and slow the train if they observe the employees, between the hours of 10pm and 5am and all day on Saturday and Sunday. The Towers should keep a log of the flagging calls. The Rules and Regulations must be revised to reflect this change - Rule 3.72(b) and 3.76(a)

Initiative: The process associated with implementing a General Order has been summarized in the attached MOW positive compliance bulletin. Procedure 3 “Before the lamps/trips are put in place, the supervisor in charge must contact the appropriate RTO Control Center Subdivision Desk Superintendent to confirm that the General Order is in effect (i.e. the track is cleared of revenue service)” will be highlighted during tool box safety talks.

Recommendation:

4. Future stand downs must include a reminder that before the lamps/trips are put in place for a General Order, the supervisor in charge must contact the appropriate Rail Control Center Subdivision Desk Superintendent to confirm that the General Order is in effect (i.e. the track is cleared of revenue service). Employees must also be reminded that they must call the RTO Control Center and obtain permission to set up adjacent track flagging when adjacent track flagging is required for the General Order. The Rules and Regulations must be revised to reflect this change – Rule 3.72(b) and Rule 3.76(a)

Initiative: Supervisors will speak to Train Operators as they are reporting to work to go over locations of General Orders and any other significant events that are occurring on their route.

Recommendation:

5. The Department of Subways must continue to require that supervisors speak to Train Operators as they are reporting to work to go over locations of General Orders and any other significant events that are occurring on their route. The Rules and Regulations must be revised to reflect this change - Rule 36

Initiative: The attached bulletin was distributed to remind Train Operators to sound the horn and reduce the speed of their trains to less than 10 miles per hour upon observing caution lights, flags, or personnel on the right of way. The train must not resume normal speed until the entire train has passed the work area.

Recommendation:

6. The Department of Subways must annually review and reissue an Operational Bulletin concerning Train Operators sounding the horn and reducing the speed of

their trains to less than 10 miles per hour upon observing caution lights, flags, or personnel on the right of way. The train must not resume normal speed until the entire train has passed the work area. Efficiency testing must continue with zero tolerance.

Adjacent Track Issues

Initiative: Unless the work area is separated from an adjacent track by a physical barrier (wall or station platform), adjacent flagging is required. A wide area is not a barrier. An adjacent track warning device is being investigated and evaluated. If this device is successful, it can be used to enhance adjacent track protection.

Recommendation:

7. The Department of Subways must continue to require adjacent track flagging when the work area is not separated from an adjacent track by a physical barrier (wall or station platform) – a wide area is not a barrier. The Rules and Regulations must be revised to reflect this change - Rule 3.80(h).

Initiative: With reference to the need to provide coverage for reverse moves, the procedure was amended to include confirmation that everyone is off the track before the train is permitted to proceed.

Recommendation:

8. The Department of Subways must continue to require that the Rail Control Center obtain confirmation that everyone is off the track before a train is permitted to make a reverse move. The Rules and Regulations must be revised to reflect this change – Rule 2.41

Noise Impairment

Initiative: The use of generators at work sites should be discouraged. The lighting department should be contacted where possible to provide lighting and power needs. Where necessary, generators should be placed at the street level when possible.

Noise suppression devices should be routinely attached to equipment that interferes with the noise of approaching trains.

Recommendation:

9. The Department of Subways must continue to require that the use of generators at work sites be discouraged. The lighting department must be contacted where possible to provide lighting and power needs. Where necessary, generators should be placed at the street level when possible. Noise suppression devices should be routinely attached to equipment that interferes with the noise of approaching trains.
10. The Department of Subways must develop noise suppression requirements for equipment that is used on the right of way and incorporate the noise suppression requirements into the specifications for the equipment. Where possible, contracts in progress should be modified to contain these specifications.
11. The Department of Subways must develop a plan to phase out or modify existing equipment that does not comply with the noise suppression requirements.

Equipment

Initiative: Emergency Alarm Boxes and Emergency Telephones that are out of service have been identified and non-emergency work is prohibited in these areas. A procedure was developed to enable employees to perform emergency work if required.

Recommendation:

12. The Department of Subways must continue to identify Emergency Alarm Boxes and Emergency Telephones that are out of service and prohibit non-emergency work in these areas. Emergency work can be conducted in these areas following the procedure that was developed to enable employees to perform emergency work. The Rules and Regulations must be revised to reflect this change – Rule 22.
13. The Department of Subways must increase the frequency of inspections of emergency alarm boxes and emergency telephones. They must establish an inspection and maintenance regimen which ensures that Emergency Alarm Boxes and Emergency Telephones are maintained in a state of good repair and are operable.

Procedures

Initiative: For maintenance activities, a track supervisor must accompany the flagger assigned to set up flags to protect the maintenance crew.

Recommendations:

14. For track jobs that are not being performed under General Order protection, a track supervisor must accompany the flagger assigned to set up and remove the flags, until the independent flagging unit is established as described later in this report. The track supervisor must be specifically assigned to watch for and warn of approaching trains and must also verify that the flagging is properly established and removed. For work activities that do not require the supervisor to accompany the flagger, another qualified flagger must accompany the flagger in setting up and removing the flagging. One of the flaggers must be specifically assigned to watch and warn of approaching trains and must verify that the flagging is properly established and removed. The Rules and Regulations must be revised to reflect this change – Rule 3.72(c)

Initiative: A joint management/union safety inspection will be performed prior to the commencement of all major track construction projects (e.g. chip out/dig outs, switch renewals, CWR installations, and track panel projects). The need for a barrier/bunting separating the work track from active adjacent tracks will be determined at this inspection. Before any work commences, an inspection certificate must be signed by a supervisor and a TWU safety officer. The certificate must be displayed at the work site. Attachment C includes a checklist that was developed by the track safety task force and is being used during the inspection. A standard certificate that must be signed and displayed at the job location was developed by the committee and is being used. The track safety task force coordinated the development of Training for Joint Labor/Management Pre-job Inspections of Major Track Construction Projects by Human Resources Training.

Recommendation:

15. The Department of Subways must continue the requirement that a joint management/union safety inspection be performed prior to the commencement of all major track construction projects (e.g. chip out/dig outs, switch renewals, CWR installations, and track panel projects). This pre-job inspection requirement should be performed prior to large scale scheduled track maintenance jobs (e.g. multiple rail replacement, switch renewal, extensive plate renewal). The need for a barrier/bunting separating the work track from active adjacent tracks will be determined at this inspection. Before any work commences, an inspection certificate must be signed by a supervisor and a TWU safety officer. The certificate must be displayed at the work site. The Department of Subways must phase in a requirement that the inspectors must receive the Training for Joint Labor/Management Pre-job Inspections of Major Track Construction Projects.

VIII. APTA Standard for Work Zone Safety

The American Public Transportation Association (APTA) Standard for Work Zone Safety (see Attachment D) was reviewed by the task force. It was determined that NYCT has implemented the components of the APTA Standard for Work Zone Safety with the exception of the requirement that “Before entering the right of way, wayside workers shall have an evacuation plan in the event of an unexpected incursion”. The intent of this requirement is to ensure that employees are aware of the location and access to clear-up spaces that must be used if a train unexpectedly enters the work area.

Recommendation:

1. The Department of Subways must require that the employees be advised of the location and access to the clear-up locations for their specific work location that will be used in the event that a train unexpectedly enters the work area. This should be addressed during the pre-job safety meeting. The Rules and Regulations must be revised to reflect this change - Rules 3.72(a) and 3.76(a).
2. The Department of Subways must develop a pocket checklist to remind employees and supervisors of the issues that must be discussed during the pre-job safety meeting: designate the flaggers; identify the employee that will accompany the flagger when setting up and retrieving the flagging and remind him/her that their function is to warn of approaching trains and verify that the flagging is properly established; outline the job and any hazards specific to the work, communicate the type of flagging protection that will be established; identify access to clear-up locations; provide an opportunity for employees to discuss their concerns.

IX. Subway Safety Group Audit of Flagging Operations

On May 9, 2007, the Senior Vice President, Department of Subways, established a program to audit flagging operations in the subway. The Subway Safety Group conducted track flagging and safety audits through June 29, 2007.

The Subway Safety Group conducted 237 audits and found 62 instances with improper flagging and 45 other deficiencies. The Subway Safety Group presented a number of enhancements to Subways management. Subways management provided comments on the enhancements and the enhancements and comments were submitted to the track safety task force for review. The track safety task force evaluated each enhancement and made recommendations to implement, modify, or abandon the initiative. The following summarizes each initiative, Subway management comments, and the recommendation of the task force on each initiative.

Procedures

Subway Audit Team Enhancement: NYCT should standardize flagging procedures. At present, different divisions follow different procedures for setting-up flagging protection. For example, RTO advises its flaggers to set the tripper on the side opposite the 3rd rail, while MOW insists that its flaggers set up on the right side of the track regardless of the 3rd rail.

Subway Management Comment: RTO and MOW Division Chiefs say that they follow the same procedures regarding the placement of the tripper. They conclude that the audit finding that led to this recommendation is based on one or a small number of flaggers who are not following proper procedures.

Standardizing the flagging was discussed by the task force in detail as a result of a proposal by Subways to establish a flagging inspection function. The task force recommendations in this area will be discussed later in this report.

Task Force Comment:

1. The location of the tripper must be consistent with the flagging rules – Rule 3.79(g).

Subway Audit Team Enhancement: In full flagging, the crew should set out the yellow lantern first then the green lantern. On the positive side, train operators would know that there is a worker on the tracks. Negatively, this procedure could require the flagger to walk with his back to train traffic, which is contrary to the rules.

Subway Management Comment: The Senior Staff rejected the recommendation that crews should set out the yellow lantern first then the green lantern, because it may result in the possibility of a worker walking with his back to traffic, which is too dangerous.

Task force recommendation:

2. The yellow lights/flags should be displayed before the green lights/flags. This will slow approaching trains and require the Train Operator to sound the horn. There are options that preclude an employee from walking with his back to traffic to place the green lights such as riding a train to the next station and walking back. The Rules and Regulations must be revised to reflect this change – Rule 3.77.

Subway Audit Team Enhancement: NYCT should have a dedicated “flagging desk” at the RCC to answer calls from the field notifying the control center that work gangs are about to set-up flags on the system. This would reduce the delays that crews encounter when notifying the control center of flagging operations, possibly improving productivity and safety.

Subway Management Comment: RTO already assigns specific personnel to handle flagging calls. They are in the process of increasing staff at the RCC to facilitate the handling and control of flagging requests.

Task force comment:

3. A dedicated flagging desk was implemented by Rapid Transit Operations.

Subway Audit Team Enhancement: NYCT should dedicate one division to flag for all of DOS. Positively, this would guarantee standardization of flagging. On the negative side, there would be logistical problems, particularly the deployment of flaggers for emergency work.

Subway Management Comment: The Senior Staff rejected the recommendation that NYCT should dedicate one division to flag for all of DOS. The logistical challenges, particularly emergency work, render this proposal impractical.

Task force recommendation:

4. The task force is concerned that a central flagging unit could negatively affect the ability to respond to emergencies if a flagger must be dispatched. However, the task force believes that an independent flagging unit will address concerns regarding inconsistent flagger training, flagging rule interpretation and enforcement.
Standardizing the flagging was discussed by the task force in detail as a result of a proposal by Subways to establish a flagging inspection function. The task force recommendations in this area will be discussed later in this report.

Subway Audit Team Enhancement: RTO should issue announcements (automated messages) to train operators that flagging has been set-up on the line(s) where they are operating trains.

Subway Management Comment: The Division Chiefs believe it would be almost impossible to provide real time information to train operators regarding flagging set-ups because of the fluid nature of much of the work that is done under flagging (e.g. point to point inspections and maintenance). Instead, RTO is posting General Order sheets in crew quarters and requiring train operators to review the sheets when they arrive for work

Task force Recommendation:

5. Towers must notify trains in their areas of the presence of employees on the right of way with periodic announcements between the hours of 10pm and 5am and all day on Saturday and Sunday. The Towers must log all announcements that are made.

Subway Audit Team Enhancement: NYCT should change the point-to-point flagging procedure for re-lamping operations in the tunnel (excluding under river tubes). One flashing yellow lantern should be locked in place at a point 25 feet into the tunnel entrance, while the flagger keeps the other flashing lantern (a minimum of 50' from the work area). The flagger, of course, must always be able to see the locked flashing yellow lantern. This would eliminate the need for the flagger to walk 650 feet to move the lantern every time the work crew moves 80' down the tunnel inspecting lights, and then 600' back down the tunnel to set up at the minimum distance from the work area.

Subway Management Comment: The Senior Staff find positives and negatives to the recommended change in flagging procedures for re-lamping operations. Positively, the change would reduce the amount of time the flagger spends walking the tracks to move

the flashing yellow light each time the work gang moves to inspect the next set of lights. Negatively, by extending the length of the slow speed area, this change could significantly slow down subway service. At a minimum, Senior Staff agreed that this change should be applied only by station lighting operations when re-lamping, and restricted in its use by line and extent, if it is adopted at all.

Task Force Recommendation:

6. The requirement that the flagger must always be able to see the locked flashing yellow lantern will require standard point to point flagging as the gang moves into the tunnel and out of sight of the locked flashing light. Special flagging for re-lamping operations in the tunnel is not recommended as exceptions to the rules will result in confusion about flagging requirements.

Training

Subway Audit Team Enhancement: NYCT should standardize flagging training. Different divisions have their own interpretation of the flagging rules and instruct their employees accordingly. This should stop.

Subway Management Comment: The Senior Staff noted that all induction training for new employees is done at the Learning Center, where Flagging Rules and Regulations are taught by RTO employees. Although MOW does not do refresher training at the Learning Center, they say that the flagging refresher that is given at annual safety stand downs follows the precepts in the flagging rule book.

Task Force Recommendation:

7. Flagging qualification training is provided by Human Resources Training division and consists of 1 day classroom instruction and 1 day of field experience. All flaggers must attend this training. MOW flaggers are qualified to flag at the conclusion of this training. However, RTO construction flaggers must receive additional field experience before they are qualified to flag. The task force believes that all flaggers must receive the same training. Standardizing the flagging training was discussed by the task force in detail as a result of a proposal by Subways to establish a flagging inspection function. The task force recommendations in this area will be discussed later in this report.

Subway Audit Team Enhancement: Flagging refresher training should be done only in a two-day flagging training course at PS 248, not at safety stand downs. The training should include practical application (trainees should be required to set up flags for a gang(s) working on the system). Employees should be required to pass a test on the course material.

Subway Management Comment: To ensure the standardization of training, Human Resources' Operations Training Unit must conduct flagging refresher training during MOW's annual safety stand downs

Task Force Recommendation:

8. The task force determined that annual flagging refresher training should be provided to all flaggers. Standardizing the flagging training was discussed by the task force in detail as a result of a proposal by Subways to establish a flagging inspection function. The task force recommendations in this area will be discussed later in this report.

Subway Audit Team Enhancement: To qualify for the supervisor position, employees should be required to pass a test that assesses their knowledge of safety regulations.

Subway Management Comment: Safety questions are already part of Civil Service “Promotion to Supervisor” exams; however, DOS intends to add more questions about flagging procedures to these tests.

Task Force Recommendation:

9. After a supervisor is qualified by Civil Service exam and is selected for promotion, Human Resources Training provides training for the candidate. Supervisor candidates must pass the flagging portion of the training with 100% correct on the exam. If a supervisor candidate does not achieve 100% on the exam, s/he could be reinstated in the area(s) of deficiency and given the opportunity to retake the exam.

Subway Audit Team Enhancement: During induction training, train operators should spend one day on the tracks with a work gang so they can share the experience of working under traffic.

Subway Management Comment: RTO feels that train operators spend sufficient time on the tracks during training to understand the hazards under which right of way workers labor. They believe that reducing the amount of right-of-way work through better coordination is the best way to ensure all employees safety.

Task Force Recommendation:

10. The Task Force does not agree that one day on the tracks with a work gang will have an impact on the Train Operator’s behavior in the cab. Within the past year, the Train Operators have been provided with the opportunity to experience the passing trains from the roadbed during their induction training. This experience was not previously provided and is not included in the refresher training. The refresher T/O and C/R training should include this experience.

Equipment

Subway Audit Team Enhancement: NYCT should standardize the equipment that is used in flagging operations. Different divisions issue different sets of flagging lanterns to their employees. For example, RTO does not include a white lantern with its set of flagging lanterns.

Subway Management Comment: RTO is going to look into the issue of the white lanterns. However, DOS notes that the high intensity flashlights, which RTO uses to signal train operators to proceed, has the same foot candles as the sealed beam lanterns (e.g. Streamlight Lite Box) and exceeds that of the white flagging lantern. DOS believes that System Safety should authorize the use of high intensity flashlights as an approved light for use in flagging operations

Task Force Recommendation:

11. All aspects of flagging should be standardized. Standardizing the flagging was discussed by the task force in detail as a result of a proposal by Subways to establish a flagging inspection function. The task force recommendations in this area will be discussed later in this report.

Subway Audit Team Enhancement: The flagger should use a radio (beeper?) in addition to a whistle to warn to the work gang of oncoming trains.

Subway Management Comment: DOS feels that the flagger's whistle is an effective device for communicating the approach of traffic to employees. In areas of excessive noise MOW uses an air horn to warn employees about oncoming traffic.

Task Force Recommendation:

12. The task force is concerned that the use of a radio to warn a work gang of an approaching train may not be feasible due to the limited frequencies that are available and the interference that will be experienced when the population of flaggers are all trying to communicate with radios. Signal employees are provided with radios but they are prohibited from using them for flagging purposes due to the aforementioned problems. The task force does not recommend that flaggers use a radio to warn the work gang of oncoming trains.

Subway Audit Team Enhancement: Re-design the base of the tripper so it can be secured to the rail from the gauge side not the field side of a track. The new tripper would have a spring loaded handle that can be pulled from the track gauge (similar to the old temporary lighting third rail taps). This proposal will enable the tripper to be secured to the running rail without requiring the employee to work between the running rail and the third rail.

Subway Management Comment: DOS suggests that the recommendation to re-design the tripper using a device similar to the Ajax clamp be made to the Employee Suggestion Program, which will ensure that it receives a thorough engineering evaluation

Task Force Recommendation:

13. The Department of Subways should request that their Engineering Division evaluate the proposal to redesign the base of the tripper to enable it to be secured to the rail from the gauge side not the field side of a track. If the evaluation is successful, a prototype should be constructed and tested for final approval.

Administration

Subway Audit Team Enhancement: Reactivate the Subway Safety Group periodically (at least every quarter for the next year) to audit track flagging operations.

Subway Management Comment: No comments were provided.

Task Force Recommendation:

14. The Subway Safety Group should be reactivated every quarter to audit track flagging operations. This will not replace the joint inspection meetings.

X. Subways Flagging Proposal

The Department of Subways developed a proposal to establish a flagging audit function within the Rolling Stock and Maintenance of Way Division that would perform functions very similar to those currently performed by train service supervisors in support of the construction flagging subdivision in Rapid Transit Operations. The audit group would consist of supervisors whose responsibilities would be to assist in the establishment of flagging, to audit for compliance with the flagging rules, and respond to any safety disputes or issues raised in the field. Subways also proposed to post jobs on future picks for individuals to select that are primarily dedicated to performing flagging. It was also proposed that a 5-day flagging qualification training and a 1-day (8-hour) annual flagging

refresher course be developed. The employees that pick the flagging would be required to attend the 5 day flagging qualification and the annual refresher.

The task force evaluated the proposal in light of the flagging concerns that were expressed by the employees that participated in the survey as well as concerns that were identified by the task force during the evaluations that were outlined in this report. The task force determined that the proposal does not address concerns regarding inconsistent training and flagging between Maintenance of Way and Rapid Transit Operations. A more effective approach is to establish a flagging unit that is independent of Rapid Transit Operations and Maintenance of Way.

The following summarizes the recommendations of the task force in addressing flagging oversight, procedures, and training:

1. A centralized flagging unit must be established and all scheduled work that requires flagging must be flagged by the flagging unit personnel.
2. The flagging unit supervisors must supervise all flaggers.
3. The Department of Subways must evaluate emergency response requirements and identify a means to facilitate timely emergency responses with qualified flaggers.
4. Human Resources Training and the Department of Subways must work together when developing employee training courses.
5. Human Resources Training must coordinate the flagger training and qualification. The training and qualification that is currently provided to Rapid Transit Operations Construction Flaggers (1 day class instruction by HR, 2 days class instruction and field experience by RTO, 4 days posting with experienced flaggers, 1 day final exam by HR) must become the standard and provided to all flaggers that have not already attended this training and qualification. Point to point flagging and near miss incident reporting requirements must be incorporated into the training. Trainees must achieve 100% on the final exam to successfully complete the training. Human Resources Training must issue a qualification card with the expiration month and year to each employee that successfully completes the final exam.
6. HR Training must coordinate a one-day refresher flagging training course and issue a re-qualification card with the expiration month and year to each employee that successfully completes the training. The one-day refresher flagger training that is currently provided to RTO construction flaggers by RTO should become the standard. Point to point flagging and near miss incident reporting requirements must be incorporated into the refresher training. Refresher flagging training must be attended every 12 months to maintain the flagging certification.
7. Only qualified flaggers can flag. In the event that a qualified flagger is not available to flag, work can not be performed until flagging is established by a qualified flagger.
8. Previously qualified employees who have not performed flagging duties within a 12 month period must attend the one day annual refresher flagging training course prior to being assigned flagging duties.
9. The supervisors in the flagging unit must attend the flagger training and qualification and the 1 day annual refresher training must be successfully completed every 12 months.

10. The flagging unit supervisors must inspect each gang that is performing full flagging once per shift
11. The flagging unit supervisors must randomly inspect each work gang whose normal job duties are performed under point to point flagging at least once every 5 days

XI. Safety DVD for Employees

The task force reviewed a DVD that was produced for ConEdison employees. The DVD consisted of statements from employees regarding the importance of safety in their work and personal lives. The DVD also featured the families of some employees and stressed the impact that an accident has on the family of an injured employee. The DVD was distributed to all employees with a letter encouraging the employee to watch the DVD with his/her family.

The task force recommended that:

1. Corporate Communications develop a DVD, similar to the DVD that Con Ed produced, for our employees and their families with the following adaptation:
 - Images of actual employee work locations that illustrate the dangers of transit work
 - Statements from injured employees on how the injury affected the employee and his/her family
 - Facts about trains such as size, weight, stopping distance, etc.

The purpose of the video will be to encourage an awareness of workplace hazards and a commitment to safety. Corporate Communications is proposing to shoot the video at the end of November and have the copies of the DVD ready for distribution by the beginning of February.

XII. Summary of Recommendations

The recommendations of the Track Safety Task Force have been grouped into seven categories: General; Training; Routine Communications to Employees; Rules and Regulations; Safety Stand Down; Board of Inquiry; and Job Preparation. Following is a compilation of the recommendations in each category.

General

1. The Track Safety Task Force members must be available to reconvene the task force as necessary.
2. The Department of Subways must issue a bulletin reminding employees of the requirement to display 2 yellow lights/flags at the leaving end of stations that are located between the first set of cautions and the end of the work area.
3. Corporate Communications must develop a DVD, similar to the DVD that Con Ed produced, for our employees and their families
4. Every supervisor must demonstrate to the hourly employees that s/he is focused on identifying and resolving safety issues throughout the entire job. Supervisors and a union designee must carry out periodic safety observations and show ongoing safety awareness throughout the job.

5. The joint labor/management inspections of active track projects must continue.
6. The joint labor/management inspection findings should be analyzed and used to evaluate the effectiveness of the Track Safety Program and the changes implemented.
7. Supervisors should be evaluated regularly on their ability to communicate safety information effectively to their employees
8. The Department of Subways must increase the frequency of inspections of emergency alarm boxes and emergency telephones. They must establish an inspection and maintenance regimen which ensures that Emergency Alarm Boxes and Emergency Telephones are maintained in a state of good repair and are operable.
9. The Department of Subways must continue to issue radios to work crew supervisors that perform emergency work along the right of way where there may be nonfunctioning EABs or ETs.
10. The Department of Subways must develop a plan to provide radios to all work crews for monitoring purposes and emergency communications.
11. The Department of Subways must continue to require that the use of generators at work sites be discouraged. The lighting department must be contacted where possible to provide lighting and power needs. Where necessary, generators should be placed at the street level when possible. Noise suppression devices should be routinely attached to equipment that interferes with the noise of approaching trains.
12. The Department of Subways must develop noise suppression requirements for equipment that is used on the right of way and incorporate the noise suppression requirements into the specifications for the equipment. Where possible, contracts in progress should be modified to contain these specifications.
13. The Department of Subways must develop a plan to phase out or modify existing equipment that does not comply with the noise suppression requirements.
14. The Department of Subways must continue the requirement that a joint management/union safety inspection be performed prior to the commencement of all major track construction projects (e.g. chip out/dig outs, switch renewals, CWR installations, and track panel projects). This pre-job inspection requirement should be performed prior to large scale scheduled track maintenance jobs (e.g. multiple rail replacement, switch renewal, extensive plate renewal). The need for a barrier/bunting separating the work track from active adjacent tracks will be determined at this inspection. Before any work commences, an inspection certificate must be signed by a supervisor and a TWU safety officer. The certificate must be displayed at the work site. The Department of Subways must phase in a requirement that the inspectors must receive the Training for Joint Labor/Management Pre-job Inspections of Major Track Construction Projects.
15. The Department of Subways must develop a pocket checklist to remind employees and supervisors of the issues that must be discussed during the pre-job safety meeting: designate the flaggers; identify the employee that will accompany the flagger when setting up and retrieving the flagging and remind him/her that their function is to warn of approaching trains and verify that the flagging is properly established; outline the job and any hazards specific to the work,

- communicate the type of flagging protection that will be established; identify access to and clear-up locations; provide an opportunity for employees to discuss their concerns.
16. Towers must notify trains in their areas of the presence of employees on the right of way with periodic announcements between the hours of 10pm and 5am and all day on Saturday and Sunday. The Towers must log all announcements that are made.
 17. The Department of Subways should request that their Engineering Division evaluate the proposal to redesign the base of the tripper to enable it to be secured to the rail from the gauge side not the field side of a track. If the evaluation is successful, a prototype should be constructed and tested for final approval.
 18. The Subway Safety Group should be reactivated every quarter to audit track flagging operations. This will not replace the joint inspection meetings.
 19. A centralized flagging unit must be established and all scheduled work that requires flagging must be flagged by the flagging unit personnel.
 20. The flagging unit supervisors must supervise all flaggers.
 21. The Department of Subways must evaluate emergency response requirements and identify a means to facilitate timely emergency responses with qualified flaggers.
 22. Only qualified flaggers can flag. In the event that a qualified flagger is not available to flag, work can not be performed until flagging is established by a qualified flagger.
 23. The flagging unit supervisors must inspect each gang that is performing full flagging once per shift
 24. The flagging unit supervisors must randomly inspect each work gang whose normal job duties are performed under point to point flagging at least once every 5 days

Training

25. Human Resources Training and the Department of Subways must work together when developing employee training courses.
26. During supervisor training, supervisors must be instructed to acknowledge employees that are observed working safely.
27. Human Resources Training advises employees of the correct method to perform each job. During training, employees should be provided with reasons for avoiding shortcuts that they may learn on the job.
28. The Department of Subways must require refresher track safety training that includes a review of the flagging rules every 2 years for anyone that must attend track safety training. The training must be administered by Human Resources Training Personnel and the training methodology must engage the employee in discussions and other forms of active participation.
29. After a supervisor is qualified by Civil Service exam and is selected for promotion, Human Resources Training provides training for the candidate. Supervisor candidates must pass the flagging portion of the training with 100% correct on the exam. If a supervisor candidate does not achieve 100% on the exam, s/he could be retrained in the area(s) of deficiency and given the opportunity to retake the exam.

30. Within the past year, the Train Operators have been provided with the opportunity to experience the passing trains from the roadbed during their induction training. This experience was not previously provided and is not included in the refresher training. The refresher Train Operator and Conductor training should include this experience.
31. Human Resources Training must coordinate the flagger training and qualification. The training and qualification that is currently provided to Rapid Transit Operations Construction Flaggers (1 day class instruction by HR, 2 days class instruction and field experience by RTO, 4 days posting with experienced flaggers, 1 day final exam by HR) must become the standard and provided to all flaggers that have not already attended this training and qualification. Point to point flagging and near miss incident reporting requirements must be incorporated into the training. Trainees must achieve 100% on the final exam to successfully complete the training. Human Resources Training must issue a qualification card with the expiration month and year to each employee that successfully completes the final exam.
32. HR Training must coordinate a one-day refresher flagging training course and issue a re-qualification card with the expiration month and year to each employee that successfully completes the training. The one-day refresher flagger training that is currently provided to RTO construction flaggers by RTO should become the standard. Point to point flagging and near miss incident reporting requirements must be incorporated into the refresher training. Refresher flagging training must be attended every 12 months to maintain the flagging certification.
33. Previously qualified employees who have not performed flagging duties within a 12 month period must attend the one day annual refresher flagging training course prior to being assigned flagging duties.
34. The supervisors in the flagging unit must attend the flagger training and qualification and the 1 day annual refresher training must be successfully completed every 12 months.

Routine Communications to Employees

35. The rule of the day should not be divisional as some rules do not apply to all employees within a division. The rule of the day should be provided for subdivisions thus making it more specific to the work that is performed by the employees that receive the rule of the day.
36. The Department of Subways must enhance communications to employees via bulletins with verbal communication when they report for duty to ensure that employees receive the information.
37. The Department of Subways must continue to require that supervisors speak to Train Operators as they are reporting to work to go over locations of General Orders and any other significant events that are occurring on their route. The Rules and Regulations must be revised to reflect this change - Rule 36
38. The Department of Subways must annually review and reissue an Operational Bulletin concerning Train Operators sounding the horn and reducing the speed of their trains to less than 10 miles per hour upon observing caution lights, flags, or personnel on the right of way. The train must not resume normal speed until the

entire train has passed the work area. Efficiency testing must continue with zero tolerance.

Rules and Regulations

39. The flagging for individuals, pairs, and small groups moving from point to point (Rule 3.76) should be modified to require a positive stop (tripper) except when the employee(s) being protected is/are moving and have access to a clear-up space within 15 feet. When the employee(s) that is/are being protected by the flagger stops to perform work or enters an area where a clear-up space is not accessible within 15 feet, the flagger must display the flashing yellow light 650 feet in advance of the work and must position him/her self no closer than 150 feet in advance of the work. The flagger must be equipped with a tripper, red light or flag, and white light. Approaching trains must be stopped and the flagger must receive verification that the employee(s) being protected is/are clear of the track before the train can be signaled to proceed. When the flagger cannot see the flashing yellow light or the employee(s) performing the work, an auxiliary flagger must be used. With this rule change, employees that perform work under point to point flagging will be required to use full flagging only when the work being performed cannot be suspended at any time.
40. A rule, addressing the use of a qualified flagger positioned on the station platform to relay communications between a work gang and the flagger whenever a station platform is between the flagger and the work gang, must be incorporated into the rules and regulations.
41. The Department of Subways must continue to require that when employees call on flagging they must contact the Rail Control Center and the Tower that has jurisdiction over the area where the flagging will be established. The Rail Control Center must authorize the flagging before it can be established. Towers must notify trains in their areas with periodic announcements, advising of the presence of employees on the right of way and reminding train operators to sound the horn and slow the train if they observe the employees, between the hours of 10pm and 5am and all day on Saturday and Sunday. The Towers should keep a log of the flagging calls. The Rules and Regulations must be revised to reflect this change - Rule 3.72(b) and 3.76(a)
42. The Department of Subways must continue to require adjacent track flagging when the work area is not separated from an adjacent track by a physical barrier (wall or station platform) – a wide area is not a barrier. The Rules and Regulations must be revised to reflect this change - Rule 3.80(h).
43. The Department of Subways must continue to require that the Rail Control Center obtain confirmation that everyone is off the track before a train is permitted to make a reverse move. The Rules and Regulations must be revised to reflect this change – Rule 2.41
44. The Department of Subways must continue to identify Emergency Alarm Boxes and Emergency Telephones that are out of service and prohibit non-emergency work in these areas. Emergency work can be conducted in these areas following the procedure that was developed to enable employees to perform emergency work. The Rules and Regulations must be revised to reflect this change – Rule 22

45. For track jobs that are not being performed under General Order protection, a track supervisor must accompany the flagger assigned to set up and remove the flags, until the independent flagging unit is established. The track supervisor must be specifically assigned to watch for and warn of approaching trains and must also verify that the flagging is properly established and removed. For work activities that do not require the supervisor to accompany the flagger, another qualified flagger must accompany the flagger in setting up and removing the flagging. One of the flaggers must be specifically assigned to watch and warn of approaching trains and must verify that the flagging is properly established and removed. The Rules and Regulations must be revised to reflect this change – Rule 3.72(c)
46. The yellow lights/flags should be displayed before the green lights/flags. The Rules and Regulations must be revised to reflect this change – Rule 3.77.

Safety Stand Down

47. Employees must be advised, during stand downs, of their obligation to report near miss incidents to their supervisor.
48. The Department of Subways in conjunction with Human Resources Training must develop a stand down that addresses all rule changes and all other communications that result from this task force.
49. The Department of Subways must identify a date when the revised rules will be implemented and must develop a schedule to provide the stand down to all employees that perform duties before the rule changes go into effect
50. Each Operating Division must select the topics for their stand downs with input from managers, supervisors, hourly employees and the union. The topics are subject to approval by System Safety.
51. Human Resources Training should prepare interactive training for each subject topic in the stand down
52. The training must be interactive to the extent that the employees actively participate in the learning process. For example, the instructor introduces a subject and provides basic information then employees use the information for interactive group discussion. Exercises that involve typical activities that occur in the actual working environment should be included in the stand down. Videos should not be used alone. However, videos can be used to introduce a subject and be followed with interactive discussions.
53. Human Resources Training must evaluate and provide training to the operating division employees selected to deliver the stand downs. The employees selected to deliver the stand down material must be dynamic and have the ability to maintain a high level of interest during the stand downs. The training evaluation must focus on this ability.
54. The Stand Down duration should be limited to 8 hours
55. Human Resources Training and the Office of System Safety should audit the stand downs to ensure that the quality of the materials and the delivery is maintained.
56. Future stand downs must include a reminder that before the lamps/trips are put in place for a General Order, the supervisor in charge must contact the appropriate

Rail Control Center Subdivision Desk Superintendent to confirm that the General Order is in effect (i.e. the track is cleared of revenue service). Employees must also be reminded that they must call the RTO Control Center and obtain permission to set up adjacent track flagging when adjacent track flagging is required for the General Order. The Rules and Regulations must be revised to reflect this change – Rule 3.72(b) and Rule 3.76(a)

Board of Inquiry

57. The Board of Inquiry should evaluate the question of how the workplace behavioral culture affects the decisions that individuals made that lead to the dangerous situation
58. The Board of Inquiry should consistently evaluate the events preceding the work shift when the accident took place i.e. job preparation
59. In addition to on-site supervision, the Board of Inquiry should review the culpability of the Superintendent and General Superintendent with respect to the conditions at the job site

Job Preparation

60. On jobs where a supervisor is on-site, each supervisor must inspect the job location prior to the pre-job meeting with a union designee and discuss all safety concerns during the pre-job meeting. The work must start by addressing the safety issues.
61. The Department of Subways must develop an inspection checklist for the supervisor and the union designee to use during the pre-job inspection. The checklist must include verification that all equipment required for the job is present and in good working order.
62. The supervisor in charge of the job must clarify the layout of each job with the employees that are going to perform the work before it starts thus accounting for absent employees or last minute changes.
63. The Department of Subways must require that the employees be advised of the location and access to the clear-up locations for their specific work location that will be used in the event that a train unexpectedly enters the work area. This should be addressed during the pre-job meeting. The Rules and Regulations must be revised to reflect this change - Rules 3.72(a) and 3.76(a).



Memorandum

To: Track Safety Task Force
From: Jeffrey Plaut, Scott Elder
Global Strategy Group
Re: Executive Summary
Date: August 2007

METHODOLOGY

- Telephone survey fielded July 12-August 2, 2007
- 756 total interviews (margin of error +/-3.6%)
 - 114 Supervisors (margin of error +/-8.7%)
 - 247 Train Operators (margin of error +/-6.0%)
 - 395 Right-of-Way workers, including 34 RTO Construction Flaggers (margin of error +/-4.9%)

OVERVIEW

Work Culture, Safety Risks and Investment in the Mission

- Only one in four survey respondents say their job is extremely or very safe.
- The top factors that contribute to safety hazards are failure of trains to stop or slow down when required and different interpretation of flagging rules by different groups on the right of way.
- Respondents are invested in their own safety and the safety of others .
 - Nearly three-quarters say they follow safety rules very closely (although far fewer say their co-workers and supervisors do so).
 - Almost eight in ten *strongly agree* that it is their responsibility to make sure their work environment is safe.
 - About nine in ten *disagree* with the statement that “when people ignore safety procedures here, it is none of my business.”
- Yet over half say they could not complete their work if they followed every safety rule.
- The top reasons given for not following safety rules include time and productivity pressures and too few workers to get the job done.

Improving Safety on the Right-of-Way – Top Suggestions

- Nearly three-quarters of respondents agree that frequent, unannounced safety audits help make the workplace safer.
- Respondents recommend more safety training, improved review and enforcement of safety rules, better communications technology (radios and warning lights) and improved flagging.

Communications and Safety Training – Opinion of Current Situation and Top Suggestions for Improvement

- Over four in ten respondents say communications (bulletins) are ineffective. The top suggestion for improving communication is to increase face-to-face interactions about rules.
- Current training, including stand-down, is not rated very positively: only about 10% of workers rate either safety or stand-down training as “excellent.”
- Suggested improvements include soliciting more input from hourly workers, increasing hands-on training and pairing junior workers with senior mentors for on-the-job training.

FINDINGS

Survey respondents are concerned about job safety.

- Only 25% of respondents say their jobs are extremely or very safe, while 49% say they are somewhat safe and 24% say they are not very or not at all safe. Track workers give a more negative assessment (32% not very or not at all safe) than train operators (14%) and supervisors (20%).
- The top reasons given for unsafe conditions are that “it is the nature of the job/inherent danger” and environmental factors, such as noise and light.
- The specific problem of noise was seen as compromising safety on the job site by 76% of respondents.
- Among those who say their job is safe, the top reason cited for safe work conditions are that the rules are emphasized and followed (45%).

The top threats to safety include pressure to get the job done quickly and trains failing to slow or stop when they are supposed to.

- Specific factors most frequently reported as contributing to safety hazards include trains not slowing or stopping when they are supposed to (53% say it is a very serious problem); the pressure to get the job done quickly (50%); the absence of yellow lamps or flags at the leaving end of the station to remind train operators that they are still within a work zone (50%); different groups of workers interpreting flagging rules differently (49%) and inadequate flagging protection for inspectors and small groups working point-to-point (49%).

Almost half of survey respondents say they have had a near miss or close call, but only one in three of those who avoided a mishap say they reported it.

- Just under half (49%) of respondents say they have had a close call or near miss where they thought they came close to being seriously injured or killed. Almost one in five (19%) say it has happened three or more times.
- Only 34% reporting a close call or near miss say they formally reported the incident (By contrast, 96% of those reporting a lost-time injury formally reported it.).

Reasons cited for failing to report near misses include a belief that if no one is injured a report is unnecessary and a fear of reprisals.

- When asked why some accidents and near-misses went unreported, 35% of respondents say that because nobody got hurt or killed, no report was necessary.
- Fully 26% of survey respondents say it was because they are afraid of being disciplined, while 21% said they didn't want to file a report because it might get a co-worker in trouble.
- Additionally, only 52% agree that "a no-blame approach is used when people report safety problems."

Respondents are invested in their own safety and the safety of others.

- Almost eight in ten (78%) *strongly agree* that it is their responsibility to make sure their work environment is safe. Far fewer (55%) strongly agree that it is their supervisor's responsibility to make their work environment safe or strongly agree that it is their co-workers' responsibility (39% strongly agree).
- Just under nine in ten respondents (89%) *disagree* with the statement that "when people ignore safety procedures here, it is none of my business."
- Fully 78% strongly agree that it is important to them that there is a continuing emphasis on safety.
- Almost three quarters (72%) of respondents say they follow safety rules very closely, while only 38% say their co-workers follow safety rules very closely and 42% say their supervisors follow safety rules very closely.

Productivity pressures are among top reasons cited for failing to follow safety rules.

- The top 3 factors cited for not following safety rules are: pressure to get more work done (54% say this is a major factor), too few workers (53%) and time pressure (53%).
- Additionally, almost three quarters of survey respondents (73%) strongly or somewhat agree that sometimes safety is compromised in order to make sure that work gets done. There is less agreement on this issue among supervisors (60% of supervisors strongly agree) than among train operators (79%).
 - This supports focus group findings that that there is a priority to "get the work done," or "get the train there on time."

Ratings for current training, including stand-down training, suggest many feel the process may not be effective.

- Only 11% of survey respondents say that the overall quality of the safety training they have received in the past year is excellent and 44% say the quality of safety training is good; 9% say the overall quality of stand-down trainings is excellent (41% good) and 7% say the overall quality of the on-the-job equipment and tool training they have received in the past year is excellent (40% good).

Ratings of the sufficiency of flagging are mixed.

- Almost two thirds of respondents (65%) say flagging on the job site is sufficient. Only 46% say it is sufficient for cleaning functions; 53% say it is sufficient for inspections, small groups; 54% say it is sufficient for leaving the job site and 56% say it is sufficient for getting to the job site.
- Ratings are slightly lower for adjacent track flagging. 62% say flagging on the job site is sufficient. Only 44% say it is sufficient for cleaning functions; 47% say it is sufficient for inspections, small groups; 51% say it is sufficient for leaving the job site and 52% say it is sufficient for getting to the job site.

Communications is an area of weakness as well.

- Over four in ten respondents (41%) say that the methods that NYCT uses to communicate, such as bulletins and directives, are not effective.
- Further, only 26% of respondents say their radios work all of the time, while 11% say they work rarely or not at all.
- The top suggested improvement to communications is to increase face-to-face interactions about rules.

Most survey respondents are aware of the new safety rules and believe the rules have made their jobs safer.

- Fully 76% of respondents say they are familiar with the new safety rules and 56% say they have made their job much safer (15%) or somewhat safer (41%).
- The aspects of the new rules that respondents believe have made the job safer include improved and more flagging and that the new rules are making people more cautious and aware.

Top recommendations for improving safety on the Right-of-Way include:

- frequent, unannounced safety audits,
- improved review and enforcement of safety rules,
- improved communication by increasing face-to-face interactions about rules,
- better communications technology (radios and warning lights),
- improved flagging and
- enhanced safety training.

Specific suggestions for improving safety training focus on:

- allowing workers to make suggestions,
- emphasizing more on-the-job training with a mentor for new workers,
- hands-on training and
- more frequent and consistent flagging training.



Memorandum

To: Track Safety Task Force
From: Jeffrey Plaut, Scott Elder
Global Strategy Group
Re: Final Report
Date: October 19, 2007

PURPOSE

Following the death of two subway workers in April 2007 New York City Transit (NYCT) convened a joint labor-management Task Force with Transport Workers Union Local 100 to identify factors that negatively affect track safety and to make recommendations about how to improve workplace safety. One of the Task Force's activities was to conduct a telephone survey of train operators, maintenance of way (MOW) personnel, construction flaggers, and their respective supervisors. The purpose of the survey was:

- To learn the extent to which safety rules and procedures are (or are not) being followed;
- To understand the impact of existing safety measures on safety culture and behavior;
- To examine the extent to which the workforce is invested in safety; and
- To make recommendations to improve workplace safety

METHODOLOGY

A consultant (Global Strategy Group) was hired to design, conduct, analyze and summarize the survey in collaboration with Task Force Members. Susan Klitzman, an occupational epidemiologist from Hunter College, CUNY, was also hired to advise the Task Force on issues related to the design, conduct, analysis and summary of the survey.

In June 2007, focus groups were conducted with selected train operators, MOW personnel, construction flaggers, and their respective supervisors. The purpose of the focus groups was to identify issues for inclusion in the survey. The Task Force developed the survey, with guidance from the consultants. It included questions about participants' assessments of the work culture, safety conditions, training and safety measures and their recommendations for improvements.

The target population for the survey was approximately 11,000 employees, consisting of train operators, MOW personnel, construction flaggers, and their respective supervisors. NYCT and TWU records were reviewed to obtain home telephone numbers. Between

July 12 and Aug 2, 2007, at least five attempts were made to contact each individual for whom valid telephone numbers were available. If the individual was not available at the time of the call, a message was left (where possible) and an 800 number was provided to call. In addition, flyers were distributed by NYCT and TWU by a variety of means to prospective participants, informing them about the survey and providing the 800 number to call. The survey contained 105 questions and took 37 minutes, on average, to complete.

- Of the 756 completed interviews (margin of error¹ +/-3.6%):
 - 114 were Supervisors² (margin of error +/-8.7%) [of this group, 7% were from Signals, 14% from Power, 30% from Infrastructure, 40% from Track, 5% from RTO and 4% said “other”]
 - 247 were Train Operators (margin of error +/-6.0%)
 - 361 were Maintenance-of-Way (MOW) personnel (margin of error +/-5.2%),
 - 34 were RTO Construction Flaggers (margin of error +/-16.1%)

Data on the following issues were analyzed for respondents as a whole and according to job (Train Operator, Construction Flaggers, MOW and Supervisors), tour (day/evening/overnight) and length of service on four general topics:

- Safety risks
- Investment in the Mission and Work Culture
- Communication and Training
- Suggestions for improving safety conditions and training

OVERVIEW

Safety Risks

- Survey respondents are concerned about job safety. Only one in four say their job is extremely or very safe, with MOW personnel more likely to say their job is more unsafe than others.
- *Organizational and physical factors* contribute to safety hazards on the job
 - The major organizational factors contributing to safety hazards are pressure to get work done quickly and making sure the trains run on time.
 - Time pressure may also be contributing to another safety risk: the failure of trains to stop or slow down when required, (a particular problem for MOW personnel and their supervisors).

¹ Margin of error provides an estimate which can be used to generalize the survey results to the entire population of NYCT employees. The margin of error calculated here is based on a 95% confidence level. So, for example, a 6% margin of error for Train Operators means if 50% of train operators in the survey answered “yes”, we are 95% certain that between 44 and 56% of all train operators at NYCT would have answered “yes” to the same question.

² The majority of supervisory respondents are MOW; few RTO supervisors participated. Therefore, no firm conclusions can be drawn about them.

- Flagging is also viewed as inadequate for specific functions and groups of workers, like cleaning, for inspectors and small groups working point-to-point, and when leaving the job site.
- Among train operators, additional safety risks are cited – most notably, lack of lights/flags at the leaving end of the stations within work zones and different interpretation of flagging rules by different groups on the right of way
- Excessive noise is reported by 76% of respondents and inadequate lighting is cited by 33% of all respondents as contributing to safety risks.
- Personal protective equipment and third rail mats are believed to be adequate and in good working order most of the time, while radios are not.

Investment in the Mission and Work Culture

- Respondents are very invested in their own safety and the safety of others.
 - Nearly three-quarters say they follow safety rules very closely (although far fewer say their co-workers and supervisors do so, with only one in three train operators saying their co-workers follow safety rules very closely.)
 - Almost eight in ten respondents *strongly agree* that it is their responsibility to make sure their work environment is safe, with agreement high across job categories.
 - About nine in ten *disagree* with the statement that “when people ignore safety procedures here, it is none of my business.”
- Despite the widespread concern over safety, the survey results suggest an aspect of the work culture which may be jeopardizing it – namely, a conflict between *safety* and *production*. At least half of all four groups (supervisors, train operators, MOW personnel and construction flaggers) say they could not complete their work if they followed every safety rule. The top reasons given for not following safety rules include time and productivity pressures and too few workers to get the job done.

Communication and Training

- The quality and frequency of communication and training also appears to be jeopardizing safety. While over three quarters of participants are aware of new safety rules, almost half cannot recall *specific* improvements. Less than one quarter say the new rules have made the job “much safer.”
- Over four in ten respondents say safety communications (bulletins and directives) are ineffective.
- While the majority report lost time due to injury, hardly anyone reports near misses – largely due to a fear of retribution and lack of understanding of the requirements.
- Current training, including stand-down training, is not rated very positively: only about 10% of workers rate either safety or stand-down training as “excellent.”

Top Suggestions for Improving Safety, Communication and Training on the Right-of-Way Include:

- Frequent, unannounced safety audits;
- more safety training;
- improved review and enforcement of safety rules;
- better communications technology (radios and warning lights);
- improved flagging; and
- improving the quality of communication by increasing face-to-face interactions about rules.
- Improving the quality of training by
 - soliciting more input from hourly workers;
 - increasing hands-on training; and
 - pairing junior workers with senior mentors for on-the-job training.

FINDINGS

I. Safety Risks

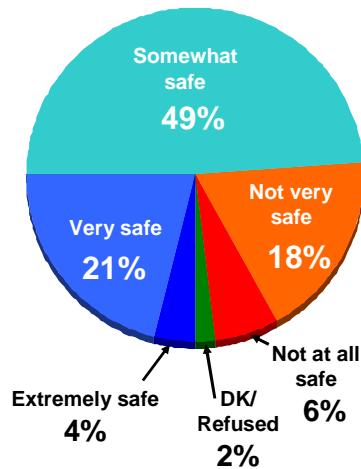
Survey respondents are concerned about job safety.

As shown in Figure 1, only 25% of all respondents say their jobs are extremely or very safe, while 49% say they are somewhat safe and 24% say they are not very or not at all safe. Ratings by type of job are as follows: MOW personnel – 31% say the job is unsafe, construction flaggers – 39%, train operators – 14% and supervisors – 20%.

Figure 1

Job Safety

Q.7 How safe is your job? Would you say it is extremely safe, very safe, somewhat safe, not very safe or not at all safe?



- Among those who say their job is safe, the top reason cited for safe work conditions is that the rules are emphasized and followed (45%).

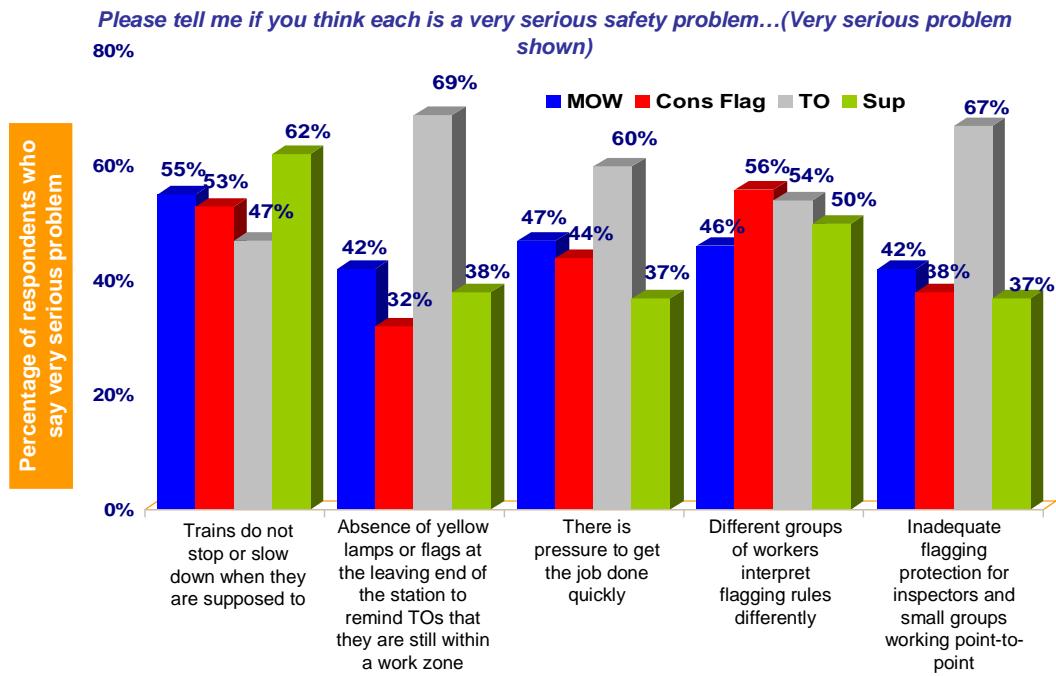
- The top reasons given for unsafe conditions are that “it is the nature of the job/inherent danger” and environmental factors, such as noise and light.
 - In keeping with the “nature of the job” observation, fully 37% of respondents strongly agree and 25% somewhat agree that “in my workplace, the chances of me being involved in an accident are quite high.” There is virtually no difference of opinion among supervisors (35% strongly agree), train operators (37% strongly agree) and MOW personnel (37% strongly agree). Among construction flaggers, 53% strongly agree that the chances of being involved in an accident are quite high.
 - There is no significant difference by shift or time on the job.

The factors which most strongly contribute to safety hazards on the job include pressure to get the job done quickly. Trains not slowing or stopping when they are supposed to are also mentioned (see Figure 2).

- Over two thirds of respondents “strongly agree” and 20% “somewhat agree” that there is a lot of pressure to get the job done quickly and keep the trains moving. Half of all respondents believe that this is a “very serious” safety problem. It is most prominently a concern among train operators (60% very serious safety problem).
- Time pressure is likely related to another safety issues: Trains not slowing or stopping when they are supposed to, which is viewed as a very serious safety problem by over half the respondents (53%) and especially by (largely MOW) supervisors (62%).
- Train operators are more likely to strongly agree that “there is a lot of pressure to get the job done and keep the trains moving” (75%) than are supervisors (54%). Fully 74% of construction flaggers strongly agree.
 - There is little difference by tour (day shift – 63% strongly agree; evening shift – 69% strongly agree; overnight shift – 65% strongly agree).

Figure 2

Reasons for Safety Problems



Ratings of the sufficiency of flagging are mixed.

- Train operators are among those least likely to say flagging on the job site is sufficient (57% sufficient), while supervisors are among those most likely to say it is sufficient (76%). Among construction flaggers, 56% say flagging on the job site is sufficient.
- Half of MOW personnel (50%) say flagging is sufficient for cleaning functions, compared with 40% for train operators. Just over a third of construction flaggers (35%) say flagging is sufficient for cleaning functions.
- Over half of MOW personnel (57%) say flagging is sufficient for inspections and small groups, while only 47% of train operators say flagging is sufficient for this function and 61% of supervisors say it is sufficient. Among construction flaggers, 41% say flagging is sufficient for inspections and small groups.
- MOW personnel are more likely to say flagging is sufficient for getting to the job site (61% sufficient) than either train operators (49%) or supervisors (53%). Over three quarters of construction flaggers (76%) say flagging is sufficient for getting to the job site.

- MOW personnel and supervisors are more likely than not to say that flagging is sufficient for leaving the job site (56% and 61% sufficient, respectively), while train operators are a little less likely to say flagging for leaving the job site is sufficient (46%). Just under three quarters of construction flaggers (74%) say flagging for this purpose is sufficient.

While the sufficiency of flagging is questioned, most respondents don't believe that there is a safety bias in favor of either contractors or NYCT employees when it comes to flagging.

- Only 24% of respondents say that it is safer when flagging is done for contractors (MOW personnel – 28%, construction flaggers – 53%, train operators – 18%, supervisors – 22%), while 21% of all respondents say it is safer when done for NYCT employees (MOW personnel – 21%, construction flaggers – 9%, train operators – 25%, supervisors – 18%). Fully 40% say there is no difference, while 15% have no opinion.

Absence of yellow lamps or flags when leaving the station (especially among train operators) is seen as a very serious safety problem by half of respondents. Insufficient rest is another concern.

- Absence of yellow lamps or flags at the leaving end of the station is considered to be a very serious safety problem by 50% of all respondents. The proportions among work groups are: 42% among MOW personnel, 38% among supervisors, 32% among construction flaggers and 69% among train operators. The issue of inadequate flagging shows similar disparities. The percentages reporting it as a very serious safety problem are 67% among train operators, 42% among MOW personnel, 37% among supervisors and 38% among construction flaggers.
- Insufficient rest for workers is most likely to be seen as a problem among train operators (54% say it is a very serious problem). Among construction flaggers, 44% say it is a very serious problem; among MOW personnel 38% say it is a very serious problem, and among train operators, 54% say insufficient rest is a very serious problem. Only 28% of supervisors say it is a very serious problem.

Noise and lighting are also perceived to be problems by some.

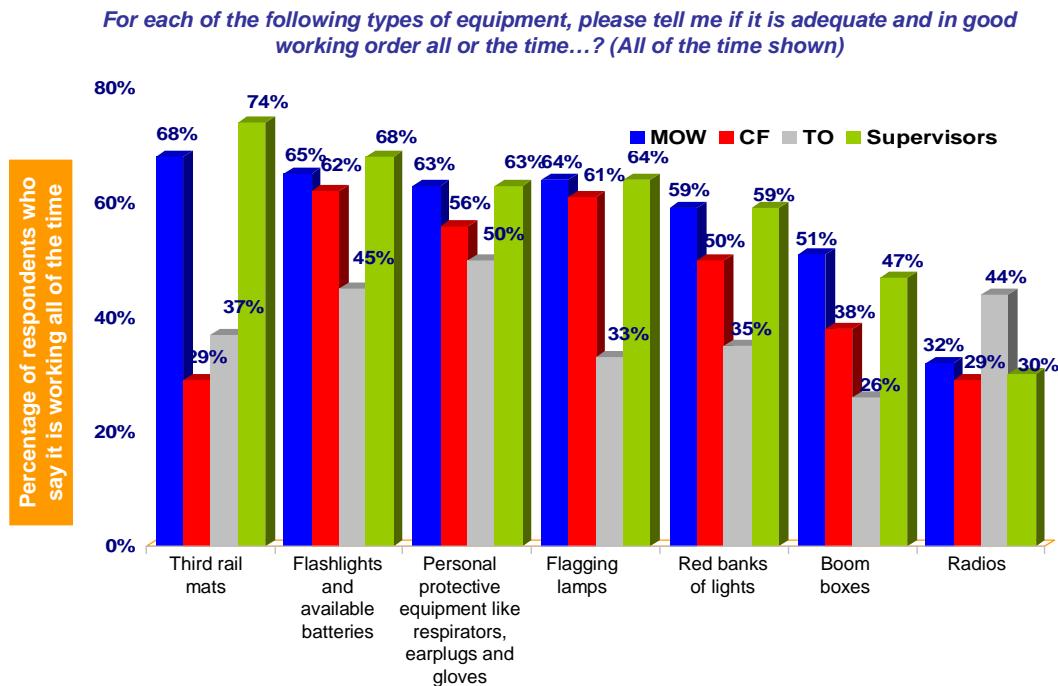
- The specific problem of noise is seen as compromising safety on the job site by over three quarters of respondents in all job categories and over three quarters of those working both above and below ground.
 - Fully 76% of construction flaggers, 77% of MOW personnel, 72% of train operators and 82% of supervisors say that noise on the job site compromises their safety.
- Lighting, although less of an overall concern, is seen as insufficient by at least a third of all respondents.
 - Among construction flaggers, 44% say lighting is insufficient, while 34% of MOW personnel, 34% of train operators and 29% of supervisors say lighting is insufficient.

Ratings on safety equipment are mixed (see Figure 3).

- Fully 68% of MOW personnel and 74% of supervisors *who use or have an opinion about* third rail mats say they are adequate and in good working order all of the time.
- Ratings of third rail mats are higher than for other equipment, as respondents who use or have an opinion about other equipment are less likely to say that flashlights and batteries work all of the time (59%); that personal protective equipment like respirators, earplugs and work gloves are adequate and in good working order all of the time (58%); and that flagging lamps work all of the time (57%).
 - Personal protective equipment is believed to be adequate and in good working order all of the time by 60% of MOW personnel, 63% of construction flaggers, 47% of train operators and 57% of supervisors.
 - Train operators are much less likely to say that flagging lamps work all of the time (33%) than are MOW personnel (64%) and supervisors (64%).
- Train operators are more likely to say that radios work all of the time (44%) than MOW personnel (32%) and supervisors (30%).

Figure 3

Reliability of Safety Equipment



II. Investment in the Mission and Work Culture

Respondents are invested in their own safety and the safety of others.

- The proportion of all workers who say they closely follow workplace safety rules is high (72% overall; 66% among MOW personnel, 79% among construction flaggers, 77% among train operators and 75% among supervisors).
- MOW personnel are about as likely to strongly agree that workplace safety is their responsibility (78% strongly agree) as are construction flaggers (74%), train operators (77%) and supervisors (85%).
 - There is essentially no difference of opinion between workers who have been on the job less than ten years (79% strongly agree) and those who have been on the job ten years or more (78%).
- A similarly high proportion of respondents (78%) strongly agree that “it is important to me that there is a continuing emphasis on safety,” with essentially no differences by job type (75% of MOW personnel strongly agree, 74% of construction flaggers strongly agree, 79% of train operators strongly agree and 83% of supervisors strongly agree).
- Far fewer respondents (55%) strongly agree that it is their supervisor’s responsibility to make their work environment safe (MOW personnel – 58%,

construction flaggers – 53%, train operators – 55%, supervisors – 46% strongly agree).

- MOW personnel are about as likely to *strongly disagree* with the statement that “when people ignore safety procedures here, it is none of my business” (69% of MOW personnel strongly disagree with this statement) as construction flaggers (76%), train operators (63%) and supervisors (76%).

Many respondents exhibit less confidence in their co-workers when it comes to following safety rules.

- About four in ten MOW personnel (39%) say their co-workers follow safety rules very closely, while 30% of train operators and 46% of supervisors say their co-workers follow safety rules very closely.

There is some agreement that workers with more years on the job are more likely to cut corners than newcomers when it comes to following safety rules.

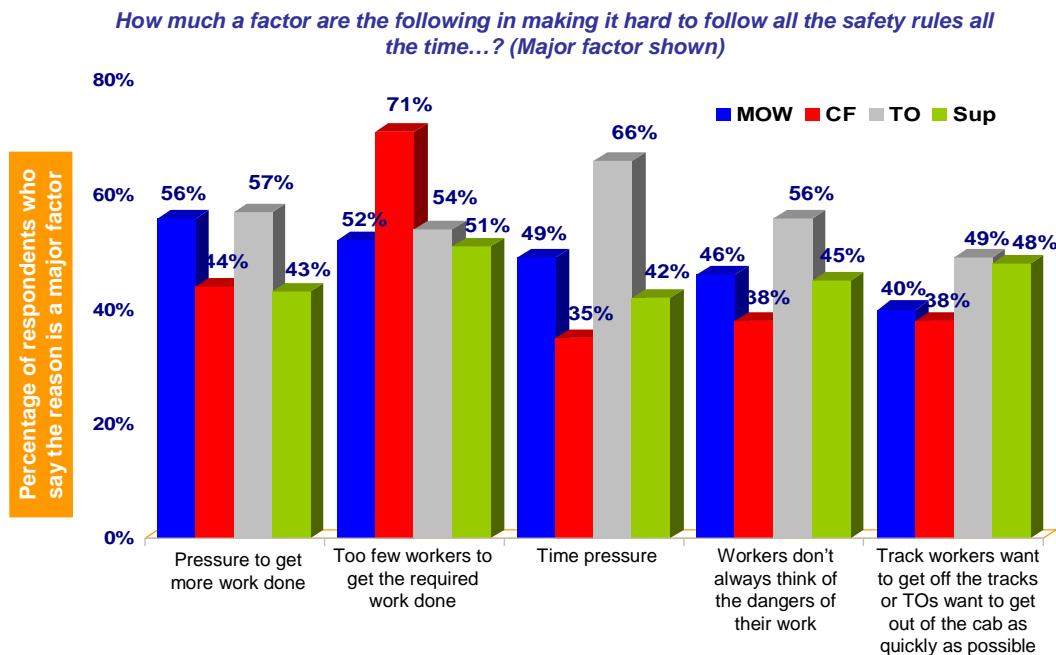
- Over a third of workers (36%) strongly agree that workers with more seniority are more likely to cut corners, with supervisors among those most likely to strongly agree (42%), followed by train operators (38%), MOW personnel (33%) and construction flaggers (26%).
 - Respondents who have been on the job ten years or more are about as likely to agree (34% strongly agree, 28% somewhat agree) with those who have been on the job ten years or less (40% strongly agree, 32% somewhat agree) that longer term workers are likely to cut corners.

Productivity pressures are among top reasons cited for failing to follow safety rules all the time (see Figure 4).

- MOW personnel (56% major factor) and train operators (57% major factor) are more likely to say pressure to get more work done is a major factor than are supervisors (43%). However, there is virtually no difference among respondents by tour or tenure.
- On the issue of too few workers, MOW personnel are as likely to say that this is a major factor (52%) as train operators (54%) and supervisors (51%). Over seven in ten (71%) construction flaggers say too few workers to get the required work done is a major factor in why safety rules are not followed all of the time.
- Train operators are more likely to say that time pressure is a major factor (66%) than are MOW personnel (49%), construction flaggers (35%) and supervisors (42%). Similarly, respondents on the evening tour are more likely to say time pressure is a major factor (65%) than respondents on either the day shift (50%) or the overnight shift (51%). There is no difference between respondents who have been on their current job less than ten years (53%) and those who have been on the job ten years or more (53%).

Figure 4

Why Safety Rules Are Not Followed All of the Time



- There is more agreement that “sometimes safety is compromised in order to make sure that work gets done” among train operators (79% of train operators agree) and respondents on the evening shift (83%) than among supervisors (60%) and respondents on the day shift (69%).
 - This supports focus group findings that there is a priority to “get the work done,” or “get the train there on time.”

III. Communication and Training

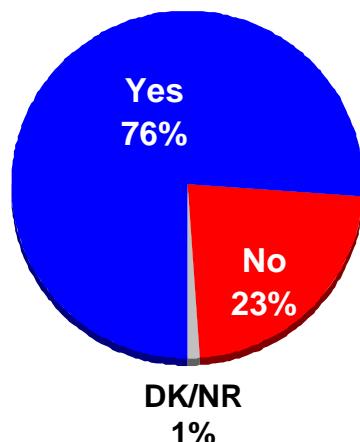
Most survey respondents are aware of the new safety rules and believe the rules have made their jobs safer.

- Fully 76% of respondents say they are familiar with the new safety rules (see Figure 5).
 - Train operators are less likely to have seen, read or heard anything recently about new track safety rules and procedures (72%) than supervisors (88%).

Figure 5

Awareness of New Track Safety Rules and Procedures

Q.9 Have you seen, read or heard anything recently about new track safety rules and procedures?



- Few workers believe the new rules have made the job much safer (MOW personnel – 13%, construction flaggers – 4%, train operators – 15%, supervisors – 24%).
 - There is little difference among respondents by tour or tenure.
- The aspects of the new rules that respondents believe have made the job safer include improved and more flagging (18% of all respondents cite this improvement) and that the new rules are making people more cautious and aware (16%).

- When respondents who said they had seen, read or heard about safety improvements were asked what new procedures and rules they recalled, 43% say they didn't know.
 - The top named response was flagging, generally, with 14% of respondents indicating that this is what they recall about the new rules.

Just over half of respondents say communications are effective.

- Only 56% of respondents say that methods the NYCT uses to communicate, such as bulletins and directives, are effective. By work type, 55% of MOW personnel, 50% of construction flaggers, 56% of train operators and 64% of supervisors say NYCT's communications methods are effective.

Lost-time injuries are much more likely to be reported than near misses or close calls.

- Fully 96% of those reporting a lost-time injury formally reported it.
- MOW personnel (52% say they had a near miss or close call) are as likely as supervisors (52%) to say they had a close call, while train operators are less likely to say they had a close call (40%). Almost seven in ten (68%) construction flaggers said they have had a close call.
 - Respondents who have been employed less than ten years are more likely to say they have had a close call (58%) than are those employed ten years or more (41%).
- Only 12% of train operators say they have had a close call or near miss three or more times; 20% of MOW personnel and 25% of supervisors reported they had near misses three or more times. About three in ten (29%) of construction flaggers say they have had a close call or near miss three or more times.
- Only 34% of those who said they had a close call or near miss say they formally reported the incident.
 - There is little difference in reporting among MOW personnel (32% say they reported the most recent incident), construction flaggers (35%), train operators (38%) and supervisors (37%).

Several reasons related to disciplinary consequences were cited for failing to report near misses. A belief that if no one is injured a report is unnecessary is also mentioned (see Figure 6).

- Fear of being disciplined is cited as a reason by 23% of MOW personnel, 29% of construction flaggers, 30% of train operators and 25% of supervisors.
- When asked why some near-misses went unreported, 35% of MOW personnel say that because nobody got hurt or killed, no report was necessary; 44% of construction flaggers, 34% of train operators and 32% of supervisors agree.

Figure 6

Reasons Given for Not Reporting Accidents and Near Misses

What is the biggest reason you think some accidents and near misses aren't reported? (Multiple responses accepted)

	MOW	CF	TO	Supervisors
Nobody hurt or killed so report not necessary	35%	44%	34%	32%
Workers afraid they will be disciplined	23%	29%	30%	25%
Workers don't want to file a report that will get coworker in trouble	18%	15%	26%	22%
Workers afraid of losing their job	17%	6%	23%	11%
Takes too much time to file a report	16%	15%	15%	14%
Supervisors discourage workers from reporting accidents or near-misses	18%	15%	15%	8%
Coworkers discourage other workers from reporting accidents or near misses	8%	9%	8%	5%

- Additionally, only 52% of all survey respondents agree that “a no-blame approach is used when people report safety problems,” with 52% of MOW personnel, 56% of construction flaggers, 48% of train operators, and 58% of supervisors agreeing.
- MOW personnel (47% agree, 50% disagree) and train operators (35% agree, 62% disagree) are more likely to disagree than agree that they “receive praise for working safely,” while supervisors are more likely to agree than disagree (62% agree, 33% disagree). Among construction flaggers, 44% agree and 56% disagree.

While there is a lack of reporting of near misses, survey respondents say that they are encouraged to report unsafe conditions, with supervisors being among those most likely to agree.

- MOW personnel are less likely to strongly agree with the statement that they are “strongly encouraged to report unsafe conditions” (48%) than either train operators (57%) or supervisors (67%). Over two thirds of construction flaggers (68%) strongly agree.

Ratings for current training, including stand-down training, suggest many feel the process may not be effective.

- Positive scores (excellent + good) for the overall quality of the safety training they have received in the past year are higher among supervisors (62%) and those on the day shift (60%) than among train operators (46%) and respondents who work the evening shift (45%).
 - This is in contrast to the ratings for the *initial* training received in the first few months on the job (67% of train operators say their initial training was excellent or good, compared with 58% for supervisors). Evening shift respondents rate initial safety training better (73% positive, 27% negative) than either day shift respondents (61% positive, 31% negative) or overnight respondents (58% positive, 37% negative).
- On the overall quality of stand-down trainings, train operators are among the least positive (38% rate stand-down trainings as excellent or good), followed by MOW personnel (56%), and supervisors (63%). Construction flaggers are notably negative in their assessments (29% positive, 65% negative).
- While only 7% of all respondents say the overall quality of the on-the-job equipment and tool training they have received in the past year is excellent and 40% say it is good, there is little difference by type of worker (48% of MOW personnel rate it positively, compared with 45% for train operators and 47% for supervisors). About six in ten construction flaggers (59%) rate the quality of on-the-job equipment and tool training positively.

IV. Suggestions for Improving Safety, Communications and Training

Respondents gave many constructive suggestions for improving safety on the job. The top suggestions given for making sure workers follow safety rules are better training on the rules/explanation of the rules and that supervisors should be more responsible.

- When asked for solutions in an open ended format, about one in eight respondents (16%) said that better training on the safety rules or explanation of safety rules will help workers better follow safety rules, with 16% of MOW personnel, 15% of construction flaggers, 15% of train operators and 19% of supervisors citing this recommendation (see Figure 7).
- Another 15% say that supervisors should be more responsible, assertive or forceful, with 14% of MOW personnel, 12% of construction flaggers, 14% of train operators and 20% of supervisors making this recommendation.
- Frequent reminders of rules is seen as a way to get workers to follow the safety rules by 13% of all respondents.

Figure 7

Ways to Ensure Workers Follow Safety Rules

What do you think should be done to make sure workers follow the safety rules?
(Open end)

	MOW	CF	TO	Supervisors
Better training/explanation of rules	16%	15%	15%	19%
Supervisors should be more responsible/assertive/forceful	14%	15%	15%	20%
Frequent reminders of rules	13%	12%	14%	11%
More time to complete tasks	7%	9%	14%	8%
Workers must be responsible for themselves	9%	9%	5%	9%
Disciplinary actions towards those who don't follow the rules	6%	15%	6%	9%
More emphasis on safety	7%	-	6%	6%

More face-to-face interactions is one solution suggested to improve communications.

- The top suggested improvement to communications is to increase face-to-face interactions about rules (see Figure 8).
 - Almost one in five respondents (19%) say that more face-to-face interactions would improve communications, with train operators (26%) among those most likely to cite this solution.

Figure 8

Suggested Improvements to Communications

What would you suggest to improve the methods that NYCT uses to communicate? (Open end)

	MOW	CF	TO	Supervisors
Face-to-face, one-on-one interactions about rules, questions	16%	29%	26%	11%
Increase communications between lower workers and mgmt.	15%	-	8%	9%
More/better class training	5%	12%	15%	9%
Mail/e-mail/call employees about new rules and safety tips	8%	-	10%	14%
Have frequent meetings	10%	6%	6%	11%
Easier access to rules/Everyone reads, communicates about and discusses rules	7%	6%	4%	3%

More worker input and mentoring are among the top suggestions given to improve safety training.

- MOW personnel and train operators are among those most likely to say that allowing workers to offer suggestions for improvements and changes to improve safety conditions is a very good idea (55% of MOW personnel say this is a very good idea, 65% of train operators agree) (see Figure 9).
 - Evening shift respondents (65% very good) and respondents who have been on the job less than ten years (63%) are also more likely to say that allowing workers to offer suggestions is a very good idea.
- Train operators are among those most likely to say that, for new workers, more on-the-job training done with a knowledgeable partner mentor is a very good idea (64%), followed by supervisors (54%) and MOW personnel (51%).
- Train operators are among the strongest supporters of conducting track safety and flagging trainings more frequently and consistently (59% very good idea), while MOW personnel (42%) and supervisors (40%) are less likely to say it is a very good idea. Just over half of construction flaggers (53%) say it is a very good idea.

Figure 9

Ideas for Improving Safety Training

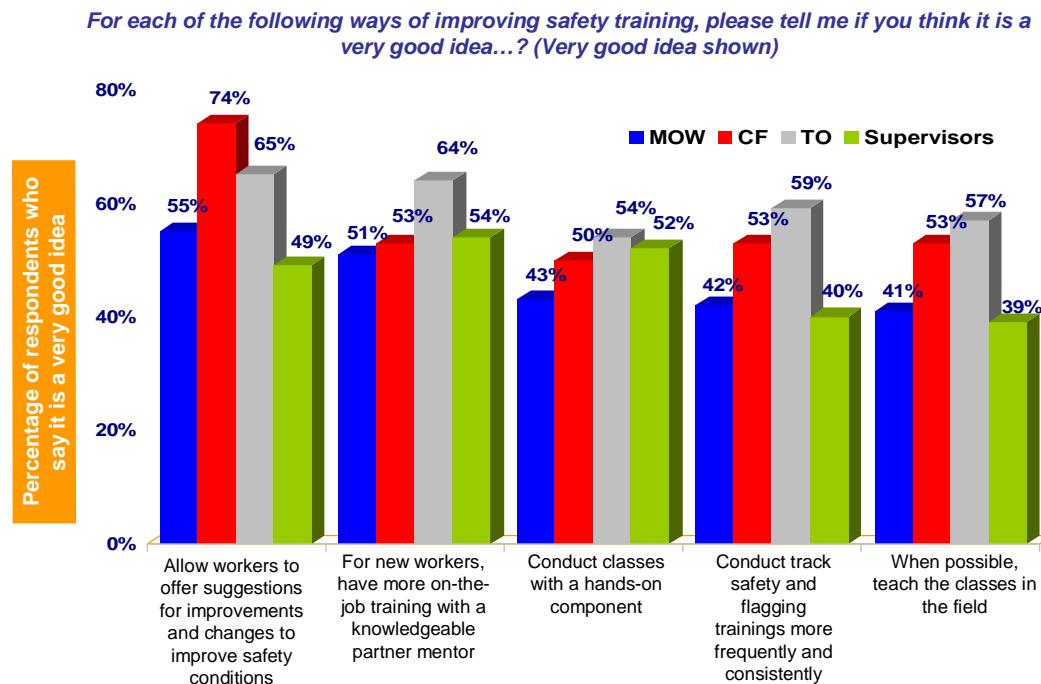


Figure 10: Summary of Suggested Safety Improvements

Respondents indicate several areas for safety improvements, including:

- Frequent, unannounced safety audits
This is seen as a way to make the workplace safer, with 73% either strongly agreeing (46%) or somewhat agreeing (27%) with this solution. Agreement is strong across job titles, tours and by tenure.
- Improved review and enforcement of safety rules
- Improved communication by increasing face-to-face interactions about rules
- Better communications technology (radios and warning lights)
- Improved flagging
- Enhanced safety training
The top ‘most important’ idea to make the workplace safer among all respondents is more training in all areas.

CONCLUSIONS

- Respondents care about the safety of their job site, as evidenced not only by the responses within the survey, but also by the large number of respondents who agreed to participate in a survey that took well over a half hour to complete.
- Respondents say that they are as conscientious as they can be about safety, but they also say that time pressure (especially among train operators), productivity pressures and too few workers inhibit their ability to follow safety rules all of the time. There is also a sense, especially among hourly workers, of not receiving rewards or recognition for working safely.
- Specific hazards are also cited, such as the failure of trains to slow or stop when they are supposed to (a particular problem for supervisors and MOW workers), different interpretation of flagging rules by different groups on the right of way and the absence of proper signals at the leaving end of stations (a particular problem for train operators).
- Respondents are aware of the new rules, and among those who are aware of them, most think they are making their jobs at least somewhat safer. However, over four in ten workers who are familiar with the new rules could not name a specific new guideline or instruction, indicating that the specific changes need to be reinforced and communication needs to be improved.
- The finding that all workers report lost-time injuries, yet few report near misses suggests the need for better training and reinforcement around such reporting, as well as the need to create an environment that encourages reporting without retribution or blame.
- In order to improve safety, respondents would like to see better safety training that has a hands-on component, as well as mentoring for newer workers; more face-to-face communications and a better explanation of rules; and more frequent, unannounced safety audits. The apparent conflict between carefully following all the safety procedures and pressure to keep the trains running on time must also be acknowledged and explicitly addressed.

This report will be used by the Track Safety Committee to develop recommendations for right of way safety improvements.

Major Track Construction Projects Joint Management/Union Safety Inspection Training Curriculum

1. Track Safety and Flagging
 - a. Identifying clear up spaces
 - b. Identifying entrances and exits to the work area.
 - c. Identifying emergency alarm boxes.
 - d. Identifying power off or third rail protection requirements
 - e. Identifying flagging requirements including adjacent track flagging.
2. Street Flagging
3. Crane Operations
 - a. Street cranes
 - b. Rail cranes
4. "The Box"
 - a. Identifying the area within "the box."
 - b. Housekeeping requirements.
5. Illumination
6. Flexible Barrier Guidelines
7. Fall Protection/Fall Arrest Systems
9. Power Tools
 - a. Fuel
 - b. Electrical – Power cords and Generators
 - c. Pneumatic – Compressors and Air lines
10. Welding and Compressed Gases
11. Fire Prevention and Protection
 - a. Removal or protection of combustible materials
 - b. Fire extinguishers
12. Movement of work trains within a work area
13. Pay loaders, skid loaders, tampers, ballast regulators, vacuum train, grinders, hopper cars, and other track maintenance equipment

Note: A test must be administered and passed by participants

Note: Trainees must receive a certificate or other proof of successful completion

Major Track Construction Projects Joint Management/Union Safety Inspection

Project Name _____ Track(s) _____

Description of Work _____

General Order Limits Requested

Track _____	Limit _____

Work Train Required Yes/No

Type _____	Track _____

Wheel Stops Required Yes/No

Location _____	Track _____	Location _____	Track _____
Location _____	Track _____	Location _____	Track _____

Tie Bumper Blocks Required Yes/No

Location _____	Track _____	Location _____	Track _____
Location _____	Track _____	Location _____	Track _____

1. Track Safety and Flagging

 - a. Identifying clear up spaces _____
 - b. Identifying entrances and exits to the work area _____
 - c. Identifying emergency alarm boxes _____
 - d. Identifying power off or third rail protection requirements (see attachment)
Power Off Yes/No
Third Rail Protection Required _____
 - e. Identifying additional flagging requirements including adjacent track flagging
Track _____ Full/Adjacent
Track _____ Full/Adjacent
Track _____ Full/Adjacent
2. Street Flagging Yes/No

Partial	Location _____	Street Pattern _____
Complete	Location _____	Type _____
Special Signage Required Yes/No		
3. Crane Operations

 - Electrical Hazards Yes/No
 - Location _____
 - Location _____

Remedy _____
Location _____
Location _____
4. "The Box"

 - a. Identifying the area within "the box."
 - b. Housekeeping requirements.
5. Illumination Yes/No Type _____ Lighting Plan Attached _____
6. Flexible Barriers Required Yes/No
7. Fall Protection/Fall Arrest Systems Yes/No Type _____

8. Power Tools
 - a. Fuel.
 - b. Electrical – Power cords and Generators.
 - c. Pneumatic – Compressors and Air lines.
10. Welding and Compressed Gases
11. Fire Prevention and Protection
 - a. Removal or protection of combustible materials.
 - b. Fire extinguishers.
 - c. Other _____
12. Other Hazards/Issues Identified

13. Other Comments

Attendance Sheet Attached

Major Track Construction Projects pre job inspection checklist

Major Track Construction Project

Joint Management/Union Safety Inspection Placard

On _____ a joint inspection was held by Management/Supervision and the TWU reviewing the following project:

Project Description _____

Location _____

Track(s) _____

An inspection form was completed and filed and a copy is located at the Division/Field Office _____ (Telephone # _____).

Location _____

Management/Supervision Representative

Print Name _____

Major Track Construction Projects pre job inspection placard

TWU Representative

Print Name _____

4. Standard for Work Zone Safety

Approved December 15, 2002
APTA Rail Transit Standards Operating Practices Committee

Approved January 10, 2003
APTA Rail Transit Standards Task Force

Authorized June 8, 2003
APTA Rail Transit Standards Executive Committee

Abstract: This standard provides guidance for the development of Rail Transit System RTS work zone safety rules and procedures and provides suggested approaches for developing said rules and procedures

Keywords: right of way, wayside worker, work zone safety,

Introduction

(This introduction is not a part of APTA RT-S-OP-004-03, *Standard for Work Zone Safety*)

This Standard for Work Zone Safety represents a common viewpoint of those parties concerned with its provisions, namely, transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any standards, recommended practices or guidelines contained herein is voluntary. In some cases, Federal and/or State regulations govern portions of a Rail Transit System's (RTS) operations. In those cases, the government regulations take precedence over this standard. APTA recognizes that for certain applications, the standards or practices, as implemented by individual rail transit agencies, may be either more or less restrictive than those given in this document.

Participants

The American Public Transportation Association greatly appreciates the contributions of the following individuals, who provided the primary effort in the drafting of the *Standard for Work Zone Safety*:

John Blum
Rudy Crespo
Al Fazio
Austin Jenkins

Maurice Lewis
Gary Rosenthal
Paul Stangas

At the time that this standard was completed, the Operating Practices Committee included the following members:

Peter Tereschuck, Chair
Austin Jenkins, Vice Chair

Nigel Astell
Franklin Beauford
Harvey Becker
John Blum
Charles Briscoe
Aubrey Burton
Robert Campbell
Rudy Crespo
Jess Diaz
James Dunn
Brian Dwyer
Charles Dziduch
Al Fazio
Gerald Francis
James Gallagher

David Gibson
Kent Haggas
Richard Hanratty
Leonard Hardy
John P. Hogan
Paul Jamieson
Austin Jenkins
Al Johnson
Charles Joseph
Daryl Lampkins
Antonio Lares
Maurice Lewis
Paul Liston
Stephanie Markos
W. Mark Miller

Laura Mizner
Terry Mulcahy
Dan Murphy
Lori Oakley
Paul Oversier
Jeffrey Parker
Chester Patton
Gary Rosenthal
Harry Saporta
Fredrick Shein
Paul Stangas
Wayne Terry
George Turner
C.J. Welter

APTA Rail Transit Standards Operating Practices Committee project consultants:

Kenneth A. Korach, *Transportation Resource Associates, Inc.*
Christopher Wallgren, *Transportation Resource Associates, Inc.*

APTA Rail Transit Standards project team:

Gabrielle Bayme, *Standards Development Program Specialist and Project Editor*
Saahir Brewington, *Administrative Assistant and Project Editor*
Antoinette Hankins, *Program Assistant*
Thomas Peacock, *Director-Operations & Technical Services*
David Phelps, *Senior Project Manager - Rail Programs*

Contents

1. Overview.....	4.1
1.1 Scope	4.1
1.2 Purpose	4.1
1.3 Alternate practices	4.1
2. References	4.2
3. Definitions, abbreviations, and acronyms	4.2
3.1 Definitions	4.2
4. Background.....	4.3
5. Requirements	4.4
6. Responsibilities – train operators and wayside workers	4.4
6.1 Train operators.....	4.4
6.2 Wayside workers	4.5
7. Employee training – train operator and wayside worker.....	4.5
7.1 Train operators.....	4.5
7.2 Wayside workers	4.5
8. Audible and hand signals.....	4.6
8.1 Types of audible signals:.....	4.6
8.2 Types of hand signals:	4.6
9. Radio/communication procedures	4.6
9.1 Train operators.....	4.6
9.2 Wayside workers	4.6
9.3 Control center/yardmaster	4.6
10. Speed past wayside workers	4.6
11. Types of wayside worker protection	4.7
11.1 Personal protection	4.7
11.2 Reduced speed zones.....	4.7
11.3 Work zones	4.7
11.4 Temporary warning devices	4.7
11.5 Flagging	4.8
12. Removing tracks from service in a work zone	4.8
13. Returning tracks to service in a work zone.....	4.8

Volume 4—Operating Practices
APTA-RT-S-OP-004-03
7/26/04

14. Personal protective equipment.....	4.8
15. Worker attire.....	4.9
16. Walking on right of way	4.9

Standard for Work Zone Safety

1. Overview

The standard provides ways for Rail Transit Systems to address situations that are present when workers perform routine and emergency work on an operating rail line. The Standard recommends that Rail Transit Systems perform periodic internal audits to ensure compliance with these rules and procedures.

1.1 Scope

This standard establishes the minimum required content for Work Zone Safety Rules and Procedures to be developed for Rail Transit Systems (RTS), and applies to both mainline and yard operations.

1.2 Purpose

APTA developed this standard to help Rail Transit Systems identify and mitigate wayside worker safety concerns. The Standard addresses the duties of wayside workers and train operators. While referenced in this Standard, the corresponding work zone safety duties, responsibilities and authority of yardmasters and train controllers are addressed in a separate standard. Development of such rules and procedures should enhance the safety of all concerned without unnecessarily restricting operation of trains through work zones.

1.3 Alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system (RTS) may develop alternates to the APTA standards so long as the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

- a) Identify the specific APTA rail transit safety standard requirements that cannot be met
- b) State why each of these requirements cannot be met

- c) Describe the alternate methods used
- d) Describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

2. References

The Operating Practices Committee did not use references to develop this standard.

3. Definitions, abbreviations, and acronyms

3.1 Definitions

For the purposes of this standard, the following terms and definitions apply. The job titles listed below are used in this standard for informational purposes only. It is up to the individual RTS to determine and utilize titles as it finds appropriate. Each person, or his/her designee shall perform the tasks described below.

3.1.1 audible signals: A signal, the indication of which is conveyed by a horn, bell or whistle.

3.1.2 control center/central control/operations control center: That facility where train control, train dispatching, and/or train supervision is accomplished for the entire rail transit system or for specific segments of a system if there is more than one Control Center; the train command center.

3.1.3 flagperson/watchperson: Personnel assigned to control movement of trains by the display of hand signals, flags, or lights. Personnel may also be assigned to protect workers who are engaged in work activities on the right of way.

3.1.4 hand signal: A signal - the indication of which is conveyed by the motion or position of a person's hand or arm. A flag may be used to enhance visibility of a hand signal. A lantern or other suitable hand held light shall be used to convey hand signals in tunnels or during hours of darkness.

3.1.5 mainline: Those tracks upon which scheduled service is operated and which are designated as such.

3.1.6 on sight/operation on sight: A requirement that train operators shall look ahead and be constantly alert for any condition which may cause injury or damage and be ready to bring their train to a safe and smooth stop. Movement must be made so as to control the movement to permit stopping within one half of the range of vision of: (a) Other trains or rail equipment occupying or fouling the track, (b) Obstructions, (c) Switches not properly lined for movement, (d) Derails set in the derailing position, (e) Any signal requiring a stop, and (f) Broken rail and misaligned track.

3.1.7 rail transit system (RTS): Term used to describe the organization that operates rail transit service and related activities. It is also known as the transit system, transit agency, operating agency, operating authority, transit authority, or other similar term.

3.1.8 right-of-way: The area at track level or above track level at a distance from the centerline of the track, as specified by the RTS.

3.1.9 temporary warning device: Signs, flags, lights, discs or targets installed when wayside workers are present to alert and direct the actions of train operators of approaching trains and removed when no longer needed.

3.1.10 train: Any motorcar, locomotive or other self-propelled on-rail vehicle, with or without other cars coupled. A regular train is a train authorized by a schedule. An extra train is any train that is not in the schedule.

3.1.11 train controller/dispatcher/supervisor: An employee, usually stationed in a control center, authorized and responsible to direct the operation of trains on the mainline. Some RTSs may employ other employees, subordinate to the Controller, to facilitate train movements at critical locations.

3.1.12 train operator: The onboard employee who controls the movement of a train.

3.1.13 wayside worker: Any employee or outside contractor who performs work upon the right of way within a specified distance of the tracks. At some properties, these personnel may be referred to as roadway workers. Flagpersons and watchpersons are considered wayside workers.

3.1.14 work zone: A section of track where train operations are temporarily restricted due to the presence of one or more wayside workers that may be designated by use of a temporary warning device.

3.1.15 yard: A facility within defined limits that has a system of tracks used for making up trains, storing trains, and other purposes. A maintenance facility may be included.

3.1.16 yardmaster: The employee who supervises the movement of trains within a Yard.

4. Background

Every operating RTS requires periodic, scheduled maintenance of the tracks, switches, structures, signals, traction power system and other wayside equipment. Unscheduled emergency repair of system elements is an integral part of RTS operation. Non-rail transit work activity may also necessarily impinge on the rail transit right of way. The protection of trains and their passengers and the employees who perform work in a work zone is assured through the adherence to clear rules and procedures governing both wayside worker and train operator actions.

5. Requirements

Each RTS shall develop and implement rules and procedures that specifically identify the behaviors and appropriate actions of wayside workers and train operators. These rules and procedures shall be appropriate for the operating rail transit system, taking into consideration the operating environment, train operating speed, equipment, geographical location, climate conditions, and specific duties of wayside workers.

As part of this plan, the RTS shall, at a minimum, address the following:

- Responsibilities
- Employee Training
- Audible and Hand Signals
- Radio/Communication Procedures
- Speed Past Wayside Workers
- Types of Worker Protection
 - Personal Protection
 - Reduced Speed Zones
 - Work Zones
 - Temporary Warning Devices
 - Removing a Track(s) from Service
 - Flagging
- Removing Tracks from Service in a Work Zone
- Returning Tracks to Service in a Work Zone
- Placing Track Back in Service
- Personal Protective Equipment
- Worker Attire
- Walking on Right of Way

6. Responsibilities – train operators and wayside workers

6.1 Train operators

Within the work zone, train operators shall operate their trains on sight and have their train under control at all times. Upon observance of warning devices or personnel on the right of way, the train operator shall reduce speed to the prescribed limit, sound the designated audible warning, and be prepared to stop. Train operators shall not be required or allowed to operate their train into the work zone until they have received and acknowledged a proceed indication from wayside workers.

Train operators shall be required to be observant for unusual conditions, which may pose a hazard to the wayside workers or to the train and its passengers, while passing through the work zone. They shall be required to obey all rules, regulations, procedures and special operating instructions.

Train operators shall be required to read all written notices that may be posted or issued to them, for monitoring radio transmissions and obeying verbal instructions regarding work taking place on the right of way. Train operators shall report any improper or

missing flagging protection. Properties with automatic train operation (ATO) may require manual operation where wayside workers are present.

6.2 Wayside workers

Wayside workers shall be required to be alert for trains approaching the work zone on any track from either direction at any time. They shall be trained and required to understand track layouts in order to establish proper installation of temporary work zone limits and warning devices.

When working in gangs of two or more people, at least one wayside worker shall be designated responsibility as flagperson/watchperson to watch for approaching trains and to give appropriate hand signals to the train operators of trains approaching the work zone. This worker shall be prepared to signal the train to stop and always ensure that all other workers are clear before permitting a train to proceed.

Upon observance of an approaching train, or hearing a train's audible signal, or hearing a watchperson/flagperson's warning, all wayside workers shall stop work, remove equipment that may be in the way of a train, and move to a place of safety. The watchperson/flagperson shall face the train and signal the train operator to proceed if it is safe to do so. The flagperson shall signal the train operator to stop if the track is not clear of personnel and/or equipment.

Before entering the right of way, wayside workers shall have an evacuation plan in the event of an unexpected incursion.

Wayside workers are responsible for obeying all rules, regulations, procedures and special operating instructions and are responsible for monitoring radio transmissions and obeying verbal instructions regarding the work taking place on the right of way.

7. Employee training – train operator and wayside worker

7.1 Train operators

As a part of their training program and at a minimum, train operators shall be taught the rules and procedures developed by the RTS to address the requirements and responsibilities in sections 5, 6, 8, 9 10, 11, 12, 13, 14, 15, and 16 of this standard.

7.2 Wayside workers

As a part of their training and at a minimum, personnel who work on the right of way shall be taught the rules and procedures developed by the RTS to address the requirements and responsibilities in sections 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, and 16 of this standard.

8. Audible and hand signals

Rules/procedures for audible and hand signals shall be developed. These signals shall apply consistently to train operators and wayside workers. At a minimum, signals utilized shall include audible and hand signals.

8.1 Types of audible signals:

- Answer to any signal not otherwise provided.
- Call for signals
- Alarm for persons on the track

8.2 Types of hand signals:

- Stop or remain standing
- Reduce speed
- Proceed

9. Radio/communication procedures

9.1 Train operators

Train operators shall monitor their radios and acknowledge any messages that apply to their operation.

9.2 Wayside workers

Before entering the track area, wayside workers shall notify the control center and/or yardmaster and receive authorization. All wayside workers shall be advised of the provisions of the authorization. They shall tell the control center and/or yardmaster exactly where they will be working, what they will be doing and the expected duration of the work. Upon completion of the work and clearing of the right of way, the control center and/or yardmaster shall be notified.

9.3 Control center/yardmaster

When appropriate, the control center and/or yardmaster shall notify train operators of the presence of the wayside workers, their exact location, the nature of the work and the expected duration. They shall again notify train operators when the wayside workers are clear of the right of way.

10. Speed past wayside workers

The RTS shall establish a maximum authorized speed, in conjunction with the operate on sight rule, to be observed by train operators when passing workers on the right of way.

The determination of this speed is dependent upon but not limited to the following: Automatic or manual operation, signaling, visibility, weather, braking capability of equipment, clearances for persons on the right of way, condition of track or nature of the work being done on the right of way. This speed shall be posted at appropriate locations or governed by rule.

11. Types of wayside worker protection

The RTS shall, at a minimum, establish safety criteria, rules and procedures to utilize the methods outlined below, or other forms of protection more compatible with full ATO systems.

11.1 Personal protection

Some work of typically short duration along the right of way may not require the use of temporary warning devices and the establishment of a formal work zone. Rules governing those activities shall be developed by the RTS. Workers assume responsibility for their own safety when working under these conditions, and the work must not involve machinery or tools that would prevent the worker from hearing the approach of a train or a radio call. Under this type of work activity, visibility of oncoming trains shall not be impaired. Workers shall adhere to all other wayside safety rules. When appropriate, the control center will notify trains that may operate in the area of employee(s) under these conditions, and the employees shall notify the control center when they are clear of the right of way.

11.2 Reduced speed zones

Whenever conditions warrant, a reduced speed zone shall be established. Where appropriate, as in ATO or cab signal territory, signal indications for the maximum allowable speed shall be reduced accordingly. Otherwise, warning devices shall be posted indicating the maximum allowable speed and indicating where normal speed may resume.

11.3 Work zones

A work zone is the area in which wayside workers will be present. Wayside workers shall be protected, as appropriate.

11.4 Temporary warning devices

A procedure shall be developed that establishes the type and location of warning devices in advance of a work zone. These devices may be a series of signs, flags, lights, discs or targets, or other such devices, as appropriate. The number and distance between each and their relationship to the work zone will be dependent upon but not limited to the following: Automatic or manual operation, maximum train speed, visibility, clearances, braking capability of equipment, the nature of the work being done on the right of way.

11.5 Flagging

Each RTS shall establish procedures to determine and establish when flagging protection shall be provided for a work group. Determinants may include, but are not limited to the size of the work group, access to safe refuge areas, sight distances, types of equipment being used, duration of the work or nature of the work. Flagging shall involve the use of an appropriately trained and properly equipped flagpersons or an automatic audible/visual device at an appropriate distance far enough in advance of the work site to warn the work crew of the approach of a train in a timely manner.

12. Removing tracks from service in a work zone

A procedure shall be established to temporarily remove tracks from service when necessary to ensure the safety of wayside workers and/or train operations. This procedure shall require authorization, by the control center and/or yardmaster responsible for the track(s) involved, of the person in charge of the Work Zone activity to temporarily remove tracks from service. The authorization shall establish the time that the track may be out of service and physical limits of the authority. The procedure shall include a requirement for written notification to all affected RTS departments. Appropriate temporary warning devices, established and adopted by the RTS, shall be provided at each entrance to the out of service track. The warning devices shall be placed in such a way as to leave no doubt that the track is out of service. The person in charge of the Work Zone activity shall immediately notify the control center and/or yardmaster if the track(s) involved cannot be returned to service within the time authorized.

13. Returning tracks to service in a work zone

A procedure shall be established for returning tracks to service after having been temporarily removed from service for wayside worker activity. Upon completion of work, tracks should be returned to service as soon as possible. Before returning tracks to service, the person in charge of the Work Zone shall ensure that all equipment, material and wayside workers are clear of the track and that track and structures are safe to return to service. All temporary wayside worker warning devices shall then be removed from the right of way. Any necessary flags or signs restricting train movement shall be placed as appropriate. The person in charge of Work Zone activity shall then immediately notify the control center and/or yardmaster responsible for the track(s) involved that the track can be returned to service.

14. Personal protective equipment

The RTS shall establish what safety equipment a person working on the right of way is required to use. At a minimum the RTS shall require high visibility clothing (safety vests or jumpsuits) to be worn by all wayside workers. The RTS shall determine what is appropriate for high visibility clothing. Additionally, other equipment may also be required, which may include but is not limited to the following: head protection, eye protection, foot protection, and two way radios. In addition, in the hours of darkness or in tunnels, a person working on the right of way shall have a working flashlight or lantern.

15. Worker attire

The RTS shall establish appropriate worker attire guidelines for persons when working on the right of way. Those clothing items, which are inappropriate for use, shall be identified.

16. Walking on right of way

Persons on the right of way shall walk against normal direction of traffic and stay clear of tracks whenever possible. They shall expect the movement of trains in either direction on any track at any time. They shall never step on any rail, equipment or metal debris. They shall use walkways when available and practical. They shall observe and comply with clearance restrictions. They shall observe and comply with all instructions and restrictions imposed by rule, procedure, bulletin or the Control Center.