STANDARD OPERATING PROCEDURES

BRAKING ALL-ELECTRIC CARS

IMPORTANT REMINDERS ABOUT BRAKING

- High braking rates are the most effective rates at high speeds.
- Low braking rates are the most comfortable rates at low speeds.

  Therefore, the fastest, safest, and most comfortable stop on normal, dry rail is made by applying the third braking rate at high speed and graduating to the second and first rates as the train slows (the 3-2-1 braking method).

- If braking rates are not reduced as train slows, the tendency to slide wheels will increase as the speed decreases.

  Therefore, the best method of avoiding slides is to use higher braking rate at the beginning of a stop and to graduate to lower rates as the train slows.

- "Fanning" (repeated application and release) of brakes while bringing a train to a stop causes discomfort to passengers, particularly to standees.

  Therefore, Motormen must become proficient in the "3-2-1 braking method." This method of braking minimizes the need for "fanning."

METROPOLITAN TRANSIT CTA
CHICAGO TRANSIT AUTHORITY
TRAINING & ACCIDENT PREVENTION DEPARTMENT
C3 9/64

SERVICE BRAKING

All-electric cars are designed to provide the most rapid braking consistent with passenger comfort. To achieve the highest standards of safety and maximum train performance, Motormen must follow the braking procedures outlined below:

PROCEDURE FOR MAKING A SERVICE STOP ON DRY RAIL

1. Shut off power before reaching braking point.
2. At braking point, move Cineston handle from coast to third brake position without pausing.
3. As speed of the train decreases, graduate release to second and then to first brake position as necessary to bring train to the proper stopping point.

   At Station stops, if it appears that the train would stop beyond the intended point, take the appropriate action outlined below:

   (1) If the train would stop beyond berthing allowance but not beyond the limit marker, hold third point of braking until train stops.
   (2) If train would stop beyond the limit marker, hold third point of braking and use track brakes and sand to stop train within platform limits. To avoid a rough stop, release the track brakes before train stops.
   (3) If train stops beyond the limit marker, follow procedures in Rule 211c.

   At any stop where a fast stop is necessary to avoid accident or injury, place Cineston in fourth point of braking (Emergency) and drop sand. If safe to do so, release track brake just before the stop by moving Cineston handle to third point.

PROCEDURES FOR MAKING A SERVICE STOP ON SLIPPERY RAIL

When a slippery rail condition is anticipated, Motormen must begin braking substantially sooner than on normal, dry rail. Before applying brakes, Motormen should depress sand button intermittently until rail has been sanded for the entire length of the train.

NOTE: In interlocking territory drop sand only to avoid accident or injury.

Braking procedures for various slippery rail conditions are outlined below:

1. MODERATELY SLIPPERY RAIL

   EXAMPLE: Rain just beginning, or just ending, or very light rain falling.

   a. Begin braking a good deal sooner than on normal, dry rail.
   b. Drop sand moderately before and during braking.
   c. Apply brakes at second braking rate initially and graduate to first braking rate for the stop.

2. VERY SLIPPERY RAIL

   EXAMPLE: Rail condition when frost has accumulated or when trains have not run on rails for some time

   a. Begin braking a great deal sooner than on normal, dry rail.
   b. Drop sand freely before and during braking.
   c. Apply brakes at first braking rate. Use track brakes if necessary.

If wheels begin to slide* during braking, take the appropriate action below:

1. If wheels begin to slide when you are still quite some distance from the intended stop
   a. Move Cineston handle to first point of power momentarily.
   b. Resume sanding and braking, using lightest practical brake application.
2. If wheels begin to slide when you are near the intended stop
   a. Hold third point of brake
   b. Use track brakes and sand (to avoid a rough stop, release the track brakes before train stops).

* To determine if wheels are sliding, check yellow panel light. If, on slippery rail, light comes on at speed in excess of 10 MPH, wheels are probably sliding.

BRAKE REFERENCE MARKS

A BRAKE REFERENCE MARK is installed in approach to certain stations. The brake reference mark is a plain white, reflective, rectangular sign mounted on a track-side stake. Its purpose is to serve as a "landmark" for motormen in judging the proper point at which to apply brakes for a stop at that station. Procedures for the use of brake reference marks follow:

USE OF BRAKE REFERENCE MARKS UNDER FAVORABLE CONDITIONS

1. Shut off power before reaching brake reference mark.
2. At brake reference mark, move Cineston handle from coast to third brake position without pausing.
3. Hold third braking position until near train berth, then graduate to second and first positions as necessary to bring train to proper berthing mark.

USE OF BRAKE REFERENCE MARKS UNDER UNFAVORABLE TRACK OR TRAIN CONDITIONS

1. Begin braking far enough in advance of the brake reference mark to satisfy your judgment of the additional distance required to stop your train under the prevailing conditions.
2. Use braking procedure which situation requires
   a. If track condition is unfavorable, brake train as outlined in PROCEDURE FOR MAKING A SERVICE STOP ON SLIPPERY RAIL.
   b. If train has one or more cars cut out, make stop with normal high rates but begin braking sooner than you would if no cars were cut out.

NOTE: Brake Reference Marks do not relieve the Motorman of the responsibility for making a safe, accurate, comfortable stop.

EMERGENCY BRAKING

Whenever it is necessary to stop a train in the shortest possible distance, use the following procedure:

1. Move Cineston handle quickly to fourth braking position.
2. Depress sand button intermittently until train stops.