MOVABLE BRIDGES - SEQUENCE

GENERAL NOTES

1. EMERGENCY STOP button: Available at all times. Will remove control power from the system but will not affect traffic signals status.
2. Marine horn available at all times.
3. PUSH & HOLD is a momentary function.
4. PUSH & RELEASE is a latching function.

OPENING SEQUENCE

Initiate Opening Sequence:

A. Turn CONTROL POWER switch ON. System ready to start operation.
   1. ALPHA - NUMERIC DISPLAY displays message: "SYSTEM READY."
   2. System status:
      a. Traffic signals GREEN.
      b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) OFF.
      c. Traffic gates RAISED.
      d. Traffic barrier(s) (if applicable) RAISED.
      e. Sidewalk gate(s) (if applicable) OPEN.
      f. Span locks driven.
      g. Motor and machinery brakes (if applicable).
      h. Auxiliary drive(s) (if applicable) UNCOUPLED.
      i. Leaf(s) is(are) FULLY SEATED.
   3. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green	X		Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red		X	Span locks pulled		X
On-coming traffic gates up	X		Brakes set	X	
On-coming traffic gates down		X	Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

B. Start opening sequence.

1. Depressing OPEN (PUSH & RELEASE) switch on control console starts opening sequence.

C. Sound marine horn.

1. Manually depress HORN (PUSH & HOLD) pushbutton to sound horn.

D. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD sign).

1. Starting opening sequence turns yellow flashing lights on.

E. Overhead traffic signals to YELLOW.

1. Change to YELLOW immediately after depressing OPEN pushbutton.
2. Start 5 second timer.
3. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow	X		Span locks driven	X	
Traffic lights red		X	Span locks pulled		X
On-coming traffic gates up	X		Brakes set	X	
On-coming traffic gates down		X	Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

F. Overhead traffic signals to RED.

1. Traffic lights change to RED automatically after 5 second YELLOW light.
2. Start 15 second traffic gate permissive timer.
3. GREEN RESET (PUSH & RELEASE) can be activated to revert to traffic signals GREEN (before traffic gates move off of fully raised).

4. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up	X		Brakes set	X	
On-coming traffic gates down		X	Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

G. Traffic gate(s) (on-coming).

1. Enabled only after 15 second traffic gate permissive timer times out.
2. Requires manual depression of ON-COMING GATE pushbutton to lower.
   a. Sound gong(s)/bell(s) on on-coming traffic gate(s). automatically after traffic signals turn RED.
   b. Automatically begin flashing lights on gate arm(s) when traffic lights turn RED.
3. Lower gate(s) by manually depressing LOWER ON-COMING GATES (PUSH & HOLD) pushbutton.
4. Gate(s) can be stopped by the E-STOP button.
5. GREEN RESET function disabled when gates move off of the UP position.
6. Requires continual depression of pushbutton. Releasing the pushbutton will cause the gate arm(s) to stop at present location and wait for raise or lower pushbutton depression to continue.
7. Manually depress RAISE ON-COMING GATE (PUSH & RELEASE) or LOWER ON-COMING GATE (PUSH & HOLD) pushbutton to raise or continue lowering gate(s).

8. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

9. Both on-coming traffic gates UP and DOWN indicating lights are ON in mid-travel.

H. Traffic gate(s) (off-going) (if present).

1. Enabled only after on-coming gate(s) are DOWN and traffic lights are RED.
2. Requires manual depression (PUSH & RELEASE) of indicated OFF-GOING GATE pushbutton to raise or lower.
3. Continue sounding gong(s)/bell(s).
4. Lower on-coming gates, manually. Prompt by flashing indicating light on appropriate LOWER OFF-GOING GATE pushbutton.
5. Gates can be stopped by the E-STOP or associated STOP (PUSH & RELEASE) button.
6. Manually depress RAISE OFF-GOING GATE or LOWER OFF-GOING GATE pushbutton to raise or continue lowering gate(s). Prompt by flashing both pushbuttons for Bridge Operator choice.
7. Stop sounding gong(s)/bell(s) when all gate arms are down. Continue sounding gong(s)/bell(s) if traffic barrier(s) or sidewalk gate(s) present.
8. System status:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) UP.
   e. Sidewalk gate(s) (if applicable) OPEN.
   f. Span locks DRIVEN.
   g. Motor and machinery brakes (if applicable) SET.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
   i. Leaf(s) is(are) SEATED.

9. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

10. Both Off-Going Traffic Gates UP and DOWN indicating lights are ON in mid-travel.

I. Sidewalk Gate(s) (if present).

1. Enabled only after 15 second traffic gate permissive timer times out.
2. Sidewalk gates can be closed at any time after the 15 second traffic gate permissive timer times out and must be CLOSED before pulling span locks.
3. Requires manual depression (PUSH & RELEASE) of indicated SIDEWALK GATE CLOSE pushbutton to close. Prompt by flashing indicating light on SIDEWALK GATE(S) pushbutton.
4. Continue sounding gong(s)/bell(s).
5. Sidewalk gates can be stopped by the E-STOP or associated STOP (PUSH & RELEASE) button.
6. Manually depress CLOSE SIDEWALK GATES or OPEN SIDEWALK GATES pushbutton to open or continue closing sidewalk gate(s). Prompt by flashing both pushbuttons for Bridge Operator choice.
7. System status:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) UP.
   e. Sidewalk gate(s) (if applicable) CLOSED.
   f. Span locks DRIVEN.
   g. Motor and machinery brakes (if applicable) SET.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
   i. Leaf(s) is(are) SEATED.

8. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

9. Both Sidewalk Gates CLOSED and OPEN indicating lights are ON in mid-travel.

J. Traffic Barrier(s) (if present).

1. Enabled only after ON-COMING and OFF-GOING gates are down and traffic signals are RED.
2. Requires manual depression (PUSH & RELEASE) of indicated TRAFFIC BARRIER button to lower. Prompt by flashing indicating light on appropriate CLOSE TRAFFIC BARRIER (PUSH & RELEASE) pushbutton.
3. Continue sounding gong(s)/bell(s).
4. Traffic barriers can be stopped by the E-STOP or associated STOP (PUSH & RELEASE) button.
5. Manually depress RAISE TRAFFIC BARRIER or LOWER TRAFFIC BARRIER button to continue raising or lowering barrier(s). Prompt by flashing both pushbuttons for Bridge Operator choice.
6. Stop sounding gong(s)/bell(s) when all gate arms, sidewalk gates, and traffic barriers are DOWN or CLOSED.
7. System status as follows:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) DOWN.
   e. Sidewalk gate(s) (if applicable) CLOSED.
   f. Span locks DRIVEN.
   g. Motor and machinery brakes (if applicable) SET.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
   i. Leaf(s) is(are) SEATED.

8. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

9. Both Traffic Barriers UP and DOWN indicating lights are ON in mid-travel.

K. Span Locks.

1. Enabled only after all traffic gate(s) are DOWN, traffic barrier(s) are DOWN, sidewalk gate(s) are CLOSED, and traffic signals are RED. Prompt by flashing indicating light on SPAN LOCKS pushbutton.
2. Manually depress indicated PULL SPAN LOCKS (PUSH & RELEASE) button.
3. Signal locks fully pulled by energizing SPAN LOCKS PULLED indicating light on console when SPAN LOCKS PULLED limit switch(es) close.
4. Span locks can be stopped by the E-STOP or associated STOP (PUSH & RELEASE) button.
5. System status as follows:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) DOWN.
   e. Sidewalk gate(s) (if applicable) CLOSED.
   f. Span locks PULLED.
   g. Motor and machinery brakes (if applicable) SET.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
   i. Leaf(s) is(are) SEATED.

6. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

7. Both Span Locks DRIVEN and PULLED indicating lights are ON in mid-travel.

L. Initiate Leaf(s) Opening Sequence.

1. Enabled only when all traffic gates are DOWN, traffic barriers are DOWN, sidewalk gates are CLOSED, span locks are PULLED, and traffic signals are RED.
2. Initiate leaf(s) opening cycle by pressing OPEN (PUSH & RELEASE) pushbutton on console.
3. Automatically:
   a. Energize drive(s) (set at zero (0) speed).
   b. Indicate drive(s) energized by energizing DRIVE(S) ON indicating light on console.
   c. Release machinery brake(s) when drive(s) is(are) energized.
   d. Issue direction command.
4. System status as follows:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) DOWN.
   e. Sidewalk gate(s) (if applicable) CLOSED.
   f. Span locks PULLED.
   g. Motor and machinery brakes (if applicable) RELEASED.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
   i. Leaf(s) is(are) SEATED.

5. Indicating lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set		X
On-coming traffic gates down	X		Brakes released	X	
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

6. Automatically start accelerating drive(s) when direction command is issued and drive (motor/controller) is producing torque. Automatically release motor brake(s). Sequencing of leaf(s) opening:
   a. Far opposite.
   b. Far adjacent, one (1) second after starting far opposite.
   c. Near opposite, five (5) seconds after far adjacent.
   d. Near adjacent, one (1) second after near opposite.
7. Accelerate to full speed as per acceleration ramp.
8. Leaf(s) can be stopped by the E-STOP or associated STOP pushbutton. Set only motor brake(s) on STOP, set ALL brake(s) on E-STOP.
9. Monitor speed (by drive).
   a. Check for overspeed (if variable speed drives). Shutdown (emergency) on overspeed.
   b. Check for normal speed (e.g., tachometer), adjust as necessary.
   c. Check for NEAR OPEN limit switches (A & B), decelerate to creep speed when first one opens (if second one does not open within 3 seconds then generate alarm).
   d. When in creep speed check for FULL OPEN limit switch, stop leaf(s) (remove direction command) when fully open.
10. Remove direction command (zero (0) speed) when leaf(s) is(are) FULLY OPEN. Automatically set motor brake(s).
11. De-energize drive(s) when motor brake(s) is(are) set. Set machinery brake(s) when drive(s) de-energized.
    a. Indicate drive(s) de-energized by energizing DRIVE(S) OFF indicating light on console.

b. Indicate brakes set (if present) by energizing appropriate indicating light on console.
c. Indicate leaf(s) FULL OPEN by energizing appropriate indicating light on console.

12. System status as follows:

a. Traffic lights RED.
b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
c. Traffic gates DOWN.
d. Traffic barrier(s) (if applicable) DOWN.
e. Sidewalk gate(s) (if applicable) CLOSED.
f. Span locks PULLED.
g. Motor and machinery brakes (if applicable) SET.
h. Auxiliary drive(s) (if applicable) UNCOUPLED.
i. Leaf(s) is(are) FULLY OPEN.

13. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open	X	
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed		X

14. Leaf indicating lights as follows during leaf travel:

	Indicating Light			
Leaf Position	**Full Closed**	**Nearly Closed**	**Nearly Open**	**Fully Open**
Fully Closed	X			
Fully Closed-Nearly Closed	X	X		
Nearly Closed		X		
Nearly Closed-Nearly Open		X	X	
Nearly Open			X	
Nearly Open-Fully Open			X	X
Fully Open				X

M. Navigation Lights.

1. Change channel clearance lights to GREEN automatically when all leafs are FULLY OPEN (and at least two brakes SET). Channel clearance lights turn RED if any leaf moves from the FULLY OPEN position.

CLOSING SEQUENCE

A. System Ready to continue operation.

1. System status:
   a. Traffic signals RED.
   b. Flashing yellow lights (WARNING DRAWBRIDGE AHEAD) ON.
   c. Traffic gates DOWN.
   d. Traffic barrier(s) (if applicable) DOWN.
   e. Sidewalk gate(s) (if applicable) CLOSED.
   f. Span locks PULLED.
   g. Motor and machinery brakes (if applicable) SET.
   h. Auxiliary drive(s) (if applicable) UNCOUPLED.
2. Indicating Lights as follows:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open	X	
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed		X

B. Start Closing Sequence.

1. By depressing CLOSE (PUSH & RELEASE) pushbutton on control console.

C. Sound horn (optional).

1. Requires manual depression of HORN (PUSH & HOLD) pushbutton.

D. Leaf(s) Closing Sequence.

1. Energize drive(s) (set at zero (0) speed) when DRIVE START (PUSH & RELEASE) pushbutton is depressed.

2. Automatically release machinery brake(s) when drive(s) is(are) energized.
3. Manually depress CLOSE (PUSH & RELEASE) pushbutton.
4. Indicating Lights as follows:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set		X
On-coming traffic gates down	X		Brakes released	X	
Off-going traffic gates up		X	Leaf fully open	X	
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed		X

5. Automatically start accelerating drive(s) when direction command is given and drive (motor/controller) is producing torque. Automatically release motor brake(s). Sequencing of leaf(s) closing as follows:
   a. Near Adjacent.
   b. Near Opposite, one (1) second after starting Near Adjacent.
   c. Far Adjacent, five (5) seconds after Near Opposite.
   d. Far Opposite, one (1) second after Far Adjacent.
6. Indicate drive(s) energized by energizing DRIVE(S) ON indicating light on console.
7. Accelerate to full speed as per acceleration ramp.
8. Leaf(s) can be stopped by the E-STOP or associated STOP (PUSH & RELEASE) pushbutton. Set only motor brake(s) on STOP, set ALL brake(s) on E-STOP.
9. Monitor speed (by drive).
   a. Check for overspeed (if variable speed drives). Shutdown (emergency) on overspeed.
   b. Check for normal speed (e.g., tachometer), adjust as necessary.
   c. Check for NEAR CLOSED limit switches (A & B), decelerate to creep speed when the first one opens (if second one does not open within 3 seconds then generate alarm).
   d. When in creep speed check for FULL CLOSED limit switch, stop drive(s) (remove direction command) when FULLY CLOSED.
10. Remove direction command (zero (0) speed) when leaf(s) is(are) FULLY CLOSED. Automatically set motor brake(s).

11. De-energize drive(s) after motor brake(s) are SET. Set machinery brake(s).
    a. Indicate drive(s) de-energized by energizing DRIVE(S) OFF indicating light on console.
    b. Indicate brakes set (if present) by energizing appropriate indicating light on console.
    c. Indicate leaf(s) FULLY SEATED by energizing appropriate indicating light on console.
12. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven		X
Traffic lights red	X		Span locks pulled	X	
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

E. Drive span locks.
    1. Enabled only when all drive(s) are de-energized and all brake(s) are SET.
    2. Manually depress (PUSH & RELEASE) DRIVE SPAN LOCKS button.
    3. Signal locks driven by energizing appropriate indicating light on console.

F. Gate(s) ready for opening after locks driven.
    1. Enable traffic barrier(s) (if present).
    2. Sound gong(s)/bell(s).

G. Manually raise traffic barriers (if present) by depressing RAISE TRAFFIC BARRIERS (PUSH & RELEASE) button.
    1. Enabled only when span locks are driven.

2. Indicating lights as follows:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

H. Manually open sidewalk gate(s) (if present) by depressing OPEN SIDEWALK GATE (PUSH & RELEASE) button.

I. Sidewalk gates can be opened at any time after the span locks are driven and before traffic lights GREEN.

1. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

J. Manually raise off-going gate(s) by depressing RAISE OFF-GOING GATE (PUSH & RELEASE) button.

1. Enabled only when span locks are driven and traffic barriers (if present) are FULLY RAISED.

2. Indicating lights as follows:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

K. Manually raise on-coming gate(s) by depressing RAISE ON-COMING GATE (PUSH & RELEASE) button.

1. Enabled only when off-going gates are fully raised, traffic barrier(s) (if present) are fully raised and span locks are driven and sidewalk gates (if present) are OPEN.
2. Stop traffic gate arm flashing lights when all gate arms are raised and sidewalk gates are open.
3. Stop gong(s)/bell(s) when all gate arms are RAISED and sidewalk gates are OPEN.
4. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open	X	
Traffic lights green		X	Sidewalk gates closed		X
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up	X		Brakes set	X	
On-coming traffic gates down		X	Brakes released		X
Off-going traffic gates up	X		Leaf fully open		X
Off-going traffic gates down		X	Leaf nearly open		X
Traffic barriers up	X		Leaf nearly closed		X
Traffic barriers down		X	Leaf fully closed	X	

L. Yellow flashing light ("WARNING DRAWBRIDGE AHEAD SIGN") OFF when all gates are raised.

M. Traffic signals to GREEN, automatically, when all gates are raised.

1. Indicating Lights status:

	ON	OFF		ON	OFF
Control power	X		Sidewalk gates open		X
Traffic lights green		X	Sidewalk gates closed	X	
Traffic lights yellow		X	Span locks driven	X	
Traffic lights red	X		Span locks pulled		X
On-coming traffic gates up		X	Brakes set	X	
On-coming traffic gates down	X		Brakes released		X
Off-going traffic gates up		X	Leaf fully open		X
Off-going traffic gates down	X		Leaf nearly open		X
Traffic barriers up		X	Leaf nearly closed		X
Traffic barriers down	X		Leaf fully closed	X	

N. Turn CONTROL POWER switch OFF.