Department of Regulatory Agencies

Division of Professions and Occupations

COLORADO
PASSENGER TRAMWAY SAFETY BOARD

SUBMISSIONS FOR
NEW, RELOCATED, OR MODIFIED
TRAMWAYS

2012

EFFECTIVE: SEPTEMBER 1, 2012

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Consumer Protection

Consumer protection is our mission

COLORADO PASSENGER TRAMWAY SAFETY BOARD
SUBMISSION BOOKLET

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COLORADO PASSENGER TRAMWAY SAFETY BOARD

INTRODUCTION

This submission booklet has been designed to include all the required documentation for installation of a new or relocated tramway and modification to existing installations. Each chapter is complete in that the chapter contains all the information required for submission to the Board office.

This includes:

- timetable
- checklist
- required documents
- policy guidelines (to assist in defining the new tramway or modifications)

If you have any questions regarding modification paperwork or classification of a modification, please call the Board office and we will be happy to assist you.

The documents in this submission booklet are available and downloadable off of the Board website at http://www.dora.state.co.us/tramway.

The Board can be reached at:

Colorado Passenger Tramway Safety Board
1560 Broadway, Suite 1350
Denver, CO 80202
Phone: 303-894-7785
Fax: 303-894-7790
http://www.dora.state.co.us/tramway

Chapter 1

New and Relocated Tramways

COLORADO PASSENGER TRAMWAY SAFETY BOARD

Definitions from the Colorado Passenger Tramway Safety Boards' Rules and Regulations.

1.2.4.1 Existing installations. Existing tramways, when reinstalled, shall be classified as new installations (see 1.2.4.2). For tramways that have not been relocated, but have not had routine maintenance performed within the previous two years or longer, these tramways shall be subject to an acceptance test as outlined in 2.1.1.11, 3.1.1.11, 4.1.1.11, 5.1.1.11, 6.1.1.11, 7.1.1.11 (ANSI B77.1-2006) and 2.1.1.11 (ANSI B77.2-2004) Acceptance Test. This test and inspection shall verify that the tramway is in compliance with the rules and regulations that were in effect at the time the tramway was originally constructed and current rules that affect all tramways. A tramway modification or alteration shall be defined by 21.1 and meet the requirements of 21.3, 21.4, and 21.5.

If an ANSI B77.1 or CPTSB rule was in existence at the time of the ropeway installation date or modification date of an existing tramway and is absent from the current CPTSB rules and regulations, it shall continue to be required.

1.2.4.2 New installations. New installations which have not received their initial registration by the effective date of these rules and regulations shall meet the requirements in effect at the time of initial registration.

21.1.1 New installation. "New Installation" means any passenger tramway installation not previously licensed and shall include both new and relocated passenger tramways (also reference rules 1.2.4.1 and 1.2.4.2).

COLORADO PASSENGER TRAMWAY SAFETY BOARD

NEW OR RELOCATED TRAMWAYS

TIMETABLE FOR SUBMISSIONS

The following is a timetable for submissions to the Colorado Passenger Tramway Safety Board.

1. Two (2) weeks prior to initial construction:

a. Notice of Modification or Installation (Form 100-12)
b. Preliminary Equipment Date Sheet
c. Preliminary Plans, Calculations and Drawings
(see Chapter 6)

2. Thirty (30) days prior to acceptance test:

a. Verification of Design (Form 110-99)
b. Acceptance Test Procedure (prepared by the Design Engineer)

3. Twenty-four (24) hour Prior to acceptance test:

a. Letter stating six (6) hours of continuous operation on each power unit classified as a "Prime mover", and one (1) hour of continuous operation on each power unit classified as "evacuation unit".

4. Prior to acceptance test:

a. Verification of Construction (Form 101-07)
b. Final Equipment Data Sheet
c. All other required documents and "AS BUILT" drawings
d. Concrete Test Reports
e. Certification of Testing for New Grips
f. Wire Rope Test Certificate
g. Certificate of Double Loaded Chair Around Bullwheel
h. Procedure / Criteria for NDT in Maintenance Manual

COLORADO PASSENGER TRAMWAY SAFETY BOARD

NEW OR RELOCATED TRAMWAYS

CHECKLIST FOR SUBMISSIONS

	COMPLETED	SUBMITTED
1. Two (2) weeks prior to initial construction:		
a. Notice of Modification or Installation (Form 100-12)	_____	_____
b. Preliminary Equipment Date Sheet	_____	_____
c. Preliminary Plans, Calculations and Drawings (see Chapter 6)	_____	_____
2. Thirty (30) days prior to acceptance test:		
a. Verification of Design (Form 110-99)	_____	_____
b. Acceptance Test Procedure (prepared by the Design Engineer)	_____	_____
3. Twenty-four (24) hour Prior to acceptance test:		
a. Letter stating six (6) hours of continuous operation for, Prime movers and one (1) for Evac Power unit.	_____	_____
4. Prior to acceptance test:		
a. Verification of Construction (Form 101-07)	_____	_____
b. Final Equipment Data Sheet	_____	_____
c. All other required documents and "AS BUILT" drawings (see Chapter 7)	_____	_____
d. Concrete Test Reports	_____	_____
e. Certification of Testing for New Grips	_____	_____
f. Wire Rope Test Certificate	_____	_____
g. Certificate of Double Loaded Chair Around Bullwheel	_____	_____
h. Procedure / Criteria for NDT in Maintenance Manual	_____	_____

This checklist is intended to aid in compliance with the Colorado Passenger Tramway Safety Board's Rules and Regulations.

Please note the following:

1. The lift identification number must be included on all plans and supporting documents submitted to the Board office. The plans/documents <u>will be returned</u> if this information is not provided. If there is any question on a lift identification number, please contact the Board office.

2. Acceptance tests will be scheduled by the Board on a first come, first serve basis. Please refer to the Board's policy regarding Acceptance Test Guidelines as published in the current Rules and Regulations booklet.

3. The owner shall notify the Board, no later than three (3) days before the acceptance test date, that the tramway is completed and ready for acceptance testing. Failure to notify the Board office may result in cancellation of the inspection.

4. All documents must be on file in the Board office prior to licensure.

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COLORADO PASSENGER TRAMWAY SAFETY BOARD

NOTICE OF MODIFICATION OR INSTALLATION

Pursuant to Colorado Passenger Tramway Safety Board's rules and regulations, this form shall be sent to the Board office prior to installation or modification of a tramway. Please provide all data and enclose the applicable fee. Mail this completed form with a check, payable to Colorado Passenger Tramway Safety Board, to same at 1560 Broadway, Suite 1350, Denver, Colorado 80202.

Licensee _____

Address of Licensee _____

TYPE OF WORK: New Installation ☐ (see proper fee below) Relocation ☐ (see proper fee below)

Major Mod ☐ (see proper fee below) Minor Mod ☐ (no fee required)

Type of Lift _____

Name/Number of Lift _____ Lift ID Number (if applicable) _____

Name of Design Engineer _____

Name of Construction Engineer _____

Area Contact Person & Title _____

Description of Work _____

_____

FEE SCHEDULE
The following fee schedule is in effect July 1, 2012 through June 30, 2013

PLEASE CIRCLE THE TYPE OF TRAMWAY CONSTRUCTION BEING COMPLETED

Modifications	Fee	New or Relocated	Fee
All Major Modifications.....	$150.00	Detachable……..	$3150.00
		Reversible Tram……..	$2775.00
		Funicular .....….	$2775.00
		Fixed Grip.....….	$1775.00
		Surface Lift.....	$1025.00
		Incline Elevator	$1025.00
		Tow…….....……..	$ 655.00
		Conveyor…….....……	$ 655.00

(Fee includes construction fee plus licensing fee)

Designated Agent's Signature _____

Title _____ Date _____

CPTSB FORM 100-12

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

LIFT ID:
MANUFACTURER:
YEAR INSTALLED:
LIFT DESCRIPTION:
LIFT CODE:
LIFT MODEL:
ACTIVE LIFT:

LICENSEE:
AREA ID:
ENTRY DATE:
LIFT NAME:
YEAR RELOCATED:
OLD AREA ID:
PUBLIC LAND:
LAST UPDATE:

GENERAL SPECIFICATIONS

CAPACITY (PRES): PPH
CAPACITY (INT): PPH
CAPACITY (ULT): PPH
VERTICAL RISE: FT.
HORIZONTAL LENGTH: FT.
SLOPE LENGTH: FT.
LOAD INTERVAL: SEC.
CARRIER No.:

SPEED: (FPM / MPS)
OVERHAULING:
LINE GAUGE: FT. IN.
CARRIER SPACING FT.
DRIVE LOCATION:
TENSION LOCATION:
ROTATION:
DOWNHILL LOAD: CARRIERS (OR %)

ROPE SPECIFICATIONS

MAIN HAUL ROPE

HAUL ROPE DIA:
HAUL ROPE SPECS:
NOMINAL BREAK: TONS
CALC SF:

HROPE MFG:
HROPEWGHT: LBS./FT.
MAX UPHILL ROPE ANGLE:

DRIVE EQUIPMENT

DRIVE 'A' (PRIME MOVER)

MAIN DRIVE (ELEC/GAS/DIESEL):

DRIVE BW DIA: (FT/M)
DRIVE BW MFG:
GEARBOX MFG:
SECONDARY RED. MFG:
SECONDARY RED. MDL:
SECONDARY RED. RATIO:

GEARBOX MDL:
GEARBOX RATIO:
MAIN DRV. LINE CONN:
DRV. LINE MFG:
DRV. LINE MDL:
DRV. LINE RATIO:

DRIVE 'B' (PRIME MOVER)

DRIVE 'B' (GAS/D/ELEC):
DRIVE 'B' MFG:
DRIVE 'B' MDL:
DRIVE 'B' HP:
DRIVE 'B' (FT/EVAC):

DRIVE 'B' (TC/FC):
DRIVE 'B' LINE CONN:
DRIVE 'B' FUEL TANK:
DRV. LINE RATIO:

DRIVE 'C' (EVACUATION DRIVE)

DRIVE 'C' (GAS/D/ELEC):
DRIVE 'C' MFG:
DRIVE 'C' MDL:
DRIVE 'C' HP:
DRIVE 'C' (FT/EVAC):

DRIVE 'C' (TC/FC):
DRIVE 'C' LINE CONN:
DRIVE 'C' FUEL TANK:
DRV. LINE RATIO:

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

BRAKING SYSTEMS

SERVICE BRAKE:
DRIVE TRAIN BACKSTOP:
DRIVE SHEAVE BRAKE:
ROLLBACK DEVICE:

OVERSPEED 110%:
OVERSPEED 115%:
BRAKE TEST TORQUE:

ELECTRICAL SYSTEM

DRIVE SYSTEM

DRIVE MFG:
MODEL:
AC OR DC:
YEAR MFG:
CONTROLER (SCR/DRUM/SOFT START, VFD, FULL VOLTAGE):

ELECTRIC MTR MFG:
ELECTRIC MTR MDL:
ELECTRIC MTR RPM:
ELECTRIC MTR HP:
REGEN DRIVE:

CONTROL SYSTEM

CONTROL MFG:
MODEL:
YEAR MFG:
PLC CONTROLED (Y/N):

ANTICOLLISION MFG:
ANTICOLLISION YR MFG:
DEROPEMENT CIRCUIT #1 (RPD,BRITTLE BAR,WIRE..):
DEROPEMENT CIRCUIT #2 (RPD,BRITTLE BAR,WIRE..):

TOWERS, GRIPS, LINE EQUIPMENT, CARRIER

TOWERS

NO. OF TOWERS:

LINE EQUIPMENT, CARRIERS

SHEAVE TRAIN MFG:
SHEAVE TRAIN MDL:
SHEAVE LINER:

CARRIERS

CARRIER MFG:
CARRIER MDL:
CARRIER YR MFG:
TOTAL WEIGHT CARRIER,GRIP,HANGER): LBS.
RESTBAR (Y/N):
FOOTREST (Y/N):

GRIPS

GRIP MFG:
GRIP MDL:
GRIP YR MFG:
GRIP SPRING TYPE:
GRIP SPRING QTY:
GRIP SLIP TEST: LBS.

TENSIONING EQUIPMENT

TOTAL TENSION FORCE: LBS.

TOP TENSION: LBS.

CWT ROPE MFG:
CWT ROPE SPEC:
CWT ROPE SF:
REEVE:
RATIO:
CWT MATERIAL:

BOTTOM TENSION: LBS.

No. OF CYLINDERS:
NOMINAL PRESSURE: LBS.
MAXIMUM PRESSURE: LBS.
MINIMUM PRESSURE: LBS.
ROD DIA:
CYLINDER BORE:

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COLORADO PASSENGER TRAMWAY SAFETY BOARD

VERIFICATION OF DESIGN

FOR
NEW TRAMWAYS
OR
RELOCATED TRAMWAYS

Licensee _____ Lift Identification # _____

Name / Number of Lift _____ Type of Lift _____

Address of Licensee _____

Name of Professional Engineer _____

Address of Professional Engineer _____

Description of Work _____

_____

Required Submissions:

1. A certified drawing log and one copy of each document as specified in CPTSB Submission booklet.

VERIFICATION

The design of the passenger tramway listed above conforms with the most current applicable rules and regulations of the Colorado Passenger Tramway Safety Board and is compatible with the existing tramway design.

Professional Engineer's Signature and Seal

SEAL &
SIGNATURE

Dora
Department of Regulatory Agencies

COLORADO PASSENGER TRAMWAY SAFETY BOARD

VERIFICATION OF CONSTRUCTION

FOR

NEW OR RELOCATED TRAMWAYS

Licensee: _____
Lift Identification #: _____
Name / Number of Lift: _____
Type of Lift: _____
Date: _____

Name of Professional Engineer: _____

Address of Professional Engineer: _____

Description of Work: _____

_____

Yes ☐ N / A ☐ 1. Foundation excavations were inspected before concrete placement. The soil / rock conditions meet or exceed the specifications of the design engineer.

Yes ☐ N / A ☐ 2. Concrete cylinder tests were made for the concrete in each terminal and each tower foundation, and the concrete meets the strength requirements specified by the tramway design engineer. A summary of the test results are attached.

Yes ☐ N / A ☐ 3. The size of concrete foundations as built and the location, number and size of reinforcing bars are as specified by the tramway design engineer.

Yes ☐ N / A ☐ 4. Structural and mechanical arrangements and components have been completed in accordance with the design engineer's final drawings and specifications.

Yes ☐ N / A ☐ 5. Electrical arrangements and components have been completed in accordance with the design engineer's final drawings and specifications.

VERIFICATION

I hereby verify that to the best of my knowledge and ability, the construction of the above-named passenger tramway has been completed in accordance with design drawings and specifications for the items listed above that were prepared by the tramway design engineer.

Professional Engineer's Signature and Seal

SEAL &
SIGNATURE

Chapter 2

Major Modifications

COLORADO PASSENGER TRAMWAY SAFETY BOARD

21.1.2 Major tramway modification. "Major Tramway Modification" means any modification to a passenger tramway which alters its verified design or verified construction and which results in a substantive change:

(a) in design speed of the system; or
(b) in capacity by changing the number of carriers, spacing of carriers, or load capacity of carriers; or
(c) in the path of the rope; or
(d) in the type of brakes and/or backstops or components thereof; or
(e) in structural arrangements; or
(f) in power or type of prime mover or auxiliary engine; or
(g) to control system logic.

Design and construction verifications are required. A major tramway modification may be deemed a new installation by the Board and current requirements shall be applicable (reference rule 1.2.4.3).

CLARIFICATION OF MAJOR MODIFICATIONS

A major modification is defined as a significant change to the tramway's certified design or certified construction and materially affects the tramway's integrity, operation or control (see rule 21.1.2). The following list is intended to provide guidance in determining those changes to the tramway that are properly classified as major modifications, however, this list is not all inclusive and it must be recognized that the circumstances pertaining to a particular modification may justify reclassification to another category. Therefore, it is the responsibility of the area operator to exercise sound judgment and to consult the Board if further clarification is needed.

All Major Modifications require an acceptance test (see rule 21.3.7) and shall be completed prior to public operation of the passenger tramway. A CPTSB Inspector shall be present during each acceptance test (see rule 22.5.1). All Major Modifications are required to meet the current CPTSB and ANSI Standards.

a) A change in the design speed of the system.

1. Any increase beyond certified design.

Note: A decrease is not a major modification.

b) A change in design capacity by changing the number of carriers, spacing of carriers, or load capacity of carriers.

1. Carriers may be added or removed to accommodate normal rope stretch or relocation in rope splice area.

Note: If this is done within the certified design parameters, it is not a modification.

2. Increasing load capacity is interpreted to mean changing the number of passengers (i.e. double chair to triple chair).

Note: A change in carrier spacing which results from normal operation (i.e. grip slippage) is not a modification.

c) A change in the path of the rope.

1. Adding or removing midway load/unload terminal.

2. Moving a tower.

3. Change in tower height or number of towers.

4. Change in line gauge.

5. Moving a terminal is at a minimum a major modification and may be considered a relocation of the lift upon Board review.

d) A change in the type of brakes and/or backstops or components thereof.

1. A change to the application mechanism, defined as the energy used to set brake (i.e. weights to springs, springs to hydraulics, or different types of weights, springs or hydraulics, etc.).

Note: If the specifications of the component are equivalent, then it is treated as a one for one replacement and not a major modification.

e) A change in structural arrangements.

1. A change to the cross arm (i.e. removing angle brace and making it self supporting).

2. Tower.

3. Terminal support.

f) A change in power transmission equipment or type of prime mover or auxiliary engine.

1. An increase or decrease in the horsepower of an electric motor or internal combustion engine.

2. Changing an AC to DC or vice versa, etc.

3. Changing an internal combustion engine to electric or vice versa.

4. A change to the arrangement of the following power transmission equipment - gearbox, fluid coupling, torque converter, V-Belt drive, pulleys, U-joints, shaft couplings (i.e. fluid coupling to torque converter, V-Belt to gear box, etc.).

Note: A change in electric motor or internal combustion engine with equivalent specifications is treated as a one for one replacement and not a major modification.

g) A change in critical components as outlined in rule 1.4.

1. A change in specifications of the critical components.
2. A change from center pole to bail chairs.
3. A change in grip models or manufacturers.
4. Adding chair bubbles, change in type of carrier (i.e. quad chair to gondola).

h) Substantive change to the control system logic.

1. Replacement of the control system.
2. Changing from relay logic to digital.
3. Multiple component changes within system controls.

COLORADO PASSENGER TRAMWAY SAFETY BOARD

MAJOR MODIFICATIONS

TIMETABLE FOR SUBMISSIONS

The following is a timetable for submissions to the Colorado Passenger Tramway Safety Board for Major Modifications.

1. Prior to the Major Modification:

a. Submit Notice of Modification (Form 100-12)
b. Preliminary Equipment Date Sheet - if available
c. Preliminary Plans, Calculations and Drawings - if available
(see Chapter 6)

2. Thirty (30) days prior to acceptance test:

a. Verification of Design (Form 120-07)
b. Acceptance Test Procedure (prepared by the Design Engineer)

3. Twenty-four (24) hour Prior to acceptance test:

a. Letter stating six (6) hours of continuous operation on each power unit classified as a “Prime mover”, and one (1) hour of continuous operation on each power unit classified as “evacuation unit”.

4. Prior to acceptance test:

a. Verification of Construction (Form 102-01)
b. Final Equipment Data Sheet Form showing modification (if applicable)
c. All other required documents and “AS BUILT” drawings
(see Chapter 7)
d. Concrete Test Reports

COLORADO PASSENGER TRAMWAY SAFETY BOARD

MAJOR MODIFICATIONS

CHECKLIST FOR SUBMISSIONS

The following is a checklist for submissions to the Colorado Passenger Tramway Safety Board.

	COMPLETED	SUBMITTED
1. Prior to the Major Modification:		
a. Submit Notice of Modification (Form 100-12)	_____	_____
b. Preliminary Equipment Date Sheet - if available	_____	_____
c. Preliminary Plans, Calculations and Drawings - if available (see Chapter 6)	_____	_____
2. Thirty (30) days prior to acceptance test:		
a. Verification of Design (Form 120-07)	_____	_____
b. Acceptance Test Procedure (prepared by the Design Engineer)	_____	_____
3. Twenty-four (24) hour Prior to acceptance test:		
a. Letter stating six (6) hours of continuous operation for, Prime movers and one (1) for Evac Power unit.	_____	_____
4. Prior to acceptance test:		
a. Verification of Construction (Form 102-01)	_____	_____
b. Final Equipment Data Sheet Form showing modification (if applicable)	_____	_____
c. All other required documents and "AS BUILT" drawings (see Chapter 7)	_____	_____
d. Concrete Test Reports	_____	_____

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Department of Regulatory Agencies

COLORADO PASSENGER TRAMWAY SAFETY BOARD

NOTICE OF MODIFICATION OR INSTALLATION

Pursuant to Colorado Passenger Tramway Safety Board's rules and regulations, this form shall be sent to the Board office prior to installation or modification of a tramway. Please provide all data and enclose the applicable fee. Mail this completed form with a check, payable to Colorado Passenger Tramway Safety Board, to same at 1560 Broadway, Suite 1350, Denver, Colorado 80202.

Licensee _____

Address of Licensee _____

TYPE OF WORK: New Installation ☐ (see proper fee below) Relocation ☐ (see proper fee below)

Major Mod ☐ (see proper fee below) Minor Mod ☐ (no fee required)

Type of Lift _____

Name/Number of Lift _____ Lift ID Number (if applicable) _____

Name of Design Engineer _____

Name of Construction Engineer _____

Area Contact Person & Title _____

Description of Work _____

_____

FEE SCHEDULE
The following fee schedule is in effect July 1, 2012 through June 30, 2013

PLEASE CIRCLE THE TYPE OF TRAMWAY CONSTRUCTION BEING COMPLETED

Modifications	Fee	New or Relocated	Fee
All Major Modifications.....	$150.00	Detachable……..	$3150.00
		Reversible Tram……..	$2775.00
		Funicular .....….	$2775.00
		Fixed Grip.....….	$1775.00
		Surface Lift.....	$1025.00
		Incline Elevator	$1025.00
		Tow…….....……..	$ 655.00
		Conveyor…….....……	$ 655.00

(Fee includes construction fee plus licensing fee)

Designated Agent's Signature _____

Title _____ Date _____

CPTSB FORM 100-12

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

LIFT ID:
MANUFACTURER:
YEAR INSTALLED:
LIFT DESCRIPTION:
LIFT CODE:
LIFT MODEL:
ACTIVE LIFT:

LICENSEE:
AREA ID:
ENTRY DATE:
LIFT NAME:
YEAR RELOCATED:
OLD AREA ID:
PUBLIC LAND:
LAST UPDATE:

GENERAL SPECIFICATIONS

CAPACITY (PRES): PPH
CAPACITY (INT): PPH
CAPACITY (ULT): PPH
VERTICAL RISE: FT.
HORIZONTAL LENGTH: FT.
SLOPE LENGTH: FT.
LOAD INTERVAL: SEC.
CARRIER No.:

SPEED: (FPM / MPS)
OVERHAULING:
LINE GAUGE: FT. IN.
CARRIER SPACING FT.
DRIVE LOCATION:
TENSION LOCATION:
ROTATION:
DOWNHILL LOAD: CARRIERS (OR %)

ROPE SPECIFICATIONS

MAIN HAUL ROPE

HAUL ROPE DIA:
HAUL ROPE SPECS:
NOMINAL BREAK: TONS
CALC SF:

HROPE MFG:
HROPEWGHT: LBS./FT.
MAX UPHILL ROPE ANGLE:

DRIVE EQUIPMENT

DRIVE 'A' (PRIME MOVER)

MAIN DRIVE (ELEC/GAS/DIESEL):

DRIVE BW DIA: (FT/M)
DRIVE BW MFG:
GEARBOX MFG:
SECONDARY RED. MFG:
SECONDARY RED. MDL:
SECONDARY RED. RATIO:

GEARBOX MDL:
GEARBOX RATIO:
MAIN DRV. LINE CONN:
DRV. LINE MFG:
DRV. LINE MDL:
DRV. LINE RATIO:

DRIVE 'B' (PRIME MOVER)

DRIVE 'B' (GAS/D/ELEC):
DRIVE 'B' MFG:
DRIVE 'B' MDL:
DRIVE 'B' HP:
DRIVE 'B' (FT/EVAC):

DRIVE 'B' (TC/FC):
DRIVE 'B' LINE CONN:
DRIVE 'B' FUEL TANK:
DRV. LINE RATIO:

DRIVE 'C' (EVACUATION DRIVE)

DRIVE 'C' (GAS/D/ELEC):
DRIVE 'C' MFG:
DRIVE 'C' MDL:
DRIVE 'C' HP:
DRIVE 'C' (FT/EVAC):

DRIVE 'C' (TC/FC):
DRIVE 'C' LINE CONN:
DRIVE 'C' FUEL TANK:
DRV. LINE RATIO:

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

BRAKING SYSTEMS

SERVICE BRAKE:
DRIVE TRAIN BACKSTOP:
DRIVE SHEAVE BRAKE:
ROLLBACK DEVICE:

OVERSPEED 110%:
OVERSPEED 115%:
BRAKE TEST TORQUE:

ELECTRICAL SYSTEM

DRIVE SYSTEM

DRIVE MFG:
MODEL:
AC OR DC:
YEAR MFG:
CONTROLER (SCR/DRUM/SOFT START, VFD, FULL VOLTAGE):

ELECTRIC MTR MFG:
ELECTRIC MTR MDL:
ELECTRIC MTR RPM:
ELECTRIC MTR HP:
REGEN DRIVE:

CONTROL SYSTEM

CONTROL MFG:
MODEL:
YEAR MFG:
PLC CONTROLED (Y/N):

ANTICOLLISION MFG:
ANTICOLLISION YR MFG:
DEROPEMENT CIRCUIT #1 (RPD,BRITTLE BAR,WIRE..):
DEROPEMENT CIRCUIT #2 (RPD,BRITTLE BAR,WIRE..):

TOWERS, GRIPS, LINE EQUIPMENT, CARRIER

TOWERS

NO. OF TOWERS:

LINE EQUIPMENT, CARRIERS

SHEAVE TRAIN MFG:
SHEAVE TRAIN MDL:
SHEAVE LINER:

CARRIERS

CARRIER MFG:
CARRIER MDL:
CARRIER YR MFG:
TOTAL WEIGHT CARRIER,GRIP,HANGER): LBS.
RESTBAR (Y/N):
FOOTREST (Y/N):

GRIPS

GRIP MFG:
GRIP MDL:
GRIP YR MFG:
GRIP SPRING TYPE:
GRIP SPRING QTY:
GRIP SLIP TEST: LBS.

TENSIONING EQUIPMENT

TOTAL TENSION FORCE: LBS.

TOP TENSION: LBS.

CWT ROPE MFG:
CWT ROPE SPEC:
CWT ROPE SF:
REEVE:
RATIO:
CWT MATERIAL:

BOTTOM TENSION: LBS.

No. OF CYLINDERS:
NOMINAL PRESSURE: LBS.
MAXIMUM PRESSURE: LBS.
MINIMUM PRESSURE: LBS.
ROD DIA:
CYLINDER BORE:

Dora
Department of Regulatory Agencies

COLORADO PASSENGER TRAMWAY SAFETY BOARD

VERIFICATION OF DESIGN

FOR MODIFICATIONS

MAJOR ☐ **MINOR** ☐

Licensee _____ Lift Identification # _____

Name / Number of Lift _____ Type of Lift _____

Address of Licensee _____

Name of Professional Engineer _____

Address of Professional Engineer _____

Description of Work _____

_____

VERIFICATION

The design of the modifications listed above conforms with the applicable rules and regulations of the Colorado Passenger Tramway Safety Board effective at the time of signing and is compatible with the existing tramway design.

Professional Engineer's Signature and Seal

SEAL &
SIGNATURE

Dora
Department of Regulatory Agencies

COLORADO PASSENGER TRAMWAY SAFETY BOARD

VERIFICATION OF CONSTRUCTION

FOR

MAJOR MODIFICATIONS

Licensee: _____
Lift Identification #: _____
Name / Number of Lift: _____
Type of Lift: _____
Date: _____

Name of Professional Engineer: _____

Address of Professional Engineer: _____

Description of Work: _____

_____

Yes ☐ N / A ☐ 1. Foundation excavations were inspected before concrete placement. The soil / rock conditions meet or exceed the specifications of the design engineer.

Yes ☐ N / A ☐ 2. Concrete cylinder tests were made for the concrete in each terminal and each tower foundation, and the concrete meets the strength requirements specified by the tramway design engineer. A summary of the test results are attached.

Yes ☐ N / A ☐ 3. The size of concrete foundations as built and the location, number and size of reinforcing bars are as specified by the tramway design engineer.

Yes ☐ N / A ☐ 4. Structural and mechanical arrangements and components have been completed in accordance with the design engineer's final drawings and specifications.

Yes ☐ N / A ☐ 5. Electrical arrangements and components have been completed in accordance with the design engineer's final drawings and specifications.

VERIFICATION

I hereby verify that to the best of my knowledge and ability, the construction of the above-named passenger tramway has been completed in accordance with design drawings and specifications for the items listed above that were prepared by the tramway design engineer.

Professional Engineer's Signature and Seal

SEAL &
SIGNATURE

Chapter 3

Minor Modifications

COLORADO PASSENGER TRAMWAY SAFETY BOARD

21.1.3 Minor modification. "Minor Modification" means any modification, addition, or deletion to a passenger tramway which does not meet the criteria of a major modification but which results in a significant change in the tramway's verified design or verified construction and materially affects its integrity, operation or control. A design verification is required, however, no construction verification is required. A minor modification may be considered a major modification at the discretion of the Board. If the authority appointed by the Board disagrees with the classification of the modification as "minor", the matter may be referred to the Board for a final decision.

CLARIFICATION OF MINOR MODIFICATIONS

A minor modification is defined as a modification, addition or deletion to a tramway that alters the tramway's certified design or certified construction (see rule 21.1.3). The following list is intended to provide guidance in determining those changes to the tramway that are properly classified as minor modifications, however, this list is not all inclusive and it must be recognized that the circumstances pertaining to a particular modification may justify reclassification to another category. Therefore, it is the responsibility of the area operator to exercise sound judgment and to consult the Board if further clarification is needed. All Minor Modifications are required to meet the current CPTSB and ANSI Standards.

a) A repair or reinforcement of structural components including structural portions of critical components. This is to exclude wire rope and wire rope repair. Refer to Section 7.

1. Welding or adding reinforcement steel on bullwheels.
2. Adding gussets to carriers.
3. Repair of dented tower tube caused by snowcat.

b) A change in configuration of tower machinery.

1. Changing in number of sheaves on sheave assembly.
2. Change from support or depression to a combination sheave assembly.

c) Substantive change to component systems within the main controls (all system modifications shall utilize an acceptance test by a qualified engineer to verify system changes and performance and the test results shall be documented).

1. Adding test circuitry (i.e. zone masking or brake testing).
2. Upgrades in the low voltage control system.
3. Change to an anti-collision system.
4. Change to the rope position detectors.

5. Change to motor controller run command and feedback.

6. Change to rope speed feedback.

7. Any change in the software logic that would affect a protection or operational circuit.

d) Substantive change to the motor controller drive system (all system modifications shall utilize an acceptance test by a qualified engineer and the test results shall be documented).

1. An upgrade to or a change from analog to digital drives where the control logic remains the same with drives of equivalent or similar performance specifications.

Note: Those that are not equivalent or similar are considered a major modification.

e) Other.

1. Changing type of deropement switches on all towers (i.e. break fork to proximity).

2. Any addition or deletion to carriers after the initial acceptance test, which are not considered one-for-one replacements.

3. Changing chair seat type (i.e. plastic to metal).

4. Changing chair guides (i.e. moving guidage contact from stem to bail, lengthening chair bail).

5. Weighting carriers.

6. Increasing size or addition of communication lines.

7. Change in roll back detection devices (i.e. whisker switch to photo eye; mechanical switch to photo eye).

8. A change in the type of brake releasing mechanism (i.e. manual to hydraulic).

9. Change in brake plumbing configuration.

10. Moving pump actuator hand pump (i.e. motor room to lift shack or vice versa).

11. A change to type of brake pump (i.e. manual to electric).

12. An addition or change of a supervisory, safety or automatic emergency shutdown circuit.

13. Adding, moving or changing lifting frames, ladders, platforms and catwalks.

COLORADO PASSENGER TRAMWAY SAFETY BOARD

MINOR MODIFICATIONS

TIMETABLE FOR SUBMISSIONS

The following is a timetable for submissions to the Colorado Passenger Tramway Safety Board for Minor Modifications.

1. Prior to the Minor Modification:

a. Submit Notice of Modification (Form 100-12)
b. Preliminary Equipment Date Sheet - if available
c. Preliminary Plans, Calculations and Drawings - if available
(see Chapter 6)

2. Prior to the Modification Completion:

a. Verification of Design (Form 120-07) (keep on file at your area and submit copy to Board office)
b. Acceptance Test Procedure (prepared by the Design Engineer) (if applicable)
c. Final Equipment Data Sheet Form showing modification (if applicable)
d. All other required documents and "AS BUILT" drawings (if applicable)
(see Chapter 7)

COLORADO PASSENGER TRAMWAY SAFETY BOARD

MINOR MODIFICATIONS

CHECKLIST FOR SUBMISSIONS

The following is a timetable for submissions to the Colorado Passenger Tramway Safety Board for Minor Modifications.

	COMPLETED	SUBMITTED
1. Prior to the Minor Modification:		
a. Submit Notice of Modification (Form 100-12)	_____	_____
b. Preliminary Equipment Date Sheet - if available	_____	_____
c. Preliminary Plans, Calculations and Drawings - if available (see Chapter 6)	_____	_____
2. Prior to the Modification Completion:		
a. Verification of Design (Form 120-07) (keep on file at your area and submit copy to Board office)	_____	_____
b. Final Equipment Data Sheet Form showing modification (if applicable)	_____	_____
c. All other required documents and "AS BUILT" drawings (if applicable) (see Chapter 7)	_____	_____

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COLORADO PASSENGER TRAMWAY SAFETY BOARD

NOTICE OF MODIFICATION OR INSTALLATION

Pursuant to Colorado Passenger Tramway Safety Board's rules and regulations, this form shall be sent to the Board office prior to installation or modification of a tramway. Please provide all data and enclose the applicable fee. Mail this completed form with a check, payable to Colorado Passenger Tramway Safety Board, to same at 1560 Broadway, Suite 1350, Denver, Colorado 80202.

Licensee _____

Address of Licensee _____

TYPE OF WORK: New Installation ☐ (see proper fee below) Relocation ☐ (see proper fee below)

Major Mod ☐ (see proper fee below) Minor Mod ☐ (no fee required)

Type of Lift _____

Name/Number of Lift _____ Lift ID Number (if applicable) _____

Name of Design Engineer _____

Name of Construction Engineer _____

Area Contact Person & Title _____

Description of Work _____

_____

FEE SCHEDULE
The following fee schedule is in effect July 1, 2012 through June 30, 2013

PLEASE CIRCLE THE TYPE OF TRAMWAY CONSTRUCTION BEING COMPLETED

Modifications	Fee	New or Relocated	Fee
All Major Modifications.....	$150.00	Detachable……..	$3150.00
		Reversible Tram……..	$2775.00
		Funicular .....….	$2775.00
		Fixed Grip.....….	$1775.00
		Surface Lift.....	$1025.00
		Incline Elevator	$1025.00
		Tow…….....……..	$ 655.00
		Conveyor…….....……	$ 655.00

(Fee includes construction fee plus licensing fee)

Designated Agent's Signature _____

Title _____ Date _____

CPTSB FORM 100-12

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

LIFT ID:
MANUFACTURER:
YEAR INSTALLED:
LIFT DESCRIPTION:
LIFT CODE:
LIFT MODEL:
ACTIVE LIFT:

LICENSEE:
AREA ID:
ENTRY DATE:
LIFT NAME:
YEAR RELOCATED:
OLD AREA ID:
PUBLIC LAND:
LAST UPDATE:

GENERAL SPECIFICATIONS

CAPACITY (PRES): PPH
CAPACITY (INT): PPH
CAPACITY (ULT): PPH
VERTICAL RISE: FT.
HORIZONTAL LENGTH: FT.
SLOPE LENGTH: FT.
LOAD INTERVAL: SEC.
CARRIER No.:

SPEED: (FPM / MPS)
OVERHAULING:
LINE GAUGE: FT. IN.
CARRIER SPACING FT.
DRIVE LOCATION:
TENSION LOCATION:
ROTATION:
DOWNHILL LOAD: CARRIERS (OR %)

ROPE SPECIFICATIONS

MAIN HAUL ROPE

HAUL ROPE DIA:
HAUL ROPE SPECS:
NOMINAL BREAK: TONS
CALC SF:

HROPE MFG:
HROPEWGHT: LBS./FT.
MAX UPHILL ROPE ANGLE:

DRIVE EQUIPMENT

DRIVE 'A' (PRIME MOVER)

MAIN DRIVE (ELEC/GAS/DIESEL):

DRIVE BW DIA: (FT/M)
DRIVE BW MFG:
GEARBOX MFG:
SECONDARY RED. MFG:
SECONDARY RED. MDL:
SECONDARY RED. RATIO:

GEARBOX MDL:
GEARBOX RATIO:
MAIN DRV. LINE CONN:
DRV. LINE MFG:
DRV. LINE MDL:
DRV. LINE RATIO:

DRIVE 'B' (PRIME MOVER)

DRIVE 'B' (GAS/D/ELEC):
DRIVE 'B' MFG:
DRIVE 'B' MDL:
DRIVE 'B' HP:
DRIVE 'B' (FT/EVAC):

DRIVE 'B' (TC/FC):
DRIVE 'B' LINE CONN:
DRIVE 'B' FUEL TANK:
DRV. LINE RATIO:

DRIVE 'C' (EVACUATION DRIVE)

DRIVE 'C' (GAS/D/ELEC):
DRIVE 'C' MFG:
DRIVE 'C' MDL:
DRIVE 'C' HP:
DRIVE 'C' (FT/EVAC):

DRIVE 'C' (TC/FC):
DRIVE 'C' LINE CONN:
DRIVE 'C' FUEL TANK:
DRV. LINE RATIO:

COLORADO PASSENGER TRAMWAY SAFETY BOARD

LIFT EQUIPMENT DATA SHEET

BRAKING SYSTEMS

SERVICE BRAKE:
DRIVE TRAIN BACKSTOP:
DRIVE SHEAVE BRAKE:
ROLLBACK DEVICE:

OVERSPEED 110%:
OVERSPEED 115%:
BRAKE TEST TORQUE:

ELECTRICAL SYSTEM

DRIVE SYSTEM

DRIVE MFG:
MODEL:
AC OR DC:
YEAR MFG:
CONTROLER (SCR/DRUM/SOFT START, VFD, FULL VOLTAGE):

ELECTRIC MTR MFG:
ELECTRIC MTR MDL:
ELECTRIC MTR RPM:
ELECTRIC MTR HP:
REGEN DRIVE:

CONTROL SYSTEM

CONTROL MFG:
MODEL:
YEAR MFG:
PLC CONTROLED (Y/N):

ANTICOLLISION MFG:
ANTICOLLISION YR MFG:
DEROPEMENT CIRCUIT #1 (RPD,BRITTLE BAR,WIRE..):
DEROPEMENT CIRCUIT #2 (RPD,BRITTLE BAR,WIRE..):

TOWERS, GRIPS, LINE EQUIPMENT, CARRIER

TOWERS

NO. OF TOWERS:

LINE EQUIPMENT, CARRIERS

SHEAVE TRAIN MFG:
SHEAVE TRAIN MDL:
SHEAVE LINER:

CARRIERS

CARRIER MFG:
CARRIER MDL:
CARRIER YR MFG:
TOTAL WEIGHT CARRIER,GRIP,HANGER): LBS.
RESTBAR (Y/N):
FOOTREST (Y/N):

GRIPS

GRIP MFG:
GRIP MDL:
GRIP YR MFG:
GRIP SPRING TYPE:
GRIP SPRING QTY:
GRIP SLIP TEST: LBS.

TENSIONING EQUIPMENT

TOTAL TENSION FORCE: LBS.

TOP TENSION: LBS.

CWT ROPE MFG:
CWT ROPE SPEC:
CWT ROPE SF:
REEVE:
RATIO:
CWT MATERIAL:

BOTTOM TENSION: LBS.

No. OF CYLINDERS:
NOMINAL PRESSURE: LBS.
MAXIMUM PRESSURE: LBS.
MINIMUM PRESSURE: LBS.
ROD DIA:
CYLINDER BORE:

Dora
Department of Regulatory Agencies

COLORADO PASSENGER TRAMWAY SAFETY BOARD

VERIFICATION OF DESIGN

FOR MODIFICATIONS

MAJOR ☐ **MINOR** ☐

Licensee _____ Lift Identification # _____

Name / Number of Lift _____ Type of Lift _____

Address of Licensee _____

Name of Professional Engineer _____

Address of Professional Engineer _____

Description of Work _____

_____

VERIFICATION

The design of the modifications listed above conforms with the applicable rules and regulations of the Colorado Passenger Tramway Safety Board effective at the time of signing and is compatible with the existing tramway design.

Professional Engineer's Signature and Seal

SEAL &
SIGNATURE

Chapter 4

Minor Alterations

COLORADO PASSENGER TRAMWAY SAFETY BOARD

MINOR ALTERATIONS

NO SUBMISSION DOCUMENTS ARE REQUIRED

21.1.4 Minor alteration. "Minor Alteration" means any other addition or deletion to a passenger tramway which does not meet the criteria of a major or minor modification or one for one replacement, and which does not materially affect the tramway's integrity, operation or control. No design or construction verification is required. A minor alteration may be considered a minor modification or a major modification at the discretion of the Board.

21.5 Documentation of minor alterations. The area operator shall keep a log documenting all minor alterations made to each of its passenger tramways. Such log shall be readily available for inspection by the Board or designated representatives of the Board and shall contain at a minimum the following information:

(a) tramway name or other means of identification;
(b) date of alteration;
(c) purpose of alteration;
(d) description of alteration;
(e) names of personnel performing such alteration;
(f) date of alteration review and acceptance by area operator or its authorized agent.

Each area operator's log of minor alterations shall be readily available to the Board's inspectors during every inspection.

CLARIFICATION OF MINOR ALTERATIONS

A minor alteration is defined as any other addition or deletion to a passenger tramway that does not meet the criteria of a major or minor modification or one for one replacement, <u>and</u> that does not materially affect the tramway's integrity, operation or control (see rule 21.1.4). The following list is intended to provide guidance in determining those changes to the tramway that are properly classified as minor alterations, however, this list is not all inclusive and it must be recognized that the circumstances pertaining to a particular alteration may justify reclassification to another category. Therefore, it is the responsibility of the area operator to exercise sound judgment and to consult the Board if further clarification is needed.

a) An addition of control system logic or circuits which does not affect the integrity of the existing control system logic

1. Timing circuit that will not allow pumps to run beyond rated cycle.

2. Adding manually operated bypass circuits.

b) An addition or change of operating circuits (reference x.2.1.7.1)

1. Addition of down loader safety gate or photo eye.
2. Changing safety gate switch from limit switch to photo eye.
3. Addition of normal and emergency switches and speed control.
4. Adding signaling devices or switches.
5. Addition or change to manually operated emergency shutdown switches.

c) Adding, moving or changing personnel access and safety equipment.

1. Machinery guards.
2. Rotating machinery retainers.

d) Replacement of a component with an equivalent component whose operating parameters are identical to the original equipment.

1. Communication systems (i.e. phone).
2. Hydraulic pump.

e) Removal of a component that is not required by code and is not part of the certified design.

1. Safety gate for downloading because lift is not downloaded lift anymore.

Chapter 5

One - for - One Replacement

COLORADO PASSENGER TRAMWAY SAFETY BOARD

ONE FOR ONE REPLACEMENT

NO SUBMISSION DOCUMENTS ARE REQUIRED

21.1.5 One for one replacement. "One for One Replacement" means the replacement of a component with an equal component. A one for one replacement shall be considered as normal maintenance and not as a modification. No design or construction verification is required.

CLARIFICATION OF ONE FOR ONE REPLACEMENT

A one for one replacement is defined as a replacement of a component with an equivalent component (see rule 21.1.5). The following list is intended to provide guidance in determining those changes to the tramway that are properly classified as one for one replacement, however, this list is not all inclusive and it must be recognized that the circumstances pertaining to a particular replacement may justify reclassification to another category. Therefore, it is the responsibility of the area operator to exercise sound judgment and to consult the Board if further clarification is needed.

Replacing:

1. batteries and chargers;
2. sheave and bullwheel liners;
3. bearing/bushings;
4. detach mechanism rails;
5. wear strap on top of chair head;
6. heating, venting, lighting;
7. tires;
8. seat pads, footrest bumpers, etc.

Chapter 6

Submission Guidelines

For <u>Preliminary</u>

Drawings and Calculations

COLORADO PASSENGER TRAMWAY SAFETY BOARD

SUBMISSION GUIDELINES

FOR PRELIMINARY DRAWINGS and CALCULATIONS

Pursuant to Colorado Passenger Tramway Safety Board's Rule 21.2.5 and 21.3.5, the following guidelines shall be used for the submission of designs, plans, and specifications prior to the construction of new or relocated lifts.

A. Lift Technical Data

1. Submit lift equipment data sheet.

B. Drawing Submittals

1. Submit a ground profile showing the location of towers, terminals, ramp and housing structures;

2. Show cable position and deflection under maximum and minimum conditions of loading.

C. Calculations

1. Number of sheaves per tower and sheave loading under maximum / minimum loading conditions;

2. Foundation loadings and any restrictions or special considerations.

3. Maximum Tower stresses.

All drawing and calculations shall be signed and sealed by a Colorado Licensed Professional Engineer.

For questions concerning drawing or calculation format, please see the "Submission Guidelines for Final 'AS BUILT' Drawings and Calculations" located in Chapter 7.

Chapter 7

Submission Guidelines

For Final

Drawings and Calculations

COLORADO PASSENGER TRAMWAY SAFETY BOARD

SUBMISSION GUIDELINES

FOR FINAL "AS BUILT" DRAWINGS AND CALCULATIONS

Pursuant to Colorado Passenger Tramway Safety Board's Rule 21.2.9 and 21.3.9, the following guidelines shall be used for the submission of designs, plans, and specifications for new, relocated, or modified lifts.

I. Drawings

A. Drawing Standards

1. Each drawing and the cover page of bound documents shall have a title block which clearly indicates the project for which this document is being submitted. This should indicate the name of the licensee and the name of the tramway. The title block should also indicate the title of the drawing, drawing number, revision number, and date, as applicable. The title block shall have lettering not less than 3/16 inch.

2. Drawings and submissions received will be assumed "Certified for Construction" unless otherwise noted. "As Built" drawings should be clearly identified.

3. All drawings submitted will be microfilmed for storage. Prints must be of acceptable quality.

4. Submit drawings rolled or flat rather than folded.

5. Manufacturers who are doing multiple installations may submit one complete set of "Standard Drawings" per season. Each drawing must clearly indicate that it is a "Manufacturer's Standard Drawing". In addition, a drawing log must be submitted with a statement that these drawings are for use on multiple installations. Submissions for individual installations need not include copies of "Standard Drawings," provided that a drawing log is submitted which clearly indicates that standard drawings are being used and have been previously submitted. Drawing logs shall be signed and sealed by a Professional Engineer.

6. The following is excerpted from the Rules of Procedure of the State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors to be used in conjunction with C.R.S. 12-25-117 and Rule 5.1.

5.1 – Sealing Requirements for Professional Engineers

5.1.1 – Seal Specifications. Pursuant to Section 12-25-117(1), C.R.S., the seal authorized by the State Board of Licensure for Architects, Professional Engineers and Professional Land Surveyors for licensees is of the crimp type, rubber stamp type, and/or computer generated type. The seal shall be of a design and size shown below. The diameter of the outer circle shall be nominally 1 5/8 inches (41 mm) and the diameter of the inner circle shall be nominally 15/16 inches (24 mm). The license number assigned shall be

centered in the inner area of the seal in the space occupied by the word "NUMBER" and the size of the numbers shall be the same size of the letters in the word "NUMBER". The word "NUMBER" should not appear on the seal. Seals obtained prior to July 1, 2005 shall be deemed acceptable.

5.1.2 Seal Application. A manual or electronic seal must be applied to either the final reproducible, the final reproduction, or the final electronic record document of all of the following:

(a) Each sheet of engineering drawings.

(b) The cover, title page, and table of contents of specifications bound in book form.

(c) The title page of details bound in book form and prepared specifically to supplement project drawings.

(d) The title or signature page of engineering reports.

5.1.3 Signature and Date Required. The manual or electronic signature of the licensee and date of signature shall be affixed to the document. The signature of the licensee and date of signature shall appear through the seal.

5.1.3.1. Signature May Be Required By Public Agencies. A public agency may require a manual or electronic signature of the licensee on reproductions.

5.1.4 – Sealing Documents That Are Not Final. When a licensee seals engineering documents that are not final, the status of the engineering documents must be identified as preliminary. Further qualifying descriptors may be added, e.g. “for review,” “not for construction,” “for bid only.”

5.1.5 – Limiting Scope of Responsibility. When a licensee signs and seals a document, the licensee is responsible for the entire document unless the licensee limits the seal to one or more disciplines (e.g. civil, structural, mechanical, etc.) shown on the document. To limit the scope of responsibility for an engineering document to one or more disciplines, on the face of such document, the licensee must include a specific written statement adjacent to the seal that accurately reflects the scope of responsibility for the document.

All disciplines or aspects of the work shown on that document must be signed and sealed by the person(s) in responsible charge.

5.1.6 – Specifying Manufactured Components in Designs. Licensees may specify manufactured components that are exempted by statute as part of design documents. "Manufactured components" for the purposes of this rule shall consist of such items as a pump, motor, prefabricated truss, or other type of item that is manufactured in multiple units for selection and use in projects that must be designed by professional engineers. Systems of manufactured components that are specific to a particular use or application must also be designed by a professional engineer. The licensee may show the manufactured component on the drawing or document and is responsible for the correct selection and specification of the manufactured components, but is not responsible for the proper design and manufacture of the manufactured components selected.

5.1.7 – Retaining Engineering Documents. The sealed, signed, and dated reproducible, or a copy of all documents displaying the licensee's seal, signature, and date, shall be retained by the licensee or the licensee's employer for a minimum of three years from the beginning of beneficial use.

7. Pursuant to Rule 1.2.4.1 of the CPTSB Rules and Regulations, a relocated tramway is considered a new installation. Therefore, the current CPTSB submission requirements for new installations must be complied with if a tramway is relocated. This includes requirements for drawings submissions and certification. In those cases where the tramway is being relocated from another state, the licensee must be able to provide complete drawing submissions.

In instances where the tramway is being relocated from another site in Colorado, the CPTSB may have drawings on file, however, these drawings must be resubmitted to the CPTSB, properly titled, and with the appropriate certification. We also realize that there may be previous drawings for a tramway which are no longer accurate (i.e. profile and arrangement drawings, tower foundations drawings, etc.) and new drawings must be submitted as necessary.

B. Drawing Submittals

The Engineer should submit a drawing log of all pertinent drawings. One copy of each of the drawings listed on the drawing log should be submitted to the Board. The following drawings, as applicable, should be submitted:

1. Structures

   a. Machinery arrangement drawings

   b. Structural drawings:
      (1) Drive Terminal;
      (2) Return Terminal;
      (3) Typical tower;
      (4) Ramps, terminal housing, and related structures.

   c. Foundation drawings and calculations:
      (1) Terminals;
      (2) Towers;
      (3) Major related structures.

   d. Counterweight details:
      (1) Size;
      (2) Weight;
      (3) Travel;
      (4) Guides;
      (5) Enclosures;
      (6) Material.

   e. Details of:
      (1) Track cable saddles and supports (bi-cable only);
      (2) Tower and terminal carrier guides.

2. Line sheaves and carriers

   a. Line sheave detail: bearings, liner, rated capacity;
   b. Line sheave assemblies;
   c. Provision for sheave alignment;
   d. Cable derailment guards;
   e. Carrier details;
   f. Grip details.

3. Design drawings or manufacturer's specification sheets for:

   a. Drive and idler sheave, shaft and bearings;
   b. Counterweight sheaves;
   c. Prime mover;
   d. Auxiliary engine;
   e. Speed reducer;
   f. Open gears, V-belts or drive system;
   g. Couplings;
   h. Clutch or torque converter;
   i. Service and emergency brakes;
   j. Backstop;
   k. Overspeed control;
   l. Speed control arrangement.

4. Electrical and communications

   a. Schematic wiring diagram and a listing of manufacturers, model, size, and identification numbers of all electric systems used in the tramway.

   b. Automatic safety stops:
      (1) Tower derailment switches;
      (2) Counterweight limit switches;
      (3) Manual and automatic stops.

   c. Provisions for grounding

   d. Lightning protection (if provided)

   Note: Detail calculations for structural and mechanical equipment selection may be requested.

II. Profile and Tabulations

A. Submit lift equipment data sheet.

B. Profile:

1. Submit a ground profile showing the location of towers, terminals, ramp and housing structures;
2. Show cable position and deflection under maximum and minimum conditions of loading.

C. Tabulate and submit:

1. Number of sheaves per tower and sheave loading under maximum / minimum loading conditions;

2. Foundation loadings and any restrictions or special considerations.

3. Maximum Tower stresses.

III. Testing Certifications

Submit the following certifications:

A. Certification from manufacturer that each grip has been non-destructively tested;
B. Wire rope test reports as required by Rules A.2.2.1 and A.2.2.2;
C. Wire rope splice certification;
D. Certification for end connections as required by Rule A.3.2.4;
E. Concrete test results for foundations;
F. Certification for a "double loaded" chair as required by Rule 4.1.4.5.2.

Chapter 8

Variance Requests

GUIDELINES FOR REQUESTING A VARIANCE FROM THE CPTSB

The rules of the Colorado Passenger Tramway Safety Board provide the Board with authority to grant exceptions to its rules. The authority to grant exceptions is outlined in Rule 1.2.3 Exceptions.

When applying for a variance, it is important that you fully outline why the variance is being requested and why it will not jeopardize the public's health or safety if it is granted. The following guidelines will assist you is submitting a complete variance request.

- **Define whether you are requesting a temporary or permanent variance:**
  - Explain what length of time is required and why.
  - Are you requesting a waiver of the rule, a delay of implementation or suggesting an alternative solution?

- **Provide definitive information as to why the variance can be granted with no additional or undue threat to the health and safety of the public, such as:**
  - Operational history;
  - History of similar lifts with similar conditions;
  expert testimony; or,
  - An alternative solution to protect the public.

- **Give a complete explanation defining the necessity of the variance:**
  - An explanation of the current or proposed condition.
  - Why it does not conform with the rule.
  - What would be necessary to comply with the rule?
  - Background information about the condition.
  - How it has affected public health and safety.

Note: Photographs and diagrams are helpful to the Board.

- **Clearly state under which reference in Rule 1.2.3 you are requesting the variance:**
  - Is it unreasonable operational or design condition or unreasonable economic burden?
    - è If based upon unreasonable operational or design condition, explain what you have done in an attempt to comply with the rule and why it was not successful.
      Note: Referring to professionals and experts in the field who have been consulted is helpful to the Board, but please provide their qualifications.
    - è If based upon unreasonable economic burden, provide estimates to complete the work and documentation of how those costs would affect other operational demands. Show why the expenditure is considered an economic burden to your area.

If you require further information or have questions please contact the Board office.