

CAIS STANDARD MANUAL

SYSTEM NO. 12 BUILDING SPECIALTY SYSTEMS

19960320 104

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Issued April 28, 1995

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12 BUILDING SPECIALTY SYSTEMS

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12 BUILDING SPECIALTY SYSTEMS

ABSTRACT

GENERAL ORGANIZATION

At this installation the list of facilities to be surveyed, including infrastructure, will be addressed on the basis of 32 unique systems that form the CAIS Engineering Deficiency Standards and Inspection Methods document. Each system deals with a specific technical aspect of the facility to be surveyed. Within each system a further breakdown is made to subsystems, each having a related list of components. Detailed observations of the listed defects are provided so as to allow the entry of observed quantification data. A DOD CAIS manual is provided for each of the 32 systems with an internal organization as outlined below:

INSPECTOR'S GUIDE

I. General

- A. Level I Inspection Method Description
- B. Level II Inspection Method Description
- C. Level III Inspection Method Description

II. General Inspection

- A. Process. This section describes the process of the inspection activity.
- B. Location. This section describes the procedure for locating the inspection units in the facility or infrastructure on this installation.

III. Inspector Qualifications

This section notes the minimum qualifications for the person or persons performing the survey.

IV. Inspection Unit

This section describes how the IU (Inspection Unit) is determined for the particular system being surveyed.

V. Unit Costs

This section notes the nature of repair costs for this system.

VI. Standard Safety Requirements

This section lists safety procedures and equipment required to implement a safe environment for the conduct of this survey.

VII. Standard Tools

This section lists a set of standard tools required for the general conduct of this survey.

VIII. Special Tools and Equipment Requirements

This section refers to special tools or equipment requirements endemic to the nature of the system being surveyed.

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IX. Level II Inspection Method Keys

This section explains the use of keys as they relate to Level II Guide Sheets.

X. Level III Inspection Method Keys

This section explains the use of keys as they relate to Level III Guide Sheets.

XI. Replacement Cost

This section describes the nature and location of replacement cost data.

XII. Appendices

Appendix A. Provides a listing and definition of all abbreviations used both in the Standards and in the data base.

Appendix B. Provides a glossary of terms with their definitions as used in the Standard.

Appendix C. This section contains a listing of the average life cycle durations for each assembly* in the Standard.

- * Assembly is a term describing the level at which replacement rather than repair occurs. This can be at the subsystem or component designation, depending on the system being surveyed.

SYSTEM TREE

The System Tree is a graphical representation of the Work Breakdown Structure, showing system, subsystem and component relationships for the Building Specialty System.

INSPECTION METHODS

Description

Describes the nature of what is to be condition surveyed.

Special Tool and Equipment Requirements

Lists any special tools required for this specific subsystem.

Special Safety Requirements

This section outlines any special safety measures or equipment required for this specific subsystem so as to maintain a safe environment and process in the conduct of the condition survey.

Component List

All components to be surveyed under this subsystem are listed here.

Related Subsystems

All other subsystems that have a survey relationship to this subsystem are listed here to help coordinate a complete and thorough condition assessment survey.

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Standard Inspection Procedure

This statement indicates the various levels of survey effort required for this subsystem.

Components

The previously listed components of this subsystem are described with a survey procedure recommended on a component by component basis. For each component there is a listing of defects with each defect broken down into observations describing the nature and severity of the defective condition observed. The surveyor enters a quantification value for each defect/observation encountered in the field CAIS device (DCD) to record the result of his survey.

References

This page lists the reference sources from which the foregoing subsystem data was developed.

Guide Sheet Control Number

This section lists the key numbers that tie the written Level II and Level III guide sheets to specific components in this subsystem.

Level II and Level III Inspection Method Guide Sheets

This section contains the detailed descriptions of the Level II and III survey and inspection procedures for this subsystem.

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INSPECTOR'S GUIDE

I. GENERAL

A. Level I Inspection Method

The Level I Inspection Method of building specialty systems consists of a thorough inspection of the system following the work breakdown structure (WBS) contained herein. The survey activity is designed to be performed by a single surveyor.

B. Level II Inspection Method

Level II inspections are triggered by defect/observations noted at the Level I inspection or in some cases, are required to conduct a meaningful survey of the component being surveyed. There are only a few Level II inspections in Building Specialty Systems. They occur typically where access to the component being surveyed is required through an access panel or other access device. Level II inspections are referenced by defect/observations through a "Level II key", which denotes a specific Guide Sheet that describes the Level II inspection activity.

C. Level III Inspection Method

The Level III inspection is triggered by defect/observations occurring in the Level I and II inspections. The Level III inspection can also occur as a result of time based scheduling, antidotal experience, or component age compared to its life cycle. The Level III inspection is referenced through a Level III key which in turn, denotes a specific Guide Sheet describing the Level III inspection process and requirements. Level III inspections produce a detailed, written engineering assessment of the deficiency along with an estimated cost of correction, and are performed at the option of the Facility Manager.

Level III inspections for the equipment defined in the Building Specialty System are typically performed only by manufacturer certified inspection personnel. **If Level III inspections are scheduled for non manufacturer certified personnel, care should be taken in order to maintain manufacturer's warranties.**

II. GENERAL INSPECTION

A. Process

Surveys are normally conducted at the component level. Figure 12-A provides the breakdown from system through component for Building Specialty Systems. The surveyor will work through the Work Breakdown Structure (WBS) to conduct the inspection. At the component level the surveyor will be provided a list of defects, each of which is described further in detail as observations. These observations are described to various levels of severity as they relate to the effect of the life of the system. The inspector will quantify the amount of distress for each observation using the predetermined Unit of Measure (UOM) for the component as presented in Field

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CAIS. The UOM is pre-loaded into Field CAIS for both the component and the defect measurements. The following rule should be followed for determining the defect quantity:

- Measure lengths and areas to determine defect quantities. Estimating, instead of measuring, compromises accuracy.

In some cases, the UOM for the component will be different than the UOM for the defect. For example, corrosion is measured in square feet (SF) and the component, Platform and Frame, is measured by each occurrence (EA). In these cases, the inspector will be asked for the "Total Quantity" which represents the total surface area of the Platform and Frame which could have had corrosion if the corroded area covered a 100% of the metal.

Multiple defects may exist at the component level, within an IU. Defect quantities are captured by the inspector for each occurrence within a discrete IU. When multiple defects exist on the same IU, the inspector must quantify the total amount affected by each observation for that IU. In cases where defects overlap an affected area, the inspector will quantify the more severe defect of the overlapping area and the remaining affected area is recorded for the less severe defect.

Once all the observations for a component are populated with the appropriate defect quantities, the inspector must close-out the component on Field CAIS. This allows Field CAIS to apply the gathered information to a singularly defined component. The next subsequent observation will retain the IU/Location/Type information from the previous entry. The inspector may accept this information or change any portion of it. The installation date or age of the component may be preloaded into the WBS for each asset from the Real Property Inventory List or site specific information. If necessary, age data can be overridden by the surveyor, Site CAIS personnel, or the Facility Manager.

B. Location

Level I and II inspections will be located by the surveyor through a discrete entry in the Field CAIS. The "IU", (Inspection Unit) will be derived from the Facility Manager furnished building drawings, floor plans, or, where necessary, surveyor-prepared schematics or sketches, required to ensure a complete inspection of all areas and to assist in the location of IU's. The inspection team members must use the recommended room numbering schemes for the installation. The installation may have equipment physically identified by a numbering system or identified on floor plans. If both exist and are different, the Facility Manager will develop guidance on which numbering system takes precedence. Where numbering systems do not exist or are not complete in identifying each space, specific guidance for the inspector to annotate areas in a consistent manner should be developed by the Facility Manager and implemented in the installations CAS process. All plans should be oriented with a north arrow to the top of the drawing. This will help describe the specific location of some IU's. In the case where no other means of location exist the inspector shall enter a brief (65 character) description of location. Locations must be accurate to insure future repeatability and consistent results.

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The key to utilizing the floor plans for locating IU's is that each area is identified consistently between the field inspection team members; also, the floor plan that is being utilized is captured as a drawing file number in Field CAIS. The drawing then becomes a part of the CAS process and should be utilized in future inspections to assure repeatability.

III. INSPECTOR QUALIFICATIONS

The minimum Inspector qualification for the Building Specialty System requires a five year journeyman. Experience or familiarity in the areas of general construction and weighing systems is desirable but not required. All of the condition survey requirements for this system can be accomplished at the Level I inspection by a single inspector, however, safety and other considerations may require that inspectors work in teams. Inspectors will be specifically trained in the CAS system and its usage and will be CAS certified in the "Civil" discipline.

IV. INSPECTION UNIT (IU)

The Inspection Unit (IU) is defined at the component level and represents the smallest inspectable portion of the subsystem. Inspection Units are always located and quantified by the inspector. Deficiencies and observations are always tied to the IU and are not independently located.

IU's for the Building Specialty System are measured mostly by individual occurrences (EA). IU's are typically composed of individual Levelers, lifts, dock seals, weight indicators, etc. with each occurrence constituting a new IU.

In the case of a unit of measure that is square feet, or linear feet, the IU is determined by the identification of its location. Defect quantities are captured by the inspector for each occurrence with the discrete component.

If the inspector finds multiple defects that occur in the same pipe length, the inspector will quantify the observation that is considered most severe and identify the remaining quantity under the less severe observation for the discrete component.

V. UNIT COSTS

The unit costs that are applied to the quantities recorded for each observation are contained within the Site CAIS as repair cost.

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VI. STANDARD SAFETY REQUIREMENTS

The Master Safety Plan will be followed at all times during the condition survey.

Inspector may utilize the following protective gear:

- Hard hat - to be worn during all surveys
- Safety glasses - to be worn during all surveys
- Safety shoes - to be worn during all surveys
- Coveralls - to be worn as necessary
- Gloves - to be worn as necessary
- Ear plugs - to be worn in designated areas
- Knee pads - to be worn when crawling is required
- Rain suit - to be worn as necessary
- Wet suit - to be worn as necessary

VII. STANDARD TOOLS

Employee Identification Card - to be worn or carried during all survey activities
Data Collection Device (DCD)
Battery pack for DCD
Flashlight
Tape measure - 30'
Rule - 6'
Tool bag
Screwdrivers -
 Phillips
 Straight slot
Knife
Pliers
8' Extension Ladder

VIII. SPECIAL TOOLS AND EQUIPMENT REQUIREMENTS

At the subsystem level, the deficiency standard has identified special tools and equipment required for the standard inspection of the associated components, which exceed the standard tools identified for the system. Level III Inspection Method Guide Sheets will address additional tools and equipment requirements that are specific to that particular advanced method of inspection.

Facility Managers should review these sections in order to determine any special tool requirements for subsystems they are to inspect/survey.

IX. LEVEL II INSPECTION METHOD KEYS

Certain observations will reference a Level II Inspection Method. The Facility Manager will be able to identify deficiencies where a Level II inspection is flagged. The Level II key at the observation level will refer to a specific guide sheet.

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All Level II Guide Sheets are located at the end of each Subsystem section. A Guide Sheet Reference page precedes Level II and Level III Guide Sheets.

X. LEVEL III INSPECTION METHOD KEYS

Certain observations will trigger a Level III inspection. The Facility Manager will be able to identify deficiencies where a Level III inspection is flagged. The Level III Key at the observation level will refer to a specific guide sheet. These guide sheets may refer the Facility Manager to a more sophisticated and costly test method.

All Level III Guide Sheets are located at the end of each Subsystem section. A Guide Sheet Reference page precedes Level II and Level III Guide Sheets.

XI. REPLACEMENT COST

A replacement cost for each assembly type will be contained within the cost estimating system in the Site CAIS.

XII. APPENDICES

Appendix A - Abbreviations

A summary and definition of all abbreviations used in this system are contained in Appendix A which is located at the end of Building Specialty.

Appendix B - Glossary

A glossary of terms used in this system are contained in Appendix B which is located at the end of Building Specialty.

Appendix C - Life Cycles

A listing of the average life cycle durations for each assembly* in the Standard.

Note - Facility Manager's Guide

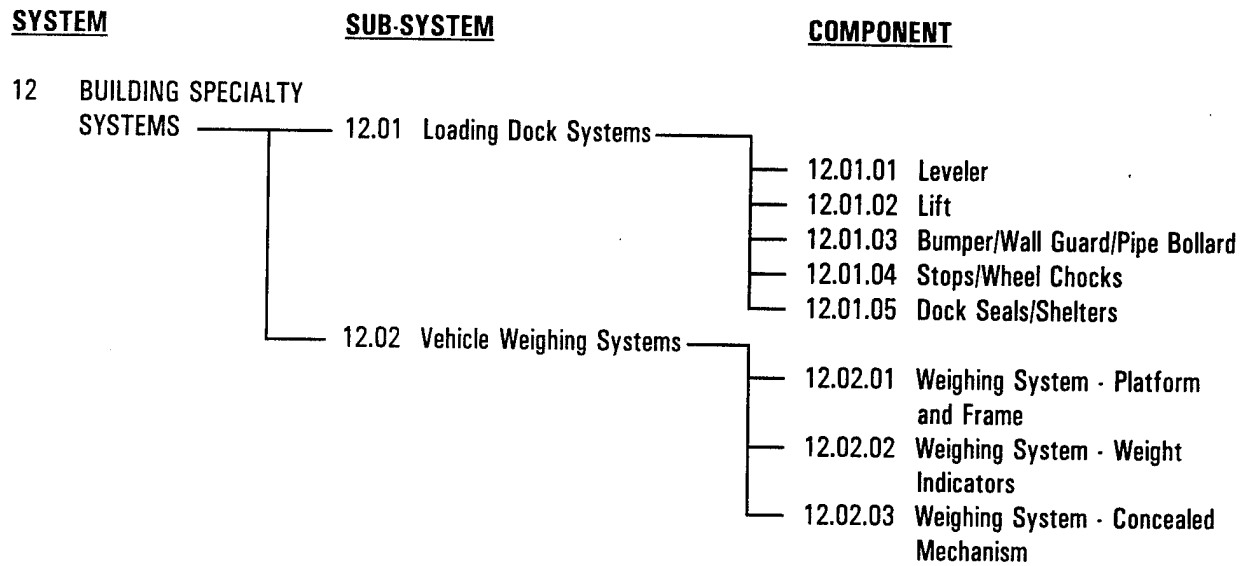
The following are included in the Facility Manager's Guide:

A table showing the required manhours to perform the standard inspection for this facility listed by Cat Code (three digit).

A listing of all Level III inspections with their estimated cost and time to perform. This list will include frequency of inspection for time driven Level III's.

* Assembly is a term describing the level at which replacement rather than repair occurs. This can be at the subsystem or component designation, depending on the system being surveyed.

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Figure 12-A. BUILDING SPECIALTY SYSTEMS

12.01 LOADING DOCK SYSTEMS

DESCRIPTION

Loading dock systems consist of the equipment which is necessary to allow delivery trucks and other similar vehicles to use above grade docks and permits unloading of material at the dock height.

SPECIAL TOOL AND EQUIPMENT REQUIREMENTS

No special tools are needed for the inspection of the loading dock systems, beyond the requirements listed in the Building Specialty Systems Standard Tools Section.

SPECIAL SAFETY REQUIREMENTS

No special safety requirements are needed for the inspection of the loading dock systems, beyond the requirements listed in the Master Safety Plan and System Safety Section.

COMPONENT LIST

- ◆ 12.01.01 LEVELER
- ◆ 12.01.02 LIFT
- ◆ 12.01.03 BUMPERS/WALL GUARD/PIPE BOLLARD
- ◆ 12.01.04 STOP/WHEEL CHOCK
- ◆ 12.01.05 DOCK SEAL/SHELTER

RELATED SUBSYSTEMS

Due to the related nature of the elements requiring inspection, the following DS/IM's should be reviewed for concurrent inspection activities.

- 01.00 BUILDING SUBSTRUCTURE (all subsystems)
- 02.00 BUILDING SUPERSTRUCTURE (all subsystems)

STANDARD INSPECTION PROCEDURE

The standard inspection procedure for this subsystem is a visual inspection of each exterior loading dock system, augmented by a Level II Inspection when required. Very few Level II or III inspection keys are indicated for the Loading Dock subsystem. Some inspections may require the inspector to utilize a ladder or similar device to observe defect/observations above/below the inspectors normal line of sight. The inspection should be carried out in order of presentation of the various components. Associated defects and observations are listed which will be presented in the inspector's Data Collection Device (DCD).

12.01 LOADING DOCK SYSTEMS

COMPONENTS

◆ 12.01.01 LEVELER

Levelers are commonly platforms either mechanically driven (which are spring loaded to raise the platform, on release, and which are walked down to the height of the truck bed) or fully hydraulic (which are powered by a hydraulic system to raise the platform or truck to the proper level and are commonly activated by a remote push button control). Levelers can be free standing on a frame or be attached to the dock structure. Both systems have a hinge system on one end to allow pivoting up or down to the level of the vehicle or dock to allow loading or unloading with a continuous platform.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, and use)			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Leveler still functions). *** {Severity M}	EA	1	
c. Broken or missing parts. (Leveler not functional). *** {Severity H}	EA	1	1

Defect:

* Control Switch Broken or Inoperative:

Observation:			
a. Switch is difficult to activate. *** {Severity M}	EA		
b. Switch does not operate leveler to elevation limits. *** {Severity H}	EA	1	1

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

♦ 12.01.01 LEVELER (Continued)

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Leveler Mechanical System Working Improperly:			
Observation:			
a. Mechanisms work but grinds, catches or otherwise displays signs of poor operation (leveler travel is not impaired). *** {Severity L}	EA		
b. Mechanisms work but grinds, catches or otherwise displays signs of poor operation and leveler travel is impaired (leveler does not completely reach elevation limits). *** {Severity M}	EA	1	1
c. Mechanisms do not work causing the leveler to be inoperative *** {Severity H}	EA	1	1

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

♦ 12.01.02 LIFT

Lifts are horizontal platforms that are powered by a hydraulic system, which can be raised or lowered to varying heights to permit the loading or unloading of delivery trucks or similar vehicles where there is a difference in elevation between the specific elements (truck bed and dock or grade). Lifts have pivoting ramps which allow for a slight elevation variance between the specific elements.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, and use)			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Lift still functions). *** {Severity M}	EA	2	
c. Broken or missing parts. (Lift not functional). *** {Severity H}	EA	2	2
Defect:			
* Control Switch Broken or Inoperative:			
Observation:			
a. Switch is difficult to activate. *** {Severity M}	EA		
b. Switch does not operate lift to elevation limits. *** {Severity H}	EA	2	2

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

♦ 12.01.02 LIFT (Continued)

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Lift Mechanical System Working Improperly:			
Observation:			
a. Mechanisms work but grinds, catches or otherwise displays signs of poor operation (lift travel is not impaired). *** {Severity L}	EA		
b. Mechanisms work but grinds, catches or otherwise displays signs of poor operation and lift travel is impaired (lift does not completely reach elevation limits). *** {Severity H}	EA	2	
c. Mechanisms do not work causing the lift to be inoperative. *** {Severity H}	EA	2	2

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

♦ 12.01.03 BUMPER/WALL GUARD/PIPE BOLLARD

These are a very important element in a docking system because they reduce maintenance by protecting structure surfaces and vehicles by preventing the vehicles from making contact with the building. Bumpers and wall guards are attached to the surface in several ways, the most common being bolted. Bumpers and wall guards are manufactured in varying shapes for a specific use, and are made of laminated rubber, polyethylene, or extruded EPDM rubbers. Pipe bollards are commonly made of steel pipe, filled with concrete, and extended above grade as specified by installation design. Bollards are strategically placed to prevent vehicles from damaging structure surfaces.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, weathering).			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Still functions). *** {Severity M}	EA		
c. Broken or missing parts. (Item not functional). *** {Severity H}	EA		
* Corrosion: (caused by water damage, etc.)			
Observation:			
a. Surface deterioration (no pitting evident). *** {Severity L}	SF		
b. Deterioration evidenced by pitting, or blistering. *** {Severity M}	SF		
c. Deterioration evidenced by holes or loss of metal. *** {Severity H}	SF		

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

♦ 12.01.04 STOP/WHEEL CHOCK

Stops/wheel chocks are a feature of the Loading Dock System. Stops/wheel chocks are elements which can be made of concrete or manufactured out of sections of laminated rubber, wood, metal or plastic. Concrete is used most often for a standard stop block, as seen in parking lots. Triangular shaped manufactured units are commonly used at dock areas. These units normally are free standing on the surface and used to stop vehicles before they come in contact with the dock. Stops/wheel chocks are also used to prevent movement of the vehicle after it has been parked.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, weathering).			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Stop/Chock still functional). *** {Severity M}	EA		
c. Broken or missing parts. (Stop/Chock no longer functional). *** {Severity H}	EA		

12.01 LOADING DOCK SYSTEMS

COMPONENTS (Continued)

◆ 12.01.05 DOCK SEAL/SHELTER

Dock seal is an assembly made of a resilient foam pad material that surrounds a dock door. It compresses when a vehicle is backed up against the dock, which creates an air tight seal at the dock opening. Dock shelters are constructed with wood and metal frames, covered with an approved fabric (Federal Standard 191). They are designed to accommodate a wide range of trucks and building variations. The shelters use these flexible fabric curtains which compress against the top and sides of the truck's body upon entering, closing off any air gap between the vehicle and the building. Dock seals and shelters protect loading operators from inclement weather, insects, conserve energy, provide security, and safety at the loading dock.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage:			
(caused by impact damage, wear, weathering).			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Seal still functions). *** {Severity M}	EA		
c. Broken or missing parts. (Seal no longer functional). *** {Severity H}	EA		

12.01 LOADING DOCK SYSTEMS

REFERENCES

1. Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990
2. Dock Equipment, Blue Giant Equipment Corp., 1991
3. Dock levelers, Seals and Shelters, Kelley Company, Inc., 1991

12.01 LOADING DOCK SYSTEMS

LEVEL II KEY GUIDE SHEET CONTROL NUMBER

1	GS-II 12.01.01-1
2	GS-II 12.01.02-2

LEVEL III KEY GUIDE SHEET CONTROL NUMBER

1	GS-III 12.01.01-1
2	GS-III 12.01.02-2

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 1

COMPONENT: LOADING DOCK SYSTEM - LEVELER
CONTROL NUMBER: GS-II 12.01.01-1

Application

This guide applies to investigation of improper operation of loading dock levelers. Improper operation of the loading dock levelers may be due to impact damage, wear and/or use.

Special Safety Requirements

Inspections covering loading dock equipment may present hazards in examining moving parts and associated mechanical devices. Caution should be used in inspecting and operating the loading dock equipment.

Inspection Action

Results of LEVEL I inspection indicate a deficiency in leveler operation. Although LEVEL I inspection methodology is very useful for determining the operating condition, the LEVEL II inspection provides a more thorough analysis of the cause of malfunction. Inspection actions to be used to further assess the extent of the component defect include the following actions:

1. Operate leveler through full operating range several times.
2. Observe movement of levers, platforms, cylinders, switches, safety locking devices, and associated mechanical moving parts.
3. Modify information in Data Collection Device to reflect the condition observed through level II inspection.

Special Tools and Equipment Requirements

None

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 1 (Continued)

COMPONENT: LOADING DOCK SYSTEM - LEVELER
CONTROL NUMBER: GS-II 12.01.01-1

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level II inspection is activated by deficiencies observed during the Level I inspections.

References

1. Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990
2. Dock Equipment, Blue Giant Equipment Corp., 1991
3. Dock levelers, Seals and Shelters, Kelley Company, Inc., 1991

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 2

COMPONENT: LOADING DOCK SYSTEM - LIFTS
CONTROL NUMBER: GS-II 12.01.02-2

Application

This guide applies to investigation of improper operation of loading dock levelers. Improper operation of the loading dock lifts may be due to impact damage, wear and/or use.

Special Safety Requirements

Inspections covering loading dock equipment may present hazards in examining moving parts and associated mechanical devices. Caution should be used in inspecting and operating the loading dock equipment.

Inspection Action

Results of LEVEL I inspection indicate a deficiency in lift operation. Although LEVEL I inspection methodology is very useful for determining the operating condition, the LEVEL II inspection provides a more thorough analysis of the cause of malfunction. Inspection actions to be used to further assess the extent of the component defect include the following actions:

1. Operate lift through full operating range several times.
2. Observe movement of levers, platforms, cylinders, switches, safety locking devices, and associated mechanical moving parts.
3. Modify information in Data Collection Device to reflect the condition observed through level II inspection.

Special Tools and Equipment Requirements

None

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 2 (Continued)

COMPONENT: LOADING DOCK SYSTEM - LIFTS
CONTROL NUMBER: GS-II 12.01.02-2

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level II inspection is activated by deficiencies observed during the Level I inspections.

References

1. Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990
2. Dock Equipment, Blue Giant Equipment Corp., 1991
3. Dock levelers, Seals and Shelters, Kelley Company, Inc., 1991

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 1

COMPONENT: LOADING DOCK SYSTEM - LEVELERS
CONTROL NUMBER: GS-III 12.01.01-1

Application

This guide applies to investigation of improper operation of loading dock equipment, lifts and levelers. Improper operation of the loading dock equipment may be due to impact damage, wear and/or use.

Special Safety Requirements

Inspections covering loading dock equipment may present hazards in examining lifts and levelers and associated mechanical devices. Caution should be used in inspecting and operating the loading dock equipment. Additional general safety requirements are contained in the Master Safety Plan and System Safety Section.

Inspection Action

Level III inspection requires the expertise of an individual that is trained in the inspection and operation of the lifts and levelers to further assess the extent of the component defect.

1. Review facility data files (Operation & Maintenance Manuals) to determine manufacture and technical specification related to the component.
2. Analyze inspection data from Level I and II inspection, in conjunction with Operation & Maintenance Manuals, to determine whether further inspection should be performed, and if so, by in-house technical capabilities or manufacture's representative.
3. Order inspection to be completed to determine extent and cost associated with correcting the deficiency.

Special Tools and Equipment Requirements

Electrical Test Equipment as required.

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level III inspection is activated by deficiencies observed during the Level I and/or Level II inspections.

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 1 (Continued)

COMPONENT: LOADING DOCK SYSTEM - LEVELERS

CONTROL NUMBER: GS-III 12.01.01-1

References

1. Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990
2. Dock Equipment, Blue Giant Equipment Corp., 1991
3. Dock Bumpers and Specialties, Durable Mat Company, Inc., 1991
4. Dock Seals and Shelters, Fairborn Inc., 1991
5. Dock Shelters, Frommelt Inc., 1987
6. Docklevelers, Seals and Shelters, Kelley Company, Inc., 1991

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 2

COMPONENT: LOADING DOCK SYSTEM - LIFTS
CONTROL NUMBER: GS-III 12.01.02-2

Application

This guide applies to investigation of improper operation of loading dock equipment, lifts and levelers. Improper operation of the loading dock equipment may be due to impact damage, wear and/or use.

Special Safety Requirements

Inspections covering loading dock equipment may present hazards in examining lifts and levelers and associated mechanical devices. Caution should be used in inspecting and operating the loading dock equipment. Additional general safety requirements are contained in the Master Safety Plan and System Safety Section.

Inspection Action

Level III inspection requires the expertise of an individual that is trained in the inspection and operation of the lifts and levelers to further assess the extent of the component defect.

1. Review facility data files (Operation & Maintenance Manuals) to determine manufacture and technical specification related to the component.
2. Analyze inspection data from Level I and II inspection, in conjunction with Operation & Maintenance Manuals, to determine whether further inspection should be performed, and if so, by in-house technical capabilities or manufacture's representative.
3. Order inspection to be completed to determine extent and cost associated with correcting the deficiency.

Special Tools and Equipment Requirements

Electrical Test Equipment as required.

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level III inspection is activated by deficiencies observed during the Level I and/or Level II inspections.

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 2 (Continued)

COMPONENT: LOADING DOCK SYSTEM - LIFTS

CONTROL NUMBER: GS-III 12.01.02-2

References

1. Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990
2. Dock Equipment, Blue Giant Equipment Corp., 1991
3. Dock Bumpers and Specialties, Durable Mat Company, Inc., 1991
4. Dock Seals and Shelters, Fairborn Inc., 1991
5. Dock Shelters, Frommelt Inc., 1987
6. Docklevelers, Seals and Shelters, Kelley Company, Inc., 1991

12.02 VEHICLE WEIGHING SYSTEMS

DESCRIPTION

Vehicle Weighing systems are mechanisms which are used to weigh vehicles such as cars, trucks, tanks or other mobile equipment. The system consists of a platform and frame for supporting the vehicle and transferring the vehicle load to the concealed operable support assembly located below the platform. This mechanism has sensing devices which transmit the vehicle weight to a weight indicator which is commonly either a balance beam or digital display device. Weighing systems are either free standing surface mounted or permanently mounted in a pit.

SPECIAL TOOL AND EQUIPMENT REQUIREMENTS

No special tools are needed for the inspection of the Vehicle Weighing Systems, beyond the requirements listed in the Building Specialty Systems Standard Tools Section.

SPECIAL SAFETY REQUIREMENTS

No special safety requirements are needed for the inspection of the Vehicle Weighing Systems, beyond the requirements listed in the Master Safety Plan and System Safety Section.

COMPONENT LIST

- ◆ 12.02.01 WEIGHING SYSTEM - PLATFORM AND FRAME
- ◆ 12.02.02 WEIGHING SYSTEM - WEIGHT INDICATORS
- ◆ 12.03.03 WEIGHING SYSTEM - CONCEALED MECHANISM

RELATED SUBSYSTEMS

Due to the related nature of the elements requiring inspection, the following DS/IM's should be reviewed for concurrent inspection activities.

- | | |
|-------|--|
| 01.00 | BUILDING SUBSTRUCTURE (all subsystems) |
| 02.00 | BUILDING SUPERSTRUCTURE (all subsystems) |
| 07.00 | BUILDING PLUMBING (all subsystems) |
| 10.00 | BUILDING ELECTRICAL (all subsystems) |

12.02 VEHICLE WEIGHING SYSTEMS

STANDARD INSPECTION PROCEDURE

The standard inspection procedure for this subsystem is a visual inspection of each Vehicle Weighing System, augmented by a Level II Inspection when required. Very few Level II or III inspection keys are indicated for the Vehicle Weighing subsystem. Some inspections may require the inspector to utilize a ladder or similar device to observe defect/observations above/below the inspectors normal line of sight. The inspection should be carried out in order of presentation of the various components. Associated defects and observations are listed which will be presented in the inspector's Data Collection Device (DCD).

The Inspection Unit (IU) for the Vehicle weighing subsystem is defined and located at the subsystem level. Each weighing system should be treated as a separate IU with a unique location, size/capacity, and type.

COMPONENTS

◆ 12.02.01 WEIGHING SYSTEM - PLATFORM AND FRAME

Platform and Frame is a structural system on which a vehicle is placed to initiate the weighing process and activate the weight indicator. Platforms can be wood or steel which is supported on a steel superstructure. Frames are commonly steel, supported from a surface mounted platform or pit walls.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, and use)			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (System still functions). *** {Severity M}	EA		
c. Broken or missing parts. (System not functional). *** {Severity H}	EA	1	1

12.02 VEHICLE WEIGHING SYSTEMS

COMPONENTS (Continued)

◆ 12.02.01 WEIGHING SYSTEM - PLATFORM AND FRAME (continued)

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
---------	-----	-----------------	------------------

*** Corrosion:**

(caused by water damage, or environmental exposure, etc.)

Observation:

- | | | | |
|----|--|----|--|
| a. | Surface deterioration (no pitting evident).
*** {Severity L} | SF | |
| b. | Deterioration evidenced by pitting, or blistering.
*** {Severity M} | SF | |
| c. | Deterioration evidenced by holes or loss of metal.
*** {Severity H} | SF | |

Defect:

*** Platform and Frame Working Improperly:**

Observation:

- | | | | | |
|----|---|----|---|---|
| a. | Platform works but catches, rubs or otherwise displays signs of poor operation (Platform travel is not impaired).
*** {Severity L} | EA | 1 | |
| b. | Platform does not work causing the weighing mechanisms to be inoperative
*** {Severity H} | EA | 1 | 1 |

12.02 VEHICLE WEIGHING SYSTEMS

COMPONENTS (Continued)

◆ 12.02.02 WEIGHING SYSTEM - WEIGHT INDICATORS

There are three basic types of weight indicators; (1) digital read out, (2) balance beam, and (3) mechanical dials.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Physical Damage: (caused by impact damage, wear, and use)			
Observation:			
a. Loose, worn, or misaligned parts. Requires tightening or adjusting. *** {Severity L}	EA		
b. Broken or missing parts. (Indicator still functions). *** {Severity M}	EA		
c. Broken or missing parts. (Indicator not functional). *** {Severity H}	EA	2	2

Defect:

* **Weight Indicators Working Improperly:**

Observation:			
a. Weight indicators work but rub, catch or otherwise displays signs of poor operation (weight indicator is working). *** {Severity L}	EA	2	
b. Weight indicators do not work *** {Severity H}	EA	2	2

12.02 VEHICLE WEIGHING SYSTEMS

COMPONENTS (Continued)

♦ 12.03.03 WEIGHING SYSTEM - CONCEALED MECHANISM

The concealed mechanisms in a weighing system are interconnected working parts that do the actual weighing of the vehicles.

Defect:	UOM	LEVEL II KEY	LEVEL III KEY
* Weighing Concealed Mechanisms			
Working Improperly:			
(Arrange to have a vehicle of known weight drive upon the weighing system. Compare the known weight with that of the observed.)			
Observation:			
a. Weight differential less than 0-10% (Weighing system operates within needed accuracy) ***{Severity L}	EA		
b. Weight differential greater than 10% (Weighing system needs adjusting). ***{Severity H}	EA	3	3

12.02 VEHICLE WEIGHING SYSTEMS

REFERENCES

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

12.02 VEHICLE WEIGHING SYSTEMS

LEVEL II KEY GUIDE SHEET CONTROL NUMBER

1	GS-II 12.02.01-1
2	GS-II 12.02.02-2
3	GS-II 12.02.02-3

LEVEL III KEY GUIDE SHEET CONTROL NUMBER

1	GS-III 12.02.01-1
2	GS-III 12.02.02-2
3	GS-III 12.02.03-3

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 1

COMPONENT: VEHICLE WEIGHING SYSTEMS - PLATFORM AND FRAME
CONTROL NUMBER: GS-II 12.02.01-1

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems.

Inspection Action

Results of LEVEL I inspection indicate a deficiency in vehicle weighing systems operation. Although LEVEL I inspection methodology is very useful for determining the operating condition, the LEVEL II inspection provides a more thorough analysis of the cause of malfunction. Inspection actions to be used to further assess the extent of the component defect include the following actions:

1. Operate vehicle weighing systems several times through full operating range by placing a vehicle of known weight upon the weighing system.
2. Observe movement of platform and associated mechanisms to determine deficiency.
3. Modify information in Data Collection Device to reflect the condition observed through level II inspection.

Special Tools and Equipment Requirements

None

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 1 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEMS - PLATFORM AND FRAME
CONTROL NUMBER: GS-II 12.02.01-1

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level II inspection is activated by deficiencies observed during the Level I inspections.

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 2

COMPONENT: VEHICLE WEIGHING SYSTEMS - WEIGHT INDICATORS
CONTROL NUMBER: GS-II 12.02.02-2

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems.

Inspection Action

Results of LEVEL I inspection indicate a deficiency in vehicle weighing systems operation. Although LEVEL I inspection methodology is very useful for determining the operating condition, the LEVEL II inspection provides a more thorough analysis of the cause of malfunction. Inspection actions to be used to further assess the extent of the component defect include the following actions:

1. Operate vehicle weighing systems several times through full operating range by placing a vehicle of known weight upon the weighing system.
2. Observe movement of platform and associated mechanisms to determine deficiency.
3. Modify information in Data Collection Device to reflect the condition observed through level II inspection.

Special Tools and Equipment Requirements

None

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 2 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEMS - WEIGHT INDICATORS

CONTROL NUMBER: GS-II 12.02.02-2

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level II inspection is activated by deficiencies observed during the Level I inspections.

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 3

COMPONENT: VEHICLE WEIGHING SYSTEMS - CONCEALED MECHANISM
CONTROL NUMBER: GS-II 12.02.03-3

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems.

Inspection Action

Results of LEVEL I inspection indicate a deficiency in vehicle weighing systems operation. Although LEVEL I inspection methodology is very useful for determining the operating condition, the LEVEL II inspection provides a more thorough analysis of the cause of malfunction. Inspection actions to be used to further assess the extent of the component defect include the following actions:

1. Operate vehicle weighing systems several times through full operating range by placing a vehicle of known weight upon the weighing system.
2. Observe movement of platform and associated mechanisms to determine deficiency.
3. Modify information in Data Collection Device to reflect the condition observed through level II inspection.

Special Tools and Equipment Requirements

None

LEVEL II INSPECTION METHOD GUIDE SHEET

LEVEL II GUIDE SHEET - KEY NO. 3 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEMS - CONCEALED MECHANISM
CONTROL NUMBER: GS-II 12.02.03-3

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level II inspection is activated by deficiencies observed during the Level I inspections.

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 1

COMPONENT: VEHICLE WEIGHING SYSTEM - PLATFORM AND FRAME
CONTROL NUMBER: GS-III 12.02.01-1

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems. Additional general safety requirements are contained in the Master Safety Plan and System Safety Section.

Inspection Action

Level III inspection requires the expertise of an individual that is trained in the inspection and operation of the vehicle weighing system to further assess the extent of the component defect.

1. Review facility data files (Operation & Maintenance Manuals) to determine manufacture and technical specification related to the component.
2. Analyze inspection data from Level I and II inspection, in conjunction with Operation & Maintenance Manuals, to determine whether further inspection should be performed, and if so, by in-house technical capabilities or manufacture's representative.
3. Order inspection to be completed to determine extent and cost associated with correcting the deficiency.

Special Tools and Equipment Requirements

The following is a list of special tools and equipment beyond those listed in the Standard tool Section.

1. Electrical Testing Equipment as required
2. Scale Calibration Equipment

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level III inspection is activated by deficiencies observed during the Level I and/or Level II inspections.

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 1 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEM - PLATFORM AND FRAME
CONTROL NUMBER: GS-III 12.02.01-1

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 2

COMPONENT: VEHICLE WEIGHING SYSTEM - WEIGHT INDICATORS
CONTROL NUMBER: GS-III 12.02.02-2

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems. Additional general safety requirements are contained in the Master Safety Plan and System Safety Section.

Inspection Action

Level III inspection requires the expertise of an individual that is trained in the inspection and operation of the vehicle weighing system to further assess the extent of the component defect.

1. Review facility data files (Operation & Maintenance Manuals) to determine manufacture and technical specification related to the component.
2. Analyze inspection data from Level I and II inspection, in conjunction with Operation & Maintenance Manuals, to determine whether further inspection should be performed, and if so, by in-house technical capabilities or manufacture's representative.
3. Order inspection to be completed to determine extent and cost associated with correcting the deficiency.

Special Tools and Equipment Requirements

The following is a list of special tools and equipment beyond those listed in the Standard tool Section.

1. Electrical Testing Equipment as required
2. Scale Calibration Equipment

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level III inspection is activated by deficiencies observed during the Level I and/or Level II inspections.

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 2 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEM - WEIGHT INDICATORS
CONTROL NUMBER: GS-III 12.02.02-2

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 3

COMPONENT: VEHICLE WEIGHING SYSTEM - CONCEALED MECHANISM
CONTROL NUMBER: GS-III 12.02.03-3

Application

This guide applies to investigation of improper operation of vehicle weighing systems. Improper operation of the vehicle weighing systems may be due to impact damage, wear and/or use and electrical deficiencies.

Special Safety Requirements

Inspections covering vehicle weighing systems may present hazards in examining platform, frame, weight indicators, and concealed mechanisms. Caution should be used in inspecting and operating the vehicle weighing systems. Additional general safety requirements are contained in the Master Safety Plan and System Safety Section.

Inspection Action

Level III inspection requires the expertise of an individual that is trained in the inspection and operation of the vehicle weighing system to further assess the extent of the component defect.

1. Review facility data files (Operation & Maintenance Manuals) to determine manufacture and technical specification related to the component.
2. Analyze inspection data from Level I and II inspection, in conjunction with Operation & Maintenance Manuals, to determine whether further inspection should be performed, and if so, by in-house technical capabilities or manufacture's representative.
3. Order inspection to be completed to determine extent and cost associated with correcting the deficiency.

Special Tools and Equipment Requirements

The following is a list of special tools and equipment beyond those listed in the Standard tool Section.

1. Electrical Testing Equipment as required
2. Scale Calibration Equipment

Recommended Inspection Frequency

There is no standard frequency prescribed for this component. The Level III inspection is activated by deficiencies observed during the Level I and/or Level II inspections.

LEVEL III INSPECTION METHOD GUIDE SHEET

LEVEL III GUIDE SHEET - KEY NO. 3 (Continued)

COMPONENT: VEHICLE WEIGHING SYSTEM - CONCEALED MECHANISM
CONTROL NUMBER: GS-III 12.02.03-3

References

1. Weighing Systems, J & S Scale Company, 1991
2. Electronic Truck Scales, UniBridge Scale Systems, 1991
3. Electronic Weight Indicators, Rice Lake Weighing Systems Inc., 1991
4. Electronic Weight Indicators, Weigh-Tronix, Inc., 1991

APPENDIX A

ABBREVIATIONS

BLDG	Building
CAS	Condition Assessment Survey
CF	Cubic Feet
CMU	Concrete Masonry Unit
CONC	Concrete
CONSTR	Construction
CU. FT.	Cubic Feet
CU. IN.	Cubic Inches
DCD	Data Collection Device
DOD	Department of Defense
DS/IM	Deficiency Standard/Inspection Method
EA	Each
ELEC	Electric, Electrical
ENCL	Enclosure
EPDM	Ethylene Propylene Diene Monomer
EST	Estimate
EXT	Exterior
FIN	Finish
FM	Facility Manager
FRP	Fiberglass Reinforced Panel
FT	Foot, Feet
GALV	Galvanized
HT	Height
IN	Inch

APPENDIX A

INT	Interior
IU	Inspection Unit
LB	Pound
LF	Linear Foot
LGTH	Length
MAT'L	Material
MECH	Mechanical
MFG	Manufacturer
MISC	Miscellaneous
PREFAB	Prefabricated
PVC	PolyVinyl Chloride
REQ	Requires
RM	Room
RPI	Real Property Inventory
SF	Square Foot
STD	Standard
SY	Square Yard
TYP	Typical
UOM	Unit Of Measure
WBS	Work Breakdown Structure
W/	With
'	Foot, Feet
"	Inch, Inches
>	Greater than
<	Less Than

APPENDIX B

GLOSSARY

Bollards

A series of short posts set to prevent vehicular access or to protect property from damage by vehicular encroachment.

APPENDIX C

LIFE CYCLES**12 BUILDING SPECIALTY SYSTEMS****12.01 LOADING DOCK SYSTEMS**

LEVELER	15 YRS
LIFT	25 YRS
BUMPER/WALL GUARD/PIPE BOLLARD	25 YRS
STOPS/WHEEL CHOCKS	10 YRS
DOCK SEALS/SHELTERS	25 YRS

Source:

Universal Loading Docks and Dock Adjustment Equipment, Advance Lifts Inc. 1990

12.02 VEHICLE WEIGHING SYSTEMS 25 YRS

Source:

Electronic Truck Scales, UniBridge Scale Systems, 1991