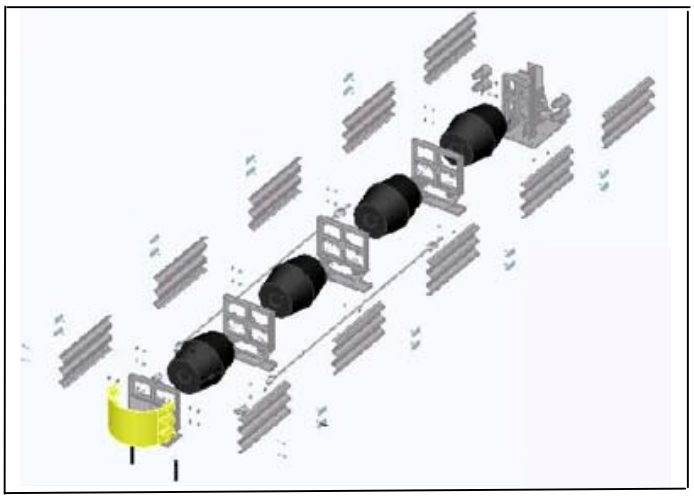
TAU-II® Crash Cushion System



Maintenance Manual

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Preface

CSP Pacific's TAU-II® is a fully re-directive, non-gating, re-usable crash cushion.

As with any roadside safety device, the TAU-II® system must be properly maintained to insure proper performance. Thoroughly review and fully understand the maintenance instructions and product limitations before starting any maintenance. Do not begin any maintenance operation without the proper plans and tools. For further guidance, refer to the TAU-II® Installation Manual and the TAU-II® Design Guide.

If you require additional information, or have questions about the TAU-II® Crash Cushion, please call CSP Pacific on 0800 655 200 or email cspcustomerservice@csppacific.co.nz

Introduction

The TAU-II® system has been tested to meet the rigorous requirements of NCHRP Report 350, Test Levels 2 and 3. The systems will be provided in lengths and capacities for both low speed and high speed applications.

The TAU-II® system is fully redirective and non-gating, and is ideally suited for narrow hazards such as the ends of rigid barriers, tollbooths, utility poles and more. Ease of installation, numerous transition options, low maintenance requirements, and reusability of system components make the TAU-II® system ideal for treating many roadside hazards.

Redirective, non-gating crash cushions are highway safety devices whose primary function is to improve the safety for occupants of errant vehicles that impact the end of rigid or semi-rigid barriers or fixed roadside hazards by absorbing the kinetic energy of impact or by allowing controlled redirection of the vehicle. These devices are designed to safely decelerate an errant vehicle to a safe stop or redirect an errant vehicle away from roadside or median hazards. These types of systems are typically applied to locations where head-on and angled impacts are likely to occur and it is desirable to have the majority of post impact trajectories on the impact side of the system.

Placement and use of the TAU-II® system should be accomplished in accordance with the guidelines of the local roading authority.

Important Information

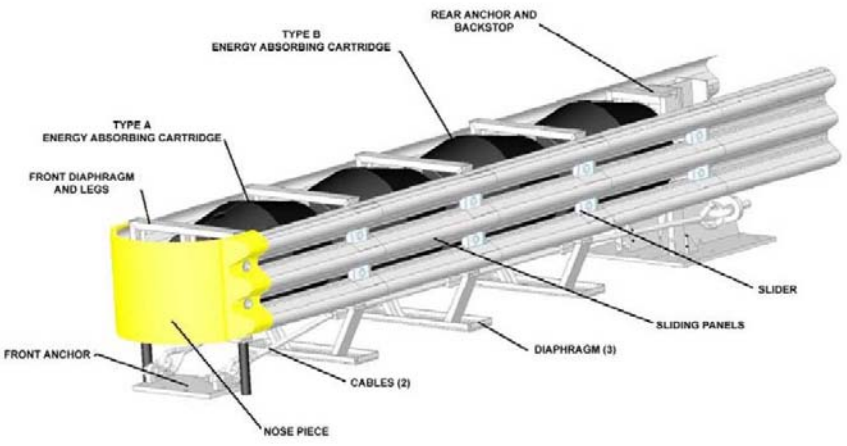
The TAU-II® crash cushion must be installed properly to maximise the systems ability to protect errant motorists that impact the system. Designers, installers and people that maintain the system should thoroughly understand the manufacturer's instructions prior to performing any necessary maintenance or repair work. Key information is provided in this Maintenance Manual and important additional information is in the Installation Manual and Design Guide. If these documents are not available, or if there are any questions regarding the proper placement or installation of the TAU-II® crash cushion, contact **CSP Pacific on 0800 655 200 or email CSP Pacific on cspcustomerservice@csppacific.co.nz**

System Overview

The TAU-II® system is designed and constructed to provide acceptable structural adequacy, minimal occupant risk and safe vehicle trajectory as set forth in NCHRP 350 for redirective, non-gating, crash cushions. The TAU-II® system is designed to shield the ends of median barriers and other narrow fixed objects likely to be struck head-on, by absorbing and dissipating the kinetic energy of impacting vehicles. TAU-II® utilises disposable Energy Absorbing Cartridges (EACs) to absorb the kinetic energy of the impacting vehicle. The EACs are separated by diaphragms and held in place with a framework of Thriebeam corrugated steel rail panels that "telescope" rearward during head-on impacts. As the vehicle compresses the cushion, it exerts a force on the first bay containing an EAC.

The diaphragms distribute the impact forces uniformly to all the remaining cartridges in each bay until the vehicle eventually stops. The depth of penetration is dependent upon both the original impact speed and the mass of the impacting vehicle. Only the Energy Absorbing Cartridges are expended after most head-on impacts. When hit at an angle along the side, the system is restrained laterally by guidance cables that run the length of the system, attaching to the bottoms of the diaphragms, and terminate at the anchors at each end of the system. The front and rear cable anchors are bolted to a foundation.

TAU-II® Crash Cushion System
Isometric Drawing (TL-2)



Parts Identification

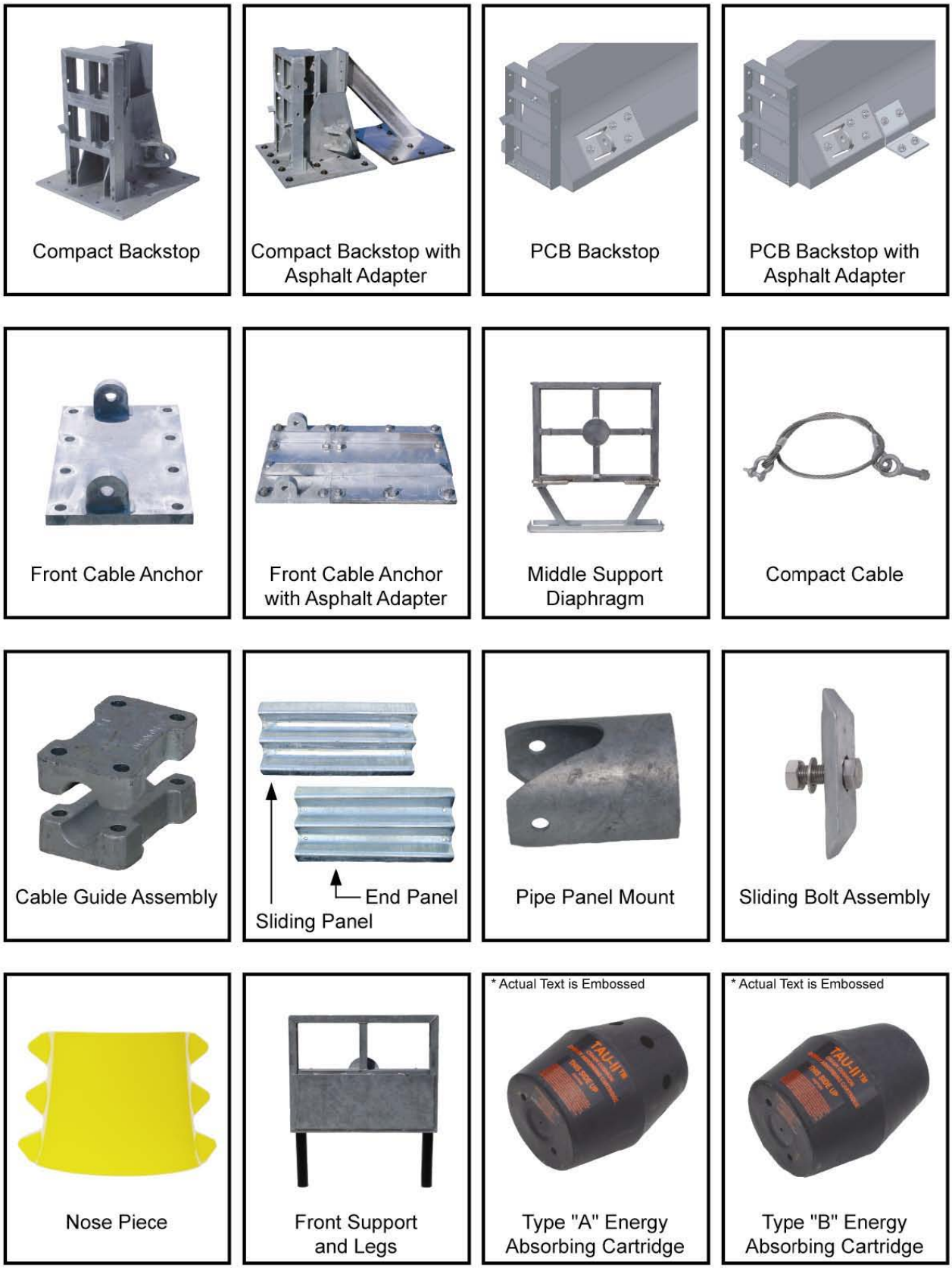
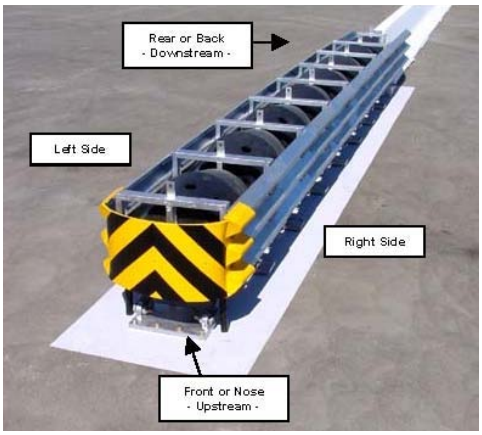


Figure 1. Illustrated parts list

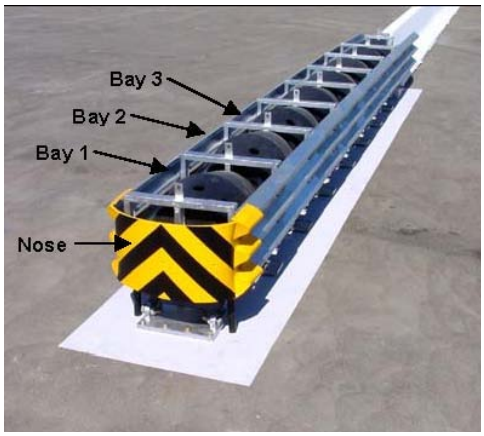
Design Considerations

The TAU-II® system is a redirective, non-gating system that has been fully tested in conformance with NCHRP Report 350 and approved by the U. S. DOT Federal Highway Administration. Redirective, non-gating crash cushions are frequently used at locations where if is desirable to have the majority of post impact vehicle trajectories on the impact side of the system. If it is desirable to maximise the post impact trajectories to the backside of the system, non-redirective crash cushions should be considered.

This section will address several of the other key issues that should be considered in deciding where and how to use the TAU-II® crash cushion.



Sign Conventions The picture of the TAU-II® systems is labelled to show the descriptive terms that will be used throughout this manual.



Bay Counting Convention The picture of the TAU-II® system above is labeled to show how the bays are numbered throughout this manual. Note that the nose does not have an Energy Absorbing Cartridge and is not counted as a bay.

System length and width

The length and width of the TAU-II® crash cushion is shown on the drawings in the Appendix.

System capacity

The TAU-II® crash cushion is available in several lengths to accommodate frontal impact velocities higher and lower than required in NCHRP Report 350. Appendix B (Page 15) contains a chart that shows the number of options available, the frontal impact speed capacity and the Type “A” and Type “B” EAC configurations.

Types of backstop structures

The TAU-II® crash cushion can be installed with either a freestanding “Compact Backstop” or a “P.C.B. Backstop” that can be attached to properly reinforced concrete barrier. These two options are shown in Appendix A.

Foundation options and considerations

There are three foundation options that are described in Appendix A. The TAU-II® system must be securely attached to the appropriate foundation in accordance with the Installation Manual and the drawings in Appendix A and E. Anchoring material options are listed in Appendix C.

The concrete foundation shown on the drawings must be a minimum of 150mm thick, reinforced 28 MPa (4000 psi) Portland Cement Concrete (PCC) or 200mm non-reinforced 28 MPa (4000 psi) PCC. The foundation should be free of major cracks and other structures (expansion joints, drainage structures, etc.) that could interfere with the operation of the TAU-II® system.

Cross slopes of up to 8% (5 degrees or 1:12 slope) can be accommodated with the standard hardware and with the instructions provided with the system. If there are cross slopes in excess of 8%, contact CSP Pacific to obtain engineering advice and assistance.

Transition options

The TAU-II® crash cushion was designed to be able to use standard AASHTO type transitions. The local road authority can apply their standard transition designs between the TAU-II® system and adjacent longitudinal barrier systems. Several typical transition options are provided in Appendix D of the Installation Manual.

Special care should be taken to ensure that the type of transition system chosen properly addresses the direction of all vehicles that will be exposed to the system. If there is bi-directional traffic around the system, ensure that the transition properly shields the vehicles from the backstop structure of the TAU-II® system.

Other site conditions and considerations

There are numerous other conditions that should be taken into consideration when selecting and locating crash cushions. The local road authority guidelines need to be taken into consideration when selecting and locating crash cushions.

A few of the typical considerations are as follows:

- All curbs, islands and elevated objects greater than 100mm high that would be beneath, beside or less than 15m in front of a TAU-II® crash cushion should be removed prior to installation.

- Ensure that all drainage inlets or structures, junction boxes, expansion joints, sign supports, delineators or any other element that is close to the installation site of the TAU-II® system, cannot interfere with the proper operation of the system.

Limitations and Warnings

The TAU-II® system has been rigorously tested and evaluated per the recommendations in the NCHRP Report 350 Guidelines for Test Level 2 (TL-2) and Test Level 3 (TL-3) terminals and crash cushions. The impact conditions recommended in NCHRP 350 are intended to address typical in–service collisions.

When the TAU-II® system is properly installed and maintained, the system is capable of stopping or containing and redirecting impacting vehicles in a predictable and safe manner under the NCHRP 350 impact conditions of:

- Vehicles: Pickup (2,000P) and small car 820C
- Mass: 2,000kg and 820kg
- Speed: 100kph
- Angle: 20 degs. for pickup and 15 for small car

Vehicle impacts that vary from the NCHRP 350 impact conditions described for redirective non-gating, crash cushions may result in significantly different results than those experienced in testing.

Vehicle impact characteristics different than or in excess of those encountered in NCHRP 350 testing (speed and angle) may result in system performance that may not meet the NCHRP 350 evaluation criteria.

Inspection / Drive-By

The frequency of Drive-By inspections is dependant on the traffic volume and the impact history of the system. Drive-By inspections are recommended at least monthly.

1) The inspector should be moving at a speed that is sufficiently slow enough to detect impact or environmental damage (debris). If any damage is observed, a Hands-On inspection is warranted.

2) Make sure that all of the cartridges are present and that there is no debris lodged underneath the system.

3) If delineation has been applied to the nose cover, make sure that it is still properly applied and visible.

4) If the system appears to have been impacted in any way (scrapes, paint marks, etc.) a Hands-On inspection should be made.

NOTE: It is important to keep a logbook of all Drive-By inspections for each installed system. Record the date of the inspection and observed condition of the system.

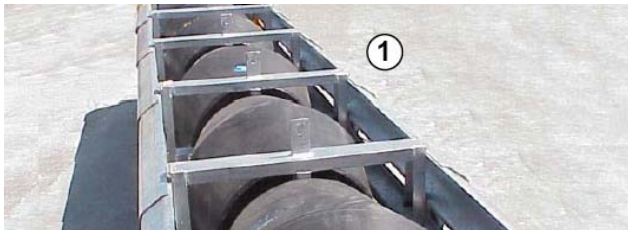
1. Look for tyre or paint marks on front and side.
2. Look for Debris (pieces of tire, garbage, etc) under unit.
3. Look for sagging cables.

Although there is no obvious damage, notice the paint marks along the side that would indicate an impact and the need for a hands on inspection. (Because the Diaphragms are not attached to rigid channels or rails, as side impact may not require any replacement parts.)

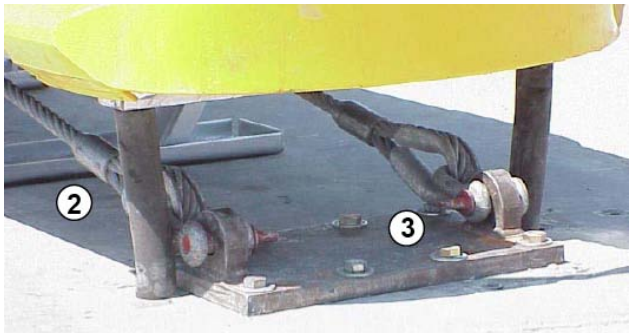
There is some obvious damage in this case. Notice the paint marks and bending of the panels toward the rear that would indicate an impact and the need for a hands-on inspection.

Inspection / Hands-on

The frequency of Hands-On inspections is dependant on the traffic volume and the impact history of the system. ***Hands-On inspections are recommended at least yearly.***

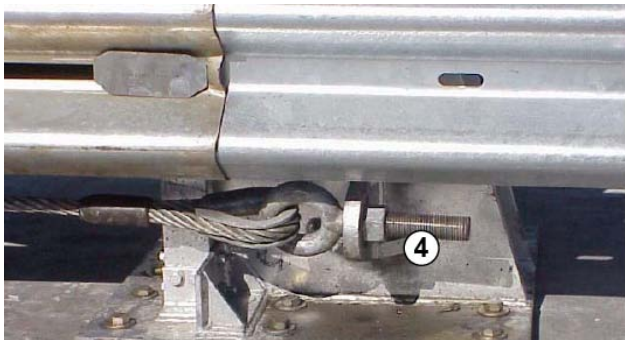


1) Check that all of Diaphragms are straight and that the Slider Bolts used to connect the side panels to the Diaphragms are straight. Check that the tightness of the nuts on the Slider Bolts is 27 N-m.

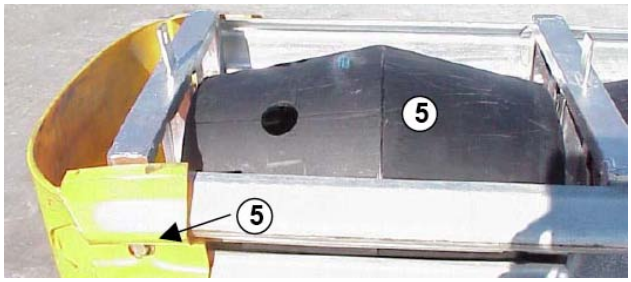


2) Check below the system and in the spaces between the Diaphragms and Energy Absorbing Cartridges (EACs) to remove any debris that may have accumulated.

3) Check the tightness of the anchor bolts on the Front Anchor Plate as well as the anchor bolts used at the base of the unit. **Concrete Installation:** Tighten to160 N-m



4) Check the nut on the end of the adjustable Eye Bolt at the end of the Cable. **Concrete Installation:** Tighten to 680 N-m



5) Check the condition of and the placement of all Energy Absorbing Cartridges. Replace any damaged Cartridges. Refer to the chart in Appendix B (Page 15) for proper placement. Check that the torque on the Front Panel Bolts (holding on the Nose Piece) is 270 N-m.

NOTE: It is important to keep a log book of all Hands-On inspections for each installed system. Record the date of inspection, the observed condition of the system and any replaced items.

Post Impact Inspection – Repairs

After an impact, the system must be thoroughly inspected to determine which parts can be reused and which parts will need to be replaced. The system must be repaired to its original condition to operate properly during the next impact.

1) Inspect the Compact Cable. Create slack in the cable by backing off the nut on the adjustable eye bolt located at the end of the cable. Loosen the bolt to the end of the thread. Inspect for cable damage to ensure that the cable has not been kinked, pinched and is not frayed. Replace the cable if strands of wire are broken or severely kinked.

2) If the system has sustained a frontal impact, attach a suitable chain or sling to the Front Support and pull the system out in a controlled manner with a heavy truck. Attach the chain to opposite corners, as shown in the pictures below:

Extend the system to its original length (for system dimensions see Appendix C, Page 20). It is important that the system bays be fully extended to accommodate the new Energy Absorbing Cartridges.

Stand at a safe distance from the pulling operation until the system is fully extended in case the chain breaks or becomes disconnected.

3) Remove any damaged Energy Absorbing Cartridges and properly discard.

4) Inspect the End, Side, and Transition Panels. If a panel is only slightly damaged, it may be possible to use a sledge hammer or appropriate device to bend the panel back to its original shape. ***If the damage cannot be repaired so that the panel will slide smoothly over an adjacent panel, it must be replaced.*** Side Panels can be easily and quickly replaced by simply removing the adjacent Slider Bolt Assemblies.

5) Inspect all of the Slider Bolts. Make sure that the Slider Bolts are straight and properly aligned with the Side Panels. Replace any damaged parts in the Slider Bolt Assemblies. ***(Do not attempt to straighten a bent Slider Bolt.)***

6) Inspect the Diaphragms - A bent or damaged diaphragm that cannot be straightened to its original shape must be replaced. There are currently two Diaphragm designs: solid and two-piece.

Solid Diaphragm - To replace a solid Diaphragm, work from the end closest to the damaged Diaphragm and remove the Cable Guide Assemblies that attach the Guide Cable to the bottoms of the Diaphragms. Remove the nut from the Adjustable Eye Bolt on the Guide Cable at the rear of the system or the clevis holding the Cable to the front of the system and pull the Cable through the base of the Diaphragms until the cable has cleared the Diaphragm that needs to be replaced. Remove the Slider Bolts attaching the Side Panels. The Diaphragm can now be replaced.

Two-Piece - To replace a two-piece Diaphragm, simply remove Guide Cable Assemblies on the damaged Diaphragm and remove the Slider Bolt assemblies from the Side Panels. Disconnect the lower section of the diaphragm from the upper section and remove and replace the damaged pieces.

7) Inspect the Front Cable Anchor. The area around the anchor bolts should not be disturbed. Remove and replace any be damaged bolts. **Concrete Installation:** Re-torque nuts to 160 N-m.

8) Inspect for damage to the bolts that attach the PCB Backstop or Compact Backstop. As with the Front Cable anchor, remove and replace any damaged bolts.

9) Replace the Energy Absorbing Cartridges. When replacing the EAC's, it is important to ensure that they are placed in the proper position and direction according to the System Configuration Chart located in Appendix B (Page 15) of this manual.

10) If the Pipe Panel Mount is deformed or in any way compromised, it must be replaced.

11) Inspect the Nose Piece to see if it has been torn or damaged. Replace the Nose Piece if there is damage, and add the proper delineation.

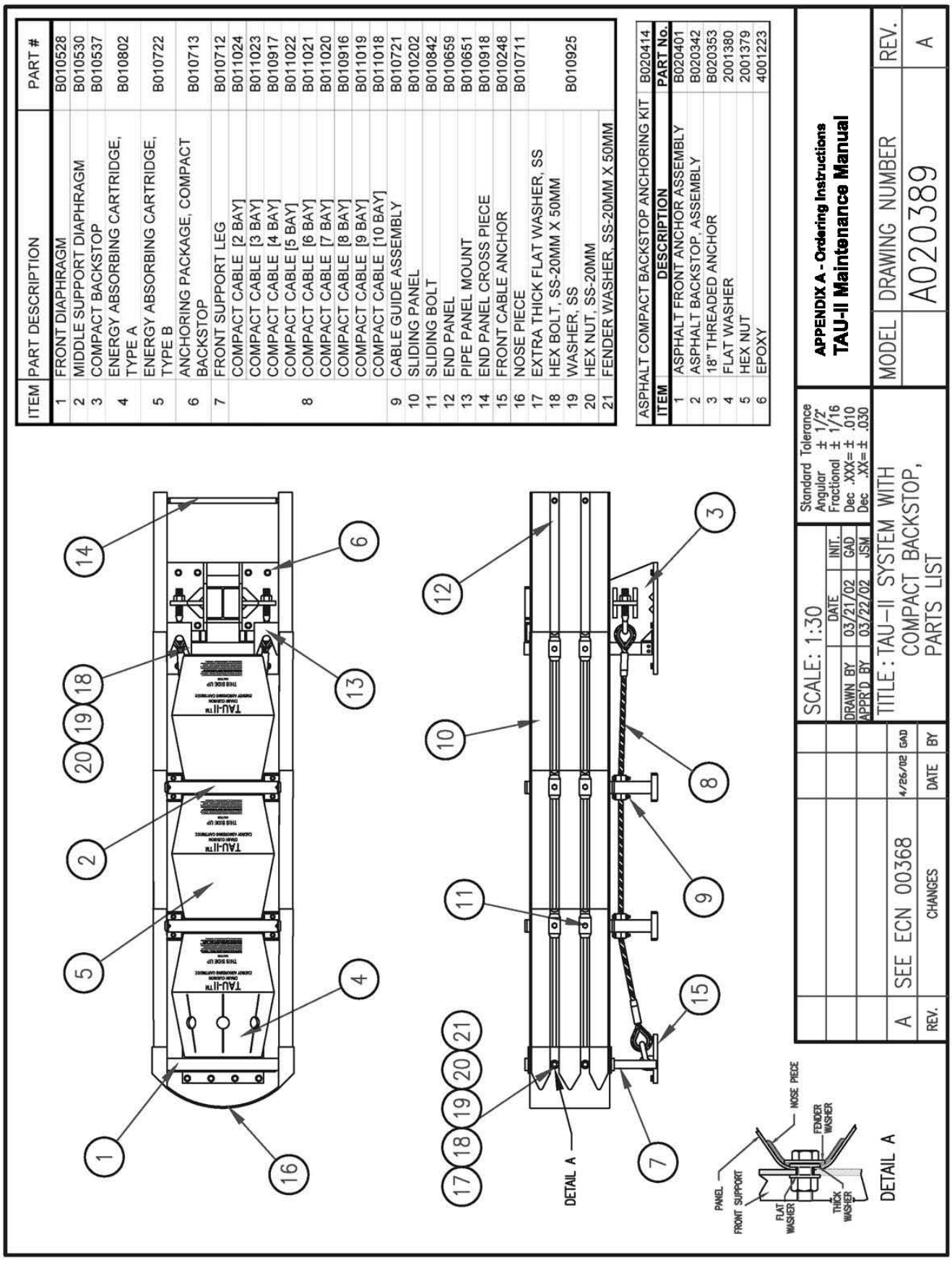
Appendix A Ordering Instructions

Make a list of the replacement parts from the following drawings. **Please call CSP Pacific on 0800 655 200 or email cspcustomerservice@csppacific.co.nz**

The following drawings show the TAU-II® system Parts for the two system Types.

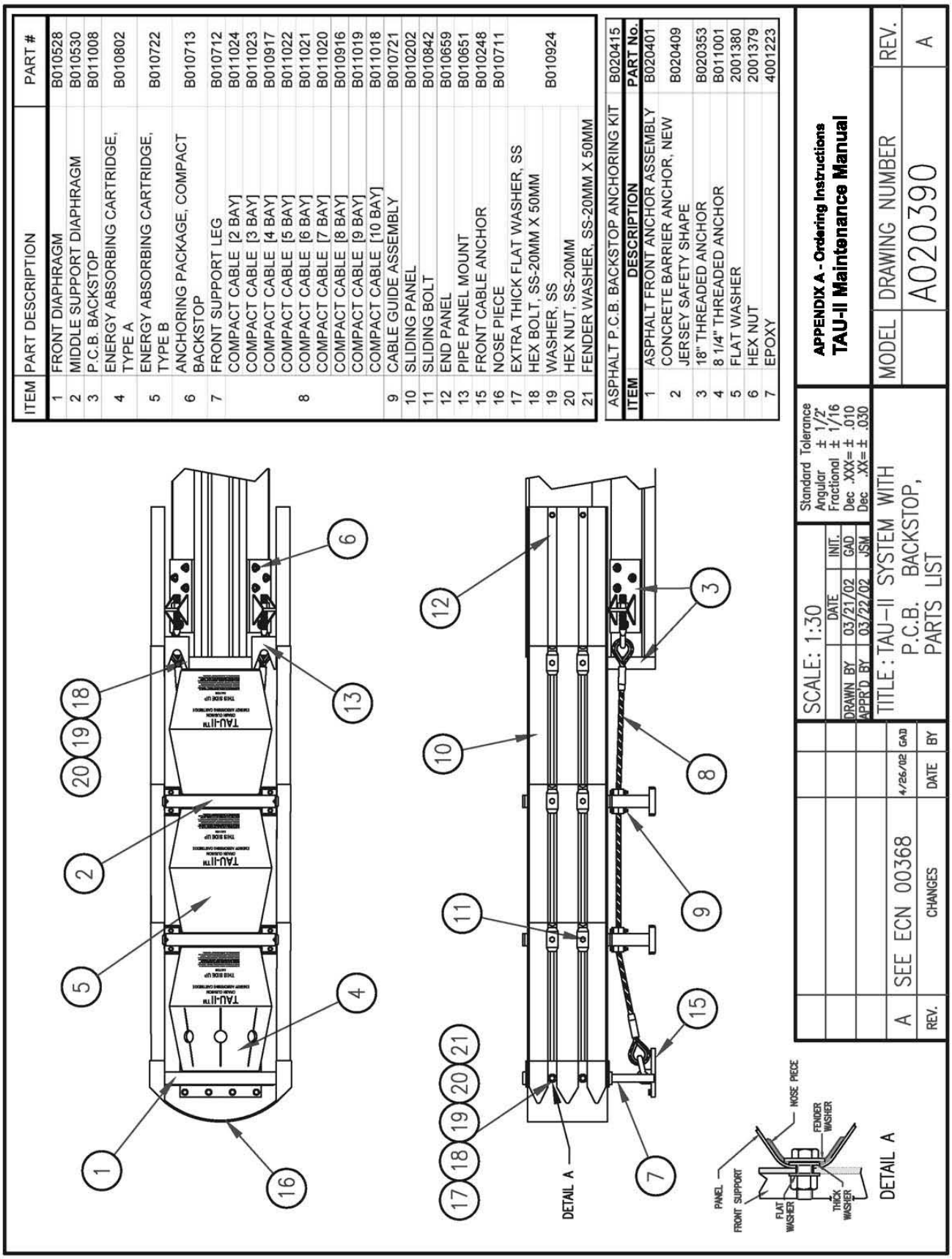
With Compact Backstop:
TAU-II® system with Compact Backstop Parts List Drawing # A020389 Page 13

With P.C.B. Backstop:
TAU-II® system with P.C.B. Backstop Parts List Drawing # A020390 Page 14



ITEM	PART DESCRIPTION	PART #
1	FRONT DIAPHRAGM	B010528
2	MIDDLE SUPPORT DIAPHRAGM	B010530
3	COMPACT BACKSTOP	B010537
4	ENERGY ABSORBING CARTRIDGE, TYPE A	B010802
5	ENERGY ABSORBING CARTRIDGE, TYPE B	B010722
6	ANCHORING PACKAGE, COMPACT BACKSTOP	B010713
7	FRONT SUPPORT LEG	B010712
8	COMPACT CABLE [2 BAY]	B011024
	COMPACT CABLE [3 BAY]	B011023
	COMPACT CABLE [4 BAY]	B010917
	COMPACT CABLE [5 BAY]	B011022
	COMPACT CABLE [6 BAY]	B011021
	COMPACT CABLE [7 BAY]	B011020
	COMPACT CABLE [8 BAY]	B010916
	COMPACT CABLE [9 BAY]	B011019
	COMPACT CABLE [10 BAY]	B011018
9	CABLE GUIDE ASSEMBLY	B010721
10	SLIDING PANEL	B010202
11	SLIDING BOLT	B010842
12	END PANEL	B010659
13	PIPE PANEL MOUNT	B010651
14	END PANEL CROSS PIECE	B010918
15	FRONT CABLE ANCHOR	B010248
16	NOSE PIECE	B010711
17	EXTRA THICK FLAT WASHER, SS	
18	HEX BOLT, SS-20MM X 50MM	
19	WASHER, SS	B010925
20	HEX NUT, SS-20MM	
21	FENDER WASHER, SS-20MM X 50MM	

ASPHALT COMPACT BACKSTOP ANCHORING KIT	B020414
ITEM DESCRIPTION	PART No.
1 ASPHALT FRONT ANCHOR ASSEMBLY	B020401
2 ASPHALT BACKSTOP, ASSEMBLY	B020342
3 18" THREADED ANCHOR	B020353
4 FLAT WASHER	2001380
5 HEX NUT	2001379
6 EPOXY	4001223

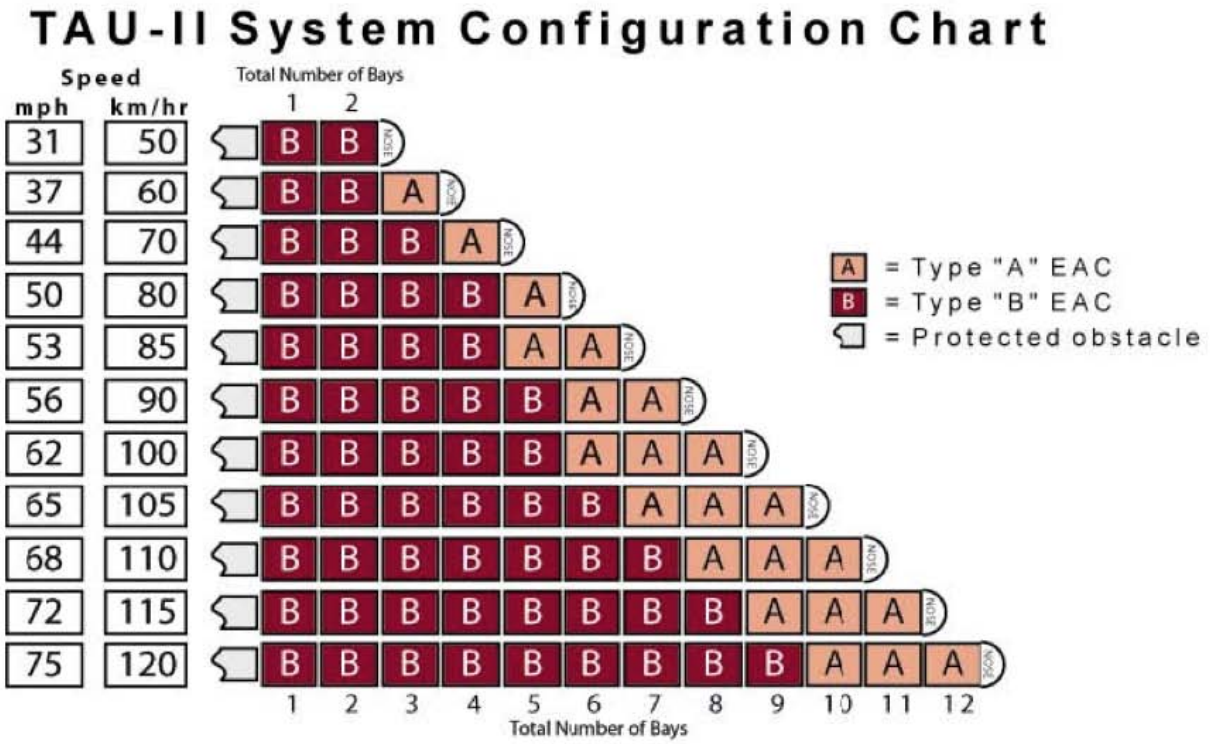

ITEM | PART DESCRIPTION | PART #
1 FRONT DIAPHRAGM B010528
2 MIDDLE SUPPORT DIAPHRAGM B010530
3 P.C.B. BACKSTOP B011008
4 ENERGY ABSORBING CARTRIDGE, TYPE A B010802
5 ENERGY ABSORBING CARTRIDGE, TYPE B B010722
6 ANCHORING PACKAGE, COMPACT BACKSTOP B010713
7 FRONT SUPPORT LEG B010712
8 COMPACT CABLE [2 BAY] B011024
COMPACT CABLE [3 BAY] B011023
COMPACT CABLE [4 BAY] B010917
COMPACT CABLE [5 BAY] B011022
COMPACT CABLE [6 BAY] B011021
COMPACT CABLE [7 BAY] B011020
COMPACT CABLE [8 BAY] B010916
COMPACT CABLE [9 BAY] B011019
COMPACT CABLE [10 BAY] B011018
9 CABLE GUIDE ASSEMBLY B010721
10 SLIDING PANEL B010202
11 SLIDING BOLT B010842
12 END PANEL B010659
13 PIPE PANEL MOUNT B010651
15 FRONT CABLE ANCHOR B010248
16 NOSE PIECE B010711
17 EXTRA THICK FLAT WASHER, SS
18 HEX BOLT, SS-20MM X 50MM B010924
19 WASHER, SS
20 HEX NUT, SS-20MM
21 FENDER WASHER, SS-20MM X 50MM
ASPHALT P.C.B. BACKSTOP ANCHORING KIT B020415
ITEM | DESCRIPTION | PART No.
1 ASPHALT FRONT ANCHOR ASSEMBLY B020401
2 CONCRETE BARRIER ANCHOR, NEW JERSEY SAFETY SHAPE B020409
3 18" THREADED ANCHOR B020353
4 8 1/4" THREADED ANCHOR B011001
5 FLAT WASHER 2001380
6 HEX NUT 2001379
7 EPOXY 4001223
APPENDIX A - Ordering Instructions
TAU-II Maintenance Manual
SCALE: 1:30
DRAWN BY 03/21/02 GAD
APPR'D BY 03/22/02 JSM
INIT.
DATE
Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Dec .XXX= ± .010
Dec .XX= ± .030
TITLE : TAU-II SYSTEM WITH P.C.B. BACKSTOP, PARTS LIST
MODEL
DRAWING NUMBER
A020390
REV.
A
A SEE ECN 00368 4/26/02 GAD
REV. CHANGES DATE BY
DETAIL A
NOSE PIECE
FENDER WASHER
PANEL
FRONT SUPPORT
FLAT WASHER
THICK WASHER

Appendix B System Configurations

The TAU-II® Crash Cushion System has been fully designed and tested to comply with the evaluation requirements of the National Cooperative Highway Research Program Report 350 (NCHRP 350) for Test Levels 2 (70kph) and 3 (100kph). The Test Level 2 system contains four energy absorbing bays and the Test Level 3 system contains eight energy absorbing bays.

It is sometimes desirable to have a crash cushion that has an energy absorbing capacity that is less than Test Level 2, between Test Level 2 and Test Level 3 or greater than Test Level 3. Therefore, the following table indicates the number of bays, and the energy absorbing cartridge configuration, that would be required to absorb the kinetic energy of a 2,000kg vehicle impacting the front of the TAU-II® system, head-on and at the velocity indicated.

Roadside safety features, such as crash cushions, must be installed in accordance with the local road controlling authority guidelines and in conformance with the manufacturer's instructions. Instructions from the manufacturer are available by contacting **CSP Pacific on 0800 655 200 or email CSP Pacific on cspcustomerservice@csppacific.co.nz**



There are two types of Energy Absorbing Cartridges (EAC). Each EAC has a forward and rearward end. Type "B" EAC's have a solid cylinder wall with (3) vent holes on the rearward end. Type "A" EAC's have (8) 3" diameter holes around the circumference of the front half of the cylinder. When installing the EAC's in a system it is important to ensure that they are placed according to manufacturer specification and in the configurations illustrated above.

Appendix C Installation Drawings

There are a variety of system configurations available for the TAU-II® system.
Placement and installation of the TAU-II® system and transitions must be accomplished in accordance with the local road authority guidelines.

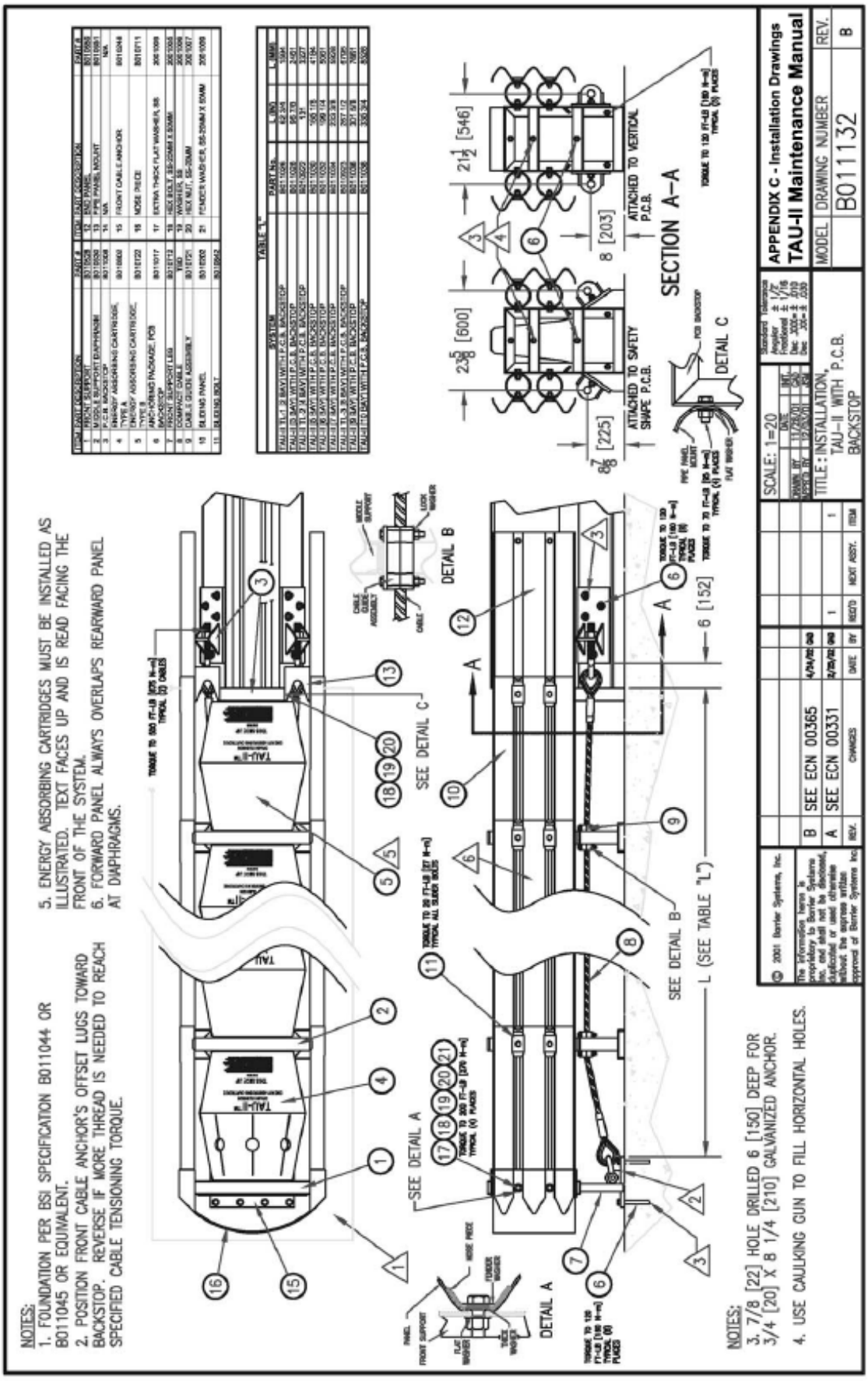
The following drawings show the TAU-II® system installation specifications:

With P.C.B. Backstop:
Installation, PC concrete Pad or Roadway, TAU-II® with P.C.B. Backstop Drawing # B011132 Page 17

With Compact Backstop:
Installation, PC concrete Pad or Roadway, TAU-II® with Compact Backstop Drawing # B011131 Page 18

Design Dimensions:
Design Dimensions, TAU-II® Drawing # A020305 Page 19

For additional information regarding this product, please contact:
CSP Pacific on 0800 655 200 or email cspcustomerservice@csppacific.co.nz


NOTES:
1. FOUNDATION PER BSI SPECIFICATION B011044 OR B011045 OR EQUIVALENT.
2. POSITION FRONT CABLE ANCHOR'S OFFSET LUGS TOWARD BACKSTOP. REVERSE IF MORE THREAD IS NEEDED TO REACH SPECIFIED CABLE TENSIONING TORQUE.
5. ENERGY ABSORBING CARTRIDGES MUST BE INSTALLED AS ILLUSTRATED. TEXT FACES UP AND IS READ FACING THE FRONT OF THE SYSTEM.
6. FORWARD PANEL ALWAYS OVERLAPS REARWARD PANEL AT DIAPHRAGMS.
NOTES:
3. 7/8 [22] HOLE DRILLED 6 [150] DEEP FOR 3/4 [20] X 8 1/4 [210] GALVANIZED ANCHOR.
4. USE CAULKING GUN TO FILL HORIZONTAL HOLES.
SECTION A–A
DETAIL A
DETAIL B
DETAIL C
SEE DETAIL A
SEE DETAIL B
SEE DETAIL C
L (SEE TABLE "L")
6 [152]
8 [203]
ATTACHED TO VERTICAL P.C.B.
ATTACHED TO SAFETY SHAPE P.C.B.
APPENDIX C - Installation Drawings
TAU-II Maintenance Manual
SCALE: 1=20
TITLE: INSTALLATION, TAU-II WITH P.C.B. BACKSTOP
MODEL
DRAWING NUMBER
B011132
REV.
B
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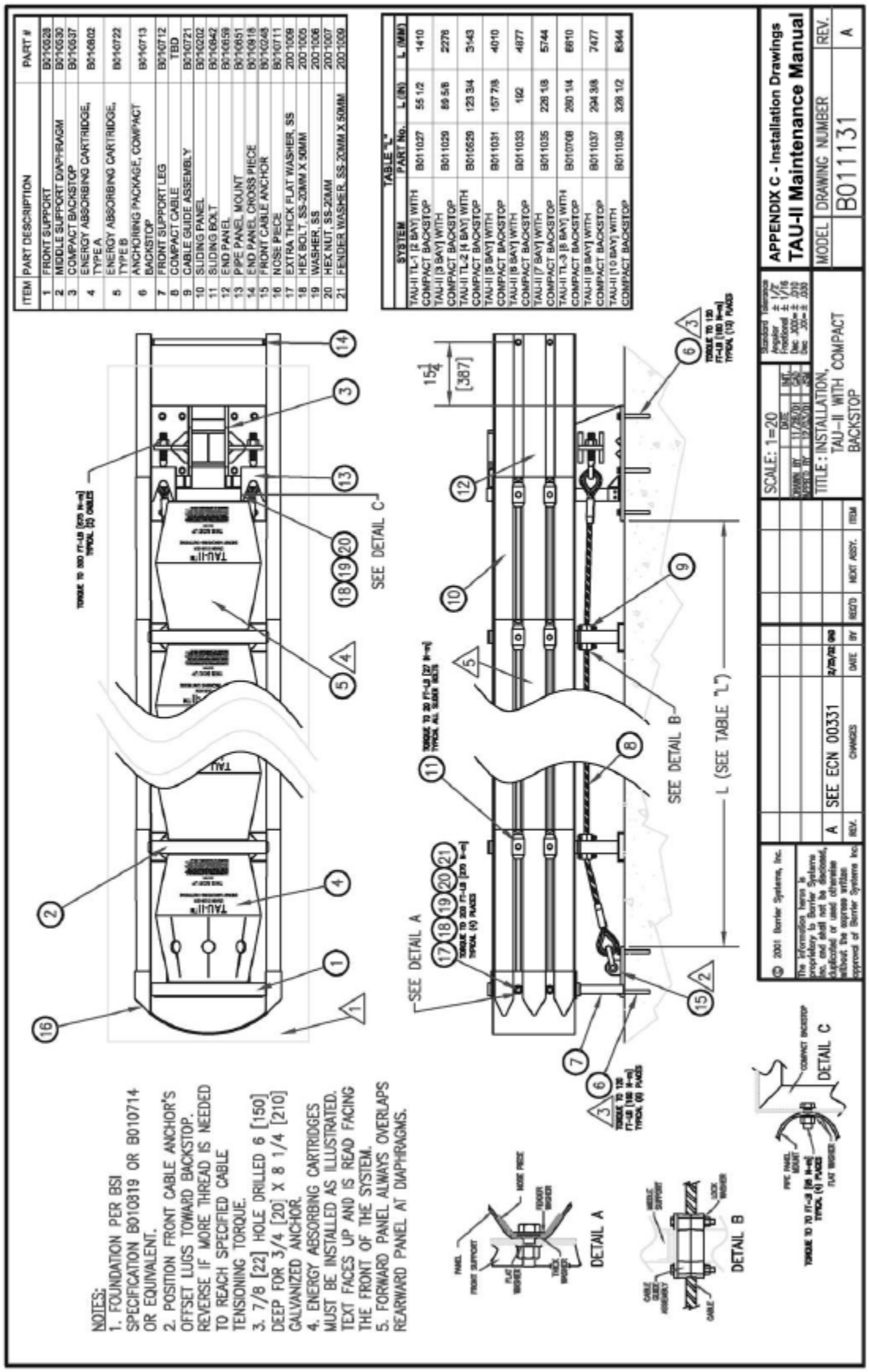

ITEM	PART DESCRIPTION	PART #
1	FRONT SUPPORT	B010628
2	MIDDLE SUPPORT DIAPHRAGM	B010630
3	COMPACT BACKSTOP	B010637
4	ENERGY ABSORBING CARTRIDGE, TYPE A	B010802
5	ENERGY ABSORBING CARTRIDGE, TYPE B	B010722
6	ANCHORING PACKAGE, COMPACT BACKSTOP	B010713
7	FRONT SUPPORT LEG	B010712
8	COMPACT CABLE	TBD
9	CABLE GUIDE ASSEMBLY	B010721
10	SLIDING PANEL	B010202
11	SLIDING BOLT	B010842
12	END PANEL	B010659
13	PIPE PANEL MOUNT	B010651
14	END PANEL CROSS PIECE	B010248
15	FRONT CABLE ANCHOR	B010711
16	NOSE PIECE	B010711
17	EXTRA THICK FLAT WASHER, SS	2001009
18	HEX BOLT, SS-20MM X 50MM	2001005
19	WASHER, SS	2001006
20	HEX NUT, SS-20MM	2001007
21	FENDER WASHER, SS-20MM X 50MM	2001009

TABLE "L"			
SYSTEM	PART No.	L (IN)	L (MM)
TAU-II TL-3 [2 BAY] WITH COMPACT BACKSTOP	B011027	55 1/2	1410
TAU-II [3 BAY] WITH COMPACT BACKSTOP	B011029	89 5/8	2278
TAU-II TL-3 [4 BAY] WITH COMPACT BACKSTOP	B010629	123 3/4	3143
TAU-II [5 BAY] WITH COMPACT BACKSTOP	B011031	157 7/8	4010
TAU-II [6 BAY] WITH COMPACT BACKSTOP	B011033	192	4877
TAU-II [7 BAY] WITH COMPACT BACKSTOP	B011035	226 1/8	5744
TAU-II TL-3 [8 BAY] WITH COMPACT BACKSTOP	B010708	260 1/4	6610
TAU-II [9 BAY] WITH COMPACT BACKSTOP	B011037	294 3/8	7477
TAU-II [10 BAY] WITH COMPACT BACKSTOP	B011039	328 1/2	8344

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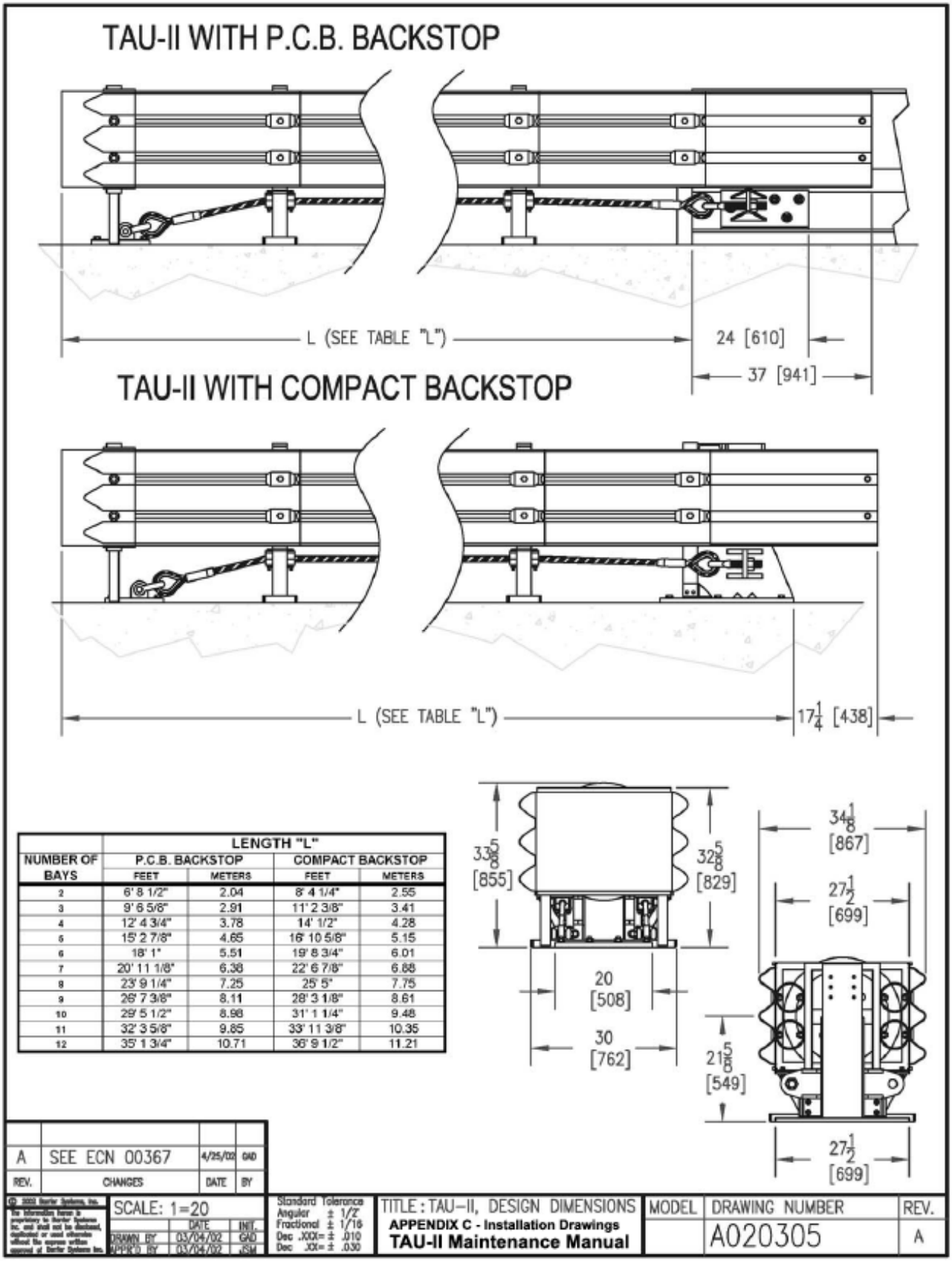
REV.	CHANGES	DATE	BY	REVD	NEXT ASSY.	ITEM
A	SEE ECN 00331	12/20/02	GMD			



NUMBER OF BAYS	LENGTH "L" P.C.B. BACKSTOP FEET	METERS	COMPACT BACKSTOP FEET	METERS
2	6' 8 1/2"	2.04	8' 4 1/4"	2.55
3	9' 6 5/8"	2.91	11' 2 3/8"	3.41
4	12' 4 3/4"	3.78	14' 1/2"	4.28
5	15' 2 7/8"	4.65	16' 10 5/8"	5.15
6	18' 1"	5.51	19' 8 3/4"	6.01
7	20' 11 1/8"	6.38	22' 6 7/8"	6.88
8	23' 9 1/4"	7.25	25' 5"	7.75
9	26' 7 3/8"	8.11	28' 3 1/8"	8.61
10	29' 5 1/2"	8.98	31' 1 1/4"	9.48
11	32' 3 5/8"	9.85	33' 11 3/8"	10.35
12	35' 1 3/4"	10.71	36' 9 1/2"	11.21

REV.	CHANGES	DATE	BY
A	SEE ECN 00367	4/25/02	GAD

SCALE: 1=20

	DATE	INIT.
DRAWN BY	03/04/02	GAD
APPR'D BY	03/04/02	JSM

Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Dec .XXX= ± .010
Dec .XX= ± .030

TITLE: TAU-II, DESIGN DIMENSIONS
APPENDIX C - Installation Drawings
TAU-II Maintenance Manual

MODEL	DRAWING NUMBER	REV.
	A020305	A