

ENGINEERED

INNOVATIVE

PRODUCTS & **S**ERVICES

FOR **T**RANSPORTATION



Break-Safe[®]



Omni-Directional Breakaway Sign Support Systems

Design Book

TRANSPO[®]
INDUSTRIES, Inc.
www.transpo.com

Saving Lives With Breakaway Support



Transpo's Break-Safe[®] is an omni-directional breakaway support system for ground mounted signs located within roadside clear zones or other locations vulnerable to vehicular impacts. The system is designed to break away quickly and cleanly upon impact, thus saving lives and reducing property damage costs. Break-Safe[®] couplings are omni-directional, meaning the system breaks away with consistent, predictable behavior, regardless of the vehicle's angle of impact.

Break-Safe[®] has been vehicle crash-tested resulting in a NCHRP approval letter based on NCHRP Report 350. In addition to superior safety performance, Break-Safe[®] provides high structural load-carrying capacity. New national signing standards specify increased sign sizes for visibility in addition to increased wind load levels. The changes create a significant increase in structural demands on sign supports. Break-Safe[®] is designed to support a wide range of post sizes, up to and including the largest permitted by AASHTO. The flexibility built into the system provides many choices when selecting post types for specific applications.



Features and Advantages

Omni-Directional Breakaway Performance:

Accident research and field experience have demonstrated that vehicles often leave the roadway and impact structures at high angles of incident. Break-Safe's symmetrical coupling design allows the system to breakaway with consistent, predictable behavior regardless of the vehicle's angle of impact. This unique omni-directional capability exceeds FHWA and AASHTO requirements for impact performance. All Break-Safe[®] models are FHWA approved for use on the National Highway System (NHS).

High Structural Capacity: Break-Safe[®] is available in a variety of models, designed to support different sign configurations and post types. The high-strength coupling and L-bracket design provides increasing structural capacity as the size of the post increases. This unique feature offers unmatched load-carrying capacity and accommodates many different post types for both single and multiple post configurations.

High Durability: All Break-Safe[®] couplings and hardware are hot-dip galvanized in accordance with ASTM A153 to provide proven corrosion protection in harsh roadside environments. Additionally, independent fatigue testing has demonstrated that Break-Safe[®] couplings are capable of withstanding more than 2 million loading cycles with no reduction in structural capacity.



Model A Series:

Model Number	Post Size and Type
AI4	4, 5" Standard I-Beams
AI6	6 x 9" Wide Flange
AP	3, 3.5, 4, 4.5" O.D. Round Pipes
AS	2.5, 3, 4" Square Tubes

Model B Series:

Model Number	Post Size and Type
B525	6, 8" Wide Flange 5" Square Tubes
B650	10 - 21" Wide Flange 6, 7, 8" Square Tubes

Easy to Install and Maintain: No special tools or equipment are required to properly install and maintain Break-Safe[®]. All components are easily secured using the American Institute of Steel Construction (AISC) turn-of-nut tightening method, which eliminates the torque requirement typical with other systems.

Low Profile: Break-Safe[®] offers the lowest stub height after impact of any current breakaway system for signs. This is essential for maximum safety and allows for variations in foundation height. Break-Safe's after-impact stub height is less than 1 inch (25mm) above the top of the foundation.

TESTED AND APPROVED TO NCHRP 350

U.S. Patents 4,528,786 and 5,596,845

Breakaway Support System for Sign Posts

DESCRIPTION:

Transpo's Break-Safe is a breakaway support system for ground-mounted signs located within roadside clear zones or other locations vulnerable to vehicular impacts. The primary component of the system is a set of precision-machined couplings, designed to breakaway quickly and cleanly upon impact, thus saving lives and reducing property damage costs. The safety performance of Break-Safe is *omni-directional*, meaning the system breaks away with consistent, predictable behavior regardless of the vehicle's angle of impact. All models and sizes are FHWA-approved in accordance with NCHRP Report 350.

In addition to superior safety performance, Break-Safe provides high structural load-carrying capacity. New national signing standards specify increased sign sizes for visibility, in addition to increased wind load levels. These changes create a significant increase in structural demands on sign supports. Break-Safe is designed to support a wide range of signpost sizes, up to and including the largest permitted by AASHTO. This flexibility built into the system gives you many choices when selecting post types and sizes for specific applications, and promotes increased signing efficiency and safety.

FEATURES and ADVANTAGES:

Omni-Directional Breakaway Performance: Accident research and field experience have demonstrated that errant vehicles often leave the roadway traveling along high angle trajectories. Break-Safe's symmetrical coupling design allows the system to breakaway with consistent, predictable behavior regardless of the vehicle's angle of impact. This unique *omni-directional* capability exceeds FHWA and AASHTO requirements for impact performance of breakaway supports.

High Structural Capacity: Break-Safe is available in a variety of models and sizes, designed to support different sign configurations and post types. The high-strength coupling and L-bracket design provides increasing structural capacity as the size of the post increases. This unique feature offers unmatched load-carrying capacity, and accommodates many different post types and sizes.

Easy to Install and Maintain: No special tools or equipment are required to properly install and maintain Break-Safe. All components are easily secured using the American Institute of Steel Construction (AISC) Turn-of-Nut Tightening method, which eliminates the need to maintain precise torque levels on bolts.

Low Profile: Break-Safe offers the lowest stub height after impact of any breakaway system for signs, which is essential for maximum safety. Break-Safe's after-impact stub height is less than 25 mm (1 in) above the top of the foundation.

Breakaway Support System for Sign Posts

PERFORMANCE SPECIFICATIONS:

System Performance Criteria:

1. Break-Safe[®] conforms to AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.”
2. Break-Safe[®] has been crash-tested and FHWA approved in accordance with the requirements of NCHRP Report 350, “Recommended Procedures for the Safety Performance Evaluation of Highway Features.”

Component Properties:

Anchors: Transpo[®] Type A and B Female Anchors are embedded in concrete flush with the top surface of the foundation. Minimum tensile load capacity of each anchor type is shown below. Actual pullout strengths may vary, depending on foundation design and concrete properties.

<u>Transpo Anchor</u>	<u>Min. Ultimate Tensile Strength</u>
Type A	133 kN (30,000 lb)
Type B	267 kN (60,000 lb)

Breakaway Couplings: Break-Safe[®] Type A and B Breakaway Couplings are threaded into the corresponding Anchor Type. Minimum tensile load capacity of each coupling type is shown below.

<u>Break-Safe[®] Coupling</u>	<u>Min. Ult. Tensile Strength</u>
Type A	84 kN (18,900 lb)
Type B	179 kN (40,400 lb)

Sign Post Brackets: Break-Safe[®] Type A and B Brackets provide a connection from the signpost to the breakaway couplings, and incorporate a load-concentrating member, which is precisely located to maximize performance of the system.

Hinge Plates: Break-Safe[®] Hinge Plates connect the upper and lower sections of each post in multi-post sign installations. When only one post of a multi-post sign is impacted, the Break-Safe[®] Hinge Plates allow the lower post section to swing out away from the vehicle, while the non-impacted posts remain intact. Minimum tensile load capacity of each hinge plate type is shown below.

<u>Break-Safe[®] Hinge Plate</u>	<u>Min. Ult. Tensile Strength</u>
Type A	32 kN (7100 lb)
Type B525	50 kN (11,300 lb)
Type B650	76 kN (17,000 lb)

Hardware: Break-Safe[®] hardware component specifications are shown in the Parts List for each Break-Safe[®] Model.

Installation:

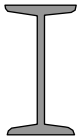
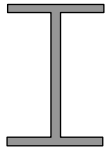
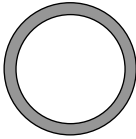
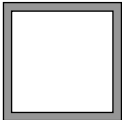
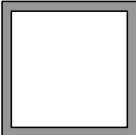
Installation of Break-Safe[®] shall be installed per manufacturer’s written instructions.

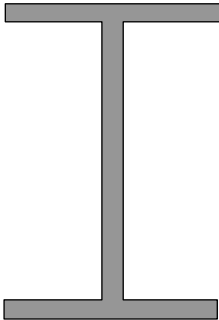
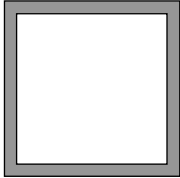
Certification:

Each Break-Safe[®] shipment contains a *Materials Certificate*, indicating that all materials, procedures and test results meet the manufacturer’s written design requirements, and all steel components are of U.S. origin and manufacture.

Break-Safe[®] Type A

Breakaway Support System for Sign Posts

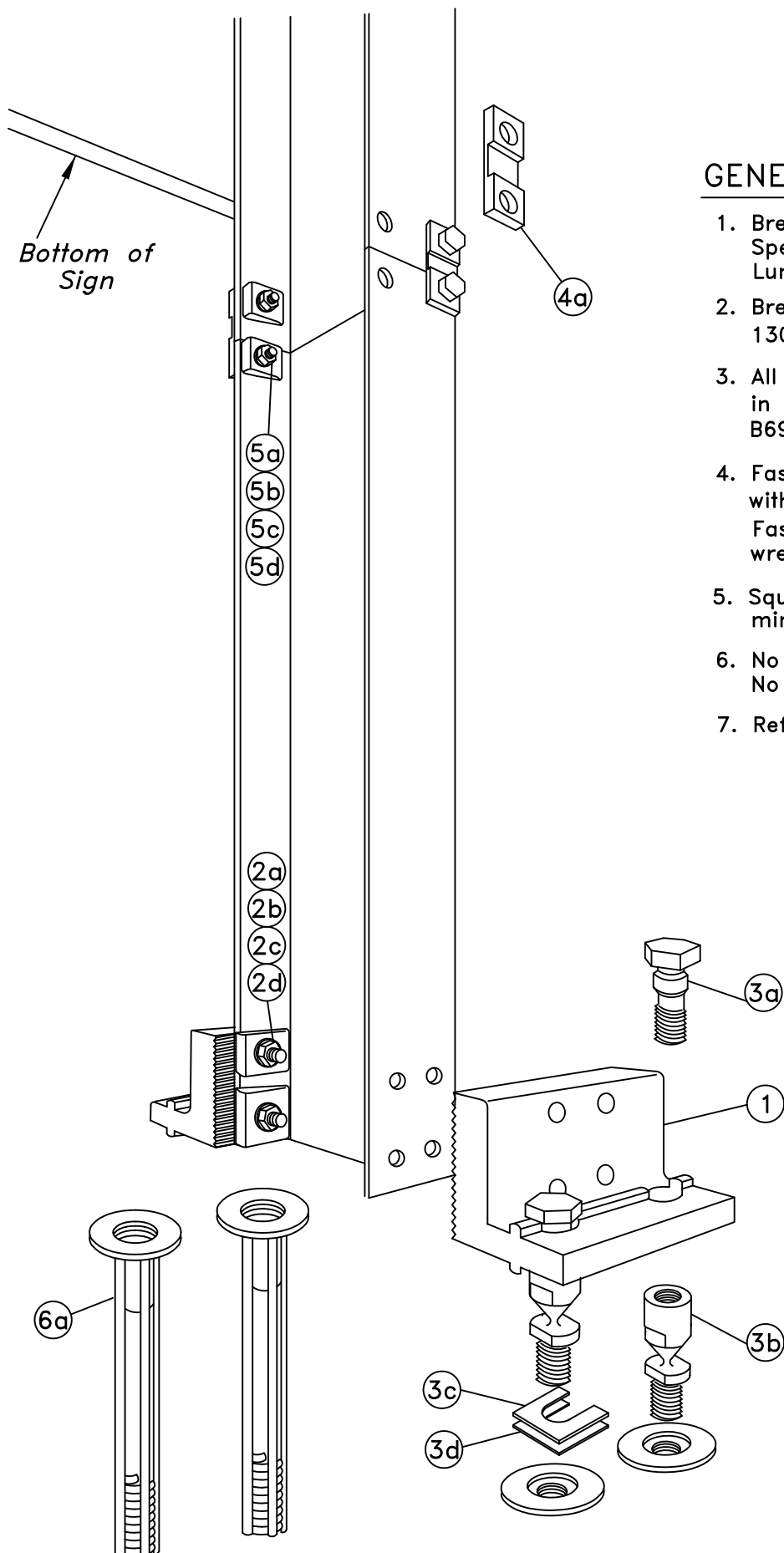
Sign Post Type	Recommended Post Sizes	Break-Safe [®] Model	Page
	Standard "S"-Shape Steel I-Beam	Metric (U.S. Customary) S100x11 (S4x7.7) S130x15 (S5x10)	AI4 5 and 6
	W150x14 (W6x9) Wide Flange Steel I-Beam	W150x14 (W6x9)	AI6 7 and 8
	Round Pipe Steel or Aluminum	76 mm (3") O.D. 89 mm (3-1/2") O.D. 102 mm (4") O.D. 114 mm (4-1/2") O.D.	AP3 AP3.5 AP4 AP4.5 9 and 10
	Square Tube Steel or Aluminum	64 mm (2-1/2") and 76 mm (3")	AS3 11 and 12
	Square Tube Steel or Aluminum	89 mm (3-1/2") and 102 mm (4") 89 mm (3-1/2") and 102 mm (4")	AS4 AS4H 13 and 14 15 and 16

Sign Post Type	Recommended Post Sizes	Break-Safe [®] Model	Page
	150 mm (6") and 200 mm (8") Wide Flange Steel I-Beam	Metric (U.S. Customary) W150x18 (W6x12) W150x22 (W6x15) W200x27 (W8x18) W200x31 (W8x21)	B525 17 and 18
	250 mm (10") to 530 mm (21") Wide Flange Steel I-Beam	W250x33 (W10x22) W250x39 (W10x26) W310x39 (W12x26) W360x45 (W14x30) W410x46 (W16x31) W460x52 (W18x35) W460x60 (W18x40) W530x66 (W21x44)	B650 21 and 22
	Square Tube Steel or Aluminum	127 mm (5") 152 mm (6")	B525 19 and 20
	Square Tube Steel or Aluminum	178 mm (7") 203 mm (8")	B650 23 and 24

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type A14	6061-T6 Aluminum	2	SBMA14*
2	Bracket Hardware Assembly, Type A14, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx57.2mm(2-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	8	
2b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	8	
2c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
2d	Bevel Washer	12.7mm(1/2"), Clipped, ASTM F436, Galv. ASTM A153	8	
3	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
3a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Hinge Assembly, Type A, includes:		1	SB-HB3
4a	Hinge Plate	Type A, AISI 4130 Steel, Galv. ASTM A123	4	
5	Hinge Hardware Assembly, Type A, includes:		1	SB-HHA
5a	Bolt	12.7mm(1/2")-13UNCx37.2mm(1-1/2"), Hex Head, ASTM A325, Galv. ASTM A153	8	
5b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	8	
5c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
5d	Bevel Washer	12.7mm(1/2"), Clipped, ASTM F436, Galv. ASTM A153	8	
6	Anchor Assembly, Type A, includes:		1	SBAAPK
6a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-5



GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model A14 is designed to fit 100mm (4") and 130mm (5") Standard S-Shaped Steel I-Beam signposts.
3. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.

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Break-Safe Model A14
Breakaway Support System for Sign Posts

Scale: Not To Scale Date: March 2013

Drawing No. BS-A14-1

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

HINGE ASSEMBLY:

1. Butt upper and lower post sections together on a flat surface.
2. Drill eight (8) 14.3mm (9/16") holes in the flanges of the post sections as shown.
3. Place Hinge Plates on outer surface of the post flanges and secure with bolts, bevel washers, lock washers, and nuts. Ensure that upper and lower post sections are in alignment, and then tighten all nuts 1/2 turn beyond snug.

BRACKET ASSEMBLY:

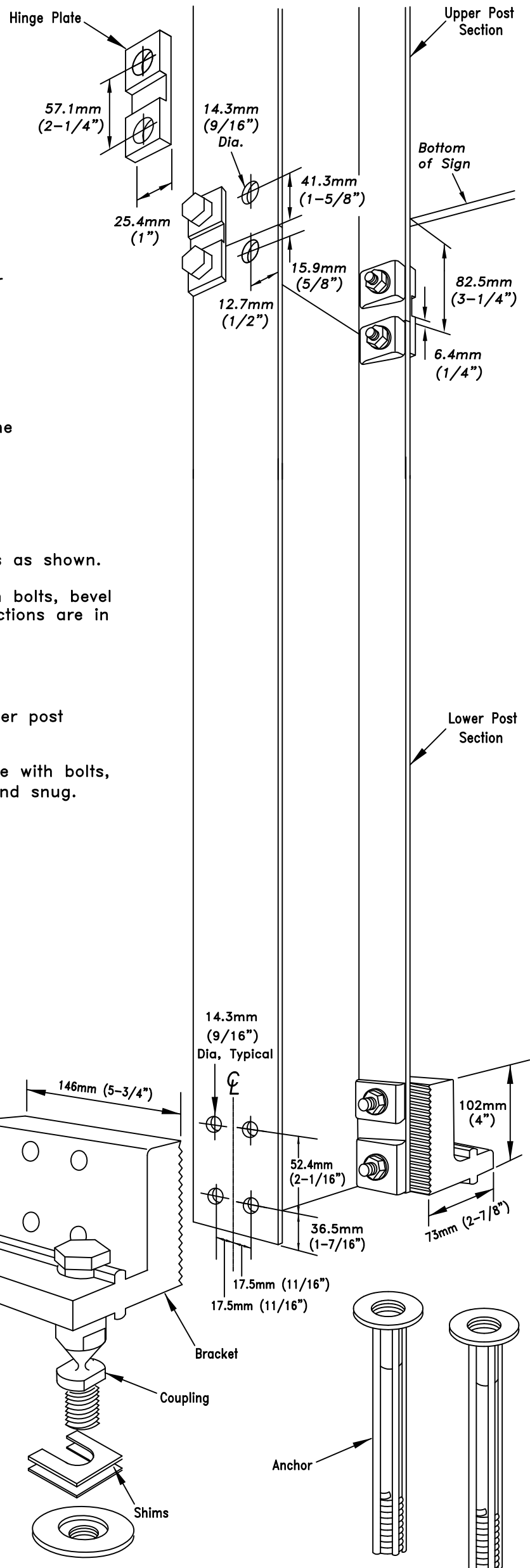
1. Drill eight (8) 14.3mm (9/16") diameter holes in the flanges of the lower post section as shown.
2. Place Brackets squarely on outer surface of the post flanges, and secure with bolts, bevel washers, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.

COUPLING ASSEMBLY:

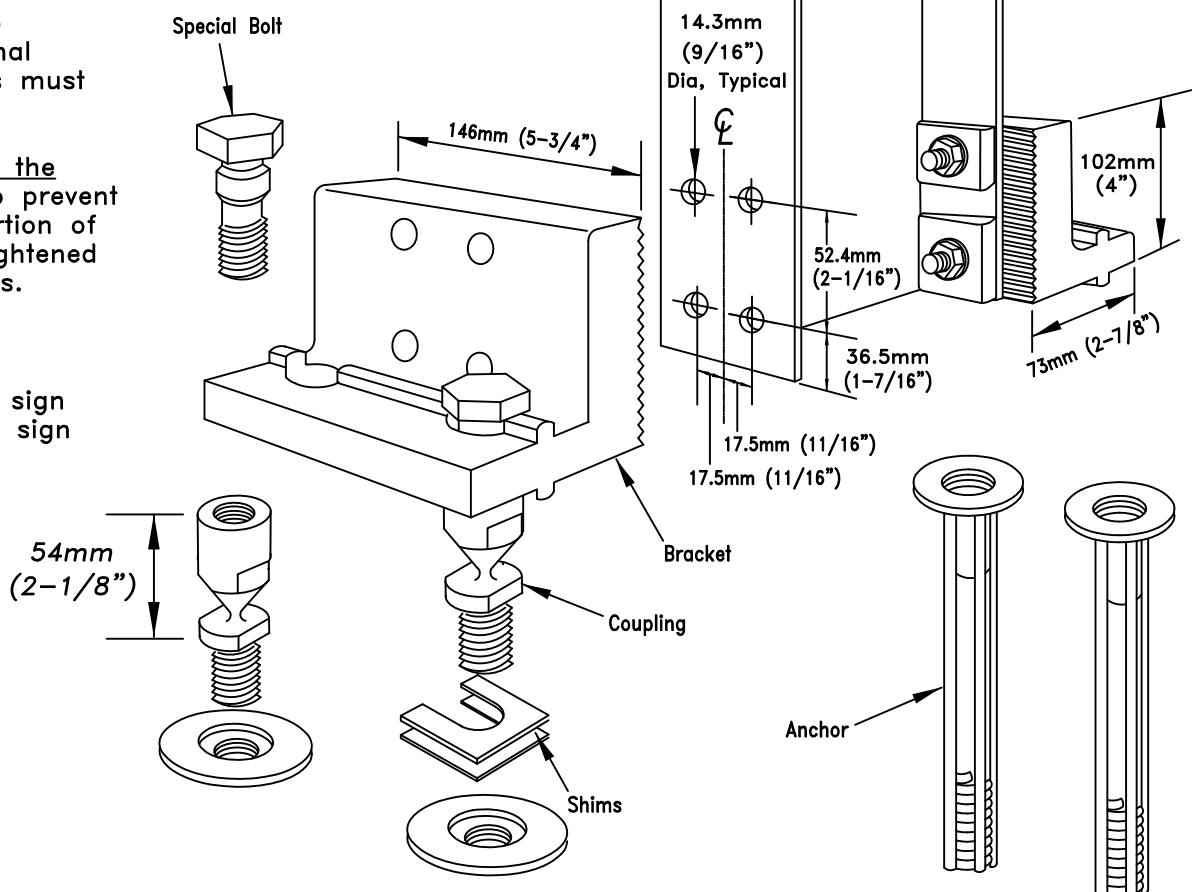
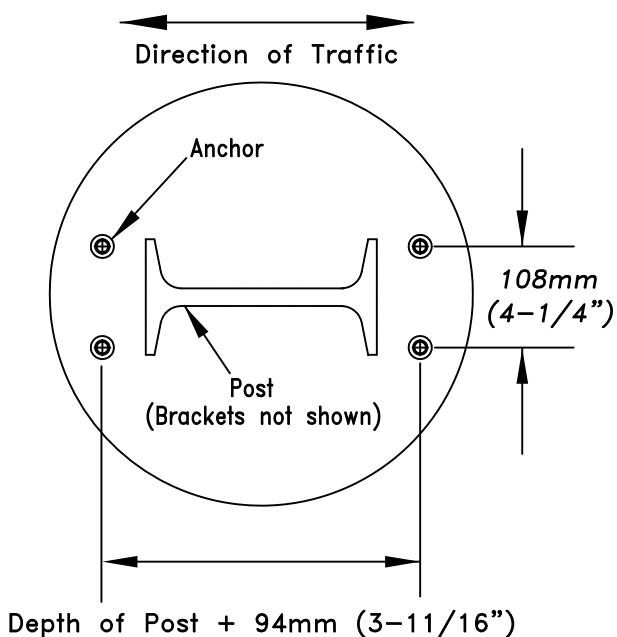
1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.



PLAN VIEW OF TYPICAL FOUNDATION



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Break-Safe Model AI4
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

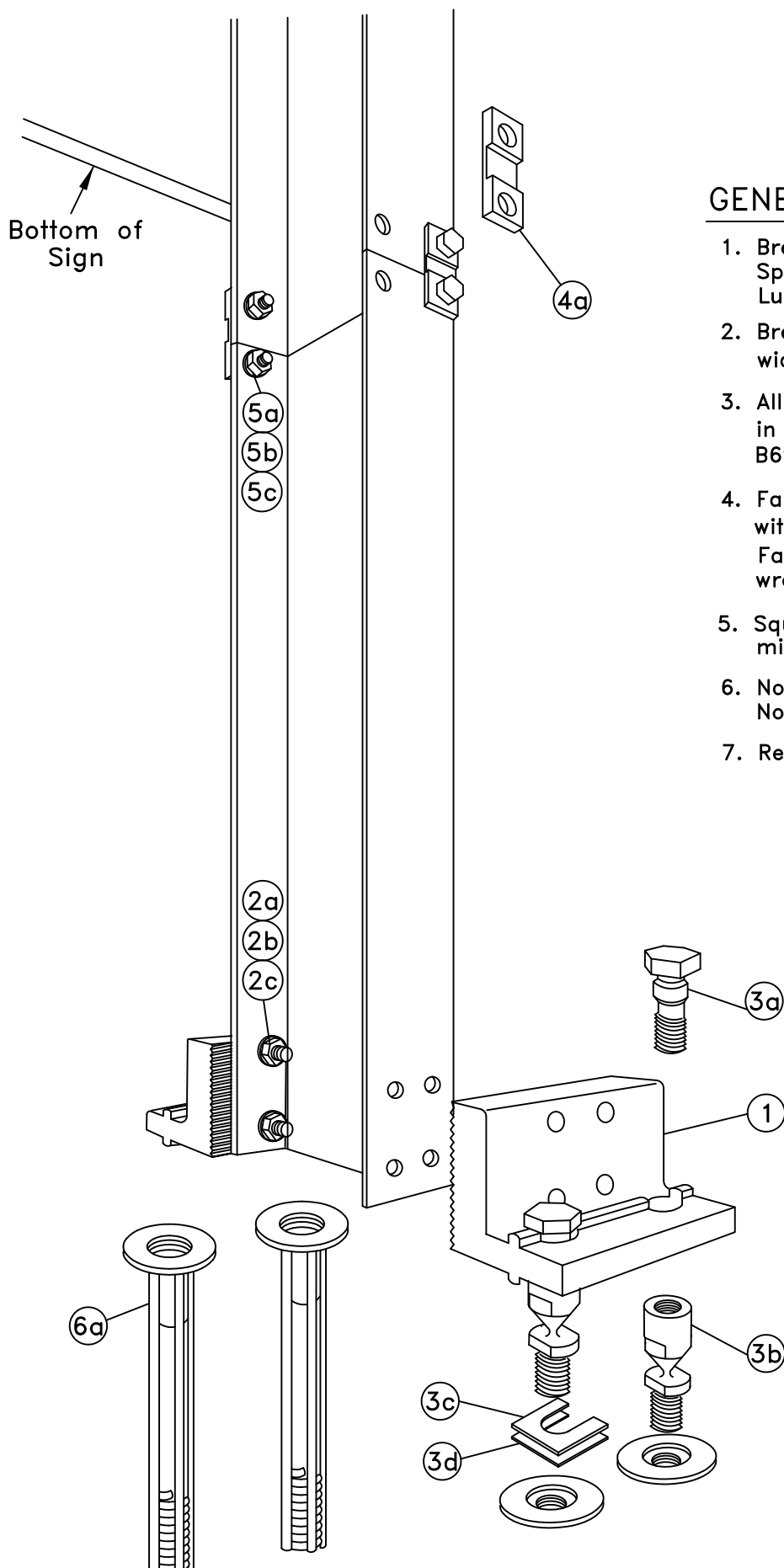
Drawing No. BS-AI4-2

Sheet: 2 of 2

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type A16	6061-T6 Aluminum	2	SBMA16*
2	Bracket Hardware Assembly, Type A16, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx57.2mm(2-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	8	
2b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	8	
2c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
3	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
3a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Hinge Assembly, Type A, includes:		1	SB-HB3
4a	Hinge Plate	Type A, AISI 4130 Steel, Galv. ASTM A123	4	
5	Hinge Hardware Assembly, Type A, includes:		1	SB-HHA
5a	Bolt	12.7mm(1/2")-13UNCx37.2mm(1-1/2"), Hex Head, ASTM A325, Galv. ASTM A153	8	
5b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	8	
5c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
6	Anchor Assembly, Type A, includes:		1	SBAAPK
6a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-5



GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model A16 is designed to fit W150x14 (W6x9) wide-flange steel I-Beam signposts.
3. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.

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Break-Safe Model A16
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Drawing No. BS-AI6-1

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

HINGE ASSEMBLY:

1. Butt upper and lower post sections together on a flat surface.
2. Drill eight (8) 14.3mm (9/16") holes in the flanges of the post sections as shown.
3. Place Hinge Plates on outer surface of the post flanges and secure with bolts, lock washers, and nuts. Ensure that upper and lower post sections are in alignment, and then tighten all nuts 1/2 turn beyond snug.

BRACKET ASSEMBLY:

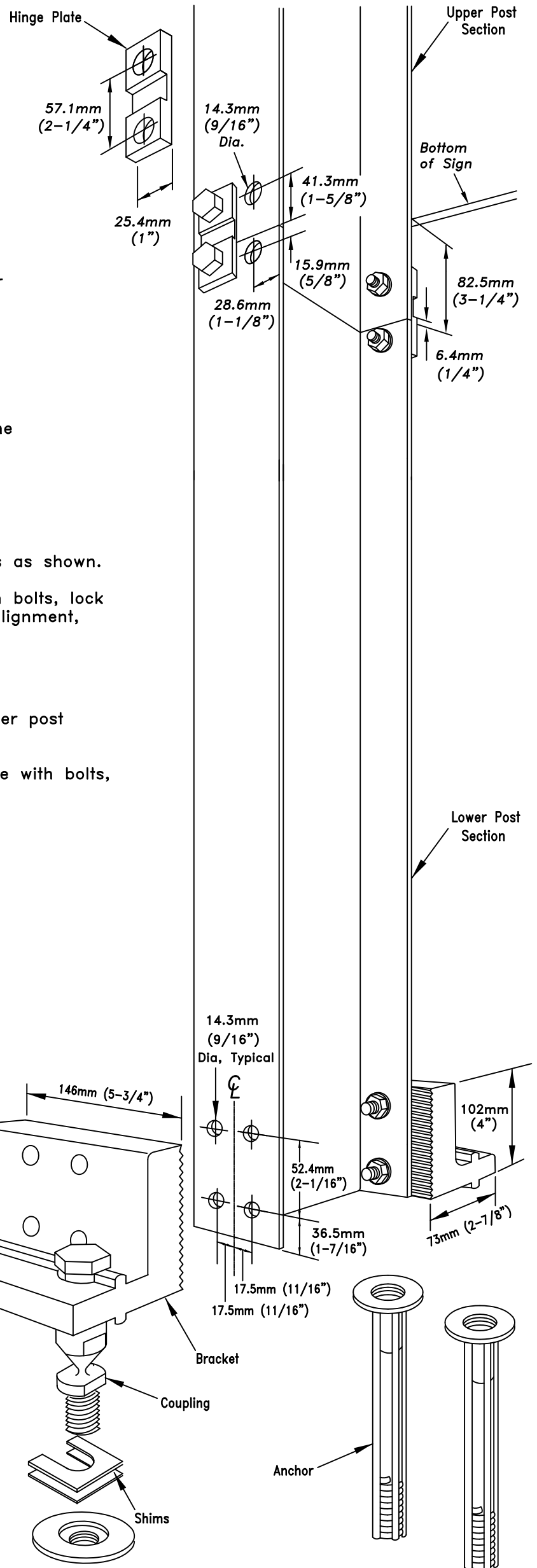
1. Drill eight (8) 14.3mm (9/16") diameter holes in the flanges of the lower post section as shown.
2. Place Brackets squarely on outer surface of the post flanges, and secure with bolts, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.

COUPLING ASSEMBLY:

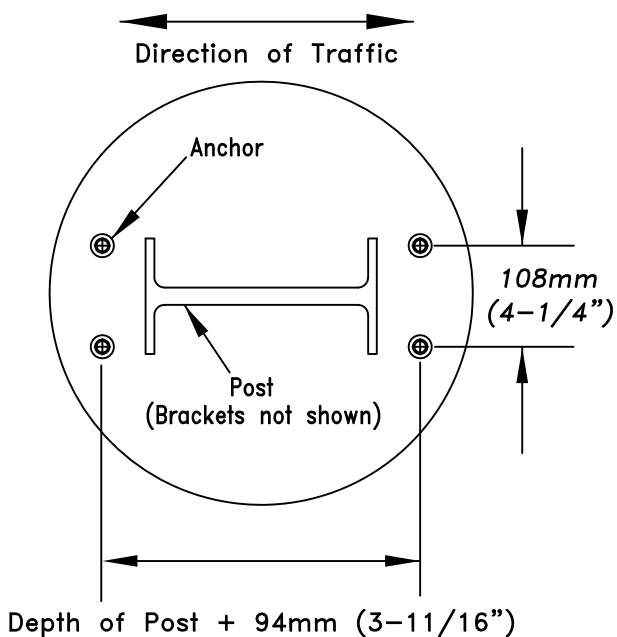
1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.



PLAN VIEW OF TYPICAL FOUNDATION



Patent Nos. 4,528,786 and 5,596,845

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The Smart Solutions Company www.transpo.com

Break-Safe Model AI6
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Drawing No. BS-AI6-2

Sheet: 2 of 2

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type AP3/AP3.5, AP4/AP4.5	6061-T6 Aluminum	2	SBMAP 3, 3.5, 4 & 4.5*
2	Bracket Adaptor, Type AP3, AP3.5, AP4, AP4.5	6061-T6 Aluminum	2	
2a	with Adaptor Ring, Type AP3, AP4	6061-T6 Aluminum	1	
3	Bracket Hardware Assembly, Type AP3, AP3.5, AP4, AP4.5, includes:		1	SB-AP3.5H, 4.5H
3a	Bolt	12.7mm(1/2")-13UNC, Hex Head, ASTM A325, Galv. ASTM A153	4	
3b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	4	
3c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	4	
4	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
4a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
4b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
4c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
4d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
5	Anchor Assembly, Type A, includes:		1	SBAAPK
5a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

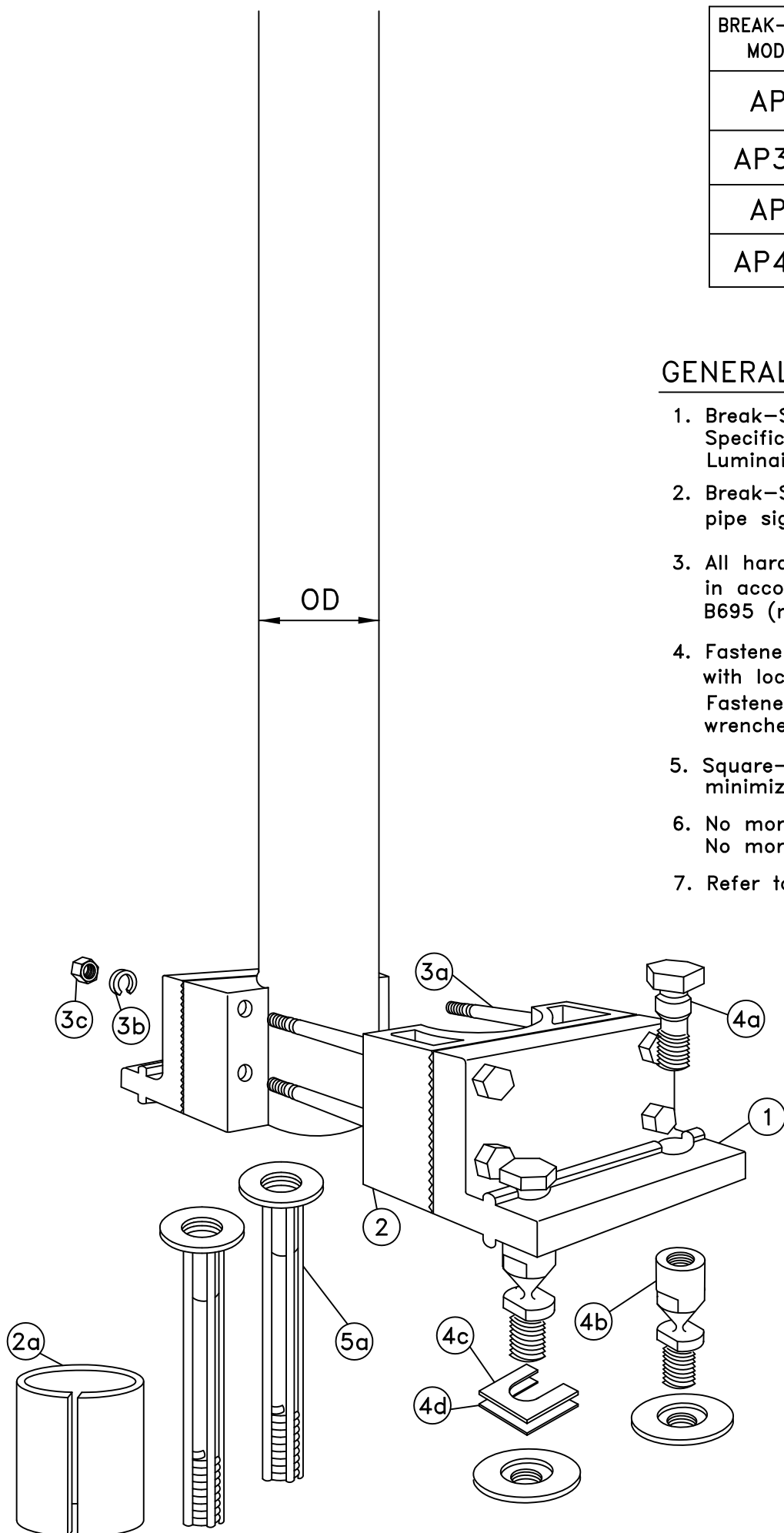
*Complete assembly includes line items 1-4

BREAK-SAFE MODEL AP SELECTION TABLE

BREAK-SAFE MODEL	PIPE OUTSIDE DIAMETER (OD)	NOMINAL SCH. 40 PIPE SIZE
AP3	73 mm (2-7/8")	2-1/2"
AP3.5	89 mm (3-1/2")	3"
AP4	102 mm (4")	3-1/2"
AP4.5	114 mm (4-1/2")	4"

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model AP is designed to fit steel or aluminum round pipe signposts. See table above for pipe sizes.
3. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.



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Break-Safe Model AP
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

Drawing No. BS-AP-1

Sheet: 1 of 2

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

BRACKET ASSEMBLY:

1. Place Bracket Adaptors (& Adaptor Ring for Models AP3 & AP4) and Brackets squarely on the bottom of the post, such that the lower end of the post is flush with the bottom of both Bracket Adaptors.
2. Secure the Bracket assembly with bolts, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.
3. Adapter Ring Provided for AP3 and AP4. Slide Adapter Ring over pipe and secure bracket assembly to pipe.

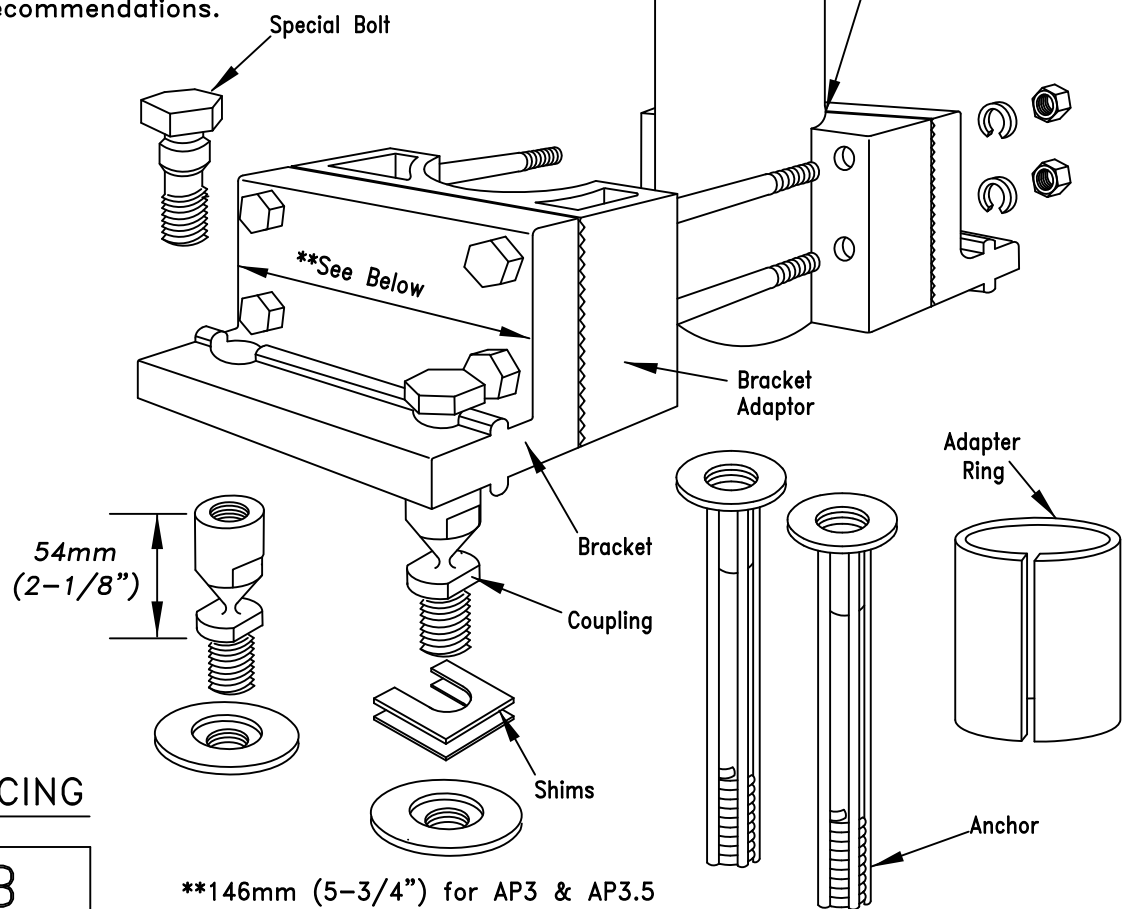
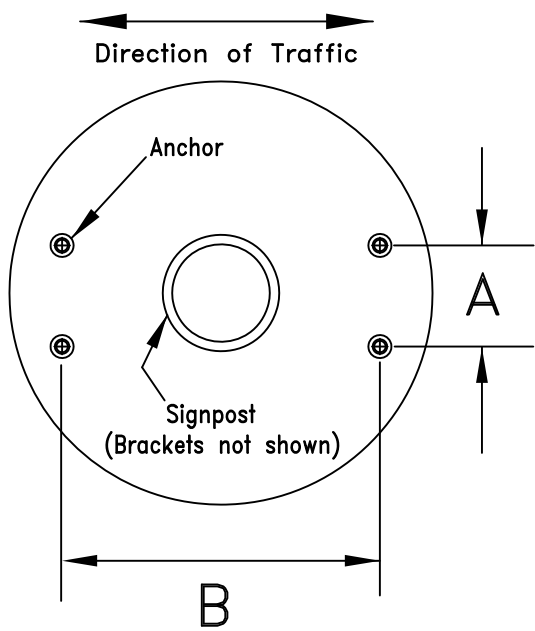
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



BREAK-SAFE MODEL AP ANCHOR SPACING

BREAK-SAFE MODEL	POST OUTSIDE DIAMETER (OD)	NOMINAL SCH 40 PIPE	A	B
AP3*	73 mm (2-7/8")	2-1/2"	70 mm (2-3/4")	202 mm (7-15/16")
AP3.5	89 mm (3-1/2")	3"	70 mm (2-3/4")	202 mm (7-15/16")
AP4*	102 mm (4")	3-1/2"	83 mm (3-1/4")	227 mm (8-15/16")
AP4.5	114 mm (4-1/2")	4"	83 mm (3-1/4")	227 mm (8-15/16")

*Install supplied Adaptor Ring for Models AP3 & AP4.

**146mm (5-3/4") for AP3 & AP3.5
 **171mm (6-3/4") for AP4 & AP4.5

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Break-Safe Model AP
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Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

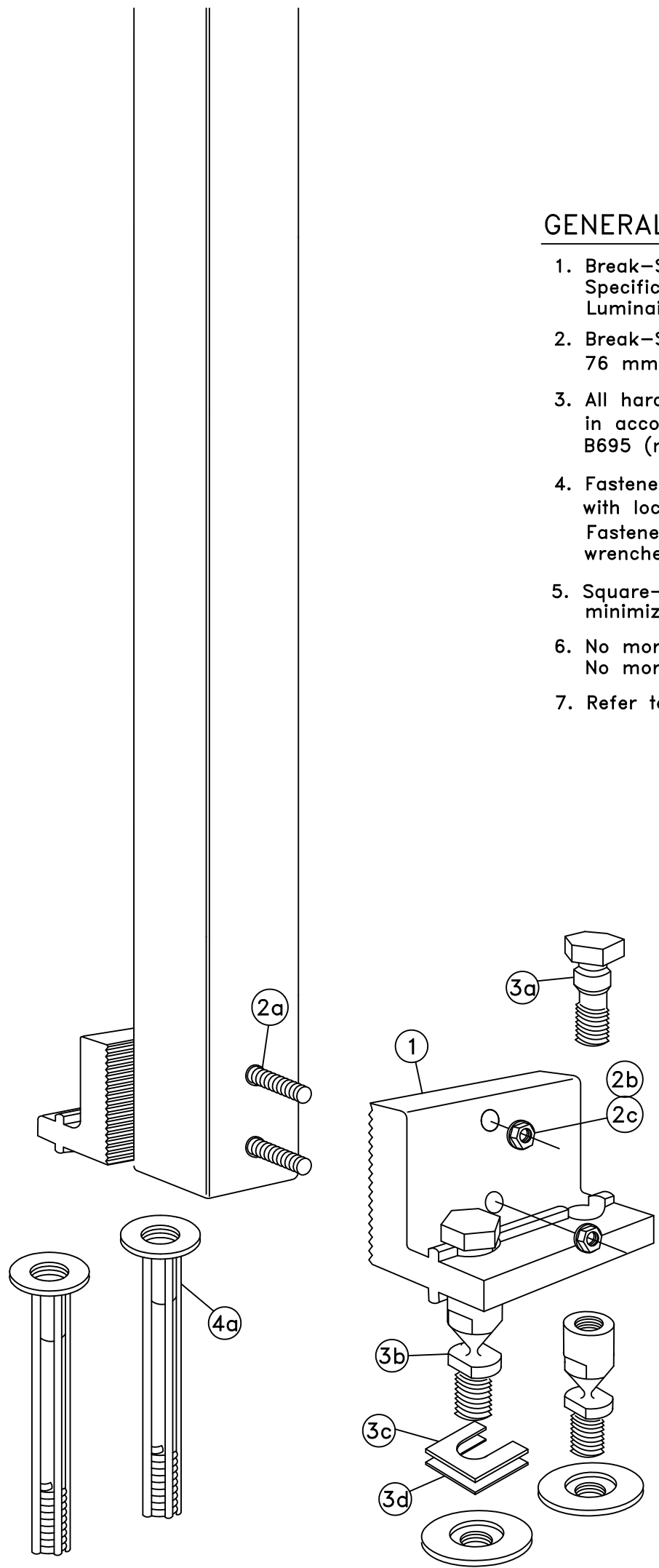
Drawing No. BS-AP-2

Sheet: 2 of 2

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type AS3	6061-T6 Aluminum	2	SBMAS3*
2	Bracket Hardware Assembly, Type AS3, includes:		1	
2a	Bolt	19.1mm(3/4")-10UNCx158.8mm(6-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	2	
2b	LockWasher	19.1mm(3/4"), ANSI B18-21-1, Galv. ASTM A153	2	
2c	Nut	19.1mm(3/4")-10UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	2	
3	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
3a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Anchor Assembly, Type A, includes:		1	SBAAPK
4a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-3



GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model AS3 is designed to fit 64 mm (2-1/2") and 76 mm (3") steel or aluminum square tube signposts.
3. All hardware items are American Standard sizes, gavanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.

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Break-Safe Model AS3
Breakaway Support System for Sign Posts

Scale: Not To Scale Date: March 2013

Drawing No. BS-AS3-1

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

BRACKET ASSEMBLY:

1. Drill four (4) 20.6mm (13/16") diameter holes in the bottom end of the post section as shown.
2. Place Brackets squarely on outer surface of the post, and secure with bolts, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.

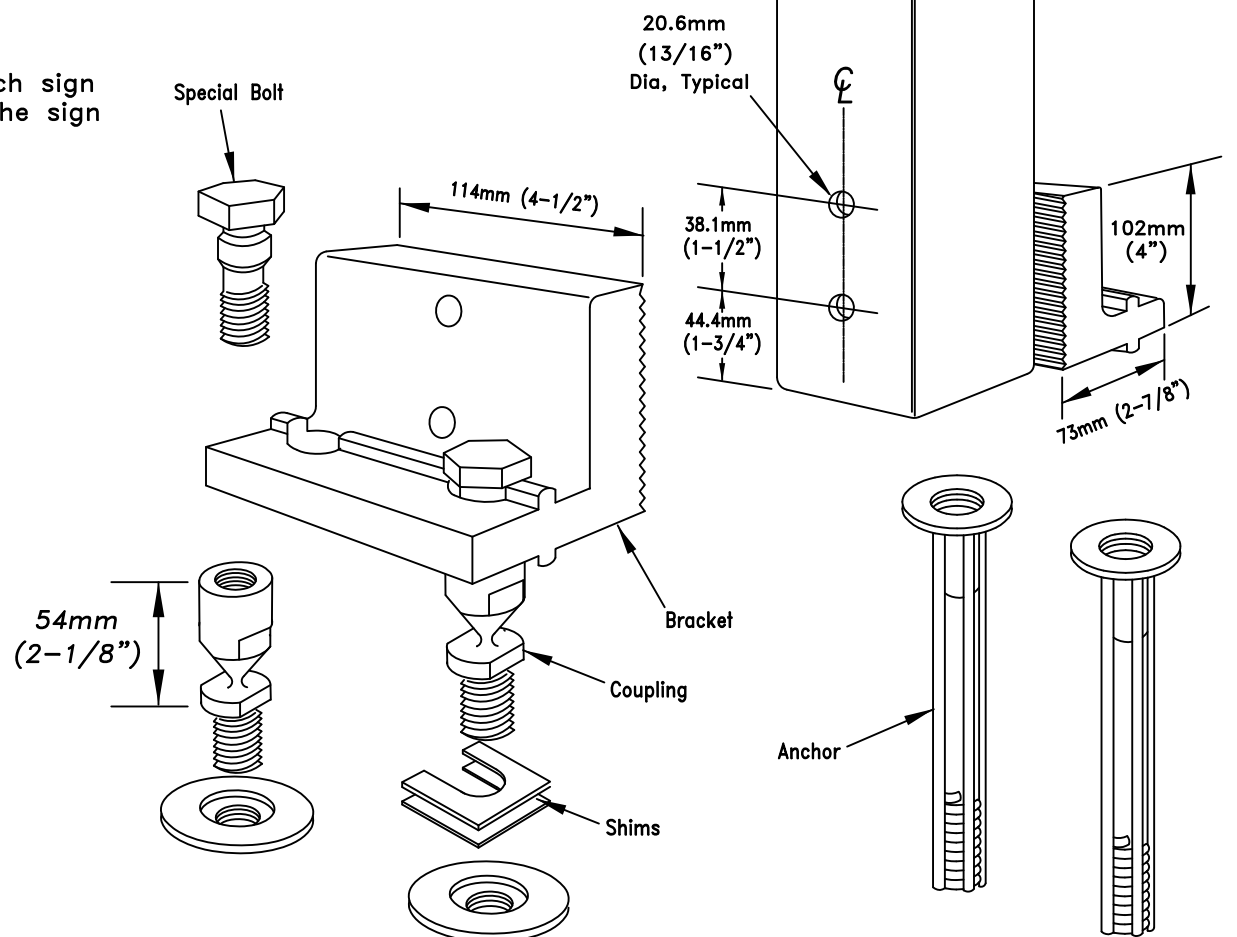
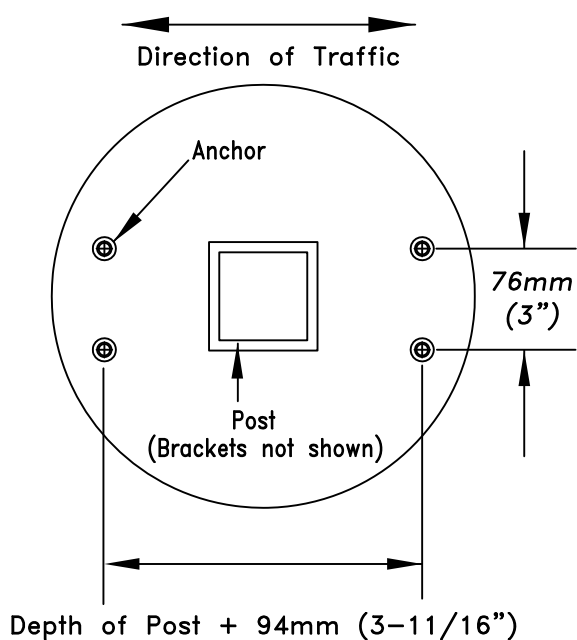
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



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Break-Safe Model AS3
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

Drawing No. BS-AS3-2

Sheet: 2 of 2

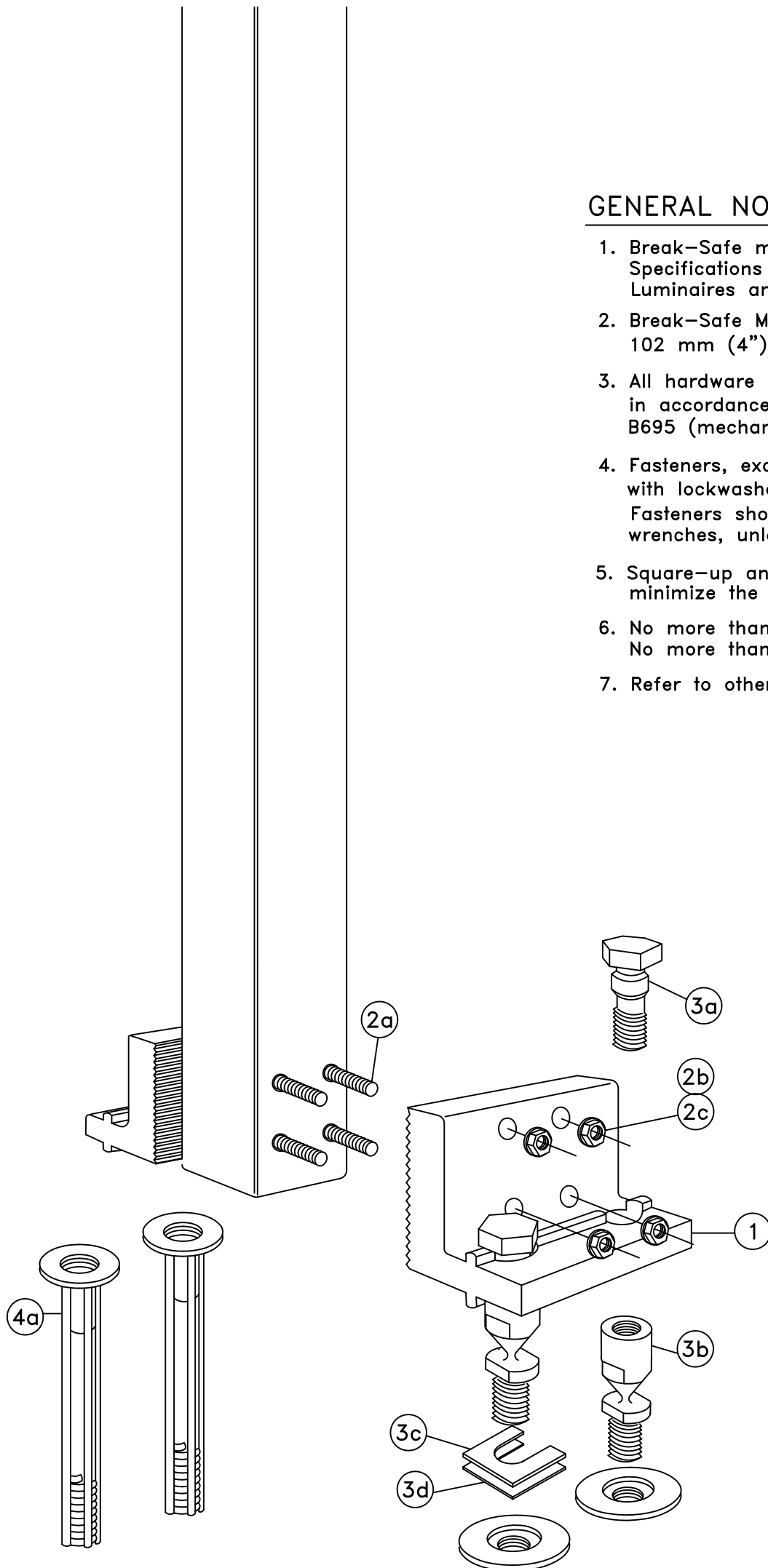
PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type AS4	6061-T6 Aluminum	2	SBMAS4*
2	Bracket Hardware Assembly, Type AS4, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx184mm(7-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	4	
2c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	4	
3	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
3a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Anchor Assembly, Type A, includes:		1	SBAAPK
4a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-3

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model AS4 is designed to fit 89 mm (3-1/2") and 102 mm (4") steel or aluminum square tube signposts.
3. All hardware items are American Standard sizes, gavanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.



Patent Nos. 4,528,786 and 5,596,845

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Break-Safe Model AS4
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Drawing No. BS-AS4-1

Sheet: 1 of 2

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

BRACKET ASSEMBLY:

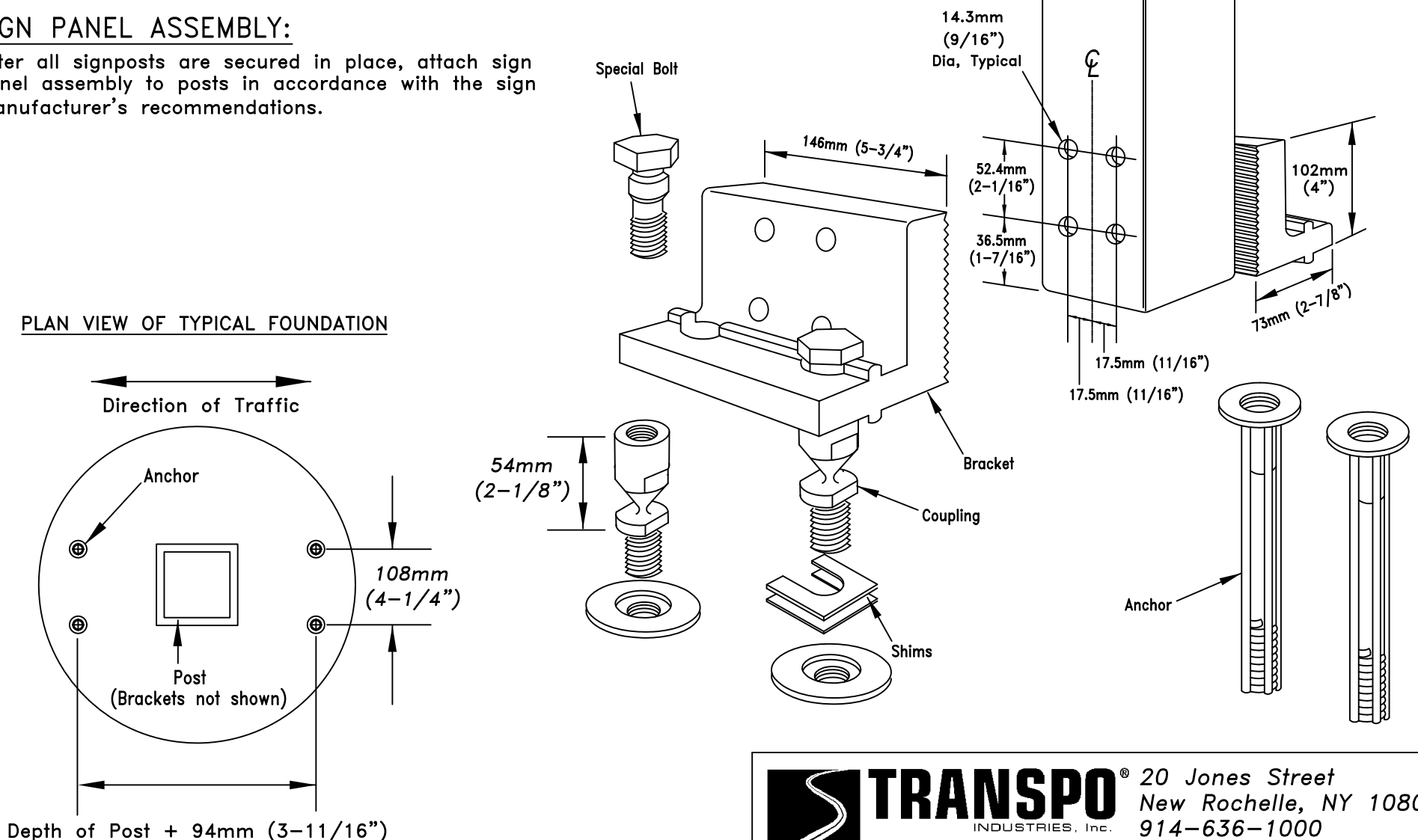
1. Drill eight (8) 14.3mm (9/16") diameter holes in the bottom end of the post section as shown.
2. Place Brackets squarely on outer surface of the post, and secure with bolts, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.

COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.



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Break-Safe Model AS4
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

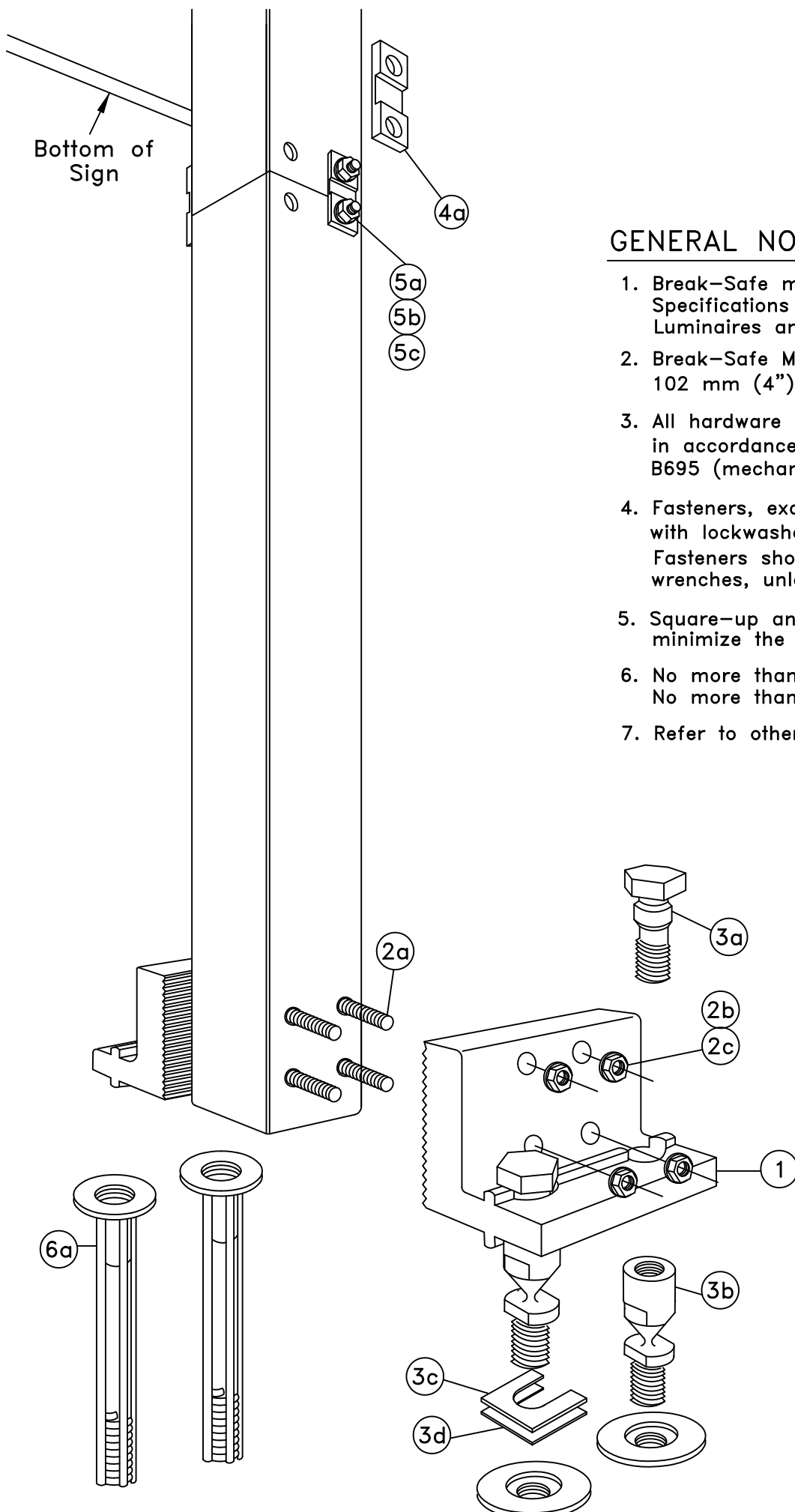
Drawing No. BS-AS4-2

Sheet: 2 of 2

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type AS4	6061-T6 Aluminum	2	SBMAS4H*
2	Bracket Hardware Assembly, Type AS4, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx184mm(7-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	4	
2c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	4	
3	Coupling & Special Bolt Assembly, Type A, includes:		1	SB-CALP
3a	Special Bolt	15.9mm(5/8")-11UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	15.9mm(5/8")-11UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	15.9mm(5/8") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	15.9mm(5/8") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Hinge Assembly, Type A, includes:		1	SB-HB3
4a	Hinge Plate	Type A, AISI 4130 Steel, Galv. ASTM A123	4	
5	Hinge Hardware Assembly, Type A, includes:		1	SB-HHA
5a	Bolt	12.7mm(1/2")-13UNCx127mm(5"), Hex Head, ASTM A325, Galv. ASTM A153	4	
5b	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	4	
5c	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	4	
6	Anchor Assembly, Type A, includes:		1	SBAAPK
6a	Anchor	15.9mm(5/8")-11UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-5



GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model AS4-H is designed to fit 89 mm (3-1/2") and 102 mm (4") steel or aluminum square tube signposts.
3. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.

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Break-Safe Model AS4H
Breakaway Support System for Sign Posts

Scale: Not To Scale Date: March 2013

Drawing No. BS-AS4H-1

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Fabricate a flat, rigid template with four (4) 16mm (5/8") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
2. Attach four (4) Transpo Type A Female Anchors to the template using four (4) 16mm (5/8") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
4. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

HINGE ASSEMBLY:

1. Butt upper and lower post sections together on a flat surface.
2. Drill eight (8) 14.3mm (9/16") holes in the upper and lower post sections as shown.
3. Place Hinge Plates on outer surface of the post, and secure with bolts, lock washers, and nuts. Bolt Heads may be tack welded to inside of tubular post. Ensure that upper and lower post sections are in alignment, and then tighten all nuts 1/2 turn beyond snug.

BRACKET ASSEMBLY:

1. Drill eight (8) 14.3mm (9/16") diameter holes in the bottom end of the lower post section as shown.
2. Place Brackets squarely on outer surface of the post, and secure with bolts, lock washers, and nuts. Then, tighten all 1/2 turn beyond snug.

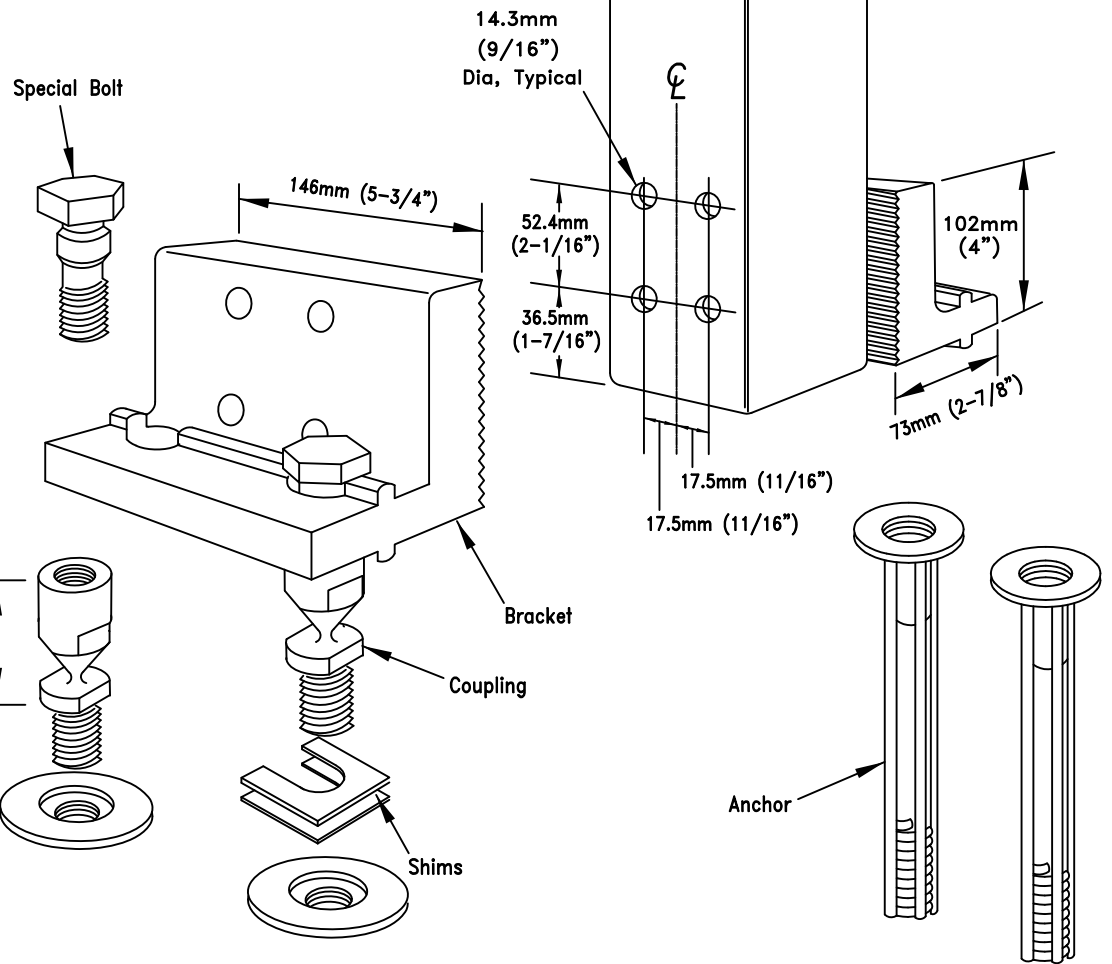
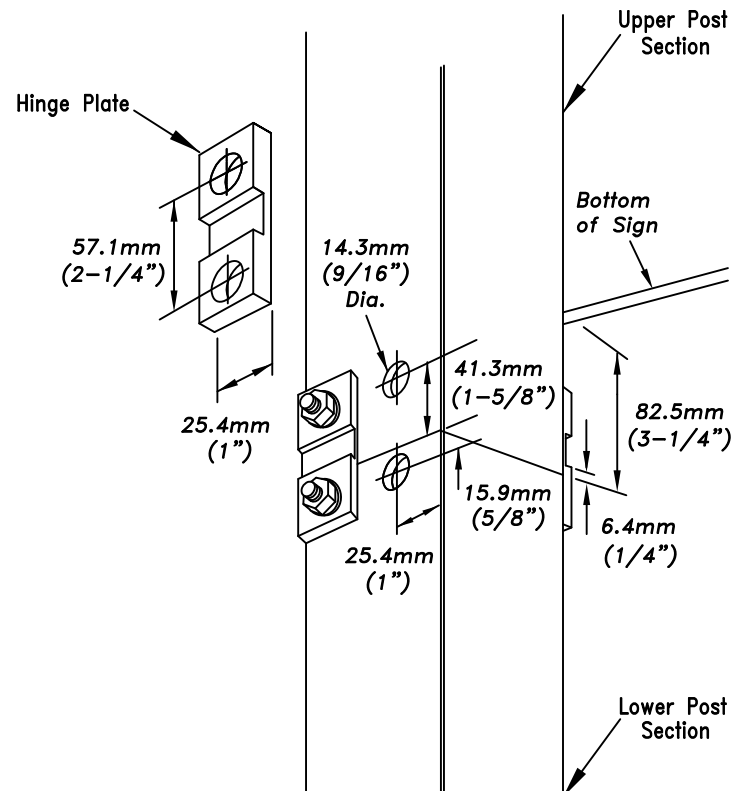
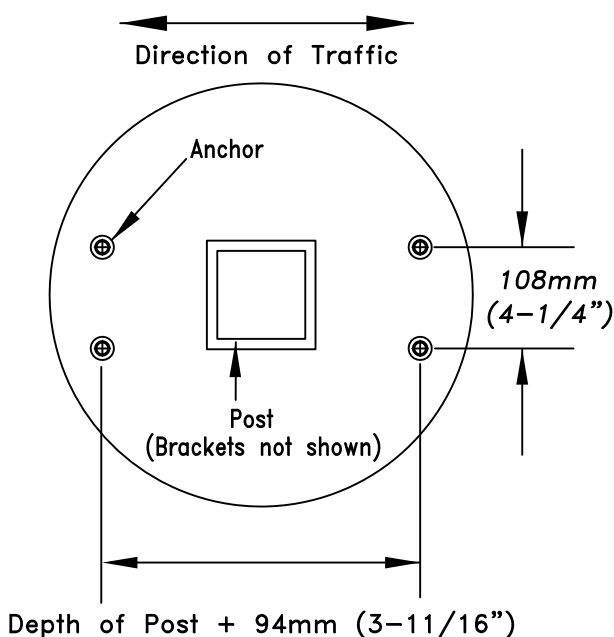
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



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Break-Safe Model AS4H
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Drawing No. BS-AS4H-2

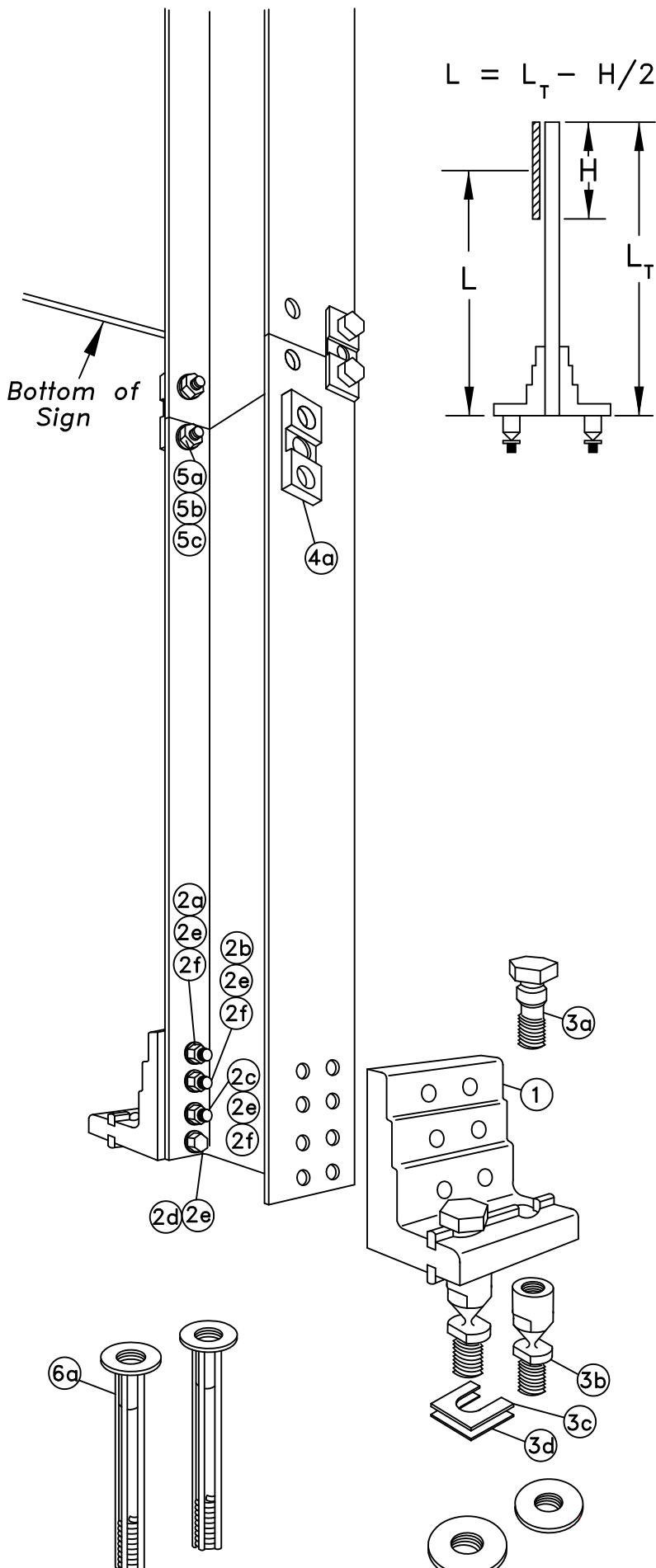
Sheet: 2 of 2

Patent Nos. 4,528,786 and 5,596,845

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type B525	6061-T6 Aluminum (see Bracket Selection Table for -Number)	2	SBM525 -1,-2,&-3*
2	Bracket Hardware Assembly, Type B525, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx63.5mm(2-1/2"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	Bolt	12.7mm(1/2")-13UNCx69.8mm(2-3/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2c	Bolt	12.7mm(1/2")-13UNCx76.2mm(3"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2d	Cap Screw	12.7mm(1/2")-13UNCx31.7mm(1-1/4"), Hex Head, ASTM A307, Galv. ASTM A153	4	
2e	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	16	
2f	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A1531	12	
3	Coupling & Special Bolt Assembly, Type B, includes:		1	SB-CBLP
3a	Special Bolt	25.4mm(1")-8UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	25.4mm(1")-8UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	25.4mm(1") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	25.4mm(1") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Hinge Assembly, Type B525, includes:		1	SB-HB1
4a	Hinge Plate	Type B525, AISI 4130 Steel, Galv. ASTM A123	4	
5	Hinge Hardware Assembly, Type B, includes:		1	SB-HHB
5a	Bolt	19.0mm(3/4")-10UNCx57.1mm(2-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	8	
5b	LockWasher	19.0mm(3/4"), ANSI B18-21-1, Galv. ASTM A153	8	
5c	Nut	19.0mm(3/4")-10UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
6	Anchor Assembly, Type B, includes:		1	SBABPK
6a	Anchor	25.4mm(1")-8UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-5



BRACKET SELECTION TABLE

Select correct Break-Safe bracket number from table, using 'L' value from the longest post. Use figure to the left to determine 'L'.

POST SIZE	BRACKET No. 1		BRACKET No. 2		BRACKET No. 3	
	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'
152mm (6")	3.6m(12')	8.8m(29')	2.7m(9')	3.6m(12')	0	2.7m(9')
203mm (8")	4.3m(14')	8.8m(29')	3.0m(10')	4.3m(14')	0	3.0m(10')

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model B525 is designed to fit 150mm (6") and 200mm (8") Wide Flange I-Beam, and 127mm (5") and 150mm (6") Square Tube signposts.
2. Select proper Bracket Number by referring to Bracket Selection Table.
3. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
4. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
5. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
6. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
7. Refer to other side of page for complete installation instructions.

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Break-Safe Model B525
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Drawing No. BS-B525-1, -2, -3

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Determine proper Break-Safe Bracket Number from the Bracket Selection Table. All posts within a sign structure shall use the same Bracket Number, determined by the length of the longest post.
2. Fabricate a flat, rigid template with four (4) 25mm (1") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
3. Attach four (4) Transpo Type B Female Anchors to the template using four (4) 25mm (1") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
4. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

HINGE ASSEMBLY:

1. Butt upper and lower post sections together on a flat surface.
2. Drill eight (8) 20.6mm (13/16") holes in the flanges of the post sections as shown.
3. Place Hinge Plates on outer surface of the post flanges and secure with bolts, lock washers, and nuts. Ensure that upper and lower post sections are in alignment, and then tighten all nuts 1/2 turn beyond snug.

BRACKET ASSEMBLY:

1. Drill sixteen (16) 14.3mm (9/16") diameter holes in the flanges of the lower post section as shown.
2. Place Brackets squarely on outer surface of the post flanges, and secure with bolts, lock washers, nuts, and cap screws. Then, tighten all 1/2 turn beyond snug.

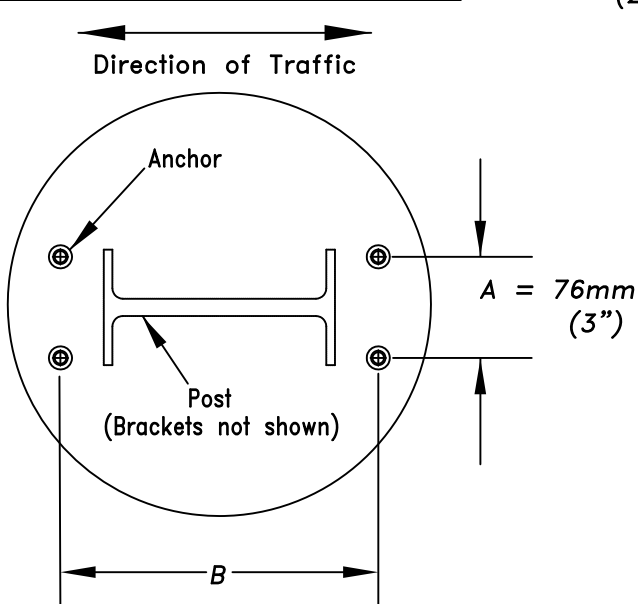
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

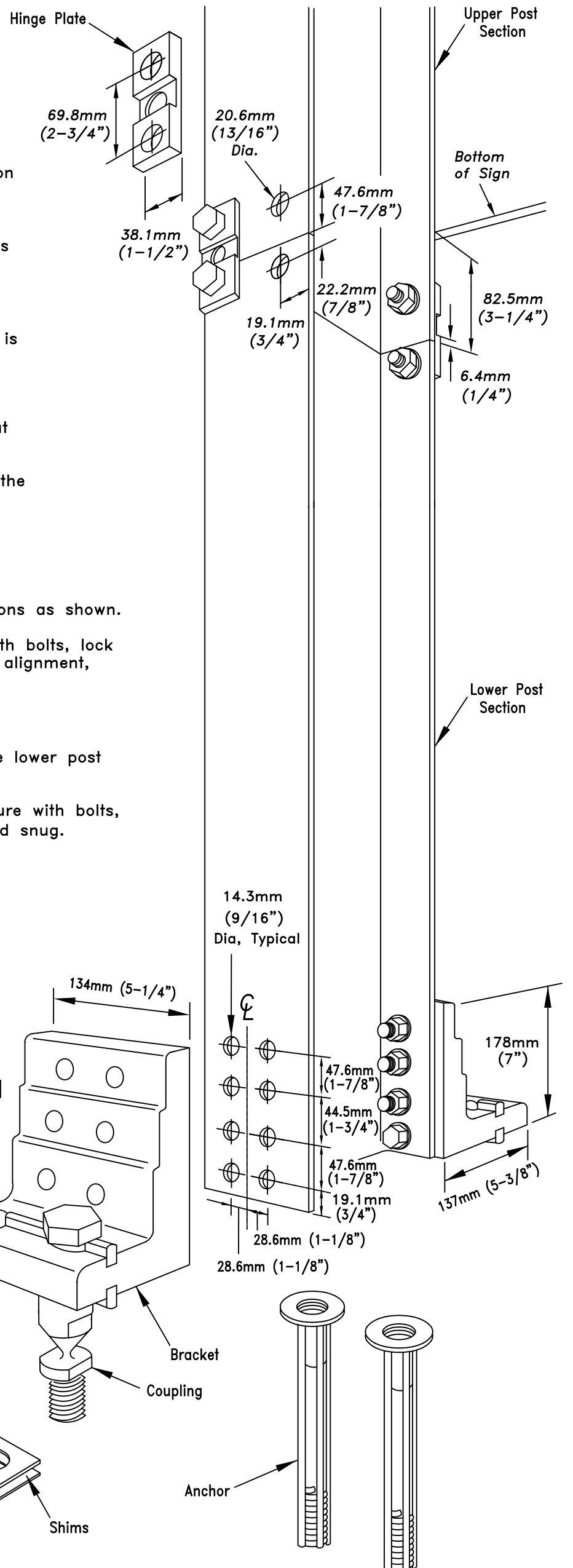
SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



- B (Bracket No. 1) = Depth of Post + 203mm (8")
- B (Bracket No. 2) = Depth of Post + 206mm (8-1/8")
- B (Bracket No. 3) = Depth of Post + 208mm (8-3/16")



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Break-Safe Model B525
 Breakaway Support System for Sign Posts

Scale: Not To Scale Date: July 2010

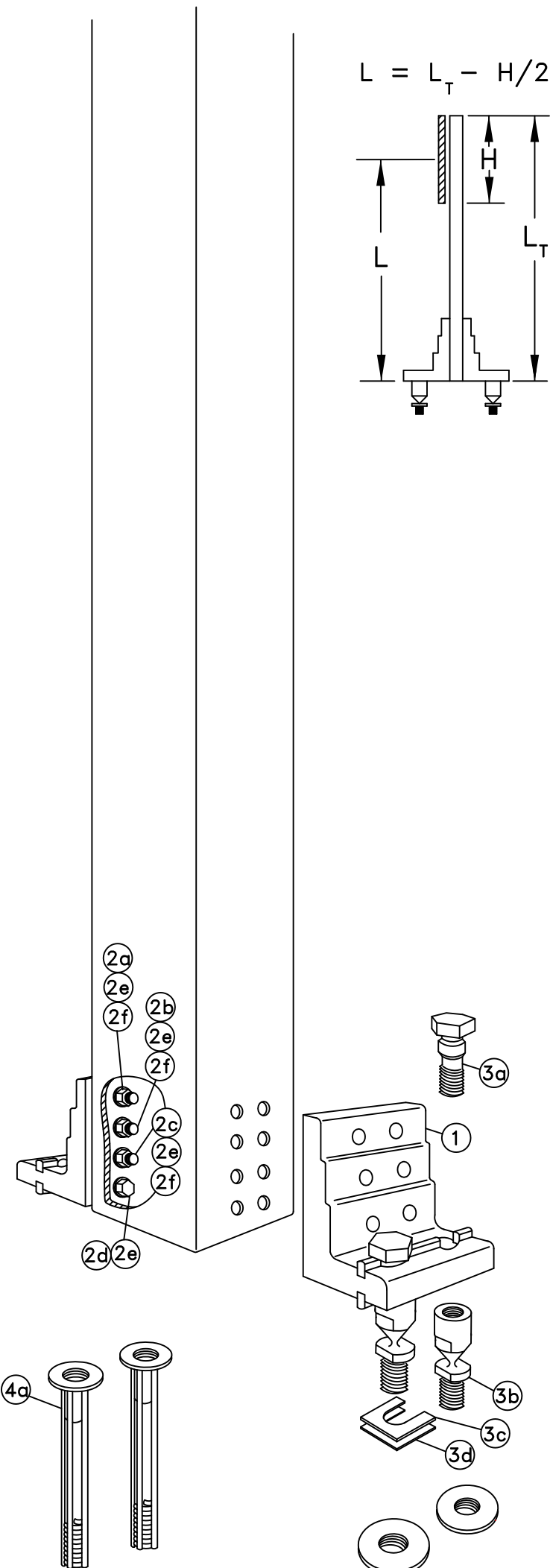
Drawing No. BS-B525-1, -2, -3 Sheet: 2 of 2

Patent Nos. 4,528,786 and 5,596,845

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type B525	6061-T6 Aluminum (see Bracket Selection Table for -Number)	2	SBM525 -1,-2,&-3*
2	Bracket Hardware Assembly, Type B525, includes:		1	
2a	Bolt	12.7mm(1/2")-13UNCx63.5mm(2-1/2"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	Bolt	12.7mm(1/2")-13UNCx69.8mm(2-3/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2c	Bolt	12.7mm(1/2")-13UNCx76.2mm(3"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2d	Cap Screw	12.7mm(1/2")-13UNCx31.7mm(1-1/4"), Hex Head, ASTM A307, Galv. ASTM A153	4	
2e	LockWasher	12.7mm(1/2"), ANSI B18-21-1, Galv. ASTM A153	16	
2f	Nut	12.7mm(1/2")-13UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A1531	12	
3	Coupling & Special Bolt Assembly, Type B, includes:		1	SB-CBLP
3a	Special Bolt	25.4mm(1")-8UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	25.4mm(1")-8UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	25.4mm(1") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	25.4mm(1") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Anchor Assembly, Type B, includes:		1	SBABPK
4a	Anchor	25.4mm(1")-8UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-3



BRACKET SELECTION TABLE

Select correct Break-Safe bracket number from table, using 'L' value from the longest post. Use figure to the left to determine 'L'.

POST SIZE	BRACKET No. 1		BRACKET No. 2		BRACKET No. 3	
	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'
127mm (5")	3.4m(11')	8.8m(29')	2.4m(8')	3.4m(11')	0	2.4m(8')
152mm (6")	3.6m(12')	8.8m(29')	2.7m(9')	3.6m(12')	0	2.7m(9')

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model B525 is designed to fit 127mm (5") and 152mm (6") Square Tube sign posts.
3. Select proper Bracket Number by referring to Bracket Selection Table.
4. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
5. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
6. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
7. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
8. Refer to other side of page for complete installation instructions.

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*Break-Safe Model B525
Breakaway Support System for Sign Posts
5" & 6" Square Tube, Single Post*

Scale: Not To Scale

Date: March 2013

Drawing No. BS-B525-STSP

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Determine proper Break-Safe Bracket Number from the Bracket Selection Table. All posts within a sign structure shall use the same Bracket Number, determined by the length of the longest post.
2. Fabricate a flat, rigid template with four (4) 25mm (1") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
3. Attach four (4) Transpo Type B Female Anchors to the template using four (4) 25mm (1") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
4. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

BRACKET ASSEMBLY:

1. Drill sixteen (16) 14.3mm (9/16") diameter holes in the front & back of the bottom end of post section as shown.
2. Place Brackets squarely on outer surface of the post, and secure with bolts, lock washers, nuts, and cap screws. Then, tighten all 1/2 turn beyond snug.

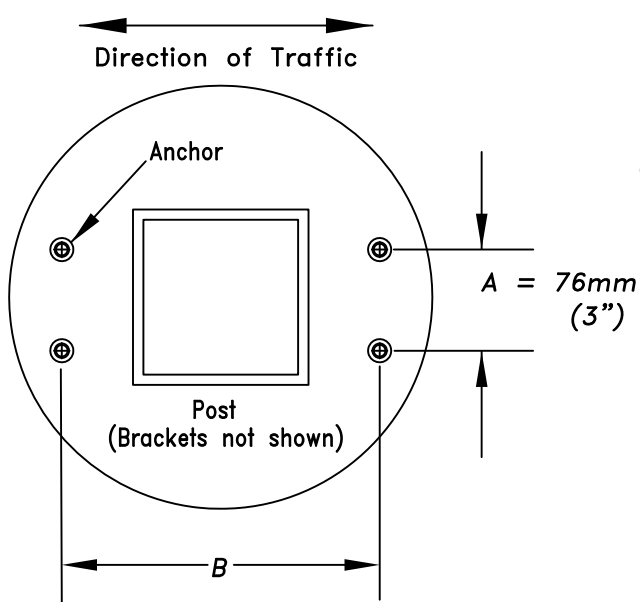
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

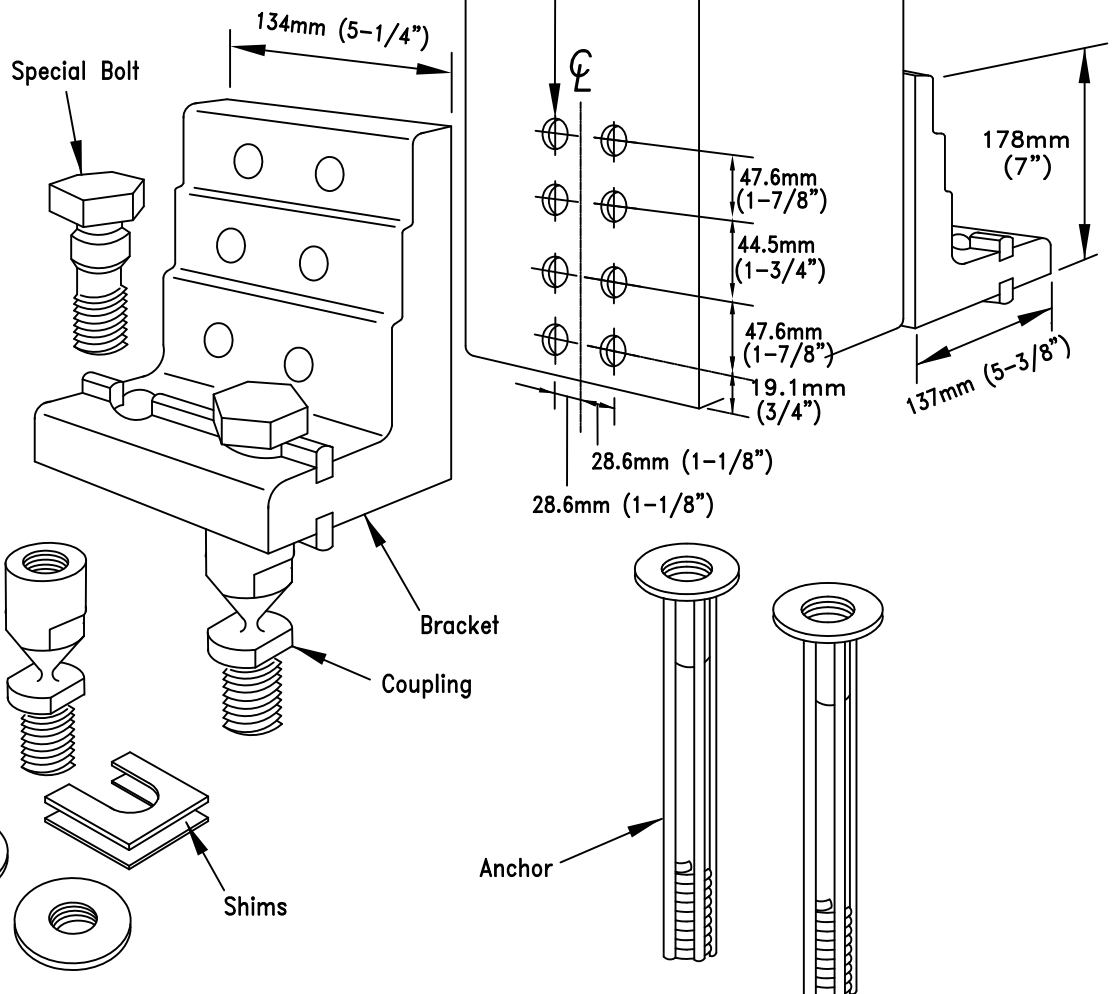
SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



- B (Bracket No. 1) = Depth of Post + 202mm (8")
- B (Bracket No. 2) = Depth of Post + 205mm (8-1/8")
- B (Bracket No. 3) = Depth of Post + 207mm (8-3/16")



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*Break-Safe Model B525
5" & 6" Square Tube, Single Post*

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

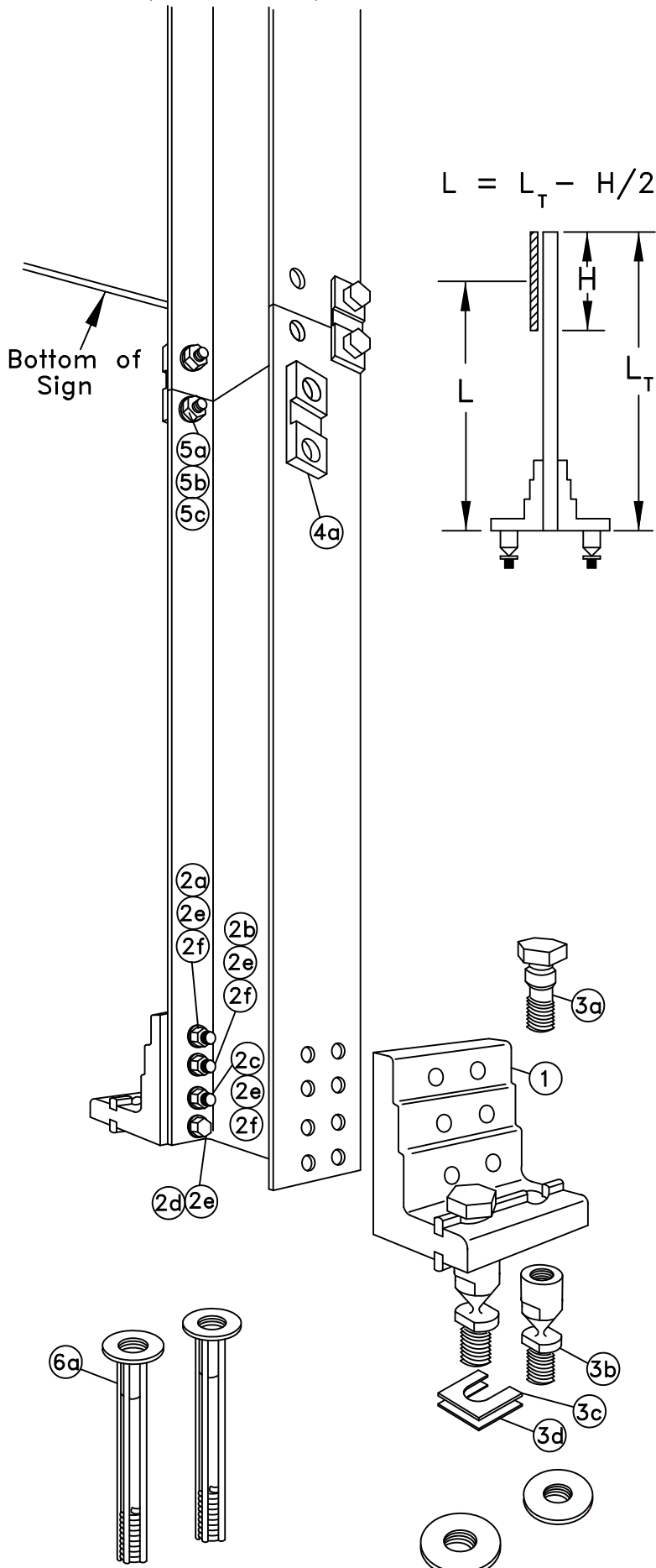
Drawing No. BS-B525-STSP

Sheet: 2 of 2

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type B650	6061-T6 Aluminum (see Bracket Selection Table for -Number)	2	SBM650 -1,-2&-3*
2	Bracket Hardware Assembly, Type B650, includes:		1	
2a	Bolt	15.9mm(5/8")-11UNCx69.9mm(2-3/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	Bolt	15.9mm(5/8")-11UNCx76.2mm(3"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2c	Bolt	15.9mm(5/8")-11UNCx82.6mm(3-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2d	Cap Screw	15.9mm(5/8")-11UNCx31.7mm(1-1/4"), Hex Head, ASTM A307, Galv. ASTM A153	4	
2e	LockWasher	15.9mm(5/8"), ANSI B18-21-1, Galv. ASTM A153	16	
2f	Nut	15.9mm(5/8")-11UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	12	
3	Coupling & Special Bolt Assembly, Type B, includes:		1	SB-CBLP
3a	Special Bolt	25.4mm(1")-8UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	25.4mm(1")-8UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	25.4mm(1") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	25.4mm(1") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Hinge Assembly, Type B650, includes:		1	SB-HB2
4a	Hinge Plate	Type B650, AISI 4130 Steel, Galv. ASTM A123	4	
5	Hinge Hardware Assembly, Type B, includes:		1	SB-HHB
5a	Bolt	19.0mm(3/4")-10UNCx57.1mm(2-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	8	
5b	LockWasher	19.0mm(3/4"), ANSI B18-21-1, Galv. ASTM A153	8	
5c	Nut	19.0mm(3/4")-10UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A153	8	
6	Anchor Assembly, Type B, includes:		1	SBABPK
6a	Anchor	25.4mm(1")-8UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-5



BRACKET SELECTION TABLE

Select correct Break-Safe bracket number from table, using 'L' value from the longest post. Use figure to the left to determine 'L'.

WIDE FLANGE I-BEAM POST SIZE	BRACKET No. 1		BRACKET No. 2		BRACKET No. 3	
	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'
250mm(10")	4.9m(16')	8.8m(29')	3.3m(11')	4.9m(16')	0	3.3m(11')
310mm(12")	5.5m(18')	8.8m(29')	4.0m(13')	5.5m(18')	0	4.0m(13')
360mm(14")	5.8m(19')	8.8m(29')	4.3m(14')	5.8m(19')	0	4.3m(14')
410mm(16")	6.4m(21')	8.8m(29')	4.6m(15')	6.4m(21')	0	4.6m(15')
460mm(18")	7.0m(23')	8.8m(29')	4.9m(16')	7.0m(23')	0	4.9m(16')
530mm(21")	7.6m(25')	8.8m(29')	5.5m(18')	7.6m(25')	0	5.5m(18')

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model B650 is designed to fit 250mm (10") through 530mm (21") Wide Flange I-Beam, and 178mm (7") and 203mm (8") Square Tube signposts.
3. Select proper Bracket Number by referring to Bracket Selection Table.
4. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
5. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
6. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
7. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
8. Refer to other side of page for complete installation instructions.

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Break-Safe Model B650
Breakaway Support System for Sign Posts

Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

Drawing No. BS-B650-1, -2, -3

Sheet: 1 of 2

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Determine proper Break-Safe Bracket Number from the Bracket Selection Table. All posts within a sign structure shall use the same Bracket Number, determined by the length of the longest post.
2. Fabricate a flat, rigid template with four (4) 25mm (1") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
3. Attach four (4) Transpo Type B Female Anchors to the template using four (4) 25mm (1") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
4. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

HINGE ASSEMBLY:

1. Butt upper and lower post sections together on a flat surface.
2. Drill eight (8) 20.6mm (13/16") holes in the flanges of the post sections as shown.
3. Place Hinge Plates on outer surface of the post flanges and secure with bolts, lock washers, and nuts. Ensure that upper and lower post sections are in alignment, and then tighten all nuts 1/2 turn beyond snug.

BRACKET ASSEMBLY:

1. Drill sixteen (16) 17.5mm (11/16") diameter holes in the flanges of the lower post section as shown.
2. Place Brackets squarely on outer surface of the post flanges, and secure with bolts, lock washers, nuts, and cap screws. Then, tighten all 1/2 turn beyond snug.

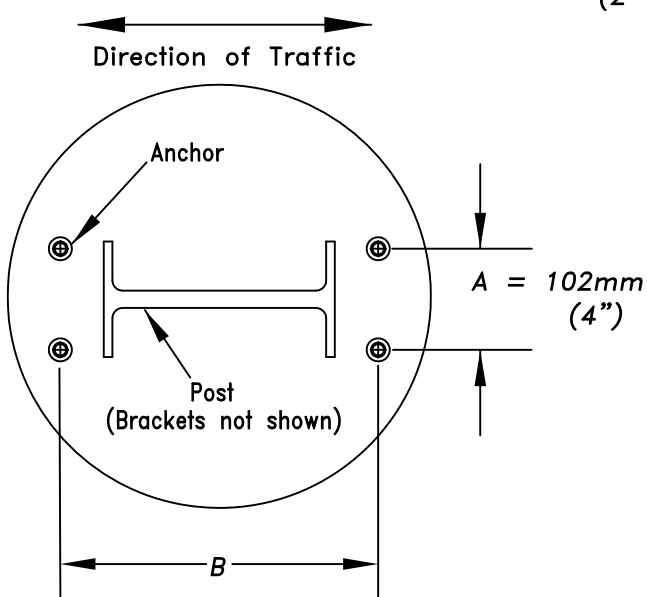
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

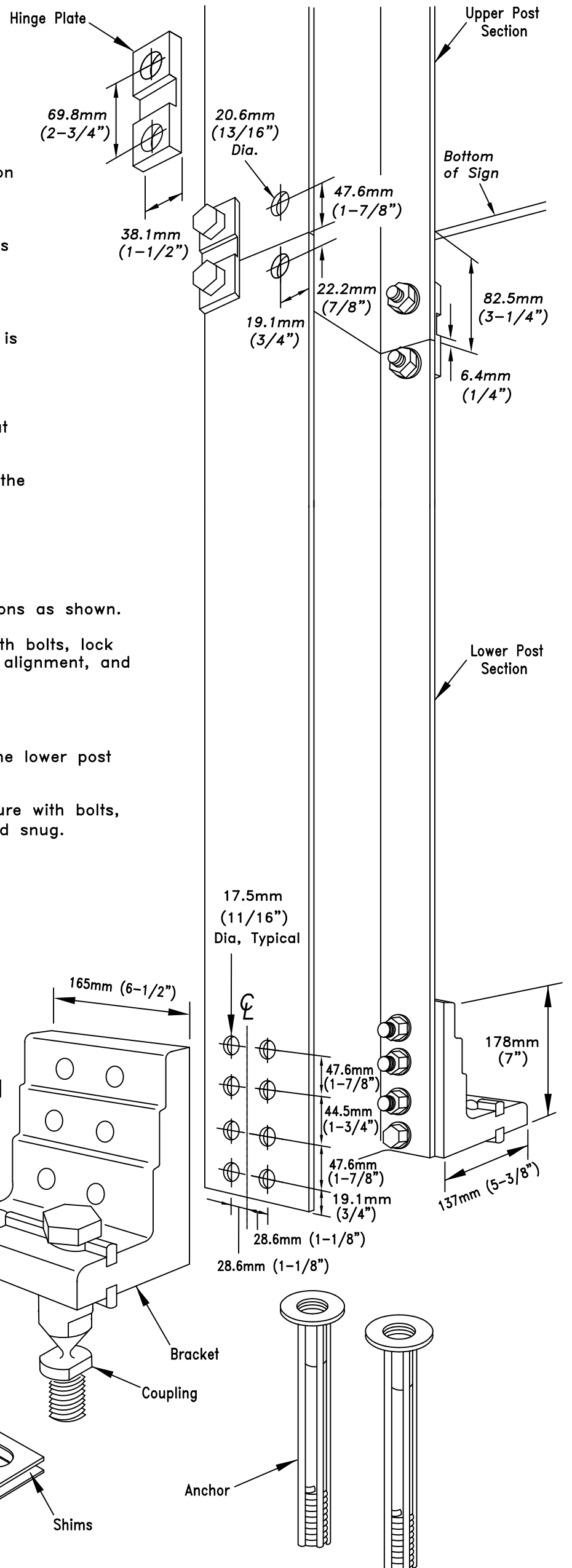
SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



- B (Bracket No. 1) = Depth of Post + 203mm (8")
- B (Bracket No. 2) = Depth of Post + 206mm (8-1/8")
- B (Bracket No. 3) = Depth of Post + 208mm (8-3/16")



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Break-Safe Model B650
Breakaway Support System for Sign Posts

Scale: Not To Scale Date: March 2013

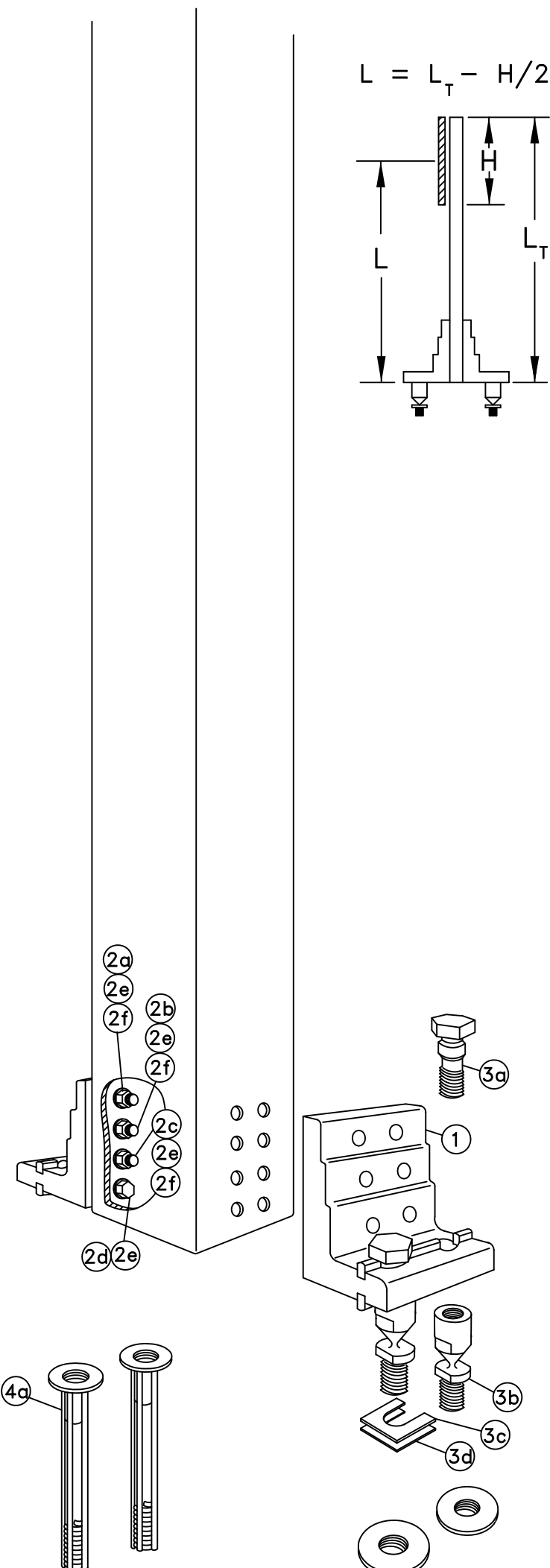
Drawing No. BS-B650-1, -2, -3 Sheet: 2 of 2

Patent Nos. 4,528,786 and 5,596,845

PARTS LIST

ITEM	DESCRIPTION	SIZE/SPECIFICATIONS	QTY/ POST	PART NUMBER
1	Bracket, Type B650	6061-T6 Aluminum (see Bracket Selection Table for -Number)	2	SBM650 -1,-2,-3*
2	Bracket Hardware Assembly, Type B650, includes:		1	
2a	Bolt	15.9mm(5/8")-11UNCx69.9mm(2-3/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2b	Bolt	15.9mm(5/8")-11UNCx76.2mm(3"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2c	Bolt	15.9mm(5/8")-11UNCx82.6mm(3-1/4"), Hex Head, ASTM A325, Galv. ASTM A153	4	
2d	Cap Screw	15.9mm(5/8")-11UNCx31.7mm(1-1/4"), Hex Head, ASTM A307, Galv. ASTM A153	4	
2e	LockWasher	15.9mm(5/8"), ANSI B18-21-1, Galv. ASTM A153	16	
2f	Nut	15.9mm(5/8")-11UNC, Heavy Hex, ASTM A563 Gr. DH, Galv. ASTM A1531	12	
3	Coupling & Special Bolt Assembly, Type B, includes:		1	SB-CBLP
3a	Special Bolt	25.4mm(1")-8UNC, ASTM A449, Galv. ASTM A153/B695	4	
3b	Coupling	25.4mm(1")-8UNC, LP, AMS 6378D, Galv. ASTM A153, Polyester Coat	4	
3c	Shim	25.4mm(1") Horseshoe, 14 Gauge, Galv. Steel Sheet	2	
3d	Shim	25.4mm(1") Horseshoe, 18 Gauge, Galv. Steel Sheet	2	
4	Anchor Assembly, Type B, includes:		1	SBABPK
4a	Anchor	25.4mm(1")-8UNC, 304 S.S. Ferrule, AISI 1038 Rod, AISI 1008 Coil	4	

*Complete assembly includes line items 1-3



BRACKET SELECTION TABLE

Select correct Break-Safe bracket number from table, using 'L' value from the longest post. Use figure to the left to determine 'L'.

POST SIZE	BRACKET No. 1		BRACKET No. 2		BRACKET No. 3	
	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'
178mm (7")	4.0m(13')	8.8m(29')	2.9m(9.5')	4.0m(13')	0	2.9m(9.5')
203mm (8")	4.3m(14')	8.8m(29')	3.0m(10')	4.3m(14')	0	3.0m(10')

GENERAL NOTES:

1. Break-Safe meets all requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
2. Break-Safe Model B650 is designed to fit 178mm (7") and 200mm (8") Square Tube sign posts.
3. Select proper Bracket Number by referring to Bracket Selection Table.
4. All hardware items are American Standard sizes, gvanized in accordance with ASTM A153 (hot dipped) or ASTM B695 (mechanically applied).
5. Fasteners, except for special bolt and coupling, are installed with lockwashers, and do not have specific torque requirements. Fasteners should be secured as tight as possible with conventional wrenches, unless noted otherwise.
6. Square-up and level individual components, particularly Anchors to minimize the need for shimming between the Couplings and Anchors.
7. No more than two shims shall be placed under any one coupling. No more than three shims underneath any pair of couplings.
8. Refer to other side of page for complete installation instructions.

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*Break-Safe Model B650
Breakaway Support System for Sign Posts
7" & 8" Square Tube, Single Post*

Scale: Not To Scale

Date: March 2013

Drawing No. BS-B650-STSP

Sheet: 1 of 2

Patent Nos. 4,528,786 and 5,596,845

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

Note: Precise positioning of the anchors is critical to proper assembly of the system. It is recommended that actual posts be used to locate the correct position of the anchors.

1. Determine proper Break-Safe Bracket Number from the Bracket Selection Table. All posts within a sign structure shall use the same Bracket Number, determined by the length of the longest post.
2. Fabricate a flat, rigid template with four (4) 25mm (1") diameter holes located to match the specified anchor pattern of the Break-Safe Brackets attached to the signpost. See diagram below.
3. Attach four (4) Transpo Type B Female Anchors to the template using four (4) 25mm (1") diameter bolts. Ensure that each Anchor Washer is snug against the bottom of the template.
4. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation. Support the template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove the bolts and template from the top of the foundation.

BRACKET ASSEMBLY:

1. Drill sixteen (16) 17.5mm (11/16") diameter holes in the front & back of the bottom end of post section as shown.
2. Place Brackets squarely on outer surface of the post, and secure with bolts, lock washers, nuts, and cap screws. Then, tighten all 1/2 turn beyond snug.

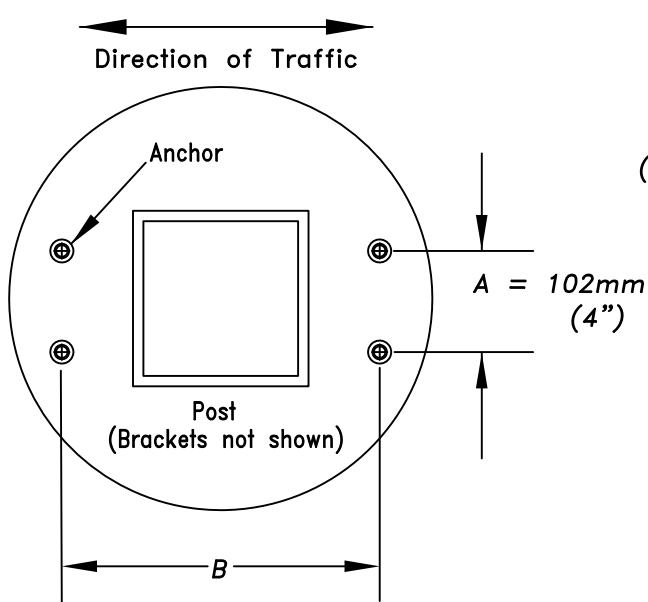
COUPLING ASSEMBLY:

1. Thread four (4) Break-Safe Couplings into Anchors. Do not tighten.
2. Suspend post assembly over foundation, insert Special Bolts through holes in the Brackets, and thread them snug into the Couplings.
3. If post is not plumb, insert Shims (14g and/or 18g) between the Couplings and Anchors, where needed.
4. Use lower wrench flats to tighten Couplings into Anchors as tight as possible using a conventional wrench. Do not use a pipe wrench. Couplings must be seated squarely.
5. Tighten Special Bolts while holding Couplings by the upper wrench flats with an additional wrench to prevent an induced torque stress across the necked portion of the Coupling. All Special Bolts shall also be tightened as tight as possible using conventional wrenches.

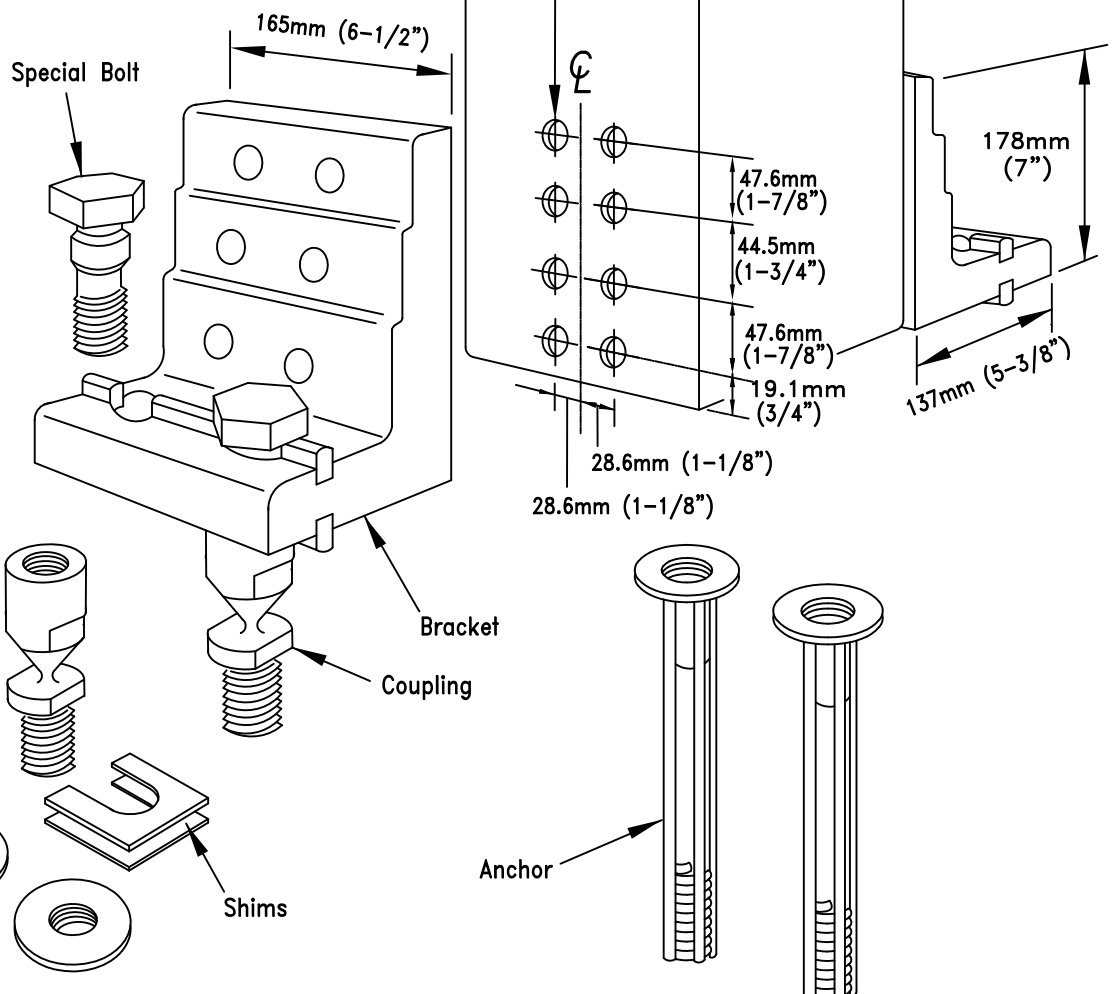
SIGN PANEL ASSEMBLY:

1. After all signposts are secured in place, attach sign panel assembly to posts in accordance with the sign manufacturer's recommendations.

PLAN VIEW OF TYPICAL FOUNDATION



- B (Bracket No. 1) = Depth of Post + 202mm (8")
- B (Bracket No. 2) = Depth of Post + 205mm (8-1/8")
- B (Bracket No. 3) = Depth of Post + 207mm (8-3/16")



TRANSPO® 20 Jones Street
INDUSTRIES, Inc. New Rochelle, NY 10801
The Smart Solutions Company 914-636-1000
www.transpo.com

*Break-Safe Model B650
7" & 8" Square Tube, Single Post*

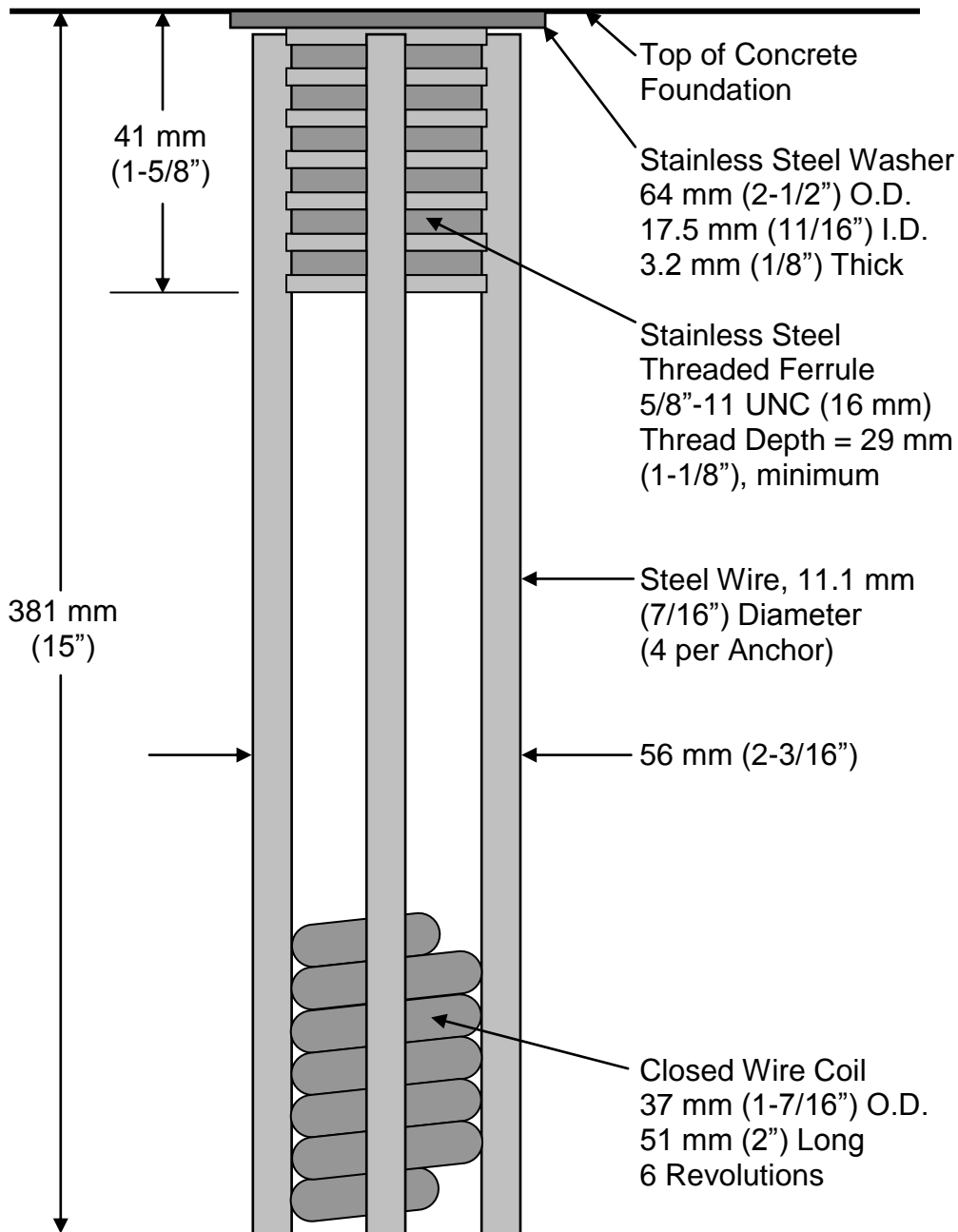
Scale: Not To Scale

Date: March 2013

Patent Nos. 4,528,786 and 5,596,845

Drawing No. BS-B650-STSP

Sheet: 2 of 2



SPECIFICATIONS

Physical Properties:

1. Ultimate Tensile Load = 267 kN (60.0 kips) minimum per Anchor.
2. Actual Pullout Strength depends on foundation design and concrete properties.

Installation Instructions:

See other side of page for typical installation diagrams.

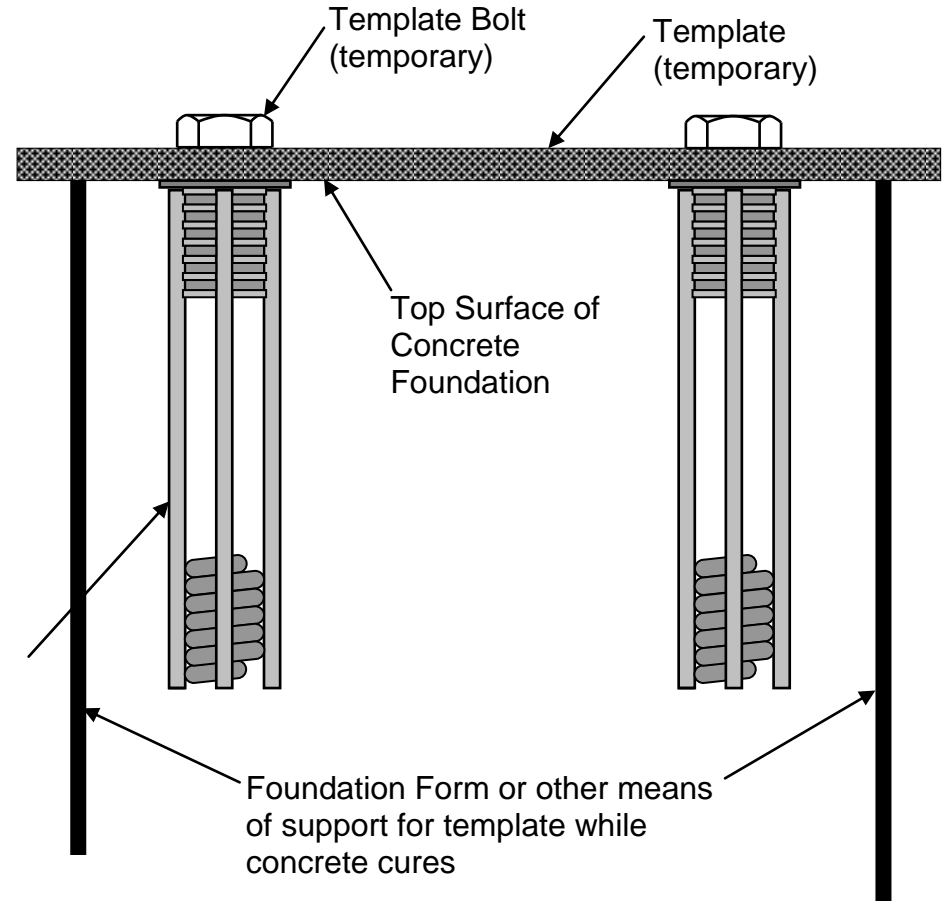
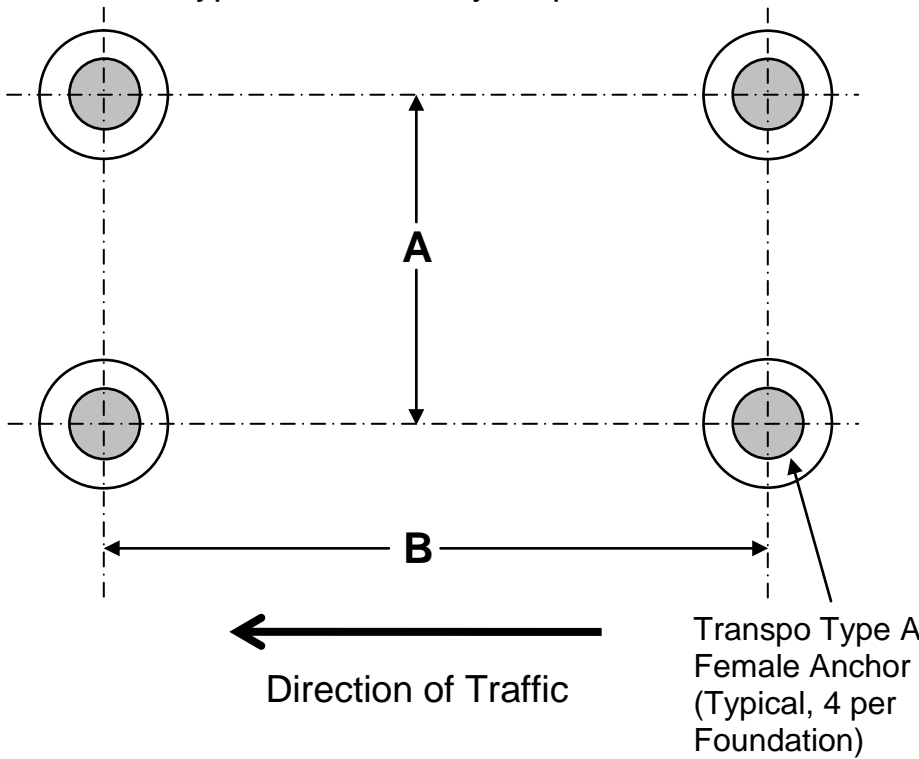
1. Fabricate a flat steel template with four (4) 16 mm (5/8") diameter holes located to match the specified bolt pattern of the Break-Safe brackets attached to the signpost.
2. Attach four (4) Break-Safe® Type A Female Anchors to template using four (4) 16 mm (5/8") diameter bolts. Ensure that each Anchor Washer is flush and snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation.
4. Support template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove bolts and template from the top of the foundation.

Transpo® Type A Female Anchor
for use with Break-Safe® Type A
Breakaway Support System for Sign Posts



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Typical Anchor Layout per Post



**See other side of page for complete
Installation Instructions**

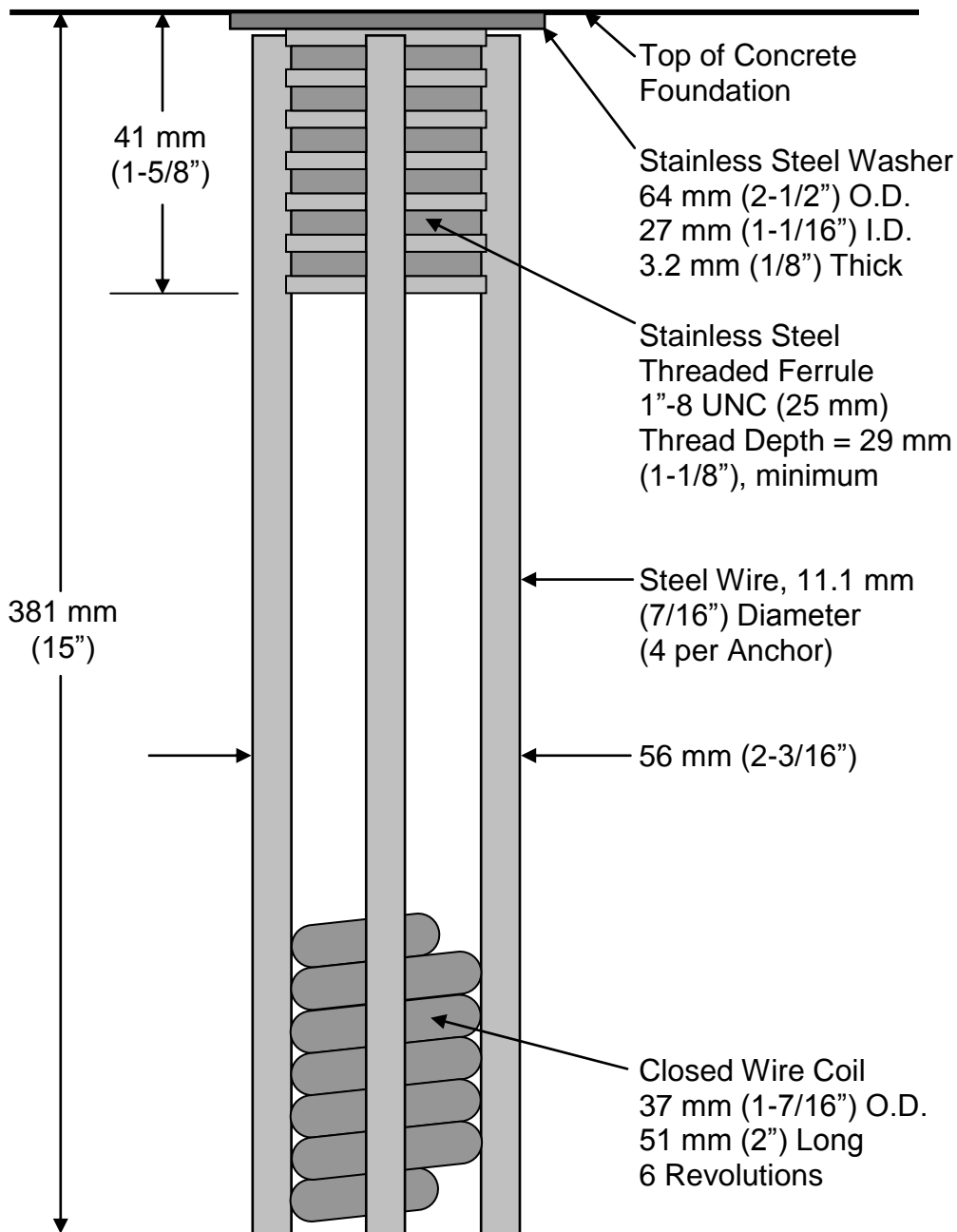
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Break-Safe Model	A	B
AI4, AI6	108 mm (4-1/4")	Depth of Post Section + 94 mm (3-11/16")
AP3, AP3.5	70 mm (2-3/4")	202 mm (7-15/16")
AP4, AP4.5	83 mm (3-1/4")	227 mm (8-15/16")
AS3	76 mm (3")	Depth of Post Section + 94 mm (3-11/16")
AS4/AS4H	108 mm (4-1/4")	Depth of Post Section + 94 mm (3-11/16")

Transpo® Type A Female Anchor
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SPECIFICATIONS

Physical Properties:

1. Ultimate Tensile Load = 267 kN (60.0 kips) minimum per Anchor.
2. Actual Pullout Strength depends on foundation design and concrete properties.

Installation Instructions:

See other side of page for typical installation diagrams.

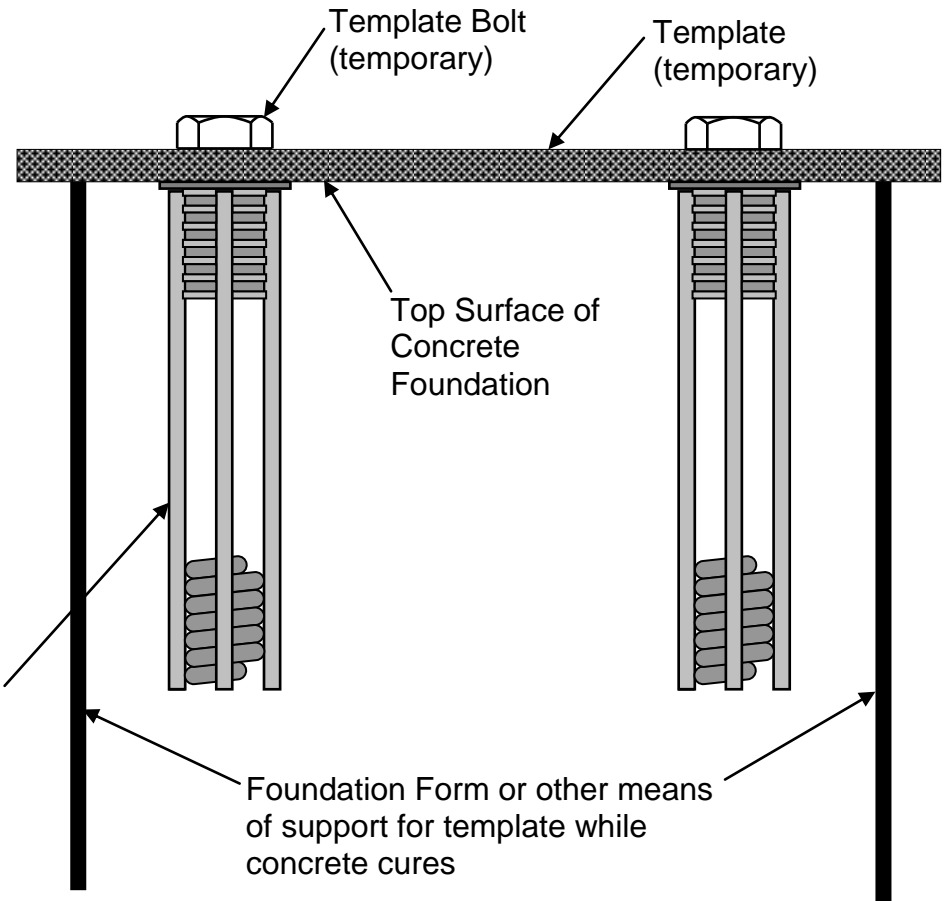
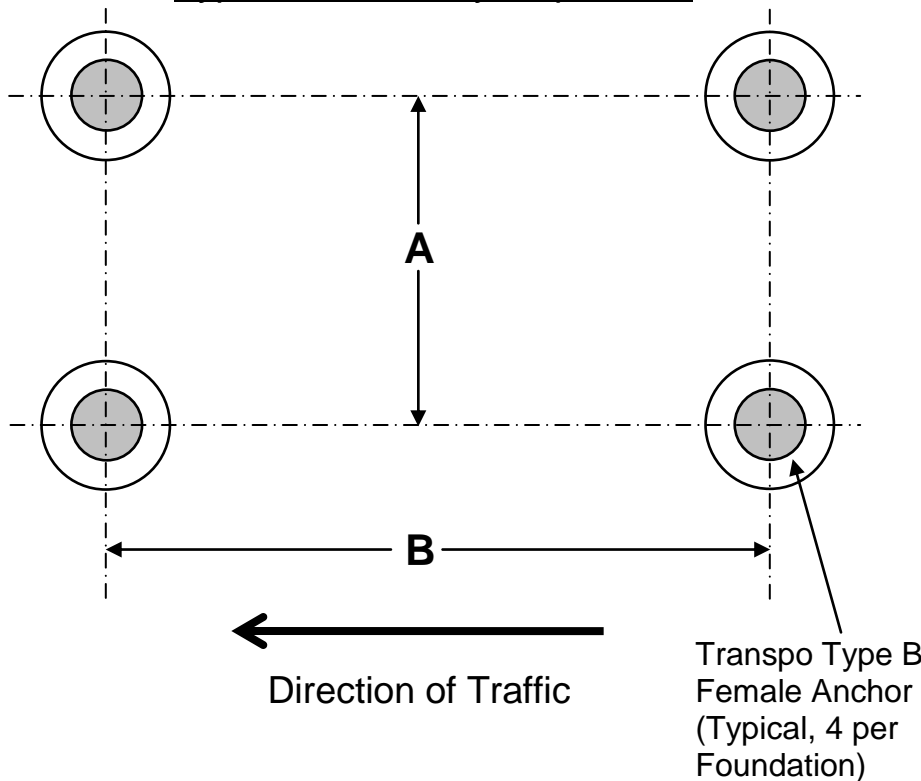
1. Fabricate flat steel or wood template with four (4) 25 mm (1") diameter holes located to match the specified bolt pattern of the Break-Safe brackets attached to the signpost.
2. Attach four (4) Break-Safe® Type B Female Anchors to template using four (4) 25 mm (1") diameter bolts. Ensure that each Anchor Washer is flush and snug against the bottom of the template.
3. Lower Anchor Assembly into fresh concrete foundation, and vibrate into position such that the tops of the Anchor Washers are flush with the finished top surface of the foundation.
4. Support template such that all Anchors are level and in their proper locations.
5. Allow concrete to cure, and then remove bolts and template from the top of the foundation.

Transpo® Type B Female Anchor
for use with Break-Safe® Type B
Breakaway Support System for Sign Posts



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Typical Anchor Layout per Post



Break-Safe Model B525

- A = 76 mm (3")
- B (Bracket No. 1) = Depth of Post Section + 203 mm (8")
- B (Bracket No. 2) = Depth of Post Section + 206 mm (8-1/8")
- B (Bracket No. 3) = Depth of Post Section + 208 mm (8-3/16")

Break-Safe Model B650

- A = 102 mm (4")
- B (Bracket No. 1) = Depth of Post Section + 203 mm (8")
- B (Bracket No. 2) = Depth of Post Section + 206 mm (8-1/8")
- B (Bracket No. 3) = Depth of Post Section + 208 mm (8-3/16")

**See other side of page for complete
Installation Instructions**

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**Transpo® Type B Female Anchor
for use with Break-Safe® Type B
Breakaway Support System for Sign Posts**



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