

QuadGuard® Elite

CRASH CUSHIONS

PRODUCT DESCRIPTION MANUAL



QuadGuard® Elite

The QuadGuard® system has been tested pursuant to National Cooperative Highway Research Program (“NCHRP”) Report 350 specifications. The QuadGuard® Elite system has been deemed eligible for federal-aid reimbursement on the National Highway System by the Federal Highway Administration (“FHWA”).

Product Description Manual



15601 Dallas Parkway
Suite 525
Addison, Texas 75001



Warning: The local highway authority, distributors, owners, contractors, lessors, and lessees are **RESPONSIBLE** for the assembly, maintenance, and repair of the QuadGuard® Elite. Failure to fulfill these **RESPONSIBILITIES** with respect to the assembly, maintenance, and repair of the QuadGuard® Elite could result in serious injury or death.

The instructions contained in this manual supersede all previous information and manuals. All information, illustrations, and specifications in this manual are based on the latest QuadGuard® Elite system information available to Valtir at the time of printing. We reserve the right to make changes at any time. Please contact Valtir or visit Valtir.com to confirm that you are referring to the most current instructions.

Table of Contents

Customer Service Contacts	3
Limitations and Warnings.....	3
System Overview	4
Design Criteria	6
Special Site Conditions	7
Foundation/Anchoring.....	9
Plan and Elevation View / Drawings	10
QuadGuard® Elite w/ Tension Strut Backup TL-2 QL2TSCVR5-U	11
QuadGuard® Elite w/ Tension Strut Backup TL-2 (EC Model) QL2TSCVR-U.....	11
QuadGuard® Elite w/ Tension Strut Backup TL-3 QL3TSCVR8-U	11
QuadGuard® Elite w/ Tension Strut Backup TL-3 (EC Model) QL3TSCVR-U.....	11
69" 5 Bay w/64" Tension Strut Backup TL-2 QL2TSCVR5-U69.....	11
90" 5 Bay w/83" Tension Strut Backup TL-2 QL2TSCVR5-U90.....	11
69" 7 Bay w/64" Tension Strut Backup TL-2 QL2TSCVR-U69.....	11
90" 7 Bay w/83" Tension Strut Backup TL-2 QL2TSCVR-U90.....	11
69" 8 Bay w/64" Tension Strut Backup TL-3 QL3TSCVR8-U69.....	11
90" 8 Bay w/83" Tension Strut Backup TL-3 QL3TSCVR8-U90.....	11
69" 11 Bay w/64" Tension Strut Backup TL-3 QL3TSCVR-U69R.....	11
90" 11 Bay w/83" Tension Strut Backup TL-3 QL3TSCVR-U90.....	11
Backup Assembly, TS QGE, 24 604603	11
Backup Assembly, Tension Strut, QGE Wide 627528	11
Fender Panel Assembly, 24/30/36/48 608235	11
Hit Indicator w/Hardware 610237	11
Diaphragm Assembly, QGE, 24 607187	11
Diaphragm Assembly, QGE, 30	11
Diaphragm Assembly, QGE, 36/48	11
Fender Panel Assembly QG LMC/QGE/CEN, 69/90 608240.....	11
Monorail Assembly, QGE for 5/7/8/11/14 Bay Systems 625637	11
Concrete Foundation, QG Elite 618686	11
Chain Assembly, QGE, 24/30/36/48 - Bay 1 & 2 606138.....	11
Chain Assembly, QGE 606137.....	11
Bay Assembly, QGE, 24/30/36/48 605040.....	11
Bay Assembly, QGE, 69/90 605041.....	11
Nose Assembly, QGE, 24/30/36/48 611557.....	11
Nose Assembly, QGE, 69/90 611565.....	11
Diaphragm Assembly, QGE, 69/90 3540501	11
Diaphragm Assembly, QGE, 69/90 11 Bay.....	11
Diaphragm Assembly, QGE, 69/90 7 & 8 Bay	11
Diaphragm Assembly, QGE, 69/90, 5 Bay.....	11

Customer Service Contacts

Valtir is committed to the highest level of customer service. Feedback regarding the QuadGuard® Elite system, its assembly procedures, supporting documentation, and performance is always welcome. Additional information can be obtained from the contact information below:

Valtir

Telephone	(888) 323-6374 (USA) (312) 467-6750 (International)
Contact Link	Valtir.com/Contact

Limitations and Warnings

Valtir, in compliance with the National Cooperative Highway Research Program Report 350 (NCHRP Report 350) “Recommended Procedures for the Safety Performance of Highway Safety Features”, contracts with FHWA approved testing facilities to perform crash tests, evaluation of tests, and submittal of results to the Federal Highway Administration for review.

The QuadGuard® Elite has been approved by FHWA as meeting the requirements and guidelines of NCHRP Report 350. These tests typically evaluate product performance defined by Report 350 involving a range of vehicles on roadways, from lightweight cars (approx. 1800 lb. [820 kg]) to full size pickup trucks (approx. 4400 lb. [2000 kg]). A product can be certified for multiple Test Levels. The QuadGuard® Elite is certified to the Test Level(s) as shown below:

Test Level 2: 44 mph [70 kph]

Test Level 3: 62 mph [100 kph]

These FHWA directed tests are not intended to represent the performance of systems when impacted by every vehicle type or every impact condition existing on the roadway. This system is tested only to the test matrix criteria of NCHRP Report 350 as approved by FHWA.

Valtir expressly disclaims any warranty or liability for injury or damage to persons or property resulting from any impact, collision or harmful contact with products, other vehicles, or nearby hazards or objects by any vehicle, object or person, whether or not the products were assembled in consultation with Valtir or by third parties.

The QuadGuard® Elite is intended to be assembled, delineated, and maintained within specific state and federal guidelines. It is important for the highway authority specifying the use of a highway product to select the most appropriate product configuration for its site specifications. The customer should be careful to properly select, assemble, and maintain the product. Site lay out, vehicle population type; speed, traffic direction, and visibility are important elements that require evaluation in the selection of a highway product. For example, curbs could cause an untested effect on an impacting vehicle.

After an impact occurs, the debris from the impact should be removed from the area immediately and the specified highway product should be evaluated and restored to its original specified condition or replaced as the highway authority determines as soon as possible.

System Overview

The QuadGuard® Elite is a potentially reusable, re-directive, non-gating impact cushion for roadside obstacles ranging in width from 24” to 90” (610 mm to 2285 mm). It consists of high molecular weight, high density polyethylene (HMW/HDPE), energy-absorbing cylinders surrounded by a framework of Quad-Beam panels.

The QuadGuard® Elite utilizes two (2) types of Cylinders in a “staged” configuration to address both lighter cars and heavier, high center-of-gravity vehicles. Its modular design allows the system length to be tailored to the design speed of a site.

Impact Performance

The five (5) Bay and seven (7) Bay EC QuadGuard® Elite systems have successfully passed the requirements stipulated in NCHRP Report 350, Test Level 2 tests with both the light car and pickup at speeds of up to 43 mph [70 kph] at angles up to 15 degrees.

The eight (8) Bay and eleven (11) Bay EC QuadGuard® Elite systems have successfully passed the requirements stipulated in NCHRP Report 350, Test Level 3 tests with both the light car and pickup at speeds of up to 62 mph [100 kph] at angles up to 15 degrees.

The “EC” designation stands for “Extra Capacity” and has additional energy absorbing capacity.

The 14 Bay 24” wide QuadGuard® Elite system has been successfully tested with pickup truck at speeds up to 70 mph [115 kph].

During head-on impacts, within the applicable NCHRP Report 350 criteria, the QuadGuard® Elite has been shown to telescope rearward to absorb the energy of impact. During those same in-criteria impacts, when impacted from the side, the system has been shown to redirect the vehicle back toward its original travel path and away from the roadside feature.

Measuring the Width

The nominal width of the Tension Strut Backup is the width between Side Panels behind the Backup (Figure 1). The outside width of the system is approximately 6” [150 mm] to 9” [230 mm] wider than this measurement.

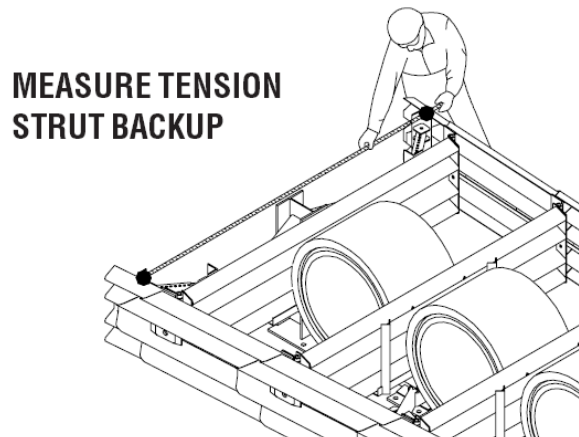


Figure 1
Tension Strut Backup Width

Counting the Number of Bays

One Bay consists of one Diaphragm, two Fender Panels, etc. The Nose section is not considered a Bay (Figure 2)

How to Determine Left/Right

To determine left from right when ordering parts, stand in front of the system facing the roadside feature. Your left is the system's left and your right is the system's right (Figure 3).

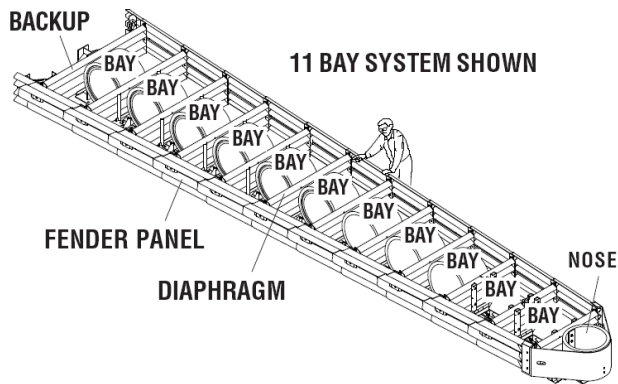


Figure 2
Number of Bays

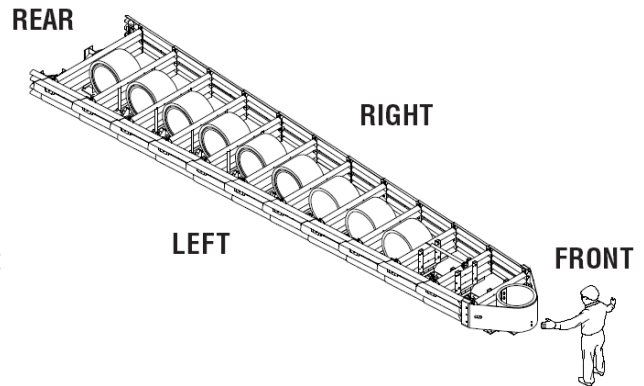


Figure 3
Left/Right

Design Criteria

Contact Valtir Customer Service Department if you would like input as to your specific application. Proper model selection is essential to the performance of the QuadGuard® Elite system. You will need to answer the following questions:

1) Specification of Width

The QuadGuard® Elite system is available in five nominal widths (p. 10).

- 24" [610 mm]
- 30" [760 mm]
- 36" [915 mm]
- 69" [1755 mm]
- 90" [2285 mm]

As a general rule, selection of the narrowest width that adequately shields the roadside obstacle is recommended.

2) System Length

System length is specified by the number of Bays the system includes. The number of bays required is a function of the design speed of the roadway. The system nose is not considered to be a Bay.

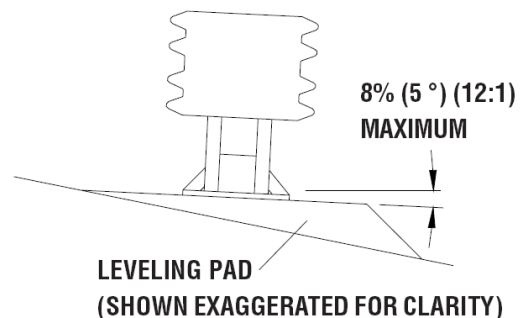
Backup Structure

Backup drawings are available at the back of this manual and are appropriate for use on grade or deck (p. 23 & 32-34).

Establish Required System Footing

The system must be anchored by an approved adhesive. Refer to QuadGuard® Elite Assembly manual and approved adhesive instructions for anchor specifications.

1. **Existing concrete** – Concrete must be at least 6" [150 mm] thick, reinforced 4000 psi [28 MPa] Portland cement concrete (P.C.C.), or 8" [200 mm] thick non-reinforced measuring at least 12' – 0" [3.66 m] wide by 50' – 0" [15.24 m] long. The concrete should be in good condition and be free of major cracks.
2. **New concrete** – If existing concrete does not meet these criteria, a new concrete foundation must be placed to properly secure the system.
3. **Cross-slope**– if there is a cross-slope of more than 8% (5 deg.), or if the cross-slope varies (twists) more than 2% (1 deg.) over the length of the system, a concrete leveling foundation may be required (Figure 4).
4. **No Cross-slope** – If the cross-slope is within the range described above, the leveling foundation is not required:
 - **Transversal slope** $\leq 8\%$
 - **Longitudinal slope** $\leq 2\%$



**Figure 4
Cross-Slope**

Special Site Conditions

Contact the Valtir Customer Service Department if you are a representative of the highway authority and would like input with your application. You will need to answer the following questions:

1. Are curbs, islands, or elevated objects (delineators or signs) present at the site? What height and width are they? All curbs and elevated objects 4" [100 mm] high should be removed. If possible, curbs less than 4" [100 mm] high should be removed approximately 50' [15 m] in front of the QuadGuard® Elite and as far back as the system's backup. Any curbs that must remain should be 4" [100 mm] maximum and be mountable.
2. If the deployment site is a gore area, (place where two roads diverge), what is the angle of divergence?
3. What is the general geometry of the site? Include the roadway for 500' [150 m] in front of highway feature so traffic patterns can be visualized.
4. Is there an existing guardrail or median barrier at the site? The backup of the QuadGuard® Elite should tie into guardrail when possible.
5. Will there be traffic approaching from the rear of the system? Is the system in a two-way traffic situation, with traffic going in opposite directions on either side of the system? Or, is the system on the side of the road in a location where crossover traffic is a concern? If so, a transition from the back of the system to the fixed object is necessary to prevent vehicle snagging (p. 10).
6. See next section if there are any other unique features at the site that may affect positioning or performance of the QuadGuard® Elite system?
7. Is the QuadGuard Elite to be used in a construction zone? A Tension-Strut Backup system can be temporarily installed on asphalt.



Caution: The potentially restorable nature of the cylinders could provide for possible rebounding of an impacting vehicle into pathways beyond the reserve area under certain impact conditions. Consideration of a system for a particular site should include an assessment of this factor.

Other Factors That May Affect Your Design:

1. The existence of drain inlets.
2. Junction boxes or other appurtenances located near the roadside feature.
3. Insufficient space for the length preferred.
4. The location and movement of expansion joints. Contact Valtir Customer Service Department before proceeding with your design (p. 3).

Transition Panel Types

If a system is placed in a location where traffic will be approaching from the rear, a Transition Panel is necessary. Figures 5, 6 & 7 show the standard panel types. There are variations for each panel type. The specific Panel needed will depend on system and site conditions. Therefore, it is important to send site specific data to the customer service department for a recommendation for exact Panel needed for your application.

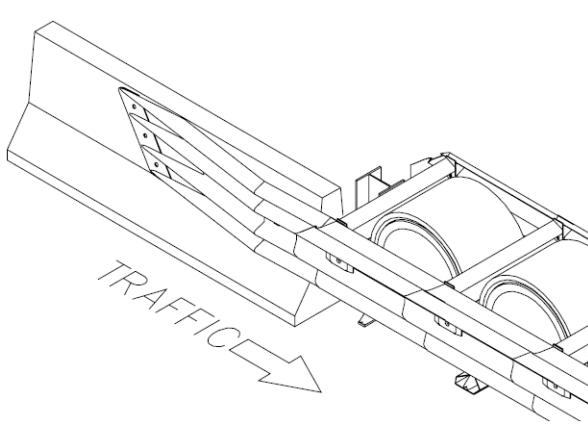


Figure 5
Quad-Beam to Safety Shape Barrier
Transition Panel

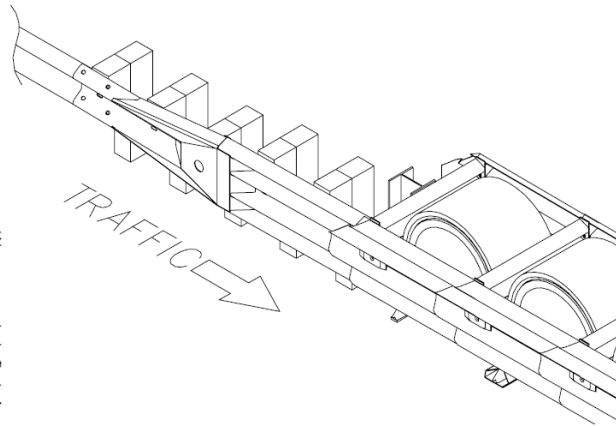


Figure 6
Quad-Beam to W-Beam Transition Panel

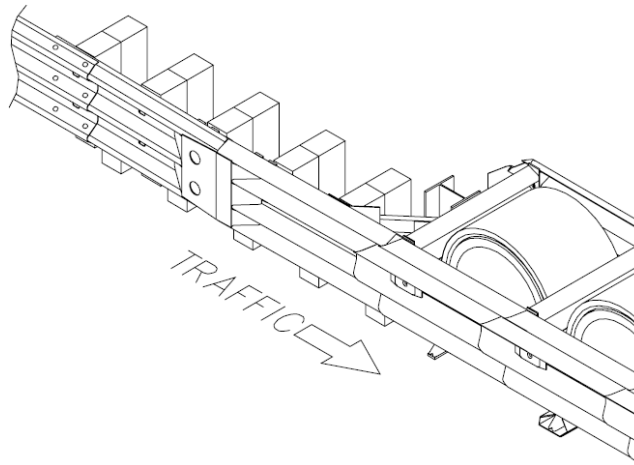


Figure 7
Quad-Beam to Thrie-Beam Transition Panel

Foundation/Anchoring



Warning: Ensure that this assembly conforms with the guidance provided by the AASHTO Roadside Design Guide, including, but not limited to, those regarding placement on or adjacent to curbs.

Concrete Installations

The QuadGuard® Elite can only be installed on an existing or freshly placed and cured concrete base (4000 psi [28 MPa] minimum). Orientation of the concrete base and the attenuator must comply with the project plans or as otherwise determined by the resident project engineer or appropriate highway authority.

Recommended dimension and reinforcement specifications for new concrete pads can be found on the standard drawings.

The QuadGuard® Elite may be installed on any of the following foundations using the specified anchorage:

Reinforced Concrete Pad or Roadway: 6" [150 mm] minimum depth P.C.C.

Anchorage: Approved adhesive with 7" [180 mm] studs 5 1/2" [140 mm] embedment

System Width	5 Bay TL2 43 mph [70 kph]	7 Bay EC TL2 53 mph [85 kph]	8 Bay TL3 62 mph [100 kph]	11 Bay EC TL3 65 mph [105 kph]
24" [610 mm]	QS2405E	QS2407E	QS2408E	QS2411E
30" [760 mm]	QS3005E	QS3007E	QS3008E	QS3011E
36" [915 mm]	QS3605E	QS3607E	QS3608E	QS3611E
69" [1755 mm]	QS6905E	QS6907E	QS6908E	QS6911E
90" [2285 mm]	QS9005E	QS9007E	QS9008E	QS9011E

Figure 8
QuadGuard® Elite System Model Numbers

Model Number Description

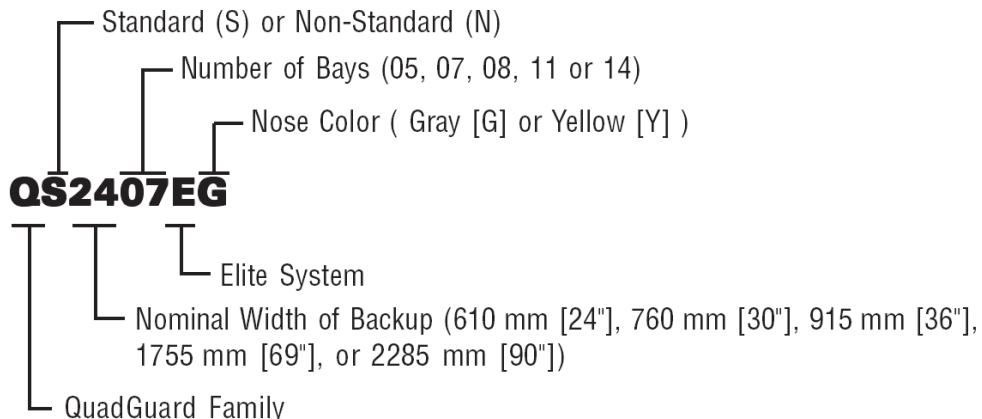
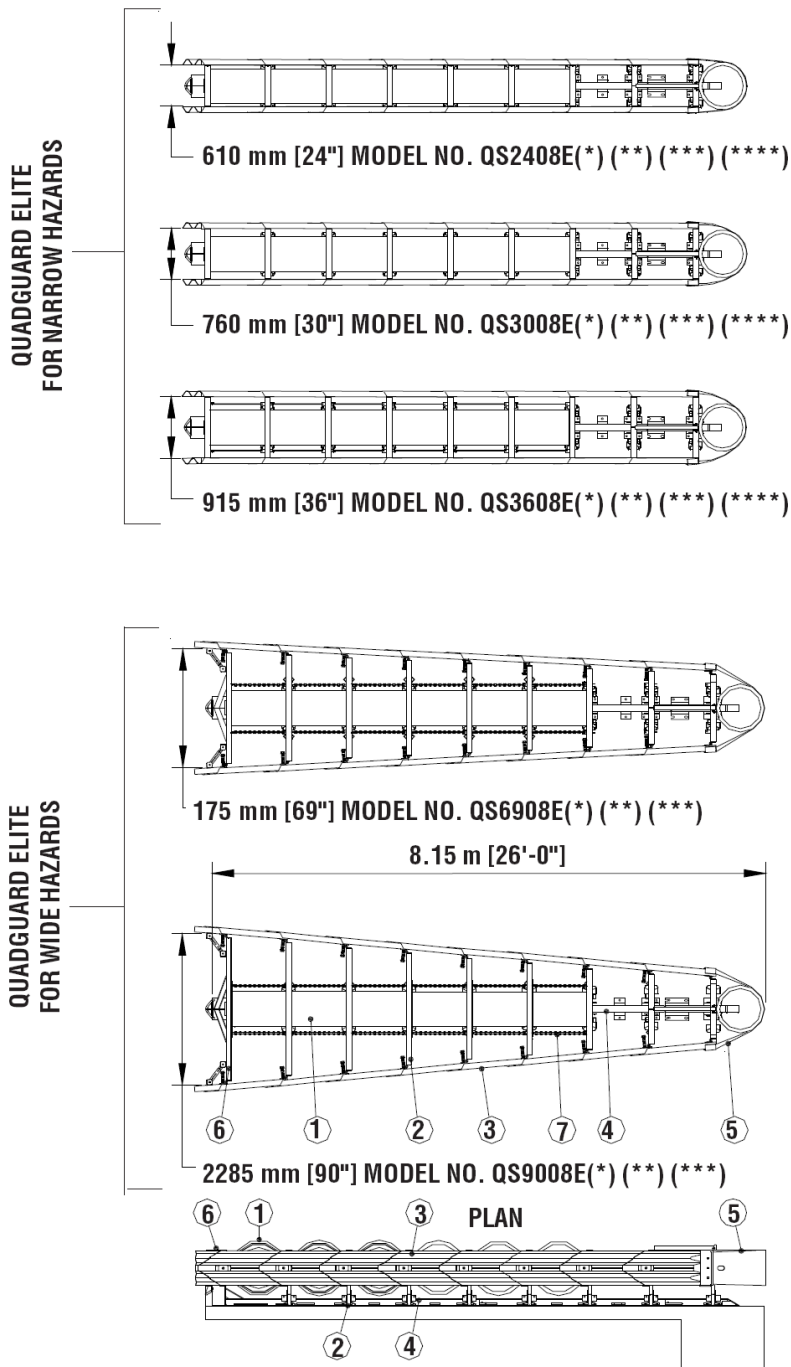


Figure 9
Model Number Key

Plan and Elevation View / Drawings



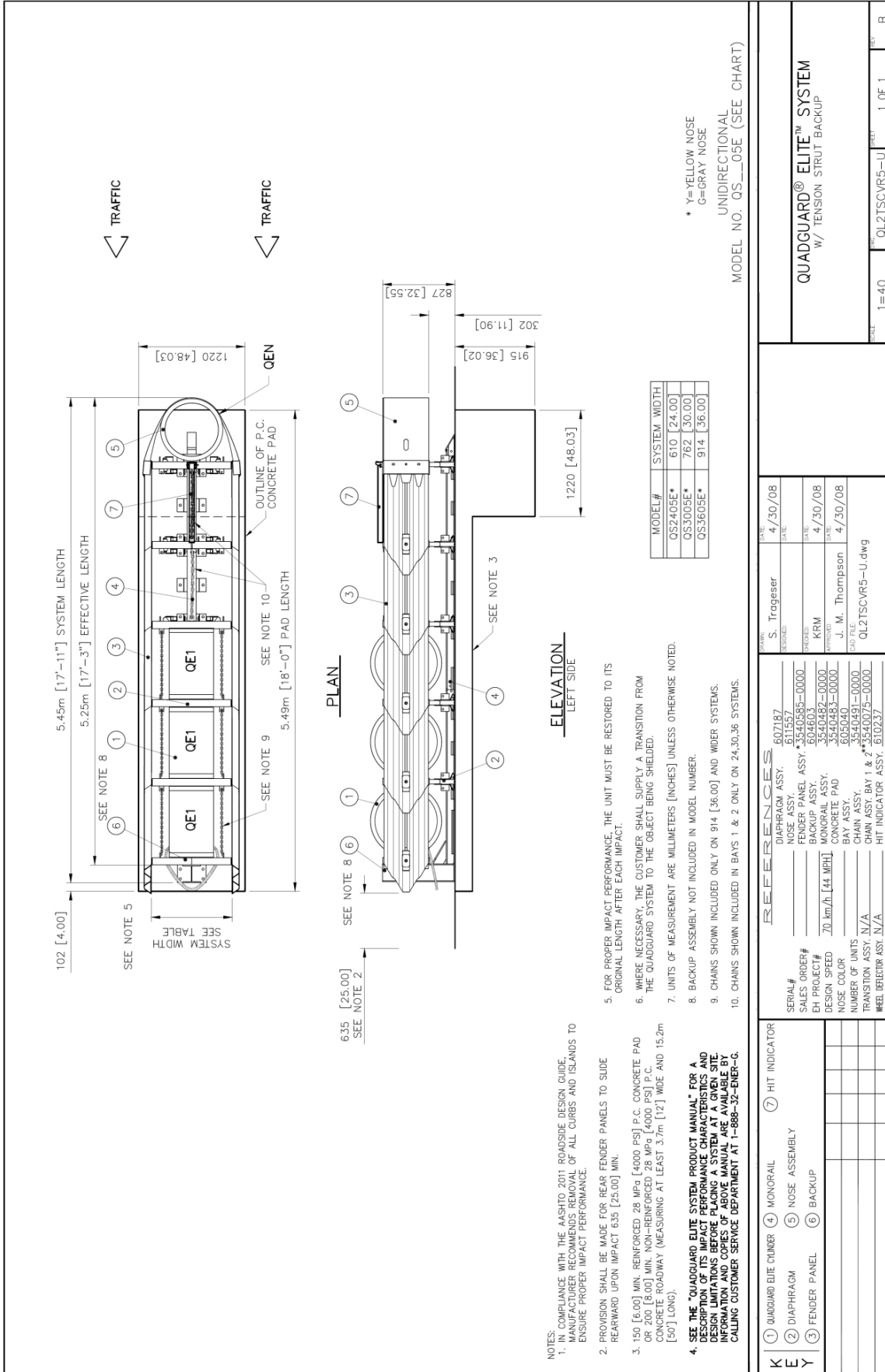
Key

- 1) Energy-Absorbing Cylinder
- 2) Diaphragm
- 3) Quad-Beam Fender Panel
- 4) Monorail
- 5) Nose Cover
- 6) Backup
- 7) Chain Assembly

- * Also Available in 5 Bay Lengths
- ** Also Available in 7 Bay Lengths (EC Model)
- *** Also Available in 11 Bay Lengths (EC Model)

Elevation

Figure 10



QuadGuard® Elite w/ Tension Strut Backup TL-2 **QL2TSCVR5-U**

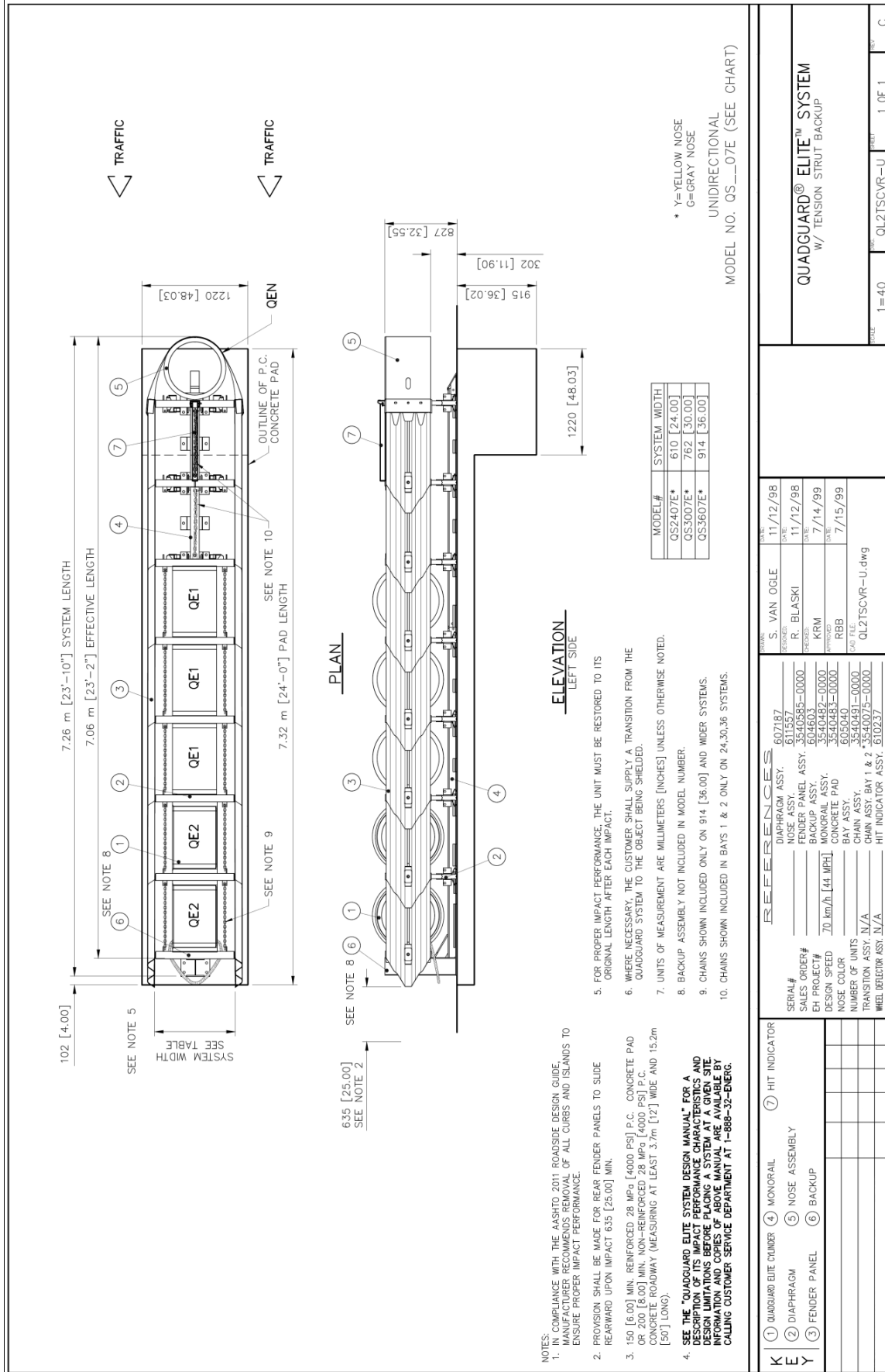
MODEL NO. QS___05E (SEE CHART)
 UNIDIRECTIONAL
 * Y= YELLOW NOSE
 G=GRAY NOSE

SCALE	1=40	REV	1 OF 1	B
QUADGUARD® ELITE™ SYSTEM W/ TENSION STRUT BACKUP				

DATE	4/30/08
BY	S. Trageser
REVISION	
DATE	4/30/08
BY	KRM
APPROVED	J. M. Thompson
DATE	4/30/08
FILE	QL2TSCVR5-U.dwg

SERIAL#	607187
SALES ORDER #	611557
EH PROJECT#	3540585-0000
DESIGN SPEED	50/60/3
NOSE COLOR	70 km/h [44 MPH]
NUMBER OF UNITS	3540489-0000
TRANSITION ASSY	605040
HIT INDICATOR ASSY	3540491-0000
	CHAIN ASSY BAY 1 & 2
	3540025-0000
	HIT INDICATOR ASSY
	610237

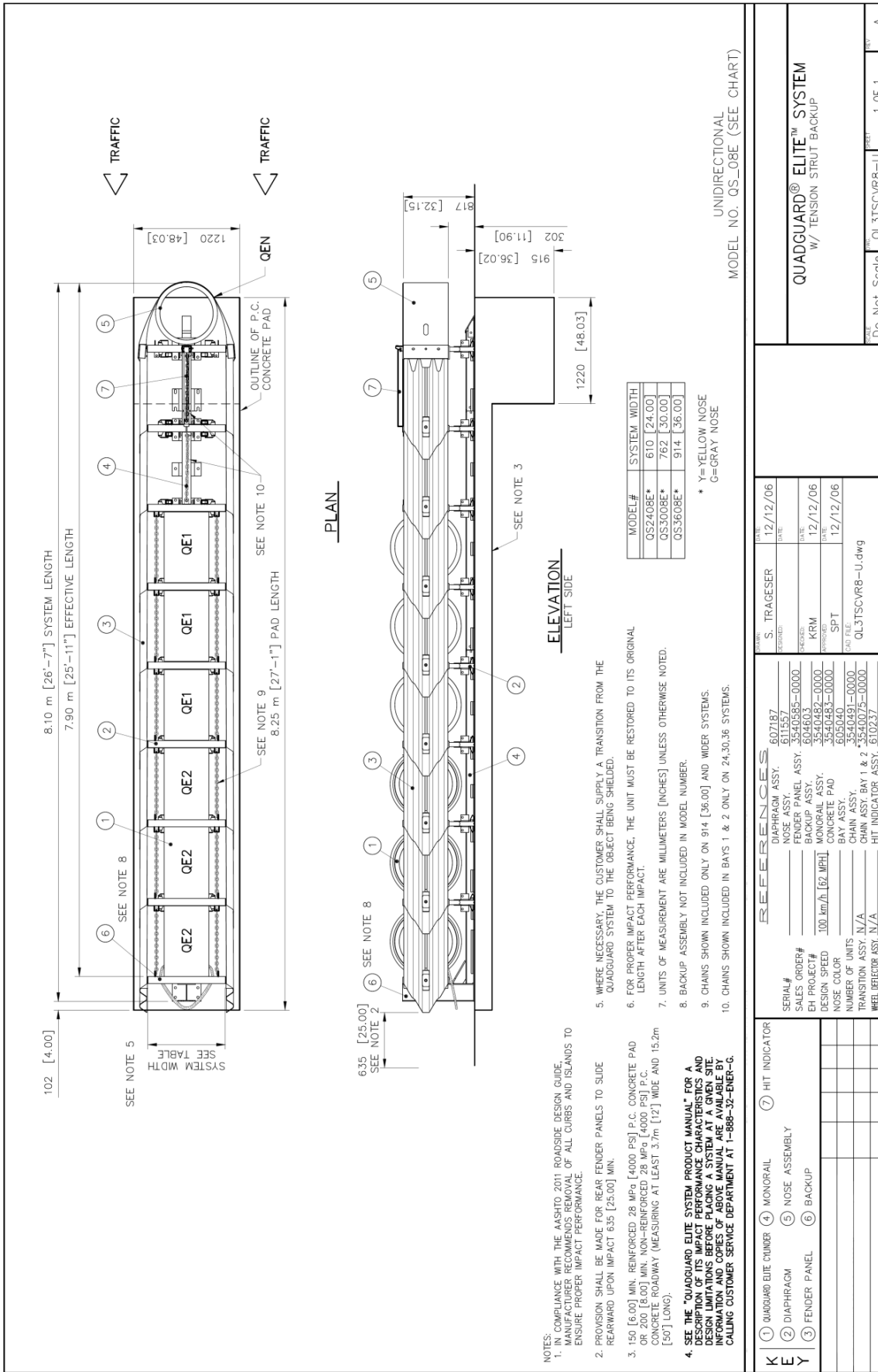
KEY	(1) QUADGUARD ELITE CINDER	(4) MONORAIL	(7) HIT INDICATOR
	(2) DIAPHRAGM	(5) NOSE ASSEMBLY	
	(3) FENDER PANEL	(6) BACKUP	



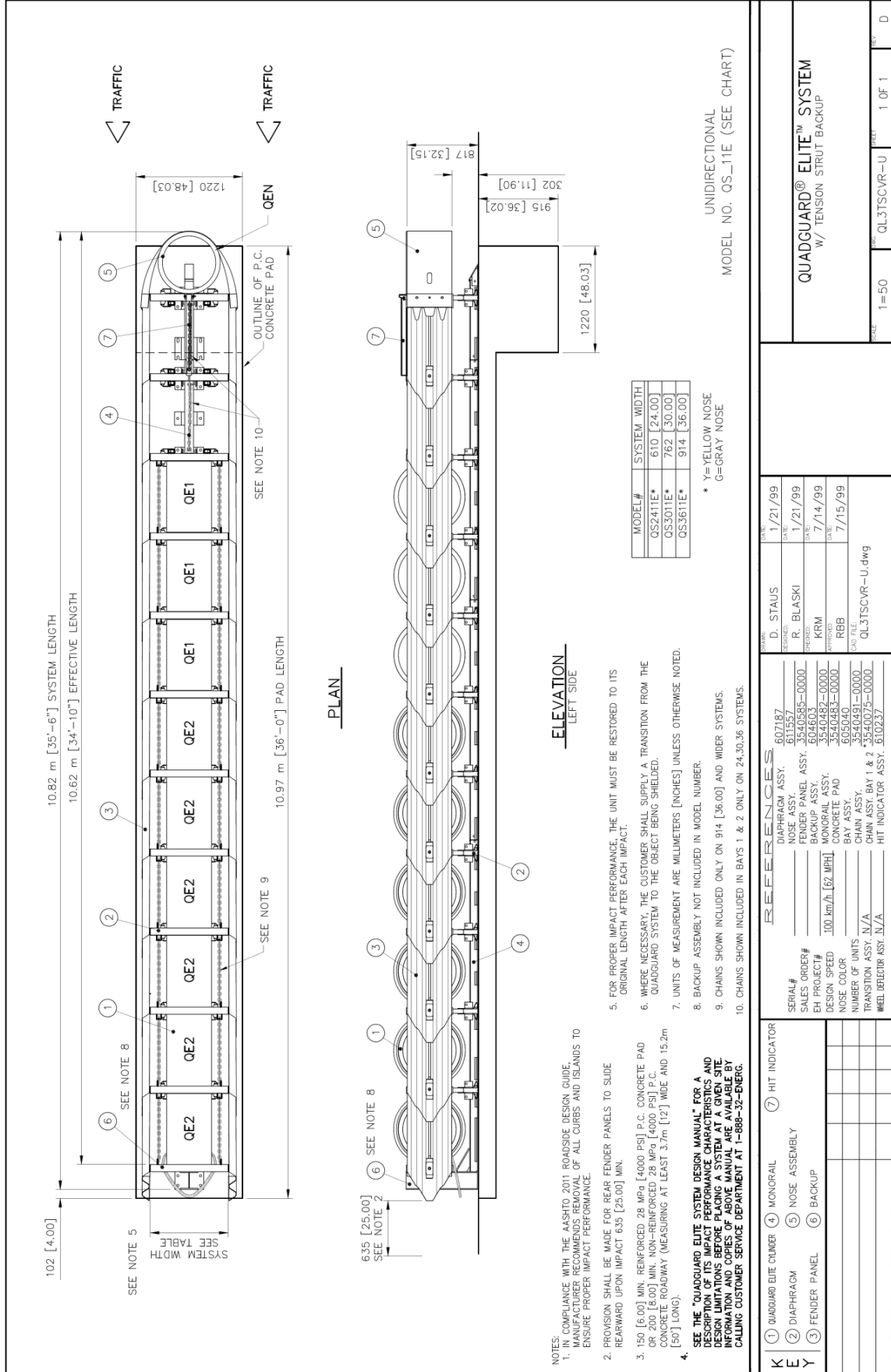
QuadGuard® Elite w/ Tension Strut Backup TL-2 (EC Model) QL2TSCVR-U

QUADGUARD® ELITE™ SYSTEM W/ TENSION STRUT BACKUP	
SCALE: 1=40	REV: 1 OF 1
MODEL NO. QS__07E (SEE CHART)	
MODEL# SYSTEM WIDTH QS2407E* 610 [24.00] QS3007E* 762 [30.00] QS3607E* 914 [36.00]	* Y=YELLOW NOSE G=GRAY NOSE UNIDIRECTIONAL MODEL NO. QS__07E (SEE CHART)
SERIAL# SALES ORDER # EH PROJECT# DESIGN SPEED NOSE COLOR NUMBER OF UNITS TRANSITION ASSY. N/A WHEEL DETECTOR ASSY. N/A	DATE: 11/12/98 ENGINEER: R. BLASKI PROJECT: KRM APPROVED: 7/14/99 DATE: 7/15/99 FILE: QL2TSCVR-U.dwg
REFERENCES DIAPHRAGM ASSY. 607187 NOSE ASSY. 611557 FENDER PANEL ASSY. 3540585-0000 BACKUP ASSY. 504603 MONORAIL ASSY. 3540187-0000 CONCRETE PAD 605040 CHAIN ASSY. 3540491-0000 CHAIN ASSY. BAY 1 & 2 3540075-0000 HIT INDICATOR ASSY. 610237	DRAWN: S. VAN OGLE CHECKED: R. BLASKI DATE: 11/12/98 PROJECT: KRM APPROVED: 7/14/99 DATE: 7/15/99 FILE: QL2TSCVR-U.dwg
(1) QUADGUARD ELITE CINDER (2) DIAPHRAGM (3) FENDER PANEL (4) MONORAIL (5) NOSE ASSEMBLY (6) BACKUP (7) HIT INDICATOR	

- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 635 [25.00] MIN.
 - 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
 - SEE THE QUADGUARD ELITE SYSTEM DESIGN MANUAL FOR A DESCRIPTION OF THE SYSTEM AND ITS LIMITATIONS. THE SYSTEM DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.
 - FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
 - WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
 - UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
 - BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.
 - CHAINS SHOWN INCLUDED ONLY ON 914 [36.00] AND WIDER SYSTEMS.
 - CHAINS SHOWN INCLUDED IN BAYS 1 & 2 ONLY ON 24-30,36 SYSTEMS.

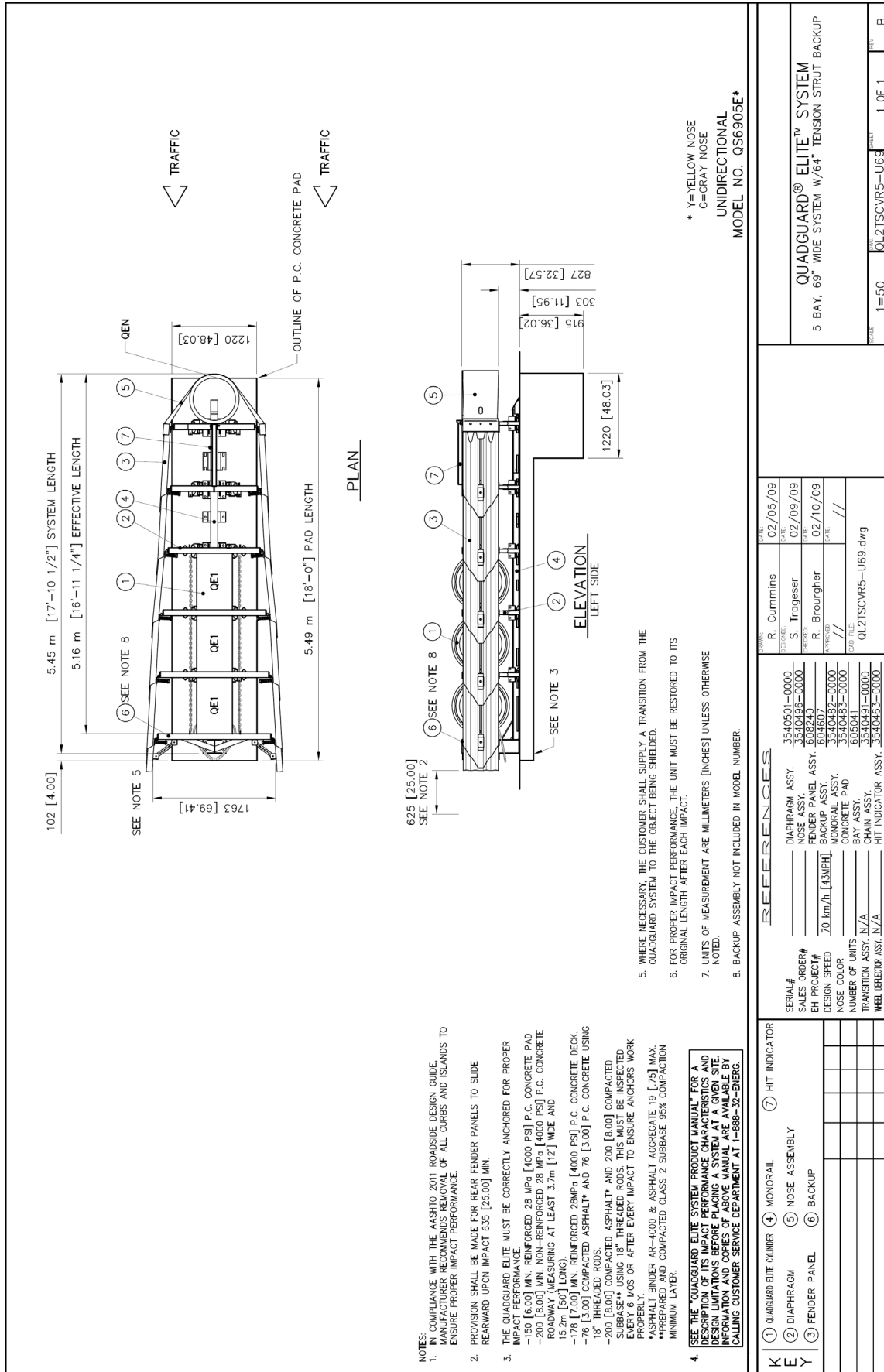


QuadGuard® Elite w/ Tension Strut Backup TL-3 **QL3TSCVR8-U**

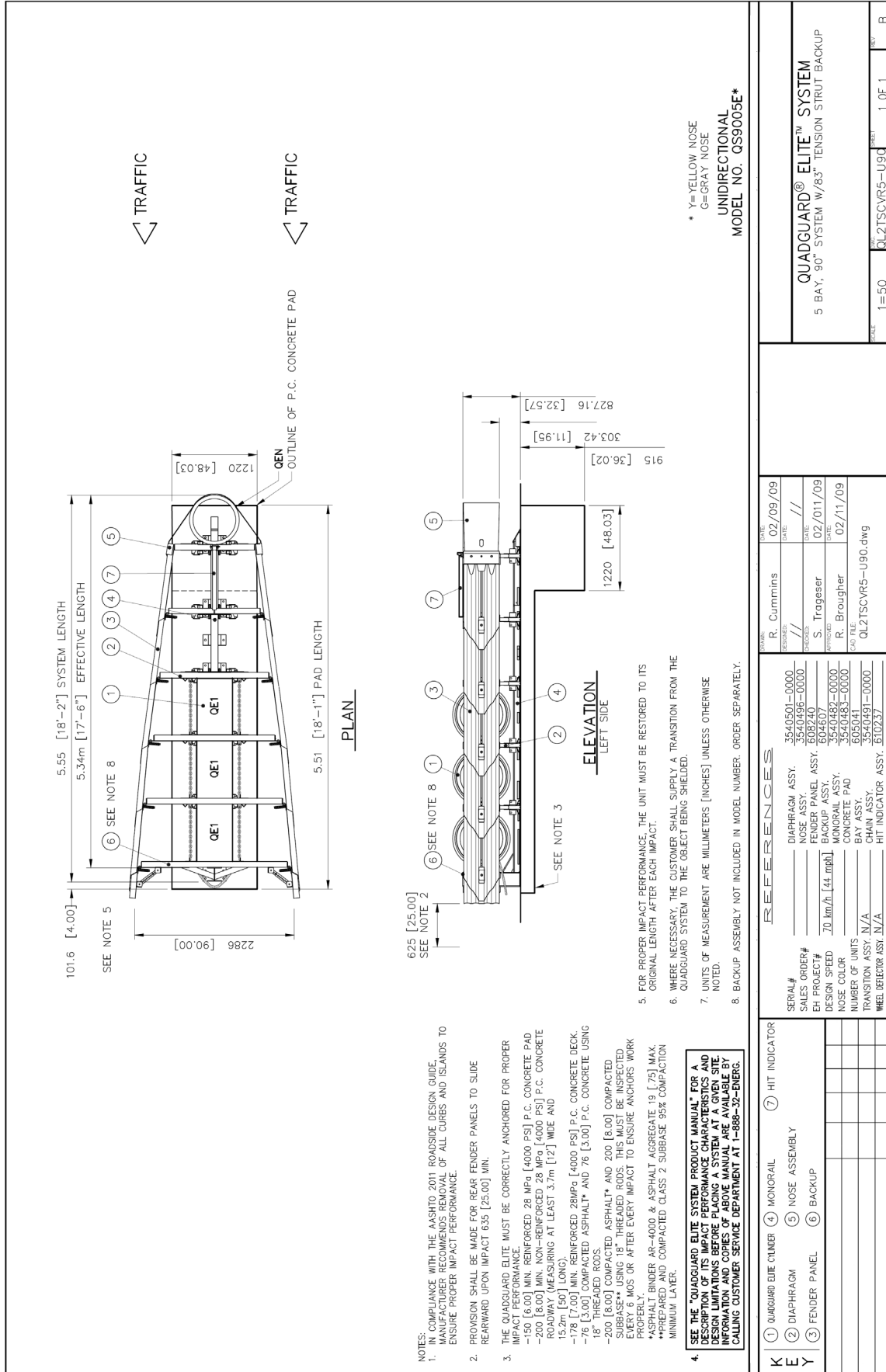


QuadGuard® Elite w/ Tension Strut Backup TL-3 (EC Model) QL3TSCVR-U

KEY	① QUADGUARD ELITE CINDER	④ MONORAIL	⑦ HIT INDICATOR					
	② DIAPHRAGM	⑤ NOSE ASSEMBLY						
	③ FENDER PANEL	⑥ BACKUP						
<table border="1"> <tr> <td>SCALE</td> <td>1=50</td> <td>REV</td> <td>1 OF 1</td> <td>D</td> </tr> </table>				SCALE	1=50	REV	1 OF 1	D
SCALE	1=50	REV	1 OF 1	D				
<table border="1"> <tr> <td>MODEL NO.</td> <td>QL3TSCVR-U</td> </tr> <tr> <td>SYSTEM</td> <td>QUADGUARD® ELITE™ SYSTEM W/ TENSION STRUT BACKUP</td> </tr> </table>				MODEL NO.	QL3TSCVR-U	SYSTEM	QUADGUARD® ELITE™ SYSTEM W/ TENSION STRUT BACKUP	
MODEL NO.	QL3TSCVR-U							
SYSTEM	QUADGUARD® ELITE™ SYSTEM W/ TENSION STRUT BACKUP							



69" 5 Bay w/64" Tension Strut Backup TL-2 QL2TSCVR5-U69



TRAFFIC

TRAFFIC

PLAN

ELEVATION
LEFT SIDE

- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 635 [25.00] MIN.
 - THE QUADGUARD ELITE MUST BE CORRECTLY ANCHORED FOR PROPER IMPACT PERFORMANCE.
 -150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD
 -200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
 -178 [7.00] MIN. REINFORCED 28MPa [4000 PSI] P.C. CONCRETE DECK.
 -18" [4.57] DIA. STEEL RODS.
 -200 [8.00] COMPACTED ASPHALT* AND 200 [8.00] COMPACTED SUBBASE** USING 18" THREADED RODS. THIS MUST BE INSPECTED EVERY 6 MOS OR AFTER EVERY IMPACT TO ENSURE ANCHORS WORK PROPERLY.
 *ASPHALT BINDER AR-4000 & ASPHALT AGGREGATE 19 [7.5] MAX. **PREPARED AND COMPACTED CLASS 2 SUBBASE 95% COMPACTION MINIMUM LAYER.
 - SEE THE "QUADGUARD ELITE SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.

- FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
- WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
- UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
- BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER. ORDER SEPARATELY.

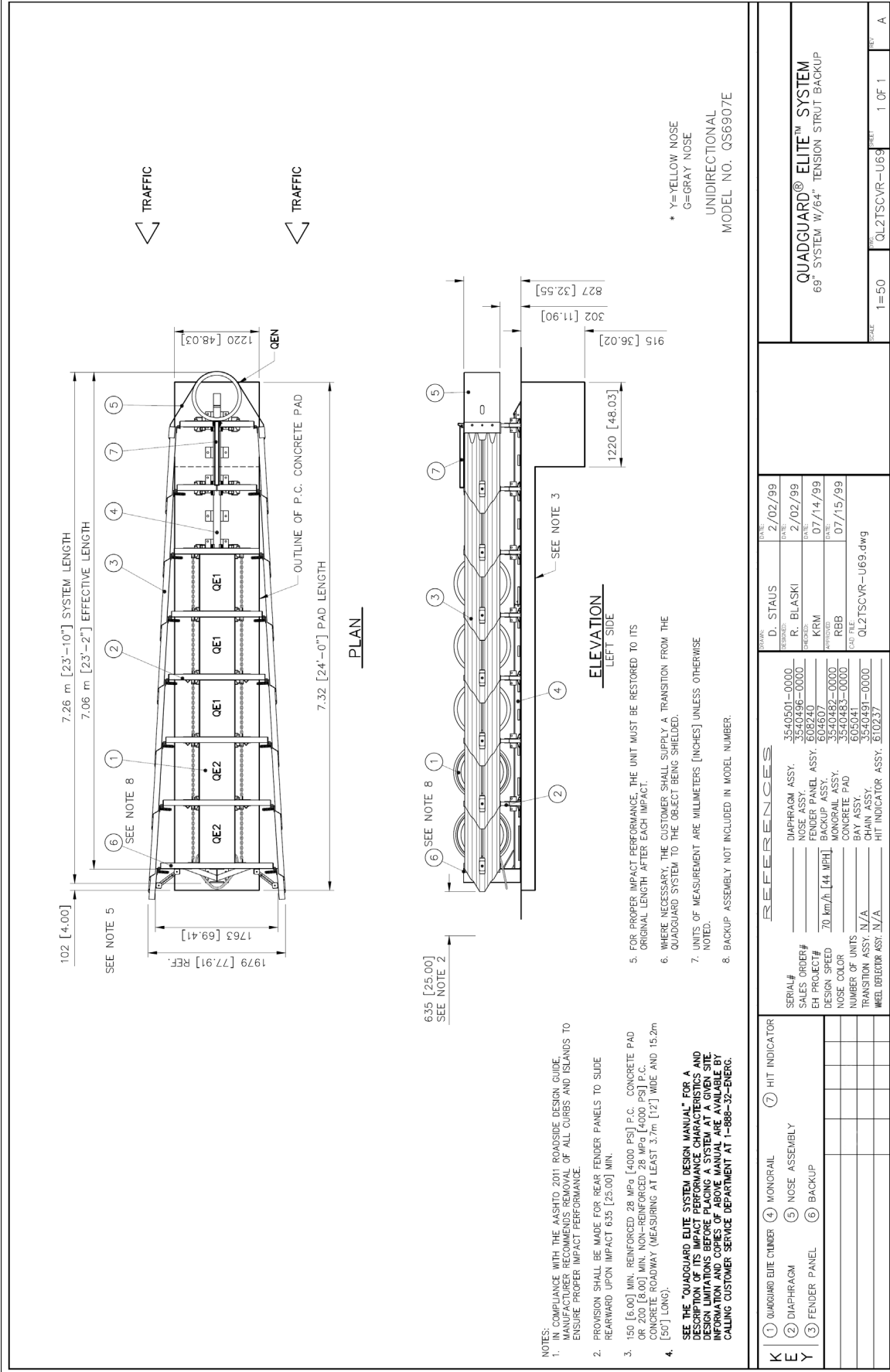
* Y=YELLOW NOSE
G=GRAY NOSE
UNIDIRECTIONAL
MODEL NO. QS9005E*

KEY	① QUADGUARD ELITE COLUMN	④ MONORAIL	⑦ HIT INDICATOR
	② DIAPHRAGM	⑤ NOSE ASSEMBLY	
	③ FENDER PANEL	⑥ BACKUP	

REFERENCES		DATE
SERIAL#	3540501-0000	02/09/09
SALES ORDER#	DIAPHRAGM ASSY.	
EH PROJECT#	NOSE ASSY.	
DESIGN SPEED	FENDER PANEL ASSY.	
NOSE COLOR	BACKUP ASSY.	
NUMBER OF UNITS	MONORAIL ASSY.	
TRANSITION ASSY.	CONCRETE PAD	
	CHAIN ASSY.	
	HIT INDICATOR ASSY.	

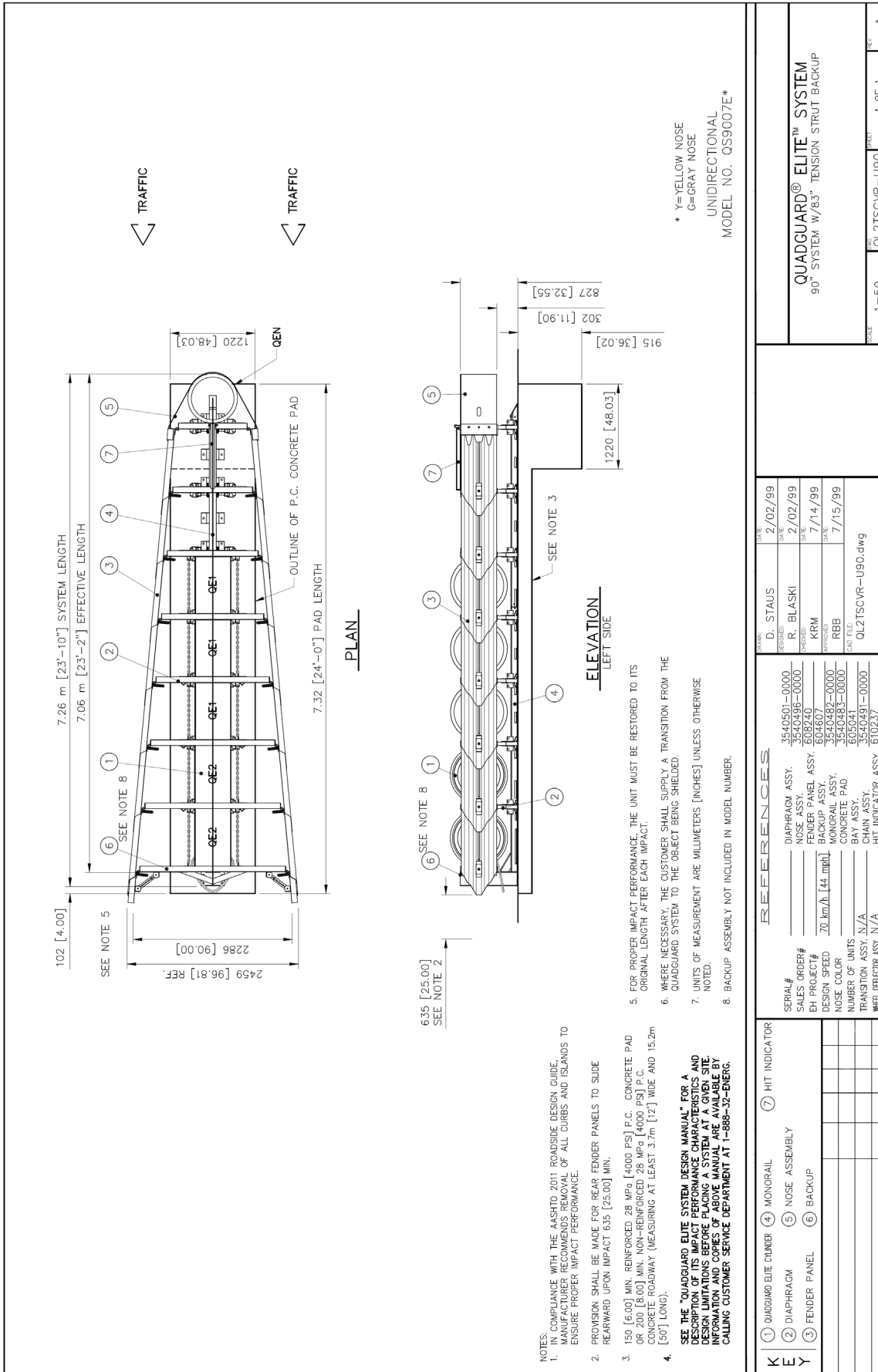
DATE	02/09/09
BY	R. Cummins
DATE	
BY	S. Trageser
DATE	02/01/09
BY	R. Brougher
DATE	02/11/09
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REV	1 OF 1
REV	B

90" 5 Bay w/83" Tension Strut Backup TL-2 QL2TSCVR5-U90



69" 7 Bay w/64" Tension Strut Backup TL-2 QL2TSCVR-U69

KEY	① QUADGUARD ELITE CINDER	④ MONORAIL	⑦ HIT INDICATOR																																				
	② DIAPHRAGM	⑤ NOSE ASSEMBLY																																					
	③ FENDER PANEL	⑥ BACKUP																																					
<p>REFERENCES</p> <table border="1"> <tr> <td>SERIAL#</td> <td>3540501-0000</td> <td>DATE</td> <td>2/02/99</td> </tr> <tr> <td>SALES ORDER#</td> <td>DIAPHRAGM ASSY.</td> <td>DESIGNED BY</td> <td>D. STAUS</td> </tr> <tr> <td>EH PROJECT#</td> <td>NOSE ASSY.</td> <td>RECHECKED BY</td> <td>R. BLASKI</td> </tr> <tr> <td>DESIGN SPEED</td> <td>FENDER PANEL ASSY.</td> <td>APPROVED BY</td> <td>KRM</td> </tr> <tr> <td>NOSE COLOR</td> <td>BACKUP ASSY.</td> <td>DATE</td> <td>07/14/99</td> </tr> <tr> <td>NUMBER OF UNITS</td> <td>MONORAIL ASSY.</td> <td>DATE</td> <td>07/15/99</td> </tr> <tr> <td>CONCRETE PAD</td> <td>CONCRETE PAD</td> <td>DWG FILE</td> <td>QL2TSCVR-U69.dwg</td> </tr> <tr> <td>TRANSITION ASSY.</td> <td>CHAIN ASSY.</td> <td></td> <td></td> </tr> <tr> <td>WHEEL BEARING ASSY.</td> <td>HIT INDICATOR ASSY.</td> <td></td> <td></td> </tr> </table>				SERIAL#	3540501-0000	DATE	2/02/99	SALES ORDER#	DIAPHRAGM ASSY.	DESIGNED BY	D. STAUS	EH PROJECT#	NOSE ASSY.	RECHECKED BY	R. BLASKI	DESIGN SPEED	FENDER PANEL ASSY.	APPROVED BY	KRM	NOSE COLOR	BACKUP ASSY.	DATE	07/14/99	NUMBER OF UNITS	MONORAIL ASSY.	DATE	07/15/99	CONCRETE PAD	CONCRETE PAD	DWG FILE	QL2TSCVR-U69.dwg	TRANSITION ASSY.	CHAIN ASSY.			WHEEL BEARING ASSY.	HIT INDICATOR ASSY.		
SERIAL#	3540501-0000	DATE	2/02/99																																				
SALES ORDER#	DIAPHRAGM ASSY.	DESIGNED BY	D. STAUS																																				
EH PROJECT#	NOSE ASSY.	RECHECKED BY	R. BLASKI																																				
DESIGN SPEED	FENDER PANEL ASSY.	APPROVED BY	KRM																																				
NOSE COLOR	BACKUP ASSY.	DATE	07/14/99																																				
NUMBER OF UNITS	MONORAIL ASSY.	DATE	07/15/99																																				
CONCRETE PAD	CONCRETE PAD	DWG FILE	QL2TSCVR-U69.dwg																																				
TRANSITION ASSY.	CHAIN ASSY.																																						
WHEEL BEARING ASSY.	HIT INDICATOR ASSY.																																						
<p>NOTES:</p> <ol style="list-style-type: none"> IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 635 [25.00] MIN. 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG). SEE THE "QUADGUARD ELITE SYSTEM DESIGN MANUAL" FOR A DETAILED DESIGN AND INSTALLATION MANUAL. DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT ANY GIVEN SITE INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG. 																																							
<p>QUADGUARD® ELITE™ SYSTEM 69" SYSTEM W/64" TENSION STRUT BACKUP</p>		<p>SCALE: 1=50 MODEL NO. QS6907E</p>																																					



- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 635 [25.00] MIN.
 - 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
 - SEE THE "QUADGUARD ELITE SYSTEM DESIGN MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.
 - FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
 - WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
 - UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
 - BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.

* Y=YELLOW NOSE
G=GRAY NOSE
UNIDIRECTIONAL
MODEL NO. QS9007E*

KEY	DESCRIPTION	DATE
1	QUADGUARD BITE CHUMBER	2/02/99
2	DIAPHRAGM	2/02/99
3	FENDER PANEL	7/14/98
4	MONORAIL	7/15/99
5	NOSE ASSEMBLY	
6	BACKUP	
7	HIT INDICATOR	

REFERENCES	
SERIAL #	3540501-0000
SALES ORDER #	R. BLASKI
EH PROJECT #	608240
DESIGN SPEED	70 km/h [44 mph]
NOSE COLOR	RBB
NUMBER OF UNITS	605041
TRANSITION ASSY. N/A	3540491-0000
WHEEL DETECTOR ASSY. N/A	610237

DATE	BY	SCALE	REV	DESCRIPTION
2/02/99	D. STAUSS	1=50		QL2TSCVR-U90
2/02/99	R. BLASKI		1	OF 1
7/14/98	KRM			
7/15/99	RBB			

QUADGUARD® ELITE™ SYSTEM
90" SYSTEM W/83" TENSION STRUT BACKUP

90" 7 Bay w/83" Tension Strut Backup TL-2 QL2TSCVR-U90

PLAN

ELEVATION
LEFT SIDE

NOTES:

- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, THIS UNIT IS TO BE INSTALLED IN A ROW OF ALL CURES AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
- PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 6.35 [25.00] MIN.
- 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12] WIDE AND 15.2m [50] LONG).
- SEE THE "QUADGUARD ELITE SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.

5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
 6. FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
 7. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
 8. BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.

* Y=YELLOW NOSE
 G=GRAY NOSE
 UNIDIRECTIONAL
 MODEL NO. QS6908E*

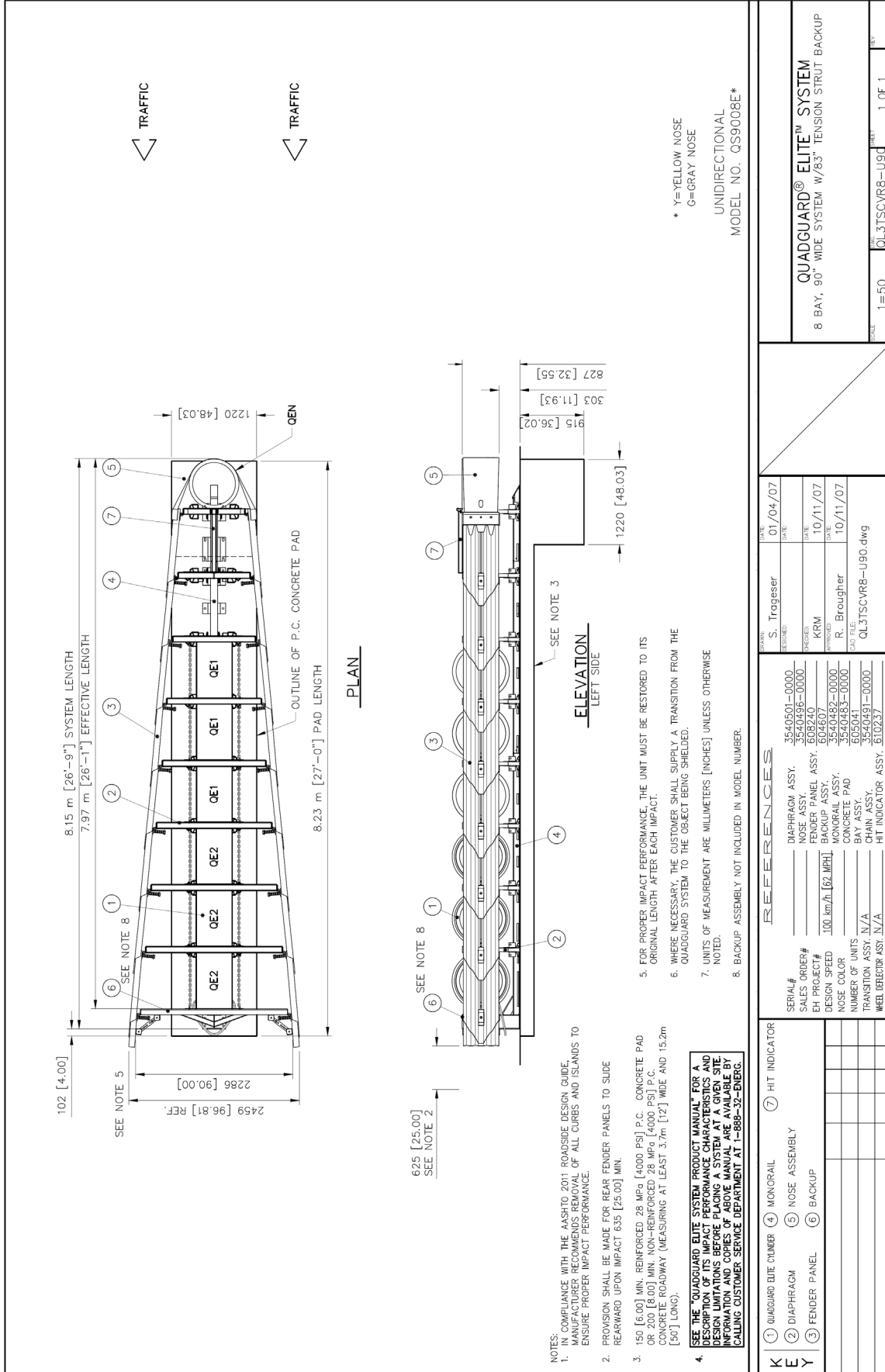
DESIGNED BY	S. Trageser	DATE	01/04/07
DESIGNED BY	KRM	DATE	10/9/07
APPROVED BY	R. Brougner	DATE	10/11/07
FILE	QL3TSCVR8-U69.dwg		

SERIAL#	3540501-0000	DIAPHRAGM ASSY.	3540496-0000
SALES ORDER#	3540496-0000	NOSE ASSY.	609240
EH PROJECT#	502602	FENDER PANEL ASSY.	502602-0000
DESIGN SPEED	100 km/h [62 MPH]	BACKUP ASSY.	3540483-0000
NOSE COLOR	Y	MONORAIL ASSY.	605041
NUMBER OF UNITS	N/A	CONCRETE PAD	3540491-0000
TRANSITION ASSY.	N/A	CHAIN ASSY.	
WHEEL DEFLECTOR ASSY.	N/A	HIT INDICATOR ASSY.	610237

KEY	(1) QUADGUARD ELITE CINDER	(4) MONORAIL	(7) HIT INDICATOR
	(2) DIAPHRAGM	(5) NOSE ASSEMBLY	
	(3) FENDER PANEL	(6) BACKUP	

QUADGUARD® ELITE™ SYSTEM 8 BAY, 69" WIDE SYSTEM W/64" TENSION STRUT BACKUP	SCALE: 1=50 QL3TSCVR8-U69
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69" 8 Bay w/64" Tension Strut Backup TL-3 QL3TSCVR8-U69



90" 8 Bay w/83" Tension Strut Backup TL-3 **QL3TSCVR8-U90**

DATE	01/04/07
BY	S. Trageser
REVISION	
CHECKED	KRM
APPROVED	R. Brougher
DATE	10/11/07
DATE	10/11/07
DWG FILE	QL3TSCVR8-U90.dwg
SCALE	1=50
REV	1 OF 1

QUADGUARD® ELITE™ SYSTEM 8 BAY, 90" WIDE SYSTEM w/83" TENSION STRUT BACKUP	
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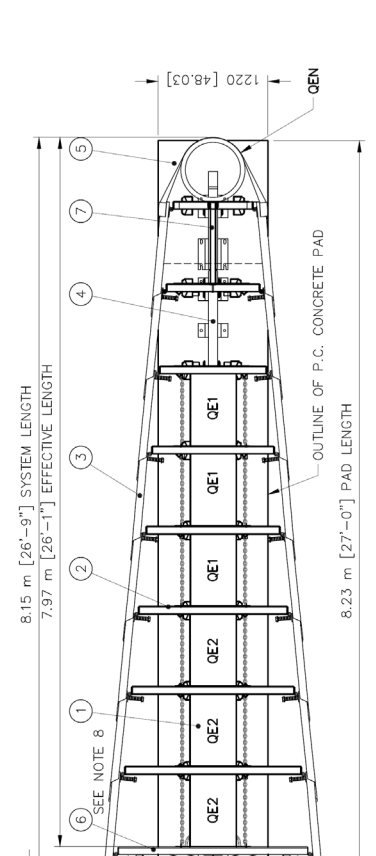
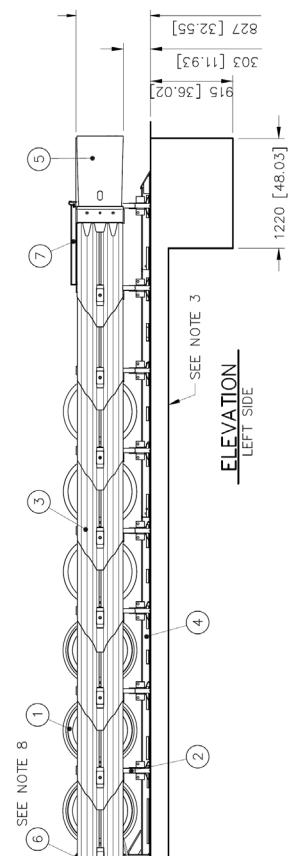
SERIAL#	3540501-0000
SALES ORDER#	3540496-0000
EH PROJECT#	609240
DESIGN SPEED	100 km/h [62 MPH]
NOSE COLOR	3540483-0000
NUMBER OF UNITS	605041
TRANSITION ASSY	N/A
WHEEL DETECTOR ASSY	N/A
HIT INDICATOR ASSY	610237

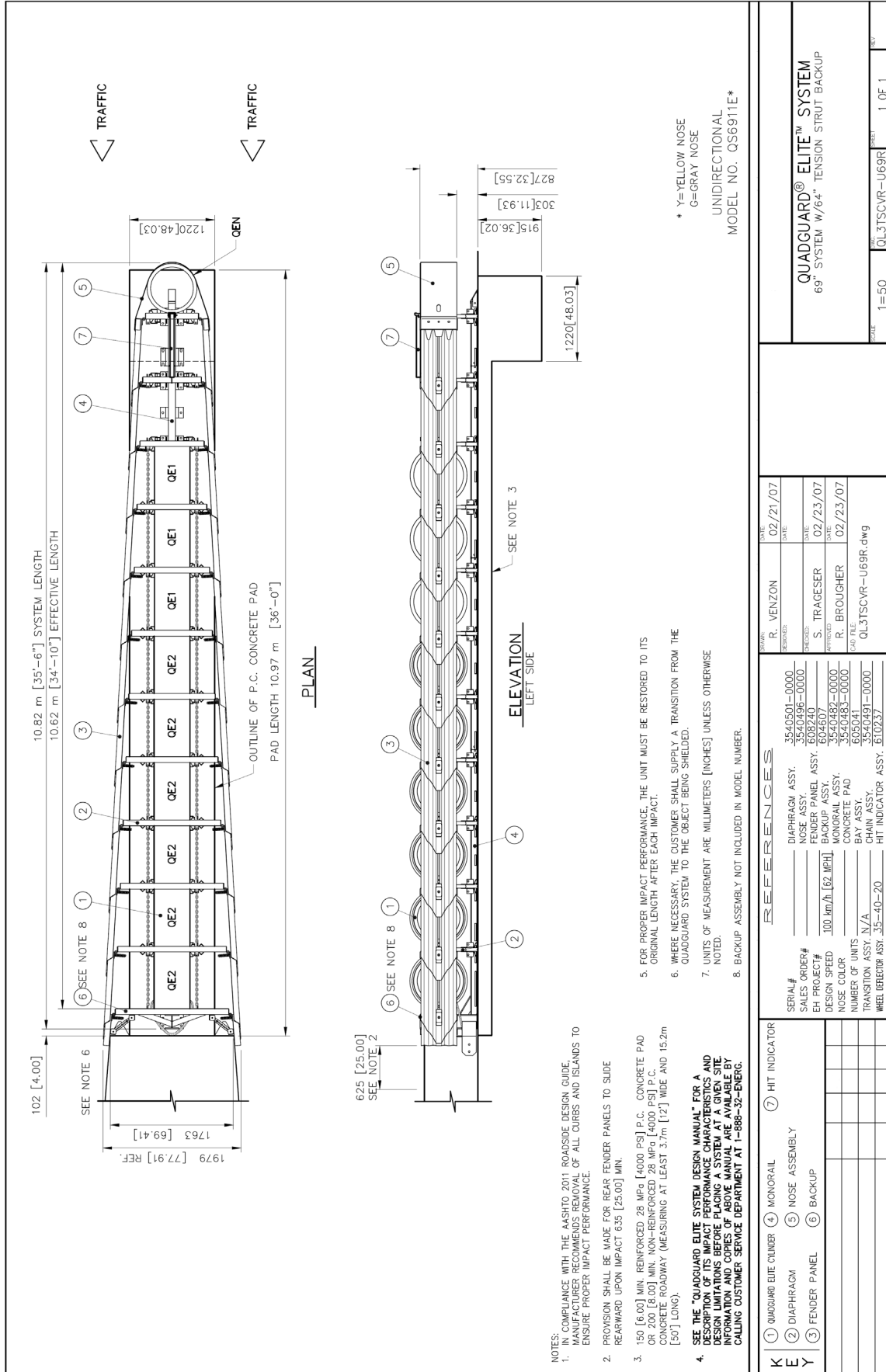
KEY	① QUADGUARD ELITE COLUMN	④ MONORAIL	⑦ HIT INDICATOR
	② DIAPHRAGM	⑤ NOSE ASSEMBLY	
	③ FENDER PANEL	⑥ BACKUP	

* Y=YELLOW NOSE
 G=GRAY NOSE
 UNIDIRECTIONAL
 MODEL NO. QS9008E*

- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 6.35 [25.00] MIN.
 - 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
 - SEE THE "QUADGUARD ELITE SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.

- FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
- WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
- UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
- BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.





69" 11 Bay w/64" Tension Strut Backup TL-3 QL3TSCVR-U69R

- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 635 [25.00] MIN.
 - 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
 - SEE THE "QUADGUARD ELITE SYSTEM DESIGN MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT 1-888-32-ENERG.
 - FOR PROPER IMPACT PERFORMANCE, THE UNIT MUST BE RESTORED TO ITS ORIGINAL LENGTH AFTER EACH IMPACT.
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 - UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
 - BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.

REFERENCES

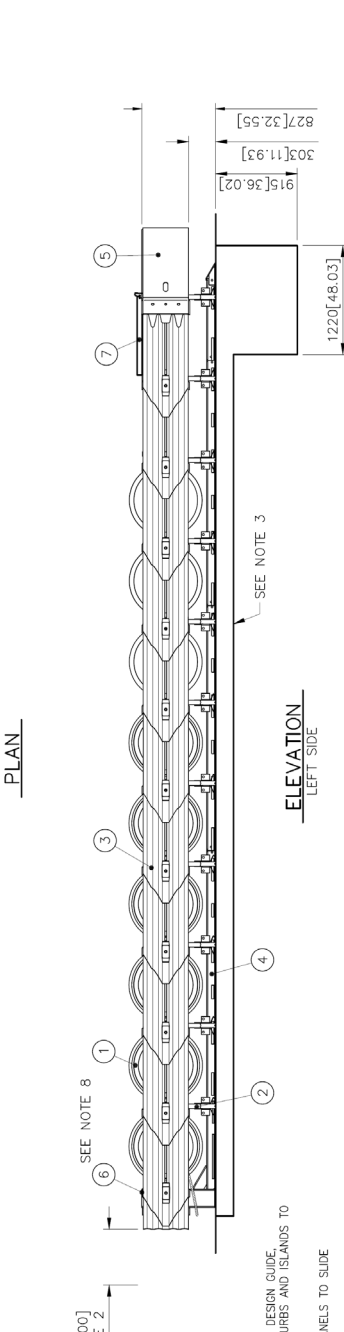
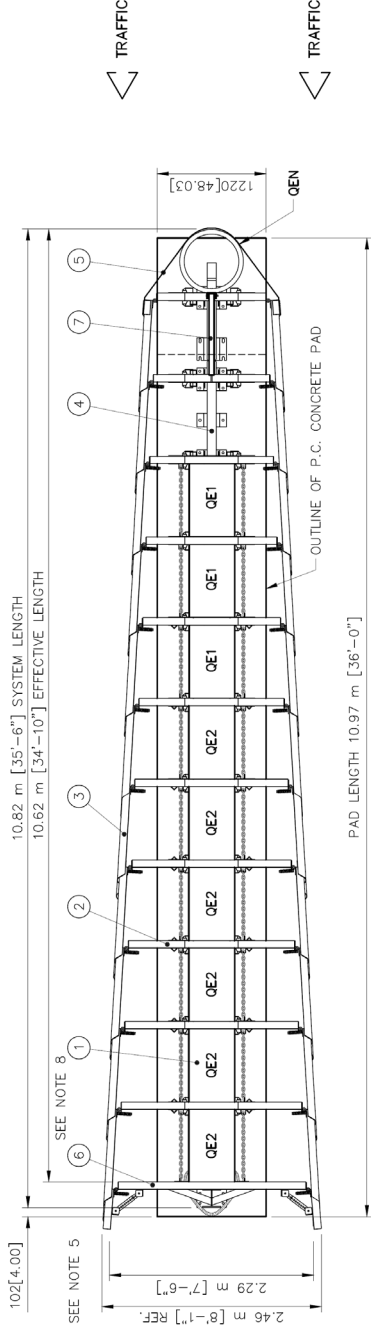
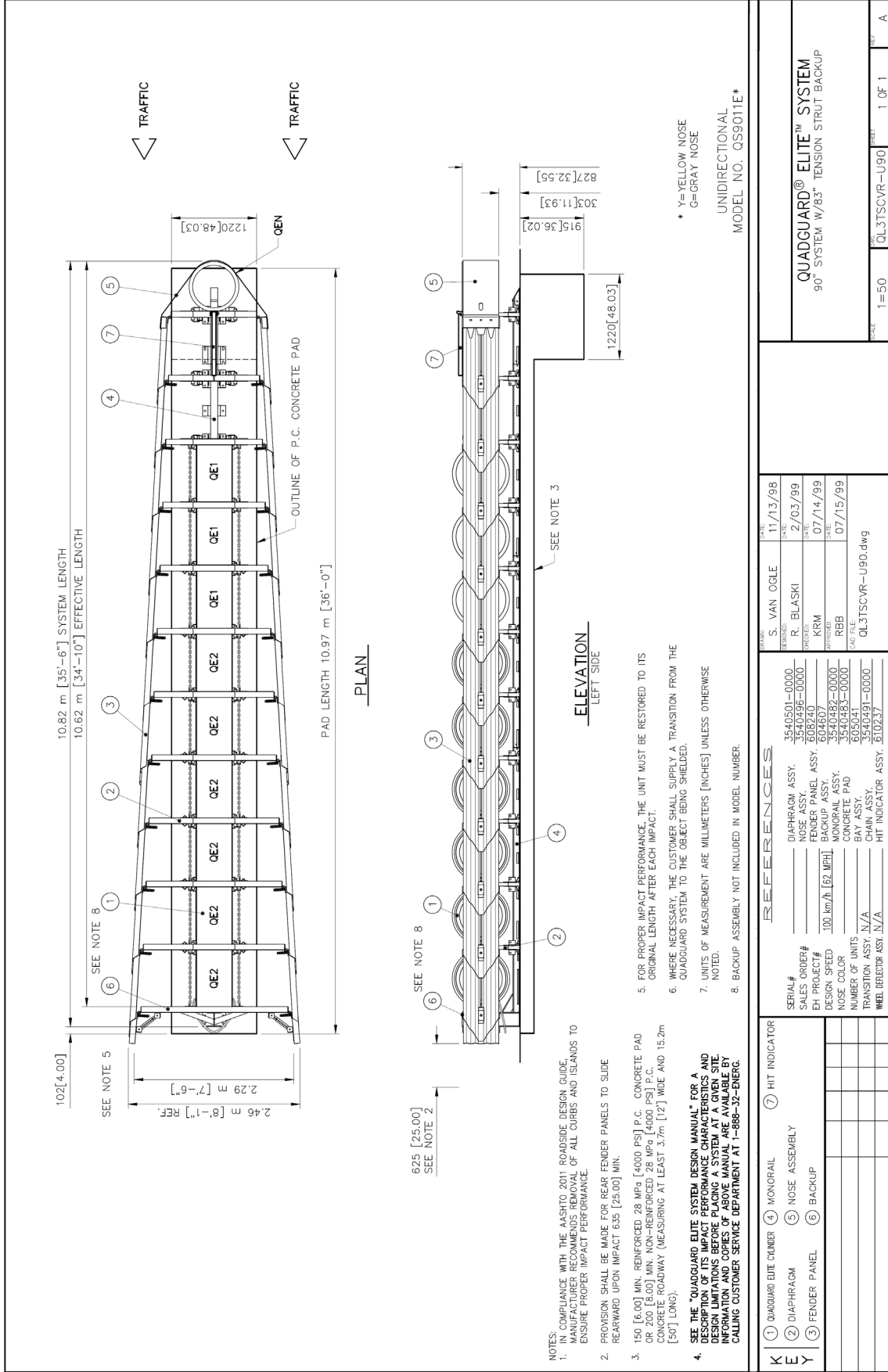
SERIAL#	DESCRIPTION	DATE
3540501-0000	DIAPHRAGM ASSY.	02/21/07
3540496-0000	NOSE ASSY.	02/21/07
EH PROJECT#	FENDER PANEL ASSY.	02/23/07
100 MPH/H [67 MPH]	BACKUP ASSY.	02/23/07
DESIGN SPEED	MONORAIL ASSY.	02/23/07
NOSE COLOR	CONCRETE PAD	
NUMBER OF UNITS	CHAIN ASSY.	
TRANSITION ASSY. N/A	HIT INDICATOR ASSY. 610237	
WHEEL DEFLECTOR ASSY. 35-40-20		

REFERENCES

DATE	BY	REVISION
02/21/07 <td>R. VENZON <td></td> </td>	R. VENZON <td></td>	
02/23/07 <td>S. TRAGESER <td></td> </td>	S. TRAGESER <td></td>	
02/23/07 <td>R. BROUGHER <td></td> </td>	R. BROUGHER <td></td>	

DATE: 02/21/07
 DATE: 02/23/07
 DATE: 02/23/07
 FILE: QL3TSCVR-U69R.dwg

SCALE: 1=50	QUADGUARD® ELITE™ SYSTEM 69" SYSTEM W/64" TENSION STRUT BACKUP
1 OF 1	



PLAN

ELEVATION
LEFT SIDE

* Y=YELLOW NOSE
G=GRAY NOSE
UNIDIRECTIONAL
MODEL NO. QS90TIE*

- NOTES:**
- IN COMPLIANCE WITH THE AASHTO 2011: ROADSIDE DESIGN GUIDE, THE PROVISIONS OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 6.35 [25.00] MIN.
 - 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY (MEASURING AT LEAST 3.7m [12'] WIDE AND 15.2m [50'] LONG).
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 - UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
 - BACKUP ASSEMBLY NOT INCLUDED IN MODEL NUMBER.

REFERENCES

DESIGNER	S. VAN OGLE	DATE	11/13/98
REVISION	R. BLASKI	DATE	2/03/99
DESIGNED BY	KRM	DATE	07/14/99
APPROVED BY	RBB	DATE	07/15/99
DWG FILE	QL3TSCVR-U90.dwg		
SCALE	1=50		

KEY

①	QUADGUARD ELITE CURB	④	MONGRAIL	⑦	HIT INDICATOR
②	DIAPHRAGM	⑤	NOSE ASSEMBLY		
③	FENDER PANEL	⑥	BACKUP		

QUADGUARD® ELITE™ SYSTEM 90° SYSTEM W/83° TENSION STRUT BACKUP	
SCALE	1=50
FILE NO.	QL3TSCVR-U90
SHEET NO.	1 OF 1
REV.	A

90" 11 Bay w/83" Tension Strut Backup TL-3 QL3TSCVR-U90

PARTS LIST		ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	BACKUP, TS, 24" QGE, G, WIDECA			1
2	611898	PANEL, SIDE, QG			2
3	619316	ANCHOR KIT, HLT, 1.3/4X7 (4)			5
4	003340	NUT, HX, 5/8, G, RAIL			4
5	003400	BOLT, RAIL, 5/8X2, G			4

* FOR TEMPORARY INSTALLATION, SEE NOTE BELOW AND DWG. 35-40-24L

Table		ASSEMBLY NO.	ITEM	PART NUMBER	DESCRIPTION
604603	1	604744	BACKUP, TS, 24" QGE ELITE, WIDECA		
604604	1	604751	BACKUP, TS, 30" QGE ELITE, WIDECA		
604605	1	604764	BACKUP, TS, 36" QGE ELITE, WIDECA		
626009	1	604773	BACKUP, TS, 48" QGE ELITE, WIDECA		

SEE NOTE 2 (1)

SEE NOTE 1 (5)

(3) *180mm [7"] OR 460mm [18"]
(FOR TEMPORARY INSTALLATION)
ANCHORING STUDS

NOTE:
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO NO. 611898.
 2. ITEM 1 SHOWN IS ASSEMBLY 604603 (24"), ASSEMBLY 604604 (30") IS SIMILAR. ASSEMBLY 604605 (36") AND 626009 (48") INCLUDE A CARTRIDGE SUPPORT AND CHAIN-MOUNTING TABS ON THE FRONT OF THE BACKUP.

DESIGNER:	S. Van Ogle	DATE:	11/11/1998
REPORT:	RBB	REV:	3/22/1999
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETRE UNITS UNLESS OTHERWISE SPECIFIED.			
DO NOT SCALE DRAWING			
EST UNFINISHED WT:	345 lbs		

TOLERANCES PER THP-SF-001, UNLESS OTHERWISE SPECIFIED.	BACKUP ASSY, TS, QGE, 24
DO NOT SCALE DRAWING	604603
EST UNFINISHED WT: 345 lbs	F
SEE PARTS LIST	1 of 1

Backup Assembly, TS QGE, 24 604603

ITEM	DESCRIPTION
1	BACKUP T.S.QGE.WIDE CAL
2	PANEL SIDE.QG.WIDE.G
3	BOLT.HX.3/8X3 1/2.ALL.THREAD.G5.G
4	NUT.HX.3/8.G
5	WASHER.LOCK.3/8.G
6	ANCHOR KIT.HILT.330ml.3/4X7 (4)
7	NUT.HX.5/8.G.RAIL
8	BOLT.HX.5/8X2.G
9	BOLT.HX.5/8X4.G5.G
10	WASHER.LOCK.5/8.G
11	5/8" HVY HEX NUT A563A
12	HINGE PLATE.FENDER.PANEL.LOG
13	TEL ST 1 3/4X1 3/4X12 GA X10.HS.G
14	TEL ST 2X2X12 GA X10.HS.G
15	EXTENSION.BACKUP.M10.QGE
16	FLT ST 3/16X2X13 WHOLES
17	BOLT.HX.3/4X5.G5.G
18	3/4" HVY HEX NUT A563 DH

TABLE			
SYSTEM	WIDTH	7" ANCHOR	18" ANCHOR / NO ANCHOR
QG ELITE	69"	604607	627529
QG ELITE	90"	604608	627530
QGE M10 WIDE	69"	618851	N/A 627531

QUADGUARD ELITE

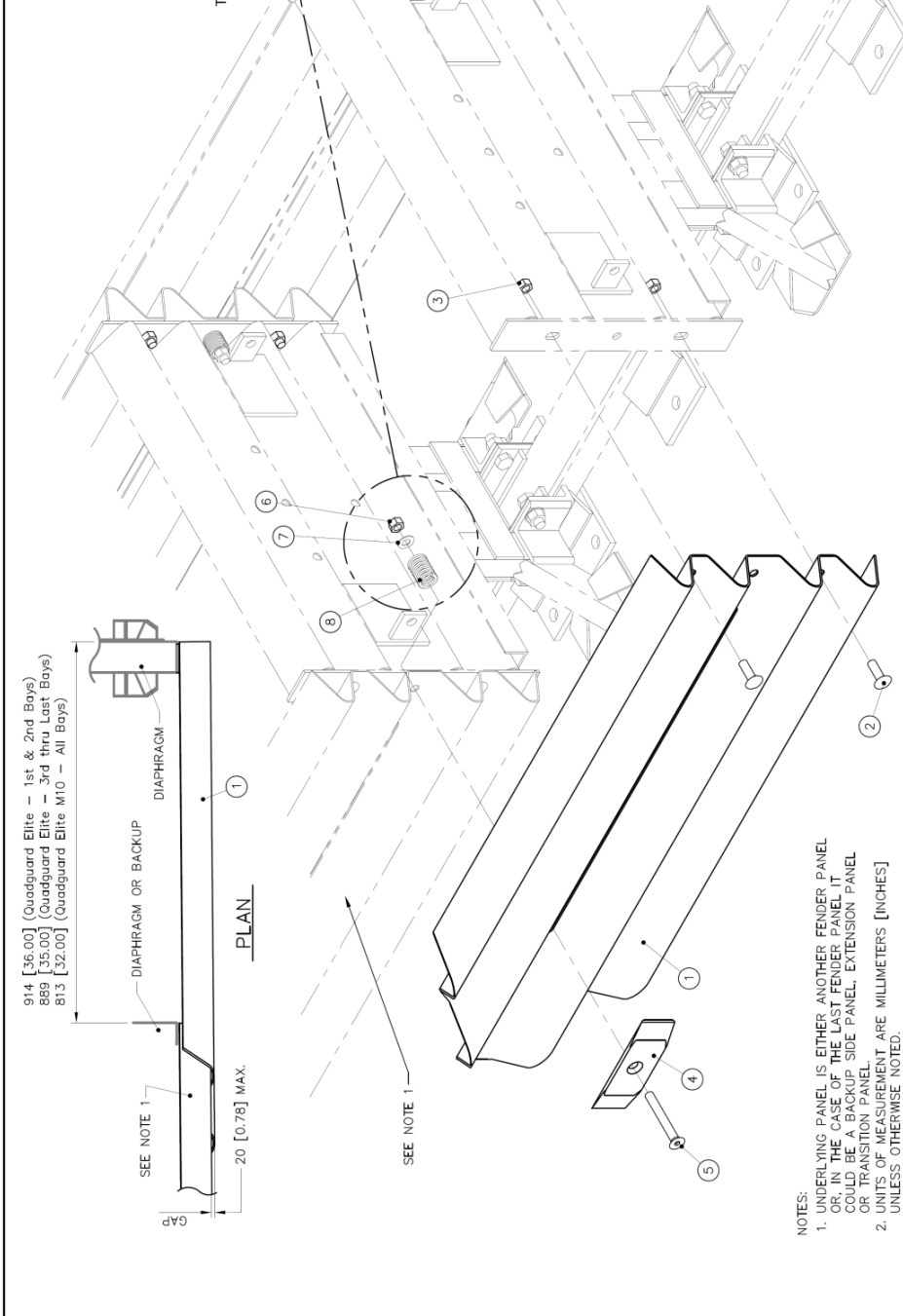
DESIGNER D. Kohfeld	DATE 2/18/2020	PROJECT NO 627528.kdw
PREPARED BY B. Eckert	DATE 2/25/2020	
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS (ROUND UP TO NEXT WHOLE NUMBER). DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY.		
DO NOT SCALE DRAWING		

QUADGUARD FAMILY	
BACKUP ASSEMBLY, TENSION STRUT	
	REV - 627528
PART 2 of 2	

Backup Assembly, Tension Strut, QGE Wide 627528

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	611832	PANEL FENDER, 0G, G	1.00
2	118614	BOLT, RAIL, 5/8X2, G5, G	2.00
3	1003340	NUT, HY, 5/8C, RAIL	2.00
4	617045	WASHER, MUSHROOM, FORGED, 0G, G	1.00
5	116878	SCREW, FL, 5/8X5, G8, G, SOCKET	1.00
6	115970	NUT, HY, 5/8, G	1.00
7	118052	WASHER, FLAT, 5/8X1.3/4, G	1.00
8	117459	SPRING, DIE, 1 1/4 OD X5/8X1.1/2, G	1.00

TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY.

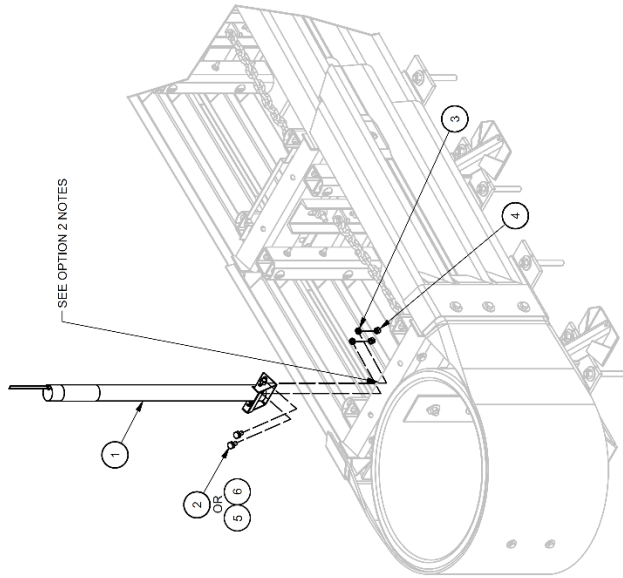


NOTES:
 1. UNDERLYING PANEL IS EITHER ANOTHER FENDER PANEL OR, IN THE CASE OF THE LAST FENDER PANEL, IT COULD BE A BACKUP SIDE PANEL, EXTENSION PANEL OR TRANSITION PANEL.
 2. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.

QUADGUARD ELITE™ SYSTEM FENDER PANEL ASSY. 24, 30, 36 & 48		PART NO. 608235 REV. D	SHEET 1 of 1 <small>©2022, THE FALCON GROUP, INC.</small>
DRAWN BY: W. Leddington APPROVED BY: Van Brocklin DATE: 11/13/08 FILE: 608235.dwg DO NOT SCALE DRAWING	TITLE: FENDER PANEL ASSY. PART NO.: 608235 REV.: D DATE: 11/13/08 FILE: 608235.dwg	PROJECT:	SHEET: 1 of 1

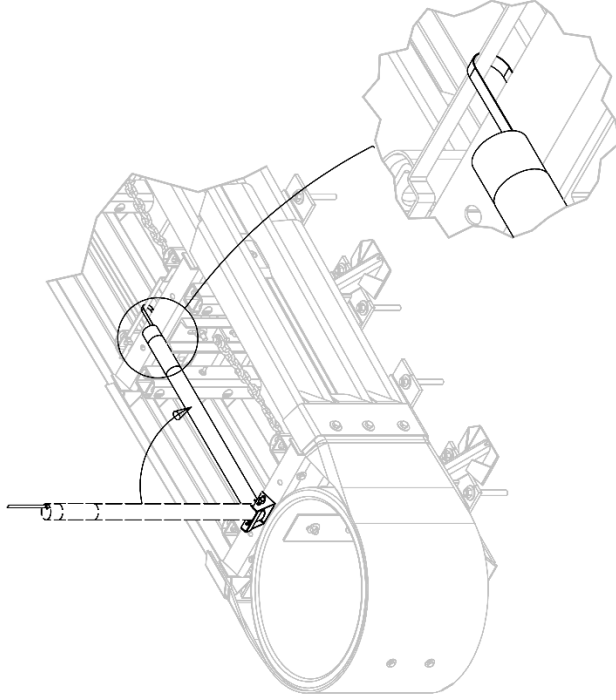
Fender Panel Assembly, 24/30/36/48 608235

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	610238	HIT INDICATOR/LM/CELESTE	1.00
2	113467	BOLT,HX,1/2X1.65,G	2.00
3	118062	WASHER,LOCK,1/2,G	2.00
4	115939	NUT,HX,1/2,G	2.00
5	116891	SCREW,HHW,1/4X1,SELF DRILL/TAPPING,G	2.00
6	118013	WASHER,FLAT,1/4 X 1,G	2.00



STEP 1:
POSITION HIT INDICATOR ON 1ST DIAPHRAGM. DRILL ONE $\phi 1/4"$ HOLE AS NEEDED TO SET BRACKET TAB IN DIAPHRAGM. BRACKET SHOULD BE CENTERED ON TOP SURFACE OF DIAPHRAGM.

STEP 2:
ATTACH HIT INDICATOR TO 1ST DIAPHRAGM.
OPTION 1: MATCH DRILL TWO $\phi 9/16"$ HOLES AS NEEDED IN DIAPHRAGM. USE ITEM 2,3 & 4 TO ATTACH BRACKET.
OPTION 2: USE SELF DRILLING + TAP SCREWS (ITEM 5) ALONG WITH FLAT WASHER (ITEM 6) TO ATTACH BRACKET.



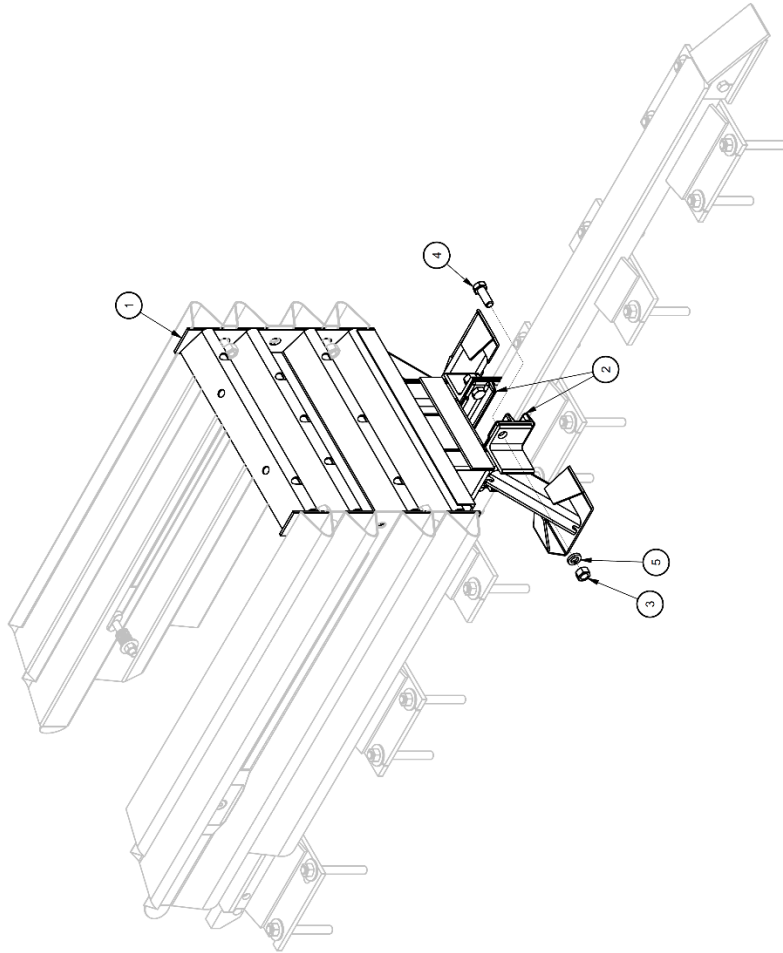
STEP 3:
ROTATE HIT INDICATOR TO HORIZONTAL POSITION AND BEND TRIGGER CLIP AROUND BRACKET OF 2ND DIAPHRAGM AS SHOWN.

QUADGUARD® SYSTEM ELITE / ELITE M10		MODEL NO. 610237 /kw	
HIT INDICATOR W/ HARDWARE		DO NOT SCALE DRAWING	
DATE: 8/19/1998 DRAWN BY: T. BUSSE CHECKED BY: RBB <small>UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.</small>		DATE: 9/10/1998 FILE: 610237 /kw	
QUANTITY: 1		PART: F	
DRAWING NO.: 610237		SHEET: 1 of 2	

Hit Indicator w/Hardware 610237

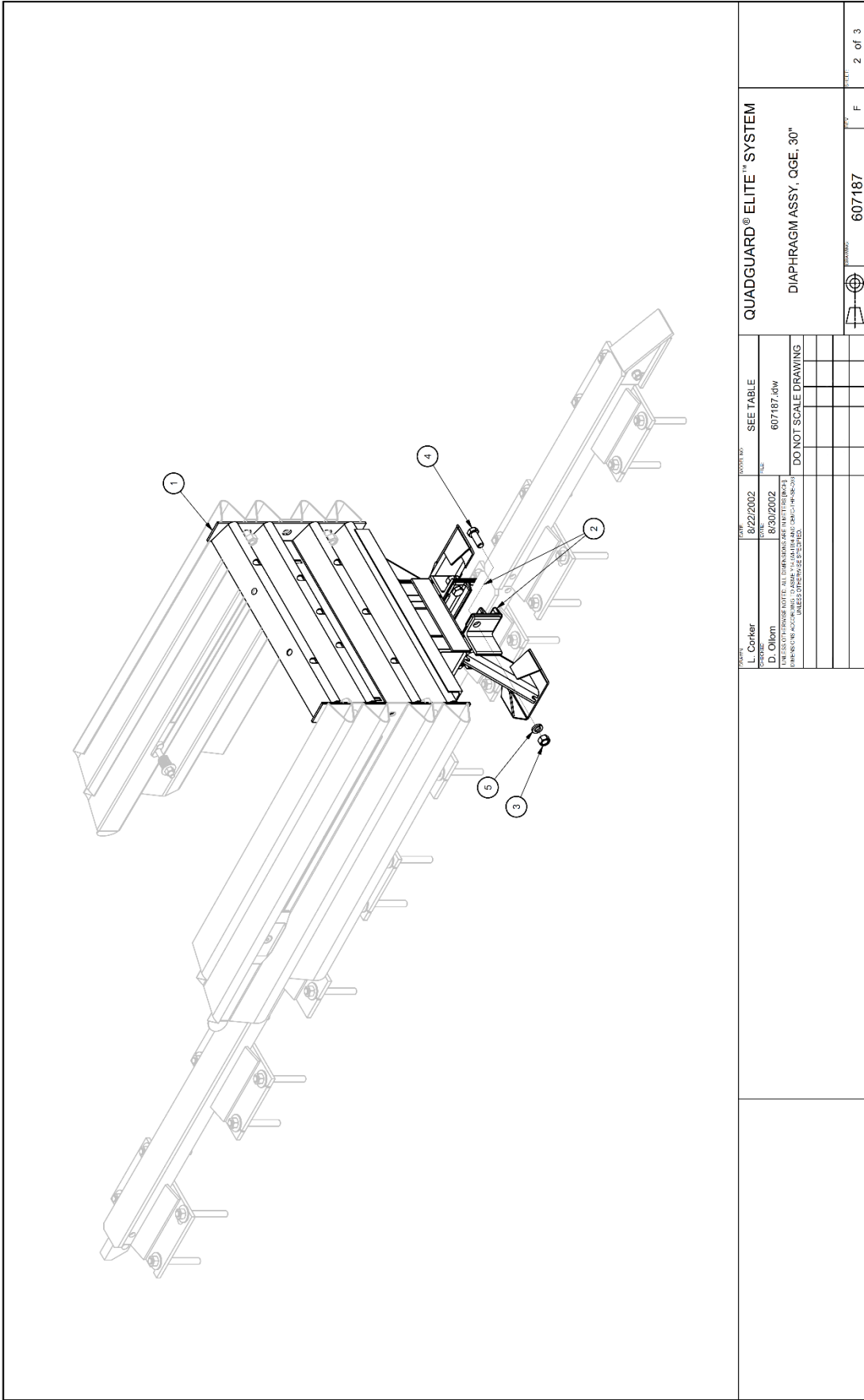
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	DIAPHRAGM OR WIDTH LOG	1
2	611366	MONORAIL GUIDE LOG G	2
3	003704	3/4" HVY HEX NUT A363 DH	4
4	113555	BOLT HX-3/4X2.68G	4
5	118089	WASHER LOCK 3/4G	4

Table	
WIDTH	ASSEMBLY NO. ITEM 1 PART NO
24"	607187 625547
30"	607189 625590
36"	607190 625543
48"	607191 607233



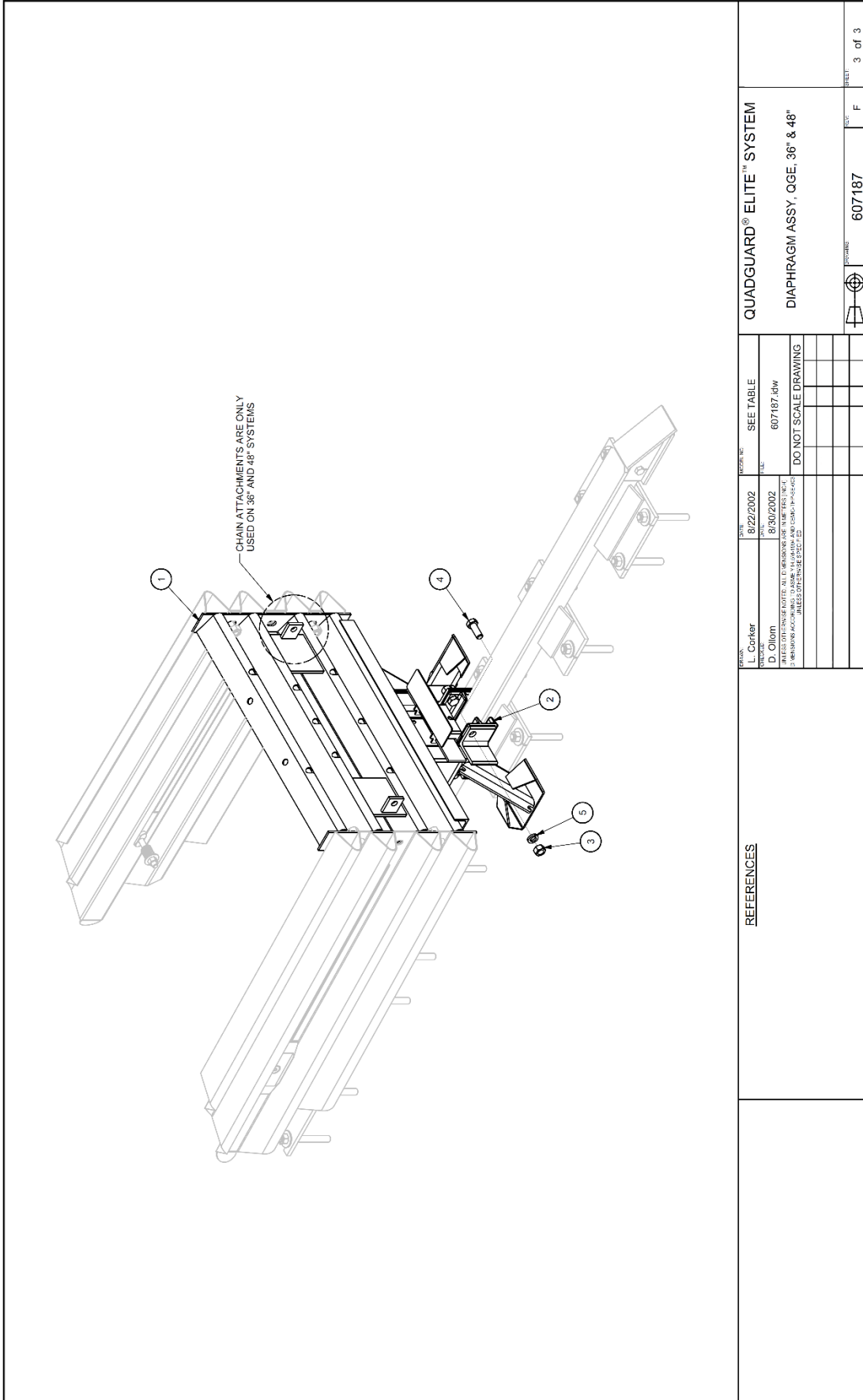
QUADGUARD® ELITE™ SYSTEM DIAPHRAGM ASSY, QGE, 24"	DATE: 8/22/2002 REV: 1 DRAWN BY: D. Oikom CHECKED BY: [Blank] APPROVED BY: [Blank]	SEE TABLE 607187 HW DO NOT SCALE DRAWING	PART NO: 607187 REV: F SHEET: 1 of 3
	GENERAL NOTE: ALL DIMENSIONS ARE IN UNITS [IN.] UNLESS OTHERWISE SPECIFIED.		

Diaphragm Assembly, QGE, 24 607187



QUADGUARD® ELITE™ SYSTEM DIAPHRAGM ASSY, QGE, 30"		SEE TABLE 607187.kw DO NOT SCALE DRAWING	DATE: 8/22/2002 DRAWN BY: L. Corlier CHECKED BY: D. Odom <small>UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES (R.F.D.) UNLESS OTHERWISE SPECIFIED.</small>	PART NO: 607187 REV: F SHEET: 2 of 3 <small>© CAMERON ENERGY, 2002</small>
--	--	--	--	---

Diaphragm Assembly, QGE, 30

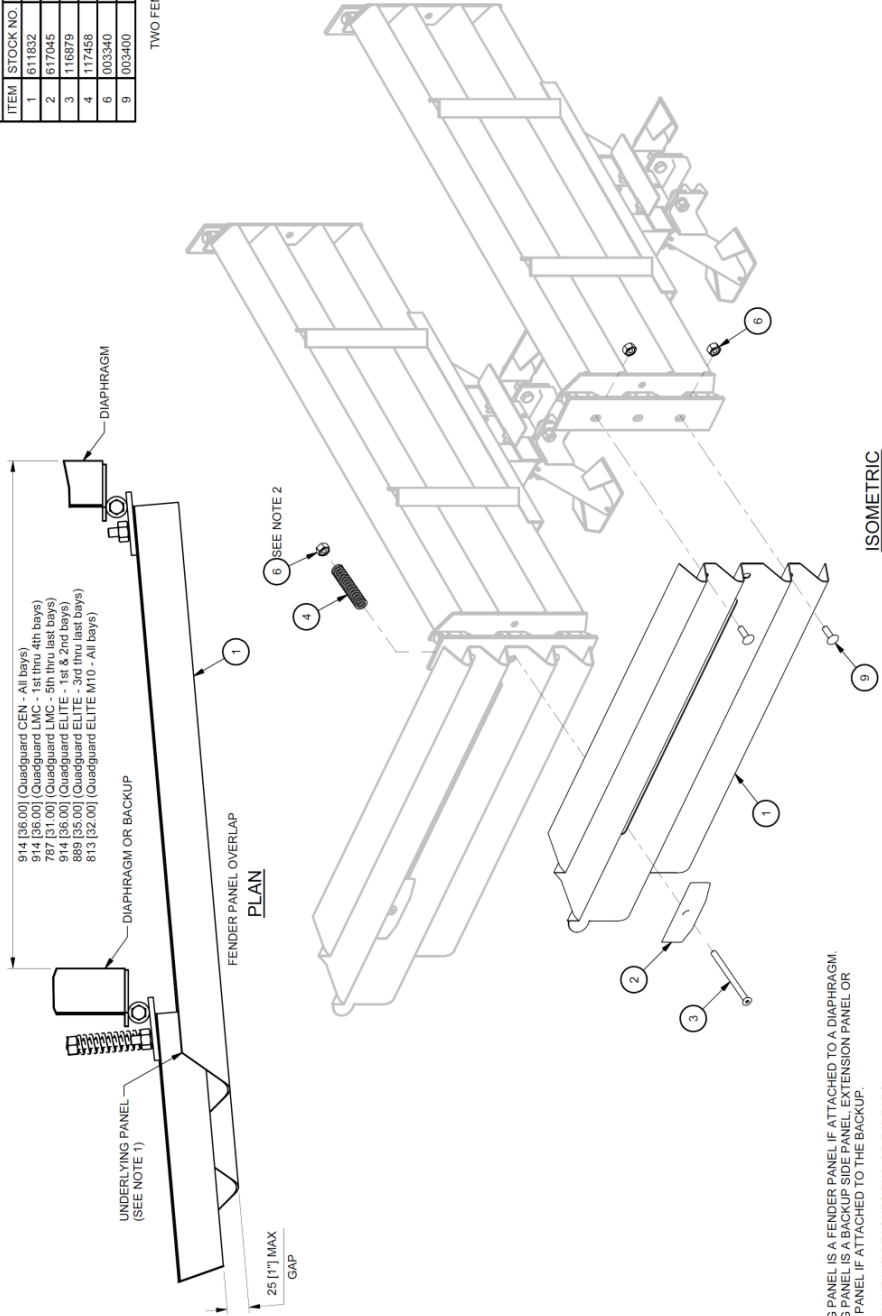


REVISED BY L. Corker	DATE 8/22/2002	REASON SEE TABLE	QUADGUARD® ELITE™ SYSTEM DIAPHRAGM ASSY, QGE, 36" & 48"
	DATE 8/30/2002	FILE 607187.dwg	
D. Ollom INTERFERENCES FOR THE SYSTEM DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING			PART NO. 607187 QTY. F DRAWING NO. 607187
SHEET NO. 3 of 3 PROJECT NO. 132594			

Diaphragm Assembly, QGE, 36/48

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	611832	PANEL FENDER.QG.G	1.00
2	617045	WASHER.MUSHROOM.QG.G	1.00
3	116879	SCREW.FL.5/8 X8 7/2.GS.G.SOCKET	1.00
4	117458	SPRING DIE.1 1/2 O.D.X3/4X6	1.00
6	003340	NUT.HX.5/8.G.RAIL	3.00
9	003400	BOLT.RAIL.5/8X2.G	2.00

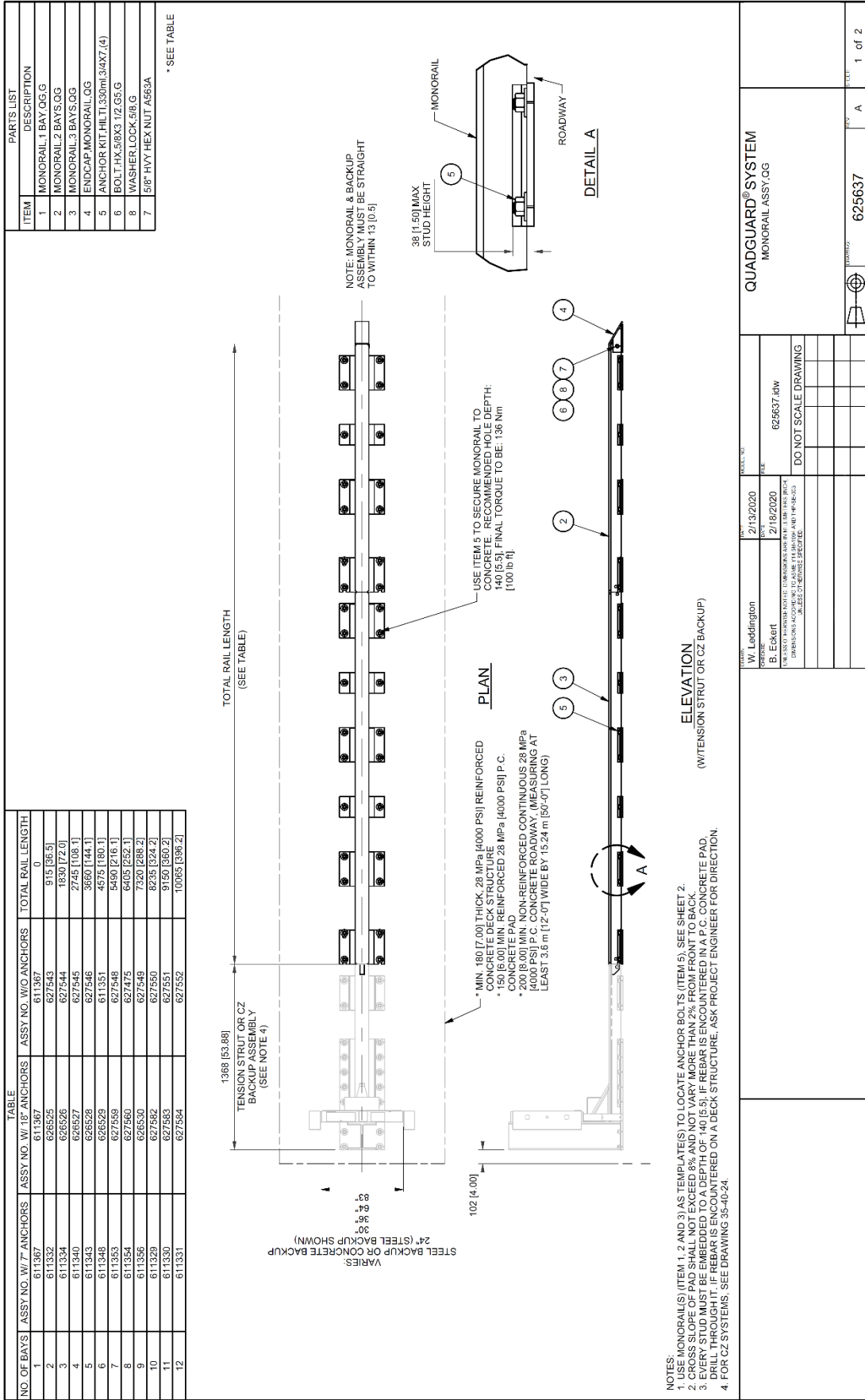
TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY



- NOTES:
1. UNDERLYING PANEL IS A FENDER PANEL IF ATTACHED TO A DIAPHRAGM.
UNDERLYING PANEL IS A BACKUP SIDE PANEL, EXTENSION PANEL OR TRANSITION PANEL IF ATTACHED TO THE BACKUP.
 2. TIGHTEN NUT UNTIL IT REACHES END OF THREADS.

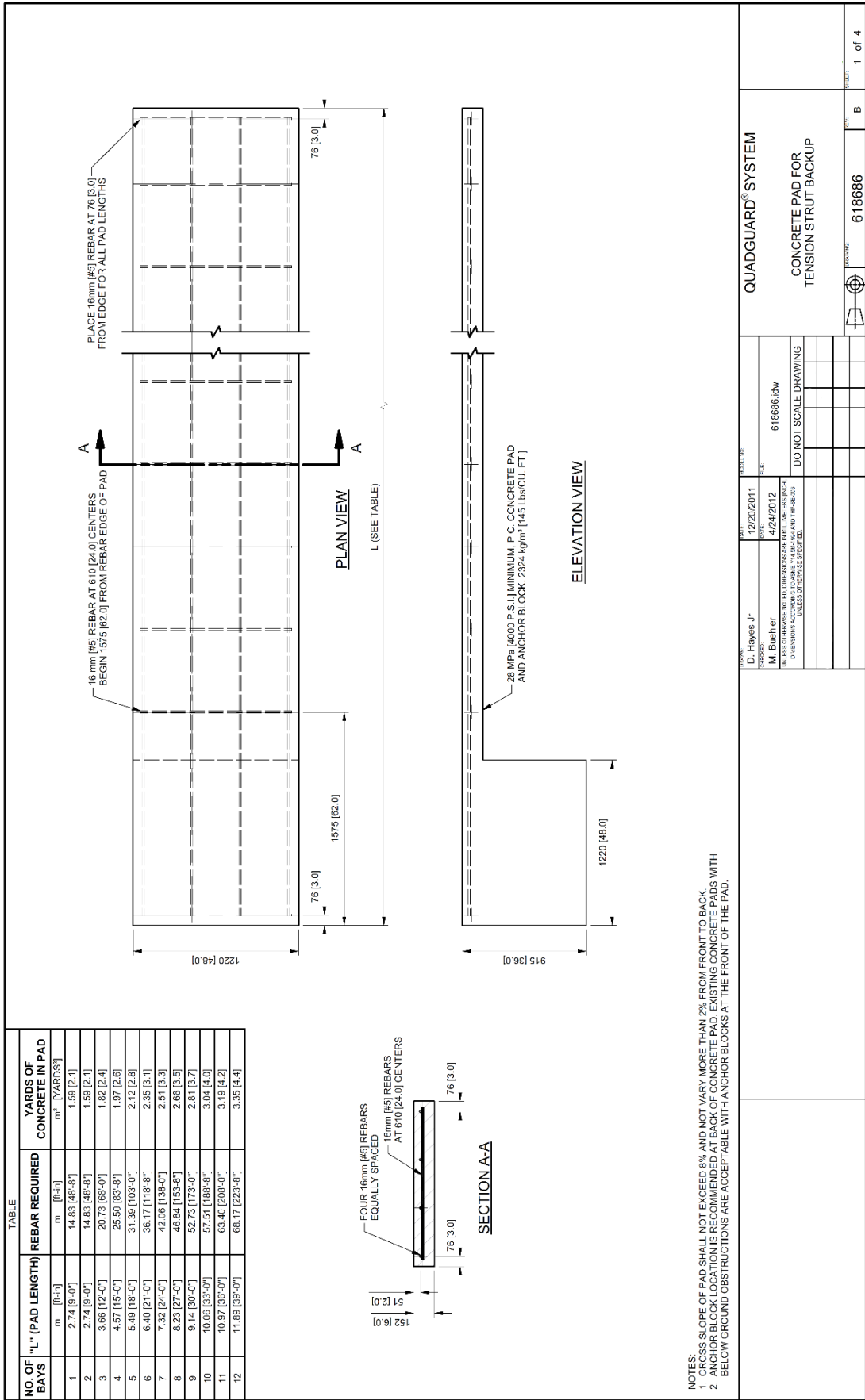
DATE: 4/20/1998		REVISED: R. Cummins	DATE: 4/28/1998	FILE: 608240.dwg	ASSEMBLY NO. 608240
DRAWN: R. Blaski		CHECKED: R. Blaski		DO NOT SCALE DRAWING	
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS (INCH DIMENSIONS ACCORDING TO PARALLELS THEREOF)					
FENDER PANEL ASSY.QG LMC/QGE.69/90					
REV: J					1 of 1

Fender Panel Assembly QG LMC/QGE/CEN, 69/90

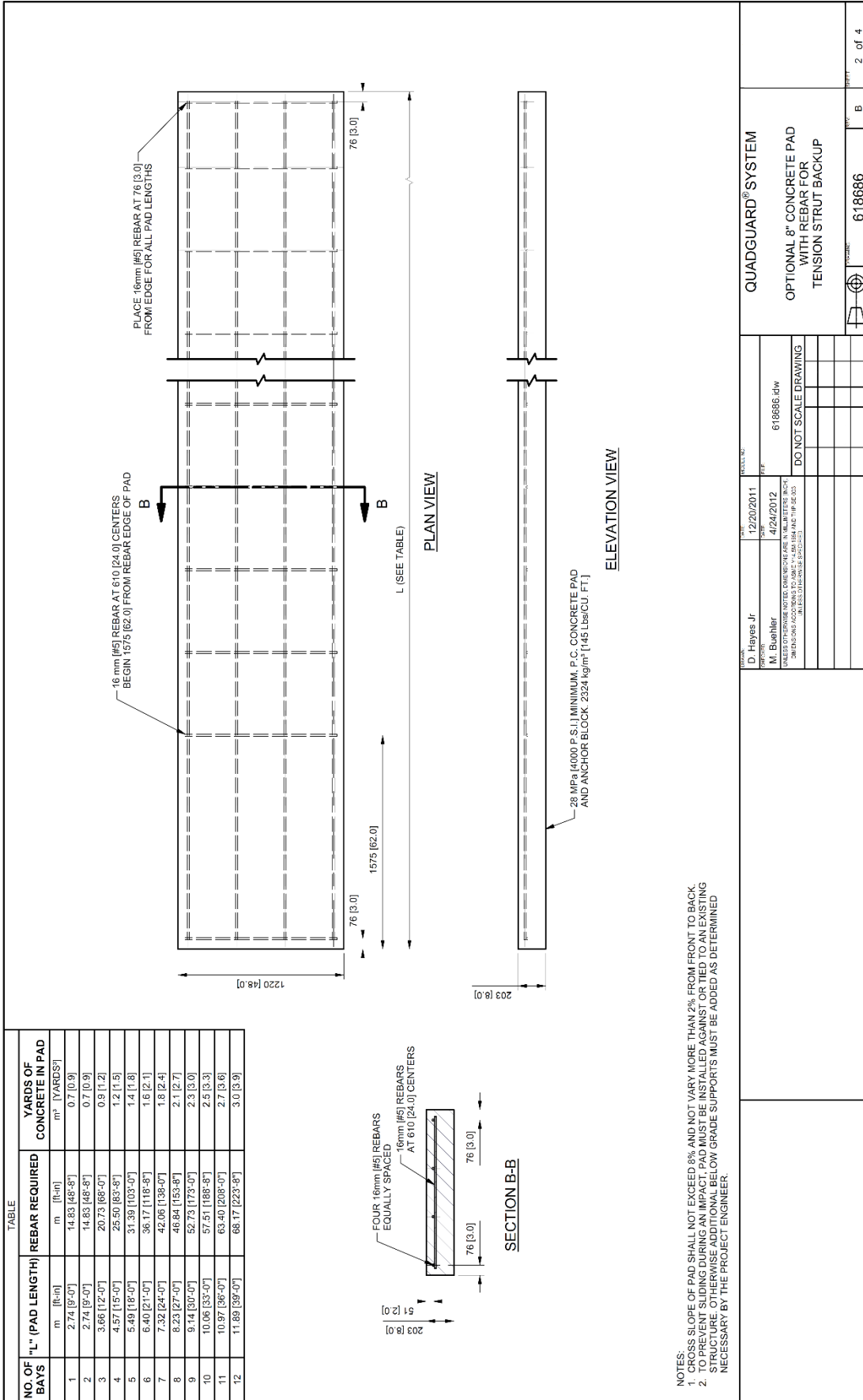


Monorail Assembly, QGE for 5/7/8/11/14 Bay Systems 625637

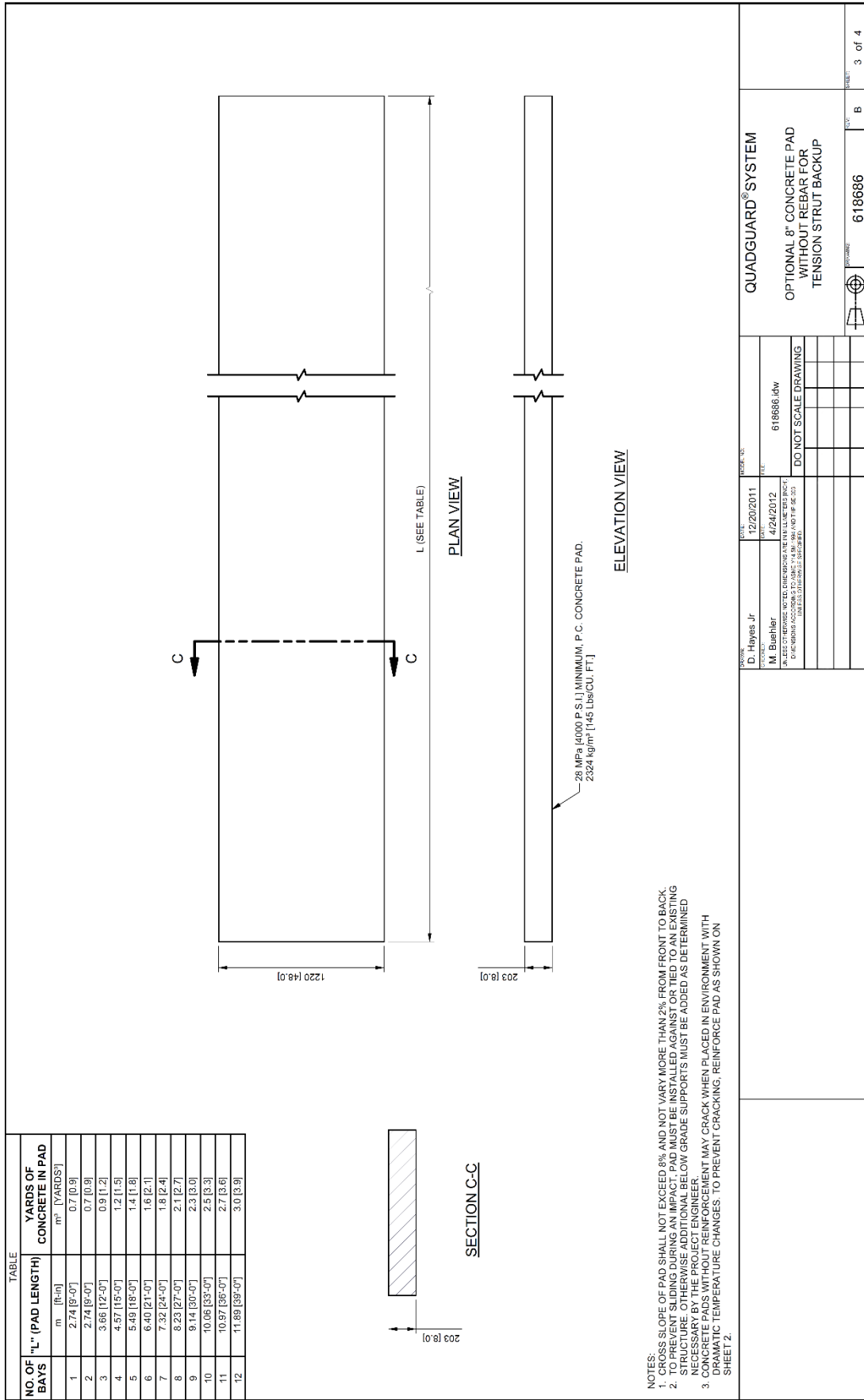
		QUADGUARD® SYSTEM MONORAIL ASSY./QG	625637
			1 of 2



Concrete Foundation, QG Elite 618686



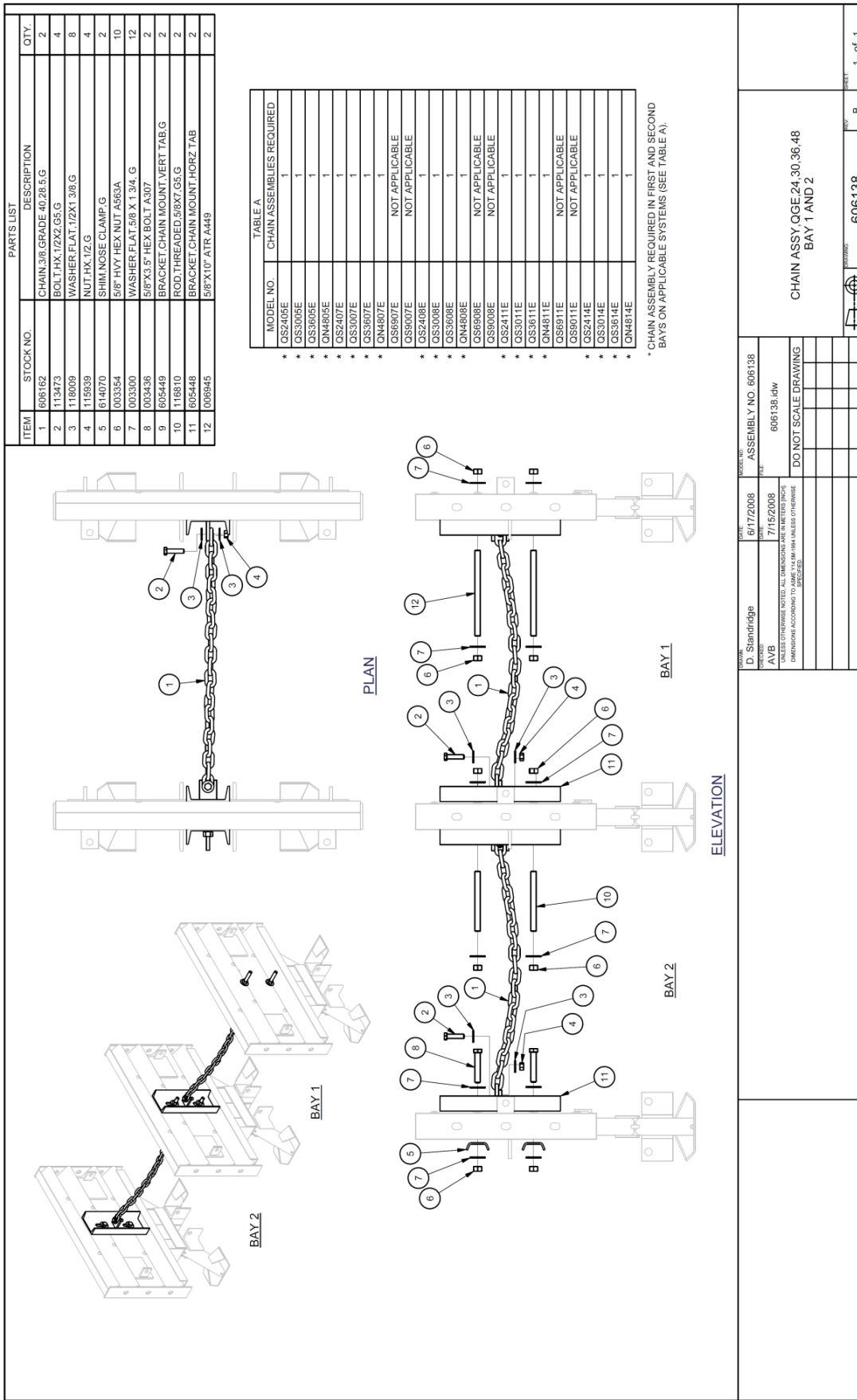
NOTES:
 1. SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.
 2. TO PREVENT SLIDING DURING AN IMPACT, PAD MUST BE INSTALLED AGAINST OR TIED TO AN EXISTING STRUCTURE. OTHERWISE ADDITIONAL BELOW GRADE SUPPORTS MUST BE ADDED AS DETERMINED NECESSARY BY THE PROJECT ENGINEER.



NOTES:
 1. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.
 2. TO PREVENT SLIDING DURING AN IMPACT, PAD MUST BE INSTALLED AGAINST OR TIED TO AN EXISTING STRUCTURE. OTHERWISE ADDITIONAL BELOW GRADE SUPPORTS MUST BE ADDED AS DETERMINED NECESSARY BY THE PROJECT ENGINEER.
 3. CONCRETE PADS WITHOUT REINFORCEMENT MAY CRACK WHEN PLACED IN ENVIRONMENT WITH SIGNIFICANT TEMPERATURE CHANGES. TO PREVENT CRACKING, REINFORCE PAD AS SHOWN ON SHEET Z.

DESIGNER D. Hayes Jr	DATE 12/20/2011	REVISIONS	PROJECT QUADGUARD [®] SYSTEM	DATE 4/24/2012	FILE 618686.dwg
CHECKED M. Buehler	DATE 4/24/2012		OPTIONAL 8" CONCRETE PAD WITHOUT REBAR FOR TENSION STRUT BACKUP		
<small>PLEASE REFER TO THE NOTES ON SHEET Z FOR THE QUADGUARD SYSTEM. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE SIGNATURE OF THE PROJECT ENGINEER.</small>					
DO NOT SCALE DRAWING					
				618686	B
				3 of 4	3 of 4

MAPLE CREEK 1330202



Chain Assembly, QGE, 24/30/36/48 - Bay 1 & 2 **606138**

1 of 1

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606164	CHAIN,3/8",GRADE 40,31,G	1,00
2	113473	BOLT,HX,1/2X2,65,G	2,00
3	118009	WASHER,FLAT,1/2X1 3/8,G	4,00
4	115939	NUT,HX,1/2,G	2,00

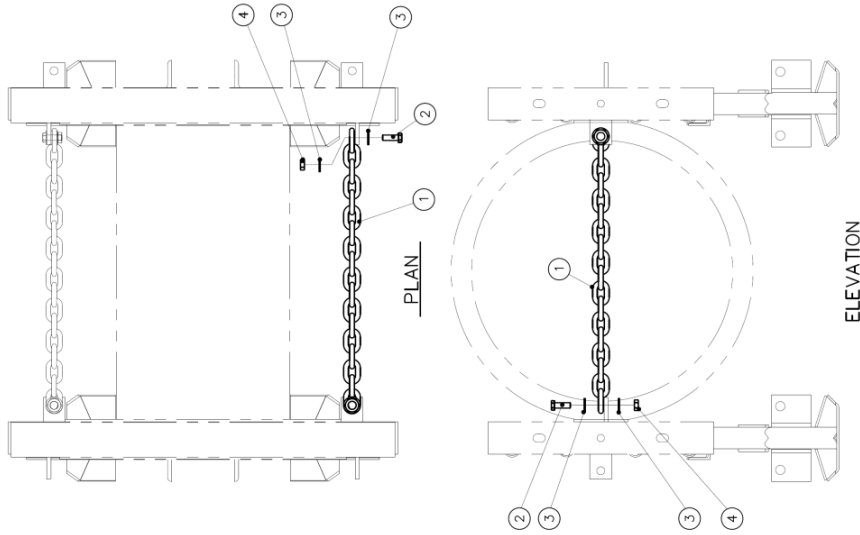


TABLE A	
MODEL NO.	CHAIN ASSEMBLIES REQUIRED
OS2405E	NOT APPLICABLE
OS3005E	NOT APPLICABLE
OS3605E	6
ON4805E	6
OS6005E	6
OS2407E	NOT APPLICABLE
OS3007E	NOT APPLICABLE
OS3607E	10
ON4807E	10
OS6007E	10
OS3008E	NOT APPLICABLE
OS3608E	NOT APPLICABLE
ON4808E	12
OS6008E	12
OS9008E	12
OS2411E	NOT APPLICABLE
OS3011E	NOT APPLICABLE
ON4811E	18
OS6011E	18
OS9011E	18
OS2414E	NOT APPLICABLE
OS3014E	NOT APPLICABLE
OS3614E	24
ON4814E	24

* TWO CHAIN ASSEMBLIES REQUIRED IN ALL BAYS EXCEPT FIRST & SECOND BAYS ON APPLICABLE SYSTEMS (SEE TABLE A).

NOTE:
1. SEE TABLE A FOR QUANTITY OF CHAIN ASSEMBLIES NEEDED.

DRAWN: S. VAN OGLE CHECKED: RBB DATE: 11/12/88 DATE: 3/16/89 DIMENSIONS ACCORDING TO ASME Y14.5M UNLESS OTHERWISE SPECIFIED.		ASSY NO. 606137	
ESTIMATED WEIGHT: N/A		CHAIN ASSY, QGE	
SEE PARTS LIST		TOLERANCES PER QMS-SF-001, UNLESS OTHERWISE SPECIFIED.	
N/A		DO NOT SCALE DRAWING	
1 of 1		606137	

Chain Assembly, QGE 606137

Table		ITEM NO. QTY.					
SYSTEM	ASSY. NO.	8	9	12	13	14	18
5 BAY SYSTEM	605040	3	0	6	4	8	3
7 BAY SYSTEM	605042	3	2	10	6	12	5
8 BAY SYSTEM	605044	3	3	12	7	14	6
11 BAY SYSTEM	605037	3	6	18	10	20	9
14 BAY SYSTEM	605039	3	9	24	13	26	12

ITEM	STOCK NO.	DESCRIPTION	QTY.
1	605707	BUMPER ASSEMBLY ELITE, 24,30,36	8
2	113472	BOLT, HX, 1/2X2, G2, G	4
3	118009	WASHER, FLAT, 1/2X1 3/8, G	24
4	115939	NUT, HX, 1/2, G	12
8	608646	CYLINDER ASSY, OE1	*
9	608647	CYLINDER ASSY, OE2	*
12	618547	TUBE ST 1.9 OD X .145 X 23	*
13	113851	CABLE ASSEMBLY, CYLINDER R	*
14	114108	CLAMP, WIRE ROPE, 1/2, G	*
15	113487	BOLT, HX, 1/2X5, G	8
16	615612	TAB, STOP	8
17	605463	BRACKET, HIT INDICATOR	1
18	618217	CYLINDER PROTECTOR ASSY, QG	*

DIAPHRAGM 1

DIAPHRAGM 2

DIAPHRAGM 3

NOTE:
1. PLACE ONLY ON DIAPHRAGMS 2 AND 3.

REV	DATE	BY	APP	DESCRIPTION
1	11/13/1998			SEE TABLE
2	3/22/1999			605040, IDW

DO NOT SCALE DRAWING

QUADGUARD [®] ELITE™ SYSTEM BAY ASSY, QGE, 24,30,36,48	PART NO. 605040 REV. M 1 of 2
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Bay Assembly, QGE, 24/30/36/48 605040

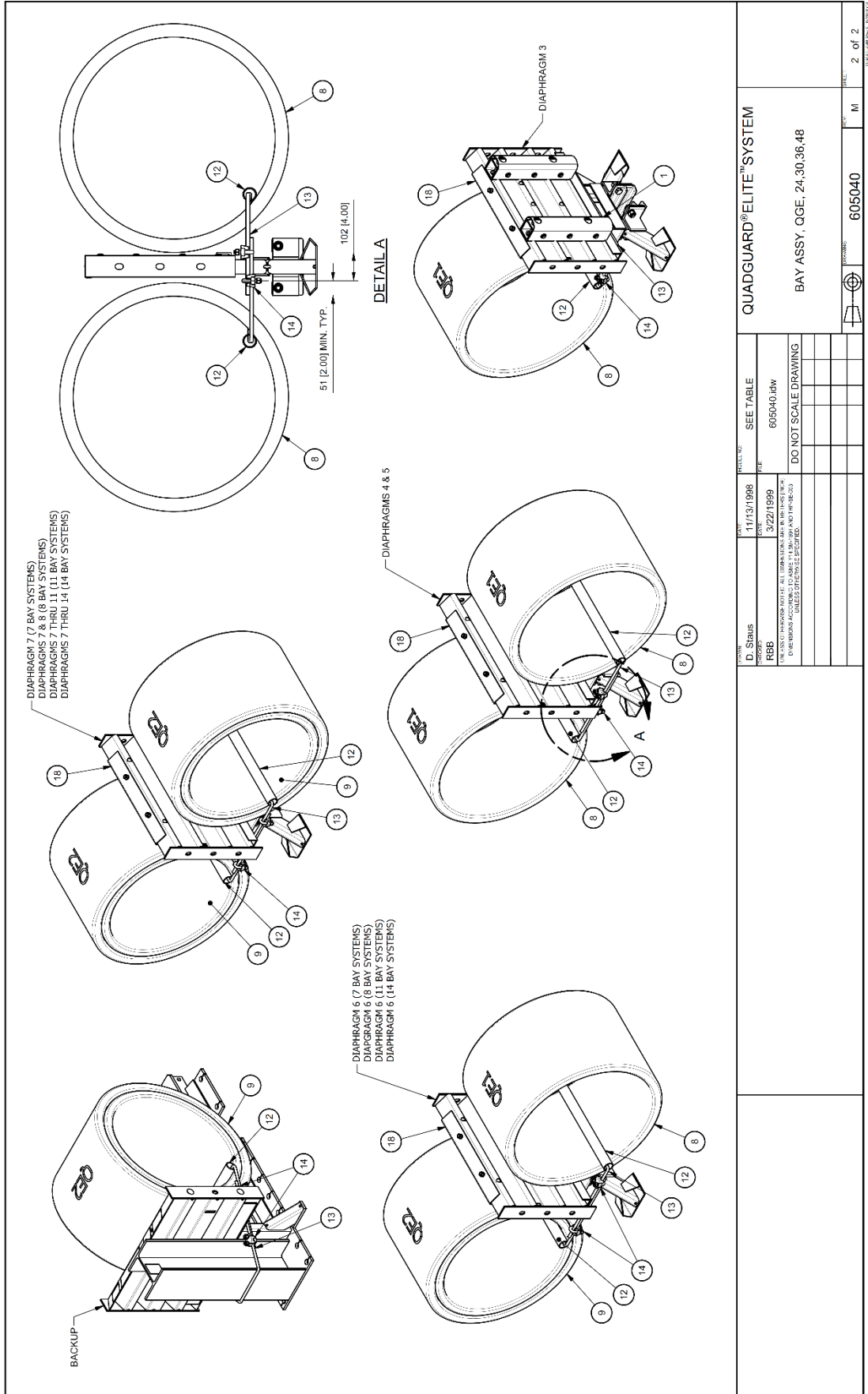


TABLE		PARTS LIST									
SYSTEM	ASSY NO.	ITEM NO.								STOCK NO.	DESCRIPTION
		5	6	7	8	9	10	11	12		
5 BAY SYSTEM	605041B	3	0	6	4	8			605705B	BUMPER ASSY,QG	8.00
7 BAY SYSTEM	605043B	3	2	10	6	12			608646B	CYLINDER ASSY,ELITE,QE1	*
8 BAY SYSTEM	605045B	3	3	12	7	14			606647B	CYLINDER ASSY,ELITE,QE2	*
11 BAY SYSTEM	605038B	3	6	18	10	20			618547G	TUBE,CABLE JACKET	*
									113891G	CABLE ASSEMBLY,CYLINDER RETAINER	*
									114108G	CLAMP WIRE ROPE,1/2	*
									114108C	BOLT,HX,1/2X2,C2,G	4.00
									118009G	WASHER,FLAT,1/2X1 3/8,G	24.0
									115939G	NUT,HX,1/2,G	12.0
									113487G	BOLT,HX,1/2X5,C2,G	8.00
									605463B	BRACKET,HIT INDICATOR	1.00

* SEE TABLE

DIAPHRAGM_1

DIAPHRAGM_2

DIAPHRAGM_3

REFERENCES		DATE	
DRAWN	D. Stouis	DATE	11/13/98
DESIGNED	RBB	DATE	11/13/98
CHECKED	KRM	DATE	3/19/99
APPROVED	RBB	DATE	3/23/99
CAD FILE	605041.dwg		
NEXT ASSEMBLY:			

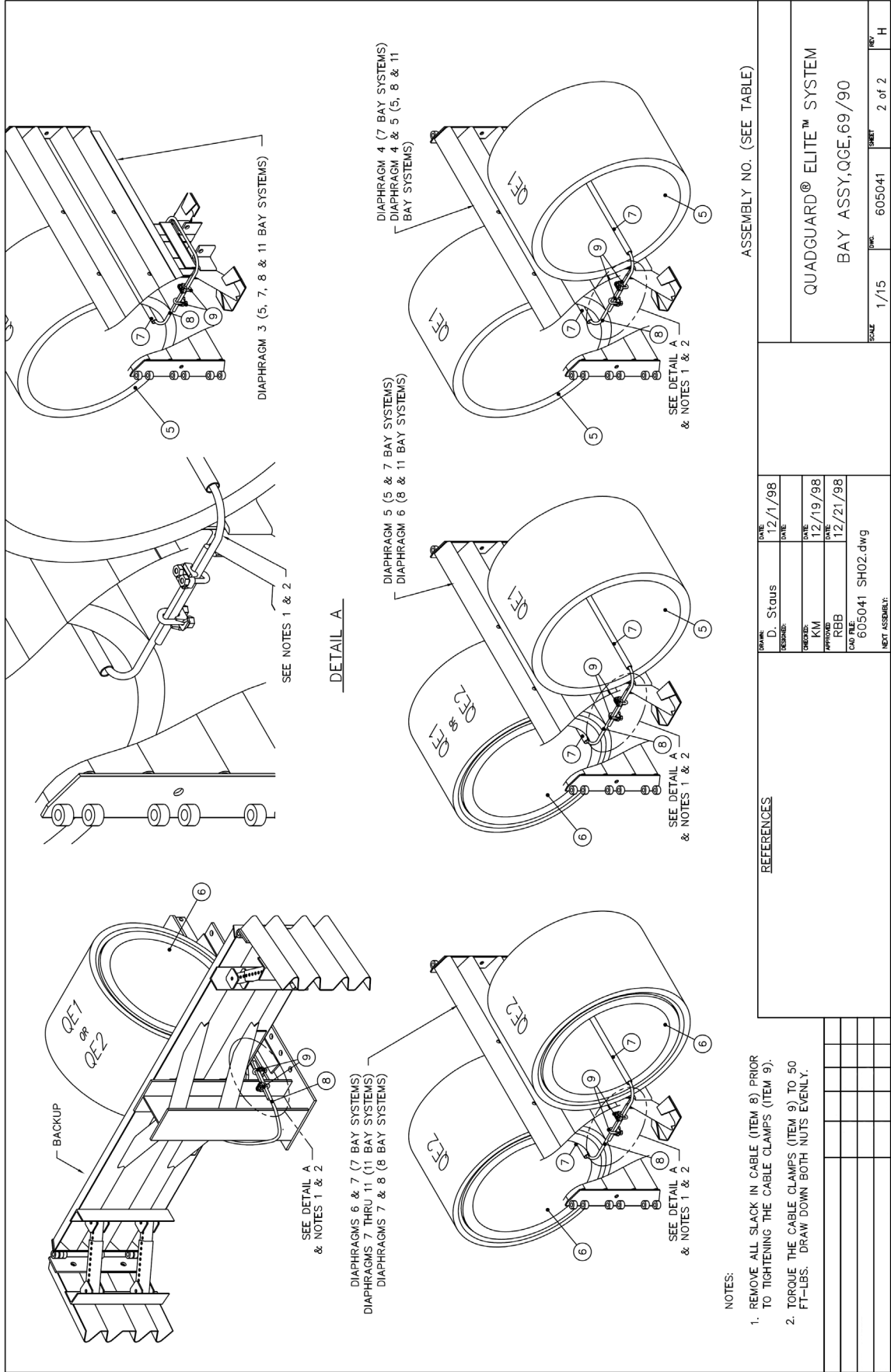
ASSEMBLY NO. (SEE TABLE)

QUADGUARD® ELITE™ SYSTEM

BAY ASSY,QGE,69/90

SCALE	1/15	DRAWN	605041	SHEET	1 of 2	REV	H
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Bay Assembly, QGE, 69/90 605041



NOTES:

1. REMOVE ALL SLACK IN CABLE (ITEM 8) PRIOR TO TIGHTENING THE CABLE CLAMPS (ITEM 9).
2. TORQUE THE CABLE CLAMPS (ITEM 9) TO 50 FT-LBS. DRAW DOWN BOTH NUTS EVENLY.

REFERENCES

DRAWN:	D. Stouss	DATE:	12/1/98
REVISION:		DATE:	
CHECKED:	KM	DATE:	12/19/98
APPROVED:	RBB	DATE:	12/21/98
CAD FILE:	605041 SH02.dwg		
NEXT ASSEMBLY:			

ASSEMBLY NO. (SEE TABLE)

QUADGUARD® ELITE™ SYSTEM
BAY ASSY, QGE, 69/90

SCALE:	1/15	DATE:	605041	SHEET:	2 of 2	REV:	H
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PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	BELT NOSE,QGE	1
3	605689	CYLINDER,NOSE,HDPE,28X20	1
4	606330	CLAMP,NOSE,BELT,QG	2
6	614666	STOP,TAB,WRAP,WELDMENT	6
7	612253	PLATE,NOSE,CYLINDER	1
8	115939	NUT,HX,1/2,G	2
9	116032	WASHER,LOCK,1/2,G	2
10	116009	WASHER,FLAT,1/2X1,3/8,G	4
12	003295	BOLT,HX,1/2X3,G5,G	2
13	003300	WASHER,FLAT,5/8 X 1 3/4, G	6
14	118570	BOLT,HX,5/8X2,G5,G	6
16	118614	BOLT,RAIL,5/8X2,G5,G	6
17	003340	5/8" GR HEX NUT	6

SECTION A-A
SCALE: 1/10

ASSEMBLY NO.	ITEM 1 DESCRIPTION	ITEM 1 PART NO.	MODELS
611557	BELT NOSE,QGE,2150,G	605099	24
611558	BELT NOSE,QGE,2150,Y	605100	
625553	BELT NOSE,QGE,2251,G	625551	30
625554	BELT NOSE,QGE,2251,Y	625552	
611559	BELT NOSE,QGE,2300,G	605105	36 & 48
611560	BELT NOSE,QGE,2300,Y	605106	

DESIGNER S. Cholda	DATE 11/30/1998	CHECKED RBB	DATE 3/16/1999	FILE 611557.dwg
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS (INCH DIMENSIONS ACCORDING TO ENGLISH). DO NOT SCALE DRAWING.				
QUADGUARD® ELITE™ SYSTEM				
NOSE ASSY,QGE,24,30,36 & 48				
PART NO. 611557				REV. G
				SHEET 1 of 1

Nose Assembly, QGE, 24/30/36/48 **611557**

PARTS LIST		ITEM	STOCK NO.	DESCRIPTION	REQD.
1	SEE TABLE	1	BELT,NOSE,QGE	1.00	
2	003354	2	NUT,HX.5/8,G	20.0	
3	606689	3	CYLINDER,NOSE,HDPE,28X20X2	1.00	
4	606330	4	CLAMP,BELT,LMC	2.00	
5	614070	5	SHIM,NOSE CLAMP, G	2.00	
6	605535	6	BRACKET,PULL OUT,QG	2.00	
7	612253	7	PLATE,NOSE CYLINDER	1.00	
8	115939	8	NUT,HX.1/2,G	6.00	
9	118082	9	WASHER,LOCK,1/2,G	6.00	
10	118009	10	WASHER,FLAT,1/2X1 3/8,G	8.00	
11	116784	11	ROD,THREADED,1/2X5 3/4,G5,G	2.00	
12	113667	12	BOLT,HX.5/8X5,G5,G,ALL THREAD	6.00	
13	003300	13	WASHER,FLAT,5/8X1 3/4,G	20.0	
15	113658	15	BOLT,HX.5/8X2 1/4,G8,G	2.00	
16	113476	16	BOLT,HX.1/2x3,G2,G	2.00	

FACE OF WASHER (ITEM 13) TO BE FLUSH WITH HUMPS ON FENDER PANEL (TYPICAL 6 PLACES).

VIEW A-A
SCALE - 1:10

FENDER PANEL (NOSE BELT)

ASSEMBLY NO. SEE TABLE

QUADGUARD® ELITE SYSTEM

NOSE ASSY,QGE,
G OR Y,69/90

DATE: 12/03/98
BY: S. CHOLDA
CHECKED BY: K. VORTENSEN
DATE: 03/19/99
FILE: 611565.dwg
DIMENSIONS ACCORDING TO NAME, Y-LAW, 504 UNLESS OTHERWISE SPECIFIED.
DO NOT SCALE DRAWING

G=GRAY Y=YELLOW

ASSEMBLY NO.	ITEM 1 DESCRIPTION	ITEM 1 PART NO.	MODELS
611565	BELT,NOSE,92 1/2,QGE,G	605101	5 BAY
611566	BELT,NOSE,92 1/2,QGE,Y	605102	48 FLARED
611561	BELT,NOSE,100,QGE,69,90 BAY,G	605095	5 BAY
611562	BELT,NOSE,100,QGE,69,90 BAY,Y	605096	69 & 90
611563	BELT,NOSE,97 1/2,QGE,69,7 BAY,G	605109	7 BAY 69
611564	BELT,NOSE,97 1/2,QGE,69,7 BAY,Y	605110	7 BAY 90
611567	BELT,NOSE,96,QGE,69/90,7&8 BAY,G	605107	8 BAY 69
611568	BELT,NOSE,96,QGE,69/90,7&8 BAY,Y	605108	8 BAY
611565	BELT,NOSE,92 1/2,QGE,G	605101	48 FLARED
611566	BELT,NOSE,92 1/2,QGE,Y	605102	8 BAY 90
611571	BELT,NOSE,93 1/2,QGE,90, 8 BAY,G	605103	8 BAY 90
611572	BELT,NOSE,93 1/2,QGE,90, 8 BAY,Y	605104	11 BAY 69
611565	BELT,NOSE,92 1/2,QGE,69,11 BAY,G	605101	605097
611566	BELT,NOSE,92 1/2,QGE,69,11 BAY,Y	605102	605098
611569	BELT,NOSE,102,QGE,90,11 BAY,G	605097	
611570	BELT,NOSE,102,QGE,90,11 BAY,Y	605098	

Nose Assembly, QGE, 69/90 611565

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	*	DIAPHRAGM,QG,QG,G	1.00
2	2704341-0000	NUT,HX,3/4,G,GR DH	4.00
3	2708201-0000	WASHER,LOCK,3/4,G	4.00
4	2699121-0000	BOLT,HX,3/4X2,G8,G	4.00
5	2760091-0000	MONORAIL GUIDE,QG,G	2.00
6	2760435-0000	HINGE PLATE,FENDER PANEL,QG,G	2.00
7	2701991-0000	BOLT,HX,5/8X4,G5,G	6.00
8	2704141-0000	NUT,HX,5/8,G	6.00
9	2708231-0000	WASHER,LOCK,5/8,G	6.00

* SEE TABLES A, B, C, D, E, F, G & H SHEETS 2, 3 & 4

VIEW FRONT SIDE
DIAPHRAGM #4-1
DIAPHRAGM #3 ONLY HAS CHAIN TABS ON THE BACK SIDE

VIEW BACK SIDE
DIAPHRAGM #1 AND #2

ASSEMBLY NO. 3540-_____

(SEE TABLES A, B, C, ETC.)

REFERENCES	DATE	BY	REV
	1/6/99	D. Staus	
	1/6/99	R. Blaski	
	1/15/99	KRM	
	1/15/99	RBB	
DWG FILE: 3540501-0000.dwg			
LIST ASSEMBLY:			

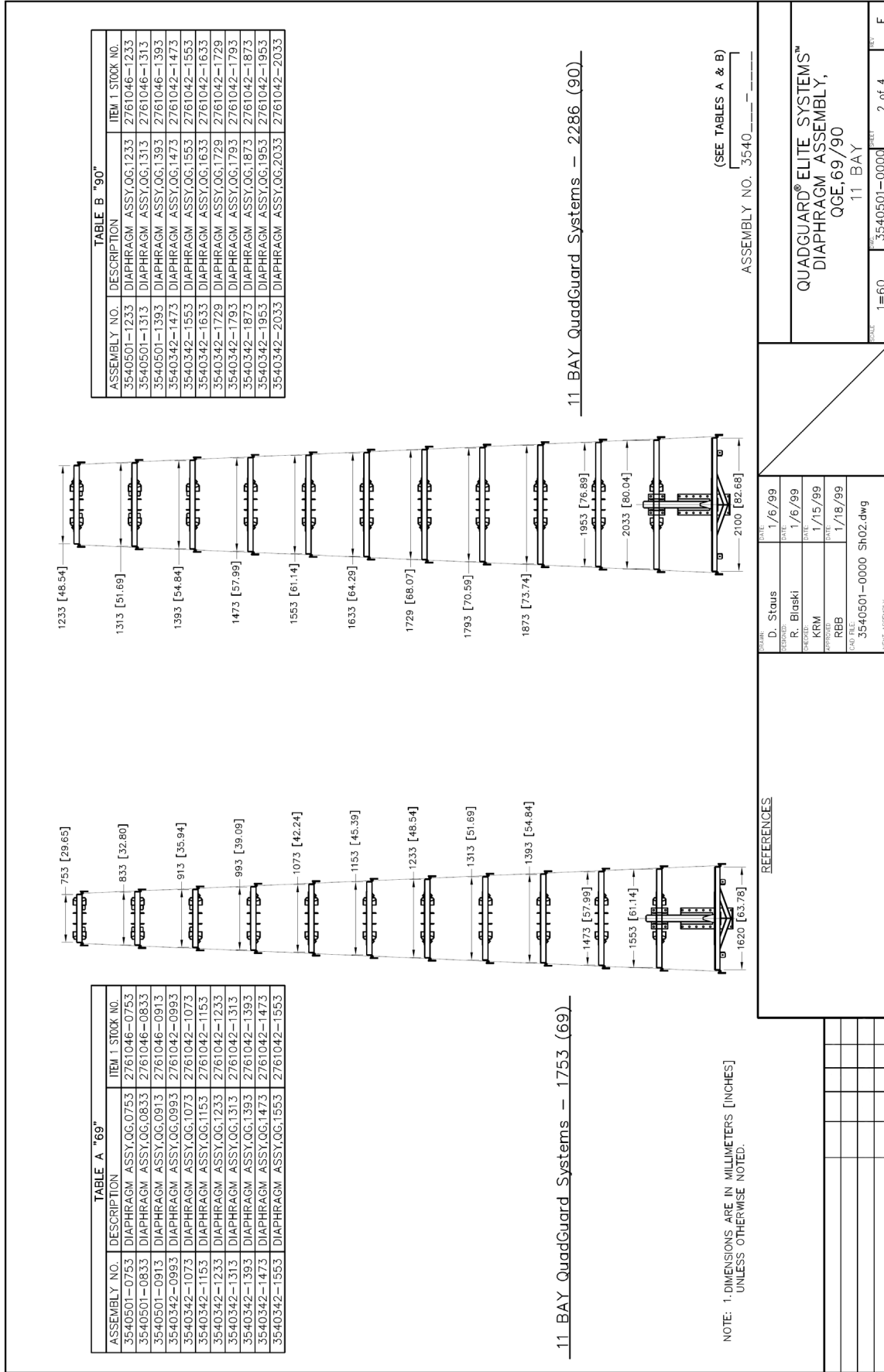
QUADGUARD® ELITE™ SYSTEMS
DIAPHRAGM ASSY,
QGE,69/90

SCALE: 1:12

3540501-0000 PART 1 of 4 REV F

Diaphragm Assembly, QGE, 69/90

3540501



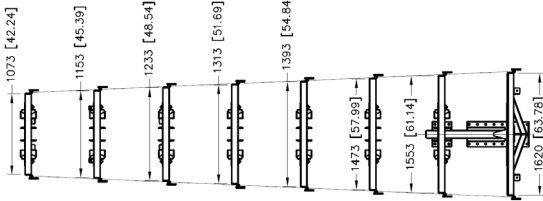
Diaphragm Assembly, QGE, 69/90 11 Bay

QUADGUARD® ELITE SYSTEMS™
DIAPHRAGM ASSEMBLY,
QGE,69/90
11 BAY

SCALE 1=60 PART 3540501-0000 2 of 4 REV F

TABLE C "69" (7 BAYS)		
ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-1073	DIAPHRAGM ASSY.QG.1073	2761046-1073
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540501-1233	DIAPHRAGM ASSY.QG.1233	2761046-1233
3540342-1313	DIAPHRAGM ASSY.QG.1313	2761042-1313
3540342-1393	DIAPHRAGM ASSY.QG.1393	2761042-1393
3540342-1473	DIAPHRAGM ASSY.QG.1473	2761042-1473
3540342-1553	DIAPHRAGM ASSY.QG.1553	2761042-1553

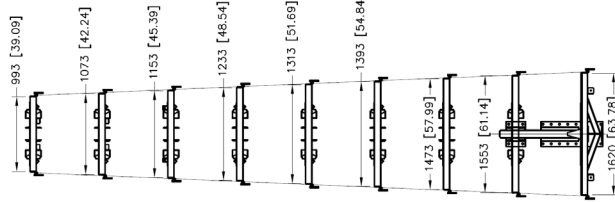
TABLE D "90" (7 BAYS)		
ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-0993	DIAPHRAGM ASSY.QG.0993	2761046-0993
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540501-1313	DIAPHRAGM ASSY.QG.1313	2761046-1313
3540342-1473	DIAPHRAGM ASSY.QG.1473	2761042-1473
3540342-1633	DIAPHRAGM ASSY.QG.1633	2761042-1633
3540342-1793	DIAPHRAGM ASSY.QG.1793	2761042-1793
3540342-1953	DIAPHRAGM ASSY.QG.1953	2761042-1953



7_BAY QuadGuard Elite Systems - 1753 (69)

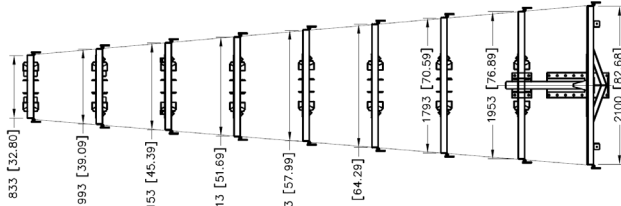
NOTE: 1. DIMENSIONS ARE IN MILLIMETERS [INCHES]
UNLESS OTHERWISE NOTED.

TABLE E "69" (8 BAYS)		
ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-0993	DIAPHRAGM ASSY.QG.0993	2761046-0993
3540501-1073	DIAPHRAGM ASSY.QG.1073	2761046-1073
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540342-1233	DIAPHRAGM ASSY.QG.1233	2761042-1233
3540342-1313	DIAPHRAGM ASSY.QG.1313	2761042-1313
3540342-1393	DIAPHRAGM ASSY.QG.1393	2761042-1393
3540342-1473	DIAPHRAGM ASSY.QG.1473	2761042-1473
3540342-1553	DIAPHRAGM ASSY.QG.1553	2761042-1553



8_BAY QuadGuard Elite Systems - 1753 (69)

TABLE F "90" (8 BAYS)		
ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-0833	DIAPHRAGM ASSY.QG.0833	2761046-0833
3540501-0993	DIAPHRAGM ASSY.QG.0993	2761046-0993
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540342-1313	DIAPHRAGM ASSY.QG.1313	2761042-1313
3540342-1473	DIAPHRAGM ASSY.QG.1473	2761042-1473
3540342-1633	DIAPHRAGM ASSY.QG.1633	2761042-1633
3540342-1793	DIAPHRAGM ASSY.QG.1793	2761042-1793
3540342-1953	DIAPHRAGM ASSY.QG.1953	2761042-1953



8_BAY QuadGuard Elite Systems - 2286 (90)

(SEE TABLES C THRU F)

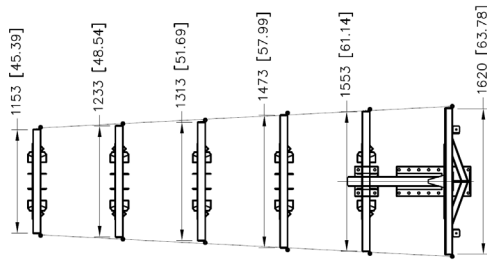
ASSEMBLY NO. 3540- - - - -

REFERENCES	DATE: 1/6/99	DATE: 1/6/99	QUADGUARD® ELITE™ SYSTEM DIAPHRAGM ASSEMBLY, QGE.69/90 7 & 8 BAY SYSTEMS
	BY: D. Staus	BY: R. Blaski	
	DATE: 1/15/99	DATE: 1/18/99	DRAWING NO. 3540501-0000 SH03.dwg
	BY: KRM	BY: RBB	
NEXT ASSEMBLY:		SCALE: 1"=60'	
		SHEET 3 of 4	

Diaphragm Assembly, QGE, 69/90 7 & 8 Bay

TABLE G "69"

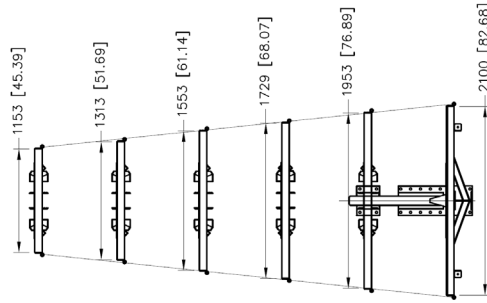
ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540501-1233	DIAPHRAGM ASSY.QG.1233	2761046-1233
3540501-1313	DIAPHRAGM ASSY.QG.1313	2761046-1313
3540342-1473	DIAPHRAGM ASSY.QG.1473	2761042-1473
3540342-1553	DIAPHRAGM ASSY.QG.1553	2761042-1553



5_BAY QuadGuard Systems — 1753 (69)

TABLE H "90"

ASSEMBLY NO.	DESCRIPTION	ITEM 1 STOCK NO.
3540501-1153	DIAPHRAGM ASSY.QG.1153	2761046-1153
3540501-1313	DIAPHRAGM ASSY.QG.1313	2761046-1313
3540501-1553	DIAPHRAGM ASSY.QG.1553	2761046-1553
3540342-1729	DIAPHRAGM ASSY.QG.1729	2761042-1729
3540342-1953	DIAPHRAGM ASSY.QG.1953	2761042-1953



5_BAY QuadGuard Systems — 2286 (90)

NOTE: 1-DIMENSIONS ARE IN MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.

(SEE TABLES G & H)
ASSEMBLY NO. 3540- - - - -

REFERENCES		DATE: 06/11/09	DATE: 06/11/09
		BY: R. VENZON	BY: S. TRAGESER
		APPROVED: P. SEPULVEDA	APPROVED: 06/11/09
		CAD FILE: 3540501-0000 SH04.DWG	NEXT ASSEMBLY:
		SCALE: 1=60	SHEET: 4 OF 4
		QUADGUARD® ELITE SYSTEMS™ DIAPHRAGM ASSEMBLY, QGE.69/90 5 BAY	

Diaphragm Assembly, QGE, 69/90, 5 Bay



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