



QUAILE ENGINEERING LTD.

38 Parkside Drive
UNIT 7
Newmarket, ON
L3Y 8J9

Tel: (905) 853-8547
Toll Free: 1-877-364-5209
Email: quaile.eng@rogers.com

May 9, 2016

Mr. Maurizio Bertato
Liv Building Products Inc.
6050 Owen Rd
Uxbridge, Ontario
L9P 1R1

Re: Proof Testing of Invisirail Glass Panels

Dear Maurizio:

This is to confirm that proof loading has been carried out on the Invisirail glass guard system over the past number of years. The glass has been tested by loading a fully erected guard panel with posts spaced at 6' o/c. The loads that have been applied are as follows:

1. Proof loads of up to 538 lb have been applied horizontally to the top edge of the glass at mid-span without failure.
2. A proof load of 813 lb has been applied horizontally at the centre of the glass panel at mid-span without failure.

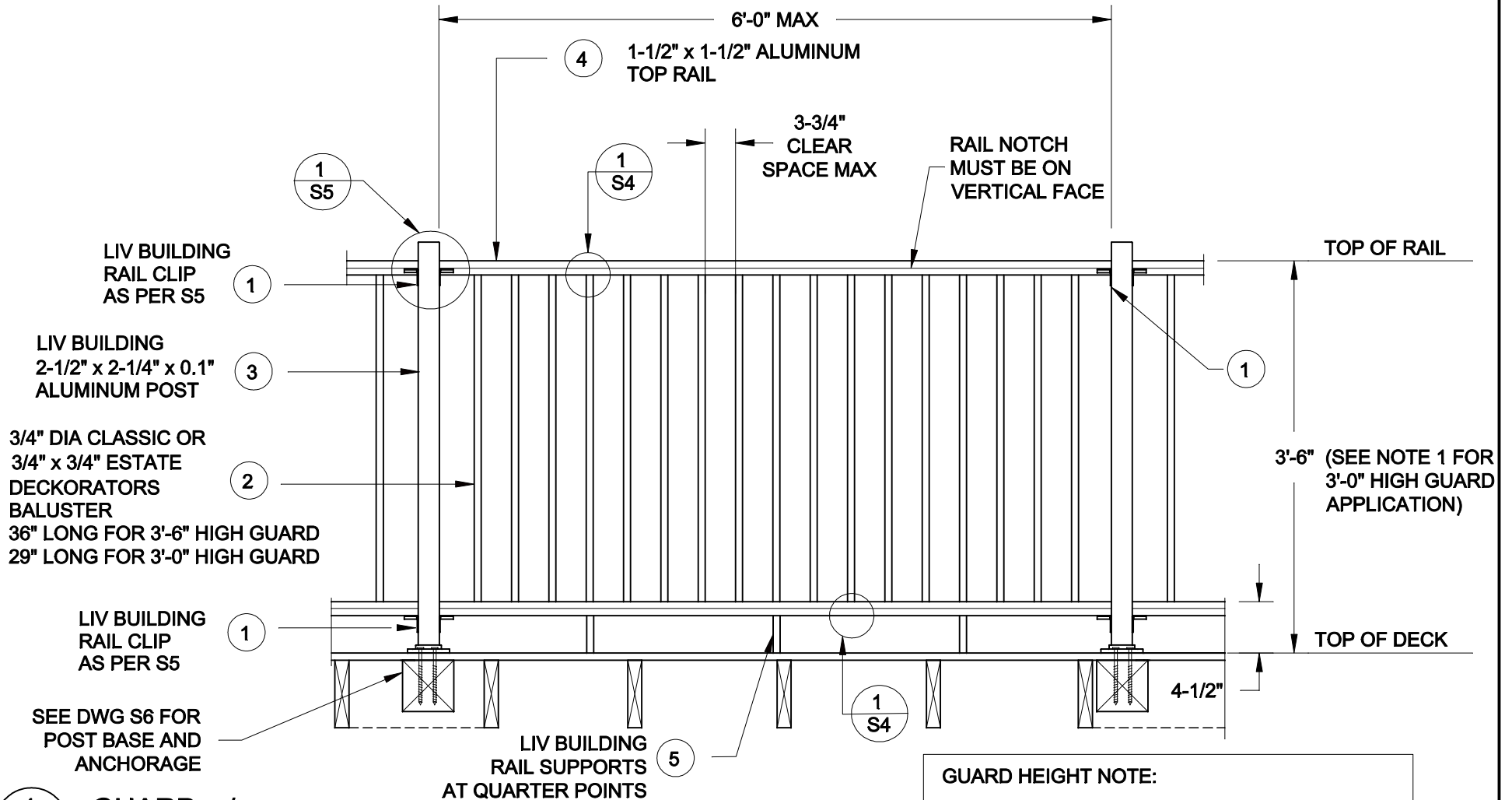
Additional tests have been carried out on the various connections and posts with a proof load of no less than 2 times the design live load as indicated on the sealed drawings.

I trust this is the information you require.

Yours truly,



Stephen Boyd, P.Eng.



1 S2 GUARD w/ CLASSIC OR ESTATE BALUSTERS

GUARD HEIGHT NOTE:

1. A 3'0" HIGH GUARD MAY BE USED FOR DECKS SERVING ONE DWELLING UNIT WHERE THE TOP OF THE DECK IS NOT MORE THAN 5'-11" ABOVE GROUND LEVEL.

FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE:
3/4" = 1'-0"

DATE:
APRIL, 2014

DRAWN SJB	CHECKED SJB
--------------	----------------

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaile.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

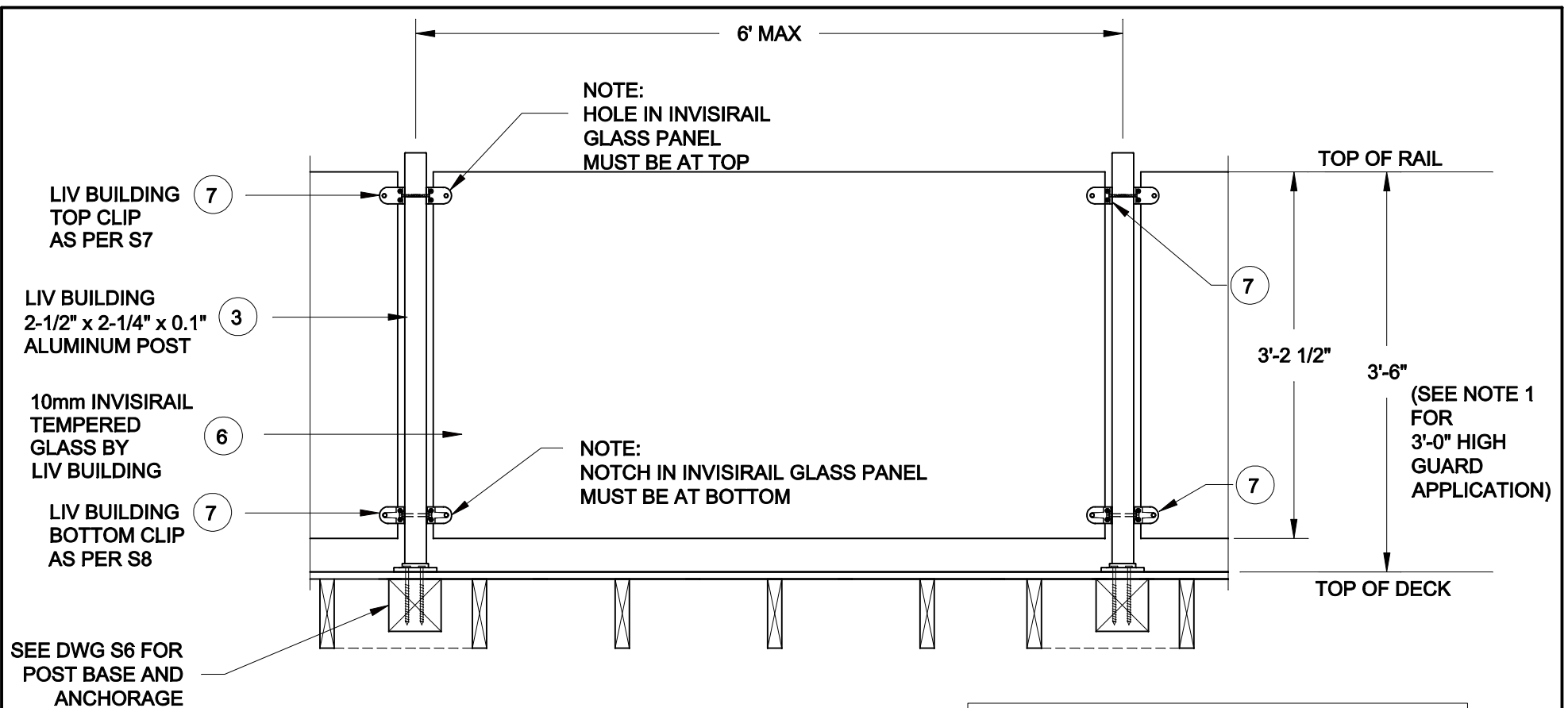
PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

ALUMINUM GUARD RAIL
DETAIL

PROJECT No.:
14-075A

DRAWING No.:
S2



1
S3 GLASS GUARD w/
UNIVERSAL ALUMINUM POSTS

GUARD HEIGHT NOTE:

1. A 3'-0" HIGH GUARD MAY BE USED FOR DECKS SERVING ONE DWELLING UNIT WHERE THE TOP OF THE DECK IS NOT MORE THAN 5'-11" ABOVE GROUND LEVEL.

FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE: 3/4" = 1'-0"	
DATE: APRIL, 2014	
DRAWN SJB	CHECKED SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaile.eng@rogers.com

ENGINEER'S SEAL



PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

INVISIRAIL GLASS GUARD WITH
UNIVERSAL ALUMINUM POST

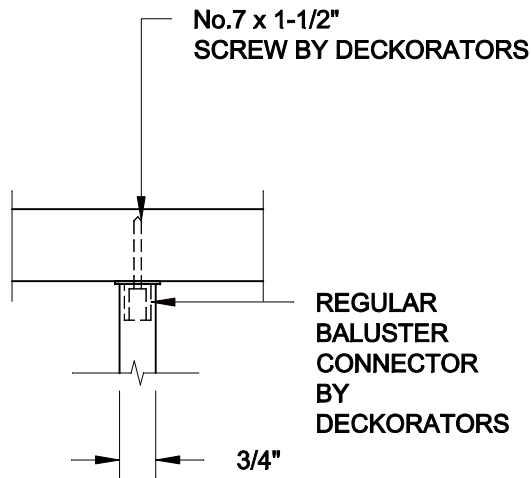
PROJECT No.:

14-075A

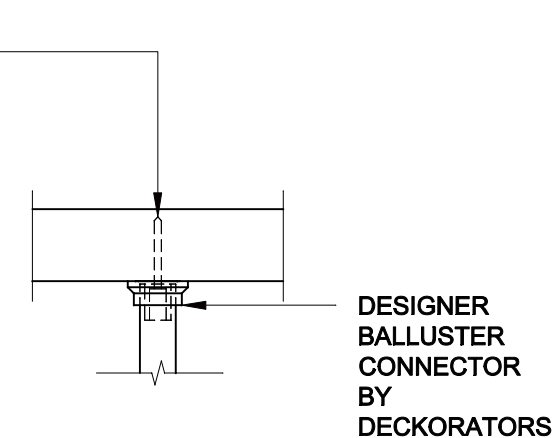
DRAWING No.:

S3

REGULAR BALLUSTER CONNECTOR



DESIGNER BALLUSTER CONNECTOR



1 S4 BALUSTER CONNECTION

FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SEE NOTES ON DRAWING S6

SCALE: 3" = 1'-0"	
DATE: APRIL, 2014	
DRAWN SJB	CHECKED SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaille.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

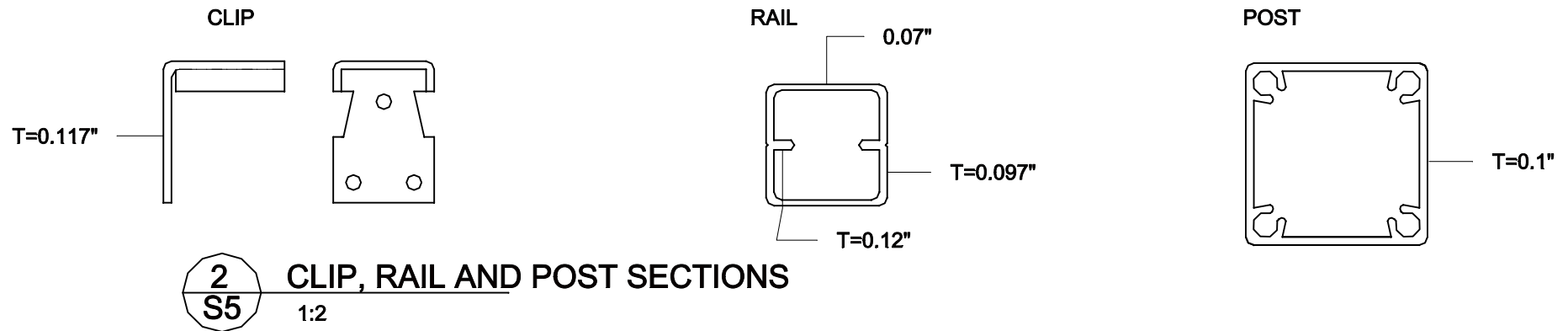
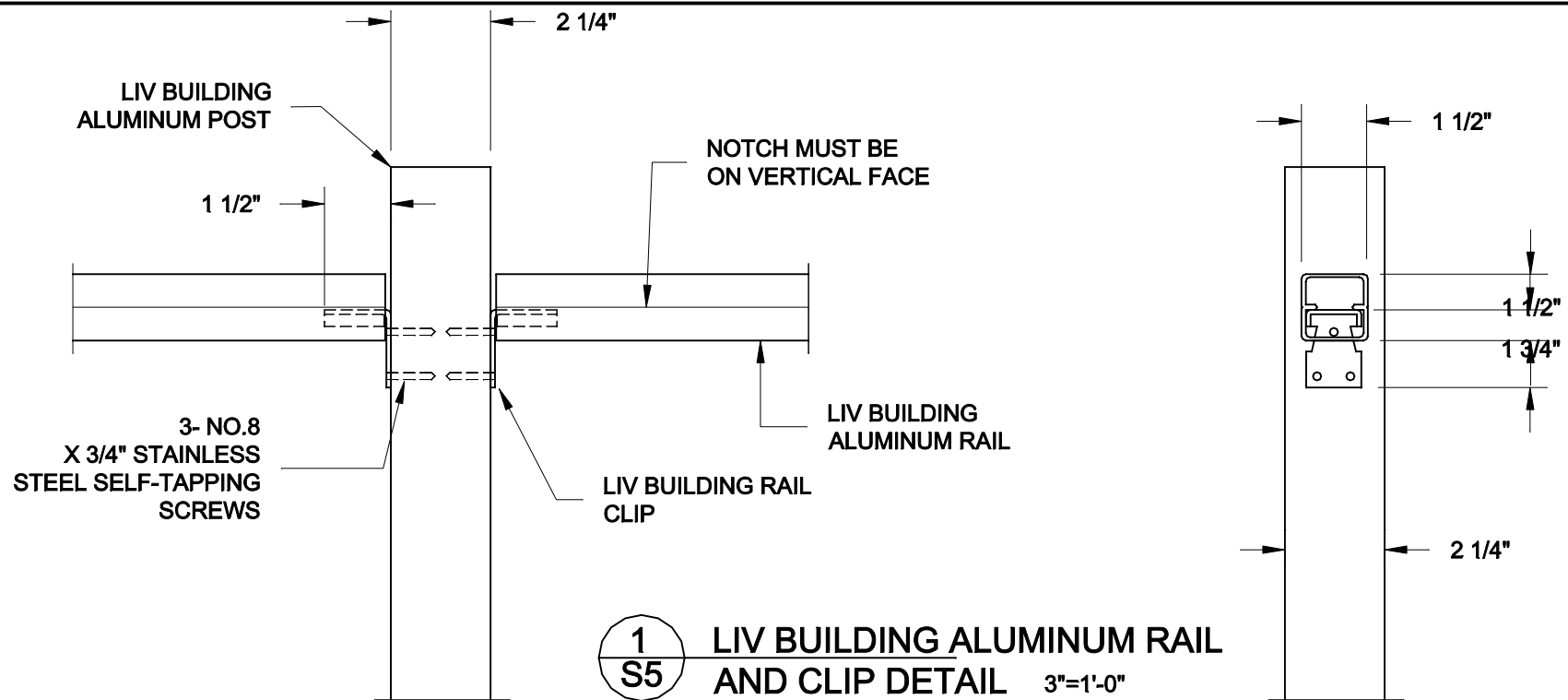
PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

BALUSTER TO RAIL
CONNECTION DETAILS

PROJECT No.:
14-075A

DRAWING No.:
S4



FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE:
AS NOTED

DATE:
APRIL, 2014

DRAWN
SJB

CHECKED
SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaile.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

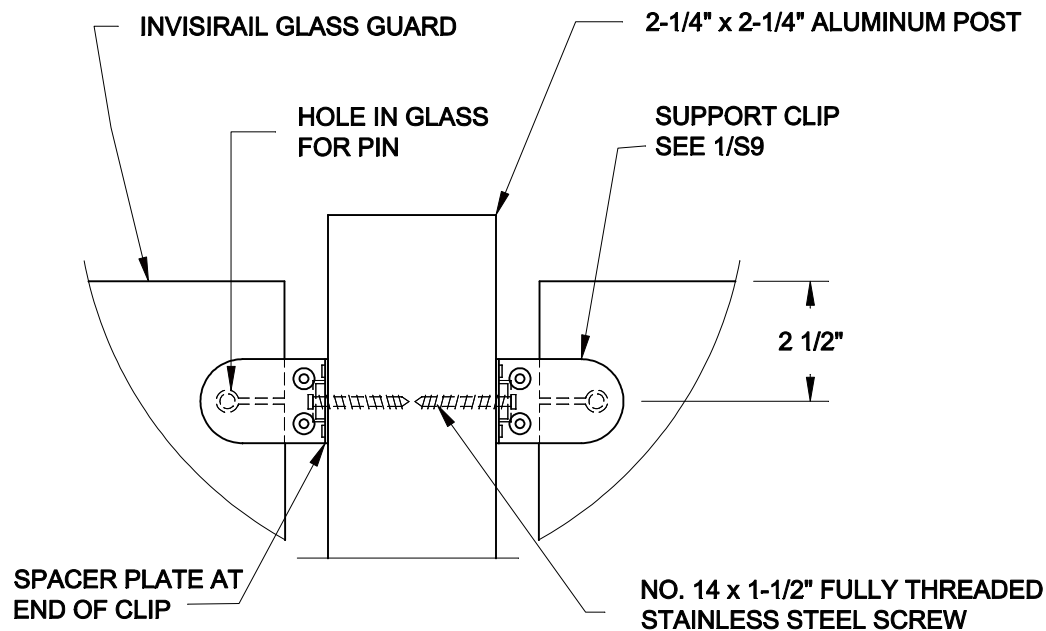
PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

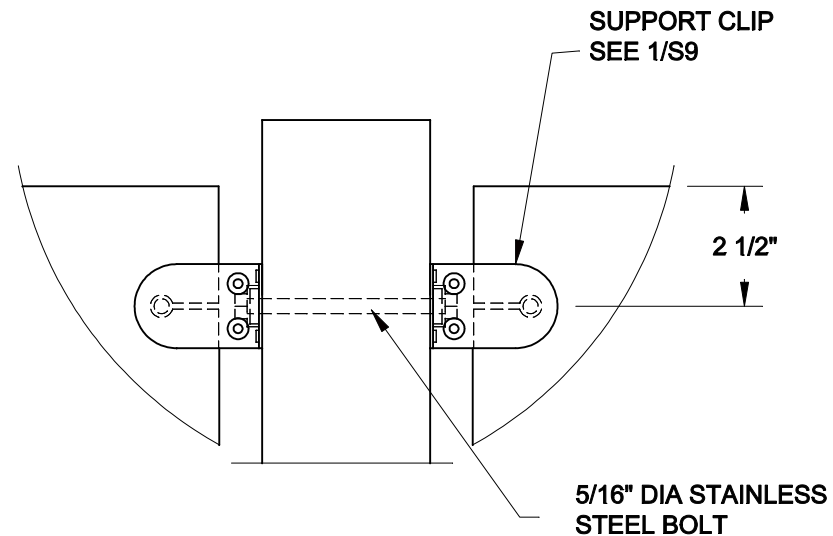
RAIL, CLIP AND POST
DETAIL

PROJECT No.:
14-075A

DRAWING No.:
S5



1
S7 TOP CLIP



2
S7 ALTERNATE CONNECTION

FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE: NTS	
DATE: APRIL, 2014	
DRAWN SJB	CHECKED SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaille.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

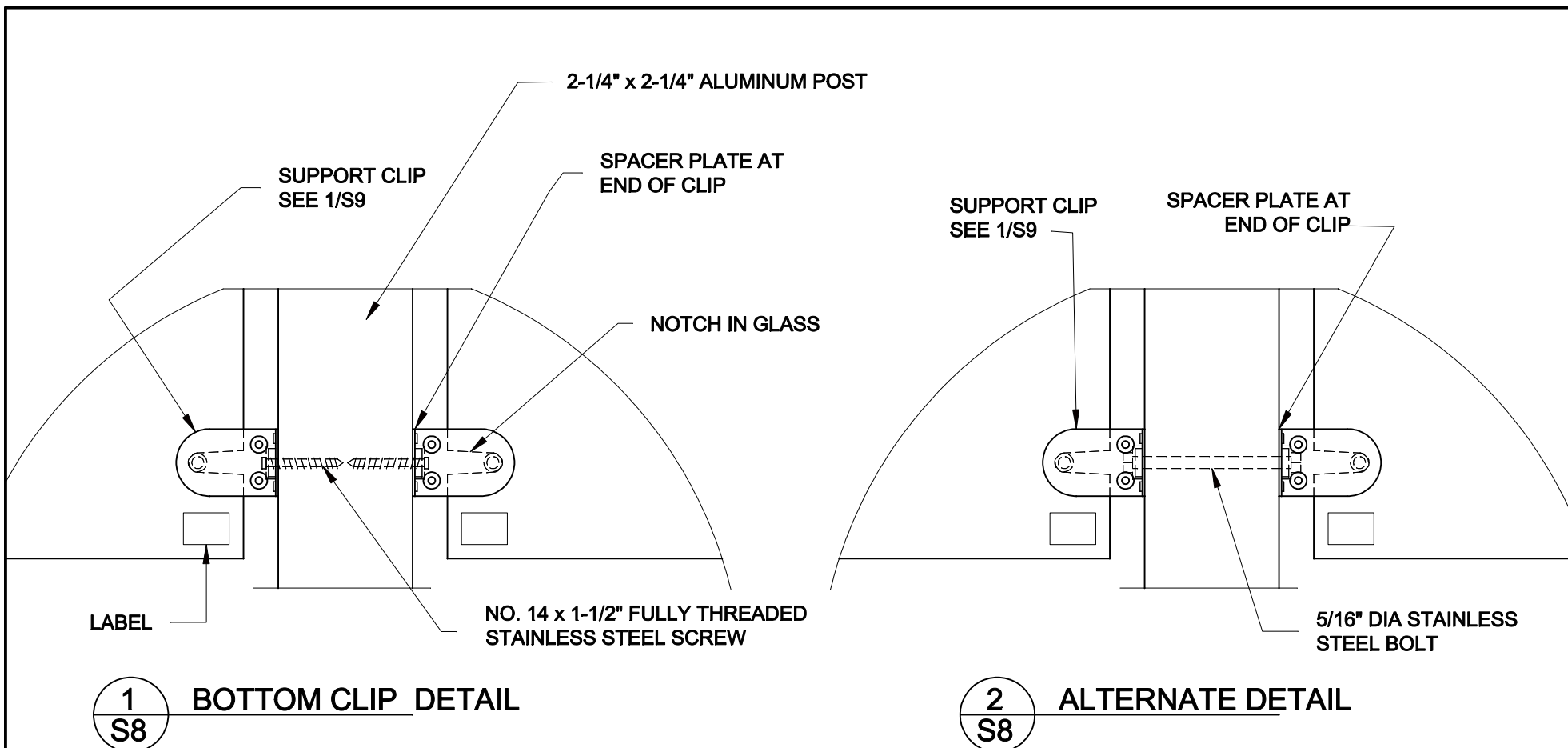
PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

TOP CLIP DETAIL
INVISIRAIL GLASS GUARD

PROJECT No.:
14-075A

DRAWING No.:
S7



FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE: NTS	
DATE: APRIL, 2014	
DRAWN SJB	CHECKED SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9
T: 905-853-8547
F: 905-853-7682
E: quaile.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

BOTTOM CLIP DETAIL
INVISIRAIL GLASS GUARD

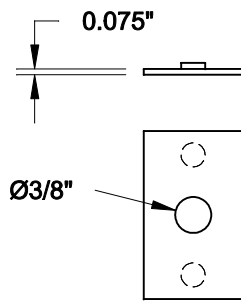
PROJECT No.:

14-075A

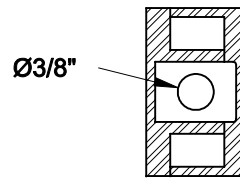
DRAWING No.:

S8

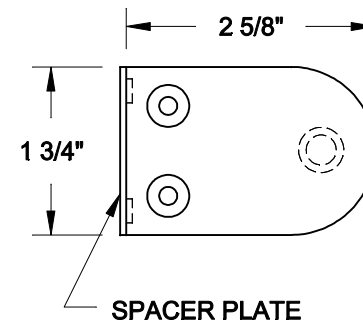
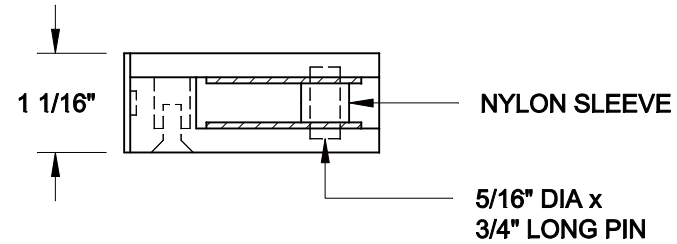
NOTE: ALL STEEL TO BE STAINLESS STEEL



SPACER PLATE



END VIEW OF CLIP



SPACER PLATE

1
S9

INVISIRAIL GLASS PANEL CLIPS

FOR PRODUCT INQUIRIES
CONTACT LIV BUILDING
PRODUCTS AT
905-852-3733

SCALE:

1:2

DATE:

APRIL, 2014

DRAWN

SJB

CHECKED

SJB

QUAILE ENGINEERING LTD.



38 Parkside Drive, UNIT 7
Newmarket, ON
L3Y 8J9

T: 905-853-8547
F: 905-853-7682

E: quaile.eng@rogers.com

ENGINEER'S SEAL



JULY 15, 2014

PROJECT:

LIV BUILDING PRODUCTS
RESIDENTIAL GUARD

INVISIRAIL GLASS PANEL CLIPS

PROJECT No.:

14-075A

DRAWING No.:

S9