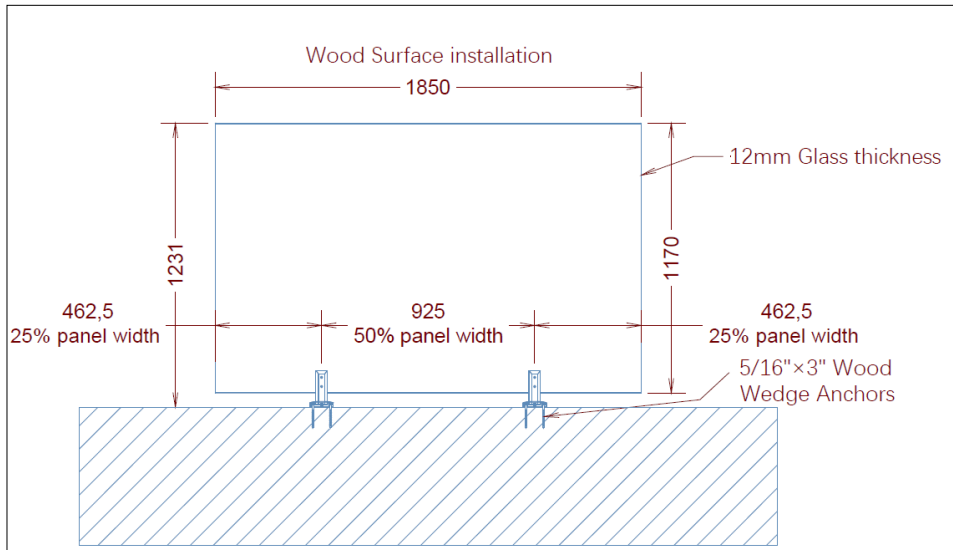


K.G. ENGINEERING



GLASS GUARD TOP MOUNT SPIGOT CONNECTION ON WOOD AND CONCRETE SUBSTRATE

PREPARED FOR:

R.F. TRANSPARENT

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May/28/2024

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DOCUMENT CONTROL

Date	May/28/2024
Job No:	RF-051424
Written by:	Konstantin Gevorgyan P. Eng.

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1. INTRODUCTION

- The following report outlines the installation procedure of a glass railing system supported by a top mounted stainless steel spigot (see figure 1).
- Various options for installations on wood and concrete substrates are included in this report.
- The dimensions for the spigots are retrieved from the reports provided by R.F. Transparent.
- The reports are prepared by "Canadian Building Envelope Science and Technology" report no. L23-1577-6770a-r1 & L23-1577-6770b.
- The bolted connections are designed in accordance with the design load for which the spigots and the glass railing are tested for; as specified in figure 2 below.

2. RECOMMENDED CONFIGURATION OF SPIGOTS BASED ON THE WIDTH OF RAILING

Width	Number of Spigots
6" - 15"	1
15" - 72.8"	2
72.8" - 100"	3

3. REQUIREMENTS

- **The support structure to which the spigots are to be mounted must be able to withstand the design loads as specified in figure 2. To be verified by others on site.**
- **Concrete footing as shown on Option B shall have minimum compressive strength of 25MPa @ 28 days w/ 5% TO 8% air entrainment.**
- **Concrete footing is design in accordance with CSA standard CAN/CSA A23.3 "Design of Concrete Structures".**

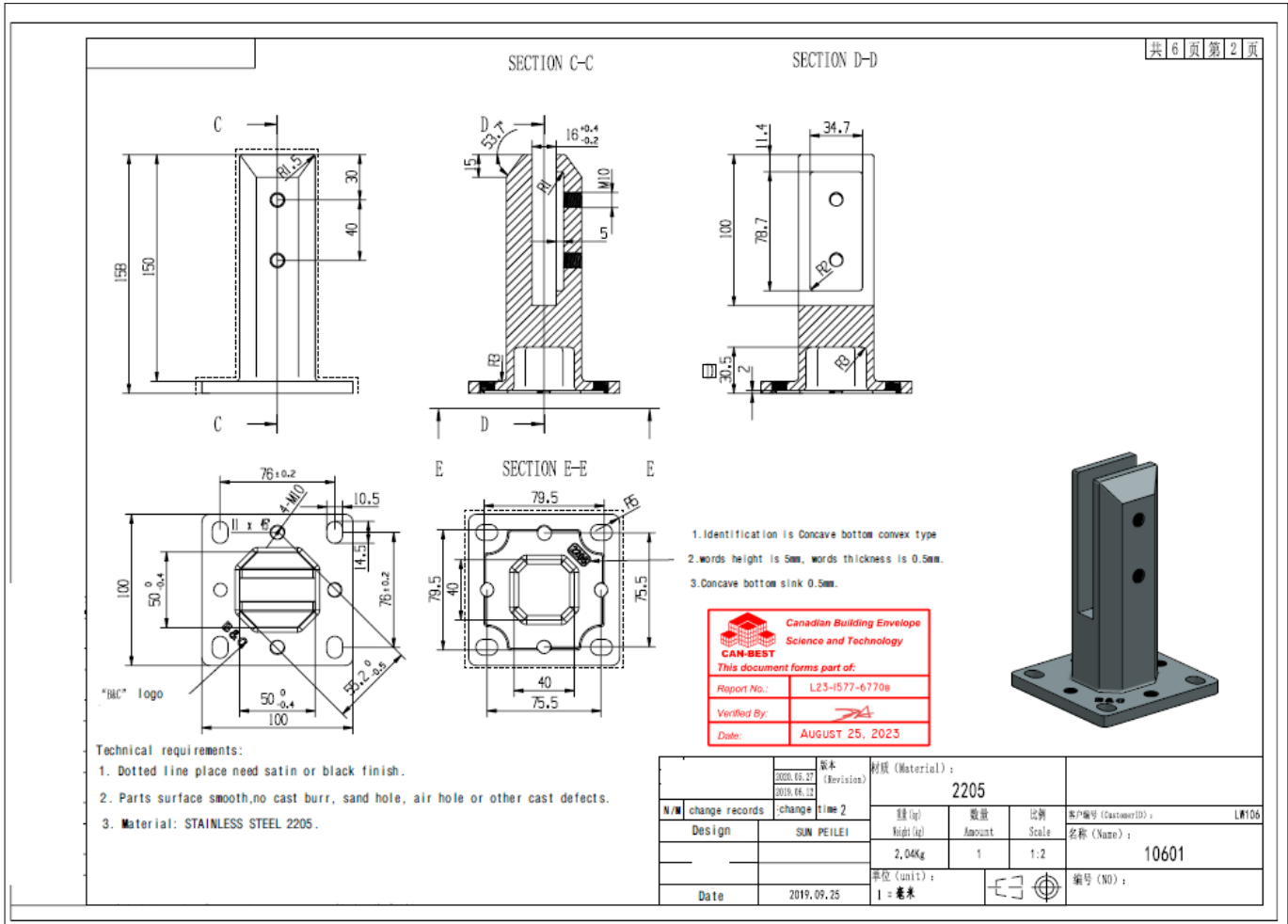
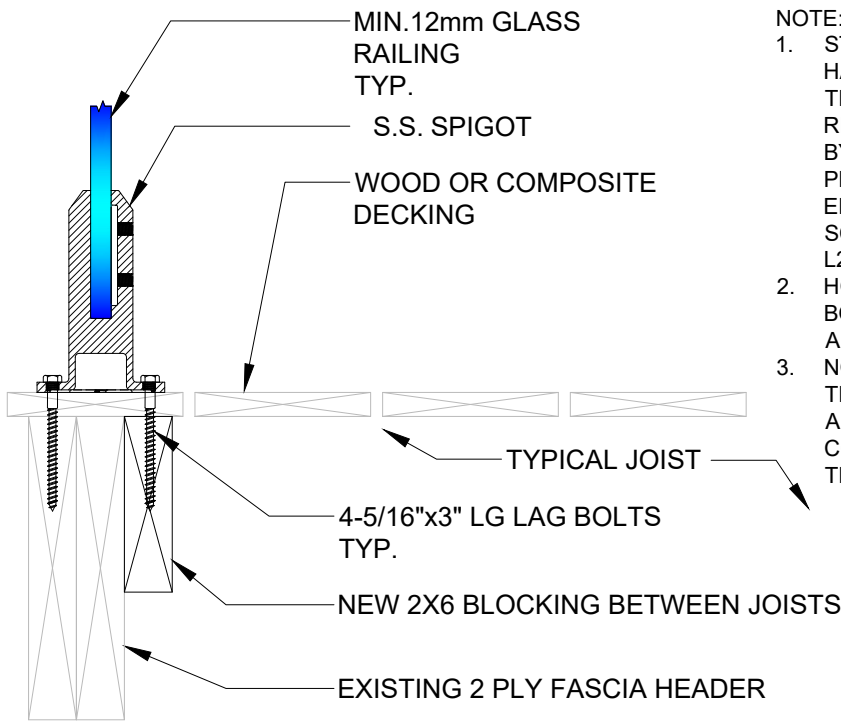


Figure 1: Stainless steel spigot

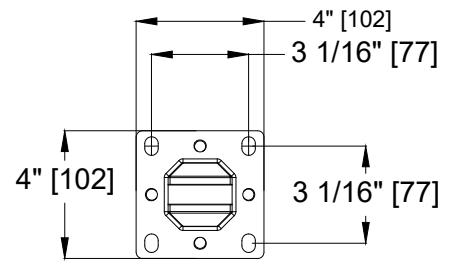
Test Requirement	Load Location	Results	Rating
Horizontal Point Load , top of panel at most critical location Basic Load: 1.00 kN (225lb) Load Factor : 1.50 Test Load: 1.50 kN (340 lb) No maximum criteria provided for deflection under load, or for permanent deflection after loading.	Top mid-span of panel	Measured deflections at top center of panel: <u>Load (kN)</u> <u>Deflection (mm)</u> 1.50 82 mm 0.00 8 mm (permanent)	PASS
	Top right corner	Measured deflections top corner of panel: <u>Load (kN)</u> <u>Deflection (mm)</u> 1.50 65 mm 0.00 7 mm (permanent)	PASS
Horizontal Uniform load , top of panel Basic Load: 0.75 kN/m (51 lb/ft) Load Factor : 1.50 Test Load: 1.13 kN/m (77 lb/ft) No maximum criteria provided for deflection under load, or for permanent deflection after loading.	Top mid-span of panel	Measured deflections at top center of panel <u>Load (kN/m)</u> <u>Deflection (mm)</u> 1.13 90 mm 0.00 8 mm (permanent)	PASS
Elements within the guard, Point Load Basic Load: 0.50 kN (113 lb) Load Factor : 1.50 Test Load: 0.75 kN (169 lb)	Glass panel at any location	<u>Load (kN)</u> <u>Observations</u> 0.75 No breakage	PASS
Vertical Uniform load , top of panel Basic Load: 1.50 kN/m (100 lb/ft) Load Factor: 1.50 Test Load: 2.25 kN/m (150 lb/ft) No maximum criteria provided for deflection under load, or for permanent deflection after loading.	Panel's top edge	<u>Load (kN/m)</u> <u>Observations</u> 2.25 No breakage	PASS
Combination Load , Point Load + Wind Load 0.5 kPa (10 psf) Test Load: 2.04 kN (459 lb)	Centre of panel + uniform wind load	Wind Load 0.5 kPa + <u>Load (kN)</u> <u>Observations</u> 2.04 No breakage	PASS

Figure 2: Load resistance test results: ref: Report No. L23-1577-6770b by "CANADIAN BUILDING ENVELOPE Science and Technology"

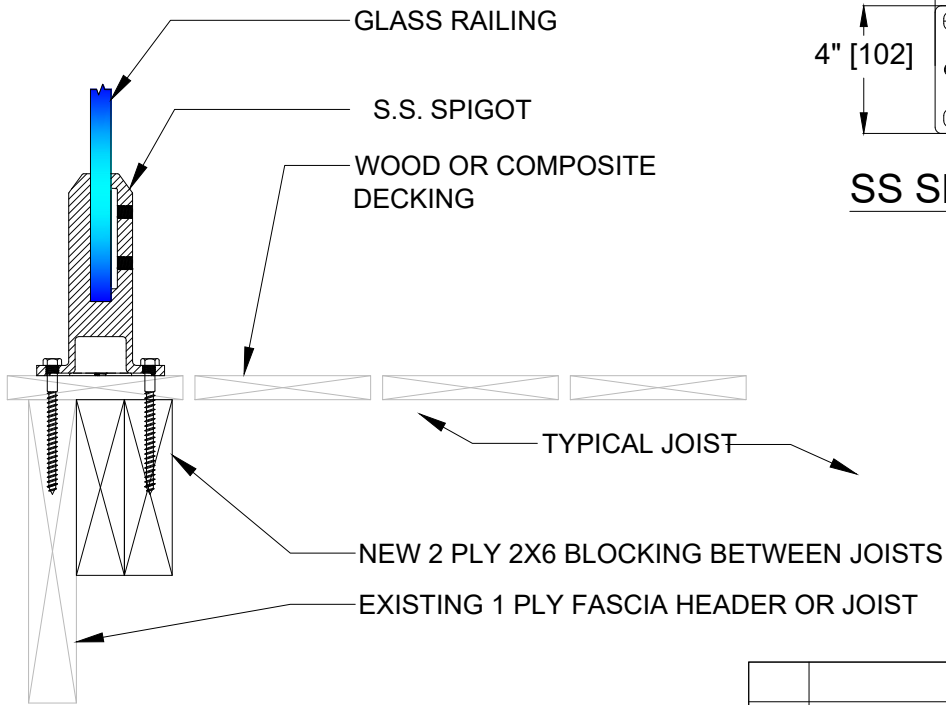


- NOTE:
1. STAINLESS STEEL SPIGOTS & GLASS HANDRAILS DESIGNED BY OTHERS. THE DIMENSION OF THE SPIGOT ARE RETRIEVED FROM THE REPORT PROVIDED BY "RF TRANSPARENT". THE REPORT PREPARED BY "CANADIAN BUILDING ENVELOPE SCIENCE AND TECHNOLOGY" REPORT NO. L23-1577-6770A-R1.
 2. HOT-DIPPED GALVANIZED OR ZINC PLATED BOLTS TO BE USED FOR OUTSIDE APPLICATIONS (TYP.).
 3. NO ADDITIONAL CONNECTIONS, OTHER THAN THE SPIGOTS SPECIFIED HEREIN, ARE REQUIRED TO RENDER A STURDY CONNECTION BETWEEN THE RAILING AND THE SUBSTRATE.

OPTION A



SS SPIGOT BASE



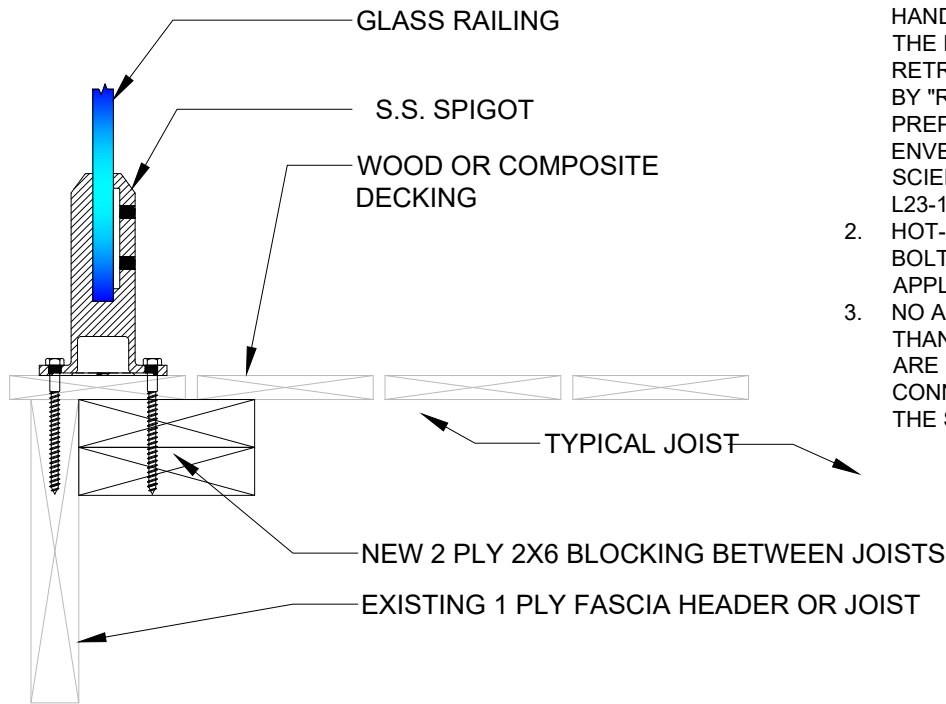
OPTION B

SS SPIGOT MOUNTED ON WOOD SUBSTRATE JOIST PERPENDICULAR TO BLOCKING

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE	MAY - 2024	ADDRESS	
DESIGN	KG	DATE			
DRAWN	KG	DATE		JOB NO.	DWG NO.
				RF-051424	RF-051424
TITLE	TYPICAL GLASS RAILING SPIGOT CONNECTION WOOD SUBSTRATE (TOP MOUNTED)				SCALE
					NTS
					SHEET-1
CLIENT	RF TRANSPARENT				REV
					0

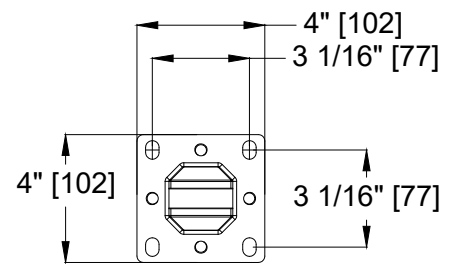
ZONE	REV	DESCRIPTION	DATE	APPD



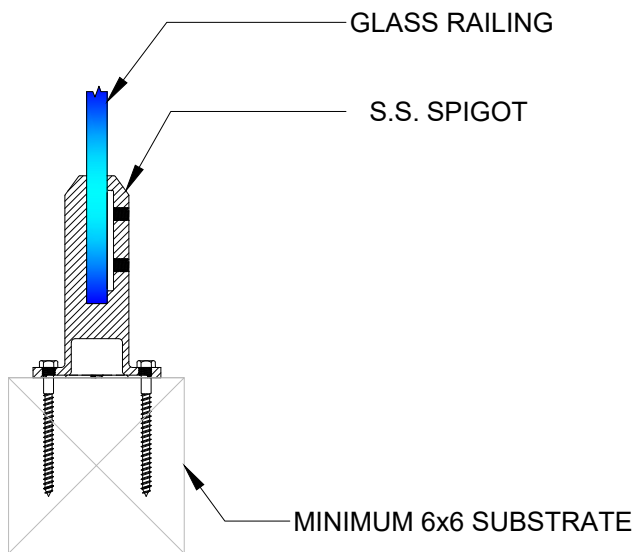
NOTE:

1. STAINLESS STEEL SPIGOTS & GLASS HANDRAILS DESIGNED BY OTHERS. THE DIMENSION OF THE SPIGOT ARE RETRIEVED FROM THE REPORT PROVIDED BY "RF TRANSPARENT". THE REPORT PREPARED BY "CANADIAN BUILDING ENVELOPE SCIENCE AND TECHNOLOGY" REPORT NO. L23-1577-6770A-R1.
2. HOT-DIPPED GALVANIZED OR ZINC PLATED BOLTS TO BE USED FOR OUTSIDE APPLICATIONS (TYP.).
3. NO ADDITIONAL CONNECTIONS, OTHER THAN THE SPIGOTS SPECIFIED HEREIN, ARE REQUIRED TO RENDER A STURDY CONNECTION BETWEEN THE RAILING AND THE SUBSTRATE.

OPTION C



SS SPIGOT BASE



OPTION D

SS SPIGOT MOUNTED ON WOOD SUBSTRATE JOIST PERPENDICULAR TO BLOCKING

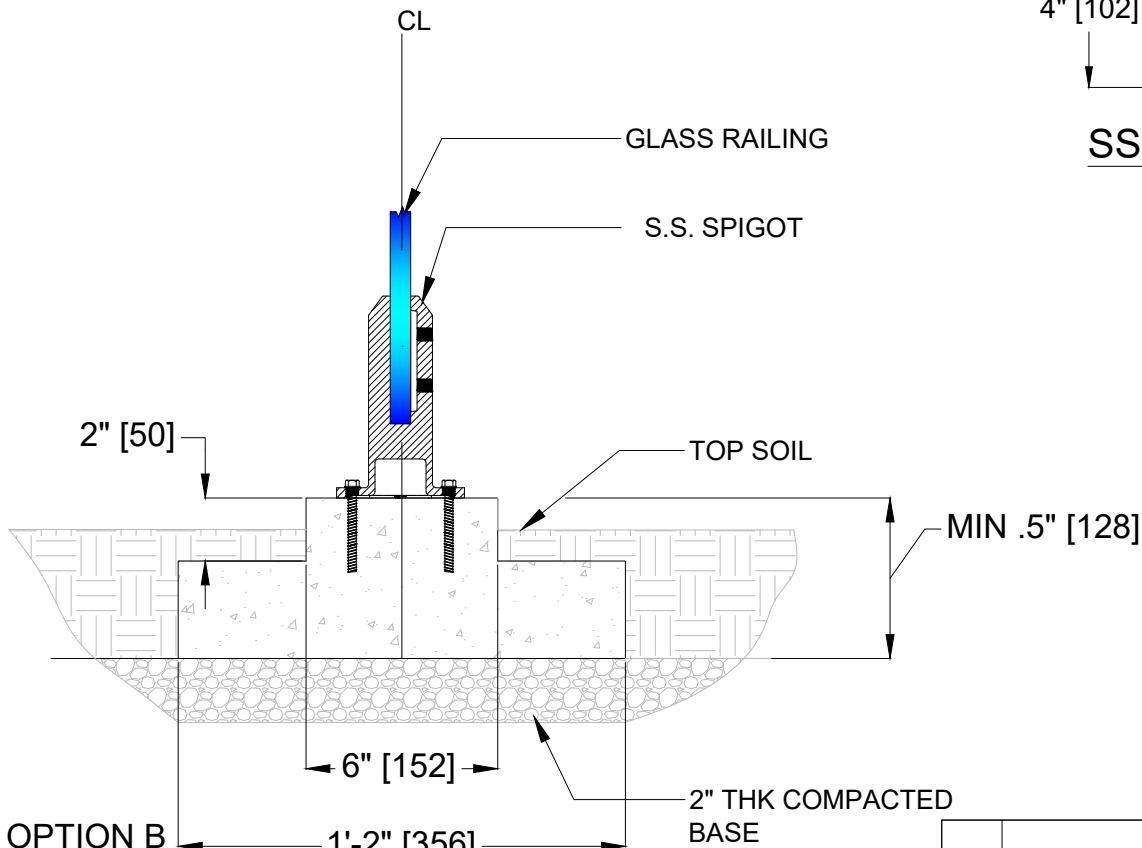
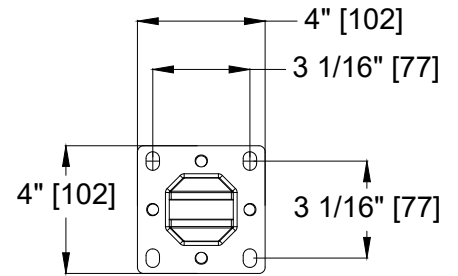
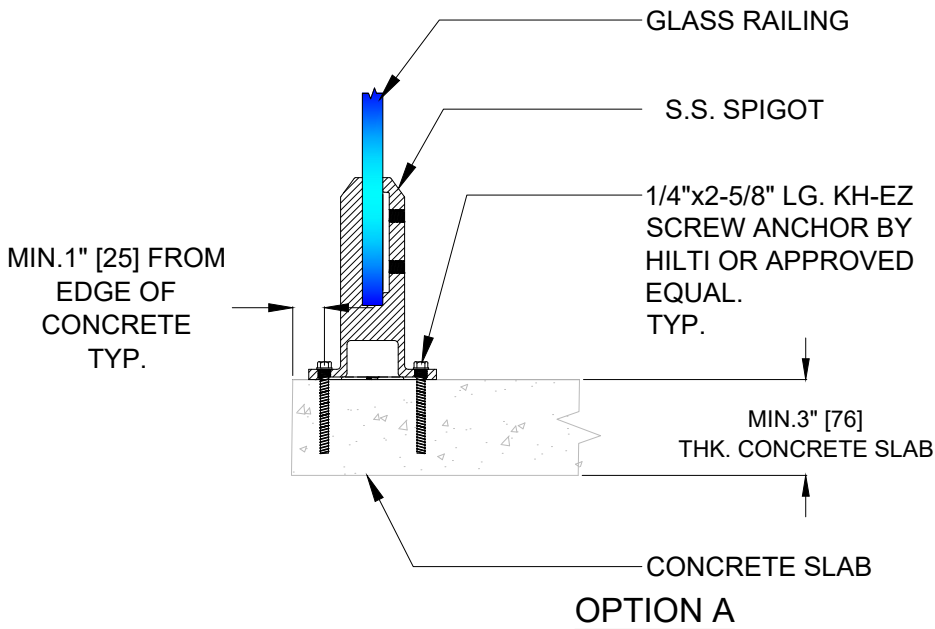
ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE	MAY - 2024	ADDRESS	
DESIGN	KG	DATE			
DRAWN	KG	DATE		JOB NO.	DWG NO.
				RF-051424	RF-051424
TITLE	TYPICAL GLASS RAILING SPIGOT CONNECTION WOOD SUBSTRATE (TOP MOUNTED)				SCALE
					NTS
					SHEET-2
CLIENT	RF TRANSPARENT				REV
					0

ZONE	REV	DESCRIPTION	DATE	APPD

NOTE:

1. STAINLESS STEEL SPIGOTS & GLASS HANDRAILS DESIGNED BY OTHERS. THE DIMENSION OF THE SPIGOT ARE RETRIEVED FROM THE REPORT PROVIDED BY "RF TRANSPARENT". THE REPORT PREPARED BY "CANADIAN BUILDING ENVELOPE SCIENCE AND TECHNOLOGY" REPORT NO. L23-1577-6770A-R1.
2. HOT-DIPPED GALVANIZED OR ZINC PLATED BOLTS TO BE USED FOR OUTSIDE APPLICATIONS (TYP.).
3. NO ADDITIONAL CONNECTIONS, OTHER THAN THE SPIGOTS SPECIFIED HEREIN, ARE REQUIRED TO RENDER A STURDY CONNECTION BETWEEN THE RAILING AND THE SUBSTRATE.



OPTION B
MINIMUM FOOTING
REQUIREMENTS FOR HANDRAIL
SYSTEM INSTALLED ON GRADE

SS SPIGOT MOUNTED ON
CONCRETE SUBSTRATE

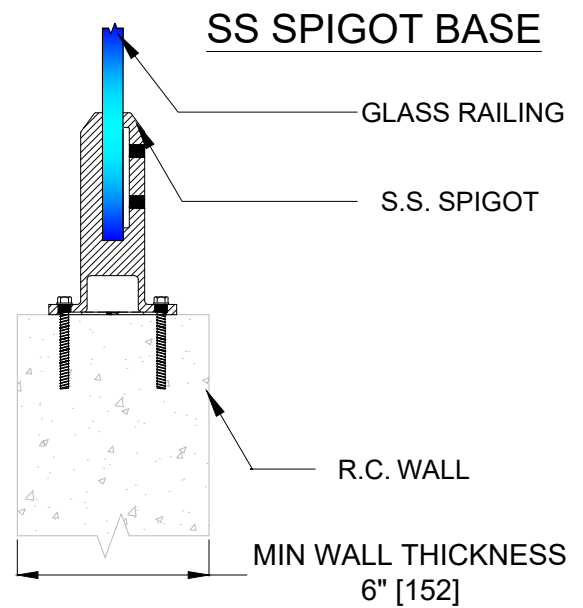
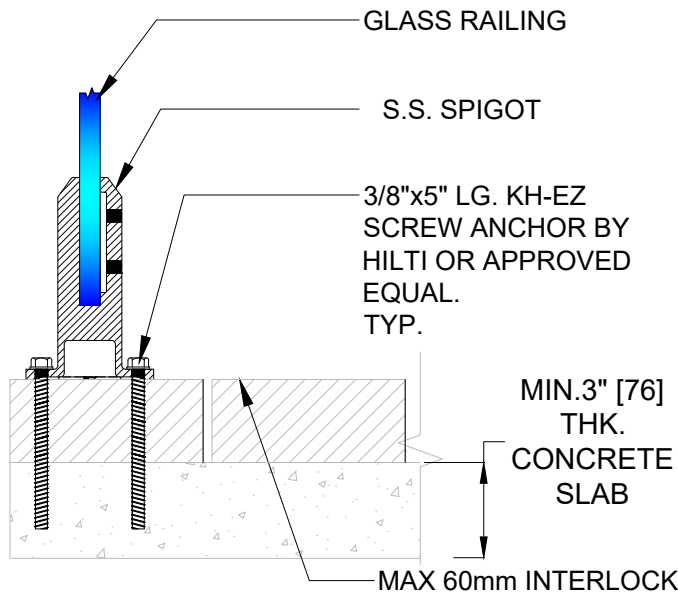
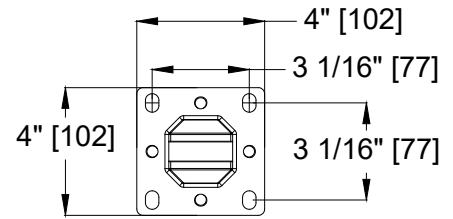
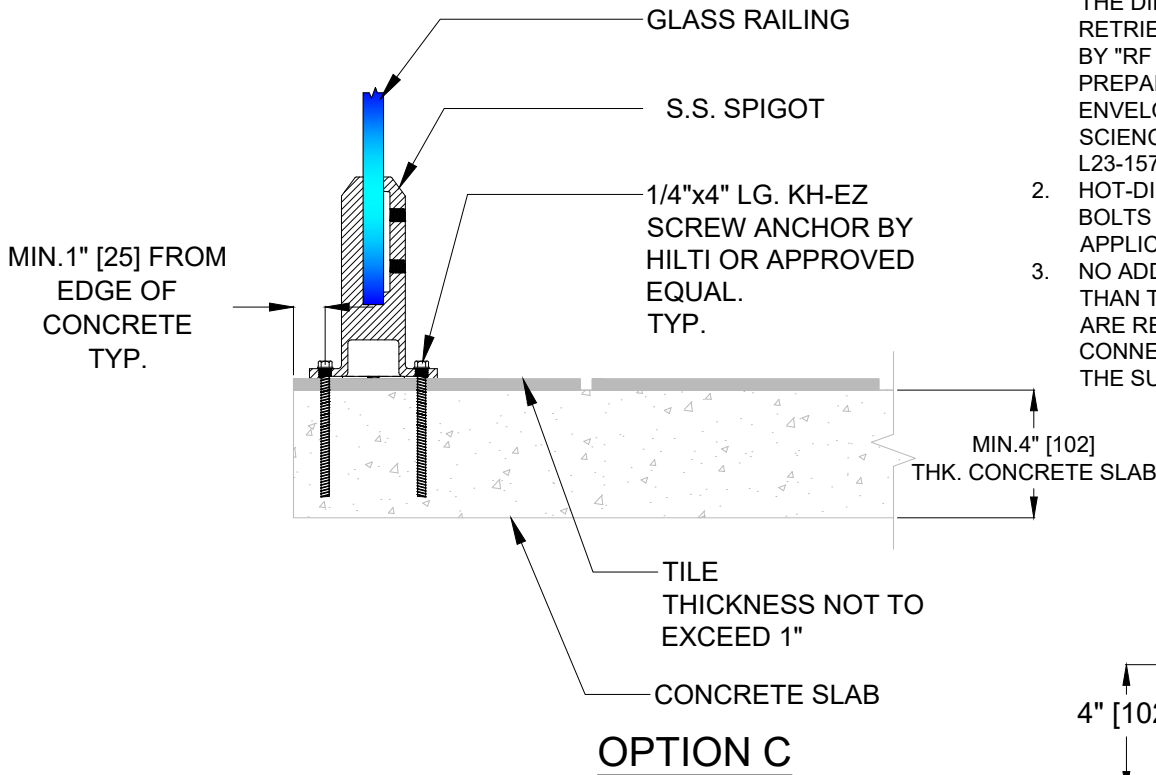
ZONE	REV	DESCRIPTION	DATE	APPD

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE	MAY - 2024	ADDRESS	
DESIGN	KG	DATE			
DRAWN	KG	DATE		JOB NO.	DWG NO.
				RF-051424	RF-051424
TITLE					SCALE
TYPICAL GLASS RAILING SPIGOT CONNECTION ON CONCRETE SUBSTRATE (TOP MOUNTED)					NTS
					SHEET-3
CLIENT					REV
RF TRANSPARENT					0

NOTE:

1. STAINLESS STEEL SPIGOTS & GLASS HANDRAILS DESIGNED BY OTHERS. THE DIMENSION OF THE SPIGOT ARE RETRIEVED FROM THE REPORT PROVIDED BY "RF TRANSPARENT". THE REPORT PREPARED BY "CANADIAN BUILDING ENVELOPE SCIENCE AND TECHNOLOGY" REPORT NO. L23-1577-6770A-R1.
2. HOT-DIPPED GALVANIZED OR ZINC PLATED BOLTS TO BE USED FOR OUTSIDE APPLICATIONS (TYP.).
3. NO ADDITIONAL CONNECTIONS, OTHER THAN THE SPIGOTS SPECIFIED HEREIN, ARE REQUIRED TO RENDER A STURDY CONNECTION BETWEEN THE RAILING AND THE SUBSTRATE.

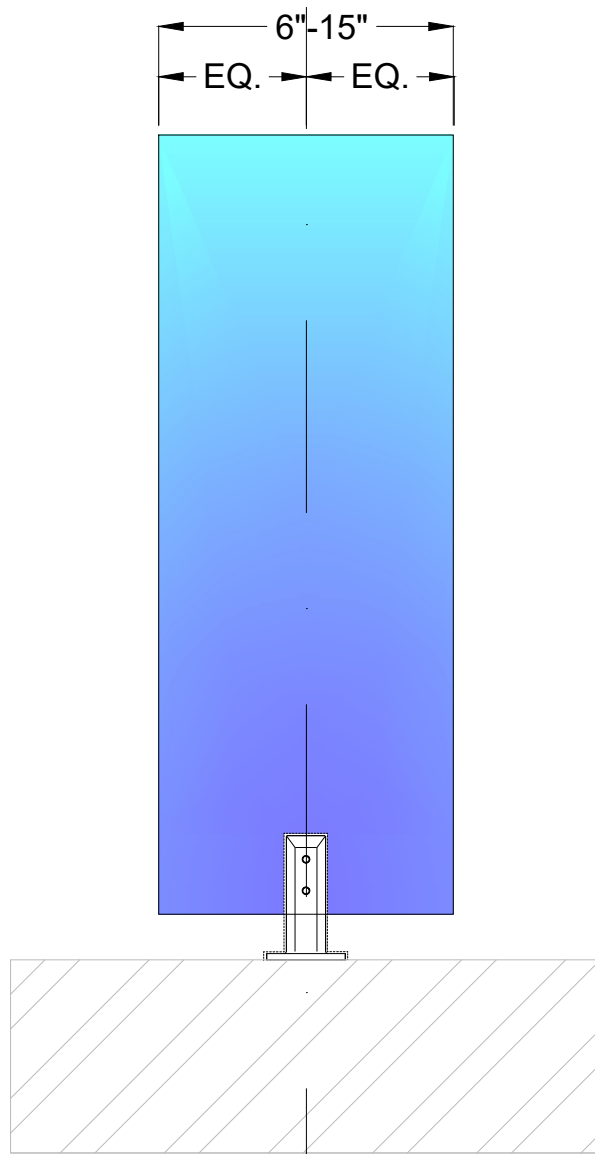


SS SPIGOT MOUNTED ON CONCRETE SUBSTRATE

ZONE	REV	DESCRIPTION	DATE	APPD

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE	MAY - 2024	ADDRESS	
DESIGN	KG	DATE			
DRAWN	KG	DATE		JOB NO.	DWG NO.
				RF-051424	RF-051424
TITLE					SCALE
TYPICAL GLASS RAILING SPIGOT CONNECTION ON CONCRETE SUBSTRATE (TOP MOUNTED)					NTS
CLIENT					SHEET-4
RF TRANSPARENT					REV
					0



CL PANEL

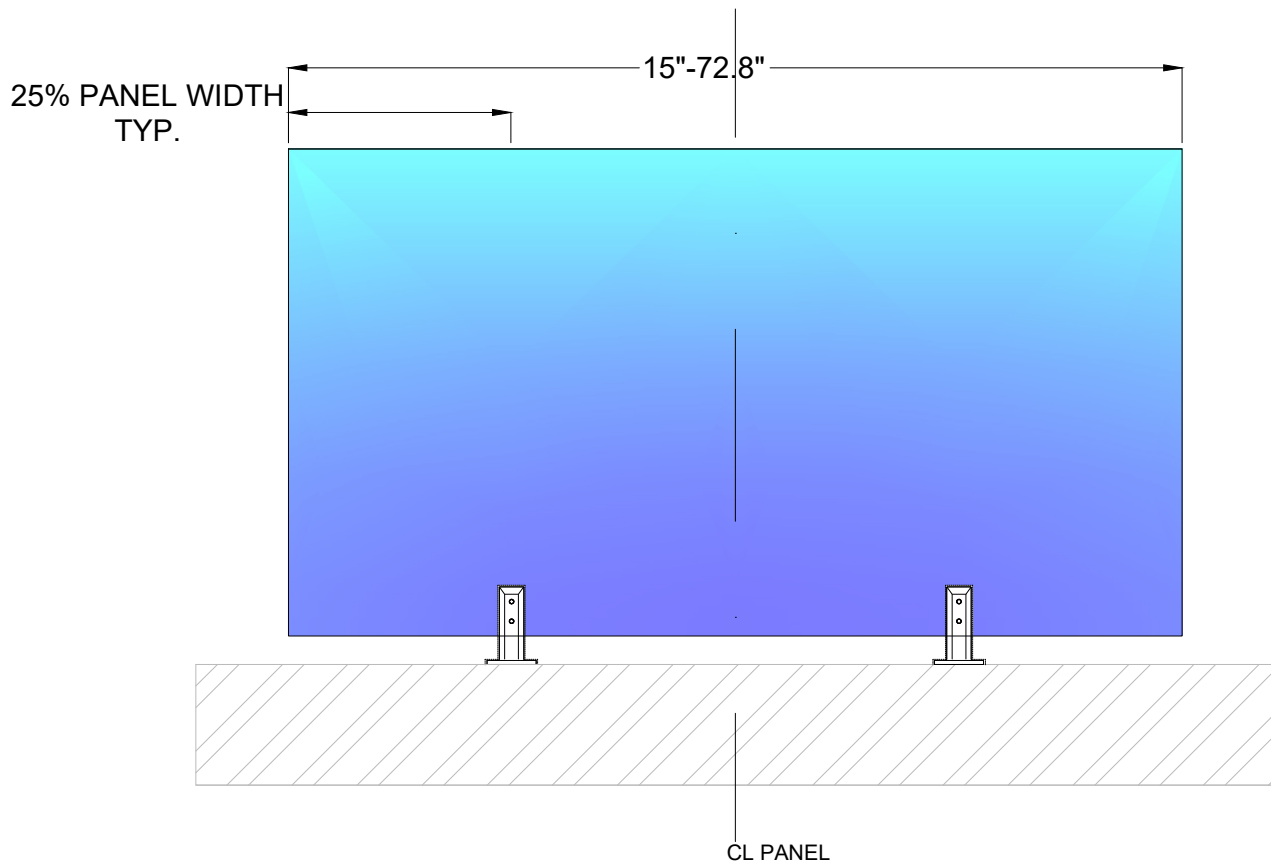
**REQUIRED SPIGOT ARRANGEMENT
FOR 6"-15" PANEL WIDTH
15" PANEL SHOWN**

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE MAY - 2024	ADDRESS	
DESIGN	KG	DATE		
DRAWN	KG	DATE	JOB NO. RF-051424	DWG NO. RF-051424

TITLE	REQUIRED SPIGOT ARRANGEMENT FOR 6"-15" PANEL WIDTH (TOP MOUNTED)			SCALE NTS
CLIENT	RF TRANSPARENT			SHEET-5 REV 0

ZONE	REV	DESCRIPTION	DATE	APPD

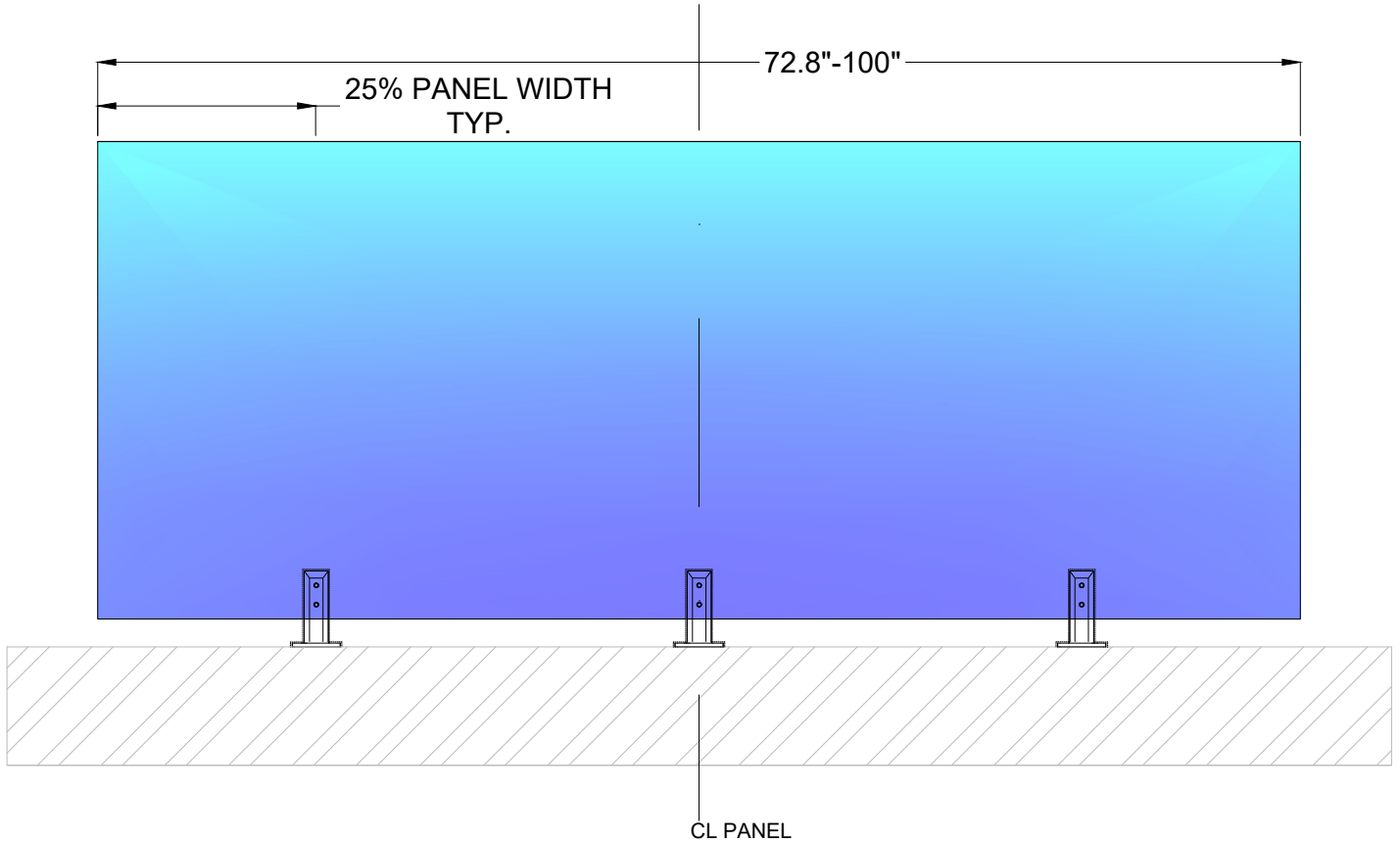


**REQUIRED SPIGOT
ARRANGEMENT FOR 15'-72.8"
PANEL WIDTH
72.8" PANEL SHOWN**

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE	MAY - 2024	ADDRESS	
DESIGN	KG	DATE			
DRAWN	KG	DATE		JOB NO.	DWG NO.
				RF-051424	RF-051424
TITLE					SCALE
REQUIRED SPIGOT ARRANGEMENT FOR 15'-72.8" PANEL WIDTH (TOP MOUNTED)					NTS
					SHEET-6
CLIENT					REV
RF TRANSPARENT					0

ZONE	REV	DESCRIPTION	DATE	APPD



**REQUIRED SPIGOT
 ARRANGEMENT FOR 72.8"-100"
 PANEL WIDTH
 100" PANEL SHOWN**

ISSU	DESCRIPTION	DATE	APPD

APPROVED	KG	DATE MAY - 2024	ADDRESS	
DESIGN	KG	DATE		
DRAWN	KG	DATE	JOB NO. RF-051424	DWG NO. RF-051424
TITLE	REQUIRED SPIGOT ARRANGEMENT FOR 72.8"-100" PANEL WIDTH (TOP MOUNTED)			SCALE NTS
CLIENT	RF TRANSPARENT			SHEET-7 REV 0

ZONE	REV	DESCRIPTION	DATE	APPD