SECTION 21- PROJECT WORKSHEETS

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SECTION 21

PROJECT WORKSHEETS

PROJECT WORKSHEET INTRODUCTION

For projects that require Strongwell to perform structural design engineering, certain information must be supplied.

To assist our customers in submitting the necessary data, "fill-in-the-blank" worksheets have been developed and are included in this section. Different structures have separate worksheets.

On the back of the building, platform, SAFRAIL[™] and grating worksheets is a commentary designed to help the customer provide the required data. Such assistance is offered on the ladder, ladder cage and stair worksheets through helpful notes.

S	TRONGWELL		Section 21 Project Worksheets
	PLATFORM	WORKSHEET	-
DAT	E QUOTE REQUIRED:	Bristol DivisionChatfield Division	Fax: 276-645-8003 Fax: 507-867-4031
GE	OGRAPHICAL INFORMATION		
1.	(City, State AND Nearest Large City)	2. OUTDOOF (If No - Go	RS YES NO
3.	LOCATED AT: GROUND LEVEL	or FEET ABO	VE
4.	IN GENERALLY OPEN AND FLAT TERRAIN (Extending 1/2 mile or more from site in any C	l: YES NO Quadrant)	
DE\$ 5.	SIGN CONDITIONS AND LOADS	JOB:	
6.	WIND LOAD: (MPH)		
7.	SEISMIC DESIGN CATAGORY:		
8.	SNOW LOAD: (PSF) (Local Conc	ditions May Control)	
9A.	LIVE LOAD: (PSF) DEFL. CRI	TERIA	
9B.	CONC. LOADS: (Barrels, Pallets, E	Equipment, Etc.)	
SEF	RVICE AND QUOTING REQUIREMEN	тѕ	
10.	CORROSIVES:	11. TEMP	(°F or AMBIENT)
12.	EXTREN [®] SERIES: STD C	OLOR	OTHER

INFORMATION TO SHOW: PLAN VIEW OF PLATFORM (WIDTH, LENGTH, ETC.); HEIGHT ABOVE FLOOR AND/OR GRADE; HANDRAILS SHOWN IN PLANS AS OBSTRUCTIONS/ INTERFERENCES; LOCATION OF CONCENTRATED LOADS; TYPE OF GRATING (IF KNOWN), ETC. USE EXTRA SHEETS AS REQUIRED.

PLATFORM WORKSHEET COMMENTARY

GEOGRAPHICAL INFORMATION

- 1. **CITY AND STATE** and **NEAREST LARGE CITY** is important because location may control wind loads, snow loads, earthquake criteria, etc. Building Code maps usually show major metropolitan cities so **NEAREST LARGE CITY** is important if actual site location is remote.
- 2. Platforms sheltered or inside other structures (**INDOORS**) will not require wind or snow loads. This answer may be apparent from specifications or drawings, but not so apparent from a telephone request for quote. Go to 9A if **INDOORS**.
- 3. Platforms outdoors and **ABOVE GRADE** (like on buildings) will have larger gust factors for wind conditions.
- 4. Platforms in **OPEN AND FLAT TERRAIN** support **HIGHER** wind loads and **LOWER** snow loads. Platforms can be designed for worst case, but may be conservative and <u>unnecessarily</u> <u>uneconomical</u>.

DESIGN CONDITIONS AND LOADS

- 5. Building codes may vary by locality. The IBC (International Building Code) is becoming the standard, however, other applicable building codes may be BOCA, SBC, ANSI (now ASCE-7) or a local (city or state) building code. All design information can be easily obtained <u>except</u> local building code information. Customer should provide local code information either with a copy of the code or supplying values 6 thru 9.
- 6. **WIND LOAD** is usually given in MPH (miles per hour).
- 7. SEISMIC DESIGN CATEGORY is to be designated. If unknown, design will default to ASCE-7.
- 8. **SNOW LOAD** is given in PSF (pounds per square foot). Local conditions may govern in mountain regions, the west coast through the Rocky Mountain states and the East coast, North of Massachusetts.
- 9A. **LIVE LOAD** is usually given in PSF (pounds per square foot). Typical design values for platforms are:
 - ACCESS PLATFORM (1-3 people limited use) 50 PSF
 - OPERATING PLATFORM (1-3 people constant) 75 PSF
 - WORK PLATFORM (men with tools, portable equipment) 100 PSF

DEFLECTION CRITERIA is typically:

- Specified as 1/4" for the grating with 100 PSF LIVE LOAD (<u>NOT</u> necessarily the the PLATFORM DESIGN LIVE LOAD)
- Specified as L/180 to L/360 for structural members (span in inches divided by 180 to 360, respectively)
- 9B. **CONCENTRATED LOADS** are <u>ADDITIONAL TO LIVE LOAD</u> and may be permanent equipment, barrels or drums of chemicals, pallets of materials, boxes, etc. Obtain these LOAD in LBS. and possibly an area over which they act (i.e. pallets 4'x4' weighing 4,000 lbs. ea.)

SERVICE AND QUOTING REQUIREMENTS

- 10-11. **CORROSIVES AND TEMPERATURE** may dictate **EXTREN®** requirements.
- 12. **EXTREN® SERIES** may be specified. **STANDARD COLOR** (YES or NO) or **OTHER** color are also needed.
- 13. **HARDWARE** will be bolts for structurals, grating clips and bolts, etc. **SPECIFY** as necessary.

STRONGWELL		Section 21 Project Worksheets
SAFRAIL™ V	VORKSHEET	
DATE QUOTE REQUIRED:	Bristol DivisionChatfield Division	Fax: 276-645-8003 Fax: 507-867-4031
GEOGRAPHICAL INFORMATION		
1(City, State AND Nearest Large City)		
2. OUTDOORS: YES (UV Coating - Standa	ard) DNO	
DESIGN CONDITIONS AND LOADS		
3. SAFRAIL [™] WILL MEET: 200# ANY DIRECT 50#/LF HORIZONT	ION ON POST OR TOP RA ALLY APPLIED TO TOP RA	IL AIL
OTHER REQUIREMENTS:		
SERVICE AND QUOTING REQUIREMENT4. CORROSIVES:5.	TS TEMP (°F o	or AMBIENT)
6. RESIN: POLYESTER (Standard) VINYL ESTER (Minimum Required) OTHER (Call)	STANDARD COLOR (*	Yellow) (Gray)
7A. SQUARE TUBE ROUND TUBE 7B. STANDARD 2 RAIL WITH TOE PLATE:	CUSTOM (attach sketch)	
OR 3 RAIL 4 RAIL	5 RAIL TC	DEPLATE
8. MOUNTING HARDWARE: 316SS	_ OTHER	
9. TYPE OF POST ASSEMBLY: BASE MOUNTED POCKET MOU	NTED SIDE N	NOUNTED
10. POST SPACING 3 FT. ON CENTER	5 FT. ON CENTER	
4 FT. ON CENTER	6 FT. ON CENTER	
INFORMATION TO SHOW: PLAN VIEW OF PLAT ABOVE FLOOR AND/OR GRADE; HANDRAILS S INTERFERENCES; LOCATION OF CONCENTRAT ETC. USE EXTRA SHEETS AS REQUIRED.	FORM (WIDTH, LENGTH, I HOWN IN PLANS AS OBS TED LOADS; TYPE OF GR/	ETC.); HEIGHT TRUCTIONS/ ATING (IF KNOWN),

SAFRAIL[™] WORKSHEET COMMENTARY

GEOGRAPHICAL INFORMATION

- 1. **CITY AND STATE** and **NEAREST LARGE CITY** is important because location may control code to be used for design.
- 2. Standard SAFRAIL[™] is UV coated.

DESIGN CONDITIONS AND LOADS

3. Standard SAFRAIL[™] will meet most codes for loading - OSHA, BOCA, UBC, etc. Other codes (for specific contract requirement, etc.) may require higher loads or have specific deflection requirements.

SERVICE AND QUOTING REQUIREMENTS

- 4-5. **CORROSIVES AND TEMPERATURE** may dictate resin requirements.
- 6. Standard color is safety yellow or gray. Standard resin is polyester. Contact Strongwell for other resin systems and other colors.
- 7. Standard SAFRAIL[™] is a two-rail system with toeplate. Note that toeplate is not usually required where a platform or walkway is less than 4' above the adjacent floor or people cannot pass below (like SAFRAIL[™] around a clarifier).
- 8. Mounting hardware is supplied, if both structures and rail are furnished by Strongwell. Mounting hardware is 316 S.S. bolts unless otherwise noted. Lengths to be specified.
- 9-10. These are required to determine accurate pricing for quantity and type of material (base plates are more expensive). Post spacing determines the amount of material required per lineal foot.

DRAWINGS AND SKETCHES OF SAFRAIL™

Simple SAFRAIL[™] layouts can easily be sketched. Be certain that any specifications are noted, such as: overall lengths, locations of openings, sections to be removable, post spacing (if this has been set by the customer), straight rail, or sloped (on concrete, steel or FRP stairs), gates, chained openings, etc.

One section through the handrail can easily show: overall height to top rail, height above walking surface, quantity of midrail, midrail spacing, toeplate, mounting style, bolts, anchors, etc.

Intricate, lengthy, or involved layouts will require drawings from the customer. However, do not forget to get specifications required on worksheet.

HANDRAIL POSTS AT STRUCTURAL MEMBERS



NOTE: All details are applicable to both standard SAFRAILTM (TS 2" x 2" x .156") and Heavy Duty (TS 2" x 2" x 1/4") unless otherwise indicated. Please contact Strongwell for information concerning SAFRAILTM Round Handrail system.

HANDRAIL POSTS AT CONCRETE



NOTE: All details are applicable to both standard SAFRAIL^M (TS 2" x 2" x .156") and Heavy Duty (TS 2" x 2" x 1/4") unless otherwise indicated. Please contact Strongwell for information concerning SAFRAIL^M Round Handrail system.

REMOVABLE HANDRAIL POSTS AT CONCRETE



NOTE: All details are applicable to both standard SAFRAILTM (TS 2" x 2" x .156") and Heavy Duty (TS 2" x 2" x 1/4") unless otherwise indicated. Please contact Strongwell for information concerning SAFRAILTM Round Handrail system.

REMOVABLE HANDRAIL POSTS AT STRUCTURAL MEMBERS



NOTE: All details are applicable to both standard SAFRAILTM (TS 2" x 2" x .156") and Heavy Duty (TS 2" x 2" x 1/4") unless otherwise indicated. Please contact Strongwell for information concerning SAFRAILTM Round Handrail system.

STRONGWELL

SUGGESTED POST & KICK PLATE INSTALLATION



NOTE: All details are applicable to both standard SAFRAIL[™] (TS 2" x 2" x .156") and Heavy Duty (TS 2" x 2" x 1/4") unless otherwise indicated. Please contact Strongwell for information concerning SAFRAIL[™] Round Handrail system.

1.

STRONGRAIL[™] WORKSHEET

DATE QUOTE	REQUIRED:

- Bristol Division Fax: 276-645-8003
- Chatfield Division Fax: 507-867-4031

GEOGRAPHICAL INFORMATION

(City, State AND Nearest Large City)

DESIGN CONDITIONS AND LOADS

- 2. STRONGRAIL[™] WILL MEET IBC 2006 WITH A 2:1 FACTOR OF SAFETY.
- 3. PICKET SPACING IS 4.75" ON CENTER (Open spacing between pickets will be less than 4").
- 4. LIST OTHER REQUIREMENTS TO BE MET:

SERVICE AND QUOTING REQUIREMENTS 5. COLOR (All handrail is UV coated): WHITE .156″ BLACK 2.125" OTHER 6. TOP RAIL TYPE: 0.156″ 2" SQUARE TUBE 3" ROUNDED ANCHOR Ø VARIES W/ 7. PICKET TYPE: 1" SQUARE FRP BASEPLATE, Ø1/2" ANCHOR N. 1" ROUND ATTATCHED TO POST. BOLTS (2x) 8. POST TYPE: 2" SQUARE TUBE 4" SQUARE TUBE □ WALL MOUNT BRACKET FRP PAK (TYP) 9. POST MOUNTING TYPE: SIDE MOUNTED TOP MOUNTED SIDE MOUNT STANDARD TOP BASE MOUNT EMBEDDED POCKET MOUNT 10. TYPE OF STRONGRAIL[™] AND ESTIMATED FOOTAGE: GROUT STRAIGHT RAIL FOOTAGE OF STRAIGHT RAIL STAIR RAIL FOOTAGE OF STAIR RAIL EMBEDDED

NOTE: For a firm price, submit drawings with this worksheet.

51	Section 21 Section 21 Project Worksheets
	BUILDING WORKSHEET
	Bristol Division Fax: 276-645-8003
DAT	E QUOTE REQUIRED: Chatfield Division Fax: 507-867-4031
GE	OGRAPHICAL INFORMATION
1.	2. OUTDOORS I YES I NO
	(City, State AND Nearest Large City)
3.	LOCATED AT: GROUND LEVEL Or FEET ABOVE
4.	IN GENERALLY OPEN AND FLAT TERRAIN: YES NO
	(Extending 1/2 Mile or more from site in any Quadrant)
DES	SIGN CONDITIONS AND LOADS
5.	LOCAL BUILDING CODE APPLICABLE TO JOB:
6.	WIND LOAD: (MPH) 7. ROOF LIVE LOAD: (PSF)
8.	FLOOR LIVE LOAD: (PSF) (FOR MEZZANINES, PLATFORMS IF APPLICABLE)
9.	SEISMIC DESIGN CATEGORY:
10.	SNOW LOAD:(PSF) (Local Conditions May Control)
SEF	RVICE AND QUOTING REQUIREMENTS

- 11. CORROSIVES: (Type) ______
 12. TEMP ______(°F or AMBIENT)
- 13. EXTREN® SERIES: ______ STD COLOR _____ OTHER _____
- 14. HARDWARE: FIBREBOLT______ 304SS _____ 316SS _____ OTHER ______



SHOW OUT-TO-OUT DIMENSIONS. NOTE: INSIDE DIMENSIONS WILL BE SMALLER BY 4.5' IN WIDTH AND 3' IN LENGTH AND PEAK HEIGHT. SHOW DOORS, WINDOWS AND SKYLIGHT AND SIZES ON THE SKETCH.

BUILDING WORKSHEET COMMENTARY

GEOGRAPHICAL INFORMATION

- 1. **CITY AND STATE** and **NEAREST LARGE CITY** is important because location may control wind loads, snow loads, earthquake criteria, etc. Building Code maps usually show major metropolitan cities so **NEAREST LARGE CITY** is important if actual site location is remote.
- 2. Buildings sheltered or inside other structures (**INDOORS**) will not require wind or snow loads. This answer may be apparent from specifications or drawings, but not so apparent from a telephone request for quote.
- 3. Buildings outdoors and **ABOVE GRADE** (like on buildings) will have larger gust factors for wind conditions.
- 4. Buildings in **OPEN AND FLAT TERRAIN** support **HIGHER** wind loads and **LOWER** snow loads. Buildings can be designed for worst case, but may be conservative and <u>unnecessarily</u> <u>uneconomical</u>.

DESIGN CONDITIONS AND LOADS

- 5. Building codes may vary by locality. The IBC (International Building Code) is becoming the standard, however, other applicable building codes may be BOCA, SBC, ANSI (now ASCE-7) or a local (city or state) building code. All design information can be easily obtained <u>except</u> local building code information. Customer should provide local code information either with a copy of the code or supplying values 6 thru 9.
- 6. **WIND LOAD** is usually given in MPH (miles per hour).
- 7. **ROOF LIVE LOAD** is given is PSF (pounds per square foot). They are usually dependant on the slope of the roof.
- 8. **FLOOR LIVE LOAD** is given in PSF (pounds per square foot). This value is only required if the building has additional internal floors, platforms or mezzanines that tie to the structure. For buildings on concrete slabs, this is not applicable unless the platforms are to be quoted. Use the **PLATFORM WORKSHEET** if required.
- 9. SEISMIC DESIGN CATEGORY is to be designated. If unknown, design will default to ASCE-7.
- 10. **SNOW LOAD** is given in PSF (pounds per square foot). Local conditions may govern in mountain regions, the west coast through the Rocky Mountain states and the East coast, North of Massachusetts.

SERVICE AND QUOTING REQUIREMENTS

- 11-12. CORROSIVES AND TEMPERATURE may dictate EXTREN® requirements.
- 13. **EXTREN® SERIES** may be specified. **STANDARD COLOR** (YES or NO) or **OTHER** color are also needed.
- 14. **HARDWARE** will be bolts for structurals, door/window hardware, trim, panels, etc. **SPECIFY** as necessary.

S	FRON	GWELI						Section 21 Project Worksheets
			GRATINO	G WOR	KSI	HEET		
			DURADE	EK®/DUR	AGRI	D®		
] Bri	stol Division		Fax: 276-645-8003
DAT	E QUOTE F	EQUIRED: _		_) Ch	atfield Divisi	on	Fax: 507-867-4031
GEO	OGRAPHIC		ΜΑΤΙΟΝ					
1.	(City, Sta	ate AND Neare	est Large City)	_				
2.	OUTDOOR	S: YES (U	V inhibitor is St	andard, U	V coa	ating needs to	be sp	ecified)
3.	STANDARD	DESIGN LOA	AD FOR PEDE	STRIAN V	VALK	WAYS IS 100	PSF	
SEF	RVICE AND		REQUIREM	ENTS				
4.	CORROSIV	ES:						
5.	TEMP		(°F	or AMBI	ENT)			
6.	RESINS:	POLYES	FER (Standard	Gray	Ωy	ellow)		
		VINYL ES	STER (Call for a	availability)			
		OTHER (of bearing	Special g bars)		_ mini	mum required	l of 15	,000 lineal feet
7.	HARDWARI	E:						
	SS SADE	DLE CLIPS		(Q	TY)			
		RT HOLD DOV	WNS	(Q	TY)			
	□1/4" x 20	x 1-1/4" SOCH	KET HEAD CAR	P SCREW	/ W/L(OCK NUT & V	VASH	ER (QTY)
8.	STANDARD	PANEL SIZE	S:					
	WIDTH	3 FT.	4 FT.	1 5 F	Т.		(Cro	ss Rod Length)
	LENGTH	B FT.	1 0 FT.	12	FT.	2 0 FT.	(Bar	Length or Span)
9.	CUSTOM P.	ANEL SIZES:	(Anything of	ther than s	sizes	listed in No. 8)	
	When quotir width (length	ng custom pan h of the cross i	el sizes, be sur rod) and which	re to verify dimensio	/ with n is th	your custome e span (lengtl	er whic h of th	ch dimension is the e bearing bar).
INFC I	DRMATION T PLAN VIEW C REQUIRED.	O SHOW OR OF GRATING	OBTAIN: LAYOUT FOR	CUSTOM	JOB	S. SPECIFIC		N OF GRATING TYPE

DURADEK® / DURAGRID® WORKSHEET COMMENTARY

GEOGRAPHICAL INFORMATION

- 1. **CITY, STATE** and **NEAREST LARGE CITY** is important because location may control code to be used for design.
- 2. UV inhibitor is standard. UV coating may be specified for added protection. Many of our competitors do not have coating as an option. When bidding in a competitive situation, consider the extra cost.

DESIGN CONDITIONS AND LOADS

3. Published load tables are available for DURADEK[®] and DURAGRID[®] gratings. The load tables specify span capabilities based on given load requirements. When quoting wheel loads (fork lifts, hand carts, etc) it is necessary to specify the wheel diameter and width along with the maximum load per wheel.

SERVICE AND QUOTING REQUIREMENTS

- 4-5. Corrosives and temperatures may dictate resin requirements.
- 6. Standard colors are yellow and gray. Custom colors are available. Set-up charges for nonstandard colors are determined by quantity/color. Polyester is the standard resin, except for 1-1/4" bearing bars and the DURAGRID[®] Economy series where it is vinyl ester. Non-standard runs are possible with a minimum order of 15,000 lineal feet, which in I-6000 is equivalent to approximately 1,875 ft².
- 7. A standard 316 S.S. saddle clip and a 316 S.S. insert clip are available. The saddle clip wraps around 2 bars and is recommended for stair tread applications. The insert hold down fits between the bars (this type "sandwiches" the bottom flange of the bar to the structural support member). Recommend 2 hold downs of each support with a minimum of 4 per panel.
- 8. Standard sizes/colors available for a 2 5 day shipment are as follows:

I-6000 1", I-6000 1-1/2" and T-5000 2" in yellow or gray polyester. Vinyl ester stock is sometimes maintained. All stock is inventoried in limited quantities and will only be held with a Purchase Order on a first come, first served basis.

9. Custom panels may require detailed shop drawing submittals prior to order entry. Custom panels require longer lead times. If submittals are required it is necessary to know the customer expected ship date, when drawings are required, number of sets required and the customer contact name/address the drawings for approval should be sent to. If a set of blueprints are not available from the customer, exact panel sizes will need to be specified.

Be sure to verify the span and width dimensions.



STRONGWELL











STANDARD CAGE WORKSHEET DATE QUOTE REQUIRED: _____ Bristol Division Fax: 276-645-8003 Chatfield Division 1'-11/2" 14 1'-112" 10





LEFT ACCESS



7'-0 MIN. TO 8'-0 MAX

A =

Α

NOTE: SELECT WHICH ACCESS IS TO BE USED AT TOP OF LADDER.

Customer Name: _	·	
Address:		
Phone:		
Fax:		

- LADDER

Section 21 Project Worksheets STRONGWEL			
STAIR W	/ORKSHEET		
DATE QUOTE REQUIRED:	 Bristol Division Chatfield Division Fax: 276-645-8003 Fax: 507-867-4031 		
TOP OF CONCRETE B (RUN DIMEN NOSING WP	ISION)		
	NOSING WP		
1 =	TOP OF CON		
; = stair Width (between stringers) = EXTREN® Series =			
reads (type) = andrail: Stringer Mount or Wall Mount Both Sides or One Side	Customer Name: Address:		
OTE: Furnish dimensions for each stair	Phone:		

