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Project Number:
Project Title:
Date: 4/12/2022

Project Details

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Project Number:
Project Title:
Contract Number:
Structural Plan Sheet Number:
Prepared by: DWS
Checked by:
Date: 4/12/2022

Comments:

Design Settings

Design Method: LRFD
Relevant Loads: Seismic

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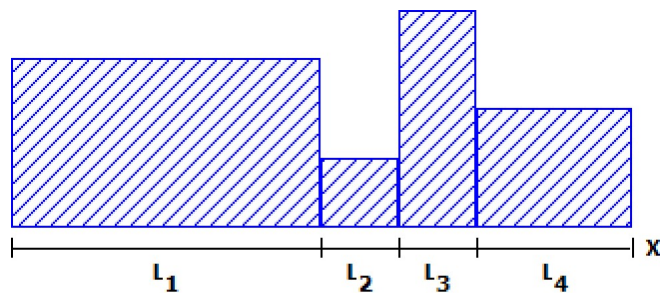
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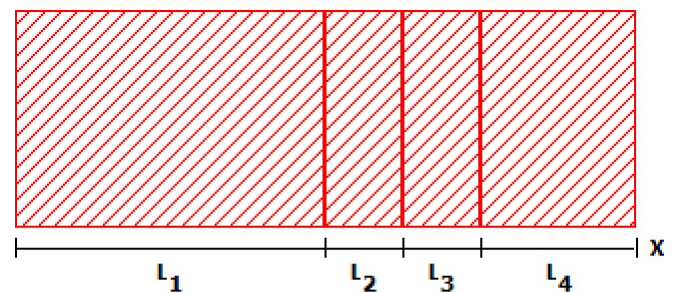
Area A

Length L:	130.00 ft	Zone Orientation:	X - Direction
Width B:	348.00 ft		
Deck Type:	Steel Roof Deck		
Support Construction:	Bar Joists	Sidelap Connector Spacing from:	3 in.
Joist / Beam Spacing:	6.00 ft	Sidelap Connector Spacing to:	36 in.
Joist / Beam Thickness:	0.2500 in.	Sidelap Connector Spacing incr.:	3 in.
Deck Panel:	1-1/2" B-Deck - Fy = 40 ksi - Wide Rib or WR	Panel Moment of Inertia (16 ga):	0.383 in. ⁴ /ft
		Panel Moment of Inertia (18 ga):	0.313 in. ⁴ /ft
f_u / f_y	55 ksi / 40 ksi	Panel Moment of Inertia (20 ga):	0.240 in. ⁴ /ft
Panel Type:	Nestable	Panel Moment of Inertia (22 ga):	0.200 in. ⁴ /ft
Panel Width:	36.000 in.		

Lateral Load



Uplift Load



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Zone A - 2L

Length L: 65 ft

Required Input Loads

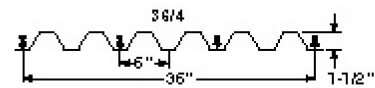
Diaphragm Shear Q: **392 plf** Net Uplift T (W): **19 psf**
 Req. Shear Stiffness G'_{req} : **0.0 kip/in.**

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 Deck Thickness: 22 ga (0.0295 in.)
 Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



Sidelap Connector Spacing: 36 in.

Edge Fastener Spacing: 36 in.

$\Phi_{Seismic}$: 0.70
 Φ_{Uplift} : 0.50
 $\Phi_{PB,Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: **445 plf** Design Uplift: **125 psf**
 Shear Stiffness G' : 16.2 kip/in. Flexibility Factor F: 61.9 micro-in./lb

Design Checks

Design Shear = 445 plf \geq Q = 392 plf \Rightarrow OK
 Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK
 Shear Stiffness G' = 16.2 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

Design OK

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Zone A - 2L

Length L: 65 ft

Required Input Loads

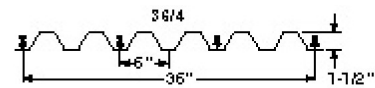
Diaphragm Shear Q: **392 plf** Net Uplift T (W): **19 psf**
 Req. Shear Stiffness G'_{req} : **0.0 kip/in.**

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 Deck Thickness: 22 ga (0.0295 in.)
 Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



No. Sidelap Connectors: 2

Min. No. Edge Fast. Per Span: 2

$\Phi_{Seismic}$: 0.70

Φ_{Uplift} : 0.50

$\Phi_{PB,Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: **445 plf** Design Uplift: **125 psf**
 Shear Stiffness G' : 16.2 kip/in. Flexibility Factor F: 61.9 micro-in./lb

Design Checks

Design Shear = 445 plf \geq Q = 392 plf \Rightarrow OK

Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK

Shear Stiffness G' = 16.2 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 3L

Length L: 16 ft

Required Input Loads

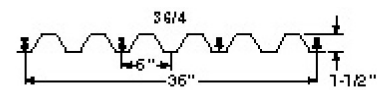
Diaphragm Shear Q: 163 plf Net Uplift T (W): 19 psf
 Req. Shear Stiffness G'_{req} : 0.0 kip/in.

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 Deck Thickness: 22 ga (0.0295 in.)
 Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



Sidelap Connector Spacing: 36 in.

Edge Fastener Spacing: 36 in.

$\Phi_{Seismic}$: 0.70
 Φ_{Uplift} : 0.50
 $\Phi_{PB,Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: 445 plf Design Uplift: 125 psf
 Shear Stiffness G' : 16.2 kip/in. Flexibility Factor F: 61.9 micro-in./lb

Design Checks

Design Shear = 445 plf \geq Q = 163 plf \Rightarrow OK
 Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK
 Shear Stiffness G' = 16.2 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 3L

Length L: 16 ft

Required Input Loads

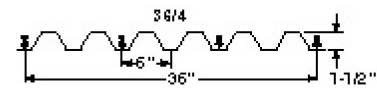
Diaphragm Shear Q: 163 plf **Net Uplift T (W):** 19 psf
Req. Shear Stiffness G'_{req} : 0.0 kip/in.

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 **Deck Thickness:** 22 ga (0.0295 in.)
Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



No. Sidelap Connectors: 1

Min. No. Edge Fast. Per Span: 1

$\Phi_{Seismic}$: 0.70

Φ_{Uplift} : 0.50

$\Phi_{PB, Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: 351 plf **Design Uplift:** 125 psf
Shear Stiffness G' : 15.5 kip/in. **Flexibility Factor F:** 64.6 micro-in./lb

Design Checks

Design Shear = 351 plf \geq Q = 163 plf \Rightarrow OK

Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK

Shear Stiffness G' = 15.5 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 2R

Length L: 16 ft

Required Input Loads

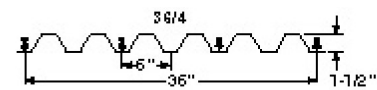
Diaphragm Shear Q: 504 plf **Net Uplift T (W):** 19 psf
Req. Shear Stiffness G'_{req} : 0.0 kip/in.

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 **Deck Thickness:** 22 ga (0.0295 in.)
Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



Sidelap Connector Spacing: 24 in.

Edge Fastener Spacing: 24 in.

$\Phi_{Seismic}$: 0.70

Φ_{Uplift} : 0.50

$\Phi_{PB, Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: 524 plf **Design Uplift:** 125 psf
Shear Stiffness G' : 16.6 kip/in. **Flexibility Factor F:** 60.3 micro-in./lb

Design Checks

Design Shear = 524 plf \geq Q = 504 plf \Rightarrow OK

Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK

Shear Stiffness G' = 16.6 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 2R

Length L: 16 ft

Required Input Loads

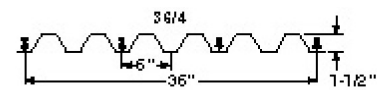
Diaphragm Shear Q: **504 plf** Net Uplift T (W): **19 psf**
 Req. Shear Stiffness G'_{req} : **0.0 kip/in.**

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 Deck Thickness: 22 ga (0.0295 in.)
 Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



No. Sidelap Connectors: 3

Min. No. Edge Fast. Per Span: 3

$\Phi_{Seismic}$: 0.70

Φ_{Uplift} : 0.50

$\Phi_{PB,Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: **524 plf** Design Uplift: **125 psf**
 Shear Stiffness G' : 16.6 kip/in. Flexibility Factor F: 60.3 micro-in./lb

Design Checks

Design Shear = 524 plf \geq Q = 504 plf \Rightarrow OK

Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK

Shear Stiffness G' = 16.6 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 3R

Length L: 33 ft

Required Input Loads

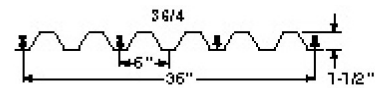
Diaphragm Shear Q: 279 plf Net Uplift T (W): 19 psf
 Req. Shear Stiffness G'_{req} : 0.0 kip/in.

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 Deck Thickness: 22 ga (0.0295 in.)
 Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



Sidelap Connector Spacing: 36 in.

Edge Fastener Spacing: 36 in.

$\Phi_{Seismic}$: 0.70
 Φ_{Uplift} : 0.50
 $\Phi_{PB, Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: 445 plf Design Uplift: 125 psf
 Shear Stiffness G' : 16.2 kip/in. Flexibility Factor F: 61.9 micro-in./lb

Design Checks

Design Shear = 445 plf \geq Q = 279 plf \Rightarrow OK
 Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK
 Shear Stiffness G' = 16.2 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

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Zone A - 3R

Length L: 33 ft

Required Input Loads

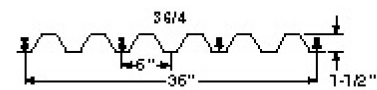
Diaphragm Shear Q: 279 plf **Net Uplift T (W):** 19 psf
Req. Shear Stiffness G'_{req} : 0.0 kip/in.

Proposed Diaphragm System

Frame Fastener: Hilti X-HSN 24 **Deck Thickness:** 22 ga (0.0295 in.)
Pattern: 36/4

Sidelap Connector: S-SLC 01 M HWH Sidelap Connector

Pattern Drawing:



No. Sidelap Connectors: 1

Min. No. Edge Fast. Per Span: 1

$\Phi_{Seismic}$: 0.70

Φ_{Uplift} : 0.50

$\Phi_{PB, Buckling}$: 0.80

Proposed System Diaphragm Shear and Stiffness/Flexibility

Design Shear: 351 plf **Design Uplift:** 125 psf
Shear Stiffness G' : 15.5 kip/in. **Flexibility Factor F:** 64.6 micro-in./lb

Design Checks

Design Shear = 351 plf \geq Q = 279 plf \Rightarrow OK

Design Uplift = 125 psf \geq T = 19 psf \Rightarrow OK

Shear Stiffness G' = 15.5 kip/in. \geq G'_{req} = 0.0 kip/in. \Rightarrow OK

Design OK

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Remarks; Your Cooperation Duties

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