CE CONSULTING ENGINEERS, CORP.
ENGINEERING CONSULTANTS

Design Guide For

AmDeck Floor and Roof System

December 07, 2007

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INDEX

1 Exemptions (Disclaimer)

The information given in this document is based on engineering design principles as set forth in ACI 318-02 (Building Code Requirements for Structural Concrete) for one way concrete joist.

This document shall only be used by Registered Architects/ Professional Engineers who possess the required credentials and who are competent to evaluate the significance and limitations of the information provided herein.

The Registered Architects/ Professional Engineers using this document to specify the AmDeck ® system for a specified project is solely responsible for determining that the project loads, span lengths, span configurations, connection details are in full compliance and within the limitations stated in this reports.

2 Scope of Work

i. The Review and analysis of the AmDeck floor and roof systems information has been provided by Amvic. [Six (6) different floor configuration with 12" panel depth & toping slabs varying from 2" to 4½" in ½" increment were analyzed and designed.]

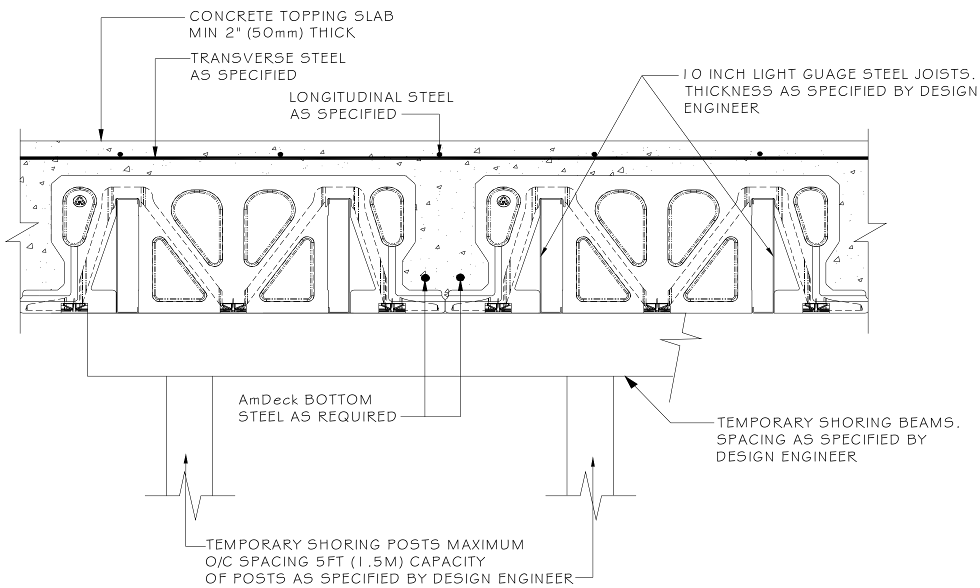
ii. EACH Amvic floor configuration analyzed and designed for:-
- Uniform dead load of 10 psf and 15 psf.
- Uniform live load of 40 psf to 100 psf in 10 psf increment.
- 3500 psi and 4000 psi compressive strength of co concrete were considered.
- ACI 318 – 02 and IBC – 2003 Codes has been used for analysis and design.

iii. Temporary shoring spans are designed and provided in tabular form.

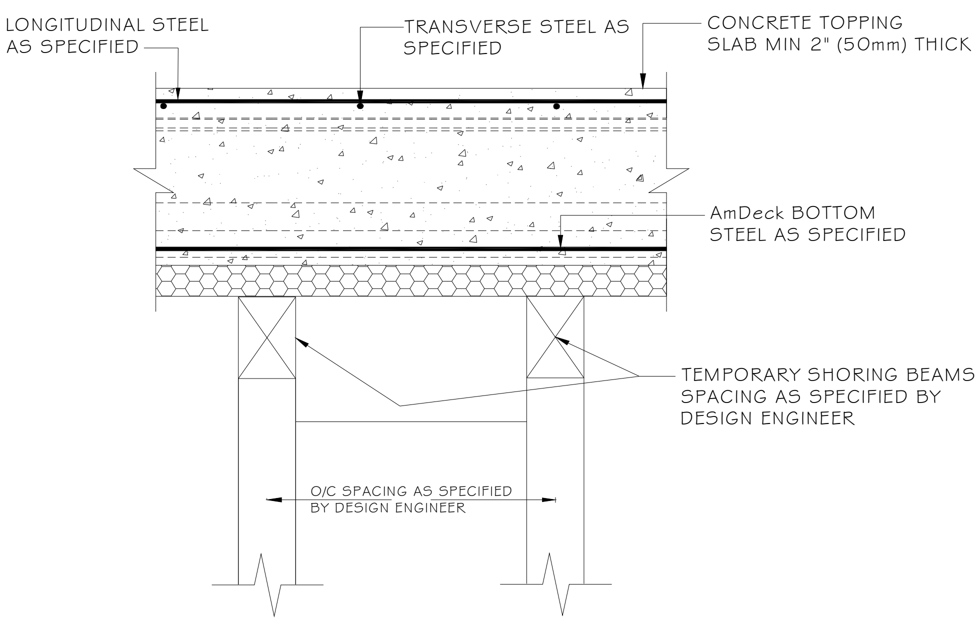
iv. Design guide table for various design parameters including reinforcement design and spans has been provided.

3 Introduction

The **AmDeck® Floor & Roof System** consists of modular, lightweight stay-in-place forms made of Expanded Polystyrene (EPS) that is used to construct floors & roofs. The system utilizes 10 inch deep lightweight steel framing stud embedded in the floor form work (refer typical transverse section) to carry temporary construction loads and to acts as furring strips for interior finishing.



TYPICAL TRANSVERSE SECTION



TYPICAL LONGITUDINAL SECTION

4 Am Deck Joist Design Criteria

Panel Designation	=	12” Panel section with 10” beam	
Beam Depth	=	d_w	in inches
Topping	=	t_f	in inches
Minimum Beam Width, bottom	=	b_w	in inches
Average Joist Width	=	b_{wa}	in inches
Panel Span, Transverse	=	b	in inches
Maximum Span of the Deck	=	L	in feet & inches
Number of Span	=	Single (SS) / Double (DS) / Multiple (MS)	
Live load acting on the deck	=	w_{LL}	in psf
Dead load acting on the deck	=	w_{DL}	in psf
Unit weight of concrete	=	γc	in pcf
Specified compressive strength of concrete	=	f’c	in psi
Yield strength of rebar	=	fy	in psi
Rebar cover, Center of rebar	=	c	in inches
Allowable Deflection factor, Total	=	$\Delta_{Factor\ Total}$	
Allowable Deflection factor, LL	=	$\Delta_{Factor\ LL}$	

4.1 Assumptions

i. Design criteria are based on **IBC 2003 + ACI 318-02** codes.

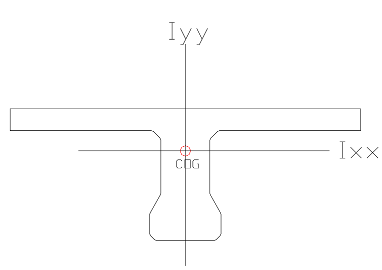
ii. Modulus of elasticity of rebar is assumed to be 29000 ksi for the design.

iii. ‘Normal weight concrete’ is assumed to be used in wall construction and therefore λ = 1.0 corresponding to ‘Normal weight concrete’ has been use in design.

iv. Factored load combination of 1.2DL + 1.6LL is used in strength calculation & service load DL + LL is used in deflection calculation.

v. ‘AmDeck floor system’ is of type ‘Concrete joist construction’ as specified in code.

4.2 Analysis



TYPICAL CROSS SECTION

Dead Load factor = K_{DL}

Live Load factor = K_{LL}

Section Properties

Cross-section area of Combined Section (A) = As Provided by Amvic (Refer Table below)

Distance of CG from top (CG_{Top}) = As Provided by Amvic (Refer Table below)

Moment of inertia about x-axis (I_{XX}) = As Provided by Amvic (Refer Table below)

Section Modulus about x-axis (S_{XX}) = I_{XX} / (Max (CG_{Top}, ($d_w + t_f - CG_{Top}$)))

Topping (inch)	Area (in^2)	Perimeter (inch)	Ixx (in^4)	Iyy (in^4)	Rx (inch)	Ry (inch)	Cg Top (inch)	Cg Bottom (inch)
2	115.9922	88.9652	1632.1071	5587.8915	3.7511	6.941	3.8451	8.1549
2.5	131.9922	89.9652	1868.2302	6953.2249	3.7622	7.258	3.8487	8.6513
3.0	147.9922	90.9652	2108.2903	8318.5582	3.7744	7.497	3.9056	9.0944
3.5	163.9922	91.9652	2357.9644	9683.8916	3.7919	7.685	4.001	9.4999
4.0	179.9922	92.9652	2621.6218	11049.2249	3.8164	7.835	4.1223	9.8777
4.5	195.9922	93.9652	2902.8583	12414.558	3.8485	7.959	4.2654	10.2346
5.0	211.9922	94.9652	3204.7879	13779.8915	3.8881	8.062	4.4246	10.5754

Effective depth (d) = $d_w - c + t_f$

Self weight of deck (w_{Self}) = w_C x A/ 144

Total Dead Load W_{DTotal} = $w_{Self} + w_{DL}$ x b /12

Live Load W_{LL} = w_{LL} x b/12

Total Unfactored Load W_P = $w_{D\ Total} + W_{LL}$

Total factored load (P_U) = {K_{DL} x $W_{D\ Total}$ + K_{LL} x W_{LL}}

ACI318-02 Section 8.3.3 followed for following approximate Shear & Moment in Joist

Maximum Shear Force (V_U) = P_U x L / 2 {For Single & Double Span)

= $1.15P_U$ x L / 2 {For Multiple Span)

Maximum Positive Moment (M_{UP})

= (P_U x L^2 / 8) x 12 {For Single Span)

= (P_U x L^2 / 14) x 12 {At End Spans of Double & Multiple Span)

= (P_U x L^2 / 16) x 12 {At Interior Spans of Multiple Span)

Maximum Negative Moment (M_{UN})

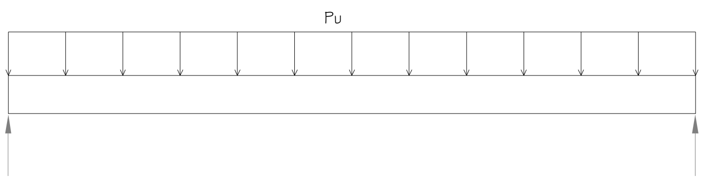
= 0 {For Single Span)

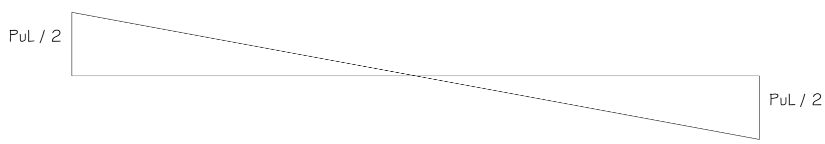
= (P_U x L^2 / 16) x 12 {At Exterior Support of Double & Multiple Span)

= (P_U x L^2 / 9) x 12 {At 1st Interior Support of Double Span)

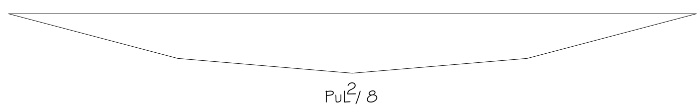
= (P_U x L^2 / 10) x 12 {At 1st Interior Support of Multiple Span)

= (P_U x L^2 / 11) x 12 {At Other Interior Support of Multiple Span)

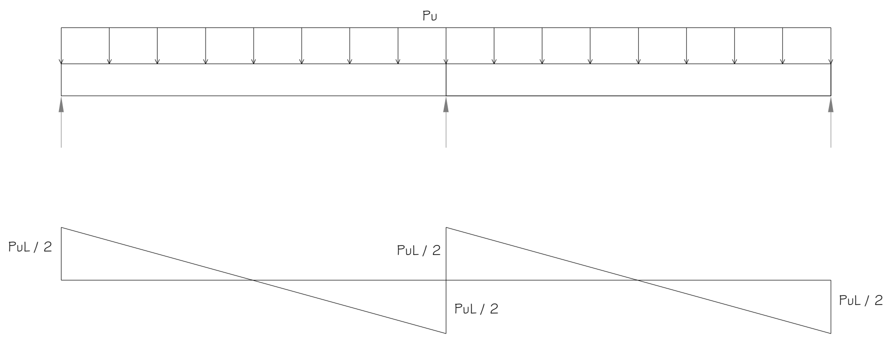




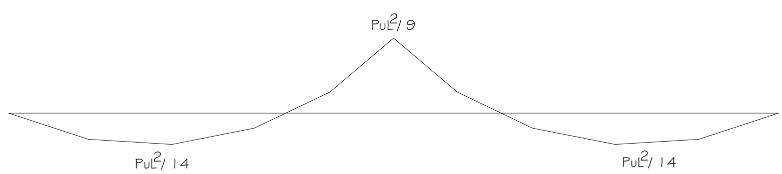
SHEAR FORCE DIAGRAM FOR SINGLE SPAN



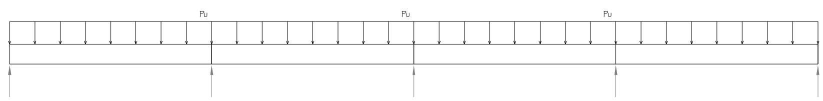
BENDING MOMENT DIAGRAM FOR SINGLE SPAN

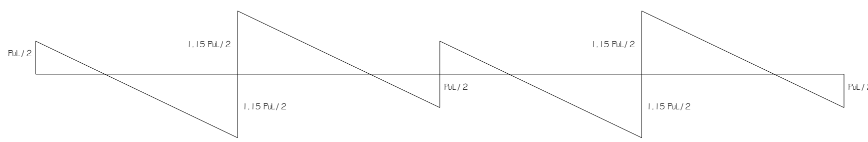


SHEAR FORCE DIAGRAM FOR DOUBLE SPAN

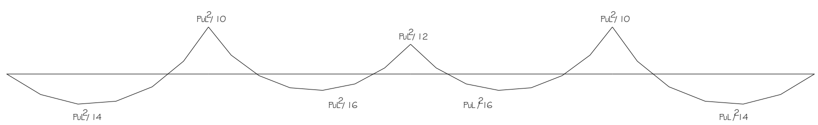


BENDING MOMENT DIAGRAM FOR DOUBLE SPAN





SHEAR FORCE DIAGRAM FOR MULTIPLE SPAN



BENDING MOMENT DIAGRAM FOR MULTIPLE SPAN

4.3 Design

4.3.1 Shear Strength

Shear Strength of the section (ϕVc) = $1.1 \times 0.75 \times 2 \times (f'c)^{0.5} \times b_w \times d$ (Per Section 8.11.8 & 11.3 of ACI – 318-02)

If $\phi Vc < V_U$, Provide Single leg stirrup rebar and provide corresponding rebar at top to support stirrups.

{

Area of single leg rebar stirrup = A_V in^2

Spacing of stirrup rebar = S_S in

Shear strength provided by shear reinforcement (ϕV_S) = $0.75 \times A_V \times fy \times d / S_S$

Total Shear strength (ϕV_N) = $\phi Vc + \phi V_S$ (Per Section 11.1 of ACI – 318-02)

4.3.2 Moment Strength

Strength reduction factor (ϕ) = 0.9

β_1 = 0.85 if ($f'c \leq 4000$ psi)

0.80 if ($4000 < f'c \leq 5000$ psi)

0.75 if ($5000 < f'c \leq 6000$ psi)

0.65 if ($6000 < f'c$)

(Above Values are per Table 6-1 of "Notes on ACI 318-02")

Balanced reinforcement ratio (ρ_t) = $0.319 \times \beta_1 \times f'c / fy$

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

Minimum reinforcement ratio (ρ_{Min}) = $\text{Max}(3 \times (f'c)^{0.5}, 200) / fy$

Positive Reinforcement

Reinforcement ratio for +ive moment (ρ_{Pos})

$$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times d^2 \times 0.85 \times f'c)]^{0.5}\}$$

Area of reinforcement required ($A_{S\ Pos}$ req) = $\rho_{Pos} \times bw \times d$

$A_{S\ Pos}$ provided > $A_{S\ Pos}$ required

Negative Reinforcement ***(For Span > 1)***

Reinforcement ratio for -ive moment (ρ_{Neg})

$$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UN} / (\phi \times b_w \times d^2 \times 0.85 \times f'c)]^{0.5}\}$$

Area of reinforcement required ($A_{S\ Neg}$ req) = $\rho_{Neg} \times bw \times d$

$A_{S\ Neg}$ provided > $A_{S\ Neg}$ required

Nominal moment strength

Plain Concrete

Nominal moment strength of the section (ϕMn) = 0.65 x 5 (f'c) $^{0.5}$ x S_{XX}

Reinforced Concrete

Nominal moment strength of the section (ϕMn)

= $\phi A_{S\ Pos}$ provided x fy x [d – ($A_{S\ Pos}$ provided x fy / (0.85 x f'c x b))/2]

4.3.3 Deflection

Total depth of section (h) = $d_w + t_f$

A_{LP} = $A_{S\ Neg}$ provided

A_B = $A_{S\ Pos}$ provided

R_{DS} = Diameter of shear rebar

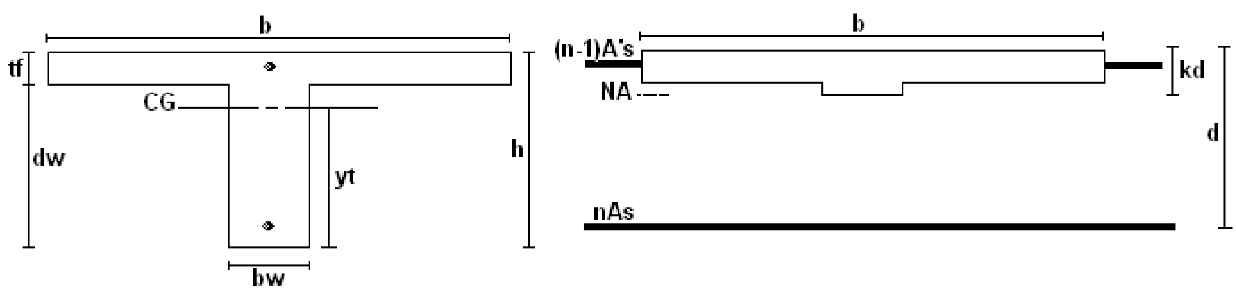
R_{DLP} = Diameter of Single rebar $A_{S\ Neg}$ provided

Effective depth (d_{LP}) = $d_w + t_f - c - R_{DS} - 0.5R_{DLP}$

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5}$ x (33 x (f'c) $^{0.5}$)

Modular ratio (n) = E_S / E_C

Modulus of rupture of concrete (fr) = 7.5 x (f'c) $^{0.5}$



Gross Section | Cracked Transformed Section

y_t = $Cg_{\ Bottom}$ As Provided by Amvic (Refer Table above)

Ig = I_{XX} As Provided by Amvic (Refer Table above)

Cracking Moment (M_{CR}) = fr x Ig / y_t

C = b_w / (n x $A_{S\ Pos}$ provided)

f = t_f x (b-b_w) / (n x $A_{S\ Pos}$ provided)

r = (n-1) $A_{S\ Neg}$ provided / (n $A_{S\ Pos}$ provided)

d' = h – d_{LP}

$$kd = \frac{\sqrt{C(2d + t_f \times f + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

(Per Table 10-2 of "Notes on ACI318-02")

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b - b_W)t_f^{\,3}/12 + b_W(kd)^3/3 + (b - b_W)t_f(kd - t_f/2)^2 + nA_{Bi}(d - kd)^2 + (n-1)A_{LPi}(kd - d')^2$$

(Per Table 10-2 of "Notes on ACI318-02")

Service Moment (M_P)

Dead Load moment, M_D = $W_{D\ Total} \times L^2 / 8$

Live Load moment, M_L = $W_{LL} \times L^2 / 8$

Total moment, M_{D+L} = $M_D + M_L$

Sustained Moment, M_{SUS} = $M_D + 0.5 \times M_L$ *(Assuming that 50% of Live Load as sustained load)*

Effective moment of inertia for deflection computation (Ie)

= I_g if $M_{CR} > M_P$

= Min. of $[\{(M_{CR} / M_P)^3 Ig + [1 - (M_{CR} / M_P)^3] I_{CR}\}$ and $I_g]$ if $M_{CR} \le M_P$

4.3.3.1 Short Term Deflection

For Continuous beam, the mid-span deflection **Δ_i = K (5/48) $M_P \times L^2$ / (Ec x Ie)**
(Per Section 9.5.2.4 of "Notes on ACI318-02")

Where,

K = $1.20 - 0.20\ M_P / M_O$ for continuous beam

= 0.80 for Continuous fixed-hinged beam, mid span deflection

= 0.738 for Continuous fixed-hinged beam, maximum deflection using maximum moment

= 0.60 for fixed-fixed beam

= 1.0 for Simple Beam

M_O = Simple span moment at mid span, = $(P \times L^2 / 8) \times 12$

Use K = 1.0 to be on conservative side

$\Delta_{i\ D}$ = $K (5/48) M_D \times L^2 / (Ec \times Ie)$

$\Delta_{i\ LL}$ = $K (5/48) M_{LL} \times L^2 / (Ec \times Ie)$

$\Delta_{i\ SUS}$ = $K (5/48) M_{SUS} \times L^2 / (Ec \times Ie)$

$\Delta_{i\ Total}$ = $\Delta_{i\ D} + \Delta_{i\ LL}$

Allowable Short Term Deflections

$\Delta_{i\ Allow\ LL}$ = $(L \times 12) / (\Delta_{Factor\ LL})$

4.3.3.2 Long Term Deflection

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\ SUS}$ (Per Section 9.5.2.5 of "Notes on ACI318-02")

Where

λ = $\xi / (1+50p')$

p' = Area of compression steel (A') / (b_w x d)

ξ = Time- dependent factor

= 2.0 5 years and more Sustained load duration

	=	1.4	12 months
	=	1.2	6 months
	=	1.0	3 months.
Δ_{LT}	=	$\Delta_{(CP+SH)} + \Delta_{i\ LL}$	

Allowable Long Term Deflection

$\Delta_{i\ Allow\ LL}$ = (L x 12) / (48$\tilde{0}$ or 240)

5 Slab Reinforcement Design Criteria

5.1 Transverse Reinforcement

L_{Slab} = b/12

$M_{u\ Slab}$ = $P_u \times L_{Slab}^2 / 12$

Balanced reinforcement ratio (ρ_t) = $0.319 \times \beta_1 \times f'c / fy$ (Per Section 7.1 of Notes on ACI 318-02)

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

Minimum reinforcement ratio (ρ_{Min}) = Max $(3 \times (f'c)^{0.5}, 200) / fy$ (Per Section 10.5.1 ACI 318-02)

Reinforcement ratio for +ive moment (ρ_{Pos})

$$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times t_f / 2^2 \times 0.85 \times f'c)]^{0.5}\}$$

Area of reinforcement required ($A_{S\ Pos}$ req) = $\rho_{Pos} \times 12 \times t_f / 2$

Area of reinforcement required ($A_{S\ Pos}$ req) (Minimum) = $\rho_{Min} \times 12 \times t_f / 2$

Area of reinforcement required ($A_{S\ Pos}$ req) (Maximum) = $\rho_{Max} \times 12 \times t_f / 2$

If $A_{S\ Pos}$ req (Minimum) > $A_{S\ Pos}$ req

Then Provided Area of Steel = Minimum of $A_{S\ Pos}$ req (Minimum) or 1.33 x $A_{S\ Pos}$ req

If $A_{S\ Pos}$ req (Minimum) ≤ $A_{S\ Pos}$ req

Then Provided Area of Steel = $A_{S\ Pos}$ req

Minimum Spacing, $S_{Calculated}$ = (A_{rebar} / Area of Steel Provided) x 12

However per section 7.12 of ACI 318-02, minimum spacing will be lesser of following three

(1) $S_{Calculated}$
(2) 18" O.C.
(3) 5 x t_f (t_f is thickness of slab)

5.2 Longitudinal Reinforcement

Minimum Longitudinal reinforcement as per section 7.12 of ACI 318-02 to be calculated by following equation.

For Grade 60 rebar, As Minimum = 0.0018 x Cross sectional Area

Spacing for As Minimum, $S_{Calculated}$ = (A_{rebar} / Area of Steel Provided) x 12

However per section 7.12 of ACI 318-02, minimum spacing will be lesser of following three

(1) $S_{Calculated}$
(2) 18" O.C.
(3) 5 x t_f (t_f is thickness of slab)

6 Shoring Design Criteria

Joist Spacing = 16”

Self weight of joist = (Area of Joist/ 2 x Unit wt. of concrete)/144

Self weight of topping = (16 x topping thickness x Unit wt. of concrete) /144

Total dead load = Self weight of joist + Self weight of topping

Construction Load = Joist Spacing x W_{LL} / 12

Self weight of steel joist = $W_{DL\ Steel}$

Total Load, W = Total Dead Load + Construction load + Self wt. of steel joist

Maximum Allowed span

Based on Allowable Moment

	UNPERFORATED PROPERTIES									PERFORATED PROPERTIES				
Joist Designation	Mrx (in.kip)	Lu (in)	Mry web.comp. (in.kip)	Mry lips.comp. (in.kip)	Shear Vr (kips)	Web Cripp Pr (kips)	Ix (in^4)	Iy (in^4)	Sf (in^3)	Mrx (in.kip)	Mry web.comp. (in.kip)	Mry lips.comp. (in.kip)	Shear Vr (kips)	Ix defl. (in^4)
1000S162-54	70.7	31.3	6.39	6.96	2.12	1.1	9.95	0.205	1.99	70.7	5.99	6.89	2.12	9.31
1000S162-68	96.9	31	7.95	8.4	4.27	1.67	12.3	0.247	2.47	96.9	7.51	8.32	4.27	11.9
1000S162-97	147	30.4	10.7	10.9	12.6	3.17	17	0.321	3.39	147	10.3	10.8	9.17	17

Allowable moment = M_{Max} from Amvic chart (Refer Table)

M_{Max} = $W \times L^2 / 8$

L = $\sqrt{M_{Max} \times 8 / W}$

Based on Allowable shear

V_X = W x L/2

L = 2 x V_X / W

Based on Deflection factor

Allowable deflection, ADF = L/ Deflection factor (D_F)

ADF = L/ Deflection factor (D_F) = $\frac{5}{384} \times \frac{W \times L^4}{E \times I}$

L = $\sqrt[3]{\Delta \times \frac{384}{5} \times \frac{E \times I}{W}}$

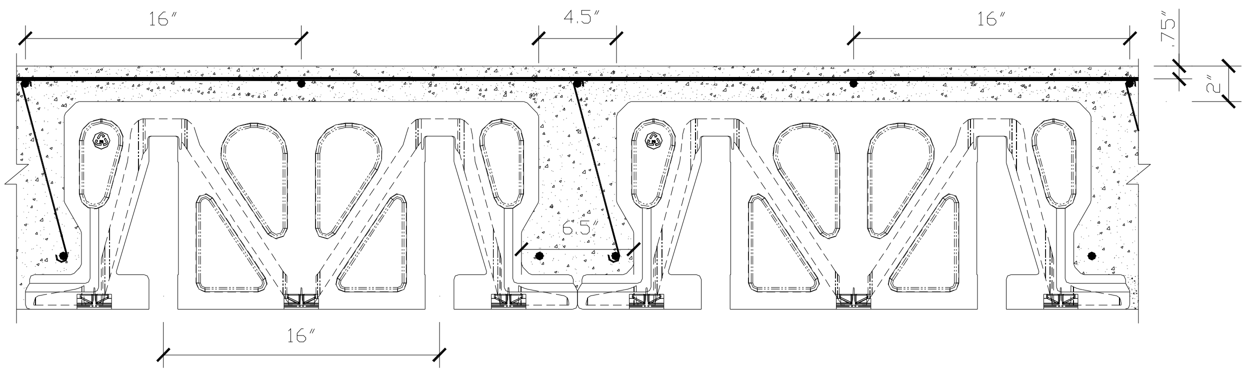
Based on Crippling

Web Crippling Load, P_r = W x L / 2

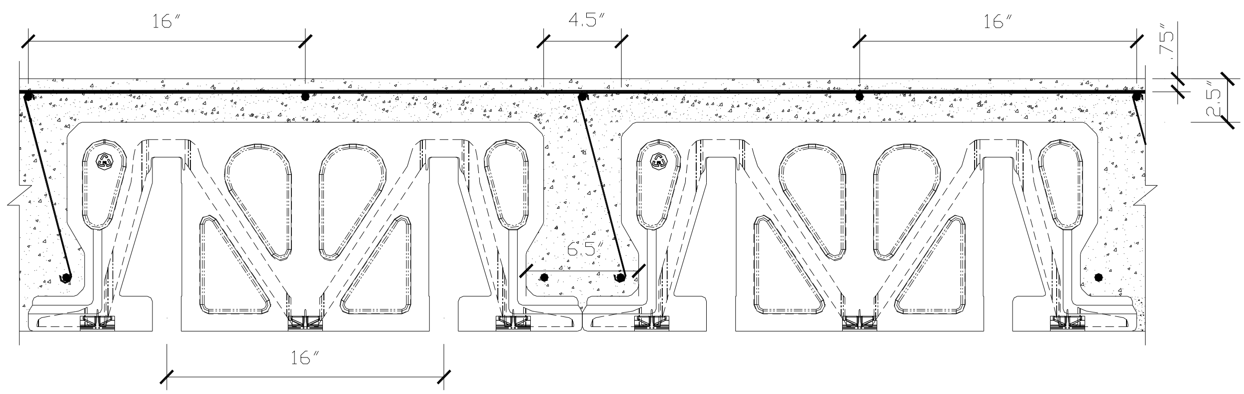
Span of Shoring = Minimum of (L_{Moment}, L_{Shear}, $L_{Deflection}$ & $L_{Crippling}$)

7 Specifications

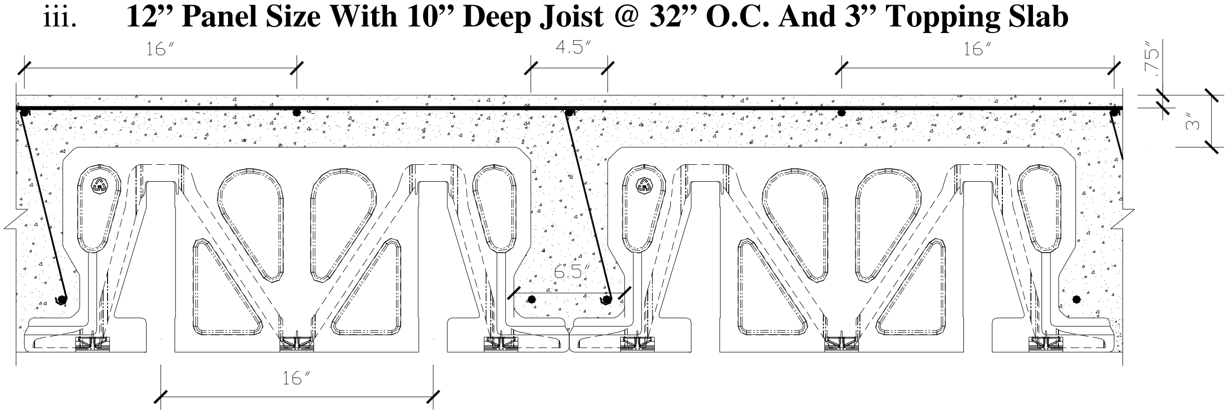
i. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 2" Topping Slab**



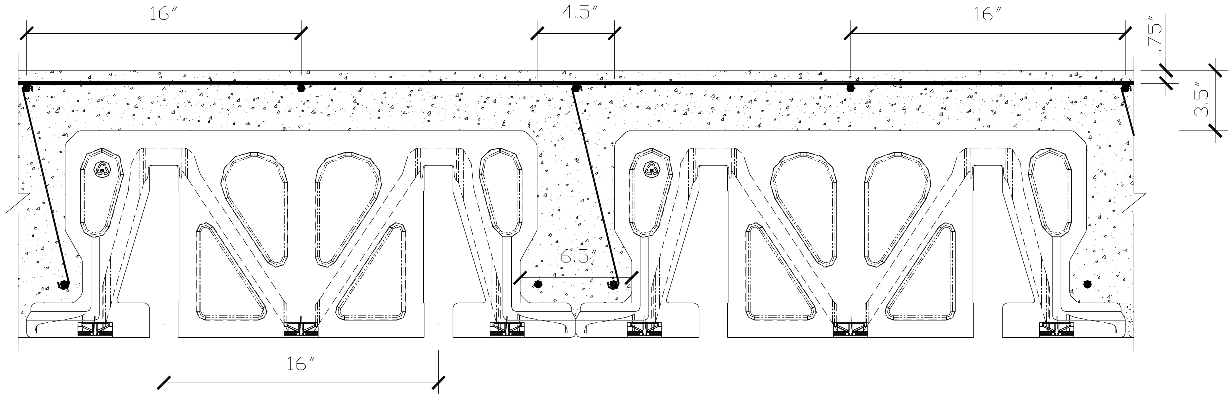
ii. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 2.5" Topping Slab**



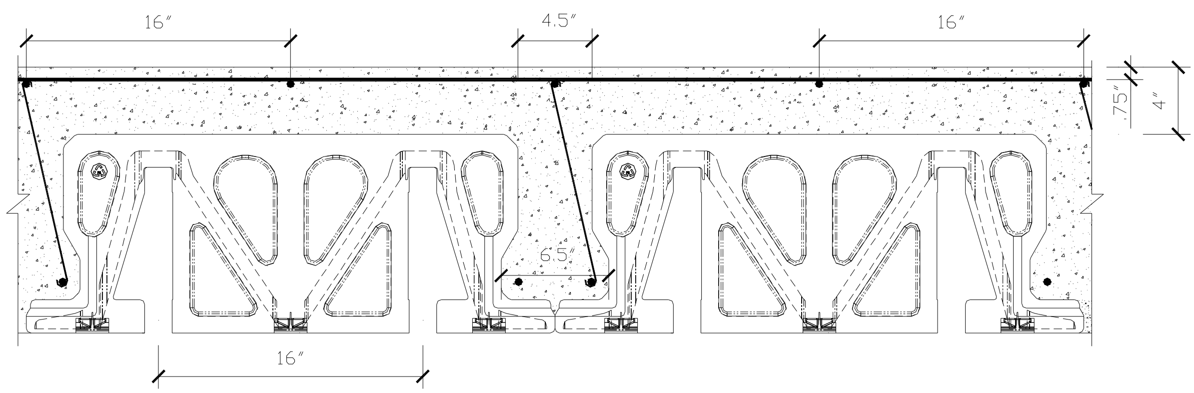
iii. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 3" Topping Slab**



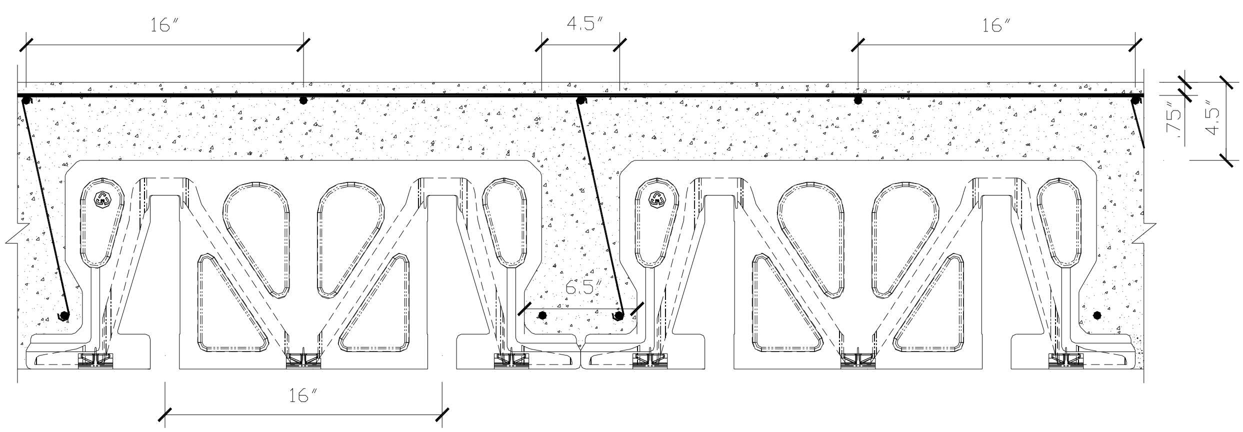
iv. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 3.5" Topping Slab**



v. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 4" Topping Slab**



vi. **12" Panel Size With 10" Deep Joist @ 32" O.C. And 4.5" Topping Slab**



8 AmDeck Joist Design Calculations

8.1 Single Span Joist

(12" Panel Size With 10" Deep Joist @ 32" O.C. And 2" Topping Slab)

8.1.1 Inputs

Panel Designation = 12" Panel section with 10" deep beam

Beam Depth (dw) = 10"

Topping (t_f) = 2"

Minimum Beam Width, bottom (b_w) = 6.5"

Average Joist Width (b_{wa}) = 5.2"

Panel Span, Transverse (b) = 32"

Maximum Span of the Deck (L) = 10'-0"

Number of Span = Single

Live load acting on the deck (w_{LL}) = 40 psf

Dead load acting on the deck (w_{DL}) = 10 psf

Unit weight of concrete (γc) = 145 pcf

Specified compressive strength of concrete (f'c) = 3500 psi

Yield strength of rebar (fy) = 60000 psi

Rebar cover, Center of rebar (c) = 1.25"

Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$) = 180 (Short Term)

Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$) = 240 (Long Term)

8.1.2 Analysis

Dead Load factor (K_{DL}) = 1.2

Live Load factor (K_{LL}) = 1.6

Section Properties

Cross-section area A = 115.9888 in^2 (Refer Table on Page – 7)

Distance of CG from top (CG_{Top}) = 3.8451 in from top

Moment of inertia about x-axis (I_{XX}) = 1632.1 in^4

Section Modulus about x-axis (S_{XX}) = 1632.1/ {Max [3.8451, (10 + 2 – 3.8451)]}

= 200.137 in^3

Effective depth (d) = $d_w - c + t_f$

= 10 – 1.25 + 2

= 10.75"

Self weight of deck (w_{Self}) = $w_C \times A_{Gross}$

= 145 x 115.9888/144

= 116.794 plf

Total Dead Load W_{DTotal} = Self Weight + Applied Additional Dead Load

= 116.794 + 10 x 32/12

= 143.46 plf

Live Load W_{LL} = 40 x 32/12

= 106.67 plf

Total Unfactored Load W_P = $w_{D\ Total} + w_{LL}$

= 143.46 + 106.67

= 250.13 plf

Total factored load (P_U) = $\{K_{DL} \times w_{D\ Total} + K_{LL} \times w_{LL}\}$

= 1.2 x 143.46 +1.6 x 106.67

= 342.824 plf

Maximum Shear Force (V_U) = $P_U \times L / 2$

= 342.824 x 10 / 2

= 1714.12 lb.

Maximum Positive Moment (M_{UP}) = $(P_U \times L^2 / 8) \times 12$

= $(342.824 \times 10^2 / 8) \times 12$

= 51423.6 in-lb.

Maximum Negative Moment (M_{UN}) = 0

8.1.3 Design

8.1.3.1 Shear Strength

Shear Strength of the section (ϕVc) = $1.1 \times 0.75 \times 2 \times (f'c)^{0.5} \times b_{wa} \times d$

= $1.1 \times 0.75 \times 2 \times (3500)^{0.5} \times 5.2 \times 10.75$

= **5456.69 lb. > V_U (= 1714.12 lb.) (OK)**

8.1.3.2 Moment Strength

Strength reduction factor (ϕ) = 0.9

β_1 = 0.85 if ($f'c \le 4000$ psi)

0.80 if ($4000 < f'c \le 5000$ psi)

0.75 if ($5000 < f'c \le 6000$ psi)

0.65 if ($6000 < f'c$)

β_1 = 0.85 since ($f'c \le 4000$ psi)

Tension controlled reinforcement ratio (ρ_t) = 0.319 x 0.85 x 3500 / 60000

= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max $(3 \times (f'c)^{0.5}, 200)$ / fy

= Max $(3 \times (3500)^{0.5}, 200)$ / 60000

= Max (177.5, 200) / 60000

= 200 / 60000

= 0.0033

Positive Reinforcement

Reinforcement ratio for +ive moment (ρ_{Pos})

= $(0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_{wa} \times d^2 \times 0.85 \times f'c)]^{0.5}\}$

= $(0.85 \times 3500/60000) \{1 - [1 - 2 \times 51423.6 / (0.9 \times 5.2 \times 10.75^2 \times 0.85 \times 3500)]^{0.5}\}$

= 0.00161 < (ρ_{Min} = 0.0033)

= 0.0033 < (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required ($A_{S\ Pos}$ req) = ρ_{Pos} x bwa x d

= 0.0033 x 5.2 x 10.75

= 0.18847 in^2

$A_{S\ Pos}$ provided = 1 # 4 (Area = 0.1963 in^2 > 0.18847) **OK**

Nominal moment strength

Plain Concrete

Nominal moment strength of the section (ϕMn) = $0.65 \times 5 (f'c)^{0.5} \times S_{XX}$

= $0.65 \times 5 \times (3500)^{0.5} \times 200.137$

= 38480.86 **in-lb.**

Reinforced Concrete

Nominal moment strength of the section (ϕMn)

= $\phi A_{S\ Pos}$ provided x fy x [d – ($A_{S\ Pos}$ provided x fy / (0.85 x f'c x b))/2]

= 0.9 x 0.1963 x 60000 x [10.75 – (0.1963 x 60000 / (0.85 x 3500 x 32))/2]

= **113296.43 in-lb.**

8.1.3.3 Deflection

Total depth of section (h) = $d_w + t_f$

= 10 + 2

= 12"

A_{LP} = 0 in^2

A_B = 0.1963 in^2

R_{DS} = 3/8" (For #3 rebar)

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5} \times (33 \times (f'c)^{0.5})$

= $(145)^{1.5} \times (33 \times (3500)^{0.5})$

= 3408788 psi

Modulus of elasticity of steel (E_S) = 29000000 psi

Modular ratio (n) = E_S / E_C

= 29000000 / 3408788

= 8.51

Modulus of rupture of concrete (fr) = $7.5 \times (f'c)^{0.5}$

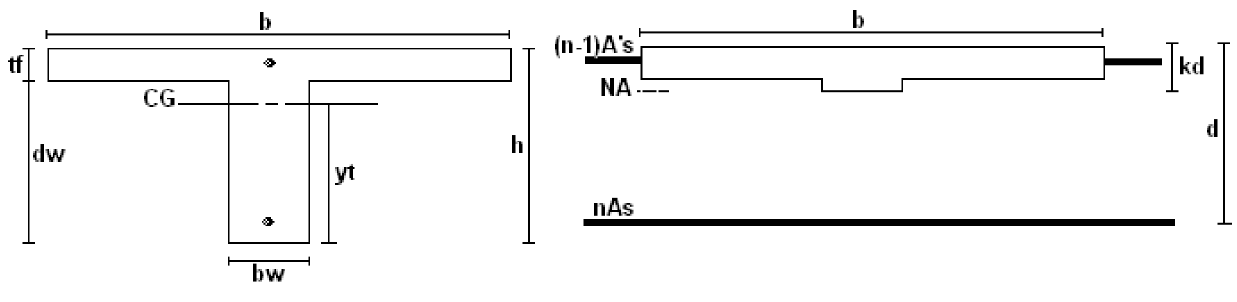
= $7.5 \times (3500)^{0.5}$

= 443.7 psi

Cracking Moment (M_{CR}) = fr x Ig / y_t

= 443.7 x 1632.1 / 8.1549

= 88800.9 in-lb.



Gross Section

Cracked Transformed Section

y_t = 8.1549" (As Provided by Amvic)

Ig = 1632.1 in^4 (As Provided by Amvic)

C = b_{wa} / (n x $A_{S\ Pos}$ provided)

= 5.2 / (8.51 x 0.1963)

= 3.1128

f = t_f x (b-b_{wa}) / (n x $A_{S\ Pos}$ provided)

= 2 x (32 – 5.2) / (8.51 x 0.1963)

= 32.085

r = (n-1) $A_{S\ Neg}$ provided / (n $A_{S\ Pos}$ provided) = 0 (As $A_{S\ Neg}$ provided = 0)

$$kd = \frac{\sqrt{C(2d + t_f \times f + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

= [{3.1128 x (2x10.75 + 2x32.085 + 0) + (32.085+0+1) ^{2}} $^{0.5}$ - (32.085+0+1)] / 3.1128

= 1.2242

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b - b_W)t_f^{\,3}/12 + b_W(kd)^3/3 + (b - b_W)t_f(kd - t_f/2)^2 + nA_{Bi}(d - kd)^2 + (n-1)A_{LPi}(kd - d')^2$$

= (32-5.2) x 2^3 / 12 + 5.2 x (1.2242) ^{3} / 3 + (32-5.2) (2) (1.2242–2/2) ^{2} + 8.51 x (0.1963) (10.75 – 1.2242) ^{2} + (10.51-1) x 0

= 175.3248 in^4

Service Moment (M_P)

Dead Load moment, M_D = 143.46 x 10^2/ 8 x 12
= 21519 lb-in

Live Load moment, M_L = 106.67x 10^2/ 8 x 12
= 16000 lb-in

Total moment, M_{D+L} = 21519 + 16000

= 37519 lb- in

Sustained Moment, M_{SUS} = M_D + 0.5 x M_L (Assume that 50% Load as sustained)
= 21519 + 0.5 x 16000
= 29519 lb-in

Effective moment of inertia for deflection computation (Ie)

A. Under Dead Load

Mcr / M_D = 88800.9 / 21519
= 4.1266
Hence $(Ie)_d$ = I_g

B. Under Sustained Load

Mcr / M_{SUS} = 88800.9 / 29519
= 3.008
Hence $(Ie)_d$ = I_g

C. Under Dead + Live Load

Mcr / M_{D+L} = 88800.9 / 37519
= 2.3668
Hence $(Ie)_d$ = I_g

8.1.3.3.1 Short Term Deflection

For Continuous beam, the mid-span deflection is $\mathbf{\Delta_i = K (5/48) M_P \times L^2 / (Ec \times Ie)}$

Where,
K = 1.20 – 0.20 M_P / M_O for continuous beam
= 0.80 for Continuous fixed-hinged beam, mid span deflection
= 0.738 for Continuous fixed-hinged beam, max deflection using maximum moment
= 0.60 for fixed-fixed beam
= 1.0 for simple span

M_O = Simple span moment at mid span, = (P x L^2 / 8) x 12

Use K = 1.0 to be on conservative side

$\Delta_{i\,D}$ = K (5/48) M_D x L^2 / (Ec x Ie)
= 1.0 x (5/48) x 21519x $(10 \times 12)^2$ / (3408788 x 1632.1)
= 0.00580"

$\Delta_{i\,LL}$ = K (5/48) M_{LL} x L^2 / (Ec x Ie)
= 1.0 x (5/48) x 16000 x $(10 \times 12)^2$ / (3408788 x 1632.1)
= 0.00431"

$\Delta_{i\,SUS}$ = K (5/48) M_{SUS} x L^2 / (Ec x Ie)
= 1.0 x (5/48) x 29519 x $(10 \times 12)^2$ / (3408788 x 1632.1)

= 0.007959”

Allowable Deflections

$\Delta_{i\ Allow\ LL}$ = (L x 12) / $\Delta_{Factor\ Total}$

= (10 x 12) / 180

= **0.6666”**

> $\Delta_{i\ LL}$ **= 0.00431” (OK)**

8.1.3.3.2 Long term Deflection

i. Sustained load duration of 5 years & more

λ = ξ/ (1 + 50 x p’)

= 2.0 / (1 + 0)

= 2.0

$\Delta_{(CP+SH)}$ = λ x $\Delta_{i\ SUS}$

= 2 x 0.007959

= 0.015918 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = 0.015918 + 0.00431

= 0.020228 in

Allowable Deflections

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}

= (10 x 12) / 240

= **0.5”**

> **0.020228” (OK)**

ii. Sustained load duration of 3 Months

Sustained Moment, M_{SUS} = M_D + 0.5 x M_L (Assume that 50% Load as sustained)

= 21519 + 0.5 x 16000

= 29519 lb-in

Under Sustained Load

Mcr / M_{SUS} = 88800.9 / 29519

= 3.008

Hence $(Ie)_{SUS}$ = I_g

$\Delta_{i\ SUS}$ = K (5/48) M_{SUS} x L^2 / (Ec x Ie)

= 1.0 x (5/48) x 29519 x $(10\ x12)^2$ / (3408788 x 1632.1)

= 0.000132”

λ = ξ/ (1 + 50 x p’)

= 1.0 / (1 + 0)

= 1.0

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\ SUS}$

= 1 x 0.000132

= 0.000132 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = 0.000132 + 0.00431

= 0.0044 in

Allowable Deflections

$\Delta_{i\ Allow}$ = $(L \times 12) / \Delta_{Factor}$

= (10 x 12) / 240

= **0.5”**

> **0.0044” (OK)**

8.1.4 Calculation for Transverse Slab Reinforcement

Consider 12” width of slab,

L_{Slab} = 27.5 / 12

= 2.292 ft

Self weight of deck = 116.794 (As calculated above)

Total factored load, P_U = 1.2 x 10 x 12 / 12 + 1.2 x 116.794 + 1.6 x 40 x 12/12

= 216.15 plf

Maximum Moment = $216.15 \times 2.29^2 / 12$

= 94.4 ft-lb

= 1133.5 in-lb

Tension controlled reinforcement ratio (ρ_t) = 0.319 x 0.85 x 3500 / 60000

= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = $Max(3 \times (f'c)^{0.5}, 200) / fy$

= $Max(3 \times (3500)^{0.5}, 200) / 60000$

= Max (177.5, 200) / 60000

= 200 / 60000

= 0.0033

Reinforcement ratio for +ive moment (ρ_{Pos})

= $(0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times t_f /2^2 \times 0.85 \times f'c)]^{0.5}\}$
= 1.78×10^{-3}
= 0.00178 < (ρ_{Min} = 0.0033)
= 0.00178 < (ρ_{Max} = 0.0158) **OK**

Area of Reinforcement Required = 0.00178 x 12 x 2/2
= 0.021 in^2

Rebar Used = #4 rebar

Area of Rebar = 0.1963 in^2

Spacing = (0.1963 / 0.021) x 12
= 112.71 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 112.71 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

8.1.5 Calculation for Longitudinal Slab Reinforcement

Consider 12" width of slab,

Per Section 7.12 of ACI-318-02 Minimum reinforcement = 0.0018 x area of cross section
= 0.0018 x 2 x 12
= 0.0432 in

Spacing = (0.1963 / 0.0432) x 12
= 54.52 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 54.52 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

8.2 Double Span Joist

(12" Panel Size With 10" Deep Joist @ 32" O.C. And 2" Topping Slab)

8.2.6 Inputs

Panel Designation = 12" Panel section with 10" deep beam

Beam Depth (dw) = 10"

Topping (t_f) = 2"

Minimum Beam Width, bottom (b_w) = 6.5"

Average Joist Width (b_{wa}) = 5.2"

Panel Span, Transverse (b) = 32"

Maximum Span of the Deck (L) = 10'-0"

Number of Span = Double

Live load acting on the deck (w_{LL}) = 40 psf

Dead load acting on the deck (w_{DL}) = 10 psf

Unit weight of concrete (γc) = 145 pcf

Specified compressive strength of concrete (f'c) = 3500 psi

Yield strength of rebar (fy) = 60000 psi

Rebar cover, Center of rebar (c) = 1.25"

Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$) = 360 (Short Term)

Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$) = 480 (Long Term)

8.2.7 Analysis

Dead Load factor (K_{DL}) = 1.2

Live Load factor (K_{LL}) = 1.6

Section Properties

Cross-section area A = 115.9888 in^2 (Refer Table on Page – 7)

Distance of CG from top (CG_{Top}) = 3.8451 in from top

Moment of inertia about x-axis (I_{XX}) = 1632.1 in^4

Section Modulus about x-axis (S_{XX}) = 1632.1 / {Max [3.8451, (10 + 2 – 3.8451)]}

= 200.137 in^3

Effective depth (d) = $d_w - c + t_f$

= 10 – 1.25 + 2

= 10.75"

Self weight of deck (w_{Self}) = $w_C \times A_{Gross}$

= 145 x 115.9888/144

= 116.794 plf

Total Dead Load W_{DTotal} = Self Weight + Applied Additional Dead Load

= 116.794 + 10 x 32/12

= 143.46 plf

Live Load W_{LL} = $40 \times 32/12$
= 106.67 plf

Total Un-factored Load W_P = $w_{D\ Total} + w_{LL}$
= 143.46 + 106.67
= 250.13 plf

Total factored load (P_U) = $\{K_{DL} \times w_{D\ Total} + K_{LL} \times w_{LL}\}$
= $1.2 \times 143.46 + 1.6 \times 106.67$
= 342.824 plf

Maximum Shear Force (V_U) = $P_U \times L / 2$
= $342.824 \times 10 / 2$
= 1714.12 lb.

Maximum Positive Moment (M_{UP}) = $(P_U \times L^2 / 14) \times 12$
= $(342.824 \times 10^2 / 14) \times 12$
= 29384.91 in-lb.

Maximum Negative Moment (M_{UN})
= $(P_U \times L^2 / 16) \times 12$ {At Exterior Support of Double Span)
= $(342.824 \times 10^2 / 16) \times 12$ = 25711.8in-lb.

= $(P_U \times L^2 / 9) \times 12$ {At 1st Interior Support of Double Span)
= $(342.824 \times 10^2 / 9) \times 12$ = 45709.87 in-lb.

8.2.8 Design

8.2.8.1 Shear Strength

Shear Strength of the section (ϕVc) = $1.1 \times 0.75 \times 2 \times (f'c)^{0.5} \times b_{wa} \times d$
= $1.1 \times 0.75 \times 2 \times (3500)^{0.5} \times 5.2 \times 10.75$
= **5456.69 lb. > V_U (= 1714.12 lb.) (OK)**

8.2.8.2 Moment Strength

Strength reduction factor (ϕ) = 0.9

β_1 = 0.85 if ($f'c \le 4000$ psi)

Tension controlled reinforcement ratio (ρ_b) = $0.319 \times 0.85 \times 3500 / 60000$
= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t
= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max $(3 \times (f'c)^{0.5}, 200) / fy$
= Max $(3 \times (3500)^{0.5}, 200) / 60000$
= Max (177.5, 200) / 60000
= 200 / 60000
= 0.0033

Positive Reinforcement
Reinforcement ratio for +ive moment (ρ_{Pos})

= $(0.85 \times f'c / fy) \times \{1 – [1 – 2 \times M_{UP} / (\phi \times b_{wa} \times d^2 \times 0.85 \times f'c)]^{0.5}\}$

= $(0.85 \times 3500/60000) \{1 – [1 – 2 \times 29384.9 / (0.9 \times 5.2 \times 10.75^2 \times 0.85 \times 3500)]^{0.5}\}$

= 0.0009139 < (ρ_{Min} = 0.0033)

= 0.0033 < (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required ($A_{S\ Pos}$ req) = ρ_{Pos} x bwa x d

= 0.0033 x 5.2 x 10.75

= 0.18477 in^2

$A_{S\ Pos}$ provided = 1 # 4 (Area = 0.1963 in^2 > 0.18447) **OK**

Negative Reinforcement
Reinforcement ratio for -ive moment (ρ_{Neg})

= $(0.85 \times f'c / fy) \times \{1 – [1 – 2 \times M_{UN} / (\phi \times b_{wa} \times d^2 \times 0.85 \times f'c)]^{0.5}\}$

= $(0.85 \times 3500/60000)\{1 – [1 – 2 \times 45709.8/(0.9 \times 5.2 \times 10.75^2 \times 0.85 \times 3500)]^{0.5}\}$

= 0.001429 < (ρ_{Min} = 0.0033)

= 0.0033 < (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required ($A_{S\ Neg}$ req) = ρ_{Neg} x bwa x d

= 0.0033 x 5.2 x 10.75

= 0.18447 in^2

$A_{S\ Neg}$ provided = 1 # 4 (Area = 0.1963 in^2 > 0.18447) **OK**

Nominal moment strength
Plain Concrete
Nominal moment strength of the section (ϕMn) = $0.65 \times 5 (f'c)^{0.5} \times S_{XX}$

= $0.65 \times 5 \times (3500)^{0.5} \times 200.137$

= **38480.8594 in-lb.**

Reinforced Concrete
Nominal moment strength of the section (ϕMn)

= $\phi A_{S\ Pos}$ provided x fy x [d – ($A_{S\ Pos}$ provided x fy / (0.85 x f'c x b))/2]

= 0.9 x 0.1963 x 60000 x [10.75 – (0.1963 x 60000 / (0.85 x 3500 x 32))/2]

= **113296.43 in-lb.**

8.2.8.3 Deflection

Total depth of section (h) = $d_w + t_f$ = 10 + 2 = 12"

A_{LP} = $A_{S\ Neg}$ provided = 0.1963 in^2

A_B = $A_{S\ Pos}$ provided = 0.1963 in^2

R_{DS} = Diameter of shear rebar = 3/8" (For #3 rebar)

R_{DLP} = Diameter of Single rebar $A_{S\ Neg}$ provided = 0.5" (For #4 rebar)

Effective depth (d_{LP}) = $d_w + t_f - c – R_{DS} – 0.5R_{DLP}$

= 10 + 2 – 1.25 – 3/8 – 0.5 (0.5)

= 10.125”

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5}$ x (33 x (f’c) $^{0.5}$)

= $(145)^{1.5}$ x (33 x $(3500)^{0.5}$)

= 3408788 psi

Modulus of elasticity of steel (E_S) = 29000000 psi

Modular ratio (n) = E_S / E_C

= 29000000 / 3408788

= 8.51

Modulus of rupture of concrete (fr) = 7.5 x (f’c) $^{0.5}$

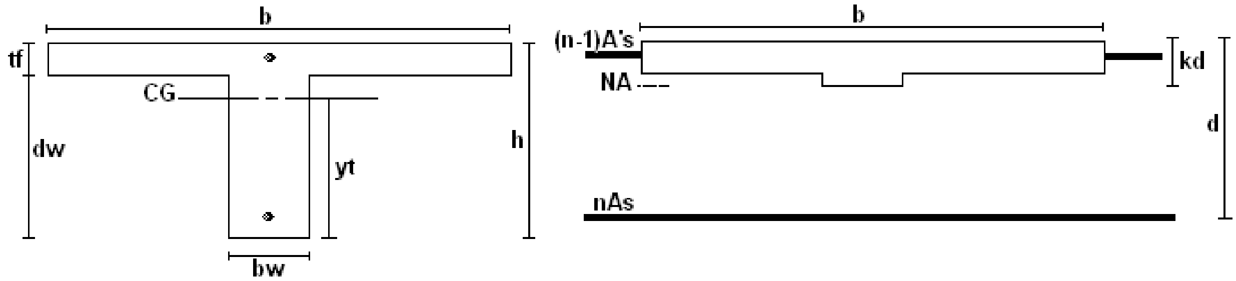
= 7.5 x $(3500)^{0.5}$

= 443.7 psi

Cracking Moment (M_{CR}) = fr x Ig / y_t

= 443.7 x 1632.1 / 8.1549

= 88800.9 in-lb.



Gross Section

Cracked Transformed Section

y_t = 8.1549” (As Provided by Amvic)

Ig = 1632.1 in^4 (As Provided by Amvic)

C = b_{wa} / (n x $A_{S\ Pos}$ provided)

= 5.2 / (8.51 x 0.1963)

= 3.1128

f = t_f x (b-b_{wa}) / (n x $A_{S\ Pos}$ provided)

= 2 x (32 – 5.2) / (8.51 x 0.1963)

= 32.085

r = (n-1) $A_{S\ Neg}$ provided / (n $A_{S\ Pos}$ provided)

= (8.51-1) x (0.1963 / (8.51 x 0.1963)

= 0.8825

d’ = h – d_{LP} = 12 – 10.125 = 1.875”

kd = $$\frac{\sqrt{C(2d + t_f \times f + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

= [{3.1128 x (2x10.75 + 2x32.085 + 2x0.8825x1.875) + (32.085 + 0.8825 + 1)^2}$^{0.5}$ - (32.085 + 0.8825 + 1)] / 3.1128

= 1.2393

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b-b_W)t_f^3/12 + b_W(kd)^3/3 + (b-b_W)t_f(kd-t_f/2)^2 + nA_{Bi}(d-kd)^2 + (n-1)A_{LPi}(kd-d')^2$$

= (32-5.2) x 2^3 / 12 + 5.2 x (1.2393)^3 / 3 + (32-5.2) (2) (1.2393–2/2)^2 + 8.51 x (0.1963) (10.75 – 1.2393)^2 + (8.51-1) x 0.1963 x (1.2393-1.875)^2

= 209.43 in^4

Dead Load moment, M_D = 143.46 x 10^2/ 14 x 12
= 12296.57 lb-in

Live Load moment, M_L = 106.67 x 10^2/ 14 x 12
= 9142.86 lb-in

Total moment, M_{D+L} = 12296.57 + 9142.86
= 21439.43 lb- in

Sustained Moment, M_{SUS} = M_D + 0.5 x M_L (Assume that 50% Load as sustained)
= 12296.57 + 0.5 x 9142.86
= 16868.0 lb-in

Effective moment of inertia for deflection computation (Ie)

A. Under Dead Load

Mcr / M_D = 88800.9 / 12296.57
= 7.221

Hence $(Ie)_d$ = I_g

B. Under Sustained Load

Mcr / M_{SUS} = 88800.9 / 16868.0
= 5.264

Hence $(Ie)_d$ = I_g

C. Under Dead + Live Load

Mcr / M_{D+L} = 88800.9 / 21439.43
= 4.142

Hence $(Ie)_d$ = I_g

8.2.8.3.1 Short Term Deflection

For Continuous beam, the mid-span deflection is **Δ_i = K (5/48) M_P x L^2 / (Ec x Ie)**

Where,

K = $1.20 - 0.20\ M_P / M_O$ for continuous beam
= 0.80 for Continuous fixed-hinged beam, mid span deflection
= 0.738 for Continuous fixed-hinged beam, max deflection using maximum moment
= 0.60 for fixed-fixed beam
= 1.0 for simple span

M_O = Simple span moment at mid span, = $(P \times L^2 / 8) \times 12$

Use K = 1.0 to be on conservative side

$\Delta_{i\ D}$ = $K (5/48) M_D \times L^2 / (Ec \times Ie)$
= $1 \times (5/48) \times 12296.57 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= 0.00331"

$\Delta_{i\ LL}$ = $K (5/48) M_{LL} \times L^2 / (Ec \times Ie)$
= $1 \times (5/48) \times 9142.86 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= 0.002465"

$\Delta_{i\ SUS}$ = $K (5/48) M_{SUS} \times L^2 / (Ec \times Ie)$
= $1 \times (5/48) \times 16868.0 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= 0.004548"

Allowable Deflections

$\Delta_{i\ Allow\ LL}$ = $(L \times 12) / \Delta_{Factor\ Total}$
= $(10 \times 12) / 180$
= **0.6666"**
> **$\Delta_{i\ LL}$ = 0.002465" (OK)**

8.2.8.3.2 Long term Deflection

p' = 0.1963 / (5.2 x 10.75) = 0.0035

i. Sustained load duration of 5 years & more

λ = $\xi / (1 + 50 \times p')$
= $2.0 / (1 + 50 \times 0.0035)$
= 1.702

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\ SUS}$
= 1.702×0.004548
= 0.007741 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = $0.007741 + 0.002465$
= 0.0102 in

Allowable Deflections

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}
= (10 x 12) / 240
= **0.5”**
> **0.0102” (OK)**

ii. Sustained load duration of 3 Months

Sustained Moment, M_{SUS} = M_D + 0.5 x M_L (Assume that 50% Load as sustained)
= 12296.57 + 0.5 x 9142.86
= 16868 lb-in

Under Sustained Load

Mcr / M_{SUS} = 88800.9 / 16868
= 5.264

Hence $(Ie)_d$ = I_g

$\Delta_{i\ SUS}$ = K (5/48) M_{SUS} x L^2 / (Ec x Ie)
= 1.0 x (5/48) x 16868 x $(10\ x12)^2$ / (3408788 x 1632.1)
= **0.004548”**

λ = ξ/ (1 + 50 x p’)
= 1.0 / (1 + 50 x 0.0035)
= 0.851

$\Delta_{(CP+SH)}$ = λ x $\Delta_{i\ SUS}$
= 0.851 x 0.004548
= 0.00387 in

$\Delta_{(CP+SH)}$ + $\Delta_{i\ LL}$ = 0.00387 + 0.002465
= 0.00634 in

Allowable Deflections

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}
= (10 x 12) / 240
= **0.5”**
> 0.00634” (OK)

8.2.9 Calculation for Transverse Slab Reinforcement

Consider 12" width of slab,

L_{Slab} = 27.5 / 12
= 2.292 ft

Self weight of deck = 116.794 (As calculated above)

Total factored load, P_U = 1.2 x 10 x 12 / 12 + 1.2 x 116.794 + 1.6 x 40 x 12/12
= 216.15 plf

Maximum Moment = 216.15 x 2.29^2 / 12
= 94.4 ft-lb
= 1133.5 in-lb

Tension controlled reinforcement ratio (ρ_t) = 0.319 x 0.85 x 3500 / 60000
= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t
= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max (3 x $(f'c)^{0.5}$, 200) / fy
= Max (3 x $(3500)^{0.5}$, 200) / 60000
= Max (177.5, 200) / 60000
= 200 / 60000
= 0.0033

Reinforcement ratio for +ive moment (ρ_{Pos})

= $(0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times t_f /2^2 \times 0.85 \times f'c)]^{0.5}\}$
= 1.78×10^{-3}
= 0.00178 < (ρ_{Min} = 0.0033)
= 0.00178 < (ρ_{Max} = 0.0158) **OK**

Area of Reinforcement Required = 0.00178 x 12 x 2/2
= 0.021 in^2

Rebar Used = #4 rebar

Area of Rebar = 0.1963 in^2

Spacing = (0.1963 / 0.021) x 12
= 112.71 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 112.71 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

8.2.10 Calculation for Longitudinal Slab Reinforcement

Consider 12" width of slab,

Per Section 7.12 of ACI-318-02 Minimum reinforcement = 0.0018 x area of cross section
= 0.0018 x 2 x 12
= 0.0432 in

Spacing = (0.1963 / 0.0432) x 12
= 54.52 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 54.52 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

8.3 Multiple Span Joist

(12" Panel Size With 10" Deep Joist @ 32" O.C. And 2" Topping Slab)

Inputs

Panel Designation	=	12" Panel section with 10" deep beam	
Beam Depth (dw)	=	10"	
Topping (t_f)	=	2"	
Minimum Beam Width, bottom (b_w)	=	6.5"	
Average Joist Width (b_{wa})	=	5.2"	
Panel Span, Transverse (b)	=	32"	
Maximum Span of the Deck (L)	=	10'-0"	
Number of Span	=	Multiple	
Live load acting on the deck (w_{LL})	=	40 psf	
Dead load acting on the deck (w_{DL})	=	10 psf	
Unit weight of concrete (γc)	=	145 pcf	
Specified compressive strength of concrete (f'c)	=	3500 psi	
Yield strength of rebar (fy)	=	60000 psi	
Rebar cover, Center of rebar (c)	=	1.25"	
Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$)	=	360	(Short Term)
Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$)	=	480	(Long Term)

8.3.1 Analysis

Dead Load factor (K_{DL})	=	1.2
Live Load factor (K_{LL})	=	1.6

Section Properties

Cross-section area A	=	115.9888 in^2 (Refer Table on Page – 7)		
Distance of CG from top (CG_{Top})	=	3.8451 in from top		
Moment of inertia about x-axis (I_{XX})	=	1632.1 in^4		
Section Modulus about x-axis (S_{XX})	=	1632.1 / {Max [3.8451, (10 + 2 – 3.8451)]}		
	=	200.137 in^3		
Effective depth (d)	=	$d_w - c + t_f$		
	=	10 – 1.25 + 2	=	10.75"
Self weight of deck (w_{Self})	=	$w_C \times A_{Gross}$		
	=	145 x 115.9888/144	=	116.794 plf
Total Dead Load W_{DTotal}	=	Self Weight + Applied Additional Dead Load		
	=	116.794 + 10 x 32/12	=	143.46 plf
Live Load W_{LL}	=	40 x 32/12	=	106.67 plf
Total un-factored Load W_P	=	$w_{D\ Total} + w_{LL}$		
	=	143.46 + 106.67	=	250.13 plf

Total factored load (P_U) = $\{K_{DL}$ x $w_{D\ Total}$ + K_{LL} x $w_{LL}\}$
= 1.2 x 143.46 +1.6 x 106.67 = 342.824 plf

Maximum Shear Force (V_U) = 1.15 x P_U x L / 2 {For Multiple Span)
= 1.15 x 342.824 x 10 / 2
= 1971.24 lb.

Maximum Positive Moment (M_{UP})
= (P_U x L^2 / 14) x 12 {At End Spans of Multiple Span)
= (342.824 x 10^2 / 14) x 12 = 29384.91 in-lb.
= (P_U x L^2 / 16) x 12 {At Interior Spans of Multiple Span)
= (342.824 x 10^2 / 16) x 12 = 25711.8 in-lb.

Maximum Negative Moment (M_{UN})
= (P_U x L^2 / 16) x 12 {At Exterior Support of Multiple Span)
= (342.824 x 10^2 / 16) x 12 = 25711.8 in-lb.
= (P_U x L^2 / 10) x 12 {At 1^{st} Interior Support of Multiple Span)
= (342.824 x 10^2 / 10) x 12 = 41138.88 in-lb.
= (P_U x L^2 / 11) x 12 {At Other Interior Support of Multiple Span)
= (342.824 x 10^2 / 11) x 12 = 37398.98 in-lb.

8.3.2 Design

8.3.2.1 Shear Strength

Shear Strength of the section (ϕVc) = 1.1 x 0.75 x 2 x $(f'c)^{0.5}$ x b_{wa} x d
= 1.1 x 0.75 x 2 x $(3500)^{0.5}$ x 5.2 x 10.75
= **5456.69 lb. > V_U (= 1714.12 lb.) (OK)**

8.3.2.2 Moment Strength

Strength reduction factor (ϕ) = 0.9
β_1 = 0.85 if (f'c ≤ 4000 psi)
Tension controlled reinforcement ratio (ρ_b) = 0.319 x 0.85 x 3500 / 60000
= 0.0158
Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t
= 0.0158
Minimum reinforcement ratio (ρ_{Min}) = Max (3 x $(f'c)^{0.5}$, 200) / fy
= Max (3 x $(3500)^{0.5}$, 200) / 60000
= Max (177.5, 200) / 60000
= 200 / 60000
= 0.0033

Positive Reinforcement

Reinforcement ratio for +ive moment (ρ_{Pos})

= (0.85 x f'c / fy) x {1 – [1 – 2 x M_{UP}/ (ϕ x b_{wa} x d^2 x 0.85 x f'c)]$^{0.5}$}

= (0.85 x 3500/60000) {1– [1– 2 x 29384.91/ (0.9 x 5.2 x 10.75^2 x 0.85 x 3500)]$^{0.5}$}

= 0.0009139 < (ρ_{Min} = 0.0033)

= 0.0033 < (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required ($A_{S\ Pos}$ req) = ρ_{Pos} x bwa x d
= 0.0033 x 5.2 x 10.75
= 0.18477 in^2

$A_{S\ Pos}$ provided = 1 # 4 (Area = 0.1963 in^2 > 0.18477) **OK**

Negative Reinforcement

Reinforcement ratio for -ive moment (ρ_{Neg})

= (0.85 x f'c / fy) x {1 – [1 – 2 x M_{UN}/ (ϕ x b_{wa} x d^2 x 0.85 x f'c)]$^{0.5}$}

= (0.85 x 3500/60000) {1 – [1 – 2 x 41138.88/ (0.9 x 5.2 x 10.75^2 x 0.85 x 3500)]$^{0.5}$}

= 0.001284 < (ρ_{Min} = 0.0033)

= 0.0033 < (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required ($A_{S\ Neg}$ req) = ρ_{Neg} x bwa x d
= 0.0033 x 5.2 x 10.75
= 0.18447in^2

$A_{S\ Neg}$ provided = 1 # 4 (Area = 0.1963 in^2 > 0.18447) **OK**

Nominal moment strength
Plain Concrete

Nominal moment strength of the section (ϕMn) = 0.65 x 5 (f'c)$^{0.5}$ x S_{XX}
= 0.65 x 5 x (3500)$^{0.5}$ x 200.137
= **38480.8594 in-lb.**

Reinforced Concrete

Nominal moment strength of the section (ϕMn)

= $\phi A_{S\ Pos}$ provided x fy x [d – ($A_{S\ Pos}$ provided x fy / (0.85 x f'c x b))/2]

= 0.9 x 0.1963 x 60000 x [10.75 – (0.1963 x 60000 / (0.85 x 3500 x 32))/2]

= **113296.43 in-lb.**

8.3.2.3 Deflection

Total depth of section (h) = $d_w + t_f$
= 10 + 2
= 12"

A_{LP} = 0 in^2

A_B = 0.1963 in^2

R_{DS} = 3/8" (For #3 rebar)

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5}$ x (33 x (f'c)$^{0.5}$)

= $(145)^{1.5}$ x (33 x $(3500)^{0.5}$)

= 3408788 psi

Modulus of elasticity of steel (E_S) = 29000000 psi

Modular ratio (n) = E_S / E_C

= 29000000 / 3408788

= 8.51

Modulus of rupture of concrete (fr) = 7.5 x $(f'c)^{0.5}$

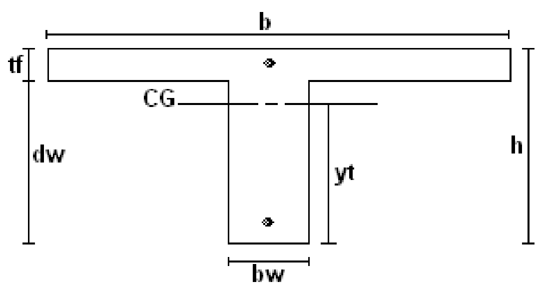
= 7.5 x $(3500)^{0.5}$

= 443.7 psi

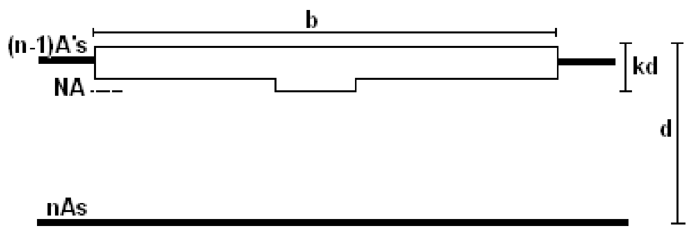
Cracking Moment (M_{CR}) = fr x Ig / y_t

= 443.7 x 1632.1 / 8.1549

= 88800.9 in-lb.



Gross Section



Cracked Transformed Section

y_t = 8.1549" (As Provided by Amvic)

Ig = 1632.1 in^4 (As Provided by Amvic)

C = b_{wa} / (n x $A_{S\ Pos}$ provided)

= 5.2 / (8.51 x 0.1963)

= 3.1128

f = t_f x (b-b_{wa}) / (n x $A_{S\ Pos}$ provided)

= 2 x (32 – 5.2) / (8.51 x 0.1963)

= 32.085

r = (n-1) $A_{S\ Neg}$ provided / (n $A_{S\ Pos}$ provided)

= (8.51-1) x (0.1963 / (8.51 x 0.1963)

= 0.8825

d' = h – d_{LP} = 12 – 10.125 = 1.875"

$$kd = \frac{\sqrt{C(2d + t_f \times f + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

= [{3.1128 x (2x10.75 + 2x32.085 + 2x0.8825x1.875) + $(32.085 + 0.8825+ 1)^2\}^{0.5}$ - (32.085 + 0.8825+ 1)] / 3.1128

= 1.2393

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b-b_W)t_f^{\,3}/12 + b_W(kd)^3/3 + (b-b_W)t_f(kd-t_f/2)^2 + nA_{Bi}(d-kd)^2 + (n-1)A_{LPi}(kd-d')^2$$

$= (32-5.2) \times 2^3 / 12 + 5.2 \times (1.2393)^3 / 3 + (32-5.2)(2)(1.2393–2/2)^2 + 8.51 \times (0.1963)(10.75 – 1.2393)^2 + (8.51-1) \times 0.1963 \times (1.2393-1.875)^2$

$= 209.43$ in^4

Service Moment (M_P)

Dead Load moment, M_D	=	$143.46 \times 10^2 / 14 \times 12$
	=	12296.57 lb-in
Live Load moment, M_L	=	$106.67 \times 10^2 / 14 \times 12$
	=	9142.86 lb-in
Total moment, M_{D+L}	=	12296.57 + 9142.86
	=	21439.43 lb- in
Sustained Moment, M_{SUS}	=	$M_D + 0.5 \times M_L$ (Assume that 50% Load as sustained)
	=	12296.57 + 0.5 x 9142.86
	=	16868.0 lb-in

Effective moment of inertia for deflection computation (Ie)

A. Under Dead Load

Mcr / M_D	=	88800.9 / 12296.57
	=	7.221
Hence $(Ie)_d$	=	I_g

B. Under Sustained Load

Mcr / M_{SUS}	=	88800.9 / 16868.0
	=	5.264
Hence $(Ie)_d$	=	I_g

C. Under Dead + Live Load

Mcr / M_{D+L}	=	88800.9 / 21439.43
	=	4.142
Hence $(Ie)_d$	=	I_g

8.3.2.3.1 Short Term Deflection

For Continuous beam, the mid-span deflection is **$\Delta_i = K (5/48) M_P \times L^2 / (Ec \times Ie)$**

Where,

K	=	$1.20 – 0.20\, M_P / M_O$	for continuous beam
	=	0.80	for Continuous fixed-hinged beam, mid span deflection

= 0.738 for Continuous fixed-hinged beam, max deflection using maximum moment
= 0.60 for fixed-fixed beam
= 1.0 for simple span

M_O = Simple span moment at mid span, = $(P \times L^2 / 8) \times 12$

$\Delta_{i\,D}$ = $K\,(5/48)\,M_D \times L^2 / (Ec \times Ie)$
= $0.8 \times (5/48) \times 12296.57 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= **0.002652"**

$\Delta_{i\,LL}$ = $K\,(5/48)\,M_{LL} \times L^2 / (Ec \times Ie)$
= $0.8 \times (5/48) \times 9142.86 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= **0.001972"**

$\Delta_{i\,SUS}$ = $K\,(5/48)\,M_{SUS} \times L^2 / (Ec \times Ie)$
= $0.8 \times (5/48) \times 16868.0 \times (10 \times 12)^2 / (3408788 \times 1632.1)$
= **0.003638"**

Allowable Deflections

$\Delta_{i\,Allow\,LL}$ = $(L \times 12) / \Delta_{Factor\,Total}$
= $(10 \times 12) / 180$
= **0.6666"**
> **$\Delta_{i\,LL}$ = 0.001972" (OK)**

8.3.2.3.2 Long term Deflection

i. Sustained load duration of 5 years & more

λ = $\xi / (1 + 50 \times p')$
= $2.0 / (1 + 50 \times 0.0035)$
= 1.702

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\,SUS}$
= 1.702×0.003638
= 0.006192 in

$\Delta_{(CP+SH)} + \Delta_{i\,LL}$ = $0.006192 + 0.001972$
= 0.008164 in

Allowable Deflections

$\Delta_{i\,Allow}$ = $(L \times 12) / \Delta_{Factor}$
= $(10 \times 12) / 240$
= **0.5"**
> **0.008164"** **(OK)**

ii. Sustained load duration of 3 Months

Sustained Moment, M_{SUS} = $M_D + 0.5 \times M_L$ (Assume that 50% Load as sustained)

= 12296.57 + 0.5 x 9142.86

= 16868 lb-in

Under Sustained Load

Mcr / M_{SUS} = 88800.9 / 16868

= 5.264

Hence $(Ie)_d$ = I_g

λ = $\xi / (1 + 50 \times p')$

= 1.0 / (1 + 50 x 0.0035)

= 0.851

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\ SUS}$

= 0.851 x 0.003638

= 0.003096 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = 0.003096 + 0.001972

= 0.005068 in

Allowable Deflections

$\Delta_{i\ Allow}$ = $(L \times 12) / \Delta_{Factor}$

= (10 x 12) / 240

= **0.5”**

> 0.005068” (OK)

8.3.3 Calculation for Transverse Slab Reinforcement

Consider 12" width of slab,

L_{Slab} = 27.5 / 12
= 2.292 ft

Self weight of deck = 116.794 (As calculated above)

Total factored load, P_U = 1.2 x 10 x 12 / 12 + 1.2 x 116.794 + 1.6 x 40 x 12/12
= 216.15 plf

Maximum Moment = 216.15 x 2.29^2 / 12
= 94.4 ft-lb
= 1133.5 in-lb

Tension controlled reinforcement ratio (ρ_t) = 0.319 x 0.85 x 3500 / 60000
= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t
= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max (3 x $(f'c)^{0.5}$, 200) / fy
= Max (3 x $(3500)^{0.5}$, 200) / 60000
= Max (177.5, 200) / 60000
= 200 / 60000
= 0.0033

Reinforcement ratio for +ive moment (ρ_{Pos})

= $(0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times t_f /2^2 \times 0.85\ f'c)]^{0.5}\}$
= 1.78×10^{-3}
= 0.00178 < (ρ_{Min} = 0.0033)
= 0.00178 < (ρ_{Max} = 0.0158) **OK**

Area of Reinforcement Required = 0.00178 x 12 x 2/2
= 0.021 in^2

Rebar Used = #4 rebar

Area of Rebar = 0.1963 in^2

Spacing = (0.1963 / 0.021) x 12
= 112.71 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 112.71 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

8.3.4 Calculation for Longitudinal Slab Reinforcement

Consider 12" width of slab,

Per Section 7.12 of ACI-318-02 Minimum reinforcement = 0.0018 x area of cross section
= 0.0018 x 2 x 12

7

	=	0.0432 in
Spacing	=	(0.1963 / 0.0432) x 12
	=	54.52 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three

(1) Calculated spacing as above = 54.52 in
(2) 5 times of thickness of slab = 5 x 2 = 10 in
(3) 18 in

Provide #4 rebar @ 10" O.C.

9 AmDeck Joist Design Chart

9.1 Table A: f'c = 3500 psi, Topping Thickness = 2.0"

General Data:

Floor Size: 12" + 2"

Unit weight of concrete = 145 pcf

Panel Size = 12"

Rebar strength = 60000 psi

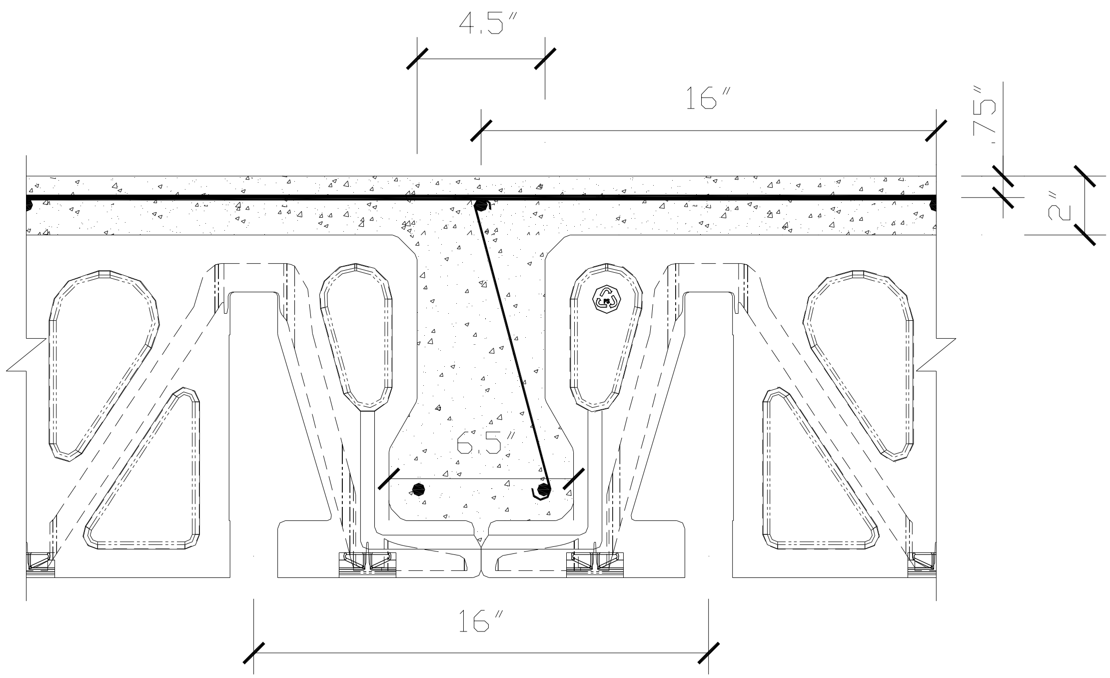
2" Standard insulation

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

Dead Load Factor = 1.2

Live Load Factor = 1.6



Consulting Engineers, Corp

Project: AmDeck Design Guide Prepared by: Kapil Date: 12/07/2007

Client: Amvic, Inc. Checked by: Andy / Raj Date: 12/07/2007

Dead Load = 10 psf

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	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Dead Load = 15 psf

[illegible]	[illegible]	[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.2 Table B: f'c = 3500 psi, Topping Thickness = 2.5"

General Data:

Unit weight of concrete = 145 pcf

Panel Size = 12"

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

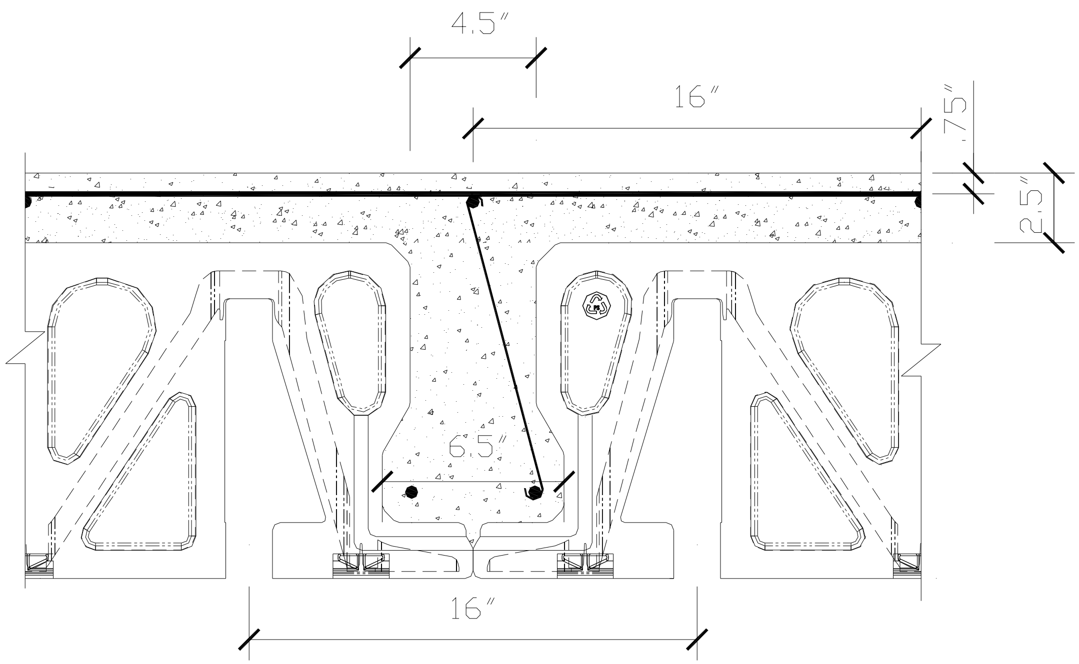
Floor Size: 12" + 2.5"

Rebar strength = 60000 psi

2" Standard insulation

Dead Load Factor = 1.2

Live Load Factor = 1.6



Dead Load = 10 psf

Slab			SF	DF	VS	SF	DF	VS	SF	DF	VS	SF	DF	VS	SF	DF	VS	SF	DF	VS	SF	DF	VS
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior End supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Dead Load = 15 psf

[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.3 Table C: f'c = 3500 psi, Topping Thickness = 3.0"

General Data:

Floor Size: 12" + 3"

Unit weight of concrete = 145 pcf

Panel Size = 12"

Rebar strength = 60000 psi

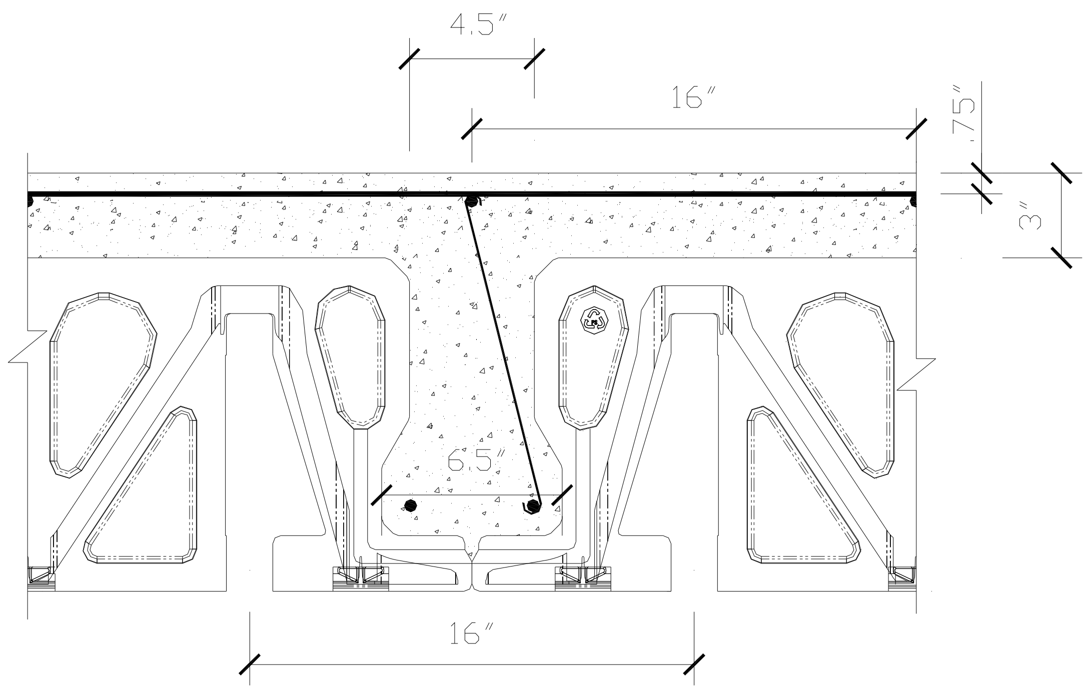
2" Standard insulation

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

Dead Load Factor = 1.2

Live Load Factor = 1.6



Dead Load = 10 psf

[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]		
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Consulting Engineers, Corp

Project: AmDeck Design Guide   Prepared by: Kapil   Date: 12/07/2007
Client: Amvic, Inc.   Checked by: Andy / Raj   Date: 12/07/2007

Dead Load = 15 psf

Notes

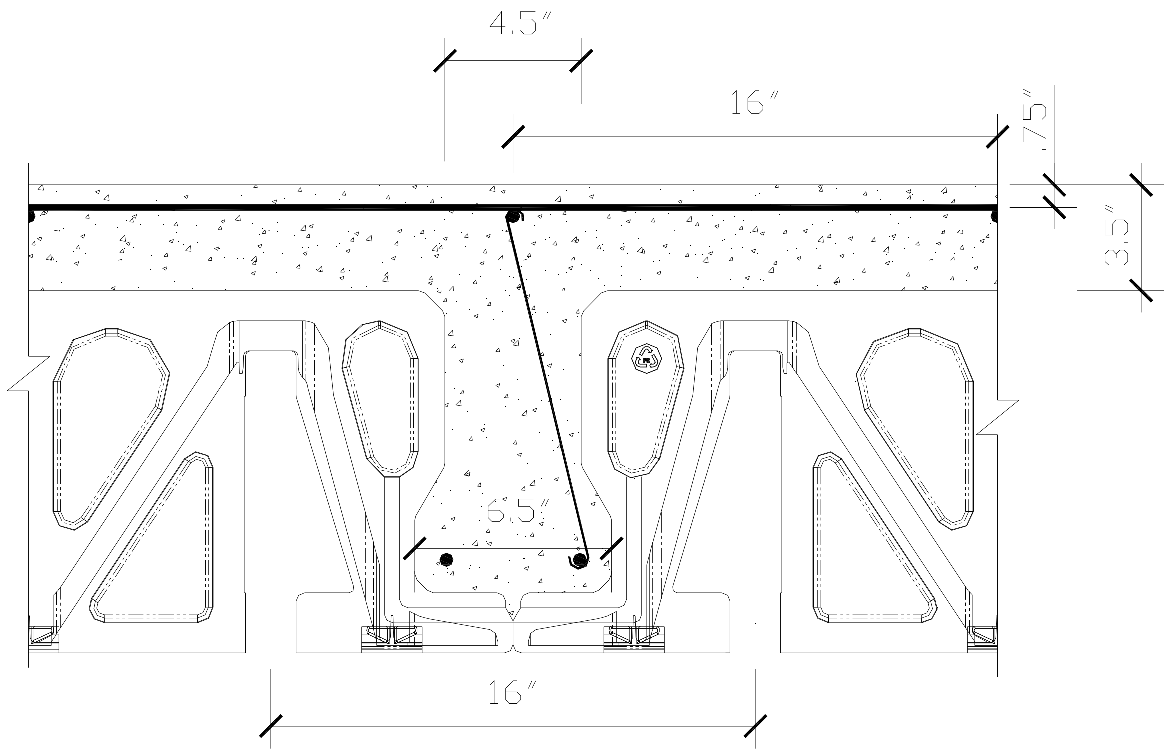
- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.4 Table D: f'c = 3500 psi, Topping Thickness = 3.5"

General Data:

Floor Size: 12" + 3.5"

Unit weight of concrete = 145 pcf
Panel Size = 12"
Rebar strength = 60000 psi
2" Standard insulation
$\Delta_{i\ LL}$ = 180
$\Delta_{i\ TOTAL}$ = 240
Dead Load Factor = 1.2
Live Load Factor = 1.6



Dead Load = 10 psf

[illegible]	[illegible]	[illegible]	[illegible]

Dead Load = 15 psf

[illegible]	[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5” O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.5 Table E: f'c = 3500 psi, Topping Thickness = 4.0"

General Data:

Unit weight of concrete = 145 pcf

Panel Size = 12"

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

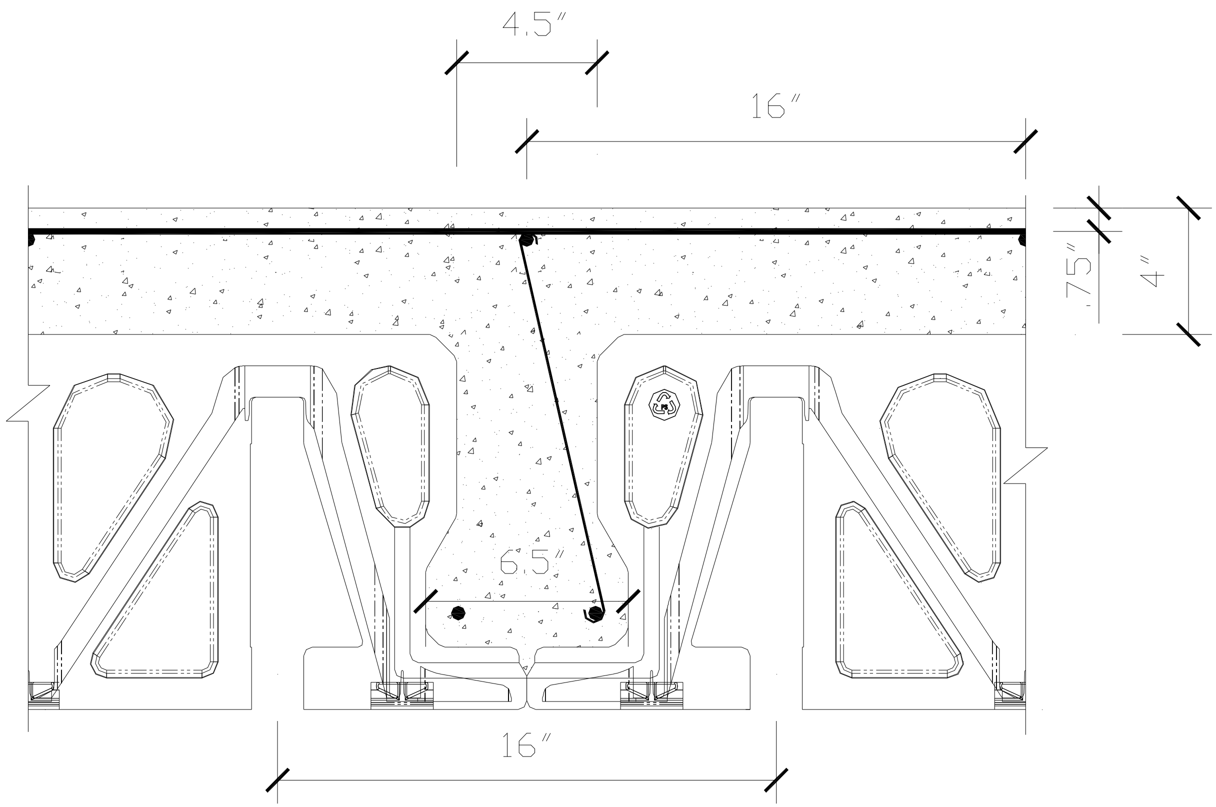
Floor Size: 12" + 4"

Rebar strength = 60000 psi

2" Standard insulation

Dead Load Factor = 1.2

Live Load Factor = 1.6



Dead Load = 10 psf

[illegible]

Dead Load = 15 psf

	f'c	3500	LL = 50 DL = 15			LL = 50 DL = 15			LL = 60 DL = 15			LL = 70 DL = 15			LL=80 DL = 15			LL=90 DL=15			LL=100 DL=15		
Span	tf	4	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
12	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	1#6+1#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	2#5	2#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans	1#6+1#7	2#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	1#6+1#7	1#6+1#7
		Int. Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	1#6+1#7	2#6
	Longitudinal Reinforcement	Exterior Supports	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.6 Table F: f'c = 3500 psi, Topping Thickness = 4.5"

General Data:

Floor Size: 12" + 4.5"

Unit weight of concrete = 145 pcf

Panel Size = 12"

Rebar strength = 60000 psi

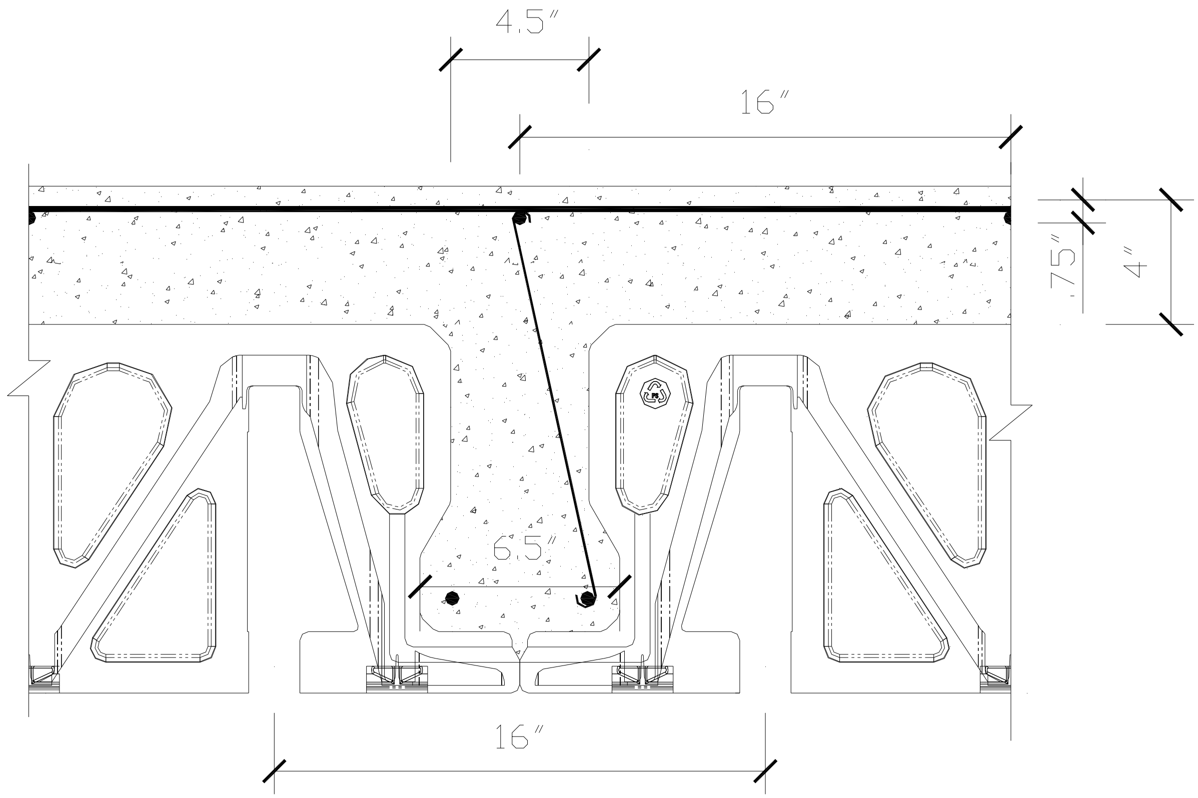
2" Standard insulation

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

Dead Load Factor = 1.2

Live Load Factor = 1.6



Consulting Engineers, Corp

Project: AmDeck Design Guide　　Prepared by: Kapil　　Date: 12/07/2007

Client: Amvic, Inc.　　Checked by: Andy / Raj　　Date: 12/07/2007

Dead Load = 10 psf

[illegible]

Consulting Engineers, Corp

Project: AmDeck Design Guide Prepared by: Kapil Date: 12/07/2007
Client: Amvic, Inc. Checked by: Andy / Raj Date: 12/07/2007

Dead Load = 15 psf

Span	Reinforcement	Location	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]		
			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Size	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.7 Table G: f'c = 4000 psi, Topping Thickness = 2.0"

General Data:

Floor Size: 12" + 2"

Unit weight of concrete = 145 pcf

Panel Size = 12"

Rebar strength = 60000 psi

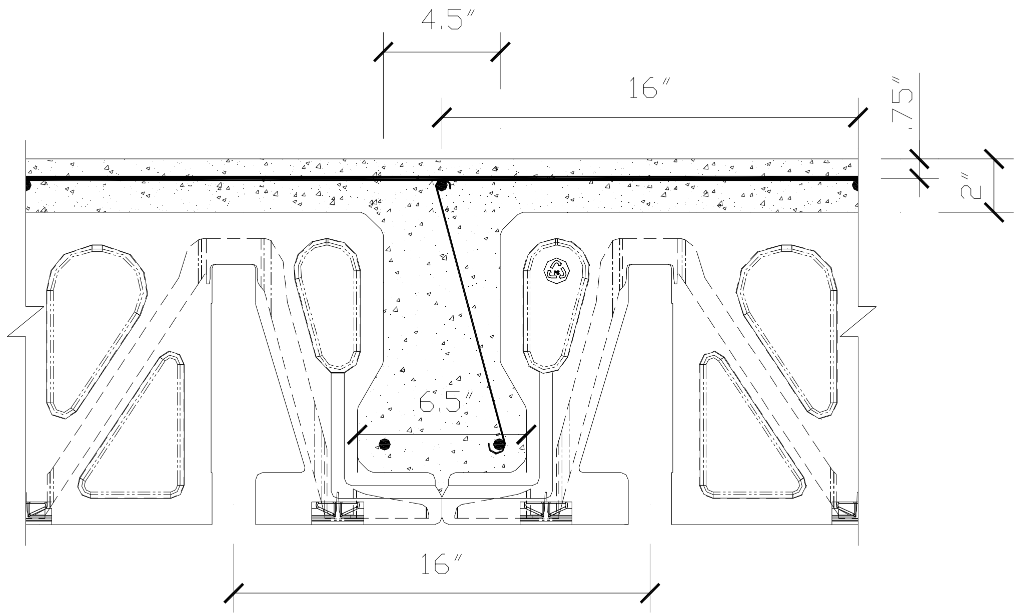
2" Standard insulation

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

Dead Load Factor = 1.2

Live Load Factor = 1.6



|

Dead Load = 10 psf

[illegible]

Dead Load = 15 psf

Size	Reinforcement	Location	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]			[illegible]		
			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Bottom Reinforcement	End Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Int. Spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Longitudinal Reinforcement	Exterior Supports	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1st Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Other Int. Support	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Slab	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Transverse Reinf.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.8 Table H: f'c = 4000 psi, Topping Thickness = 2.5"

General Data:

Unit weight of concrete = 145 pcf

Panel Size = 12"

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

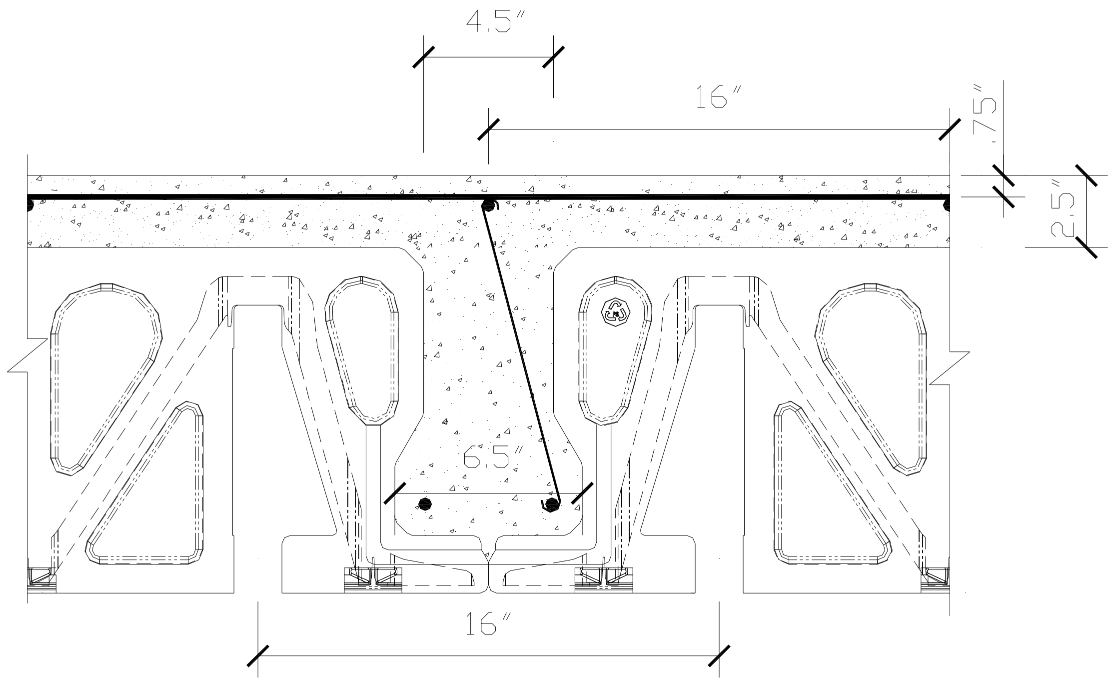
Floor Size: 12" + 2.5"

Rebar strength = 60000 psi

2" Standard insulation

Dead Load Factor = 1.2

Live Load Factor = 1.6



Consulting Engineers, Corp

Project: AmDeck Design Guide Prepared by: Kapil Date: 12/07/2007
Client: Amvic, Inc. Checked by: Andy / Raj Date: 12/07/2007

Dead Load = 10 psf

	f'c	4000	LL = 50 DL = 10			LL = 50 DL = 10			LL = 60 DL = 10			LL = 70 DL = 10			LL=80 DL = 10			LL=90 DL=10			LL=100 DL=10		
Span		tf 2.5	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
12	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
16	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#4	2#4	1#5	1#4	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
18	Bottom Reinforcement	End Spans	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	1#6+1#7	1#6+1#7
		Int. Spans	2#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	1#6+1#7	2#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC

Consulting Engineers, Corp

Project: AmDeck Design Guide | Prepared by: Kapil | Date: 12/07/2007
Client: Amvic, Inc. | Checked by: Andy / Raj | Date: 12/07/2007

Dead Load = 15 psf

	f'c	4000	LL = 50 DL = 15			LL = 50 DL = 15			LL = 60 DL = 15			LL = 70 DL = 15			LL=80 DL = 15			LL=90 DL=15			LL=100 DL=15		
Span	tf	2.5	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
12	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
16	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#5	1#4	1#4+1#5	1#5	1#4	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
18	Bottom Reinforcement	End Spans	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#5	1#4	2#4	1#5	1#4	1#4+1#5	1#5	1#4	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	2#5	2#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans	1#6+1#7	2#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	1#6+1#7	1#6+1#7
		Int. Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	1#6+1#7	2#6
	Longitudinal Reinforcement	Exterior Supports	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC
	Transverse Reinf.		#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC	#4@12.5in OC

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

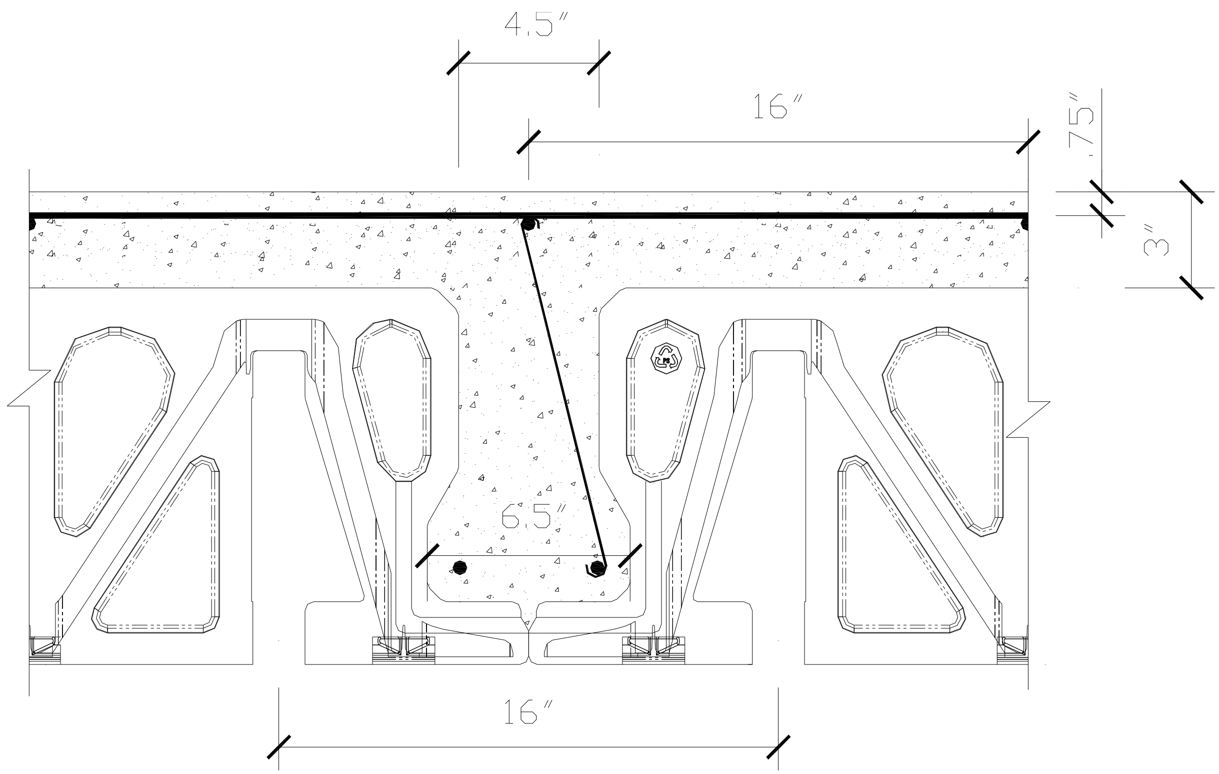
9.9 Table I: f'c = 4000 psi, Topping Thickness = 3.0"

General Data:

Floor Size: 12" + 3"

Unit weight of concrete = 145 pcf
Panel Size = 12"
Rebar strength = 60000 psi
2" Standard insulation

$\Delta_{i\ LL}$ = 180
$\Delta_{i\ TOTAL}$ = 240
Dead Load Factor = 1.2
Live Load Factor = 1.6



Dead Load = 10 psf

Dead Load = 15 psf

Span	f'c / tf	4000 / 3	LL = 50 DL = 15			LL = 50 DL = 15			LL = 60 DL = 15			LL = 70 DL = 15			LL=80 DL = 15			LL=90 DL=15			LL=100 DL=15		
			SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
12	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#6
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
16	Bottom Reinforcement	End Spans	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
18	Bottom Reinforcement	End Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#6	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#6	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#6	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	1#6+1#7	1#6+1#7
		Int. Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	1#6+1#7	2#6
	Longitudinal Reinforcement	Exterior Supports	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC
	Transverse Reinf.		#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC	#4@15in OC

Notes

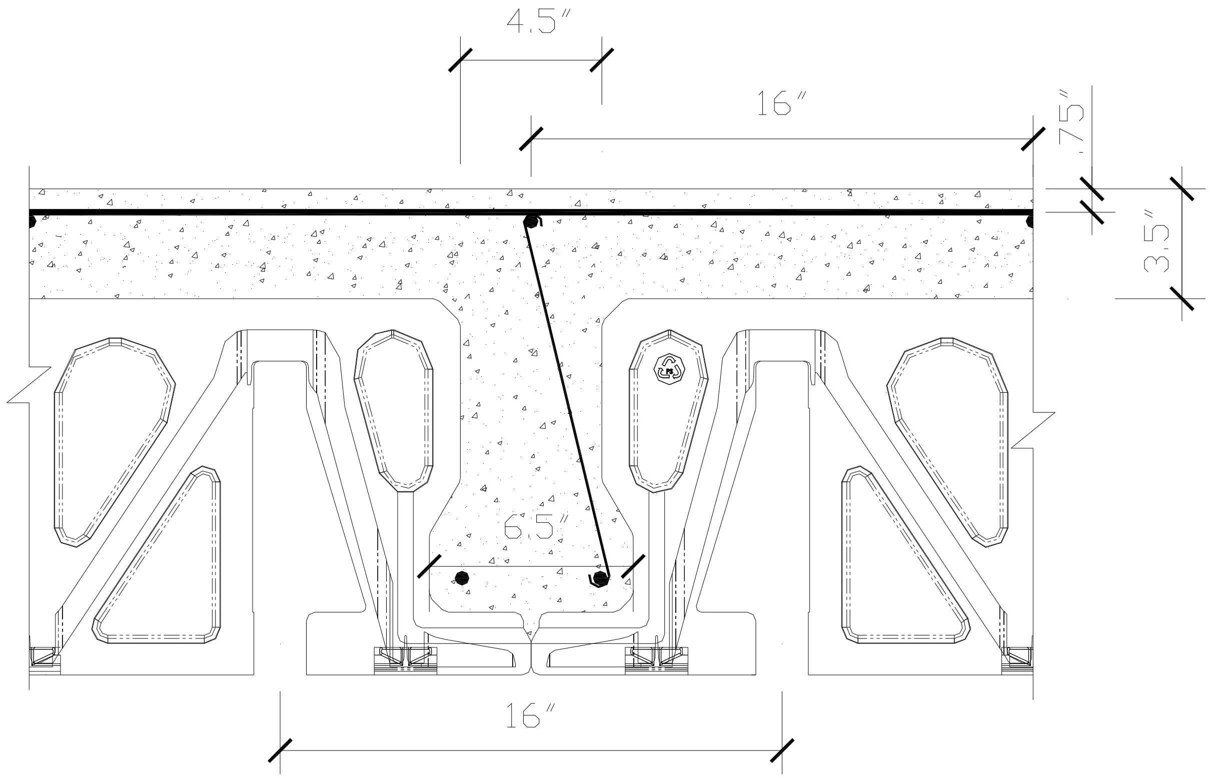
- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.10 Table J: f'c = 4000 psi, Topping Thickness = 3.5"

General Data: **Floor Size: 12" + 3.5"**

Unit weight of concrete = 145 pcf
Panel Size = 12"
Rebar strength = 60000 psi
2" Standard insulation

$\Delta_{i\ LL}$ = 180
$\Delta_{i\ TOTAL}$ = 240
Dead Load Factor = 1.2
Live Load Factor = 1.6



Dead Load = 10 psf

[illegible]	[illegible]

Consulting Engineers, Corp

Project: AmDeck Design Guide — Prepared by: Kapil — Date: 12/07/2007

Client: Amvic, Inc. — Checked by: Andy / Raj — Date: 12/07/2007

Dead Load = 15 psf

		f'c	4000	LL = 50 DL = 15			LL = 50 DL = 15			LL = 60 DL = 15			LL = 70 DL = 15			LL=80 DL = 15			LL=90 DL=15			LL=100 DL=15		
Span		tf	3.5	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
		Int. Spans		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
12	Bottom Reinforcement	End Spans		1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans		1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
14	Bottom Reinforcement	End Spans		1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5
		Int. Spans		1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support		1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support		1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
16	Bottom Reinforcement	End Spans		1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans		1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support		1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4
		Other Int. Support		1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
18	Bottom Reinforcement	End Spans		2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans		2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support		1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5
		Other Int. Support		1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
20	Bottom Reinforcement	End Spans		1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans		1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support		1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support		1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
22	Bottom Reinforcement	End Spans		2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans		2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4
		1st Int. Support		1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support		1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
24	Bottom Reinforcement	End Spans		1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	1#6+1#7	2#5	2#5
		Int. Spans		1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support		1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6
		Other Int. Support		1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
26	Bottom Reinforcement	End Spans		2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans		2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports		1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support		1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7
		Other Int. Support		1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
28	Bottom Reinforcement	End Spans		1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans		1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6
		1st Int. Support		1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support		1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
30	Bottom Reinforcement	End Spans		2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	1#6+1#7	1#6+1#7
		Int. Spans		2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	1#6+1#7	2#6
	Longitudinal Reinforcement	Exterior Supports		1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support		1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support		1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab		#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC
	Transverse Reinf.			#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC	#4@17.5in OC

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

9.11 Table K: f'c = 4000 psi, Topping Thickness = 4.0"

General Data:

Unit weight of concrete = 145 pcf

Panel Size = 12"

$\Delta_{i\ LL}$ = 180

$\Delta_{i\ TOTAL}$ = 240

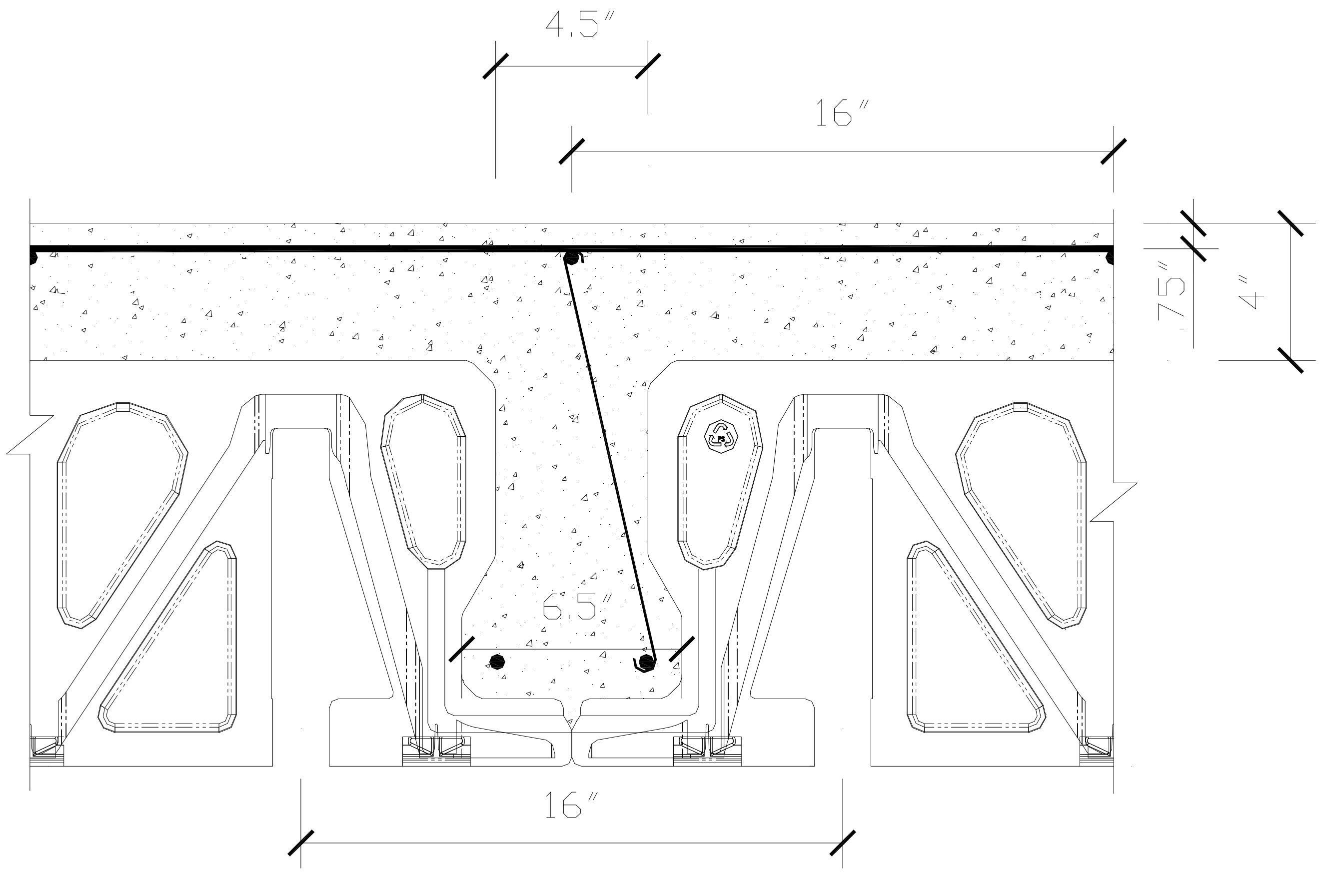
Floor Size: 12" + 4"

Rebar strength = 60000 psi

Dead Load Factor = 1.2

2" Standard insulation

Live Load Factor = 1.6



Dead Load = 10 psf

	f'c	4000	LL = 50 DL = 10			LL = 50 DL = 10			LL = 60 DL = 10			LL = 70 DL = 10			LL=80 DL = 10			LL=90 DL=10			LL=100 DL=10		
Span	tf	4	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
12	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#5	1#5	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6
		Int. Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6
		Int. Spans	2#7	2#5	1#4+1#5	2#7	2#5	1#4+1#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC

Dead Load = 15 psf

	f'c	4000	LL = 50 DL = 15			LL = 50 DL = 15			LL = 60 DL = 15			LL = 70 DL = 15			LL=80 DL = 15			LL=90 DL=15			LL=100 DL=15		
Span	tf	4	SS	DS	MS	SS	DS	MS	SS	DL	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS	SS	DS	MS
10	Bottom Reinforcement	End Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
12	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4
		1st Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
14	Bottom Reinforcement	End Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5
		Int. Spans	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
		Int. Spans	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4	1#4	1#4	1#4	1#4	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
		Int. Spans	2#4	1#5	1#5	2#4	1#5	1#5	2#4	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5
		1st Int. Support	1#4	2#4	1#5	1#4	2#4	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5
		Other Int. Support	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	1#5	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4
		Int. Spans	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	1#4+1#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	1#5	1#5+1#6	2#4	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4
		1st Int. Support	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	2#4	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5
		Int. Spans	2#5	1#5	1#5	2#5	1#5	1#5	2#5	2#4	1#5	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5	1#5	1#4	1#5	1#5	1#4	1#5	1#5	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4
		1st Int. Support	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	1#4+1#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6
		Other Int. Support	1#4	1#4	2#4	1#4	1#4	2#4	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5
		Int. Spans	1#5+1#6	2#4	2#4	1#5+1#6	2#4	2#4	1#5+1#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5
		1st Int. Support	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	2#5	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	2#6
		Other Int. Support	1#4	1#4	1#4+1#5	1#4	1#4	1#4+1#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
26	Bottom Reinforcement	End Spans	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6
		Int. Spans	2#6	1#4+1#5	2#4	2#6	1#4+1#5	2#4	2#6	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4	2#4	1#4	2#4	2#4	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5
		1st Int. Support	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7
		Other Int. Support	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	2#5	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
28	Bottom Reinforcement	End Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6
		Int. Spans	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	1#4+1#5	1#4+1#5	1#6+1#7	2#5	1#4+1#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	1#4+1#5	1#4+1#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6
		1st Int. Support	1#4	2#6	1#5+1#6	1#4	2#6	1#5+1#6	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	1#5+1#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
30	Bottom Reinforcement	End Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	1#5+1#6	2#7	1#5+1#6	1#5+1#6	2#7	2#6	2#6	2#7	2#6	2#6	2#7	2#6	2#6
		Int. Spans	2#7	2#5	2#5	2#7	2#5	2#5	2#7	1#5+1#6	2#5	2#7	1#5+1#6	2#5	2#7	2#6	1#5+1#6	2#7	2#6	1#5+1#6	2#7	2#6	2#6
	Longitudinal Reinforcement	Exterior Supports	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	2#5	2#5	1#4	1#5+1#6	1#5+1#6	1#4	1#5+1#6	1#5+1#6	1#4	2#6	2#6
		1st Int. Support	1#4	1#6+1#7	2#6	1#4	1#6+1#7	2#6	1#4	2#7	1#6+1#7	1#4	2#7	1#6+1#7	1#4	2#7	2#7	1#4	2#7	2#7	1#4	2#7	2#7
		Other Int. Support	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	2#6	1#4	1#4	1#6+1#7	1#4	1#4	1#6+1#7	1#4	1#4	2#7	1#4	1#4	2#7
		Slab	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC
	Transverse Reinf.		#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC	#4@18in OC

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

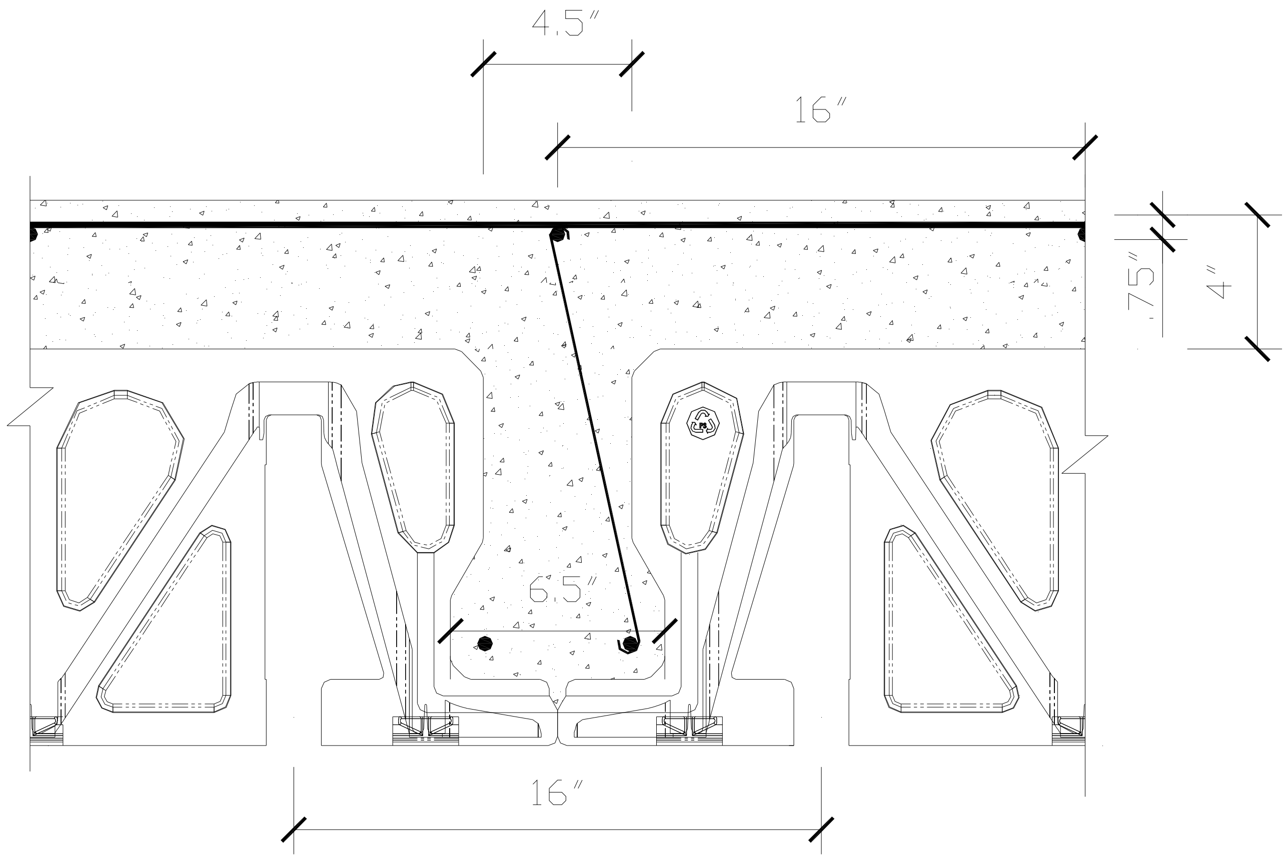
9.12 Table L: f'c = 4000 psi, Topping Thickness = 4.5"

General Data:

Floor Size: 12" + 4.5"

Unit weight of concrete = 145 pcf | Panel Size = 12" | Rebar strength = 60000 psi | 2" Standard insulation

$\Delta_{i\ LL}$ = 180 | $\Delta_{i\ TOTAL}$ = 240 | Dead Load Factor = 1.2 | Live Load Factor = 1.6



Dead Load = 10 psf

[illegible]

Consulting Engineers, Corp

Project: AmDeck Design Guide Prepared by: Kapil Date: 12/07/2007
Client: Amvic, Inc. Checked by: Andy / Raj Date: 12/07/2007

Dead Load = 15 psf

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.

Shoring Design Calculation

Maximum allowed span for steel channel sections supporting the flanges, between the joist is obtained from the minimum of spans based on moment, shear, deflection and crippling.

Joist Spacing = 16”

Deflection Factor, D_F = 360 & 480

Modulus of Elasticity of Steel, E_S = 29000 Ksi

Steel Joist Type = 1000S162-54

Self weight of joist = (Area of Joist/ 2 x Unit wt. of concrete)

W_{DJ} = (51.9888/2 x 145)/144

= 26.18 plf

Self weight of topping = (16 x topping thickness x Unit wt. of concrete) /144

W_{DT} = 16 x 2 x 145/144

= 32.22 plf

Self weight of AmDeck Block = 1.3 x 16/12

= 1.73 plf

Total dead load = Self weight of joist + Self weight of topping + Self weight of AmDeck Block

= 26.18 + 32.22 + 1.73

= 60.13 plf

As per ACI 347-02, Construction load to be taken as 50 psf.

Construction load = Joist Spacing x W_{LL} / 12

= 16 x 50/12

= 66.67 plf

Self weight of steel joist = $W_{DL\ Steel}$

For 1000S162-54 Joist

Self weight of steel joist, $W_{DL\ Steel}$ = 2.66 plf

Total Load, W = Total Dead Load + Live load + Self wt. of steel joist

= 60.13 + 66.67 + 2.66

= 129.46 plf

Maximum Allowed span

Based on Allowable Moment

Allowable moment = M_{Max} from Amvic Steel joist chart

M_{Max} = $W \times L^2 / 8$

70.7 x 1000/12 = $W \times L^2 / 8$

70.70 = $129.46 \times L^2 / 8$

L = $\sqrt{70.70 \times 8/129.46}$

= 19.08 ft

Based on Allowable shear

V_X = W x L/2

2.12 x 1000 = 129.46 x L/2

L = 2 x 2120 / 129.46

= 32.75 ft

Based on Crippling

Web Crippling Load, P_r = W x L / 2

1.1 x 10^3 = 129.46 x L/2

L = 1.1 x 10^3 x 2 / 129.46

= 16.99 ft

Maximum Span of Shoring = Minimum of (19.08, 32.75, 14.565 & 16.99)

= 14.50 ft

Based on Deflection factor

i. ***Deflection Factor, ADF = L/360***

Allowable deflection, ADF = L/ Deflection factor (D_F)

L/ 360 = $\frac{5}{384} \times \frac{129.46 \times L^4}{29 \times 10^6 \times \frac{9.31}{144}}$

L = 14.565 ft

ii. ***Deflection Factor, ADF= L/480***

Allowable deflection, ADF = L/ Deflection factor (D_F)

L/ 480 = $\frac{5}{384} \times \frac{129.46 \times L^4}{29 \times 10^6 \times \frac{9.31}{144}}$

L = 13.23 ft

Maximum Span of Shoring = Minimum of (19.08, 32.75, 13.23 & 16.99)

= 13.00 ft

9.13 Shoring Span Table

Allowable Deflection factor	L/360			L/480		
Topping (in)	1000S162-54	1000S162-68	1000S162-97	1000S162-54	1000S162-68	1000S162-97
2.0	14.5	15.5	17.5	13.0	14.0	16.0
2.5	14.0	15.0	17.0	12.5	14.0	15.5
3.0	13.5	15.0	17.0	12.5	13.5	15.0
3.5	13.5	14.5	16.5	12.0	13.5	15.0
4.0	13.5	14.5	16.0	12.0	13.0	14.5
4.5	12.5	14.0	16.0	12.0	13.0	14.5

10 Garage Deck Joist Design Criteria

Panel Designation	=	12" Panel section with 10" deep beam		
Beam Depth	=	d_w	in inches	
Topping	=	t_f	in inches	
Minimum Beam Width, bottom	=	b_w	in inches	
Average Joist Width	=	b_{wa}	in inches	
Panel Span, Transverse	=	b	in inches	
Maximum Span of the Deck	=	L	in feet & inches	
Number of Span	=	Single (SS) / Double (DS)		
Live load acting on the deck	=	w_{LL}	in psf	
Dead load acting on the deck	=	w_{DL}	in psf	
Wheel Load	=	P	in lb	
Distance between Front & Rear Wheel	=	x	in feet	
Unit weight of concrete	=	γc	in pcf	
Specified compressive strength of concrete	=	f'c	in psi	
Yield strength of rebar	=	fy	in psi	
Rebar cover, Center of rebar (bottom)	=	c	in inches	
Rebar cover, Center of rebar (top)	=	d'	in inches	(take as $t_f/2$)
Allowable Deflection factor, Total	=	$\Delta_{Factor\ Total}$		
Allowable Deflection factor, LL	=	$\Delta_{Factor\ LL}$		

10.1 Assumptions

i. Design criteria are based on **IBC 2003 + ACI 318-02** codes.

ii. Modulus of elasticity of rebar is assumed to be 29000 ksi for the design.

iii. 'Normal weight concrete' is assumed to be used in wall construction and therefore λ = 1.0 corresponding to 'Normal weight concrete' has been use in design.

iv. Factored load combination of 1.2DL + 1.6LL is used in strength calculation & service load DL + LL is used in deflection calculation.

v. 'AmDeck floor system' is of type 'Concrete joist construction' as specified in code.

vi. Vehicle point load is acting at equal distance from both support for the calculation of maximum moment & maximum deflection for Garage joist design.

vii. One of the vehicle point load is taken @ support & other @ distance "X" from support in shear calculation for garage joist design.

viii. The distance between vehicle front & rear wheel is taken as 8'-0".

ix. Point load is assumed to act in middle of top slab for maximum moment calculation.

Dead Load factor	=	K_{DL}
Live Load factor	=	K_{LL}

10.2 Garage Slab Design

Since, L_Y / L_X > 2

Slab is designed as one way.

Assume width of slab	=	b in feet
Self weight of slab	=	W_{slab} in plf
Imposed Dead Load	=	W_{DL} x b in plf
Imposed Live load	=	W_{LL} x b in plf
Total un-factored Dead load	=	(Self weight of slab + Imposed Dead Load) in plf
Total un-factored Live load	=	Imposed Live load in plf
Total Factored Load, W_{Slab}	=	K_{DL} x (Self weight of slab + w_{DL}) + K_{LL} x w_{LL}
Effective span	=	L_{Slab} in feet
Maximum Moment, M_U	=	Moment due to Wheel Load + Moment due to W_{Slab}
	=	$(K_{LL} \times P) \times b / 4 + W_{Slab} \times b^2 / 12$
		(Since slab is continuous over multiple supports)

Determination of reinforcement

Reinforcement ratio, ρ = $(0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_U / (\phi \times b \times d'^2 \times 0.85 \times f'c)]^{0.5}\}$

Area of reinforcement required ($A_{S\ req}$)	=	ρ x b x d
Area of rebar	=	$\pi / 4 \times (\#\text{ of rebar}/8)^2$ in in^2
Spacing of rebar	=	(Area of rebar / $A_{S\ required}$) x width of slab

<u>Punching Shear check for Garage Slab under Wheel Load</u>

Concentrated load for residential car	=	P_1 in lb
Length of bearing area	=	L_1 in inches
Bearing area, A_1	=	L_1 x L_1 in sq. inch
Self weight of slab	=	$A_1 \times t_f \times 145 / (144 \times 12)$
Total Factored Load, P_u	=	1.2 DL + 1.6LL
Perimeter of bearing area for two-way shear, b_0	=	$\{4 \times (L_1 + d')\}$ in inches
Shear strength of concrete in two-way shear, $\phi_v V_c$	=	$[\phi_v \times 4 \times \sqrt{f'c} \times b_0 \times d']$ in lb

10.3 Garage Deck Joist

10.3.1 Analysis

Section Properties

Cross-section area of Combined Section (A)	=	As Provided by Amvic (Refer Table below)
Distance of CG from top (CG_{Top})	=	As Provided by Amvic (Refer Table below)
Moment of inertia about x-axis (I_{XX})	=	As Provided by Amvic (Refer Table

below)

Section Modulus about x-axis (S_{XX}) = I_{XX} / (Max (CG_{Top}, ($d_w + t_f - CG_{Top}$)))

Topping (inch)	Area (in^2)	Perimeter (inch)	Ixx (in^4)	Iyy (in^4)	Rx (inch)	Ry (inch)	Cg Top (inch)	Cg Bottom (inch)
2	115.9922	88.9652	1632.1071	5587.8915	3.7511	6.941	3.8451	8.1549
2.5	131.9922	89.9652	1868.2302	6953.2249	3.7622	7.258	3.8487	8.6513
3.0	147.9922	90.9652	2108.2903	8318.5582	3.7744	7.497	3.9056	9.0944
3.5	163.9922	91.9652	2357.9644	9683.8916	3.7919	7.685	4.001	9.4999
4.0	179.9922	92.9652	2621.6218	11049.2249	3.8164	7.835	4.1223	9.8777
4.5	195.9922	93.9652	2902.8583	12414.558	3.8485	7.959	4.2654	10.2346
5.0	211.9922	94.9652	3204.7879	13779.8915	3.8881	8.062	4.4246	10.5754

Effective depth (d) = $d_w - c + t_f$

Self weight of deck (w_{Self}) = w_C x A/ 144

Total Dead Load W_{DTotal} = $w_{Self} + w_{DL}$ x b /12

Live Load W_{LL} = w_{LL} x b/12

Total Unfactored UDL W_P = $w_{D\ Total} + W_{LL}$

Total factored UDL (W_U) = {K_{DL} x $W_{D\ Total}$ + K_{LL} x W_{LL}}

Factored Point Load, P_U = K_{LL} x P

Maximum Shear Force (V_U)

= K_{DL} x $W_{D\ Total}$ x L / 2 + Maximum (K_{LL} x W_{LL} x L / 2, P_U x (2 - x / L))   For (x < L)

= K_{DL} x $W_{D\ Total}$ x L / 2 + Maximum (K_{LL} x W_{LL} x L / 2, P_U)   For (x > L)

Maximum Positive Moment (M_{UP})

a. For Single Span

= (K_{DL} x $W_{D\ Total}$ x L^2 /8) + Maximum (K_{LL} x W_{LL} x L^2 /8, P_U x L / 4)   For (x ≥ L/2)

= (K_{DL} x $W_{D\ Total}$ x L^2 /8) + Maximum (K_{LL} x W_{LL} x L^2 /8, P_U x (L-x) / 2)   For (x < L/2)

b. For Double Span

= (K_{DL} x $W_{D\ Total}$ x L^2 /14) + Maximum (K_{LL} x W_{LL} x L^2 /8, P_U x L / 4)   For (x ≥ L/2)

= (K_{DL} x $W_{D\ Total}$ x L^2 /14) + Maximum (K_{LL} x W_{LL} x L^2 /8, P_U x (L-x) / 2)   For (x < L/2)

10.3.2 Design

10.3.2.1 Shear Strength

Shear Strength of the section (ϕVc) = 1.1 x 0.75 x 2 x $(f'c)^{0.5}$ x bwa x d

If ϕVc < V_U, Provide Single leg stirrup rebar and provide corresponding rebar at top to support stirrups.

{

Area of single leg rebar stirrup = A_V in^2

Spacing of stirrup rebar = S_S in

Shear strength provided by shear reinforcement (ϕV_S) = 0.75 x A_V x fy x d / S_S

Total Shear strength (ϕV_N) = $\phi Vc + \phi V_S$

}

10.3.2.2 Moment Strength

Strength reduction factor (ϕ) = 0.9

β_1 = 0.85 if (f'c ≤ 4000 psi)

0.80 if (4000 < f'c ≤ 5000 psi)

0.75 if (5000 < f'c ≤ 6000 psi)

0.65 if (6000 < f'c)

Balanced reinforcement ratio (ρ_t) = $0.319 \times \beta_1 \times f'c / fy$

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

Minimum reinforcement ratio (ρ_{Min}) = Max $(3 \times (f'c)^{0.5}, 200) / fy$

Positive Reinforcement

Reinforcement ratio for +ive moment (ρ_{Pos})

$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_{wa} \times d^2 \times 0.85 \times f'c)]^{0.5}\}$

Area of reinforcement required ($A_{S\ Pos}$ req) = $\rho_{Pos} \times bwa \times d$

$A_{S\ Pos}$ provided > $A_{S\ Pos}$ required

Negative Reinforcement (For Span > 1)

Reinforcement ratio for -ive moment (ρ_{Neg})

$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UN} / (\phi \times bwa \times d^2 \times 0.85 \times f'c)]^{0.5}\}$

Area of reinforcement required ($A_{S\ Neg}$ req) = $\rho_{Neg} \times bwa \times d$

$A_{S\ Neg}$ provided > $A_{S\ Neg}$ required

Nominal moment strength

Plain Concrete

Nominal moment strength of the section (ϕMn) = $0.65 \times 5 (f'c)^{0.5} \times S_{XX}$

Reinforced Concrete

Nominal moment strength of the section (ϕMn)

$= \phi A_{S\ Pos} \text{ provided} \times fy \times [d - (A_{S\ Pos} \text{ provided} \times fy / (0.85 \times f'c \times b))/2]$

10.3.2.3 Deflections

Total depth of section (h) = $d_w + t_f$

A_{LP} = $A_{S\ Neg}$ provided

A_B = $A_{S\ Pos}$ provided

R_{DS} = Diameter of shear rebar

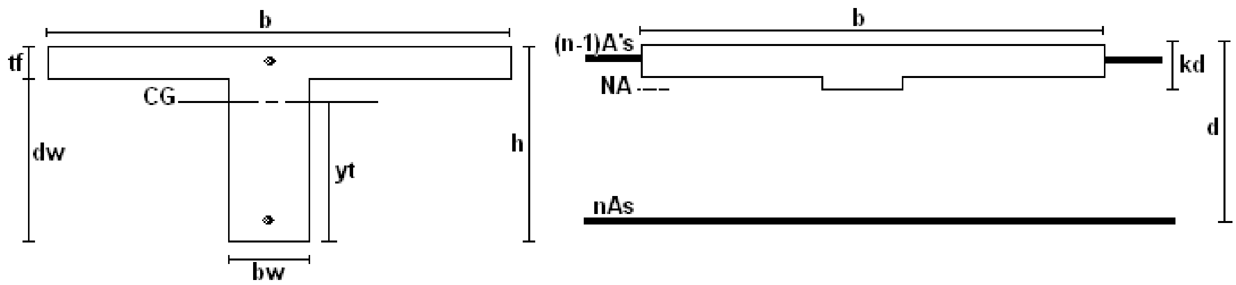
R_{DLP} = Diameter of Single rebar $A_{S\ Neg}$ provided

Effective depth (d_{LP}) = $d_w + t_f - c - R_{DS} - 0.5R_{DLP}$

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5} \times (33 \times (f'c)^{0.5})$

Modular ratio (n) = E_S / E_C

Modulus of rupture of concrete (fr) = $7.5 \times (f'c)^{0.5}$



Gross Section | Cracked Transformed Section

y_t = Cg Bottom — As Provided by Amvic (Refer Table above)

Ig = I_{XX} — As Provided by Amvic (Refer Table above)

Cracking Moment (M_{CR}) = fr x Ig / y_t

C = bwa / (n x $A_{S\ Pos}$ provided)

f = t_f x (b-bwa) / (n x $A_{S\ Pos}$ provided)

r = (n-1) $A_{S\ Neg}$ provided / (n $A_{S\ Pos}$ provided)

d' = $h - d_{LP}$

kd = $$\frac{\sqrt{C(2d + t_f \times f + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b - b_W)t_f^{\,3}/12 + b_W(kd)^3/3 + (b - b_W)t_f(kd - t_f/2)^2 + nA_{Bi}(d - kd)^2 + (n-1)A_{LPi}(kd - d')^2$$

Service Moment (M_P)

Dead Load moment, M_D = $W_{D\ Total} \times L^2/8$

Live Load moment, M_{L1} = $W_{LL} \times L^2/8$ (Due to UDL)

Live Load moment, M_{L2} = P x L/4 ($x \geq L/2$)

= P x (L-x)/2 ($x < L/2$)

Total Live Load Moment, M_L = $M_{L1} + M_{L2}$

Total moment, M_{D+L} = $M_D + M_L$

Sustained Moment, $M_{SUS\ 1}$ = $M_D + 0.5 \times M_{L1}$ *Assuming that 50% of live Load as sustained load)*

Sustained Moment, $M_{SUS\ 2}$ = $0.5 \times M_{L2}$ *(Assuming that 50% of live Load as sustained load)*

Effective moment of inertia for deflection computation (Ie)

= I_g if $M_{CR} > M_P$

= Minimum of $[\{(M_{CR}/M_P)^3\, Ig + [1 - (M_{CR}/M_P)^3]\, I_{CR}\}$ and $I_g]$ if $M_{CR} \leq M_P$

10.3.2.4 Short Term Deflection

For Uniformly Distributed Load

Mid-span deflection is Δ_I = K (5/48) M_P x L^2 / (Ec x Ie)

For Point Load

Mid-span deflection Δ_{ip} = {P x L^3} / (48 x Ec x Ie) (x ≥ L/2)
= {P x (L - x)/2} x {3 x L^2 – 4 x ((L - x)/2)^2}/ (24 x Ec x Ie) (x < L/2)

Where,

K = 1.0 for Simple Beam

$\Delta_{i\,D}$ = K (5/48) M_D x L^2 / (Ec x Ie)

$\Delta_{i\,Total}$ = K (5/48) $M_{(D+L)\,UDI}$ x L^2 / (Ec x Ie)
+ {P x (L - x)/2} x {3 x L2 – 4 x ((L - x)/2)^2} / (24 x Ec x Ie) (x < L/2)
= K (5/48) $M_{(D+L)\,UDI}$ x L^2 / (Ec x Ie) + {P x L^3} / (48 x Ec x Ie) (x ≥ L/2)

$\Delta_{i\,SUS}$ = K (5/48) $M_{SUS\,1}$ x L^2 / (Ec x Ie)
+ {0.5 x P x (L - x)/2} x {3 x L2 – 4 x ((L - x)/2)^2} / (24 x Ec x Ie) (x < L/2)
= K (5/48) $M_{SUS\,1}$ x L^2 / (Ec x Ie) + {0.5 x P x L^3} / (48 x Ec x Ie) (x ≥ L/2)

$\Delta_{i\,LL}$ = $\Delta_{i\,Total}$ - $\Delta_{i\,DL}$

Allowable Short Term Deflections

$\Delta_{i\,Allow\,LL}$ = (L x 12) / (180 or 360)

10.3.2.5 Long Term Deflection

$\Delta_{(CP+SH)}$ = λ x $\Delta_{i\,SUS}$

Where

λ = ξ / (1+50p')

p' = Area of compression steel (A') / (bwa x d)

ξ = Time- dependent factor
= 2.0 5 years and more Sustained load duration
= 1.4 12 months
= 1.2 6 months
= 1.0 3 months.

Δ_{LT} = $\Delta_{(CP+SH)}$ + $\Delta_{i\,LL}$

Allowable Long Term Deflection

$\Delta_{i\,Allow\,LL}$ = (L x 12) / 240 or 480

11 Slab Reinforcement Design Criteria

11.1 Transverse Reinforcement

L_{Slab} = b/12

$M_{u\ Slab}$ = $P_u \times L_{Slab}^2 / 12$

Balanced reinforcement ratio (ρ_t) = $0.319 \times \beta_1 \times f'c / fy$ (Per Section 7.1 of Notes on ACI 318-02)

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

Minimum reinforcement ratio (ρ_{Min}) = Max $(3 \times (f'c)^{0.5}, 200) / fy$ (Per Section 10.5.1 ACI 318-02)

Reinforcement ratio for +ive moment (ρ_{Pos})

$$= (0.85 \times f'c / fy) \times \{1 - [1 - 2 \times M_{UP} / (\phi \times b_w \times t_f / 2^2 \times 0.85 \times f'c)]^{0.5}\}$$

Area of reinforcement required ($A_{S\ Pos}$ req) = $\rho_{Pos} \times 12 \times t_f / 2$

Area of reinforcement required ($A_{S\ Pos}$ req) (Minimum) = $\rho_{Min} \times 12 \times t_f / 2$

Area of reinforcement required ($A_{S\ Pos}$ req) (Maximum) = $\rho_{Max} \times 12 \times t_f / 2$

If $A_{S\ Pos}$ req (Minimum) > $A_{S\ Pos}$ req

Then Provided Area of Steel = Minimum of $A_{S\ Pos}$ req (Minimum) or 1.33 x $A_{S\ Pos}$ req

If $A_{S\ Pos}$ req (Minimum) ≤ $A_{S\ Pos}$ req

Then Provided Area of Steel = $A_{S\ Pos}$ req

Minimum Spacing, $S_{Calculated}$ = (A_{rebar} / Area of Steel Provided) x 12

However per section 7.12 of ACI 318-02, minimum spacing will be lesser of following three

(1) $S_{Calculated}$
(2) 18" O.C.
(3) 5 x t_f (t_f is thickness of slab)

11.2 Longitudinal Reinforcement

Minimum Longitudinal reinforcement as per section 7.12 of ACI 318-02 to be calculated by following equation.

For Grade 60 rebar, As Minimum = 0.0018 x Cross sectional Area

Spacing for As Minimum, $S_{Calculated}$ = (A_{rebar} / Area of Steel Provided) x 12

However per section 7.12 of ACI 318-02, minimum spacing will be lesser of following three

(1) $S_{Calculated}$
(2) 18" O.C.
(3) 5 x t_f (t_f is thickness of slab)

12 Garage Deck Joist Design Calculation

(12" Panel Size With 10" Deep Joist @ 32" O.C. And 4" Topping Slab)

Single Span beam

Inputs

Panel Designation	=	12" Panel section with 10" deep beam
Beam Depth (d_w)	=	10"
Topping (t_f)	=	4"
Minimum Beam Width, bottom (b_w)	=	6.5"
Average Joist Width (b_{wa})	=	5.2"
Panel Span, Transverse (b)	=	32"
Maximum Span of the Deck (L)	=	15'-0"
Number of Span	=	Single
Live load acting on the deck (w_{LL})	=	50 psf
Dead load acting on the deck (w_{DL})	=	10 psf
Wheel Load (P)	=	3000 lb
Distance between Front & Rear Wheel (x)	=	8'-0"
Unit weight of concrete (γc)	=	145 pcf
Specified compressive strength of concrete (f'c)	=	3500 psi
Yield strength of rebar (fy)	=	60000 psi
Rebar cover, Center of bottom rebar (c)	=	1.25"
Rebar cover, clear of top rebar (d')	=	2" (=t_f/2)
Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$)	=	180 or 360 (Short Term)
Allowable Deflection factor, Total ($\Delta_{Factor\ LL}$)	=	240 or 480 (Long Term)

Dead Load factor (K_{DL}) = 1.2

Live Load factor (K_{LL}) = 1.6

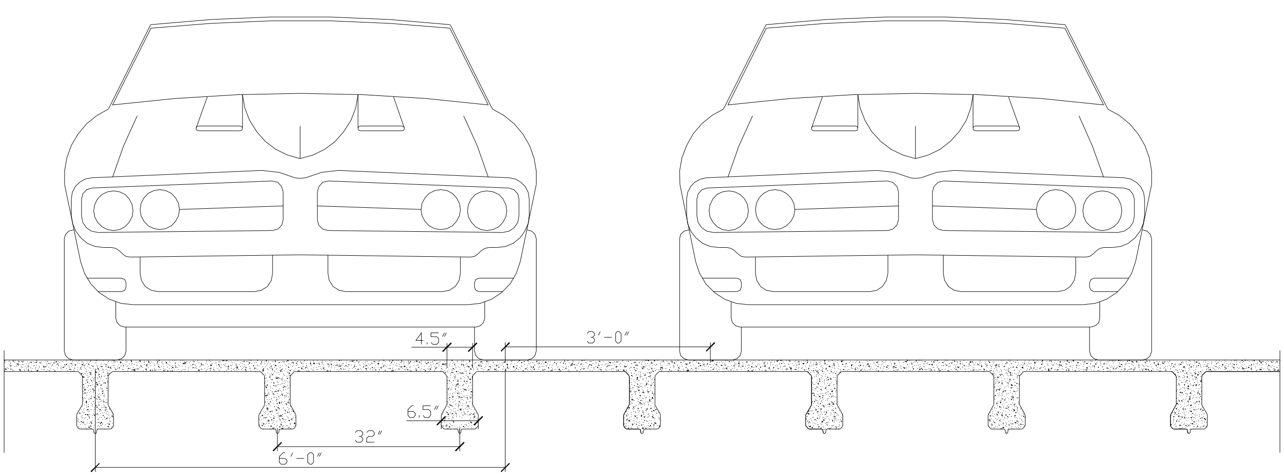
ence Provide #4 Rebar @ 16" O.C. in Longitudinal direction.

12.1 Garage Joist Design

12.1.1 Analysis

Section Properties

Cross-section area A	=	179.9888 in^2
Distance of CG from top (CG_{Top})	=	4.1223 in from top
Moment of inertia about x-axis (I_{XX})	=	2621.6 in^4
Section Modulus about x-axis (S_{XX})	=	2621.6 / {Max [4.1223, (10 + 4 – 4.1223)]}
	=	265.4 in^3
Effective depth (d)	=	$d_w - c + t_f$
	=	10 – 1.25 + 4
	=	12.75”
Self weight of deck (w_{Self})	=	w_C x A_{Gross}
	=	145 x 179.9888/144
	=	181.239 plf
Total Dead Load W_{DTotal}	=	181.239 + 10 x 32/12
	=	207.91 plf
Live Load W_{LL}	=	50 x 32/12
	=	133.33 plf
Total Unfactored UDL (W_P)	=	$w_{D\ Total} + w_{LL}$
	=	207.91 + 133.33
	=	341.24 plf
Total factored UDL (W_U)	=	$\{K_{DL} \times w_{D\ Total} + K_{LL} \times w_{LL}\}$
	=	1.2 x 207.91 +1.6 x 133.33
	=	462.82 plf



Factored Point load (P_U) = K_{LL} x P
= 1.6 x 3000
= 4800 lb

Maximum Shear Force (V_U)

= K_{DL} x $W_{D\ Total}$ x L / 2 + Maximum (K_{LL} x W_{LL} x L / 2, P_U x (2 - x / L)) For (x < L)

= 1.4 x 207.91 x 15 / 2 + Maximum (1.6 x 133.33 x 15 / 2, 4800 x (2 - 8 / 15))

= 9223.01 lb.

Maximum Positive Moment (M_{UP})

= (K_{DL} x $W_{D\ Total}$ x L^2 /8) + Maximum (K_{LL} x W_{LL} x L^2 /8, P_U x L / 4) For (x ≥ L/2)

= (1.4 x 207.91 x 15^2 /8) + Maximum (1.6 x 133.33 x 15^2 /8, 4800 x 15 / 4)

= 23530.41 ft-lb = 282364.9 in-lb.

12.1.2 Shear Strength

Shear Strength of the section (ϕVc) = 1.1 x 0.75 x 2 x (f'c) $^{0.5}$ x b_{wa} x d
= 1.1 x 0.75 x 2 x (3500) $^{0.5}$ x 5.2 x 12.75
= **6471.895 lb. < V_U (= 9223.01 lb.) (Not OK)**

Hence Shear Stirrups provided

Area of single leg of #3 rebar = π/4 x $(3/8)^2$
= 0.110 in^2

Spacing of stirrup rebar = 5 in

Shear strength provided by shear reinforcement (ϕV_S)
= 0.75 x 0.11x 60000 x 12.75 / 5
= 12622.5 lb

Total Shear strength (ϕV_N) = ϕVc + ϕV_S
= 6471.895 + 12622.5
= **19094.4 lb > V_U (= 9223.01 lb.) (OK)**

12.1.3 Moment Strength

Strength reduction factor (ϕ) = 0.9

β_1 = 0.85 if (f'c ≤ 4000 psi)
0.80 if (4000 < f'c ≤ 5000 psi)
0.75 if (5000 < f'c ≤ 6000 psi)
0.65 if (6000 < f'c)

β_1 = 0.85 since (f'c ≤ 4000 psi)

Tension controlled reinforcement ratio (ρ_b) = 0.319 x 0.85 x 3500 / 60000
= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t

= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max (3 x (f'c) $^{0.5}$, 200) / fy

= Max (3 x (3500) $^{0.5}$, 200) / 60000

= Max (177.5, 200) / 60000

= 200 / 60000

= 0.0033

Positive Reinforcement

Reinforcement ratio for +ive moment (ρ_{Pos})

= (0.85 x f'c / fy) x {1 – [1 – 2 x M_{UP}/ (ϕ x b_{wa} x d^2 x 0.85 x f'c)] $^{0.5}$}

= (0.85 x 3500 /60000) {1 – [1 – 2 x 282364.9 / (0.9 x 5.2 x 12.75^2 x 0.85 x 3500)] $^{0.5}$}

= 0.006629 > (ρ_{Min} = 0.0033)

< (ρ_{Max} = 0.0158) **OK**

Area of reinforcement required (A_S req) = ρ_{Pos} x bwa x d

= 0.006629 x 5.2 x 12.75

= 0.4395 in^2

A_S provided = 2 #5 (Area = 0.6136 in^2 > 0.4395 in^2) **OK**

Nominal moment strength

Plain Concrete

Nominal moment strength of the section (ϕMn) = 0.65 x 5 (f'c) $^{0.5}$ x S_{XX}

= 0.65 x 5 x (3500) $^{0.5}$ x 265.4

= **51029.15 in-lb.**

Reinforced Concrete

Nominal moment strength of the section (ϕMn)

= $\phi A_{S\ Pos}$ provided x fy x [d – ($A_{S\ Pos}$ provided x fy / (0.85 x f'c x b))/2]

= 0.9 x 0.6136 x 60000 x [12.75 – (0.6136 x 60000 / (0.85 x 3500 x 32))/2]

= 416056 in-lb.

12.1.4 Deflections

Dead Load moment, M_D = $207.91 \times 15^2 / 8 \times 12$

= 70170 lb-in

Live Load (UDL) moment, M_{L1} = $133.33 \times 15^2 / 8 \times 12$

= 45000 lb-in

Live Load (Point) moment, M_{L2} = 3000 x 15 /4 x 12 since (x > L/2)

= 135000 lb-in

Total moment, $M_{D+L\ (UDL)}$ = 70170 + 45000

= 115171 lb- in

Sustained Moment, $M_{SUS\ 1}$ = $M_D + 0.5 \times M_L$ (Assume that 50% Load as sustained)

= 70170 + 0.5 x 45000

= 92670 lb-in

Sustained Moment, $M_{SUS\ 2}$ = 0.5 x 135000 (Assume that 50% Load as sustained)

= 67500 lb-in

Total depth of section (h) = $d_w + t_f$

= 10 + 4

= 14"

Modulus of elasticity of concrete (E_C) = $(\gamma_C)^{1.5} \times (33 \times (f'c)^{0.5})$

= $(145)^{1.5} \times (33 \times (3500)^{0.5})$

= 3408788 psi

Modulus of elasticity of steel (E_S) = 29000000 psi

Modular ratio (n) = E_S / E_C

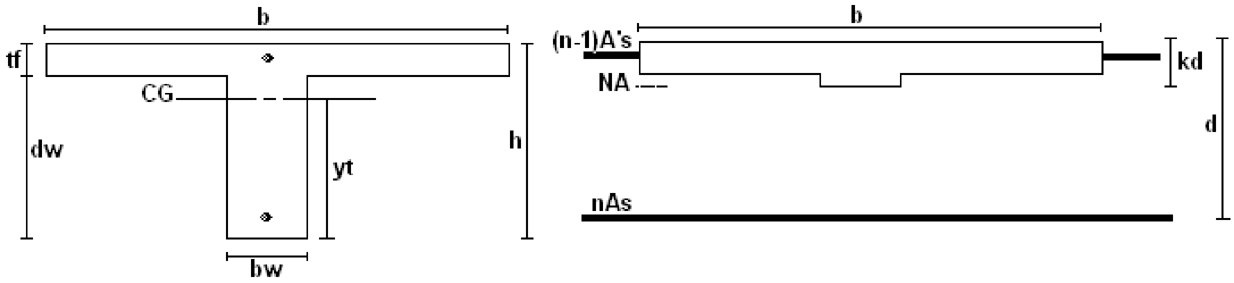
= 29000000 / 3408788

= 8.51

Modulus of rupture of concrete (fr) = $7.5 \times (f'c)^{0.5}$

= $7.5 \times (3500)^{0.5}$

= 443.7 psi



Gross Section

Cracked Transformed Section

y_t = 9.877'' (As Provided by Amvic)

Ig = 2621.6218 in^4 (As Provided by Amvic)

Cracking Moment (M_{CR}) = fr x Ig / y_t

= 443.7 x 2621.6218 / 9.877

= 108083.64 in-lb.

r = (n-1) A'_s / (n x A_S provided)

= (8.51-1) x 0.2613 / (8.51 x 0.6136) Use (π/4) $(4/8)^2$ x (16/12) = 0.2613

= 0.3758

C = b_{wa} / (n x A_S provided)

= 5.2 / (8.51 x 0.6136)

= 0.9958

f = t_f x (b-b_{wa}) / (n x A_S provided)

= 4 x (32 – 5.2) / (8.51 x 0.6136)

= 20.5295

$$kd = \frac{\sqrt{C(2d + t_f \times f) + 2rd') + (f + r + 1)^2} - (f + r + 1)}{C}$$

= [{0.99 x (2 x 12.75 + 4 x 20.5295 + 2 x 0.3758 x 2) + (1+20.5295 + 0.3758) $^2\}^{0.5}$

- (1+ 20.5295 + 0.3758)] / 0.9958

= 2.351

Moment of inertia of cracked section transformed to concrete (Icr)

$$= (b - b_W)t_f^{\ 3} / 12 + b_W (kd)^3 / 3 + (b - b_W)t_f (kd - t_f / 2)^2 + nA_{Bi}(d - kd)^2 + (n-1)A_{LPi}(kd - d')^2$$

= (32-5.2) x 4^3 / 12 + 5.2 x $(2.351)^3$ / 3 + (32-5.2) (4) $(2.351–4/2)^2$ + 8.51 (0.6136) $(12.75 – 2.351)^2$ + (8.51- 1) (0.196) $(2.351 – 2)^2$

= 743.519 in^4

Effective moment of inertia for deflection computation (Ie)

A. Under Dead Load

Mcr / Md = 108083.64 / 70170

= 1.54

Hence $(Ie)_d$ = I_g

B. Under Sustained Load

Mcr / M_{SUS} = 108083.64 / (92670 + 67500)

= 0.674

Hence $(Ie)_d$ = Minimum of $[\{(M_{CR} / M_P)^3\ Ig + [1 - (M_{CR} / M_P)^3]\ I_{CR}\}$ and $I_g]$

= Min $[\{(108083.64 / 160170)^3 \times 2621.6218 + [1 - (108083.64 / 160170)^3] \times 743.519\}$ and $2621.6218]$

= Min {(1320.625, 2621.6218}

= 1320.625 in^4

C. Under Dead + Live Load

Mcr / M_{D+L} = 108083.64/ (115171 + 135000)

= 0.432

Hence $(Ie)_d$ = Minimum of $[\{(M_{CR} / M_P)^3\ Ig + [1 - (M_{CR} / M_P)^3]\ I_{CR}\}$ and $I_g]$

= Min $[\{(108083.64 / 250171)^3 \times 2621.6218 + [1 - (108083.64 / 250171)^3] \times 743.519\}$ and $2621.6218]$

= Min {894.9757, 2621.6218}

= 894.9757 in^4

12.1.4.1 Short Term Deflection

For Uniformly Distributed Load

Mid-span deflection is ΔI = K (5/48) MP x L2 / (Ec x Ie)

For Point Load

Mid-span deflection Δip

= {2 x P x (L - x)/2} x {3 x L2 – 4 x ((L - x)/2)2} / (24 x Ec x Ie) (x < L/2)

= {2 x P x L3} / (48 x Ec x Ie) (x ≥ L/2)

Where,

K = 1.0 for Simple Beam

$\Delta_{i\,D}$ = $K (5/48) M_D \times L^2 / (Ec \times Ie)$

= $1.0 \times (5/48) \times 70170 \times (15 \times 12)^2 / (3408788 \times 2621.6218)$

= 0.02650”

$\Delta_{i\,SUS}$ = $K (5/48) M_{SUS\,1} \times L^2 / (Ec \times Ie) + \{0.5 \times P \times L^3\} / (48 \times Ec \times Ie)$

= $1.0 \times (5/48) \times 92670 \times (15 \times 12)^2 / (3408788 \times 1320.625) + \{0.5 \times 3000 \times (15 \times 12)^3\} / \{48 \times 3408788 \times 1320.625)$

= 0.10996”

$\Delta_{i\,Total}$ = $K (5/48) M_{(D+L)\,UDl} \times L^2 / (Ec \times Ie) + \{P \times L^3\} / (48 \times Ec \times Ie)$

= 1.0 x (5/48) x 115171 x (15 x12)^2 / (3408788 x 894.9757) + {3000 x (15x 12)^3}/ {48 x 3408788 x 894.9757)

= **0.2468"**

$\Delta_{i\ LL}$ = $\Delta_{i\ Total}$ - $\Delta_{i\ DL}$

= 0.2468- 0.10996

= **0.13684"**

Allowable Short Term Deflections

For $\Delta_{Factor\ LL}$ = 180

$\Delta_{i\ Allow\ LL}$ = (L x 12) / $\Delta_{Factor\ LL}$

= (15 x 12) / 180

= **1.000"**

> **$\Delta_{i\ LL}$ = 0.13684" (OK)**

For $\Delta_{Factor\ LL}$ = 360

$\Delta_{i\ Allow\ LL}$ = (L x 12) / $\Delta_{Factor\ LL}$

= (15 x 12) / 360

= **0.5000"**

> **$\Delta_{i\ LL}$ = 0.13684" (OK)**

For $\Delta_{Factor\ Total}$ = 240

$\Delta_{i\ Allow\ Total}$ = (L x 12) / $\Delta_{Factor\ Total}$

= (15 x 12) / 240

= **0.75"**

> **$\Delta_{i\ Total}$ = 0.13684" (OK)**

For $\Delta_{Factor\ Total}$ = 480

$\Delta_{i\ Allow\ Total}$ = (L x 12) / $\Delta_{Factor\ Total}$

= (15 x 12) / 480

= **0.3750"**

> **$\Delta_{i\ Total}$ = 0.13684" (OK)**

12.1.4.2 Long term Deflection

i. Sustained load duration of 3 Months

λ = ξ/ (1 + 50 x p')

p' = A'_S / bwa x d

= 0.196 / (5.17 x 12.75)

= 2.973 x 10^{-3}

λ = 1.0 / (1 + 2.973 x 10^{-3})

= 0.997

$\Delta_{(CP+SH)}$ = λ x $\Delta_{i\ SUS}$

= 0.997 x 0.10996

= 0.1096 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = 0.1096 + 0.13684

= 0.246 in

Allowable Deflections

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}

= (15 x 12) / 240

= **0.75"**

> **0.246" (OK)**

ii. Sustained load duration of 5 years & more

Sustained Moment, $M_{SUS\ 1}$ = $M_D + 0.3 \times M_L$ (Assume that 30% Load as sustained)

= 70170 + 0.3 x 45000

= 83670 lb-in

Sustained Moment, $M_{SUS\ 2}$ = 0.3 x 135000 (Assume that 30% Load as sustained)

= 40500 lb-in

Under Sustained Load

Mcr / M_{SUS} = 108083.64 / (83670 + 40500)

= 0.87

Hence $(Ie)_d$ = Minimum of $[\{(M_{CR} / M_P)^3\ Ig + [1 - (M_{CR} / M_P)^3]\ I_{CR}\}$ and $I_g]$

= Min [{(108083.64 / 124170)^3 x 2621.6218 + [1 - (108083.64 / 124170)^3] x 743.519} and 2621.6218]

= Min {1982.17, 2621.6218}

= 1982.17 in^4

$\Delta_{i\ SUS}$ = K (5/48) $M_{SUS\ 1}$ x L^2 / (Ec x Ie) + {0.3 x P x L^3} / (48 x Ec x Ie)

= 1.0 x (5/48) x 83670x (15 x12)^2 / (3408788 x 1982.17) + {0.3 x 3000 x (15 x12)^3}/ {48 x 3408788 x 1982.17)

= 0.05797

λ = ξ/ (1 + 50 x p')

p' = A'_S / bwa x d

= 0.196 / (5.17 x 12.75)

= 2.973 x 10^{-3}

= 2.0 / (1 + 2.973 x 10^{-3})

= 1.994

$\Delta_{(CP+SH)}$ = $\lambda \times \Delta_{i\ SUS}$

= 1.994 x 0.05797

= 0.1156 in

$\Delta_{(CP+SH)} + \Delta_{i\ LL}$ = 0.1156 + 0.13684

= 0.2524 in

Allowable Deflections

For Δ_{Factor} = 240

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}
= (15 x 12) / 240
= **0.75"**
> **0.2524" (OK)**

For Δ_{Factor} = 480

$\Delta_{i\ Allow}$ = (L x 12) / Δ_{Factor}
= (15 x 12) / 480
= **0.375"**
> **0.2524" (OK)**

12.1.5 Calculation for Transverse Slab Reinforcement

Consider 12" width of slab,

L_{Slab} = 27.5/ 12
= 2.29 ft

Self weight of deck = 145 x (4 / 12) x 1
= 48.33 plf

Total factored load, P_U = 1.2 x 10 x 12 / 12 + 1.2 x 48.33 + 1.6 x 40 x 12/12
= 133.9 plf

Total factored point load = 1.6 x 3000
= 4800 lb

Maximum Moment = 133.9 x 2.29^2 / 12 + 4800 x 2.29 / 4
= 2806.5 ft-lb
= 33678 in-lb

Tension controlled reinforcement ratio (ρ_t) = 0.319 x 0.85 x 3500 / 60000
= 0.0158

Maximum allowed reinforcement ratio (ρ_{Max}) = ρ_t
= 0.0158

Minimum reinforcement ratio (ρ_{Min}) = Max (3 x (f'c)$^{0.5}$, 200) / fy
= Max (3 x (3500)$^{0.5}$, 200) / 60000
= Max (177.5, 200) / 60000
= 200 / 60000
= 0.0033

Reinforcement ratio for +ive moment (ρ_{Pos})

= (0.85 x f'c / fy) x {1 – [1 – 2 x M_{UP}/ (ϕ x b_w x t_f /2^2 x 0.85 f'c)]$^{0.5}$}
= 0.0159
= 0.0159 > (ρ_{Min} = 0.0033)
= 0.0159 > (ρ_{Max} = 0.0158)

Area of Reinforcement Required = 0.0158 x 12 x 4/2
= 0.3792 in^2

Rebar Used = #4 rebar

Area of Rebar = 0.1963 in^2

Spacing = (0.1963 / 0.3792) x 12
= 6.29 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 6.29 in
(2) 5 times of thickness of slab = 5 x 4 = 20 in
(3) 18 in

Provide #4 rebar @ 6" O.C.

12.1.6 Calculation for Longitudinal Slab Reinforcement

Consider 12" width of slab,

Per Section 7.12 of ACI-318-02 Minimum reinforcement = 0.0018 x area of cross section
= 0.0018 x 4 x 12
= 0.0864 in

Spacing = (0.1963 / 0.0864) x 12
= 27.26 in

Per Section 7.12 of ACI-318-02 Spacing of rebar will be Minimum of the following three
(1) Calculated spacing as above = 27.26 in
(2) 5 times of thickness of slab = 5 x 4 = 20 in
(3) 18 in

Provide #4 rebar @ 18" O.C.

Punching Shear check for Garage Slab under Wheel Load

Concentrated load for residential car = 3000 lb

Length of bearing area, L = 4.5 in

Self weight of 4" thick slab = (4.5 x 4.5/144) x (4/12) x 145
= 6.797 lb

Total Factored Load, P_u = 1.2 DL + 1.6LL
= 1.2 x 6.797 + 1.6 x 3000
= 4808 lb

Perimeter of bearing area for two-way shear, b_0 = {4 x (L + d')}
= {4 x (4.5 + 2)}
= 26 in

Shear strength of concrete in two-way shear, $\phi_v V_c$ = [ϕ_v x 4 x √f'c x b_0 x d']
= 0.75 x 4 x √3500 x 26 x 2
= 9229.1 lb
> 4808 lb

13 Garage Deck Joist Design Chart

13.1 f'c = 3500 psi, Topping Thickness = 4.0"

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =180

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 240

Dead Load = 10 psf

Span			LL = 50 DL = 10	
	f'c	3500 psi		
	tf	4	SS	DS
15	Bottom Reinforcement	End Spans	1#4+1#5	1#4+1#5
		Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	2#5	1#4+1#5
		Int. Spans	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	3500 psi	LL = 50 DL = 15	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =360

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 480

Dead Load = 10 psf

Span		f'c	3500 psi	LL = 50 DL = 10	
		tf	4	SS	DS
15	Bottom Reinforcement		End Spans	1#4+1#5	1#4+1#5
			Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement		End Spans	2#5	1#4+1#5
			Int. Spans	2#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement		End Spans	2#7	2#7
			Int. Spans	2#7	2#7
	Longitudinal Reinforcement		Exterior Supports	1#4	1#5
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	3500 psi	LL = 50 DL = 15	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@6in OC	#4@6in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@6in OC	#4@6in OC
	Longitudinal		#4@18in OC	#4@18in OC

13.2 f'c = 3500 psi, Topping Thickness = 4.5"

General Data:

Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Dead Load = 10 psf

Wheel Data:

Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =180

Floor Size: 12"

Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 240

Span		f'c	3500 psi	LL = 50 DL = 10	
		tf	4.5	SS	DS
15	Bottom Reinforcement		End Spans	1#4+1#5	1#4+1#5
			Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement		End Spans	2#5	1#4+1#5
			Int. Spans	2#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement		End Spans	2#7	2#7
			Int. Spans	2#7	2#7
	Longitudinal Reinforcement		Exterior Supports	1#4	1#5
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	3500 psi	LL = 50 DL = 15	
		tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =360

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 480

Dead Load = 10 psf

Span		f'c	3500 psi	LL = 50 DL = 10	
		tf	4.5	SS	DS
15	Bottom Reinforcement		End Spans	1#4+1#5	1#4+1#5
			Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement		End Spans	2#5	1#4+1#5
			Int. Spans	2#5	1#4+1#5
	Longitudinal Reinforcement		Exterior Supports	1#4	1#4
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement		End Spans	2#7	2#7
			Int. Spans	2#7	2#7
	Longitudinal Reinforcement		Exterior Supports	1#4	1#5
			1st Int. Support	1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5

	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	3500 psi	LL = 50 DL = 15	
		tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5

	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

13.3 f'c = 4000 psi, Topping Thickness = 4.0"

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =180

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 240

Dead Load = 10 psf

Span		f'c	4000 psi	LL = 50 DL = 10	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
23	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
24	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
	Bottom Reinforcement	End Spans		
		Int. Spans		
25	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	4000 psi	LL = 50 DL = 15	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =360

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 480

Dead Load = 10 psf

Span		f'c	4000 psi	LL = 50 DL = 10	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	4000 psi	LL = 50 DL = 15	
		tf	4	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		2#7	2#7
		Int. Spans		2#7	2#7
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	2#7	2#7
		Int. Spans	2#7	2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5

	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		2#7
		Int. Spans		2#7
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		
		Int. Spans		
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

13.4 f'c = 4000 psi, Topping Thickness = 4.5”

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =180

Floor Size: 12”
Panel Size = 12”
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 240

Dead Load = 10 psf

Span				
	f'c	4000 psi	LL = 50 DL = 10	
Span	tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans	1#4+1#5	1#4+1#5
		Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	1#4+1#5	1#4+1#5
		Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span			LL = 50 DL = 15	
	f'c	4000 psi		
	tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans	1#4+1#5	1#4+1#5
		Int. Spans	1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans	2#5	1#4+1#5
		Int. Spans	2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports	1#4	1#4
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

General Data:
Unit weight of concrete = 145 pcf
Rebar strength = 60000 psi
Dead Load Factor = 1.2

Wheel Data:
Wheel Load = 3000 lb
Wheel distance = 8 ft
Deflection Factor, $\Delta_{i\ LL}$ =360

Floor Size: 12"
Panel Size = 12"
Live Load Factor = 1.6
$\Delta_{i\ TOTAL}$ = 480

Dead Load = 10 psf

Span		f'c	4000 psi	LL = 50 DL = 10	
		tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		1#7+1#8	1#7+1#8
		Int. Spans		1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

18	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
19	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Dead Load = 15 psf

Span		f'c	4000 psi	LL = 50 DL = 15	
		tf	4.5	SS	DS
15	Bottom Reinforcement	End Spans		1#4+1#5	1#4+1#5
		Int. Spans		1#4+1#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
16	Bottom Reinforcement	End Spans		2#5	1#4+1#5
		Int. Spans		2#5	1#4+1#5
	Longitudinal Reinforcement	Exterior Supports		1#4	1#4
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
17	Bottom Reinforcement	End Spans		1#7+1#8	1#7+1#8
		Int. Spans		1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	1#5
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC
18	Bottom Reinforcement	End Spans		1#7+1#8	1#7+1#8
		Int. Spans		1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports		1#4	1#5
		1st Int. Support		1#4	2#4
	Transverse Reinf.			#4@5in OC	#4@5in OC
	Longitudinal			#4@18in OC	#4@18in OC

19	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
20	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#4
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
21	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
22	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	1#4+1#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
23	Bottom Reinforcement	End Spans	1#7+1#8	1#7+1#8
		Int. Spans	1#7+1#8	1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	1#5
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC

	Longitudinal		#4@18in OC	#4@18in OC
24	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	2#5
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC
25	Bottom Reinforcement	End Spans		1#7+1#8
		Int. Spans		1#7+1#8
	Longitudinal Reinforcement	Exterior Supports	1#4	2#4
		1st Int. Support	1#4	1#5+1#6
	Transverse Reinf.		#4@5in OC	#4@5in OC
	Longitudinal		#4@18in OC	#4@18in OC

Notes

- Shaded portion value shows that joists are provide with shear reinforcement w/ #3 rebar single leg @ 5" O.C.
- Blank Cells indicates that the joists are failing in deflection.