MEMORIAS DE DISEÑO Y CALCULO ESTRUCTURAL

ESTUDIO ESTRUCTURAL SEGÚN:

REGLAMENTO COLOMBIANO DE CONSTRUCCION SISMO RESISTENTE NSR-10

NOMBRE DEL PROYECTO:

CENTRO DE VIDA SENSORIAL
SENDEROS DEL ZIPA
BOJACA - CUNDINAMARCA

Diseñó y Calculó:

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Bogotá D.C., Octubre de 2025

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TABLA DE CONTENIDO

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ANÁLISIS, DISEÑO Y CÁLCULO ESTRUCTURAL

1. Introducción.

El presente informe contiene el análisis, diseño y cálculo estructural del CENTRO DE VIDA SENSORIAL, ubicada en el Barrio Senderos del Zipa Municipio de Bojacá Cundinamarca.

Imagen 1 - Localización Estructuras centro integral.

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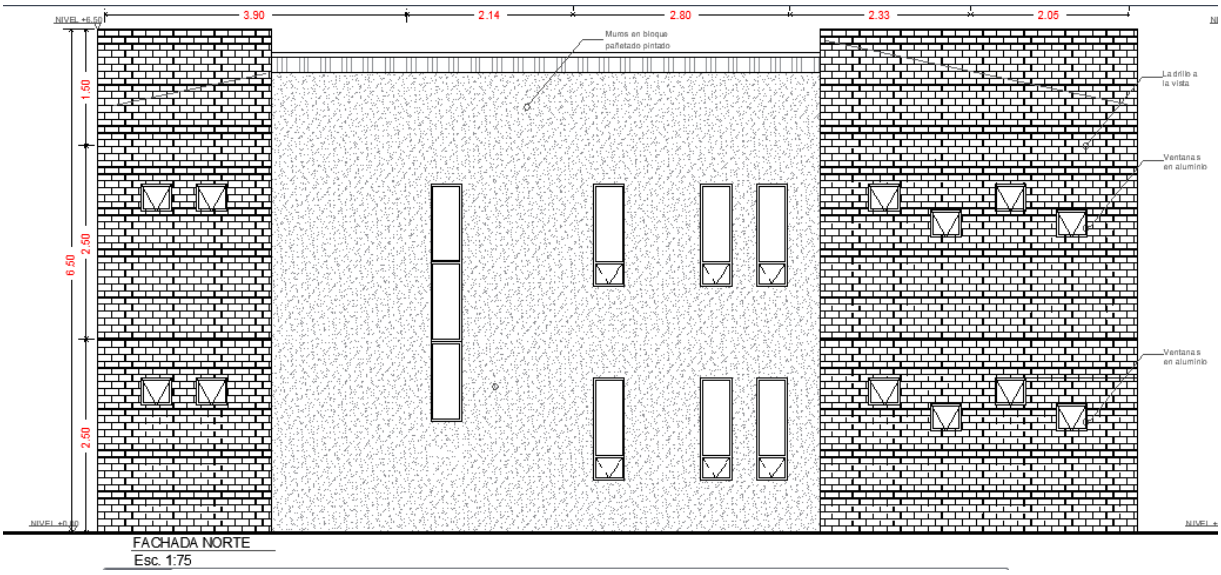

Imagen 2 - Fachada norte.

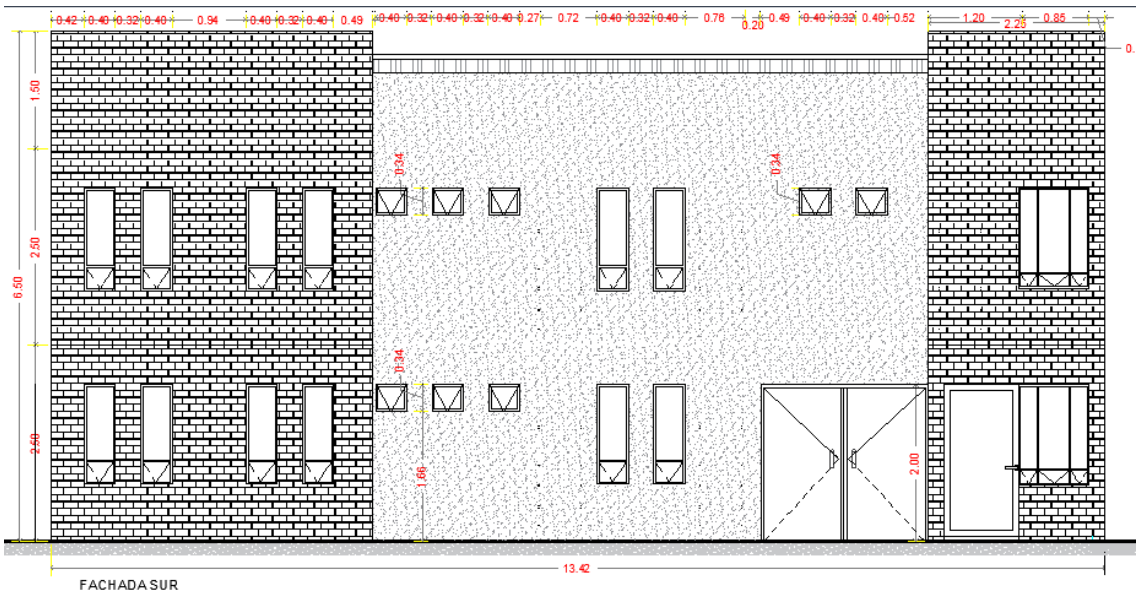

Imagen 3 - Fachada sur.

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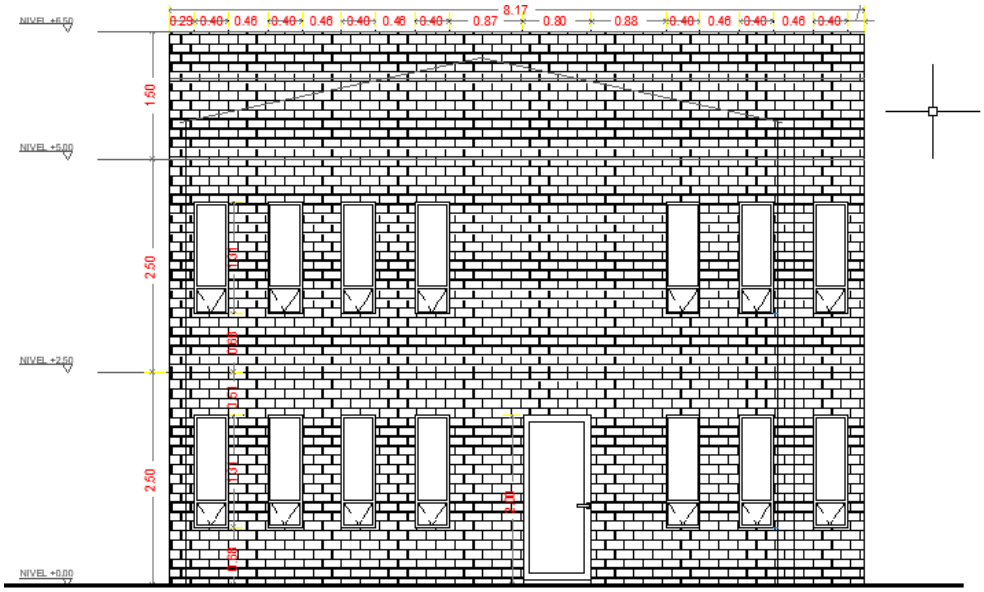

Imagen 4 -

Imagen 5 - Fachada occidental.

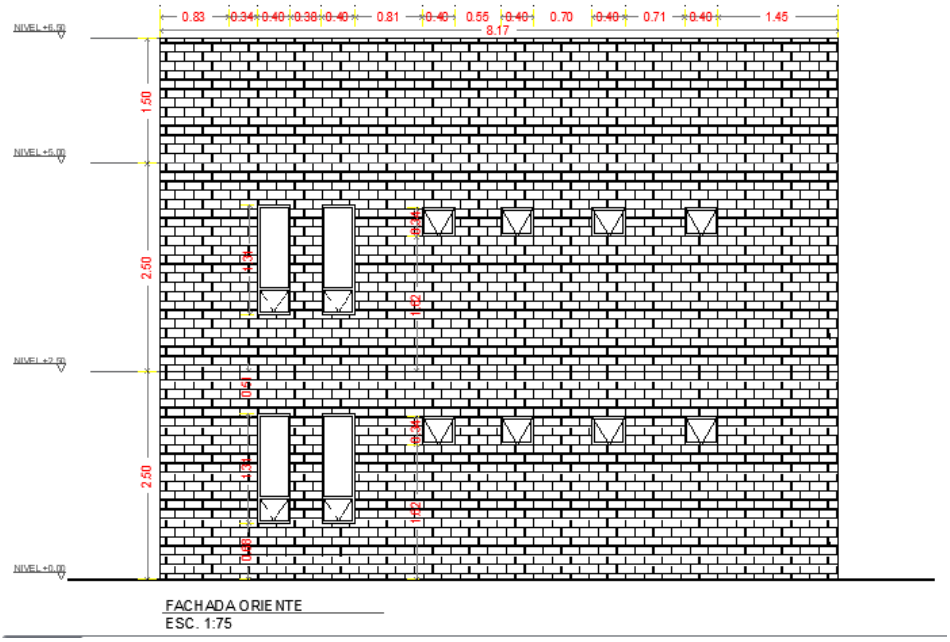

Imagen 6 - Fachada oriental.

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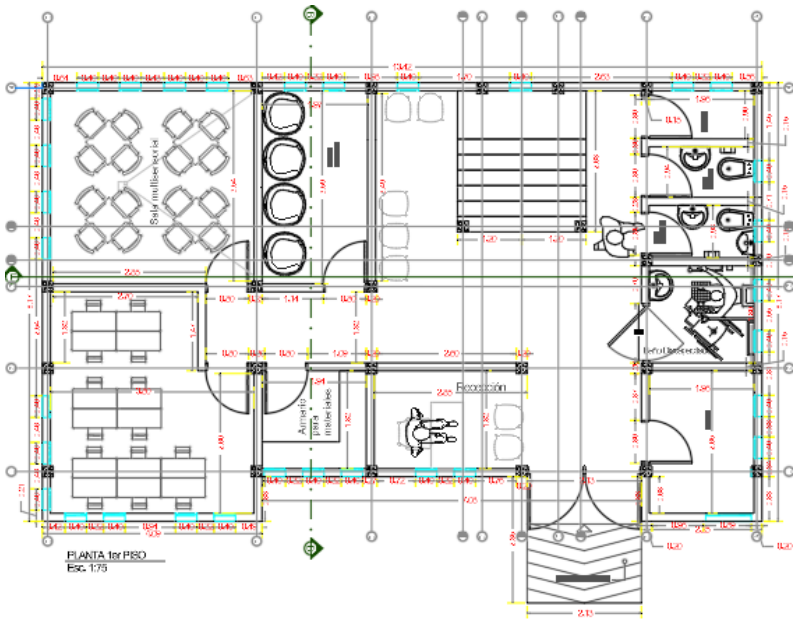

Imagen 7 - Planta arquitectónica primer piso.

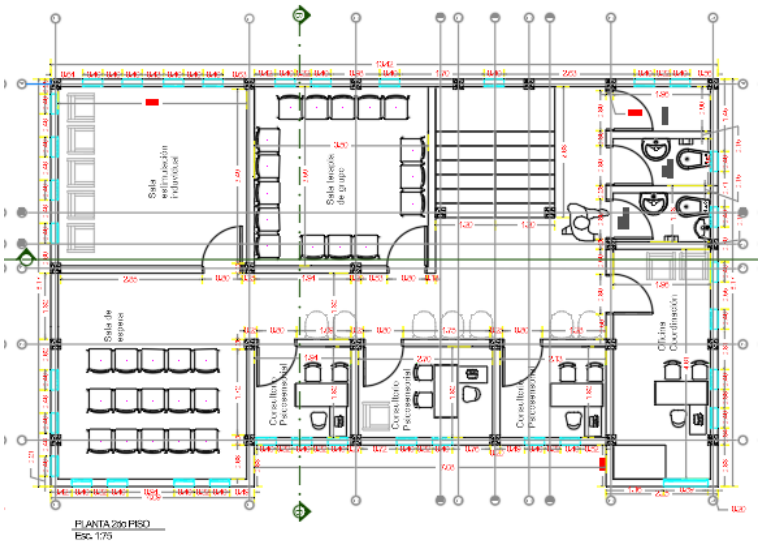

Imagen 8 - Planta arquitectónica segundo piso.

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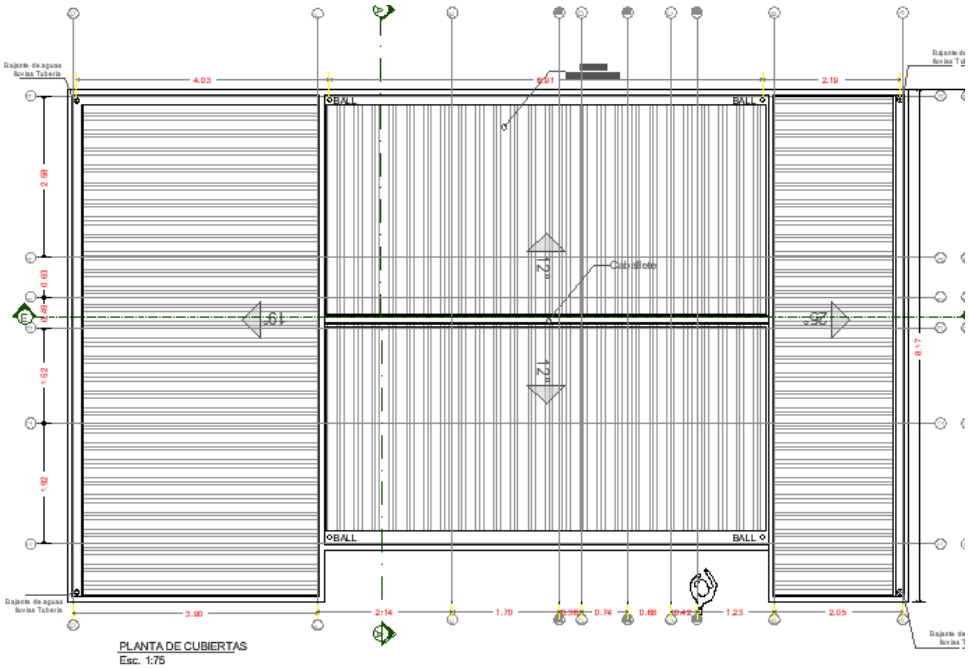

Imagen 9 - Planta de cubiertas.

La edificación se considera como una estructura independiente, configuración que está dada desde el diseño arquitectónico. En el proyecto arquitectónico están establecidos los diferentes usos de la edificación, alturas de piso, ubicación de columnas, elementos de fachada y elementos no estructurales

La metodología utilizada para desarrollar el presente estudio está acorde al Reglamento Colombiano de Construcción Sismo Resistente NSR-10 y sus decretos complementarios.

2. Descripción del sistema estructural.

De acuerdo con el numeral A.3.2.1 del Reglamento NSR-10, la estructura se clasifica como SISTEMA DE PÓRTICO RESISTENTE A MOMENTOS, en el cual las cargas verticales y horizontales son resistidas por un pórtico espacial esencialmente completo resistentes a momentos.

A partir de la localización del proyecto se establece el grado de disipación de energía correspondiente a: Disipación de Energía Moderada (DMO). Así mismo el coeficiente básico de capacidad de disipación de energía utilizado, de acuerdo a la NSR-10, es de Ro=5.0.

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3. Análisis de cargas.

3.1 Carga muerta.

Las cargas muertas se calcularon de acuerdo con el peso propio de todos los elementos considerados a partir de la masa de los materiales según la densidad utilizando para ello los valores mínimos establecidos en el Título B, tabla B.3.2-1 y las cargas muertas mínimas de elementos no estructurales horizontales y verticales del Reglamento NSR-10. En los anexos se encuentran las cargas muertas consideradas para el análisis.

3.2 Carga viva.

De acuerdo con el Capítulo B.4 de la NSR-10 corresponde a carga viva todas las cargas producidas por el uso y ocupación de la edificación. De acuerdo con el uso que tendrá la edificación se definieron las cargas vivas a utilizar en el diseño.

Fueron definidos los siguientes usos con sus respectivas cargas vivas según la tabla B.4.2.1-1 del Reglamento NSR-10.

En los anexos se encuentra el resumen de las cargas vivas de diseño para cada una de las plantas de la edificación de acuerdo a los usos de la tabla anterior.

Ocupación o uso	Carga Uniforme (kgf/m2) m2 de área en planta
Reunión silletería móvil	500
Aulas de capacitación	200
Oficinas	200
Almacenamiento Liviano	600
baños	180
Corredores y escaleras	300
Cubiertas con acceso totalmente limitado al personal de mantenimiento y a través de un acceso (puerta, reja, o trampa) que permanezca siempre cerrada con llave	180
Cubierta – zona tanques	500

Tabla 1 Cargas Vivas

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CARGAS UTILIZADAS PARA EL DISEÑO DE CUBIERTA EN FIBROCEMENTO:

Carga Muerta (D)		
Teja	14.4	Kg/m2
Manto	4	Kg/m2
Perfil 5x10x2	4.64	Kg/m2
		Kg/m2
Total	23.04	Kg/m2
Carga Viva (L)	90	Kg/m2
viento (W)	48	Kg/m2
Empozamiento h= 30 cm	150	Kg/m2
Granizo (G)	50	Kg/m2

4. Movimiento sísmico de diseño.

Se usará el método del análisis dinámico elástico basado en el espectro de diseño para evaluar los efectos sísmicos en la estructura, de acuerdo con lo establecido en la norma NSR-10. A continuación, se describe la información utilizada para la aplicación de este.

- Zona de amenaza sísmica: Intermedia.
- Coeficiente de aceleración pico efectiva Aa = 0.15.
- Coeficiente de velocidad pico efectiva Av = 0.20.
- Perfil de suelo: D.
- Coeficiente de amplificación Fa = 1.50.
- Coeficiente de amplificación Fv = 2.00.
- Grupo de uso: Edificaciones de atención a la comunidad (III) A.2.5.1.2
- Coeficiente de importancia = 1.25.
- Sistema estructural: Pórticos en concreto reforzado con capacidad moderada de disipación de energía (DMO).
- Capacidad de disipación de energía: Conforme con el material de la estructura señalado anteriormente y de las características del sistema de resistencia sísmica, se establece el coeficiente de capacidad de disipación de energía básico utilizado, que es R_0=5.0.

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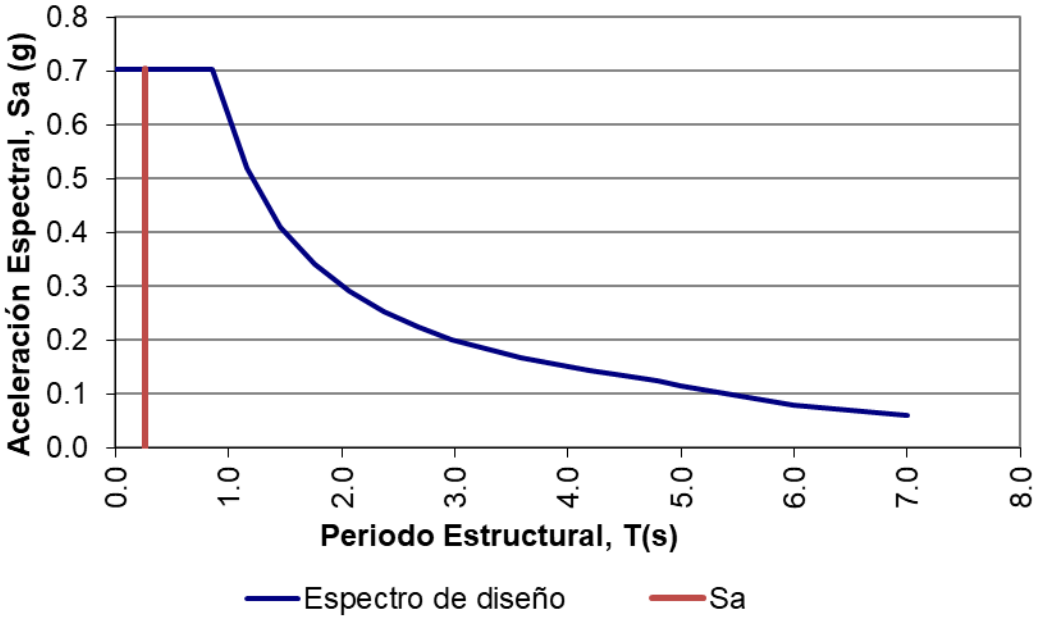

Imagen 10 - Espectro de diseño. Fuente propia.

5. Grado de irregularidad.

Según la arquitectura del Edificio, se establecen parámetros de irregularidad como lo establece la Norma NSR-10. En caso de existir varias irregularidades se escoge el menor valor ϕ_a ó ϕ_p.

Tipo	Descripción			Resultado	Φp
1aP	Irregularidad torsional	Dada por RCB		NO	1
1bP	Irr. torsional extrema	Dada por RCB		NO	1
2P	Retrocesos en las esquinas (Piso tipo)	A=	0.00 m	NO	1
		B=	8.17 m		
		C=	0.00 m		
		D=	13.42 m		
3P	Irregularidad del diafragma (Caso 1)	A=	8.17 m	NO	1
		B=	13.42 m		
		C=	0.00 m		
		D=	0.00 m		
	Irregularidad del diafragma (Caso 2)	A=	8.17 m	NO	
		B=	13.42 m		
		C=	0.00 m		
		D=	0.00 m		
		E=	0.00 m		
4P	Desplazamiento de los planos de acción			NO	1
5P	Sistemas no paralelos			NO	1
				Φp	**1**

Tabla 2 Irregularidades en planta – Centro de vida sensorial.

Fecha:	Octubre de 2025			Realizó:	C.P
Tipo	Descripción			Resultado	Φa
1aA	Piso flexible	Dada por RCB		NO	1
1bA	Piso flexible extremo	Dada por RCB		NO	1
2A	Irregularidad en la distribución de masas	Dada por RCB		NO	1
3A	Geométrica	A =	13.42 m	NO	1
		B =	13.42 m		
4A	Desplazamiento del plano de acción	A =		NO	1
		B =			
5aA	Piso débil	B =		NO	1
		C =			
5bA	Piso débil extremo	B =		NO	1
		C =			
				Φa	**1**

Tabla 3 Irregularidades en altura – Centro de vida sensorial.

6. Grupo de uso.

El grupo de uso al que pertenece la edificación corresponde al **Grupo III,** por lo que se utiliza un coeficiente de Importancia **I = 1.25**

7. Combinaciones de carga.

El modelo estructural del edificio se evaluó para las condiciones de un sismo de diseño según lo establecido en la NSR-10. Para efectos de la revisión del diseño de cada uno de los elementos estructurales, se utilizaron las combinaciones de carga establecidas en el titulo B.2.4.2 y se enumeran a continuación:

- 1.4D
- 1.2D+1.6L+0.5Lr
- 1.2D+1.6Lr+1.0L
- 1.2D+1.0L+0.5Lr
- 1.2D+1.0E+1.0L
- 0.9D
- 0.9D+1.0E

Donde D es la carga muerta, L la carga viva, Lr caga viva sobre la cubierta y E carga sísmica. Sin embargo, de acuerdo a las condiciones de carga a las que se verá sometida la estructura se determinan las combinaciones correspondientes. Las combinaciones de carga con las cuales se obtiene la envolvente de los mayores efectos en los miembros

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estructurales, son las siguientes:

- 1.4D0 + 1.4DL + 1.4DL
- 1.2D0 + 1.2DL + 1.2DL + .5LL + 1.6LL
- 1.2D0 + 1.2DL + 1.2DL + 1.6LL + LL
- 1.2D0 + 1.2DL + 1.2DL + .5LL + LL
- 1.2D0 + 1.2DL + 1.2DL + .5LL + EQX + .3EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL - EQX - .3EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL + EQX - .3EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL - EQX + .3EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL + .3EQX + EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL - .3EQX - EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL - .3EQX + EQY
- 1.2D0 + 1.2DL + 1.2DL + .5LL + .3EQX - EQY
- .9D0 + .9DL + .9DL + EQX + .3EQY
- .9D0 + .9DL + .9DL - EQX - .3EQY
- .9D0 + .9DL + .9DL + EQX - .3EQY
- .9D0 + .9DL + .9DL - EQX + .3EQY
- .9D0 + .9DL + .9DL + .3EQX + EQY
- .9D0 + .9DL + .9DL - .3EQX - EQY
- .9D0 + .9DL + .9DL - .3EQX + EQY
- .9D0 + .9DL + .9DL + .3EQX - EQY

Donde D0 es el peso propio de los elementos estructurales, DL el peso adicional que soportara la estructura, LL la carga viva, LLR carga viva sobre la cubierta, EQX la carga sísmica en sentido X y EQY la carga sísmica en el sentido Y.

8. Análisis y diseño estructural.

Mediante el uso del programa *EngSolutions RCB v9.1.7*, de propiedad del suscrito, se analiza y confecciona la estructura tridimensionalmente. Mediante un proceso interactivo se crea la estructura con lo cual se define la geometría y conformación de la estructura. El programa calcula inicialmente la matriz de rigidez, considerando deformaciones axiales y de corte, y a partir de ella, obtiene las deformaciones, reacciones y elementos mecánicos para el correspondiente diseño.

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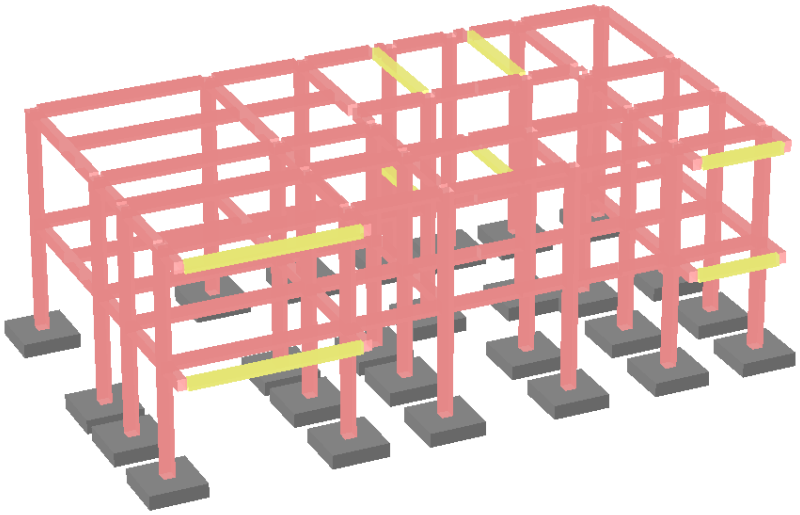

Imagen 11 - Vista tridimensional del modelo estructural – Centro de vida sensorial.

El primer resultado del análisis estructural permitió evaluar la magnitud de los desplazamientos y a partir de ellos las derivas correspondientes. Una vez la estructura cumplió con los requisitos de control de la deriva que se presentan en los anexos, se procedió al diseño de los elementos estructurales, utilizando el Método de la Resistencia Ultima, de conformidad con lo establecido en la Norma NSR-10. Para ello se tuvieron en cuenta los efectos causados por el sismo de diseño mediante la capacidad de disipación de energía del sistema estructural, mediante la reducción de las fuerzas al dividirlas por el coeficiente de reducción de capacidad de disipación de energía R.

El diseño se realizó de acuerdo con los requisitos propios del sistema estructural de resistencia sísmica y del material estructural utilizado. Los despieces se realizaron de acuerdo con el grado de capacidad de disipación para los valores más desfavorables obtenidos de las combinaciones más desfavorables señaladas anteriormente.

9. Parámetros del estudio de suelos.

El estudio de suelos fue elaborado por la compañía DAPSIL S.A.S., en el cual se establece que la cimentación más adecuada para la edificación será una cimentación , conformada por medio de zapatas unidas por vigas de amarre, siempre y cuando las cargas de trabajo que actúan sobre el terreno no excedan las dadas en la siguiente tabla:

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CAPACIDAD PORTANTE ULTIMA (tn/m2) $\sigma_{ns} = \sigma_u / F.S.$ F.S. = 3.0

	ANCHO DE CIMIENTO B (m)							
CIMIENTO	B/L (m/m)	0.5	1.0	1.5	2.0	2.5	3.0	4.0
Continuo	0.00	21.52	17.48	16.14	15.47	15.06	14.79	14.46
Rectangular	0.25	22.60	18.36	16.95	16.24	15.82	15.53	15.18
	0.50	23.67	19.23	17.75	17.01	16.57	16.27	15.90
	0.75	24.75	20.11	18.56	17.79	17.32	17.01	16.63
Cuadrado	1.00	25.82	20.98	19.37	18.56	18.08	17.75	17.35

Otras recomendaciones y parámetros están relacionados y descritos en el referido estudio geotécnico.

10. Especificación de materiales.

Los materiales con los cuales se realizó el presente estudio y con los cuales se tendrá que realizar la construcción son:

Concretos:

- De limpieza: f'c = 140 kg/cm2 (14 MPa).
- Zapatas y vigas de amarre: f'c = 210 kg/cm2 (21 MPa).
- Columnas: f'c = 210 kg/cm2 (21 MPa).
- Vigas y placa de entrepiso: f'c = 210 kg/cm2 (21 MPa).

Refuerzo:

- 3/8” y mayores: fy = 4200 kg/cm2 (420 MPa).
- Malla Electrosoldada: fy = 4200 kg/cm2 (420 MPa).

11. Resistencia al fuego.

Para la norma colombiana de construcción sismo resistente NSR-10, las edificaciones deben clasificarse por grupos de ocupación para establecer la condición de protección al fuego.

El **Edificio centro de vida sensorial** se clasifica dentro del Grupo INSTITUCIONAL (L), Subgrupo (I-5) Servicio publico:

I	INSTITUCIONAL	K.2.6
I-1	Reclusión	
I-2	Salud o incapacidad	
I-3	Educación	
I-4	Seguridad pública	
I-5	Servicio público	

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De acuerdo con la tabla Tabla J.3.3-1, para edificaciones en clasificación I-5 con menos de 500 m2 construidos y 2 pisos se establece esta edificación como categoría III.

Tabla J.3.3-1
Categorización de las edificaciones para efectos de resistencia contra el fuego de acu con su uso, área construida, y número de pisos.

Grupos y subgrupos de ocupación	Área total construida, A_T m²	Número de pisos						
		1	2	3	4	5	6	≥ 7
(C-1)	$A_T > 1500$	III	III	II	II	II	I	I
	$A_T < 1500$	III	III	III	II	II	II	I
(C-2)	$A_T > 500$	II	I	I	I	I	I	I
	$A_T < 500$			II	I	I	I	I
(E)	Sin límite	III	III	III	II	II	II	I
(I-2), (I-4)	$A_T > 1000$	III	II	II	I	I	I	I
	$500 < A_T < 1000$	III	III	II	II	I	I	I
	$A_T < 500$	III	III	III	II	II	II	I
(I-3)	$A_T > 1000$	II	II	I	I	I	I	I
	$A_T < 1000$		III	II	II	I	I	I
(L-1), (L-2), (L-3), (L-4)	$A_T > 1000$	II	I	I	I	I	I	I
(L-5), (I-1), (I-5)	$500 < A_T < 1000$	II	II	I	I	I	I	I
	$A_T < 500$	III	III	II	II	I	I	I
(R-1), (R-2)	Unidades > 140 m²				II	I	I	I
	Unidades ≤ 140 m²				III	II	II	I
(R-3)	$A_T > 5000$	III	II	I	I	I	I	I
	$A_T < 5000$	III	II	II	II	I	I	I

Notas: (1). En edificios para vivienda, el límite de 140 m² por unidad corresponde al promedio aritmético de las áreas de todas las unidades, sin tener en cuenta las zonas comunes.

Dado lo anterior para la estructura y mampostería del centro integral a construir se deberá garantizar una resistencia requerida al fuego, en hora de:

Muros de cerramiento de escaleras y muros divisorios entre unidades: **1 hora**

Elementos estructurales de los materiales cubiertos por los títulos C a G del reglamento NSR-10: **1 hora**.

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Tabla J.3.4-3
Resistencia requerida al fuego normalizado NTC 1480 (ISO 834), en horas, de elementos de una edificación de todos los grupos de ocupación excepto R-1 y R-2. (Véase Nota 1)

Elementos de la construcción	Categoría según la clasificación dada en J.3.3.1		
	I	II	III
Muros Cortafuego	3	2	1
Muros de cerramiento de escaleras, ascensores, buitrones, ductos para basuras y corredores de evacuación protegidos	2	2	1
Muros divisorios entre unidades	1	1	1
Muros interiores no portantes	½	¼	-
Elementos estructurales de los materiales cubiertos por los Títulos C a G del Reglamento NSR-10	2	1	1
Cubiertas	1	1	½
Escaleras interiores no encerradas con muros	2	1	1

Nota 1. En la sección J.3.3.3 se indican los grupos de ocupación que están exentos de cuantificación de resistencia contra el fuego y para los cuales no hay necesidad de aplicar la presente tabla.

EVALUACIÓN DE LA PROVISIÓN DE RESISTENCIA CONTRA FUEGO EN ELEMENTOS DE EDIFICACIONES:

COLUMNAS DE CONCRETO 25X25 cm:

La dimensión mínima para columnas en estructuras con capacidad moderada de disipación de energía DMO dada en C.21.3.5.1 de 250 mm, es adecuada para resistencia al fuego requerida hasta de dos (2) horas. Este tamaño de columna no se permite en zonas de amenaza sísmica alta. ***Cumple.***

LOSAS MACIZA e= 10cm:

El espesor mínimo en losas macizas y el ancho mínimo del alma de viguetas no debe ser menor de 80 mm para resistencia al fuego requerida de una (1) hora. ***Cumple.***

ELEMENTOS DE MAMPOSTERIA NO ESTRUCTURAL Y ESTRUCTURAL:

El espesor mínimo de muros para unidades de perforación vertical con resistencia al fuego de 1 hora es 5cm y las unidades a utilizar en el centro integral son de 12 cm. ***Cumple.***

12. Criterio de diseño.

De acuerdo con el reglamento Colombiano de Construcción Sismo Resistente NSR-10, la estructura aquí diseñada, es capaz de resistir los temblores pequeños sin daño, temblores moderados sin daño estructural, pero con algún daño en los elementos no estructurales, y un temblor fuerte sin colapso o pérdida de vidas humanas.

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13. Normas de diseño y construcción.

El presente estudio, se realiza de acuerdo con las Normas contenidas en el Decreto 926 del 19 de marzo de 2010, REGLAMENTO COLOMBIANO DE CONSTRUCCIÓN SISMO RESISTENTE NSR-10.

El cuidado tanto en el diseño como en LA CONSTRUCCIÓN, SUPERVISIÓN TÉCNICA Y EN LA INTERVENTORÍA, son fundamentales para que la edificación sea sismo-resistente.

Las siguientes MEMORIAS corresponden al análisis y diseño de la edificación en los términos del proyecto arquitectónico y de los parámetros ya mencionados.

Este estudio está constituido por las presentes MEMORIAS DE CÁLCULO y PLANOS ESTRUCTURALES que se acompañan, los cuales contienen toda la información sobre los materiales a utilizar, secciones, tamaño y localización de todos los elementos estructurales con sus dimensiones y refuerzo.

Si por alguna circunstancia existe alguna variación en ellos, que impliquen modificaciones al proyecto estructural, se deberá hacer conocer al suscrito para estudiar su incidencia y definir la solución más adecuada.

Atentamente,

ING. CRISTIAN PINZÓN CHIVATÁ
Consultor Estructural.

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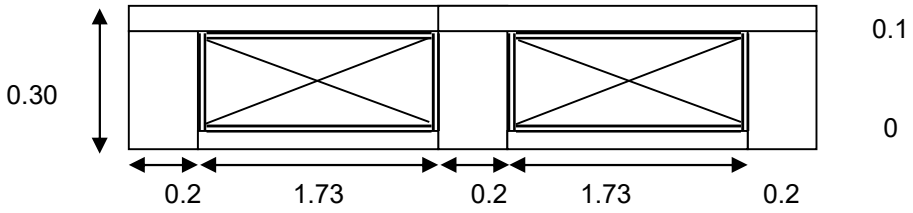
CENTRO DE VIDA SENSORIAL
BOJACÁ - CUNDINAMARCA

INDICE ANEXOS

ANEXO 1.
EVALUACION DE CARGAS

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
PISO 2 - SALA ESPERA Y ESTIMULACION

Luz de Calculo	1.73	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales		
PLACA	240	kg/m^2			
NERVIO	50	kg/m^2			
CASETON			30	kg/m^2	
MUROS DIVISORIOS			213	kg/m^2	ok
ALISTADO			120	kg/m^2	
ACABADO			100	kg/m^2	
CIELO RASO			50	kg/m^2	
INSTALACIONES			30	kg/m^2	
	290	kg/m^2	**543**	kg/m^2	

Carga viva **500** kg/m^2

Carga ultima placa	1739.6	kg/m^2
Carga ultima vigueta	1799.3	kg/m^2
Cu / vigueta	3472.6	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 650.806 \text{ kg*m}$$

Rn (kg/cm^2) 11.30

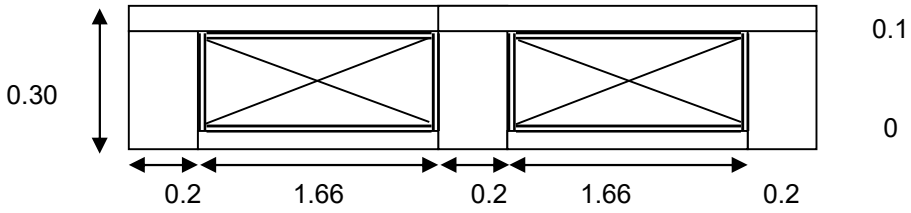
ρ = 0.0028 ρ_{min} = 0.0018

As = 2.78 cm^2/m

Usar malla electrosoldada XX-295 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
PISO 2 - SALA DE TERAPIA DE GRUPO

Luz de Calculo	1.66	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales		
PLACA	240	kg/m^2			
NERVIO	52	kg/m^2			
CASETON			30	kg/m^2	
MUROS DIVISORIOS			213	kg/m^2	ok
ALISTADO			120	kg/m^2	
ACABADO			100	kg/m^2	
CIELO RASO			50	kg/m^2	
INSTALACIONES			30	kg/m^2	
	292	kg/m^2	**543**	kg/m^2	

Carga viva **200** kg/m^2

Carga ultima placa	1259.6	kg/m^2
Carga ultima vigueta	1321.5	kg/m^2
Cu / vigueta	2458.1	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 433.869 \text{ kg*m}$$

Rn (kg/cm^2) 7.53

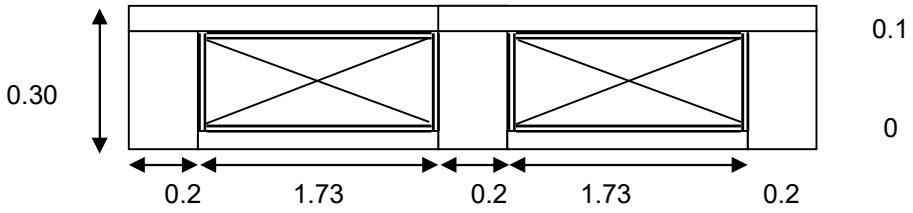
ρ = 0.0018 ρ_{min} = 0.0018

As = 1.83 cm^2/m

Usar malla electrosoldada XX-221 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
PISO 2 - CONSULTORIOS

Luz de Calculo	1.73	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales		
PLACA	240	kg/m^2			
NERVIO	50	kg/m^2			
CASETON			30	kg/m^2	
MUROS DIVISORIOS			213	kg/m^2	ok
ALISTADO			120	kg/m^2	
ACABADO			100	kg/m^2	
CIELO RASO			50	kg/m^2	
INSTALACIONES			30	kg/m^2	
	290	kg/m^2	**543**	kg/m^2	

Carga viva **200** kg/m^2

Carga ultima placa	1259.6	kg/m^2
Carga ultima vigueta	1319.3	kg/m^2
Cu / vigueta	2546.2	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 471.232 \text{ kg*m}$$

Rn (kg/cm^2) 8.18

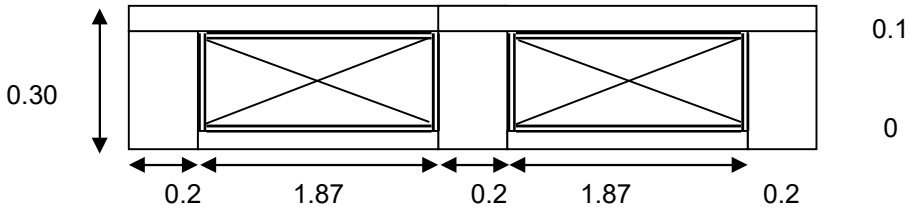
ρ = 0.0020 ρ_{min} = 0.0018

As = 1.99 cm^2/m

Usar malla electrosoldada XX-221 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
PISO 2 - BAÑOS

Luz de Calculo	1.87	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales		
PLACA	240	kg/m^2			
NERVIO	46	kg/m^2			
CASETON			30	kg/m^2	
MUROS DIVISORIOS			213	kg/m^2	ok
ALISTADO			120	kg/m^2	
ACABADO			100	kg/m^2	
CIELO RASO			50	kg/m^2	
INSTALACIONES			30	kg/m^2	
	286	kg/m^2	**543**	kg/m^2	

Carga viva **180** kg/m^2

Carga ultima placa	1227.6	kg/m^2
Carga ultima vigueta	1283.3	kg/m^2
Cu / vigueta	2656.3	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 536.599 \text{ kg*m}$$

Rn (kg/cm^2) 9.32

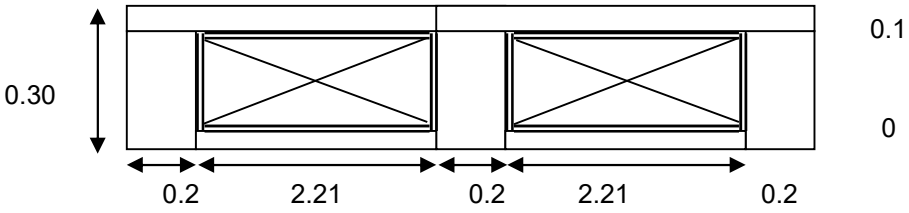
ρ = 0.0023 ρ_{min} = 0.0018

As = 2.28 cm^2/m

Usar malla electrosoldada XX-221 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
PISO 2 - CORREDORES Y ESCALERAS

Luz de Calculo	2.21	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales		
PLACA	240	kg/m^2			
NERVIO	40	kg/m^2			
CASETON			30	kg/m^2	
MUROS DIVISORIOS			213	kg/m^2	ok
ALISTADO			120	kg/m^2	
ACABADO			100	kg/m^2	
CIELO RASO			50	kg/m^2	
INSTALACIONES			30	kg/m^2	
	280	kg/m^2	**543**	kg/m^2	

Carga viva **300** kg/m^2

Carga ultima placa	1419.6	kg/m^2
Carga ultima vigueta	1467.4	kg/m^2
Cu / vigueta	3536.4	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 866.684 \text{ kg*m}$$

Rn (kg/cm^2) 15.05

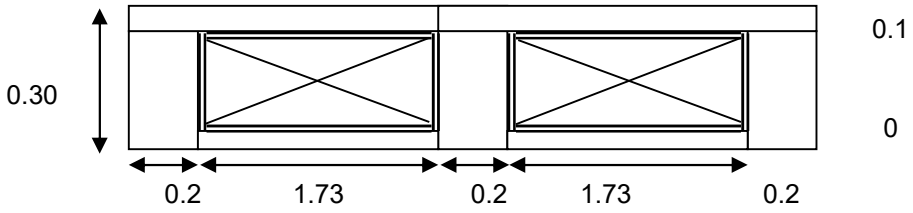
ρ = 0.0037 ρ_{min} = 0.0018

As = 3.75 cm^2/m

Usar malla electrosoldada XX-378 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
CUBIERTA

Luz de Calculo	1.73	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales	
PLACA	240	kg/m^2		
NERVIO	50	kg/m^2		
CASETON			30	kg/m^2
MUROS DIVISORIOS			0	kg/m^2
ALISTADO			144	kg/m^2
CIELO RASO			50	kg/m^2
INSTALACIONES			30	kg/m^2
CUBIERTA			23	
	290	kg/m^2	**277**	kg/m^2

Carga viva **180** kg/m^2

Carga ultima placa	907.9	kg/m^2
Carga ultima vigueta	967.6	kg/m^2
Cu / vigueta	1867.5	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 339.664 \text{ kg*m}$$

Rn (kg/cm^2) 5.90

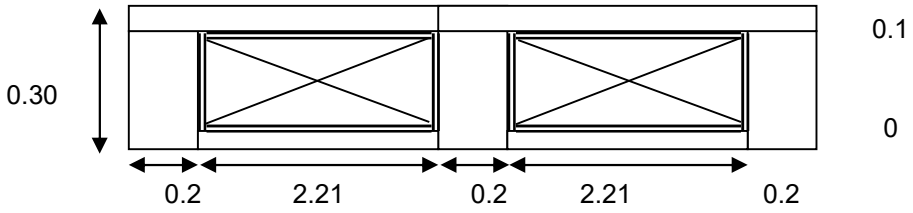
ρ = 0.0014 ρ_{min} = 0.0018

As = 1.80 cm^2/m

Usar malla electrosoldada XX-221 con refuerzo principal en sentido perpendicular a las viguetas.

CENTRO DE VIDA SENSORIAL - BOJACÁ
ANALISIS DE CARGAS - PLACA ALIGERADA DE ENTREPISO
CUBIERTA - ZONA TANQUE

Luz de Calculo	2.21	m	Materiales		
Esp placa sup	0.10	m	fc	210	kg/cm^2
Esp placa inf	0	m	fy	4200	kg/cm^2
b	1.00	m	m	23.53	
Ancho nervio	0.20	m	Esp. Eq.	0.12	cm
Altura vigueta	0.30	m			



Cargas

Carga muerta	Peso propio		Adicionales	
PLACA	240	kg/m^2		
NERVIO	40	kg/m^2		
CASETON			30	kg/m^2
MUROS DIVISORIOS			0	kg/m^2
ALISTADO			144	kg/m^2
CIELO RASO			50	kg/m^2
INSTALACIONES			30	kg/m^2
CUBIERTA			23	
	280	kg/m^2	**277**	kg/m^2

Carga viva **500** kg/m^2

Carga ultima placa	1419.9	kg/m^2
Carga ultima vigueta	1467.7	kg/m^2
Cu / vigueta	3537.2	kg/m

(Analisis por metro de ancho)

$$Mu = \frac{wl^2}{8} = 866.879 \text{ kg*m}$$

Rn (kg/cm^2) 15.05

ρ = 0.0037 ρ_{min} = 0.0018

As = 3.75 cm^2/m

Usar malla electrosoldada XY-221 con refuerzo principal en sentido perpendicular a las viguetas.

ANEXO 2.
CALCULO DE LA FUERZA SISMICA

Company: Cristian Pinzón Chivatá **Engineer: Cristian Pinzón Chivatá**
Project: Untitled **01:35:12 p. m. 22/10/2025**
File: C:\Users\supin\Desktop\44. BOJACÁ\MODELO ESTRUCTURAL\2025-10-22 Modelo definitivo Bojacá.rcb

S E I S M I C D E S I G N C O D E : COL NSR-10

```
============================================================
 S E I S M I C   B A S E   L E V E L :  1
============================================================

S E I S M I C   F O R C E   R E S I S T I N G   S Y S T E M

System X-Direction:   C: Moment Res.Frame
System Y-Direction:   C: Moment Res.Frame
------------------------------------------------------------
Energy dissip capacity: 2: Moderate-DMO
------------------------------------------------------------
```

RESPONSE SPECTRUM EARTHQUAKE FORCES COL NSR-10

```
Elastic Modal Base Shear
                  Vm  = Sam  Wm'
                  Sam = Spectral modal acceleration
                  Wm' = Effective modal weight



A N A L Y S I S   P A R A M E T E R S

Number of modes to be included ... =    20

                                    X-direction   Y-direction
                                    -----------   -----------
Energy dissipation coefficient, Ro =    5             5
```

S P E C T R A L M O D A L A C C E L E R A T I O N

Sam = 2.5 Aa Fa I [0.4+0.6T/To] For Tm <= To
Sam = 2.5 Aa Fa I For To < Tm <= Tc
Sam = 1.2 Av Fv I/Tm For Tc < Tm < Tl
Sam = 1.2 Av Fv Tl I/Tm² For Tm > Tl

Eff. peak acceleration & veloc., Aa = .15 Av = .20

Region:	10	9	8	7	6	5	4	3	2	1
Aa or Av	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05

LOCATION	Aa	Av	Menace
Barranquilla, Cartagena, San Andres, Valledupar	0.10	0.10	Low
Bogota, Medellin	0.15	0.20	Interm
Armenia, Bucaramanga, Cali, Manizalez, Pereira	0.25	0.25	High
Cucuta, Villavicencio	0.35	0.30	High
Quibdo	0.35	0.35	High

Importance coefficient, I ..... = 1.25

GROUP	COEFFICIENT
IV - Essential facilities	1.50
III- Public assistance facilities	1.25
II - Especial occupancy buildings	1.10
I - Normal occupancy buildings	1.00

Site profile type, S ..... = D

TYPE	SOIL PROFILE TYPE	Shear Wave Velocity
A	Hard Rock	> 1500 m/s
B	Rock	1500 - 760 m/s
C	Very Dense Soil & Soft Rock	760 - 360 m/s
D	Stiff Soil Profile	360 - 180 m/s
E	Soft Soil Profile	< 180 m/s
F	Soils requiring site-specific evaluations	

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Untitled
01:35:13 p. m. 22/10/2025

S P E C T R A L M O D A L A C C E L E R A T I O N

```
  Sam = 2.5 Aa Fa I [0.4+0.6T/To]  For Tm <= To
  Sam = 2.5 Aa Fa I                For To < Tm <= Tc
  Sam = 1.2 Av Fv I/Tm             For Tc < Tm < Tl
  Sam = 1.2 Av Fv Tl I/Tm²         For Tm > Tl
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS

                                   Short Periods   Long Periods
                                   -------------   ----------------
Effect. peak acceleration & velc., Aa = 0.15       Av = 0.20
Site coefficients (Tables below),  Fa = 1.50       Fv = 2.00

Design response parameters,     Aa Fa =   0.23  Av Fv=   0.40

Long-period transition period, Tl sec =   4.80  (2.4 Fv)
```

Site Coefficient Fa

Site Class	Aa<=0.1	Aa=0.2	Aa=0.3	Aa=0.4	Ss>=0.5
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	a	a	a	a	a

Site Coefficient Fv

Site Class	Av<=0.1	Av=0.2	Av=0.3	Av=0.4	Av>=0.5
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	a	a	a	a	a

a: Site-specific geotechnical investigation required

Reduction in R for Irregularity and Lack of Redundancy:

PLAN IRREGULARITIES			ELEVATION IRREGULARITIES	
Type	Description	Øp	Type Description	Øa
1aP	Torsional	0.9	1aA Flexible	0.9
1bP	Torsional Extrme	0.8	1bA Flexible Extrme	0.8
2P	Reentrant corners	0.9	2A Mass	0.9
3P	Diaph. discontin.	0.9	3A Geometrical	0.9
4P	Plane shifting	0.8	4A Plane shifting	0.8
5P	Unparallel grid	0.9	5aA Weak Story	0.9
			5bA Weak Story Extr	0.8

NOTE: EngSolutions RCB assumes irregular but redundant building.
For regular buildings make (Øp . Øa)= 1.0

	X - D I R E C T I O N	Y - D I R E C T I O N
Reduct. factor, (Øp.Øa) =	1	1
Redundancy factor, Ør =	1	1

R = (Øp Øa) Ør Ro

S T A T I C E Q U I V A L E N T B A S E S H E A R

Building Weight, W, (ton) = 224.3

Peak Acceleration Coeffi., Aa Fa = .23
Peak Velocity Coefficient, Av Fv = .4
Importance factor, I . . . . . = 1.25
Site class, S . . . . . = D
Coeff. for upper limit period, Cu = 1.27

	X-direction	Y-direction
Computed Period =	0.328	0.343
Ta = Ct (H)^x =	0.047 H^0.9	0.047 H^0.9
=	0.200	0.200
Tmax = Cu Ta =	0.254	0.254
Fundamental Period =	0.254	0.254
Energ-Disspst coeff, R =	5	5
1.2 Av Fv I / T =	2.361	2.361
2.5 Aa Fa I =	.719	.719
Sa =	.719	.719
Base Shear, Vo =	161.22	161.22
Static Shear, .8Vo (ton) =	128.98	128.98

S P E C T R A L A C C E L E R A T I O N

MODE No	PERIOD (sec)	Sa (g)
1	.343	.719
2	.328	.719
3	.184	.719
4	.117	.578
5	.116	.575
6	.064	.446
7	0	.288
8	0	.288
9	0	.288
10	0	.288
11	0	.288
12	0	.288
13	0	.288
14	0	.288
15	0	.288
16	0	.288
17	0	.288
18	0	.288

M O D A L B A S E S H E A R

MODE No	X - D I R E C T I O N Sax (g)	W'x (ton)	Vx (ton)	Y - D I R E C T I O N Say (g)	W'y (ton)	Vy (ton)
1	.719	0	0	.719	205.02	147.41
2	.719	208.14	149.65	.719	0	0
3	.719	.23	.17	.719	.01	.01
4	.578	0	0	.578	19.24	11.12
5	.575	15.93	9.16	.575	0	0
6	.446	0	0	.446	0	0
7	.288	0	0	.288	0	0
8	.288	0	0	.288	0	0
9	.288	0	0	.288	0	0
10	.288	0	0	.288	0	0
11	.288	0	0	.288	0	0
12	.288	0	0	.288	0	0
13	.288	0	0	.288	0	0
14	.288	0	0	.288	0	0
15	.288	0	0	.288	0	0
16	.288	0	0	.288	0	0
17	.288	0	0	.288	0	0
18	.288	0	0	.288	0	0
ELASTIC Ve (combined):		149.93				147.83
STATIC 0.8 Sa(T1)W:		128.98				128.98
Design Base Shear:		149.93				147.83

Total Building Weight, W = 224.3 ton
Participating Mass, ΣW'/W = 100% in X, 100% in Y
W'xm={ΣWj ϕxjm}²/ΣWj ϕxjm² W'ym={ΣWj ϕyjm}²/ΣWj ϕyjm²
Combination of Modal Response: SRSS V = (Sum Vi²)½

A C C I D E N T A L T O R S I O N

	X-direction	Y-direction
Accidental eccentricity as a percentage of building dimension, (%)=	0	0

Modal nodal force:

$$Fim = Vm \; Wim \; \phi im / \Sigma \; Wj \; \phi jm$$
$$Vm = Sam \; W'm$$
$$W'm = \{\Sigma \; Wj \; \phi jm\}^2 / \Sigma \; Wj \; \phi jm^2$$

C O M B I N E D M O D A L F O R C E

X - DIRECTION

Floor k -	Weight W (ton)	Force F (ton)	Shear V (ton)	Torsion T=F(E-ε) (ton-m)
5	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0
3	95.91	85.41	85.41	0.0
2	128.3	64.51	149.9	0.0

C O M B I N E D M O D A L F O R C E

Y - DIRECTION

Floor k -	Weight W (ton)	Force F (ton)	Shear V (ton)	Torsion T=F(E-ε) (ton-m)
5	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0
3	95.91	86.41	86.41	0.0
2	128.3	61.41	147.8	0.0

ACCELERATIONS ON NON-STRUCTURAL ELEMENTS- NSR-10

F L O O R A C C E L E R A T I O N S

Level	hx	hx/heq	ax
5	6.50	1.33	0.891
4	6.19	1.26	0.849
3	5.00	1.02	0.686
2	2.50	0.51	0.483

Seismic base level . . . . . = 1
Height above seismic base, hn . . . . . = 6.50 m
Equivalent height, heq = 0.75 hn . . . . . = 4.88 m
Ground acceleration, As = Aa Fa I . . . . . = 0.288
Spectral acceleration, Sa . . . . . = 0.668

ax = Sa hx/heq for hx > heq
ax = As + (Sa -As) hx/heq for hx < heq

Force on structural non-seismic element : Fp = ax Wp / Ro
Force on nonstructural element : Fp = ax ap Wp / Rp
> 0.5 Aa I Wp

ap : component amplification factor

ANEXO 3.
GEOMETRIA Y CARGAS DE LA ESTRUCTURA

Company: Cristian Pinzón Chivatá **Engineer: Cristian Pinzón Chivatá**
Project: Centro Integral - Bojacá **01:40:58 p. m. 22/10/2025**
File: C:\Users\supin\Desktop\44. BOJACÁ\MODELO ESTRUCTURAL\2025-10-22 Modelo definitivo Bojacá.rcb

GENERAL INPUT DATA

Structure type: Three-Dimensional Frame Structure
Number of Floor Grids . . . . = 1
Building total length . . . . = 13.23 m
Building total width . . . . . = 8.06 m

STORY INFORMATION

Number of Stories . . . . = 4
Total Frame Height . . . . = 6.5 m

Floor	Story Height	Grid No
1	2.50	1
2	2.50	1
3	1.19	1
4	0.31	1
5	-	1

* Story Height in (m)

STRUCTURAL GRID INFORMATION

GRID No 1

Grid Point	X	Y
1'-G	0.00	0.00
1-G	0.00	0.93
2-G	0.00	2.85
3-G	0.00	4.37
3''-G	0.00	5.31
G:3''a	0.00	6.21
4-G	0.00	8.06
1'-F	3.90	0.00
1-F	3.90	0.93
2-F	3.90	2.85
3-F	3.90	4.37
3''-F	3.90	5.31
F:3''a	3.90	6.21
4-F	3.90	8.06
1-E	6.04	0.93
2-E	6.04	2.85
3-E	6.04	4.37
3''-E	6.04	5.31
E:3''a	6.04	6.21
4-E	6.04	8.06
1-E1	7.72	0.93
2-E1	7.72	2.85
3-E1	7.72	4.37
3''-E1	7.72	5.31
4-E1	7.72	8.06
4:E1a	8.10	8.06
1-E2	8.84	0.93
2-E2	8.84	2.85
3-E2	8.84	4.37
3''-E2	8.84	5.31
4:E1b	9.53	8.06
1-E3	9.97	0.93
2-E3	9.97	2.85
3-E3	9.97	4.37
3''-E3	9.97	5.31
4-E3	9.97	8.06
1'-B	11.17	0.00
1-B	11.17	0.93
2-B	11.17	2.85
3-B	11.17	4.37
3'-B	11.17	4.83
3''-B	11.17	5.31
4-B	11.17	8.06
1'-A	13.23	0.00
1-A	13.23	0.93
2-A	13.23	2.85
3-A	13.23	4.37
3'-A	13.23	4.83

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:40:58 p. m. 22/10/2025

Grid Point	X	Y
3''-A	13.23	5.31
4-A	13.23	8.06

* Coordinates X & Y are in (m)

NODE DATA

Axis	Floor	X	Y	Z	Axis	Floor	X	Y	Z
1-G	1	0.00	0.93	0.00	2-G	1	0.00	2.85	0.00
3-G	1	0.00	4.37	0.00	4-G	1	0.00	8.06	0.00
1-F	1	3.90	0.93	0.00	2-F	1	3.90	2.85	0.00
3-F	1	3.90	4.37	0.00	4-F	1	3.90	8.06	0.00
1-E	1	6.04	0.93	0.00	2-E	1	6.04	2.85	0.00
3-E	1	6.04	4.37	0.00	4-E	1	6.04	8.06	0.00
3''-E1	1	7.72	5.31	0.00	4:E1a	1	8.10	8.06	0.00
1-E2	1	8.84	0.93	0.00	2-E2	1	8.84	2.85	0.00
4:E1b	1	9.53	8.06	0.00	3''-E3	1	9.97	5.31	0.00
1-B	1	11.17	0.93	0.00	2-B	1	11.17	2.85	0.00
3'-B	1	11.17	4.83	0.00	4-B	1	11.17	8.06	0.00
1-A	1	13.23	0.93	0.00	2-A	1	13.23	2.85	0.00
3'-A	1	13.23	4.83	0.00	4-A	1	13.23	8.06	0.00
1'-G	2	0.00	0.00	2.50	1-G	2	0.00	0.93	2.50
2-G	2	0.00	2.85	2.50	3-G	2	0.00	4.37	2.50
3''-G	2	0.00	5.31	2.50	G:3''a	2	0.00	6.21	2.50
4-G	2	0.00	8.06	2.50	1'-F	2	3.90	0.00	2.50
1-F	2	3.90	0.93	2.50	2-F	2	3.90	2.85	2.50
3-F	2	3.90	4.37	2.50	3''-F	2	3.90	5.31	2.50
F:3''a	2	3.90	6.21	2.50	4-F	2	3.90	8.06	2.50
1-E	2	6.04	0.93	2.50	2-E	2	6.04	2.85	2.50
3-E	2	6.04	4.37	2.50	3''-E	2	6.04	5.31	2.50
E:3''a	2	6.04	6.21	2.50	4-E	2	6.04	8.06	2.50
1-E1	2	7.72	0.93	2.50	2-E1	2	7.72	2.85	2.50
3''-E1	2	7.72	5.31	2.50	4-E1	2	7.72	8.06	2.50
4:E1a	2	8.10	8.06	2.50	1-E2	2	8.84	0.93	2.50
2-E2	2	8.84	2.85	2.50	3''-E2	2	8.84	5.31	2.50
4:E1b	2	9.53	8.06	2.50	1-E3	2	9.97	0.93	2.50
2-E3	2	9.97	2.85	2.50	3''-E3	2	9.97	5.31	2.50
4-E3	2	9.97	8.06	2.50	1'-B	2	11.17	0.00	2.50
1-B	2	11.17	0.93	2.50	2-B	2	11.17	2.85	2.50
3-B	2	11.17	4.37	2.50	3'-B	2	11.17	4.83	2.50
3''-B	2	11.17	5.31	2.50	4-B	2	11.17	8.06	2.50
1'-A	2	13.23	0.00	2.50	1-A	2	13.23	0.93	2.50
2-A	2	13.23	2.85	2.50	3-A	2	13.23	4.37	2.50
3'-A	2	13.23	4.83	2.50	3''-A	2	13.23	5.31	2.50
4-A	2	13.23	8.06	2.50					
1'-G	3	0.00	0.00	5.00	1-G	3	0.00	0.93	5.00
2-G	3	0.00	2.85	5.00	3-G	3	0.00	4.37	5.00
3''-G	3	0.00	5.31	5.00	G:3''a	3	0.00	6.21	5.00
4-G	3	0.00	8.06	5.00	1'-F	3	3.90	0.00	5.00
1-F	3	3.90	0.93	5.00	2-F	3	3.90	2.85	5.00
3-F	3	3.90	4.37	5.00	3''-F	3	3.90	5.31	5.00
F:3''a	3	3.90	6.21	5.00	4-F	3	3.90	8.06	5.00
1-E	3	6.04	0.93	5.00	2-E	3	6.04	2.85	5.00
3-E	3	6.04	4.37	5.00	3''-E	3	6.04	5.31	5.00
E:3''a	3	6.04	6.21	5.00	4-E	3	6.04	8.06	5.00
1-E1	3	7.72	0.93	5.00	2-E1	3	7.72	2.85	5.00
3''-E1	3	7.72	5.31	5.00	4-E1	3	7.72	8.06	5.00
4:E1a	3	8.10	8.06	5.00	1-E2	3	8.84	0.93	5.00
2-E2	3	8.84	2.85	5.00	3''-E2	3	8.84	5.31	5.00
4:E1b	3	9.53	8.06	5.00	1-E3	3	9.97	0.93	5.00
2-E3	3	9.97	2.85	5.00	3''-E3	3	9.97	5.31	5.00
4-E3	3	9.97	8.06	5.00	1'-B	3	11.17	0.00	5.00
1-B	3	11.17	0.93	5.00	2-B	3	11.17	2.85	5.00
3-B	3	11.17	4.37	5.00	3'-B	3	11.17	4.83	5.00
3''-B	3	11.17	5.31	5.00	4-B	3	11.17	8.06	5.00
1'-A	3	13.23	0.00	5.00	1-A	3	13.23	0.93	5.00
2-A	3	13.23	2.85	5.00	3-A	3	13.23	4.37	5.00
3'-A	3	13.23	4.83	5.00	3''-A	3	13.23	5.31	5.00
4-A	3	13.23	8.06	5.00					

Axis	Floor	X	Y	Z	Axis	Floor	X	Y	Z

MATERIALS

Number of materials = 1

REINFORCED CONCRETE

Mat	Name	f'c Kg/cm2	fy Kg/cm2	fys1 Kg/cm2	fys2 Kg/cm2	E Kg/cm2	G Kg/cm2	w Kg/m3
1	f'c=3000 psi	210	4200	4200	4200	178720	71488	2400.0

f'c: Compressive strength of concrete
fy: Yield strength of longitudinal reinforcement
fys1: Yiel strength of shear reinforcement, bar sizes <= 3/8"
fys2: Yiel strength of shear reinforcement, bar sizes > 3/8"

MEMBER DATA

Total number of members..... = 180
Number of columns..... = 52
Number of beams ..... = 128
Number of braces ..... = 0

COLUMN SECTIONS

Number of prismatic sections = 2

Sec	Name	Shape	b (cm)	h (cm)	tw (cm)	tf (cm)	P1 (cm)	P2 (cm)	A (cm2)	I2 (cm4)	I3 (cm4)	J (cm4)
1	C25x25	Rectang	25.00	25.00	-	-	-	-	625.0	32552	32552	48177
2	C25x35	Rectang	25.00	35.00	-	-	-	-	875.0	89323	45573	100260

COLUMNS

Column	Story	L (m)	Lu (m)	a (m)	c (m)	Theta (o)	Sec -	Mat -	System -
4-A	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4-A	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3'-A	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
3'-A	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
2-A	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-A	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
1-A	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-A	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4-B	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4-B	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3'-B	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
3'-B	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
2-B	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-B	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L

Column	Story	L	Lu	a	c	Theta	Sec	Mat	System
1-B	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-B	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3''-E3	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
3''-E3	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4:E1b	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4:E1b	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
2-E2	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-E2	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
1-E2	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-E2	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4:E1a	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4:E1a	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3''-E1	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
3''-E1	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4-E	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4-E	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3-E	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
3-E	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
2-E	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-E	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
1-E	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-E	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4-F	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4-F	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3-F	2	2.50	2.20	0.08	0.23	0.0	2	1	G&L
3-F	1	2.50	2.28	0.00	0.23	0.0	2	1	G&L
2-F	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-F	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
1-F	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-F	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
4-G	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
4-G	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
3-G	2	2.50	2.20	0.08	0.23	0.0	2	1	G&L
3-G	1	2.50	2.28	0.00	0.23	0.0	2	1	G&L
2-G	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
2-G	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L
1-G	2	2.50	2.20	0.08	0.23	90.0	1	1	G&L
1-G	1	2.50	2.28	0.00	0.23	90.0	1	1	G&L

BEAM SECTIONS

Number of prismatic sections = 2

Sec	Name	Shape	b (cm)	h (cm)	tw (cm)	tf (cm)	P1 (cm)	P2 (cm)	A (cm2)	I2 (cm4)	I3 (cm4)	J (cm4)
1	V20x30	Rectang	20.00	30.00	-	-	-	-	600.0	45000	20000	46400
2	V15x30	Rectang	15.00	30.00	-	-	-	-	450.0	33750	8437	23119

BEAMS

Beam	Floor	L (m)	Lu (m)	a (m)	c (m)	Sec -	Mat -	System -

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:40:59 p. m. 22/10/2025

Beam	Floor	L	Lu	a	c	Sec	Mat	System
1'(G-F)	2	3.90	3.70	0.10	0.10	2	1	G&L
1'(B-A)	2	2.06	1.86	0.10	0.10	2	1	G&L
1(G-F)	2	3.90	3.65	0.13	0.13	1	1	G&L
1(F-E)	2	2.14	1.89	0.13	0.13	1	1	G&L
1(E-E1)	2	1.68	1.56	0.13	0.00	1	1	G&L
1(E1-E2)	2	1.12	1.00	0.00	0.13	1	1	G&L
1(E2-E3)	2	1.13	1.01	0.13	0.00	1	1	G&L
1(E3-B)	2	1.20	1.08	0.00	0.13	1	1	G&L
1(B-A)	2	2.06	1.81	0.13	0.13	1	1	G&L
2(G-F)	2	3.90	3.65	0.13	0.13	1	1	G&L
2(F-E)	2	2.14	1.89	0.13	0.13	1	1	G&L
2(E-E1)	2	1.68	1.56	0.13	0.00	1	1	G&L
2(E1-E2)	2	1.12	1.00	0.00	0.13	1	1	G&L
2(E2-E3)	2	1.13	1.01	0.13	0.00	1	1	G&L
2(E3-B)	2	1.20	1.08	0.00	0.13	1	1	G&L
2(B-A)	2	2.06	1.81	0.13	0.13	1	1	G&L
3(G-F)	2	3.90	3.65	0.13	0.13	1	1	G&L
3(F-E)	2	2.14	1.89	0.13	0.13	1	1	G&L
3''(E-E1)	2	1.68	1.46	0.10	0.13	1	1	G&L
3''(E1-E2)	2	1.12	1.00	0.13	0.00	1	1	G&L
3''(E2-E3)	2	1.13	1.01	0.00	0.13	1	1	G&L
3''(E3-B)	2	1.20	0.97	0.13	0.10	1	1	G&L
3'(B-A)	2	2.06	1.81	0.13	0.13	1	1	G&L
4(G-F)	2	3.90	3.65	0.13	0.13	1	1	G&L
4(F-E)	2	2.14	1.89	0.13	0.13	1	1	G&L
4(E-E1)	2	1.68	1.48	0.13	0.08	1	1	G&L
4(E1-E1a)	2	0.38	0.18	0.08	0.13	1	1	G&L
4(E1a-E1b)	2	1.43	1.18	0.13	0.13	1	1	G&L
4(E1b-E3)	2	0.44	0.24	0.13	0.08	1	1	G&L
4(E3-B)	2	1.20	1.00	0.08	0.13	1	1	G&L
4(B-A)	2	2.06	1.81	0.13	0.13	1	1	G&L
1'(G-F)	3	3.90	3.70	0.10	0.10	2	1	G&L
1'(B-A)	3	2.06	1.86	0.10	0.10	2	1	G&L
1(G-F)	3	3.90	3.65	0.13	0.13	1	1	G&L
1(F-E)	3	2.14	1.89	0.13	0.13	1	1	G&L
1(E-E1)	3	1.68	1.56	0.13	0.00	1	1	G&L
1(E1-E2)	3	1.12	1.00	0.00	0.13	1	1	G&L
1(E2-E3)	3	1.13	1.01	0.13	0.00	1	1	G&L
1(E3-B)	3	1.20	1.08	0.00	0.13	1	1	G&L
1(B-A)	3	2.06	1.81	0.13	0.13	1	1	G&L
2(G-F)	3	3.90	3.65	0.13	0.13	1	1	G&L
2(F-E)	3	2.14	1.89	0.13	0.13	1	1	G&L
2(E-E1)	3	1.68	1.56	0.13	0.00	1	1	G&L
2(E1-E2)	3	1.12	1.00	0.00	0.13	1	1	G&L
2(E2-E3)	3	1.13	1.01	0.13	0.00	1	1	G&L
2(E3-B)	3	1.20	1.08	0.00	0.13	1	1	G&L
2(B-A)	3	2.06	1.81	0.13	0.13	1	1	G&L
3(G-F)	3	3.90	3.65	0.13	0.13	1	1	G&L
3(F-E)	3	2.14	1.89	0.13	0.13	1	1	G&L
3''(E-E1)	3	1.68	1.46	0.10	0.13	1	1	G&L
3''(E1-E2)	3	1.12	1.00	0.13	0.00	1	1	G&L
3''(E2-E3)	3	1.13	1.01	0.00	0.13	1	1	G&L
3''(E3-B)	3	1.20	0.97	0.13	0.10	1	1	G&L
3'(B-A)	3	2.06	1.81	0.13	0.13	1	1	G&L
4(G-F)	3	3.90	3.65	0.13	0.13	1	1	G&L
4(F-E)	3	2.14	1.89	0.13	0.13	1	1	G&L
4(E-E1)	3	1.68	1.48	0.13	0.08	1	1	G&L
4(E1-E1a)	3	0.38	0.18	0.08	0.13	1	1	G&L
4(E1a-E1b)	3	1.43	1.18	0.13	0.13	1	1	G&L
4(E1b-E3)	3	0.44	0.24	0.13	0.08	1	1	G&L
4(E3-B)	3	1.20	1.00	0.08	0.13	1	1	G&L
4(B-A)	3	2.06	1.81	0.13	0.13	1	1	G&L
G(1'-1)	2	0.93	0.81	0.00	0.13	1	1	G&L
G(1-2)	2	1.92	1.67	0.13	0.13	1	1	G&L
G(2-3)	2	1.52	1.22	0.13	0.18	1	1	G&L
G(3-3'')	2	0.94	0.77	0.18	0.00	1	1	G&L
G(3''-3''a)	2	0.90	0.90	0.00	0.00	1	1	G&L
G(3''a-4)	2	1.85	1.73	0.00	0.13	1	1	G&L
F(1'-1)	2	0.93	0.81	0.00	0.13	1	1	G&L

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Beam	Floor	L	Lu	a	c	Sec	Mat	System
F(1-2)	2	1.92	1.67	0.13	0.13	1	1	G&L
F(2-3)	2	1.52	1.22	0.13	0.18	1	1	G&L
F(3-3'')	2	0.94	0.77	0.18	0.00	1	1	G&L
F(3''-3''a)	2	0.90	0.90	0.00	0.00	1	1	G&L
F(3''a-4)	2	1.85	1.73	0.00	0.13	1	1	G&L
E(1-2)	2	1.92	1.67	0.13	0.13	1	1	G&L
E(2-3)	2	1.52	1.27	0.13	0.13	1	1	G&L
E(3-3'')	2	0.94	0.72	0.13	0.10	1	1	G&L
E(3''-3''a)	2	0.90	0.80	0.10	0.00	1	1	G&L
E(3''a-4)	2	1.85	1.73	0.00	0.13	1	1	G&L
E1(3''-4)	2	2.75	2.53	0.13	0.10	2	1	G&L
E3(3''-4)	2	2.75	2.53	0.13	0.10	2	1	G&L
B(1'-1)	2	0.93	0.81	0.00	0.13	1	1	G&L
B(1-2)	2	1.92	1.67	0.13	0.13	1	1	G&L
B(2-3)	2	1.52	1.40	0.13	0.00	1	1	G&L
B(3-3')	2	0.46	0.34	0.00	0.13	1	1	G&L
B(3'-3'')	2	0.48	0.26	0.13	0.10	1	1	G&L
B(3''-4)	2	2.75	2.53	0.10	0.13	1	1	G&L
A(1'-1)	2	0.93	0.81	0.00	0.13	1	1	G&L
A(1-2)	2	1.92	1.67	0.13	0.13	1	1	G&L
A(2-3)	2	1.52	1.40	0.13	0.00	1	1	G&L
A(3-3')	2	0.46	0.34	0.00	0.13	1	1	G&L
A(3'-3'')	2	0.48	0.36	0.13	0.00	1	1	G&L
A(3''-4)	2	2.75	2.63	0.00	0.13	1	1	G&L
G(1'-1)	3	0.93	0.81	0.00	0.13	1	1	G&L
G(1-2)	3	1.92	1.67	0.13	0.13	1	1	G&L
G(2-3)	3	1.52	1.22	0.13	0.18	1	1	G&L
G(3-3'')	3	0.94	0.77	0.18	0.00	1	1	G&L
G(3''-3''a)	3	0.90	0.90	0.00	0.00	1	1	G&L
G(3''a-4)	3	1.85	1.73	0.00	0.13	1	1	G&L
F(1'-1)	3	0.93	0.81	0.00	0.13	1	1	G&L
F(1-2)	3	1.92	1.67	0.13	0.13	1	1	G&L
F(2-3)	3	1.52	1.22	0.13	0.18	1	1	G&L
F(3-3'')	3	0.94	0.77	0.18	0.00	1	1	G&L
F(3''-3''a)	3	0.90	0.90	0.00	0.00	1	1	G&L
F(3''a-4)	3	1.85	1.73	0.00	0.13	1	1	G&L
E(1-2)	3	1.92	1.67	0.13	0.13	1	1	G&L
E(2-3)	3	1.52	1.27	0.13	0.13	1	1	G&L
E(3-3'')	3	0.94	0.72	0.13	0.10	1	1	G&L
E(3''-3''a)	3	0.90	0.80	0.10	0.00	1	1	G&L
E(3''a-4)	3	1.85	1.73	0.00	0.13	1	1	G&L
E1(3''-4)	3	2.75	2.53	0.13	0.10	2	1	G&L
E3(3''-4)	3	2.75	2.53	0.13	0.10	2	1	G&L
B(1'-1)	3	0.93	0.81	0.00	0.13	1	1	G&L
B(1-2)	3	1.92	1.67	0.13	0.13	1	1	G&L
B(2-3)	3	1.52	1.40	0.13	0.00	1	1	G&L
B(3-3')	3	0.46	0.34	0.00	0.13	1	1	G&L
B(3'-3'')	3	0.48	0.26	0.13	0.10	1	1	G&L
B(3''-4)	3	2.75	2.53	0.10	0.13	1	1	G&L
A(1'-1)	3	0.93	0.81	0.00	0.13	1	1	G&L
A(1-2)	3	1.92	1.67	0.13	0.13	1	1	G&L
A(2-3)	3	1.52	1.40	0.13	0.00	1	1	G&L
A(3-3')	3	0.46	0.34	0.00	0.13	1	1	G&L
A(3'-3'')	3	0.48	0.36	0.13	0.00	1	1	G&L
A(3''-4)	3	2.75	2.63	0.00	0.13	1	1	G&L
G:3''a-F:3''a	2	3.90	3.70	0.10	0.10	1	1	G&L
F:3''a-E:3''a	2	2.14	1.94	0.10	0.10	1	1	G&L
G:3''a-F:3''a	3	3.90	3.70	0.10	0.10	1	1	G&L
F:3''a-E:3''a	3	2.14	1.94	0.10	0.10	1	1	G&L

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SLAB PROPERTIES AND FLOOR LOAD DATA

Number of slab sections = 9

Floor Type:

1: One-way joist slab
2: One-way flat slab
3: Two-way joist slab
4: Two-way flat slab
5: One-way deck on secondary beams

No	Name	Type	tv (cm)	γ (Kg/m3)	Sup.DL (Kg/m2)	LL1 (Kg/m2)	LL2 (Kg/m2)	h (cm)	hf (cm)	bw (cm)	S (cm)
1	Auditorio	2	10.00	2400.0	543.00	500.00	0.00	-	-	-	-
2	cubierta	2	10.00	2400.0	277.00	180.00	0.00	-	-	-	-
3	Oficinas	2	10.00	2400.0	543.00	200.00	0.00	-	-	-	-
4	Aula capacitacion	2	10.00	2400.0	543.00	200.00	0.00	-	-	-	-
5	baños	2	10.00	2400.0	543.00	180.00	0.00	-	-	-	-
6	Corredores	2	10.00	2400.0	543.00	300.00	0.00	-	-	-	-
7	Almacenamiento	2	10.00	2400.0	543.00	600.00	0.00	-	-	-	-
8	Escalera	2	15.00	2400.0	543.00	300.00	0.00	-	-	-	-
9	Cubierta - tanques	2	10.00	2400.0	277.00	500.00	0.00	-	-	-	-

GROUND SUPPORT DATA

Total number of ground supports = 26

K = Spring constant(ton/cm)

Characteristics for All Degrees of Freedom
Value = K Dash = free C = constrained

Support	Floor	Type	Ux	Uy	Uz	TetX	TetY	TetZ
1-G	1	Fixed	C	C	C	C	C	C
2-G	1	Fixed	C	C	C	C	C	C
3-G	1	Fixed	C	C	C	C	C	C
4-G	1	Fixed	C	C	C	C	C	C
1-F	1	Fixed	C	C	C	C	C	C
2-F	1	Fixed	C	C	C	C	C	C
3-F	1	Fixed	C	C	C	C	C	C
4-F	1	Fixed	C	C	C	C	C	C
1-E	1	Fixed	C	C	C	C	C	C
2-E	1	Fixed	C	C	C	C	C	C
3-E	1	Fixed	C	C	C	C	C	C
4-E	1	Fixed	C	C	C	C	C	C
3''-E1	1	Fixed	C	C	C	C	C	C
4:E1a	1	Fixed	C	C	C	C	C	C
1-E2	1	Fixed	C	C	C	C	C	C
2-E2	1	Fixed	C	C	C	C	C	C
4:E1b	1	Fixed	C	C	C	C	C	C
3''-E3	1	Fixed	C	C	C	C	C	C
1-B	1	Fixed	C	C	C	C	C	C
2-B	1	Fixed	C	C	C	C	C	C
3'-B	1	Fixed	C	C	C	C	C	C
4-B	1	Fixed	C	C	C	C	C	C
1-A	1	Fixed	C	C	C	C	C	C
2-A	1	Fixed	C	C	C	C	C	C
3'-A	1	Fixed	C	C	C	C	C	C
4-A	1	Fixed	C	C	C	C	C	C

SUMMARY OF TOTAL FLOOR LOADS

LOAD CASE 1 : SELFW (D0)

	Force (ton)			Moment (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	0.00	0.00	24.24	0.0	0.0	0.0
2	0.00	0.00	24.54	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0
Total	0.00	0.00	48.78	0.0	0.0	0.0

LOAD CASE 3 : DEAD (DL)

	Force (ton)			Moment (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	0.00	0.00	51.63	0.0	0.0	0.0
2	0.00	0.00	78.94	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0
Total	0.00	0.00	130.58	0.0	0.0	0.0

LOAD CASE 4 : LIVE (LL)

	Force (ton)			Moment (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	0.00	0.00	0.00	0.0	0.0	0.0
2	0.00	0.00	35.63	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0
Total	0.00	0.00	35.63	0.0	0.0	0.0

LOAD CASE 5 : ROOF L (RFL)

	Force (ton)			Moment (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	0.00	0.00	23.70	0.0	0.0	0.0
2	0.00	0.00	0.00	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0
Total	0.00	0.00	23.70	0.0	0.0	0.0

LOAD CASE 6 : EQUAKE X (EQX) - TYPE : SPECTRAL

	Force (ton)			Acc. Tors. Mom. (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	85.41	0.00	0.00	0.0	0.0	0.0
2	64.52	0.00	0.00	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0

Floor	Px	Py	Pz	Mx	My	Mz
Total	149.93	0.00	0.00	0.0	0.0	0.0

LOAD CASE 7 : EQUAKE Y (EQY) - TYPE : SPECTRAL

	Force (ton)			Acc. Tors. Mom. (ton-m)		
Floor	Px	Py	Pz	Mx	My	Mz
5	0.00	0.00	0.00	0.0	0.0	0.0
4	0.00	0.00	0.00	0.0	0.0	0.0
3	0.00	86.41	0.00	0.0	0.0	0.0
2	0.00	61.42	0.00	0.0	0.0	0.0
1	0.00	0.00	0.00	0.0	0.0	0.0
Total	0.00	147.83	0.00	0.0	0.0	0.0

L O A D S

Total number of load cases = 7

LOAD CASE 1 : SELFW (D0)

Number of nodal loads .... = 0
Number of column loads ... = 52
Number of beam loads ..... = 128

Column Loads (D0)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

		D i s t r i b u t e d F o r c e / M o m e n t							C o n c e n t r a t e d F o r c e / M o m e n t					
Column	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1-G	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-G	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-G	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-G	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3-G	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.5
3-G	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.5
4-G	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-G	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-F	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-F	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-F	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-F	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3-F	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.5
3-F	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.5
4-F	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-F	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-E	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-E	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-E	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-E	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3-E	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3-E	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-E	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-E	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3''-E1	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3''-E1	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4:E1a	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4:E1a	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-E2	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-E2	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-E2	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3

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Column	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
2-E2	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4:E1b	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4:E1b	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3''-E3	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3''-E3	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-B	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-B	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-B	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-B	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3'-B	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3'-B	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-B	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-B	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-A	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
1-A	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-A	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
2-A	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3'-A	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
3'-A	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-A	1	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3
4-A	2	-	-	-	-	-	-	-	F	G	1.00	0.0	0.0	0.3

Beam Loads (D0)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

		Distributed Force/Moment							Concentrated Force/Moment					
Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1'(G-F)	2	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
1'(B-A)	2	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
1(G-F)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(F-E)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E-E1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E1-E2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E2-E3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E3-B)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(B-A)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(G-F)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(F-E)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E-E1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E1-E2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E2-E3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E3-B)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(B-A)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3(G-F)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3(F-E)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E-E1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E1-E2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E2-E3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E3-B)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3'(B-A)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(G-F)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(F-E)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E-E1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1-E1a)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1a-E1b)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1b-E3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E3-B)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(B-A)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1'(G-F)	3	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
1'(B-A)	3	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
1(G-F)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(F-E)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E-E1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E1-E2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(E2-E3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1(E3-B)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
1(B-A)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(G-F)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(F-E)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E-E1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E1-E2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E2-E3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(E3-B)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
2(B-A)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3(G-F)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3(F-E)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E-E1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E1-E2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E2-E3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3''(E3-B)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
3'(B-A)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(G-F)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(F-E)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E-E1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1-E1a)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1a-E1b)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E1b-E3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(E3-B)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
4(B-A)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(1'-1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(1-2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(2-3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3-3'')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3''-3''a)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3''a-4)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(1'-1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(1-2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(2-3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3-3'')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3''-3''a)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3''a-4)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(1-2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(2-3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(3-3'')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(3''-3''a)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(3''a-4)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E1(3''-4)	2	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
E3(3''-4)	2	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
B(1'-1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(1-2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(2-3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3-3')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3'-3'')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3''-4)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(1'-1)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(1-2)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(2-3)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3-3')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3'-3'')	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3''-4)	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(1'-1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(1-2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(2-3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3-3'')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3''-3''a)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G(3''a-4)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(1'-1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(1-2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(2-3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3-3'')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3''-3''a)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F(3''a-4)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(1-2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(2-3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(3-3'')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
E(3''-3''a)														
	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E(3''a-4)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
E1(3''-4)	3	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
E3(3''-4)	3	F	G	Z	0.00	1.00	0.11	0.11	-	-	-	-	-	-
B(1'-1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(1-2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(2-3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3-3')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3'-3'')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
B(3''-4)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(1'-1)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(1-2)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(2-3)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3-3')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3'-3'')	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
A(3''-4)	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G:3''a-F:3''a														
	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F:3''a-E:3''a														
	2	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
G:3''a-F:3''a														
	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-
F:3''a-E:3''a														
	3	F	G	Z	0.00	1.00	0.14	0.14	-	-	-	-	-	-

LOAD CASE 2 : DEADFAC (DL)

Number of nodal loads .... = 0
Number of column loads ... = 0
Number of beam loads ..... = 68

Beam Loads (DL)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

		Distributed Force/Moment							Concentrated Force/Moment					
Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1'(G-F)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1'(B-A)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1(F-E)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1(E-E1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1(E1-E2)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1(E2-E3)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1(E3-B)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(G-F)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(F-E)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(E-E1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(E1-E1a)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(E1a-E1b)														
	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(E1b-E3)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(E3-B)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
4(B-A)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
1'(G-F)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
1'(B-A)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
1(F-E)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1(E-E1)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1(E1-E2)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1(E2-E3)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1(E3-B)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(G-F)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
4(F-E)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(E-E1)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(E1-E1a)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(E1a-E1b)														
	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(E1b-E3)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-

Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
4(E3-B)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(B-A)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(1'-1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(1-2)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(2-3)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(3-3'')	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(3''-3''a)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(3''a-4)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
F(1'-1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
B(1'-1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(1'-1)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(1-2)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(2-3)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(3-3')	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(3'-3'')	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
A(3''-4)	2	F	G	Z	0.00	1.00	0.56	0.56	-	-	-	-	-	-
G(1'-1)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(1-2)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(2-3)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(3-3'')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(3''-3''a)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
G(3''a-4)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(1'-1)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(1-2)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(2-3)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(3-3'')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(3''-3''a)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
F(3''a-4)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(1'-1)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(1-2)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(2-3)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(3-3')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(3'-3'')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
B(3''-4)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(1'-1)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(1-2)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(2-3)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(3-3')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(3'-3'')	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-
A(3''-4)	3	F	G	Z	0.00	1.00	0.38	0.38	-	-	-	-	-	-

LOAD CASE 3 : DEAD (DL)

Number of nodal loads .... = 0
Number of column loads ... = 0
Number of beam loads ..... = 72

Beam Loads (DL)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

		Distributed Force/Moment							Concentrated Force/Moment					
Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1'(G-F)	2	F	G	Z	0.00	1.00	0.36	0.36	-	-	-	-	-	-
1'(B-A)	2	F	G	Z	0.00	1.00	0.36	0.36	-	-	-	-	-	-
1(G-F)	2	F	G	Z	0.00	1.00	1.12	1.12	-	-	-	-	-	-
1(F-E)	2	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
1(E-E1)	2	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
1(E1-E2)	2	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
1(E2-E3)	2	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
1(E3-B)	2	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
1(B-A)	2	F	G	Z	0.00	1.00	1.04	1.04	-	-	-	-	-	-
2(G-F)	2	F	G	Z	0.00	1.00	1.35	1.35	-	-	-	-	-	-
2(F-E)	2	F	G	Z	0.00	1.00	1.35	1.35	-	-	-	-	-	-
2(E-E1)	2	F	G	Z	0.00	1.00	1.67	1.67	-	-	-	-	-	-

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
2(E1-E2)	2	F	G	Z	0.00	1.00	1.64	1.64	-	-	-	-	-	-
2(E2-E3)	2	F	G	Z	0.00	1.00	1.64	1.64	-	-	-	-	-	-
2(E3-B)	2	F	G	Z	0.00	1.00	1.64	1.64	-	-	-	-	-	-
2(B-A)	2	F	G	Z	0.00	1.00	1.57	1.57	-	-	-	-	-	-
3(G-F)	2	F	G	Z	0.00	1.00	1.33	1.33	-	-	-	-	-	-
3(F-E)	2	F	G	Z	0.00	1.00	1.33	1.33	-	-	-	-	-	-
3''(E-E1)	2	F	G	Z	0.00	1.00	2.02	2.02	-	-	-	-	-	-
3''(E1-E2)	2	F	G	Z	0.00	1.00	2.28	2.28	-	-	-	-	-	-
3''(E2-E3)	2	F	G	Z	0.00	1.00	2.27	2.27	-	-	-	-	-	-
3''(E3-B)	2	F	G	Z	0.00	1.00	2.11	2.11	-	-	-	-	-	-
3'(B-A)	2	F	G	Z	0.00	1.00	1.75	1.75	-	-	-	-	-	-
4(G-F)	2	F	G	Z	0.00	1.00	0.72	0.72	-	-	-	-	-	-
4(F-E)	2	F	G	Z	0.00	1.00	0.72	0.72	-	-	-	-	-	-
4(E-E1)	2	F	G	Z	0.00	1.00	1.08	1.08	-	-	-	-	-	-
4(E1-E1a)	2	F	G	Z	0.00	1.00	1.23	1.23	-	-	-	-	-	-
4(E1a-E1b)	2	F	G	Z	0.00	1.00	1.30	1.30	-	-	-	-	-	-
4(E1b-E3)	2	F	G	Z	0.00	1.00	1.06	1.06	-	-	-	-	-	-
4(E3-B)	2	F	G	Z	0.00	1.00	1.08	1.08	-	-	-	-	-	-
4(B-A)	2	F	G	Z	0.00	1.00	1.44	1.44	-	-	-	-	-	-
1'(G-F)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1'(B-A)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
1(G-F)	3	F	G	Z	0.00	1.00	0.74	0.74	-	-	-	-	-	-
1(F-E)	3	F	G	Z	0.00	1.00	0.50	0.50	-	-	-	-	-	-
1(E-E1)	3	F	G	Z	0.00	1.00	0.50	0.50	-	-	-	-	-	-
1(E1-E2)	3	F	G	Z	0.00	1.00	0.50	0.50	-	-	-	-	-	-
1(E2-E3)	3	F	G	Z	0.00	1.00	0.50	0.50	-	-	-	-	-	-
1(E3-B)	3	F	G	Z	0.00	1.00	0.50	0.50	-	-	-	-	-	-
1(B-A)	3	F	G	Z	0.00	1.00	0.69	0.69	-	-	-	-	-	-
2(G-F)	3	F	G	Z	0.00	1.00	0.89	0.89	-	-	-	-	-	-
2(F-E)	3	F	G	Z	0.00	1.00	0.89	0.89	-	-	-	-	-	-
2(E-E1)	3	F	G	Z	0.00	1.00	1.10	1.10	-	-	-	-	-	-
2(E1-E2)	3	F	G	Z	0.00	1.00	1.09	1.09	-	-	-	-	-	-
2(E2-E3)	3	F	G	Z	0.00	1.00	1.09	1.09	-	-	-	-	-	-
2(E3-B)	3	F	G	Z	0.00	1.00	1.09	1.09	-	-	-	-	-	-
2(B-A)	3	F	G	Z	0.00	1.00	1.04	1.04	-	-	-	-	-	-
3(G-F)	3	F	G	Z	0.00	1.00	0.88	0.88	-	-	-	-	-	-
3(F-E)	3	F	G	Z	0.00	1.00	0.88	0.88	-	-	-	-	-	-
3''(E-E1)	3	F	G	Z	0.00	1.00	1.34	1.34	-	-	-	-	-	-
3''(E1-E2)	3	F	G	Z	0.00	1.00	1.40	1.40	-	-	-	-	-	-
3''(E2-E3)	3	F	G	Z	0.00	1.00	1.39	1.39	-	-	-	-	-	-
3''(E3-B)	3	F	G	Z	0.00	1.00	1.39	1.39	-	-	-	-	-	-
3'(B-A)	3	F	G	Z	0.00	1.00	1.16	1.16	-	-	-	-	-	-
4(G-F)	3	F	G	Z	0.00	1.00	0.47	0.47	-	-	-	-	-	-
4(F-E)	3	F	G	Z	0.00	1.00	0.47	0.47	-	-	-	-	-	-
4(E-E1)	3	F	G	Z	0.00	1.00	0.71	0.71	-	-	-	-	-	-
4(E1-E1a)	3	F	G	Z	0.00	1.00	0.70	0.70	-	-	-	-	-	-
4(E1a-E1b)	3	F	G	Z	0.00	1.00	0.75	0.75	-	-	-	-	-	-
4(E1b-E3)	3	F	G	Z	0.00	1.00	0.61	0.61	-	-	-	-	-	-
4(E3-B)	3	F	G	Z	0.00	1.00	0.71	0.71	-	-	-	-	-	-
4(B-A)	3	F	G	Z	0.00	1.00	0.95	0.95	-	-	-	-	-	-
E(2-3)	2	F	G	Z	0.00	1.00	0.07	0.07	-	-	-	-	-	-
B(1-2)	2	F	G	Z	0.00	1.00	0.08	0.08	-	-	-	-	-	-
A(1-2)	2	F	G	Z	0.00	1.00	0.08	0.08	-	-	-	-	-	-
E(2-3)	3	F	G	Z	0.00	1.00	0.05	0.05	-	-	-	-	-	-
B(1-2)	3	F	G	Z	0.00	1.00	0.05	0.05	-	-	-	-	-	-
A(1-2)	3	F	G	Z	0.00	1.00	0.05	0.05	-	-	-	-	-	-
G:3''a-F:3''a	2	F	G	Z	0.00	1.00	1.44	1.44	-	-	-	-	-	-
F:3''a-E:3''a	2	F	G	Z	0.00	1.00	1.44	1.44	-	-	-	-	-	-
G:3''a-F:3''a	3	F	G	Z	0.00	1.00	0.95	0.95	-	-	-	-	-	-
F:3''a-E:3''a	3	F	G	Z	0.00	1.00	0.95	0.95	-	-	-	-	-	-

LOAD CASE 4 : LIVE (LL)

Number of nodal loads .... = 0
Number of column loads ... = 0
Number of beam loads ..... = 36

Beam Loads (LL)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

		Distributed Force/Moment							Concentrated Force/Moment					
Beam	Floor	Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1'(G-F)	2	F	G	Z	0.00	1.00	0.23	0.23	-	-	-	-	-	-
1'(B-A)	2	F	G	Z	0.00	1.00	0.28	0.28	-	-	-	-	-	-
1(G-F)	2	F	G	Z	0.00	1.00	0.71	0.71	-	-	-	-	-	-
1(F-E)	2	F	G	Z	0.00	1.00	0.19	0.19	-	-	-	-	-	-
1(E-E1)	2	F	G	Z	0.00	1.00	0.19	0.19	-	-	-	-	-	-
1(E1-E2)	2	F	G	Z	0.00	1.00	0.19	0.19	-	-	-	-	-	-
1(E2-E3)	2	F	G	Z	0.00	1.00	0.19	0.19	-	-	-	-	-	-
1(E3-B)	2	F	G	Z	0.00	1.00	0.19	0.19	-	-	-	-	-	-
1(B-A)	2	F	G	Z	0.00	1.00	0.80	0.80	-	-	-	-	-	-
2(G-F)	2	F	G	Z	0.00	1.00	0.86	0.86	-	-	-	-	-	-
2(F-E)	2	F	G	Z	0.00	1.00	0.42	0.42	-	-	-	-	-	-
2(E-E1)	2	F	G	Z	0.00	1.00	0.54	0.54	-	-	-	-	-	-
2(E1-E2)	2	F	G	Z	0.00	1.00	0.53	0.53	-	-	-	-	-	-
2(E2-E3)	2	F	G	Z	0.00	1.00	0.53	0.53	-	-	-	-	-	-
2(E3-B)	2	F	G	Z	0.00	1.00	0.53	0.53	-	-	-	-	-	-
2(B-A)	2	F	G	Z	0.00	1.00	1.20	1.20	-	-	-	-	-	-
3(G-F)	2	F	G	Z	0.00	1.00	0.85	0.85	-	-	-	-	-	-
3(F-E)	2	F	G	Z	0.00	1.00	0.42	0.42	-	-	-	-	-	-
3''(E-E1)	2	F	G	Z	0.00	1.00	0.54	0.54	-	-	-	-	-	-
3''(E1-E2)	2	F	G	Z	0.00	1.00	0.81	0.81	-	-	-	-	-	-
3''(E2-E3)	2	F	G	Z	0.00	1.00	0.81	0.81	-	-	-	-	-	-
3''(E3-B)	2	F	G	Z	0.00	1.00	0.81	0.81	-	-	-	-	-	-
3'(B-A)	2	F	G	Z	0.00	1.00	0.76	0.76	-	-	-	-	-	-
4(G-F)	2	F	G	Z	0.00	1.00	0.46	0.46	-	-	-	-	-	-
4(F-E)	2	F	G	Z	0.00	1.00	0.18	0.18	-	-	-	-	-	-
4(E-E1)	2	F	G	Z	0.00	1.00	0.28	0.28	-	-	-	-	-	-
4(E1-E1a)	2	F	G	Z	0.00	1.00	0.41	0.41	-	-	-	-	-	-
4(E1a-E1b)	2	F	G	Z	0.00	1.00	0.43	0.43	-	-	-	-	-	-
4(E1b-E3)	2	F	G	Z	0.00	1.00	0.35	0.35	-	-	-	-	-	-
4(E3-B)	2	F	G	Z	0.00	1.00	0.41	0.41	-	-	-	-	-	-
4(B-A)	2	F	G	Z	0.00	1.00	0.33	0.33	-	-	-	-	-	-
E(2-3)	2	F	G	Z	0.00	1.00	0.03	0.03	-	-	-	-	-	-
B(1-2)	2	F	G	Z	0.00	1.00	0.06	0.06	-	-	-	-	-	-
A(1-2)	2	F	G	Z	0.00	1.00	0.06	0.06	-	-	-	-	-	-
G:3''a-F:3''a	2	F	G	Z	0.00	1.00	0.92	0.92	-	-	-	-	-	-
F:3''a-E:3''a	2	F	G	Z	0.00	1.00	0.37	0.37	-	-	-	-	-	-

LOAD CASE 5 : ROOF L (RFL)

Number of nodal loads .... = 0
Number of column loads ... = 0
Number of beam loads ..... = 36

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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Beam Loads (RFL)

Class = F: Force M: Moment
System = L: Local Force/Moment referred to local coordinates (1, 2, 3)
G: Global Force/Moment referred to global coordinates (X, Y, Z)
Axis = (1, 2, 3) if System = L, or (X, Y, Z) if System = G
Units = Distributed Force: (ton/m), Distributed Moment: (ton-m/m)
Concentrated Force: (ton), Concentrated Moment: (ton-m)

Beam	Floor	Distributed Force/Moment							Concentrated Force/Moment					
		Class	Sys	Axis	A/L	B/L	Wi	Wj	Class	Sys	A/L	P1\Px	P2\Py	P3\Pz
1'(G-F)	3	F	G	Z	0.00	1.00	0.08	0.08	-	-	-	-	-	-
1'(B-A)	3	F	G	Z	0.00	1.00	0.08	0.08	-	-	-	-	-	-
1(G-F)	3	F	G	Z	0.00	1.00	0.26	0.26	-	-	-	-	-	-
1(F-E)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
1(E-E1)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
1(E1-E2)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
1(E2-E3)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
1(E3-B)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
1(B-A)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
2(G-F)	3	F	G	Z	0.00	1.00	0.31	0.31	-	-	-	-	-	-
2(F-E)	3	F	G	Z	0.00	1.00	0.55	0.55	-	-	-	-	-	-
2(E-E1)	3	F	G	Z	0.00	1.00	0.76	0.76	-	-	-	-	-	-
2(E1-E2)	3	F	G	Z	0.00	1.00	0.74	0.74	-	-	-	-	-	-
2(E2-E3)	3	F	G	Z	0.00	1.00	0.74	0.74	-	-	-	-	-	-
2(E3-B)	3	F	G	Z	0.00	1.00	0.74	0.74	-	-	-	-	-	-
2(B-A)	3	F	G	Z	0.00	1.00	0.36	0.36	-	-	-	-	-	-
3(G-F)	3	F	G	Z	0.00	1.00	0.31	0.31	-	-	-	-	-	-
3(F-E)	3	F	G	Z	0.00	1.00	0.85	0.85	-	-	-	-	-	-
3''(E-E1)	3	F	G	Z	0.00	1.00	0.85	0.85	-	-	-	-	-	-
3''(E1-E2)	3	F	G	Z	0.00	1.00	0.91	0.91	-	-	-	-	-	-
3''(E2-E3)	3	F	G	Z	0.00	1.00	0.91	0.91	-	-	-	-	-	-
3''(E3-B)	3	F	G	Z	0.00	1.00	0.91	0.91	-	-	-	-	-	-
3'(B-A)	3	F	G	Z	0.00	1.00	0.40	0.40	-	-	-	-	-	-
4(G-F)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
4(F-E)	3	F	G	Z	0.00	1.00	0.17	0.17	-	-	-	-	-	-
4(E-E1)	3	F	G	Z	0.00	1.00	0.25	0.25	-	-	-	-	-	-
4(E1-E1a)	3	F	G	Z	0.00	1.00	0.24	0.24	-	-	-	-	-	-
4(E1a-E1b)	3	F	G	Z	0.00	1.00	0.26	0.26	-	-	-	-	-	-
4(E1b-E3)	3	F	G	Z	0.00	1.00	0.21	0.21	-	-	-	-	-	-
4(E3-B)	3	F	G	Z	0.00	1.00	0.25	0.25	-	-	-	-	-	-
4(B-A)	3	F	G	Z	0.00	1.00	0.33	0.33	-	-	-	-	-	-
E(2-3)	3	F	G	Z	0.00	1.00	0.04	0.04	-	-	-	-	-	-
B(1-2)	3	F	G	Z	0.00	1.00	0.02	0.02	-	-	-	-	-	-
A(1-2)	3	F	G	Z	0.00	1.00	0.02	0.02	-	-	-	-	-	-
G:3''a-F:3''a	3	F	G	Z	0.00	1.00	0.33	0.33	-	-	-	-	-	-
F:3''a-E:3''a	3	F	G	Z	0.00	1.00	0.33	0.33	-	-	-	-	-	-

LOAD CASE 6 : EQUAKE X (EQX) - TYPE : SPECTRAL

Number of nodal loads .... = 94
Number of column loads ... = 0
Number of beam loads ..... = 0

Nodal Loads (EQX)

Axis	Floor	Force (ton)			Moment (ton-m)		
		Px	Py	Pz	Mx	My	Mz
1'-G	2	1.20	0.00	0.00	0.0	0.0	0.0
1-G	2	1.99	0.00	0.00	0.0	0.0	0.0
2-G	2	2.26	0.00	0.00	0.0	0.0	0.0
3-G	2	2.16	0.00	0.00	0.0	0.0	0.0
3''-G	2	0.29	0.00	0.00	0.0	0.0	0.0
G:3''a	2	1.98	0.00	0.00	0.0	0.0	0.0
4-G	2	1.85	0.00	0.00	0.0	0.0	0.0
1'-F	2	1.20	0.00	0.00	0.0	0.0	0.0

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Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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Axis	Floor	Px	Py	Pz	Mx	My	Mz
1-F	2	2.52	0.00	0.00	0.0	0.0	0.0
2-F	2	2.59	0.00	0.00	0.0	0.0	0.0
3-F	2	2.57	0.00	0.00	0.0	0.0	0.0
3''-F	2	0.06	0.00	0.00	0.0	0.0	0.0
F:3''a	2	2.45	0.00	0.00	0.0	0.0	0.0
4-F	2	2.32	0.00	0.00	0.0	0.0	0.0
1-E	2	1.73	0.00	0.00	0.0	0.0	0.0
2-E	2	1.97	0.00	0.00	0.0	0.0	0.0
3-E	2	1.08	0.00	0.00	0.0	0.0	0.0
3''-E	2	0.96	0.00	0.00	0.0	0.0	0.0
E:3''a	2	0.92	0.00	0.00	0.0	0.0	0.0
4-E	2	1.72	0.00	0.00	0.0	0.0	0.0
1-E1	2	0.96	0.00	0.00	0.0	0.0	0.0
2-E1	2	1.17	0.00	0.00	0.0	0.0	0.0
3''-E1	2	1.92	0.00	0.00	0.0	0.0	0.0
4-E1	2	0.93	0.00	0.00	0.0	0.0	0.0
4:E1a	2	1.07	0.00	0.00	0.0	0.0	0.0
1-E2	2	1.12	0.00	0.00	0.0	0.0	0.0
2-E2	2	1.31	0.00	0.00	0.0	0.0	0.0
3''-E2	2	1.20	0.00	0.00	0.0	0.0	0.0
4:E1b	2	1.07	0.00	0.00	0.0	0.0	0.0
1-E3	2	0.78	0.00	0.00	0.0	0.0	0.0
2-E3	2	0.95	0.00	0.00	0.0	0.0	0.0
3''-E3	2	1.69	0.00	0.00	0.0	0.0	0.0
4-E3	2	0.74	0.00	0.00	0.0	0.0	0.0
1'-B	2	0.70	0.00	0.00	0.0	0.0	0.0
1-B	2	1.61	0.00	0.00	0.0	0.0	0.0
2-B	2	1.84	0.00	0.00	0.0	0.0	0.0
3-B	2	0.06	0.00	0.00	0.0	0.0	0.0
3'-B	2	1.19	0.00	0.00	0.0	0.0	0.0
3''-B	2	0.77	0.00	0.00	0.0	0.0	0.0
4-B	2	1.88	0.00	0.00	0.0	0.0	0.0
1'-A	2	0.70	0.00	0.00	0.0	0.0	0.0
1-A	2	1.39	0.00	0.00	0.0	0.0	0.0
2-A	2	1.75	0.00	0.00	0.0	0.0	0.0
3-A	2	0.31	0.00	0.00	0.0	0.0	0.0
3'-A	2	1.36	0.00	0.00	0.0	0.0	0.0
3''-A	2	0.52	0.00	0.00	0.0	0.0	0.0
4-A	2	1.73	0.00	0.00	0.0	0.0	0.0
1'-G	3	1.50	0.00	0.00	0.0	0.0	0.0
1-G	3	2.59	0.00	0.00	0.0	0.0	0.0
2-G	3	2.91	0.00	0.00	0.0	0.0	0.0
3-G	3	2.80	0.00	0.00	0.0	0.0	0.0
3''-G	3	0.38	0.00	0.00	0.0	0.0	0.0
G:3''a	3	2.45	0.00	0.00	0.0	0.0	0.0
4-G	3	2.39	0.00	0.00	0.0	0.0	0.0
1'-F	3	1.50	0.00	0.00	0.0	0.0	0.0
1-F	3	3.46	0.00	0.00	0.0	0.0	0.0
2-F	3	3.91	0.00	0.00	0.0	0.0	0.0
3-F	3	3.78	0.00	0.00	0.0	0.0	0.0
3''-F	3	0.38	0.00	0.00	0.0	0.0	0.0
F:3''a	3	3.47	0.00	0.00	0.0	0.0	0.0
4-F	3	3.17	0.00	0.00	0.0	0.0	0.0
1-E	3	2.03	0.00	0.00	0.0	0.0	0.0
2-E	3	2.56	0.00	0.00	0.0	0.0	0.0
3-E	3	1.46	0.00	0.00	0.0	0.0	0.0
3''-E	3	1.20	0.00	0.00	0.0	0.0	0.0
E:3''a	3	1.18	0.00	0.00	0.0	0.0	0.0
4-E	3	2.01	0.00	0.00	0.0	0.0	0.0
1-E1	3	1.03	0.00	0.00	0.0	0.0	0.0
2-E1	3	1.43	0.00	0.00	0.0	0.0	0.0
3''-E1	3	2.38	0.00	0.00	0.0	0.0	0.0
4-E1	3	1.05	0.00	0.00	0.0	0.0	0.0
4:E1a	3	1.18	0.00	0.00	0.0	0.0	0.0
1-E2	3	1.31	0.00	0.00	0.0	0.0	0.0
2-E2	3	1.68	0.00	0.00	0.0	0.0	0.0
3''-E2	3	1.35	0.00	0.00	0.0	0.0	0.0
4:E1b	3	1.18	0.00	0.00	0.0	0.0	0.0
1-E3	3	0.84	0.00	0.00	0.0	0.0	0.0
2-E3	3	1.15	0.00	0.00	0.0	0.0	0.0
3''-E3	3	2.10	0.00	0.00	0.0	0.0	0.0
4-E3	3	0.83	0.00	0.00	0.0	0.0	0.0
1'-B	3	0.88	0.00	0.00	0.0	0.0	0.0
1-B	3	2.38	0.00	0.00	0.0	0.0	0.0
2-B	3	3.01	0.00	0.00	0.0	0.0	0.0
3-B	3	0.40	0.00	0.00	0.0	0.0	0.0
3'-B	3	1.73	0.00	0.00	0.0	0.0	0.0

Axis	Floor	Px	Py	Pz	Mx	My	Mz
3''-B	3	1.52	0.00	0.00	0.0	0.0	0.0
4-B	3	2.79	0.00	0.00	0.0	0.0	0.0
1'-A	3	0.88	0.00	0.00	0.0	0.0	0.0
1-A	3	1.85	0.00	0.00	0.0	0.0	0.0
2-A	3	2.27	0.00	0.00	0.0	0.0	0.0
3-A	3	0.40	0.00	0.00	0.0	0.0	0.0
3'-A	3	1.75	0.00	0.00	0.0	0.0	0.0
3''-A	3	0.68	0.00	0.00	0.0	0.0	0.0
4-A	3	2.22	0.00	0.00	0.0	0.0	0.0

LOAD CASE 7 : EQUAKE Y (EQY) - TYPE : SPECTRAL

Number of nodal loads .... = 94
Number of column loads ... = 0
Number of beam loads ..... = 0

Nodal Loads (EQY)

		Force (ton)			Moment (ton-m)		
Axis	Floor	Px	Py	Pz	Mx	My	Mz
1'-G	2	0.00	1.09	0.00	0.0	0.0	0.0
1-G	2	0.00	1.82	0.00	0.0	0.0	0.0
2-G	2	0.00	2.10	0.00	0.0	0.0	0.0
3-G	2	0.00	2.03	0.00	0.0	0.0	0.0
3''-G	2	0.00	0.28	0.00	0.0	0.0	0.0
G:3''a	2	0.00	1.89	0.00	0.0	0.0	0.0
4-G	2	0.00	1.80	0.00	0.0	0.0	0.0
1'-F	2	0.00	1.09	0.00	0.0	0.0	0.0
1-F	2	0.00	2.32	0.00	0.0	0.0	0.0
2-F	2	0.00	2.42	0.00	0.0	0.0	0.0
3-F	2	0.00	2.44	0.00	0.0	0.0	0.0
3''-F	2	0.00	0.06	0.00	0.0	0.0	0.0
F:3''a	2	0.00	2.36	0.00	0.0	0.0	0.0
4-F	2	0.00	2.28	0.00	0.0	0.0	0.0
1-E	2	0.00	1.60	0.00	0.0	0.0	0.0
2-E	2	0.00	1.85	0.00	0.0	0.0	0.0
3-E	2	0.00	1.03	0.00	0.0	0.0	0.0
3''-E	2	0.00	0.92	0.00	0.0	0.0	0.0
E:3''a	2	0.00	0.89	0.00	0.0	0.0	0.0
4-E	2	0.00	1.69	0.00	0.0	0.0	0.0
1-E1	2	0.00	0.89	0.00	0.0	0.0	0.0
2-E1	2	0.00	1.10	0.00	0.0	0.0	0.0
3''-E1	2	0.00	1.84	0.00	0.0	0.0	0.0
4-E1	2	0.00	0.92	0.00	0.0	0.0	0.0
4:E1a	2	0.00	1.05	0.00	0.0	0.0	0.0
1-E2	2	0.00	1.04	0.00	0.0	0.0	0.0
2-E2	2	0.00	1.24	0.00	0.0	0.0	0.0
3''-E2	2	0.00	1.16	0.00	0.0	0.0	0.0
4:E1b	2	0.00	1.06	0.00	0.0	0.0	0.0
1-E3	2	0.00	0.73	0.00	0.0	0.0	0.0
2-E3	2	0.00	0.89	0.00	0.0	0.0	0.0
3''-E3	2	0.00	1.63	0.00	0.0	0.0	0.0
4-E3	2	0.00	0.73	0.00	0.0	0.0	0.0
1'-B	2	0.00	0.65	0.00	0.0	0.0	0.0
1-B	2	0.00	1.50	0.00	0.0	0.0	0.0
2-B	2	0.00	1.75	0.00	0.0	0.0	0.0
3-B	2	0.00	0.06	0.00	0.0	0.0	0.0
3'-B	2	0.00	1.14	0.00	0.0	0.0	0.0
3''-B	2	0.00	0.75	0.00	0.0	0.0	0.0
4-B	2	0.00	1.86	0.00	0.0	0.0	0.0
1'-A	2	0.00	0.65	0.00	0.0	0.0	0.0
1-A	2	0.00	1.30	0.00	0.0	0.0	0.0
2-A	2	0.00	1.66	0.00	0.0	0.0	0.0
3-A	2	0.00	0.29	0.00	0.0	0.0	0.0
3'-A	2	0.00	1.31	0.00	0.0	0.0	0.0
3''-A	2	0.00	0.51	0.00	0.0	0.0	0.0
4-A	2	0.00	1.72	0.00	0.0	0.0	0.0
1'-G	3	0.00	1.44	0.00	0.0	0.0	0.0
1-G	3	0.00	2.51	0.00	0.0	0.0	0.0
2-G	3	0.00	2.87	0.00	0.0	0.0	0.0
3-G	3	0.00	2.80	0.00	0.0	0.0	0.0

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:41:00 p. m. 22/10/2025

Axis	Floor	Px	Py	Pz	Mx	My	Mz
3''-G	3	0.00	0.38	0.00	0.0	0.0	0.0
G:3''a	3	0.00	2.50	0.00	0.0	0.0	0.0
4-G	3	0.00	2.47	0.00	0.0	0.0	0.0
1'-F	3	0.00	1.45	0.00	0.0	0.0	0.0
1-F	3	0.00	3.37	0.00	0.0	0.0	0.0
2-F	3	0.00	3.88	0.00	0.0	0.0	0.0
3-F	3	0.00	3.80	0.00	0.0	0.0	0.0
3''-F	3	0.00	0.39	0.00	0.0	0.0	0.0
F:3''a	3	0.00	3.56	0.00	0.0	0.0	0.0
4-F	3	0.00	3.31	0.00	0.0	0.0	0.0
1-E	3	0.00	1.98	0.00	0.0	0.0	0.0
2-E	3	0.00	2.56	0.00	0.0	0.0	0.0
3-E	3	0.00	1.47	0.00	0.0	0.0	0.0
3''-E	3	0.00	1.23	0.00	0.0	0.0	0.0
E:3''a	3	0.00	1.21	0.00	0.0	0.0	0.0
4-E	3	0.00	2.10	0.00	0.0	0.0	0.0
1-E1	3	0.00	1.01	0.00	0.0	0.0	0.0
2-E1	3	0.00	1.43	0.00	0.0	0.0	0.0
3''-E1	3	0.00	2.44	0.00	0.0	0.0	0.0
4-E1	3	0.00	1.10	0.00	0.0	0.0	0.0
4:E1a	3	0.00	1.24	0.00	0.0	0.0	0.0
1-E2	3	0.00	1.29	0.00	0.0	0.0	0.0
2-E2	3	0.00	1.69	0.00	0.0	0.0	0.0
3''-E2	3	0.00	1.39	0.00	0.0	0.0	0.0
4:E1b	3	0.00	1.25	0.00	0.0	0.0	0.0
1-E3	3	0.00	0.83	0.00	0.0	0.0	0.0
2-E3	3	0.00	1.16	0.00	0.0	0.0	0.0
3''-E3	3	0.00	2.16	0.00	0.0	0.0	0.0
4-E3	3	0.00	0.88	0.00	0.0	0.0	0.0
1'-B	3	0.00	0.87	0.00	0.0	0.0	0.0
1-B	3	0.00	2.36	0.00	0.0	0.0	0.0
2-B	3	0.00	3.03	0.00	0.0	0.0	0.0
3-B	3	0.00	0.41	0.00	0.0	0.0	0.0
3'-B	3	0.00	1.77	0.00	0.0	0.0	0.0
3''-B	3	0.00	1.57	0.00	0.0	0.0	0.0
4-B	3	0.00	2.95	0.00	0.0	0.0	0.0
1'-A	3	0.00	0.87	0.00	0.0	0.0	0.0
1-A	3	0.00	1.83	0.00	0.0	0.0	0.0
2-A	3	0.00	2.30	0.00	0.0	0.0	0.0
3-A	3	0.00	0.41	0.00	0.0	0.0	0.0
3'-A	3	0.00	1.81	0.00	0.0	0.0	0.0
3''-A	3	0.00	0.71	0.00	0.0	0.0	0.0
4-A	3	0.00	2.36	0.00	0.0	0.0	0.0

ANEXO 4.
CALCULO DE DERIVAS

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:43:57 p. m. 22/10/2025
File: C:\Users\supin\Desktop\44. BOJACÁ\MODELO ESTRUCTURAL\2025-10-22 Modelo definitivo Bojacá.rcb

P-DELTA ANALYSIS - SUMMARY MAXIMUM STORY DRIFT RATIO, Δ/h

	Drift-Ratio at CENTER OF MASS			MAXIMUM Corner Story-Drift-Ratio			
Story	DriftX	DriftY	DriftR	DriftX	DriftY	DriftR	Axis
2	0.0032	0.0039	0.0039	0.0034	0.0040	0.0040	1-A
1	0.0044	0.0046	0.0046	0.0045	0.0046	0.0046	1-A
Maxima	0.0044	0.0046	0.0046	0.0045	0.0046	0.0046	

DriftX = $(\Delta x/h)max$
DriftY = $(\Delta y/h)max$
DriftR = $([(\Delta x/h)^2 + (\Delta y/h)^2]^{1/2})max$

P-DELTA ANALYSIS - DETAILED MAXIMUM STORY DRIFT RATIO, δ/h

Story	ColAxis	$(\delta x/h)max$	$(\delta y/h)max$	$([(\delta x/h)^2 + (\delta y/h)^2]^{1/2})max$
4T 0				
3T 0				
2	1-G	0.0034	0.0038	0.0038
	2-G	0.0033	0.0038	0.0038
	3-G	0.0032	0.0038	0.0038
	4-G	0.0031	0.0038	0.0038
	1-F	0.0034	0.0038	0.0038
	2-F	0.0033	0.0038	0.0038
	3-F	0.0032	0.0038	0.0038
	4-F	0.0031	0.0038	0.0038
	1-E	0.0034	0.0039	0.0039
	2-E	0.0033	0.0039	0.0039
	3-E	0.0032	0.0039	0.0039
	4-E	0.0031	0.0039	0.0039
	3''-E1	0.0032	0.0039	0.0039
	4:E1a	0.0031	0.0039	0.0039
	1-E2	0.0034	0.0039	0.0039
	2-E2	0.0033	0.0039	0.0039
	4:E1b	0.0031	0.0039	0.0039
	3''-E3	0.0032	0.0039	0.0039
	1-B	0.0034	0.0039	0.0039
	2-B	0.0033	0.0039	0.0039
	3'-B	0.0032	0.0039	0.0039
	4-B	0.0031	0.0039	0.0039
	1-A	0.0034	0.0040	0.0040
	2-A	0.0033	0.0040	0.0040
	3'-A	0.0032	0.0040	0.0040
	4-A	0.0031	0.0040	0.0040
1	1-G	0.0045	0.0045	0.0045
	2-G	0.0044	0.0045	0.0045
	3-G	0.0044	0.0045	0.0045
	4-G	0.0043	0.0045	0.0045
	1-F	0.0045	0.0046	0.0046
	2-F	0.0044	0.0046	0.0046
	3-F	0.0044	0.0046	0.0046
	4-F	0.0043	0.0046	0.0046
	1-E	0.0045	0.0046	0.0046
	2-E	0.0044	0.0046	0.0046
	3-E	0.0044	0.0046	0.0046
	4-E	0.0043	0.0046	0.0046
	3''-E1	0.0044	0.0046	0.0046
	4:E1a	0.0043	0.0046	0.0046
	1-E2	0.0045	0.0046	0.0046
	2-E2	0.0044	0.0046	0.0046
	4:E1b	0.0043	0.0046	0.0046
	3''-E3	0.0044	0.0046	0.0046
	1-B	0.0045	0.0046	0.0046
	2-B	0.0044	0.0046	0.0046
	3'-B	0.0044	0.0046	0.0046
	4-B	0.0043	0.0046	0.0046
	1-A	0.0045	0.0046	0.0046
	2-A	0.0044	0.0046	0.0046
	3'-A	0.0044	0.0046	0.0046

4-A	0.0043	0.0046	0.0046

Note: Drift amplification factor, D: .8 in X; .8 in Y
MAXIMA DRIFT: (δ/h)x =0.0045; (δ/h)y =0.0046; (δ/h)r =0.0046

ANEXO 5.
DISEÑO DE ELEMENTOS ESTRUCTURALES

Company: Cristian Pinzón Chivatá **Engineer:** Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá 01:47:20 p. m. 22/10/2025
File: C:\Users\supin\Desktop\44. BOJACÁ\MODELO ESTRUCTURAL\2025-10-22 Modelo definitivo Bojacá.rcb

LOAD COMBINATIONS

No	Load combination
1	1.4D0 + 1.4DL + 1.4DL
2	1.2D0 + 1.2DL + 1.2DL + .5LL + 1.6RFL
3	1.2D0 + 1.2DL + 1.2DL + 1.6LL + .5RFL
4	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + EQX + .3EQY
5	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - EQX - .3EQY
6	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + EQX - .3EQY
7	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - EQX + .3EQY
8	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + .3EQX + EQY
9	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - .3EQX - EQY
10	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - .3EQX + EQY
11	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + .3EQX - EQY
12	.9D0 + .9DL + .9DL + EQX + .3EQY
13	.9D0 + .9DL + .9DL - EQX - .3EQY
14	.9D0 + .9DL + .9DL + EQX - .3EQY
15	.9D0 + .9DL + .9DL - EQX + .3EQY
16	.9D0 + .9DL + .9DL + .3EQX + EQY
17	.9D0 + .9DL + .9DL - .3EQX - EQY
18	.9D0 + .9DL + .9DL - .3EQX + EQY
19	.9D0 + .9DL + .9DL + .3EQX - EQY

STRONG COLUMN WEAK BEAM CHECK

Units: ton-m

		Direction 2					Direction 3					
Axis	Floor	S.Mnc->	S.Mnb->	S.Mnc<-	S.Mnb<-	Ratio	S.Mnc->	S.Mnb->	S.Mnc<-	S.Mnb<-	Ratio	
1-G	2	5.9	1.6	6.7	3.2	2.1	6.2	3.0	6.4	1.6	2.1	
2-G	2	6.3	3.5	6.8	3.5	1.8	6.6	3.4	6.6	1.6	1.9	
3-G	2	8.3	1.6	7.9	3.6	2.2	12.1	6.9	11.8	6.8	1.7	
4-G	2	6.6	3.4	6.7	1.6	1.9	6.6	3.1	6.7	1.6	2.2	
1-F	2	6.3	1.6	7.1	3.1	2.3	6.6	5.0	6.8	4.9	1.3	
2-F	2	5.5	3.6	6.1	3.6	1.5	5.8	5.7	5.8	5.5	1.0	*
3-F	2	9.0	5.5	8.5	5.6	1.5	13.0	9.0	13.0	8.4	1.4	
4-F	2	9.8	4.7	10.0	1.6	2.1	9.8	4.9	10.0	4.9	2.0	
1-E	2	5.3	1.8	5.9	2.1	2.8	5.5	3.7	5.7	3.7	1.5	
2-E	2	5.5	3.2	5.8	3.2	1.7	5.4	3.9	5.8	3.9	1.4	
3-E	2	5.6	4.1	5.6	4.1	1.4	5.3	1.6	5.9	2.1	2.8	
4-E	2	5.6	2.0	5.6	1.6	2.8	5.6	3.4	5.7	3.4	1.7	
3''-E1	2	5.7	1.2	6.1	1.2	4.8	5.8	4.2	6.0	4.2	1.4	
4:E1a	2	5.5	0.0	5.6	0.0	100.0	5.5	4.3	5.5	4.3	1.3	
1-E2	2	5.5	0.0	5.7	0.0	100.0	5.5	3.8	5.7	3.8	1.4	
2-E2	2	5.6	0.0	6.0	0.0	100.0	5.7	4.2	5.9	4.1	1.4	
4:E1b	2	5.4	0.0	5.5	0.0	100.0	5.4	3.9	5.5	3.9	1.4	
3''-E3	2	5.6	1.2	6.0	1.2	4.8	5.6	4.0	6.0	3.9	1.4	
1-B	2	5.5	1.6	6.3	2.8	2.2	5.9	3.6	5.9	3.6	1.6	
2-B	2	5.6	3.4	5.8	3.4	1.6	5.6	3.9	5.8	3.9	1.5	
3'-B	2	5.6	3.9	5.8	3.9	1.4	5.6	2.3	5.8	1.6	2.4	
4-B	2	5.7	1.6	5.7	1.6	3.5	5.6	3.6	5.9	3.7	1.5	
1-A	2	5.4	1.6	6.0	2.9	2.1	5.5	1.6	5.9	2.1	2.7	
2-A	2	5.5	3.2	5.5	3.2	1.7	5.2	1.6	5.8	2.3	2.5	
3'-A	2	5.7	3.6	5.6	3.6	1.6	5.3	1.6	6.0	2.4	2.5	
4-A	2	5.6	2.0	5.5	1.6	2.8	5.3	1.6	5.8	2.2	2.6	

S.Mnc: Sum of nominal flexural strengths of columns framing into the joint
S.Mnb: Sum of nominal flexural strengths of beams framing into the joint
--> : Drift +
<-- : Drift -
Ratio: MIN (S.Mnc/SMnb ->, S.Mnc/SMnb ->)
Check: OK If Ratio > 1.2
X If Ratio < 1.2 *

MATERIALS

Number of materials = 1

REINFORCED CONCRETE

Mat	Name	f'c Kg/cm2	fy Kg/cm2	fys1 Kg/cm2	fys2 Kg/cm2	E Kg/cm2	G Kg/cm2	w Kg/m3
1	f'c=3000 psi	210	4200	4200	4200	178720	71488	2400.0

f'c: Compressive strength of concrete
fy: Yield strength of longitudinal reinforcement
fys1: Yiel strength of shear reinforcement, bar sizes <= 3/8"
fys2: Yiel strength of shear reinforcement, bar sizes > 3/8"

COLUMN SECTIONS

Number of prismatic sections = 2

Sec	Name	Shape	b (cm)	h (cm)	tw (cm)	tf (cm)	P1 (cm)	P2 (cm)	A (cm2)	I2 (cm4)	I3 (cm4)	J (cm4)
1	C25x25	Rectang	25.00	25.00	-	-	-	-	625.0	32552	32552	48177
2	C25x35	Rectang	25.00	35.00	-	-	-	-	875.0	89323	45573	100260

Design Results - Columns (DMO)

Column	Story	L (m)	Lu (m)	Sec Mat	bxh (cm)	TRANSVERSE REINFORCEMENT TIES	TRANSVERSE REINFORCEMENT XTIES	LONGITUDINAL REINFORCEMENT Sec	LdCmb critc	Pu (ton)	Mu2 (ton-m)	Mu3 (ton-m)	RHO -	As (cm2)
4-A	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	3.94	1.03	0.52	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	3.94	1.05	0.53	0.0100	6.25
4-A	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	10.07	1.54	0.60	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	12	2.94	1.19	0.39	0.0100	6.25
3'-A	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	3.76	0.62	1.40	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	10	3.76	0.74	1.55	0.0100	6.25
3'-A	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	9.18	0.78	1.77	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	16	4.90	0.30	1.68	0.0100	6.25
2-A	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	2.77	0.53	1.39	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	10	2.77	0.63	1.60	0.0100	6.25
2-A	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	7.03	0.72	1.85	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	16	3.43	0.32	1.73	0.0100	6.25
1-A	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	9	3.21	0.50	1.18	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	9	3.21	0.56	1.27	0.0100	6.25
1-A	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	9	7.59	0.65	1.65	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	17	4.62	0.51	1.52	0.0100	6.25
4-B	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	14	3.16	1.10	0.33	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	14	3.16	1.25	0.20	0.0100	6.25
4-B	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	12	6.30	1.78	0.37	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	12	6.30	1.57	0.48	0.0100	6.25
3'-B	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	8	4.50	0.53	1.51	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	8	4.50	0.64	1.63	0.0100	6.25
3'-B	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	16	6.21	0.61	1.75	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	16	6.21	0.51	1.67	0.0100	6.25
2-B	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	18	2.98	0.34	1.30	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	8	4.42	0.27	1.61	0.0100	6.25
2-B	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	16	6.54	0.47	1.86	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	15	5.88	1.59	0.49	0.0100	6.25

Company: Cristian Pinzón Chivatá Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá 01:47:20 p. m. 22/10/2025

Column	Story	L	Lu	Sec	bxh	TIES	XTIES	Sec	LdCmb	Pu	Mu2	Mu3	RHO	As
1-B	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	3.31	1.05	0.51	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	13	3.31	1.18	0.61	0.0100	6.25
1-B	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	7.18	1.75	0.71	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	7.18	1.63	0.58	0.0100	6.25
3''-E3	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	15	3.26	1.03	0.21	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	15	3.26	1.16	0.15	0.0100	6.25
3''-E3	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	11.58	1.75	0.26	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	7.84	1.56	0.34	0.0100	6.25
4:E1b	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	14	1.88	1.05	0.04	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	12	1.76	1.16	0.08	0.0100	6.25
4:E1b	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	12	4.26	1.73	0.12	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	12	4.26	1.55	0.35	0.0100	6.25
2-E2	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	3.10	1.03	0.07	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	4.58	1.18	0.13	0.0100	6.25
2-E2	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	11.07	1.71	0.25	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	7.39	1.56	0.28	0.0100	6.25
1-E2	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	2.28	0.99	0.05	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	3.18	1.10	0.13	0.0100	6.25
1-E2	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	5.78	1.62	0.13	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	5.78	1.57	0.28	0.0100	6.25
4:E1a	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	2.72	1.17	0.06	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	2.72	1.34	0.07	0.0100	6.25
4:E1a	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	4.87	1.80	0.15	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	4.87	1.59	0.30	0.0100	6.25
3''-E1	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	1	5.59	0.13	0.14	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	1	5.59	0.13	0.13	0.0100	6.25
3''-E1	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	13	7.83	1.49	0.21	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	7.83	1.48	0.32	0.0100	6.25
4-E	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	14	2.80	0.94	0.50	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	6	3.82	1.05	0.64	0.0100	6.25
4-E	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	6	9.51	1.64	0.63	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	13	6.56	1.48	0.43	0.0100	6.25
3-E	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	3.35	0.50	1.63	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	10	3.35	0.51	1.87	0.0100	6.25
3-E	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	6.99	0.57	2.02	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	16	3.48	0.34	1.75	0.0100	6.25
2-E	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	8	3.78	0.54	1.30	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	8	3.78	0.67	1.52	0.0100	6.25
2-E	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	16	6.41	0.65	1.83	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	12	5.41	1.59	0.52	0.0100	6.25
1-E	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	4	3.41	1.00	0.40	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	4	3.41	1.13	0.41	0.0100	6.25
1-E	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	14	4.60	1.68	0.32	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	14	4.60	1.57	0.37	0.0100	6.25
4-F	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	7.26	1.50	1.97	0.0130	8.15
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	7.26	1.72	2.34	0.0207	12.92
4-F	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	17.51	2.07	1.76	0.0213	13.28
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	5	17.51	1.72	0.99	0.0100	6.25
3-F	2	2.50	2.20	2	25x35	7 #3 @ 8 cm (end)	1 (b)	Top	10	8.82	4.16	1.01	0.0100	8.75
				1		7 #3 @ 16 cm (ctr)	0 (h)	Bot	10	8.82	4.38	1.28	0.0101	8.85
3-F	1	2.50	2.28	2	25x35	7 #3 @ 8 cm (end)	1 (b)	Top	10	19.62	4.74	1.32	0.0100	8.75
				1		8 #3 @ 16 cm (ctr)	0 (h)	Bot	10	19.62	4.51	0.96	0.0100	8.75
2-F	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	5.04	0.94	1.49	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	10	5.04	1.22	1.80	0.0101	6.32
2-F	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	10	12.25	1.17	2.08	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	17	4.66	0.65	1.63	0.0100	6.25
1-F	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	6.72	1.61	0.94	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	5	6.72	1.88	1.20	0.0100	6.25
1-F	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	5	16.28	2.23	1.10	0.0113	7.06
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	5	16.28	1.86	0.69	0.0100	6.25
4-G	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	11	5.24	1.22	1.64	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	11	5.24	1.49	1.81	0.0125	7.79

Column	Story	L	Lu	Sec	bxh	TIES	XTIES	Sec	LdCmb	Pu	Mu2	Mu3	RHO	As
4-G	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	6	13.17	1.91	1.33	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	6	13.17	1.63	0.84	0.0100	6.25
3-G	2	2.50	2.20	2	25x35	7 #3 @ 8 cm (end)	1 (b)	Top	8	5.27	3.16	1.36	0.0100	8.75
				1		7 #3 @ 16 cm (ctr)	0 (h)	Bot	8	5.27	3.26	1.69	0.0100	8.75
3-G	1	2.50	2.28	2	25x35	7 #3 @ 8 cm (end)	1 (b)	Top	8	12.70	4.06	1.57	0.0100	8.75
				1		8 #3 @ 16 cm (ctr)	0 (h)	Bot	8	12.70	4.16	1.02	0.0100	8.75
2-G	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	8	3.79	1.23	1.48	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	8	3.79	1.58	1.77	0.0130	8.15
2-G	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	11	6.08	1.41	1.85	0.0113	7.06
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	19	3.50	0.65	1.65	0.0100	6.25
1-G	2	2.50	2.20	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	11	5.14	1.14	1.51	0.0100	6.25
				1		9 #3 @ 14 cm (ctr)	0 (h)	Bot	11	5.14	1.44	1.66	0.0107	6.69
1-G	1	2.50	2.28	1	25x25	7 #3 @ 7 cm (end)	0 (b)	Top	11	12.58	1.30	1.91	0.0100	6.25
				1		10 #3 @ 14 cm (ctr)	0 (h)	Bot	11	12.58	0.81	1.65	0.0100	6.25

BEAM SECTIONS

Number of prismatic sections = 2

Sec	Name	Shape	b (cm)	h (cm)	tw (cm)	tf (cm)	P1 (cm)	P2 (cm)	A (cm2)	I2 (cm4)	I3 (cm4)	J (cm4)
1	V20x30	Rectang	20.00	30.00	-	-	-	-	600.0	45000	20000	46400
2	V15x30	Rectang	15.00	30.00	-	-	-	-	450.0	33750	8437	23119

Design Results - Beams (DMO)

BEAM: 1'(G-F) FLOOR: 2

Length: L = 3.90 m a = 0.10 m Section: b = 15.0 cm Sec: V15x30
Lu = 3.70 m c = 0.10 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.10	0.47	0.84	1.21	1.58	1.95	2.32	2.69	3.06	3.43	3.80
Mu(-), ton-m:	-0.16	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.16
Mu(+), ton-m:	0.23	1.06	1.84	2.40	2.74	2.86	2.73	2.39	1.83	1.05	0.22
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.22	2.18	2.92	3.39	3.56	3.39	2.91	2.17	1.21	1.21
Vu, ton:	2.59	2.38	1.78	1.19	0.61	0.03	0.62	1.20	1.79	2.39	2.60
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

1'-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 1'-F

BEAM: 1'(B-A) FLOOR: 2

Length: L = 2.06 m a = 0.10 m Section: b = 15.0 cm Sec: V15x30
Lu = 1.86 m c = 0.10 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.10	0.29	0.47	0.66	0.84	1.03	1.22	1.40	1.59	1.77	1.96
Mu(-), ton-m:	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.03
Mu(+), ton-m:	0.14	0.38	0.59	0.73	0.83	0.86	0.83	0.73	0.59	0.38	0.14
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	1.16	1.16	0.94	0.63	0.33	0.04	0.33	0.63	0.94	1.16	1.16
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1'-B 31 #3 @ 6 1'-A

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:20 p. m. 22/10/2025

BEAM: 1(G-F) FLOOR: 2

Length: L = 3.90 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.65 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-2.71	-1.47	-0.60	-0.60	-0.60	-0.60	-0.60	-0.60	-0.60	-1.60	-2.99
Mu(+), ton-m:	0.90	0.60	0.96	1.39	1.74	1.88	1.62	1.04	0.60	0.60	1.00
As(-), cm2:	3.25	1.69	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.85	3.62
As(+), cm2:	1.61	1.61	1.61	1.61	2.02	2.19	1.87	1.61	1.61	1.61	1.61
Vu, ton:	4.34	4.08	3.32	2.45	1.76	1.32	2.00	2.76	3.61	4.37	4.63
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

1-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 1-F

BEAM: 1(F-E) FLOOR: 2

Length: L = 2.14 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.89 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-2.21	-1.64	-1.13	-0.69	-0.44	-0.44	-0.44	-0.55	-0.94	-1.39	-1.91
Mu(+), ton-m:	0.74	0.63	0.56	0.44	0.44	0.44	0.44	0.45	0.59	0.68	0.73
As(-), cm2:	2.60	1.89	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.22
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.18	3.18	2.95	2.62	2.30	1.98	1.80	2.13	2.45	2.69	2.69
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-F 31 #3 @ 6 1-E

BEAM: 1(E-E2) FLOOR: 2

Length: L = 2.80 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.55 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.38	0.64	0.89	1.15	1.40	1.66	1.91	2.17	2.42	2.68
Mu(-), ton-m:	-1.84	-1.13	-0.56	-0.41	-0.41	-0.41	-0.41	-0.41	-0.68	-1.30	-2.05
Mu(+), ton-m:	0.61	0.53	0.65	0.73	0.70	0.64	0.69	0.68	0.59	0.46	0.68
As(-), cm2:	2.14	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.41
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.89	2.86	2.40	1.94	1.49	1.29	1.75	2.19	2.63	3.07	3.10
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

1-E 11 #3 @ 6 10 #3 @ 12 11 #3 @ 6 1-E2

BEAM: 1(E2-B) FLOOR: 2

Length: L = 2.33 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.08 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.33	0.54	0.75	0.96	1.17	1.37	1.58	1.79	2.00	2.21
Mu(-), ton-m:	-1.98	-1.38	-0.86	-0.43	-0.40	-0.40	-0.40	-0.40	-0.63	-1.10	-1.66
Mu(+), ton-m:	0.66	0.62	0.62	0.58	0.50	0.40	0.46	0.57	0.64	0.68	0.67
As(-), cm2:	2.31	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.92
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.89	2.89	2.59	2.23	1.87	1.51	1.67	2.04	2.40	2.70	2.70
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

1-E2 34 #3 @ 6 1-B

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:20 p. m. 22/10/2025

BEAM: 1(B-A) FLOOR: 2

Length: L = 2.06 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-1.81	-1.24	-0.75	-0.39	-0.39	-0.39	-0.39	-0.59	-0.96	-1.40	-1.93
Mu(+), ton-m:	0.97	0.85	0.72	0.59	0.46	0.52	0.74	0.94	1.09	1.23	1.36
As(-), cm2:	2.10	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.25
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.35	3.35	3.11	2.76	2.40	2.05	2.20	2.55	2.91	3.14	3.14
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-B 30 #3 @ 6 1-A

BEAM: 2(G-F) FLOOR: 2

Length: L = 3.90 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.65 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-3.04	-1.60	-0.71	-0.71	-0.71	-0.71	-0.71	-0.71	-0.71	-1.79	-3.55
Mu(+), ton-m:	1.01	0.71	0.98	1.53	2.04	2.21	1.90	1.17	0.71	0.71	1.18
As(-), cm2:	3.68	1.84	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.08	4.38
As(+), cm2:	1.61	1.61	1.61	1.76	2.39	2.60	2.21	1.61	1.61	1.61	1.61
Vu, ton:	5.15	4.84	3.92	2.78	1.88	1.35	2.16	3.19	4.27	5.18	5.49
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

2-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 2-F

BEAM: 2(F-E) FLOOR: 2

Length: L = 2.14 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.89 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-2.41	-1.80	-1.25	-0.77	-0.48	-0.48	-0.48	-0.54	-0.91	-1.36	-1.87
Mu(+), ton-m:	0.80	0.51	0.48	0.48	0.48	0.48	0.48	0.48	0.59	0.69	0.75
As(-), cm2:	2.86	2.09	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.17
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.60	3.60	3.34	2.97	2.60	2.23	1.91	2.22	2.59	2.86	2.86
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

2-F 31 #3 @ 6 2-E

BEAM: 2(E-E2) FLOOR: 2

Length: L = 2.80 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.55 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.38	0.64	0.89	1.15	1.40	1.66	1.91	2.17	2.42	2.68
Mu(-), ton-m:	-2.08	-1.21	-0.53	-0.47	-0.47	-0.47	-0.47	-0.47	-0.66	-1.40	-2.33
Mu(+), ton-m:	0.69	0.47	0.69	0.86	0.92	0.96	0.88	0.79	0.60	0.47	0.78
As(-), cm2:	2.44	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.76
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.75	3.71	3.07	2.43	1.78	1.49	2.14	2.75	3.35	3.96	4.00
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

2-E 11 #3 @ 6 10 #3 @ 12 11 #3 @ 6 2-E2

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:20 p. m. 22/10/2025

BEAM: 2(E2-B) FLOOR: 2

Length:	L = 2.33 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 2.08 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.33	0.54	0.75	0.96	1.17	1.37	1.58	1.79	2.00	2.21
Mu(-), ton-m:	-2.12	-1.42	-0.84	-0.42	-0.42	-0.42	-0.42	-0.42	-0.68	-1.24	-1.91
Mu(+), ton-m:	0.71	0.56	0.61	0.61	0.57	0.45	0.51	0.57	0.59	0.56	0.64
As(-), cm2:	2.49	1.63	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.23
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.44	3.44	3.02	2.52	2.03	1.53	1.91	2.41	2.91	3.34	3.34
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	2-E2				34 #3 @ 6						2-B

BEAM: 2(B-A) FLOOR: 2

Length:	L = 2.06 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.81 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-2.07	-1.37	-0.78	-0.41	-0.41	-0.41	-0.41	-0.52	-0.91	-1.41	-2.03
Mu(+), ton-m:	0.80	0.76	0.70	0.66	0.62	0.75	0.89	1.05	1.14	1.21	1.28
As(-), cm2:	2.43	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.62	2.38
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	4.18	4.18	3.83	3.31	2.79	2.27	2.36	2.88	3.40	3.75	3.75
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	2-B				30 #3 @ 6						2-A

BEAM: 3(G-F) FLOOR: 2

Length:	L = 3.90 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 3.65 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-3.25	-1.78	-0.71	-0.71	-0.71	-0.71	-0.71	-0.71	-0.71	-1.88	-3.54
Mu(+), ton-m:	1.08	0.71	0.93	1.46	1.91	2.09	1.80	1.15	0.71	0.71	1.18
As(-), cm2:	3.97	2.06	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.19	4.37
As(+), cm2:	1.61	1.61	1.61	1.67	2.22	2.45	2.09	1.61	1.61	1.61	1.61
Vu, ton:	5.17	4.86	3.96	2.84	1.99	1.39	2.19	3.13	4.22	5.12	5.42
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	3-G			11 #3 @ 6	19 #3 @ 12		11 #3 @ 6				3-F

BEAM: 3(F-E) FLOOR: 2

Length:	L = 2.14 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.89 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-2.65	-1.94	-1.30	-0.73	-0.53	-0.53	-0.53	-0.53	-0.90	-1.37	-1.91
Mu(+), ton-m:	0.88	0.81	0.70	0.56	0.53	0.53	0.57	0.85	1.06	1.24	1.38
As(-), cm2:	3.17	2.27	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.23
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	4.26	4.26	3.99	3.63	3.27	2.90	2.54	2.57	2.93	3.20	3.20
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	3-F				31 #3 @ 6						3-E

BEAM: 3''(E-E1) FLOOR: 2

Length: L = 1.68 m, Lu = 1.46 m, a = 0.10 m, c = 0.13 m, Section: b = 20.0 cm, h = 30.0 cm, Sec: V20x30, Mat: f'c=3000 psi

X, m:	0.10	0.25	0.39	0.54	0.68	0.83	0.97	1.12	1.26	1.41	1.56
Mu(-), ton-m:	-0.42	-0.42	-0.42	-0.42	-0.42	-0.42	-0.50	-0.80	-1.17	-1.60	-2.08
Mu(+), ton-m:	0.42	0.42	0.47	0.57	0.62	0.60	0.51	0.43	0.42	0.42	0.69
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.84	2.44
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.05	2.05	1.91	1.87	2.26	2.66	3.05	3.45	3.85	3.99	3.99
Tu, ton-m:	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3''-E — 24 #3 @ 6 — 3''-E1

BEAM: 3''(E1-E3) FLOOR: 2

Length: L = 2.25 m, Lu = 2.00 m, a = 0.13 m, c = 0.13 m, Section: b = 20.0 cm, h = 30.0 cm, Sec: V20x30, Mat: f'c=3000 psi

X, m:	0.13	0.33	0.53	0.73	0.93	1.13	1.33	1.53	1.73	1.93	2.13
Mu(-), ton-m:	-2.34	-1.50	-0.82	-0.47	-0.47	-0.47	-0.47	-0.47	-0.68	-1.32	-2.13
Mu(+), ton-m:	0.78	0.60	0.71	0.79	0.80	0.78	0.78	0.80	0.74	0.65	0.71
As(-), cm2:	2.77	1.73	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.51
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	4.29	4.29	3.76	3.10	2.44	1.78	2.28	2.94	3.59	4.12	4.12
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

3''-E1 — 33 #3 @ 6 — 3''-E3

BEAM: 3''(E3-B) FLOOR: 2

Length: L = 1.20 m, Lu = 0.97 m, a = 0.13 m, c = 0.10 m, Section: b = 20.0 cm, h = 30.0 cm, Sec: V20x30, Mat: f'c=3000 psi

X, m:	0.13	0.22	0.32	0.42	0.51	0.61	0.71	0.81	0.90	1.00	1.10
Mu(-), ton-m:	-1.73	-1.42	-1.15	-0.89	-0.67	-0.49	-0.35	-0.35	-0.35	-0.35	-0.35
Mu(+), ton-m:	0.61	0.64	0.65	0.63	0.61	0.58	0.53	0.45	0.35	0.35	0.35
As(-), cm2:	2.01	1.64	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.58	3.58	3.58	3.43	3.15	2.87	2.59	2.32	2.17	2.17	2.17
Tu, ton-m:	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3''-E3 — 16 #3 @ 6 — 3''-B

BEAM: 3'(B-A) FLOOR: 2

Length: L = 2.06 m, Lu = 1.81 m, a = 0.13 m, c = 0.13 m, Section: b = 20.0 cm, h = 30.0 cm, Sec: V20x30, Mat: f'c=3000 psi

X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-2.08	-1.40	-0.83	-0.44	-0.44	-0.44	-0.44	-0.44	-0.89	-1.48	-2.19
Mu(+), ton-m:	1.30	1.24	1.17	1.06	0.89	0.80	0.90	1.05	1.15	1.22	1.28
As(-), cm2:	2.44	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.70	2.58
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.86	3.86	3.54	3.05	2.57	2.20	2.68	3.16	3.64	3.97	3.97
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

3'-B — 30 #3 @ 6 — 3'-A

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:21 p. m. 22/10/2025

BEAM: 4(G-F) FLOOR: 2

Length: L = 3.90 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.65 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-2.76	-1.48	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-1.59	-2.97
Mu(+), ton-m:	0.92	0.59	0.89	1.33	1.57	1.70	1.47	1.02	0.59	0.59	0.99
As(-), cm2:	3.31	1.70	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.84	3.58
As(+), cm2:	1.61	1.61	1.61	1.61	1.81	1.97	1.69	1.61	1.61	1.61	1.61
Vu, ton:	4.27	4.02	3.15	2.43	1.73	1.23	1.94	2.64	3.43	4.26	4.52
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

4-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 4-F

BEAM: 4(F-E) FLOOR: 2

Length: L = 2.14 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.89 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-2.15	-1.59	-1.09	-0.66	-0.43	-0.43	-0.43	-0.43	-0.73	-1.13	-1.59
Mu(+), ton-m:	0.72	0.50	0.47	0.43	0.43	0.43	0.43	0.43	0.57	0.66	0.70
As(-), cm2:	2.52	1.84	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.84
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.16	3.16	2.93	2.62	2.30	1.99	1.72	2.00	2.31	2.54	2.54
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

4-F 31 #3 @ 6 4-E

BEAM: 4(E-E1) FLOOR: 2

Length: L = 1.68 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.48 m c = 0.08 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.27	0.42	0.57	0.72	0.87	1.01	1.16	1.31	1.46	1.61
Mu(-), ton-m:	-1.63	-1.17	-0.78	-0.45	-0.33	-0.33	-0.33	-0.33	-0.33	-0.49	-0.82
Mu(+), ton-m:	0.70	0.70	0.69	0.66	0.61	0.51	0.42	0.54	0.64	0.70	0.74
As(-), cm2:	1.88	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.76	2.76	2.64	2.33	2.02	1.70	1.44	1.76	2.07	2.19	2.19
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E 24 #3 @ 6 4-E1

BEAM: 4(E1-E1a) FLOOR: 2

Length: L = 0.38 m a = 0.08 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.18 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.08	0.09	0.11	0.13	0.15	0.16	0.18	0.20	0.22	0.24	0.25
Mu(-), ton-m:	-1.21	-1.26	-1.32	-1.37	-1.43	-1.49	-1.55	-1.61	-1.67	-1.74	-1.80
Mu(+), ton-m:	0.75	0.74	0.74	0.73	0.73	0.73	0.72	0.72	0.72	0.71	0.71
As(-), cm2:	2.35	2.35	2.35	2.35	2.39	2.46	2.53	2.60	2.68	2.76	2.84
As(+), cm2:	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
Vu, ton:	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
Tu, ton-m:	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E1 3 #3 @ 6 4:E1a

BEAM: 4(E1a-E1b) FLOOR: 2

Length: L = 1.43 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.18 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.24	0.36	0.48	0.60	0.72	0.83	0.95	1.07	1.19	1.31
Mu(-), ton-m:	-1.56	-1.17	-0.82	-0.50	-0.31	-0.31	-0.31	-0.43	-0.74	-1.08	-1.46
Mu(+), ton-m:	0.86	0.75	0.62	0.47	0.31	0.31	0.31	0.45	0.61	0.75	0.87
As(-), cm2:	1.80	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.67
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.17	3.17	3.17	2.90	2.63	2.35	2.51	2.78	3.05	3.05	3.05
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4:E1a 19 #3 @ 6 4:E1b

BEAM: 4(E1b-E3) FLOOR: 2

Length: L = 0.44 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.24 m c = 0.08 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.15	0.17	0.20	0.22	0.25	0.27	0.29	0.32	0.34	0.37
Mu(-), ton-m:	-1.58	-1.50	-1.42	-1.34	-1.26	-1.19	-1.12	-1.05	-0.98	-0.91	-0.85
Mu(+), ton-m:	0.98	0.97	0.95	0.93	0.91	0.89	0.87	0.85	0.83	0.81	0.79
As(-), cm2:	2.40	2.31	2.21	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
As(+), cm2:	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Vu, ton:	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
Tu, ton-m:	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4:E1b 4 #3 @ 6 4-E3

BEAM: 4(E3-B) FLOOR: 2

Length: L = 1.20 m a = 0.08 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.00 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.08	0.18	0.28	0.37	0.47	0.57	0.67	0.77	0.87	0.97	1.08
Mu(-), ton-m:	-0.53	-0.33	-0.33	-0.33	-0.33	-0.33	-0.45	-0.71	-0.99	-1.30	-1.63
Mu(+), ton-m:	0.66	0.53	0.39	0.33	0.33	0.35	0.44	0.54	0.62	0.69	0.74
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.88
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.82	1.82	1.82	1.95	2.16	2.38	2.59	2.80	2.93	2.93	2.93
Tu, ton-m:	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E3 16 #3 @ 6 4-B

BEAM: 4(B-A) FLOOR: 2

Length: L = 2.06 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-1.88	-1.19	-0.62	-0.40	-0.40	-0.40	-0.40	-0.43	-0.84	-1.36	-2.00
Mu(+), ton-m:	0.66	0.69	0.69	0.66	0.59	0.69	0.91	1.06	1.11	1.13	1.12
As(-), cm2:	2.19	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.33
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.66	3.66	3.35	2.88	2.42	1.96	2.18	2.64	3.10	3.41	3.41
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

4-B 30 #3 @ 6 4-A

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:21 p. m. 22/10/2025

BEAM: 1'(G-F) FLOOR: 3

Length:	L = 3.90 m	a = 0.10 m	Section:	b = 15.0 cm	Sec:	V15x30				
	Lu = 3.70 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.10	0.47	0.84	1.21	1.58	1.95	2.32	2.69	3.06	3.43	3.80
Mu(-), ton-m:	-0.09	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.10
Mu(+), ton-m:	0.14	0.67	1.15	1.51	1.72	1.79	1.72	1.50	1.15	0.66	0.14
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.33	1.76	2.03	2.13	2.03	1.76	1.32	1.21	1.21
Vu, ton:	1.63	1.50	1.12	0.75	0.37	0.02	0.38	0.75	1.13	1.50	1.63
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

1'-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 1'-F

BEAM: 1'(B-A) FLOOR: 3

Length:	L = 2.06 m	a = 0.10 m	Section:	b = 15.0 cm	Sec:	V15x30				
	Lu = 1.86 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.10	0.29	0.47	0.66	0.84	1.03	1.22	1.40	1.59	1.77	1.96
Mu(-), ton-m:	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Mu(+), ton-m:	0.08	0.23	0.35	0.44	0.50	0.52	0.50	0.44	0.35	0.23	0.08
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	0.70	0.70	0.57	0.38	0.20	0.02	0.20	0.38	0.56	0.70	0.70
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1'-B 31 #3 @ 6 1'-A

BEAM: 1(G-F) FLOOR: 3

Length:	L = 3.90 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 3.65 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-1.41	-0.69	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.82	-1.62
Mu(+), ton-m:	0.47	0.32	0.52	0.79	1.04	1.11	0.96	0.62	0.32	0.32	0.54
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.87
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.21	2.03	1.66	1.30	0.90	0.64	1.04	1.41	1.77	2.26	2.44
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

1-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 1-F

BEAM: 1(F-E) FLOOR: 3

Length:	L = 2.14 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.89 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-1.10	-0.81	-0.55	-0.34	-0.22	-0.22	-0.22	-0.30	-0.50	-0.75	-1.03
Mu(+), ton-m:	0.37	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.34
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.49	1.49	1.36	1.18	1.01	0.87	1.04	1.22	1.39	1.52	1.52
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-F 31 #3 @ 6 1-E

BEAM: 1(E-E2) FLOOR: 3

Length: L = 2.80 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.55 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.38	0.64	0.89	1.15	1.40	1.66	1.91	2.17	2.42	2.68
Mu(-), ton-m:	-1.00	-0.60	-0.28	-0.22	-0.22	-0.22	-0.22	-0.22	-0.34	-0.68	-1.11
Mu(+), ton-m:	0.33	0.22	0.31	0.37	0.38	0.40	0.37	0.33	0.26	0.22	0.37
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.58	1.57	1.32	1.07	0.82	0.68	0.93	1.17	1.41	1.65	1.67
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

1-E 11 #3 @ 6 10 #3 @ 12 11 #3 @ 6 1-E2

BEAM: 1(E2-B) FLOOR: 3

Length: L = 2.33 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.08 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.33	0.54	0.75	0.96	1.17	1.37	1.58	1.79	2.00	2.21
Mu(-), ton-m:	-1.06	-0.72	-0.43	-0.21	-0.21	-0.21	-0.21	-0.21	-0.29	-0.53	-0.82
Mu(+), ton-m:	0.35	0.23	0.26	0.27	0.26	0.22	0.28	0.33	0.34	0.32	0.29
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.58	1.58	1.42	1.22	1.03	0.83	0.81	1.00	1.20	1.37	1.37
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

1-E2 34 #3 @ 6 1-B

BEAM: 1(B-A) FLOOR: 3

Length: L = 2.06 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-0.82	-0.53	-0.30	-0.18	-0.18	-0.18	-0.18	-0.22	-0.41	-0.64	-0.92
Mu(+), ton-m:	0.39	0.37	0.35	0.31	0.26	0.28	0.38	0.45	0.50	0.53	0.55
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.42	1.42	1.32	1.16	1.00	0.84	1.00	1.16	1.31	1.42	1.42
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-B 30 #3 @ 6 1-A

BEAM: 2(G-F) FLOOR: 3

Length: L = 3.90 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.65 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-1.58	-0.75	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.96	-1.98
Mu(+), ton-m:	0.53	0.40	0.53	0.89	1.19	1.26	1.07	0.65	0.40	0.40	0.66
As(-), cm2:	1.82	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.31
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.59	2.38	1.96	1.45	0.96	0.68	1.16	1.68	2.11	2.69	2.91
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

2-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 2-F

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:21 p. m. 22/10/2025

BEAM: 2(F-E) FLOOR: 3

Length: L = 2.14 m, Lu = 1.89 m	a = 0.13 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-1.28	-0.93	-0.63	-0.38	-0.26	-0.26	-0.26	-0.28	-0.49	-0.74	-1.04
Mu(+), ton-m:	0.43	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.35
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.81	1.81	1.66	1.45	1.24	1.04	1.08	1.29	1.50	1.65	1.65
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	2-F				31 #3 @ 6						2-E

BEAM: 2(E-E2) FLOOR: 3

Length: L = 2.80 m, Lu = 2.55 m	a = 0.13 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.38	0.64	0.89	1.15	1.40	1.66	1.91	2.17	2.42	2.68
Mu(-), ton-m:	-1.29	-0.67	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	-0.31	-0.77	-1.48
Mu(+), ton-m:	0.43	0.30	0.36	0.55	0.79	0.86	0.75	0.49	0.30	0.30	0.49
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.71
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.70	2.66	1.97	1.46	1.11	0.83	1.25	1.60	2.15	2.83	2.87
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	2-E			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					2-E2

BEAM: 2(E2-B) FLOOR: 3

Length: L = 2.33 m, Lu = 2.08 m	a = 0.13 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.33	0.54	0.75	0.96	1.17	1.37	1.58	1.79	2.00	2.21
Mu(-), ton-m:	-1.24	-0.77	-0.42	-0.25	-0.25	-0.25	-0.25	-0.25	-0.31	-0.63	-1.03
Mu(+), ton-m:	0.41	0.25	0.25	0.31	0.36	0.46	0.43	0.37	0.30	0.25	0.34
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.31	2.31	1.84	1.46	1.19	0.91	1.05	1.32	1.60	1.96	1.96
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	2-E2				34 #3 @ 6						2-B

BEAM: 2(B-A) FLOOR: 3

Length: L = 2.06 m, Lu = 1.81 m	a = 0.13 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-1.01	-0.65	-0.34	-0.20	-0.20	-0.20	-0.20	-0.20	-0.37	-0.64	-0.96
Mu(+), ton-m:	0.34	0.28	0.30	0.30	0.28	0.33	0.43	0.50	0.52	0.52	0.50
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.82	1.82	1.67	1.45	1.22	1.00	1.09	1.31	1.54	1.69	1.69
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	2-B				30 #3 @ 6						2-A

BEAM: 3(G-F) FLOOR: 3

Length: L = 3.90 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.65 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-1.70	-0.86	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.99	-2.01
Mu(+), ton-m:	0.57	0.40	0.47	0.80	1.09	1.16	0.98	0.64	0.40	0.40	0.67
As(-), cm2:	1.96	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.35
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.58	2.42	2.00	1.47	1.00	0.67	1.14	1.67	2.08	2.65	2.87
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

3-G 11 #3 @ 6 19 #3 @ 12 11 #3 @ 6 3-F

BEAM: 3(F-E) FLOOR: 3

Length: L = 2.14 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.89 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-1.35	-0.95	-0.59	-0.31	-0.27	-0.27	-0.27	-0.27	-0.39	-0.63	-0.94
Mu(+), ton-m:	0.45	0.27	0.27	0.27	0.28	0.42	0.45	0.47	0.50	0.53	0.55
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.25	2.25	1.91	1.68	1.48	1.27	1.16	1.37	1.57	1.72	1.72
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

3-F 31 #3 @ 6 3-E

BEAM: 3''(E-E1) FLOOR: 3

Length: L = 1.68 m a = 0.10 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.46 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.10	0.25	0.39	0.54	0.68	0.83	0.97	1.12	1.26	1.41	1.56
Mu(-), ton-m:	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.42	-0.65	-0.93	-1.30
Mu(+), ton-m:	0.26	0.26	0.33	0.37	0.37	0.34	0.27	0.26	0.26	0.26	0.43
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.31	1.31	1.23	1.14	1.36	1.59	1.81	2.03	2.32	2.48	2.48
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3''-E 24 #3 @ 6 3''-E1

BEAM: 3''(E1-E3) FLOOR: 3

Length: L = 2.25 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.00 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.33	0.53	0.73	0.93	1.13	1.33	1.53	1.73	1.93	2.13
Mu(-), ton-m:	-1.27	-0.77	-0.39	-0.25	-0.25	-0.25	-0.25	-0.25	-0.33	-0.69	-1.15
Mu(+), ton-m:	0.42	0.25	0.29	0.39	0.48	0.58	0.52	0.40	0.30	0.25	0.38
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.61	2.61	2.08	1.60	1.27	0.95	1.22	1.55	1.90	2.40	2.40
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

3''-E1 33 #3 @ 6 3''-E3

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:21 p. m. 22/10/2025

BEAM: 3''(E3-B) FLOOR: 3

Length:	L = 1.20 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 0.97 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.22	0.32	0.42	0.51	0.61	0.71	0.81	0.90	1.00	1.10
Mu(-), ton-m:	-1.00	-0.81	-0.65	-0.49	-0.36	-0.25	-0.20	-0.20	-0.20	-0.20	-0.20
Mu(+), ton-m:	0.33	0.21	0.24	0.25	0.26	0.26	0.26	0.22	0.20	0.20	0.20
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.05	2.05	2.05	1.97	1.83	1.68	1.54	1.39	1.31	1.31	1.31
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
DESIGN	3''-E3				16 #3 @ 6						3''-B

BEAM: 3'(B-A) FLOOR: 3

Length:	L = 2.06 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.81 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-0.95	-0.59	-0.30	-0.21	-0.21	-0.21	-0.21	-0.21	-0.34	-0.65	-1.04
Mu(+), ton-m:	0.53	0.57	0.58	0.57	0.53	0.56	0.53	0.56	0.55	0.53	0.50
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.84	1.84	1.66	1.42	1.17	1.01	1.25	1.50	1.75	1.92	1.92
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	3'-B				30 #3 @ 6						3'-A

BEAM: 4(G-F) FLOOR: 3

Length:	L = 3.90 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 3.65 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.49	0.86	1.22	1.59	1.95	2.32	2.68	3.05	3.41	3.78
Mu(-), ton-m:	-1.49	-0.71	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.84	-1.67
Mu(+), ton-m:	0.50	0.33	0.49	0.81	1.01	1.08	0.94	0.64	0.33	0.33	0.56
As(-), cm2:	1.72	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.94
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.37	2.23	1.80	1.35	0.90	0.59	1.04	1.48	1.94	2.34	2.48
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	4-G			11 #3 @ 6		19 #3 @ 12		11 #3 @ 6			4-F

BEAM: 4(F-E) FLOOR: 3

Length:	L = 2.14 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.89 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.31	0.50	0.69	0.88	1.07	1.26	1.45	1.64	1.83	2.02
Mu(-), ton-m:	-1.12	-0.83	-0.57	-0.35	-0.22	-0.22	-0.22	-0.22	-0.39	-0.60	-0.84
Mu(+), ton-m:	0.37	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.23	0.28
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.55	1.55	1.43	1.26	1.08	0.91	0.91	1.08	1.25	1.38	1.38
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	4-F				31 #3 @ 6						4-E

BEAM: 4(E-E1) FLOOR: 3

Length: L = 1.68 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.48 m c = 0.08 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.27	0.42	0.57	0.72	0.87	1.01	1.16	1.31	1.46	1.61
Mu(-), ton-m:	-0.86	-0.61	-0.38	-0.19	-0.17	-0.17	-0.17	-0.17	-0.17	-0.21	-0.38
Mu(+), ton-m:	0.29	0.30	0.31	0.31	0.31	0.29	0.29	0.32	0.36	0.37	0.37
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.53	1.53	1.46	1.29	1.12	0.95	0.78	0.87	1.04	1.10	1.10
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E 24 #3 @ 6 4-E1

BEAM: 4(E1-E1a) FLOOR: 3

Length: L = 0.38 m a = 0.08 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.18 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.08	0.09	0.11	0.13	0.15	0.16	0.18	0.20	0.22	0.24	0.25
Mu(-), ton-m:	-0.58	-0.61	-0.64	-0.67	-0.71	-0.74	-0.77	-0.80	-0.84	-0.88	-0.91
Mu(+), ton-m:	0.35	0.34	0.34	0.33	0.32	0.32	0.31	0.31	0.30	0.30	0.30
As(-), cm2:	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
As(+), cm2:	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
Vu, ton:	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
Tu, ton-m:	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E1 3 #3 @ 6 4:E1a

BEAM: 4(E1a-E1b) FLOOR: 3

Length: L = 1.43 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.18 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.24	0.36	0.48	0.60	0.72	0.83	0.95	1.07	1.19	1.31
Mu(-), ton-m:	-0.72	-0.54	-0.38	-0.24	-0.15	-0.15	-0.15	-0.24	-0.39	-0.55	-0.74
Mu(+), ton-m:	0.33	0.30	0.25	0.18	0.15	0.15	0.15	0.16	0.22	0.27	0.30
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.36	1.36	1.36	1.23	1.10	1.05	1.19	1.32	1.45	1.45	1.45
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4:E1a 19 #3 @ 6 4:E1b

BEAM: 4(E1b-E3) FLOOR: 3

Length: L = 0.44 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.24 m c = 0.08 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.15	0.17	0.20	0.22	0.25	0.27	0.29	0.32	0.34	0.37
Mu(-), ton-m:	-0.84	-0.80	-0.75	-0.71	-0.67	-0.63	-0.59	-0.55	-0.51	-0.47	-0.44
Mu(+), ton-m:	0.40	0.40	0.39	0.39	0.38	0.38	0.37	0.36	0.36	0.35	0.34
As(-), cm2:	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
As(+), cm2:	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
Vu, ton:	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
Tu, ton-m:	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4:E1b 4 #3 @ 6 4-E3

BEAM: 4(E3-B) FLOOR: 3

Length: L = 1.20 m a = 0.08 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.00 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.08	0.18	0.28	0.37	0.47	0.57	0.67	0.77	0.87	0.97	1.08
Mu(-), ton-m:	-0.26	-0.16	-0.16	-0.16	-0.16	-0.16	-0.22	-0.35	-0.50	-0.65	-0.82
Mu(+), ton-m:	0.29	0.24	0.18	0.16	0.16	0.16	0.20	0.24	0.27	0.29	0.30
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	0.88	0.88	0.88	0.92	1.03	1.14	1.25	1.38	1.46	1.46	1.46
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

4-E3 16 #3 @ 6 4-B

BEAM: 4(B-A) FLOOR: 3

Length: L = 2.06 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.31	0.49	0.67	0.85	1.03	1.21	1.39	1.57	1.75	1.94
Mu(-), ton-m:	-0.91	-0.53	-0.21	-0.19	-0.19	-0.19	-0.19	-0.19	-0.32	-0.61	-0.97
Mu(+), ton-m:	0.30	0.29	0.36	0.41	0.44	0.51	0.56	0.58	0.56	0.50	0.42
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.90	1.90	1.69	1.41	1.13	0.85	1.06	1.34	1.62	1.81	1.81
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

4-B 30 #3 @ 6 4-A

BEAM: G(1'-1) FLOOR: 2

Length: L = 0.93 m a = 0.00 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.26	-0.52	-0.78	-1.06	-1.33	-1.61	-1.90	-2.20	-2.50	-2.80
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	2.14	2.14	2.14	2.14	2.14	2.14	2.39	2.75	3.11	3.50	3.89
As(+), cm2:	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14
Vu, ton:	3.14	3.20	3.27	3.34	3.41	3.48	3.54	3.61	3.61	3.61	3.61
Tu, ton-m:	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

DESIGN

1'-G 9 #3 @ 10 1-G

BEAM: G(1-2) FLOOR: 2

Length: L = 1.92 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.67 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-2.88	-2.35	-1.83	-1.34	-0.88	-0.58	-0.58	-0.58	-0.58	-0.78	-1.06
Mu(+), ton-m:	0.96	0.77	0.64	0.58	0.58	0.58	0.58	0.58	0.75	1.09	1.42
As(-), cm2:	3.47	2.78	2.13	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.63
Vu, ton:	4.24	4.24	4.17	4.05	3.93	3.80	3.68	3.56	3.44	3.37	3.37
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-G 28 #3 @ 6 2-G

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:21 p. m. 22/10/2025

BEAM: G(2-3) FLOOR: 2

	Length:	L = 1.52 m Lu = 1.22 m	a = 0.13 m c = 0.18 m	Section:	b = 20.0 cm h = 30.0 cm	Sec: Mat:	V20x30 f'c=3000 psi				
X, m:	0.13	0.25	0.37	0.49	0.61	0.74	0.86	0.98	1.10	1.22	1.35
Mu(-), ton-m:	-1.62	-1.21	-0.81	-0.57	-0.57	-0.57	-0.95	-1.41	-1.87	-2.35	-2.85
Mu(+), ton-m:	1.52	1.14	0.75	0.57	0.57	0.57	0.71	1.07	1.42	1.76	2.09
As(-), cm2:	1.88	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.18	2.78	3.43
As(+), cm2:	1.76	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.63	2.04	2.44
Vu, ton:	4.19	4.19	4.20	4.28	4.36	4.45	4.53	4.61	4.69	4.70	4.70
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00
DESIGN	2-G				20 #3 @ 6						3-G

BEAM: G(3-4) FLOOR: 2

	Length:	L = 3.69 m Lu = 3.39 m	a = 0.18 m c = 0.13 m	Section:	b = 20.0 cm h = 30.0 cm	Sec: Mat:	V20x30 f'c=3000 psi				
X, m:	0.18	0.51	0.85	1.19	1.53	1.87	2.21	2.55	2.89	3.23	3.57
Mu(-), ton-m:	-4.02	-2.55	-1.22	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-1.84	-3.10
Mu(+), ton-m:	1.34	0.80	0.80	1.17	2.04	3.02	2.17	1.51	0.97	0.80	1.03
As(-), cm2:	5.37	3.35	1.92	1.92	1.92	1.91	1.91	1.91	1.91	2.44	4.06
As(+), cm2:	1.92	1.92	1.92	1.92	2.70	3.96	2.85	2.04	1.91	1.91	1.91
Vu, ton:	5.51	5.44	5.21	4.93	4.65	3.62	3.89	4.15	4.42	4.69	4.77
Tu, ton-m:	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	3-G			11 #3 @ 6	17 #3 @ 12	11 #3 @ 6					4-G

BEAM: F(1'-1) FLOOR: 2

	Length:	L = 0.93 m Lu = 0.81 m	a = 0.00 m c = 0.13 m	Section:	b = 20.0 cm h = 30.0 cm	Sec: Mat:	V20x30 f'c=3000 psi				
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.26	-0.52	-0.79	-1.06	-1.34	-1.62	-1.91	-2.20	-2.50	-2.81
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	2.15	2.15	2.15	2.15	2.15	2.15	2.41	2.76	3.13	3.51	3.91
As(+), cm2:	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Vu, ton:	3.14	3.21	3.28	3.35	3.42	3.48	3.55	3.62	3.62	3.62	3.62
Tu, ton-m:	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DESIGN	1'-F				9 #3 @ 10						1-F

BEAM: F(1-2) FLOOR: 2

	Length:	L = 1.92 m Lu = 1.67 m	a = 0.13 m c = 0.13 m	Section:	b = 20.0 cm h = 30.0 cm	Sec: Mat:	V20x30 f'c=3000 psi				
X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-2.80	-2.34	-1.88	-1.43	-0.98	-0.56	-0.56	-0.56	-0.56	-0.73	-0.93
Mu(+), ton-m:	0.95	0.78	0.60	0.56	0.56	0.56	0.56	0.56	0.76	1.18	1.60
As(-), cm2:	3.36	2.76	2.19	1.64	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.85
Vu, ton:	4.03	4.03	4.01	3.99	3.96	3.94	3.91	3.89	3.86	3.85	3.85
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	1-F				28 #3 @ 6						2-F

BEAM: F(2-3) FLOOR: 2

Length: L = 1.52 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.22 m c = 0.18 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.25	0.37	0.49	0.61	0.74	0.86	0.98	1.10	1.22	1.35
Mu(-), ton-m:	-1.49	-1.14	-0.80	-0.62	-0.62	-0.67	-1.14	-1.62	-2.11	-2.60	-3.09
Mu(+), ton-m:	1.72	1.25	0.79	0.62	0.62	0.62	0.62	0.94	1.28	1.62	1.96
As(-), cm2:	1.72	1.61	1.61	1.61	1.61	1.61	1.61	1.87	2.47	3.10	3.75
As(+), cm2:	2.00	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.87	2.29
Vu, ton:	5.28	5.28	5.28	5.30	5.32	5.33	5.35	5.37	5.38	5.39	5.39
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

2-F 20 #3 @ 6 3-F

BEAM: F(3-4) FLOOR: 2

Length: L = 3.69 m a = 0.18 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.39 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.18	0.51	0.85	1.19	1.53	1.87	2.21	2.55	2.89	3.23	3.57
Mu(-), ton-m:	-5.64	-3.49	-1.57	-1.13	-1.13	-1.13	-1.13	-1.13	-1.13	-2.52	-4.20
Mu(+), ton-m:	1.88	1.13	1.13	1.61	3.59	5.49	3.67	1.96	1.13	1.13	1.40
As(-), cm2:	7.50	4.31	1.81	1.61	1.61	1.61	1.61	1.61	1.61	3.00	5.33
As(+), cm2:	2.19	1.61	1.61	1.86	4.44	7.28	4.55	2.29	1.61	1.61	1.61
Vu, ton:	8.20	8.19	8.14	8.09	8.03	6.86	6.92	6.97	7.03	7.08	7.10
Tu, ton-m:	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

3-F 11 #3 @ 6 17 #3 @ 12 11 #3 @ 6 4-F

BEAM: E(1-2) FLOOR: 2

Length: L = 1.92 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.67 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.93	-1.57	-1.21	-0.85	-0.51	-0.39	-0.39	-0.39	-0.64	-0.93	-1.23
Mu(+), ton-m:	1.59	1.32	1.05	0.78	0.51	0.39	0.39	0.52	0.85	1.17	1.49
As(-), cm2:	2.25	1.81	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.83	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.72
Vu, ton:	2.60	2.60	2.58	2.56	2.53	2.51	2.48	2.46	2.43	2.42	2.42
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-E 28 #3 @ 6 2-E

BEAM: E(2-3) FLOOR: 2

Length: L = 1.52 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.27 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.25	0.38	0.51	0.63	0.76	0.89	1.01	1.14	1.27	1.40
Mu(-), ton-m:	-1.26	-1.01	-0.76	-0.53	-0.38	-0.38	-0.56	-0.89	-1.23	-1.57	-1.92
Mu(+), ton-m:	1.34	1.03	0.73	0.42	0.38	0.38	0.38	0.45	0.69	0.92	1.14
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.81	2.23
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.18	3.18	3.18	3.21	3.24	3.27	3.30	3.33	3.36	3.36	3.36
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

2-E 21 #3 @ 6 3-E

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:22 p. m. 22/10/2025

BEAM: E(3-3'') FLOOR: 2

	Length:	L = 0.94 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 0.72 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.20	0.27	0.34	0.41	0.48	0.55	0.63	0.70	0.77	0.84
Mu(-), ton-m:	-2.25	-2.04	-1.84	-1.63	-1.43	-1.23	-1.03	-0.84	-0.68	-0.53	-0.45
Mu(+), ton-m:	0.75	0.45	0.45	0.45	0.45	0.45	0.48	0.53	0.60	0.69	0.80
As(-), cm2:	2.65	2.39	2.14	1.89	1.64	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.10	3.10	3.10	3.10	3.09	3.08	3.07	3.07	3.07	3.07	3.07
Tu, ton-m:	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
DESIGN	3-E				12 #3 @ 6						3''-E

BEAM: E(3''-4) FLOOR: 2

	Length:	L = 2.75 m	a = 0.10 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 2.53 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.10	0.35	0.61	0.86	1.11	1.36	1.62	1.87	2.12	2.37	2.63
Mu(-), ton-m:	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.66	-1.02	-1.41	-1.81
Mu(+), ton-m:	0.93	0.87	0.83	0.86	0.87	0.85	0.82	0.78	0.78	0.78	0.78
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.10
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.23	1.23	1.19	1.16	1.56	1.60	1.64	1.68	1.72	1.76	1.76
Tu, ton-m:	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E

BEAM: E1(3''-4) FLOOR: 2

	Length:	L = 2.75 m	a = 0.13 m	Section:	b = 15.0 cm	Sec:	V15x30			
		Lu = 2.53 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.38	0.63	0.88	1.14	1.39	1.64	1.89	2.15	2.40	2.65
Mu(-), ton-m:	-1.06	-0.89	-0.72	-0.57	-0.42	-0.29	-0.21	-0.21	-0.21	-0.21	-0.27
Mu(+), ton-m:	0.82	0.74	0.65	0.56	0.47	0.37	0.26	0.21	0.21	0.21	0.29
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	0.77	0.77	0.74	0.71	0.68	0.65	0.62	0.60	0.62	0.65	0.66
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E1			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E1

BEAM: E3(3''-4) FLOOR: 2

	Length:	L = 2.75 m	a = 0.13 m	Section:	b = 15.0 cm	Sec:	V15x30			
		Lu = 2.53 m	c = 0.10 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.38	0.63	0.88	1.14	1.39	1.64	1.89	2.15	2.40	2.65
Mu(-), ton-m:	-1.03	-0.87	-0.71	-0.57	-0.43	-0.30	-0.21	-0.21	-0.21	-0.21	-0.22
Mu(+), ton-m:	0.81	0.74	0.65	0.57	0.48	0.38	0.28	0.21	0.21	0.21	0.24
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	0.73	0.73	0.70	0.67	0.64	0.61	0.58	0.57	0.60	0.63	0.63
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E3			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E3

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:22 p. m. 22/10/2025

BEAM: B(1'-1) FLOOR: 2

Length: L = 0.93 m a = 0.00 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.81 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.14	-0.29	-0.44	-0.60	-0.77	-0.94	-1.11	-1.29	-1.48	-1.67
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.70	1.94
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.74	1.80	1.87	1.94	2.01	2.08	2.14	2.21	2.21	2.21	2.21
Tu, ton-m:	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

DESIGN

1'-B 9 #3 @ 10 1-B

BEAM: B(1-2) FLOOR: 2

Length: L = 1.92 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.67 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-2.52	-2.07	-1.62	-1.18	-0.75	-0.50	-0.50	-0.50	-0.72	-0.99	-1.27
Mu(+), ton-m:	1.27	1.04	0.80	0.57	0.50	0.50	0.50	0.50	0.89	1.28	1.66
As(-), cm2:	3.00	2.42	1.87	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.92
Vu, ton:	3.60	3.60	3.57	3.52	3.47	3.43	3.38	3.33	3.28	3.26	3.26
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-B 28 #3 @ 6 2-B

BEAM: B(2-3') FLOOR: 2

Length: L = 1.98 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.73 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.30	0.47	0.64	0.82	0.99	1.16	1.34	1.51	1.68	1.86
Mu(-), ton-m:	-1.21	-0.95	-0.69	-0.44	-0.29	-0.29	-0.31	-0.58	-0.86	-1.15	-1.44
Mu(+), ton-m:	1.24	0.99	0.74	0.49	0.29	0.29	0.30	0.53	0.76	0.99	1.22
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.65
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.74	1.74	1.76	1.79	1.81	1.84	1.87	1.89	1.92	1.94	1.94
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

2-B 29 #3 @ 6 3'-B

BEAM: B(3'-3'') FLOOR: 2

Length: L = 0.48 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.26 m c = 0.10 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.15	0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.35	0.38
Mu(-), ton-m:	-1.75	-1.68	-1.61	-1.54	-1.48	-1.41	-1.34	-1.28	-1.23	-1.17	-1.12
Mu(+), ton-m:	1.00	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.92	0.92	0.93
As(-), cm2:	2.40	2.32	2.23	2.15	2.07	1.99	1.98	1.98	1.98	1.98	1.98
As(+), cm2:	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
Vu, ton:	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
Tu, ton-m:	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3'-B 4 #3 @ 6 3''-B

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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BEAM: B(3''-4) FLOOR: 2

Length:	L = 2.75 m	a = 0.10 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 2.53 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.10	0.35	0.61	0.86	1.11	1.36	1.62	1.87	2.12	2.37	2.63
Mu(-), ton-m:	-0.87	-0.61	-0.36	-0.30	-0.30	-0.30	-0.42	-0.66	-0.92	-1.19	-1.48
Mu(+), ton-m:	0.91	0.72	0.52	0.32	0.30	0.38	0.57	0.76	0.95	1.13	1.31
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.70
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.02	1.02	0.98	0.93	0.90	0.94	0.99	1.03	1.07	1.12	1.12
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

3''-B 11 #3 @ 6 10 #3 @ 12 11 #3 @ 6 4-B

BEAM: A(1'-1) FLOOR: 2

Length:	L = 0.93 m	a = 0.00 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 0.81 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.14	-0.29	-0.45	-0.60	-0.77	-0.94	-1.11	-1.29	-1.48	-1.67
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.70	1.94
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.73	1.80	1.87	1.94	2.01	2.07	2.14	2.21	2.21	2.21	2.21
Tu, ton-m:	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

DESIGN

1'-A 9 #3 @ 10 1-A

BEAM: A(1-2) FLOOR: 2

Length:	L = 1.92 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.67 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-2.57	-2.05	-1.55	-1.08	-0.64	-0.51	-0.51	-0.51	-0.74	-1.08	-1.43
Mu(+), ton-m:	1.24	1.06	0.86	0.64	0.51	0.51	0.51	0.52	0.85	1.15	1.43
As(-), cm2:	3.06	2.40	1.79	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.65
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.65
Vu, ton:	3.71	3.71	3.63	3.48	3.34	3.19	3.04	2.90	2.75	2.69	2.69
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-A 28 #3 @ 6 2-A

BEAM: A(2-3') FLOOR: 2

Length:	L = 1.98 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.73 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.30	0.47	0.64	0.82	0.99	1.16	1.34	1.51	1.68	1.86
Mu(-), ton-m:	-1.44	-1.08	-0.74	-0.44	-0.32	-0.32	-0.32	-0.57	-0.89	-1.24	-1.61
Mu(+), ton-m:	1.06	0.88	0.69	0.49	0.32	0.32	0.37	0.58	0.78	0.97	1.13
As(-), cm2:	1.66	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.86
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.12	2.12	2.04	1.91	1.77	1.80	1.93	2.06	2.20	2.27	2.27
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

2-A 29 #3 @ 6 3'-A

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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BEAM: A(3'-4) FLOOR: 2

	Length:	L = 3.23 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 2.98 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.42	0.72	1.02	1.32	1.62	1.91	2.21	2.51	2.81	3.11
Mu(-), ton-m:	-1.81	-1.20	-0.67	-0.36	-0.36	-0.36	-0.36	-0.41	-0.78	-1.23	-1.78
Mu(+), ton-m:	0.60	0.63	0.60	0.55	0.47	0.51	0.74	0.90	0.99	1.04	1.05
As(-), cm2:	2.10	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.07
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.19	2.15	1.92	1.68	1.44	1.20	1.17	1.41	1.65	1.89	1.94
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3'-A			11 #3 @ 6	13 #3 @ 12	11 #3 @ 6					4-A

BEAM: G(1'-1) FLOOR: 3

	Length:	L = 0.93 m	a = 0.00 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 0.81 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.16	-0.33	-0.50	-0.67	-0.85	-1.04	-1.23	-1.42	-1.62	-1.82
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.95	2.19	2.44
As(+), cm2:	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Vu, ton:	1.97	2.03	2.09	2.15	2.21	2.26	2.32	2.38	2.38	2.38	2.38
Tu, ton-m:	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DESIGN	1'-G				9 #3 @ 10						1-G

BEAM: G(1-2) FLOOR: 3

	Length:	L = 1.92 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 1.67 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.72	-1.40	-1.09	-0.80	-0.53	-0.34	-0.34	-0.34	-0.34	-0.43	-0.56
Mu(+), ton-m:	0.57	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.38	0.56	0.73
As(-), cm2:	1.99	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.49	2.49	2.44	2.35	2.26	2.17	2.08	1.99	1.90	1.85	1.85
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	1-G				28 #3 @ 6						2-G

BEAM: G(2-3) FLOOR: 3

	Length:	L = 1.52 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30			
		Lu = 1.22 m	c = 0.18 m		h = 30.0 cm	Mat:	f'c=3000 psi			
X, m:	0.13	0.25	0.37	0.49	0.61	0.74	0.86	0.98	1.10	1.22	1.35
Mu(-), ton-m:	-0.81	-0.61	-0.42	-0.29	-0.29	-0.30	-0.50	-0.72	-0.95	-1.19	-1.44
Mu(+), ton-m:	0.65	0.48	0.30	0.29	0.29	0.29	0.29	0.43	0.58	0.72	0.85
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.65
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.99	1.99	1.99	1.93	1.94	2.00	2.06	2.12	2.18	2.18	2.18
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00
DESIGN	2-G				20 #3 @ 6						3-G

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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BEAM: G(3-4) FLOOR: 3

Length: L = 3.69 m, Lu = 3.39 m	a = 0.18 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.18	0.51	0.85	1.19	1.53	1.87	2.21	2.55	2.89	3.23	3.57
Mu(-), ton-m:	-2.45	-1.51	-0.67	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.92	-1.69
Mu(+), ton-m:	0.82	0.49	0.49	0.70	1.24	1.82	1.37	0.97	0.60	0.49	0.56
As(-), cm2:	2.90	1.74	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.96
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	2.11	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.16	3.11	2.94	2.74	2.52	1.86	2.06	2.25	2.45	2.65	2.70
Tu, ton-m:	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	3-G	11 #3 @ 6	17 #3 @ 12	11 #3 @ 6	4-G						

BEAM: F(1'-1) FLOOR: 3

Length: L = 0.93 m, Lu = 0.81 m	a = 0.00 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.16	-0.33	-0.50	-0.68	-0.86	-1.04	-1.23	-1.42	-1.62	-1.83
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.98	2.22	2.47
As(+), cm2:	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Vu, ton:	1.98	2.04	2.09	2.15	2.21	2.27	2.33	2.39	2.39	2.39	2.39
Tu, ton-m:	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DESIGN	1'-F	9 #3 @ 10	1-F								

BEAM: F(1-2) FLOOR: 3

Length: L = 1.92 m, Lu = 1.67 m	a = 0.13 m, c = 0.13 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.70	-1.37	-1.07	-0.78	-0.51	-0.34	-0.34	-0.34	-0.34	-0.41	-0.55
Mu(+), ton-m:	0.57	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.40	0.58	0.75
As(-), cm2:	1.96	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.47	2.47	2.42	2.33	2.24	2.15	2.06	1.97	1.88	1.83	1.83
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	1-F	28 #3 @ 6	2-F								

BEAM: F(2-3) FLOOR: 3

Length: L = 1.52 m, Lu = 1.22 m	a = 0.13 m, c = 0.18 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.13	0.25	0.37	0.49	0.61	0.74	0.86	0.98	1.10	1.22	1.35
Mu(-), ton-m:	-0.79	-0.62	-0.47	-0.36	-0.36	-0.48	-0.72	-0.98	-1.25	-1.53	-1.82
Mu(+), ton-m:	0.69	0.48	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.61
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.76	2.11
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.47	2.47	2.47	2.53	2.59	2.66	2.72	2.78	2.84	2.84	2.84
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00
DESIGN	2-F	20 #3 @ 6	3-F								

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
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BEAM: F(3-4) FLOOR: 3

Length: L = 3.69 m a = 0.18 m Section: b = 20.0 cm Sec: V20x30
Lu = 3.39 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.18	0.51	0.85	1.19	1.53	1.87	2.21	2.55	2.89	3.23	3.57
Mu(-), ton-m:	-3.85	-2.26	-0.91	-0.77	-0.77	-0.77	-0.77	-0.77	-0.77	-1.31	-2.51
Mu(+), ton-m:	1.28	0.77	0.77	1.13	2.47	3.66	2.63	1.51	0.77	0.77	0.84
As(-), cm2:	4.81	2.66	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.99
As(+), cm2:	1.61	1.61	1.61	1.61	2.94	4.54	3.13	1.74	1.61	1.61	1.61
Vu, ton:	5.23	5.18	5.01	4.81	4.59	3.64	3.84	4.04	4.24	4.43	4.49
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00

DESIGN

3-F 11 #3 @ 6 17 #3 @ 12 11 #3 @ 6 4-F

BEAM: E(1-2) FLOOR: 3

Length: L = 1.92 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.67 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.02	-0.82	-0.62	-0.42	-0.23	-0.20	-0.20	-0.20	-0.29	-0.43	-0.58
Mu(+), ton-m:	0.75	0.63	0.51	0.39	0.27	0.20	0.20	0.32	0.49	0.66	0.82
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.50	1.50	1.48	1.46	1.43	1.41	1.38	1.36	1.33	1.32	1.32
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-E 28 #3 @ 6 2-E

BEAM: E(2-3) FLOOR: 3

Length: L = 1.52 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.27 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.25	0.38	0.51	0.63	0.76	0.89	1.01	1.14	1.27	1.40
Mu(-), ton-m:	-0.60	-0.49	-0.39	-0.29	-0.23	-0.23	-0.38	-0.57	-0.76	-0.96	-1.16
Mu(+), ton-m:	0.68	0.51	0.34	0.23	0.23	0.23	0.23	0.23	0.23	0.30	0.39
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.89	1.89	1.89	1.92	1.94	1.96	1.99	2.01	2.04	2.04	2.04
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	12.00	6.00	6.00	6.00	6.00	6.00

DESIGN

2-E 21 #3 @ 6 3-E

BEAM: E(3-3'') FLOOR: 3

Length: L = 0.94 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.72 m c = 0.10 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.20	0.27	0.34	0.41	0.48	0.55	0.63	0.70	0.77	0.84
Mu(-), ton-m:	-1.51	-1.36	-1.22	-1.07	-0.93	-0.78	-0.64	-0.50	-0.37	-0.30	-0.30
Mu(+), ton-m:	0.50	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.38	0.46
As(-), cm2:	1.74	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.25	2.25	2.25	2.25	2.24	2.23	2.22	2.21	2.21	2.21	2.21
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3-E 12 #3 @ 6 3''-E

BEAM: E(3''-4) FLOOR: 3

Length: L = 2.75 m	a = 0.10 m	Section: b = 20.0 cm	Sec: V20x30							
Lu = 2.53 m	c = 0.13 m	h = 30.0 cm	Mat: f'c=3000 psi							
X, m:	0.10	0.35	0.61	0.86	1.11	1.36	1.62	1.87	2.12	2.37	2.63
Mu(-), ton-m:	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.26	-0.49	-0.75	-1.02
Mu(+), ton-m:	0.61	0.69	0.79	0.87	0.76	0.63	0.56	0.49	0.43	0.38	0.34
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	0.92	0.92	0.88	0.84	1.00	1.04	1.08	1.12	1.16	1.21	1.21
Tu, ton-m:	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E

BEAM: E1(3''-4) FLOOR: 3

Length: L = 2.75 m	a = 0.13 m	Section: b = 15.0 cm	Sec: V15x30							
Lu = 2.53 m	c = 0.10 m	h = 30.0 cm	Mat: f'c=3000 psi							
X, m:	0.13	0.38	0.63	0.88	1.14	1.39	1.64	1.89	2.15	2.40	2.65
Mu(-), ton-m:	-0.57	-0.46	-0.36	-0.27	-0.19	-0.12	-0.11	-0.11	-0.11	-0.11	-0.13
Mu(+), ton-m:	0.38	0.36	0.33	0.30	0.26	0.22	0.17	0.11	0.11	0.12	0.15
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	0.49	0.48	0.45	0.42	0.39	0.36	0.33	0.33	0.36	0.39	0.39
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E1			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E1

BEAM: E3(3''-4) FLOOR: 3

Length: L = 2.75 m	a = 0.13 m	Section: b = 15.0 cm	Sec: V15x30							
Lu = 2.53 m	c = 0.10 m	h = 30.0 cm	Mat: f'c=3000 psi							
X, m:	0.13	0.38	0.63	0.88	1.14	1.39	1.64	1.89	2.15	2.40	2.65
Mu(-), ton-m:	-0.56	-0.46	-0.36	-0.27	-0.20	-0.13	-0.11	-0.11	-0.11	-0.11	-0.11
Mu(+), ton-m:	0.38	0.36	0.33	0.31	0.27	0.23	0.18	0.12	0.11	0.11	0.13
As(-), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
As(+), cm2:	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Vu, ton:	0.47	0.47	0.44	0.41	0.38	0.35	0.32	0.32	0.35	0.38	0.38
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00
DESIGN	3''-E3			11 #3 @ 6	10 #3 @ 12	11 #3 @ 6					4-E3

BEAM: B(1'-1) FLOOR: 3

Length: L = 0.93 m	a = 0.00 m	Section: b = 20.0 cm	Sec: V20x30							
Lu = 0.81 m	c = 0.13 m	h = 30.0 cm	Mat: f'c=3000 psi							
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.09	-0.18	-0.27	-0.38	-0.48	-0.59	-0.70	-0.82	-0.95	-1.08
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.45	1.45	1.45	1.45
Tu, ton-m:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DESIGN	1'-B				9 #3 @ 10						1-B

BEAM: B(1-2) FLOOR: 3

Length: L = 1.92 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.67 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.47	-1.16	-0.87	-0.60	-0.35	-0.29	-0.29	-0.29	-0.32	-0.48	-0.65
Mu(+), ton-m:	0.49	0.40	0.34	0.29	0.29	0.29	0.29	0.29	0.46	0.62	0.75
As(-), cm2:	1.69	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.21	2.21	2.16	2.06	1.96	1.86	1.76	1.66	1.56	1.50	1.50
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-B 28 #3 @ 6 2-B

BEAM: B(2-3') FLOOR: 3

Length: L = 1.98 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 1.73 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.30	0.47	0.64	0.82	0.99	1.16	1.34	1.51	1.68	1.86
Mu(-), ton-m:	-0.70	-0.53	-0.37	-0.23	-0.22	-0.22	-0.22	-0.39	-0.60	-0.84	-1.09
Mu(+), ton-m:	0.58	0.49	0.39	0.27	0.22	0.22	0.22	0.22	0.26	0.32	0.36
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.21	1.21	1.15	1.09	1.19	1.29	1.39	1.49	1.59	1.64	1.64
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

2-B 29 #3 @ 6 3'-B

BEAM: B(3'-3'') FLOOR: 3

Length: L = 0.48 m a = 0.13 m Section: b = 20.0 cm Sec: V20x30
Lu = 0.26 m c = 0.10 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.13	0.15	0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.35	0.38
Mu(-), ton-m:	-1.36	-1.30	-1.24	-1.18	-1.13	-1.07	-1.01	-0.95	-0.90	-0.85	-0.80
Mu(+), ton-m:	0.45	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.28
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
Tu, ton-m:	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

DESIGN

3'-B 4 #3 @ 6 3''-B

BEAM: B(3''-4) FLOOR: 3

Length: L = 2.75 m a = 0.10 m Section: b = 20.0 cm Sec: V20x30
Lu = 2.53 m c = 0.13 m h = 30.0 cm Mat: f'c=3000 psi

X, m:	0.10	0.35	0.61	0.86	1.11	1.36	1.62	1.87	2.12	2.37	2.63
Mu(-), ton-m:	-0.53	-0.27	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.37	-0.60	-0.90
Mu(+), ton-m:	0.37	0.40	0.42	0.40	0.41	0.50	0.57	0.61	0.61	0.59	0.55
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.04	1.04	0.88	0.73	0.58	0.50	0.65	0.81	0.96	1.12	1.13
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

3''-B 11 #3 @ 6 10 #3 @ 12 11 #3 @ 6 4-B

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:22 p. m. 22/10/2025

BEAM: A(1'-1) FLOOR: 3

Length:	L = 0.93 m	a = 0.00 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 0.81 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.81
Mu(-), ton-m:	0.00	-0.09	-0.18	-0.27	-0.37	-0.48	-0.59	-0.70	-0.82	-0.95	-1.08
Mu(+), ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.04	1.10	1.16	1.22	1.28	1.33	1.39	1.45	1.45	1.45	1.45
Tu, ton-m:	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

DESIGN

1'-A 9 #3 @ 10 1-A

BEAM: A(1-2) FLOOR: 3

Length:	L = 1.92 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.67 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.29	0.46	0.63	0.79	0.96	1.13	1.29	1.46	1.63	1.80
Mu(-), ton-m:	-1.47	-1.17	-0.89	-0.62	-0.38	-0.29	-0.29	-0.29	-0.36	-0.53	-0.71
Mu(+), ton-m:	0.49	0.40	0.34	0.29	0.29	0.29	0.29	0.29	0.40	0.55	0.68
As(-), cm2:	1.69	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.11	2.11	2.06	1.96	1.86	1.76	1.66	1.56	1.46	1.46	1.46
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

1-A 28 #3 @ 6 2-A

BEAM: A(2-3') FLOOR: 3

Length:	L = 1.98 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 1.73 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.30	0.47	0.64	0.82	0.99	1.16	1.34	1.51	1.68	1.86
Mu(-), ton-m:	-0.82	-0.61	-0.41	-0.24	-0.18	-0.18	-0.18	-0.29	-0.47	-0.68	-0.90
Mu(+), ton-m:	0.51	0.44	0.35	0.25	0.18	0.18	0.18	0.28	0.38	0.46	0.52
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.21	1.21	1.15	1.05	0.95	0.95	1.05	1.15	1.25	1.30	1.30
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00

DESIGN

2-A 29 #3 @ 6 3'-A

BEAM: A(3'-4) FLOOR: 3

Length:	L = 3.23 m	a = 0.13 m	Section:	b = 20.0 cm	Sec:	V20x30				
	Lu = 2.98 m	c = 0.13 m		h = 30.0 cm	Mat:	f'c=3000 psi				
X, m:	0.13	0.42	0.72	1.02	1.32	1.62	1.91	2.21	2.51	2.81	3.11
Mu(-), ton-m:	-1.07	-0.67	-0.34	-0.21	-0.21	-0.21	-0.21	-0.21	-0.35	-0.62	-0.95
Mu(+), ton-m:	0.36	0.27	0.32	0.34	0.34	0.38	0.50	0.57	0.58	0.55	0.51
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	1.44	1.41	1.24	1.06	0.89	0.71	0.65	0.83	1.00	1.18	1.22
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00	6.00

DESIGN

3'-A 11 #3 @ 6 13 #3 @ 12 11 #3 @ 6 4-A

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:22 p. m. 22/10/2025

BEAM: G:3''a-F:3''a FLOOR: 2

Length: L = 3.90 m, Lu = 3.70 m	a = 0.10 m, c = 0.10 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.10	0.47	0.84	1.21	1.58	1.95	2.32	2.69	3.06	3.43	3.80
Mu(-), ton-m:	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-1.07	-3.31
Mu(+), ton-m:	0.66	1.94	3.21	4.02	4.38	4.28	3.67	2.60	1.08	0.66	1.10
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	4.05
As(+), cm2:	1.61	2.26	3.91	5.06	5.59	5.44	4.55	3.11	1.61	1.61	1.61
Vu, ton:	4.45	4.02	2.86	1.87	0.90	1.52	2.51	3.50	4.69	5.93	6.37
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	G:3''a	11 #3 @ 6	19 #3 @ 12	11 #3 @ 6	F:3''a						

BEAM: F:3''a-E:3''a FLOOR: 2

Length: L = 2.14 m, Lu = 1.94 m	a = 0.10 m, c = 0.10 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.10	0.29	0.49	0.68	0.88	1.07	1.26	1.46	1.65	1.85	2.04
Mu(-), ton-m:	-3.46	-2.70	-2.02	-1.44	-0.95	-0.69	-0.69	-0.69	-0.69	-0.69	-0.69
Mu(+), ton-m:	1.15	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
As(-), cm2:	4.25	3.23	2.37	1.66	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	3.67	3.67	3.36	2.96	2.57	2.17	1.77	1.37	0.97	0.72	0.72
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	F:3''a	32 #3 @ 6	E:3''a								

BEAM: G:3''a-F:3''a FLOOR: 3

Length: L = 3.90 m, Lu = 3.70 m	a = 0.10 m, c = 0.10 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.10	0.47	0.84	1.21	1.58	1.95	2.32	2.69	3.06	3.43	3.80
Mu(-), ton-m:	-0.35	-0.35	-0.35	-0.35	-0.35	-0.35	-0.35	-0.35	-0.35	-0.53	-1.73
Mu(+), ton-m:	0.35	1.07	1.77	2.22	2.42	2.38	2.05	1.48	0.65	0.35	0.58
As(-), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	2.01
As(+), cm2:	1.61	1.61	2.05	2.62	2.87	2.81	2.40	1.70	1.61	1.61	1.61
Vu, ton:	2.46	2.22	1.54	0.94	0.48	0.73	1.19	1.86	2.54	3.22	3.46
Tu, ton-m:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	6.00	6.00
DESIGN	G:3''a	11 #3 @ 6	19 #3 @ 12	11 #3 @ 6	F:3''a						

BEAM: F:3''a-E:3''a FLOOR: 3

Length: L = 2.14 m, Lu = 1.94 m	a = 0.10 m, c = 0.10 m	Section: b = 20.0 cm, h = 30.0 cm	Sec: V20x30	Mat: f'c=3000 psi						
X, m:	0.10	0.29	0.49	0.68	0.88	1.07	1.26	1.46	1.65	1.85	2.04
Mu(-), ton-m:	-1.78	-1.29	-0.87	-0.51	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36
Mu(+), ton-m:	0.59	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
As(-), cm2:	2.06	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
As(+), cm2:	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Vu, ton:	2.26	2.26	1.99	1.63	1.28	0.99	0.76	0.53	0.39	0.57	0.57
Tu, ton-m:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stirrup:	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3	#3
Spacing, cm:	6.00	6.00	6.00	6.00	12.00	12.00	12.00	6.00	6.00	6.00	6.00
DESIGN	F:3''a	32 #3 @ 6	E:3''a								

LONG-TERM BEAM DEFLECTIONS

PERMISSIBLE DEFLECTIONS
Immediate deflection due to Live Load . . . . . = L/360
Long-term deflection due to Sustained loads . . = L/480

TYPE OF DEFLECTION	LOAD COMBINATION
Immediate due to Dead load (DLs)	D0 + DL + DL
Immediate due to Live load (LLs)*	LL + RFL
Immediate due to Sus. load (SLds)	D0 + DL + DL + .25LL + .25RFL
Long-term due to Sus. load (SLds)	D0 + DL + DL + .25LL + .25RFL

* Computed as Defl(DLS + LLs) - Defl(DLs)

Units: Defl: Max. deflection (cm), L: Beam length (m), h: Beam depth (cm)

Beam	Floor	h	L	L/h	Beam Type	IMMEDIATE DEFLECTIONS DLs Deflc	Live Deflc	Sut.Lds Deflc	ADDITIONAL LONG-TERM DEFLEC. Sus.Lds 6 months Deflc	1-year Deflc	5-years Deflc
1'(G-F)	2	30	3.90	13	SimpSupprt	1.058	0.285	1.130	1.162*	1.355*	1.936*
1'(B-A)	2	30	2.06	7	SimpSupprt	0.032	0.012	0.035	0.036	0.041	0.059
1(G-F)	2	30	3.90	13	EndJContin	0.111	0.318	0.173	0.177	0.207	0.296
1(F-E)	2	30	2.14	7	BothEndCnt	0.012	0.003	0.013	0.013	0.015	0.021
1(E-E2)	2	30	2.80	9	BothEndCnt	0.027	0.005	0.028	0.029	0.034	0.049
1(E2-B)	2	30	2.33	8	BothEndCnt	0.010	0.000	0.010	0.010	0.012	0.017
1(B-A)	2	30	2.06	7	EndIContin	0.006	0.006	0.007	0.008	0.009	0.013
2(G-F)	2	30	3.90	13	EndJContin	0.175	0.389	0.260	0.268	0.312	0.446
2(F-E)	2	30	2.14	7	BothEndCnt	0.000	0.000	0.000	0.000	0.000	0.000
2(E-E2)	2	30	2.80	9	BothEndCnt	0.036	0.012	0.039	0.040	0.047	0.067
2(E2-B)	2	30	2.33	8	BothEndCnt	0.012	0.002	0.012	0.012	0.015	0.021
2(B-A)	2	30	2.06	7	EndIContin	0.009	0.008	0.011	0.011	0.013	0.019
3(G-F)	2	30	3.90	13	EndJContin	0.143	0.360	0.219	0.225	0.263	0.375
3(F-E)	2	30	2.14	7	EndIContin	0.008	0.003	0.009	0.009	0.010	0.014
3''(E-E1)	2	30	1.68	6	EndJContin	0.032	0.000	0.032	0.030	0.035	0.050
3''(E1-E3)	2	30	2.25	8	BothEndCnt	0.018	0.007	0.020	0.020	0.024	0.034
3''(E3-B)	2	30	1.20	4	EndIContin	0.000	0.000	0.001	0.001	0.001	0.001
3'(B-A)	2	30	2.06	7	SimpSupprt	0.015	0.006	0.016	0.017	0.020	0.028
4(G-F)	2	30	3.90	13	EndJContin	0.156	0.218	0.203	0.208	0.243	0.347
4(F-E)	2	30	2.14	7	BothEndCnt	0.011	0.004	0.012	0.012	0.014	0.019
4(E-E1)	2	30	1.68	6	BothEndCnt	0.006	0.001	0.007	0.007	0.008	0.011
4(E1-E1a)	2	30	.38	1	BothEndCnt	0.003	0.000	0.003	0.003	0.003	0.004
4(E1a-E1b)	2	30	1.43	5	BothEndCnt	0.001	0.000	0.001	0.002	0.002	0.003
4(E1b-E3)	2	30	.44	1	BothEndCnt	0.002	0.000	0.002	0.002	0.002	0.003
4(E3-B)	2	30	1.20	4	BothEndCnt	0.002	0.000	0.001	0.002	0.002	0.003
4(B-A)	2	30	2.06	7	EndIContin	0.014	0.002	0.014	0.014	0.017	0.024
1'(G-F)	3	30	3.90	13	SimpSupprt	0.860	0.179	0.905	0.931*	1.086*	1.551*
1'(B-A)	3	30	2.06	7	SimpSupprt	0.023	0.003	0.023	0.024	0.028	0.040
1(G-F)	3	30	3.90	13	EndJContin	0.086	0.021	0.092	0.094	0.110	0.157
1(F-E)	3	30	2.14	7	BothEndCnt	0.018	0.005	0.019	0.020	0.023	0.033
1(E-E2)	3	30	2.80	9	BothEndCnt	0.016	0.003	0.017	0.017	0.020	0.028
1(E2-B)	3	30	2.33	8	BothEndCnt	0.005	0.001	0.006	0.006	0.007	0.010
1(B-A)	3	30	2.06	7	EndIContin	0.005	0.001	0.005	0.006	0.007	0.009
2(G-F)	3	30	3.90	13	EndJContin	0.095	0.051	0.101	0.104	0.121	0.173
2(F-E)	3	30	2.14	7	BothEndCnt	0.002	0.001	0.002	0.002	0.002	0.003
2(E-E2)	3	30	2.80	9	BothEndCnt	0.026	0.015	0.030	0.030	0.035	0.051
2(E2-B)	3	30	2.33	8	BothEndCnt	0.008	0.006	0.010	0.010	0.011	0.016
2(B-A)	3	30	2.06	7	EndIContin	0.007	0.001	0.007	0.007	0.008	0.012
3(G-F)	3	30	3.90	13	EndJContin	0.088	0.022	0.092	0.095	0.110	0.158
3(F-E)	3	30	2.14	7	EndIContin	0.014	0.005	0.015	0.015	0.018	0.025
3''(E-E1)	3	30	1.68	6	EndJContin	0.024	0.008	0.026	0.027	0.031	0.045
3''(E1-E3)	3	30	2.25	8	BothEndCnt	0.010	0.007	0.012	0.012	0.014	0.020
3''(E3-B)	3	30	1.20	4	EndIContin	0.007	0.002	0.006	0.006	0.007	0.010
3'(B-A)	3	30	2.06	7	SimpSupprt	0.012	0.003	0.013	0.013	0.015	0.022
4(G-F)	3	30	3.90	13	EndJContin	0.095	0.014	0.098	0.101	0.118	0.168
4(F-E)	3	30	2.14	7	BothEndCnt	0.016	0.006	0.018	0.018	0.021	0.031
4(E-E1)	3	30	1.68	6	BothEndCnt	0.004	0.001	0.004	0.004	0.005	0.007
4(E1-E1a)	3	30	.38	1	BothEndCnt	0.002	0.000	0.002	0.002	0.002	0.003
4(E1a-E1b)	3	30	1.43	5	BothEndCnt	0.002	0.000	0.002	0.002	0.003	0.004
4(E1b-E3)	3	30	.44	1	BothEndCnt	0.002	0.000	0.002	0.002	0.002	0.003
4(E3-B)	3	30	1.20	4	BothEndCnt	0.004	0.001	0.005	0.005	0.005	0.008
4(B-A)	3	30	2.06	7	EndIContin	0.011	0.003	0.012	0.012	0.014	0.020
G(1'-1)	2	30	.93	3	Cantilever	0.145	0.035	0.154	0.151	0.176	0.251*
G(1-2)	2	30	1.92	6	BothEndCnt	0.005	0.000	0.006	0.006	0.007	0.010
G(2-3)	2	30	1.52	5	BothEndCnt	0.003	0.000	0.003	0.003	0.004	0.005
G(3-4)	2	30	3.69	12	EndIContin	0.277	0.215	0.333	0.333	0.389	0.556
F(1'-1)	2	30	.93	3	Cantilever	0.150	0.035	0.159	0.156	0.182	0.259*
F(1-2)	2	30	1.92	6	BothEndCnt	0.006	0.001	0.006	0.006	0.007	0.010
F(2-3)	2	30	1.52	5	BothEndCnt	0.005	0.001	0.006	0.006	0.007	0.009
F(3-4)	2	30	3.69	12	EndIContin	0.409	0.207	0.461	0.474	0.553	0.791*
E(1-2)	2	30	1.92	6	EndJContin	0.002	0.000	0.001	0.001	0.002	0.002

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Centro Integral - Bojacá
01:47:23 p. m. 22/10/2025

Beam	Floor	h	L	L/h	Beam Type	Deflc	Deflc	Deflc	Deflc	Deflc	Deflc
E(2-3)	2	30	1.52	5	BothEndCnt	0.002	0.001	0.002	0.002	0.002	0.003
E(3-3'')	2	30	.94	3	BothEndCnt	0.032	0.007	0.033	0.031	0.036	0.051
E(3''-4)	2	30	2.75	9	EndIContin	0.035	0.001	0.035	0.036	0.042	0.059
E1(3''-4)	2	30	2.75	9	SimpSupprt	0.003	0.000	0.003	0.004	0.004	0.006
E3(3''-4)	2	30	2.75	9	SimpSupprt	0.003	0.004	0.003	0.003	0.004	0.005
B(1'-1)	2	30	.93	3	Cantilever	0.083	0.050	0.095	0.098	0.114	0.163
B(1-2)	2	30	1.92	6	BothEndCnt	0.001	0.001	0.000	0.000	0.000	0.000
B(2-3')	2	30	1.98	7	BothEndCnt	0.001	0.002	0.002	0.002	0.002	0.003
B(3'-3'')	2	30	.48	2	BothEndCnt	0.002	0.001	0.002	0.002	0.003	0.004
B(3''-4)	2	30	2.75	9	EndIContin	0.006	0.001	0.007	0.007	0.008	0.011
A(1'-1)	2	30	.93	3	Cantilever	0.078	0.048	0.089	0.092	0.107	0.153
A(1-2)	2	30	1.92	6	BothEndCnt	0.002	0.000	0.001	0.001	0.002	0.002
A(2-3')	2	30	1.98	7	BothEndCnt	0.004	0.000	0.003	0.004	0.004	0.006
A(3'-4)	2	30	3.23	11	EndIContin	0.028	0.000	0.028	0.029	0.034	0.049
G(1'-1)	3	30	.93	3	Cantilever	0.130	0.026	0.136	0.136	0.159	0.227*
G(1-2)	3	30	1.92	6	BothEndCnt	0.011	0.001	0.011	0.011	0.013	0.019
G(2-3)	3	30	1.52	5	BothEndCnt	0.005	0.001	0.005	0.005	0.006	0.009
G(3-4)	3	30	3.69	12	EndIContin	0.167	0.104	0.191	0.196	0.229	0.327
F(1'-1)	3	30	.93	3	Cantilever	0.127	0.025	0.133	0.133	0.155	0.221*
F(1-2)	3	30	1.92	6	BothEndCnt	0.012	0.000	0.012	0.012	0.014	0.020
F(2-3)	3	30	1.52	5	BothEndCnt	0.008	0.003	0.009	0.009	0.011	0.016
F(3-4)	3	30	3.69	12	EndIContin	0.461	0.142	0.497	0.511	0.596	0.852*
E(1-2)	3	30	1.92	6	EndJContin	0.002	0.001	0.002	0.002	0.002	0.003
E(2-3)	3	30	1.52	5	BothEndCnt	0.001	0.001	0.002	0.002	0.002	0.003
E(3-3'')	3	30	.94	3	BothEndCnt	0.028	0.010	0.030	0.031	0.036	0.051
E(3''-4)	3	30	2.75	9	EndIContin	0.031	0.009	0.033	0.034	0.040	0.057
E1(3''-4)	3	30	2.75	9	SimpSupprt	0.004	0.009	0.004	0.004	0.005	0.007
E3(3''-4)	3	30	2.75	9	SimpSupprt	0.005	0.008	0.004	0.004	0.005	0.007
B(1'-1)	3	30	.93	3	Cantilever	0.038	0.002	0.039	0.040	0.046	0.066
B(1-2)	3	30	1.92	6	BothEndCnt	0.003	0.002	0.002	0.002	0.002	0.003
B(2-3')	3	30	1.98	7	BothEndCnt	0.002	0.003	0.003	0.003	0.003	0.004
B(3'-3'')	3	30	.48	2	BothEndCnt	0.006	0.001	0.006	0.006	0.007	0.010
B(3''-4)	3	30	2.75	9	EndIContin	0.023	0.001	0.023	0.024	0.028	0.040
A(1'-1)	3	30	.93	3	Cantilever	0.040	0.003	0.041	0.042	0.049	0.070
A(1-2)	3	30	1.92	6	BothEndCnt	0.004	0.000	0.004	0.004	0.005	0.007
A(2-3')	3	30	1.98	7	BothEndCnt	0.005	0.000	0.005	0.005	0.006	0.009
A(3'-4)	3	30	3.23	11	EndIContin	0.024	0.000	0.024	0.025	0.029	0.042
G:3''a-F:3''a	2	30	3.90	13	SimpSupprt	0.690	0.517	0.824	0.847*	0.989*	1.412*
F:3''a-E:3''a	2	30	2.14	7	SimpSupprt	0.336	0.720*	0.497	0.511*	0.596*	0.852*
G:3''a-F:3''a	3	30	3.90	13	SimpSupprt	0.574	0.351	0.662	0.681	0.794	1.135*
F:3''a-E:3''a	3	30	2.14	7	SimpSupprt	0.145	0.093	0.152	0.156	0.183	0.261

NOTE: * Deflections on marked beams are greater than maximum permissible deflection
Depth, H, of all beams is larger than that recomemenden in Table 9.5(a)

Immediate deflections are computed according to 9.5.2.3 with:
Effective stiffness: E I = Ec . Ie

$$Ie = (Mcr/Ma)^3\ Ig + [1 - (Mcr/Ma)^3]\ Icr \quad \text{for } Ma > Mcr$$

$$Ie = Igr \quad \text{for } Ma < Mcr$$

$$Mcr = fr\ Ig/Yt$$

$$Icr = b(kd)^3/3 + n\ As(d-kd)^2 + (n-1)A's(kd-d')^2$$

$$n = Es/Ec$$

Long-term deflections are computed according to 9.5.2.5

ANEXO 6.
DISEÑO DE LA CIMENTACION

P-Delta Analysis- Support Reactions

Support		Load	Force (ton)			Moment (ton-m)		
Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
1-G	1	1	0.52	-0.38	16.17	0.27	0.40	0.00
		2	0.53	-0.35	15.95	0.25	0.41	0.00
		3	0.84	-0.42	17.34	0.30	0.66	0.00
		4	1.79	0.01	17.00	-0.23	2.19	0.00
		5	-0.66	-0.71	12.95	0.73	-1.31	0.00
		6	1.79	-0.86	14.82	0.93	2.19	0.00
		7	-0.66	0.15	15.13	-0.43	-1.30	0.00
		8	0.94	1.07	18.89	-1.65	0.98	0.00
		9	0.19	-1.77	11.07	2.15	-0.09	0.00
		10	0.20	1.11	18.32	-1.71	-0.07	0.00
		11	0.93	-1.82	11.63	2.21	0.96	0.00
		12	1.56	0.12	12.42	-0.31	2.01	0.00
		13	-0.90	-0.60	8.37	0.65	-1.49	0.00
		14	1.55	-0.75	10.24	0.85	2.00	0.00
		15	-0.89	0.26	10.55	-0.51	-1.49	0.00
		16	0.70	1.18	14.30	-1.72	0.79	0.00
		17	-0.04	-1.66	6.48	2.07	-0.28	0.00
		18	-0.03	1.22	13.74	-1.78	-0.25	0.00
		19	0.69	-1.71	7.04	2.13	0.77	0.00
2-G	1	1	0.57	0.10	8.37	-0.12	0.45	0.00
		2	0.59	0.09	8.59	-0.11	0.46	0.00
		3	0.96	0.10	9.62	-0.13	0.76	0.00
		4	1.84	0.60	9.73	-0.70	2.22	0.00
		5	-0.58	-0.41	6.19	0.48	-1.22	0.00
		6	1.84	-0.62	7.99	0.73	2.21	0.00
		7	-0.57	0.80	7.94	-0.95	-1.21	0.00
		8	1.00	2.08	11.13	-2.46	1.02	0.00
		9	0.27	-1.90	4.79	2.24	-0.02	0.00
		10	0.27	2.14	10.59	-2.53	-0.01	0.00
		11	0.99	-1.96	5.33	2.31	1.01	0.00
		12	1.57	0.57	7.15	-0.67	2.00	0.00
		13	-0.84	-0.44	3.62	0.52	-1.43	0.00
		14	1.57	-0.64	5.41	0.76	2.00	0.00
		15	-0.84	0.77	5.36	-0.91	-1.43	0.00
		16	0.73	2.05	8.55	-2.43	0.81	0.00
		17	0.00	-1.92	2.21	2.27	-0.23	0.00
		18	0.01	2.11	8.02	-2.50	-0.22	0.00
		19	0.72	-1.99	2.75	2.34	0.80	0.00
3-G	1	1	0.61	0.72	16.77	-0.68	0.48	0.00
		2	0.63	0.68	17.16	-0.64	0.50	0.00
		3	1.04	0.96	19.00	-0.88	0.82	0.00
		4	2.23	1.63	15.91	-1.91	2.81	0.00
		5	-0.86	-0.19	15.81	0.56	-1.74	0.00
		6	2.23	-0.54	18.84	1.06	2.81	0.00
		7	-0.86	1.99	12.88	-2.41	-1.74	0.00
		8	1.15	4.29	11.44	-5.55	1.22	0.00
		9	0.22	-2.85	20.28	4.20	-0.15	0.00
		10	0.22	4.40	10.53	-5.70	-0.15	0.00
		11	1.14	-2.96	21.19	4.35	1.22	0.00
		12	1.94	1.37	10.83	-1.67	2.58	0.00
		13	-1.15	-0.45	10.73	0.80	-1.97	0.00
		14	1.94	-0.80	13.76	1.29	2.58	0.00
		15	-1.15	1.73	7.80	-2.17	-1.97	0.00
		16	0.86	4.03	6.36	-5.31	0.99	0.00
		17	-0.07	-3.11	15.20	4.44	-0.38	0.00
		18	-0.07	4.14	5.45	-5.46	-0.37	0.00
		19	0.85	-3.22	16.11	4.59	0.99	0.00
4-G	1	1	0.57	-0.52	12.95	0.38	0.45	0.00
		2	0.54	-0.50	12.77	0.37	0.43	0.00
		3	0.75	-0.72	13.90	0.54	0.59	0.00
		4	1.73	-0.22	12.63	-0.05	2.10	0.00
		5	-0.59	-0.85	11.37	0.84	-1.20	0.00
		6	1.73	-0.97	13.63	1.02	2.10	0.00
		7	-0.60	-0.09	10.37	-0.23	-1.20	0.00
		8	0.91	0.72	10.68	-1.36	0.94	0.00
		9	0.22	-1.78	13.33	2.15	-0.04	0.00
		10	0.21	0.75	10.00	-1.41	-0.05	0.00
		11	0.92	-1.82	14.00	2.20	0.95	0.00
		12	1.52	-0.02	8.96	-0.20	1.94	0.00
		13	-0.80	-0.65	7.70	0.69	-1.36	0.00

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Engineer: Cristian Pinzón Chivatá
Project: Untitled
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Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		14	1.53	-0.78	9.96	0.87	1.94	0.00
		15	-0.80	0.11	6.70	-0.38	-1.36	0.00
		16	0.71	0.91	7.00	-1.51	0.78	0.00
		17	0.02	-1.58	9.65	2.00	-0.20	0.00
		18	0.01	0.95	6.32	-1.56	-0.21	0.00
		19	0.72	-1.62	10.33	2.05	0.79	0.00
1-F	1	1	-0.34	-0.44	19.52	0.32	-0.29	0.00
		2	-0.36	-0.40	19.47	0.30	-0.31	0.00
		3	-0.60	-0.47	20.96	0.34	-0.51	0.00
		4	1.32	0.00	20.64	-0.25	1.81	0.00
		5	-2.09	-0.81	15.55	0.84	-2.47	0.00
		6	1.31	-0.86	18.42	0.91	1.80	0.00
		7	-2.09	0.05	17.77	-0.32	-2.46	0.00
		8	0.13	1.03	22.23	-1.63	0.33	0.00
		9	-0.91	-1.84	13.96	2.22	-0.99	0.00
		10	-0.89	1.05	21.37	-1.65	-0.96	0.00
		11	0.11	-1.86	14.82	2.24	0.30	0.00
		12	1.48	0.13	15.09	-0.34	1.95	0.00
		13	-1.92	-0.69	10.00	0.75	-2.33	0.00
		14	1.48	-0.74	12.87	0.82	1.94	0.00
		15	-1.92	0.18	12.22	-0.41	-2.32	0.00
		16	0.30	1.16	16.68	-1.72	0.47	0.00
		17	-0.74	-1.72	8.41	2.13	-0.84	0.00
		18	-0.72	1.17	15.82	-1.74	-0.81	0.00
		19	0.28	-1.73	9.27	2.15	0.44	0.00
2-F	1	1	-0.36	0.10	10.92	-0.12	-0.30	0.00
		2	-0.38	0.10	11.96	-0.11	-0.32	0.00
		3	-0.64	0.08	12.91	-0.10	-0.53	0.00
		4	1.27	0.65	12.83	-0.77	1.76	0.00
		5	-2.09	-0.48	8.20	0.57	-2.45	0.00
		6	1.27	-0.57	11.11	0.67	1.76	0.00
		7	-2.09	0.73	9.92	-0.87	-2.44	0.00
		8	0.10	2.10	13.81	-2.49	0.29	0.00
		9	-0.91	-1.93	7.21	2.29	-0.98	0.00
		10	-0.91	2.13	12.94	-2.52	-0.97	0.00
		11	0.10	-1.96	8.09	2.32	0.28	0.00
		12	1.45	0.63	9.34	-0.75	1.91	0.00
		13	-1.91	-0.50	4.70	0.60	-2.30	0.00
		14	1.45	-0.59	7.62	0.69	1.91	0.00
		15	-1.91	0.71	6.42	-0.84	-2.29	0.00
		16	0.27	2.08	10.32	-2.46	0.44	0.00
		17	-0.73	-1.95	3.72	2.31	-0.83	0.00
		18	-0.73	2.11	9.45	-2.49	-0.82	0.00
		19	0.28	-1.98	4.59	2.34	0.43	0.00
3-F	1	1	-0.36	1.01	24.56	-0.90	-0.31	0.00
		2	-0.42	0.98	27.05	-0.87	-0.35	0.00
		3	-0.69	1.46	28.77	-1.27	-0.58	0.00
		4	1.74	2.07	24.35	-2.32	2.42	0.00
		5	-2.59	0.03	22.80	0.47	-3.15	0.00
		6	1.73	-0.12	27.27	0.67	2.42	0.00
		7	-2.59	2.21	19.88	-2.52	-3.15	0.00
		8	0.22	4.67	19.38	-5.88	0.48	0.00
		9	-1.08	-2.57	27.77	4.03	-1.20	0.00
		10	-1.07	4.71	18.04	-5.94	-1.19	0.00
		11	0.22	-2.62	29.11	4.09	0.47	0.00
		12	1.93	1.67	16.57	-1.98	2.59	0.00
		13	-2.40	-0.37	15.02	0.82	-2.98	0.00
		14	1.93	-0.52	19.48	1.02	2.59	0.00
		15	-2.40	1.81	12.10	-2.17	-2.98	0.00
		16	0.42	4.27	11.60	-5.53	0.64	0.00
		17	-0.89	-2.97	19.98	4.38	-1.04	0.00
		18	-0.88	4.31	10.26	-5.59	-1.03	0.00
		19	0.41	-3.02	21.32	4.44	0.63	0.00
4-F	1	1	-0.33	-0.76	19.49	0.58	-0.28	0.00
		2	-0.33	-0.75	19.68	0.58	-0.28	0.00
		3	-0.48	-1.18	21.19	0.92	-0.40	0.00
		4	1.25	-0.46	19.05	0.13	1.72	0.00
		5	-1.94	-1.17	17.25	1.13	-2.30	0.00
		6	1.25	-1.22	20.03	1.20	1.73	0.00
		7	-1.95	-0.41	16.28	0.06	-2.30	0.00
		8	0.13	0.43	16.94	-1.15	0.31	0.00
		9	-0.82	-2.07	19.36	2.40	-0.88	0.00
		10	-0.83	0.45	16.11	-1.17	-0.90	0.00
		11	0.14	-2.08	20.19	2.42	0.32	0.00

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Engineer: Cristian Pinzón Chivatá
Project: Untitled
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Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		12	1.38	-0.14	13.43	-0.12	1.83	0.00
		13	-1.81	-0.84	11.63	0.88	-2.19	0.00
		14	1.39	-0.89	14.40	0.95	1.84	0.00
		15	-1.82	-0.09	10.65	-0.20	-2.19	0.00
		16	0.26	0.76	11.32	-1.40	0.42	0.00
		17	-0.69	-1.74	13.73	2.15	-0.77	0.00
		18	-0.70	0.77	10.49	-1.42	-0.79	0.00
		19	0.27	-1.76	14.57	2.17	0.43	0.00
1-E	1	1	0.07	0.07	9.56	-0.09	0.04	0.00
		2	0.07	0.06	9.11	-0.08	0.04	0.00
		3	0.09	0.08	9.05	-0.10	0.05	0.00
		4	1.81	0.50	8.55	-0.66	2.20	0.00
		5	-1.67	-0.38	8.41	0.50	-2.12	0.00
		6	1.81	-0.38	6.32	0.51	2.20	0.00
		7	-1.67	0.51	10.64	-0.67	-2.11	0.00
		8	0.60	1.54	11.89	-2.04	0.70	0.00
		9	-0.45	-1.41	5.07	1.87	-0.61	0.00
		10	-0.45	1.54	12.52	-2.04	-0.60	0.00
		11	0.59	-1.41	4.44	1.88	0.68	0.00
		12	1.79	0.48	6.22	-0.64	2.19	0.00
		13	-1.69	-0.40	6.07	0.53	-2.13	0.00
		14	1.78	-0.40	3.98	0.54	2.18	0.00
		15	-1.69	0.49	8.31	-0.65	-2.13	0.00
		16	0.57	1.52	9.55	-2.01	0.69	0.00
		17	-0.48	-1.43	2.74	1.90	-0.63	0.00
		18	-0.47	1.52	10.18	-2.01	-0.61	0.00
		19	0.56	-1.43	2.11	1.90	0.67	0.00
2-E	1	1	0.15	0.03	9.73	-0.06	0.11	0.00
		2	0.15	0.04	11.10	-0.06	0.11	0.00
		3	0.21	0.04	10.60	-0.07	0.15	0.00
		4	1.87	0.59	7.92	-0.73	2.24	0.00
		5	-1.56	-0.52	10.29	0.62	-2.01	0.00
		6	1.87	-0.57	7.54	0.66	2.24	0.00
		7	-1.56	0.63	10.67	-0.77	-2.01	0.00
		8	0.67	1.95	9.33	-2.37	0.75	0.00
		9	-0.36	-1.88	8.88	2.26	-0.53	0.00
		10	-0.36	1.97	10.15	-2.38	-0.52	0.00
		11	0.67	-1.90	8.06	2.27	0.75	0.00
		12	1.81	0.58	5.07	-0.71	2.20	0.00
		13	-1.61	-0.53	7.43	0.64	-2.05	0.00
		14	1.81	-0.58	4.69	0.68	2.20	0.00
		15	-1.61	0.62	7.81	-0.76	-2.05	0.00
		16	0.61	1.94	6.48	-2.35	0.71	0.00
		17	-0.41	-1.90	6.03	2.27	-0.57	0.00
		18	-0.42	1.95	7.30	-2.36	-0.56	0.00
		19	0.61	-1.91	5.21	2.29	0.71	0.00
3-E	1	1	-0.13	0.26	9.41	-0.25	-0.12	0.00
		2	-0.09	0.22	10.73	-0.21	-0.09	0.00
		3	-0.13	0.26	9.80	-0.24	-0.12	0.00
		4	1.37	0.82	5.71	-0.92	1.83	0.00
		5	-1.60	-0.35	11.64	0.48	-2.04	0.00
		6	1.37	-0.26	7.50	0.41	1.83	0.00
		7	-1.60	0.73	9.85	-0.85	-2.04	0.00
		8	0.33	2.05	5.07	-2.45	0.48	0.00
		9	-0.57	-1.57	12.27	2.00	-0.69	0.00
		10	-0.56	2.02	6.31	-2.43	-0.68	0.00
		11	0.33	-1.55	11.03	1.98	0.47	0.00
		12	1.40	0.75	3.09	-0.86	1.86	0.00
		13	-1.57	-0.41	9.01	0.54	-2.01	0.00
		14	1.40	-0.33	4.88	0.47	1.86	0.00
		15	-1.57	0.66	7.22	-0.79	-2.01	0.00
		16	0.37	1.98	2.45	-2.38	0.51	0.00
		17	-0.53	-1.64	9.65	2.07	-0.66	0.00
		18	-0.53	1.95	3.69	-2.36	-0.65	0.00
		19	0.36	-1.61	8.41	2.05	0.50	0.00
4-E	1	1	0.03	-0.18	10.06	0.12	0.02	0.00
		2	0.02	-0.14	9.76	0.08	0.01	0.00
		3	0.03	-0.16	9.62	0.09	0.01	0.00
		4	1.73	0.18	8.83	-0.40	2.10	0.00
		5	-1.68	-0.49	9.08	0.59	-2.07	0.00
		6	1.74	-0.56	9.73	0.65	2.11	0.00
		7	-1.69	0.25	8.19	-0.46	-2.08	0.00
		8	0.52	1.06	7.57	-1.64	0.62	0.00
		9	-0.47	-1.37	10.35	1.84	-0.60	0.00

Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		10	-0.50	1.08	7.38	-1.66	-0.63	0.00
		11	0.55	-1.39	10.54	1.86	0.66	0.00
		12	1.72	0.21	6.34	-0.42	2.10	0.00
		13	-1.69	-0.45	6.59	0.57	-2.08	0.00
		14	1.73	-0.52	7.23	0.63	2.11	0.00
		15	-1.69	0.28	5.70	-0.48	-2.09	0.00
		16	0.51	1.09	5.08	-1.67	0.62	0.00
		17	-0.48	-1.33	7.86	1.82	-0.60	0.00
		18	-0.51	1.12	4.89	-1.69	-0.63	0.00
		19	0.54	-1.35	8.05	1.83	0.65	0.00
3''-E1	1	1	-0.02	0.06	13.83	-0.08	-0.03	0.00
		2	0.00	0.05	15.85	-0.06	-0.01	0.00
		3	0.00	0.05	15.29	-0.08	-0.02	0.00
		4	1.61	0.40	14.50	-0.59	2.02	0.00
		5	-1.64	-0.30	11.53	0.45	-2.06	0.00
		6	1.59	-0.27	13.97	0.41	2.01	0.00
		7	-1.62	0.36	12.06	-0.55	-2.05	0.00
		8	0.50	1.16	14.27	-1.74	0.61	0.00
		9	-0.52	-1.06	11.76	1.60	-0.65	0.00
		10	-0.47	1.15	13.54	-1.72	-0.61	0.00
		11	0.44	-1.05	12.50	1.59	0.57	0.00
		12	1.61	0.38	10.38	-0.57	2.03	0.00
		13	-1.64	-0.31	7.40	0.47	-2.06	0.00
		14	1.59	-0.28	9.85	0.43	2.01	0.00
		15	-1.62	0.35	7.93	-0.53	-2.05	0.00
		16	0.50	1.15	10.14	-1.72	0.62	0.00
		17	-0.53	-1.07	7.64	1.62	-0.65	0.00
		18	-0.47	1.14	9.41	-1.70	-0.61	0.00
		19	0.44	-1.06	8.37	1.61	0.57	0.00
4:E1a	1	1	-0.09	0.01	8.66	-0.04	-0.08	0.00
		2	-0.08	0.01	8.46	-0.04	-0.07	0.00
		3	-0.10	0.02	8.66	-0.04	-0.10	0.00
		4	1.72	0.27	8.80	-0.49	2.09	0.00
		5	-1.88	-0.25	6.86	0.41	-2.24	0.00
		6	1.71	-0.23	9.33	0.38	2.08	0.00
		7	-1.87	0.25	6.32	-0.45	-2.23	0.00
		8	0.47	0.85	7.31	-1.48	0.58	0.00
		9	-0.64	-0.83	8.35	1.41	-0.73	0.00
		10	-0.60	0.85	6.57	-1.47	-0.71	0.00
		11	0.44	-0.82	9.09	1.40	0.56	0.00
		12	1.74	0.27	6.54	-0.48	2.11	0.00
		13	-1.85	-0.25	4.59	0.42	-2.21	0.00
		14	1.73	-0.23	7.07	0.39	2.11	0.00
		15	-1.84	0.25	4.06	-0.44	-2.21	0.00
		16	0.50	0.85	5.05	-1.47	0.61	0.00
		17	-0.61	-0.83	6.08	1.42	-0.71	0.00
		18	-0.58	0.84	4.30	-1.46	-0.69	0.00
		19	0.47	-0.83	6.83	1.41	0.59	0.00
1-E2	1	1	-0.08	0.01	9.71	-0.04	-0.08	0.00
		2	-0.07	0.01	9.31	-0.03	-0.07	0.00
		3	-0.12	0.01	9.34	-0.04	-0.12	0.00
		4	1.62	0.24	9.30	-0.46	2.04	0.00
		5	-1.79	-0.22	8.02	0.40	-2.21	0.00
		6	1.61	-0.20	9.18	0.35	2.04	0.00
		7	-1.78	0.22	8.14	-0.42	-2.20	0.00
		8	0.44	0.74	9.04	-1.40	0.57	0.00
		9	-0.61	-0.72	8.28	1.33	-0.74	0.00
		10	-0.58	0.74	8.70	-1.38	-0.70	0.00
		11	0.41	-0.72	8.62	1.31	0.54	0.00
		12	1.65	0.24	6.88	-0.45	2.08	0.00
		13	-1.75	-0.22	5.60	0.41	-2.18	0.00
		14	1.64	-0.20	6.76	0.36	2.07	0.00
		15	-1.75	0.21	5.73	-0.41	-2.17	0.00
		16	0.47	0.74	6.62	-1.39	0.60	0.00
		17	-0.57	-0.73	5.86	1.34	-0.70	0.00
		18	-0.55	0.73	6.28	-1.37	-0.67	0.00
		19	0.44	-0.72	6.21	1.33	0.57	0.00
2-E2	1	1	-0.11	0.01	12.11	-0.04	-0.10	0.00
		2	-0.11	0.01	14.23	-0.03	-0.10	0.00
		3	-0.17	0.01	13.57	-0.04	-0.16	0.00
		4	1.55	0.24	12.02	-0.47	1.99	0.00
		5	-1.79	-0.22	10.91	0.40	-2.20	0.00
		6	1.55	-0.20	12.04	0.35	1.98	0.00
		7	-1.79	0.22	10.89	-0.42	-2.20	0.00

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Untitled
01:48:58 p. m. 20/10/2025

Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		8	0.39	0.75	11.61	-1.40	0.53	0.00
		9	-0.62	-0.72	11.32	1.33	-0.74	0.00
		10	-0.62	0.74	11.27	-1.39	-0.73	0.00
		11	0.38	-0.72	11.66	1.32	0.51	0.00
		12	1.60	0.24	8.34	-0.46	2.03	0.00
		13	-1.74	-0.22	7.23	0.41	-2.16	0.00
		14	1.60	-0.20	8.36	0.36	2.03	0.00
		15	-1.74	0.22	7.21	-0.41	-2.16	0.00
		16	0.43	0.74	7.93	-1.39	0.57	0.00
		17	-0.58	-0.73	7.64	1.34	-0.70	0.00
		18	-0.57	0.74	7.59	-1.38	-0.69	0.00
		19	0.43	-0.72	7.98	1.33	0.56	0.00
4:E1b	1	1	0.00	0.01	7.33	-0.04	0.00	0.00
		2	0.00	0.01	7.18	-0.03	0.00	0.00
		3	-0.01	0.01	7.45	-0.04	-0.02	0.00
		4	1.81	0.27	6.02	-0.49	2.17	0.00
		5	-1.82	-0.25	7.31	0.42	-2.18	0.00
		6	1.83	-0.22	6.52	0.36	2.18	0.00
		7	-1.84	0.24	6.81	-0.43	-2.20	0.00
		8	0.51	0.83	5.72	-1.47	0.61	0.00
		9	-0.51	-0.81	7.61	1.40	-0.63	0.00
		10	-0.58	0.82	5.96	-1.45	-0.70	0.00
		11	0.58	-0.80	7.38	1.38	0.68	0.00
		12	1.82	0.27	4.07	-0.48	2.17	0.00
		13	-1.81	-0.25	5.36	0.43	-2.18	0.00
		14	1.84	-0.22	4.57	0.37	2.19	0.00
		15	-1.83	0.24	4.86	-0.42	-2.20	0.00
		16	0.52	0.83	3.77	-1.46	0.62	0.00
		17	-0.51	-0.81	5.66	1.41	-0.62	0.00
		18	-0.58	0.82	4.00	-1.44	-0.69	0.00
		19	0.59	-0.80	5.42	1.39	0.69	0.00
3''-E3	1	1	-0.12	0.05	12.17	-0.07	-0.10	0.00
		2	-0.12	0.04	13.95	-0.06	-0.11	0.00
		3	-0.17	0.05	13.81	-0.07	-0.15	0.00
		4	1.56	0.39	11.54	-0.60	1.98	0.00
		5	-1.80	-0.31	11.58	0.48	-2.20	0.00
		6	1.59	-0.27	11.24	0.40	2.01	0.00
		7	-1.84	0.35	11.88	-0.52	-2.22	0.00
		8	0.33	1.15	12.02	-1.73	0.48	0.00
		9	-0.58	-1.07	11.11	1.61	-0.69	0.00
		10	-0.68	1.14	12.12	-1.71	-0.78	0.00
		11	0.44	-1.05	11.01	1.59	0.57	0.00
		12	1.61	0.38	7.81	-0.58	2.02	0.00
		13	-1.76	-0.32	7.84	0.49	-2.16	0.00
		14	1.64	-0.28	7.50	0.42	2.05	0.00
		15	-1.79	0.34	8.15	-0.50	-2.18	0.00
		16	0.38	1.14	8.28	-1.72	0.52	0.00
		17	-0.53	-1.08	7.37	1.63	-0.65	0.00
		18	-0.64	1.13	8.38	-1.69	-0.74	0.00
		19	0.49	-1.07	7.27	1.61	0.61	0.00
1-B	1	1	-0.04	-0.24	13.78	0.17	-0.05	0.00
		2	-0.02	-0.22	13.57	0.15	-0.03	0.00
		3	0.01	-0.26	14.56	0.18	-0.02	0.00
		4	1.81	0.27	15.05	-0.50	2.20	0.00
		5	-1.85	-0.71	10.34	0.81	-2.27	0.00
		6	1.79	-0.62	12.76	0.68	2.19	0.00
		7	-1.84	0.18	12.63	-0.37	-2.26	0.00
		8	0.54	1.28	16.88	-1.84	0.66	0.00
		9	-0.59	-1.72	8.51	2.15	-0.73	0.00
		10	-0.55	1.25	16.16	-1.80	-0.68	0.00
		11	0.50	-1.70	9.24	2.11	0.61	0.00
		12	1.80	0.34	11.21	-0.55	2.21	0.00
		13	-1.86	-0.64	6.50	0.76	-2.27	0.00
		14	1.79	-0.55	8.92	0.64	2.19	0.00
		15	-1.85	0.25	8.80	-0.42	-2.26	0.00
		16	0.54	1.35	13.04	-1.89	0.66	0.00
		17	-0.60	-1.66	4.67	2.10	-0.72	0.00
		18	-0.55	1.32	12.32	-1.85	-0.68	0.00
		19	0.50	-1.63	5.40	2.06	0.61	0.00
2-B	1	1	-0.04	0.09	10.79	-0.10	-0.04	0.00
		2	-0.01	0.08	11.95	-0.09	-0.02	0.00
		3	0.02	0.09	12.71	-0.10	0.00	0.00
		4	1.79	0.72	11.31	-0.87	2.17	0.00
		5	-1.81	-0.57	9.46	0.69	-2.22	0.00

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Untitled
01:48:58 p. m. 20/10/2025

Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		6	1.78	-0.41	11.86	0.51	2.17	0.00
		7	-1.81	0.56	8.90	-0.68	-2.22	0.00
		8	0.53	1.98	9.82	-2.41	0.64	0.00
		9	-0.56	-1.83	10.94	2.23	-0.69	0.00
		10	-0.55	1.93	9.10	-2.35	-0.68	0.00
		11	0.52	-1.78	11.66	2.18	0.63	0.00
		12	1.78	0.70	7.86	-0.84	2.17	0.00
		13	-1.82	-0.59	6.01	0.72	-2.22	0.00
		14	1.77	-0.43	8.41	0.53	2.17	0.00
		15	-1.82	0.54	5.46	-0.66	-2.22	0.00
		16	0.52	1.96	6.38	-2.38	0.64	0.00
		17	-0.57	-1.85	7.50	2.26	-0.69	0.00
		18	-0.56	1.91	5.66	-2.33	-0.68	0.00
		19	0.51	-1.80	8.22	2.20	0.63	0.00
3'-B	1	1	0.18	0.10	10.07	-0.11	0.14	0.00
		2	0.17	0.09	10.46	-0.10	0.13	0.00
		3	0.24	0.11	10.78	-0.12	0.18	0.00
		4	1.70	0.63	10.45	-0.79	2.10	0.00
		5	-1.34	-0.43	8.23	0.58	-1.82	0.00
		6	1.71	-0.46	10.92	0.55	2.10	0.00
		7	-1.34	0.65	7.76	-0.75	-1.82	0.00
		8	0.63	1.90	8.97	-2.34	0.72	0.00
		9	-0.27	-1.71	9.71	2.13	-0.45	0.00
		10	-0.28	1.91	8.16	-2.33	-0.45	0.00
		11	0.65	-1.71	10.52	2.12	0.73	0.00
		12	1.64	0.60	7.59	-0.76	2.05	0.00
		13	-1.40	-0.46	5.36	0.62	-1.87	0.00
		14	1.64	-0.49	8.05	0.58	2.05	0.00
		15	-1.41	0.62	4.90	-0.72	-1.87	0.00
		16	0.57	1.87	6.10	-2.31	0.67	0.00
		17	-0.33	-1.74	6.85	2.17	-0.49	0.00
		18	-0.34	1.88	5.29	-2.30	-0.50	0.00
		19	0.58	-1.74	7.66	2.15	0.68	0.00
4-B	1	1	0.08	0.02	11.23	-0.04	0.06	0.00
		2	0.06	0.02	10.93	-0.04	0.04	0.00
		3	0.06	0.01	11.07	-0.04	0.03	0.00
		4	1.85	0.47	8.81	-0.67	2.19	0.00
		5	-1.72	-0.44	11.39	0.59	-2.11	0.00
		6	1.85	-0.31	9.97	0.43	2.20	0.00
		7	-1.72	0.34	10.23	-0.50	-2.11	0.00
		8	0.59	1.34	7.96	-1.88	0.68	0.00
		9	-0.47	-1.30	12.25	1.81	-0.60	0.00
		10	-0.48	1.30	8.38	-1.83	-0.61	0.00
		11	0.60	-1.26	11.82	1.76	0.70	0.00
		12	1.83	0.47	5.93	-0.66	2.19	0.00
		13	-1.73	-0.45	8.51	0.60	-2.11	0.00
		14	1.83	-0.31	7.09	0.44	2.19	0.00
		15	-1.73	0.34	7.35	-0.49	-2.12	0.00
		16	0.58	1.33	5.07	-1.87	0.68	0.00
		17	-0.48	-1.31	9.36	1.82	-0.60	0.00
		18	-0.49	1.29	5.50	-1.83	-0.62	0.00
		19	0.59	-1.27	8.94	1.77	0.69	0.00
1-A	1	1	-0.14	-0.19	10.56	0.13	-0.12	0.00
		2	-0.15	-0.18	10.27	0.13	-0.13	0.00
		3	-0.25	-0.23	11.25	0.16	-0.23	0.00
		4	1.33	0.34	7.93	-0.57	1.81	0.00
		5	-1.64	-0.71	11.58	0.83	-2.10	0.00
		6	1.32	-0.56	5.57	0.62	1.80	0.00
		7	-1.64	0.18	13.94	-0.36	-2.09	0.00
		8	0.29	1.33	12.79	-1.89	0.45	0.00
		9	-0.61	-1.71	6.72	2.14	-0.74	0.00
		10	-0.60	1.29	14.59	-1.82	-0.72	0.00
		11	0.28	-1.66	4.92	2.08	0.43	0.00
		12	1.40	0.40	4.97	-0.61	1.88	0.00
		13	-1.57	-0.65	8.61	0.78	-2.03	0.00
		14	1.39	-0.49	2.61	0.58	1.87	0.00
		15	-1.57	0.25	10.97	-0.41	-2.03	0.00
		16	0.36	1.40	9.82	-1.93	0.52	0.00
		17	-0.54	-1.65	3.76	2.10	-0.68	0.00
		18	-0.52	1.35	11.63	-1.87	-0.65	0.00
		19	0.35	-1.60	1.95	2.04	0.49	0.00
2-A	1	1	-0.17	0.08	7.38	-0.09	-0.15	0.00
		2	-0.20	0.07	7.42	-0.08	-0.17	0.00
		3	-0.33	0.08	8.36	-0.09	-0.29	0.00

Company: Cristian Pinzón Chivatá
Engineer: Cristian Pinzón Chivatá
Project: Untitled
01:48:58 p. m. 20/10/2025

Axis	Floor	LdComb	Fx	Fy	Fz	Mx	My	Mz
		4	1.25	0.73	3.51	-0.89	1.74	0.00
		5	-1.67	-0.59	10.45	0.73	-2.10	0.00
		6	1.25	-0.41	4.04	0.50	1.74	0.00
		7	-1.66	0.55	9.92	-0.65	-2.10	0.00
		8	0.24	2.00	5.13	-2.42	0.40	0.00
		9	-0.65	-1.86	8.83	2.26	-0.76	0.00
		10	-0.64	1.94	7.06	-2.35	-0.75	0.00
		11	0.23	-1.80	6.90	2.19	0.39	0.00
		12	1.35	0.71	1.27	-0.86	1.82	0.00
		13	-1.57	-0.62	8.22	0.75	-2.02	0.00
		14	1.34	-0.43	1.80	0.52	1.82	0.00
		15	-1.57	0.52	7.69	-0.63	-2.01	0.00
		16	0.33	1.98	2.90	-2.40	0.48	0.00
		17	-0.55	-1.88	6.59	2.29	-0.68	0.00
		18	-0.54	1.92	4.83	-2.33	-0.67	0.00
		19	0.32	-1.82	4.67	2.22	0.47	0.00
3'-A	1	1	-0.22	0.14	10.36	-0.14	-0.19	0.00
		2	-0.21	0.12	9.97	-0.12	-0.18	0.00
		3	-0.32	0.12	10.40	-0.12	-0.28	0.00
		4	1.26	0.74	5.30	-0.89	1.74	0.00
		5	-1.72	-0.50	13.44	0.65	-2.13	0.00
		6	1.26	-0.32	6.12	0.43	1.74	0.00
		7	-1.72	0.56	12.62	-0.67	-2.13	0.00
		8	0.22	1.91	6.91	-2.35	0.39	0.00
		9	-0.67	-1.67	11.83	2.12	-0.77	0.00
		10	-0.67	1.86	9.10	-2.29	-0.78	0.00
		11	0.22	-1.62	9.64	2.05	0.39	0.00
		12	1.35	0.71	2.59	-0.86	1.81	0.00
		13	-1.63	-0.53	10.73	0.68	-2.05	0.00
		14	1.35	-0.35	3.41	0.46	1.81	0.00
		15	-1.63	0.53	9.91	-0.64	-2.05	0.00
		16	0.31	1.88	4.20	-2.32	0.46	0.00
		17	-0.59	-1.70	9.12	2.15	-0.70	0.00
		18	-0.59	1.83	6.39	-2.25	-0.70	0.00
		19	0.31	-1.65	6.93	2.08	0.46	0.00
4-A	1	1	-0.22	-0.15	8.52	0.10	-0.18	0.00
		2	-0.19	-0.13	8.00	0.08	-0.16	0.00
		3	-0.24	-0.13	8.00	0.08	-0.21	0.00
		4	1.19	0.32	3.99	-0.55	1.66	0.00
		5	-1.60	-0.58	11.08	0.72	-2.01	0.00
		6	1.19	-0.45	5.01	0.53	1.67	0.00
		7	-1.60	0.19	10.06	-0.37	-2.01	0.00
		8	0.21	1.17	4.93	-1.75	0.37	0.00
		9	-0.62	-1.43	10.15	1.92	-0.71	0.00
		10	-0.63	1.13	6.75	-1.70	-0.73	0.00
		11	0.22	-1.39	8.32	1.86	0.39	0.00
		12	1.25	0.35	1.93	-0.57	1.72	0.00
		13	-1.53	-0.55	9.02	0.70	-1.95	0.00
		14	1.26	-0.42	2.95	0.51	1.72	0.00
		15	-1.54	0.22	8.01	-0.39	-1.96	0.00
		16	0.27	1.20	2.87	-1.77	0.42	0.00
		17	-0.55	-1.40	8.09	1.90	-0.66	0.00
		18	-0.57	1.16	4.69	-1.72	-0.68	0.00
		19	0.28	-1.36	6.26	1.84	0.44	0.00

LOAD COMBINATIONS

No	Load combination
1	1.4D0 + 1.4DL + 1.4DL
2	1.2D0 + 1.2DL + 1.2DL + .5LL + 1.6RFL
3	1.2D0 + 1.2DL + 1.2DL + 1.6LL + .5RFL
4	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + 1.4EQX + .42EQY
5	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - 1.4EQX - .42EQY
6	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + 1.4EQX - .42EQY
7	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - 1.4EQX + .42EQY
8	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + .42EQX + 1.4EQY
9	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - .42EQX - 1.4EQY
10	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL - .42EQX + 1.4EQY
11	1.2D0 + 1.2DL + 1.2DL + .5LL + .2RFL + .42EQX - 1.4EQY
12	.9D0 + .9DL + .9DL + 1.4EQX + .42EQY
13	.9D0 + .9DL + .9DL - 1.4EQX - .42EQY

No	Load combination
14	.9D0 + .9DL + .9DL + 1.4EQX - .42EQY
15	.9D0 + .9DL + .9DL - 1.4EQX + .42EQY
16	.9D0 + .9DL + .9DL + .42EQX + 1.4EQY
17	.9D0 + .9DL + .9DL - .42EQX - 1.4EQY
18	.9D0 + .9DL + .9DL - .42EQX + 1.4EQY
19	.9D0 + .9DL + .9DL + .42EQX - 1.4EQY

DISEÑO DE ZAPATAS

PROYECTO: CENTRO DE VIDA SENSORIAL- BOJACÁ

ZAPATA TIPO **EJE G-3, F-1**

P = 21.19 Ton FC = 1.50

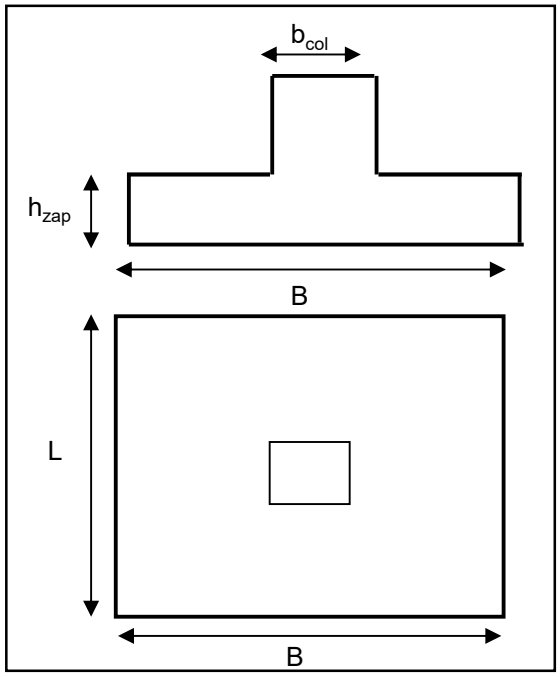
Pu = 31.79 Ton σ_{adm} = 19.692 Ton/m^2

$$A = \frac{21.19}{19.692} = 1.08 \ m^2$$

B = 1.10 m Voladizo 0.65 m

L = 1.10 m Cumple

b_{col}	0.32	m
l_{col}	0.32	m
h_{zap}	0.30	m
f'c	210	kg/cm^2
fy	4200	kg/cm^2



1. Chequeo a cortante (Como viga)

$$\sigma_u = 1.50 * \frac{21.19}{1.1 * 1.1} = 26.27 \ t/m^2$$

Ru = 262.7 * (0.65 - 0.23) = 110.33 kN

$$\upsilon_u = \frac{0.110}{1.00 * 0.23} = 0.480 \ MPa$$

$$\upsilon_c = \frac{0.480}{0.85} = 0.564 \ MPa$$

vc = 0.76 MPa Cumple

2. Chequeo de cortante (Como placa)

bo = 2 * (0.32 + 0.23) + 2 * (0.32 + 0.23) = 2.2 m

$$\nu_u = \frac{0.32}{2.2 * 0.23} = 0.628 \ MPa \qquad \nu_n = \frac{0.628}{0.85} = 0.739 \ MPa$$

$$\nu_c = \frac{\sqrt{21}}{6} * \left(1 + \frac{2}{32 / 32}\right) = 2.29 \ MPa \quad \text{Cumple}$$

$$\nu_c = \frac{\sqrt{21}}{3} = 1.53 \ MPa$$

3. Diseño a Flexion

$$Mu = 26.27 * \frac{0.65^2}{2} = 5.549 \ t\text{-}m$$

ρ = 0.0029

As = 6.61 cm^2/m

Colocar 8 barras 1/2" en cada sentido de la zapata.

DISEÑO DE ZAPATAS

PROYECTO: CENTRO DE VIDA SENORIAL - BOJACÁ

ZAPATA TIPO **EJE F-3**

P = 28.00 Ton FC = 1.50 b_{col} 0.32 m

l_{col} 0.32 m

Pu = 42.00 Ton σ_{adm} = 20.01 Ton/m^2 h_{zap} 0.30 m

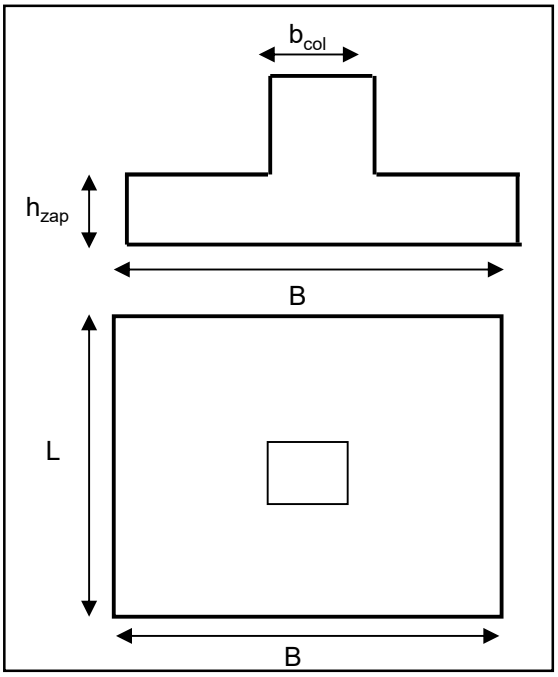
$$A = \frac{28.00}{20.01} = 1.40 \ m^2$$

f'c 210 kg/cm^2

fy 4200 kg/cm^2

B = 1.20 m Voladizo 0.65 m

L = 1.20 m Cumple



1. Chequeo a cortante (Como viga)

$$\sigma_u = 1.50 * \frac{28.00}{1.2 * 1.2} = 29.17 \ t/m^2$$

Ru = 291.7 * (0.65 - 0.23) = 122.50 kN

$$\upsilon_u = \frac{0.123}{1.00 * 0.23} = 0.533 \ MPa$$

$$\upsilon_c = \frac{0.533}{0.85} = 0.627 \ MPa$$

vc = 0.76 MPa Cumple

2. Chequeo de cortante (Como placa)

bo = 2 * (0.32 + 0.23) + 2 * (0.32 + 0.23) = 2.2 m

$$\nu_u = \frac{0.42}{2.2 * 0.23} = 0.830 \ MPa \qquad \nu_n = \frac{0.830}{0.85} = 0.977 \ MPa$$

$$\nu_c = \frac{\sqrt{21}}{6} * \left(1 + \frac{2}{32 / 32}\right) = 2.29 \ MPa$$ Cumple

$$\nu_c = \frac{\sqrt{21}}{3} = 1.53 \ MPa$$

3. Diseño a Flexion

$$Mu = 29.17 * \frac{0.65^2}{2} = 6.161 \ t\text{-}m$$

ρ = 0.0032

As = 7.37 cm^2/m

Colocar 9 barras 1/2" en cada sentido de la zapata.

DISEÑO DE ZAPATAS

PROYECTO: CENTRO DE VIDA SENSORIAL - BOJACÁ

ZAPATA TIPO **EJE G-2, G-4, E-1, E-2, E-3, 4-E, 3"-EL, 1-B**

P = 16.88 Ton

Pu = 25.32 Ton

FC = 1.50

σ_{adm} = 20.98 Ton/m^2

b_{col} 0.32 m

l_{col} 0.32 m

h_{zap} 0.30 m

$$A = \frac{16.88}{20.98} = 0.80 \ m^2$$

f'c 210 kg/cm^2

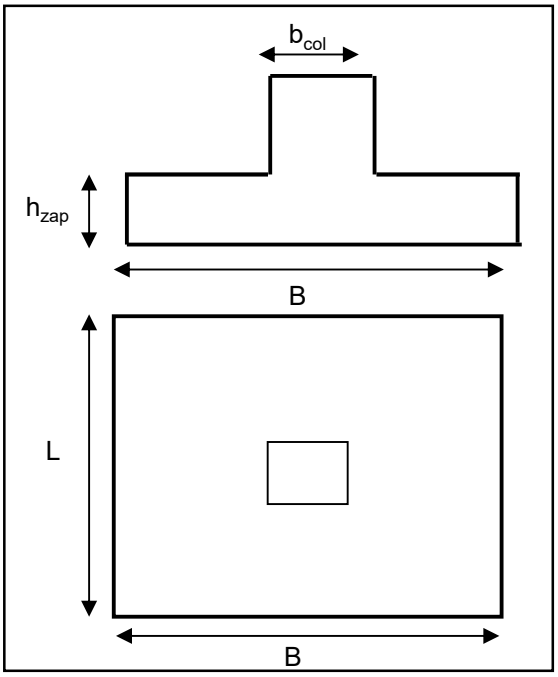
fy 4200 kg/cm^2

B = 1.00 m

L = 1.00 m

Voladizo 0.65 m

Cumple



1. Chequeo a cortante (Como viga)

$$\sigma_u = 1.50 * \frac{16.88}{1 * 1} = 25.32 \ t/m^2$$

Ru = 253.2 * (0.65 - 0.23) = 106.34 kN

$$\upsilon_u = \frac{0.106}{1.00 * 0.23} = 0.462 \ MPa$$

$$\upsilon_c = \frac{0.462}{0.85} = 0.544 \ MPa$$

vc = 0.76 MPa Cumple

2. Chequeo de cortante (Como placa)

bo = 2 * (0.32 + 0.23) + 2 * (0.32 + 0.23) = 2.2 m

$$\nu_u = \frac{0.25}{2.2 * 0.23} = 0.500 \ MPa \qquad \nu_n = \frac{0.500}{0.85} = 0.589 \ MPa$$

$$\nu_c = \frac{\sqrt{21}}{6} * \left(1 + \frac{2}{32 / 32} \right) = 2.29 \ MPa$$ Cumple

$$\nu_c = \frac{\sqrt{21}}{3} = 1.53 \ MPa$$

3. Diseño a Flexion

$$Mu = 25.32 * \frac{0.65^2}{2} = 5.349 \ t - m$$

ρ = 0.0028

As = 6.36 cm^2/m

Colocar 7 barras 1/2" en cada sentido de la zapata.

VIGA DE FUNDACIÓN

PROYECTO: CENTRO DE VIDA SENSORIAL - BOJACÁ

P =	280000	N	Aa:	0.15	
b viga:	320	mm	f'c:	21	Mpa
h viga:	360	mm			
Ag:	115200	mm2			
As min:	1152	mm2	Colocar 6 barras de 1/2" en la viga.		
			As:	1032	mm2

1. Resistencia a compresión:

Compresión	10500	N	
C nominal:	1204777.665	N	Cumple

2. Resistencia a tensión:

Tensión	10500	N	
T nominal:	390096	N	Cumple

3. Refuerzo de cortante:

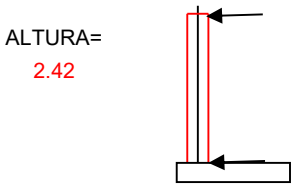
d	274.365	mm	
d/2	137.1825	mm	Usar estribos de 3/8" cada 13 cm

ANEXO 7.
DISEÑO DE ELEMENTOS NO ESTRUCTURALES

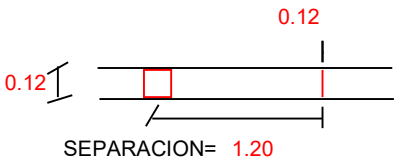
DISEÑO DE ELEMENTOS NO ESTRUCTURALES NSR-10
MAMPOSTERIA - CENTRO DE VIDA SENSORIAL - BOJACA -CUND.
MUROS PISO 1 Y 2 Elaboró: C.P

D.7. Muros de mampostería reforzados construidos con unidades de perforación vertical

CORTE MURO



PLANTA MURO

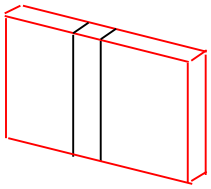


Condicion de apoyo del muro
Muro Altura Total

MATERIAL: Mampostería de ladrillo
DENSIDAD: 1300 Kg/m³

GEOMETRIA DEL MURO

Altura Muro	=	2.42	m
Ancho Muro	=	0.12	m
Ancho columneta	=	0.07	m
Separacion entre columnetas	=	1.20	m
Densidad del muro	=	1300	Kg/m³
Grado de desempeño	=	Superior	Depende del grupo de uso A.9.2-1
Peso Muro :	=	377.52	Kg/ml



Capacidad de disipación de energía del elemento no est y su anclaje	Anclaje	Dúctil	
	Rp =	3.0	A.9.4.9
Coeficiente amplificación dinámica	ap =	1.0	Tabla A.9.5-1
	g =	9.8	m/s2
	Aa =	0.15	
	Grupo de uso	III	
	I =	1.25	

NSR-10 A.9.4-2

$$ax = As + \frac{(Sa - As) * hx}{heq} \longrightarrow hx \leq heq$$

$$ax = Sa * \frac{hx}{heq} \longrightarrow hx \geq heq$$

hx = altura en metros, medida desde la base, del nivel de apoyo del elemento no estructural.
heq = 0.75*hn
hn = altura en metros, medida desde la base, del piso más alto de la edificación

hx	=	2.72	m
hn	=	5.37	m
heq	=	4.03	m
Fa	=	1.50	
As	=	0.281	
Sa	=	0.668	
ax	=	0.542	de diseño

Fuerza sísmica horizontal sobre el elemento no est, aplicada en su centro de masa	Fp	=	(ax*ap)/Rp * g * M		>	(Aa*I)/2 * g * M
			68.26			35.39

1. Diseño a Flexión:

Carga P de diseño :	=	68.26	Kg	
Reacción en anclaje		41.30	Kg* ml	
Separacion entre columnetas	=	1.20	m	
Momento Aplicado	=	49.56	Kg* ml	
Sección Columneta B	=	6.85	cm	
Sección Columneta h	=	7.6	cm	
d	=	5	cm	
K	=	0.034190	T/cm2	
fy	=	4.2	T/cm2	
f'c	=	0.125	T/cm2	
Rho	=	0.011810		
Rho mínimo a flexión :	=	0.002130		
		0.011810	>	0.002130
Entonces As:	=	0.37	cm2	
Varilla Deseada	=	0.71	cm2	= 3/8"
Cantidad de varillas	=	1	Un	
As colocado	=	0.71	cm2	Cumple

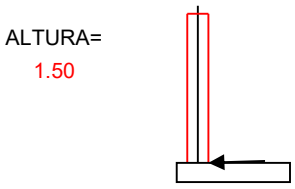
2. Diseño a Cortante:

Reacción R:	=	34.1	Kg/ml
Ancho de la Placa	=	0.25	m
Vd	=	8.5	Kg
vu =Vd/b*d	=	0.27	Kg/cm2
&Vc	=	4.44	Kg/cm2
vu	<	&Vc	NO Requiere refuerzo a cortante

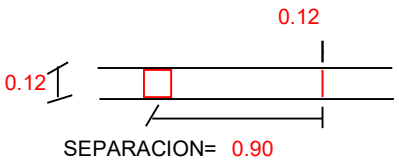
DISEÑO DE ELEMENTOS NO ESTRUCTURALES NSR-10
MAMPOSTERIA - CENTRO DE VIDA SENSORIAL - BOJACA -CUND.
MURO ANTEPECHO CUBIERTA - LADRILLO PRENSADO No. 6 Elaboró: C.P

D.7. Muros de mampostería reforzados construidos con unidades de perforación vertical

CORTE MURO



PLANTA MURO

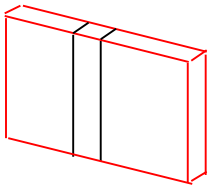


Condicion de apoyo del muro
Voladizo

MATERIAL: Mampostería de ladrillo
DENSIDAD: 1300 Kg/m³

GEOMETRIA DEL MURO

Altura Muro	=	1.50	m
Ancho Muro	=	0.12	m
Ancho columneta	=	0.07	m
Separacion entre columnetas	=	0.90	m
Densidad del muro	=	1300	Kg/m³
Grado de desempeño	=	Superior	Depende del grupo de uso A.9.2-1
Peso Muro :	=	234	Kg/ml



Capacidad de disipación de energía del elemento no est y su anclaje	Anclaje	Dúctil	
	Rp =	3.0	A.9.4.9
Coeficiente amplificación dinámica	ap =	2.5	Tabla A.9.5-1
	g =	9.8	m/s2
	Aa =	0.15	
	Grupo de uso	III	
	I =	1.25	

NSR-10 A.9.4-2

$$ax = As + \frac{(Sa - As) * hx}{heq} \longrightarrow hx \leq heq$$

$$ax = Sa * \frac{hx}{heq} \longrightarrow hx \geq heq$$

hx = altura en metros, medida desde la base, del nivel de apoyo del elemento no estructural.
heq = 0.75*hn
hn = altura en metros, medida desde la base, del piso más alto de la edificación

hx	=	5.37	m
hn	=	5.37	m
heq	=	4.03	m
Fa	=	1.50	
As	=	0.281	
Sa	=	0.668	
ax	=	0.891	de diseño

Fuerza sísmica horizontal sobre el elemento no est, aplicada en su centro de masa	Fp	=	(ax*ap)/Rp * g * M		>	(Aa*I)/2 * g * M
			173.68			21.94

1. Diseño a Flexión:

Carga P de diseño :	=	173.68	Kg	
Reacción en anclaje		65.13	Kg* ml	
Separacion entre columnetas	=	0.90	m	
Momento Aplicado	=	58.62	Kg* ml	
Sección Columneta B	=	6.85	cm	
Sección Columneta h	=	7.6	cm	
d	=	5	cm	
K	=	0.040441	T/cm2	
fy	=	4.2	T/cm2	
f'c	=	0.125	T/cm2	
Rho	=	0.015400		
Rho mínimo a flexión :	=	0.002130		
		0.015400	>	0.002130
Entonces As:	=	0.49	cm2	
Varilla Deseada	=	0.71	cm2	= 3/8''
Cantidad de varillas	=	1	Un	
As colocado	=	0.71	cm2	Cumple

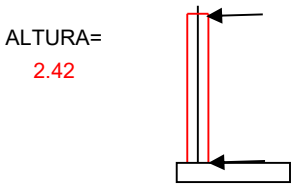
2. Diseño a Cortante:

Reacción R:	=	86.8	Kg/ml
Ancho de la Placa	=	0.25	m
Vd	=	21.7	Kg
vu =Vd/b*d	=	0.69	Kg/cm2
&Vc	=	4.44	Kg/cm2
vu	<	&Vc	NO Requiere refuerzo a cortante

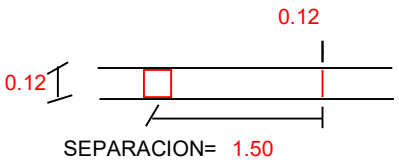
DISEÑO DE ELEMENTOS NO ESTRUCTURALES NSR-10
MAMPOSTERIA - CENTRO DE VIDA SENSORIAL - BOJACA -CUND.
MUROS PISO 1 Y 2 Elaboró: C.P

Muros en bloque No. 5 - Altura total

CORTE MURO



PLANTA MURO

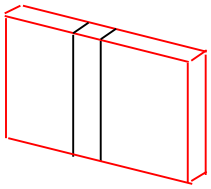


Condicion de apoyo del muro
Muro Altura Total

MATERIAL: Mampostería de ladrillo
DENSIDAD: 1300 Kg/m³

GEOMETRIA DEL MURO

Altura Muro	=	2.42	m
Ancho Muro	=	0.12	m
Ancho columneta	=	0.07	m
Separacion entre columnetas	=	1.50	m
Densidad del muro	=	1300	Kg/m³
Grado de desempeño	=	Superior	Depende del grupo de uso A.9.2-1
Peso Muro :	=	377.52	Kg/ml



Capacidad de disipación de energía del elemento no est y su anclaje	Anclaje	Dúctil	
	Rp =	3.0	A.9.4.9
Coeficiente amplificación dinámica	ap =	1.0	Tabla A.9.5-1
	g =	9.8	m/s2
	Aa =	0.15	
	Grupo de uso	III	
	I =	1.25	

NSR-10 A.9.4-2

$$ax = As + \frac{(Sa - As) * hx}{heq} \longrightarrow hx \leq heq$$

$$ax = Sa * \frac{hx}{heq} \longrightarrow hx \geq heq$$

hx = altura en metros, medida desde la base, del nivel de apoyo del elemento no estructural.
heq = 0.75*hn
hn = altura en metros, medida desde la base, del piso más alto de la edificación

hx	=	2.72	m
hn	=	5.37	m
heq	=	4.03	m
Fa	=	1.50	
As	=	0.281	
Sa	=	0.668	
ax	=	0.542	de diseño

Fuerza sísmica horizontal sobre el elemento no est, aplicada en su centro de masa	Fp	=	(ax*ap)/Rp * g * M		>	(Aa*I)/2 * g * M
			68.26			35.39

1. Diseño a Flexión:

Carga P de diseño :	=	68.26	Kg	
Reacción en anclaje		41.30	Kg* ml	
Separacion entre columnetas	=	1.50	m	
Momento Aplicado	=	61.95	Kg* ml	
Sección Columneta B	=	12	cm	
Sección Columneta h	=	15.0	cm	
d	=	12	cm	
K	=	0.003585	T/cm2	
fy	=	4.2	T/cm2	
f'c	=	0.125	T/cm2	
Rho	=	0.000967		
Rho mínimo a flexión :	=	0.002130		
		0.000967	>	0.002130
Entonces As:	=	0.31	cm2	
Varilla Deseada	=	0.71	cm2	= 3/8"
Cantidad de varillas	=	1	Un	
As colocado	=	0.71	cm2	Cumple

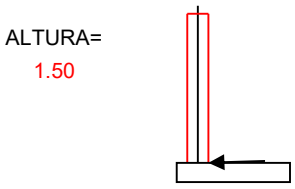
2. Diseño a Cortante:

Reacción R:	=	34.1	Kg/ml	
Ancho de la Placa	=	0.25	m	
Vd	=	8.5	Kg	
vu =Vd/b*d	=	0.06	Kg/cm2	
&Vc	=	4.44	Kg/cm2	
vu	<	&Vc	NO Requiere refuerzo a cortante	

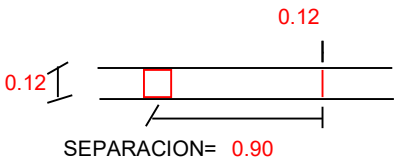
DISEÑO DE ELEMENTOS NO ESTRUCTURALES NSR-10
MAMPOSTERIA - CENTRO DE VIDA SENSORIAL - BOJACA -CUND.
MURO ANTEPECHO CUBIERTA - LADRILLO PRENSADO No. 6 Elaboró: C.P

D.7. Muros de mampostería reforzados construidos con unidades de perforación vertical

CORTE MURO



PLANTA MURO

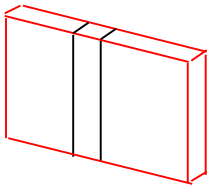


Condicion de apoyo del muro
Voladizo

MATERIAL: Mampostería de ladrillo
DENSIDAD: 1300 Kg/m³

GEOMETRIA DEL MURO

Altura Muro	=	1.50	m
Ancho Muro	=	0.12	m
Ancho columneta	=	0.07	m
Separacion entre columnetas	=	0.90	m
Densidad del muro	=	1300	Kg/m³
Grado de desempeño	=	Superior	Depende del grupo de uso A.9.2-1
Peso Muro :	=	234	Kg/ml



Capacidad de disipación de energía del elemento no est y su anclaje	Anclaje	Dúctil	
	Rp =	3.0	A.9.4.9
Coeficiente amplificación dinámica	ap =	2.5	Tabla A.9.5-1
	g =	9.8	m/s2
	Aa =	0.15	
	Grupo de uso	III	
	I =	1.25	

NSR-10 A.9.4-2

$$ax = As + \frac{(Sa - As) * hx}{heq} \longrightarrow hx \leq heq$$

$$ax = Sa * \frac{hx}{heq} \longrightarrow hx \geq heq$$

hx = altura en metros, medida desde la base, del nivel de apoyo del elemento no estructural.
heq = 0.75*hn
hn = altura en metros, medida desde la base, del piso más alto de la edificación

hx	=	5.37	m
hn	=	5.37	m
heq	=	4.03	m
Fa	=	1.50	
As	=	0.281	
Sa	=	0.668	
ax	=	0.891	de diseño

Fuerza sísmica horizontal sobre el elemento no est, aplicada en su centro de masa	Fp	=	(ax*ap)/Rp * g * M		>	(Aa*I)/2 * g * M
			173.68			21.94

1. Diseño a Flexión:

Carga P de diseño :	=	173.68	Kg	
Reacción en anclaje		65.13	Kg* ml	
Separacion entre columnetas	=	0.90	m	
Momento Aplicado	=	58.62	Kg* ml	
Sección Columneta B	=	12	cm	
Sección Columneta h	=	15.0	cm	
d	=	12	cm	
K	=	0.003392	T/cm2	
fy	=	4.2	T/cm2	
f'c	=	0.125	T/cm2	
Rho	=	0.000914		
Rho mínimo a flexión :	=	0.002130		
		0.000914	>	0.002130
Entonces As:	=	0.31	cm2	
Varilla Deseada	=	0.71	cm2	= 3/8''
Cantidad de varillas	=	1	Un	
As colocado	=	0.71	cm2	Cumple

2. Diseño a Cortante:

Reacción R:	=	86.8	Kg/ml
Ancho de la Placa	=	0.25	m
Vd	=	21.7	Kg
vu =Vd/b*d	=	0.15	Kg/cm2
&Vc	=	4.44	Kg/cm2
vu	<	&Vc	NO Requiere refuerzo a cortante