

**ELABORACIÓN DE LOS DISEÑOS ARQUITECTONICOS Y ESTRUCTURALES PARA
POLIDEPORTIVO EN EL MUNICIPIO DE
SAN SEBASTIAN (CAUCA)**

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**UNIVERSIDAD DEL CAUCA
FACULTAD DE INGENIERIA CIVIL
PROGRAMA DE INGENIERIA CIVIL
POPAYAN
2012**

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INFORME FINAL PARA OPTAR EL TITULO DE: INGENIERO CIVIL

**DIRECTOR:
ING. JULIO CESAR DIAGO, Decano de la Facultad de Ingeniería Civil**



**UNIVERSIDAD DEL CAUCA
FACULTAD DE INGENIERIA CIVIL
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1. INTRODUCCIÓN

Esta modalidad de trabajo de grado, practica social, dentro de la universidad del cauca, y como futuros ingenieros nos ha permitido en esta oportunidad contribuir un poco en mejorar la infraestructura dentro del municipio de SAN SEBASTIAN. Infraestructura que por su carácter de sociales o públicas tienen la oportunidad de brindar una mejora en la calidad de vida de todo aquel que haga buen uso de estas instalaciones.

Dentro de una comunidad este tipo de instalaciones son las que ayudan al desarrollo. Muchas veces estos proyectos no se pueden llevar a cabo por falta de recursos, falta de capacidad intelectual, por la falta de gestión u otros motivos. Con la presentación de este proyecto se pretende descartar uno de estos inconvenientes y hacer más factible la posibilidad de este proyecto.

A sido el motivo y preocupación de nuestro grupo de trabajo el querer ayudar en este proceso de mejoras para este municipio con el fin de entregar un proyecto constructivo formado por un diseño arquitectónico y estructural de una cubierta para un polideportivo y con el cual se pretende brindar un mejor espacio para la realización de actividades propias de dicha localidad.

Se busca mediante este proyecto ampliar y consolidar los conocimientos adquiridos en el transcurso de nuestros estudios de pregrado, esta es una gran oportunidad ya que se darán opiniones y estas se discutirán en torno a la solución de una necesidad, en este caso la cubierta para un polideportivo, que beneficiara a los habitantes y demás personal vinculados al municipio de San Sebastián al sur del cauca.

2. OBJETIVOS

2.1 OBJETIVO GENERAL

Realizar el diseño estructural de la cubierta del polideportivo, ubicada en el barrio Centro del municipio de San Sebastián.

2.2 OBJETIVOS ESPECÍFICOS

- Realizar el levantamiento topográfico o mediciones del lugar donde se va realizar el proyecto.
- Realizar el diseño arquitectónico de la cubierta.
- Elaborar los planos arquitectónicos y estructurales del proyecto.
- Realizar el diseño estructural de los elementos que componen todo el sistema de cubierta.
- Presentar un informe final con, con el cual vamos a sustentar el trabajo que se realizó .durante el desarrollo de este proyecto.
- Complementar conocimientos adquiridos en la institución y conocer aspectos nuevos que quedan por fuera de nuestro pensum académico.

3. JUSTIFICACION

Este trabajo de grado nos brindó la oportunidad de estar más en contacto con la comunidad del municipio de SAN SEBASTIAN, con el diseño de un proyecto que ayudara al esparcimiento y actividades que se realicen en el municipio, dando con este la solución a una de las tantas necesidades que tiene esta comunidad y así dar nuestro aporte o hacer una labor social que en Colombia son muy necesarias.

La realización de este trabajo nos da la posibilidad de enriquecer y poner en práctica nuestros conocimientos adquiridos dentro de la formación Universitaria y con los cuales queremos ser parte de un desarrollo en el cual todos estamos involucrados.

Con este trabajo también queremos dejar plasmada todas las especificaciones constructivas que rigen el diseño y construcción de estructuras metálicas plasmadas en la NSR-10.

4. METODOLOGÍA

Para la realización de este trabajo social se contó con la colaboración del Ingeniero Julio Cesar Diago Franco Decano de la Universidad del Cauca quien desempeño las funciones de Director y supervisor del mismo de una manera personal e interactiva en el desarrollo del proyecto y la realización de los informes.

El procedimiento para el diseño de la estructura de cubierta del polideportivo se rigió por los siguientes parámetros:

1. Análisis de datos
2. Procesamiento de la información
3. Diseño del sistema estructural
4. Entrega de informe final del proyecto junto con las memorias de cálculos y planos del proyecto.

5. DESARROLLO DEL PROYECTO

MEMORIAS DE CÁLCULO

CERCHA SAN SEBASTIAN
SUPPORT ACTIONS

	JOINT #		Horiz F.		Vert F.		Moment	
	=====		=====		=====		=====	
	1		-94		-1890		0	
	2		426		1746		0	
	57		421		-1715		0	
	58		-93		1859		0	
=====								
	MEMBER #:	1	SECTION :	NOT	RECTANGULAR	LENGTH :	1.00	
	End	1	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	823	Min	-12720		Min	-12720	Max
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0
=====								
	MEMBER #:	2	SECTION :	NOT	RECTANGULAR	LENGTH :	1.00	
	End	3	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	407	Min	-7001		Min	-7001	Max
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0
=====								
	MEMBER #:	3	SECTION :	NOT	RECTANGULAR	LENGTH :	1.00	
	End	5	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	84	Min	-2120		Min	-2120	Max
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0
=====								
	MEMBER #:	4	SECTION :	NOT	RECTANGULAR	LENGTH :	1.00	
	End	7	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	2449	Min	-157		Min	-157	Max
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0
=====								
	MEMBER #:	5	SECTION :	NOT	RECTANGULAR	LENGTH :	1.00	
	End	9	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	6127	Min	-334		Min	-334	Max
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0
=====								
	MEMBER #:	6	SECTION :	NOT	RECTANGULAR	LENGTH :	0.76	
	End	11	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max	9429	Min	-464		Min	-464	Max
Mu-	0	0	0	0	0	0	0	0




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Mu+      0      0      0      0      0      0      0      0      0
Vu       0      0      0      0      0      0      0      0      0
=====

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MEMBER #: 7          SECTION :NOT RECTANGULAR LENGTH : 1.21
End 13  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 15
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      3571      Min      -196          Min      -196      Max      3571
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 8          SECTION :NOT RECTANGULAR LENGTH : 1.04
End 15  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 16
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      3203      Min      -65          Min      -65      Max      3203
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 9          SECTION :NOT RECTANGULAR LENGTH : 0.73
End 16  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 18
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      5416      Min      -173         Min      -173      Max      5416
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 10         SECTION :NOT RECTANGULAR LENGTH : 1.69
End 18  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 20
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      548       Min      -745         Min      -745      Max      548
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 11         SECTION :NOT RECTANGULAR LENGTH : 1.69
End 20  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 22
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      180       Min      -4586        Min      -4586      Max      180
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 12         SECTION :NOT RECTANGULAR LENGTH : 1.69
End 22  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 24
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      369       Min      -7644        Min      -7644      Max      369
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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```

MEMBER #: 13         SECTION :NOT RECTANGULAR LENGTH : 1.69
End 24  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 26
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      535       Min      -9433        Min      -9433      Max      535
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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MEMBER #: 14         SECTION :NOT RECTANGULAR LENGTH : 1.69
End 26  Sec.1      Sec.2      Sec.3      Sec.4      Sec.5      Sec.6      Sec.7      End 28
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max      686       Min      -10024       Min      -10024      Max      686
Mu-     0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0
=====

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	MEMBER #:	15	SECTION :NOT RECTANGULAR				LENGTH :	1.72		
	End	28	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 30
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		691	Min	-9914		Min	-9914	Max	691
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	16	SECTION :NOT RECTANGULAR				LENGTH :	1.72		
	End	30	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 32
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		747	Min	-9894		Min	-9894	Max	747
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	17	SECTION :NOT RECTANGULAR				LENGTH :	1.69		
	End	32	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 34
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		617	Min	-10131		Min	-10131	Max	617
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	18	SECTION :NOT RECTANGULAR				LENGTH :	1.69		
	End	34	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 36
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		533	Min	-9515		Min	-9515	Max	533
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	19	SECTION :NOT RECTANGULAR				LENGTH :	1.69		
	End	36	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 38
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		434	Min	-7702		Min	-7702	Max	434
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	20	SECTION :NOT RECTANGULAR				LENGTH :	1.69		
	End	38	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 40
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		313	Min	-4622		Min	-4622	Max	313
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	21	SECTION :NOT RECTANGULAR				LENGTH :	1.69		
	End	40	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 42
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		525	Min	-762		Min	-762	Max	525
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	22	SECTION :NOT RECTANGULAR				LENGTH :	0.74		
	End	42	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 44
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
Fu	Max		5586	Min	0		Min	0	Max	5586
Mu-		0	0		0		0		0	0
Mu+		0	0		0		0		0	0
Vu		0	0		0		0		0	0
=====										
	MEMBER #:	23	SECTION :NOT RECTANGULAR				LENGTH :	1.03		



	End 44	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 45
Fu	Max	3177	Min	0		Min	0	Max	3177
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 24 SECTION :NOT RECTANGULAR LENGTH : 1.21									
	End 45	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 46
Fu	Max	3468	Min	-50		Min	-50	Max	3468
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 25 SECTION :NOT RECTANGULAR LENGTH : 0.76									
	End 46	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 48
Fu	Max	9465	Min	-82		Min	-82	Max	9465
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 26 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 48	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 50
Fu	Max	6165	Min	-51		Min	-51	Max	6165
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 27 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 50	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 52
Fu	Max	2490	Min	-50		Min	-50	Max	2490
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 28 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 52	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 54
Fu	Max	0	Min	-2068		Min	-2068	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 29 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 54	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 56
Fu	Max	0	Min	-6940		Min	-6940	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 30 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 56	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 58
Fu	Max	0	Min	-12668		Min	-12668	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 31 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 2	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 4
Fu	Max	0	Min	-6940		Min	-6940	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0



Fu	Max	1254	Min	-927	Min	-927	Max	1254
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 32 SECTION :NOT RECTANGULAR LENGTH : 1.00

End 4	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 6
Fu	Max	41	Min	-4737	Min	-4737	Max	41
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 33 SECTION :NOT RECTANGULAR LENGTH : 1.00

End 6	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 8
Fu	Max	282	Min	-9015	Min	-9015	Max	282
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 34 SECTION :NOT RECTANGULAR LENGTH : 1.00

End 8	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 10
Fu	Max	458	Min	-12690	Min	-12690	Max	458
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 35 SECTION :NOT RECTANGULAR LENGTH : 1.00

End 10	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 12
Fu	Max	588	Min	-15971	Min	-15971	Max	588
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 36 SECTION :NOT RECTANGULAR LENGTH : 1.00

End 12	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 14
Fu	Max	254	Min	-6909	Min	-6909	Max	254
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 37 SECTION :NOT RECTANGULAR LENGTH : 1.62

End 12	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 17
Fu	Max	301	Min	-8548	Min	-8548	Max	301
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 38 SECTION :NOT RECTANGULAR LENGTH : 1.05

End 14	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 17
Fu	Max	223	Min	-3185	Min	-3185	Max	223
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 39 SECTION :NOT RECTANGULAR LENGTH : 1.69

End 17	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 19
Fu	Max	463	Min	-10011	Min	-10011	Max	463
Mu-	0	0	0	0	0	0	0	0



Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

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=====
MEMBER #: 40          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 19  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 21
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max    366   Min   -4266   Min   -4266   Max    366
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 41          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 21  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 23
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max    881   Min   -403   Min   -403   Max    881
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 42          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 23  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 25
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   3762   Min     0   Min     0   Max   3762
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 43          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 25  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 27
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   5787   Min     0   Min     0   Max   5787
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 44          SECTION :NOT RECTANGULAR LENGTH : 1.36
End 27  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 29
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   4596   Min     0   Min     0   Max   4596
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 45          SECTION :NOT RECTANGULAR LENGTH : 1.36
End 29  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 31
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   4596   Min     0   Min     0   Max   4596
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 46          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 31  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 33
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   5865   Min     0   Min     0   Max   5865
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```

```

=====
MEMBER #: 47          SECTION :NOT RECTANGULAR LENGTH : 1.69
End 33  Sec.1  Sec.2  Sec.3  Sec.4  Sec.5  Sec.6  Sec.7  End 35
=====  =====  =====  =====  =====  =====  =====  =====  =====
Fu      Max   3817   Min     0   Min     0   Max   3817
Mu-     0      0      0      0      0      0      0      0      0
Mu+     0      0      0      0      0      0      0      0      0
Vu      0      0      0      0      0      0      0      0      0
=====

```



=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.69
End 35	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 37	
=====									
Fu	Max	908	Min	-358	Min	-358	Max	908	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.69
End 37	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 39	
=====									
Fu	Max	152	Min	-4252	Min	-4252	Max	152	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.69
End 39	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 41	
=====									
Fu	Max	183	Min	-10027	Min	-10027	Max	183	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.05
End 41	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 43	
=====									
Fu	Max	104	Min	-3121	Min	-3121	Max	104	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.62
End 41	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 47	
=====									
Fu	Max	99	Min	-8648	Min	-8648	Max	99	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.00
End 43	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 47	
=====									
Fu	Max	68	Min	-6830	Min	-6830	Max	68	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.00
End 47	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 49	
=====									
Fu	Max	157	Min	-16024	Min	-16024	Max	157	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.00
End 49	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 51	
=====									
Fu	Max	126	Min	-12746	Min	-12746	Max	126	
Mu-	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	
=====									
MEMBER #:		SECTION :NOT RECTANGULAR LENGTH :							1.00



	End 51	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 53
Fu	Max	125	Min	-9074		Min	-9074	Max	125
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 57 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 53	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 55
Fu	Max	158	Min	-4798		Min	-4798	Max	158
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 58 SECTION :NOT RECTANGULAR LENGTH : 1.00									
	End 55	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 57
Fu	Max	1185	Min	-950		Min	-950	Max	1185
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 59 SECTION :NOT RECTANGULAR LENGTH : 0.60									
	End 1	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 2
Fu	Max	0	Min	0		Min	0	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 60 SECTION :NOT RECTANGULAR LENGTH : 0.65									
	End 3	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 4
Fu	Max	229	Min	-3572		Min	-3572	Max	229
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 61 SECTION :NOT RECTANGULAR LENGTH : 0.71									
	End 5	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 6
Fu	Max	183	Min	-3252		Min	-3252	Max	183
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 62 SECTION :NOT RECTANGULAR LENGTH : 0.76									
	End 7	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 8
Fu	Max	145	Min	-3013		Min	-3013	Max	145
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 63 SECTION :NOT RECTANGULAR LENGTH : 0.82									
	End 9	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 10
Fu	Max	112	Min	-2854		Min	-2854	Max	112
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 64 SECTION :NOT RECTANGULAR LENGTH : 0.87									
	End 11	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 12
Fu	Max								
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0



Fu	Max	68	Min	-2418	Min	-2418	Max	68
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 65 SECTION :NOT RECTANGULAR LENGTH : 0.96

End 13	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 14
Fu	Max	301	Min	-16	Min	-16	Max	301
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 66 SECTION :NOT RECTANGULAR LENGTH : 1.24

End 14	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 16
Fu	Max	137	Min	-2839	Min	-2839	Max	137
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 67 SECTION :NOT RECTANGULAR LENGTH : 1.20

End 17	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 18
Fu	Max	178	Min	-5065	Min	-5065	Max	178
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 68 SECTION :NOT RECTANGULAR LENGTH : 1.19

End 19	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 20
Fu	Max	69	Min	-4161	Min	-4161	Max	69
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 69 SECTION :NOT RECTANGULAR LENGTH : 1.19

End 21	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 22
Fu	Max	56	Min	-3249	Min	-3249	Max	56
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 70 SECTION :NOT RECTANGULAR LENGTH : 1.20

End 23	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 24
Fu	Max	40	Min	-2345	Min	-2345	Max	40
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 71 SECTION :NOT RECTANGULAR LENGTH : 1.20

End 25	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 26
Fu	Max	25	Min	-1437	Min	-1437	Max	25
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 72 SECTION :NOT RECTANGULAR LENGTH : 1.19

End 27	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 28
Fu	Max	502	Min	-493	Min	-493	Max	502
Mu-	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0

MEMBER #: 73 SECTION :NOT RECTANGULAR LENGTH : 1.60



	End 29	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 30
Fu	Max	0	Min	-0		Min	-0	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 74 SECTION :NOT RECTANGULAR LENGTH : 1.19

	End 31	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 32
Fu	Max	19	Min	-976		Min	-976	Max	19
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 75 SECTION :NOT RECTANGULAR LENGTH : 1.20

	End 33	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 34
Fu	Max	0	Min	-1454		Min	-1454	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 76 SECTION :NOT RECTANGULAR LENGTH : 1.20

	End 35	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 36
Fu	Max	0	Min	-2361		Min	-2361	Max	0
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 77 SECTION :NOT RECTANGULAR LENGTH : 1.19

	End 37	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 38
Fu	Max	7	Min	-3266		Min	-3266	Max	7
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 78 SECTION :NOT RECTANGULAR LENGTH : 1.19

	End 39	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 40
Fu	Max	22	Min	-4177		Min	-4177	Max	22
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 79 SECTION :NOT RECTANGULAR LENGTH : 1.20

	End 41	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 42
Fu	Max	58	Min	-5125		Min	-5125	Max	58
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 80 SECTION :NOT RECTANGULAR LENGTH : 1.21

	End 43	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 44
Fu	Max	26	Min	-2591		Min	-2591	Max	26
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 81 SECTION :NOT RECTANGULAR LENGTH : 0.96

	End 43	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 46
Fu	Max	254	Min	-25		Min	-25	Max	254
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0



```

MEMBER #: 82 SECTION :NOT RECTANGULAR LENGTH : 0.87
End 47 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 48
=====
Fu Max 48 Min -2415 Min -2415 Max 48
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 83 SECTION :NOT RECTANGULAR LENGTH : 0.82
End 49 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 50
=====
Fu Max 27 Min -2852 Min -2852 Max 27
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 84 SECTION :NOT RECTANGULAR LENGTH : 0.76
End 51 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 52
=====
Fu Max 1 Min -3011 Min -3011 Max 1
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 85 SECTION :NOT RECTANGULAR LENGTH : 0.71
End 53 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 54
=====
Fu Max 0 Min -3250 Min -3250 Max 0
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 86 SECTION :NOT RECTANGULAR LENGTH : 0.65
End 55 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 56
=====
Fu Max 0 Min -3569 Min -3569 Max 0
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 87 SECTION :NOT RECTANGULAR LENGTH : 0.60
End 57 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 58
=====
Fu Max 0 Min 0 Min 0 Max 0
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 88 SECTION :NOT RECTANGULAR LENGTH : 1.19
End 2 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 3
=====
Fu Max 6964 Min -496 Min -496 Max 6964
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 89 SECTION :NOT RECTANGULAR LENGTH : 1.23
End 4 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 5
=====
Fu Max 6170 Min -395 Min -395 Max 6170
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

MEMBER #: 90 SECTION :NOT RECTANGULAR LENGTH : 1.26

```



	End 6	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 7
Fu	Max	5374	Min	-303		Min	-303	Max	5374
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 91 SECTION :NOT RECTANGULAR LENGTH : 1.29

	End 8	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 9
Fu	Max	4752	Min	-228		Min	-228	Max	4752
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 92 SECTION :NOT RECTANGULAR LENGTH : 1.33

	End 10	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 11
Fu	Max	4348	Min	-171		Min	-171	Max	4348
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 93 SECTION :NOT RECTANGULAR LENGTH : 1.20

	End 12	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 13
Fu	Max	154	Min	-3748		Min	-3748	Max	154
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 94 SECTION :NOT RECTANGULAR LENGTH : 1.39

	End 14	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 15
Fu	Max	243	Min	-4596		Min	-4596	Max	243
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 95 SECTION :NOT RECTANGULAR LENGTH : 1.60

	End 14	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 18
Fu	Max	315	Min	-292		Min	-292	Max	315
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 96 SECTION :NOT RECTANGULAR LENGTH : 2.06

	End 18	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 19
Fu	Max	7153	Min	-118		Min	-118	Max	7153
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 97 SECTION :NOT RECTANGULAR LENGTH : 2.06

	End 20	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 21
Fu	Max	5627	Min	-94		Min	-94	Max	5627
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER #: 98 SECTION :NOT RECTANGULAR LENGTH : 2.06

	End 22	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 23
Fu	Max	4026	Min	-71		Min	-71	Max	4026
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0



Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #: 99		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 24	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 25	
	=====									
Fu	Max	2471	Min	-43		Min	-43	Max	2471	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:100		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 26	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 27	
	=====									
Fu	Max	1031	Min	-25		Min	-25	Max	1031	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:101		SECTION :NOT RECTANGULAR				LENGTH :		2.10	
	End 27	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 30	
	=====									
Fu	Max	2799	Min	0		Min	0	Max	2799	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:102		SECTION :NOT RECTANGULAR				LENGTH :		2.10	
	End 30	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 31	
	=====									
Fu	Max	2769	Min	0		Min	0	Max	2769	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										

	MEMBER #:103		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 31	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 34	
	=====									
Fu	Max	1061	Min	0		Min	0	Max	1061	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:104		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 33	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 36	
	=====									
Fu	Max	2499	Min	0		Min	0	Max	2499	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:105		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 35	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 38	
	=====									
Fu	Max	4055	Min	0		Min	0	Max	4055	
Mu-	0	0	0	0	0	0	0	0	0	
Mu+	0	0	0	0	0	0	0	0	0	
Vu	0	0	0	0	0	0	0	0	0	
=====										
	MEMBER #:106		SECTION :NOT RECTANGULAR				LENGTH :		2.06	
	End 37	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 40	
	=====									
Fu	Max	5656	Min	-11		Min	-11	Max	5656	
Mu-	0	0	0	0	0	0	0	0	0	



Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

```

=====
MEMBER #:107 SECTION :NOT RECTANGULAR LENGTH : 2.06
End 39 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 42
=====
Fu Max 7182 Min -38 Min -38 Max 7182
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:108 SECTION :NOT RECTANGULAR LENGTH : 1.60
End 42 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 43
=====
Fu Max 159 Min -403 Min -403 Max 159
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:109 SECTION :NOT RECTANGULAR LENGTH : 1.39
End 43 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 45
=====
Fu Max 75 Min -4583 Min -4583 Max 75
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:110 SECTION :NOT RECTANGULAR LENGTH : 1.20
End 46 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 47
=====
Fu Max 18 Min -3833 Min -3833 Max 18
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:111 SECTION :NOT RECTANGULAR LENGTH : 1.33
End 48 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 49
=====
Fu Max 4345 Min -40 Min -40 Max 4345
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:112 SECTION :NOT RECTANGULAR LENGTH : 1.29
End 50 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 51
=====
Fu Max 4748 Min -2 Min -2 Max 4748
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```

```

=====
MEMBER #:113 SECTION :NOT RECTANGULAR LENGTH : 1.26
End 52 Sec.1 Sec.2 Sec.3 Sec.4 Sec.5 Sec.6 Sec.7 End 53
=====
Fu Max 5370 Min 0 Min 0 Max 5370
Mu- 0 0 0 0 0 0 0 0 0
Mu+ 0 0 0 0 0 0 0 0 0
Vu 0 0 0 0 0 0 0 0 0
=====

```



MEMBER # : 114		SECTION : NOT RECTANGULAR LENGTH : 1.23							
	End 54	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 55
Fu	Max	6165	Min	0		Min	0	Max	6165
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER # : 115		SECTION : NOT RECTANGULAR LENGTH : 1.19							
	End 56	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 57
Fu	Max	6959	Min	0		Min	0	Max	6959
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER # : 116		SECTION : NOT RECTANGULAR LENGTH : 1.75							
	End 13	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 16
Fu	Max	4021	Min	-195		Min	-195	Max	4021
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

MEMBER # : 117		SECTION : NOT RECTANGULAR LENGTH : 1.72							
	End 44	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6	Sec.7	End 46
Fu	Max	4161	Min	-34		Min	-34	Max	4161
Mu-	0	0	0	0	0	0	0	0	0
Mu+	0	0	0	0	0	0	0	0	0
Vu	0	0	0	0	0	0	0	0	0

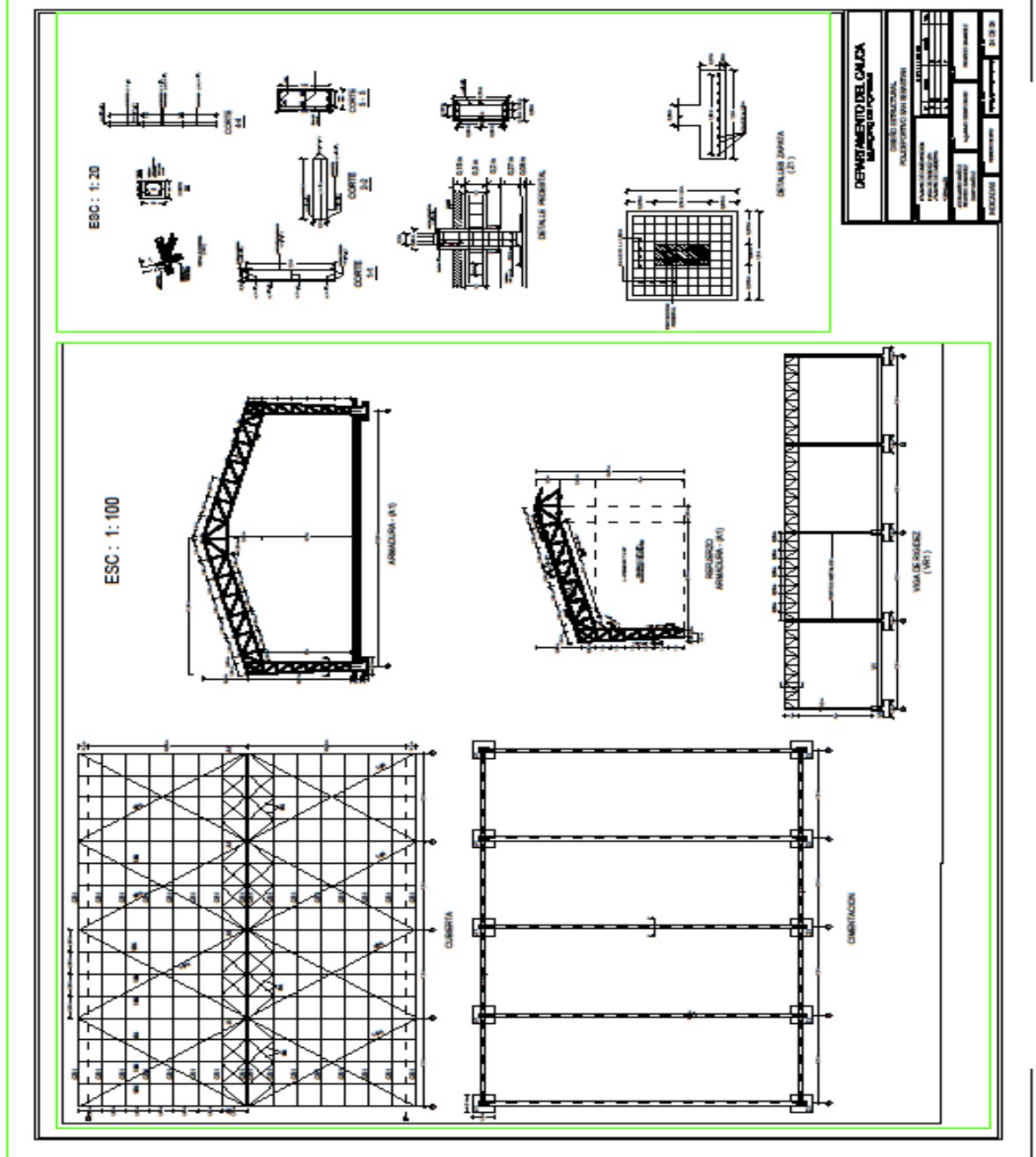
6. PLANOS

En el presente documento se anexan los planos arquitectónicos y estructurales del sistema de cerchas y cubierta del proyecto, planos que constan de:

- Cubierta: se muestra las vigas de amarre, las armaduras y las correas, con sus respectivos arriostramientos.
- Cercha: se muestra en detalle todos los elementos propios de la cercha tipo.
- Otros detalles. Se indican nudos, elementos particulares y cortes de los elementos.

En total es 1 plano entre arquitectónicos y estructurales bajo el lineamiento de la NSR – 10.

PLANO MODELO CUBIERTA POLIDEPORTIVO SAN SEBASTIAN – CAUCA



7. CONCLUSIONES

- Según el análisis desarrollado con el programa cercha se determinó la utilización de perfiles de 2 1/2" x 3/16" en todos los elementos de la estructura, perfil el cual cumplió todos los requisitos necesarios para este tipo de estructura.
- Con la determinación de las cargas transmitidas al suelo se determinó la construcción de zapatas de 1.5m X 1,5m, con barras de acero # 4 cada 0,15m c-c, con una longitud de 1,35m, las cuales son suficientes y capaces de soportar los esfuerzos producidos en la cimentación.
- La cimentación de la estructura también se diseñó con una viga de amarre de 0,3m X 0,3m la cual sirve como disipadora de esfuerzos entre las zapatas de la estructura.
- La realización del trabajo social a través de este proyecto nos dio la oportunidad de fortalecer los conocimientos adquiridos durante el transcurso de la carrera, y también de poder prestar un servicio a la comunidad desde el campo universitario.
- Si ponemos todos de nuestra parte, un poco de nuestro tiempo y lo que hemos aprendido, en la formulación, desarrollo y gestión de proyectos que tengan carácter social podremos mejorar la calidad de vida de muchos, llevando un buen control. La profesión del ingeniero civil está bien ligada e tratar de satisfacer necesidades.

8. ANEXOS

- Se anexa las memorias de cálculo y los planos del diseño arquitectónico.
- Memorias y planos del proyecto en medio magnético