KOCAELİ ÜNİVERSİTESİ - FEN BİLİMLERİ ENSTİTÜSÜ

UZUN AÇIKLIKLI ÇATILAR İÇİN BÜKÜMLÜ BORU MAKAS KONSTRÜKSİYONU DİZAYN VE UYGULAMASI

YÜKSEK LİSANS TEZİ

Makina Müh. Murat TEMEL

Anabilim Dalı : Makina Mühendisliği

Danışman : Prof. İbrahim UZMAN

OCAK 2000

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Tezin Enstitüye Teslim Tarihi : 18.01.2000

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Tez Danışmanı	Üye	Üye
Prof. İbrahim UZMAN	Prof.Dr. Mustafa ALIŞVERİŞÇİ	Prof.Dr. Erdinç KALUÇ
(.....)	(.....)	(.....)

MART 2000

UZUN AÇIKLIKLI ÇATILAR İÇİN BÜKÜMLÜ BORU MAKAS KONSTRÜKSİYONU DİZAYN VE UYGULAMASI

Murat TEMEL

Anahtar Kelimeler : Çelik Konstrüksiyon, Boru Makas, Çelik Çatılar, Kaynak, Uzun Açıklık

Özet : Bu çalışmada, uzun açıklıkların geçilmesini gerektiren yapıların çatılarına, hem güzel bir mimari hem de dayanıklı bir çözümün uygulanması incelenmiştir. Burada en önemli nokta çok zor olan kaynaklı boru birleşimlerin uygulanması sırasında oluşan iç gerilmeler ve kaynak çatlaması problemlerinin ortadan kaldırılmasıdır. Uygulanan kaynak ağzı şekli, kaynak sıralaması ve %100 kontrol yapılması imalat aşamasında doğabilecek tüm riskleri ortadan kaldırmaktadır. Bu kadar büyük çelik parçaların şantiye ortamında birleştirilip çatı sisteminin kurulması için yapılan çalışmalar da detaylı olarak incelenmiştir.

DESIGN AND APPLICATION OF THE CURVED PIPE TRUSSES FOR HIGH SPAN ROOFS

Murat TEMEL

Keywords : Steel Construction, Pipe Truss, Steel Roof, Welding, High Span

Abstract : In this project roofing of high span steel structures with pipe trusses is studied. Very high span is sometimes needed for architectural buildings. And also for long durability steel structures are advantageous. In the production of pipe trusses the major problems come from residual stresses and consequent cracks. To reduce those problems in production and erection a special method for welding edge preparation through %100 inspection and a specific welding sequence are applied. Difficulties emerged in the construction of the roof due to huge truss pieces are examined in detail and solutions are proposed.

ÖNSÖZ ve TEŞEKKÜR

Yapılarda çelik kullanılması insanlara birçok avantaj sağlamaktadır. İmalatının seri olması, özellikle depreme karşı çok dayanıklı olması, sökülebilir olması ve hurdasının dahi değerli olması nedeniyle ekonomikliği çelik yapılarını avantajları arasındadır. Ancak en önemli özelliği mimari açısından çok esnek olmasıdır. Betonarme yapılarda uygulanması imkansız olan estetik çelik yapılar için sıradan sayılmaktadır. Ancak istenen kompleks estetik teknolojinin sınırlarını zorlamakta ve mühendisleri daha karışık problemleri çözmeye zorlamaktadır.

Türkiye için yeni sayılabilecek çelik yapılar hızla çoğalmaktadır. Bu tezde incelenen ve betonarme yapılarla mukayese dahi edilemeyecek kadar güzel, ekonomik, karmaşık olan ve uluslararası standartlarda olan çelik çatı dizaynı, imalatı ve montajı tam olarak bir mühendislik harikasıdır.

Bana bu konuda çalışma olanağı veren danışmanım Sayın Prof. İbrahim UZMAN'a ; kaynak konusundaki engin bilgisiyle imalat aşamasında büyük yardımlarını gördüğüm Sayın Prof. Dr. Selahaddin ANIK'a, Sayın Prof. Dr. Ahmet OĞUR'a ; projede beraber çalıştığımız Sayın Y.Müh. Metin OYSU'ya ve Sayın Y. Tekniker Yasemin KARDEŞ'e teşekkürlerimi sunarım.

Bu yapının gelecekte uygulaması yapılacak diğer yapılara örnek teşkil etmesi dileğiyle....

Ocak 2000, Kocaeli

Makina Müh.
Murat TEMEL

İÇİNDEKİLER

SİMGELER DİZİNİ ve KISALTMALAR

t	:	Et kalınlığı
ø	:	Çap
⊿	:	Köşe kaynağı
⊿	:	Çevresel kaynak
⊿	:	Çift köşe kaynağı
▱	:	Sac
µ	:	Mikron
PL	:	Plaka
P	:	Poz
CHS	:	Circular Hollow Section – Boru Kesitli
U.T.	:	Ultrasonik Test
R.T.	:	Radyografik Test
TSE	:	Türk Standartları Enstitüsü
EN	:	Euro Norm
ASME	:	American Society of Mechanical Engineers
AWS	:	American Welding Society
BS	:	British Steel
ITAB	:	Isının Tesiri Altındaki Bölge
WPS	:	Welding Procedure Specification – Kaynak Prosedürü Spesifikasyonu
PQR	:	Procedure Quality Record – Uygulama Kalifiye Raporu
ITP	:	Inspection and Test Plan – Muayene ve Test Planı
Y.Ç.	:	Yatay Çapraz
D.Ç.	:	Dikey Çapraz
µ	:	Mikron
SMAW	:	Shielded Metal Arc Welding – Elektrik Ark Kaynağı
GMAW	:	Gas Metal Arc Welding – Gazaltı Kaynağı

ŞEKİLLER DİZİNİ

TABLOLAR DİZİNİ

1. GİRİŞ

1.1. Konunun Tanıtılması

Günümüzde büyük ve özellikle mimari önem taşıyan yapıların birçoğu bünyesinde yüksek oranlarda çelik konstrüksiyon barındırmaktadır. Büyük açıklıklar geçilen fabrika binalarında, yüksek binalarda, dinamik yüklere maruz yapılarda, ekonomikliği ve imalat esnekliği nedeniyle çelik tercih sebebidir. Çelik konstrüksiyon bina yapımı Türkiye'de henüz emekleme dönemindedir. Ancak gelişen teknolojik imkanlar ve mühendislik hesaplarında bilgisayarların yardımları inşaat sektöründe çelik kullanımını belirgin bir şekilde arttırmıştır.

Çelik yapıların imalatları fabrika veya atölye ortamında hassas makinalar ile yapılırken şantiye sahasının fizibilite ve alt yapı çalışmaları devam edebilir, binanın temelleri atılabilir. Bu avantajla, zamanın çok değerli olduğu günümüzde, çelik yapılar betonarme yapılara göre çok daha kısa sürede tamamlanabilir.

Mimari alanda çelik yapılar betonarme yapılara göre tercih sebebidir, çünkü çelik istenilen şekle sokulabilir, istenilen cephe veya çatı formu rahatlıkla uygulanabilir.

Çelik yapı maliyetleri betonarme yapılara göre daha yüksekmiş gibi görünse de aslına daha ekonomiktir. Betonarme yapının ömrü tamamlandıktan sonra yıkılması ve enkazın atılması gereklidir. Ancak çelik binaların böyle bir problemi yoktur; bina ömrünü tamamlayınca çelik hurdası satılır ve kullanılmış bina para olarak sahibine geri döner. Ayrıca çeliğin kendisi de fırınlarda eritilerek tekrar kullanılır, çevreye ve doğaya zarar verilmez.

Çelik binalar güvenlidir. Çelik esnek bir malzeme olduğu için çökmesi söz konusu değildir. En kötü ihtimalle, kalıcı deformasyona uğrayarak eğrilip bükülür ama hiçbir zaman içinde bulunanları öldürecek kadar hasar görmez. Çelik binaların kontrolleri

kolaydır. Kesitler, işçiliğin ve kullanılan malzemenin kalitesi çok rahat kontrol edilebilir. Betonarme binaların tahribatsız muayenesi çok zordur ve kısmen yapılabilir.

1.2. Çalışmanın Amacı ve İçeriği

İnşaat sektörü dahilinde gelişmekte olan çelik konstrüksiyon uygulamalarının zorlarından bir tanesi bu tezin konusu olmuştur. 50,4 metre x 48 metrelik bir spor salonu kompleksinin çatısının bükümlü düzlem boru makas kullanılarak inşa edilmesi ve söz konusu boru makasın 50,4 metre açıklık geçiyor olması bu uygulamayı özellikli bir hale getirmektedir. Bir makasın teorik ağırlığı 16 ton civarındadır. Eksen araları 4 metredir ve toplam 13 adet makas imal edilecektir.

Makas tamamen borudan oluşmaktadır, boru kalınlıkları standart borulara göre çok fazladır, üst ve alt başlıklar bükümlüdür ve kaynakları %100 Ultrasonik kontrollü olup tam nüfuziyet istenmektedir. Boru kalınlıklarının fazlalığı, kaynakların %100 ultrasonik kontrollü ve tam nüfuziyetli olması makasın tümünde özel kaynak ağzı sistemi kullanılmasını zorunlu kılmıştır. Tüm bunlar Türkiye'de daha önce denenmemiş bir imalatın yapılması anlamını taşımaktadır.

Borular British Steel'e yaptırılıp Türkiye'ye getirilmiştir. Malzeme sertifikaları borular ile beraber gelmiştir. Bununla beraber tüm kimyasal analizler tekrar yaptırılmıştır. Kullanılacak kaynak metodu ve bütün kalite güvence evrakları hazırlanıp gerekli testler uygulanmıştır. Test sonuçlarına göre elektrot tipi seçilmiştir.

İmalat için 60 metre uzunluğunda ve 8 metre genişliğinde bir çatma tezgahı imal edilmiştir. Tezgah henüz çizim aşamasındayken makas üzerindeki plakalara, kaynak yerlerine ve alt başlık - üst başlık ek yerlerine dikkat edilmiştir. Böylece makas tezgahtan alınmadan önce tüm plakalar yerine konabilmekte ve kaynaklar yapılabilmektedir.

İmalatı tamamlanmış makasların boyları saçaklarla beraber ~60 metre olduğu için nakliyesi 5 parça olarak yapılacaktır. Parçalar; 2 adet 21 metre, 1 adet 8 metre ve 2

adet 4,6 metrelik saçaklardan ibarettir. Şantiye sahasına kurulacak bir ekleme tezgahı ile makas tek parça haline getirilip yerine monte edilecektir.

Kaldırılan makasların bir defada yerlerine problemsiz koyulması montaj sahası ve imkanlar dar olduğu için çok önemlidir. Montaj sonrasında makasların zati ağırlıklarından dolayı çok az olsa da geometrilerinde bir değişiklik olacağı tespit edilmiştir. Bu nedenle makasların bağlanacağı ankrajlar bu esnemeye uygun olarak yerleştirilmiştir ve makas geometrisindeki değişikliğin montajda sebep olacağı zorluklar ortadan kaldırılmıştır.

2. PROJELENDİRME

Spor salonu çatısının proje çalışmaları ;

- Boston Design Collaborative – Mozhan Khadem
- ARUP Mühendislik ve Müşavirlik Ltd. Şti.
- METEX Design Group

firmaları tarafından yapılmıştır.
Mimari ve statiği bu firmalar tarafından yapılan çatının detaylandırılması ve imalat resimlerinin çizilmesi tarafımdan yapılmıştır.

2.1. Ana Projeler

Binanın mimarisi ortaya çıktıktan sonra statik hesaplar sonucu belirlenen aks araları, alt ve üst başlıkta bulunan aşık, yatay çapraz, dikey çaprazlar yerleri ile kesitler, genel görünüş olarak çizilmiştir. Bu paftalardaki prensiplere uygun olarak proje detaylandırılacaktır.

3 adet ana proje elimize geçmiştir (Bkz. Ek-6). Bunlar ;

- Çatı üst başlık genel görünüşü
- Çatı alt başlık genel görünüşü
- Makas bağlantı prensipleri

2.1.1. Makasların statik hesabı

Mimari projelerden makas boyutları belirlendikten sonra statik hesaplar ile kesitler tayin edilmiştir. Burada ARUP firması kendisine ait olan bir bilgisayar programı kullanmıştır (Bkz. Ek-5). Program bu sonuçları kullanarak kendiliğinden düğüm

noktalarını ve boru ebatlarını bulmaktadır. Gerekli hesaplamalar ile beton kolon üzerindeki ankraj bağlantıları da ortaya çıkmıştır. Tüm bu hesaplamalar ile ortaya çıkarılan makasların rijitliğini sağlamak için gerekli aşık ve çapraz bağlantılarının tespit edilmesi ile çatı üst başlığı genel planı ve çatı alt başlığı genel planı tamamlanmış olmaktadır. Ayrıca bu hesaplar göstermektedir ki makaslar yerine monte edildikten sonra 8 cm alçalarak ve açıklıkları 6 cm artacaktır.

2.1.2. Makas bağlantı prensipleri

Makas bağlantı prensiplerinde şu esaslar verilmiştir ;

- Makas çaprazlarının bağlanma şekli
- Makas çaprazlarının kaynak prensibi
- Makas ankraj plakasının yerleşimi
- Çatı aşıklarının makaslara cıvatalı bağlantı şekilleri
- Çatı çaprazlarının makaslara cıvatalı bağlantı şekilleri
- Makas üst ve alt başlık borularının kaynaklı ekleme detayları

Bu prensiplere bağlı kalınarak gerekli detaylandırmanın ve imalat resimlerinin çizilmesi ayrıca imalatçıya ters düşen noktaların gözden geçirilerek düzeltilmesi istenmiştir.

2.2. Projenin Detaylandırılması ve İmalat Resimlerinin Çizilmesi

Verilen tüm bilgiler doğrultusunda imalatın ve montajın rahatlıkla yapılabilmesi için gerekli tüm detayların ve çizimlerin hazırlanması gereklidir. Projelerde, imal edilecek bir parça bütün olarak görülür, gereken detaylar ve malzeme cinsleri çizimlerin yanına not olarak düşülür. Daha önce hazırlanması gereken parçaların teker teker resimlerinin çıkartılması ve imalatın uygun yapılabilmesi için gerekli ölçülerin verilip detayların görünür hale getirilmesi projenin en önemli safhalarından biridir. Bu detaylandırma işlemi sırasında yapılan bir hata tüm imalata yansır ve bazen montajı çok zorlaştırabilir. Detaylandırmanın iyi bir şekilde yapılması durumunda ise projelerdeki aksaklıklar görülebilir ve düzeltilebilir.

2.2.1. Projenin detaylandırılması aşamaları

Gelen projeler aşağıdaki aşamalar sırasıyla takip edilerek detaylandırılır ;

- Bina ana eksenleri belirlenip ölçü kontrolü yapılır.
- Makaslar ana projelerde belirlenen eksen araları boyunca yerleştirilir.
- Gerçek boyutlarına uygun makaslar çizilerek tipik parçalar belirlenir.
- Ana projelerde verilen aralar boyunca aşıkların ve çaprazların ölçüleri belirlenir.
- Makaslara, aşık ve çapraz bağlantı prensiplerine uygun plakalar yerleştirilir.
- Aşıkların ve çaprazların üzerindeki plakalar prensiplere uygun biçimde yerleştirilir.
- Aşıkların ve çaprazların tipik olanlarına numara verilir.
- Bağlantı plakalarındaki farklılıklara göre makaslar numaralandırılır.
- Aşık, çapraz ve makas numaraları çatı planlarına işlenir. Bu sayede markalama planı elde edilmiş olur.
- Montaj veya imalat açısından gerekli değişiklikler yapılarak resimlere işlenir.

Spor salonu çatısında detaylandırma sırasında prensip detayları dahil olmak üzere bir çok noktada değişiklik yapılmıştır. Yapılan değişiklikler ;

- Makas üst ve alt başlık ek detaylarında boru içine bir "baking ring" konularak kaynak ağzı detayı değiştirilmiştir.
- Aşık ve çapraz bağlantı kulaklarına montajda kolaylık olması açısından ikinci delikler delinmiştir.
- Aşık ve çapraz boylarında değişiklikler yapılmıştır.
- Bu açıklıktaki makas sehimi düşeyde ~8 cm, yatayda ~6 cm olarak alınmıştır. Dolayısıyla düşey çapraz ölçülerinde değişiklikler yapılmıştır.
- Makas sehiminin makasın montajından sonra yavaş yavaş ortaya çıkacağı düşünülerek tüm çapraz bağlantılarda birer uçlar oval delik olarak delinmiştir.
- Makas sehimi yüzünden boydaki uzama makas taban plakasının bağlandığı kolon üstü ankraj yerleşimini etkilemiştir. Bu ~6 cm lik fark iki baştaki ankrajları 3'er cm eksenden kaçırarak bertaraf edilmiştir. Makasın monte edildikten sonra

uzayacağı düşünülerek makas taban plakasının tek tarafına oval delik açılmıştır. Böylece normal delik olan tarafta makaslar ipinde dururken uzama oval delik tarafına kaydırma şeklinde basite indirgenmiştir.

Makaslarda ve genel olarak sistemde yapılan bu değişikliklerden sonra makas üzerine eklenmesi gereken diğer elemanların detaylandırılması yapılır. Bunlar ;

- Yağmur deresi detayları.
- Kaplama detayları.
- Saçak kaplaması detayları.

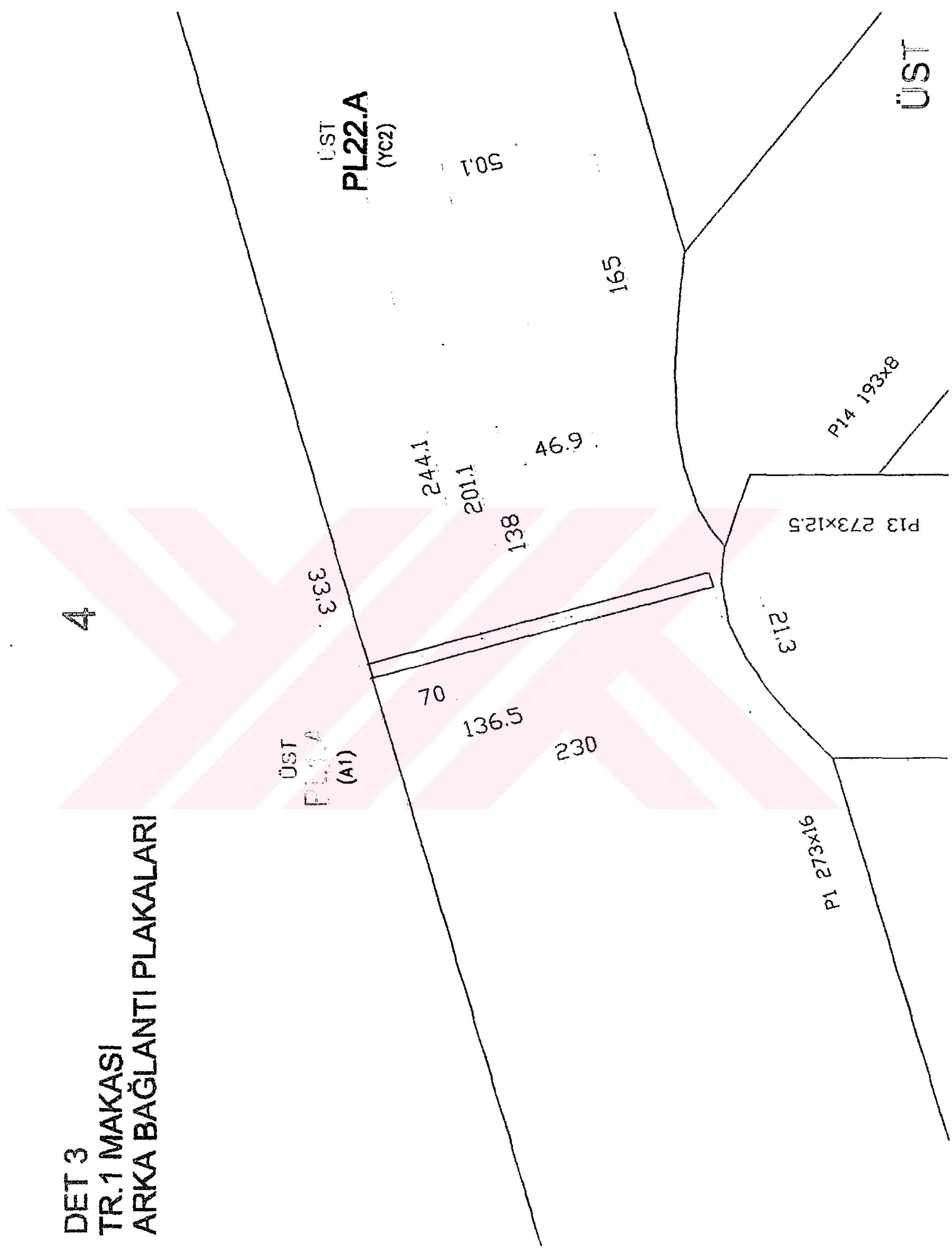
2.2.2. İmalat resimlerinin çizilmesi aşamaları

Detaylandırmalar konusunda kararlar verilip uygun bulunduktan sonra imalat resimlerinin çizilmesi işlemine başlanır. Bu projede imalat resimlerinin çizilmesinde değişik yöntemler kullanılmıştır.

Öncelikle çatı sistemi kararlaştırılan detaylara uygun olarak komple çizilmiştir. Buradan makas tiplerinin sadece bağlantı plakalarına göre değişiklik gösterdiği ortaya çıkmıştır. Çatı makası imalatı için makas bilgisayarda 1:1 ölçekli çizilmiş ve makas üzerindeki elemanlar birer birer bu resimden çekilmiştir. Böylece herhangi bir elemanda yanlışlık yapma riski ortadan kalkmıştır. Makas üzerindeki tüm elemanların imalat resimleri teker teker çıkartılmıştır. Boylar ve boru alıştırmaları için gerekli tüm ölçüler resimlerin üzerinde gösterilmiştir.

Daha sonra makasların üzerindeki aşık ve çapraz bağlantı plakaları yerleşimleri ile imalatta kullanılacak ölçüler her bir plaka için detay olarak çizilmiştir (Şekil 2.1.).

Aşık ve çaprazlar üzerlerindeki plakalar ile birlikte tiplerine göre detaylandırılıp imalat resimleri ayrı ayrı çizilmiştir.



Şekil 2.1. Makaş üzerindeki aşık ve çapraz bağlantı plakalarının ayrı ayrı çizilerek gösterilmesi.

3. MALZEME TEMİNİ ve RAPORLAMA

Bu projede kullanılan borular British Steel tarafından imal edilmiştir. Sac ve standart profiller yerli temin edilmiştir. Borulardan alt ve üst başlıklar bükümlü olduğu için büküm işlemi Kartal Bombe – Gebze 'de yapılmıştır.

Tablo 3.1. Malzemelerin geliş miktarlarını, geliş tarihlerini ve gidecekleri yerleri gösteren tablo.

MALZEME SEVKİYAT PROGRAMI

	MALZEME	BOY	ADET	YÜKLEME TARİHİ	VARIŞ TARİHİ	GİDECEĞİ YER
1.	CHS 273 x 16 (Boru)	12 mt	150 BOY	10.OCAK.1999	~ 26.OCAK.1999	KARTAL BOMBE
2.	CHS 139,7 x 5 (Boru)	12 mt	230 BOY	20.ARALIK.1998	~ 6.OCAK.1999	ELTEK
3.	CHS 60,3 x 5 (Boru)	12 mt	85 BOY	20.ARALIK.1998	~ 6.OCAK.1999	ELTEK
4.	CHS 193,7 x 5 (Boru)	6 mt	92 BOY	25.KASIM.1998	~ 11.ARALIK.1998	ELTEK
5.	CHS 193,7 x 6,3 (Boru)	6 mt	55 BOY	25.KASIM.1998	~ 11.ARALIK.1998	ELTEK
6.	CHS 193,7 x 8 (Boru)	6 mt	17 BOY	25.KASIM.1998	~ 11.ARALIK.1998	ELTEK
7.	CHS 193,7 x 10 (Boru)	12 mt	15 BOY	25.KASIM.1998	~ 11.ARALIK.1998	ELTEK
8.	CHS 193,7x12,5 (Boru)	6 mt	17 BOY	20.ARALIK.1998	~ 06.OCAK.1999	ELTEK
9.	CHS 114,3 x 5 (Boru)	6 mt	19 BOY	6.ARALIK.1998	~ 22.ARALIK.1998	ELTEK

Yukarıdaki tablodan da anlaşılacağı üzere büküm işlemi olmayan borular Eltek Atölyesine indirilmiştir. Saclar ve standart profiller bilahare Eltek Atölyesine gelmiştir (Tablo 3.1.).

Malzemeler ile beraber sertifikaları da istenmiştir. Ancak yine de boruların ve sacların kimyasal analizleri tekrar yaptırılmıştır. Analizlerdeki amaç malzeme kalitesini belgelemek ve kaynak işleminde uygulanacak yöntemi seçmektir. Kimyasal analizler ve sertifikalar sonucunda malzemelerde herhangi bir uyumsuzluk olmadığı anlaşılmıştır (Tablo 3.2.).

Tablo 3.2. Boruların kimyasal içeriğini, dolayısıyla kaynak kabiliyetini öğrenmek için yapılan spektral analiz sonuçları.

BORULARIN SPEKTRAL ANALİZLERİ																			
	Fe1	Fe2	C	Si	Mn	P	S	Cr1	Mo	Ni1	Al	B	Co	Cu	Nb	Pb	Sn	Ti	V	W
CHS 273x16	98.53	98.51	.179	.159	.811	.014	.006	.000	.000	.026	.043	.0001	.003	.019	.003	.0000	.005	.000	.000	.000
CHS 193x12,5	98.51	98.49	,162	.188	.809	.018	.011	.010	.000	.026	.039	.0001	..002	.020	.004	.0000	.002	.000	.000	.000
CHS 193x10	98.47	98.45	.181	.177	.846	.011	.005	.007	.000	..026	.051	.0001	.003	.015	.002	.0000	.002	.000	.000	.000
CHS 193x8	98,50	98,48	.172	.172	.837	.016	.006	.009	.000	.024	.044	.0000	.002	.006	.003	.0000	.002	.000	.000	.000
CHS 193x6,3	98.50	98.48	,171	.172	.838	.016	.006	.010	.000	.024	.044	.0001	..002	.007	.003	.0000	.002	.000	.000	.000
CHS 139,7x5	98.45	98.43	,166	.173	.875	.017	.013	.010	.000	.024	.047	.0000	..003	.013	.003	.0000	.002	.000	.000	.000
CHS 114.3x5	98.49	98.47	,172	.169	.801	.009	.017	.008	.000	.029	.047	.0001	..002	.043	.003	.0000	.003	.000	.000	.000
CHS 60,3x5	98.42	98.41	,172	.179	.882	.016	.009	.007	.000	.024	.068	.0001	..003	.009	.003	.0000	.002	.000	.000	.000

3.1. Raporlama

Kimyasal analizlerden sonra malzemelere çeşitli tahribatlı muayeneler uygulanır. Kaynaklı numunelere uygulanan çekme deneyi, bükme deneyi, çentik darbe deneyi, sertlik ölçme, makro yapının incelenmesi sonucunda kaynak metodunda herhangi bir uyumsuzluk varsa veya malzemede herhangi bir anormallik varsa ortaya çıkar.

Tablo 3.3. Boruların kaynak işleminden sonra mekanik özelliklerinin test edildiği çekme deneyi sonuçları.

KAYNAKLI ÇEKME DENEYİ				
Numune Cinsi	Kesit Alanı (mm^2)	Çekme Yükü (N)	Çekme Dayanımı (N/mm^2)	Kopma Yeri
CHS273x16-CHS273x16	16 x 30 = 480	216000	450	SAC
CHS273x16-CHS193x12,5	19,85 x11 = 218,35	10200	467,14	SAC
CHS273x16-CHS193x10	19,50 x 4,75 = 92,62	44000	475,05	SAC
CHS273x16-CHS193x8	19,50 x 5,10 = 99,45	48000	482,65	SAC
CHS273x16-CHS193x6,3	19,30 x 3,55 = 68,51	33500	488,97	SAC
CHS273x16-CHS193x5	24,6 x 2 = 49,2	28000	569,10	SAC
CHS193x12,5-CHS193x12,5	8,7 x 25 = 217,5	10200	468,96	SAC
CHS193x6,3-CHS193x6,3	19,75 x 3,65 = 72	35000	486,11	SAC
CHS60,3x5-CHS60,3x5	7,65 x 3,80 = 29,07	14500	498,79	SAC

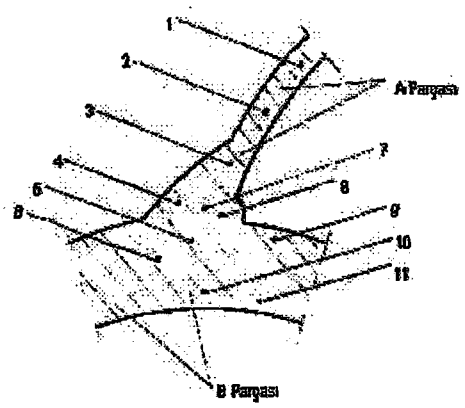
Tablo 3.4. Boruların kaynak işleminden sonra mekanik özelliklerinin test edildiği eğme deneyi sonuçları.

KAYNAKLI EĞME DENEYİ					
Numune Cinsi	Mesnetler Arası Mesafe (mm)	Mandrel Çapı (mm)	Parça Kalınlığı (mm)	Eğme Açısı	Sonuç
CHS273x16-CHS273x16 KÖK	85	46	13	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS273x16 ALIN	85	46	13	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x12,5 KÖK	72.4	46	8,8	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x12,5 ALIN	71,5	46	8,5	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x10 KÖK	66,25	46	6,75	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x10 ALIN	64	46	6	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x8 KÖK	58	46	4	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x8 ALIN	62,5	46	4	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x6,3 KÖK	55	46	3	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x6,3 ALIN	56,8	46	3,6	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x5 KÖK	51,55	46	1,85	180°	Çatlama ve Kırılma Olmadı
CHS273x16-CHS193x5 ALIN	55	46	3	180°	Çatlama ve Kırılma Olmadı
CHS193x6,3-CHS193x6,3 KÖK	56,8	46	3,6	180°	Çatlama ve Kırılma Olmadı
CHS193x6,3-CHS193x6,3 ALIN	56,8	46	3,6	180°	Çatlama ve Kırılma Olmadı
CHS60,3x5-CHS60,3x5 KÖK	57,4	46	3,8	180°	Çatlama ve Kırılma Olmadı
CHS60,3x5-CHS60,3x5 ALIN	57,4	46	3,8	180°	Çatlama ve Kırılma Olmadı

Tablo 3.5. Boruların kaynak işleminden sonra mekanik özelliklerinin test edildiği çentik darbe deneyi sonuçları.

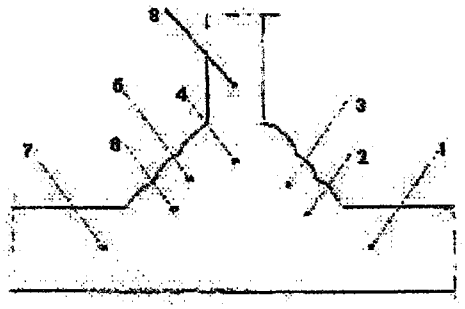
Numune Cinsi	Sıcaklık (°C)	Darbe Çentik Muk. "V" Çentik (Joule)
CHS 273x16 KÖK	-20 °C	154
CHS 273x16 ALIN	-20 °C	147
CHS 273x16 ITAB	-20 °C	163
CHS 193x12,5 KÖK	-20 °C	135
CHS 193x12,5 ALIN	-20 °C	126
CHS 193x12,5 ITAB	-20 °C	174

Tablo 3.6. Boruların kaynak işleminden sonra kesit alınarak sertlik ölçümü yapılan kurtağzı alıştırması.



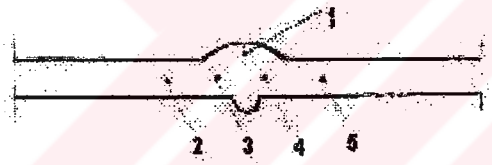
Ölçüm Yapılan Nokta	Ölçüm Değeri (HV)
1	167
2	165
3	185
4	180
5	150
6	140
7	190
8	177
9	142
10	130
11	145

Tablo 3.7. Elektrik ark kaynağı ile kaynatılmış ve kesit alınarak sertlik ölçümü yapılan köşe kaynağı.



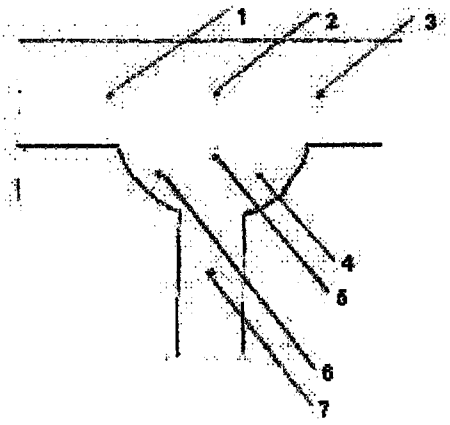
Ölçüm Yapılan Nokta	Ölçüm Değeri (HV)
1	115
2	122
3	159
4	131
5	126
6	155
7	122
8	114

Tablo 3.8. Elektrik ark kaynağı ile kaynatılmış ve kesit alınarak sertlik ölçümü yapılan alın kaynağı.



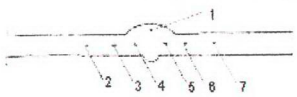
Ölçüm Yapılan Nokta	Ölçüm Değeri (HV)
1	148
2	124
3	126
4	149
5	139

Tablo 3.9. Gazaltı kaynağı ile kaynatılmış ve kesit alınarak sertlik ölçümü yapılan köşe kaynağı.



Ölçüm Yapılan Nokta	Ölçüm Değeri (HV)
1	124
2	129
3	124
4	210
5	150
6	180
7	113

Tablo 3.10. Gazaltı kaynağı ile kaynatılmış ve kesit alınarak sertlik ölçümü yapılan alın kaynağı.



Ölçüm Yapılan Nokta	Ölçüm Değeri (HV)
1	176
2	118
3	121
4	148
5	149
6	130
7	120

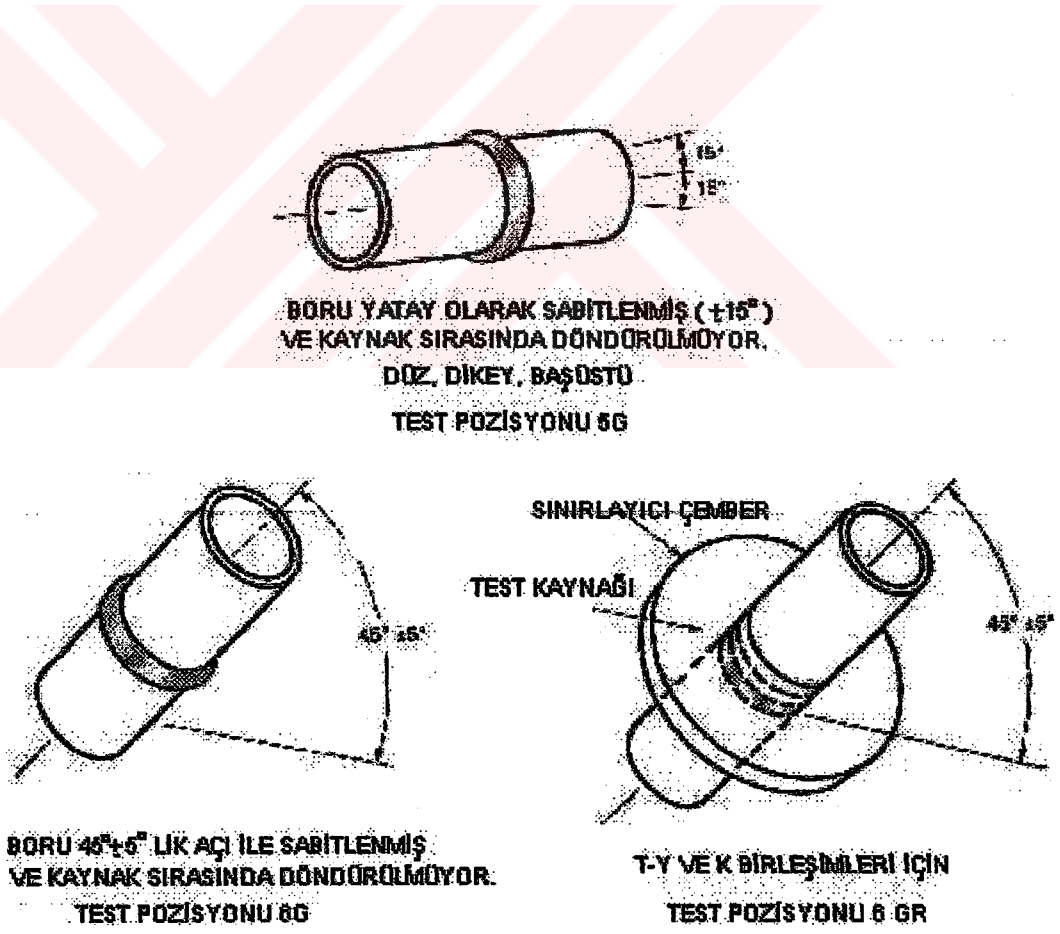
Testlerden de anlaşılacağı gibi elimizdeki malzemeye göre uygulanan kaynak yöntemi doğrudur ve malzeme yapısında herhangi bir uygunsuzluğa neden olmamaktadır. Bu aşamadan sonra uygulanacak kaynak metodunu raporlayan WPS (Kaynak Prosedürü Spesifikasyonu) ve PRQ (Uygulama Kalifiye Raporu) lar yazılır (Bkz. Ek-2 ve Ek-3).

Şekil 3.1. 5G pozisyonunda test olan bir boru kaynakçısı.

3.2. Kaynakçı Sertifikalandırma

Bu projede yapılan kaynakların %100 ultrasonik kontrollü olmasından dolayı kaynakçıların sertifikalandırılması çok önemlidir. Kaynakçıları Sakarya Üniversitesinden Katamer gözetiminde Prof. Dr. Selahaddin Anık sertifikalandırmıştır (Şekil 3.1.).

Kaynakçıların test parçaları ultrasonik veya radyografik muayeneden geçirilir. Kaynak dikişine göz ile muayene yapılır. Penetrant testi uygulanır. Tüm bu kontrolların sonucu olumlu ise kaynakçı sertifikasını alır. Kaynakçı sertifikalandırma işleminde AWS D1.1. Structural Welding Code 1996 dikkate alınmıştır. Kaynakçıların tamamı aşağıda şekli verilen 5G ve 6G pozisyonlarında sertifikalandırılmıştır (Şekil 3.2.).



Şekil 3.2. AWS D.1.1. Welding Code ile tanımlanmış 5G, 6G ve 6 GR test pozisyonları.

3.3. Kaynak Prosedürlerinin Hazırlanması

Kaynak prosedürleri hazırlama işleminde AWS D 1.1 Structural Welding Code 1996 dikkate alınmıştır. Bu aşamada öncelikle kaynakların WPS'leri (Kaynak Prosedürü Spesifikasyonu) hazırlanmıştır. Yapılan tüm deneyler; sertlik, çekme, bükme, çentik darbe, makro; PQR'lara (Uygulama Kalifiye Raporu) eklenmiştir. PQR'lar ve deney sonuçları uygulanacak kaynak yöntemini, kullanılacak elektrot cinslerini ve özelliklerini ortaya çıkarmıştır. Tüm kaynak işlemleri bu sayede uluslararası standartlara uygun olarak raporlanmış ve kaliteleri belgelenmiştir.

Kaynaklar, tiplerine (köşe, alın v.s.) ve metotlarına (elektrik ark, gazaltı, tozaltı v.s.) göre ayrılarak her bir çeşit kaynak için ayrı ayrı PQR ve WPS hazırlanır.
Kaynak prosedürünün içeriğini üzerinde çalışılan çelik çatının imalatı ve montajı için gerekli teknik zorunluluklar oluşturur.

Kaynak prosedüründe tanımlanan tüm işlemlerin kontrolü I&T Plan (Inspection and Test Plan – Muayene ve Test Planı) doğrulusunda yapılacaktır (Bkz Ek-4).

Uygulanacak kaynak yöntemleri şunlardır ;

- SMAW (Shielded Metal Arc Welding - Elektrik Ark Kaynağı)
- GMAW (Gas Metal Arc Welding - Gazaltı Kaynağı)

Bu projede kullanılan St 37-2 ve eşdeğeri malzemelerin kaynağı için gerekli kaynak elektrotları ve yardımcı malzemeler elektrik ark kaynağı için AWS A.5.1.'de belirtildiği gibi E7018 ve E6010, gazaltı kaynağı için AWS A.5.18.'de belirtildiği gibi E70 S-6 sertifikalı olacaktır.

Bazik elektrotlar kullanılmadan önce 250-300°C'de fırınlanacaktır ve kullanım sırasında özel termoslarda saklanacaktır. Kaynak malzemesi üreticinin sağladığı paketlerde muhafaza edilecektir.

Elektrotların saklandığı yer nem almamalıdır ve üreticinin önerdiği minimum koruma koşullarına uygun olmalıdır.

Kaynak işleminden önce yapılan hazırlıklarla WPS'lerde aşağıdaki tüm şartlar sağlanmalıdır ;

- Kullanılacak özel bir proses veya prosesler bileşiminin kaynaktan önce belirlenmesi gereklidir. Uygun manuel veya yarı otomatik proseslerden biri belirtilmelidir.
- Kaynak prosedürünün uygulanacağı boruların çapları ve malzemenin et kalınlığı belirtilmelidir.
- Kaynak ağzı detaylarını gösteren şekiller kullanılmalıdır. Kaynak açısı ve birleştirilen malzemelerin arasındaki boşluk belirtilmelidir. Köşe ve alın kaynaklarının şekli ve kaynak kalınlığı gösterilmeli, eğer altlık kullanılacaksa belirtilmelidir. Y, T ve K birleşimlerinde kaynak ağızları AWS D.1.1.'e göre dizayn edilecektir.
- Dolgu malzemesinin özellikleri kaynak pasolarının adetleri belirtilmelidir.
- Akım, kutuplanma, voltaj ve akım şiddeti gibi elektriksel özellikler her bir paso ve kullanılan elektrot veya tel için ayrı ayrı belirtilmelidir.
- Kaynak pozisyonu ve doğrultusu belirtilmelidir.

Kaynak işlemi rüzgar, yağmur ve kar gibi kötü hava koşullarına maruz ortamlarda yapılmayacaktır. Islak yüzeyler kaynak edilmeyecektir.

Her çeşit kaynakta %100 gözle muayene yapılarak raporlanacaktır.

K, Y, T birleşimlerinde ve alın kaynaklarında kök pasolarda %100 penetrant testi uygulanacaktır. Dolgu pasolarından sonra bu kaynaklarda % 100 ultrasonik ve % 50 manyetik parçacık testleri uygulanacaktır.
Kaynak içindeki çatlakların tamamı tamir edilecektir. Porozite ve gözeneklerin 1,5mm genişliğinden büyük olanları ve genişliği ne olursa olsun sürekliliği 20mm'den büyük olanları tamir edilecektir. Kaynaklardaki undercut hatalarının 0,5mm'den derin olanları tamir edilecektir.

Kaynakçıların tamamı yaptıkları kaynakların kenarına kendi numaralarını vuracaklardır. Tüm kaynakçıların test sonuçları raporlanarak çıkan hatalar ve yapılan tamirler raporlanacaktır.

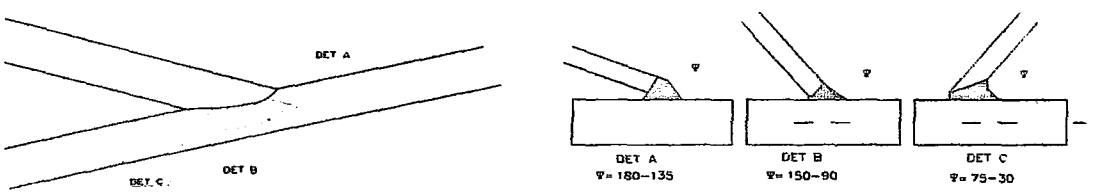
Kaynak prosedürüne ayrıca kaynakçıların sertifikalandırılmasının nasıl olması gerektiği dahil edilmiştir (Bkz Bölüm 3.2.).

3.4. Kaynak Kontrol Prosedürlerinin Hazırlanması

İmal edilen makasların kaynakları için %100 ultrasonik ve %50 manyetik parçacık testi uygulanması öngörülmüştür.

3.4.1. Ultrasonik test prosedürü

Prosedür kodu : ELT. KÜSS. U.T.
Malzeme : 13 Adet çatı makası
Ultrasonik alet : Marka : Krautkramer
Model : USN 52
Seri No : 622112
Prob tipi :
Krautkramer marka
1) MWB60 N4 8x9mm
2) MWB70 N4 8x9mm
Automatic marka
1) 5 MHz ϕ13mm
Kaynak tipleri ve test oranı :
Kaynaklar 273x16mm boruya 193mm çapında 5-6,3-8-10-12,5mm kalınlıklarındaki boruların K,Y ve T birleşimleri şeklindedir. Kaynaklar %100 kontrol edilecektir.



Şekil 3.3. Ultrasonik test yapılacak kaynak tipleri

Markalama : Ekteki çizim ve liste (Şekil 3.8.).
Test yüzeyleri : Makine ile temizlenmiş.

Temas sıvısı : Tutkal (Gliserin esaslı).

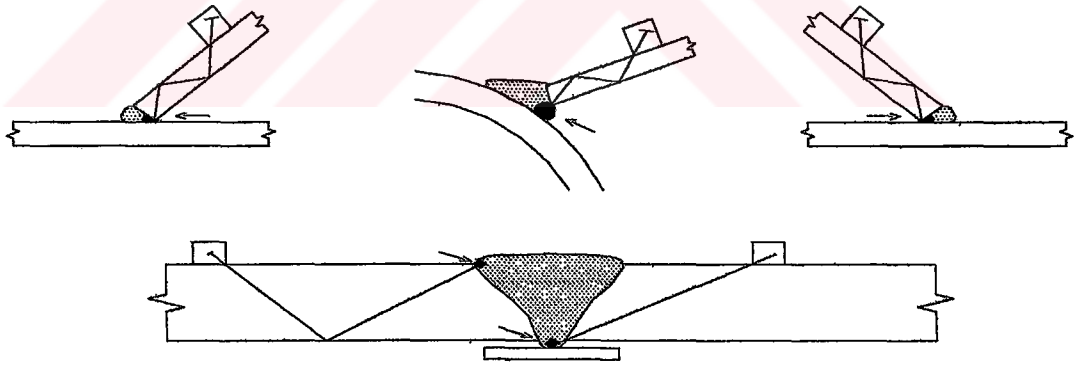
Teknik :

A) Şüphelenilen yerlerde laminasyon testi.Normal Probla (Automatic 5 MHz ϕ13mm) kontrol.

B) Alın kaynaklarında (16mm) doğrudan temas 60° ve 70° açılı Prob (4 MHz) ile kontrol.

C) Y , K ve T birleşimlerinde doğrudan temas 60° ve 70° açılı Prob (4 MHz) ile kontrol.

Kalibrasyon : Cihazın yatay ekranı V2 bloğunda ayarlanacak. Dikey ekran ayarları için Y, K, T şeklindeki kaynaklı bağlantılar üzerinde kontrol yapılacak üç bölgeden kesitler alınıp test numuneleri hazırlanmıştır. Bu numunelere göre D.A.C. eğrileri oluşturulup cihazın hafizasına yerleştirilmiştir. CHS 273x16 mm alın kaynakları için ayrı bir numune hazırlanmıştır. Ve bu numuneye göre ayrı bir D.A.C. eğrisi daha hazırlanmıştır. Hata derinlikleri zorunluluklar yüzünden 3mm olarak açılmıştır. 273x16mm alın kaynağı için referans hata çapı 2,5mm olarak hazırlandı.



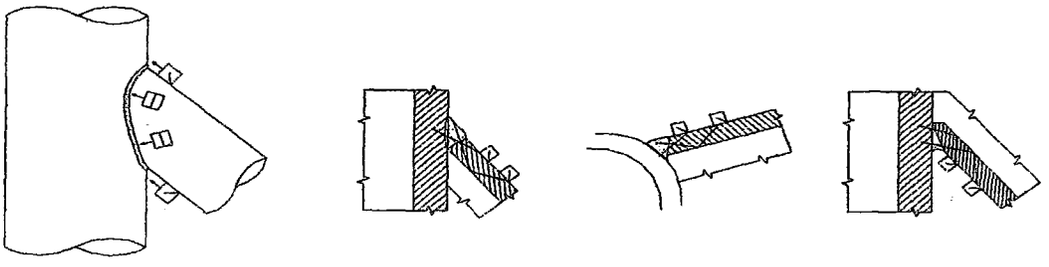
Hazırlanan 4 D.A.C. eğrisi hafizaya alındı.Kontrollar 6 dB arttırılarak yapılacak.

Şekil 3.4. Ultrasonik test için değişik bölgelerden kesitler alınmış ve test cihazının kalibrasyonu için gerekli 1mm çapında delikler açılmış numuneler.

Tablo 3.11. Ultrasonik test aletinin hafizasına kaydedilmiş olan kalibrasyon verileri.

Hafıza Kodu	Prob	Açı		Kristal Boyutu	Bölüm 1.02 DAC Kazançları	Bölüm 1.03 Kontrol Kazanç Değerleri
ELT P1	MWB70N4	70°	4MHz	8 x 9mm	60 dB	66 dB
ELT 60 / 6	MWB60N4	60°	4MHz	8 x 9mm	60 dB	66 dB
ELT 70 / 16	MWB70N4	70°	4MHz	8 x 9mm	70 dB	76 dB
ELT 60 / 16	MWB60N4	60°	4MHz	8 x 9mm	55 dB	61 Db

Tarama yönü ve kapsamı : Aşağıda şematik olarak çizilen teknik kullanılmıştır.

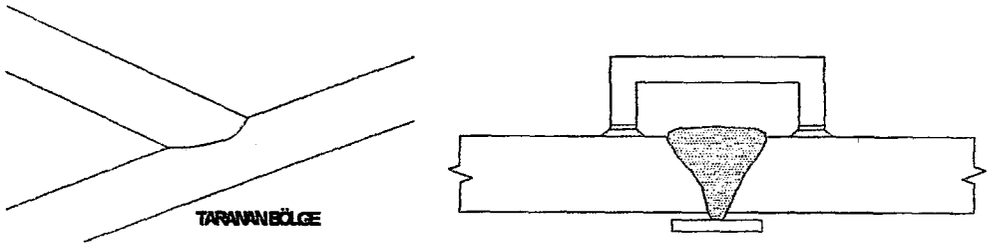


Şekil 3.5. Ultrasonik test yapılacak kaynakların tarama teknikleri.

Raporlama : Bulunan bütün süreksizlikler kayıt edilecek. Kabul red kriteri olarak Teknik Şartname'nin 11.5.2.ci maddesindeki değerler kullanılacaktır. Tamir gerektiren kaynaklar tamir sonrası tekrar kontrol edilecektir.

3.4.2. Manyetik parçacık test prosedürü

Prosedür kodu : ELT. KÜSS. M.T.
Malzeme : 13 Adet Çatı makası
Test standardı : EN 1291
Manyetik parçacık Marka : Tiede
Test cihazı : Model : TWM
Seri No : 743852
Manyetizasyon : Nal tipi, ayak açıklığı ayarlanabilir aparat
Kaynak tipleri ve test oranı :
Kaynaklar 273 x 16mm boruya 193mm pında 5-6,3-8-10-12,5 mm kalınlıklarındaki boruların K, Y ve T birleşimleri şeklindedir. Ayarlanabilir ayaklar K, Y ve T birleşimlerinin %50'sini kontrol etmeye uygundur.



Şekil 3.6. Manyetik parçacık testi için uygun olan kaynak bölgesi ve test aleti.

Markalama : Ekteki çizim ve liste (Şekil 3.8.).

Test yüzeyleri : Makine ile temizlenmiş.

Kontrast spray : ELY. White Contrast Paint 712 Code 2614

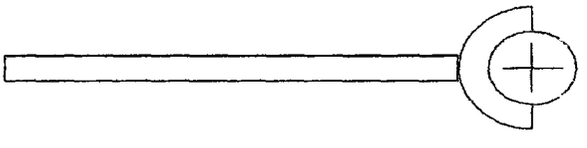
Manyetik parçacık tipi : Sulandırılmış siyah tip.:ELY. White Contrast Paint 712 Code 2614

Teknik :

1) Çanak fırça ile temizlenmiş yüzeylere beyaz fon sıkılır.

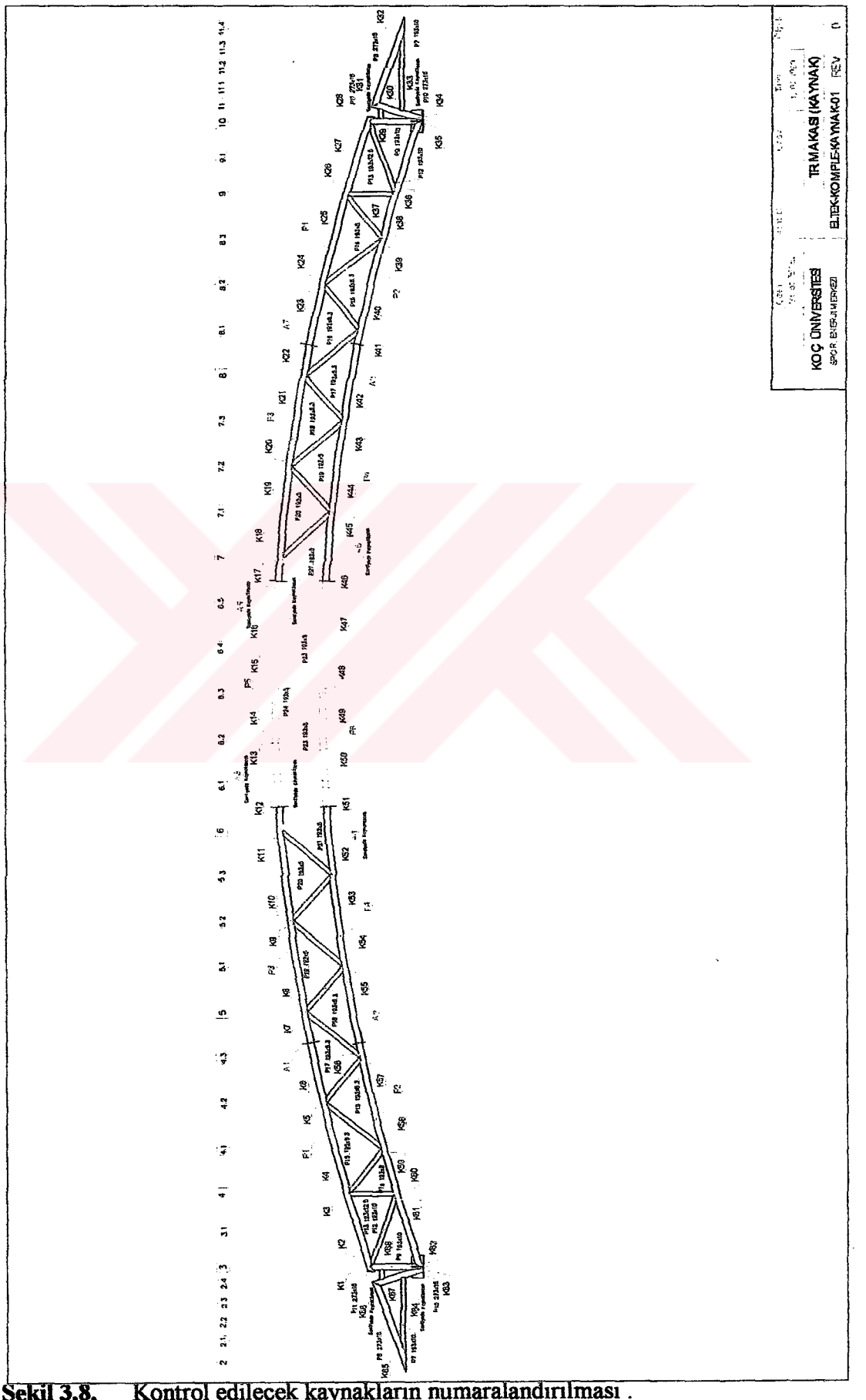
2) Parçacıklar kalibrasyon parçası yüzeyine püskürtülür. Manyetik alan yaratılarak gözle izlenir. Kalibrasyon parçası üzerindeki hata görülebiliyorsa kaynağın kontrolüne aynı şekilde devam edilir.

Kalibrasyon : Üzerinde gözle görülmeyen "+" şeklinde hata olan standart parça.



Şekil 3.7. Manyetik parçacık testinde kullanılan kalibrasyon parçası.

Raporlama : Bulunan bütün süreksizlikler kayıt edilecek. Kabul red kriteri olarak Teknik Şartname'nin 11.5.2.ci maddesindeki değerler kullanılacaktır. Tamir gerektiren kaynaklar tamir sonrası tekrar kontrol edilecektir.



Şekil 3.8. Kontrol edilecek kaynakların numaralandırılması .

Tablo 3.12. Ultrasonik ve Manyetik Parçacık testi için Y,T,K bağlantıları listesi.

KAYNAK NO	Bölüm 1.04 KAYNATILAN PARÇALAR
K1	P1 (273x16) + P11 (273x16)
K2	P1 (273x16) + P12 (193x10)
K3	P1 (273x16) + P13 (193x12.5)
K4	P1 (273x16) + P14 (193x8)
K5	P1 (273x16) + P15 (193x6,3)
K6	P1 (273x16) + P16 (193x6,3)
K7	P3 (273x16) + P17 (193x6,3)
K8	P3 (273x16) + P18 (193x6,3)
K9	P3 (273x16) + P19 (193x5)
K10	P3 (273x16) + P20 (193x5)
K11	P3 (273x16) + P21 (193x5)
K12	P3 (273x16) + P22 (193x5)
K13	P5 (273x16) + P23 (193x5)
K14	P5 (273x16) + P24 (193x5)
K15	P5 (273x16) + P24 (193x5)
K16	P5 (273x16) + P23 (193x5)
K17	P3 (273x16) + P22 (193x5)
K18	P3 (273x16) + P21 (193x5)
K19	P3 (273x16) + P20 (193x5)
K20	P3 (273x16) + P19 (193x5)
K21	P3 (273x16) + P18 (193x6,3)
K22	P3 (273x16) + P17 (193x6,3)
K23	P1 (273x16) + P16 (193x6,3)
K24	P1 (273x16) + P15 (193x6,3)
K25	P1 (273x16) + P14 (193x8)
K26	P1 (273x16) + P13 (193x12.5)
K27	P1 (273x16) + P12 (193x10)
K28	P1 (273x16) + P11 (273x16)
K29	P11 (273x16) + P9 (193x10)
K30	P10 (273x16) + P9 (193x10)
K31	P10 (273x16) + P8 (273x16)
K32	P8 (273x16) + P7 (193x10)
K33	P10 (273x16) + P7 (193x10)
K34	P10 (273x16) + P11 (273x16)
K35	P2 (273x16) + P11 (273x16)
K36	P2 (273x16) + P12 (193x10)
K37	P2 (273x16) + P13 (193x12.5)
K38	P2 (273x16) + P14 (193x8)
K39	P2 (273x16) + P15 (193x6,3)
K40	P2 (273x16) + P16 (193x6,3)
K41	P2 (273x16) + P17 (193x6,3)
K42	P4 (273x16) + P18 (193x6,3)
K43	P4 (273x16) + P19 (193x5)
K44	P4 (273x16) + P20 (193x5)
K45	P4 (273x16) + P21 (193x5)
K46	P6 (273x16) + P22 (193x5)
K47	P6 (273x16) + P23 (193x5)
K48	P6 (273x16) + P24 (193x5)
K49	P6 (273x16) + P24 (193x5)
K50	P6 (273x16) + P23 (193x5)
K51	P6 (273x16) + P22 (193x5)
K52	P4 (273x16) + P21 (193x5)
K53	P4 (273x16) + P20 (193x5)
K54	P4 (273x16) + P19 (193x5)
K55	P4 (273x16) + P18 (193x6,3)
K56	P2 (273x16) + P17 (193x6,3)
K57	P2 (273x16) + P16 (193x6,3)
K58	P2 (273x16) + P15 (193x6,3)
K59	P2 (273x16) + P14 (193x8)
K60	P2 (273x16) + P13 (193x12.5)
K61	P2 (273x16) + P12 (193x10)
K62	P2 (273x16) + P11 (273x16)
K63	P11 (273x16) + P10 (273x16)
K64	P10 (273x16) + P7 (193x10)
K65	P8 (273x16) + P7 (193x10)
K66	P10 (273x16) + P8 (273x16)
K67	P10 (273x16) + P9 (193x10)
K68	P11 (273x16) + P9 (193x10)

Tablo 3.13. Ultrasonik ve Manyetik Parçacık testi için alın kaynakları listesi. Bu listeler her makas için ayrı ayrı hazırlanır.

KAYNAK NO	KAYNATILAN PARÇALAR
A1	P1 (273x16) + P3 (273x16)
A2	P2 (273x16) + P4 (273x16)
A3	P3 (273x16) + P5 (273x16)
A4	P4 (273x16) + P6 (273x16)
A5	P3 (273x16) + P5 (273x16)
A6	P4 (273x16) + P6 (273x16)
A7	P1 (273x16) + P3 (273x16)
A8	P2 (273x16) + P4 (273x16)

4. İMALAT HAZIRLIKLARI

Malzemeler Kartal Bombe ve ELTEK Atölyesine gelmeye başladıktan sonra imalat için gerekli hazırlıklar yapılmaya başlanmıştır. Bunlar sırasıyla şöyledir :

- Boruların bükülmesi
- Numune parçaların hazırlanması
- Boru kesim listelerinin hazırlanması
- Boru kurtağzı alıştırma şablonlarının hazırlanması
- Makas imalat tezgahının kurulması
- Aşık ve çapraz imalat kalıplarının hazırlanması

4.1. Boruların Bükülmesi

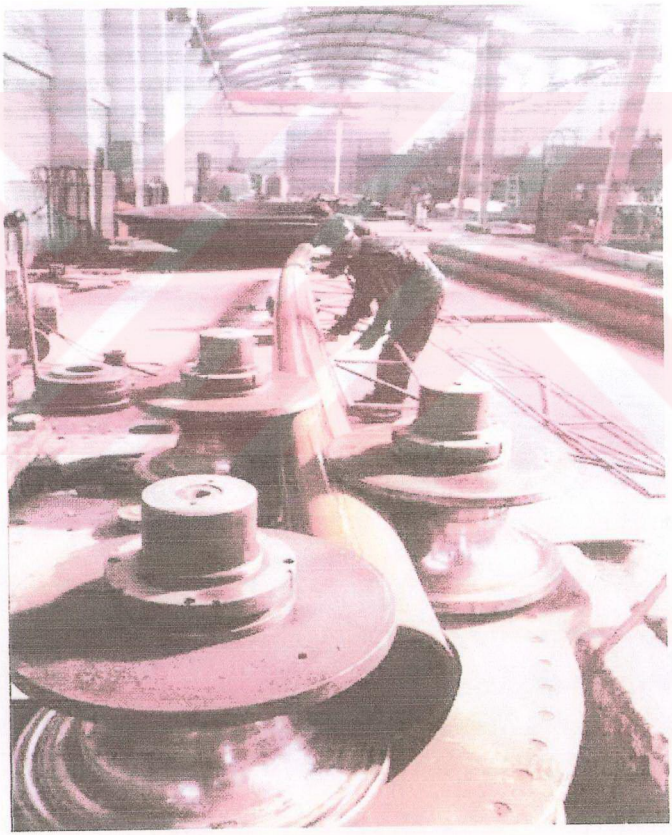
British Steel' den temin edilen boruların Ø 273 x 16 mm olan alt ve üst başlıkları bükümlü formu vermek amacıyla Gebze- Kartal Bombe'de bükülmüştür. Büküm işlemi sırasında borularda herhangi bir ovalleşmenin olmasını engellemek amacıyla boruları eksenlerine kadar saran merdaneler kullanılmıştır. Boruların büküm aşamasında tek bir düzlem içinde kalmalarını sağlamak için büküm makinasının önüne ve arkasına yükseklik ayarlı rulolar konulmuştur.

Boruların her birinin büküm çaplarının aynı olması gerekmektedir. Eğer bu sağlanamazsa imalat tezgahına konulamayacak olan borular problem çıkaracaktır. Büküm işlemi sırasında boru malzemesi içindeki homojensizlik kendisini büküm çapının istenilenden büyük veya küçük olması şeklinde gösterir. Bu durum bazen aynı borunun birkaç defa bükme makinasına sokulmasına neden olur.

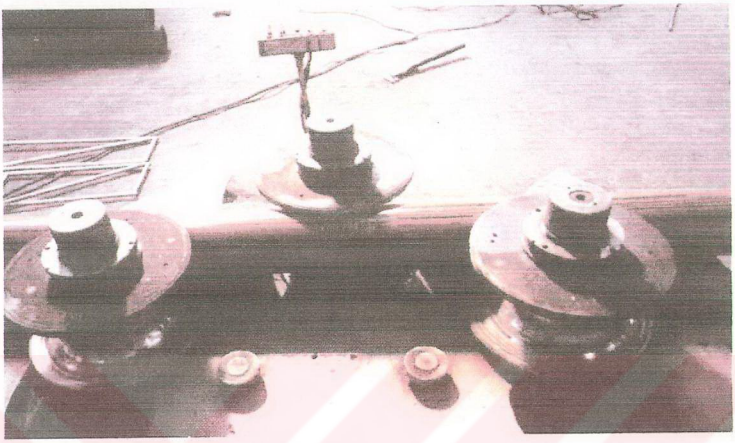
Bu nedenle büküm çapları farklı olan üst ve alt başlıklar için ince etli kutu profilden büküm şablonları hazırlanmıştır. Bu şablonlar; yaklaşık 130 adet 12 mt boru kontrol

edileceği için deforme olmamaları amacıyla makas şeklinde hazırlanmıştır (Şekil 4.1.).

Bükülen borular %100 şablonlar ile kontrol edilmiştir. Üst ve alt başlık boruları " Ü " ve " A " harfleriyle soğuk markalanmıştır. Makinada merdaneler arasındaki ~75 cm'lik boşluk nedeniyle boruların başından ve sonundan bükülemeyerek düz kalmış bölümler imalat aşamasında kesilmiştir (Şekil 4.2.).



Şekil 4.1. ϕ273x16 mm boruların bükülmesi işlemi. Borular bükülürken önceden hazırlanmış şablonlar ile kontrolleri yapılır.



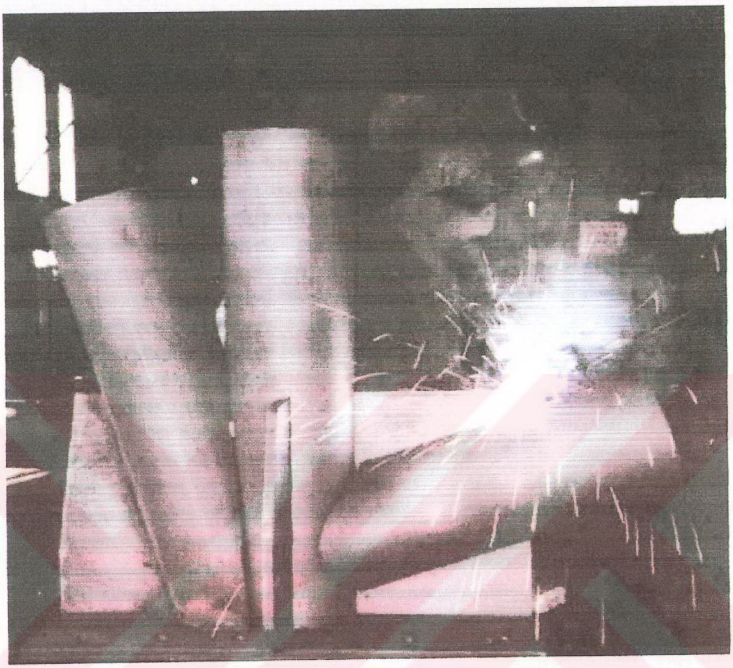
Şekil 4.2. Boruların bükülmesi işleminde merdaneler arası boşluk nedeniyle iki başta ~75'er cm düz kalır.

4.2. Numune Parçaların Hazırlanması

İmalat başlamadan önce bazı karışık detaylar 1:1 ölçek ile orijinal malzemeye sadık kalınarak hazırlanmıştır. Bunun iki nedeni vardır ;

- İmalatta karşılaşılabilecek bazı problemler önceden saptanarak çözümler numune parçalar üzerinde uygulanır ve sonuçlar kontrol edilebilir.
- Bu tür karışık detaylar özen ile hazırlanacağı için imalatta çalışan elemanlara örnek teşkil ederler. Böylece imalat hataları en aza indirgenir.

Numune parçalar hazırlanırken aynı parçadan iki adet hazırlanmıştır. Parçalardan biri kaynatılmış diğeri kaynak ağzı açılmış puntalı olarak bırakılmıştır. Böylece bir parçada kaynağı incelemek ve örnek olarak kaynakçılara göstermek mümkünken diğer parçada kaynak ağzı ve imalat özelliklerini çalışanlara göstermek mümkün olmaktadır (Şekil 4.3. ve 4.4.).



Şekil 4.3. Makasların taban plakası birleşiminden bir numunenin kaynatılması işlemi. Kaynak sonucunda taban plakasının aşırı çektiği gözlenmiştir. Bu olumsuzluğu gidermek için taban plakaları altına kaynak sırasında takılmak üzere kalın sactan bir kalıp hazırlanmıştır ve kaynak çekmesi engellenmiştir.

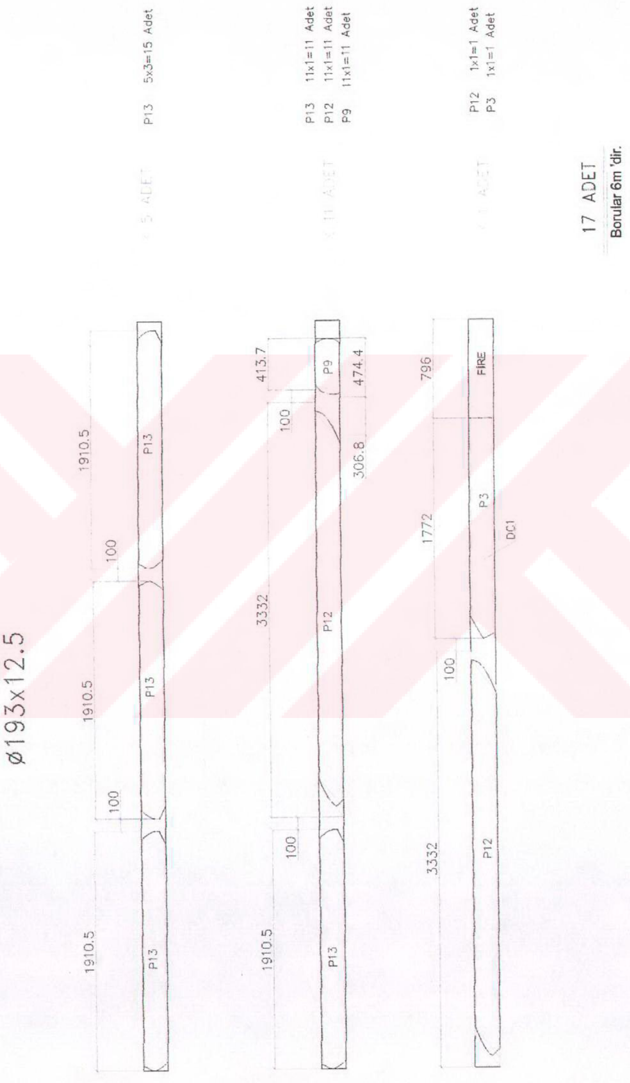
Şekil 4.4. Makas üzerinde bir düğüm noktasının kaynak ağzı detayını gösteren numune parça.

4.3. Boru Kesim Listelerinin Hazırlanması

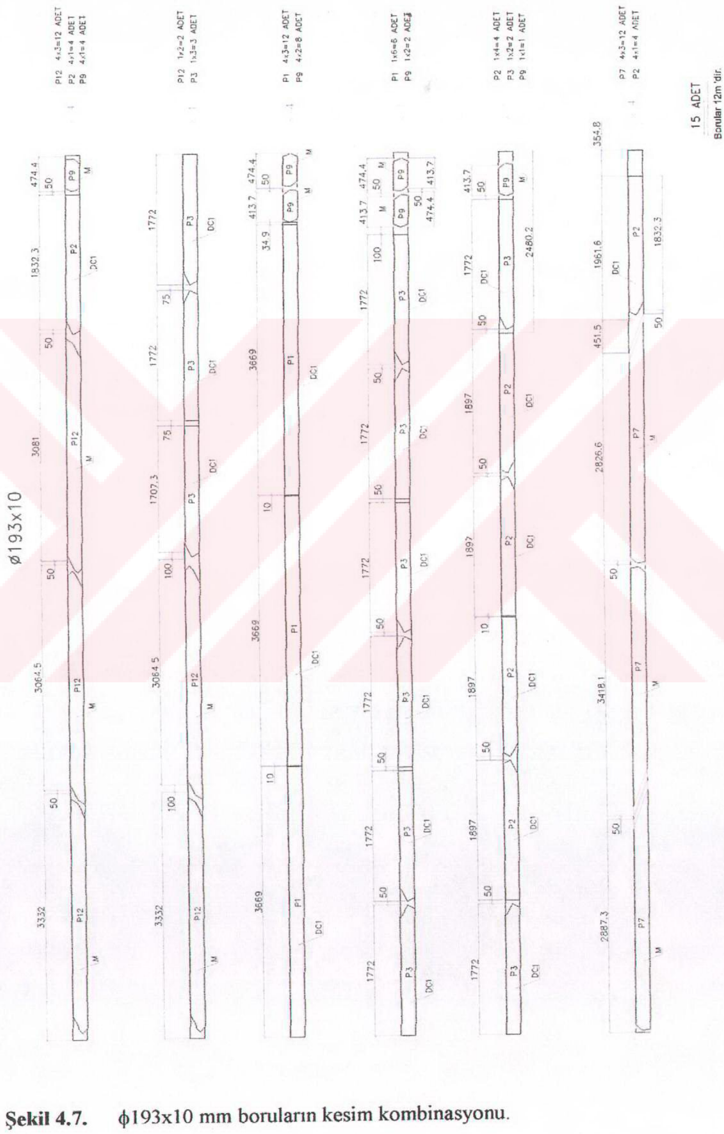
British Steel'den alınan boruların imalat aşamasında en az fire ile kullanılması çok önemlidir. Boruların istenilen ölçülerde ve minimum fire ile kesilmesi için kesim kombinasyonları yapılmıştır. Bu kombinasyon listeleri sayesinde boyları birbirine çok yakın olan boruların adetleri karıştırılmamıştır. Bu tür kombinasyon listeleri esnek çalışma şartlarındaki atölyelerde iş takibini kolaylaştırmakta ve hata oranını düşürmektedir. Aksi halde yapılacak en küçük karışıklık telafisi çok zor ve masraflı sonuçlar doğurabilir. Yapılacak kombinasyonların kolay anlaşılır olmasına özellikle dikkat edilmiştir.

Boru kesimleri açılı olduğu ve daha sonra tornada kurtağzı alıştırması yapılacağı için kombinasyonlarda açılar ölçü olarak verilmiştir. Bu sayede borular ilk kesimlerinden sonra tornaya direkt olarak bağlanmışlardır. İşçilik ve zamandan kazanç sağlanmıştır. Listeler AutoCAD ortamında çizildiği için gerçek kesim ölçülerine ve boru boylarına sadık kalınmıştır. Tüm listeler kolaylıkla uygulanmıştır.

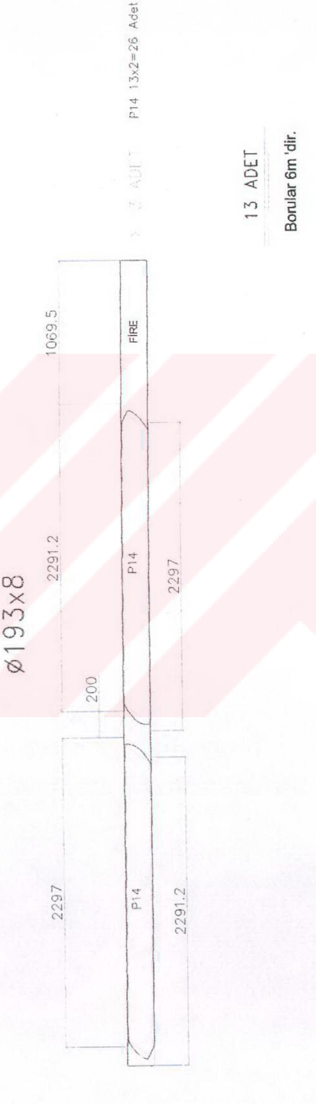
Şekil 4.5. ϕ273x16 mm boruların kesim kombinasyonu.



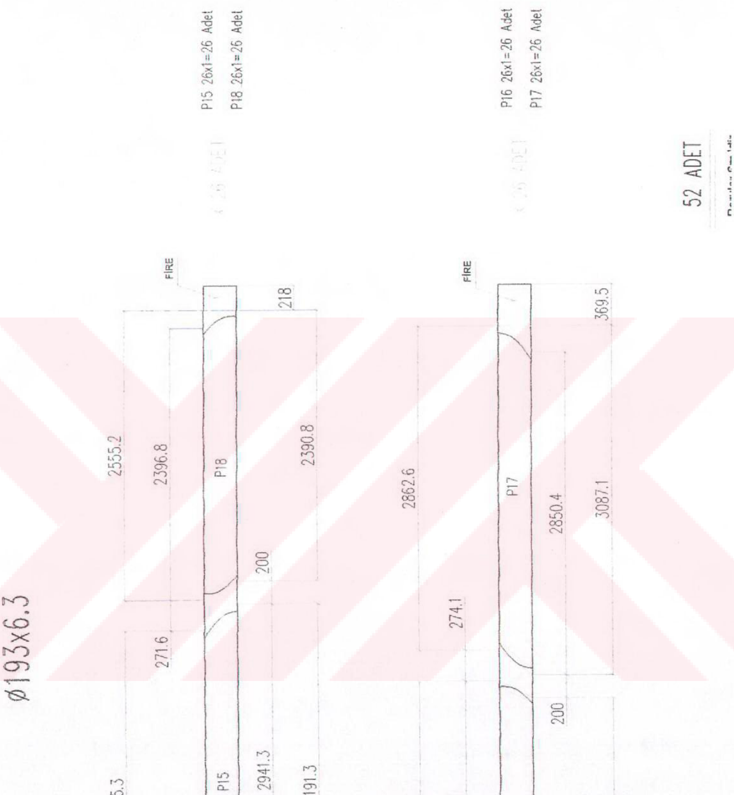
Şekil 4.6. ϕ193x12,5 mm boruların kesim kombinasyonu.



Şekil 4.7. φ193x10 mm boruların kesim kombinasyonu.

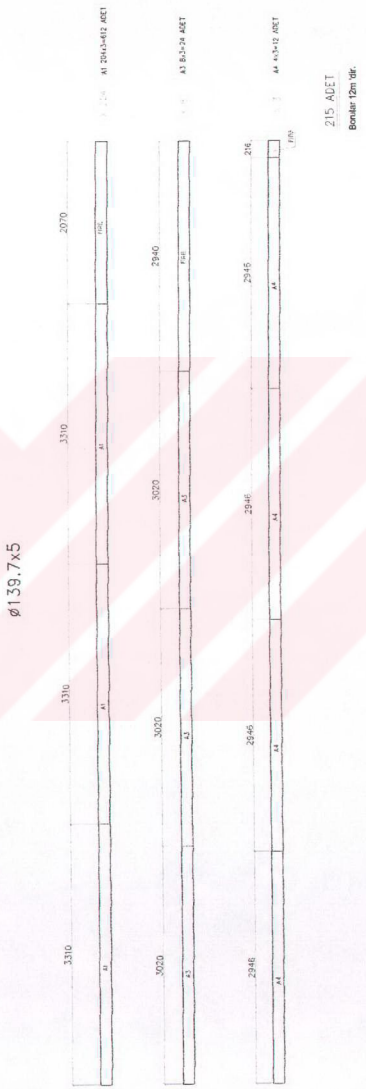


Şekil 4.8. ϕ193x8 mm boruların kesim kombinasyonu.

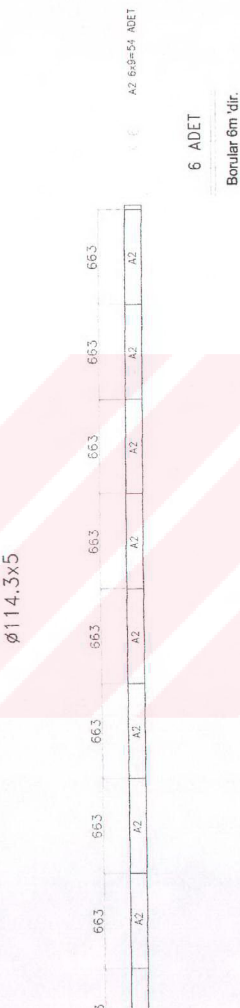


Şekil 4.9. ϕ193x6,3 mm boruların kesim kombinasyonu.

Şekil 4.10. ϕ193x5 mm boruların kesim kombinasyonu.



Şekil 4.11. ϕ139,7x5 mm boruların kesim kombinasyonu.



Şekil 4.12. ϕ114,3x5 mm boruların kesim kombinasyonu.

Şekil 4.13. ϕ60,3x5 mm boruların kesim kombinasyonu.

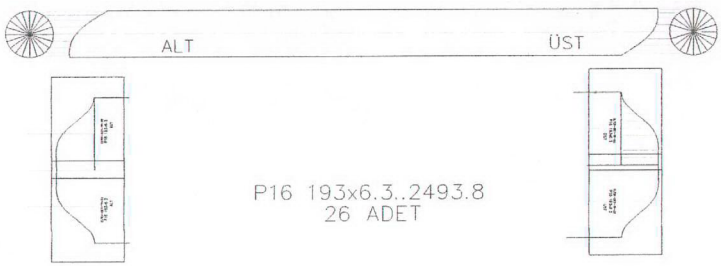
Şekil 4.14. ϕ60,3x5 mm boruların kesim kombinasyonu.

4.4. Boru Kurtağzı Alıştırma Şablonlarının Hazırlanması

Aynı pozlu boruların kurtağızlarının açılması için şablon hazırlanması şarttır. Bunun için bilgisayarda 1:1 ölçekli çizilen makastan çekilen boruların kurtağzı açılımları alınır. Dikkat edilecek nokta; et kalınlığı fazla olan ve kaynak ağzı açılacak olan boruların iç ve dış yüzeylerinin farklı açılımlara sahip olmasıdır.

Şekil 4.15. Uygun kaynak ağzı açılarak hazırlanan 68 adet ayrı kurtağzı numunesi .

Bilgisayardan alınan çıktılar önce kartonların üzerine çizilir ve poz numaraları kartonun üzerine yazılır (Şekil 4.16.). Daha sonra kartondan açılımlar yumuşak tenekelere aktarılır. Bu tenekeler boruların üzerine sarılarak kesim profili çizilir. Böylece hatasız bir kesim için her şey sağlanmış olur. Bu yöntem öncelikle sayısı 68'i bulan kaynak ağzı açılmış numuneleri yaparken kullanıldı. Açı ve kaynak ağzı kontrolleri yapılan numuneler daha sonra tornada açılacak kurtağızlarının doğruluklarının kontrolünde kullanılırlar.



Şekil 4.16. Bilgisayardan alınan bir kurtağzı açılımı.

4.5. Makas İmalat Tezgahının Hazırlanması

Böyle bir makasın doğru yapılmasının tek yolu çok hassas bir imalat tezgahının kurulmasıdır. Bu tezgahın üzerinde tüm parçaları ve plakaları ile bir makas tam olarak çatılabilmeli, ölçü kontrolleri ve kaynak işlemi rahatlıkla yapılabilmelidir.

Yapılacak tezgah dayamalı tip tezgahtır, yani konulacak tüm parçaların birden fazla dayaması vardır ve bu dayamalar ölçü hatlarını engellemenin yanısıra kaynak işlemi sırasında makasın deforme olmasını engellemektedir. Makaslar ile üzerlerindeki plakalar çok iyi irdelenerek tezgahı oluşturan profillerin ve dayamaların yerleri çok iyi seçilmiştir. Tezgahın yüksekliği 80 cm yapılarak makasın üst ve alt tarafındaki kaynaklar dahil tüm elemanların rahat pozisyonda kaynatılabilmesi sağlanmıştır.

Kaynatılan makas boyutsal çekmeye maruz kalır, tezgahın üzerindeki dayamalar nedeniyle kalıp içinde sıkışır eğer tezgah yeterli tolerans ile yapılmazsa kaynaklar yüksek iç gerilmeler nedeniyle henüz soğumadan çatlar veya soğumuş olan kaynaklar ITAB bölgesinden koparlar. Eğer kalıp çatma ölçülerinde ve sıfır tolerans ile imal edilirde makas soğuduktan sonra kalıptan sıkışma nedeniyle çıkartılamayacaktır.

Tüm bu nedenlerden dolayı tezgah bilgisayarda çizilmiştir (Şekil 4.17.-Şekil 4.18.). Kullanılan profillerin yerleri milimetrik olarak ölçülendirilmiştir. Tezgahın boyutları çok büyük olduğu için atölye içine yerleştirilmesi işlemi de bilgisayar yardımıyla yapılmış ve en uygun yerleştirme biçimi seçilmiştir. Tezgah kurulurken teodolit ve nivo kullanılmıştır. Ölçüler defalarca kontrol edilip sağlamaları yapılmıştır.

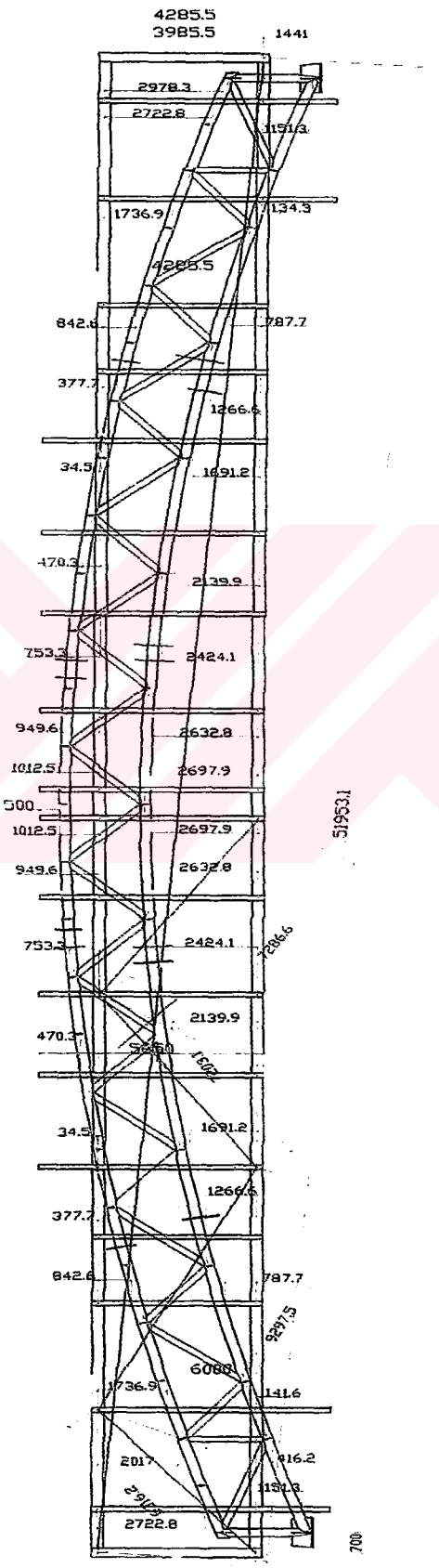
Bu tezgah ile üst ve alt başlıklardaki boru eklerinin detaylarındaki ringlerin boru içlerine geçirilip kaynatılması dahil tüm gerekli birleşimler ve makasın nakliye işlemi için gerekli olan 3 parçaya ayrılması işlemleri rahatlıkla yapılabilmiştir.

4.6. Aşık ve Çapraz İmalat Kalıplarının Hazırlanması

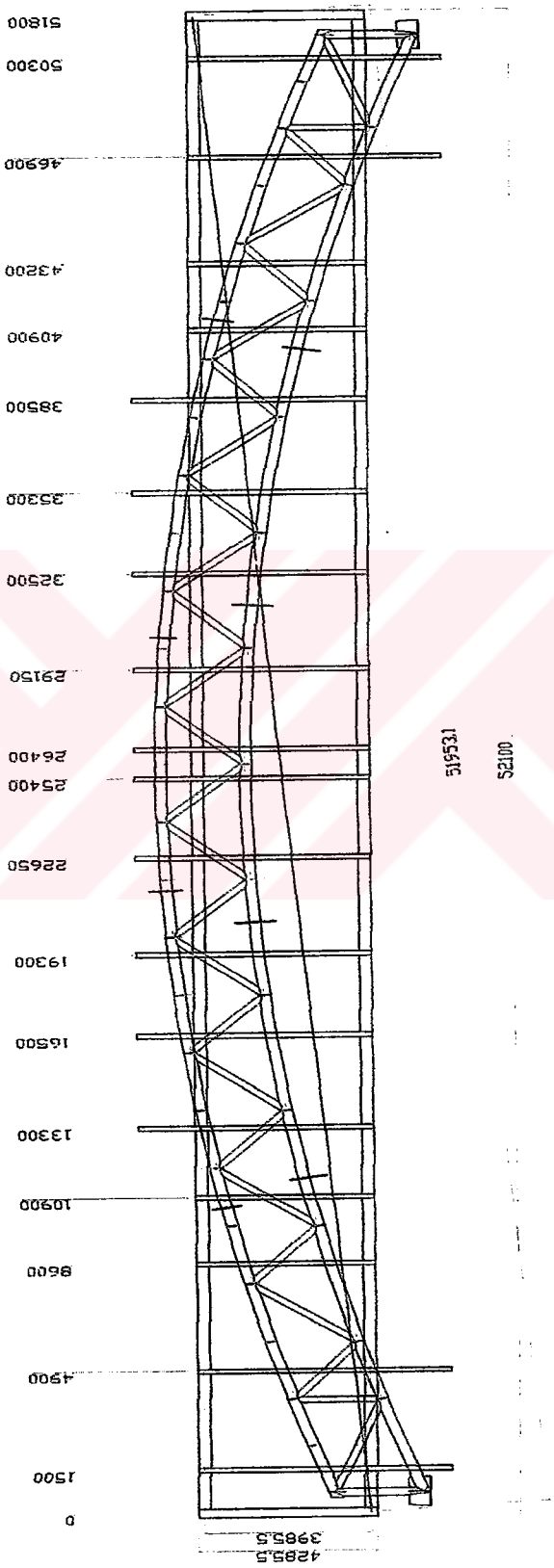
Projede toplam 4 tip aşık, 3 tip düşey çapraz ve 15 tip yatay çapraz vardır. Aşıklar için pimli tip imalat kalıpları hazırlanmıştır. Bu kalıplar aşığın bağlanacağı net ölçülerde ve iki başta delikli plakaların olduğu kalıplardır. İki baştaki delikli plakaların arasına önceden olması gereken boyda kesilmiş aşık malzemesi koyulur aşığın bağlantı plakaları kalıbın delikli plakalarına ikişer pim ile bağlanır ve plakalar puntalanır. Böylece bağlantı plakaları arasında bir eksantriklik olmaz ve aynı tipteki tüm aşıklar standart boyda olurlar.

Düşey çaprazların tümü ve yatay çaprazların 2 tipi için dayamalı ve pimli tip imalat kalıpları hazırlanmıştır. Bu kalıplar çaprazın bağlanacağı net ölçülerde ve olması gereken açıda kurulmuştur. Açıyı dayamalar ölçüyü ise pim ile çapraza bağlanan plakalar sabitlemektedir. Bu kalıplarda çatılıp puntalanan çaprazların açılarında ve boylarında hiçbir yanlışlık olamaz.

Geriye kalan 13 tip yatay çaprazın imalatı pimli tip imalat kalıplarında yapılmıştır.



Şekil 4.17. Bilgisayarda hazırlanmış makas imalat tezgahı kontrol ölçüleri.

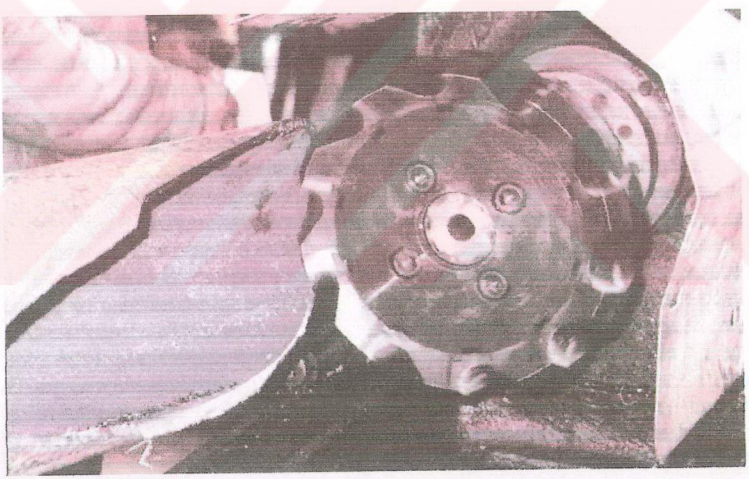


Şekil 4.18. Bilgisayarda çizilip ölçülendirilmiş makas imalat tezgahı ölçüleri.

5. İMALAT

5.1. Kurtağzı Alıştırmaları

Makas imalatının yapmak için öncelikle boruları net boylarına keserek kurtağzı alıştırmalarını yapmak gerekir. Boruların kesimi için gerekli kombinasyonlar 4.3. Boru Kesim Listelerinin Hazırlanması bölümünde anlatılmıştı. 4.4. Boru Kurtağzı Alıştırma Şablonlarının Hazırlanması bölümünde anlatılan ve bilgisayar yardımıyla hazırlanmış şablonlar yardımıyla tornada kurtağzı alıştırma işlemine başlanır.



Şekil 5.1. Tornada kurtağzı alıştırılan bir boru.

Sayısı 68' i bulan kurtağzı tipleri makası oluşturan borulara teker teker tornada alıştırılır. Bu işlemde bazı kurtağzı tiplerinin açıları çok fazla olduğu için tornada alınması gereken büyük pasolar karşımıza çıkar. Önceden hazırlanmış numunelerin üzerlerine ve içlerine teneke şablonlar sarılarak kesilir. Borular bu teneke şablonlarla sarılır ve renkli bir kalem ile çizilir. Üzerleri ve içleri çizilen borular yaklaşık 1cm

pay bırakılarak oksijen ile kesilir. Böylece alınacak pasonun kalınlığı ayarlanmış olur, zaman ve işçilik kaybı en aza indirilir (Şekil 5.1.).

Boruların iki tarafına birden kurtağzı alıştırılacağı için tornaya özel bir bağlama aparatı yapılmıştır. Bu aparat ile hem boruya istenen açı verilebilmekte hem de iki baştaki kurtağızlarının eksantrik açılmasını engellemektedir. Kurtağzı alıştırılan borulara, AWS D.1.1.'de belirtilen tam nüfuziyetli kaynak ağzı detayına uygun, kaynak ağızları taşlama yöntemiyle açılır. Şekil 4.5.'de görülen kurtağzı numuneleri bu işlemi yapan kişiye örnek teşkil ederek yanlış kaynak ağzı açılamamasını sağlar.

Şekil 5.2. Kurtağzı alıştırılmış ve kaynak ağızları hazırlanmış borular.

5.2. Makas Çatma

Ø 273 x 16 mm olan alt ve üst başlıkları oluşturan bükülmüş borular olmaları gereken boylara kesilerek kaynak ağızları açılır. Makas çatma tezgahına ilk olarak bu borular koyulur. Bu borular koyulurken kaynatılarak eklenecek olanlarının içlerine altlık teşkil etmesi için ringler yerleştirilir (Şekil 5.3.). Kaynatılmayacak üst ve alt başlık ekleri sonra sökülmek üzere puntalanır. Daha sonra kurtağızları alıştırılmış ve kaynak ağızları açılmış ara elemanlar örülür. Tüm parçaların koyulması bir sıraya tabidir ve birbirlerine puntalanırlar. Makası oluşturan her parçanın kaynağı çok

önemli olduğundan parçalar arasında bırakılan kaynak boşluğu büyük titizlikle bu sırada ayarlanır. Bırakılan boşluğun 1mm'den büyük olması durumunda kaynakta nüfuziyetsizlik; 5mm'den büyük olması durumunda kök oluşmama gibi problemlerle karşılaşılır. Makas çatılırken dayamalı tip olan çatma tezgahı parçaların tam yelerlerine oturmaları için önceden hassas biçimde ayarlandığı için ölçülerde hiçbir hata olmaz.

Şekil 2.1.'de gösterilen ve her makas için çizilen aşık ve çapraz bağlantı plakalarının yerleştirilmesi işlemine geçilir. Bu plakalar makasa dik ve yatay doğrultuda tam yerlerinde olabilmeleri için küçük kalıplar yardımıyla yerleştirilmiştir. Tezgah üzerindeki makasın üst ve alt yüzeyinde kalan plakalar yerleştirildikten sonra kaynak işlemine başlanır.

Şekil 5.3. Ø 273 x 16 mm boruların içine ring konularak kaynatılmış kesiti.

Kaynak işlemi ve testleri tamamlandıktan sonra nakliye nedeniyle kaynatılmayan parçaların puntaları kopartılarak makas 3 parça halinde tezgahtan çıkartılır.

Şekil 5.4. Üst ve alt başlıkların nivo ile kontrol edilerek çatılması işlemi.

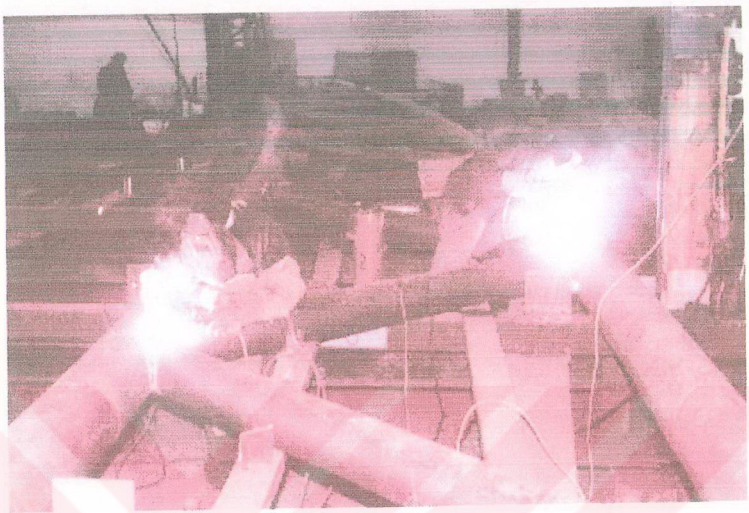
5.3. Makas Kaynağı

Makasların kaynakları çatma tezgahından çıkartılmadan önce tamamlanır. Tüm kaynaklar 3.3. Kaynak Prosedürlerinin Hazırlanması bölümünde ele alınan prosedürlere uygun yapılır. Kaynakçılar 3.2. Kaynakçı Sertifikalandırma bölümündeki esaslara göre sertifikalandırılmışlardır.

Boruların Y, T ve K birleşimlerinde kök pasoda selülozik tip elektrot kullanılmıştır. Böylece hatasız kök elde edilmiştir. Üst pasolarda bazik tip elektrot kullanılmıştır. Böylece istenilen düzeyde fiziksel özellikler elde edilmiştir.

5.3.1. Kaynakların penetrant ile kontrolü

Yapılan tüm kaynakların kök pasoları penetrant testi ile kontrol edilir. Tamamlanan kök pasolar taşlanarak temizlenir ve bir bez parçası ile silinir. Temizlenen bölgeye sprey BT 68 penetrant sıvı sıkılır. Yaklaşık 10 dakika beklendikten sonra sprey BT 69 temizleyici sıvı bir bez parçasının üzerine sıkılır. Bu bez ile penetrant sıvı güzelce temizlenir. Eğer kaynakta bir çatlak varsa penetrant sıvı bu çatlağa nüfuz edecektir.



Şekil 5.5. Çatma tezgahı üzerindeki bir makasın devam eden kaynak işlemi.

Nüfuz eden penetrant sıvıyı göz ile rahatlıkla görebilmek için spey BT 70 geliştirici kaynak bölgesine ince bir zar şeklinde sıkılır. Birkaç saniye içinde kuruyup beyazlaşan geliştirici eğer varsa çatlaklara nüfuz etmiş kırmızı penetrant sıvının görülmesini sağlar.

Kök pasoda herhangi bir çatlak veya gözenek bulunduğu taktirde bu hatalar ortadan kaldırılıncaya kadar taşlanır ve tekrar penetrant testi uygulanır. Hata kalmayan çatlakların üst pasolarının kaynağına devam edilir.

5.3.2. Kaynakların ultrasonik kontrolü

Makasların kaynakları %100 ultrasonik kontrollüdür. 3.4.1. Ultrasonik Test Prosedürü bölümünde anlatılan esaslar ve kalibrasyonlar çerçevesinde gerekli kontroller yapılır. Hata bulunan kaynaklar ve yerleri işaretlenir. Şekil 3.4.1.'deki kaynak numaralarına göre aşağıdaki raporlar doldurulur. Kontrol edilen kaynaklarda bulunan hatalar tamir edildikten sonra yapılan test sonuçları tekrar raporlara işlenir.

Eğer ikinci defa hata bulunuyorsa tekrar hatanın yeri ve derinliği hem kaynağın üzerine hem de raporlara işlenir. Bu işlem hatasız kaynağa erişilene kadar devam eder.

Şekil 5.6. Ultrasonik testi yapılan bir alın kaynağı.

Tablo 5.1. Alın kaynaklarının ultrasonik ve manyetik parçacık testleri için raporlama listeleri

KAYNAK NO	KAYNATILAN PARÇALAR	KONTROL SONUCU
A1	P1 (273x16) + P3 (273x16)	
A2	P2 (273x16) + P4 (273x16)	
A3	P3 (273x16) + P5 (273x16)	
A4	P4 (273x16) + P6 (273x16)	
A5	P3 (273x16) + P5 (273x16)	
A6	P4 (273x16) + P6 (273x16)	
A7	P1 (273x16) + P3 (273x16)	
A8	P2 (273x16) + P4 (273x16)	

Tablo 5.2. Ultrasonik ve manyetik parçacık testleri için raporlama listeleri.

KAYNAK NO	KAYNATILAN PARÇALAR	KONTROL SONUCU
K1	P1 (273x16) + P11 (273x16)	
K2	P1 (273x16) + P12 (193x10)	
K3	P1 (273x16) + P13 (193x12.5)	
K4	P1 (273x16) + P14 (193x8)	
K5	P1 (273x16) + P15 (193x6,3)	
K6	P1 (273x16) + P16 (193x6,3)	
K7	P3 (273x16) + P17 (193x6,3)	
K8	P3 (273x16) + P18 (193x6,3)	
K9	P3 (273x16) + P19 (193x5)	
K10	P3 (273x16) + P20 (193x5)	
K11	P3 (273x16) + P21 (193x5)	
K12	P3 (273x16) + P22 (193x5)	
K13	P5 (273x16) + P23 (193x5)	
K14	P5 (273x16) + P24 (193x5)	
K15	P5 (273x16) + P24 (193x5)	
K16	P5 (273x16) + P23 (193x5)	
K17	P3 (273x16) + P22 (193x5)	
K18	P3 (273x16) + P21 (193x5)	
K19	P3 (273x16) + P20 (193x5)	
K20	P3 (273x16) + P19 (193x5)	
K21	P3 (273x16) + P18 (193x6,3)	
K22	P3 (273x16) + P17 (193x6,3)	
K23	P1 (273x16) + P16 (193x6,3)	
K24	P1 (273x16) + P15 (193x6,3)	
K25	P1 (273x16) + P14 (193x8)	
K26	P1 (273x16) + P13 (193x12.5)	
K27	P1 (273x16) + P12 (193x10)	
K28	P1 (273x16) + P11 (273x16)	
K29	P11 (273x16) + P9 (193x10)	
K30	P10 (273x16) + P9 (193x10)	
K31	P10 (273x16) + P8 (273x16)	
K32	P8 (273x16) + P7 (193x10)	
K33	P10 (273x16) + P7 (193x10)	
K34	P10 (273x16) + P11 (273x16)	
K35	P2 (273x16) + P11 (273x16)	
K36	P2 (273x16) + P12 (193x10)	
K37	P2 (273x16) + P13 (193x12.5)	
K38	P2 (273x16) + P14 (193x8)	
K39	P2 (273x16) + P15 (193x6,3)	
K40	P2 (273x16) + P16 (193x6,3)	
K41	P2 (273x16) + P17 (193x6,3)	
K42	P4 (273x16) + P18 (193x6,3)	
K43	P4 (273x16) + P19 (193x5)	
K44	P4 (273x16) + P20 (193x5)	
K45	P4 (273x16) + P21 (193x5)	
K46	P6 (273x16) + P22 (193x5)	
K47	P6 (273x16) + P23 (193x5)	
K48	P6 (273x16) + P24 (193x5)	
K49	P6 (273x16) + P24 (193x5)	
K50	P6 (273x16) + P23 (193x5)	
K51	P6 (273x16) + P22 (193x5)	
K52	P4 (273x16) + P21 (193x5)	
K53	P4 (273x16) + P20 (193x5)	
K54	P4 (273x16) + P19 (193x5)	
K55	P4 (273x16) + P18 (193x6,3)	
K56	P2 (273x16) + P17 (193x6,3)	
K57	P2 (273x16) + P16 (193x6,3)	
K58	P2 (273x16) + P15 (193x6,3)	
K59	P2 (273x16) + P14 (193x8)	
K60	P2 (273x16) + P13 (193x12.5)	
K61	P2 (273x16) + P12 (193x10)	
K62	P2 (273x16) + P11 (273x16)	
K63	P11 (273x16) + P10 (273x16)	
K64	P10 (273x16) + P7 (193x10)	
K65	P8 (273x16) + P7 (193x10)	
K66	P10 (273x16) + P8 (273x16)	
K67	P10 (273x16) + P9 (193x10)	
K68	P11 (273x16) + P9 (193x10)	

5.3.3. Kaynakların manyetik parçacık yöntemi ile kontrolü

Makasların kaynakları %50 ultrasonik kontrollüdür. 3.4.2. Manyetik Parçacık Test Prosedürü bölümünde anlatılan esaslar çerçevesinde gerekli kontroller yapılır.

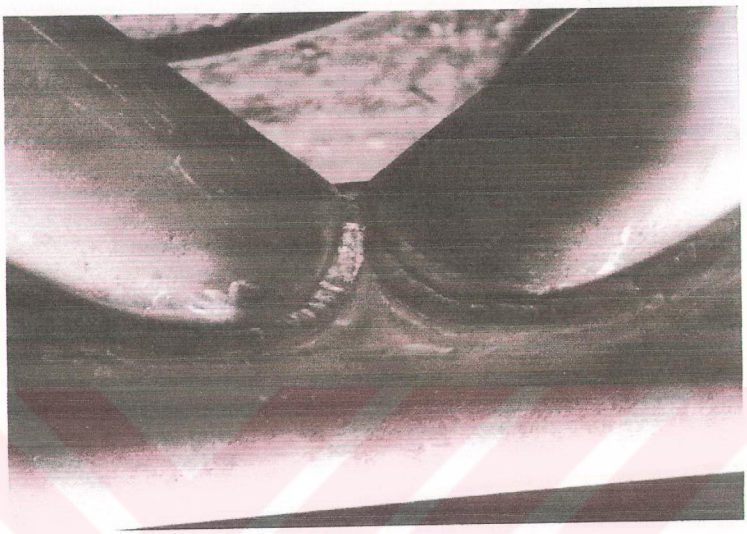
Manyetik parçacık yöntemi ile yapılan kontrollerde ultrasonik kontrol ile hataları tespit etmesi zor olan kaynak yüzeyinden yaklaşık 5 mm derinliğe kadar olan bölgede sağlıklı sonuçlar elde edilir. Ayrıca undercut hataları en küçük ayrıntısına kadar görülebilir.

Kontrol yapılacak kaynak üzerine demir tozlarının rahatlıkla görülebileceği beyaz fon sıkılır. Aynı zamanda kaygan olan beyaz fon kuruduktan sonra üzerine sulandırılmış demir tozları püskürtülür. Hata bulunan kaynaklar ve yerleri işaretlenir. Şekil 3.3.'deki kaynak numaralarına göre Tablo 5.1. ve 5.2'deki raporlar doldurulur. Kontrol edilen kaynaklarda bulunan hatalar tamir edildikten sonra yapılan test sonuçları tekrar raporlara işlenir. Eğer ikinci defa hata bulunuyorsa tekrar hatanın yeri ve derinliği hem kaynağın üzerine hem de raporlara işlenir. Bu işlem hatasız kaynağa erişilene kadar devam eder.

5.4. Aşık İmalatı

Aşık imalatının en önemli noktası detaylandırılmasının uygun yapılmasıdır. Makasların aralarına girecek olan aşıkların hem konstrüksiyon olarak, hem de adet çokluğu nedeniyle montajlarının kolay yapılması için taşımaları gerekli özelliklere sahip olmalıdırlar.

Konstrüksiyon olarak tüm aşıkların bağlantı plakaları kaynağı çok önemlidir. Ek-1'deki aşık resimlerinden de görüldüğü gibi boru olan aşıkların bağlantı plakalarının kaynağında düzgün bir kök oluşması ve tam nüfuziyetli kaynak elde edilmesi amacıyla 5 mmlik dairesel altlık kullanılmıştır. Aşık bağlantı plakalarının borulara kaynaklanmasında borulara kaynak ağzı açılmıştır kök pasolara penetrant testi uygulanmıştır.



Şekil 5.7. Tüm testleri yapılmış ve hata bulunmayan bir kaynak bölgesi.

Montaj kolaylığı açısından aşıklar çift delikli plakalar ile makaslara bağlanmıştır. Böylece aşık iki başından kavale ile makastaki plakaya tutturulurken boşta kalan deliğe cıvata takılır ve yüksekte yapılan montajda büyük kolaylık sağlanır.

4.3. Boru Kesim Listelerinin Hazırlanması bölümünde anlatılan gerekli kombinasyonlar ile kesilen borulara önceden hazırlanan pimli tip kalıplarda bağlantı plakaları puntalanır ve aşıklar çatılır. Bu kalıpların ölçüleri kontrollü olduğu için imal edilen aşıkların ölçülerinde bir yanlışlık olamaz. Çatılan aşıkların kaynakları yapılır.

5.5. Çapraz İmalatı

Çaprazlar tüm çatı sistemini kararlı hale getiren yegane elemanlardır. Makasların akslarındaki veya şaküllerindeki kaçıklıklar çaprazlar sayesinde ortadan kaldırılır. Ancak çaprazlar olmaları gerekli ölçülerinde imal edilemezlerse düzeltilmesi gereken kaçıklıklar daha fazla artarak sistemde büyük uyumsuzluklara sebep olabilirler.

Bunun için aşık imalatında olduğu gibi detaylandırmanın uygun yapılması çok önemlidir.

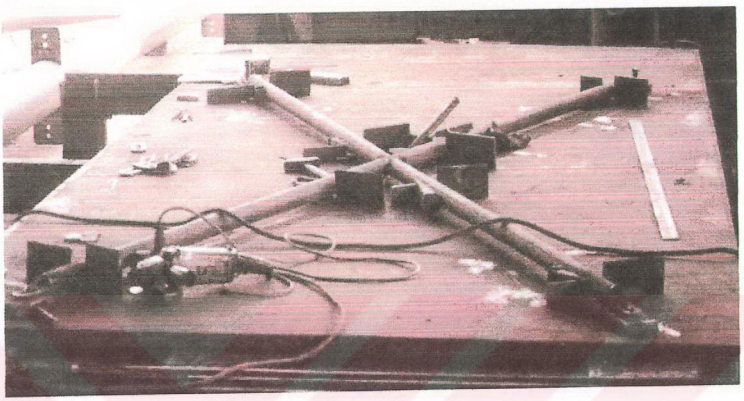
Şekil 5.8. Kaynakları yapılan aşıklar.

Çaprazlar sistemi karalı hale getirdikleri için montajları zor olur. Birçok defalar makasın çektirilmesi veya ötelenmesi gerekli olur. Bunun için çaprazlar çift delikli plakalar ile makaslara bağlanmıştır. Böylece çapraz iki başından kavale ile makastaki plakaya tutturulurken boşta kalan deliğe cıvata takılır ve yüksekte yapılan montajda büyük kolaylık sağlanır.

Çapraz bağlantı plakalarının kaynaklarında Ek-1'deki DC.1. resimlerinden de görülebileceği gibi uygun çaptaki borularda düzgün kök oluşması için 5mm sactan dairesel altlık kullanılmıştır. Küçük çaptaki borular dahil tüm borulara kaynak ağzı açılmıştır ve kök pasolara penetrant testi uygulanmıştır.

Çapraz boruları 4.3. Boru Kesim Listelerinin Hazırlanması bölümündeki kombinasyonlar ile kesilir. Önceden hazırlanan pimli ve dayamalı tip kalıplarda hem uygun açı ile çatılır hem de bağlantı plakaları puntalanır. Bu kalıpların ölçüleri

kontrollü olduğu için imal edilen çaprazların ölçülerinde ve açılarında bir yanlışlık olamaz. Çatılan çaprazların kaynakları yapılır.



Şekil 5.9. Çatılmış ve henüz kalıp içinde olan bir çapraz.

5.6. Kumlama ve Boyama

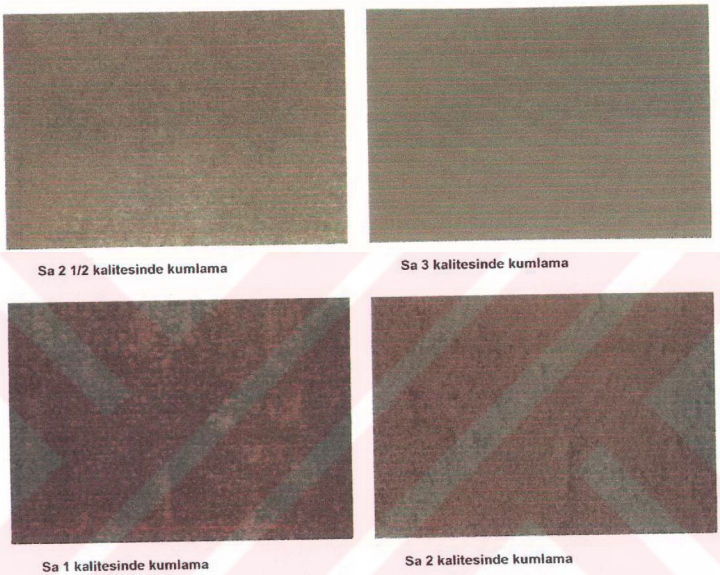
Malzemeler üzerlerindeki muhtemel tufal veya meneviş tabakalarının alınması amacıyla imalata girmeden önce kumlanırlar. Bu işlem malzemeyi işlemeyi kolaylaştırır. Kaynak için zararı olan pas tabakası malzeme üzerinden alınmış olur.

İmalat tamamlandıktan sonra mekanik temizliğe geçilir. Bu aşamada parçalar üzerinde göze hoş görünmeyen kaynak sıçrantıları, kesim çapakları, keskin köşeler, kaynak cürufları ve kabukları mekanik yöntemlerle temizlenir. Mekanik temizlik işleri için taşlama motorları, tel çanak fırça ve keski kullanılır.

Temizlenen makas parçaları, aşıklar ve çaprazlar boyama için uygun yüzey eldesi için kumlanırlar. Kumlanan parçaların yüzey kalitesinin Sa 2½ olması istenir.

Çelik konstrüksiyonun dayanıklılığını ve ekonomikliğini etkileyen en önemli faktör malzemesinin dış etkenlerden korunmasıdır. Çeliğin ömrü üzerindeki boyanın ömrü ile doğru orantılıdır. Boyanın cinsi ve tatbikatı çok önemlidir. Boyanın yapışması için malzeme yüzeyinin gerekli miktarda pürüzlü olması istenir. Uygun pürüzlülük

miktarı kumlamanın süresine ve kumlama malzemesi olarak kullanılan gridlerin tane büyüklüğüne bağlıdır. Sa 2½ yüzey kalitesi için belirli oranlarda değişik tane büyüklüğündeki gridler karıştırılır.



Şekil 5.10. İsveç standartlarına göre yüzey kalitelerinin görsel olarak ifadesi.

Sa 2½ yüzey kalitesinin sağlanmasından sonra boya tatbikatına geçilir. Bu projedeki boya tipleri ve kalınlıkları aşağıdaki gibi uygulanmıştır.

- Astar boya (antipas) Resist 78 (Inorganic Zilc Silicate) 60µ
- Ara kat Penguard HB (High Build Epoxy) 50µ
- Son kat Futura AS (Polyurethane Topcoat) 50µ

Şantiye ortamında çok kaynak işi olduğu için imalatlar astar boyalı olarak nakledilmişlerdir. Kaynak nedeniyle yanan astarlı kısımlar touch-up yöntemi ile tamir edildikten sonra ara kat tatbikatı makaslar henüz yerdeyken yapılmıştır. Son

kat boya tatbikatı makaslar yerlerine monte edildikten sonra yapılmıştır. Makasların son kat boya renk kodu standart boya kartelasında bulunmayan RAL 030.50.50 'dir.

5.7. Kalite Kontrol

Çatı Konstrüksiyonunu oluşturmak için kullanılan tüm malzemelerin, yarı mamullerin, yapılan tüm kaynak işlemlerinin ve boya tatbikatının kaliteleri belgelenmiştir. Kalite kontrol raporları aşağıdaki unsurların tamamını aynı sıra ile içermektedir.

- Temin edilen boruların sertifikalandırılması ayrıca fiziksel ve kimyasal özelliklerinin test edilerek raporlanması
- Temin edilen standart profillerin ve sac malzemenin sertifikalandırılması ayrıca fiziksel ve kimyasal özelliklerinin test edilerek raporlanması
- Kullanılan her türlü kaynak elektrotları, kaynak telleri, argon shield vs. gibi yardımcı malzemelerin kalite belgelerinin temin edilip uygunluklarının raporlanması
- Tüm kaynak işlemleri için gerekli raporlarının hazırlanarak gerekli testlerin yapılması (WPS-PQR) (Bkz. Ek-2 ve Ek-3)
- Tüm kaynakçıların yeterliliklerini belgelemek amacıyla sertifikalandırılması
- Kesilen, bükülen, delinen tüm parçaların, yarı mamullerin ve tam mamullerin boyutsal kontrollerinin yapılarak uygunluklarının raporlanması
- Yapılan kaynakların penetrant, ultrasonik, manyetik parçacık testlerinin yapılarak uygunluklarının raporlanması
- Yapılan kaynakların, imalatların, mekanik temizliğin ve boyanın gözle kontrolü yapılarak uygunluklarının raporlanması
- Astar, ara kat ve son kat boya tatbikatının kalınlıklarının ölçülerek uygunluklarının raporlanması

Bu projede yukarıda sözü edilen raporlar hazırlanırken gözlenen her türlü olumsuzluk tamir edilerek düzeltilmiş ve tüm tamir işlemleri raporlara dahil edilmiştir.

6. MONTAJ

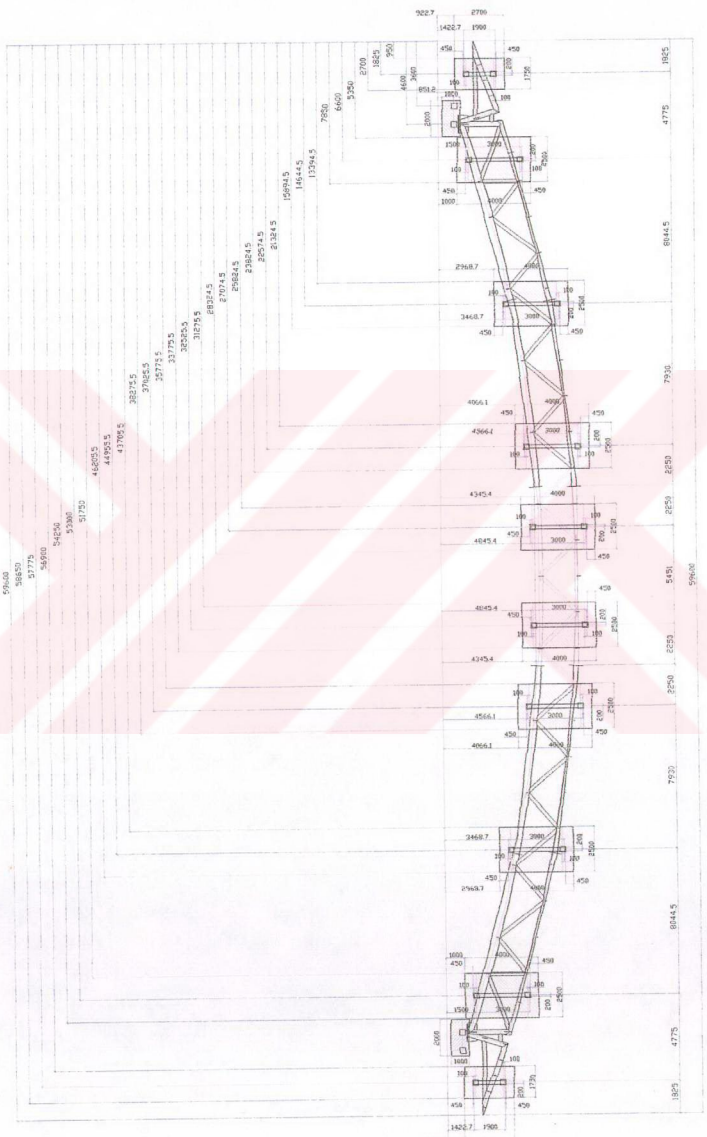
Şantiye sahasındaki yer problemi bu büyüklükteki makasların montajını güçleştirdi. Ancak nakliye öncesi yapılan etütler ile şantiye sahasında önlemler alınmış ve düzenlemeler ile saha montaja uygun hale getirilmiştir. Montaj işleminin altı makaslık ve yedi makaslık iki grupta tamamlanması planlanmıştır.

6.1. Makas Birleştirme Tezgahının Kurulması

Şantiyeye 5 parça halinde götürülen makasların eklenmesi için bir ekleme tezgahının kurulması gereklidir. Bu tezgah sayesinde makaslar herhangi bir ölçü hatası olmaksızın eklenebilecek, kaynakları ve gerekli testleri rahatlıkla yapılabilecektir. Şantiye sahasındaki yerin darlığı nedeniyle kurulacak tezgahın konumu hem montaj hem de nakliye açısından çok önemlidir. Bu tezgahın kurulması yapılacak olan nakliyeyi etkileyeceği için önceliklidir.

Tezgaha makas parçalarının koyulması ve tezgahtan bitmiş makasın çıkartılması işlemleri mobil vinçler sayesinde yapılacağı için TIR'ların ve vinçlerin geçebileceği kadar boş alanın tezgahın yanında kalması gereklidir. Ayrıca biten makaslar için de yer ayrılması gereklidir. Bu yerler parçaların ve biten makasların en az manevra ile montaj edilmesini sağlayacak şekilde seçilmiştir.

Sahanın çamur olması nedeniyle ekleme tezgahının kurulacağı yer düzeltildi. Stabilize malzeme döküldü. Kurulacak tezgah çok karmaşık bir yapıya sahip olmadığı için ayakların geldiği yerlere beton dökülmesi yeterli oldu. Dökülecek beton ayakların konumları ve ölçüleri Şekil 6.1. de görüldüğü gibi resimlendi. Tezgah yüksekliği ~80cm yapılarak kaynak ve testler için kolaylık elde edildi. Makasın ana ölçülerine sadık kalmak amacıyla taban plakalarının geldiği yerlere karşılık plakalar koyularak cıvata ile bağlanması dolayısıyla otomatik bir ölçü kontrolü sağlandı.



Şekil 6.1. Şantiyedeki ekleme tezgahının ölçülendirilmiş resmi.

Makas parçalarının tezgaha alınmasını ve biten makasın tezgahtan çıkartılmasını kolaylaştırmak için tezgah mümkün olduğu kadar basitleştirilerek üstündeki gereksiz parçalar alındı.

Henüz astar boyalı olarak eklenen makaslara gerekeli boya rötuşları yapıldıktan sonra yerdeyken ara kat boyaları atılır. Son kat boya makasların montajları sırasında zarar göreceği düşüncesiyle çatıda atılacaktır.

Şekil 6.2. Şantiyedeki ekleme tezgahında süren kaynak işlemi

6.2. Makasların Nakliyesi

Tamamlanmış makasın boyu ~60 metredir. Bu haliyle bir makasın nakliyesi imkansızdır. Makaslar nakliye işlemi düşünülerek 2 adet 21 metre, 1 adet 8 metre ve 2 adet 4,6 metrelik saçaklar olmak üzere 5 parçaya ayrılmışlardır.

21 metrelik büyük parçalar için özel olarak iki adet "dolly" adı verilen alçak tip treyler hazırlanmıştır. Parçalar düz değil bükümlü olduğu ve trafikte sol değil sağ taraftan çıkıntı olması istendiği için yükleme işlemi bir kat daha zorlaşmıştır. 21 metrelik makas parçaları çok rahatlıkla hareket ettirilemeyeceği ve şantiyedeki yerin

darlığı nedeniyle bir yükleme programı yapılmıştır. Bu program ile en son montajı yapılacak makasın parçaları en önce; birinci monte edilecek makasın parçaları en son yüklenecek biçimde ayarlanmıştır. Ayrıca yükleme sırasında makas parçalarının yönleri montaj yönüne ve ekleme tezgahı yönüne göre önceden tayin edilmiştir. Nakliyede yapılan sıralamanın ve yön tayininin sayesinde kısıtlı olan şantiye sahası imkanları olabildiğince verimli kullanılmıştır.

Nakliye, tonaj ve yükseklik sınırlamaları nedeniyle 4'er adet 21 metrelik parçalar halinde gerçekleştirilmiştir. Küçük parçalar ise normal TIR'larla ve kamyonlarla sevk edilmişlerdir. Nakliyede karşılaşılan tek problem şantiyede makas parçalarını indirirken bir vincin yetersiz kalarak ikinci vince ihtiyaç duyulması olmuştur.

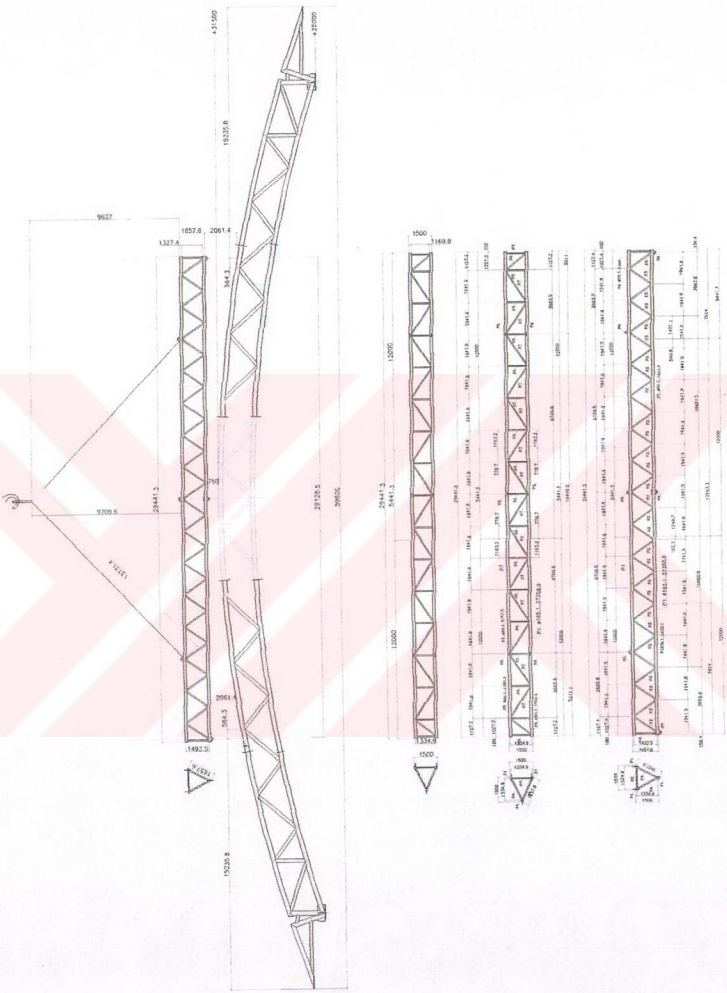
6.3. Makasları Kaldırma Aparatı İmalatı

Makaslar yer darlığından dolayı tek vinç ile monte edilecektir. 60 metrelik ve 16 tonluk bir düzlem makasın tek noktadan kaldırılması ve havada dengesini bozmadan çeşitli manevralar yapması mümkün değildir. Üç noktadan makası taşıyacak olan aparat taşıyıcı olacağı için üçgen boru makas şeklinde dizayn edilmiştir.

Bu aparat dizayn edilirken işlevselliği ön planda tutulmuştur. Çelik konstrüksiyon montajı hakkındaki tecrübeler ve mevcut makasların bilinen yönleri söz konusu aparatın ne gibi özelliklere sahip olması gerektiğini belirlemiştir.

- Aparat hafif olmalıdır.
- Mümkün olduğunca küçük ve kıvrak olmalıdır.
- Makasları dengeli tutmalıdır.
- Kaldırırken makaslara zarar vermemelidir.
- Makaslara rahat bağlanabilmeli ve çözülebilmelidir.
- 16 ton taşıyacağı için yeteri kadar sağlam olmalıdır.

Ölçülendirilmiş ve kesitleri belirlenmiş aparat için proje firmasından statik açıdan yardım istenmiştir. Kesitler gerekli hesaplar yapılarak onaylandıktan sonra aparat imal edilmiştir.



Şekil 6.3. Kaldırma aparatının ölçülendirilmiş resmi .

Kaldırma aparatı sayesinde makaslar eklendikleri yerden zarar görmeden alınmışlar ve rahatlıkla çatıya monte edilmişlerdir.

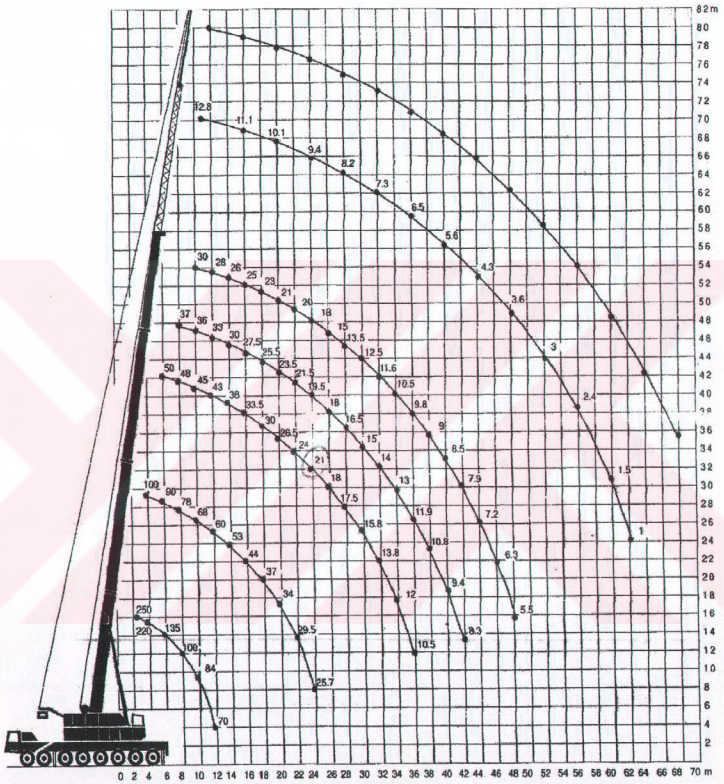
Şekil 6.4. Kaldırma aparatı ile manevralar yapılarak binanın içerisine kadar getirilirmiş ve montajı yapılmak üzere olan ilk makas.

6.4. Makasların Montaj Vincinin Seçimi

Kaldırılacak birinci makas vincinin seçimi için bağlayıcı olmuştur. İlk makasın koyulacağı yer vincin en fazla yaklaşabildiği noktadan 24 metre açıktadır ve vinç bomu aparat ve halatlar bağlı haliyle 32 metre yükseklikte olacaktır. Makasın ağırlığı 16 tondur aparat, halatlar vs. ile beraber kaldırılacak olan ağırlık 18,5 tonu bulmaktadır.

Aşağıda görülen 200 tonluk vinç eğrisi 24 metre açılık ve 32 metre yükseklik için 21 tonluk kapasiteyi göstermektedir. Kaldırmayı planladığımız ağırlık 18,5 ton olduğuna göre bu kapasitedeki vinç bizim için yeterli olmaktadır.

Dar alanlara gireceği için eni, boyu ve bomu döndürebilmesi için gerekli en küçük alan da vinç seçimi için belirleyici olmuştur. Ayak açıklıkları kurtarmadığı için henüz betonu dökülmemiş olan 2 kolon sonradan tekrar yapılmak üzere kesilmiştir.



Şekil 6.5. 200 ton Liebherr / LT 1200 vinç için kaldırma eğrisi.

6.5. Montaj

Saha içinde gerekli hazırlıklar tamamlandıktan sonra ilk altı makaslık bölümünü monte etmek üzere teknik malzemelerin hazırlanmasına geçilir. Bunların içinde en önemlisi montajda kullanılacak cıvata, somun ve pulun tedarik edilmesidir.

Tablo 6.1. Montajda kullanılacak cıvataların listesi.

AŞIK BAĞLANTI CIVATALARI				
Tip : M20	Boy : 60mm	Diş Boyu : 45mm	2496 adet	2496 adet somun+pul
AŞIK-2 BAĞLANTI CIVATALARI				
Tip : M12	Boy : 50mm	Diş Boyu : 35mm	108 adet	108 adet somun+pul
Tip : M16	Boy : 50mm	Diş Boyu : 35mm	108 adet	108 adet somun+pul
AŞIK-3 BAĞLANTI CIVATALARI				
Tip : M20	Boy : 70mm	Diş Boyu : 45mm	96 adet	96 adet somun+pul
DÜŞEY ÇAPRAZ 2-3 BAĞLANTI CIVATALARI				
Tip : M20	Boy : 60mm	Diş Boyu : 45mm	288 adet	288 adet somun+pul
DÜŞEY ÇAPRAZ 1 BAĞLANTI CIVATALARI				
Tip : M24	Boy : 80mm	Diş Boyu : 50mm	96 adet	96 adet somun+pul
YATAY ÇAPRAZ BAĞLANTI CIVATALARI				
Tip : M20	Boy : 60mm	Diş Boyu : 45mm	512 adet	512 adet somun+pul

İlk makas monte edildikten ve teodolit ile şakülüne getirildikten sonra ön tarafında bulunan beton perdeye geçici olarak bağlanacaktır.

Şekil 6.6. Birinci makasın montaj resmi.

Şekil 6.7. Birinci makasın montajdan sonraki resmi.

Birinci makasın montajından sonra ikinci makasın gereğince monte edilebilmesi için alt ve üst başlıklarından bağlanmak üzere en az 4'er aşık ve 3 dikey çapraz montaja hazır hale getirilmiştir. İkinci makas yerine kaldırıldığı zaman vinç çözülmeden bu aşıklar ve çaprazlar başka bir vinç yardımıyla bağlanarak sistemin doğruluğu ölçümlerle kontrol edilir.

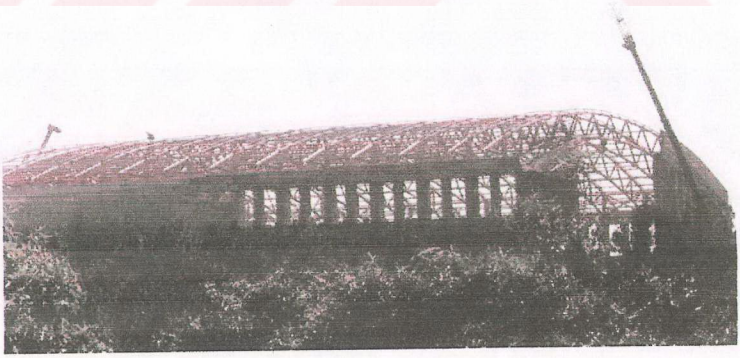
İlk üç makas yerlerine kaldırıldıktan sonra sistemin doğruluğunun kontrolü çok önemlidir çünkü olası bir hata tüm sitemin yanlış olmasına ve son makasın montajına kadar artarak süreklilik kazanmasına neden olacaktır. Tüm sistemin montajı bittikten sonra bu tür hataların giderilmesi veya tamiri, sistemin tamamen sökülerek bir kez daha monte edilmesi haricinde mümkün değildir.

Tüm montaj sırasında herhangi bir bağlantı uyumsuzluğu veya ölçü hatasına rastlanmamıştır. Herhangi bir nedenle delik patlatılmamıştır. Altı makaslık ve yedi makaslık olmak üzere iki partide sistemli bir şekilde gerçekleştirilen montajda hiçbir aksaklık olmamıştır.

Aşıkları, çaprazları monte edilen ve cıvata sıkımları tamamlanan bölümlere son kat boyaları atılır. Bu bölümlerin montajları tamamlanmış olur.

Son makasın montajı, aynı aksta olan beton perdenin dökülebilmesi için bir ay sonraya ertelenmiştir. Tekrar 200 tonluk vincin sahaya girmemesi için makas olması gereken yerden 1,5 metre geriye geçici aşıklarla monte edilmiştir. Beton perdenin dökülmesinden ve hazır hale getirilmesinden sonra son makas ve son aks arasının elemanlarının montajı yapılmış ve sistem tamamlanmıştır.

Şekil 6.8. İlk altı makasın montajının tamamlanmış hali.



Şekil 6.9. Montajın tamamlanma aşamasına gelmiş durumu .
Beton perdenin dökülebilmesi için son makasın geçici aşıklarla 1,5 metre geriye monte edildiği görülebiliyor.

7. SONUÇ

Bu çalışmanın amacı, çelik konstrüksiyon yapıların dizayn, imalat ve montaj aşamalarını örneklerle anlatmaktır. İncelenen çelik konstrüksiyon çatıyı oluşturan makas, aşık, çapraz, gibi elemanların imalatı, kayağı, boyanması, montajı prosedürlere bağlanmıştır. Bu prosedürler oluşturulurken değerlendirilen ilgili yerli ve yabancı standartlar tüm aşamaların uluslararası kurallara uygun yapılmasını sağlamıştır. Tüm teorik bilgiler uygulanmış ve doğrulukları kanıtlanmıştır.

Uygulama şeklinde yapılan bu çalışma ile ~50 metrelik açıklık ~90 kg/m^2'lik bir ağırlık ile geçilmiştir. Bu kadar büyük bir açıklığı çelikten başka malzemelerle bu kadar hafif geçmek hemen hemen mümkün değildir.

Özgün bir mimari yapıya sahip olan çatı cıvatalı bağlantı detayları ile kolay monte edilmiştir. 13 adet makasın büyük titizlikle yapılan kaynakları birçok testten geçirilerek raporlanmıştır. Konstrüktif olarak çok önemli olan kaynakların standartlara uygun şekilde incelenerek raporlanması için tüm evreler detaylı olarak ele alınmıştır. İmalatta ve montajda karşılaşılabilecek sorunlara pratik çözümler getirilerek uygulamalarına deyinilmiştir.

Ortaya çıkan çatı konstrüktif özellikleri açısından çeşitli otoritelerden olumlu yönde eleştiriler almıştır. Çeşitli ülkelerdeki benzeri çalışmalar gibi bu çatı da mimarisi ve çelik konstrüksiyon olması nedeniyle literatürdeki saygın yerini almıştır.

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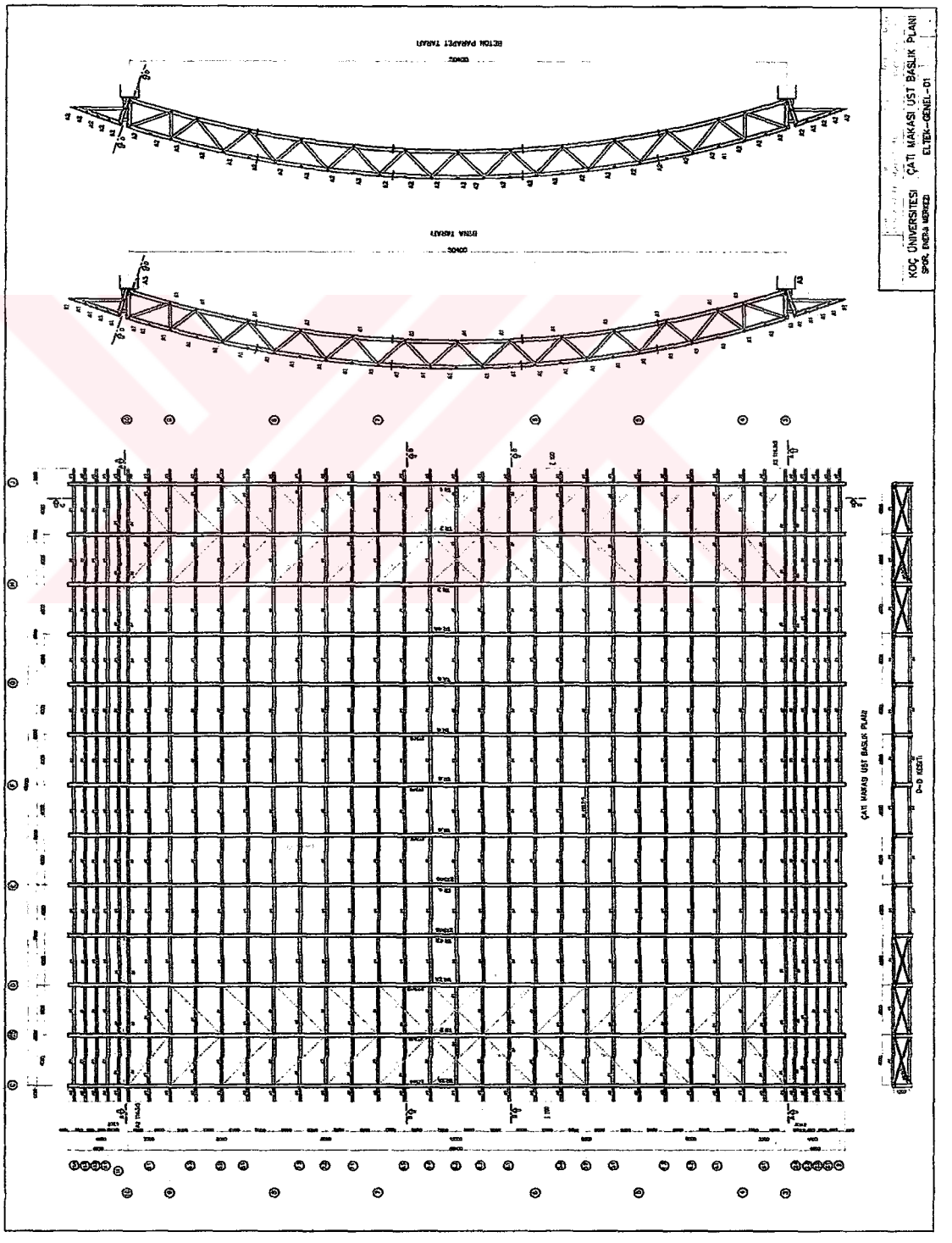
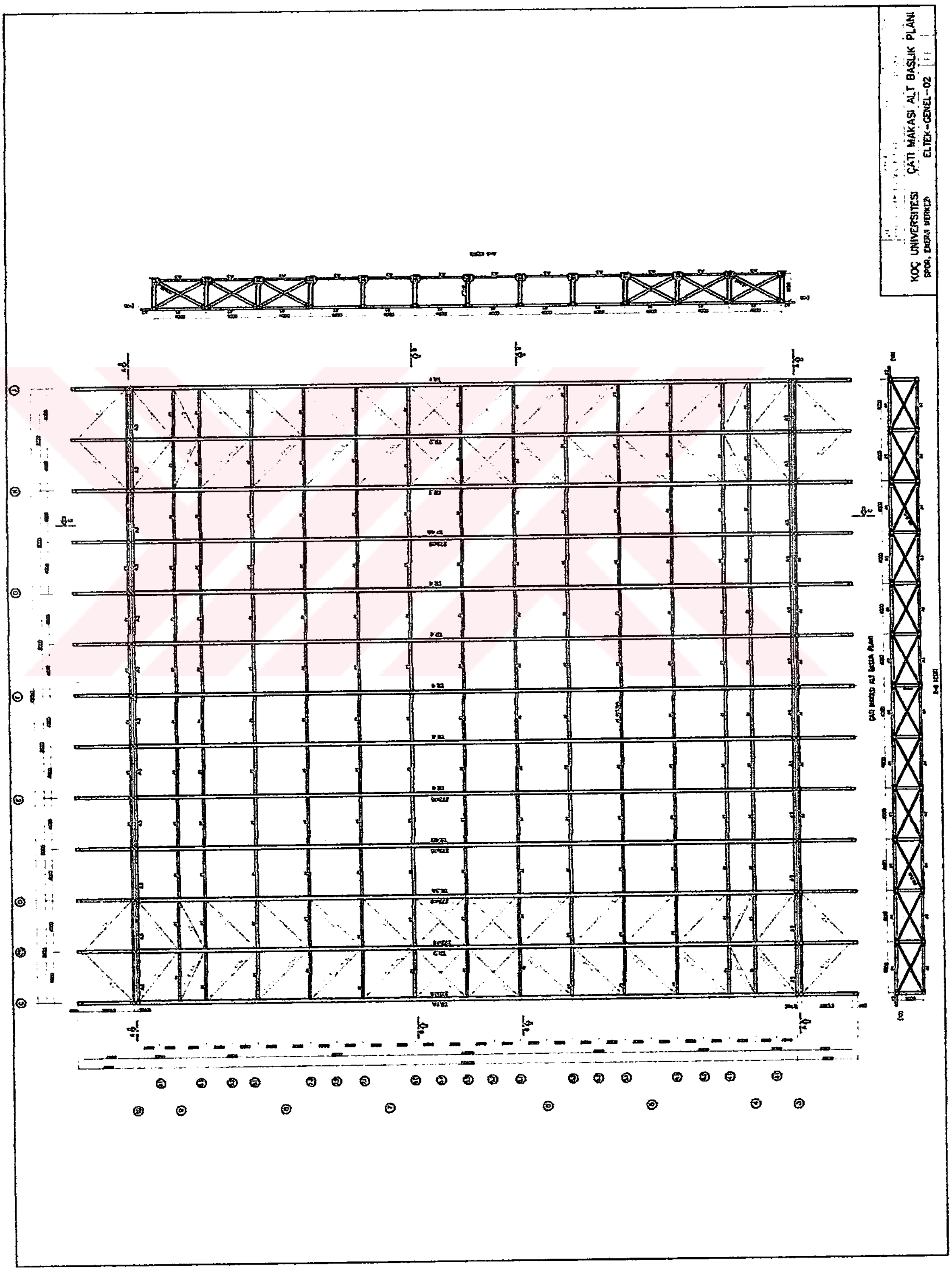
EKLER

EK-1 Detay Resimleri

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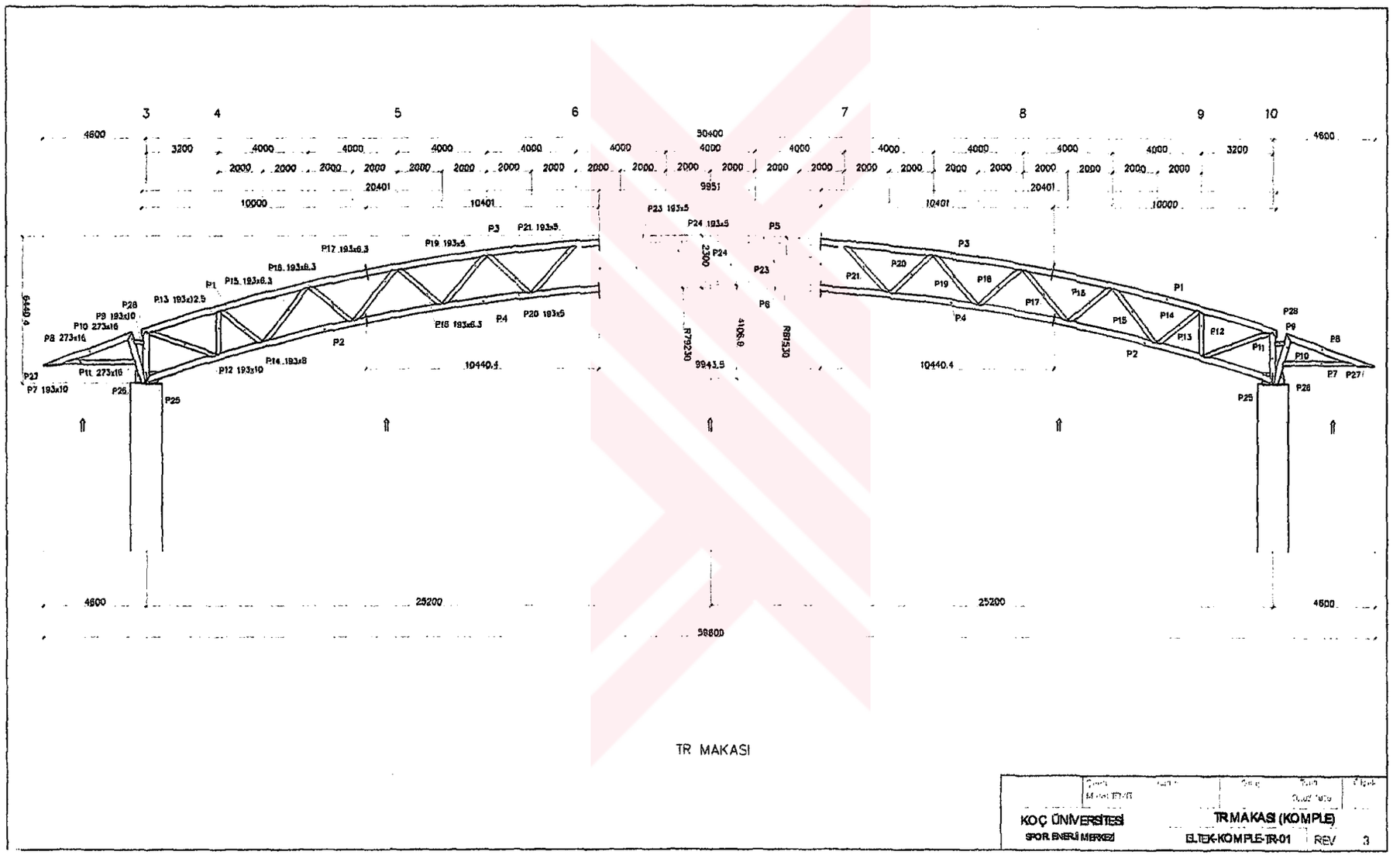
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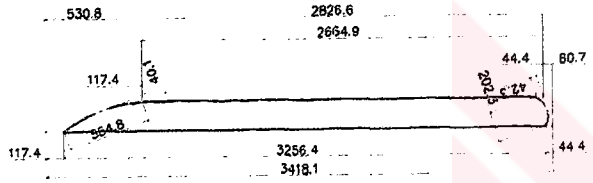
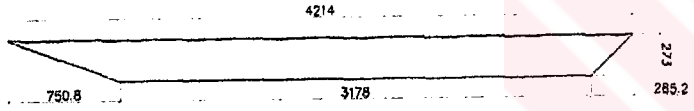
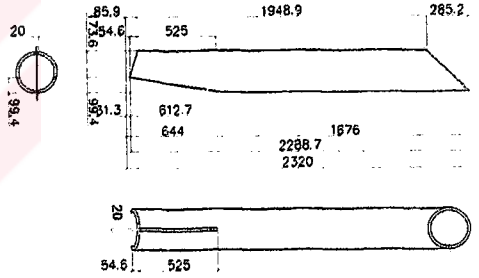


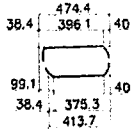
P7 193x10..3418.1
26 ADET



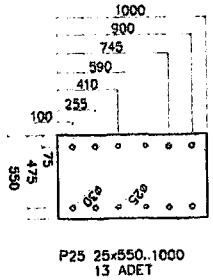
P8 273x16..4214
26 ADET



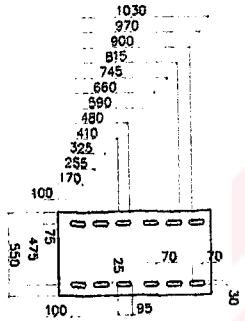
P10 273x16..2320
26 ADET



P9 193x10..474.4
26 ADET



P25 25x550..1000
13 ADET



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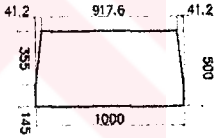

P26 20x500..1000
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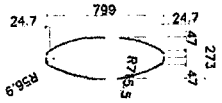

P27 20x273..799
26 ADET

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SPOR, ENERJİ MERKEZİ

MAKAS DETAYI (TR)
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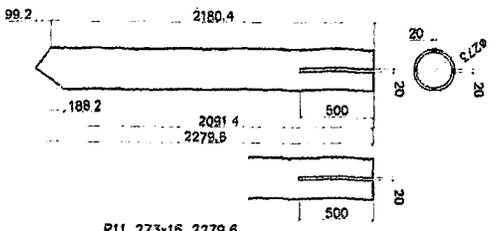
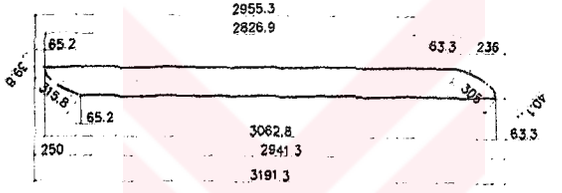


P11 273x16..2279.6
26 ADET



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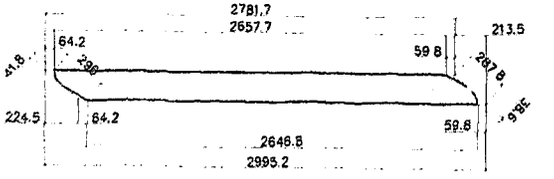

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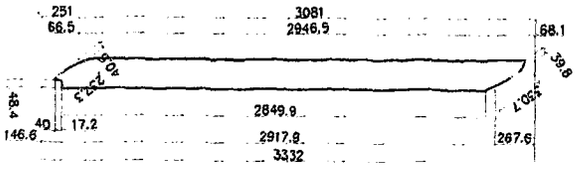
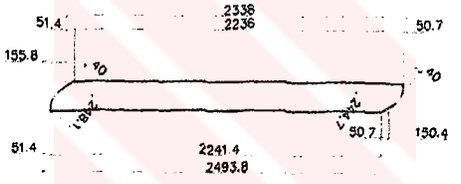
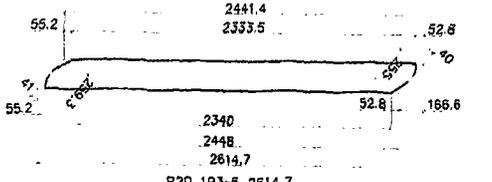


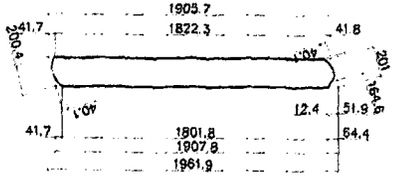
P12 193x10..3332
26 ADET



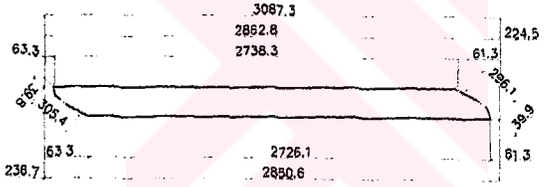
P16 193x6.3..2493.8
26 ADET



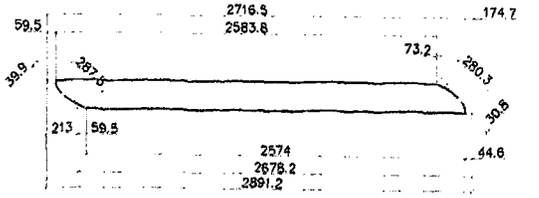
P20 193x5..2614.7
26 ADET



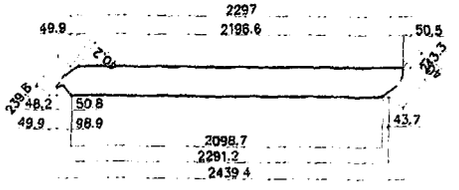
P13 193x12.5..1910.5
26 ADET



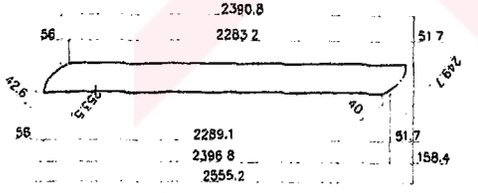
P17 193x6.3..3087.3
26 ADET



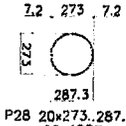
P21 193x5..2891.2
26 ADET



P14 193x8 2439.4
26 ADET

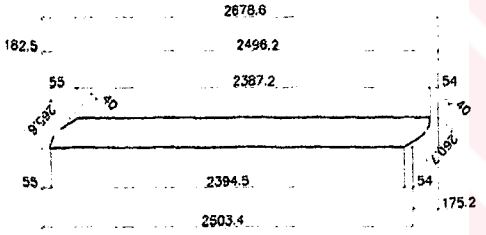


P18 193x6.3..2555.2
26 ADET

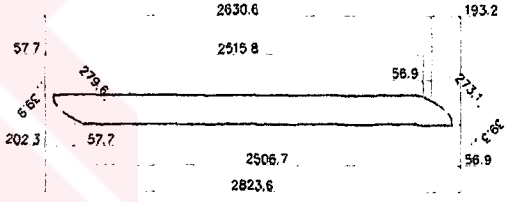


P28 20x273..287.3
26 ADET

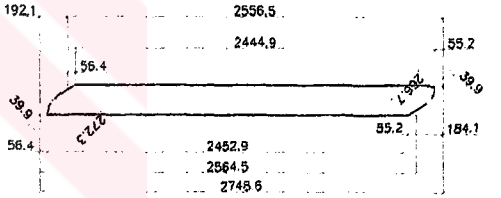
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	MAKAS DETAYI (TR)		
	ELTEK-DET-TR-02	REV	4



P22 193x5..2678.6
26 ADET

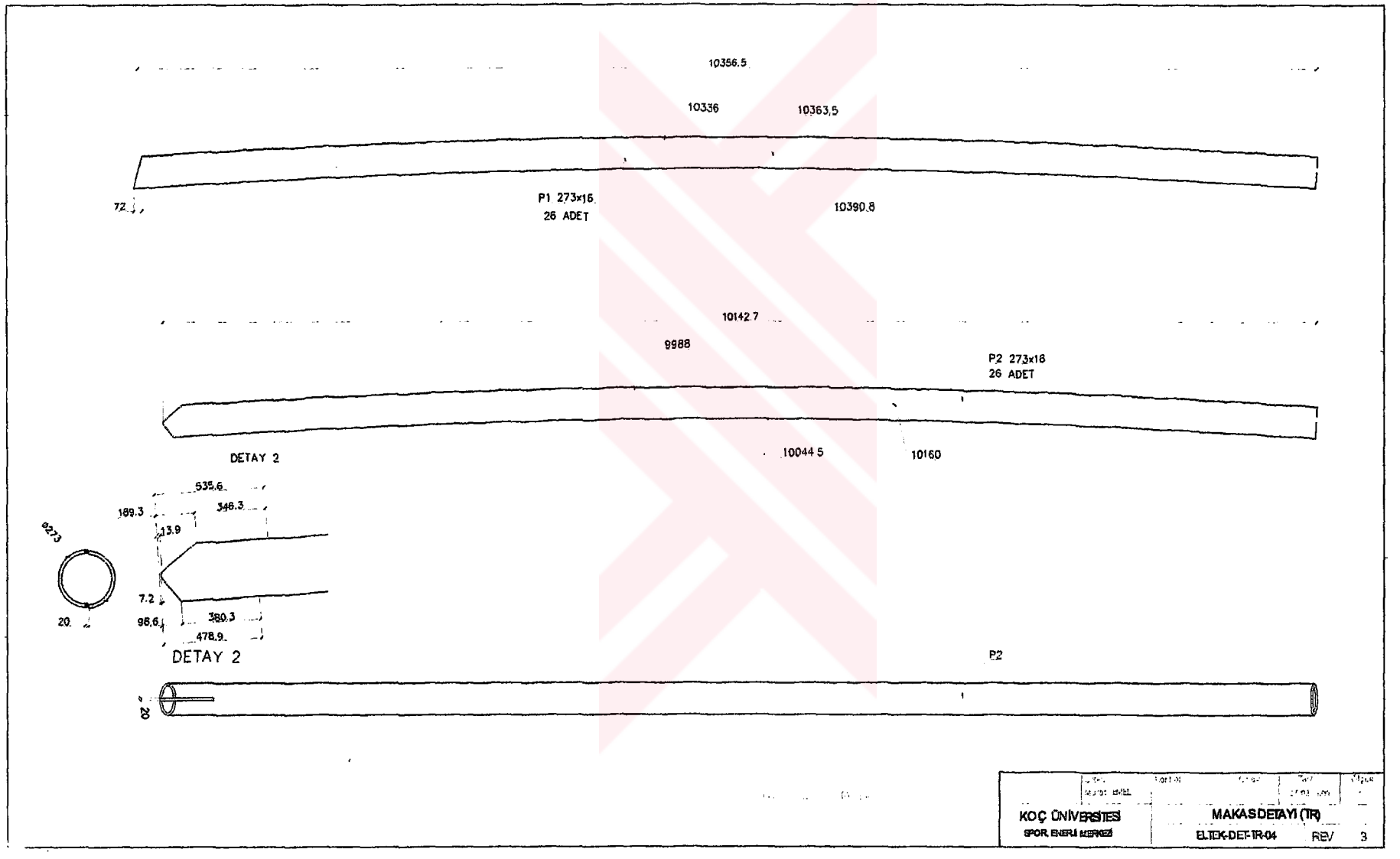


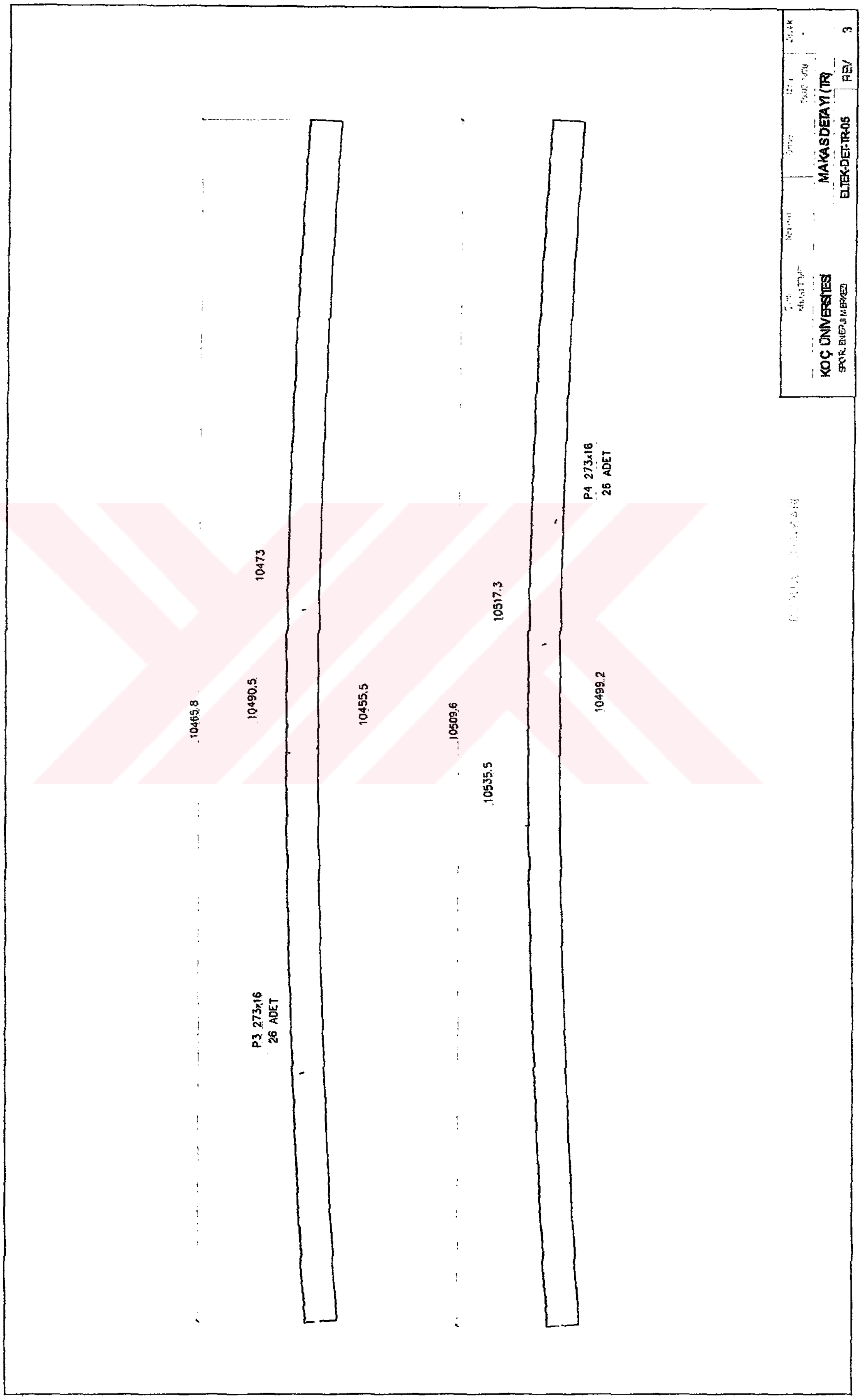
P23 193x5..2823.6
26 ADET



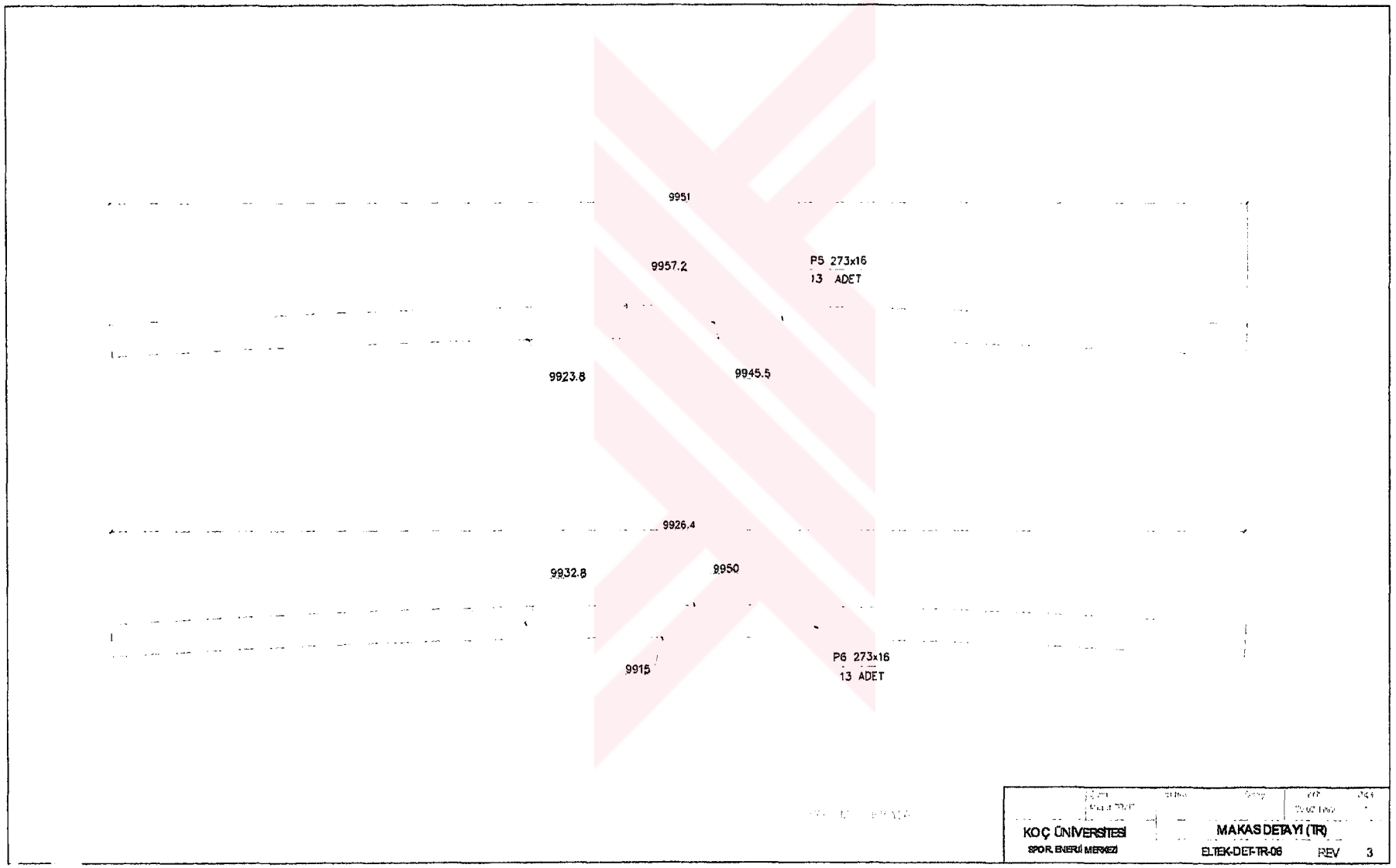
P24 193x5..2748.6
26 ADET

KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ		MAKAS DETAYI (TR)		
		ELTEK-DET-TR-03	REV	1


10356.5
10336
10363,5
72
P1 273x16
26 ADET
10390.8
10142.7
9988
P2 273x16
26 ADET
DETAY 2
10044.5
10160
535.6
346.3
189.3
13.9
ø273
7.2
98.6
380.3
478.9
20
DETAY 2
P2
20
KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ
MAKAS DETAYI (TR)
ELTEK-DET-TR-04
REV
3

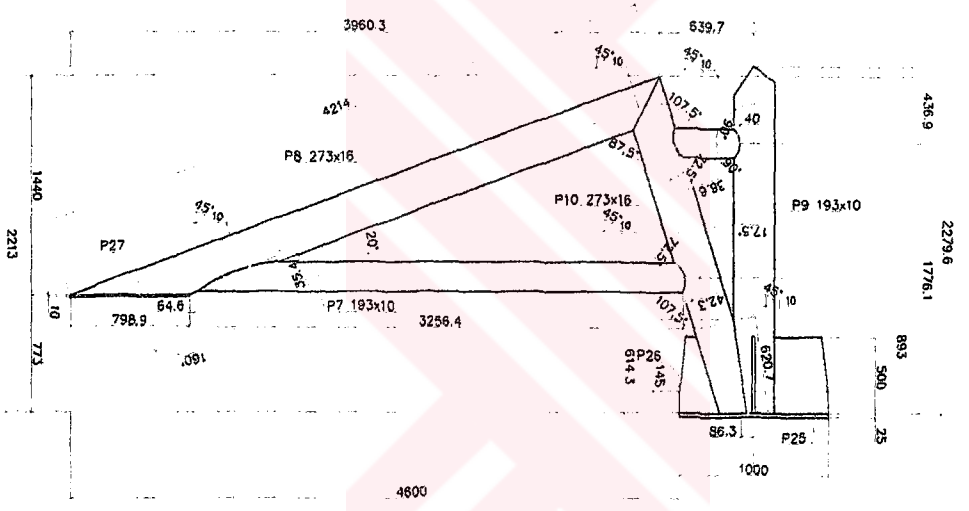


P3 273x16
26 ADET
P4 273x16
26 ADET
10473
10490.5
10465.8
10455.5
10517.3
10509.6
10535.5
10499.2
KOÇ ÜNİVERSİTESİ
MAKAS DETAYI (TR)
ELTEK-DET-TR-05
REV
3

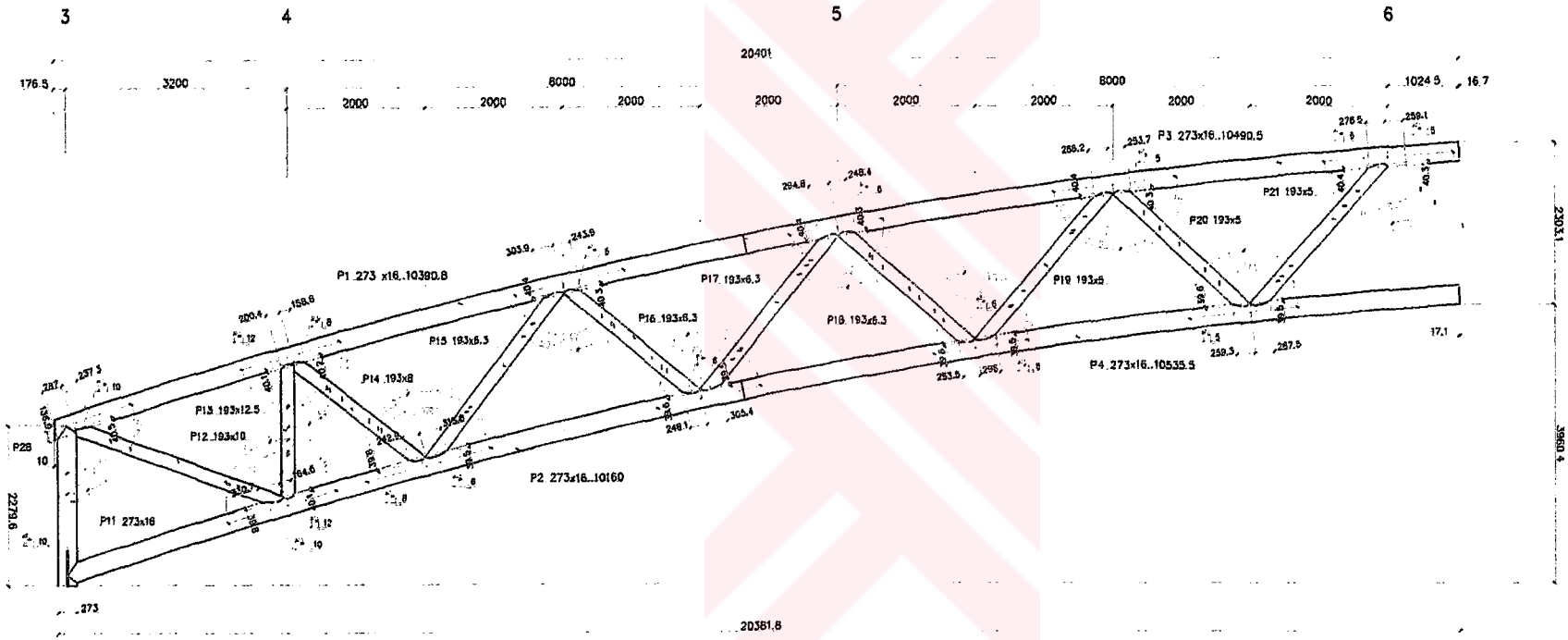


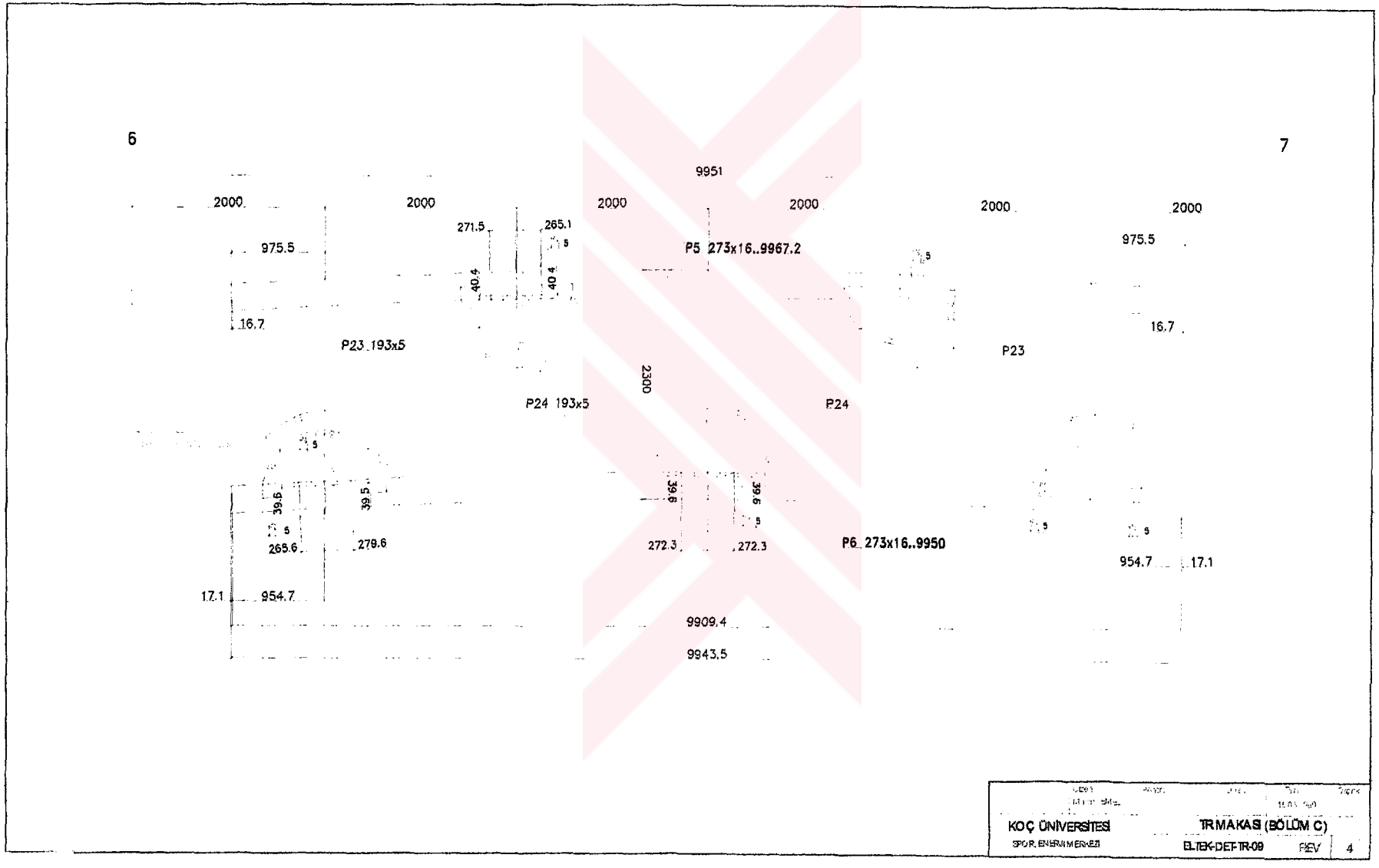
KOÇ ÜNİVERSİTESİ SPOR. ENERJİ MERKEZİ	MAKAS DETAYI (TR)		
	ELTEK-DEF-TR-06	REV	3

3



Çizen: Murat TEMEL	Kontrol	Onay	Tarih: 16.05.1950	Ölçek
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ	TR MAKASI (BÖLÜM A)			
	ELTEK-DET-TR-07	REV	3	


3
4
5
6
20401
176.5
3200
2000
2000
8000
2000
2000
2000
8000
2000
2000
1024.5
16.7
P3 273x16..10490.5
P21 193x5
P20 193x5
P19 193x5
P17 193x6.3
P18 193x6.3
P16 193x6.3
P15 193x6.3
P14 193x8
P13 193x12.5
P12 193x10
P1 273 x16..10380.8
P2 273x16..10160
P4 273x16..10535.5
P11 273x16
P28
2303.1
3960.4
2279.6
273
20381.8
KOÇ ÜNİVERSİTESİ
TR MAKASI (BÖLÜM B)
ELTEK-DEF-TR-08
REV 4


6
7
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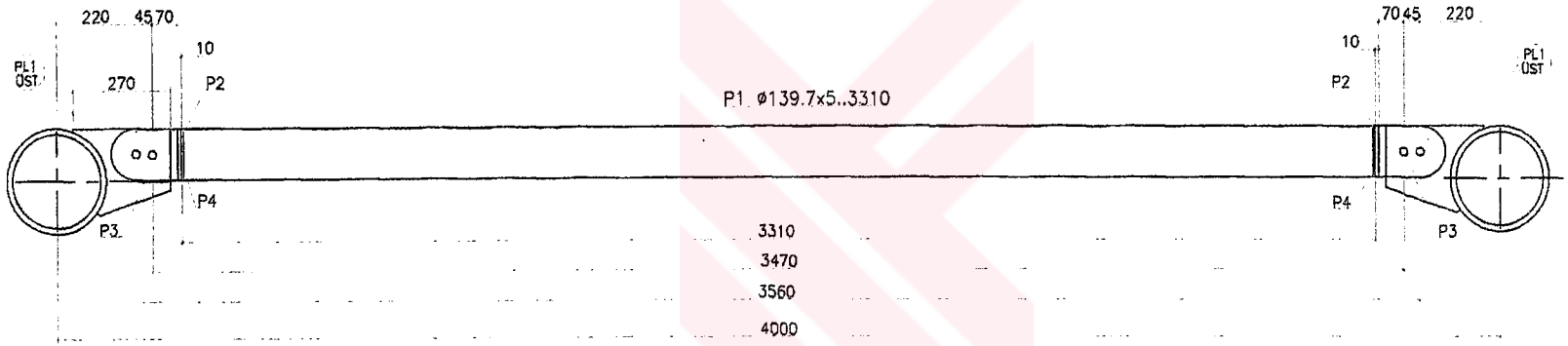
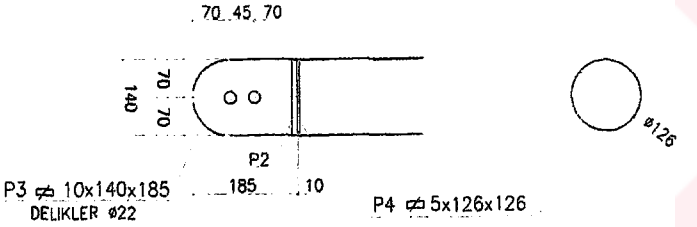
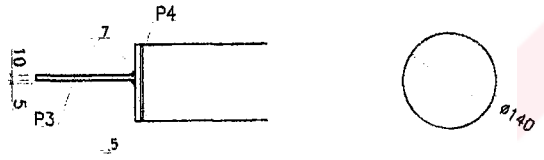
2000
2000
2000
2000
2000
2000
975.5
975.5
271.5
265.1
40.4
40.4
P5 273x16..9967.2
16.7
16.7
P23 193x5
P23
2300
P24 193x5
P24
39.6
39.5
39.6
39.6
265.6
279.6
272.3
272.3
P6 273x16..9950
954.7
17.1
17.1
954.7
9909.4
9943.5
KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ
TRMAKAS (BÖLÜM C)
ELTEK-DET-TR-09
REV
4



A1 (444 ADET)

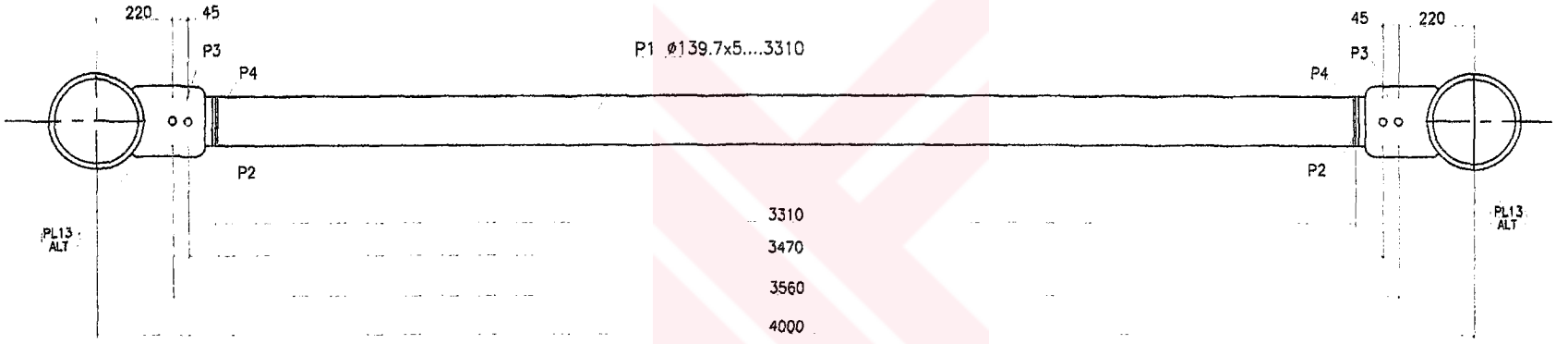
ÜST BASLIK





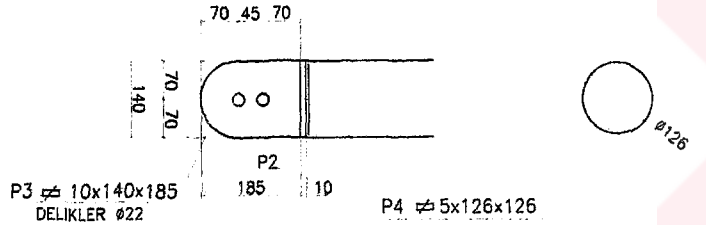
P2 ⌀10x140x140

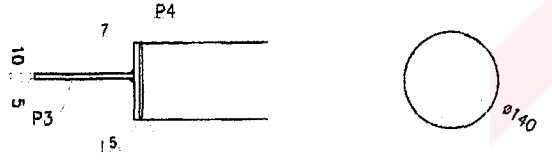
Çizen	Kontrol	Onay	Tarih	Ölçek
Murat TEMEL			08.03.13	-
KOÇ ÜNİVERSİTESİ		ASIK DETAYLARI (A1)		
SPOR, ENERJİ MERKEZİ		ELTEK-DET-01	REV	2



A1 (156 ADET)

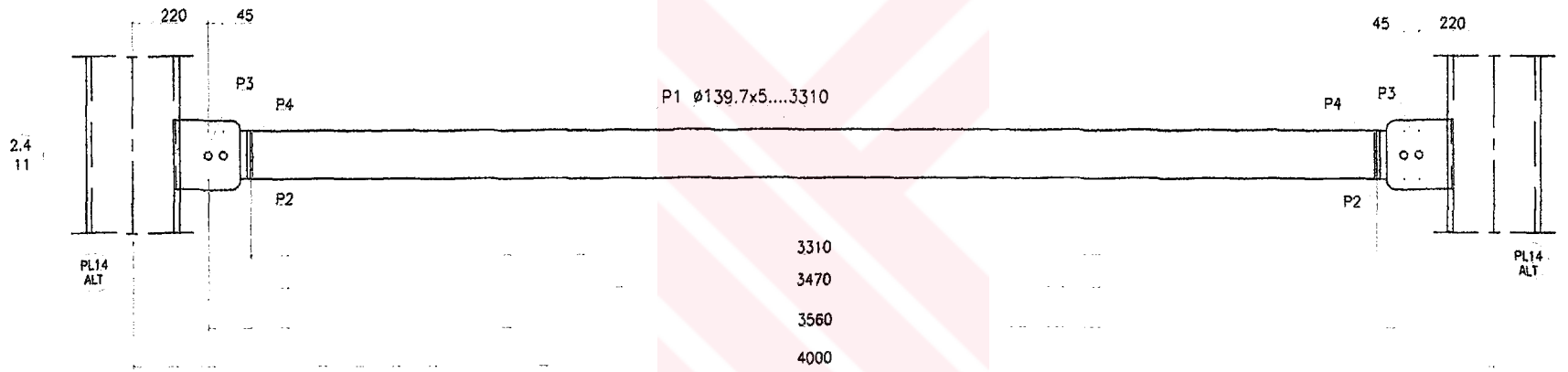
ALT BASLIK





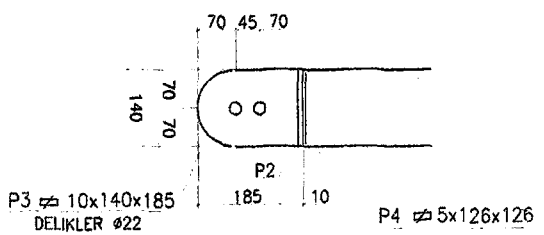
P2 ⏥ 10x140x140

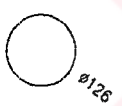
Çizen	Kontrol	Onay	Tarih	Ölçek
Murat TEMEL			08.09.1999	-
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ		ASİK DETAYLARI (A1)		
		ELTEK-DET-01.A	REV	2



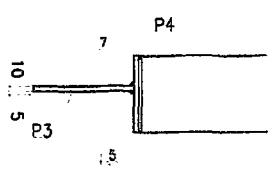
A1 (12 ADET)

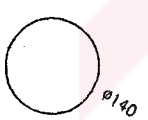
ALT BASLIK





P4 ⏥ 5x126x126



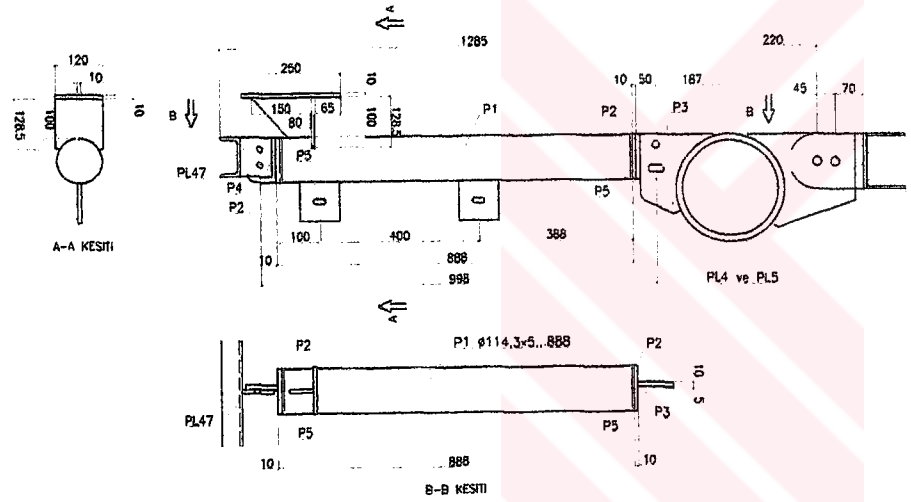


P2 ⏥ 10x140x140

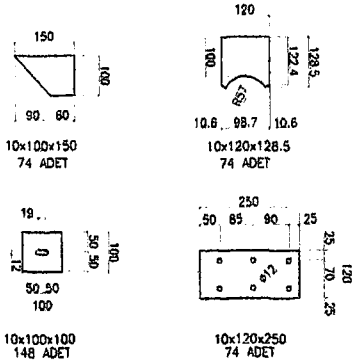
Çizen	Kontrol	Onay	Tarih	Ölçek
Mutlu TEPSEL			08.03.1999	-

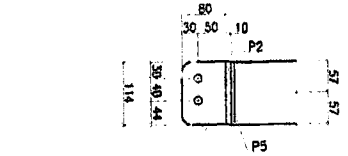
KOÇ ÜNİVERSİTESİ
SPOR, ENERJİ MERKEZİ

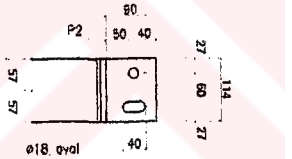
ASIK DETAYLARI (A1)
ELTEK-DET-01.B REV 2

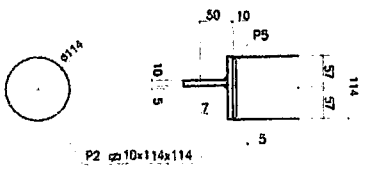


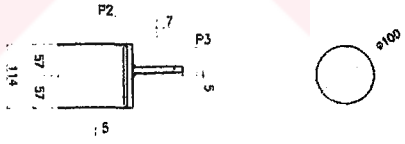
A2 (74 ADET)







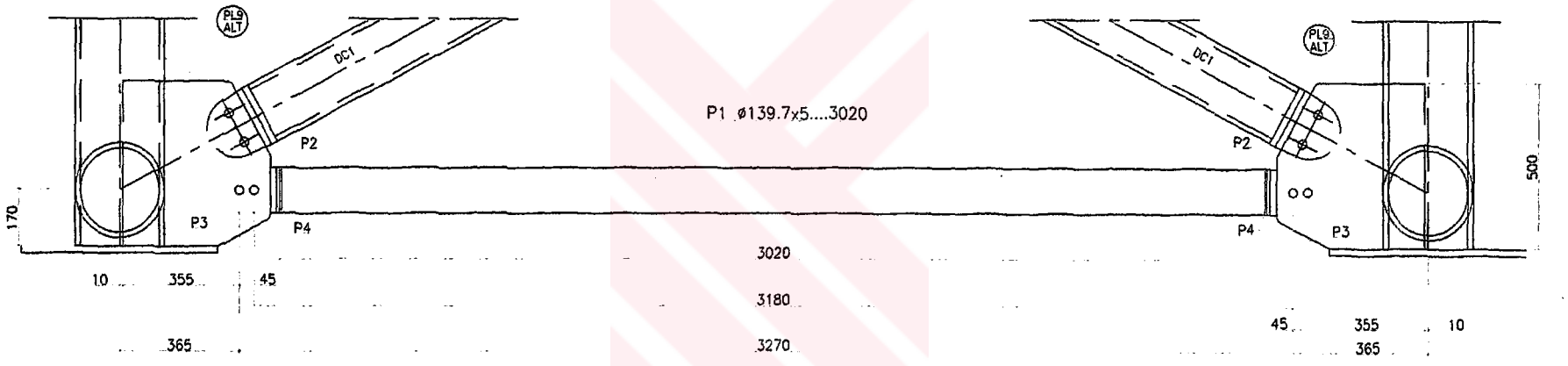




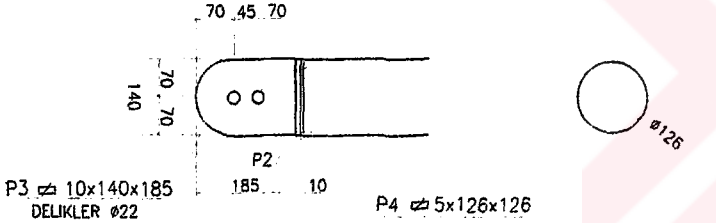
Çizen	Kontrol	Onay	Tarih	Ölçek
Murat TEMEL			09.05.1900	

KOÇ ÜNİVERSİTESİ
SPOR, ENERJİ MERKEZİ

ASIK DETAYLARI (A2)
ELTEK-DET-02 REV 3

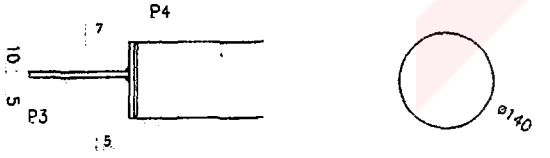


A3 (12 ADET)



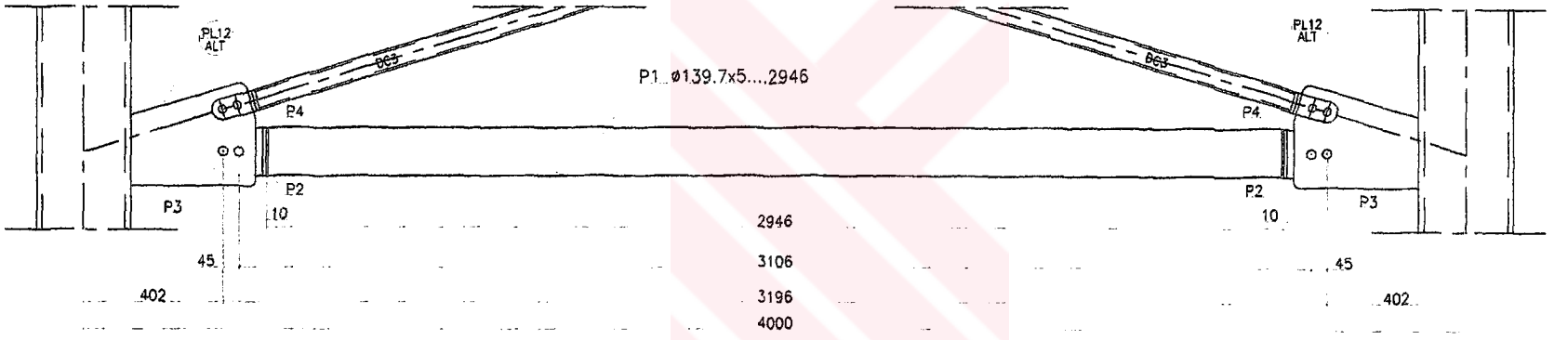
P3 ⌀ 10x140x185
DELİKLER ø22

P4 ⌀ 5x126x126

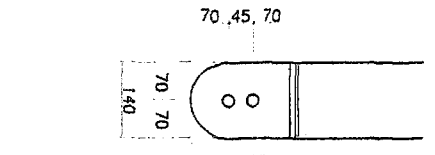


P2 ⌀ 10x140x140

Çizen: Murat TEMEL	Kontrol	Onay	Tarih: 02.03.1999	Ölçek
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ		ASIK DETAYLARI (A3) ELTEK-DET-03.A	REV	2



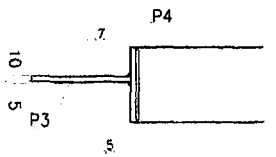
A4 (12 ADET)



P3 ⏀ 10x140x185
DELİKLER ø22

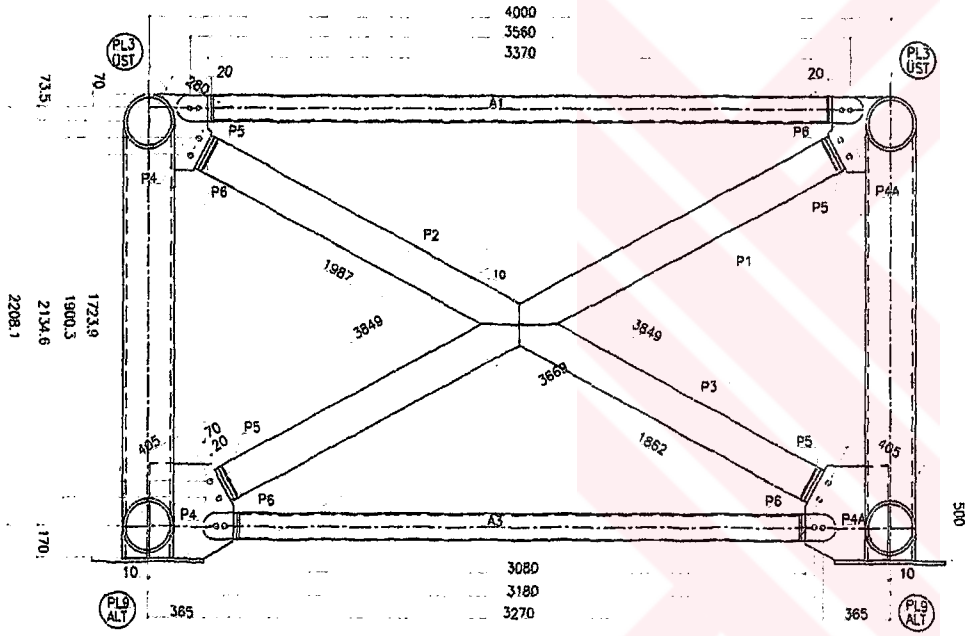
185 10

P4 ⏀ 5x126x126

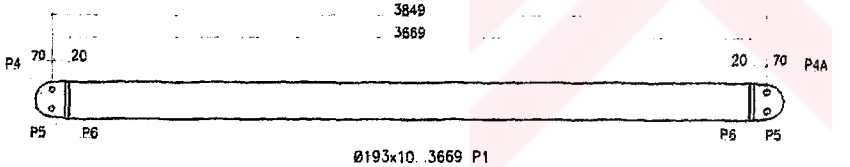


P2 ⏀ 10x140x140

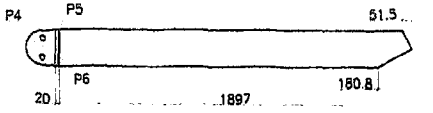
Çizen	Kontrol	Onay	Tarih	Ölçek
Murat TEMEL			08.03.1950	
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ	ASIK DETAYLARI (A4) ELTEK-DET-04		REV	2



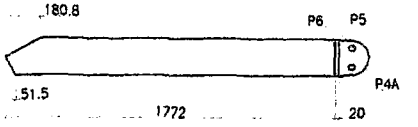
DC.1 (12 KOMPLE)



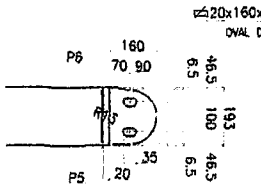
Ø193x10...3669 P1



Ø193x10...1897 P2

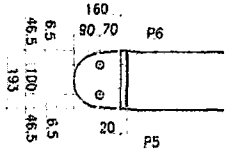


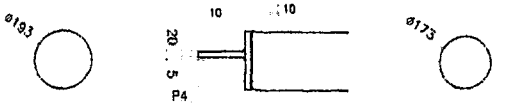
Ø193x10...1772 P3



▱20x160x193 P4A
OVAL DELİK

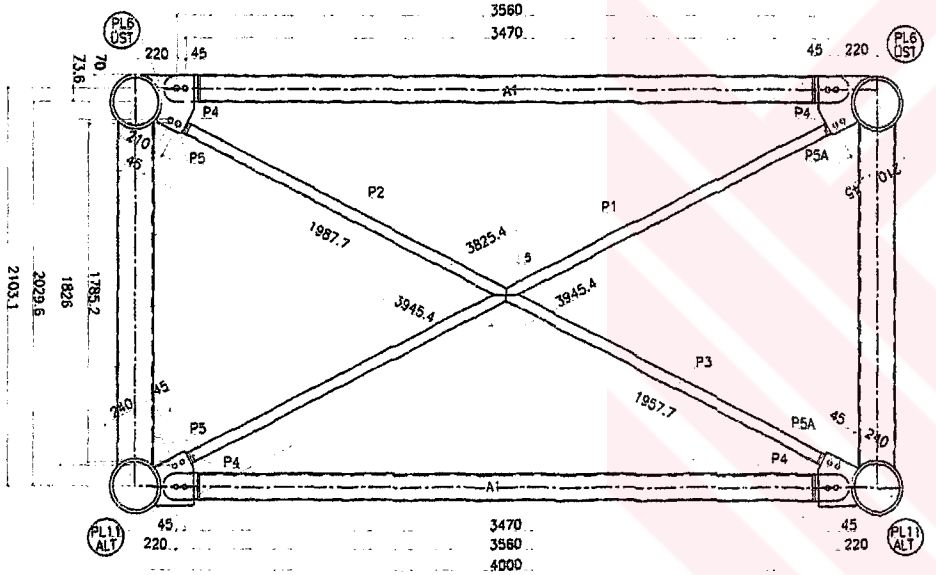
▱20x160x193 P4
DELİKLER ø26



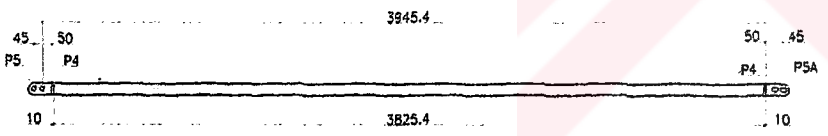


▱20xø193 P5 ▱20xø173 P6

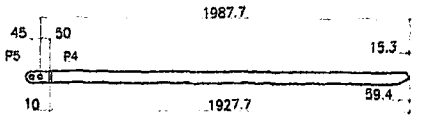
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	DİKEY ÇAPRAZ DETAYLARI (DC.1) ELTEK-DET-05 REV 3



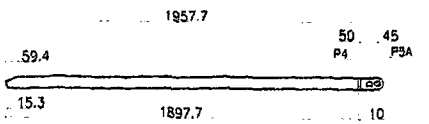
DC.2 (24 KOMPLE)



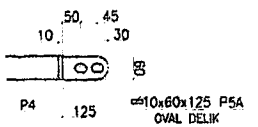
ø60.3x5...3825.4 P1



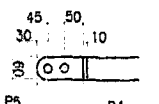
ø60.3x5...1927.7 P2



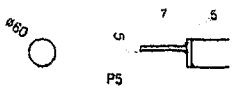
ø60.3x5...1897.7 P3



ø10x60x125 P5A
OVAL DELIK

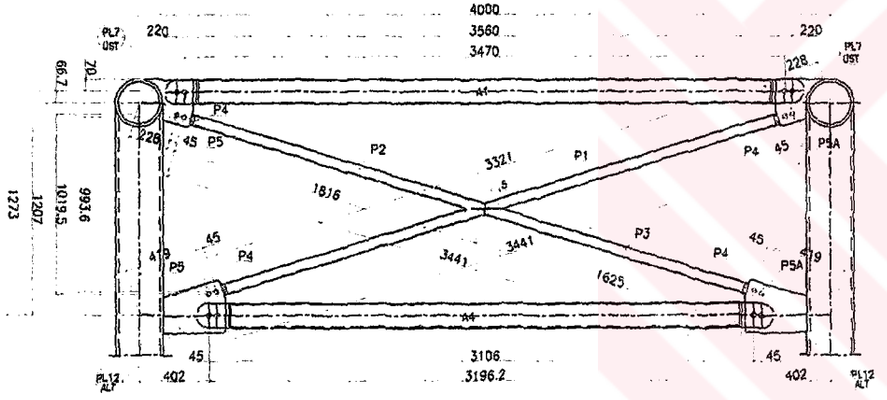


ø10x60x125 P5
DELIKLER ø22
125
P4

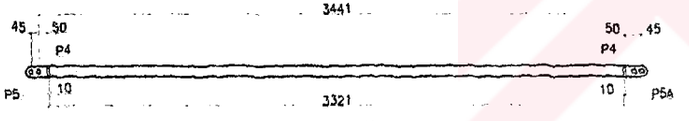


ø 10xø60x60 P4

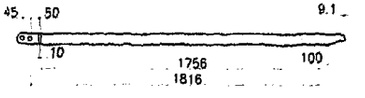
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ	DİKEY ÇAPRAZ DETAYLARI (DC.2) ELTEK-DET-06 REV 3



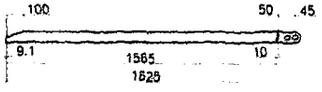
DC.3 (12 KOMPLE)



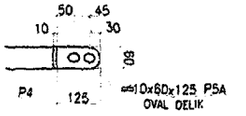
ø60.3x5...3321 P1



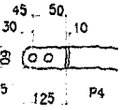
ø60.3x5...1756 P2



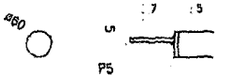
ø60.3x5...1565 P3



▭10x60x125 P5A
OVAL DELIK

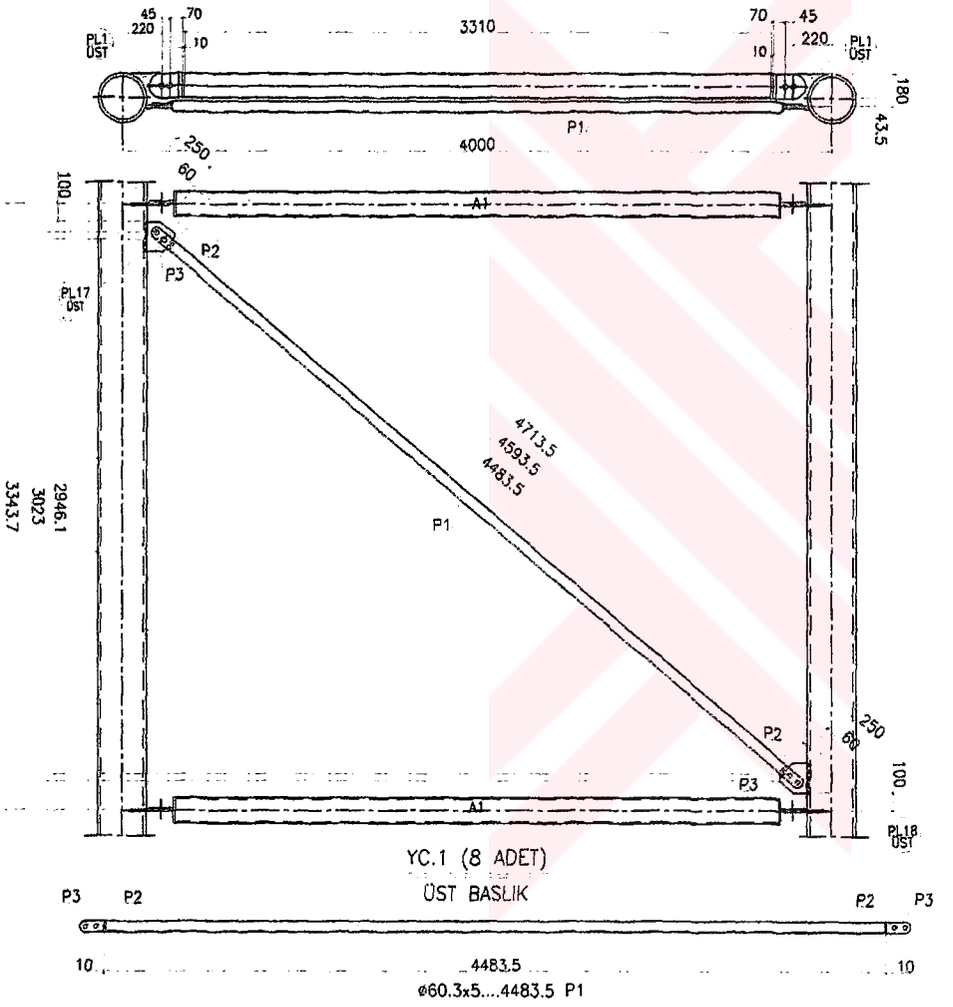


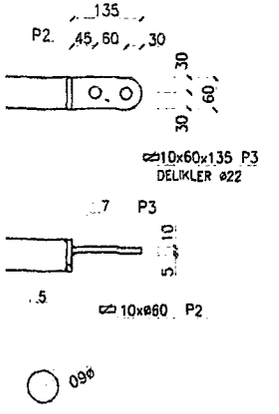
▭10x60x125 P5
DELIKLER ø22



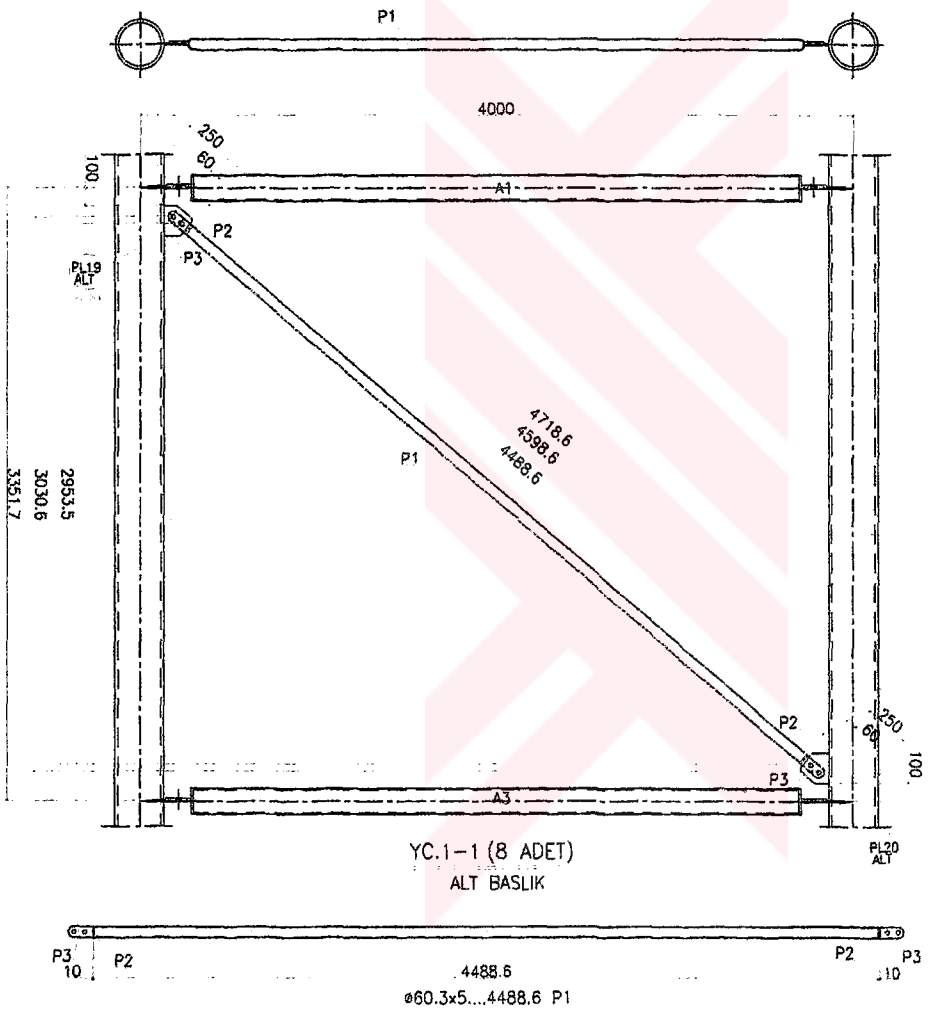
▭10xø60x60 P4

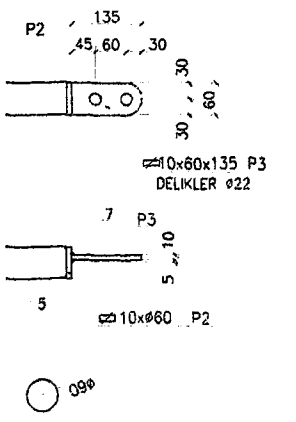
KOÇ ÜNİVERSİTESİ ŞİRKET ENERJİ MÜHENDİSLİĞİ		DİKEY ÇAPRAZ DETAYLARI (DC.3)	
		ELTEK-DET-07	REV 3



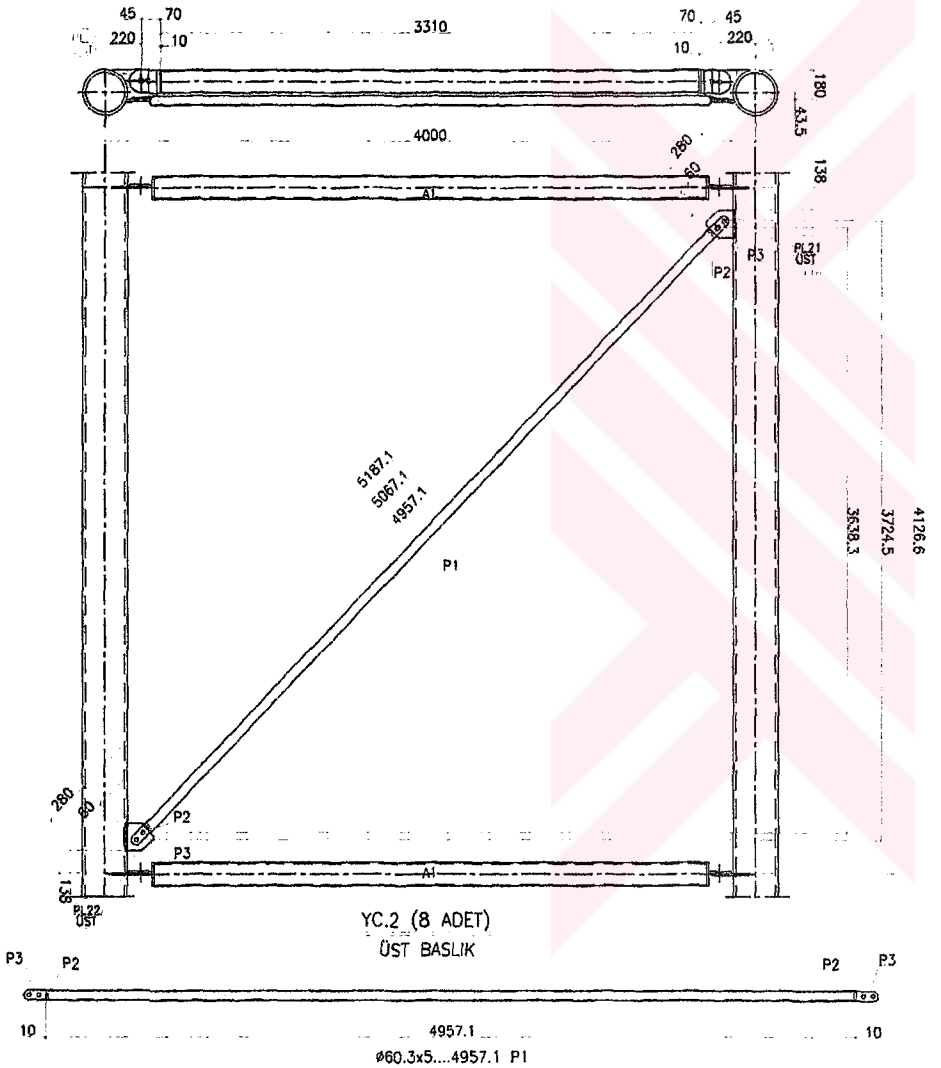


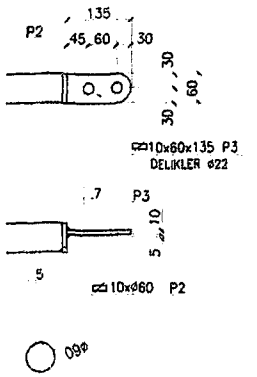
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.1) ELTEK-DET-08	REV 2



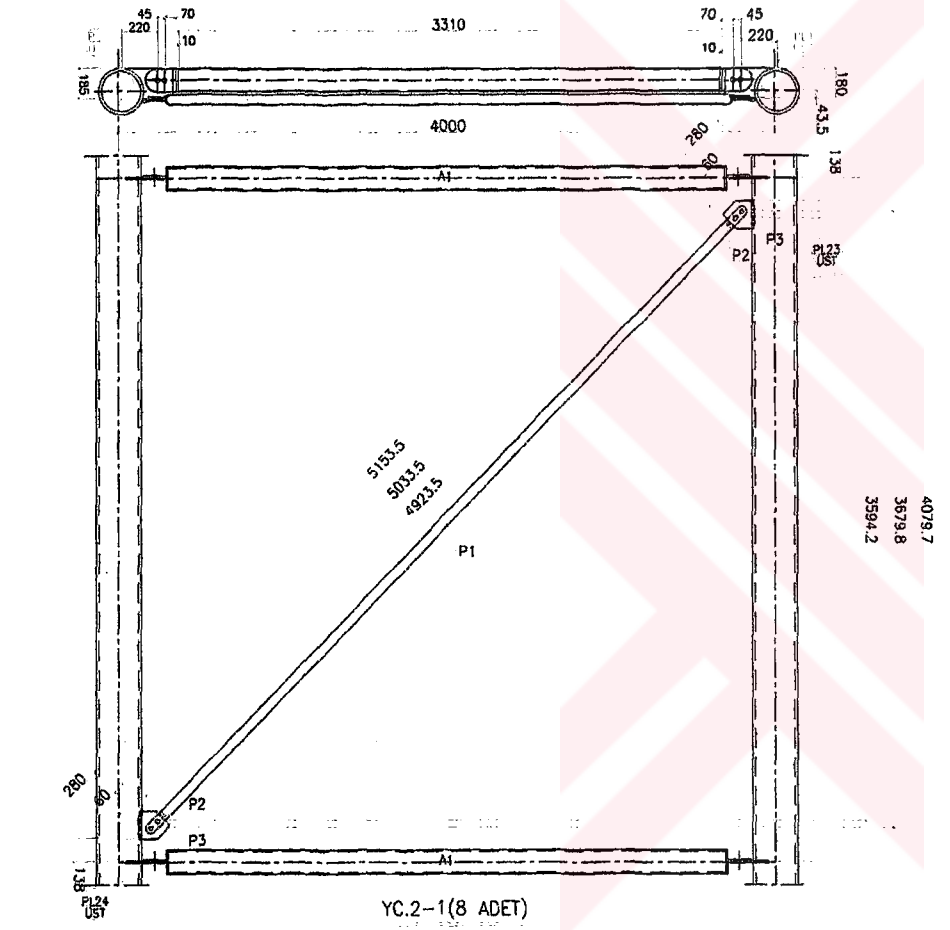


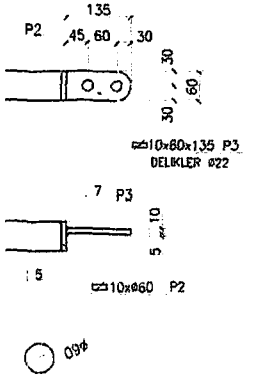
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ			YATAY ÇAPRAZ DETAYLARI (YC.1-1)	
			ELTEK-DET-09	REV 2



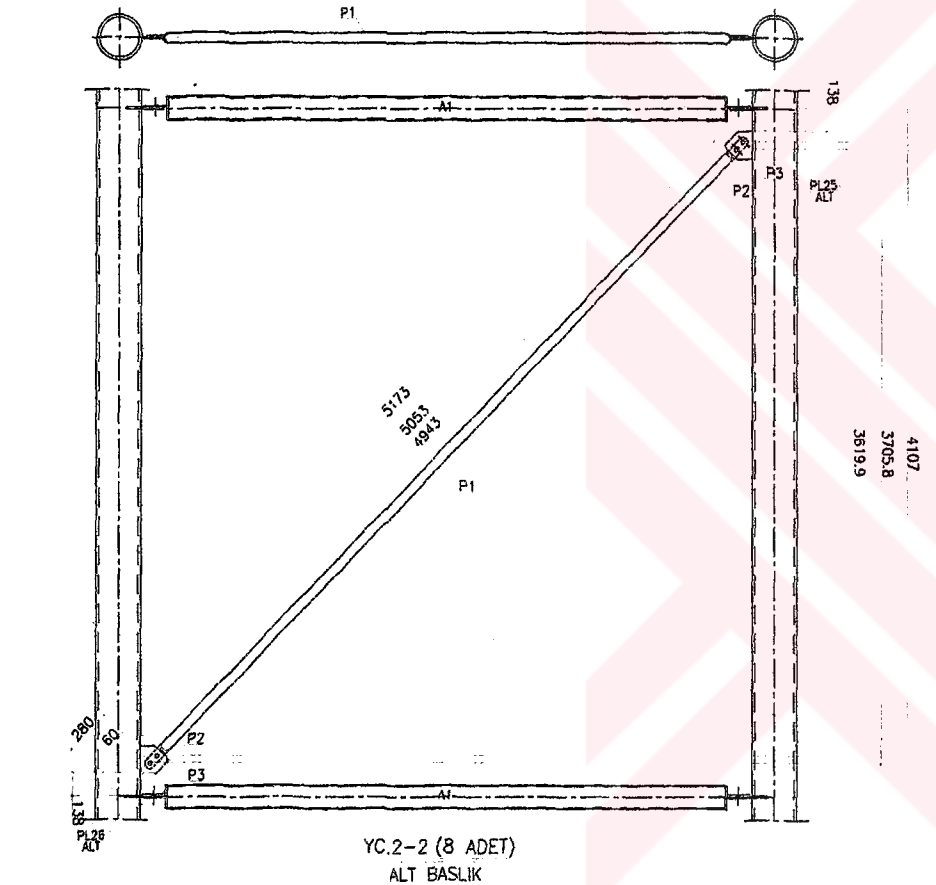


KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ			YATAY ÇAPRAZ DETAYLARI (YC.2)	
			ELTEK-DET-10	REV 2

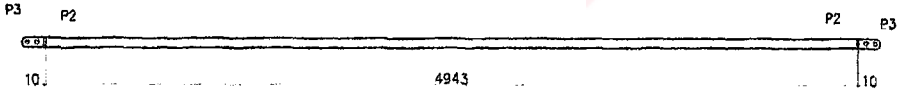




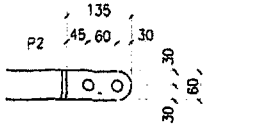
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ			YATAY ÇAPRAZ DETAYLARI (YC.2-1)	
			ELTEK-DEF-11	REV 2

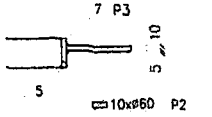


YC.2-2 (8 ADET)
ALT BASLIK

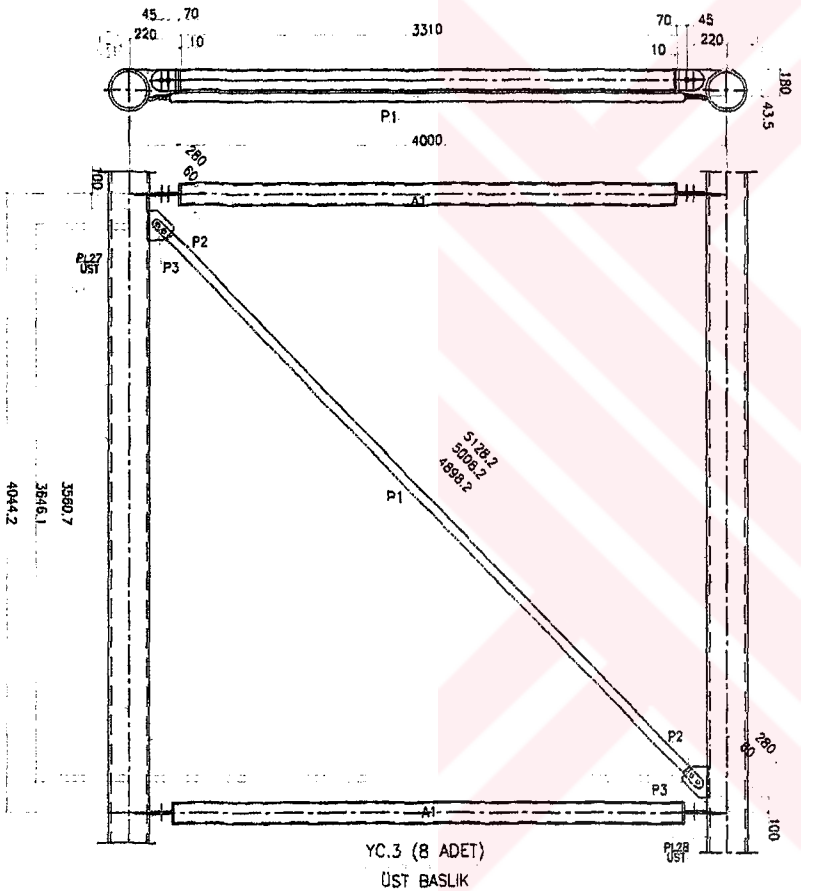


ø60.3x5....4943 P1

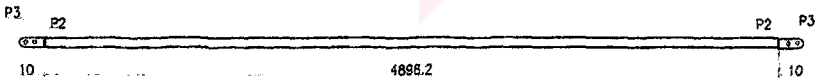




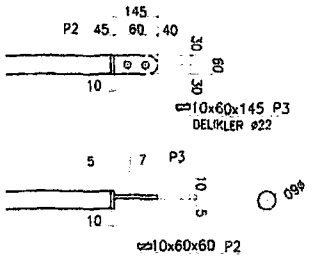
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.2-2)	
	EK-DET-12	REV 2



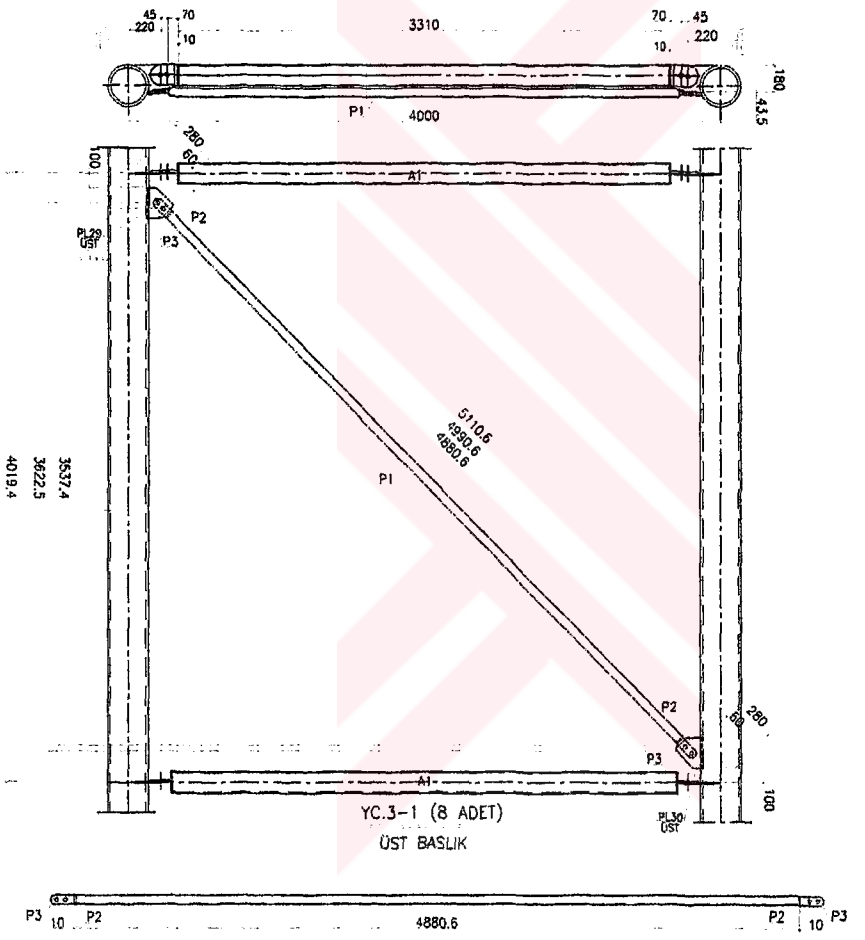
YC.3 (8 ADET)
ÜST BASLIK

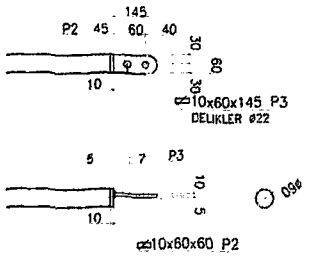


ø60.3x5....4898.2 P1

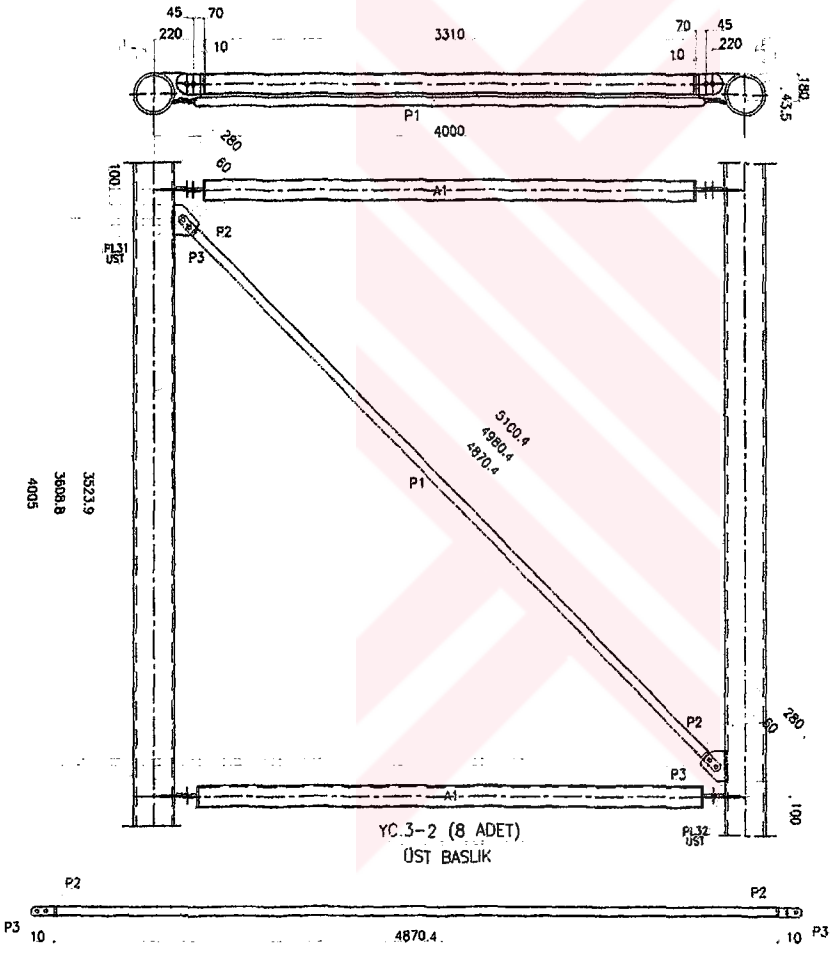


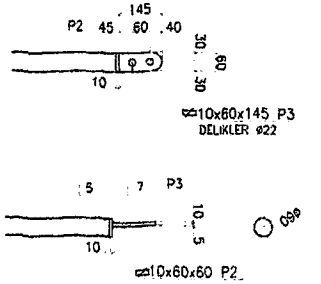
KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3)		
	ELTEK-DEF-13	REV	2



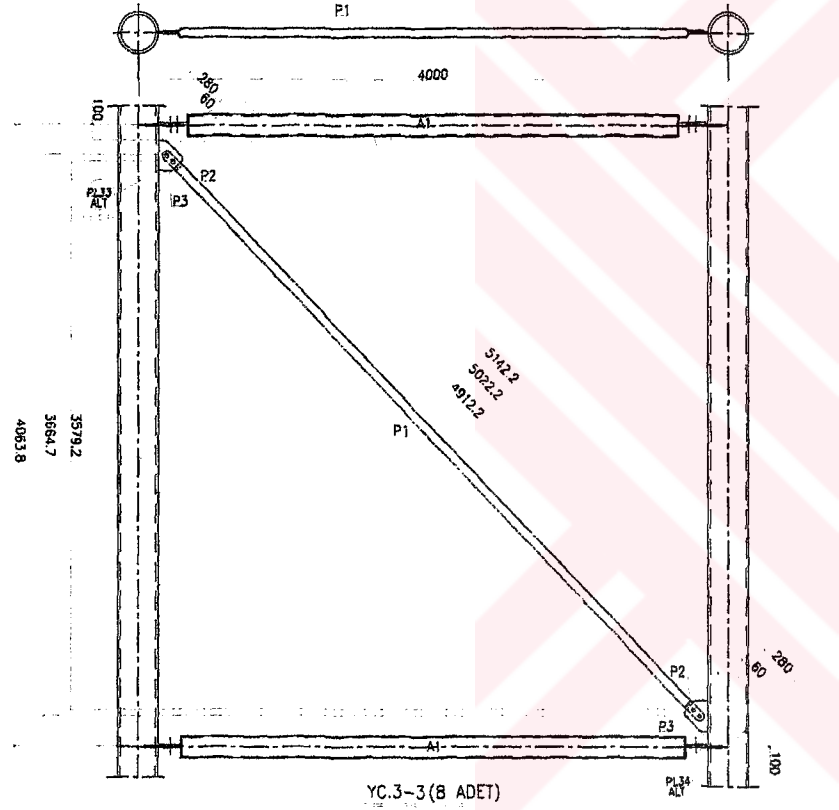


KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3-1)	
	ELTEK-DET-14	REV 2

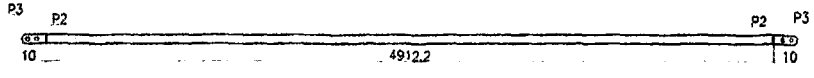




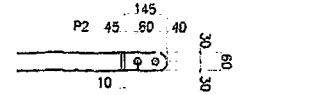
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3-2)	
	ELTEK-DET-15	REV 2



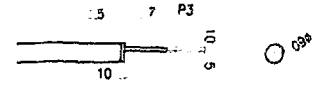
YC.3-3(8 ADET)
ALT BASLIK



ø60.3x5....4912.2 P1

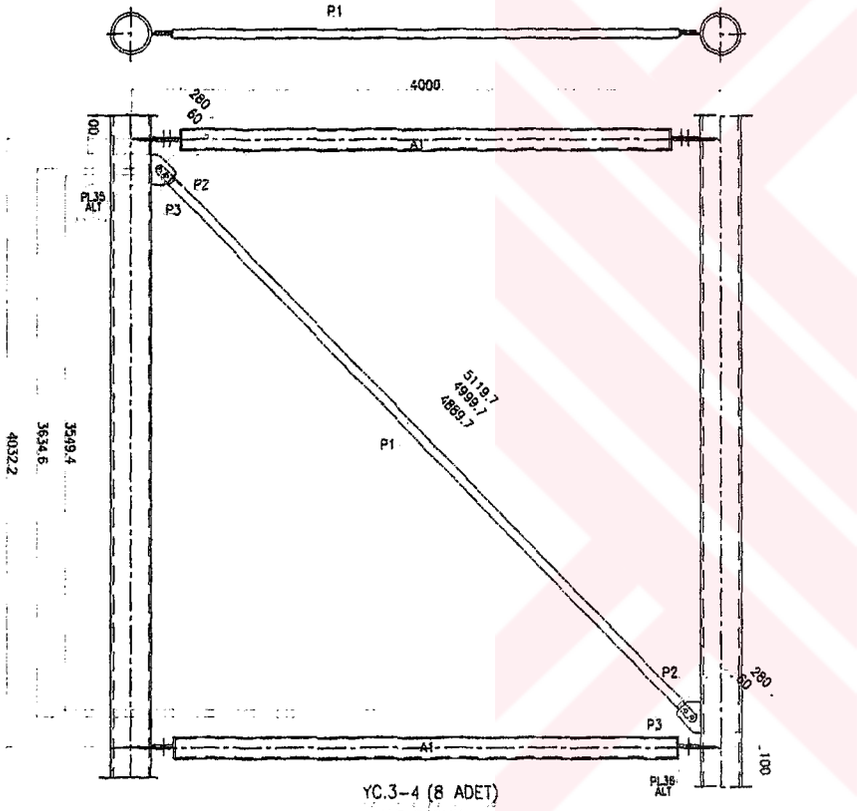


▭10x60x145 P3
DELIKLER ø22

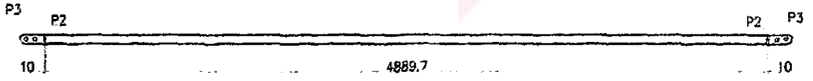


▭10x60x60 P2

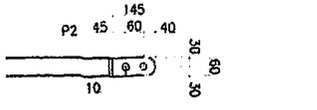
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3-3)		
	ELTEK-DET-16	REV	2



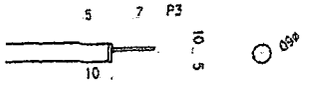
YC.3-4 (8 ADET)
ALT BAŞLIK



ø60.3x5....4889.7 P1

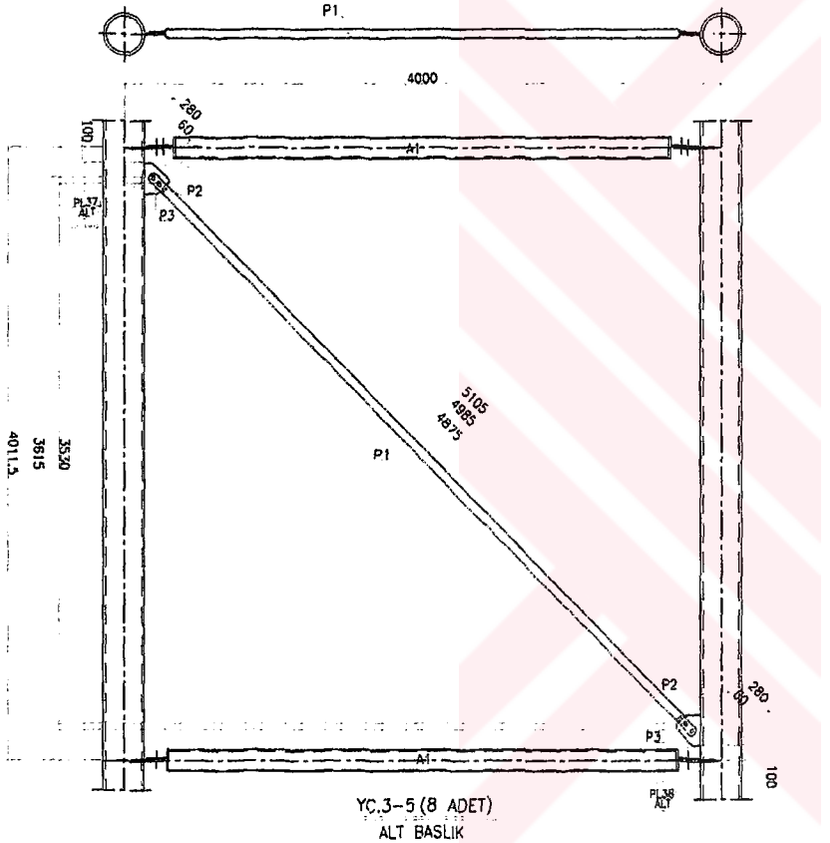


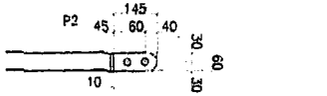
PL10x60x145 P3
DELİKLER ø22

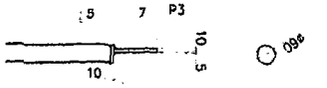


PL10x60x60 P2

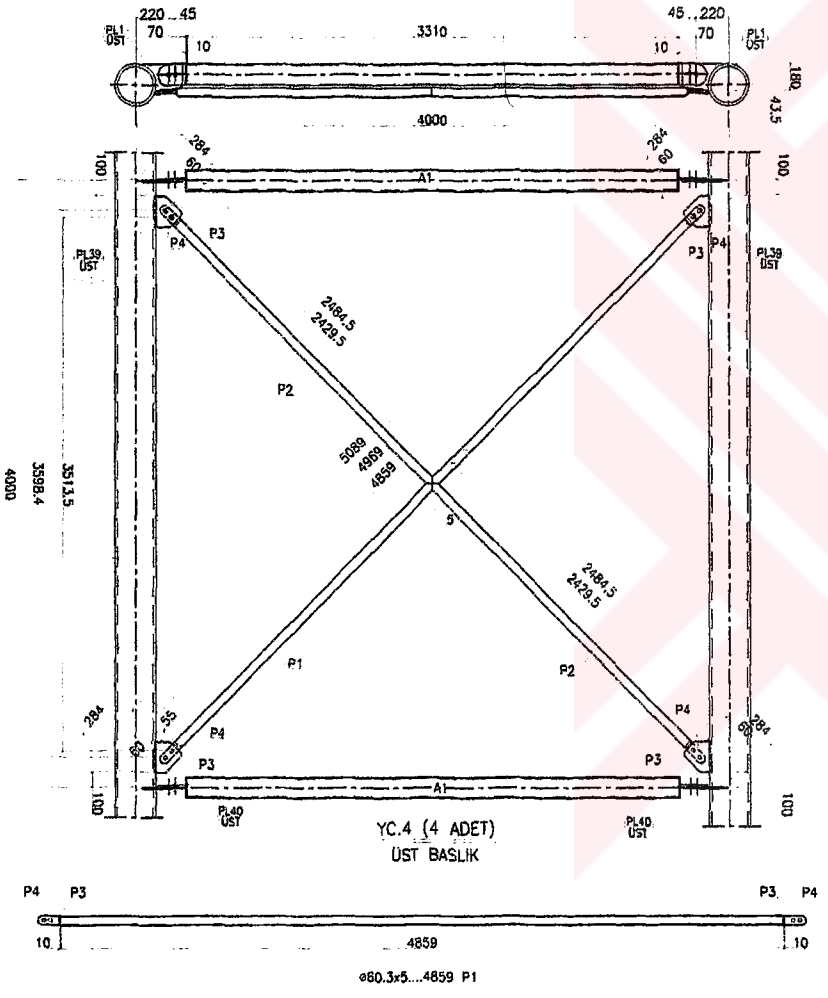
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3-4)	
	ELTEK-DET-17	REV 2

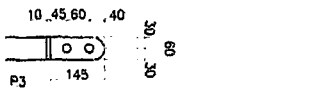


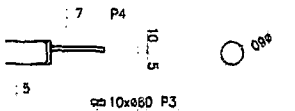


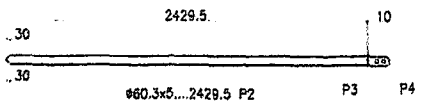


KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.3-5)		
	ELTEK-DET-18	REV	2





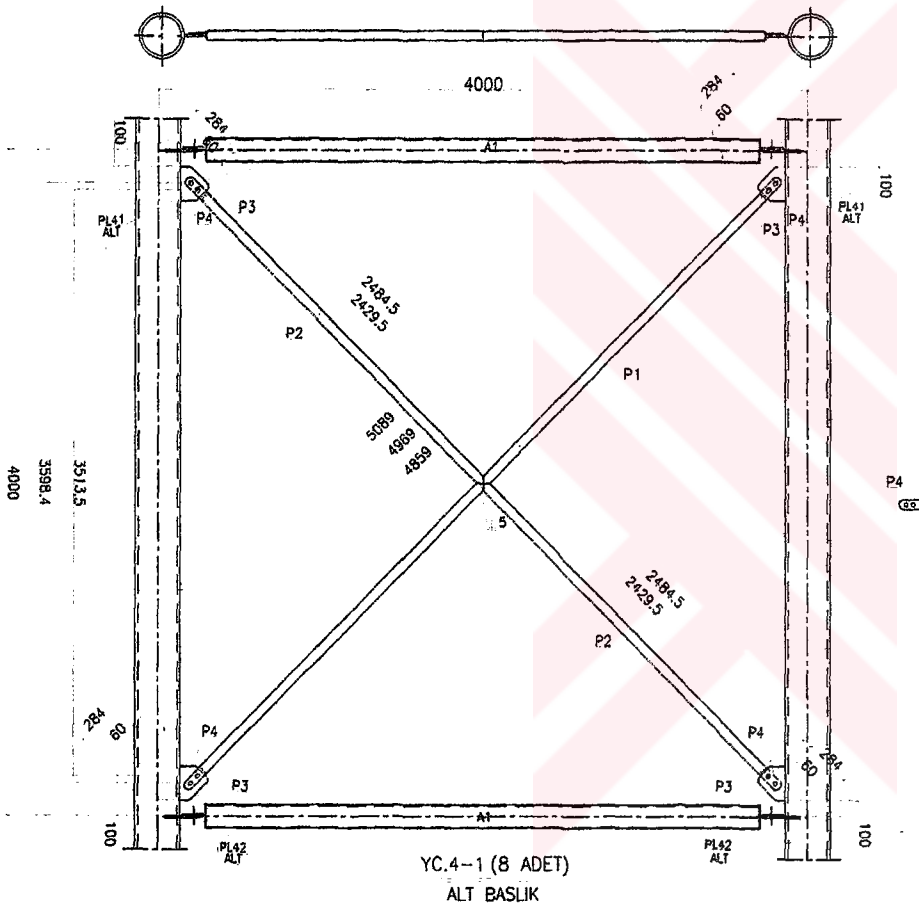




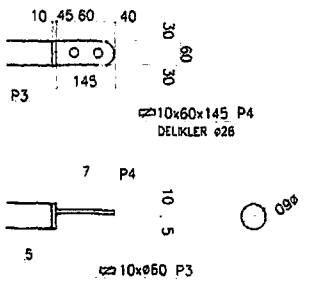
KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ

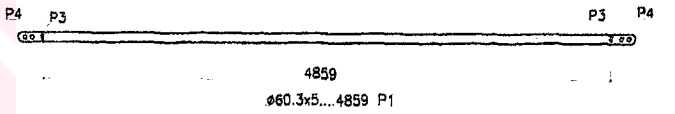
YATAY ÇAPRAZ DETAYLARI (YC.4)

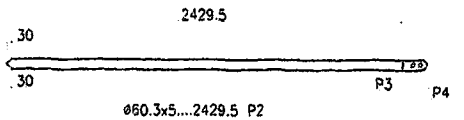
ELTEK-DET-19 REV 2



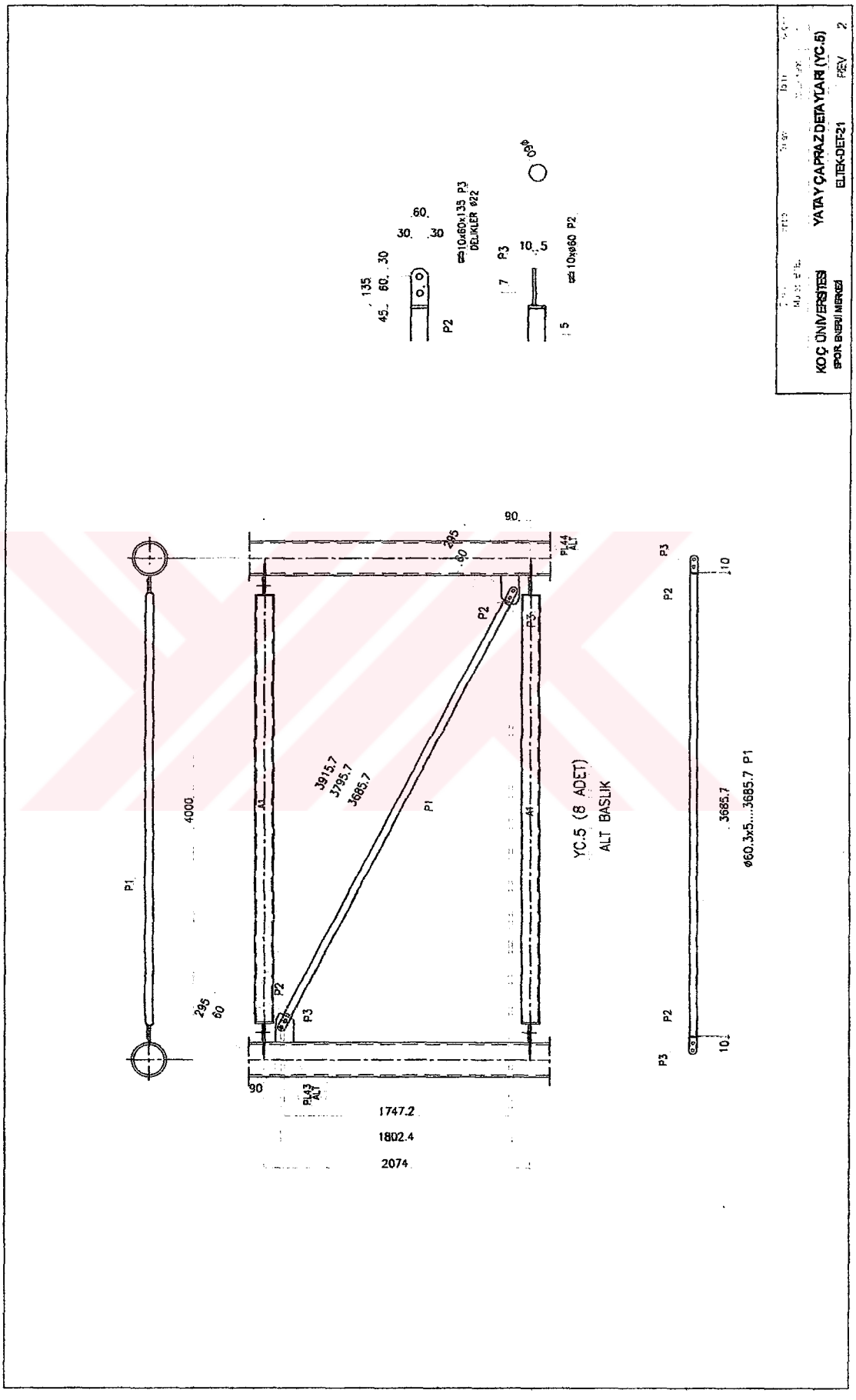
YC.4-1 (8 ADET)
ALT BASLIK

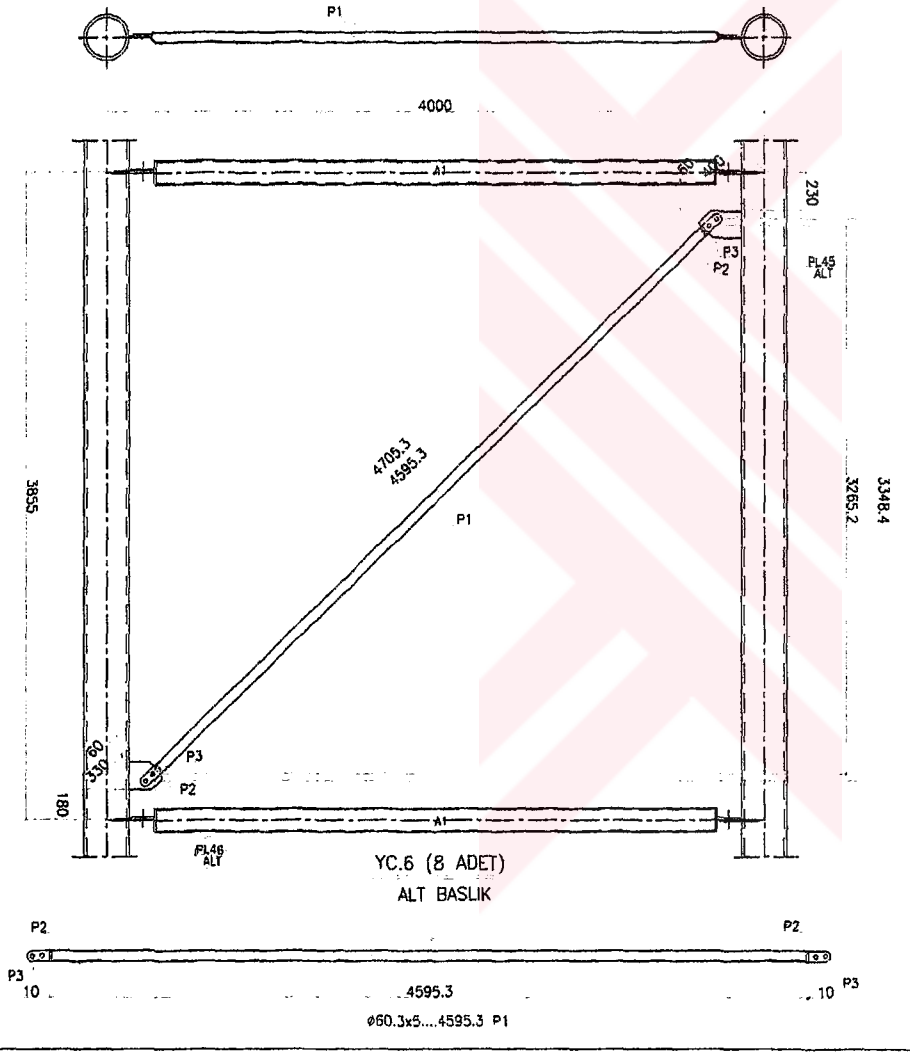


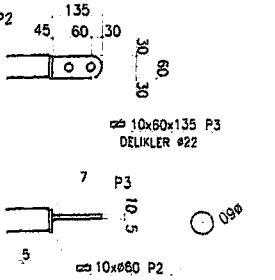




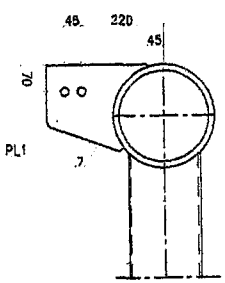
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.4-1)	
	ELTEK-DET-20	REV 2

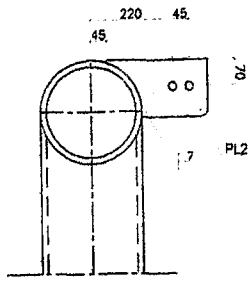

KOÇ ÜNİVERSİTESİ
SPOR BİLİMİ MERKEZİ
YATAY ÇAPRAZ DETAYLARI (YC.5)
ELTEK-DEF-21
REV 2
YC.5 (8 ADET)
ALT BAŞLIK
4000
3915.7
3795.7
3685.7
1747.2
1802.4
2074
P1
P2
P3
PL44 ALT
PL43 ALT
ø60.3x5...3685.7 P1
ø10x60x135 P3 DELİKLER ø22
ø10x80 P2

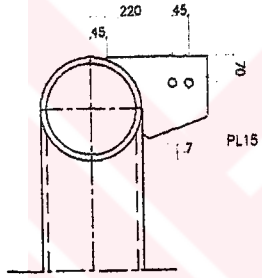


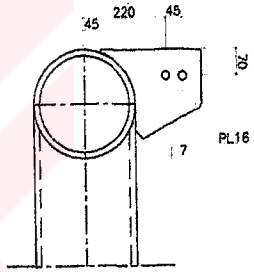


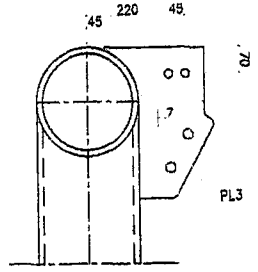
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	YATAY ÇAPRAZ DETAYLARI (YC.6)	
	ELTEK-DET-22	REV 2

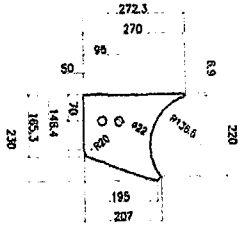






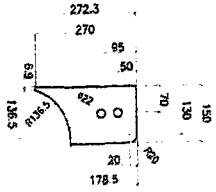






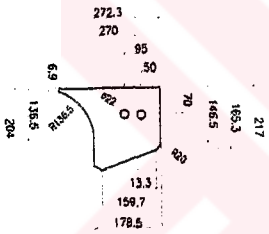
PL1 10x230x272.3
696 Ad.

TR.1A için 29 Adet
TR.2 için 58 Adet
TR.3A için 58 Adet
TR.4B için 58 Adet
TR.4 için 290 Adet
TR.4A için 58 Adet
TR.3 için 58 Adet
TR.2 için 58 Adet
TR.1 için 29 Adet



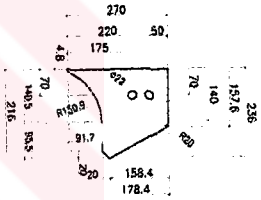
PL2 10x150x272.3
48 Ad.

TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 4 Adet
TR.4 için 20 Adet
TR.4A için 4 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet



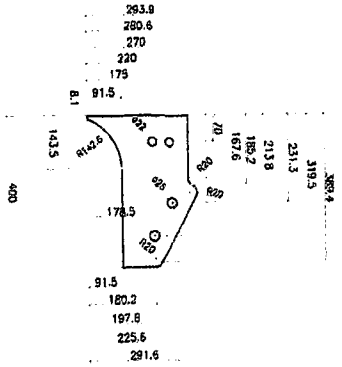
PL15 10x217x272.3
24 Ad.

TR.4B için 2 Adet
TR.4 için 20 Adet
TR.4A için 2 Adet



PL16 10x236x270
24 Ad.

TR.4B için 2 Adet
TR.4 için 20 Adet
TR.4A için 2 Adet



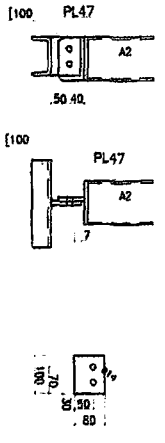
PL3 10x293.9x400
24 Ad.

TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 2 Adet
TR.4A için 2 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet

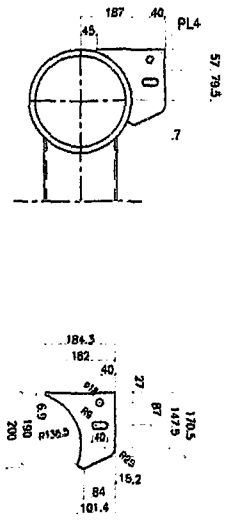
ÜST PLAKALAR

KOÇ ÜNİVERSİTESİ
SPOR, ENERJİ MERKEZİ

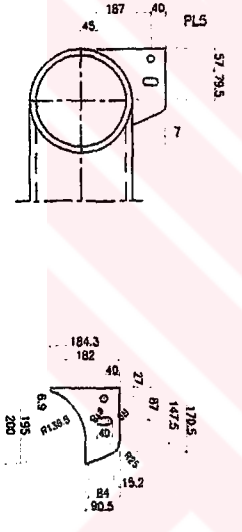
PLAKA DETAYLARI
ELTEK-DET-23 REV 4



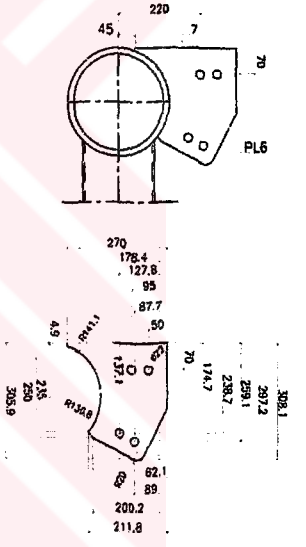
PL47 10x80x100
54 Ad.



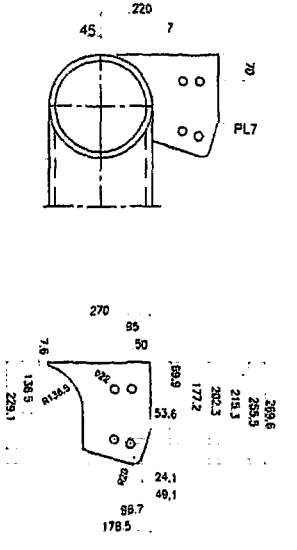
PL4 10x184.3x200
50 Ad.
TR.1A için 25 Adet
TR.1 için 25 Adet



PL5 10x184.3x200
4 Ad.
TR.1A için 2 Adet
TR.1 için 2 Adet



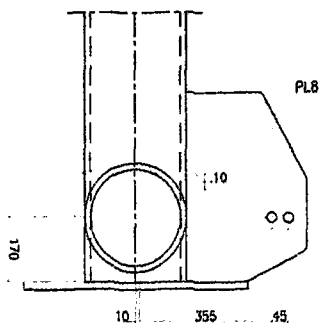
PL6 10x270x308.1
48 Ad.
TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 4 Adet
TR.4 için 20 Adet
TR.4A için 4 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet

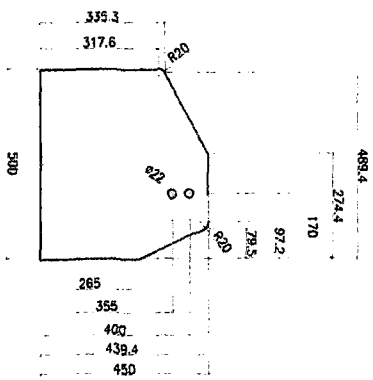


PL7 10x270x269.6
24 Ad.
TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 2 Adet
TR.4A için 2 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet

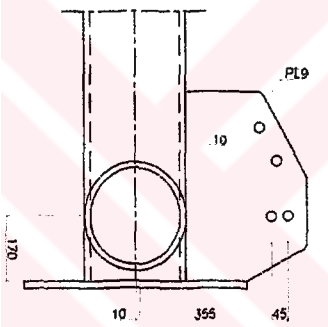
ÜST PLAKALAR

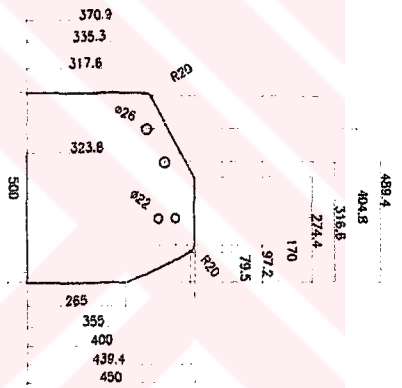
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	PLAKA DETAYLARI ELTEK-DET-24	REV	3



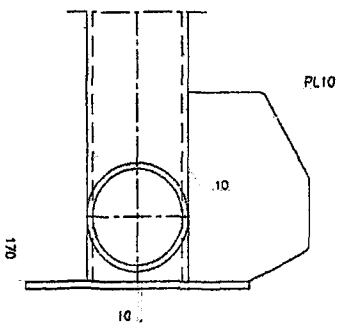


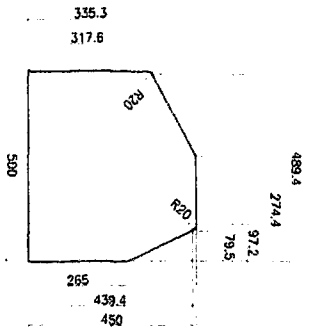
PL8 20x450x500
24 Ad.
TR.4B için 2 Adet
TR.4 için 20 Adet
TR.4A için 2 Adet





PL9 20x450x500
24 Ad.
TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 2 Adet
TR.4A için 2 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet

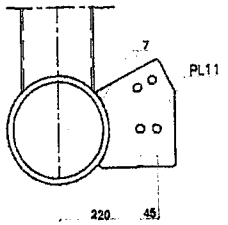


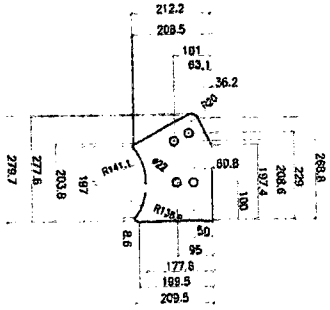


PL10 20x450x500
4 Ad.
TR.1A için 2 Adet
TR.1 için 2 Adet

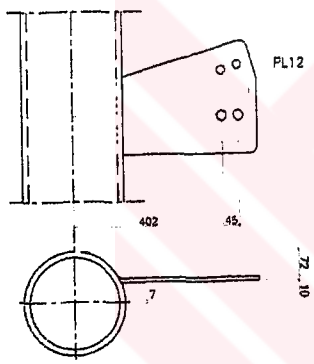
ALT PLAKALAR

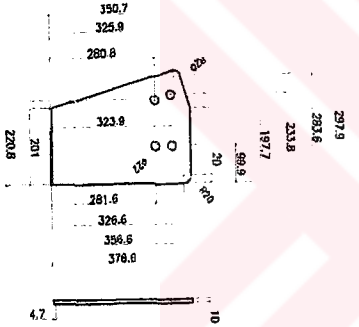
KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	PLAKA DETAYLARI ELTEK-DET-25	REV 3



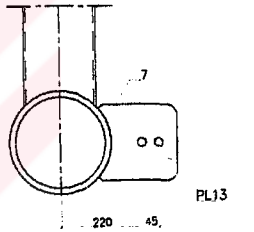


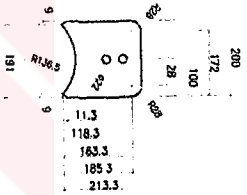
PL11 10x212.2x279.7
48 Ad.
TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 4 Adet
TR.4 için 20 Adet
TR.4A için 4 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet



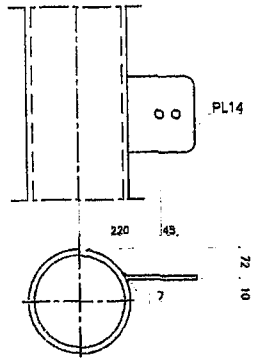


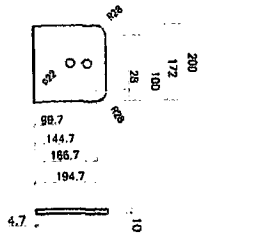
PL12 10x297.9x376.6
24 Ad.
TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 4 Adet
TR.4B için 2 Adet
TR.4A için 2 Adet
TR.3 için 4 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet





PL13 10x213.3x200
264 Ad.
TR.1A için 11 Adet
TR.2 için 22 Adet
TR.3A için 22 Adet
TR.4B için 22 Adet
TR.4 için 110 Adet
TR.4A için 22 Adet
TR.3 için 22 Adet
TR.2 için 22 Adet
TR.1 için 11 Adet

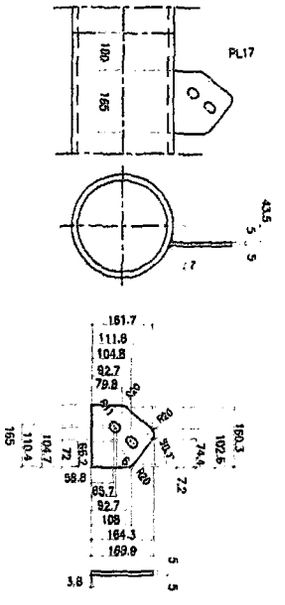




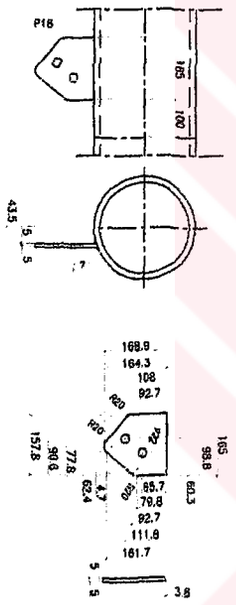
PL14 10x194.7x200
24 Ad.
TR.4A için 2 Adet
TR.4 için 20 Adet
TR.4A için 2 Adet

ALT PLAKALAR

KOÇ ÜNİVERSİTESİ SPOR, ENERJİ MERKEZİ	PLAKA DETAYLARI		
	ELTEK-DET-28	REV	2

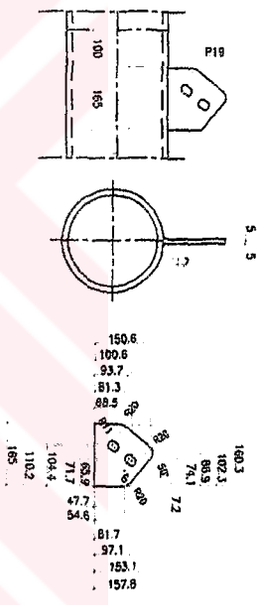


PL17 10x165x168.9
8 Adet
TR.2 için 4 Adet
TR.2 için 4 Adet

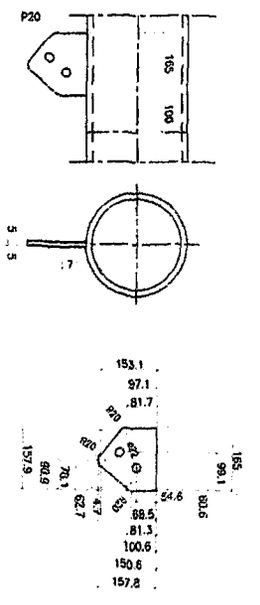


PL18 10x165x168.9
8 Adet
TR.1A için 2 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.1 için 2 Adet

ÜST PLAKALAR
(YC1 PLAKALARI)



PL19 10x157.8x165
8 Adet
TR.2 için 4 Adet
TR.2 için 4 Adet

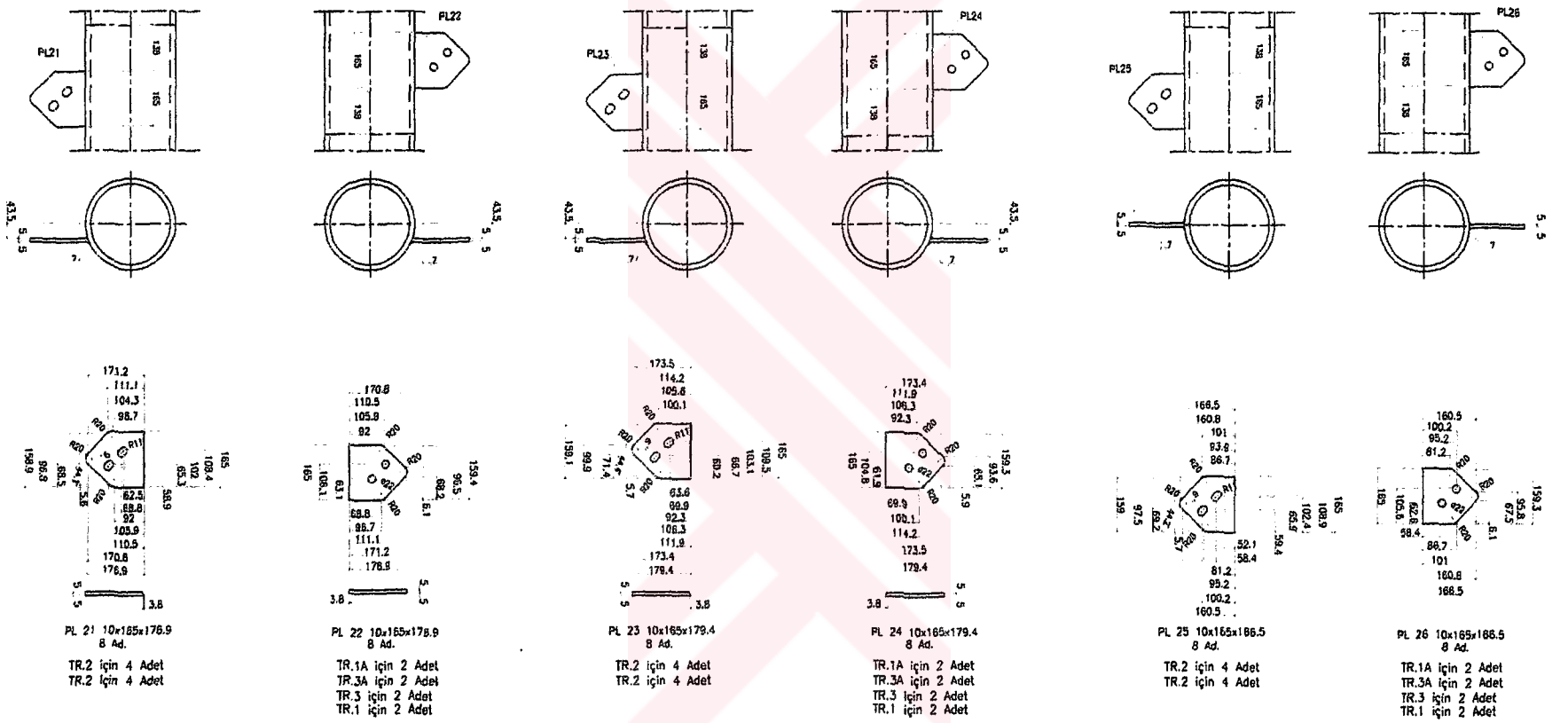


PL20 10x157.8x165
8 Adet
TR.1A için 2 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.1 için 2 Adet

ALT PLAKALAR
(YC1-1 PLAKALARI)

KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ

PLAKA DETAYLARI
ELTEK-DET-27 | REV | 2



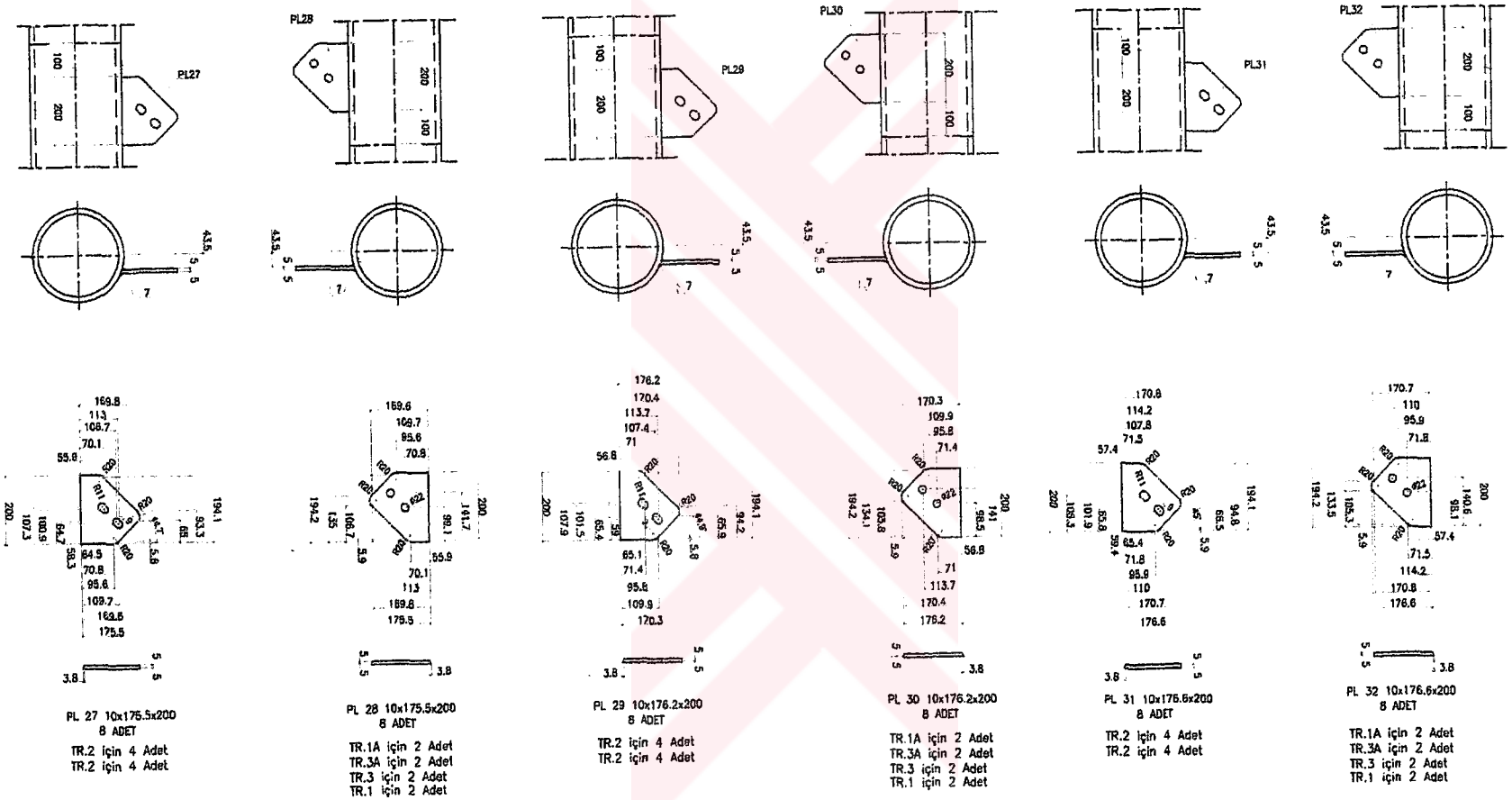
ÜST PLAKALAR
(YC2ve YC2-1 PLAKALARI)

ALT PLAKALAR
(YC2-2 PLAKALARI)

KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ

PLAKA DETAYLARI

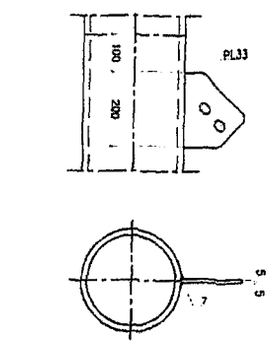
ELTEK-DET-28 REV 2

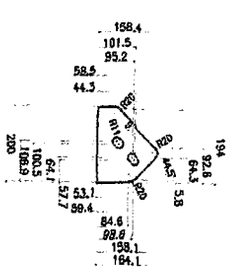


ÜST PLAKALAR
(YC3 , YC3-1 ve YC3-2 PLAKALARI)

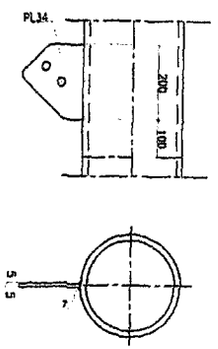
KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ

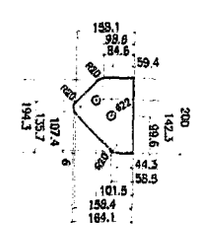
PLAKA DETAYLARI
ELTEK-DET-29 | REV | 3



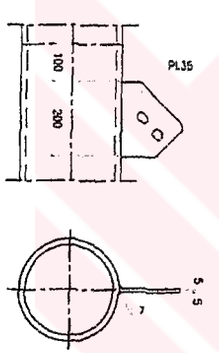


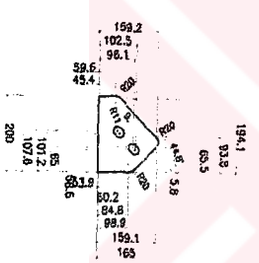
PL 33 10x164.1x200
8 ADET
TR.2 için 4 Adet
TR.2 için 4 Adet



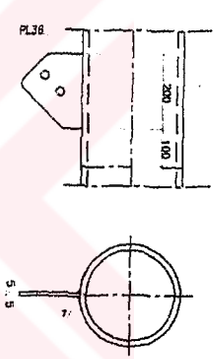


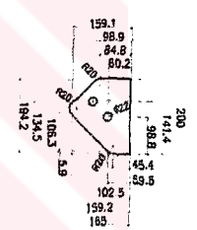
PL 34 10x164.1x200
8 ADET
TR.1A için 2 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.1 için 2 Adet



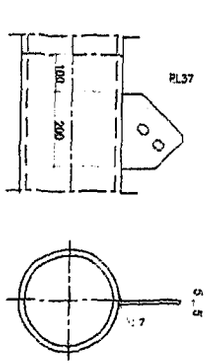


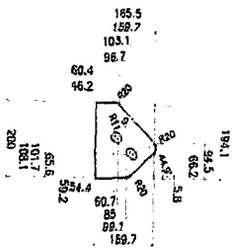
PL 35 10x165x200
8 ADET
TR.2 için 4 Adet
TR.2 için 4 Adet



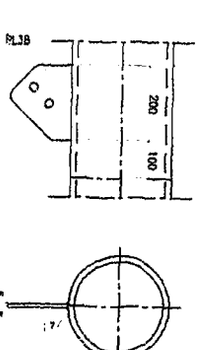


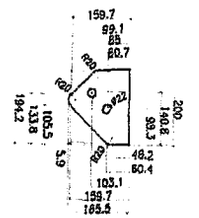
PL 36 10x165x200
8 ADET
TR.1A için 2 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.1 için 2 Adet





PL 37 10x165.5x200
8 ADET
TR.2 için 4 Adet
TR.2 için 4 Adet

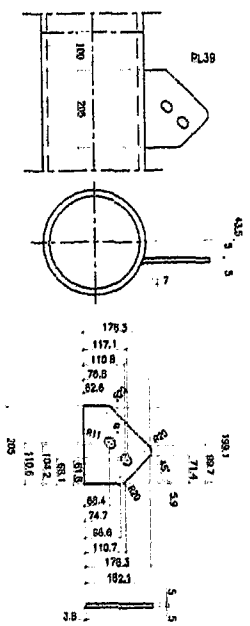




PL 38 10x165.5x200
8 ADET
TR.1A için 2 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.1 için 2 Adet

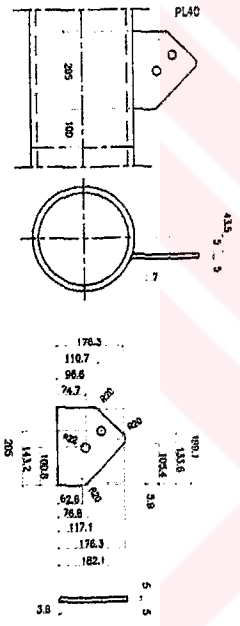
ALT PLAKALAR
(YC3-3 , YC3-4 ve YC3-5 PLAKALARI)

KOÇ ÜNİVERSİTESİ SPOR ENERJİ MERKEZİ	PLAKA DETAYLARI ELTEK-DET-30	REV	2



PL 39 10x182.1x205
8 ADET

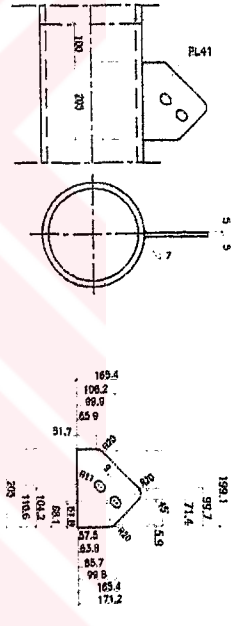
TR.1A için 1 Adet
TR.2 için 2 Adet
TR.3A için 1 Adet
TR.3 için 1 Adet
TR.2 için 2 Adet
TR.1 için 1 Adet



PL 40 10x182.1x205
8 ADET

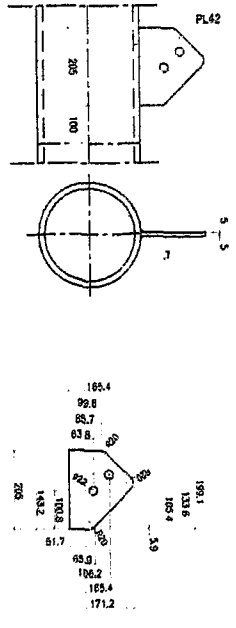
TR.1A için 1 Adet
TR.2 için 2 Adet
TR.3A için 1 Adet
TR.3 için 1 Adet
TR.2 için 2 Adet
TR.1 için 1 Adet

ÜST PLAKALAR
(YC4 PLAKALARI)



PL 41 10x171.2x205
16 ADET

TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet



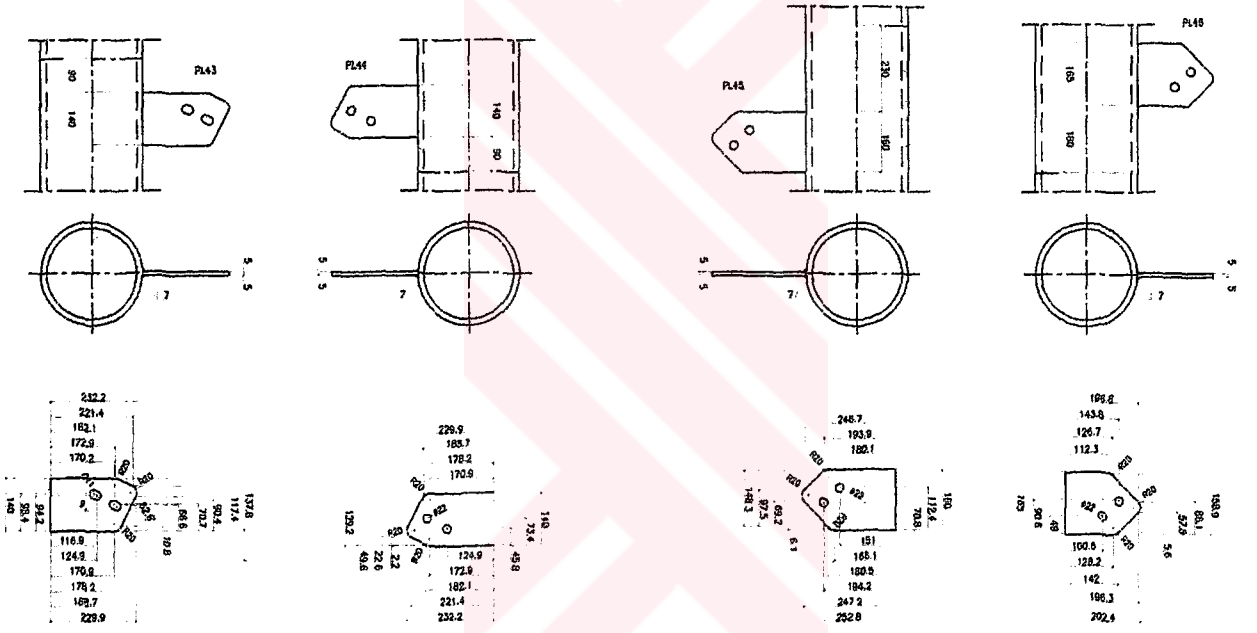
PL 42 10x171.2x205
16 ADET

TR.1A için 2 Adet
TR.2 için 4 Adet
TR.3A için 2 Adet
TR.3 için 2 Adet
TR.2 için 4 Adet
TR.1 için 2 Adet

ALT PLAKALAR
(YC4-1 PLAKALARI)

KOÇ ÜNİVERSİTESİ
SPOR, ENERJİ MERKEZİ

PLAKA DETAYLARI
ELTEK-DET-31 REV 2



ALT PLAKALAR
(YC5 PLAKALARI)

ALT PLAKALAR
(YC6 PLAKALARI)

KOÇ ÜNİVERSİTESİ
SPOR ENERJİ MERKEZİ

PLAKA DETAYLARI
ELTEK-DET-32 REV 2

EK-2 Kaynak Prosedürü Spesifikasyonları

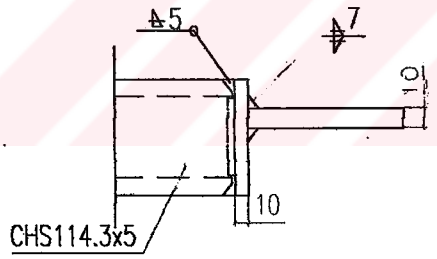
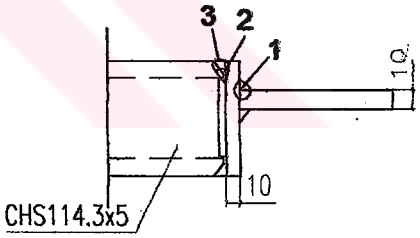
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 1

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

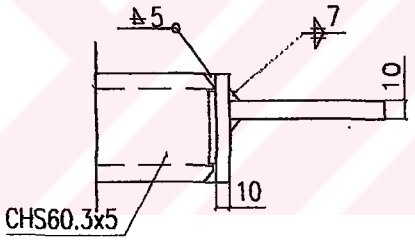
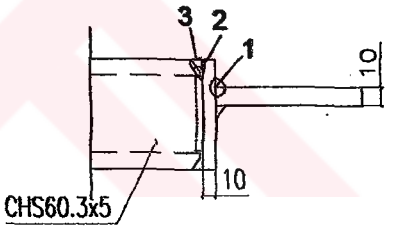
MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal - Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 Current 1(110-150), 2(80-100), 3(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO	: 2
SUBJECT	: Pipe Purlins / Diagonals
PROCEDURE DETAILS	: Acc. to welding procedure
MANUFACTURER'S NAME : ELTEK Çelik A.Ş.	

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal - Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 Current 1(110-150), 2(80-100), 3(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A
Quality Assurance	

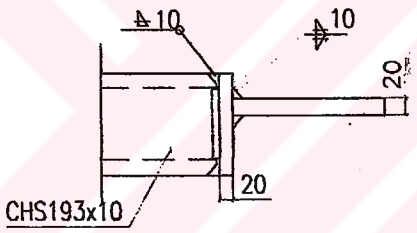
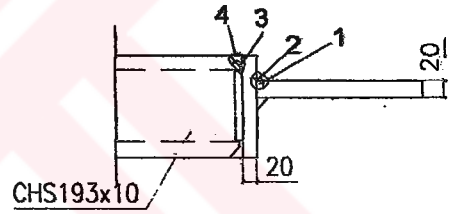
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 3

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	**PARENT MATERIAL** St 37.2
JOINT TYPE Fillet Weld	**SPECIFICATION** AWS D 1.1
WELDING POSITION Horizontal - Vertical	**MATERIALS GROUP** St 37.2
WORK PIECE POSITION Horizontal	**BACKING** Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	**RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH)** 
FILLER MATERIAL type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	**WELDING CONDITIONS** run no 1, run no 2, run no 3, run no 4 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 run4 ϕ3.25 current 1(110-150), 2(110-150), 3(80-100), 4(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	**POSTWELD HEAT TREATMENT** N/A

Quality Assurance

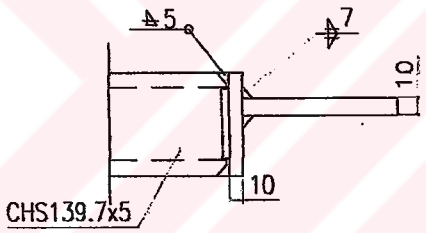
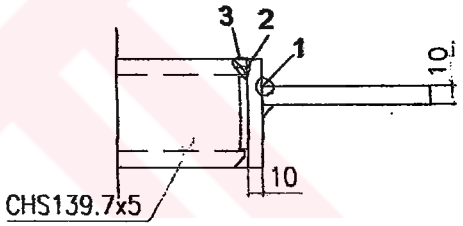
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 4

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	**PARENT MATERIAL** St 37.2
JOINT TYPE Fillet Weld	**SPECIFICATION** AWS D 1.1
WELDING POSITION Horizontal- Vertical	**MATERIALS GROUP** St 37.2
WORK PIECE POSITION Horizontal	**BACKING** Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	**RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH)** 
FILLER MATERIAL type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	**WELDING CONDITIONS** run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 current 1(110-150), 2(80-100), 3(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	**POSTWELD HEAT TREATMENT** N/A

Quality Assurance

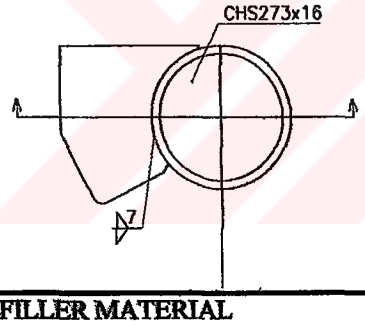
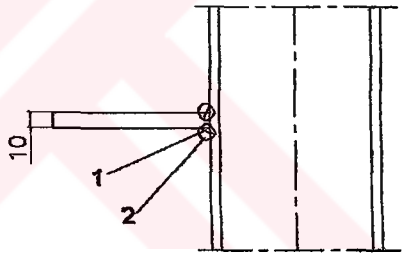
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 5

SUBJECT : Pipe Trusses / Plates

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal-Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL Type E 7018 Composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ3.25 , run2 ϕ3.25 current 1(80-100), 3(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

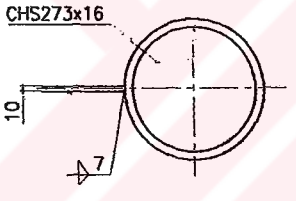
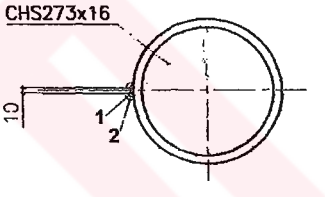
	WELDING PROCEDURE SPECIFICATION (WPS)	Date Rev. 2 Page 1

WPS NO : 6

SUBJECT : Pipe Trusses / Plates

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal-Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ3.25 , run2 ϕ3.25 current 1(80-100), 2(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 7

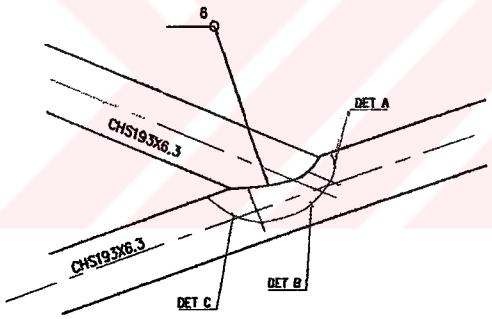
SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

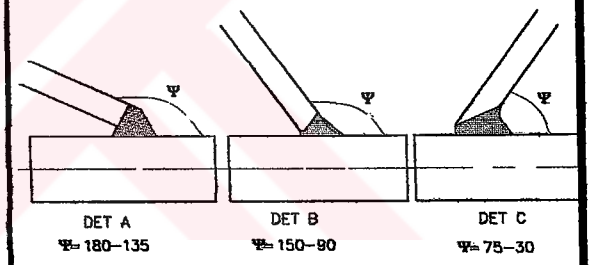
MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T- JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING

WELD-EDGE PREPARATION (DIMENSIONED SKETCH)



RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH)



FILLER MATERIAL
type E 6010
composition C: 0.08 Si : 0.1 Mn: 0.7 Mo: 0.5
type E 7018
composition C : 0.07 Si : 0.5 Mn: 0.9

WELDING CONDITIONS
run no 1, run no 2, run no 3

Filler material size
run1 ϕ3.25 , run2 ϕ.3.25 , run3 ϕ.3.25

current 1(80-100), 2(110-150), 3(110-150)
polarity (+)

SHIELDING

HEAT TREATMENT
preheating ~150 °C Preheated

POSTWELD HEAT TREATMENT
N/A

Quality Assurance

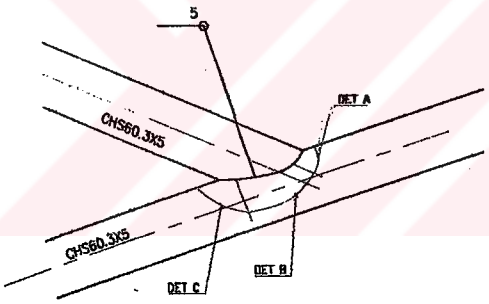
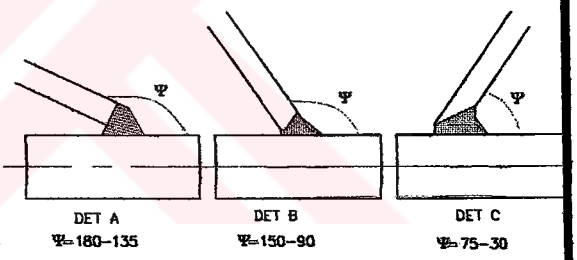
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 8

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T – JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ.3.25 , run3 ϕ3.25
SHIELDING	current 1(80-100), 2(110-150), 3(110-150) polarity (+)
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A
Quality Assurance	

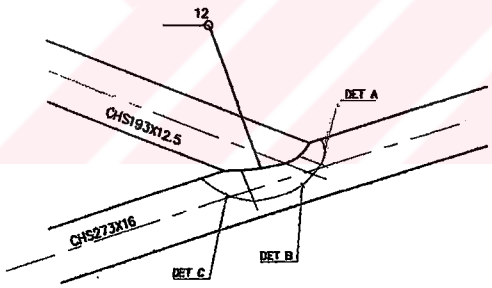
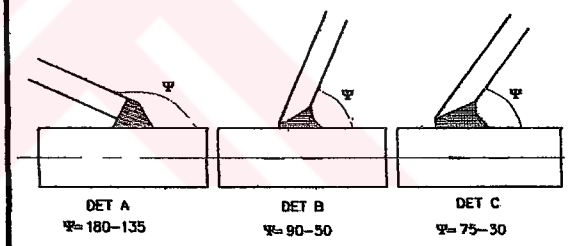
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 9

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25
SHIELDING	current 1(80-100), 2(110-150), 3(110-150) polarity (+)
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

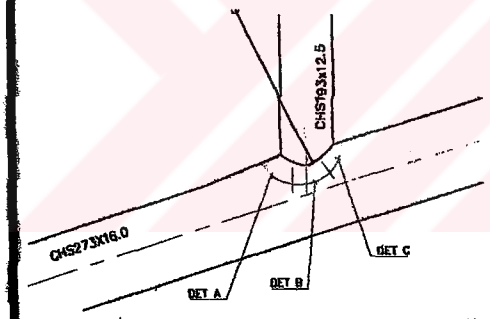
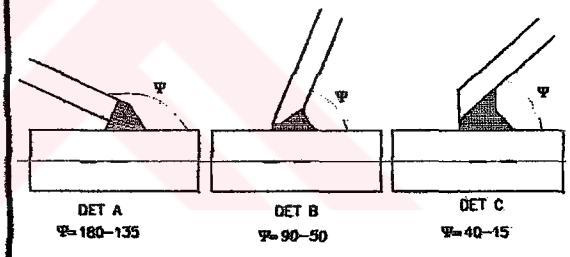
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 10

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T – JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 , run4 ϕ3.25 Current 1(80-110), 2(110-150), 3(110-150), 4(130-300) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

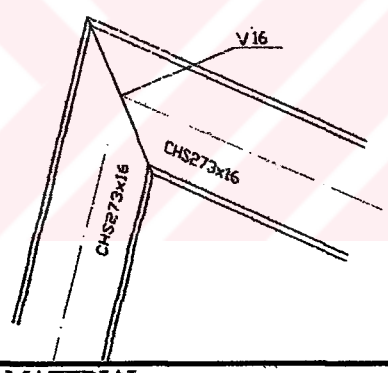
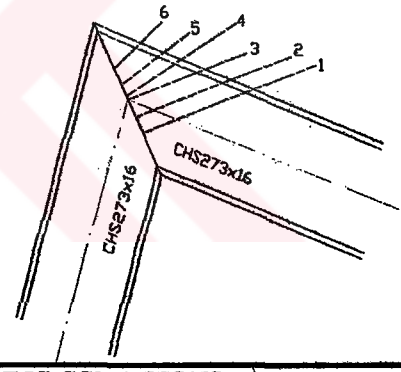
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 11

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si : 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4, run no 5, run no 6 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 , run4 ϕ3.25 , run5 ϕ3.25 , run6 ϕ3.25 current 1(80-110), 1(110-150), 3(110-150), 4(110-150), 5(110-150), 6(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

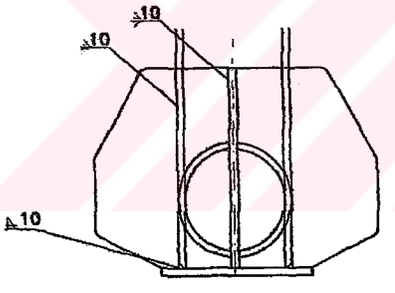
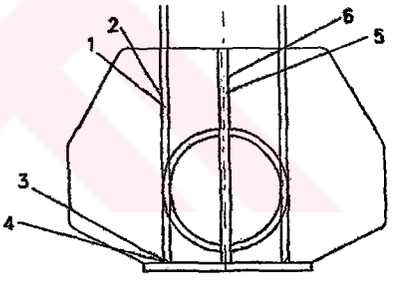
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 12

SUBJECT : Pipe Trusses / Base Plate

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4, run no 5, run no 6 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25, run4 ϕ3.25 , run5 ϕ3.25 , run6 ϕ3.25 current 1(110-150), 2(110-150), 3(110-150) 4(110-150), 5(110-150), 6(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

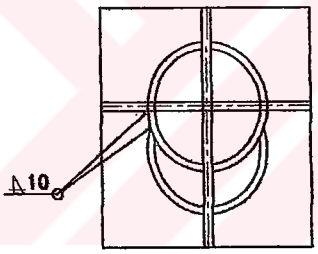
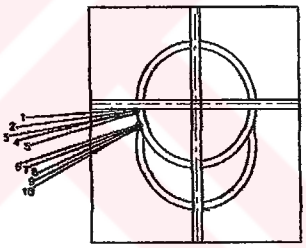
	(a) WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 13

SUBJECT : Pipe Trusses / Base Plate

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C : 0.08 Si : 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4, run no 5, run no 6, run no 7, run no 8, run no 9, run no 10 Filler material size run1 ϕ3.25, run2 ϕ3.25, run3 ϕ3.25, run4 ϕ3.25, run5 ϕ3.25, run6 ϕ3.25, run7 ϕ3.25, run8 ϕ3.25, run9 ϕ3.25, run10 ϕ3.25 current 1(80-100), 2(110-150), 3(110-150), 4(80-100), 5(110-150), 6(80-100), 7(110-150), 8(110-150), 9(110-50), 10(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

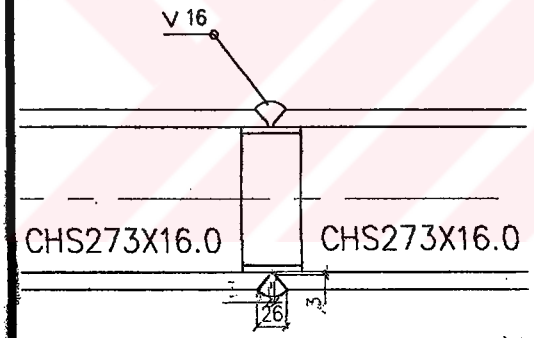
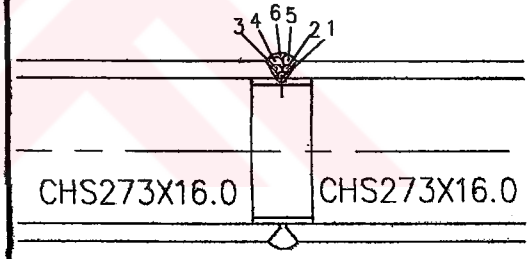
	(b) WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 14

SUBJECT : Pipe Trusses / Main Pipes

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE Butt Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C : 0.08 Si : 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4, run no 5, run no 6 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 , run4 ϕ3.25 , run5 ϕ3.25 , run6 ϕ3.25 Current 1(80-100), 2(110-150), 3(110-150), 4(110-150), 5(110-150),6(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurence

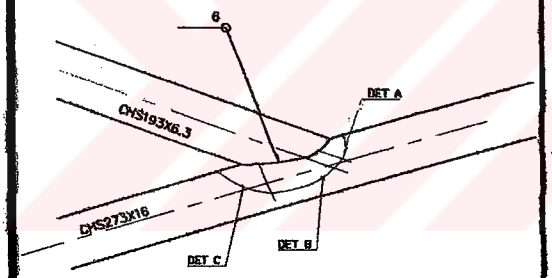
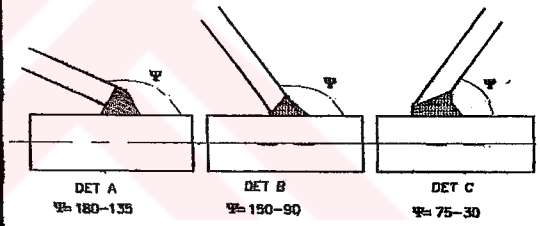
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 15

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 Current 1(80-100), 2(110-150), 3(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

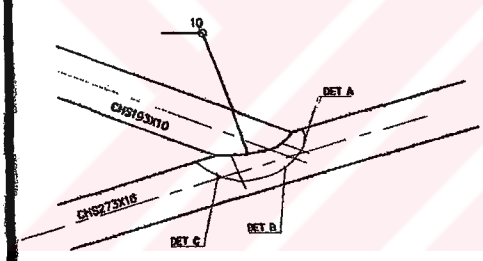
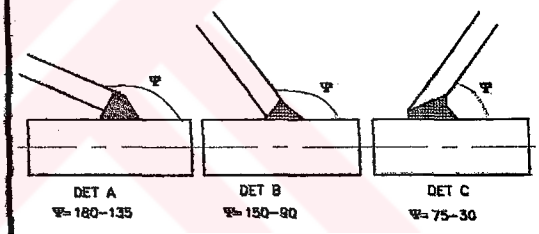
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 16

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C : 0.08 Si : 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2 run no 3, run no 4, run no 5 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 , run4 ϕ3.25 , run5 ϕ3.25
SHIELDING	current 1(80-100), 2(110-150), 3(110-150), 4(110-150), 5(110-150) polarity (+)
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

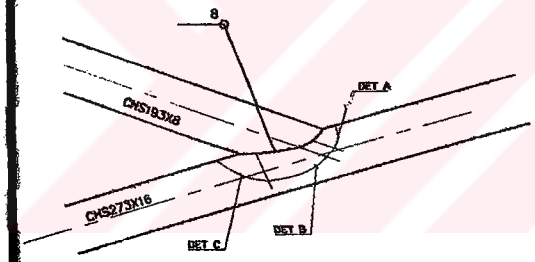
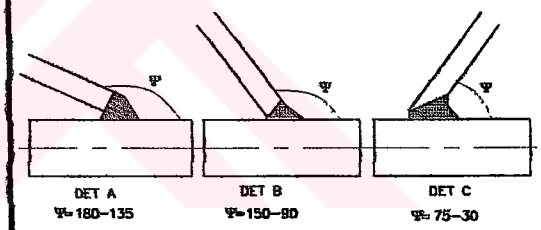
	(c) WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 17

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25 , run4 ϕ3.25 current 1(80-100), 2(110-150), 3(110-150), 4(110-150) polarity (+)
SHIELDING	
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

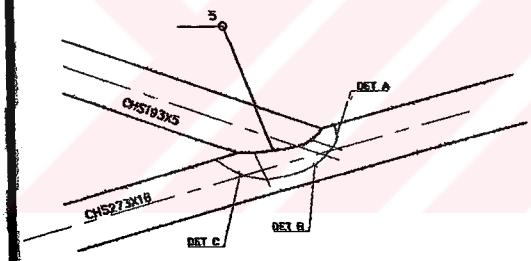
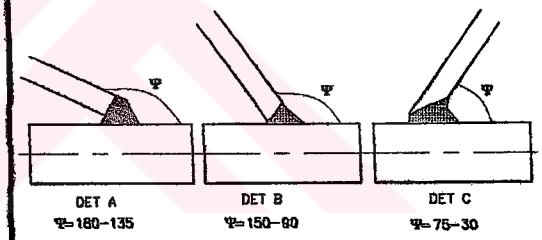
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 18

SUBJECT : Pipe Trusses

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS Run no 1, run no 2, run no 3 Filler material size run1 ϕ3.25 , run2 ϕ3.25 , run3 ϕ3.25
SHIELDING	Current 1(80-100), 2(110-150), 3(110-150) polarity (+)
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A

Quality Assurance

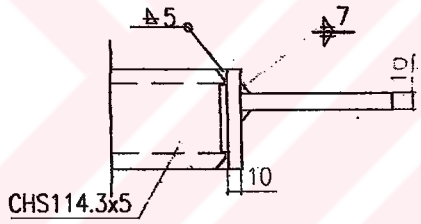
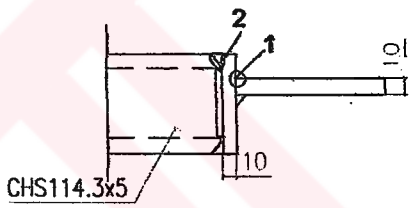
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 19

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal - Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07- 0.14 Si :0.7-1.0 Mn:1.3- 1.5	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ1.2 , run2 ϕ1.2
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	current 1(130-300), 2(130-300) voltage 1(19-29), 2(19-29) polarity (+) wire feed speed
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

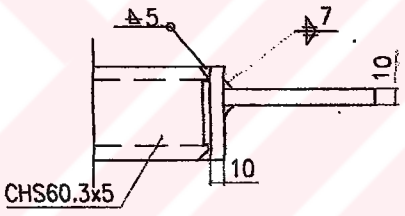
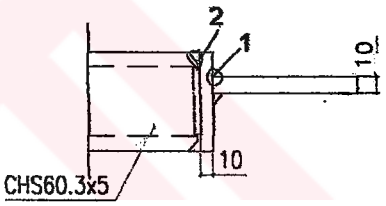
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 20

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal - Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07- 0.14 Si :0.7-1.0 Mn:1.3- 1.5	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ1.2 , run2 ϕ1.2
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	current 1(130-300), 2(130-300) voltage 1(19-29), 2(19-29) polarity (+) wire feed speed
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

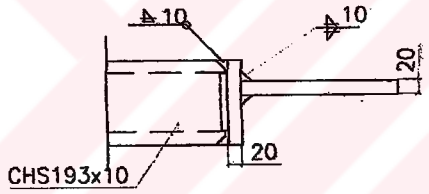
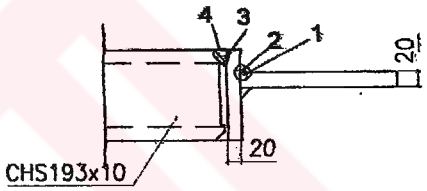
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 21

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal - Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07- 0.14 Si :0.7-1.0 Mn:1.3- 1.5	WELDING CONDITIONS run no 1 run no 2, run no 3, run no 4 Filler material size run1 ϕ1.2 , run2 ϕ1.2 , run3 ϕ1.2 , run4 ϕ1.2
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	current 1(130-300), 2(130-300) 3(130-300) 4(130-300) voltage 1(19-29), 2(19-29), 3(19-29), 4(19-29) polarity (+) wire feed speed
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

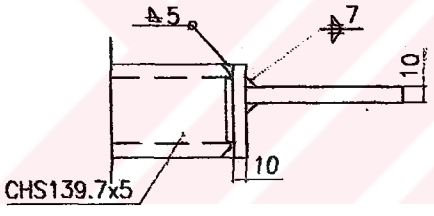
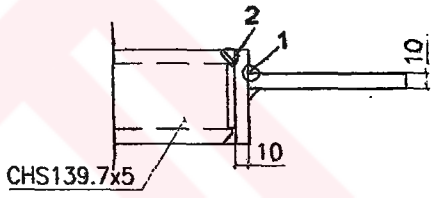
	(d) WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 22

SUBJECT : Pipe Purlins / Diagonals

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING Backing Ring Used
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07- 0.14 Si :0.7-1.0 Mn:1.3- 1.5	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ1.2 , run2 ϕ1.2
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	current 1(130-300), 2(130-300) voltage 1(19-29), 2(19-29) polarity (+) wire feed speed
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

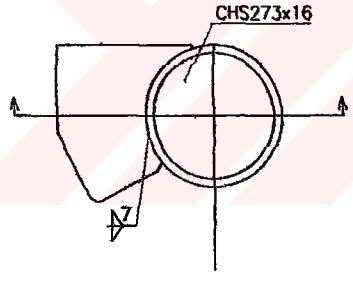
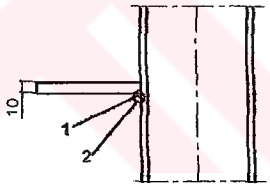
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 23

SUBJECT : Pipe Trusses / Plates

PROCEDURE DETAILS : Acc. to welding procedure

MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal-Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07-0.14 Si: 0.7-1.0 Mn: 1.3-1.5	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ1.2 , run2 ϕ1.2 current 1(130-300), 2(130-300) voltage 1(19-29), 2(19-29) polarity (+) wire feed speed
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

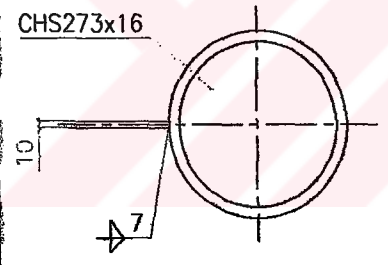
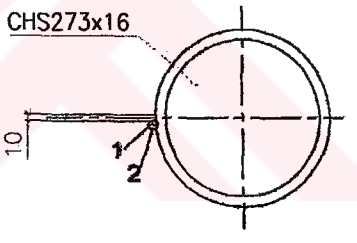
	WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 24

SUBJECT : Pipe Trusses / Plates

PROCEDURE DETAILS : Acc. to welding procedure

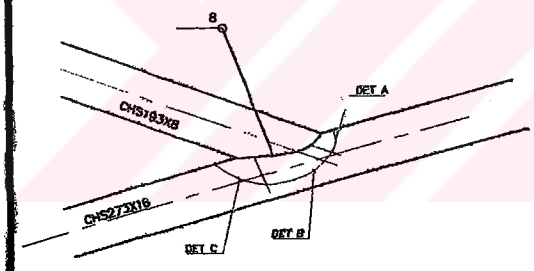
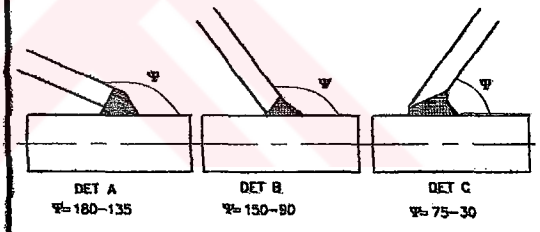
MANUFACTURER'S NAME : ELTEK Çelik A.Ş.

WELDING PROCESSES GMAW	PARENT MATERIAL St 37.2
JOINT TYPE Fillet Weld	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH)  	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type SG-2 composition C : 0.07-0.14 Si : 0.7 - 1.0 Mn: 1.3-1.5	WELDING CONDITIONS run no 1, run no 2 Filler material size run1 ϕ1.2 , run2 ϕ1.2 current 1(130-300), 2(130-300) voltage 1(19-29), 2(19-29) polarity (+) wire feed speed
SHIELDING type M2-1 (BOS Argoshield) composition 75% Argon, 25% CO_2	
HEAT TREATMENT preheating N/A	POSTWELD HEAT TREATMENT N/A

Quality Assurance

EK-3 Bir Uygulama Kalifiye Raporu

	(e) WELDING PROCEDURE SPECIFICATION (WPS)	Tarih 18.06.99 Rev. 2 Page 1

WPS NO : 17	
SUBJECT : Pipe Trusses	
PROCEDURE DETAILS : Acc. to welding procedure	
MANUFACTURER'S NAME : ELTEK Çelik A.Ş.	
WELDING PROCESSES SMAW	PARENT MATERIAL St 37.2
JOINT TYPE T - JOINT	SPECIFICATION AWS D 1.1
WELDING POSITION Horizontal- Vertical	MATERIALS GROUP St 37.2
WORK PIECE POSITION Horizontal	BACKING
WELD-EDGE PREPARATION (DIMENSIONED SKETCH) 	RUN SEQUENCE AND COMPLETED WELD DIMENSION(SKETCH) 
FILLER MATERIAL type E 6010 composition C: 0.08 Si: 0.1 Mn: 0.7 Mo: 0.5 type E 7018 composition C : 0.07 Si : 0.5 Mn: 0.9	WELDING CONDITIONS run no 1, run no 2, run no 3, run no 4 Filler material size run1 ϕ3.25, run2 ϕ3.25, run3 ϕ3.25,run4 ϕ3.25
SHIELDING	current 1(80-100), 2(110-150), 3(110-150), 4(110-150) polarity (+)
HEAT TREATMENT preheating ~150 °C Preheated	POSTWELD HEAT TREATMENT N/A
Quality Assurance	

	PROCEDURE QUALIFICATION REPORT FORM (PQR)	Date 18.06.1999 Page 2 Rev. 2
PQR NO	17	
WELDER NO	8	

TENSILE TEST

Specimen Description	Specimen Dimension bxh(mm)	s(mm2)	Ultimate Tensile load (N)	Tensile strength N/mm2	Character of failure and location	Remarks
CHS273x16-CHS193x8	19,5x5,10	99,45	48000	482,65	plate	acceptable

GUIED BEND TEST

Specimen Description	Specimen Dimension mm	Dist. between supports (mm)	Mandril Diameter (mm)	Elongation Bend Angle	Remarks
CHS273x16-CHS193x8(FACE)	5,5	62,5	46	180	Test pattern didn't
CHS273x16-CHS193x8(ROOT)	4	58	46	180	crack and break

IMPACT TEST

Specimen Description	Temp (C)	Width (mm)	Values (J)	Remarks

VISUAL INSPECTION

Appearance :	acceptable	Convexity :	none
Undercut :	none	Piping porosity :	none

RADIOGRAPHIC - ULTRASONIC EXAMINATION

RT Report no	Result
UT Report no	Result

OTHER TEST

HARDNES TEST	Result:	Satisfactory
MACROETC TEST	Result:	acceptable

PREPARED	CHECKED	APPROVED

	PATTERN LIST (PQR)	Date 18.06.99 Page 3

Stamp	Welder's Name	Pattern Code	Welding Process
1	Remzi SEZGİN		SMAW
2	Yaşar ILMAZ		SMAW
3	Yaman ÖZ		SMAW
5	Süleyman YÜRE		SMAW
6	Hamit KONAK		SMAW
7	Cengiz SEREN		SMAW
8	Yemliha ÖZEN		SMAW

CHS 273x16mm ÇEKME DENEYİ RAPORU
CHS 273x16mm TENSILE TEST REPORT

DENEY LABORATUVARI
LABORATORY : ANADOLU DÖKÜM SANAYİ A.Ş.

NUMUNENİN AİT OLDUĞU FİRMA
COMPANY : ELTEK ÇELİK A.Ş.

İSTENEN TEST TİPİ
TEST TYPE : ÇEKME TESTİ

NUMUNENİN CİNSİ VE ADEDİ
SAMPLE DESCR. and QUANTITY : 1 ad. KAYNAKLI ÇEKME NUMUNESİ

DENEYİN YAPILDIĞI TARİH
DATE of TESTING : 01 / 03 / 1999

UYGULANAN STANDART
APPLIED STANDART : TS. 138

DENEYLERİ YAPANLAR
OPERATORS : Lab. N. DEMİR/ Mak. Müh. M. TEMEL

DENEYİ KONTROL EDEN
APPROVAL : Met. Müh. METEHAN BOYDAK

DENEY SONUÇLARI :
TEST RESULTS :

NUMUNE CİNSİ ve NO SAMPLE IDENTIFICATION	KESİT ALANI SECTION AREA (mm^2)	ÇEKME YÜKÜ TENSILE LOAD (N)	Madde IL Ç EKME DAYANIMI TENSILE STRENGTH (N/mm^2)	KOPMA YERİ BREAK POINT
CHS 273 x 16	19,5 x 5,1 =99,45	48000	482,65	SAC

ÇHS 273x16mm EĞME DENEYİ RAPORU
CHS 273x16mm BEND TEST REPORT

DENEY LABORATUVARI
LABORATORY : ANADOLU DÖKÜM SANAYİ A.Ş.

NUMUNENİN AİT OLDUĞU FİRMA
COMPANY : ELTEK ÇELİK A.Ş.

Bölüm 2.01
TEST TYPE : İSTENEN TEST TİPİ ÇEKME TESTİ

NUMUNENİN CİNSİ VE ADEDİ
Bölüm 2.02
KAYNAKLI EĞME NUMUNESİ SAMPLE DESCR. and QUANTITY : 1 ad.

DENEYİN YAPILDIĞI TARİH
DATE of TESTING : 01 / 03 / 1999

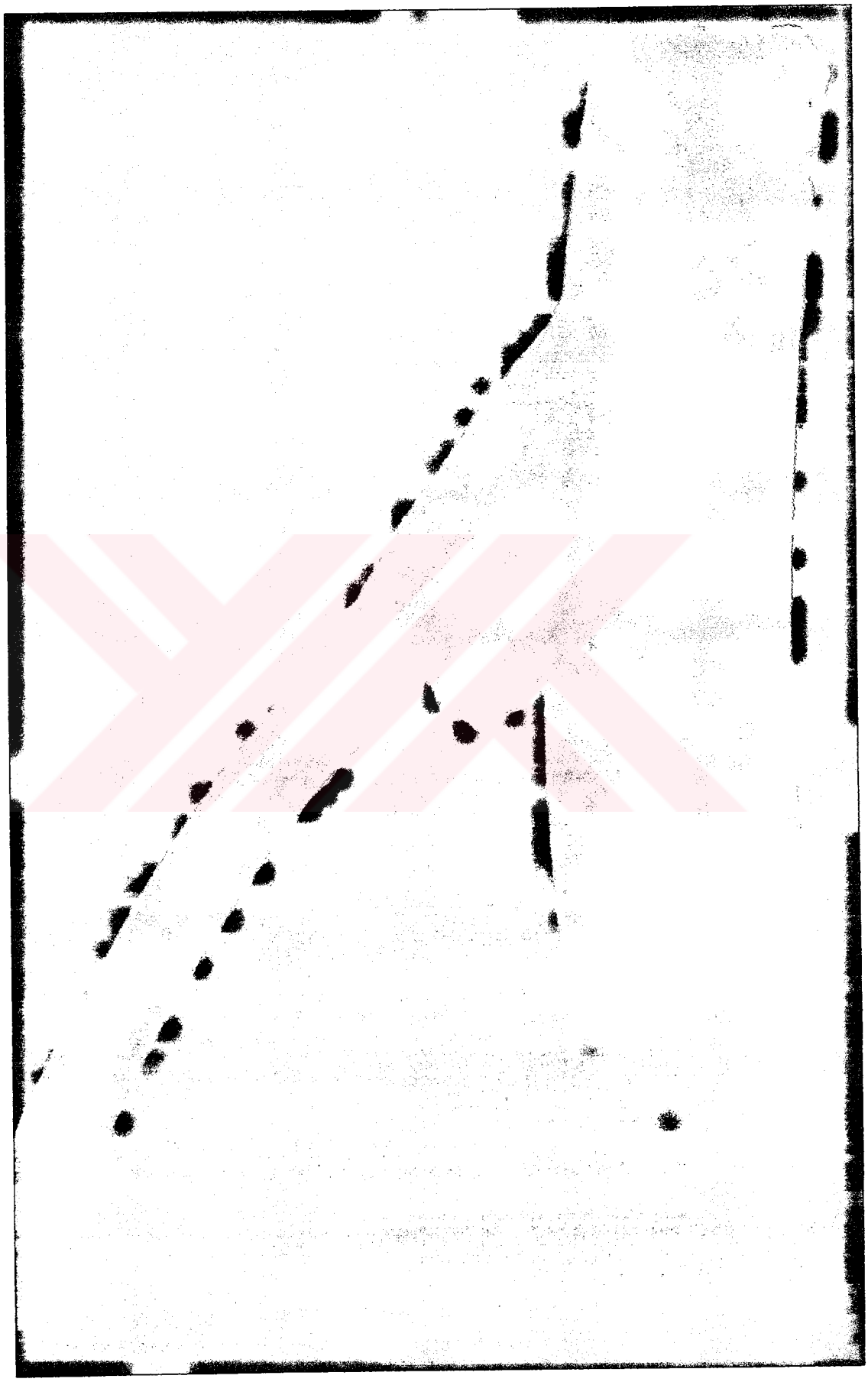
UYGULANAN STANDART
APPLIED STANDART : TS. 205

DENEYLERİ YAPANLAR
OPERATORS : Lab. N. DEMİR / Mak. Müh. M. TEMEL

DENEYİ KONTROL EDEN
APPROVAL : Met. Müh. METEHAN BOYDAK

DENEY SONUÇLARI :
TEST RESULTS :

NUMUNE CİNSİ ve NO *SAMPLE* IDENTIFICATION	MESNETLER ARASI MESAFE DISTANCE BETWEEN ROLLERS (mm)	MANDREL ÇAPI DIAMETER of MANDREL (mm)	PARÇA NIN KALINLIĞI THICKNESS of SAMPLE (mm)	EĞME AÇISI BENDING ANGLE	SONUÇ RESULT
CHS 273x16 CHS 193x8 ROOT	58	46	4	180°	Çatlama ve kırılma olmadı
CHS 273x16 CHS 193x8 FACE	62,5	46	5,5	180°	Çatlama ve kırılma olmadı



EK-4 ITP – Muayene ve Test Planı

PREPARED BY: MURAT TEMEL

INSPECTION AND TEST PLAN FOR STEEL STRUCTURE (I & T)									
						INVOLVEMENT			
STEPS	NO	DESCRIPTION	QUALITY RECORD NO	QUALITY PROCEDURE NO	ACCEPTANCE CRITERIAS	ELTEK	APPROVE	CLIENT	REMARKS
PRIOR CUTTING OF PLATE AND PIPES	1	MATERIAL INSPECTION	HL-QC/RN-03	Hold	DIN 1022		R	R	
		1.1 Verification Of Material Certificate Of Mill Test Report			DIN 1014 DIN 1017 DIN 59411 DIN 59410 DIN 1028 DIN 50123 DIN 50111 DIN 50125-EH16X30 DIN 1025 DIN 1027 DIN 1026 DIN 17700 DIN 10025 FE360BFN TS 3357 TS 207 TS 205 TS 138 TS 913 TS 10321 TS 648 TS 910 TS 912 ASTME A-252				
1		1.2 Dimensional check	HL-QC/RN-06	SSP-001	Table-1 Accepted	P	W/R		
AFTER CUTTING OF PLATE AND PIPES	1	DIMENSIONAL CHECK (Lenght,Width,Dingonal)	HL-QC/RN-06	SSP-001 SSP-007	DIN 1022 DIN 1014 DIN 1017 DIN 59411 DIN 59410 DIN 1028 DIN 50123 DIN 50111 DIN 50125-EH16X30 DIN 1025 DIN 1027 DIN 1026 DIN 17700 DIN 10025 FE360BFN TS 3357 TS 207 TS 205 TS 138 TS 913 TS 10321 EN10113-2 TS 648 TS 910 TS 912 ASTME A-252	P	I/R	R	
2	2	WELD BEVEL CHECK	*			P	SW/SI	R	
BEFORE AND AFTER DRILLING	1	CHECK OF DRILLING LOCATION &DIAMETER	*			P	SI	R	
3									
PRIOR TO WELDING	1	ASSEMBLY CHECK IN ACCORDANCE WITH RELATED DRAWINGS	*		AWS E 7018 E 6010 ASTME A 252 TS 5618 TS 5387	P	W	R	
	2	REVIEW OF WPS & PQR		SSP-005	AWS E 7018 E 6010 ASTME A 252	P	R	R	
	3	REVIEW OF WELDERS CERTIFICATE			AWS E 7018 E 6010 ASTME A 252 TS 563 AWS D 1.1 DIN 50111 DIN 8560 AWS 5.1 / E 7018 EL OC / FN 01 EL OC / FN 02 EL OC / FN 03 EL OC / RN 01 EL OC / RN 05 DIN 17100 E 287 EN 288 ASME SEC 9 TS 9013 TS 8363 TS EN 719 TS 5437 TS 6205 pr EN 1157 AWS 5.1 SEC 5 B.C	P	R		
	4	CHECK OF WELDING CONSUMABLE AND SHROGARE OF IT (CLEAN,FREEMOUSTURE)			DIN 17100 E 287 EN 288 ASME SEC 9 TS 9013 TS 8363 TS EN 719 TS 5437 TS 6205 pr EN 1157 AWS 5.1 SEC 5 B.C	P	SW		
4									

INSPECTION AND TEST PLAN FOR STEEL STRUCTURE (I & T)

STEPS	NO	DESCRIPTION	QUALITY RECORD NO	QUALITY PROCEDURE NO	ACCEPTANCE CRITERIAS	INVOLVEMENT			REMARKS
						ELEEK	APPROVE	CLIENT	
DURING WELDING	1	CHECK OF PREHEATING INTERPASS TEMPERATURE	*		AWS D 1.1	P			
	2	CHECK OF TACK WELDS	*		AWS D 1.1 TS 563 TS 5618 TS 5387	P		W	
	3	CHECK OF WELDING CONSUMABLE	*		AWS D 1.1	P		W	
	4	CHECK OF WELDING PARAMETRES	*	SSP-002	TS 9913 TS 8365 TS EN 719 TS 5437 TS 6205 pr EN 1157		R	R	
	5	CHECK OF WELDER'S CERTIFICATE	*	SSP-002	TS 563 TS 5618 AWS D 1.1 DIN 50111 DIN 8560 AWS 5.1 / E 7018 TS 9913 TS 8365 TS EN 719 TS 5437		R	R	
5									
AFTER WELDING	1	NDT INSPECTION							
		1.1 %100 Visual Check (All Welds)	EL-QC/RN-05	SSP-003	AWS D 1.1 TS 5127	P	SI	R	
		1.2.3 Ultrasonic inspection (%100) Full penetration butt welds	EN-QC/RN-08	SSP-008	AWS D 1.1 TS 5127 TS 4822 TS 5187 TS EN 10246-7 TS prEN 10246-6 TS prEN 956 TS 7482 TS EN 571-1 ASTM E 142 ASTM E SE 94			W/R	
		1.3 Penetrant or MPI inspection (Fillet Welds) (%10 min.)	EN-QC/RN-04	SSP-005	ASTM 165 TS prEN 956 TS 7482 TS EN 571-1		SW/R	W/R	
	2	CHECK OF WELDER STAMP	*	SSP-002		P		I	
	3	CHECK OF MARKING	*	SSP-002		P		R	
	4	CHECK OF BOLTED CONNECT	*	SSP-002		P		R	
	5	CHECK OF COMPETION OF TEST PREPARATION OF REPORT	*	SSP-002			A	R	
6									
PAINTING	1	CHECKM OF SAND BLASTING	EN-QC/RN-07	SSP-006	DIN 50310 ASTM C 322	P	W	W/R	
	2	CHECK OF PAINT TYPE	EN-QC/RN-07		SA 2.5 SA 3 SSPC SP.5 SSPC SP.2 SSPS SP.3 TS 914 BS 3900 S 2 BS 3900 S 3 BS 2620	P		W	
	3	VISUAL INSPECTION AND THICKNESS MEASUREMENT OF FIRST COATING (DRY)	EN-QC/RN-07		BS 5411 BS 3900 ISO 2178 ISO 2808 ISO 2360 DIN 50981 DIN 50984 ASTM D 1400 ASTM B 499	P	SW	I/R	
	4	VISUAL INSPECTION AND THICKNESS MEASUREMENT OF TOTAL COATING (DRY)	EN-QC/RN-07		BS 5411 BS 3900 ISO 2178 ISO 2808 ISO 2360 DIN 50981 DIN 50984 ASTM D 1400 ASTM B 499		SW/R		
7									

INSPECTION AND TEST PLAN FOR STEEL STRUCTURE (I & T)

STEPS	NO	DESCRIPTION	QUALITY RECORD NO	QUALITY PROCEDURE NO	ACCEPTANCE CRITERIAS	INVOLVEMENT ELTEK	APPROVE	CLIENT	REMARKS
AFTER THE SETTING 8	1	VISUAL INSPECTION AND CHECK MEASUREMENT OF TOTAL PART'S			DIN 1025 DIN 1027 DIN 1026 DIN 17780 DIN 10025 FE360BFN TS 3357 TS 913 TS 10321 HN10113-2 TS 648 TS 910 TS 912 SA 2.5 SA 3 SSPC SP.5 SSPC SP.2 SSPS SP.3 TS 914 DIN 8551 BS 3900 S 2 BS 3900 S 3 BS 2620 AWS D 1.1 TS 5127 DIN 8560 DIN 54109 ASTME E 186 ASTME E 446 BSI 3971 DIN 410 ASTME 142 ASTME SE 94 TS ISO 9002/EN04193 TS ISO 9002/EN301/56 TS 1021/1 TS 1021/2 TS 1024/4 TS 1026 TS 80 TS 93	P		W/R	
PRIOR TO SHIPMENT 9	1	TRIAL, ASSEMBLY AND THAT ERECTION IN WORKSHOP				P		W/R	
	2	PREPARATION OF DATA FILE				P		R	
ERECTION 10	1	VISUAL INSPECTION AND CHECK MEASUREMENT OF TOTAL PART'S			TS ISO 9002/EN301/56 TS 1021/1 TS 1021/2 TS 1024/4 TS 1026 TS 80 DIN 7990 DIN 7968 DIN 555 B 1.1 DIN601				

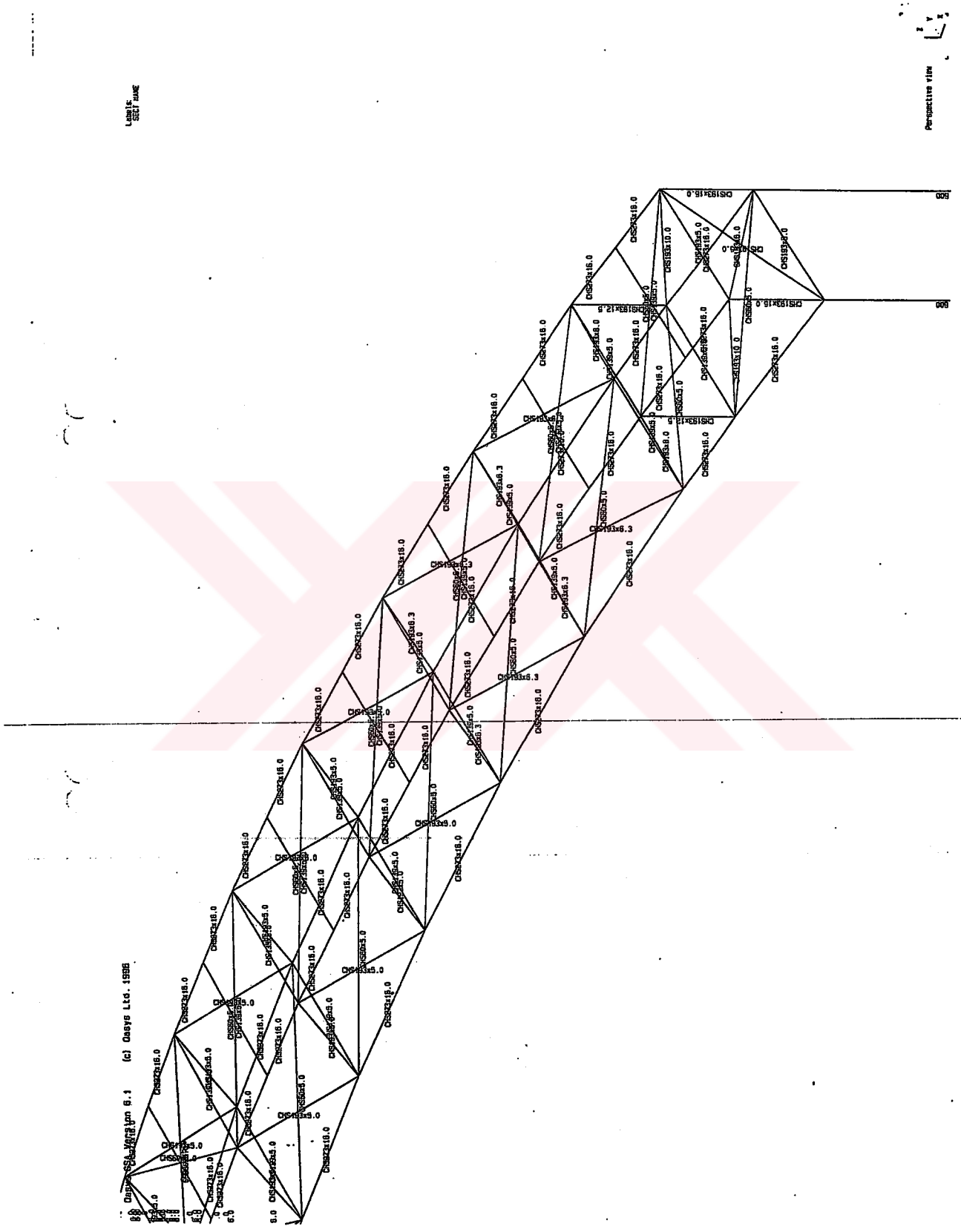
ELTEK REVIATIONS

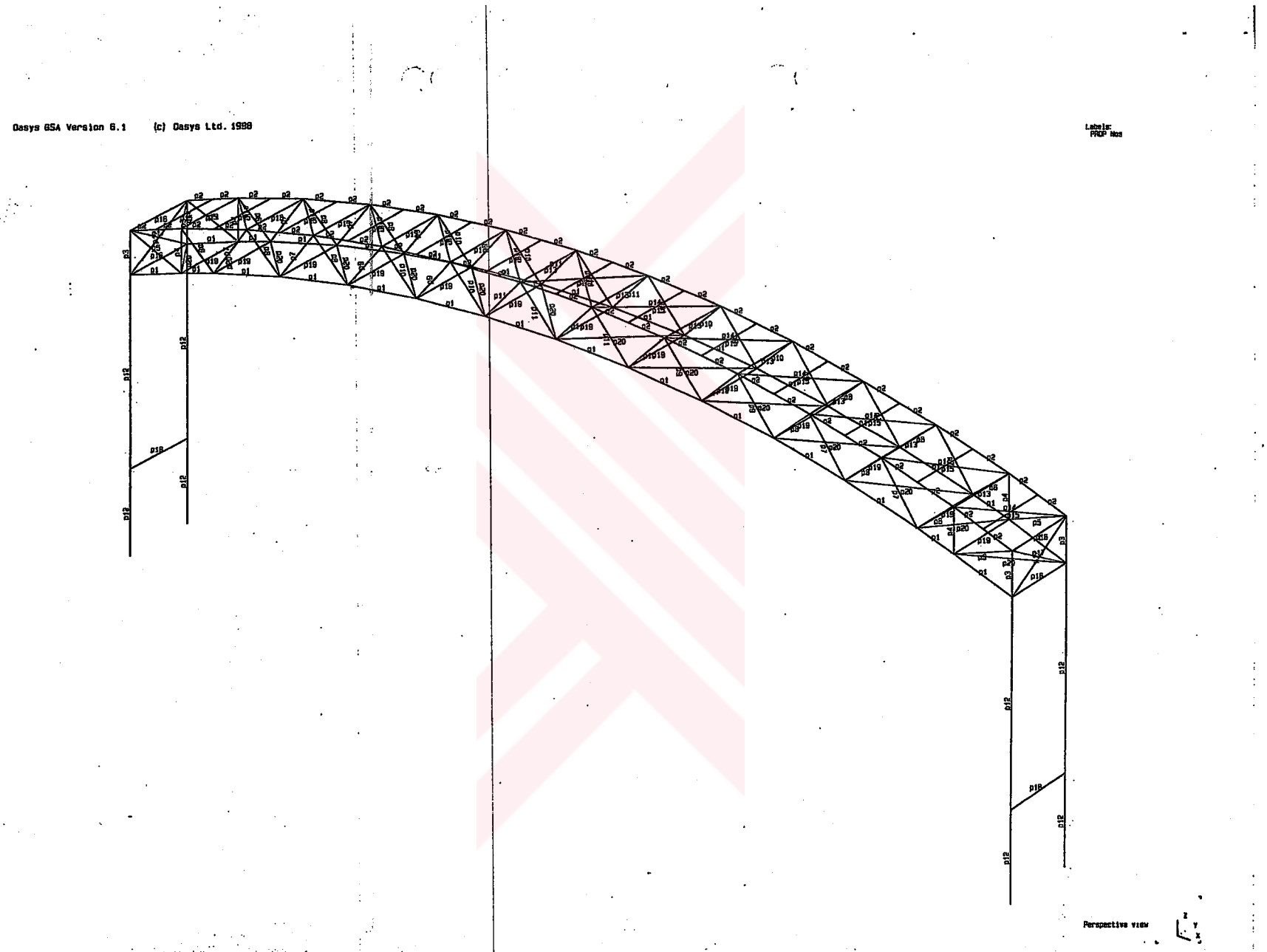
* - A REPORT SHALL BE PREPARED IF ANY NONCOMITY WAS FOUND.
X - A REPORT SHALL BE PREPARED AFTER CHECK TEST.
R - REVIEW.
S - SPOT.
N - TO BE SUBMITTED BY IRON MILL IN THEIR ORIGINAL FORM.
QC - QUALITY CONTROL DEPARTMENT
P - PERFORMANCE
W - WITNESS.
E - ELTEK STEEL STRUCTION A.Ş.
I - INSPECTION.

NOTH : PLEASE REFER TO THE QC PROCEDURE WITH SERIAL NO: EN-QC-SSP-001,002,003,004,005.

DATE: PREPARED CHECKED APPROVAL

EK-5 Statik Analizler




Oasys GSA Version 8.1 (c) Oasys Ltd. 1998
Labels:
PROP Nos
Perspective view
Z
Y
X

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

Type of Structure: GENERAL 3D

Global Restraints: none

Input Data Units: kN m T s deg.C Gravity = 9.80665 m/s2
Results Units: - same as input data units

Number of Nodes = 130 Highest Node = 132
Number of Elements = 298 Highest Element = 355
Number of Basic Loadcases = 8 Highest Basic Loadcase = 8
Number of Combination Loadcases = 8
Number of Envelopes = 1

Static Loadcase Titles:

Basic Loadcases
1 cati kaplama + kar yuku
2 ruzgar
3 ruzgar
4 servis yukleri
5 celik cati zati ag. (gravity)
6 deprem y yonu
7 deprem x yonu
8

Combination Loadcases
9 dusey yukler
1* 1.000 4* 1.000 5* 1.000
10 ruzgar+dusey yukler
1* 1.000 2* 1.000 3* 1.000 4* 1.000
5* 1.000
11 DEPREM y yonu
1* 1.000 4* 1.000 5* 1.000 6* 1.000
12 deprem x yonu +
1* 1.000 4* 1.000 5* 1.000 7* 1.000
13 deprem xy +
1* 1.000 4* 1.000 5* 1.000 6* 710.0E-3
7* 710.0E-3
14 deprem 1x+.3y
1* 1.000 4* 1.000 5* 1.000 6* 300.0E-3
7* 1.000
15 deprem .3x+1y
1* 1.000 4* 1.000 5* 1.000 6* 1.000
7* 300.0E-3
16 thermal
1* 1.000 4* 1.000 5* 1.000 8* 1.000

Envelopes
1 tum kombinasyonlar
9 10 11 12 13 14 15 16

A N A L Y S I S B Y G S A Version 6x021

Static analysis

Nodes Units: [m]

Node	X	Y	Z	Axis
1	0.0	0.0	-9.000	
2	0.0	0.0	4.000	
3	50.400	0.0	-9.000	
4	50.400	0.0	4.000	
5	0.0	0.0	6.000	
6	50.400	0.0	6.000	
7	3.113	0.0	6.945	
8	47.287	0.0	6.945	
9	7.053	0.0	7.951	
10	11.038	0.0	8.758	
11	15.059	0.0	9.366	
12	19.105	0.0	9.771	
13	23.167	0.0	9.975	
14	27.233	0.0	9.975	
15	31.295	0.0	9.771	
16	35.341	0.0	9.366	
17	39.362	0.0	8.758	
18	43.347	0.0	7.951	
19	25.200	0.0	10.000	
20	3.113	0.0	4.945	
21	5.077	0.0	5.473	
22	45.323	0.0	5.473	
23	9.041	0.0	6.380	
24	13.045	0.0	7.087	
25	17.080	0.0	7.594	
26	21.135	0.0	7.898	
27	25.200	0.0	8.000	
28	29.265	0.0	7.898	
29	33.320	0.0	7.594	
30	37.355	0.0	7.087	
31	41.359	0.0	6.380	
32	47.287	0.0	4.945	
33	1.557	0.0	6.473	
34	48.844	0.0	6.473	
35	5.083	0.0	7.448	
36	9.046	0.0	8.355	
37	13.049	0.0	9.062	
38	17.082	0.0	9.569	
39	21.136	0.0	9.673	
40	29.264	0.0	9.673	
41	33.318	0.0	9.569	
42	37.352	0.0	9.062	
43	41.355	0.0	8.355	
44	45.317	0.0	7.448	
45	0.0	4.000	-9.000	
46	0.0	4.000	4.000	
47	50.400	4.000	-9.000	
48	50.400	4.000	4.000	
49	0.0	4.000	6.000	
50	50.400	4.000	6.000	
51	3.113	4.000	6.945	
52	47.287	4.000	6.945	
53	7.053	4.000	7.951	
54	11.038	4.000	8.758	
55	15.059	4.000	9.366	

Nodes Units: [m]

Node	X	Y	Z	Axis
56	19.105	4.000	9.771	
57	23.167	4.000	9.975	
58	27.233	4.000	9.975	
59	31.295	4.000	9.771	
60	35.341	4.000	9.366	
61	39.362	4.000	8.758	
62	43.347	4.000	7.951	
63	25.200	4.000	10.000	
64	3.113	4.000	4.945	
65	5.077	4.000	5.473	
66	45.323	4.000	5.473	
67	9.041	4.000	6.380	
68	13.045	4.000	7.087	
69	17.080	4.000	7.594	
70	21.135	4.000	7.898	
71	25.200	4.000	8.000	
72	29.265	4.000	7.898	
73	33.320	4.000	7.594	
74	37.355	4.000	7.087	
75	41.359	4.000	6.380	
76	47.287	4.000	4.945	
77	1.557	4.000	6.473	
78	48.844	4.000	6.473	
79	5.083	4.000	7.448	
80	9.046	4.000	8.355	
81	13.049	4.000	9.062	
82	17.082	4.000	9.569	
83	21.136	4.000	9.673	
84	29.264	4.000	9.673	
85	33.318	4.000	9.569	
86	37.352	4.000	9.062	
87	41.355	4.000	8.355	
88	45.317	4.000	7.448	
89	0.0	0.0	-5.000	
90	50.400	0.0	-5.000	
91	0.0	4.000	-5.000	
92	50.400	4.000	-5.000	
93	51.200	0.0	5.800	
94	51.200	4.000	5.800	
95	-0.800	0.0	5.800	
96	-0.800	4.000	5.800	
97	54.800	0.0	4.945	
98	54.800	4.000	4.945	
99	-4.400	0.0	4.945	
100	-4.400	4.000	4.945	
101	50.400	0.0	4.945	
102	50.400	4.000	4.945	
103	50.784	0.0	4.945	
104	50.784	4.000	4.945	
105	49.362	0.0	5.648	
106	48.325	0.0	5.297	
107	49.362	4.000	5.648	
108	48.325	4.000	5.297	
109	50.400	0.0	5.297	
110	50.400	0.0	5.648	
111	50.400	4.000	5.297	
112	50.400	4.000	5.648	
113	50.923	0.0	5.230	
114	51.131	0.0	5.648	
115	50.923	4.000	5.230	
116	51.131	4.000	5.648	
117	51.950	0.0	5.648	
119	51.950	4.000	5.648	
121	0.0	0.0	4.945	
122	0.0	4.000	4.945	
123	-0.438	4.000	4.953	
124	-0.438	0.0	4.953	
125	0.0	0.0	5.643	
126	0.0	4.000	5.643	
127	1.044	0.0	5.646	
128	1.044	4.000	5.646	
129	-0.739	4.000	5.641	
130	-0.739	0.0	5.641	
131	-1.488	4.000	5.643	
132	-1.488	0.0	5.643	

Elements

Elem. No.	Type	Fixity xx	yy	zz	Prop. No.	Group No. of elems.	Topology End 1	End 2	3rd Node	Length [m]	
18	BEAM	f/f	f/f	f/f	2	2	13	19		2.033	
19	BEAM	f/f	f/f	f/f	2	2	19	14		2.033	
20	BEAM	f/f	f/f	f/f	1	1	2	20		3.253	
21	BEAM	f/f	f/f	f/f	1	1	20	21		2.034	
26	BEAM	f/f	f/f	f/f	1	1	21	23		4.066	
27	BEAM	f/f	f/f	f/f	1	1	23	24		4.066	
28	BEAM	f/f	f/f	f/f	1	1	24	25		4.067	
29	BEAM	f/f	f/f	f/f	1	1	25	26		4.066	
30	BEAM	f/f	f/f	f/f	1	1	26	27		4.066	
31	BEAM	f/f	f/f	f/f	1	1	27	28		4.066	
32	BEAM	f/f	f/f	f/f	1	1	28	29		4.066	
33	BEAM	f/f	f/f	f/f	1	1	29	30		4.067	
34	BEAM	f/f	f/f	f/f	1	1	30	31		4.066	
35	BEAM	f/f	f/f	f/f	1	1	31	22		4.066	
36	BEAM	f/f	f/f	f/f	1	1	22	32		2.034	
37	BEAM	f/f	f/f	f/f	1	1	32	4		3.253	
40	BEAM	f/f	f/f	f/f	4	4	20	7		2.000	V
41	BEAM	f/f	f/f	f/f	4	4	32	8		2.000	V
44	BEAM	f/f	f/f	f/f	6	6	7	21		2.454	
45	BEAM	f/f	f/f	f/f	6	6	8	22		2.454	
46	BEAM	f/f	f/f	f/f	7	7	21	9		3.169	
47	BEAM	f/f	f/f	f/f	7	7	22	10		3.169	
48	BEAM	f/f	f/f	f/f	7	7	23	10		3.105	
49	BEAM	f/f	f/f	f/f	7	7	11	17		3.105	
50	BEAM	f/f	f/f	f/f	8	8	9	23		2.534	
51	BEAM	f/f	f/f	f/f	8	8	18	31		2.534	
52	BEAM	f/f	f/f	f/f	8	8	17	30		2.612	
53	BEAM	f/f	f/f	f/f	8	8	10	24		2.612	
54	BEAM	f/f	f/f	f/f	9	9	24	11		3.041	

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

Elements

Elem. No.	Type of ele.	Fixity xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length [m]	
95	BEAM	f/f	f/f	f/f	9	9	28	12		2.973	
96	BEAM	f/f	f/f	f/f	9	9	30	16		3.041	
97	BEAM	f/f	f/f	f/f	9	9	29	15		2.973	
98	BEAM	f/f	f/f	f/f	10	10	11	25		2.688	
99	BEAM	f/f	f/f	f/f	10	10	12	26		2.762	
60	BEAM	f/f	f/f	f/f	10	10	16	29		2.688	
61	BEAM	f/f	f/f	f/f	10	10	15	28		2.762	
62	BEAM	f/f	f/f	f/f	11	11	26	13		2.906	
63	BEAM	f/f	f/f	f/f	11	11	28	14		2.906	
64	BEAM	f/f	f/f	f/f	11	11	14	27		2.834	
65	BEAM	f/f	f/f	f/f	11	11	27	13		2.834	
66	BEAM	f/f	f/f	f/f	2	2	5	33		1.627	
67	BEAM	f/f	f/f	f/f	2	2	33	7		1.626	
68	BEAM	f/f	f/f	f/f	2	2	8	34		1.627	
69	BEAM	f/f	f/f	f/f	2	2	34	6		1.626	
70	BEAM	f/f	f/f	f/f	2	2	7	35		2.033	
71	BEAM	f/f	f/f	f/f	2	2	35	9		2.033	
72	BEAM	f/f	f/f	f/f	2	2	9	36		2.034	
73	BEAM	f/f	f/f	f/f	2	2	36	10		2.032	
74	BEAM	f/f	f/f	f/f	2	2	10	37		2.034	
75	BEAM	f/f	f/f	f/f	2	2	37	11		2.033	
76	BEAM	f/f	f/f	f/f	2	2	11	38		2.033	
77	BEAM	f/f	f/f	f/f	2	2	38	12		2.033	
78	BEAM	f/f	f/f	f/f	2	2	12	39		2.034	
79	BEAM	f/f	f/f	f/f	2	2	39	13		2.034	
80	BEAM	f/f	f/f	f/f	2	2	14	40		2.034	
81	BEAM	f/f	f/f	f/f	2	2	40	15		2.034	
82	BEAM	f/f	f/f	f/f	2	2	15	41		2.033	
83	BEAM	f/f	f/f	f/f	2	2	41	16		2.033	
84	BEAM	f/f	f/f	f/f	2	2	16	42		2.034	
85	BEAM	f/f	f/f	f/f	2	2	42	17		2.033	
86	BEAM	f/f	f/f	f/f	2	2	17	43		2.033	
87	BEAM	f/f	f/f	f/f	2	2	43	18		2.033	
88	BEAM	f/f	f/f	f/f	2	2	18	44		2.033	
89	BEAM	f/f	f/f	f/f	2	2	44	6		2.033	
92	BEAM	f/f	f/f	f/f	2	2	57	63		2.033	
93	BEAM	f/f	f/f	f/f	2	2	63	58		2.033	
94	BEAM	f/f	f/f	f/f	1	1	46	64		3.253	
96	BEAM	f/f	f/f	f/f	1	1	64	65		2.034	
100	BEAM	f/f	f/f	f/f	1	1	65	67		4.066	
101	BEAM	f/f	f/f	f/f	1	1	67	68		4.066	
102	BEAM	f/f	f/f	f/f	1	1	68	69		4.067	
103	BEAM	f/f	f/f	f/f	1	1	69	70		4.066	
104	BEAM	f/f	f/f	f/f	1	1	70	71		4.066	
105	BEAM	f/f	f/f	f/f	1	1	71	72		4.066	
106	BEAM	f/f	f/f	f/f	1	1	72	73		4.066	
107	BEAM	f/f	f/f	f/f	1	1	73	74		4.067	
108	BEAM	f/f	f/f	f/f	1	1	74	75		4.066	
109	BEAM	f/f	f/f	f/f	1	1	75	66		4.066	
110	BEAM	f/f	f/f	f/f	1	1	66	76		2.034	
111	BEAM	f/f	f/f	f/f	1	1	76	48		3.253	
114	BEAM	f/f	f/f	f/f	4	4	64	51		2.000	V
115	BEAM	f/f	f/f	f/f	4	4	76	52		2.000	V
118	BEAM	f/f	f/f	f/f	6	6	51	65		2.484	
119	BEAM	f/f	f/f	f/f	6	6	52	66		2.484	
120	BEAM	f/f	f/f	f/f	7	7	68	83		3.169	
121	BEAM	f/f	f/f	f/f	7	7	66	82		3.169	
122	BEAM	f/f	f/f	f/f	7	7	67	84		3.108	
123	BEAM	f/f	f/f	f/f	7	7	75	61		3.105	
124	BEAM	f/f	f/f	f/f	8	8	83	67		2.534	
125	BEAM	f/f	f/f	f/f	8	8	82	75		2.534	
126	BEAM	f/f	f/f	f/f	8	8	61	74		2.612	
127	BEAM	f/f	f/f	f/f	8	8	84	68		2.612	
128	BEAM	f/f	f/f	f/f	9	9	68	55		3.041	
129	BEAM	f/f	f/f	f/f	9	9	69	56		2.973	
130	BEAM	f/f	f/f	f/f	9	9	74	60		3.041	
131	BEAM	f/f	f/f	f/f	9	9	73	59		2.973	
132	BEAM	f/f	f/f	f/f	10	10	55	69		2.688	
133	BEAM	f/f	f/f	f/f	10	10	56	70		2.762	
134	BEAM	f/f	f/f	f/f	10	10	60	73		2.688	
135	BEAM	f/f	f/f	f/f	10	10	59	72		2.762	
136	BEAM	f/f	f/f	f/f	11	11	70	57		2.906	
137	BEAM	f/f	f/f	f/f	11	11	72	58		2.906	
138	BEAM	f/f	f/f	f/f	11	11	58	71		2.834	
139	BEAM	f/f	f/f	f/f	11	11	71	57		2.834	
140	BEAM	f/f	f/f	f/f	2	2	49	77		1.627	
141	BEAM	f/f	f/f	f/f	2	2	77	51		1.626	
142	BEAM	f/f	f/f	f/f	2	2	52	78		1.627	
143	BEAM	f/f	f/f	f/f	2	2	78	50		1.626	
144	BEAM	f/f	f/f	f/f	2	2	51	79		2.033	
145	BEAM	f/f	f/f	f/f	2	2	79	53		2.033	
146	BEAM	f/f	f/f	f/f	2	2	53	80		2.034	
147	BEAM	f/f	f/f	f/f	2	2	80	54		2.032	
148	BEAM	f/f	f/f	f/f	2	2	54	81		2.034	
149	BEAM	f/f	f/f	f/f	2	2	81	55		2.033	
150	BEAM	f/f	f/f	f/f	2	2	55	82		2.033	
151	BEAM	f/f	f/f	f/f	2	2	82	56		2.033	
152	BEAM	f/f	f/f	f/f	2	2	56	83		2.034	
153	BEAM	f/f	f/f	f/f	2	2	83	57		2.034	
154	BEAM	f/f	f/f	f/f	2	2	58	84		2.034	
155	BEAM	f/f	f/f	f/f	2	2	84	59		2.034	
156	BEAM	f/f	f/f	f/f	2	2	59	85		2.033	
157	BEAM	f/f	f/f	f/f	2	2	85	60		2.033	
158	BEAM	f/f	f/f	f/f	2	2	60	86		2.034	
159	BEAM	f/f	f/f	f/f	2	2	86	61		2.033	
160	BEAM	f/f	f/f	f/f	2	2	61	87		2.033	
161	BEAM	f/f	f/f	f/f	2	2	87	62		2.033	
162	BEAM	f/f	f/f	f/f	2	2	62	88		2.033	
163	BEAM	f/f	f/f	f/f	2	2	88	52		2.033	
166	BEAM	f/f	p/p	p/p	15	16	49	5		4.000	
167	BEAM	f/f	p/p	p/p	13	13	51	7		4.000	
168	BEAM	f/f	p/p	p/p	13	13	53	9		4.000	
169	BEAM	f/f	p/p	p/p	13	13	54	10		4.000	
170	BEAM	f/f	p/p	p/p	13	13	55	11		4.000	
171	BEAM	f/f	p/p	p/p	13	13	56	12		4.000	
172	BEAM	f/f	p/p	p/p	13	13	57	13		4.000	
173	BEAM	f/f	p/p	p/p	13	13	58	14		4.000	
174	BEAM	f/f	p/p	p/p	13	13	59	15		4.000	

Elements

Elem. No.	Type of ele.	Fixity xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length [m]	
175	BEAM	f/f	p/p	p/p	13	13	60	16		4.000	
176	BEAM	f/f	p/p	p/p	13	13	61	17		4.000	
177	BEAM	f/f	p/p	p/p	13	13	62	18		4.000	
178	BEAM	f/f	p/p	p/p	13	13	82	8		4.000	
179	BEAM	f/f	p/p	p/p	14	16	80	6		4.000	
180	BEAM	f/f	p/p	p/p	14	14	49	7		5.156	
181	BEAM	f/f	p/p	p/p	14	14	51	9		5.704	
182	BEAM	f/f	p/p	p/p	14	14	53	10		5.704	
183	BEAM	f/f	p/p	p/p	14	14	54	11		5.704	
184	BEAM	f/f	p/p	p/p	14	14	55	12		5.704	
185	BEAM	f/f	p/p	p/p	14	14	56	13		5.705	
186	BEAM	f/f	p/p	p/p	14	14	57	14		5.704	
187	BEAM	f/f	p/p	p/p	14	14	58	13		5.704	
188	BEAM	f/f	p/p	p/p	14	14	14	59		5.705	
189	BEAM	f/f	p/p	p/p	14	14	15	60		5.704	
190	BEAM	f/f	p/p	p/p	14	14	16	61		5.704	
191	BEAM	f/f	p/p	p/p	14	14	17	62		5.704	
192	BEAM	f/f	p/p	p/p	14	14	18	52		5.704	
193	BEAM	f/f	p/p	p/p	14	14	8	50		5.156	
194	BEAM	f/f	p/p	p/p	15	15	77	23		4.000	
195	BEAM	f/f	p/p	p/p	15	15	79	35		4.000	
196	BEAM	f/f	p/p	p/p	15	15	80	36		4.000	
197	BEAM	f/f	p/p	p/p	15	15	81	37		4.000	
198	BEAM	f/f	p/p	p/p	15	15	82	38		4.000	
199	BEAM	f/f	p/p	p/p	15	15	83	39		4.000	
200	BEAM	f/f	p/p	p/p	15	15	63	19		4.000	
201	BEAM	f/f	p/p	p/p	15	15	84	40		4.000	
202	BEAM	f/f	p/p	p/p	15	15	85	41		4.000	
203	BEAM	f/f	p/p	p/p	15	15	86	42		4.000	
204	BEAM	f/f	p/p	p/p	15	15	87	43		4.000	
205	BEAM	f/f	p/p	p/p	15	15	88	44		4.000	
206	BEAM	f/f	p/p	p/p	15	15	78	34		4.000	
207	BEAM	f/f	p/p	p/p	16	16	2	46		4.000	
208	BEAM	f/f	p/p	p/p	16	16	4	48		4.000	
209	BEAM	f/f	p/p	p/p	17	17	5	46		4.472	
210	BEAM	f/f	p/p	p/p	17	17	2	49		4.472	
211	BEAM	f/f	p/p	p/p	17	17	4	50		4.472	
212	BEAM	f/f	p/p	p/p	17	17	6	48		4.472	
213	BEAM	f/f	f/f	f/f	12	12	1	89		4.000	V
214	BEAM	f/f	f/p	f/f	12	12	89	2		9.000	V
215	BEAM	f/f	f/f	f/f	12	12	3	90		4.000	V
216	BEAM	f/f	f/p	f/f	12	12	90	4		9.000	V
217	BEAM	f/f	f/f	f/f	12	12	45	91		4.000	V
218	BEAM	f/f	f/p	f/f	12	12	91	46		9.000	V
219	BEAM	f/f	f/f	f/f	12	12	47	92		4.000	V
220	BEAM	f/f	f/p	f/f	12	12	92	48		9.000	V
221	BEAM	f/f	p/p	p/p	18	18	89	91		4.000	
222	BEAM	f/f	p/p	p/p	18	18	90	92		4.000	
223	BEAM	f/f	p/p	p/p	19	19	64	20		4.000	
224	BEAM	f/f	p/p	p/p	19	19	65	21		4.000	
225	BEAM	f/f	p/p	p/p	19	19	67	23		4.000	
226	BEAM	f/f	p/p	p/p	19	19	68	24		4.000	
227	BEAM	f/f	p/p	p/p	19	19	69	25		4.000	
228	BEAM	f/f	p/p	p/p	19	19	70	26		4.000	
229	BEAM	f/f	p/p	p/p	19	19	71	27		4.000	
230	BEAM	f/f	p/p	p/p	19	19	72	28		4.000	
231	BEAM	f/f	p/p	p/p	19	19	73	29		4.000	
232	BEAM	f/f	p/p	p/p	19	19	74	30		4.000	
233	BEAM	f/f	p/p	p/p	19	19	75	31		4.000	
234	BEAM	f/f	p/p	p/p	19	19	66	22		4.000	
235	BEAM	f/f	p/p	p/p	19	19	76	32		4.000	
236	BEAM	f/f	p/p	p/p	20	20	46	20		5.156	
237	BEAM	f/f	p/p	p/p	20	20	64	21		4.487	
238	BEAM	f/f	p/p	p/p	20	20	65	23		5.704	
239	BEAM	f/f	p/p	p/p	20	20	67	24		5.704	
240	BEAM	f/f	p/p	p/p	20	20	68	25		5.704	
241	BEAM	f/f	p/p	p/p	20	20	69	26		5.704	
242	BEAM	f/f	p/p	p/p	20	20	70	27		5.704	
244	BEAM	f/f	p/p	p/p	20	20	48	32		5.156	
245	BEAM	f/f	p/p	p/p	20	20	76	32		4.487	
246	BEAM	f/f	p/p	p/p	20	20	66	31		5.704	
247	BEAM	f/f	p/p	p/p	20	20	75	30		5.704	
248	BEAM	f/f	p/p	p/p	20	20	74	29		5.704	
249	BEAM	f/f	p/p	p/p	20	20	73	28		5.704	
250	BEAM	f/f	p/p	p/p	20	20	72	27		5.704	
252	BEAM	f/f	f/f	f/f	3	3	4	101		945.0E-3	V
254	BEAM	f/f	f/f	f/f	3	3	48	102		945.0E-3	V
258	BEAM	f/f	f/f	f/f	22	22	4	103		1.020	
260	BEAM	f/f	f/f	f/f	22	22	48	104		1.020	
262	BEAM	f/f	f/f	f/f	23	23	32	101		3.113	
263	BEAM	f/f	f/f	f/f	23	23	101	103		384.0E-3	
264	BEAM	f/f	f/f	f/f	23	23	103	97		4.016	
265	BEAM	f/f	f/f	f/f	23	23	76	102		3.113	
266	BEAM	f/f	f/f	f/f	23	23	102	104		384.0E-3	
267	BEAM	f/f	f/f	f/f	23	23	104	98		4.016	
270	BEAM	f/f	f/f	f/f	5	5	6	105		1.096	
271	BEAM	f/f	f/f	f/f	5	5	105	106		1.098	
272	BEAM	f/f	f/f	f/f	5	5	106	32		1.096	
273	BEAM	f/f	f/f	f/f	5	5	50	107		1.096	
274	BEAM	f/f	f/f	f/f	5	5	107	108		1.098	
275	BEAM	f/f	f/f	f/f	5	5	108	76		1.096	
276	BEAM	f/f	f/f	f/f	3	3	101	109		352.0E-3	V
277	BEAM	f/f	f/f	f/f	3	3	109	110		351.0E-3	V
278	BEAM	f/f	f/f	f/f	3	3	110	6		352.0E-3	V
279	BEAM	f/f	f/f	f/f	3	3	102	111		352.0E-3	V
280	BEAM	f/f	f/f	f/f	3	3	111	112		351.0E-3	V
281	BEAM	f/f	f/f	f/f	3	3	112	50		352.0E-3	V
282	BEAM	f/f	f/f	f/f	22	22	103	113		317.1E-3	
283	BEAM	f/f	f/f	f/f	22	22	113	114		466.9E-3	
284	BEAM	f/f	f/f	f/f	22	22	114	93		166.9E-3	
285	BEAM	f/f	f/f	f/f	22	22	104	115		317.1E-3	
286	BEAM	f/f	f/f	f/f	22	22	115	116		466.9E-3	
287	BEAM	f/f	f/f	f/f	22	22	116	94		166.9E-3	
288	BEAM	f/f	f/f	f/f	24	24	93	117		785.2E-3	
289	BEAM	f/f	f/f	f/f	24	24	117	97		2.935	
291	BEAM	f/f	f/f	f/f	24	24	94	119		785.2E-3	
292	BEAM	f/f	f/f	f/f	24	24	119	98		2.935	
294	BEAM	f/f	f/f	f/f	25	25	105	110		1.038	

Elements

Elem. No.	Type	Fixity xx	yy	zz	Prop. No.	Group No. of elems.	Topology End 1	End 2	3rd Node	Length [m]	
295	BEAM	f/f	f/f	f/f	25	25	110	114		731.0E-3	
296	BEAM	f/f	f/f	f/f	25	25	114	117		819.0E-3	
297	BEAM	f/f	f/f	f/f	25	25	107	112		1.038	
298	BEAM	f/f	f/f	f/f	25	25	112	116		731.0E-3	
299	BEAM	f/f	f/f	f/f	25	25	116	119		819.0E-3	
302	BEAM	f/f	f/f	f/f	3	3	2	121		945.0E-3	V
304	BEAM	f/f	f/f	f/f	3	3	46	122		945.0E-3	V
305	BEAM	f/f	f/f	f/f	22	22	46	123		1.049	
308	BEAM	f/f	f/f	f/f	22	22	2	124		1.049	
310	BEAM	f/f	f/f	f/f	23	23	100	123		3.962	
311	BEAM	f/f	f/f	f/f	23	23	123	122		438.1E-3	
312	BEAM	f/f	f/f	f/f	23	23	122	64		3.113	
313	BEAM	f/f	f/f	f/f	23	23	99	124		3.962	
314	BEAM	f/f	f/f	f/f	23	23	124	121		438.1E-3	
315	BEAM	f/f	f/f	f/f	23	23	121	20		3.113	
318	BEAM	f/f	f/f	f/f	3	3	121	125		698.0E-3	V
319	BEAM	f/f	f/f	f/f	3	3	125	5		387.0E-3	V
320	BEAM	f/f	f/f	f/f	3	3	122	126		698.0E-3	V
321	BEAM	f/f	f/f	f/f	3	3	126	49		387.0E-3	V
322	BEAM	f/f	f/f	f/f	5	5	5	127		1.102	
323	BEAM	f/f	f/f	f/f	5	5	127	20		2.185	
324	BEAM	f/f	f/f	f/f	5	5	49	128		1.102	
325	BEAM	f/f	f/f	f/f	5	5	128	64		2.185	
326	BEAM	f/f	f/f	f/f	22	22	123	129		751.0E-3	
327	BEAM	f/f	f/f	f/f	22	22	129	96		170.1E-3	
328	BEAM	f/f	f/f	f/f	22	22	124	130		751.0E-3	
329	BEAM	f/f	f/f	f/f	22	22	130	98		170.3E-3	
330	BEAM	f/f	f/f	f/f	24	24	100	131		2.994	
331	BEAM	f/f	f/f	f/f	24	24	131	96		705.7E-3	
332	BEAM	f/f	f/f	f/f	24	24	99	132		2.994	
333	BEAM	f/f	f/f	f/f	24	24	132	98		705.7E-3	
334	BEAM	f/f	f/f	f/f	25	25	131	129		749.0E-3	
335	BEAM	f/f	f/f	f/f	25	25	129	126		739.0E-3	
336	BEAM	f/f	f/f	f/f	25	25	126	128		1.044	
337	BEAM	f/f	f/f	f/f	25	25	132	130		749.0E-3	
338	BEAM	f/f	f/f	f/f	25	25	130	125		739.0E-3	
339	BEAM	f/f	f/f	f/f	25	25	125	127		1.044	
340	BEAM	f/f	p/p	p/p	13	13	97	98		4.000	
341	BEAM	f/f	p/p	p/p	13	13	117	119		4.000	
342	BEAM	f/f	p/p	p/p	13	13	93	94		4.000	
343	BEAM	f/f	p/p	p/p	14	14	98	117		4.962	
344	BEAM	f/f	p/p	p/p	13	13	100	99		4.000	
345	BEAM	f/f	p/p	p/p	13	13	131	132		4.000	
346	BEAM	f/f	p/p	p/p	13	13	96	95		4.000	
347	BEAM	f/f	p/p	p/p	14	14	100	132		4.997	
348	BEAM	f/f	f/f	f/f	17	17	4	94		4.459	
349	BEAM	f/f	f/f	f/f	17	17	93	48		4.459	
350	BEAM	f/f	f/f	f/f	17	17	96	2		4.459	
351	BEAM	f/f	f/f	f/f	17	17	46	95		4.459	
352	BEAM	f/f	p/p	p/p	21	21	26	83		4.461	
353	BEAM	f/f	p/p	p/p	21	21	39	70		4.461	
354	BEAM	f/f	p/p	p/p	21	21	40	72		4.461	
355	BEAM	f/f	p/p	p/p	21	21	28	84		4.461	

Beam Properties

* indicates that properties are derived from the Beam Sections module

Prop- erty	Mate- rial	Area [m2]	Iyy [m4]	Izz [m4]	Beta deg]	Tors.(C) [m4]	Ky	Kz
1*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
2*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
3*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
4*	1	7.116E-3	29.34E-6	29.34E-6	0.0	58.69E-6	0.498	0.498
5*	1	5.771E-3	24.42E-6	24.42E-6	0.0	48.83E-6	0.498	0.498
6*	1	4.667E-3	20.16E-6	20.16E-6	0.0	40.31E-6	0.498	0.498
7*	1	3.709E-3	16.30E-6	16.30E-6	0.0	32.60E-6	0.498	0.498
8*	1	3.709E-3	16.30E-6	16.30E-6	0.0	32.60E-6	0.498	0.498
9*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
10*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
11*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
12*	2	720.0E-3	86.40E-3	21.60E-3	0.0	59.33E-3	0.833	0.833
13*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
14*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
15*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
16*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
17*	1	5.771E-3	24.42E-6	24.42E-6	0.0	48.83E-6	0.498	0.498
18*	2	320.0E-3	17.07E-3	4.267E-3	0.0	11.72E-3	0.833	0.833
19*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
20*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
21*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
22*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
23*	1	4.555E-3	17.03E-6	2.276E-6	0.0	118.8E-9	0.476	0.309
24*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
25*	1	4.555E-3	17.03E-6	2.276E-6	0.0	118.8E-9	0.476	0.309

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Prop- erty	Section Name	Modified Properties Area	Iyy	Izz	Torsion	Ky	Kz
1	CHS273x16.0	-	-	-	-	-	-
2	CHS273x16.0	-	-	-	-	-	-
3	CHS273x16.0	-	-	-	-	-	-
4	CHS193x12.5	-	-	-	-	-	-
5	CHS193x10.0	-	-	-	-	-	-
6	CHS193x8.0	-	-	-	-	-	-
7	CHS193x6.3	-	-	-	-	-	-
8	CHS193x6.3	-	-	-	-	-	-

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Prop- erty	Section Name	Modified Properties Area	Iyy	Izz	Torsion	Ky	Kz
9	CHS193x5.0	-	-	-	-	-	-
10	CHS193x5.0	-	-	-	-	-	-
11	CHS193x5.0	-	-	-	-	-	-
12	GRS1200x600	-	-	-	-	-	-
13	CHS139x5.0	-	-	-	-	-	-
14	CHS60x5.0	-	-	-	-	-	-
15	CHS139x5.0	-	-	-	-	-	-
16	CHS193x8.0	-	-	-	-	-	-
17	CHS193x10.0	-	-	-	-	-	-
18	GRS800X400	-	-	-	-	-	-
19	CHS139x5.0	-	-	-	-	-	-
20	CHS60x5.0	-	-	-	-	-	-
21	CHS60x5.0	-	-	-	-	-	-
22	CHS273x16.0	-	-	-	-	-	-
23	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-
24	CHS273x16.0	-	-	-	-	-	-
25	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-

Note: General sections are specified in [mm] as follows:
GRS Depth x Width

Materials

Material	Youngs Mod.(E) [kN/m2]	Poissons Ratio (Nu)	Density (Ro) [T/m3]	Coef.of Exp. (Alpha) [/deg.C]
1	205.0E+6	300.0E-3	7.850	12.00E-6
2	33.00E+6	300.0E-3	2.400	12.00E-6

Restraints

Rest. set	Trans. x	y	z	Rot. xx	yy	zz	Plane of nodes	Plane datum	List of nodes			
1	r	r	r	r	r	r	-	-	1	3	45	47
2	r	-	-	-	-	-	-		89	90	91	92

Node Loads — Units: [kN] [kNm]

Node	Loadcase	Direction	Value
5	1	FZ	-10.00
6	1	FZ	-10.00
7	1	FZ	-10.00
8	1	FZ	-10.00
9	1	FZ	-10.00
10	1	FZ	-10.00
11	1	FZ	-10.00
12	1	FZ	-10.00
13	1	FZ	-10.00
14	1	FZ	-10.00
15	1	FZ	-10.00
16	1	FZ	-10.00
17	1	FZ	-10.00
18	1	FZ	-10.00
19	1	FZ	-10.00
33	1	FZ	-10.00
34	1	FZ	-10.00
35	1	FZ	-10.00
36	1	FZ	-10.00
37	1	FZ	-10.00
38	1	FZ	-10.00
39	1	FZ	-10.00
40	1	FZ	-10.00
41	1	FZ	-10.00
42	1	FZ	-10.00
43	1	FZ	-10.00
44	1	FZ	-10.00
5	2	FZ	1.280
7	2	FZ	1.280
9	2	FZ	1.280
10	2	FZ	1.280
11	2	FZ	1.280
12	2	FZ	1.280
13	2	FZ	1.280
33	2	FZ	1.280
35	2	FZ	1.280
36	2	FZ	1.280
37	2	FZ	1.280
38	2	FZ	1.280
39	2	FZ	1.280
6	3	FZ	3.080
8	3	FZ	3.080
14	3	FZ	3.080
15	3	FZ	3.080
16	3	FZ	3.080
17	3	FZ	3.080
18	3	FZ	3.080
19	3	FZ	3.080
34	3	FZ	3.080
40	3	FZ	3.080
41	3	FZ	3.080

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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Node Loads — Units: [kN] [kNm]

Node	Loadcase	Direction	Value
43	3	FZ	3.080
43	3	FZ	3.080
44	3	FZ	3.080
2	4	FZ	-4.600
4	4	FZ	-4.600
20	4	FZ	-4.600
21	4	FZ	-4.600
22	4	FZ	-4.600
23	4	FZ	-4.600
24	4	FZ	-4.600
25	4	FZ	-4.600
26	4	FZ	-4.600
27	4	FZ	-4.600
28	4	FZ	-4.600
29	4	FZ	-4.600
30	4	FZ	-4.600
31	4	FZ	-4.600
32	4	FZ	-4.600
49	6	FY	-5.760
50	6	FY	-5.760
51	6	FY	-5.760
52	6	FY	-5.760
53	6	FY	-5.760
54	6	FY	-5.760
55	6	FY	-5.760
56	6	FY	-5.760
57	6	FY	-5.760
58	6	FY	-5.760
59	6	FY	-5.760
60	6	FY	-5.760
61	6	FY	-5.760
62	6	FY	-5.760
63	6	FY	-5.760
77	6	FY	-5.760
78	6	FY	-5.760
79	6	FY	-5.760
80	6	FY	-5.760
81	6	FY	-5.760
82	6	FY	-5.760
83	6	FY	-5.760
84	6	FY	-5.760
85	6	FY	-5.760
86	6	FY	-5.760
87	6	FY	-5.760
88	6	FY	-5.760
49	1	FZ	-10.00
50	1	FZ	-10.00
51	1	FZ	-10.00
52	1	FZ	-10.00
53	1	FZ	-10.00
54	1	FZ	-10.00
55	1	FZ	-10.00
56	1	FZ	-10.00
57	1	FZ	-10.00
58	1	FZ	-10.00
59	1	FZ	-10.00
60	1	FZ	-10.00
61	1	FZ	-10.00
62	1	FZ	-10.00
63	1	FZ	-10.00
77	1	FZ	-10.00
78	1	FZ	-10.00
79	1	FZ	-10.00
80	1	FZ	-10.00
81	1	FZ	-10.00
82	1	FZ	-10.00
83	1	FZ	-10.00
84	1	FZ	-10.00
85	1	FZ	-10.00
86	1	FZ	-10.00
87	1	FZ	-10.00
88	1	FZ	-10.00
49	2	FZ	1.280
51	2	FZ	1.280
53	2	FZ	1.280
54	2	FZ	1.280
55	2	FZ	1.280
56	2	FZ	1.280
57	2	FZ	1.280
77	2	FZ	1.280
79	2	FZ	1.280
80	2	FZ	1.280
81	2	FZ	1.280
82	2	FZ	1.280
83	2	FZ	1.280
50	3	FZ	3.080
52	3	FZ	3.080
58	3	FZ	3.080
59	3	FZ	3.080
60	3	FZ	3.080
61	3	FZ	3.080
62	3	FZ	3.080
63	3	FZ	3.080
78	3	FZ	3.080
84	3	FZ	3.080
85	3	FZ	3.080
86	3	FZ	3.080
87	3	FZ	3.080
88	3	FZ	3.080
46	4	FZ	-4.600
48	4	FZ	-4.600
64	4	FZ	-4.600
65	4	FZ	-4.600
66	4	FZ	-4.600
67	4	FZ	-4.600
68	4	FZ	-4.600
69	4	FZ	-4.600
70	4	FZ	-4.600
71	4	FZ	-4.600

Node Loads — Units: [kN] [kNm]

Node	Loadcase	Direction	Value
72	4	FZ	-4.600
73	4	FZ	-4.600
74	4	FZ	-4.600
75	4	FZ	-4.600
76	4	FZ	-4.600
46	6	FY	-6.120
48	6	FY	-6.120
64	6	FY	-6.120
65	6	FY	-6.120
66	6	FY	-6.120
67	6	FY	-6.120
68	6	FY	-6.120
69	6	FY	-6.120
70	6	FY	-6.120
71	6	FY	-6.120
72	6	FY	-6.120
73	6	FY	-6.120
74	6	FY	-6.120
75	6	FY	-6.120
76	6	FY	-6.120
97	1	FZ	-8.400
98	1	FZ	-8.400
117	1	FZ	-10.53
119	1	FZ	-10.53
93	1	FZ	-2.250
94	1	FZ	-2.250
99	1	FZ	-8.400
100	1	FZ	-8.400
131	1	FZ	-10.53
132	1	FZ	-10.53
95	1	FZ	-2.250
96	1	FZ	-2.250
99	2	FZ	960.0E-3
100	2	FZ	960.0E-3
131	2	FZ	1.200
132	2	FZ	1.200
95	2	FZ	260.0E-3
96	2	FZ	260.0E-3
97	3	FZ	2.300
98	3	FZ	2.300
117	3	FZ	2.900
119	3	FZ	2.900
93	3	FZ	615.0E-3
94	3	FZ	615.0E-3
98	6	FY	-4.320
119	6	FY	-5.400
131	6	FY	-5.400
100	6	FY	-4.320

Beam Loads — Units: [kN] per [m] for distributed loads [kNm]

Element No.	Load-case	Type	Direction		W1	L1	W2	L2
18	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
19	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
66	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
67	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
68	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
69	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
70	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
71	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
72	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
73	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
74	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
75	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
76	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
77	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
78	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
79	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
80	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
81	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
82	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
83	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
84	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
85	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
86	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
87	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
88	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
89	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
92	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
93	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
140	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
141	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
142	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
143	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
144	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
145	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
146	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
147	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
148	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
149	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
150	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
151	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
152	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
153	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
154	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
155	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
156	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
157	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
158	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
159	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
160	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
161	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
162	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
163	7	U.D.L.	Fx	Global	520.0E-3	.0	.0	.0
20	7	U.D.L.	Fx	Global	255.0E-3	.0	.0	.0
22	7	U.D.L.	Fx	Global	255.0E-3	.0	.0	.0
26	7	U.D.L.	Fx	Global	255.0E-3	.0	.0	.0
27	7	U.D.L.	Fx	Global	255.0E-3	.0	.0	.0

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

Beam Loads — Units: [kN] [kN/m]

Element No.	Load-case	Type	Direction	per [m] W1	for distributed loads L1	W2	L2
28	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
29	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
30	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
31	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
32	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
33	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
34	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
35	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
36	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
37	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
94	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
96	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
100	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
101	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
102	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
103	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
104	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
105	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
106	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
107	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
108	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
109	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
110	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
111	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
289	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
292	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
264	7	U.D.L.	Fx Global	285.0E-3	.0	.0	.0
267	7	U.D.L.	Fx Global	255.0E-3	.0	.0	.0
66	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
330	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
331	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
333	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
332	7	U.D.L.	Fx Global	520.0E-3	.0	.0	.0
18	8	Thermal	Fx Element	-10.00	.0	35.00	.0
19	8	Thermal	Fx Element	-10.00	.0	35.00	.0
20	8	Thermal	Fx Element	-10.00	.0	35.00	.0
22	8	Thermal	Fx Element	-10.00	.0	35.00	.0
26	8	Thermal	Fx Element	-10.00	.0	35.00	.0
27	8	Thermal	Fx Element	-10.00	.0	35.00	.0
28	8	Thermal	Fx Element	-10.00	.0	35.00	.0
29	8	Thermal	Fx Element	-10.00	.0	35.00	.0
30	8	Thermal	Fx Element	-10.00	.0	35.00	.0
31	8	Thermal	Fx Element	-10.00	.0	35.00	.0
32	8	Thermal	Fx Element	-10.00	.0	35.00	.0
33	8	Thermal	Fx Element	-10.00	.0	35.00	.0
34	8	Thermal	Fx Element	-10.00	.0	35.00	.0
35	8	Thermal	Fx Element	-10.00	.0	35.00	.0
36	8	Thermal	Fx Element	-10.00	.0	35.00	.0
37	8	Thermal	Fx Element	-10.00	.0	35.00	.0
40	8	Thermal	Fx Element	-10.00	.0	35.00	.0
41	8	Thermal	Fx Element	-10.00	.0	35.00	.0
44	8	Thermal	Fx Element	-10.00	.0	35.00	.0
45	8	Thermal	Fx Element	-10.00	.0	35.00	.0
46	8	Thermal	Fx Element	-10.00	.0	35.00	.0
47	8	Thermal	Fx Element	-10.00	.0	35.00	.0
48	8	Thermal	Fx Element	-10.00	.0	35.00	.0
49	8	Thermal	Fx Element	-10.00	.0	35.00	.0
50	8	Thermal	Fx Element	-10.00	.0	35.00	.0
51	8	Thermal	Fx Element	-10.00	.0	35.00	.0
52	8	Thermal	Fx Element	-10.00	.0	35.00	.0
53	8	Thermal	Fx Element	-10.00	.0	35.00	.0
54	8	Thermal	Fx Element	-10.00	.0	35.00	.0
55	8	Thermal	Fx Element	-10.00	.0	35.00	.0
56	8	Thermal	Fx Element	-10.00	.0	35.00	.0
57	8	Thermal	Fx Element	-10.00	.0	35.00	.0
58	8	Thermal	Fx Element	-10.00	.0	35.00	.0
59	8	Thermal	Fx Element	-10.00	.0	35.00	.0
60	8	Thermal	Fx Element	-10.00	.0	35.00	.0
61	8	Thermal	Fx Element	-10.00	.0	35.00	.0
62	8	Thermal	Fx Element	-10.00	.0	35.00	.0
63	8	Thermal	Fx Element	-10.00	.0	35.00	.0
64	8	Thermal	Fx Element	-10.00	.0	35.00	.0
65	8	Thermal	Fx Element	-10.00	.0	35.00	.0
66	8	Thermal	Fx Element	-10.00	.0	35.00	.0
67	8	Thermal	Fx Element	-10.00	.0	35.00	.0
68	8	Thermal	Fx Element	-10.00	.0	35.00	.0
69	8	Thermal	Fx Element	-10.00	.0	35.00	.0
70	8	Thermal	Fx Element	-10.00	.0	35.00	.0
71	8	Thermal	Fx Element	-10.00	.0	35.00	.0
72	8	Thermal	Fx Element	-10.00	.0	35.00	.0
73	8	Thermal	Fx Element	-10.00	.0	35.00	.0
74	8	Thermal	Fx Element	-10.00	.0	35.00	.0
75	8	Thermal	Fx Element	-10.00	.0	35.00	.0
76	8	Thermal	Fx Element	-10.00	.0	35.00	.0
77	8	Thermal	Fx Element	-10.00	.0	35.00	.0
78	8	Thermal	Fx Element	-10.00	.0	35.00	.0
79	8	Thermal	Fx Element	-10.00	.0	35.00	.0
80	8	Thermal	Fx Element	-10.00	.0	35.00	.0
81	8	Thermal	Fx Element	-10.00	.0	35.00	.0
82	8	Thermal	Fx Element	-10.00	.0	35.00	.0
83	8	Thermal	Fx Element	-10.00	.0	35.00	.0
84	8	Thermal	Fx Element	-10.00	.0	35.00	.0
85	8	Thermal	Fx Element	-10.00	.0	35.00	.0
86	8	Thermal	Fx Element	-10.00	.0	35.00	.0
87	8	Thermal	Fx Element	-10.00	.0	35.00	.0
88	8	Thermal	Fx Element	-10.00	.0	35.00	.0
89	8	Thermal	Fx Element	-10.00	.0	35.00	.0
92	8	Thermal	Fx Element	-10.00	.0	35.00	.0
93	8	Thermal	Fx Element	-10.00	.0	35.00	.0
94	8	Thermal	Fx Element	-10.00	.0	35.00	.0
96	8	Thermal	Fx Element	-10.00	.0	35.00	.0
100	8	Thermal	Fx Element	-10.00	.0	35.00	.0
101	8	Thermal	Fx Element	-10.00	.0	35.00	.0
102	8	Thermal	Fx Element	-10.00	.0	35.00	.0
103	8	Thermal	Fx Element	-10.00	.0	35.00	.0
104	8	Thermal	Fx Element	-10.00	.0	35.00	.0
105	8	Thermal	Fx Element	-10.00	.0	35.00	.0
106	8	Thermal	Fx Element	-10.00	.0	35.00	.0

Beam Loads — Units: [kN] [kN/m]

Element No.	Load-case	Type	Direction	per [m] W1	for distributed loads L1	W2	L2
107	8	Thermal	Fx Element	-10.00	.0	35.00	.0
108	8	Thermal	Fx Element	-10.00	.0	35.00	.0
109	8	Thermal	Fx Element	-10.00	.0	35.00	.0
110	8	Thermal	Fx Element	-10.00	.0	35.00	.0
111	8	Thermal	Fx Element	-10.00	.0	35.00	.0
114	8	Thermal	Fx Element	-10.00	.0	35.00	.0
115	8	Thermal	Fx Element	-10.00	.0	35.00	.0
118	8	Thermal	Fx Element	-10.00	.0	35.00	.0
119	8	Thermal	Fx Element	-10.00	.0	35.00	.0
120	8	Thermal	Fx Element	-10.00	.0	35.00	.0
121	8	Thermal	Fx Element	-10.00	.0	35.00	.0
122	8	Thermal	Fx Element	-10.00	.0	35.00	.0
123	8	Thermal	Fx Element	-10.00	.0	35.00	.0
124	8	Thermal	Fx Element	-10.00	.0	35.00	.0
125	8	Thermal	Fx Element	-10.00	.0	35.00	.0
126	8	Thermal	Fx Element	-10.00	.0	35.00	.0
127	8	Thermal	Fx Element	-10.00	.0	35.00	.0
128	8	Thermal	Fx Element	-10.00	.0	35.00	.0
129	8	Thermal	Fx Element	-10.00	.0	35.00	.0
130	8	Thermal	Fx Element	-10.00	.0	35.00	.0
131	8	Thermal	Fx Element	-10.00	.0	35.00	.0
132	8	Thermal	Fx Element	-10.00	.0	35.00	.0
133	8	Thermal	Fx Element	-10.00	.0	35.00	.0
134	8	Thermal	Fx Element	-10.00	.0	35.00	.0
135	8	Thermal	Fx Element	-10.00	.0	35.00	.0
136	8	Thermal	Fx Element	-10.00	.0	35.00	.0
137	8	Thermal	Fx Element	-10.00	.0	35.00	.0
138	8	Thermal	Fx Element	-10.00	.0	35.00	.0
139	8	Thermal	Fx Element	-10.00	.0	35.00	.0
140	8	Thermal	Fx Element	-10.00	.0	35.00	.0
141	8	Thermal	Fx Element	-10.00	.0	35.00	.0
142	8	Thermal	Fx Element	-10.00	.0	35.00	.0
143	8	Thermal	Fx Element	-10.00	.0	35.00	.0
144	8	Thermal	Fx Element	-10.00	.0	35.00	.0
145	8	Thermal	Fx Element	-10.00	.0	35.00	.0
146	8	Thermal	Fx Element	-10.00	.0	35.00	.0
147	8	Thermal	Fx Element	-10.00	.0	35.00	.0
148	8	Thermal	Fx Element	-10.00	.0	35.00	.0
149	8	Thermal	Fx Element	-10.00	.0	35.00	.0
150	8	Thermal	Fx Element	-10.00	.0	35.00	.0
151	8	Thermal	Fx Element	-10.00	.0	35.00	.0
152	8	Thermal	Fx Element	-10.00	.0	35.00	.0
153	8	Thermal	Fx Element	-10.00	.0	35.00	.0
154	8	Thermal	Fx Element	-10.00	.0	35.00	.0
155	8	Thermal	Fx Element	-10.00	.0	35.00	.0
156	8	Thermal	Fx Element	-10.00	.0	35.00	.0
157	8	Thermal	Fx Element	-10.00	.0	35.00	.0
158	8	Thermal	Fx Element	-10.00	.0	35.00	.0
159	8	Thermal	Fx Element	-10.00	.0	35.00	.0
160	8	Thermal	Fx Element	-10.00	.0	35.00	.0
161	8	Thermal	Fx Element	-10.00	.0	35.00	.0
162	8	Thermal	Fx Element	-10.00	.0	35.00	.0
163	8	Thermal	Fx Element	-10.00	.0	35.00	.0
166	8	Thermal	Fx Element	-10.00	.0	35.00	.0
167	8	Thermal	Fx Element	-10.00	.0	35.00	.0
168	8	Thermal	Fx Element	-10.00	.0	35.00	.0
169	8	Thermal	Fx Element	-10.00	.0	35.00	.0
170	8	Thermal	Fx Element	-10.00	.0	35.00	.0
171	8	Thermal	Fx Element	-10.00	.0	35.00	.0
172	8	Thermal	Fx Element	-10.00	.0	35.00	.0
173	8	Thermal	Fx Element	-10.00	.0	35.00	.0
174	8	Thermal	Fx Element	-10.00	.0	35.00	.0
175	8	Thermal	Fx Element	-10.00	.0	35.00	.0
176	8	Thermal	Fx Element	-10.00	.0	35.00	.0
177	8	Thermal	Fx Element	-10.00	.0	35.00	.0
178	8	Thermal	Fx Element	-10.00	.0	35.00	.0
179	8	Thermal	Fx Element	-10.00	.0	35.00	.0
180	8	Thermal	Fx Element	-10.00	.0	35.00	.0
181	8	Thermal	Fx Element	-10.00	.0	35.00	.0
182	8	Thermal	Fx Element	-10.00	.0	35.00	.0
183	8	Thermal	Fx Element	-10.00	.0	35.00	.0
184	8	Thermal	Fx Element	-10.00	.0	35.00	.0
185	8	Thermal	Fx Element	-10.00	.0	35.00	.0
186	8	Thermal	Fx Element	-10.00	.0	35.00	.0
187	8	Thermal	Fx Element	-10.00	.0	35.00	.0
188	8	Thermal	Fx Element	-10.00	.0	35.00	.0
189	8	Thermal	Fx Element	-10.00	.0	35.00	.0
190	8	Thermal	Fx Element	-10.00	.0	35.00	.0
191	8	Thermal	Fx Element	-10.00	.0	35.00	.0
192	8	Thermal	Fx Element	-10.00	.0	35.00	.0
193	8	Thermal	Fx Element	-10.00	.0	35.00	.0
194	8	Thermal	Fx Element	-10.00	.0	35.00	.0
195	8	Thermal	Fx Element	-10.00	.0	35.00	.0
196	8	Thermal	Fx Element	-10.00	.0	35.00	.0
197	8	Thermal	Fx Element	-10.00	.0	35.00	.0
198	8	Thermal	Fx Element	-10.00	.0	35.00	.0
199	8	Thermal	Fx Element	-10.00	.0	35.00	.0
200	8	Thermal	Fx Element	-10.00	.0	35.00	.0
201	8	Thermal	Fx Element	-10.00	.0	35.00	.0
202	8	Thermal	Fx Element	-10.00	.0	35.00	.0
203	8	Thermal	Fx Element	-10.00	.0	35.00	.0
204	8	Thermal	Fx Element	-10.00	.0	35.00	.0
205	8	Thermal	Fx Element	-10.00	.0	35.00	.0
206	8	Thermal	Fx Element	-10.00	.0	35.00	.0
207	8	Thermal	Fx Element	-10.00	.0	35.00	.0
208	8	Thermal	Fx Element	-10.00	.0	35.00	.0
209	8	Thermal	Fx Element	-10.00	.0	35.00	.0
210	8	Thermal	Fx Element	-10.00	.0	35.00	.0
211	8	Thermal	Fx Element	-10.00	.0	35.00	.0
212	8	Thermal	Fx Element	-10.00	.0	35.00	.0
223	8	Thermal	Fx Element	-10.00	.0	35.00	.0
224	8	Thermal	Fx Element	-10.00	.0	35.00	.0
225	8	Thermal	Fx Element	-10.00	.0	35.00	.0
226	8	Thermal	Fx Element	-10.00	.0	35.00	.0
227	8	Thermal	Fx Element	-10.00	.0	35.00	.0
228	8	Thermal	Fx Element	-10.00	.0	35.00	.0
229	8	Thermal	Fx Element	-10.00	.0	35.00	.0
230	8	Thermal	Fx Element	-10.00	.0	35.00	.0

Beam Loads — Units: [kN] per [m] for distributed loads [kNm]

Element No.	Load-case	Type	Direction	W1	L1	W2	L2
231	8	Thermal	Fx Element	-10.00	.0	35.00	.0
232	8	Thermal	Fx Element	-10.00	.0	35.00	.0
233	8	Thermal	Fx Element	-10.00	.0	35.00	.0
234	8	Thermal	Fx Element	-10.00	.0	35.00	.0
235	8	Thermal	Fx Element	-10.00	.0	35.00	.0
236	8	Thermal	Fx Element	-10.00	.0	35.00	.0
237	8	Thermal	Fx Element	-10.00	.0	35.00	.0
238	8	Thermal	Fx Element	-10.00	.0	35.00	.0
239	8	Thermal	Fx Element	-10.00	.0	35.00	.0
240	8	Thermal	Fx Element	-10.00	.0	35.00	.0
241	8	Thermal	Fx Element	-10.00	.0	35.00	.0
242	8	Thermal	Fx Element	-10.00	.0	35.00	.0
244	8	Thermal	Fx Element	-10.00	.0	35.00	.0
245	8	Thermal	Fx Element	-10.00	.0	35.00	.0
246	8	Thermal	Fx Element	-10.00	.0	35.00	.0
247	8	Thermal	Fx Element	-10.00	.0	35.00	.0
248	8	Thermal	Fx Element	-10.00	.0	35.00	.0
249	8	Thermal	Fx Element	-10.00	.0	35.00	.0
250	8	Thermal	Fx Element	-10.00	.0	35.00	.0
252	8	Thermal	Fx Element	-10.00	.0	35.00	.0
254	8	Thermal	Fx Element	-10.00	.0	35.00	.0
258	8	Thermal	Fx Element	-10.00	.0	35.00	.0
260	8	Thermal	Fx Element	-10.00	.0	35.00	.0
262	8	Thermal	Fx Element	-10.00	.0	35.00	.0
263	8	Thermal	Fx Element	-10.00	.0	35.00	.0
264	8	Thermal	Fx Element	-10.00	.0	35.00	.0
265	8	Thermal	Fx Element	-10.00	.0	35.00	.0
266	8	Thermal	Fx Element	-10.00	.0	35.00	.0
267	8	Thermal	Fx Element	-10.00	.0	35.00	.0
270	8	Thermal	Fx Element	-10.00	.0	35.00	.0
271	8	Thermal	Fx Element	-10.00	.0	35.00	.0
272	8	Thermal	Fx Element	-10.00	.0	35.00	.0
273	8	Thermal	Fx Element	-10.00	.0	35.00	.0
274	8	Thermal	Fx Element	-10.00	.0	35.00	.0
275	8	Thermal	Fx Element	-10.00	.0	35.00	.0
276	8	Thermal	Fx Element	-10.00	.0	35.00	.0
277	8	Thermal	Fx Element	-10.00	.0	35.00	.0
278	8	Thermal	Fx Element	-10.00	.0	35.00	.0
279	8	Thermal	Fx Element	-10.00	.0	35.00	.0
280	8	Thermal	Fx Element	-10.00	.0	35.00	.0
281	8	Thermal	Fx Element	-10.00	.0	35.00	.0
282	8	Thermal	Fx Element	-10.00	.0	35.00	.0
283	8	Thermal	Fx Element	-10.00	.0	35.00	.0
284	8	Thermal	Fx Element	-10.00	.0	35.00	.0
285	8	Thermal	Fx Element	-10.00	.0	35.00	.0
286	8	Thermal	Fx Element	-10.00	.0	35.00	.0
287	8	Thermal	Fx Element	-10.00	.0	35.00	.0
288	8	Thermal	Fx Element	-10.00	.0	35.00	.0
289	8	Thermal	Fx Element	-10.00	.0	35.00	.0
291	8	Thermal	Fx Element	-10.00	.0	35.00	.0
292	8	Thermal	Fx Element	-10.00	.0	35.00	.0
294	8	Thermal	Fx Element	-10.00	.0	35.00	.0
295	8	Thermal	Fx Element	-10.00	.0	35.00	.0
296	8	Thermal	Fx Element	-10.00	.0	35.00	.0
297	8	Thermal	Fx Element	-10.00	.0	35.00	.0
298	8	Thermal	Fx Element	-10.00	.0	35.00	.0
299	8	Thermal	Fx Element	-10.00	.0	35.00	.0
102	8	Thermal	Fx Element	-10.00	.0	35.00	.0
304	8	Thermal	Fx Element	-10.00	.0	35.00	.0
306	8	Thermal	Fx Element	-10.00	.0	35.00	.0
308	8	Thermal	Fx Element	-10.00	.0	35.00	.0
310	8	Thermal	Fx Element	-10.00	.0	35.00	.0
311	8	Thermal	Fx Element	-10.00	.0	35.00	.0
312	8	Thermal	Fx Element	-10.00	.0	35.00	.0
313	8	Thermal	Fx Element	-10.00	.0	35.00	.0
314	8	Thermal	Fx Element	-10.00	.0	35.00	.0
315	8	Thermal	Fx Element	-10.00	.0	35.00	.0
318	8	Thermal	Fx Element	-10.00	.0	35.00	.0
319	8	Thermal	Fx Element	-10.00	.0	35.00	.0
320	8	Thermal	Fx Element	-10.00	.0	35.00	.0
321	8	Thermal	Fx Element	-10.00	.0	35.00	.0
322	8	Thermal	Fx Element	-10.00	.0	35.00	.0
323	8	Thermal	Fx Element	-10.00	.0	35.00	.0
324	8	Thermal	Fx Element	-10.00	.0	35.00	.0
325	8	Thermal	Fx Element	-10.00	.0	35.00	.0
326	8	Thermal	Fx Element	-10.00	.0	35.00	.0
327	8	Thermal	Fx Element	-10.00	.0	35.00	.0
328	8	Thermal	Fx Element	-10.00	.0	35.00	.0
329	8	Thermal	Fx Element	-10.00	.0	35.00	.0
330	8	Thermal	Fx Element	-10.00	.0	35.00	.0
331	8	Thermal	Fx Element	-10.00	.0	35.00	.0
332	8	Thermal	Fx Element	-10.00	.0	35.00	.0
333	8	Thermal	Fx Element	-10.00	.0	35.00	.0
334	8	Thermal	Fx Element	-10.00	.0	35.00	.0
335	8	Thermal	Fx Element	-10.00	.0	35.00	.0
336	8	Thermal	Fx Element	-10.00	.0	35.00	.0
337	8	Thermal	Fx Element	-10.00	.0	35.00	.0
338	8	Thermal	Fx Element	-10.00	.0	35.00	.0
339	8	Thermal	Fx Element	-10.00	.0	35.00	.0
340	8	Thermal	Fx Element	-10.00	.0	35.00	.0
341	8	Thermal	Fx Element	-10.00	.0	35.00	.0
342	8	Thermal	Fx Element	-10.00	.0	35.00	.0
343	8	Thermal	Fx Element	-10.00	.0	35.00	.0
344	8	Thermal	Fx Element	-10.00	.0	35.00	.0
345	8	Thermal	Fx Element	-10.00	.0	35.00	.0
346	8	Thermal	Fx Element	-10.00	.0	35.00	.0
347	8	Thermal	Fx Element	-10.00	.0	35.00	.0
348	8	Thermal	Fx Element	-10.00	.0	35.00	.0
349	8	Thermal	Fx Element	-10.00	.0	35.00	.0
350	8	Thermal	Fx Element	-10.00	.0	35.00	.0
351	8	Thermal	Fx Element	-10.00	.0	35.00	.0
352	8	Thermal	Fx Element	-10.00	.0	35.00	.0
353	8	Thermal	Fx Element	-10.00	.0	35.00	.0
354	8	Thermal	Fx Element	-10.00	.0	35.00	.0
355	8	Thermal	Fx Element	-10.00	.0	35.00	.0

Gravity Loads

Loadcase	XG Value	YG Value	ZG Value
5	.0	.0	-1.000

BEAM & SPRING FORCE & MOMENT ENVELOPES

The force in an element at any point is the force required to maintain equilibrium if the element is cut at that point and the end 2 part of the element is discarded. Thus: +ve axial forces are tensile
Directions are in element axes
Maximum & minimum values are given on consecutive lines per point
Associated loadcase numbers are given in brackets: (max) (min)
Loadcases: 81

Beam Property 1

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
20	81	2	(10) (11) (10) (11) (10) (15)	(10) (15) (11) (10) (10) (11)				
			-225.2	-1.455	-5.779	-706.3E-3	13.48	-3.528
			-327.1	-1.743	-7.975	-10.42	8.969	-5.861
		20	(10) (11) (10) (11) (10) (11)	(10) (15) (10) (11) (9) (15)				
			-224.3	-1.455	-2.683	-706.3E-3	-4.796	1.353
			-326.2	-1.743	-4.866	-10.42	-7.387	-199.0E-3
22	81	20	(14) (16) (16) (15) (10) (14)	(11) (16) (16) (15) (9) (15)				
			27.92	52.52E-3	-2.184	872.8E-3	985.2E-3	761.2E-3
			-27.65	-830.8E-3	-2.427	-317.5E-3	812.7E-3	-286.4E-3
		21	(14) (16) (16) (15) (10) (11)	(11) (16) (16) (15) (15) (16)				
			27.94	52.52E-3	-230.9E-3	872.8E-3	-1.574	1.433
			-27.12	-830.8E-3	-418.3E-3	-317.5E-3	-2.046	612.6E-3
26	81	21	(15) (16) (15) (16) (10) (15)	(15) (16) (11) (10) (15) (16)				
			343.8	366.5E-3	-3.384	3.668	2.045	2.800
			213.2	97.63E-3	-4.111	268.1E-3	1.196	519.6E-3
		23	(15) (16) (15) (16) (10) (11)	(15) (16) (10) (15) (16) (10)				
			344.4	366.5E-3	588.1E-3	3.668	-4.428	1.016
			214.1	97.63E-3	-132.3E-3	268.1E-3	-6.543	243.3E-3
27	81	23	(15) (16) (11) (10) (10) (15)	(15) (10) (10) (15) (11) (10)				
			621.1	313.7E-3	-2.518	4.972	-2.232	2.492
			409.3	97.28E-3	-2.837	917.3E-3	-3.009	499.4E-3
		24	(15) (16) (11) (10) (12) (11)	(15) (10) (10) (15) (11) (10)				
			621.5	313.7E-3	1.491	4.972	-4.374	1.217
			410.0	97.28E-3	1.171	917.3E-3	-6.338	103.8E-3
28	81	24	(15) (10) (15) (10) (10) (15)	(15) (10) (10) (15) (11) (10)				
			825.1	369.6E-3	-2.774	5.740	-2.913	3.003
			550.9	178.7E-3	-3.192	1.439	-3.829	581.9E-3
		25	(15) (10) (15) (10) (10) (11)	(15) (10) (10) (15) (11) (12)				
			825.3	369.6E-3	1.239	5.740	-6.033	1.503
			551.4	178.7E-3	632.0E-3	1.439	-8.574	-167.2E-3
29	81	25	(15) (10) (11) (12) (11) (12)	(11) (10) (10) (15) (11) (10)				
			952.8	1.112	-2.266	5.475	-4.922	3.743
			641.9	-83.67E-3	-2.373	1.684	-6.862	387.0E-3
		26	(15) (10) (11) (12) (15) (9)	(11) (10) (10) (15) (12) (11)				
			952.8	1.112	1.786	5.475	-6.004	772.5E-3
			642.2	-83.67E-3	1.674	1.684	-7.856	-779.4E-3
30	81	26	(15) (10) (9) (15) (10) (11)	(11) (10) (10) (15) (9) (15)				
			1.009E+3	1.496	-1.887	1.991	-5.966	2.099
			680.2	576.7E-3	-2.122	1.062	-7.447	1.290
		27	(15) (10) (9) (15) (10) (11)	(11) (10) (10) (11) (15) (9)				
			1.009E+3	1.496	2.155	1.991	-8.422	-1.055
			680.3	576.7E-3	1.921	1.062	-7.829	-3.984
31	81	27	(11) (10) (11) (12) (15) (9)	(10) (15) (10) (15) (11) (12)				
			1.008E+3	-577.4E-3	-1.907	-1.071	-8.851	-1.055
			670.1	-1.500	-2.092	-1.994	-7.842	-3.990
		28	(11) (10) (11) (12) (15) (9)	(10) (15) (10) (11) (12) (11)				
			1.008E+3	-577.4E-3	2.127	-1.071	-8.573	2.108
			670.0	-1.500	1.951	-1.994	-7.420	1.293
32	81	28	(11) (10) (9) (15) (12) (11)	(10) (15) (10) (11) (12) (11)				
			949.3	79.52E-3	-1.509	-1.677	-8.812	774.0E-3
			617.1	-1.113	-1.766	-5.476	-7.863	-778.4E-3
		29	(11) (10) (9) (15) (9) (15)	(10) (15) (10) (11) (15) (10)				
			949.2	79.52E-3	2.359	-1.677	-4.812	3.746
			616.8	-1.113	2.262	-5.476	-6.847	400.4E-3
33	81	29	(11) (10) (10) (11) (15) (10)	(10) (11) (10) (11) (15) (9)				
			820.0	-171.0E-3	-803.4E-3	-1.412	-5.710	1.507
			518.8	-369.0E-3	-1.221	-5.738	-8.561	-154.2E-3
		30	(11) (10) (10) (11) (11) (10)	(10) (11) (10) (11) (15) (10)				
			819.5	-171.0E-3	3.182	-1.412	-2.517	3.006
			518.3	-369.0E-3	2.791	-5.738	-3.779	570.6E-3
34	81	30	(11) (10) (10) (11) (15) (10)	(10) (11) (10) (11) (15) (10)				
			614.8	-92.16E-3	-1.142	-889.8E-3	-3.987	1.220
			383.9	-313.6E-3	-1.477	-4.967	-6.304	109.6E-3
		31	(11) (10) (10) (11) (12) (12)	(10) (11) (10) (11) (15) (10)				
			614.1	-92.16E-3	2.811	-889.8E-3	-1.899	2.498
			383.2	-313.6E-3	2.500	-4.967	-2.970	484.4E-3
35	81	31	(11) (10) (26) (11) (15) (10)	(16) (11) (10) (11) (15) (10)				
			336.9	-57.65E-3	162.6E-3	-267.2E-3	-3.982	1.023
			209.2	-360.4E-3	-683.2E-3	-3.665	-6.504	249.2E-3
		22	(11) (10) (16) (11) (11) (10)	(16) (11) (15) (10) (11) (10)				
			336.0	-57.65E-3	4.073	-267.2E-3	2.066	2.483
			208.3	-360.4E-3	3.259	-3.665	1.254	490.8E-3
36	81	22	(11) (16) (11) (12) (15) (10)	(16) (11) (10) (11) (11) (10)				
			4.215	804.4E-3	463.6E-3	316.9E-3	-1.381	1.417
			-27.45	-69.10E-3	149.4E-3	-879.4E-3	-2.022	564.7E-3
		32	(11) (16) (11) (12) (11) (10)	(16) (11) (12) (11) (12) (11)				
			3.690	804.4E-3	2.408	316.9E-3	1.005	779.3E-3
			-27.97	-69.10E-3	2.103	-879.4E-3	989.7E-3	-219.1E-3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 1

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
37	E1	32	(10) (15) (15) (10) (15) (10)	(11) (10) (10) (15) (12) (11)				
			-218.3	1.835	4.837	10.39	-4.411	1.361
			-331.2	1.403	2.433	653.4E-3	-7.319	-157.1E-3
		4	(10) (15) (15) (10) (11) (10)	(11) (10) (15) (10) (10) (15)				
			-219.3	1.836	7.858	10.39	13.33	-3.414
			-332.4	1.403	5.529	653.4E-3	8.939	-6.118
94	E1	46	(15) (16) (10) (11) (11) (12)	(16) (15) (16) (15) (10) (11)				
			-177.0	-1.525	-4.618	-683.7E-3	9.772	-3.709
			-263.2	-2.453	-6.184	-9.815	6.268	-7.365
		64	(15) (16) (10) (11) (15) (9)	(16) (15) (15) (9) (16) (15)				
			-176.3	-1.525	-1.463	-683.7E-3	-3.646	1.443
			-261.2	-2.453	-3.042	-9.815	-5.287	609.7E-3
96	E1	64	(12) (16) (16) (13) (10) (12)	(11) (12) (16) (15) (11) (10)				
			41.16	30.19E-3	-2.158	1.120	892.6E-3	1.208
			-14.19	-111.6E-3	-2.379	-378.7E-3	549.9E-3	646.5E-3
		65	(13) (16) (16) (13) (10) (9)	(11) (12) (16) (15) (15) (16)				
			41.38	30.19E-3	-204.7E-3	1.120	-1.579	1.423
			-13.66	-111.6E-3	-320.0E-3	-378.7E-3	-2.040	744.1E-3
100	E1	65	(12) (11) (15) (16) (11) (12)	(15) (10) (16) (15) (15) (16)				
			286.4	334.5E-3	-2.852	3.631	1.307	2.383
			161.1	84.00E-3	-3.624	224.3E-3	-17.98E-3	616.1E-3
		67	(12) (11) (15) (16) (15) (9)	(15) (10) (11) (12) (11) (10)				
			286.3	334.5E-3	1.121	3.631	-3.578	1.028
			162.0	84.00E-3	446.3E-3	224.3E-3	-5.094	216.3E-3
101	E1	67	(12) (11) (15) (10) (11) (12)	(15) (10) (10) (12) (11) (10)				
			476.6	301.4E-3	-2.305	4.874	-2.295	2.434
			288.3	87.57E-3	-2.630	875.3E-3	-2.692	482.4E-3
		68	(12) (11) (15) (10) (15) (9)	(15) (10) (11) (12) (11) (10)				
			476.3	301.4E-3	1.705	4.874	-3.623	1.209
			286.0	87.57E-3	1.438	875.3E-3	-4.923	126.3E-3
102	E1	68	(12) (11) (15) (10) (11) (12)	(15) (10) (10) (12) (11) (10)				
			611.0	382.7E-3	-2.532	5.586	-2.851	2.984
			379.6	162.9E-3	-2.875	1.405	-3.356	990.6E-3
		69	(12) (11) (15) (10) (15) (9)	(15) (10) (11) (12) (11) (12)				
			610.5	382.7E-3	1.507	5.586	-5.049	1.439
			380.1	162.9E-3	1.179	1.405	-6.625	-87.28E-3
103	E1	69	(12) (11) (11) (12) (10) (15)	(11) (10) (11) (12) (11) (10)				
			694.5	1.091	-2.201	5.212	-4.267	3.611
			453.5	-52.74E-3	-2.336	1.634	-5.480	477.6E-3
		70	(13) (11) (11) (12) (10) (11)	(11) (10) (10) (12) (12) (11)				
			693.8	1.091	1.832	5.212	-5.493	746.2E-3
			453.8	-52.74E-3	1.701	1.634	-6.393	-823.5E-3
104	E1	70	(12) (11) (9) (15) (15) (16)	(11) (10) (10) (12) (9) (15)				
			728.6	1.419	-1.728	1.815	-5.472	1.935
			475.4	370.3E-3	-1.963	1.024	-6.305	898.8E-3
		71	(12) (11) (9) (15) (15) (16)	(11) (10) (15) (9) (11) (12)				
			724.7	1.419	2.322	1.815	-4.478	-686.6E-3
			475.5	370.3E-3	2.080	1.024	-5.986	-3.836
105	E1	71	(9) (15) (11) (12) (10) (11)	(10) (15) (11) (12) (11) (12)				
			721.2	-370.5E-3	-2.021	-1.026	-4.488	-606.8E-3
			474.7	-1.422	-2.310	-1.817	-6.025	-3.840
		72	(9) (15) (11) (12) (10) (11)	(10) (15) (10) (9) (12) (11)				
			721.1	-370.5E-3	2.021	-1.026	-5.097	1.941
			474.3	-1.422	1.733	-1.817	-6.228	699.9E-3
106	E1	72	(9) (15) (9) (15) (13) (10)	(10) (15) (10) (9) (12) (11)				
			683.1	48.45E-3	-1.674	-1.620	-5.307	743.9E-3
			450.7	-1.091	-1.728	-5.212	-5.386	-822.7E-3
		73	(9) (15) (9) (15) (11) (12)	(10) (15) (15) (9) (15) (10)				
			682.8	48.45E-3	2.332	-1.620	-4.234	3.614
			450.1	-1.091	2.253	-5.212	-5.370	474.8E-3
107	E1	73	(9) (15) (10) (11) (12) (11)	(10) (11) (15) (9) (15) (9)				
			593.3	-158.8E-3	-1.090	-1.376	-5.037	1.433
			375.1	-382.1E-3	-1.479	-5.583	-6.577	-75.25E-3
		74	(9) (15) (10) (11) (9) (15)	(10) (11) (10) (9) (15) (10)				
			592.8	-158.8E-3	2.035	-1.376	-2.465	2.985
			374.3	-382.1E-3	2.522	-5.583	-3.208	581.2E-3
108	E1	74	(9) (15) (10) (11) (12) (11)	(10) (11) (15) (9) (15) (10)				
			454.2	-81.70E-3	-1.344	-848.1E-3	-3.591	1.212
			279.4	-300.9E-3	-1.677	-4.859	-4.816	133.2E-3
		75	(9) (15) (10) (11) (9) (15)	(10) (11) (10) (9) (15) (10)				
			453.5	-81.70E-3	2.844	-848.1E-3	-1.925	2.435
			278.4	-300.9E-3	2.279	-4.859	-2.569	469.3E-3
109	E1	75	(9) (15) (16) (11) (12) (11)	(10) (11) (15) (9) (15) (10)				
			261.4	-83.48E-3	-342.3E-3	-222.5E-3	-3.539	1.033
			154.5	-330.3E-3	-1.091	-3.628	-4.968	235.7E-3
		66	(9) (15) (16) (11) (9) (15)	(10) (11) (16) (11) (11) (10)				
			260.5	-83.48E-3	3.495	-222.5E-3	1.306	2.371
			153.3	-330.3E-3	2.813	-3.628	4.026E-3	579.4E-3
110	E1	66	(9) (16) (11) (16) (12) (10)	(9) (15) (10) (11) (11) (10)				
			16.29	80.80E-3	369.2E-3	373.7E-3	-1.382	1.410
			-13.97	-32.91E-3	120.7E-3	-1.125	-2.009	693.5E-3
		76	(9) (16) (11) (16) (9) (10)	(9) (15) (12) (11) (15) (10)				
			15.76	80.80E-3	2.295	373.7E-3	935.8E-3	1.253
			-14.50	-32.91E-3	2.074	-1.125	576.4E-3	629.9E-3
111	E1	76	(11) (12) (15) (10) (12) (11)	(11) (16) (11) (12) (16) (11)				
			-182.0	2.555	3.202	9.782	-3.640	1.445
			-261.9	1.470	1.510	681.3E-3	-5.265	661.8E-3
		48	(11) (12) (15) (10) (9) (15)	(11) (16) (12) (11) (10) (15)				
			-182.9	2.555	6.088	9.782	9.796	-3.590
			-263.7	1.470	4.597	681.3E-3	6.309	-7.644

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 1

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.					
10	E1	26	15) 1.009E+3	576.7E-3	-2.116	1.987	-7.447	1.290
111	E1	76	15) -188.0	2.555	1.573	9.779	-3.645	666.7E-3
37	E1	4	11) -326.1	1.830	7.858	10.39	13.25	-6.111
37	E1	32	11) -325.2	1.830	4.772	10.39	-7.312	-157.1E-3
20	E1	2	11) -327.1	-1.743	-7.962	-10.42	13.48	-5.861
32	E1	29	15) 949.8	-1.113	2.262	-5.476	-8.814	3.746
Minimum values in this output:			Lc.					
37	E1	4	15) -332.4	1.835	7.860	10.39	13.33	-6.118
94	E1	46	11) -183.2	-2.453	-4.618	-9.811	6.340	-7.365
20	E1	2	15) -320.8	-1.737	-7.975	-10.42	13.40	-5.850
20	E1	2	15) -320.8	-1.737	-7.975	-10.42	13.40	-5.850
20	E1	25	15) 935.3	369.6E-3	859.1E-3	5.740	-8.574	1.500
111	E1	48	15) -189.1	2.555	4.597	9.779	6.391	-7.644

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
18	E1	13	(10) (9) (12) (11) (12) (16)	(11) (12) (16) (15) (12) (11)				
			-863.3	2.050	4.988	15.67E-3	-9.068	3.409
			-987.0	-312.6E-3	4.451	-24.48E-3	-11.82	606.4E-3
		19	(10) (12) (12) (11) (12) (16)	(11) (12) (10) (11) (15) (9)				
			-863.3	2.050	7.003	15.67E-3	2.964	1.242
			-987.3	-312.6E-3	6.473	-24.48E-3	-548.5E-3	-759.1E-3
19	E1	19	(10) (12) (15) (9) (16) (10)	(9) (15) (10) (11) (15) (9)				
			-863.3	315.8E-3	-6.473	9.378E-3	2.964	1.242
			-987.3	-2.038	-7.038	-19.44E-3	-548.5E-3	-759.0E-3
		14	(10) (12) (15) (9) (16) (10)	(9) (15) (16) (11) (9) (15)				
			-863.3	315.8E-3	-4.451	9.378E-3	-9.068	3.384
			-988.3	-2.038	-5.008	-19.44E-3	-11.81	600.0E-3
66	E1	5	(10) (15) (12) (11) (10) (15)	(11) (12) (15) (10) (12) (11)				
			-195.9	411.0E-3	-10.33	7.269	17.74	222.7E-3
			-273.9	-10.88	-13.32	-779.7E-3	12.82	-16.55
		33	(10) (15) (12) (11) (10) (15)	(11) (12) (11) (12) (11) (12)				
			-195.5	411.0E-3	-8.786	7.269	-2.307	1.149
			-273.9	-10.88	-11.62	-779.7E-3	-3.226	-446.1E-3
67	E1	33	(10) (15) (11) (12) (16) (15)	(11) (12) (11) (12) (11) (12)				
			-192.8	3.690	184.1E-3	7.268	-2.171	1.152
			-270.9	-198.6E-3	-1.892	-779.5E-3	-3.186	-446.4E-3
		7	(10) (15) (11) (12) (16) (11)	(11) (12) (16) (15) (10) (11)				
			-192.4	3.690	1.732	7.268	-1.524	-112.6E-3
			-270.7	-198.6E-3	-266.4E-3	-779.5E-3	-3.903	-4.848
68	E1	8	(10) (11) (16) (15) (15) (16)	(12) (11) (16) (11) (10) (15)				
			-179.9	175.9E-3	439.3E-3	766.9E-3	-1.593	-122.2E-3
			-267.8	-3.693	-1.639	-7.284	-3.980	-4.839
		34	(10) (11) (16) (15) (11) (16)	(12) (11) (10) (16) (15) (16)				
			-180.4	175.9E-3	1.980	766.9E-3	-1.938	1.113
			-268.3	-3.693	-90.29E-3	-7.284	-2.999	-416.1E-3
69	E1	34	(10) (11) (16) (9) (11) (10)	(12) (11) (10) (16) (15) (16)				
			-182.5	10.98	11.62	767.2E-3	-1.973	1.108
			-271.3	-361.6E-3	7.706	-7.285	-3.038	-417.6E-3
		6	(10) (11) (15) (9) (11) (10)	(12) (11) (11) (10) (9) (15)				
			-183.0	10.95	13.27	767.2E-3	17.76	178.3E-3
			-271.7	-361.6E-3	9.253	-7.285	11.82	-16.71
70	E1	7	(10) (15) (12) (11) (10) (15)	(15) (16) (15) (10) (12) (11)				
			-320.2	349.3E-3	-7.476	5.590	7.486	315.6E-3
			-388.8	-8.437	-8.852	50.17E-3	5.986	-7.404
		35	(10) (15) (12) (11) (10) (15)	(15) (16) (10) (13) (11) (12)				
			-319.7	349.3E-3	-5.816	5.590	-7.321	9.780
			-388.6	-8.437	-6.815	50.17E-3	-8.444	-394.6E-3
71	E1	35	(10) (15) (11) (12) (16) (15)	(15) (16) (10) (14) (11) (12)				
			-317.5	7.701	3.806	5.590	-7.186	9.750
			-383.1	-252.3E-3	3.190	50.17E-3	-8.241	-394.6E-3
		9	(10) (15) (11) (12) (12) (11)	(15) (16) (16) (15) (12) (11)				
			-317.0	7.701	5.946	5.590	1.988	118.2E-3
			-382.9	-252.3E-3	5.153	50.17E-3	458.9E-3	-5.907
72	E1	9	(10) (15) (12) (11) (10) (15)	(15) (10) (16) (10) (12) (11)				
			-826.1	364.3E-3	-7.009	5.496	3.847	150.3E-3
			-610.7	-7.449	-8.169	660.8E-3	3.179	-6.930
		36	(10) (15) (12) (11) (10) (11)	(15) (10) (10) (15) (11) (12)				
			-825.7	364.3E-3	-5.027	5.496	-9.059	8.217
			-610.6	-7.449	-6.124	660.8E-3	-11.03	-590.5E-3
73	E1	36	(10) (15) (11) (12) (16) (10)	(15) (10) (10) (15) (11) (12)				
			-823.9	6.201	4.205	5.492	-9.022	8.220
			-608.5	-552.4E-3	3.637	661.0E-3	-10.71	-590.3E-3
		10	(10) (15) (11) (12) (12) (10)	(15) (10) (16) (15) (12) (11)				
			-823.5	6.201	6.358	5.492	835.1E-3	832.4E-3
			-608.5	-552.4E-3	5.618	661.0E-3	-990.5E-3	-4.383
74	E1	10	(10) (15) (12) (11) (10) (15)	(15) (10) (16) (15) (12) (11)				
			-686.4	506.1E-3	-7.161	5.758	2.550	332.4E-3
			-786.0	-6.301	-8.146	1.224	1.717	-8.480
		37	(10) (15) (12) (11) (10) (11)	(15) (10) (10) (15) (11) (12)				
			-686.1	506.1E-3	-5.161	5.758	-10.57	7.336
			-786.0	-6.301	-6.163	1.224	-12.77	-698.8E-3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
75	E1	37	(10) -684.8	(15) 5.046	(12) 4.401	(16) 5.758	(10) -10.53	(15) 7.339
			(10) -784.5	(15) -696.9E-3	(11) 3.833	(12) 1.224	(10) -12.52	(15) -696.9E-3
		11	(10) -684.5	(15) 5.046	(11) 6.542	(12) 5.758	(10) -381.5E-3	(16) 638.4E-3
			(10) -784.5	(15) -696.9E-3	(11) 5.832	(12) 1.224	(10) -1.963	(15) -2.922
76	E1	11	(10) -799.5	(14) 519.5E-3	(12) -6.347	(11) 5.847	(10) 447.6E-3	(16) 333.9E-3
			(10) -904.6	(14) -4.402	(12) -7.745	(11) 1.580	(10) -372.7E-3	(15) -3.945
		38	(10) -799.3	(14) 519.5E-3	(12) -4.335	(11) 5.847	(10) -10.86	(15) 5.004
			(10) -905.4	(14) -4.402	(12) -5.709	(11) 1.580	(10) -14.04	(15) -722.2E-3
77	E1	38	(10) -798.4	(14) 4.393	(11) 4.852	(12) 5.845	(11) -10.83	(10) 5.007
			(10) -904.4	(14) -763.0E-3	(11) 4.125	(12) 1.580	(11) -13.87	(10) -721.3E-3
		12	(10) -798.2	(14) 4.393	(11) 6.969	(12) 5.845	(11) 140.8E-3	(10) 829.8E-3
			(10) -905.2	(14) -763.0E-3	(11) 6.137	(12) 1.580	(11) -3.392	(10) -1.925
78	E1	12	(10) -866.2	(12) 1.142	(11) -5.685	(12) 4.141	(11) 1.396	(10) 300.1E-3
			(10) -983.2	(12) -9.804	(11) -9.374	(12) 1.668	(11) -2.963	(10) -6.475
		39	(10) -866.1	(12) 1.142	(11) -3.663	(15) 9	(11) 4.141	(10) -12.08
			(10) -984.1	(12) -9.804	(11) -7.310	(12) 1.668	(11) -15.99	(10) -2.023
79	E1	39	(10) -868.7	(12) 6.389	(11) 3.149	(12) 4.141	(11) -11.96	(10) 13.46
			(10) -983.6	(12) -3.193	(11) -381.2E-3	(12) 1.668	(11) -15.97	(10) -2.025
		13	(10) -865.6	(12) 6.389	(11) 5.186	(12) 4.141	(11) -6.867	(10) 4.469
			(10) -984.6	(12) -3.193	(11) 1.659	(12) 1.668	(11) -10.64	(10) 466.2E-3
80	E1	14	(10) -847.4	(9) 3.153	(9) -1.631	(15) -1.672	(16) -6.882	(10) 4.444
			(10) -978.6	(9) -6.396	(9) -5.168	(15) -4.143	(16) -10.65	(10) 460.7E-3
		40	(10) -847.5	(9) 3.153	(9) 372.5E-3	(15) -1.672	(16) -11.93	(10) 13.47
			(10) -978.7	(9) -6.396	(9) -3.148	(15) -4.143	(16) -15.87	(10) -1.967
81	E1	40	(10) -847.9	(9) 9.812	(15) 7.325	(9) -1.672	(12) -12.03	(11) 13.47
			(10) -979.2	(9) -1.095	(15) 3.668	(9) -4.143	(12) -15.89	(11) -1.966
		15	(10) -848.0	(9) 9.812	(15) 9.332	(9) -1.672	(12) 1.362	(11) 261.6E-3
			(10) -979.3	(9) -1.095	(15) 5.676	(9) -4.143	(12) -2.539	(11) -6.462
82	E1	15	(10) -768.7	(11) 740.3E-3	(9) -5.357	(15) -1.564	(10) 147.6E-3	(16) 799.0E-3
			(10) -897.9	(11) -4.397	(9) -6.863	(15) -5.843	(10) -3.387	(16) -3.931
		41	(10) -768.9	(11) 740.3E-3	(9) -3.345	(15) -1.564	(10) -9.628	(16) -5.016
			(10) -898.1	(11) -4.397	(9) -4.851	(15) -5.843	(10) -13.83	(16) -706.0E-3
83	E1	41	(10) -769.6	(11) 4.405	(15) 5.709	(9) -1.564	(15) -9.648	(10) 5.007
			(10) -899.1	(11) -501.2E-3	(15) 3.488	(9) -5.846	(15) -14.01	(10) -706.9E-3
		16	(10) -769.8	(11) 4.405	(15) 7.714	(9) -1.564	(11) 427.1E-3	(10) 312.1E-3
			(10) -899.3	(11) -501.2E-3	(15) 5.500	(9) -5.846	(11) -511.2E-3	(10) -3.950
84	E1	16	(10) -680.9	(11) 632.1E-3	(9) -4.897	(15) -1.196	(10) -411.4E-3	(16) 614.4E-3
			(10) -780.9	(11) -5.049	(9) -6.352	(15) -5.753	(10) -1.969	(16) -2.927
		42	(10) -691.2	(11) 632.1E-3	(9) -2.897	(15) -1.196	(10) -9.218	(16) 7.341
			(10) -780.9	(11) -5.049	(9) -4.352	(15) -5.753	(10) -12.39	(16) -671.1E-3
85	E1	42	(10) -683.3	(11) 6.309	(15) 6.044	(9) -1.195	(15) -9.282	(10) 7.341
			(10) -782.4	(11) -483.5E-3	(15) 4.220	(9) -5.784	(15) -12.64	(10) -671.2E-3
		17	(10) -682.6	(11) 6.309	(15) 8.039	(9) -1.195	(11) 2.496	(10) 311.7E-3
			(10) -782.7	(11) -483.5E-3	(15) 6.218	(9) -5.784	(11) 1.398	(10) -5.485
86	E1	17	(10) -493.1	(11) 525.4E-3	(9) -4.702	(15) -638.4E-3	(10) 768.2E-3	(16) 506.0E-3
			(10) -604.3	(11) -6.204	(9) -5.118	(15) -5.486	(10) -1.084	(16) -4.389
		43	(10) -493.5	(11) 525.4E-3	(9) -2.720	(15) -638.4E-3	(10) -7.752	(16) 8.225
			(10) -604.7	(11) -6.204	(9) -4.136	(15) -5.486	(10) -10.57	(16) -562.3E-3
87	E1	43	(10) -494.9	(11) 7.458	(15) 6.082	(9) -638.1E-3	(10) -7.788	(16) 8.222
			(10) -606.7	(11) -342.6E-3	(15) 4.095	(9) -5.490	(10) -10.88	(16) -562.7E-3
		18	(10) -495.3	(11) 7.458	(15) 8.063	(9) -638.1E-3	(11) 3.827	(10) 133.7E-3
			(10) -607.1	(11) -342.6E-3	(15) 6.076	(9) -5.490	(11) 2.549	(10) -6.938
88	E1	18	(10) -297.0	(11) 227.4E-3	(9) -4.416	(15) -49.19E-3	(10) 1.950	(16) 93.55E-3
			(10) -379.2	(11) -7.710	(9) -5.771	(15) -5.587	(10) 458.0E-3	(16) -5.918
		44	(10) -297.5	(11) 227.4E-3	(9) -2.457	(15) -49.19E-3	(10) -6.110	(16) 9.758
			(10) -379.7	(11) -7.710	(9) -3.811	(15) -5.587	(10) -8.043	(16) -368.8E-3
89	E1	44	(10) -299.3	(11) 8.433	(15) 6.802	(9) -49.19E-3	(12) -6.146	(10) 9.758
			(10) -382.2	(11) -327.4E-3	(15) 4.563	(9) -5.587	(12) -8.385	(10) -368.8E-3
		8	(10) -299.8	(11) 8.433	(15) 8.762	(9) -49.19E-3	(12) 7.439	(10) 296.9E-3
			(10) -382.7	(11) -327.4E-3	(15) 6.522	(9) -5.587	(12) 5.124	(10) -7.188

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
92	E1	57	(10) -802.3	(11) -1.773	(10) 4.430	(11) 47.19E-3	(15) -7.023	(16) -481.3E-3
			(10) -944.1	(11) -2.567	(10) 3.652	(11) 34.51E-3	(15) -9.070	(16) -1.402
		63	(10) -802.3	(15) -1.773	(10) 4.456	(11) 47.19E-3	(16) 4.027	(15) 3.818
			(10) -944.1	(15) -2.567	(10) 5.674	(11) 34.51E-3	(16) 1.197	(15) 3.123
93	E1	63	(10) -802.3	(15) 2.569	(15) -8.674	(10) -42.15E-3	(16) 4.027	(15) 3.818
			(10) -944.1	(15) 1.799	(15) -6.446	(10) -54.14E-3	(16) 1.197	(15) 3.122
		58	(10) -802.3	(15) 2.569	(15) -3.653	(10) -42.15E-3	(16) 4.027	(15) -7.010
			(10) -944.5	(15) 1.799	(15) -4.425	(10) -54.14E-3	(16) -9.017	(15) -1.406
140	E1	49	(10) -197.1	(15) -93.84E-3	(10) -9.778	(15) 7.825	(11) 14.37	(16) -3.450E-3
			(10) -225.9	(15) -2.992	(10) -11.68	(15) -869.1E-3	(11) 10.71	(16) -13.93
		77	(10) -196.7	(13) -93.84E-3	(10) -8.230	(15) 7.825	(11) -2.748	(16) 197.9E-3
			(10) -225.9	(13) -2.992	(10) -9.888	(15) -869.1E-3	(11) -3.965	(16) -9.064
141	E1	77	(10) -194.0	(13) 496.6E-3	(12) 1.860	(11) 7.825	(10) -2.782	(15) 157.6E-3
			(10) -222.9	(13) -11.80	(12) -162.0E-3	(11) -869.1E-3	(10) -4.302	(15) -9.061
		51	(10) -193.6	(13) 496.6E-3	(12) 3.145	(11) 7.825	(10) -484.7E-3	(15) 10.12
			(10) -223.0	(13) -11.80	(12) 1.385	(11) -869.1E-3	(10) -1.925	(15) -684.9E-3
142	E1	52	(10) -180.7	(11) 11.84	(15) -700.0E-3	(16) 876.5E-3	(10) -520.2E-3	(15) 10.13
			(10) -220.2	(11) -461.9E-3	(15) -3.022	(16) -7.822	(10) -2.144	(15) -616.6E-3
		78	(10) -181.2	(11) 11.84	(15) 848.4E-3	(16) 876.5E-3	(10) -2.023	(15) 147.1E-3
			(10) -220.7	(11) -461.9E-3	(15) -3.193	(16) -7.822	(10) -4.200	(15) -9.128
143	E1	78	(10) -183.3	(11) 2.996	(11) 9.792	(9) 876.4E-3	(10) -1.988	(15) 147.8E-3
			(10) -223.7	(11) 66.37E-3	(11) 7.642	(9) -7.815	(10) -3.863	(15) -9.134
		50	(10) -183.7	(11) 2.996	(11) 11.34	(9) 876.4E-3	(10) 14.16	(15) 26.40E-3
			(10) -224.1	(11) 66.37E-3	(11) 9.189	(9) -7.815	(10) 10.69	(15) -14.00
144	E1	51	(10) -318.1	(15) 5.518	(11) -7.445	(12) 5.621	(10) 6.730	(16) 7.568
			(10) -398.1	(15) -181.8E-3	(11) -8.463	(12) -62.98E-3	(10) 5.359	(16) -155.3E-3
		79	(10) -317.6	(15) 5.518	(11) -5.486	(12) 5.621	(10) -7.213	(16) 214.4E-3
			(10) -395.9	(15) -181.8E-3	(11) -6.242	(12) -62.98E-3	(10) -8.257	(16) -3.652
145	E1	79	(10) -315.3	(15) 419.7E-3	(12) 4.428	(11) 5.621	(10) -7.249	(16) 214.4E-3
			(10) -393.4	(15) -4.860	(12) 3.279	(11) -62.98E-3	(10) -8.419	(16) -3.652
		53	(10) -314.8	(15) 419.7E-3	(12) 6.462	(11) 5.621	(10) 2.680	(16) 5.229
			(10) -393.2	(15) -4.860	(12) 5.238	(11) -62.98E-3	(10) 1.410	(16) -639.0E-3
146	E1	53	(10) -516.0	(15) 3.884	(11) -6.962	(12) 5.350	(10) 3.792	(16) 5.099
			(10) -609.3	(15) -483.8E-3	(11) -7.867	(12) 601.4E-3	(10) 3.131	(16) -627.8E-3
		80	(10) -515.6	(15) 3.884	(11) -4.980	(12) 5.350	(10) -9.012	(16) 356.3E-3
			(10) -609.2	(15) -483.8E-3	(11) -5.675	(12) 601.4E-3	(10) -10.25	(16) -2.800
147	E1	80	(10) -513.8	(15) 432.9E-3	(12) 4.620	(11) 5.351	(10) -9.049	(16) 356.6E-3
			(10) -607.2	(15) -4.006	(12) 3.688	(11) 601.3E-3	(10) -10.29	(16) -2.798
		54	(10) -513.4	(15) 432.9E-3	(12) 6.663	(11) 5.351	(10) 1.613	(16) 5.343
			(10) -607.1	(15) -4.006	(12) 5.669	(11) 601.3E-3	(10) 459.5E-3	(16) -523.3E-3
148	E1	54	(10) -664.2	(15) 2.676	(11) -7.072	(12) 5.568	(10) 2.583	(16) 4.104
			(10) -771.0	(15) -609.5E-3	(11) -7.938	(12) 1.175	(10) 1.967	(16) -732.4E-3
		81	(10) -663.9	(15) 2.676	(11) -5.072	(12) 5.568	(10) -10.38	(16) 507.2E-3
			(10) -771.0	(15) -609.5E-3	(11) -5.793	(12) 1.175	(10) -11.75	(16) -1.339
149	E1	81	(10) -662.6	(15) 553.4E-3	(12) 4.709	(11) 5.567	(10) -10.42	(16) 507.1E-3
			(10) -769.5	(15) -2.912	(12) 3.921	(11) 1.175	(10) -11.79	(16) -1.339
		55	(10) -662.3	(15) 553.4E-3	(12) 6.788	(11) 5.567	(10) 581.1E-3	(16) 4.980
			(10) -769.5	(15) -2.912	(12) 5.920	(11) 1.179	(10) -481.6E-3	(16) -617.9E-3
150	E1	55	(10) -761.6	(15) 2.205	(11) -6.430	(12) 5.506	(10) 730.9E-3	(16) 3.398
			(10) -890.1	(15) -752.2E-3	(11) -7.194	(12) 1.544	(10) 278.2E-3	(16) -932.4E-3
		82	(10) -761.4	(15) 2.205	(11) -4.418	(12) 5.506	(10) -10.37	(16) 596.9E-3
			(10) -890.2	(15) -752.2E-3	(11) -5.094	(12) 1.544	(10) -12.17	(16) -1.085
151	E1	82	(10) -760.5	(15) 530.3E-3	(12) 5.419	(11) 5.506	(10) -10.54	(16) 597.6E-3
			(10) -889.2	(15) -830.7E-3	(12) 4.210	(11) 1.543	(10) -12.20	(16) -1.082
		56	(10) -760.3	(15) 530.3E-3	(12) 7.462	(11) 5.506	(10) 2.909	(16) 606.9E-3
			(10) -889.3	(15) -830.7E-3	(12) 6.222	(11) 1.543	(10) -337.9E-3	(16) -480.3E-3
152	E1	56	(10) -811.5	(15) -697.4E-3	(10) -7.549	(11) 3.646	(10) 3.863	(16) -937.0E-3
			(10) -957.8	(15) -7.005	(10) -11.56	(11) 1.560	(10) 586.6E-3	(16) -2.127
		83	(10) -811.4	(15) -697.4E-3	(10) -6.529	(11) 3.646	(10) -12.64	(16) 12.12
			(10) -958.0	(15) -7.005	(10) -9.535	(11) 1.560	(10) -17.60	(16) 481.1E-3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
153	E1	83	(10) (15) (11) (12) (15) (10)	(11) (10)	(10) (15)	(11) (10)		
			-811.1	6.668	5.658	3.646	-12.66	12.11
			-957.2	-14.07E-3	2.028	1.560	-17.69	480.0E-3
		87	(10) (15) (11) (12) (15) (10)	(11) (10)	(15) (9)	(12) (11)		
			-811.0	6.668	7.694	3.646	-4.117	559.4E-3
			-957.4	-14.07E-3	4.048	1.560	-7.116	-1.445
154	E1	98	(10) (11) (9) (15) (10) (11)	(10) (15)	(12) (12)	(9) (15)		
			-793.3	-6.137E-3	-3.305	-1.554	-4.122	549.1E-3
			-955.8	-6.671	-7.674	-3.647	-7.141	-1.448
		84	(10) (11) (9) (15) (10) (11)	(10) (15)	(10) (11)	(15) (10)		
			-793.4	-6.137E-3	-1.285	-1.554	-11.57	12.12
			-955.9	-6.671	-5.654	-3.647	-17.67	527.1E-3
155	E1	84	(10) (11) (15) (10) (15) (10)	(10) (15)	(10) (11)	(15) (10)		
			-791.7	7.007	9.546	-1.554	-11.55	12.12
			-956.6	728.4E-3	4.720	-3.647	-17.58	528.2E-3
		89	(10) (11) (15) (10) (11) (10)	(10) (15)	(15) (10)	(10) (15)		
			-793.8	7.007	11.56	-1.554	3.689	-983.0E-3
			-956.7	728.4E-3	6.740	-3.647	104.1E-3	-2.128
156	E1	89	(10) (11) (15) (9) (10) (11)	(10) (15)	(11) (10)	(15) (9)		
			-731.3	833.7E-3	-5.300	-1.520	2.516	606.9E-3
			-886.5	-514.3E-3	-7.433	-5.504	-836.9E-3	-475.0E-3
		85	(10) (11) (15) (9) (10) (11)	(10) (15)	(10) (9)	(9) (15)		
			-731.5	833.7E-3	-3.288	-1.520	-9.567	570.6E-3
			-886.7	-514.3E-3	-5.422	-5.504	-12.07	-1.088
157	E1	85	(10) (11) (9) (15) (12) (10)	(10) (15)	(10) (9)	(9) (15)		
			-732.2	727.2E-3	-5.106	-1.520	-8.539	559.7E-3
			-887.7	-2.210	3.563	-5.504	-12.04	-1.091
		60	(10) (11) (9) (15) (15) (10)	(10) (15)	(15) (10)	(15) (9)		
			-732.4	727.2E-3	7.100	-1.520	711.1E-3	3.402
			-887.9	-2.210	5.575	-5.504	-249.8E-3	-908.9E-3
158	E1	60	(10) (11) (15) (9) (10) (11)	(10) (11)	(15) (10)	(15) (9)		
			-628.9	2.914	-4.986	-1.144	553.9E-3	4.583
			-765.9	-531.1E-3	-6.654	-5.563	-999.0E-3	-596.2E-3
		86	(10) (11) (15) (9) (10) (11)	(10) (11)	(10) (9)	(9) (15)		
			-629.2	2.914	-2.986	-1.144	-9.107	484.0E-3
			-766.2	-531.1E-3	-4.654	-5.563	-11.52	-1.344
159	E1	86	(10) (11) (9) (15) (12) (10)	(10) (11)	(10) (9)	(9) (15)		
			-630.3	584.5E-3	5.748	-1.144	-9.073	483.9E-3
			-767.7	-2.684	4.131	-5.563	-11.48	-1.345
		61	(10) (11) (9) (15) (9) (10)	(10) (11)	(15) (10)	(15) (9)		
			-630.6	584.5E-3	7.732	-1.144	2.535	4.111
			-768.0	-2.684	6.130	-5.563	1.357	-704.3E-3
160	E1	61	(10) (11) (15) (9) (10) (11)	(10) (11)	(15) (10)	(15) (9)		
			-483.0	4.009	-4.756	-579.9E-3	1.791	5.348
			-603.2	-410.7E-3	-6.529	-5.344	-123.6E-3	-501.0E-3
		87	(10) (11) (15) (9) (10) (15)	(10) (11)	(10) (9)	(9) (15)		
			-483.4	4.009	-2.774	-579.9E-3	-7.778	334.1E-3
			-603.6	-410.7E-3	-4.548	-5.344	-9.980	-2.804
161	E1	87	(10) (11) (9) (15) (12) (10)	(10) (11)	(10) (9)	(9) (15)		
			-484.8	457.3E-3	5.636	-580.1E-3	-7.742	333.7E-3
			-605.7	-3.892	4.048	-5.342	-9.939	-2.807
		62	(10) (11) (9) (15) (9) (10)	(10) (11)	(10) (10)	(15) (9)		
			-485.2	457.3E-3	7.616	-580.1E-3	1.772	5.104
			-606.1	-3.892	6.029	-5.342	2.499	-595.8E-3
162	E1	62	(10) (11) (15) (9) (10) (11)	(16) (11)	(15) (10)	(15) (9)		
			-294.6	4.859	-4.451	64.94E-3	2.672	6.230
			-390.0	-397.6E-3	-6.390	-5.614	884.3E-3	-615.4E-3
		88	(10) (11) (15) (9) (10) (15)	(16) (11)	(10) (11)	(9) (15)		
			-295.1	4.859	-2.492	64.94E-3	-6.173	193.0E-3
			-390.5	-397.6E-3	-4.433	-5.614	-8.331	-3.649
163	E1	88	(10) (11) (9) (15) (9) (10)	(16) (11)	(10) (9)	(9) (15)		
			-296.9	157.2E-3	6.226	64.94E-3	-6.138	193.0E-3
			-393.0	-5.524	4.529	-5.614	-8.015	-3.649
		92	(10) (11) (9) (15) (9) (10)	(16) (11)	(16) (10)	(15) (9)		
			-297.4	157.2E-3	8.185	64.94E-3	6.691	7.561
			-393.5	-5.524	6.488	-5.614	9.052	-126.6E-3

Maximum values in this output:

		Lc.					
68	E1	6 10)	-179.9	139.0E-3	-636.9E-3	642.7E-3	-2.162 -122.2E-3
142	E1	52 15)	-318.1	11.84	-2.986	-7.822	-520.2E-3 10.13
69	E1	6 11)	-271.7	10.95	13.17	* -7.285	17.76 -16.70
141	E1	51 11)	-320.3	-11.80	3.107	7.828	-484.7E-3 10.12
69	E1	6 11)	-271.7	10.95	13.17	-7.285	17.76 -16.70
81	E1	40 15)	-954.0	9.812	3.673	-4.143	-12.03 13.47

Minimum values in this output:

		Lc.					
19	E1	14 12)	-988.3	-2.027	-4.943	-5.819E-3	-9.818 3.363
141	E1	77 11)	-320.8	-11.80	1.560	7.828	-4.279 -9.061
66	E1	8 15)	-273.9	-10.87	-13.12	7.268	17.74 -16.54
142	E1	52 15)	-318.1	11.84	-2.986	-7.822	-520.2E-3 10.13
153	E1	83 15)	-957.2	6.662	5.658	3.643	-17.69 12.10
69	E1	6 15)	-270.2	10.95	13.06	-7.284	17.66 -16.71

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 3

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
252	E1	4	(10) (11) (11) (12) (11) (10)	(15) (10)	(12) (11)	(11) (12)		
			-90.56	64.44	3.347	13.56	4.506	113.4
			-182.3	199.5E-3	1.325	666.7E-3	3.634	98.95E-3
		101	(10) (11) (11) (12) (11) (10)	(15) (10)	(11) (10)	(11) (12)		
			-89.62	64.44	3.347	13.56	6.796	52.49
			-181.4	199.5E-3	1.325	666.7E-3	5.026	-129.6E-3
254	E1	48	(15) (9) (11) (16) (9) (15)	(11) (10)	(15) (10)	(11) (16)		
			-20.09	64.67	2.282	13.03	5.428	111.5
			-108.1	-626.7E-3	704.7E-3	714.6E-3	3.908	-1.296
		102	(15) (9) (11) (16) (9) (15)	(11) (10)	(9) (10)	(11) (16)		
			-19.16	64.67	2.282	13.03	6.615	50.34
			-107.2	-626.7E-3	704.7E-3	714.6E-3	5.113	-704.1E-3
276	E1	101	(10) (11) (11) (12) (10) (11)	(15) (10)	(11) (10)	(11) (12)		
			-119.3	64.64	-41.76	13.01	18.90	52.49
			-224.1	-796.8E-3	-86.05	448.9E-3	13.63	-130.9E-3
		109	(10) (11) (11) (12) (10) (11)	(15) (10)	(11) (12)	(11) (10)		
			-118.9	64.64	-41.76	13.01	-835.1E-3	29.73
			-223.8	-796.8E-3	-86.05	448.9E-3	-1.852	112.2E-3
277	E1	109	(10) (11) (11) (12) (10) (11)	(15) (10)	(11) (12)	(11) (10)		
			-118.9	64.64	-41.76	13.01	-834.9E-3	29.73
			-223.8	-796.8E-3	-86.06	448.9E-3	-1.852	112.2E-3
		110	(10) (11) (11) (12) (10) (11)	(15) (10)	(10) (15)	(11) (10)		
			-118.6	64.64	-41.76	13.01	-18.73	7.046
			-223.4	-796.8E-3	-86.06	448.9E-3	-20.57	345.4E-3
278	E1	110	(10) (11) (11) (12) (16) (11)	(15) (16)	(10) (12)	(11) (10)		
			-122.6	62.58	-18.57	12.33	-7.369	7.051
			-229.9	-1.327	-32.52	216.3E-3	-10.12	344.3E-3
		6	(10) (11) (11) (12) (16) (11)	(15) (16)	(10) (11)	(9) (15)		
			-122.3	62.58	-18.57	12.33	-14.32	897.4E-3
			-229.6	-1.327	-32.52	216.3E-3	-19.60	-14.98
279	E1	102	(15) (9) (11) (16) (10) (9)	(15) (10)	(9) (10)	(11) (16)		
			-47.38	62.53	-42.10	11.92	17.12	50.33
			-144.4	-1.503	-52.13	509.8E-3	13.86	-705.3E-3
		111	(15) (9) (11) (16) (10) (9)	(15) (10)	(10) (15)	(11) (16)		
			-47.03	62.53	-42.10	11.92	-956.9E-3	28.32
			-144.0	-1.503	-52.13	509.8E-3	-2.166	-176.1E-3
280	E1	111	(15) (9) (11) (16) (10) (9)	(15) (10)	(10) (15)	(11) (16)		
			-47.03	62.55	-42.10	11.92	-956.9E-3	28.32
			-144.0	-1.503	-52.13	509.8E-3	-2.166	-176.1E-3
		112	(15) (9) (11) (16) (10) (9)	(15) (10)	(10) (12)	(11) (16)		
			-46.68	62.55	-42.10	11.92	-15.73	6.367
			-143.7	-1.503	-52.13	509.8E-3	-19.72	351.5E-3
281	E1	112	(15) (9) (11) (16) (15) (9)	(15) (10)	(10) (15)	(11) (16)		
			-49.81	58.98	-10.17	10.59	-7.258	6.368
			-149.2	-1.784	-23.30	356.0E-3	-11.45	380.7E-3
		50	(15) (9) (11) (16) (15) (9)	(15) (10)	(10) (9)	(16) (15)		
			-49.46	58.98	-10.17	10.59	-14.66	978.7E-3
			-148.8	-1.784	-23.30	356.0E-3	-17.57	-14.39
302	E1	2	(10) (15) (15) (10) (16) (13)	(10) (11)	(15) (16)	(15) (10)		
			-103.1	65.36	-978.3E-3	-648.1E-3	-3.619	114.1
			-192.0	53.15E-3	-2.831	-13.58	-4.718	-25.96E-3
		121	(10) (15) (15) (10) (16) (13)	(10) (11)	(16) (14)	(15) (9)		
			-102.1	65.36	-978.3E-3	-648.1E-3	-5.639	52.31
			-191.1	53.15E-3	-2.831	-13.58	-6.709	-97.63E-3
304	E1	46	(11) (12) (15) (16) (11) (12)	(10) (11)	(10) (11)	(15) (16)		
			-24.37	65.23	-486.1E-3	-694.4E-3	-4.252	112.0
			-116.2	-802.5E-3	-2.424	-13.01	-5.630	-1.365
		122	(11) (12) (15) (16) (11) (12)	(10) (11)	(16) (12)	(15) (16)		
			-23.44	65.23	-486.1E-3	-694.4E-3	-5.757	80.37
			-115.3	-802.5E-3	-2.424	-13.01	-6.801	-605.7E-3
318	E1	121	(10) (15) (15) (9) (15) (10)	(10) (11)	(10) (15)	(15) (9)		
			-128.3	64.48	53.75	-432.3E-3	-14.68	52.29
			-224.2	-766.4E-3	46.08	-12.91	-17.66	-102.4E-3
		125	(10) (15) (15) (9) (15) (10)	(10) (11)	(11) (10)	(15) (10)		
			-127.6	64.48	53.75	-432.3E-3	19.93	7.287
			-223.5	-766.4E-3	46.08	-12.91	17.52	399.9E-3
319	E1	125	(10) (15) (11) (12) (15) (16)	(10) (11)	(16) (15)	(15) (10)		
			-132.9	62.18	34.46	-162.8E-3	9.635	7.292
			-230.3	-1.355	19.19	-12.18	7.271	399.5E-3
		5	(10) (15) (11) (12) (15) (16)	(10) (11)	(15) (10)	(12) (11)		
			-132.5	62.18	34.46	-183.8E-3	19.58	925.0E-3
			-230.0	-1.355	19.19	-12.18	15.45	-14.91
320	E1	122	(11) (12) (15) (16) (12) (10)	(10) (11)	(11) (12)	(15) (16)		
			-47.10	62.61	51.46	-516.2E-3	-14.33	80.38
			-145.7	-1.407	46.51	-11.88	-16.88	-610.0E-3
		126	(11) (12) (15) (16) (12) (10)	(10) (11)	(16) (10)	(15) (16)		
			-46.40	62.61	51.46	-516.2E-3	19.36	6.684
			-145.0	-1.407	46.51	-11.88	17.55	372.3E-3
321	E1	126	(11) (12) (15) (16) (12) (11)	(10) (11)	(11) (10)	(15) (16)		
			-50.49	58.94	26.82	-376.1E-3	11.05	6.660
			-151.8	-1.646	11.17	-10.52	8.019	372.0E-3
		49	(11) (12) (15) (16) (12) (11)	(10) (11)	(12) (11)	(16) (11)		
			-50.14	58.94	26.82	-376.1E-3	17.83	959.6E-3
			-151.4	-1.646	11.17	-10.52	15.04	-14.39

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 3

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.					
254	E1	102	15) -19.16	64.67	704.7E-3	13.03	6.094	80.33
302	E1	2	15) -192.0	65.36	-2.760	-13.58	-3.819	114.1
318	E1	121	15) -224.2	64.48	53.78	-12.90	-17.66	52.29
252	E1	4	15) -182.2	64.44	3.097	13.56	3.696	113.4
318	E1	125	11) -222.9	64.48	53.97	-12.91	19.93	7.284
302	E1	2	15) -192.0	65.36	-2.760	-13.58	-3.819	114.1
Minimum values in this output:			Lc.					
319	E1	125	15) -230.3	62.18	34.46	-12.18	7.271	7.292
281	E1	112	16) -143.8	-1.784	-20.05	391.2E-3	-9.948	350.7E-3
277	E1	109	11) -223.8	64.64	-86.06	13.01	-634.9E-3	29.73
302	E1	2	11) -191.7	65.36	-2.534	-13.58	-3.881	114.1
277	E1	110	15) -222.9	64.63	-85.81	13.01	-20.57	7.045
278	E1	6	15) -228.8	62.58	-31.68	12.33	-19.49	-14.98

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 4

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
40	E1	20	(10) (15) (15) (10) (11) (10)		(12) (11) (10) (11) (15) (10)			
			-128.4	4.041	8.182	212.8E-3	-5.684	7.441
			-179.7	527.0E-3	5.735	-1.873	-8.130	690.4E-3
		7	(10) (15) (15) (10) (11) (10)		(12) (11) (15) (10) (10) (15)			
			-127.3	4.041	8.182	212.8E-3	8.234	-363.6E-3
			-178.6	527.0E-3	5.735	-1.873	9.786	-640.8E-3
41	E1	32	(10) (11) (11) (10) (10) (11)		(15) (9) (15) (10) (11) (10)			
			-118.6	4.023	-5.393	1.872	8.129	7.418
			-179.3	493.7E-3	-8.195	-209.4E-3	5.338	646.1E-3
		8	(10) (11) (11) (10) (10) (11)		(15) (9) (10) (11) (10) (11)			
			-117.5	4.023	-5.393	1.872	-5.447	-341.3E-3
			-178.2	493.7E-3	-8.195	-209.4E-3	-8.261	-628.3E-3
114	E1	64	(11) (12) (15) (10) (12) (11)		(16) (11) (11) (12) (15) (16)			
			-104.2	3.674	6.347	244.7E-3	-4.735	6.671
			-143.8	501.3E-3	4.733	-1.741	-6.289	672.3E-3
		51	(11) (12) (15) (10) (12) (11)		(16) (11) (12) (11) (10) (15)			
			-103.1	3.674	6.347	244.7E-3	6.405	-307.8E-3
			-142.7	501.3E-3	4.733	-1.741	4.730	-677.6E-3
115	E1	76	(15) (9) (11) (10) (15) (9)		(15) (16) (9) (15) (11) (10)			
			-103.8	3.663	-4.743	1.737	6.282	6.652
			-142.4	470.5E-3	-6.343	-245.2E-3	4.740	647.1E-3
		52	(15) (9) (11) (10) (15) (9)		(15) (16) (15) (9) (10) (11)			
			-102.7	3.663	-4.743	1.737	-4.745	-293.9E-3
			-141.3	470.5E-3	-6.343	-245.2E-3	-6.405	-674.4E-3
Maximum values in this output:			Lc.					
115	E1	52	15) -102.7	3.661	-4.743	1.737	-4.745	-673.1E-3
40	E1	20	15) -179.7	4.041	8.181	-1.873	-8.128	7.441
40	E1	20	11) -179.3	4.039	8.182	-1.873	-8.130	7.439
41	E1	32	15) -179.0	4.022	-8.193	1.872	8.129	7.416
40	E1	7	15) -178.6	4.041	8.181	-1.873	8.234	-640.8E-3
40	E1	20	15) -179.7	4.041	8.181	-1.873	-8.128	7.441
Minimum values in this output:			Lc.					
40	E1	20	15) -179.7	4.041	8.181	-1.873	-8.128	7.441
115	E1	76	10) -118.7	470.5E-3	-5.363	-201.3E-3	5.309	647.1E-3
41	E1	32	11) -179.3	4.023	-8.195	1.871	8.129	7.418
40	E1	20	11) -179.3	4.039	8.182	-1.873	-8.130	7.439
41	E1	8	11) -178.2	4.023	-8.195	1.871	-8.261	-628.3E-3
114	E1	51	15) -103.5	3.674	4.736	-1.740	4.737	-677.6E-3

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 5

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
273	E1	50	(9) (15) (15) (16) (15) (9)		(16) (11) (9) (15) (16) (11)			
			191.8	863.1E-3	-1.715	50.98E-3	3.146	254.2E-3
			144.6	-46.36E-3	-2.551	-2.768	2.087	-712.6E-3
		107	(9) (15) (15) (16) (15) (9)		(16) (11) (16) (15) (15) (15)			
			191.7	863.1E-3	-1.254	50.98E-3	612.8E-3	305.0E-3
			144.4	-46.36E-3	-2.090	-2.768	460.4E-3	-1.658
274	E1	107	(9) (15) (15) (9) (12) (11)		(16) (11) (10) (9) (16) (15)			
			228.0	695.2E-3	945.7E-3	52.07E-3	-1.542	303.5E-3
			172.0	8.825E-3	655.8E-3	-2.838	-1.900	-1.480
		108	(9) (15) (15) (9) (12) (11)		(16) (11) (10) (9) (16) (15)			
			227.9	695.2E-3	1.406	52.07E-3	-548.7E-3	292.4E-3
			171.9	8.825E-3	1.117	-2.838	-634.7E-3	-2.241
275	E1	108	(9) (15) (15) (9) (12) (11)		(16) (11) (10) (9) (16) (15)			
			227.9	695.1E-3	1.535	51.90E-3	-548.7E-3	292.5E-3
			171.9	8.824E-3	1.215	-2.836	-634.7E-3	-2.243
		76	(9) (15) (15) (9) (12) (11)		(16) (11) (12) (11) (16) (15)			
			227.7	695.1E-3	1.996	51.90E-3	1.325	261.3E-3
			171.7	8.824E-3	1.676	-2.836	961.3E-3	-3.004
322	E1	5	(15) (10) (12) (11) (10) (15)		(15) (9) (15) (10) (15) (9)			
			237.4	5.947E-3	-2.387	2.730	4.153	1.728
			174.0	-349.0E-3	-3.348	-22.15E-3	2.677	-392.3E-3
		127	(15) (10) (12) (11) (10) (15)		(15) (9) (11) (10) (11) (12)			
			237.2	5.947E-3	-1.924	2.730	718.7E-3	2.112
			173.8	-349.0E-3	-2.884	-22.15E-3	501.3E-3	-298.3E-3
323	E1	127	(15) (10) (10) (11) (11) (10)		(15) (9) (10) (15) (11) (12)			
			280.8	-36.05E-3	1.184	2.784	-1.758	1.980
			205.1	-172.5E-3	876.5E-3	-20.97E-3	-2.177	-303.2E-3
		20	(15) (10) (10) (11) (11) (10)		(15) (9) (11) (10) (11) (12)			
			280.5	-36.05E-3	2.103	2.784	1.418	2.357
			205.8	-172.5E-3	1.796	-20.97E-3	1.161	-219.0E-3
324	E1	49	(12) (11) (16) (11) (11) (12)		(15) (16) (12) (11) (15) (16)			
			194.0	47.83E-3	-1.736	2.766	3.186	724.0E-3
			145.2	-866.2E-3	-2.626	-48.62E-3	2.083	-290.9E-3
		128	(12) (11) (16) (11) (11) (12)		(15) (16) (16) (15) (11) (16)			
			193.8	47.83E-3	-1.272	2.766	550.9E-3	1.679
			145.1	-866.2E-3	-2.162	-48.62E-3	424.1E-3	-303.6E-3
325	E1	128	(12) (11) (12) (11) (9) (15)		(15) (16) (11) (12) (11) (16)			
			230.0	-8.900E-3	1.027	2.836	-1.648	1.499
			172.4	-694.0E-3	731.5E-3	-49.75E-3	-1.978	-301.8E-3
		64	(12) (11) (12) (11) (9) (15)		(15) (16) (9) (15) (11) (16)			
			229.7	-5.900E-3	1.947	2.836	1.282	3.015
			172.1	-694.0E-3	1.651	-49.75E-3	950.7E-3	-281.2E-3
Maximum values in this output:			Lc.					
271	E1	105	11) 281.3	171.4E-3	1.051	-2.791	-2.095	-1.970
273	E1	50	15) 144.6	863.1E-3	-1.715	-2.768	2.087	-712.6E-3
272	E1	32	15) 280.3	172.0E-3	2.149	-2.790	1.429	-2.349
325	E1	128	15) 173.3	-693.3E-3	731.5E-3	2.836	-1.651	1.498
270	E1	6	11) 237.3	343.9E-3	-3.314	-2.738	4.168	-1.725
325	E1	64	11) 172.1	-694.0E-3	1.654	2.836	962.2E-3	3.015
Minimum values in this output:			Lc.					
273	E1	107	15) 144.4	863.1E-3	-1.254	-2.768	460.4E-3	-1.658
324	E1	49	11) 145.2	-866.2E-3	-1.736	2.766	2.083	723.8E-3
322	E1	5	15) 237.4	-348.7E-3	-3.348	2.730	4.153	1.728
274	E1	107	11) 172.8	694.6E-3	655.8E-3	-2.838	-1.593	-1.479
323	E1	127	15) 280.8	-172.0E-3	1.181	2.784	-2.177	1.980
275	E1	76	15) 172.7	695.1E-3	1.682	-2.836	975.0E-3	-3.004

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 6

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
44	E1	7	(15) (10) (11) (12) (15) (10)		(15) (10) (10) (15) (11) (12)			
			208.6	-216.3E-3	1.930	571.2E-3	-1.949	2.162
			145.8	-408.2E-3	1.242	34.42E-3	-2.823	-538.3E-3
		21	(15) (10) (11) (12) (15) (10)		(15) (10) (15) (10) (15) (10)			
			208.0	-216.3E-3	2.626	571.2E-3	2.755	2.696
			145.2	-408.2E-3	1.947	34.42E-3	1.964	410.0E-3
45	E1	8	(11) (10) (9) (15) (11) (10)		(10) (11) (10) (11) (9) (15)			
			208.2	397.4E-3	1.924	-32.46E-3	-1.800	524.4E-3
			137.2	209.1E-3	1.135	-569.4E-3	-2.827	-2.170
		22	(11) (10) (9) (15) (11) (10)		(10) (11) (11) (10) (10) (11)			
			207.7	397.4E-3	2.630	-32.46E-3	2.761	-385.3E-3
			136.7	209.1E-3	1.840	-569.4E-3	1.851	-2.687
118	E1	51	(12) (11) (11) (12) (12) (11)		(15) (16) (11) (12) (11) (12)			
			163.0	-109.9E-3	1.461	432.1E-3	-1.443	2.189
			113.2	-415.5E-3	806.5E-3	34.99E-3	-2.351	-562.3E-3
		65	(12) (11) (11) (12) (12) (11)		(15) (16) (12) (11) (15) (10)			
			162.5	-109.9E-3	2.167	432.1E-3	2.300	2.462
			112.7	-415.5E-3	1.512	34.99E-3	1.404	404.3E-3
119	E1	52	(9) (15) (9) (15) (9) (15)		(16) (11) (15) (9) (9) (15)			
			161.4	406.4E-3	1.428	-34.43E-3	-1.433	552.0E-3
			112.8	106.6E-3	801.7E-3	-429.6E-3	-2.196	-2.191
		66	(9) (15) (9) (15) (9) (15)		(16) (11) (9) (15) (10) (11)			
			160.9	406.4E-3	2.134	-34.43E-3	2.176	-379.5E-3
			112.2	106.6E-3	1.507	-429.6E-3	1.401	-2.456

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 6

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.					
44	E1	7 15)	208.6	-218.9E-3	1.920	571.2E-3	-2.823	2.159
119	E1	52 9)	161.4	406.4E-3	1.428	-43.55E-3	-2.196	552.0E-3
45	E1	22 11)	207.7	211.5E-3	2.630	-569.4E-3	2.761	-2.687
44	E1	7 15)	208.6	-218.9E-3	1.920	571.2E-3	-2.823	2.159
45	E1	22 11)	207.7	211.5E-3	2.630	-569.4E-3	2.761	-2.687
44	E1	21 15)	208.0	-218.9E-3	2.626	571.2E-3	2.755	2.696
Minimum values in this output:			Lc.					
119	E1	66 15)	112.2	106.6E-3	1.507	-429.3E-3	1.401	-2.452
118	E1	51 12)	161.0	-415.5E-3	1.461	45.35E-3	-2.251	-562.3E-3
119	E1	52 15)	112.8	106.6E-3	801.7E-3	-429.3E-3	-1.433	-2.191
45	E1	22 11)	207.7	211.5E-3	2.630	-569.4E-3	2.761	-2.687
45	E1	8 11)	208.2	211.5E-3	1.924	-569.4E-3	-2.827	-2.168
45	E1	22 11)	207.7	211.5E-3	2.630	-569.4E-3	2.761	-2.687

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 7

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
46	E1	21	(10)(11)(15)(10)(11)(10)	(12)(11)(10)(15)(15)(10)				
			-163.4	427.4E-3	186.9E-3	19.31E-3	-787.3E-3	481.1E-3
			-237.3	236.5E-3	105.9E-3	-169.0E-3	-968.2E-3	383.1E-3
		9	(10)(11)(15)(10)(11)(10)	(12)(11)(11)(10)(10)(15)				
			-161.7	427.4E-3	782.7E-3	19.31E-3	826.0E-3	-366.4E-3
			-236.6	236.5E-3	670.1E-3	-169.0E-3	442.5E-3	-673.4E-3
47	E1	22	(10)(15)(10)(11)(15)(10)	(15)(9)(10)(11)(10)(11)				
			-152.8	-221.5E-3	188.2E-3	168.6E-3	-747.1E-3	-357.2E-3
			-237.4	-424.4E-3	96.80E-3	-18.28E-3	-962.4E-3	-476.3E-3
		18	(10)(15)(10)(11)(15)(10)	(15)(9)(13)(10)(11)(10)				
			-152.1	-221.5E-3	752.4E-3	168.8E-3	533.3E-3	868.9E-3
			-236.7	-424.4E-3	661.0E-3	-18.28E-3	453.7E-3	344.8E-3
48	E1	23	(10)(11)(9)(10)(11)(10)	(11)(10)(10)(15)(9)(15)				
			-117.2	282.9E-3	408.2E-3	68.14E-3	-1.269	291.5E-3
			-177.8	250.1E-3	285.9E-3	27.91E-3	-1.608	-178.9E-3
		10	(10)(11)(9)(10)(11)(10)	(11)(10)(16)(10)(10)(11)				
			-116.5	282.9E-3	975.4E-3	65.14E-3	584.6E-3	-521.6E-3
			-177.2	250.1E-3	856.1E-3	27.91E-3	504.1E-3	-1.019
49	E1	31	(10)(15)(10)(12)(15)(10)	(10)(15)(10)(11)(11)(12)				
			-113.5	-244.0E-3	408.7E-3	-27.38E-3	-1.207	176.3E-3
			-178.6	-285.2E-3	273.0E-3	-65.37E-3	-1.606	-299.2E-3
		17	(10)(15)(10)(12)(15)(10)	(10)(15)(12)(10)(11)(10)				
			-112.8	-244.0E-3	978.9E-3	-27.38E-3	599.7E-3	1.019
			-177.9	-285.2E-3	843.2E-3	-65.37E-3	525.9E-3	506.0E-3
120	E1	65	(11)(12)(15)(10)(11)(10)	(16)(11)(10)(15)(15)(10)				
			-124.4	518.6E-3	169.9E-3	12.34E-3	-782.1E-3	521.8E-3
			-181.1	255.0E-3	101.0E-3	-104.7E-3	-938.0E-3	430.1E-3
		53	(11)(12)(15)(10)(11)(10)	(16)(11)(16)(10)(10)(15)				
			-123.7	518.8E-3	734.1E-3	12.34E-3	900.1E-3	-378.2E-3
			-180.3	255.0E-3	665.2E-3	-104.7E-3	432.2E-3	-1.121
121	E1	66	(15)(9)(10)(11)(15)(10)	(15)(16)(10)(11)(10)(11)				
			-124.4	-238.9E-3	169.5E-3	104.2E-3	-740.4E-3	-400.8E-3
			-180.9	-515.9E-3	90.95E-3	-12.49E-3	-929.3E-3	-517.0E-3
		62	(15)(9)(10)(11)(15)(10)	(15)(16)(13)(10)(11)(10)				
			-123.7	-238.9E-3	733.7E-3	104.2E-3	510.8E-3	1.118
			-180.2	-515.9E-3	685.2E-3	-12.49E-3	441.9E-3	356.5E-3
122	E1	67	(15)(9)(11)(10)(9)(10)	(11)(10)(10)(12)(9)(15)				
			-86.29	401.0E-3	344.6E-3	114.5E-3	-1.252	311.5E-3
			-133.1	253.5E-3	276.5E-3	17.66E-3	-1.415	-66.65E-3
		54	(15)(9)(11)(10)(9)(10)	(11)(10)(11)(10)(10)(11)				
			-85.61	401.0E-3	914.8E-3	114.5E-3	624.1E-3	-513.5E-3
			-131.4	253.5E-3	846.7E-3	17.66E-3	492.1E-3	-1.310
123	E1	79	(11)(12)(10)(15)(12)(10)	(10)(15)(10)(9)(11)(12)				
			-86.90	-246.0E-3	384.1E-3	-17.94E-3	-1.187	65.27E-3
			-134.2	-401.2E-3	261.8E-3	-114.6E-3	-1.408	-318.4E-3
		61	(11)(12)(10)(15)(12)(10)	(10)(15)(15)(10)(11)(10)				
			-86.22	-246.0E-3	924.3E-3	-17.94E-3	636.1E-3	1.309
			-133.5	-401.2E-3	833.0E-3	-114.6E-3	511.4E-3	498.1E-3
Maximum values in this output:			Lc.					
122	E1	54 15)	-85.61	400.4E-3	908.5E-3	114.3E-3	613.6E-3	-1.310
120	E1	65 15)	-124.4	518.8E-3	167.3E-3	-104.5E-3	-935.0E-3	521.8E-3
49	E1	17 15)	-177.9	-272.2E-3	978.9E-3	-65.37E-3	949.7E-3	1.019
47	E1	18 15)	-236.7	-423.8E-3	752.4E-3	168.8E-3	530.2E-3	865.9E-3
123	E1	61 15)	-86.83	-401.2E-3	914.6E-3	-114.6E-3	636.1E-3	1.309
123	E1	61 11)	-86.22	-400.8E-3	911.9E-3	-114.5E-3	629.8E-3	1.309
Minimum values in this output:			Lc.					
47	E1	22 15)	-237.4	-422.8E-3	188.2E-3	168.8E-3	-960.3E-3	-474.0E-3
121	E1	66 11)	-124.4	-515.9E-3	166.9E-3	104.0E-3	-929.3E-3	-517.0E-3
121	E1	66 10)	-152.1	-238.9E-3	90.95E-3	-9.517E-3	-740.4E-3	-400.8E-3
46	E1	21 11)	-237.3	425.6E-3	188.5E-3	-169.0E-3	-966.6E-3	476.5E-3
48	E1	23 15)	-177.1	270.5E-3	402.2E-3	69.09E-3	-1.608	-178.9E-3
122	E1	54 11)	-86.20	401.0E-3	911.2E-3	114.5E-3	624.3E-3	-1.310

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 8

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
50	E1	9	(11)(10)(11)(12)(15)(10)	(11)(12)(10)(15)(15)(9)				
			188.4	-383.3E-3	1.224	116.9E-3	-1.391	965.9E-3
			128.9	-509.4E-3	577.9E-3	-7.626E-3	-2.205	-528.3E-3
		23	(11)(10)(11)(12)(15)(10)	(11)(12)(11)(10)(15)(10)				
			188.0	-383.3E-3	1.791	116.9E-3	1.619	1.938
			128.8	-509.4E-3	1.146	-7.626E-3	892.4E-3	677.7E-3
51	E1	18	(15)(10)(9)(15)(11)(10)	(9)(15)(10)(11)(12)(11)				
			188.5	507.3E-3	1.219	6.591E-3	-1.162	529.4E-3
			124.0	382.4E-3	814.9E-3	-117.0E-3	-2.192	-965.1E-3
		31	(15)(10)(9)(15)(11)(10)	(9)(15)(10)(10)(11)(11)				
			188.0	507.3E-3	1.786	6.591E-3	1.619	-849.6E-3
			123.5	382.4E-3	1.083	-117.0E-3	842.0E-3	-1.935
52	E1	17	(15)(10)(12)(11)(15)(10)	(11)(10)(10)(15)(12)(11)				
			160.6	435.1E-3	810.1E-3	45.39E-3	-1.004	323.5E-3
			107.5	324.6E-3	243.4E-3	21.71E-3	-1.911	-930.8E-3
		30	(15)(10)(12)(11)(15)(10)	(11)(10)(15)(10)(10)(15)				
			160.1	435.1E-3	1.383	45.39E-3	982.7E-3	-700.7E-3
			107.1	324.6E-3	816.5E-3	21.71E-3	379.6E-3	-1.780
53	E1	10	(11)(10)(15)(9)(11)(10)	(16)(15)(10)(11)(15)(9)				
			160.1	-122.6E-3	803.4E-3	-23.40E-3	-1.043	934.6E-3
			108.1	-429.2E-3	245.8E-3	-45.20E-3	-1.307	-314.0E-3
		24	(11)(10)(15)(9)(11)(10)	(16)(15)(11)(10)(11)(10)				
			159.6	-322.6E-3	1.376	-23.40E-3	939.2E-3	1.779
			107.7	-429.2E-3	818.9E-3	-45.20E-3	347.3E-3	710.3E-3
124	E1	53	(12)(11)(11)(12)(12)(11)	(11)(16)(11)(12)(15)(9)				
			143.3	-449.2E-3	716.8E-3	18.04E-3	-593.1E-3	761.3E-3
			97.51	-509.0E-3	37.45E-3	-6.298E-3	-1.812	-523.6E-3
		67	(12)(11)(11)(12)(12)(11)	(11)(16)(9)(15)(15)(10)				
			142.9	-449.2E-3	1.284	18.04E-3	1.030	1.901
			97.06	-509.0E-3	605.1E-3	-6.298E-3	219.0E-3	680.7E-3
125	E1	62	(9)(15)(9)(10)(9)(15)	(16)(15)(15)(9)(12)(11)				
			143.1	506.9E-3	705.5E-3	6.403E-3	-578.6E-3	525.8E-3
			97.46	433.3E-3	31.44E-3	-18.07E-3	-1.479	-760.2E-3
		75	(9)(15)(9)(10)(9)(15)	(16)(15)(12)(11)(10)(11)				
			142.7	506.9E-3	1.273	6.403E-3	1.036	-650.6E-3
			97.01	433.3E-3	599.1E-3	-18.07E-3	217.7E-3	-1.898
126	E1	61	(12)(11)(12)(10)(12)(11)	(11)(10)(11)(12)(12)(11)				
			122.1	427.8E-3	357.9E-3	137.7E-3	-419.8E-3	308.3E-3
			82.33	366.9E-3	-205.1E-3	17.14E-3	-1.210	-734.1E-3
		74	(12)(11)(12)(10)(12)(11)	(11)(10)(12)(11)(10)(15)				
			121.6	427.8E-3	931.0E-3	137.7E-3	473.4E-3	-697.3E-3
			81.85	366.9E-3	368.0E-3	17.14E-3	-207.1E-3	-1.769
127	E1	54	(9)(15)(10)(9)(9)(15)	(10)(15)(15)(9)(15)(9)				
			120.6	-369.9E-3	341.2E-3	-18.21E-3	-417.8E-3	737.2E-3
			81.88	-422.0E-3	-210.3E-3	-137.7E-3	-1.203	-298.1E-3
		68	(9)(15)(10)(9)(9)(15)	(10)(15)(9)(15)(11)(10)				
			120.1	-369.9E-3	914.3E-3	-18.21E-3	436.0E-3	1.769
			81.40	-422.0E-3	362.8E-3	-137.7E-3	-218.6E-3	708.9E-3
Maximum values in this output:			Lc.					
51	E1	18 15)	188.5	382.4E-3	1.218	-117.0E-3	-2.186	-964.7E-3
51	E1	18 9)	143.7	507.3E-3	661.1E-3	6.591E-3	-1.448	527.6E-3
50	E1	23 15)	187.9	-383.8E-3	1.791	116.6E-3	1.615	1.938
126	E1	61 11)	82.33	395.9E-3	-205.1E-3	137.7E-3	-419.8E-3	-734.1E-3
51	E1	31 15)	188.0	382.4E-3	1.786	-117.0E-3	1.619	-1.934
50	E1	23 15)	187.9	-383.8E-3	1.791	116.6E-3	1.619	1.938
Minimum values in this output:			Lc.					
127	E1	68 15)	81.40	-394.4E-3	362.8E-3	-137.7E-3	-218.6E-3	1.767
50	E1	9 12)	143.6	-809.4E-3	667.4E-3	-7.626E-3	-1.475	-527.6E-3
127	E1	54 15)	81.88	-394.4E-3	-210.3E-3	-137.7E-3	-417.8E-3	737.2E-3
127	E1	68 15)	81.40	-394.4E-3	362.8E-3	-137.7E-3	-218.6E-3	1.767
50	E1	9 15)	188.4	-383.8E-3	1.224	116.6E-3	-2.206	965.9E-3
51	E1	31 11)	188.0	382.9E-3	1.786	-116.7E-3	1.616	-1.935

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 9

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
54	E1	24	(10)(11)(9)(15)(11)(10)	(11)(10)(10)(11)(15)(15)				
			-72.52	206.7E-3	277.2E-3	131.4E-3	-1.084	84.19E-3
			-114.1	100.4E-3	201.0E-3	30.56E-3	-1.333	-510.1E-3
		11	(10)(11)(9)(15)(11)(10)	(11)(10)(16)(15)(10)(11)				
			-72.00	206.7E-3	736.7E-3	131.4E-3	288.7E-3	-477.5E-3
			-113.6	100.4E-3	660.5E-3	30.56E-3	198.9E-3	-817.1E-3
55	E1	25	(10)(11)(9)(15)(9)(15)	(12)(11)(10)(9)(16)(15)				
			-34.24	109.0E-3	485.7E-3	29.66E-3	-1.362	-137.0E-3
			-54.39	-326.0E-3	263.4E-3	3.309E-3	-1.867	-1.420
		12	(10)(11)(9)(15)(9)(15)	(12)(11)(16)(15)(10)(9)				
			-33.74	109.0E-3	947.8E-3	29.66E-3	975.5E-3	-404.3E-3
			-53.89	-326.0E-3	715.4E-3	3.309E-3	20.04E-3	-470.7E-3
56	E1	30	(10)(15)(11)(12)(13)(10)	(10)(15)(10)(15)(11)(12)				
			-74.39	-102.0E-3	283.9E-3	-30.08E-3	-1.061	507.1E-3
			-115.3	-311.2E-3	208.6E-3	-131.5E-3	-1.336	-91.72E-3
		16	(10)(15)(11)(12)(13)(10)	(10)(15)(12)(11)(15)(10)				
			-73.83	-102.0E-3	743.4E-3	-30.08E-3	300.8E-3	818.9E-3
			-114.7	-311.2E-3	668.2E-3	-131.5E-3	213.3E-3	476.4E-3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 9

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
57	E1	29	(10) (15) (11) (12) (12) (11)	(15) (9) (10) (12) (11) (10)				
			-41.05	324.2E-3	504.2E-3	-3.290E-3	-1.372	1.418
			-55.82	-114.6E-3	298.5E-3	-29.36E-3	-1.587	121.4E-3
		15	(10) (15) (11) (12) (12) (11)	(15) (9) (12) (11) (12) (10)				
			-40.96	324.2E-3	966.2E-3	-3.290E-3	599.4E-3	480.1E-3
			-55.12	-114.6E-3	720.6E-3	-29.36E-3	30.06E-3	416.9E-3
128	E1	68	(15) (9) (9) (10) (11) (10)	(11) (10) (10) (9) (9) (15)				
			-83.79	207.9E-3	273.5E-3	189.4E-3	-1.057	100.5E-3
			-83.78	180.1E-3	195.4E-3	22.38E-3	-1.202	-443.5E-3
		55	(15) (9) (9) (10) (11) (10)	(11) (10) (11) (10) (10) (11)				
			-53.27	207.9E-3	733.1E-3	189.4E-3	363.5E-3	-465.6E-3
			-83.26	180.1E-3	655.0E-3	22.38E-3	236.2E-3	-1.011
129	E1	69	(15) (9) (9) (15) (11) (10)	(12) (11) (10) (11) (10) (15)				
			-30.80	86.20E-3	642.8E-3	17.00E-3	-1.259	-196.8E-3
			-42.16	-274.0E-3	325.9E-3	7.585E-3	-1.619	-1.383
		56	(15) (9) (9) (15) (11) (10)	(12) (11) (11) (10) (10) (11)				
			-30.30	86.20E-3	1.105	17.00E-3	979.0E-3	-363.7E-3
			-41.67	-274.0E-3	787.9E-3	7.585E-3	397.3E-3	-871.1E-3
130	E1	74	(11) (12) (10) (12) (15) (10)	(10) (15) (10) (12) (11) (12)				
			-84.86	-182.3E-3	279.0E-3	-22.28E-3	-1.031	441.0E-3
			-87.27	-212.3E-3	201.0E-3	-159.5E-3	-1.208	-108.8E-3
		60	(11) (12) (10) (12) (15) (10)	(10) (15) (15) (9) (15) (10)				
			-54.34	-182.3E-3	738.6E-3	-22.28E-3	377.2E-3	1.012
			-86.75	-212.3E-3	660.6E-3	-159.5E-3	277.2E-3	463.8E-3
131	E1	73	(11) (12) (11) (12) (15) (10)	(15) (9) (10) (15) (11) (10)				
			-32.12	272.3E-3	648.0E-3	-7.510E-3	-1.267	1.381
			-46.48	-91.64E-3	349.9E-3	-16.69E-3	-1.625	140.2E-3
		59	(11) (12) (11) (12) (15) (10)	(15) (9) (15) (9) (15) (10)				
			-31.63	272.3E-3	1.110	-7.510E-3	988.9E-3	573.7E-3
			-45.98	-91.64E-3	811.9E-3	-16.69E-3	454.8E-3	376.6E-3

Maximum values in this output:

		Lc.						
129	E1	56 15)	-30.30	-274.0E-3	1.099	7.682E-3	968.0E-3	-368.4E-3
57	E1	29 11)	-54.45	324.2E-3	258.5E-3	-3.380E-3	-1.426	1.418
131	E1	59 15)	-32.91	270.7E-3	1.110	-7.510E-3	988.9E-3	573.7E-3
128	E1	55 11)	-54.29	187.2E-3	733.1E-3	159.4E-3	363.5E-3	-1.011
131	E1	59 15)	-32.91	270.7E-3	1.110	-7.510E-3	988.9E-3	573.7E-3
57	E1	29 11)	-54.45	324.2E-3	258.5E-3	-3.380E-3	-1.428	1.416

Minimum values in this output:

		Lc.						
56	E1	30 15)	-115.3	-103.3E-3	283.0E-3	-131.6E-3	-1.136	604.6E-3
55	E1	29 15)	-53.01	-326.0E-3	253.4E-3	3.423E-3	-1.420	-1.420
128	E1	68 10)	-71.42	180.1E-3	195.4E-3	22.38E-3	-1.067	82.17E-3
130	E1	74 15)	-88.89	-188.5E-3	279.0E-3	-159.5E-3	-1.170	438.6E-3
131	E1	73 15)	-33.40	270.7E-3	648.0E-3	-7.510E-3	-1.625	1.379
58	E1	29 15)	-53.01	-326.0E-3	253.4E-3	3.423E-3	-1.420	-1.420

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 10

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
58	E1	11	(11) (10) (15) (9) (11) (10)	(10) (15) (10) (11) (15) (16)				
			122.0	-46.22E-3	253.6E-3	-24.41E-3	-462.9E-3	1.068
			84.17	-233.7E-3	-159.9E-3	-108.3E-3	-1.185	-35.56E-3
		25	(11) (10) (15) (9) (11) (10)	(10) (15) (11) (12) (11) (10)				
			121.6	-46.22E-3	714.8E-3	-24.41E-3	116.6E-3	1.195
			83.77	-233.7E-3	301.3E-3	-108.3E-3	-310.6E-3	510.7E-3
59	E1	12	(11) (10) (15) (9) (11) (10)	(10) (11) (10) (11) (11) (10)				
			80.00	1.607	-142.0E-3	-70.11E-3	-861.2E-3	3.347
			53.87	-6.115E-3	-217.5E-3	-248.4E-3	-726.4E-3	332.3E-3
		26	(11) (10) (15) (9) (11) (10)	(10) (11) (11) (12) (9) (15)				
			79.57	1.607	321.2E-3	-70.11E-3	-478.9E-3	375.6E-3
			53.44	-6.115E-3	245.7E-3	-248.4E-3	-594.0E-3	-1.093
60	E1	16	(15) (10) (12) (11) (15) (16)	(11) (10) (10) (15) (12) (11)				
			123.0	241.3E-3	264.8E-3	108.3E-3	-482.8E-3	47.53E-3
			88.39	48.90E-3	-134.3E-3	23.15E-3	-1.198	-1.064
		29	(15) (10) (12) (11) (15) (16)	(11) (10) (15) (9) (10) (15)				
			122.6	241.3E-3	725.9E-3	108.3E-3	131.5E-3	-521.2E-3
			87.99	48.90E-3	326.9E-3	23.15E-3	-260.9E-3	-1.198
61	E1	15	(15) (16) (12) (11) (15) (16)	(15) (10) (10) (13) (10) (11)				
			81.25	9.867E-3	-133.8E-3	248.6E-3	-610.5E-3	-309.2E-3
			63.40	-1.606	-202.1E-3	69.98E-3	-736.2E-3	-3.345
		28	(15) (16) (12) (11) (15) (16)	(15) (10) (10) (9) (11) (12)				
			80.82	9.867E-3	329.8E-3	248.6E-3	-420.4E-3	1.091
			62.97	-1.606	261.1E-3	69.95E-3	-548.5E-3	-383.7E-3
132	E1	55	(9) (15) (15) (9) (9) (15)	(10) (11) (15) (9) (15) (16)				
			94.15	-28.37E-3	-92.18E-3	-20.79E-3	64.33E-3	1.017
			68.61	-225.3E-3	-508.6E-3	-177.7E-3	-591.9E-3	-17.97E-3
		69	(9) (15) (15) (9) (9) (15)	(10) (11) (9) (15) (11) (10)				
			93.75	-28.37E-3	369.0E-3	-20.79E-3	-219.9E-3	1.096
			68.21	-225.3E-3	-47.47E-3	-177.7E-3	-683.0E-3	513.1E-3
133	E1	56	(9) (15) (15) (10) (9) (15)	(10) (11) (10) (9) (11) (10)				
			62.63	1.893	-226.6E-3	-70.31E-3	-451.5E-3	3.403
			48.26	71.06E-3	-313.6E-3	-305.2E-3	-557.6E-3	429.3E-3
		70	(9) (15) (15) (10) (9) (15)	(10) (11) (10) (15) (9) (15)				
			62.20	1.693	236.6E-3	-70.31E-3	-518.9E-3	275.1E-3
			47.83	71.06E-3	149.6E-3	-305.2E-3	-679.6E-3	-1.273

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 10

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
134	E1	60	(12) (11) (12) (11) (12) (11)	(15) (10) (11) (12) (12) (11)				
			96.97	232.5E-3	-65.21E-3	177.7E-3	52.80E-3	24.75E-3
			69.47	30.56E-3	-498.6E-3	19.91E-3	-619.4E-3	-1.014
		73	(12) (11) (12) (11) (12) (11)	(15) (10) (10) (11) (10) (15)				
			96.57	232.5E-3	398.9E-3	177.7E-3	-162.6E-3	-517.9E-3
			69.06	30.56E-3	-37.48E-3	19.91E-3	-667.6E-3	-1.099
135	E1	59	(12) (11) (10) (11) (12) (11)	(15) (10) (11) (12) (10) (11)				
			66.42	-62.61E-3	-200.0E-3	305.3E-3	-461.8E-3	-417.8E-3
			49.40	-1.692	-305.8E-3	71.23E-3	-588.8E-3	-3.402
		72	(12) (11) (10) (11) (12) (11)	(15) (10) (10) (11) (11) (12)				
			69.99	-62.61E-3	263.2E-3	305.3E-3	-418.9E-3	1.272
			48.98	-1.692	197.4E-3	71.23E-3	-666.8E-3	-280.9E-3

Maximum values in this output:

		Lc.						
60	E1	16 15)	123.6	51.13E-3	264.8E-3	108.2E-3	-1.198	-1.061
133	E1	56 15)	48.26	1.693	-113.6E-3	-304.9E-3	-453.2E-3	3.403
60	E1	29 15)	122.6	51.13E-3	725.9E-3	108.2E-3	131.5E-3	-1.198
135	E1	72 15)	50.10	-1.692	198.4E-3	305.3E-3	-684.1E-3	1.270
60	E1	29 15)	122.6	51.13E-3	725.9E-3	108.2E-3	131.5E-3	-1.198
133	E1	56 11)	49.37	1.693	-305.6E-3	-305.2E-3	-462.5E-3	3.403

Minimum values in this output:

		Lc.						
133	E1	70 15)	47.83	1.693	149.6E-3	-304.9E-3	-679.6E-3	-1.273
135	E1	59 11)	49.40	-1.692	-305.8E-3	305.1E-3	-461.8E-3	-3.402
132	E1	55 15)	68.61	-28.37E-3	-508.6E-3	-177.6E-3	64.33E-3	1.017
133	E1	56 11)	49.37	1.693	-305.6E-3	-305.2E-3	-462.5E-3	3.403
60	E1	16 15)	123.0	51.13E-3	264.8E-3	108.2E-3	-1.198	-1.061
135	E1	59 11)	49.40	-1.692	-305.8E-3	305.1E-3	-461.8E-3	-3.402

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 11

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
62	E1	26	(10) (11) (10) (11) (11) (10)	(11) (12) (10) (11) (10) (11)				
			8.678	-534.8E-3	-262.1E-3	178.8E-3	-549.4E-3	-1.105
			-4.902	-2.217	-412.5E-3	-7.206E-3	-833.4E-3	-3.527
		13	(10) (11) (10) (11) (11) (10)	(11) (12) (11) (12) (15) (10)				
			9.152	-534.8E-3	201.6E-3	178.8E-3	-921.2E-3	2.915
			-4.428	-2.217	51.16E-3	-7.206E-3	-1.147	449.2E-3
63	E1	28	(9) (11) (10) (15) (9) (9) (15) (10) (15) (15) (10)					
			1.571	2.216	-254.6E-3	6.818E-3	-647.4E-3	1.526
			-6.838	528.3E-3	-368.3E-3	-178.8E-3	-843.1E-3	1.096
		14	(9) (13) (11) (10) (15) (9) (9) (15) (15) (9) (10) (11)					
			2.045	2.216	209.1E-3	6.818E-3	-909.3E-3	-438.7E-3
			-6.064	528.3E-3	98.38E-3	-178.8E-3	-1.107	-2.914
64	E1	14	(15) (16) (10) (11) (15) (9) (9) (15) (9) (15) (10) (15)					
			44.69	-1.197	-782.9E-3	53.48E-3	1.170	-1.788
			32.39	-2.118	-1.238	7.326E-3	314.1E-3	-3.106
		27	(15) (16) (10) (11) (15) (9) (9) (15) (15) (9) (11) (10)					
			44.24	-1.197	-319.0E-3	53.48E-3	-1.248	2.897
			31.94	-2.118	-774.4E-3	7.326E-3	-1.682	1.613
65	E1	27	(11) (10) (15) (10) (12) (11) (11) (12) (11) (12) (15) (10)					
			42.79	2.119	803.4E-3	-7.335E-3	-1.260	2.898
			23.34	1.202	327.6E-3	-53.85E-3	-1.725	1.622
		13	(11) (10) (15) (10) (12) (11) (11) (12) (12) (11) (10) (11)					
			43.24	2.119	9.267	-7.334E-3	-1.210	-1.784
			23.79	1.202	791.5E-3	-53.85E-3	325.8E-3	-3.107
136	E1	70	(15) (16) (10) (11) (16) (15) (11) (12) (10) (9) (10) (11)					
			8.115	-475.0E-3	-286.2E-3	157.3E-3	-648.6E-3	-1.007
			-613.5E-3	-1.967	-374.1E-3	-35.62E-3	-715.0E-3	-3.165
		57	(15) (16) (10) (11) (16) (15) (11) (12) (16) (15) (15) (10)					
			8.589	-475.0E-3	177.5E-3	157.3E-3	-651.1E-3	2.580
			-139.6E-3	-1.967	89.89E-3	-35.62E-3	-1.049	373.1E-3
137	E1	72	(11) (12) (11) (10) (10) (11) (9) (15) (10) (12) (15) (10)					
			6.725	1.966	-272.9E-3	35.32E-3	-640.7E-3	3.164
			-4.371	467.8E-3	-367.4E-3	-157.2E-3	-743.6E-3	996.1E-3
		58	(11) (12) (11) (10) (10) (11) (9) (15) (10) (11) (10) (11)					
			7.199	1.966	191.2E-3	35.32E-3	-758.7E-3	-363.1E-3
			-3.897	467.8E-3	96.30E-3	-157.2E-3	-1.038	-2.549
138	E1	58	(12) (11) (10) (11) (10) (11) (9) (15) (11) (10) (10) (15)					
			36.59	-1.166	-988.8E-3	48.36E-3	1.788	-1.761
			23.34	-1.905	-1.529	32.54E-3	870.7E-3	-2.808
		71	(12) (11) (10) (11) (10) (11) (9) (15) (11) (10) (11) (10)					
			36.13	-1.166	-525.0E-3	48.36E-3	-1.275	2.592
			22.89	-1.905	-1.068	32.54E-3	-1.891	1.544
139	E1	71	(9) (15) (15) (10) (15) (10) (11) (12) (10) (15) (15) (10)					
			31.80	1.905	1.073	-32.53E-3	-1.396	2.593
			21.57	1.171	615.3E-3	-48.53E-3	-1.903	1.552
		57	(9) (15) (15) (10) (15) (10) (11) (12) (15) (16) (10) (11)					
			32.25	1.905	1.537	-32.53E-3	1.795	-1.766
			22.02	1.171	1.079	-48.53E-3	981.4E-3	-2.808

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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SPOR SALONU

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BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 11

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
		Lc.						
64	S1	14 15)	44.69	-3.118	-782.9E-3	7.326E-3	314.1E-3	-3.106
63	S1	28 11)	-4.941	3.216	-261.8E-3	-178.7E-3	-833.7E-3	3.526
139	S1	57 15)	22.02	1.905	1.537	-32.59E-3	1.795	-2.808
62	S1	13 11)	-4.428	-2.217	201.6E-3	178.8E-3	-921.2E-3	2.915
139	S1	57 15)	22.02	1.905	1.537	-32.59E-3	1.795	-2.808
63	S1	28 15)	-6.414	3.216	-254.6E-3	-178.8E-3	-843.1E-3	3.526
Minimum values in this output:								
		Lc.						
63	S1	28 13)	-6.838	1.749	-274.7E-3	-125.0E-3	-822.7E-3	2.868
62	S1	26 11)	-4.902	-2.217	-262.1E-3	178.8E-3	-833.4E-3	-3.527
138	S1	58 11)	23.34	-1.905	-1.529	32.57E-3	1.785	-2.807
63	S1	14 15)	-5.940	3.216	209.1E-3	-178.8E-3	-909.3E-3	-2.913
139	S1	71 15)	21.57	1.905	1.073	-32.59E-3	-1.903	2.593
62	S1	26 11)	-4.902	-2.217	-262.1E-3	178.8E-3	-833.4E-3	-3.527

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 12

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
213	S1	1	(10)(11)(16)(15)(10)(11)		(10)(11)(11)(10)(16)(15)			
			-488.2	2.733	-602.7	-5.290	1.078E+3	3.864
			-751.1	-66.11	-808.3	-64.81	803.5	-625.8
		89	(10)(11)(16)(15)(10)(11)		(10)(11)(10)(11)(10)(15)			
			-420.4	2.733	-602.7	-5.290	-1.607E+3	-340.2E-3
			-683.4	-66.11	-808.3	-64.81	-2.156E+3	-361.4
214	S1	89	(10)(11)(10)(15)(11)(10)		(10)(11)(10)(11)(10)(15)			
			-405.3	-166.8E-3	240.5	-5.290	-1.608E+3	-340.2E-3
			-666.3	-67.20	178.7	-64.81	-2.165E+3	-361.4
		2	(10)(11)(10)(15)(11)(10)		(10)(11)(9)(9)(15)(10)			
			-252.8	-166.8E-3	240.5	-5.290	.0	243.4
			-515.8	-67.20	178.7	-64.81	.0	1.152
215	S1	3	(10)(15)(16)(11)(15)(10)		(11)(10)(10)(15)(16)(11)			
			-471.9	2.750	831.1	64.21	-803.5	3.882
			-752.4	-66.07	602.6	5.212	-1.108E+3	-625.2
		90	(10)(15)(16)(11)(15)(10)		(11)(10)(15)(10)(12)(11)			
			-404.1	2.750	831.1	64.21	2.216E+3	-311.5E-3
			-684.6	-66.07	602.6	5.212	1.607E+3	-360.9
216	S1	90	(10)(15)(10)(11)(10)(15)		(11)(10)(15)(10)(12)(11)			
			-389.0	-166.7E-3	-178.7	64.21	2.225E+3	-311.9E-3
			-669.5	-67.19	-247.3	5.212	1.608E+3	-360.9
		4	(10)(15)(10)(11)(10)(15)		(11)(10)(9)(9)(11)(10)			
			-216.5	-166.7E-3	-178.7	64.21	.0	243.9
			-517.0	-67.19	-247.3	5.212	.0	1.150
217	S1	45	(15)(16)(10)(15)(15)(16)		(10)(11)(16)(15)(9)(15)			
			-278.6	-234.6E-3	-527.7	-5.455	971.5	6.948E-3
			-513.7	-67.29	-728.6	-65.10	703.6	-627.4
		91	(15)(16)(10)(15)(15)(16)		(10)(11)(15)(16)(16)(15)			
			-207.9	-234.6E-3	-527.7	-5.455	-1.407E+3	7.641
			-445.9	-67.29	-728.6	-65.10	-1.943E+3	-358.2
218	S1	91	(15)(16)(16)(15)(16)(15)		(10)(11)(15)(16)(16)(15)			
			-192.8	1.184	215.8	-5.455	-1.398E+3	7.641
			-430.9	-66.20	155.4	-65.10	-1.942E+3	-359.2
		46	(15)(16)(16)(15)(16)(15)		(10)(11)(9)(9)(15)(16)			
			-40.25	1.184	215.8	-5.455	.0	237.6
			-278.4	-66.20	155.4	-65.10	.0	-3.019
219	S1	47	(11)(12)(10)(11)(12)(11)		(11)(10)(11)(12)(12)(11)			
			-276.4	-235.8E-3	736.7	64.50	-733.4	138.8E-3
			-516.9	-67.30	550.1	5.347	-982.2	-626.8
		92	(11)(12)(10)(11)(12)(11)		(11)(10)(12)(11)(16)(11)			
			-208.7	-235.8E-3	736.7	64.50	1.964E+3	7.681
			-449.1	-67.30	550.1	5.347	1.467E+3	-357.6
220	S1	92	(11)(12)(16)(11)(11)(12)		(11)(10)(12)(11)(16)(11)			
			-193.6	1.195	-162.0	64.50	1.964E+3	7.681
			-434.0	-66.17	-218.2	5.347	1.456E+3	-357.6
		48	(11)(12)(16)(11)(11)(12)		(11)(10)(9)(9)(11)(16)			
			-41.09	1.195	-162.0	64.50	.0	238.0
			-281.5	-66.17	-218.2	5.347	.0	-3.073
Maximum values in this output:								
		Lc.						
218	S1	46 15)	-40.26	-66.20	155.4	-65.10	.0	237.6
215	S1	3 16)	-514.0	2.750	783.8	5.827	-1.005E+3	3.882
215	S1	3 15)	-752.4	-66.06	831.1	64.21	-1.108E+3	-625.1
220	S1	92 11)	-193.6	-66.17	-162.0	64.50	1.456E+3	-357.6
216	S1	90 15)	-669.8	-67.19	-247.3	64.21	2.224E+3	-360.9
216	S1	4 11)	-516.0	-67.19	-240.6	64.21	.0	243.9
Minimum values in this output:								
		Lc.						
215	S1	3 15)	-752.4	-66.06	831.1	64.21	-1.108E+3	-625.1
219	S1	47 11)	-276.4	-67.30	550.1	64.50	-733.4	-626.8
213	S1	1 11)	-751.1	-66.10	-808.3	-64.81	1.078E+3	625.8
218	S1	91 11)	-193.7	-66.20	-162.0	-65.10	-1.488E+3	-358.2
214	S1	89 11)	-668.3	-67.20	240.5	-64.81	-2.166E+3	-361.4
217	S1	45 15)	-275.6	-67.29	-527.7	-65.10	703.6	-627.4

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 13

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
167	S1	51	(12)(11)(11)(10)(11)(9)		(10)(11)(9)(9)(9)(9)			
			1.750	16.60E-9	-325.8E-3	-38.31E-3	.0	.0
			-65.33	1.098E-9	-325.8E-3	-327.2E-3	.0	.0
		7	(12)(11)(11)(10)(11)(9)		(10)(11)(9)(9)(9)(9)			
			1.750	16.60E-9	325.8E-3	-35.31E-3	.0	.0
			-65.33	1.098E-9	325.8E-3	-327.2E-3	.0	.0
168	S1	53	(12)(11)(11)(10)(11)(9)		(10)(15)(9)(9)(9)(9)			
			3.566	9.694E-9	-325.8E-3	-36.28E-3	.0	.0
			-57.15	383.9E-12	-325.8E-3	-325.5E-3	.0	.0
		9	(12)(11)(11)(10)(11)(9)		(10)(15)(9)(9)(9)(9)			
			3.566	9.694E-9	325.8E-3	-36.28E-3	.0	.0
			-57.15	383.9E-12	325.8E-3	-325.5E-3	.0	.0
169	S1	54	(12)(11)(11)(12)(11)(9)		(10)(11)(9)(9)(9)(9)			
			4.912	4.679E-9	-325.8E-3	-35.86E-3	.0	.0
			-46.07	-161.1E-12	-325.8E-3	-277.6E-3	.0	.0
		10	(12)(11)(11)(12)(11)(9)		(10)(11)(9)(9)(9)(9)			
			4.912	4.679E-9	325.8E-3	-35.86E-3	.0	.0
			-46.07	-161.1E-12	325.8E-3	-277.6E-3	.0	.0
170	S1	55	(12)(11)(15)(9)(11)(9)		(10)(11)(9)(9)(9)(9)			
			5.908	1.679E-9	-325.8E-3	-30.59E-3	.0	.0
			-36.59	-484.8E-12	-325.8E-3	-218.3E-3	.0	.0
		11	(12)(11)(15)(9)(11)(9)		(10)(11)(9)(9)(9)(9)			
			5.908	1.679E-9	325.8E-3	-30.59E-3	.0	.0
			-36.59	-484.8E-12	325.8E-3	-218.3E-3	.0	.0
171	S1	86	(12)(11)(15)(9)(11)(9)		(10)(11)(9)(9)(9)(9)			
			5.838	349.5E-12	-325.8E-3	-27.53E-3	.0	.0
			-23.47	-494.4E-12	-325.8E-3	-96.83E-3	.0	.0
		12	(12)(11)(15)(9)(11)(9)		(10)(11)(9)(9)(9)(9)			
			5.838	349.5E-12	325.8E-3	-27.53E-3	.0	.0
			-23.47	-494.4E-12	325.8E-3	-96.83E-3	.0	.0
172	S1	57	(12)(11)(15)(9)(11)(9)		(12)(11)(9)(9)(9)(9)			
			19.84	-22.89E-12	-325.8E-3	984.3E-6	.0	.0
			10.09	-204.7E-12	-325.8E-3	-82.12E-3	.0	.0
		13	(12)(11)(15)(9)(11)(9)		(12)(11)(9)(9)(9)(9)			
			19.84	-22.89E-12	325.8E-3	984.3E-6	.0	.0
			10.09	-204.7E-12	325.8E-3	-82.12E-3	.0	.0
173	S1	58	(9)(15)(12)(11)(11)(9)		(15)(9)(9)(9)(9)(9)			
			19.77	214.1E-12	-325.8E-3	82.23E-3	.0	.0
			10.07	-17.89E-12	-325.8E-3	-530.9E-6	.0	.0
		14	(9)(15)(12)(11)(11)(9)		(15)(9)(9)(9)(9)(9)			
			19.77	214.1E-12	325.8E-3	82.23E-3	.0	.0
			10.07	-17.89E-12	325.8E-3	-530.9E-6	.0	.0
174	S1	59	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			5.668	901.2E-12	-325.8E-3	96.86E-3	.0	.0
			-23.80	-391.7E-12	-325.8E-3	27.39E-3	.0	.0
		15	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			5.668	901.2E-12	325.8E-3	96.86E-3	.0	.0
			-23.80	-391.7E-12	325.8E-3	27.39E-3	.0	.0
175	S1	60	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			9.696	489.3E-12	-325.8E-3	218.3E-3	.0	.0
			-36.64	-1.723E-9	-325.8E-3	30.56E-3	.0	.0
		16	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			9.696	489.3E-12	325.8E-3	218.3E-3	.0	.0
			-36.64	-1.723E-9	325.8E-3	30.56E-3	.0	.0
176	S1	61	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			4.685	162.1E-12	-325.8E-3	277.6E-3	.0	.0
			-46.11	-4.725E-9	-325.8E-3	35.68E-3	.0	.0
		17	(9)(15)(12)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			4.685	162.1E-12	325.8E-3	277.6E-3	.0	.0
			-46.11	-4.725E-9	325.8E-3	35.68E-3	.0	.0
177	S1	62	(9)(15)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			3.338	-401.9E-12	-325.8E-3	329.4E-3	.0	.0
			-57.19	-9.740E-9	-325.8E-3	36.12E-3	.0	.0
		18	(9)(15)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			3.338	-401.9E-12	325.8E-3	329.4E-3	.0	.0
			-57.19	-9.740E-9	325.8E-3	36.12E-3	.0	.0
178	S1	52	(9)(15)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			1.566	-1.112E-9	-325.8E-3	327.3E-3	.0	.0
			-65.33	-16.65E-9	-325.8E-3	35.15E-3	.0	.0
		8	(9)(15)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			1.566	-1.112E-9	325.8E-3	327.3E-3	.0	.0
			-65.33	-16.65E-9	325.8E-3	35.15E-3	.0	.0
340	S1	97	(10)(11)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			-90.49E-3	-2.499E-9	-325.8E-3	272.3E-3	.0	.0
			-1.929	-28.47E-9	-325.8E-3	34.14E-3	.0	.0
		98	(10)(11)(10)(11)(11)(9)		(11)(10)(9)(9)(9)(9)			
			-90.49E-3	-2.499E-9	325.8E-3	272.3E-3	.0	.0
			-1.929	-28.47E-9	325.8E-3	34.14E-3	.0	.0
341	S1	117	(9)(15)(10)(11)(9)(9)		(11)(10)(9)(9)(9)(9)			
			465.3E-3	-2.019E-9	-325.8E-3	271.1E-3	.0	.0
			-1.377	-24.89E-9	-325.8E-3	32.62E-3	.0	.0
		119	(9)(15)(10)(11)(9)(9)		(11)(10)(9)(9)(9)(9)			
			465.3E-3	-2.019E-9	325.8E-3	271.1E-3	.0	.0
			-1.377	-24.89E-9	325.8E-3	32.62E-3	.0	.0
342	S1	93	(16)(15)(10)(11)(9)(9)		(11)(10)(9)(9)(9)(9)			
			1.487	-1.920E-9	-325.8E-3	269.0E-3	.0	.0
			-1.133	-23.76E-9	-325.8E-3	31.91E-3	.0	.0
		94	(16)(15)(10)(11)(9)(9)		(11)(10)(9)(9)(9)(9)			
			1.487	-1.920E-9	325.8E-3	269.0E-3	.0	.0
			-1.133	-23.76E-9	325.8E-3	31.91E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 13

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
344	E1	100	(10)(15)(15)(10)(9)(11)	(10)(15)(9)(9)(9)(9)				
			-76.86E-3	28.46E-9	-325.8E-3	-34.57E-3	.0	.0
			-1.738	2.498E-9	-325.8E-3	-275.1E-3	.0	.0
		99	(10)(15)(15)(10)(9)(11)	(10)(15)(9)(9)(9)(9)				
			-76.88E-3	28.46E-9	325.8E-3	-34.57E-3	.0	.0
			-1.738	2.498E-9	325.8E-3	-275.1E-3	.0	.0
345	E1	131	(16)(11)(11)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			347.3E-3	24.56E-9	-325.8E-3	-33.02E-3	.0	.0
			-1.377	2.015E-9	-325.8E-3	-275.3E-3	.0	.0
		132	(16)(11)(11)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			347.3E-3	24.56E-9	325.8E-3	-33.02E-3	.0	.0
			-1.377	2.015E-9	325.8E-3	-275.3E-3	.0	.0
346	E1	96	(16)(11)(11)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			805.3E-3	23.68E-9	-325.8E-3	-32.36E-3	.0	.0
			-1.729	1.912E-9	-325.8E-3	-274.1E-3	.0	.0
		95	(16)(11)(11)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			805.3E-3	23.68E-9	325.8E-3	-32.36E-3	.0	.0
			-1.729	1.912E-9	325.8E-3	-274.1E-3	.0	.0

Maximum values in this output:

			Lc.					
172	E1	87	12)	19.84	-195.5E-12	-325.8E-3	984.3E-6	.0	.0
344	E1	100	15)	-1.738	28.46E-9	-325.8E-3	-275.1E-3	.0	.0
170	E1	11	11)	-36.59	1.67E-9	325.8E-3	-216.3E-3	.0	.0
178	E1	52	11)	-65.28	-16.65E-9	-325.8E-3	327.2E-3	.0	.0
167	E1	51	9)	1.562	1.256E-9	-325.8E-3	-40.04E-3	.0	.0
167	E1	51	9)	1.562	1.256E-9	-325.8E-3	-40.04E-3	.0	.0

Minimum values in this output:

			Lc.					
167	E1	51	11)	-65.33	16.60E-9	-325.8E-3	-327.2E-3	.0	.0
340	E1	97	11)	-1.929	-28.47E-9	-325.8E-3	272.3E-3	.0	.0
344	E1	100	11)	-1.737	28.46E-9	-325.8E-3	-275.0E-3	.0	.0
167	E1	51	11)	-65.33	16.60E-9	-325.8E-3	-327.2E-3	.0	.0
167	E1	51	9)	1.562	1.256E-9	-325.8E-3	-40.04E-3	.0	.0
167	E1	51	9)	1.562	1.256E-9	-325.8E-3	-40.04E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 14

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
180	E1	49	(11)(12)(9)(15)(11)(16)	(10)(11)(10)(11)(15)(9)				
			105.3	-7.451E-9	-169.5E-3	-3.692E-3	-21.83E-12	21.90E-12
			-1.708	-3.827E-6	-169.5E-3	-6.076E-3	-87.31E-12	-7.276E-12
		7	(11)(12)(9)(15)(11)(16)	(10)(11)(10)(11)(15)(9)				
			105.4	-7.451E-9	169.5E-3	-3.692E-3	-21.83E-12	21.90E-12
			-1.649	-3.827E-6	169.5E-3	-6.076E-3	-87.31E-12	-7.276E-12
181	E1	51	(11)(12)(11)(16)(16)(11)	(12)(11)(9)(11)(10)(9)				
			104.2	3.815E-6	-187.7E-3	1.745E-3	14.55E-12	1.819E-12
			-4.890	-685.5E-9	-187.7E-3	-1.199E-3	-101.9E-12	.0
		9	(11)(12)(11)(16)(16)(11)	(12)(11)(9)(11)(10)(9)				
			104.3	3.815E-6	187.7E-3	1.745E-3	14.55E-12	1.819E-12
			-4.822	-685.5E-9	187.7E-3	-1.199E-3	-101.9E-12	.0
182	E1	53	(11)(12)(12)(16)(9)(16)	(12)(11)(10)(12)(15)(9)				
			84.34	193.7E-9	-188.8E-3	5.477E-3	-141.9E-12	30.20E-12
			-7.537	-521.5E-9	-188.8E-3	1.845E-3	-152.8E-12	.0
		10	(11)(12)(12)(16)(9)(16)	(12)(11)(10)(12)(15)(9)				
			84.39	193.7E-9	188.8E-3	5.477E-3	-141.9E-12	30.20E-12
			-7.483	-521.5E-9	188.8E-3	1.845E-3	-152.8E-12	.0
183	E1	54	(11)(12)(12)(16)(16)(11)	(12)(11)(16)(9)(11)(12)				
			65.85	327.8E-9	-189.6E-3	8.394E-3	39.10E-12	7.276E-12
			-9.512	.0	-189.6E-3	6.039E-3	.0	-9.095E-12
		11	(11)(12)(12)(16)(16)(11)	(12)(11)(16)(9)(11)(12)				
			65.89	327.8E-9	189.6E-3	8.394E-3	39.10E-12	7.276E-12
			-9.471	.0	189.6E-3	6.039E-3	.0	-9.095E-12
184	E1	55	(11)(12)(16)(9)(16)(9)	(15)(10)(9)(10)(11)(12)				
			90.94	-327.6E-9	-190.2E-3	10.42E-3	-116.4E-12	-54.57E-12
			-10.90	-417.2E-9	-190.2E-3	8.828E-3	-131.0E-12	-59.12E-12
		12	(11)(12)(16)(9)(16)(9)	(15)(10)(9)(10)(11)(12)				
			90.97	-327.8E-9	190.2E-3	10.42E-3	-116.4E-12	-54.57E-12
			-10.87	-417.2E-9	190.2E-3	8.828E-3	-131.0E-12	-59.12E-12
185	E1	56	(11)(12)(10)(11)(9)(11)	(12)(10)(11)(10)(9)(10)				
			19.24	14.90E-9	-190.6E-3	14.48E-3	14.55E-12	14.55E-12
			-10.22	-953.7E-9	-190.6E-3	12.91E-3	-29.10E-12	12.73E-12
		13	(11)(12)(10)(11)(9)(11)	(12)(10)(11)(10)(9)(10)				
			19.25	14.90E-9	190.6E-3	14.48E-3	14.55E-12	14.55E-12
			-10.21	-953.7E-9	190.6E-3	12.91E-3	-29.10E-12	12.73E-12
186	E1	57	(10)(15)(11)(16)(11)(9)	(9)(10)(11)(10)(9)(9)				
			-24.97	59.60E-9	-190.7E-3	5.714E-3	.0	.0
			-30.26	-596.0E-9	-190.7E-3	4.807E-3	-58.21E-12	.0
		14	(10)(15)(11)(16)(11)(9)	(9)(10)(11)(10)(9)(9)				
			-24.97	59.60E-9	190.7E-3	5.714E-3	.0	.0
			-30.26	-596.0E-9	190.7E-3	4.807E-3	-58.21E-12	.0
187	E1	58	(10)(11)(10)(16)(11)(9)	(10)(12)(10)(9)(9)(9)				
			-24.81	29.80E-9	-190.7E-3	-4.809E-3	265.6E-12	.0
			-30.25	-536.4E-9	-190.7E-3	-5.721E-3	232.8E-12	.0
		13	(10)(11)(10)(16)(11)(9)	(10)(12)(10)(9)(9)(9)				
			-24.81	29.80E-9	190.7E-3	-4.809E-3	265.6E-12	.0
			-30.25	-536.4E-9	190.7E-3	-5.721E-3	232.8E-12	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 14

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
188	E1	14	(15)(9)(16)(12)(9)(16)	(10)(9)(9)(11)(16)(9)				
			19.30	-29.80E-9	-190.6E-3	-12.52E-3	-116.4E-12	9.095E-12
			-9.975	-126.7E-9	-190.6E-3	-14.41E-3	-131.0E-12	7.276E-12
		59	(15)(9)(16)(12)(9)(16)	(10)(9)(9)(11)(16)(9)				
			19.28	-29.80E-9	190.6E-3	-12.52E-3	-116.4E-12	9.095E-12
			-9.989	-126.7E-9	190.6E-3	-14.41E-3	-131.0E-12	7.276E-12
189	E1	15	(15)(9)(9)(9)(10)(9)	(10)(11)(9)(10)(10)(11)				
			51.03	238.4E-9	-190.2E-3	-8.407E-3	88.21E-12	-28.19E-12
			-10.52	238.4E-9	-190.2E-3	-10.38E-3	90.93E-12	-40.02E-12
		60	(15)(9)(9)(9)(9)(9)	(10)(11)(9)(10)(10)(11)				
			51.01	238.4E-9	190.2E-3	-8.407E-3	88.21E-12	-28.19E-12
			-10.55	238.4E-9	190.2E-3	-10.38E-3	90.93E-12	-40.02E-12
190	E1	16	(15)(9)(11)(9)(11)(16)	(15)(9)(9)(9)(10)(9)				
			65.97	3.815E-6	-189.6E-3	-5.968E-3	.0	-28.19E-12
			-9.098	.0	-189.6E-3	-8.168E-3	.0	-36.38E-12
		61	(15)(9)(11)(9)(11)(16)	(15)(9)(9)(9)(10)(9)				
			65.93	3.815E-6	189.6E-3	-5.968E-3	.0	-28.19E-12
			-9.131	.0	189.6E-3	-8.168E-3	.0	-36.38E-12
191	E1	17	(15)(9)(10)(16)(16)(9)	(15)(9)(11)(12)(9)(10)				
			84.47	931.3E-12	-188.8E-3	-1.798E-3	116.4E-12	-14.55E-12
			-7.075	-1.028E-6	-188.8E-3	-8.216E-3	-7.276E-12	-21.83E-12
		62	(15)(9)(10)(16)(16)(9)	(15)(9)(11)(12)(9)(10)				
			84.42	931.3E-12	188.8E-3	-1.758E-3	116.4E-12	-14.55E-12
			-7.130	-1.028E-6	188.8E-3	-8.216E-3	-7.276E-12	-21.83E-12
192	E1	18	(15)(9)(10)(16)(11)(9)	(15)(9)(9)(12)(11)(9)				
			104.4	39.80E-9	-187.7E-3	1.252E-3	-29.10E-12	29.10E-12
			-4.442	-1.147E-6	-187.7E-3	-1.532E-3	-36.38E-12	.0
		52	(15)(9)(10)(16)(11)(9)	(15)(9)(9)(12)(11)(9)				
			104.3	39.80E-9	187.7E-3	1.252E-3	-29.10E-12	29.10E-12
			-4.509	-1.147E-6	187.7E-3	-1.532E-3	-36.38E-12	.0
193	E1	8	(15)(9)(9)(11)(9)(16)	(11)(10)(10)(11)(10)(11)				
			105.3	37.25E-9	-169.5E-3	6.150E-3	3.638E-12	1.819E-12
			-1.371	-3.777E-6	-169.5E-3	3.678E-3	-145.5E-12	-36.38E-12
		50	(15)(9)(9)(11)(9)(16)	(11)(10)(10)(11)(10)(11)				
			105.2	37.25E-9	169.5E-3	6.150E-3	3.638E-12	1.819E-12
			-1.434	-3.777E-6	169.5E-3	3.678E-3	-145.5E-12	-36.38E-12
343	E1	98	(9)(15)(9)(16)(16)(9)	(15)(10)(15)(10)(9)(11)				
			234.5E-3	12.11E-9	-164.2E-3	11.69E-3	480.3E-12	.0
			-650.6E-3	-621.0E-9	-164.2E-3	934.4E-6	12.73E-12	-116.4E-12
		117	(9)(15)(9)(16)(16)(9)	(15)(10)(15)(10)(9)(11)				
			281.5E-3	12.11E-9	164.2E-3	11.69E-3	480.3E-12	.0
			-603.8E-3	-621.0E-9	164.2E-3	934.4E-6	12.73E-12	-116.4E-12
347	E1	100	(12)(11)(12)(16)(9)(16)	(10)(11)(9)(10)(12)(9)				
			215.3E-3	-6.403E-9	-165.4E-3	-1.316E-3	43.66E-12	3.865E-12
			-1.079	-536.7E-9	-165.4E-3	-12.16E-3	32.74E-12	3.638E-12
		132	(12)(11)(12)(16)(9)(16)	(10)(11)(9)(10)(12)(9)				
			262.0E-3	-6.403E-9	165.4E-3	-1.316E-3	43.66E-12	3.865E-12
			-1.032	-536.7E-9	165.4E-3	-12.16E-3	32.74E-12	3.638E-12

Maximum values in this output:

			Lc.					
180	E1	7	11)	105.4	-3.822E-6	169.5E-3	-6.076E-3	-87.31E-12	21.83E-12
181	E1	51	11)	104.2	3.815E-6	-187.7E-3	-1.199E-3	-101.9E-12	.0
186	E1	14	11)	-30.24	59.60E-9	190.7E-3	5.003E-3	.0	.0
185	E1	56	12)	-10.22	.0	-190.6E-3	14.48E-3	-3.638E-12	14.55E-12
343	E1	98	15)	-650.8E-3	-17.71E-9	-164.2E-3	11.69E-3	480.3E-12	-116.4E-12
182	E1	53	15)	84.23	183.3E-9	-186.8E-3	1.918E-3	-147.7E-12	30.20E-12

Minimum values in this output:

			Lc.					
186	E1	57	15)	-30.26	59.60E-9	-190.7E-3	5.004E-3	.0	.0
180	E1	49	15)	105.2	-3.827E-6	-169.5E-3	-6.072E-3	-87.18E-12	21.90E-12
186	E1	57	9)	-28.43	.0	-190.7E-3	5.714E-3	-29.10E-12	.0
188	E1	14	9)	-9.975	-129.2E-9	-190.6E-3	-14.41E-3	-116.4E-12	7.276E-12
182	E1	53	12)	-7.537	193.7E-9	-188.8E-3	5.477E-3	-152.8E-12	3.638E-12
343	E1	98	11)	-650.4E-3	-17.70E-9	-164.2E-3	11.69E-3	480.2E-12	-116.4E-12

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 15

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
194	E1	77	(12)(11)(12)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			609.7E-3	19.71E-9	-325.8E-3	-34.76E-3	.0	.0
			-14.57	1.434E-9	-325.8E-3	-336.4E-3	.0	.0
		33	(12)(11)(11)(10)(9)(9)	(10)(15)(9)(9)(9)(9)				
			609.7E-3	19.71E-9	325.8E-3	-34.76E-3	.0	.0
			-14.57	1.434E-9	325.8E-3	-336.4E-3	.0	.0
195	E1	79	(12)(11)(11)(10)(11)(9)	(10)(15)(9)(9)(9)(9)				
			601.6E-3	13.14E-9	-325.8E-3	-35.72E-3	.0	.0
			-16.14	743.3E-12	-325.8E-3	-342.4E-3	.0	.0
		35	(12)(11)(11)(10)(11)(9)	(10)(15)(9)(9)(9)(9)				
			601.6E-3	13.14E-9	325.8E-3	-35.72E-3	.0	.0
			-16.14	743.3E-12	325.8E-3	-342.4E-3	.0	.0
196	E1	60	(12)(11)(11)(10)(11)(9)	(10)(11)(9)(9)(9)(9)				
			916.7E-3	7.085E-9	-325.8E-3	-36.30E-3	.0	.0
			-13.65	116.4E-12	-325.8E-3	-311.4E-3	.0	.0
		36	(12)(11)(11)(10)(11)(9)	(10)(11)(9)(9)(9)(9)				
			916.7E-3	7.086E-9	325.8E-3	-36.30E-3	.0	.0
			-13.65	116.4E-12	325.8E-3	-311.4E-3	.0	.0

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 15

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
197	E1	81	(12)(11)(11)(12)(11)(9)	(10)(11)(9)(9)(9)(9)				
			1.163	3.088E-9	-328.8E-3	-34.20E-3	.0	.0
			-11.35	-331.8E-12	-328.8E-3	-283.1E-3	.0	.0
		37	(12)(11)(11)(12)(11)(9)	(10)(11)(9)(9)(9)(9)				
			1.163	3.088E-9	328.8E-3	-34.20E-3	.0	.0
			-11.35	-331.8E-12	328.8E-3	-283.1E-3	.0	.0
198	E1	82	(12)(11)(15)(9)(11)(9)	(10)(11)(9)(9)(9)(9)				
			1.282	888.7E-12	-325.8E-3	-27.27E-3	.0	.0
			-8.795	-493.4E-12	-325.8E-3	-177.4E-3	.0	.0
		38	(12)(11)(15)(9)(11)(9)	(10)(11)(9)(9)(9)(9)				
			1.282	888.7E-12	325.8E-3	-27.27E-3	.0	.0
			-8.795	-493.4E-12	325.8E-3	-177.4E-3	.0	.0
199	E1	83	(12)(11)(15)(9)(11)(9)	(10)(11)(9)(9)(9)(9)				
			4.431	191.1E-12	-325.8E-3	-16.40E-3	.0	.0
			-1.679	-370.9E-12	-325.8E-3	-89.10E-3	.0	.0
		39	(12)(11)(15)(9)(11)(9)	(10)(11)(9)(9)(9)(9)				
			4.431	191.1E-12	325.8E-3	-16.40E-3	.0	.0
			-1.679	-370.9E-12	325.8E-3	-89.10E-3	.0	.0
200	E1	63	(12)(11)(12)(11)(11)(9)	(14)(16)(9)(9)(9)(9)				
			4.077	9.462E-12	-325.8E-3	307.9E-6	.0	.0
			-625.9E-3	-21.76E-12	-325.8E-3	2.586E-6	.0	.0
		19	(12)(11)(12)(11)(11)(9)	(14)(16)(9)(9)(9)(9)				
			4.077	9.462E-12	325.8E-3	307.9E-6	.0	.0
			-625.9E-3	-21.76E-12	325.8E-3	2.586E-6	.0	.0
201	E1	84	(9)(15)(12)(11)(11)(9)	(15)(10)(9)(9)(9)(9)				
			4.406	378.7E-12	-325.8E-3	89.18E-3	.0	.0
			-1.684	-232.6E-12	-325.8E-3	16.64E-3	.0	.0
		40	(9)(15)(12)(11)(11)(9)	(15)(10)(9)(9)(9)(9)				
			4.406	378.7E-12	325.8E-3	89.18E-3	.0	.0
			-1.684	-232.6E-12	325.8E-3	16.64E-3	.0	.0
202	E1	85	(9)(15)(12)(11)(11)(9)	(15)(10)(9)(9)(9)(9)				
			1.241	499.0E-12	-325.8E-3	177.4E-3	.0	.0
			-8.803	-931.7E-12	-325.8E-3	27.32E-3	.0	.0
		41	(9)(15)(12)(11)(11)(9)	(15)(10)(9)(9)(9)(9)				
			1.241	499.0E-12	325.8E-3	177.4E-3	.0	.0
			-8.803	-931.7E-12	325.8E-3	27.32E-3	.0	.0
203	E1	86	(9)(15)(12)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			1.116	334.5E-12	-325.8E-3	253.2E-3	.0	.0
			-11.36	-3.133E-9	-325.8E-3	34.11E-3	.0	.0
		42	(9)(15)(12)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			1.116	334.5E-12	325.8E-3	253.2E-3	.0	.0
			-11.36	-3.133E-9	325.8E-3	34.11E-3	.0	.0
204	E1	87	(9)(15)(16)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			868.0E-3	-134.4E-12	-325.8E-3	311.4E-3	.0	.0
			-13.66	-7.132E-9	-325.8E-3	36.16E-3	.0	.0
		43	(9)(15)(16)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			868.0E-3	-134.4E-12	325.8E-3	311.4E-3	.0	.0
			-13.66	-7.132E-9	325.8E-3	36.16E-3	.0	.0
205	E1	88	(9)(15)(10)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			564.8E-3	-759.6E-12	-325.8E-3	342.3E-3	.0	.0
			-16.14	-13.19E-9	-325.8E-3	35.63E-3	.0	.0
		44	(9)(15)(10)(11)(11)(9)	(11)(10)(9)(9)(9)(9)				
			564.8E-3	-759.6E-12	325.8E-3	342.3E-3	.0	.0
			-16.14	-13.19E-9	325.8E-3	35.63E-3	.0	.0
206	E1	78	(16)(15)(10)(11)(9)(9)	(11)(10)(9)(9)(9)(9)				
			536.5E-3	-1.447E-9	-325.8E-3	336.5E-3	.0	.0
			-14.61	-19.76E-9	-325.8E-3	34.68E-3	.0	.0
		34	(16)(15)(10)(11)(9)(9)	(11)(10)(9)(9)(9)(9)				
			536.5E-3	-1.447E-9	325.8E-3	336.5E-3	.0	.0
			-14.61	-19.76E-9	325.8E-3	34.68E-3	.0	.0

Maximum values in this output:

			Lc.					
199	E1	83	12)	4.431	-364.1E-12	-325.8E-3	-16.47E-3	.0	.0
194	E1	77	11)	-14.57	-19.71E-9	-325.8E-3	-336.3E-3	.0	.0
198	E1	38	11)	-8.795	887.7E-12	325.8E-3	-177.4E-3	.0	.0
205	E1	88	11)	-16.13	-13.19E-9	-325.8E-3	342.3E-3	.0	.0
194	E1	77	9)	564.4E-3	1.637E-9	-325.8E-3	-39.45E-3	.0	.0
194	E1	77	9)	564.4E-3	1.637E-9	-325.8E-3	-39.45E-3	.0	.0

Minimum values in this output:

			Lc.					
205	E1	88	15)	-16.14	-13.19E-9	-325.8E-3	342.3E-3	.0	.0
206	E1	78	11)	-14.59	-19.76E-9	-325.8E-3	336.5E-3	.0	.0
194	E1	77	9)	564.4E-3	1.637E-9	-325.8E-3	-39.45E-3	.0	.0
195	E1	79	15)	-16.12	13.14E-9	-325.8E-3	-342.4E-3	.0	.0
194	E1	77	9)	564.4E-3	1.637E-9	-325.8E-3	-39.45E-3	.0	.0
194	E1	77	9)	564.4E-3	1.637E-9	-325.8E-3	-39.45E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 16

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
166	E1	49	(16)(11)(9)(9)(9)(9)	(10)(15)(9)(9)(9)(9)				
			4.825	.0	-456.4E-3	-93.65E-3	.0	.0
			-20.24	.0	-456.4E-3	-763.2E-3	.0	.0
		5	(16)(11)(9)(9)(9)(9)	(10)(15)(9)(9)(9)(9)				
			4.825	.0	456.4E-3	-93.65E-3	.0	.0
			-20.24	.0	456.4E-3	-763.2E-3	.0	.0
179	E1	50	(16)(15)(9)(9)(9)(9)	(11)(10)(9)(9)(9)(9)				
			4.572	.0	-456.4E-3	761.9E-3	.0	.0
			-20.46	.0	-456.4E-3	92.70E-3	.0	.0
		6	(16)(15)(9)(9)(9)(9)	(11)(10)(9)(9)(9)(9)				
			4.572	.0	456.4E-3	761.9E-3	.0	.0
			-20.46	.0	456.4E-3	92.70E-3	.0	.0
207	E1	2	(11)(16)(9)(9)(9)(9)	(10)(15)(9)(9)(9)(9)				
			8.219	.0	-456.4E-3	-89.86E-3	.0	.0
			3.675	.0	-456.4E-3	-758.7E-3	.0	.0
		46	(11)(15)(9)(9)(9)(9)	(10)(15)(9)(9)(9)(9)				
			8.219	.0	456.4E-3	-89.86E-3	.0	.0
			3.675	.0	456.4E-3	-758.7E-3	.0	.0
208	E1	4	(15)(16)(9)(9)(9)(9)	(11)(10)(9)(9)(9)(9)				
			8.729	.0	-456.4E-3	762.6E-3	.0	.0
			4.115	.0	-456.4E-3	89.28E-3	.0	.0
		48	(15)(16)(9)(9)(9)(9)	(11)(10)(9)(9)(9)(9)				
			8.729	.0	456.4E-3	762.6E-3	.0	.0
			4.115	.0	456.4E-3	89.28E-3	.0	.0

Maximum values in this output:

			Lc.					
208	E1	4	15)	8.729	.0	-456.4E-3	762.3E-3	.0	.0
166	E1	49	9)	4.033	.0	-456.4E-3	-105.9E-3	.0	.0
166	E1	5	9)	4.033	.0	456.4E-3	-105.9E-3	.0	.0
208	E1	4	11)	8.728	.0	-456.4E-3	762.6E-3	.0	.0
166	E1	49	9)	4.033	.0	-456.4E-3	-105.9E-3	.0	.0
166	E1	49	9)	4.033	.0	-456.4E-3	-105.9E-3	.0	.0

Minimum values in this output:

			Lc.					
179	E1	50	15)	-20.46	.0	-456.4E-3	761.6E-3	.0	.0
166	E1	49	9)	4.033	.0	-456.4E-3	-105.9E-3	.0	.0
166	E1	49	9)	4.033	.0	456.4E-3	-105.9E-3	.0	.0
166	E1	49	15)	-20.20	.0	-456.4E-3	-763.2E-3	.0	.0
166	E1	49	9)	4.033	.0	-456.4E-3	-105.9E-3	.0	.0
166	E1	49	9)	4.033	.0	456.4E-3	-105.9E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 17

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
209	E1	5	(11)(12)(11)(12)(9)(9)	(10)(11)(9)(9)(9)(9)				
			105.1	-98.30E-9	-888.5E-3	-173.9E-3	.0	.0
			-6.203	-301.2E-9	-888.5E-3	-1.748	.0	.0
		46	(11)(12)(11)(12)(9)(9)	(10)(11)(9)(9)(9)(9)				
			104.2	-98.30E-9	888.5E-3	-173.9E-3	.0	.0
			-7.092	-301.2E-9	888.5E-3	-1.748	.0	.0
210	E1	2	(10)(11)(15)(10)(9)(9)	(16)(15)(9)(9)(9)(9)				
			-2.315	551.2E-9	-888.5E-3	-130.0E-3	.0	.0
			-145.8	301.9E-9	-888.5E-3	-1.660	.0	.0
		49	(10)(11)(15)(10)(9)(9)	(16)(15)(9)(9)(9)(9)				
			-1.427	551.2E-9	888.5E-3	130.0E-3	.0	.0
			-144.9	301.9E-9	888.5E-3	-1.660	.0	.0
211	E1	4	(10)(15)(10)(11)(9)(9)	(11)(16)(9)(9)(9)(9)				
			-1.868	-295.4E-9	-888.5E-3	1.668	.0	.0
			-145.5	-550.0E-9	-888.5E-3	137.7E-3	.0	.0
		50	(10)(15)(10)(11)(9)(9)	(11)(16)(9)(9)(9)(9)				
			-979.6E-3	-295.4E-9	888.5E-3	1.668	.0	.0
			-144.7	-550.0E-9	888.5E-3	137.7E-3	.0	.0
212	E1	6	(15)(16)(9)(15)(9)(9)	(15)(10)(9)(9)(9)(9)				
			105.9	296.0E-9	-888.5E-3	1.790	.0	.0
			-5.802	96.45E-9	-888.5E-3	168.4E-3	.0	.0
		48	(15)(16)(9)(15)(9)(9)	(15)(10)(9)(9)(9)(9)				
			105.0	296.0E-9	888.5E-3	1.750	.0	.0
			-6.690	96.45E-9	888.5E-3	168.4E-3	.0	.0
348	E1	4	(10)(11)(11)(10)(12)(11)	(11)(10)(11)(10)(11)(10)				
			-3.019	692.8E-3	-904.8E-3	1.305	13.49	2.381
			-77.05	210.0E-3	-3.952	566.5E-3	862.9E-3	204.5E-3
		94	(10)(11)(11)(10)(12)(11)	(11)(10)(9)(15)(10)(9)				
			-2.219	692.8E-3	907.6E-3	1.305	897.6E-3	-731.7E-3
			-76.25	210.0E-3	-2.140	566.5E-3	-94.86E-3	-890.7E-3
349	E1	93	(15)(16)(11)(16)(16)(15)	(15)(9)(11)(16)(10)(11)				
			74.63	490.8E-3	-777.6E-3	239.9E-3	1.511	-107.4E-3
			1.425E-3	17.74E-3	-3.884	-369.3E-3	447.7E-3	-318.3E-3
		48	(15)(16)(11)(16)(16)(15)	(15)(9)(16)(15)(16)(11)				
			73.83	490.8E-3	1.035	239.9E-3	1.021	-320.6E-3
			-798.3E-3	17.74E-3	-2.072	-369.3E-3	-11.77	-2.507
350	E1	96	(10)(15)(10)(15)(15)(9)	(10)(15)(12)(11)(10)(15)				
			-1.550	-213.8E-3	2.123	-608.2E-3	904.5E-3	-767.1E-3
			-75.28	-747.3E-3	-912.5E-3	-1.265	-34.39E-3	-920.6E-3
		2	(10)(15)(10)(15)(15)(9)	(10)(15)(15)(10)(11)(10)				
			-2.349	-213.8E-3	3.935	-608.2E-3	13.47	2.413
			-76.08	-747.3E-3	899.7E-3	-1.265	858.6E-3	186.1E-3

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 17

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
351	E1	46	(11) (16) (16) (15) (15) (16)	(12) (11) (16) (11) (16) (15)				
			74.8E	-33.3E-3	2.06E	356.1E-3	1.00E	-339.1E-3
			103.9E-3	-571.6E-3	-1.031	-237.7E-3	-11.78	-2.60E
		95	(11) (16) (16) (15) (15) (16)	(12) (11) (15) (16) (11) (16)				
			75.6E	-33.3E-3	3.87E	356.1E-3	1.45E	-49.80E-3
			903.6E-3	-571.6E-3	781.0E-3	-237.7E-3	446.1E-3	-190.3E-3

Maximum values in this output:

		Lc.						
212	E1	6 15)	105.9	96.45E-9	-888.5E-3	1.750	.0	.0
348	E1	4 11)	-77.0S	692.8E-3	-3.952	1.30S	13.49	2.35i
350	E1	2 15)	-76.0S	-747.3E-3	3.93S	-1.26S	13.47	2.41i
212	E1	6 15)	105.9	96.45E-9	-888.5E-3	1.750	.0	.0
348	E1	4 11)	-77.0S	692.8E-3	-3.952	1.30S	13.49	2.35i
350	E1	2 11)	-76.0S	-747.0E-3	3.93S	-1.262	13.47	2.41i

Minimum values in this output:

		Lc.						
210	E1	2 11)	-14S.8	949.7E-9	-888.5E-3	-1.69S	.0	.0
350	E1	96 15)	-75.2S	-747.3E-3	2.123	-1.26S	-33.12E-3	-920.6E-3
348	E1	4 11)	-77.0S	692.8E-3	-3.952	1.30S	13.49	2.35i
209	E1	5 11)	105.1	-98.30E-9	-888.5E-3	-1.748	.0	.0
351	E1	46 11)	74.8E	-571.5E-3	2.06E	-237.7E-3	-11.78	-2.59E
351	E1	46 15)	74.8E	-571.6E-3	2.06E	-235.1E-3	-11.78	-2.60E

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 18

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
221	E1	89	(16) (10) (9) (9) (9) (9)	(15) (10) (9) (9) (9) (9)				
			3.91S	.0	-15.06	8.976	.0	.0
			396.4E-3	.0	-15.06	830.6E-3	.0	.0
		91	(16) (10) (9) (9) (9) (9)	(15) (10) (9) (9) (9) (9)				
			3.91S	.0	15.06	8.976	.0	.0
			396.4E-3	.0	15.06	830.6E-3	.0	.0
222	E1	90	(16) (10) (9) (9) (9) (9)	(10) (11) (9) (9) (9) (9)				
			3.945	.0	-15.06	-829.6E-3	.0	.0
			405.5E-3	.0	-15.06	-8.988	.0	.0
		92	(16) (10) (9) (9) (9) (9)	(10) (11) (9) (9) (9) (9)				
			3.945	.0	15.06	-829.6E-3	.0	.0
			405.5E-3	.0	15.06	-5.988	.0	.0

Maximum values in this output:

		Lc.						
222	E1	90 16)	3.945	.0	-15.06	-876.1E-3	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0
221	E1	91 9)	426.1E-3	.0	15.06	943.5E-3	.0	.0
221	E1	89 15)	1.092	.0	-15.06	8.976	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0

Minimum values in this output:

		Lc.						
221	E1	89 10)	396.4E-3	.0	-15.06	830.6E-3	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0
222	E1	90 11)	1.124	.0	-15.06	-8.988	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0
221	E1	89 9)	426.1E-3	.0	-15.06	943.5E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 19

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
223	E1	64	(16) (15) (15) (10) (11) (9)	(10) (15) (9) (9) (9) (9)				
			-91.80E-3	28.29E-9	-325.8E-3	-35.31E-3	.0	.0
			-16.31	2.515E-9	-325.8E-3	-323.8E-3	.0	.0
		20	(16) (15) (15) (10) (11) (9)	(10) (15) (9) (9) (9) (9)				
			-91.80E-3	28.29E-9	325.8E-3	-35.31E-3	.0	.0
			-16.31	2.515E-9	325.8E-3	-323.8E-3	.0	.0
224	E1	65	(10) (15) (15) (10) (11) (9)	(10) (15) (9) (9) (9) (9)				
			-3.003	24.79E-9	-325.8E-3	-35.03E-3	.0	.0
			-18.79	2.171E-9	-325.8E-3	-326.1E-3	.0	.0
		21	(10) (15) (15) (10) (11) (9)	(10) (15) (9) (9) (9) (9)				
			-3.003	24.79E-9	325.8E-3	-35.03E-3	.0	.0
			-18.79	2.171E-9	325.8E-3	-326.1E-3	.0	.0
225	E1	67	(10) (15) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.509	17.71E-9	-325.8E-3	-36.32E-3	.0	.0
			-14.35	1.552E-9	-325.8E-3	-310.4E-3	.0	.0
		23	(10) (15) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.509	17.71E-9	325.8E-3	-36.32E-3	.0	.0
			-14.35	1.552E-9	325.8E-3	-310.4E-3	.0	.0
226	E1	68	(10) (15) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-5.840	11.72E-9	-325.8E-3	-34.51E-3	.0	.0
			-9.521	1.030E-9	-325.8E-3	-252.4E-3	.0	.0
		24	(10) (15) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-5.840	11.72E-9	325.8E-3	-34.51E-3	.0	.0
			-9.521	1.030E-9	325.8E-3	-252.4E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 19

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
227	E1	69	(11) (12) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.443	6.900E-9	-325.8E-3	-28.43E-3	.0	.0
			-7.427	610.6E-12	-325.8E-3	-175.4E-3	.0	.0
		25	(11) (12) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.443	6.900E-9	325.8E-3	-28.43E-3	.0	.0
			-7.427	610.6E-12	325.8E-3	-175.4E-3	.0	.0
228	E1	70	(11) (12) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.021	3.198E-9	-325.8E-3	-16.31E-3	.0	.0
			-4.809	278.1E-12	-325.8E-3	-89.49E-3	.0	.0
		26	(11) (12) (15) (10) (11) (9)	(10) (11) (9) (9) (9) (9)				
			-4.021	3.198E-9	325.8E-3	-16.31E-3	.0	.0
			-4.809	278.1E-12	325.8E-3	-89.49E-3	.0	.0
229	E1	71	(10) (15) (12) (11) (11) (9)	(14) (16) (9) (9) (9) (9)				
			-4.816	7.047E-12	-325.8E-3	330.8E-6	.0	.0
			-10.67	-22.08E-12	-325.8E-3	2.352E-6	.0	.0
		27	(10) (15) (12) (11) (11) (9)	(14) (16) (9) (9) (9) (9)				
			-4.816	7.047E-12	325.8E-3	330.8E-6	.0	.0
			-10.67	-22.08E-12	325.8E-3	2.352E-6	.0	.0
230	E1	72	(15) (9) (10) (11) (11) (9)	(15) (10) (9) (9) (9) (9)				
			-3.958	-286.3E-12	-325.8E-3	89.86E-3	.0	.0
			-4.610	-3.241E-9	-325.8E-3	16.81E-3	.0	.0
		28	(15) (9) (10) (11) (11) (9)	(15) (10) (9) (9) (9) (9)				
			-3.958	-286.3E-12	325.8E-3	89.86E-3	.0	.0
			-4.610	-3.241E-9	325.8E-3	16.81E-3	.0	.0
231	E1	73	(15) (9) (10) (11) (11) (9)	(15) (10) (9) (9) (9) (9)				
			-4.360	-616.6E-12	-325.8E-3	175.4E-3	.0	.0
			-7.148	-6.943E-9	-325.8E-3	28.42E-3	.0	.0
		29	(15) (9) (10) (11) (11) (9)	(15) (10) (9) (9) (9) (9)				
			-4.360	-616.6E-12	325.8E-3	175.4E-3	.0	.0
			-7.148	-6.943E-9	325.8E-3	28.42E-3	.0	.0
232	E1	74	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-8.297	-1.034E-9	-325.8E-3	252.4E-3	.0	.0
			-9.422	-11.76E-9	-325.8E-3	34.38E-3	.0	.0
		30	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-8.297	-1.034E-9	325.8E-3	252.4E-3	.0	.0
			-9.422	-11.76E-9	325.8E-3	34.38E-3	.0	.0
233	E1	75	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-3.986	-1.555E-9	-325.8E-3	310.4E-3	.0	.0
			-14.24	-17.75E-9	-325.8E-3	36.16E-3	.0	.0
		31	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-3.986	-1.555E-9	325.8E-3	310.4E-3	.0	.0
			-14.24	-17.75E-9	325.8E-3	36.16E-3	.0	.0
234	E1	66	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-2.577	-2.173E-9	-325.8E-3	326.1E-3	.0	.0
			-18.72	-24.83E-9	-325.8E-3	35.67E-3	.0	.0
		22	(10) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-2.577	-2.173E-9	325.8E-3	326.1E-3	.0	.0
			-18.72	-24.83E-9	325.8E-3	35.67E-3	.0	.0
235	E1	76	(12) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-22.10E-3	-2.515E-9	-325.8E-3	323.5E-3	.0	.0
			-16.16	-28.29E-9	-325.8E-3	35.13E-3	.0	.0
		32	(12) (11) (10) (11) (11) (9)	(11) (10) (9) (9) (9) (9)				
			-22.10E-3	-2.515E-9	325.8E-3	323.5E-3	.0	.0
			-16.16	-28.29E-9	325.8E-3	35.13E-3	.0	.0

Maximum values in this output:

		Lc.						
235	E1	76 12)	-22.10E-3	-2.839E-9	-325.8E-3	39.68E-3	.0	.0
223	E1	64 19)	-16.31	28.25E-9	-325.8E-3	-323.6E-3	.0	.0
227	E1	25 11)	-4.443	6.899E-9	325.8E-3	-178.4E-3	.0	.0
234	E1	66 11)	-18.72	-24.83E-9	-325.8E-3	326.1E-3	.0	.0
223	E1	64 9)	-254.0E-3	2.859E-9	-325.8E-3	-40.03E-3	.0	.0
223	E1	64 9)	-254.0E-3	2.859E-9	-325.8E-3	-40.03E-3	.0	.0

Minimum values in this output:

		Lc.						
224	E1	65 15)	-18.79	24.79E-9	-325.8E-3	-326.1E-3	.0	.0
235	E1	76 11)	-16.16	-28.29E-9	-325.8E-3	323.5E-3	.0	.0
223	E1	64 9)	-254.0E-3	2.859E-9	-325.8E-3	-40.03E-3	.0	.0
224	E1	65 15)	-18.79	24.79E-9	-325.8E-3	-326.1E-3	.0	.0
223	E1	64 9)	-254.0E-3	2.859E-9	-325.8E-3	-40.03E-3	.0	.0
223	E1	64 9)	-254.0E-3	2.859E-9	-325.8E-3	-40.03E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 20

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
236	E1	46	(15) (16) (9) (16) (9) (16)	(10) (11) (15) (9) (16) (9)				
			14.37	29.80E-9	-169.5E-3	-3.720E-3	817.1E-12	-32.74E-12
			-2.830	-320.4E-9	-169.5E-3	-27.21E-3	-116.4E-12	-36.38E-12
		20	(15) (16) (9) (16) (9) (16)	(10) (11) (15) (9) (16) (9)				
			14.43	29.80E-9	169.5E-3	-3.720E-3	817.1E-12	-32.74E-12
			-2.767	-320.4E-9	169.5E-3	-27.21E-3	-116.4E-12	-36.38E-12
237	E1	64	(15) (10) (11) (16) (16) (9)	(10) (11) (11) (12) (10) (9)				
			18.99	432.1E-9	-149.0E-3	-1.399E-3	436.6E-12	-5.457E-12
			2.619	-111.8E-9	-149.0E-3	-17.15E-3	-32.74E-12	-7.276E-12
		21	(15) (10) (11) (16) (16) (9)	(10) (11) (11) (12) (10) (9)				
			19.03	432.1E-9	149.0E-3	-1.399E-3	436.6E-12	-5.457E-12
			2.654	-111.8E-9	149.0E-3	-17.15E-3	-32.74E-12	-7.276E-12

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 20

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
238	E1	65	(15) (16) (10) (15) (16) (9)	(12) (11) (16) (10) (9) (15)				
			19.57 -223.5E-9 -188.3E-3	3.319E-3 -80.04E-12 14.95E-12				
			5.257 -719.7E-9 -188.3E-3	-2.099E-3 -94.59E-12-44.75E-12				
		23	(15) (16) (10) (15) (16) (9)	(12) (11) (16) (10) (9) (15)				
			19.63 -223.5E-9 188.3E-3	3.319E-3 -80.04E-12 14.95E-12				
			5.318 -719.7E-9 188.3E-3	-2.099E-3 -94.59E-12-44.75E-12				
239	E1	67	(15) (10) (16) (11) (10) (16)	(12) (11) (11) (12) (9) (10)				
			12.87 1.676E-6 -189.2E-3	6.833E-3 87.31E-12 .0				
			7.397 -238.4E-9 -189.2E-3	3.479E-3 -36.38E-12-1.619E-12				
		24	(15) (10) (16) (11) (10) (16)	(12) (11) (11) (12) (9) (10)				
			12.92 1.676E-6 189.2E-3	6.833E-3 87.31E-12 .0				
			7.444 -238.4E-9 189.2E-3	3.479E-3 -36.38E-12-1.619E-12				
240	E1	68	(12) (11) (10) (16) (9) (11)	(12) (10) (9) (10) (11) (16)				
			10.51 312.9E-9 -190.0E-3	9.495E-3 .0 -25.47E-12				
			5.653 -208.6E-9 -190.0E-3	8.402E-3 -29.10E-12-32.74E-12				
		25	(12) (11) (10) (16) (9) (11)	(12) (10) (9) (10) (11) (16)				
			10.54 312.9E-9 190.0E-3	9.495E-3 .0 -25.47E-12				
			5.687 -208.6E-9 190.0E-3	8.402E-3 -29.10E-12-32.74E-12				
241	E1	69	(12) (11) (12) (16) (16) (9)	(15) (10) (11) (10) (9) (10)				
			10.67 312.9E-9 -190.4E-3	12.64E-3 407.5E-12-14.55E-12				
			-1.737 -566.2E-9 -190.4E-3	10.25E-3 320.1E-12-16.37E-12				
		26	(12) (11) (12) (16) (16) (9)	(15) (10) (11) (10) (9) (10)				
			10.69 312.9E-9 190.4E-3	12.64E-3 407.5E-12-14.55E-12				
			-1.717 -566.2E-9 190.4E-3	10.25E-3 320.1E-12-16.37E-12				
242	E1	70	(15) (10) (9) (16) (11) (16)	(12) (10) (9) (10) (9) (12)				
			11.52 .0 -190.7E-3	11.44E-3 .0 -14.55E-12				
			7.202 -298.0E-9 -190.7E-3	10.04E-3 -43.66E-12-14.61E-12				
		27	(15) (10) (9) (16) (11) (16)	(12) (10) (9) (10) (9) (12)				
			11.52 .0 190.7E-3	11.44E-3 .0 -14.55E-12				
			7.209 -298.0E-9 190.7E-3	10.04E-3 -43.66E-12-14.61E-12				
244	E1	48	(11) (12) (12) (16) (16) (9)	(15) (10) (10) (12) (9) (10)				
			14.04 134.1E-9 -169.5E-3	27.20E-3 14.55E-12 29.10E-12				
			-3.019 -931.3E-9 -169.5E-3	3.620E-3 -7.276E-12 27.28E-12				
		32	(11) (12) (12) (16) (16) (9)	(15) (10) (10) (12) (9) (10)				
			14.10 134.1E-9 169.5E-3	27.20E-3 14.55E-12 29.10E-12				
			-2.956 -931.3E-9 169.5E-3	3.620E-3 -7.276E-12 27.28E-12				
245	E1	76	(11) (10) (16) (12) (11) (16)	(15) (10) (15) (9) (12) (15)				
			18.96 .0 -149.0E-3	17.18E-3 497.7E-12 8.185E-12				
			2.227 -37.25E-9 -149.0E-3	1.502E-3 30.92E-12 6.366E-12				
		22	(11) (10) (16) (12) (11) (16)	(15) (10) (15) (9) (12) (16)				
			18.99 .0 149.0E-3	17.18E-3 497.7E-12 8.185E-12				
			2.262 -37.25E-9 149.0E-3	1.502E-3 30.92E-12 6.366E-12				
246	E1	66	(11) (10) (11) (16) (11) (16)	(15) (9) (11) (9) (9) (10)				
			19.41 685.5E-9 -188.3E-3	2.170E-3 14.55E-12 14.55E-12				
			4.641 -476.8E-9 -188.3E-3	-3.077E-3 -218.3E-12 14.32E-12				
		31	(11) (10) (11) (16) (11) (16)	(15) (9) (11) (9) (9) (10)				
			19.47 685.5E-9 188.3E-3	2.170E-3 14.55E-12 14.55E-12				
			4.702 -476.8E-9 188.3E-3	-3.077E-3 -218.3E-12 14.32E-12				
247	E1	75	(11) (10) (9) (16) (9) (16)	(15) (9) (15) (9) (15) (9)				
			12.72 -89.60E-9 -189.2E-3	-3.405E-3 147.7E-12 545.7E-15				
			6.625 -745.1E-9 -189.2E-3	-6.589E-3 29.10E-12-29.10E-12				
		30	(11) (10) (9) (16) (9) (16)	(15) (9) (15) (9) (15) (9)				
			12.77 -89.60E-9 189.2E-3	-3.405E-3 147.7E-12 545.7E-15				
			6.672 -745.1E-9 189.2E-3	-6.589E-3 29.10E-12-29.10E-12				
248	E1	74	(9) (15) (10) (9) (16) (10)	(10) (9) (11) (10) (11) (9)				
			10.09 59.60E-9 -190.0E-3	-7.907E-3 29.10E-12-32.74E-12				
			5.526 .0 -190.0E-3	-9.304E-3 -58.21E-12-36.38E-12				
		29	(9) (15) (10) (9) (16) (10)	(10) (9) (11) (10) (11) (9)				
			10.12 59.60E-9 190.0E-3	-7.907E-3 29.10E-12-32.74E-12				
			5.560 .0 190.0E-3	-9.304E-3 -58.21E-12-36.38E-12				
249	E1	73	(9) (15) (15) (16) (16) (11)	(10) (11) (11) (16) (9) (16)				
			10.30 302.5E-9 -190.4E-3	-9.860E-3 465.7E-12 43.66E-12				
			-1.848 -1.520E-6 -190.4E-3	-12.60E-3 378.3E-12 40.02E-12				
		28	(9) (15) (15) (16) (16) (11)	(10) (11) (11) (16) (9) (16)				
			10.32 302.5E-9 190.4E-3	-9.860E-3 465.7E-12 43.66E-12				
			-1.828 -1.520E-6 190.4E-3	-12.60E-3 378.3E-12 40.02E-12				
250	E1	72	(11) (10) (16) (9) (16) (11)	(10) (9) (9) (16) (11) (10)				
			11.44 625.8E-9 -190.7E-3	-9.881E-3 582.1E-12 2.728E-12				
			6.798 -59.60E-9 -190.7E-3	-11.40E-3 553.0E-12 .0				
		27	(11) (10) (16) (9) (16) (11)	(10) (9) (9) (16) (11) (10)				
			11.45 625.8E-9 190.7E-3	-9.881E-3 582.1E-12 2.728E-12				
			6.805 -59.60E-9 190.7E-3	-11.40E-3 553.0E-12 .0				

Maximum values in this output:

		Lc.						
238	E1	23	15)	19.63	-719.7E-9	188.3E-3	-2.027E-3	-89.49E-12-44.75E-12
239	E1	67	16)	7.501	1.676E-6	-189.2E-3	6.182E-3	-29.10E-12 .0
242	E1	27	11)	11.46	-119.2E-9	190.7E-3	10.76E-3	.0 -14.55E-12
244	E1	48	15)	13.93	113.2E-9	-169.5E-3	27.20E-3	-2.163E-12 29.10E-12
236	E1	46	15)	14.37	29.80E-9	-169.5E-3	-27.15E-3	817.1E-12-36.38E-12
249	E1	73	9)	10.30	-178.6E-9	-190.4E-3	-11.50E-3	407.9E-12 43.66E-12

Minimum values in this output:

		Lc.						
244	E1	48	12)	-3.019	134.1E-9	-169.5E-3	4.386E-3	-7.276E-12 29.10E-12
249	E1	73	16)	9.694	-1.520E-6	190.4E-3	-10.87E-3	378.3E-12 40.02E-12
242	E1	70	15)	7.481	-298.0E-9	-190.7E-3	10.78E-3	-29.10E-12-14.55E-12
236	E1	46	11)	14.25	29.80E-9	-169.5E-3	-27.31E-3	814.9E-12-36.38E-12
246	E1	66	9)	5.719	208.6E-9	-188.3E-3	-3.077E-3	-218.3E-12 14.55E-12
238	E1	65	15)	19.57	-719.7E-9	-188.3E-3	-2.027E-3	-89.49E-12-44.75E-12

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 21

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
352	E1	26	(11) (12) (10) (9) (9) (16)	(10) (11) (10) (11) (9) (9)				
			10.63 -1.751E-9 -133.7E-3	-2.432E-3 -56.84E-15 29.10E-12				
			-4.144 -2.075E-9 -133.7E-3	-7.932E-3 -177.6E-15 29.10E-12				
		83	(11) (12) (10) (9) (9) (16)	(10) (11) (10) (11) (9) (9)				
			10.76 -1.751E-9 133.7E-3	-2.432E-3 -56.84E-15 29.10E-12				
			-4.012 -2.075E-9 133.7E-3	-7.932E-3 -177.6E-15 29.10E-12				
353	E1	39	(12) (11) (9) (10) (9) (16)	(10) (11) (11) (10) (16) (11)				
			-40.54E-3 2.001E-9 -133.7E-3	-2.990E-3 319.7E-15 21.83E-12				
			-16.12 1.681E-9 -133.7E-3	-8.936E-3 81.71E-15-218.3E-12				
		70	(12) (11) (9) (10) (9) (16)	(10) (11) (11) (10) (16) (11)				
			-172.6E-3 2.001E-9 133.7E-3	-2.990E-3 319.7E-15 21.83E-12				
			-16.25 1.681E-9 133.7E-3	-8.936E-3 81.71E-15-218.3E-12				
354	E1	40	(10) (15) (16) (12) (16) (9)	(15) (10) (15) (10) (15) (16)				
			188.6E-3 -1.703E-9 -133.7E-3	8.946E-3 291.6E-15 174.9E-12				
			-16.13 -2.076E-9 -133.7E-3	3.005E-3 56.84E-15-65.48E-12				
		72	(10) (15) (16) (12) (16) (9)	(15) (10) (15) (10) (15) (16)				
			56.55E-3 -1.703E-9 133.7E-3	8.946E-3 291.6E-15 174.9E-12				
			-16.26 -2.078E-9 133.7E-3	3.005E-3 56.84E-15-65.48E-12				
355	E1	28	(15) (9) (15) (16) (16) (9)	(15) (10) (10) (15) (10) (9)				
			10.64 2.325E-9 -133.7E-3	7.935E-3 -44.41E-15 7.276E-12				
			-4.074 1.789E-9 -133.7E-3	2.446E-3 -163.5E-15 .0				
		84	(15) (9) (15) (16) (16) (9)	(15) (10) (10) (15) (10) (9)				
			10.78 2.325E-9 133.7E-3	7.935E-3 -44.41E-15 7.276E-12				
			-3.942 1.789E-9 133.7E-3	2.446E-3 -163.5E-15 .0				

Maximum values in this output:

		Lc.						
355	E1	84	15)	10.78	2.325E-9	133.7E-3	7.935E-3	-163.5E-15 .0
355	E1	28	15)	10.64	2.325E-9	-133.7E-3	7.935E-3	-163.5E-15 .0
354	E1	72	16)	-296.6E-3	-1.703E-9	133.7E-3	3.216E-3	60.40E-15-65.48E-12
354	E1	40	15)	-16.13	-2.037E-9	-133.7E-3	8.946E-3	291.6E-15 174.9E-12
353	E1	39	11)	-16.12	2.001E-9	-133.7E-3	-8.936E-3	319.7E-15-218.3E-12
354	E1	40	15)	-16.13	-2.037E-9	-133.7E-3	8.946E-3	291.6E-15 174.9E-12

Minimum values in this output:

		Lc.						
354	E1	72	15)	-16.26	-2.037E-9	133.7E-3	8.946E-3	291.6E-15 174.9E-12
354	E1	40	12)	-162.0E-3	-2.078E-9	-133.7E-3	3.438E-3	64.84E-15-67.30E-12
353	E1	39	16)	-166.5E-3	1.809E-9	-133.7E-3	-3.216E-3	92.37E-15 21.83E-12
353	E1	39	11)	-16.12	2.001E-9	-133.7E-3	-8.936E-3	319.7E-15-218.3E-12
352	E1	26	11)	10.63	-2.075E-9	-133.7E-3	-7.932E-3	-177.6E-15 29.10E-12
353	E1	39	11)	-16.12	2.001E-9	-133.7E-3	-8.936E-3	319.7E-15-218.3E-12

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 22

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
258	E1	4	(10) (11) (11) (12) (11) (10)	(9) (15) (12) (10) (11) (10)				
			-73.89 58.65 555.0E-3	343.1E-3 4.899 115.5				
			-136.0 -344.0E-3 -157.4E-3	-5.545 3.945 889.5E-3				
		103	(10) (11) (11) (12) (11) (10)	(9) (15) (11) (10) (11) (10)				
			-72.65 58.65 936.9E-3	343.1E-3 5.236 85.71				
			-135.0 -344.0E-3 224.4E-3	-5.545 3.979 1.197				
260	E1	48	(15) (9) (11) (16) (9) (14)	(16) (15) (13) (10) (11) (16)				
			-40.80 57.04 345.6E-3	483.2E-3 4.852 114.1				
			-90.16 -353.4E-3 -270.6E-3	-5.199 4.106 -99.91E-3				
		104	(15) (9) (11) (16) (9) (14)	(16) (15) (9) (10) (11) (16)				
			-39.86 57.04 727.4E-3	483.2E-3 5.237 85.91				
			-89.22 -353.4E-3 111.3E-3	-5.199 4.053 260.6E-3				
282	E1	103	(10) (11) (11) (10) (16) (11)	(9) (15) (11) (10) (11) (10)				
			-38.55 58.52 2.014	69.69E-3 11.60 55.52				
			-86.39 554.3E-3 -1.464	-8.669 8.093 1.139				
		113	(10) (11) (11) (10) (16) (11)	(9) (15) (11) (10) (11) (10)				
			-38.27 58.52 3.152	69.69E-3 11.16 36.98				
			-86.11 554.3E-3 -1.326	-8.669 8.238 962.9E-3				
283	E1	113	(10) (11) (11) (10) (16) (11)	(9) (15) (11) (10) (11) (10)				
			-38.27 58.52 1.781	61.31E-3 11.16 36.89				
			-86.10 554.3E-3 -2.007	-8.962 8.238 963.3E-3				
		114	(10) (11) (11) (10) (16) (11)	(9) (15) (16) (10) (11) (16)				
			-37.86 58.52 1.988	61.31E-3 11.06 9.571				
			-85.68 554.3E-3 -1.800	-8.962 8.390 668.4E-3				
284	E1	114	(16) (11) (11) (10) (10) (15)	(10) (15) (11) (10) (11) (16)				
			-1.611 60.57 -41.92	-94.55E-3 16.16 9.716				
			-36.65 1.062 -85.07	-8.963 12.35 593.7E-3				
		93	(16) (11) (11) (10) (10) (15)	(10) (15) (11) (10) (10) (15)				
			-1.459 60.57 -41.65	-94.55E-3 6.992 445.6E-3				
			-36.50 1.062 -85.00	-8.963 5.388 -392.0E-3				
285	E1	104	(15) (9) (11) (16) (15) (10)	(16) (15) (9) (10) (11) (16)				
			-7.482 59.30 3.092	293.1E-3 10.47 55.57				
			-46.26 542.8E-3 -619.5E-3	-8.693 8.351 210.1E-3				
		115	(15) (9) (11) (16) (15) (10)	(16) (15) (9) (10) (11) (16)				
			-7.198 59.30 3.230	293.1E-3 10.38 36.77				
			-45.98 542.8E-3 -481.2E-3	-8.693 8.177 38.01E-3				
286	E1	115	(15) (9) (11) (16) (15) (10)	(16) (15) (9) (10) (11) (16)				
			-7.221 59.27 3.168	292.8E-3 10.38 36.78				
			-45.97 542.9E-3 -777.5E-3	-8.985 8.176 40.36E-3				
		116	(15) (9) (11) (16) (15) (10)	(16) (15) (15) (10) (11) (10)				
			-6.805 59.27 3.378	292.8E-3 11.01 9.029				
			-45.56 542.9E-3 -570.7E-3	-8.985 7.862 -255.7E-3				

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 22

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
287	E1	116	(15) (9)	(11) (16)	(107) (12)	(16) (11)	(16) (10)	(11) (10)
			34.05	63.20	-42.20	165.3E-3	15.15	9.018
			-457.2E-3	882.1E-3	-63.85	-9.417	11.89	-309.8E-3
		94	(15) (9)	(11) (16)	(10) (12)	(16) (11)	(16) (10)	(16) (11)
			34.20	63.20	-42.13	165.3E-3	6.225	-424.9E-3
			-306.1E-3	882.1E-3	-53.78	-9.417	4.854	-1.532
306	E1	46	(11) (12)	(16) (15)	(14) (16)	(15) (16)	(9) (10)	(16) (15)
			-38.33	152.5E-3	982.1E-3	9.151	4.586	-21.20E-3
			-86.36	-56.32	180.7E-3	-463.8E-3	4.169	-113.2
		123	(11) (12)	(16) (15)	(14) (16)	(15) (16)	(14) (10)	(16) (15)
			-37.38	152.5E-3	1.418	9.151	5.769	-181.1E-3
			-85.41	-56.32	616.3E-3	-463.8E-3	4.965	-54.08
308	E1	2	(10) (15)	(10) (15)	(12) (11)	(11) (12)	(11) (10)	(10) (15)
			-77.46	223.4E-3	993.2E-3	9.497	4.541	-950.9E-3
			-128.5	-57.51	232.6E-3	-244.2E-3	4.000	-114.4
		124	(10) (15)	(10) (15)	(12) (11)	(11) (12)	(12) (10)	(10) (15)
			-76.51	223.4E-3	1.429	9.497	5.598	-1.185
			-127.5	-57.51	668.2E-3	-244.2E-3	4.873	-54.06
325	E1	123	(11) (12)	(16) (15)	(11) (12)	(15) (16)	(12) (11)	(16) (15)
			-8.048	-471.9E-3	1.656	8.116	10.72	-109.8E-3
			-46.32	-59.05	-2.059	-318.3E-3	9.030	-54.26
		129	(11) (12)	(16) (15)	(11) (12)	(15) (16)	(11) (10)	(10) (15)
			-7.364	-471.9E-3	1.965	8.116	10.39	280.7E-3
			-45.63	-59.05	-1.759	-318.3E-3	8.698	-9.921
327	E1	129	(11) (12)	(16) (15)	(10) (11)	(15) (16)	(16) (10)	(10) (15)
			30.79	-767.5E-3	-49.16	8.526	14.64	326.4E-3
			-3.901	-63.08	-54.44	-194.4E-3	13.32	-9.969
		96	(11) (12)	(16) (15)	(10) (11)	(15) (16)	(12) (10)	(15) (16)
			30.95	-767.5E-3	-49.12	8.526	5.543	774.2E-3
			-3.743	-63.08	-54.38	-194.4E-3	4.954	431.9E-3
328	E1	124	(10) (15)	(10) (15)	(16) (15)	(11) (12)	(15) (10)	(10) (15)
			-43.46	-534.3E-3	1.421	8.157	10.65	-1.110
			-85.19	-58.46	-1.924	-90.93E-3	9.077	-54.38
		130	(10) (15)	(10) (15)	(16) (15)	(11) (12)	(16) (10)	(16) (15)
			-42.77	-534.3E-3	1.720	8.157	10.44	-688.4E-3
			-84.50	-58.46	-1.624	-90.93E-3	9.201	-10.48
329	E1	130	(10) (15)	(10) (15)	(10) (16)	(15) (10)	(15) (10)	(16) (15)
			-4.587	-1.088	-48.01	8.149	15.40	-616.3E-3
			-39.99	-60.89	-53.57	98.71E-3	13.76	-10.65
		95	(10) (15)	(10) (15)	(10) (16)	(15) (10)	(15) (10)	(15) (10)
			-4.428	-1.088	-48.75	8.149	6.409	-286.1E-3
			-39.79	-60.89	-53.91	98.71E-3	5.457	-445.3E-3

Maximum values in this output:

			Lc.					
287	E1	94	15)	34.20	63.19	-51.60	-9.417	5.895	-1.532
287	E1	116	11)	34.03	63.20	-51.76	-9.417	14.57	9.018
286	E1	116	15)	-6.805	89.26	3.375	-8.985	11.01	-9.027
308	E1	2	11)	-127.9	-57.51	232.6E-3	9.497	4.541	-114.4
284	E1	114	11)	-36.65	60.57	-54.96	-8.961	16.16	9.718
288	E1	4	11)	-136.0	58.65	555.0E-3	-8.542	4.475	115.5

Minimum values in this output:

			Lc.					
288	E1	4	11)	-136.0	58.65	555.0E-3	-8.542	4.475	115.5
327	E1	129	15)	30.74	-63.08	-54.24	8.526	14.31	-9.969
284	E1	114	15)	-36.62	60.56	-55.07	-8.961	16.14	9.716
287	E1	116	11)	34.03	63.20	-51.76	-9.417	14.57	9.018
256	E1	4	10)	-73.59	-330.9E-3	-157.4E-3	304.4E-3	3.946	859.5E-3
308	E1	2	15)	-128.5	-57.51	155.0E-3	9.497	4.519	-114.4

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 23

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
262	E1	32	(11) (15)	(15) (10)	(15) (10)	(12) (11)	(10) (11)	(12) (11)
			30.49	20.47E-3	1.112	267.1E-6	-1.114	3.145E-3
			19.22	16.99E-3	619.1E-3	-5.385E-3	-1.686	-8.284E-3
		101	(11) (16)	(15) (10)	(15) (10)	(12) (11)	(15) (10)	(10) (15)
			30.49	20.47E-3	2.203	267.1E-6	3.476	-50.41E-3
			19.22	16.99E-3	1.711	-5.385E-3	2.512	-71.83E-3
263	E1	101	(10) (16)	(9) (15)	(11) (10)	(16) (11)	(10) (11)	(11) (10)
			-23.59	1.027	44.91	-917.2E-6	-6.092	486.4E-3
			-33.07	-181.6E-3	31.36	-5.890E-3	-0.636	167.4E-3
		103	(10) (16)	(9) (15)	(11) (10)	(16) (11)	(11) (10)	(15) (9)
			-23.59	1.027	45.05	-917.2E-6	8.637	555.2E-3
			-33.07	-181.6E-3	31.50	-5.890E-3	5.977	-199.7E-3
284	E1	101	(10) (11)	(97) (15)	(10) (11)	(10) (11)	(11) (10)	(10) (15)
			-33.90	1.452E-3	-1.245	-88.33E-6	3.276	2.509E-3
			-44.05	-47.53E-3	-1.395	-3.393E-3	1.663	-155.4E-3
		97	(10) (11)	(9) (15)	(10) (11)	(10) (11)	(10) (11)	(15) (9)
			-33.90	1.452E-3	163.2E-3	-88.33E-6	-308.7E-3	35.49E-3
			-44.05	-47.53E-3	12.83E-3	-3.383E-3	-499.9E-3	-3.645E-3
285	E1	76	(9) (15)	(15) (10)	(12) (11)	(16) (15)	(10) (9)	(15) (9)
			25.07	50.23E-3	833.5E-3	323.4E-6	-1.111	31.29E-3
			14.76	15.62E-3	807.6E-3	-5.504E-3	-1.168	836.9E-6
		102	(9) (15)	(15) (10)	(12) (11)	(16) (15)	(12) (11)	(10) (15)
			25.07	50.23E-3	1.925	323.4E-6	2.936	-81.49E-3
			14.76	16.82E-3	1.699	-5.504E-3	2.442	-125.1E-3

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 23

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
266	E1	102	(10) (15)	(11) (10)	(9) (15)	(10) (11)	(15) (9)	(11) (10)
			-22.40	2.182	39.14	-768.6E-6	-5.935	986.3E-3
			-33.23	821.2E-3	39.93	-7.197E-3	-7.608	183.1E-3
		104	(10) (15)	(11) (10)	(9) (15)	(10) (11)	(9) (13)	(15) (16)
			-22.40	2.182	39.27	-768.6E-6	7.448	148.9E-3
			-33.23	821.2E-3	30.06	-7.197E-3	5.584	-190.2E-3
267	E1	104	(10) (16)	(16) (15)	(10) (9)	(16) (11)	(9) (10)	(16) (15)
			-34.19	762.4E-6	-1.241	6.386E-6	2.215	36.60E-6
			-43.68	-91.61E-3	-1.371	-3.334E-3	1.859	-166.6E-3
		98	(10) (16)	(16) (15)	(10) (9)	(16) (11)	(10) (9)	(11) (16)
			-34.19	762.4E-6	166.9E-3	6.386E-6	-298.4E-3	40.59E-3
			-43.68	-91.61E-3	36.78E-3	-3.334E-3	-464.6E-3	-3.025E-3
310	E1	100	(10) (12)	(15) (16)	(12) (10)	(15) (16)	(10) (12)	(15) (16)
			-40.07	54.81E-3	-36.53E-3	3.181E-3	-340.6E-3	47.54E-3
			-44.66	-995.1E-6	-100.8E-3	-11.03E-6	-423.4E-3	-3.443E-3
		123	(10) (12)	(15) (16)	(12) (10)	(15) (16)	(12) (10)	(16) (15)
			-40.07	54.81E-3	1.353	3.181E-3	2.184	499.5E-6
			-44.65	-995.1E-6	1.288	-11.03E-6	2.012	-169.6E-3
311	E1	123	(10) (11)	(10) (15)	(11) (12)	(11) (10)	(12) (11)	(11) (16)
			-22.57	-986.9E-3	-26.09	7.790E-3	7.201	-126.4E-3
			-31.05	-2.672	-32.97	669.2E-6	5.603	-191.9E-3
		122	(10) (11)	(10) (15)	(11) (12)	(11) (10)	(11) (12)	(15) (16)
			-22.57	-986.9E-3	-25.94	7.790E-3	-5.793	1.044
			-31.05	-2.672	-32.81	669.2E-6	-7.207	122.1E-3
312	E1	122	(12) (11)	(10) (11)	(15) (9)	(11) (16)	(16) (15)	(10) (11)
			29.44	-17.55E-3	-1.700	5.511E-3	2.909	-33.95E-3
			16.46	-48.56E-3	-1.919	-323.1E-6	2.441	-120.5E-3
		64	(12) (11)	(10) (11)	(15) (9)	(11) (16)	(11) (12)	(11) (12)
			29.44	-17.55E-3	-608.9E-3	5.511E-3	-1.151	30.69E-3
			16.46	-48.56E-3	-827.2E-3	-323.1E-6	-1.374	324.0E-6
313	E1	99	(10) (13)	(11) (12)	(14) (10)	(15) (10)	(10) (14)	(11) (12)
			-39.76	91.49E-3	-31.25E-3	3.205E-3	-349.6E-3	44.13E-3
			-44.61	-1.281E-3	-97.81E-3	85.13E-6	-433.9E-3	-2.902E-3
		124	(10) (13)	(11) (12)	(14) (10)	(15) (10)	(14) (10)	(9) (15)
			-39.75	51.45E-3	1.358	3.205E-3	2.194	2.221E-3
			-44.60	-1.281E-3	1.291	85.13E-6	2.015	-159.7E-3
314	E1	124	(15) (16)	(10) (15)	(10) (15)	(15) (10)	(15) (10)	(11) (12)
			-22.27	-758.9E-3	-28.51	6.715E-3	7.911	219.0E-3
			-28.98	-898.9E-3	-35.88	927.7E-6	6.219	-193.1E-3
		121	(15) (16)	(10) (15)	(10) (15)	(15) (10)	(10) (15)	(15) (10)
			-22.27	-758.9E-3	-28.35	6.715E-3	-6.235	612.5E-3
			-28.98	-898.9E-3	-35.73	927.7E-6	-7.773	163.2E-3
315	E1	121	(15) (16)	(10) (9)	(10) (11)	(11) (12)	(11) (10)	(10) (11)
			33.59	-17.63E-3	-1.799	5.387E-3	3.470	-52.62E-3
			20.85	-19.79E-3	-2.200	-273.7E-6	2.679	-66.69E-3
		20	(15) (16)	(10) (9)	(10) (11)	(11) (12)	(10) (15)	(9) (15)
			33.59	-17.63E-3	-707.9E-3	5.387E-3	-1.223	2.689E-3
			20.85	-19.79E-3	-1.108	-273.7E-6	-1.682	-9.062E-3

Maximum values in this output:

			Lc.					
315	E1	121	15)	33.59	-18.46E-3	-2.197	5.386E-3	3.458	-66.52E-3
266	E1	102	11)	-33.01	2.182	30.32	-7.197E-3	-6.009	986.3E-3
263	E1	103	11)	-26.91	-178.6E-3	45.05	-5.890E-3	8.637	555.0E-3
311	E1	123	11)	-31.05	-2.670	-26.09	7.790E-3	5.603	-126.4E-3
263	E1	103	11)	-28.91	-178.6E-3	45.05	-5.890E-3	8.637	555.0E-3
311	E1	122	15)	-30.62	-2.672	-26.21	7.789E-3	-5.852	1.044

Minimum values in this output:

			Lc.					
310	E1	100	12)	-44.66	-412.2E-6	-36.53E-3	14.31E-6	-423.4E-3	-3.309E-3
311	E1	123	15)	-30.62	-2.672	-26.37	7.789E-3	5.664	-126.5E-3
314	E1	124	15)	-22.27	-898.9E-3	-35.88	6.715E-3	7.911	218.6E-3
266	E1	102	11)	-33.01	2.182	30.32	-7.197E-3	-6.009	986.3E-3
263	E1	101	11)	-28.91	-178.6E-3	44.91	-5.890E-3	-8.636	486.4E-3
263	E1	103	9)	-30.79	1.027	38.20	-1.055E-3	7.234	-199.7E-3

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 24

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
288	E1	93	(15) (10)	(9) (15)	(10) (16)	(10) (11)	(16) (10)	(9) (15)
			51.52	548.6E-3	-7.948	-12.12E-3	7.225	90.32E-3
			39.95	-3.446	-10.14	-220.4E-3	5.723	-8.148
		117	(15) (10)	(9) (15)	(10) (16)	(10) (11)	(10) (12)	(10) (11)
			51.37	548.6E-3	-7.202	-12.12E-3	-73.79E-3	-262.1E-3
			39.80	-3.446	-9.392	-220.4E-3	-348.6E-3	-5.514
289	E1	117	(14) (10)	(10) (11)	(13) (10)	(15) (9)	(16) (15)	(10) (11)
			46.05	-91.91E-3	-669.3E-3	11.75E-3	-550.3E-3	-266.8E-3
			35.19	-1.882	-1.113	-778.2E-6	-1.163	-8.857
		97	(11) (10)	(10) (11)	(11) (10)	(15) (9)	(11) (10)	(9) (15)
			44.86	-91.91E-3	2.065	11.75E-3	772.2E-3	3.562E-3
			34.49	-1.882	1.721	-778.2E-6	342.8E-3	-33.66E-3
291	E1	94	(12) (10)	(10) (11)	(10) (11)	(16) (15)	(11) (10)	(16) (11)
			51.14	-454.6E-3	-7.999	-10.63E-3	7.642	-585.8E-3
			39.97	-5.492	-10.67	-226.4E-3	5.849	-9.586
		119	(12) (10)	(10) (11)	(10) (11)	(16) (15)	(10) (13)	(16) (15)
			50.99	-454.6E-3	-7.253	-10.63E-3	13.19E-3	-167.1E-3
			39.82	-9.492	-9.922	-226.4E-3	-282.9E-3	-5.385

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 24

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
292	E1	119	(12) (10) (16) (15) (12) (11)	(11) (16) (10) (12) (16) (15)				
			46.01	-66.84E-3	-834.8E-3	6.065E-3	-351.0E-3	-193.3E-3
			35.39	-1.834	-1.219	-1.330E-3	-773.0E-3	-5.423
		98	(16) (10) (16) (15) (9) (13)	(11) (16) (9) (15) (16) (11)				
			44.40	-66.84E-3	1.787	6.065E-3	425.0E-3	2.935E-3
			34.69	-1.834	1.556	-1.330E-3	151.4E-3	-38.70E-3
330	E1	100	(14) (10) (11) (16) (11) (12)	(16) (15) (12) (11) (16) (15)				
			45.45	1.683	-1.343	1.689E-3	383.0E-3	3.348E-3
			40.73	73.78E-3	-1.638	-6.802E-3	115.3E-3	-49.54E-3
		131	(11) (10) (11) (16) (14) (16)	(16) (15) (15) (16) (16) (11)				
			45.69	1.683	1.662	1.689E-3	457.8E-3	-217.6E-3
			41.42	73.78E-3	1.416	-6.802E-3	298.9E-3	-5.085
331	E1	131	(16) (10) (15) (10) (15) (10)	(11) (16) (12) (11) (16) (11)				
			51.48	5.290	8.512	91.82E-3	792.8E-3	-210.7E-3
			46.91	408.9E-3	7.171	5.658E-3	560.2E-3	-5.069
		96	(16) (10) (15) (10) (15) (10)	(11) (16) (15) (10) (16) (15)				
			51.64	5.290	9.221	51.82E-3	6.841	-508.9E-3
			47.06	408.9E-3	7.855	5.658E-3	6.006	-8.798
332	E1	99	(13) (10) (15) (10) (10) (13)	(12) (11) (15) (10) (12) (11)				
			48.44	1.687	-1.542	580.5E-6	693.7E-3	2.844E-3
			40.51	77.97E-3	-1.792	-13.32E-3	384.2E-3	-42.17E-3
		132	(11) (10) (15) (10) (12) (11)	(12) (11) (12) (11) (10) (15)				
			45.86	1.687	1.818	580.5E-6	138.4E-3	-231.1E-3
			41.21	77.97E-3	1.177	-13.32E-3	-124.3E-3	-5.093
333	E1	132	(11) (10) (11) (12) (12) (10)	(15) (10) (15) (10) (10) (15)				
			51.96	3.536	7.904	38.54E-3	806.0E-3	-227.7E-3
			46.87	-430.5E-3	7.100	2.933E-3	621.0E-3	-5.071
		95	(11) (10) (11) (12) (12) (10)	(15) (10) (12) (10) (10) (11)				
			52.12	3.536	8.670	38.54E-3	6.554	57.10E-3
			47.02	-430.5E-3	7.784	2.933E-3	5.873	-7.564

Maximum values in this output:

			Lc.					
333	E1	95	11)	52.12	3.536	8.001	38.49E-3	6.187	-7.564
331	E1	131	15)	50.86	5.290	8.512	51.81E-3	584.2E-3	-5.065
331	E1	96	15)	50.91	5.290	9.221	51.81E-3	6.841	-8.798
331	E1	131	11)	50.96	5.267	8.499	51.82E-3	560.2E-3	-5.065
291	E1	94	11)	50.14	-5.492	-10.67	-226.3E-3	7.642	-9.586
288	E1	93	91	50.79	548.6E-3	-10.13	-15.25E-3	7.216	90.32E-3

Minimum values in this output:

			Lc.					
289	E1	97	10)	34.49	-91.91E-3	1.721	-656.3E-6	342.8E-3	3.029E-3
291	E1	94	11)	50.14	-5.492	-10.67	-226.3E-3	7.642	-9.586
291	E1	94	11)	50.14	-5.492	-10.67	-226.3E-3	7.642	-9.586
291	E1	119	15)	50.10	-5.487	-9.907	-226.4E-3	-265.2E-3	-5.385
289	E1	117	15)	45.84	-1.881	-709.7E-3	11.79E-3	-1.163	-8.554
291	E1	94	11)	50.14	-5.492	-10.67	-226.3E-3	7.642	-9.586

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 25

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
294	E1	105	(11) (10) (12) (11) (11) (10)	(12) (11) (10) (11) (10) (11)				
			43.16	46.15E-3	10.33	334.4E-6	-2.035	-4.119E-3
			29.17	-171.3E-3	7.188	-8.446E-3	-2.863	-138.7E-3
		110	(11) (10) (12) (11) (11) (10)	(12) (11) (11) (10) (11) (12)				
			43.16	46.15E-3	10.70	334.4E-6	8.031	39.16E-3
			29.17	-171.3E-3	7.952	-8.446E-3	5.615	-92.80E-3
295	E1	110	(13) (10) (11) (10) (11) (10)	(16) (11) (10) (11) (11) (10)				
			57.54	1.911	17.20	-741.4E-6	-2.742	718.8E-3
			51.18	516.1E-3	11.61	-6.568E-3	-4.324	186.1E-3
		114	(13) (10) (11) (10) (11) (10)	(16) (11) (11) (10) (16) (11)				
			57.54	1.911	17.46	-741.4E-6	8.344	-168.9E-3
			51.18	516.1E-3	11.87	-6.568E-3	5.842	-678.1E-3
296	E1	114	(10) (11) (9) (15) (10) (11)	(10) (11) (11) (10) (10) (15)				
			-3.548	9.305E-3	-2.983	-60.02E-6	2.450	2.104E-3
			-4.771	-317.5E-3	-3.953	-1.441E-3	1.882	-299.5E-3
		117	(10) (11) (9) (15) (10) (11)	(10) (11) (10) (15) (10) (11)				
			-3.548	9.305E-3	-2.698	-60.02E-6	-443.2E-3	-4.549E-3
			-4.771	-317.5E-3	-3.666	-1.441E-3	-674.6E-3	-39.91E-3
297	E1	107	(9) (15) (16) (11) (9) (15)	(16) (11) (15) (9) (16) (11)				
			38.45	56.52E-3	8.700	397.6E-6	-2.053	1.677E-3
			26.79	-168.1E-3	6.959	-8.065E-3	-2.503	-189.8E-3
		112	(9) (15) (16) (11) (9) (15)	(16) (11) (9) (15) (11) (16)				
			38.45	56.52E-3	9.064	397.6E-6	6.717	-15.30E-3
			26.79	-168.1E-3	7.322	-8.065E-3	5.399	-56.99E-3
298	E1	112	(12) (10) (11) (10) (9) (15)	(10) (11) (15) (9) (11) (16)				
			66.07	3.391	14.54	-370.3E-6	-1.956	1.310
			50.40	315.2E-3	10.45	-7.742E-3	-3.445	106.8E-3
		116	(12) (10) (11) (10) (9) (15)	(10) (11) (9) (15) (10) (11)				
			66.07	3.391	14.60	-370.3E-6	7.277	-123.6E-3
			50.40	315.2E-3	10.70	-7.742E-3	5.779	-1.169
299	E1	116	(13) (16) (16) (11) (10) (16)	(16) (11) (16) (10) (16) (11)				
			-3.402	-2.830E-3	-2.870	-488.0E-9	2.327	-8.408E-3
			-4.207	-371.5E-3	-3.644	-1.444E-3	1.816	-338.3E-3
		119	(13) (16) (16) (11) (10) (16)	(16) (11) (10) (12) (16) (15)				
			-3.402	-2.830E-3	-2.583	-488.0E-9	-396.6E-3	-6.090E-3
			-4.207	-371.5E-3	-3.357	-1.444E-3	-552.0E-3	-34.03E-3

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 26

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
334	E1	131	(11) (12) (15) (16) (12) (10)	(15) (16) (15) (16) (16) (11)				
			-3.723	421.5E-3	3.634	1.457E-3	-401.8E-3	-7.052E-3
			-5.109	-1.506E-3	3.281	-6.573E-6	-488.8E-3	-19.09E-3
		129	(11) (12) (15) (16) (12) (10)	(15) (16) (12) (10) (16) (15)				
			-3.724	421.5E-3	3.896	1.457E-3	2.346	-5.924E-3
			-5.109	-1.506E-3	3.543	-6.573E-6	2.121	-334.8E-3
335	E1	129	(16) (10) (10) (15) (11) (12)	(11) (10) (12) (11) (10) (15)				
			62.96	-271.6E-3	-11.73	7.813E-3	7.668	-119.1E-3
			56.33	-3.504	-16.05	299.6E-6	6.144	-1.268
		126	(16) (10) (10) (15) (11) (12)	(11) (10) (11) (12) (15) (10)				
			62.96	-271.6E-3	-11.47	7.813E-3	-2.426	1.321
			56.33	-3.504	-15.79	299.6E-6	-4.095	90.60E-3
336	E1	126	(12) (11) (15) (16) (11) (12)	(11) (16) (12) (11) (15) (16)				
			35.25	172.3E-3	-7.283	8.048E-3	6.694	-12.27E-3
			28.53	-57.23E-3	-9.014	-392.9E-6	5.340	-57.64E-3
		128	(12) (11) (15) (16) (11) (12)	(11) (16) (11) (12) (16) (15)				
			35.25	172.3E-3	-6.917	8.048E-3	-2.073	2.104E-3
			28.54	-57.23E-3	-8.648	-392.9E-6	-2.525	-192.1E-3
337	E1	132	(10) (13) (11) (12) (15) (10)	(15) (10) (10) (11) (10) (15)				
			-4.246	371.2E-3	4.006	1.457E-3	-483.2E-3	-3.495E-3
			-5.535	-6.527E-3	3.414	62.37E-6	-621.5E-3	-22.30E-3
		130	(10) (13) (11) (12) (15) (10)	(15) (10) (15) (10) (10) (11)				
			-4.247	371.2E-3	4.269	1.457E-3	2.481	918.4E-6
			-5.536	-6.527E-3	3.676	62.37E-6	2.172	-300.3E-3
338	E1	130	(16) (10) (10) (15) (10) (15)	(15) (16) (15) (10) (16) (15)				
			63.78	-599.9E-3	-13.76	6.788E-3	8.366	-209.9E-3
			57.09	-2.139	-17.73	784.7E-6	6.734	-814.5E-3
		125	(16) (10) (10) (15) (10) (15)	(15) (16) (16) (15) (15) (10)				
			63.78	-599.9E-3	-13.50	6.788E-3	-3.239	766.8E-3
			57.09	-2.139	-17.48	784.7E-6	-4.644	203.8E-3
339	E1	125	(15) (10) (15) (9) (10) (15)	(10) (15) (10) (15) (9)				
			42.56	176.6E-3	-8.135	8.411E-3	7.944	42.72E-3
			31.47	-45.43E-3	-10.56	-341.2E-6	6.032	-52.30E-3
		127	(15) (10) (15) (9) (10) (15)	(11) (12) (10) (15) (10) (15)				
			42.56	176.6E-3	-7.789	8.411E-3	-2.260	-4.432E-3
			31.47	-45.43E-3	-10.20	-341.2E-6	-2.895	-141.7E-3

Maximum values in this output:

			Lc.					
295	E1	110	13)	57.54	1.521	15.73	-4.917E-3	-3.776	569.8E-3
298	E1	112	11)	63.37	3.391	10.72	-7.742E-3	-2.067	1.310
295	E1	114	11)	66.69	1.911	17.46	-6.568E-3	8.344	-678.1E-3
339	E1	127	11)	42.48	176.3E-3	-10.18	8.411E-3	-2.891	-141.6E-3
338	E1	130	15)	61.83	-2.139	-17.73	6.788E-3	8.366	-814.5E-3
335	E1	126	15)	62.23	-3.504	-11.72	7.812E-3	-2.533	1.321

Minimum values in this output:

			Lc.					
337	E1	130	13)	-5.536	261.6E-3	4.308	1.084E-3	2.464	-213.0E-3
335	E1	129	15)	62.23	-3.504	-11.98	7.812E-3	6.225	-1.268
338	E1	130	15)	61.83	-2.139	-17.73	6.788E-3	8.366	-814.5E-3
294	E1	105	11)	43.16	-171.3E-3	10.33	-8.446E-3	-2.863	-138.7E-3
338	E1	125	15)	61.83	-2.139	-17.48	6.788E-3	-4.644	766.5E-3
335	E1	129	15)	62.23	-3.504	-11.98	7.812E-3	6.225	-1.268

BEAM STRESS ENVELOPES

+ve stresses: tensile

Bending & combined stresses are only given for elements with sections specified
Of these, unsymmetrical sections are marked by '*'
Bending stresses: By = Myy/Iyy x Dz Bz = Mzz/Izz x Dy
- where Dz & Dy are the distances from the centre of gravity to the edge of the section in the +ve z and y directions respectively. For unsymmetrical sections and where the -ve Dz or Dy magnitude is greater than the +ve, the -ve distance is used and the bending stress is output enclosed by [ ] so as to highlight the change of sign.
For circular sections: C1 = A + SQRT(By*By+Bz*Bz) C2 = A - SQRT(By*By+Bz*Bz)
For rect. & I sections: C1 = A + ABS(By) + ABS(Bz) C2 = A - ABS(By) - ABS(Bz)
For unsymmetrical sections the combined stress: A + By + Bz is calculated at the two end points of both the top and bottom edges of the section. C1 is output as the maximum of these four values and C2 as the minimum.
Directions are in element axes
Maximum & minimum values are given on consecutive lines per point
Associated loadcase numbers are given in brackets: (max)(min)
Loadcases: E1

Beam Property 1

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined C1 [kN/m2]	Combined C2 [kN/m2]
20	E1	2	(10) (11)	(11) (10)	(10) (11)	(12) (16)	(10) (11)
			-17.44E+3	17.18E+3	-4.498E+3	-4.829E+3	-29.72E+3
			-25.32E+3	11.43E+3	-7.473E+3	-7.580E+3	-44.06E+3
		20	(10) (11)	(10) (11)	(9) (15)	(10) (11)	(10) (11)
			-17.36E+3	-6.115E+3	1.725E+3	-11.06E+3	-23.67E+3
			-25.25E+3	-9.416E+3	-253.7	-15.83E+3	-34.67E+3
22	E1	20	(14) (16)	(16) (15)	(9) (15)	(12) (16)	(14) (16)
			2.161E+3	1.218E+3	970.9	3.570E+3	947.2
			-2.140E+3	1.036E+3	-326.9	-615.5	-3.665E+3
		21	(14) (16)	(16) (15)	(15) (16)	(14) (16)	(12) (16)
			2.153E+3	-2.007E+3	1.827E+3	4.937E+3	-462.4
			-2.099E+3	-2.608E+3	781.1	54.13	-4.253E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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BEAM STRESS ENVELOPES

Beam Property 1

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
26	E1	21	(15) (16)	(11) (10)	(15) (16)	(15) (16)	(15) (16)
			26.62E+3	2.607E+3	3.187E+3	30.71E+3	22.52E+3
			16.50E+3	1.525E+3	662.4	18.37E+3	14.63E+3
		23	(15) (16)	(10) (15)	(11) (10)	(15) (16)	(15) (16)
			26.66E+3	-5.645E+3	1.295E+3	35.10E+3	18.22E+3
			16.57E+3	-8.342E+3	310.2	22.46E+3	10.69E+3
27	E1	23	(15) (16)	(10) (15)	(11) (10)	(15) (16)	(15) (16)
			48.08E+3	-2.846E+3	3.177E+3	53.06E+3	43.10E+3
			31.68E+3	-3.836E+3	636.6	34.55E+3	28.72E+3
		24	(15) (16)	(10) (15)	(11) (10)	(15) (16)	(15) (16)
			48.11E+3	-5.577E+3	1.552E+3	56.34E+3	39.89E+3
			31.74E+3	-8.088E+3	132.3	37.58E+3	25.90E+3
28	E1	24	(15) (10)	(10) (15)	(11) (10)	(15) (10)	(15) (10)
			63.87E+3	-3.713E+3	3.831E+3	70.07E+3	57.66E+3
			42.65E+3	-4.882E+3	741.8	46.43E+3	38.86E+3
		25	(15) (10)	(10) (15)	(11) (12)	(15) (10)	(15) (10)
			63.88E+3	-7.692E+3	1.917E+3	74.98E+3	52.79E+3
			42.68E+3	-10.93E+3	-213.1	50.38E+3	34.99E+3
29	E1	25	(15) (10)	(10) (15)	(11) (10)	(15) (10)	(15) (10)
			73.76E+3	-6.274E+3	4.772E+3	83.74E+3	63.77E+3
			49.69E+3	-8.774E+3	493.4	55.98E+3	43.40E+3
		26	(15) (10)	(10) (15)	(12) (11)	(15) (10)	(15) (10)
			73.76E+3	-7.655E+3	984.9	83.83E+3	63.68E+3
			49.71E+3	-10.03E+3	-993.6	57.41E+3	42.01E+3
30	E1	26	(15) (10)	(10) (15)	(9) (15)	(15) (10)	(15) (10)
			78.12E+3	-7.606E+3	2.676E+3	87.75E+3	68.48E+3
			52.65E+3	-9.494E+3	1.645E+3	60.61E+3	44.70E+3
		27	(15) (10)	(10) (11)	(15) (9)	(15) (10)	(15) (10)
			78.10E+3	-6.912E+3	-1.349E+3	88.16E+3	68.04E+3
			52.66E+3	-9.982E+3	-5.079E+3	60.87E+3	44.45E+3
31	E1	27	(11) (10)	(10) (15)	(11) (12)	(11) (10)	(11) (10)
			78.02E+3	-7.077E+3	-1.345E+3	88.09E+3	67.95E+3
			51.87E+3	-9.998E+3	-5.086E+3	60.22E+3	43.52E+3
		28	(11) (10)	(10) (11)	(12) (11)	(11) (10)	(11) (10)
			78.01E+3	-7.105E+3	2.688E+3	87.61E+3	68.41E+3
			51.86E+3	-9.460E+3	1.648E+3	59.34E+3	44.38E+3
32	E1	28	(11) (10)	(10) (11)	(12) (11)	(11) (10)	(11) (10)
			73.50E+3	-7.410E+3	986.8	83.56E+3	63.43E+3
			47.77E+3	-10.02E+3	-992.4	55.23E+3	40.31E+3
		29	(11) (10)	(10) (11)	(15) (10)	(11) (10)	(11) (10)
			73.48E+3	-5.752E+3	4.776E+3	83.43E+3	63.53E+3
			47.75E+3	-8.729E+3	510.4	53.52E+3	41.97E+3
33	E1	29	(11) (10)	(10) (11)	(15) (9)	(11) (10)	(11) (10)
			63.48E+3	-7.279E+3	1.931E+3	74.56E+3	52.40E+3
			40.16E+3	-10.91E+3	-195.6	47.44E+3	32.88E+3
		30	(11) (10)	(10) (11)	(15) (10)	(11) (10)	(11) (10)
			63.44E+3	-3.208E+3	3.832E+3	69.59E+3	57.29E+3
			40.12E+3	-4.816E+3	727.7	43.41E+3	36.83E+3
34	E1	30	(11) (10)	(10) (11)	(15) (10)	(11) (10)	(11) (10)
			47.59E+3	-5.084E+3	1.585E+3	55.78E+3	39.41E+3
			29.72E+3	-8.037E+3	139.7	34.80E+3	24.63E+3
		31	(11) (10)	(10) (11)	(15) (10)	(11) (10)	(11) (10)
			47.54E+3	-2.421E+3	3.181E+3	52.48E+3	42.59E+3
			29.66E+3	-3.786E+3	617.5	32.16E+3	27.16E+3
35	E1	31	(11) (10)	(10) (11)	(15) (10)	(11) (10)	(11) (16)
			26.08E+3	-5.077E+3	1.304E+3	34.47E+3	17.68E+3
			16.15E+3	-8.291E+3	312.6	21.28E+3	10.67E+3
		22	(11) (10)	(15) (10)	(11) (10)	(11) (10)	(11) (10)
			26.01E+3	2.634E+3	3.168E+3	30.11E+3	21.91E+3
			16.12E+3	1.599E+3	625.8	17.84E+3	14.40E+3
36	E1	22	(11) (16)	(10) (11)	(11) (10)	(11) (16)	(10) (16)
			326.3	-1.760E+3	1.806E+3	3.474E+3	-2.149E+3
			-2.125E+3	-2.578E+3	719.9	38.31	-4.287E+3
		32	(11) (16)	(12) (11)	(12) (11)	(9) (16)	(11) (16)
			285.7	1.282E+3	993.6	1.685E+3	-882.5
			-2.165E+3	1.134E+3	-279.3	-614.1	-3.716E+3
37	E1	32	(10) (15)	(10) (15)	(12) (11)	(10) (15)	(10) (15)
			-16.90E+3	-5.624E+3	1.735E+3	-11.09E+3	-22.71E+3
			-25.64E+3	-9.331E+3	-300.3	-16.31E+3	-34.97E+3
		4	(10) (15)	(15) (10)	(10) (15)	(10) (16)	(10) (15)
			-16.97E+3	17.00E+3	-4.382E+3	-8.250E+3	-28.70E+3
			-25.73E+3	10.69E+3	-7.800E+3	-7.699E+3	-44.44E+3
94	E1	46	(15) (16)	(16) (15)	(10) (11)	(15) (16)	(15) (16)
			-13.70E+3	12.46E+3	-4.729E+3	-1.377E+3	-26.02E+3
			-20.30E+3	7.991E+3	-9.389E+3	-6.695E+3	-33.98E+3
		64	(15) (16)	(15) (9)	(16) (15)	(15) (16)	(15) (16)
			-13.65E+3	-4.648E+3	1.839E+3	-8.934E+3	-18.36E+3
			-20.22E+3	-6.741E+3	777.3	-13.42E+3	-27.02E+3
96	E1	64	(12) (16)	(16) (15)	(11) (10)	(12) (16)	(12) (16)
			3.202E+3	1.136E+3	1.541E+3	4.585E+3	1.818E+3
			-1.098E+3	701.0	824.2	434.6	-2.631E+3
		65	(12) (16)	(16) (15)	(15) (16)	(12) (16)	(12) (16)
			3.203E+3	-2.014E+3	1.815E+3	5.855E+3	552.0
			-1.058E+3	-2.600E+3	948.7	1.168E+3	-3.283E+3
100	E1	65	(12) (11)	(16) (15)	(15) (16)	(12) (11)	(12) (11)
			22.17E+3	1.666E+3	3.038E+3	23.92E+3	20.43E+3
			12.47E+3	-22.59	785.5	15.49E+3	9.446E+3
		67	(12) (11)	(11) (12)	(11) (10)	(12) (11)	(12) (11)
			22.16E+3	-4.561E+3	1.311E+3	28.67E+3	15.66E+3
			12.54E+3	-6.494E+3	301.2	17.29E+3	7.794E+3

BEAM STRESS ENVELOPES

Beam Property 1

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
101	E1	67	(12) (11)	(10) (12)	(11) (10)	(12) (11)	(12) (11)
			36.90E+3	-2.875E+3	3.103E+3	40.40E+3	33.40E+3
			22.09E+3	-3.432E+3	615.0	26.40E+3	17.78E+3
		68	(12) (11)	(11) (12)	(11) (10)	(12) (11)	(12) (11)
			36.87E+3	-4.619E+3	1.842E+3	43.15E+3	30.59E+3
			22.14E+3	-6.276E+3	161.1	27.01E+3	17.27E+3
102	E1	68	(12) (11)	(10) (12)	(11) (10)	(12) (11)	(12) (11)
			47.30E+3	-3.639E+3	3.805E+3	51.66E+3	42.94E+3
			29.39E+3	-4.278E+3	752.9	34.70E+3	24.07E+3
		69	(12) (11)	(11) (12)	(11) (12)	(12) (11)	(12) (11)
			47.26E+3	-6.437E+3	1.822E+3	55.70E+3	38.81E+3
			29.43E+3	-8.446E+3	-111.3	36.12E+3	22.74E+3
103	E1	69	(12) (11)	(11) (12)	(11) (10)	(12) (11)	(12) (11)
			53.76E+3	-5.440E+3	4.604E+3	60.78E+3	46.74E+3
			35.10E+3	-6.987E+3	609.0	42.23E+3	27.98E+3
		70	(12) (11)	(10) (12)	(12) (11)	(12) (11)	(12) (11)
			53.70E+3	-7.003E+3	951.3	61.91E+3	45.50E+3
			35.13E+3	-8.150E+3	-1.050E+3	42.28E+3	27.98E+3
104	E1	70	(12) (11)	(10) (12)	(9) (15)	(12) (11)	(12) (11)
			96.17E+3	-6.976E+3	2.467E+3	64.58E+3	47.76E+3
			36.60E+3	-8.039E+3	1.146E+3	44.11E+3	29.49E+3
		71	(12) (11)	(15) (9)	(11) (12)	(12) (11)	(12) (11)
			56.10E+3	-5.708E+3	-773.3	65.13E+3	47.07E+3
			36.81E+3	-7.631E+3	-4.891E+3	42.58E+3	31.04E+3
105	E1	71	(9) (15)	(11) (12)	(11) (12)	(9) (15)	(9) (15)
			55.83E+3	-5.722E+3	-773.6	64.89E+3	46.76E+3
			36.74E+3	-7.682E+3	-4.899E+3	42.53E+3	30.96E+3
		72	(9) (15)	(10) (9)	(12) (11)	(9) (15)	(9) (15)
			55.82E+3	-6.498E+3	2.474E+3	64.13E+3	47.51E+3
			36.71E+3	-7.940E+3	1.147E+3	43.99E+3	29.43E+3
106	E1	72	(9) (15)	(10) (9)	(12) (11)	(9) (15)	(9) (15)
			52.88E+3	-6.765E+3	948.4	61.07E+3	44.68E+3
			34.89E+3	-8.141E+3	-1.049E+3	42.04E+3	27.74E+3
		73	(9) (15)	(15) (9)	(15) (10)	(9) (15)	(9) (15)
			52.85E+3	-5.398E+3	4.608E+3	59.73E+3	45.97E+3
			34.84E+3	-6.846E+3	605.3	41.94E+3	27.75E+3
107	E1	73	(9) (15)	(15) (9)	(15) (9)	(9) (15)	(9) (15)
			45.93E+3	-6.422E+3	1.827E+3	54.31E+3	37.54E+3
			29.04E+3	-8.386E+3	-95.93	35.71E+3	22.36E+3
		74	(9) (15)	(10) (9)	(15) (10)	(9) (15)	(9) (15)
			45.89E+3	-3.142E+3	3.806E+3	50.07E+3	41.71E+3
			28.97E+3	-4.090E+3	741.0	34.25E+3	23.70E+3
108	E1	74	(9) (15)	(15) (9)	(15) (10)	(9) (15)	(9) (15)
			35.16E+3	-4.978E+3	1.546E+3	41.31E+3	29.02E+3
			21.63E+3	-6.140E+3	169.8	26.46E+3	16.80E+3
		75	(9) (15)	(10) (9)	(15) (10)	(9) (15)	(9) (15)
			35.11E+3	-2.454E+3	3.104E+3	38.46E+3	31.76E+3
			21.55E+3	-3.275E+3	993.3	25.83E+3	17.27E+3
109	E1	75	(9) (15)	(15) (9)	(15) (10)	(9) (15)	(9) (15)
			20.24E+3	-4.512E+3	1.317E+3	26.58E+3	13.89E+3
			11.96E+3	-6.334E+3	300.4	16.66E+3	7.262E+3
		66	(9) (15)	(16) (11)	(11) (10)	(9) (15)	(9) (15)
			20.17E+3	1.665E+3	3.023E+3	21.97E+3	18.37E+3
			11.87E+3	9.133	738.7	14.86E+3	8.863E+3
110	E1	66	(9) (16)	(10) (11)	(11) (10)	(9) (16)	(9) (13)
			1.261E+3	-1.763E+3	1.797E+3	3.763E+3	-1.241E+3
			-1.082E+3	-2.561E+3	884.1	1.151E+3	-3.684E+3
		76	(9) (16)	(12) (11)	(15) (10)	(9) (16)	(9) (16)
			-1.220E+3	-1.193E+3	1.598E+3	2.703E+3	-262.6
			-1.122E+3	734.8	803.0	448.3	-2.693E+3
111	E1	76	(11) (12)	(11) (12)	(16) (11)	(11) (16)	(11) (12)
			-14.09E+3	-4.641E+3	1.843E+3	-9.370E+3	-18.80E+3
			-20.28E+3	-6.713E+3	843.7	-13.42E+3	-27.23E+3
		48	(11) (12)	(12) (11)	(10) (15)	(11) (12)	(11) (12)
			-14.16E+3	12.49E+3	-4.877E+3	-1.525E+3	-26.79E+3
			-20.41E+3	8.043E+3	-9.746E+3	-6.831E+3	-33.99E+3

Maximum values in this output:

			Lc.				
30	E1	26	15	78.12E+3	-9.494E+3	1.645E+3	87.75E+3	68.48E+3
20	E1	2	11	-25.32E+3	17.18E+3	-7.473E+3	-6.984E+3	-44.06E+3
32	E1	29	15	73.21E+3	-8.687E+3	4.776E+3	83.13E+3	63.30E+3
30	E1	27	15	78.10E+3	-9.966E+3	-1.345E+3	88.16E+3	68.04E+3
30	E1	26	15	78.12E+3	-9.494E+3	1.645E+3	87.75E+3	68.48E+3

Minimum values in this output:

			Lc.				
37	E1	4	15	-25.73E+3	17.00E+3	-7.800E+3	-7.028E+3	-44.44E+3
28	E1	25	15	63.88E+3	-10.93E+3	1.912E+3	74.98E+3	52.79E+3
111	E1	48	15	-14.64E+3	8.146E+3	-9.746E+3	-1.938E+3	-27.34E+3
37	E1	32	15	-25.64E+3	-9.331E+3	-189.0	-16.11E+3	-34.97E+3
37	E1	4	15	-25.73E+3	17.00E+3	-7.800E+3	-7.028E+3	-44.44E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM STRESS ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
18	E1	13	(10) (9)	(16) (15)	(12) (11)	(10) (9)	(10) (9)
			-66.83E+3	-11.56E+3	4.346E+3	-54.59E+3	-79.07E+3
			-76.41E+3	-15.07E+3	773.1	-63.12E+3	-89.69E+3
		19	(10) (12)	(10) (11)	(15) (9)	(10) (14)	(10) (12)
			-66.83E+3	3.779E+3	1.584E+3	-62.95E+3	-70.70E+3
			-76.42E+3	-699.3	-967.7	-73.79E+3	-79.48E+3
19	E1	19	(10) (12)	(10) (11)	(15) (9)	(10) (14)	(10) (12)
			-66.83E+3	3.779E+3	1.584E+3	-62.95E+3	-70.70E+3
			-76.42E+3	-699.3	-967.7	-73.79E+3	-79.48E+3
		14	(10) (12)	(16) (11)	(9) (15)	(10) (12)	(10) (12)
			-66.83E+3	-11.56E+3	4.314E+3	-54.43E+3	-79.23E+3
			-76.51E+3	-15.08E+3	765.0	-63.28E+3	-89.74E+3
66	E1	5	(10) (15)	(15) (10)	(12) (11)	(11) (10)	(10) (15)
			-15.17E+3	22.62E+3	281.9	9.753E+3	-31.51E+3
			-21.20E+3	16.34E+3	-21.10E+3	1.177E+3	-52.13E+3
		33	(10) (15)	(11) (12)	(11) (12)	(10) (15)	(10) (15)
			-15.13E+3	-3.196E+3	1.465E+3	-11.60E+3	-18.66E+3
			-21.20E+3	-4.112E+3	-868.7	-17.64E+3	-24.76E+3
67	E1	33	(10) (15)	(11) (12)	(11) (12)	(10) (15)	(10) (15)
			-14.93E+3	-2.767E+3	1.466E+3	-11.44E+3	-18.43E+3
			-20.97E+3	-4.062E+3	-569.1	-17.80E+3	-24.14E+3
		7	(10) (15)	(16) (15)	(10) (11)	(10) (14)	(10) (15)
			-14.89E+3	-1.943E+3	-143.5	-12.61E+3	-17.17E+3
			-20.95E+3	-4.976E+3	-6.181E+3	-14.51E+3	-28.88E+3
68	E1	8	(10) (11)	(16) (11)	(10) (15)	(10) (9)	(10) (11)
			-13.93E+3	-2.030E+3	-155.6	-11.17E+3	-16.69E+3
			-20.73E+3	-5.075E+3	-6.157E+3	-13.85E+3	-28.71E+3
		34	(10) (11)	(10) (16)	(15) (16)	(10) (11)	(10) (11)
			-13.96E+3	-2.471E+3	1.419E+3	-11.45E+3	-16.47E+3
			-20.77E+3	-3.823E+3	-533.1	-17.78E+3	-23.76E+3
69	E1	34	(10) (11)	(10) (16)	(15) (16)	(10) (11)	(10) (11)
			-14.13E+3	-2.515E+3	1.412E+3	-11.57E+3	-16.68E+3
			-21.00E+3	-3.869E+3	-532.4	-17.63E+3	-24.37E+3
		6	(10) (11)	(11) (10)	(9) (15)	(15) (10)	(10) (11)
			-14.16E+3	22.64E+3	227.3	10.08E+3	-29.23E+3
			-21.04E+3	15.07E+3	-21.30E+3	903.7	-52.12E+3
70	E1	7	(10) (15)	(15) (10)	(12) (11)	(11) (14)	(10) (15)
			-24.79E+3	9.544E+3	402.4	-16.28E+3	-32.43E+3
			-29.87E+3	7.632E+3	-9.439E+3	-19.41E+3	-43.28E+3
		35	(10) (15)	(10) (13)	(11) (12)	(11) (14)	(10) (15)
			-24.75E+3	-9.207E+3	12.43E+3	-13.24E+3	-33.97E+3
			-29.85E+3	-10.76E+3	-503.1	-17.52E+3	-46.28E+3
71	E1	35	(10) (15)	(10) (14)	(11) (12)	(11) (14)	(10) (15)
			-24.58E+3	-9.161E+3	12.43E+3	-13.33E+3	-33.75E+3
			-29.65E+3	-10.51E+3	-503.1	-17.46E+3	-45.80E+3
		9	(10) (15)	(16) (15)	(12) (11)	(11) (14)	(10) (15)
			-24.54E+3	2.496E+3	150.7	-11.93E+3	-26.34E+3
			-29.64E+3	588.1	-7.531E+3	-25.87E+3	-37.18E+3
72	E1	9	(10) (15)	(16) (10)	(12) (11)	(10) (12)	(10) (15)
			-40.72E+3	4.908E+3	191.6	-36.67E+3	-44.78E+3
			-47.27E+3	4.053E+3	-8.839E+3	-41.31E+3	-57.17E+3
		36	(10) (15)	(10) (15)	(11) (12)	(10) (14)	(10) (15)
			-40.69E+3	-11.55E+3	10.48E+3	-29.12E+3	-52.26E+3
			-47.27E+3	-14.06E+3	-752.9	-32.79E+3	-64.79E+3
73	E1	36	(10) (15)	(10) (15)	(11) (12)	(10) (14)	(10) (15)
			-40.55E+3	-11.50E+3	10.48E+3	-29.03E+3	-52.07E+3
			-47.13E+3	-13.96E+3	-752.5	-32.79E+3	-64.32E+3
		10	(10) (15)	(16) (15)	(12) (11)	(10) (14)	(10) (15)
			-40.52E+3	1.065E+3	678.8	-39.75E+3	-41.29E+3
			-47.10E+3	-1.263E+3	-5.588E+3	-45.31E+3	-52.82E+3
74	E1	10	(10) (15)	(16) (15)	(12) (11)	(10) (14)	(10) (15)
			-53.14E+3	3.264E+3	423.8	-50.61E+3	-55.67E+3
			-60.85E+3	2.189E+3	-6.986E+3	-57.20E+3	-68.16E+3
		37	(10) (15)	(10) (15)	(11) (12)	(10) (12)	(10) (15)
			-53.11E+3	-13.47E+3	9.353E+3	-39.62E+3	-66.61E+3
			-60.85E+3	-16.28E+3	-888.4	-44.68E+3	-79.62E+3
75	E1	37	(10) (15)	(10) (15)	(11) (12)	(10) (14)	(10) (15)
			-53.01E+3	-13.43E+3	9.352E+3	-39.56E+3	-66.46E+3
			-60.73E+3	-15.96E+3	-888.8	-44.65E+3	-79.22E+3
		11	(10) (15)	(16) (15)	(12) (11)	(10) (14)	(10) (15)
			-52.98E+3	-486.4	813.9	-51.63E+3	-54.14E+3
			-60.73E+3	-2.502E+3	-3.726E+3	-58.77E+3	-65.21E+3
76	E1	11	(10) (14)	(16) (15)	(12) (11)	(10) (12)	(10) (15)
			-61.89E+3	570.7	425.7	-61.51E+3	-62.27E+3
			-70.02E+3	-475.1	-5.031E+3	-69.91E+3	-74.85E+3
		38	(10) (14)	(10) (15)	(11) (12)	(10) (12)	(10) (15)
			-61.87E+3	-13.84E+3	6.380E+3	-48.01E+3	-75.74E+3
			-70.09E+3	-17.90E+3	-920.8	-84.31E+3	-88.82E+3
77	E1	38	(10) (14)	(10) (15)	(11) (12)	(10) (12)	(10) (15)
			-61.80E+3	-13.80E+3	6.384E+3	-47.98E+3	-75.63E+3
			-70.01E+3	-17.68E+3	-919.6	-84.27E+3	-88.53E+3
		12	(10) (14)	(16) (11)	(12) (11)	(10) (12)	(10) (15)
			-61.77E+3	179.5	1.058E+3	-60.85E+3	-62.73E+3
			-70.07E+3	-4.324E+3	-5.004E+3	-68.89E+3	-76.35E+3
78	E1	12	(10) (12)	(16) (15)	(12) (11)	(11) (12)	(10) (15)
			-67.06E+3	1.729E+3	382.6	-65.09E+3	-69.35E+3
			-76.11E+3	-1.268E+3	-8.284E+3	-74.82E+3	-82.92E+3
		39	(10) (12)	(11) (12)	(11) (12)	(10) (14)	(10) (15)
			-67.05E+3	-15.37E+3	17.16E+3	-48.77E+3	-85.33E+3
			-76.18E+3	-20.39E+3	-2.579E+3	-56.42E+3	-97.11E+3

BEAM STRESS ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
79	E1	39	(10) (12)	(11) (12)	(11) (12)	(10) (14)	(10) (15)
			-67.01E+3	-15.24E+3	17.16E+3	-48.76E+3	-85.27E+3
			-76.14E+3	-20.36E+3	-2.581E+3	-56.44E+3	-97.01E+3
		13	(10) (12)	(10) (11)	(12) (11)	(10) (12)	(10) (15)
			-67.00E+3	-8.758E+3	5.697E+3	-56.93E+3	-77.08E+3
			-76.21E+3	-13.56E+3	594.3	-69.05E+3	-87.63E+3
80	E1	14	(10) (9)	(16) (15)	(9) (15)	(10) (9)	(10) (11)
			-65.60E+3	-8.774E+3	5.666E+3	-55.04E+3	-76.15E+3
			-75.75E+3	-13.58E+3	587.4	-64.56E+3	-87.50E+3
		40	(10) (9)	(15) (9)	(15) (9)	(10) (14)	(10) (11)
			-65.60E+3	-15.21E+3	17.17E+3	-48.81E+3	-82.40E+3
			-75.76E+3	-20.23E+3	-2.508E+3	-55.94E+3	-96.88E+3
81	E1	40	(10) (9)	(15) (9)	(15) (9)	(10) (14)	(10) (11)
			-65.63E+3	-15.33E+3	17.17E+3	-48.81E+3	-82.45E+3
			-75.80E+3	-20.26E+3	-2.506E+3	-55.92E+3	-96.98E+3
		15	(10) (9)	(16) (11)	(9) (15)	(15) (9)	(10) (11)
			-65.64E+3	1.737E+3	333.5	-65.02E+3	-66.23E+3
			-75.81E+3	-3.236E+3	-8.264E+3	-74.46E+3	-82.82E+3
82	E1	15	(10) (11)	(16) (15)	(9) (15)	(10) (9)	(10) (11)
			-59.51E+3	188.4	1.019E+3	-58.20E+3	-60.82E+3
			-69.51E+3	-4.218E+3	-5.011E+3	-68.17E+3	-76.11E+3
		41	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-59.52E+3	-12.26E+3	6.387E+3	-47.23E+3	-71.81E+3
			-69.52E+3	-17.63E+3	-900.1	-53.76E+3	-88.27E+3
83	E1	41	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-59.58E+3	-12.30E+3	6.383E+3	-47.25E+3	-71.90E+3
			-69.60E+3	-17.86E+3	-901.3	-53.80E+3	-88.86E+3
		16	(10) (11)	(16) (10)	(9) (15)	(10) (9)	(10) (11)
			-59.59E+3	844.5	397.9	-58.87E+3	-60.32E+3
			-69.62E+3	-651.8	-5.036E+3	-68.94E+3	-74.67E+3
84	E1	16	(10) (11)	(15) (11)	(9) (15)	(10) (9)	(10) (11)
			-60.39E+3	-524.5	783.2	-48.62E+3	-52.16E+3
			-69.43E+3	-2.535E+3	-3.732E+3	-57.62E+3	-64.93E+3
		42	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-60.41E+3	-11.75E+3	9.359E+3	-38.64E+3	-62.18E+3
			-69.45E+3	-15.79E+3	-855.6	-44.08E+3	-76.80E+3
85	E1	42	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-60.49E+3	-11.79E+3	9.359E+3	-38.68E+3	-62.31E+3
			-60.57E+3	-15.11E+3	-855.8	-44.15E+3	-79.20E+3
		17	(10) (11)	(16) (10)	(9) (15)	(10) (9)	(10) (11)
			-60.52E+3	3.182E+3	397.4	-48.76E+3	-52.28E+3
			-60.59E+3	1.731E+3	-6.993E+3	-56.27E+3	-67.89E+3
86	E1	17	(10) (11)	(16) (11)	(9) (15)	(10) (9)	(10) (11)
			-38.17E+3	979.3	645.1	-37.58E+3	-38.76E+3
			-46.78E+3	-1.344E+3	-5.594E+3	-43.98E+3	-52.52E+3
		43	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-38.20E+3	-9.883E+3	10.49E+3	-28.30E+3	-48.10E+3
			-46.81E+3	-13.47E+3	-716.8	-32.12E+3	-63.87E+3
87	E1	43	(10) (11)	(10) (11)	(15) (9)	(10) (9)	(10) (11)
			-38.31E+3	-9.929E+3	10.48E+3	-28.37E+3	-48.26E+3
			-46.96E+3	-13.87E+3	-717.4	-32.23E+3	-64.34E+3
		18	(10) (11)	(16) (10)	(9) (15)	(10) (9)	(10) (11)
			-38.34E+3	4.879E+3	170.5	-35.09E+3	-41.60E+3
			-47.00E+3	3.249E+3	-8.845E+3	-40.45E+3	-86.89E+3
88	E1	18	(10) (11)	(16) (11)	(9) (15)	(15) (9)	(10) (11)
			-22.99E+3	2.487E+3	119.3	-21.55E+3	-24.11E+3
			-29.35E+3	583.9	-7.545E+3	-24.79E+3	-36.91E+3
		44	(10) (11)	(10) (11)	(15) (9)	(15) (9)	(10) (11)
			-23.03E+3	-7.790E+3	12.44E+3	-13.12E+3	-30.83E+3
			-29.39E+3	-10.35E+3	-470.1	-16.82E+3	-45.50E+3
89	E1	44	(10) (11)	(10) (11)	(15) (9)	(15) (9)	(10) (11)
			-23.17E+3	-7.839E+3	12.44E+3	-13.04E+3	-31.01E+3
			-29.59E+3	-10.69E+3	-470.1	-16.97E+3	-45.98E+3
		8	(10) (11)	(11) (10)	(9) (15)	(15) (9)	(10) (11)
			-23.20E+3	9.484E+3	378.5	-16.07E+3	-29.74E+3
			-29.63E+3	6.532E+3	-9.419E+3	-18.69E+3	-42.99E+3
92	E1	57	(10) (11)	(11) (12)	(10) (11)	(10) (11)	(10) (12)
			-62.11E+3	-8.983E+3	-613.7	-51.39E+3	-72.82E+3
			-73.08E+3	-11.56E+3	-1.787E+3	-63.95E+3	-82.55E+3
		63	(10) (15)	(11) (16)	(15) (10)	(10) (14)	(10) (15)
			-62.11E+3	5.134E+3	4.868E+3	-57.25E+3	-66.96E+3
			-73.09E+3	1.526E+3	3.981E+3	-66.26E+3	-80.16E+3
93	E1	63	(10) (15)	(11) (16)	(15) (10)	(10) (14)	(10) (15)
			-62.11E+3	5.134E+3	4.868E+3	-57.25E+3	-66.96E+3
			-73.09E+3	1.526E+3	3.981E+3	-66.26E+3	-80.16E+3
		58	(10) (15)	(15) (9)	(16) (15)	(10) (15)	(10) (12)
			-62.11E+3	-8.938E+3	-678.2	-51.22E+3	-73.00E+3
			-73.11E+3	-11.50E+3	-1.792E+3	-64.00E+3	-82.89E+3
140	E1	49	(10) (15)	(12) (11)	(16) (11)	(11) (14)	(10) (15)
			-15.26E+3	18.32E+3	-4.399	5.037E+3	-31.49E+3
			-17.49E+3	13.65E+3	-17.76E+3	513.1	-39.96E+3
		77	(10) (13)	(10) (15)	(16) (11)	(11) (12)	(10) (15)
			-15.22E+3	-3.503E+3	201.4	-4.724E+3	-18.73E+3
			-17.49E+3	-5.055E+3	-11.56E+3	-13.12E+3	-30.08E+3
141	E1	77	(10) (13)	(10) (15)	(16) (11)	(11) (12)	(10) (15)
			-15.02E+3	-3.547E+3	200.9	-4.316E+3	-18.57E+3
			-17.26E+3	-5.484E+3	-11.55E+3	-12.84E+3	-30.02E+3
		51	(10) (13)	(11) (12)	(11) (12)	(11) (13)	(10) (15)
			-14.99E+3	-618.0	12.90E+3	-4.140E+3	-17.38E+3
			-17.26E+3	-2.455E+3	-834.9	-14.39E+3	-30.12E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM STRESS ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
142	E1	52	(10) (11)	(15) (10)	(15) (9)	(15) (9)	(10) (11)
			-13.99E+3	-663.2	12.92E+3	-3.94E+3	-16.80E+3
			-17.04E+3	-2.733E+3	-786.0	-13.83E+3	-29.97E+3
		78	(10) (11)	(10) (11)	(16) (15)	(15) (9)	(10) (11)
			-14.02E+3	-2.579E+3	187.6	-4.13E+3	-16.61E+3
			-17.08E+3	-5.354E+3	-11.64E+3	-12.54E+3	-29.89E+3
143	E1	78	(10) (11)	(10) (11)	(16) (15)	(15) (9)	(10) (11)
			-14.19E+3	-2.835E+3	188.4	-4.53E+3	-16.72E+3
			-17.31E+3	-4.925E+3	-11.64E+3	-12.82E+3	-29.95E+3
		50	(10) (11)	(9) (15)	(16) (11)	(15) (10)	(10) (11)
			-14.22E+3	18.05E+3	33.66	5.23E+3	-29.14E+3
			-17.35E+3	13.63E+3	-17.85E+3	690.5	-39.89E+3
144	E1	51	(10) (15)	(16) (11)	(11) (12)	(10) (14)	(10) (15)
			-24.62E+3	8.567E+3	9.648E+3	-17.06E+3	-32.19E+3
			-30.66E+3	6.832E+3	-198.0	-20.24E+3	-42.48E+3
		79	(10) (15)	(10) (13)	(12) (11)	(10) (15)	(10) (15)
			-24.58E+3	-9.196E+3	273.4	-15.38E+3	-33.78E+3
			-30.65E+3	-10.53E+3	-4.656E+3	-19.38E+3	-41.92E+3
145	E1	79	(10) (15)	(10) (13)	(12) (11)	(10) (15)	(10) (15)
			-24.41E+3	-9.242E+3	273.4	-15.17E+3	-33.66E+3
			-30.45E+3	-10.73E+3	-4.656E+3	-18.79E+3	-42.12E+3
		53	(10) (15)	(11) (10)	(11) (12)	(11) (14)	(10) (15)
			-24.37E+3	3.417E+3	7.941E+3	-21.65E+3	-26.31E+3
			-30.44E+3	1.797E+3	-814.6	-25.56E+3	-39.07E+3
146	E1	53	(10) (15)	(16) (10)	(11) (12)	(10) (14)	(10) (15)
			-39.94E+3	4.835E+3	6.500E+3	-35.89E+3	-44.00E+3
			-47.17E+3	3.991E+3	-800.0	-41.12E+3	-55.00E+3
		80	(10) (15)	(10) (12)	(12) (11)	(10) (15)	(10) (15)
			-39.91E+3	-11.49E+3	454.3	-28.42E+3	-51.41E+3
			-47.16E+3	-13.06E+3	-3.570E+3	-34.72E+3	-59.60E+3
147	E1	80	(10) (15)	(10) (12)	(12) (11)	(10) (15)	(10) (15)
			-39.77E+3	-11.54E+3	454.6	-28.23E+3	-51.32E+3
			-47.00E+3	-13.12E+3	-3.567E+3	-34.18E+3	-59.82E+3
		54	(10) (15)	(11) (10)	(11) (12)	(10) (12)	(10) (15)
			+39.74E+3	2.312E+3	6.812E+3	-38.92E+3	-40.57E+3
			-46.99E+3	585.9	-667.1	-43.94E+3	-54.17E+3
148	E1	54	(10) (15)	(11) (10)	(11) (12)	(10) (14)	(10) (15)
			-51.42E+3	3.293E+3	5.232E+3	-48.78E+3	-54.06E+3
			-59.69E+3	2.508E+3	-933.8	-55.95E+3	-69.84E+3
		81	(10) (15)	(10) (12)	(12) (11)	(10) (15)	(10) (13)
			-51.40E+3	-13.24E+3	646.6	-38.15E+3	-64.64E+3
			-59.69E+3	-14.98E+3	-1.707E+3	-45.78E+3	-73.59E+3
149	E1	81	(10) (15)	(10) (12)	(12) (11)	(10) (15)	(10) (15)
			-51.29E+3	-13.38E+3	646.5	-38.00E+3	-64.58E+3
			-59.57E+3	-15.03E+3	-1.707E+3	-45.34E+3	-73.79E+3
		55	(10) (15)	(11) (12)	(11) (12)	(10) (14)	(10) (15)
			-51.27E+3	740.8	5.839E+3	-50.40E+3	-52.13E+3
			-59.57E+3	-614.0	-787.8	-57.39E+3	-65.44E+3
150	E1	55	(10) (15)	(16) (10)	(11) (12)	(10) (14)	(10) (15)
			-58.96E+3	931.8	4.332E+3	-57.85E+3	-60.06E+3
			-68.90E+3	354.7	-1.189E+3	-66.71E+3	-73.31E+3
		82	(10) (15)	(11) (12)	(12) (11)	(10) (15)	(10) (13)
			-58.94E+3	-13.22E+3	761.0	-45.22E+3	-72.66E+3
			-68.91E+3	-15.52E+3	-1.383E+3	-55.57E+3	-82.36E+3
151	E1	82	(10) (15)	(11) (12)	(12) (11)	(10) (15)	(10) (13)
			-58.87E+3	-13.44E+3	763.1	-45.12E+3	-72.63E+3
			-68.83E+3	-15.56E+3	-1.380E+3	-55.37E+3	-82.46E+3
		56	(10) (15)	(11) (12)	(11) (12)	(10) (14)	(10) (15)
			-58.86E+3	3.199E+3	-773.2	-58.29E+3	-59.43E+3
			-68.84E+3	-430.7	-612.3	-66.76E+3	-72.13E+3
152	E1	56	(10) (15)	(11) (12)	(10) (11)	(10) (12)	(10) (15)
			-62.82E+3	4.926E+3	-1.195E+3	-61.36E+3	-64.28E+3
			-74.14E+3	747.9	-2.712E+3	-69.71E+3	-79.74E+3
		83	(10) (15)	(10) (15)	(11) (10)	(10) (12)	(10) (15)
			-62.81E+3	-16.11E+3	15.45E+3	-45.69E+3	-78.94E+3
			-74.16E+3	-22.43E+3	613.3	-93.28E+3	-101.4E+3
153	E1	83	(10) (15)	(10) (15)	(11) (10)	(10) (12)	(10) (15)
			-62.78E+3	-16.14E+3	15.44E+3	-45.63E+3	-78.93E+3
			-74.10E+3	-22.56E+3	612.0	-93.22E+3	-101.4E+3
		57	(10) (15)	(15) (9)	(12) (11)	(10) (15)	(10) (12)
			-62.78E+3	-5.246E+3	713.1	-54.49E+3	-71.06E+3
			-74.12E+3	-9.072E+3	-1.842E+3	-68.55E+3	-80.47E+3
154	E1	58	(10) (11)	(11) (12)	(9) (15)	(10) (11)	(10) (9)
			-61.41E+3	-5.256E+3	700.0	-52.99E+3	-70.22E+3
			-73.99E+3	-9.104E+3	-1.646E+3	-66.42E+3	-80.07E+3
		84	(10) (11)	(10) (11)	(15) (10)	(15) (9)	(10) (11)
			-61.41E+3	-14.75E+3	15.45E+3	-46.60E+3	-76.16E+3
			-73.99E+3	-22.53E+3	672.0	-92.95E+3	-101.3E+3
155	E1	84	(10) (11)	(10) (11)	(15) (10)	(10) (9)	(10) (11)
			-61.44E+3	-14.72E+3	15.45E+3	-46.70E+3	-76.18E+3
			-74.08E+3	-22.41E+3	673.3	-92.81E+3	-101.3E+3
		59	(10) (11)	(15) (10)	(10) (15)	(10) (9)	(10) (11)
			-61.45E+3	4.958E+3	-1.215E+3	-60.32E+3	-62.67E+3
			-74.06E+3	132.8	-2.713E+3	-69.40E+3	-79.69E+3
156	E1	59	(10) (11)	(11) (10)	(15) (9)	(10) (14)	(10) (11)
			-56.61E+3	3.208E+3	773.8	-55.41E+3	-57.80E+3
			-68.62E+3	-1.066E+3	-609.8	-68.35E+3	-71.92E+3
		85	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-56.62E+3	-12.20E+3	727.4	-44.41E+3	-68.83E+3
			-68.64E+3	-15.38E+3	-1.387E+3	-55.11E+3	-82.16E+3

BEAM STRESS ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
157	E1	85	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (.11)
			-56.65E+3	-12.15E+3	726.3	-44.50E+3	-68.86E+3
			-68.72E+3	-15.34E+3	-1.391E+3	-55.42E+3	-82.01E+3
		60	(10) (11)	(16) (10)	(15) (9)	(10) (14)	(10) (11)
			-56.70E+3	906.5	4.337E+3	-55.66E+3	-57.73E+3
			-68.73E+3	-318.4	-1.159E+3	-65.49E+3	-73.14E+3
158	E1	60	(10) (11)	(15) (10)	(15) (9)	(10) (9)	(10) (11)
			-48.68E+3	706.2	5.843E+3	-47.26E+3	-50.11E+3
			-59.29E+3	-1.274E+3	-760.0	-56.01E+3	-65.16E+3
		86	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-48.71E+3	-11.61E+3	617.0	-37.09E+3	-60.33E+3
			-59.31E+3	-14.69E+3	-1.714E+3	-45.25E+3	-73.37E+3
159	E1	86	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-48.79E+3	-11.57E+3	616.9	-37.21E+3	-60.37E+3
			-59.43E+3	-14.64E+3	-1.714E+3	-45.69E+3	-73.17E+3
		61	(10) (11)	(15) (10)	(15) (9)	(10) (9)	(10) (11)
			-48.81E+3	3.232E+3	5.241E+3	-46.93E+3	-50.70E+3
			-59.45E+3	1.731E+3	-897.9	-54.21E+3	-65.59E+3
160	E1	61	(10) (11)	(15) (10)	(15) (9)	(10) (9)	(10) (11)
			-37.39E+3	2.233E+3	6.819E+3	-36.83E+3	-37.94E+3
			-46.70E+3	-157.5	-638.7	-43.02E+3	-53.86E+3
		87	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-37.42E+3	-9.916E+3	425.9	-27.50E+3	-47.34E+3
			-46.73E+3	-12.72E+3	-3.575E+3	-34.08E+3	-59.37E+3
161	E1	87	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-37.53E+3	-9.870E+3	425.4	-27.65E+3	-47.41E+3
			-46.89E+3	-12.67E+3	-3.579E+3	-34.62E+3	-59.15E+3
		62	(10) (11)	(16) (10)	(15) (9)	(10) (9)	(10) (11)
			-37.56E+3	4.809E+3	6.567E+3	-34.11E+3	-40.81E+3
			-46.92E+3	3.185E+3	-759.6	-39.57E+3	-54.74E+3
162	E1	62	(10) (11)	(15) (10)	(15) (9)	(15) (9)	(10) (11)
			-22.81E+3	3.406E+3	7.943E+3	-21.31E+3	-24.11E+3
			-30.19E+3	1.127E+3	-784.6	-24.57E+3	-38.82E+3
		88	(10) (11)	(10) (11)	(9) (15)	(10) (11)	(10) (11)
			-22.84E+3	-7.870E+3	246.1	-14.97E+3	-30.72E+3
			-30.23E+3	-10.62E+3	-4.652E+3	-18.63E+3	-41.82E+3
163	E1	88	(10) (11)	(10) (9)	(9) (15)	(10) (11)	(10) (11)
			-22.98E+3	-7.825E+3	246.1	-15.16E+3	-30.81E+3
			-30.42E+3	-10.22E+3	-4.652E+3	-19.23E+3	-41.62E+3
		52	(10) (11)	(16) (10)	(15) (9)	(10) (13)	(10) (11)
			-23.02E+3	8.530E+3	9.666E+3	-18.57E+3	-29.48E+3
			-30.46E+3	6.454E+3	-161.4	-19.08E+3	-42.27E+3

Maximum values in this output:

			Lc.				
68	E1	8	10-13.93E+3	-2.756E+3	-155.8	-11.17E+3	-16.69E+3
69	E1	6	11-21.04E+3	22.64E+3	-21.29E+3	10.04E+3	-52.12E+3
81	E1	40	15-21.85E+3	-15.33E+3	17.17E+3	-50.83E+3	-96.87E+3
69	E1	6	15-20.91E+3	22.92E+3	-21.30E+3	10.09E+3	-51.91E+3
68	E1	34	10-13.96E+3	-2.471E+3	-444.0	-11.45E+3	-16.47E+3

Minimum values in this output:

			Lc.				
19	E1	14	12-76.51E+3	-12.52E+3	4.287E+3	-63.28E+3	-89.74E+3
153	E1	83	15-74.10E+3	-22.56E+3	15.43E+3	-46.77E+3	-101.4E+3
69	E1	6	15-20.91E+3	22.92E+3	-21.30E+3	10.09E+3	-51.91E+3
78	E1	12	12-76.11E+3	1.230E+3	382.6	-74.82E+3	-77.40E+3
153	E1	83	15-74.10E+3	-22.56E+3	15.43E+3	-46.77E+3	-101.4E+3

BEAM STRESS ENVELOPES

Beam Property 3

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
252	E1	4	(10) (11)	(12) (11)	(11) (12)	(15) (9)	(10) (11)
			-7.011E+3	8.744E+3	144.6E+3	130.5E+3	-11.82E+3
			-14.11E+3	4.633E+3	79.15	-2.761E+3	-158.7E+3
		101	(10) (11)	(11) (10)	(11) (12)	(11) (12)	(10) (11)
			-6.936E+3	8.665E+3	66.92E+3	53.43E+3	-13.35E+3
			-14.04E+3	6.407E+3	-165.2	-860.1	-81.52E+3
254	E1	48	(15) (9)	(15) (10)	(11) (16)	(15) (9)	(10) (11)
			-1.556E+3	6.921E+3	142.1E+3	140.7E+3	-12.09E+3
			-8.369E+3	4.983E+3	-1.663E+3	-3.678E+3	-143.8E+3
		102	(15) (9)	(9) (10)	(11) (16)	(11) (12)	(10) (11)
			-1.483E+3	8.434E+3	64.17E+3	63.17E+3	-13.59E+3
			-8.296E+3	6.518E+3	-897.6	-543.9	-66.17E+3
276	E1	101	(10) (11)	(11) (10)	(11) (12)	(11) (10)	(10) (11)
			-9.233E+3	24.09E+3	66.92E+3	53.77E+3	-25.61E+3
			-17.38E+3	17.38E+3	-166.9	8.144E+3	-88.47E+3
		109	(10) (11)	(11) (12)	(11) (10)	(15) (9)	(10) (11)
			-9.206E+3	-1.065E+3	37.91E+3	20.65E+3	-10.58E+3
			-17.32E+3	-2.361E+3	143.1	-9.192E+3	-55.24E+3
277	E1	109	(10) (11)	(11) (12)	(11) (10)	(15) (9)	(10) (11)
			-9.206E+3	-1.064E+3	37.91E+3	20.64E+3	-10.58E+3
			-17.32E+3	-2.361E+3	143.1	-9.192E+3	-55.24E+3
		110	(10) (11)	(10) (15)	(11) (10)	(16) (11)	(10) (15)
			-9.179E+3	-20.05E+3	8.983E+3	14.41E+3	-29.23E+3
			-17.29E+3	-26.23E+3	440.3	10.36E+3	-44.98E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM STRESS ENVELOPES

Beam Property 3

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
278	E1	110	(10) (11)	(10) (12)	(11) (10)	(16) (11)	(10) (15)
			-9.494E+3	-9.394E+3	8.989E+3	1.960E+3	-18.90E+3
			-17.80E+3	-12.90E+3	438.9	-4.054E+3	-31.66E+3
		6	(10) (11)	(10) (11)	(9) (15)	(11) (10)	(10) (11)
			-9.467E+3	-18.26E+3	1.144E+3	13.68E+3	-27.75E+3
			-17.77E+3	-24.99E+3	-19.10E+3	8.814E+3	-49.22E+3
279	E1	102	(15) (9)	(9) (10)	(11) (16)	(11) (10)	(10) (11)
			-3.668E+3	21.83E+3	64.17E+3	63.14E+3	-27.07E+3
			-11.18E+3	17.67E+3	-899.1	8.281E+3	-70.57E+3
		111	(15) (9)	(10) (15)	(11) (16)	(15) (9)	(10) (11)
			-3.641E+3	-1.220E+3	36.11E+3	32.87E+3	-10.59E+3
			-11.15E+3	-2.761E+3	-224.5	-9.571E+3	-39.89E+3
280	E1	111	(15) (9)	(10) (15)	(11) (16)	(15) (9)	(10) (11)
			-3.641E+3	-1.220E+3	36.11E+3	32.87E+3	-10.59E+3
			-11.15E+3	-2.761E+3	-224.5	-9.571E+3	-39.86E+3
		112	(15) (9)	(10) (12)	(11) (16)	(15) (10)	(11) (12)
			-3.614E+3	-20.06E+3	8.117E+3	21.65E+3	-28.85E+3
			-11.12E+3	-25.14E+3	448.2	10.72E+3	-36.12E+3
281	E1	112	(15) (9)	(10) (15)	(11) (16)	(15) (10)	(10) (12)
			-3.856E+3	-9.253E+3	8.118E+3	12.85E+3	-18.93E+3
			-11.55E+3	-14.60E+3	447.1	-397.3	-24.06E+3
		50	(15) (9)	(10) (9)	(16) (15)	(11) (10)	(10) (9)
			-3.829E+3	-18.68E+3	1.248E+3	22.75E+3	-28.35E+3
			-11.52E+3	-22.40E+3	-18.35E+3	9.073E+3	-33.95E+3
302	E1	2	(10) (15)	(15) (16)	(15) (10)	(11) (12)	(10) (15)
			-7.979E+3	-4.869E+3	145.4E+3	130.7E+3	-13.22E+3
			-14.86E+3	-6.011E+3	-33.09	-3.311E+3	-160.4E+3
		121	(10) (15)	(16) (14)	(15) (9)	(15) (16)	(10) (15)
			-7.906E+3	-7.189E+3	66.69E+3	52.40E+3	-15.22E+3
			-14.79E+3	-8.553E+3	-124.5	-1.244E+3	-81.98E+3
304	E1	46	(11) (12)	(10) (11)	(15) (16)	(11) (12)	(10) (15)
			-1.887E+3	-5.421E+3	142.8E+3	141.1E+3	-13.54E+3
			-8.997E+3	-7.178E+3	-1.740E+3	-3.239E+3	-144.9E+3
		122	(11) (12)	(16) (12)	(15) (16)	(15) (16)	(10) (15)
			-1.814E+3	-7.339E+3	64.22E+3	62.87E+3	-15.49E+3
			-8.924E+3	-8.671E+3	-773.4	-1.200E+3	-66.55E+3
318	E1	121	(10) (15)	(10) (15)	(15) (9)	(15) (16)	(10) (15)
			-9.928E+3	-18.67E+3	66.67E+3	53.02E+3	-28.60E+3
			-17.35E+3	-22.51E+3	-130.5	8.727E+3	-87.72E+3
		125	(10) (15)	(11) (10)	(15) (10)	(16) (15)	(10) (11)
			-9.874E+3	25.41E+3	9.290E+3	14.15E+3	-32.21E+3
			-17.30E+3	22.33E+3	509.9	9.670E+3	-44.30E+3
319	E1	125	(10) (15)	(16) (15)	(15) (10)	(16) (15)	(10) (11)
			-10.39E+3	12.28E+3	9.296E+3	1.398E+3	-20.68E+3
			-17.83E+3	9.270E+3	509.3	-4.702E+3	-31.06E+3
		8	(10) (15)	(15) (10)	(12) (11)	(15) (10)	(10) (15)
			-10.26E+3	24.98E+3	1.179E+3	13.56E+3	-29.98E+3
			-17.80E+3	19.69E+3	-19.01E+3	9.464E+3	-49.17E+3
320	E1	122	(11) (12)	(11) (12)	(15) (16)	(15) (10)	(10) (15)
			-3.646E+3	-18.27E+3	64.19E+3	63.12E+3	-29.14E+3
			-11.28E+3	-21.52E+3	-777.6	8.893E+3	-70.51E+3
		126	(11) (12)	(16) (10)	(15) (16)	(11) (10)	(15) (9)
			-3.592E+3	24.69E+3	8.463E+3	21.85E+3	-28.99E+3
			-11.23E+3	22.37E+3	474.7	12.31E+3	-35.68E+3
321	E1	126	(11) (12)	(11) (10)	(15) (16)	(11) (12)	(15) (16)
			-3.809E+3	14.09E+3	8.490E+3	12.54E+3	-20.21E+3
			-11.75E+3	10.22E+3	474.2	-1.209E+3	-23.23E+3
		49	(11) (12)	(12) (11)	(16) (11)	(15) (10)	(13) (12)
			-3.881E+3	22.73E+3	1.223E+3	22.69E+3	-30.28E+3
			-11.72E+3	19.17E+3	-18.34E+3	9.736E+3	-34.49E+3

Maximum values in this output:

			Lc.				
254	E1	102	15-1.483E+3	7.769E+3	64.17E+3	63.15E+3	-66.12E+3
318	E1	125	11-17.26E+3	25.41E+3	9.287E+3	9.794E+3	-44.30E+3
302	E1	2	15-14.86E+3	-4.869E+3	145.4E+3	130.7E+3	-160.4E+3
304	E1	46	11-1.887E+3	-7.178E+3	142.8E+3	141.1E+3	-144.9E+3
277	E1	109	10-9.206E+3	-1.362E+3	143.1	-7.837E+3	-10.58E+3

Minimum values in this output:

			Lc.				
319	E1	125	15-17.83E+3	9.270E+3	9.296E+3	-4.702E+3	-30.96E+3
277	E1	110	15-17.25E+3	-26.23E+3	8.981E+3	70.47E+3	-44.98E+3
278	E1	6	15-17.71E+3	-24.84E+3	-19.10E+3	13.62E+3	-49.05E+3
279	E1	111	9-11.15E+3	-1.566E+3	208.8	-9.571E+3	-12.73E+3
302	E1	2	15-14.86E+3	-4.869E+3	145.4E+3	130.7E+3	-160.4E+3

BEAM STRESS ENVELOPES

Beam Property 4

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
40	E1	20	(10) (15)	(10) (11)	(15) (10)	(11) (12)	(10) (15)
			-18.04E+3	-18.69E+3	24.47E+3	11.04E+3	-36.87E+3
			-25.25E+3	-26.74E+3	2.270E+3	748.7	-61.49E+3
		7	(10) (15)	(15) (10)	(10) (15)	(11) (12)	(10) (15)
			-17.89E+3	27.08E+3	-1.195E+3	2.110E+3	-36.96E+3
			-25.09E+3	19.03E+3	-2.107E+3	1.149E+3	-52.26E+3
41	E1	32	(10) (11)	(15) (10)	(11) (10)	(15) (9)	(10) (11)
			-16.67E+3	26.73E+3	24.39E+3	11.03E+3	-34.35E+3
			-25.20E+3	17.95E+3	2.125E+3	926.5	-61.39E+3
		8	(10) (11)	(10) (11)	(10) (11)	(15) (9)	(10) (11)
			-16.51E+3	-17.91E+3	-1.122E+3	2.231E+3	-34.46E+3
			-25.04E+3	-27.17E+3	-2.066E+3	1.378E+3	-52.29E+3
114	E1	64	(11) (12)	(11) (12)	(15) (16)	(11) (12)	(10) (15)
			-14.64E+3	-15.57E+3	21.94E+3	12.25E+3	-36.91E+3
			-20.26E+3	-20.68E+3	2.211E+3	635.9	-41.61E+3
		51	(11) (12)	(12) (11)	(10) (15)	(16) (12)	(11) (12)
			-14.49E+3	21.06E+3	-1.012E+3	1.307E+3	-30.20E+3
			-20.05E+3	15.96E+3	-2.229E+3	1.049E+3	-41.14E+3
115	E1	76	(15) (9)	(9) (15)	(11) (10)	(15) (9)	(10) (11)
			-14.58E+3	20.66E+3	21.88E+3	12.27E+3	-34.27E+3
			-20.01E+3	15.59E+3	2.128E+3	806.3	-41.50E+3
		52	(15) (9)	(15) (9)	(10) (11)	(16) (9)	(15) (9)
			-14.43E+3	-15.61E+3	-966.6	1.390E+3	-30.19E+3
			-19.89E+3	-21.06E+3	-2.218E+3	1.243E+3	-40.95E+3

Maximum values in this output:

			Lc.				
115	E1	52	15-14.43E+3	-15.61E+3	-2.214E+3	1.334E+3	-30.19E+3
40	E1	7	15-25.09E+3	27.08E+3	-2.107E+3	2.066E+3	-52.26E+3
40	E1	20	15-25.25E+3	-26.73E+3	24.47E+3	10.99E+3	-61.49E+3
115	E1	76	15-14.58E+3	15.59E+3	21.86E+3	12.27E+3	-41.44E+3
115	E1	52	15-14.43E+3	-15.61E+3	-2.214E+3	1.334E+3	-30.19E+3

Minimum values in this output:

			Lc.				
40	E1	20	15-25.25E+3	-26.73E+3	24.47E+3	10.99E+3	-61.49E+3
41	E1	8	11-25.04E+3	-27.17E+3	-2.066E+3	2.201E+3	-52.29E+3
114	E1	51	15-14.54E+3	15.58E+3	-2.229E+3	1.194E+3	-30.28E+3
114	E1	64	12-20.20E+3	-20.68E+3	2.562E+3	635.9	-41.04E+3
40	E1	20	15-25.25E+3	-26.73E+3	24.47E+3	10.99E+3	-61.49E+3

BEAM STRESS ENVELOPES

Beam Property 5

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
270	E1	6	(11) (10)	(11) (10)	(12) (11)	(11) (10)	(11) (10)
			41.12E+3	16.47E+3	1.163E+3	58.94E+3	23.29E+3
			28.06E+3	10.85E+3	-6.816E+3	38.95E+3	17.16E+3
		105	(11) (10)	(11) (10)	(12) (11)	(11) (10)	(13) (10)
			41.09E+3	3.113E+3	1.164E+3	49.95E+3	12.24E+3
			28.03E+3	2.077E+3	-8.302E+3	30.33E+3	25.73E+3
271	E1	105	(11) (10)	(10) (11)	(12) (11)	(11) (10)	(11) (10)
			48.75E+3	-5.966E+3	1.182E+3	60.11E+3	37.38E+3
			39.22E+3	-8.280E+3	-7.767E+3	39.27E+3	27.17E+3
		106	(11) (10)	(10) (11)	(9) (15)	(11) (10)	(11) (10)
			48.72E+3	-2.129E+3	1.011E+3	57.66E+3	39.77E+3
			33.19E+3	-2.693E+3	-8.537E+3	38.48E+3	30.90E+3
272	E1	106	(11) (10)	(10) (11)	(9) (15)	(11) (10)	(11) (10)
			48.72E+3	-2.129E+3	1.011E+3	57.67E+3	39.77E+3
			33.19E+3	-2.693E+3	-8.537E+3	38.48E+3	30.90E+3
		32	(11) (10)	(15) (10)	(9) (15)	(11) (10)	(11) (10)
			48.69E+3	5.649E+3	839.6	59.52E+3	37.86E+3
			33.16E+3	4.184E+3	-9.282E+3	37.40E+3	28.92E+3
273	E1	90	(9) (15)	(9) (15)	(16) (11)	(9) (15)	(9) (15)
			33.24E+3	12.43E+3	1.005E+3	45.71E+3	20.76E+3
			25.05E+3	8.250E+3	-2.816E+3	33.77E+3	16.33E+3
		107	(9) (15)	(16) (15)	(16) (15)	(9) (10)	(9) (15)
			33.21E+3	2.422E+3	1.206E+3	35.86E+3	30.86E+3
			25.02E+3	1.820E+3	-6.554E+3	30.32E+3	18.22E+3
274	E1	107	(9) (15)	(10) (9)	(16) (15)	(9) (15)	(9) (15)
			39.51E+3	-6.093E+3	1.200E+3	47.11E+3	31.91E+3
			29.81E+3	-7.809E+3	-5.846E+3	38.40E+3	21.21E+3
		108	(9) (15)	(10) (9)	(16) (15)	(9) (10)	(9) (15)
			39.48E+3	-2.169E+3	1.156E+3	42.23E+3	36.73E+3
			29.78E+3	-2.509E+3	-8.856E+3	35.60E+3	20.59E+3
275	E1	108	(9) (15)	(10) (9)	(16) (15)	(9) (10)	(9) (15)
			39.48E+3	-2.169E+3	1.156E+3	42.23E+3	36.73E+3
			29.78E+3	-2.509E+3	-8.863E+3	35.60E+3	20.59E+3
		76	(9) (15)	(12) (11)	(16) (16)	(9) (10)	(9) (15)
			39.46E+3	5.238E+3	1.112E+3	44.63E+3	34.28E+3
			29.75E+3	3.799E+3	-11.87E+3	37.94E+3	17.27E+3
322	E1	6	(15) (10)	(15) (10)	(15) (9)	(15) (10)	(15) (10)
			41.13E+3	16.42E+3	6.829E+3	58.91E+3	23.35E+3
			30.15E+3	11.37E+3	-1.155E+3	41.57E+3	18.73E+3
		127	(15) (10)	(11) (10)	(11) (12)	(15) (10)	(14) (10)
			41.10E+3	2.840E+3	8.349E+3	49.92E+3	32.89E+3
			30.12E+3	1.981E+3	-1.179E+3	32.37E+3	27.86E+3

BEAM STRESS ENVELOPES

Beam Property 5

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
323	E1	127	(15) (10)	(10) (15)	(11) (12)	(15) (10)	(15) (10)
			48.65E+3	-6.949E+3	7.828E+3	60.28E+3	37.02E+3
			35.72E+3	-8.603E+3	-1.198E+3	42.75E+3	28.69E+3
		20	(15) (10)	(11) (10)	(11) (12)	(15) (10)	(13) (10)
			48.60E+3	5.604E+3	9.317E+3	59.44E+3	37.77E+3
			35.66E+3	4.587E+3	-865.4	40.31E+3	31.01E+3
324	E1	49	(12) (11)	(12) (11)	(15) (16)	(12) (11)	(12) (11)
			33.62E+3	12.89E+3	2.862E+3	46.28E+3	20.99E+3
			25.17E+3	8.232E+3	-991.7	33.88E+3	16.45E+3
		128	(12) (11)	(16) (15)	(11) (16)	(12) (11)	(12) (11)
			33.59E+3	2.217E+3	6.636E+3	36.04E+3	31.14E+3
			25.14E+3	1.676E+3	-1.200E+3	31.98E+3	18.30E+3
325	E1	128	(12) (11)	(11) (12)	(11) (16)	(12) (11)	(12) (11)
			39.85E+3	-6.814E+3	5.924E+3	47.76E+3	31.95E+3
			29.88E+3	-7.817E+3	-1.193E+3	38.68E+3	21.07E+3
		64	(12) (11)	(9) (15)	(11) (16)	(12) (10)	(12) (11)
			39.80E+3	5.066E+3	11.92E+3	44.84E+3	34.76E+3
			29.82E+3	3.757E+3	-1.111E+3	40.56E+3	17.32E+3

Maximum values in this output:

			Lc.				
271	E1	105	11	48.75E+3	-8.280E+3	-7.787E+3	60.11E+3	37.38E+3
270	E1	6	11	41.12E+3	16.47E+3	-6.816E+3	58.94E+3	23.29E+3
325	E1	64	11	29.82E+3	3.803E+3	11.92E+3	42.13E+3	17.32E+3
323	E1	127	15	48.65E+3	-8.603E+3	7.827E+3	60.28E+3	37.02E+3
271	E1	106	11	48.72E+3	-2.693E+3	-8.528E+3	57.66E+3	39.77E+3

Minimum values in this output:

			Lc.				
273	E1	107	15	25.02E+3	1.820E+3	-6.554E+3	31.82E+3	18.22E+3
323	E1	127	15	48.65E+3	-8.603E+3	7.827E+3	60.28E+3	37.02E+3
275	E1	76	15	29.75E+3	3.854E+3	-11.87E+3	42.23E+3	17.27E+3
271	E1	107	10	28.05E+3	2.046E+3	984.4	30.32E+3	25.78E+3
273	E1	50	15	25.05E+3	8.250E+3	-2.815E+3	33.77E+3	16.33E+3

BEAM STRESS ENVELOPES

Beam Property 6

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
44	E1	7	(15) (10)	(10) (15)	(11) (12)	(15) (10)	(15) (10)
			44.69E+3	-9.333E+3	10.35E+3	61.70E+3	27.67E+3
			31.23E+3	-13.52E+3	-2.577E+3	40.84E+3	21.62E+3
		21	(15) (10)	(15) (10)	(15) (10)	(15) (10)	(15) (10)
			44.57E+3	13.19E+3	12.91E+3	63.03E+3	26.12E+3
			31.12E+3	9.403E+3	1.963E+3	40.73E+3	21.51E+3
45	E1	8	(11) (10)	(10) (11)	(9) (15)	(11) (10)	(11) (10)
			44.62E+3	-8.618E+3	2.511E+3	51.67E+3	27.56E+3
			29.40E+3	-13.93E+3	-10.39E+3	38.27E+3	20.52E+3
		22	(11) (10)	(11) (10)	(10) (11)	(11) (10)	(11) (10)
			44.50E+3	13.22E+3	-1.849E+3	62.95E+3	26.06E+3
			29.28E+3	8.861E+3	-12.86E+3	38.33E+3	20.23E+3
118	E1	51	(12) (11)	(11) (12)	(11) (12)	(12) (11)	(9) (11)
			34.93E+3	-6.901E+3	10.46E+3	46.04E+3	23.82E+3
			24.26E+3	-10.78E+3	-2.692E+3	36.81E+3	11.71E+3
		65	(12) (11)	(12) (11)	(15) (10)	(12) (11)	(12) (11)
			34.81E+3	10.83E+3	11.79E+3	45.87E+3	24.05E+3
			24.14E+3	6.722E+3	1.936E+3	37.70E+3	10.59E+3
119	E1	52	(9) (15)	(15) (9)	(9) (15)	(9) (15)	(12) (15)
			34.58E+3	-6.860E+3	2.643E+3	45.42E+3	23.77E+3
			24.16E+3	-10.51E+3	-10.49E+3	36.69E+3	11.63E+3
		66	(9) (15)	(9) (15)	(10) (11)	(9) (15)	(9) (15)
			34.47E+3	10.42E+3	-1.817E+3	45.10E+3	23.84E+3
			24.05E+3	6.707E+3	-11.76E+3	37.57E+3	10.53E+3

Maximum values in this output:

			Lc.				
44	E1	7	15	44.69E+3	-13.52E+3	10.34E+3	61.70E+3	27.67E+3
45	E1	22	11	44.50E+3	13.22E+3	-12.86E+3	62.95E+3	26.06E+3
44	E1	21	15	44.57E+3	13.19E+3	12.91E+3	63.03E+3	26.12E+3
44	E1	21	15	44.57E+3	13.19E+3	12.91E+3	63.03E+3	26.12E+3
44	E1	7	15	44.69E+3	-13.52E+3	10.34E+3	61.70E+3	27.67E+3

Minimum values in this output:

			Lc.				
119	E1	66	15	24.05E+3	6.707E+3	-11.74E+3	37.57E+3	10.53E+3
45	E1	8	11	44.62E+3	-13.53E+3	-10.38E+3	61.67E+3	27.56E+3
45	E1	22	11	44.50E+3	13.22E+3	-12.86E+3	62.95E+3	26.06E+3
119	E1	52	15	24.16E+3	-8.860E+3	-10.49E+3	36.69E+3	11.63E+3
119	E1	66	15	24.05E+3	6.707E+3	-11.74E+3	37.57E+3	10.53E+3

BEAM STRESS ENVELOPES

Beam Property 7

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
46	E1	21	(10) (11)	(10) (15)	(15) (10)	(10) (11)	(10) (11)
			-43.78E+3	-4.661E+3	2.848E+3	-38.59E+3	-48.96E+3
			-63.97E+3	-8.732E+3	3.268E+3	-57.59E+3	-70.35E+3
		9	(10) (11)	(11) (10)	(10) (15)	(10) (11)	(10) (11)
			-43.59E+3	3.114E+3	-2.169E+3	-40.18E+3	-46.99E+3
			-63.78E+3	2.620E+3	-5.171E+3	-57.76E+3	-69.80E+3
47	E1	22	(10) (15)	(10) (11)	(10) (11)	(10) (15)	(10) (15)
			-41.19E+3	-4.423E+3	-2.115E+3	-36.29E+3	-46.10E+3
			-64.01E+3	-5.697E+3	-2.820E+3	-57.67E+3	-70.35E+3
		16	(10) (15)	(13) (10)	(11) (10)	(10) (15)	(10) (15)
			-41.00E+3	3.157E+3	5.144E+3	-37.63E+3	-44.38E+3
			-63.82E+3	2.886E+3	2.041E+3	-57.81E+3	-69.83E+3
48	E1	23	(10) (11)	(10) (15)	(9) (15)	(10) (11)	(10) (11)
			-31.60E+3	-7.312E+3	1.725E+3	-23.94E+3	-39.26E+3
			-47.99E+3	-9.518E+3	-1.059E+3	-38.38E+3	-57.51E+3
		10	(10) (11)	(16) (10)	(10) (11)	(10) (11)	(10) (11)
			-31.42E+3	3.461E+3	-3.088E+3	-27.12E+3	-35.71E+3
			-47.76E+3	2.984E+3	-6.032E+3	-40.94E+3	-54.58E+3
49	E1	31	(10) (15)	(10) (11)	(11) (12)	(10) (15)	(10) (15)
			-30.60E+3	-7.146E+3	1.044E+3	-23.30E+3	-37.90E+3
			-48.15E+3	-9.510E+3	-1.771E+3	-38.59E+3	-57.71E+3
		17	(10) (15)	(12) (10)	(11) (10)	(10) (15)	(10) (15)
			-30.41E+3	3.550E+3	6.035E+3	-26.09E+3	-34.73E+3
			-47.97E+3	3.114E+3	2.996E+3	-41.11E+3	-54.82E+3
120	E1	65	(11) (12)	(10) (15)	(15) (10)	(15) (9)	(11) (12)
			-33.53E+3	-4.630E+3	3.089E+3	-27.21E+3	-39.85E+3
			-48.82E+3	-9.535E+3	2.546E+3	-42.89E+3	-54.76E+3
		53	(11) (12)	(15) (10)	(10) (15)	(11) (12)	(11) (9)
			-33.34E+3	2.961E+3	-2.339E+3	-26.08E+3	-40.60E+3
			-48.62E+3	2.559E+3	-5.646E+3	-45.00E+3	-52.31E+3
121	E1	66	(15) (9)	(10) (11)	(10) (11)	(11) (12)	(15) (9)
			-33.53E+3	-4.383E+3	-2.373E+3	-27.24E+3	-39.81E+3
			-48.78E+3	-5.802E+3	-3.061E+3	-42.98E+3	-54.64E+3
		62	(15) (9)	(13) (10)	(11) (10)	(15) (9)	(11) (12)
			-33.34E+3	3.024E+3	6.619E+3	-26.10E+3	-40.98E+3
			-48.59E+3	2.616E+3	2.110E+3	-44.89E+3	-52.41E+3
122	E1	67	(15) (9)	(10) (12)	(9) (15)	(15) (9)	(15) (9)
			-23.27E+3	-7.411E+3	1.844E+3	-15.43E+3	-31.10E+3
			-35.61E+3	-8.378E+3	-394.6	-27.07E+3	-44.15E+3
		54	(15) (9)	(11) (10)	(10) (11)	(15) (9)	(15) (9)
			-23.08E+3	3.698E+3	-3.040E+3	-14.52E+3	-31.65E+3
			-35.43E+3	2.914E+3	-7.755E+3	-30.72E+3	-40.14E+3
123	E1	75	(11) (12)	(10) (9)	(11) (12)	(11) (12)	(11) (12)
			-23.43E+3	-7.027E+3	386.4	-15.60E+3	-31.26E+3
			-36.17E+3	-8.338E+3	-1,885E+3	-27.66E+3	-44.68E+3
		61	(11) (12)	(15) (10)	(11) (10)	(11) (12)	(11) (12)
			-23.29E+3	3.766E+3	7.780E+3	-14.66E+3	-31.84E+3
			-35.99E+3	3.027E+3	3.949E+3	-31.13E+3	-40.85E+3

Maximum values in this output:

			Lc.				
122	E1	54	15	-23.08E+3	3.634E+3	-7.755E+3	-14.52E+3	-31.65E+3
123	E1	61	15	-23.41E+3	3.766E+3	7.749E+3	-14.80E+3	-32.03E+3
123	E1	61	11	-23.25E+3	3.705E+3	7.750E+3	-14.66E+3	-31.84E+3
122	E1	54	15	-23.08E+3	3.634E+3	-7.755E+3	-14.52E+3	-31.65E+3
122	E1	67	15	-23.27E+3	-7.826E+3	-394.6	-15.43E+3	-31.10E+3

Minimum values in this output:

			Lc.				
47	E1	22	15	-64.01E+3	-5.685E+3	-2.806E+3	-57.67E+3	-70.35E+3
48	E1	23	15	-47.75E+3	-9.518E+3	-1.059E+3	-38.17E+3	-57.33E+3
122	E1	54	11	-23.24E+3	3.696E+3	-7.755E+3	-14.65E+3	-31.83E+3
47	E1	18	15	-63.82E+3	3.139E+3	5.126E+3	-57.81E+3	-69.83E+3
47	E1	22	15	-64.01E+3	-5.685E+3	-2.806E+3	-57.67E+3	-70.35E+3

BEAM STRESS ENVELOPES

Beam Property 8

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
50	E1	9	(11) (10)	(10) (15)	(15) (9)	(15) (10)	(11) (10)
			50.80E+3	-7.643E+3	5.718E+3	69.04E+3	36.58E+3
			34.76E+3	-13.06E+3	-3.127E+3	42.90E+3	26.63E+3
		23	(11) (10)	(11) (10)	(15) (10)	(11) (10)	(11) (10)
			50.68E+3	9.582E+3	11.48E+3	65.63E+3	35.74E+3
			34.64E+3	5.283E+3	4.012E+3	41.27E+3	28.01E+3
51	E1	18	(15) (10)	(10) (11)	(12) (11)	(11) (10)	(15) (10)
			50.82E+3	-6.997E+3	3.114E+3	64.99E+3	36.67E+3
			33.43E+3	-12.98E+3	-5.714E+3	40.92E+3	25.94E+3
		31	(15) (10)	(15) (10)	(10) (11)	(15) (10)	(15) (10)
			50.70E+3	9.586E+3	-3.846E+3	65.63E+3	35.77E+3
			33.31E+3	4.988E+3	-11.46E+3	39.60E+3	27.01E+3
52	E1	17	(15) (10)	(10) (15)	(12) (11)	(15) (10)	(15) (10)
			43.31E+3	-5.946E+3	1.915E+3	55.86E+3	30.73E+3
			28.99E+3	-11.31E+3	-5.511E+3	35.16E+3	22.83E+3
		30	(15) (10)	(15) (10)	(10) (15)	(15) (10)	(15) (10)
			43.18E+3	5.640E+3	-4.148E+3	55.13E+3	31.32E+3
			28.86E+3	2.247E+3	-10.54E+3	33.58E+3	24.15E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

KOC UNIVERSITESI

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CELIK CATI ANA MAKASLARI t.seh

BEAM STRESS ENVELOPES

Beam Property 8

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
93	E1	10	(11) (10)	(10) (11)	(15) (9)	(11) (10)	(11) (10)
			43.15E+3	-6.174E+3	5.533E+3	35.72E+3	30.59E+3
			29.15E+3	-11.29E+3	-1.859E+3	35.63E+3	22.77E+3
		24	(11) (10)	(11) (10)	(11) (10)	(11) (10)	(11) (10)
			41.03E+3	5.560E+3	10.53E+3	54.94E+3	31.12E+3
			29.02E+3	2.056E+3	4.309E+3	33.70E+3	24.34E+3
124	E1	53	(12) (11)	(11) (12)	(15) (9)	(12) (11)	(9) (15)
			38.65E+3	-3.511E+3	4.507E+3	48.12E+3	29.25E+3
			26.29E+3	-8.949E+3	-3.099E+3	32.08E+3	20.57E+3
		67	(12) (11)	(9) (15)	(15) (10)	(12) (11)	(12) (11)
			38.53E+3	6.099E+3	11.25E+3	46.10E+3	30.95E+3
			26.17E+3	1.296E+3	4.030E+3	37.49E+3	14.85E+3
129	E1	62	(9) (15)	(15) (9)	(12) (11)	(9) (15)	(12) (11)
			38.59E+3	-3.425E+3	3.111E+3	47.88E+3	29.39E+3
			26.28E+3	-8.758E+3	-4.500E+3	31.93E+3	20.61E+3
		75	(9) (15)	(12) (11)	(10) (11)	(9) (15)	(9) (11)
			38.47E+3	6.131E+3	-3.853E+3	46.03E+3	30.90E+3
			26.16E+3	1.289E+3	-11.24E+3	37.45E+3	14.86E+3
126	E1	61	(12) (11)	(11) (12)	(12) (11)	(12) (11)	(12) (11)
			32.92E+3	-2.488E+3	1.825E+3	40.31E+3	25.53E+3
			22.20E+3	-7.161E+3	-4.346E+3	27.20E+3	17.19E+3
		74	(12) (11)	(12) (11)	(10) (15)	(12) (11)	(12) (11)
			32.79E+3	2.803E+3	-4.128E+3	38.34E+3	27.24E+3
			22.07E+3	-1.226E+3	-10.47E+3	32.61E+3	11.93E+3
127	E1	54	(9) (15)	(15) (9)	(15) (9)	(9) (15)	(9) (15)
			32.51E+3	-2.473E+3	4.364E+3	39.85E+3	25.17E+3
			22.08E+3	-7.124E+3	-1.765E+3	27.09E+3	17.05E+3
		68	(9) (15)	(9) (15)	(11) (10)	(9) (15)	(9) (15)
			32.38E+3	2.581E+3	10.47E+3	37.80E+3	26.97E+3
			21.95E+3	-1.294E+3	4.197E+3	32.49E+3	11.41E+3

Maximum values in this output:

			Lc.				
51	E1	18	1S 50.82E+3	-12.94E+3	-5.711E+3	64.96E+3	36.67E+3
51	E1	31	1S 50.70E+3	9.586E+3	-11.45E+3	65.63E+3	35.77E+3
50	E1	23	1S 50.67E+3	11.48E+3	11.48E+3	65.60E+3	35.73E+3
51	E1	31	1S 50.70E+3	9.586E+3	-11.45E+3	65.63E+3	35.77E+3
51	E1	18	1S 50.82E+3	-12.94E+3	-5.711E+3	64.96E+3	36.67E+3

Minimum values in this output:

			Lc.				
127	E1	68	1S 21.95E+3	-1.294E+3	10.46E+3	32.49E+3	11.41E+3
50	E1	9	1S 50.79E+3	-13.06E+3	5.718E+3	65.04E+3	36.54E+3
51	E1	31	1S 50.69E+3	9.565E+3	-11.46E+3	65.61E+3	35.76E+3
127	E1	54	1S 22.08E+3	-2.473E+3	4.364E+3	27.09E+3	17.05E+3
127	E1	68	1S 21.95E+3	-1.294E+3	10.46E+3	32.49E+3	11.41E+3

BEAM STRESS ENVELOPES

Beam Property 9

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
54	E1	24	(10) (11)	(10) (11)	(16) (15)	(10) (11)	(10) (11)
			-24.46E+3	-7.923E+3	615.3	-16.53E+3	-32.40E+3
			-36.48E+3	-9.743E+3	-3.728E+3	-28.05E+3	-48.91E+3
		11	(10) (11)	(16) (15)	(10) (11)	(10) (11)	(10) (11)
			-24.29E+3	2.111E+3	-3.490E+3	-20.43E+3	-28.15E+3
			-36.31E+3	1.454E+3	-5.972E+3	-32.14E+3	-44.47E+3
55	E1	25	(10) (11)	(10) (9)	(16) (15)	(10) (11)	(10) (11)
			-11.55E+3	-9.984E+3	-1.002E+3	-1.845E+3	-21.56E+3
			-18.35E+3	-11.46E+3	-10.38E+3	-3.648E+3	-33.09E+3
		12	(10) (11)	(16) (15)	(10) (9)	(10) (11)	(10) (11)
			-11.38E+3	4.206E+3	-2.955E+3	-6.729E+3	-16.04E+3
			-18.18E+3	146.4	-3.440E+3	-14.86E+3	-21.51E+3
56	E1	30	(10) (15)	(10) (15)	(11) (12)	(10) (15)	(10) (15)
			-25.08E+3	-7.753E+3	3.706E+3	-17.31E+3	-32.86E+3
			-38.89E+3	-9.767E+3	-870.4	-28.45E+3	-49.33E+3
		16	(10) (15)	(12) (11)	(15) (10)	(10) (15)	(10) (15)
			-24.91E+3	2.199E+3	5.986E+3	-20.90E+3	-28.92E+3
			-38.71E+3	1.559E+3	3.482E+3	-32.51E+3	-44.91E+3
57	E1	29	(10) (15)	(10) (12)	(11) (10)	(9) (14)	(10) (15)
			-13.85E+3	-10.03E+3	10.36E+3	-3.507E+3	-23.92E+3
			-28.83E+3	-11.60E+3	887.7	-5.651E+3	-33.55E+3
		15	(10) (15)	(12) (11)	(12) (10)	(10) (15)	(10) (14)
			-13.68E+3	4.381E+3	3.509E+3	-8.609E+3	-18.76E+3
			-18.66E+3	219.7	3.047E+3	-15.31E+3	-22.12E+3
128	E1	68	(15) (9)	(10) (9)	(9) (15)	(15) (9)	(15) (9)
			-18.15E+3	-7.727E+3	734.4	-9.026E+3	-27.27E+3
			-28.26E+3	-8.789E+3	-3.242E+3	-19.44E+3	-37.08E+3
		55	(15) (9)	(11) (10)	(10) (11)	(15) (9)	(15) (9)
			-17.97E+3	2.657E+3	-3.403E+3	-10.15E+3	-25.79E+3
			-28.09E+3	1.726E+3	-7.386E+3	-23.72E+3	-32.46E+3
129	E1	69	(15) (9)	(10) (11)	(10) (15)	(15) (16)	(10) (11)
			-10.39E+3	-9.199E+3	-1.146E+3	5.143E+3	-20.24E+3
			-14.22E+3	-11.84E+3	-10.11E+3	-3.678E+3	-26.36E+3
		56	(15) (9)	(11) (10)	(10) (11)	(15) (9)	(10) (11)
			-10.22E+3	7.156E+3	-2.658E+3	-2.018E+3	-14.74E+3
			-14.06E+3	2.904E+3	-4.174E+3	-9.508E+3	-18.94E+3

BEAM STRESS ENVELOPES

Beam Property 9

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
130	E1	74	(11) (12)	(10) (12)	(11) (12)	(11) (12)	(11) (12)
			-18.51E+3	-7.938E+3	3.223E+3	-9.374E+3	-27.64E+3
			-29.44E+3	-8.830E+3	-795.1	-20.58E+3	-38.31E+3
		60	(11) (12)	(15) (9)	(15) (10)	(11) (12)	(11) (12)
			-18.33E+3	2.757E+3	7.397E+3	-10.47E+3	-26.19E+3
			-29.27E+3	2.026E+3	3.390E+3	-24.74E+3	-33.79E+3
131	E1	73	(11) (12)	(10) (15)	(11) (10)	(11) (12)	(10) (15)
			-10.84E+3	-9.263E+3	10.09E+3	4.713E+3	-22.38E+3
			-15.68E+3	-11.87E+3	1.025E+3	-4.891E+3	-26.84E+3
		59	(11) (12)	(15) (9)	(15) (10)	(11) (12)	(10) (14)
			-10.67E+3	7.229E+3	4.193E+3	-2.391E+3	-17.24E+3
			-15.51E+3	3.324E+3	2.753E+3	-10.73E+3	-20.37E+3

Maximum values in this output:

			Lc.				
129	E1	56	1S -10.22E+3	7.075E+3	-4.154E+3	-2.018E+3	-18.41E+3
131	E1	59	1S -11.10E+3	7.229E+3	4.193E+3	-2.745E+3	-19.46E+3
57	E1	29	1I -18.37E+3	-10.42E+3	10.36E+3	-3.674E+3	-33.06E+3
129	E1	69	1S -10.39E+3	-11.79E+3	-10.11E+3	5.143E+3	-25.92E+3
129	E1	56	1S -10.80E+3	2.904E+3	-2.658E+3	-6.866E+3	-14.74E+3

Minimum values in this output:

			Lc.				
56	E1	30	1S -38.89E+3	-9.767E+3	3.688E+3	-28.45E+3	-49.33E+3
131	E1	73	1S -11.27E+3	-11.87E+3	10.08E+3	4.304E+3	-26.84E+3
55	E1	25	1S -17.88E+3	-10.38E+3	-10.38E+3	-3.202E+3	-32.56E+3
56	E1	16	1S -38.71E+3	1.632E+3	5.986E+3	-32.51E+3	-44.91E+3
56	E1	30	1S -38.89E+3	-9.767E+3	3.688E+3	-28.45E+3	-49.33E+3

BEAM STRESS ENVELOPES

Beam Property 10

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
58	E1	11	(11) (10)	(10) (11)	(15) (16)	(11) (10)	(11) (10)
			41.16E+3	-3.383E+3	7.803E+3	52.81E+3	29.52E+3
			28.40E+3	-8.661E+3	-282.0	31.79E+3	25.01E+3
		25	(11) (10)	(11) (12)	(11) (10)	(11) (10)	(11) (10)
			41.03E+3	882.3	8.735E+3	49.80E+3	32.25E+3
			28.26E+3	-2.270E+3	3.733E+3	32.49E+3	24.03E+3
59	E1	12	(11) (10)	(10) (11)	(11) (10)	(11) (10)	(9) (15)
			26.99E+3	-4.102E+3	24.46E+3	52.02E+3	16.86E+3
			18.17E+3	-5.309E+3	2.385E+3	22.90E+3	1.563E+3
		26	(11) (10)	(11) (12)	(9) (15)	(11) (10)	(12) (10)
			26.84E+3	-3.500E+3	2.746E+3	35.86E+3	18.32E+3
			18.03E+3	-4.342E+3	-7.990E+3	22.50E+3	13.56E+3
60	E1	16	(15) (10)	(10) (15)	(12) (11)	(15) (10)	(14) (10)
			41.49E+3	-3.829E+3	347.4	53.18E+3	30.41E+3
			29.82E+3	-8.756E+3	-7.775E+3	33.36E+3	26.28E+3
		29	(15) (10)	(15) (9)	(10) (15)	(15) (10)	(15) (10)
			41.35E+3	975.5	-3.809E+3	50.16E+3	32.54E+3
			29.68E+3	-1.907E+3	-8.759E+3	33.76E+3	25.61E+3
61	E1	15	(15) (16)	(10) (13)	(10) (11)	(15) (10)	(12) (11)
			27.41E+3	-4.462E+3	-2.260E+3	52.44E+3	18.05E+3
			21.39E+3	-5.381E+3	-24.45E+3	26.42E+3	1.978E+3
		28	(15) (16)	(10) (9)	(11) (12)	(15) (10)	(14) (16)
			27.27E+3	-3.073E+3	7.973E+3	35.92E+3	21.54E+3
			21.24E+3	-4.009E+3	-2.804E+3	25.19E+3	16.56E+3
132	E1	55	(9) (15)	(15) (9)	(15) (16)	(9) (13)	(9) (15)
			31.76E+3	470.2	7.413E+3	36.09E+3	27.44E+3
			23.15E+3	-4.326E+3	-131.3	30.54E+3	15.70E+3
		69	(9) (15)	(9) (15)	(11) (10)	(9) (10)	(9) (15)
			31.63E+3	-1.607E+3	8.011E+3	36.24E+3	27.02E+3
			23.01E+3	-4.992E+3	3.751E+3	31.31E+3	13.59E+3
133	E1	56	(9) (15)	(10) (9)	(11) (10)	(11) (10)	(9) (15)
			21.13E+3	-3.300E+3	24.88E+3	41.76E+3	15.74E+3
			16.28E+3	-4.077E+3	3.138E+3	21.60E+3	-6.812E+3
		70	(9) (15)	(10) (15)	(9) (15)	(11) (10)	(9) (15)
			20.99E+3	-3.771E+3	2.011E+3	27.01E+3	16.53E+3
			16.14E+3	-4.967E+3	-9.308E+3	21.04E+3	5.586E+3
134	E1	60	(12) (11)	(11) (12)	(12) (11)	(12) (11)	(12) (11)
			32.72E+3	385.9	180.9	37.25E+3	28.19E+3
			23.44E+3	-4.527E+3	-7.410E+3	30.86E+3	16.02E+3
		73	(12) (11)	(10) (11)	(10) (15)	(12) (10)	(12) (11)
			32.58E+3	-1.189E+3	-3.786E+3	37.15E+3	28.01E+3
			23.30E+3	-4.880E+3	-8.030E+3	32.41E+3	13.92E+3
135	E1	59	(12) (11)	(11) (12)	(10) (11)	(15) (10)	(12) (11)
			22.41E+3	-3.376E+3	-3.054E+3	42.15E+3	16.85E+3
			16.67E+3	-4.304E+3	-24.87E+3	24.85E+3	-8.430E+3
		72	(12) (11)	(10) (11)	(11) (12)	(15) (10)	(12) (11)
			22.26E+3	-3.062E+3	9.297E+3	27.35E+3	18.05E+3
			16.52E+3	-4.874E+3	-2.053E+3	23.50E+3	6.026E+3

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BEAM STRESS ENVELOPES

Beam Property 10

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:			Lc.				
60	S1	16	15 41.49E+3	-8.756E+3	-7.754E+3	53.18E+3	29.79E+3
60	S1	29	15 41.35E+3	975.5	-8.759E+3	50.16E+3	32.54E+3
133	S1	56	11 16.66E+3	-3.381E+3	24.88E+3	41.76E+3	-8.448E+3
60	S1	16	15 41.49E+3	-8.756E+3	-7.754E+3	53.18E+3	29.79E+3
60	S1	29	15 41.35E+3	975.5	-8.759E+3	50.16E+3	32.54E+3
Minimum values in this output:			Lc.				
133	S1	70	15 16.14E+3	-4.967E+3	-9.368E+3	26.69E+3	5.586E+3
60	S1	16	15 41.49E+3	-8.756E+3	-7.754E+3	53.18E+3	29.79E+3
135	S1	59	11 16.67E+3	-3.376E+3	-24.87E+3	41.76E+3	-8.430E+3
133	S1	70	10 16.91E+3	-3.771E+3	1.703E+3	21.04E+3	12.77E+3
133	S1	56	15 16.28E+3	-3.312E+3	24.87E+3	41.37E+3	-8.812E+3

BEAM STRESS ENVELOPES

Beam Property 11

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
62	S1	26	(10)(11)	(10)(11)	(10)(11)	(15)(16)	(10)(11)
			2.928E+3	-4.016E+3	-8.074E+3	25.32E+3	-6.090E+3
			-1.684E+3	-6.091E+3	-25.78E+3	10.32E+3	-28.15E+3
		13	(10)(11)	(11)(12)	(15)(10)	(15)(16)	(10)(11)
			3.088E+3	-6.733E+3	21.31E+3	21.35E+3	-5.424E+3
			-1.494E+3	-8.383E+3	3.283E+3	8.682E+3	-23.84E+3
63	S1	28	(9)(13)	(10)(15)	(15)(10)	(11)(10)	(16)(15)
			930.2	-4.732E+3	25.78E+3	24.82E+3	-9.844E+3
			-2.205E+3	-6.162E+3	8.014E+3	8.286E+3	-28.67E+3
		14	(9)(13)	(15)(9)	(10)(11)	(11)(10)	(16)(15)
			690.1	-6.646E+3	-3.207E+3	20.83E+3	-7.887E+3
			-2.046E+3	-8.090E+3	-21.30E+3	6.563E+3	-24.31E+3
64	S1	14	(15)(16)	(9)(15)	(10)(15)	(15)(16)	(10)(11)
			15.08E+3	8.553E+3	-13.01E+3	37.90E+3	-2.115E+3
			10.93E+3	2.296E+3	-22.71E+3	27.31E+3	-8.230E+3
		27	(15)(16)	(15)(9)	(11)(10)	(15)(16)	(10)(11)
			14.93E+3	-9.119E+3	21.17E+3	37.97E+3	-2.995E+3
			10.78E+3	-12.30E+3	11.79E+3	28.14E+3	-8.643E+3
65	S1	27	(11)(10)	(11)(12)	(15)(10)	(11)(10)	(16)(15)
			14.43E+3	-9.211E+3	21.18E+3	37.61E+3	-6.609E+3
			7.874E+3	-12.61E+3	11.85E+3	24.32E+3	-9.181E+3
		13	(11)(10)	(12)(11)	(10)(11)	(11)(10)	(16)(15)
			14.59E+3	8.843E+3	-13.04E+3	37.42E+3	-5.473E+3
			8.026E+3	2.381E+3	-22.71E+3	23.64E+3	-8.732E+3
136	S1	70	(15)(16)	(10)(9)	(10)(11)	(15)(16)	(10)(11)
			2.738E+3	-4.010E+3	-7.362E+3	26.33E+3	-5.998E+3
			-207.0	-5.226E+3	-23.13E+3	9.178E+3	-21.32E+3
		57	(15)(16)	(16)(15)	(15)(10)	(15)(16)	(10)(11)
			2.898E+3	-6.221E+3	18.64E+3	23.05E+3	-4.633E+3
			-47.09	-7.666E+3	2.727E+3	6.827E+3	-17.68E+3
137	S1	72	(11)(12)	(10)(13)	(15)(10)	(11)(10)	(16)(15)
			2.269E+3	-4.683E+3	21.13E+3	25.87E+3	-9.606E+3
			-1.473E+3	-5.435E+3	7.281E+3	7.393E+3	-21.60E+3
		58	(11)(12)	(10)(11)	(10)(11)	(11)(10)	(16)(15)
			2.429E+3	-5.946E+3	-2.654E+3	22.55E+3	-6.931E+3
			-1.315E+3	-7.387E+3	-18.63E+3	5.009E+3	-18.11E+3
138	S1	58	(12)(11)	(11)(10)	(10)(15)	(15)(16)	(10)(11)
			12.34E+3	13.05E+3	-12.87E+3	32.59E+3	-2.243E+3
			7.875E+3	6.364E+3	-20.52E+3	25.84E+3	-16.44E+3
		71	(12)(11)	(10)(11)	(11)(10)	(15)(16)	(10)(11)
			12.19E+3	-9.317E+3	16.94E+3	31.56E+3	-2.670E+3
			7.723E+3	-13.82E+3	11.28E+3	26.19E+3	-15.73E+3
139	S1	71	(9)(15)	(10)(15)	(15)(10)	(11)(10)	(16)(15)
			10.73E+3	-10.20E+3	18.95E+3	31.16E+3	-6.060E+3
			7.277E+3	-13.91E+3	11.34E+3	22.60E+3	-16.23E+3
		57	(9)(15)	(15)(16)	(10)(11)	(11)(10)	(16)(15)
			10.88E+3	11.12E+3	-12.91E+3	32.16E+3	-5.413E+3
			7.429E+3	7.171E+3	-20.52E+3	22.35E+3	-16.93E+3
Maximum values in this output:			Lc.				
64	S1	14	15 15.08E+3	2.296E+3	-22.71E+3	37.90E+3	-7.743E+3
139	S1	57	15 7.429E+3	13.12E+3	-20.52E+3	31.79E+3	-16.93E+3
63	S1	28	15-2.164E+3	-6.162E+3	25.78E+3	24.34E+3	-28.67E+3
64	S1	27	15 14.93E+3	-9.119E+3	21.17E+3	37.97E+3	-8.121E+3
64	S1	14	10 12.92E+3	7.531E+3	-13.01E+3	27.95E+3	-2.118E+3
Minimum values in this output:			Lc.				
63	S1	28	13-2.206E+3	-6.013E+3	20.96E+3	19.60E+3	-24.02E+3
139	S1	71	15 7.277E+3	-13.91E+3	18.95E+3	30.78E+3	-16.23E+3
62	S1	26	11-1.654E+3	-6.091E+3	-25.78E+3	24.84E+3	-28.15E+3
137	S1	58	10-1.143E+3	-5.946E+3	-2.654E+3	5.009E+3	-7.291E+3
63	S1	28	15-2.164E+3	-6.162E+3	25.78E+3	24.34E+3	-28.67E+3

BEAM STRESS ENVELOPES

Beam Property 12

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
213	S1	1	(10)(11)	(11)(10)	(16)(15)	(11)(10)	(10)(11)
			-678.0	7.485E+3	93.66	18.13E+3	-6.266E+3
			-1.843E+3	5.580E+3	-8.692E+3	4.910E+3	-17.22E+3
		89	(10)(11)	(10)(11)	(10)(15)	(11)(10)	(10)(11)
			-583.9	-11.16E+3	-4.725	19.04E+3	-11.75E+3
			-949.1	-14.97E+3	-5.019E+3	10.58E+3	-20.94E+3
214	S1	89	(10)(11)	(10)(11)	(10)(15)	(11)(10)	(10)(11)
			-563.0	-11.17E+3	-4.725	19.12E+3	-11.73E+3
			-928.2	-15.03E+3	-5.019E+3	10.61E+3	-20.98E+3
		2	(10)(11)	(9)(9)	(15)(10)	(15)(9)	(10)(11)
			-351.1	.0	3.381E+3	2.666E+3	-367.1
			-716.4	.0	15.00	-369.9	-4.097E+3
215	S1	3	(10)(15)	(10)(15)	(16)(11)	(15)(10)	(10)(15)
			-655.4	-5.880E+3	93.91	15.33E+3	-6.244E+3
			-1.045E+3	-7.696E+3	-8.683E+3	4.933E+3	-17.42E+3
		90	(10)(15)	(15)(10)	(12)(11)	(15)(10)	(10)(15)
			-561.2	15.39E+3	-4.327	19.46E+3	-11.73E+3
			-950.8	11.16E+3	-5.012E+3	10.60E+3	-21.35E+3
216	S1	90	(10)(15)	(15)(10)	(12)(11)	(15)(10)	(10)(15)
			-540.3	15.45E+3	-4.327	19.54E+3	-11.71E+3
			-929.9	11.17E+3	-5.013E+3	10.63E+3	-21.40E+3
		4	(10)(15)	(9)(9)	(11)(10)	(11)(12)	(10)(15)
			-328.5	.0	3.387E+3	2.670E+3	-344.5
			-718.1	.0	15.97	-375.4	-4.105E+3
217	S1	48	(15)(16)	(16)(15)	(9)(15)	(11)(10)	(10)(11)
			-382.8	6.746E+3	98.50E-3	13.42E+3	-6.038E+3
			-713.5	4.886E+3	-8.713E+3	4.681E+3	-14.19E+3
		91	(15)(16)	(15)(15)	(16)(15)	(11)(10)	(10)(11)
			-388.7	-9.773E+3	108.1	14.87E+3	-11.31E+3
			-619.4	-13.49E+3	-4.975E+3	10.15E+3	-15.45E+3
218	S1	91	(15)(16)	(15)(16)	(16)(15)	(11)(10)	(10)(11)
			-267.8	-9.710E+3	108.1	14.83E+3	-11.29E+3
			-598.4	-13.49E+3	-4.975E+3	10.16E+3	-15.37E+3
		46	(15)(16)	(9)(9)	(15)(16)	(15)(9)	(10)(11)
			-95.95	.0	3.301E+3	3.245E+3	-368.8
			-385.6	.0	-41.93	-378.8	-3.357E+3
219	S1	47	(11)(12)	(11)(12)	(12)(11)	(15)(10)	(10)(15)
			-384.0	-8.093E+3	1.924	13.62E+3	-6.014E+3
			-717.9	-6.621E+3	-8.705E+3	4.705E+3	-14.39E+3
		92	(11)(12)	(12)(11)	(16)(11)	(15)(10)	(10)(15)
			-389.8	13.64E+3	106.7	15.38E+3	-11.29E+3
			-623.7	10.19E+3	-4.967E+3	10.17E+3	-15.86E+3
220	S1	92	(11)(12)	(12)(11)	(16)(11)	(15)(10)	(10)(15)
			-268.9	13.64E+3	106.7	15.24E+3	-11.26E+3
			-602.8	10.12E+3	-4.967E+3	10.19E+3	-15.78E+3
		48	(11)(12)	(9)(9)	(11)(16)	(11)(12)	(10)(15)
			-87.07	.0	3.309E+3	3.248E+3	-338.7
			-391.0	.0	-42.68	-381.2	-3.363E+3
Maximum values in this output:			Lc.				
216	S1	46	15 -88.95	.0	3.301E+3	3.245E+3	-3.357E+3
216	S1	90	15 -929.9	15.45E+3	-5.012E+3	19.54E+3	-21.40E+3
216	S1	4	11 -716.7	.0	3.387E+3	2.670E+3	-4.103E+3
216	S1	90	15 -929.9	15.45E+3	-5.012E+3	19.54E+3	-21.40E+3
220	S1	48	10 -327.5	.0	-8.148	-319.4	-339.7
Minimum values in this output:			Lc.				
215	S1	3	15-1.045E+3	-7.696E+3	-8.682E+3	15.33E+3	-17.42E+3
214	S1	89	11 -928.2	-15.03E+3	-5.019E+3	19.12E+3	-20.98E+3
217	S1	48	15 -382.8	4.886E+3	-8.713E+3	13.22E+3	-13.98E+3
220	S1	48	12 -391.0	.0	-9.746	-381.2	-400.7
216	S1	90	15 -929.9	15.45E+3	-5.012E+3	19.54E+3	-21.40E+3

BEAM STRESS ENVELOPES

Beam Property 13

Elem. no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
167	S1	51	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			827.1	.0	.0	827.1	827.1
			-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
		7	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			827.1	.0	.0	827.1	827.1
			-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
168	S1	53	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			1.685E+3	.0	.0	1.685E+3	1.685E+3
			-27.01E+3	.0	.0	-27.01E+3	-27.01E+3
		9	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			1.685E+3	.0	.0	1.685E+3	1.685E+3
			-27.01E+3	.0	.0	-27.01E+3	-27.01E+3
169	S1	54	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.322E+3	.0	.0	2.322E+3	2.322E+3
			-21.77E+3	.0	.0	-21.77E+3	-21.77E+3
		10	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.322E+3	.0	.0	2.322E+3	2.322E+3
			-21.77E+3	.0	.0	-21.77E+3	-21.77E+3

BEAM STRESS ENVELOPES

Beam Property 13

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
170	E1	88	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.792E+3	.0	.0	2.792E+3	2.792E+3
			-17.29E+3	.0	.0	-17.29E+3	-17.29E+3
		11	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.792E+3	.0	.0	2.792E+3	2.792E+3
			-17.29E+3	.0	.0	-17.29E+3	-17.29E+3
171	E1	56	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.759E+3	.0	.0	2.759E+3	2.759E+3
			-11.09E+3	.0	.0	-11.09E+3	-11.09E+3
		12	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.759E+3	.0	.0	2.759E+3	2.759E+3
			-11.09E+3	.0	.0	-11.09E+3	-11.09E+3
172	E1	57	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			9.378E+3	.0	.0	9.378E+3	9.378E+3
			4.766E+3	.0	.0	4.766E+3	4.766E+3
		13	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			9.378E+3	.0	.0	9.378E+3	9.378E+3
			4.766E+3	.0	.0	4.766E+3	4.766E+3
173	E1	58	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			9.344E+3	.0	.0	9.344E+3	9.344E+3
			4.761E+3	.0	.0	4.761E+3	4.761E+3
		14	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			9.344E+3	.0	.0	9.344E+3	9.344E+3
			4.761E+3	.0	.0	4.761E+3	4.761E+3
174	E1	59	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.679E+3	.0	.0	2.679E+3	2.679E+3
			-11.11E+3	.0	.0	-11.11E+3	-11.11E+3
		15	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.679E+3	.0	.0	2.679E+3	2.679E+3
			-11.11E+3	.0	.0	-11.11E+3	-11.11E+3
175	E1	60	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.692E+3	.0	.0	2.692E+3	2.692E+3
			-17.32E+3	.0	.0	-17.32E+3	-17.32E+3
		16	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.692E+3	.0	.0	2.692E+3	2.692E+3
			-17.32E+3	.0	.0	-17.32E+3	-17.32E+3
176	E1	61	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.214E+3	.0	.0	2.214E+3	2.214E+3
			-21.79E+3	.0	.0	-21.79E+3	-21.79E+3
		17	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.214E+3	.0	.0	2.214E+3	2.214E+3
			-21.79E+3	.0	.0	-21.79E+3	-21.79E+3
177	E1	62	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			1.577E+3	.0	.0	1.577E+3	1.577E+3
			-27.03E+3	.0	.0	-27.03E+3	-27.03E+3
		18	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			1.577E+3	.0	.0	1.577E+3	1.577E+3
			-27.03E+3	.0	.0	-27.03E+3	-27.03E+3
178	E1	52	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			740.3	.0	.0	740.3	740.3
			-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
		8	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			740.3	.0	.0	740.3	740.3
			-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
340	E1	97	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-42.77	.0	.0	-42.77	-42.77
			-911.7	.0	.0	-911.7	-911.7
		98	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-42.77	.0	.0	-42.77	-42.77
			-911.7	.0	.0	-911.7	-911.7
341	E1	117	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			219.9	.0	.0	219.9	219.9
			-650.9	.0	.0	-650.9	-650.9
		119	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			219.9	.0	.0	219.9	219.9
			-650.9	.0	.0	-650.9	-650.9
342	E1	93	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			702.7	.0	.0	702.7	702.7
			-535.5	.0	.0	-535.5	-535.5
		94	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			702.7	.0	.0	702.7	702.7
			-535.5	.0	.0	-535.5	-535.5
344	E1	100	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-36.33	.0	.0	-36.33	-36.33
			-821.4	.0	.0	-821.4	-821.4
		99	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-36.33	.0	.0	-36.33	-36.33
			-821.4	.0	.0	-821.4	-821.4
345	E1	131	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			164.1	.0	.0	164.1	164.1
			-650.6	.0	.0	-650.6	-650.6
		132	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			164.1	.0	.0	164.1	164.1
			-650.6	.0	.0	-650.6	-650.6
346	E1	96	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			380.6	.0	.0	380.6	380.6
			-817.0	.0	.0	-817.0	-817.0
		95	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			380.6	.0	.0	380.6	380.6
			-817.0	.0	.0	-817.0	-817.0

BEAM STRESS ENVELOPES

Beam Property 13

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
			Lc.				
172	E1	57	12 9.378E+3	.0	.0	9.378E+3	9.378E+3
167	E1	51	9 738.1	.0	.0	738.1	738.1
167	E1	51	9 738.1	.0	.0	738.1	738.1
172	E1	57	12 9.378E+3	.0	.0	9.378E+3	9.378E+3
172	E1	57	12 9.378E+3	.0	.0	9.378E+3	9.378E+3
Minimum values in this output:							
			Lc.				
167	E1	51	11-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
167	E1	51	9 738.1	.0	.0	738.1	738.1
167	E1	51	9 738.1	.0	.0	738.1	738.1
167	E1	51	11-30.88E+3	.0	.0	-30.88E+3	-30.88E+3
167	E1	51	11-30.88E+3	.0	.0	-30.88E+3	-30.88E+3

BEAM STRESS ENVELOPES

Beam Property 14

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
180	E1	49	(11)(12)	(10)(11)	(15)(9)	(11)(12)	(11)(12)
			121.2E+3	-1.956E-6	1.962E-6	121.2E+3	121.2E+3
			-1.966E+3	-7.824E-6	-652.0E-9	-1.966E+3	-1.966E+3
		7	(11)(12)	(10)(11)	(15)(9)	(11)(12)	(11)(12)
			121.3E+3	-1.956E-6	1.962E-6	121.3E+3	121.3E+3
			-1.894E+3	-7.824E-6	-652.0E-9	-1.894E+3	-1.894E+3
181	E1	51	(11)(12)	(9)(11)	(10)(9)	(11)(12)	(11)(12)
			120.0E+3	1.304E-6	163.0E-9	120.0E+3	120.0E+3
			-5.629E+3	-9.128E-6	.0	-5.629E+3	-5.629E+3
		9	(11)(12)	(9)(11)	(10)(9)	(11)(12)	(11)(12)
			120.1E+3	1.304E-6	163.0E-9	120.1E+3	120.1E+3
			-5.552E+3	-9.128E-6	.0	-5.552E+3	-5.552E+3
182	E1	53	(11)(12)	(10)(12)	(15)(9)	(11)(12)	(11)(12)
			97.09E+3	-12.71E-6	2.706E-6	97.09E+3	97.09E+3
			-8.677E+3	-13.69E-6	.0	-8.677E+3	-8.677E+3
		10	(11)(12)	(10)(12)	(15)(9)	(11)(12)	(11)(12)
			97.15E+3	-12.71E-6	2.706E-6	97.15E+3	97.15E+3
			-8.615E+3	-13.69E-6	.0	-8.615E+3	-8.615E+3
183	E1	54	(11)(12)	(16)(9)	(11)(12)	(11)(12)	(11)(12)
			75.81E+3	2.608E-6	652.0E-9	75.81E+3	75.81E+3
			-10.95E+3	.0	-815.0E-9	-10.95E+3	-10.95E+3
		11	(11)(12)	(16)(9)	(11)(12)	(11)(12)	(11)(12)
			75.86E+3	2.608E-6	652.0E-9	75.86E+3	75.86E+3
			-10.90E+3	.0	-815.0E-9	-10.90E+3	-10.90E+3
184	E1	55	(11)(12)	(9)(10)	(11)(12)	(11)(12)	(11)(12)
			58.64E+3	-10.43E-6	-4.890E-6	58.64E+3	58.64E+3
			-12.55E+3	-11.74E-6	-5.298E-6	-12.55E+3	-12.55E+3
		12	(11)(12)	(9)(10)	(11)(12)	(11)(12)	(11)(12)
			58.67E+3	-10.43E-6	-4.890E-6	58.67E+3	58.67E+3
			-12.52E+3	-11.74E-6	-5.298E-6	-12.52E+3	-12.52E+3
185	E1	56	(11)(12)	(11)(10)	(9)(10)	(11)(12)	(11)(12)
			22.15E+3	1.304E-6	1.304E-6	22.15E+3	22.15E+3
			-11.77E+3	-2.608E-6	1.141E-6	-11.77E+3	-11.77E+3
		13	(11)(12)	(11)(10)	(9)(10)	(11)(12)	(11)(12)
			22.17E+3	1.304E-6	1.304E-6	22.17E+3	22.17E+3
			-11.75E+3	-2.608E-6	1.141E-6	-11.75E+3	-11.75E+3
186	E1	57	(10)(15)	(11)(10)	(9)(9)	(10)(15)	(10)(15)
			-28.74E+3	.0	.0	-28.74E+3	-28.74E+3
			-34.84E+3	-5.216E-6	.0	-34.84E+3	-34.84E+3
		14	(10)(15)	(11)(10)	(9)(9)	(10)(15)	(10)(15)
			-28.74E+3	.0	.0	-28.74E+3	-28.74E+3
			-34.84E+3	-5.216E-6	.0	-34.84E+3	-34.84E+3
187	E1	58	(10)(11)	(10)(9)	(9)(9)	(10)(11)	(10)(11)
			-28.56E+3	23.80E-6	.0	-28.56E+3	-28.56E+3
			-34.83E+3	20.87E-6	.0	-34.83E+3	-34.83E+3
		13	(10)(11)	(10)(9)	(9)(9)	(10)(11)	(10)(11)
			-28.56E+3	23.80E-6	.0	-28.56E+3	-28.56E+3
			-34.83E+3	20.87E-6	.0	-34.83E+3	-34.83E+3
188	E1	14	(15)(9)	(9)(11)	(16)(9)	(15)(9)	(15)(9)
			22.22E+3	-10.43E-6	815.0E-9	22.22E+3	22.22E+3
			-11.48E+3	-11.74E-6	652.0E-9	-11.48E+3	-11.48E+3
		59	(15)(9)	(9)(11)	(16)(9)	(15)(9)	(15)(9)
			22.20E+3	-10.43E-6	815.0E-9	22.20E+3	22.20E+3
			-11.50E+3	-11.74E-6	652.0E-9	-11.50E+3	-11.50E+3
189	E1	15	(15)(9)	(9)(10)	(10)(11)	(15)(9)	(15)(9)
			58.75E+3	5.216E-6	-2.527E-6	58.75E+3	58.75E+3
			-12.11E+3	4.564E-6	-3.586E-6	-12.11E+3	-12.11E+3
		60	(15)(9)	(9)(10)	(10)(11)	(15)(9)	(15)(9)
			58.72E+3	5.216E-6	-2.527E-6	58.72E+3	58.72E+3
			-12.14E+3	4.564E-6	-3.586E-6	-12.14E+3	-12.14E+3
190	E1	16	(15)(9)	(9)(9)	(10)(9)	(15)(9)	(15)(9)
			75.94E+3	.0	-2.527E-6	75.94E+3	75.94E+3
			-10.46E+3	.0	-3.260E-6	-10.46E+3	-10.46E+3
		61	(15)(9)	(9)(9)	(10)(9)	(15)(9)	(15)(9)
			75.90E+3	.0	-2.527E-6	75.90E+3	75.90E+3
			-10.51E+3	.0	-3.260E-6	-10.51E+3	-10.51E+3

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BEAM STRESS ENVELOPES

Beam Property 14

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
191	E1	17	(15)(9)	(11)(12)	(9)(10)	(15)(9)	(15)(9)
			97.25E+3	10.43E-6	-1.304E-6	97.25E+3	97.25E+3
			-8.146E+3	-692.0E-9	-1.956E-6	-8.146E+3	-8.146E+3
		62	(15)(9)	(11)(12)	(9)(10)	(15)(9)	(15)(9)
			97.18E+3	10.43E-6	-1.304E-6	97.18E+3	97.18E+3
			-8.208E+3	-692.0E-9	-1.956E-6	-8.208E+3	-8.208E+3
192	E1	18	(15)(9)	(9)(12)	(11)(9)	(15)(9)	(15)(9)
			120.2E+3	-2.608E-6	2.608E-6	120.2E+3	120.2E+3
			-5.114E+3	-3.260E-6	.0	-5.114E+3	-5.114E+3
		52	(15)(9)	(9)(12)	(11)(9)	(15)(9)	(15)(9)
			120.1E+3	-2.608E-6	2.608E-6	120.1E+3	120.1E+3
			-5.191E+3	-3.260E-6	.0	-5.191E+3	-5.191E+3
193	E1	8	(15)(9)	(10)(11)	(10)(11)	(15)(9)	(15)(9)
			121.2E+3	326.0E-9	163.0E-9	121.2E+3	121.2E+3
			-1.579E+3	-13.04E-6	-3.260E-6	-1.579E+3	-1.579E+3
		80	(15)(9)	(10)(11)	(10)(11)	(15)(9)	(15)(9)
			121.1E+3	326.0E-9	163.0E-9	121.1E+3	121.1E+3
			-1.651E+3	-13.04E-6	-3.260E-6	-1.651E+3	-1.651E+3
343	E1	98	(9)(15)	(15)(10)	(9)(11)	(9)(15)	(9)(15)
			270.0	43.05E-6	.0	270.0	270.0
			-749.2	1.141E-6	-10.43E-6	-749.2	-749.2
		117	(9)(15)	(15)(10)	(9)(11)	(9)(15)	(9)(15)
			324.1	43.05E-6	.0	324.1	324.1
			-695.1	1.141E-6	-10.43E-6	-695.1	-695.1
347	E1	100	(12)(11)	(9)(10)	(12)(9)	(12)(11)	(12)(11)
			247.9	3.912E-6	346.4E-9	247.9	247.9
			-1.242E+3	2.934E-6	326.0E-9	-1.242E+3	-1.242E+3
		132	(12)(11)	(9)(10)	(12)(9)	(12)(11)	(12)(11)
			301.6	3.912E-6	346.4E-9	301.6	301.6
			-1.188E+3	2.934E-6	326.0E-9	-1.188E+3	-1.188E+3

Maximum values in this output:

			Lc.				
180	E1	7	11	121.3E+3	-7.824E-6	1.956E-6	121.3E+3	121.3E+3
343	E1	98	15	-749.2	43.05E-6	-10.43E-6	-749.2	-749.2
182	E1	53	15	96.95E+3	-13.24E-6	2.706E-6	96.95E+3	96.95E+3
180	E1	7	11	121.3E+3	-7.824E-6	1.956E-6	121.3E+3	121.3E+3
180	E1	7	11	121.3E+3	-7.824E-6	1.956E-6	121.3E+3	121.3E+3

Minimum values in this output:

			Lc.				
186	E1	57	15	-34.84E+3	.0	.0	-34.84E+3	-34.84E+3
182	E1	53	12	-8.677E+3	-13.69E-6	326.0E-9	-8.677E+3	-8.677E+3
343	E1	98	11	-748.8	43.03E-6	-10.43E-6	-748.8	-748.8
186	E1	57	15	-34.84E+3	.0	.0	-34.84E+3	-34.84E+3
186	E1	57	15	-34.84E+3	.0	.0	-34.84E+3	-34.84E+3

BEAM STRESS ENVELOPES

Beam Property 15

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
194	E1	77	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			288.1	.0	.0	288.1	288.1
			-6.885E+3	.0	.0	-6.885E+3	-6.885E+3
		33	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			288.1	.0	.0	288.1	288.1
			-6.885E+3	.0	.0	-6.885E+3	-6.885E+3
195	E1	79	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			284.3	.0	.0	284.3	284.3
			-7.627E+3	.0	.0	-7.627E+3	-7.627E+3
		35	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			284.3	.0	.0	284.3	284.3
			-7.627E+3	.0	.0	-7.627E+3	-7.627E+3
196	E1	80	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			433.3	.0	.0	433.3	433.3
			-6.451E+3	.0	.0	-6.451E+3	-6.451E+3
		36	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			433.3	.0	.0	433.3	433.3
			-6.451E+3	.0	.0	-6.451E+3	-6.451E+3
197	E1	81	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			549.6	.0	.0	549.6	549.6
			-5.363E+3	.0	.0	-5.363E+3	-5.363E+3
		37	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			549.6	.0	.0	549.6	549.6
			-5.363E+3	.0	.0	-5.363E+3	-5.363E+3
198	E1	82	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			606.1	.0	.0	606.1	606.1
			-4.157E+3	.0	.0	-4.157E+3	-4.157E+3
		38	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			606.1	.0	.0	606.1	606.1
			-4.157E+3	.0	.0	-4.157E+3	-4.157E+3
199	E1	83	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.094E+3	.0	.0	2.094E+3	2.094E+3
			-793.3	.0	.0	-793.3	-793.3
		39	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			2.094E+3	.0	.0	2.094E+3	2.094E+3
			-793.3	.0	.0	-793.3	-793.3

BEAM STRESS ENVELOPES

Beam Property 15

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
200	E1	63	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			1.927E+3	.0	.0	1.927E+3	1.927E+3
			-295.8	.0	.0	-295.8	-295.8
		19	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			1.927E+3	.0	.0	1.927E+3	1.927E+3
			-295.8	.0	.0	-295.8	-295.8
201	E1	64	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.082E+3	.0	.0	2.082E+3	2.082E+3
			-795.9	.0	.0	-795.9	-795.9
		40	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			2.082E+3	.0	.0	2.082E+3	2.082E+3
			-795.9	.0	.0	-795.9	-795.9
202	E1	85	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			586.8	.0	.0	586.8	586.8
			-4.160E+3	.0	.0	-4.160E+3	-4.160E+3
		41	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			586.8	.0	.0	586.8	586.8
			-4.160E+3	.0	.0	-4.160E+3	-4.160E+3
203	E1	86	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			527.2	.0	.0	527.2	527.2
			-5.368E+3	.0	.0	-5.368E+3	-5.368E+3
		42	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			527.2	.0	.0	527.2	527.2
			-5.368E+3	.0	.0	-5.368E+3	-5.368E+3
204	E1	87	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			410.2	.0	.0	410.2	410.2
			-6.457E+3	.0	.0	-6.457E+3	-6.457E+3
		43	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			410.2	.0	.0	410.2	410.2
			-6.457E+3	.0	.0	-6.457E+3	-6.457E+3
205	E1	88	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			262.2	.0	.0	262.2	262.2
			-7.629E+3	.0	.0	-7.629E+3	-7.629E+3
		44	(9)(15)	(9)(9)	(9)(9)	(9)(15)	(9)(15)
			262.2	.0	.0	262.2	262.2
			-7.629E+3	.0	.0	-7.629E+3	-7.629E+3
206	E1	76	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			253.6	.0	.0	253.6	253.6
			-6.903E+3	.0	.0	-6.903E+3	-6.903E+3
		34	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			253.6	.0	.0	253.6	253.6
			-6.903E+3	.0	.0	-6.903E+3	-6.903E+3

Maximum values in this output:

			Lc.				
199	E1	83	12	2.094E+3	.0	.0	2.094E+3	2.094E+3
194	E1	77	9	266.8	.0	.0	266.8	266.8
194	E1	77	9	266.8	.0	.0	266.8	266.8
199	E1	83	12	2.094E+3	.0	.0	2.094E+3	2.094E+3
199	E1	83	12	2.094E+3	.0	.0	2.094E+3	2.094E+3

Minimum values in this output:

			Lc.				
205	E1	88	15	-7.629E+3	.0	.0	-7.629E+3	-7.629E+3
194	E1	77	9	266.8	.0	.0	266.8	266.8
194	E1	77	9	266.8	.0	.0	266.8	266.8
205	E1	88	15	-7.629E+3	.0	.0	-7.629E+3	-7.629E+3
205	E1	88	15	-7.629E+3	.0	.0	-7.629E+3	-7.629E+3

BEAM STRESS ENVELOPES

Beam Property 16

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
166	E1	49	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			1.628E+3	.0	.0	1.628E+3	1.628E+3
			-6.828E+3	.0	.0	-6.828E+3	-6.828E+3
		5	(16)(11)	(9)(9)	(9)(9)	(16)(11)	(16)(11)
			1.628E+3	.0	.0	1.628E+3	1.628E+3
			-6.828E+3	.0	.0	-6.828E+3	-6.828E+3
179	E1	50	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			1.542E+3	.0	.0	1.542E+3	1.542E+3
			-6.904E+3	.0	.0	-6.904E+3	-6.904E+3
		6	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			1.542E+3	.0	.0	1.542E+3	1.542E+3
			-6.904E+3	.0	.0	-6.904E+3	-6.904E+3
207	E1	2	(11)(16)	(9)(9)	(9)(9)	(11)(16)	(11)(16)
			2.773E+3	.0	.0	2.773E+3	2.773E+3
			1.240E+3	.0	.0	1.240E+3	1.240E+3
		46	(11)(16)	(9)(9)	(9)(9)	(11)(16)	(11)(16)
			2.773E+3	.0	.0	2.773E+3	2.773E+3
			1.240E+3	.0	.0	1.240E+3	1.240E+3
208	E1	4	(15)(16)	(9)(9)	(9)(9)	(15)(16)	(15)(16)
			2.945E+3	.0	.0	2.945E+3	2.945E+3
			1.388E+3	.0	.0	1.388E+3	1.388E+3
		48	(15)(16)	(9)(9)	(9)(9)	(15)(16)	(15)(16)
			2.945E+3	.0	.0	2.945E+3	2.945E+3
			1.388E+3	.0	.0	1.388E+3	1.388E+3

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BEAM STRESS ENVELOPES

Beam Property 16

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:			Lc.				
208	E1	4	15 2.945E+3	.0	.0	2.945E+3	2.945E+3
166	E1	49	9 1.361E+3	.0	.0	1.361E+3	1.361E+3
166	E1	49	9 1.361E+3	.0	.0	1.361E+3	1.361E+3
208	E1	4	15 2.945E+3	.0	.0	2.945E+3	2.945E+3
208	E1	4	15 2.945E+3	.0	.0	2.945E+3	2.945E+3
Minimum values in this output:			Lc.				
179	E1	50	15-6.904E+3	.0	.0	-6.904E+3	-6.904E+3
166	E1	49	9 1.361E+3	.0	.0	1.361E+3	1.361E+3
166	E1	49	9 1.361E+3	.0	.0	1.361E+3	1.361E+3
179	E1	50	15-6.904E+3	.0	.0	-6.904E+3	-6.904E+3
179	E1	50	15-6.904E+3	.0	.0	-6.904E+3	-6.904E+3

BEAM STRESS ENVELOPES

Beam Property 17

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
209	E1	5	(11)(12)	(9)(9)	(9)(9)	(11)(12)	(11)(12)
			18.22E+3	.0	.0	18.22E+3	18.22E+3
			-1.078E+3	.0	.0	-1.078E+3	-1.078E+3
		46	(11)(12)	(9)(9)	(9)(9)	(11)(12)	(11)(12)
			18.06E+3	.0	.0	18.06E+3	18.06E+3
			-1.229E+3	.0	.0	-1.229E+3	-1.229E+3
210	E1	2	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-401.2	.0	.0	-401.2	-401.2
			-25.27E+3	.0	.0	-25.27E+3	-25.27E+3
		49	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-247.2	.0	.0	-247.2	-247.2
			-25.11E+3	.0	.0	-25.11E+3	-25.11E+3
211	E1	4	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-323.7	.0	.0	-323.7	-323.7
			-25.22E+3	.0	.0	-25.22E+3	-25.22E+3
		50	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-169.7	.0	.0	-169.7	-169.7
			-25.07E+3	.0	.0	-25.07E+3	-25.07E+3
212	E1	6	(15)(16)	(9)(9)	(9)(9)	(15)(16)	(15)(16)
			18.35E+3	.0	.0	18.35E+3	18.35E+3
			-1.005E+3	.0	.0	-1.005E+3	-1.005E+3
		48	(15)(16)	(9)(9)	(9)(9)	(15)(16)	(15)(16)
			18.20E+3	.0	.0	18.20E+3	18.20E+3
			-1.159E+3	.0	.0	-1.159E+3	-1.159E+3
348	E1	4	(10)(11)	(11)(10)	(11)(10)	(11)(10)	(10)(11)
			-323.1	53.31E+3	9.294E+3	40.77E+3	-4.028E+3
			-13.35E+3	3.411E+3	808.1	2.982E+3	-67.47E+3
		94	(10)(11)	(9)(15)	(10)(9)	(9)(15)	(10)(11)
			-384.5	3.548E+3	-2.892E+3	4.517E+3	-4.800E+3
			-13.21E+3	-374.9	-3.520E+3	-10.38E+3	-16.15E+3
349	E1	93	(15)(16)	(11)(16)	(10)(11)	(15)(16)	(15)(9)
			12.93E+3	5.973E+3	-424.9	19.01E+3	6.829E+3
			247.8E-1	1.770E+3	-1.258E+3	2.011E+3	-2.137E+3
		48	(15)(16)	(16)(15)	(16)(11)	(15)(10)	(10)(11)
			12.79E+3	4.035E+3	-1.267E+3	60.34E+3	-1.610E+3
			-138.3	-46.51E+3	-9.307E+3	3.532E+3	-34.76E+3
350	E1	98	(10)(15)	(12)(11)	(10)(15)	(12)(11)	(10)(15)
			-268.5	3.578E+3	-3.032E+3	4.620E+3	-4.852E+3
			-13.04E+3	-135.9	-3.638E+3	-9.408E+3	-16.66E+3
		2	(10)(15)	(15)(10)	(11)(10)	(15)(10)	(10)(15)
			-407.1	93.25E+3	9.836E+3	40.91E+3	-3.879E+3
			-13.18E+3	3.394E+3	735.4	3.066E+3	-67.28E+3
351	E1	46	(11)(16)	(16)(11)	(16)(15)	(11)(10)	(10)(15)
			12.97E+3	3.968E+3	-1.340E+3	60.66E+3	-3.510E+3
			18.00	-46.57E+3	-10.28E+3	3.629E+3	-34.72E+3
		95	(11)(16)	(15)(16)	(11)(16)	(15)(16)	(11)(10)
			11.11E+3	5.735E+3	-196.6	18.85E+3	7.374E+3
			156.6	1.763E+3	-752.3	2.074E+3	-1.998E+3
Maximum values in this output:			Lc.				
212	E1	6	15 18.35E+3	.0	.0	18.35E+3	18.35E+3
348	E1	4	11-13.35E+3	53.31E+3	9.294E+3	40.77E+3	-67.47E+3
350	E1	2	11-13.18E+3	93.25E+3	9.836E+3	40.91E+3	-67.28E+3
351	E1	46	11 12.97E+3	-46.57E+3	-10.27E+3	60.66E+3	-34.72E+3
212	E1	6	15 18.35E+3	.0	.0	18.35E+3	18.35E+3
Minimum values in this output:			Lc.				
210	E1	2	11-25.27E+3	.0	.0	-25.27E+3	-25.27E+3
351	E1	46	11 12.97E+3	-46.57E+3	-10.27E+3	60.66E+3	-34.72E+3
351	E1	46	15 12.97E+3	-46.57E+3	-10.28E+3	60.66E+3	-34.72E+3
210	E1	2	11-25.27E+3	.0	.0	-25.27E+3	-25.27E+3
348	E1	4	11-13.35E+3	53.31E+3	9.294E+3	40.77E+3	-67.47E+3

BEAM STRESS ENVELOPES

Beam Property 18

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
221	E1	89	(16)(10)	(9)(9)	(9)(9)	(16)(10)	(16)(10)
			12.24	.0	.0	12.24	12.24
			1.239	.0	.0	1.239	1.239
		91	(16)(10)	(9)(9)	(9)(9)	(16)(10)	(16)(10)
			12.24	.0	.0	12.24	12.24
			1.239	.0	.0	1.239	1.239
222	E1	90	(16)(10)	(9)(9)	(9)(9)	(16)(10)	(16)(10)
			12.33	.0	.0	12.33	12.33
			1.267	.0	.0	1.267	1.267
		92	(16)(10)	(9)(9)	(9)(9)	(16)(10)	(16)(10)
			12.33	.0	.0	12.33	12.33
			1.267	.0	.0	1.267	1.267
Maximum values in this output:			Lc.				
222	E1	90	16 12.33	.0	.0	12.33	12.33
221	E1	89	9 1.332	.0	.0	1.332	1.332
221	E1	89	9 1.332	.0	.0	1.332	1.332
222	E1	90	16 12.33	.0	.0	12.33	12.33
222	E1	90	16 12.33	.0	.0	12.33	12.33
Minimum values in this output:			Lc.				
221	E1	89	10 1.239	.0	.0	1.239	1.239
221	E1	89	9 1.332	.0	.0	1.332	1.332
221	E1	89	9 1.332	.0	.0	1.332	1.332
221	E1	89	10 1.239	.0	.0	1.239	1.239
221	E1	89	10 1.239	.0	.0	1.239	1.239

BEAM STRESS ENVELOPES

Beam Property 19

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
223	E1	64	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			-24.48	.0	.0	-24.48	-24.48
			-7.708E+3	.0	.0	-7.708E+3	-7.708E+3
		20	(16)(15)	(9)(9)	(9)(9)	(16)(15)	(16)(15)
			-24.48	.0	.0	-24.48	-24.48
			-7.708E+3	.0	.0	-7.708E+3	-7.708E+3
224	E1	65	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-1.419E+3	.0	.0	-1.419E+3	-1.419E+3
			-8.880E+3	.0	.0	-8.880E+3	-8.880E+3
		21	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-1.419E+3	.0	.0	-1.419E+3	-1.419E+3
			-8.880E+3	.0	.0	-8.880E+3	-8.880E+3
225	E1	67	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.131E+3	.0	.0	-2.131E+3	-2.131E+3
			-6.781E+3	.0	.0	-6.781E+3	-6.781E+3
		23	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.131E+3	.0	.0	-2.131E+3	-2.131E+3
			-6.781E+3	.0	.0	-6.781E+3	-6.781E+3
226	E1	68	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.760E+3	.0	.0	-2.760E+3	-2.760E+3
			-4.501E+3	.0	.0	-4.501E+3	-4.501E+3
		24	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.760E+3	.0	.0	-2.760E+3	-2.760E+3
			-4.501E+3	.0	.0	-4.501E+3	-4.501E+3
227	E1	69	(11)(12)	(9)(9)	(9)(9)	(12)(12)	(11)(12)
			-2.100E+3	.0	.0	-2.100E+3	-2.100E+3
			-3.510E+3	.0	.0	-3.510E+3	-3.510E+3
		25	(11)(12)	(9)(9)	(9)(9)	(11)(12)	(11)(12)
			-2.100E+3	.0	.0	-2.100E+3	-2.100E+3
			-3.510E+3	.0	.0	-3.510E+3	-3.510E+3
228	E1	70	(11)(12)	(9)(9)	(9)(9)	(11)(12)	(11)(12)
			-1.901E+3	.0	.0	-1.901E+3	-1.901E+3
			-2.273E+3	.0	.0	-2.273E+3	-2.273E+3
		26	(11)(12)	(9)(9)	(9)(9)	(11)(12)	(11)(12)
			-1.901E+3	.0	.0	-1.901E+3	-1.901E+3
			-2.273E+3	.0	.0	-2.273E+3	-2.273E+3
229	E1	71	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.276E+3	.0	.0	-2.276E+3	-2.276E+3
			-5.044E+3	.0	.0	-5.044E+3	-5.044E+3
		27	(10)(15)	(9)(9)	(9)(9)	(10)(15)	(10)(15)
			-2.276E+3	.0	.0	-2.276E+3	-2.276E+3
			-5.044E+3	.0	.0	-5.044E+3	-5.044E+3
230	E1	72	(15)(9)	(9)(9)	(9)(9)	(15)(9)	(15)(9)
			-1.871E+3	.0	.0	-1.871E+3	-1.871E+3
			-2.179E+3	.0	.0	-2.179E+3	-2.179E+3
		28	(15)(9)	(9)(9)	(9)(9)	(15)(9)	(15)(9)
			-1.871E+3	.0	.0	-1.871E+3	-1.871E+3
			-2.179E+3	.0	.0	-2.179E+3	-2.179E+3
231	E1	73	(15)(9)	(9)(9)	(9)(9)	(15)(9)	(15)(9)
			-2.061E+3	.0	.0	-2.061E+3	-2.061E+3
			-3.378E+3	.0	.0	-3.378E+3	-3.378E+3
		29	(15)(9)	(9)(9)	(9)(9)	(15)(9)	(15)(9)
			-2.061E+3	.0	.0	-2.061E+3	-2.061E+3
			-3.378E+3	.0	.0	-3.378E+3	-3.378E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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BEAM STRESS ENVELOPES

Beam Property 19

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
232	E1	74	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-2.503E+3	.0	.0	-2.503E+3	-2.503E+3
			-4.453E+3	.0	.0	-4.453E+3	-4.453E+3
		30	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-2.503E+3	.0	.0	-2.503E+3	-2.503E+3
			-4.453E+3	.0	.0	-4.453E+3	-4.453E+3
233	E1	75	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-1.884E+3	.0	.0	-1.884E+3	-1.884E+3
			-6.730E+3	.0	.0	-6.730E+3	-6.730E+3
		31	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-1.884E+3	.0	.0	-1.884E+3	-1.884E+3
			-6.730E+3	.0	.0	-6.730E+3	-6.730E+3
234	E1	66	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-1.219E+3	.0	.0	-1.218E+3	-1.218E+3
			-8.846E+3	.0	.0	-8.846E+3	-8.846E+3
		22	(10)(11)	(9)(9)	(9)(9)	(10)(11)	(10)(11)
			-1.218E+3	.0	.0	-1.218E+3	-1.218E+3
			-8.846E+3	.0	.0	-8.846E+3	-8.846E+3
235	E1	76	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			-10.44	.0	.0	-10.44	-10.44
			-7.635E+3	.0	.0	-7.635E+3	-7.635E+3
		32	(12)(11)	(9)(9)	(9)(9)	(12)(11)	(12)(11)
			-10.44	.0	.0	-10.44	-10.44
			-7.639E+3	.0	.0	-7.639E+3	-7.639E+3

Maximum values in this output:

			Lc.				
235	E1	76	12	-10.44	.0	.0	-10.44	-10.44
223	E1	64	9	-120.0	.0	.0	-120.0	-120.0
223	E1	64	9	-120.0	.0	.0	-120.0	-120.0
235	E1	76	12	-10.44	.0	.0	-10.44	-10.44
235	E1	76	12	-10.44	.0	.0	-10.44	-10.44

Minimum values in this output:

			Lc.				
224	E1	65	15	-8.880E+3	.0	.0	-8.880E+3	-8.880E+3
223	E1	64	9	-120.0	.0	.0	-120.0	-120.0
223	E1	64	9	-120.0	.0	.0	-120.0	-120.0
224	E1	65	15	-8.880E+3	.0	.0	-8.880E+3	-8.880E+3
224	E1	65	15	-8.880E+3	.0	.0	-8.880E+3	-8.880E+3

BEAM STRESS ENVELOPES

Beam Property 20

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
236	E1	46	(15)(16)	(15)(9)	(16)(9)	(15)(16)	(15)(16)
			16.84E+3	73.22E-6	-2.934E-6	16.84E+3	16.84E+3
			-3.258E+3	-10.43E-6	-3.260E-6	-3.258E+3	-3.258E+3
		20	(15)(16)	(15)(9)	(16)(9)	(15)(16)	(15)(16)
			16.62E+3	73.22E-6	-2.934E-6	16.62E+3	16.62E+3
			-3.185E+3	-10.43E-6	-3.260E-6	-3.185E+3	-3.185E+3
237	E1	64	(15)(10)	(11)(12)	(10)(9)	(15)(10)	(15)(10)
			21.86E+3	39.12E-6	-489.0E-9	21.86E+3	21.86E+3
			3.015E+3	-2.934E-6	-652.0E-9	3.015E+3	3.015E+3
		21	(15)(10)	(11)(12)	(10)(9)	(15)(10)	(15)(10)
			21.90E+3	39.12E-6	-489.0E-9	21.90E+3	21.90E+3
			3.055E+3	-2.934E-6	-652.0E-9	3.055E+3	3.055E+3
238	E1	65	(15)(16)	(16)(10)	(9)(15)	(15)(16)	(15)(16)
			22.53E+3	-7.172E-6	1.304E-6	22.53E+3	22.53E+3
			6.052E+3	-8.476E-6	-4.010E-6	6.052E+3	6.052E+3
		23	(15)(16)	(16)(10)	(9)(15)	(15)(16)	(15)(16)
			22.60E+3	-7.172E-6	1.304E-6	22.60E+3	22.60E+3
			6.122E+3	-8.476E-6	-4.010E-6	6.122E+3	6.122E+3
239	E1	67	(15)(10)	(11)(12)	(9)(10)	(15)(10)	(15)(10)
			14.82E+3	7.824E-6	.0	14.82E+3	14.82E+3
			8.515E+3	-3.260E-6	-163.0E-9	8.515E+3	8.515E+3
		24	(15)(10)	(11)(12)	(9)(10)	(15)(10)	(15)(10)
			14.87E+3	7.824E-6	.0	14.87E+3	14.87E+3
			8.569E+3	-3.260E-6	-163.0E-9	8.569E+3	8.569E+3
240	E1	68	(12)(11)	(9)(10)	(11)(16)	(12)(11)	(12)(11)
			12.10E+3	.0	-2.282E-6	12.10E+3	12.10E+3
			6.508E+3	-2.608E-6	-2.934E-6	6.508E+3	6.508E+3
		25	(12)(11)	(9)(10)	(11)(16)	(12)(11)	(12)(11)
			12.14E+3	.0	-2.282E-6	12.14E+3	12.14E+3
			6.547E+3	-2.608E-6	-2.934E-6	6.547E+3	6.547E+3
241	E1	69	(12)(11)	(11)(10)	(9)(10)	(12)(11)	(12)(11)
			12.28E+3	36.51E-6	-1.304E-6	12.28E+3	12.28E+3
			-2.000E+3	28.69E-6	-1.467E-6	-2.000E+3	-2.000E+3
		26	(12)(11)	(11)(10)	(9)(10)	(12)(11)	(12)(11)
			12.31E+3	36.51E-6	-1.304E-6	12.31E+3	12.31E+3
			-1.976E+3	28.69E-6	-1.467E-6	-1.976E+3	-1.976E+3
242	E1	70	(15)(10)	(9)(10)	(9)(12)	(15)(10)	(15)(10)
			13.26E+3	.0	-1.304E-6	13.26E+3	13.26E+3
			8.291E+3	-3.912E-6	-1.309E-6	8.291E+3	8.291E+3
		27	(15)(10)	(9)(10)	(9)(12)	(15)(10)	(15)(10)
			13.27E+3	.0	-1.304E-6	13.27E+3	13.27E+3
			8.299E+3	-3.912E-6	-1.309E-6	8.299E+3	8.299E+3

BEAM STRESS ENVELOPES

Beam Property 20

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
244	E1	48	(11)(12)	(10)(12)	(9)(10)	(11)(12)	(11)(12)
			16.16E+3	1.304E-6	2.608E-6	16.16E+3	16.16E+3
			-3.476E+3	-652.0E-9	2.445E-6	-3.476E+3	-3.476E+3
		32	(11)(12)	(10)(12)	(9)(10)	(11)(12)	(11)(12)
			16.23E+3	1.304E-6	2.608E-6	16.23E+3	16.23E+3
			-3.403E+3	-652.0E-9	2.445E-6	-3.403E+3	-3.403E+3
245	E1	76	(11)(10)	(15)(9)	(12)(16)	(11)(10)	(11)(10)
			21.83E+3	44.60E-6	733.5E-9	21.83E+3	21.83E+3
			2.564E+3	2.771E-6	570.5E-9	2.564E+3	2.564E+3
		22	(11)(10)	(15)(9)	(12)(16)	(11)(10)	(11)(10)
			21.87E+3	44.60E-6	733.5E-9	21.87E+3	21.87E+3
			2.604E+3	2.771E-6	570.5E-9	2.604E+3	2.604E+3
246	E1	66	(11)(10)	(11)(9)	(9)(10)	(11)(10)	(11)(10)
			22.34E+3	1.304E-6	1.304E-6	22.34E+3	22.34E+3
			5.343E+3	-19.56E-6	1.284E-6	5.343E+3	5.343E+3
		31	(11)(10)	(11)(9)	(9)(10)	(11)(10)	(11)(10)
			22.41E+3	1.304E-6	1.304E-6	22.41E+3	22.41E+3
			5.412E+3	-19.56E-6	1.284E-6	5.412E+3	5.412E+3
247	E1	75	(11)(10)	(15)(9)	(15)(9)	(11)(10)	(11)(10)
			14.65E+3	13.24E-6	48.90E-9	14.65E+3	14.65E+3
			7.627E+3	2.608E-6	-2.608E-6	7.627E+3	7.627E+3
		30	(11)(10)	(15)(9)	(15)(9)	(11)(10)	(11)(10)
			14.70E+3	13.24E-6	48.90E-9	14.70E+3	14.70E+3
			7.681E+3	2.608E-6	-2.608E-6	7.681E+3	7.681E+3
248	E1	74	(9)(15)	(11)(10)	(11)(9)	(9)(15)	(9)(15)
			11.61E+3	2.608E-6	-2.934E-6	11.61E+3	11.61E+3
			6.362E+3	-5.216E-6	-3.260E-6	6.362E+3	6.362E+3
		29	(9)(15)	(11)(10)	(11)(9)	(9)(15)	(9)(15)
			11.65E+3	2.608E-6	-2.934E-6	11.65E+3	11.65E+3
			6.401E+3	-5.216E-6	-3.260E-6	6.401E+3	6.401E+3
249	E1	73	(9)(15)	(11)(16)	(9)(16)	(9)(15)	(9)(15)
			11.86E+3	41.73E-6	3.912E-6	11.86E+3	11.86E+3
			-2.128E+3	33.91E-6	3.586E-6	-2.128E+3	-2.128E+3
		28	(9)(15)	(11)(16)	(9)(16)	(9)(15)	(9)(15)
			11.88E+3	41.73E-6	3.912E-6	11.88E+3	11.88E+3
			-2.104E+3	33.91E-6	3.586E-6	-2.104E+3	-2.104E+3
250	E1	72	(11)(10)	(9)(16)	(11)(10)	(11)(10)	(11)(10)
			13.17E+3	52.16E-6	244.5E-9	13.17E+3	13.17E+3
			7.826E+3	49.55E-6	.0	7.826E+3	7.826E+3
		27	(11)(10)	(9)(16)	(11)(10)	(11)(10)	(11)(10)
			13.18E+3	52.16E-6	244.5E-9	13.18E+3	13.18E+3
			7.834E+3	49.55E-6	.0	7.834E+3	7.834E+3

Maximum values in this output:

			Lc.				
238	E1	23	15	22.60E+3	-8.020E-6	-4.010E-6	22.60E+3	22.60E+3
236	E1	46	15	16.84E+3	73.22E-6	-2.260E-6	16.84E+3	16.84E+3
249	E1	73	9	11.86E+3	36.51E-6	3.912E-6	11.86E+3	11.86E+3
238	E1	23	15	22.60E+3	-8.020E-6	-4.010E-6	22.60E+3	22.60E+3
238	E1	23	15	22.60E+3	-8.020E-6	-4.010E-6	22.60E+3	22.60E+3

Minimum values in this output:

			Lc.				
244	E1	48	12	-3.476E+3	-652.0E-9	2.608E-6	-3.476E+3	-3.476E+3
246	E1	66	9	6.584E+3	-19.56E-6	1.304E-6	6.584E+3	6.584E+3
238	E1	65	15	22.53E+3	-8.020E-6	-4.010E-6	22.53E+3	22.53E+3
244	E1	48	12	-3.476E+3	-652.0E-9	2.608E-6	-3.476E+3	-3.476E+3
244	E1	48	12	-3.476E+3	-652.0E-9	2.608E-6	-3.476E+3	-3.476E+3

BEAM STRESS ENVELOPES

Beam Property 21

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
352	E1	26	(11)(12)	(10)(11)	(9)(9)	(11)(12)	(11)(12)
			12.24E+3	-5.094E-9	2.608E-6	12.24E+3	12.24E+3
			-4.770E+3	-15.92E-9	2.608E-6	-4.770E+3	-4.770E+3
		83	(11)(12)	(10)(11)	(9)(9)	(11)(12)	(11)(12)
			12.39E+3	-5.094E-9	2.608E-6	12.39E+3	12.39E+3
			-4.618E+3	-15.92E-9	2.608E-6	-4.618E+3	-4.618E+3
353	E1	39	(12)(11)	(11)(10)	(16)(11)	(12)(11)	(12)(11)
			-46.66	28.65E-9	1.956E-6	-46.66	-46.66
			-18.56E+3	7.323E-9	-19.56E-6	-18.56E+3	-18.56E+3
		70	(12)(11)	(11)(10)	(16)(11)	(12)(11)	(12)(11)
			-198.7	28.65E-9	1.956E-6	-198.7	-198.7
			-18.71E+3	7.323E-9	-19.56E-6	-18.71E+3	-18.71E+3
354	E1	40	(10)(15)	(15)(10)	(15)(16)	(10)(15)	(10)(15)
			217.1	26.13E-9	15.67E-6	217.1	217.1
			-18.57E+3	5.094E-9	-5.868E-6	-18.57E+3	-18.57E+3
		72	(10)(15)	(15)(10)	(15)(16)	(10)(15)	(10)(15)
			65.10	26.13E-9	15.67E-6	65.10	65.10
			-18.72E+3	5.094E-9	-5.868E-6	-18.72E+3	-18.72E+3
355	E1	28	(15)(9)	(10)(15)	(10)(9)	(15)(9)	(15)(9)
			17.25E+3	-3.980E-9	652.0E-9	12.25E+3	12.25E+3
			-4.690E+3	-14.65E-9	.0	-4.690E+3	-4.690E+3
		84	(15)(9)	(10)(15)	(10)(9)	(15)(9)	(15)(9)
			12.41E+3	-3.980E-9	652.0E-9	12.41E+3	12.41E+3
			-4.538E+3	-14.65E-9	.0	-4.538E+3	-4.538E+3

Job No.	Sheet No.	Rev.
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Drg. Ref.		
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BEAM STRESS ENVELOPES

Beam Property 21

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:			Lc.				
359	E1	84	15 12.41E+3	-14.65E-9	.0	12.41E+3	12.41E+3
353	E1	39	11-18.56E+3	28.65E-9	-19.56E-6	-18.56E+3	-18.56E+3
354	E1	40	15-18.57E+3	26.13E-9	15.67E-6	-18.57E+3	-18.57E+3
355	E1	84	15 12.41E+3	-14.65E-9	.0	12.41E+3	12.41E+3
359	E1	84	15 12.41E+3	-14.65E-9	.0	12.41E+3	12.41E+3
Minimum values in this output:			Lc.				
354	E1	72	15-18.72E+3	26.13E-9	15.67E-6	-18.72E+3	-18.72E+3
352	E1	26	11 12.24E+3	-15.92E-9	2.608E-6	12.24E+3	12.24E+3
353	E1	39	11-18.56E+3	28.65E-9	-19.56E-6	-18.56E+3	-18.56E+3
354	E1	72	15-18.72E+3	26.13E-9	15.67E-6	-18.72E+3	-18.72E+3
384	E1	72	15-18.72E+3	26.13E-9	15.67E-6	-18.72E+3	-18.72E+3

BEAM STRESS ENVELOPES

Beam Property 22

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
258	E1	4	(10)(11)	(12)(10)	(11)(10)	(15)(9)	(10)(11)
			-5.697E+3	5.876E+3	147.3E+3	136.9E+3	-10.84E+3
			-10.52E+3	5.029E+3	1.096E+3	-1.110E+3	-157.9E+3
		103	(10)(11)	(11)(10)	(12)(10)	(15)(12)	(10)(11)
			-5.624E+3	6.676E+3	71.02E+3	60.92E+3	-10.92E+3
			-10.45E+3	5.073E+3	1.526E+3	-605.3	-81.79E+3
260	E1	48	(15)(9)	(13)(10)	(11)(16)	(15)(9)	(10)(11)
			-3.158E+3	6.185E+3	145.5E+3	142.4E+3	-11.05E+3
			-6.979E+3	5.234E+3	-127.4	-868.0	-148.8E+3
		104	(15)(9)	(9)(10)	(11)(16)	(15)(12)	(10)(11)
			-3.085E+3	6.676E+3	71.28E+3	68.47E+3	-10.85E+3
			-6.907E+3	5.167E+3	332.2	-564.1	-74.73E+3
282	E1	103	(10)(11)	(11)(10)	(11)(10)	(11)(10)	(10)(11)
			-2.984E+3	14.79E+3	70.78E+3	65.62E+3	-13.40E+3
			-6.667E+3	10.32E+3	1.452E+3	7.436E+3	-79.00E+3
		113	(10)(11)	(11)(10)	(11)(10)	(11)(10)	(10)(11)
			-2.962E+3	14.22E+3	47.12E+3	42.56E+3	-13.54E+3
			-6.665E+3	10.50E+3	1.228E+3	7.612E+3	-55.89E+3
283	E1	113	(10)(11)	(11)(10)	(11)(10)	(11)(10)	(10)(11)
			-2.963E+3	14.22E+3	47.03E+3	42.47E+3	-13.54E+3
			-6.665E+3	10.50E+3	1.228E+3	7.612E+3	-55.80E+3
		114	(10)(11)	(16)(10)	(11)(16)	(15)(10)	(10)(15)
			-2.930E+3	14.10E+3	12.20E+3	11.33E+3	-13.66E+3
			-6.633E+3	10.70E+3	852.1	7.804E+3	-24.58E+3
284	E1	114	(16)(11)	(11)(10)	(11)(16)	(11)(10)	(10)(11)
			-124.7	20.60E+3	12.39E+3	21.20E+3	-15.89E+3
			-2.837E+3	15.75E+3	756.9	15.64E+3	-26.88E+3
		93	(16)(11)	(11)(10)	(10)(15)	(16)(15)	(10)(11)
			-113.0	8.914E+3	568.1	8.502E+3	-6.971E+3
			-2.826E+3	6.811E+3	-499.8	6.059E+3	-11.75E+3
289	E1	104	(15)(9)	(9)(10)	(11)(16)	(11)(10)	(10)(11)
			-579.2	13.35E+3	70.85E+3	71.12E+3	-13.84E+3
			-3.581E+3	10.65E+3	267.9	7.809E+3	-72.30E+3
		115	(15)(9)	(9)(10)	(11)(16)	(11)(10)	(10)(11)
			-557.2	13.23E+3	46.88E+3	47.88E+3	-13.27E+3
			-3.559E+3	10.42E+3	48.46	7.587E+3	-49.01E+3
286	E1	115	(15)(9)	(9)(10)	(11)(16)	(11)(10)	(10)(11)
			-559.0	13.23E+3	46.79E+3	47.79E+3	-13.27E+3
			-3.559E+3	10.42E+3	51.45	7.587E+3	-48.93E+3
		116	(15)(9)	(15)(10)	(11)(10)	(15)(10)	(10)(15)
			-526.8	14.04E+3	11.51E+3	17.63E+3	-12.84E+3
			-3.527E+3	10.02E+3	-328.0	7.218E+3	-18.68E+3
287	E1	116	(15)(9)	(16)(10)	(11)(10)	(11)(10)	(10)(16)
			2.636E+3	19.31E+3	11.50E+3	24.47E+3	-15.20E+3
			-35.39	15.16E+3	-394.9	15.14E+3	-19.34E+3
		94	(15)(9)	(16)(10)	(16)(11)	(11)(10)	(15)(16)
			2.647E+3	7.936E+3	-841.2	10.45E+3	-5.115E+3
			-23.69	6.189E+3	-1.993E+3	6.207E+3	-7.969E+3
306	E1	46	(11)(12)	(9)(10)	(16)(15)	(11)(12)	(10)(15)
			-2.967E+3	5.847E+3	-27.03	141.4E+3	-11.46E+3
			-6.688E+3	5.316E+3	-144.3E+3	-735.8	-147.4E+3
		123	(11)(12)	(14)(10)	(16)(15)	(11)(16)	(10)(15)
			-2.894E+3	7.354E+3	-230.9	66.41E+3	-12.29E+3
			-6.612E+3	6.330E+3	-68.95E+3	110.3	-72.27E+3
308	E1	2	(10)(15)	(11)(10)	(10)(15)	(11)(12)	(10)(15)
			-5.996E+3	5.789E+3	-1.212E+3	136.0E+3	-11.24E+3
			-9.945E+3	5.099E+3	-145.8E+3	-985.4	-159.9E+3
		124	(10)(15)	(12)(10)	(10)(15)	(11)(16)	(10)(15)
			-5.923E+3	7.136E+3	-1.511E+3	59.38E+3	-12.32E+3
			-9.872E+3	6.213E+3	-68.92E+3	314.5	-79.10E+3
326	E1	123	(11)(12)	(12)(11)	(16)(15)	(15)(16)	(10)(15)
			-623.0	13.67E+3	-140.0	69.53E+3	-15.31E+3
			-3.586E+3	11.51E+3	-69.18E+3	8.661E+3	-70.80E+3
		129	(11)(12)	(11)(10)	(10)(15)	(11)(10)	(10)(11)
			-570.0	13.24E+3	397.9	17.74E+3	-14.25E+3
			-3.533E+3	11.04E+3	-12.65E+3	7.840E+3	-18.68E+3

BEAM STRESS ENVELOPES

Beam Property 22

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
327	E1	129	(11)(12)	(16)(10)	(10)(15)	(15)(10)	(10)(15)
			2.384E+3	18.67E+3	416.1	24.61E+3	-17.26E+3
			-301.9	16.99E+3	-13.71E+3	16.73E+3	-19.85E+3
		96	(11)(12)	(12)(10)	(15)(16)	(15)(10)	(11)(12)
			2.396E+3	7.067E+3	987.0	8.935E+3	-4.100E+3
			-289.7	6.316E+3	550.6	6.102E+3	-7.391E+3
328	E1	124	(10)(15)	(15)(10)	(10)(15)	(15)(10)	(10)(15)
			-3.364E+3	13.83E+3	-1.416E+3	64.10E+3	-15.02E+3
			-6.594E+3	11.57E+3	-69.33E+3	8.395E+3	-77.29E+3
		130	(10)(15)	(16)(10)	(16)(15)	(11)(10)	(10)(11)
			-3.311E+3	13.30E+3	-877.6	11.56E+3	-15.08E+3
			-6.841E+3	11.73E+3	-13.36E+3	8.454E+3	-24.63E+3
329	E1	130	(10)(15)	(15)(10)	(16)(15)	(15)(10)	(10)(15)
			-355.0	19.63E+3	-785.7	20.78E+3	-17.92E+3
			-3.092E+3	17.55E+3	-13.59E+3	17.21E+3	-26.97E+3
		95	(10)(15)	(15)(10)	(12)(10)	(12)(11)	(10)(15)
			-342.0	8.171E+3	-357.2	7.424E+3	-7.323E+3
			-3.080E+3	6.957E+3	-567.7	5.054E+3	-11.26E+3
Maximum values in this output:			Lc.				
287	E1	94	15 2.647E+3	7.916E+3	-1.953E+3	10.41E+3	-5.118E+3
284	E1	114	11-2.837E+3	20.60E+3	12.39E+3	21.20E+3	-26.88E+3
258	E1	4	11-10.52E+3	5.705E+3	147.3E+3	136.9E+3	-157.9E+3
260	E1	48	15-3.158E+3	6.175E+3	145.4E+3	142.4E+3	-148.7E+3
327	E1	96	11 2.396E+3	6.420E+3	986.7	8.892E+3	-4.100E+3
Minimum values in this output:			Lc.				
258	E1	4	11-10.52E+3	5.709E+3	147.3E+3	136.9E+3	-157.9E+3
258	E1	4	10-5.697E+3	5.029E+3	1.096E+3	-549.3	-10.84E+3
308	E1	2	15-9.945E+3	5.761E+3	-145.8E+3	136.0E+3	-159.9E+3
258	E1	4	9-6.982E+3	5.731E+3	1.379E+3	-1.110E+3	-13.85E+3
258	E1	4	11-10.52E+3	5.709E+3	147.3E+3	136.9E+3	-157.9E+3

BEAM STRESS ENVELOPES

Beam Property 23

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
262	E1	32	(11)(16)	(11)(11)	(11)(11)	(11)(10)	(10)(16)	*
			6.694E+3	[7.546E+3]	[196.8]	14.44E+3	-763.1	
			4.221E+3	-7.546E+3	-80.58	9.288E+3	-1.836E+3	
		101	(11)(16)	(15)(15)	(15)(10)	(11)(10)	(10)(13)	*
			6.694E+3	15.55E+3	[1.706E+3]	23.90E+3	-7.451E+3	
			4.221E+3	[-15.55E+3]	[1.197E+3]	16.72E+3	-9.716E+3	
263	E1	101	(10)(16)	(11)(11)	(11)(11)	(11)(10)	(10)(11)	*
			-5.179E+3	[38.64E+3]	4.730E+3	37.02E+3	-36.41E+3	
			-7.260E+3	-38.64E+3	[-11.85E+3]	23.71E+3	-56.54E+3	
		103	(10)(16)	(11)(11)	(15)(15)	(11)(10)	(10)(11)	*
			-5.179E+3	38.65E+3	5.398E+3	37.69E+3	-33.60E+3	
			-7.260E+3	[-38.65E+3]	[-13.19E+3]	25.67E+3	-58.18E+3	
264	E1	103	(10)(11)	(11)(11)	(15)(15)	(15)(16)	(10)(11)	*
			-7.443E+3	10.18E+3	[3.691E+3]	4.251E+3	-15.84E+3	
			-9.671E+3	[-10.18E+3]	-1.511E+3	349.4	-21.37E+3	
		97	(10)(11)	(11)(11)	(15)(15)	(10)(16)	(10)(11)	*
			-7.443E+3	[2.237E+3]	345.1	-5.988E+3	-8.854E+3	
			-9.671E+3	-2.237E+3	[-842.9]	-7.379E+3	-12.75E+3	
265	E1	76	(9)(15)	(9)(9)	(15)(15)	(9)(15)	(10)(15)	*
			5.504E+3	[6.119E+3]	304.2	11.63E+3	-388.5	
			3.241E+3	-6.119E+3	[-743.1]	8.672E+3	-3.628E+3	
		102	(9)(15)	(12)(12)	(15)(10)	(9)(10)	(10)(13)	*
			5.504E+3	13.14E+3	[2.971E+3]	19.91E+3	-7.034E+3	
			3.241E+3	[-13.14E+3]	[1.223E+3]	16.96E+3	-9.036E+3	
266	E1	102	(10)(15)	(9)(9)	(11)(11)	(9)(10)	(10)(11)	*
			-4.919E+3	[34.04E+3]	9.590E+3	29.26E+3	-36.87E+3	
			-7.297E+3	-34.04E+3	[-23.43E+3]	24.86E+3	-57.56E+3	
		104	(10)(15)	(9)(9)	(16)(15)	(9)(15)	(10)(9)	*
			-4.919E+3	33.32E+3	[4.918E+3]	31.36E+3	-34.04E+3	
			-7.297E+3	[-33.32E+3]	[-3.937E+3]	19.13E+3	-41.56E+3	
267	E1	104	(10)(16)	(9)(9)	(15)(15)	(15)(16)	(10)(11)	*
			-7.807E+3	9.911E+3	[3.987E+3]	4.210E+3	-15.84E+3	
			-9.891E+3	[-9.911E+3]	-1.620E+3	238.9	-20.72E+3	
		98	(10)(16)	(9)(9)	(11)(11)	(10)(16)	(10)(11)	*
			-7.807E+3	[2.079E+3]	395.7	-6.103E+3	-8.870E+3	
			-9.891E+3	-2.079E+3	[-966.5]	-7.479E+3	-12.38E+3	
310	E1	100	(10)(12)	(12)(12)	(15)(15)	(10)(16)	(10)(15)	*
			-8.797E+3	[1.895E+3]	462.3	-7.204E+3	-10.35E+3	
			-9.805E+3	-1.895E+3	[-1.129E+3]	-7.833E+3	-12.53E+3	
		123	(10)(12)	(12)(12)	(15)(15)	(15)(16)	(10)(15)	*
			-8.798E+3	9.771E+3	[4.029E+3]	4.027E+3	-17.82E+3	
			-9.804E+3	[-9.771E+3]	-1.649E+3	-110.4	-20.81E+3	
311	E1	123	(10)(11)	(12)(12)	(16)(11)	(12)(11)	(11)(12)	*
			-4.955E+3	32.22E+3	[3.607E+3]	30.84E+3	-33.11E+3	
			-6.816E+3	[-32.22E+3]	[3.003E+3]	21.26E+3	-38.91E+3	
		122	(10)(11)	(12)(12)	(15)(15)	(15)(10)	(10)(15)	*
			-4.956E+3	[32.25E+3]	10.15E+3	29.61E+3	-36.59E+3	
			-6.817E+3	-32.25E+3	[-24.80E+3]	24.94E+3	-57.70E+3	

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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BEAM STRESS ENVELOPES

Beam Property 23

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
312	E1	122	(12)(11)	(16)(16)	(11)(10)	(12)(11)	(10)(16)	*
			6.463E+3	13.02E+3	[2.861E+3]	20.74E+3	-6.922E+3	
			3.615E+3	[-13.02E+3]	[1.281E+3]	17.48E+3	-8.584E+3	
		64	(12)(11)	(12)(12)	(11)(11)	(12)(11)	(12)(11)	*
			6.463E+3	[6.149E+3]	298.4	12.62E+3	306.1	
			3.615E+3	-6.149E+3	[-729.0]	9.063E+3	-2.264E+3	
313	E1	99	(10)(13)	(14)(14)	(11)(11)	(10)(16)	(10)(15)	*
			-8.728E+3	[1.941E+3]	429.2	-7.107E+3	-10.22E+3	
			-9.793E+3	-1.941E+3	[-1.048E+3]	-7.760E+3	-12.69E+3	
		124	(10)(13)	(14)(14)	(15)(15)	(15)(16)	(10)(15)	*
			-8.728E+3	9.817E+3	[3.794E+3]	3.802E+3	-17.79E+3	
			-9.793E+3	[-9.817E+3]	-1.593E+3	-1.935	-21.11E+3	
314	E1	124	(15)(16)	(15)(15)	(12)(11)	(15)(10)	(10)(15)	*
			-4.688E+3	35.39E+3	[4.588E+3]	32.63E+3	-34.69E+3	
			-6.363E+3	[-35.39E+3]	[-5.203E+3]	26.63E+3	-45.48E+3	
		121	(15)(16)	(15)(15)	(15)(15)	(15)(10)	(10)(15)	*
			-4.889E+3	[34.78E+3]	5.956E+3	35.85E+3	-36.99E+3	
			-6.363E+3	-34.78E+3	[-14.55E+3]	24.26E+3	-54.22E+3	
315	E1	121	(15)(16)	(11)(11)	(11)(10)	(15)(10)	(10)(16)	*
			7.375E+3	15.52E+3	[1.584E+3]	24.43E+3	-7.336E+3	
			4.578E+3	[-15.52E+3]	[1.280E+3]	18.40E+3	-9.071E+3	
		20	(15)(16)	(15)(15)	(15)(15)	(15)(16)	(14)(16)	*
			7.375E+3	[7.524E+3]	[215.3]	15.11E+3	3.684	
			4.578E+3	-7.524E+3	-88.12	10.59E+3	-1.470E+3	

Maximum values in this output:

			Lc.					
315	E1	121	15 7.375E+3	15.47E+3	[1.560E+3]	24.43E+3	-8.742E+3	*
263	E1	103	11-6.348E+3	38.65E+3	[-13.18E+3]	37.69E+3	-58.18E+3	*
311	E1	122	15-6.723E+3	-26.18E+3	[-24.80E+3]	29.61E+3	-57.70E+3	*
263	E1	103	11-6.348E+3	38.65E+3	[-13.18E+3]	37.69E+3	-58.18E+3	*
312	E1	64	12 6.463E+3	-6.149E+3	[-7.695]	12.62E+3	306.1	*

Minimum values in this output:

			Lc.					
310	E1	100	13-9.805E+3	-1.695E+3	[78.61]	-7.833E+3	-11.73E+3	*
263	E1	103	11-6.348E+3	38.65E+3	[-13.18E+3]	37.69E+3	-58.18E+3	*
311	E1	122	15-6.723E+3	-26.18E+3	[-24.80E+3]	29.61E+3	-57.70E+3	*
310	E1	100	16-9.673E+3	-1.759E+3	[81.78]	-7.833E+3	-11.46E+3	*
263	E1	103	11-6.348E+3	38.65E+3	[-13.18E+3]	37.69E+3	-58.18E+3	*

BEAM STRESS ENVELOPES

Beam Property 24

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
288	E1	93	(15)(10)	(16)(10)	(9)(15)	(11)(10)	(10)(11)	*
			3.988E+3	9.310E+3	115.1	17.62E+3	-4.208E+3	
			3.092E+3	7.296E+3	-10.39E+3	10.39E+3	-9.658E+3	
		117	(15)(10)	(10)(12)	(10)(11)	(15)(10)	(9)(11)	
			3.977E+3	-94.02	-334.1	11.01E+3	3.390E+3	
			3.081E+3	-444.5	-7.029E+3	3.428E+3	-3.066E+3	
289	E1	117	(14)(10)	(10)(15)	(10)(11)	(15)(10)	(9)(11)	
			3.565E+3	-701.6	-340.1	10.78E+3	2.278E+3	
			2.724E+3	-1.483E+3	-7.084E+3	3.504E+3	-3.702E+3	
		97	(11)(10)	(11)(10)	(9)(15)	(11)(10)	(16)(10)	
			3.473E+3	964.5	4.541	4.458E+3	2.784E+3	
			2.670E+3	437.0	-42.91	3.187E+3	2.233E+3	
291	E1	94	(12)(10)	(11)(10)	(16)(11)	(11)(10)	(10)(11)	
			3.999E+3	9.743E+3	-746.8	19.51E+3	-4.400E+3	
			3.094E+3	7.457E+3	-12.22E+3	10.59E+3	-11.75E+3	
		119	(12)(10)	(10)(13)	(16)(15)	(15)(10)	(16)(11)	
			3.947E+3	16.76	-238.5	10.75E+3	3.606E+3	
			3.083E+3	-360.6	-6.868E+3	3.388E+3	-3.001E+3	
292	E1	119	(12)(10)	(10)(12)	(16)(15)	(15)(10)	(16)(11)	
			3.561E+3	-447.5	-246.4	10.44E+3	2.609E+3	
			2.739E+3	-985.4	-6.914E+3	3.285E+3	-3.451E+3	
		98	(16)(10)	(9)(15)	(16)(11)	(9)(10)	(11)(10)	
			3.437E+3	541.8	3.743	3.977E+3	3.220E+3	
			2.685E+3	193.1	-49.34	3.021E+3	2.349E+3	
330	E1	100	(14)(10)	(12)(11)	(16)(15)	(12)(10)	(15)(10)	
			3.518E+3	488.2	4.268	4.002E+3	3.311E+3	
			3.183E+3	146.9	-55.05	3.542E+3	2.764E+3	
		131	(11)(10)	(15)(16)	(16)(11)	(11)(10)	(16)(15)	
			3.537E+3	583.6	-277.4	10.04E+3	3.092E+3	
			3.208E+3	330.1	-6.463E+3	3.731E+3	-2.992E+3	
331	E1	131	(16)(10)	(12)(11)	(16)(11)	(11)(10)	(16)(15)	
			3.985E+3	1.011E+3	-260.6	10.44E+3	3.037E+3	
			3.631E+3	714.2	-6.457E+3	4.593E+3	-2.563E+3	
		96	(16)(10)	(15)(10)	(16)(15)	(15)(10)	(10)(15)	
			3.997E+3	8.721E+3	-648.7	18.15E+3	-4.047E+3	
			3.643E+3	7.657E+3	-11.22E+3	11.33E+3	-10.27E+3	
332	E1	99	(13)(10)	(15)(10)	(12)(11)	(15)(10)	(12)(11)	
			3.517E+3	884.3	3.626	4.396E+3	2.899E+3	
			3.126E+3	489.8	-53.76	3.626E+3	2.619E+3	
		132	(11)(10)	(12)(11)	(10)(15)	(11)(10)	(9)(15)	
			3.550E+3	176.4	-294.6	10.04E+3	3.171E+3	
			3.190E+3	-158.5	-6.493E+3	3.513E+3	-2.965E+3	

BEAM STRESS ENVELOPES

Beam Property 24

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
333	E1	132	(11)(10)	(15)(10)	(10)(15)	(15)(10)	(9)(15)	
			4.022E+3	1.028E+3	-290.3	10.56E+3	3.121E+3	
			3.628E+3	791.8	-6.469E+3	4.471E+3	-2.931E+3	
		95	(11)(10)	(12)(10)	(10)(11)	(15)(10)	(10)(15)	
			4.035E+3	8.356E+3	72.80	16.51E+3	-3.847E+3	
			3.640E+3	7.487E+3	-9.643E+3	11.13E+3	-8.473E+3	

Maximum values in this output:

			Lc.					
333	E1	98	11 4.039E+3	7.887E+3	-9.643E+3	16.49E+3	-8.423E+3	
291	E1	94	11 3.881E+3	9.743E+3	-12.22E+3	19.51E+3	-11.75E+3	
288	E1	93	9 3.932E+3	9.200E+3	115.1	13.13E+3	-5.269E+3	
291	E1	94	11 3.881E+3	9.743E+3	-12.22E+3	19.51E+3	-11.75E+3	
291	E1	119	16 3.919E+3	-203.1	-238.5	4.233E+3	3.606E+3	

Minimum values in this output:

			Lc.					
289	E1	97	10 2.670E+3	437.0	3.862	3.107E+3	2.233E+3	
289	E1	117	15 3.548E+3	-1.483E+3	-7.081E+3	10.76E+3	-3.686E+3	
291	E1	94	11 3.881E+3	9.743E+3	-12.22E+3	19.51E+3	-11.75E+3	
292	E1	98	10 2.665E+3	336.0	3.591	3.021E+3	2.349E+3	
291	E1	94	11 3.881E+3	9.743E+3	-12.22E+3	19.51E+3	-11.75E+3	

BEAM STRESS ENVELOPES

Beam Property 25

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
294	E1	105	(11)(10)	(11)(11)	(11)(11)	(11)(10)	(10)(15)	*
			9.475E+3	[12.90E+3]	[3.294E+3]	25.67E+3	-2.740E+3	
			6.405E+3	-12.90E+3	-1.348E+3	15.61E+3	-4.778E+3	
		110	(11)(10)	(11)(11)	(12)(11)	(11)(10)	(10)(11)	*
			9.475E+3	35.93E+3	[1.247E+3]	45.79E+3	-19.15E+3	
			6.405E+3	[-35.93E+3]	[-930.6]	32.59E+3	-27.39E+3	
295	E1	110	(13)(10)	(11)(11)	(11)(11)	(11)(10)	(16)(11)	*
			14.83E+3	[19.35E+3]	6.989E+3	40.98E+3	-3.226E+3	
			11.24E+3	-19.35E+3	[-17.07E+3]	25.31E+3	-21.78E+3	
		114	(13)(10)	(11)(-11)	(12)(11)	(11)(10)	(10)(11)	*
			14.83E+3	37.33E+3	[16.11E+3]	68.08E+3	-16.76E+3	
			11.24E+3	[-37.33E+3]	-6.594E+3	41.92E+3	-29.28E+3	
296	E1	114	(10)(11)	(11)(11)	(15)(15)	(15)(10)	(10)(11)	*
			-778.9	10.96E+3	[7.113E+3]	17.03E+3	-9.249E+3	
			-1.048E+3	[-10.96E+3]	-2.912E+3	7.662E+3	-14.92E+3	
		117	(10)(11)	(15)(15)	(11)(11)	(15)(10)	(10)(11)	*
			-778.9	[3.018E+3]	[938.4]	2.965E+3	-2.806E+3	
			-1.048E+3	-3.018E+3	-384.2	1.312E+3	-4.431E+3	
297	E1	107	(9)(15)	(9)(9)	(11)(11)	(11)(10)	(10)(15)	*
			7.783E+3	[11.20E+3]	[4.808E+3]	19.60E+3	-2.761E+3	
			5.882E+3	-11.20E+3	-1.845E+3	15.66E+3	-5.146E+3	
		112	(9)(15)	(9)(9)	(16)(16)	(9)(15)	(15)(9)	*
			7.783E+3	[0.08E+3]	[1.354E+3]	39.14E+3	-16.24E+3	
			5.882E+3	[-30.08E+3]	-954.2	30.32E+3	-22.80E+3	
298	E1	112	(12)(10)	(9)(9)	(11)(11)	(11)(10)	(16)(11)	*
			14.51E+3	[15.41E+3]	12.74E+3	38.90E+3	-1.990E+3	
			11.07E+3	-15.41E+3	[-31.12E+3]	24.83E+3	-26.45E+3	
		116	(12)(10)	(9)(9)	(11)(11)	(11)(10)	(10)(11)	*
			14.51E+3	32.56E+3	[27.76E+3]	67.91E+3	-16.40E+3	
			11.07E+3	[-32.56E+3]	-11.36E+3	40.26E+3	-23.69E+3	
299	E1	116	(13)(16)	(16)(16)	(11)(11)	(15)(10)	(10)(11)	*
			-747.0	10.41E+3	[8.036E+3]	17.29E+3	-9.088E+3	
			-923.7	[-10.41E+3]	-3.290E+3	7.679E+3	-14.14E+3	
		119	(13)(16)	(12)(12)	(15)(15)	(15)(10)	(10)(16)	*
			-747.0	[3.470E+3]	[808.4]	2.111E+3	-2.611E+3	
			-923.7	-2.470E+3	-330.9	1.155E+3	-3.397E+3	
334	E1	131	(11)(12)	(16)(16)	(11)(11)	(11)(12)	(11)(12)	
			-817.5	[2.187E+3]	[453.5]	1.450E+3	-2.817E+3	
			-1.122E+3	-2.187E+3	-188.6	1.193E+3	-3.321E+3	
		129	(11)(12)	(12)(12)	(15)(15)	(11)(10)	(10)(15)	*
			-817.6	10.50E+3	[7.932E+3]	17.10E+3	-10.50E+3	
			-1.122E+3	[-10.50E+3]	-3.255E+3	8.780E+3	-14.12E+3	
335	E1	129	(16)(10)	(12)(12)	(15)(15)	(15)(10)	(10)(15)	*
			13.82E+3	34.31E+3	[30.13E+3]	71.64E+3	-19.07E+3	
			12.37E+3	[-34.31E+3]	-12.33E+3	48.35E+3	-26.52E+3	
		126	(16)(10)	(12)(12)	(12)(15)	(15)(10)	(16)(15)	*
			13.82E+3	[18.32E+3]	12.85E+3	37.64E+3	-3.434E+3	
			12.37E+3	-18.32E+3	[-31.38E+3]	28.75E+3	-29.05E+3	
336	E1	126	(12)(11)	(12)(12)	(16)(16)	(12)(11)	(11)(12)	*
			7.738E+3	29.95E+3	[1.369E+3]	39.00E+3	-18.19E+3	
			5.826E+3	[-29.95E+3]	-860.5	30.01E+3	-22.75E+3	
		128	(12)(11)	(12)(12)	(15)(15)	(15)(10)	(10)(11)	*
			7.739E+3	[11.30E+3]	[4.563E+3]	19.70E+3	-3.280E+3	
			5.826E+3	-11.30E+3	-1.868E+3	17.20E+3	-8.315E+3	
337	E1	132	(10)(13)	(11)(11)	(15)(15)	(11)(10)	(10)(15)	*
			-932.3	[2.781E+3]	[529.6]	3.137E+3	-3.128E+3	
			-1.215E+3	-2.781E+3	-216.8	1.313E+3	-4.194E+3	
		130	(10)(13)	(15)(15)	(11)(11)	(11)(10)	(10)(15)	*
			-932.4	11.10E+3	[7.133E+3]	17.03E+3	-10.67E+3	
			-1.215E+3	[-11.10E+3]	-2.920E+3	8.795E+3	-15.23E+3	

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 06-May-98	Checked

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SPOR SALONU

CELIK CATI ANA MAKASLARI t.seh

BEAM STRESS ENVELOPES

Beam Property 25

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
338	E1	130	(16)(10)	(15)(15)	(15)(15)	(15)(10)	(16)(15)	*
			14.00E+3	37.43E+3	[19.35E+3]	70.35E+3	-19.57E+3	
			12.53E+3	[-37.43E+3]	-7.920E+3	47.66E+3	-31.78E+3	
		125	(16)(10)	(15)(15)	(15)(15)	(15)(10)	(16)(15)	*
			14.00E+3	[20.78E+3]	7.453E+3	41.81E+3	-8.416E+3	
			12.53E+3	-20.78E+3	[-18.21E+3]	29.44E+3	-25.41E+3	
339	E1	125	(15)(10)	(15)(15)	(9)(15)	(15)(10)	(10)(15)	*
			9.344E+3	35.54E+3	[1.242E+3]	45.30E+3	-20.54E+3	
			6.909E+3	[-35.54E+3]	[-1.015E+3]	35.01E+3	-27.21E+3	
		127	(15)(10)	(15)(15)	(15)(15)	(15)(10)	(10)(11)	*
			9.344E+3	[12.95E+3]	[3.365E+3]	25.66E+3	-3.243E+3	
			6.909E+3	-12.95E+3	-1.378E+3	17.12E+3	-4.986E+3	

Maximum values in this output:

			Lc.					
295	E1	110	13	14.83E+3	-16.89E+3	[-13.51E+3]	37.35E+3	-15.58E+3	*
338	E1	130	15	13.57E+3	37.43E+3	[19.35E+3]	70.35E+3	-31.78E+3	*
335	E1	129	15	13.66E+3	27.85E+3	[30.13E+3]	71.64E+3	-26.52E+3	*
335	E1	129	15	13.66E+3	27.85E+3	[30.13E+3]	71.64E+3	-26.52E+3	*
298	E1	112	16	14.33E+3	-13.78E+3	[-2.536E+3]	29.15E+3	-1.990E+3	*

Minimum values in this output:

			Lc.					
337	E1	130	13	-1.219E+3	11.02E+3	[5.059E+3]	14.87E+3	-14.31E+3	*
338	E1	130	15	13.57E+3	37.43E+3	[19.35E+3]	70.35E+3	-31.78E+3	*
338	E1	126	15	13.66E+3	-11.33E+3	[-31.38E+3]	37.84E+3	-29.05E+3	*
299	E1	119	10	-771.3	-1.775E+3	[152.8]	1.155E+3	-2.611E+3	*
338	E1	130	15	13.57E+3	37.43E+3	[19.35E+3]	70.35E+3	-31.78E+3	*

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by YSK	Date Dec-03-98	Data GAGA Checked

KOC UNIVERSITESI
SPOR SALONU CELIK CATI
KONSOL GAGA BOLUMU

Type of Structure: PLANE FRAME

Global Restraints: Y XX ZZ

Input Data Units: kN m T s deg.C Gravity = 9.80665 m/s2
Results Units: - same as input data units

Number of Nodes = 7 Highest Node = 7
Number of Elements = 8 Highest Element = 8
Number of Basic Loadcases = 3 Highest Basic Loadcase = 3
Number of Combination Loadcases = 2
Number of Envelopes = 0

Static Loadcase Titles:

Basic Loadcases
1 KAPLAMA
2 GRAVITY
3 KAR
Combination Loadcases
4 DUSEY-YUKLER
1* 1.000 2* 1.000
5 DUSEY +KAR
1* 1.000 2* 1.000 3* 1.000

A N A L Y S I S B Y G S A Version 6s036

Static analysis

Nodes Units: [m]

Node	X	Y	Z	Axis
1	.0		.0	
2	.0		1.730	
3	.0		2.270	
4	.213		.630	
5	.585		1.730	
6	.700		2.070	
7	4.600		.630	

Elements

Elem. No.	Type	Fixity of ele. xx yy zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length [m]
1	BEAM	f/f	1	1	1	2		1.730 V
2	BEAM	f/f	1	1	2	3		540.0E-3 V
3	BEAM	f/f	1	2	1	4		665.0E-3
4	BEAM	f/f	1	2	4	5		1.161
5	BEAM	f/f	1	2	5	6		356.9E-3
6	BEAM	f/f	1	3	6	7		4.157
7	BEAM	f/f	2	4	4	7		4.387
8	BEAM	f/f	2	5	2	5		585.0E-3

Beam Properties

* indicates that properties are derived from the Beam Sections module

Property	Mate-rial	Area [m2]	Iyy [m4]	Izz [m4]	Beta deg]	Tors.(C) [m4]	Ky	Kz
1*	1	12.92E-3	107.1E-6	107.1E-6		214.1E-6	.500	.500
2*	1	5.771E-3	24.42E-6	24.42E-6		48.83E-6	.498	.498

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Property	Section Name	Modified Properties Area	Iyy	Izz	Torsion	Ky	Kz
1	CHS273x16.0	-	-				
2	CHS193x10.0	-	-				

Materials

Material	Youngs Mod.(E) [kN/m2]	Poissons Ratio (Nu)	Density (Ro) [T/m3]	Coef.of Exp. (Alpha) [/deg.C]
1	205.0E+6	300.0E-3	7.850	12.00E-6

Pinned Supports

List of Nodes
1 3

Beam Loads Units: [kN] [kNm]

Element No.	Load-case	Type	Direction	per [m] W1	for distributed loads L1	W2	L2
5	1	U.D.L.	Fz Global	-3.800	.0	.0	.0
5	3	U.D.L.	Fz Global	-3.000	.0	.0	.0
6	1	U.D.L.	Fz Global	-3.800	.0	.0	.0
8	1	U.D.L.	Fz Global	-3.800	.0	.0	.0
6	3	U.D.L.	Fz Global	-3.000	.0	.0	.0
8	3	U.D.L.	Fz Global	-3.000	.0	.0	.0

Gravity Loads

Loadcase	XG Value	YG Value	ZG Value
2	.0	.0	-1.000

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

Directions are in global axes
Loadcases: 5

Beam Property 1

Elem no.	Load case	Node no.	Translation [m] DX	DY	DZ	phi-XX	Rotation [rad] phi-YY	phi-ZZ
1	5	1	r		r		-28.14E-6	
		2	188.2E-6		539.9E-9		-164.8E-6	
2	5	2	188.2E-6		539.9E-9		-164.8E-6	
		3	r		r		-440.2E-6	
3	5	1	r		r		-28.14E-6	
		4	-68.41E-6		6.153E-6		-34.37E-6	
4	5	4	-68.41E-6		6.153E-6		-34.37E-6	
		5	217.6E-6		-113.0E-6		629.5E-6	
5	5	5	217.6E-6		-113.0E-6		629.5E-6	
		6	484.9E-6		-206.1E-6		902.3E-6	
6	5	6	484.9E-6		-206.1E-6		902.3E-6	
		7	-210.1E-6		-2.275E-3		-19.75E-6	

Maximum values in this output:

5	5	6	484.9E-6		-206.1E-6		902.3E-6	
3	5	4	-68.41E-6		6.153E-6		-34.37E-6	
5	5	6	484.9E-6		-206.1E-6		902.3E-6	

Minimum values in this output:

6	5	7	-210.1E-6		-2.275E-3		-19.75E-6	
6	5	7	-210.1E-6		-2.275E-3		-19.75E-6	
2	5	3	r		r		-440.2E-6	

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

Beam Property 2

Elem no.	Load case	Node no.	Translation [m] DX	DY	DZ	phi-XX	Rotation [rad] phi-YY	phi-ZZ
7	5	4	-68.41E-6		6.153E-6		-34.37E-6	
		7	-210.1E-6		-2.275E-3		-19.75E-6	
8	5	2	188.2E-6		539.9E-9		-164.8E-6	
		5	217.6E-6		-113.0E-6		629.5E-6	

Maximum values in this output:

8	5	5	217.6E-6		-113.0E-6		629.5E-6	
7	5	4	-68.41E-6		6.153E-6		-34.37E-6	
8	5	5	217.6E-6		-113.0E-6		629.5E-6	

Minimum values in this output:

7	5	7	-210.1E-6		-2.275E-3		-19.75E-6	
7	5	7	-210.1E-6		-2.275E-3		-19.75E-6	
8	5	2	188.2E-6		539.9E-9		-164.8E-6	

B E A M & S P R I N G F O R C E S & M O M E N T S

The force in an element at any point is the force required to maintain equilibrium if the element is cut at that point and the end 2 part of the element is discarded. Thus: +ve axial forces are tensile
Directions are in element axes
Loadcases: 5

Beam Property 1

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
1	5	1	-33.82E-3		-18.06		13.89	
		2	1.687		-18.06		-17.36	
2	5	2	-2.916		41.47		-22.39	
		3	-2.379		41.47		-4.168E-6	
3	5	1	-64.36		41.08		-13.89	
		4	-63.73		41.29		13.50	
4	5	4	-48.95		5.941		9.026	
		5	-47.65		6.311		16.14	
5	5	5	-20.41		-47.25		25.11	
		6	-17.76		-46.35		8.311	
6	5	6	46.82		-16.47		8.311	
		7	39.60		13.93		3.016	

Maximum values in this output:

6	5	6	46.82		-16.47		8.311	
2	5	2	-2.916		41.47		-22.39	
5	5	5	-20.41		-47.25		25.11	

Minimum values in this output:

3	5	1	-64.36		41.08		-13.89	
5	5	5	-20.41		-47.25		25.11	
2	5	2	-2.916		41.47		-22.39	

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SPOR SALONU CELIK CATI
KONSOL GAGA BOLUMU

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by YSK	Date Dec-03-98	Checked GAGA

BEAM & SPRING FORCES & MOMENTS

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
7	5	4	-38.22		-2.682		4.475	
		7	-38.22		-733.0E-3		-3.016	
8	5	2	59.53		4.603		5.036	
		5	59.53		8.841		8.968	

Maximum values in this output:

8	5	2	59.53		4.603		5.036	
8	5	5	59.53		8.841		8.968	
8	5	5	59.53		8.841		8.968	

Minimum values in this output:

7	5	4	-38.22		-2.682		4.475	
7	5	4	-38.22		-2.682		4.475	
7	5	7	-38.22		-733.0E-3		-3.016	

REACTIONS

Directions are in global axes
Total moments are about (0,0,0)
Loadcases: 5

Node no.		Load case	Force [kN] FX	FY	FZ	Moment [kNm] MXX	MYY	MZZ
1	pin	5	41.47		47.84		-	
3	pin	5	-41.47		-2.379		-	

BEAM STRESSES

+ve stresses: tensile
Bending & combined stresses are only given for elements with sections specified
Of these, unsymmetrical sections are marked by '*'
Bending stresses: By = Myy/Iyy x Dz Bz = Mzz/Izz x Dy
- where Dz & Dy are the distances from the centre of gravity to the edge of the section in the +ve z and y directions respectively. For unsymmetrical sections and where the -ve Dz or Dy magnitude is greater than the +ve, the -ve distance is used and the bending stress is output enclosed by [ ] so as to highlight the change of sign.
For circular sections: C1 = A + SQRT(By^2+By+Bz^2+Bz) C2 = A - SQRT(By^2+By+Bz^2+Bz)
For rect. & I sections: C1 = A + ABS(By) + ABS(Bz) C2 = A - ABS(By) - ABS(Bz)
For unsymmetrical sections the combined stress: A + By + Bz is calculated at the two end points of both the top and bottom edges of the section. C1 is output as the maximum of these four values and C2 as the minimum.
Directions are in element axes
Loadcases: 5

Beam Property 1

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
1	5	1	-2.618	17.71E+3	.0	17.70E+3	-17.71E+3
		2	130.6	-22.13E+3	.0	22.26E+3	-22.00E+3
2	5	2	-225.7	-28.55E+3	.0	28.32E+3	-28.77E+3
		3	-184.2	-5.314E-3	.0	-184.2	-184.2
3	5	1	-4.982E+3	-17.71E+3	.0	12.72E+3	-22.69E+3
		4	-4.933E+3	17.21E+3	.0	12.28E+3	-22.15E+3
4	5	4	-3.769E+3	11.51E+3	.0	7.719E+3	-15.30E+3
		5	-3.704E+3	20.58E+3	.0	16.87E+3	-24.28E+3
5	5	5	-1.580E+3	32.01E+3	.0	30.43E+3	-33.59E+3
		6	-1.375E+3	10.60E+3	.0	9.221E+3	-11.97E+3
6	5	6	3.625E+3	10.60E+3	.0	14.22E+3	-6.971E+3
		7	2.756E+3	3.845E+3	.0	6.601E+3	-1.090E+3

Maximum values in this output:

6	5	6	3.625E+3	10.60E+3	.0	14.22E+3	-6.971E+3
5	5	5	-1.580E+3	32.01E+3	.0	30.43E+3	-33.59E+3
1	5	1	-2.618	17.71E+3	.0	17.70E+3	-17.71E+3
5	5	5	-1.580E+3	32.01E+3	.0	30.43E+3	-33.59E+3
2	5	3	-184.2	-5.314E-3	.0	-184.2	-184.2

Minimum values in this output:

3	5	1	-4.982E+3	-17.71E+3	.0	12.72E+3	-22.69E+3
2	5	2	-225.7	-28.55E+3	.0	28.32E+3	-28.77E+3
1	5	1	-2.618	17.71E+3	.0	17.70E+3	-17.71E+3
2	5	3	-184.2	-5.314E-3	.0	-184.2	-184.2
5	5	5	-1.580E+3	32.01E+3	.0	30.43E+3	-33.59E+3

BEAM STRESSES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
7	5	4	-6.622E+3	17.69E+3	.0	11.06E+3	-24.31E+3
		7	-6.622E+3	-11.92E+3	.0	5.299E+3	-18.54E+3
8	5	2	10.31E+3	19.90E+3	.0	30.22E+3	-9.590E+3
		5	10.31E+3	35.45E+3	.0	45.76E+3	-25.13E+3

Maximum values in this output:

8	5	2	10.31E+3	19.90E+3	.0	30.22E+3	-9.590E+3
8	5	5	10.31E+3	35.45E+3	.0	45.76E+3	-25.13E+3
7	5	4	-6.622E+3	17.69E+3	.0	11.06E+3	-24.31E+3
8	5	5	10.31E+3	35.45E+3	.0	45.76E+3	-25.13E+3
8	5	2	10.31E+3	19.90E+3	.0	30.22E+3	-9.590E+3

Minimum values in this output:

7	5	4	-6.622E+3	17.69E+3	.0	11.06E+3	-24.31E+3
7	5	7	-6.622E+3	-11.92E+3	.0	5.299E+3	-18.54E+3
7	5	4	-6.622E+3	17.69E+3	.0	11.06E+3	-24.31E+3
7	5	7	-6.622E+3	-11.92E+3	.0	5.299E+3	-18.54E+3
8	5	5	10.31E+3	35.45E+3	.0	45.76E+3	-25.13E+3

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 16-May-98	Checked

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SPOR SALONU CELIK CATI MAKASLARI

TUM YUKLER + ZATI YUK DEP.SERB

Type of Structure: GENERAL 3D

Global Restraints: none

Input Data Units: kN m T s deg.C Gravity = 9.80665 m/s2
Results Units: - same as input data units

Number of Nodes = 130 Highest Node = 132
Number of Elements = 306 Highest Element = 363
Number of Basic Loadcases = 8 Highest Basic Loadcase = 8
Number of Combination Loadcases = 0
Number of Envelopes = 1

Static Loadcase Titles:

Basic Loadcases
1 COMB 9 + LC1
2 COMB10 + LC1
3 COMB10 + LC1
4 COMB11 + LC1
5 COMB12 + LC1
6 COMB13 + LC1
7 COMB14 + LC1
8 COMB15 + LC1

Envelopes
1 All

A N A L Y S I S B Y G S A Version 6x021

Static analysis

Nodes Units: [m]

Node	X	Y	Z	Axis
1	0.0	0.0	-9.000	
2	0.0	0.0	4.000	
3	50.400	0.0	-9.000	
4	50.400	0.0	4.000	
5	0.0	0.0	6.000	
6	50.400	0.0	6.000	
7	3.113	0.0	6.945	
8	47.287	0.0	6.945	
9	7.053	0.0	7.951	
10	11.038	0.0	8.758	
11	15.059	0.0	9.366	
12	19.105	0.0	9.771	
13	23.167	0.0	9.975	
14	27.233	0.0	9.975	
15	31.295	0.0	9.771	
16	35.341	0.0	9.366	
17	39.362	0.0	8.758	
18	43.347	0.0	7.951	
19	25.200	0.0	10.000	
20	3.113	0.0	4.945	
21	5.077	0.0	5.473	
22	45.323	0.0	5.473	
23	9.041	0.0	6.380	
24	13.045	0.0	7.087	
25	17.080	0.0	7.594	
26	21.135	0.0	7.898	
27	25.200	0.0	8.000	
28	29.265	0.0	7.898	
29	33.320	0.0	7.594	
30	37.355	0.0	7.087	
31	41.359	0.0	6.380	
32	47.287	0.0	4.945	
33	1.557	0.0	6.473	
34	48.844	0.0	6.473	
35	5.083	0.0	7.448	
36	9.046	0.0	8.385	
37	13.049	0.0	9.062	
38	17.082	0.0	9.569	
39	21.136	0.0	9.873	
40	29.264	0.0	9.873	
41	33.318	0.0	9.569	
42	37.352	0.0	9.062	
43	41.355	0.0	8.385	
44	45.317	0.0	7.448	
45	0.0	4.000	-9.000	
46	0.0	4.000	4.000	
47	50.400	4.000	-9.000	
48	50.400	4.000	4.000	
49	0.0	4.000	6.000	
50	50.400	4.000	6.000	
51	3.113	4.000	6.945	
52	47.287	4.000	6.945	
53	7.053	4.000	7.951	
54	11.038	4.000	8.758	
55	15.059	4.000	9.366	
56	19.105	4.000	9.771	
57	23.167	4.000	9.975	
58	27.233	4.000	9.975	
59	31.295	4.000	9.771	
60	35.341	4.000	9.366	
61	39.362	4.000	8.758	
62	43.347	4.000	7.951	
63	25.200	4.000	10.000	
64	3.113	4.000	4.945	
65	5.077	4.000	5.473	
66	45.323	4.000	5.473	
67	9.041	4.000	6.380	
68	13.045	4.000	7.087	
69	17.080	4.000	7.594	
70	21.135	4.000	7.898	
71	25.200	4.000	8.000	
72	29.265	4.000	7.898	
73	33.320	4.000	7.594	
74	37.355	4.000	7.087	
75	41.359	4.000	6.380	
76	47.287	4.000	4.945	

Nodes Units: [m]

Node	X	Y	Z	Axis
77	1.557	4.000	6.473	
78	48.844	4.000	6.473	
79	5.083	4.000	7.448	
80	9.046	4.000	8.385	
81	13.049	4.000	9.062	
82	17.082	4.000	9.569	
83	21.136	4.000	9.873	
84	29.264	4.000	9.873	
85	33.318	4.000	9.569	
86	37.352	4.000	9.062	
87	41.355	4.000	8.385	
88	45.317	4.000	7.448	
89	0.0	0.0	-5.000	
90	50.400	0.0	-5.000	
91	0.0	4.000	-5.000	
92	50.400	4.000	-5.000	
93	51.200	0.0	5.800	
94	51.200	4.000	5.800	
95	-0.800	0.0	5.800	
96	-0.800	4.000	5.800	
97	54.800	0.0	4.945	
98	54.800	4.000	4.945	
99	-4.400	0.0	4.945	
100	-4.400	4.000	4.945	
101	50.400	0.0	4.945	
102	50.400	4.000	4.945	
103	50.784	0.0	4.945	
104	50.784	4.000	4.945	
105	49.362	0.0	5.648	
106	48.325	0.0	5.297	
107	49.362	4.000	5.648	
108	48.325	4.000	5.297	
109	50.400	0.0	5.297	
110	50.400	0.0	5.648	
111	50.400	4.000	5.297	
112	50.400	4.000	5.648	
113	50.923	0.0	5.230	
114	51.131	0.0	5.648	
115	50.923	4.000	5.230	
116	51.131	4.000	5.648	
117	51.950	0.0	5.648	
119	51.950	4.000	5.648	
121	0.0	0.0	4.945	
122	0.0	4.000	4.945	
123	-0.438	4.000	4.953	
124	-0.438	0.0	4.953	
125	0.0	0.0	5.643	
126	0.0	4.000	5.643	
127	1.044	0.0	5.646	
128	1.044	4.000	5.646	
129	-0.739	4.000	5.641	
130	-0.739	0.0	5.641	
131	-1.488	4.000	5.643	
132	-1.488	0.0	5.643	

Elements

Elem. No.	Type	Fixity of ele. xx	yy	zz	Prop. No.	Group No. of elems.	Topology End 1	End 2	3rd Node	Length [m]	
18	BEAM	f/f	f/f	f/f	2	2	13	19		2.033	
19	BEAM	f/f	f/f	f/f	2	2	19	14		2.033	
20	BEAM	f/f	f/f	f/f	1	1	2	20		3.253	
22	BEAM	f/f	f/f	f/f	1	1	20	21		2.034	
26	BEAM	f/f	f/f	f/f	1	1	21	23		4.056	
27	BEAM	f/f	f/f	f/f	1	1	23	24		4.056	
28	BEAM	f/f	f/f	f/f	1	1	24	25		4.057	
29	BEAM	f/f	f/f	f/f	1	1	25	26		4.056	
30	BEAM	f/f	f/f	f/f	1	1	26	27		4.056	
35	BEAM	f/f	f/f	f/f	1	1	27	28		4.056	
32	BEAM	f/f	f/f	f/f	1	1	28	29		4.056	
33	BEAM	f/f	f/f	f/f	1	1	29	30		4.057	
34	BEAM	f/f	f/f	f/f	1	1	30	31		4.056	
35	BEAM	f/f	f/f	f/f	1	1	31	22		4.056	
36	BEAM	f/f	f/f	f/f	1	1	22	32		2.034	
37	BEAM	f/f	f/f	f/f	1	1	32	4		3.253	
40	BEAM	f/f	f/f	f/f	4	4	20	7		2.000	V
41	BEAM	f/f	f/f	f/f	4	4	32	8		2.000	V
44	BEAM	f/f	f/f	f/f	6	6	7	21		2.454	
45	BEAM	f/f	f/f	f/f	6	6	8	22		2.454	
46	BEAM	f/f	f/f	f/f	7	7	21	9		3.169	
47	BEAM	f/f	f/f	f/f	7	7	22	18		3.169	
48	BEAM	f/f	f/f	f/f	7	7	23	10		3.105	
49	BEAM	f/f	f/f	f/f	7	7	31	17		3.105	
50	BEAM	f/f	f/f	f/f	8	8	9	23		2.534	
51	BEAM	f/f	f/f	f/f	8	8	16	31		2.534	
52	BEAM	f/f	f/f	f/f	8	8	17	30		2.612	
53	BEAM	f/f	f/f	f/f	8	8	10	24		2.612	
54	BEAM	f/f	f/f	f/f	9	9	24	11		3.041	
55	BEAM	f/f	f/f	f/f	9	9	25	12		2.973	
56	BEAM	f/f	f/f	f/f	9	9	30	16		3.041	
57	BEAM	f/f	f/f	f/f	9	9	29	15		2.973	
58	BEAM	f/f	f/f	f/f	10	10	11	25		2.688	
59	BEAM	f/f	f/f	f/f	10	10	12	26		2.762	
60	BEAM	f/f	f/f	f/f	10	10	16	29		2.688	
61	BEAM	f/f	f/f	f/f	10	10	15	28		2.762	
62	BEAM	f/f	f/f	f/f	11	11	26	13		2.906	
63	BEAM	f/f	f/f	f/f	11	11	28	14		2.906	
64	BEAM	f/f	f/f	f/f	11	11	14	27		2.834	
65	BEAM	f/f	f/f	f/f	11	11	27	13		2.834	
66	BEAM	f/f	f/f	f/f	2	2	5	33		1.627	
67	BEAM	f/f	f/f	f/f	2	2	33	7		1.626	
68	BEAM	f/f	f/f	f/f	2	2	8	34		1.627	
69	BEAM	f/f	f/f	f/f	2	2	34	6		1.626	
70	BEAM	f/f	f/f	f/f	2	2	7	35		2.033	
71	BEAM	f/f	f/f	f/f	2	2	35	9		2.033	
72	BEAM	f/f	f/f	f/f	2	2	9	36		2.034	
73	BEAM	f/f	f/f	f/f	2	2	36	10		2.032	
74	BEAM	f/f	f/f	f/f	2	2	10	37		2.034	
75	BEAM	f/f	f/f	f/f	2	2	37	11		2.033	

Job No.	Sheet No.	Rev.
38035		

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SPOR SALONU CELIK CATI MAKASLARI

TUM YUKLER + ZATI YUK DEP.SERB

Drg. Ref.

Made by SK | Date 16-May-98 | Checked

Elements

Elem. No.	Type	of ele.	Fixity xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length (m)	
76	BEAM		f/f	f/f	f/f	2	2	11	38		2.033	
77	BEAM		f/f	f/f	f/f	2	2	38	12		2.033	
78	BEAM		f/f	f/f	f/f	2	2	12	39		2.034	
79	BEAM		f/f	f/f	f/f	2	2	39	13		2.034	
80	BEAM		f/f	f/f	f/f	2	2	14	40		2.034	
81	BEAM		f/f	f/f	f/f	2	2	40	15		2.034	
82	BEAM		f/f	f/f	f/f	2	2	15	41		2.033	
83	BEAM		f/f	f/f	f/f	2	2	41	16		2.033	
84	BEAM		f/f	f/f	f/f	2	2	16	42		2.034	
85	BEAM		f/f	f/f	f/f	2	2	42	17		2.033	
86	BEAM		f/f	f/f	f/f	2	2	17	43		2.033	
87	BEAM		f/f	f/f	f/f	2	2	43	18		2.033	
88	BEAM		f/f	f/f	f/f	2	2	18	44		2.033	
89	BEAM		f/f	f/f	f/f	2	2	44	8		2.033	
92	BEAM		f/f	f/f	f/f	2	2	57	63		2.033	
93	BEAM		f/f	f/f	f/f	2	2	63	58		2.033	
94	BEAM		f/f	f/f	f/f	1	1	46	64		3.253	
96	BEAM		f/f	f/f	f/f	1	1	64	65		2.034	
100	BEAM		f/f	f/f	f/f	1	1	65	67		4.066	
101	BEAM		f/f	f/f	f/f	1	1	67	68		4.066	
102	BEAM		f/f	f/f	f/f	1	1	68	69		4.067	
103	BEAM		f/f	f/f	f/f	1	1	69	70		4.066	
104	BEAM		f/f	f/f	f/f	1	1	70	71		4.066	
105	BEAM		f/f	f/f	f/f	1	1	71	72		4.066	
106	BEAM		f/f	f/f	f/f	1	1	72	73		4.066	
107	BEAM		f/f	f/f	f/f	1	1	73	74		4.067	
108	BEAM		f/f	f/f	f/f	1	1	74	75		4.066	
109	BEAM		f/f	f/f	f/f	1	1	75	66		4.066	
110	BEAM		f/f	f/f	f/f	1	1	66	76		2.034	
111	BEAM		f/f	f/f	f/f	1	1	76	48		3.253	
114	BEAM		f/f	f/f	f/f	4	4	64	51		2.000	V
115	BEAM		f/f	f/f	f/f	4	4	76	52		2.000	V
118	BEAM		f/f	f/f	f/f	6	6	51	65		2.454	
119	BEAM		f/f	f/f	f/f	6	6	52	66		2.454	
120	BEAM		f/f	f/f	f/f	7	7	65	53		3.169	
121	BEAM		f/f	f/f	f/f	7	7	66	62		3.169	
122	BEAM		f/f	f/f	f/f	7	7	67	54		3.105	
123	BEAM		f/f	f/f	f/f	7	7	75	61		3.105	
124	BEAM		f/f	f/f	f/f	8	8	53	67		2.534	
125	BEAM		f/f	f/f	f/f	8	8	62	75		2.534	
126	BEAM		f/f	f/f	f/f	8	8	61	74		2.612	
127	BEAM		f/f	f/f	f/f	8	8	54	68		2.612	
128	BEAM		f/f	f/f	f/f	9	9	68	55		3.041	
129	BEAM		f/f	f/f	f/f	9	9	69	56		2.973	
130	BEAM		f/f	f/f	f/f	9	9	74	60		3.041	
131	BEAM		f/f	f/f	f/f	9	9	73	59		2.973	
132	BEAM		f/f	f/f	f/f	10	10	55	69		2.688	
133	BEAM		f/f	f/f	f/f	10	10	56	70		2.762	
134	BEAM		f/f	f/f	f/f	10	10	60	73		2.688	
135	BEAM		f/f	f/f	f/f	10	10	59	72		2.762	
136	BEAM		f/f	f/f	f/f	11	11	70	57		2.906	
137	BEAM		f/f	f/f	f/f	11	11	72	58		2.906	
138	BEAM		f/f	f/f	f/f	11	11	58	71		2.834	
139	BEAM		f/f	f/f	f/f	11	11	71	57		2.834	
140	BEAM		f/f	f/f	f/f	2	2	49	77		1.627	
141	BEAM		f/f	f/f	f/f	2	2	77	51		1.626	
142	BEAM		f/f	f/f	f/f	2	2	52	78		1.627	
143	BEAM		f/f	f/f	f/f	2	2	78	50		1.626	
144	BEAM		f/f	f/f	f/f	2	2	51	79		2.033	
145	BEAM		f/f	f/f	f/f	2	2	79	53		2.033	
146	BEAM		f/f	f/f	f/f	2	2	53	80		2.034	
147	BEAM		f/f	f/f	f/f	2	2	80	54		2.032	
148	BEAM		f/f	f/f	f/f	2	2	54	81		2.034	
149	BEAM		f/f	f/f	f/f	2	2	81	55		2.033	
150	BEAM		f/f	f/f	f/f	2	2	55	82		2.033	
151	BEAM		f/f	f/f	f/f	2	2	82	56		2.033	
152	BEAM		f/f	f/f	f/f	2	2	56	83		2.034	
153	BEAM		f/f	f/f	f/f	2	2	83	57		2.034	
154	BEAM		f/f	f/f	f/f	2	2	58	84		2.034	
155	BEAM		f/f	f/f	f/f	2	2	84	59		2.034	
156	BEAM		f/f	f/f	f/f	2	2	59	85		2.033	
157	BEAM		f/f	f/f	f/f	2	2	85	60		2.033	
158	BEAM		f/f	f/f	f/f	2	2	60	86		2.034	
159	BEAM		f/f	f/f	f/f	2	2	86	61		2.033	
160	BEAM		f/f	f/f	f/f	2	2	61	87		2.033	
161	BEAM		f/f	f/f	f/f	2	2	87	62		2.033	
162	BEAM		f/f	f/f	f/f	2	2	62	88		2.033	
163	BEAM		f/f	f/f	f/f	2	2	88	52		2.033	
166	BEAM		f/f	p/p	p/p	16	16	49	5		4.000	
167	BEAM		f/f	p/p	p/p	13	13	51	7		4.000	
168	BEAM		f/f	p/p	p/p	13	13	53	9		4.000	
169	BEAM		f/f	p/p	p/p	13	13	54	10		4.000	
170	BEAM		f/f	p/p	p/p	13	13	55	11		4.000	
171	BEAM		f/f	p/p	p/p	13	13	56	12		4.000	
172	BEAM		f/f	p/p	p/p	13	13	57	13		4.000	
173	BEAM		f/f	p/p	p/p	13	13	58	14		4.000	
174	BEAM		f/f	p/p	p/p	13	13	59	15		4.000	
175	BEAM		f/f	p/p	p/p	13	13	60	16		4.000	
176	BEAM		f/f	p/p	p/p	13	13	61	17		4.000	
177	BEAM		f/f	p/p	p/p	13	13	62	18		4.000	
178	BEAM		f/f	p/p	p/p	13	13	52	8		4.000	
179	BEAM		f/f	p/p	p/p	16	16	50	6		4.000	
180	BEAM		f/f	p/p	p/p	14	14	49	7		5.156	
181	BEAM		f/f	p/p	p/p	14	14	51	9		5.704	
182	BEAM		f/f	p/p	p/p	14	14	53	10		5.704	
183	BEAM		f/f	p/p	p/p	14	14	54	11		5.704	
184	BEAM		f/f	p/p	p/p	14	14	55	12		5.704	
185	BEAM		f/f	p/p	p/p	14	14	56	13		5.705	
186	BEAM		f/f	p/p	p/p	14	14	57	14		5.704	
187	BEAM		f/f	p/p	p/p	14	14	58	13		5.704	
188	BEAM		f/f	p/p	p/p	14	14	14	59		5.705	
189	BEAM		f/f	p/p	p/p	14	14	15	60		5.704	
190	BEAM		f/f	p/p	p/p	14	14	16	61		5.704	
191	BEAM		f/f	p/p	p/p	14	14	17	62		5.704	
192	BEAM		f/f	p/p	p/p	14	14	18	52		5.704	
193	BEAM		f/f	p/p	p/p	14	14	8	50		5.156	
194	BEAM		f/f	p/p	p/p	15	15	77	13		4.000	
195	BEAM		f/f	p/p	p/p	15	15	79	35		4.000	

Elements

Elem. No.	Type	of ele.	Fixity xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length (m)	
196	BEAM		f/f	p/p	p/p	15	15	80	36		4.000	
197	BEAM		f/f	p/p	p/p	15	15	81	37		4.000	
198	BEAM		f/f	p/p	p/p	15	15	82	38		4.000	
199	BEAM		f/f	p/p	p/p	15	15	83	39		4.000	
200	BEAM		f/f	p/p	p/p	15	15	63	19		4.000	
201	BEAM		f/f	p/p	p/p	15	15	84	40		4.000	
202	BEAM		f/f	p/p	p/p	15	15	85	41		4.000	
203	BEAM		f/f	p/p	p/p	15	15	86	42		4.000	
204	BEAM		f/f	p/p	p/p	15	15	87	43		4.000	
205	BEAM		f/f	p/p	p/p	15	15	88	44		4.000	
206	BEAM		f/f	p/p	p/p	15	15	76	34		4.000	
207	BEAM		f/f	p/p	p/p	16	16	2	46		4.000	
208	BEAM		f/f	p/p	p/p	16	16	4	48		4.000	
209	BEAM		f/f	p/p	p/p	17	17	5	46		4.472	
210	BEAM		f/f	p/p	p/p	17	17	3	49		4.472	
211	BEAM		f/f	p/p	p/p	17	17	4	50		4.472	
212	BEAM		f/f	p/p	p/p	17	17	6	48		4.472	
213	BEAM		f/f	f/f	f/f	12	12	1	89		4.000	V
214	BEAM		f/f	f/p	f/f	12	12	89	2		9.000	V
215	BEAM		f/f	f/f	f/f	12	12	3	90		4.000	V
216	BEAM		f/f	f/p	f/f	12	12	90	4		9.000	V
217	BEAM		f/f	f/f	f/f	12	12	45	91		4.000	V
218	BEAM		f/f	f/p	f/f	12	12	91	46		9.000	V
219	BEAM		f/f	f/f	f/f	12	12	47	92		4.000	V
220	BEAM		f/f	f/p	f/f	12	12	92	48		9.000	V
221	BEAM		f/f	p/p	p/p	18	18	89	91		4.000	
222	BEAM		f/f	p/p	p/p	18	18	90	92		4.000	
223	BEAM		f/f	p/p	p/p	19	19	64	20		4.000	
224	BEAM		f/f	p/p	p/p	19	19	65	21		4.000	
225	BEAM		f/f	p/p	p/p	19	19	67	23		4.000	
226	BEAM		f/f	p/p	p/p	19	19	68	24		4.000	
227	BEAM		f/f	p/p	p/p	19	19	69	25		4.000	
228	BEAM		f/f	p/p	p/p	19	19	70	26		4.000	
229	BEAM		f/f	p/p	p/p	19	19	71	27		4.000	
230	BEAM		f/f	p/p	p/p	19	19	72	28		4.000	
231	BEAM		f/f	p/p	p/p	19	19	73	29		4.000	
232	BEAM		f/f	p/p	p/p	19	19	74	30		4.000	
233	BEAM		f/f	p/p	p/p	19	19	75	31		4.000	
234	BEAM		f/f	p/p	p/p	19	19	66	22		4.000	
235	BEAM		f/f	p/p	p/p	19	19	76	32		4.000	
236	BEAM		f/f	p/p	p/p	20	20	46	20		5.156	
237	BEAM		f/f	p/p	p/p	20	20	54	21		4.487	
238	BEAM		f/f	p/p	p/p	20	20	55	23		5.704	
239	BEAM		f/f	p/p	p/p	20	20	57	24		5.704	
240	BEAM		f/f	p/p	p/p	20	20	58	25		5.704	
241	BEAM		f/f	p/p	p/p	20	20	59	26		5.704	
242	BEAM		f/f	p/p	p/p	20	20	70	27		5.704	
243	BEAM		f/f	p/p	p/p	20	20	48	32		5.156	
244	BEAM		f/f	p/p	p/p	20	20	76	22		4.487	
245	BEAM		f/f	p/p	p/p	20	20	66	31		5.704	
246	BEAM		f/f	p/p	p/p	20	20	75	30		5.704	
247	BEAM		f/f	p/p	p/p	20	20	74	29		5.704	
248	BEAM		f/f	p/p	p/p	20	20	73	28		5.704	
249	BEAM		f/f	p/p	p/p	20	20	72	27		5.704	
250	BEAM		f/f	p/p	p/p	20	20	72	27		5.704	
252	BEAM		f/f	f/f	f/f	3	3	4	101		945.0E-3	V
254	BEAM		f/f	f/f	f/f	3	3	48	102		945.0E-3	V
258	BEAM		f/f	f/f	f/f	22	22	4	103		1.020	
260	BEAM		f/f	f/f	f/f	22	22	48	104		1.020	
262	BEAM		f/f	f/f	f/f	23	23	32	101		3.113	
263	BEAM		f/f	f/f	f/f	23	23	101	103		384.0E-3	
264	BEAM		f/f	f/f	f/f	23	23	103	97		4.016	
265	BEAM		f/f	f/f	f/f	23	23	76	102		3.113	
266	BEAM		f/f	f/f	f/f	23	23	102	104		384.0E-3	
267	BEAM		f/f	f/f	f/f	23	23	104	98		4.016	
270	BEAM		f/f	f/f	f/f	5	5	6	105		1.096	
271	BEAM		f/f	f/f	f/f	5	5	105	106		1.095	
272	BEAM		f/f	f/f	f/f	5	5	106	32		1.096	
273	BEAM		f/f	f/f	f/f	5	5	50	107		1.096	
274	BEAM		f/f	f/f	f/f	5	5	107	108		1.095	
275	BEAM		f/f	f/f	f/f	5	5	108	76		1.096	
276	BEAM		f/f	f/f	f/f	3	3	101	109		352.0E-3	V
277	BEAM		f/f	f/f	f/f	3	3	109	110		351.0E-3	V
278	BEAM		f/f	f/f	f/f	3	3	110	6		352.0E-3	V
279	BEAM		f/f	f/f	f/f	3	3	102	111		352.0E-3	V
280	BEAM		f/f	f/f	f/f	3	3	111	112		351.0E-3	V
281	BEAM		f/f	f/f	f/f	3	3	112	50		352.0E-3	V
282	BEAM		f/f	f/f	f/f	22	22	103	113		317.1E-3	
283	BEAM		f/f	f/f	f/f	22	22	113	114		466.9E-3	
284	BEAM		f/f	f/f	f/f	22	22	114	93		166.9E-3	
288	BEAM		f/f	f/f	f/f	22	22	104	115		317.1E-3	
286	BEAM		f/f	f/f	f/f	22	22	115	116		466.9E-3	
287	BEAM		f/f	f/f	f/f	22	22	116	94		166.9E-3	
288	BEAM		f/f	f/f	f/f	24	24	93	117		769.2E-3	
289	BEAM		f/f	f/f	f/f	24	24	117	97		2.935	
291	BEAM		f/f	f/f	f/f	24	24	94	119		769.2E-3	
292	BEAM		f/f	f/f	f/f	24	24	119	98		2.935	
294	BEAM		f/f	f/f	f/f	25	25	105	110		1.036	
295	BEAM		f/f	f/f	f/f	25	25	110	114		731.0E-3	
296	BEAM		f/f	f/f	f/f	25	25	114	117		819.0E-3	
297	BEAM		f/f	f/f	f/f	25	25	107	112		1.038	
298	BEAM		f/f	f/f	f/f	25	25	113	116		731.0E-3	
299	BEAM		f/f	f/f	f/f	25	25	116	119		819.0E-3	
302	BEAM		f/f	f/f	f/f	3	3	2	121		945.0E-3	V
304	BEAM		f/f	f/f	f/f	3	3	46	122		945.0E-3	V
306	BEAM		f/f	f/f	f/f	22	22	46	123		1.049	
308	BEAM		f/f	f/f	f/f	22	22	2	124		1.049	
310	BEAM		f/f	f/f	f/f	23	23	100	123		3.962	
311	BEAM		f/f	f/f	f/f	23	23	123	122		438.1E-3	
312	BEAM		f/f	f/f	f/f	23	23	122	64		3.113	
313	BEAM		f/f	f/f	f/f	23	23	99	124		3.962	
314	BEAM		f/f	f/f	f/f	23	23	124	121		438.1E-3	
315	BEAM		f/f	f/f	f/f	23	23	121	20		3.113	
318	BEAM		f/f	f/f	f/f	3	3	121	125		698.0E-3	V
319	BEAM		f/f	f/f	f/f	3	3	125	5		357.0E-3	V
320	BEAM		f/f	f/f	f/f	3	3	122	126		698.0E-3	V
321	BEAM		f/f	f/f	f/f	3	3	126	49		357.0E-3	V
322	BEAM		f/f	f/f	f/f	5	5	5	127		1.102	
323	BEAM		f/f	f/f	f/f	5	5	127	30		2.165	

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date 16-May-98	Checked

KOC UNIVERSITESI

SPOR SALONU CELIK CATI MAKASLARI

TUM YUKLER + ZATI YUK DEP.SERB

Elements

Elem. No.	Type	Fixity xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	Jrd Node	Length [m]
324	BEAM	f/f	f/f	f/f	5	5	49	128		1.102
325	BEAM	f/f	f/f	f/f	5	5	128	64		2.186
326	BEAM	f/f	f/f	f/f	22	22	133	129		751.0E-3
327	BEAM	f/f	f/f	f/f	22	22	129	96		170.3E-3
328	BEAM	f/f	f/f	f/f	22	22	134	130		751.0E-3
329	BEAM	f/f	f/f	f/f	22	22	130	95		170.3E-3
330	BEAM	f/f	f/f	f/f	24	24	100	131		2.994
331	BEAM	f/f	f/f	f/f	24	24	131	96		705.7E-3
332	BEAM	f/f	f/f	f/f	24	24	99	132		2.994
333	BEAM	f/f	f/f	f/f	24	24	132	95		705.7E-3
334	BEAM	f/f	f/f	f/f	25	25	131	129		749.0E-3
335	BEAM	f/f	f/f	f/f	25	25	129	126		739.0E-3
336	BEAM	f/f	f/f	f/f	25	25	126	128		1.044
337	BEAM	f/f	f/f	f/f	25	25	132	130		749.0E-3
338	BEAM	f/f	f/f	f/f	25	25	130	125		739.0E-3
339	BEAM	f/f	f/f	f/f	25	25	125	127		1.044
340	BEAM	f/f	p/p	p/p	13	13	97	98		4.000
341	BEAM	f/f	p/p	p/p	13	13	117	119		4.000
342	BEAM	f/f	p/p	p/p	13	13	93	94		4.000
343	BEAM	f/f	p/p	p/p	14	14	98	117		4.962
344	BEAM	f/f	p/p	p/p	13	13	100	99		4.000
345	BEAM	f/f	p/p	p/p	13	13	131	132		4.000
346	BEAM	f/f	p/p	p/p	13	13	96	95		4.000
347	BEAM	f/f	p/p	p/p	14	14	100	132		4.997
348	BEAM	f/f	f/f	f/f	17	17	4	94		4.459
349	BEAM	f/f	f/f	f/f	17	17	93	48		4.459
350	BEAM	f/f	f/f	f/f	17	17	96	2		4.459
351	BEAM	f/f	f/f	f/f	17	17	46	95		4.459
352	BEAM	f/f	p/p	p/p	21	21	26	83		4.461
353	BEAM	f/f	p/p	p/p	21	21	39	70		4.461
354	BEAM	f/f	p/p	p/p	21	21	40	72		4.461
355	BEAM	f/f	p/p	p/p	21	21	28	84		4.461
356	BEAM	f/f	f/f	f/f	21	21	86	30		4.461
357	BEAM	f/f	f/f	f/f	21	21	42	74		4.461
358	BEAM	f/f	f/f	f/f	21	21	88	32		4.461
359	BEAM	f/f	f/f	f/f	21	21	44	66		4.461
360	BEAM	f/f	f/f	f/f	21	21	37	68		4.461
361	BEAM	f/f	f/f	f/f	21	21	81	24		4.461
362	BEAM	f/f	f/f	f/f	21	21	35	69		4.461
363	BEAM	f/f	f/f	f/f	21	21	79	21		4.461

Beam Properties

* indicates that properties are derived from the Beam Sections module

Prop-erty	Mate-rial	Area [m2]	Iyy [m4]	Izz [m4]	Beta deg]	Tors.(C) [m4]	Ky	Kz
1*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
2*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
3*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
4*	1	7.116E-3	29.34E-6	29.34E-6	0.0	58.69E-6	0.498	0.498
5*	1	5.771E-3	24.42E-6	24.42E-6	0.0	48.83E-6	0.498	0.498
6*	1	4.667E-3	20.16E-6	20.16E-6	0.0	40.31E-6	0.498	0.498
7*	1	3.709E-3	16.30E-6	16.30E-6	0.0	32.60E-6	0.498	0.498
8*	1	3.709E-3	16.30E-6	16.30E-6	0.0	32.60E-6	0.498	0.498
9*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
10*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
11*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
12*	2	720.0E-3	86.40E-3	21.60E-3	0.0	59.33E-3	0.833	0.833
13*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
14*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
15*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
16*	1	2.964E-3	13.20E-6	13.20E-6	0.0	26.40E-6	0.498	0.498
17*	1	5.771E-3	24.42E-6	24.42E-6	0.0	48.83E-6	0.498	0.498
18*	2	320.0E-3	17.07E-3	4.267E-3	0.0	11.72E-3	0.833	0.833
19*	1	2.116E-3	4.805E-6	4.805E-6	0.0	9.611E-6	0.497	0.497
20*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
21*	1	868.7E-6	334.8E-9	334.8E-9	0.0	669.5E-9	0.497	0.497
22*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
23*	1	4.555E-3	17.03E-6	2.276E-6	0.0	118.6E-9	0.476	0.305
24*	1	12.92E-3	107.1E-6	107.1E-6	0.0	214.1E-6	0.500	0.500
25*	1	4.555E-3	17.03E-6	2.276E-6	0.0	118.6E-9	0.476	0.305

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Prop-erty	Section Name	Modified Properties Area	Iyy	Izz	Torsion	Ky	Kz
1	CHS273x16.0	-	-	-	-	-	-
2	CHS273x16.0	-	-	-	-	-	-
3	CHS273x16.0	-	-	-	-	-	-
4	CHS193x12.5	-	-	-	-	-	-
5	CHS193x10.0	-	-	-	-	-	-
6	CHS193x8.0	-	-	-	-	-	-
7	CHS193x6.3	-	-	-	-	-	-
8	CHS193x5.3	-	-	-	-	-	-
9	CHS193x5.0	-	-	-	-	-	-
10	CHS193x5.0	-	-	-	-	-	-
11	CHS193x5.0	-	-	-	-	-	-
12	GRS1200x600	-	-	-	-	-	-
13	CHS139x5.0	-	-	-	-	-	-
14	CHS60x5.0	-	-	-	-	-	-
15	CHS139x5.0	-	-	-	-	-	-
16	CHS193x5.0	-	-	-	-	-	-
17	CHS193x10.0	-	-	-	-	-	-
18	GRS800X400	-	-	-	-	-	-
19	CHS139x5.0	-	-	-	-	-	-
20	CHS60x5.0	-	-	-	-	-	-
21	CHS60x5.0	-	-	-	-	-	-
22	CHS273x16.0	-	-	-	-	-	-
23	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-
24	CHS273x16.0	-	-	-	-	-	-
25	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-

Note: General sections are specified in [mm] as follows:
GRS Depth x Width

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Prop-erty	Section Name	Modified Properties Area	Iyy	Izz	Torsion	Ky	Kz
15	CHS139x5.0	-	-	-	-	-	-
16	CHS193x5.0	-	-	-	-	-	-
17	CHS193x10.0	-	-	-	-	-	-
18	GRS800X400	-	-	-	-	-	-
19	CHS139x5.0	-	-	-	-	-	-
20	CHS60x5.0	-	-	-	-	-	-
21	CHS60x5.0	-	-	-	-	-	-
22	CHS273x16.0	-	-	-	-	-	-
23	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-
24	CHS273x16.0	-	-	-	-	-	-
25	CH152x76x17	x2.00	x2.00	x2.00	x2.00	-	-

Note: General sections are specified in [mm] as follows:
GRS Depth x Width

Materials

Material	Youngs Mod.(E) [kN/m2]	Poissons Ratio (Nu)	Density (Ro) [T/m3]	Coef.of Exp. (Alpha) [/deg.C]
1	205.0E+6	300.0E-3	7.850	12.00E-6
2	33.00E+6	300.0E-3	2.400	12.00E-6

BEAM & SPRING FORCE & MOMENT ENVELOPES

The force in an element at any point is the force required to maintain equilibrium if the element is cut at that point and the end 2 part of the element is discarded. Thus: +ve axial forces are tensile
Directions are in element axes
Maximum & minimum values are given on consecutive lines per point
Associated loadcase numbers are given in brackets: (max) (min)
Loadcases: E1

Beam Property 1

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
30	E1	26	7)	1.208E+3	1.304	-2.039	1.764	-9.196	2.791
30	E1	26	1)	963.5	2.009	-1.909	1.230	-8.349	2.978
37	E1	4	3)	-279.0	564.1E-3	7.810	9.222	12.85	-3.145
37	E1	32	7)	-284.1	570.2E-3	4.779	9.223	-7.534	-1.100
37	E1	4	7)	-285.2	570.2E-3	7.802	9.223	12.93	-3.154
103	E1	69	3)	622.6	552.6E-3	-2.242	3.836	-5.615	3.066
Minimum values in this output:									
37	E1	4	7)	-285.2	570.2E-3	7.802	9.223	12.93	-3.154
31	E1	27	4)	959.1	-2.029	-2.086	-1.307	-7.938	-5.300
20	E1	2	7)	-260.1	-793.2E-3	-7.829	-8.976	12.78	-3.661
20	E1	20	3)	-268.5	-799.8E-3	-4.721	-8.978	-7.566	-1.073
28	E1	28	7)	971.0	-224.8E-3	628.1E-3	4.598	-9.999	1.667
94	E1	46	3)	-126.0	-1.677	-4.728	-8.263	6.142	-5.275

Beam Property 2

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
68	E1	8	3)	-265.6	-37.09E-3	268.3E-3	-95.07E-3	-3.824	-697.1E-3
142	E1	52	7)	-257.8	12.61	-1.680	-9.357	-2.781	10.79
69	E1	6	3)	-298.7	11.33	14.17	-8.712	19.07	-17.57
141	E1	77	3)	-260.1	-12.81	301.1E-3	9.383	-4.389	-9.684
69	E1	6	3)	-298.7	11.33	14.17	-8.712	19.07	-17.57
74	E1	37	3)	-857.1	-10.67	-3.194	5.312	-9.435	13.47
Minimum values in this output:									
19	E1	14	4)	-1.125E+3	-2.420	-6.613	-33.77E-3	-12.20	4.266
141	E1	77	3)	-260.1	-12.81	301.1E-3	9.383	-4.389	-9.684
66	E1	5	7)	-298.1	-11.23	-14.34	8.705	19.05	-17.43
142	E1	52	3)	-259.9	12.60	-1.714	-9.358	-2.807	10.78
78	E1	39	4)	-1.117E+3	3.101	-8.360	1.734	-18.60	-4.782
69	E1	6	7)	-294.1	11.34	14.06	-8.710	18.97	-17.57

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 3

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
254	E1	102	7)	-28.96	65.51	3.740	12.83	8.235	80.74
276	E1	101	3)	-237.2	66.65	-58.96	13.11	20.92	52.97
118	E1	121	7)	-236.3	65.47	56.83	-13.13	-19.92	51.65
252	E1	4	3)	-191.2	65.28	4.998	13.40	3.324	114.7
319	E1	5	7)	-244.1	63.41	43.81	-12.56	21.39	-16.68
252	E1	4	3)	-191.2	65.28	4.998	13.40	3.324	114.7
Minimum values in this output:			Lc.						
278	E1	110	3)	-244.5	65.06	-41.36	12.58	-6.908	6.122
321	E1	126	8)	-162.2	-1.240	31.62	-631.1E-3	7.143	-840.9E-3
277	E1	109	3)	-236.8	66.64	-58.98	13.11	163.4E-3	39.51
302	E1	2	3)	-200.1	65.75	-4.701	-13.64	-3.390	113.8
278	E1	6	3)	-244.2	65.06	-41.36	12.58	-21.47	-16.78
278	E1	6	3)	-244.2	65.06	-41.36	12.58	-21.47	-16.78

Beam Property 4

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
115	E1	52	7)	-121.2	3.653	-8.104	2.162	-5.001	-1.004
41	E1	32	3)	-190.4	3.975	-8.178	2.304	8.268	7.071
40	E1	20	3)	-190.1	3.957	8.109	-2.312	-8.214	6.974
41	E1	32	3)	-190.4	3.978	-8.178	2.304	8.268	7.071
41	E1	32	7)	-190.0	3.975	-8.178	2.303	8.270	7.071
41	E1	32	3)	-190.4	3.975	-8.178	2.304	8.268	7.071
Minimum values in this output:			Lc.						
40	E1	20	7)	-190.4	3.957	8.106	-2.313	-8.210	6.974
114	E1	64	8)	-157.0	227.2E-3	7.367	-91.58E-3	-7.085	154.2E-3
41	E1	32	3)	-190.4	3.975	-8.178	2.304	8.268	7.071
40	E1	20	7)	-190.4	3.957	8.106	-2.313	-8.210	6.974
40	E1	20	3)	-190.1	3.957	8.109	-2.312	-8.214	6.974
114	E1	51	7)	-122.3	3.599	5.162	-2.176	5.061	-1.027

Beam Property 5

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
271	E1	105	3)	299.0	259.5E-3	1.198	-2.924	-2.310	-2.302
273	E1	80	7)	169.2	1.082	-2.273	-2.889	2.889	-833.3E-3
272	E1	32	7)	297.9	259.8E-3	2.396	-2.922	1.526	-2.872
325	E1	128	7)	202.9	-863.2E-3	898.8E-3	2.934	-1.931	1.807
270	E1	6	3)	251.9	466.8E-3	-3.613	-2.868	6.461	-1.923
325	E1	64	3)	201.8	-863.5E-3	1.820	2.934	1.044	3.694
Minimum values in this output:			Lc.						
273	E1	107	7)	169.1	1.082	-1.812	-2.889	416.4E-3	-1.987
324	E1	49	3)	170.2	-1.087	-2.274	2.863	2.639	831.3E-3
322	E1	5	7)	251.7	-483.2E-3	-3.672	2.835	4.458	1.889
274	E1	107	3)	202.3	856.2E-3	808.3E-3	-2.960	-1.873	-1.807
323	E1	127	7)	298.1	-279.8E-3	1.323	2.891	-2.401	2.286
275	E1	76	7)	201.1	856.4E-3	1.851	-2.958	1.046	-3.688

Beam Property 6

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
44	E1	7	7)	227.7	-30.75E-3	1.928	451.6E-3	-2.799	2.749
119	E1	52	8)	176.4	153.2E-3	1.960	26.03E-3	-3.019	76.51E-3
119	E1	66	8)	175.9	153.2E-3	2.666	26.03E-3	2.657	-299.5E-3
44	E1	7	3)	227.3	-30.01E-3	1.919	451.7E-3	-2.783	2.750
45	E1	22	3)	227.0	50.66E-3	2.633	-476.9E-3	2.803	-2.840
44	E1	21	7)	227.1	-30.75E-3	2.634	451.6E-3	2.799	2.828
Minimum values in this output:			Lc.						
119	E1	66	7)	141.1	-65.99E-3	1.694	-349.1E-3	1.611	-2.585
118	E1	51	8)	176.5	-124.4E-3	1.961	-50.65E-3	-3.004	-36.61E-3
119	E1	52	7)	141.6	-65.99E-3	987.9E-3	-349.1E-3	-1.679	-2.747
45	E1	22	7)	226.7	49.82E-3	2.622	-477.1E-3	2.795	-2.839
119	E1	52	8)	176.4	153.2E-3	1.960	26.03E-3	-3.019	76.51E-3
45	E1	22	3)	227.0	50.66E-3	2.633	-476.9E-3	2.803	-2.840

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 7

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
123	E1	61	3)	-102.9	-141.1E-3	968.5E-3	-82.20E-3	575.3E-3	1.210
120	E1	65	7)	-145.8	298.3E-3	265.3E-3	-87.67E-3	-1.159	-102.3E-3
122	E1	54	8)	-142.2	194.3E-3	1.183	-21.47E-3	990.3E-3	-505.7E-3
47	E1	18	7)	-250.3	-254.5E-3	908.1E-3	112.9E-3	767.4E-3	826.0E-3
122	E1	54	8)	-142.2	194.3E-3	1.183	-21.47E-3	990.1E-3	-505.7E-3
123	E1	61	7)	-103.6	-141.4E-3	971.4E-3	-82.22E-3	886.1E-3	1.210
Minimum values in this output:			Lc.						
47	E1	22	7)	-251.0	-254.5E-3	343.9E-3	112.9E-3	-1.197	19.21E-3
121	E1	66	3)	-145.1	-326.7E-3	265.4E-3	88.68E-3	-1.156	49.85E-3
121	E1	66	8)	-199.1	-110.2E-3	-73.95E-3	-38.75E-3	-704.9E-3	-189.9E-3
46	E1	21	3)	-250.3	222.6E-3	339.4E-3	-101.2E-3	-1.198	-81.98E-3
122	E1	67	8)	-142.9	194.3E-3	613.2E-3	-21.47E-3	-1.799	97.84E-3
122	E1	54	3)	-104.0	137.8E-3	981.1E-3	82.81E-3	603.6E-3	-1.216

Beam Property 8

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
51	E1	18	7)	208.2	93.46E-3	1.615	-105.6E-3	-2.851	-1.513
53	E1	10	7)	176.6	1.020	711.7E-3	-131.9E-3	-1.745	2.808
50	E1	23	7)	204.4	-91.34E-3	2.203	103.7E-3	1.965	1.744
126	E1	61	7)	102.6	-879.6E-3	-27.72E-3	207.4E-3	-809.4E-3	-2.490
50	E1	23	3)	204.4	-91.41E-3	2.202	103.6E-3	1.968	1.744
53	E1	10	7)	176.6	1.020	711.7E-3	-131.9E-3	-1.745	2.808
Minimum values in this output:			Lc.						
126	E1	74	3)	101.6	-880.0E-3	840.3E-3	207.3E-3	-144.6E-3	-193.3E-3
52	E1	17	3)	178.0	-976.7E-3	724.5E-3	124.2E-3	-1.756	-2.746
126	E1	61	3)	102.1	-880.0E-3	-32.73E-3	207.3E-3	-807.9E-3	-2.491
127	E1	68	3)	102.4	925.2E-3	552.9E-3	-214.3E-3	-129.4E-3	141.6E-3
50	E1	9	7)	204.8	-91.34E-3	1.635	103.7E-3	-2.898	1.513
52	E1	17	3)	178.0	-976.7E-3	724.5E-3	124.2E-3	-1.756	-2.746

Beam Property 9

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
129	E1	56	7)	-23.64	-134.8E-3	1.038	55.33E-3	735.9E-3	-423.6E-3
56	E1	30	3)	-127.8	675.4E-3	455.5E-3	-158.2E-3	-1.617	1.491
57	E1	15	8)	-49.65	-203.1E-3	1.074	-55.72E-3	699.1E-3	476.4E-3
126	E1	68	3)	-64.81	-552.2E-3	269.3E-3	159.2E-3	-1.316	-1.343
129	E1	56	3)	-24.91	-133.3E-3	1.043	58.36E-3	746.9E-3	-426.0E-3
56	E1	30	3)	-127.8	675.4E-3	455.5E-3	-158.2E-3	-1.617	1.491
Minimum values in this output:			Lc.						
56	E1	30	7)	-128.9	674.9E-3	459.3E-3	-158.3E-3	-1.619	1.490
54	E1	24	7)	-125.5	-708.3E-3	446.7E-3	162.1E-3	-1.610	-1.530
128	E1	68	8)	-91.39	36.47E-3	55.62E-3	31.77E-3	-1.072	-52.58E-3
130	E1	74	7)	-54.73	529.9E-3	276.2E-3	-166.8E-3	-1.323	1.307
57	E1	29	4)	-56.56	-167.6E-3	587.7E-3	-51.66E-3	-1.808	-50.93E-3
54	E1	24	7)	-125.5	-708.3E-3	446.7E-3	162.1E-3	-1.610	-1.530

Beam Property 10

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:			Lc.						
60	E1	16	7)	146.5	-257.3E-3	544.6E-3	-38.69E-3	-1.731	-1.105
133	E1	56	7)	52.40	960.7E-3	-374.7E-3	-240.2E-3	-429.0E-3	2.154
60	E1	29	7)	146.1	-257.3E-3	1.006	-38.89E-3	382.9E-3	-413.4E-3
135	E1	72	7)	53.12	-946.0E-3	92.67E-3	241.1E-3	-813.2E-3	470.5E-3
60	E1	29	7)	146.1	-257.3E-3	1.006	-38.89E-3	382.9E-3	-413.4E-3
133	E1	56	3)	53.52	960.4E-3	-366.8E-3	-240.4E-3	-438.3E-3	2.154
Minimum values in this output:			Lc.						
133	E1	70	7)	51.98	960.7E-3	88.48E-3	-240.2E-3	-824.4E-3	-499.6E-3
135	E1	59	3)	52.42	-946.9E-3	-378.6E-3	240.9E-3	-420.0E-3	-2.143
132	E1	55	7)	74.89	208.5E-3	-536.1E-3	-35.02E-3	12.40E-3	953.6E-3
133	E1	56	3)	53.52	960.4E-3	-366.8E-3	-240.4E-3	-438.3E-3	2.154
60	E1	16	7)	146.5	-257.3E-3	544.6E-3	-38.89E-3	-1.731	-1.105
135	E1	59	3)	52.42	-946.9E-3	-378.6E-3	240.9E-3	-420.0E-3	-2.143

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 11

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
64	E1	14	7)	52.34	-1.971	-965.0E-3	53.40E-3	529.3E-3	-2.956
65	E1	27	7)	47.96	1.965	521.6E-3	-51.65E-3	-1.579	2.633
139	E1	57	7)	28.58	1.791	1.483	-70.59E-3	1.600	-2.701
62	E1	13	3)	-2.325	-1.552	65.49E-3	117.4E-3	-1.351	1.930
139	E1	57	7)	28.58	1.791	1.483	-70.59E-3	1.600	-2.701
65	E1	27	7)	47.96	1.965	521.6E-3	-51.65E-3	-1.579	2.631
Minimum values in this output:									
			Lc.						
63	E1	28	7)	-5.460	1.552	-388.3E-3	-119.8E-3	-886.0E-3	2.589
64	E1	14	3)	50.92	-1.972	-973.3E-3	53.46E-3	540.6E-3	-2.956
138	E1	58	3)	28.86	-1.803	-1.479	74.60E-3	1.592	-2.731
63	E1	14	7)	-4.986	1.552	78.37E-3	-119.8E-3	-1.332	-1.921
65	E1	27	4)	15.57	1.451	937.2E-3	-74.82E-3	-1.976	1.939
64	E1	14	7)	52.34	-1.971	-965.0E-3	53.40E-3	529.3E-3	-2.956

Beam Property 12

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
220	E1	48	3)	-39.00	-66.68	-102.6	60.84	.0	239.3
213	E1	1	8)	-811.7	3.310	-542.6	-4.504	723.4	8.899
215	E1	3	7)	-755.7	-66.86	612.0	60.47	-816.1	-630.5
219	E1	47	3)	-274.4	-67.87	349.4	60.84	-465.9	-632.3
215	E1	90	7)	-672.8	-67.75	-182.3	60.47	1.640E+3	-364.3
216	E1	4	3)	-519.3	-67.76	-175.8	60.48	.0	245.5
Minimum values in this output:									
			Lc.						
215	E1	3	7)	-755.7	-66.86	612.0	60.47	-816.1	-630.5
219	E1	47	3)	-274.4	-67.87	349.4	60.84	-465.9	-632.3
213	E1	1	3)	-748.7	-65.80	-593.8	-62.11	791.7	-620.9
218	E1	91	3)	-197.3	-65.61	101.3	-62.36	-911.6	-355.3
214	E1	89	3)	-665.9	-66.71	176.9	-62.11	-1.592E+3	-358.9
219	E1	47	3)	-274.4	-67.87	349.4	60.84	-465.9	-632.3

Beam Property 13

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
172	E1	57	4)	23.44	23.01E-12	-325.8E-3	10.38E-3	.0	.0
344	E1	100	7)	-1.619	27.74E-9	-325.8E-3	-250.7E-3	.0	.0
172	E1	13	3)	14.42	149.0E-12	326.8E-3	-64.94E-3	.0	.0
177	E1	62	3)	-98.24	-9.834E-9	-329.8E-3	309.1E-3	.0	.0
167	E1	51	1)	1.480	1.586E-9	-325.8E-3	-21.15E-3	.0	.0
167	E1	51	1)	1.480	1.586E-9	-325.8E-3	-21.15E-3	.0	.0
Minimum values in this output:									
			Lc.						
178	E1	52	7)	-66.42	-16.30E-9	-325.8E-3	290.1E-3	.0	.0
340	E1	97	3)	-1.845	-26.79E-9	-325.8E-3	238.4E-3	.0	.0
344	E1	100	3)	-1.618	27.73E-9	-325.8E-3	-250.6E-3	.0	.0
168	E1	53	7)	-57.65	10.33E-9	-329.8E-3	-313.3E-3	.0	.0
167	E1	51	1)	1.480	1.586E-9	-325.8E-3	-21.15E-3	.0	.0
167	E1	51	1)	1.480	1.586E-9	-325.8E-3	-21.15E-3	.0	.0

Beam Property 14

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
193	E1	8	7)	108.8	-3.785E-6	-169.5E-3	2.668E-3	-29.24E-12	-21.90E-12
181	E1	51	3)	106.3	3.698E-6	-167.7E-3	1.538E-3	14.55E-12	.0
186	E1	14	3)	-34.39	-119.2E-9	190.7E-3	6.438E-3	-29.10E-12	.0
185	E1	56	4)	-15.83	-7.481E-9	-190.6E-3	16.19E-3	.0	29.10E-12
191	E1	17	1)	-9.170	29.80E-9	-188.8E-3	-7.076E-3	145.5E-12	36.38E-12
191	E1	17	2)	-7.903	29.80E-9	-188.8E-3	-6.117E-3	145.5E-12	50.93E-12
Minimum values in this output:									
			Lc.						
186	E1	57	7)	-34.41	-118.1E-9	-190.7E-3	6.437E-3	-29.14E-12	.0
180	E1	49	7)	108.5	-3.817E-6	-169.5E-3	-2.886E-3	-14.28E-12	-14.55E-12
186	E1	57	1)	-32.72	-119.2E-9	-190.7E-3	7.017E-3	.0	.0
188	E1	14	1)	-13.14	476.8E-9	-190.6E-3	-16.05E-3	.0	.0
182	E1	53	1)	-10.39	29.80E-9	-188.8E-3	7.057E-3	-232.8E-12	.0
184	E1	55	3)	33.32	.0	-190.2E-3	8.881E-3	58.21E-12	-68.48E-12

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 15

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
195	E1	79	4)	5.719	1.319E-9	-325.8E-3	-29.87E-3	.0	.0
194	E1	77	3)	-15.14	19.74E-9	-325.8E-3	-306.1E-3	.0	.0
200	E1	19	3)	280.9E-3	274.6E-12	325.8E-3	2.300E-3	.0	.0
205	E1	88	3)	-8.912	-13.14E-9	-325.8E-3	311.7E-3	.0	.0
194	E1	77	1)	288.7E-3	1.832E-9	-325.8E-3	-24.01E-3	.0	.0
194	E1	77	1)	288.7E-3	1.832E-9	-325.8E-3	-24.01E-3	.0	.0
Minimum values in this output:									
			Lc.						
206	E1	78	7)	-15.24	-19.09E-9	-325.8E-3	298.9E-3	.0	.0
206	E1	78	3)	-15.23	-19.09E-9	-325.8E-3	299.0E-3	.0	.0
194	E1	77	1)	288.7E-3	1.832E-9	-325.8E-3	-24.01E-3	.0	.0
195	E1	79	7)	-9.937	13.68E-9	-325.8E-3	-316.6E-3	.0	.0
194	E1	77	1)	288.7E-3	1.832E-9	-325.8E-3	-24.01E-3	.0	.0
194	E1	77	1)	288.7E-3	1.832E-9	-325.8E-3	-24.01E-3	.0	.0

Beam Property 16

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
207	E1	2	3)	9.519	.0	-456.4E-3	-684.7E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
166	E1	5	1)	3.711	.0	456.4E-3	-75.08E-3	.0	.0
179	E1	50	3)	-20.88	.0	-456.4E-3	672.3E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
Minimum values in this output:									
			Lc.						
179	E1	50	7)	-20.91	.0	-456.4E-3	672.7E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
166	E1	49	7)	-20.82	.0	-456.4E-3	-695.3E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0
166	E1	49	1)	3.711	.0	-456.4E-3	-75.08E-3	.0	.0

Beam Property 17

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
212	E1	6	7)	109.8	178.1E-9	-888.5E-3	1.557	.0	.0
348	E1	4	3)	-76.11	602.4E-3	-4.007	1.186	13.58	2.185
350	E1	2	7)	-74.54	-741.4E-3	3.918	-1.204	13.35	2.430
211	E1	4	3)	-151.2	-604.6E-9	-888.5E-3	1.572	.0	.0
348	E1	4	3)	-76.11	602.4E-3	-4.007	1.186	13.58	2.185
350	E1	2	3)	-74.51	-741.0E-3	3.918	-1.201	13.35	2.431
Minimum values in this output:									
			Lc.						
211	E1	4	7)	-151.2	-603.1E-9	-888.5E-3	1.566	.0	.0
350	E1	2	7)	-74.84	-741.4E-3	3.918	-1.204	13.35	2.430
348	E1	4	3)	-76.11	602.4E-3	-4.007	1.186	13.58	2.185
210	E1	2	7)	-149.7	611.7E-9	-888.5E-3	-1.611	.0	.0
349	E1	48	7)	72.88	403.9E-3	-2.112	48.43E-3	-11.81	-2.384
351	E1	46	7)	74.11	-873.8E-3	2.024	-103.9E-3	-11.60	-2.676

Beam Property 18

Elem no.	Load case	Node no.		Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:									
			Lc.						
221	E1	89	8)	3.986	.0	-15.06	747.0E-3	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
221	E1	91	1)	515.3E-3	.0	15.06	836.5E-3	.0	.0
221	E1	89	7)	1.205	.0	-15.06	8.649	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
Minimum values in this output:									
			Lc.						
222	E1	90	2)	430.3E-3	.0	-15.06	-429.0E-3	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
222	E1	90	3)	1.194	.0	-15.06	-8.346	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0
221	E1	89	1)	515.3E-3	.0	-15.06	836.5E-3	.0	.0

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 19

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
224	E1	65	1)	2.590	2.832E-9	-325.8E-3	-29.58E-3	.0	.0
223	E1	64	7)	-12.97	27.56E-9	-328.8E-3	-295.9E-3	.0	.0
228	E1	26	3)	-8.585	3.624E-9	325.8E-3	-103.4E-3	.0	.0
234	E1	86	3)	-9.751	-23.68E-9	-325.8E-3	295.3E-3	.0	.0
223	E1	64	1)	2.071	2.741E-9	-325.8E-3	-26.17E-3	.0	.0
223	E1	64	1)	2.071	2.741E-9	-325.8E-3	-26.17E-3	.0	.0
Minimum values in this output:									
232	E1	74	8)	-22.01	-968.2E-12	-325.8E-3	41.88E-3	.0	.0
235	E1	76	3)	-14.78	-26.68E-9	-325.8E-3	289.5E-3	.0	.0
223	E1	64	1)	2.071	2.741E-9	-325.8E-3	-26.17E-3	.0	.0
224	E1	65	7)	-8.416	24.43E-9	-325.8E-3	-300.3E-3	.0	.0
223	E1	64	1)	2.071	2.741E-9	-325.8E-3	-26.17E-3	.0	.0
223	E1	64	1)	2.071	2.741E-9	-325.8E-3	-26.17E-3	.0	.0

Beam Property 20

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
248	E1	29	3)	19.92	298.0E-9	190.0E-3	-7.865E-3	-291.0E-12	36.38E-12
245	E1	66	3)	19.11	1.222E-6	-188.3E-3	-1.400E-3	-145.5E-12	.0
242	E1	27	3)	13.00	.0	190.7E-3	12.12E-3	58.21E-12	-1.819E-12
244	E1	48	7)	13.76	-242.9E-9	-169.5E-3	23.77E-3	-937.1E-12	31.10E-12
240	E1	68	3)	10.81	476.8E-9	-190.0E-3	7.884E-3	323.9E-12	-7.276E-12
248	E1	74	2)	15.66	305.5E-9	-190.0E-3	-8.542E-3	-291.0E-12	44.57E-12
Minimum values in this output:									
236	E1	46	1)	-5.349	-119.2E-9	-169.5E-3	-2.009E-3	58.21E-12	-30.20E-12
244	E1	48	8)	-1.807	-1.058E-6	-169.5E-3	1.881E-3	10.91E-12	26.38E-12
242	E1	70	8)	8.984	-476.8E-9	-190.7E-3	12.54E-3	-29.10E-12	-1.819E-12
236	E1	46	3)	-10.83	-119.2E-9	-169.5E-3	-23.80E-3	-873.1E-12	-903.9E-12
244	E1	48	7)	13.76	-242.9E-9	-169.5E-3	23.77E-3	-937.1E-12	31.10E-12
236	E1	46	3)	10.83	-119.2E-9	-169.5E-3	-23.80E-3	-873.1E-12	-903.9E-12

Beam Property 21

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
361	E1	81	8)	17.24	7.108E-3	-133.4E-3	-3.706E-3	99.41E-3	15.68E-3
363	E1	79	3)	-7.541	40.34E-3	-130.1E-3	-20.97E-3	94.36E-3	87.90E-3
360	E1	68	3)	-14.61	16.67E-3	154.0E-3	-17.10E-3	142.1E-3	-36.92E-3
359	E1	66	7)	-11.22	-25.48E-3	137.5E-3	21.25E-3	97.08E-3	55.86E-3
360	E1	68	3)	-14.61	16.67E-3	154.0E-3	-17.10E-3	142.1E-3	-36.92E-3
358	E1	22	7)	-8.309	-40.96E-3	-136.1E-3	-20.65E-3	112.4E-3	93.34E-3
Minimum values in this output:									
360	E1	68	3)	-14.61	16.67E-3	154.0E-3	-17.10E-3	142.1E-3	-36.92E-3
358	E1	88	7)	-8.177	-40.96E-3	-129.4E-3	20.65E-3	93.19E-3	-89.40E-3
361	E1	81	7)	5.121	27.64E-3	-150.8E-3	-18.25E-3	114.9E-3	59.29E-3
362	E1	65	3)	-11.53	24.91E-3	138.2E-3	-21.56E-3	98.78E-3	-94.66E-3
352	E1	26	3)	2.679	-2.845E-9	-133.7E-3	-8.293E-3	-206.1E-15	-29.10E-12
363	E1	21	3)	-7.673	40.34E-3	137.4E-3	-20.97E-3	110.7E-3	-92.06E-3

Beam Property 22

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
287	E1	94	7)	33.87	62.23	-81.70	-9.383	6.082	-1.449
287	E1	116	3)	33.69	62.24	-81.66	-9.383	14.74	8.941
306	E1	123	5)	-61.95	-39.93	2.561	6.223	7.011	-37.91
308	E1	2	3)	-134.7	-87.46	1.154	9.386	4.566	-113.6
284	E1	114	3)	-36.36	59.76	-84.91	-8.918	15.87	9.630
258	E1	4	3)	-142.7	59.83	1.237	-5.879	4.598	116.0
Minimum values in this output:									
258	E1	4	3)	+142.7	59.83	1.237	-5.879	4.598	116.0
327	E1	129	7)	30.11	-61.96	-84.32	8.215	14.39	-9.850
284	E1	114	7)	-36.31	59.76	-85.02	-8.918	15.85	9.626
287	E1	116	7)	33.72	62.23	-81.77	-9.383	14.72	8.939
308	E1	2	2)	-84.64	421.9E-3	1.591	-379.8E-3	4.027	-324.3E-3
308	E1	2	7)	-135.3	-87.46	1.277	9.386	4.566	-113.6

BEAM & SPRING FORCE & MOMENT ENVELOPES

Beam Property 23

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
315	E1	121	7)	45.79	-13.97E-3	-2.187	6.042E-3	3.399	-33.11E-3
266	E1	102	3)	-24.52	1.037	36.03	-6.462E-3	-7.084	755.4E-3
263	E1	103	3)	-22.73	-1.346	49.26	-5.143E-3	9.460	767.4E-3
311	E1	122	3)	-22.91	-2.069	-30.35	7.474E-3	-6.735	901.2E-3
263	E1	103	3)	-22.73	-1.346	49.26	-5.143E-3	9.460	767.4E-3
111	E1	122	7)	-22.48	-2.070	-30.63	7.473E-3	-6.794	901.6E-3
Minimum values in this output:									
310	E1	100	4)	-44.65	-3.138E-3	-13.07E-3	-29.23E-6	-482.3E-3	-5.355E-3
111	E1	123	7)	-22.48	-2.070	-30.78	7.473E-3	6.657	-5.049E-3
314	E1	124	7)	-15.25	-299.9E-3	-39.45	6.407E-3	8.712	337.8E-3
266	E1	102	3)	-24.52	1.037	36.03	-6.462E-3	-7.084	755.4E-3
263	E1	101	3)	-22.73	-1.346	49.12	-5.143E-3	-9.429	250.7E-3
267	E1	104	7)	-42.65	-51.88E-3	-1.378	-3.304E-3	2.232	-168.9E-3

Beam Property 24

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
333	E1	95	3)	51.86	3.634	8.048	34.66E-3	6.216	-7.287
331	E1	131	7)	50.99	5.221	8.473	47.58E-3	573.1E-3	-4.773
331	E1	95	7)	51.04	5.221	9.182	47.58E-3	6.802	-8.458
331	E1	131	3)	51.09	5.218	8.460	47.59E-3	549.2E-3	-4.774
291	E1	94	3)	50.24	-5.483	-10.60	-214.2E-3	7.558	-9.350
333	E1	95	2)	46.85	-333.7E-3	7.880	772.9E-6	5.876	222.1E-3
Minimum values in this output:									
289	E1	97	2)	34.38	-58.20E-3	1.710	-282.1E-6	342.6E-3	1.483E-3
291	E1	94	3)	50.24	-5.483	-10.60	-214.2E-3	7.558	-9.350
291	E1	94	3)	50.24	-5.483	-10.60	-214.2E-3	7.558	-9.350
291	E1	94	7)	50.36	-5.478	-10.59	-214.3E-3	7.518	-9.348
289	E1	117	7)	45.68	-1.796	-732.0E-3	12.24E-3	-1.102	-8.309
291	E1	94	3)	50.24	-5.483	-10.60	-214.2E-3	7.558	-9.350

Beam Property 25

Elem no.	Load case	Node no.	Lc.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:									
295	E1	110	6)	64.70	567.0E-3	16.46	-2.271E-3	-4.144	200.8E-3
296	E1	112	3)	60.25	2.877	14.13	-7.393E-3	-3.419	1.109
295	E1	114	3)	63.80	1.368	19.58	-6.182E-3	9.035	-494.3E-3
339	E1	125	7)	45.54	203.5E-3	-11.09	9.042E-3	8.318	70.25E-3
338	E1	130	7)	58.54	-1.834	-20.25	6.791E-3	9.187	-713.5E-3
335	E1	126	7)	59.22	-3.213	-14.91	7.840E-3	-3.815	1.209
Minimum values in this output:									
337	E1	130	5)	-5.546	252.7E-3	4.172	1.009E-3	2.447	-202.8E-3
335	E1	129	7)	59.22	-3.211	-15.17	7.840E-3	7.302	-1.169
338	E1	130	7)	58.54	-1.834	-20.25	6.791E-3	9.187	-713.5E-3
294	E1	108	3)	46.21	-207.3E-3	10.90	-9.129E-3	-3.063	-141.2E-3
338	E1	125	7)	58.54	-1.834	-19.99	6.791E-3	-5.680	641.7E-3
335	E1	129	7)	59.22	-3.213	-15.17	7.840E-3	7.302	-1.169

BEAM STRESS ENVELOPES

+ve stresses: tensile

Bending & combined stresses are only given for elements with sections specified
Of these, unsymmetrical sections are marked by '*'
Bending stresses: By = Myy/Iyy x Dz Bz = Mzz/Izz x Dy
- where Dz & Dy are the distances from the centre of gravity to the edge of the section in the +ve z and y directions respectively. For unsymmetrical sections and where the -ve Dz or Dy magnitude is greater than the +ve, the -ve distance is used and the bending stress is output enclosed by [ ] so as to highlight the change of sign.

For circular sections: C1 = A + SQRT(By*By+Bz*Bz) C2 = A - SQRT(By*By+Bz*Bz)
For rect. & I sections: C1 = A + ABS(By) + ABS(Bz) C2 = A - ABS(By) - ABS(Bz)
For unsymmetrical sections the combined stress: A + By + Bz is calculated at the two end points of both the top and bottom edges of the section. C1 is output as the maximum of these four values and C2 as the minimum.
Directions are in element axes
Maximum & minimum values are given on consecutive lines per point
Associated loadcase numbers are given in brackets: (max) (min)
Loadcases: E1

Beam Property 1

Elem no.	Load case	Node no.	Lc.	Axial A	Bending By	Bending Bz	Combined C1	Combined C2
Maximum values in this output:								
30	E1	26	7	93.84E+3	-11.72E+3	3.558E+3	105.8E+3	81.29E+3
37	E1	4	7	-22.08E+3	16.49E+3	-4.022E+3	-5.112E+3	-39.05E+3
103	E1	69	3	48.19E+3	-7.158E+3	3.909E+3	56.35E+3	40.04E+3
30	E1	26	7	93.84E+3	-11.72E+3	3.558E+3	105.8E+3	81.29E+3
30	E1	27	7	93.53E+3	-11.79E+3	-3.200E+3	105.7E+3	81.30E+3
Minimum values in this output:								
37	E1	4	7	-22.08E+3	16.49E+3	-4.022E+3	-5.112E+3	-39.05E+3
28	E1	25	7	75.17E+3	-12.75E+3	2.123E+3	88.09E+3	62.24E+3
94	E1	46	3	-9.751E+3	7.830E+3	-6.725E+3	570.7	-20.07E+3
37	E1	32	7	21.99E+3	-9.609E+3	-1.657E+3	-12.24E+3	-31.74E+3
37	E1	4	7	-22.08E+3	16.49E+3	-4.022E+3	-5.112E+3	-39.05E+3

BEAM STRESS ENVELOPES

Beam Property 2

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
68	E1	8	2-15.90E+3	-4.875E+3	-888.8	-10.98E+3	-20.85E+3
69	E1	6	3-22.89E+3	24.31E+3	-22.40E+3	10.17E+3	-55.95E+3
74	E1	37	3-66.39E+3	-12.03E+3	17.17E+3	-45.36E+3	-87.31E+3
69	E1	6	7-22.77E+3	24.19E+3	-22.40E+3	10.21E+3	-55.74E+3
68	E1	34	2-15.94E+3	-2.713E+3	-811.8	-13.11E+3	-18.77E+3
Minimum values in this output:							
		Lc.					
19	E1	14	4-87.09E+3	-15.86E+3	5.438E+3	-70.62E+3	-103.6E+3
78	E1	39	4-86.47E+3	-23.71E+3	-6.097E+3	-61.99E+3	-111.0E+3
69	E1	6	7-22.77E+3	24.19E+3	-22.40E+3	10.21E+3	-55.74E+3
78	E1	12	6-85.94E+3	-418.2	-76.37	-85.52E+3	-86.37E+3
78	E1	39	4-86.47E+3	-23.71E+3	-6.097E+3	-61.99E+3	-111.0E+3

Beam Property 3

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
254	E1	102	7-2.241E+3	10.49E+3	64.68E+3	63.29E+3	-67.77E+3
319	E1	5	7-18.90E+3	27.27E+3	-21.27E+3	15.69E+3	-83.48E+3
252	E1	4	3-14.80E+3	4.237E+3	146.2E+3	131.4E+3	-161.0E+3
254	E1	48	7-2.314E+3	5.980E+3	143.6E+3	141.4E+3	-146.1E+3
277	E1	109	2-10.22E+3	-25.77	225.4	-9.989E+3	-10.44E+3
Minimum values in this output:							
		Lc.					
278	E1	110	3-18.93E+3	-8.807E+3	7.605E+3	-7.162E+3	-30.70E+3
278	E1	6	3-18.90E+3	-27.37E+3	-21.39E+3	15.83E+3	-53.64E+3
278	E1	6	3-18.90E+3	-27.37E+3	-21.39E+3	15.83E+3	-53.64E+3
279	E1	111	4-12.19E+3	-78.73	145.5	-12.03E+3	-12.35E+3
252	E1	4	3-14.80E+3	4.237E+3	146.2E+3	131.4E+3	-161.0E+3

Beam Property 4

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
115	E1	92	7-17.03E+3	-16.49E+3	-3.302E+3	-252.2	-33.80E+3
41	E1	32	7-26.71E+3	27.20E+3	23.25E+3	9.075E+3	-62.49E+3
41	E1	32	3-26.75E+3	27.19E+3	23.25E+3	9.027E+3	-62.53E+3
115	E1	76	7-17.18E+3	17.12E+3	20.73E+3	9.703E+3	-44.07E+3
115	E1	92	7-17.03E+3	-16.49E+3	-3.302E+3	-252.2	-33.80E+3
Minimum values in this output:							
		Lc.					
40	E1	20	7-26.76E+3	-27.00E+3	22.94E+3	8.669E+3	-62.19E+3
40	E1	20	1-26.72E+3	-27.01E+3	22.94E+3	8.720E+3	-62.19E+3
114	E1	91	7-17.19E+3	16.64E+3	-3.379E+3	-208.4	-34.18E+3
40	E1	7	4-21.59E+3	20.77E+3	-1.492E+3	-766.5	-42.41E+3
41	E1	32	3-26.75E+3	27.19E+3	23.25E+3	9.027E+3	-62.53E+3

Beam Property 5

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
271	E1	105	3-31.81E+3	-9.128E+3	-9.097E+3	64.70E+3	38.92E+3
270	E1	6	3 43.65E+3	17.63E+3	-7.598E+3	62.84E+3	24.45E+3
325	E1	64	3 34.96E+3	4.128E+3	14.60E+3	50.13E+3	19.79E+3
123	E1	127	7 51.66E+3	-9.497E+3	9.033E+3	64.77E+3	38.55E+3
274	E1	108	1 44.44E+3	-2.952E+3	-84.38	47.40E+3	41.47E+3
Minimum values in this output:							
		Lc.					
273	E1	107	7 29.30E+3	1.646E+3	-7.883E+3	37.32E+3	21.28E+3
123	E1	127	7 81.66E+3	-9.497E+3	9.033E+3	64.77E+3	38.55E+3
275	E1	76	7 34.88E+3	4.142E+3	-14.56E+3	49.99E+3	19.71E+3
270	E1	105	2 30.85E+3	1.969E+3	278.3	33.83E+3	28.86E+3
273	E1	50	7 29.33E+3	10.49E+3	-3.293E+3	40.32E+3	18.33E+3

Beam Property 6

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
44	E1	7	7 48.78E+3	-13.40E+3	13.16E+3	67.87E+3	30.00E+3
45	E1	22	3 48.65E+3	13.42E+3	-13.60E+3	67.75E+3	29.84E+3
44	E1	21	7 48.67E+3	13.40E+3	13.52E+3	67.71E+3	29.83E+3
45	E1	22	3 48.65E+3	13.42E+3	-13.60E+3	67.75E+3	29.84E+3
45	E1	8	5 45.66E+3	-12.37E+3	-9.306E+3	61.14E+3	36.18E+3
Minimum values in this output:							
		Lc.					
119	E1	66	7 30.23E+3	7.715E+3	-12.38E+3	44.82E+3	15.65E+3
119	E1	52	8 37.80E+3	-14.46E+3	366.3	52.26E+3	23.34E+3
45	E1	22	3 48.65E+3	13.42E+3	-13.60E+3	67.75E+3	29.84E+3
45	E1	8	2 33.65E+3	-9.171E+3	-198.3	42.81E+3	24.48E+3
118	E1	51	3 30.47E+3	-8.081E+3	13.39E+3	46.08E+3	14.87E+3

BEAM STRESS ENVELOPES

Beam Property 7

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
123	E1	61	3-27.75E+3	3.406E+3	7.163E+3	-19.82E+3	-35.68E+3
122	E1	54	8-38.35E+3	5.862E+3	-2.994E+3	-31.77E+3	-44.93E+3
123	E1	61	7-27.92E+3	3.470E+3	7.163E+3	-19.96E+3	-35.88E+3
123	E1	75	3-27.93E+3	-9.157E+3	4.570E+3	-17.70E+3	-38.17E+3
123	E1	61	3-27.75E+3	3.406E+3	7.163E+3	-19.82E+3	-35.68E+3
Minimum values in this output:							
		Lc.					
47	E1	22	7-67.68E+3	-7.084E+3	113.7	-60.59E+3	-74.76E+3
122	E1	67	8-38.53E+3	-10.65E+3	877.4	-27.86E+3	-49.20E+3
122	E1	54	3-28.05E+3	3.874E+3	-7.197E+3	-20.01E+3	-36.08E+3
46	E1	9	7-67.27E+3	4.818E+3	-4.662E+3	-60.77E+3	-73.76E+3
47	E1	22	7-67.68E+3	-7.084E+3	113.7	-60.59E+3	-74.76E+3

Beam Property 8

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
51	E1	18	7 55.33E+3	-16.88E+3	-8.959E+3	74.44E+3	36.22E+3
50	E1	23	3 59.11E+3	11.65E+3	10.33E+3	70.68E+3	39.54E+3
53	E1	10	7 47.61E+3	-10.33E+3	16.63E+3	67.18E+3	28.03E+3
50	E1	9	7 55.22E+3	-17.16E+3	8.986E+3	74.57E+3	35.87E+3
52	E1	30	7 47.99E+3	5.304E+3	-1.159E+3	53.42E+3	42.56E+3
Minimum values in this output:							
		Lc.					
126	E1	74	3 27.40E+3	-896.2	-1.144E+3	28.83E+3	25.97E+3
50	E1	9	7 55.22E+3	-17.16E+3	8.986E+3	74.57E+3	35.87E+3
52	E1	17	3 47.98E+3	-10.40E+3	-16.26E+3	67.28E+3	28.69E+3
127	E1	68	7 27.48E+3	-830.4	838.3	28.66E+3	26.30E+3
127	E1	54	7 27.61E+3	-4.876E+3	15.14E+3	43.53E+3	11.70E+3

Beam Property 9

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
139	E1	56	7-7.974E+3	5.379E+3	-3.096E+3	-1.767E+3	-34.18E+3
129	E1	56	3-8.403E+3	5.459E+3	-3.114E+3	-2.118E+3	-34.69E+3
56	E1	30	3-43.11E+3	-11.82E+3	10.90E+3	-27.03E+3	-59.19E+3
129	E1	69	7-8.142E+3	-12.15E+3	-6.025E+3	5.421E+3	-21.70E+3
129	E1	56	2-10.67E+3	1.919E+3	-2.681E+3	-7.372E+3	-13.97E+3
Minimum values in this output:							
		Lc.					
56	E1	30	7-43.49E+3	-11.83E+3	10.89E+3	-27.41E+3	-59.57E+3
57	E1	29	4-19.08E+3	-13.21E+3	-372.2	-5.864E+3	-32.30E+3
54	E1	24	7-42.33E+3	-11.77E+3	-11.18E+3	-26.09E+3	-58.56E+3
56	E1	16	7-43.31E+3	3.488E+3	-4.116E+3	-37.92E+3	-48.71E+3
56	E1	30	7-43.49E+3	-11.83E+3	10.89E+3	-27.41E+3	-59.57E+3

Beam Property 10

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
60	E1	16	7 49.41E+3	-12.65E+3	-8.076E+3	64.42E+3	34.40E+3
60	E1	29	7 49.28E+3	2.580E+3	-3.022E+3	53.25E+3	45.30E+3
133	E1	56	3 18.05E+3	-3.204E+3	15.75E+3	34.12E+3	1.987E+3
60	E1	16	7 49.41E+3	-12.65E+3	-8.076E+3	64.42E+3	34.40E+3
60	E1	29	7 49.28E+3	2.580E+3	-3.022E+3	53.25E+3	45.30E+3
Minimum values in this output:							
		Lc.					
133	E1	70	7 17.54E+3	-6.026E+3	-3.652E+3	24.58E+3	10.49E+3
60	E1	16	7 49.41E+3	-12.65E+3	-8.076E+3	64.42E+3	34.40E+3
135	E1	59	3 17.69E+3	-3.070E+3	-15.66E+3	33.65E+3	1.723E+3
133	E1	56	2 19.81E+3	-4.061E+3	-318.2	23.88E+3	15.74E+3
133	E1	56	7 17.68E+3	-3.136E+3	15.74E+3	33.73E+3	1.626E+3

Beam Property 11

Elem no.	Load case	Node no.	Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:							
		Lc.					
64	E1	14	7 17.66E+3	3.869E+3	-21.62E+3	39.62E+3	-4.309E+3
139	E1	57	7 9.642E+3	11.70E+3	-19.78E+3	32.99E+3	-13.31E+3
65	E1	27	7 16.18E+3	-11.94E+3	19.34E+3	38.62E+3	-6.262E+3
64	E1	27	7 17.51E+3	-11.32E+3	19.31E+3	39.80E+3	-4.793E+3
64	E1	14	2 15.39E+3	8.387E+3	-14.33E+3	31.99E+3	-1.215E+3
Minimum values in this output:							
		Lc.					
63	E1	28	7-1.842E+3	-6.476E+3	18.93E+3	18.16E+3	-21.84E+3
65	E1	27	4 12.00E+3	-14.44E+3	14.17E+3	32.24E+3	-8.232E+3
64	E1	14	7 17.66E+3	3.869E+3	-21.62E+3	39.62E+3	-4.309E+3
137	E1	58	2 100.9	-6.672E+3	-80.08	6.773E+3	-6.571E+3
63	E1	28	7-1.842E+3	-6.476E+3	18.93E+3	18.16E+3	-21.84E+3

BEAM STRESS ENVELOPES

Beam Property 12

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
220	E1	48	3	-84.17	.0	3.323E+3	3.269E+3	-3.377E+3
216	E1	90	7	-934.5	11.39E+3	-5.060E+3	15.52E+3	-17.39E+3
216	E1	4	3	-721.2	.0	1.410E+3	2.688E+3	-4.131E+3
216	E1	90	7	-934.5	11.39E+3	-5.060E+3	15.52E+3	-17.39E+3
220	E1	48	2	-324.5	.0	13.82	-310.7	-336.3
Minimum values in this output:								
215	E1	3	7	-1.050E+3	-5.667E+3	-8.758E+3	13.38E+3	-15.47E+3
214	E1	89	3	-924.8	-11.06E+3	-4.984E+3	15.12E+3	-16.97E+3
219	E1	47	3	-381.1	-3.236E+3	-8.782E+3	11.64E+3	-12.40E+3
220	E1	48	4	-188.0	.0	11.53	-376.5	-399.5
216	E1	90	7	-934.5	11.39E+3	-5.060E+3	15.52E+3	-17.39E+3

Beam Property 13

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
172	E1	57	4	11.08E+3	.0	.0	11.08E+3	11.08E+3
167	E1	51	1	699.4	.0	.0	699.4	699.4
167	E1	51	1	699.4	.0	.0	699.4	699.4
172	E1	57	4	11.08E+3	.0	.0	11.08E+3	11.08E+3
172	E1	57	4	11.08E+3	.0	.0	11.08E+3	11.08E+3
Minimum values in this output:								
178	E1	52	7	-31.39E+3	.0	.0	-31.39E+3	-31.39E+3
167	E1	51	1	699.4	.0	.0	699.4	699.4
167	E1	51	1	699.4	.0	.0	699.4	699.4
178	E1	52	7	-31.39E+3	.0	.0	-31.39E+3	-31.39E+3
178	E1	52	7	-31.39E+3	.0	.0	-31.39E+3	-31.39E+3

Beam Property 14

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
193	E1	8	7	125.2E+3	-2.620E-6	-1.962E-6	125.2E+3	125.2E+3
191	E1	17	1	-10.56E+3	13.04E-6	3.260E-6	-10.56E+3	-10.56E+3
191	E1	17	2	-9.099E+3	13.04E-6	4.564E-6	-9.099E+3	-9.099E+3
193	E1	8	7	125.2E+3	-2.620E-6	-1.962E-6	125.2E+3	125.2E+3
193	E1	8	7	125.2E+3	-2.620E-6	-1.962E-6	125.2E+3	125.2E+3
Minimum values in this output:								
186	E1	57	7	-39.61E+3	-2.611E-6	.0	-39.61E+3	-39.61E+3
182	E1	53	1	-11.96E+3	-20.87E-6	.0	-11.96E+3	-11.96E+3
184	E1	55	3	38.36E+3	5.216E-6	-5.868E-6	38.36E+3	38.36E+3
186	E1	57	7	-39.61E+3	-2.611E-6	.0	-39.61E+3	-39.61E+3
186	E1	57	7	-39.61E+3	-2.611E-6	.0	-39.61E+3	-39.61E+3

Beam Property 15

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
195	E1	79	1	2.703E+3	.0	.0	2.703E+3	2.703E+3
194	E1	77	1	136.4	.0	.0	136.4	136.4
194	E1	77	1	136.4	.0	.0	136.4	136.4
195	E1	79	4	2.703E+3	.0	.0	2.703E+3	2.703E+3
195	E1	79	4	2.703E+3	.0	.0	2.703E+3	2.703E+3
Minimum values in this output:								
206	E1	78	7	-7.203E+3	.0	.0	-7.203E+3	-7.203E+3
194	E1	77	1	136.4	.0	.0	136.4	136.4
194	E1	77	1	136.4	.0	.0	136.4	136.4
206	E1	78	7	-7.203E+3	.0	.0	-7.203E+3	-7.203E+3
206	E1	78	7	-7.203E+3	.0	.0	-7.203E+3	-7.203E+3

Beam Property 16

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
207	E1	2	3	3.212E+3	.0	.0	3.212E+3	3.212E+3
166	E1	49	1	1.252E+3	.0	.0	1.252E+3	1.252E+3
166	E1	49	1	1.252E+3	.0	.0	1.252E+3	1.252E+3
207	E1	2	3	3.212E+3	.0	.0	3.212E+3	3.212E+3
207	E1	2	3	3.212E+3	.0	.0	3.212E+3	3.212E+3
Minimum values in this output:								
179	E1	50	7	-7.054E+3	.0	.0	-7.054E+3	-7.054E+3
166	E1	49	1	1.252E+3	.0	.0	1.252E+3	1.252E+3
166	E1	49	1	1.252E+3	.0	.0	1.252E+3	1.252E+3
179	E1	50	7	-7.054E+3	.0	.0	-7.054E+3	-7.054E+3
179	E1	50	7	-7.054E+3	.0	.0	-7.054E+3	-7.054E+3

BEAM STRESS ENVELOPES

Beam Property 17

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
212	E1	6	7	19.02E+3	.0	.0	19.02E+3	19.02E+3
346	E1	4	3	-13.19E+3	53.66E+3	8.634E+3	41.16E+3	-67.84E+3
350	E1	2	3	-13.91E+3	52.75E+3	9.509E+3	40.70E+3	-66.83E+3
349	E1	48	7	12.63E+3	-46.66E+3	-9.424E+3	60.23E+3	-34.97E+3
212	E1	6	7	19.02E+3	.0	.0	19.02E+3	19.02E+3
Minimum values in this output:								
211	E1	4	7	-26.20E+3	.0	.0	-26.20E+3	-26.20E+3
349	E1	48	7	12.63E+3	-46.66E+3	-9.424E+3	60.23E+3	-34.97E+3
351	E1	46	7	12.84E+3	-48.86E+3	-10.58E+3	59.90E+3	-34.22E+3
211	E1	4	7	-26.20E+3	.0	.0	-26.20E+3	-26.20E+3
348	E1	4	3	-13.19E+3	53.66E+3	8.634E+3	41.16E+3	-67.84E+3

Beam Property 18

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
221	E1	89	8	12.46	.0	.0	12.46	12.46
221	E1	89	1	1.610	.0	.0	1.610	1.610
221	E1	89	1	1.610	.0	.0	1.610	1.610
221	E1	89	8	12.46	.0	.0	12.46	12.46
221	E1	89	8	12.46	.0	.0	12.46	12.46
Minimum values in this output:								
222	E1	90	2	1.370	.0	.0	1.370	1.370
221	E1	89	1	1.610	.0	.0	1.610	1.610
221	E1	89	1	1.610	.0	.0	1.610	1.610
222	E1	90	2	1.370	.0	.0	1.370	1.370
222	E1	90	2	1.370	.0	.0	1.370	1.370

Beam Property 19

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
224	E1	68	1	1.224E+3	.0	.0	1.224E+3	1.224E+3
223	E1	64	1	978.8	.0	.0	978.8	978.8
223	E1	64	1	978.8	.0	.0	978.8	978.8
224	E1	68	1	1.224E+3	.0	.0	1.224E+3	1.224E+3
224	E1	68	1	1.224E+3	.0	.0	1.224E+3	1.224E+3
Minimum values in this output:								
232	E1	74	8	-10.40E+3	.0	.0	-10.40E+3	-10.40E+3
223	E1	64	1	978.8	.0	.0	978.8	978.8
223	E1	64	1	978.8	.0	.0	978.8	978.8
232	E1	74	8	-10.40E+3	.0	.0	-10.40E+3	-10.40E+3
232	E1	74	8	-10.40E+3	.0	.0	-10.40E+3	-10.40E+3

Beam Property 20

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
248	E1	29	3	22.93E+3	-26.08E-6	3.260E-6	22.93E+3	22.93E+3
240	E1	68	3	21.65E+3	46.95E-6	-652.0E-9	21.65E+3	21.65E+3
248	E1	74	2	18.03E+3	-26.08E-6	3.994E-6	18.03E+3	18.03E+3
248	E1	29	3	22.93E+3	-26.08E-6	3.260E-6	22.93E+3	22.93E+3
248	E1	29	3	22.93E+3	-26.08E-6	3.260E-6	22.93E+3	22.93E+3
Minimum values in this output:								
236	E1	46	1	-6.157E+3	5.216E-6	-3.423E-6	-6.157E+3	-6.157E+3
244	E1	48	7	15.84E+3	-83.98E-6	2.787E-6	15.84E+3	15.84E+3
236	E1	46	3	12.47E+3	-78.24E-6	-45.15E-6	12.47E+3	12.47E+3
236	E1	46	1	-6.157E+3	5.216E-6	-3.423E-6	-6.157E+3	-6.157E+3
236	E1	46	1	-6.157E+3	5.216E-6	-3.423E-6	-6.157E+3	-6.157E+3

Beam Property 21

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
361	E1	81	8	19.85E+3	8.909E+3	1.406E+3	28.87E+3	10.83E+3
360	E1	68	3	-16.82E+3	12.73E+3	-3.308E+3	-3.670E+3	-29.98E+3
358	E1	22	7	-9.565E+3	10.07E+3	8.368E+3	3.529E+3	-22.66E+3
361	E1	81	8	19.85E+3	8.909E+3	1.406E+3	28.87E+3	10.83E+3
361	E1	81	8	19.85E+3	8.909E+3	1.406E+3	28.87E+3	10.83E+3
Minimum values in this output:								
360	E1	68	3	-16.82E+3	12.73E+3	-3.308E+3	-3.670E+3	-29.98E+3
352	E1	26	3	3.084E+3	-18.47E-9	-2.608E-6	3.084E+3	3.084E+3
363	E1	21	3	-8.833E+3	9.917E+3	-8.250E+3	4.057E+3	-21.73E+3
360	E1	37	3	-16.67E+3	4.651E+3	3.368E+3	-10.94E+3	-22.41E+3
360	E1	68	3	-16.82E+3	12.73E+3	-3.308E+3	-3.670E+3	-29.98E+3

BEAM STRESS ENVELOPES

Beam Property 22

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
Maximum values in this output:									
			Lc.						
287	E1	94	7	2.622E+3	7.754E+3	-1.847E+3	10.59E+3	-5.149E+3	
284	E1	114	3	2.814E+3	20.23E+3	12.38E+3	20.85E+3	-26.48E+3	
258	E1	4	3	11.04E+3	5.861E+3	147.8E+3	136.9E+3	-159.0E+3	
260	E1	48	7	3.998E+3	6.059E+3	145.9E+3	142.0E+3	-150.0E+3	
327	E1	96	3	2.347E+3	6.508E+3	895.8	8.916E+3	-4.222E+3	
Minimum values in this output:									
			Lc.						
258	E1	4	3	-11.04E+3	5.861E+3	147.8E+3	136.9E+3	-159.0E+3	
308	E1	2	2	-6.582E+3	5.134E+3	-413.5	-1.401E+3	-11.70E+3	
308	E1	2	7	-10.48E+3	5.820E+3	-144.9E+3	134.5E+3	-158.4E+3	
260	E1	48	8	-7.888E+3	5.919E+3	454.7	-1.682E+3	-13.82E+3	
258	E1	4	3	-11.04E+3	5.861E+3	147.8E+3	136.9E+3	-159.0E+3	

Beam Property 23

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
Maximum values in this output:									
			Lc.						
315	E1	121	7	10.05E+3	15.21E+3	[786.4]	26.05E+3	-5.477E+3	*
263	E1	103	3	4.991E+3	42.33E+3	[-18.23E+3]	44.80E+3	-65.55E+3	*
311	E1	122	7	4.936E+3	-30.40E+3	[-21.42E+3]	34.23E+3	-56.75E+3	*
263	E1	103	3	4.991E+3	42.33E+3	[-18.23E+3]	44.80E+3	-65.55E+3	*
312	E1	64	4	9.688E+3	-6.611E+3	[-466.9]	16.49E+3	2.611E+3	*
Minimum values in this output:									
			Lc.						
310	E1	100	4	-9.803E+3	-2.024E+3	[127.2]	-7.652E+3	-11.88E+3	*
263	E1	103	3	4.991E+3	42.33E+3	[-18.23E+3]	44.80E+3	-65.55E+3	*
311	E1	122	7	4.936E+3	-30.40E+3	[-21.42E+3]	34.23E+3	-56.75E+3	*
310	E1	100	4	-9.803E+3	-2.024E+3	[127.2]	-7.652E+3	-11.88E+3	*
263	E1	103	3	4.991E+3	42.33E+3	[-18.23E+3]	44.80E+3	-65.55E+3	*

Beam Property 24

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2
Maximum values in this output:								
			Lc.					
333	E1	95	3	4.014E+3	7.924E+3	-9.298E+3	16.22E+3	-8.196E+3
291	E1	94	3	3.889E+3	9.636E+3	-11.92E+3	19.22E+3	-11.44E+3
333	E1	95	2	3.627E+3	7.491E+3	383.1	11.12E+3	-3.870E+3
291	E1	94	3	3.889E+3	9.636E+3	-11.92E+3	19.22E+3	-11.44E+3
291	E1	119	8	3.921E+3	-241.6	-74.03	4.174E+3	3.668E+3
Minimum values in this output:								
			Lc.					
289	E1	97	2	2.662E+3	436.8	1.891	3.098E+3	2.225E+3
289	E1	117	7	3.938E+3	-1.407E+3	-6.769E+3	10.43E+3	-3.377E+3
291	E1	94	3	3.889E+3	9.636E+3	-11.92E+3	19.22E+3	-11.44E+3
289	E1	97	2	2.662E+3	436.8	1.891	3.098E+3	2.225E+3
291	E1	94	3	3.889E+3	9.636E+3	-11.92E+3	19.22E+3	-11.44E+3

Beam Property 25

Elem no.	Load case	Node no.		Axial A	Bending By	Bending Bz	Combined [kN/m2] C1	Combined [kN/m2] C2	
Maximum values in this output:									
			Lc.						
295	E1	110	6	14.21E+3	-18.54E+3	[-4.771E+3]	34.70E+3	-9.106E+3	*
338	E1	130	7	12.85E+3	41.11E+3	[16.95E+3]	70.91E+3	-35.19E+3	*
335	E1	129	7	13.00E+3	32.67E+3	[27.77E+3]	73.45E+3	-31.04E+3	*
335	E1	129	7	13.00E+3	32.67E+3	[27.77E+3]	73.45E+3	-31.04E+3	*
299	E1	119	2	-754.2	-1.826E+3	[87.88]	1.189E+3	-2.616E+3	*
Minimum values in this output:									
			Lc.						
337	E1	130	5	-1.218E+3	10.95E+3	[4,817E+3]	14.95E+3	-14.14E+3	*
338	E1	130	7	12.85E+3	41.11E+3	[16.95E+3]	70.91E+3	-35.19E+3	*
335	E1	126	7	13.00E+3	-17.07E+3	[-28.52E+3]	41.79E+3	-32.69E+3	*
299	E1	119	2	-754.2	-1.826E+3	[87.88]	1.189E+3	-2.616E+3	*
338	E1	130	7	12.85E+3	41.11E+3	[16.95E+3]	70.91E+3	-35.19E+3	*

Job No.	Sheet No.	Rev.
38035		
Drg. Ref.		
Made by SK	Date Apr-24-97	Data GYMH12 Checked

KOC UNIVERSITESI
SPOR SALONU
CELIK CATI ANA MAKASLARI t.seh

Type of Structure: GENERAL 3D

Global Restraints: none

Input Data Units: kN m T s deg.C Gravity = 9.80665 m/s2
Results Units: - same as input data units

Number of Nodes = 44 Highest Node = 44
Number of Elements = 70 Highest Element = 91
Number of Basic Loadcases = 3 Highest Basic Loadcase = 3
Number of Combination Loadcases = 0
Number of Envelopes = 0

Modal Specification:

Number of Automatic Masters = 0
Number of Modes = 3
Start MODE = 1
Self-mass: DIAGONAL
Additional mass:- Loadcase: 0 Direction: Scale factor:

Static Loadcase Titles:

Basic Loadcases
1 dusey yukler
2
3

A N A L Y S I S B Y G S A Version 6s036

Buckling analysis of loadcase 1

Nodes Units: [m]

Node	X	Y	Z	Axis
1	.0	.0	-9.000	
2	.0	.0	4.000	
3	50.400	.0	-9.000	
4	50.400	.0	4.000	
5	.0	.0	6.000	
6	50.400	.0	6.000	
7	1.113	.0	6.945	
8	47.287	.0	6.945	
9	7.053	.0	7.951	
10	11.038	.0	8.758	
11	15.059	.0	9.366	
12	19.105	.0	9.771	
13	23.167	.0	9.975	
14	27.233	.0	9.975	
15	31.295	.0	9.771	
16	35.341	.0	9.366	
17	39.362	.0	8.758	
18	43.347	.0	7.951	
19	25.200	.0	10.000	
20	3.113	.0	4.945	
21	5.077	.0	5.473	
22	45.323	.0	5.473	
23	9.041	.0	6.380	
24	13.045	.0	7.087	
25	17.080	.0	7.594	
26	21.135	.0	7.898	
27	25.200	.0	8.000	
28	29.265	.0	7.898	
29	33.320	.0	7.594	
30	37.355	.0	7.087	
31	41.359	.0	6.380	
32	47.287	.0	4.945	
33	1.897	.0	6.473	
34	48.844	.0	6.473	
35	5.083	.0	7.448	
36	9.046	.0	8.355	
37	13.049	.0	9.062	
38	17.082	.0	9.569	
39	21.136	.0	9.873	
40	25.264	.0	9.873	
41	33.318	.0	9.569	
42	37.352	.0	9.062	
43	41.355	.0	8.355	
44	45.317	.0	7.448	

Elements

Elem. No.	Type	Fixity of ele.	xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length [m]	
18	BEAM	f/f	f/f	f/f		2	2	13	19		2.033	
19	BEAM	f/f	f/f	f/f		2	2	19	14		2.033	
20	BEAM	f/f	f/f	f/f		1	1	2	20		3.253	
22	BEAM	f/f	f/f	f/f		1	1	20	21		2.034	
26	BEAM	f/f	f/f	f/f		1	1	21	23		4.066	
27	BEAM	f/f	f/f	f/f		1	1	23	24		4.066	
28	BEAM	f/f	f/f	f/f		1	1	24	25		4.067	
29	BEAM	f/f	f/f	f/f		1	1	25	26		4.066	
30	BEAM	f/f	f/f	f/f		1	1	26	27		4.066	
31	BEAM	f/f	f/f	f/f		1	1	27	28		4.066	
32	BEAM	f/f	f/f	f/f		1	1	28	29		4.066	
33	BEAM	f/f	f/f	f/f		1	1	29	30		4.067	
34	BEAM	f/f	f/f	f/f		1	1	30	31		4.066	
35	BEAM	f/f	f/f	f/f		1	1	31	22		4.066	
36	BEAM	f/f	f/f	f/f		1	1	22	32		2.034	
37	BEAM	f/f	f/f	f/f		1	1	32	4		3.253	
38	BEAM	f/f	f/f	f/f		3	3	2	5		2.000	V
39	BEAM	f/f	f/f	f/f		3	3	4	6		2.000	V
40	BEAM	f/f	f/f	f/f		4	4	20	7		2.000	V
41	BEAM	f/f	f/f	f/f		4	4	32	8		2.000	V
42	BEAM	f/f	f/f	f/f		5	5	5	20		3.287	
43	BEAM	f/f	f/f	f/f		5	5	6	32		3.287	
44	BEAM	f/f	f/f	f/f		6	6	7	21		2.454	
45	BEAM	f/f	f/f	f/f		6	6	8	22		2.454	
46	BEAM	f/f	f/f	f/f		7	7	21	9		3.169	
47	BEAM	f/f	f/f	f/f		7	7	22	18		3.169	
48	BEAM	f/f	f/f	f/f		7	7	23	10		3.105	

Elements

Elem. No.	Type	Fixity of ele.	xx	yy	zz	Prop. No.	Group of elems.	Topology End 1	End 2	3rd Node	Length [m]	
49	BEAM	f/f	f/f	f/f		7	7	31	17		3.105	
50	BEAM	f/f	f/f	f/f		8	8	9	23		2.834	
51	BEAM	f/f	f/f	f/f		8	8	18	31		2.834	
52	BEAM	f/f	f/f	f/f		8	8	17	30		2.612	
53	BEAM	f/f	f/f	f/f		8	8	10	24		2.612	
54	BEAM	f/f	f/f	f/f		9	9	24	11		3.041	
55	BEAM	f/f	f/f	f/f		9	9	25	12		2.973	
56	BEAM	f/f	f/f	f/f		9	9	30	16		3.041	
57	BEAM	f/f	f/f	f/f		9	9	29	15		2.973	
58	BEAM	f/f	f/f	f/f		10	10	11	25		2.688	
59	BEAM	f/f	f/f	f/f		10	10	12	26		2.762	
60	BEAM	f/f	f/f	f/f		10	10	16	29		2.688	
61	BEAM	f/f	f/f	f/f		10	10	15	28		2.762	
62	BEAM	f/f	f/f	f/f		11	11	26	13		2.906	
63	BEAM	f/f	f/f	f/f		11	11	28	14		2.906	
64	BEAM	f/f	f/f	f/f		11	11	14	27		2.834	
65	BEAM	f/f	f/f	f/f		11	11	27	13		2.834	
66	BEAM	f/f	f/f	f/f		2	2	5	33		1.627	
67	BEAM	f/f	f/f	f/f		2	2	33	7		1.626	
68	BEAM	f/f	f/f	f/f		2	2	8	34		1.627	
69	BEAM	f/f	f/f	f/f		2	2	34	6		1.626	
70	BEAM	f/f	f/f	f/f		2	2	7	35		2.033	
71	BEAM	f/f	f/f	f/f		2	2	35	9		2.033	
72	BEAM	f/f	f/f	f/f		2	2	9	36		2.034	
73	BEAM	f/f	f/f	f/f		2	2	36	10		2.032	
74	BEAM	f/f	f/f	f/f		2	2	10	37		2.034	
75	BEAM	f/f	f/f	f/f		2	2	37	11		2.033	
76	BEAM	f/f	f/f	f/f		2	2	11	38		2.033	
77	BEAM	f/f	f/f	f/f		2	2	38	12		2.033	
78	BEAM	f/f	f/f	f/f		2	2	12	39		2.034	
79	BEAM	f/f	f/f	f/f		2	2	39	13		2.034	
80	BEAM	f/f	f/f	f/f		2	2	14	40		2.034	
81	BEAM	f/f	f/f	f/f		2	2	40	15		2.034	
82	BEAM	f/f	f/f	f/f		2	2	15	41		2.033	
83	BEAM	f/f	f/f	f/f		2	2	41	16		2.033	
84	BEAM	f/f	f/f	f/f		2	2	16	42		2.034	
85	BEAM	f/f	f/f	f/f		2	2	42	17		2.033	
86	BEAM	f/f	f/f	f/f		2	2	17	43		2.033	
87	BEAM	f/f	f/f	f/f		2	2	43	18		2.033	
88	BEAM	f/f	f/f	f/f		2	2	18	44		2.033	
89	BEAM	f/f	f/f	f/f		2	2	44	8		2.033	
90	BEAM	f/f	f/p	f/f		12	12	1	2		13.00	V
91	BEAM	f/f	f/p	f/f		12	12	3	4		13.00	V

Beam Properties

* indicates that properties are derived from the Beam Sections module

Prop-erty	Mate-rial	Area [m2]	Iyy [m4]	Izz [m4]	Beta deg]	Tors.(C) [m4]	Ky	Kz
1*	1	12.92E-3	107.1E-6	107.1E-6	.0	214.1E-6	.500	.500
2*	1	12.92E-3	107.1E-6	107.1E-6	.0	214.1E-6	.500	.500
3*	1	8.932E-3	35.54E-6	35.54E-6	.0	71.09E-6	.498	.498
4*	1	7.116E-3	29.34E-6	29.34E-6	.0	58.69E-6	.498	.498
5*	1	5.771E-3	24.42E-6	24.42E-6	.0	48.83E-6	.498	.498
6*	1	4.567E-3	20.16E-6	20.16E-6	.0	40.31E-6	.498	.498
7*	1	3.709E-3	16.30E-6	16.30E-6	.0	32.66E-6	.498	.498
8*	1	3.709E-3	16.30E-6	16.30E-6	.0	32.66E-6	.498	.498
9*	1	2.964E-3	13.20E-6	13.20E-6	.0	26.40E-6	.498	.498
10*	1	2.964E-3	13.20E-6	13.20E-6	.0	26.40E-6	.498	.498
11*	1	2.964E-3	13.20E-6	13.20E-6	.0	26.40E-6	.498	.498
12*	2	900.0E-3	168.8E-3	27.00E-3	.0	80.84E-3	.833	.833

Beam Sections

Modified Properties labelled x are factors of the section properties
Derived properties are listed in the Beam Properties module above

Prop-erty	Section Name	Area	Iyy	Izz	Torsion	Ky	Kz
		Modified Properties					
1	CHS273x16.0	-	-	-	-	-	-
2	CHS273x16.0	-	-	-	-	-	-
3	CHS193x16.0	-	-	-	-	-	-
4	CHS193x12.5	-	-	-	-	-	-
5	CHS193x10.0	-	-	-	-	-	-
6	CHS193x8.0	-	-	-	-	-	-
7	CHS193x6.3	-	-	-	-	-	-
8	CHS193x6.3	-	-	-	-	-	-
9	CHS193x5.0	-	-	-	-	-	-
10	CHS193x5.0	-	-	-	-	-	-
11	CHS193x5.0	-	-	-	-	-	-
12	GRS1500x600	-	-	-	-	-	-

Note: General sections are specified in [mm] as follows:
GRS Depth x Width

Restraints

Rest. set	Trans. x	y	z	Rot. xx	yy	zz	Plane of nodes	Plane datum	List of nodes
1	r	r	r	r	r	r	-		1 3

Node Loads Units: [kN] [kNm]

Node	Loadcase	Direction	Value
5	1	PZ	-14.50
6	1	PZ	-14.50
7	1	PZ	-14.50
8	1	PZ	-14.50
9	1	PZ	-14.50

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Node Loads Units: [kN] [kNm]

Node	Loadcase	Direction	Value
10	1	FZ	-14.50
11	1	FZ	-14.50
12	1	FZ	-14.50
13	1	FZ	-14.50
14	1	FZ	-14.50
15	1	FZ	-14.50
16	1	FZ	-14.50
17	1	FZ	-14.50
18	1	FZ	-14.50
19	1	FZ	-14.50
33	1	FZ	-14.50
34	1	FZ	-14.50
35	1	FZ	-14.50
36	1	FZ	-14.50
37	1	FZ	-14.50
38	1	FZ	-14.50
39	1	FZ	-14.50
40	1	FZ	-14.50
41	1	FZ	-14.50
42	1	FZ	-14.50
43	1	FZ	-14.50
44	1	FZ	-14.50
2	1	FZ	-4.600
4	1	FZ	-4.600
20	1	FZ	-4.600
21	1	FZ	-4.600
22	1	FZ	-4.600
23	1	FZ	-4.600
24	1	FZ	-4.600
25	1	FZ	-4.600
26	1	FZ	-4.600
27	1	FZ	-4.600
28	1	FZ	-4.600
29	1	FZ	-4.600
30	1	FZ	-4.600
31	1	FZ	-4.600
32	1	FZ	-4.600

BEAM & SPRING FORCES & MOMENTS

The force in an element at any point is the forces required to maintain equilibrium if the element is cut at that point and the end 2 part of the element is discarded. Thus: +ve axial forces are tensile
Directions are in element axes
Loadcases: 1 2 3

Beam Property 1

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
20	3	2	4.501E-3	61.12	48.21E-3	157.7	-89.17E-3	255.0
20	3	2	4.501E-3	61.12	48.21E-3	157.7	-89.17E-3	255.0
31	3	27	-8.982	-8.164	201.9E-3	-36.23	-274.5E-3	-228.5
20	2	2	1.294E-3	-63.25	8.990E-3	273.3	-16.78E-3	-342.4
31	1	28	-8.982	-8.164	201.9E-3	-36.23	846.4E-3	198.3
37	2	4	-10.65E-3	-48.59	-3.060E-3	199.0	-2.496E-3	291.5
Minimum values in this output:								
32	3	28	-9.886	-23.61	160.7E-3	-102.8	-287.4E-3	-216.6
37	3	32	-56.12E-3	-61.76	-10.90E-3	-158.4	62.56E-3	87.10
36	3	22	-2.107	-33.60	-41.89E-3	-156.2	72.03E-3	73.97
30	2	26	-1.548	-32.05	23.78E-3	-422.1	-14.63E-3	-8.113
29	3	25	-9.744	22.66	185.3E-3	102.8	-288.5E-3	-121.6
20	2	2	1.294E-3	-63.25	8.990E-3	273.3	-16.78E-3	-342.4

Beam Property 2

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
81	3	40	10.67	13.66	-2.503	-67.06	3.030	-127.9
79	2	39	1.905	117.6	-300.7E-3	-377.0	718.1E-3	224.9
78	3	13	10.60	-13.66	2.567	67.72	-2.103	-154.0
71	2	35	683.7E-3	-58.53	-14.76E-3	165.2	17.35E-3	-27.45
80	3	40	10.67	-21.02	1.998	-66.49	1.452	-127.8
77	2	38	1.726	92.58	-208.4E-3	-155.9	55.43E-3	396.0
Minimum values in this output:								
66	1	5	234.1E-3	-10.62	5.111E-3	-43.91	-4.554E-3	63.31
74	2	10	1.459	-60.59	117.8E-3	51.89	-92.60E-3	163.7
81	3	40	10.67	13.66	-2.503	-67.06	3.030	-127.9
18	2	13	1.660	108.0	-502.8E-3	-401.6	182.1E-3	141.6
19	3	19	9.706	19.21	2.028	2.960	-3.493	-139.1
82	2	41	1.733	41.74	217.8E-3	-53.59	71.70E-3	-327.9

BEAM & SPRING FORCES & MOMENTS

Beam Property 3

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
39	3	4	1.286	-59.57	62.59E-3	-31.46	-67.37E-3	-158.5
39	2	4	232.7E-3	-2.763	11.62E-3	-63.49	12.52E-3	137.6
39	3	4	1.286	-59.57	62.59E-3	-31.46	-67.37E-3	-158.5
38	1	2	130.7E-3	-20.31	-4.248E-3	42.05	3.151E-3	31.60
39	3	6	1.286	-59.57	62.59E-3	-31.46	87.81E-3	-39.36
39	2	6	232.7E-3	-2.763	11.62E-3	-63.49	10.51E-3	143.2
Minimum values in this output:								
38	1	2	130.7E-3	-20.31	-4.248E-3	42.05	3.151E-3	31.60
39	3	4	1.286	-59.57	62.59E-3	-31.46	-67.37E-3	-158.5
38	3	2	1.219	-59.02	-40.29E-3	30.99	30.95E-3	-157.6
38	2	2	219.3E-3	-4.634	-7.059E-3	-77.00	5.170E-3	-195.9
39	3	4	1.286	-59.57	62.59E-3	-31.46	-67.37E-3	-158.5
38	2	2	219.3E-3	-4.634	-7.059E-3	-77.00	5.170E-3	-195.9

Beam Property 4

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
40	3	20	1.154	18.98	-55.36E-3	-15.41	57.73E-3	-24.33
41	2	32	204.4E-3	26.58	9.849E-3	-24.51	-9.980E-3	74.00
41	3	32	1.133	19.18	84.10E-3	15.80	-84.97E-3	-24.32
41	3	32	1.133	19.18	84.10E-3	15.80	-84.97E-3	-24.32
40	3	20	1.154	18.98	-55.36E-3	-15.41	57.73E-3	-24.33
41	2	32	204.4E-3	26.58	9.849E-3	-24.51	-9.980E-3	74.00
Minimum values in this output:								
41	1	32	121.7E-3	16.24	5.846E-3	-12.34	-5.923E-3	31.65
40	2	20	208.5E-3	-30.87	-10.10E-3	-32.95	10.51E-3	-96.46
40	3	20	1.154	18.98	-55.36E-3	-15.41	57.73E-3	-24.33
40	2	20	208.5E-3	-30.87	-10.10E-3	-32.95	10.51E-3	-96.46
41	3	32	1.133	19.18	84.10E-3	15.80	-84.97E-3	-24.32
40	2	20	208.5E-3	-30.87	-10.10E-3	-32.95	10.51E-3	-96.46

Beam Property 5

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
42	1	5	-220.7E-3	-6.529	-260.8E-6	-8.399	607.7E-6	-8.762
43	3	6	-2.135	22.90	1.837E-3	12.77	-2.204E-3	11.11
43	3	6	-2.135	22.90	1.837E-3	12.77	-2.204E-3	11.11
43	3	6	-2.135	22.90	1.837E-3	12.77	-2.204E-3	11.11
42	3	5	-2.055	-22.69	-2.305E-3	-12.65	5.428E-3	-10.97
42	3	20	-2.055	-22.69	-2.305E-3	-12.65	-2.140E-3	63.84
Minimum values in this output:								
43	3	6	-2.135	22.90	1.837E-3	12.77	-2.204E-3	11.11
42	3	5	-2.055	-22.69	-2.305E-3	-12.65	5.428E-3	-10.97
42	3	5	-2.055	-22.69	-2.305E-3	-12.65	5.428E-3	-10.97
42	3	5	-2.055	-22.69	-2.305E-3	-12.65	5.428E-3	-10.97
43	3	6	-2.135	22.90	1.837E-3	12.77	-2.204E-3	11.11
43	3	32	-2.135	22.90	1.837E-3	12.77	3.835E-3	-64.15

Beam Property 6

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Shear [kN] Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Moment [kNm] Mzz
Maximum values in this output:								
45	1	8	-168.9E-3	10.90E-3	-1.246E-3	4.389	1.989E-3	805.7E-3
45	3	8	-1.547	20.85	-11.63E-3	15.37	18.37E-3	-4.163
45	1	8	-168.9E-3	10.90E-3	-1.246E-3	4.389	1.989E-3	805.7E-3
45	3	8	-1.547	20.85	-11.63E-3	15.37	18.37E-3	-4.163
44	3	7	-1.581	-20.79	-16.31E-3	-15.25	21.36E-3	4.040
44	3	21	-1.581	-20.79	-16.31E-3	-15.25	-18.65E-3	55.08
Minimum values in this output:								
44	3	7	-1.581	-20.79	-16.31E-3	-15.25	21.36E-3	4.040
44	3	7	-1.581	-20.79	-16.31E-3	-15.25	21.36E-3	4.040
44	3	7	-1.581	-20.79	-16.31E-3	-15.25	21.36E-3	4.040
44	3	7	-1.581	-20.79	-16.31E-3	-15.25	21.36E-3	4.040
44	3	21	-1.581	-20.79	-16.31E-3	-15.25	-18.65E-3	55.08
45	3	22	-1.547	20.85	-11.63E-3	15.37	-10.17E-3	-55.34

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BEAM & SPRING FORCES & MOMENTS

Beam Property 7

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
47	3	22	1.715	-5.553	-5.697E-3	-12.14	9.247E-3	13.62
46	3	21	1.686	5.624	-7.920E-3	12.10	14.57E-3	-13.36
47	1	23	184.3E-3	-509.8E-3	-601.2E-6	-1.829	969.1E-6	-15.97
46	2	23	299.8E-3	-29.68	-2.009E-3	19.25	1.781E-3	-66.47
49	3	31	1.677	-383.1E-3	-21.77E-3	-5.180	34.09E-3	29.06
47	3	18	1.715	-5.553	-5.697E-3	-12.14	-8.808E-3	31.22
Minimum values in this output:								
48	1	23	178.1E-3	231.8E-3	-1.138E-3	-834.7E-3	1.036E-3	12.32
48	2	23	299.8E-3	-29.68	-2.009E-3	19.25	1.781E-3	-66.47
49	3	31	1.677	-383.1E-3	-21.77E-3	-5.180	34.09E-3	29.06
47	3	22	1.715	-5.553	-5.697E-3	-12.14	9.247E-3	13.62
49	3	17	1.677	-383.1E-3	-21.77E-3	-5.180	-31.52E-3	30.25
46	2	23	299.8E-3	-29.68	-2.009E-3	19.25	1.781E-3	-66.47

Beam Property 8

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
52	1	17	-74.18E-3	-804.1E-3	-9.343E-3	-1.482	8.173E-3	8.508
53	2	10	-135.4E-3	80.25	-3.002E-3	-24.73	8.543E-3	140.3
50	1	9	-142.7E-3	3.054	-222.7E-6	-1.444	2.068E-3	-1.765
51	3	18	-1.305	5.812	-24.97E-3	7.374	37.45E-3	-20.66
52	3	17	-727.8E-3	-8.138	-46.10E-3	1.851	70.74E-3	-40.57
53	2	10	-135.4E-3	80.25	-3.002E-3	-24.73	8.543E-3	140.3
Minimum values in this output:								
50	3	9	-1.332	-9.214	-5.757E-3	-7.367	20.05E-3	20.11
50	3	9	-1.332	-9.214	-5.757E-3	-7.367	20.05E-3	20.11
52	3	17	-727.8E-3	-8.138	-46.10E-3	1.851	70.74E-3	-40.57
53	2	10	-135.4E-3	80.25	-3.002E-3	-24.73	8.543E-3	140.3
52	3	30	-727.8E-3	-8.138	-46.10E-3	1.851	-49.66E-3	-19.31
53	2	24	-135.4E-3	80.25	-3.002E-3	-24.73	703.0E-6	-69.30

Beam Property 9

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
57	3	29	1.996	25.86	-111.3E-3	6.220	126.0E-3	65.92
57	3	29	1.996	25.86	-111.3E-3	6.220	126.0E-3	65.92
54	3	24	1.350	-10.72	22.50E-3	-1.400	-26.47E-3	-44.83
56	2	30	234.5E-3	-37.82	1.614E-3	11.89	1.247E-3	-55.26
57	3	29	1.996	25.86	-111.3E-3	6.220	126.0E-3	65.92
55	2	12	383.0E-3	-111.6	-18.58E-3	8.800	-40.14E-3	208.5
Minimum values in this output:								
56	1	30	141.1E-3	-2.077	777.2E-6	2.407	888.6E-6	-9.913
55	2	25	383.0E-3	-111.6	-18.58E-3	8.800	15.08E-3	-122.8
57	3	29	1.996	25.86	-111.3E-3	6.220	126.0E-3	65.92
55	3	25	1.982	-25.87	-90.05E-3	-6.168	63.82E-3	-65.81
57	3	15	1.996	25.86	-111.3E-3	6.220	-205.0E-3	-10.97
55	2	25	383.0E-3	-111.6	-18.58E-3	8.800	15.08E-3	-122.8

Beam Property 10

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
61	3	15	1.091	-39.05	-167.5E-3	-7.172	281.0E-3	-59.66
58	2	11	-99.65E-3	138.3	8.490E-3	-16.77	-9.951E-3	180.8
58	3	11	-511.2E-3	24.82	36.06E-3	3.070	-38.20E-3	51.08
59	3	12	1.084	38.29	-111.4E-3	7.222	229.3E-3	58.60
61	3	15	1.091	-39.05	-167.5E-3	-7.172	281.0E-3	-59.66
58	2	11	-99.65E-3	138.3	8.490E-3	-16.77	-9.951E-3	180.8
Minimum values in this output:								
58	3	11	-511.2E-3	24.82	36.06E-3	3.070	-38.20E-3	51.08
61	3	15	1.091	-39.05	-167.5E-3	-7.172	281.0E-3	-59.66
61	3	15	1.091	-39.05	-167.5E-3	-7.172	281.0E-3	-59.66
60	2	16	-78.62E-3	74.75	556.9E-6	-17.11	-2.752E-3	112.3
61	3	28	1.091	-39.05	-167.5E-3	-7.172	-181.6E-3	48.19
59	2	26	226.0E-3	114.0	-29.73E-3	-619.6E-3	-19.32E-3	-214.7

BEAM & SPRING FORCES & MOMENTS

Beam Property 11

Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
64	3	14	892.4E-3	-43.40	265.7E-3	-9.440	-808.9E-3	-83.33
64	2	14	156.8E-3	77.24	61.88E-3	2.526	-118.5E-3	42.11
62	3	26	81.63E-3	-37.30	286.3E-3	-8.866	-288.3E-3	-74.05
62	2	26	-49.46E-3	-39.79	64.88E-3	10.52	-64.74E-3	23.38
62	3	13	81.63E-3	-37.30	286.3E-3	-8.866	843.7E-3	34.32
63	2	14	-62.62E-3	-92.13	55.08E-3	6.110	114.4E-3	185.2
Minimum values in this output:								
63	2	26	-62.62E-3	-92.13	55.08E-3	6.110	-46.63E-3	-82.45
63	2	26	-62.62E-3	-92.13	55.08E-3	6.110	-46.63E-3	-82.45
65	3	27	796.9E-3	42.64	-294.1E-3	9.194	298.4E-3	87.87
64	3	14	892.4E-3	-43.40	265.7E-3	-9.440	-808.9E-3	-83.33
65	3	13	796.9E-3	42.64	-294.1E-3	9.194	-838.3E-3	-82.99
64	2	27	156.8E-3	77.24	61.88E-3	2.526	86.86E-3	-176.8

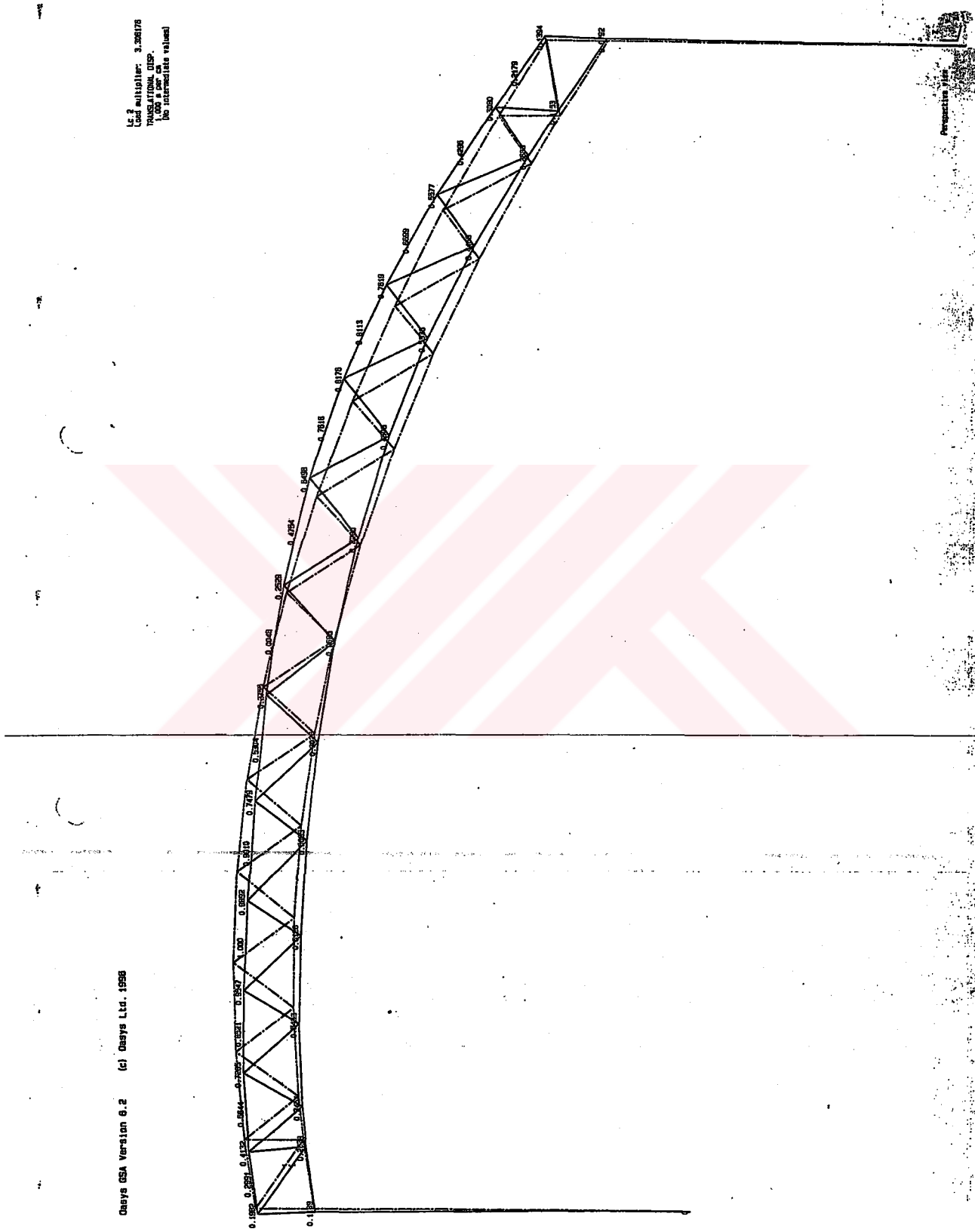
Beam Property 12

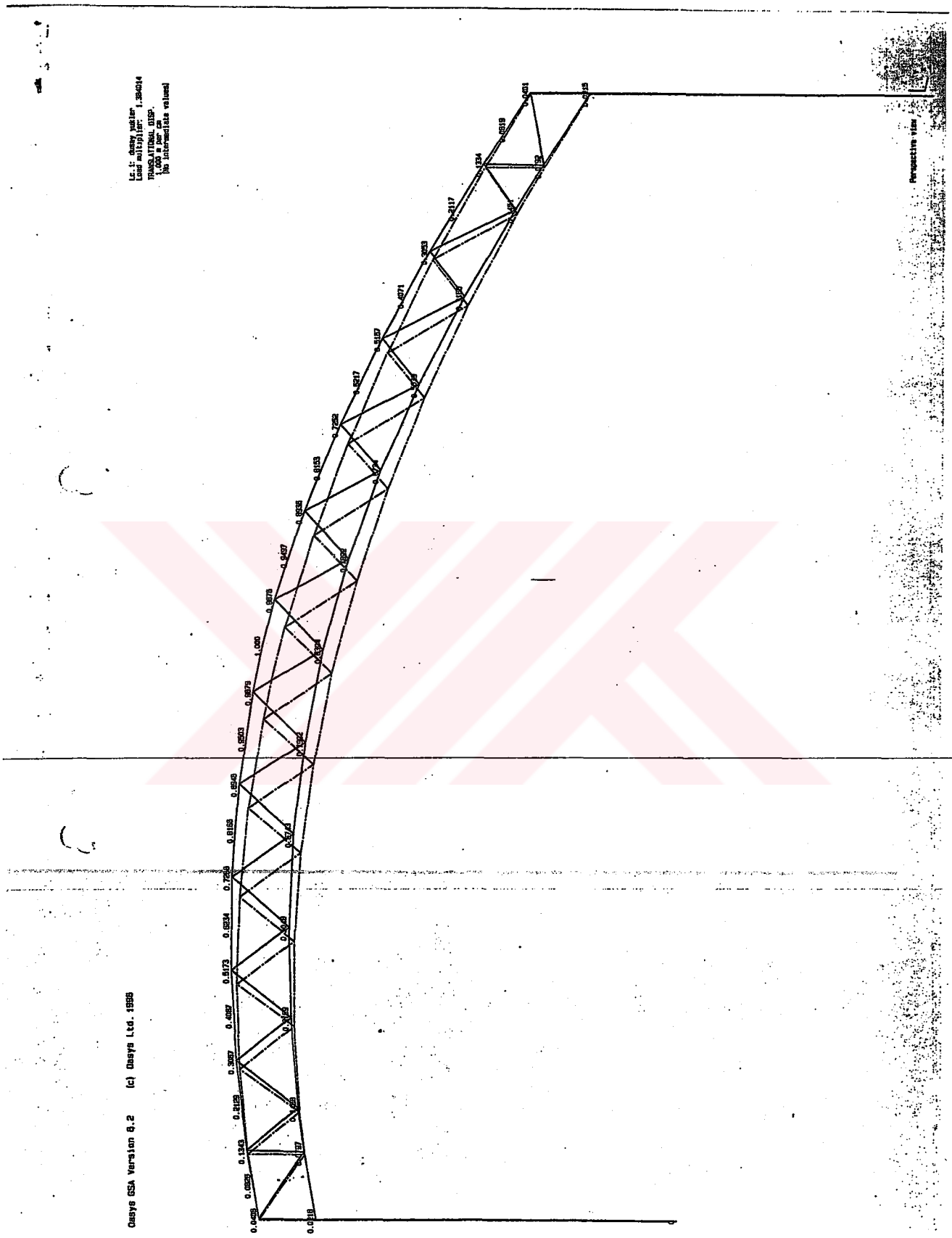
Elem no.	Load case	Node no.	Axial [kN] Fx	Shear [kN] Fy	Fz	Torsion [kNm] Mxx	Moment [kNm] Myy	Mzz
Maximum values in this output:								
90	3	1	2.089E-3	-17.97	-2.162	482.7	28.11	-837.4
91	2	3	-419.6E-6	39.63	387.2E-3	-693.5	-8.033	1.007E+3
91	3	3	-2.089E-3	-18.44	2.153	-483.9	-27.99	-846.3
90	3	1	2.089E-3	-17.97	-2.162	482.7	28.11	-837.4
90	3	1	2.089E-3	-17.97	-2.162	482.7	28.11	-837.4
91	2	3	-419.6E-6	39.63	387.2E-3	-693.5	-8.033	1.007E+3
Minimum values in this output:								
91	3	3	-2.089E-3	-18.44	2.153	-483.9	-27.99	-846.3
90	2	1	419.6E-6	-58.22	-389.1E-3	-923.9	8.056	-1.484E+3
90	3	1	2.089E-3	-17.97	-2.162	482.7	28.11	-837.4
90	2	1	419.6E-6	-58.22	-389.1E-3	-923.9	8.056	-1.484E+3
91	3	3	-2.089E-3	-18.44	2.153	-483.9	-27.99	-846.3
90	2	1	419.6E-6	-58.22	-389.1E-3	-923.9	8.056	-1.484E+3

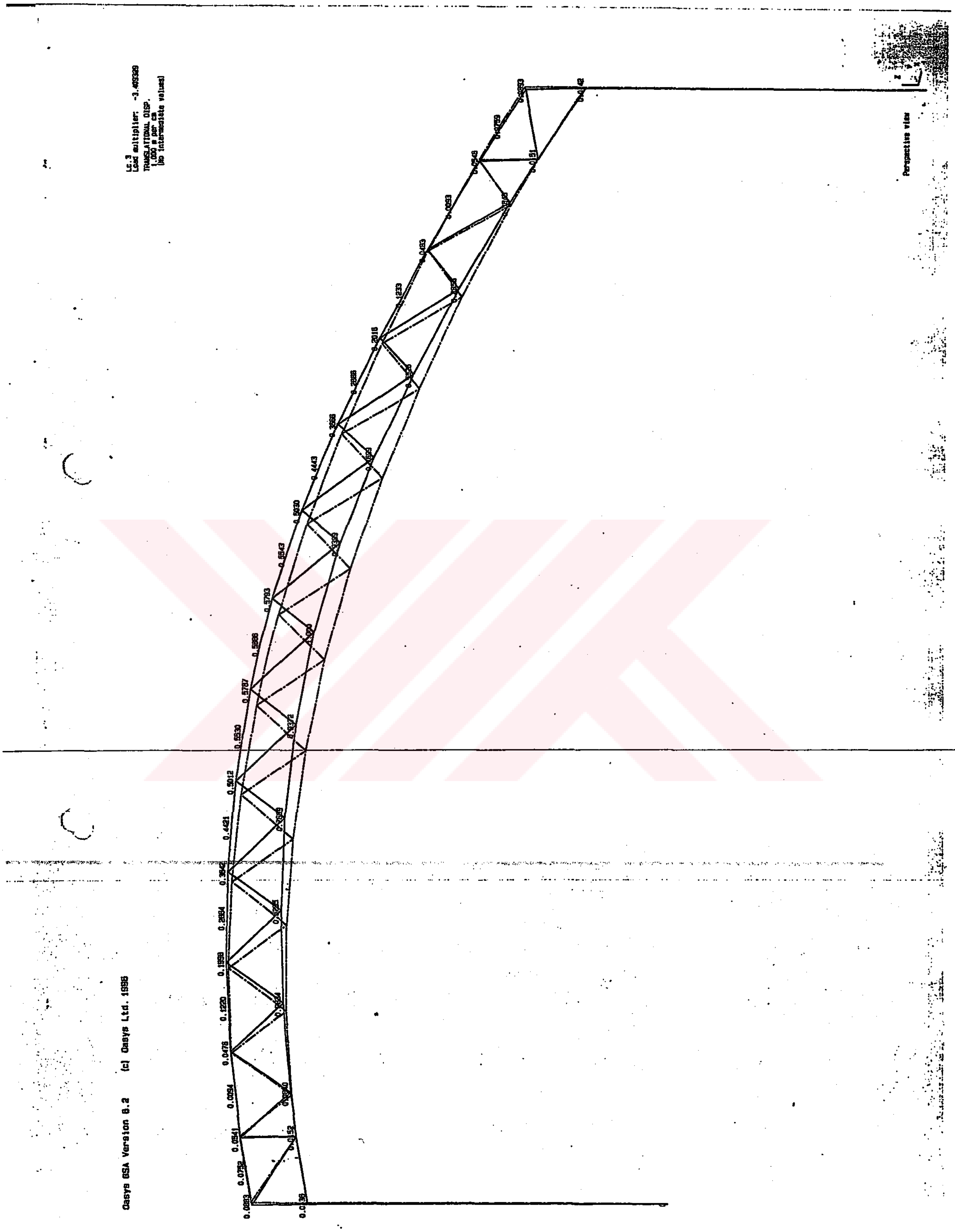
MODAL DETAILS

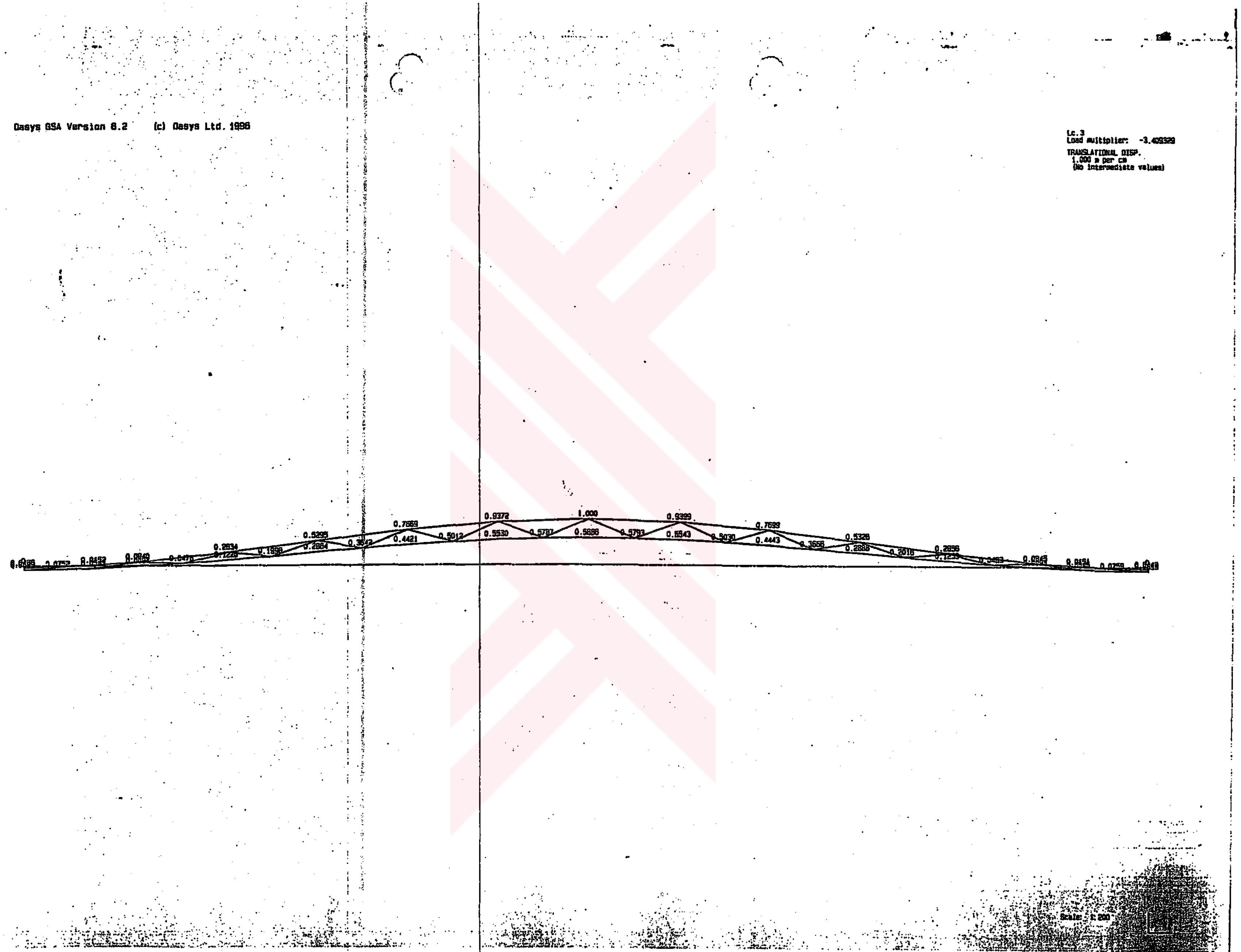
Loadcase results:

Loadcase 1	Buckling mode	Load multiplier =	1.384	
		Modal stiffness =	49.72	
		Error norm =	467.7E-3	
Loadcase 2	Buckling mode	Load multiplier =	3.306	
		Modal stiffness =	569.4	
		Error norm =	815.9E-3	
Loadcase 3	Buckling mode	Load multiplier =	-3.409	
		Modal stiffness =	205.8	
		Error norm =	412.1E-3	


Oasys GSA Version 8.2 (c) Oasys Ltd. 1998
Perspective view


LC 1: dummy yukler
Load multiplier: 1.384014
TRANSLATIONAL DISP.
Deformed shape
No intermediate values
Perspective view
Oasys GSA Version 8.2 (c) Oasys Ltd. 1998


Oasys GSA Version 8.2 (c) Oasys Ltd. 1996
LC.3
Load multiplier: -3.409329
TRANSLATIONAL DISP.
1.000 m per cm
(No intermediate values)
0.0883
0.0752
0.0541
0.0094
0.0476
0.1220
0.1998
0.2884
0.3642
0.4421
0.5012
0.5530
0.5787
0.5886
0.5793
0.5543
0.5030
0.4443
0.3668
0.2886
0.2016
0.1233
0.0483
0.0093
0.0546
0.0759
Perspective view
Z


Oasys GSA Version 8.2 (c) Oasys Ltd. 1998
Lc.3
Load multiplier: -3.409329
TRANSLATIONAL DISP.
1.000 m per cm
(No intermediate values)
0.7669
0.9372
1.000
0.9399
0.7699
0.5295
0.5326
0.2834
0.2856
0.4421
0.5012
0.5530
0.5787
0.5698
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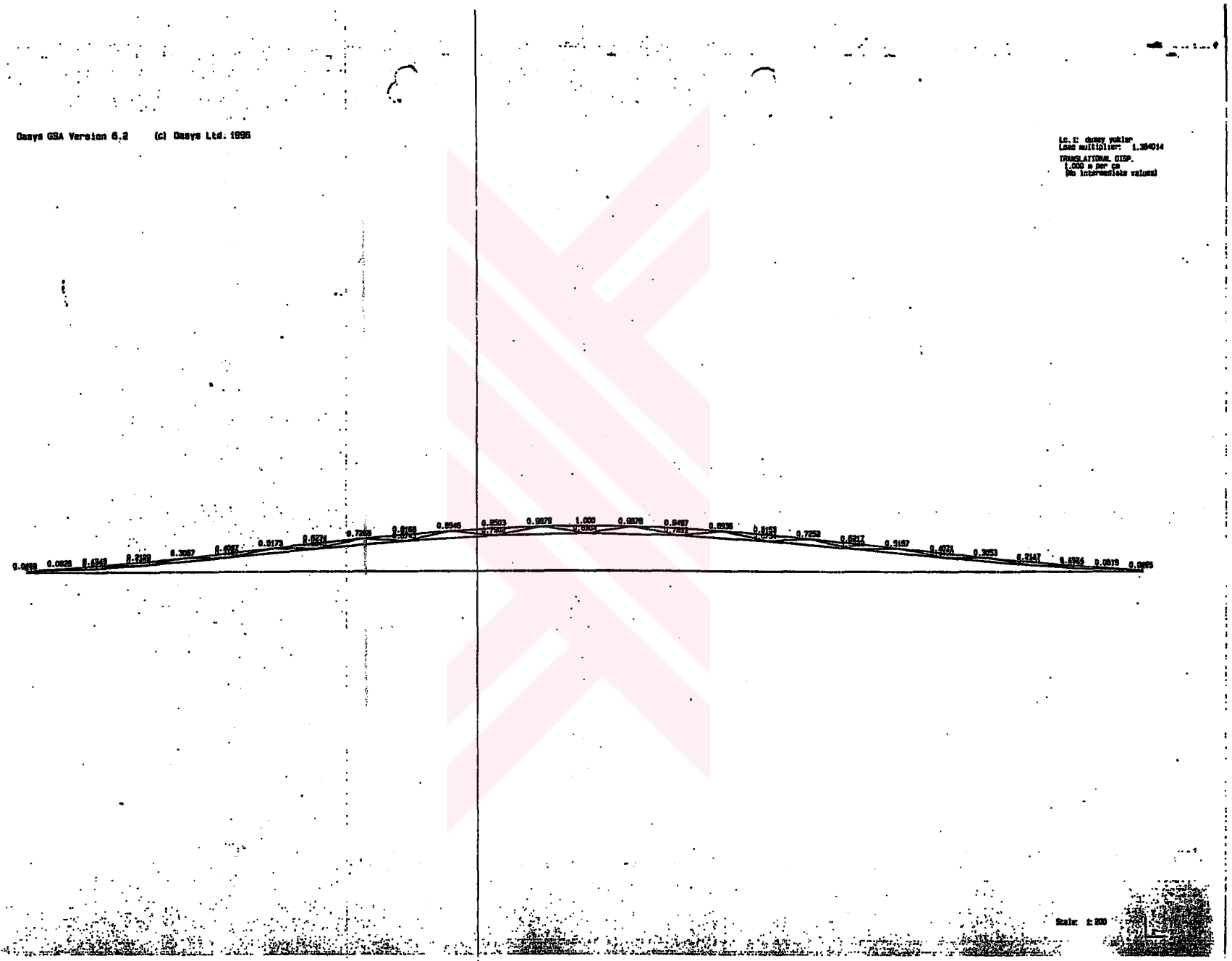
0.5543
0.5030
0.4443
0.1958
0.2016
0.0492
0.0454
Scale: 1:200


Oasys GSA Version 6.2 (c) Oasys Ltd. 1996
Lc.1: dummy roller
Load multiplier: 1.384014
TRANSLATIONAL DISP.
1.000 m per cm
(No intermediate values)
Scale: 1:200

ÖZGEÇMİŞ

1972 yılında İzmir'de doğdu. İlk, orta, lise öğrenimini İzmir'de tamamladı. Orta ve Lise öğrenimini tamamladığı İzmir Özel Türk Koleji Anadolu İngilizce Bölümü'nde 5 yıl arka arkaya devlet bursu kazandı. 1991 yılında girdiği Yıldız Üniversitesi Kocaeli Mühendislik Fakültesi Makina Mühendisliği Bölümü'nden 1996 yılında Makina Mühendisi olarak mezun oldu.

1996 yılından beri ELTEK Çelik A.Ş.'de Fabrika Müdür Yardımcısı olarak görev yapmaktadır.