SSCL-SR-1049

SUPERCONDUCTING SUPER COLLIDER

Computer-Aided Design OF THE Digital Footprint

July 1989

a joint venture
Kaiser Engineers, Inc.
Tudor Engineering Company
Keller & Gannon-Knight

Prepared under DOE Contract DE-AC02-85ER40230

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OF THE
Digital Footprint

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Appendices

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B. Coordinate Table

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1. INTRODUCTION

This report summarizes the design of the overall configuration of the tunnel and required land boundaries for the Superconducting Super Collider (SSC) at the Texas site. Design of the facility is based on a series of 834 points along the magnet centerlines which define the main tunnel configuration. These points, along with criteria developed during earlier stages of the project, were used for development of a land area boundary defined by approximately 2,000 coordinates joined by straight lines.

This configuration, the "digital footprint", was developed on an Intergraph computer-aided design system along with graphic data which characterizes the selected site in Texas. This combination of data has been used to prepare drawings showing the configuration of the digital footprint at the Texas site.

The information presented in this report has the following objectives:

- Describe the computer files used to prepare drawings of the digital footprint.
- Describe the sequence by which input data has been used to generate the files.
- Describe the method for transfer of computer data between the Central Design Group (CDG) and RTK, which can serve as a model for data transfer between other organizations.
- Provide background information on the Texas Coordinate System (TCS) as it applies to the SSC project.
- Provide background information on the use of computer-aided design software as it applies to the SSC project.
- Provide tabulated data on the contents of the files and a list of drawings prepared for use with these files.

This information has been arranged as follows:

Section 2 provides a brief description of the computer system at RTK which was used for development of the digital footprint.

Section 3 describes the procedure by which the lattice of magnets comprising the main ring, defined by a series of coordinates, was developed into a land boundary definition, which is called the digital footprint.

Section 4 describes the procedure by which the digital footprint is converted into the state plane coordinate system. An output table of coordinates is given in Appendix C.

Section 5 provides some additional information about the state plane coordinate system.

Section 6 discusses the methods for using the output from the coordinate conversion sequence in three-dimensional files.

Section 7 describes the files used to prepare general arrangement drawings and maps for the digital footprint at the Texas site.

Section 8 provides a description of additional computer programs used to convert coordinates.

The appendices consist of: (A) a list of reference documents pertaining to state plane coordinates, (B) a list of digital footprint coordinates, and (C) criteria for computer-aided engineering file arrangements.

2. SURVEY DATA MANAGEMENT

The following describes the method for transfer, processing, and storage of survey data for the SSC project. Survey data consists mainly of coordinates for points used to describe the configuration of the facility. Two coordinate systems are presently in use for listing these coordinates. The first system has been named the ISP coordinate system because it was adopted for the Invitation for Site Proposals. The design of the lattice of superconducting magnets and other critical points are listed in the ISP coordinate system. The second system consists of the Texas state plane coordinate system extending over the site. The state plane coordinate system will be used to locate key components of the facility with respect to local features.

Data from the ISP coordinate system must be used as the basis for the detailed layout of components as well as the description of the land requirements. This made it necessary to transfer, convert, and prepare calculations from data which was shared by CDG and RTK.

The conversion of survey data and the flow of information generally conformed to the following sequence:

- Generation of data by the CDG.
- Transmission of data to RTK.
- Loading of data into a coordinate geometry database.
- Computations using coordinate geometry and interactive graphics software.
- Conversion of data into the state plane coordinate system.
- Plotting of data into graphics design files.
- Output of information into data files.
- Transmission of data to CDG.

The following sections contain a detailed description of these procedures.

2.1 GENERATION OF DATA AT THE CENTRAL DESIGN GROUP

Data transferred to RTK was stored in ASCII text files in a VAX system at CDG. The files consisted of columns containing: 1) the point number, 2) the Y-coordinate, 3) the X-coordinate, 4) the Z-coordinate (optional), and 5) other optional data. Header data may be included in order to identify the file and provide other information associated with the file such as the units.

Dimensional units of CDG files consisted of international feet. The point number consisted of an integer and contained no alpha characters. Columns were separated by a minimum of one blank space.

A skeletal beamline lattice was created by CDG and made available for use by RTK to create the detailed footprint.

2.2 TRANSMISSION OF DATA TO AND FROM RTK

Data has been transferred to and from RTK by telephone. The configuration of the transfer equipment consists of a 9600 Baud workstation port connected to a PC at LBL (see Figure 2-1). Kermit protocol exists on both the VAX cluster at CDG and at RTK.

The transfer procedure is as follows:

- The connected computer will use KERMIT

  KERMIT> SET PORT 2

  KERMIT> SET BAUD 9600

  KERMIT> CONNECT

- Connection to VAX

  After VAX answers and connects, press <carriage return> and enter:

  CSA (or a specific VAX such as CSA4)

  This selects a VAX for login and issues a standard login prompt.

  Username: NAME (as given by LBL)
  Password: (as given by LBL)

  This login should place the user in the directory required for file transfer.

- Execute VAX KERMIT

  $ KERMIT

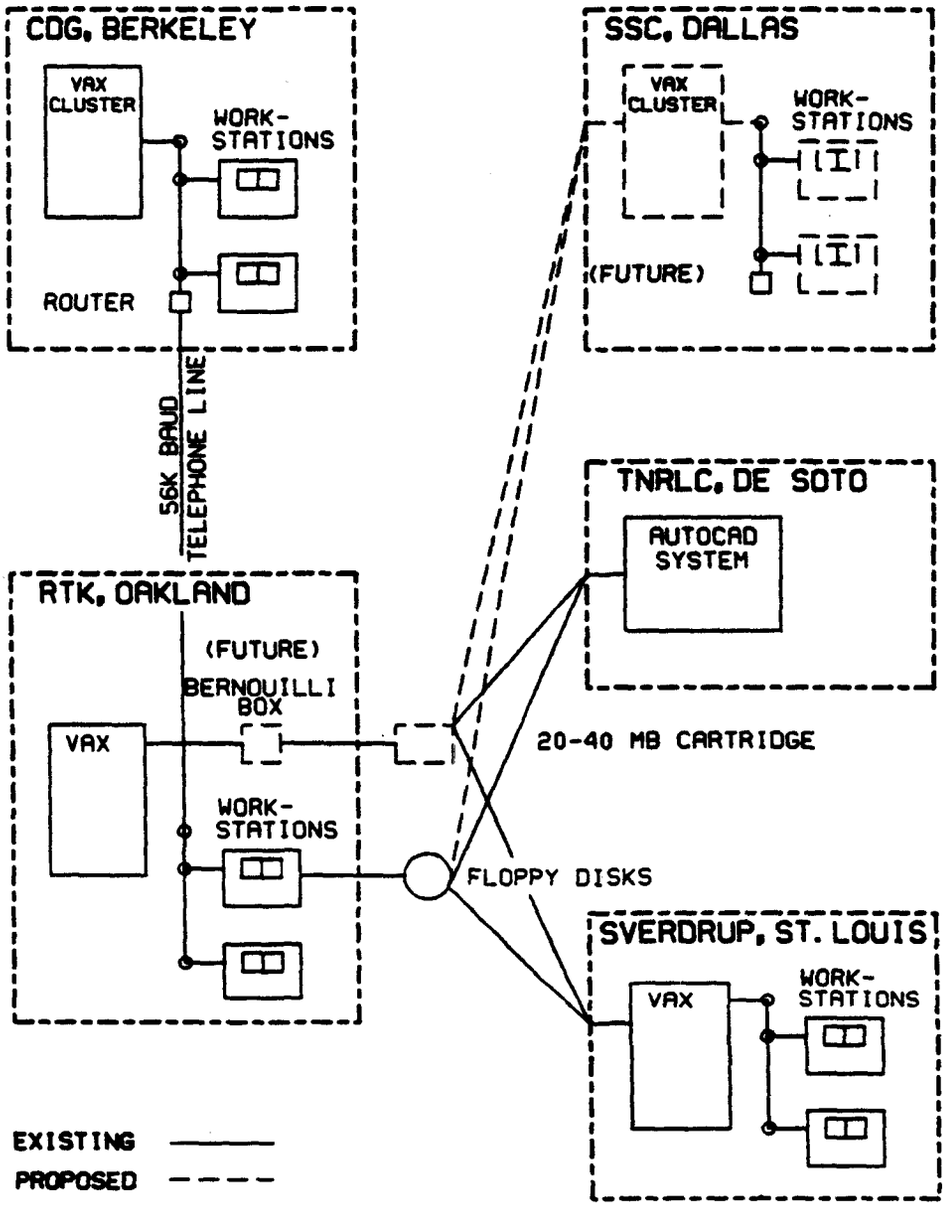
- Place VAX in server mode

  KERMIT - 32> SERVER

  Use specified escape sequence to return to PC KERMIT mode such as (control) (minus) followed by (C).

Figure 2-1

COMPUTER SYSTEM CONFIGURATION



- Request the file

  ```
  KERMIT> GET  filename.ext     (to transfer from VAX to PC)
  KERMIT> SEND filename.ext     (to transfer to VAX from PC)
  ```

- Release VAX

  ```
  KERMIT> FINISH
  KERMIT> BYE
  KERMIT> EXIT
  C>
  ```

- Transfer from PC to RTK VAX

  (These are standard KE procedures.)

The received files were copied into a duplicate file which was edited as required for further processing, i.e., loading into a survey database for coordinate geometry computations or translation into the state plane coordinate system.

2.3 LOADING OF DATA INTO THE COORDINATE GEOMETRY DATABASE

The system to be used for storage and computations for survey data consists of the Interactive Coordinate Geometry Subsystem (ICS) which is a software package by Intergraph Corporation. To use this system, a database file is created for the storage of point numbers. After the database is created, the ICS program is activated and the table of point numbers is entered using the "INPUT FILE" command. Output files may also be created during the time ICS is active. These output files may be retained as documentation of the contents of the database or for transmission of data to other systems.

Information which has been entered into the database may be used in computations using (ICS) coordinate geometry software or may be plotted into graphics files and used to prepare drawings or to do additional computations using Interactive Graphics Design Software (IGDS). Coordinates which are generated using IGDS are subsequently transferred to the ICS database.

2.4 COMPUTATIONS USING COORDINATE GEOMETRY SOFTWARE

Points in the ICS system were stored in the database with a specific point identification number, coordinates, and associated graphics features which were used in plotting points. Figures are also stored in the database. These consist of associations of points which may define a series of line segments and circular or spiral curves.

ICS operates in both the interactive mode (using an attached graphics file) or in the batch mode. In the interactive mode, commands used to initiate a computation may be selected from a table or screen menu or may be keyed in. After the selection of a command, the data required

for the computation must be keyed in using a prescribed sequence. For example, to store a new point with known coordinates, the command "STORE" is either keyed in or selected from a menu. The required data consists of: 1) the point identification, 2) the north (Y) coordinate, 3) the east (X) coordinate, and 4) the elevation.

The sequence determines the required arrangement of input files because the "STORE" command activates the input of these files and looks for the point data in the prescribed sequence.

2.5 CONVERSION TO STATE PLANE COORDINATES

ASCII files containing lists of points with coordinates in the ISP coordinate system were converted into the state plane coordinate system using a program based on existing programs obtained from the National Oceanic and Atmospheric Association with modifications inserted to suit the requirements of the SSC project. The procedure for conversion is described in Section 4.

The programs are available on the RTK VAX system in the DCL environment. Input may be obtained from a file such as an ICS output file and may be processed in batch mode. Output may be obtained as an output file with only the point numbers and converted coordinates or with intermediate values generated during the computation. The output may be obtained as ASCII text files which may be transferred to CDG or placed into an ICS database.

2.6 PLOTTING OF DATA INTO GRAPHICS FILES

The ICS program enables the selective plotting of points and figures into a graphics file. This may be accomplished with or without the file actively displayed at a graphics terminal. The plotted points may be used for additional graphic design, and the new points may be stored in the database.

2.7 OUTPUT IN DATA FILE

Output files may be created while the ICS program is active. They may be used as a record of the computations performed while the program is active, or they may be used as a table of the point and graphic elements included in the database.

Output files consist of ASCII text files with a nine-character file name followed by a three-character extension.

2.8 TRANSFER OF DATA TO CDG

The procedure for transfer of data files from RTK to CDG is similar to that of transferring data files from CDG to RTK. ALL ASCII text files are suitable for transfer.

2.9 GRAPHICS FILE ARRANGEMENTS

Several methods are available for arranging graphics files using Intergraph software. These arrangements make use of "reference files" in which several discrete files of graphic data may be joined together for display at the terminal or for plotting, while the graphic elements themselves are protected from being deleted or revised.

Reference file arrangements are analogous to drawings which have been prepared on multiple layers of transparent film. The files may be translated or rotated with respect to one another, while the drawing data itself remains fixed to the film on which it was drawn. The computer files, however, may also be scaled with respect to one another.

Each graphics file contains a coordinate system which may be set to any desired range of values. Once the origin is defined, all points within the file take on the appropriate coordinate values within the file. Files may, therefore, be set for the ISP coordinate system or the state plane coordinate system.

Two basic techniques for using graphics files for locating the footprint stand out as being the most advantageous. The first method is appropriate for conceptual design of the footprint at the selected site and may be termed the "approximate method." The second method is appropriate for precise determination of the footprint in the state plane coordinate system. The approximate method will yield coordinate values which are within 1.5 ft of the exact values. The precise method can yield coordinates which are within the required accuracy for land acquisition.

2.10 APPROXIMATE FOOTPRINT POSITIONING

This method uses a footprint file in the ISP coordinate system along with a second reference file containing the graphic database for the site in the state plane coordinate system. These two files are attached as reference files to a third file used for plotting the combination of the files. The footprint is not converted point-by-point into the state plane coordinate system. Instead, the reference file is scaled and rotated to represent its position at the site. The source of the approximation is the fact that one scale factor must be used for the whole footprint. This factor is only exact for the latitude at the center of the footprint. Points north of the footprint are too far apart and points south of the footprint are too close together. The error may be as much as 1.5 ft.

2.11 FOOTPRINT POSITIONING BY POINT CONVERSION

In order to obtain a layout of the footprint in a graphics file with a higher degree of accuracy, the data may be converted point by point into the state plane coordinate system. The converted points may be plotted into a file in the state plane coordinate system. This file may be attached using a one-to-one scale ratio to the plotting file.

Points may be connected by lines defining the boundary of the footprint after conversion. For additional information about the accuracy of the point conversion refer to Section 5.5.

2.12 DOCUMENTATION OF GRAPHICS FILES

Selected combinations of reference files may at any time be copied into discrete files in order to serve as a record of a footprint sited within the map database. These files may be taped and filed as a permanent record while the active files are further manipulated. This has not been done as yet by RTK. Files have, however, been copied for conversion to AutoCad format for transfer to TNRLC. These files are noted in the drawing lists in Section 7.

3. DESIGN OF THE DIGITAL FOOTPRINT

The boundary coordinates which were used to define the land area requirements for the project were calculated according to the following procedure using 834 points along the lattice. The relationship of the lattice points to the tunnel is shown in Figure 3-3. The land boundary points were measured from the lattice points which refer to the center of the magnets. Their Z-distances are also used for establishing elevations (see Section 4).

- Points along the lattice, numbered 1 through 834, were obtained from the text file LIGHTSUR.DAT. The file was copied and the copy was edited to conform to requirements for an input file for the ICS database. This consists of removing all text above the coordinate list, adding the word "STORE" above the list, and removing the columns for the S-Index and Angle (Theta). The file was named LIGHTSUR.OUT.

- A graphics file, DIGITAL.DGN was prepared for plotting coordinates and figures. ICS software was accessed while displaying the graphics file. The database TEMPLATE.DBS was attached to the graphics file.

- The lattice coordinates were placed in the database using the INPUT FILE command followed by LIGHTSUR.OUT.

- Inner boundary coordinates were computed using the PARALLEL FIGURE command. This resulted in points numbered 1001 through 1834 which define a figure 150 ft inside from the lattice points. The resulting inner boundary includes the outer boundary of the bypass area.

- Other boundaries were calculated using the same procedure as in Item 3.4. Distances of 850 ft and 1,150 ft were used in the appropriate regions based on land area requirements (see Figure 3-1). Outside points are numbered 2001 through 2834.

- Points on the A, B, and C area boundaries were assigned numbers 901 through 923 based on dimensions from the ISP footprint. Locations of area boundaries A through K are shown in Figure 3-2.

- The inner bypass area boundary was determined after noting that the outer bypass area points fall very close to the ISP footprint boundary in that area. It was assumed that the inner bypass boundary points may be calculated as points along the ISP footprint area which has a radius of 111,165 ft. This arc was used to calculate 88 points on the arc plus two points at the upper and lower intersections of the bypass arc and the inner ring.

Figure 3-1

DIGITAL FOOTPRINT POINT NUMBERS

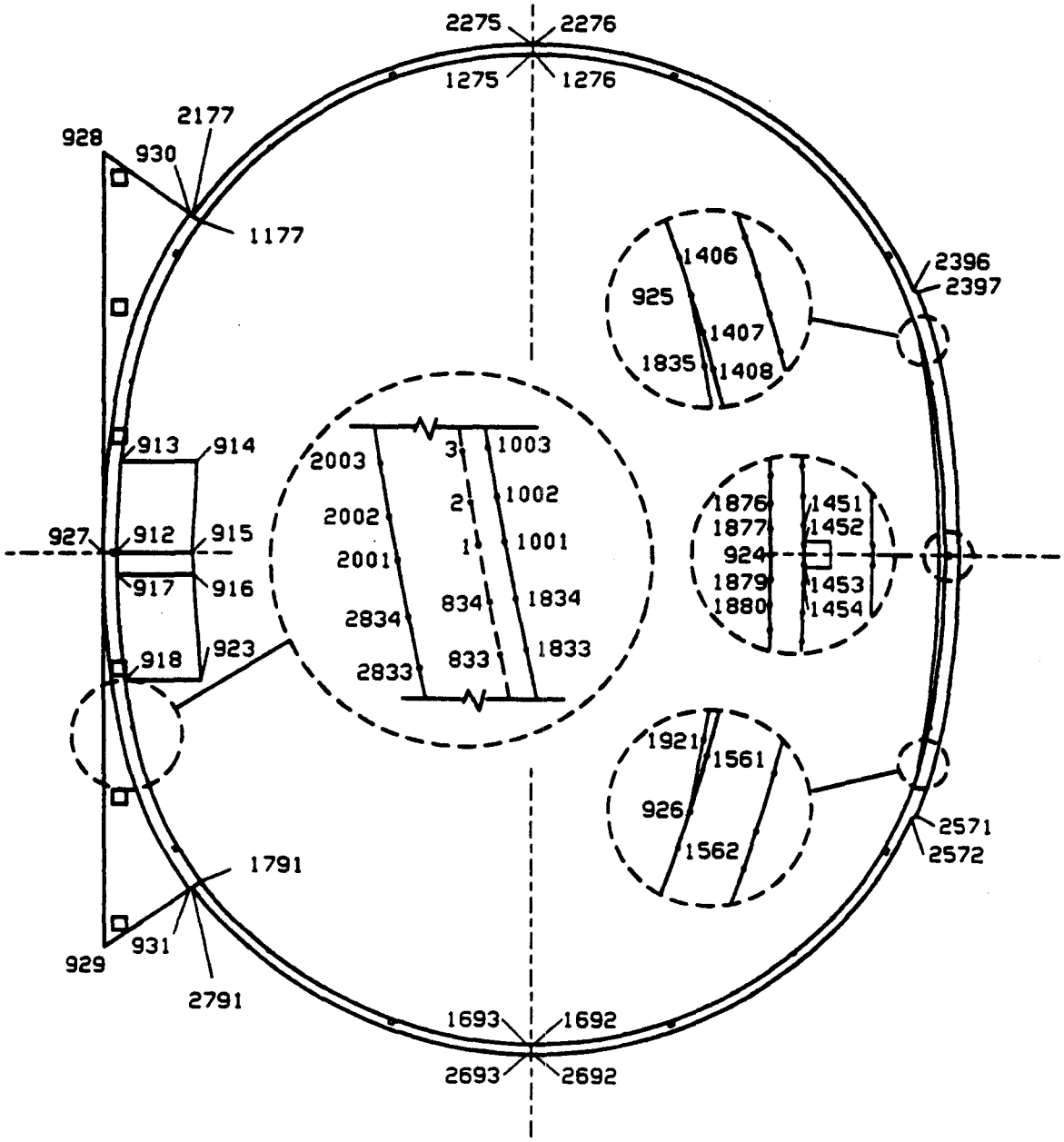


Figure 3-2

LAND AREA DESIGNATIONS

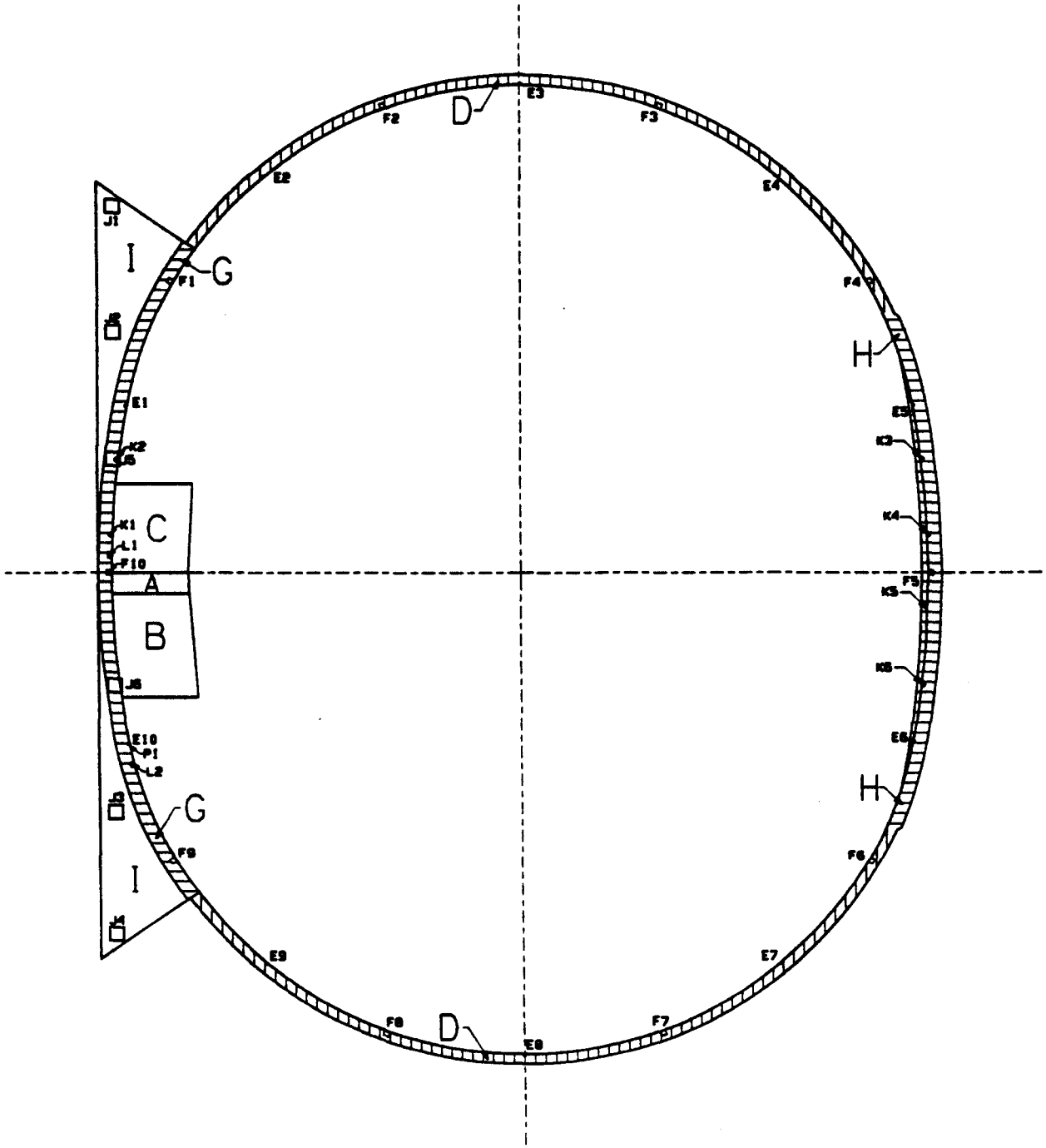
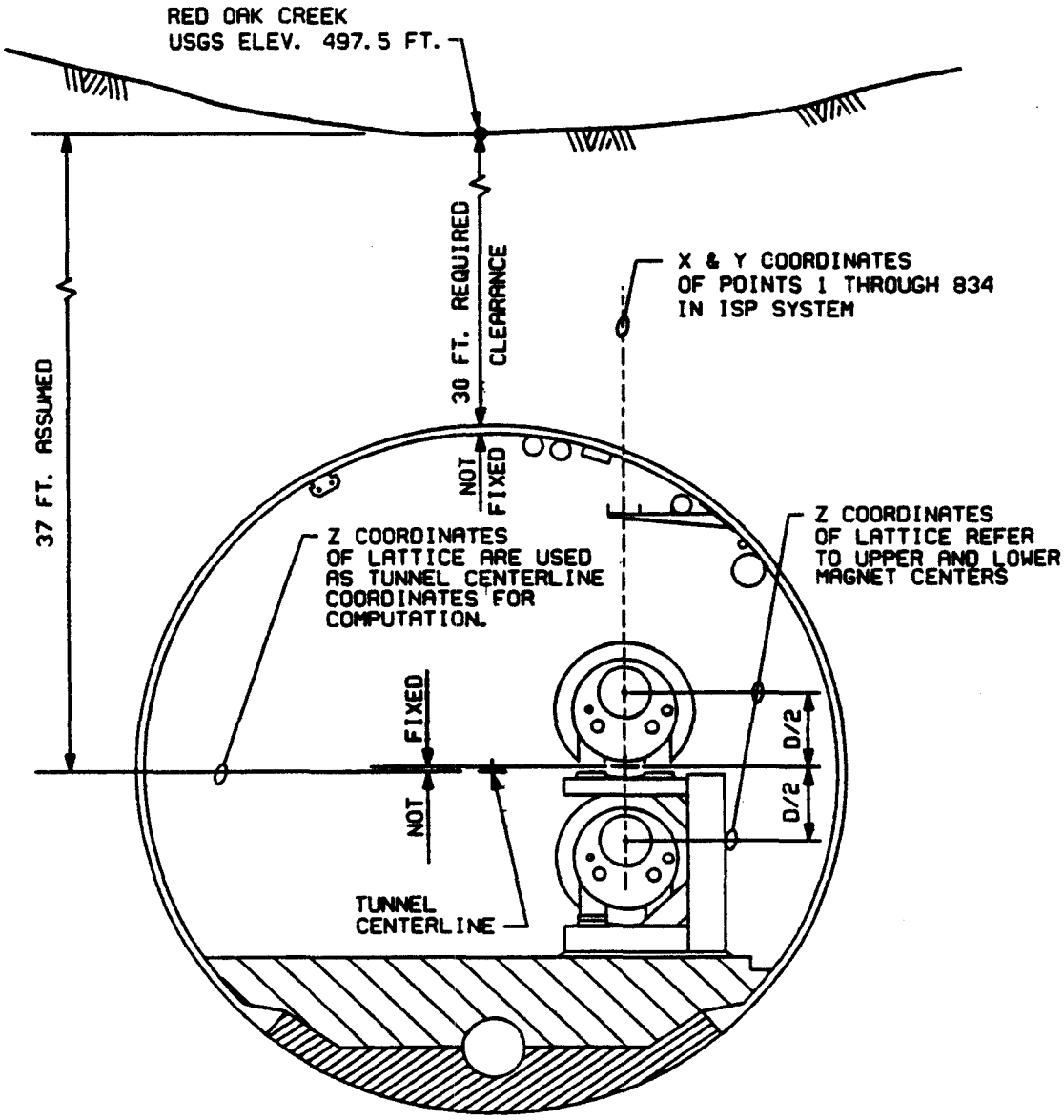


Figure 3-3

LATTICE COORDINATES



- The "left" boundary of the I area was defined by first determining the intersection with the Y-axis of two points, 2045 and 2046, above and below the axis. The intersection point 927 was used to determine the upper and lower apices of the I area by locating points 928 and 929 a distance of 38,680 ft above and below point 927 with the same X-coordinate.

- The upper and lower I area boundaries were selected as lines from points 928 to 2177 and from points 929 to 2791.

- The upper outer G area boundary was modified by extending a line from points 2175 through 2176 to its intersection with the line from 928 to 2177.

- The lower G area boundary was modified by extending a line from points 2793 through 2792 to its intersection with the line from points 929 to 2791.

- The J areas were located as sets of four corner points numbered 932 through 955. Coordinates were determined using ISP footprint dimensions beginning from point 927.

- E and F areas were located as follows:

Boundary	Location
E3	Centered on B/C*
F3	Centered on C50
E4	Centered on C/D
F4	Centered on D50
E5	Used ISP location**
F5	Used ISP location
E6	Used ISP location
F6	Centered on E50
E7	Centered on E/F
F7	Centered on F50
E8	Centered on F/G
F8	Centered on G50
E9	Centered on G/H
F9	Centered on H50
E10	Used ISP location
F10	Used ISP location
E1	Used ISP location
F1	Centered on A50
E2	Centered on AB
F2	Centered on B50

* B/C, C50, etc. are CDG designations for points on the lattice which were transferred to RTK prior to the 834 lattice points in the file RED.IN (10/13/88).

** Lattice points did not establish new locations for these areas. The ISP footprint was therefore used for locating these areas.

- The following Tables 3-1 and 3-2 identify point numbers used in the digital footprint. Computed coordinates are given in the Appendix.

Table 3-1

POINT SUMMARY

Point Number	Description
1 - 834	Lattice coordinates received 10/27/88. File name: LIGHTPNT.DAT converted to LIGHTPNT.OUT
835 - 839	(Not used)*
840 - 879	Boundaries of E3 - F7 areas
880 - 900	(Not used)
901 - 931	A, B, C, and I area boundaries
932 - 955	J area boundaries
956	Bypass arc at Y = 100,000
957 - 959	(Not used)
960 - 999	E8 - F2
1000	(Not used)
1001 - 1834	Inside G, H, and D area boundaries 150 ft from lattice (excludes bypass crescent)
1835 - 1877	Upper bypass points
1878	Bypass arc at Y = 100,000
1879 - 1921	Lower bypass points
1922 - 2000	(Not used)
2001 - 2176	G area, outer boundary 1,150 ft from points 1 - 176
2177 - 2396	D area, upper arc, outer boundary 850 ft from points 177 - 396

Table 3-1 (Cont'd)

POINT SUMMARY

Point Number	Description
2397 - 2571	H area, outer boundary 1,150 ft from points 397 - 571
2572 - 2791	D area, lower arc, outer boundary 850 ft from points 572 - 791
2792 - 2834	G area, outer boundary 1,150 ft from points 792 - 834
2835 - 2836	(Not used) X = 0, Y = 0
2837 - 10099	(Not used) (No value assigned)
10100 - 10321	Points used in the previous 22-point calculation from the file RED.IN

* Unused points assigned X = 0, Y = 0 for continuity of numbering in batch programs.

Table 3-2

INDIVIDUAL POINT DESCRIPTIONS

Point No.	Location	Description	Comment
835		0, 0	
836		0, 0	
837		0, 0	
838		0, 0	
839		0, 0	
840	E3 (B/C)	NW	
841		NE	
842		SE	
843		SW	
844	F3 (C50)	NW	
845		NE	
846		SE	
847		SW	
848	E4 (C/D)	N	
849		E	
850		S	
851		W	
852	F4 (D50)	N	
853		E	
854		S	
855		W	
856	E5	NW	Coincides with 1420
857		NE	
858		SE	
859		SW	
860	F5	NW	
861		NE	
862		SE	
863		SW	
864	E6	NW	Perp. bisector (1548 - 1549)
865		NE	
866		SE	
867		SW	
868	F6 (E50)	N	
869		E	
870		S	
871	F6 (E50)	W	
872	E7 (E/F)	N	
873		E	
874		S	

Table 3-2 (Cont'd)

INDIVIDUAL POINT DESCRIPTIONS

Point No.	Location	Description	Comment
875		W	
876	F7 (F50)	NW	
877		NE	
878		SE	
879		SW	
880		0	E8 @ point 960
881		0	
882		0	
883		0	
884		0	
885		0	
886		0	
887		0	
888		0	
889		0	
890		0	
891		0	
892		0	
893		0	
894		0	
895		0	
896		0	
897		0	
898		0	
899		0	
900		0	
901		Center (Y=100,000, X=100,000)	*
902		ISP footprint centers of arcs	*
903		ISP footprint centers of arcs	*
904		ISP footprint centers of arcs	*
905		ISP footprint centers of arcs	*
906		ISP footprint centers of arcs	*
907		Tangent points of ISP arcs	*
908		Tangent points of ISP arcs	*

Table 3-2 (Cont'd)

INDIVIDUAL POINT DESCRIPTIONS

Point No.	Location	Description	Comment
909		Tangent points of ISP arcs	*
910		Tangent points of ISP arcs	*
911		I area at Y=100,000	*
912			Redefined**
913			Redefined**
914			Redefined**
915			Redefined**
916			Redefined**
917			Redefined**
918			Redefined**
919		I area boundary corner	*
920		I area boundary corner	*
921		I area boundary corner	*
922		I area boundary corner	*
923		B area corner	*
924		Y at bypass arc	
925		Bypass arc, upper intersection	
926		Bypass arc, lower intersection	
927		I area at Y (Y=100,000)	
928		I area at top, ISP length	
929		I area at bottom, ISP length	
930		I area at upper outer arc	
931		I area at lower outer arc	
932	J1 area	NW	
933	J1 area	NE	
934	J1 area	SE	
935	J1 area	SW	
936	J2 area	NW	

* Superseded by 834 point computation
** A, B, and C area boundaries redefined for 834 point footprint by using dimensions from the ISP footprint

Table 3-2 (Cont'd)

INDIVIDUAL POINT DESCRIPTIONS

Point No.	Location	Description	Comment
937	J2 area	NE	
938	J2 area	SE	
939	J2 area	SW	
940	J5 area	NW	
941	J5 area	NE	
942	J5 area	SE	
943	J5 area	SW	
944	J6 area	NW	
945	J6 area	NE	
946	J6 area	SE	
947	J6 area	SW	
948	J3 area	NW	
949	J3 area	NE	
950	J3 area	SE	
951	J3 area	SW	
952	J4 area	NW	
953	J4 area	NE	
954	J4 area	SE	
955	J4 area	SW	
956		Bypass arc at Y	
957		0	
958		0	
959		0	
960	E8 (F/G)	NW	
961	E8	NE	(F/G)
962		SE	
963		SW	
964	F8	NW	(G50)
965		NE	
966		SE	
967		SW	
968	E9	N	(G/H)
969		E	
970		S	
971		W	
972	F9	N	(H50)
973		E	
974		S	
975		W	

Table 3-2 (Cont'd)

INDIVIDUAL POINT DESCRIPTIONS

Point No.	Location	Description	Comment
976	E10	NW	Near 1002
977		NE	
978		SE	
979		SW	
980	F10	NW	
981		NE	
982		SE	
983		SW	
984	E1	NW	
985		NE	
986		SE	
987		SW	
988	F1	N	
989		E	
990		S	
991		W	
992	E2	N	
993		E	
994		S	
995		W	
996	F2	N	
997		E	
998		S	
999		W	
1000		O	
10100 - 10121		Lattice points from CDG on 10/13/88; keyed in from hardcopy from file RED.IN	
10200 - 10221		Inner arc points 150 ft from 10100 - 10121	
10300 - 10321		Outer arc points 850 ft and 1,150 ft from points 10100 - 10121	

4. CONVERSION OF DATA TO THE TEXAS COORDINATE SYSTEM

This section outlines the procedure by which the digital footprint is converted into the Texas Coordinate System, North Central Zone, NAD 1927. The procedure for developing the digital footprint is described in Section 3.

4.1 ISP COORDINATE SYSTEM

The footprint, including the lattice of 834 points along the magnet centerline and the boundary corners which define the land requirements for the project are first developed in a three-dimensional Cartesian coordinate system. This system is defined by assuming that the center of the lattice has the coordinates of X = 100,000, Y = 100,000, and Z = 0.

The dimensional units are International Feet (IF). The system has been named the ISP coordinate system because it was first used during the preparation of the Invitation for Site Proposals. Most of the lattice coordinates in this system have a Z-coordinate of zero. Thus, most of the lattice coordinates and all boundary coordinates are located in a plane at Z = zero. This is referred to as the "plane of the footprint."

The ISP coordinate system has many advantages for defining the location of various components of the project. All distances and angles in the coordinate system correspond exactly to the true distances and angles between the components of the project. Conversion to other systems is required, however, to adapt the geometry expressed in the ISP system to the Texas site. The boundary corners for the footprint, for example, must be determined in the Texas coordinate system in order to locate them in reference to existing monuments whose coordinates in this system have been determined.

4.2 CRITERIA FOR STATE PLANE COORDINATE CONVERSION

Conversion to the Texas Coordinate System, North Central Zone, NAD 1927, has been done based on the following criteria established on February 17, 1989.

- The center of the lattice has the following horizontal coordinates:

  X - 2,212,866.3200
  Y - 253,713.1100.

- The obliquity, defined as the <u>Grid</u> bearing of the ISP Y-axis is N 13° 16′ 12" W.

- The dip (or tilt) of the plane of the lattice is 0° 13′ 48.7" (0.23019444 degrees).

- The strike (rotation axis of dip) has a True bearing of N 28° 00′ 43" E (see Section 4.4).

- The elevation of the lattice must be set to provide 30 ft minimum cover over the main tunnel.

4.3 SUMMARY OF PROCEDURE FOR CONVERSION

The procedure and assumptions used for conversion from the ISP system to the Texas Coordinate System (TCS), North Central Zone, NAD 1927, may be summarized as follows. Additional information about the conversion steps is provided in Section 4.4.

4.3.1 Stage 1

The axis of the plane of the footprint is first rotated through the dip angle about the strike axis to produce a modified ISP coordinate system in which elevations vary from +180 ft to -180 ft. The center of the footprint has the coordinates X = 100,000, Y = 100,000, Z = 0 at this stage. The Z-axis of the ISP system is inclined from the "vertical" (the Z-axis of the modified ISP system) by the tilt angle in the direction of the dip (see Figure 4-1).

4.3.2 Stage 2

The coordinates developed in Stage 1 are translated "upward" (in the direction of the positive Z-axis of the modified ISP system) to an elevation which has been calculated to provide the required clearance of 30 ft over Red Oak Creek on the north side of the footprint (see Figures 4-2 and 4-3). The Z translation distance is computed only for the center point but is applied to all points. The center point elevation is calculated based on the National Geodetic Vertical Datum of 1929 (NGVD 1929).

4.3.3 Stage 3

In this stage, the Z-coordinates of points in the modified ISP system are converted to NGVD 1929 elevations. This requires that the Z-coordinate measured from a plane (Z = 0) in the modified ISP system is converted to a distance from the spheroid at elevation zero. This may be termed a curvature correction because it compensates for the curvature of the spheroid.

The correction varies from zero at the center to over 55 ft at points farthest from the center. The center correction is zero because, by definition, the center is already positioned at its correct USGS elevation.

4.3.4 Stage 4

In this stage, the Modified ISP and Y-coordinates are determined in the TCS. This is accomplished by first positioning the center of the footprint at the designated location given in TCS coordinates and

Figure 4-1

MODIFIED ISP COORDINATE SYSTEM

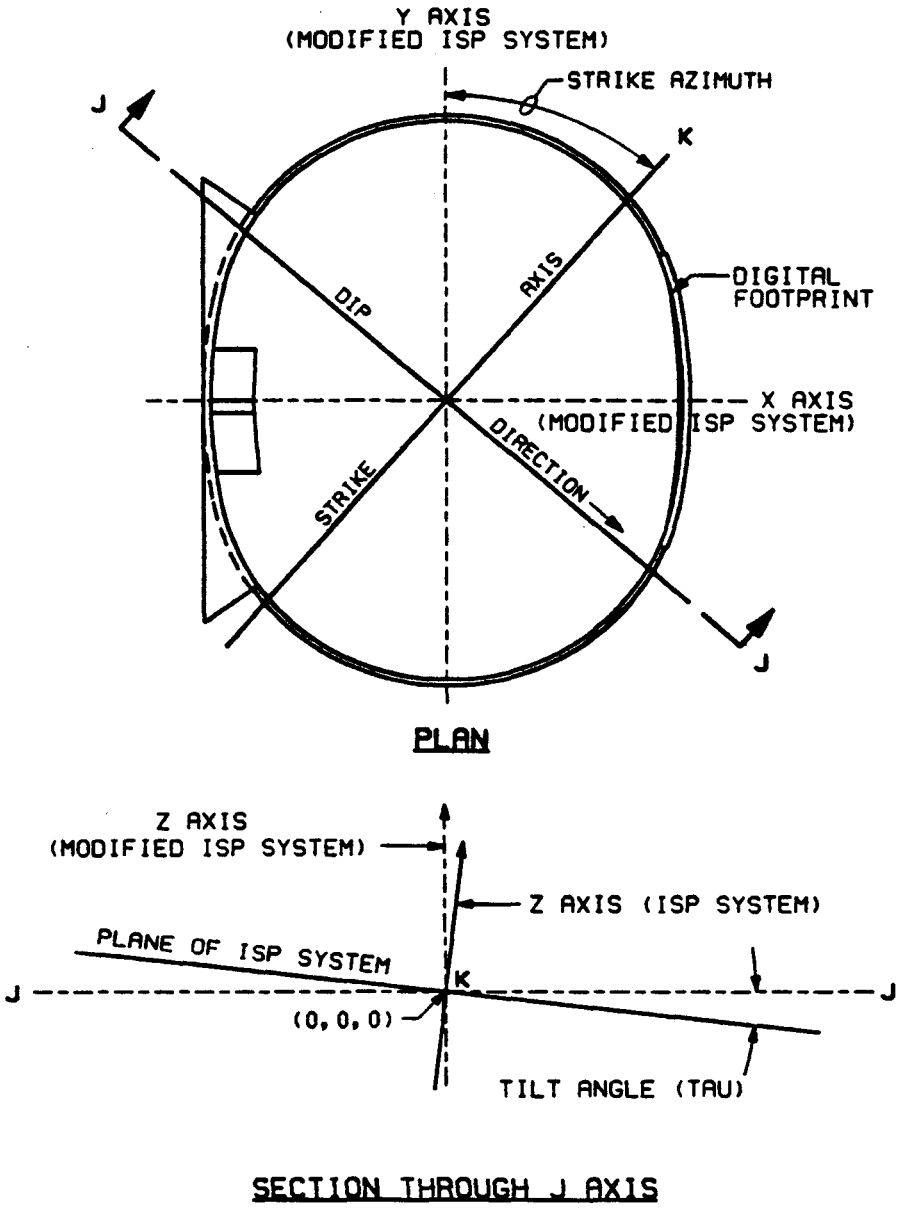
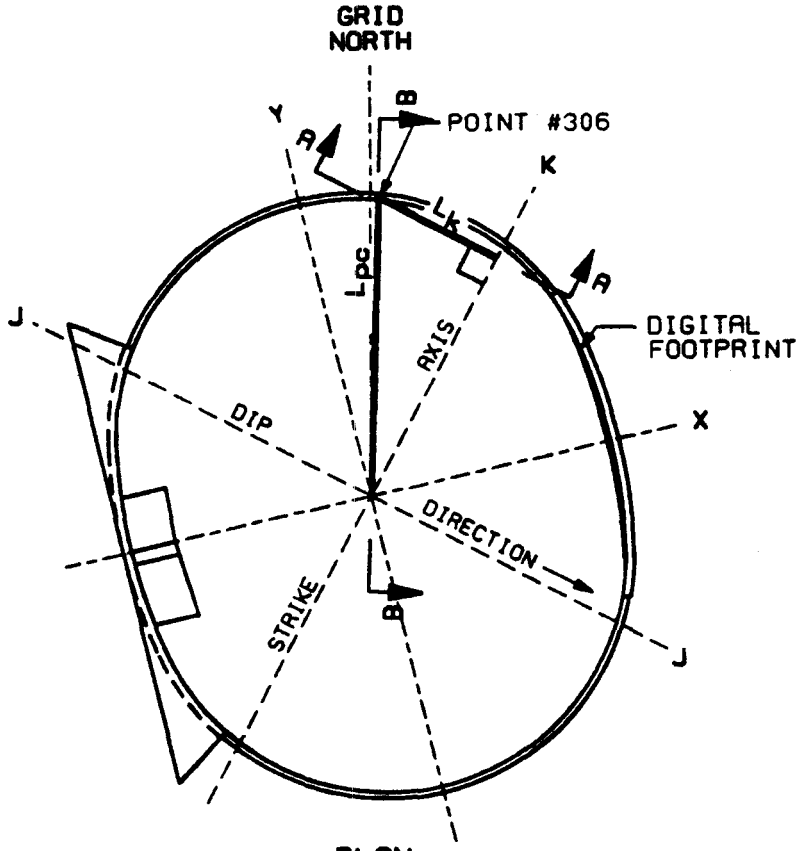
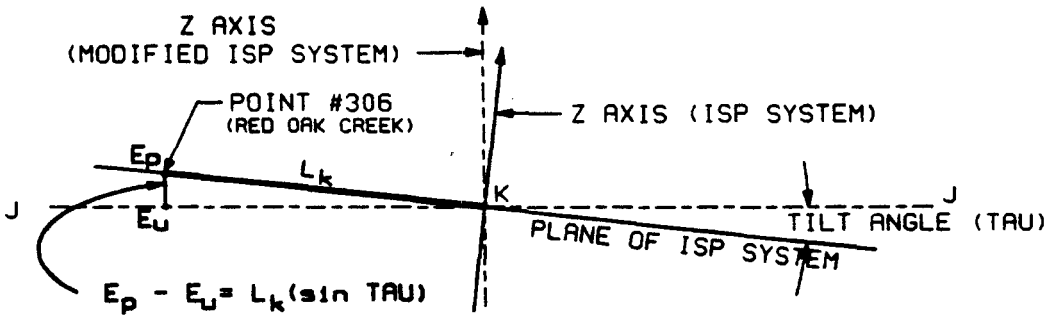


Figure 4-2

DETERMINATION OF CENTER ELEVATION



PLAN

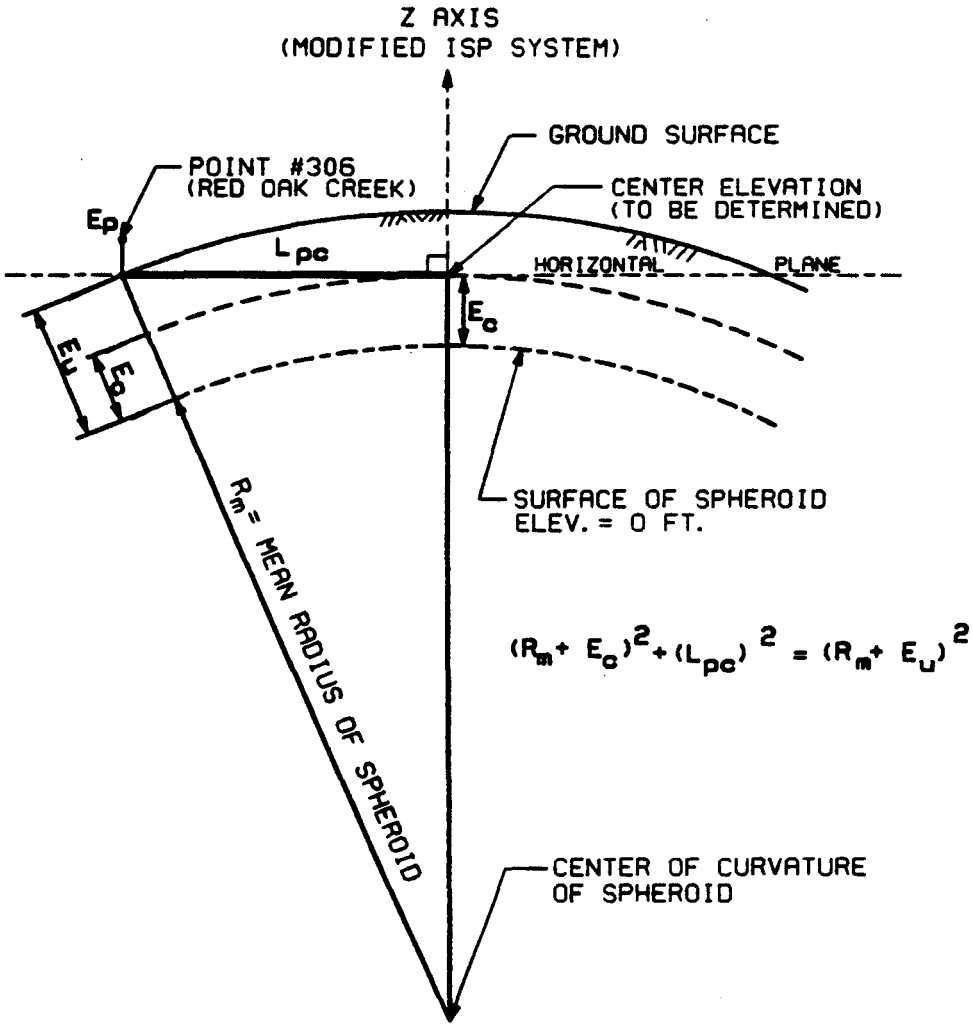


SECTION A - A

(SECT. B-B FIG. 4-3)

Figure 4-3

CURVATURE CORRECTION



SECTION B - B

rotating the footprint through the obliquity angle. This is done using coordinate system rotation and translation computation routines. The resulting coordinates in this stage are approximate (except for the center point). This is because the TCS system is a map projection which requires that scale function be applied to convert "real" distances to map distances. These scale factors are described in detail in Section 4.4. They are based in part on the latitude of the point (see Figure 4-4).

4.3.5 Stage 5

The latitude of each point is determined using the approximate coordinates derived in Stage 4. The scale factor is then computed using the latitude and the elevation of the point. An additional factor is computed for conversion from International Feet to American Survey Feet because the TCS utilizes the latter unit. The total factor is the product of the individual factors, calculated for each point. The total factor may be applied to the length of a short line to convert it to a "grid length" which is a map length in the TCS. For long lines, however, the total factor varies enough from one end to the other to require an additional computation using Simpson's Rule. This rule states that the total factor for a line is equal to the product of the total factor of the ends and four times the total factor of the midpoint divided by six.

For each point to be converted to the TCS, the ISP coordinates are used to compute the length and azimuth of a line from the point to the center of the footprint. The length is then adjusted using the total factors for the endpoints and midpoint of the line, using Simpson's Rule.

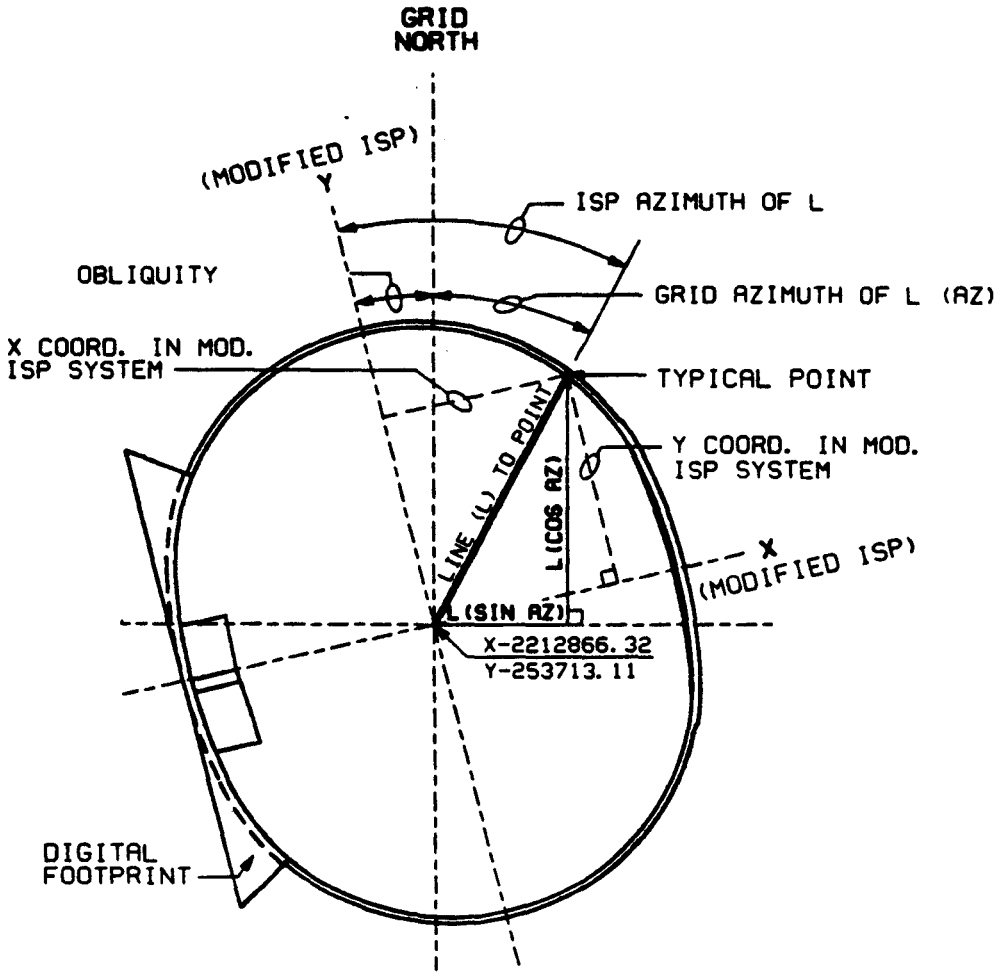
The length of the line before the scale factor is applied represents an ISP distance which is a "measurable" or "ground" distance. The length of the line after it is scaled represents a "grid" distance which is a distance between the center and the point in the TCS. The azimuth of the line does not change. The corrected coordinate is, therefore, computed using the grid length of the line, the azimuth, and the coordinate of the center. The TCS coordinates for 834 points along the magnets (point nos. 1 - 834), as well as the boundary corners derived from the lattice coordinates, are given in Appendix B. The following section provides details of the stages used for their determination.

4.4 FOOTPRINT OF FEBRUARY 17, 1989

TCS coordinates were determined for about 2,600 points based on the criteria given in Section 4.2. The following is a description of the procedure used to determine these coordinates using the stages summarized in Section 4.3.

Figure 4-4

COMPUTATION OF TCS COORDINATES OF A POINT



PLAN

The rotation equations are as follows:

$$J = x \cos \theta + y \sin \theta \quad \text{(where } \theta \text{ is the angle of rotation)}$$
$$K = -x \sin \theta + y \cos \theta$$

The value of θ was determined from the criteria given in Sections 4.2.2 and 4.2.4. The obliquity is given as a bearing from true north and must be converted to a grid bearing. This was accomplished by determining the "convergence of the meridian" at the center of the digital footprint. This value is 0° 22′ 33.5446". It represents the angle between grid north and geodetic north which results because meridians converge toward the North Pole, while TCS grid north lines remain parallel to each other. The azimuth of the K axis is determined as follows:

Obliquity	- 13° 16′ 12"	(grid)
Convergence	+ 0° 22′ 33.5446"	
Obliquity	- 12° 53′ 38.4554"	(true)

Strike	- 28° 00′ 43"
Obliquity	- 12° 53′ 38.4554"
Angle K to Y	- 40° 54′ 21.4554"

Theta = - 40° 54′ 21.4554"

4.4.1 Stage 1

In order to account for the tilt of the footprint, a series of translations and rotations was done using ICS software, which provides batch commands to process all points using a single command once the criteria for the transformation are set. The transformation was done in several steps using one rotation or two translations at a time, so that the results may be verified easily. This procedure could be done using a batch program in order to handle a larger number of points.

4.4.1.1 Step 1 - The origin of the X-Y coordinates was set at the center of the footprint by a translation of 100,000 ft in the X-direction and the Y-direction. The ISP coordinates of the center became (0, 0, 0).

4.4.1.2 Step 2 - The ISP coordinates were converted to coordinates in a temporary system in which the strike axis (K) and the dip axis (J) replace the Y- and X-axes respectively. This constitutes a rotation about the Z-axis through the azimuth of the strike (K) axis, a clockwise, negative angle, Theta (see paragraph 4.4).

4.4.1.3 Step 3 - The tilt angle, Tau, was used to rotate the coordinates about the K-axis using the same rotation equations as in Step 2. This resulted in new Z- and J-coordinates.

4.4.1.4 Step 4 - The reverse procedure described in Step 2 was used to return the "tilted" coordinates back to the ISP system.

4.4.1.5 Step 5 - The system was translated by 100,000 ft in the X- and Y-directions to reestablish the center of the footprint at (100,000, 100,000, 0) because the TCS conversion program uses this as input.

4.4.2 Stage 2

In order to set the center of the footprint at the required USGS elevation, it was necessary to determine the point at which the tilted tunnel plane clears 30 ft under the lowest creek elevation at the site. This was observed to be Red Oak Creek at an elevation of 497.5 ft, NGVD 1929. The required tunnel centerline elevation is 497.5 ft - 30 ft (for clearance) - 7 ft (for 1/2 tunnel diameter). The required lattice elevation was therefore determined to be 460.5 ft. This is the elevation assigned to lattice point number 306 which is located very near the centerline of Red Oak Creek.

The elevation at the center of the footprint which corresponds to 460.5 ft at point number 306 was computed based on the length of the perpendicular from point 306 to the K-axis (21,996.0951 ft) multiplied by the sine of the tilt angle (see Figure 4-2).

$$H(tilt) = Ep - Eu$$
$$H(tilt) = 21{,}996.0951\ (\sin -0.23019444...^{o})$$
$$= -88.37'$$

A curvature correction must also be subtracted from the elevation at point 306 to account for curvature of the spheroid. This was computed as follows (see Figure 4-3):

L_{pc} = Horizontal length from P to center

R_m = Mean radius of spheroid

E_c = USGS elevation at center

E_u = Uncorrected elevation of the horizontal plane of the footprint under point P

For Point No. 306:

E_u = 460.5 ft - 88.37 ft = 372.13 ft

L_{pc} = 47,965.45 ft

$$E_c = [(R_m + E_u)^2 - (L_{pc})^2]^{1/2} - R_m$$
$$E_c = [(20{,}895{,}786.73)^2 - (47{,}965.45)^2]^{1/2} - R_m$$
$$E_c = 20{,}895{,}731.68 - 20{,}895{,}414.6 = 317.08 \text{ ft}$$

<u>Use 317.00 ft</u>

The center was, therefore, set at elevation 317.0 ft, and this value was used to translate all points in the modified ISP system in the positive Z direction. This was done using Intergraph ICS software.

4.4.3 Stage 3

In this stage, the curvature correction was applied to all points. The correction was determined using the same equation given in paragraph 4.4.2. The correction must be determined for each point because it is a function of the distance from each point to the center of the spheroid. The correction is always positive because the plane of the ISP system (or the horizontal projection of the modified ISP system) approaches a minimum distance to the center of the spheroid at the center of the footprint. At this point, the correction factor is zero. This correction has been included in the batch program used for transforming coordinates into the TCS.

4.4.4 Stage 4

Figure 4-4 shows the relationship of the modified ISP coordinate system and the TCS. The key to the conversion is the horizontal length of the line (L) from any point to the center of the footprint. This length was computed by the Pythagorean theorem using modified ISP coordinates. The azimuth in the modified ISP system was also computed as arc tangent of X divided by Y. The azimuth of the point from Grid North was then found by subtracting the obliquity. This enabled the computation of the X and Y distances from the center in TCS coordinates within a few feet. The results were approximate because the line, L, was not scaled at that point. The approximate coordinates were used to determine the scale factor, however. This was applied to the length of the line, and a second, precise computation of X and Y was then made.

4.4.5 Stage 5

There are three factors which are required for the scaling of the line, L. These are: 1) the sea level factor, 2) the grid factor, and 3) the unit conversion factor. The three factors may be multiplied together to produce a total factor.

The sea level factor is required to convert a line at a given elevation to a length at "sea level", which is to say, the surface of the reference spheroid. This is because the equations for determining the grid factor were derived for lines on the spheroid. The sea level factor is determined as a ratio between the distance from the point to the center of the spheroid, and the distance from the spheroid surface to the spheroid center.

The sea level factor for the point P is computed as follows:

$$K_{sl} = \frac{R_m}{R_m + \text{USGS Elev. at P}}$$

As an example, for the center of the footprint:

$$K_{s1} = \frac{20,895,414.6}{20,895,414.6 + 317}$$

$$K_{s1} = \underline{0.999984829}$$

The grid factor is based on the derivation of the TCS which is a Lambert conformal projection. The grid factor is the ratio of the length of the line projected onto the spheroid and the length of the line projected onto the conical surface of the map. The ratio is a function of the latitude (a variable) and other values which are constants for a single map zone, such as the North Central Zone of the TCS. The grid factor was calculated for points in the digital footprint using an equation given in Appendix A, Reference 3. This may be stated as follows:

$$K_g = \frac{LR\,(1 - e^2 \sin^2 \phi)^{1/2}}{20,925,832.16 \cos \phi}$$

Where

L = .5453944146 (a constant for the zone)

ϕ = The latitude of the point

R = Distance from the point to the apex of the map cone

e = Eccentricity of the spheroid

For the center coordinate

R = 32,438,639.87

e^2 = 0.0067686580

ϕ = 32° 21′ 43.6836"

$\sin \phi$ = .535268780

$\sin^2 \phi$ = .2685125576

$\cos \phi$ = .8446818586

This results in the following value for K_g:

K_g = <u>.9999444943</u>

The third factor is required because the ISP and modified ISP coordinates are expressed in International Feet (IF) as follows:

1 IF = 12 in/ft x .0254 m/in

1 IF = 0.304800000 m

1 m = 3.280839895 IF

In American Survey Feet (ASF):

1 m = 39.37 in/12 in/ASF

1 ASF = .304800610 m

1 m = 3.28083333... ASF

The ASF is a longer unit than an IF. The ratio between the two is as follows:

$$1 \text{ IF} = \frac{3.280833333...}{3.280839895} = 0.99999800 \text{ ASF}$$

The total factor for the center point would be the product of the three factors ($K_{s1} \times K_g \times K_{ASF}$) = 0.999927324 = K_t.

The total factors for all points and midpoints of the line were computed by the batch program and the total factor for the line was determined using Simpson's Rule (see paragraph 4.3.5).

$$K_L = \frac{K_p + 4\,K_{mp} + K_c}{6}$$

Where:

K_L = Total scale factor for the line

K_p = Total scale factor for the point

K_{mp} = Total scale factor for the midpoint

K_c = Total scale factor for the center

The exact TCS coordinates were computed as the sum of the center coordinates and the appropriate sides of the right triangle whose hypotenuse is the scaled line, L (see Figure 4-4). The tabular results of the program are given in Appendix B.

5. TEXAS COORDINATE SYSTEM

This section provides background information about the Texas Coordinate System applicable to the SSC site.

5.1 TYPES OF SYSTEMS

Two types of map projections are used for state coordinate systems in the United States. These consist of the transverse Mercator projection and the Lambert projection. The Lambert system is used in Texas. More specifically, the Lambert system is designated as the Lambert conformal, conic, two-parallel projection. The term "conformal" refers to the ability of the map to maintain scale relationships in all directions at a given point. This maintains angular relationships as nearly as possible between lines in one area which is small enough so that the scale factor may be assumed constant.

The projection consists of a cone which intersects the spheroid at two parallels of latitude. Texas uses one cone for each of five zones; each cone has a different altitude and a different set of parallels of intersection. The SSC site falls within the North Central Zone (see Figure 5-1).

5.2 DEVELOPMENT OF LAMBERT SYSTEM

The map is developed by unrolling the cone so that it becomes a plane. The meridians are represented by straight lines which intersect at the apex of the cone. The parallels of latitude are represented by circular arcs whose center is at the apex of the cone. The longitude is represented by the angle (θ) between the meridians multiplied by a constant, and latitude measured as a radius of a circular arc (R).

The value of R is computed for each map zone based on the requirement for conformality. The lowest arc in the zone (R_b) becomes a constant for the zone. The value for the North Central Zone is 32,691,654.54 ft. This corresponds to a latitude (l) of 31°, $40'$. The constant by which the longitude is multiplied is also derived from the conformality. The value of l for the North Central Zone is .5453944146. The derivation of the constants for a Lambert projection is given in References 8 and 9 in Appendix A.

5.3 POSITION OF THE SSC PROJECT

At the two parallels of intersection of the Lambert cone with the spheroid, the scale factor is unity-based on the derivation of the system. At points between the parallels, the scale factor is less than unity; outside the parallels, the scale factor is greater than unity. The SSC project lies within the two parallels of the North Central Zone, close to the lower parallel. The scale factor varies between .9999201 and .9999778 at the project site. Figures 5-2, 5-3, and 5-4 show the location of the project at different scales.

Figure 5-1

LAMBERT PROJECTION CONE

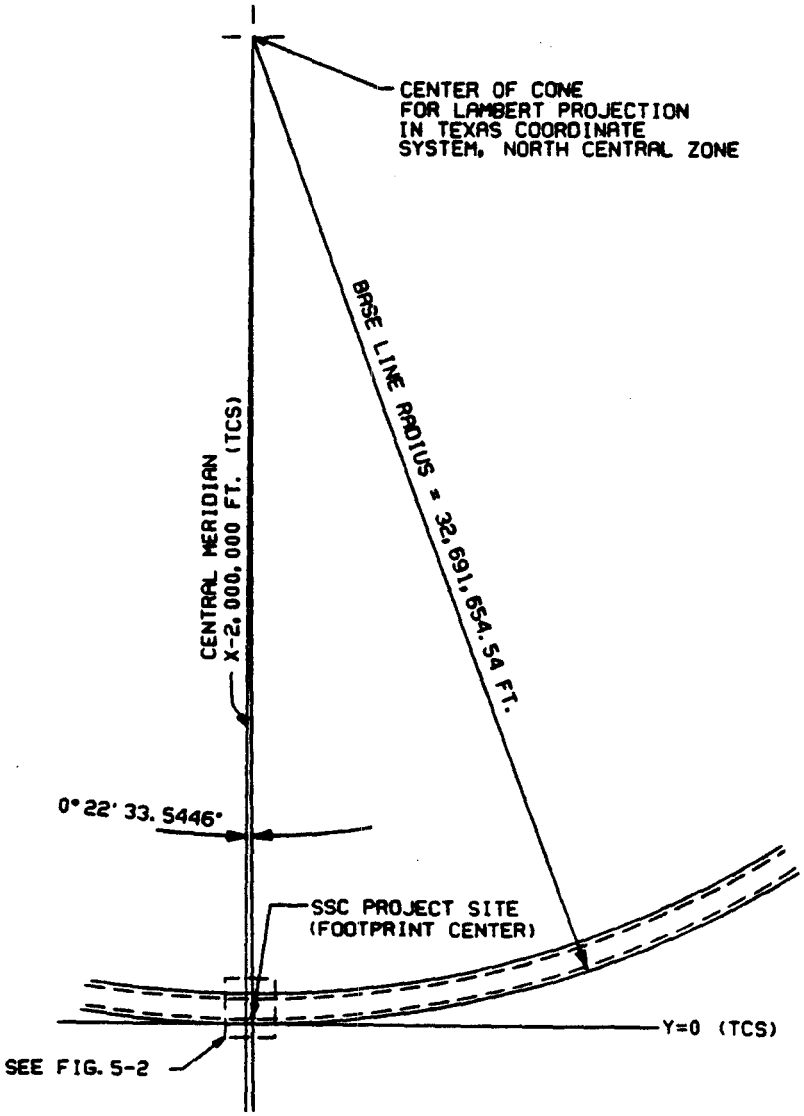


Figure 5-2

LAMBERT AND STATE PLANE GRID

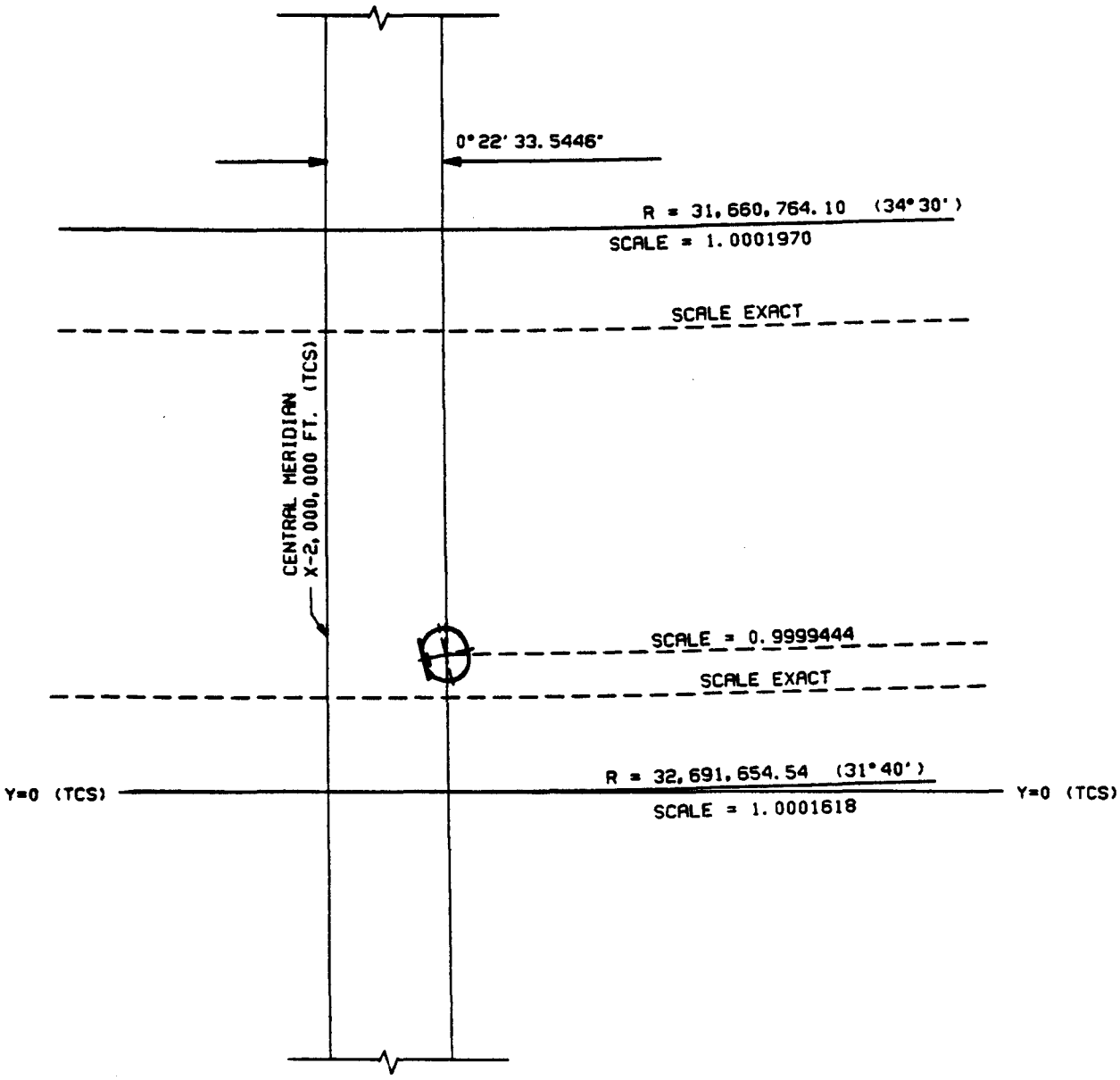
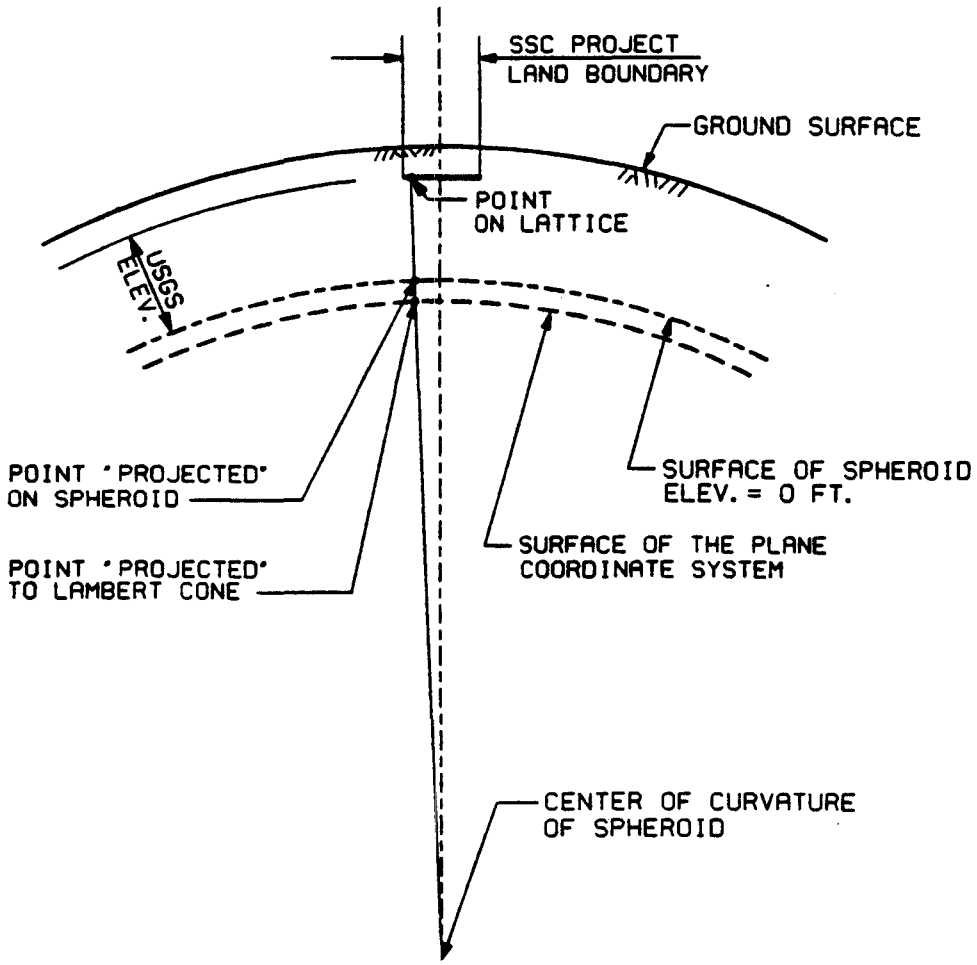


Figure 5-3

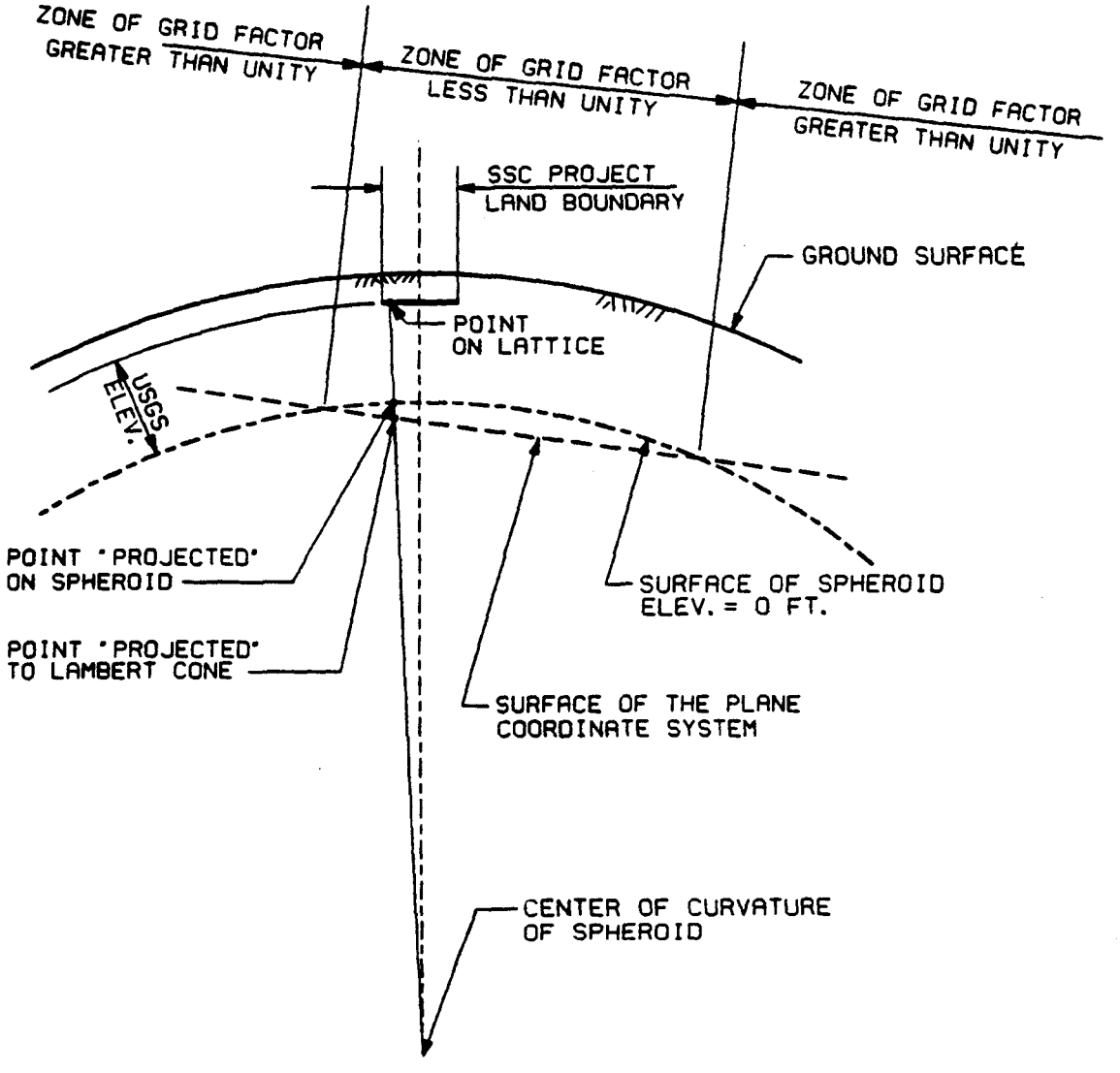
PROJECTION OF POINT ON LAMBERT CONE



SECTION LOOKING NORTH

Figure 5-4

PROJECTION OF POINT ON LAMBERT CONE



SECTION LOOKING EAST

5.4 SCALE FACTORS

In order to visualize the effect of scale factors (grid factors) and sea level factors, it is helpful to refer to a diagram such as Figure 5-3. Here it can be seen that a ground distance would have to be scaled by a factor of less than unity in order to convert it to a distance on the spheroid (see paragraph 4.4.2). Similarly, a distance on the spheroid would have to be scaled by a factor of less than unity in order to convert it to a distance on the cone of the Lambert system. This diagram is true for sea level factors, but is an approximation in the case of grid conversion. The grid factor must be computed according to the formula derived for it. It cannot be derived by assuming a projection from one surface to the other.

5.5 LIMITATIONS OF THE TCS

Additional information about state plane coordinate systems may be obtained from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration. A list of selected publications is provided in Appendix A. The use of the Texas Coordinate System is intended for definition of the land boundary. For this purpose, the computation procedure is in conformance with land surveying practice. The TCS is not intended to be used for precise computations, such as for the lattice, because allowances must be made in representing ground distances and angles by grid distances and angles on a mathematically-derived surface.

The assumption that a ground angle is equal to a grid angle is true over short distances, but for long lines, the curvature of the earth begins to take effect, in spite of the fact that scale factors have been applied when going to and from the TCS. Long lines require an azimuth correction which is termed the "t-T" correction.

The control of the tunnel alignment might best be accomplished by adopting an independent 3D Cartesian system. By being independent from local systems, the chance of using a monument which has an incorrect location can be avoided. The Cartesian system produces exact distances because all lengths are true lengths. The independent system would be tied to the local system by a single point and bearing.

6. CONFIGURATION OF FILES

This section provides information and recommendations about both graphic and non-graphic Intergraph files as they apply to the SSC project. Some of these files have already been developed. The contents of these existing files is described in Section 7. New graphics files should follow the format of existing files, where possible, in order to maintain compatibility. Draft CAE criteria are given in Appendix C.

There are, however, a number of options which may be chosen when setting up new files. These options should be selected in such a way that the maximum advantage is obtained from the graphics software. An example of this is the selection of working units. The selection of working units defines the degree of accuracy of the graphic data in a file. Once this has been set and graphic data is placed in file, it is undesirable to change the working units. The SSC project requires a very wide range of object sizes--from fractions of an inch to several miles. The selection of working units must, therefore, be considered for all new files based on the size of the objects in the file and the required read-out accuracy.

The selection of working units is discussed more fully in Section 6.3 and Appendix C-2.

6.1 COORDINATE SYSTEMS FOR GRAPHICS FILES

The size of the SSC project requires that the selection of a coordinate system be considered for new files in a manner similar to the way working units are considered. An object is modelled in a three-dimensional (3D) rectilinear coordinate system which is the basis of Intergraph files. All distances and dimensions in the graphics files are equivalent to distances and dimensions in the real world. The 3D rectilinear system is the simplest one for locating points accurately and with a minimal amount of computation.

The "elevations" in a 3D file are identical to a Z-distance above a plane through the origin normal to the Z-axis. The consideration of other coordinate systems comes into play when one attempts to relate a large object such as the SSC infrastructure to a local site. The rectilinear system remains valid, but now must be superimposed on systems which take the curvature of the earth into account. This is not to say that the rectilinear system is no longer sufficient, what takes place is that some components of the project will be designed in relation to the direction of gravity and to local elevations referenced to a geodetic datum.

These components are more suitably described in coordinate systems other than the ISP system. Conversion between the systems is required in order to transform ISP data into a site-specific system. The E and F area shafts, for example, will be vertical with reference to the geoid. In the ISP coordinate system, each shaft centerline will have X- and Y-coordinates which vary with the Z-coordinate because the centerlines are not parallel.

The lattice, on the other hand, is easily described in the ISP system because most of the points lie in a plane defined by the equation $Z = 0$. In the TCS, however, even if the plane of the footprint were not tilted, the elevation of these points would vary according to their distance from the center coordinate.

Graphics files are rectilinear, and the software does not support a curved surface datum. If USGS elevations are used to plot the lattice points, they appear to be in a concave, upwardly curved surface. This distortion is undesirable, but it permits the direct use of map data to show the ground surface in the same files along with other local data which is referenced to sea level.

As another option, the ISP system could be used for the graphics file configuration. The local data would have to be transformed into ISP coordinates in order to be placed in the file. The selection of the file format should be based on the type of information to be obtained from the file. It may be desirable to use the following 3D file types.

- Establish a (Type 1) file for lattice and injector components in the ISP system. This file would be used to plot ISP coordinates and develop a model of the overall accelerator and main ring. All distances would be true distances. Graphic data would be limited to baselines or centerlines.

- Establish (Type 2) files for components of the project, such as the experimental halls. Use one reference point in each file, such as the center of a detector along the beamline, to dimension the component. Use the direction of gravity for the Z-direction.

- Establish a (Type 3) file for the overall site and infrastructure in the TCS. The Z-direction would represent USGS elevations. Topography would be placed in the file by digitizing maps drawn in the TCS.

The component files (Type 2) could be attached to this file as reference files without having to be rotated because they are compatible in terms of Z-orientation. A scale factor, computed for the one reference point, could be used for scaling the attached reference files. The lattice could be plotted in this file using the computed TCS coordinates. The lattice would be a non-planar "space line string." The attached components, such as an experimental hall, would coincide correctly with the lattice, provided that the detector in the Type 2 file is properly oriented in space with reference to the vertical.

The Type 2 file may be simultaneously attached to the Type 1 file. In the case of an experimental hall, the attached reference file would have to be rotated so that the detector centerline is properly oriented with the lattice. The structure itself will be skewed to the plane of the lattice. Scaling of the reference file is not required.

In general, the use of reference files simplifies the overall modeling of the project because rotation and scaling may be used to compensate for the effects of curvature and map distortion. The Type 1 file can be relied upon to accurately model the lattice, injector, and other component baselines.

6.2 ALTERNATIVE COORDINATE SYSTEMS

6.2.1 Geographic Coordinates

The latitude, longitude, and elevation of a point specify its location but are not suitable for placing data in graphics files. The geographic coordinates may be transformed into the TCS using existing US Coast and Geodetic Survey programs. Geographic coordinates are very useful for specifying the location of points because they can be transformed into other systems, such as the TCS, North American Datum of 1983, or the Universal Transverse Mercator System.

6.2.2 Tangent Plane Coordinate System

A tangent plane coordinate system is a 3D rectilinear system which is placed and oriented at a local position. Such a system is slightly different from the ISP system because of the tilt of the plane of the footprint. The modified ISP system becomes a tangent plane system when the following assumptions are made:

- The Z-coordinate of the center is equated to an elevation in the geodetic system.
- The orientation of the X-Y plane is set by defining it tangent to the spheroid at the center. (This is not the plane of the ISP system.)
- The direction of the Y-axis is set by defining it parallel to Grid North in the TCS.

The resulting system has a plane at Z = 0 which intersects the spheroid at one point. This is the reason it is termed a tangent plane system. In this system, the X- and Y-axes are parallel to the TCS X- and Y-axes. The elevations, however, do not coincide with USGS elevations due to curvature. In addition, distances in the TCS require scale factors to determine true distances, while the distances in the tangent plane system are equivalent to true distances.

With a tangent plane coordinate system, a Type 1 file (in the ISP system) can be attached as a reference file and re-oriented to show the effects of different tilts or translations of the footprint. Local data, such as ground elevations, would have to be converted from elevations to Z-distances. This conversion could be done using Digital Terrain Modeling software (DTM). The method consists of creating a spherical surface representing the curvature of the spheroid and a digital terrain model of the ground referenced to the spheroid. The two model files may be added together. The result may be converted to

a corrected ground surface model. At present, only the ISP and the TCS are in use.

6.3 WORKING UNITS

When a new graphics file is created, the working units may be specified. The entire footprint may be plotted in a file with 2,032 units of resolution per subunit (inch) and 12 subunits per master unit (ft). These are the recommended working units for files in which a high degree of precision is required (see Appendix C - Draft CAE Criteria).

The area of coverage for this set of working units is adequate to include the entire digital footprint. Where additional area is required, alternative sets may be used. These sets should consist of even multiples of 2,032 subunits per master unit, such as 508 or 256.

6.4 COMPUTER-AIDED ENGINEERING (CAE) CRITERIA

In order to coordinate the various CAE files used to design the facility, it is necessary to set criteria for file configuration. Draft criteria are given in Appendix C.

7. FILE AND DRAWING DATA

The purpose of this section is to describe the data currently available on the Intergraph computer system maintained by RTK and provide some background information about Intergraph computer files as related to the SSC project. Section 7.1 provides a brief overview of Intergraph's format for storage and management of computer data. Section 7.2 provides information about some of the files used to store data and contains information on the contents of applicable files. Section 7.3 contains a drawing list for drawings prepared on the Intergraph system. The filename of the plot file for the drawing is given in Table 7.3-1.

7.1 OVERVIEW OF INTERGRAPH FORMAT

7.1.1 File Types

All Intergraph data is stored in files. This includes both graphic and non-graphic data. All files must contain a file name of nine or less alphanumeric characters followed by a period and three or more additional alphanumeric characters which comprise the extension. Non-graphic files, such as text files, may have any extension. Graphics files always have the .DGN extension. Graphics files represent discrete groups of graphic data. Only one graphics file may be called up at a terminal at one time for adding or modifying data. This is termed the "active" file. Other files may be attached to any active file so that the total group appears as one file. The attached files are termed "reference" files and cannot be revised as long as they are displayed only as reference files. To revise reference files, they must be called up individually as active files. After revisions are complete, the original active file may be called up and the reference files will be displayed in their revised form.

7.1.2 Non-Graphics Files

These consist of ASCII text files which store alphanumeric data. A typical example of such a file is a list of point numbers and their coordinates for use in preparing geometric calculations. Non-graphic files are always independent from each other or from graphic files. Non-graphic data, however, may be used to produce graphic elements through the use of programs such as coordinate geometry (COGO) or digital terrain modeling (DTM).

7.1.3 Graphics Files

These files, when active, appear on the screen as pictorial elements, although the data which produces the image as a text file contains a list of data describing the location and type of each element. Input to graphics files is done with a keyboard, a menu and cursor, and a digitizer table.

Each graphics file is subdivided into 63 levels. These levels have no relationship to elevation in a dimensional sense. They permit graphic

data to be stored in one active file, while allowing the operator to selectively display any combinations of levels. Levels in one graphics file cannot be translated, rotated, or scaled in relation to other levels in the same graphics file. These manipulations would have to be done to the graphic elements themselves.

Although the levels themselves are fixed within a file, another file may be attached as a reference file and translated, rotated, or scaled in relation to the active file.

7.1.4 Working Units

Dimensional data in a graphics file is specified in terms of units of resolution (UORs) in the X-, Y-, or Z-direction. For convenience in relating UORs to standard units of length, the UORs are grouped into subunits. Subunits are grouped into master units. This relationship is defined for each file. For example, if the English system is chosen for the file, there would be 12 subunits (inches) per master unit (ft). The number of UORs per subunit might be chosen as 1,000. The UORs are limited to 2^{32} in any dimension. The file size in the above example would be limited to about 368 miles.

7.2 FILE CONTENTS

7.2.1 Directories

Files for the SSC project currently reside in four directories as follows:

Directory	Contents
ZHA1:[102, 1]	Data related to the Environmental Impact Report for seven sites.
ZGA2:[102, 2]	Files prepared by the Central Design Group.
ZGA1:[102, 3]	Files related to the detector study, mostly 3D graphics files.
ZGA1:[102, 4]	Files prepared for the Texas conceptual study.

7.2.2 Non-Graphics Files

Several types of non-graphic files are currently stored in ZG2:[102, 4]. The most important types may be classified as follows:

FILENAME.PNT FILENAME.INP FILENAME.OUT FILENAME.TXT	ASCII text files containing lists of point numbers and coordinates.

FILENAME.DBS	Coordinate geometry database for storage of points.

7.2.3 Graphics Files

All graphics files have the extension .DGN. The files may be classified for convenience into the following general types.

- Map files containing geographic data for the Texas site.
- Template files representing the SSC project either as a land boundary, a lattice configuration, or both.
- Miscellaneous files containing graphics used for the project. This includes several drawing borders used to prepare plots.

7.2.4 Map Files

The following three map files are currently stored in ZG2:[102, 4]:

- **SITEMAP.DGN** - Contains geographic data for the Texas site obtained from USGS quadrangle maps and various other sources which are listed by file level on the accompanying table. The coordinate system is the Texas Coordinate System, North Central Zone. It is a two-dimensional file with 3,048 units of resolution/ft.
- **SITEMAP2.DGN** - Contains additional data for the Texas site including boundaries for various agricultural soil types.
- **PROPOSED.DGN** - Contains infrastructure data for the Texas site which has been proposed for the SSC project. This is also a two-dimensional file with 3,048 units of resolution/ft.

7.2.5 Template Files

Two template files currently reside in ZGA2:[102, 4]:

- **PRECISE.DGN** - Contains a graphic layout of the ISP template in a file with 3,048 units of resolution/ft and uses the ISP coordinate system with 22 points plotted along the beamline.
- **DIGITAL.DGN** - Contains a graphic layout of a digital template derived from 834 points along the lattice. It also contains 22 additional lattice points obtained from the previous set in PRECISE.DGN.

7.2.6 The following tables describe the contents of selected files by level. The source of the data is given in parentheses.

Table 7.2-1

FILE CONTENTS
ZG1:[102, 4] SITEMAP.DGN

Level	Contents
1	Town Boundaries (USGS Maps)
2	Rivers, Lakes, and Creeks (USGS Maps)
3	County Lines and Names (USGS Maps)
4	Topography and Text (USGS Maps)
5,6	Blank
7	Local Roads (USGS Maps)
8	Highways (USGS Maps)
9	Railroads (USGS Maps)
10	Electric Power Transmission Lines, 345 and 138 kV (Initial Texas proposal)
11	Electric Power Transmission Lines, 69 kV (Initial Texas proposal)
12	Telephone Lines in Vicinity of Project
13	Blank
14	Water
15	Gas and Liquid Product Pipelines (Initial Texas proposal)
16	Flood Hazard Boundaries (Flood Insurance Rate Maps, Ellis County)
17	Blank
23	Property Lines (USGS Maps)
25	Property Lines (Initial Texas proposal)
26	Property Text
27	Property Text
28	Property Text
29	Property Text
30-39	Blank
40	Surface Geology & Text
41	Top of Eagle Ford Shale
42	Surface Geology with Small Text
43	Bore Hole Locations
44	Bore Hole Designation (Initial Texas proposal)
45	Top of Austin Chalk Contours (Initial Texas proposal)
46-54	Blank

Table 7.2-1 (Cont'd)

FILE CONTENTS
ZG1:[102, 4] SITEMAP.DGN

Level	Contents
55	Natural Resources - Sand and Cement (Earth Technology Corporation)
56	Natural Resources Symbols (Earth Technology Corporation)
57, 58	Blank
59	Geodetic Coordinates at 7.5 minute Intervals
60, 61	Blank
62	State Plane Coordinate System, 10,000-ft Grid Marks
63	Coast and Geodetic Survey Monument Locations

Table 7.2-2

FILE CONTENTS
ZG1:[102, 4] SITEMAP2.DGN

Level	Contents
1-32	Blank
33	Soil Type Boundaries
34	Soil Type Designations
50	ISP Land Boundary
51	ISP Dimensions
52	Hatching
60	Quadrangle Boundaries
62	State Plan Coordinate System, 10,000-ft Grid Marks

Table 7.2-3

FILE CONTENTS
ZG1:[102, 4] DIGITAL.DGN

Level	Contents
1	Blank
2	Blank (ICS Default Level for Plotting Symbols)
3	Blank
4	Blank (ICS Default Level for Plotting Elements)
5-8	Blank
9	Approximate Beam Line
10	ISP Land Boundary (Analog Footprint)
11	ISP Approximate Beam Line
12	Blank (ICS Default Level for Plotting Annotation)
13	X- and Y-axes of ISP System
14	Construction Lines for ISP Template
15-19	Blank
20	22 Points Q-E/F
21	22-point Numbers Q-E/F (#100-122)
22	Blank
23	Ring Boundary Points
24	Ring Boundary Point Numbers
25	Other Area Points, A, B, C, and I Areas
26	Other Area Point Numbers
27-29	Blank
30	Lattice Points (1-834)
31	Lattice Point Numbers (1-834)
32	Blank
33	Inside Boundary Points (1,001-1,834 and 1,835-1,921)
34	Inside Boundary Point Numbers
35	Blank
36	Outside Boundary Points (2,001-2,834)
37	Outside Boundary Point Numbers
38, 39	Blank
40	Inside Boundary Line
41	Outside Boundary Line
42	Blank
43	A, B, C, I, and J Area Points
44	A, B, C, I, and J Area Point Numbers
45	A, B, C, I, and J Area Lines
46	Blank
47	Proposed Drill Holes (Dwg. GC-2)

Table 7.2-3 (Cont'd)

FILE CONTENTS
ZG1:[102, 4] DIGITAL.DGN

Level	Contents
48	E and F Area Points
49	E and F Area Point Numbers
50	E and F Area Lines
51	Ring Hatching
52	HEB, LINAC, and MEB Text (enlarged)
53	HEB, LINAC, and MEB Graphics
54	HEB, LINAC, and MEB Text
55	Drill Holes (1 in = 1,000 ft)
56	Drill Holes (1 in = 5,000 ft)
57	Drill Hole Text
58	Drill Hole Text in HEB Area
59	Drill Holes for 1 in = 1,000 ft Plots
60	Drill Holes for 1 in = 5,000 ft Plots
61	Drill Hole Text
62	Drill Hole Text - HEB Area
63	Blank

Table 7.2-4

FILE CONTENTS
ZG1:[102, 4] PROPOSED.DGN

Level	Contents
1	Town Boundaries (USGS Maps)
2-9	Blank
10	Proposed Electric Power Transmission Lines, 138 kV and above (Initial Texas proposal)
11	Proposed Electric Power Transmission Lines, 69 kV (Initial Texas proposal)
12	Blank
13	Proposed Oil and Gas Pipelines (Initial Texas proposal)
14	Proposed Water Lines and Related Facilities (Initial Texas proposal)
15	Proposed Wastewater Facilities (Initial Texas proposal)
16-61	Blank
62	State Plane Coordinate System, 10,000-ft Grid Marks
63	Blank

Table 7.2-5

FILE CONTENTS
ZG1:[102, 4] PROFEB89.DGN

Level	Contents
1	Grid Frame
2	Text, Legend, and Notes
3	Geological Formations
4	Tunnel
5	Blank
6	Shaft Centerlines
7	Grid for Statute Miles
8	Tick Marks
9	Bore Holes
10	Vertical Lines @ 1,000 ft interval
11	Vertical Lines @ 10,000 ft interval
12	Horizontal Lines @ 1,000 ft interval
13	Horizontal Lines @ 10,000 ft interval
14	Text

Table 7.2-6

FILE CONTENTS
ZG1:[102, 4] BDR.DGN
(Border for 36" x 36" Maps)

Level	Contents
1	Border and Title Block
2	Scale for 1 in = 5,000 ft
3	North Arrow
4	Legend for Land Areas
5	Notes (regarding map data)

Table 7.2-7

FILE CONTENTS
ZG1:[102, 4] BDR36X36.DGN

Level	Contents
1	Border and Title Block
2	Scale for 1 in = 5,000 ft
3	North Arrow
4	Legend for Land Areas

Table 7.2-8

FILE CONTENTS
ZG1:[102, 4] FOOTTEXT.DGN
(Text for Footprint Land Areas)

Level	Contents
1-56	Blank
57	Text
58	Hatchings

7.3 DIRECTORY CONTENTS

The following lists provide information on drawings prepared for the Texas conceptual study. The first list includes the drawing number, title, revision, and date for each drawing. The second list gives the file name of the file used to plot the listed drawing.

Table 7.3-1 identifies the files stored in the Texas Conceptual Study directory, ZGA1:[102, 4].

Table 7.3-1

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
ABC.GRD;4	2153	Digital Terrain Model files - A, B, C Area
ABC.TIN;7	1694	Digital Terrain Model files - A, B, C Area
ABC.XYZ;7	286	Digital Terrain Model files - A, B, C Area
ABCIN.GRD;1	2153	Digital Terrain Model files - A, B, C Area
ABCOUT.GRD;2	2153	Digital Terrain Model files - A, B, C Area
BDR.DGN;1	68	Border for 24" x 36" drawings
BDR2000.DGN;1	60	Border for 36" x 72" drawings
BDR24X36.DGN;2	44	Border for 24" x 36" drawings
BDR36X36.DGN;1	68	Border for 36" x 36" drawings
BENCHMARK.DGN;1	52	Plot file for drawing ML-1
BENCHMARK.LIS;1	41	Text file
CHALK.GRD;1	522	Digital Terrain Model files - Austin Chalk
CHALK.TIN;1	46	Digital Terrain Model files - Austin Chalk
CHALK.XYZ;1	10	Digital Terrain Model files - Austin Chalk
CHECKPROF.DGN;1	180	Geologic profile
COVER.DGN;1	28	Cover sheet - Drawing CV-1
COVER3636.DGN;1	652	Cover sheet - Drawing CV-2
DIGITAL.DGN;1	2860	Digital footprint
DIGITAL.INP;2	332	Coordinate Geometry software files
DIGITAL1.ATT;1	522	Coordinate Geometry software files
DIGITAL1.DBS;1	232	Database for Coordinate Geometry
DIGITAL1.DDL;1	16	Coordinate Geometry software files

Table 7.3-1 (Cont'd)

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
DIGITAL1.LST;1	17	Coordinate Geometry software files
DIGITAL1.PAR;1	445	Coordinate Geometry software files
DIGITAL1.SYM;1	6	Coordinate Geometry software files
DIGITAL1.WIN;1	50	Coordinate Geometry software files
DIGITAL1CIRC_CURV.ENT;1	388	Coordinate Geometry software files
DIGITAL1COORD_DIFF.ENT;1	142	Coordinate Geometry software files
DIGITAL1FIG_HEAD.ENT;1	95	Coordinate Geometry software files
DIGITAL1FIG_POINT.ENT;1	423	Coordinate Geometry software files
DIGITAL1HEADER.ENT;1	2	Coordinate Geometry software files
DIGITAL1LINE.ENT;1	529	Coordinate Geometry software files
DIGITAL1OBS.ENT;1	60	Coordinate Geometry software files
DIGITAL1PNT.ENT;1	412	Coordinate Geometry software files
DIGITAL1SHT.ENT;1	60	Coordinate Geometry software files
DIGITAL1SKW.ENT;1	91	Coordinate Geometry software files
DIGITAL1SPIRAL.ENT;1	189	Coordinate Geometry software files
DIGITAL1STA_EQUA.ENT;1	377	Coordinate Geometry software files
DIGITAL1STA_HEAD.ENT;1	95	Coordinate Geometry software files
DIGITAL1VERTICAL.ENT;1		Coordinate Geometry software files
DIGITAL1XSE.ENT;1	45	Coordinate Geometry software files
DIGITAL2.ATT;1	522	Coordinate Geometry software files
DIGITAL2.DBS;1	232	Coordinate Geometry database
DIGITAL2.DDL;1	16	Coordinate Geometry database files

Table 7.3-1 (Cont'd)

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
DIGITAL2.LST;1	17	Coordinate Geometry database files
DIGITAL2.PAR;1	445	Coordinate Geometry database files
DIGITAL2.SYM;1	6	Coordinate Geometry database files
DIGITAL2.WIN;1	50	Coordinate Geometry database files
DIGITAL2CIRC_CURV.ENT;1	131	Coordinate Geometry database files
DIGITAL2COORD_DIFF.ENT;1	142	Coordinate Geometry database files
DIGITAL2FIG_HEAD.ENT;1	33	Coordinate Geometry database files
DIGITAL2FIG_POINT.ENT;1	142	Coordinate Geometry database files
DIGITAL2HEADER.ENT;1	2	Coordinate Geometry database files
DIGITAL2LINE.ENT;1	177	Coordinate Geometry database files
DIGITAL2OBS.ENT;1	60	Coordinate Geometry database files
DIGITAL2PNT.ENT;1	412	Coordinate Geometry database files
DIGITAL2SHT.ENT;1	60	Coordinate Geometry database files
DIGITAL2SKW.ENT;1	91	Coordinate Geometry database files
DIGITAL2SPIRAL.ENT;1	64	Coordinate Geometry database files
DIGITAL2STA_EQUA.ENT;1	127	Coordinate Geometry database files
DIGITAL2STA_HEAD.ENT;1	33	Coordinate Geometry database files
DIGITAL2VERTICAL.ENT;1	56	Coordinate Geometry database files
DIGITAL2XSE.ENT;1	45	Coordinate Geometry database files
DIGITAL3D.DGN;1	16	Three-dimensional footprint
DIRECTORY.LIS;1	0	
DRAWING.DATA;1	124	RTK Drawing name files
DRAWING.LIS;16	11	RTK Drawing name files
DRAWING.LIST;15	10	RTK Drawing name files

Table 7.3-1 (Cont'd)

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
DUM333.LIS;1	155	Text file Drawing list for EIS
EISDRAW.LIS;8	5	Drawing list for EIS
EISDRAW.LIST;7	5	Drawing list for EIS
EISDRAW.LIST;6	5	Drawing EL-1
ELECTPWR.DGN;1	24	
EXTGRD.DEF;2	1	
EXTXYZ.BAT;3	1	
EXTXYZ.DEF;2	1	Drawing FL-1
FLOOD.DGN;1	1	
FOOTPRINT.RPT;1	485	Labels for footprint land areas
FOOTTEXT.DGN;1	64	Miscellaneous graphics
FORMS.DGN;1	184	Drawing GC-2B
GEOBOT.DGN;1	60	Drawing GC-1
GEOTECH.DGN;1	232	Drawing GC-2
GEOTECH2.DGN;1	152	Drawing GC-3
GEOTECH3.DGN;1	272	
GEOTECH4.ATR;1	265	Drawing GC-4
GEOTECH4.DGN;1	716	Drawing GC-2A
GEOTOP.DGN;1	60	
GRDGEN.BAT;2	1	
GRDGEN.DEF;4	1	
HAZARD.DGN;1	1760	Flood hazard boundaries
INJ.GRD;1	1060	DTM file - Injector area
ISPTILT.INP;3	312	Coordinate tables
ISPTILT.RPT;1	485	Coordinate tables
ISPTILT.TXT;1	0	Coordinate Tables
K1K2.DGN;1	20	DTM plot file
K5K6.DGN;1	400	DTM plot file
K5K6.GRD;1	522	DTM plot file
K5K6.XYZ;1	286	DTM plot file
K5K6C.GRD;1	522	DTM plot file
K6.DGN;1	16	DTM plot file
MEB.DGN;1	16	DTM plot file
MONUMENT.DGN;1	48	Drawing ML-2
OILANDGAS.DGN;1	28	Drawing OG-1
PARCELS.DGN;1	24	Drawing PM-1
PARROADS.DGN;1	28	Drawing PM-2
PROF1TO1.DGN;1	144	Geologic profile
PROFBDR.DGN;1	64	Border for geologic profile
PROFEB89.DGN;1	184	Tunnel profile - Feb. 17 1989 criteria
PROFILE.BAT;4	1	
PROFILE.DEF;2	1	

Table 7.3-1 (Cont'd)

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
PROFILE.DGN;1	96	Drawing TP-1
PROFILE3.DGN;1	524	Tunnel profile
PROFTILT3.DGN;1	192	Tunnel profile - 0.3-degree tilt
PROFTILT5.DGN;1	192	Tunnel profile - 0.5-degree tilt
PROPOSED.DGN;1	316	Database map for proposed data
PUTIN.BAT;4	1	
PUTIN.DEF;1	1	
REFILES.DAT;1	1	
RING.ATR;1	2	
RING.DGN;1	580	Three-dimensional plot of main tunnel
ROADS.DGN;1	20	Plot for access road drawing
SEED.DGN;9	16	Seed file
SEEDZ.DGN;12	16	Seed file
SG1.DGN;1	88	Drawing SG-1
SG2.DGN;1	160	Drawing SG-2
SG3.DGN;1	88	Drawing SG-3
SG4.DGN;1	60	Drawing SG-4
SG5.DGN;1	104	Drawing SG-5
SHALE.DGN;1	220	DTM plot file for top of shale
SHALE.GRD;1	1078	DTM file for top of shale
SHALE.TIN;1	105	DTM file for top of shale
SHALE.XYZ;1	20	DTM file for top of shale
SHALEIN.GRD;1	1078	DTM file for top of shale
SHALEOUT.GRD;1	1078	DTM output file
SITE3D.001;2	3605	DTM output file
SITE3D.DGN;12	20052	DTM output file
SITE3D.TBL;1	2	DTM file for site topography
SITE3D.TIN;1	956	DTM file for site topography
SITE3D.XYZ;1	162	DTM file for site topography
SITEBOT.DGN;1	52	Drawing PL-1B
SITEFLOOD.DGN;1	28	Drawing FM-1
SITEFOOT.DGN;1	1676	Footprint in Texas Coordinate System
SITELOC.DGN;1	44	Drawing PL-1
SITEMAP.DGN;1	3848	Map database (see table for levels)
SITEMAP2.DGN;1	2204	Map database (see table for levels)
SITETOP.DGN;1	52	Drawing PL-1A
SITETOPO.DGN;1	48	Drawing TM-1
SSC.CEL;1	756	Cell library

Table 7.3-1 (Cont'd)

DIRECTORY ZGA1:[102,004]

File Name	Size (Blocks)	Description
SSC3789.OUT;3	84	COGO output file
SSC3889.OUT;5	486	COGO output file
SSC3989.OUT;4	968	COGO output file
SSCTILT.ASC;5	273	COGO output file
SSCTILT.ASC;4	273	COGO output file
SSCTILT;ASC;3	272	COGO output file
SSCTILT.ASC;2	278	COGO output file
SSCTILT.ASC;1	278	COGO output file
SSCTILT.TCS;2	278	COGO output file
SSCTILT.TCS;1	278	COGO output file
TELEPHONE.DGN;1	28	Drawing TL-1
TEXASTATE.DGN;1	16	File for trial point plotting in TCS
TOPCHALK.DGN;1	28	Plot file for top of chalk
TOPSHALE.DGN;1	24	Plot file for top of shale
WASTE.DGN;1	24	Drawing WW-1
WATER.DGN;1	24	Drawing WS-1
WAXAHACH1.DGN;1	2208	Base map from TNRLC
WAXAHACH2.DGN;1	76	Base map from TNRLC

8. APPLICABLE COMPUTER PROGRAMS

Several computer programs have been used to date for determining coordinates for the SSC project. The following is a brief description of each program.

8.1 INTERACTIVE GEOMETRY SUBSYSTEM (ICS)

This is a program designed by Intergraph Corporation for either batch or interactive use. It is designed primarily for solution of surveying and coordinate geometry problems. Problems are solved by first storing the coordinates of known points, such as lattice coordinates. The user may then determine the coordinates of new points by specifying one of a group of commands which operates using the existing point coordinates. The user may also determine points using standard Interactive Graphics Design Software (IGDS) commands. ICS is an extension of the computing capability of IGDS. The transformation of coordinates from the ISP system to the modified ISP system may be done using ICS. A batch program should be used instead, however, in order to reduce the computation time and the possibility of errors during the setting of translation and rotation parameters. The following procedure may be used to transform coordinates using COGO.

8.1.1 Transforming Coordinates from ISP to Modified ISP System

This conversion is described in Section 4.4. It consists of tilting the ISP footprint plane and raising it to a predetermined elevation.

- The input file consists of four columns containing point numbers, Y-coordinates, X-coordinates, and Z-coordinates, respectively. This is an ASCII text file which may be edited for use as input to the ICS or COGO. Editing consists of removing all text except for the four columns of numbers. The word "STORE" is typed in on the line above the first number.

- At an Intergraph workstation, begin by creating a COGO database using the procedure described in the user's guide.

- Create a new graphics file for checking coordinates by plotting. Display the graphics file and attach the ICS library by keying in:

  RC = ZF1:[15,50]ICS.CEL

- Attach the ICS menu by keying in:

  AM = ICSA,M1

- Enter the name of the database when prompted.

- Select the command "AUTO PLOT" which will toggle to the OFF position.

- Select the command "INPUT FILE" and, at the prompt, key in the name of the prepared input file. Do not display the alpha readout. This will greatly speed up the input process.

- List some of the coordinates to verify that they have been stored in the database.

- With the "alpha scroll" off, select "TRANSFORM COORDINATES". Press "reset" twice to invoke the tutorial. Set the X- and Y-transformations to -100000.0000.

- Select "DIRECT" (transformation) and key in the description of points to be transformed. The points will be translated to a coordinate system in which the center of the lattice is at 0, 0, 0.

- Enter the following points into the database using the "STORE" command:

5001	0	100000	0
5002	65481.9433	75992.8040	0
5003	0	-100000	0
5004	-65481.9433	-75992.8040	0

  These points define two lines representing the strike angle.

- Select the "COMPUTE TRANSFORM" command and key in the following points which describe the counterclockwise rotation through the angle:

  (5001 5002) (5003 5004)

- Select the "TRANSFORM COORDINATES" command and key in the description of points to be transformed. The points will be rotated about the Z-axis so that the strike axis coincides with the Y-axis.

- Select "TRANSFORM COORDINATES" and invoke the screen tutorial for translation and rotation by pressing "reset" twice. Set the Y-axis rotation to:

  -0° 13′ 48.7" (This is the specified tilt angle.)

- Select "DIRECT" (transformation) and key in the description of points to be transformed. The points will be rotated to reflect the tilt of the ISP plane about the strike axis.

- Select the "COMPUTE TRANSFORM" command and key in the following points which describe the clockwise rotation through the angle θ:

  (5003 5004) (5001 5002)

- Select the "TRANSFORM COORDINATES" command and key in the description of points to be transformed. The points will be rotated about the Z-axis to their original orientation.

- Select "TRANSFORM COORDINATES" and invoke the screen tutorial for translation and rotation by pressing "reset" twice. Set the following translation values:

  X = 100000.00
  Y = 100000.00
  Z = 317.00

  The resulting values represent the coordinates of the points in the modified ISP system. They can be plotted in a 3D graphics file or transformed into the TCS using other programs.

- In order to generate a table of coordinates, specify an output file and key in "LIST COORDINATES" followed by a description of coordinates. Terminate the COGO program and edit the list of coordinates to prepare it for further processing.

8.2 TCS COORDINATE CONVERSION

8.2.1 The program TILT.EXE is available on the VAX system at RTK. This program converts coordinates from the ISP coordinate system to the modified ISP system. Points in the modified ISP system reflect the tilt of the ISP system (rotations of -.23019444...^{o}) about the strike axis and a vertical translation in which the center elevation is set to 317.00 ft (see Section 4.4.2).

The following instructions may be used to operate the program at a VAX terminal.

- At the DCL prompt, key in

  DCL: TILT:==$OAK_CAE_EXE:TILT

- The DCL prompt will reappear; key in

  DCL: TILT FILENAME.OUT FILENAME.INP

This will use the input file (FILENAME.INP) to compute a list of transformed coordinates which will be listed in the output file (FILENAME.OUT). The file names and extensions are optional.

- To key in points one at a time, with results displayed on the screen along with intermediate values, key in

  DCL: TILT [return]

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE * AMERICAN SURVEY FEET - - NAD 1927 - -		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1	82634.1334	62354.7918	385.62	228171.62	2180214.71	426.75

- o No prompt will appear; key in

  Point number (space) Y-coordinate (space) X-coordinate (space) Z-coordinate.

- o Output to screen unless filename is specified.

8.2.2 The program PLANE.EXE is available on the VAX system at RTK. This program has been updated to include the obliquity and center coordinates as of February 17, 1989 (see Section 4.2). It also uses a constant elevation of 317.00 ft for all points in computing the sea level factor. It computes X- and Y-coordinates only and introduces an error of between 0 ft and +/- 0.2 ft, depending on the actual elevation of the point. Future revision of this program will provide curvature-corrected elevations. Output accuracy of X- and Y-coordinates will also be increased due to the use of exact elevations for computing sea level factors.

The following instructions may be used to operate the program at a VAX terminal.

- o At the DCL prompt, key in

  DCL: PLANE:==$OAK_CAE_EXE:PLANE

- o The DCL prompt will reappear; key in

  DCL:PLANE FILENAME.OUT FILENAME.INP FILENAME.TXT

  This will use the input file (FILENAME.INP) to compute a list of transformed coordinates which will be listed in the output file (FILENAME.OUT). The intermediate values will be listed in the long file (FILENAME.TXT). The filenames and extensions are optional.

- o To key in points, one at a time, with results displayed on the screen along with intermediate values, key in

  DCL:PLANE [return]

- o The following prompt will appear

  Seq # Y-Coord. X-Coord.

- o Key in [return]

- o Then key in the point number, Y-coordinate, X-coordinate

- o The output file PLANE.SXY will be generated. It is necessary to copy it to a new file name to save it, because subsequent

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
52	101761.0440	60718.5876	440.91	246411.04	2174232.53	477.91
53	101886.2670	60723.7072	441.22	246534.08	2174208.77	478.22
54	102217.9749	60737.2704	442.63	246860.02	2174145.84	479.63
55	102260.9834	60739.0288	442.74	246902.29	2174137.68	479.74
56	102340.9033	60742.2962	442.94	246980.82	2174122.52	479.95
57	102383.9118	60744.0545	443.05	247023.08	2174114.36	480.06
58	102463.8317	60747.3219	443.25	247101.61	2174099.20	480.26
59	102506.8402	60749.0803	443.35	247143.87	2174091.04	480.37
60	102586.7601	60752.3477	443.55	247222.40	2174075.88	480.57
61	102629.7686	60754.1061	443.66	247264.66	2174067.72	480.68
62	103529.6522	60790.8983	446.49	248148.89	2173897.00	483.58
63	103570.6282	60792.5736	446.60	248189.15	2173889.22	483.68
64	103609.4737	60794.1617	446.69	248227.32	2173881.85	483.78
65	103657.0059	60796.1050	446.81	248274.03	2173872.83	483.91
66	103755.2176	60800.1203	447.06	248370.53	2173854.20	484.16
67	103853.4292	60804.1355	447.30	248467.04	2173835.57	484.42
68	103900.9615	60806.0788	447.42	248513.74	2173826.55	484.54
69	103939.8069	60807.6669	447.52	248551.91	2173819.18	484.65
70	103980.7831	60809.3422	447.62	248592.18	2173811.41	484.75
71	104880.6665	60846.1345	450.45	249476.41	2173640.69	487.71
72	104923.6750	60847.8928	450.56	249518.67	2173632.53	487.82
73	105003.5949	60851.1602	450.76	249597.20	2173617.37	488.03
74	105046.6034	60852.9186	450.87	249639.46	2173609.21	488.15
75	105126.5234	60856.1860	451.07	249717.99	2173594.05	488.36
76	105169.5319	60857.9443	451.18	249760.25	2173585.89	488.48
77	105249.4518	60861.2117	451.38	249838.78	2173570.72	488.69
78	105292.4603	60862.9701	451.49	249881.04	2173562.56	488.81
79	105624.1681	60876.5333	452.89	250206.98	2173499.64	490.27
80	105749.3912	60881.6529	453.21	250330.03	2173475.88	490.61
81	105808.3968	60884.0652	453.35	250388.00	2173464.68	490.77
82	106101.1805	60896.9631	454.08	250675.91	2173410.04	491.56
83	106382.7318	60911.2341	454.78	250953.20	2173359.31	492.32
84	106664.1835	60927.3518	455.47	251230.81	2173310.40	493.07
85	106945.5246	60945.2967	456.16	251508.74	2173263.30	493.81
86	107319.7888	60972.1573	457.06	251879.14	2173203.54	494.79
87	107694.4262	61002.7336	457.95	252250.77	2173147.32	495.76
88	108068.7459	61036.9786	458.84	252622.92	2173094.74	496.72
89	108349.2598	61065.0292	459.49	252902.36	2173057.66	497.43
90	108629.5857	61094.9010	460.13	253182.04	2173022.40	498.13
91	108909.7096	61126.6111	460.78	253461.94	2172988.97	498.83
92	109200.6929	61161.5025	461.44	253753.14	2172956.14	499.55
93	109259.3053	61168.7189	461.57	253811.84	2172949.71	499.70
94	109383.6938	61184.0335	461.85	253936.41	2172936.07	500.01
95	109713.1941	61224.5994	462.02	254266.40	2172899.93	500.25
96	109755.9159	61229.8593	462.11	254309.18	2172895.24	500.36
97	109835.3032	61239.6334	462.29	254388.69	2172886.53	500.56
98	109878.0252	61244.8934	462.39	254431.47	2172881.85	500.66
99	109957.4123	61254.6674	462.57	254510.98	2172873.14	500.86
100	110000.1343	61259.9273	462.67	254553.76	2172868.45	500.97
101	110079.5216	61269.7014	462.84	254633.27	2172859.75	501.17
102	110122.2435	61274.9613	462.94	254676.05	2172855.06	501.28

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
103	111016.1328	61385.0145	464.38	255571.26	2172757.01	502.97
104	111056.8359	61390.0258	464.48	255612.03	2172752.55	503.07
105	111095.4224	61394.7766	464.56	255650.67	2172748.32	503.17
106	111142.6379	61400.5897	464.67	255697.95	2172743.14	503.29
107	111240.1951	61412.6009	464.89	255795.66	2172732.44	503.54
108	111337.7522	61424.6120	465.11	255893.36	2172721.74	503.79
109	111384.9677	61430.4252	465.22	255940.64	2172716.56	503.91
110	111423.5542	61435.1759	465.30	255979.29	2172712.33	504.01
111	111464.2573	61440.1872	465.40	256020.05	2172707.86	504.12
112	112358.1466	61550.2405	466.84	256915.26	2172609.81	505.87
113	112400.8685	61555.5003	466.94	256958.04	2172605.13	505.98
114	112480.2558	61565.2745	467.11	257037.55	2172596.42	506.19
115	112522.9778	61570.5343	467.21	257080.33	2172591.73	506.30
116	112602.3649	61580.3085	467.39	257159.84	2172583.03	506.51
117	112645.0869	61585.5683	467.49	257202.62	2172578.34	506.62
118	112724.4742	61595.3425	467.67	257282.13	2172569.63	506.83
119	112767.1960	61600.6024	467.76	257324.91	2172564.95	506.94
120	113096.6963	61641.1683	467.93	257654.90	2172528.80	507.24
121	113221.0848	61656.4830	468.21	257779.47	2172515.16	507.57
122	113279.6972	61663.6993	468.35	257838.17	2172508.73	507.73
123	113570.4540	61700.4311	469.00	258129.57	2172477.75	508.50
124	113849.9038	61737.6154	469.62	258410.07	2172449.80	509.24
125	114129.1038	61776.6323	470.24	258690.75	2172423.70	509.97
126	114408.0446	61817.4612	470.85	258971.59	2172399.41	510.70
127	115133.6989	61933.2134	472.40	259704.37	2172345.53	512.56
128	115503.9794	61997.8707	473.18	260079.58	2172323.47	513.49
129	115873.7536	62065.3718	473.95	260454.94	2172304.30	514.41
130	116243.4789	62133.1415	474.72	260830.32	2172285.40	515.34
131	116612.8833	62202.6300	475.48	261205.77	2172268.25	516.27
132	116981.5893	62275.7342	476.23	261581.38	2172254.77	517.18
133	117349.7240	62351.6699	476.96	261957.09	2172244.19	518.08
134	117717.8038	62427.8730	477.70	262332.80	2172233.87	518.99
135	118085.5233	62505.7871	478.43	262708.55	2172225.31	519.90
136	118452.4619	62587.3001	479.15	263084.37	2172220.42	520.79
137	118818.5844	62672.4040	479.85	263460.22	2172219.22	521.67
138	119183.8556	62761.0905	480.55	263836.06	2172221.70	522.53
139	119548.2404	62853.3514	481.22	264211.86	2172227.86	523.39
140	119911.7039	62949.1777	481.89	264587.58	2172237.70	524.22
141	120274.2111	63048.5602	482.54	264963.19	2172251.23	525.05
142	120635.7274	63151.4894	483.18	265338.64	2172268.43	525.86
143	120996.2180	63257.9554	483.81	265713.91	2172289.31	526.66
144	121355.6482	63367.9480	484.42	266088.96	2172313.87	527.44
145	121713.9836	63481.4565	485.01	266463.75	2172342.10	528.21
146	122071.1898	63598.4702	485.60	266838.24	2172373.99	528.96
147	122427.2326	63718.9777	486.17	267212.40	2172409.56	529.70
148	122782.0776	63842.9676	486.73	267586.20	2172448.79	530.43
149	123135.6909	63970.4279	487.27	267959.60	2172491.68	531.14
150	123488.0386	64101.3464	487.80	268332.55	2172538.23	531.84
151	123839.0868	64235.7105	488.32	268705.04	2172588.42	532.52
152	124188.8019	64373.5074	488.82	269077.01	2172642.27	533.19
153	124537.1501	64514.7237	489.30	269448.44	2172699.76	533.84

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
154	124884.0983	64659.3460	489.78	269819.28	2172760.88	534.48
155	125229.6129	64807.3603	490.24	270189.51	2172825.63	535.10
156	125573.6609	64958.7525	490.68	270559.09	2172894.01	535.71
157	125916.2093	65113.5080	491.11	270927.98	2172966.00	536.31
158	126257.2251	65271.6121	491.53	271296.15	2173041.60	536.89
159	126596.6756	65433.0494	491.93	271663.56	2173120.81	537.45
160	126934.5283	65597.8045	492.32	272030.17	2173203.61	538.00
161	127270.7507	65765.8616	492.70	272395.96	2173290.00	538.54
162	127605.3105	65937.2045	493.06	272760.88	2173379.97	539.05
163	127938.1757	66111.8169	493.40	273124.91	2173473.52	539.56
164	128269.3143	66289.6819	493.73	273488.00	2173570.62	540.05
165	128598.6944	66470.7825	494.05	273850.12	2173671.27	540.52
166	128606.0907	66474.8988	494.06	273858.26	2173673.58	540.53
167	128926.2846	66655.1013	494.35	274211.23	2173775.47	540.98
168	129252.0533	66842.6206	494.64	274571.31	2173883.20	541.42
169	129575.9693	67033.3224	494.91	274930.32	2173994.45	541.85
170	129898.0015	67227.1884	495.17	275288.22	2174109.22	542.26
171	130218.1190	67424.2000	495.42	275644.98	2174227.48	542.66
172	130536.2910	67624.3383	495.65	276000.56	2174349.24	543.04
173	130852.4870	67827.5842	495.86	276354.93	2174474.47	543.40
174	131166.6768	68033.9179	496.06	276708.06	2174603.17	543.75
175	131478.8299	68243.3197	496.25	277059.91	2174735.32	544.09
176	131788.9167	68455.7698	496.42	277410.45	2174870.91	544.41
177	132096.9072	68671.2474	496.57	277759.64	2175009.93	544.71
178	132402.7720	68889.7320	496.71	278107.46	2175152.36	544.99
179	132706.4816	69111.2027	496.84	278453.86	2175298.20	545.27
180	133008.0070	69335.6382	496.95	278798.82	2175447.42	545.52
181	133307.3192	69563.0169	497.05	279142.30	2175600.01	545.76
182	133604.3894	69793.3170	497.13	279484.27	2175755.96	545.98
183	133899.1891	70026.5163	497.20	279824.69	2175915.26	546.19
184	134191.6900	70262.5926	497.25	280163.54	2176077.88	546.38
185	134481.8641	70501.5231	497.29	280500.78	2176243.81	546.56
186	134769.6836	70743.2850	497.31	280836.37	2176413.04	546.72
187	135055.1207	70987.8550	497.32	281170.29	2176585.55	546.86
188	135338.1481	71235.2096	497.31	281502.51	2176761.32	546.99
189	135618.7386	71485.3251	497.29	281832.99	2176940.34	547.11
190	135896.8654	71738.1775	497.26	282161.69	2177122.58	547.20
191	136172.5017	71993.7425	497.21	282488.60	2177308.04	547.28
192	136445.6209	72251.9957	497.14	282813.68	2177496.69	547.35
193	136716.1970	72512.9121	497.06	283136.89	2177688.52	547.39
194	136984.2040	72776.4668	496.96	283458.20	2177883.51	547.43
195	137249.6161	73042.6345	496.85	283777.59	2178081.63	547.44
196	137512.4079	73311.3896	496.73	284095.02	2178282.87	547.44
197	137772.5541	73582.7063	496.59	284410.47	2178487.21	547.43
198	138030.0298	73856.5586	496.44	284723.90	2178694.64	547.40
199	138284.8102	74132.9202	496.27	285035.28	2178905.12	547.35
200	138536.8708	74411.7646	496.08	285344.59	2179118.64	547.29
201	138786.1877	74693.0650	495.89	285651.79	2179335.19	547.21
202	139032.7367	74976.7944	495.67	285956.85	2179554.73	547.11
203	139276.4942	75262.9255	495.44	286259.75	2179777.25	547.00
204	139517.4369	75551.4311	495.20	286560.45	2180002.73	546.87

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
205	139755.5414	75842.2831	494.95	286858.93	2180231.14	546.73
206	139990.7852	76135.4540	494.67	287155.16	2180462.47	546.57
207	140223.1456	76430.9153	494.39	287449.11	2180696.68	546.39
208	140452.6002	76728.6389	494.09	287740.75	2180933.77	546.20
209	140679.1269	77028.5961	493.77	288030.05	2181173.70	546.00
210	140902.7042	77330.7582	493.44	288316.98	2181416.46	545.77
211	141123.3106	77635.0961	493.10	288601.53	2181662.01	545.53
212	141340.9247	77941.5806	492.74	288883.66	2181910.34	545.28
213	141555.5258	78250.1824	492.37	289163.34	2182161.42	545.01
214	141767.0934	78560.8717	491.98	289440.54	2182415.23	544.72
215	141975.6070	78873.6188	491.58	289715.25	2182671.74	544.42
216	142181.0466	79188.3936	491.17	289987.43	2182930.93	544.10
217	142383.3926	79505.1660	490.74	290257.06	2183192.77	543.77
218	142582.6254	79823.9056	490.29	290524.11	2183457.25	543.42
219	142778.7261	80144.5816	489.84	290788.55	2183724.33	543.06
220	142971.6758	80467.1635	489.36	291050.37	2183993.98	542.68
221	143161.4558	80791.6202	488.88	291309.53	2184266.19	542.28
222	143348.0482	81117.9204	488.38	291566.02	2184540.92	541.87
223	143531.4347	81446.0330	487.86	291819.80	2184818.15	541.44
224	143711.5981	81775.9265	487.34	292070.85	2185097.86	541.00
225	143888.5208	82107.5692	486.79	292319.15	2185380.01	540.55
226	144062.1861	82440.9292	486.24	292564.67	2185664.58	540.07
227	144232.5771	82775.9746	485.67	292807.40	2185951.54	539.58
228	144399.6775	83112.6732	485.09	293047.30	2186240.87	539.08
229	144563.4714	83450.9927	484.49	293284.35	2186532.53	538.56
230	144723.9428	83790.9006	483.88	293518.54	2186826.50	538.03
231	144881.0765	84132.3642	483.26	293749.83	2187122.75	537.48
232	145034.8574	84475.3509	482.62	293978.21	2187421.26	536.92
233	145185.2708	84819.8276	481.97	294203.66	2187721.98	536.34
234	145332.3021	85165.7614	481.31	294426.15	2188024.90	535.74
235	145475.9373	85513.1189	480.63	294645.66	2188329.99	535.14
236	145616.1626	85861.8671	479.94	294862.17	2188637.21	534.51
237	145752.9644	86211.9721	479.24	295075.66	2188946.54	533.87
238	145886.3298	86563.4006	478.52	295286.11	2189257.94	533.22
239	145889.2924	86571.3298	478.50	295290.82	2189264.98	533.21
240	146016.2459	86916.1188	477.79	295493.50	2189571.39	532.55
241	146142.7002	87270.0928	477.05	295697.81	2189886.86	531.87
242	146265.6806	87625.2886	476.29	295899.02	2190204.31	531.18
243	146385.1753	87981.6722	475.53	296097.11	2190523.72	530.47
244	146501.1727	88339.2093	474.75	296292.06	2190845.06	529.74
245	146613.6618	88697.8657	473.95	296483.86	2191168.28	529.00
246	146722.6319	89057.6069	473.15	296672.47	2191493.38	528.25
247	146828.0724	89418.3983	472.33	296857.90	2191820.30	527.48
248	146929.9732	89780.2054	471.50	297040.11	2192149.03	526.70
249	147028.3245	90142.9934	470.66	297219.09	2192479.52	525.90
250	147123.1168	90506.7275	469.80	297394.83	2192811.75	525.09
251	147214.3411	90871.3728	468.93	297567.30	2193145.69	524.27
252	147301.9888	91236.8942	468.05	297736.49	2193481.30	523.43
253	147386.0512	91603.2569	467.16	297902.39	2193818.56	522.58
254	147466.5203	91970.4254	466.26	298064.98	2194157.42	521.71
255	147543.3885	92338.3646	465.34	298224.23	2194497.86	520.84

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
256	147616.6483	92707.0392	464.42	298380.15	2194839.84	519.94
257	147686.2927	93076.4138	463.48	298532.71	2195183.33	519.04
258	147752.3151	93446.4529	462.53	298681.89	2195528.31	518.12
259	147814.7090	93817.1212	461.57	298827.69	2195874.72	517.19
260	147873.4686	94188.3828	460.59	298970.09	2196222.55	516.24
261	147928.5881	94560.2022	459.61	299109.07	2196571.76	515.29
262	147980.0623	94932.5438	458.62	299244.62	2196922.31	514.31
263	148027.8862	95305.3717	457.61	299376.74	2197274.17	513.33
264	148072.0553	95678.6503	456.59	299505.40	2197627.31	512.33
265	148112.5652	96052.3437	455.56	299630.59	2197981.69	511.33
266	148149.4122	96426.4159	454.53	299752.31	2198337.29	510.30
267	148182.5927	96800.8311	453.48	299870.54	2198694.06	509.27
268	148212.1035	97175.5534	452.42	299985.27	2199051.97	508.22
269	148237.9417	97550.5469	451.34	300096.48	2199410.98	507.17
270	148260.1049	97925.7754	450.26	300204.17	2199771.07	506.10
271	148278.5909	98301.2030	449.17	300308.33	2200132.20	505.01
272	148293.3981	98676.7937	448.07	300408.95	2200494.32	503.92
273	148304.5248	99052.5114	446.96	300506.01	2200857.42	502.81
274	148311.9702	99428.3200	445.84	300599.52	2201221.45	501.69
275	148315.7335	99804.1836	444.71	300689.45	2201586.38	500.56
276	148315.8143	100180.0659	443.56	300775.80	2201952.18	499.42
277	148312.2125	100555.9309	442.41	300858.57	2202318.80	498.27
278	148304.9287	100931.7425	441.25	300937.73	2202686.21	497.11
279	148293.9634	101307.4649	440.08	301013.30	2203054.38	495.93
280	148279.3176	101683.0616	438.91	301085.25	2203423.28	494.75
281	148260.9929	102058.4969	437.72	301153.59	2203792.86	493.55
282	148238.9910	102433.7346	436.52	301218.31	2204163.10	492.34
283	148213.3140	102808.7386	435.31	301279.39	2204533.95	491.12
284	148183.9643	103183.4731	434.10	301336.84	2204905.38	489.89
285	148150.9447	103557.9020	432.87	301390.64	2205277.35	488.65
286	148114.2585	103931.9896	431.64	301440.80	2205649.84	487.40
287	148073.9091	104305.6996	430.40	301487.31	2206022.80	486.14
288	148029.9005	104678.9964	429.15	301530.16	2206396.19	484.87
289	147982.2368	105051.8441	427.89	301569.35	2206769.99	483.59
290	147930.9226	105424.2069	426.63	301604.88	2207144.15	482.30
291	147875.9629	105796.0491	425.35	301636.74	2207518.65	481.00
292	147817.3630	106167.3351	424.07	301664.93	2207893.44	479.69
293	147755.1282	106538.0290	422.78	301689.45	2208268.48	478.38
294	147689.2650	106908.0954	421.49	301710.29	2208643.75	477.05
295	147619.7793	107277.4989	420.18	301727.45	2209019.21	475.71
296	147546.6779	107646.2038	418.87	301740.94	2209394.81	474.36
297	147469.9679	108014.1748	417.55	301750.74	2209770.53	473.01
298	147389.6566	108381.3765	416.23	301756.86	2210146.33	471.64
299	147305.7516	108747.7738	414.89	301759.30	2210522.17	470.27
300	147218.2611	109113.3316	413.55	301758.06	2210898.01	468.89
301	147127.1935	109478.0145	412.20	301753.14	2211273.83	467.50
302	147032.5574	109841.7879	410.85	301744.54	2211649.58	466.10
303	146934.3620	110204.6165	409.49	301732.25	2212025.22	464.69
304	146832.6168	110566.4657	408.12	301716.29	2212400.73	463.28
305	146727.3314	110927.3008	406.75	301696.64	2212776.06	461.85
306	146618.5160	111287.0871	405.37	301673.32	2213151.19	460.42

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
307	146506.1810	111645.7899	403.99	301646.33	2213526.06	458.99
308	146390.3372	112003.3750	402.60	301615.67	2213900.66	457.54
309	146270.9956	112359.8080	401.20	301581.33	2214274.93	456.09
310	146148.1680	112715.0547	399.80	301543.34	2214648.85	454.63
311	146021.8658	113069.0810	398.39	301501.68	2215022.38	453.16
312	146018.9806	113077.0386	398.36	301500.70	2215030.79	453.13
313	145892.1013	113421.8528	396.98	301456.36	2215395.49	451.69
314	145758.8870	113773.3365	395.56	301407.39	2215768.13	450.20
315	145622.2356	114123.4982	394.14	301354.78	2216140.28	448.72
316	145482.1602	114472.3042	392.71	301298.51	2216511.89	447.22
317	145338.6743	114819.7213	391.28	301238.62	2216882.93	445.72
318	145191.7917	115165.7159	389.84	301175.08	2217253.37	444.21
319	145041.5265	115510.2548	388.40	301107.93	2217623.17	442.70
320	144887.8930	115853.3051	386.95	301037.15	2217992.29	441.18
321	144730.9060	116194.8337	385.50	300962.76	2218360.70	439.66
322	144570.5806	116534.8080	384.05	300884.76	2218728.37	438.13
323	144406.9322	116873.1952	382.59	300803.17	2219095.25	436.59
324	144239.9765	117209.9629	381.13	300717.99	2219461.32	435.05
325	144069.7295	117545.0787	379.67	300629.22	2219826.53	433.50
326	143896.2076	117878.5106	378.20	300536.88	2220190.86	431.95
327	143719.4273	118210.2265	376.72	300440.98	2220554.26	430.39
328	143539.4058	118540.1944	375.25	300341.52	2220916.71	428.83
329	143356.1602	118868.3830	373.77	300238.51	2221278.17	427.27
330	143169.7081	119194.7604	372.29	300131.97	2221638.60	425.70
331	142980.0675	119519.2956	370.80	300021.90	2221997.97	424.12
332	142787.2565	119841.9572	369.32	299908.31	2222356.24	422.54
333	142591.2936	120162.7144	367.83	299791.23	2222713.38	420.96
334	142392.1978	120481.5363	366.34	299670.64	2223069.36	419.37
335	142189.9880	120798.3924	364.84	299546.58	2223424.14	417.78
336	141984.6836	121113.2523	363.35	299419.05	2223777.69	416.19
337	141776.3045	121426.0856	361.85	299288.06	2224129.97	414.59
338	141564.8706	121736.8625	360.35	299153.62	2224480.95	412.99
339	141350.4021	122045.5530	358.85	299015.75	2224830.60	411.39
340	141132.9196	122352.1275	357.34	298874.47	2225178.88	409.78
341	140912.4441	122656.5567	355.84	298729.77	2225525.76	408.17
342	140688.9967	122958.8113	354.33	298581.69	2225871.21	406.56
343	140462.5988	123258.8622	352.83	298430.23	2226215.19	404.95
344	140233.2723	123556.6807	351.32	298275.41	2226557.66	403.33
345	140001.0389	123852.2382	349.81	298117.23	2226898.61	401.71
346	139765.9211	124145.5063	348.30	297955.73	2227237.99	400.09
347	139527.9415	124436.4569	346.79	297790.91	2227575.77	398.47
348	139287.1229	124725.0620	345.28	297622.79	2227911.91	396.84
349	139043.4884	125011.2941	343.77	297451.38	2228246.40	395.22
350	138797.0614	125295.1255	342.26	297276.70	2228579.19	393.59
351	138547.8655	125576.5291	340.75	297098.78	2228910.25	391.96
352	138295.9246	125855.4777	339.24	296917.61	2229239.56	390.33
353	138041.2630	126131.9447	337.73	296733.23	2229567.07	388.70
354	137783.9050	126405.9035	336.22	296545.65	2229892.76	387.07
355	137523.8755	126677.3278	334.71	296354.89	2230216.60	385.44
356	137261.1992	126946.1916	333.21	296160.97	2230538.56	383.80
357	136995.9016	127212.4691	331.70	295963.90	2230858.60	382.17

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
358	136728.0078	127476.1347	330.19	295763.70	2231176.69	380.54
359	136457.5439	127737.1630	328.69	295560.40	2231492.80	378.90
360	136184.5357	127995.5292	327.19	295354.01	2231806.91	377.27
361	135909.0093	128251.2083	325.69	295144.55	2232118.99	375.64
362	135630.9912	128504.1757	324.19	294932.04	2232428.99	374.01
363	135350.5082	128754.4073	322.69	294716.51	2232736.90	372.38
364	135067.5871	129001.8791	321.19	294497.97	2233042.68	370.75
365	134782.2551	129246.5671	319.70	294276.45	2233346.31	369.12
366	134494.5396	129488.4480	318.21	294051.96	2233647.75	367.49
367	134204.4682	129727.4987	316.72	293824.53	2233946.98	365.86
368	133912.0687	129963.6959	315.23	293594.18	2234243.96	364.23
369	133617.3693	130197.0173	313.75	293360.93	2234538.68	362.61
370	133320.3981	130427.4402	312.27	293124.81	2234831.09	360.99
371	133021.1837	130654.9428	310.79	292885.83	2235121.18	359.37
372	132719.7548	130879.5029	309.32	292644.02	2235408.92	357.75
373	132416.1403	131101.0993	307.84	292399.41	2235694.27	356.13
374	132110.3696	131319.7105	306.38	292152.00	2235977.21	354.52
375	131802.4716	131535.3155	304.91	291901.84	2236257.71	352.91
376	131492.4762	131747.8938	303.45	291648.95	2236535.75	351.30
377	131180.4130	131957.4249	301.99	291393.34	2236811.30	349.69
378	130866.3120	132163.8886	300.54	291135.04	2237084.33	348.09
379	130550.2034	132367.2652	299.09	290874.09	2237354.81	346.49
380	130232.1174	132567.5352	297.64	290610.49	2237622.73	344.89
381	129912.0846	132764.6792	296.20	290344.28	2237888.05	343.30
382	129590.1357	132958.6785	294.77	290075.49	2238150.75	341.71
383	129266.3017	133149.5144	293.34	289804.13	2238410.81	340.13
384	128940.6137	133337.1684	291.91	289530.24	2238668.19	338.54
385	128933.2578	133341.3565	291.88	289524.05	2238673.96	338.51
386	128613.1028	133521.6227	290.49	289253.84	2238922.88	336.97
387	128283.8004	133702.8596	289.07	288974.96	2239174.85	335.39
388	127952.7383	133880.8617	287.66	288693.63	2239424.08	333.82
389	127619.9482	134055.6117	286.25	288409.86	2239670.53	332.26
390	127285.4621	134227.0931	284.85	288123.70	2239914.20	330.70
391	126949.3119	134395.2893	283.46	287835.16	2240155.05	329.14
392	126611.5300	134560.1842	282.07	287544.28	2240393.06	327.59
393	126272.1490	134721.7620	280.69	287251.08	2240628.21	326.05
394	125931.2012	134880.0071	279.31	286955.58	2240860.47	324.51
395	125588.7194	135034.9043	277.94	286657.83	2241089.83	322.98
396	125244.7365	135186.4388	276.57	286357.85	2241316.27	321.45
397	124899.2855	135334.5962	275.21	286055.66	2241539.75	319.92
398	124552.3995	135479.3620	273.86	285751.29	2241760.26	318.41
399	124204.1119	135620.7225	272.52	285444.78	2241977.78	316.89
400	123854.4562	135758.6640	271.18	285136.15	2242192.28	315.39
401	123503.4657	135893.1734	269.84	284825.44	2242403.76	313.89
402	123151.1744	136024.2377	268.52	284512.67	2242612.17	312.40
403	122797.6158	136151.8443	267.20	284197.87	2242817.52	310.91
404	122442.8240	136275.9810	265.89	283881.08	2243019.77	309.43
405	122086.8331	136396.6358	264.59	283562.32	2243218.90	307.96
406	121729.6772	136513.7974	263.29	283241.62	2243414.91	306.49
407	121371.3906	136627.4542	262.01	282919.02	2243607.76	305.04
408	121012.0077	136737.5955	260.73	282594.54	2243797.44	303.59

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
409	120651.5630	136844.2105	259.45	282268.23	2243983.94	302.14
410	120290.0910	136947.2893	258.19	281940.10	2244167.23	300.71
411	119927.6264	137046.8218	256.93	281610.19	2244347.29	299.28
412	119564.2042	137142.7985	255.69	281278.53	2244524.12	297.86
413	119199.8591	137235.2102	254.45	280945.16	2244697.68	296.44
414	118834.6260	137324.0480	253.22	280610.10	2244867.98	295.04
415	118468.5402	137409.3033	251.99	280273.39	2245034.98	293.64
416	118101.6366	137490.9681	250.78	279935.05	2245198.67	292.25
417	117733.9506	137569.0343	249.58	279595.14	2245359.05	290.88
418	117365.8660	137645.2082	248.38	279254.40	2245517.67	289.50
419	116997.7387	137721.1750	247.18	278913.57	2245676.10	288.14
420	116629.0643	137794.4318	245.99	278571.58	2245832.02	286.78
421	116259.6899	137864.0732	244.80	278228.08	2245984.58	285.43
422	115889.9602	137931.8135	243.62	277883.81	2246135.37	284.09
423	115520.1927	137999.3459	242.45	277539.44	2246285.97	282.76
424	115149.9400	138064.1564	241.28	277193.98	2246434.04	281.44
425	114779.0701	138125.3366	240.11	276847.09	2246578.71	280.12
426	114407.6187	138182.8803	238.96	276498.80	2246719.97	278.81
427	114128.6754	138223.6873	238.10	276236.69	2246823.71	277.84
428	113849.4729	138262.6818	237.25	275973.92	2246925.75	276.87
429	113570.0205	138299.8438	236.40	275710.48	2247026.06	275.91
430	113275.3547	138337.0334	235.52	275432.24	2247129.89	274.90
431	113231.8213	138342.3897	235.38	275391.10	2247145.10	274.75
432	112549.6525	138426.3229	233.33	274746.47	2247383.37	272.44
433	112509.9826	138431.2039	233.22	274708.98	2247397.22	272.30
434	111239.7451	138587.4923	229.40	273508.64	2247840.89	268.05
435	109969.5077	138743.7808	225.58	272308.29	2248284.56	263.88
436	109929.8378	138748.6618	225.46	272270.80	2248298.42	263.75
437	109247.6690	138832.5950	223.41	271626.17	2248536.69	261.54
438	109204.1356	138837.9513	223.28	271585.03	2248551.90	261.40
439	108909.2432	138873.3005	222.40	271306.15	2248653.99	260.46
440	108629.1173	138904.9882	221.57	271040.80	2248749.13	259.57
441	108348.7896	138934.8376	220.74	270774.83	2248842.52	258.68
442	108068.2739	138962.8660	219.92	270508.26	2248934.19	257.80
443	107694.6219	138997.2030	218.83	270152.49	2249053.37	256.64
444	107319.9979	139027.9342	217.75	269794.95	2249169.27	255.48
445	106945.0906	139054.9939	216.68	269436.30	2249281.66	254.33
446	106663.7483	139072.9167	215.89	269166.60	2249363.69	253.48
447	106382.2955	139089.0119	215.10	268896.38	2249443.95	252.63
448	106100.7433	139103.2603	214.31	268625.64	2249522.45	251.79
449	105804.0259	139116.2956	213.49	268339.86	2249603.24	250.91
450	105760.2006	139118.0839	213.37	268297.62	2249615.04	250.78
451	105073.4587	139146.1056	211.48	267635.69	2249799.95	248.76
452	105033.5229	139147.7351	211.37	267597.20	2249810.70	248.65
453	103754.7700	139199.9132	207.85	266364.67	2250155.00	244.95
454	102476.0171	139252.0913	204.33	265132.13	2250499.31	241.34
455	102436.0813	139253.7209	204.22	265093.64	2250510.06	241.23
456	101749.3394	139281.7426	202.32	264431.71	2250694.97	239.32
457	101705.5142	139283.5308	202.20	264389.47	2250706.77	239.20
458	101408.7211	139294.7134	201.39	264103.19	2250785.78	238.38
459	101126.9439	139303.4508	200.62	263830.96	2250858.96	237.61

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
460	100845.1154	139310.3395	199.86	263558.26	2250930.35	236.85
461	100563.2482	139315.3982	199.10	263285.10	2250999.98	236.09
462	100188.0403	139319.1489	198.10	262920.80	2251089.75	235.10
463	99812.1576	139319.2267	197.11	262555.00	2251176.11	234.11
464	99436.2921	139315.6219	196.14	262188.37	2251258.87	233.13
465	99154.4251	139310.5411	195.41	261912.88	2251318.63	232.40
466	98872.5971	139303.6298	194.69	261637.01	2251376.59	231.68
467	98590.8204	139294.8698	193.97	261360.77	2251432.75	230.97
468	98301.2392	139283.9587	193.25	261076.44	2251488.60	230.24
469	98255.3459	139282.0824	193.13	261031.34	2251497.31	230.13
470	98117.0105	139276.4268	192.78	260895.41	2251523.56	229.78
471	97782.0216	139262.7330	192.52	260566.25	2251587.12	229.52
472	97739.0130	139260.9747	192.41	260523.99	2251595.28	229.42
473	97659.0932	139257.7073	192.21	260445.46	2251610.45	229.22
474	97616.0846	139255.9489	192.10	260403.20	2251618.61	229.11
475	97536.1647	139252.6815	191.90	260324.67	2251633.77	228.91
476	97493.1561	139250.9232	191.79	260282.41	2251641.93	228.81
477	97413.2363	139247.6558	191.59	260203.88	2251657.10	228.61
478	97370.2277	139245.8974	191.49	260161.62	2251665.26	228.51
479	96798.8064	139222.5375	190.63	259600.13	2251773.69	227.68
480	96760.1250	139220.9560	190.53	259562.12	2251781.03	227.59
481	96695.7105	139218.3225	190.37	259498.83	2251793.25	227.43
482	96660.3071	139216.8751	190.28	259464.04	2251799.97	227.35
483	96244.7761	139199.8867	189.24	259055.73	2251878.81	226.35
484	95829.2453	139182.8983	188.20	258647.43	2251957.66	225.35
485	95793.8419	139181.4509	188.11	258612.64	2251964.38	225.27
486	95729.4274	139178.8174	187.95	258549.34	2251976.60	225.11
487	95690.7460	139177.2360	187.85	258511.33	2251983.94	225.02
488	95119.3247	139153.8759	186.99	257949.85	2252092.37	224.24
489	95076.3161	139152.1177	186.88	257907.59	2252100.53	224.14
490	94996.3963	139148.8502	186.68	257829.06	2252115.69	223.96
491	94953.3877	139147.0919	186.58	257786.80	2252123.86	223.86
492	94873.4678	139143.8245	186.38	257708.27	2252139.02	223.67
493	94830.4592	139142.0661	186.27	257666.00	2252147.18	223.57
494	94750.5394	139138.7987	186.07	257587.47	2252162.35	223.38
495	94707.5308	139137.0404	185.96	257545.21	2252170.51	223.28
496	94372.5419	139123.3466	185.69	257216.05	2252234.07	223.08
497	94234.2065	139117.6909	185.35	257080.12	2252260.32	222.76
498	94188.3132	139115.8146	185.23	257035.02	2252269.03	222.65
499	93898.8077	139103.0508	184.51	256750.34	2252323.06	221.99
500	93617.2563	139088.7799	183.81	256473.05	2252373.80	221.35
501	93335.8046	139072.6621	183.12	256195.43	2252422.72	220.71
502	93054.4635	139054.7173	182.43	255917.50	2252469.83	220.09
503	92680.1993	139027.8566	181.53	255547.09	2252529.60	219.26
504	92305.5620	138997.2804	180.64	255175.46	2252585.84	218.45
505	91931.2422	138963.0353	179.76	254803.30	2252638.43	217.64
506	91650.7283	138934.9847	179.10	254523.86	2252675.52	217.05
507	91370.4024	138905.1129	178.46	254244.18	2252710.79	216.46
508	91090.2786	138873.4029	177.82	253964.28	2252744.23	215.88
509	90802.5515	138838.9123	177.17	253676.33	2252776.71	215.28
510	90756.9641	138833.2996	177.06	253630.68	2252781.71	215.19

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
511	90619.5506	138816.3814	176.75	253493.06	2252796.79	214.91
512	90286.7971	138775.4111	175.43	253159.81	2252833.29	213.66
513	90244.0752	138770.1511	175.33	253117.02	2252837.98	213.58
514	90164.6879	138760.3771	175.15	253037.52	2252846.69	213.42
515	90121.9660	138755.1171	175.05	252994.73	2252851.38	213.33
516	90042.5788	138745.3430	174.88	252915.23	2252860.09	213.17
517	89999.8568	138740.0831	174.78	252872.44	2252864.78	213.08
518	89920.4695	138730.3090	174.60	252792.93	2252873.49	212.92
519	89877.7476	138725.0492	174.50	252750.15	2252878.17	212.84
520	89310.1374	138655.1634	172.65	252181.69	2252940.45	211.14
521	89271.7137	138650.4327	172.56	252143.21	2252944.66	211.06
522	89207.7285	138642.5548	172.42	252079.13	2252951.68	210.94
523	89172.5611	138638.2251	172.34	252043.91	2252955.54	210.87
524	88759.7995	138587.4061	171.41	251630.53	2253000.83	210.06
525	88347.0379	138536.5872	170.47	251217.15	2253046.12	209.26
526	88311.8704	138532.2574	170.40	251181.93	2253049.97	209.19
527	88247.8852	138524.3795	170.25	251117.85	2253056.99	209.07
528	88209.4615	138519.6489	170.16	251079.37	2253061.21	208.99
529	87641.8513	138449.7631	168.31	250510.91	2253123.49	207.34
530	87599.1294	138444.5032	168.21	250468.12	2253128.17	207.26
531	87519.7421	138434.7291	168.03	250388.62	2253136.88	207.11
532	87477.0202	138429.4693	167.94	250345.83	2253141.57	207.03
533	87397.6330	138419.6951	167.76	250266.33	2253150.28	206.88
534	87354.9110	138414.4352	167.66	250223.54	2253154.97	206.80
535	87275.5238	138404.6611	167.48	250144.03	2253163.68	206.65
536	87232.8019	138399.4012	167.39	250101.25	2253168.36	206.57
537	86900.0484	138358.4308	166.06	249768.00	2253204.87	205.37
538	86762.6349	138341.5126	165.75	249630.38	2253219.95	205.12
539	86717.0475	138335.8999	165.65	249584.72	2253224.95	205.04
540	86429.5469	138299.5690	165.00	249296.58	2253255.59	204.51
541	86150.0971	138262.3847	164.38	249016.07	2253283.54	204.00
542	85870.8971	138223.3678	163.76	248735.39	2253309.66	203.50
543	85591.9564	138182.5389	163.15	248454.54	2253333.95	203.01
544	84866.3020	138066.7867	161.60	247721.74	2253387.86	201.75
545	84496.0215	138002.1294	160.82	247346.53	2253409.93	201.13
546	84126.2474	137934.6283	160.05	246971.15	2253429.11	200.51
547	83756.5220	137866.8586	159.28	246595.77	2253448.02	199.91
548	83387.1176	137797.3701	158.52	246220.30	2253465.19	199.31
549	83018.4117	137724.2659	157.77	245844.68	2253478.67	198.73
550	82650.2769	137648.3302	157.04	245468.97	2253489.27	198.16
551	82282.1972	137572.1271	156.30	245093.25	2253499.60	197.59
552	81914.4777	137494.2130	155.57	244717.49	2253508.18	197.03
553	81547.5390	137412.7000	154.85	244341.66	2253513.07	196.49
554	81181.4165	137327.5961	154.15	243965.80	2253514.29	195.96
555	80816.1453	137238.9096	153.45	243589.94	2253511.82	195.44
556	80451.7605	137146.6487	152.78	243214.13	2253505.67	194.94
557	80088.2971	137050.8224	152.11	242838.40	2253495.84	194.45
558	79725.7898	136951.4399	151.46	242462.78	2253482.32	193.97
559	79364.2736	136848.5107	150.82	242087.31	2253465.13	193.50
560	79003.7830	136742.0446	150.20	241712.03	2253444.26	193.05
561	78644.3527	136632.0521	149.58	241336.97	2253419.72	192.61

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
562	78286.0173	136518.5436	148.99	240962.17	2253391.50	192.18
563	77928.8112	136401.5299	148.40	240587.67	2253359.61	191.76
564	77572.7684	136281.0224	147.83	240213.49	2253324.05	191.36
565	77217.9234	136157.0325	147.27	239839.68	2253284.83	190.97
566	76864.3100	136029.5722	146.73	239466.27	2253241.95	190.60
567	76511.9623	135898.6537	146.20	239093.30	2253195.42	190.24
568	76160.9141	135764.2896	145.68	238720.81	2253145.23	189.89
569	75811.1990	135626.4927	145.18	238348.82	2253091.39	189.55
570	75462.8508	135485.2764	144.70	237977.38	2253033.91	189.23
571	75115.9027	135340.6541	144.22	237606.52	2252972.80	188.92
572	74770.3880	135192.6398	143.76	237236.28	2252908.06	188.63
573	74426.3400	135041.2475	143.32	236866.68	2252839.69	188.35
574	74083.7916	134886.4921	142.89	236497.78	2252767.70	188.08
575	73742.7759	134728.3880	142.47	236129.60	2252692.11	187.82
576	73403.3253	134566.9507	142.07	235762.18	2252612.91	187.58
577	73065.4726	134402.1956	141.68	235395.55	2252530.11	187.36
578	72729.2502	134234.1385	141.30	235029.74	2252443.73	187.14
579	72394.6904	134062.7956	140.94	234664.81	2252353.77	186.94
580	72061.8252	133888.1832	140.60	234300.77	2252260.23	186.75
581	71730.6867	133710.3182	140.27	233937.66	2252163.14	186.58
582	71401.3065	133529.2176	139.95	233575.53	2252062.49	186.42
583	71393.9102	133525.1013	139.94	233567.39	2252060.18	186.42
584	71073.7163	133344.8988	139.65	233214.40	2251958.30	186.27
585	70747.9476	133157.3795	139.36	232854.30	2251850.57	186.14
586	70424.0316	132966.6777	139.09	232495.28	2251739.33	186.02
587	70101.9995	132772.8117	138.83	232137.36	2251624.57	185.92
588	69781.8820	132575.8000	138.58	231780.59	2251506.31	185.83
589	69463.7100	132375.6618	138.36	231424.99	2251384.56	185.75
590	69147.5140	132172.4159	138.14	231070.60	2251259.33	185.68
591	68833.3242	131966.0822	137.94	230717.46	2251130.64	185.63
592	68521.1710	131756.6803	137.75	230365.59	2250998.49	185.60
593	68211.0843	131544.2303	137.58	230015.04	2250862.90	185.57
594	67903.0937	131328.7527	137.43	229665.83	2250723.89	185.56
595	67597.2289	131110.2681	137.29	229318.00	2250581.46	185.57
596	67293.5193	130888.7974	137.16	228971.58	2250435.62	185.59
597	66991.9939	130664.3619	137.05	228626.60	2250286.41	185.62
598	66692.6818	130436.9832	136.95	228283.11	2250133.82	185.66
599	66395.6116	130206.6831	136.87	227941.12	2249977.87	185.72
600	66100.8119	129973.4838	136.80	227600.69	2249818.58	185.80
601	65808.3109	129737.4075	136.75	227261.82	2249655.96	185.88
602	65518.1368	129498.4770	136.71	226924.57	2249490.03	185.98
603	65230.3174	129256.7151	136.69	226588.96	2249320.80	186.10
604	64944.8802	129012.1451	136.68	226255.02	2249148.29	186.23
605	64661.8528	128764.7905	136.69	225922.79	2248972.52	186.37
606	64381.2623	128514.6750	136.71	225592.29	2248793.50	186.52
607	64103.1355	128261.8226	136.74	225263.57	2248611.26	186.69
608	63827.4993	128006.2575	136.79	224936.65	2248425.80	186.87
609	63554.3801	127748.0044	136.86	224611.56	2248237.15	187.07
610	63283.8040	127487.0879	136.94	224288.33	2248045.32	187.28
611	63015.7969	127223.5333	137.04	223967.00	2247850.34	187.50
612	62750.3849	126957.3656	137.15	223647.59	2247652.21	187.74

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
613	62487.5931	126688.6105	137.27	223330.14	2247450.97	187.99
614	62227.4468	126417.2938	137.41	223014.68	2247246.63	188.25
615	61969.9712	126143.4415	137.56	222701.23	2247039.20	188.53
616	61715.1908	125867.0799	137.73	222389.83	2246828.72	188.82
617	61463.1301	125588.2355	137.92	222080.51	2246615.19	189.12
618	61213.8132	125306.9351	138.11	221773.30	2246398.64	189.44
619	60967.2642	125023.2057	138.33	221468.22	2246179.10	189.77
620	60723.5067	124737.0746	138.56	221165.31	2245956.57	190.11
621	60482.5641	124448.5690	138.80	220864.59	2245731.09	190.47
622	60244.4595	124157.7169	139.05	220566.09	2245502.68	190.84
623	60009.2157	123864.5461	139.33	220269.85	2245271.35	191.22
624	59776.8554	123569.0848	139.61	219975.89	2245037.13	191.62
625	59547.4008	123271.3612	139.91	219684.23	2244800.04	192.03
626	59320.8740	122971.4040	140.23	219394.92	2244560.10	192.45
627	59097.2967	122669.2419	140.56	219107.96	2244317.34	192.89
628	58876.6904	122364.9040	140.90	218823.40	2244071.78	193.33
629	58659.0763	122058.4195	141.26	218541.26	2243823.45	193.80
630	58444.4751	121749.8177	141.63	218261.57	2243572.36	194.27
631	58232.9076	121439.1284	142.02	217984.35	2243318.55	194.76
632	58024.3939	121126.3813	142.42	217709.62	2243062.03	195.26
633	57818.9544	120811.6065	142.83	217437.43	2242802.83	195.77
634	57616.6083	120494.8340	143.26	217167.79	2242540.98	196.30
635	57417.3756	120176.0945	143.71	216900.72	2242276.50	196.84
636	57221.2749	119855.4185	144.16	216636.26	2242009.42	197.39
637	57028.3252	119532.8366	144.64	216374.43	2241739.75	197.95
638	56838.5451	119208.3799	145.12	216115.26	2241467.54	198.53
639	56651.9528	118882.0797	145.62	215858.76	2241192.80	199.12
640	56468.5662	118553.9671	146.14	215604.97	2240915.56	199.72
641	56288.4029	118224.0736	146.66	215353.90	2240635.85	200.33
642	56111.4801	117892.4309	147.21	215105.59	2240353.69	200.96
643	55937.8148	117559.0709	147.76	214860.05	2240069.11	201.59
644	55767.4239	117224.0255	148.33	214617.32	2239782.14	202.25
645	55600.3234	116887.3269	148.91	214377.40	2239492.80	202.91
646	55436.5296	116549.0074	149.51	214140.34	2239201.13	203.58
647	55276.0581	116209.0995	150.12	213906.14	2238907.15	204.27
648	55118.9244	115867.6359	150.74	213674.83	2238610.89	204.97
649	54965.1435	115524.6492	151.38	213446.44	2238312.37	205.68
650	54814.7301	115180.1725	152.03	213220.98	2238011.64	206.40
651	54667.6988	114834.2387	152.69	212998.48	2237708.71	207.13
652	54524.0636	114486.8812	153.37	212778.96	2237403.61	207.88
653	54383.8384	114138.1330	154.06	212562.43	2237096.38	208.63
654	54247.0365	113788.0280	154.76	212348.93	2236787.04	209.40
655	54113.6712	113436.5995	155.48	212138.47	2236475.63	210.18
656	54110.7086	113428.6703	155.50	212133.77	2236468.59	210.20
657	53983.7550	113083.8813	156.21	211931.07	2236162.17	210.97
658	53857.3007	112729.9073	156.95	211726.75	2235846.69	211.78
659	53734.3203	112374.7115	157.71	211525.53	2235529.22	212.59
660	53614.8257	112018.3279	158.47	211327.43	2235209.80	213.41
661	53498.8282	111660.7907	159.25	211132.47	2234888.46	214.25
662	53386.3391	111302.1344	160.05	210940.67	2234565.21	215.10
663	53277.3690	110942.3932	160.85	210752.05	2234240.11	215.95

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE *	- - NAD 1927 - - AMERICAN SURVEY FEET	
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
664	53171.9285	110581.6018	161.67	210566.61	2233913.17	216.82
665	53070.0278	110219.7947	162.50	210384.39	2233584.43	217.70
666	52971.6765	109857.0067	163.34	210205.40	2233253.93	218.59
667	52876.8841	109493.2726	164.20	210029.66	2232921.68	219.49
668	52785.6598	109128.6273	165.07	209857.18	2232587.73	220.40
669	52698.0122	108763.1058	165.95	209687.98	2232252.11	221.32
670	52613.9498	108396.7432	166.84	209522.07	2231914.84	222.25
671	52533.4806	108029.5747	167.74	209359.48	2231575.96	223.20
672	52456.6124	107661.6355	168.66	209200.22	2231235.51	224.15
673	52383.3526	107292.9609	169.58	209044.30	2230893.52	225.11
674	52313.7082	106923.5863	170.52	208891.73	2230550.01	226.08
675	52247.6858	106553.5472	171.47	208742.54	2230205.02	227.06
676	52185.2919	106182.8789	172.43	208596.74	2229858.59	228.05
677	52126.5324	105811.6173	173.41	208454.34	2229510.75	229.05
678	52071.4128	105439.7979	174.39	208315.35	2229161.53	230.06
679	52019.9387	105067.4563	175.38	208179.79	2228810.96	231.08
680	51972.1148	104694.6283	176.39	208047.67	2228459.09	232.11
681	51927.9456	104321.3498	177.41	207919.01	2228105.93	233.15
682	51887.4357	103947.6564	178.44	207793.81	2227751.53	234.20
683	51850.5887	103573.5842	179.47	207672.09	2227395.93	235.26
684	51817.4082	103199.1690	180.52	207553.86	2227039.14	236.32
685	51787.8975	102824.4466	181.58	207439.13	2226681.22	237.39
686	51762.0592	102449.4532	182.66	207327.91	2226322.19	238.48
687	51739.8961	102074.2247	183.74	207220.22	2225962.09	239.57
688	51721.4100	101698.7970	184.83	207116.05	2225600.95	240.67
689	51706.6029	101323.2064	185.93	207015.43	2225238.80	241.78
690	51695.4761	100947.4887	187.04	206918.37	2224875.69	242.90
691	51688.0307	100571.6801	188.16	206824.87	2224511.64	244.02
692	51684.2675	100195.8165	189.29	206734.93	2224146.70	245.15
693	51684.1867	99819.9342	190.44	206648.58	2223780.89	246.29
694	51687.7884	99444.0692	191.59	206565.82	2223414.25	247.44
695	51695.0722	99068.2575	192.75	206486.65	2223046.83	248.60
696	51706.0376	98692.5352	193.92	206411.08	2222678.64	249.76
697	51720.6833	98316.9384	195.10	206339.13	2222309.73	250.94
698	51739.0080	97941.5032	196.28	206270.79	2221940.13	252.12
699	51761.0099	97566.2655	197.48	206206.08	2221569.88	253.30
700	51786.6870	97191.2615	198.69	206145.00	2221199.02	254.50
701	51816.0367	96816.5270	199.90	206087.55	2220827.57	255.70
702	51849.0562	96442.0981	201.13	206033.75	2220455.58	256.91
703	51885.7425	96068.0105	202.36	205983.59	2220083.08	258.12
704	51926.0919	95694.3005	203.60	205937.09	2219710.11	259.34
705	51970.1004	95321.0037	204.85	205894.24	2219336.69	260.57
706	52017.7642	94948.1560	206.11	205855.05	2218962.88	261.81
707	52069.0783	94575.7932	207.37	205819.53	2218588.70	263.05
708	52124.0380	94203.9509	208.65	205787.67	2218214.19	264.30
709	52182.6380	93832.6650	209.93	205759.48	2217839.39	265.55
710	52244.8727	93461.9711	211.22	205734.97	2217464.33	266.81
711	52310.7359	93091.9047	212.51	205714.13	2217089.05	268.07
712	52380.2216	92722.5012	213.82	205696.98	2216713.58	269.35
713	52453.3230	92353.7963	215.13	205683.50	2216337.96	270.62
714	52530.0331	91985.8253	216.45	205673.70	2215962.22	271.91

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
715	52610.3444	91618.6236	217.78	205667.58	2215586.41	273.19
716	52694.2494	91252.2263	219.11	205665.14	2215210.56	274.49
717	52781.7398	90886.6685	220.45	205666.39	2214834.70	275.79
718	52872.8074	90521.9856	221.80	205671.32	2214458.87	277.09
719	52967.4435	90158.2122	223.15	205679.93	2214083.11	278.40
720	53065.6389	89795.3836	224.51	205692.23	2213707.45	279.71
721	53167.3842	89433.5344	225.88	205708.20	2213331.93	281.03
722	53272.6696	89072.6992	227.25	205727.85	2212956.58	282.35
723	53381.4849	88712.9130	228.63	205751.17	2212581.44	283.68
724	53493.8199	88354.2101	230.01	205778.18	2212206.55	285.01
725	53609.6638	87996.6250	231.40	205808.85	2211831.95	286.34
726	53729.0053	87640.1921	232.80	205843.19	2211457.66	287.68
727	53851.8330	87284.9454	234.20	205881.20	2211083.72	289.03
728	53978.1352	86930.9191	235.61	205922.86	2210710.18	290.37
729	53981.0203	86922.9615	235.64	205923.84	2210701.77	290.41
730	54107.8996	86578.1472	237.02	205968.19	2210337.06	291.73
731	54241.1139	86226.6635	238.44	206017.17	2209964.41	293.08
732	54377.7654	85876.5019	239.86	206069.80	2209592.25	294.44
733	54517.8407	85527.6959	241.29	206126.07	2209220.63	295.80
734	54661.3266	85180.2788	242.72	206185.98	2208849.57	297.16
735	54808.2092	84834.2842	244.16	206249.52	2208479.12	298.53
736	54958.4745	84489.7453	245.60	206316.69	2208109.31	299.90
737	55112.1080	84146.6950	247.05	206387.47	2207740.18	301.27
738	55269.0950	83805.1664	248.50	206461.87	2207371.75	302.65
739	55429.4204	83465.1921	249.95	206539.88	2207004.08	304.03
740	55593.0688	83126.8049	251.41	206621.49	2206637.18	305.41
741	55760.0245	82790.0372	252.87	206706.68	2206271.10	306.79
742	55930.2714	82454.9214	254.33	206795.46	2205905.88	308.17
743	56103.7934	82121.4895	255.80	206887.81	2205541.54	309.56
744	56280.5737	81789.7736	257.28	206983.73	2205178.13	310.95
745	56460.5951	81459.8057	258.75	207083.20	2204815.67	312.34
746	56643.8408	81131.6171	260.23	207186.22	2204454.20	313.73
747	56830.2928	80805.2397	261.71	207292.78	2204093.76	315.12
748	57019.9335	80480.7045	263.20	207402.86	2203734.38	316.52
749	57212.7444	80158.0429	264.68	207516.46	2203376.10	317.91
750	57408.7073	79837.2857	266.17	207633.56	2203018.95	319.31
751	57607.8031	79518.4637	267.66	207754.15	2202662.96	320.70
752	57810.0129	79201.6077	269.16	207878.23	2202308.17	322.10
753	58015.3173	78886.7478	270.65	208005.78	2201954.62	323.50
754	58223.6964	78573.9144	272.15	208136.78	2201602.33	324.90
755	58435.1304	78263.1376	273.65	208271.23	2201251.34	326.30
756	58649.5989	77954.4471	275.15	208409.11	2200901.68	327.70
757	58867.0814	77647.8726	276.66	208550.42	2200553.39	329.10
758	59087.5569	77343.4433	278.16	208695.12	2200206.51	330.50
759	59311.0043	77041.1888	279.67	208843.22	2199861.05	331.90
760	59537.4021	76741.1379	281.17	208994.70	2199517.07	333.29
761	59766.7287	76443.3194	282.68	209149.53	2199174.58	334.69
762	59998.9621	76147.7619	284.19	209307.72	2198833.63	336.09
763	60234.0798	75854.4938	285.70	209469.24	2198494.25	337.49
764	60472.0594	75563.5432	287.21	209634.08	2198156.46	338.88
765	60712.8780	75274.9380	288.72	209802.21	2197820.31	340.28

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
766	60956.5125	74988.7060	290.23	209973.64	2197485.82	341.67
767	61202.9395	74704.8746	291.74	210148.33	2197153.02	343.07
768	61452.1354	74423.4710	293.25	210326.27	2196821.95	344.46
769	61704.0764	74144.5224	294.76	210507.45	2196492.64	345.85
770	61958.7380	73868.0554	296.27	210691.85	2196165.12	347.24
771	62216.0959	73594.0966	297.78	210879.44	2195839.43	348.62
772	62476.1255	73322.6723	299.29	211070.22	2195515.59	350.01
773	62738.8017	73053.8085	300.79	211264.16	2195193.63	351.39
774	63004.0994	72787.5310	302.30	211461.25	2194873.59	352.77
775	63271.9931	72523.8654	303.81	211661.46	2194555.49	354.15
776	63542.4570	72262.8371	305.31	211864.78	2194239.37	355.52
777	63815.4653	72004.4709	306.81	212071.18	2193925.26	356.90
778	64090.9916	71748.7918	308.31	212280.66	2193613.18	358.27
779	64369.0098	71495.8244	309.81	212493.18	2193303.18	359.63
780	64649.4928	71245.5928	311.31	212708.73	2192995.26	361.00
781	64932.4138	70998.1210	312.81	212927.28	2192689.48	362.36
782	65217.7459	70753.4330	314.30	213148.82	2192385.85	363.72
783	65505.4613	70511.5521	315.79	213373.32	2192084.41	365.07
784	65795.5327	70272.5014	317.28	213600.77	2191785.18	366.42
785	66087.9322	70036.3042	318.77	213831.14	2191488.19	367.77
786	66382.6317	69802.9828	320.25	214064.40	2191193.48	369.11
787	66679.6029	69572.5599	321.73	214300.54	2190901.06	370.45
788	66978.8172	69345.0573	323.21	214539.54	2190610.97	371.79
789	67280.2461	69120.4972	324.68	214781.36	2190323.24	373.12
790	67583.8606	68898.9008	326.16	215026.00	2190037.89	374.45
791	67889.6314	68680.2896	327.62	215273.41	2189754.95	375.77
792	68197.5293	68464.6846	329.09	215523.59	2189474.45	377.09
793	68507.5248	68252.1063	330.55	215776.50	2189196.41	378.40
794	68819.5880	68042.5752	332.01	216032.13	2188920.86	379.71
795	69133.6889	67836.1115	333.46	216290.44	2188647.84	381.01
796	69449.7976	67632.7348	334.91	216551.41	2188377.35	382.31
797	69767.8835	67432.4649	336.36	216815.02	2188109.44	383.60
798	70087.9163	67235.3209	337.80	217081.25	2187844.12	384.89
799	70409.8652	67041.3216	339.23	217350.06	2187581.42	386.18
800	70733.6992	66850.4857	340.66	217621.43	2187321.36	387.45
801	71059.3873	66662.8317	342.09	217895.33	2187063.98	388.72
802	71066.7432	66658.6436	342.12	217901.53	2187058.22	388.75
803	71386.8982	66478.3774	343.51	218171.75	2186809.30	389.99
804	71716.2005	66297.1405	344.93	218450.64	2186557.33	391.25
805	72047.2626	66119.1384	346.34	218731.99	2186308.11	392.50
806	72380.0528	65944.3884	347.75	219015.77	2186061.66	393.75
807	72714.5389	65772.9070	349.15	219301.95	2185818.00	394.99
808	73050.6891	65604.7108	350.54	219590.51	2185577.15	396.23
809	73388.4709	65439.8159	351.93	219881.40	2185339.14	397.46
810	73727.8520	65278.2381	353.31	220174.62	2185104.00	398.68
811	74068.7998	65119.9930	354.69	220470.13	2184871.74	399.89
812	74411.2816	64965.0958	356.06	220767.89	2184642.38	401.10
813	74755.2645	64813.5612	357.43	221067.90	2184415.96	402.30
814	75100.7155	64665.4039	358.79	221370.10	2184192.48	403.50
815	75447.6015	64520.6381	360.14	221674.48	2183971.97	404.68
816	75795.8890	64379.2776	361.48	221981.00	2183754.46	405.86

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
817	76145.5448	64241.3361	362.82	222289.64	2183539.96	407.04
818	76496.5353	64106.8267	364.16	222600.37	2183328.50	408.20
819	76848.8266	63975.7624	365.48	222913.16	2183120.08	409.36
820	77202.3852	63848.1558	366.80	223227.97	2182914.75	410.51
821	77557.1769	63724.0191	368.11	223544.77	2182712.50	411.65
822	77913.1679	63603.3642	369.41	223863.55	2182513.37	412.78
823	78270.3238	63486.2027	370.71	224184.26	2182317.38	413.91
824	78628.6104	63372.5459	371.99	224506.87	2182124.53	415.02
825	78987.9933	63262.4046	373.27	224831.36	2181934.86	416.13
826	79348.4380	63155.7896	374.55	225157.69	2181748.37	417.23
827	79709.9099	63052.7108	375.81	225485.83	2181565.09	418.33
828	80072.3745	62953.1783	377.07	225815.75	2181385.03	419.41
829	80435.7967	62857.2016	378.31	226147.42	2181208.21	420.48
830	80800.1419	62764.7899	379.55	226480.81	2181034.65	421.55
831	81165.3749	62675.9521	380.78	226815.88	2180864.37	422.61
832	81531.4608	62590.6968	382.01	227152.60	2180697.38	423.65
833	81898.3643	62509.0320	383.22	227490.94	2180533.69	424.69
834	82266.0504	62430.9658	384.42	227830.87	2180373.33	425.72
840	148366.0213	99939.1399	444.43	300769.36	2201706.18	500.40
841	148366.0221	100139.1389	443.82	300815.27	2201900.82	499.80
842	148166.0228	100139.1381	443.30	300620.63	2201946.72	498.81
843	148166.0220	99939.1391	443.90	300574.73	2201752.08	499.41
844	146356.5685	113173.1194	398.96	301851.29	2215046.81	454.53
845	146183.9059	113642.3572	397.08	301790.95	2215543.11	452.57
846	145713.6941	113469.3332	396.37	301293.64	2215482.64	450.71
847	145887.1173	113000.3754	398.25	301354.77	2214986.45	452.67
848	139245.1128	124851.5576	344.79	297610.94	2228044.66	396.42
849	139115.4800	125003.8557	343.98	297519.74	2228222.64	395.55
850	138963.1807	124874.2218	343.98	297341.76	2228131.43	395.11
851	139092.8136	124721.9238	344.78	297432.97	2227953.46	395.97
852	129146.7739	133622.8013	291.59	289796.44	2238898.86	338.96
853	128711.0935	133868.1153	289.69	289428.74	2239237.60	336.87
854	128465.3699	133431.7128	290.37	289089.43	2238869.29	336.51
855	128901.2409	133186.7370	292.26	289457.40	2238530.83	338.60
856	116600.5500	137647.1655	246.36	278510.03	2245695.24	286.87
857	116637.6063	137843.7020	245.86	278591.20	2245878.01	286.75
858	116441.0699	137880.7567	245.23	278408.44	2245959.19	286.03
859	116404.0137	137684.2203	245.73	278327.26	2245776.42	286.15
860	100250.9784	139168.5129	198.73	262947.48	2250928.70	235.44
861	100251.0860	139669.1342	197.21	263062.49	2251415.90	234.86
862	99751.0877	139669.2376	195.89	262575.90	2251530.77	233.55
863	99750.9801	139168.6336	197.41	262460.90	2251043.59	234.12
864	83329.9490	137633.1160	158.87	246126.96	2253318.45	199.41
865	83291.0533	137829.2962	158.17	246134.13	2253518.31	199.10
866	83094.8726	137790.3990	157.77	245934.28	2253525.49	198.79
867	83133.7683	137594.2188	158.47	245927.10	2253325.63	199.10
868	71509.8219	133417.7052	140.57	233655.55	2251929.05	186.72
869	71264.3811	133853.8219	138.60	233516.77	2252409.84	185.79
870	70828.6477	133608.5947	138.20	233036.41	2252271.19	185.59
871	71074.2754	133172.1464	140.17	233175.29	2251790.04	186.53
872	61001.5078	124832.0979	139.00	221457.68	2245985.24	190.15

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
873	60849.2643	124961.7946	138.20	221339.28	2246146.42	189.79
874	60719.5660	124809.5503	138.32	221178.10	2246028.02	189.97
875	60871.8096	124679.8534	139.12	221296.51	2245866.84	190.33
876	54088.8534	112932.2055	156.95	211998.55	2235990.43	211.38
877	54260.8593	113401.6878	155.97	212273.71	2236407.87	210.33
878	53791.4439	113574.5260	154.21	211856.52	2236683.83	209.71
879	53618.6803	113105.3226	155.18	211580.68	2236266.83	210.77
901	100000.0000	100000.0000	317.00	253713.11	2212866.32	317.00
902	109963.9655	100000.0398	343.21	263410.29	2210579.40	345.59
903	90036.0345	99999.9602	290.79	244015.85	2215153.25	293.16
904	100000.2069	151795.0672	159.72	265601.52	2263274.82	223.92
905	99999.7931	48204.9327	474.28	241824.80	2162458.25	538.47
906	99999.7099	27377.0287	537.52	237044.32	2142188.34	663.72
907	117183.3221	62471.3533	476.16	261822.61	2172398.85	516.93
908	117183.6219	137528.7839	248.25	279050.31	2245446.19	289.02
909	82816.6779	137528.6467	157.84	245603.45	2253334.60	198.60
910	82816.3781	62471.2161	385.75	228375.71	2180286.19	426.51
911	99999.8384	59533.4926	439.88	244424.98	2173483.38	479.06
912	99999.8435	60830.8115	435.94	244722.75	2174745.95	472.65
913	108799.8148	61265.1204	457.77	253386.78	2173148.98	495.52
914	108799.8436	68465.0872	435.91	255039.36	2180156.10	461.55
915	99999.8723	68030.7783	414.07	246375.32	2181753.10	438.53
916	97899.8802	68179.0647	408.10	244365.59	2182379.38	432.43
917	97899.8510	60882.6958	430.25	242690.88	2175278.41	466.97
918	87599.8900	61706.4080	400.66	232855.67	2178443.99	439.42
919	138239.7060	59533.6453	540.48	281640.52	2164707.41	614.65
920	131853.4330	68673.2625	495.93	277523.16	2175067.77	543.69
921	61759.9707	59533.3399	339.27	207208.28	2182259.67	413.45
922	68146.3167	68673.0080	328.32	215521.56	2189688.95	376.08
923	87599.9187	68906.3748	378.79	234508.25	2185451.18	405.61
924	100000.1539	138541.5162	199.97	262559.46	2250376.06	235.51
925	121388.8844	136464.5386	262.55	282898.65	2243445.19	305.31
926	78612.2058	136464.5245	150.01	241267.24	2253264.05	192.77
927	99999.8384	59530.8175	439.88	244424.37	2173480.77	479.07
928	138679.7045	59530.9720	541.64	282068.11	2164603.83	616.63
929	61319.9722	59530.6630	338.12	206779.44	2182358.05	413.11
930	132768.6668	67733.0195	501.19	278198.06	2173942.67	551.79
931	67217.9719	67741.9947	328.71	214404.36	2188995.93	379.32
932	136909.7140	60370.9610	534.44	280538.36	2165827.51	604.61
933	136909.7193	61690.9549	530.43	280841.33	2167112.13	598.14
934	135589.7238	61690.9497	526.96	279556.72	2167415.06	592.38
935	135589.7185	60370.9558	530.96	279253.74	2166130.44	598.85
936	124409.7572	60370.9111	501.55	268373.36	2168696.20	553.39
937	124409.7625	61690.9050	497.54	268676.33	2169980.83	546.92
938	123089.7671	61690.8997	494.07	267391.70	2170283.76	541.94
939	123089.7618	60370.9058	498.08	267088.73	2168999.13	548.41
940	111909.8005	60370.8612	468.67	256208.23	2171564.92	509.64
941	111909.8058	61690.8551	464.66	256511.20	2172849.56	503.17
942	110589.8103	61690.8498	461.19	255226.55	2173152.50	498.99
943	110589.8051	60370.8559	465.19	254923.58	2171867.86	505.46
944	89409.8784	60370.7713	409.47	234310.67	2176728.71	449.74

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
945	89409.8836	61690.7652	405.46	234613.64	2178013.36	443.27
946	88089.8882	61690.7599	401.99	233328.97	2178316.31	440.50
947	88089.8829	60370.7660	406.00	233026.00	2177031.66	446.97
948	76909.9216	60370.7214	376.59	222145.18	2179597.53	426.92
949	76909.9269	61690.7153	372.58	222448.16	2180882.19	420.45
950	75589.9315	61690.7100	369.11	221163.47	2181185.14	418.48
951	75594.9262	60370.7161	373.13	220865.37	2179899.33	424.96
952	64409.9649	60370.6714	343.70	209979.59	2182466.38	411.59
953	64409.9701	61690.6654	339.69	210282.56	2183751.04	405.12
954	63089.9747	61690.6601	336.22	208997.86	2184054.00	403.94
955	63089.9694	60370.6662	340.23	208694.89	2182769.33	410.41
956	100000.1565	139169.1884	198.06	262703.53	2250986.93	234.77
960	51834.1949	99860.8301	190.71	206803.96	2223786.26	246.22
961	51834.2378	100060.8291	190.10	206849.91	2223980.90	245.61
962	51634.2386	100060.8705	189.57	206655.27	2224026.85	245.55
963	51634.1956	99860.8715	190.18	206609.32	2223832.21	246.15
964	54286.3067	86530.6670	237.63	206130.93	2210249.90	291.98
965	54112.8835	86999.6249	235.75	206069.78	2210746.12	290.18
966	53643.4322	86826.8809	235.04	205573.23	2210685.75	290.62
967	53816.0948	86357.6431	236.92	205633.58	2210189.44	292.41
968	61036.8197	75125.7787	290.02	210083.26	2197600.79	341.16
969	60907.1868	75278.0767	289.22	209992.05	2197778.76	340.41
970	60754.8877	75148.4428	289.21	209814.07	2197687.56	340.85
971	60884.5205	74996.1448	290.02	209905.28	2197509.58	341.59
972	71534.2245	66567.5669	343.63	218335.60	2186862.29	389.76
973	71098.5441	66812.8810	341.74	217967.88	2187201.03	388.08
974	70853.2262	66377.1991	342.41	217629.13	2186833.31	389.79
975	71288.9067	66131.8851	344.31	217996.85	2186494.57	391.48
976	83090.3437	62209.9709	387.26	228582.38	2179969.06	428.28
977	83130.0461	62405.9899	386.77	228666.02	2180150.72	427.40
978	82934.0272	62445.6909	386.14	228484.35	2180234.35	426.85
979	82894.3247	62249.6718	386.63	228400.72	2180052.69	427.73
980	100249.7352	60330.7621	438.11	244851.18	2174201.94	475.77
981	100249.8428	60831.3741	436.59	244966.18	2174689.12	473.30
982	99749.8445	60831.4788	435.28	244479.60	2174803.98	471.99
983	99749.7369	60330.8655	436.80	244364.59	2174316.80	474.45
984	116621.4041	62153.3563	475.65	261202.76	2172218.34	516.53
985	116584.4322	62349.9080	474.96	261211.89	2172418.11	515.46
986	116387.8800	62312.9346	474.55	261012.12	2172427.24	514.96
987	116424.8518	62116.3829	475.24	261002.98	2172227.46	516.04
988	129171.3524	66391.4049	495.80	274389.21	2173462.59	543.19
989	128926.1285	66827.1357	493.83	274250.57	2173942.93	540.18
990	128490.3952	66581.9086	493.43	273770.22	2173804.28	539.57
991	128735.6191	66146.1777	495.40	273908.87	2173323.94	542.58
992	139280.4344	75190.4492	495.68	286246.95	2179705.81	547.32
993	139128.1908	75320.1461	494.88	286128.55	2179866.98	546.09
994	138998.4926	75167.9016	495.00	285967.39	2179748.58	546.15
995	139150.7361	75038.2048	495.80	286085.78	2179587.41	547.38
996	146381.3204	86894.6770	478.82	295843.87	2189466.74	534.40
997	145911.1473	87067.7941	477.05	295426.04	2189743.12	531.49
998	145739.1414	86598.3118	478.03	295150.88	2189325.70	532.38

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
999	146208.5568	86425.4736	479.79	295568.04	2189049.75	535.29
1000	-.0534	.0616	357.56	133435.17	2138494.22	836.12
1001	82664.4498	62501.6958	385.26	228234.84	2180350.72	426.09
1002	83032.0367	62425.8404	386.45	228575.18	2180192.53	427.13
1003	83399.4494	62352.8344	387.64	228916.01	2180037.16	428.15
1004	83767.7226	62283.4005	388.82	229258.49	2179885.06	429.17
1005	84137.0312	62215.7374	390.00	229602.39	2179734.45	430.18
1006	84506.2145	62148.3117	391.17	229946.22	2179584.10	431.20
1007	84875.2001	62083.7230	392.34	230290.50	2179436.55	432.22
1008	85244.6200	62022.7820	393.50	230636.05	2179292.46	433.22
1009	85614.7203	61965.4476	394.65	230983.09	2179151.71	434.21
1010	85892.5558	61924.8027	395.50	231244.16	2179048.39	434.95
1011	86170.7886	61885.9437	396.35	231506.03	2178946.72	435.69
1012	86449.2580	61848.9124	397.20	231768.54	2178846.76	436.42
1013	86743.1960	61811.8146	398.08	232046.10	2178743.20	437.18
1014	86786.4970	61806.4869	398.21	232087.02	2178728.08	437.29
1015	87468.6658	61722.5537	400.26	232731.67	2178489.82	439.08
1016	87508.3356	61717.6728	400.38	232769.16	2178475.97	439.18
1017	88778.5731	61561.3843	404.20	233969.53	2178032.33	442.56
1018	90048.8106	61405.0958	408.01	235169.90	2177588.70	446.03
1019	90088.4804	61400.2149	408.13	235207.38	2177574.84	446.13
1020	90770.6492	61316.2816	410.18	235852.03	2177336.59	448.03
1021	90813.9503	61310.9539	410.31	235892.95	2177321.47	448.15
1022	91108.1142	61275.6920	411.19	236171.15	2177219.64	448.97
1023	91387.2547	61244.1158	412.02	236435.57	2177124.84	449.74
1024	91666.6089	61214.3701	412.85	236700.62	2177031.78	450.51
1025	91946.0468	61186.4493	413.67	236966.17	2176940.47	451.27
1026	92318.3740	61152.2341	414.75	237320.68	2176821.72	452.27
1027	92691.5341	61121.6229	415.83	237676.82	2176706.29	453.27
1028	93065.0776	61094.6618	416.89	238034.18	2176594.32	454.26
1029	93345.3026	61076.8102	417.68	238302.81	2176512.63	454.99
1030	93625.7777	61060.7709	418.47	238572.09	2176432.65	455.72
1031	93906.3397	61046.5724	419.25	238841.89	2176354.44	456.45
1032	94202.3242	61033.5694	420.07	239126.96	2176273.85	457.20
1033	94245.9156	61031.7908	420.19	239168.98	2176262.12	457.32
1034	94932.6574	61003.7689	422.08	239830.91	2176077.23	459.08
1035	94972.5932	61002.1394	422.19	239869.40	2176066.48	459.19
1036	96251.3461	60949.9614	425.71	241101.95	2175722.22	462.54
1037	97530.0991	60897.7832	429.24	242334.49	2175377.95	465.97
1038	97570.0348	60896.1537	429.35	242372.99	2175367.20	466.08
1039	98256.7767	60868.1319	431.24	243034.91	2175182.32	467.95
1040	98300.3681	60866.3532	431.36	243076.93	2175170.58	468.07
1041	98596.4280	60855.1984	432.17	243362.50	2175091.78	468.88
1042	98877.2140	60846.4916	432.94	243633.77	2175018.86	469.65
1043	99158.0637	60839.6268	433.70	243905.53	2174947.73	470.41
1044	99438.8480	60834.5876	434.45	244177.64	2174878.38	471.16
1045	99812.7255	60830.8502	435.44	244540.65	2174788.93	472.16
1046	100187.1393	60830.7728	436.43	244905.02	2174702.93	473.14
1047	100561.6376	60834.3644	437.40	245270.32	2174620.47	474.12
1048	100842.3851	60839.4250	438.13	245544.71	2174560.97	474.84
1049	101123.2343	60846.3123	438.85	245819.62	2174503.21	475.56

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1050	101404.0230	60855.0416	439.56	246094.90	2174447.26	476.27
1051	101696.1492	60866.0591	440.29	246381.73	2174390.94	477.01
1052	101754.9177	60868.4617	440.44	246439.48	2174379.79	477.15
1053	101880.1408	60873.5813	440.75	246562.52	2174356.04	477.47
1054	102211.8501	60887.1428	441.59	246888.46	2174293.10	478.31
1055	102254.8587	60888.9011	441.69	246930.72	2174284.95	478.42
1056	102334.7785	60892.1685	441.89	247009.25	2174269.78	478.62
1057	102377.7871	60893.9269	442.00	247051.51	2174261.62	478.73
1058	102457.7070	60897.1943	442.20	247130.04	2174246.46	478.93
1059	102500.7156	60898.9526	442.31	247172.30	2174238.30	479.04
1060	102580.6354	60902.2201	442.51	247250.83	2174223.14	479.25
1061	102623.6440	60903.9784	442.62	247293.10	2174214.98	479.36
1062	103523.5289	60940.7689	444.87	248177.33	2174044.26	481.68
1063	103564.5051	60942.4442	444.98	248217.59	2174036.48	481.78
1064	103603.3504	60944.0323	445.07	248255.76	2174029.11	481.88
1065	103650.8828	60945.9756	445.19	248302.47	2174020.09	482.01
1066	103749.0943	60949.9909	445.44	248398.97	2174001.46	482.26
1067	103847.3060	60954.0062	445.68	248495.48	2173982.83	482.52
1068	103894.8383	60955.9495	445.80	248542.18	2173973.81	482.64
1069	103933.6837	60957.5376	445.90	248580.35	2173966.44	482.75
1070	103974.6598	60959.2129	446.00	248620.62	2173958.67	482.85
1071	104874.5448	60996.0034	448.26	249504.85	2173787.95	485.23
1072	104917.5534	60997.7617	448.37	249547.11	2173779.79	485.34
1073	104997.4732	61001.0292	448.57	249625.64	2173764.62	485.56
1074	105040.4818	61002.7874	448.68	249667.90	2173756.46	485.67
1075	105120.4016	61006.0549	448.88	249746.43	2173741.30	485.89
1076	105163.4102	61007.8132	448.98	249788.69	2173733.14	486.00
1077	105243.3300	61011.0806	449.18	249867.22	2173717.98	486.22
1078	105286.3386	61012.8390	449.29	249909.48	2173709.82	486.33
1079	105618.0480	61026.4004	450.12	250235.42	2173646.89	487.22
1080	105743.2710	61031.5200	450.44	250358.47	2173623.13	487.56
1081	105802.0396	61033.9227	450.58	250416.21	2173611.98	487.72
1082	106094.0902	61046.7882	451.31	250703.40	2173557.48	488.51
1083	106374.6544	61061.0092	452.01	250979.71	2173506.93	489.26
1084	106655.1287	61077.0709	452.70	251256.36	2173458.19	490.01
1085	106935.3888	61094.9469	453.38	251533.22	2173411.26	490.75
1086	107308.3260	61121.7122	454.28	251902.31	2173351.72	491.73
1087	107681.4992	61152.1691	455.17	252272.49	2173295.72	492.69
1088	108054.4575	61186.2896	456.05	252643.29	2173243.33	493.65
1089	108333.8573	61214.2287	456.70	252921.62	2173206.39	494.36
1090	108613.2096	61243.9967	457.34	253200.32	2173171.25	495.06
1091	108892.3514	61275.5956	457.98	253479.24	2173137.94	495.76
1092	109182.6062	61310.3997	458.64	253769.71	2173105.20	496.47
1093	109240.9830	61317.5870	458.77	253828.18	2173098.79	496.62
1094	109365.3715	61332.9017	459.05	253952.75	2173085.15	496.93
1095	109694.8703	61373.4694	459.80	254282.73	2173049.01	497.74
1096	109737.5922	61378.7292	459.89	254325.52	2173044.32	497.85
1097	109816.9794	61388.5034	460.07	254405.02	2173035.62	498.05
1098	109859.7014	61393.7633	460.17	254447.81	2173030.93	498.16
1099	109939.0886	61403.5373	460.35	254527.31	2173022.22	498.36
1100	109981.8106	61408.7973	460.44	254570.10	2173017.54	498.46

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE - NAD 1927 * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1101	110061.1978	61418.5714	460.62	254649.60	2173008.83	498.66
1102	110103.9198	61423.8313	460.72	254692.39	2173004.14	498.77
1103	110997.8076	61533.8862	462.74	255587.60	2172906.10	501.03
1104	111038.5107	61538.8975	462.83	255628.36	2172901.64	501.14
1105	111077.0972	61543.6482	462.91	255667.00	2172897.40	501.24
1106	111124.3127	61549.4614	463.02	255714.29	2172892.22	501.36
1107	111221.8698	61561.4726	463.24	255811.99	2172881.52	501.61
1108	111319.4268	61573.4838	463.46	255909.69	2172870.82	501.86
1109	111366.6424	61579.2969	463.57	255956.98	2172865.65	501.98
1110	111405.2289	61584.0477	463.66	255995.62	2172861.41	502.08
1111	111445.9320	61589.0590	463.75	256036.38	2172856.95	502.19
1112	112339.8198	61699.1139	465.76	256931.59	2172758.90	504.51
1113	112382.5418	61704.3738	465.86	256974.38	2172754.22	504.62
1114	112461.9289	61714.1479	466.04	257053.88	2172745.51	504.83
1115	112504.6509	61719.4078	466.14	257096.67	2172740.82	504.94
1116	112584.0382	61729.1819	466.32	257176.17	2172732.12	505.15
1117	112626.7602	61734.4418	466.41	257218.96	2172727.43	505.26
1118	112706.1473	61744.2159	466.59	257298.46	2172718.72	505.47
1119	112748.8693	61749.4759	466.69	257341.24	2172714.04	505.59
1120	113078.3680	61790.0435	467.43	257671.23	2172677.90	506.46
1121	113202.7565	61805.3581	467.71	257795.80	2172664.25	506.79
1122	113261.1335	61812.5455	467.84	257854.27	2172657.85	506.95
1123	113551.1623	61849.1853	468.50	258144.94	2172626.95	507.72
1124	113829.6323	61886.2392	469.12	258424.45	2172599.10	508.45
1125	114107.8627	61925.1206	469.73	258704.15	2172573.08	509.18
1126	114385.3686	61965.7385	470.34	258983.55	2172548.92	509.90
1127	115108.9835	62081.1665	471.89	259714.28	2172495.19	511.76
1128	115477.6107	62145.5350	472.66	260087.81	2172473.23	512.68
1129	115846.7643	62212.9228	473.43	260462.54	2172454.09	513.61
1130	116216.0929	62280.6198	474.20	260837.51	2172435.21	514.53
1131	116584.4323	62349.9080	474.96	261211.89	2172418.11	515.46
1132	116951.8521	62422.7572	475.70	261586.19	2172404.68	516.36
1133	117319.3691	62498.5655	476.44	261961.26	2172394.11	517.27
1134	117687.0538	62574.6868	477.17	262336.57	2172383.81	518.17
1135	118053.7132	62652.3763	477.90	262711.24	2172375.27	519.08
1136	118419.2173	62733.5705	478.62	263085.59	2172370.40	519.97
1137	118783.9084	62818.3416	479.32	263459.96	2172369.21	520.84
1138	119147.7515	62906.6816	480.01	263834.34	2172371.68	521.70
1139	119510.7117	62998.5817	480.68	264208.67	2172377.81	522.55
1140	119872.7541	63094.0334	481.35	264582.92	2172387.62	523.39
1141	120233.8442	63193.0273	482.00	264957.06	2172401.09	524.21
1142	120593.9469	63295.5541	482.63	265331.05	2172418.23	525.02
1143	120953.0281	63401.6038	483.26	265704.85	2172439.02	525.81
1144	121311.0531	63511.1663	483.86	266078.43	2172463.48	526.59
1145	121667.9875	63624.2311	484.46	266451.75	2172491.60	527.36
1146	122023.7973	63740.7873	485.04	266824.78	2172523.38	528.11
1147	122378.4480	63860.8238	485.61	267197.48	2172558.80	528.84
1148	122731.9057	63984.3288	486.17	267569.82	2172597.88	529.57
1149	123084.1366	64111.2909	486.71	267941.75	2172640.60	530.28
1150	123435.1067	64241.6976	487.23	268313.25	2172686.97	530.97
1151	123784.7824	64375.5363	487.75	268684.28	2172736.97	531.65

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1152	124133.1302	64512.7944	488.25	269054.80	2172790.60	532.32
1153	124480.1166	64653.4586	488.73	269424.77	2172847.86	532.97
1154	124825.7083	64797.5155	489.21	269794.17	2172908.75	533.60
1155	125169.8721	64944.9511	489.66	270162.95	2172973.25	534.23
1156	125512.5750	65095.7515	490.11	270531.09	2173041.35	534.83
1157	125853.7840	65249.9020	490.54	270898.53	2173113.07	535.42
1158	126193.4666	65407.3879	490.95	271265.26	2173188.37	536.00
1159	126531.5901	65568.1940	491.35	271631.23	2173267.27	536.56
1160	126868.1218	65732.3050	491.74	271996.42	2173349.75	537.11
1161	127203.0297	65899.7050	492.11	272360.77	2173435.80	537.64
1162	127536.2815	66070.3781	492.47	272724.27	2173525.42	538.16
1163	127867.8453	66244.3077	492.82	273086.87	2173618.60	538.66
1164	128197.6893	66421.4773	493.15	273448.54	2173715.32	539.15
1165	128526.0874	66602.0380	493.46	273809.58	2173815.67	539.62
1166	128532.8346	66605.7931	493.47	273817.01	2173817.78	539.63
1167	128852.0841	66785.4641	493.76	274168.94	2173919.37	540.08
1168	129176.5861	66972.2543	494.05	274527.62	2174026.68	540.52
1169	129499.2357	67162.2105	494.32	274885.23	2174137.50	540.94
1170	129820.0089	67355.3186	494.58	275241.73	2174251.81	541.35
1171	130138.8748	67551.5600	494.82	275597.09	2174369.62	541.75
1172	130455.8029	67750.9158	495.05	275951.28	2174490.90	542.13
1173	130770.7627	67953.3669	495.26	276304.27	2174615.64	542.49
1174	131083.7240	68158.8940	495.46	276656.02	2174743.83	542.84
1175	131394.6569	68367.4772	495.65	277006.49	2174875.47	543.17
1176	131703.5313	68579.0966	495.82	277355.66	2175010.53	543.49
1177	132010.3177	68793.7318	495.97	277703.49	2175149.01	543.79
1178	132314.9867	69011.3623	496.11	278049.94	2175290.88	544.08
1179	132617.5089	69231.9671	496.24	278394.99	2175436.15	544.35
1180	132917.8554	69455.5251	496.35	278738.60	2175584.79	544.60
1181	133215.9974	69682.0148	496.45	279080.74	2175736.78	544.84
1182	133511.9060	69911.4145	496.53	279421.37	2175892.12	545.06
1183	133805.5533	70143.7022	496.60	279760.46	2176050.79	545.27
1184	134096.9107	70378.8554	496.65	280097.98	2176212.78	545.46
1185	134385.9503	70616.8518	496.69	280433.90	2176378.06	545.64
1186	134672.6444	70857.6684	496.71	280768.19	2176546.63	545.80
1187	134956.9656	71101.2823	496.72	281100.80	2176718.46	545.94
1188	135238.8865	71347.6698	496.71	281431.72	2176893.55	546.07
1189	135518.3800	71596.8075	496.69	281760.91	2177071.87	546.18
1190	135795.4194	71848.6714	496.65	282088.33	2177253.40	546.28
1191	136069.9780	72103.2372	496.60	282413.96	2177438.13	546.36
1192	136342.0295	72360.4807	496.54	282737.76	2177626.05	546.42
1193	136611.5477	72620.3770	496.46	283059.71	2177817.12	546.47
1194	136878.5069	72882.9013	496.36	283379.77	2178011.35	546.50
1195	137142.8813	73148.0284	496.25	283697.91	2178208.69	546.52
1196	137404.6457	73415.7327	496.13	284014.10	2178409.15	546.52
1197	137663.7748	73685.9887	495.99	284328.31	2178612.69	546.50
1198	137920.2439	73958.7703	495.84	284640.52	2178819.31	546.47
1199	138174.0282	74234.0515	495.67	284950.68	2179028.97	546.42
1200	138425.1034	74511.8056	495.49	285258.78	2179241.66	546.36
1201	138673.4455	74792.0063	495.29	285564.78	2179457.35	546.28
1202	138919.0306	75074.6264	495.08	285868.65	2179676.04	546.19

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1203	139161.8351	75359.6388	494.85	286170.36	2179897.69	546.07
1204	139401.8357	75647.0164	494.61	286469.89	2180122.28	545.95
1205	139639.0094	75936.7314	494.35	286767.20	2180349.80	545.80
1206	139873.3335	76228.7560	494.08	287062.27	2180580.23	545.65
1207	140104.7853	76523.0622	493.80	287355.07	2180813.53	545.47
1208	140333.3428	76819.6218	493.50	287645.57	2181049.69	545.28
1209	140558.9839	77118.4063	493.18	287933.74	2181288.68	545.07
1210	140781.6872	77419.3870	492.86	288219.55	2181530.48	544.85
1211	141001.4310	77722.5351	492.51	288502.99	2181775.08	544.62
1212	141218.1944	78027.8213	492.16	288784.01	2182022.43	544.36
1213	141431.9565	78335.2166	491.79	289062.60	2182272.53	544.09
1214	141642.6969	78644.6912	491.40	289338.72	2182525.35	543.81
1215	141850.3952	78956.2156	491.00	289612.35	2182780.86	543.51
1216	142055.0317	79269.7597	490.59	289883.47	2183039.04	543.19
1217	142256.5865	79585.2937	490.16	290152.04	2183299.86	542.86
1218	142455.0405	79902.7871	489.72	290418.05	2183563.30	542.51
1219	142650.3745	80222.2094	489.26	290681.46	2183829.33	542.15
1220	142842.5697	80543.5301	488.79	290942.25	2184097.93	541.77
1221	143031.6079	80866.7182	488.31	291200.40	2184369.08	541.38
1222	143217.4707	81191.7428	487.81	291455.88	2184642.73	540.97
1223	143400.1403	81518.5727	487.30	291708.67	2184918.88	540.54
1224	143579.5993	81847.1764	486.77	291958.74	2185197.50	540.10
1225	143755.8304	82177.5224	486.23	292206.07	2185478.54	539.65
1226	143928.8166	82509.5791	485.68	292450.63	2185762.00	539.17
1227	144098.5415	82843.3146	485.11	292692.41	2186047.84	538.69
1228	144264.9886	83178.6969	484.53	292931.37	2186336.04	538.19
1229	144428.1420	83515.6936	483.94	293167.50	2186626.56	537.67
1230	144587.9861	83854.2725	483.33	293400.77	2186919.38	537.14
1231	144744.5055	84194.4012	482.71	293631.16	2187214.47	536.59
1232	144897.6852	84536.0469	482.08	293858.65	2187511.81	536.03
1233	145047.5104	84879.1768	481.43	294083.21	2187811.36	535.46
1234	145193.9670	85223.7581	480.77	294304.83	2188113.09	534.86
1235	145337.0406	85569.7577	480.09	294523.49	2188416.99	534.26
1236	145476.7176	85917.1423	479.41	294739.15	2188723.01	533.64
1237	145612.9846	86265.8786	478.70	294951.81	2189031.12	533.00
1238	145745.9524	86616.2593	477.99	295161.63	2189341.60	532.35
1239	145748.6549	86623.4927	477.98	295165.92	2189348.02	532.34
1240	145875.2341	86967.2647	477.26	295368.01	2189653.53	531.69
1241	146001.1967	87319.8624	476.53	295571.53	2189967.77	531.01
1242	146123.6962	87673.6696	475.77	295771.95	2190283.98	530.31
1243	146242.7238	88028.6598	475.01	295969.26	2190602.14	529.61
1244	146358.2677	88384.7991	474.23	296163.45	2190922.22	528.88
1245	146470.3170	88742.0532	473.44	296354.50	2191244.19	528.15
1246	146578.8611	89100.3879	472.64	296542.38	2191568.01	527.40
1247	146683.8893	89459.7689	471.82	296727.07	2191893.66	526.63
1248	146785.3916	89820.1614	471.00	296908.57	2192221.10	525.85
1249	146883.3584	90181.5310	470.16	297086.86	2192550.30	525.06
1250	146977.7803	90543.8430	469.31	297261.91	2192881.23	524.25
1251	147068.6479	90907.0627	468.44	297433.70	2193213.86	523.43
1252	147155.9528	91271.1551	467.57	297602.24	2193548.16	522.60
1253	147239.6866	91636.0853	466.68	297767.49	2193884.10	521.75

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE * NAD AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1254	147319.8411	92001.8184	465.78	297929.44	2194221.64	520.89
1255	147396.4088	92368.3191	464.87	298088.07	2194560.74	520.01
1256	147469.3821	92735.5523	463.94	298243.38	2194901.39	519.12
1257	147538.7543	93103.4828	463.01	298395.34	2195243.54	518.22
1258	147604.5185	93472.0752	462.06	298543.94	2195587.16	517.31
1259	147666.6685	93841.2942	461.10	298689.17	2195932.23	516.38
1260	147725.1983	94211.1043	460.14	298831.01	2196278.69	515.44
1261	147780.1024	94581.4701	459.16	298969.45	2196626.53	514.48
1262	147831.3753	94952.3559	458.16	299104.47	2196975.72	513.52
1263	147879.0123	95323.7263	457.16	299236.07	2197326.20	512.54
1264	147923.0087	95695.5455	456.15	299364.23	2197677.96	511.55
1265	147963.3602	96067.7778	455.12	299488.93	2198030.96	510.54
1266	148000.0632	96440.3875	454.09	299610.17	2198385.16	509.52
1267	148033.1139	96813.3389	453.04	299727.94	2198740.54	508.49
1268	148062.5093	97186.5962	451.99	299842.22	2199097.05	507.45
1269	148088.2465	97560.1236	450.92	299953.00	2199454.66	506.40
1270	148110.3231	97933.8851	449.84	300060.27	2199813.34	505.33
1271	148128.7368	98307.8449	448.76	300164.02	2200173.05	504.25
1272	148143.4861	98681.9672	447.66	300264.24	2200533.77	503.16
1273	148154.5694	99056.2160	446.55	300360.93	2200895.44	502.06
1274	148161.9857	99430.5553	445.44	300454.07	2201258.05	500.95
1275	148165.7341	99804.9494	444.31	300543.65	2201621.55	499.82
1276	148165.8146	100179.3622	443.17	300629.66	2201985.92	498.69
1277	148162.2270	100553.7576	442.03	300712.10	2202351.11	497.54
1278	148154.9717	100928.1001	440.87	300790.96	2202717.08	496.38
1279	148144.0492	101302.3534	439.71	300866.23	2203083.82	495.21
1280	148129.4607	101676.4817	438.53	300937.91	2203451.27	494.03
1281	148111.2077	102050.4491	437.35	301005.98	2203819.41	492.83
1282	148089.2918	102424.2197	436.15	301070.44	2204188.19	491.63
1283	148063.7150	102797.7577	434.95	301131.28	2204557.59	490.42
1284	148034.4801	103171.0271	433.74	301188.50	2204927.57	489.19
1285	148001.5896	103543.9922	432.52	301242.10	2205298.09	487.96
1286	147965.0469	103916.6171	431.30	301292.06	2205669.12	486.71
1287	147924.8553	104288.8661	430.06	301338.39	2206040.62	485.46
1288	147881.0187	104660.7035	428.82	301381.07	2206412.56	484.19
1289	147833.5414	105032.0935	427.56	301420.11	2206784.90	482.92
1290	147782.4278	105403.0004	426.30	301455.50	2207157.60	481.63
1291	147727.6830	105773.3889	425.03	301487.23	2207530.63	480.34
1292	147669.3121	106143.2232	423.76	301515.31	2207903.95	479.03
1293	147607.3208	106512.4679	422.47	301539.73	2208277.53	477.72
1294	147541.7149	106881.0875	421.18	301560.49	2208651.33	476.40
1295	147472.5009	107249.0467	419.88	301577.59	2209025.32	475.06
1296	147399.6853	107616.3100	418.57	301591.02	2209399.46	473.72
1297	147323.2752	107982.8424	417.26	301600.79	2209773.71	472.37
1298	147243.2779	108348.6086	415.94	301606.89	2210148.04	471.01
1299	147159.7010	108713.5734	414.61	301609.32	2210522.40	469.65
1300	147072.5526	109077.7020	413.28	301608.08	2210896.78	468.27
1301	146981.8409	109440.9592	411.93	301603.18	2211271.13	466.88
1302	146887.5749	109803.3103	410.59	301594.61	2211645.41	465.49
1303	146789.7635	110164.7204	409.23	301582.37	2212019.58	464.09
1304	146688.4160	110525.1550	407.87	301566.47	2212393.62	462.68

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1305	146583.5422	110884.5792	406.50	301546.90	2212767.49	461.26
1306	146475.1522	111242.9588	405.13	301523.68	2213141.14	459.84
1307	146363.2564	111600.2593	403.75	301496.79	2213514.55	458.41
1308	146247.8655	111956.4464	402.37	301466.24	2213887.68	456.97
1309	146128.9905	112311.4858	400.97	301432.05	2214260.50	455.52
1310	146006.6431	112665.3437	399.58	301394.20	2214632.96	454.06
1311	145880.7174	113018.3144	398.18	301352.66	2215005.37	452.60
1312	145878.0855	113025.5737	398.15	301351.77	2215013.04	452.57
1313	145751.5804	113369.3710	396.77	301307.56	2215376.66	451.13
1314	145618.8840	113719.4880	395.36	301258.78	2215747.86	449.66
1315	145482.7669	114068.2806	393.94	301206.37	2216118.55	448.18
1316	145343.2392	114415.7230	392.52	301150.33	2216488.71	446.69
1317	145200.3142	114761.7817	391.09	301090.67	2216858.30	445.19
1318	145054.0059	115106.4236	389.66	301027.38	2217227.29	443.69
1319	144904.3281	115449.6155	388.22	300960.49	2217595.64	442.18
1320	144751.2952	115791.3245	386.78	300889.99	2217963.32	440.67
1321	144594.9220	116131.5180	385.34	300815.89	2218330.29	439.15
1322	144435.2235	116470.1631	383.89	300738.20	2218696.52	437.63
1323	144272.2149	116807.2273	382.44	300656.92	2219061.97	436.10
1324	144105.9119	117142.6783	380.98	300572.07	2219426.61	434.56
1325	143936.3306	117476.4840	379.52	300483.65	2219790.39	433.02
1326	143763.4870	117808.6123	378.06	300391.68	2220153.30	431.48
1327	143587.3979	118139.0313	376.59	300296.15	2220515.28	429.93
1328	143408.0801	118467.7091	375.12	300197.07	2220876.31	428.37
1329	143225.5510	118794.6146	373.65	300094.47	2221236.35	426.81
1330	143039.8279	119119.7161	372.17	299988.34	2221595.38	425.25
1331	142850.9288	119442.9823	370.70	299878.71	2221953.34	423.68
1332	142658.8715	119764.3826	369.21	299765.57	2222310.21	422.11
1333	142463.6749	120083.8857	367.73	299648.93	2222665.96	420.53
1334	142265.3574	120401.4612	366.24	299528.82	2223020.55	418.95
1335	142063.9382	120717.0784	364.76	299405.25	2223373.94	417.36
1336	141859.4364	121030.7072	363.27	299278.21	2223726.10	415.78
1337	141651.8720	121342.3176	361.77	299147.73	2224077.01	414.19
1338	141441.2647	121651.8794	360.28	299013.82	2224426.62	412.59
1339	141227.6346	121959.3630	358.78	298876.49	2224774.90	410.99
1340	141011.0025	122264.7390	357.29	298735.76	2225121.82	409.39
1341	140791.3890	122567.9780	355.79	298591.63	2225467.34	407.79
1342	140568.8151	122869.0508	354.29	298444.13	2225811.44	406.18
1343	140343.3024	123167.9286	352.79	298293.26	2226154.07	404.58
1344	140114.8724	123464.5828	351.29	298139.04	2226495.21	402.97
1345	139883.5471	123758.9848	349.78	297981.49	2226834.82	401.35
1346	139649.3486	124051.1063	348.28	297820.62	2227172.87	399.74
1347	139412.2993	124340.9194	346.78	297656.44	2227509.33	398.12
1348	139172.4222	124628.3962	345.27	297488.97	2227844.16	396.50
1349	138929.7403	124913.5091	343.77	297318.24	2228177.34	394.88
1350	138684.2767	125196.2309	342.26	297144.24	2228508.83	393.26
1351	138436.0550	125476.5342	340.76	296967.01	2228838.60	391.64
1352	138185.0991	125754.3923	339.26	296786.56	2229166.62	390.02
1353	137931.4332	126029.7784	337.75	296602.90	2229492.85	388.39
1354	137675.0814	126302.6661	336.25	296416.05	2229817.27	386.77
1355	137416.0685	126573.0292	334.75	296226.04	2230139.84	385.14

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1356	137154.4191	126840.8420	333.25	296032.87	2230460.54	383.52
1357	136890.1587	127106.0784	331.74	295836.57	2230779.33	381.89
1358	136623.3124	127368.7131	330.25	295637.15	2231096.17	380.26
1359	136353.9058	127628.7209	328.75	295434.65	2231411.05	378.64
1360	136081.9649	127886.0770	327.25	295229.06	2231723.94	377.01
1361	135807.5158	128140.7564	325.75	295020.42	2232034.79	375.38
1362	135530.5847	128392.7349	324.26	294808.75	2232343.58	373.76
1363	135251.1983	128641.9882	322.77	294594.06	2232650.29	372.13
1364	134969.3833	128888.4924	321.28	294376.38	2232954.87	370.51
1365	134685.1668	129132.2237	319.79	294155.72	2233257.31	368.89
1366	134398.5762	129373.1591	318.31	293932.11	2233557.58	367.26
1367	134109.6388	129611.2750	316.82	293705.57	2233855.63	365.64
1368	133818.3826	129846.5489	315.34	293476.12	2234151.46	364.02
1369	133524.8352	130078.9580	313.86	293243.78	2234445.02	362.41
1370	133229.0252	130308.4801	312.39	293008.58	2234736.29	360.79
1371	132930.9806	130535.0932	310.92	292770.54	2235025.25	359.18
1372	132630.7301	130758.7754	309.45	292529.67	2235311.86	357.56
1373	132328.3028	130979.5054	307.98	292286.01	2235596.09	355.95
1374	132023.7274	131197.2619	306.52	292039.58	2235877.92	354.35
1375	131717.0332	131412.0241	305.06	291790.40	2236157.33	352.74
1376	131408.2497	131623.7712	303.60	291538.49	2236434.28	351.14
1377	131097.4066	131832.4831	302.15	291283.88	2236708.75	349.54
1378	130784.5336	132038.1397	300.71	291026.59	2236980.72	347.94
1379	130469.6608	132240.7211	299.26	290766.66	2237250.14	346.35
1380	130152.8185	132440.2081	297.82	290504.09	2237517.01	344.76
1381	129834.0369	132636.5814	296.39	290238.92	2237781.30	343.17
1382	129513.3468	132829.8221	294.96	289971.18	2238042.97	341.59
1383	129190.7789	133019.9119	293.53	289700.89	2238302.01	340.01
1384	128866.0618	133207.0065	292.11	289427.81	2238558.63	338.43
1385	128859.3515	133210.8270	292.08	289422.16	2238563.89	338.40
1386	128540.1407	133390.5616	290.69	289152.76	2238812.08	336.86
1387	128212.1188	133571.0938	289.28	288874.96	2239063.07	335.30
1388	127882.3510	133748.3999	287.88	288594.72	2239311.32	333.73
1389	127550.8621	133922.4668	286.48	288312.07	2239556.81	332.17
1390	127217.6836	134093.2777	285.08	288027.02	2239799.52	330.62
1391	126882.8476	134260.8163	283.69	287739.61	2240039.43	329.07
1392	126546.3864	134425.0665	282.31	287449.87	2240276.51	327.53
1393	126208.3321	134586.0125	280.93	287157.81	2240510.74	325.99
1394	125868.7174	134743.6390	279.56	286863.48	2240742.10	324.45
1395	125527.5744	134897.9307	278.19	286566.89	2240970.56	322.93
1396	125184.9364	135048.8727	276.83	286268.07	2241196.11	321.40
1397	124840.8360	135196.4509	275.48	285967.07	2241418.72	319.89
1398	124495.3063	135340.6507	274.13	285663.89	2241638.37	318.37
1399	124148.3804	135481.4585	272.79	285358.58	2241855.04	316.87
1400	123800.0916	135618.8608	271.46	285051.16	2242068.70	315.37
1401	123450.4735	135752.8442	270.13	284741.66	2242279.35	313.88
1402	123099.5594	135883.3960	268.81	284430.11	2242486.95	312.39
1403	122747.3831	136010.5037	267.50	284116.54	2242691.49	310.91
1404	122393.9785	136134.1552	266.19	283800.99	2242892.95	309.44
1405	122039.3794	136254.3383	264.90	283483.47	2243091.31	307.97
1406	121683.6198	136371.0417	263.61	283164.03	2243286.54	306.51

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1407	121326.7340	136484.2542	262.32	282842.69	2243478.64	305.06
1408	120968.7561	136593.9649	261.05	282519.49	2243667.58	303.61
1409	120609.7206	136700.1631	259.78	282194.44	2243853.35	302.17
1410	120249.6618	136802.8389	258.52	281867.60	2244035.92	300.74
1411	119888.6145	136901.9823	257.27	281538.98	2244215.28	299.32
1412	119526.6130	136997.5837	256.03	281208.62	2244391.42	297.91
1413	119163.6923	137089.6342	254.79	280876.54	2244564.31	296.50
1414	118799.8872	137178.1246	253.57	280542.80	2244733.93	295.10
1415	118435.2326	137263.0466	252.35	280207.40	2244900.28	293.71
1416	118069.7635	137344.3921	251.14	279870.39	2245063.34	292.33
1417	117703.1737	137422.2256	249.94	279531.49	2245223.23	290.95
1418	117335.5083	137498.3127	248.74	279191.13	2245381.68	289.58
1419	116967.9628	137574.1596	247.55	278850.84	2245539.86	288.22
1420	116600.5500	137647.1656	246.36	278510.03	2245695.24	286.87
1421	116232.2769	137716.5994	245.18	278167.56	2245847.35	285.52
1422	115862.9682	137784.2625	244.00	277823.67	2245997.97	284.18
1423	115493.7849	137851.6883	242.83	277479.85	2246148.33	282.85
1424	115124.7994	137916.2770	241.66	277135.57	2246295.89	281.53
1425	114755.3794	137977.2179	240.50	276790.04	2246439.99	280.22
1426	114385.2791	138034.5523	239.35	276443.01	2246580.74	278.92
1427	114107.4437	138075.1972	238.50	276181.94	2246684.07	277.95
1428	113829.2109	138114.0563	237.65	275920.08	2246785.75	276.99
1429	113550.7414	138151.0876	236.80	275657.57	2246885.71	276.03
1430	113256.8035	138188.1853	235.92	275380.02	2246989.29	275.02
1431	113213.5024	138193.5130	235.79	275339.10	2247004.41	274.87
1432	112531.3336	138277.4463	233.74	274694.47	2247242.68	272.56
1433	112491.6638	138282.3272	233.62	274656.98	2247256.54	272.42
1434	111221.4263	138438.6157	229.80	273456.64	2247700.21	268.17
1435	109951.1888	138594.9042	225.99	272256.29	2248143.88	264.00
1436	109911.5190	138599.7851	225.87	272218.80	2248157.73	263.87
1437	109229.3502	138683.7183	223.82	271574.17	2248396.00	261.66
1438	109186.0491	138689.0460	223.69	271533.25	2248411.13	261.52
1439	108891.8853	138724.3080	222.81	271255.06	2248512.97	260.58
1440	108612.7447	138755.8842	221.98	270990.64	2248607.77	259.69
1441	108333.3905	138785.6299	221.15	270725.59	2248700.84	258.81
1442	108053.9526	138813.5506	220.33	270460.05	2248792.16	257.93
1443	107681.6255	138847.7658	219.25	270105.54	2248910.92	256.77
1444	107308.4653	138878.3771	218.17	269749.40	2249026.37	255.62
1445	106934.9218	138905.3382	217.11	269392.05	2249138.35	254.48
1446	106654.6969	138923.1898	216.32	269123.43	2249220.04	253.63
1447	106374.2217	138939.2291	215.53	268854.14	2249300.03	252.78
1448	106093.6597	138953.4275	214.75	268584.35	2249378.25	251.95
1449	105797.6752	138966.4305	213.93	268299.28	2249458.85	251.07
1450	105754.0839	138968.2092	213.81	268257.26	2249470.58	250.94
1451	105067.3420	138996.2310	211.92	267595.34	2249655.49	248.92
1452	105027.4063	138997.8605	211.81	267556.85	2249666.24	248.81
1453	103748.6533	139050.0386	208.29	266324.31	2250010.55	245.11
1454	102469.9004	139102.2167	204.76	265091.78	2250354.85	241.50
1455	102429.9646	139103.8462	204.65	265053.28	2250365.60	241.38
1456	101743.2228	139131.8680	202.76	264391.36	2250550.51	239.48
1457	101699.6314	139133.6467	202.64	264349.34	2250562.25	239.36

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1458	101403.5715	139144.8016	201.83	264063.77	2250641.06	238.54
1459	101122.7854	139153.5084	201.06	263792.50	2250713.98	237.78
1460	100841.9357	139160.3731	200.30	263520.75	2250785.13	237.02
1461	100561.1514	139165.4124	199.55	263248.64	2250854.49	236.26
1462	100187.2739	139169.1497	198.56	262885.63	2250943.94	235.27
1463	99812.8601	139169.2272	197.57	262521.26	2251029.96	234.28
1464	99438.3619	139165.6356	196.60	262155.96	2251112.43	233.31
1465	99157.6143	139160.5749	195.87	261881.57	2251171.94	232.59
1466	98876.7651	139153.6876	195.15	261606.66	2251229.71	231.87
1467	98595.9737	139144.9582	194.44	261331.38	2251285.66	231.16
1468	98307.1257	139134.0748	193.72	261047.77	2251341.37	230.43
1469	98261.4721	139132.2084	193.60	261002.91	2251350.04	230.32
1470	98123.1367	139126.5526	193.25	260866.98	2251376.29	229.97
1471	97788.1493	139112.8571	192.41	260537.81	2251439.85	229.14
1472	97745.1407	139111.0988	192.31	260495.55	2251448.01	229.03
1473	97665.2209	139107.8314	192.11	260417.02	2251463.18	228.83
1474	97622.2123	139106.0731	192.00	260374.76	2251471.34	228.73
1475	97542.2925	139102.8056	191.80	260296.23	2251486.50	228.53
1476	97499.2839	139101.0474	191.69	260253.97	2251494.66	228.42
1477	97419.3640	139097.7799	191.49	260175.44	2251509.83	228.23
1478	97376.3554	139096.0216	191.38	260133.18	2251517.99	228.12
1479	96804.9356	139072.6598	189.95	259571.69	2251626.42	226.73
1480	96766.2542	139071.0784	189.85	259533.69	2251633.76	226.63
1481	96701.8397	139068.4449	189.69	259470.39	2251645.98	226.48
1482	96666.4363	139066.9975	189.60	259435.60	2251652.70	226.39
1483	96250.9055	139050.0091	188.56	259027.30	2251731.54	225.39
1484	95835.3746	139033.0207	187.52	258618.99	2251810.39	224.39
1485	95799.9712	139031.5733	187.43	258584.20	2251817.11	224.31
1486	95735.5567	139028.9397	187.27	258520.91	2251829.33	224.15
1487	95696.8753	139027.3584	187.17	258482.90	2251836.67	224.06
1488	95125.4554	139003.9966	185.74	257921.41	2251945.10	222.71
1489	95082.4468	139002.2383	185.63	257879.15	2251953.26	222.61
1490	95002.5270	138998.9708	185.43	257800.62	2251968.42	222.42
1491	94959.5184	138997.2125	185.32	257758.36	2251976.58	222.32
1492	94879.5986	138993.9451	185.12	257679.83	2251991.75	222.14
1493	94836.5900	138992.1868	185.02	257637.57	2251999.91	222.03
1494	94756.6701	138988.9193	184.82	257559.04	2252015.07	221.85
1495	94713.6615	138987.1610	184.71	257516.78	2252023.24	221.75
1496	94378.6741	138973.4655	183.87	257187.62	2252086.80	220.97
1497	94240.3387	138967.8098	183.52	257051.69	2252113.05	220.65
1498	94194.6851	138965.9434	183.41	257006.83	2252121.71	220.55
1499	93905.9127	138953.2119	182.69	256722.86	2252175.61	219.88
1500	93625.3458	138938.9908	181.99	256446.54	2252226.17	219.24
1501	93344.8715	138922.9291	181.30	256169.89	2252274.91	218.61
1502	93064.6114	138905.0531	180.62	255893.03	2252321.85	217.99
1503	92691.6742	138878.2878	179.72	255523.93	2252381.40	217.17
1504	92318.5010	138847.8309	178.83	255153.75	2252437.42	216.35
1505	91945.5427	138813.7104	177.95	254782.95	2252489.82	215.55
1506	91666.1429	138785.7713	177.30	254504.61	2252526.76	214.96
1507	91386.7906	138756.0032	176.66	254225.90	2252561.92	214.37
1508	91107.6462	138724.4041	176.02	253946.98	2252595.24	213.79

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1509	90820.6476	138690.0009	175.37	253659.77	2252627.63	213.20
1510	90775.2983	138684.4175	175.27	253614.35	2252632.61	213.11
1511	90637.8848	138667.4992	174.96	253476.73	2252647.68	212.83
1512	90305.1299	138626.5306	174.20	253143.48	2252684.19	212.16
1513	90262.4080	138621.2708	174.11	253100.69	2252688.88	212.07
1514	90183.0208	138611.4966	173.93	253021.19	2252697.59	211.91
1515	90140.2988	138606.2367	173.83	252978.40	2252702.28	211.82
1516	90060.9116	138596.4626	173.65	252898.90	2252710.99	211.66
1517	90018.1896	138591.2027	173.56	252856.11	2252715.67	211.58
1518	89938.8024	138581.4286	173.38	252776.60	2252724.38	211.42
1519	89896.0804	138576.1687	173.28	252733.82	2252729.07	211.33
1520	89328.4687	138506.2848	172.00	252165.36	2252791.35	210.20
1521	89290.0450	138501.5540	171.91	252126.88	2252795.56	210.13
1522	89226.0598	138493.6762	171.77	252062.80	2252802.58	210.00
1523	89190.8923	138489.3464	171.69	252027.58	2252806.44	209.93
1524	88778.1308	138438.5275	170.76	251614.20	2252851.73	209.13
1525	88365.3692	138387.7085	169.83	251200.82	2252897.02	208.33
1526	88330.2018	138383.3787	169.75	251165.60	2252900.87	208.26
1527	88266.2165	138375.5009	169.60	251101.52	2252907.89	208.14
1528	88227.7929	138370.7702	169.52	251063.04	2252912.11	208.06
1529	87660.1811	138300.8861	168.24	250494.58	2252974.39	206.98
1530	87617.4592	138295.6263	168.14	250451.79	2252979.07	206.90
1531	87538.0720	138285.8522	167.96	250372.29	2252987.78	206.75
1532	87495.3500	138280.5923	167.86	250329.50	2252992.47	206.67
1533	87415.9628	138270.8182	167.68	250249.99	2253001.18	206.52
1534	87373.2408	138265.5583	167.59	250207.21	2253005.87	206.44
1535	87293.8536	138255.7842	167.41	250127.70	2253014.58	206.29
1536	87251.1317	138250.5242	167.31	250084.92	2253019.27	206.21
1537	86918.3767	138209.5557	166.56	249751.66	2253055.77	205.59
1538	86780.9632	138192.6374	166.25	249614.04	2253070.85	205.34
1539	86735.6139	138187.0541	166.15	249568.63	2253075.83	205.25
1540	86448.8413	138150.8152	165.50	249281.21	2253106.38	204.73
1541	86170.3686	138113.7609	164.88	249001.69	2253134.24	204.22
1542	85892.1382	138074.8795	164.27	248721.98	2253160.27	203.72
1543	85614.6324	138034.2606	163.66	248442.58	2253184.43	203.23
1544	84891.0174	137918.8336	162.11	247711.83	2253238.20	201.98
1545	84522.3903	137854.4650	161.34	247338.30	2253260.16	201.36
1546	84153.2366	137787.0773	160.57	246963.55	2253279.32	200.74
1547	83783.9080	137719.3802	159.80	246588.57	2253298.21	200.14
1548	83415.5686	137650.0921	159.04	246214.19	2253315.32	199.54
1549	83048.1488	137577.2429	158.30	245839.88	2253328.76	198.96
1550	82680.6318	137501.4346	157.56	245464.79	2253339.34	198.39
1551	82312.9471	137425.3133	156.83	245089.48	2253349.66	197.83
1552	81946.2877	137347.6238	156.10	244714.80	2253358.21	197.27
1553	81580.7837	137266.4295	155.38	244340.44	2253363.09	196.73
1554	81216.0926	137181.6585	154.68	243966.05	2253364.29	196.20
1555	80852.2495	137093.3185	153.99	243591.67	2253361.84	195.69
1556	80489.2893	137001.4184	153.32	243217.32	2253355.71	195.18
1557	80127.2468	136905.9667	152.65	242843.06	2253345.92	194.69
1558	79766.1568	136806.9727	152.00	242468.91	2253332.46	194.22
1559	79406.0540	136704.4459	151.37	242094.91	2253315.33	193.75

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1560	79046.9728	136598.3963	150.74	241721.10	2253294.54	193.30
1561	78688.9478	136488.8338	150.14	241347.50	2253270.09	192.86
1562	78332.0134	136375.7690	149.54	240974.17	2253241.99	192.44
1563	77976.2037	136259.2128	148.96	240601.13	2253210.22	192.02
1564	77621.5530	136139.1763	148.39	240228.41	2253174.80	191.62
1565	77268.0952	136015.6712	147.83	239856.06	2253135.74	191.24
1566	76915.8643	135888.7092	147.29	239484.12	2253093.03	190.86
1567	76564.8942	135758.3025	146.77	239112.61	2253046.67	190.50
1568	76215.2185	135624.4638	146.25	238741.57	2252996.68	190.16
1569	75866.8708	135487.2057	145.75	238371.03	2252943.05	189.82
1570	75519.8844	135346.5415	145.27	238001.05	2252885.80	189.50
1571	75174.2927	135202.4846	144.80	237631.63	2252824.93	189.19
1572	74830.1289	135055.0490	144.34	237262.84	2252760.44	188.90
1573	74487.4260	134904.2486	143.89	236894.69	2252692.33	188.62
1574	74146.2169	134750.0981	143.46	236527.23	2252620.63	188.35
1575	73806.5343	134592.6122	143.05	236160.49	2252545.33	188.10
1576	73468.4109	134431.8061	142.65	235794.50	2252466.44	187.86
1577	73131.8792	134267.6951	142.26	235429.30	2252383.97	187.63
1578	72796.9712	134100.2950	141.89	235064.93	2252297.92	187.42
1579	72463.7194	133929.6220	141.53	234701.42	2252208.31	187.22
1580	72132.1557	133755.6924	141.18	234338.81	2252115.14	187.03
1581	71802.3117	133578.5227	140.86	233977.12	2252018.43	186.86
1582	71473.9135	133397.9621	140.54	233616.07	2251918.08	186.70
1583	71467.1663	133394.2070	140.53	233608.64	2251915.97	186.70
1584	71147.9168	133214.5359	140.24	233256.69	2251814.39	186.56
1585	70823.4148	133027.7458	139.95	232898.00	2251707.09	186.42
1586	70500.7652	132837.7896	139.68	232540.38	2251596.27	186.31
1587	70179.9921	132644.6815	139.42	232183.86	2251481.96	186.20
1588	69861.1261	132448.4401	139.18	231828.48	2251364.17	186.11
1589	69544.1980	132249.0843	138.95	231474.27	2251242.89	186.03
1590	69229.2382	132046.6332	138.74	231121.27	2251118.15	185.97
1591	68916.2769	131841.1061	138.54	230769.51	2250989.96	185.92
1592	68605.3441	131632.5229	138.35	230419.02	2250858.33	185.88
1593	68296.4696	131420.9034	138.18	230069.83	2250723.28	185.86
1594	67989.6832	131206.2683	138.03	229721.99	2250584.80	185.85
1595	67685.0143	130988.6378	137.89	229375.52	2250442.93	185.85
1596	67382.4921	130768.0330	137.76	229030.45	2250297.67	185.87
1597	67082.1455	130544.4750	137.65	228686.83	2250149.03	185.90
1598	66784.0036	130317.9853	137.55	228344.68	2249997.04	185.95
1599	66488.0949	130088.5856	137.47	228004.03	2249841.70	186.01
1600	66194.4477	129856.2979	137.40	227664.92	2249683.03	186.08
1601	65903.0903	129621.1447	137.35	227327.38	2249521.05	186.17
1602	65614.0507	129383.1483	137.31	226991.45	2249355.77	186.27
1603	65327.3565	129142.3316	137.29	226657.15	2249187.20	186.38
1604	65043.0353	128898.7178	137.28	226324.51	2249015.37	186.51
1605	64761.1144	128652.3303	137.29	225993.58	2248840.29	186.65
1606	64481.6209	128403.1926	137.31	225664.38	2248661.97	186.80
1607	64204.5815	128151.3287	137.35	225336.94	2248480.44	186.97
1608	63930.0230	127896.7629	137.40	225011.30	2248295.70	187.15
1609	63657.9715	127639.5194	137.46	224687.48	2248107.79	187.35
1610	63388.4532	127379.6230	137.54	224365.51	2247916.71	187.55

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1611	63121.4940	127117.0988	137.64	224045.44	2247722.49	187.78
1612	62857.1196	126851.9717	137.75	223727.28	2247525.14	188.01
1613	62595.3552	126584.2673	137.87	223411.07	2247324.68	188.26
1614	62336.2261	126314.0114	138.01	223096.84	2247121.14	188.52
1615	62079.7571	126041.2298	138.16	222784.62	2246914.52	188.80
1616	61825.9728	125765.9486	138.33	222474.44	2246704.86	189.09
1617	61574.8976	125488.1944	138.51	222166.33	2246492.17	189.39
1618	61326.5555	125207.9938	138.71	221860.31	2246276.47	189.71
1619	61080.9703	124925.3737	138.92	221556.43	2246057.78	190.03
1620	60838.1658	124640.3613	139.15	221254.70	2245836.13	190.38
1621	60598.1652	124352.9837	139.39	220955.16	2245611.53	190.73
1622	60360.9915	124063.2687	139.65	220657.83	2245384.01	191.10
1623	60126.6674	123771.2441	139.92	220362.74	2245153.58	191.48
1624	59895.2157	123476.9379	140.20	220069.93	2244920.28	191.88
1625	59666.6582	123180.3782	140.50	219779.42	2244684.11	192.29
1626	59441.0170	122881.5938	140.82	219491.23	2244445.12	192.71
1627	59218.3138	122580.6131	141.14	219205.40	2244203.31	193.14
1628	58998.5700	122277.4650	141.49	218921.95	2243958.71	193.59
1629	58781.8066	121972.1788	141.84	218640.92	2243711.35	194.05
1630	58568.0444	121664.7835	142.21	218362.31	2243461.24	194.52
1631	58357.3040	121355.3089	142.60	218086.18	2243208.42	195.01
1632	58149.6057	121043.7845	143.00	217812.53	2242952.90	195.50
1633	57944.9692	120730.2404	143.41	217541.40	2242694.72	196.02
1634	57743.4144	120414.7064	143.84	217272.81	2242433.89	196.54
1635	57544.9604	120097.2130	144.28	217006.79	2242170.45	197.08
1636	57349.6265	119777.7907	144.74	216743.36	2241904.40	197.62
1637	57157.4312	119456.4700	145.21	216482.56	2241635.80	198.19
1638	56968.3930	119133.2819	145.69	216224.39	2241364.65	198.76
1639	56782.5303	118808.2573	146.19	215968.90	2241090.98	199.35
1640	56599.8606	118481.4274	146.70	215716.10	2240814.82	199.95
1641	56420.4016	118152.8237	147.23	215466.02	2240536.20	200.56
1642	56244.1706	117822.4777	147.77	215218.67	2240255.15	201.18
1643	56071.1843	117490.4209	148.32	214974.10	2239971.68	201.82
1644	55901.4594	117156.6855	148.89	214732.31	2239685.83	202.46
1645	55735.0124	116821.3032	149.47	214493.34	2239397.63	203.12
1646	55571.8589	116484.3065	150.06	214257.20	2239107.10	203.80
1647	55412.0148	116145.7276	150.67	214023.91	2238814.26	204.48
1648	55255.4955	115805.5989	151.29	213793.51	2238519.16	205.17
1649	55102.3157	115463.9532	151.92	213566.01	2238221.82	205.88
1650	54952.4905	115120.8233	152.57	213341.43	2237922.26	206.60
1651	54806.0340	114776.2420	153.23	213119.80	2237620.51	207.33
1652	54662.9604	114430.2424	153.91	212901.14	2237316.61	208.07
1653	54523.2833	114082.8577	154.60	212685.46	2237010.58	208.83
1654	54387.0163	113734.1215	155.30	212472.80	2236702.45	209.59
1655	54254.0486	113383.7408	156.01	212262.96	2236391.96	210.37
1656	54251.3461	113376.5074	156.02	212258.67	2236385.54	210.39
1657	54124.7669	113032.7354	156.74	212056.57	2236080.02	211.16
1658	53998.8042	112680.1377	157.47	211853.05	2235765.77	211.96
1659	53876.3048	112326.3305	158.23	211652.62	2235449.55	212.77
1660	53757.2772	111971.3403	158.99	211455.29	2235131.37	213.59
1661	53641.7332	111615.2010	159.77	211261.09	2234811.28	214.42

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE *	- - NAD 1927 - - AMERICAN SURVEY FEET	
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1662	53529.6839	111257.9469	160.56	211070.04	2234489.31	215.26
1663	53421.1399	110899.6122	161.36	210882.15	2234165.47	216.12
1664	53316.1117	110540.2312	162.18	210697.45	2233839.81	216.98
1665	53214.6093	110179.8387	163.00	210515.94	2233512.36	217.86
1666	53116.6425	109818.4691	163.84	210337.65	2233183.15	218.75
1667	53022.2207	109456.1571	164.69	210162.59	2232852.20	219.64
1668	52931.3530	109092.9374	165.56	209990.78	2232519.55	220.55
1669	52844.0482	108728.8450	166.43	209822.25	2232185.24	221.47
1670	52760.3144	108363.9148	167.32	209656.99	2231849.29	222.39
1671	52680.1598	107998.1817	168.22	209495.03	2231511.74	223.33
1672	52603.5922	107631.6810	169.13	209336.39	2231172.62	224.28
1673	52530.6188	107264.4478	170.06	209181.08	2230831.96	225.24
1674	52461.2467	106896.5173	170.99	209029.11	2230489.80	226.21
1675	52395.4824	106527.9249	171.94	208880.51	2230146.16	227.18
1676	52333.3324	106158.7058	172.90	208735.27	2229801.09	228.17
1677	52274.8026	105788.8958	173.86	208593.43	2229454.60	229.17
1678	52219.8986	105418.5300	174.84	208454.98	2229106.75	230.17
1679	52168.6256	105047.6442	175.84	208319.95	2228757.55	231.19
1680	52120.9887	104676.2738	176.84	208188.35	2228407.05	232.21
1681	52076.9922	104304.4546	177.85	208060.19	2228055.28	233.25
1682	52036.6407	103932.2223	178.88	207935.48	2227702.27	234.29
1683	51999.9377	103559.6126	179.91	207814.24	2227348.05	235.34
1684	51966.8871	103186.6612	180.96	207696.47	2226992.66	236.41
1685	51937.4917	102813.4039	182.01	207582.19	2226636.14	237.48
1686	51911.7545	102439.8765	183.08	207471.40	2226278.51	238.55
1687	51889.6778	102066.1150	184.16	207364.13	2225919.81	239.64
1688	51871.2641	101692.1552	185.24	207260.38	2225560.09	240.74
1689	51856.5149	101318.0329	186.34	207160.15	2225199.36	241.84
1690	51845.4316	100943.7841	187.45	207063.47	2224837.66	242.95
1691	51838.0153	100569.4447	188.56	206970.33	2224475.04	244.08
1692	51834.2668	100195.0507	189.69	206880.75	2224111.52	245.20
1693	51834.1863	99820.6379	190.83	206794.73	2223747.15	246.34
1694	51837.7740	99446.2424	191.97	206712.29	2223381.94	247.49
1695	51845.0293	99071.9000	193.13	206633.43	2223015.95	248.64
1696	51855.9518	98697.6467	194.29	206558.16	2222649.20	249.80
1697	51870.5403	98323.5184	195.47	206486.49	2222281.73	250.97
1698	51888.7933	97949.5510	196.65	206418.42	2221913.58	252.14
1699	51910.7092	97575.7803	197.85	206353.96	2221544.78	253.32
1700	51936.2859	97202.2424	199.05	206293.12	2221175.37	254.51
1701	51965.5209	96828.9730	200.26	206235.90	2220805.37	255.71
1702	51998.4113	96456.0079	201.48	206182.30	2220434.84	256.91
1703	52034.9540	96083.3830	202.70	206132.34	2220063.79	258.12
1704	52075.1457	95711.1340	203.94	206086.02	2219692.28	259.34
1705	52118.9823	95339.2966	205.18	206043.34	2219320.32	260.56
1706	52166.4596	94967.9066	206.44	206004.30	2218947.97	261.79
1707	52217.5732	94596.9997	207.70	205968.92	2218575.26	263.03
1708	52272.3180	94226.6112	208.97	205937.19	2218202.21	264.27
1709	52330.6889	93856.7768	210.24	205909.11	2217828.87	265.52
1710	52392.6802	93487.5322	211.53	205884.69	2217455.28	266.77
1711	52458.2860	93118.9125	212.82	205863.94	2217081.46	268.04
1712	52527.5000	92750.9534	214.12	205846.85	2216707.46	269.30

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1713	52600.3156	92383.6900	215.43	205833.42	2216333.31	270.57
1714	52676.7258	92017.1577	216.74	205823.66	2215959.05	271.85
1715	52756.7230	91651.3915	218.06	205817.57	2215584.71	273.13
1716	52840.3000	91286.4266	219.39	205815.14	2215210.32	274.42
1717	52927.4484	90922.2981	220.72	205816.38	2214835.93	275.72
1718	53018.1600	90559.0409	222.07	205821.29	2214461.57	277.01
1719	53112.4261	90196.6898	223.41	205829.87	2214087.28	278.32
1720	53210.2375	89835.2797	224.77	205842.11	2213713.09	279.63
1721	53311.5850	89474.8451	226.13	205858.02	2213339.03	280.94
1722	53416.4587	89115.4208	227.50	205877.60	2212965.16	282.26
1723	53524.8487	88757.0413	228.87	205900.83	2212591.49	283.58
1724	53636.7446	88399.7408	230.25	205927.73	2212218.06	284.90
1725	53752.1355	88043.5537	231.63	205958.28	2211844.92	286.23
1726	53871.0104	87688.5142	233.03	205992.49	2211472.09	287.57
1727	53993.3579	87334.6564	234.42	206030.35	2211099.62	288.91
1728	54119.2835	86981.6857	235.82	206071.89	2210727.19	290.25
1729	54121.9155	86974.4264	235.85	206072.79	2210719.52	290.28
1730	54248.4205	86630.6291	237.23	206117.00	2210355.89	291.59
1731	54381.1169	86280.5121	238.64	206165.79	2209984.68	292.94
1732	54517.2341	85931.7195	240.06	206218.21	2209613.98	294.30
1733	54656.7618	85584.2770	241.48	206274.26	2209243.81	295.65
1734	54799.6867	85238.2184	242.91	206333.93	2208874.20	297.01
1735	54945.9951	84893.5765	244.34	206397.23	2208505.20	298.37
1736	55095.6729	84550.3846	245.78	206464.13	2208136.84	299.74
1737	55248.7057	84208.6755	247.22	206534.64	2207769.14	301.10
1738	55405.0789	83868.4821	248.66	206608.75	2207402.16	302.47
1739	55564.7775	83529.8370	250.11	206686.46	2207035.92	303.85
1740	55727.7861	83192.7728	251.56	206767.74	2206670.46	305.22
1741	55894.0891	82857.3218	253.02	206852.61	2206305.82	306.60
1742	56063.6704	82523.5161	254.48	206941.04	2205942.02	307.98
1743	56236.5139	82191.3878	255.94	207033.03	2205579.11	309.36
1744	56412.6030	81860.9688	257.41	207128.57	2205217.11	310.74
1745	56591.9208	81532.2909	258.88	207227.65	2204856.07	312.12
1746	56774.4499	81205.3855	260.35	207330.27	2204496.02	313.51
1747	56960.1731	80880.2840	261.83	207436.41	2204136.99	314.90
1748	57149.0722	80557.0177	263.30	207546.06	2203779.01	316.29
1749	57341.1294	80235.6175	264.79	207659.21	2203422.13	317.68
1750	57536.3260	79916.1144	266.27	207775.86	2203066.38	319.07
1751	57734.6436	79598.5389	267.76	207895.98	2202711.78	320.46
1752	57936.0628	79282.9217	269.24	208019.57	2202358.38	321.85
1753	58140.5645	78969.2928	270.73	208146.62	2202006.20	323.24
1754	58348.1289	78657.6825	272.23	208277.11	2201655.29	324.64
1755	58558.7362	78348.1207	273.72	208411.04	2201305.67	326.03
1756	58772.3663	78040.6371	275.22	208548.38	2200957.39	327.43
1757	58988.9984	77735.2611	276.71	208689.13	2200610.46	328.82
1758	59208.6119	77432.0221	278.21	208833.27	2200264.93	330.21
1759	59431.1858	77130.9493	279.71	208980.79	2199920.83	331.61
1760	59656.6985	76832.0715	281.21	209131.67	2199578.19	333.00
1761	59885.1285	76535.4173	282.71	209285.91	2199237.04	334.39
1762	60116.4539	76241.0153	284.22	209443.47	2198897.42	335.79
1763	60350.6524	75948.8938	285.72	209604.36	2198559.37	337.18

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1764	60587.7016	75659.0807	287.22	209768.55	2198222.90	338.57
1765	60827.5787	75371.6039	288.73	209936.03	2197888.06	339.96
1766	61070.2607	75086.4910	290.23	210106.79	2197554.88	341.35
1767	61315.7243	74803.7692	291.74	210280.79	2197223.38	342.73
1768	61563.9460	74523.4658	293.24	210458.04	2196893.61	344.12
1769	61814.9018	74245.6078	294.74	210638.51	2196565.59	345.51
1770	62068.5678	73970.2217	296.25	210822.19	2196239.35	346.89
1771	62324.9195	73697.3340	297.75	211009.05	2195914.93	348.27
1772	62583.9325	73426.9708	299.25	211199.08	2195592.35	349.65
1773	62845.5818	73159.1581	300.75	211392.26	2195271.65	351.02
1774	63109.8422	72893.9217	302.26	211588.58	2194952.86	352.40
1775	63376.6885	72631.2870	303.75	211788.01	2194636.01	353.77
1776	63646.0951	72371.2792	305.25	211990.53	2194321.12	355.14
1777	63918.0360	72113.9231	306.75	212196.13	2194008.24	356.51
1778	64192.4851	71859.2437	308.25	212404.79	2193697.38	357.87
1779	64469.4163	71607.2652	309.74	212616.48	2193388.59	359.24
1780	64748.8027	71358.0119	311.23	212831.18	2193081.88	360.59
1781	65030.6176	71111.5077	312.72	213048.88	2192777.29	361.95
1782	65314.8341	70867.7763	314.21	213269.56	2192474.85	363.30
1783	65601.4247	70626.8410	315.69	213493.18	2192174.59	364.65
1784	65890.3621	70388.7251	317.18	213719.74	2191876.53	366.00
1785	66181.6184	70153.4512	318.66	213949.21	2191580.70	367.34
1786	66475.1657	69921.0421	320.14	214181.56	2191287.14	368.68
1787	66770.9758	69691.5200	321.61	214416.78	2190995.87	370.01
1788	67069.0204	69464.9069	323.08	214654.84	2190706.91	371.34
1789	67369.2708	69241.2247	324.55	214895.72	2190420.30	372.67
1790	67671.6982	69020.4947	326.02	215139.39	2190136.07	373.99
1791	67976.2736	68802.7382	327.48	215385.84	2189854.24	375.31
1792	68282.9677	68587.9760	328.94	215635.04	2189574.83	376.62
1793	68591.7512	68376.2288	330.40	215886.96	2189297.88	377.93
1794	68902.5944	68167.5170	331.85	216141.59	2189023.41	379.23
1795	69215.4673	67961.8604	333.29	216398.89	2188751.45	380.53
1796	69530.3401	67759.2790	334.74	216658.84	2188482.02	381.83
1797	69847.1825	67559.7920	336.18	216921.43	2188215.15	383.11
1798	70165.9640	67363.4187	337.61	217186.61	2187950.87	384.40
1799	70486.6541	67170.1780	339.04	217454.37	2187689.20	385.67
1800	70809.2220	66980.0882	340.47	217724.68	2187430.16	386.95
1801	71133.9392	66792.9936	341.89	217997.77	2187173.55	388.21
1802	71140.6494	66789.1731	341.92	218003.42	2187168.29	388.24
1803	71459.8603	66609.4384	343.31	218272.84	2186920.10	389.47
1804	71787.8821	66428.9063	344.72	218550.65	2186669.12	390.73
1805	72117.6499	66251.6002	346.12	218830.90	2186420.87	391.98
1806	72449.1389	66077.5333	347.52	219113.57	2186175.38	393.22
1807	72782.3174	65906.7224	348.92	219398.63	2185932.67	394.46
1808	73117.1533	65739.1838	350.31	219686.06	2185692.77	395.69
1809	73453.6146	65574.9336	351.69	219975.82	2185455.69	396.91
1810	73791.6689	65413.9876	353.07	220267.89	2185221.47	398.13
1811	74131.2836	65256.3611	354.44	220562.24	2184990.11	399.34
1812	74472.4265	65102.0694	355.81	220858.84	2184761.66	400.54
1813	74815.0646	64951.1273	357.17	221157.67	2184536.11	401.74
1814	75159.1649	64803.5492	358.52	221458.69	2184313.51	402.93

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP POINT	VALUES * INTERNATIONAL FEET NORTH	EAST	** ELEV	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET NORTH	EAST	ELEV
1815	75504.6946	64659.3494	359.87	221761.88	2184093.87	404.11
1816	75851.6205	64518.5416	361.21	222067.21	2183877.20	405.29
1817	76199.9093	64381.1393	362.54	222374.64	2183663.54	406.45
1818	76549.5274	64247.1559	363.87	222684.15	2183452.91	407.61
1819	76900.4415	64116.6041	365.19	222995.72	2183245.31	408.77
1820	77252.6178	63989.4963	366.50	223309.30	2183040.77	409.91
1821	77606.0225	63865.8449	367.81	223624.86	2182839.32	411.05
1822	77960.6216	63745.6618	369.10	223942.39	2182640.97	412.18
1823	78316.3811	63628.9584	370.39	224261.85	2182445.74	413.30
1824	78673.2670	63515.7459	371.68	224583.20	2182253.65	414.41
1825	79031.2448	63406.0352	372.95	224906.42	2182064.72	415.52
1826	79390.2803	63299.8370	374.22	225231.47	2181878.96	416.61
1827	79750.3391	63197.1612	375.48	225558.33	2181696.39	417.70
1828	80111.3865	63098.0178	376.73	225886.96	2181517.04	418.78
1829	80473.3879	63002.4164	377.97	226217.34	2181340.91	419.85
1830	80836.3086	62910.3659	379.21	226549.42	2181168.03	420.91
1831	81200.1137	62821.8755	380.43	226883.18	2180998.41	421.96
1832	81564.7683	62736.9535	381.65	227218.58	2180832.07	423.01
1833	81930.2374	62655.6080	382.86	227555.60	2180669.03	424.04
1834	82297.2047	62577.6943	384.06	227894.87	2180508.97	425.07
1835	120908.6609	136557.5972	261.00	282452.65	2243645.98	303.44
1836	120428.0325	136648.5416	259.46	282005.77	2243844.81	301.58
1837	119947.0086	136737.3704	257.92	281558.02	2244041.68	299.74
1838	119465.5984	136824.0816	256.39	281109.41	2244236.57	297.91
1839	118983.8114	136908.6736	254.87	280659.95	2244429.48	296.09
1840	118501.6567	136991.1448	253.35	280209.64	2244620.42	294.28
1841	118019.1438	137071.4936	251.84	279758.49	2244809.37	292.49
1842	117536.2821	137149.7183	250.33	279306.52	2244996.33	290.71
1843	117053.0807	137225.8176	248.83	278853.73	2245181.30	288.95
1844	116569.5491	137299.7899	247.33	278400.13	2245364.28	287.19
1845	116085.6968	137371.6339	245.84	277945.73	2245545.27	285.45
1846	115601.5330	137441.3481	244.35	277490.53	2245724.25	283.72
1847	115117.0670	137508.9311	242.87	277034.55	2245901.22	282.01
1848	114632.3083	137574.3817	241.40	276577.80	2246076.19	280.31
1849	114147.2664	137637.6985	239.93	276120.28	2246249.15	278.62
1850	113661.9505	137698.8805	238.47	275662.01	2246420.09	276.94
1851	113176.3700	137757.9263	237.01	275202.99	2246589.01	275.28
1852	112690.5344	137814.8349	235.56	274743.23	2246755.91	273.63
1853	112204.4531	137869.6050	234.12	274282.73	2246920.79	272.00
1854	111718.1355	137922.2358	232.68	273821.52	2247083.64	270.37
1855	111231.5910	137972.7260	231.24	273359.60	2247244.46	268.77
1856	110744.8290	138021.0749	229.82	272896.97	2247403.24	267.17
1857	110257.8590	138067.2814	228.40	272433.65	2247559.99	265.59
1858	109770.6902	138111.3446	226.98	271969.64	2247714.70	264.02
1859	109283.3324	138153.2638	225.57	271504.95	2247867.36	262.46
1860	108795.7947	138193.0381	224.17	271039.60	2248017.98	260.92
1861	108308.0868	138230.6665	222.77	270573.59	2248166.55	259.39
1862	107820.2180	138266.1487	221.38	270106.93	2248313.06	257.88
1863	107332.1977	138299.4837	219.99	269639.63	2248457.52	256.38
1864	106844.0355	138330.6709	218.61	269171.70	2248599.93	254.89
1865	106355.7407	138359.7098	217.24	268703.14	2248740.27	253.42

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1866	105867.3229	138386.5999	215.88	268233.98	2248878.55	251.96
1867	105378.7915	138411.3404	214.51	267764.21	2249014.77	250.51
1868	104890.1559	138433.9310	213.16	267293.84	2249148.91	249.08
1869	104401.4257	138454.3713	211.81	266822.89	2249280.99	247.66
1870	103912.6101	138472.6609	210.47	266351.36	2249410.99	246.26
1871	103423.7189	138488.7992	209.14	265879.26	2249538.92	244.86
1872	102934.7613	138502.7862	207.81	265406.61	2249664.76	243.49
1873	102445.7470	138514.6215	206.48	264933.40	2249788.53	242.12
1874	101956.6852	138524.3049	205.17	264459.66	2249910.21	240.77
1875	101467.5855	138531.8362	203.86	263985.38	2250029.81	239.44
1876	100978.4574	138537.2152	202.56	263510.58	2250147.32	238.12
1877	100489.3104	138540.4420	201.26	263035.27	2250262.74	236.81
1878	100000.1539	138541.5162	199.97	262559.46	2250376.06	235.51
1879	99511.0159	138540.4382	198.69	262083.17	2250487.29	234.23
1880	99021.8874	138537.2078	197.41	261606.40	2250596.42	232.97
1881	98532.7778	138531.8252	196.14	261129.15	2250703.45	231.72
1882	98043.6965	138524.2906	194.87	260651.43	2250808.38	230.48
1883	97554.6532	138514.6041	193.62	260173.25	2250911.21	229.25
1884	97065.6572	138502.7658	192.37	259694.63	2251011.93	228.05
1885	96576.7180	138488.7759	191.12	259215.57	2251110.55	226.85
1886	96087.8451	138472.6348	189.89	258736.08	2251207.05	225.67
1887	95599.0479	138454.3427	188.66	258256.17	2251301.45	224.50
1888	95110.3359	138433.9001	187.43	257775.85	2251393.73	223.35
1889	94621.7186	138411.3072	186.21	257295.12	2251483.90	222.21
1890	94133.2054	138386.5647	185.00	256814.01	2251571.95	221.09
1891	93644.8058	138359.6729	183.80	256332.51	2251657.89	219.98
1892	93156.5292	138330.6323	182.61	255850.64	2251741.70	218.88
1893	92668.3852	138299.4434	181.42	255368.40	2251823.40	217.80
1894	92180.3830	138266.1071	180.23	254885.81	2251902.97	216.73
1895	91692.5323	138230.6238	179.06	254402.88	2251980.42	215.68
1896	91204.8424	138192.9941	177.89	253919.60	2252055.74	214.64
1897	90717.3227	138153.2190	176.73	253436.00	2252128.93	213.62
1898	90229.9828	138111.2992	175.57	252952.08	2252200.00	212.61
1899	89742.8320	138067.2353	174.42	252467.86	2252268.94	211.62
1900	89255.8798	138021.0284	173.28	251983.33	2252335.74	210.64
1901	88769.1357	137972.6793	172.15	251498.52	2252400.41	209.67
1902	88282.6090	137922.1890	171.02	251013.43	2252462.95	208.72
1903	87796.3091	137869.5583	169.90	250528.06	2252523.36	207.78
1904	87310.2456	137814.7884	168.79	250042.44	2252581.62	206.86
1905	86824.4276	137757.8802	167.69	249556.56	2252637.75	205.95
1906	86338.8648	137698.8350	166.59	249070.44	2252691.74	205.06
1907	85853.5665	137637.6538	165.50	248584.08	2252743.60	204.18
1908	85368.5420	137574.3378	164.41	248097.51	2252793.31	203.32
1909	84883.8008	137508.8883	163.34	247610.72	2252840.88	202.47
1910	84399.3523	137441.3066	162.27	247123.72	2252886.31	201.63
1911	83915.2058	137371.5938	161.20	246636.53	2252929.59	200.81
1912	83431.3708	137299.7514	160.15	246149.15	2252970.73	200.01
1913	82947.8565	137225.7808	159.10	245661.60	2253009.73	199.22
1914	82464.6724	137149.6833	158.06	245173.88	2253046.57	198.44
1915	81981.8277	137071.4605	157.03	244686.00	2253081.28	197.68
1916	81499.3320	136991.1140	156.00	244197.97	2253113.83	196.94

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
1917	81017.1944	136908.6451	154.99	243709.81	2253144.24	196.21
1918	80535.4243	136824.0557	153.98	243221.52	2253172.50	195.49
1919	80054.0312	136737.3472	152.97	242733.10	2253198.61	194.79
1920	79573.0241	136648.5213	151.98	242244.58	2253222.58	194.10
1921	79092.4125	136557.5798	150.99	241755.95	2253244.39	193.43
2001	82401.7080	61228.5278	388.43	227686.91	2179171.95	431.81
2002	82773.9773	61151.7062	389.64	228031.59	2179011.74	432.86
2003	83152.3253	61076.5272	390.87	228382.56	2178851.74	433.91
2004	83530.1429	61005.2940	392.08	228733.92	2178695.70	434.95
2005	83903.1006	60936.9623	393.27	229081.21	2178543.60	435.98
2006	84277.3465	60868.6119	394.46	229429.75	2178391.19	437.01
2007	84657.3142	60802.1008	395.66	229784.29	2178239.25	438.06
2008	85039.3005	60739.0869	396.86	230141.59	2178090.25	439.10
2009	85421.1110	60679.9383	398.04	230499.61	2177945.06	440.12
2010	85708.5475	60637.8890	398.92	230769.70	2177838.17	440.89
2011	85995.1844	60597.8561	399.80	231039.48	2177733.42	441.64
2012	86282.1722	60559.6920	400.67	231310.03	2177630.41	442.39
2013	86582.4187	60521.7981	401.58	231593.54	2177524.62	443.18
2014	86627.7339	60516.2226	401.71	231636.36	2177508.80	443.29
2015	87309.9027	60432.2893	403.76	232281.01	2177270.55	445.08
2016	87349.5725	60427.4084	403.88	232318.50	2177256.69	445.18
2017	88619.8100	60271.1199	407.70	233518.87	2176813.06	448.56
2018	89890.0476	60114.8314	411.51	234719.24	2176369.42	452.02
2019	89929.7174	60109.9505	411.63	234756.73	2176355.57	452.13
2020	90611.8861	60026.0173	413.68	235401.37	2176117.32	454.03
2021	90657.2007	60020.4418	413.82	235444.20	2176101.49	454.15
2022	90957.6783	59984.4231	414.72	235728.36	2175997.47	454.99
2023	91245.3585	59951.8809	415.57	236000.88	2175899.78	455.78
2024	91533.1499	59921.2367	416.42	236273.93	2175803.90	456.58
2025	91821.9288	59892.3826	417.27	236548.36	2175709.55	457.36
2026	92205.7374	59857.1124	418.39	236913.80	2175587.13	458.40
2027	92591.5858	59825.4604	419.50	237282.05	2175467.77	459.43
2028	92976.9485	59797.6461	420.60	237650.72	2175352.26	460.45
2029	93266.8569	59779.1776	421.42	237928.63	2175267.75	461.21
2030	93555.8040	59762.6539	422.23	238206.05	2175185.35	461.96
2031	93844.9484	59748.0212	423.03	238484.09	2175104.75	462.71
2032	94147.2854	59734.7391	423.87	238775.29	2175022.44	463.48
2033	94192.9044	59732.8775	423.99	238819.26	2175010.15	463.60
2034	94879.6462	59704.8558	425.89	239481.19	2174825.27	465.36
2035	94919.5820	59703.2263	426.00	239519.68	2174814.52	465.47
2036	96198.3349	59651.0482	429.52	240752.23	2174470.26	468.82
2037	97477.0880	59598.8701	433.04	241984.77	2174125.99	472.25
2038	97517.0236	59597.2405	433.15	242023.27	2174115.24	472.36
2039	98203.7655	59569.2188	435.04	242685.19	2173930.36	474.23
2040	98249.3840	59567.3574	435.17	242729.16	2173918.08	474.36
2041	98551.7982	59555.9631	436.00	243020.86	2173837.58	475.19
2042	98841.1742	59546.9900	436.79	243300.43	2173762.43	475.98
2043	99130.5063	59539.9179	437.57	243580.40	2173689.15	476.76
2044	99420.6766	59534.7101	438.35	243861.60	2173617.48	477.54
2045	99806.0833	59530.8576	439.37	244235.81	2173525.28	478.56
2046	100193.2281	59530.7774	440.39	244612.57	2173436.35	479.58

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2047	100579.5758	59534.4828	441.40	244989.43	2173351.29	480.59
2048	100870.0249	59539.7183	442.15	245273.30	2173289.72	481.34
2049	101159.3572	59546.8135	442.89	245556.51	2173230.23	482.08
2050	101448.7079	59555.8090	443.62	245840.18	2173172.57	482.81
2051	101747.1883	59567.0662	444.37	246133.26	2173115.03	483.56
2052	101808.0116	59569.5528	444.52	246193.02	2173103.49	483.72
2053	101933.2346	59574.6724	444.84	246316.07	2173079.73	484.03
2054	102264.9440	59588.2339	445.67	246642.01	2173016.80	484.87
2055	102307.9525	59589.9922	445.78	246684.27	2173008.64	484.98
2056	102387.8724	59593.2596	445.98	246762.80	2172993.48	485.18
2057	102430.8809	59595.0180	446.08	246805.06	2172985.32	485.29
2058	102510.8008	59598.2854	446.29	246883.59	2172970.15	485.49
2059	102553.8094	59600.0438	446.39	246925.85	2172962.00	485.60
2060	102633.7291	59603.3112	446.59	247004.38	2172946.83	485.81
2061	102676.7378	59605.0695	446.70	247046.64	2172938.67	485.92
2062	103576.6228	59641.8600	448.96	247930.88	2172767.95	488.24
2063	103617.5989	59643.5353	449.06	247971.14	2172760.18	488.34
2064	103656.4444	59645.1234	449.16	248009.31	2172752.81	488.44
2065	103703.9766	59647.0667	449.28	248056.01	2172743.79	488.57
2066	103802.1883	59651.0820	449.52	248152.52	2172725.16	488.82
2067	103900.3999	59655.0972	449.77	248249.02	2172706.52	489.08
2068	103947.9322	59657.0406	449.89	248295.73	2172697.51	489.20
2069	103986.7775	59658.6286	449.99	248333.90	2172690.14	489.31
2070	104027.7536	59660.3039	450.09	248374.16	2172682.36	489.41
2071	104927.6387	59697.0945	452.34	249258.39	2172511.64	491.79
2072	104970.6472	59698.8527	452.45	249300.66	2172503.48	491.91
2073	105050.5671	59702.1202	452.65	249379.18	2172488.32	492.12
2074	105093.5756	59703.8785	452.76	249421.45	2172480.16	492.23
2075	105173.4955	59707.1459	452.96	249499.98	2172465.00	492.45
2076	105216.5040	59708.9043	453.07	249542.24	2172456.84	492.56
2077	105296.4240	59712.1717	453.27	249620.77	2172441.68	492.78
2078	105339.4325	59713.9301	453.38	249663.03	2172433.52	492.89
2079	105671.1418	59727.4915	454.21	249988.97	2172370.59	493.79
2080	105796.3648	59732.6111	454.52	250112.01	2172346.83	494.12
2081	105857.1878	59735.0977	454.67	250171.78	2172335.29	494.29
2082	106155.5910	59748.2432	455.42	250465.21	2172279.60	495.09
2083	106444.7112	59762.8977	456.13	250749.95	2172227.50	495.87
2084	106733.6564	59779.4446	456.84	251034.95	2172177.29	496.64
2085	107023.2851	59797.9181	457.55	251321.07	2172128.80	497.40
2086	107407.7225	59825.5089	458.48	251701.54	2172067.42	498.41
2087	107793.5845	59857.0013	459.40	252084.30	2172009.52	499.41
2088	108178.3434	59892.2014	460.30	252466.84	2171955.47	500.40
2089	108467.3983	59921.1060	460.98	252754.78	2171917.26	501.13
2090	108755.1884	59951.7732	461.64	253041.91	2171881.06	501.85
2091	109042.8420	59984.3356	462.30	253329.33	2171846.73	502.57
2092	109339.4102	60019.8967	462.97	253626.12	2171813.27	503.30
2093	109399.8282	60027.3353	463.11	253686.63	2171806.65	503.45
2094	109524.2168	60042.6501	463.39	253811.20	2171793.00	503.76
2095	109853.7155	60083.2177	464.13	254141.18	2171756.86	504.58
2096	109896.4374	60088.4776	464.23	254183.97	2171752.18	504.69
2097	109975.8246	60098.2517	464.41	254263.47	2171743.47	504.88

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP POINT	VALUES * INTERNATIONAL FEET NORTH	EAST	** ELEV	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET NORTH	EAST	ELEV
2098	110018.5466	60103.5115	464.50	254306.26	2171738.78	504.99
2099	110097.9339	60113.2857	464.68	254385.76	2171730.08	505.19
2100	110140.6557	60118.5456	464.78	254428.55	2171725.39	505.30
2101	110220.0431	60128.3197	464.96	254508.05	2171716.68	505.50
2102	110262.7649	60133.5796	465.05	254550.84	2171712.00	505.60
2103	111156.6527	60243.6345	467.07	255446.05	2171613.95	507.87
2104	111197.3559	60248.6459	467.16	255486.81	2171609.49	507.97
2105	111235.9424	60253.3966	467.25	255525.45	2171605.26	508.07
2106	111283.1579	60259.2098	467.36	255572.74	2171600.08	508.19
2107	111380.7149	60271.2209	467.58	255670.44	2171589.38	508.44
2108	111478.2721	60283.2320	467.80	255768.14	2171578.68	508.69
2109	111525.4877	60289.0452	467.90	255815.43	2171573.50	508.82
2110	111564.0741	60293.7959	467.99	255854.07	2171569.27	508.92
2111	111604.7772	60298.8073	468.08	255894.83	2171564.80	509.02
2112	112498.6650	60408.8622	470.10	256790.04	2171466.76	511.34
2113	112541.3870	60414.1221	470.20	256832.83	2171462.07	511.46
2114	112620.7741	60423.8963	470.38	256912.33	2171453.36	511.67
2115	112663.4961	60429.1561	470.47	256955.12	2171448.68	511.78
2116	112742.8834	60438.9303	470.65	257034.62	2171439.97	511.99
2117	112785.6054	60444.1901	470.75	257077.41	2171435.29	512.10
2118	112864.9925	60453.9642	470.93	257156.91	2171426.58	512.31
2119	112907.7145	60459.2241	471.02	257199.70	2171421.89	512.42
2120	113237.2132	60499.7918	471.77	257529.68	2171385.75	513.29
2121	113361.6017	60515.1065	472.05	257654.25	2171372.11	513.63
2122	113422.0193	60522.5450	472.18	257714.76	2171365.48	513.79
2123	113718.3568	60559.9818	472.85	258011.75	2171333.91	514.57
2124	114005.3190	60598.1658	473.49	258299.79	2171305.21	515.33
2125	114291.9525	60638.2214	474.12	258587.94	2171278.41	516.08
2126	114581.8943	60680.6606	474.76	258879.86	2171253.17	516.84
2127	115323.1838	60798.9069	476.35	259628.43	2171198.12	518.74
2128	115706.1393	60865.7774	477.15	260016.48	2171175.31	519.70
2129	116080.6713	60934.1470	477.93	260396.67	2171155.89	520.63
2130	116453.4385	61002.4743	478.70	260775.14	2171136.83	521.57
2131	116831.0079	61073.4988	479.48	261158.90	2171119.30	522.52
2132	117209.5737	61148.5580	480.25	261544.55	2171105.47	523.45
2133	117582.4450	61225.4706	481.00	261925.09	2171094.75	524.37
2134	117953.5531	61302.3006	481.74	262303.89	2171084.35	525.28
2135	118329.4004	61381.9369	482.49	262687.95	2171075.59	526.21
2136	118707.3375	61465.8931	483.22	263075.03	2171070.56	527.13
2137	119084.4342	61553.5479	483.95	263462.14	2171069.32	528.03
2138	119460.6540	61644.8928	484.66	263849.25	2171071.88	528.93
2139	119835.9608	61739.9191	485.36	264236.31	2171078.22	529.80
2140	120210.3187	61838.6177	486.05	264623.30	2171088.36	530.67
2141	120583.6917	61940.9791	486.72	265010.16	2171102.29	531.52
2142	120956.0441	62046.9935	487.38	265396.87	2171120.01	532.35
2143	121327.3399	62156.6507	488.02	265783.39	2171141.52	533.17
2144	121697.5437	62269.9401	488.65	266169.68	2171166.81	533.98
2145	122066.6198	62386.8509	489.27	266555.70	2171195.88	534.77
2146	122434.5329	62507.3720	489.87	266941.42	2171228.74	535.55
2147	122801.2476	62631.4915	490.46	267326.80	2171265.37	536.31
2148	123166.7288	62759.1979	491.03	267711.80	2171305.78	537.06

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2149	123530.9413	62890.4788	491.59	268096.39	2171349.95	537.79
2150	123893.8502	63025.3214	492.13	268480.52	2171397.89	538.51
2151	124255.4207	63163.7129	492.67	268864.17	2171449.60	539.21
2152	124615.6180	63305.6401	493.18	269247.29	2171505.06	539.90
2153	124974.4078	63451.0892	493.68	269629.85	2171564.27	540.57
2154	125331.7552	63600.0464	494.17	270011.81	2171627.22	541.23
2155	125687.6263	63752.4973	494.65	270393.14	2171693.91	541.87
2156	126041.9868	63908.4273	495.10	270773.80	2171764.34	542.50
2157	126394.8026	64067.8215	495.55	271153.74	2171838.49	543.11
2158	126746.0401	64230.6644	495.98	271532.95	2171916.36	543.71
2159	127095.6652	64396.9407	496.39	271911.37	2171997.94	544.29
2160	127443.6447	64566.6342	496.79	272288.97	2172083.23	544.86
2161	127789.9450	64739.7286	497.18	272665.72	2172172.21	545.41
2162	128134.5329	64916.2073	497.55	273041.58	2172264.87	545.94
2163	128477.3753	65096.0535	497.91	273416.52	2172361.22	546.46
2164	128818.4394	65279.2498	498.25	273790.49	2172461.23	546.96
2165	129155.3487	65464.4901	498.57	274160.89	2172564.19	547.45
2166	129167.7210	65471.3759	498.58	274174.51	2172568.05	547.47
2167	129495.1551	65655.6530	498.88	274535.46	2172672.24	547.92
2168	129830.6350	65848.7623	499.18	274906.28	2172783.18	548.38
2169	130164.2600	66045.1801	499.46	275276.05	2172897.77	548.82
2170	130495.9447	66244.8571	499.73	275644.67	2173015.98	549.24
2171	130825.6574	66447.7739	499.98	276012.12	2173137.79	549.65
2172	131153.3663	66653.9112	500.22	276378.36	2173263.19	550.05
2173	131479.0399	66863.2490	500.44	276743.36	2173392.18	550.42
2174	131802.6471	67075.7674	500.64	277107.07	2173524.73	550.78
2175	132124.1568	67291.4459	500.83	277469.47	2173660.84	551.13
2176	132438.8909	67507.0799	501.01	277825.26	2173798.47	551.45
2177	132590.9694	67979.5893	499.97	278081.71	2174223.42	549.92
2178	132900.2223	68200.4941	500.11	278433.38	2174367.43	550.21
2179	133210.6606	68426.8714	500.24	278787.46	2174516.49	550.49
2180	133518.8661	68656.2792	500.36	279140.06	2174669.02	550.75
2181	133824.8094	68888.6953	500.46	279491.15	2174824.99	550.99
2182	134128.4611	69124.0976	500.54	279840.69	2174984.40	551.22
2183	134429.7920	69362.4635	500.61	280188.66	2175147.22	551.44
2184	134728.7732	69603.7698	500.66	280535.01	2175313.45	551.63
2185	135025.3760	69847.9938	500.70	280879.72	2175483.06	551.81
2186	135319.5719	70095.1118	500.73	281222.75	2175656.03	551.98
2187	135611.3328	70345.1002	500.74	281564.07	2175832.36	552.12
2188	135900.6306	70597.9348	500.73	281903.65	2176012.03	552.25
2189	136187.4375	70853.5916	500.71	282241.45	2176195.01	552.37
2190	136471.7261	71112.0459	500.67	282577.44	2176381.30	552.47
2191	136753.4690	71373.2728	500.62	282911.59	2176570.86	552.55
2192	137032.6391	71637.2475	500.55	283243.86	2176763.69	552.61
2193	137309.2098	71903.9443	500.47	283574.23	2176959.77	552.66
2194	137583.1543	72173.3381	500.37	283902.67	2177159.08	552.70
2195	137854.4464	72445.4025	500.26	284229.13	2177361.59	552.71
2196	138123.0603	72720.1118	500.13	284553.60	2177567.29	552.71
2197	138388.9700	72997.4395	499.99	284876.03	2177776.16	552.70
2198	138652.1499	73277.3589	499.83	285196.41	2177988.18	552.67
2199	138912.5748	73559.8431	499.66	285514.69	2178203.32	552.62

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2200	139170.2199	73844.8652	499.47	285830.85	2178421.58	552.55
2201	139425.0602	74132.3977	499.27	286144.85	2178642.92	552.47
2202	139677.0714	74422.4130	499.05	286456.67	2178867.33	552.37
2203	139926.2293	74714.8833	498.82	286766.28	2179094.78	552.26
2204	140172.5100	75009.7806	498.57	287073.65	2179325.25	552.13
2205	140415.8897	75307.0764	498.31	287378.74	2179558.72	551.98
2206	140656.3452	75606.7422	498.03	287681.53	2179795.17	551.82
2207	140893.8534	75908.7495	497.74	287981.99	2180034.58	551.64
2208	141128.3915	76213.0690	497.43	288280.09	2180276.92	551.45
2209	141359.9369	76519.6718	497.11	288575.80	2180522.16	551.23
2210	141588.4674	76828.5280	496.77	288869.09	2180770.30	551.01
2211	141813.9612	77139.6084	496.42	289159.94	2181021.29	550.76
2212	142036.3966	77452.8831	496.06	289448.32	2181275.12	550.50
2213	142255.7521	77768.3218	495.68	289734.19	2181531.76	550.23
2214	142472.0068	78085.8943	495.28	290017.54	2181791.19	549.93
2215	142685.1399	78405.5701	494.87	290298.33	2182053.39	549.63
2216	142895.1310	78727.3187	494.45	290576.54	2182318.32	549.30
2217	143101.9599	79051.1091	494.01	290852.15	2182585.97	548.96
2218	143305.6067	79376.9102	493.55	291125.11	2182856.30	548.60
2219	143506.0519	79704.6907	493.08	291395.42	2183129.30	548.23
2220	143703.2762	80034.4193	492.60	291663.03	2183404.93	547.84
2221	143897.2609	80366.0642	492.11	291927.94	2183683.16	547.44
2222	144087.9870	80699.5935	491.59	292190.10	2183963.98	547.02
2223	144275.4365	81034.9754	491.07	292449.51	2184247.36	546.58
2224	144459.5913	81372.1775	490.53	292706.12	2184533.26	546.13
2225	144640.4338	81711.1676	489.98	292959.92	2184821.66	545.66
2226	144817.9465	82051.9131	489.41	293210.88	2185112.54	545.18
2227	144992.1124	82394.3813	488.83	293458.98	2185405.86	544.68
2228	145162.9149	82738.5393	488.23	293704.20	2185701.59	544.17
2229	145330.3375	83084.3540	487.62	293946.51	2185999.72	543.64
2230	145494.3642	83431.7925	487.00	294185.88	2186300.20	543.09
2231	145654.9791	83780.8211	486.36	294422.30	2186603.01	542.53
2232	145812.1670	84131.4065	485.71	294655.74	2186908.13	541.95
2233	145965.9127	84483.5150	485.05	294886.18	2187215.52	541.36
2234	146116.2014	84837.1129	484.37	295113.60	2187525.15	540.76
2235	146263.0188	85192.1661	483.68	295337.97	2187836.99	540.13
2236	146406.3507	85548.6405	482.97	295559.28	2188151.02	539.50
2237	146546.1833	85906.5021	482.25	295777.50	2188467.20	538.84
2238	146681.8020	86263.8680	481.52	295991.51	2188783.87	538.18
2239	146686.2377	86275.7402	481.50	295998.55	2188794.40	538.16
2240	146815.3131	86626.2917	480.77	296204.63	2189105.94	537.50
2241	146944.5536	86988.0650	480.01	296413.44	2189428.35	536.80
2242	147070.2586	87351.1300	479.24	296619.10	2189752.84	536.09
2243	147192.4006	87715.4091	478.46	296821.58	2190079.33	535.36
2244	147310.9680	88080.8674	477.66	297020.85	2190407.78	534.62
2245	147425.9492	88447.4697	476.85	297216.89	2190738.17	533.86
2246	147537.3335	88815.1807	476.03	297409.69	2191070.46	533.09
2247	147645.1099	89183.9654	475.19	297599.22	2191404.63	532.31
2248	147749.2683	89553.7882	474.34	297785.47	2191740.64	531.51
2249	147849.7986	89924.6137	473.48	297968.42	2192078.46	530.69
2250	147946.6910	90296.4061	472.61	298148.05	2192418.05	529.87

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2251	148039.9364	90669.1300	471.72	298324.34	2192759.39	529.02
2252	148129.5258	91042.7495	470.82	298497.28	2193102.43	528.17
2253	148215.4506	91417.2288	469.91	298666.85	2193447.16	527.30
2254	148297.7025	91792.5318	468.99	298833.04	2193793.53	526.41
2255	148376.2736	92168.6225	468.05	298995.83	2194141.51	525.52
2256	148451.1565	92545.4650	467.10	299155.20	2194491.07	524.60
2257	148522.3438	92923.0229	466.14	299311.13	2194842.17	523.68
2258	148589.8289	93301.2602	465.17	299463.62	2195194.79	522.74
2259	148653.6052	93680.1404	464.19	299612.65	2195548.88	521.79
2260	148713.6665	94059.6272	463.20	299758.20	2195904.41	520.82
2261	148770.0072	94439.6841	462.19	299900.27	2196261.35	519.84
2262	148822.6218	94820.2748	461.17	300038.82	2196619.67	518.85
2263	148871.5052	95201.3625	460.14	300173.87	2196979.33	517.85
2264	148916.6529	95582.9109	459.10	300305.38	2197340.29	516.83
2265	148958.0603	95964.8834	458.05	300433.35	2197702.53	515.80
2266	148995.7237	96347.2430	456.99	300557.76	2198066.00	514.75
2267	149029.6392	96729.9533	455.92	300678.61	2198430.67	513.70
2268	149059.8037	97112.9775	454.84	300795.87	2198796.51	512.63
2269	149086.2144	97496.2787	453.74	300909.55	2199163.48	511.54
2270	149108.8686	97879.8203	452.64	301019.63	2199531.54	510.45
2271	149127.7642	98263.5654	451.52	301126.10	2199900.67	509.34
2272	149142.8994	98647.4771	450.39	301228.95	2200270.82	508.23
2273	149154.2727	99031.5187	449.26	301328.16	2200641.96	507.09
2274	149161.8830	99415.6533	448.11	301423.73	2201014.06	505.95
2275	149165.7297	99799.8439	446.96	301515.66	2201387.07	504.80
2276	149165.8122	100184.0537	445.79	301603.92	2201760.97	503.63
2277	149162.1307	100568.2459	444.61	301688.52	2202135.71	502.45
2278	149154.6855	100952.3836	443.43	301769.44	2202511.27	501.26
2279	149143.4772	101336.4298	442.23	301846.68	2202887.60	500.06
2280	149128.5071	101720.3478	441.03	301920.23	2203264.66	498.85
2281	149109.7764	102104.1008	439.81	301990.08	2203642.44	497.63
2282	149087.2870	102487.6516	438.59	302056.23	2204020.87	496.39
2283	149061.0411	102870.9638	437.35	302118.67	2204399.94	495.15
2284	149031.0411	103254.0004	436.11	302177.39	2204779.60	493.89
2285	148997.2901	103636.7246	434.86	302232.39	2205159.81	492.62
2286	148959.7910	104019.0999	433.60	302283.66	2205540.55	491.35
2287	148918.5477	104401.0894	432.33	302331.19	2205921.77	490.06
2288	148873.5641	104782.6565	431.06	302375.00	2206303.44	488.76
2289	148824.8445	105163.7644	429.77	302415.06	2206685.52	487.45
2290	148772.3935	105544.3768	428.48	302451.37	2207067.97	486.13
2291	148716.2161	105924.4571	427.18	302483.94	2207450.76	484.80
2292	148656.3179	106303.9687	425.87	302512.75	2207833.86	483.46
2293	148592.7044	106682.8753	424.55	302537.81	2208217.21	482.12
2294	148525.3820	107061.1404	423.22	302559.11	2208600.79	480.76
2295	148454.3568	107438.7277	421.89	302576.66	2208984.57	479.39
2296	148379.6359	107815.6012	420.55	302590.44	2209368.49	478.02
2297	148301.2264	108191.7245	419.20	302600.46	2209752.54	476.63
2298	148219.1357	108567.0614	417.84	302606.72	2210136.66	475.23
2299	148133.3719	108941.5761	416.48	302609.22	2210520.82	473.83
2300	148043.9431	109315.2327	415.11	302607.95	2210905.00	472.42
2301	147950.8580	109687.9952	413.73	302602.92	2211289.14	471.00

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2302	147854.1253	110059.8277	412.35	302594.12	2211673.21	469.57
2303	147753.7544	110430.6947	410.96	302581.56	2212057.18	468.13
2304	147649.7550	110800.5605	409.56	302565.25	2212441.00	466.68
2305	147542.1371	111169.3897	408.16	302545.17	2212824.65	465.23
2306	147430.9109	111537.1469	406.75	302521.33	2213208.09	463.77
2307	147316.0872	111903.7967	405.34	302493.74	2213591.27	462.30
2308	147197.6769	112269.3040	403.91	302462.40	2213974.16	460.82
2309	147075.6914	112633.6336	402.49	302427.31	2214356.73	459.33
2310	146950.1425	112996.7507	401.05	302388.47	2214738.93	457.84
2311	146821.7064	113356.7582	399.62	302346.10	2215118.77	456.35
2312	146817.3865	113368.6731	399.58	302344.63	2215131.36	456.30
2313	146688.3866	113719.2503	398.17	302299.56	2215502.16	454.83
2314	146552.2371	114078.4783	396.72	302249.51	2215883.01	453.32
2315	146412.5582	114436.3977	395.27	302195.73	2216263.40	451.80
2316	146269.3796	114792.9314	393.81	302138.22	2216643.24	450.27
2317	146122.7148	115148.0454	392.34	302076.99	2217022.51	448.74
2318	145972.5780	115501.7054	390.88	302012.05	2217401.15	447.20
2319	145818.9838	115853.8774	389.40	301943.41	2217779.14	445.65
2320	145661.9465	116204.5279	387.92	301871.06	2218156.44	444.10
2321	145501.4816	116553.6229	386.44	301795.03	2218533.02	442.54
2322	145337.6042	116901.1292	384.96	301715.30	2218908.83	440.98
2323	145170.3303	117247.0132	383.47	301631.90	2219283.84	439.41
2324	144999.6757	117591.2418	381.97	301544.83	2219658.02	437.83
2325	144825.6570	117933.7821	380.47	301454.10	2220031.32	436.25
2326	144648.2908	118274.6010	378.97	301359.71	2220403.72	434.66
2327	144467.5940	118613.6659	377.47	301261.68	2220775.18	433.07
2328	144283.5841	118950.9442	375.96	301160.02	2221145.65	431.48
2329	144096.2788	119286.4036	374.45	301054.73	2221515.12	429.88
2330	143905.6959	119620.0119	372.93	300945.83	2221883.53	428.27
2331	143711.8539	119951.7370	371.42	300833.32	2222250.86	426.66
2332	143514.7713	120281.5471	369.90	300717.22	2222617.07	425.05
2333	143314.4670	120609.4105	368.37	300597.54	2222982.13	423.43
2334	143110.9602	120935.2959	366.85	300474.29	2223345.99	421.81
2335	142904.2705	121259.1718	365.32	300347.47	2223708.63	420.18
2336	142694.4177	121581.0072	363.79	300217.11	2224070.02	418.55
2337	142481.4221	121900.7713	362.26	300083.22	2224430.10	416.92
2338	142265.3038	122218.4333	360.73	299945.81	2224788.86	415.28
2339	142046.0838	122533.9628	359.19	299804.89	2225146.25	413.64
2340	141823.7831	122847.3293	357.66	299660.47	2225502.25	412.00
2341	141598.4230	123158.5030	356.12	299512.57	2225856.81	410.36
2342	141370.0253	123467.4539	354.58	299361.21	2226209.91	408.71
2343	141138.6116	123774.1523	353.04	299206.39	2226561.51	407.06
2344	140904.2044	124078.5689	351.50	299048.14	2226911.58	405.41
2345	140666.8260	124380.6743	349.96	298886.46	2227260.07	403.75
2346	140426.4994	124680.4398	348.41	298721.38	2227606.97	402.10
2347	140183.2474	124977.8363	346.87	298552.91	2227952.23	400.44
2348	139937.0935	125272.8354	345.33	298381.06	2228295.83	398.78
2349	139688.0614	125565.4088	343.78	298205.86	2228637.73	397.11
2350	139436.1748	125855.5283	342.24	298027.31	2228977.89	395.45
2351	139181.4581	126143.1662	340.70	297845.44	2229316.29	393.79
2352	138923.9356	126428.2948	339.15	297660.27	2229652.89	392.12

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE - - NAD 1927 - - * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2353	138663.6320	126710.8869	337.61	297471.80	2229987.66	390.45
2354	138400.5724	126990.9152	336.07	297280.06	2230320.56	388.78
2355	138134.7819	127268.3528	334.53	297085.08	2230651.58	387.12
2356	137866.2863	127543.1732	332.99	296886.86	2230980.66	385.45
2357	137595.1110	127815.3499	331.45	296685.42	2231307.79	383.78
2358	137321.2822	128084.8570	329.91	296480.79	2231632.93	382.11
2359	137044.8262	128351.6684	328.37	296272.98	2231956.05	380.44
2360	136765.7696	128615.7584	326.83	296062.02	2232277.12	378.77
2361	136484.1390	128877.1020	325.30	295847.92	2232596.11	377.10
2362	136199.9616	129135.6739	323.77	295630.71	2232912.98	375.44
2363	135913.2645	129391.4492	322.24	295410.40	2233227.71	373.77
2364	135624.0754	129644.4036	320.71	295187.02	2233540.27	372.10
2365	135332.4220	129894.5127	319.18	294960.59	2233850.62	370.44
2366	135038.3323	130141.7524	317.66	294731.13	2234158.74	368.77
2367	134741.8344	130386.0991	316.13	294498.66	2234464.60	367.11
2368	134442.9569	130627.5292	314.61	294263.21	2234768.16	365.45
2369	134141.7285	130866.0197	313.10	294024.79	2235069.41	363.79
2370	133838.1781	131101.5476	311.58	293783.44	2235368.30	362.13
2371	133532.3347	131334.0904	310.07	293539.16	2235664.82	360.47
2372	133224.2278	131563.6256	308.57	293292.00	2235958.92	358.82
2373	132913.8869	131790.1313	307.06	293041.96	2236250.60	357.16
2374	132601.3417	132013.5857	305.56	292789.08	2236539.80	355.52
2375	132286.6225	132233.9675	304.06	292533.38	2236826.52	353.87
2376	131969.7593	132451.2554	302.57	292274.88	2237110.72	352.22
2377	131650.7824	132665.4285	301.08	292013.61	2237392.37	350.58
2378	131329.7226	132876.4664	299.59	291749.59	2237671.45	348.94
2379	131006.6106	133084.3487	298.11	291482.85	2237947.93	347.31
2380	130681.4777	133289.0556	296.64	291213.41	2238221.78	345.68
2381	130354.3546	133490.5672	295.16	290941.31	2238492.98	344.05
2382	130025.2732	133688.8645	293.70	290666.56	2238761.51	342.42
2383	129694.2648	133883.9282	292.23	290389.19	2239027.32	340.80
2384	129363.0742	134074.7527	290.78	290110.68	2239289.06	339.20
2385	129352.0604	134081.0233	290.73	290101.40	2239297.69	339.14
2386	129026.5544	134264.3026	289.32	289826.68	2239550.77	337.57
2387	128689.9965	134449.5327	287.87	289541.65	2239808.29	335.97
2388	128351.5998	134631.4783	286.43	289254.09	2240063.04	334.36
2389	128011.4369	134810.0999	284.99	288964.04	2240314.96	332.76
2390	127669.5403	134985.3803	283.56	288671.53	2240564.02	331.17
2391	127325.9429	135157.3029	282.14	288376.60	2240810.20	329.58
2392	126980.6775	135325.8510	280.72	288079.27	2241053.49	327.99
2393	126633.7776	135491.0085	279.30	287779.57	2241293.85	326.42
2394	126285.2762	135652.7594	277.89	287477.54	2241531.26	324.84
2395	125935.2069	135811.0883	276.49	287173.19	2241765.70	323.27
2396	125587.4135	135964.3015	275.11	286869.88	2241994.64	321.73
2397	125342.1989	136395.8800	273.16	286730.29	2242470.95	320.22
2398	124990.1142	136542.8154	271.78	286421.36	2242694.76	318.68
2399	124631.3870	136688.4130	270.40	286105.67	2242918.80	317.12
2400	124271.2507	136830.4893	269.02	285787.79	2243139.74	315.57
2401	123909.7397	136969.0304	267.65	285467.76	2243357.55	314.03
2402	123546.8888	137104.0232	266.28	285145.62	2243572.21	312.49
2403	123182.7327	137235.4546	264.92	284821.38	2243783.71	310.96

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET				** STATE PLANE - - NAD 1927 - - * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2404	122817.3065	137363.3123	263.58	284495.09	2243992.02	309.44
2405	122450.6451	137487.5837	262.23	284166.78	2244197.13	307.92
2406	122082.7838	137608.2569	260.90	283836.47	2244399.01	306.41
2407	121713.7579	137725.3204	259.57	283504.20	2244597.64	304.91
2408	121343.6030	137838.7631	258.25	283170.00	2244793.01	303.41
2409	120972.3543	137948.5739	256.94	282833.90	2244985.10	301.93
2410	120600.0475	138054.7423	255.64	282495.94	2245173.88	300.45
2411	120226.7185	138157.2582	254.35	282156.14	2245359.34	298.98
2412	119852.4031	138256.1117	253.06	281814.54	2245541.47	297.51
2413	119477.1371	138351.2933	251.79	281471.17	2245720.24	296.06
2414	119100.9566	138442.7939	250.52	281126.07	2245895.63	294.61
2415	118723.8977	138530.6047	249.26	280779.27	2246067.64	293.17
2416	118345.9966	138614.7173	248.01	280430.80	2246236.24	291.75
2417	117969.9061	138694.5680	246.78	280083.11	2246400.28	290.33
2418	117598.6079	138771.4069	245.57	279739.39	2246560.29	288.95
2419	117226.0221	138848.2938	244.36	279394.43	2246720.64	287.57
2420	116847.6741	138923.4728	243.13	279043.48	2246880.65	286.18
2421	116469.8566	138994.7060	241.92	278692.13	2247036.70	284.80
2422	116096.8989	139063.0377	240.73	278344.84	2247188.81	283.45
2423	115722.6529	139131.3880	239.54	277996.31	2247341.23	282.10
2424	115342.6853	139197.8991	238.34	277641.79	2247493.18	280.74
2425	114960.6989	139260.9131	237.14	277284.49	2247642.19	279.38
2426	114578.8884	139320.0616	235.96	276926.49	2247787.39	278.04
2427	114291.4519	139362.1110	235.08	276656.40	2247894.29	277.04
2428	114004.8150	139402.1438	234.20	276386.63	2247999.05	276.04
2429	113717.8272	139440.3080	233.33	276116.09	2248102.06	275.05
2430	113417.5807	139478.2018	232.42	275832.58	2248207.86	274.03
2431	113372.2655	139483.7774	232.29	275789.76	2248223.69	273.87
2432	112690.0967	139567.7106	230.24	275145.13	2248461.96	271.55
2433	112650.4269	139572.5915	230.12	275107.64	2248475.81	271.42
2434	111380.1894	139728.8800	226.30	273907.29	2248919.49	267.17
2435	110109.9519	139885.1685	222.49	272706.95	2249363.16	263.00
2436	110070.2821	139890.0494	222.37	272669.46	2249377.01	262.87
2437	109388.1133	139973.9827	220.32	272024.83	2249615.28	260.66
2438	109342.7987	139979.5581	220.18	271982.00	2249631.11	260.52
2439	109042.3211	140015.5768	219.28	271697.84	2249735.14	259.55
2440	108754.6409	140048.1191	218.43	271425.33	2249832.84	258.64
2441	108466.8495	140078.7632	217.58	271152.28	2249928.72	257.73
2442	108178.0706	140107.6173	216.73	270877.86	2250023.09	256.82
2443	107794.2621	140142.8876	215.61	270512.42	2250145.52	255.62
2444	107408.4136	140174.5396	214.50	270144.17	2250264.89	254.43
2445	107023.0510	140202.3539	213.40	269775.51	2250380.41	253.26
2446	106733.1425	140220.8224	212.58	269497.61	2250464.93	252.38
2447	106444.1954	140237.3461	211.77	269220.19	2250547.34	251.51
2448	106155.0510	140251.9788	210.97	268942.15	2250627.95	250.64
2449	105852.7140	140265.2609	210.13	268650.96	2250710.27	249.75
2450	105807.0951	140267.1224	210.01	268606.99	2250722.56	249.61
2451	105120.3531	140295.1441	208.11	267945.07	2250907.46	247.59
2452	105080.4175	140296.7736	208.00	267906.57	2250918.21	247.48
2453	103801.6645	140348.9518	204.48	266674.04	2251262.52	243.78
2454	102522.9116	140401.1298	200.96	265441.50	2251606.82	240.17

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2455	102482.9758	140402.7594	200.85	265403.01	2251617.58	240.06
2456	101796.2339	140430.7812	198.96	264741.08	2251802.48	238.15
2457	101750.6155	140432.6426	198.83	264697.11	2251814.76	238.02
2458	101448.2013	140444.0369	198.00	264405.41	2251895.27	237.19
2459	101158.8252	140453.0099	197.21	264125.84	2251970.43	236.40
2460	100869.4931	140460.0821	196.43	263845.88	2252043.72	235.62
2461	100579.3228	140465.2898	195.65	263564.68	2252115.40	234.84
2462	100193.9161	140469.1424	194.63	263190.47	2252207.61	233.82
2463	99806.7713	140469.2225	193.61	262813.71	2252296.55	232.80
2464	99420.4237	140465.5172	192.60	262436.86	2252381.63	231.79
2465	99129.9745	140460.2817	191.85	262152.98	2252443.20	231.04
2466	98840.6422	140453.1864	191.11	261869.77	2252502.71	230.30
2467	98551.3121	140444.1916	190.38	261586.12	2252560.37	229.57
2468	98256.1099	140433.0686	189.64	261296.27	2252617.31	228.83
2469	98208.3783	140431.1173	189.52	261249.36	2252626.36	228.71
2470	98070.0428	140425.4616	189.17	261113.43	2252652.61	228.36
2471	97735.0555	140411.7660	188.33	260784.27	2252716.18	227.53
2472	97692.0469	140410.0078	188.22	260742.01	2252724.34	227.42
2473	97612.1270	140406.7403	188.02	260663.48	2252739.50	227.23
2474	97569.1184	140404.9820	187.92	260621.22	2252747.66	227.12
2475	97489.1987	140401.7146	187.71	260542.69	2252762.83	226.92
2476	97446.1900	140399.9562	187.61	260500.43	2252770.99	226.82
2477	97366.2703	140396.6888	187.41	260421.90	2252786.15	226.62
2478	97323.2616	140394.9305	187.30	260379.64	2252794.32	226.52
2479	96751.8418	140371.5688	185.87	259818.15	2252902.74	225.12
2480	96713.1602	140369.9874	185.77	259780.14	2252910.08	225.02
2481	96648.7458	140367.3538	185.61	259716.85	2252922.31	224.87
2482	96613.3425	140365.9064	185.52	259682.06	2252929.02	224.78
2483	96197.8116	140348.9180	184.48	259273.76	2253007.87	223.78
2484	95782.2807	140331.9296	183.44	258865.45	2253086.72	222.79
2485	95746.8773	140330.4822	183.35	258830.66	2253093.44	222.70
2486	95682.4628	140327.8487	183.19	258767.37	2253105.66	222.55
2487	95643.7813	140326.2673	183.09	258729.36	2253113.00	222.46
2488	95072.3615	140302.9055	181.66	258167.87	2253221.43	221.10
2489	95029.3530	140301.1472	181.55	258125.61	2253229.59	221.00
2490	94949.4331	140297.8797	181.35	258047.08	2253244.75	220.82
2491	94906.4245	140296.1215	181.24	258004.82	2253252.91	220.72
2492	94826.5047	140292.8541	181.04	257926.29	2253268.08	220.53
2493	94783.4961	140291.0957	180.93	257884.03	2253276.24	220.43
2494	94703.5763	140287.8283	180.73	257805.50	2253291.40	220.24
2495	94660.5677	140286.0699	180.62	257763.24	2253299.56	220.14
2496	94325.5803	140272.3745	179.78	257434.07	2253363.13	219.36
2497	94187.2449	140266.7187	179.44	257298.14	2253389.38	219.04
2498	94139.5138	140264.7674	179.32	257251.24	2253398.43	218.93
2499	93844.3886	140251.7558	178.58	256961.03	2253453.51	218.26
2500	93555.2890	140237.1023	177.87	256676.31	2253505.61	217.60
2501	93266.3438	140220.5554	177.16	256391.30	2253555.83	216.95
2502	92976.7151	140202.0818	176.45	256105.18	2253604.34	216.30
2503	92592.2777	140174.4911	175.52	255724.70	2253665.73	215.45
2504	92206.4157	140142.9987	174.60	255341.94	2253723.65	214.62
2505	91821.6568	140107.7986	173.70	254959.40	2253777.71	213.79

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2506	91532.6019	140078.8940	173.02	254671.45	2253815.93	213.18
2507	91244.8118	140048.2268	172.36	254384.32	2253852.14	212.57
2508	90957.1786	140015.6667	171.70	254096.92	2253886.48	211.97
2509	90663.8667	139980.5067	171.04	253803.38	2253919.58	211.37
2510	90616.4531	139974.6691	170.93	253755.90	2253924.79	211.27
2511	90479.0397	139957.7509	170.62	253618.28	2253939.86	210.99
2512	90146.2846	139916.7823	169.87	253285.03	2253976.37	210.32
2513	90103.5629	139911.5224	169.77	253242.24	2253981.06	210.23
2514	90024.1755	139901.7483	169.59	253162.74	2253989.77	210.07
2515	89981.4536	139896.4885	169.50	253119.95	2253994.46	209.99
2516	89902.0664	139886.7143	169.32	253040.45	2254003.17	209.83
2517	89859.3445	139881.4544	169.22	252997.66	2254007.85	209.74
2518	89779.9571	139871.6803	169.04	252918.15	2254016.56	209.58
2519	89737.2353	139866.4204	168.95	252875.37	2254021.25	209.50
2520	89169.6235	139796.5364	167.66	252306.91	2254083.53	208.37
2521	89131.1999	139791.8057	167.58	252268.43	2254087.74	208.29
2522	89067.2145	139783.9278	167.43	252204.35	2254094.76	208.17
2523	89032.0471	139779.5981	167.35	252169.13	2254098.62	208.10
2524	88619.2856	139728.7791	166.42	251755.75	2254143.91	207.29
2525	88206.5240	139677.9602	165.49	251342.37	2254189.20	206.49
2526	88171.3566	139673.6304	165.41	251307.15	2254193.06	206.42
2527	88107.3713	139665.7525	165.27	251243.07	2254200.08	206.30
2528	88068.9476	139661.0219	165.18	251204.59	2254204.29	206.23
2529	87501.3359	139591.1379	163.90	250636.13	2254266.57	205.14
2530	87458.6140	139585.8780	163.80	250593.34	2254271.26	205.06
2531	87379.2268	139576.1038	163.62	250513.84	2254279.97	204.91
2532	87336.5048	139570.8440	163.53	250471.05	2254284.65	204.83
2533	87257.1176	139561.0698	163.35	250391.54	2254293.36	204.68
2534	87214.3956	139555.8100	163.25	250348.76	2254298.05	204.60
2535	87135.0084	139546.0358	163.07	250269.25	2254306.76	204.45
2536	87092.2865	139540.7760	162.98	250226.47	2254311.45	204.37
2537	86759.5315	139499.8074	162.23	249893.21	2254347.96	203.75
2538	86622.1180	139482.8891	161.92	249755.60	2254363.03	203.50
2539	86574.7049	139477.0517	161.81	249708.11	2254368.23	203.41
2540	86281.6238	139440.0156	161.15	249414.37	2254399.46	202.87
2541	85994.6819	139401.8343	160.51	249126.35	2254428.17	202.35
2542	85708.0484	139361.7787	159.88	248838.19	2254454.98	201.84
2543	85418.1067	139319.3395	159.24	248546.27	2254480.23	201.33
2544	84676.8172	139201.0932	157.65	247797.68	2254535.31	200.04
2545	84293.8616	139134.2226	156.85	247409.62	2254558.13	199.40
2546	83919.3297	139065.8531	156.07	247029.42	2254577.56	198.78
2547	83546.5624	138997.5258	155.30	246650.94	2254596.63	198.17
2548	83168.9931	138926.5013	154.52	246267.18	2254614.17	197.56
2549	82790.4273	138851.4421	153.75	245881.51	2254628.02	196.96
2550	82417.5559	138774.5295	153.00	245500.97	2254638.75	196.38
2551	82046.4478	138697.6995	152.26	245122.15	2254649.16	195.81
2552	81670.6006	138618.0632	151.51	244738.09	2254657.93	195.24
2553	81292.6634	138534.1070	150.78	244350.99	2254662.97	194.68
2554	80915.5668	138446.4522	150.05	243963.87	2254664.22	194.13
2555	80539.3469	138355.1073	149.34	243576.75	2254661.68	193.60
2556	80164.0402	138260.0810	148.64	243189.67	2254655.35	193.08

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	STATE PLANE - - NAD 1927 - - * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2557	79789.6823	138161.3824	147.95	242802.68	2254645.22	192.57
2558	79416.3093	138059.0210	147.28	242415.80	2254631.30	192.08
2560	78672.6611	137843.3494	145.98	241642.55	2254592.10	191.13
2561	78302.4573	137730.0600	145.35	241256.25	2254566.82	190.68
2562	77933.3811	137613.1492	144.73	240870.21	2254537.76	190.24
2563	77565.4681	137492.6281	144.13	240484.48	2254504.91	189.81
2564	77198.7534	137368.5085	143.54	240099.09	2254468.29	189.40
2565	76833.2721	137240.8022	142.97	239714.07	2254427.89	189.00
2566	76469.0597	137109.5213	142.41	239329.47	2254383.73	188.61
2567	76106.1507	136974.6787	141.87	238945.33	2254335.80	188.24
2568	75744.5802	136836.2872	141.33	238561.66	2254284.10	187.88
2569	75384.3829	136694.3600	140.82	238178.53	2254228.66	187.54
2570	75025.5932	136548.9108	140.32	237795.95	2254169.46	187.20
2571	74673.4453	136402.1211	139.83	237419.53	2254107.43	186.89
2572	74428.0453	135970.6441	140.50	237081.66	2253743.83	187.11
2573	74080.1862	135817.5748	140.05	236707.98	2253674.70	186.82
2574	73730.0487	135659.3908	139.61	236330.90	2253601.12	186.55
2575	73381.4779	135497.7840	139.18	235954.56	2253523.85	186.29
2576	73034.5069	135332.7702	138.77	235579.00	2253442.89	186.04
2577	72689.1693	135164.3650	138.37	235204.25	2253358.27	185.81
2578	72345.4980	134992.5846	137.99	234830.34	2253269.97	185.59
2579	72003.5261	134817.4457	137.62	234457.32	2253178.01	185.38
2580	71663.2864	134638.9648	137.27	234085.22	2253082.41	185.19
2581	71324.8116	134457.1593	136.93	233714.07	2252983.16	185.02
2582	70989.8665	134272.9989	136.61	233345.81	2252880.81	184.85
2583	70978.7921	134266.8356	136.60	233333.62	2252877.35	184.85
2584	70653.2468	134083.6215	136.30	232974.73	2252773.77	184.70
2585	70320.3003	133891.9704	136.00	232606.70	2252663.67	184.57
2586	69989.2081	133697.0437	135.73	232239.73	2252549.96	184.45
2587	69660.0414	133498.8827	135.46	231873.88	2252432.66	184.34
2588	69332.8318	133297.5063	135.21	231509.20	2252311.78	184.25
2589	69007.6108	133092.9340	134.98	231145.73	2252187.33	184.17
2590	68684.4096	132885.1854	134.76	230783.49	2252059.33	184.10
2591	68363.2591	132674.2804	134.55	230422.52	2251927.79	184.05
2592	68044.1902	132460.2393	134.36	230062.86	2251792.71	184.01
2593	67727.2337	132243.0825	134.19	229704.54	2251654.12	183.99
2594	67412.4197	132022.8310	134.03	229347.59	2251512.02	183.98
2595	67099.7786	131799.5060	133.89	228992.05	2251366.44	183.98
2596	66789.3403	131573.1287	133.76	228637.96	2251217.38	184.00
2597	66481.1348	131343.7209	133.64	228285.34	2251064.85	184.03
2598	66175.1915	131111.3048	133.54	227934.23	2250908.88	184.08
2599	65871.5399	130875.9024	133.46	227584.67	2250749.48	184.14
2600	65570.2090	130637.5366	133.39	227236.69	2250586.66	184.22
2601	65271.2278	130396.2303	133.34	226890.32	2250420.44	184.30
2602	64974.6249	130152.0063	133.30	226545.60	2250250.83	184.41
2603	64680.4290	129904.8883	133.27	226202.55	2250077.85	184.52
2604	64388.6681	129654.8999	133.26	225861.21	2249901.52	184.65
2605	64099.3703	129402.0653	133.27	225521.62	2249721.86	184.80
2606	63812.5634	129146.4085	133.29	225183.80	2249538.88	184.96
2607	63528.2749	128887.9542	133.33	224847.80	2249352.59	185.13
2608	63246.5320	128626.7272	133.38	224513.63	2249163.03	185.31

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2609	62967.3618	128362.7526	133.45	224181.34	2248970.19	185.51
2610	62690.7912	128096.0557	133.53	223850.95	2248774.12	185.73
2611	62416.8467	127826.6620	133.63	223522.50	2248574.81	185.96
2612	62145.5545	127554.5975	133.74	223196.02	2248372.30	186.20
2613	61876.9407	127279.8883	133.87	222871.53	2248166.60	186.45
2614	61611.0310	127002.5606	134.01	222549.08	2247957.73	186.72
2615	61347.8511	126722.6412	134.17	222228.69	2247745.71	187.00
2616	61087.4261	126440.1569	134.34	221910.39	2247530.56	187.30
2617	60829.7810	126155.1349	134.53	221594.22	2247312.30	187.61
2618	60574.9407	125867.6024	134.73	221280.20	2247090.96	187.94
2619	60322.9295	125577.5870	134.95	220968.36	2246866.55	188.27
2620	60073.7717	125285.1168	135.18	220658.74	2246639.09	188.62
2621	59827.4909	124990.2195	135.43	220351.35	2246408.62	188.99
2622	59584.1113	124692.9237	135.69	220046.25	2246175.14	189.37
2623	59343.6557	124393.2578	135.97	219743.44	2245938.69	189.76
2624	59106.1475	124091.2506	136.26	219442.97	2245699.28	190.16
2625	58871.6095	123786.9311	136.57	219144.85	2245456.93	190.58
2626	58640.0641	123480.3283	136.89	218849.12	2245211.68	191.02
2627	58411.5336	123171.4721	137.23	218555.81	2244963.55	191.46
2628	58186.0397	122860.3916	137.58	218264.95	2244712.55	191.92
2629	57963.6044	122547.1170	137.94	217976.56	2244458.71	192.39
2630	57744.2488	122231.6783	138.33	217690.67	2244202.06	192.88
2631	57527.9941	121914.1058	138.72	217407.30	2243942.62	193.38
2632	57314.8610	121594.4300	139.13	217126.49	2243680.42	193.89
2633	57104.8699	121272.6813	139.55	216848.27	2243415.48	194.41
2634	56898.0410	120948.8910	139.99	216572.65	2243147.83	194.95
2635	56694.3942	120623.0899	140.45	216299.67	2242877.49	195.50
2636	56493.9490	120295.3094	140.92	216029.35	2242604.49	196.06
2637	56296.7247	119965.5808	141.40	215761.72	2242328.85	196.64
2638	56102.7401	119633.9359	141.89	215496.80	2242050.61	197.23
2639	55912.0140	119300.4066	142.41	215234.62	2241769.78	197.83
2640	55724.5645	118965.0247	142.93	214975.21	2241486.40	198.44
2641	55540.4097	118627.8226	143.47	214718.58	2241200.49	199.07
2642	55359.5672	118288.8325	144.02	214464.77	2240912.07	199.71
2643	55182.0545	117948.0870	144.59	214213.79	2240621.19	200.36
2644	55007.8885	117605.6188	145.17	213965.68	2240327.86	201.03
2645	54837.0860	117261.4608	145.77	213720.45	2240032.12	201.70
2646	54669.6634	116915.6460	146.38	213478.13	2239733.98	202.39
2647	54505.6368	116568.2076	147.00	213238.74	2239433.49	203.10
2648	54345.0218	116219.1790	147.64	213002.31	2239130.67	203.81
2649	54187.8339	115868.5936	148.29	212768.86	2238825.54	204.54
2650	54034.0882	115516.4851	148.95	212538.40	2238518.14	205.27
2651	53883.7996	115162.8872	149.63	212310.97	2238208.50	206.02
2652	53736.9821	114807.8340	150.33	212086.59	2237896.64	206.78
2653	53593.6502	114451.3596	151.03	211865.27	2237582.61	207.56
2654	53453.8176	114093.4980	151.75	211647.04	2237266.41	208.34
2655	53318.1990	113736.1321	152.48	211433.02	2236949.74	209.14
2656	53313.7633	113724.2599	152.50	211425.98	2236939.20	209.16
2657	53184.6879	113373.7084	153.23	211219.89	2236627.66	209.95
2658	53055.4473	113011.9351	153.99	211011.07	2236305.23	210.77
2659	52929.7424	112648.8701	154.76	210805.39	2235980.73	211.60

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ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2660	52807.6004	112284.5909	155.54	210602.91	2235654.23	212.44
2661	52689.0330	111919.1327	156.34	210403.63	2235325.76	213.30
2662	52574.0517	111552.5304	157.15	210207.58	2234995.36	214.16
2663	52462.6675	111184.8194	157.97	210014.77	2234663.05	215.04
2664	52354.8910	110816.0346	158.81	209825.23	2234328.87	215.93
2665	52250.7327	110446.2119	159.66	209638.97	2233992.85	216.83
2666	52150.2024	110075.3864	160.52	209456.02	2233655.02	217.74
2667	52053.3100	109703.5940	161.39	209276.38	2233315.42	218.66
2668	51960.0645	109330.8701	162.28	209100.08	2232974.07	219.59
2669	51870.4751	108957.2506	163.18	208927.13	2232631.01	220.53
2670	51784.5504	108582.7713	164.09	208757.55	2232286.27	221.48
2671	51702.2985	108207.4683	165.01	208591.35	2231939.88	222.44
2672	51623.7273	107831.3776	165.95	208428.56	2231591.89	223.42
2673	51548.8444	107454.5351	166.90	208269.19	2231242.32	224.40
2674	51477.6571	107076.9772	167.86	208113.24	2230891.20	225.39
2675	51410.1720	106698.7399	168.83	207960.75	2230538.57	226.39
2676	51346.3958	106319.8597	169.81	207811.71	2230184.46	227.41
2677	51286.3344	105940.3729	170.80	207666.16	2229828.91	228.43
2678	51229.9938	105560.3160	171.81	207524.09	2229471.96	229.46
2679	51177.3791	105179.7253	172.83	207385.53	2229113.62	230.51
2680	51128.4957	104798.6375	173.86	207250.48	2228753.95	231.56
2681	51083.3481	104417.0892	174.90	207118.97	2228392.97	232.62
2682	51041.9406	104035.1167	175.95	206990.99	2228030.72	233.69
2683	51004.2773	103652.7571	177.01	206866.58	2227667.24	234.77
2684	50970.3617	103270.0468	178.08	206745.73	2227302.55	235.86
2685	50940.1972	102887.0226	179.16	206628.45	2226936.70	236.96
2686	50913.7866	102503.7214	180.26	206514.77	2226569.71	238.06
2687	50891.1323	102120.1798	181.36	206404.69	2226201.63	239.18
2688	50872.2368	101736.4347	182.48	206298.22	2225832.49	240.30
2689	50857.1016	101352.5230	183.61	206195.37	2225462.32	241.44
2690	50845.7283	100968.4813	184.74	206096.16	2225091.16	242.58
2691	50838.1180	100584.3468	185.89	206000.58	2224719.05	243.73
2692	50834.2713	100200.1562	187.04	205908.66	2224346.02	244.89
2693	50834.1887	99815.9464	188.21	205820.39	2223972.11	246.05
2694	50837.8703	99431.7542	189.39	205735.79	2223597.35	247.23
2695	50845.3155	99047.6165	190.57	205654.87	2223221.78	248.41
2696	50856.5237	98663.5703	191.77	205577.63	2222845.44	249.60
2697	50871.4939	98279.6522	192.97	205504.08	2222468.35	250.80
2698	50890.2246	97895.8993	194.19	205434.23	2222090.57	252.00
2699	50912.7139	97512.3484	195.41	205368.09	2221712.12	253.22
2700	50938.9599	97129.0363	196.65	205305.65	2221333.03	254.44
2701	50968.9599	96745.9997	197.89	205246.93	2220953.36	255.67
2702	51002.7109	96363.2754	199.14	205191.94	2220573.13	256.90
2703	51040.2099	95980.9002	200.40	205140.67	2220192.37	258.14
2704	51081.4532	95598.9107	201.67	205093.14	2219811.14	259.39
2705	51126.4368	95217.3436	202.94	205049.34	2219429.45	260.65
2706	51175.1565	94836.2356	204.23	205009.28	2219047.36	261.91
2707	51227.6075	94455.6233	205.52	204972.97	2218664.89	263.18
2708	51283.7848	94075.5430	206.82	204940.41	2218282.08	264.45
2709	51343.6831	93696.0314	208.13	204911.60	2217898.98	265.73
2710	51407.2966	93317.1248	209.45	204886.54	2217515.61	267.02

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2711	51474.6190	92938.8597	210.78	204865.24	2217132.01	268.32
2712	51545.6442	92561.2724	212.11	204847.71	2216748.22	269.62
2713	51620.3650	92184.3989	213.45	204833.93	2216364.28	270.92
2714	51698.7745	91808.2756	214.80	204823.91	2215980.22	272.23
2715	51780.8652	91432.9387	216.16	204817.66	2215596.08	273.55
2716	51866.6290	91058.4240	217.52	204815.17	2215211.90	274.87
2717	51956.0578	90684.7674	218.89	204816.44	2214827.72	276.20
2718	52049.1429	90312.0049	220.27	204821.48	2214443.56	277.53
2719	52145.8756	89940.1724	221.65	204830.29	2214059.48	278.87
2720	52246.2465	89569.3054	223.04	204842.85	2213675.49	280.21
2721	52350.2459	89199.4396	224.44	204859.18	2213291.65	281.56
2722	52457.8638	88830.6103	225.84	204879.26	2212907.99	282.91
2723	52569.0901	88462.8531	227.25	204903.11	2212524.54	284.27
2724	52683.9138	88096.2034	228.66	204930.71	2212141.35	285.63
2725	52802.3240	87730.6961	230.09	204962.06	2211758.44	286.99
2726	52924.3096	87366.3665	231.51	204997.16	2211375.86	288.36
2727	53049.8585	87003.2494	232.95	205036.01	2210993.64	289.73
2728	53178.2945	86643.2420	234.38	205078.38	2210613.79	291.10
2729	53182.6144	86631.3271	234.42	205079.85	2210601.20	291.15
2730	53311.6143	86280.7498	235.83	205124.93	2210230.39	292.49
2731	53447.7638	85921.5218	237.28	205174.99	2209849.52	293.88
2732	53587.4427	85563.6024	238.73	205228.79	2209469.12	295.26
2733	53730.6213	85207.0686	240.19	205286.30	2209089.26	296.65
2734	53877.2861	84851.9547	241.66	205347.54	2208709.99	298.05
2735	54027.4229	84498.2947	243.12	205412.49	2208331.33	299.45
2736	54181.0172	84146.1227	244.60	205481.15	2207953.33	300.85
2737	54338.0544	83795.4722	246.08	205553.50	2207576.01	302.25
2738	54498.5193	83446.3772	247.56	205629.55	2207199.43	303.66
2739	54662.3967	83098.8709	249.04	205709.29	2206823.61	305.06
2740	54829.6706	82752.9869	250.53	205792.70	2206448.58	306.47
2741	55000.3252	82408.7582	252.03	205879.78	2206074.40	307.89
2742	55174.3440	82066.2179	253.53	205970.53	2205701.08	309.30
2743	55351.7102	81725.3990	255.03	206064.93	2205328.67	310.72
2744	55532.4069	81386.3342	256.53	206162.97	2204957.20	312.14
2745	55716.4169	81049.0558	258.04	206264.65	2204586.72	313.56
2746	55903.7222	80713.5965	259.55	206369.95	2204217.24	314.98
2747	56094.3050	80379.9882	261.07	206478.86	2203848.82	316.40
2748	56288.1470	80048.2631	262.58	206591.38	2203481.48	317.83
2749	56485.2297	79718.4530	264.10	206707.50	2203115.26	319.26
2750	56685.5340	79390.5895	265.63	206827.20	2202750.19	320.68
2751	56889.0408	79064.7042	267.15	206950.46	2202386.32	322.11
2752	57095.7305	78740.8283	268.68	207077.29	2202023.67	323.54
2753	57305.5833	78418.9929	270.21	207207.66	2201662.28	324.97
2754	57518.5789	78099.2288	271.74	207341.57	2201302.18	326.40
2755	57734.6971	77781.5668	273.27	207479.00	2200943.42	327.83
2756	57953.9171	77466.0373	274.81	207619.94	2200586.01	329.26
2757	58176.2178	77152.6708	276.34	207764.37	2200230.01	330.69
2758	58401.5779	76841.4971	277.88	207912.28	2199875.44	332.12
2759	58629.9756	76532.5461	279.42	208063.66	2199522.33	333.55
2760	58861.3893	76225.8478	280.96	208218.49	2199170.73	334.98
2761	59095.7966	75921.4312	282.50	208376.76	2198820.65	336.41

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2762	59333.1750	75619.3257	284.04	208538.45	2198472.15	337.84
2763	59573.5016	75319.5603	285.59	208703.55	2198125.25	339.27
2764	59816.7536	75022.1638	287.13	208872.04	2197779.98	340.69
2765	60062.9075	74727.1647	288.67	209043.90	2197436.37	342.12
2766	60311.9395	74434.5913	290.22	209219.12	2197094.47	343.55
2767	60563.8261	74144.4718	291.76	209397.68	2196754.30	344.97
2768	60818.5429	73856.8338	293.30	209579.57	2196415.90	346.39
2769	61076.0653	73571.7052	294.85	209764.76	2196079.30	347.81
2770	61336.3689	73289.1132	296.39	209953.24	2195744.52	349.23
2771	61599.4286	73009.0849	297.93	210144.99	2195411.61	350.65
2772	61865.2190	72731.6473	299.47	210340.00	2195080.59	352.06
2773	62133.7147	72456.8268	301.01	210538.24	2194751.50	353.48
2774	62404.8900	72184.6501	302.55	210739.69	2194424.37	354.89
2775	62678.7188	71915.1431	304.09	210944.34	2194099.23	356.30
2776	62955.1748	71648.3317	305.63	211152.16	2193776.10	357.70
2777	63234.2313	71384.2417	307.17	211363.14	2193455.03	359.10
2778	63515.8619	71122.8981	308.70	211577.25	2193136.04	360.51
2779	63800.0394	70864.3262	310.23	211794.48	2192819.17	361.90
2780	64086.7364	70608.5509	311.76	212014.81	2192504.43	363.30
2781	64375.9255	70355.5965	313.29	212238.20	2192191.88	364.69
2782	64667.5789	70105.4874	314.82	212464.65	2191881.52	366.08
2783	64961.6687	69858.2477	316.34	212694.13	2191573.40	367.46
2784	65258.1665	69613.9010	317.87	212926.61	2191267.54	368.84
2785	65557.0440	69372.4709	319.39	213162.08	2190963.97	370.22
2786	65858.2724	69133.9804	320.90	213400.52	2190662.73	371.59
2787	66161.8229	68898.4525	322.42	213641.89	2190363.84	372.96
2788	66467.6663	68665.9097	323.93	213886.18	2190067.32	374.33
2789	66775.7732	68436.3745	325.43	214133.36	2189773.21	375.69
2790	67086.1140	68209.8688	326.94	214383.42	2189481.54	377.04
2791	67395.2721	67988.8359	328.42	214633.57	2189195.47	378.38
2792	67547.1476	67516.2636	330.26	214672.92	2188700.69	380.71
2793	67861.7888	67300.4995	331.74	214929.62	2188418.48	382.04
2794	68183.2058	67084.6880	333.24	215192.91	2188134.68	383.39
2795	68506.7217	66872.0356	334.74	215458.97	2187853.46	384.73
2796	68832.3053	66662.5631	336.23	215727.76	2187574.87	386.07
2797	69159.9255	66456.2903	337.72	215999.27	2187298.93	387.40
2798	69489.5510	66253.2370	339.20	216273.48	2187025.65	388.73
2799	69821.1498	66053.4229	340.68	216550.35	2186755.08	390.05
2800	70154.6904	65856.8669	342.16	216829.85	2186487.23	391.37
2801	70487.8231	65664.9235	343.62	217110.02	2186223.97	392.67
2802	70500.1279	65657.9178	343.67	217120.39	2186214.33	392.71
2803	70827.5223	65473.5752	345.09	217396.71	2185959.78	393.98
2804	71166.6411	65286.9357	346.55	217683.92	2185700.30	395.28
2805	71507.6265	65103.5983	348.00	217973.71	2185443.61	396.57
2806	71850.3916	64923.6103	349.45	218265.99	2185189.77	397.85
2807	72194.9037	64746.9889	350.89	218560.75	2184938.80	399.13
2808	72541.1295	64573.7512	352.33	218857.95	2184690.74	400.40
2809	72889.0360	64403.9138	353.76	219157.57	2184445.60	401.67
2810	73238.5897	64237.4929	355.19	219459.57	2184203.41	402.93
2811	73589.7571	64074.5045	356.61	219763.94	2183964.18	404.18
2812	73942.5044	63914.9645	358.02	220070.63	2183727.95	405.42

TILT = -0.23019444 DEGREES / CENTER = X: 2212866.32 FEET Y: 253713.11 FEET

ISP VALUES * INTERNATIONAL FEET			**	- - NAD 1927 - - STATE PLANE * AMERICAN SURVEY FEET		
POINT	NORTH	EAST	ELEV	NORTH	EAST	ELEV
2813	74296.7978	63758.8878	359.42	220379.62	2183494.74	406.66
2814	74652.6034	63606.2896	360.82	220690.89	2183264.56	407.89
2815	75009.8868	63457.1847	362.22	221004.39	2183037.45	409.11
2816	75368.6139	63311.5870	363.60	221320.10	2182813.42	410.33
2817	75728.7503	63169.5108	364.98	221637.99	2182592.49	411.54
2818	76090.2613	63030.9697	366.35	221958.03	2182374.68	412.74
2819	76453.1122	62895.9769	367.72	222280.19	2182160.03	413.93
2820	76817.2682	62764.5454	369.08	222604.44	2181948.53	415.11
2821	77182.6945	62636.6878	370.42	222930.75	2181740.23	416.29
2822	77549.3559	62512.4164	371.77	223259.07	2181535.13	417.45
2823	77917.2171	62391.7432	373.10	223589.40	2181333.26	418.61
2824	78286.2430	62274.6796	374.43	223921.68	2181134.64	419.76
2825	78656.3980	62161.2370	375.75	224255.89	2180939.27	420.91
2826	79027.6467	62051.4262	377.06	224592.01	2180747.20	422.04
2827	79399.9534	61945.2578	378.36	224929.98	2180558.42	423.16
2828	79773.2824	61842.7419	379.65	225269.79	2180372.97	424.28
2829	80147.5979	61743.8884	380.94	225611.41	2180190.85	425.39
2830	80522.8638	61648.7068	382.21	225954.78	2180012.09	426.48
2831	80899.0444	61557.2062	383.48	226299.90	2179836.70	427.57
2832	81276.1032	61469.3954	384.74	226646.71	2179664.70	428.65
2833	81654.0044	61385.2828	385.99	226995.20	2179496.11	429.72
2834	82027.2008	61306.0466	387.21	227340.22	2179333.34	430.77
2835	-.0534	.0616	357.56	133435.17	2138494.22	836.12

APPENDIX C

CRITERIA FOR COMPUTER-AIDED ENGINEERING

C-1 FILE LEVEL PROTOCOL

The following tables designate the levels for storage of file data, based on the type of file. File types may be designated as follows:

- **Type 1 - Site-specific Map Data**
  This includes data related to the project site including topography, roads, utilities, geology, and parcel data. It includes both existing and proposed features (in separate files).

- **Type 2 - SSC Project Infrastructure**
  This includes major features related to the facility including the footprint, main tunnel, injector area, access shafts, and experimental hall locations. Files containing detailed layouts for each facility would not be included in this category, but Type 2 files would contain control points to identify the location of the facility.

- **Type 3 - Facility Layouts**
  This includes mechanical and architectural general arrangements of facilities.

Table C-1-1

LEVEL PROTOCOL
TYPE 1 FILES (MAP DATA)

Level	Contents
1	Town boundaries
2	Hydrographic features
3	Topography - Spot elevations
4	Topography - Index contours
5	Topography - Intermediate contours
6	Blank
7	Transportation - Local roads
8	Transportation - Highways
9	Transportation - Railroads
10	Utilities - Electric 138kV and higher
11	Utilities - Electric less than 38kV
12	Utilities - Telephone
13	Utilities - Sanitary sewage

Table C-1-1 (Cont'd)

LEVEL PROTOCOL
TYPE 1 FILES (MAP DATA)

Level	Contents
14	Utilities - Water supply
15	Utilities - Natural gas
16	Flood hazard areas
17	Blank
18	Blank
19	Blank
20	Blank
21	Blank
22	Blank
23	Blank
24	Blank
25	Blank
26	Property lines
27	Property data
28	Property data
29	Property data
30	Blank
31	Blank
32	Blank
33	Blank
34	Blank
35	Blank
36	Blank
37	Blank
38	Blank
39	Blank
40	Geology
41	Geology
42	Geology
43	Geology
44	Geology
45	Geology
46	Blank
47	Blank
48	Blank
49	Blank
50	Blank
51	Blank
52	Blank
53	Blank
54	Blank
55	Natural resources

Table C-1-1 (Cont'd)

LEVEL PROTOCOL
TYPE 1 FILES (MAP DATA)

Level	Contents
56	Natural resources
57	Natural resources
58	Natural resources
59	Map coordinates
60	Map coordinates
61	Map coordinates
62	Map coordinates
63	Map coordinates

Table C-1-2

LEVEL PROTOCOL
TYPE 2 FILES
(PROJECT GENERAL ARRANGEMENTS)

Level	Contents
1-10	Lattice and main tunnel
11-20	Injector area
21-30	Land boundary
31-40	E & F areas
41-50	I & J areas
51-63	Miscellaneous

Table C-1-3

TYPE 3 FILES
FACILITY LAYOUTS

Discipline	Application Packages
Architectural	AMOD APDP - Details APDP - Floor plans APDP - Reflected ceiling plans APDP - Site plans SPFL
Civil	Mapping (Caltrans) IGDS - Plans IGDS - Sections and details
Elect/Instr	IGDS - Diagrams IGDS - Phys. drawings
General	IGDS - Diagrams IGDS - Plant layouts IGDS - Facility arrangements IGDS - Detail drawings
HVAC	IGDS - HVAC APDP - HVAC APDP - Plumbing
Instrumentation	IGDS - Diagrams ILD - Loop diagrams
Mechanical	IGDS - 2D PDS - Equipment model
Piping	PDS - Piping model PDS - Drawings
Structural	IGDS - 2D IGDS SMS

C-2 WORKING UNITS

The following table may be used to set working units for new files unless software packages require other units.

Table C-2-1

WORKING UNITS

Set Number	Area of Coverage	English Units UOR/SU	English Units SU/MU (in/ft)	Metric Units UOR/SU	Metric Units SU/MU (mm/m)
1	Project vicinity (Approx. 30 mi)	254	12	10	1,000
2	Project area (Approxx 15 mi)	508	12	20	1,000
3	Local areas (Approx. 3 mi)	2,032	12	80	1,000
4	Equipment components (2,000 ft)	16,256	12	640	1,000

ICF KAISER ENGINEERS

ENGINEERING DIVISION
CAE PROCEDURES

SUBJECT:	Number: 3.3
CAE DRAFTING STANDARDS	Approved: _____
	Date:
	Rev. 0 By: KSR Date: 14APR89

I. PURPOSE

To set forth the standards and procedures for planning, drafting and revising Computer Aided Engineering (CAE) generated drawings. Kaiser Engineers (KE) CAE drafting standards specified herein shall apply unless the client requests specific CAE drafting requirements.

II. RESPONSIBILITY

Overall responsibility for the administration of this procedure is assigned to Design Support Manager and Chiefs of Discipline.

III. GENERAL POLICY

Deviation from these standards and procedures must be approved by the Chief Engineer.

IV. PROCEDURE

A. Drawing Planning and Layout

Before starting work at the CAE terminal the drawing content should be roughly sketched free hand on a calculation sheet or on the back of an old print.

In general, the drawing produced shall conform to the following:

1. Reserve the necessary space above the title block on the right hand for legend, notes, key plot plan and bills of material, if required.

2. Arrange the main elements of the drawing to avoid an area 1-1/2" wide at the left hand of the sheet to facilitate reading prints bound in a file.

3. Orient all drawings, notes and dimensions to read from the bottom of the sheet or from the right hand side. Use north arrows to orient plans. If possible, the plans should be designed so that the north arrow points to the top of the sheet, or as a second choice to the left of the sheet. Plans created by different design disciplines for the same facility shall maintain the same orientation.

4. Use a "Key Plan," as applicable, to locate the area of the drawing in relation to the plant or building layout. This plan is preferably placed in the lower right hand corner of the sheet, so that it is markedly visible when the sheet is folded.

5. Avoid mixing major plans with sections and details on the same drawings.

6. Where part views are shown, match lines with matching drawing numbers shall clearly indicate the limits of work on each sheet. Plant coordinate numbers shall be assigned to plant yard match lines.

7. The sheet composition should be simple. Crowding and overlapping of views and details are to be avoided. Details should be carefully organized so that related details read coherently in a grouped arrangement. Use simple orthographic projection to explain sections. Avoid cutting complex sections. In general, about 1" of clear space should separate details and - preferably more for sections and elevations.

8. All of the drawings for a project must be plotted on the standard paper, or mylar tracing material approved for the specific project.

9. Avoid repetition of information on different drawings or on the same drawing to avoid conflicts.

B. Rules for Microfilming

In most cases KE microfilm is reduced at a ratio of 29:1, therefore, requiring the following preparation rules:

1. Lettering must be at least 3/32" high and 3/32" wide.

2. There must be maximum contrast between line density and background.

C. Line Weights

1. For width and character of lines used on CAE engineering drawings, see Attachment B.

2. Use a gray background by referencing previously digitized project drawings, where possible, for drawing background. The gray plot or representation is similar to a screened background. The color gray for reference files is set up by using the level symbology table in design options.

3. When existing prints of drawings are available on a job expansion, they must first be digitized. The existing facilities will be shown on the drawing by symbolizing and plotting in the color gray. The gray plot is a faint or screened version of the existing job. All additional facility layouts will be indicated with solid lines, symbols and letters. This will enable contractors to clearly distinguish the existing facility from the new.

D. Lettering

1. For lettering used on CAE engineering drawings, see Attachment A.

2. Underline titles of views with a single line.

E. Drawing Production

1. All graphics for a drawing shall be created in full scale outside of the job border.

2. Drawings shall be composed by placing scaled reference files inside the border at the required scale. These may be self-referencing or external reference files.

3. Text shall be placed inside the border at a scale of 1:1. Dimensioning shall be placed inside the border.

4. Drawings shall not be produced by placing scaled graphics inside the border or by scaling the border to any scale other than 1:1.

5. For scale ratios used on CAE drawings see Attachment I.

F. Levels

1. The CAE system has standard levels for the location of graphic elements.

2. Levels 60-63 shall not be used for standard graphics since shapes (i.e. circles, triangles, etc.) placed on these levels will be plotted filled on the electrostatic plotters.

G. Scales

1. Choice of scales shall be selected by the Design Sections. In general, the scale of a drawing should be large enough to meet the following requirements:

   - Preserve separation of parallel lines.

   - Allow for reasonable space between lines and lettering or figures.

   - Preserve clarity when the drawing is reduced to half-size reproduction.

2. Scales shall be called out under the title of each view or detail if more than one scale is used on the drawing sheet.

   Thus: SCALE: 1/2" = 1'-0"

3. Plans, elevation, sections and details where accuracy is necessary to establish physical relationships must be to scale.

4. Digitizing to scale is not always necessary. Exaggeration of a detail may clarify the intent.

5. Graphic scales must be added above the title block on civil yard drawings.

6. Graphic scales for CAE drawings are located in the CAE DRAFT3.CEL library. See Attachment D for cells available.

7. If a detail is not to scale, note it under the title: NOT TO SCALE or NTS.

H. Drafting Symbols

1. KE Standard Drafting Symbols are located in DRAFT3.CEL library. The symbols should be used with an active scale of one, if working units are 2032.

2. Each discipline may have standard symbols which can be placed using a matrix menu. See Attachment C for the library matrix menus for the piping and electrical disciplines.

I. Arrows and North Arrows

1. Arrows with straight shafts may be used only where they will not conflict with dimension and section lines and the lines of the drawing. These arrows should be drawn parallel to each other and notes should be grouped systematically.

2. Welding symbols shall be drawn with shafts in straight segments.

3. In general, the number of arrows from notations shall be kept to a minimum. Where possible, notes should be grouped together, with the arrows run from the end or from the beginning of the notation.

4. Where necessary to orient a plan view in space, place a north arrow on the drawing. The north arrow should be located in the upper right hand section of the drawing. For north arrows used on CAE generated drawings, see Attachment D. The north arrows and plant north arrows are also located in the DRAFT3.CEL library.

5. Arrows provided in the DRAFT3.CEL library should be used unless the project CAE Criteria specifies otherwise. The leader line, a user command, used for identifying or noting elements, is the CAE standard. This command is located in the ADSU and UTILITIES on-screen menu.

J. **Dimensioning**

1. Dimension lines shall be simple, straight unbroken lines of weight 0, with arrowheads.

2. Dimensions shall be written above the line.

3. Arrowheads should accurately point to the line being dimensioned.

4. Witness lines must be in line with the surface being dimensioned.

5. Dimensions 1'-0" and larger shall be written in feet and inches. There are exceptions to this such as plate width and beam depths, duct work, certain equipment dimensions and other recognized standards. In some cases on civil yard plans, dimensions are shown only in feet (176.17 ft.).

6. Use coordinate systems with feet and decimals for plot plans, maps and drawings showing outside services.

7. Show elevations within structures in feet and inches. All other elevations figures shall be in feet and decimals.

8. Avoid unnecessary duplication of dimensions. In general, horizontal dimension should be shown on plans; vertical dimension should be shown on sections and elevations.

9. If elevations are shown on a structure, do not repeat the same information by giving height dimensions to the same points.

10. When a dimension is out of scale enough to be misleading, add the note, "not to scale", or the abbreviation, "NTS" adjacent to the dimension figure. Do not use a wavy line under the figure.

K. Section and Detail Designations

1. Designation of section cuts shall be with straight lines as illustrated by Attachment F.

2. Sections shall be designated by letters using the alphabet in sequence, omitting letters I, O and Q. After all letters have been utilized, use two letters, such as AA, AB, AC, etc.

3. Details are to be numbered in sequence.

4. When a section or detail is referenced or plotted on a sheet other than the sheet from which it is taken, the letter or number designation shall be given adjacent to the title of the section or detail and underlined. The drawing number(s) of the sheet(s) on which the section is cut shall be shown below this underline. Conversely, the designation of the section or detail on the drawing(s) on which they are cut shall include the number of the sheet upon which the section or detail originated.

5. Omit the drawing reference if the section or detail is located on the same sheet as that on which the section or detail cut is taken.

6. Ensure that the section arrows are placed in the direction of the section.

L. Construction Detail Designations

1. All disciplines have construction detail libraries. If construction details are required, contact the appropriate Discipline Chief for a booklet showing all the details available for the same discipline. After determining requirements contact the CAD Supervisor explaining requirements, or fill out a Construction Detail Request Form (Attachment K).

2. CD's on construction drawing should be referred to on other construction drawings as illustrated on Attachment F.

M. Notes

1. All notes and notations are to be concise.

2. Specific notations are to be carefully placed as they relate to that portion of the drawing or detail to which they apply.

3. Avoid placing notes through the drawing lines.

4. Notes related to small plans and details should be placed to one side with enough separation to preserve legibility.

5. If possible, organize the notes and notations in groups.

6. Avoid repetitious notes.

7. General notes should cover applicable material specifications, bill of materials, design criteria and special instructions to the fabricator and/or installer. Use the printed block at the bottom of the standard sheet for these or, if the notes are extensive, group them on the right hand side of the sheet.

N. Indications of Materials

1. Where possible, omit hatching and other material indications on drawings. Simple notation may be adequate.

2. Hatching and other material indications should be used only where it is an advantage in clarifying a drawing. Partial cross hatching of a view is sufficient to show the intent.

3. Attachment E illustrates CAE engineering drawing material indication symbols.

Q. Drawing Sheets

1. All Kaiser Engineers design work is plotted on standard size sheets, with border and title block.

2. Except for special work, the standard size sheet is 27" x 40".

3. Refer to the title block established as the standard in the job criteria as the proper form of title.

4. The information required on the title block is shown in Attachment J.

5. Because of the lettering size required and the limitations of space, drawing titles should be as brief as possible, preferably two (2) lines. The title of the drawing is a means of identification only.

6. The standard drawing sheet has a box for REFERENCE DRAWINGS. List only those reference drawings required to do the work shown on the sheet.

7. If vendor's drawings must be referenced because they supplement the work shown on the sheet, these reference titles should be brief.

P. Drawing Signatures and Approvals

1. Attachment J indicates the normal signature and approval requirements within the Engineering Division.

2. Additional approvals by other Divisions and Clients may be required by specific project procedures.

3. The Professional Engineers' seal is used as required by specific project procedure. These procedures should conform to the State Board of Registration requirements.

Q. Revisions, Holds and Deletions

1. All revisions, holds and deletions should be moved or located in level 59. The level can be turned on or off for plotting purposes.

2. Revisions will be highlighted on a drawing by placing a "CLOUD" (in level 59) around the revised area. A brief description of the revision shall be inserted in the drawing revision box. In depth revisions may require a separate memo with a full description of the revisions to accompany the drawing to the field. A 5/16" triangle will be placed inside the "CLOUD" (also on level 59) with the appropriate revision number. See an example on Attachment G. When and if subsequent revisions are made, the cloud in level 59 will not be plotted but the revision triangle will. On certain presentation drawings, and in cases where the revision is not specific to an area, omit the cloud.

3. A revised and replotted drawing shall not be signed and issued until the predecessor mylar has been stamped REVISED & SUPERSEDED BY DWG. NO. ___. REV. NO. ___.

   Signature of revisions shall follow the Project Design Criteria. The names or initials of the persons signing the original drawing shall be printed on the newly plotted drawing. When engineering seals and a registered engineer's signature are required, the new plot should be re-signed and re-stamped by the responsible engineer.

4. A "HOLD" is placed on a portion of a drawing which cannot be completed or released because of lack of information. As shown in Attachment H, the area in question is outlined on level 59 and the word HOLD is placed in the file and plotted. A brief note is required to clarify missing data.

5. A deletion of a detail or part shall be shown with hatching on level 59 with the word OMIT. The deletion on level 59 will be plotted once for the appropriate revision, and later deleted from the design file on subsequent revisions.

The revision symbol and cloud are the same as described above. See Attachment H for an example.

6. The D Base Update column, in the title block, is for ensuring the drawing file is updated when hand corrections or markups are required due to time constraints. The design file should coincide with the issued drawing at all times. Both the checker and the CAE Operator shall initial the D Base update column acknowledging the incorporation of the changes to the design file.

R. Abbreviations and Spelling

1. The use of abbreviations of words in notations should be restricted to commonly used abbreviations as listed in Attachment L. Do not invent new ones!

2. Avoid use of abbreviations in drawing titles.

3. Avoid excessive use of abbreviations. In general, avoid abbreviating short words where space permits full spelling.

4. Provide a legend of abbreviations used, where required (as for Corps of Engineers work). The legend shall appear only once in a set of drawings.

5. An abbreviation used only once and then shown in the legend is considered a waste of time.

6. Spelling must be accurate. Misspelled words may not impair or destroy the intent of a design, but they often provoke antagonism in the mind of the reader. If uncertain about the spelling of any word, take time to look it up. Use simple forms or the most common form of a word when there is a choice.

7. Avoid hyphenating a word at the end of a line. When hyphenating is necessary, use a proper division of the word.

S. Metric System SI

Drawings prepared for overseas construction using the metric system should conform to the codes and regulations of that particular country. Some countries, such as Brazil, specify drawing size, scales to be used, etc. All metric units and conversions should conform to ASTM:E380, "Standard Metric Guide - A Guide to the Use of SI - The International System of Units."

ATTACHMENTS

A - Text Standards
B - Line Styles
C - Discipline Symbols
D - Standard Drafting Symbols
E - Materials Indication Patterns
F - Detail Designations
G - Method of Showing a Revision
H - Method of Showing a Deletion
I - Scale Ratios
J - Sample Title Block
K - Construction Detail Request Form
L - Abbreviations

ATTACHMENT A

TEXT STANDARDS

BELOW ARE SAMPLES OF TEXT SIZE, WEIGHTS AND FONTS USED FOR CAE DRAFTING. IT IS RECOMMENDED THAT FONT 0 IS USED FOR ALL DRAFTING TEXT REQUIREMENTS.

TEXT SIZE=3/32", WT=0, FT=0 (THIS IS KE STANDARD TEXT)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1 2 3 4 5 6 7 8 9 10 ¼ ½ ⅜ 9/16

TEXT SIZE=1/8", WT=1, FT=0 (THIS IS KE STANDARD FOR SUBTITLES)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1 2 3 4 5 6 7 8 9 10 ¼ ½ ⅜ 9/16

TEXT SIZE=5/32", WT=2, FT=0 (THIS IS KE STANDARD FOR TITLE BLOCKS)

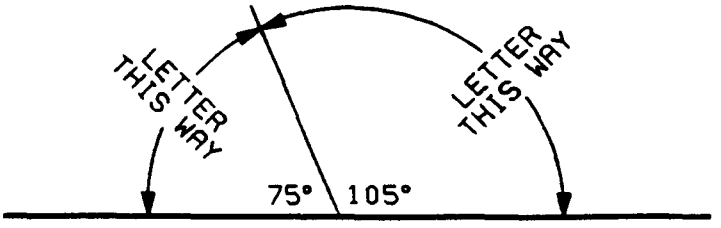
ABCDEFGHIJKLMNOPQRSTUVWXYZ

1 2 3 4 5 6 7 8 9 10 ¼ ½ ⅜ 9/16

TEXT SIZE=3/16", WT=3, FT=0 (THIS IS SOMETIMES USED IN THE TITLE BLOCK WHEN SPECIFIED)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1 2 3 4 5 6 7 8 9 10 ¼ ½ ⅜ 9/16



NOTE: USE THE ABOVE TEXT FONT, SIZES AND WEIGHTS UNLESS JOB STANDARDS SPECIFY OTHERWISE.

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ZGA3: [134,001]KEIC0865.DGN TEMPLETON
08-DEC-1988 19:45

ATTACHMENT B

LINE STYLES

LINE DESCRIPTION	CAE LINE WEIGHTS AND CODES	
OUTLINE OF PARTS OR PRINCIPLE FEATURE. THE THICKNESS MAY VARY TO SUIT SIZE OF DRAWING.	LC=0	WT 2
		WT 3
INTERNAL PARTS	LC=0	WT 0
		WT 1
DASHED LINES	LC=2	WT 0
	LC=3	
CENTER LINE	LC=4	WT 0
DIMENSION AND EXTENSION LINES. LINES UNBROKEN, DIMENSIONS ABOVE LINES.	10'-0" ¼	WT 0
MATCH LINE	LC=6	WT 2
BREAK LINES.		WT 0
RULED LINE FOR LONG BREAKS		WT 0
PHANTOM LINE/BACKGROUND	CO=7 GRAY	WT 0

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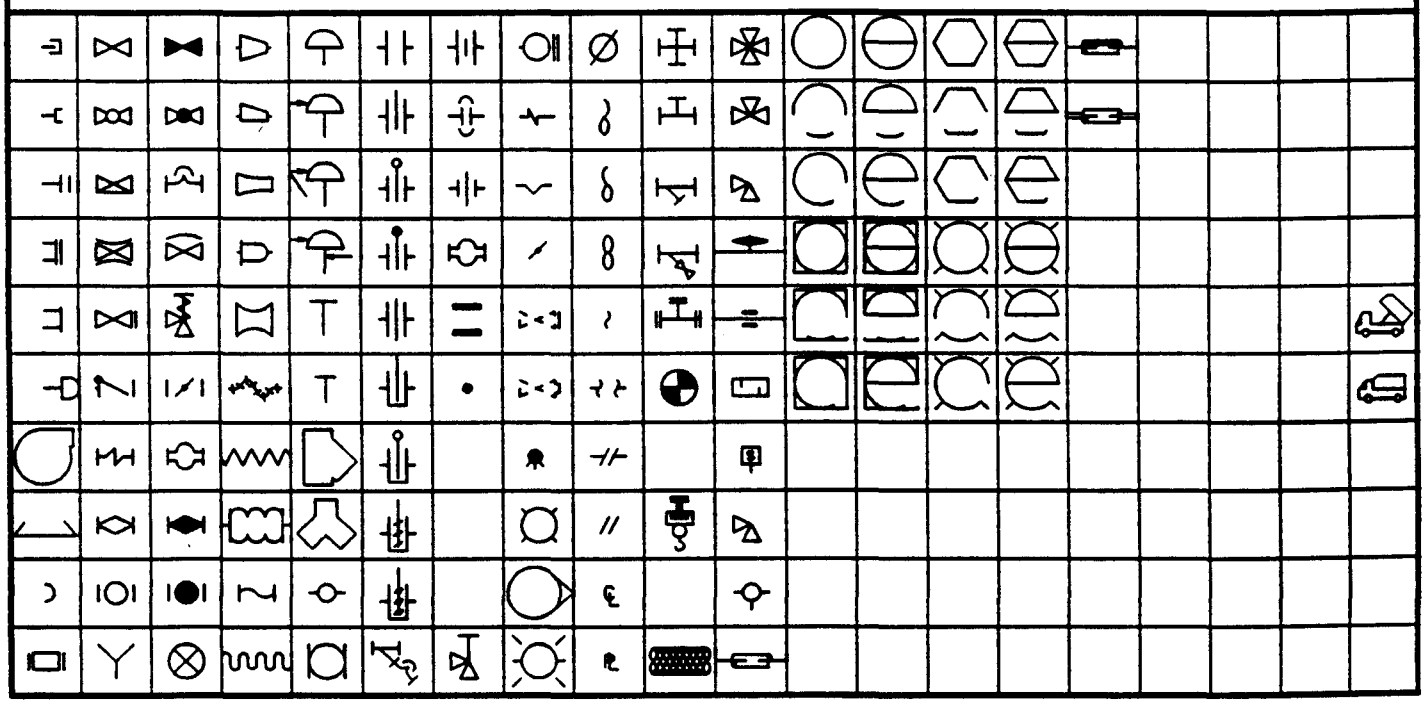
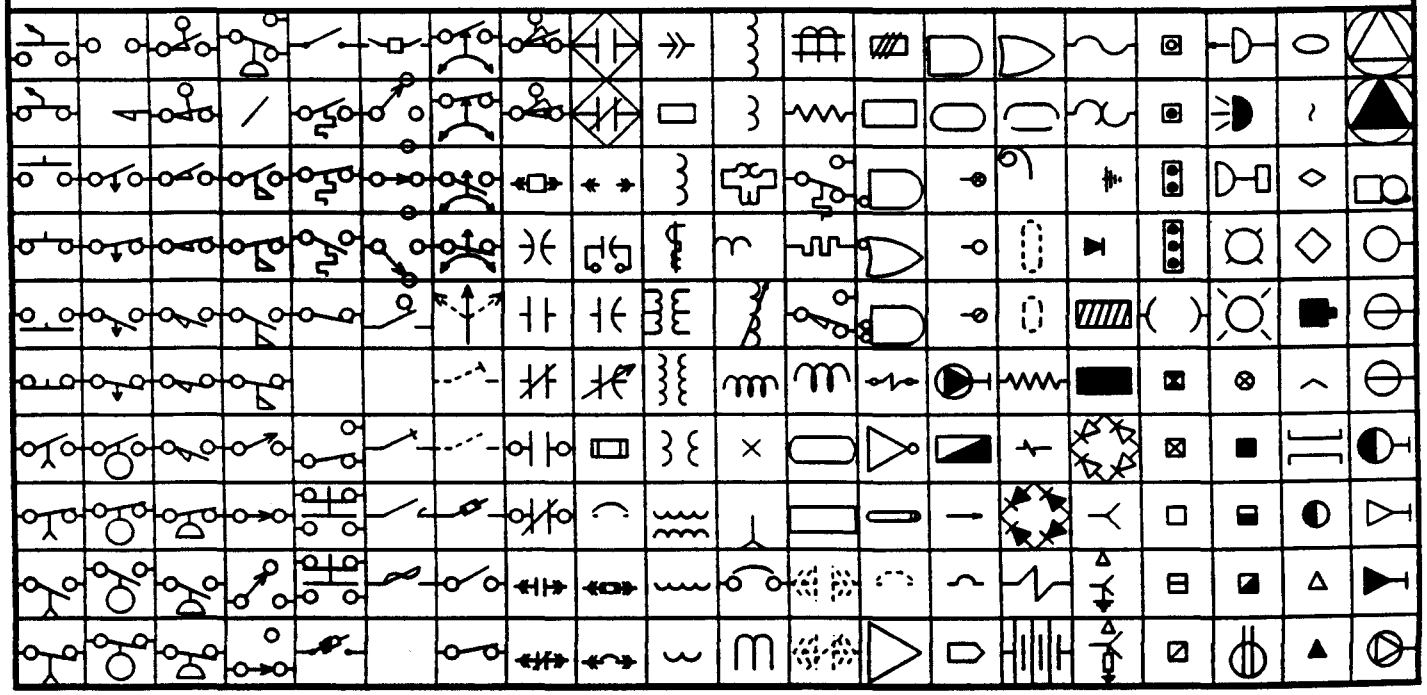
ZG3: [134, 1]KEIC0865.DGN TEMPLETON
8-DEC-1988 21:58

ATTACHMENT C

PIPING SYMBOLS



ELECTRICAL SYMBOLS



ATTACHMENT D

KE STANDARD DRAFTING SYMBOLS

(ALL OF THE CELLS LISTED BELOW ARE STORED IN THE DRAFT CELL LIBRARY)

(RC=ZFA1: [12, 1]DRAFT3. CEL)

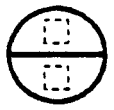
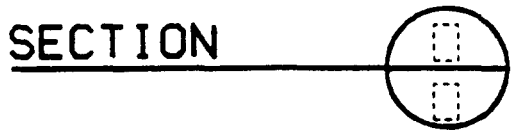
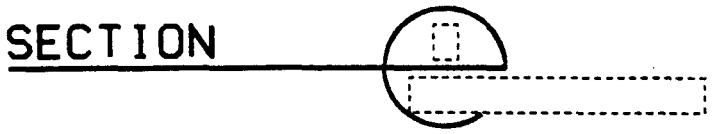
		CELL NAME (AC=)
OPEN ARROWHEAD	>	D001
SMALL ARROWHEAD	►	D002
LARGE ARROWHEAD	►	D003
POINTER	⇨	D004
	⇨	D005
CENTER LINE	℄	D006
PLATE	℞	D007
SMALL DOT	•	D011
LARGE DOT	●	D012
	⌇	D013
	⊸	D014
	⊗	D015
	⌇⌇	D016
BRACKET	—	D017
BUBBLE	○	D021

ALSO REFER TO ATTACHMENT C
FOR MATRIX MENU AND CELL LISTING
AND ATTACHMENT E
FOR PATTERN LISTINGS

KAISER ENGINEERS

ZGA3: [134, 001]KEIC0865. DGN FL_METIS
11-JAN-1989 15: 52

ATTACHMENT D (CONTINUED)

		CELL NAME (AC=)
BUBBLE		D022
SECTION		D023
SECTION		D024
NORTH ARROW		D025
NORTH ARROW		D026
PLANT NORTH		D027
BUBBLE		D031
BUBBLE		D032

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ZGA3: [134,001]KEIC0865.DGN FLEMETIS
11-JAN-1989 15:52

ATTACHMENT D (CONTINUED)

	CELL NAME (AC=)
1/16" = 1'-0" 10 0 10 20 30 40 50 60	D051
1/8" = 1'-0" 10 0 10 20	D052
3/16" = 1'-0" 10 5 0 10 20	D053
1/4" = 1'-0" 5 0 5 10	D054
3/8" = 1'-0" 1 6" 0 1 2 3 4 5 6 7 8 9 10	D055
1/2" = 1'-0" 1 6" 0 1 2 3 4 5 6	D056
3/4" = 1'-0" 1 6" 0 1 2 3 4	D057
1" = 1'-0" 1 9" 6" 3" 0 1 2 3	D058
1 1/4" = 1'-0" 1 9" 6" 3" 0 1 2	D059
1 1/2" = 1'-0" 1 9" 6" 3" 0 1 2	D060
3" = 1'-0" 1" 0 1" 2" 3" 4" 5" 6" 7" 8" 9" 10" 11" 1'-0"	D061
KAISER ENGINEERS	FLOGO
KAISER ENGINEERS HANFORD	KEH

KAISER ENGINEERS

ZGA3: [134,001]KEIC0865.DGN FLEMETIS
11-JAN-1989 15:52

ATTACHMENT D (CONTINUED)

	CELL NAME (AC=)
DETAIL	D033
DETAIL	D034
WORK POINT	D035
1/4" REV. TRIANGLE	D036
5/16" REV. TRIANGLE	D037
CHAIN	D040
BUBBLE	D041
BUBBLE	D042
KAISER ENGINEERS	D049
RAILROAD	D050

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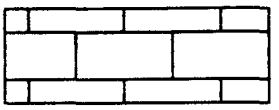
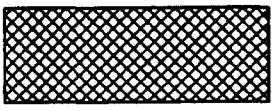
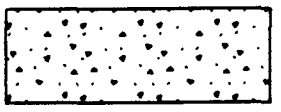
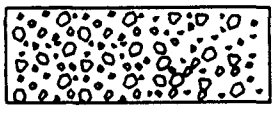
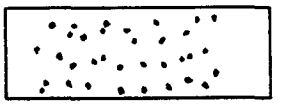
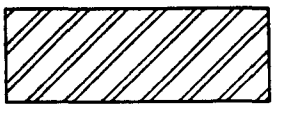
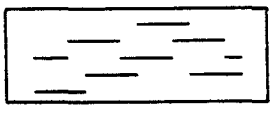
ZGA3: [134,001]KEIC0865.DGN FLEMETIS
11-JAN-1989 15:53

ATTACHMENT E

MATERIALS INDICATION PATTERNS

(ALL OF THE CELLS LISTED BELOW ARE STORED IN THE DRAFT CELL LIBRARY)

(RC=ZFA1: [12, 1]DRAFT3. CEL)

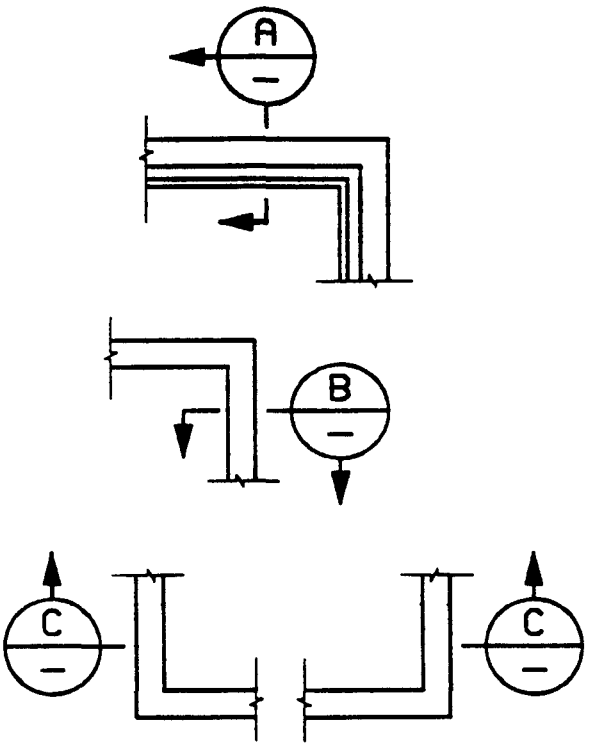
		CELL NAME (AC=)
BRICK		BRICK
CHECKER PLATE		MESH
CONCRETE		CONC
EARTH		EARTH
FILL		FILL
GRATING		GRATE
GRAVEL		GRAVEL
INSULATION		INSUL
SAND		SAND
STEEL		STEEL
WATER		WATER

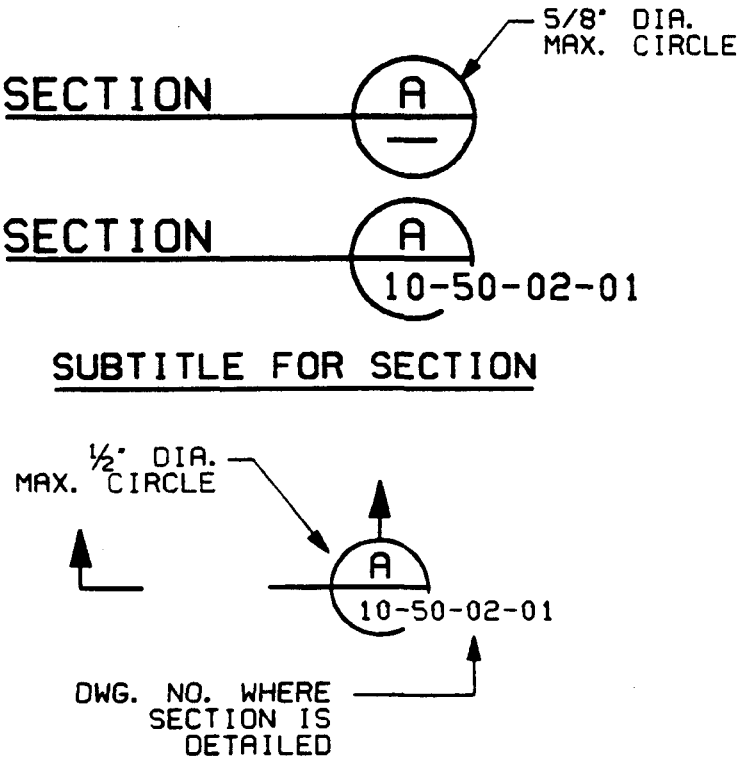
KAISER ENGINEERS

ZGA3: [134, 001]KEIC0865. DGN

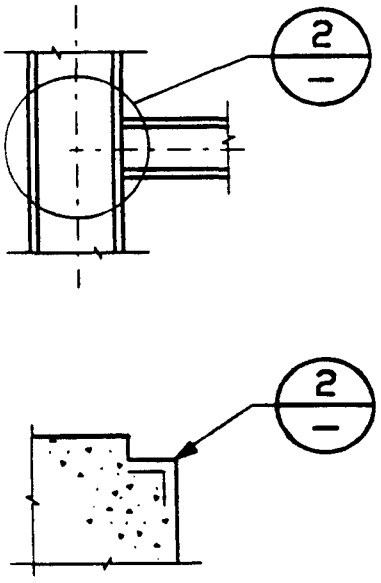
TEMPLETON
08-DEC-1988 19: 18

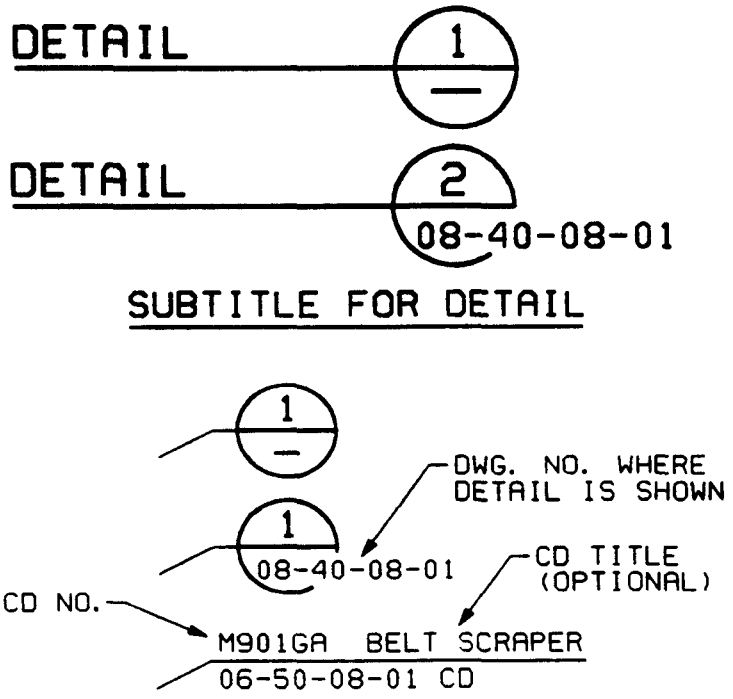
ATTACHMENT F





SECTION DESIGNATIONS





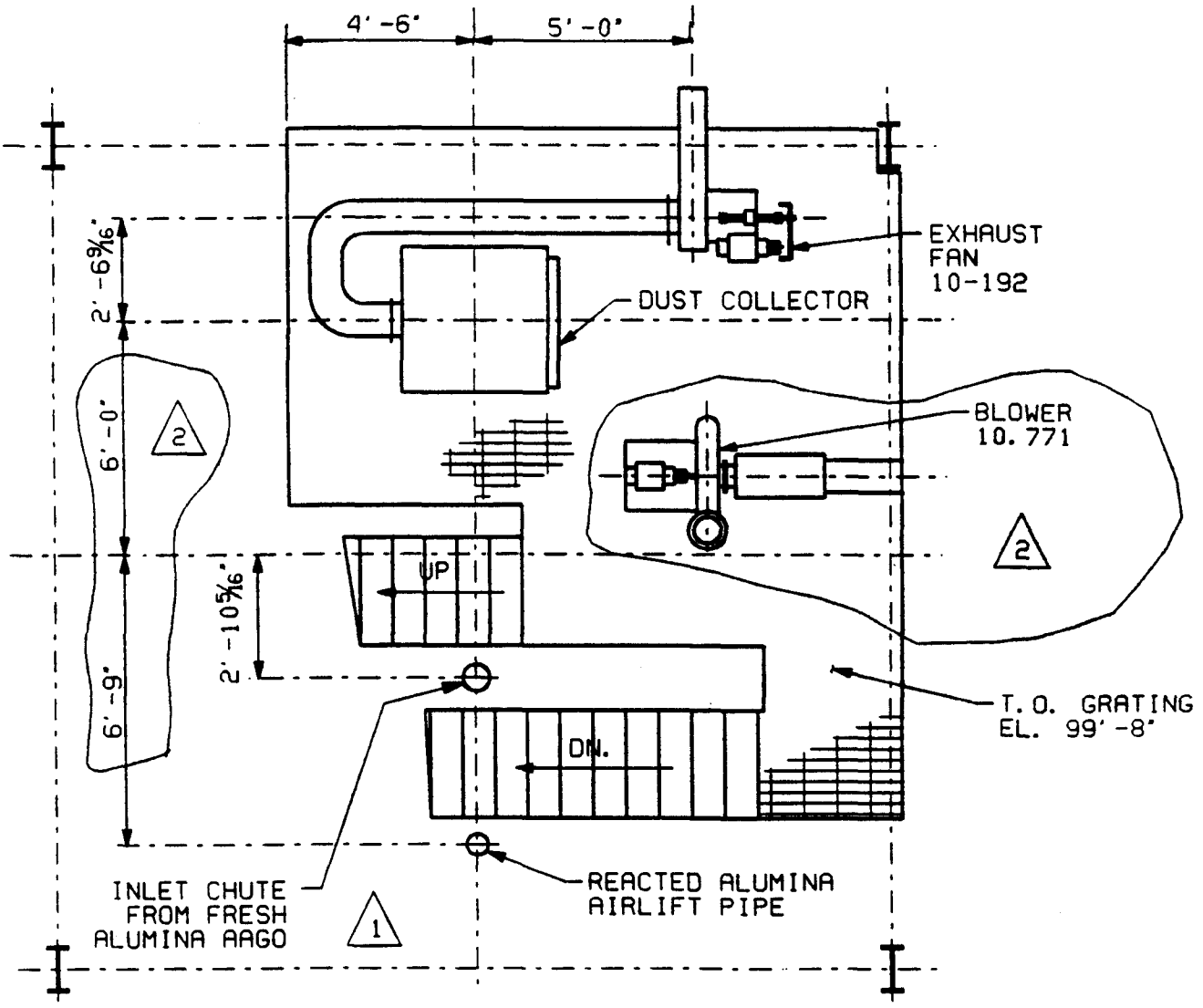
DETAIL DESIGNATIONS

KAISER ENGINEERS

ZGA3: [134,001]KEIC0865.DGN FLEMETIS
11-JAN-1989 15:55

ATTACHMENT G

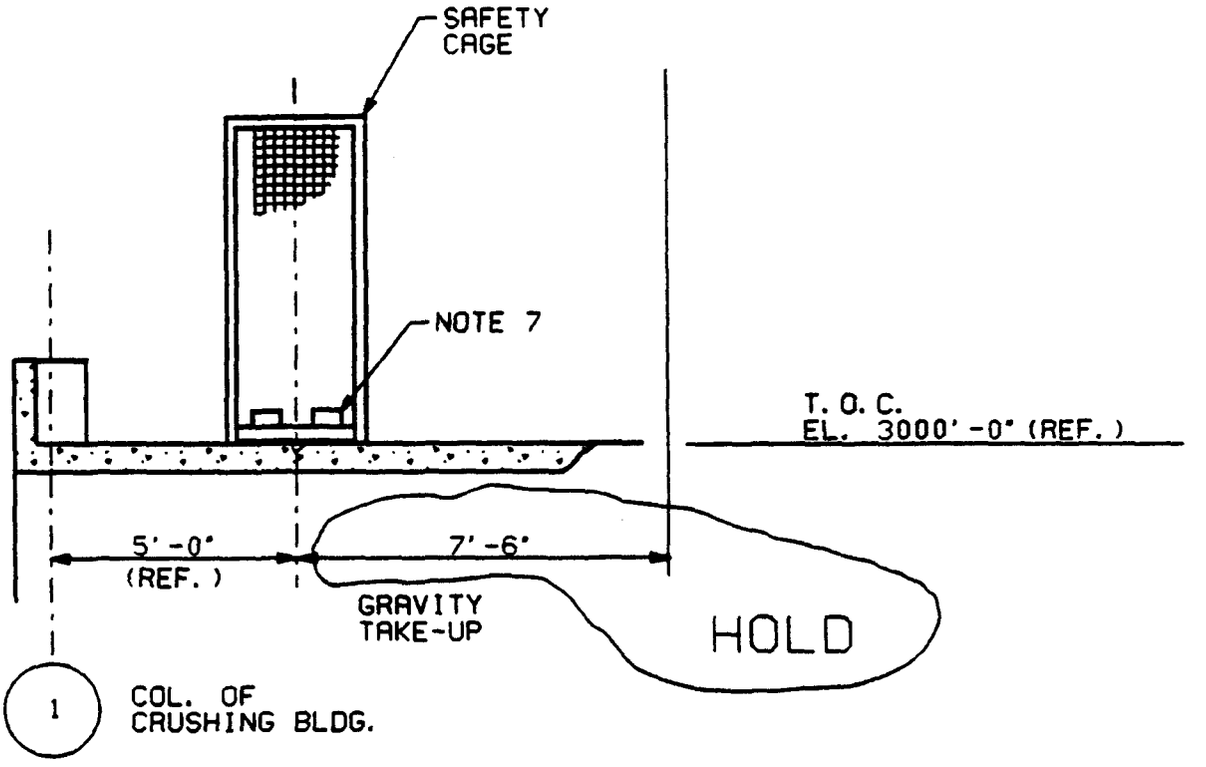
METHOD OF SHOWING A REVISION



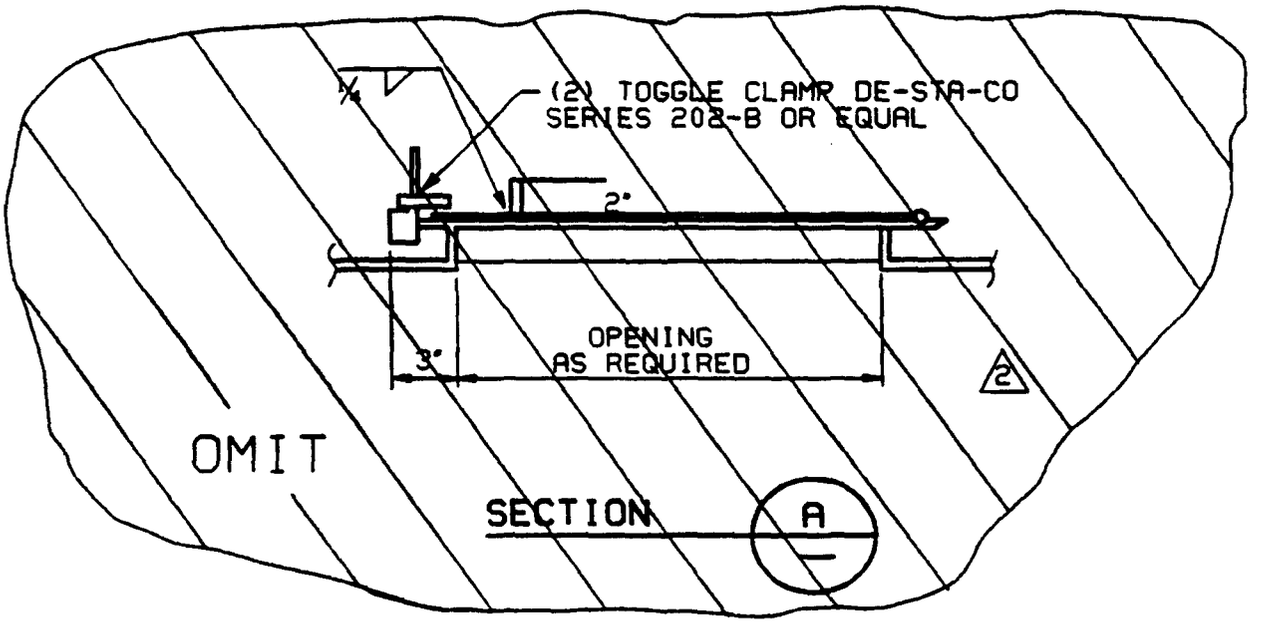
NO.	DATE	REVISION	BY / CK	APP	APP	UPDATE
2	8-21-75	DIMENSIONS CHANGED-ADDED BLOWER 10.771	PS / LH			
1	8-12-75	ADDED INLET CHUTE	PS / SR			

11-JAN-89 ZG3: [134,1]KEIP0004.DGN; 1

ATTACHMENT H



METHOD OF SHOWING A "HOLD"



METHOD OF SHOWING A DELETION

9-DEC-88 ZG3: [134,1]KEIP0004.DGN;1

ATTACHMENT I

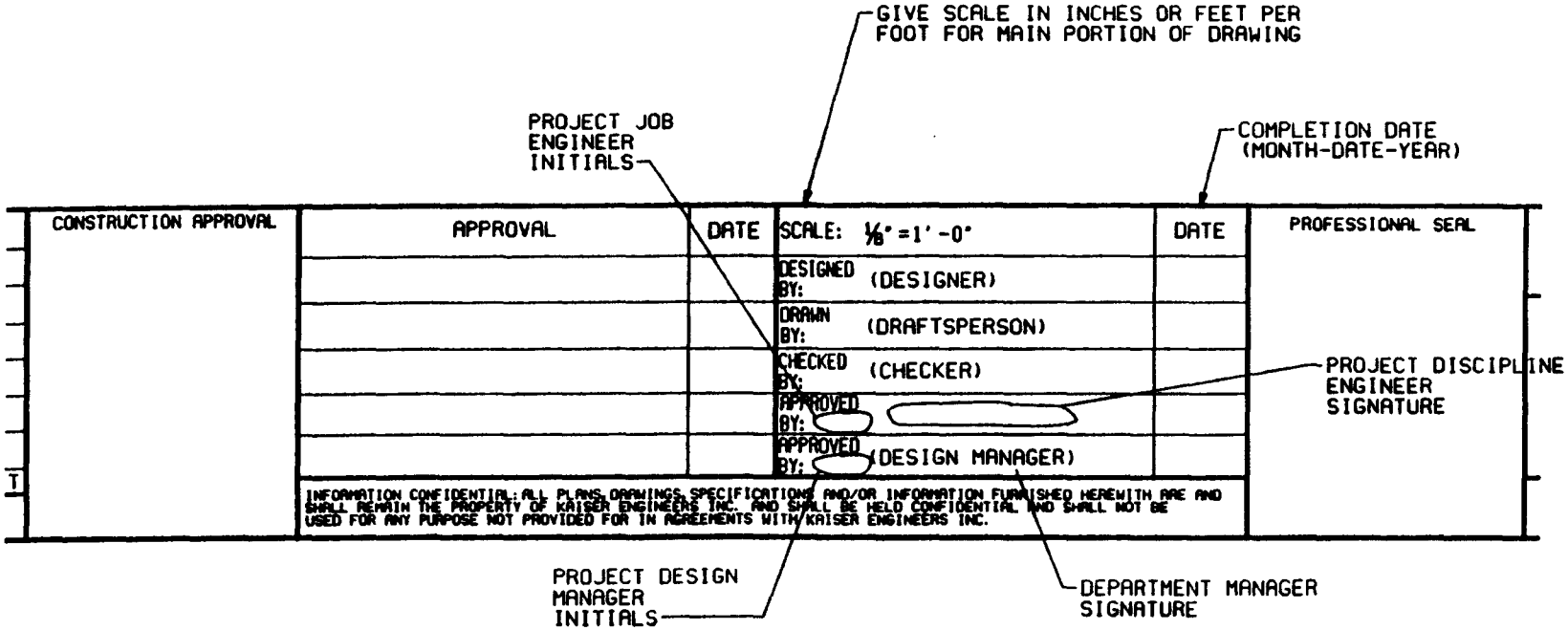
SCALE RATIOS

(FOR USE WITH REFERENCE FILE ATTACHMENTS)

1/16"	=	1'-0"	-	1:192
3/32"	=	1'-0"	-	1:128
1/8"	=	1'-0"	-	1:96
3/16"	=	1'-0"	-	1:64
1/4"	=	1'-0"	-	1:48
3/8"	=	1'-0"	-	1:32
1/2"	=	1'-0"	-	1:24
3/4"	=	1'-0"	-	1:16
1"	=	1'-0"	-	1:12
1 1/2"	=	1'-0"	-	1:8

KAISER ENGINEERS

ZGA3: [134,001]KEIC0865.DGN FLEMETIS
11-JAN-1989 15:58



GIVE INITIALS AND FULL LAST NAME. NO MORE THAN ONE NAME SHOULD BE LISTED IN EACH LINE. THE SAME NAME SHALL NOT BE USED FOR DESIGNED AND CHECKED.

ATTACHMENT J

ZGA3: [134,001]KEIC0926.DGN SOTO

CONSTRUCTION DETAIL REQUEST FORM

NAME: _____ JOB NO.: _____

DATE: _____ DIRECTORY: _____

DATE REQUIRED: _____ PHONE NO.: _____

DISCIPLINE: _____ WORKING UNITS: _____

CONSTRUCTION DETAIL NUMBERS REQUIRED

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

CC: KAREN RAMOS
BECKI FLEMETIS

FILENAME OF CDS: _____

ZGA3: [134,001]KEIC0926.DGN TEMPLETON
11-JAN-1989 18:27

ATTACHMENT K

ABBREVIATIONS

air circuit breaker	ACB
alternating current	AC (or A-C as adjective)
aluminum	AL
amber	AMB
American wire gage	AWG
ampere	AMP
ampere-hour	AMP-HR
anchor bolt	AB
annunciator	ANN
approved	APPVD
approximate	APPROX
architectural	ARCH
atmosphere	ATM
average	AVG
back to back	B TO B
battery	BAT.
beam	BM
bearing	BRG
bench mark	BM
bill of material	B/M
blocking	BLKG
board	BD
board feet (measure)	FBM
bolt circle	BC
both face	BF
bottom	BOT
bracing	BRCG
bracket	BRKT
British thermal unit	BTU
brake horsepower	BHP
building	BLDG
cabinet	CAB.
candlepower	CP
capacitor	CAP or C
cast iron	CI
catch basin	CB
ceiling	CLG
cement	CEM
center	CTR
centerline	CL
centers	CTRS
center to center	C to C
centimeter	CM
checker plate	CH PL
cleanout	CO
closet	CLOS
column	COL
concrete	CONC
conduit	CND or COND
construction joint	CONST JT

ABBREVIATIONS

continuous	CONT
control relay	CR
control switch	CS
conveyor	CONV
corrugated	CORR
cosecant	CSC
cosine	COS
cotangent	COT
countersink or countersunk	CSK
cover plate	COV PL
cubic feet per minute	CFM
cubic feet per second	CFS
cubic feet or foot	CU FT or CF, FT^3
cubic yard	CY, or CU YD
cylinder	CYL
decibel	DB
degree	DEG (or ^{o})
degree Centigrade	^oC
degree Fahrenheit	^oF
demand meter	DM
detail	DET
diagonal	DIAG
diameter	DIA
dimension	DIM.
direct current	DC (or D-C as adjective)
ditto	DO
division	DIV
dowel	DWL
down	DN
drawing	DWG
each	EA
each face	EF
each way	EW
electric	ELEC
elementary	ELEM
elevation	ELEV
equipment	EQUIP
exciter	EXCTR
existing	EXIST
expansion joint	EXP JT
explosion proof	EP
face to face	F TO F
far face	FF (concrete details)
far side	FS (steel details)
feet per minute	FPM
feet per second	FPS
finish	FIN
flange	FLG
flashing	FLSHG
flat face	FF (piping)

ABBREVIATIONS

floor	FL
floor drain	FD
foot	FT
foot candle	FC
footing	FTG
foot pounds	FT LBS (or '#)
foot kips	FT KIPS (or 'K)
foundation	FDN
fractional horsepower	FHP
frequency	FREQ
gage	GA
gallon	GAL
gallons per minute	GPM
galvanized	GALV
galvanized iron	GI
glass	GL
generator	GEN
green	GRN
ground	GRD or GND
gypsum	GYP
hand hole	HH
handrail	H.R.
hanger	HGR
head	HD
heater	HTR
height	HT
hexagonal	HEX
high voltage	HV
horizontal	HORIZ
horsepower	HP
hour	HR
illuminate	ILLUM
incandescent	INCAND
inch	IN. (or ")
inclusive	INCL
inside	INS
inside diameter	ID
instrument	INSTR
invert	INV
joint	JT
junction	JCT
kilovolt	KV
kilovolt ampere	KVA
kilowatt	KW
kilowatt-hour	KWHR
laboratory	LAB
lamp, green indicating	GIL
lamp, red indicating	RIL
lamp, yellow indicating	YIL
lamp, white indicating	WIL

ABBREVIATIONS

lavatory	LAV
left hand	LH
length	LG
light	LT
lighting	LTG
limit switch	LS
linear feet or foot	LIN FT or LF
logarithm	LOG
longitudinal	LONGIT
machine bolt	MB
magnet	MAG
manhole	MH
manufacturer	MFR
manufacturing	MFG
material	MATL
maximum	MAX
mechanical	MECH
meter	M
miles per hour	MPH
millimeter	MM
minimum	MIN
minute	MIN (or ')
miscellaneous	MISC
motor generator	MG
near face	NF (concrete details)
near side	NS (steel details)
nominal	NOM
normally closed	NC
normally open	NO
not in contract	NIC
not to scale	NTS
number	NO. (or #)
oil circuit breaker	OCB
oil insulated self-cooled	OISC
oil insulated fan-cooled	OIFC
on centers	OC
one pole	SP
open holes	OH
opening	OPG
opposite hand	OPP HAND
ounce	OZ
outside diameter	OD
outstanding leg	OSL
out to out	O TO O
overhead	OVHD
partition	PTN
piece	PC
pieces	PCS
plate	PL
pneumatic	PNEU

ABBREVIATIONS

point	PT
positive	POS
potential	POT
potential transformer	PT
pounds	LBS (or #)
pounds per square foot	PSF
pounds per square inch	PSI
pounds per square inch absolute	PSIA
pounds per square inch gage	PSIG
power factor	PF
public address	PA
pull box	PB
pushbutton station	PB STA
radius	R or RAD
rectifier	RECT
reinforcing	REINF
required	REQD
resistance	RES
retaining wall	RET WALL
revision	REV
revolutions per minute	RPM
rheostat	RHEO
right hand	RH
riser	R
rivets	RIV
roadway	RDWY
secant	SEC
second	SEC (or ")
section	SECT
sheet	SHT
sine	SIN
solenoid	SOL
spacing or spaces	SPA
specifications	SPECS
square	SQ
square foot or feet	SQ FT or FT^2
square inch or inches	SQ IN
standard	STD
station	STA
steel	STL
stiffener	STIFF
structural	STRUCT
switch	SW
switchboard	SWBD
switchgear	SWGR
symmetrical	SYMM
tachometer	TACH
tangent	TAN

ABBREVIATIONS

thousand board feet	MBM
thread	THD
time delay	TD
time delay opening	TDO
time delay closing	TDC
toggle	TGL
top of steel	TOS
transformer	XFMR
transmitter	XMTR
tread	T
typical	TYP
unit cooler	UC
unit heater	UH
urinal	U
vertical	VERT
volt	V
volt-amperes	VA
volt-meter	VM
watercloset	WC
watt	W
weather stripping	WS
weight	WT
white	WHT
with	W or W/
without	W/O
wood	WD
working point	WP
wrought iron	WI
yard	YD
year	YR
yellow	YEL

KAISER ENGINEERS
CAE LEVEL SET-UP

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file: LEV index.wrl 1-17-89

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: AMOD

JOB # _____ TITLE: _____ WORKING UNITS: 1000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	DRAWING SHEET EDGE			33	RESERVED FOR EPDP		
2	GRAPHIC SCALE/NORTH ARROW	6	4,5	34	RESERVED FOR EPDP		
3	"DWG. SHEET INDEPENDENT"			35	CASEWORK/MILLWORK		
4	FLOORS	5	0	36	EQUIPMENT (BUILDINGS)		
5	CEILINGS	5	0	37	EQUIPMENT (OWNER)		
6	INTERIOR FURNISHINGS	4	0	38	ROOF SYSTEMS	4,6	0
7	EXTERIOR FURNISHINGS	0	0	39	MASS MODELS	3	0
8	PEOPLE			40	REF SYMBOLS & TEXT		
9	UNASSIGNED			41	MATCH, BREAK, CENTERLINES		
10	HORIZ. COL. CENTERLINES	0	0	42	SITE CONTOUR LINES	2	0
11	VERT. COL. CENTERLINES	0	0	43	SITE PROFILE LINES	2	0
12	COLUMNS	4	0	44	UNASSIGNED		
13	FINISH FLOOR LINES			45	ROOM NAMES AND NUMBERS		
14	UNASSIGNED			46	NOTES AND MISC. TEXT		
15	WALLS	4	0	47	PERSPECTIVE OUTPUT	3	4,1,0
16	WINDOW CELLS	6	0	48	SECTION OUTPUT		
17	WINDOW OPENINGS			49	UNASSIGNED		
18	VERTICAL ACCESS			50	DIMENSIONS & LEADER LINES		
19	VERTICAL ACCESS			51	USER DEFINABLE		
20	VERTICAL ACCESS			52	USER DEFINABLE		
21	RESERVED FOR SPFL			53	USER DEFINABLE		
22	RESERVED FOR SPFL			54	USER DEFINABLE		
23	RESERVED FOR SPFL			55	USER DEFINABLE		
24	RESERVED FOR SPFL			56	REF. NOTES (ARCH. APDP)		
25	DOOR CELLS	5	0	57	REF. NOTES (ENGR.-EPDP)		
26	DOOR OPENINGS	4	0	58	REF. NOTES (INTERIORS-SPFL)		
27	RESERVED FOR SPFL			59	SPEC. SECTION NUMBERS		
28	RESERVED FOR EPDP			60	UNASSIGNED		
29	RESERVED FOR EPDP			61	NON-PRINT REF. ELEMENTS		
30	PLUMBING FIXTURES			62	ADDENDA & BULLETIN BUBBLES		
31	UNASSIGNED			63	NAMED VOLUMES		
32	RESERVED FOR EPDP						

KAISER ENGINEERS
CAE LEVEL SET-UP 15DEC88

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: APDP (SITE PLANS)

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	SHEET BORDER			33	PAVEMENT MARKINGS		2
2	NORTH ARROW/GRAPHIC SCALE			34	PAVEMENT MARKINGS		0
3	"SHEET DEPENDENT" TITLE BLK. INFO.			35	PAVEMENT MARKINGS		0
4	BUILDING FOOTPRINT	0		36	MAN MADE FEATURES		
5	BUILDING FOOTPRINT	0		37	MAN MADE FEATURES		
6	BUILDING FOOTPRINT	0		38	MAN MADE FEATURES		
7	BLDG. FOOTPRINT AREA NOTATION	0		39			
8	BLDG. FOOTPRINT AREA NOTATION	0		40	REFERENCE SYMB. & TEXT	3	
9	BLDG. FOOTPRINT AREA NOTATION	0		41	MATCH, BREAK, CENTER LINES	0	
10	BLDG. FOOTPRINT FLOOR ELEV.	0		42	MATCH, BREAK, CENTER LINES	0	
11				43	MATCH, BREAK, CENTER LINES	0	
12	PROP. LINES A21MUTHS, POINTS	0		44			
13	LOT/BLOCK NUMBERS			45	DRAINAGE-LAND FEATURES		
14	LOT/BLOCK NUMBERS			46	DRAINAGE-LAND FEATURES		
15	MERCATOR GRID			47	DRAINAGE-LAND FEATURES		
16	MERCATOR GRID COORD NOTATION			48	DIMENSIONS AND LEADER LINES	3	
17	CONTOURS - MAJOR			49	DIMENSIONS AND LEADER LINES	3	
18	CONTOURS - MINOR			50	DIMENSIONS AND LEADER LINES	3	
19	CONTOURS - MAJOR			51	USER DEFINABLE		
20	CONTOURS - MINOR			52	USER DEFINABLE		
21	SPOT ELEVATIONS			53	USER DEFINABLE		
22	SPOT ELEVATIONS			54	USER DEFINABLE		
23	UTILITIES	3		55	LARGE SCALE DRAWING INFO	1	1
24	UTILITIES	3		56	VEGETATION	2	
25	UTILITIES	3		57	VEGETATION	2	
26	EASEMENT & RIGHT OF WAY	3		58	VEGETATION	2	
27	EASEMENT & RIGHT OF WAY	3		59	VEGETATION		
28	EASEMENT & RIGHT OF WAY	3		60	SITE AREA NOTATION		
29	BLDG. CODE SET BACK NOTATION			61	NON-PRINT REF. ELEMENTS		
30	PAVEMENT-PARK LOTS, SIDEWALKS, E	3	2	62	ADDENDA & BULLETIN "BUBBLES"	3	
31	PAVEMENT-PARK LOTS, SIDEWALKS, E	3	0	63	"CHANGE INDICATION" LEVEL	3	
32	PAVEMENT-PARK LOTS, SIDEWALKS, E	3	0				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: APDP (FLOOR PLANS)

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	DRAWING SHEET EDGE	3	0	33	RENOVATION (PLUMB FIXTURES)		
2	GRAPHIC SCALE/NORTH ARROW	4,6	4	34	DEMOLITION (PLUMBING)		
3	"DWG SHT INDEP" INFORMATION			35	CASEWORK/MILLWORK		0
4	BLDG FOOTPRINT (FLOOR PERIMETER)	5	2	36	EQUIPMENT (X-RAY, ETC)		
5	ROOM PERIMETER SHAPE	5	2	37	EQUIPMENT (OWNWR FURNISHED)		
6	EXTERIOR PERIMETER SHAPE	5	2	38	BEAM CENTERLINES	1	0
7	RESERVED			39	CEILING REFERENCES		
8	CURTAIN WALL CENTERLINES	1	0	40	REFERENCE SYMBOLS AND TEXT	3	2
9	CURTAIN WALL MULLIONS AND GLASS	4	2	41	MATCH LINES, BREAKS & CENTER LINES	2	0
10	COLUMN GRID (CENTERLINES)	2	0	42	DOOR SYMBOLS	3	1
11	COLUMN GRID TAGS	2	1	43	WINDOW SYMBOLS	3	1
12	COLUMNS	1	0	44	WALL FIRE RATINGS	0	2
13	RESERVED			45	ROOM NUMBERS	2	
14	CAVITY WALL LINES	4	0	46	NOTES, TEXT, LEADER LINES, TERMINATOR	2	0
15	EXTERIOR WALL EDGES	4	1	47	DRAWING COMP. TITLES & SCALES		3
16	WINDOWS, WINDOW SILLS	4	0,2	48	LEGEND AND SCHEDULE GRAPHICS		
17	ROOM NAMES AND UNDERLINES	2	1	49	LEGEND AND SCHEDULE TEXT		
18	SHAFTS	3	0	50	DIMENTIONS AND LEADER LINES	3	1
19	ELEVATORS, ESCALATORS	3	0	51	WALL PENETRATIONS	4	1
20	STAIRS AND HANDRAILS, BREAKLINES	0		52	USER DEFINABLE		
21	BEAM EDGES	6	0	53	CONCRETE MASONRY UNIT	3	0
22	SLABS	6	0	54	USER DEFINABLE		
23	INTERIOR WALL EDGES	4	1	55	USER DEFINABLE		
24	STRUCTURAL WALL EDGES	4	1	56	REFERENCE NOTES (ELECTRICAL)		
25	DOORS AND DOOR SWINGS	4	3,0	57	REFERENCE NOTES (HVAC)		
26	DOOR FRAMES	4	1	58	REFERENCE NOTES (STRUCTURAL)		
27	RESERVED			59	SPECIFICATION SECTION NUMBERS		
28	RENOVATION (WALLS AND PART.S TO REMAIN)			60	WALL & PARTITION CENTERLINES	1	0
29	RENOV. (WALLS AND PART.S TO BE REMOVED)			61	NON-PRINT REFERENCE ELEMENTS		
30	PLUMBING AND FIXTURES	2	1	62	ADDENDA AND BULLETIN BUBBLES	0	4
31	TOILET PART.S & H.C. HANDRAILS	2		63	"CHANGE INDICATION" LEVEL	3	6
32	RENOVATION (PLUMBING FIXTURES)						

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: APDP (SECTIONS/ELEVATIONS)

15DEC88

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	SHEET BORDER	6	4	33			
2	NORTH ARROW/GRAPHIC SCALE	6	0	34			
3	"SHEET DEPENDENT" TITLE BLK. INF.			35	CASEWORK/MILLWORK	2	0
4	GRADE LINE			36	EQUIP. (X-RAY, ETC.)	2	
5				37	EQUIP. (OWNER FURNISHED)	2	
6				38	BEAMS	2	0
7				39			
8				40	REF. SYMBOLS & SYMBOL TEXT	3	1
9				41	MATCH, BREAK, CENTERLINES	0	0
10	COLUMN GRID CENTERLINE	2	0	42	FLOOR ELEV., TAGS		
11	COLUMN GRID TAGS	2	1	43			
12	COLUMNS	4		44			
13	FINISH FLOOR LINES & TARGETS	2	2	45	ROOM NAMES AND NUMBERS	2	1
14				46	NOTES, MISC. TEXT, FIN. FLR & ELEV	3	1
15	WALL EDGES & CURTAIN WALLS	4	3	47	ELEV. & SECTION TITLES & SCALES	3	1,3
16	WINDOW, WINDOW SILLS	4	1	48	LEGEND GRAPHICS		
17	STAIRS	4	0	49	LEGEND TEXT		
18	LOUVERS	2	1,0	50	DIMENSIONS & LEADER LINES	0	0
19	ELEVATORS, ESCALATORS		1,0	51	WALL PENETRATIONS	4	1,0
20	COMPONENTS & STEEL SEC.S	2	0,3	52	USER DEFINABLE		
21				53	CONCRETE MASONRY UNIT	3	0
22	CONCRETE SLABS, PADS	6	1	54	USER DEFINABLE		
23				55	LARGE SCALE DRAWING INFO	1	1
24				56	REFERENCE NOTES (ELEC)	3	1
25	DOORS AND FRAMES	4	0	57	REFERENCE NOTES (HVAC)	3	1
26				58	REFERENCE NOTES (STRUCT)	3	1
27				59	SPEC. NUMBERS		
28				60	WALL & PARTITION CENTERLINES	1	0
29				61	NON-PRINT REF. ELEMENTS		
30	PLUMBING FIXTURES	2	1	62	ADDENDA & BULLETIN "BUBBLES"	0	4
31	TOILET PARTS & H.C. HANDRAILS	0	4	63	"CHANGE INDICATION" LEVEL	3	6
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

15DEC88

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: APDP (DETAILS)

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT COD
1	SHEET BORDER	0	2	33			
2	GRAPHIC SCALE/NORTH ARROW	6	4	34			
3	"SHT. INDEPENDENT" TITLE BLK. INFO.			35			
4	MODULAR DETAIL REF. GRID - LINES	0	0	36	EQUIPMENT		
5	MOD. DETAIL REF. GRID - TIC MARKS	0	1	37	EQUIPMENT		
6				38	BEAMS	2	
7				39			
8				40	REF. SYMBOLS AND TEXT	3	
9				41	MATCH LINES, BREAK & C'S	2	
10	COLUMN GRID (CENTERLINES)	2	0	42	DOOR NUMBERS AND SYMBOLS		
11	COLUMN GRID BUBBLES	2	1	43	WALL TYPE LABELS		
12				44			
13				45			
14				46	NOTES, MISC. TEXT	3	1
15				47	DETAIL TITLE AND SCALE	3	1
16				48			
17				49			
18				50	DIMENSIONS & LEADER LINES	1	
19				51	USER DEFINABLE		
20	COMPONENT AND STEEL SEC.S	2	0	52	USER DEFINABLE		
21				53	USER DEFINABLE		
22				54	DEFAULT ACTIVE		
23				55	LARGE SCALE DWG INFO	1	
24				56	REFERENCE NOTES (ELECT)	3	
25				57	REFERENCE NOTES (HVAC)	3	
26				58	REFERECE NOTES (STRUCT)	3	
27				59	SPEC. NUMBERS		
28				60			
29				61	NON-PRINT REFERENCE ELEMENTS		
30				62	ADDENDA & BULLETIN "BUBBLES"	0	
31				63	"CHANGE INDICATION" LEVEL	3	
32							

KAISER ENGINEERS
CAE LEVEL SET-UP 15DEC88

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: APDP (REFLECTED CEILING PLANS)

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	SHEET BORDER		4	33			
2	NORTH ARROW/GRAPHIC SCALE			34			
3	"SHT. DEPENDENT" TITLE BLK. INFO	2	1	35	SPRINKLERS (CEILING, WALL)	4	1
4				36			
5				37	BEAMS	2	1
6				38	HVAC (SUPPLY)	4	2,0
7				39	HVAC (RETURN)	4	2,0
8				40	REF. SYMBOLS AND TEXT	3	3
9				41	MATCH, BREAK, CENTERLINES	0	0
10	WALL FIRE RATINGS	5	4	42	CLG. HT.S SYMBOL & TEXT	1	1
11	CEILING PATTERN (GRID)	5	1	43			
12	CEILING PATTERN (PLAS/G.B.)	5	1	44			
13	CEILING PATTERN (LINNER/WD.)			45	ROOM NAME AND NUMBERS	2	1
14	CEILING PATTERN (EXP. CONST)	5	1	46	NOTES, MISCELLANEOUS TEXT	3	1
15	CEILING PATTERN (MISC., LEAD)		0	47	DWG. COMP. TITLES AND SCALES	2	3
16	CEILING PATTERN (RENOV. EXIST.)			48			
17	CEILING PATTERN (RENOV. TO REMOV.)			49			
18	CEILING PATTERN (SHAFTS)	5	0	50	DIMENSIONS AND LEADER LINES	3	0
19				51	USER DEFINABLE		
20	FLUORESCENT (RECESSED/STRIP)	4	3,2	52	USER DEFINABLE		
21	FLUORESCENT (SURFACE/S-REC.)	4	2	53	USER DEFINABLE		
22	FLUORESCENT (WALL)	4	3,2	54			
23	INCANDESCENT (RECESSED)	4	2	55			
24	INCANDESCENT (RECESSED)	4	3	56	REFERENCE NOTES (ELEC.)	3	1
25	INCANDESCENT (WALL)	4	2,3	57	REFERENCE NOTES (HVAC.)	3	1
26	H.I.D. (RECESSED)	4	2	58	REFERENCE NOTES (STRUCT.)	3	1
27	H.I.D. (SURFACE)	4	3,1	59	SPEC. NUMBERS		
28	H.I.D. (WALL)	4	3,2,1	60	CLG. HT. SYM & TEXT		1
29	EXIT LIGHTS	4	1	61	NON-PRINT REF. ELEMENTS	1	
30	(ELEC.) SMOKE & HEAT DETECT.	4	2	62	ADDENDA & BULLETIN BUBBLES	5	4
31	(COMMUNICATION) SPEAKERS	4	2	63	"CHANGE INDICATION" LEVEL	3	6
32	CLOCKS	4	2,3				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: ARCHITECTURAL

APPLICATION PACKAGE: SPFL

JOB # _____ TITLE: _____ WORKING UNITS: 8000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	SHEET BORDER		0,4	33			
2	"SHEET INDEPENDENT" TITLE BLOCK INFO.		5,0	34	USER LEVEL FOUR		
3	"SHEET DEPENDENT" TITLE BLOCK INFO.		1	35	CASEWORK/MILLWORK	33	0
4				36	PANEL - TAGS/NUMBER	25	0
5	FLOOR PERIMETER - GROSS AREA		0	37	FURNITURE - TAGS/NUMBER	29	0
6	PLANNING UNIT PERIMETER - BLOCK PLAN		0	38	EQUIPMENT - TAGS/NUMBER	30	0
7	ZONE PERIMETER		0	39	FIXTURE - TAGS/NUMBER	31	0
8	GROUPING - FOOTPRINT	24	0	40	REFERENCE SYMBOLS AND SYMBOL TEXT	34	0
9	GROUPING - TAG	24	0	41	MATCHLINES, BREAKLINES, CTRLINES, TARGETS	2	8,0,2
10	PANEL - ELECTRICAL SYMBOLOGY	27	0	42	DEVELOPMENT PANEL - TAGS/NUMBER	26	0
11	PANEL - PRODUCTION PLACEMENT SYMBOLS	25	0	43	DEVELOPMENT SEATING - TAGS/NUMBER	26	0
12	PANEL - (FUTURE)		0	44	FLOOR - TEXT	21	0
13	PANEL - (FUTURE)		0	45	PLANNING UNIT - TEXT	22	0
14	PANEL - GRAPHICS	25	0	46	ZONE - TEXT	23	1,0
15	FURNITURE - GRAPHICS	29	0	47	DRAWING COMPONENT TITLES AND SCALES	36	3
16	EQUIPMENT - GRAPHICS	30	0	48	NOTES - TEXT	36	0
17	FIXTURE - GRAPHICS	31	0	49	PANEL - HEIGHT TEXT	25	0
18	CARPET - GRAPHICS (SEAMING PLAN)	32	0	50	DIMENSIONS AND LEADER LINES	34	0
19	CARPET - TEXT DIMENSIONS	2	0	51	GROUPING - TEXT	24	0
20	DEVELOPMENT - PANEL GRAPHICS	26	0	52	MISCELLANEOUS - TAGS/NUMBER	26	0
21	DEVELOPMENT - SEATING GRAPHICS	31	0	53	OCCUPANT - NAME TEXT	37	0
22	DEVELOPMENT - PANEL BALLOON BASE	26	0	54	USER LEVEL FIVE		
23	DEVELOPMENT - PEDESTAL GRAPHICS	26	0	55	PATTERNS (FLOOR AND AREA)	36	0
24	DEVELOPMENT - PANEL HEIGHT INDICATION	28	0	56	WALL PATTERNS (MATERIALS)	36	0
25	AREA LOCATION - TEXT	28	0	57	WALL PATTERNS (SOUND AND FIRE)	36	0
26	AREA LOCATION - PERIMETER GRAPHICS		0	58	ERROR MESSAGES	32	0
27	USER LEVEL ONE			59	SPECIFICATION NUMBERS	32	0
28	USER LEVEL TWO			60	CATALOG SHEET GRAPHICS		
29	USER LEVEL THREE			61	NON-PRINT REF. ELEMENTS; DEFAULT ACTIVE		
30	FURNITURE - MISCELLANEOUS PRODUCTION	34	0	62	ADDENDA AND BULLETIN "BUBBLES"	36	4
31	SYMBOLS - MISCELLANEOUS COMPONENT NUMBER	34	0	63	"CHANGE INDICATION" LEVEL		
32	SYMBOLS - INSTALLATION/CONST. DRAWING	34	0				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: CIVIL

APPLICATION PACKAGE: IGDS - PLANS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTER LINES	0	0	33	FENCE ALIGNMENT	3	
2	TEXT & NOTES	4	0	34	PROPERTY LINES	7	0
3	DIMENSIONING	4	0	35	EASEMENT BOUNDARIES	7	0,1
4	CUT SECTIONS, TITLES, N. ARROW, ETC.	0	1	36	OTHER LAND BOUNDARIES	7	
5	USER DEFINABLE (GENERAL ITEMS)			37			
6	USER DEFINABLE (GENERAL ITEMS)			38			
7	USER DEFINABLE (GENERAL ITEMS)			39			
8	USER DEFINABLE (GENERAL ITEMS)			40	RAILROAD ALIGNMENT	4	
9	COORDINATE DATA	0	0	41	OTHER RAILROAD DESIGN	4	
10	EXISTING CONTOURS & ELEVS.	7	0,1	42	OTHER RAILROAD DESIGN	4	
11	EXISTING BUILDINGS & STRUCTURES	7	2,3	43	OTHER RAILROAD DESIGN	4	
12	EXISTING ROADWAYS	7	1	44	OTHER RAILROAD DESIGN	4	
13	EXISTING UTILITIES	7	1	45			
14	OTHER EXISTING FEATURES	7	0,1	46			
15	NEW GRADING LINES	2	0	47			
16	NEW EDGE OF PAVEMENT	2	1	48			
17	DRAINAGE DITCHES & STORM DRAINS	1	1	49			
18	OTHER GRADING & PAVING FEATURES	2	1	50			
19	OTHER GRADING & PAVING FEATURES			51			
20	NEW WATER SUPPLY PIPING	6	1	52			
21	NEW SANITARY SEWAGE	6	1	53			
22	NEW NATURAL GAS PIPING	6	1	54			
23	NEW INDUSTRIAL WASTE PIPING	6	1	55			
24	NEW MISCELLANEOUS PIPING	6	1	56			
25	NEW MISCELLANEOUS PIPING	6	125	57			
26	NEW MISCELLANEOUS PIPING	6	1	58			
27	NEW MISCELLANEOUS PIPING	6	125	59	REVISION CLOUDS	5	0
28	NEW MISCELLANEOUS PIPING	6	1	60	NON-PLOTTING CONSTRUCTION LINES	5	0
29	NEW MISCELLANEOUS PIPING	6	125	61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30	NEW BUILDINGS & STRUCT. (SITE PLAN)	3	2,3	62			
31	OTHER SITE PLAN FEATURES	3	0,1,2	63			
32	OTHER SITE PLAN FEATURES	3	0,1,2				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: CIVIL

APPLICATION PACKAGE: IGDS - SECTS & DTLS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONING	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.	0	1	36			
5				37			
6	EXISTING FEATURES	7	0,1	38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46	USER DEFINABLE		
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21	USER DEFINABLE			53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: CIVIL

APPLICATION PACKAGE: CALTRANS MAPPING

JOB # _____ TITLE: _____ WORKING UNITS: 1000 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	COORDINATE CONTROL			33			
2	PLANIMETRIC FEATURES			34			
3	ROADWAY FEATURES			35			
4	VEGETATION & NATURAL FEATURES			36			
5	UTILITY & IRRIGATION FEATURES			37			
6	HYDROGRAPHIC FEATURES			38			
7	TOPOGRAPHY			39			
8				40			
9				41			
10	BORDER DATA			42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59			
28				60			
29				61			
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP 15DEC88

DISCIPLINE: ELECTRICAL/INSTRUMENTATION

APPLICATION PACKAGE: IGDS - DIAGRAMS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INC

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	ALL GRAPHICS AND TEXT	2	0	33			
2				34			
3				35			
4				36			
5				37			
6				38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60			
29				61	NON-PLOTTING NOTES AND INSTRUCT.	5	0
30				62			
31				63			
32				64			

KAISER ENGINEERS
CAE LEVEL SET-UP 15DEC88

DISCIPLINE: ELECTRICAL/INSTRUMENTATION

APPLICATION PACKAGE: IGDS - LAYOUT & PANEL PHYS. DWGS.

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33	ASSOCIATED DIMEN.	2	1
2	GENERAL TEXT & NOTES	4	0	34			
3	DIMENSIONS	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36			
5	ELECTRICAL EQUIPMENT			37			
6				38			
7				39			
8				40			
9				41	GROUNDING	2	1
10				42	ASSOCIATED TEXT	0	1
11	EXPOSED CONDUITS & RACEWAYS	2	1	43	ASSOCIATED DIMENSIONS	0	1
12	ASSOCIATED TEXT	0	1	44			
13	ASSOCIATED DIMEN.	0	1	45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21	EMBEDDED CONDUITS	2	1	53			
22	ASSOCIATED TEXT	0	1	54			
23	ASSOCIATED DIMEN.	0	1	55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31	LIGHTING		1	63			
32	ASSOCIATED TEXT		1				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: GENERAL

APPLICATION PACKAGE: IGDS - DIAGRAMS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRAPHICS	2	1	33			
2	TEXT & NOTES	4	0	34			
3				35			
4				36			
5				37			
6				38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: GENERAL

APPLICATION PACKAGE: IGDS - PLANT LAYOUTS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONS, ELEVATIONS	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36			
5				37			
6				38			
7				39			
8				40			
9	COORDINATE DATA			41			
10	EXISTING CONTOURS & GROUND FEATURES	7		42			
11	EXISTING STRUCTURES	7	2	43			
12	EXISTING ROADS	7	1	44			
13	EXISTING UTILITIES	7	1	45			
14				46			
15	NEW GRADING	2		47			
16				48			
17				49			
18	NEW ROADS & CIVIL FEATURES			50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30	NEW STRUCTURES, CONVEYORS, ETC.	2	1	62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: GENERAL

APPLICATION PACKAGE: IGDS - FAC. ARRGTS.

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONS, ELEVATIONS, COORDINATE	4	0	35	EXISTING ARCHITECTURE		
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36	NEW ARCHITECTURE		
5				37			
6				38			
7	EXISTING EQUIPMENT			39			
8	NEW EQUIPMENT			40	EXISTING HVAC		
9				41	NEW HVAC		
10				42			
11				43			
12				44			
13				45	EXISTING PIPING		
14				46	NEW PIPING		
15				47			
16				48			
17				49			
18				50	EXISTING ELECTRICAL EQUIPMENT		
19				51	NEW ELECTRICAL EQUIPMENT		
20	EXISTING CONCRETE			52			
21	NEW CONCRETE			53			
22				54			
23				55	EXISTING ELECTRICAL CONDUIT & TRAYS		
24				56	NEW ELECTRICAL CONDUITS & TRAYS		
25	EXISTING STEEL			57			
26	NEW STEEL			58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: GENERAL

APPLICATION PACKAGE: IGDS - DETAIL DWGS.

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONS, ELEVATIONS, COORDINATES	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36			
5	GRAPHICS			37			
6				38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP 30JAN89

DISCIPLINE: HVAC

APPLICATION PACKAGE: IGDS - HVAC

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRAPHIC SCALE/NORTH ARROW - BORDER			33			
2	TITLE BLOCK TEXT - BORDER			34			
3				35			
4				36			
5	DUCTWORK - SUPPLY			37			
6				38	TRANSFER GRILLES AND DUCTWORK		
7				39	HEATING PIPING		
8				40	COOLING PIPING		
9	DUCTWORK - RETURN			41	MATCH LNS, BREAKLNS, CTRLNS, TARGETS-BRDR		
10				42	ADDENDA AND BULLETIN "BUBBLES" - BORDER		
11				43	"CHANGE INDICATION" (SYMBOLS & TEXT)- BRDR		
12				44			
13	DUCTWORK - EXHAUST			45			
14				46	NOTES, MISCELLANEOUS TEXT - BORDER		
15				47			
16	LOUVERS - INTAKE			48	LEGEND & SCHEDULE GRAPHICS - BORDER		
17	LOUVERS - EXHAUST			49	LEGEND & SCHEDULE TEXT - BORDER		
18				50	DIMENSIONS AND LEADER LINES - BORDER		
19				51			
20				52			
21				53			
22				54			
23				55			
24	THERMOSTATS (PNEUMATIC & ELECTRIC)			56			
25	CEILING DIFFUSERS (SUPPLY)			57	DUCTWORK - MAKE UP		
26	CEILING GRILLES, REGISTERS (RETURN)			58			
27	CEILING GRILLES, REGISTERS (EXHAUST)			59			
28				60			
29	EQUIPMENT			61			
30				62			
31	CFM TAGS & DIFF/GRILLE/REGIST I.D.-BORDER			63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP 15DEC88

DISCIPLINE: INSTRUMENTATION

APPLICATION PACKAGE: IGDS - DIAGRAMS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INC

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	BUBBLES, TAGS, TEXT	2	1	33			
2	BACKGROUND (PIPING OR MECHANICAL)	0	0	34			
3				35			
4				36			
5				37			
6				38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60			
29				61	NON-PLOTTING NOTES AND INSTRUCT.	5	0
30				62			
31				63			
32				64			

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: INSTRUMENTATION

APPLICATION PACKAGE: ILD (LOOP DIAGRAM)

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	DUMB GRAPHICS & TEXT, TITLE BLOCK			33	SYSTEM CODES TEXT (INSTR.)		
2				34			
3	PACKAGED SYSTEM DUMB GRAPHICS & TEXT			35			
4	"HOLD" GRAPHICS & TEXT			36			
5				37			
6				38			
7				39	DUMB GRAPHICS & TEXT		
8				40	TERMINAL POINT STRING GRAPHICS		
9				41	NAME LABELS TEXT (TERMINAL PT. STRINGS)		
10				42	ATTRIBUTE LABLS TXT (TERMINAL PT. STRINGS)		
11	REV. (TRIANGLE) GRAPHICS & TEXT			43	SYSTEM CODES TEXT (TERMINAL PT. STRINGS)		
12				44			
13				45			
14	DWG. BORDER DUMB GRAPHICS & TEXT			46			
15				47			
16				48			
17				49			
18				50	SIGNAL LINE GRAPHICS		
19				51	NAME LABELS TEXT (SIGNAL LINES)		
20				52	ATTRIBUTE LABELS TEXT (SIGNAL LINES)		
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59			
28				60			
29				61			
30	INSTRUMENTS GRAPHICS			62	ATTRIBUTE LABELS TEXT (SPECIAL DEVICES)		
31	NAME LABELS TEXT (INSTR.)			63	SYSTEM CODES TEXT (SPECIAL DEVICES)		
32	ATTRIBUTE LABELS TEXT (INSTR.)						

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: MECHANICAL

APPLICATION PACKAGE: IGDS-2D

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	MECHANICAL EQUIPMENT	0	1	33			
2	CENTERLINES, WORKING PTS	2	0	34			
3				35			
4	SECTION ID, NORTH ARROW	4	1	36			
5				37			
6	TEXT & LABELS	4	0	38			
7	STRUCTURAL BACKGROUND	7	0	39			
8				40			
9	DIMENSIONING	2	0	41			
10				42			
11				43			
12	NON-PLOTTED GRAPHICS	3	0	44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59			
28				60			
29				61			
30				62			
31				63	NOTES TO OPERATOR		
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: MECHANICAL

APPLICATION PACKAGE: EQUIPMENT MODELING

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1				33	COORDINATE LABELS	0	
2				34			
3				35			
4				36			
5				37			
6				38			
7				39			
8				40	MAINTENANCE ENVELOPE - HARD	3	
9				41			
10	PRIMITIVES AND PARAMETRICS	(9) 2	(0) 1	42	ACCESS ENVELOPE - HARD	3	
11				43			
12	EQUIPMENT NOZZLES	(9) 4	(0) 1	44	SAFETY ENVELOPE - HARD	3	
13	2-D SHADOWS	0	0	45			
14				46	ERECTION/CONSTRUCTION ENVELOPE - HARD	3	
15				47	ERECTION/CONSTRUCTION ENVELOPE - SOFT	12	
16				48	PLACE POINT	1	
17				49			
18				50	DATUM POINT	8	
19				51			
20	LADDERS (EQP PARAMETRICS)	(7) 10	0	52			
21	PLATFORMS (EQP PARAMETRICS)	(7) 15	0	53			
22	HANDRAILS (EQP PARAMETRICS)	(7) 10	0	54			
23	MISC. LIGHT STEEL (EQP PARAMETRICS	23	0	55			
24				56			
25				57			
26				58			
27				59			
28				60			
29				61			
30	HOLE ELEMENT/DUMB GRAPHICS	0	0	62			
31	SEMI DUMB GRAPHICS	2	1	63			
32	ALPHANUMERIC LABELS	0	0		()= SYMBOLOGY OF EXISTING EQUIPMENT		

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: PIPING

APPLICATION PACKAGE: PDS - MODEL

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	LINE ROUTE SEGMENT	1	1	33	PIPE	2	1
2	PIPING COMMODITY ITEM	2	1	34	ENGINEERED ITEM	2	2
3	PIPE	2	1	35	IN-LINE INSTRUMENT	6	2
4	ENGINEERED ITEM	6	2	36	OFF-LINE INSTRUMENT	6	2
5	IN-LINE INSTRUMENT	6	2	37	PIPE SUPPORTS	5	1
6	OFF-LINE INSTRUMENT	6	2	38			
7	PIPE SUPPORTS	5	1	39			
8	MAINTENANCE ENVELOPE - HARD	3		40	PHYS. PIPE SUPPORT	0	1
9	MAINTENANCE ENVELOPE - SOFT			41	LINE ROUTE SEGMENT	1	1
10	PHYS. PIPE SUPPORT	0	1	42	PIPING COMMODITY ITEM	2	1
11	LINE ROUTE SEGMENT	1	1	43	PIPE	2	1
12	PIPE COMMODITY ITEM	2	1	44	ENGINEERED ITEM	6	2
13	PIPE	2	1	45	IN-LINE INSTRUMENT	6	2
14	ENGINEERED ITEM	6	2	46			
15	IN-LINE INSTRUMENT	6	2	47			
16	ACCESS ENVELOPE - HARD	3		48			
17	ACCESS ENVELOPE - SOFT			49			
18	SAFETY ENVELOPE - HARD	3		50			
19	SAFETY ENVELOPE - SOFT			51	LINE ROUTE SEGMENT	1	1
20				52	PIPING COMMODITY ITEM	2	1
21	LINE ROUTE SEGMENT	1	1	53	PIPE	2	1
22	PIPING COMMODITY ITEM	2	1	54	ENGINEERED ITEM	6	2
23	PIPE	2	1	55	IN-LINE INSTRUMENT	6	2
24	ENGINEERED ITEM	6	2	56			
25	IN-LINE INSTRUMENT	6	2	57	MODEL LABELS	3	0
26	ERECTION/CONSTRUCTION ENVELOPE - HARD	3		58	MISCELLANEOUS GRAPHICS	3	0
27	ERECTION/CONSTRUCTION ENVELOPE - SOFT			59	COORDINATE LABELS	3	0
28				60	DESIGN CHECK MARKERS	3	2
29				61	INTERFERENCE CHECK MARKERS	3	0
30				62	AUTOMATED COMPONENT/PIPE PLACEMENT MARKERS	3	2
31	LINE ROUTE SEGMENT	1	1	63	MODEL RECONSTRUCTION MARKERS	3	2
32	PIPING COMMODITY ITEM	2	1				

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: PIPING

APPLICATION PACKAGE: PDS - DRAWINGS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	DRAWING BORDER			33			
2	DRAWING (TITLE) BLOCK			34			
3	MISC. NON-INTELLIGENT DWG GRAPHICS	5	0	35			
4	DWG. VIEW SPECIF. DISPLAYABLE ATTR.			36			
5	ATTRIBUTE LABELS			37			
6	ALPHANUMERIC LABELS			38			
7	COORDINATE LABELS			39			
8	REPORTS			40			
9	DIMENSIONING	0	0	41			
10	REVISION TRIANGLES & REVISION CLOUDS			42			
11	HOLD CLOUDS			43			
12	NON-PLOTTED DRAWING GRAPHICS			44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21	VECTOR HIDDEN LINE FOR DRAWING VIEW 1			53			
22	VECTOR HIDDEN LINE FOR DRAWING VIEW 2			54			
23	VECTOR HIDDEN LINE FOR DRAWING VIEW 3			55			
24	VECTOR HIDDEN LINE FOR DRAWING VIEW 4			56			
25	VECTOR HIDDEN LINE FOR DRAWING VIEW 5			57			
26	VECTOR HIDDEN LINE FOR DRAWING VIEW 6			58			
27	VECTOR HIDDEN LINE FOR DRAWING VIEW 7			59			
28	VECTOR HIDDEN LINE FOR DRAWING VIEW 8			60			
29	VECTOR HIDDEN LINE FOR DRAWING VIEW 9			61			
30	VECTOR HIDDEN LINE FOR DRAWING VIEW 10			62			
31	VECTOR HIDDEN LINE FOR DRAWING VIEW 11			63			
32	VECTOR HIDDEN LINE FOR DRAWING VIEW 12						

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: STRUCTURAL

APPLICATION PACKAGE: IGDS - 2D

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONS, ELEVATIONS, COORDINATES	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36			
5	BEAM LINES			37			
6	CROSS SECTION DETAILS & HANDRAILS			38			
7				39			
8				40			
9				41			
10				42			
11				43			
12				44			
13				45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: STRUCTURAL

APPLICATION PACKAGE: IGDS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	GRIDS & CENTERLINES	0	0	33			
2	TEXT & NOTES	4	0	34			
3	DIMENSIONS	4	0	35			
4	CUT SECTIONS, TITLES, N. ARROW, ETC.			36			
5				37			
6				38			
7				39			
8				40	CONCRETE OUT LINE		
9				41			
10				42	REINFORCEMENT DETAILS		
11				43			
12				44	CONCRETE DIMENSIONS		
13				45			
14				46	PRIMARY STEEL FRAMING USED FOR ANALYSIS		
15				47			
16				48	SECOND. STEEL FRM.,GRATING/CHK.R,H.R.,ETC.		
17				49			
18				50	STEEL DIMENSIONS		
19				51			
20				52	GRID LNES,GRID DIMEN. & COL. LNE DESIGNTN		
21				53			
22				54	EXISTING STRUCTURE DETAILS		
23				55			
24				56			
25				57			
26				58			
27				59	REVISION CLOUDS	5	0
28				60	NON-PLOTTING CONSTRUCTION LINES	5	0
29				61	NON-PLOTTING NOTES & INSTRUCTIONS	5	0
30				62			
31				63			
32							

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: STRUCTURAL

APPLICATION PACKAGE: SMS

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1				33	TUBE DETAILS - EXISTING		
2				34	DIMENSIONING - NEW		
3				35	DIMENSIONING - EXISTING		
4				36	GRID LABELS - NEW		
5				37	GRID LABELS- EXISTING		
6				38			
7				39			
8				40			
9				41			
10	GRID - NEW	2	0	42			
11	GRID - EXISTING	2	0	43			
12	MEMBER LINES - NEW	6	2	44			
13	MEMBER LINES - EXISTING	6	2	45			
14	ANNOTATION - NEW	0	0	46			
15	ANNOTATION - EXISTING	0	0	47			
16	BEAM SECTIONS - NEW	4	1	48			
17	BEAM SECTIONS - EXISTING	4	1	49			
18	COLUMN SECTIONS - NEW	3	1	50			
19	COLUMN SECTIONS - EXISTING	3	1	51			
20	BRACE SECTIONS - NEW	1	1	52			
21	BRACE SECTIONS - EXISTING	1	1	53			
22	PROPAGATED MODEL - NEW	38	0	54			
23	PROPAGATED MODEL - EXISTING			55			
24	MTO TEXT - NEW			56			
25	MTO TEXT - EXISTING			57			
26	VOLUME ELEMENTS - NEW			58			
27	VOLUME ELEMENTS - EXISTING			59			
28	AREA ELEMENTS - NEW			60			
29	AREA ELEMENTS - EXISTING			61			
30	CENTER LINES - NEW			62			
31	CENTER LINES - EXISTING			63			
32	TUBE DETAILS - NEW						

KAISER ENGINEERS
CAE LEVEL SET-UP

DISCIPLINE: STRUCTURAL

APPLICATION PACKAGE: IRM

JOB # _____ TITLE: _____ WORKING UNITS: 2032 P.U./INCH

LEVEL	DESCRIPTION	COLOR CODE	WT CODE	LEVEL	DESCRIPTION	COLOR CODE	WT CODE
1	LABELS (ELEMENTS, NODES)			33			
2				34			
3				35			
4				36			
5				37			
6				38			
7	TRIAD			39			
8				40	POST PROCESSING RESULTS		
9	LOADS & ENFORCED DISPLACEMENTS			41			
10				42			
11	EDGES			43			
12	NODES			44			
13	ELEMENTS			45			
14				46			
15				47			
16				48			
17				49			
18				50			
19				51			
20				52			
21				53			
22				54			
23				55			
24				56			
25				57			
26				58			
27				59			
28				60			
29				61			
30				62			
31				63			
32							