

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ PAGE _____ OF _____ PAGES

2. AMENDMENT/MODIFICATION NO. _____ 3. EFFECTIVE DATE _____ 4. REQUISITION/PURCHASE REQ. NO. _____ 5. PROJECT NO. *(If applicable)* _____

6. ISSUED BY _____ CODE _____ 7. ADMINISTERED BY *(If other than Item 6)* _____ CODE _____

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)* _____ (X) 9A. AMENDMENT OF SOLICIATION NO. _____
 9B. DATED *(SEE ITEM 11)* _____
 10A. MODIFICATION OF CONTRACT/ORDER NO. _____
 10B. DATED *(SEE ITEM 11)* _____
 CODE _____ FACILITY CODE _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
 (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)* _____

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

| | |
|-----------|--|
| CHECK ONE | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. |
| | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). |
| | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: |
| | D. OTHER <i>(Specify type of modification and authority)</i> |

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

| | | | |
|--|------------------|---|------------------|
| 15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i> | | 16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i> | |
| 15B. CONTRACTOR/OFFEROR | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA | 16C. DATE SIGNED |
| <i>(Signature of person authorized to sign)</i> | | <i>(Signature of Contracting Officer)</i> | |

Item 14. Continued.

CHANGES TO THE SPECIFICATIONS

Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, each bearing the notation "ACCOMPANYING AMENDMENT NO. 0003 TO SOLICITATION NO. DACA63-03-B-0006:"

SECTION 01320A PROJECT SCHEDULE
SECTION 02467 DRILLED PIERS

CHANGES TO THE DRAWINGS

Replacement Drawings.- Replace the drawings listed below with the attached new drawings of the same number, bearing the notation "AM #0003":

A201.CAL Seq 119 A-201 EXTERIOR ELEVATIONS
A701.CAL Seq 156 A-701 ROOF DETAILS
A702.CAL Seq 157 A-702 ROOF DETAILS
E501.CAL Seq 229 E-501 BID OPTION #3 LIGHTNING PROTECTION DETAILS

END OF AMENDMENT

Goodfellow AFB Consolidated Wing Support Complex GFWSC

SECTION 01320A

PROJECT SCHEDULE 11/2002

PART I GENERAL

1.1 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referenced in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1-1-11 (1995) Progress. Schedules. and Network Analysis Systems

1.2 QUALIFICATIONS

The Contractor shall designate a scheduler who shall be responsible for the preparation of the project schedule and periodic updates. The Scheduler shall have three years of experience in construction scheduling, estimating, cost management, and impact/change order analysis. The Scheduler shall have the responsibility of coordinating and updating the schedule and providing required updates in a timely manner. Qualifications of this individual shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission.

1.3 SUBMITTALS

SD-01 Data

1.3.1 Network Diagram; GA-RE

The diagram shall show a continuous activity flow from left to right. The diagrams shall be 36x48, minimum size unless explicitly modified by the Contracting Officer. The diagrams shall be legible, shall have activities 'grouped' or 'banded' by Project area, building or feature, and shall contain the following information:

- a. Activity number
- b. Activity description
- c. Duration in workdays
- e. Total float in workdays
- f. Logic ties
- h. Clearly marked critical path (s)
- i. 'Banded' or 'grouping' identification on each sheet
- j. Composed and/or milestone dates
- k. Scale of sufficiently large scale to render a legible diagram

Dates shall be shown on the diagram for start of the project, any milestones required by the contract, and contract completion. The critical path shall be clearly identified. Submittal, review, procurement, fabrication, delivery, installation, start-up, and testing of special or long lead-time materials and equipment shall be included in the NAS diagram. Government and other agency activities shall be shown. These include but are not limited to: notice to proceed, approvals, inspections, and utility tie in for phasing requirements.

1.3.2 Reports: GA-RE

PART 2 PRODUCTS

2.9 SCHEDULING SYSTEM DATA EXCHANGE FORMAT

2.9.1 Application of This Provision

The data exchange format provides a platform for exchanging scheduling and planning data between various software systems. The Data Exchange Format shall allow project management systems to share information with other programs e.g. Resident Management System (RMS). Scheduling information shall be transferred from the contractor's project management system to the Government as described in this section.

2.9.2 Electronic Data Exchange File Required for All Schedule Submissions

2.9.2.1 Schedule Data

The Contractor shall provide schedule data in the Data Exchange Format for each Preliminary, Initial, Monthly NAS Updates, and requests for time extensions or change proposals. The Contractor's failure to provide schedule data in the exact format described herein shall result in disapproval of the entire schedule submission.

2.9.2.2 Transfer of Schedule Data

The entire set of schedule data shall be transferred at every exchange of scheduling data. Thus, for updates to existing projects, the data exchange file shall contain all activities that have not started or are already complete as well as those activities in progress.

2.9.3 Data Transfer Responsibility

The Contractor shall be responsible for Electronic Data Exchange File data that may have been lost or destroyed during transit between the Contractor and the Contracting Officer. If Electronic Data Exchange File data is damaged during transit, then the Contractor shall provide the Contracting Officer with new Electronic Data Exchange File within two (2) working days of notification by the Contracting Officer.

2.9.4 Data Consistency Responsibility

The Contractor shall be responsible for the consistency between the Electronic Data Exchange File and printed reports which accompany schedule submissions. If Electronic Data Exchange File and printed reports which accompany schedule submission differs, in any way, from the printed schedule reports or standard activity coding, then the Contracting Officer shall disapprove the entire schedule submission. The Contractor shall provide the Contracting Officer with a completely revised, and consistent, schedule submission within 24 hours of notification of inconsistency by the Contracting Officer.

2.9.5 Creating the Electronic Data Exchange File

The Contractor shall have the option of creating the electronic data exchange file by one of the three following methods.

2.9.5.1 Commercially Available Software

The Contractor shall be required to secure software that meets this requirement. Many commercially available scheduling systems support the standard data exchange format. Under this option the Contractor shall produce his own data translation software. This software shall take the information provided by the Contractor's scheduling system and reformat the data into the Data Exchange Format.

2.9.5.2 Interface Program

Under this option the Contractor shall produce his own data translation software. This software shall take the information provided by the Contractor's scheduling system and reformat the data into the Data Exchange Format.

2.9.5.3 Manual Methods

Under this option the Contractor shall manually reformat his scheduling system report files or create all necessary data by manually entering all data into the Data Exchange Format.

2.9.6 File Transfer Medium

All required data shall be submitted on 3 1/2" diskettes), formatted to hold 1.44 MB of data, under the MS-DOS version 5.0 (or higher) operating system. Higher data densities and other operating systems may be approved by the Contracting Officer if compatible with the Government's computing capability.

2.9.7 File Type and Format

The data file shall consist of a 132 character, fixed format, 'ASCII' file. Text shall be left justified and numbers shall be right justified in each field. Data records must conform, exactly, to the sequence column position, maximum length, mandatory values, and field definitions described below to comply with this standard data exchange format. Unless specifically stated, all numbers shall be whole numbers. All data columns shall be separated by a single blank column.

2.9.8 Electronic Data Exchange File Name

The Contractor shall insure that each file has a name related to either the schedule data date, project name, or contract number. No two Electronic Data Exchange Files shall have the same name through out the life of this contract. The Contractor shall submit his file naming convention to the Contracting Officer for approval. In the event that the Contractor's naming convention is disapproved, the Contracting Officer shall direct the contract to provide files under a unique file naming convention.

2.9.9 Disc Label

The Contractor shall affix a permanent exterior label to each diskette submitted. The label shall contain the type of schedule (Preliminary Initial, Update, or Change), full project number, project name, project location, data date, name and telephone number of the Contractor's scheduler, and the MS-DOS version used to format the diskette.

2.9.10 Standard Activity Coding Dictionary

The Contractor shall submit, with the initial schedule submission, a consistent coding scheme that shall be used throughout the project for the Activity Codes shown in paragraph: Activity Records of this section. The coding scheme submitted shall demonstrate that each code shall only represent one type of information through the duration of the contract. Incomplete coding of activities or an incomplete coding scheme shall be sufficient for disapproval of the schedule.

2.10 DATA EXCHANGE FILE FORMAT ORGANIZATION

The Data Exchange File Format shall consist of the following records provided in the exact sequence shown below:

| Paragraph Record | Remarks |
|-----------------------|------------------------------------|
| Reference Description | |
| Volume Record | First Record on Every Data Disk |
| Project ID Record | Second Record |
| Calendar Record(s) | Minimum of One Record Required |
| Holiday Record(s) | Optional Record |
| Activity Record(s) | Mandatory Record |
| Precedence Records | Mandatory for Precedence Method |
| Unit Cost Record(s) | Optional for Unit Cost Projection. |
| Progress Record(s) | Mandatory for Updates |
| File End Record | Last Record of Data File |

2.10.1 Record Descriptions

2.10.1.1 Volume Record

The Volume Record shall be used to control the transfer of data that may not fit on a single disk. The first record in every disk used to store the data exchange file shall contain the Volume Record. The Volume Record shall sequentially identify the number of the data transfer disk(s). The Volume Record shall have the following format:

| Description | Column Position | Max Len. | Required. Value | Type | Just |
|-------------------|-----------------|----------|-----------------|-------|-------|
| RECORD IDENTIFIER | 1- 4 | 4 | VOLM | | Fixed |
| DISK NUMBER | 6- 7 | 2 | Number | Right | |

- a. The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "VOLM".
- b. The DISK NUMBER field shall identify the number of the data disk used to store the data exchange information. If all data may be contained on a single disk, this field shall contain the value of "1". If more disks are required, then the second designated with a "3", and so on. Identification of the last date disk shall not be accomplished with the Volume Record. Identification of the last data disk is accomplished in the PROJECT END RECORD (see paragraph: File End Record).

2.10.1.2 Project ID Record

The Project ID Record is the second record of the file and shall contain project information in the following format:

| Description | Column Position | Max. Len. | Required. Value | Type | Just |
|---------------------|-----------------|-----------|-----------------|---------|--------|
| RECORD IDENTIFIER | 1- 4 | 4 | PROJ | | Fixed |
| DATA DATE | 6- 12 | 7 | - | ddmmmyy | See(2) |
| PROJECT IDENTIFIER | 14- 17 | 4 | - | Alpha | Left |
| PROJECT NAME | 19- 66 | 48 | - | Alpha | Left |
| CONTRACTOR NAME | 68-103 | 36 | - | Alpha | Left |
| ARROW OR PRECEDENCE | 105 | 1 | A,P | Fixed | |
| CONTRACT NUMBER | 107-112 | 6 | - | Alpha | Left |
| PROJECT START | 114-120 | 7 | - | ddmmmyy | Filled |
| PROJECT END | 122-128 | 7 | - | ddmmmyy | Filled |

- a. The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "PROJ". This record shall contain the general project information and indicates which scheduling method shall be used.
- b. The DATA DATE is the date of the schedule calculation. The abbreviation "ddmmmyy" refers to a date format that shall translate a date into two numbers for the day, three letters for the month, and two numbers for the year. For example, March 1, 1999 shall be translated into 01MAR99. This same convention for date formats shall be used throughout the entire data format. To insure that dates are translated consistently, the following abbreviations shall be used for the three character month code:

| Abbreviation | Month |
|--------------|-----------|
| JAN | January |
| FEB | February |
| MAR | March |
| APR | April |
| MAY | May |
| JUN | June |
| JUL | July |
| AUG | August |
| SEP | September |
| OCT | October |

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NOV November
 DEC December

- c. The PROJECT IDENTIFIER is the maximum of four-character abbreviation for the schedule. These four characters shall be used to uniquely identify the project and specific update as agreed upon by the Contractor and Contracting Officer. When utilizing scheduling software these four characters shall be used to select the project. Software manufacturers' shall verify that data importing programs do not automatically overwrite other schedules with the same PROJECT IDENTIFIER.
- d. The PROJECT NAME field shall contain the name and location of the project edited to fit the space provided. The data appearing here shall appear on scheduling software reports. The abbreviation "Alpha" used throughout paragraph six, RECORD DESCRIPTIONS, refers to an Alphanumeric" field value.
- e. The CONTRACTOR NAME field shall contain the Construction Contractor's name edited to fit the space provided.
- f. The ARROW OR PRECEDENCE field shall indicate which method shall be used for calculation of the schedule. The value "A" shall signify the Arrow Diagramming Technique. The value "P" shall signify the Precedence Diagramming Technique. The ACTIVITY IDENTIFICATION field of the Activity Record shall be interpreted differently depending on the value of this field (see paragraph 2.10.1.6 b). The Precedence Record shall be required if the value of this field is "P" (see paragraph 2.10.1.6).
- g. THE CONTRACT NUMBER field shall directly identify the contract for the project. For example, a complete Government construction contract number, "DACA41-98-C-0001" shall be entered into this field as "980001".
- h. The PROJECT START shall contain the date that the project will start or has started. On Government construction projects, this date is the date that the construction contractor acknowledges the Notice to Proceed.
- i. The PROJECT END shall contain the data that the contract must complete on or prior to. On Government construction projects, this date is the PROJECT START plus the contract period, typically expressed in a specific number of calendar days.

2.10.1.3 Calendar Record

The Calendar Record(s) shall follow the Project Identifier Record in every data file. A minimum of one Calendar Record shall be required for all data exchange activity files. The format for the Calendar Record shall be as follows:

| Description | Column Position | Max Len. | Required. Value | Type | Just. |
|----------------------|-----------------|----------|-----------------|---------|---------|
| RECORD IDENTIFIER | 1-4 | 4 | CLDR | Fixed | |
| CALENDAR CODE | 6-6 | 1 | - | Alpha. | Filled |
| WORKDAYS | 8-14 | 7 | | SMTWTFS | See (3) |
| CALENDAR DESCRIPTION | 16-45 | 30 | | Alpha. | Left |

- a. The RECORD IDENTIFIER shall always begin with "CLDR" to identify it as a Calendar Record. Each Calendar Record used shall have this identification in the first four columns.
- b. The CALENDAR CODE shall be used in the activity records to signify that this calendar is associated with the activity.
- c. The WORKDAYS field shall contain the work week pattern selected with "Y" for Yes, and "N" for No. The first character shall be Sunday and the last character Saturday. An example of a typical five-(5) day workweek would be NYYYYYN. A seven-(7) day workweek would be YYYYYYY.

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d. The CALENDAR DESCRIPTION shall be used to briefly explain the calendar used. optional Holiday Record(s) shall follow the Calendar record(s). The Holiday Record shall be used to designate specific non-work days for a specific Calendar. More than one Holiday Record may be used for a particular calendar. If used, the following format shall be followed:

| Description | Column Position | Max. Len. | Required. Value | Type | Just. |
|-------------------|-----------------|-----------|-----------------|---------|--------|
| RECORD IDENTIFIER | 1- 4 | 4 | HOLI | Fixed | |
| CALENDAR CODE | 6- 6 | 1 | - | Alpha. | |
| Filled | | | | | |
| HOLIDAY DATE | 8- 14 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 16- 22 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 24- 30 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 32- 38 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 40- 46 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 48- 54 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 56- 62 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 64- 70 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 72- 78 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 80- 86 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 88- 94 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 96- 102 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 104- 110 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 112- 118 | 7 | - | ddmmmyy | Filled |
| HOLIDAY DATE | 120- 126 | 7 | - | ddmmmyy | Filled |

a. The RECORD IDENTIFIER shall always begin with "HOLI" and shall signify an Optional Holiday Calendar is to be used.

b. The CALENDAR CODE indicates which work week calendar the holidays shall be applied to. More than one HOLI record may be used for a given CALENDAR CODE.

c. The HOLIDAY DATE is to be used for each date to be designated as a non-work day.

2.10.1.5 Activity Records

Activity Records shall follow any Holiday Record(s). If there are no Holiday Record(s), then the Activity Records shall follow the Calendar Record(s). There shall be one Activity Record for every activity in the network. Each activity shall have one record in the following format:

| Description | Column Position | Max. Len. | Required. Value | Type | Just. |
|-------------------------|-----------------|-----------|-----------------|---------|---------|
| RECORD IDENTIFIER | 1- 4 | 4 | ACTV | Fixed | |
| ACTIVITY IDENTIFICATION | 6- 15 | 10 | | | See(2) |
| ACTIVITY DESCRIPTION | 17- 46 | 30 | | Alpha | Left |
| ACTIVITY DURATION | 48- 50 | 3 | | Integer | Right |
| CONSTRAINT DATE | 52- 58 | 7 | | ddmmmyy | Filled |
| CONSTRAINT TYPE | 60- 61 | 2 | | | See (7) |
| CALENDAR CODE | 63- 63 | 1 | | Alpha | Filled |
| HAMMOCK CODE | 65- 65 | 1 | | Y.blank | Fixed |
| WORKERS PER DAY | 67- 69 | 3 | | Integer | Right |
| RESPONSIBILITY CODE | 71- 74 | 4 | | Alpha | Left |
| WORK AREA CODE | 76- 79 | 4 | | Alpha | Left |
| MOD OR CLAIM NUMBER | 81- 86 | 6 | | Alpha | Left |
| BID ITEM | 88- 93 | 6 | | Alpha | Left |
| PHASE OF WORK | 95- 96 | 2 | | Alpha | Left |
| CATEGORY OF WORK | 98- 98 | 1 | | Alpha | Filled |
| FEATURE OF WORK | 100-129 | 30 | | Alpha | Left |

a. The RECORD IDENTIFIER for each activity description record must begin with the four-

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character "ACTV" code. This field shall be used for both the Arrow Diagram Method (ADM) and Precedence Diagram Method (PDM) (see paragraph: Activity Records).

b. The ACTIVITY IDENTIFICATION consists of coding that differs, depending on whether the ADM or PDM method was selected in the Project Record (see paragraph: Project ID Record). If the ADM method was selected, then the field shall be interpreted as two right justified fields of five (5) integers each. If the PDM method was selected, the field shall be interpreted as one (1) right-justified field of ten (10) integers or alpha/numeric characters. The maximum activity number allowed under this arrangement is 99999 for ADM and 9999999999 for the PDM method.

c. The ACTIVITY DESCRIPTION shall be a maximum of 30 characters. Descriptions must be limited to the space provided.

d. The ACTIVITY DURATION contains the estimated duration for the activity on the schedule. The duration shall be based upon the workweek designated by the activity's related calendar.

e. The CONSTRAINT DATE field shall be used to identify a date that the scheduling system may use to modify float calculations. If there is a date in this field, then there must be a valid entry in the CONSTRAINT TYPE field. The CONSTRAINT DATE shall be the same as, or later than, the PROJECT START DATE. The CONSTRAINT DATE shall be the same as, or earlier than, the PROJECT END DATE.

g. The CONSTRAINT TYPE field shall be used to identify the way that the scheduling system shall use the CONSTRAINT DATE to modify schedule float calculations. If there is a value in this field, then there must be a valid entry in the CONSTRAINT DATE TYPE. Other types may be available from specific software manufacturers.

Code Definition

ES The CONSTRAINT DATE shall replace an activity's early start date, if the early start date is prior to the CONSTRAINT DATE.

LF The CONSTRAINT DATE shall replace an activity's late finish date, if the late finish date is after the CONSTRAINT DATE.

g. The CALENDAR CODE, as previously explained, relates this activity to an appropriate workweek calendar. The ACTIVITY DURATION must be based on the valid workweek referenced by this CALENDAR CODE field.

h. The HAMMOCK CODE indicates that a particular activity does not have its own independent duration, but takes its start dates from the start date of the preceding activity (or node) and takes its finish dates from the finish dates of its succeeding activity (or node). If the value of the HAMMOCK ACTIVITY field is "Y", then the activity is a HAMMOCK ACTIVITY.

i. The WORKERS PER DAY. This field may contain the average number of workers expected to work on the activity each day the activity is in progress. The total duration times the average number of workers per day shall equal the contractor's estimate of the total man days of work required to perform the activity.

j. The RESPONSIBILITY CODE shall identify the Subcontractor or major trade involved with completing the work for the activity.

k. The WORK AREA CODE shall identify the location of the activity within the project.

l. The MOD OR CLAIM NUMBER CODE. This code shall be use to uniquely identify activities that are changed on a construction contract modification, or activities that justify any claimed time extensions.

m. The BID ITEM field shall designate the bid item number associated with the activity. The values of all the various activities shall sum to the amount stated in the Contract Bid Item Schedule.

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n. The PHASE OF CONSTRUCTION shall designate phase to which an activity is connected. This field shall used for submittals, procurement, fabrication, site work or building or areas within a building, etc..

o. The CATEGORY OF WORK shall be from the following list:

| | |
|------|-----------------|
| CODE | DESCRIPTION |
| A | Architectural |
| C | Civil |
| E | Electrical |
| F | Fire Extinguish |
| H | Hazardous/Toxic |
| M | Mechanical |
| P | Plumbing |
| R | Roofing |
| S | Structural |
| T | Safety |
| X | Administrative |

p. The FEATURE OF WORK shall match those in the Resident Management system that is to be used on this project. See the attached RMS data Sheets listing some examples of the features of work.

2.10.1.6 Precedence Record

The Precedence Record(s) shall follow the Activity Records if a Precedence Type Schedule (PDM) is identified in the ARROW OR PRECEDENCE field of the Project Record (see paragraph: Project ID Record). The Precedence Record has the following format:

| Description | Column Position | Max. Len. | Required. Value | Type | Just. |
|-------------------------|-----------------|-----------|-----------------|---------|---------|
| RECORD IDENTIFIER | 1- 4 | 4 | PRED | Fixed | |
| ACTIVITY IDENTIFICATION | 6- 15 | 10 | - | Integer | See (2) |
| PRECEDING ACTIVITY | 17- 26 | 10 | - | Integer | |
| PREDECESSOR TYPE | 28- 28 | 1 | S,F,C | | Filled |
| LAG DURATION | 30- 33 | 4 | - | Integer | Right |

a. The RECORD IDENTIFIER shall begin with the four characters "PRED" in the first four columns of the record.

b. The ACTIVITY IDENTIFICATION identifies the activity whose predecessor shall be specified in this record. Refer to the Activity Record for further explanation on this field (see paragraph 2.10.1.5 b.).

c. The PREDECESSOR ACTIVITY number is the number of an activity that precedes the activity noted in the ACTIVITY IDENTIFICATION field.

d. The PREDECESSOR TYPE field indicates the type of relationship that exists between the chosen pair of activities. The PREDECESSOR TYPE field must, as minimum, contain one of the codes listed below.

Other types of activity relations may be supported from specific software vendors.

| | |
|------|-------------------------------|
| Code | Definition |
| S | Start-to-Start relationship |
| F | Finish-to-Finish relationship |
| C | Finish-to-Start relationship |

e. The LAG DURATION field contains the number of day's delay between the preceding and current activity.

2.10.1.7 Unit Cost Record

The Unit Cost Record shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Unit Cost Record shall follow any Activity Records. The fields for this record shall take the following format:

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| Description | Column Position | Max Len. | Required Value | Type | Just. |
|-------------------------|-----------------|----------|----------------|---------|---------|
| RECORD IDENTIFIER | 1-4 | 4 | UNIT | Fixed | |
| ACTIVITY IDENTIFICATION | 6-15 | 10 | - | Integer | See (2) |
| TOTAL QTY | 17-29 | 13 | - | 8.4 | Right |
| COST PER UNIT | 31-43 | 13 | - | 8.4 | Right |
| QTY TO DATE | 45-57 | 13 | - | 8.4 | Right |
| UNIT OF MEASURE | 59-61 | 3 | - | Alpha. | Left |

a. The RECORD IDENTIFIER shall be identified with the four characters "UNIT" placed in the first four columns of the record.

b. The ACTIVITY IDENTIFICATION for each activity shall match the format described in the activity record (see paragraph 2.10.1.5 b.).

c. The TOTAL QTY is the total amount of this type of material to be used in this activity. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed, this field shall still contain a ".0000" in columns 25, 26, 27, 28 and 29.

d. The COST PER UNIT is the cost, in dollars and cents, for each unit to be used in this activity. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed, this field shall still contain a ".0000" in columns 38, 39, 41, 42 and 43.

e. The QTY TO DATE is the quantity of material installed in this activity up to the data date. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed, this field shall still contain a ".0000" in columns 53, 54, 55, 56, and 57.

f. The UNIT OF MEASURE is an abbreviation that may be used to describe the units being measured for this activity.

2.10.1.8 Progress Record

Progress Record(s) shall follow all Unit Cost Record(s). If there are no Unit Cost Record(s), then the Progress Record(s) shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Progress Record shall follow any Activity Records. One Record shall exist for each activity in-progress or completed. The fields for this Record shall take the following format:

| Description | Column Position | Max Len. | Required Value | Type | Just. |
|-------------------------|-----------------|----------|----------------|---------|---------|
| RECORD IDENTIFIER | 1- 4 | 4 | PROG | Fixed | |
| ACTIVITY IDENTIFICATION | 6- 15 | 10 | - | Integer | See (2) |
| ACTUAL START DATE | 17- 23 | 7 | - | ddmmmyy | Full |
| ACTUAL FINISH DATE | 25- 31 | 7 | - | ddmmmyy | Full |
| REMAINING DURATION | 33- 35 | 3 | - | Integer | Right |
| ACTIVITY COST | 37- 48 | 12 | - | 9.2 | Right |
| COST TO DATE | 50- 61 | 12 | - | 9.2 | Right |
| STORED MATERIAL | 63- 74 | 12 | - | 9.2 | Right |
| EARLY START DATE | 75- 82 | 7 | - | ddmmmyy | |
| EARLY FINISH DATE | 84- 90 | 7 | - | ddmmmyy | |
| LATE START DATE | 92- 98 | 7 | - | ddmmmyy | |

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| | | | | | |
|------------------|---------|---|-----|---------|-------|
| LATE FINISH DATE | 100-106 | 7 | - | ddmmyy | |
| FLOAT SIGN | 108-108 | 1 | +,- | | Fixed |
| TOTAL FLOAT | 110-112 | 3 | - | Integer | Right |

- a. The RECORD IDENTIFIER shall begin with the four characters "PROG" in the first four columns of the record.
- b. The ACTIVITY IDENTIFICATION for each activity for which progress has been posted, shall match the format described in the Activity Record (see paragraph 2.10.5(b)).
- c. The ACTUAL START DATE is required for all in-progress activities. The ACTUAL START DATE shall be the same as, or later than, the PROJECT START DATE contained in the Project Record (see paragraph 2.10.2(h)). The ACTUAL START DATE shall also be the same as, or prior to, the DATA DATE contained in the Project Record.
- d. An ACTUAL FINISH DATE is required for all completed activities. If the REMAINING DURATION of an activity is zero, then there must be an ACTUAL FINISH DATE. The ACTUAL FINISH DATE must be the same as, or later than the PROJECT START date contained in the Project Record .(see paragraph 2.10.2(h)). The ACTUAL FINISH DATE must also be the same as, or prior to the DATA DATE contained in the Project Record.
- e. REMAINING DURATION is required for all in-progress activities. Activities completed, based on time, shall have a zero (0) REMAINING DURATION
- f. Cost Progress is contained in the field COST TO DATE. If there is an ACTUAL START DATE, then there must also be some value for COST TO DATE. The COST TO DATE shall not be tied to REMAINING DURATION. For example, if the REMAINING DURATION is "0", the COST TO DATE may only be 95% of the ACTIVITY COST. This difference may be used to reflect 5% retainage for punch list items.

2.10.1.9 File End Record

The File End Record shall be used to identify that the data file is completed. This record shall be the last record of the entire data file. The File End Record shall have the following format:

| Description | Column Position | Max. Len. | Required. Value | Type | Just. |
|-------------------|-----------------|-----------|-----------------|------|-------|
| RECORD IDENTIFIER | 1- 3 | 3 | | END | Fixed |

- a. The RECORD IDENTIFIER for the File End Record shall be "End". No data contained in the data exchange file that occurs after this record is found shall be used.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule, scheduling personnel, or approved periodic schedule updates will result in an inability of the Contracting Officer to evaluate Contractor's progress for the purposes of payment. In this event, progress payments will not be made until corrective action is taken and the schedule is approved by the Contracting Officer. The contractor's pay

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estimates shall be based upon the amount of work completed as agreed upon between Government and Contractor personnel during the Periodic Progress Meetings further specified below.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).

3.3.2 Level of Detail Required

The Project Schedule shall be at a level of detail appropriate for the size and complexity of the project. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule:

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of the durations all non-procurement activities' are greater than 20 days). Durations shall be in workdays.

3.3.2.2 Project Activities, General

Project activities consist of all construction activities, including design-related activities, placement of warranty tags, O&M manuals, jobsite clean-up, and required testing and training. Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. These procurement tasks

include, but are not limited to: submittals, approvals, procurement, fabrication, delivery, installation, start-up, testing, and training.

3.3.2.3 Critical Activities

The following activities shall be listed as separate line activities on the Contractor's project schedule:

- a. Submission and approval of mechanical/electrical layout drawings.
- b. Submission and approval of O & M manuals.
- c. Submission and approval of as-built drawings.
- d. Submission and approval of 1354 data and installed equipment lists.
- e. Submission and approval of testing and air balance (TAB).

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- f. Submission of TAB specialist design review report.
- g. Submission and approval of fire protection specialist.
- h. Submission and approval of testing and balancing of HVAC plus commissioning plans and data.
- i. Air and water balance dates.
- j. HVAC commissioning dates.
- k. Controls testing plan.
- l. Controls testing.
- m. Performance Verification testing.
- n. Other systems testing, if required.
- o. Prefinal inspection.
- p. Correction of punchlist from prefinal inspection.
- q. Final inspection.

3.3.2.4 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: the review of Government-approved submittals, approvals, inspections, utility tie-in, Government Furnished Equipment (GFE), and Notice to Proceed (NTP) for phasing requirements.

3.3.2.5 Responsibility

All activities shall be identified in the project schedule by the party responsible for performing the work. Responsibility includes, but is not limited to, the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.6 Work Areas

All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than one work area. The work area of each activity shall be identified by the Work Area Code.

3.3.2.7 Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number. Whenever possible, changes shall be added to the schedule by adding new activities. Existing activities shall not normally be changed to reflect modifications.

3.3.2.8 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. The bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.9 Phase of Work

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All activities shall be identified *in* the project schedule by the phases of work *in* which the activity occurs. Activities shall not *contain* work in more than one phase of work. The project phase of each activity shall be identified by the *unique* Phase of Work Code.

3.3.2.10 Category of Work

All activities shall be identified *in* the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals, approvals, procurement, fabrication, delivery, installation, start-up, and *testing*. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.11 Feature of Work (Work Breakdown Structure(WBS))

All activities shall be identified *in* the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to, a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code or WBS Code.

3.3.2.12 Resources .

All appropriate activities shall be assigned resources (labor, materials, equipment) that are expected to be used during the execution of the activity.

3.3.2.13 Costs

All work activities shall be cost-loaded with the amount budgeted. The sum of all activities *in* the schedule shall equal the total contract amount.

3.3.2.14 Data Dictionary

The Contractor shall submit a coding scheme that shall be used throughout the project for all activity codes contained *in* the schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a Responsibility Code Value, "ELE", may be identified as "Electrical subcontractor." Activity code values shall represent the same information throughout the duration of the contract.

3.3.3 Scheduled Project Completion 3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, and a zero day duration. It is possible for submittal activities to be started before NTP. If started, such activities will not alter the Contract start date or completion time for the Contract.

3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the currently approved contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.3.3.3 Early Project Completion

In the event the project schedule shows completion of the project "prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted in the

narrative report at every project schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

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3.3.4 Interim Completion Dates

Contractually specified interim phasing completion dates shall be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date. Activities with separate completion dates shall also be constrained to show negative float if the completion date is not met.

3.3.4.1 Start Phase

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2 End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the phase of the project, and a zero day duration.

3.3.4.3 Phase X

The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed I

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed *only* on a case-by-case approval of the Contracting Officer. The Contractor shall propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule. If approval is not given, a revised schedule that reflects corrections to the original logic to show the current sequence of activities shall be submitted prior to payment being made for those items of work.

3.3.7 Negative Lags I

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS. A data disk and a printed, legible network diagram are required for each submission. Submissions shall contain the same level of detail as is being used by the contractor for project management:

3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days, shall be submitted for approval within 15 calendar days after the NTP is acknowledged unless otherwise approved by the Contracting officer. Summary activities for the remainder of the project will be included along with budgeted costs for all activities. The sum of the budgeted costs shall equal the contract amount.

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The preliminary schedule, upon acceptance, shall be used for payment purposes not to exceed 90 calendar days after NTP. After that time period, the approved, updated Initial Schedule shall be used.

3.4.2 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 45 calendar days after NTP. The schedule shall provide a logical sequence of activities which represent work activities through the entire project and shall be at an appropriate level of detail as defined in paragraph PROJECT SCHEDULE. The Government has 30 days for approval.

3.4.2.1 Operations and Maintenance Manuals

Include activities on the Schedule for turn-over to the Government of the required number of copies of approved O&M manuals for all specification sections and for Operation and Maintenance training classes. The completion date for submittal of O & M Manuals will be 120 calendar days prior to the final acceptance inspection date. The amount to be withheld until completion and approval of these activities will be the amount indicated on the Bidding Schedule for "Operation and Maintenance Manuals".

3.4.3 Periodic Schedule Updates

The Contractor shall submit periodic updates as required by the Contracting Officer. Updated data discussed in the periodic progress meetings will be the basis for the schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative, is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.4 Standard Activity Coding Dictionary

The Contractor shall use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the preliminary submission, initial submission, and every periodic project schedule update throughout the life of the project:

3.5.1 Data Disks

Three data disks containing the project schedule shall be provided. The data disc's shall be provided as required by paragraph : SCHEDULING SYSTEM DATA EXCHANGE FORMAT. The automated scheduling software utilized by the Contractor shall be capable of direct data input into the scheduling system currently in use by the Government. The Government (e.g. the Fort Worth District) currently uses Primavera for Windows, Version 3.1, subject to current update. The Contractor will be responsible for the accuracy of this data and successful data transfer to the Government. In the event of faulty disk(s), the Contractor will be responsible for replacement.

3.5.1.1 File Medium

Required data shall be submitted on CD-ROM disk or 3.5 high density diskette, formatted under Windows 95, 98, NT, or 2000, unless otherwise approved by the Contracting Officer.

3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate file name, the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number or person responsible for the schedule, and the MS-DOS version used to format the disk.

3.5.1.3 File Name

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2 Narrative Report

A Narrative Report shall be provided with the preliminary, initial, and each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken to maintain and/or regain schedule. This report shall be provided for use with the updated schedule in evaluating current progress and as an indicator of upcoming progress. This report shall also accompany pay requests for payment evaluation, or required to be taken. The narrative report is expected to relay to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the periodic schedule updates. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The software program used for scheduling shall be capable of producing the reports as listed. The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number and then sorted according to Early Start Date. For completed activities, the Actual Start Date shall be used as the secondary sort.

3.5.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number. Preceding and succeeding activities shall include all information listed above in paragraph Schedule Reports. A blank line shall be left between each activity grouping.

3.5.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities shall not be shown on this report.

3.5.4.4 Earnings Report

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A compilation of the Contractor's Total Earnings on the project from the NTP until the most recent Monthly Progress Meeting.

3.5.5 Network Diagram

The network diagram shall be required on the preliminary and initial schedule submission and on periodic schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. Activity numbers, descriptions, durations, milestones and constraint dates shall be shown, and the critical path shall easily apparent. The network diagram must be legible in its electronic form, or another means of production shall be required subject to Contracting Officer approval. Legibility shall be determined upon submission of the Preliminary Schedule. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

The critical path shall be clearly shown. 3.5.5.4 Banding Activities shall be coded so that banding is possible to assist in understanding the activity sequence. Typically, this flow will group activities by phase, category of work, work area, and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.5.5.6 Open Ends

Open Ended Activities other than the first and last activities, "Start Project" and "End Project", shall only be used with approval of the Contracting Officer.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss progress or payment shall be held on a monthly basis. During these meetings the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. During meetings the Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate. .

3.6.1 Meeting Attendance

The Contractor's Project Manager, Quality Control Manager or staff, and Scheduler shall attend the periodic progress meeting along with similar representation by the Government.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 7 working days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

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Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. As a minimum, the Contractor shall address the following items on an activity by activity basis during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in progress or completed.

3.6.3.2 Duration

The estimated Remaining Duration for each activity in progress. Calculations shall be based on Remaining Duration in applicable work periods for each activity.

3.6.3.3 Earnings

The earnings for each activity started~ Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on lack of satisfactory progress.

3.6.3.4 Logic Changes

All logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

Any request for a time extension from the Contractor, whether as a result of added or changed work due to a modification, a differing site condition, or unusually severe weather, shall be accompanied by justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals~ Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

- a. A list of affected activities.
- b. A brief explanation of the causes of the change.
- c. An analysis of the overall impact of the change proposed.
- d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.1 2.5 TIME IMPACT "FRAGNET" ANALYSIS

Within twenty calendar days from the notice to proceed of a change, or from the start of the impact of a mutually recognized changed condition, whichever event occurs first, the contractor shall submit a detailed Time Impact 'fragnet' analysis to the Contracting

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Officer. The Time Impact 'fragnet' will clearly demonstrate all activities associated with the changed condition, including estimated durations, costs, resources and proposed tie-in points of the 'fragnet' into the approved NAS. Should the contractor fail to submit the 'fragnet' analysis within the expired time period as specified above, it shall be mutually agreed between the contractor and the Contracting officer that the changed condition has no time impact. The foregoing shall not be construed to limit the Contracting Officer's authority to issue unilateral modifications to the Contract as provided for herein.

3.7.2 Not Used

3.7.3 Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

3.8 DIRECTED CHANGES "

If the NTP is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 7 calendar days of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 7 calendar days of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 7 calendar days of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor. Use of Zero Free Float and Zero Total Float constraints shall not be allowed.

3.10 TRANSFER OF SCHEDULE DATA INTO THE RESIDENT MANAGEMENT SYSTEM

The contractor shall be responsible for the downloading and uploading of the schedule data into the Resident Management System (RMS) that will be used on the subject Contract prior to the RMS databases being transferred to the Government as part of the monthly and final payment requests.

--End of Section --

SECTION 02467
DRILLED PIERS
05/2002
Amendment 0003

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent specified. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 615/A 615M (1996a) Deformed and Plain Billet-Steel
Bars for Concrete Reinforcement

ASTM A 706

1.2 QUALIFICATIONS

The work shall be performed by a specialty Contractor, specializing in the specified foundation system and having experience installing the specified foundation system under similar subsurface conditions.

1.3 SUBSURFACE DATA

Subsurface data logs are shown on the drawings. The subsurface investigation report is available for examination at the Fort Worth District Office. Upon request, these samples will be made available. The request should reach the Fort Worth District Office at least three (3) days prior to the time of requested examination date.

1.4 MEASUREMENT AND PAYMENT

1.4.1 Drilled Piers

Drilled foundation piers will be measured by the linear foot for depths actually drilled in strict conformance to the requirements of the specification and drawings. The length of drilled piers will be measured from the authorized bottom of the bells or piers to their upper termination at the bottom of the grade beam, slab, pier cap, or any formed portion of the pier above grade, as applicable. Payment for drilled foundation piers will be made at the applicable contract unit price per linear foot according to diameter. This payment shall constitute full compensation for all plant, labor, materials, and all costs necessary for drilling, temporary and permanent casing, and furnishing and placing steel and concrete, (Am#3) and except for bellling work including additional concrete for bells indicated below.

1.4.2 Belling Piers

Payment for bellling the drilled foundation piers will be included in the contract price for the structure to which the work pertains, which payment shall constitute full compensation for labor, plant, materials, and all costs necessary to enlarge the pier holes to form the bells, including concrete in the enlarged portions.

1.4.3 1.4.3 Temporary Casing that Cannot be Removed (Am#3)

Payment for temporary casing that cannot be removed will be measured by the linear foot from the very lowest point where originally installed to the upper termination of the casing. Payment for casing will be made at the applicable contract unit price per linear foot according to diameter for only the material cost of the casing.
(Am#3)

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Survey; G.

Furnish a certified copy of the drilled pier survey. See Part 1 paragraph "RECORDS: Survey."

Qualifications; G.

Furnish the qualifications of the foundation system contractor. See Part 1 paragraph QUALIFICATIONS.

SD-11 Closeout Submittals

Drilled Pier Records; G.

Furnish the drilled pier placement records. See Part 1 paragraph RECORDS: Drilled Pier Records.

1.6 QUALIFICATIONS

Qualifications of the foundation system contractor shall show that the contractor has been engaged in the successful installation of drilled foundation caissons or piers for at least 5 years.

1.7 SUPERVISION, INSPECTION, AND SAFETY

1.7.1 Contractor Supervision

The Contractor shall provide for the supervision of all phases of drilled pier construction. Supervision shall be the Contractor's responsibility as outlined in Quality Control provisions of Section 01451 CONTRACTOR QUALITY CONTROL. Each drilled pier excavation shall be checked by the Contractor for its depth, water removal, cleanup, workmanship, and for all tolerance requirements before any concrete is placed.

1.7.2 Government Inspection

The Contracting Officer reserves the right to inspect each drilled pier excavation prior to placement of reinforcing steel and concrete. The Contractor shall furnish the Contracting Officer all necessary equipment required for proper inspection of drilled pier excavations. This inspection in no way relieves the Contractor of his responsibilities as outlined in CONTRACT CLAUSE "INSPECTION OF CONSTRUCTION."

1.7.3 Safety Precautions for Workmen and Inspectors

The Contractor shall provide and operate all equipment required by the Contracting Officer to allow visual inspection of pier excavations by workmen or the Government, including equipment for personnel entering the excavation. Sufficient approved equipment shall be maintained to raise and lower Contractor and Government personnel into the excavation whenever required. All such equipment and all procedures used for personnel entering pier excavations shall strictly comply with all requirements of the applicable safety manuals.

1.7.3.1 Life Line

Each person entering a drilled pier excavation shall be provided with a life line rigged so that the person can be immediately hoisted out of the excavation in an emergency. The life line shall be suitable for instant rescue, securely fastened to a shoulder harness, and separated from any line used to remove excavated materials. No person shall be lowered into a drilled pier excavation prior to casing the shaft through the overburden.

1.7.3.2 Ventilation

Each drilled pier excavation shall be provided with a ventilating device of sufficient capacity to assure a safe and healthy atmosphere before workmen and inspectors are permitted to enter the drilled pier excavation and during all work periods.

1.8 RECORDS

1.8.1 Survey

Furnish a certified copy of the survey. Lines and levels shall be established and caisson centerline locations staked and maintained by a registered surveyor or engineer provided by the Contractor.

1.8.2 Drilled Pier Records

Detailed records in an approved form, for each pier, showing shaft and bell diameters, depths of test holes, top and bottom elevations, bearing strata description, casing description, water conditions, concrete strength, concrete volume, rock elevations, dates of excavation and concrete placement, and other pertinent information. Upon completion of pier work, the Contractor shall provide a record of centerline locations based on the survey of the registered surveyor or engineer provided by the Contractor. In addition, corrective measures shall be similarly recorded. A complete tabulation of all records pertaining to approved piers shall be delivered to the Contracting Officer.

PART 2 PRODUCTS

2.1 CONCRETE WORK

Concrete work shall be in accordance with requirements of Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE, as modified herein:

2.1.1 Coarse Aggregate

Maximum size of coarse aggregate shall be 1-inch.

2.1.2 Reinforcing Steel

Reinforcing steel shall conform to ASTM A 615, ASTM A 616, ASTM A 617, ASTM A 706, Grade 60. Steel shall be tied into cages and inserted securely in the drilled pier shaft, in position and alignment, as shown, prior to concrete placement.

2.1.3 Strength

Concrete strength shall be 3000 psi at 28 days. Slump shall be not less than 5 inches nor more than 7 inches.

PART 3 EXECUTION

3.1 PREPARATION

a. Excavation of piers or groups of piers shall be performed so that the excavation and the placement of reinforcing steel and concrete are a continuous operation performed the same day that the excavation is started. Excavations shall not be left open overnight. Drilled piers shall be excavated to the depths and dimensions shown in the drawings. The bottoms of the pier excavation shall be cleaned of loose and disturbed materials or materials determined to be unsatisfactory for the required bearing pressure. Excavated material shall be disposed of in accordance with Section 02315 EXCAVATION, FILLING, AND BACKFILLING FOR BUILDINGS. Excavations below indicated depths, without specific direction by the Contracting Officer, shall be filled with concrete at no cost to the Government. Where, in the opinion of the Contracting Officer, materials are encountered at the indicated depths that do not provide the required bearing capacity or would result in unsatisfactory construction, the excavation shall be extended as directed by the Contracting Officer. Payment for the additional excavation and pier construction will be in accordance with PART 1 paragraph MEASUREMENT AND PAYMENT.

b. The drilling equipment shall be of suitable type and of sufficient size and capacity to satisfactorily perform the required drilling operations as specified or indicated. All equipment shall be subject to specific approval by the Contracting Officer. Any equipment which fails to perform satisfactorily shall be immediately modified as approved or removed and replaced.

3.2 INSTALLATION

a. During construction, the pier excavation shall be adequately and securely protected against cave-ins, displacement of the surrounding earth, and inflow of ground and surface water by means of temporary steel casings as required or as directed by the Contracting Officer. Casings shall have outside diameters not less than indicated shaft sizes, and shall be capable of sustaining loads imposed by installing, sealing, maintaining the excavated hole, and extracting. The casing shall have a minimum wall thickness of 1/4-inch. The ends of the casing shall not be damaged such that proper seating and sealing are impaired. Damaged casing shall be immediately repaired or removed from the site. Temporary steel casings shall be withdrawn, as the concrete is being placed, maintaining sufficient head of concrete within the casing to offset water table and to prevent extraneous material from falling in from the sides or entering from beneath casing and mixing with concrete. Casings may be jerked upward a maximum of 4 inches to break the bottom seal but shall thereafter be removed with a smooth, continuous motion. All voids surrounding the casing shall be filled with concrete extruded from the bottom of the casing as it is being raised, with all free water surrounding the casing being forced to the surface ahead of the rising concrete. Venting shall be provided if necessary to insure removal of water around the casing as the concrete level rises, and the casing is being removed. Driving of casings shall not be permitted within 20 feet of concrete Placed within the preceding 3 days.

b. The inside of steel casings shall be thoroughly cleaned before being placed in a pier hole.

c. Pier holes shall be protected from inflow of ground or surface water. Water that flows into the excavations shall be continuously removed and the maximum permissible depth of water in the bottom of excavation will be 2 inches at the start of concrete placement. In the event that excessive water enters the hold, the excavation shall be deepened to undisturbed material immediately prior to concrete placement.

d. Drilled piers shall be underreamed to the dimensions shown in the drawings. All pier underreams shall be measured using pier underream calipers specifically designed for this purpose and approved by the Contracting Officer.

e. Concrete shall be placed in the pier hole within three hours after approval of the completed excavation. Concrete shall be continuously placed by methods that insure against segregation and dislodging of excavation sidewalls and shall completely fill the bell and shaft. Concrete shall be placed by pumps, tremie, or drop chutes. The discharge of pumping chute shall be kept a minimum of 3 feet below the fresh concrete surface during placement.

f. Concrete shall be vibrated for not less than the upper 5 feet of pier.

g. Protection shall be provided around the top of the excavation to prevent debris and water from entering the excavation and concrete placed therein.

3.3 TOLERANCES

a. Any pier out of center or plumb beyond the tolerance specified shall be corrected as necessary to comply with the tolerances and the Contractor shall bear any cost of correction. Method of correction shall be approved by the Contracting Officer.

b. Cross sections of shafts and bells shall not be less than design dimensions. Cross sections of shafts and bells shall not be greater than design dimensions plus 3 inches unless approved or directed by the Contracting Officer.

c. Location of the tops of installed piers shall not deviate from the centerline locations shown on the drawings more than 3 inches.

d. Vertical piers shall be installed plumb within a maximum of 1-1/2 inches for the first 10 feet and within 1/2 inches for each 10 feet of additional depth.

e. The center of the pier will be established after construction is completed and the center marked by a suitable permanent mark.

f. Batter piers shall be installed a maximum of 2 percent of length from specified inclination.

3.4 PROTECTION

Provide protection around top of the excavation to prevent debris from being dislodged into the excavation and concrete.

-- End of Section --