

GUIDELINE FOR
PREPARATION OF
DESIGN AND CONSTRUCTION
DRAWINGS

Reference Manual 10A



APRIL 2001

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CHAPTER ONE

Introduction

1. INTRODUCTION

The following guideline is intended for National Park Service employees, joint agencies, and architectural and engineering (A/E) contractors for use in the preparation of NPS preliminary design (final submittal), construction and as-constructed drawings. To produce archivable drawings, maintain uniformity of work and to facilitate review of both A/E submittals and NPS-generated products, these requirements should be met for all drawings. Drawings that do not meet these guidelines are unacceptable. If some special condition makes it impractical or impossible to conform to these requirements, the problem should be referred to the Project Manager, Denver Service Center, for resolution. In the case of park or System Support Office-produced projects, refer to the official responsible for the project.

Director's Order 10A sets forth the basic requirements. This document, Reference Manual 10A, includes specific information and graphic examples of drawing requirements. Specific size requirements are noted within the document although illustrations shown are for graphic representation only and may not be shown at actual size.

A CADD User's guide is available from the Denver Service Center to assist in the preparation of acceptable computer generated drawings, or can be accessed from the following web site: <http://165.83.23.11/dsc/cadd>.

CHAPTER TWO

Drawing Format

2. DRAWING FORMAT

MATERIALS AND SUPPLIES AVAILABLE FROM NPS

The following material prepared by the Denver Service Center may be obtained upon request from the A/E managers:

- Cover sheets for parks
- Standard drawing sheets
- Standard details

STANDARD SHEETS

Standard 22"x34" NPS drawing sheets (Exhibit 2-A) are used for preliminary design, construction, and as-constructed drawings. Reduced-size samples of standard drawing sheets, showing overall sheet size and trim lines are shown in Exhibit 2-A. The exhibit also shows the location of the approval and revision blocks when required. Any sheet sizes other than 22"x34" require written approval prior to use.

Cover Sheet Standard cover sheets with vicinity and park maps should be used for all NPS projects.

All cover sheets should contain:

- A vicinity map
- A park map showing the project site location
- Basic data (source of information and date of cover sheet base preparation)
- A bar scale including a metric scale
- Required approval and revision blocks
- A solicitation number on drawings prepared for bid
- A construction contract number on as-constructed drawings
- If applicable, information regarding the A/E firm, subcontractors, and contract number.

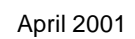
A/E logos are not permitted. The format for presenting A/E firm and subcontractor information is shown on Page 2 of Exhibit 2B. If a set of drawings is prepared in part by the DSC and in part by an A/E, then the A/E information block should be placed only on those drawings for which they are responsible (see Page 3 of Exhibit 2B). If the state in which a project is located requires a professional stamp(s), then the A/E should also submit one stamped set of nonreproducible record drawings to the DSC and each sheet should be stamped. The stamp should be placed to the left side of the A/E firm information block.

An index to the sheets in the set is added to the cover sheet if possible; otherwise, the index is placed on a separate second sheet.

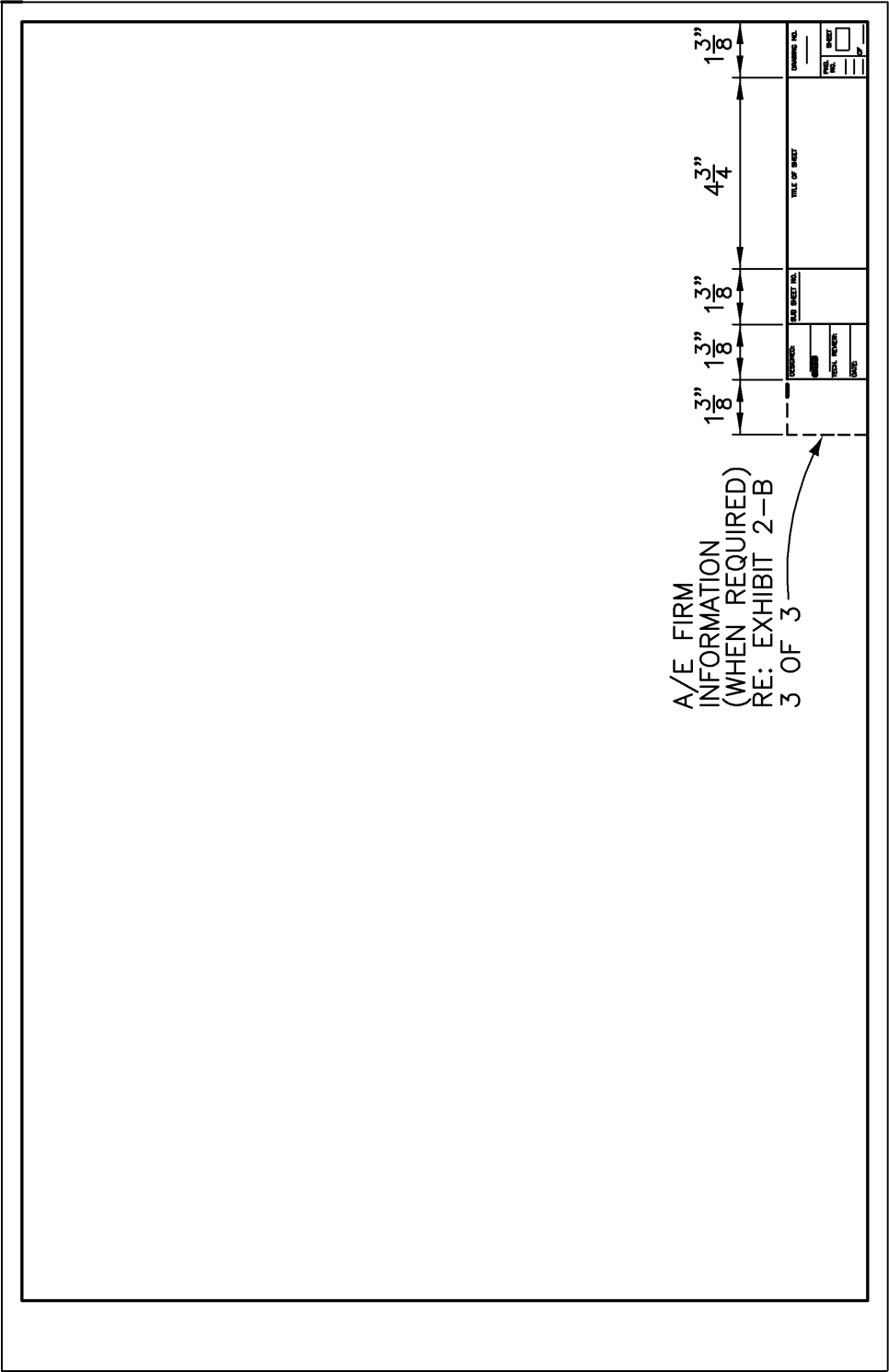
Second Sheets. These sheets are to be used for all subsequent drawings with the exception of those listed below.

Plan and Profile Sheets. These are preprinted with the second sheet title block. For manual drafting, the grid should be red ink; orange ink is unacceptable.

Survey Sheets. These sheets have been designed to be used on all NPS survey projects.



SECOND SHEET



OVERALL DIMENSIONS OF SECOND SHEET SAME AS COVER SHEET

PLAN/PROFILE SHEET

[illegible]

A/E FIRM INFORMATION
(WHEN REQUIRED)
RE: EXHIBIT 2-B, 3 OF 3

OVERALL DIMENSIONS OF PLAN AND PROFILE SHEET SAME AS COVER SHEET

[illegible]

REGIONS MAY SUBSTITUTE REGION NAME—INDEX SHEET ONLY

OVERALL DIMENSIONS OF SURVEY SHEET SAME AS COVER SHEET

TITLE BLOCKS

Title blocks on cover sheets include the project title, specific location within the park, park name, region, county, and state (see Page 1 of Exhibit 2-B). If the park is in more than one county, show only the county in which the particular project is located. Title blocks on second sheets contain the title of the sheet (sheet contents) and park name. If location within the park is specified, it should follow the same standard size for location within park as shown on Page 1 of Exhibit 2-B. The samples in Exhibit 2-B show how to prepare the title blocks for cover and second sheets.

SOLICITATION OR CONSTRUCTION CONTRACT NUMBERS

Page 1 of Exhibit 2-B shows the proper size and placement of solicitation or construction contract numbers, which appear above the title block on drawings prepared for bid (solicitation number) or on as-constructed drawings (construction contract number).

Diagram illustrating the layout and lettering requirements for a drawing sheet, showing the title block, scales, and drawing area.

Top Section (Title Block):

- Left:** PROJ. NO. STL1142 (240 LETTERING HEIGHT/#3 PEN), 1443IB160092123 (200 LETTERING HEIGHT/#3 PEN)
- Center:** CONSTRUCTION DRAWINGS (200 LETTERING HEIGHT/#3 PEN)
- Right:** WATER STORAGE SYSTEM (175 LETTERING HEIGHT/#2 PEN)

Bottom Section (Drawing Area):

- Left:** UNITED STATES DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, DENVER SERVICE CENTER (140 LETTERING HEIGHT/#1 PEN)
- Right:** STATUE OF LIBERTY NATIONAL MONUMENT (130 LETTERING HEIGHT/#0 PEN), LIBERTY ISLAND (175 LETTERING HEIGHT/#2 PEN)

Annotations and Details:

- Scales:** SCALE OF MILES (0 to 3), SCALE OF KILOMETERS (0 to 4). THIS TYPE OF SCALE USED ON COVER SHEETS ONLY.
- Orientation:** Arrow pointing up.
- Lettering:** .175 LETTERING HEIGHT/#2 PEN, .130 LETTERING HEIGHT/#0 PEN, .140 LETTERING HEIGHT/#1 PEN, .175 LETTERING HEIGHT/#2 PEN.
- Form Fields:** DRAWING NO. 356, 41,019; PKG. NO. 142; SHEET 1 OF 7.
- Notes:** THIS LINE SHOULD IDENTIFY THE NPS OFFICE RESPONSIBLE FOR THE PREPARATION OF THE SET OF DRAWINGS; THIS SPACE DESCRIBES THE SET OF DRAWINGS (PRELIMINARY DESIGN, CONSTRUCTION, OR AS-CONSTRUCTED); LOCATION OF REVISION LETTER WHEN SET IS REVISED. SEE DIRECTOR'S ORDER #10B.

A/E INFORMATION ON COVER SHEET

IDENTIFY WHICH FIRM
IS THE PRIME

1 3/8" x # OF INFORMATION COLUMNS
WIDTH =

A/E FIRM	-	A/E CONTRACT NUMBER	Mark	Sheet	REVISION	Date	Initial
PRIME/ARCH: NAME CITY, STATE	CIVIL: NAME CITY, STATE	MECHANICAL: NAME CITY, STATE					
LANDSCAPE: NAME CITY, STATE	STRUCTURAL: NAME CITY, STATE	ELECTRICAL: NAME CITY, STATE					

NUMBER OF SUBCONTRACTORS
VARIES PER PROJECT

SECOND SHEET TITLE BLOCK

WHEN SCALE IS SHOWN, USE BAR SCALE ON SECOND SHEETS. IF NOT TO SCALE, SHOW "NO SCALE" IN THIS LOCATION.

A/E FIRM INFORMATION (WHEN REQUIRED)

DESIGNED: SMITH
TECH. REVIEW: FARKASH
DATE: 1/92

SUB SHEET NO. E1

TITLE OF SHEET
ELECTRICAL LEGEND
AND ABBREVIATIONS

STATUE OF LIBERTY NATIONAL MONUMENT

DRAWING NO. 356
41,019

PKG. NO. 142

SHEET 2 OF 7

SCALE OF FEET
4 0 4 8

0.240 LETTERING HEIGHT/#3 PEN
0.625 LETTERING HEIGHT
0.500 LETTERING WIDTH
#5 PEN

0.175 LETTERING HEIGHT/#2 PEN

0.130 LETTERING HEIGHT/#0 PEN
0.175 LETTERING HEIGHT/#2 PEN

SIGNATURE REQUIRED FOR TECH REVIEW

PRIME: NAME CITY, STATE
SUBCONTRACTOR NAME CITY, STATE

APPROVAL AND REVISION BLOCKS

Approval and revision blocks are preprinted on the cover sheet or first sheet, as required (see Exhibit 2-C).

Approval Block. Use on all preliminary design and construction drawing sets. All preliminary design and construction drawings prepared by parks, System Support Offices, or the Denver Service Center require approval signatures.

Revision Block. Required for changes to construction drawings which have been issued for bid and therefore are official contract documents. Include:

- An identifying mark (a triangle with a number or letter, used to key the information in the revision block to the part of the drawing it pertains to)
- The sheet number(s) of the sheets with that change or addition
- A brief description of the revision
- The date of the revision
- The initials of the person responsible for the revision.

A completed block is shown in Appendix E.

The information in the revision block is keyed to the drawings by encircling the affected part of each drawing and placing a revision mark on or within the circle (See page 3 of Chapter 3 under "use of ink or pencil"). When major revisions are made to a sheet, a note "General Revision" above the title block is acceptable.

APPROVAL BLOCKS

(SAMPLE)

PRELIMINARY

RECOMMENDED:	_____	_____
	Project Manager	Date
APPROVED:	_____	_____
	Superintendent	Date

PRELIMINARY

RECOMMENDED:	_____	_____
	Project Manager	Date
RECOMMENDED:	_____	_____
	Superintendent	Date
APPROVED:	_____	_____
	Regional Director	Date

APPROVAL BLOCKS (SAMPLE)

CONSTRUCTION

QUALITY DESIGN CERTIFICATION	
<input type="checkbox"/>	Prepared in Accordance with Design Development (Title I) _____ Drawing No.
OR	
<input type="checkbox"/>	Variance from Design Development (Title I) Approved by Superintendent on _____ Date
OR	
<input type="checkbox"/>	Construction Drawing Not Preceded by Design Development (Title I)
<div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> Project Manager Date </div>	

REVISION BLOCK

Mark	Sheet	REVISION	Date	Initial

DRAWINGS REISSUED FOR BID

REISSUED BID PACKAGES: Drawings and specifications that did not make it through a successful first bid and are rebid are identified as a reissued bid package.

DRAWINGS: Whether or not changes are made to the drawings, a revision letter is added to the drawing number to show that the drawings are being reissued. On the cover sheet, an R is added to the old project number (JELA-133A-R) and a new solicitation number replaces the old one. If no changes are made to the drawings, the words "Reissued for bid, no changes to the drawings" and the date are added to the Revision Block. If changes are made to the drawings, the words "Reissued for bid," the sheet numbers of the revised drawings, and the date are added to the Revision Block.

SPECIFICATIONS: The project number and solicitation number are also changed on the Project Manual.

REVISION LETTER:

See Drawing and Map Numbers Guideline, Director's Order 10B.

DRAWINGS FOR CONTRACT MODIFICATIONS

Drawings prepared to accompany a construction contract modification shall follow Director's Order 10A. The contracting officer's representative (COR) is responsible for submitting the drawings or sketches, as appropriate, for inclusion in the contract modification package. In most cases, the drawings or sketches will actually be prepared by the project designer. The drawings or sketches will be furnished to TIC (by whomever initially prepares these documents) for filming or filing, as appropriate, immediately after preparation to avoid loss. In the event changes are made to the design during the modification negotiation process, or if the modification is not executed, the COR is responsible for advising TIC of the changes. The COR is also responsible for incorporating the changes into the as-built drawings.

When sketches are used rather than standard drawing sheets, the sketches must include the project number, drawing number, project title, person responsible for drawing, and the date prepared.

NORTH ARROWS

When possible the drawings should be laid out so north is toward the top or left of the sheet. The orientation of north should be maintained throughout a set of drawings, if possible. When a north arrow is required, it is normally placed in the lower right-hand corner above the title block (see Page 3 of Exhibit 2-B). Recommended style for north arrows appears in Exhibit 2-D. When more than one north arrow is used on the same sheet, each arrow should be placed near the title of the specific view it orients (see "Specific View Titles," below).

SCALES

All scales should be graphic scales (see Exhibit 2-E). If a single scale applies to an entire sheet, place scale above the title block. If an entire drawing sheet is not to scale, the term "NO SCALE" should appear above the title block. If more than one scale is used on a sheet, place scales below the title of each section or detail. If a specific section or detail is not drawn to scale, the term "NO SCALE" should appear below the title of that section or detail. If more than one scale is used on a sheet, but one or more of them is used repetitively, group all scales above the title block, and reference each section or detail to the corresponding scale (see Page 4 of Exhibit 2-E).

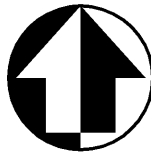
Scales of associated drawings should be the same for all disciplines.

SPECIFIC VIEW TITLES

Instructions for drawing section or detail symbols are provided in Exhibit 2-F.

RECOMMENDED NORTH ARROWS

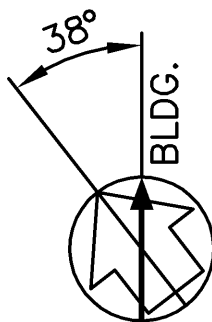
WHEN NORTH ARROW APPLIES TO ENTIRE DRAWING AND IS SHOWN ABOVE TITLE BLOCK, USE A $\frac{3}{4}$ " CIRCLE.



WHEN NORTH ARROW APPLIES ONLY TO PORTIONS OF A DRAWING, IT SHOULD BE SHOWN IN VICINITY OF SPECIFIC PLAN TITLE, USING A $\frac{1}{2}$ " CIRCLE.

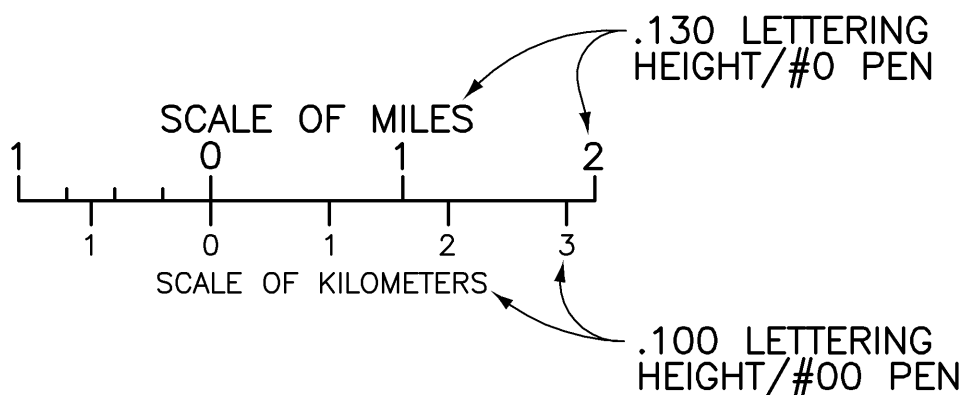


BUILDING NORTH – THE NORTHERLY DIRECTION OF THE BUILDING DISTINGUISHED FROM THE GEOGRAPHIC NORTH.

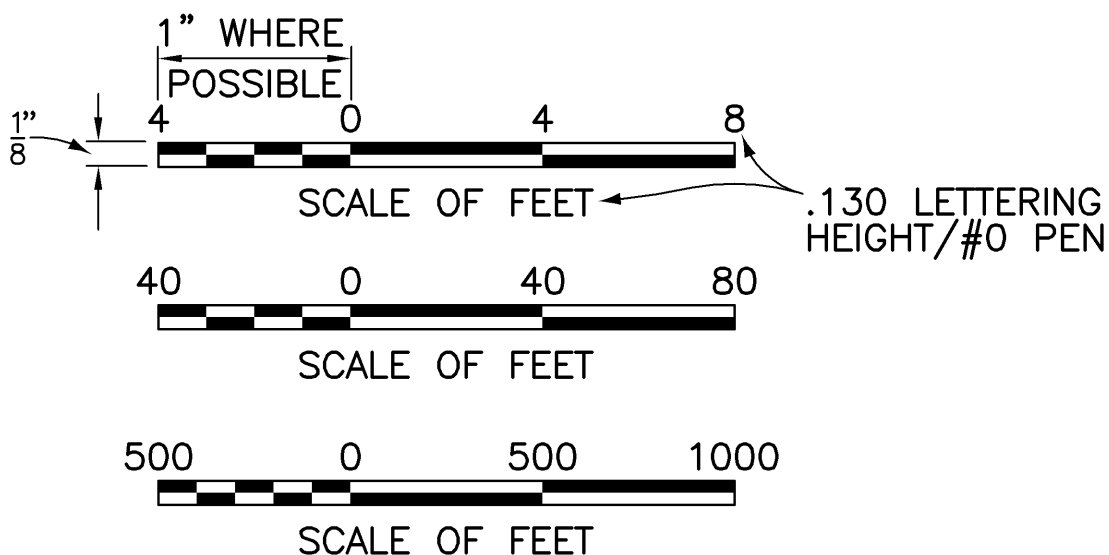


COVER SHEET GRAPHIC SCALE

THIS SCALE IS USED ONLY ON COVER SHEETS



STANDARD GRAPHIC SCALE

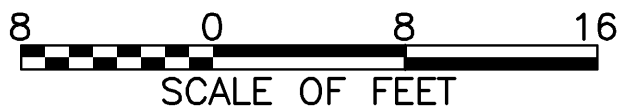


DO NOT SHOW TEXT SCALES ($\frac{1}{4}'' = 1'-0''$). TEXT SCALES ARE NOT ACCURATE AS DRAWINGS ARE OFTEN REDUCED AND DISTORTED.

STANDARD SCALES

COMMON ARCHITECTURAL & ENGINEERING SCALES

$$\frac{1}{8}" = 1'-0"$$



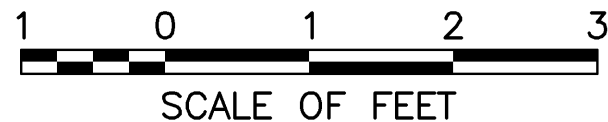
$$\frac{1}{4}" = 1'-0"$$



$$\frac{1}{2}" = 1'-0"$$



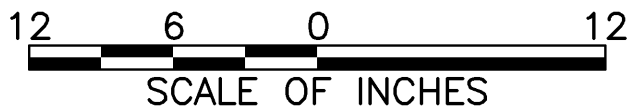
$$\frac{3}{4}" = 1'-0"$$



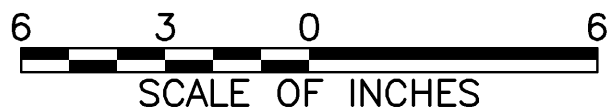
$$1" = 1'-0"$$



$$1\frac{1}{2}" = 1'-0"$$



$$3" = 1'-0"$$



$$1" = 10'$$



$$1" = 20'$$



$$1" = 40'$$



$$1" = 50'$$



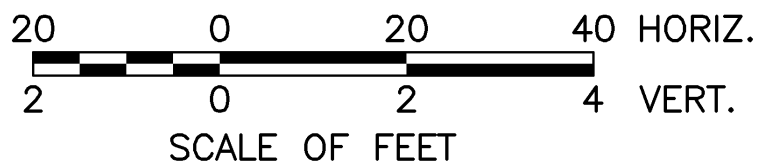
PROFILE SCALES

PROFILES ARE USUALLY DRAWN WITH DIFFERENT HORIZONTAL AND VERTICAL SCALES. THIS IS DONE TO EXAGGERATE THE VERTICAL DIMENSIONS SO THE PROFILE CAN BE EASILY DRAWN AND READ.

A FEW COMMON SCALE COMBINATIONS:

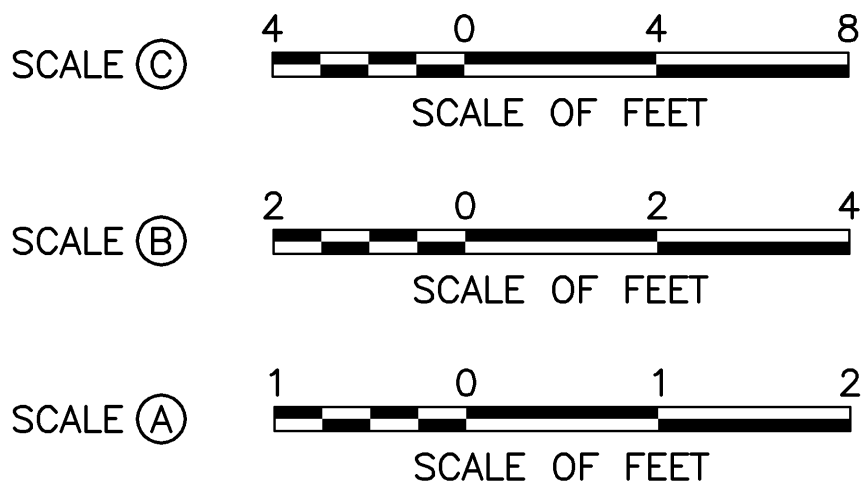
$$1" = \frac{20'}{2'} \text{ HORIZ.} \quad 1" = \frac{40'}{10'} \text{ HORIZ.} \quad 1" = \frac{20'}{5'} \text{ HORIZ.} \quad 1" = \frac{100'}{20'} \text{ HORIZ.}$$

THESE SHOULD ALWAYS BE SHOWN WITH A GRAPHIC SCALE AS IN THIS EXAMPLE:



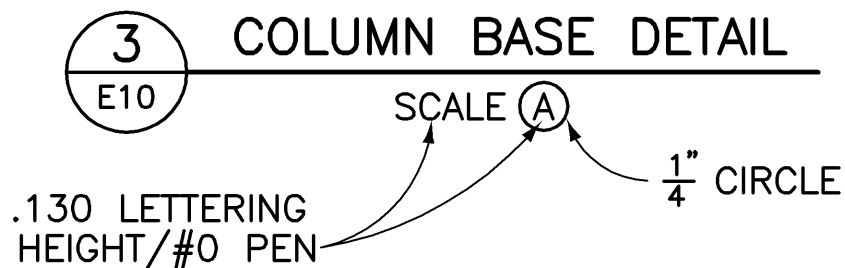
GROUPING MULTIPLE SCALES

MULTIPLE SCALES WILL BE LOCATED ABOVE THE TITLE BLOCK (IF POSSIBLE) AND WILL BE SHOWN AS FOLLOWS:

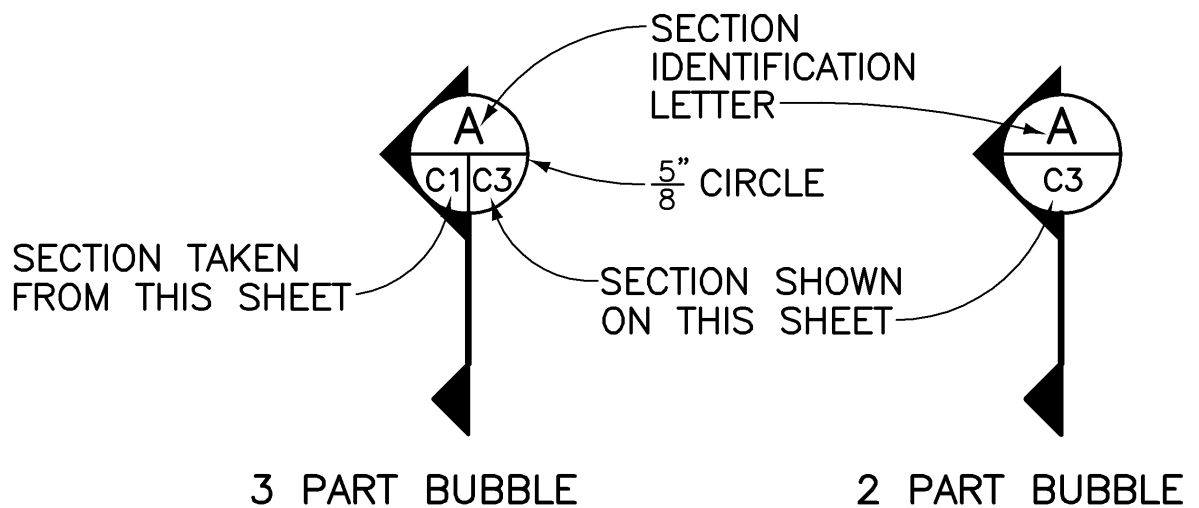


REFERENCE TO SCALES

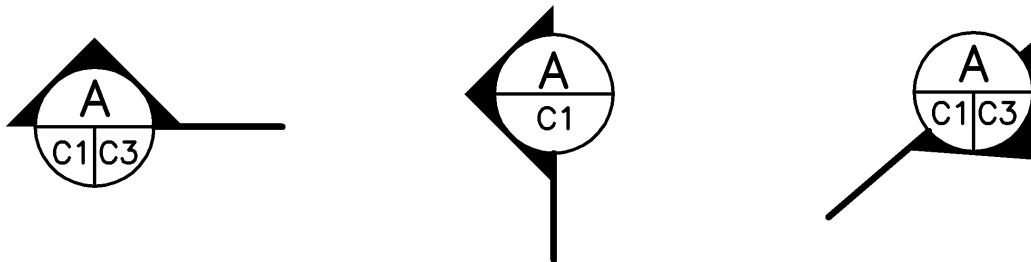
WHEN USING MULTIPLE SCALES ON A DRAWING, THE SCALE SHOULD BE REFERENCED BELOW TITLE OF SECTION OR DETAIL AS SHOWN BELOW:



SECTION OR DETAIL IDENTIFICATION SYMBOLS



IDENTIFICATION LETTER AND SHEET NUMBERS SHOULD ALWAYS BE DRAFTED HORIZONTALLY, AS SHOWN BELOW:

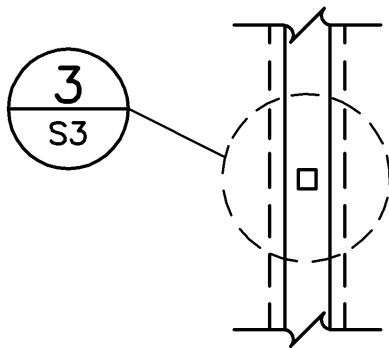


NOTE

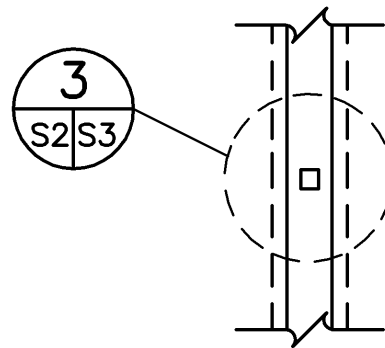
CIRCLES ARE $\frac{5}{8}$ "; DETAIL OR SECTION LETTER CALLOUTS ARE .175 LETTERING HEIGHT/#2 PEN; SHEET NUMBER REFERENCES ARE .110 LETTERING HEIGHT/#0 PEN

SECTION OR DETAIL IDENTIFICATION SYMBOLS

DETAIL REFERENCES SHOULD BE SHOWN AS FOLLOWS:



2 PART BUBBLE



3 PART BUBBLE

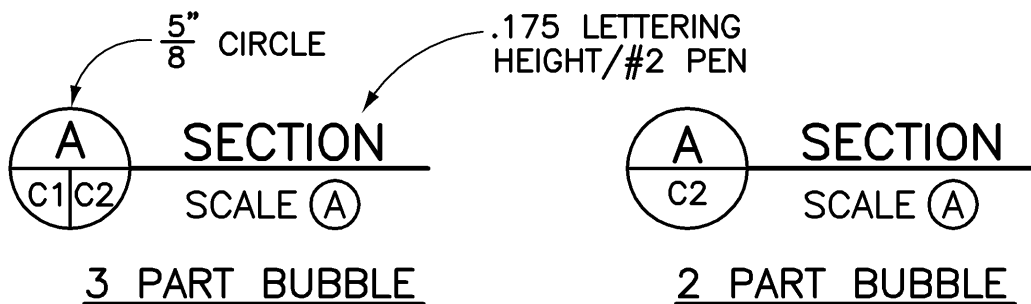
WHEN ENCLOSING AN AREA INDICATING AN ENLARGED DETAIL,
THE OUTLINE SHOULD BE SHOWN AS A DASHED LINE.

DETAIL OR SECTION REFERENCES LOCATED IN ANY NOTE FORM
SHALL BE SHOWN AS FOLLOWS:

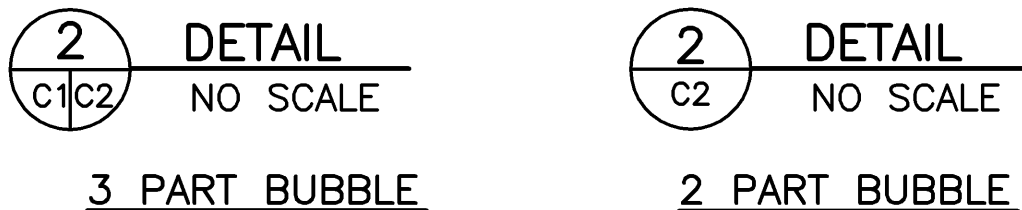
↖ CONCRETE WALK. SEE
DETAIL 3/L7. MATCH
LINES AND GRADES OF
EXISTING CURB.

TYPICAL TITLES

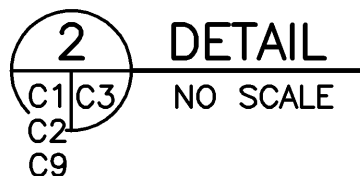
TYPICAL TITLE FOR A SECTION (DESIGNATED WITH A LETTER):



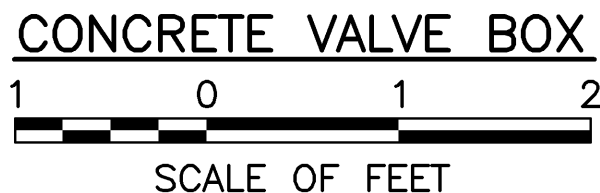
TYPICAL TITLES FOR A DETAIL (DESIGNATED WITH A NUMBER):



WHEN A SECTION OR DETAIL IS TAKEN FROM MORE THAN ONE SHEET AND A 3-PART BUBBLE IS USED:

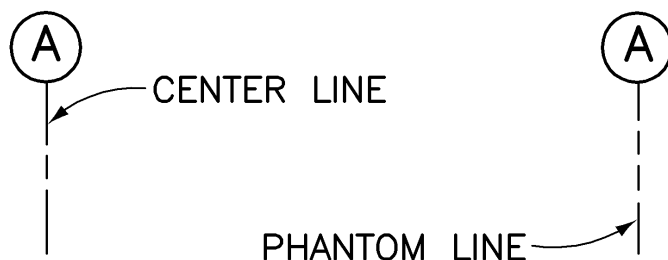


TYPICAL TITLE WITHOUT BUBBLE:

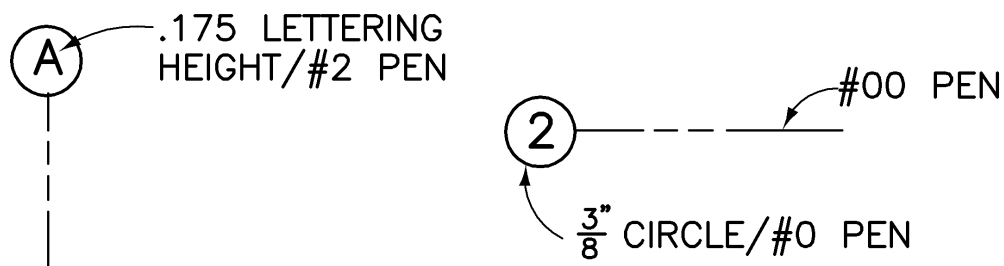


BUILDING LINES

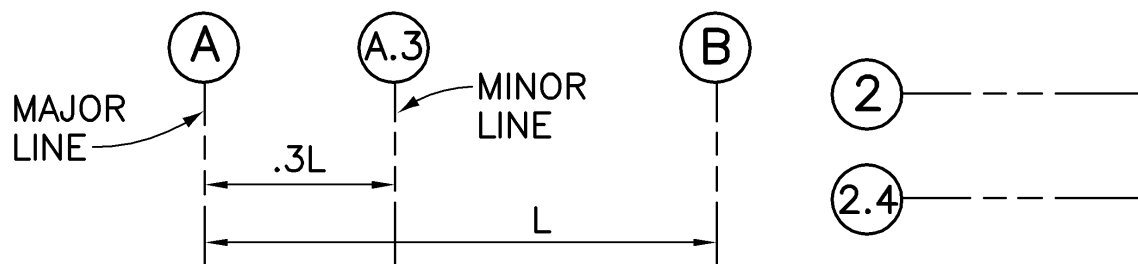
BUILDING LINES THAT ARE ASSOCIATED WITH THE CENTER LINE OF AN OBJECT SHOULD BE SHOWN AS A CENTER LINE. IF A BUILDING LINE IS NOT REPRESENTING A CENTER LINE, IT SHOULD BE SHOWN AS A PHANTOM LINE.



ALL BUILDING LINE REFERENCES SHOULD BE READ HORIZONTALLY.



MAJOR LINES SHOULD BE NUMBERED WITH LETTERS OF THE ALPHABET OR WHOLE NUMBERS. MINOR LINES APPEAR BETWEEN MAJOR LINES. A MINOR LINE SHOULD BE NUMBERED ACCORDING TO HOW FAR IT IS FROM THE PRECEEDING MAJOR LINE. THE NUMBERING OF MINOR LINES SHOULD REPRESENT THE NUMBER OF TENTHS OF THE DISTANCE BETWEEN MAJOR LINES.



MINOR LINE CALLOUTS, OR CALLOUTS WITH MORE THAN ONE NUMBER SHALL BE .140 LETTERING HEIGHT/#1 PEN.

CHAPTER THREE

Drafting Practices

3. DRAFTING PRACTICES

All NPS drawings are microfilmed and therefore must be capable of being reproduced as clear and legible half-size prints. This is particularly important for construction drawings being issued to prospective bidders as nominal half-size prints.

Consistent line density and clear, legible lettering are essential. Originals and photographic duplicates that cannot be reproduced as clear and legible half-size prints are unacceptable.

All NPS drafting practices apply to both manual and computer-aided drafting.

GENERAL

These drafting practices are to be followed:

- Maintain even line weight.
- Avoid line congestion.
- Match line weight when making additions or changes.
- Keep drawings clean and uncreased.
- Keep erasures at a minimum, with no ghosting.
- Maintain dark, clear, sharp, uniform lines to ensure good reproduction and microfilm.
- Differentiate outlines and section lines by varying the width of lines, not by changing densities; the density of the line should be constant.
- Use line work techniques for distinctive symbols and crosshatching.
- Do not use pencil for shading or toning.
- Ensure open spacing of lines and lettering.
- Clean out all graphics behind text to ensure good legible drawings.

ACTUAL ELEVATION VS. REFERENCE BUILDING ELEVATION

If a reference building elevation is set that is different from the actual elevation, it should be noted on the plan sheets.

ABBREVIATIONS

Words written in full are preferred. However, abbreviations may be used if necessary to conserve space and ensure neatness and readability. All abbreviations should be described in a legend and used consistently throughout a discipline. See Appendix C for NPS recommendations. Edit suggested abbreviations as needed.

ADHESIVE-BACKED MATERIALS

No adhesive-backed material or rub on transfers of any kind will be accepted on any final original. Adhesive backed strips applied to original drawings in order to file them in hanging drawing files (such as EASI FILE) are not acceptable.

COLORS USED IN THE REVIEW AND UPDATING OF DRAWINGS

Additions, changes, and corrections must be marked on check prints and as-constructed prints using the following color code:

- RED--indicates additions
- GREEN--indicates deletions
- BLUE--indicates general notation or specific instruction to draftsman
- YELLOW--indicates okay as shown (use when necessary)

DIMENSION FORMAT

All dimensions 1'-0" and over should be called out in feet and inches. If a measurement other than feet and inches is accepted industry-wide to describe a product or spacing, the common measure should be used. For example:

48" pipe (not 4'-0" pipe)
16" o.c. (not 1'-4" o.c.)

Both slash marks and arrows are acceptable as line terminators as long as they are consistent within a discipline.

Survey and site work layout dimensions should be feet and decimals.

ENLARGED DETAIL:

If a detail of a certain item is to be enlarged, it should be shown with the same orientation as the item from which it was taken. It should not be turned 90 degrees or shown in reverse direction.

LAYOUT LINES

Layout lines and guidelines used in preparing originals must be invisible on reproduced drawings and microfilm.

NEW WORK AND EXISTING CONDITIONS

New work should be easily distinguishable from other information shown on the drawings. Show new work at 100% (unscreened) and show existing conditions, including text, screened at 50%. Background information shown for orientation or clarification may be screened at 50%.

Survey drawings should be shown at 100% (unscreened) to be screened later if incorporated into design drawings.

DRAWINGS VS. SPECIFICATIONS

Limit text within the drawings to the required notation, avoiding duplication of information within the drawings and the written specifications.

LETTERING - SIZES AND PEN WEIGHTS

The following pen and lettering sizes are recommended for full sized drawings so that text will be easily readable after drawings are reduced to half-size.

No line weight should be less than .012" in thickness (or #00 pen). When possible use .014" in thickness (or #0 pen).

Use only one type of lettering style, vertical and all uppercase.

Maintain a minimum lettering height of:

- * Mechanical - .100; when possible, use .130
- Freehand - 1/8"

For each numeral in a fraction, maintain a minimum lettering height of:

- * Mechanical - .100
- Freehand - 1/8"

* Refers to Leroy® and computer aided drafting.

SYMBOLS

Preferred symbols and line symbols with abbreviations for the most common drawing elements are in Appendix C. All symbols used should appear in a legend and should be used consistently throughout a discipline. Edit suggested symbols as needed.

USE OF COLORED INK OR PENCIL

The use of colored inks or pencils on final original drawings is prohibited.

USE OF INK OR PENCIL











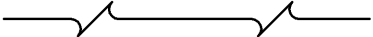


Waterproof ink is recommended for all drafting surfaces. If drafting pencils are used on polyester materials, plastic lead pencils should be used. Felt-tip pens/markers should not be used.

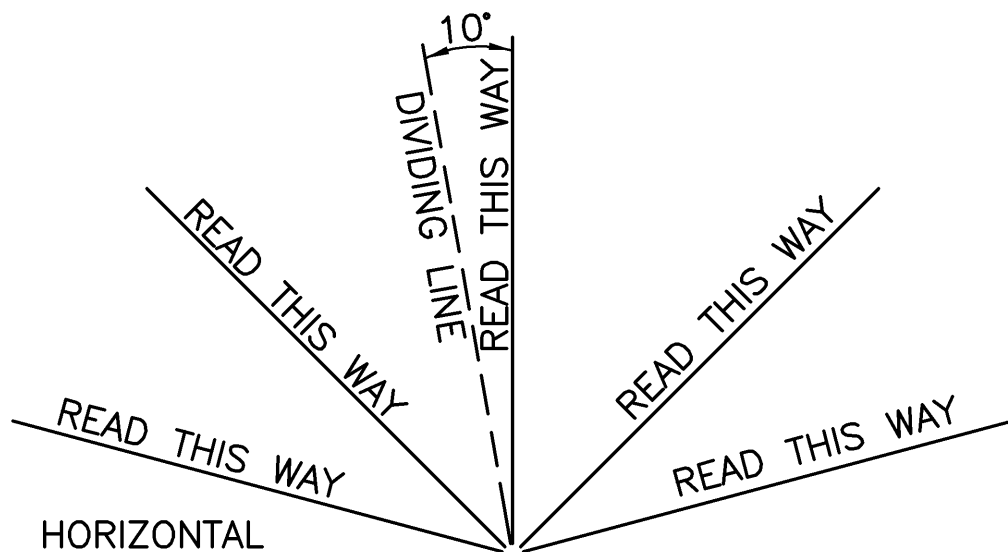
A combination of ink and pencil should not be used on the same drawing sheet.

Soft black pencils should be used on the backs of drawings to identify revisions made after the drawings are issued for bid.

The use of grease pencils is unacceptable.

LINE SYMBOLS, LINE WEIGHTS AND LETTERING ORIENTATION

<u>LINE SYMBOLS</u>	<u>LINE WEIGHTS</u>
 MATCH LINE	 LIGHT * #00 (.012)
 CENTER LINE	 #0 (.014)
 PHANTOM LINE	 #1 (.020)
 BUILDING LINE	 #2 (.024)
 INVISIBLE OR HIDDEN CONSTRUCTION	 #3 (.031)
 BREAK LINE	 #5 (.051)
 PARTIAL BREAK/(CUT AWAY)	* MINIMUM LINE WEIGHT ACCEPTED BY NPS



DISCIPLINE SPECIFIC GUIDELINES

Site Work Drawings (Landscape Architecture, Civil, and Survey)

Slope designation of a utility line or a grade line of a road should be expressed as a percent of slope and the direction of the slope should be designated by a + or - sign with an arrow. A positive slope is uphill in the direction of increasing station.

Slope designation of earthwork may be shown as run:rise (for example, 3:1, 4:1).

In special instances, slopes may be designated as inches of rise or fall per foot of run. For clarity, the direction of the slope should be designated with an arrow (for example, 1/4 inch per foot →).

Architectural Drawings

1. On the first sheet of the architectural drawings, provide Building Code Data, including:
 - Name and date of the major building code(s) to which the design conforms
 - Occupancy Group
 - Construction Type
 - Square footage of each building

Structural Drawings

1. General Notes: should contain, as a minimum,:
 - Design loads
 - Name and date of model building code and/or design specifications to which the design conforms
 - Soil bearing capacity or other foundation design values
 - Structural materials description (for example, ASTM number, allowable stresses, etc).
2. Showing Elevations on Drawings:

Plan Sheets: Elevations should be shown on plan sheets (e.g. top of beam, top of footing, top of wall), as well as sections and details.

Decimal versus Feet and Inches: The method of expressing elevations should match the architectural drawings or other drawings to which the structural drawings pertain. For instance, if the building elevations on the architectural sheets are in feet and inches, the building elevations on the related structural drawings should be in feet and inches also. Elevations shown should be consistent throughout the set of drawings.

3. Sections and Details:

Showing Architectural Features: Sections and details may show architectural features in order to enhance the information being conveyed. These architectural features should not be shown in detail but rather outlined using a phantom line.

Poche' (material symbols): All structural materials shown in section should be poche'd. When two structural steel members are shown back to back, reverse and stagger the hatching in order to increase clarity.

Use of O.C.: It is normally not necessary to use O.C. to annotate "on center" when using "@" symbol. It is appropriate to state O.C. in cases when panelized or modular materials are being applied to framing.

4. Dimensions for Spacing of Structural Members:

Dimensions 2 feet or less: Indicated in inches.

Dimensions greater than 2 feet: Indicated in feet and inches.

5. Nominal Versus Actual Size Wood:

Nominal Size: Nominal size lumber and timber should be indicated without tick marks (e.g. 2x6, 10x10).

Actual Size: Actual size lumber and timber, including glued laminated timber, should be indicated with tick marks (e.g. 8"x8", 1 3/4", 7 3/4").

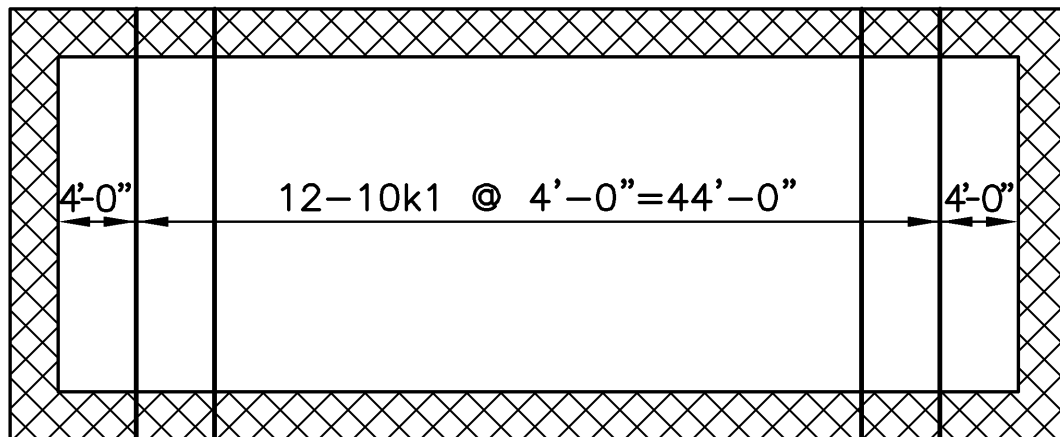
Note: For projects which contain both actual size and nominal size lumber, include a statement in the General Notes explaining this convention.

SHOWING MEMBERS IN FRAMING PLANS:

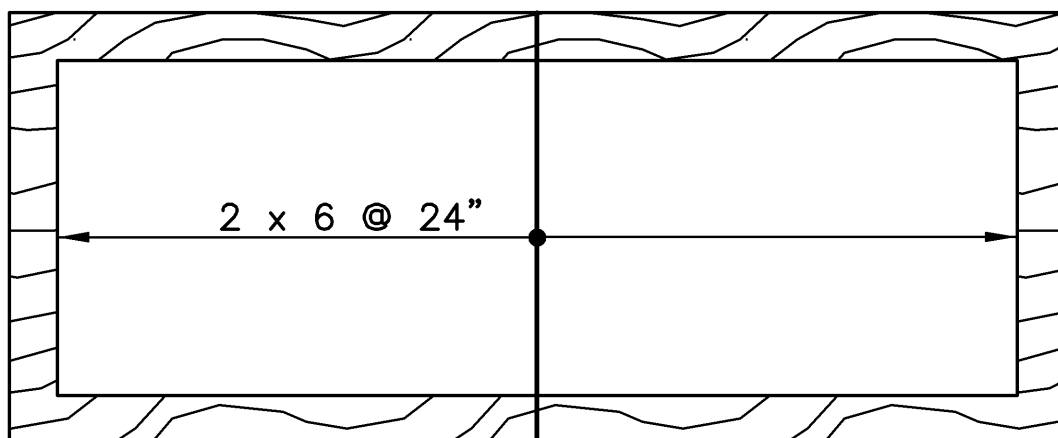
Single Members: Member should be shown as a solid line without span arrows.

Repetitive Members:

Pre-Manufactured Materials: Members should be shown as the first and last two members of the layout with member identification, distance between members, how many, and spacing.



'Off-the-shelf' Materials (e.g. lumber framing): Members should be shown as one in the middle of the layout with leaders to the edges, member identification and spacing.



STRUCTURAL STEEL SHAPE DESIGNATIONS

DESIGNATION	TYPE OF SHAPE	DESIGNATION	TYPE OF SHAPE
PL $\frac{1}{2}$ x 18	PLATE	HP 14x73	HP SHAPE
L $6 \times 6 \times \frac{3}{4}$	EQUAL LEG ANGLE	C 12x20.7	AMERICAN STANDARD CHANNEL
L $6 \times 4 \times \frac{5}{8}$	UNEQUAL LEG ANGLE	MC 12x45	MISCELLANEOUS CHANNEL
BAR 1 \square	SQUARE BAR	MC 12x10.6	
BAR $1\frac{1}{4} \phi$	ROUND BAR	W 24x76	W SHAPE
BAR $2\frac{1}{2} \times \frac{1}{2}$	FLAT BAR	W 14x26	
ST 12x50	STRUCTURAL TEE CUT FROM S SHAPE	M 8x18.5	M SHAPE
WT 12x38	STRUCTURAL TEE CUT FROM W SHAPE	M 10x9	
WT 7x13		M 8x34.3	
S 24x100	S SHAPE	MT 4x9.25	STRUCTURAL TEE CUT FROM M SHAPE
PIPE 4 STD.	PIPE	MT 5x4.5	
PIPE 4X-STRONG	PIPE	MT 4x17.15	
PIPE 4XX-STRONG	PIPE	TS 4x4x.375	STRUCT. TUBING: SQ
		TS 5x3x.375	STRUCT. TUBING: REC.

STANDARD ABBREVIATIONS GIVEN IN THIS TABLE DESIGNATE ROLLED STEEL SECTIONS ON DRAWINGS THAT IDENTIFY THE SECTION GROUP WITHOUT REFERENCE TO THE MANUFACTURER.

WHEN THE LENGTH OF A ROLLED MEMBER IS GIVEN, USE FEET AND INCHES THUS: W 24x76x6'-10", OR L $2 \times 2 \times \frac{1}{2} \times 1'-11\frac{1}{2}"$, OR 2-L $6 \times 4 \times \frac{1}{2} \times 0'-8"$, OR PL $\frac{1}{2} \times 10 \times 0'-11\frac{1}{2}"$.

FOR PRACTICALLY ALL OTHER DIMENSIONS ON STRUCTURAL STEEL (EXCEPT DEPTH OF SECTIONS, PIPE DIAMETERS, HOLES, ETC.) USE FEET AND INCHES WHEN 1'-0" OR OVER, AND INCHES ONLY WHEN LESS THAN ONE FOOT: THUS $7\frac{1}{2}"$.

CHAPTER FOUR

Archival Quality

4. ARCHIVAL QUALITY

GENERAL

The National Park Service is responsible for the lifetime administration and maintenance of its buildings. Therefore, it is imperative that the material used for that documentation meets a minimum 100 year life expectancy.

The archival quality of drawings is important because various reproduction methods, such as diazo printing and wash-off photographic processes, do not produce acceptable archival products. The National Park Service will not accept as an archival product any drawing which has been prepared using a spray fixative or spray coating.

WET INK PLOTTERS AND INK JET PRINTERS

Drawing sheets produced using either wet ink plotters or ink jet printers are acceptable as long as the ink is waterproof, pigmented, is a permanent base ink, and is not diluted. Lettering and line density shall be 100% black. Drawings submitted using the wet ink process shall be printed or plotted on high quality vellum, Clearprint 1000H or approved equal, or on translucent drafting mylar with a matte face surface with a minimum thickness of .003 inch and a maximum thickness of .004 inch.

Screen patterns shall be 50% dot with no less than 85 dots per inch and no more than 120 dots per inch relative to line weights being used. Each dot shall be sharp, clear, and with a definite visual dot separation of each dot. In some cases computer generated screen patterns which use a combination of pen sizes and percentage of screen and which are produced on wet ink plotters or ink jet printers may be acceptable. Screen patterns shall be of consistent line and lettering quality vertically, horizontally, and diagonally.

USE OF PHOTOGRAPHIC REPRODUCTION

In some cases, photographic reproduction methods may be used as an effective tool in the preparation of a set of drawings. For instance, if several drawing sheets require the same base sheet information (a floor plan, for example), duplicates made by photographic techniques may be used. In all cases, the end product must meet the same archival standards as original tracings.

Photographic reproducibles shall be .004 inch thickness, polyester base matte film, and photographically developed, fixed and washed. Lettering and line work must be sharp and clear, not over or under exposed, and reversed reading. Finished product shall be free of chemical stains, dirt, wrinkles, and other visual defects that would affect the quality of reproduction. Photographic wash off or moistline eraser film will not be acceptable as a final product.

If photo art/tint screens are used on photographic mylar, the screens shall be 50% dot with no fewer than 100 dots per inch, and no more than 120 dots per inch for a standard 22"x34" sheet or with no fewer than 133 dots per inch and no more than 150 dots per inch for a half-size drawing.

When an A/E wants to use "photo drawing techniques" (for example, photos of a site or building), they must supply a high quality, half-size, photographic mylar reproducible of the photo drawing sheet, in addition to supplying the full-size original to the National Park Service. When photographs are used as information on a photographic sheet, the photos shall be screened by using a magenta or gray halftone screen with 120 dots per inch, with either conventional square dots or elliptical dots, for both standard 22"x34" drawings and for half-size drawings. The half-size reproducible must be capable of producing clear, legible prints by using the diazo or xerographic printing process.

UNACCEPTABLE PRODUCTS

Design and construction drawings produced by using computerized methods, such as impact printer plotters, electrostatic, laser, or xerography, and submitted as final products, have presented many problems and concerns. Some of the problems associated with these methods are image transfer with the stacking of drawings, image smearing, rubbing off the image with routine handling, flaking and peeling during reproduction, poor clarity of lettering and detail, uneven density, hollowing out of lettering and line work, poor image anchorage to the sheet, and quality variation over time.

Some of the problems associated with the xerographic process are documented in American Society of Testing and Materials (ASTM) Specification D-3458, "Standard Specification for Copies from Office Copying Machines for Permanent Records," or National Technical Information Service (NTIS) Publication PB90-171836, "Archival Copies of Thermofax, Verifax, and Other Unstable Records." The NTIS publication also describes the use of the tape test of dry image anchorage of the copier. (Copies of this document may be attained through the NPS Technical Information Center, Denver Service Center).

Based on the problems associated with the technology described in this section, design and construction drawings produced or reproduced by using any of the unacceptable methods noted above will not be accepted as a final archival product or as an original drawing.

CHAPTER FIVE

Construction Drawings

5. CONSTRUCTION DRAWINGS

SHEET ORDER

Each discipline's drawings should be organized in a logical sequence which agrees with the drawings of other disciplines in the drawing set. Each discipline should begin with an overview and then become more detailed. Discipline specific notes, legends, code references, and abbreviations should be located on the first sheet of each discipline. A list of abbreviations and a legend may be combined with other disciplines into an overall listing, which is shown at the beginning of the overall set of drawings in the General section.

A typical drawing set should be in the following order:

	<u>TYPE</u>	<u>SUBSHEET</u>
	Cover Sheet	
*	Index	
	General.....	G
	CivilC	
	Roads	
	Parking	
	Site Utilities	
	Grading Plan	
	Landscape.....	L
	Architectural.....	A
**	Structural.....	S
	Mechanical.....	M
	HVAC	
	Plumbing/Piping	
	Fire Protection	
***	Electrical.....	E
	Power	
	Lighting	
	Fire Detection	
	Intrusion Detection	
	Lightning Protection	

* The index should be placed on the cover sheet if possible.

** Plans of a structural set should be placed before the sections and details sheets (i.e. foundation, floor, and roof framing plans should precede any of the associated sections and details).

*** The following sequence should be used: legend and abbreviations, general notes, site plan, power plan, one line diagram, lighting plan, fire and intrusion plan, lightning protection, schedules, control wiring diagrams, and control cabinet layouts.

SUBSHEET DESIGNATION AND NUMBERING

Subsheet numbers should normally begin with the first letter of the discipline. For example, civil engineering work should begin with C, landscape design work with L, etc. If a discipline has more than one subfunction, these may have separate subsheet letters. Whole numbers should normally be used to number subsheets (for example M1, M2, etc.). If the project is divided into discrete areas, the designers may choose to use fractional subsheet numbers to differentiate the areas (for example A1.1, A2.1, etc.)

CHAPTER SIX

Drafting and Detailing References

6. DRAFTING AND DETAILING REFERENCES

The following is a list of detailing manuals that are used by the National Park Service in the preparation of drawings. The use of the latest edition of these manuals is recommended as a guideline.

STRUCTURAL

CONCRETE:	American Concrete Institute (ACI) Standard, <u>Details and Detailing of Concrete Reinforcement</u> , ACI 315 <u>ACI Detailing Manual</u> , SP-66
STEEL:	American Institute of Steel Construction, AISC, <u>Detailing for Steel Construction</u> American Welding Society, <u>Symbols for Welding and Nondestructive Testing</u> , ANSI/AWS A2.4 American Welding Society, <u>Structural Welding Code/Steel</u> , ANSI/AWS D1.1
TIMBER:	American Institute of Timber Construction, <u>Timber Construction Manual</u> , AITC 104, Typical Construction Details
MASONRY:	<u>Reinforced Masonry Engineering Handbook, Clay and Concrete Masonry, 5th Edition</u> , by James E. Amrhein <u>Designing and Detailing Masonry</u> , by Christine Beall
PRECAST CONCRETE:	Prestressed Concrete Institute, <u>PCI Drafting Handbook</u> ., MNL-119

<u>ELECTRICAL:</u>	ANSI Y32.2 (Graphic Symbols for Electrical and Electronic Diagrams) ANSI Y32.9 (Control)
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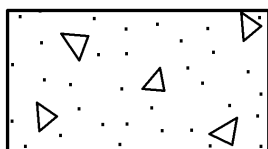
MECHANICAL:

HVAC:	ASHRAE Handbook - <u>Fundamentals</u> , Abbreviations and Symbols
Plumbing:	ASPE Data Book
Plumbing Fixtures:	ANSI Y32.4, Graphic Symbols for Plumbing Fixtures
Fire Sprinkler:	NFPA 170, Standard for Firesafety Symbols

APPENDIX A

General Materials Symbols

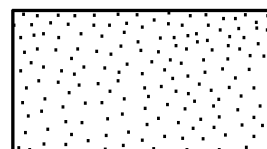
TYPICAL MATERIAL SYMBOLS



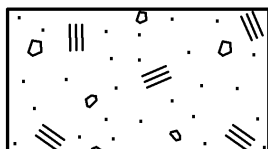
CONCRETE



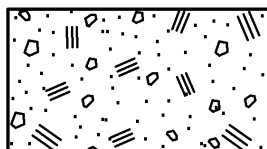
STEEL



SAND, GROUT
OR MORTAR



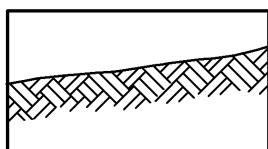
SELECT
BACKFILL



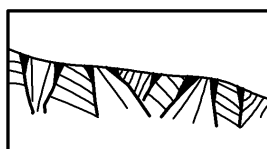
BACKFILL



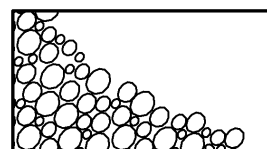
AGGREGATE



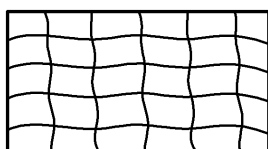
EARTH SURFACE



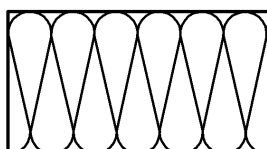
ROCK SURFACE



GRAVEL/DRAIN ROCK



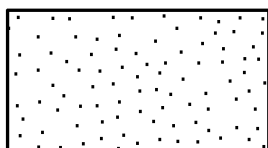
INSULATION—RIGID



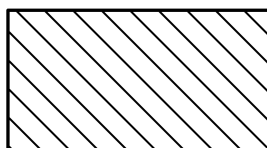
INSULATION



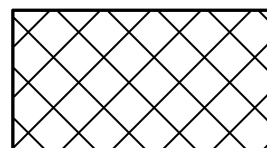
GYP SUM BOARD



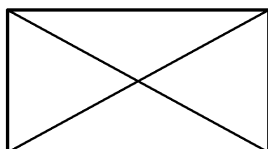
PLASTER



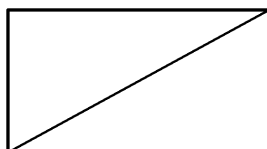
BRICK (SECTION)



CMU (SMALL SCALE)



WOOD FRAMING



BLOCKING



FINISH WOOD



PLYWOOD

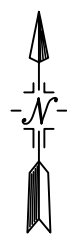
APPENDIX B

Sample Survey Sheets

Sample Survey Index Sheet
Sample Topographic Survey (Developed Area)
Sample Topographic Survey (Undeveloped Area)

LEGEND

- TREE / THICKET LINE
- AERIAL UTILITY (LABELED)
- WIRE FENCE
- RAIL FENCE
- UNDERGROUND UTILITY
- UG
- UTILITY POLE
- GAS VALVE
- TREE - SIZE - SPECIES
- LIGHT LOCATION
- POST
- CONTROL STATION
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- WETLANDS AREA
- (A1) DRAWING NUMBER
- SIGN
- NAIL AND SHINER
- BBQ BARBECUE PIT
- I.P. SET
- IRON PIPE
- SET WETLANDS SURVEY



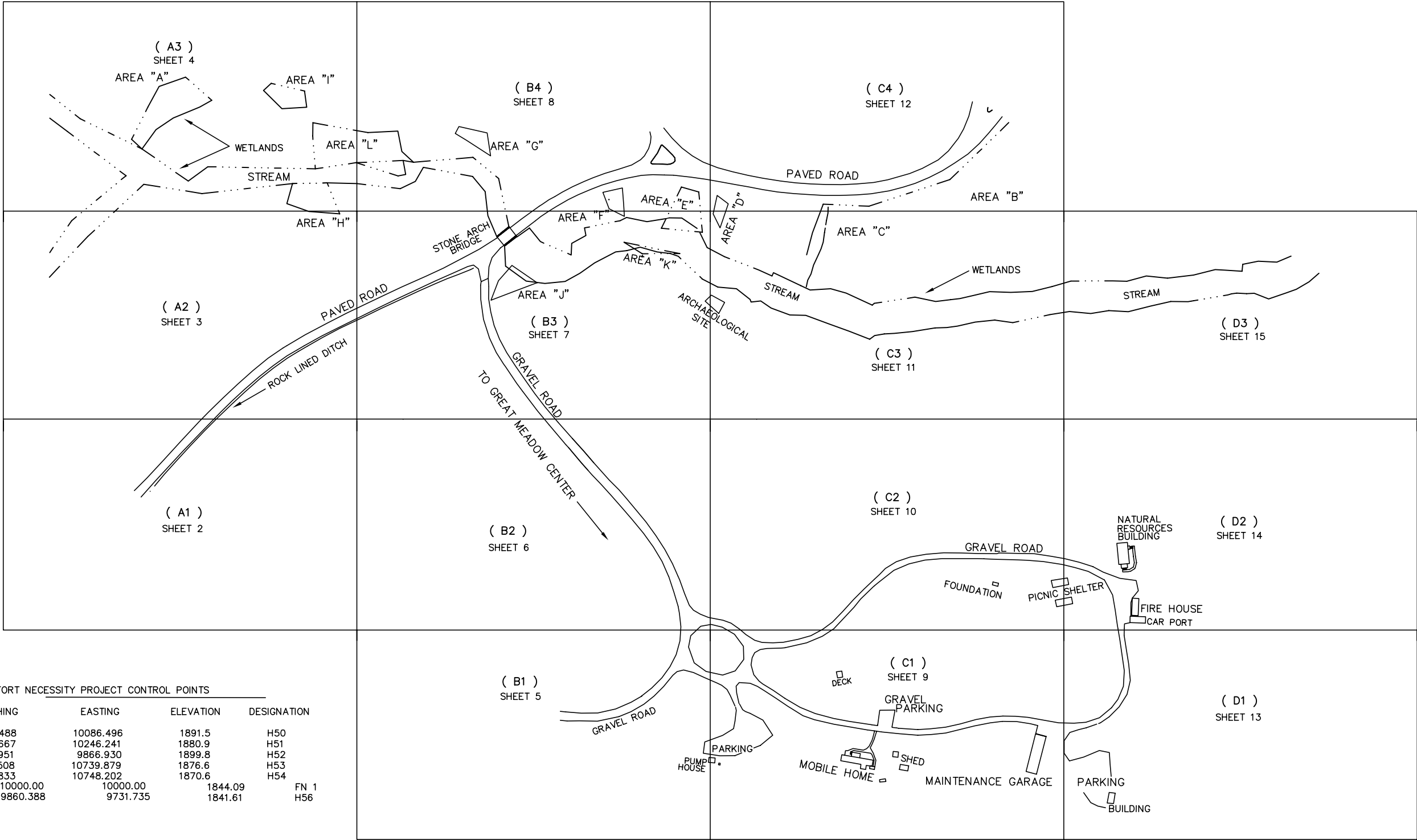
FORT NECESSITY PROJECT CONTROL POINTS

NORTHING	EASTING	ELEVATION	DESIGNATION
8989.488	10086.496	1891.5	H50
9159.667	10246.241	1880.9	H51
8901.951	9866.930	1899.8	H52
9141.508	10739.879	1876.6	H53
8933.833	10748.202	1870.6	H54
10000.00	10000.00	1844.09	FN 1
9860.388	9731.735	1841.61	H56

NOTE:

UNDERGROUND UTILITY LOCATIONS SHOWN ARE BASED UPON VARIOUS RECORD UTILITY MAPS IN CONJUNCTION WITH VISIBLE FIELD EVIDENCE GATHERED DURING THE TIME THE FIELD SURVEY WAS PERFORMED. THEREFORE, ALL UNDERGROUND UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

THIS DRAWING ONLY REFLECTS AND VERIFIES THE FIELD SURVEY DATA OF THOSE FEATURES AND CONDITIONS PRESENT AS OF _____.



NOTES

MONUMENTS

NAME: MON. #133
DESCRIPTION:
NPS BRASS CAP
N. 1709777.61
E. 375209.81
ELEV. 1688.351

NAME: JF-22
DESCRIPTION:
NPS BRASS CAP
N. 1709670.80
E. 375750.89
ELEV. 1696.55

NAME: JF-21
DESCRIPTION:
NPS BRASS CAP
N. 1709664.44
E. 375589.09
ELEV. 1702.13

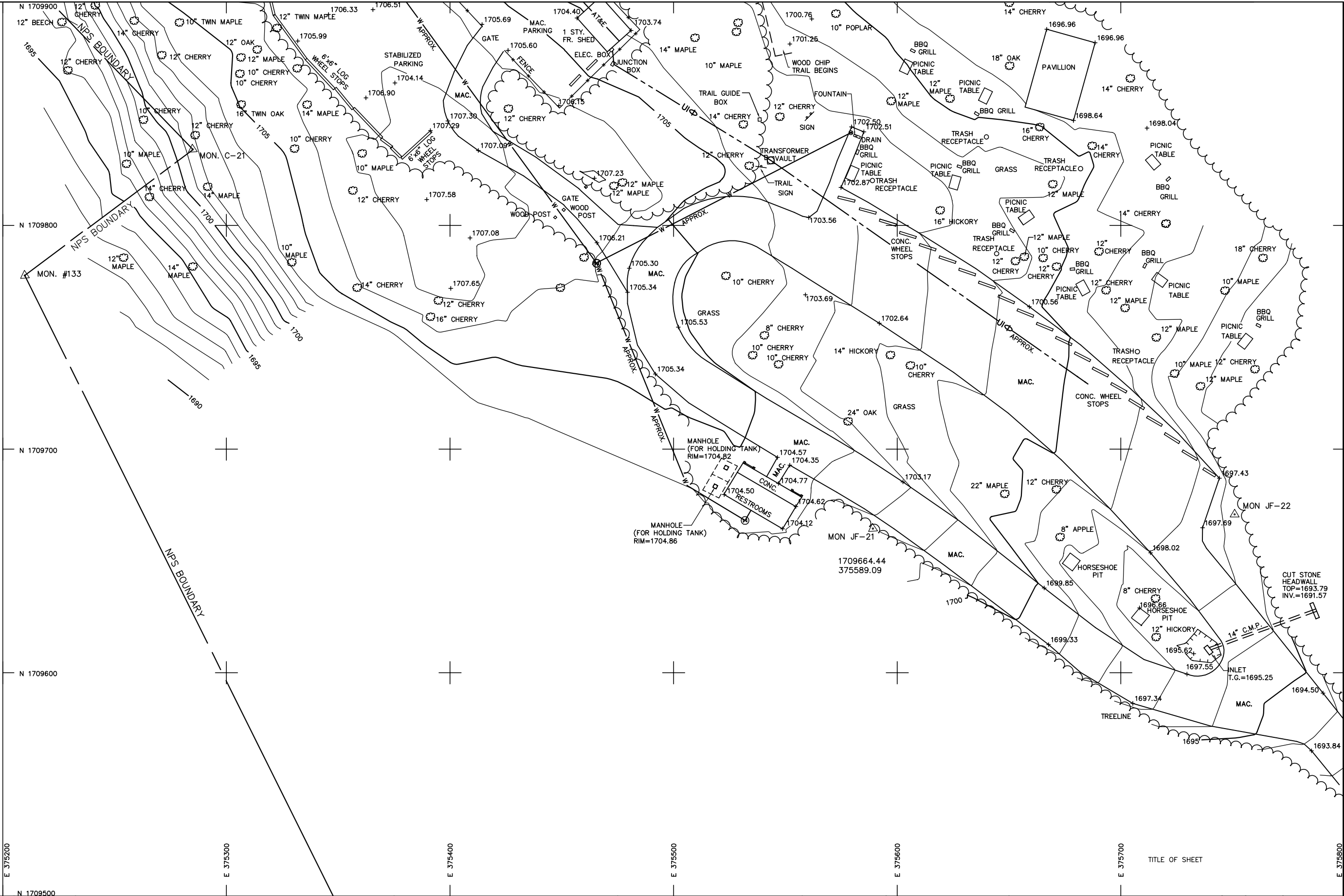


NOTES

THE SURVEY BOUNDARY LINES SHOWN HEREIN ARE ONLY A GRAPHIC APPLICATION OF THE LEGAL DESCRIPTION FOR EACH PARCEL OR RIGHT-OF-WAY TO THIS TOPOGRAPHIC MAP; THEY DO NOT, IN ANY WAY, REPRESENT AN ACTUAL BOUNDARY SURVEY AND SHOULD NOT BE RELIED UPON FOR ACCURATE BOUNDARY LOCATION.

UNDERGROUND UTILITY LOCATIONS SHOWN ARE BASED UPON VARIOUS RECORD UTILITY MAPS IN CONJUNCTION WITH VISIBLE EVIDENCE GATHERED DURING THE TIME THE FIELD SURVEY WAS PERFORMED. THEREFORE, ALL UNDERGROUND UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

THIS DRAWING ONLY REFLECTS AND VERIFIES THE FIELD SURVEY DATA OF THOSE FEATURES AND CONDITIONS PRESENT AS OF ____.



11/8/01 14:18 C:\ERMAN R15 S:\SW\USER\NPS10\JUL\SAMPLE-DEV-AREADWG

REVISIONS		BY	DATE	HORIZONTAL DATUM: PA SPC SOUTH ZONE (NAD 27), BASED ON EXISTING NPS BOUNDARY MONUMENTS C-21 AND #133		SCALE: 1" = 20'		UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER		A-E FIRM		FIELD WORK:		SAMPLE TOPOGRAPHIC SURVEY (DEVELOPED AREA)		PKG. NO.		SHEET		DRAWING NO.	
				VERTICAL DATUM: NGVD 29, BASED ON PDH DISK Q316 (ELEV.= 1653.146 FT.)		GRAPHIC SCALE CONTOUR INTERVAL = 1'				NAME: CITY, STATE: CONTRACT NUMBER:		DRAWN:		CHECKED:		99		41,001A			
																OF 200					

NOTES

MONUMENTS

NAME: GC17
DESCRIPTION: GC17, 1976
NPS BRASS CAP ON ROCK 1' HIGH
N: 1836303.96
E: 439068.63
EL: 6983.15

NAME: GC18
DESCRIPTION: GC18, 1976
NPS ALUM. CAP IN CONC., UP 0.1
LOCATED 8' SOUTH OF ROCK OUTCROP
N: 1836231.71
E: 439357.25
EL: 6976.45

NOTES

UNDERGROUND UTILITY LOCATIONS SHOWN ARE BASED UPON VARIOUS RECORD UTILITY MAPS IN CONJUNCTION WITH VISIBLE EVIDENCE GATHERED DURING THE TIME THE FIELD SURVEY WAS PERFORMED. THEREFORE, ALL UNDERGROUND UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

THIS DRAWING ONLY REFLECTS AND VERIFIES THE FIELD SURVEY DATA OF THOSE FEATURES AND CONDITIONS PRESENT AS OF ____.

REVISIONS

BY

DATE

HORIZONTAL DATUM: NAD 1927, ARIZONA STATE PLANE COORDINATES
BASED ON MONUMENTS NP12 & GC45

VERTICAL DATUM: NGVD 1929, BASED ON MONUMENT NP23

SCALE: 1" = 20'
0 20 40
GRAPHIC SCALE
CONTOUR INTERVAL = 1'

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

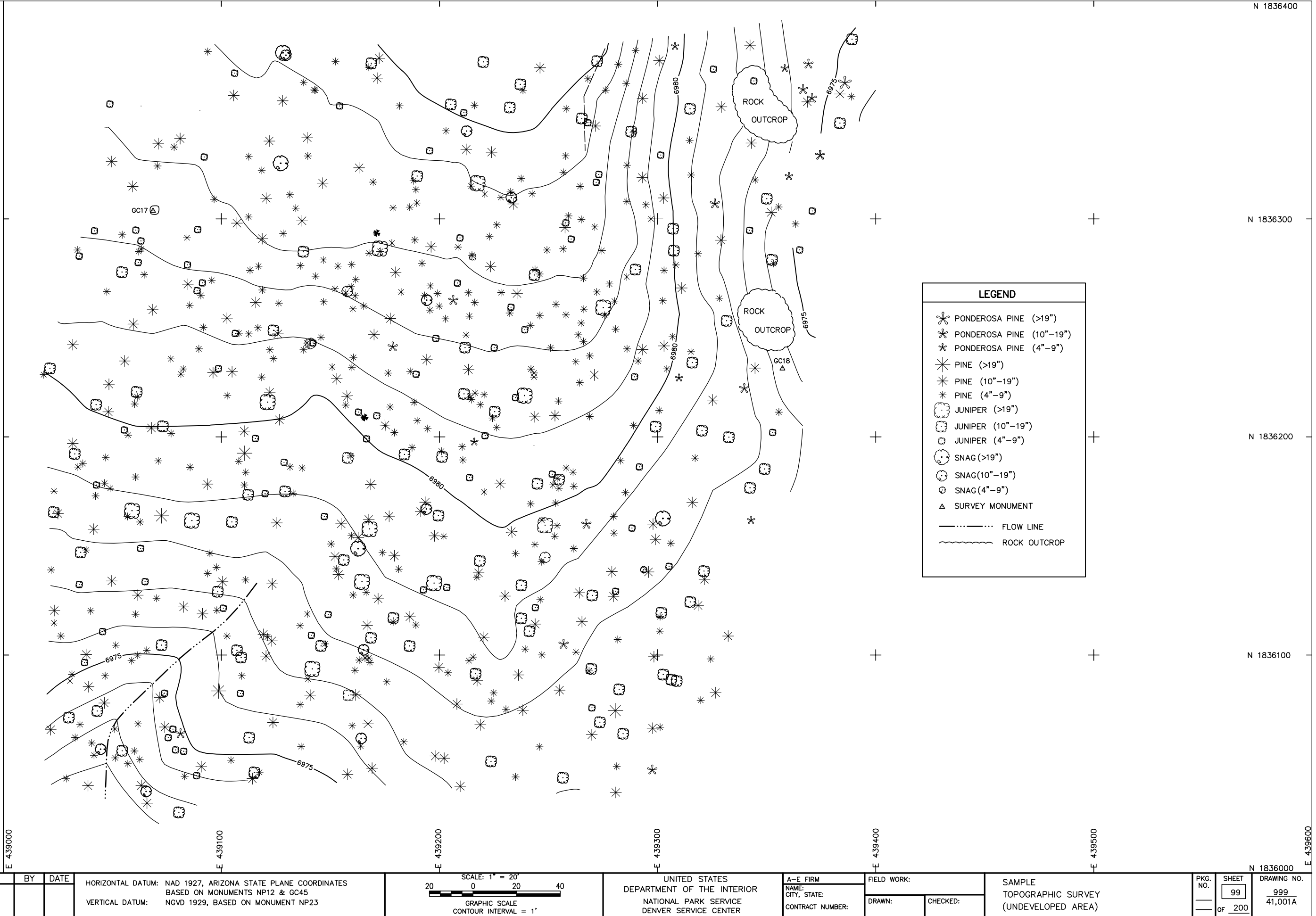
A-E FIRM
NAME:
CITY, STATE:
CONTRACT NUMBER:

FIELD WORK:
DRAWN:
CHECKED:

SAMPLE
TOPOGRAPHIC SURVEY
(UNDEVELOPED AREA)

PKG. NO.
SHEET
OF

DRAWING NO.
999
41.001A



11/9/01 11:35 C:\ERMAN R15 S:\SYN\USER\NPS\10\3\1\SAMPLE-UNDEV-AREADWG

APPENDIX C

Standard Abbreviations, Standard Symbols, and Sample Construction Drawings

<u>SHEET</u>	<u>SUB SHEET</u>	<u>TITLE OF SHEET</u>
1		SAMPLE COVER SHEET
2	G1	SAMPLE PROJECT OVERVIEW SITE PLAN
3	C1	SAMPLE ABBREVIATION SHEET
4	C2	SAMPLE SYMBOL SHEET
5	C3	SAMPLE MAPPING SYMBOLS
6	C4	SAMPLE PARKING AREA LAYOUT
7	C5	SAMPLE PARKING AREA GRADING PLAN
8	C6	SAMPLE ROAD PROFILE AND SECTIONS
9	C7	SAMPLE ROADWAY CROSS SECTIONS
10	C8	SAMPLE ROADWAY PLAN AND PROFILE
11	C9	SAMPLE WATER LINE PLAN AND PROFILE
12	C10	SAMPLE SEWER PLAN AND PROFILE
13	C11	SAMPLE STANDARD DETAILS
14	C12	SAMPLE PLAN AND DETAILS FOR ROADWAY SIGNS AND PAVEMENT MARKINGS
15	L1	SAMPLE SITE PLAN BUILDING TERRACE
16	L2	SAMPLE LANDSCAPE PLAN AND DETAILS
17	L3	SAMPLE VISITOR CENTER IRRIGATION LAYOUT
18	A1	SAMPLE FLOOR PLAN
19	A2	SAMPLE RENOVATION FLOOR PLAN
20	A3	SAMPLE ELEVATIONS
21	A4	SAMPLE SECTIONS
22	A5	SAMPLE DETAIL SHEET
23	S1	SAMPLE FOUNDATION AND FLOOR FRAMING PLAN
24	S2	SAMPLE FOUNDATION PLAN / ROOF FRAMING PLAN
25	S3	SAMPLE SECOND FLOOR FRAMING PLAN
26	S4	SAMPLE ROOF FRAMING PLAN
27	S5	SAMPLE FOUNDATION DETAILS
28	S6	SAMPLE FIRST FLOOR FRAMING SECTIONS
29	S7	SAMPLE ROOF BRACING AND DIAPHRAGM PLAN AND JOIST BEARING DETAILS

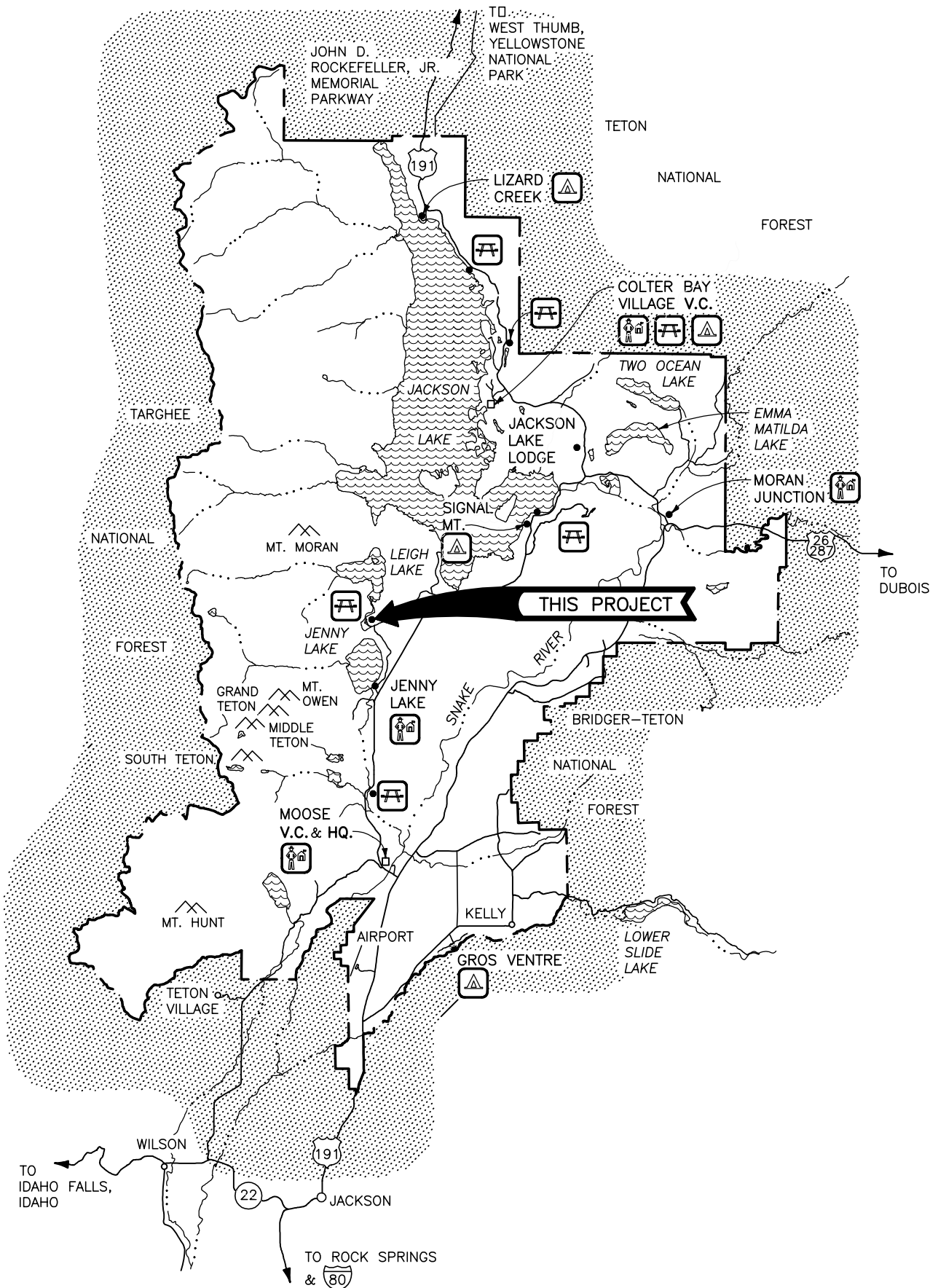
<u>SHEET</u>	<u>SUB SHEET</u>	<u>TITLE</u>
30	M1	SAMPLE LEGEND
31	M2	SAMPLE HVAC FLOOR PLAN
32	M3	SAMPLE HVAC SECTIONS
33	M4	SAMPLE HVAC FLOW DIAGRAMS
34	M5	SAMPLE WATER SUPPLY PLAN
35	M6	SAMPLE WASTE AND VENT PLAN
36	M7	SAMPLE WASTE AND VENT ISOMETRIC
37	M8	SAMPLE FIRE PROTECTION PLAN
38	E1	SAMPLE ELECTRICAL ABBREVIATIONS
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40	E3	SAMPLE ELECTRICAL AND TELEPHONE SITE PLAN, ONE LINE DIAGRAM
41	E4	SAMPLE POWER AND LIGHTING PLAN, SCHEDULES, AND CONTROL SCHEMATIC
42	E5	SAMPLE CONTROL WIRING DIAGRAM
43	E6	SAMPLE FIRE / INTRUSION ALARM, RISER DIAGRAM, AND LIGHTING PROTECTION

Note:

These drawings are a sampling of design work of all disciplines for the National Park Service. They are not meant to represent a complete set of construction drawings. Each sheet should be viewed as an individual sheet representing good design drafting practices. Section and detail bubbles, sheet numbers, subsheet numbers, etc., will not cross reference.

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BASIC DATA: U.S.G.S. TOPOGRAPHIC MAP 1968; COVER SHEET REVISED & REDRAWN 8/93.



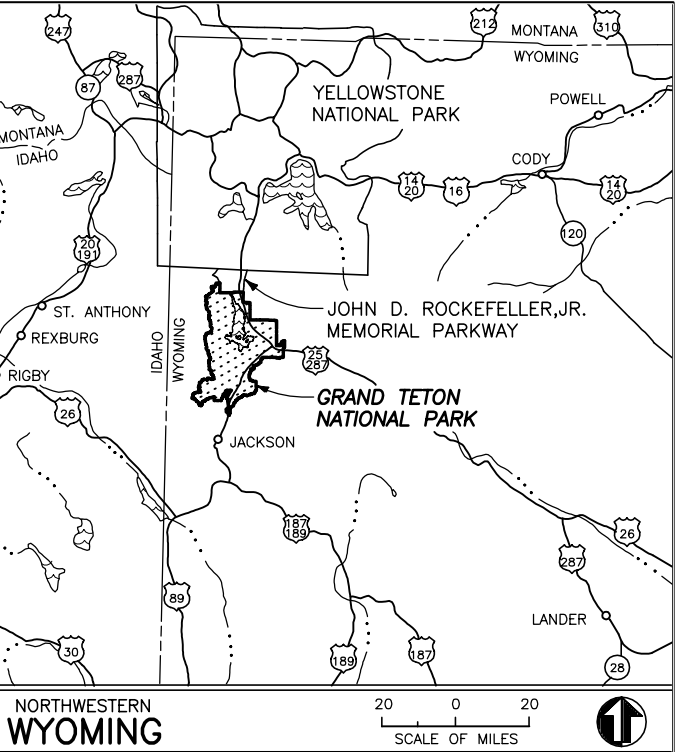
GRAND TETON NATIONAL PARK

LEGEND

- PARK BOUNDARY
- STATE LINE
- PAVED ROAD
- UNPAVED ROAD
- RIVER
- V.C. VISITOR CENTER
- HQ. PARK HEADQUARTERS
- RANGER STATION
- PICNIC AREA
- CAMPGROUND

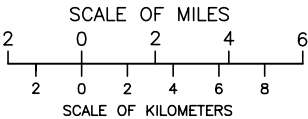
INDEX

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4	C2	SYMBOL SHEET
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9	C7	ROADWAY CROSS SECTIONS
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SHEET	SUB SHEET	TITLE OF SHEET
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43	E6	FIRE/INTRUSION ALARM RISER DIAGRAM AND LIGHTNING PROTECTION

PROJ. NO. GRTE108
1443IB160092123



Mark	Sheet	REVISION	Date	Initial	QUALITY DESIGN CERTIFICATION
					<input checked="" type="checkbox"/> Prepared in Accordance with Design Development (Title I) Drawing No. _____ OR <input type="checkbox"/> Variance from Design Development (Title I) Approved by Superintendent on _____ Date _____ OR <input type="checkbox"/> Construction Drawing Not Preceded by Design Development (Title I)
					(SIGNATURE) _____ 10/94 Date _____ Project Manager



CONSTRUCTION DRAWINGS

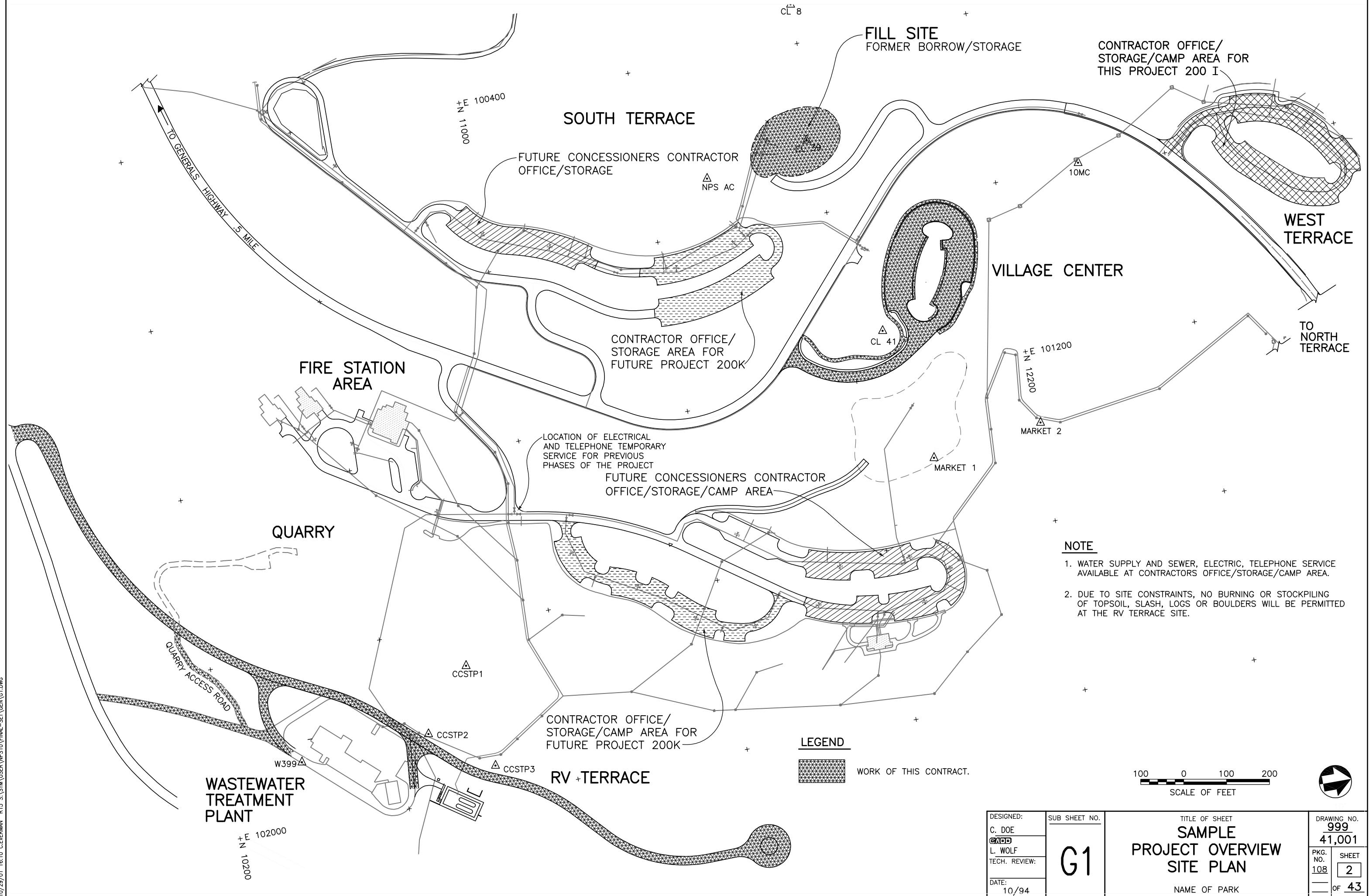
UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
SITE IMPROVEMENTS
LOCATION WITHIN PARK
LEIGH LAKE PICNIC AREA
NAME OF PARK
GRAND TETON NATIONAL PARK
REGION COUNTY STATE
ROCKY MTN. TETON WYOMING

DRAWING NO.
999
41,001
PKG. NO. **108**
SHEET **1** OF **43**

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SITE WORK GENERAL ABBREVIATIONS

⊙	AT	CB	CATCH BASIN	EVC	END OF VERTICAL CURVATURE	MH	MANHOLE	RT	RIGHT
℄	CENTER LINE	CC	CONTROL CABLE	EW	EACH WAY	MIN	MINIMUM	RW	RECLAIMED WATER
△	DELTA (ANGLE)	CF	CUBIC FEET	EXIST	EXISTING	MJ	MECHANICAL JOINT	S	SEWER
∅	DIAMETER	CI	CAST IRON	FDN	FOUNDATION	MO	MIDDLE ORDINATE	S	SLOPE
'	FEET	CIP	CAST IRON PIPR	FF	FINISHED FLOOR (ELEVATION)	MON	MONUMENT	S	SOUTH
℄	FLOW LINE	CJ	CONSTRUCTION JOINT	FH	FIRE HYDRANT	N	NORTH	SB	SELECT BACKFILL
"	INCHES	CLG	CEILING	FL	FLOW LINE	NIC	NOT IN CONTRACT	SCH	SCHEDULE
—	MINUS	CLR	CLEAR	FM	FORCE MAIN	NPS	NATIONAL PARK SERVICE	SHT	SHEET
#	NUMBER	CLR	CLEARANCE	FT	FOOT, FEET	NTE	NOT TO EXCEED	SP	SIGNAL POLE
%	PERCENT	CMP	CORRUGATED METAL PIPE	G	GAS	NTS	NOT TO SCALE	SQ	SQUARE
+	PLUS	CO	CLEANOUT	GA	GAGE	OC	ON CENTER	SS	STAINLESS STEEL
℄	PROPERTY LINE	CO	CONTRACTING OFFICER	GAL	GALLON	OD	OUTSIDE DIAMETER	ST	STORM SEWER
℄	P—LINE	CONC	CONCRETE	GALV	GALVANIZED	PB	POLYBUTYLENE (PIPE)	STA	STATION
A	AIR	CP	CORNER POINT	GLL	GRADING LIMIT LINE	PB	PULLBOX	STL	STEEL (PIPE)
AC, ACP	ASBESTOS CEMENT (PIPE)	CP	CATCH POINT	GPH	GALLONS PER HOUR	PC	POINT OF CURVATURE	STM	STEAM
AC	ASBESTOS CEMENT	CS	COMBINED SEWER	GPM	GALLONS PER MINUTE	PCC	POINT OF COMPOUND CURVATURE	T	TANGENT LENGTH
AC	ASPHALT CEMENT CONCRETE	CS	COMFORT STATION	GS	GALVANIZED STEEL	PE	PLAIN END PIPE	T	TELEPHONE
AE	AERIAL TELEPHONE	CSP	CORRUGATED STEEL PIPE	GSP	GALVANIZED STEEL PIPE	PE	POLYETHYLENE (PIPE)	TRANS	TRANSFORMER
AL	ALUMINUM	CU	COPPER	GV	GATE VALVE	PED	PEDESTAL	TC	TOP OF CURB
ARV	AIR RELIEF VALVE	CV	CURBSTOP VALVE	HB	HOSE BIBB	PG	PROFILE GRADE	TS	TOP OF SLOPE
ASPH	ASPHALT	CY	CUBIC YARDS	HH	HANDHOLE	PI	POINT OF INTERSECTION	TS	TOP OF STEP
AT	AERIAL TELEPHONE	D	DELTA (ANGLE)	HP	HIGH POINT	POC	POINT ON CURVE	TS	TRENCH SCAR
B&B	BALL AND BURLAP	DBH	DIAMETER BREAST HEIGHT	HP	HINGE POINT	POL	POINT ON LINE	TW	TOP OF WALL
BC	BEGINNING OF CURVE	DC	DEGREE OF CURVE	HORIZ	HORIZONTAL	POT	POINT ON TANGENCY	TYP	TYPICAL
BC	BOTTOM OF CURB	DET	DETAIL	IN	INCH, INCHES	PP	POWER POLE	UE	UNDERGROUND ELECTRICAL
BC	BRASS CAP	DI	DROP INLET	ID	INSIDE DIAMETER	PRC	POINT OF REVERSE CURVATURE	UT	UNDERGROUND TELEPHONE
BD	BEDDING	DI	DUCTILE IRON	INV	INVERT	PRV	PRESSURE REGULATING VALVE	V	VALVE
BF	BACKFILL	DIA	DIAMETER	IE	INVERT ELEVATION	PSF	POUNDS PER SQUARE FOOT	VAR	VARIES
BLDG	BUILDING	DIP	DUCTILE IRON PIPE	JT	JOINT	PSI	POUNDS PER SQUARE INCH	VC	VERTICAL CURVE
BM	BENCHMARK	DR	DRAIN	L	LENGTH	PT	POINT OF TANGENCY	VC,VCP	VITRIFIED CLAY PIPE
BOL	BEGINNING OF LINE	E	EAST	L	LIGHTING	PVC	POLYVINYL CHLORIDE (PIPE)	VERT	VERTICAL
BOT	BOTTOM	E	ELECTRIC	LB	POUND	PVCC	POINT OF VERTICAL COMPOUND CURVATURE	VPC	VERTICAL POINT OF CURVATURE
BR	BRICK	EA	EACH	LC	LENGTH OF CURVE	PVI	POINT OF VERTICAL INTERSECTION	VPI	VERTICAL POINT OF INTERSECTION
BS	BOTTOM OF SLOPE	EC	END OF CURVE	LF	LINEAR FEET	PVRC	POINT OF VERTICAL REVERSE CURVATURE	VPT	VERTICAL POINT OF TANGENCY
BS	BOTTOM OF STEP	EJ	EXPANSION JOINT	LP	LOW POINT	R	RADIUS (LENGTH)	W	WATER
BVC	BEGINNING OF VERTICAL CURVATURE	EL	ELEVATION	LPG	LIQUID PROPANE GAS	RC	REINFORCED CONCRETE	W	WEST
BW	BOTTOM OF WALL	EOL	END OF LINE	LS	LIFT STATION	RCP	REINFORCED CONCRETE PIPE	W/	WITH
C	CHORD LENGTH	EP	EDGE OF PAVEMENT	LT	LEFT	REQ'D	REQUIRED	WLL	WORK LIMIT LINE
CAL	CALIPER	ER	EDGE OF ROAD	M	METER	RP	RADIUS POINT	W/O	WITHOUT
CATV	CABLE TELEVISION	ES	EDGE OF SHOULDER	MAX	MAXIMUM	ROW	RIGHT OF WAY	YH	YARD HYDRANT

NOTE










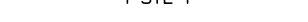



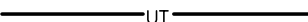
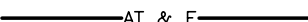
USE OF PERIODS IN ABBREVIATIONS IS OPTIONAL.

DESIGNED: C. SMITH	SUB SHEET NO. C1	TITLE OF SHEET SAMPLE ABBREVIATION SHEET	DRAWING NO. 999 41,001	
 L. WOLF			PKG. NO. 108	SHEET 3
TECH. REVIEW:				
DATE: 10/94			NAME OF PARK	



8/10/01 13:08 C:EVERMAN R15 S:\SYN\USER\NPS10\FINAL-SET\CIVIL\C2.DWG

SITE WORK SYMBOLS

UTILITY LINE SYMBOLS

	6"DIP W	WATERLINE WITH TYPE OF PIPE AND DIAMETER
	4"DIP RW	RECLAIMED WATER LINE WITH TYPE OF PIPE AND DIAMETER
	8"PVC S	GRAVITY SEWER LINE WITH TYPE OF PIPE AND DIAMETER
	4"PE FM	SEWER FORCE MAIN WITH TYPE OF PIPE AND DIAMETER
	18"RCP ST	STORM DRAIN WITH TYPE OF PIPE AND DIAMETER
	4"PVC DR	DRAIN LINE WITH TYPE OF PIPE AND DIAMETER
	2"GSP LP	LIQUIFIED PROPANE GAS LINE WITH TYPE OF PIPE AND DIAMETER
	2"GSP A	AIR LINE WITH TYPE OF PIPE AND DIAMETER
	4"STL F	FUEL LINE WITH TYPE OF PIPE AND DIAMETER
	AE	AERIAL (OVERHEAD) ELECTRICAL
	UE	UNDERGROUND ELECTRICAL
	AT	AERIAL (OVERHEAD) TELEPHONE
	UT	UNDERGROUND TELEPHONE
	AT & E	AERIAL TELEPHONE AND ELECTRIC
	UT & E	UNDERGROUND TELEPHONE AND ELECTRIC

NEW VERSUS EXISTING UTILITY LINES


	6"DIP W	WATER LINE WITH TYPE OF PIPE AND DIAMETER
	6"DIP W	EXISTING WATER LINE WITH TYPE OF PIPE AND DIAMETER

UTILITY LINES (SURVEYS)




	6"DIP RW	(EXISTING) RECLAIMED WATER LINE WITH TYPE OF PIPE AND DIAMETER
---	----------	--

TYPE OF PIPE

TYPE OF PIPE MAY BE DELETED IF CLEARLY SPECIFIED (NEW PIPE)
OR IF UNDETERMINABLE (EXISTING PIPE)

	6"W	WATER LINE WITH DIAMETER
	6"RW	EXISTING RECLAIMED WATER LINE WITH DIAMETER


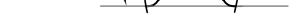
ABANDONED UTILITY LINES

	4"CIP S	EXISTING UTILITY (ABANDONED)
	4"CIP S	EXISTING UTILITY TO BE ABANDONED
	18"RCP ST	EXISTING UTILITY TO BE REMOVED

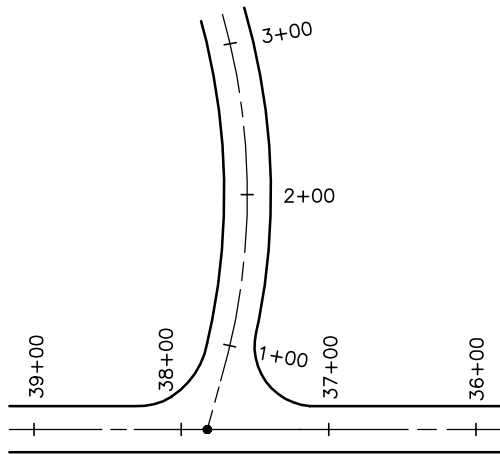
UTILITIES WITH DIFFERENT SYMBOLS FOR NEW AND EXISTING

	FIRE HYDRANT
	EXISTING FIRE HYDRANT
	YARD HYDRANT
	EXISTING YARD HYDRANT
	VALVE
	EXISTING VALVE
	CLEANOUT
	EXISTING CLEANOUT
	MANHOLE
	EXISTING MANHOLE

CONTOURS





	EXISTING/NEW INTERMEDIATE CONTOUR (EXISTING—SOLID, NEW—SOLID)
	EXISTING/NEW INDEX CONTOUR (EXISTING—SOLID, NEW—SOLID)

STATIONING









STATION LABELING SHOULD BE PLACED ON THE RIGHT SIDE OF ALIGNMENTS, WHENEVER POSSIBLE, RELATIVE TO THE DIRECTION OF INCREASING STATIONING, OFTEN REFERRED TO AS THE CONSTRUCTION LAYOUT DIRECTION OF AN ALIGNMENT, SEE ABOVE ROAD EXAMPLE. REFERENCE TO DIRECTION LEFT OR RIGHT OF A PARTICULAR ALIGNMENT ALWAYS APPLIES TO THE INCREASING STATIONING DIRECTION OF AN ALIGNMENT.

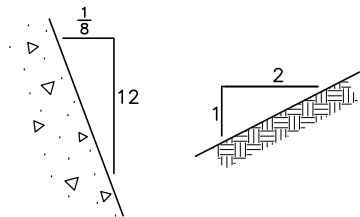
OTHER SYMBOLS

	METER
	REDUCER
	PLUGGED OR CAPPED LINE
	SCREENED END

ELECTRICAL SITE WORK SYMBOLS

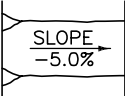
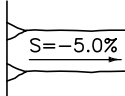
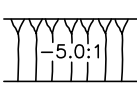
	POLE MOUNTED TRANSFORMER
	PAD MOUNTED TRANSFORMER
	PULLBOX, 1 INDICATES PULLBOX NUMBER
	ELECTRICAL MANHOLE
	SPLICE BOX
	GUY WIRE

SLOPES AND BATTERS



EXPRESS SLOPES AND BATTERS AS THE RATIO OF THE HORIZONTAL RUN TO THE VERTICAL RISE. (FOR EXAMPLE: 2:1)

SLOPES IN PLAN VIEW


	OR		OR	
PLAN		PLAN		PLAN

NOTE

FOR UTILITY LINE TYPES NOT SHOWN, USE SIMILIAR LINE SYMBOLOGY TO EXAMPLES SHOWN.



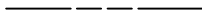

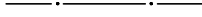








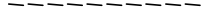
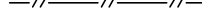
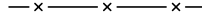











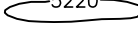

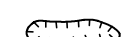
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


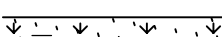
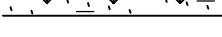

















LEGEND SHEET SHOULD INCLUDE ONLY SYMBOLS USED ON EACH SPECIFIC PROJECT.

DESIGNED: C. DOE  L. WOLF TECH. REVIEW:	SUB SHEET NO. C2	TITLE OF SHEET SAMPLE SYMBOL SHEET NAME OF PARK	DRAWING NO. 999 41,001
DATE: 10/94			PKG. NO. 108 SHEET 4 OF 43

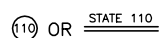
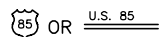

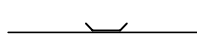
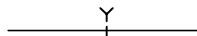
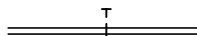
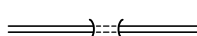
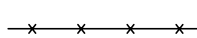
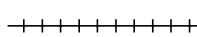
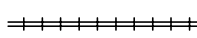







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OTHER SITE WORK AND MAPPING SYMBOLS

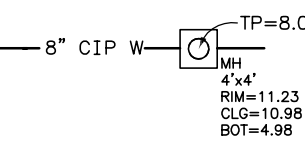
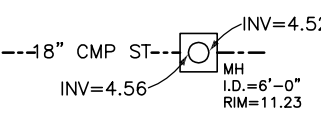
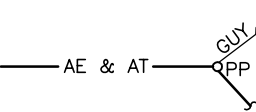
	PARK BOUNDARY
	INTERNATIONAL BOUNDARY
	STATE LINE
	COUNTY LINE
	RESERVATION LINE
	LAND GRANT LINE
	CITY BOUNDARY (LARGE)
	TOWNSHIP LINE
	SECTION LINE
	BASIN BOUNDARY OR RIGHT OF WAY BOUNDARY
	CONSTRUCTION LIMIT LINE
	PROPERTY LINE (METES AND BOUNDS)
	FLOW LINE
	EDGE OF WATER
	WOVEN WIRE FENCE
	BARBED WIRE FENCE
	CHAIN LINK FENCE/HANDRAIL
	WOODEN FENCE
	GUARDRAIL/PORCH RAILING
	TRENCH SCAR
	EROSION
	TREE LINE, LIMIT OR BOUNDARY
	SHRUB LINE, LIMIT OR BOUNDARY
	ROCK OUTCROP
	DIRT PILE
	RIPRAP BOULDER FIELD OR ROCK PILE
	ROCK OR STONE WALL
	INDEX CONTOUR #1 PEN
	INTERMEDIATE CONTOUR #00 PEN INTERMEDIATE CONTOURS MAY BE SHOWN DASHED TO CLARIFY DESIGN INTENT
	DEPRESSION CONTOURS OR BORROW AREA

	STREAM OR DRAINAGE DITCH #0 PEN
	TRAIL #1 PEN
	SOIL BORING
	PROPERTY CORNER
	HANDICAP RAMP
	SIGN
	SPOT ELEVATION (EXISTING) ("x" INDICATES SPOT)
	SPOT ELEVATION (NEW) ("+ " INDICATES SPOT)
	MARSH OR SWAMP
	MEADOW OR GRASS
	SIZE AND TYPE OF TREE
	BENCHMARK OR MONUMENT
	COORDINATES SHOWN WITH A " + " EVERY 500 OR 1000 FEET DEPENDING ON SCALE OF DRAWING. AT LEAST 3 POINTS NEED TO BE LABELED AND SHOWN.
	PAVED ROAD
	UNIMPROVED ROAD, PATH OR WALK
	CULVERT WITH FLARED END SECTIONS
	BUILDING WITH BUILDING NUMBER
	STREET LIGHT
	SIGNAL POLE
	POWER POLE OR TELEPHONE POLE
	PICNIC TABLE
	TRASH CAN
	BARBECUE (FIRE PITS)
	FLAGPOLE
	RIPRAP
	STONE CURB
	DRY STONE WALL

SYMBOLS SPECIFIC TO
SMALL SCALE MAPPING

	STATE HIGHWAY SYSTEM
	U.S. HIGHWAY SYSTEM
	INTERSTATE HIGHWAY
	BRIDGE
	CULVERT
	HEADWALL
	TUNNEL
	FENCE
	RAILROAD
	RAILROAD (DOUBLE TRACK)
	CEMETERY
	CHURCH
	SCHOOL
	RIVER
	SPRING
	CANAL
	RESERVOIR OR LAKE

UTILITIES IN PLAN (SURVEYS)

	8" CIP W	TP=8.00 MH 4'x4' RIM=11.23 CLG=10.98 BOT=4.98	8" DIAMETER CAST IRON WATER LINE WITH 4'x4' MANHOLE HAVING RIM ELEVATION = 11.23, CEILING ELEVATION = 10.98, FLOOR ELEVATION = 4.98, AND TOP OF PIPE = 8.00
	18" CMP ST	INV=4.56 MH I.D.=6'-0" RIM=11.23	18" DIAMETER CORRUGATED METAL PIPE STORM SEWER WITH 6'-0" INSIDE DIAMETER MANHOLE HAVING RIM ELEVATION = 11.23, INLET INVERT ELEVATION = 4.56 OUTLET INVERT ELEVATION = 4.52
	AE & AT	GUY PP	AERIAL ELECTRIC AND AERIAL TELEPHONE LINES STRUNG ACROSS A GUY SUPPORTED UTILITY POLE.

DESIGNER NOTE

LEGEND SHEET SHOULD INCLUDE
ONLY SYMBOLS USED ON EACH
SPECIFIC PROJECT.

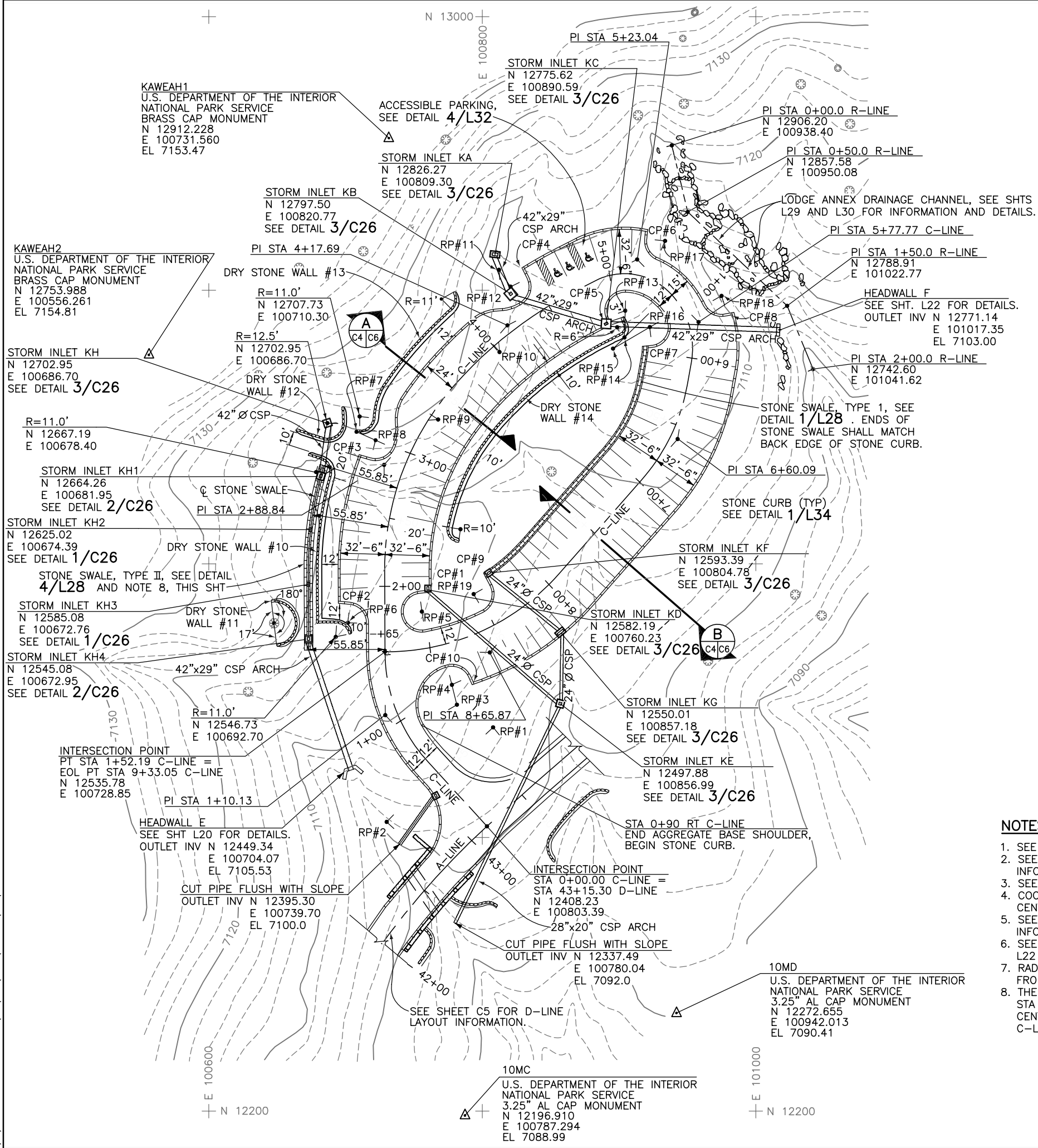
DESIGNED:
C. SMITH
L. WOLF
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
C3

TITLE OF SHEET
SAMPLE
MAPPING SYMBOLS
NAME OF PARK

DRAWING NO.
999
41,001
PKG. NO.
108
SHEET
5
OF 43

8/24/01 14:09 C:EVERMAN R15 S:\SYN\USER\NPS10\FINAL-SET\CVIL\C4.DWG



C-LINE CURVE LAYOUT TABLE							
STATION	NORTHING	EASTING	RADIUS	DELTA	LENGTH	TANGENT	DEGREE OF CURVE
PC STA 0+63.85	12455.35	100760.30					
PI STA 1+10.13	12489.50	100729.07	120.00	42-10-36.9	88.33	46.28	47-44-47.3
PT STA 1+52.19	12535.78	100728.85					
PC STA 2+11.06	12594.64	100728.57					
PI STA 2+88.84	12672.43	100728.21	204.15	41-42-56.1	148.63	77.78	28-03-58.1
PCC STA 3+59.69	12730.73	100779.70					
PI STA 4+17.69	12774.20	100818.09	303.96	21-36-22.3	114.62	58.00	18-50-59.7
PT STA 4+74.31	12800.49	100869.79					
PC STA 4+88.95	12807.12	100882.84					
PI STA 5+23.04	12822.57	100913.23	46.48	72-30-07.1	58.82	34.08	123-15-42.4
PCC STA 5+47.77	12798.24	100937.09					
PI STA 5+77.77	12776.82	100958.10	58.12	54-35-58.9	55.39	30.00	98-34-28.3
PT STA 6+03.16	12747.29	100952.81					
PC STA 6+20.09	12730.63	100949.83					
PI STA 6+60.09	12691.26	100942.78	143.24	31-12-19.6	78.01	40.00	40-00-01.8
PT STA 6+98.10	12661.23	100916.34					
PC STA 7+89.24	12592.83	100856.12					
PI STA 8+65.87	12535.31	100805.48	168.20	48-59-20.4	143.81	76.63	34-03-53.2
PT STA 9+33.05	12535.78	100728.85					

CORNER POINT TABLE			
CP#	NORTHING	EASTING	
1	12580.81	100761.14	
2	12572.63	100696.18	
3	12678.08	100710.91	
4	12815.89	100830.89	
5	12775.45	100892.25	
6	12843.17	100919.26	
7	12757.94	100921.22	
8	12782.12	100982.82	
9	12590.37	100804.09	
10	12513.59	100793.41	

CORNER POINTS ARE LOCATED AT ASPHALT CONCRETE PAVEMENT CORNERS ADJACENT TO THE STONE CURBING AND/OR STONE SWALE.

RADIUS POINT TABLE			
RP#	NORTHING	EASTING	RADIUS
1	12480.55	100807.72	40
2	12411.40	100730.03	40
3	12497.10	100781.43	30
4	12511.66	100777.81	15
5	12565.16	100755.71	15
6	12557.03	100701.75	15
7	12696.69	100708.29	30
8	12690.53	100721.96	15
9	12705.49	100767.84	30
10	12754.91	100812.64	30
11	12815.05	100812.17	30
12	12802.67	100820.64	15
13	12785.16	100904.57	15
14	12765.69	100903.91	34.48
15	12757.54	100895.60	46.12
16	12773.19	100922.50	15
17	12836.15	100933.65	15
18	12795.95	100974.91	15
19	12577.98	100793.62	15

RADIUS IS TO EDGE OF PAVEMENT OR FACE INVERT OF STONE CURB WHICHEVER IS APPLICABLE.

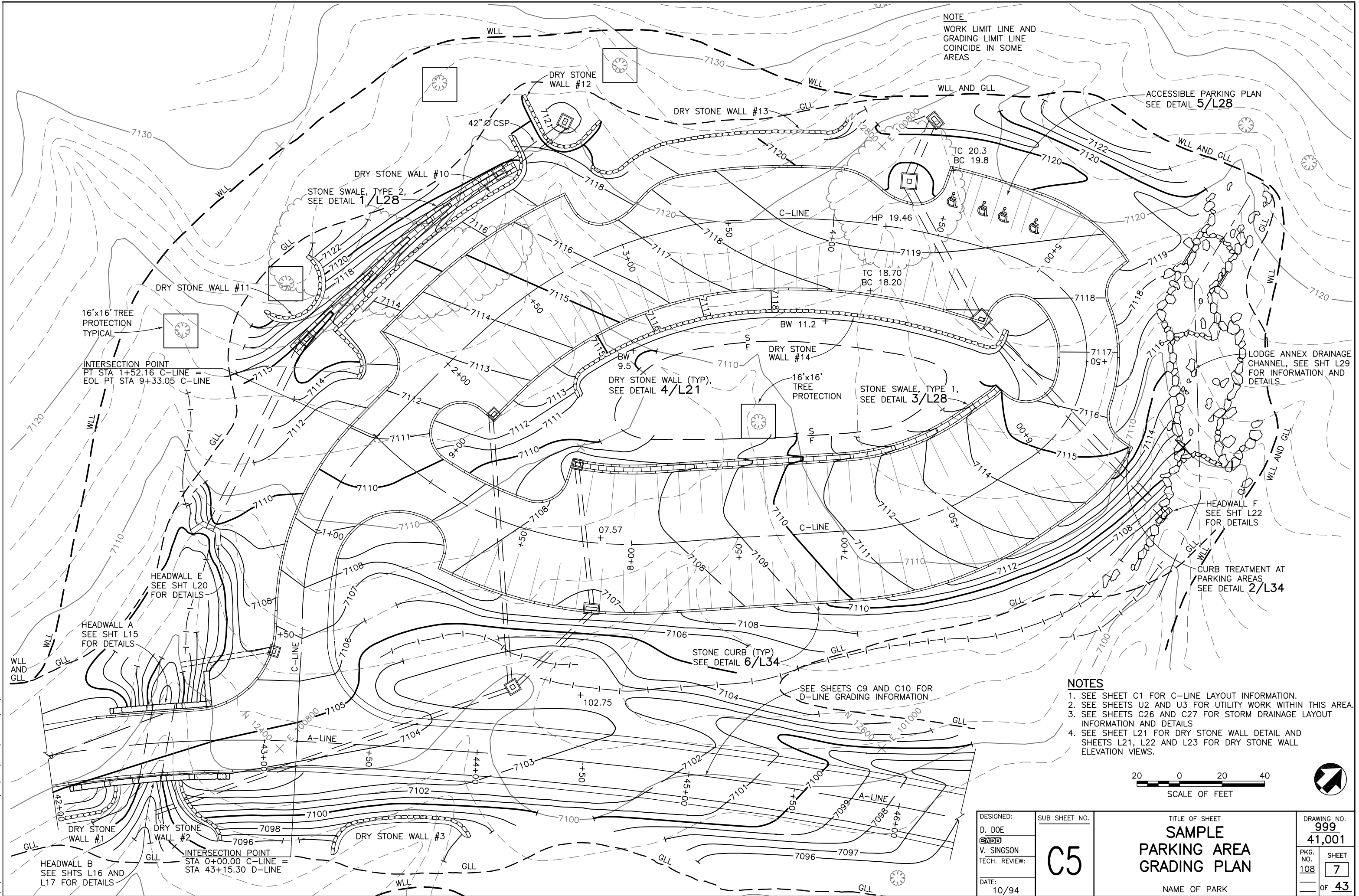
NOTES

- SEE SHEET C3 FOR C-LINE PROFILE AND SECTIONS.
- SEE SHEET C2 FOR FINISH GRADING AND ADDITIONAL LAYOUT INFORMATION.
- SEE SHEETS U2 AND U3 FOR UTILITY WORK WITHIN THIS AREA.
- COORDINATES GIVEN FOR ALL STORM INLETS ARE FOR CENTER OF GRATE.
- SEE SHEETS C26 AND C27 FOR STORM DRAINAGE LAYOUT INFORMATION AND DETAILS.
- SEE SHEET L21 FOR DRY STONE WALL DETAILS AND SHEETS L22 AND L23 FOR DRY STONE WALL ELEVATION VIEWS.
- RADIUS DIMENSIONS FOR DRY STONE WALLS ARE TO THE FRONT FACE TOP EDGE.
- THE STONE SWALE ABOVE DRY STONE WALL #10 BEGINS AT STA 1+53.76 LT AND ENDS AT STA 2+72.86 LT THE CENTER LINE OF THE STONE SWALE RUNS PARALLEL TO C-LINE CENTER LINE, 55.85' LEFT.



DESIGNED: D. DOE L. WOLF TECH. REVIEW:	SUB SHEET NO. C4	TITLE OF SHEET SAMPLE PARKING AREA LAYOUT	DRAWING NO. 999 41,001
DATE: 10/94		NAME OF PARK	PKG. NO. 108 SHEET 6 OF 43

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NOTE
WORK LIMIT LINE AND
GRADING LIMIT LINE
COINCIDE IN SOME
AREAS

ACCESSIBLE PARKING PLAN
SEE DETAIL 5/L28

LODGE ANNEX DRAINAGE
CHANNEL, SEE SHT L29
FOR INFORMATION AND
DETAILS

HEADWALL F
SEE SHT L22
FOR DETAILS

CURB TREATMENT AT
PARKING AREAS
SEE DETAIL 2/L34

- NOTES**
1. SEE SHEET C1 FOR C-LINE LAYOUT INFORMATION.
 2. SEE SHEETS U2 AND U3 FOR UTILITY WORK WITHIN THIS AREA.
 3. SEE SHEETS C26 AND C27 FOR STORM DRAINAGE LAYOUT INFORMATION AND DETAILS.
 4. SEE SHEET L21 FOR DRY STONE WALL DETAIL AND SHEETS L21, L22 AND L23 FOR DRY STONE WALL ELEVATION VIEWS.

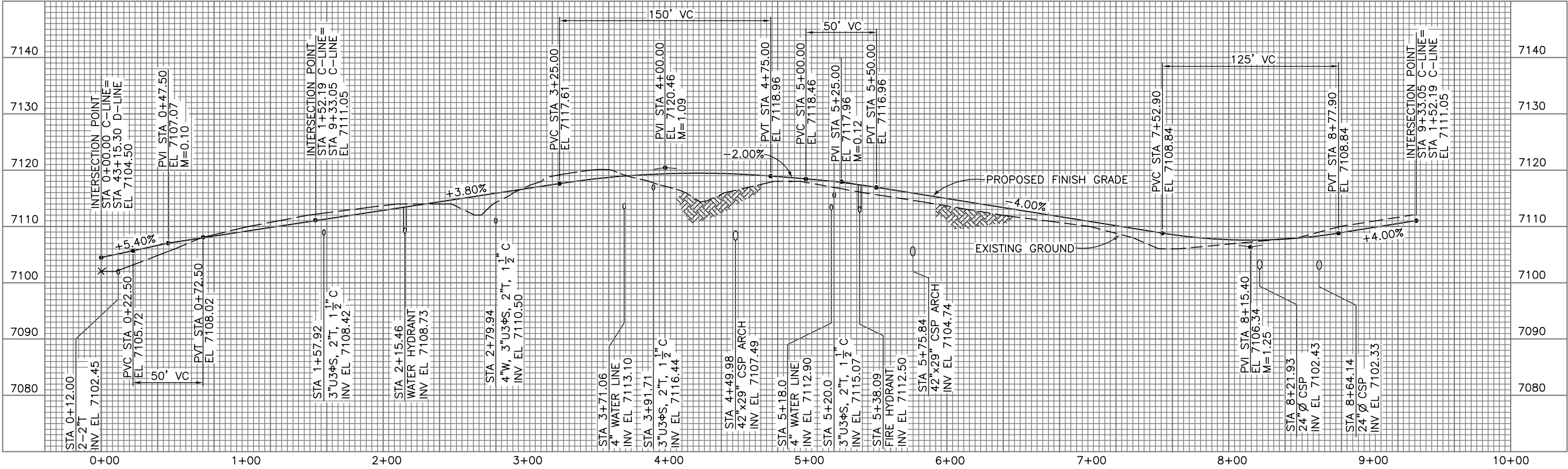
20 0 20 40
SCALE OF FEET

DESIGNED:
D. DOE
V. SINGSON
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
C5

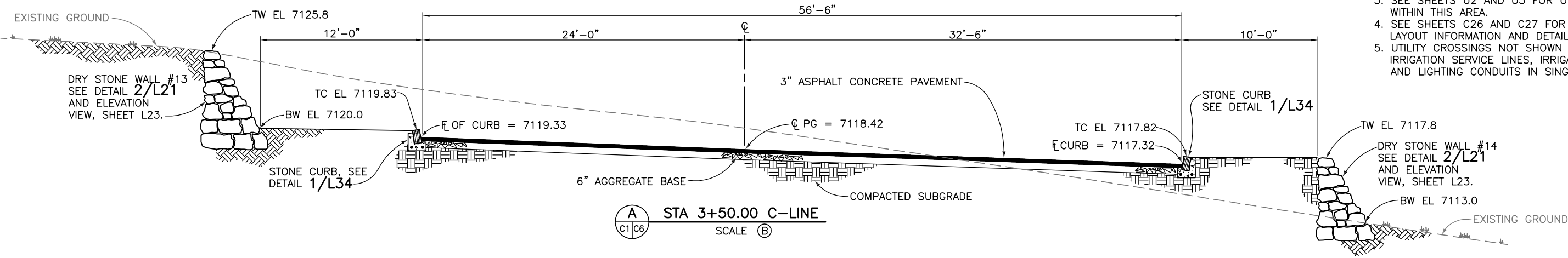
TITLE OF SHEET
**SAMPLE
PARKING AREA
GRADING PLAN**
NAME OF PARK

DRAWING NO.
999
41,001
PKG. NO. **108**
SHEET **7**
OF **43**

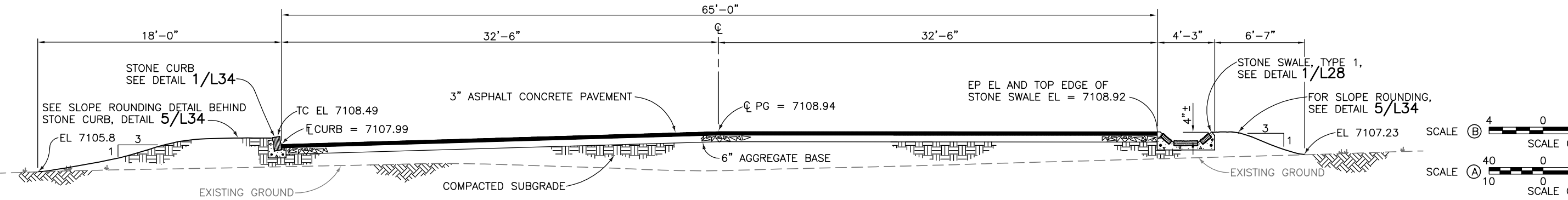


C-LINE PROFILE
SCALE (A)

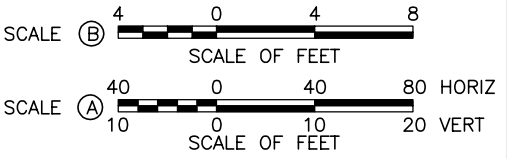
- NOTES**
1. SEE SHEET C1 FOR C-LINE LAYOUT INFORMATION.
 2. SEE SHEET C2 FOR FINISH GRADING AND ADDITIONAL LAYOUT INFORMATION.
 3. SEE SHEETS U2 AND U3 FOR UTILITY WORK WITHIN THIS AREA.
 4. SEE SHEETS C26 AND C27 FOR STORM DRAINAGE LAYOUT INFORMATION AND DETAILS.
 5. UTILITY CROSSINGS NOT SHOWN ON PROFILE INCLUDE IRRIGATION SERVICE LINES, IRRIGATION SLEEVES, AND LIGHTING CONDUITS IN SINGLE TRENCH.



A STA 3+50.00 C-LINE
SCALE (B)



B STA 7+50.00 C-LINE
SCALE (B)



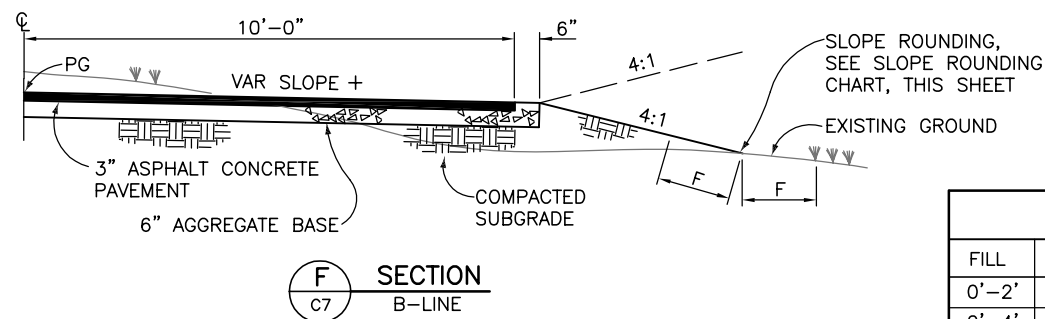
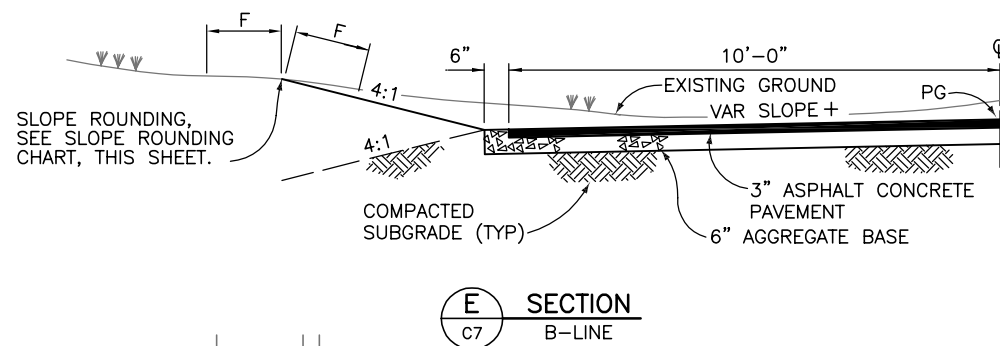
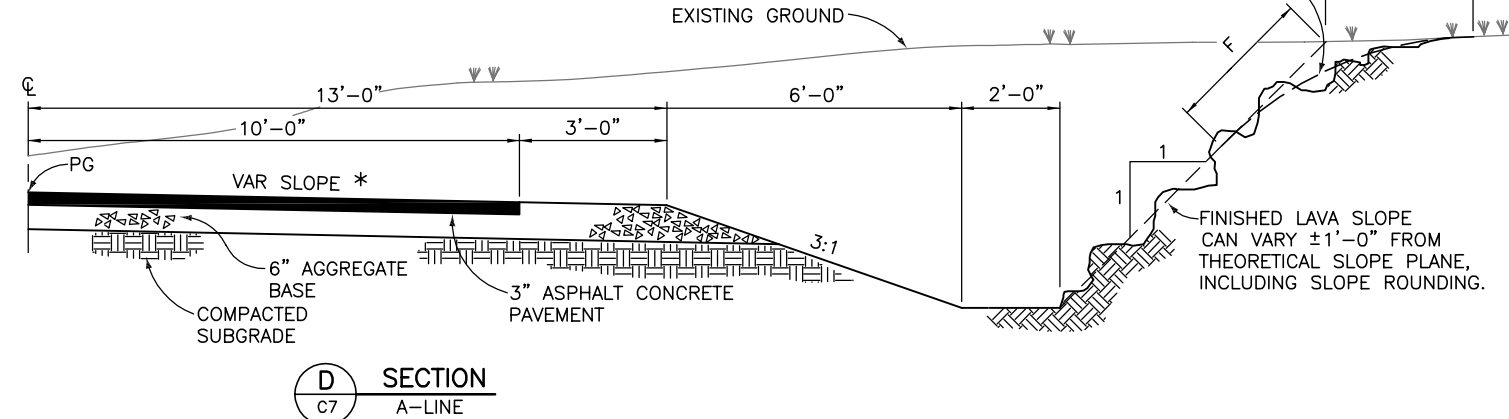
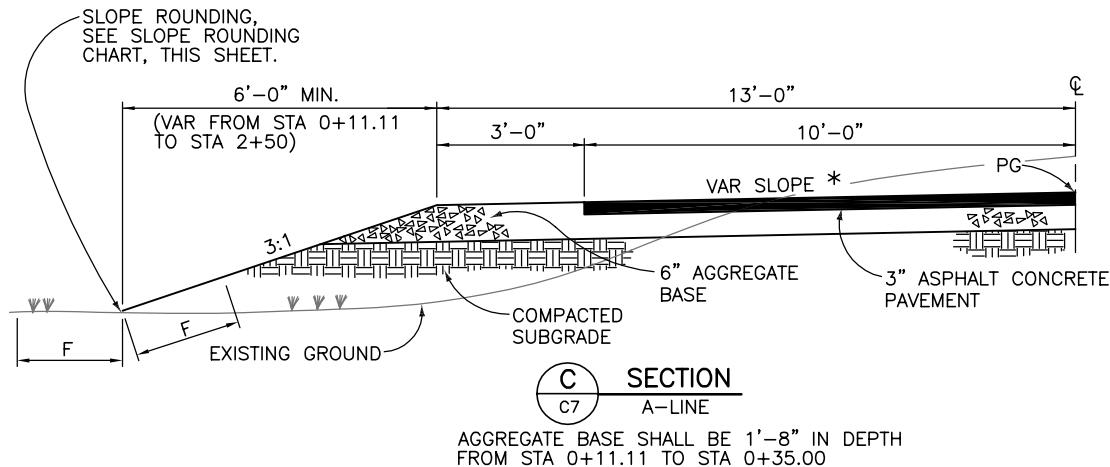
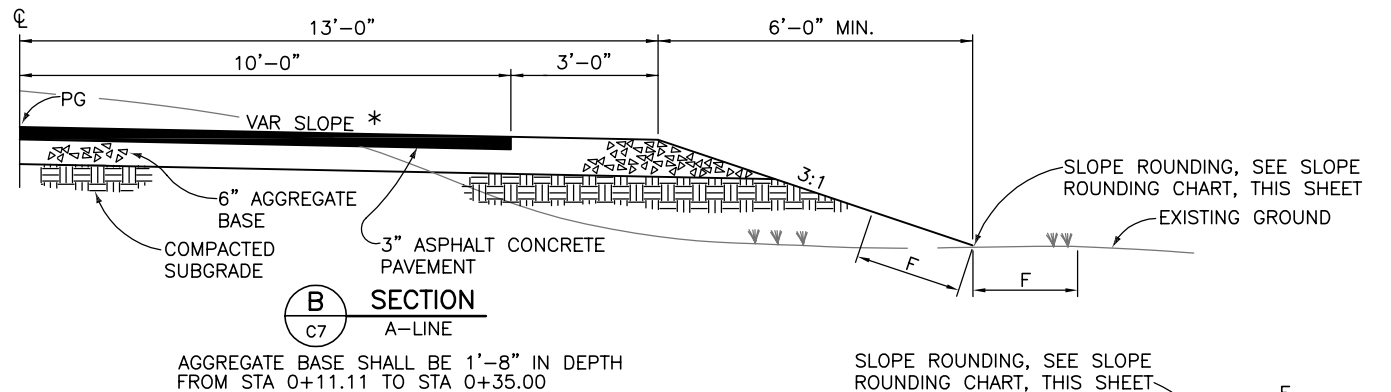
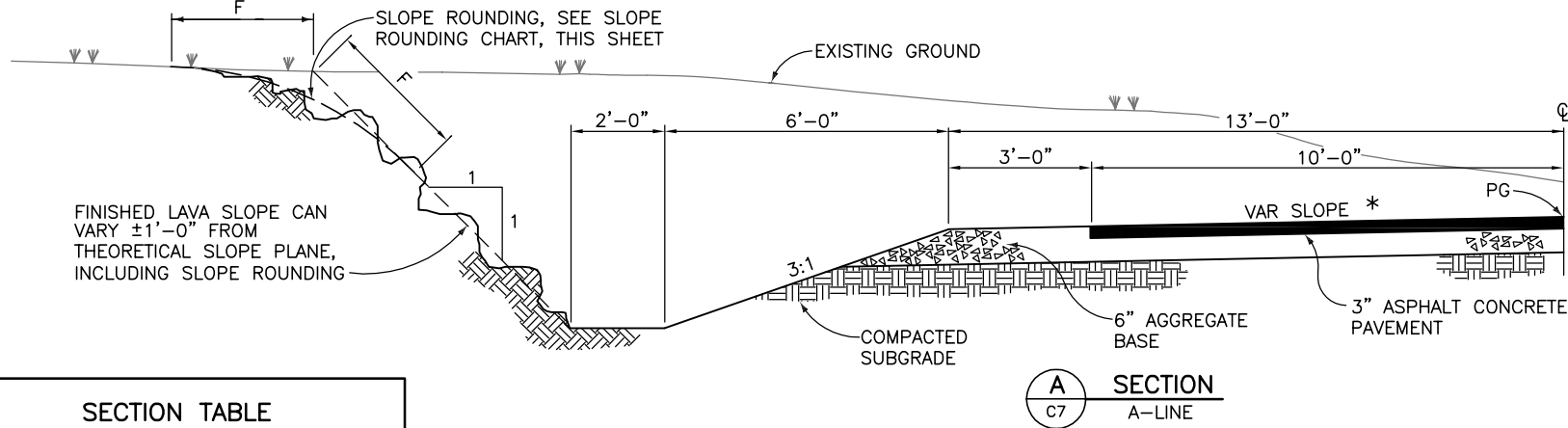
DESIGNED: B. HENRY L. WOLF TECH. REVIEW: DATE: 10/94	SUB SHEET NO. C6	TITLE OF SHEET SAMPLE ROAD PROFILE AND SECTIONS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 8 OF 43
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SECTION TABLE	
A—LINE	
STATIONING FOR SECTIONS LEFT OF CENTER LINE	SECTION
STA 0+11.11 TO STA 3+62	C
STA 3+62 TO STA 5+19	A
STA 5+19 TO STA 6+24	C
STA 6+24 TO STA 7+63	A
STA 7+63 TO STA 10+25	C
STA 10+25 TO STA 10+98	A
STA 10+98 TO STA 13+33	C
STA 13+33 TO STA 19+04.33	A
STATIONING FOR SECTIONS RIGHT OF CENTER LINE	SECTION
STA 0+11.11 TO STA 3+85	B
STA 3+85 TO STA 5+00	D
STA 5+00 TO STA 6+30	B
STA 6+30 TO STA 7+50	D
STA 7+50 TO STA 8+85	B
STA 8+85 TO STA 10+65	D
STA 10+65 TO STA 13+45	B
STA 13+45 TO STA 19+04.33	D
B—LINE	
STATIONING FOR SECTIONS LEFT OF CENTER LINE	SECTION
STA 0+00 TO STA 2+25	E
STATIONING FOR SECTIONS RIGHT OF CENTER LINE	SECTION
STA 0+00 TO STA 2+25	F

NOTES

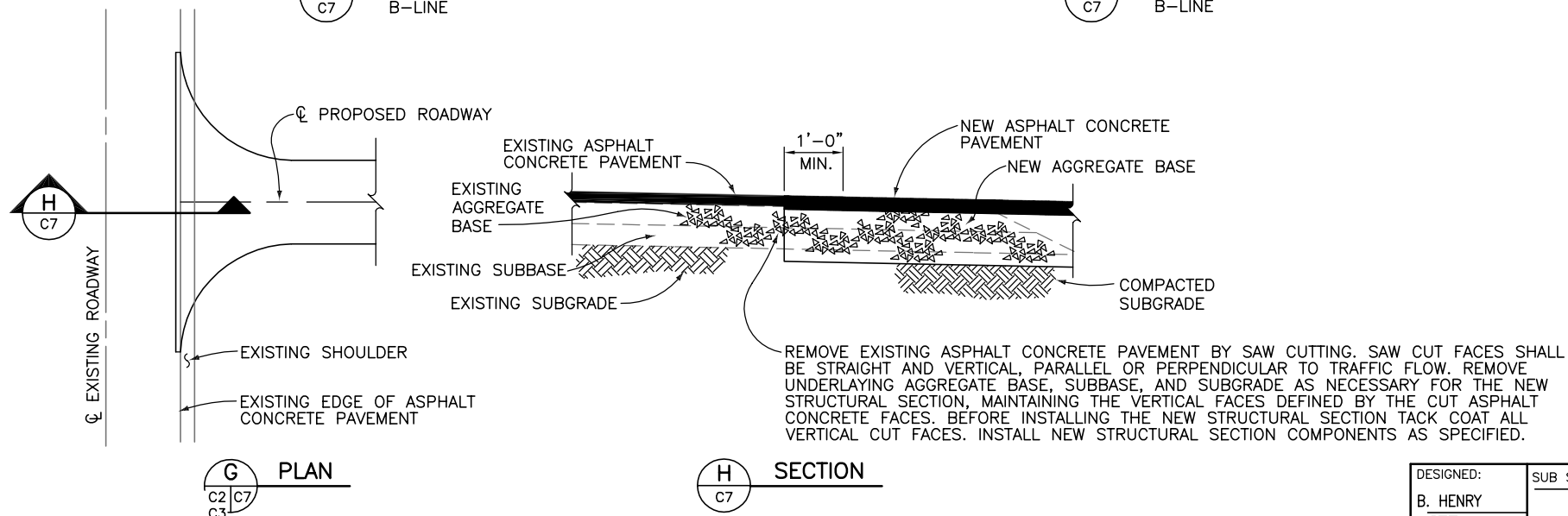
- THE ABOVE TABLE DOES NOT COMPENSATE FOR INTERSECTION AND DRAINAGE STRUCTURE VARIABILITY. SEE SHEETS C2 AND C3 FOR INTERSECTION AND DRAINAGE STRUCTURE LAYOUTS.
- TWENTY FEET TRANSITIONS SHALL BE PROVIDED, WHEREVER APPLICABLE, AT LOCATIONS WHERE ONE TYPICAL CROSS SECTION ENDS AND ANOTHER TYPICAL CROSS SECTION BEGINS.
- STARTING AND ENDING STATIONS FOR TYPICAL CROSS SECTIONS SHALL BE FIELD ADJUSTED.
- SEE SHEETS C5 THROUGH C9 FOR 50' A—LINE CROSS SECTIONS.



SLOPE ROUNDING CHART					
FILL	SLOPE	F	CUT	SLOPE	F
0'-2'	3:1 OR 4:1	1'	0'-2'	1:1 OR 4:1	2'
2'-4'	3:1 OR 4:1	2'	2'-4'	1:1 OR 4:1	3'
4'-6'	3:1 OR 4:1	3'	4'-6'	1:1 OR 4:1	3'
6'-10'	3:1	4'	6'-10'	1:1	4'
OVER 10'	3:1	5'	10'-14'	1:1	5'
			OVER 14'	1:1	6'

* FOR A—LINE CROSS SLOPE INFORMATION SEE A—LINE SUPERELEVATION DIAGRAM ON SHEETS C2 AND C3.

+ FOR B—LINE CROSS SLOPE INFORMATION SEE B—LINE SUPERELEVATION NOTES ON SHEET C2.



TYPICAL PAVEMENT CONNECTION DETAIL

DESIGNED: B. HENRY J. BENDORF TECH. REVIEW:	SUB SHEET NO. C7	TITLE OF SHEET SAMPLE ROADWAY CROSS SECTIONS	DRAWING NO. 999 41,001
DATE: 10/94		NAME OF PARK	PKG. NO. 108 SHEET 9 OF 43

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RADIUS POINT TABLE			
RP#	NORTHING	EASTING	RADIUS
1	434572.31	390089.38	90'
2	434703.00	389997.07	50'
3	434670.20	389967.02	40'
4	434612.52	389885.32	40'

MANUA KEA PROPERTIES

PUUKOHOLA HEIAU
NATIONAL
HISTORIC SITE

STA 5+88 AT CENTER LINE
28"x20" CSP ARCH x 45' LENGTH
WITH METAL END SECTIONS.
SEE DETAIL 1/C11
INLET INV EL 139.3
OUTLET INV EL 138.4

PI STA 7+99.51
N 434110.11
E 389576.02
DC=19° 05' 55"
R=300.00'
L=318.68'
T=176.23'

STA 0+00.00 A-LINE
N 434699.83
E 390098.34

STATE OF HAWAII

DEMOLISH EXISTING ASPHALT
CONCRETE PAVEMENT.
ONCE DEMOLITION IS COMPLETE THE
CONTRACTOR SHALL PERFORM ROAD
RESTORATION TO PORTION NOT
WITHIN NEW ROADWAY.

HP-13, BRASS PLATE MARKER
N 434821.84
E 390004.95
EL 151.21

STA 0+11.11
N 434693.54
E 390089.19
BEGIN NEW ROAD CONSTRUCTION
MATCH EXISTING PAVEMENT

INTERSECTION POINT
STA 1+75.00 A-LINE=
STA 0+00.00 B-LINE
N 434600.67
E 389954.15

PC STA 1+83.44
N 434595.88
E 389947.20

REGRADE AS NECESSARY
FOR DRAINAGE

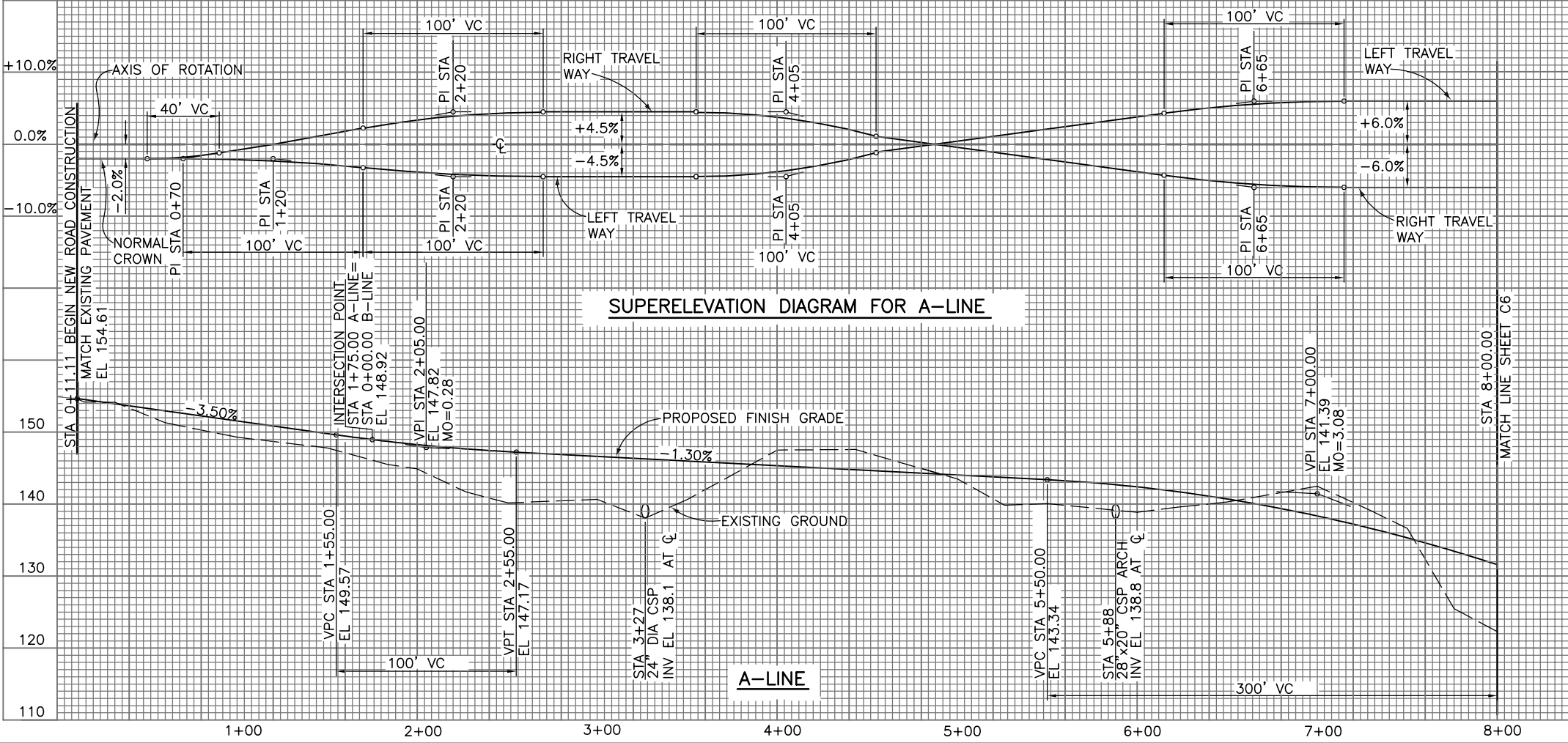
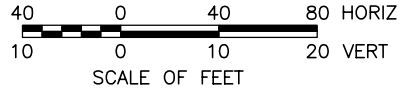
PT STA 4+43.36
N 434410.24
E 389767.75

15'x7' HANDLAID RIPRAP,
SEE DETAIL 4/C11

CATCH POINT LINE IS THEORETICAL GRADE
CATCH WITHOUT SLOPE ROUNDING. (TYP)

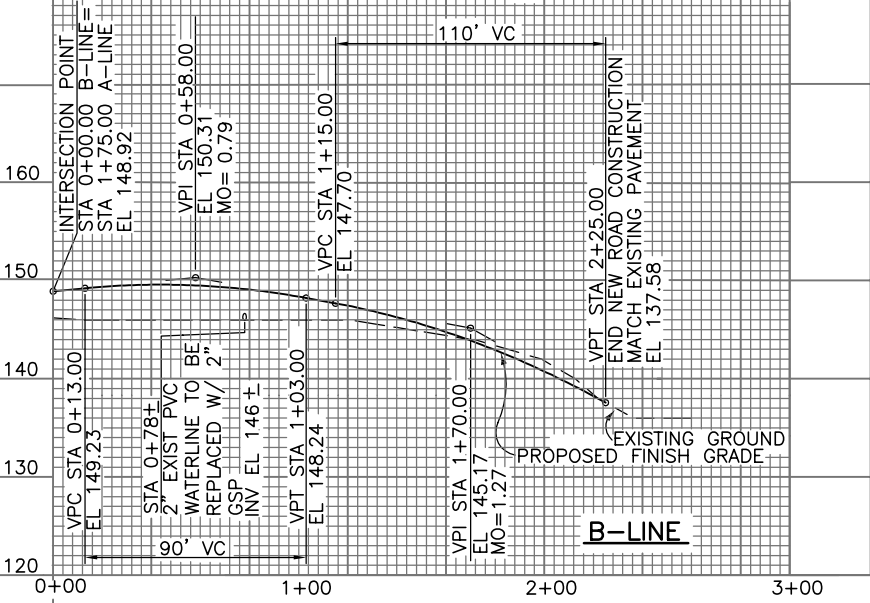
NOTES

1. SEE SHEET C8 FOR TYPICAL CROSS SECTIONS
2. SEE SHEETS C9 AND C10 FOR 50' A-LINE CROSS SECTIONS.
3. SEE SHEET C11 FOR DRAINAGE DETAILS
4. SEE SHEETS C12 AND C13 FOR SIGN AND PAVEMENT MARKING INFORMATION.
5. SEE SHEET C3 FOR UTILITY WORK.



B-LINE SUPERELEVATION

ROAD CROSS SLOPE LEFT OF CENTER LINE: STA 0+13 MATCH A-LINE SURFACE AND TRANSITION TO -2% AT STA 0+43. MAINTAIN -2% FROM STA 0+43 TO STA 1+95, THEN TRANSITION FROM -2% TO CROSS SLOPE GRADE THAT EXISTS AT STA 2+25. ROAD CROSS SLOPE RIGHT OF CENTER LINE: STA 0+13 MATCH A-LINE SURFACE AND TRANSITION TO -2% AT STA 0+43. MAINTAIN -2% FROM STA 0+43 TO STA 0+80. FROM STA. 0+80 TO 1+10 TRANSITION FROM -2.0% TO +2.0%. MAINTAIN +2.0% CROSS SLOPE FROM STA 1+10 TO STA 1+95, THEN TRANSITION FROM +2.0% TO CROSS SLOPE GRADE THAT EXISTS AT STA 2=25.



DESIGNED:
B. DOE
L. WOLF
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
C8

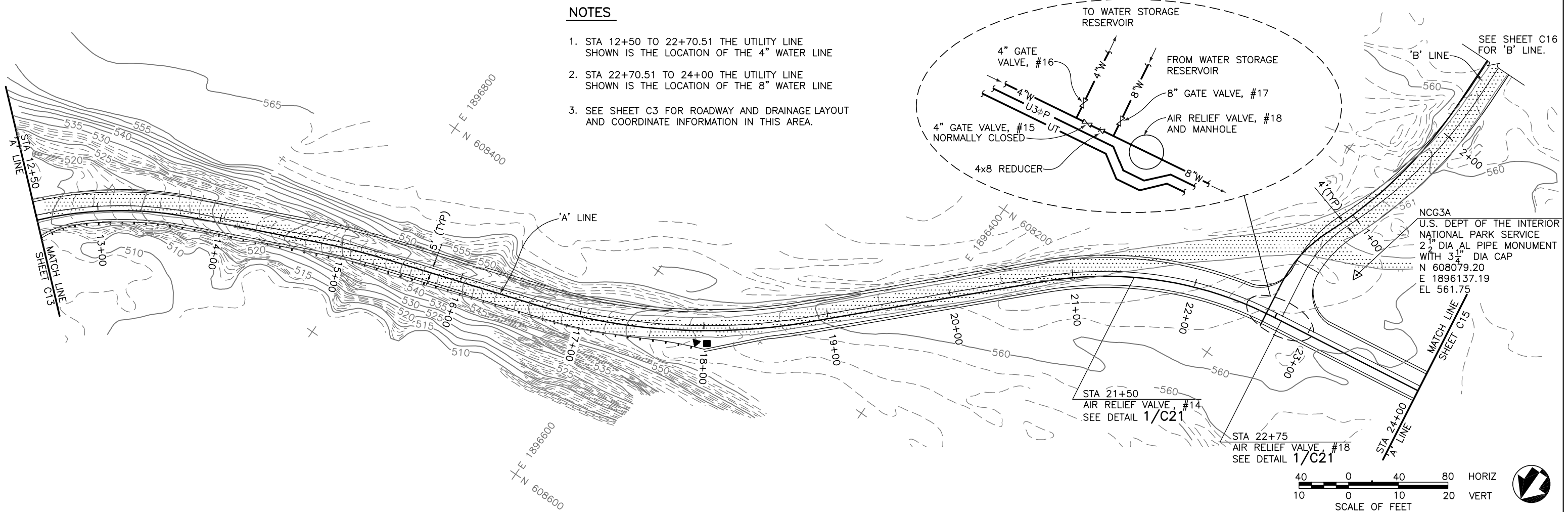
TITLE OF SHEET
**SAMPLE
ROADWAY PLAN
AND PROFILE**
NAME OF PARK

DRAWING NO.
**999
41,001**
PKG. NO. **108**
SHEET **10**
OF **43**

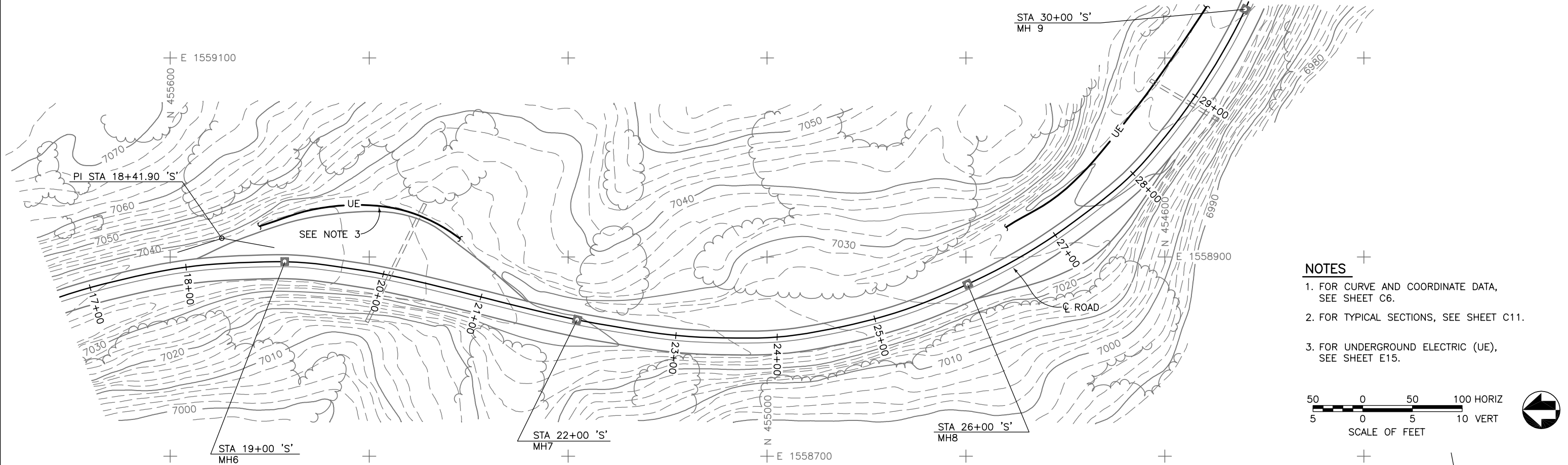
8/24/01 11:26 C:EVERMAN R15 S:\SYN\USER\NPS10\FINAL-SET\CIVIL\C9.DWG

NOTES

1. STA 12+50 TO 22+70.51 THE UTILITY LINE SHOWN IS THE LOCATION OF THE 4" WATER LINE
2. STA 22+70.51 TO 24+00 THE UTILITY LINE SHOWN IS THE LOCATION OF THE 8" WATER LINE
3. SEE SHEET C3 FOR ROADWAY AND DRAINAGE LAYOUT AND COORDINATE INFORMATION IN THIS AREA.

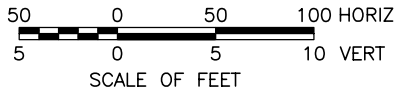


8/24/01 11:32 C:EVERMAN R15 S:\SWM\USER\NPS10\FINAL-SET\CVIL\C10.DWG

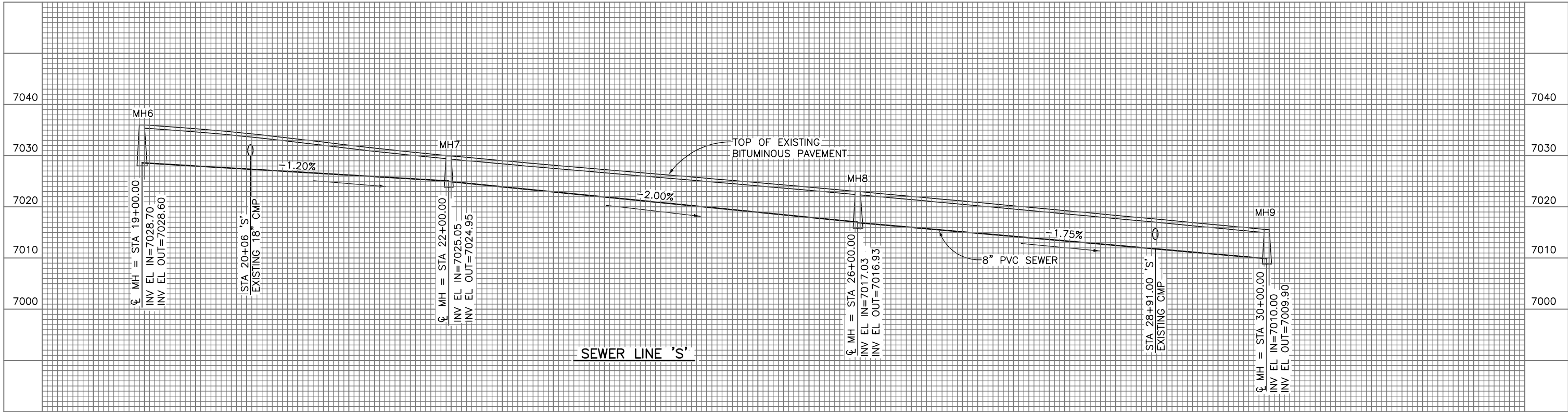


NOTES

1. FOR CURVE AND COORDINATE DATA, SEE SHEET C6.
2. FOR TYPICAL SECTIONS, SEE SHEET C11.
3. FOR UNDERGROUND ELECTRIC (UE), SEE SHEET E15.



PI STA 31+10.34 'S'



29+00

30+00

DESIGNED:

B. BOXER

BY L. WOLF

TECH. REVIEW:

DATE:

10/94

SUB SHEET NO.

C10

TITLE OF SHEET

SAMPLE SEWER
PLAN AND PROFILE

NAME OF PARK

DRAWING NO.

999
41,001

PKG.

NO.

108

SHEET

12

OF

43

TABLE I THRUST(T) AT FITTINGS, IN POUNDS AT 100 PSI WATER PRESSURE					
PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22½° BEND	11¼° BEND
1½"	284	401	217	111	56
2"	443	627	339	173	87
2½"	649	918	497	253	127
3"	962	1361	736	375	189
4"	1810	2559	1385	706	355
6"	3739	5288	2862	1459	733
8"	6433	9097	4923	2510	1261
10"	9677	13685	7406	3776	1897
12"	13685	17600	10474	4847	2683
14"	18385	26001	14072	7174	3604
16"	23779	30971	18199	9278	4661

TABLE II SAFE BEARING LOADS (B)	
SOIL	SAFE BEARING LOAD, POUNDS PER SQ. FT.
SOUND SHALE	10000
CEMENTED SAND AND GRAVEL	4000
COARSE AND FINE COMPACTED SAND	3000
MEDIUM CLAY (CAN BE SPADED)	2000
SOFT CLAY	1000
MUCK	0

$$A_{SB} = \frac{T}{B} \times \frac{P_t}{100}$$

WHERE:

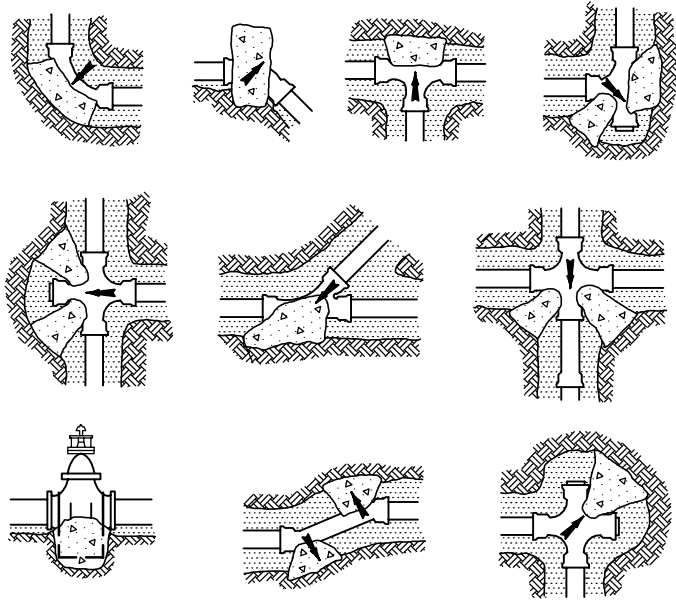
A_{SB} = AREA OF BLOCK BEARING AGAINST UNDISTURBED TRENCH MATERIAL IN SQ. FT.

T = THRUST FACTOR FROM TABLE I IN POUNDS AT 100 PSI

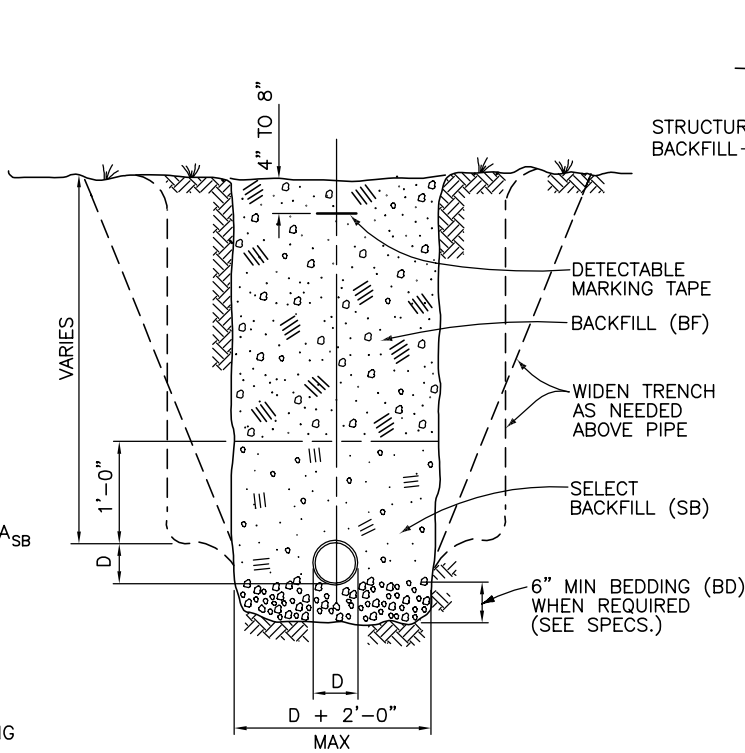
B = SAFE BEARING LOAD FROM TABLE II IN POUNDS/SQ. FT.

P_t = PRESSURE USED FOR PIPELINE TEST IN PSI

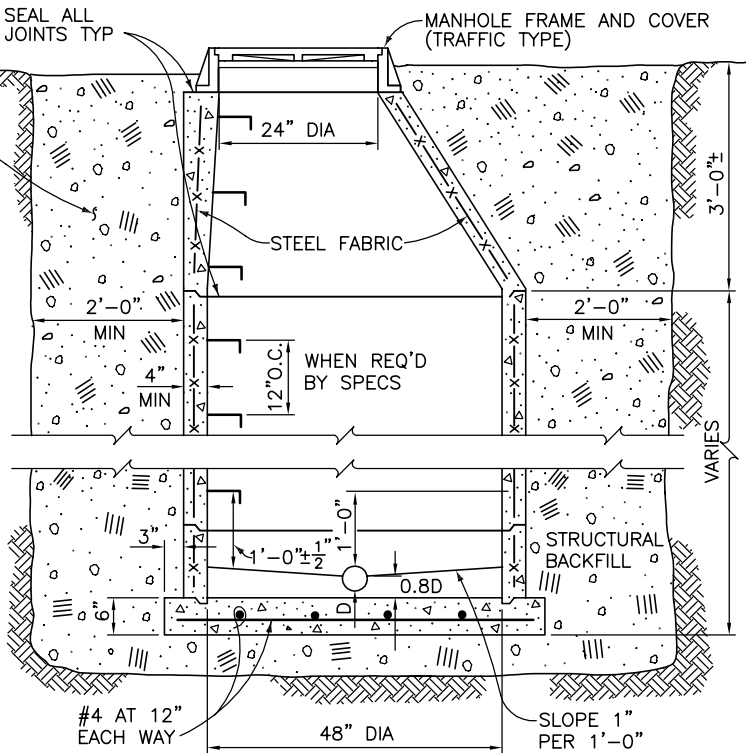
THRUST BLOCK SIZING



LOCATION OF THRUST BLOCKS



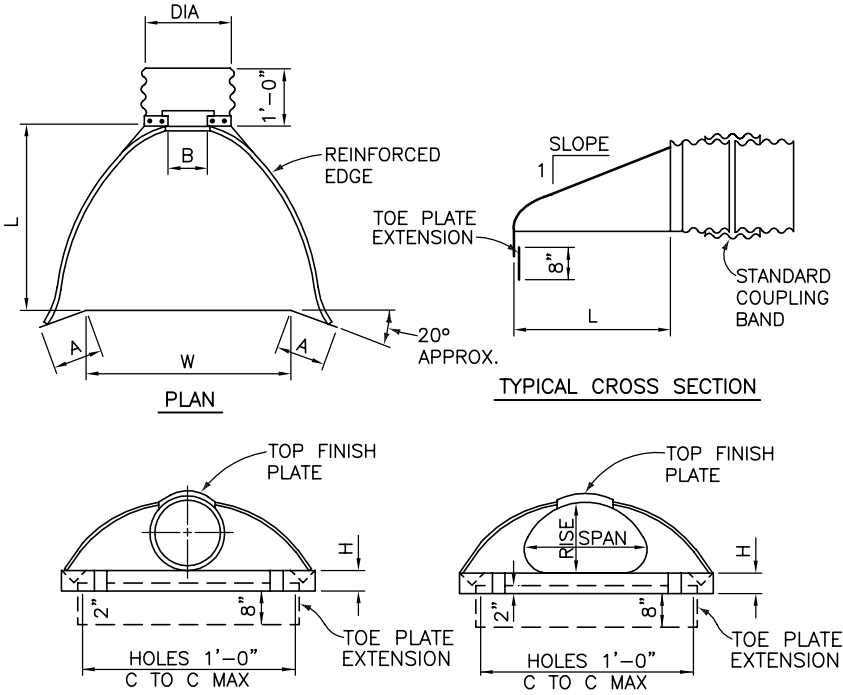
TRENCH DETAIL
SINGLE PIPE, NON-TRAFFIC AREA



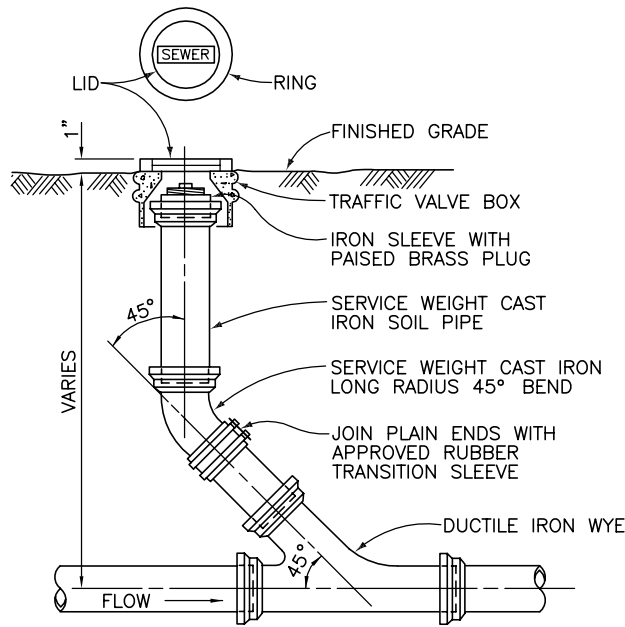
NOTES

- SEE SPECS FOR CAST-IN-PLACE BASE PREPARATION.
- USING GRADE RINGS, ADJUST RING AND COVER SO BOTH ELEVATION AND SLOPE ARE 1" ABOVE GRADE IN OPEN AND GRASSED AREAS, OR FLUSH IN PAVED SURFACES.

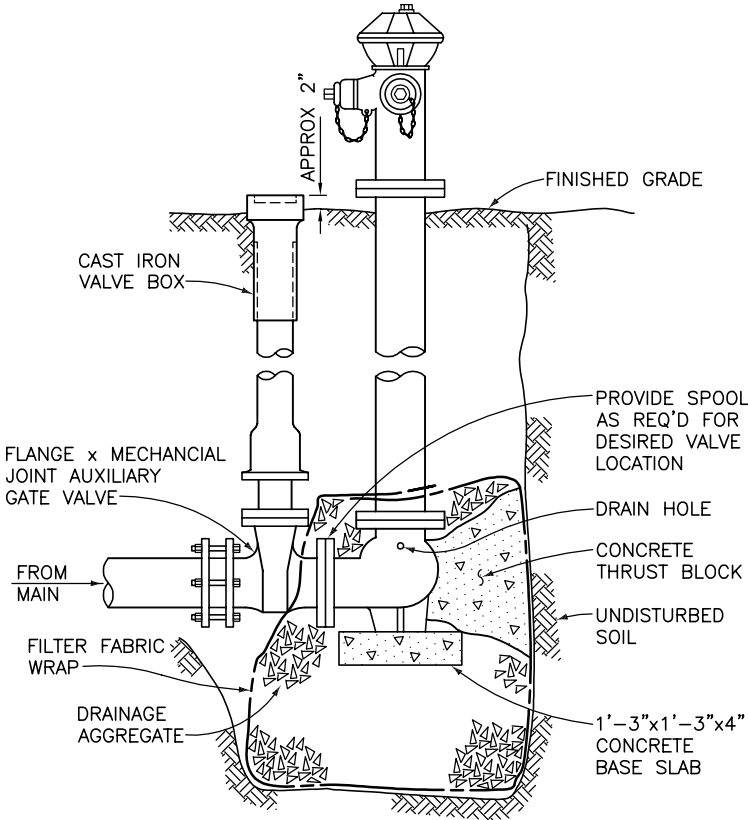
PRECAST CONCRETE MANHOLE



METAL END SECTIONS FOR CSP CULVERTS



SEWER LINE CLEANOUT DETAIL



FIRE HYDRANT
DRY BARREL TYPE
WITH VALVE AND BOX

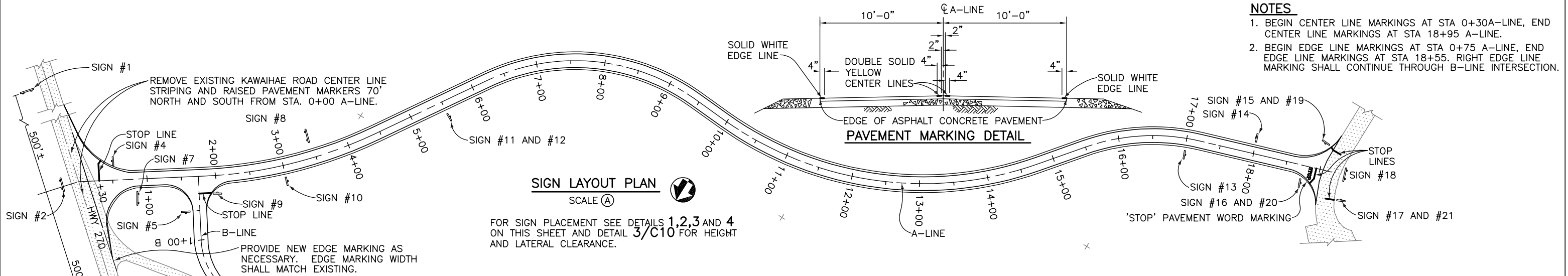
END SECTIONS								
PIPE (IN)	MINIMUM THICKNESS (IN)	DIMENSIONS (INCHES)					APPROX SLOPE	BODY (PCS)
		A	B (MAX)	H	L	W		
ARCH SPAN 18 RISE 11	0.1046	4	9	6	19	30	2½	1
CIRCULAR 15	0.1046	4½	9	6	19	30	2½	1

NOTES

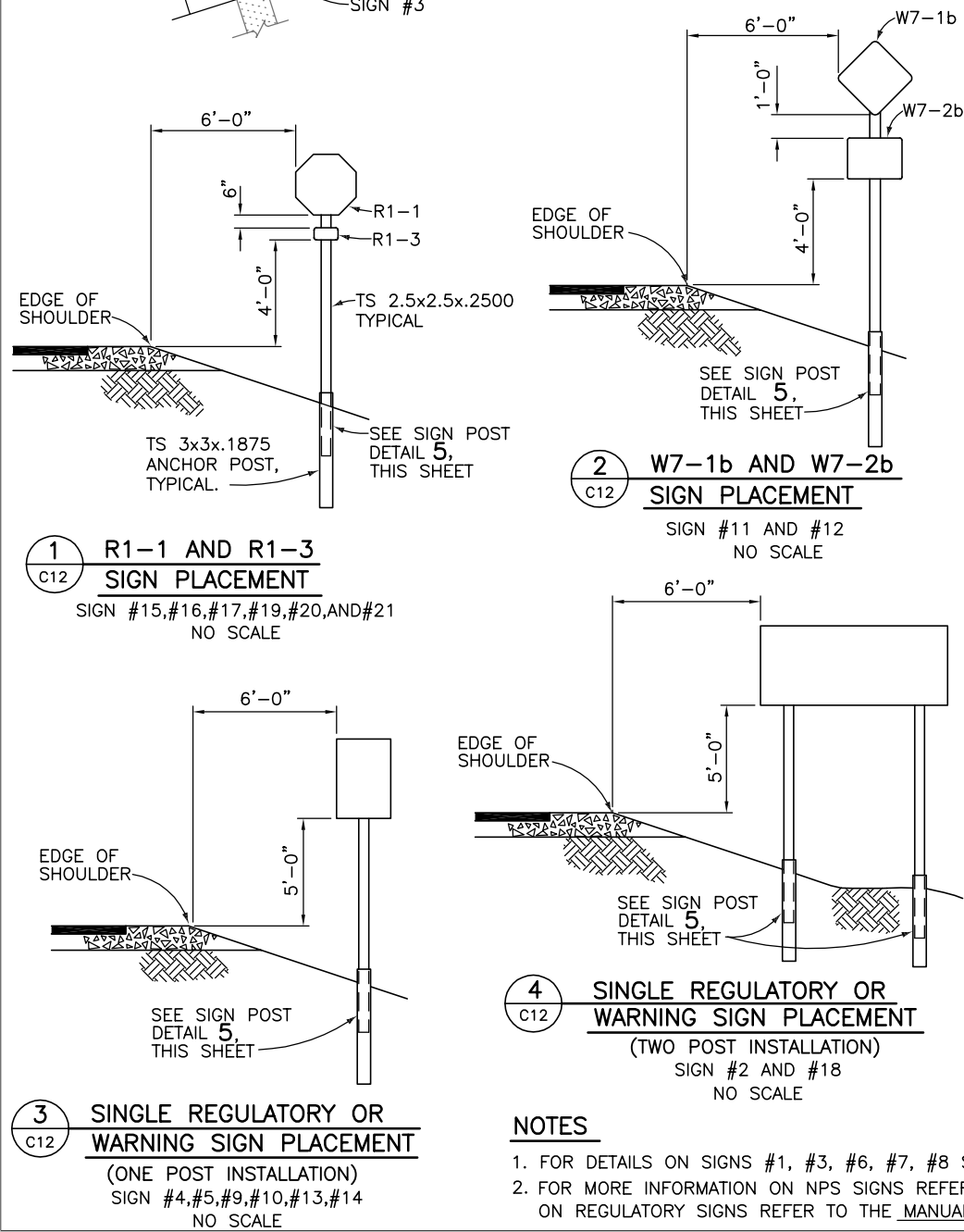
- TOE PLATE EXTENSIONS SHALL BE INSTALLED ON END SECTIONS AND SHALL HAVE A MINIMUM THICKNESS OF 0.138 INCHES (STEEL).
- END SECTION CONNECTION SHALL INCLUDE ONE FOOT OF PIPE LENGTH. THE CONNECTOR SECTION WILL BE THE SAME THICKNESS AS THE METAL END SECTION, AND WILL BE ATTACHED BY GALVANIZED RIVETS OR BOLTS SPACED AT A MAXIMUM OF SIX INCHES. A SHOP TACK WELD ONE INCH LONG AT THE SAME SPACING MAY BE USED IN LIEU OF RIVETS OR BOLTS.

NO SCALE

DESIGNED: B. HENRY L. WOLF TECH. REVIEW: DATE: 10/94	SUB SHEET NO. C11	TITLE OF SHEET SAMPLE STANDARD DETAILS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 13 OF 43
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- NOTES**
- BEGIN CENTER LINE MARKINGS AT STA 0+30A-LINE, END CENTER LINE MARKINGS AT STA 18+95 A-LINE.
 - BEGIN EDGE LINE MARKINGS AT STA 0+75 A-LINE, END EDGE LINE MARKINGS AT STA 18+55. RIGHT EDGE LINE MARKING SHALL CONTINUE THROUGH B-LINE INTERSECTION.

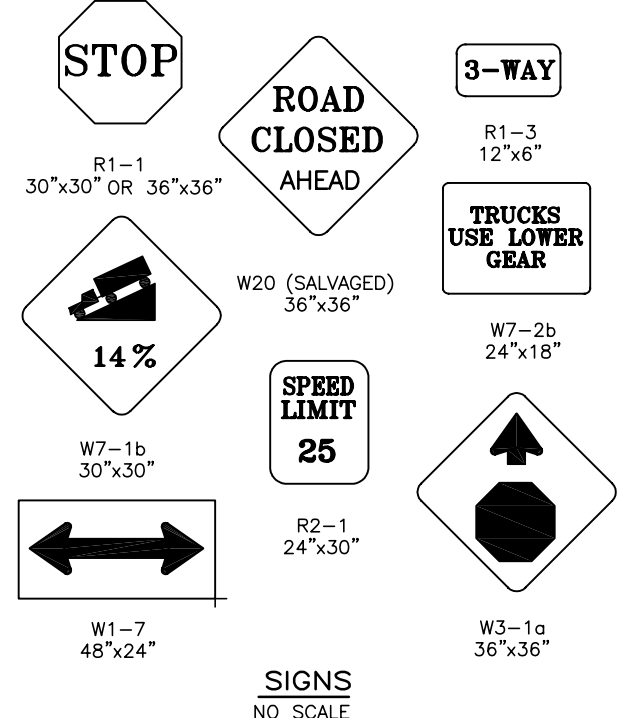


← Puukohola Heiau NHS Spencer Park

Puukohola Heiau NHS Spencer Park →

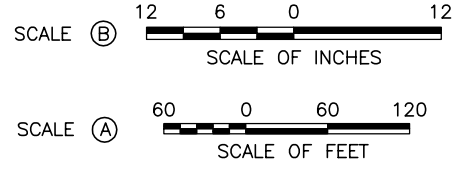
↑ Spencer Park Puukohola Heiau Visitor Center →

← Puukohola Heiau Visitor Center



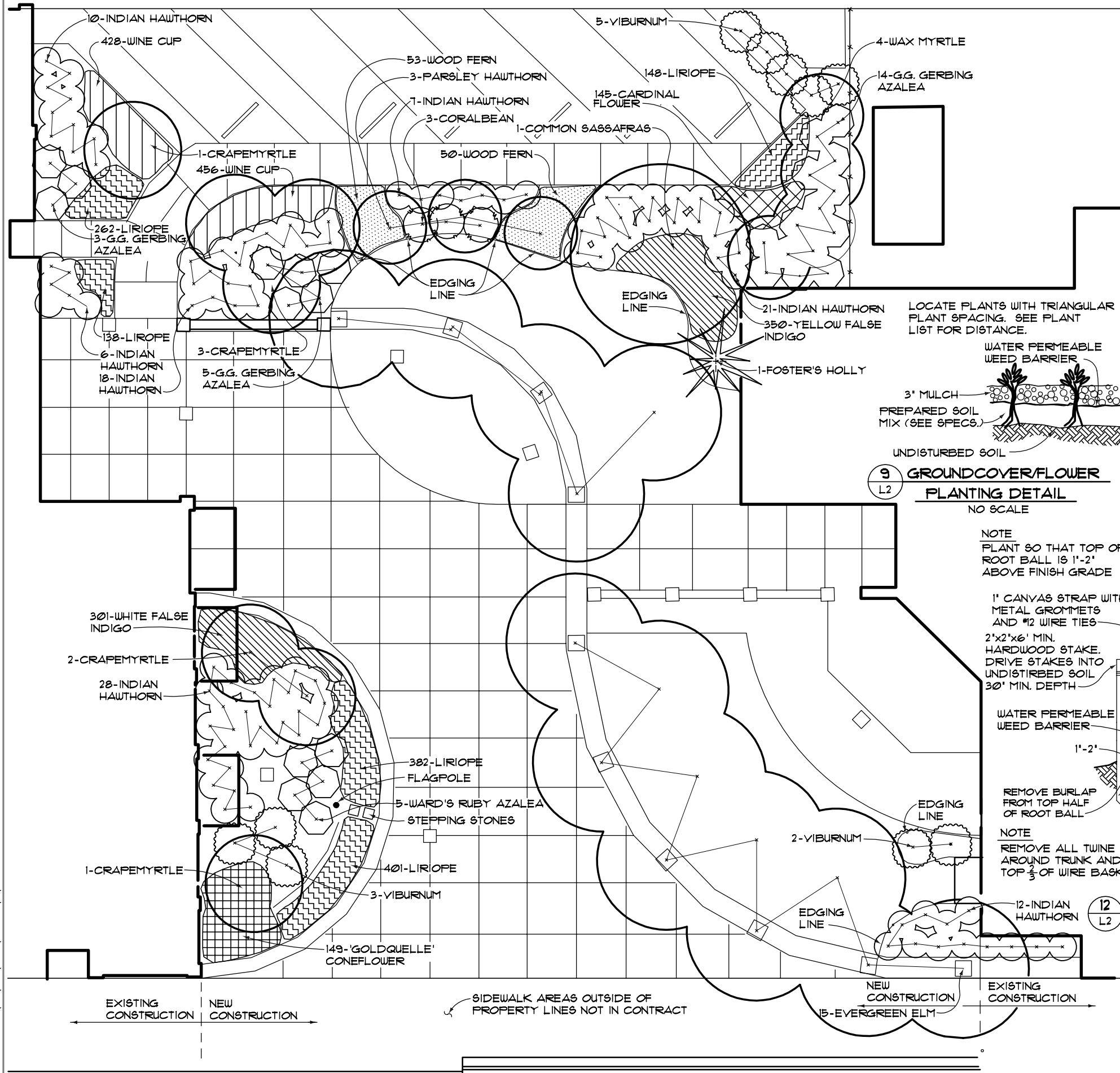
SIGN SCHEDULE					
SIGN NO.	TYPE		SIGN TYPE OR CATEGORY	DESCRIPTION	SIZE
	FHWA	NPS			WxH
1		*	1	PUUKOHOLA HEIAU NHS SPENCER PARK	120"x48"
2	*		W1-7	DOUBLE ARROW	48"x24"
3		*	1	PUUKOHOLA HEIAU NHS SPENCER PARK	114"x48"
4	*		R1-1	STOP	36"x36"
5	*		W20	ROAD CLOSED AHEAD (SALVAGED)	36"x36"
6		*	3	PUUKOHOLA HEIAU NHS ENTRANCE SIGN	87"x38"
7		*	3	SPENCER PARK PUUKOHOLA HEIAU V.C.	72"x24"
8		*	3	PUUKOHOLA HEIAU VISITOR CENTER	72"x18"
9	*		R1-1	STOP	30"x30"
10	*		R2-1	SPEED LIMIT 25	24"x30"
11	*		W7-1b	HILL WITH % GRADE	30"x30"
12	*		W7-2b	TRUCKS USE LOWER GEAR	24"x18"
13	*		W3-1a	STOP AHEAD	36"x36"
14	*		R2-1	SPEED LIMIT 25	24"x30"
15	*		R1-1	STOP	36"x36"
16	*		R1-1	STOP	36"x36"
17	*		R1-1	STOP	36"x36"
18	*		W1-7	DOUBLE ARROW	48"x24"
19	*		R1-3	3-WAY	12"x6"
20	*		R1-3	3-WAY	12"x6"
21	*		R1-3	3-WAY	12"x6"

- NOTES**
- FOR DETAILS ON SIGNS #1, #3, #6, #7, #8 SEE SHEET C13.
 - FOR MORE INFORMATION ON NPS SIGNS REFER TO THE JANUARY 1988 NPS SIGN MANUAL. FOR MORE INFORMATION ON REGULATORY SIGNS REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 1988 EDITION.



DESIGNED: B. WADER L. WOLF TECH. REVIEW: DATE: 10/94	SUB SHEET NO. C12	TITLE OF SHEET SAMPLE PLAN AND DETAILS FOR ROADWAY SIGNS AND PAVEMENT MARKINGS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 14 OF 43
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PLANT LIST

QTY	COMMON NAME	BOTANICAL NAME	SIZE/CONDITION
15	EVERGREEN ELM	ULMUS PARVIFOLIA 'DRAKE' (ROOT BALL TO FIT TREE GRATE)	2 1/2' CAL/B#B (12' TO 14' MATCHED)
1	COMMON SASSAFRAS	SASSAFRAS ALBIDUM	2' CAL/B#B SPECIMEN
3	PARSLEY HAWTHORN	CRATAEGUS MARSHALLI	6'-8' HT/B#B
7	CRAPEMYRTLE	LAGERSTROMIA INDICA 'POTOMAC'	8'-10' HT/B#B (MULTITRUNK SPECIMEN)
4	WAX MYRTLE	MYRICA CERIFERA	8'-10' HT/B#B (FULL MULTI-TRUNK)
1	FOSTER'S HOLLY	ILEX X ATTENUATA 'FOSTERII'	6'-8' HT. SPECIMEN B#B (FULL BRANCHING TO GROUND)
10	JAPANESE VIBURNUM	RHODODENDRON INDICUM 'G.G. GERBING'	36'-42' HT/B#B (FOR SCREENING)
22	AZALEA G.G. GERBING	VIBURNUM JAPINUCA 'LEATHERLEAF'	30'-36' HT/ CONTAINER (FULL)
5	AZALEA WARD'S RUBY	RHODODENDRON SP. KURUMES HYBRID 'WARD'S RUBY'	24'-30' HT/ CONTAINER (FULL)
102	INDIAN HAWTHORN	RAPHIOLEPIS INDICA 'CLARA'	24'-30' HT/CONTAINER (FULL)
3	CORALBEAN	ERYTHRINA HERBACEA	18'-24' HT/ CONTAINER
145	CARDINAL FLOWER	LOEBELIA CARDINALIS	1-GAL/FULL, PLANT 8' O.C.
350	YELLOW FALSE INDIGO	BAPTISIA TINCTORIA	1-QUART/FULL, PLANT 8' O.C.
301	WHITE FALSE INDIGO	BAPTISIA ALBA	1-QUART/FULL, PLANT 8' O.C.
884	WINE CUP	CALLITHOE DIGITATA	2 1/4' POT/FULL, PLANT 6' O.C.
112	WOOD FURN	DRYOPTERIS SPP.	1-GAL/FULL, PLANT 15' O.C.
149	CONEFLOWER GOLDQUELLE	RUDBECKIA LACINIATA 'GOLDQUELLE'	1-QUART/FULL, PLANT 12' O.C.
1331	LIRIOPE	LIRIOPE MUSCARI 'TIDWELL'S BIG BLUE'	2 1/4' POT/FULL, PLANT 6' O.C.
2	STEPPING STONES (TO MATCH CONCRETE FINISH OF COURTYARD)		2'x2'
3230	BED PREPARATION (ALL AREAS WITH SHRUBS + GROUND COVER)		SQ. FT.
400	SOD (REPLACE WITH EQUAL TO EXISTING SOD)		SQ. YD.
166	RYERSON STEEL EDGING (OR APPROVED EQUAL)		LIN. FT. (3/16'x4')

9 GROUND COVER/FLORAL PLANTING DETAIL NO SCALE

NOTE
PLANT SO THAT TOP OF
ROOT BALL IS 1'-2"
ABOVE FINISH GRADE

1' CANVAS STRAP WITH
METAL GROMMETS
AND #12 WIRE TIES
2'x2'x6' MIN.
HARDWOOD STAKE.
DRIVE STAKES INTO
UNDISTURBED SOIL
30' MIN. DEPTH

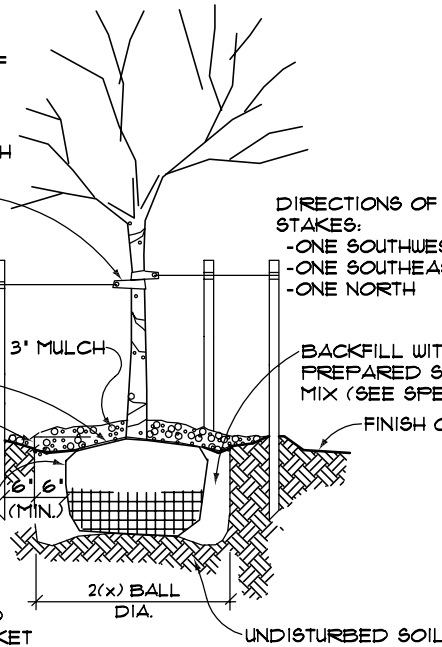
WATER PERMEABLE
WEED BARRIER

3' MULCH

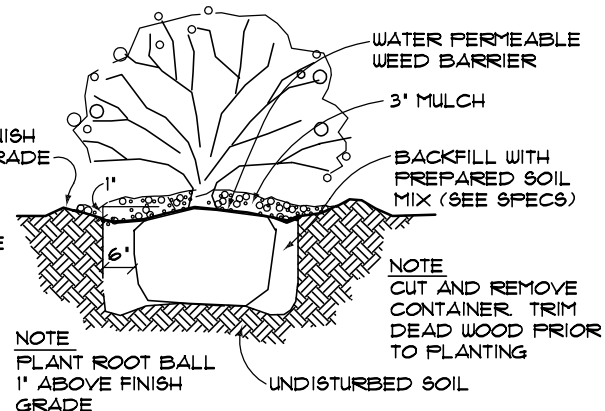
1'-2'

REMOVE BURLAP
FROM TOP HALF
OF ROOT BALL

NOTE
REMOVE ALL TWINE
AROUND TRUNK AND
TOP 1/3 OF WIRE BASKET



12 TREE PLANTING DETAIL NO SCALE



8 SHRUB PLANTING DETAIL NO SCALE

8 0 8 16
SCALE OF FEET



3 LANDSCAPE SITE PLAN L2

DESIGNED: A. BROWN L. WOLF TECH. REVIEW:	SUB SHEET NO. L2	TITLE OF SHEET SAMPLE LANDSCAPE PLAN AND DETAILS NAME OF PARK	DRAWING NO. 999 41,001
DATE: 10/94			PKG. NO. 108 SHEET 16 OF 43

POINT OF CONNECTION (P.O.C.)

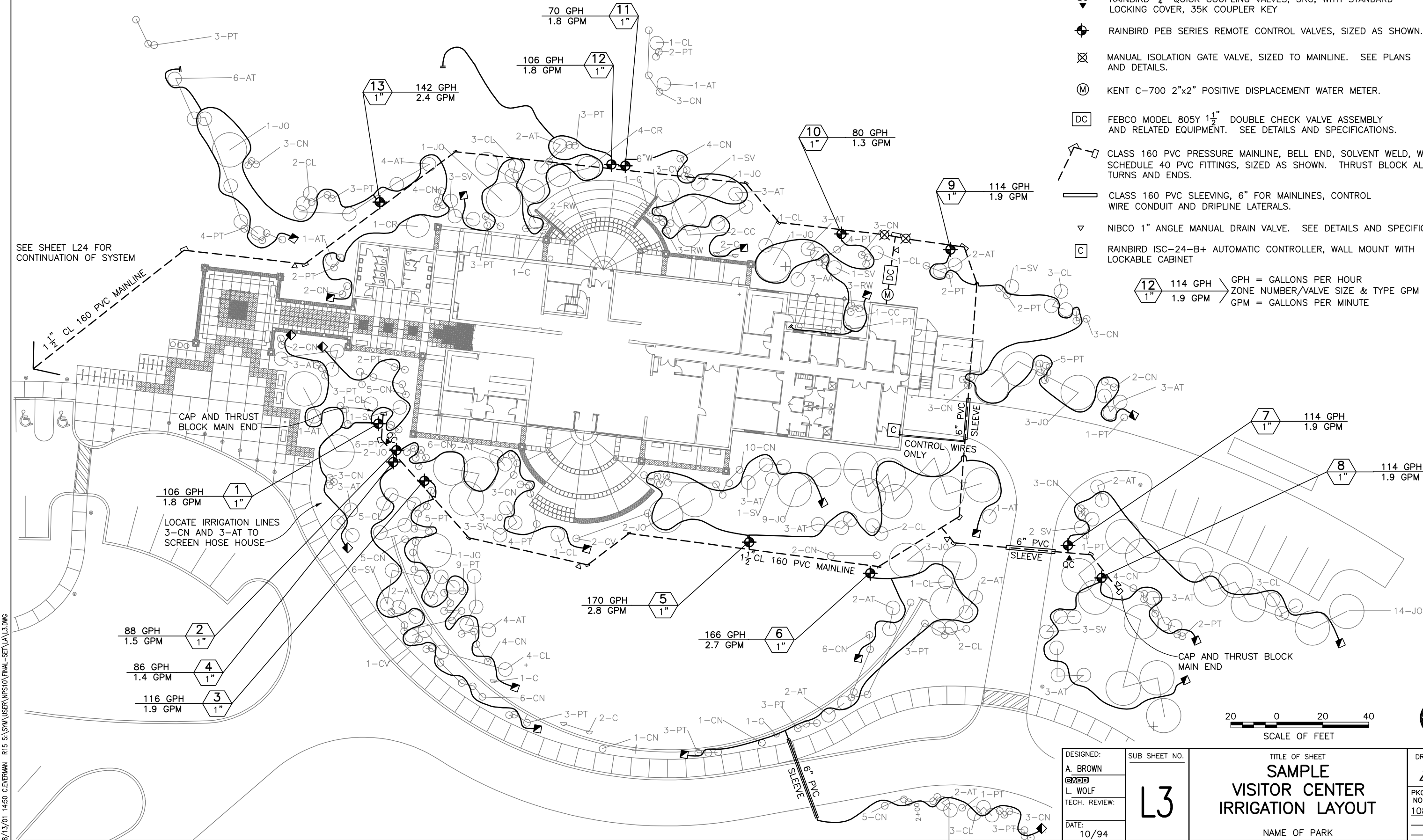
P.O.C. IS EXISTING 1 1/2" COPPER SERVICE STUBBED OUT AT APPROXIMATELY 24" DEPTH OF BURY.

CONTRACTOR SHALL PROVIDE AND INSTALL CONNECTION, 1 1/2" TYPE-K COPPER SERVICE THROUGH METER AND BACKFLOW PREVENTER, NEW 1 1/2" PVC MAINLINE, 1" MANUAL DRAIN VALVE, AND EXTEND MAINLINE TOWARD CONTROL VALVES @ 24" MINIMUM DEPTH OF BURY. PROVIDE 3 CUBIC FOOT DRAIN SUMP AT MANUAL DRAIN VALVE.

IRRIGATION LEGEND

- SALCO HIGH TEMPERATURE PVC FLEX HOSE (DRIP LINE). 1/2" AR-050-HT, RESISTANT TO UV RADIATION, COMPATIBLE WITH SCHEDULE 40 PIPE FITTINGS, INFUSED WITH ALGICIDE AND IMPERVIOUS TO CHEMICALS/FERTILIZERS. SEE SPECIFICATIONS AND DETAILS FOR EMITTER TYPES AND FITTINGS.
- FLUSHING END PLUG. SEE DETAILS AND SPECIFICATIONS.
- RAINBIRD 3/4" QUICK COUPLING VALVES, 3RC, WITH STANDARD LOCKING COVER, 35K COUPLER KEY
- RAINBIRD PEB SERIES REMOTE CONTROL VALVES, SIZED AS SHOWN.
- MANUAL ISOLATION GATE VALVE, SIZED TO MAINLINE. SEE PLANS AND DETAILS.
- KENT C-700 2"x2" POSITIVE DISPLACEMENT WATER METER.
- FEBCO MODEL 805Y 1 1/2" DOUBLE CHECK VALVE ASSEMBLY AND RELATED EQUIPMENT. SEE DETAILS AND SPECIFICATIONS.
- CLASS 160 PVC PRESSURE MAINLINE, BELL END, SOLVENT WELD, WITH SCHEDULE 40 PVC FITTINGS, SIZED AS SHOWN. THRUST BLOCK ALL TURNS AND ENDS.
- CLASS 160 PVC SLEEVING, 6" FOR MAINLINES, CONTROL WIRE CONDUIT AND DRIPLINE LATERALS.
- NIBCO 1" ANGLE MANUAL DRAIN VALVE. SEE DETAILS AND SPECIFICATIONS.
- RAINBIRD ISC-24-B+ AUTOMATIC CONTROLLER, WALL MOUNT WITH LOCKABLE CABINET

12 1" 114 GPH 1.9 GPM → GPH = GALLONS PER HOUR
ZONE NUMBER/VALVE SIZE & TYPE GPM MARKER.
GPM = GALLONS PER MINUTE

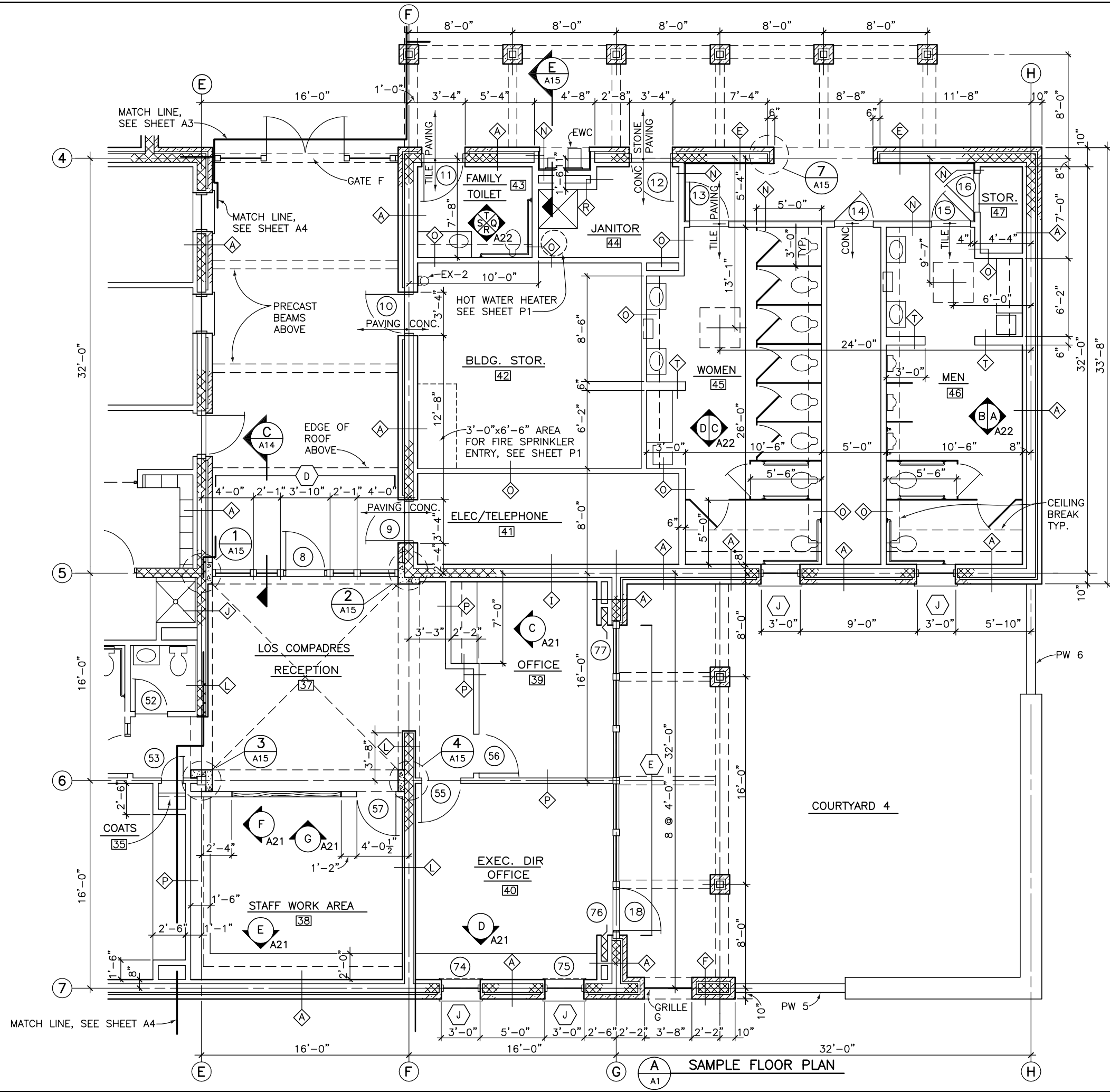


20 0 20 40
SCALE OF FEET



DESIGNED: A. BROWN L. WOLF TECH. REVIEW: DATE: 10/94	SUB SHEET NO. L3	TITLE OF SHEET SAMPLE VISITOR CENTER IRRIGATION LAYOUT NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 17 OF 43
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8/24/01 11:43 C:\EYEMAN R15 S:\SYN\USER\NPS10\FINAL-SET\ARCH\A1.DWG

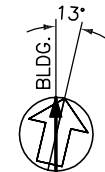
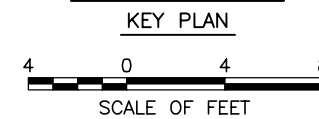
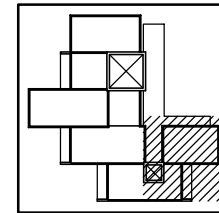


BUILDING CODE DATA

CODE: UNIFORM BUILDING CODE, 1991
OCCUPANCY GROUP: A3/B2
CONSTRUCTION TYPE: III N

NOTES

- DIMENSIONS TO FACE OF MASONRY OR STUDS OR CENTER LINE OF COL, CMU OR STUDS
- SEE SHEET A19 FOR WALL TYPES INDICATED THUS



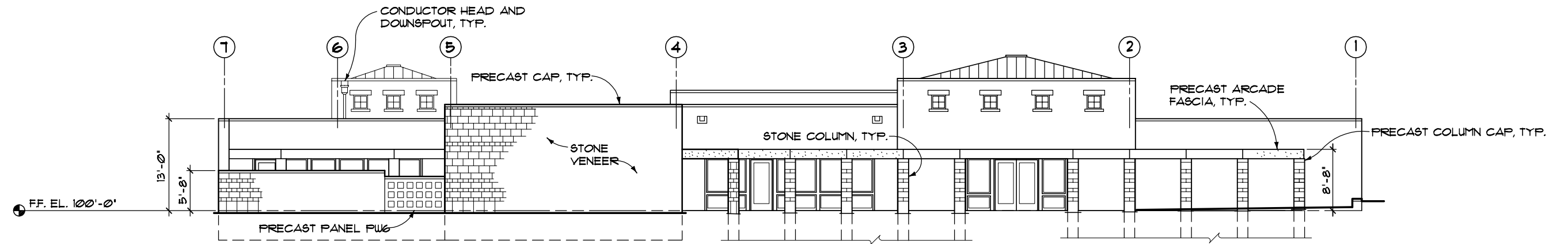
DESIGNED:
TREANTS
RUSSELL
DL SIKES
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
A1

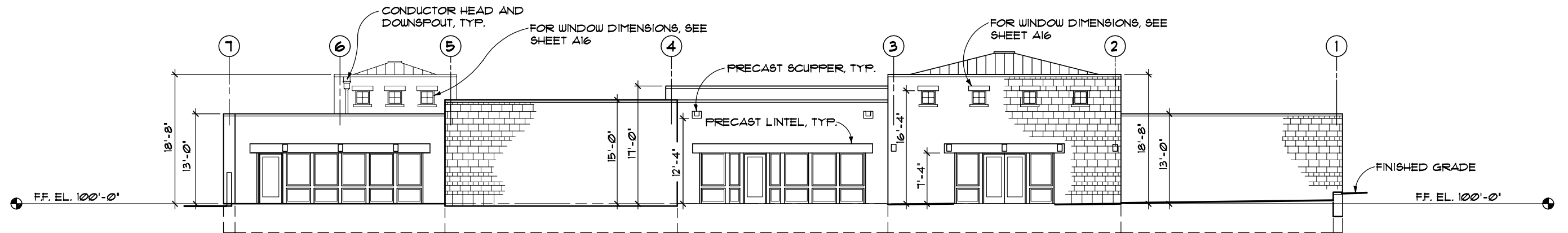
TITLE OF SHEET
SAMPLE FLOOR PLAN

NAME OF PARK

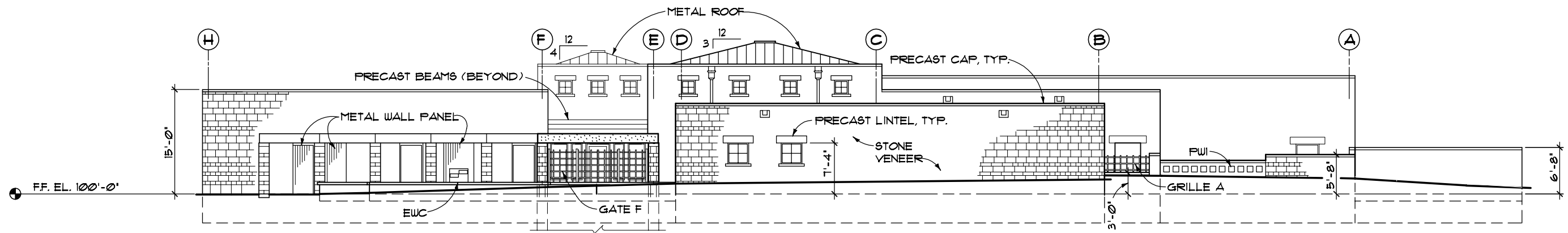
DRAWING NO.
999
41,001
PKG. NO. **108**
SHEET **18**
OF **43**



A
A3
EAST ELEVATION



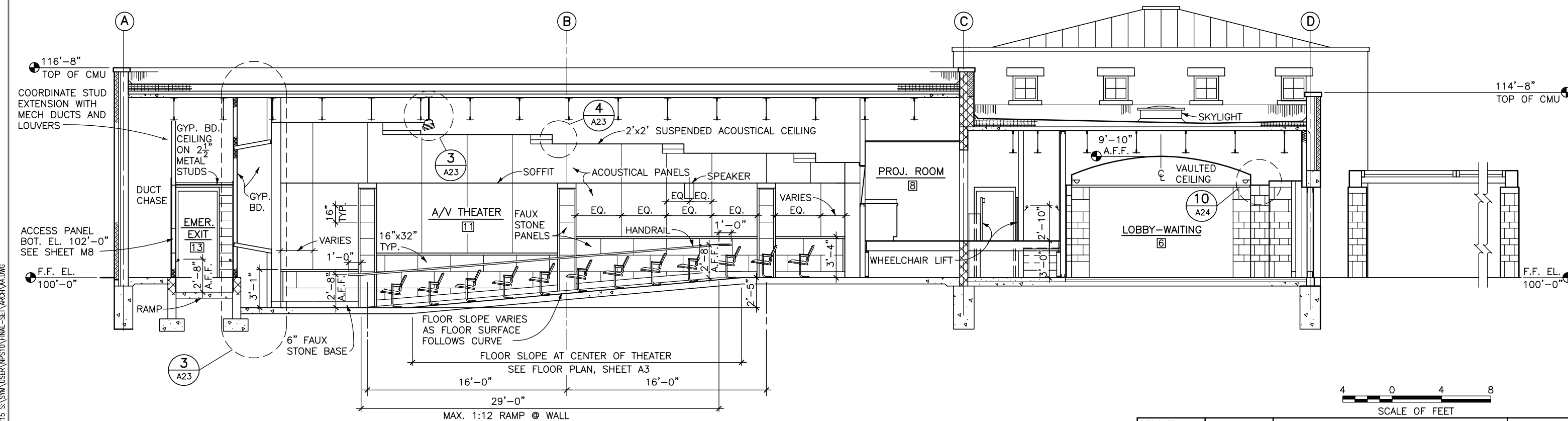
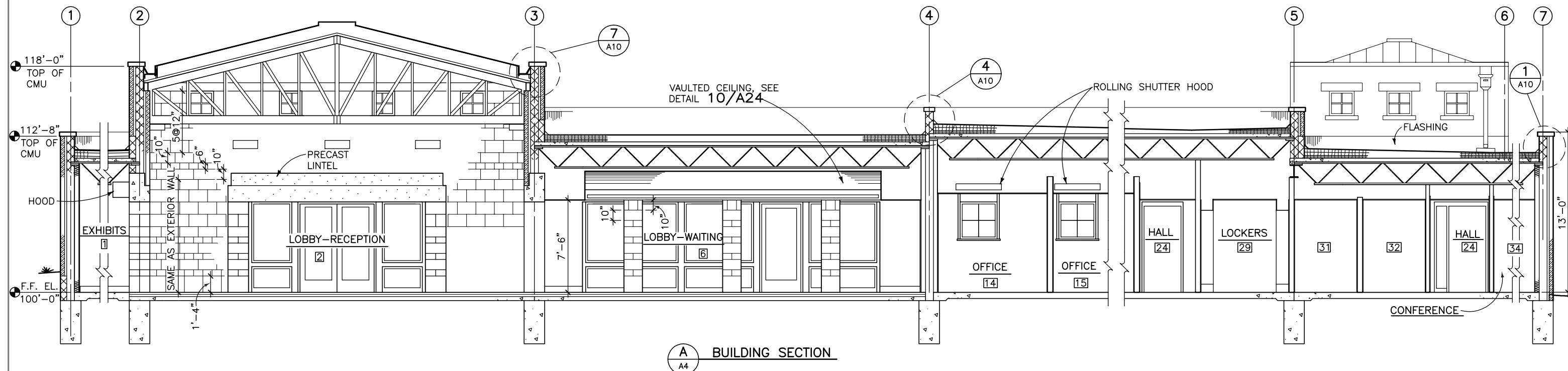
B
A3
EAST ELEVATION WITHOUT ARCADE AND COURTYARD WALLS



C
A3
NORTH ELEVATION



DESIGNED: TREANTS/ SALDANA DJ SIKES TECH. REVIEW: DATE: 10/94	SUB SHEET NO. A3	TITLE OF SHEET SAMPLE ELEVATIONS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 20 OF 43
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NOTES

1. CENTER PILASTER IS LOCATED ON COLUMN LINE "B"
2. SEE A/V THEATER ELEVATION V/A22, FOR ADDITIONAL DIMENSIONS AND NOTATIONS

DESIGNED:
TREANTS
K. COPELAND
GADD
A. CAMPBELL
TECH. REVIEW:

DATE:
10/94

A. CAMPBELL
TECH. REVIEW:

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

DATE: 10/94

SUB SHEET NO.

A4

TITLE OF SHEET

SAMPLE SECTIONS

NAME OF PARK

DRAWING NO.

DRAWING NO.
999

41,001

G.	SUEY
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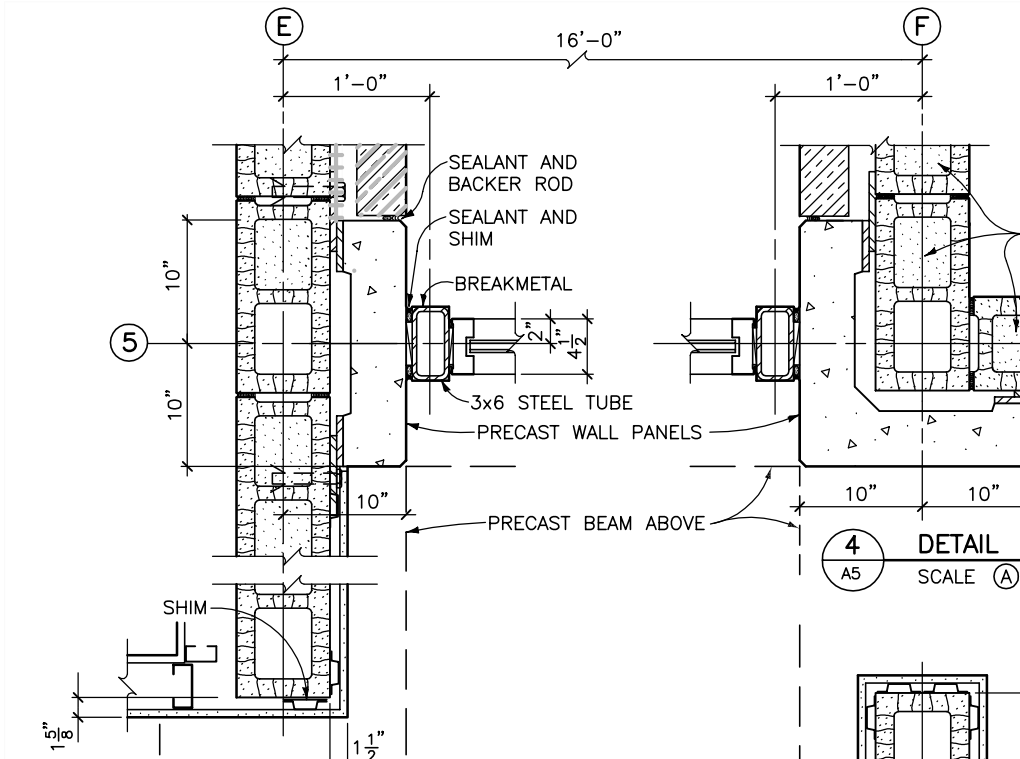
SHEET

08	21		
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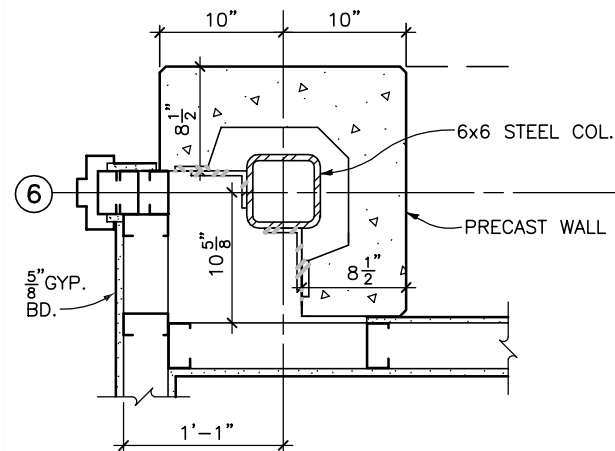
17

OF 4.5

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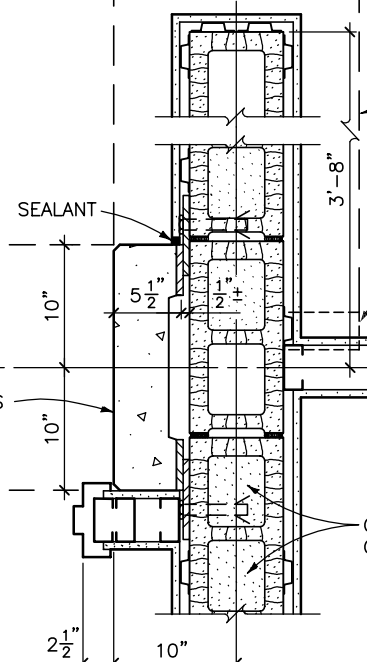


1 DETAIL
A5 SCALE (A)

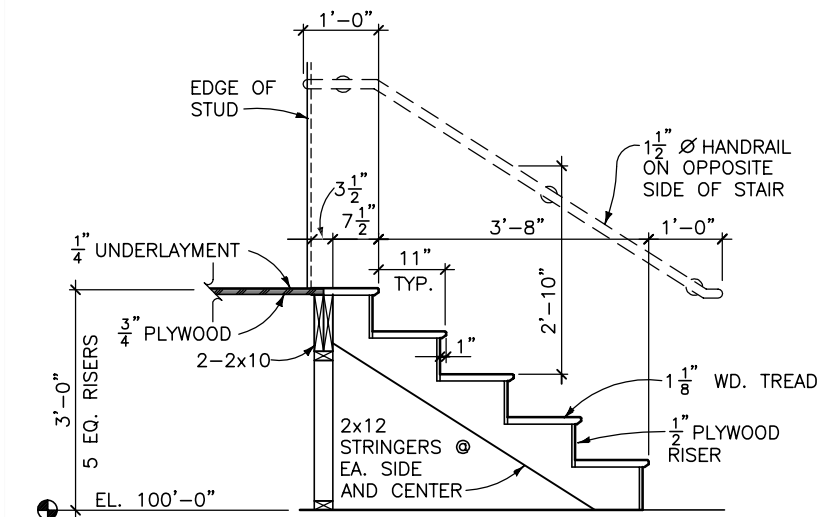


2 DETAIL
A5 SCALE (A)

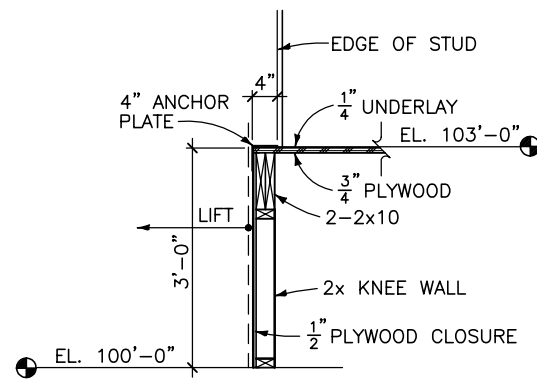
PRECAST WALL PANELS AT
LOS COMPADRES RECEPTION



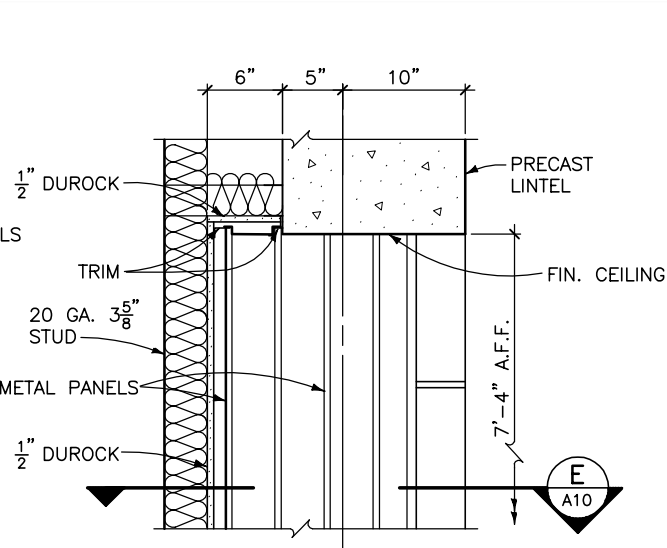
5 DETAIL
A5 SCALE (A)



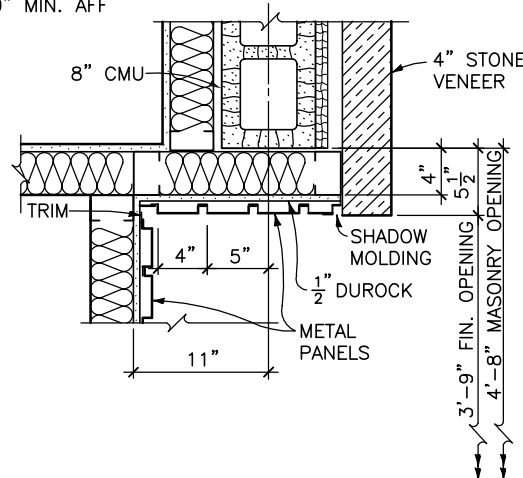
3 SECTION AT STAIRS
A5 SCALE (B)



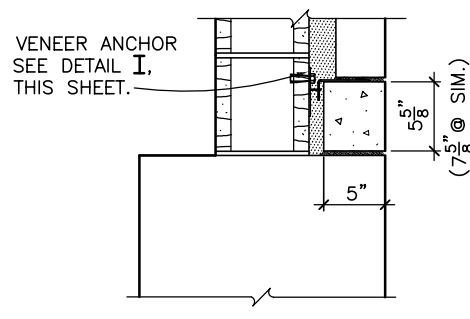
6 SECTION THRU PLATFORM AT LIFT
A5 SCALE (B)



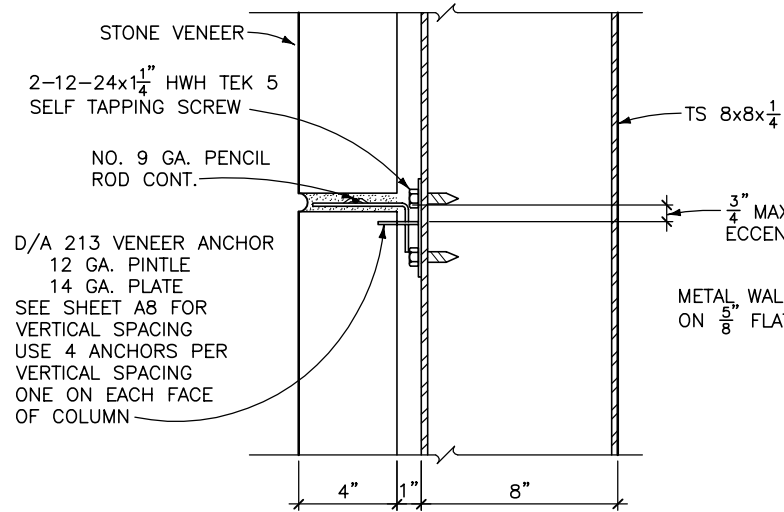
7 HEAD AT EXT. EWC ALCOVE
A5 SCALE (A)



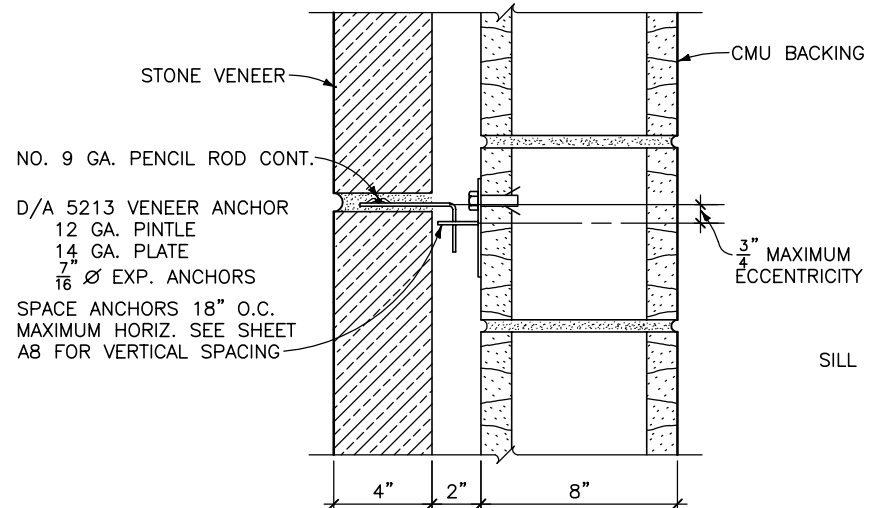
8 SIDE WALL AT EWC ALCOVE
A5 SCALE (A)



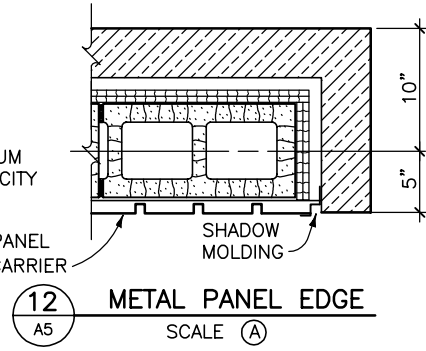
9 PRECAST CONCRETE BASE
A5 SCALE (A)



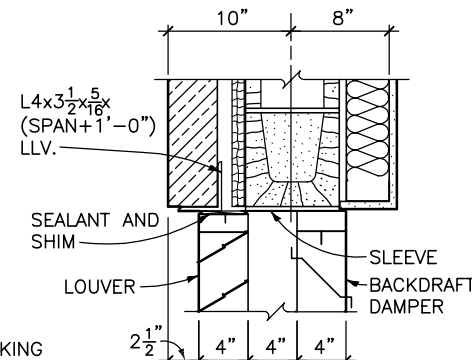
10 VENEER ANCHOR AT COLUMN
A5 SCALE (C)



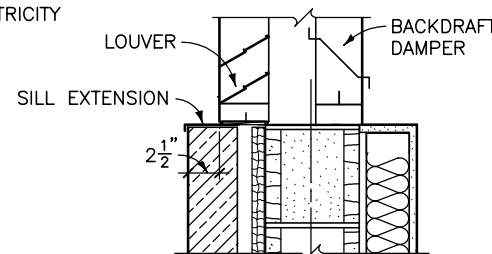
11 VENEER ANCHOR AT CMU
A5 SCALE (C)



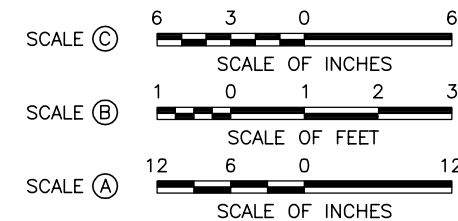
12 METAL PANEL EDGE
A5 SCALE (A)



13 LOUVER HEAD
A5 SCALE (A)

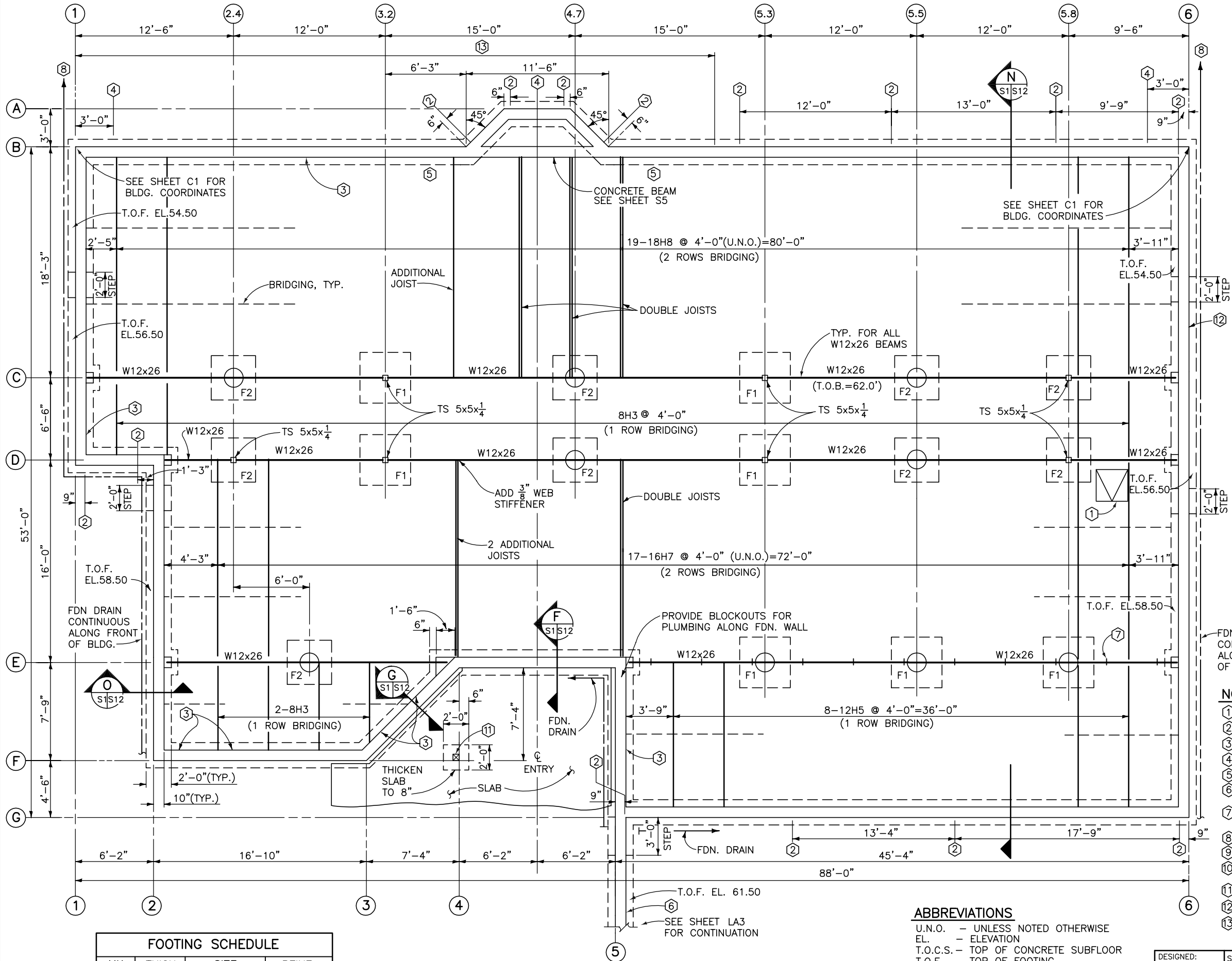


14 LOUVER SILL
A5 SCALE (A)



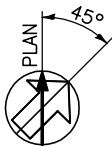
DESIGNED: RUSSELL HEDRICKS TECH. REVIEW: DATE: 10/94	SUB SHEET NO. A5	TITLE OF SHEET SAMPLE DETAIL SHEET NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 22 OF 43
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FOOTING SCHEDULE			
MK	THICK	SIZE	REINF.
F1	1'-0"	4'-0"x4'-0"	6-#5 E.W.
F2		3'-6"x3'-6"	

FOUNDATION AND FLOOR FRAMING PLAN



ABBREVIATIONS

U.N.O. - UNLESS NOTED OTHERWISE
EL. - ELEVATION
T.O.C.S. - TOP OF CONCRETE SUBFLOOR
T.O.F. - TOP OF FOOTING
T.O.S. - TOP OF SLAB
FDN. - FOUNDATION
FTG. - FOOTING
E.S. - EACH SIDE
CONT. - CONTINUOUS
A.B. - ANCHOR BOLT
T.O.B. - TOP OF BEAM

GENERAL NOTES

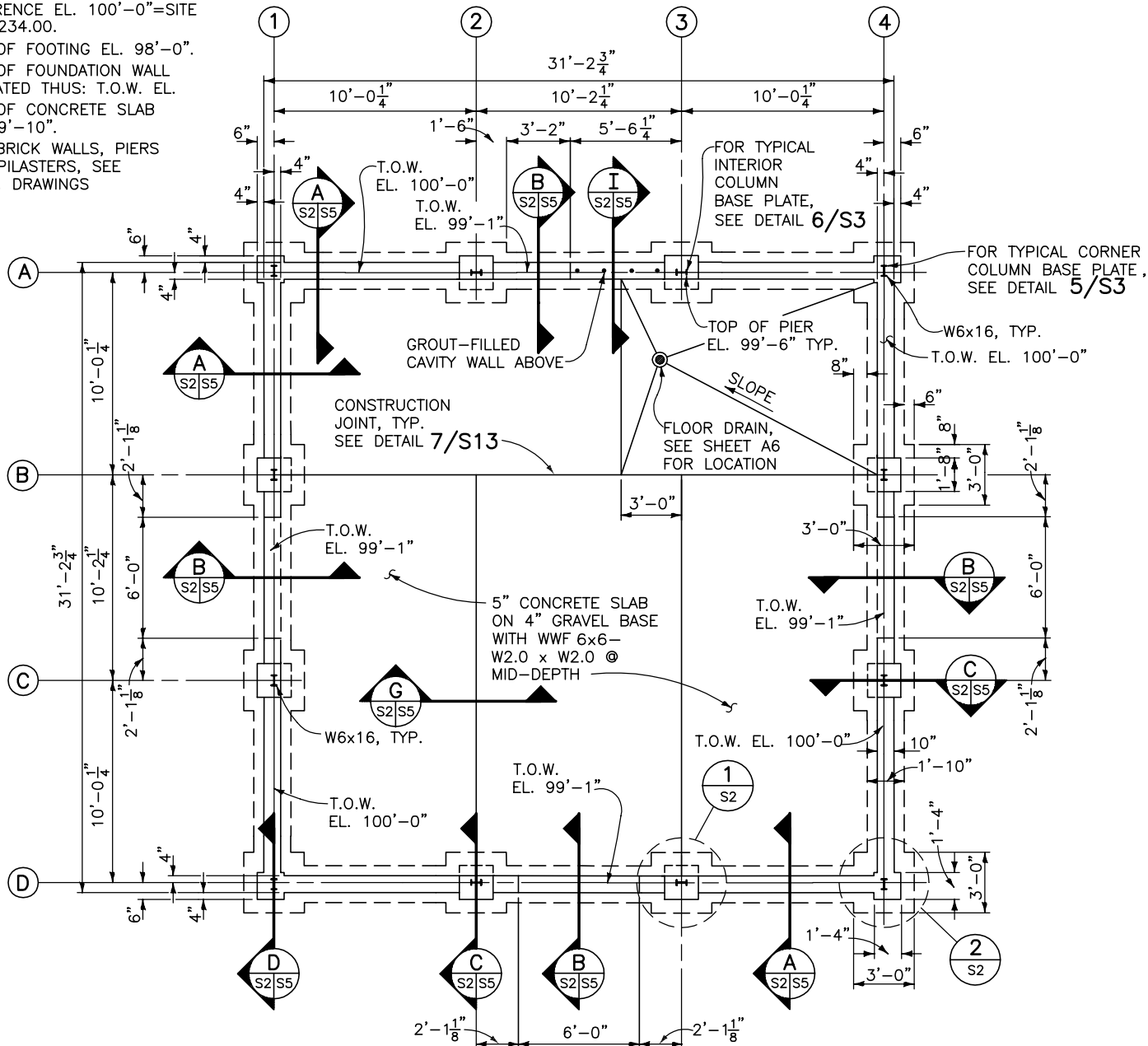
- DESIGN LIVE LOADS - 1991 UBC
A. ROOF: 30 PSF
B. WIND: EFFECTIVE VELOCITY PRESSURE 10 PSF (80 MPH, EXP. C)
C. FLOORS: 100 PSF
- FOUNDATION
A. DESIGN SOIL BEARING PRESSURE: 2500 PSF
B. FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR GRANULAR FILL COMPACTED TO 98% OF MAXIMUM DENSITY.
- CONCRETE
A. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
B. REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60. DO NOT WELD OR REBEND REINFORCING BARS. REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315 AND 318-89.
C. CONCRETE COVER SHALL BE ACCORDING TO ACI 318-89 OR AS SHOWN.
D. REINFORCING SPLICES SHALL BE AS FOLLOWS OR AS SHOWN.
#5-2'-2"
#7-3'-3"
#9-5'-5"
- STEEL
A. STRUCTURAL STEEL: ASTM A36
B. TUBULAR STEEL: ASTM A500, GRADE B.
C. STANDARD BOLTS, ANCHOR BOLTS AND LAG SCREWS: ASTM A307
D. GALVANIZING: ALL STEELWORK EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 OR ASTM A153.
- TIMBER
A. FRAMING LUMBER: SOUTHERN PINE SELECT STRUCTURAL
B. GLUED LAMINATED TIMBER:
1. BEAMS: COMBINATION SYMBOL 24F, Fb=2400 PSI, Fv=200 PSI.
2. COLUMNS AND TRUSS MEMBERS: COMBINATION SYMBOL 50, Fc=2300 PSI, Ft=1550 PSI.
C. PLYWOOD NAILING SCHEDULE:
1. ROOF SHEATHING; 8d COMMON NAILS AT 6 INCHES ON CENTER AT DIAPHRAGM BOUNDARIES AND ALL OTHER PLYWOOD PANEL EDGES, 12 INCHES ON CENTER ALONG INTERMEDIATE FRAMING MEMBERS. BLOCKING SHALL BE PROVIDED AT ALL PLYWOOD PANEL EDGES.
2. WALL SHEATHING; 10d COMMON NAILS AT 4 INCHES ON CENTER AT PLYWOOD PANEL EDGES, 12 INCHES ON CENTER ALONG INTERMEDIATE FRAMING MEMBERS
3. FLOOR SHEATHING; 8d COMMON NAILS AT 6 INCHES ON CENTER AT DIAPHRAGM BOUNDARIES AND ALL OTHER PLYWOOD PANEL EDGES, 10 INCHES ON CENTER ALONG INTERMEDIATE FRAMING MEMBERS.

NOTES

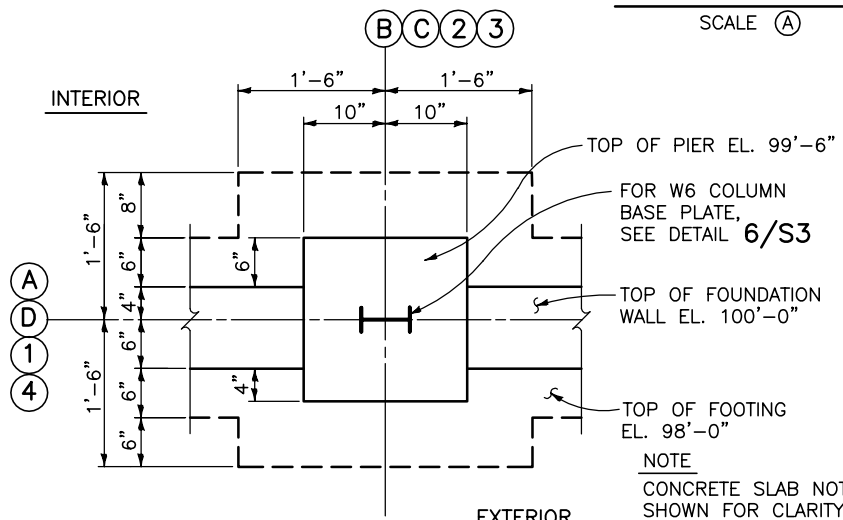
- BILCO TYPE Q-2 (30"x30") FLOOR DOOR OR APPROVED EQUAL.
- ℄ OF EMBEDDED ANGLE - SEE DETAIL 5/S12
- BLOCK OUT FOR SPRINKLER RISER IN FDN. AND DECK.
- ℄ OF THRU WALL FDN VENT - SEE SECTION Q/S12
- DEPRESSED CONCRETE DECK THIS AREA. SEE SHEET S12.
- EXTERIOR WALL - PLACE MONOLITHICALLY WITH BLDG. FDN WALLS - SEE DETAIL 10/S12
- ADD 2.5 VS1 x 6" SPACER OR APPROVED EQUAL @ 4'-0" O.C. UNDER BRG. WALL BETWEEN (5) AND (6)
- 6" Ø FOUNDATION DRAIN TO DAYLIGHT.
- WIDEN WALK 3" FOR COLUMN. SEE DETAIL 11/S12
- 4" FDN. WALL STUB OUT WITH 1/2" EXP. JT. TO RETAINING WALL WITH #4 DOWELS @ 10" O.C. VERT. EXP. JT. CARRIED THRU STONEWORK.
- 6x6 COLUMN - SEE DETAIL 11/S12 (SIMILAR)
- BLOCK OUT FOR MECHANICAL - SEE ELEV. P/S12
- A.B. EMBEDMENT @ 3'-6" O.C. FOR DECK SEE SHEET S12.

DESIGNED: J. SMITH D. DAVIS TECH. REVIEW:	SUB SHEET NO. S1	TITLE OF SHEET SAMPLE FOUNDATION AND FLOOR FRAMING PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 23 OF 43
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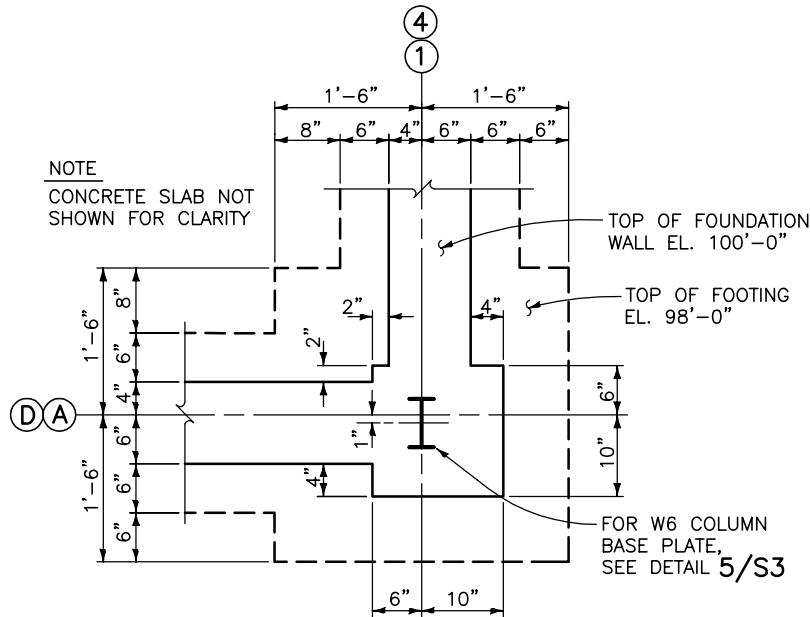
- NOTES
1. REFERENCE EL. 100'-0"=SITE EL. 1234.00.
 2. TOP OF FOOTING EL. 98'-0".
 3. TOP OF FOUNDATION WALL INDICATED THUS: T.O.W. EL.
 4. TOP OF CONCRETE SLAB EL. 99'-10".
 5. FOR BRICK WALLS, PIERS AND PILASTERS, SEE ARCH. DRAWINGS



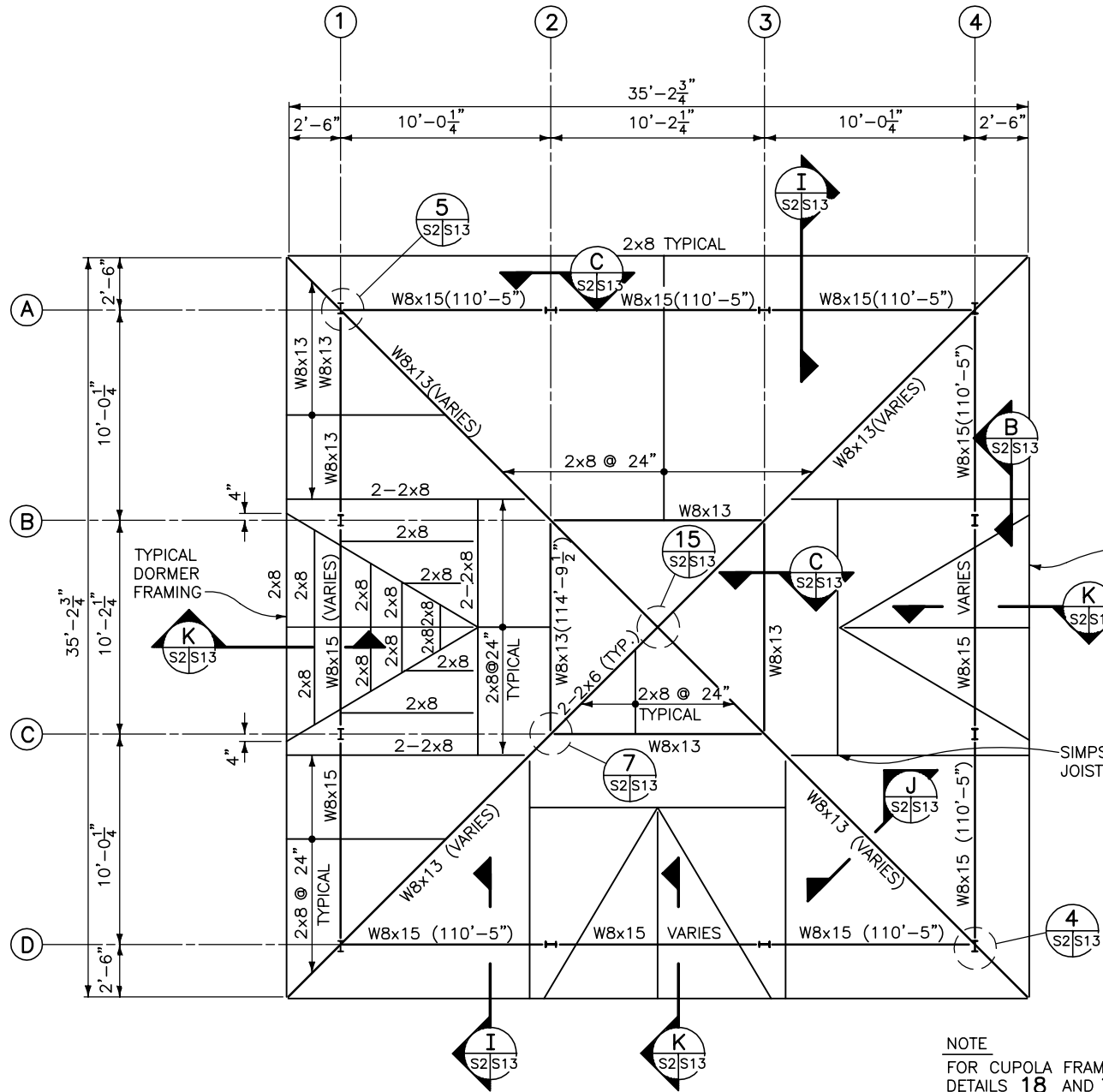
FOUNDATION PLAN
SCALE (A)



1 CONCRETE PIER PLAN DETAIL
SCALE (B)

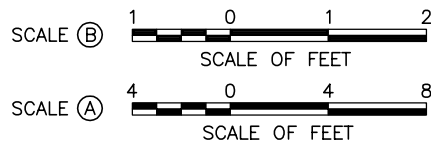


2 CORNER COLUMN PLAN DETAIL
SCALE (B)



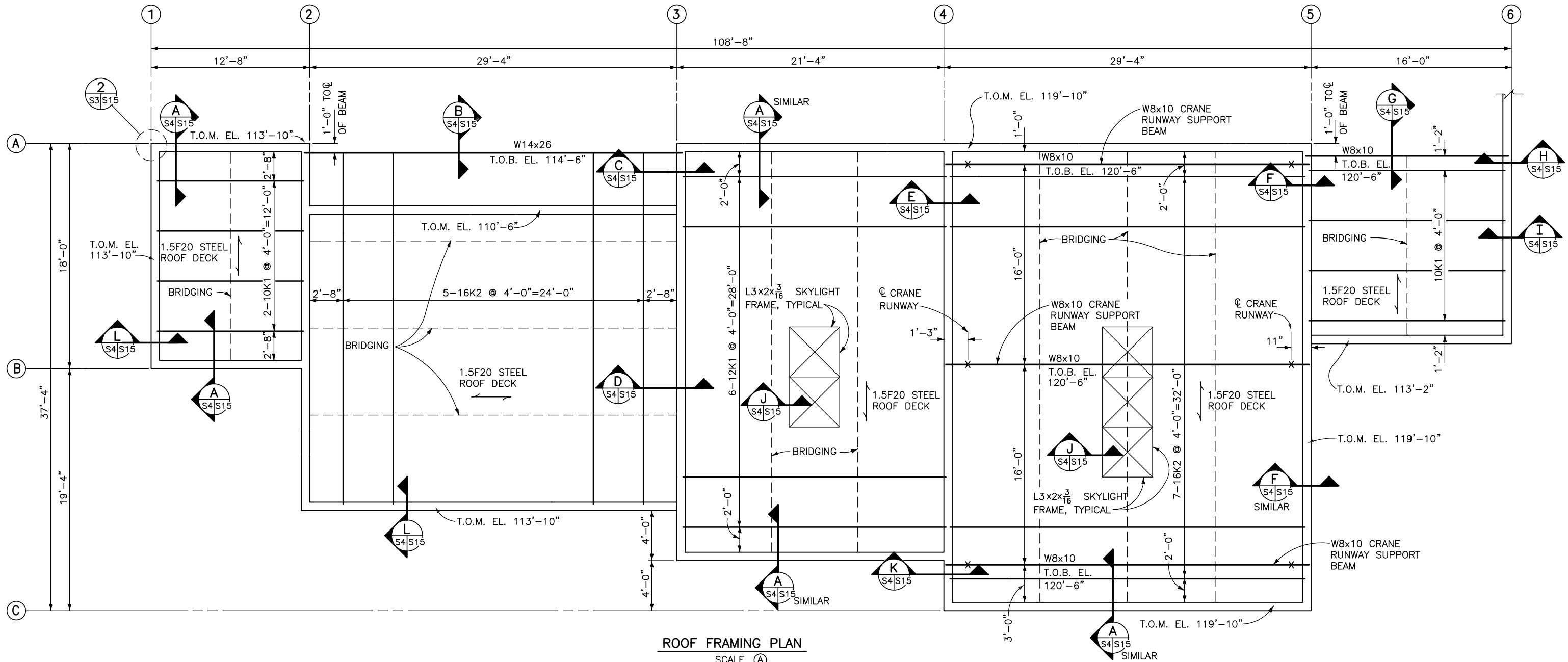
ROOF FRAMING PLAN

SCALE (A)
TOP OF STEEL ELEVATION INDICATED THUS: ()



DESIGNED: J. SMITH CHECKED: D. DAVIS TECH. REVIEW: DATE: 10/94	SUB SHEET NO. S2	TITLE OF SHEET SAMPLE FOUNDATION PLAN ROOF FRAMING PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 24 OF 43
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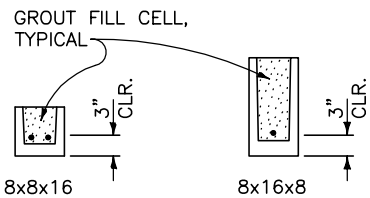
ROOF FRAMING PLAN

SCALE (A)

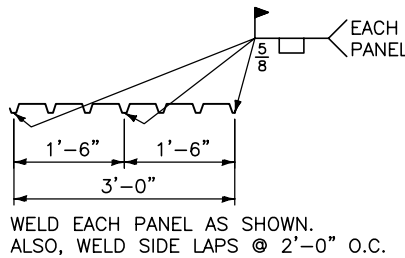
NOTE
FOR SKYLIGHT LOCATION AND DETAILS,
SEE ARCHITECTURAL SHEETS.

MASONRY LINTEL SCHEDULE			
OPENING SIZE	LINTEL BLK. SIZE (NOM.)	REINFORCING	BEARING EACH END
3'-4" TO 6'-0"	8x8x16	2-#5	8" MINIMUM
MORE THAN 6'-0"	8x16x8	1-#5	16" MINIMUM

(WxHxL)

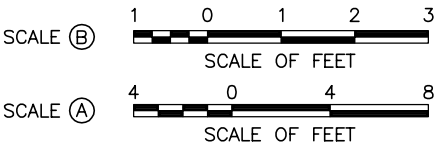


1 LINTEL DETAILS
SCALE (B)



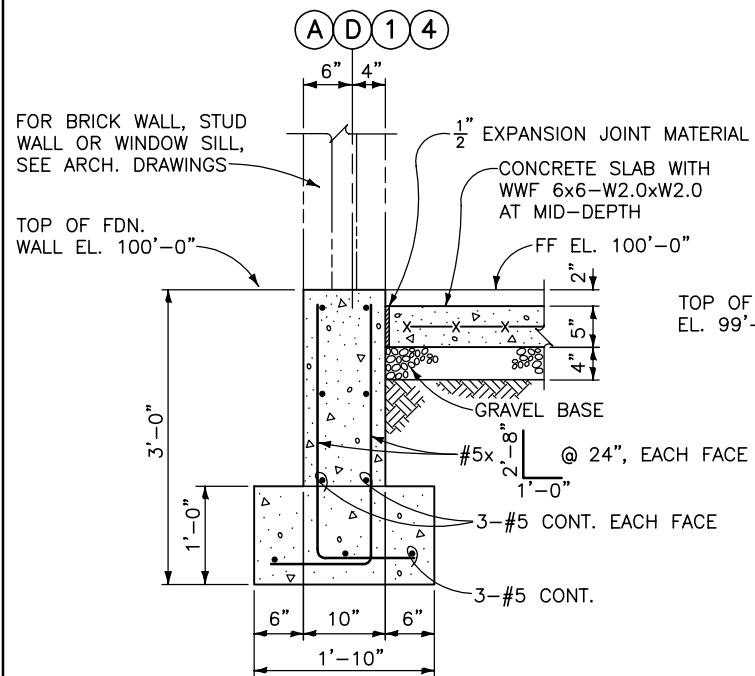
2 DECK WELDING DETAIL
SCALE (B)

NOTE
REFERENCE ELEVATION 100'-0"=
SITE ELEVATION 1234.00.

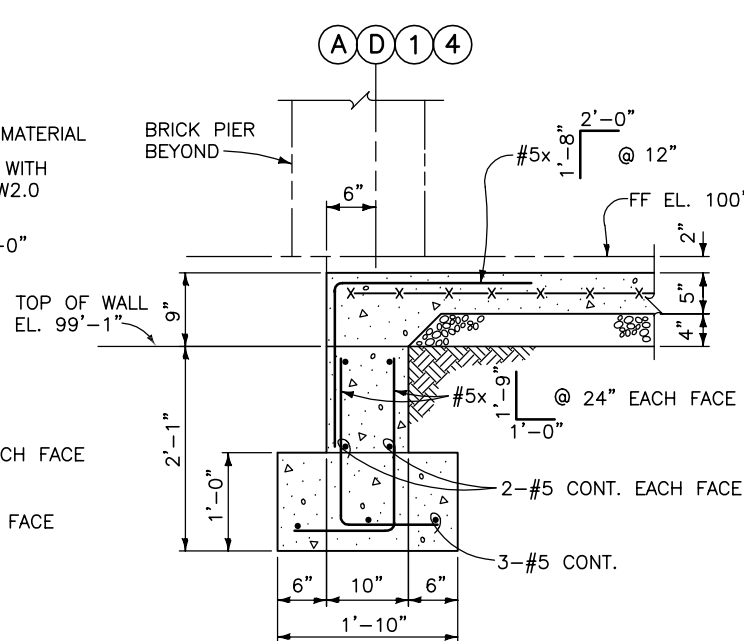


DESIGNED: J. SMITH 8/24/01 D. DAVIS TECH. REVIEW: DATE: 10/94	SUB SHEET NO. S4	TITLE OF SHEET SAMPLE ROOF FRAMING PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 26 OF 43
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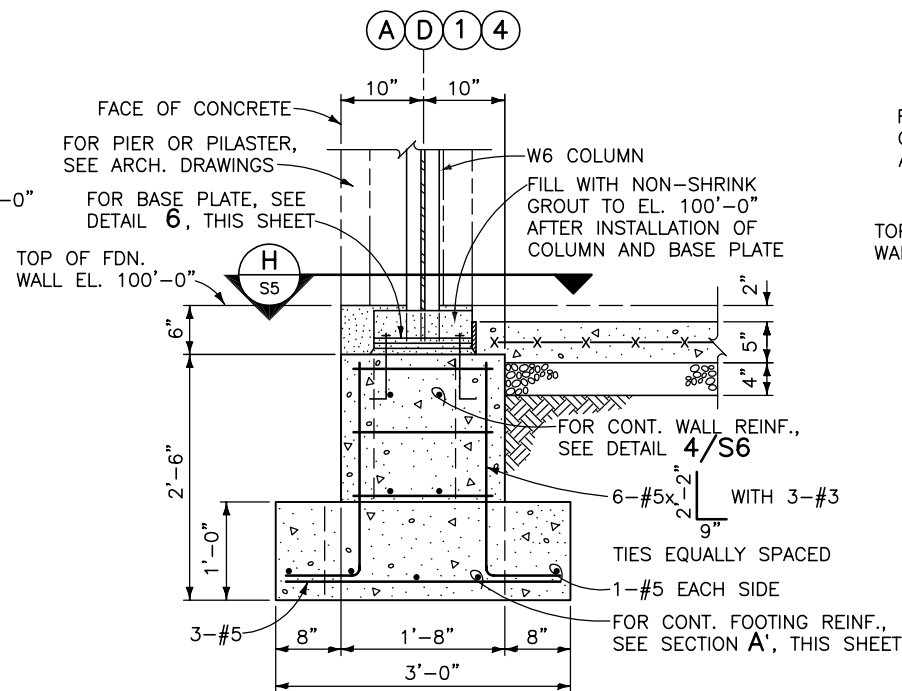
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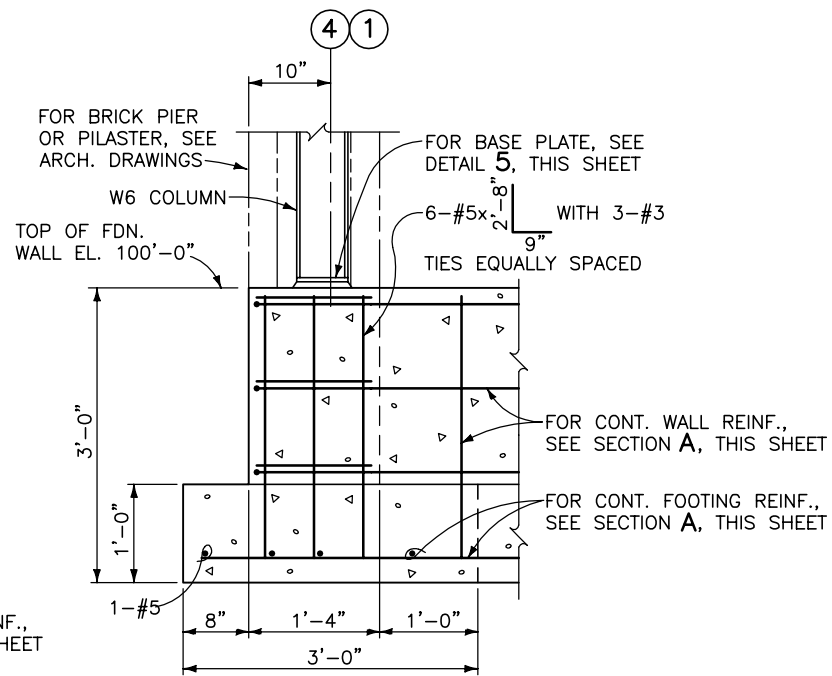
A FOUNDATION SECTION
SCALE (A)



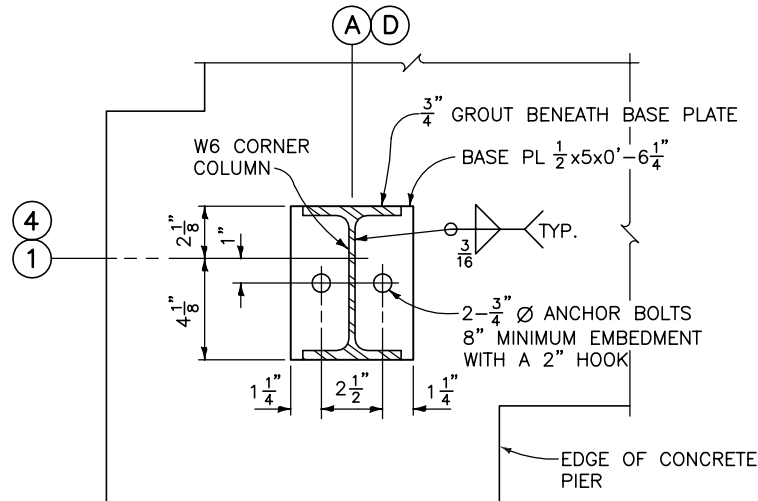
B FOUNDATION SECTION
AT DOOR OPENING
SCALE (A)



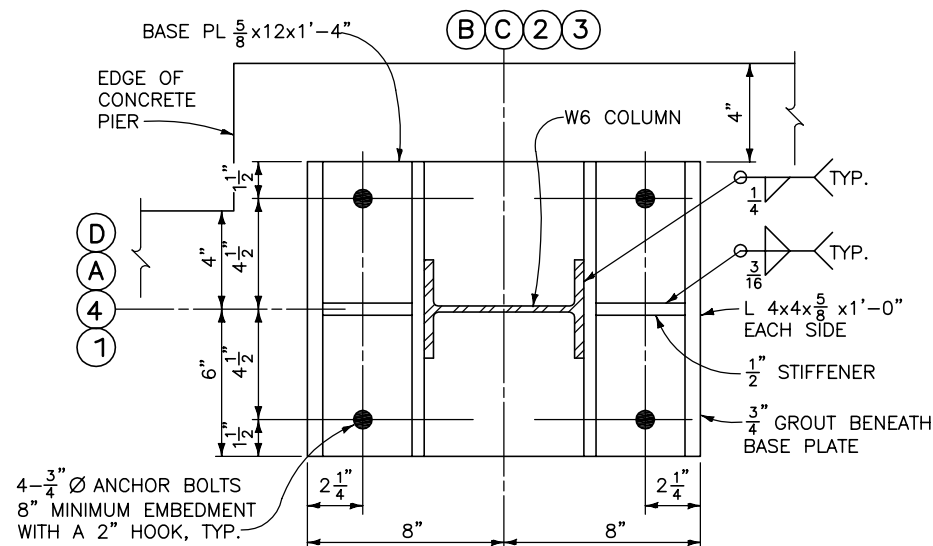
C FOUNDATION PIER SECTION
SCALE (A)



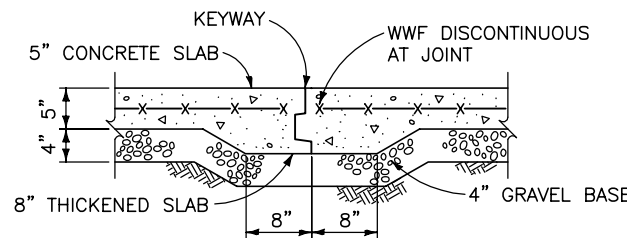
D CORNER FOUNDATION SECTION
SCALE (A)



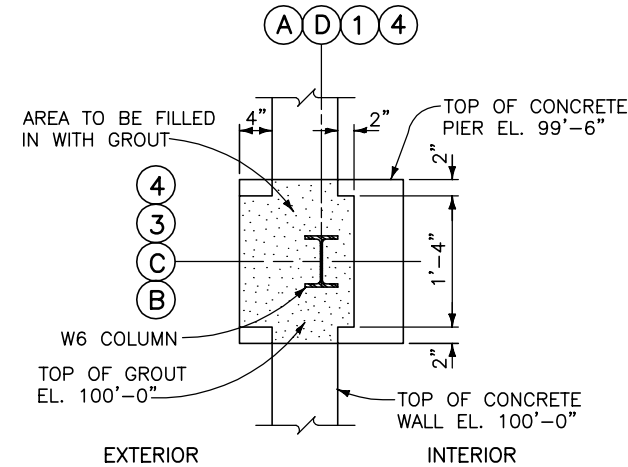
5 CORNER COLUMN BASE PLATE DETAIL
SCALE (B)



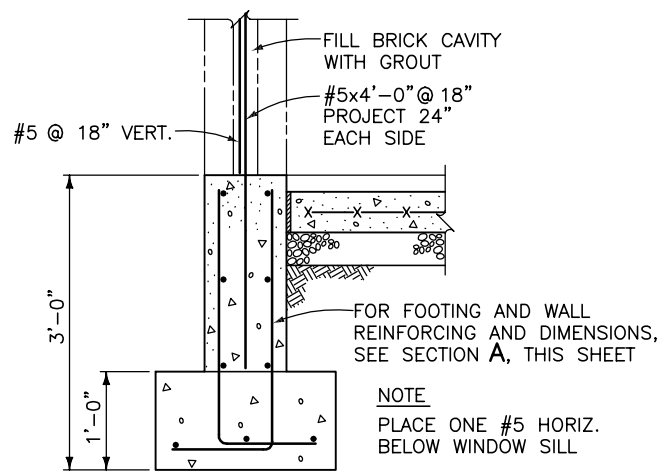
6 COLUMN BASE PLATE DETAIL
SCALE (B)



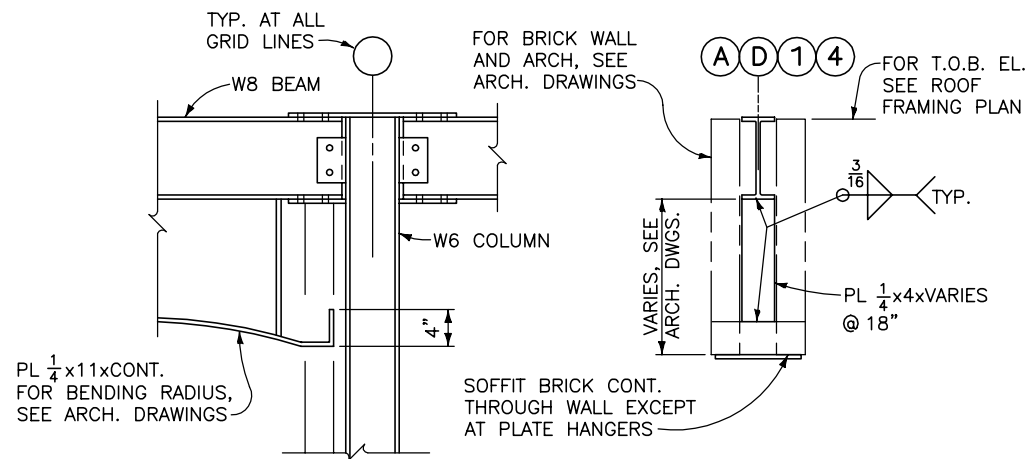
7 CONSTRUCTION JOINT DETAIL
SCALE (A)



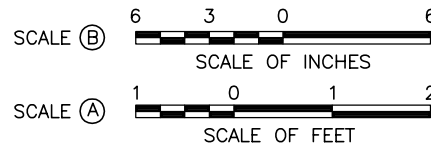
H COLUMN GROUTING PLAN
SCALE (A)



I FOUNDATION SECTION
AT GROUT FILLED WALL
SCALE (A)

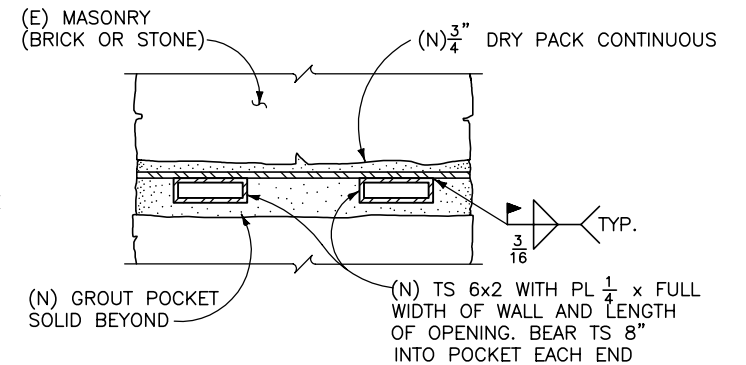
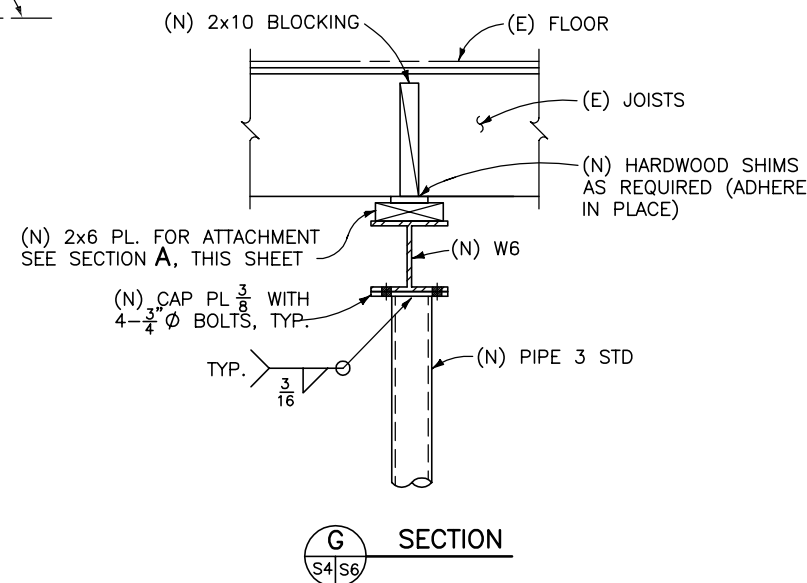
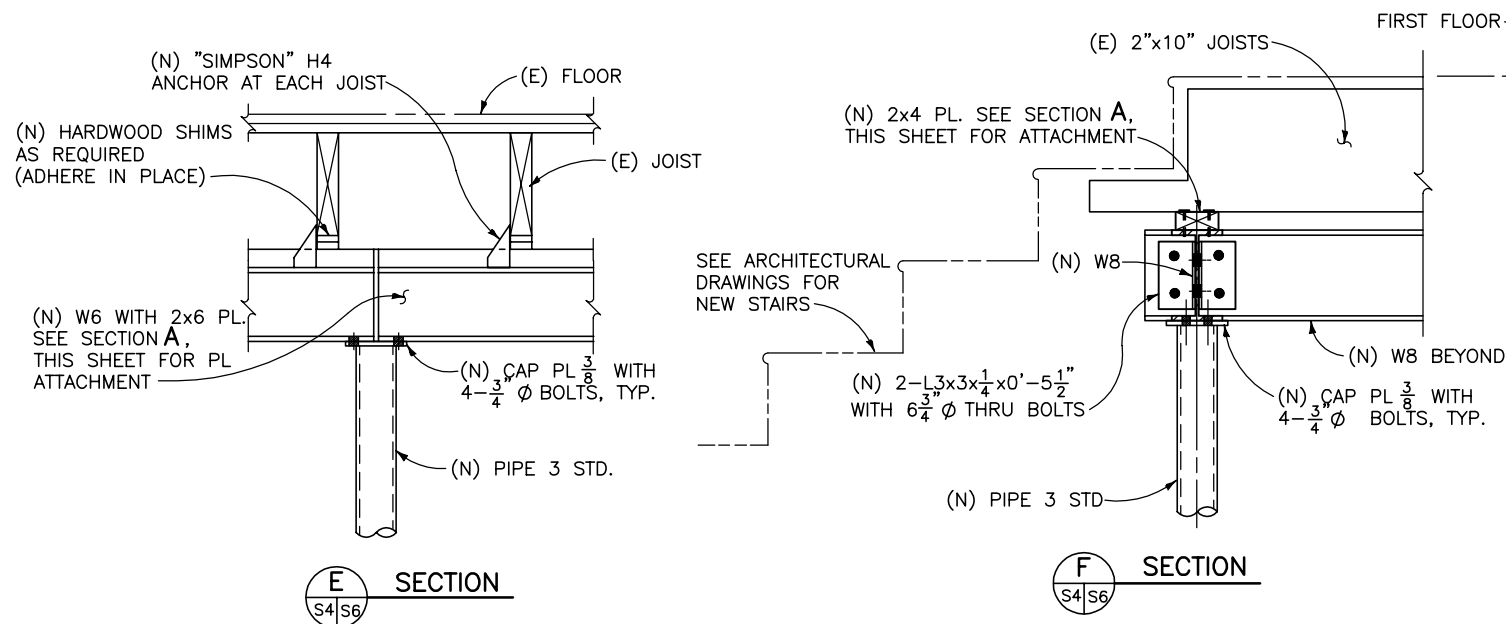
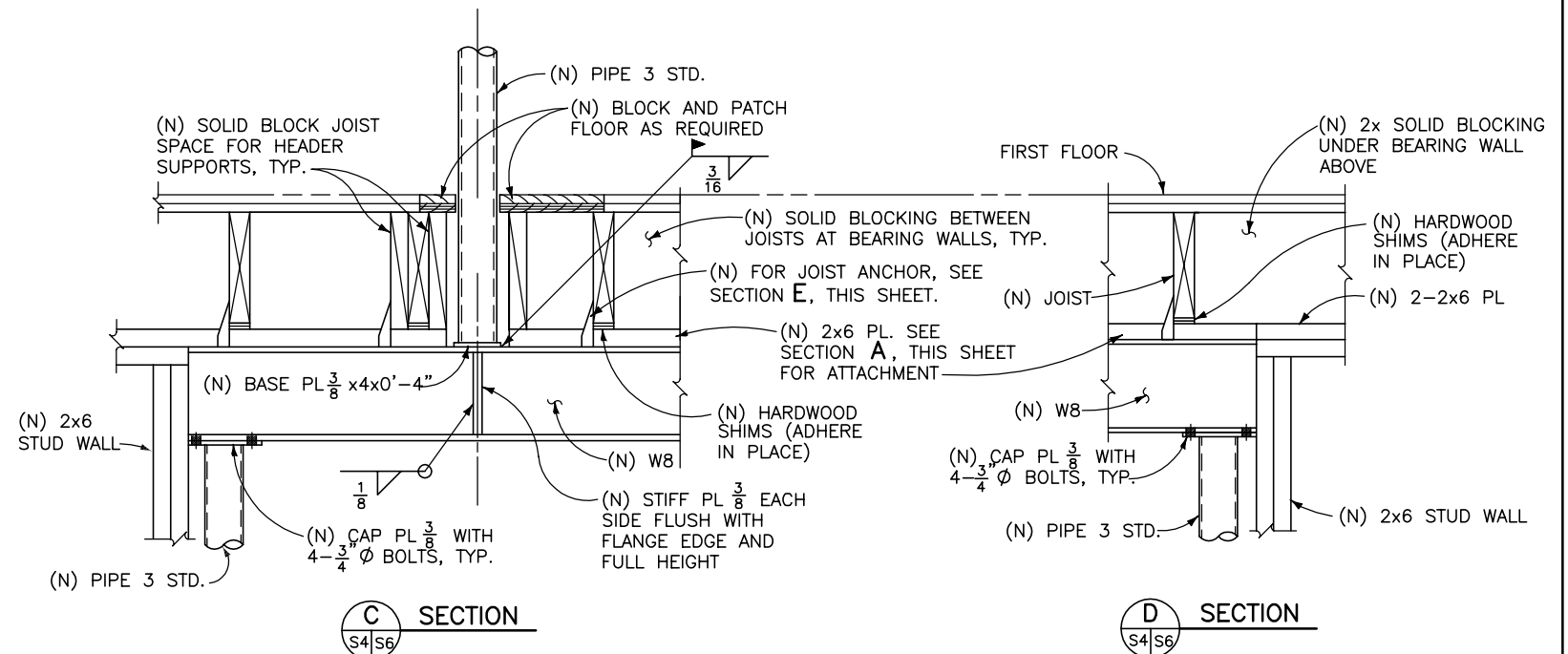
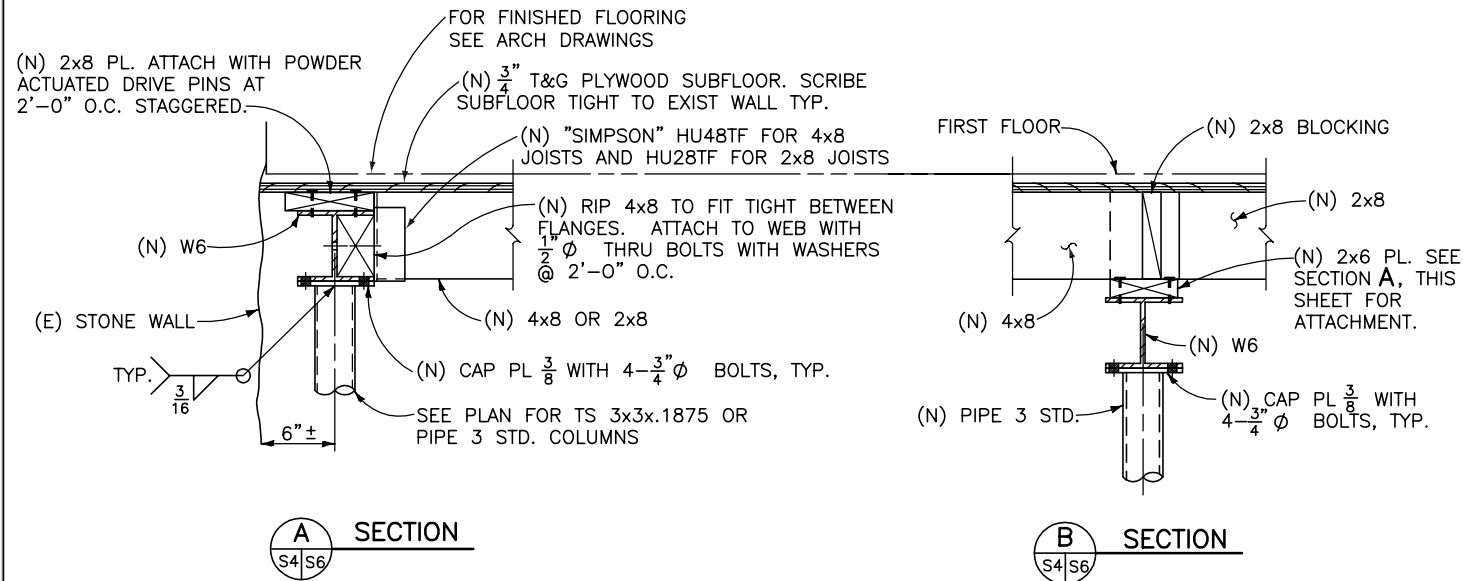


10 STEEL LINTEL DETAIL
SCALE (A)



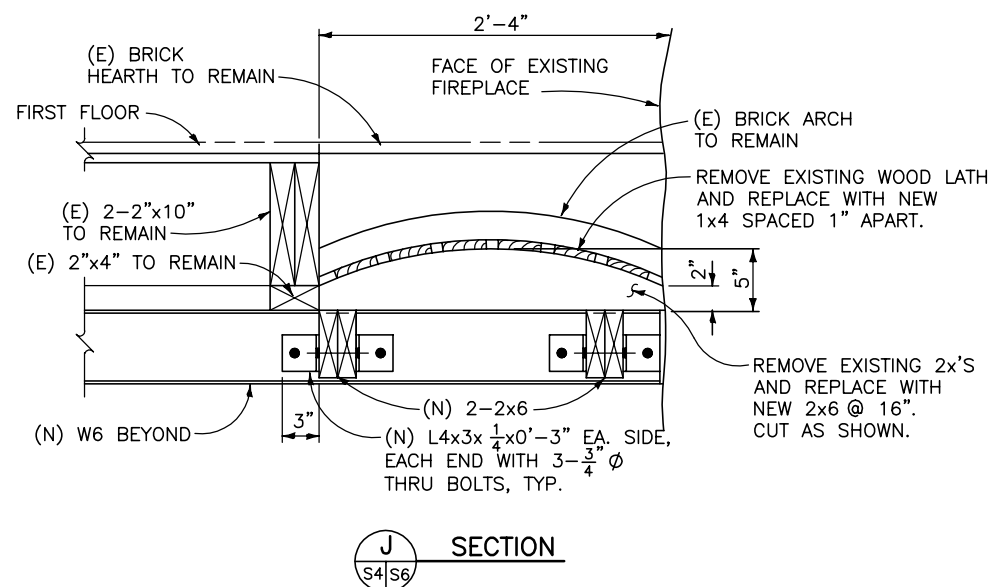
DESIGNED: J. SMITH D. DAVIS TECH. REVIEW: DATE: 10/94	SUB SHEET NO. S5	TITLE OF SHEET SAMPLE FOUNDATION DETAILS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 27 OF 43
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NOTE
AT DOOR 104, SEE DETAIL 3/A49
FOR TRIM AND NAILERS

H SECTION
S4/S6 NO SCALE



12 6 0 12
SCALE OF INCHES

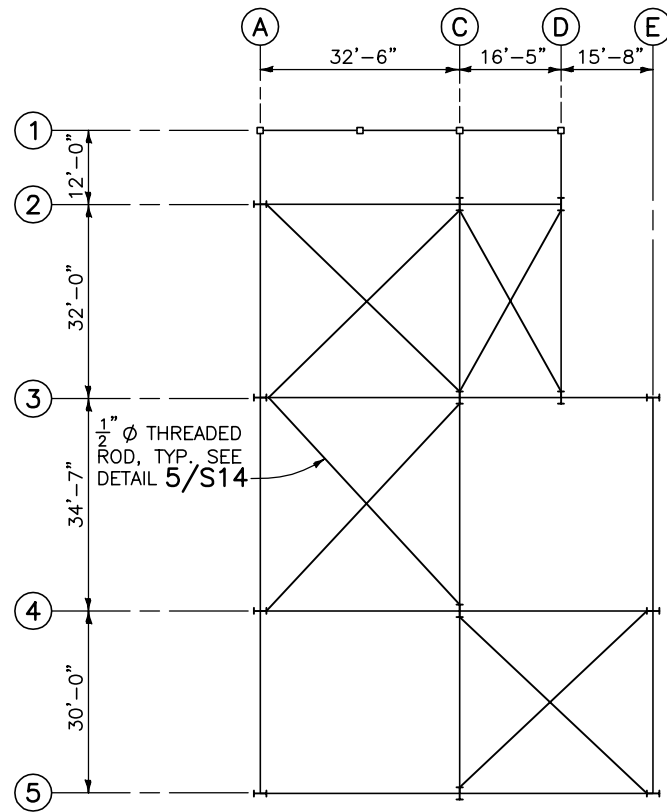
DESIGNED:
J. SMITH
D. DAVIS
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
S6

TITLE OF SHEET
**SAMPLE FIRST FLOOR
FRAMING SECTIONS**

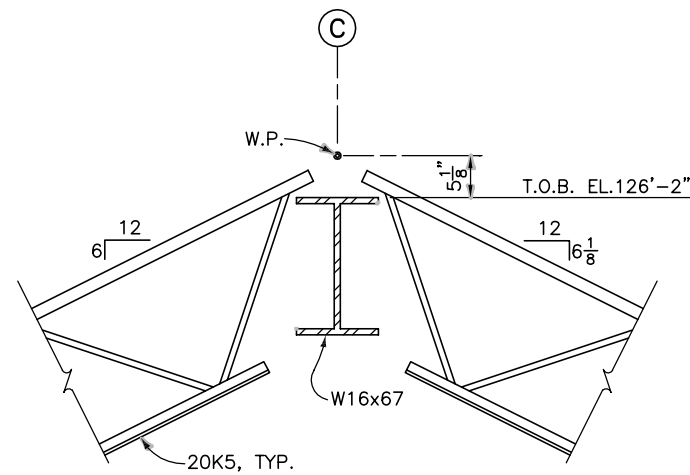
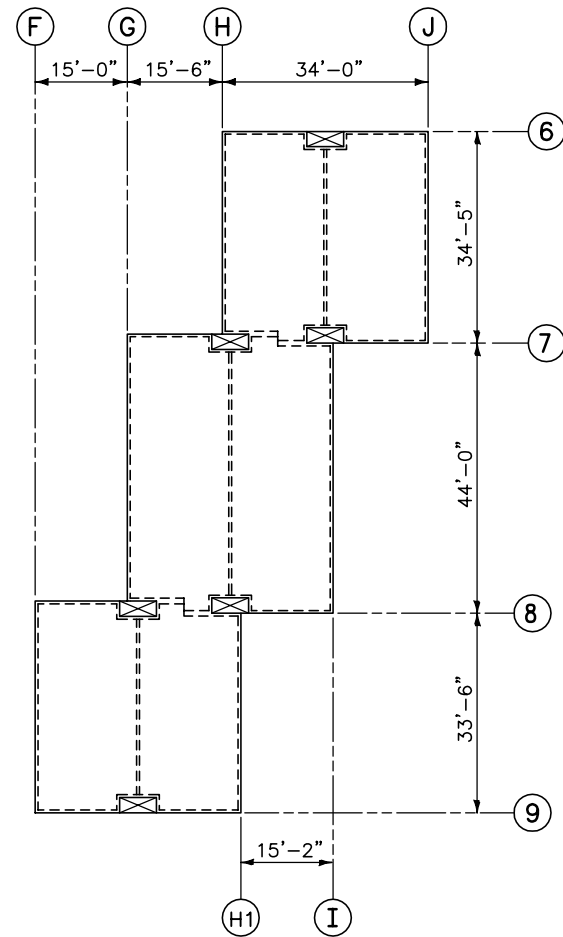
NAME OF PARK

DRAWING NO.
**999
41,001**
PKG. NO.
108
SHEET
28
OF **43**



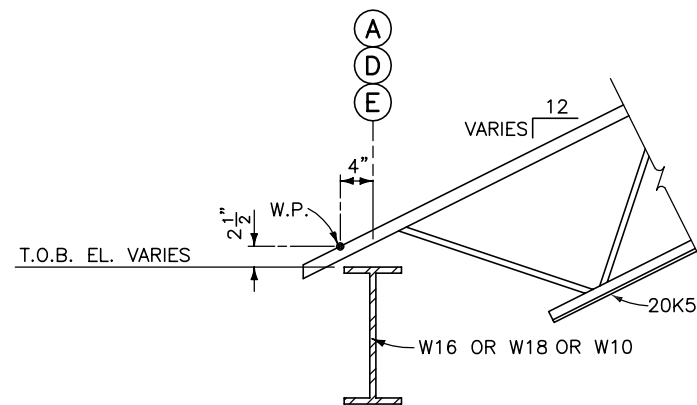
DIAGONAL ROOF BRACING AND DIAPHRAGM BOUNDARY PLAN

SCALE (A)



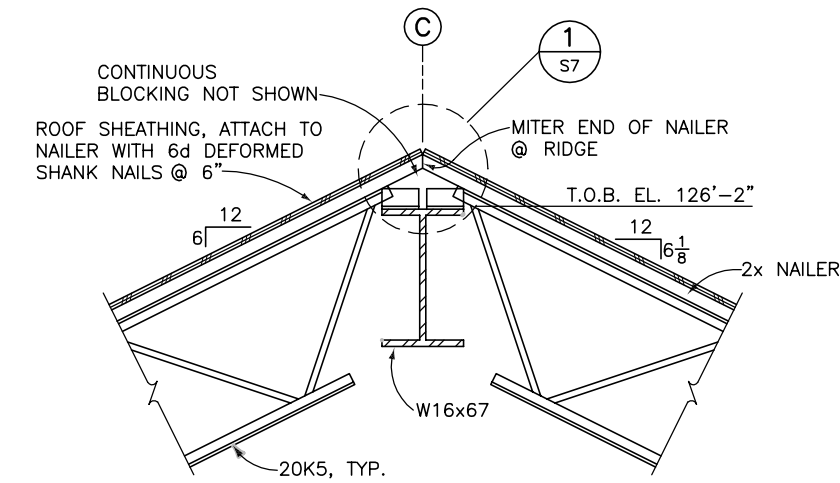
1 WORKING POINT AT RIDGE DETAIL

SCALE (B)



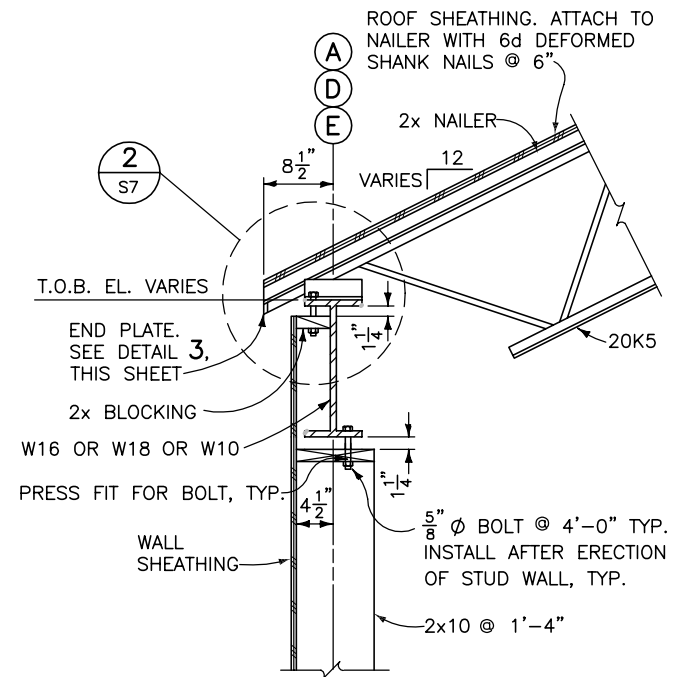
2 WORKING POINT AT EAVE DETAIL

SCALE (B)



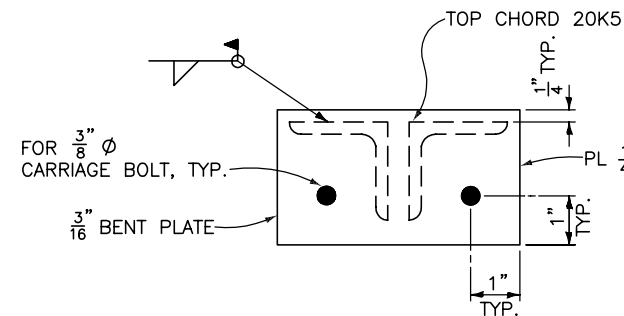
A JOIST BEARING AT RIDGE SECTION

SCALE (B)



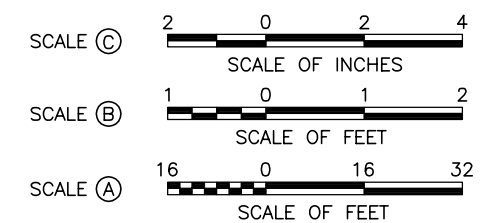
B JOIST BEARING AT EAVE SECTION

SCALE (B)



3 TYPICAL JOIST END PLATE DETAIL

SCALE (C)



DESIGNED:
J. SMITH
D. DAVIS
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
S7

TITLE OF SHEET
**SAMPLE
ROOF BRACING AND
DIAPHRAGM PLAN AND
JOIST BEARING DETAILS**
NAME OF PARK

DRAWING NO.
**999
41,001**
PKG. NO.
108
SHEET
29
OF **43**

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PIPING SYMBOLS

	CAP
	FLOOR CLEANOUT
	FLOOR DRAIN
	GRADE CLEANOUT
	CLEANOUT PLUG, IN LINE
	WALL CLEANOUT
	TEE, OUTLET UP
	TEE, OUTLET DOWN
	ELBOW, TURNED DOWN
	ELBOW, TURNED UP
	ELBOW, BASE
	EXPANSION JOINT
	FLEXIBLE CONNECTOR
	LATERAL
	REDUCER - CONCENTRIC
	REDUCER - ECCENTRIC
	SLEEVE - THROUGH WALL
	TEE - STRAIGHT
	TEE - SINGLE SWEEP
	ELBOW - 45°
	ELBOW - 90°
	UNION
	PUMP
	FUNNEL DRAIN
	HOSE CONNECTION
	ORIFICE PLATE
	STRAINER WITH BLOWDOWN AND HOSE CONNECTION
	SIGHT GLASS
	FLOW SWITCH
	PRESSURE AND TEMPERATURE TAP
	FLUID METER
	THERMOMETER
	PRESSURE GAUGE
	PRESSURE SWITCH
	THERMAL BULB
	AIR SEPARATOR
	VENTURI FLOW METER
	SHOCK ARRESTOR
	AIR VENT - AUTOMATIC
	AIR VENT - MANUAL

MECHANICAL LEGEND

	ANGLE GATE VALVE
	ANGLE GATE VALVE, PLAN
	ANGLE GLOBE VALVE
	ANGLE GLOBE VALVE, PLAN
	BACKFLOW PREVENTER
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	RELIEF VALVE
	3-WAY AUTOMATIC VALVE
	2-WAY AUTOMATIC VALVE
	BALANCING VALVE
	OUTSIDE STEM AND YOKE VALVE
	OUTSIDE STEM AND YOKE VALVE WITH TAMPER SWITCH
	HOSE BIBB
	WALL HYDRANT

AIR CONDITIONING PIPING SYMBOLS

	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	DRAIN
	REFRIGERANT LIQUID
	REFRIGERANT SUCTION
	DIRECTION OF FLOW

HEATING PIPING SYMBOLS

	BOILER BLOW DOWN
	COMPRESSED AIR
	VACUUM PUMP DISCHARGE
	FUEL-OIL SUPPLY
	FUEL-OIL RETURN
	FUEL-OIL VENT
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	LOW-PRESSURE CONDENSATE
	LOW-PRESSURE STEAM

PLUMBING PIPING SYMBOLS

	COLD WATER
	COMPRESSED AIR
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RECIRCULATING
	FIRE
	GAS
	LP GAS
	WASTE (ABOVE GRADE)
	WASTE (BELOW GRADE)
	STORM DRAIN
	VENT
	SLOPE DOWN IN DIRECTION OF ARROW

FIRE SPRINKLER SYMBOLS

	UPRIGHT SPRINKLER
	PENDANT SPRINKLER
	PENDANT SPRINKLER, WITH GUARD
	DRY PENDANT SPRINKLER
	SIDEWALL SPRINKLER
	ALARM CHECK VALVE
	DRY-PIPE VALVE
	FIRE DEPARTMENT CONNECTION

VENTILATION AND AIR CONDITIONING SYMBOLS

	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	RETURN OR EXHAUST DUCT UP
	RETURN OR EXHAUST DUCT DOWN
	DUCT (FIRST FIGURE, SIDE SHOWN AND SECOND FIGURE, SIDE NOT SHOWN) ALL DUCTS DIMENSIONS SHALL BE SHOWN IN INCHES.
	INCLINED RISE (R), ARROW IN DIRECTION OF AIR FLOW
	INCLINED DROP (D), ARROW IN DIRECTION OF AIR FLOW
	TRANSITIONS
	RECTANGULAR TO ROUND TRANSITION
	STANDARD RECTANGULAR BRANCH FOR SUPPLY OR RETURN
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	FLEXIBLE DUCT CONNECTION
	MANUAL VOLUME DAMPER
	AUTOMATIC DAMPER
	FIRE DAMPER WITH ACCESS DOOR
	BACKDRAFT DAMPER
	ROUND DUCT UP

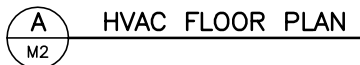
	ROUND DUCT DOWN
	THERMOSTAT
	TEMPERATURE SENSOR
	HUMIDISTAT
	DUCT MOUNTED SMOKE DETECTOR
	TERMINAL DEVICE SIZE, TYP
	SUPPLY RESISTER OR GRILLE, SIDE VIEW
	TERMINAL DEVICE CFM, TYP
	RETURN OR EXHAUST GRILLE, SIDE VIEW
	SUPPLY DIFFUSER
	NUMBER OF SLOTS
	SLOT DIFFUSER
	NECK DIAMETER
	FACE DIAMETER
	CFM
	ROUND DUCT AND DIFFUSER

DESIGNER NOTE

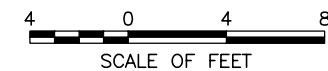
LEGEND SHEET SHOULD INCLUDE ONLY SYMBOLS USED ON EACH SPECIFIC PROJECT.

DESIGNED: A. SMITH A. RIMMER TECH. REVIEW:	SUB SHEET NO. M1	TITLE OF SHEET SAMPLE LEGEND NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 30 OF 43
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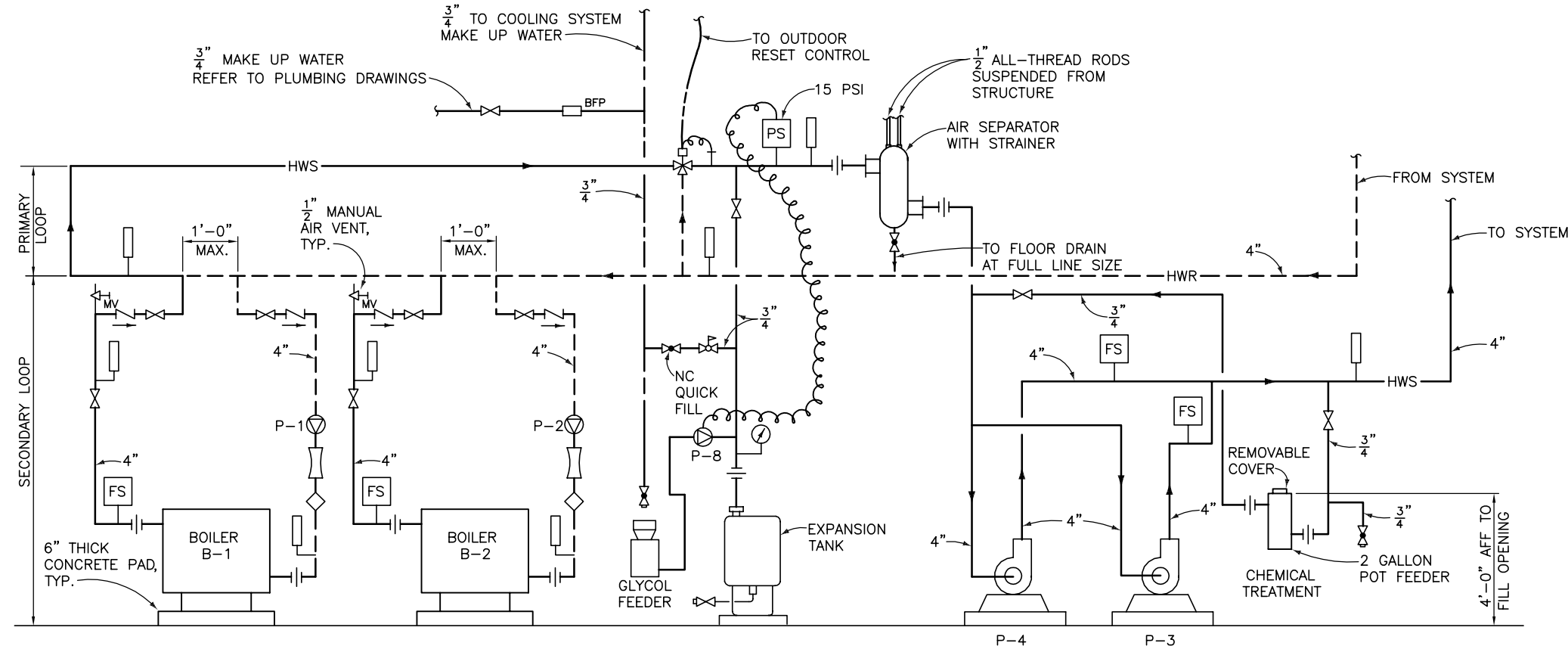
1. ON FAN COIL UNITS FC-5, 6 AND 8, RETURN AIR SHALL BE THROUGH BOTTOM GRILLE INTEGRAL WITH ACCESS PANEL.
2. ON FAN COIL UNITS FC-1, 2 AND 3, RETURN AIR SHALL BE THROUGH BACK OF UNIT ABOVE CEILING.
3. A 24"Wx16"H NON-VISION DOOR GRILLE (DG) SHALL BE INTEGRAL WITH THE DOORS TO THE MENS AND WOMENS ROOMS, THE JANITORS ROOM, AND THE LUNCH ROOM. SEE DOOR SCHEDULE.
4. INSTALL DUCTWORK, AIR HANDLERS, AND FAN COIL UNITS ABOVE CEILING AND IN LOFT AND MEZZANINE AREAS AS SHOWN. SUSPEND FAN COIL UNITS FROM OVERHEAD STRUCTURE WITH VIBRATION ISOLATORS. AIR HANDLERS (AH-4, AH-7, MUA-1, MUA-2) SHALL BE MOUNTED WITH VIBRATION ISOLATORS ON MEZZANINE OR LOFT FLOOR WITHOUT CONCRETE PADS.
5. DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS AND DO NOT INCLUDE LINER THICKNESS. ADD LINER THICKNESS TO DETERMINE OUTSIDE DUCT DIMENSION.
6. FOR FIRE DAMPER INSTALLATION, SEE DETAIL **10/M11**



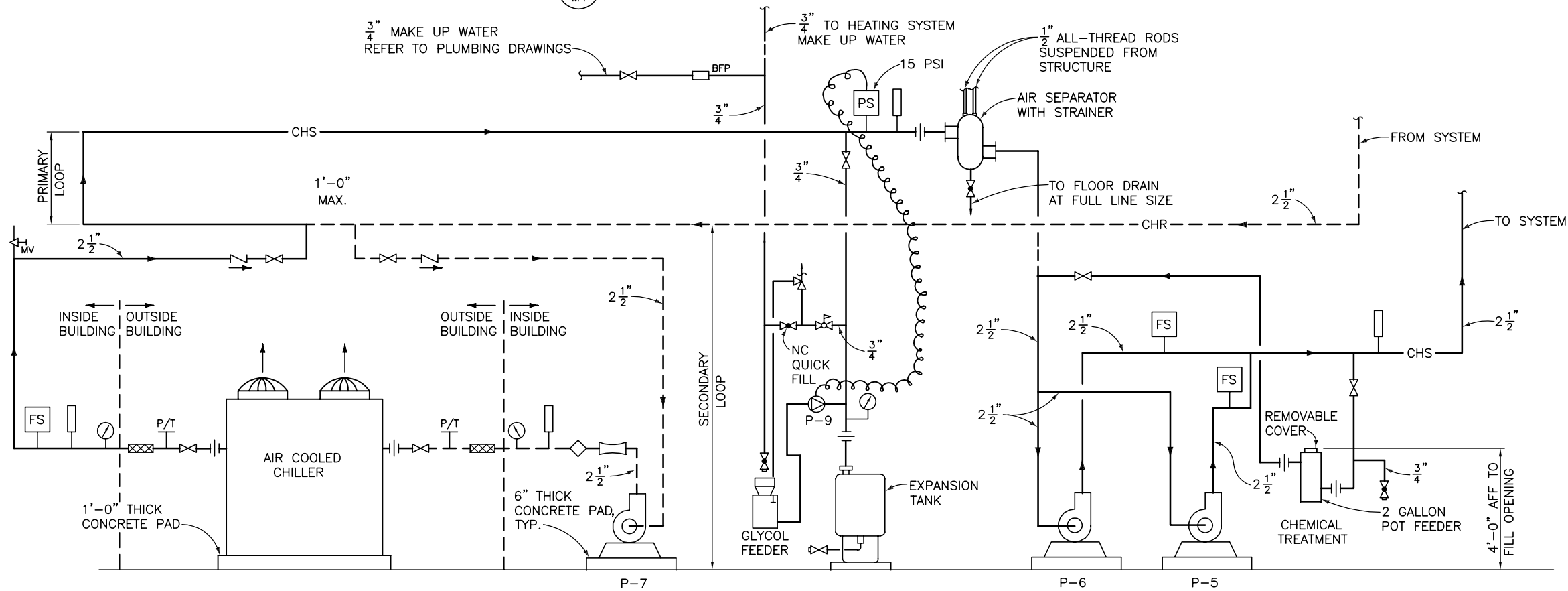
DESIGNED:	SUB SHEET NO.	TITLE OF SHEET <div style="font-size: 24pt; font-weight: bold; margin: 10px 0;">SAMPLE HVAC FLOOR PLAN</div>	DRAWING NO. <div style="font-size: 24pt; font-weight: bold; margin: 5px 0;">999</div>
A. SMITH	M2	41,001	PKG. NO.
J. KIRK			SHEET <div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; font-size: 24pt; font-weight: bold;">31</div>
TECH. REVIEW:			108
DATE: <div style="font-size: 24pt; font-weight: bold; margin-top: 5px;">10/94</div>		NAME OF PARK	OF <div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; font-size: 24pt; font-weight: bold;">43</div>



DESIGNED: A. SMITH	SUB SHEET NO. M3	TITLE OF SHEET SAMPLE HVAC SECTIONS	DRAWING NO. 999 41,001	
3ADD J. KIRK			PKG. NO. 108	SHEET 32
TECH. REVIEW:				
DATE: 10/94			NAME OF PARK	



A
M4
CHILLED WATER FLOW DIAGRAM

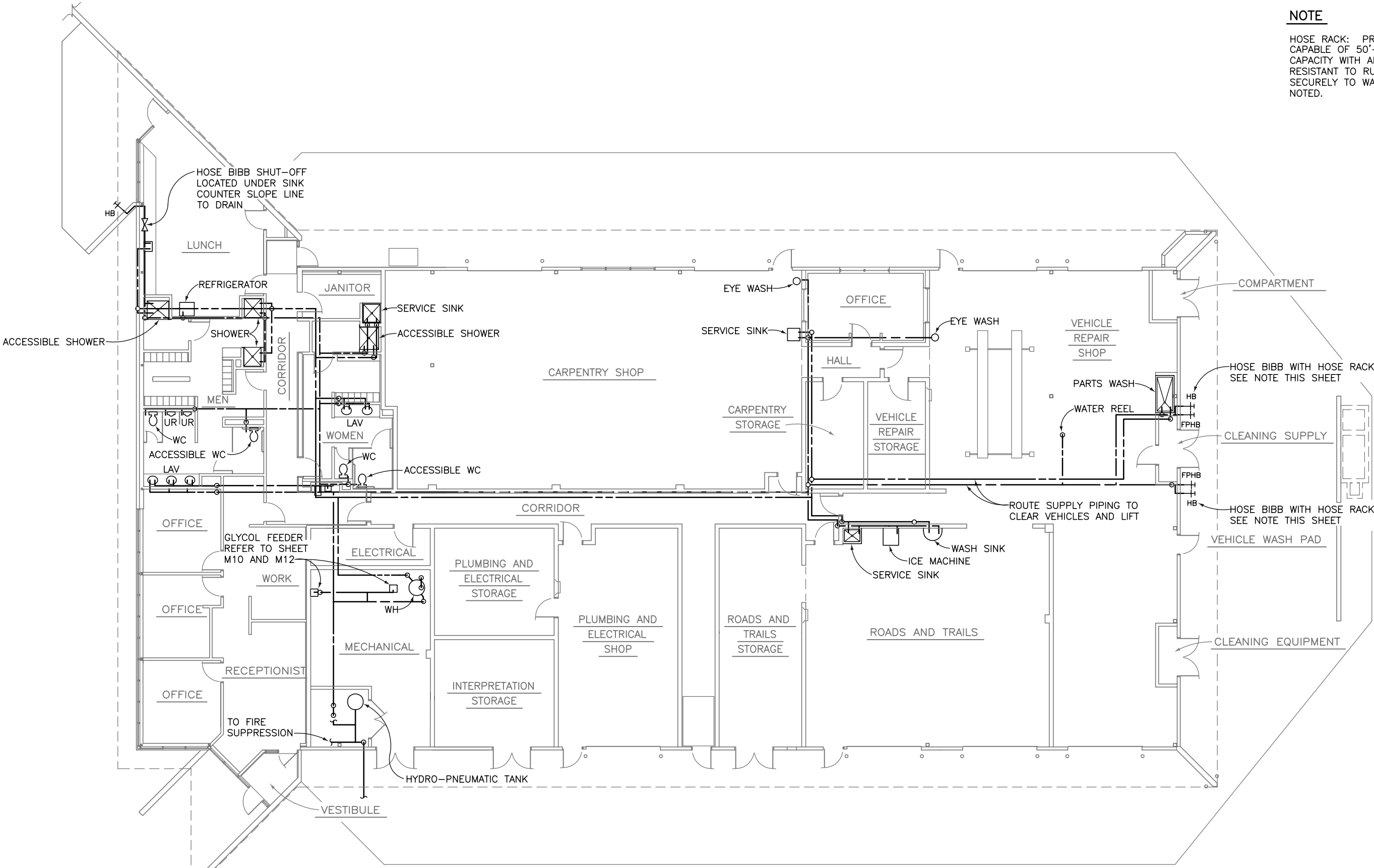


B
M4
CHILLED WATER FLOW DIAGRAM

DESIGNED: A. SMITH J. KIRK TECH. REVIEW: DATE: 10/94	SUB SHEET NO. M4	TITLE OF SHEET SAMPLE HVAC FLOW DIAGRAMS	DRAWING NO. 999 41,001
PKG. NO. 108	SHEET 33	NAME OF PARK	OF 43

NOTE

HOSE RACK: PROVIDE A FIXTURE CAPABLE OF 50'-0" MINIMUM HOSE CAPACITY WITH AN EPOXY FINISH RESISTANT TO RUST. MOUNT FIXTURE SECURELY TO WALL LOCATED AS NOTED.

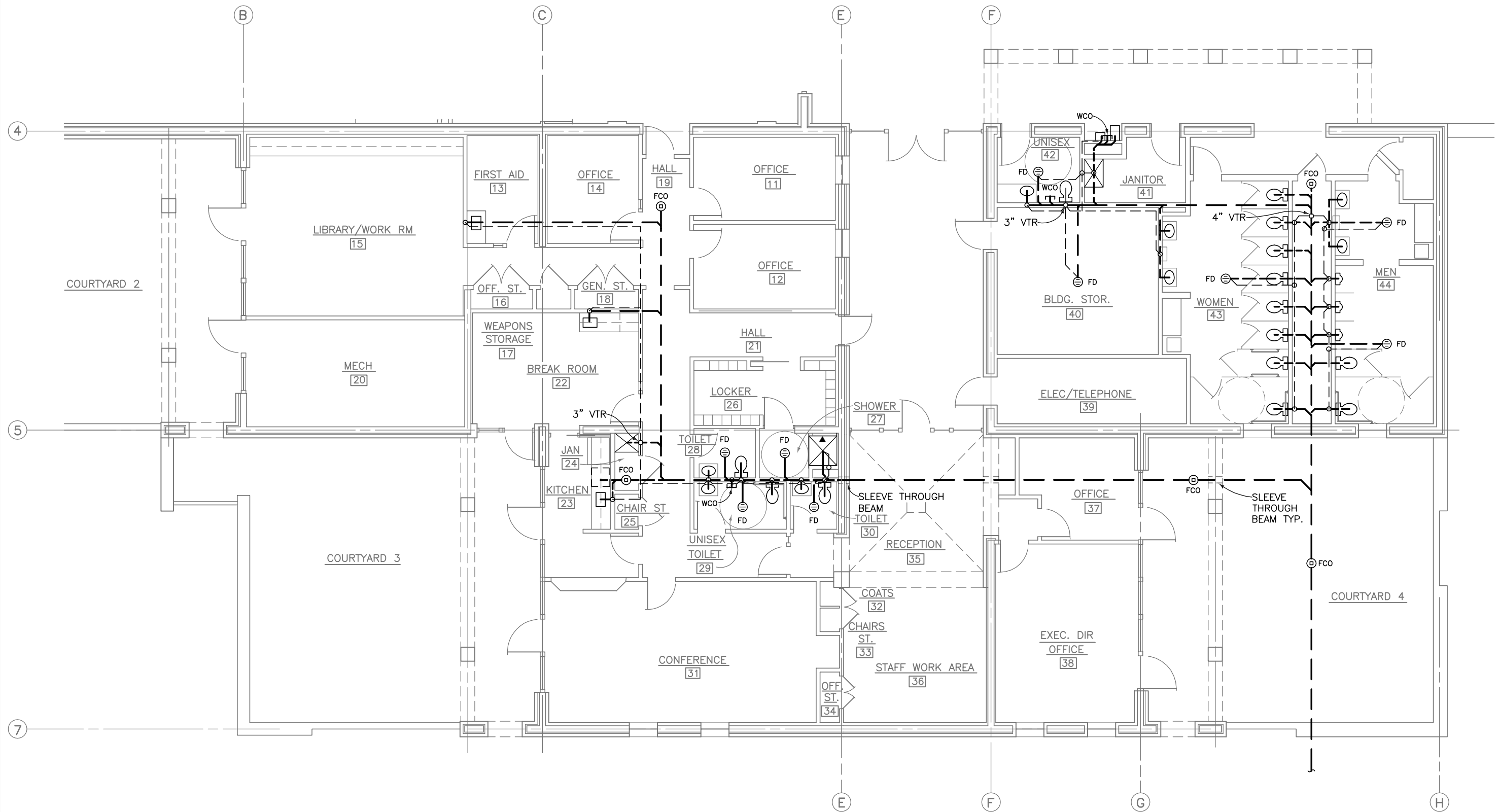


D WATER SUPPLY PLAN
M5

8 0 8 16
SCALE OF FEET

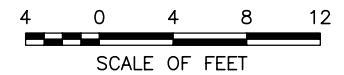
DESIGNED: A. SMITH J. KIRK TECH. REVIEW: DATE: 10/94	SUB SHEET NO. M5	TITLE OF SHEET SAMPLE WATER SUPPLY PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 34 OF 43
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8/24/01 13:20 C:EVERMAN R15 S:\SYM\USER\NPS10\FINAL-SET\MECH\M6.DWG



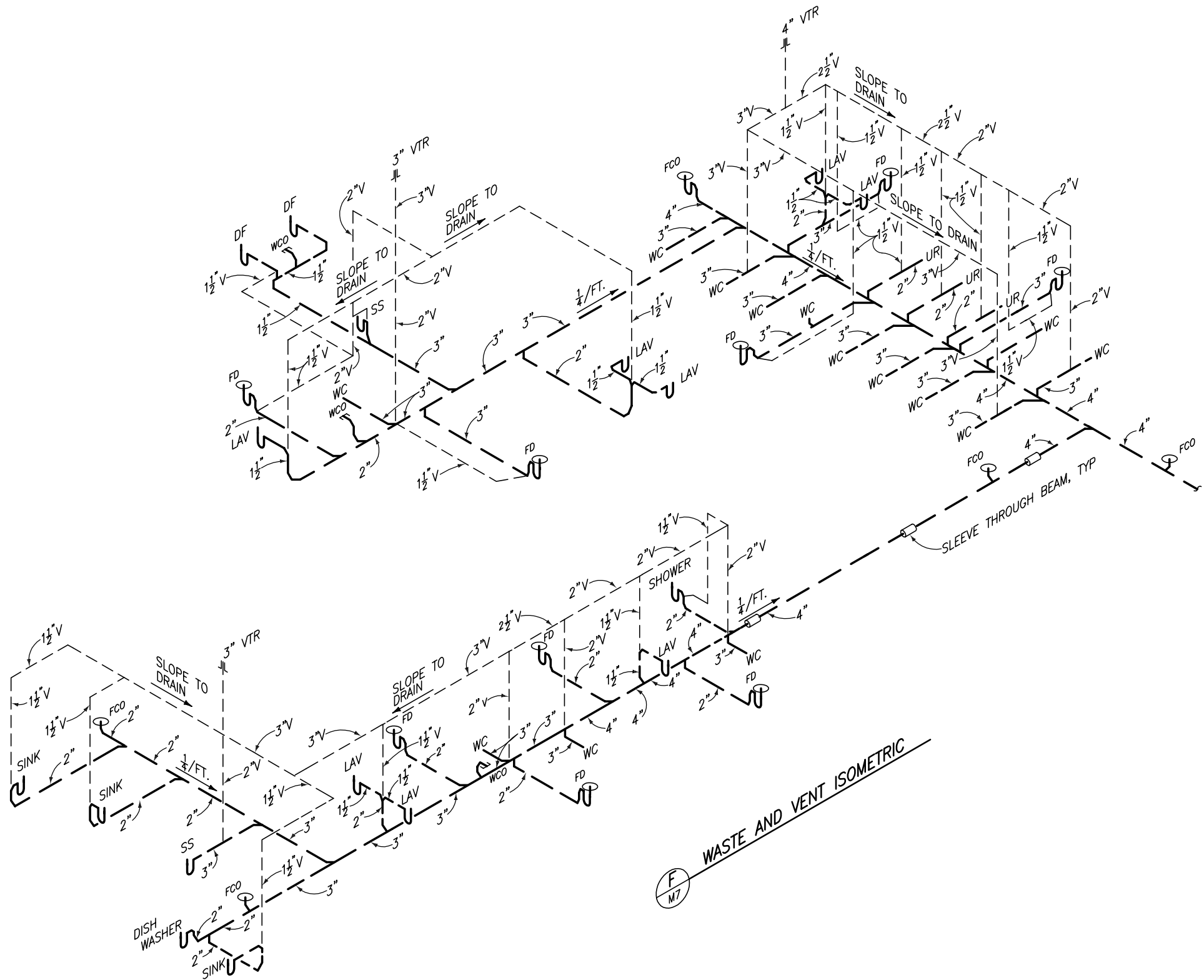
E
WASTE AND VENT PLAN
M6

NOTE: SCALE IS 3/16" = 1'-0"



DESIGNED: A. SMITH J. KIRK TECH. REVIEW: DATE: 10/94	SUB SHEET NO. M6	TITLE OF SHEET SAMPLE WASTE AND VENT PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 35 OF 43
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NOTE
VENT PIPING THROUGH ROOF SHALL EXTEND
A MIN. OF 6" ABOVE ROOF SURFACE.

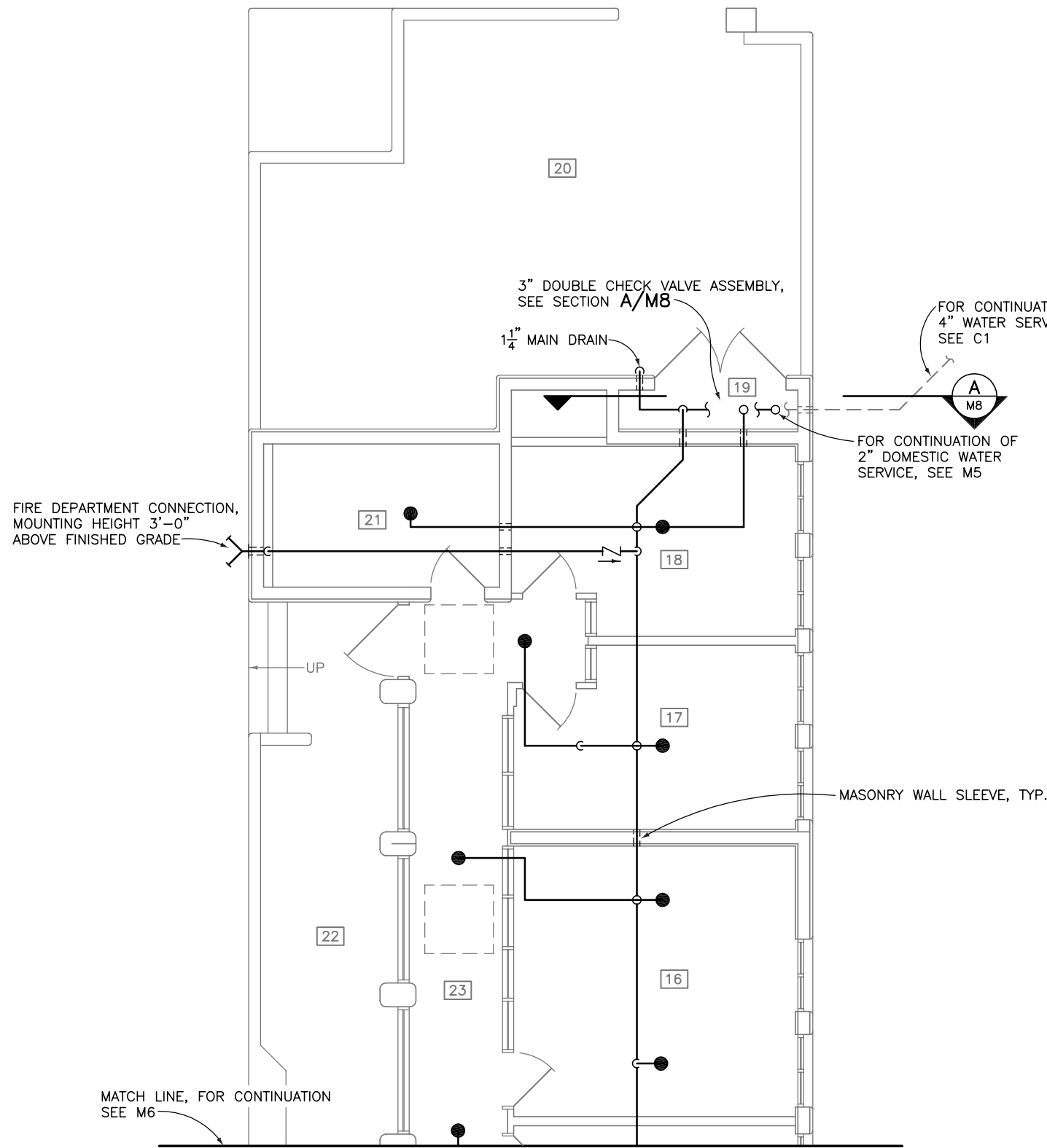


WASTE AND VENT ISOMETRIC

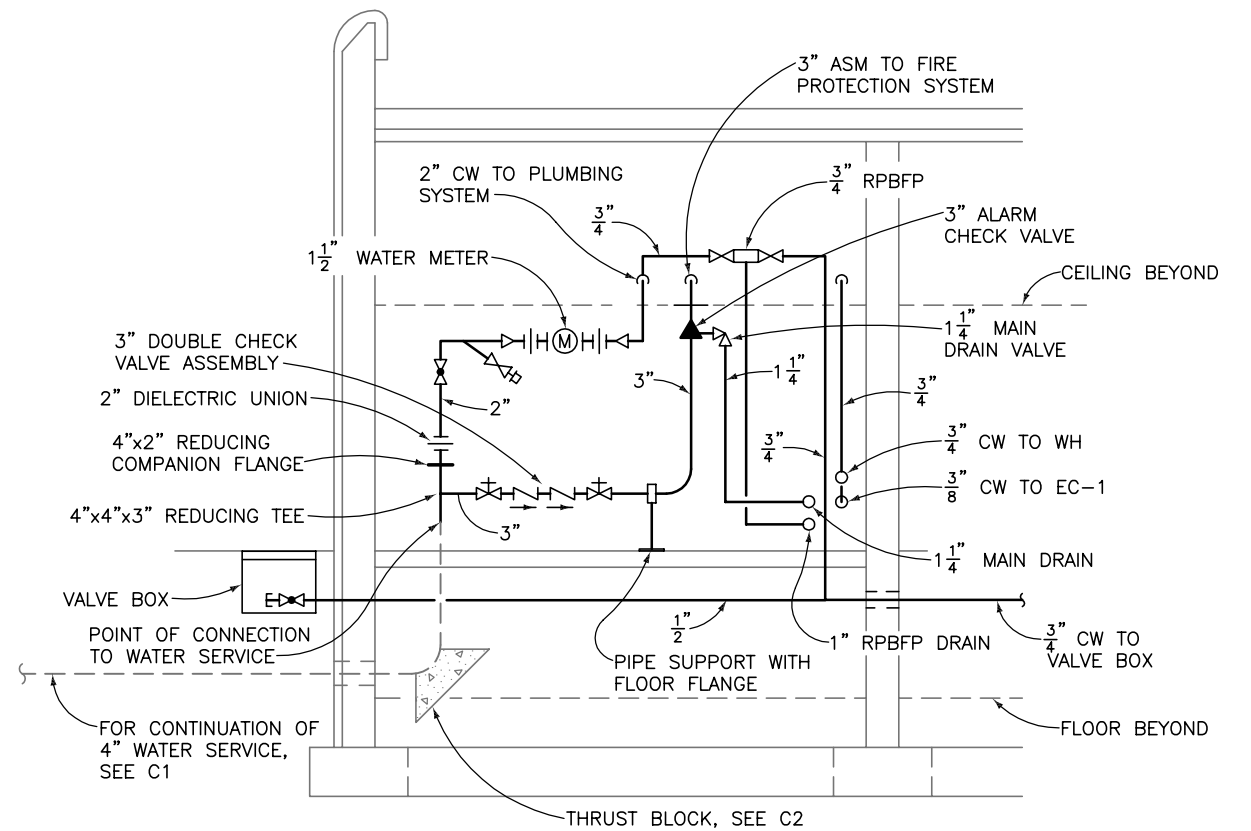
NO SCALE

DESIGNED: A.SMITH J. KIRK TECH. REVIEW: DATE: 10/94	SUB SHEET NO. M7	TITLE OF SHEET SAMPLE WASTE AND VENT ISOMETRIC NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 36 OF 43
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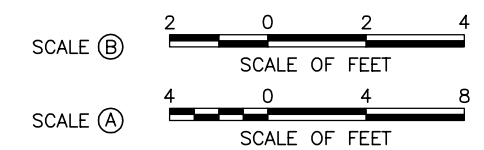
G
M8 NORTH WING FIRE PROTECTION PLAN
SCALE (A)



A
M8 SECTION
SCALE (B)

NOTE

FOR EXACT LOCATION OF SPRINKLERS IN FINISHED CEILING AREA, SEE A23.



DESIGNED: A. SMITH J. KIRK TECH. REVIEW: DATE: 10/94	SUB SHEET NO. M8	TITLE OF SHEET SAMPLE FIRE PROTECTION PLAN NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 37 OF 43
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ELECTRICAL ABBREVIATIONS

A	AERIAL
A1ϕP	AERIAL SINGLE-PHASE PRIMARY
A3ϕP	AERIAL THREE-PHASE PRIMARY
A1ϕS	AERIAL SINGLE-PHASE SECONDARY
A3ϕS	AERIAL THREE-PHASE SECONDARY
A, AMP	AMPERES
AC	ALTERNATING CURRENT, ABOVE COUNTER
ADD	ADDITIVE
AD-#	AUTOMATIC DAMPER, # INDICATES UNIT NUMBER
AFC	ABOVE FINISHED CONCRETE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU-#	AIR HANDLING UNIT, # INDICATES UNIT NUMBER
A.I.R.	AMPERE INTERRUPTING RATING
AL	ALUMINUM
APPROX.	APPROXIMATELY
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIOVISUAL
AWG	AMERICAN WIRE GAUGE
A-1,3,5	HOMERUN TO PANELBOARD A TO CIRCUIT BREAKER NUMBERS 1, 3, AND 5
BBH-#	BASEBOARD HEATER, # INDICATES UNIT NUMBER
BD	BEDDING
BF	BACKFILL
BLDG	BUILDING
C	CONDUIT, CONTACTOR
C&A	CONTROL AND ALARM
CAT.	CATALOG
CATV	CABLE TELEVISION
C.B.	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CENTER LINE
CL	CHLORINE
CLR	CLEARANCE
CO	CONTRACTING OFFICER; CONDUIT ONLY
CONC.	CONCRETE
COND	CONDENSER
CR-#	CONTROL RELAY, # INDICATES UNIT NUMBER
CS	COMFORT STATION
CT	CURRENT TRANSFORMER
CU	COPPER
D	DIMMER; DEPTH
DD-#	DUCT DETECTOR, # INDICATES UNIT NUMBER
DF	DRINKING FOUNTAIN
DIA.	DIAMETER
DN	DOWN
DP	DISTRIBUTION PANELBOARD
DPDT	DOUBLE POLE, DOUBLE THROW SWITCH
DPST	DOUBLE POLE, SINGLE THROW SWITCH
DS	MAGNETIC DOOR SWITCH
EC-#	EVAPORATIVE COOLER, # INDICATES UNIT NUMBER
EDH-#	ELECTRIC DUCT HEATER, # INDICATES UNIT NUMBER

EF-#	ELECTRIC FURNACE; EXHAUST FAN, # INDICATES UNIT NUMBER
EH-#	ELECTRIC HEATER PANEL, # INDICATES UNIT NUMBER
EL	LIGHT FIXTURE WITH BUILT-IN EMERGENCY LIGHT
ELEV	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE DEVICE
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
EUH-#	ELECTRIC UNIT HEATER, # INDICATES UNIT NUMBER
EVAP	EVAPORATOR
EWC	ELECTRIC WATER COOLER
EXIST.	EXISTING
EXT	EXTERIOR
FAP	FIRE ALARM PANEL
FC-#	FAN COIL, # INDICATES UNIT NUMBER
FIAP	FIRE/INTRUSION ALARM PANEL
FLA	FULL LOAD AMPERES
FLR	FLOOR
FT.	FOOT
FVNR	FULL VOLTAGE NON-REVERSING
G, GEN.	GENERATOR
G, GND	GROUND
GF	GAS FURNACE
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
GFE	GOVERNMENT FURNISHED EQUIPMENT
H	HEIGHT
HD	ELECTRIC HAND DRYER
HID	HIGH INTENSITY DISCHARGE
HL	HIGH LEVEL
HLA	HIGH LEVEL ALARM
HLCO	HIGH LEVEL CUTOFF
HP	HORSEPOWER; HEAT PUMP
HPS	HIGH PRESSURE SODIUM
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
IAP	INTRUSION ALARM PANEL
IDENT.	IDENTIFICATION
I.G.	ISOLATED GROUND
IMP.	IMPEDANCE
INT.	INTERIOR
IR-#	INDUCTION RELAY, # INDICATES UNIT NUMBER
J	JUNCTION
J-BOX	JUNCTION BOX
KHEF	KITCHEN HOOD EXHAUST FAN
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR

L	LIGHT; LENGTH
LA	LIGHTNING ARRESTOR
LL	LOW LEVEL
LLA	LOW LEVEL ALARM
LLCO	LOW LEVEL CUTOFF
LOP	LOSS OF PHASE
LR-#	LATCHING RELAY, # INDICATES UNIT NUMBER
LRA	LOCKED ROTOR AMPERES
LTG	LIGHTING
LTFMC	LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT
LTS	LIGHTS
M	METER; MOTOR
MAX.	MAXIMUM
MC-#	MAGNETIC CONTACTOR, # INDICATES UNIT NUMBER
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MDS	MAIN DISTRIBUTION SWITCHBOARD
MECH.	MECHANICAL
MFGR.	MANUFACTURER
M.H.	MOUNTING HEIGHT; METAL HALIDE
MIN.	MINIMUM
MLM-#	MOTOR LOAD MONITOR, # INDICATES UNIT NUMBER
MS-#	MOTOR STARTER, # INDICATES UNIT NUMBER
MT	MANUAL TIMER
MTS	MANUAL TRANSFER SWITCH
MV	MERCURY VAPOR
MW	MICROWAVE
N, NEUT.	NEUTRAL
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
N.O.	NORMALLY OPEN
NPS	NATIONAL PARK SERVICE
O.C.	ON CENTER, OVERCURRENT
OH	OVERHEAD
OL	OVERLOAD CONTACTS; OVERLOAD RELAY
OV	OVERVOLTAGE
P-#	PUMP, # INDICATES UNIT NUMBER
PB	PULLBOX
PC	PHOTOCELL; PULL CHAIN
PED	PEDESTAL
PIR	PASSIVE INFRARED
PLUMB.	PLUMBING
P/N	PART NUMBER
PNLB	PANELBOARD
PP	POWER POLE
PRI	PRIMARY
PROJ.	PROJECTOR; PROJECT; PROJECTION

PS-#	PRESSURE SWITCH, # INDICATES UNIT NUMBER
PSI	POUNDS PER SQUARE INCH
PT	POTENTIAL TRANSFORMER
PUC	PUBLIC UTILITY COMMISSION
PUD	PUBLIC UTILITY DISTRICT
PVC	POLYVINYL CHLORIDE
R,R-# RLY.	RELAY, # INDICATES UNIT NUMBER
REC., RECPT.	RECEPTACLE
RGS, RGSC	RIGID GALVANIZED STEEL CONDUIT
RH	RADIANT HEAT PANEL
RM	ROOM
RMS	ROOT MEAN SQUARE
RTM	RUNNING TIME METER
RV	RECREATIONAL VEHICLE
S, SEC	SECONDARY; SECONDARY POWER
S-#	SWITCH, # INDICATES SWITCH NUMBER
SB	SELECT BACKFILL; SPLICEBOX
SCH	SCHEDULE
SPDT	SINGLE POLE, DOUBLE THROW SWITCH
SPST	SINGLE POLE, SINGLE THROW SWITCH
SQ	SQUARE
SS	STAINLESS STEEL; SELECTOR SWITCH
SSR-#	SOLID STATE RELAY, # INDICATES UNIT NUMBER
ST	SHUNT TRIP
SVC	SERVICE
SYM.	SYMMETRICAL
SYM. A.I.R.	SYMMETRICAL AMPERE INTERRUPTING RATING
T	TRANSFORMER; THERMOSTAT
TC	TELEPHONE CABINET
TD	TIME DELAY
TDC	TIME DELAY CLOSE, TIME DELAY CONTACTS
TDO	TIME DELAY OPEN
TOL	THERMAL OVERLOAD
TP	TRANSFORMER POLE
TS	TIME SWITCH
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
U, UG	UNDERGROUND
UH-#	UNIT HEATER, # INDICATES UNIT NUMBER
UT	UNDERGROUND TELEPHONE
UV-#	ULTRAVIOLET; UNDERVOLTAGE DETECTION RELAY, # INDICATES UNIT NUMBER
U1ϕP	UNDERGROUND SINGLE-PHASE PRIMARY
U3ϕP	UNDERGROUND THREE-PHASE PRIMARY
U1ϕS	UNDERGROUND SINGLE-PHASE SECONDARY

DESIGNER NOTE

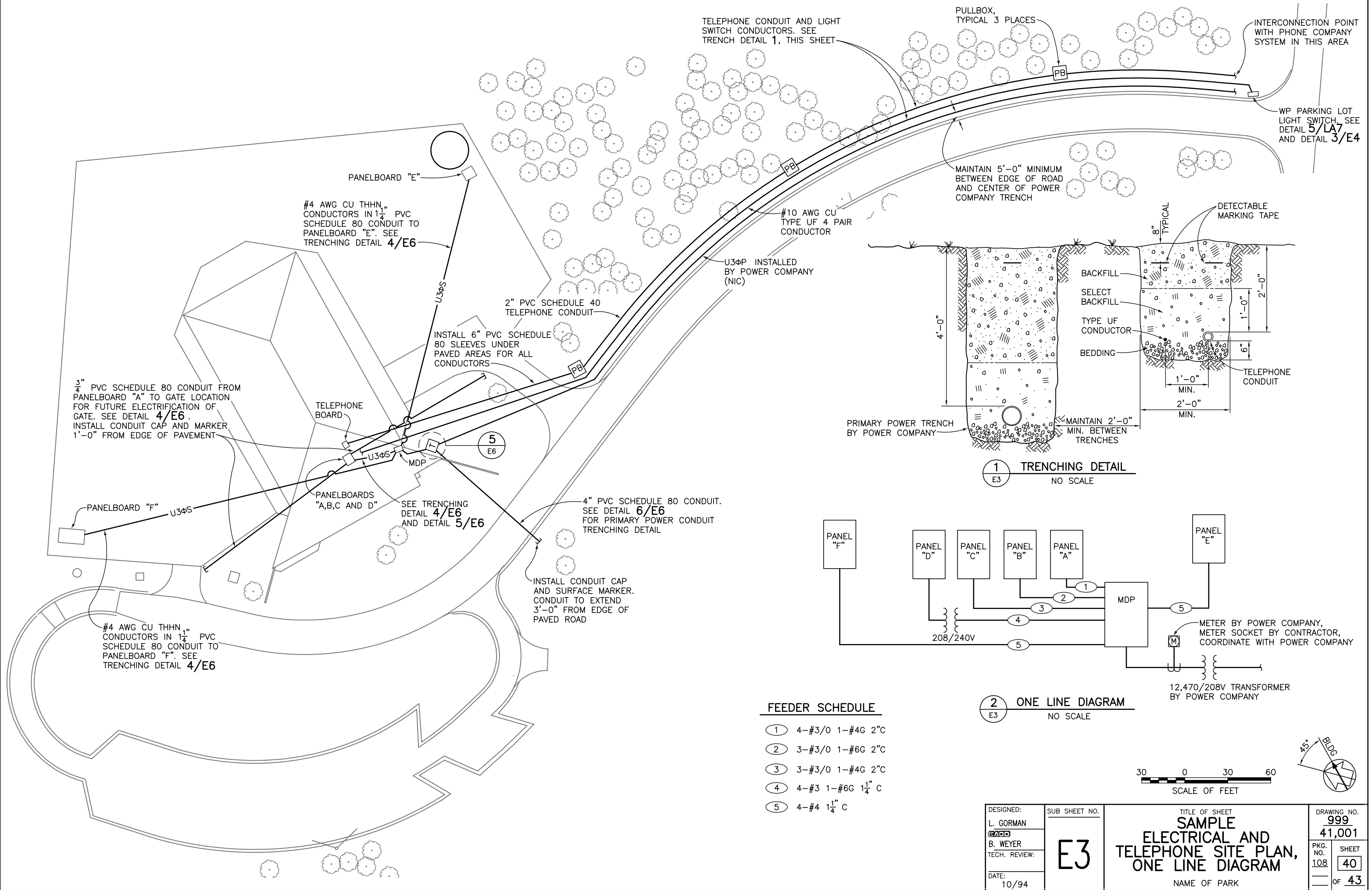
LEGEND SHEET SHOULD INCLUDE ONLY SYMBOLS USED ON EACH SPECIFIC PROJECT.

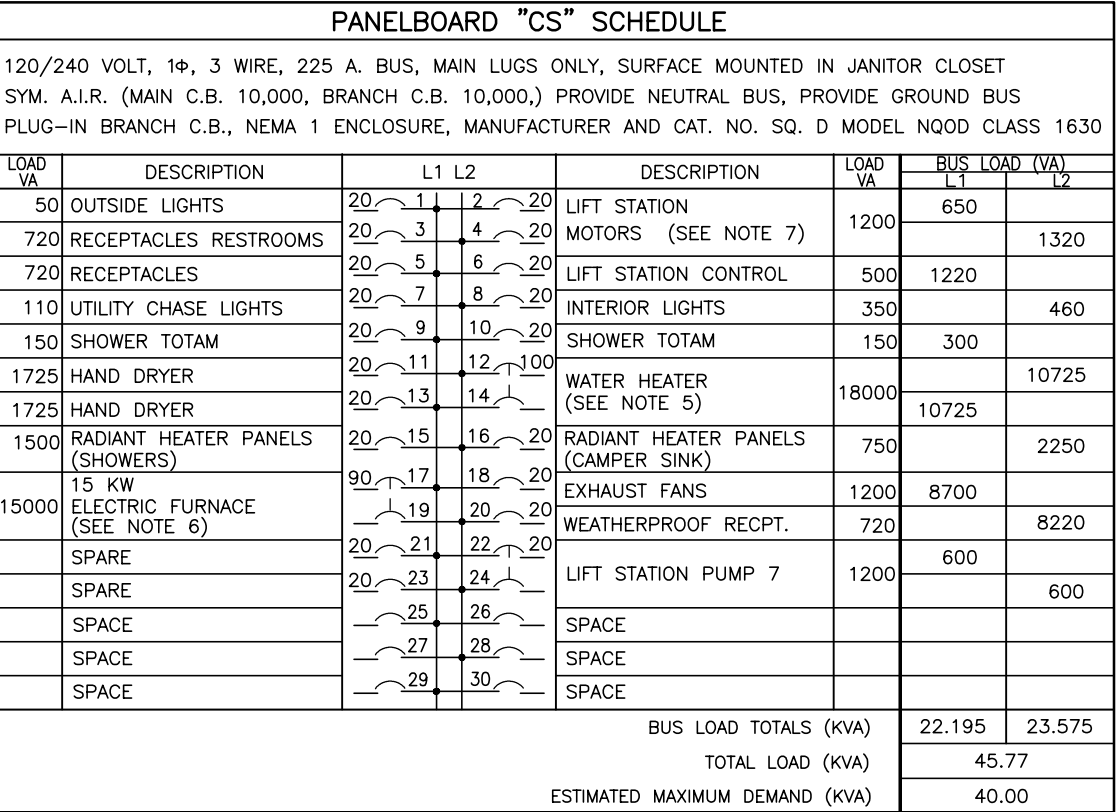
DESIGNED: L. GORMAN B. WEYER TECH. REVIEW:	SUB SHEET NO. <div>E1</div>	TITLE OF SHEET SAMPLE ELECTRICAL ABBREVIATIONS NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 38 OF 43
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ELECTRICAL SYMBOL LEGEND

 COMPUTER OUTLET	 CONDUIT, TURNING UP	 CONDUIT, TURNING DOWN	 CAPPED CONDUIT OR SLEEVE; SUBSCRIPT S FOR ACCOMPANYING SURFACE MARKER	 SINGLE RECEPTACLE	 DATA OUTLET	 DUPLEX RECEPTACLE	 DUPLEX RECEPTACLE, FLOOR MOUNT	 DUPLEX RECEPTACLE, WEATHERPROOF	 DUPLEX RECEPTACLE - SPLIT WIRED	 DUPLEX RECEPTACLE ISOLATED GROUND	 DUPLEX RECEPTACLE, GROUND FAULT CIRCUIT INTERRUPTER	 TRIPLEX RECEPTACLE	 DOUBLE DUPLEX RECEPTACLE	 FLOOR RECEPTACLE-RECEPTACLE SHALL BE INSTALLED TWO INCHES FROM WALL	 DOUBLE DUPLEX RECEPTACLE, FLUSH MOUNT IN FLOOR	 DOUBLE DUPLEX RECEPTACLE ISOLATED GROUND	 MULTI-OUTLET ASSEMBLY. ARROWS INDICATE LIMIT OF INSTALLATION, "X" INDICATES DUPLEX RECEPTACLES AND "X" INDICATES SPACING OF OUTLETS IN INCHES.	 TELEPHONE OUTLET - RECESSED IN WALL	 TELEPHONE OUTLET - SURFACE MOUNT ON WALL	 PAY TELEPHONE OUTLET (AND BOOTH WHERE APPLICABLE)	 TELEPHONE OUTLET - FLOOR MOUNTED	 COMPUTER MODEM OUTLET	 CABLE TV OUTLET	 UNDERGROUND TELEPHONE	 UNDERGROUND ELECTRICAL	 EXISTING OVERHEAD SINGLE PHASE PRIMARY	 EXISTING TELEPHONE	 AERIAL SINGLE PHASE PRIMARY	 AERIAL THREE PHASE PRIMARY	 AERIAL SINGLE PHASE SECONDARY	 AERIAL THREE PHASE SECONDARY	 ALARM	 CABLE TELEVISION	 UNDERGROUND SINGLE PHASE PRIMARY	 UNDERGROUND THREE PHASE PRIMARY	 UNDERGROUND SINGLE PHASE SECONDARY	 UNDERGROUND THREE PHASE SECONDARY	 TELEPHONE LINE	 WIRING EXPOSED	 WIRING CONCEALED	 3/4" CONDUIT CONCEALED IN CEILING OR WALL CONTAINING 3 WIRES (PHASE, NEUTRAL, GROUND)	 BRANCH CIRCUIT/HOME RUN TO PANELBOARD. ARROWS INDICATE NUMBER OF CIRCUITS. LETTER IDENTIFIES PANELBOARD, NUMERAL AT ARROW IDENTIFIES CIRCUIT NUMBER	 GUY WIRE	 METER	 PULLBOX, # INDICATES PULLBOX NUMBER	 MANHOLE, # INDICATES MANHOLE NUMBER	 SPLICE BOX, # INDICATES SPLICE BOX NUMBER	 PAD MOUNTED TRANSFORMER	 POLE MOUNTED TRANSFORMER	 COMBINATION FIRE AND INTRUSION ALARM PANEL	 INTRUSION ALARM CONTROL PANEL	 FIRE ALARM CONTROL PANEL	 INTRUSION DETECTOR, # INDICATES UNIT TYPE AS LISTED BELOW H = HOLD-UP DEVICE U = ULTRASONIC PIR = PASSIVE INFRARED D = DUAL (PIR & MICROWAVE) DETECTOR	 FIRE DETECTOR, # INDICATES UNIT TYPE AS LISTED BELOW FT = FIXED TEMPERATURE RA = RATE ANTICIPATION RR = RATE OF RISE I = IONIZATION PE = PHOTOELECTRIC D = DUCT	 FLOW SWITCH	 TAMPER SWITCH	 MANUAL PULL STATION	 HORN, F INDICATES FIRE AND I INDICATES INTRUSION, s AT # LOCATION INDICATES HORN/STROBE COMBINATION	 BELL, F INDICATES FIRE AND I INDICATES INTRUSION	 MAGNETIC SWITCH	 KEYPAD	 ANNUNCIATION PANEL	 AUTOMATIC TELEPHONE DIALER	 DOOR HOLDER, MAGNETIC	 END-OF-LINE DEVICE	 CLOSED CIRCUIT TELEVISION SECURITY CAMERA	 METER SOCKET	 PUSHBUTTON	 BUZZER, DOORBELL	 HAND DRYER	 ELECTRIC HEATER	 DRINKING FOUNTAIN	 CARBON MONOXIDE SENSOR	 RADON GAS SENSOR	 UNINTERRUPTIBLE POWER SUPPLY	 PROGRAMMABLE LIGHTING CONTROLLER	 PUBLIC ADDRESS SYSTEM	 DUPLEX PUMP CONTROLLER	 MOTOR	 CONTROL RELAY COIL, # INDICATES COIL DESIGNATION	 DUCT HEATER	 OCCUPANCY SENSOR	 PHOTO CELL RELAY	 TIME SWITCH	 AUXILIARY RELAY	 PROTECTIVE RELAY	 UNDERVOLTAGE RELAY, PM INDICATES LOSS OF PHASE OR PHASE REVERSAL	 PRIMARY COIL	 SECONDARY COIL	 THERMOSTAT	 HUMIDISTAT	 GENERATOR	 SPECIAL PURPOSE RECEPTACLE	 S SINGLE POLE SWITCH	 S# SWITCH, # INDICATES UNIT TYPE AS LISTED BELOW 3 = THREE WAY SWITCH 4 = FOUR WAY SWITCH K = KEY OPERATED SWITCH MS = MANUAL MOTOR STARTER P = PILOT LIGHT D = DIMMER SWITCH a,b, = DIFFERENTIATES SEPARATE SWITCH OPERATED CIRCUITS IN THE SAME AREA EF = EXHAUST FAN SWITCH R = ON/OFF VARIABLE SPEED SWITCH S = SPEED CONTROL SWITCH T = TIMER SWITCH	 SWITCH AND RECEPTACLE COMBINATION	 FLOOR MODULE TELEPHONE COMPUTER	 ISOLATED GROUND TYPE DUPLEX RECEPTACLE	 DATA (FAX)	 CONDUCTORS, CROSSING AND ELECTRICALLY CONNECTED	 CONDUCTORS, CROSSING BUT NOT CONNECTED	 SEPARABLE CONNECTOR (ENGAGED)	 TERMINAL BLOCK	 REPRESENTS CONNECTION FROM EXTERNAL EQUIPMENT DOES NOT NECESSARILY REPRESENT A TERMINAL POINT	 ELECTRICAL CONTACTS, N.O.	 ELECTRICAL CONTACTS, N.C.	 CURRENT TRANSFORMER	 POTENTIAL TRANSFORMER	 TRANSFORMER	 3Φ DELTA	 3Φ GROUNDED WYE	 ELECTRICAL DEVICE, FUNCTION AS NOTED	 JUNCTION BOX	 ADJUSTABLE TIME DELAY RELAY	 ENCLOSURE, SURFACE MOUNT, FUNCTION AS NOTED	 ENCLOSURE, FLUSH MOUNT, FUNCTION AS NOTED	 PANELBOARD, SURFACE MOUNT	 ENCLOSURE, FLUSH MOUNT,	 DISCONNECT SWITCH	 MOTOR STARTER	 COMBINATION STARTER AND DISCONNECTING MEANS	 MOTOR CONTROL CENTER	 TELEPHONE TERMINAL BOARD	 SPEAKER	 PUBLIC ADDRESS SYSTEM, A INDICATES AMPLIFIER, M INDICATES MICROPHONE	 TEMPERATURE CONTROL PANEL	 SOLENOID OPERATED VALVE	 RADIANT HEATER PANEL, # INDICATES UNIT NUMBER	 AIR HANDLING UNIT	 SWITCH, SPST	 SWITCH, SPDT	 SWITCH, DPST	 SWITCH, DPDT </
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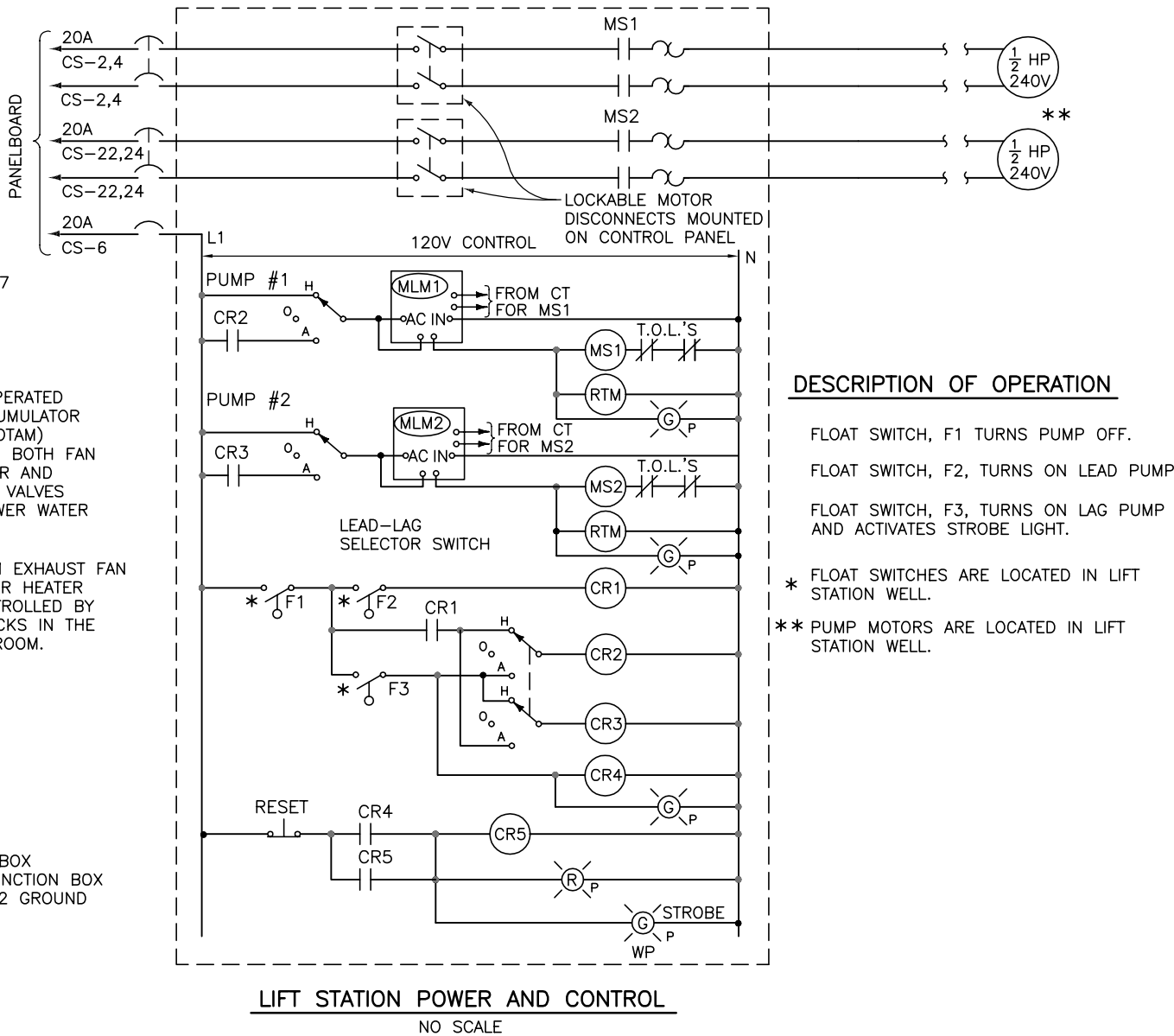
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SYMBOL	TYPE	LAMP	VOLTAGE	MOUNTING	PART NO. AND MANUFACT.
	VANDAL-PROOF FLUORESCENT ENERGY SAVING BALLAST	1-40 WATT 48 INCH RAPID START	120V	CEILING SURFACE	U.L. LISTED FOR WET LOCATIONS. CATALOG #7170 KENALL MFG. CO., ILL. (708) 360-8200
	FLUORESCENT ENERGY SAVING BALLAST	2-40 WATT 48 INCH RAPID START	120V	CEILING SURFACE	MDF-240-ESB J.W. LIGHTING OF KIDDE
	VANDAL-PROOF FLUORESCENT 0° F. BALLAST CLEAR LENS	PL-7 WATT	120V	WALL SURFACE	U.L. LISTED FOR WET LOCATIONS. CATALOG #3707 KENALL MFG. CO., ILL. (708) 360-8200
	FLUORESCENT PORCELAIN BASE	PL-7 WATT	120V	CEILING SURFACE	LEVITON BASE AND 7 WATT PL LAMP
	SQUARE BOLLARD WITH LOUVERS	120V. 35 WATT L.P.S.	120V	BASE PLATE	8" SQ. AL., 36" HIGH, DARK BRONZE FINISH, HOUSE SIDE SHIELD, P/N BS8-L-35L-120 -DB-HS-36, EMCO LIGHTING (800) 227-0758
	WARNING STROBE LIGHT, RED WITH GUARD	XENON 120V., 0.3A. 106 CANDLEPOWER 104 HOURS LIFE	120V	WALL BRACKET $\frac{3}{4}$ " HUB	CATALOG #SHBG-2-23R KILLARK ELECTRIC MFG. CO. ST. LOUIS, MO.
	SEALED WEATHERPROOF, TAMPERPROOF, 0° F. BALLAST	PL-9 WATT	120V	RECESSED IN RETAINING WALL	STG-9PL-120-0-0° F. MWC LIGHTING QUALITY LIGHTING (708) 451-0040

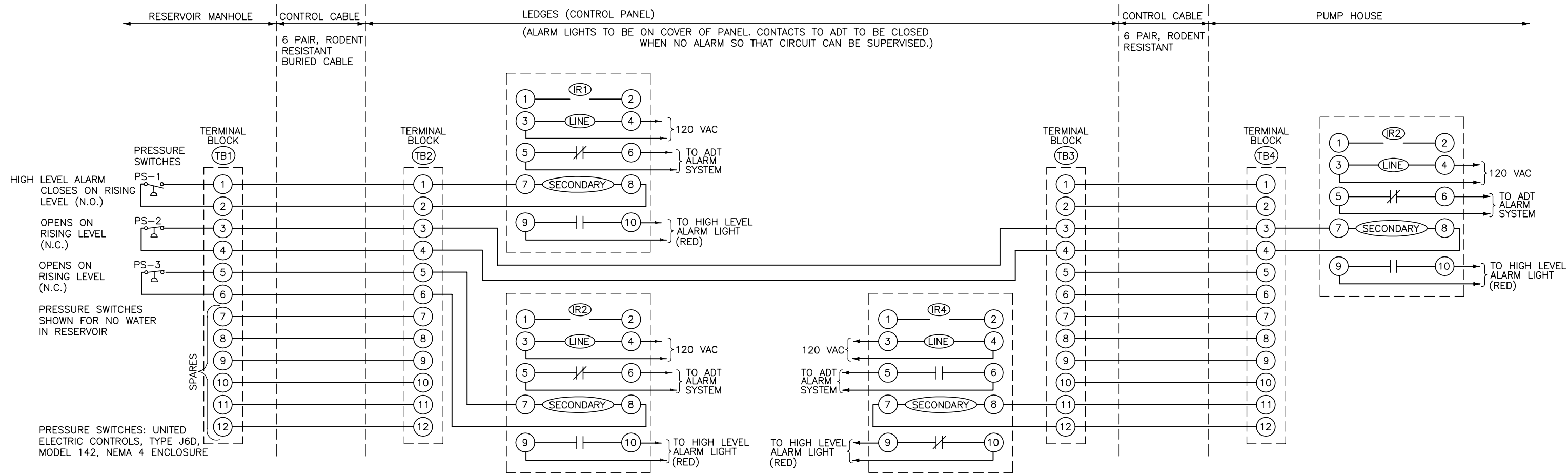
1. THE LIGHT FIXTURES "C" ARE TO BE MOUNTED ON THE SOFFIT (UNDERSIDE OF EAVES) HALFWAY BETWEEN EAVE EDGE AND BUILDING WALL AND CENTERED FOR EACH DOOR AND POWERED FROM CS-1 VIA PHOTOCELL ON NORTH SIDE OF BUILDING UNDER EAVES.
2. THE LIFT STATION PUMP MOTORS WILL BE POWERED BY FOUR #12 TYPE UF, THE FLOATS WILL REQUIRE FOUR #12 TYPE UF, AND THE WEATHERPROOF RECEPTACLE NEAR THE VENT PIPE WILL REQUIRE TWO #12 TYPE UF, THIS IS A TOTAL OF TEN #12 TYPE UF AND ONE #12 GROUND FOR EACH LIFT STATION. THE DOSING SIPHON WILL REQUIRE TWO #12 TYPE UF FOR THE WEATHERPROOF RECEPTACLE AND TWO #12 TYPE UF FOR THE HIGH ALARM FLOAT FOR A TOTAL OF FOUR #12 TYPE UF AND ONE #12 GROUND AT EACH DOSING SIPHON. THE WEATHERPROOF RECEPTACLE SHALL CONSIST OF A CROUSE-HINDS DS222 MOUNTED ON A FS2 DEAD-END (20A, 125V, $\frac{3}{4}$ HUB).
3. MOUNT KILWATT HOUR METER ABOVE WATER METER FOR EASE OF READING. DELETE KILOWATT HOUR METER AT COMFORT STATIONS #5,6,7,8, AND 9.
4. HAND DRYER TO BE RATED 1725 WATTS AT 115V., REVOLVING NOZZLE, SURFACE MOUNTED, 46" ABOVE FLOOR IN MENS WASHROOM AND 44" ABOVE FLOOR IN LADIES RESTROOM. COLOR ALMOND. MODEL A2 WORLD DRYER CORPORATION, (312)449-6950.
5. WATER HEATER TO BE HARD WIRED WITH 2-#10 TYPE THWN AND 1-#8 GROUND.
6. THE ELECTRIC FURNACE, (F-1), IS CONTROLLED BY EITHER OF THE TWO THERMOSTATS. FURNACE TO BE HARD WIRED WITH #1/0 TYPE THWN AND 1-#8 GROUND.
7. IN COMFORT STATION #9, DELETE BOTH SHOWERS IN THEIR ENTIRETY. USE FOR STORAGE. DELETE OUTSIDE LIGHTS AND CHANGE INSIDE LIGHTS TO INCANDESCENT PORCELAIN BASES.
8. WATER HEATER AND EXHAUST FAN ARE OPERATED BY TIME CLOCKS.
9. STROBE ALARM LIGHT, WATER PROOF, MOUNTED OUTSIDE OF BUILDING, CENTERED ABOVE DOOR TO UTILITY CHASE.
10. LEAD-LAG SELECTOR SWITCH, PUMP #1 AND PUMP #2 H.O.A. SWITCHES, RESET SWITCH, RUN TIME INDICATORS, RUN LIGHTS, AND ALARM LIGHTS ON DOOR OF CONTROL CABINET. PILOT LIGHTS WILL BE IDENTIFIED AS "NO. 1 PUMP RUNNING", "NO. 2 PUMP RUNNING", "LAG PUMP ON", "HIGH LEVEL ALARM".



FLOAT SWITCH, F1 TURNS PUMP OFF.
 FLOAT SWITCH, F2, TURNS ON LEAD PUMP
 FLOAT SWITCH, F3, TURNS ON LAG PUMP
 AND ACTIVATES STROBE LIGHT.
 FLOAT SWITCHES ARE LOCATED IN LIFT
 STATION WELL.
 PUMP MOTORS ARE LOCATED IN LIFT
 STATION WELL.



DESIGNED: L. GORMAN CADD B. WEYER TECH. REVIEW: DATE: 10/94	SUB SHEET NO. <div style="font-size: 48pt; text-align: center;">E4</div>	TITLE OF SHEET <div style="font-size: 24pt; font-weight: bold;">SAMPLE</div> <div style="font-size: 36pt; font-weight: bold;">POWER AND LIGHTING PLAN, SHEDULES AND CONTROL SCHEMATIC</div> NAME OF PARK	DRAWING. NO. <div style="font-size: 24pt; font-weight: bold;">999</div> <div style="font-size: 24pt;">41,001</div> PKG. NO. <div style="border: 1px solid black; padding: 2px;">108</div> SHEET <div style="border: 1px solid black; padding: 2px; display: inline-block;">41</div> OF 43
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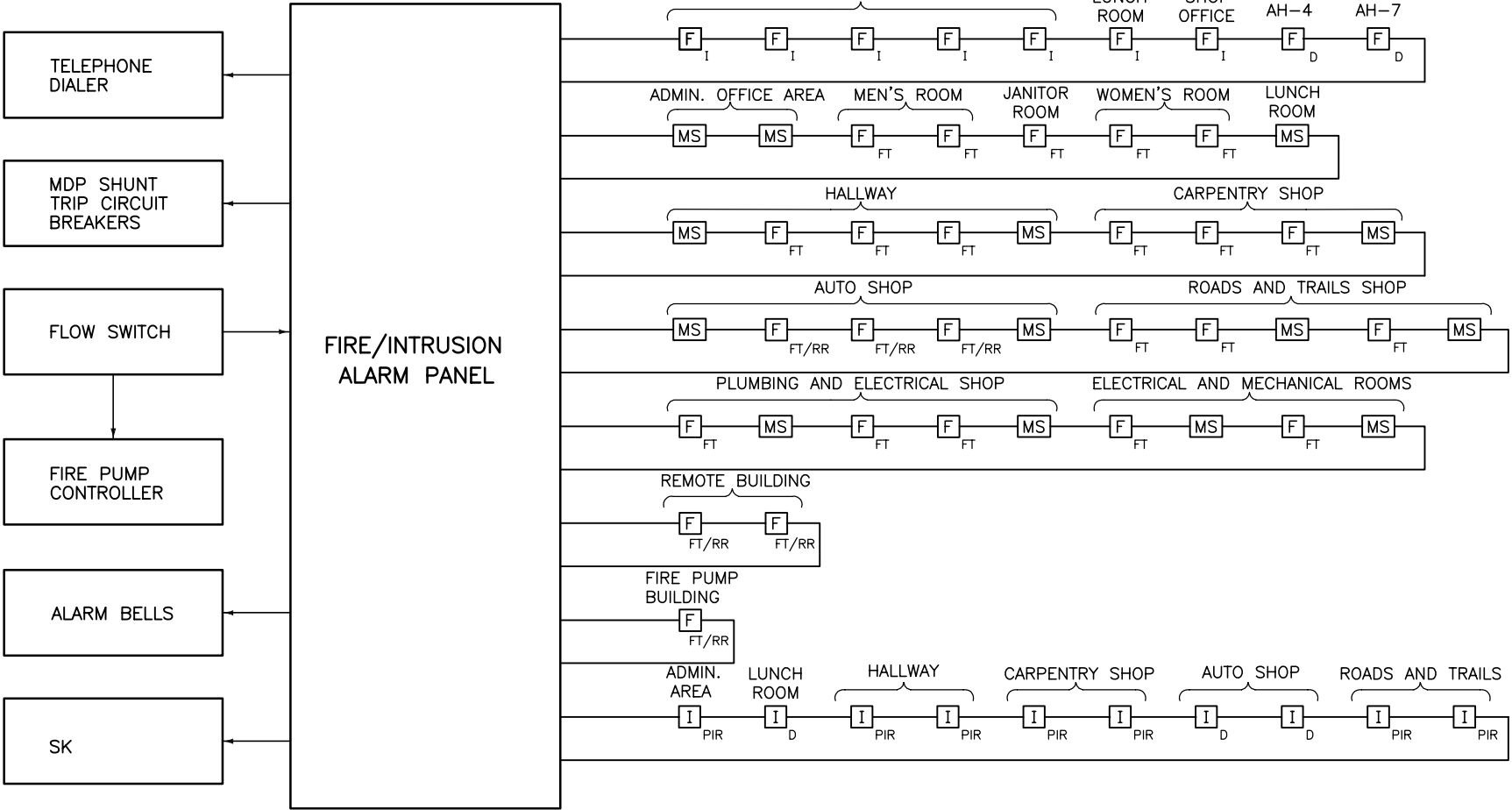


CONTROL WIRING DIAGRAM

RELAY AND CONTROL SCHEDULE

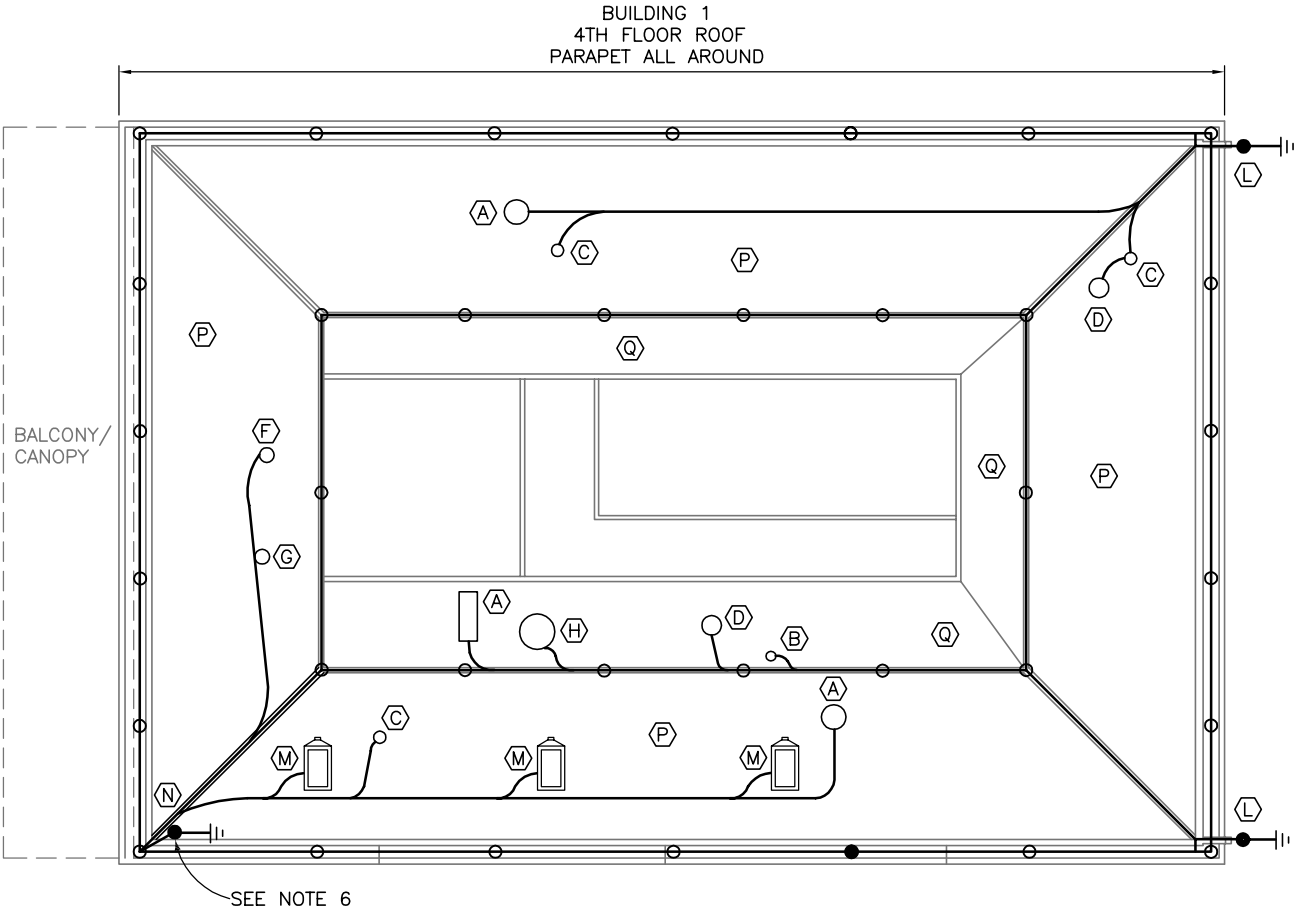
- IR INDUCTION RELAY, WITH INTERCHANGEABLE 25 AMPERE DOUBLE BREAK CONTACTS, 120 VAC COIL, 24V SECONDARY COIL. B/W CONTROLS DIVISION, SECTION 1500.
- IR1 - P/N 1500-D-L1-S2-OC-X (SHOWN WITH POWER OFF AND SECONDARY COIL OPEN CIRCUIT FROM HIGH LEVEL ALARM PRESSURE SWITCH PS-1)
- IR2 - P/N 1500-D-L1-S2-OC-X (SHOWN WITH POWER OFF. WHEN AC POWER IS APPLIED AND PS-3 INDICATING LOW WATER, CONTACTS WILL REVERSE SO THAT N.C. CONTACT TO ADT OPEN AND N.O. CONTACT TO LO LEVEL ALARM CLOSES.)
- IR3 - P/N 1500-C-L1-S2-OC-X (SHOWN WITH POWER OFF. WHEN AC POWER IS APPLIED THEN PS-2 BEING CLOSED (LOW WATER) THEN IR3 CONTACTS WILL CLOSE TO INITIATE PUMP MOTOR START UP. WATER RAISING WILL OPEN PS-2 AND PUMP WILL BE STOPPED.)
- IR4 - P/N 1500-D-L1-S2-OC-X (SHOWN WITH POWER OFF, WHEN POWER IS APPLIED AND CR1 ENERGIZED THEN IR4 CONTACT WILL BE CLOSED FOR NO ALARM, AND ALARM LIGHT WILL BE OFF.)
- CR CONTROL RELAY, 10 AMPERE CONTACTS, 120V COIL. SQUARE D CLASS 8501
- MLM MOTOR LOAD MONITOR, OVER AND UNDER LOAD, TIME MARK MODEL 400
- MS MOTOR STARTER, COMBINATION TYPE WITH CIRCUIT BREAKER AND BIMETALLIC OVERLAY RELAY. THERMAL UNITS PER MANUFACTURER'S RECOMMENDATION.
- MS1 - NEMA SIZE 1 FOR 1 1/2 HP MOTOR
- MS2 - NEMA SIZE 2 FOR 5 HP MOTOR(N.I.C.)
- RTI RUN TIME INDICATOR 0-99,999 HOURS, 120V
- CT CURRENT TRANSFORMER, TIME MARK MODEL 276A
1 1/2 HP P/N 276A-15
5 HP P/N 276A-40

DESIGNED: L. GORMAN B. WEYER TECH. REVIEW:	SUB SHEET NO. <div>E5</div>	TITLE OF SHEET SAMPLE CONTROL WIRING DIAGRAM NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 42 OF 43
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FIRE ALARM SYSTEM FUNCTIONS AS FOLLOWS:
1. IONIZATION AND DUCT DETECTORS ACTIVATE ALARM BELLS ON BUILDING AND SHUT DOWN HVAC SYSTEM.
2. FT, FT/RR AND MS DEVICES ACTIVATE ALARM BELLS, TELEPHONE DIALER, AND MDP SHUNT TRIP BREAKERS.
3. FLOW SWITCH ACTIVATES FIRE PUMP THROUGH FIRE PUMP CONTROLLER, ALARM BELLS, TELEPHONE DIALER AND MDP SHUNT TRIP BREAKERS.

FIRE/INTRUSION ALARM SYSTEM RISER DIAGRAM
NO SCALE



LIGHTNING PROTECTION

NOTES

- ROOF PENETRATIONS (BONDED TO CONDUCTOR AS SHOWN)
 - (A) OUTSIDE AIR INTAKE
 - (B) 4" VENT THRU ROOF
 - (C) 2" VENT THRU ROOF
 - (D) EXHAUST FAN
 - (E) CONDENSING UNIT
 - (F) 18" DIA. GAS VENT
 - (G) 10" DIA. GAS VENT
 - (H) ELEVATOR SHAFT VENT
 - (J) DRYER VENT
 - (K) 4" ROOF DRAIN
 - (L) 6" GALVANIZED DOWNSPOUT WITH COLLECTOR HEAD
 - (M) GALVANIZED FLASHING AND CRICKET AT SKYLIGHTS
 - (N) PVC THRU-ROOF CONNECTOR
 - (P) RIGID SHINGLES 6/12 PITCH
 - (Q) MEMBRANE ROOFING (FLAT)
- LIGHTNING PROTECTIONS SYMBOLS
 - AIR TERMINALS
 -
 - CONDUCTOR
 - ⎓ DRIVEN GROUND ROD
- MOUNT AIR TERMINALS ON ADHESIVE AIR TERMINAL BASE.
- FASTEN EXPOSED CABLES WITH ADHESIVE CABLE HOLDERS NOT MORE THAN 3 FEET APART.
- DOWN CONDUCTORS TO BE IN PVC CONDUIT, PAINT TO MATCH SURROUNDINGS ALONGSIDE DOWN SPOUT WHERE AVAILABLE. USE COLLECTOR HEAD TO PENETRATE PARAPET.
- DOWN CONDUCTOR AT SOUTHEAST CORNER (ON DECATUER STREET) TO START AT THRU-ROOF CONNECTOR, HENCE IN PVC TO CORNER OF DRIVEWAY WHERE GROUND ROD IS TO BE DRIVEN.



DESIGNED: L. GORMAN B. WEYER TECH. REVIEW: DATE: 10/94	SUB SHEET NO. E6	TITLE OF SHEET SAMPLE FIRE/INTRUSION ALARM RISER DIAGRAM LIGHTNING PROTECTION NAME OF PARK	DRAWING NO. 999 41,001 PKG. NO. 108 SHEET 43 OF 43
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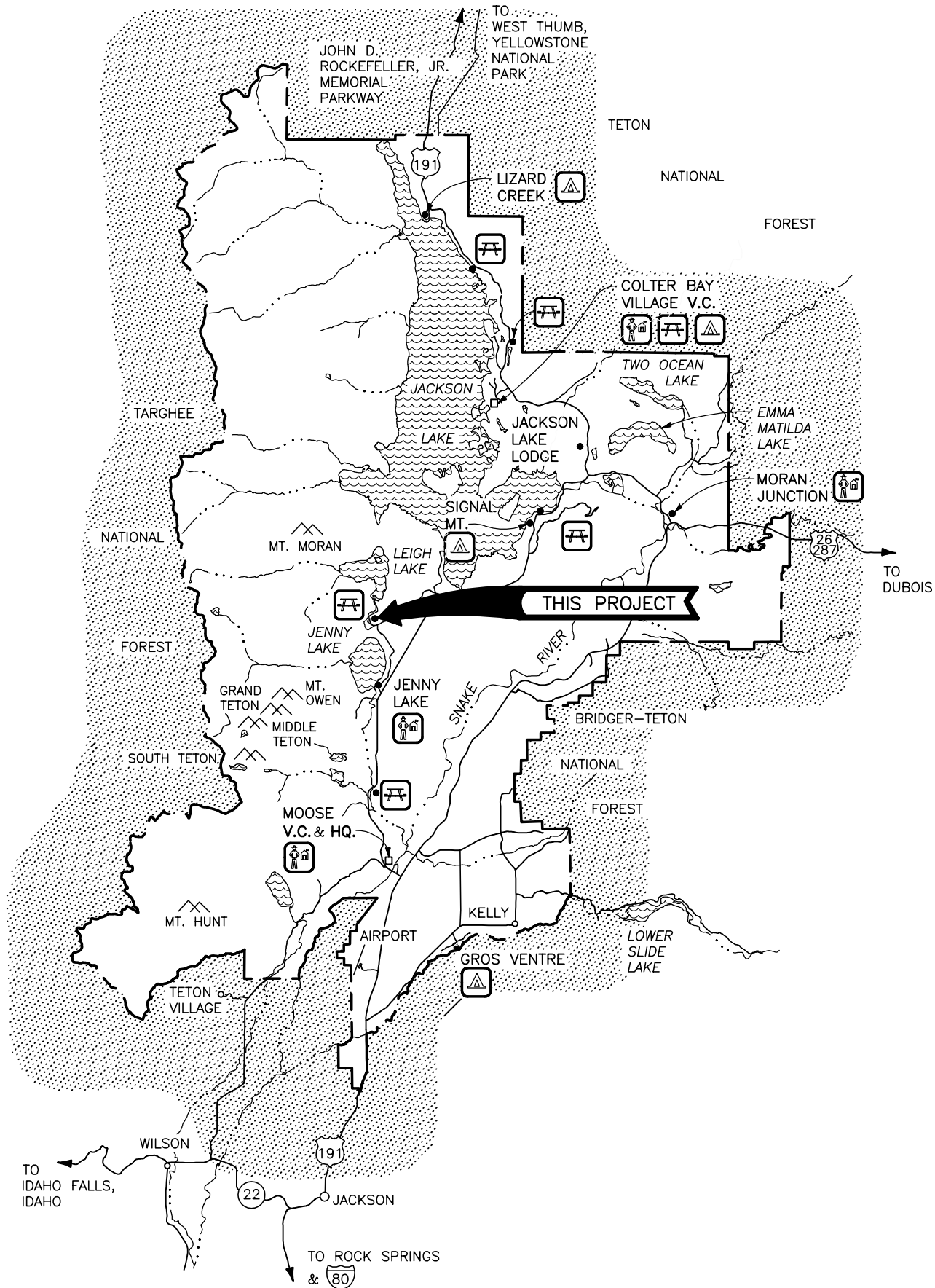
APPENDIX D

Sample Amendment or Modification

**SAMPLE COVER SHEET
SAMPLE REVISED SHEET**

8/16/01 17:25 C:EVERMAN R15 P:\PROJ\NPS-10\FINAL-SET\GEN\COV-MOD.DWG

BASIC DATA: U.S.G.S. TOPOGRAPHIC MAP 1968; COVER SHEET REVISED & REDRAWN 8/93.

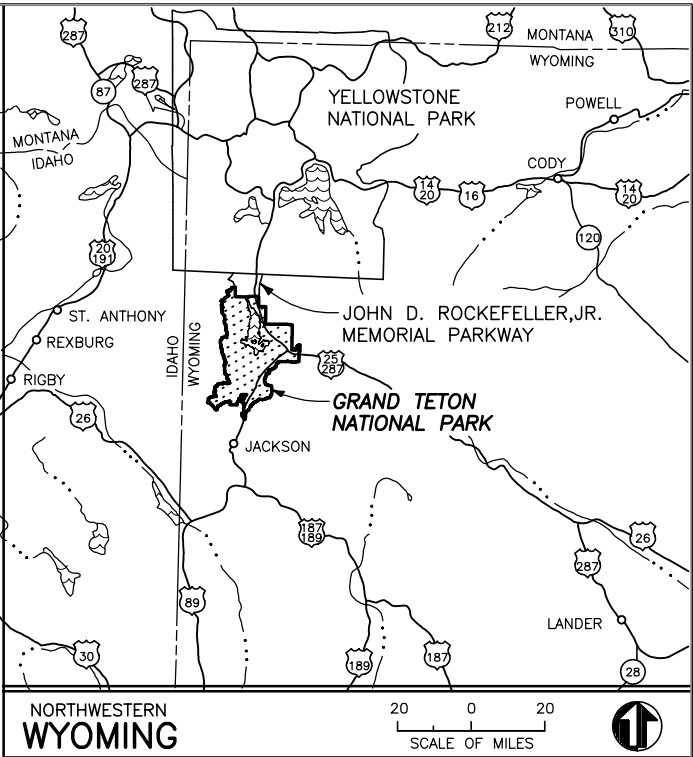


LEGEND

- PARK BOUNDARY
--- STATE LINE
— PAVED ROAD
- - - UNPAVED ROAD
... RIVER
- V.C. VISITOR CENTER
HQ. PARK HEADQUARTERS
RANGER STATION
PICNIC AREA
CAMPGROUND

INDEX

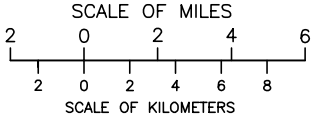
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3	C1	ABBREVIATION SHEET
4A	C2	SYMBOL SHEET
5	C3	MAPPING SYMBOLS
6	C4	PARKING AREA LAYOUT
7A	C5	PARKING AREA GRADING PLAN
8	C6	ROAD PROFILE AND SECTIONS
9	C7	ROADWAY CROSS SECTIONS
10	C8	ROADWAY PLAN AND PROFILE
11	C9	WATER LINE PLAN AND PROFILE
12	C10	SEWER PLAN AND PROFILE
13	C11	STANDARD DETAILS
14	C12	PLAN AND DETAILS FOR ROADWAY SIGNS AND PAVEMENT MARKINGS
15	L1	SITE PLAN BUILDING TERRACE
16	L2	LANDSCAPE PLAN AND DETAILS
17	L3	VISITOR CENTER IRRIGATION LAYOUT
18	A1	FLOOR PLAN
19	A2	RENOVATION FLOOR PLAN
20	A3	ELEVATIONS
21	A4	SECTIONS
22	A5	DETAIL SHEET



SHEET	SUB SHEET	TITLE OF SHEET
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24	S2	FOUNDATION PLAN AND ROOF FRAMING PLAN
25	S3	SECOND FLOOR FRAMING PLAN
26	S4	ROOF FRAMING PLAN
27	S5	FOUNDATION DETAILS
28	S6	FIRST FLOOR FRAMING SECTIONS
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37	M8	FIRE PROTECTION PLAN
38	E1	ELECTRICAL ABBREVIATIONS
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40	E3	ELECTRICAL AND TELEPHONE SITE PLAN, ONE LINE DIAGRAM
41	E4	POWER AND LIGHTING PLAN, SCHEDULES, AND CONTROL SCHEMATIC
42	E5	CONTROL WIRING DIAGRAM
43	E6	FIRE/INTRUSION ALARM RISER DIAGRAM AND LIGHTNING PROTECTION

GRAND TETON NATIONAL PARK

PROJ. NO. GRTE108
1443IB160092123



Mark	Sheet	REVISION	Date	Initial	QUALITY DESIGN CERTIFICATION
1	1A, 4A, 7A	AMENDMENT OR MODIFICATION NO. 1; REVISED SHT. 1, 4, 7	4/93	L.E.N.	<input checked="" type="checkbox"/> Prepared in Accordance with Design Development (Title I) Drawing No. _____ OR <input type="checkbox"/> Approved by Superintendent on _____ Date _____ OR <input type="checkbox"/> Construction Drawing Not Preceded by Design Development (Title I)
					(SIGNATURE) _____ 10/94 Date
					Project Manager



CONSTRUCTION DRAWINGS

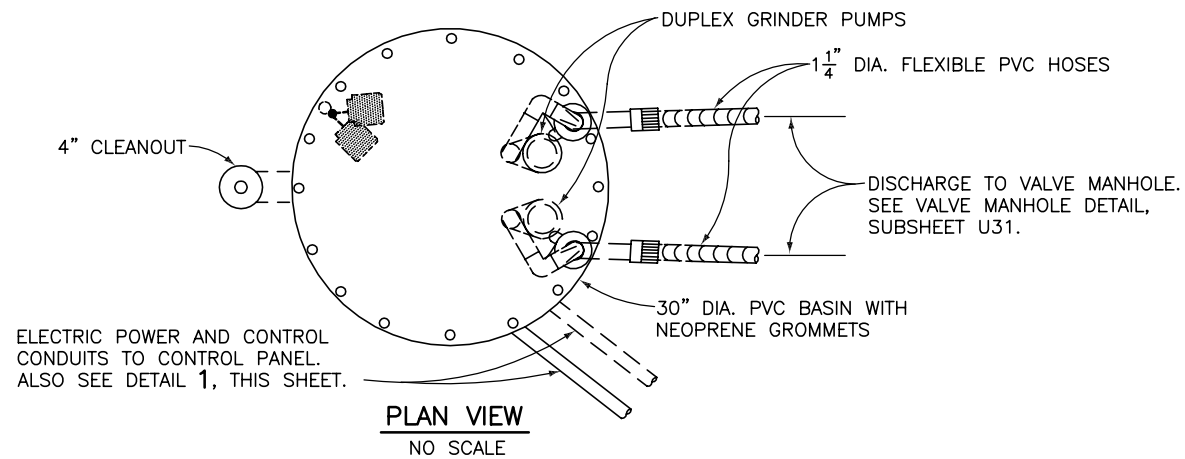
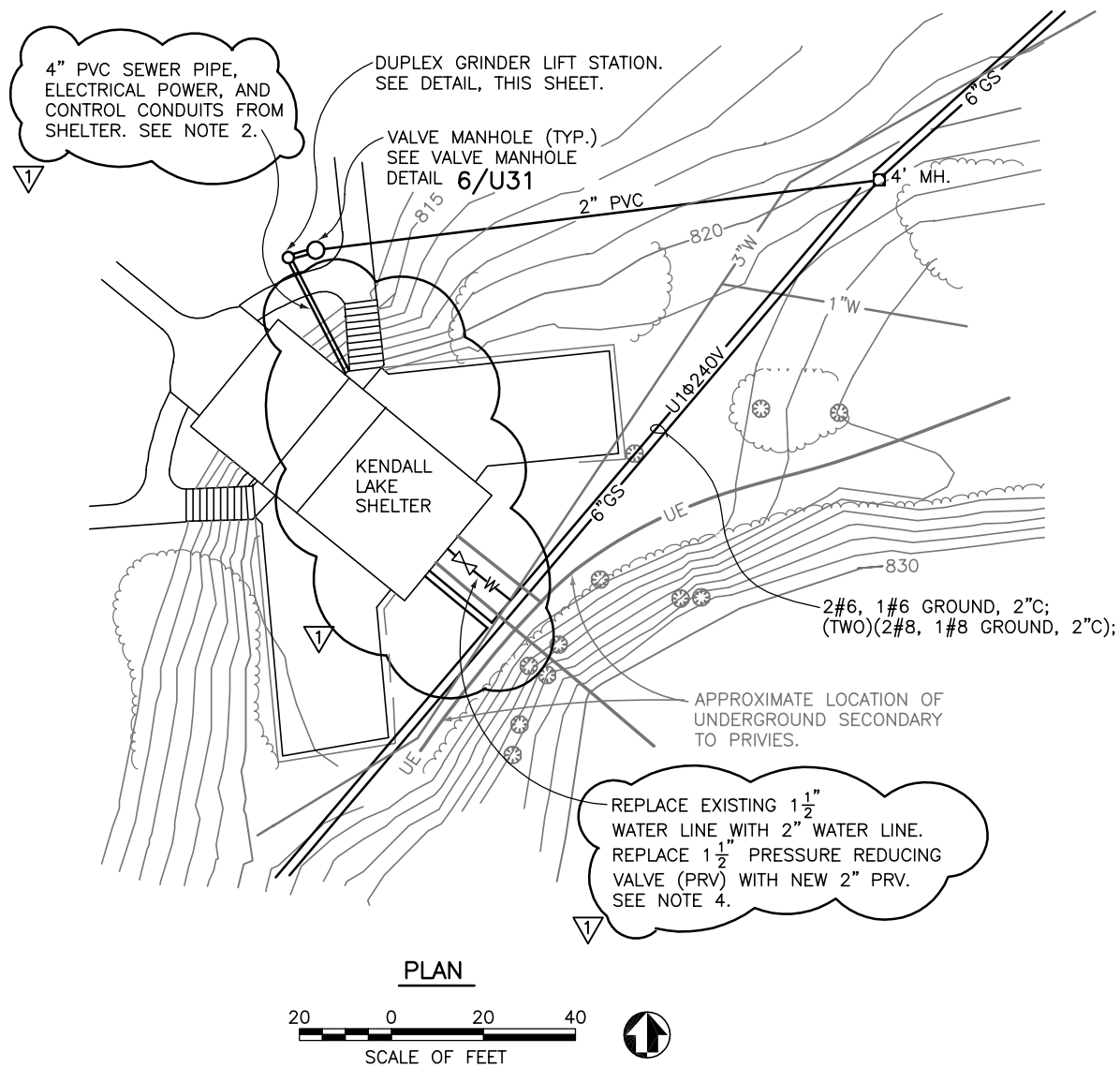
UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
SITE IMPROVEMENTS
LOCATION WITHIN PARK
LEIGH LAKE PICNIC AREA
NAME OF PARK
GRAND TETON NATIONAL PARK
REGION
ROCKY MTN.
COUNTY
TETON
STATE
WYOMING

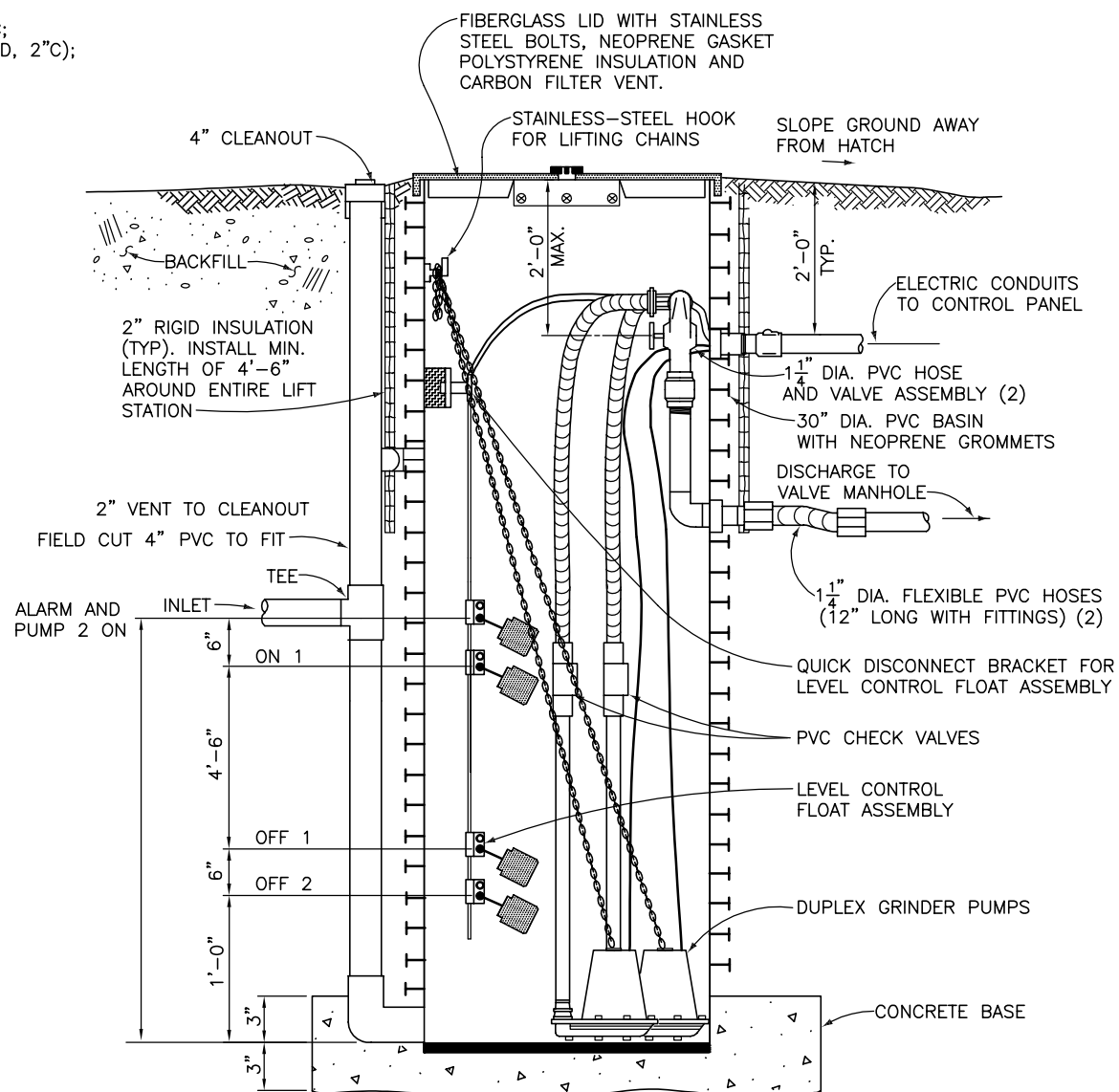
DRAWING NO.
999
41,001
PKG. NO.
108
SHEET
1A
OF **43**

8/23/01 11:28 C:EVERMAN R15 S:\SYN\USER\NPS10\FINAL-SET\GEN\U3.MOD.DWG



NOTES

1. PROVIDE ELECTRICAL SPLICE BOX WITH CORD GRIPS INSIDE OF PVC BASIN
2. 4" PVC SEWER TO EXIT BUILDING BELOW THE FOOTER. ADJUST HEIGHT OF LIFT STATION INLET TO MAINTAIN A MINIMUM OF 0.25 IN./FT. SLOPE. THE INLET SHALL BE A MINIMUM OF 4'-6" BELOW GRADE. SEE SHEET M6 FOR SHELTER PLUMBING ISOMETRIC.
3. 2" PVC FROM LIFT STATION TO MANHOLE SHALL MAINTAIN A MINIMUM COVER OF 4'-0" AND ENTER THE MANHOLE AT AN ELEVATION OF APPROXIMATELY 815.7'.
4. 1 1/2" PVC WATER LINE AND GATE VALVE TO BE REPLACED WITH 2" PVC WATER LINE AND GATE VALVE. REPLACE 3"x3"x1 1/2" TEE WITH 3"x3"x2" TEE.
5. SEE SHEET E10 FOR ADDITIONAL ELECTRIC POWER AND CONTROL CIRCUIT INFORMATION.



DUPLEX GRINDER LIFT STATION (30" DIA.)

NO SCALE

DESIGNED:
J. SMITH
J.JONES
TECH. REVIEW:
DATE:
10/94

SUB SHEET NO.
U3

TITLE OF SHEET
**SAMPLE
PLAN AND DETAILS**

NAME OF PARK

DRAWING NO.
999
41,001
PKG. NO.
108
SHEET
7A
OF **43**

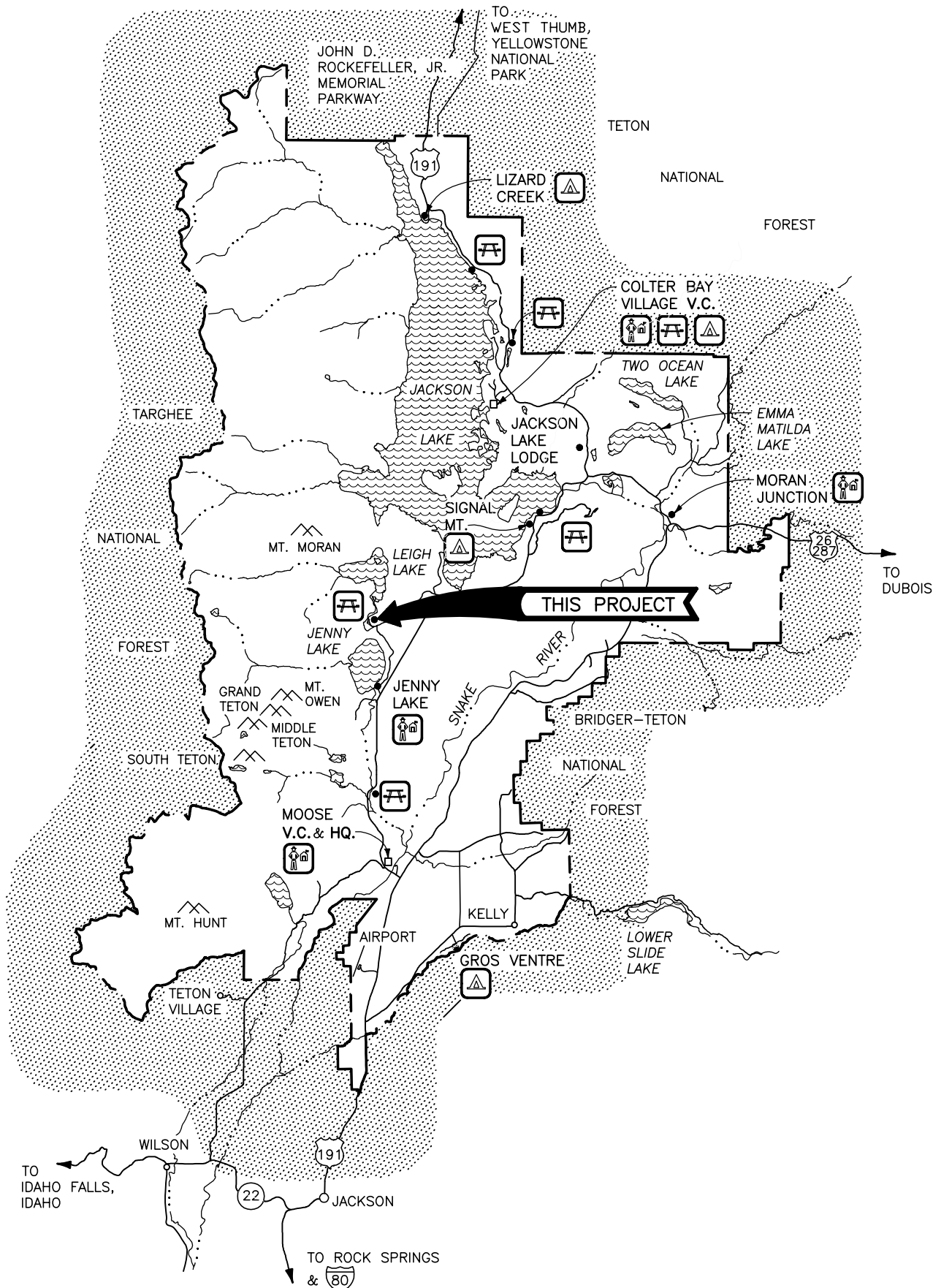
APPENDIX E

Sample As-Constructed Drawing Cover Sheet

SAMPLE COVER SHEET

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BASIC DATA: U.S.G.S. TOPOGRAPHIC MAP 1968; COVER SHEET REVISED & REDRAWN 8/93.

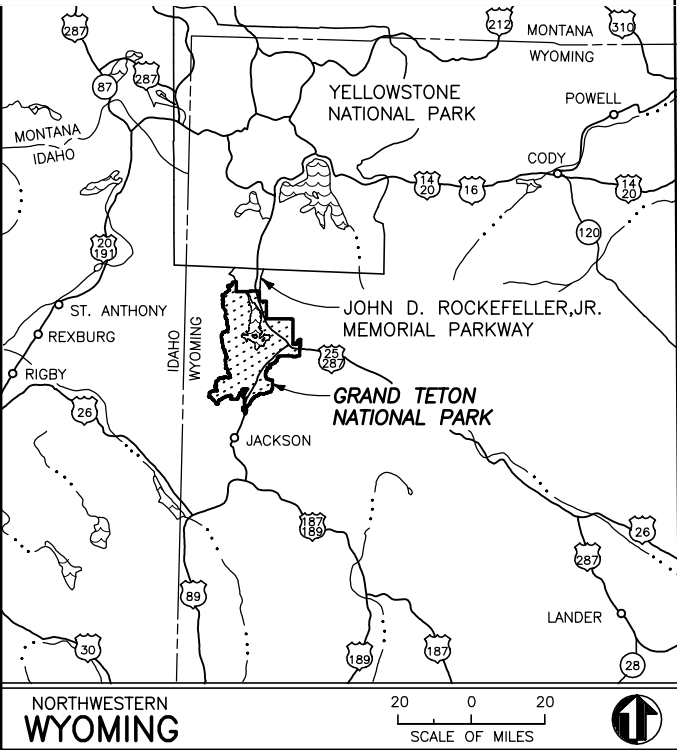


LEGEND

- PARK BOUNDARY
--- STATE LINE
--- PAVED ROAD
--- UNPAVED ROAD
--- RIVER
- V.C. VISITOR CENTER
H.Q. PARK HEADQUARTERS
RANGER STATION
PICNIC AREA
CAMPGROUND

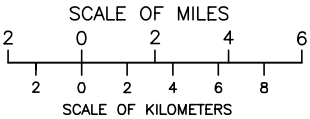
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4	C2	SYMBOL SHEET
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43	E6	FIRE/INTRUSION ALARM RISER DIAGRAM AND LIGHTNING PROTECTION

Ⓐ AS CONSTRUCTED DRAWING
PROJECT NO. GRTE108
CONTRACT NO. 1443CX160092123
PROJECT SUPERVISOR: M.J.'SMITH
CONTRACTOR: JONES CONSTRUCTION
1111 W. HAWAII
SEATTLE, WASHINGTON



Mark	Sheet	REVISION	Date	Initial	QUALITY DESIGN CERTIFICATION
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2	1B, 13A	MODIFICATION NO. 1; REVISED SHEET 1, 13	5/93	L.E.N.	(SIGNATURE) _____ 10/94 Project Manager Date
A	ALL	AS-CONSTRUCTED	11/93	L.E.N.	



AS-CONSTRUCTED DRAWINGS
UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
SITE IMPROVEMENTS
LOCATION WITHIN PARK
LEIGH LAKE PICNIC AREA
NAME OF PARK
GRAND TETON NATIONAL PARK
REGION COUNTY STATE
ROCKY MTN. TETON WYOMING

DRAWING NO.
999
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108
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