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BAND
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REPLACE CANALES

AND

MISCELLANEOUS ROOF REPAIRS

Randall Copeland

Bandelier National Monument
June 1985

Rec'd FYI HASO file

United States Department of the Interior

NATIONAL PARK SERVICE

DENVER SERVICE CENTER
755 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

IN REPLY REFER TO:

June 6, 1985

H30 (DSC-TSE)

Memorandum

To: Regional Director, Southwest Region

From: Assistant Manager, Southeast/Southwest Team, DSC

Reference: Bandelier National Monument; Pkg. No. 224; PT 36; Rehabilitate Decaying Wood Structural Members

Subject: Transmittal of Construction Drawings No. 315/80,030

Enclosed are the subject drawings which incorporate review comments received by this office on June 3, 1985. We call your attention to several review comments and our response.

1. The need for a pest control operation within the structural repair work. We concur that this work needs to be performed and a discussion is given under the work proposal for "Rehabilitate Vigas, Columns and Miscellaneous Wood Members" submitted under separate cover. As this operation relates only to the work components to be performed through Southwest Region day-labor, this separate submission will not delay the 8a contract progress and any subsequent review comments can easily be incorporated.

2. We concur with park comments on the need for treatment of existing wood lintels. This work is also addressed under the "Rehabilitate Vigas, Columns and Miscellaneous Wood Members" work proposal.

3. We also concur with park comments on restoring missing masonry at those canales where the original detail had masonry overhead. This situation is known to exist at Building Nos. 13 and 17 and the 15/17 portal; a review of historic photographs within the park collection and discussion with park maintenance personnel will answer this earlier condition elsewhere. However, to lessen the need for subsequent roof flashing repairs, it is proposed that this condition remain except on Building No. 13 where a new roof and related flashing is scheduled under this package. This work can be a component of future roof replacement work, at which time proper flashing will be installed.

The enclosed drawings indicate replacing roof level change canales. As these canales are not visible from the ground, the proposal was for a substitute, low maintenance material. To minimize cutting the existing roof coating and the need for subsequent patching, it is recommended that this work be

deferred until future roof replacement is undertaken, and that the existing canales receive only an additional urethane coating under this contract where required to halt any possible leakage. Due to the 8a cost-plus nature of this contract, this substitution will create no contractual difficulty.

By copy of this memorandum, we are forwarding copies to the Superintendent, Bandelier National Monument; Washington Office; the Division of Conservation, Engineering and Facilities Management; and Contracting and Property Management.

Robert S. Budz

Enclosure

cc:
(ea. w/enc.)
WASO-422-Hugh Miller
Supt., Bandelier NM
SWR-PCC-Sulam, Hicks, Webb
SWR-OM-Parks, Romero
SWR-ACP-Scharn

REPLACE CANALES AND MISCELLANEOUS ROOF REPAIRS

Package 224 - Rehabilitate Decaying Wood Structural Members
Frijoles Canyon
Bandelier National Monument
New Mexico

June 1985

Prepared by
Randall Copeland
Historical Archictect
Southeast/Southwest Team, DSC

The following provides background material for the work identified within the attached drawings. Initially submitted within an overall Pkg. 224 work proposal, this information responds to regional request for review of the individual components and focuses on the "Replace Canales and Miscellaneous Roof Repairs" project. This copy incorporates park and region review comments for the work received by DSC on June 3, 1985. Assessment of Effect (XXX) forms for this work are being prepared and will be submitted by the park. Related Pkg. 224 work consists of "Install Insulated Windows" (approved March 15, 1985) and "Rehabilitate Vigas, Columns and Miscellaneous Wood Members," to be submitted separately. A separate Assessment of Effect (XXX) form has been approved (March 13, 1985) for rehabilitating the entrance station (Building No. 26).

A. Introduction

This report concerns the historic building complex located in lower Canyon de los Frijoles of Bandelier National Monument (BAND), Sandoval County, New Mexico. Excerpted from the historic structures report (HSR) (in progress), it addresses pending construction activity for rehabilitating decaying wood members. The primary emphasis for this proposed work is the buildings' canales and related roof deterioration. This work will halt ongoing deterioration and deter deterioration to adjacent woodwork, the buildings' structural system and their interior fabric. This work is only one component of the current Development/Study Package Proposal No. 224. Other components include rehabilitating the water, sewer, electrical and gas services; rehabilitating flagstone and curbstone; and installing fire alarm and security systems. These latter components are scheduled for design and construction over a multi-year period through Denver Service Center (DSC) and park contract, and Southwest Region (SWR) and park day-labor, and have, or will, receive individual design and compliance review. Some of these components are underway or completed.

Built between 1934 and 1942 under the auspices of the Civilian Conservation Corps (CCC), these thirty-one buildings serve as the administrative, interpretive, residential, maintenance and overall operational center for the park. To a large degree, they have maintained their original functional use (Illus. 1). With the exception of modifications to interior partitions, color schemes, roofing and utilities and the growth of site vegetation over the years, the extant buildings are basically reflective of their historic appearance. The buildings are listed on the National Register of Historic Places and are currently being included on the park List of Classified Structures.

The buildings fall into four basic locational groupings--the headquarters, cabin, canyon, and entrance road areas (Illus. 2). The only exception is the comfort station (Building No. 1) in the Juniper Campground area, west of the headquarters area. The entrance road area consists of the fire lookout (Building No. 30) and entrance station (Building No. 26), while the canyon area consists of five residential units (Building Nos. 7, 8, 10, 11 and 32) and the park stables (Building No. 25). The headquarters area consists of eight service-oriented buildings (Building Nos. 3, 4, 5, 6, 12, 13, 14 and 22), the visitor center/museum (Building No. 2), comfort station (Building No. 9), administrative headquarters (Building No. 15/16), curio shop/snack

bar (Building No. 17) and V.I.P. quarters (Building No. 18). These latter two buildings historically belong with the remaining eight buildings (the cabin area) as they relate to the complex originally built as the cabin/hotel development area. Today, three of these buildings (Building Nos. 19, 20 and 28) serve as residential quarters, Building Nos. 24 and 27 serve as combination residential/office use, Building Nos. 23 and 29 as offices, while Building No. 21 is being converted to a laundry and storage facility. Discounting the two entrance road structures, the overall complex encompasses approximately eight acres. Bandelier is rather unique in that it has original construction drawings for the buildings, as well as drawings for many of the subsequent repairs and modifications. These drawings are on file at the park, the region and DSC.

B. Significance

Much of the significance of these structures lies in that they are the largest known collection of CCC-built structures in the country not altered by the addition of new structures within the district. The Historical Data Section of the HSR, prepared by Laura Soulliere Harrison, traces the historical environment in which they were constructed and provides insight into the intent and details of the evolution of this district. Their unification in style, scale, massing, color, materials and details, and their overall relation to the site signify much of what the CCC-era rustic "parkitecture" movement sought to create. This unification is set within a context of flagstone-terraced courtyards, portals, masking walls and native vegetation to form a district complex of significant value. It is as a district that the buildings are of primary significance. Architecture, landscape architecture and arts and crafts all meld into a unique collective ambience. Fortunately, much of this original character remains. Secondary themes consist of the buildings' social history role during World War II, their relation to the CCC program and their history within the canyon's visitor accessibility development.

For the most part, modifications to date have not overly compromised this unity. While respecting that the buildings are actively used and periodic repairs and modifications are required, sensitivity and the compliance process must guide all subsequent development, regardless of its nature, to ensure continuity of preservation.

In respect to this level of significance and retained character, the focus of the approved work is preservation through the replacement of deteriorated fabric "in kind." The use of contemporary materials and methods (i.e. electrical wiremold, fiberglass rods, column base flashing, etc.) will retain the complex character, restore missing or deteriorated elements and ensure a proper response to life-cycle costing.

C. DESCRIPTION

All of the buildings are reflective of vernacular southwest "puebloesque" architecture in both style and construction, the exception being the use of native stone rather than adobe brick. The typical wall construction consists of coursed ashlar tuff, a pyroclastic igneous rock composed of compacted fragments of ash and gas-rich rock material broken and deposited through

volcanic activity. Exterior walls have a slight batter and average 1'-9" thick with a rubble fill. Three different mortar mixes were reportedly utilized, depending upon location--a 1:1:6 (cement, lime, sand) mixture below grade and at vigas, windows and doors; a mix of pojuaque soil and sand mixture, and a mixture of "1 part cement and 3 parts of fine aggregates and with an addition of 10% lime to volume of cement used." Originally a mud stucco partially coated the exterior to give an aged appearance. Those buildings with an entrance portal (Building Nos. 2, 15, 20, 23, 24, 28 and 29) as well as the patio/courtyard portals had their covered walls painted. On these portal areas and on Building No. 26, subsequent coating has used a cement-based stucco mix.

The roof construction reflects typical southwest architecture and its evolution from early timber-and-earth roof construction techniques. A primary system of peeled logs--vigas--provides the structural system with a secondary system of smaller logs--latias--overhead. These vigas average eight to ten inches in diameter, are spaced approximately 2'-6" apart, and in many cases are sawn on top to provide a wider bearing for the latias. Many originally extended through and beyond the wall, but most of the exposed vigas were merely "stubs." Those vigas that had no extension were embedded within the wall and pinned into the adjacent masonry with a steel dowel. On those vigas which extended over a portal, a similar dowel pinned the viga to the adzed wood lintel. Running perpendicular or in a herringbone pattern to the vigas, the smaller aspen latias serve as the interior ceiling. Above these latias run sloped 2x6 rafters with 1-inch solid sheathing which give the roof its finish slope. On several of the buildings, this area between the latias and the rafters has screened vents on the exterior walls. Several of the maintenance-oriented buildings have no latias and the exposed sheathing rests directly on the vigas. A 4-ply built-up composition roof with metal flashing at the parapets formed the original finish roof (Illus. 3). Drainage was through channeled logs--canales--with metal flashing lining the channel and extending onto the parapet and roof. Both galvanized metal and copper were used for this flashing. In a few areas, the viga itself became the canale. Most of these canales were independent from the viga, but in those areas where the two intersected, the canale was notched to "sit" on the viga (Illus. 4). These canales extended beyond the wall an average of 2'-0" to assure that runoff was away from the wall. These different canale types are identified within the project construction drawings.

Those buildings with a portal or a major facade opening requiring intermediate support had peeled log columns with a decorative corbel--zapata--cut from 8x8s supporting the 10-inch square lintel; both the corbel and the lintel were given an adzed finish on the exposed face(s). A 3/4" diameter pin tied the three wooden elements together. Adjoining lintel members had a half-lap joint.

Two basic window types exist, all being 1-3/8-inch thick casement windows. The primary facade windows are predominately a pair of 6-lite sash while secondary facades are primarily a pair of 4-lite sash. All windows, many of which originally had screens, are set within the masonry opening without any decorative architrave. The lintel and window frame configurations vary; however, most of the lintels are composed of two wooden members with

the outer face of the exterior member having an adzed finish. The interior masonry jamb openings are splayed and have a parged surface on the interior. A three-inch thick stone forms the exterior window sill.

D. Condition

The most critical deterioration problem on the buildings is deteriorating wood, primarily the canales and vigas (Illus. 5 and 6). The initial application of preservative has been lost over the years, and exposure to rain and snow has promoted an environment of fungal attack. Natural "checking" within log members only aggravates this condition. While most of the deterioration within the vigas is isolated in the exposed areas, a number of vigas are deteriorated well into or through the wall and therefore rid the member of its structural load-carrying capacity. Many of the original viga "stubs" have been periodically replaced and continue to be a major maintenance expenditure. The prevalent method of replacement has been to remove the exposed deteriorated area or "stub" and (re)install a new "stub," mortared in place; many of these are now loose and displaced. On a number of buildings, they have been cut off and parged over. Likewise, some of the canales have been replaced, though a much smaller percentage than the vigas. One concern in any viga or canale replacement is that the new log member match the original in diameter, particularly in viga replacement over portals where both the original and the replacement are visible. Cement parging around replacement canales and vigas is also to be avoided. Similar deterioration is occurring on the portal columns, latias and window and door lintels (Illus. 7 and 8).

Most of the original composition roofs have been replaced (at least once) over the years and were again replaced in 1980, this time with a membrane roof coating. This work consisted of removal of the existing roofing material, installing a 4-inch thick layer of sprayed polyurethane foam insulation to the primed sheathing and the application of a spray-applied urethane elastomer coating over the roof and parapets. The most immediate concern with these roofs relates to current leaks in a number of locations due to a lack of adequate quality control during installation. Numerous blisters exist throughout the roofs which in time will also create additional leaks (Illus. 9 and 10). In at least one instance, Building No. 21, rotten sheathing was not replaced prior to installation and now its eventual replacement requires additional demolition work. Similar conditions are suspected to exist elsewhere, but are difficult to assess in a nondestructive manner. A final problem with the roofs is lack of adhesion at the parapets, another source of potential leakage.

E. Approved Treatment

The approved work is scheduled to be performed through a combination of SWR day-labor and (SWR administered) 8a contract. This work is identified within the attached drawings and discussed below.

As roofing is an integral component of this work, an approach toward resolution of the existing roof problems was a criteria within the execution of this design work. Discussions have been held for some time on correcting the existing leaks through warranty repair. No guarantee is provided for

the roof blisters, areas of water ponding or loss of adhesion at the parapets. However, the material supplier has given an estimate of $20,000 to repair limited areas of the roof parapets on several buildings. On April 16, 1985, these problems were discussed at the SWR with all parties present. At that time, it was proposed that the replacement of all roofs be programmed. The majority of the canale project is oriented towards, but not constrained by, the acceptance of this proposal. A case in point is the metal flashing. Historically, both galvanized and copper flashing were utilized. As funding levels differed yearly during construction, so too did the quality of materials used. It is felt that due to the cost of this canale replacement work and the possibility of long-term performance roofs in the near future, that a high quality canale flashing, copper, be utilized throughout so that the final product will be as successful as possible.

Where review of this proposal became critical was on the proposed work for Building Nos. 13, 21 and 2/9 portal. The approved work identified below involves new EPDM membrane system roofs, thus the initiation of a new system which in time will be utilized on all buildings. It is advisable for a park such as Bandelier to have all roofs be of a similar material. This is historically accurate, easier to maintain and is aesthetically compatible as one descends into the canyon and the roofs are visible.

Canales

Replace all existing canales. This work will replace all canales on all buildings except Building Nos. 1 and 30. The work will consist of removal of the roofing system as required (including deteriorated sheathing and existing metal flashing) and installing copper-lined, pressure-treated (CCA) stained canales to match the originals. Two channel designs were initially employed, a "V" and a "U" in cross section. As less than 5% were of the former design and to maximize the water discharge capacity, all canale channels will have a "U" cross section as shown. Most of the canale openings have masonry overhead which creates a drainage port rather than an open cut through the wall. However, nine buildings currently have no wall over head; in some cases this is an original detail, while in others it is not. To lessen the impact on the existing roofs' flashing and the need for subsequent repairs, this conditon should remain until roof replacement is scheduled, at which time this replacement of original details can be performed and the parapets properly flashed. The exception to this is Building No. 13 (see below).

An exception to canale replacement "in-kind" is the canales which drain one roof level onto another through a roof division parapet. These are not visible from the ground on any of the buildings except the visitor center. To lessen future maintenance and replacement requirements, the replacement of these canales will be made with a PVC scupper, painted to match the adjacent masonry on all pertinent buildings except No. 2, where they will be replaced "in-kind." However, for similar reasons to deferring the canale openings' restoration, this work should also occur during future roof replacement. Instead, this project will apply an additional urethane coating where required to halt any possible leakage.

Building No. 13

This structure has 12 primary vigas, over 40% of which are deteriorated through the wall, posing eventual structural failure (Illus. 11). Three of these vigas become canales. Due to: 1) the level of intervention required to correct this deterioration; 2) significant notches within many of the vigas from former suspended equipment; and 3) the roof condition noted earlier, the deteriorated vigas will be replaced in their entirety and a new roof installed. This work will consist of dismantling portions of the parapets and removing the sheathing as required to replace the vigas. Any sound vigas will be retained. New canales will be installed to match the originals, sound sheathing installed and the parapets rebuilt. The parapet configurations at the canales will be restored to their original configuration. A properly flashed EPDM roof membrane will then be installed.

Building No. 21

This structure has no projecting vigas, but severely deteriorated sheathing is known to exist (Illus. 12). The approved work will consist of roof removal to replace all deteriorated sheathing. At that time, any deteriorated vigas can easily be replaced and new canales installed. This work will be followed by a new EPDM roof membrane. In addition, the existing skylight will be restored through the replacement of deteriorated wood, removal of sprayed flashing on the wood and replacement of the glass as required.

2/9 Portal

This 30-foot long portal consists of two columns supporting a lintel which in turn supports a low masonry parapet. Deterioration of the columns at their base has resulted in severe settlement and deformation of the lintel and parapet (Illus. 13). In addition, the "ceiling" latias are deteriorated at their exposed edges. Several alternatives exist on correcting this condition. The first would jack the lintel back to a horizontal position and through underpinning, replace the columns and footings. This would be followed by installing new stubs to the deteriorated latias. The second approach would be dismantling and reconstruction. A third approach is a combination of the two. As jacking the lintel back to its original, level position with the parapet intact, will cause excessive bond loss within the mortar joints, the low parapet and roof sheathing will be dismantled as required to replace the latias in full. At that time, the lintel can be leveled in situ and new columns installed. New latias, non-stained but treated with a non-toxic wood preservative, a new EPDM roof and restored parapets will then be installed. All flagstone removed for the new footings will be reset.

Utility Removal

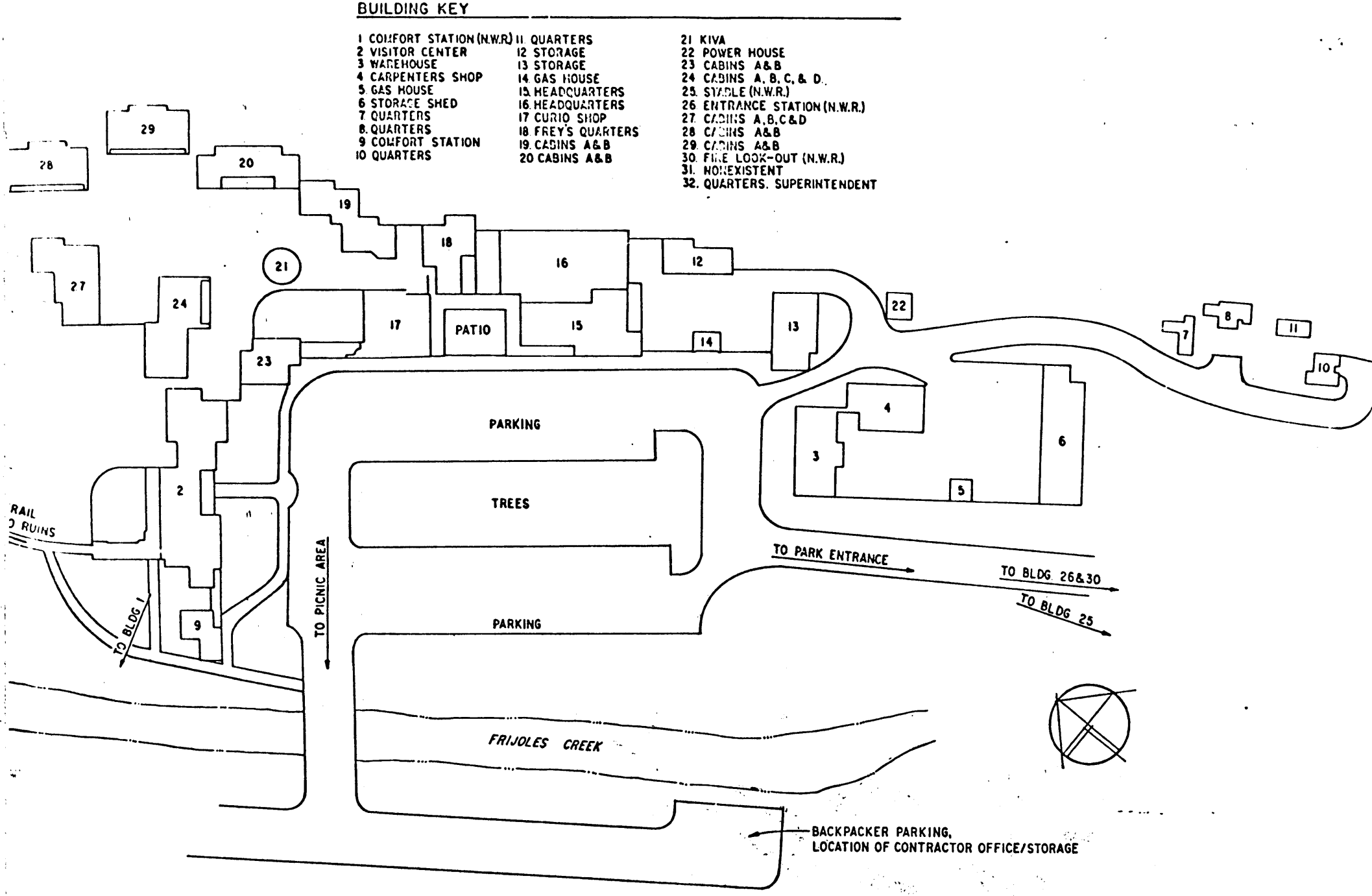
The ongoing utility system project consists of replacing much of the park's exterior exposed utility service. In a number of areas on roof parapets, this piping and conduit are partially embedded within the roof foam.

Rather than remove these areas and introduce the need for roofing repairs in a gas and electric contract, they are being left in situ. The work included herein is to remove this embedded material and perform the required repairs.

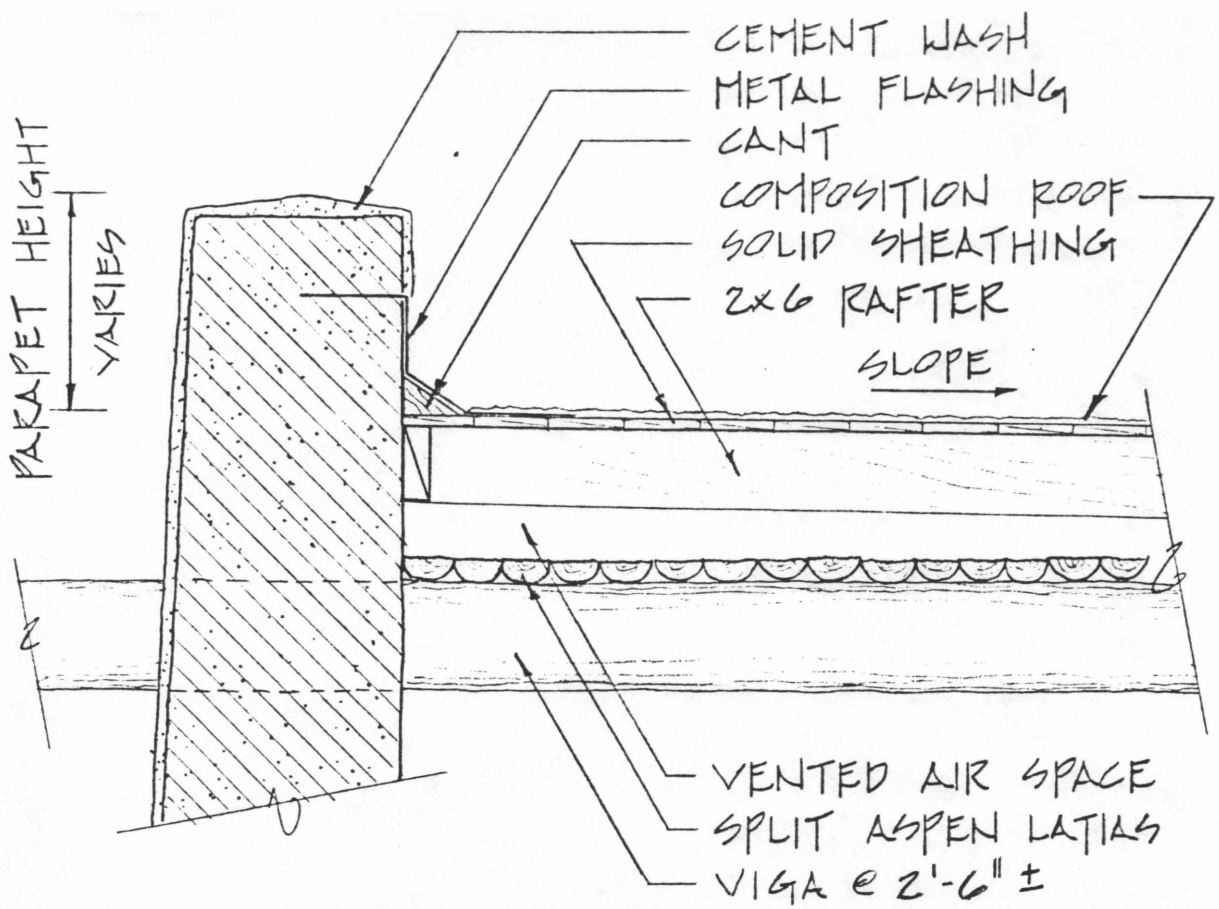
STRUCTURE NO.	L.C.S. NO.	DATE INITIATED	ORIGINAL NAME/USE	CURRENT NAME/USE	PROPOSED NAME/USE *	SQUARE FOOTAGE
1	23272	1934	Comfort Station	Same	Same	500
2	23231	1935	Headquarters & Museum	Visitor Center	Same	5,000
3	23230	1935	Warehouse	Same	Offices	1,200
4	23229	1936	Carpenter Shop	Same	Curator Office & Storage	1,100
4A		1939	Heater Room	Same	Same	120
5	23228	1935	Gas and Oil House	Same	Same	180
6	23220	1936	Garage	Storage	Same	2,000
7	23227	1936	Residence No. 1	Residence	Same	1,400
8	23226	1937	Residence No. 2	Residence	Same	1,500
9	23224	1935	Comfort Station	Same	Same	650
10	23222	1937	Quarters	V.I.P. Quarters	Same	1,400
10A		1940	Laundry	Same	Same	180
11	23223	1937	Residence No. 3	Same	Same	1,200
12	23225	1937	Storage	Same	Offices	650
13	23221	1939	Storage	Training Room	Same	1,300
14	23219	1937	Oil and Gas House	Office Storage	Same	400
15	23218	1937	Lunch Room	Admin. Hdqtrs.	Same	5,100
16		1938	Dormitory			
17	23217	1939	Hotel Lobby & Sales Room	Curio Shop	Same	2,000
18	23216	1939	Operator's Residence	Residence	Same	1,200
19	23215	1939	Cabin "A"	Quarters	Same	1,000
20	23283	1939	Cabin "B"	Quarters	Same	1,200
21	23271	1939	Comfort Station and Boiler Room	Laundry and Storage	Same	800
22	23270	1939	Power House	Same	Same	400
23	23269	1940	Cabin Group "D"	Offices	Same	800
24	23249	1939	Cabin Group "C"	Quarters (A & B)	Same	
				Offices (C & D)	Quarters	1,400
25	23248	1939	Stable	Same	Same	1,800
26	23247	1940	Checking Station	Same	Same	170
27	23246	1940	Cabin Group E-1	Quarters (A & B)	Same	
				Darkroom (C)	Same	1,500
				Storage (D)	Same	
28	23245	1940	Cabin Group E-2	Quarters	Same	1,100
29	23244	1940	Cabin Group E-3	Library (A)	Quarters	
				Storage (B)	Quarters	1,100
30	23243	1941	Fire Lookout	Same	Same	600
31	23242	1934	Entrance Road and Wall Stone Gutters	Same	Same	N/A
32	23241	1941	Residence No. 4	Same	Same	1,600

* PROPOSED UNDER PKG. 214

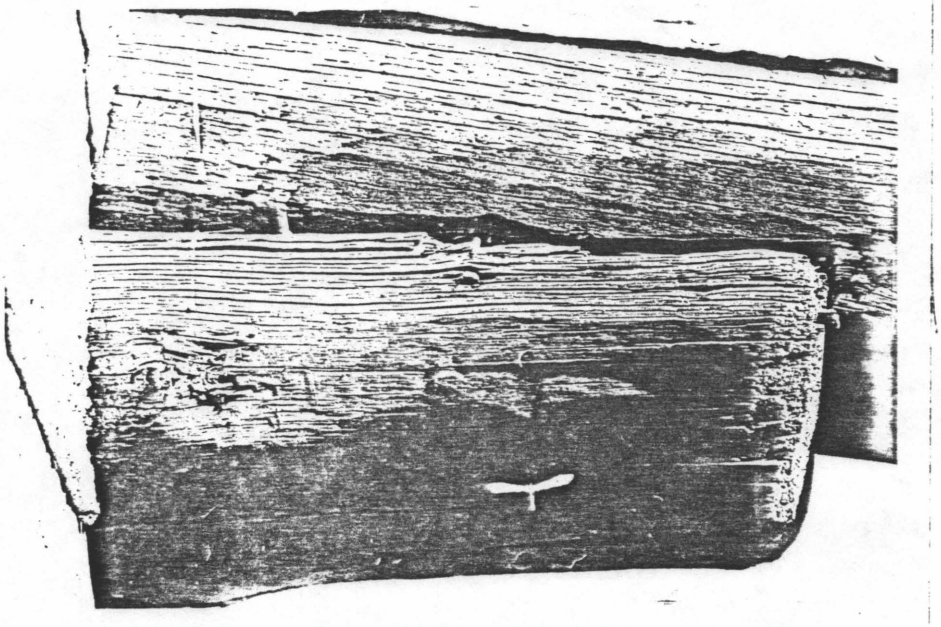
ILLUS. 1



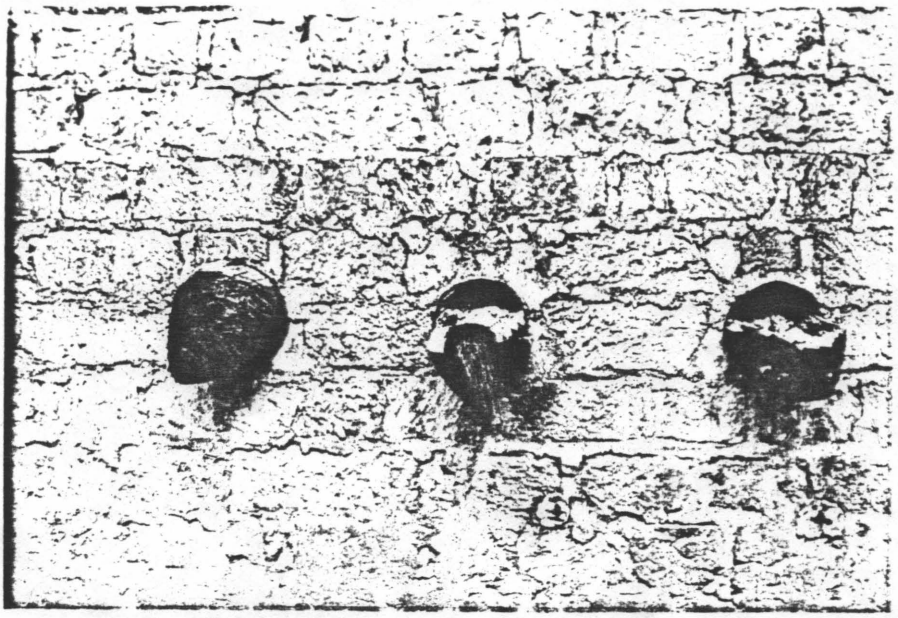
ILLUS. 2 — SITE PLAN



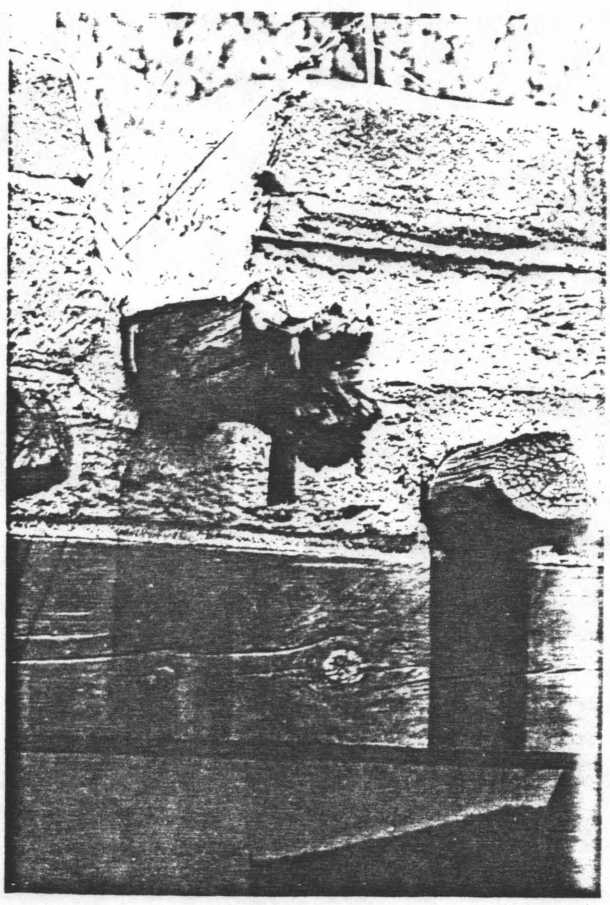
ILLUS. 3 – TYPICAL PARAPET DETAIL (ORIGINAL)
SCALE: 3/4" = 1'-0"



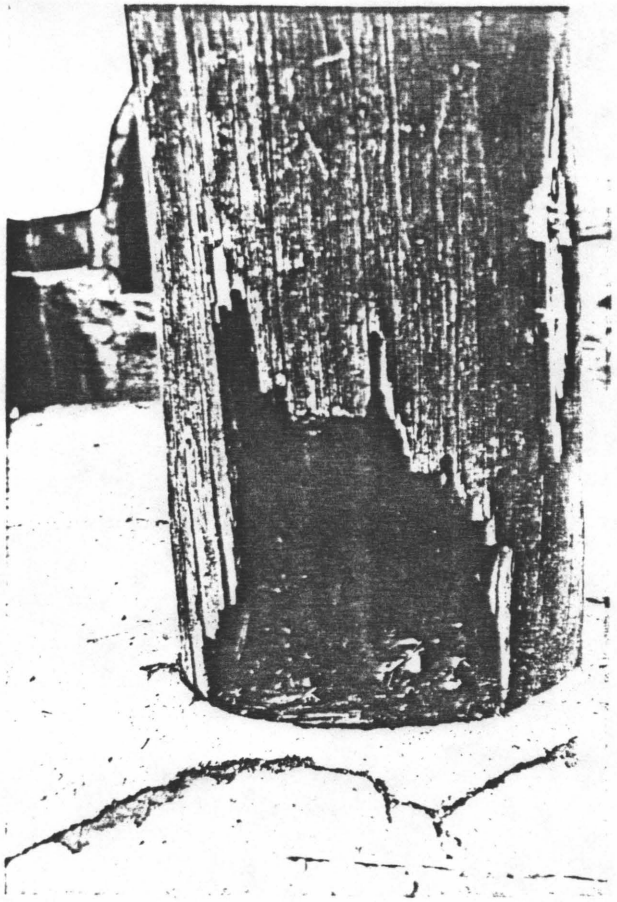
ILLUS. 4 – VIGA/CANALE INTERSECTION
NOTE CANALE NOTCH AND DIFFERENT END CONDITION ON VIGA.



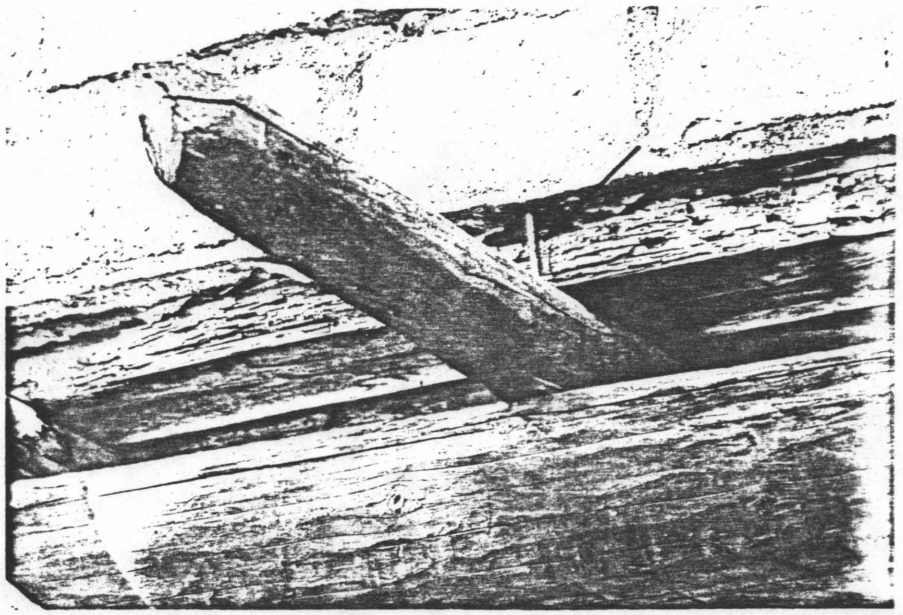
ILLUS. 5 – TYPICAL VIGA DETERIORATION



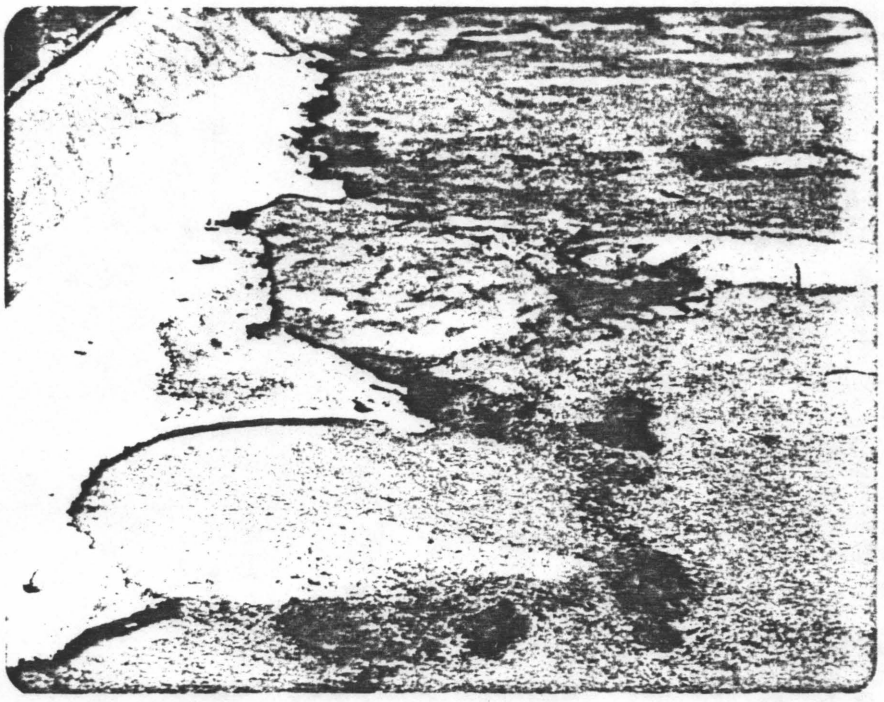
ILLUS. 6 – TYPICAL CANALE DETERIORATION



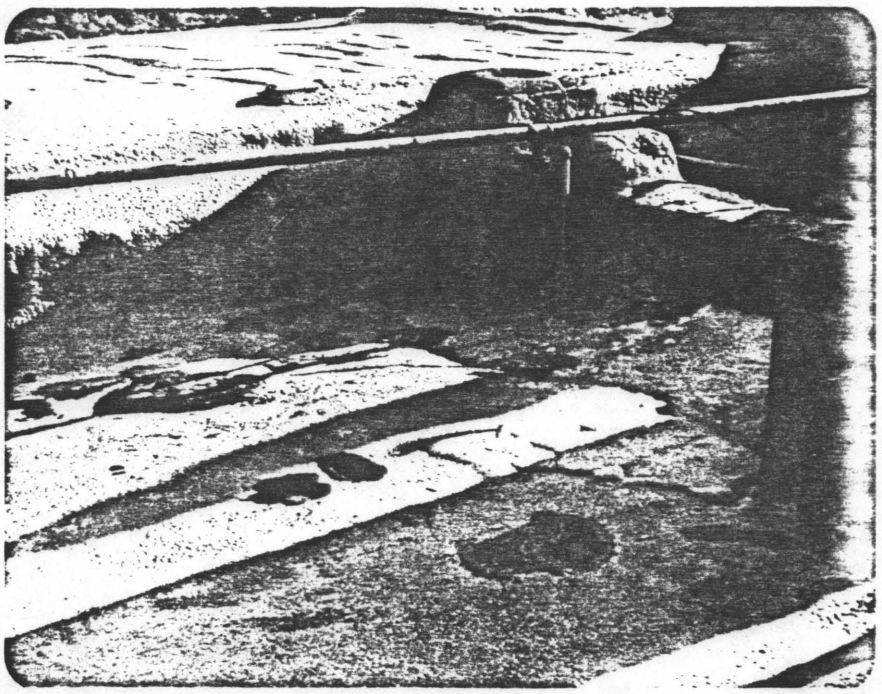
ILLUS. 7 - COLUMN BASE DETERIORATION, BUILDING NO. 17 PORTAL



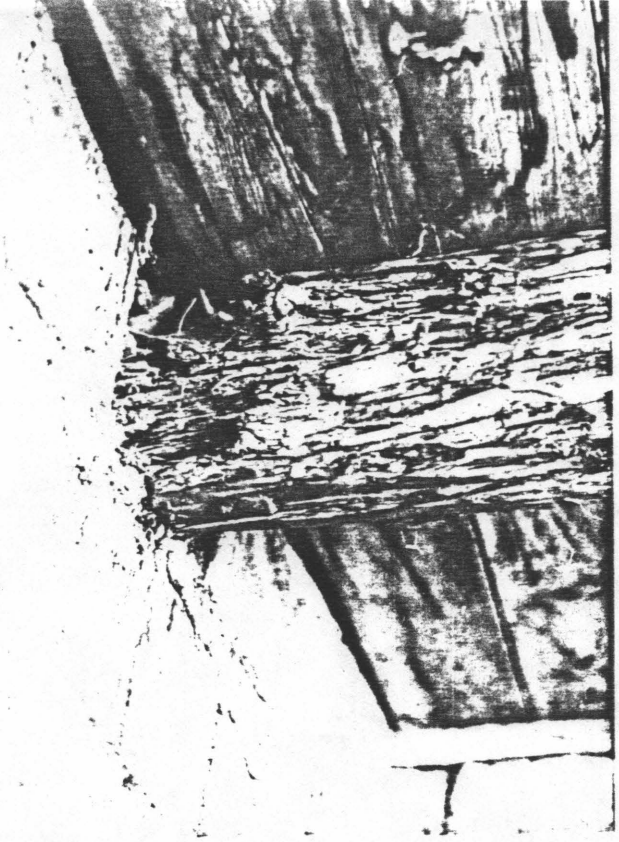
ILLUS. 8 - WOOD DETERIORATION IN PORTAL LATIAS, BUILDING NO. 2. NOTE SUPPORT PIN (ARROW).



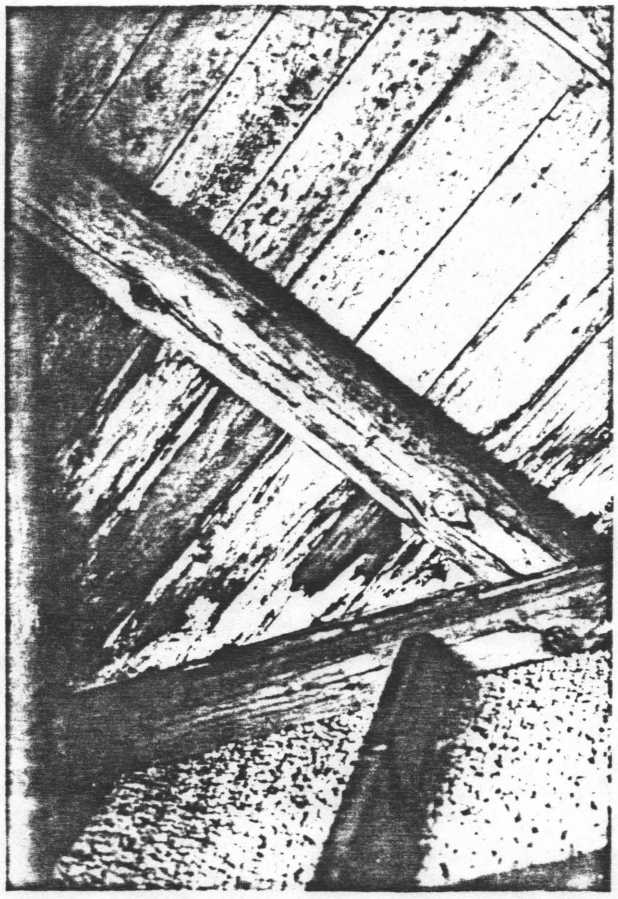
ILLUS. 9 - BLISTERING OF ROOF MEMBRANE DUE TO ENTRAPPED MOISTURE. INDICATATIVE OF MEMBRANE LEAK OR INSTALLATION OVER WET SUBSTRATE.



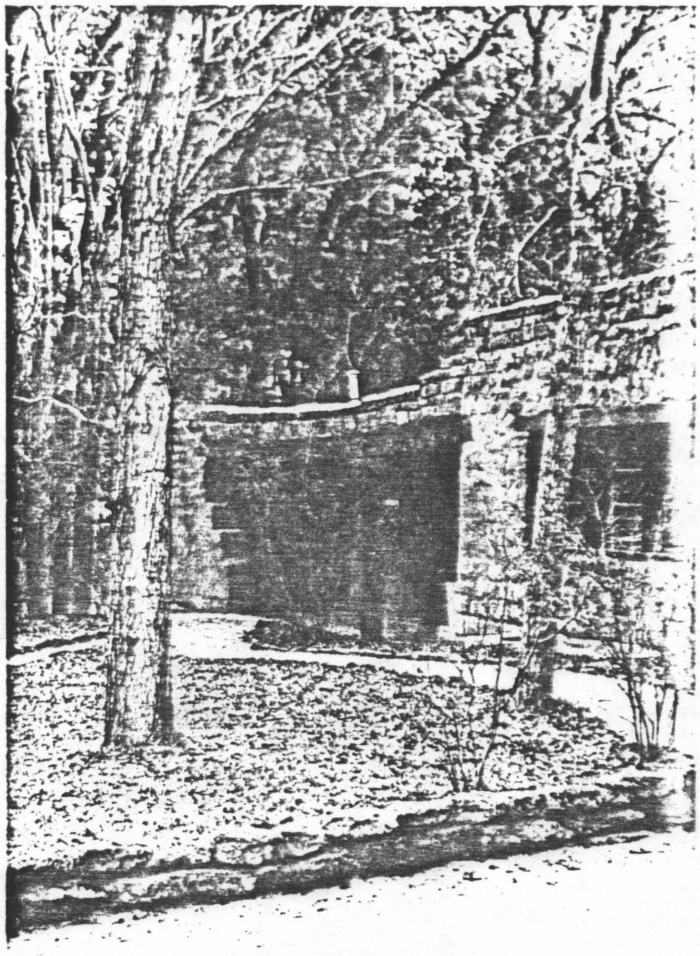
ILLUS. 10 - AREA OF BLDG. 15/16 ROOF SHOWING SEVERAL PARK EFFORTS AT SEALING LEAKS.



ILLUS. 11 - VIGA DETERIORATION THROUGH THE WALL AND POSING POTENTIAL FAILURE, BUILDING NO. 13

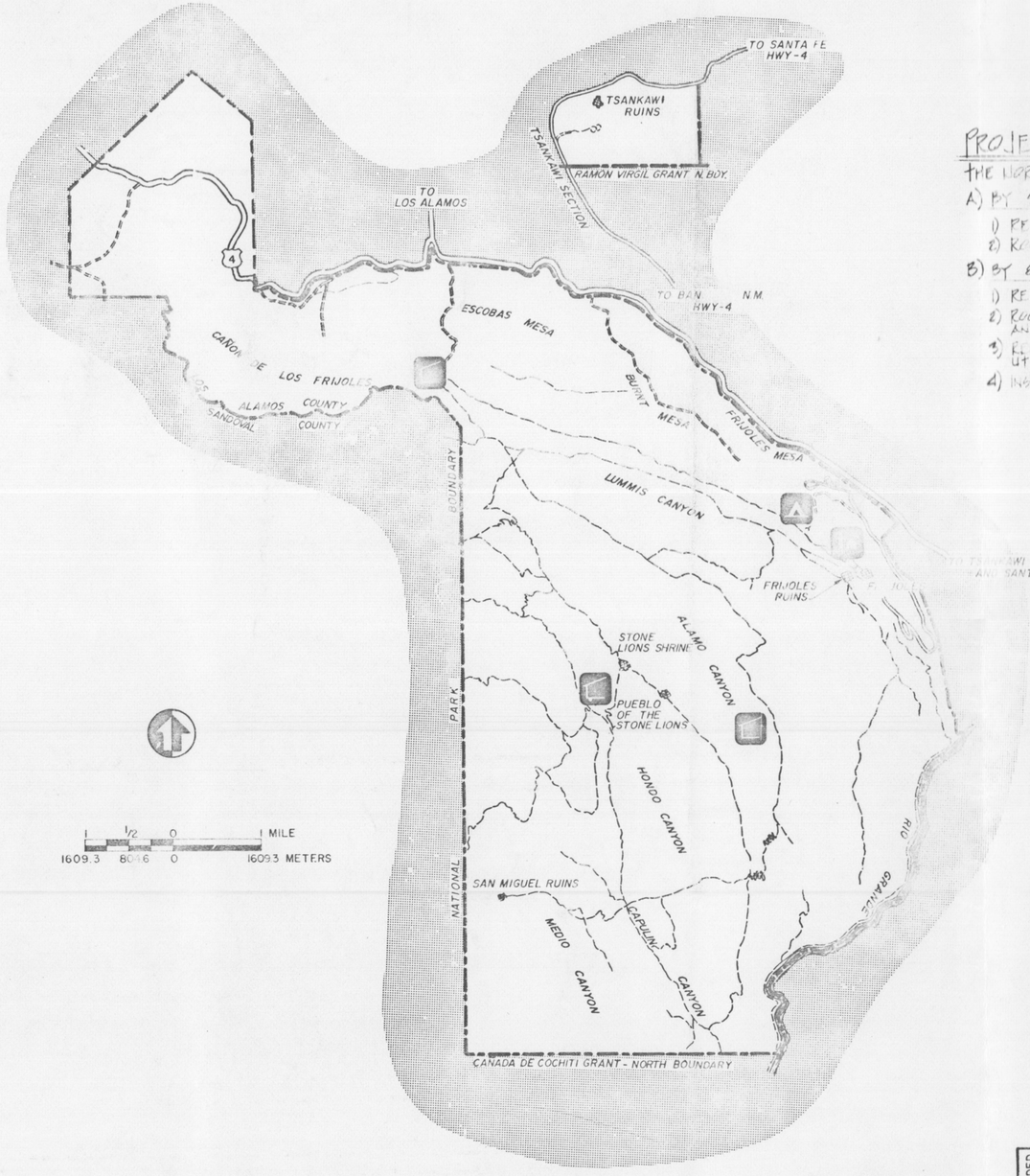


ILLUS. 12 — UNDERSIDE OF ROOF SHEATHING, BUILDING NO. 21. NOTE DISCOLORATION INDICATING WOOD CELLULOSE UNDER FUNGAL ATTACK.



ILLUS. 13 – PORTAL BETWEEN BUILDING NOS. 2 & 9 SHOWING LINTEL/PARAPET DEFORMATION.

B. BAND
IE3
013234



1/2 0 1 MILE
1609.3 804.6 0 1609.3 METERS

REDUCED SIZE REPRODUCTION

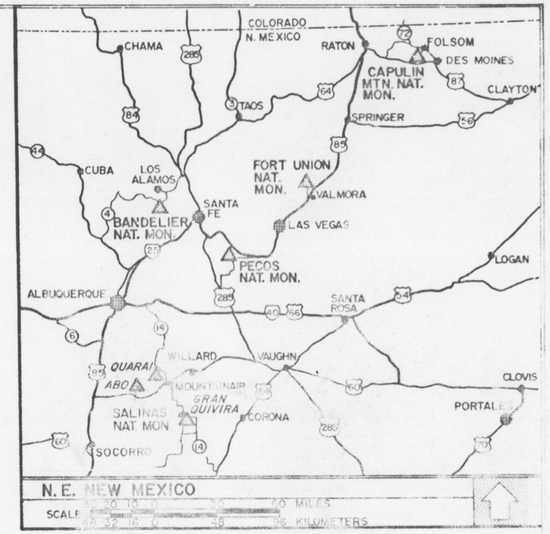
BASIC DATA 315/20,000-A JULY 1972 DSC

PROJECT DESCRIPTION

THE WORK OF THIS CONTRACT CONSISTS OF:

A) BY SWR-SWCRC DAY LABOR
   1) REPLACEMENT OF CANALES AS SHOWN AND
   2) ROOF AND MISC. REPAIR WORK AS SHOWN.

B) BY BA CONTRACT NO. CX 7029 5 0005
   1) REPLACEMENT OF CANALES AS SHOWN,
   2) ROOF REPAIR FLASHING FOR SWR-SWCRC AND CONTRACTOR INSTALLED CANALES,
   3) REMOVAL AND REPAIRS TO ABANDONED UTILITY LINES AS DIRECTED, AND
   4) INSTALLATION OF NEW MEMBRANE ROOFS AS SHOWN.



LEGEND

- MONUMENT BOUNDARY
- PAVED ROAD
- UNPAVED ROAD
- TRAIL
- PUEBLO RUIN
- TRAIL SHELTER
- HEADQUARTERS
- CAMPGROUND

INDEX

SHEET No.	TITLE
1	COVER SHEET
2	ROOF PLAN
3	ROOF PLAN
4	GENERAL DETAILS
5	CANALE TYPES A, B & C DETAILS
6	CANALE TYPES D, E, F & G DETAILS
7	CANALE TYPES H, I, J, K, L, M & N DETAILS
8	2/9 PORTAL DETAILS

RECOMMENDED
Assistant Manager — Date 6 June 85
JOHN HUNTER, Superintendent — 5/10/85
APPROVED ROBERT KERR, Director – Region — 5/24/85

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

PREPARED COPELAND
DESIGNED R. BURGHER
DRAWN THORSON
CHECKED 6/85
DATE

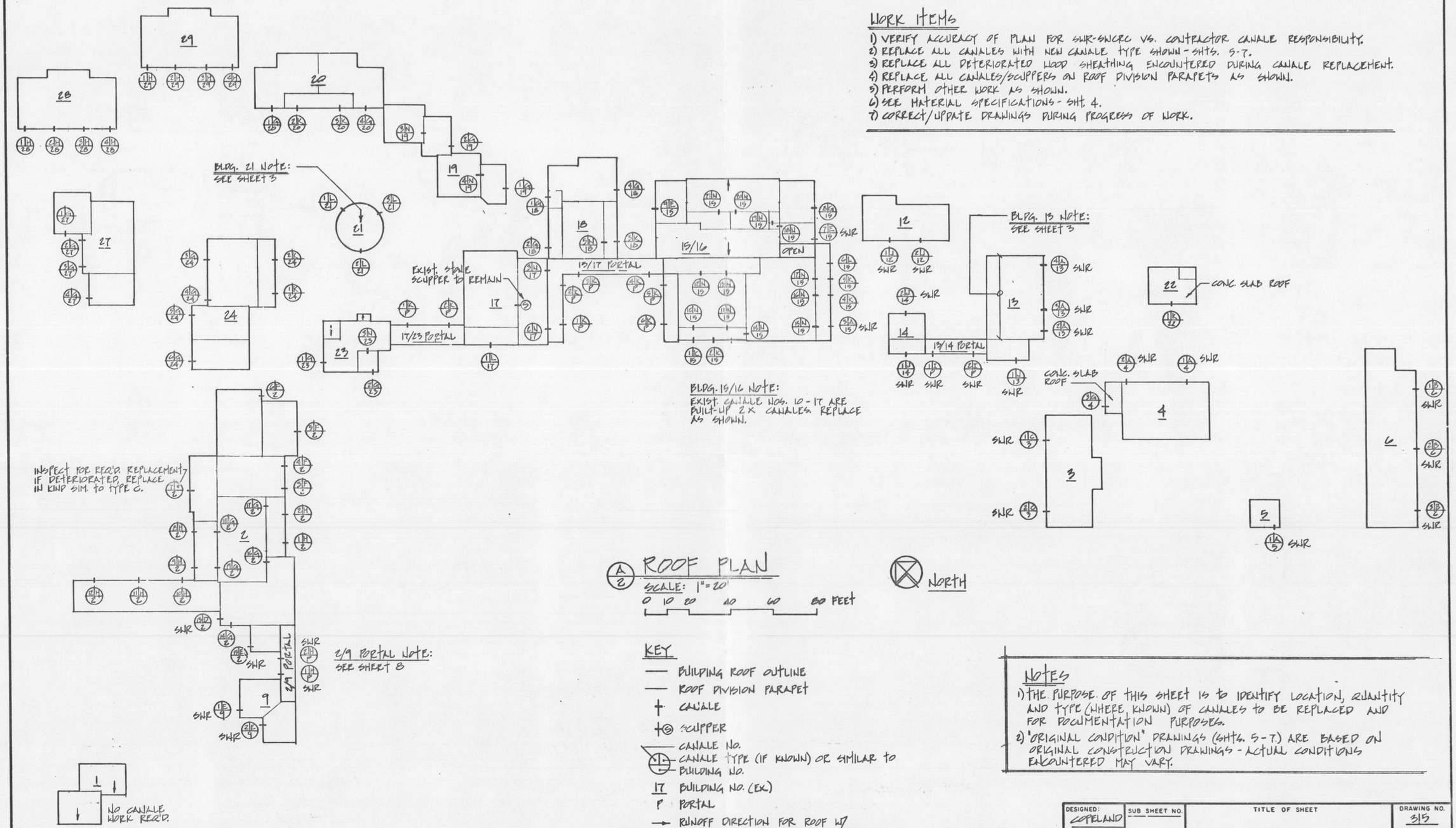
TITLE OF DRAWING
REPLACE, CANALES
MISC. ROOF REPAIRS
NAME OF PARK
BANDELIER NATIONAL MONUMENT
SOUTHWEST REGION — SANDOVAL COUNTY — N. MEXICO STATE

DRAWING NO 315 / 30,030
PKG NO. 224
SHEET 1 OF 8

GPO 1974 678 ...

WORK ITEMS

1) VERIFY ACCURACY OF PLAN FOR SWR-SWCRC VS. CONTRACTOR CANALE RESPONSIBILITY.
2) REPLACE ALL CANALES WITH NEW CANALE TYPE SHOWN - SHTS. 5-7.
3) REPLACE ALL DETERIORATED WOOD SHEATHING ENCOUNTERED DURING CANALE REPLACEMENT.
4) REPLACE ALL CANALES/SCUPPERS ON ROOF DIVISION PARAPETS AS SHOWN.
5) PERFORM OTHER WORK AS SHOWN.
6) SEE MATERIAL SPECIFICATIONS - SHT. 4.
7) CORRECT/UPDATE DRAWINGS DURING PROGRESS OF WORK.



A/2 ROOF PLAN

SCALE: 1" = 20'

0 10 20 40 60 80 FEET

NORTH

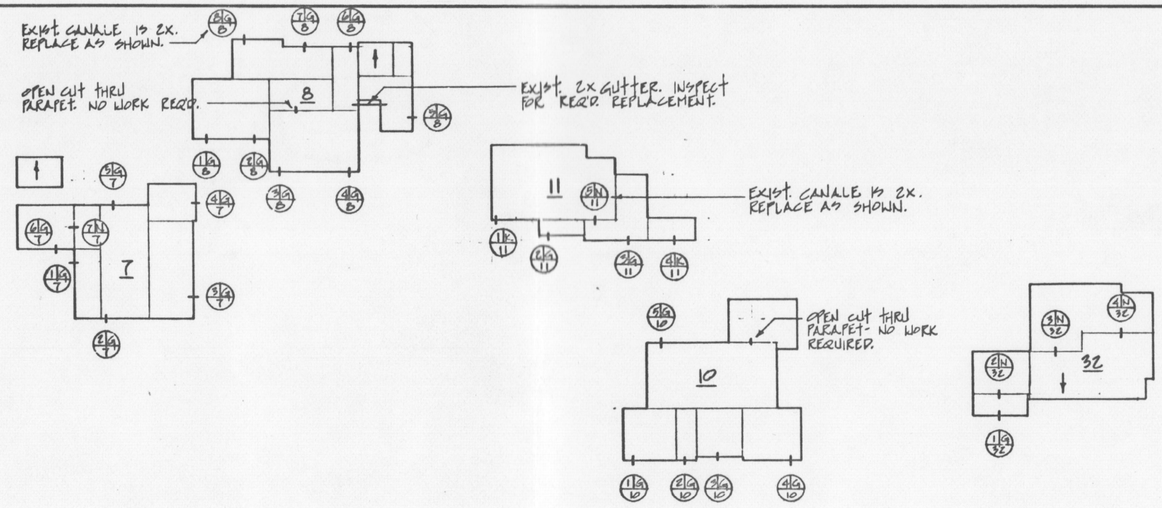
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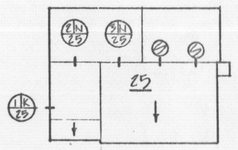
- BUILDING ROOF OUTLINE
- ROOF DIVISION PARAPET
- CANALE
- SCUPPER
- CANALE No.
- CANALE TYPE (IF KNOWN) OR SIMILAR TO BUILDING No.
- 17 BUILDING No. (EX.)
- P PORTAL
- RUNOFF DIRECTION FOR ROOF W/ SHED/GUTTER DRAINAGE (NO CANALES)
- SWR CANALES TO BE REPLACED AND OTHER WORK TO BE PERFORMED BY SWR-SWCRC

NOTES

1) THE PURPOSE OF THIS SHEET IS TO IDENTIFY LOCATION, QUANTITY AND TYPE (WHERE KNOWN) OF CANALES TO BE REPLACED AND FOR DOCUMENTATION PURPOSES.
2) 'ORIGINAL CONDITION' DRAWINGS (SHTS. 5-7) ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS - ACTUAL CONDITIONS ENCOUNTERED MAY VARY.

DESIGNED: COPELAND	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 315 80,030
DRAWN: COPELAND		ROOF PLAN	PKG. NO. 224
TECH. REVIEW: THORSEN			SHEET 2 OF 8
DATE: 6/85			





ROOF PLAN

SCALE: 1" = 20'

0 10 20 40 60 80 FEET

—SEE SHEET 2 FOR KEY—

NORTH

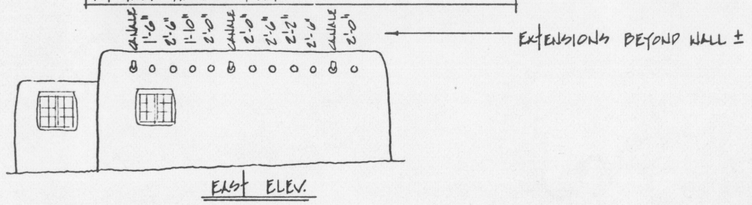
SWR 26

SEE E/7

BLDG. 13 WORK

1) DOCUMENT EXISTING CONDITIONS TO BE REPRODUCED IN NEW WORK.
2) REMOVE EXIST. ROOF MEMBRANE, FOAM & SHEATHING.
3) DISMANTLE PARAPET AS REQ'D. FOR REPLACING ALL DETERIORATED VIGAS IN FULL. NEW VIGAS SHALL BE 10" DIA. W/ EXTENSION AS SHOWN BELOW. CLEAN STONE OF FOAM OVERSPRAY & SALVAGE FOR REUSE.
4) NEW CANALES TO BE SIM. TO "TYPE A" - NEW WORK.
5) INSTALL SEAL @ WEST ELEV. LINTEL SIM. TO (F/4) & AS SPEC.
6) REPLACE PARAPET & SHEATHING - SEE (E/4)
7) INSTALL NEW INSULATED ROOF (BY CONTRACTOR)

REFER to DRWG. NO. NM/BAN 2029 (4/37) ON FILE AT PARK HEADQUARTERS



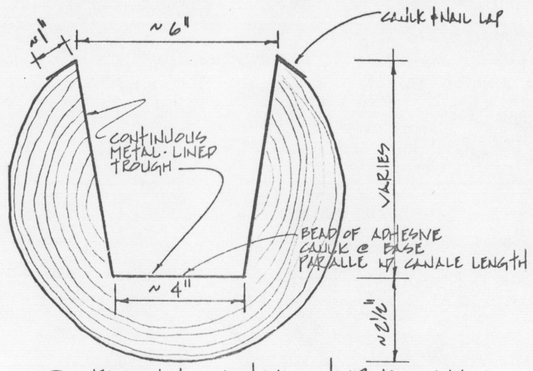
BLDG. 21 WORK

SWR

1) REMOVE EXIST. ROOF MEMBRANE & FOAM. REMOVE OVERSPRAY ON PARAPETS.
2) REPLACE ALL DETERIORATED SHEATHING.
3) INSPECT VIGAS FOR DETERIORATION. IF REQ'D., REMOVE SHEATHING & DISMANTE PARAPET AS REQ'D. TO REPLACE VIGA IN FULL. REPLACE SHEATHING & REBUILD PARAPET.
4) REPAIR ANY DAMAGES TO INTERIOR CEILING TO MATCH EXIST. CONDITIONS.
5) REPLACE DETERIORATED WOOD WITHIN ROOF SKYLIGHT. REMOVE ROOF OVERSPRAY ON WOOD MEMBERS TO REMAIN.
6) INSTALL NEW GLASS IN ROOF SKYLIGHT.
7) INSTALL NEW INSULATED ROOF (BY CONTRACTOR)

REFER to DRWG. NO. NM/BAN 2034 (6/38) ON FILE AT PARK HEADQUARTERS

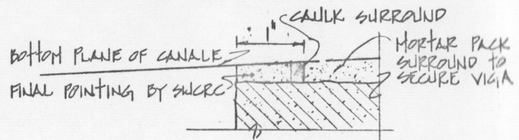
DESIGNED: COPELAND	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 315 80,030
DRAWN: COPELAND		ROOF PLAN	PKG. NO. 114
TECH. REVIEW: THORSON			SHEET 3 OF 8
DATE: 6/85			



A/4 FLASHING DETAIL - TYP. FOR ALL

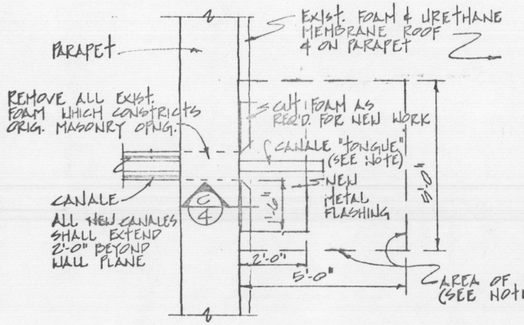
HALF SIZE

Note: REMOVE EXIST. CEMENT PATCHES AROUND CANALES AND INSTALL NEW CANALES AS CLOSE AS POSSIBLE TO ORIGINAL DIAMETER.



D/4 CANALE SEAL @ WALL - TYP. FOR ALL

FULL SIZE

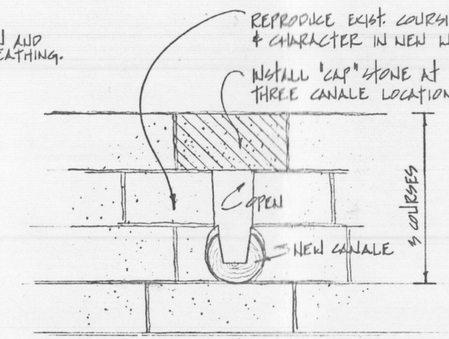


Notes:

1) WHERE POSSIBLE, ATTACH CANALE "TONGUE" THROUGH SHEATHING TO VIGA OR RAFTER BELOW.
2) REMOVE EXIST. ROOF FOAM AS SHOWN AND EXIST. METAL FLASHING TO EXPOSE SHEATHING. FOLLOWING CANALE & FLASHING INSTALLATION, TAPER NEW FOAM TO OPNG. & COAT.

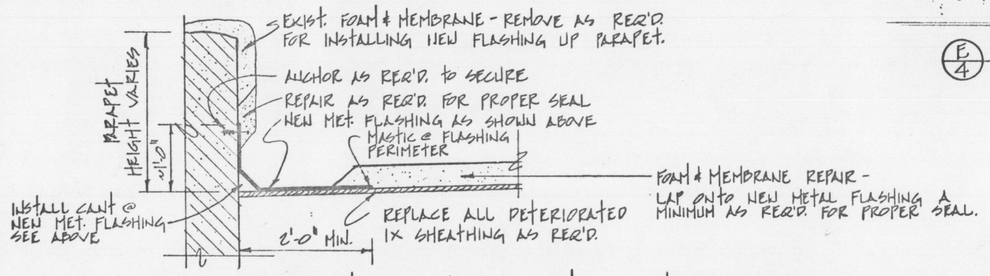
B/4 CANALE ROOF FLASHING - PLAN - TYP. FOR ALL

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



E/4 PARAPET DETAIL @ CANALE - BLDG. NO. 13

SCALE: 1" = 1'-0"



G/4 PARAPET FLASHING DETAIL - TYP. FOR ALL

SCALE: 1" = 1'-0"

PROJECT MATERIALS AND SPECIFICATIONS

SECTION 01010 – GENERAL CONDITIONS

1. The project plans and details indicate known or suspected conditions; verify during progress of work. SWR-SWCRC will be responsible for all canales which are extensions of or connected to existing vigas; contractor shall be responsible for all others. Contractor shall be responsible for final foam and urethane flashing on his as well as SWR-SWCRC installed canales.
2. Each respective party shall be responsible for damage to adjacent fabric due to weather or workmanship on their areas of responsibility.
3. Clean premises daily of work debris and ensure that any ongoing canale/roof work is protected from detrimental weather.
4. Provide adequate protection and warning to building occupants and the public of overhead work.
5. Maintain as built mark-ups during progress of work for submittal at final inspection.

SECTION 02113 – DEMOLITION

1. For all demolition operations, use approved methods to avoid damage to adjacent fabric to remain. Complete demolition that might damage new construction before starting new work. Use hand chisels to remove cement repairs around existing canales. Use least abrasive method as approved to remove foam and urethane flashing from stone substrate.
2. Prior to initiating and as work progresses, document existing conditions to be reproduced in new work.
3. Roof removal for new canale flashing: Cut existing membrane and foam and remove existing metal flashing to expose wood sheathing. Remove only that flashing as required for project execution.
4. Embedded utility removal: Remove all discontinued utility conduit and pipe as directed.
5. Dispose of all non-salvageable material legally, outside the park.

SECTION 04201 – MASONRY WORK

1. Stone: Reuse existing.
2. Mortar:
   a. Portland Cement: ASTM C150, Type I or II, white, nonstaining.
   b. Masonry cement: ASTM C91.
   c. Lime: ASTM C207, Type S. hydrated, high plasticity.
   d. Sand: ASTM C144, clean, sharp and washed free of loam, silt, and vegetable matter.
   e. Clay: Pojauque clay, source available through and furnished by park.
   f. Water: Clean and potable.
3. Mortar Mix:
   a. For setting stone and setting canales as required: 1 part portland cement, 3 parts lime, and 8 parts sand.
   b. For finish pointing: 1 part clay, 3 parts sand, and 1 part calcium aluminate. This mix may be adjusted, subject to approval of finish color, texture, and strength. Prepare test samples to determine final approved mix.
   c. Cement Wash (Parapet coping): 1 part masonry cement and 3 parts sand. Use approximately 10% (by volume) of approved non-oxidizing water repellent within water required for mixing.
4. Laying stone: Clean old mortar and relay all stone removed for new work. Set accurately into position in full bed of mortar. Bond shall match existing and keyed into existing adjacent masonry. Match existing pointing in texture, color, and tooling. Ensure that new mortar work does not stain adjacent stonework.
5. Canales: Use mortar mix as required to secure canale within masonry opening. Rake joints approximately 1 inch beyond plane of wall. When mortar has set, apply sealant around canale. Final surface pointing at canale will be by SWR-SWCRC.
6. Pointing:
   a. At canales: Allow sealant to set and point at canale with a full mortar surround. Blend new pointing into existing stonework in color, texture, and tooling.
   b. At lintels: Install sealant/mortar at wood lintels as shown. Where existing mortar is defective, remove using hand methods until sound mortar is encountered. If existing mortar is sound, use approved cutting methods to achieve a 1-inch depth cut for repointing.

SECTION 06098 – CARPENTRY WORK

1. Replace all canales as shown. Replace all vigas and columns as shown and as required. Material shall be hand-peeled, CCA-treated Ponderosa Pine. Log diameter shall equal as closely as possible the original diameter size.
   a. End of canales shall be cut perpendicular to slope of canale. Fabricate new canale by: measuring existing masonry opening, forming canale trough and approximate dimension, preservative treating, removing existing canale, final dimensioning of canale, and installation. Secure as shown and as required.
   b. End of vigas shall be adzed to a point to match existing approved end and shall have varying extension lengths as shown.
2. Replace all built-up canales as shown. Material shall be CCA treated, S4S No. 2 Grade, Douglas Fir or No 1 Grade, Southern Pine, free from knots, warpage, stain, rot, or other imperfections. Moisture content not to exceed 19 percent.
3. Replace all deteriorated sheathing encountered during canale replacement. Material shall be Utility or No. 3 Grade where not exposed underneath and No. 2 Grade where exposed, free from warpage, stain, rot, or other imperfections. Moisture content not to exceed 19 percent. Remove deteriorated sheathing to center of bearing member below. Nail each board twice at each bearing with common nails driven at a slight angle.
4. Following installation, stain all canales, vigas, and columns with an opaque stain to match existing adjacent stained fabric.
5. Rough hardware shall be nails, spikes, screws, bolts, nut, anchors, and similar items of proper size to rigidly secure members in place. All fastenings shall be hot dipped galvanized.
6. Glass for Building 21 skylight shall be patterned wire glass, 3/8 inch, meeting requirements of UBC.

SECTION 07510 – ROOFING

1. Reroof Buildings 13, 21, and 2/9 Portal as shown and repair all roof flashing at new canales and removed utility ines.
2. New roof system shall be equal to EPDM Roofing Systems as manufactured by Carlisle Tire and Rubber or approved equal. All materials shall be furnished by, or approved by, manufacturer of the roofing system. Prior to initiating work, furnish written guarantee from manufacturer on compatibility of new roof system with new canale details. The completed project shall be inspected by the manufacturer and upon approval, given a 15 year Total Roofing System Warranty.
3. Ensure that substrate is sound, clean, and free of deleterious substances. Perform new installation and existing repairs in dry weather.
4. New Roofs: Install cant at parapet perimeter. Install taper insulation board as required to attain a minimum 1/4-inch per foot slope to canales. Install, as per manufacturer's recommendations, 4 inches of rigid Styrofoam SM insulation board as manufactured by Dow Corning, or approved equal, to Buildings 13 and 21; none required on 2/9 Portal. taper insulation around canales to maintain unrestricted flow through masonry opening. Install Design "A" system and related materials. Let counterflashing into existing mortar joint a minimum of 2 inches and seal. Seal at all roof penetrations.
5. Roof Repairs: Following canale installation and removal of abandoned utilities, repair existing roofs as per manufacturer recommendations. Lap new materials onto new flashing a minimum amount as required to seal. No foam material shall constrict existing masonry opening at canale locations.

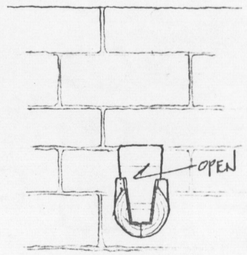
SECTION 07600 – METAL FLASHING

1. All metal flashing shall be watertight, without waves, buckles, or distortion.
2. Flashing shall be ASTM B370 24 gauge copper. Extend onto roof and parapet and into and beyond canale as shown.
3. Install cant at areas of new canale flashing as shown.
4. Use approved taper board at canale tongues as required.
5. All flashing overlaps shall be sealed and connected as required to assure proper seal.
6. Connectors and/or welds shall be of a compatible material and of proper size to rigidly secure member in place.

SECTION 07900 – SEALANTS

1. All sealant shall be a neutral cure one-part silicone. Class A, No. 790 building sealant as manufacturered by Dow Corning or approved equal. Color: At canale and lintel locations, clear; at column base locations, brown. Ensure area to receive caulk is free of loose debris prior to installation.

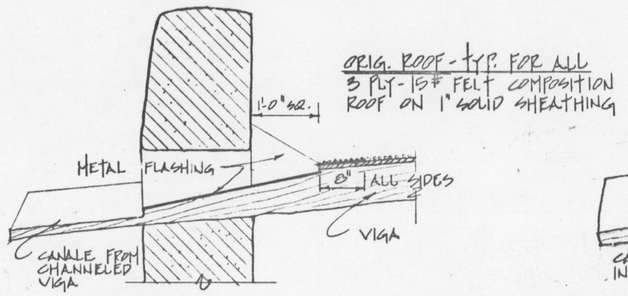
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DRAWN: COPELAND		GENERAL DETAILS	PKG. NO. 124
TECH. REVIEW: THORSON			SHEET 4 OF 8
DATE: 6/85			



A/5 END ELEV.
TYP. FOR ALL EXCEPT TYPES G, I, J & N

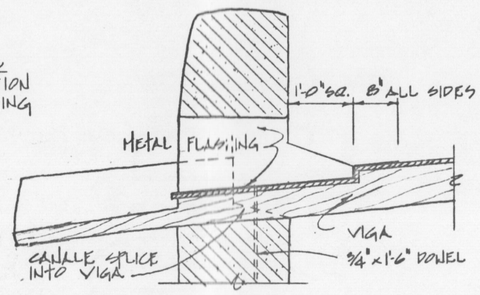
THE FOLLOWING CANALES HAVE NO MASONRY OVERHEAD:

BLDG.	CANALE NO.
2	7
10	3 & 5
11	1, 2 & 3
13	2, 3 & 4 — SEE E/4 THIS BLDG. ONLY
15	8
15/ITP	1 & 2
17	2 & 3
19	3 & 4
24	ALL



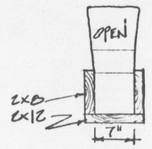
B/5 SECTION

TYPE A — ORIGINAL CONDITION



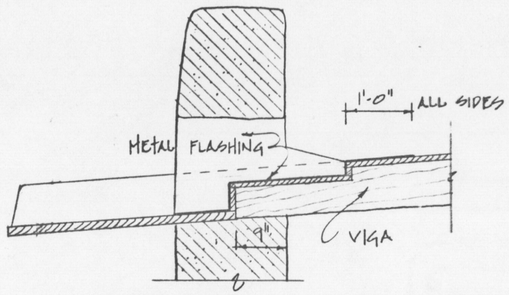
E/5 SECTION

TYPE B — ORIGAL CONDITION



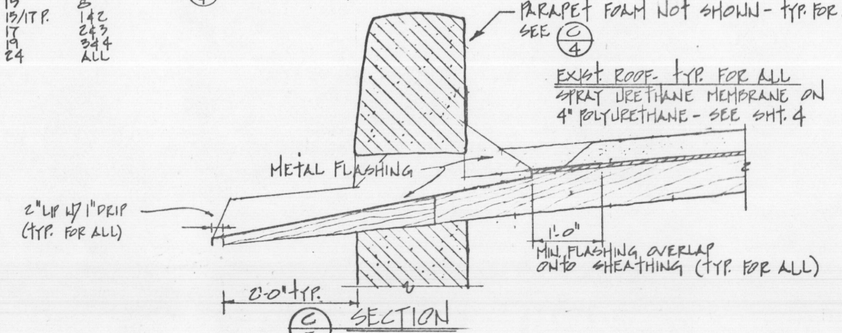
F/5 END ELEV.

TYPE C — ORIG. CONDITION

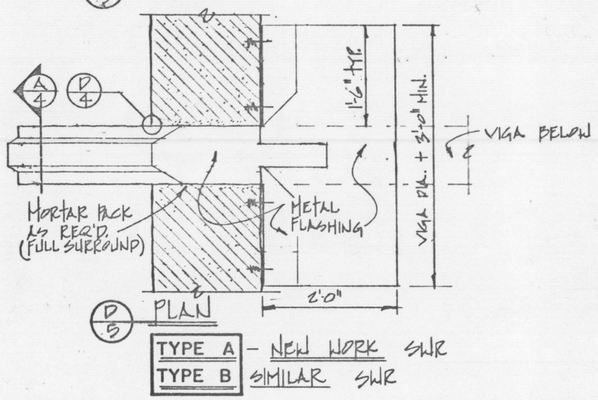


G/5 SECTION

TYPE C — ORIGINAL CONDITION



C/5 SECTION



D/5 PLAN

TYPE A — NEW WORK SWR
TYPE B SIMILAR SWR

GENERAL NOTE:

SEE SHT. 4 FOR DETAILS ON EXISTING ROOF & PARAPET REPAIRS. TYP. FOR ALL CANALE TYPES.

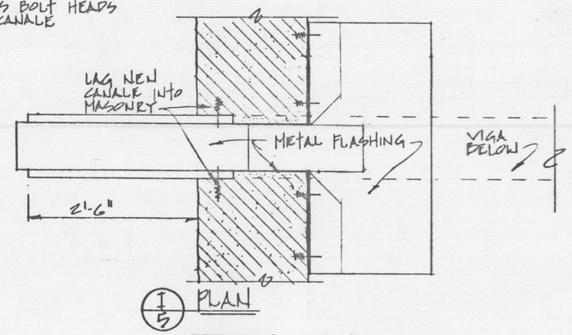
TYPES A, B, C, D & E WORK - SWR

1- SEE D/4 FOR ROOF REMOVAL.
2- REMOVE EXIST. CANALE EXTENSION & EXIST. METAL FLASHING.
3- REMOVE DETERIORATED VIGA TO SOUND MATERIAL.
4- STABILIZE VIGA AS REQ'D. *
5- REPLACE DETERIORATED SHEATHING AS REQ'D.
6- ATTACH NEW CANALE TO EXIST. VIGA (TYPES A, B, D & E)
7- ATTACH NEW CANALE TO MASONRY WALL (TYPE C)
8- INSTALL NEW METAL FLASHING.
9- SEE D/4 FOR ROOF REPAIR (BY CONTRACTOR)

* "STABILIZE VIGA" AS USED THROUGHOUT THIS SET REFERS TO PROCEDURE AS IDENTIFIED IN PRESERVATION PLAN - HISTORIC BUILDING COMPLEX BANDELIER NATIONAL MONUMENT BY CONSERVATION SERVICES

H/5 SECTION

Note:
RECESS BOLT HEADS INTO CANALE

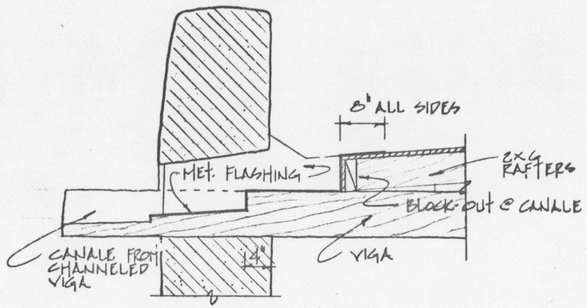


I/5 PLAN

TYPE C — NEW WORK SWR

SCALE: 1" = 1'-0"
0 1 2 3 4 FEET

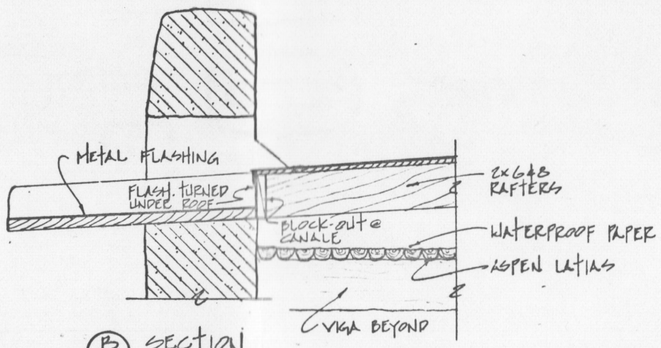
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DRAWN: COPELAND			PKG. NO. 224
TECH. REVIEW: THORSON			SHEET 5 OF 8
DATE: 6/85			



A/6 SECTION

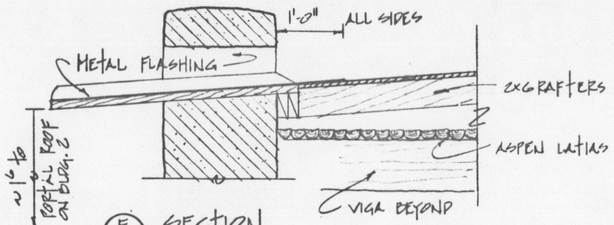
TYPE D – ORIGINAL CONDITION
TYPE E SIMILAR BUT WITH LATIAS ON TOP OF VIGA

SEE P/5 FOR NEW WORK SIM



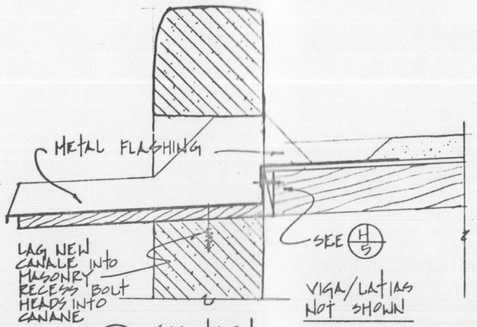
B/6 SECTION

TYPE F – ORIGINAL CONDITION

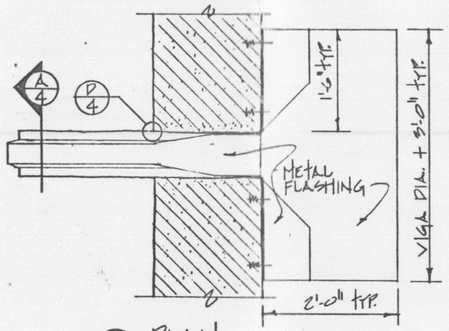


E/6 SECTION

TYPE G – ORIGINAL CONDITION

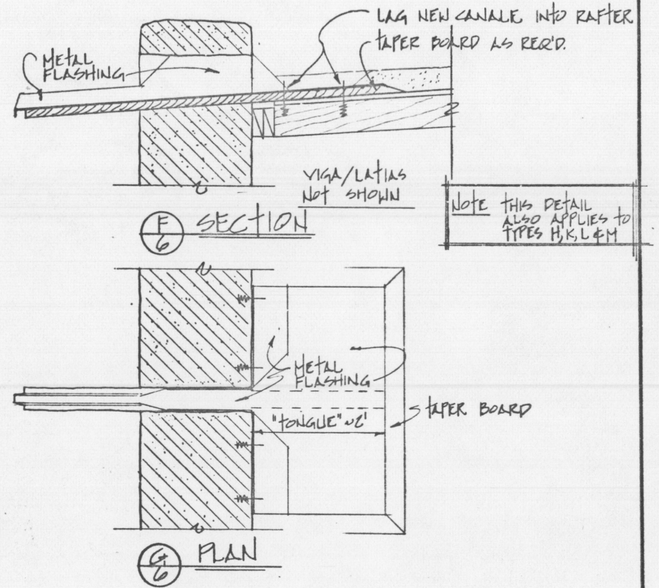


C/6 SECTION



D/6 PLAN

TYPE F – NEW WORK

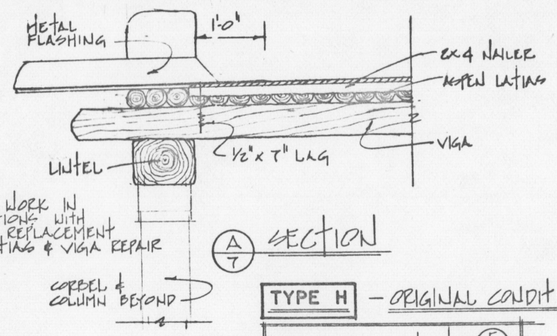


F/6 SECTION

G/6 PLAN

TYPE G – NEW WORK

DESIGNED: COPELAND DRAWN: COPELAND TECH. REVIEW: THORSON DATE: 6/85	SUB SHEET NO.	TITLE OF SHEET CANALE TYPES D, E, F & G DETAILS	DRAWING NO. 315 $0,030 PKG. NO. 224 SHEET 6 OF 8

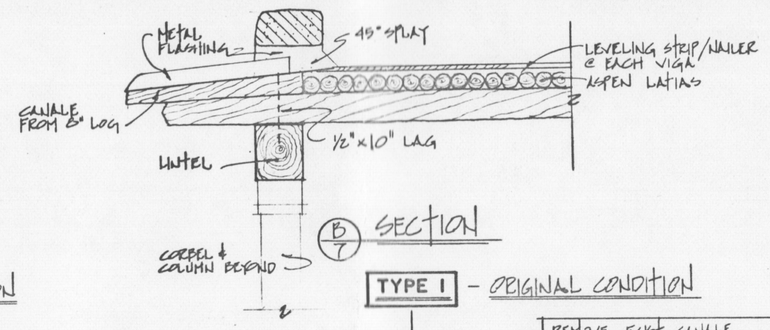


NOTE: COORDINATE WORK IN THESE LOCATIONS WITH SWR-SWCRC REPLACEMENT OF EDGE LATIAS & VIGA REPAIR

A/7 SECTION

TYPE H – ORIGINAL CONDITION

REPLACE SIM. TO F/6
LAG NEW CANALE INTO LINTEL

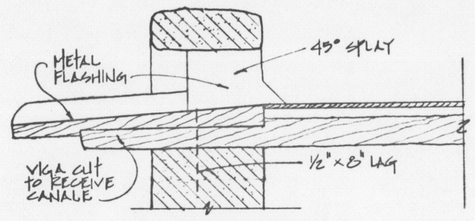


B/7 SECTION

TYPE I – ORIGINAL CONDITION

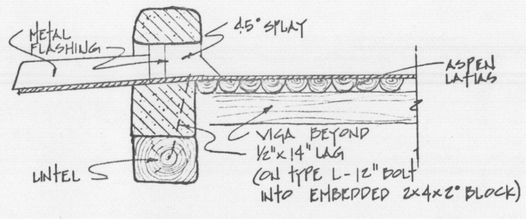
REMOVE EXIST. CANALE
STABILIZE VIGA/SPLICE STUB AS REQ'D.
INSTALL NEW CANALE TO MATCH ORIG. - CUT CANALE/VIGA TO MATCH, FLASH SIM TO OTHERS.

SWR



C/7 SECTION

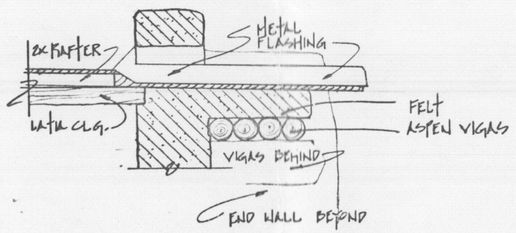
TYPE J – ORIGINAL CONDITION



D/7 SECTION

TYPE K – ORIGINAL CONDITION
TYPE L – SIMILAR BUT WITHOUT LINTEL

REPLACE SIM. TO F/6

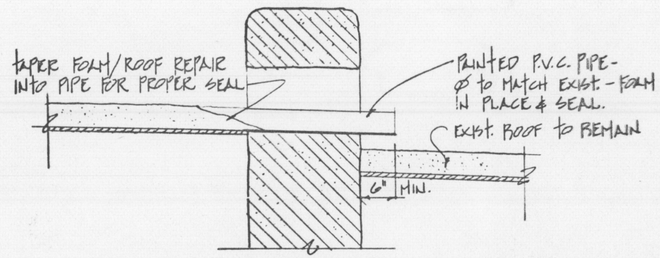


E/7 SECTION

TYPE M – ORIGINAL CONDITION

REMOVE EXIST. CANALE AND MASONRY AS REQ'D. TO REPLACE VIGAS SHOWN. REBUILD MASONRY & INSTALL NEW CANALE TO MATCH EXIST.

SWR

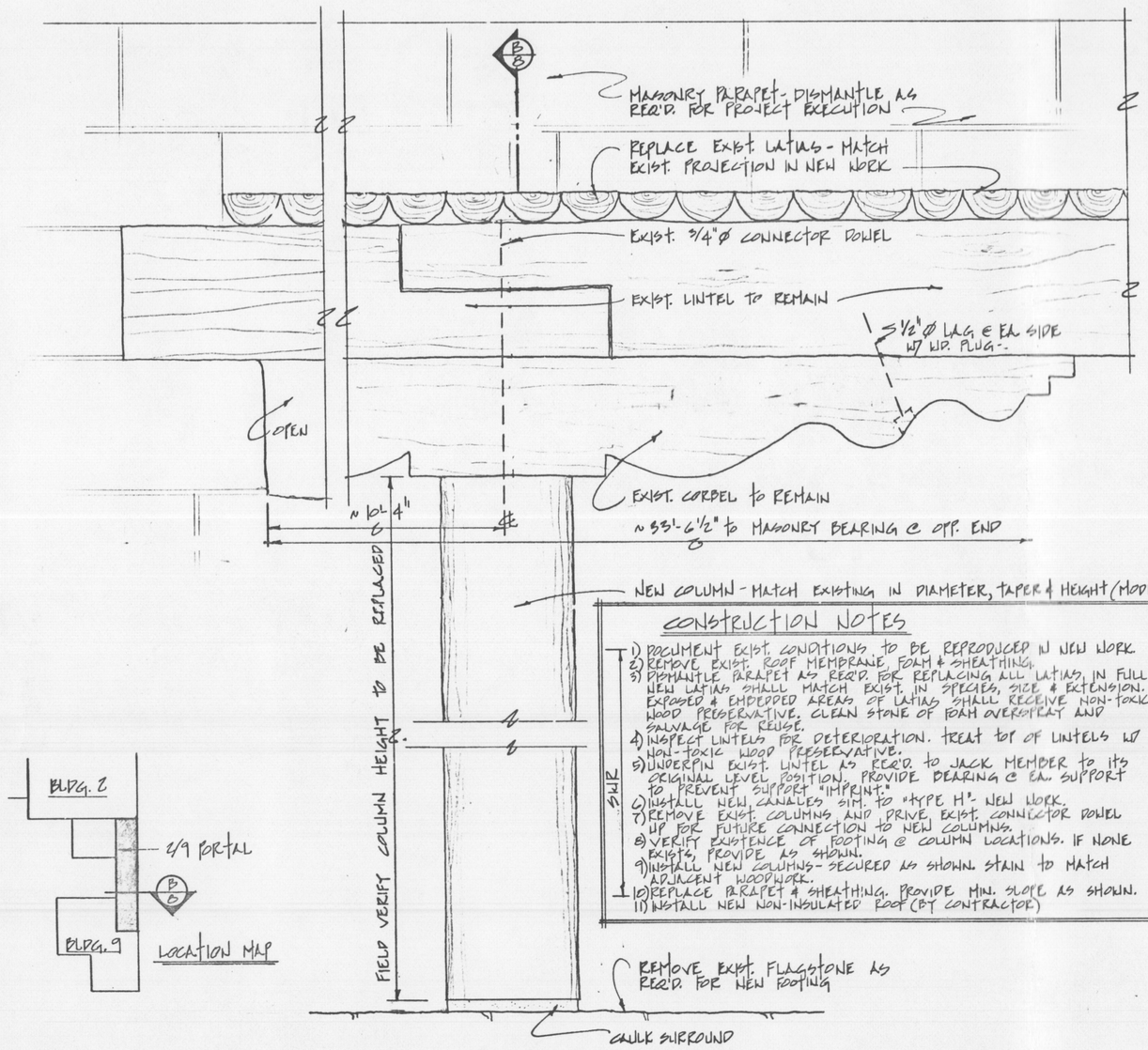


F/7 SECTION @ ROOF LEVEL CHANGE

TYPE N – NEW WORK

REPLACE EXIST. CANALES W/ PVC PIPE - PAINT TO MATCH ORIG. STONE COLOR.

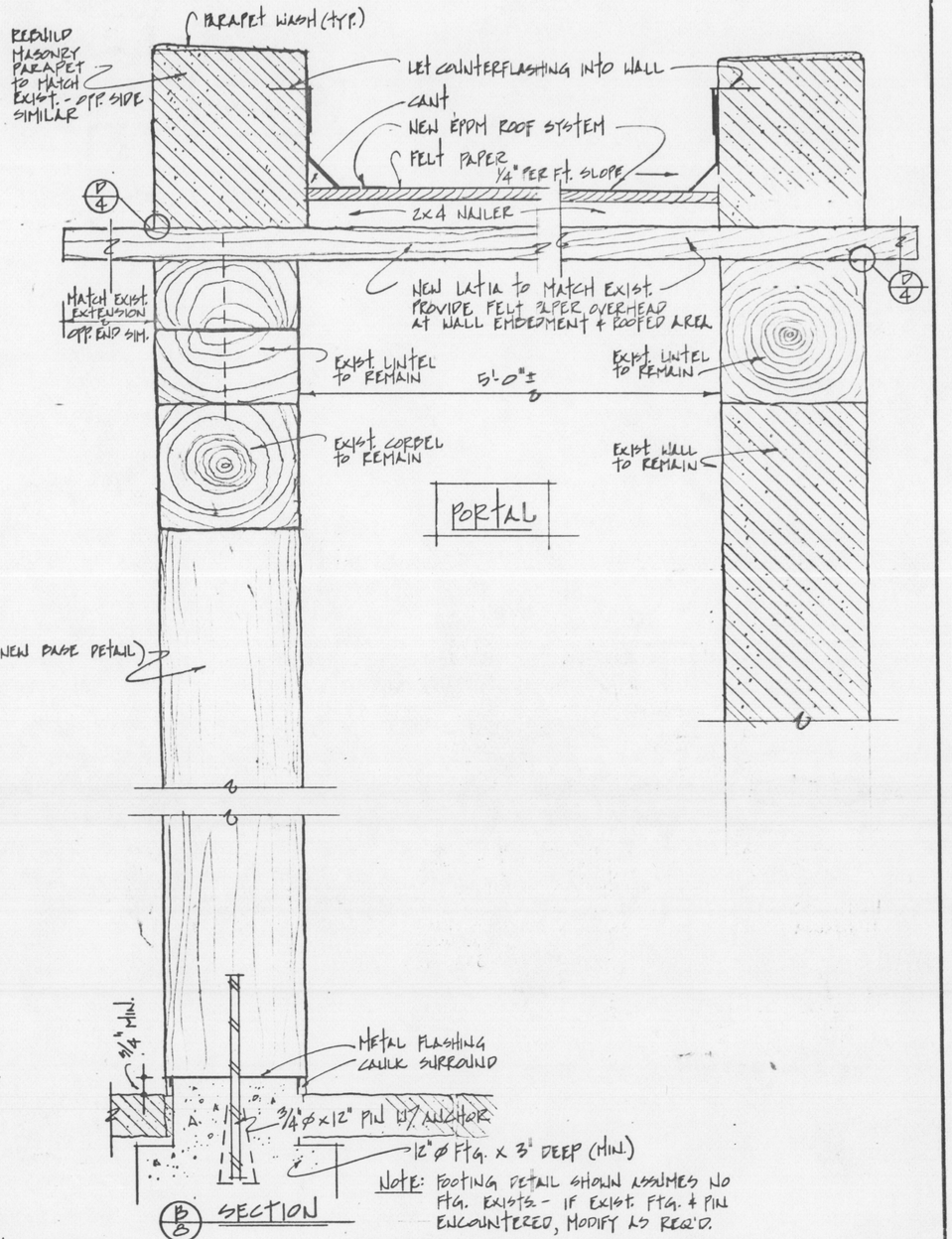
DESIGNED: COPELAND DRAWN: COPELAND TECH. REVIEW: THORSON DATE: 6/89	SUB SHEET NO.	TITLE OF SHEET CANALE TYPES H, I, J, K, L, M & N DETAILS	DRAWING NO. 315 80,030 PKG. NO. 224 SHEET 7 OF 8



CONSTRUCTION NOTES

1) DOCUMENT EXIST. CONDITIONS TO BE REPRODUCED IN NEW WORK.
2) REMOVE EXIST. ROOF MEMBRANE, FOAM & SHEATHING.
3) DISMANTLE PARAPET AS REQ'D. FOR REPLACING ALL LATHS, IN FULL. NEW LATHS SHALL MATCH EXIST. IN SPECIES, SIZE & EXTENSION. EXPOSED & EMBEDDED AREAS OF LATHS SHALL RECEIVE NON-TOXIC WOOD PRESERVATIVE. CLEAN STONE OF FOAM OVERSPRAY AND SALVAGE FOR REUSE.
4) INSPECT LINTELS FOR DETERIORATION. TREAT TOP OF LINTELS W/ NON-TOXIC WOOD PRESERVATIVE.
5) UNDERPIN EXIST. LINTEL AS REQ'D. to JACK MEMBER TO ITS ORIGINAL LEVEL POSITION. PROVIDE BEARING @ EA. SUPPORT TO PREVENT SUPPORT "IMPRINT."
6) INSTALL NEW CANALES SIM. TO "TYPE H" NEW WORK.
7) REMOVE EXIST. COLUMNS AND PRIVE EXIST. CONNECTOR DOWEL UP FOR FUTURE CONNECTION TO NEW COLUMNS.
8) VERIFY EXISTENCE OF FOOTING @ COLUMN LOCATIONS. IF NONE EXISTS, PROVIDE AS SHOWN.
9) INSTALL NEW COLUMNS - SECURED AS SHOWN. STAIN TO MATCH ADJACENT WOODWORK.
10) REPLACE PARAPET & SHEATHING. PROVIDE MIN. SLOPE AS SHOWN.
11) INSTALL NEW NON-INSULATED ROOF (BY CONTRACTOR)

A/B COLUMN ELEVATION



B/B SECTION

NOTE: FOOTING DETAIL SHOWN ASSUMES NO FTG. EXISTS - IF EXIST. FTG. & PIN ENCOUNTERED, MODIFY AS REQ'D.

NOTE:
USE CAUTION DURING ANY EXCAVATION TO AVOID DAMAGE TO BURIED UTILITIES.

SCALE: 3" = 1'-0"

DESIGNED: COPELAND	SUB SHEET NO.	TITLE OF SHEET: 2/9 PORTAL DETAILS	DRAWING NO. 315 80,030
DRAWN: COPELAND			PKG. NO. 224
TECH. REVIEW: THOMSON			SHEET 8
DATE: 6/85			OF 9