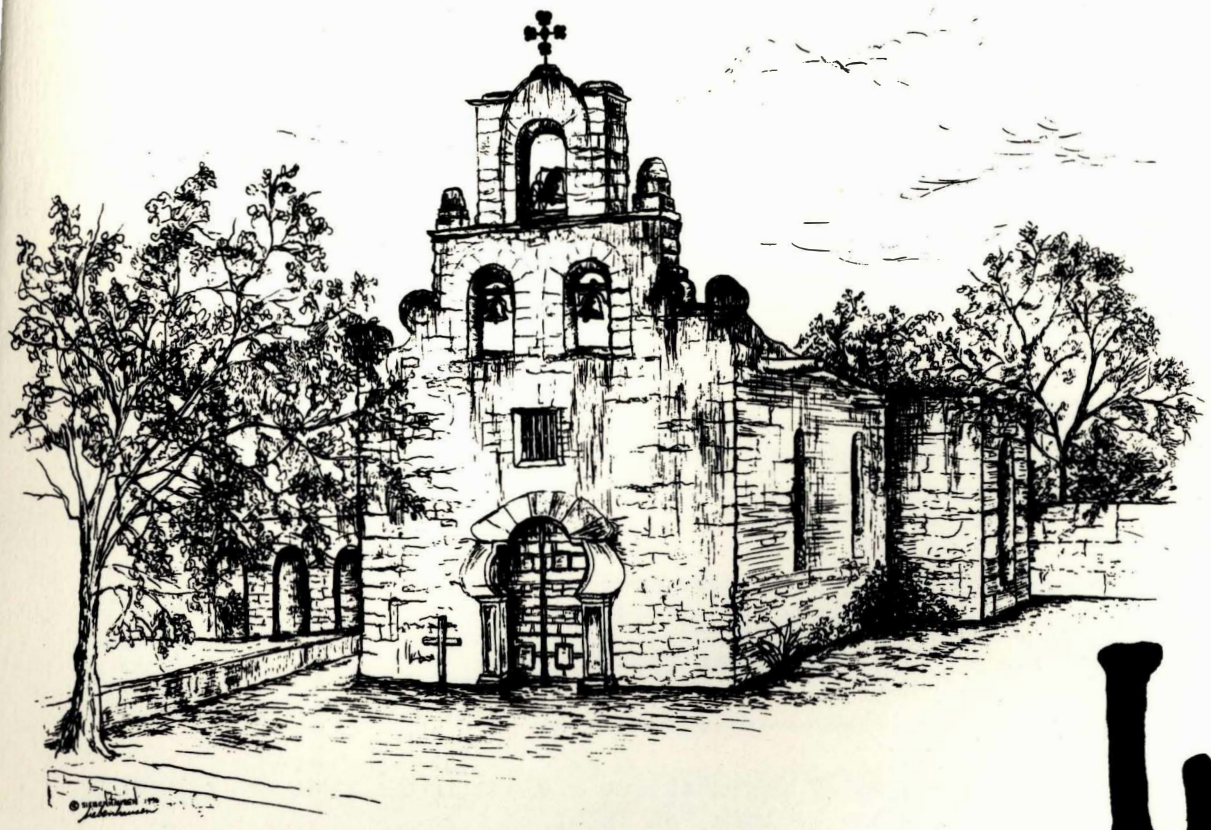
JOURNAL OF THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION



Mission Espada

LA TIERRA

Vol. 7
No. 2
1980


H. P. Smith
'40

ESPADA MISSION

Research and Restoration

Harvey P. Smith, Jr.

INTRODUCTION

Standing as the last stubborn concentration of Spanish colonial resistance, the small mission church withstood Indian attack, several relocations, recalcitrant Indian converts and a harsh land with few friends. To the north four other missions housed and protected those few friends who were a part of the same movement--the Spanish colonization of the southwest.

This small group of Franciscan padres founded a line of five missions along the San Antonio River beginning in 1718. The last of these missions to the south was San Francisco de la Espada. Exposed on three sides, it stood at the end of the chain, as the southern anchor for this group of fortified outposts in an unsettled country.

Mission Espada experienced an eventful, wide-ranging history of expansion and colonization. First, in the eastern part of Texas in May of 1690, San Francisco de los Tejas was founded on the banks of San Pedro Creek in what is now Houston County. Struggling to survive in a hostile land, the missionaries were confronted with an epidemic of fever that killed over 3,000 of the Tejas and one of the padres. After only three years the mission had to be abandoned and put to the torch. The surviving missionaries wandered over the land for more than four months before finding a place of rest in Monclova, Mexico (Habig 1968:193-4).

A second attempt to colonize in the eastern area of Texas came in 1716 with the reestablishment of San Francisco de los Tejas in a Neche Indian village ten miles east of the original mission site (ibid:195). Again, in the summer of 1719, the little mission had to be abandoned, as the French drove the Spaniards out of east Texas. After a temporary stay at Mission San Antonio de Valero, the Franciscan fathers joined the Aguayo expedition going back to east Texas. With great tenacity the intrepid padres reestablished the Mission San Francisco for the third time among the Tejas Indians on the site of the previous mission. Named San Franciso de los Neches, the event was celebrated with much "pealing of bells, the blowing of trumpets and the beating of drums" according to Habig's quotation of Fr. Juan Antonio de la Peña, the diarist of the expedition (ibid:199-200).

The support of the eastern mission group was tenuous at best, and the padres found themselves faced with meager supplies, little military protection and reluctant Indians who were very often hostile. With the closing of the presidio in 1729 the task was too great, so the Querétaran friars moved their three missions to the San Antonio River. This move was the equivalent of founding a new mission, since only the name and some small amount of moveable property was actually transferred from the Tejas Indian country of east Texas.

HISTORY

Mission San Francisco de los Neches was one of the three missions moved to the San Antonio River, and on March 5, 1731 it was reestablished as San Francisco de la Espada - St. Francis of the sword. The mission was located on the west bank of the San Antonio River about nine miles south of the center of the city. As the last mission in the chain, Espada was the most exposed and experienced frequent Indian raids from the marauding Apaches. The struggle to survive dictated that the mission be a strong, fortified quadrangle as well as a church.

Before 1737 the small mission had lost 40 horses to one Indian raid, and after many other setbacks, all 230 of the resident Indians abandoned the mission and

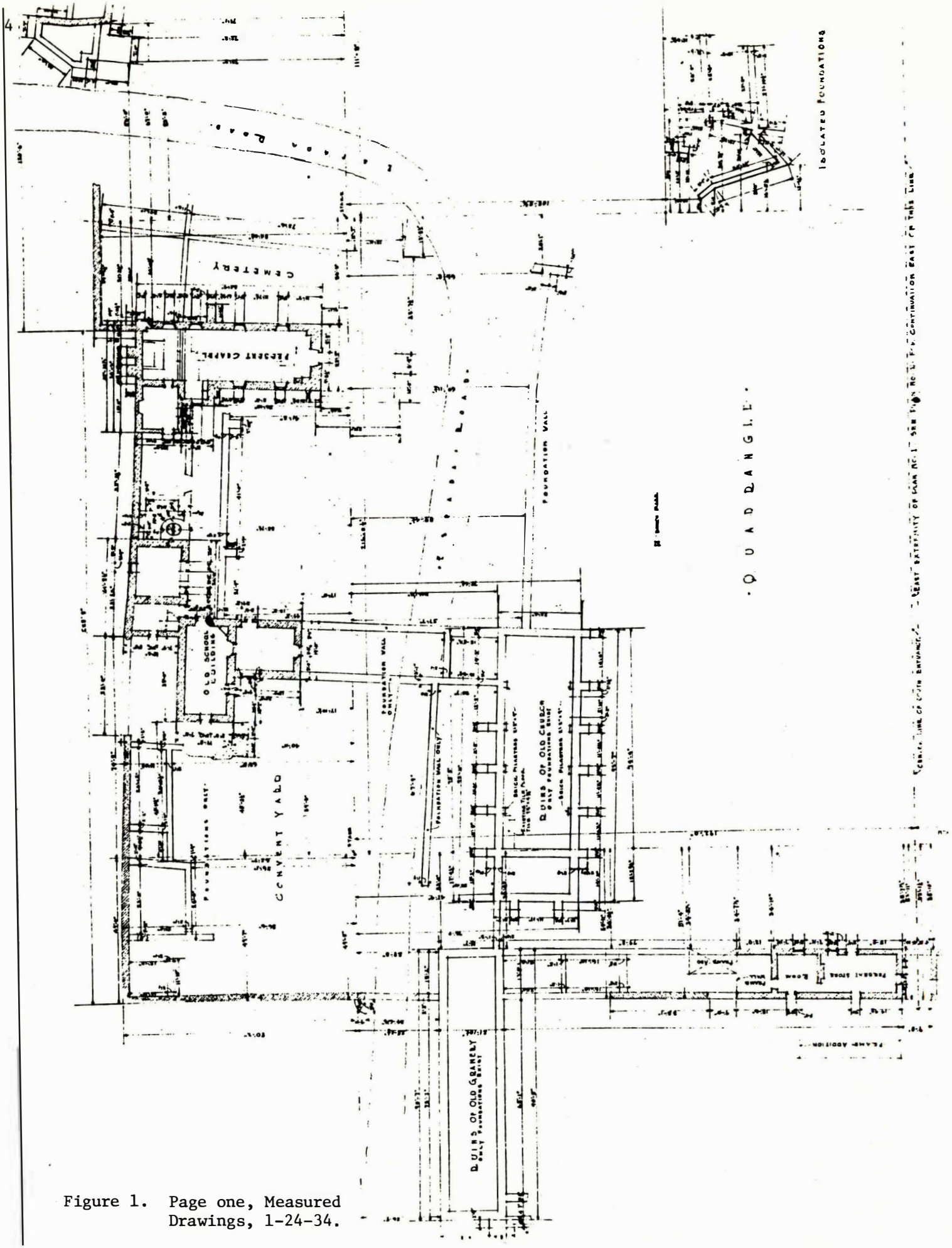


Figure 1. Page one, Measured Drawings, 1-24-34.

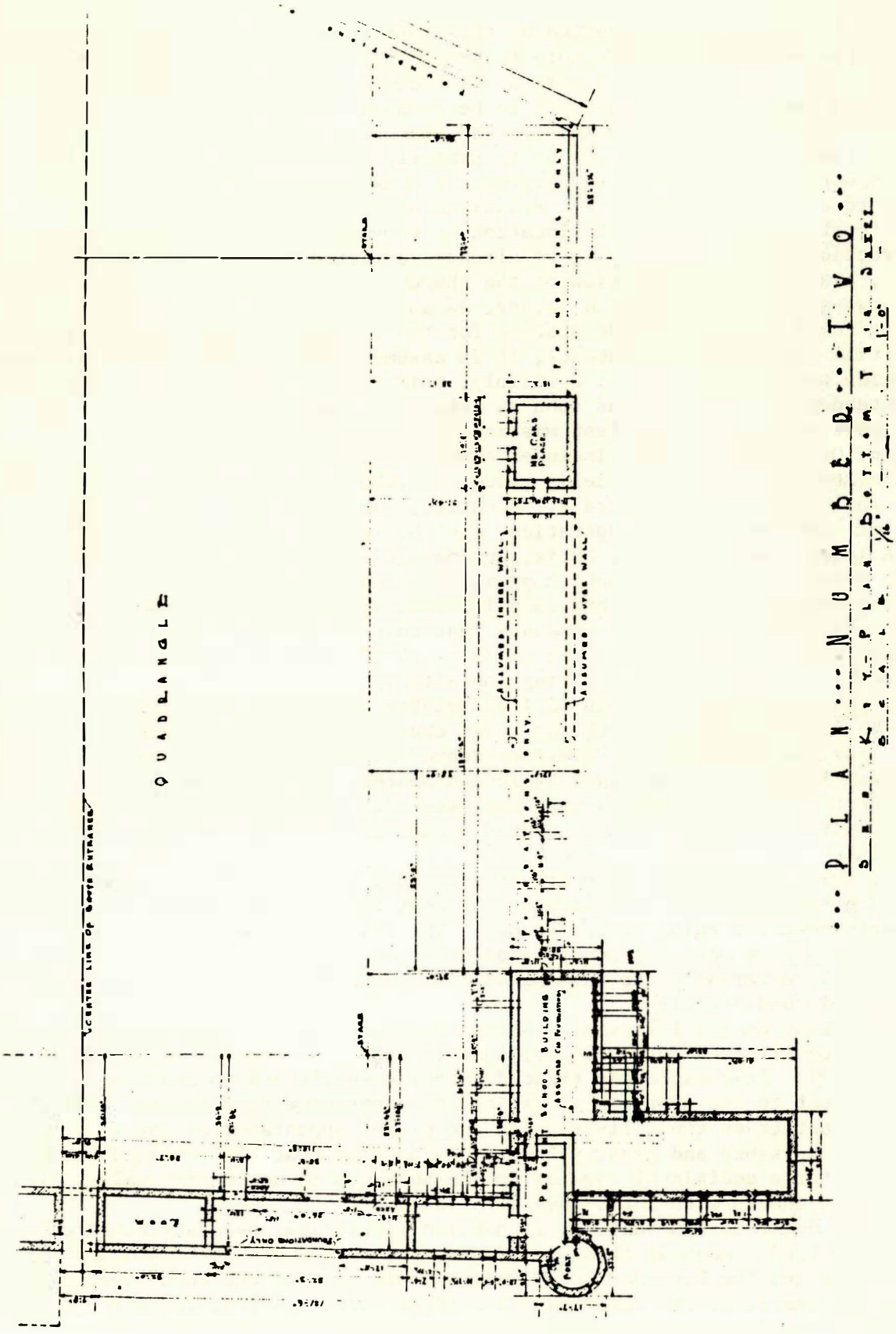


Figure 2. Page two, Measured Drawings, 1-29-34

returned to the brush. Undaunted by this turn of events, the missionaries secured the help of ten soldiers and were able to bring back all but 24 of the original group.

In 1739 another epidemic struck and reduced the resident Indians from 120 to only 50. Again the Indian runaways had to be rounded up and persuaded to return to the mission. By the end of 1740 Mission San Francisco once more had 120 Indians residents, and the fields were planted and being properly tended by the residents (ibid:206-7).

An early reference to the progress in construction of the buildings of the mission is recorded in the report of Fr. Francisco Ortiz written in 1745 (ibid:207). By this time, fourteen years after the location of the mission site, a new church of masonry construction was in progress. The already completed sacristy was serving as the chapel, awaiting the completion of the church. The report went on to describe an adjacent, two-story friary built of stone, as was the church. A granary of stone was also nearing completion to provide storage for the expanding crops. Since the Indian houses were still referred to as jacales, it is assumed that a quadrangle of permanent construction was not yet built. Certainly, this type of fortified enclosure was needed and intended to be erected as soon as possible. Such enclosures were almost always a basic part of even the smallest missions (Tunnell and Newcomb 1969:7).

Fr. Ortiz' report also included a description of the farming and ranching activities of the mission. The fields produced 1,600 bushels of corn and 64 bushels of beans while the ranch included 1,150 cattle, 740 sheep, 90 goats, 81 horses and 16 yokes of oxen--not a small operation, even by today's standards (Habig 1968:210).

A later report from Fr. Ortiz, during a visit in 1756, records the completion of the construction of the church previously started before 1745. The report states that the church is 39 feet long, and 15½ feet wide, built of stone and hand-hewn beams. Fr. Habig (1968:211) comments that this church must refer to the presently restored chapel; these dimensions of 39' x 15'6" could be correct for the chapel, if assumed to be interior and omitting the altar.

A progress report written in 1762 relates the status of Mission Espada at that time. A new and larger church was under construction, but progress was apparently slow. For the first time a "mission square" or "irregular rectangle" is mentioned, which was formed on three sides by Indian houses, now described as being made of stone. The fourth side of the square was completed with the small church and the connecting friary, with the granary and a covered arcade forming the southwest corner (Habig 1968:213).

At last, then, after 31 years of occupancy in this rather exposed position at the end of the chain of five missions, Espada had a secure enclosure to protect its occupants from the raids of the Apache. The mission ranch had grown still larger and would be even more exposed to Indian attack, but no mention of this was made (ibid:215). Apparently the raiding parties concentrated on the mission and its store of materials and supplies.

Reporting on his 1777 visit, Father Morfí stated that the larger, new church was so poorly constructed (or designed) that it had to be demolished before it collapsed (Morfí 1777). This matter is treated rather casually and no mention is made of putting the architect to the sword or of giving the contractor back to the Indians! Morfí comments further on the "ill-arranged and plain" appearance of the friary, the galleries, workshop and granary. He explains also that the enclosed square is completed by three additional rows of Indian houses with connecting walls. This general description checks with later investigations.

After numerous fluctuations in mission population, Espada reached a low of 57 Indians by 1789. Most of these residents were reported to be the descendants of the Pacao tribe and the Barrados and Marhuitos, all part of the Coahuiltecan group. According to the report of Fr. José Francisco López these resident Indians had suffered from numerous epidemics, and the population was destined not to recover in number (Habig 1968:218).

Reviewing the mission activities, 1762 seems to be the peak of colonization, after which the Indian population falls off steadily (White 1930:9-10). In recording all of this, Robert Leon White forcefully presents a strong attack on the missionary system

and the treatment of the Indians. He also quotes from Fr. Morfí's report to set forth a strong criticism of the Canary Islanders and their laziness and lack of industry (White 1930:18).

By 1794 Espada received a partial secularization decree which resulted in the division of mission property and a land grant to each Indian family. The name of Pedro Huizar, surveyor, is mentioned as platting the land for this division of property. His name would have more lasting fame as the sculptor of San José Mission, the beautiful sacristry window and the ornate front façade (Smith 1931b).

After secularization of Espada, a resident missionary remained to minister to the dwindling number of Indians. In 1804, 37 Indians remained, and by 1809 only 24 were present. By 1813 only one missionary remained; he was at San José and maintained records for all four outlying missions. Sporadic Indian raids still occurred in the area and on the mission itself. A fire in the southeast corner bastion was reported in the year 1820. As late as 1826, a band of Comanches attacked Espada. Another fire occurred in one of the kitchens, spreading to several other structures, but sparing the chapel. Final secularization was completed in 1824 some 93 years after San Francisco was moved from east Texas to the San Antonio River. From this time on, the church was allowed to fall into ruin with only occasional repairs by sporadic residents.

A major military encounter occurred in October of 1835 when James Bowie and James W. Fannin, Jr. established themselves at Espada with about 100 Americans, routing the few Mexican soldiers staying there. Several days later a force of some 200 Mexican soldiers attacked the mission, but they were turned back by the entrenched defenders (Habig 1968:224-5).

Mission Espada was allowed to slowly fall into ruin during the next two decades. This condition was finally checked by the arrival in 1858 of Father Francis Bouchu. He was assigned as assistant pastor to the San Fernando Church, but showed an immediate interest in the small mission Espada. Taking up residence at Espada, Father Bouchu continued his ministry for almost half a century, showing loving care to the local residents, and also the mission chapel as well as other buildings in the group.

Father Bouchu found both side walls of the chapel in ruin with only the front façade and the rear wall still standing. He began a reconstruction program that was to last over many years, with practical, direct solutions rather than with any concern for authenticity. The side transepts were rebuilt, and a tin roof would suffice for the chapel. Brooks (1936) finds the front façade to be "the only part that need really concern us since ... the ambitious Reverend Father Bouchu had almost entirely renewed" the remainder of the chapel. So we see, even those in priestly garb are not immune, as to questioning the quality of their restorations!

Again, in 1911, further restorations to the chapel occurred with the installation of new doors, new windows, a wood ceiling, a new roof and a new brick floor. At this same time the north transept was omitted in favor of a straight wall.

Thus we see the intrepid little mission rather stoically submitting to a series of stop-gap repairs through the first half of the 20th century. The scheme of the whole mission was still visable (Smith 1931a:8) -- a place to worship, to teach and to convert, but also a place of strength and refuge in a vast, unfriendly land.

ARCHITECTURE AND ARCHAEOLOGY

The largest archaeological artifact remaining, as evidence of man's past activities, is architecture. Research and investigation of these largest artifacts has drawn the attention of many in the past, and will continue to do so into the foreseeable future. For purposes of our investigations of the architecture of Mission Espada, we will refer to the original architectural drawings made by Harvey Smith, Sr. to carry out stabilization and restoration at the mission, beginning in the early 1930's. Architect Smith had spent many years in research and study of the missions and other early historic buildings (Smith 1933:8) prior to this project. His restoration of the Governor's Palace was the first major project, and then Mission San José. Espada would also be studied, measured and researched in preparation for the planning of the final Restoration Drawings and lastly, the restoration work itself.

Three groups of drawings made by architect Smith will be used for comparison and reference in revealing the research and preparations for this restoration project.

Field Drawings Not numbered 1933-4 (?)	Approximately 25 sheets of varying size tracing paper. These were made on the site from direct measurements of the various structures and excavations.
Measured Drawings Sheets 1-4, incl. Dtd. 1-29-34	Accurate, scale drawings that are the final result of consolidating the various field drawings. These show the status of the buildings at the time of this investigation. (Figures 1 and 2)
Restoration Drawings Sheets 1-8, incl. Dtd. 3-8-34	Accurate, scale drawings that show the present status of the buildings and the additional work called for in the restoration.

The various portions of the overall mission facilities are considered individually to clarify the discussion. Reference is made to each of the three groups of drawings where pertinent and to other sources as well.

Chapel

Our first consideration must be the small chapel on the west side of the enclosed plaza. This rather diminutive structure with its intriguing entrance portal, set in an otherwise plain façade, has caught the imagination of numerous visitors -- priests, soldiers, artists, as well as professional writers. The strongly Moorish style of the stone entrance architrave has been romantically explained as the result of inverting the first stones above the column caps, thus affecting a cut or "nick" in the arch. Whether a whim of the artist or a misplacement, "the provincial translation of a more elaborate gateway from Spain's Alhambra" (Brooks 1936:87) is a continuing success with visitors through the centuries (Figure 3). The front façade is completed by extending the wall above the roofline in a free-standing gable that is pierced with three arched openings for three mission bells. Records indicate that this front portion of the chapel is original (Smith 1934a; Smith 1934b; Corner 1890:22). Father Bouchu made extensive "repairs" by replacing the side walls and installing a new tin roof (Habig 1968:226), but the front was still standing then in 1858.

As in all restoration and stabilization work, the architect is confronted with the question: How much shall be replaced and/or how much shall be left as is, and only stabilized? Obviously, each case and even each part must be judged individually. The answer must meet both a philosophy and a practical solution. If very little remains, stabilization only is often the best answer. If nearly complete and in need of weather protection, restoration is usually best. Whatever the decision, experience indicates that the debate will go on! The ubiquitous question will never be finally answered.

Architect Smith made a basically complete restoration of the chapel, utilizing some of Father Bouchu's earlier work, but detailing the side transepts to be replaced in their original form (Smith 1934a). Services were to be conducted in the chapel and it, therefore, needed to be usable.

Large Church

At the time of the 1934 investigations, the later, large church was found in ruins. Having been torn down because of poor workmanship shortly after completion, only the foundations and a lower portion of the walls remained in 1934. The Measured Drawings (M.D. Sheet No. 1) recorded the plan of this structure and showed connecting footings extending to the granary and the friary (Figure 1). An intriguing single foundation extends from the north end of the church a distance of over 120 feet to the north. It is interesting to speculate that this might be the remains of an earlier and smaller, enclosed plaza (Smith 1934b; Brooks 1936:39). Other evidence points to a similar possibility (Figure 4).

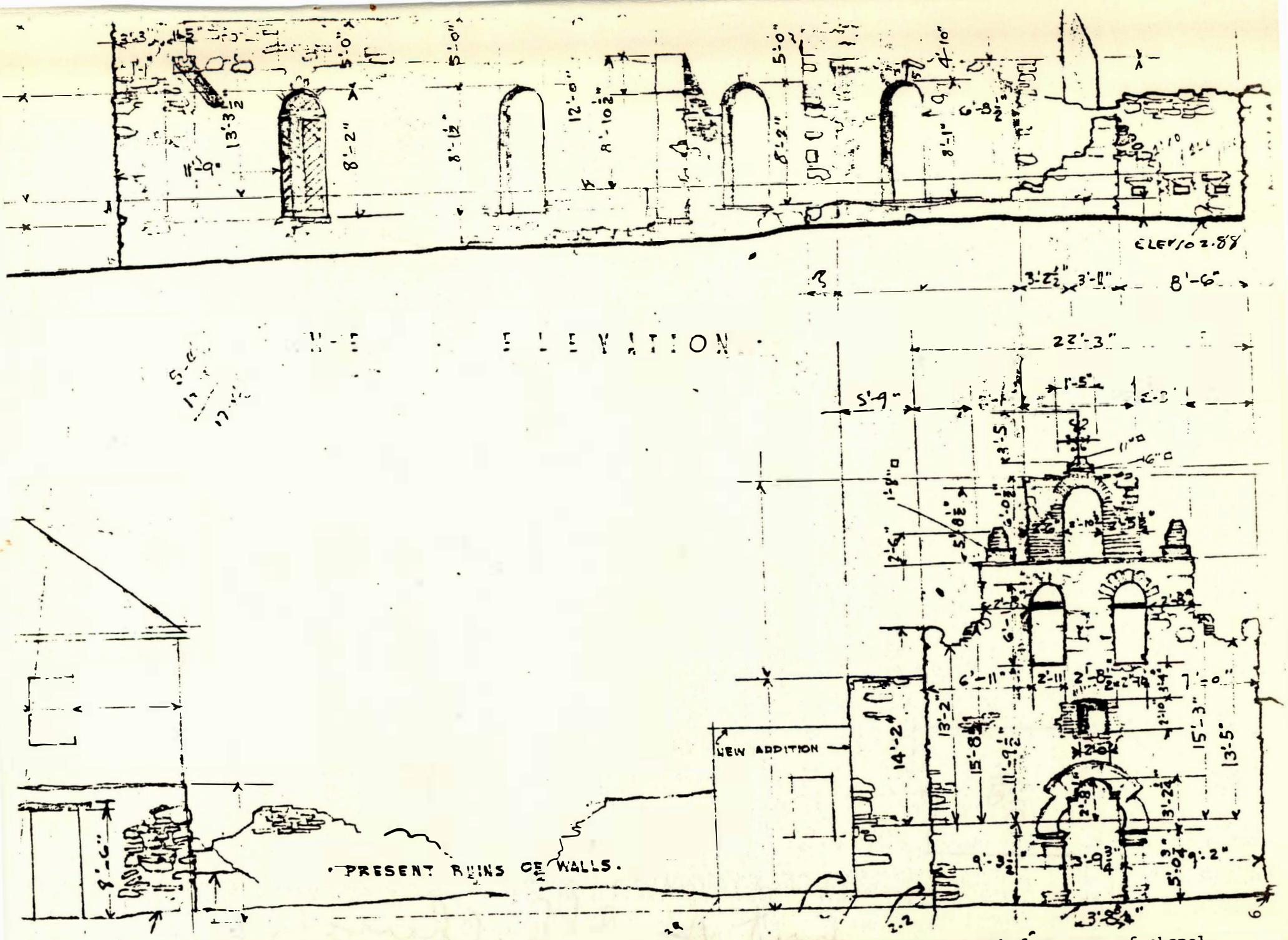


Figure 3. Front elevation of chapel and N-E elevation. Note gun ports in wall extending north from rear of chapel. Field Drawings made at the site, 1933-1934.

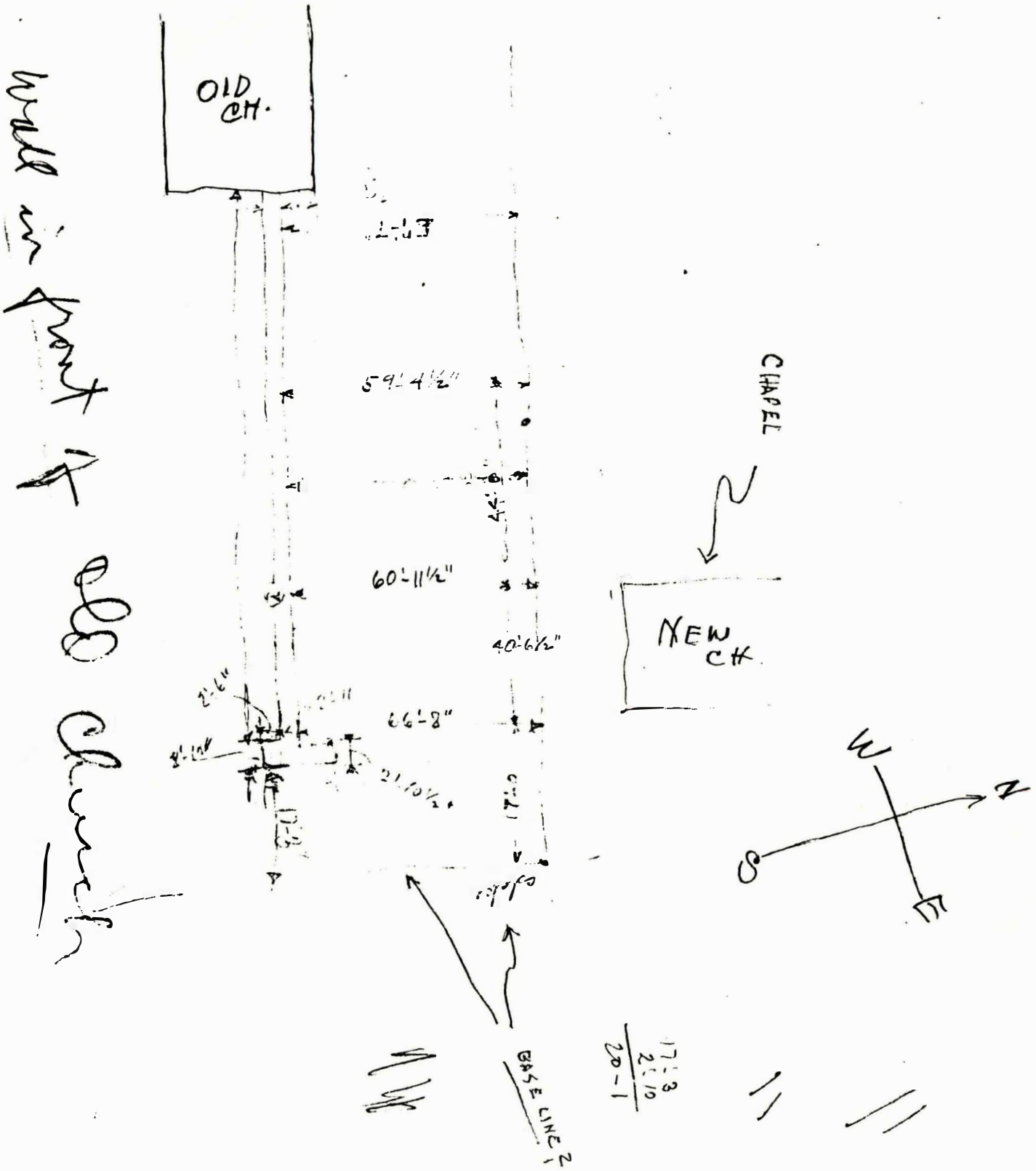


Figure 4. Plan of large church, showing foundations of wall extending to the north.

Granary

Just south of the large church ruins are the remains of the granary. Both field drawings and measured drawings record this 90 x 22 foot structure, but remains of openings are not shown and were probably not evident in the footings. Projecting some 73 feet to the south, outside of the enclosed plaza walls, a question of access and security is immediately evident. Where were window and door openings, if any? One field drawing shows the extension of the outer south plaza wall footing extending across the width of the 22 foot wide granary. If correct, this might indicate the wall predating the granary. Extended footings at the southeast corner of the granary seem to imply a small fortification or bastion (Figure 5). These footings are carefully recorded with detailed measurements on two field drawings, the measured drawings and the restoration drawings (Smith 1934a; Smith 1934b). It could be supposed that the later construction of the granary created a "blind" area along the south wall of the plaza. The small, corner bastion would correct that.

Isolated Foundations

The Measured Drawings, Sheet No. 1, dated 1-29-34 show a group of isolated foundations (or footings) that were found during the 1933-1934 investigations and are located in the approximate north center of the mission plaza (Smith 1934b:1). Detailed field drawings also record these footings with numerous dimensions (Figure 6). Here, again, we are intrigued by the unusual shape, as well as the isolated position of these footing stones. It is easy to speculate that these are the foundation remains of a smaller, earlier enclosure with a fortified entrance to the east and double wall Indian quarters running to the north. Since the single foundation extending north from the large church is only 50 feet from this isolated foundation, a linkup is logical to envision. Such an arrangement would create an enclosed plaza of only about one-third the area (Figure 1). It would have been logical to first enclose a smaller space with the most essential elements, and expand the plaza later (Brooks 1936:39). At any rate, Smith has carefully recorded the now obscured evidence of greater complexity at Espada (Smith 1931c:32). It remains for others to extend the research and possibly find the answers.

Fortifications

The builders of Espada, aware of its exposed location, provided a variety of fortifications ranging from occasional rifle ports to a sturdy little bastion that reflects the influence of the feudal castles of Europe (Brooks 1936:85). With few exceptions, each visitor has been drawn to this "unique fragment" of another world, as it stands strong and resolute at the southeast corner of the plaza enclosure. The only openings in this perfectly round bastion are small ports for rifles and larger ones, at a lower position, for small cannon (Figure 7). Smith's restoration drawings (1934a:8) show the existing walls 12 feet above the ground level, and he designed a simple and unobtrusive dome roof of stone masonry as a part of the restoration. A limited archaeological investigation of the bastion's foundation is the only research of this type accomplished at Espada (Fox and Hester 1976). The date of construction of this small tower is not known, but some evidence exists to imply that the eastern part of the enclosed plaza came after the original construction of the west plaza, including the chapel (Habig 1968:207, 216; Smith 1934b:1). A reference to the overall site plan will show that the mission builders were careful to cover all exterior walls with a protective "line of fire" from the various strategically placed fortifications (Smith 1934a; Smith 1934b; Corner 1890:22). Smith found fortifications at the southeast corner of the granary, a half round bastion west of the granary (see Figure 5), and ports in the walls extending north from the chapel (Smith 1934b:3) (Figure 3), as well as the fortified west entrance to the plaza. This fortified entrance has only the north half of its fortifications remaining (Figure 8). A comparison of this unit with the isolated foundations (Figure 6) in the central plaza

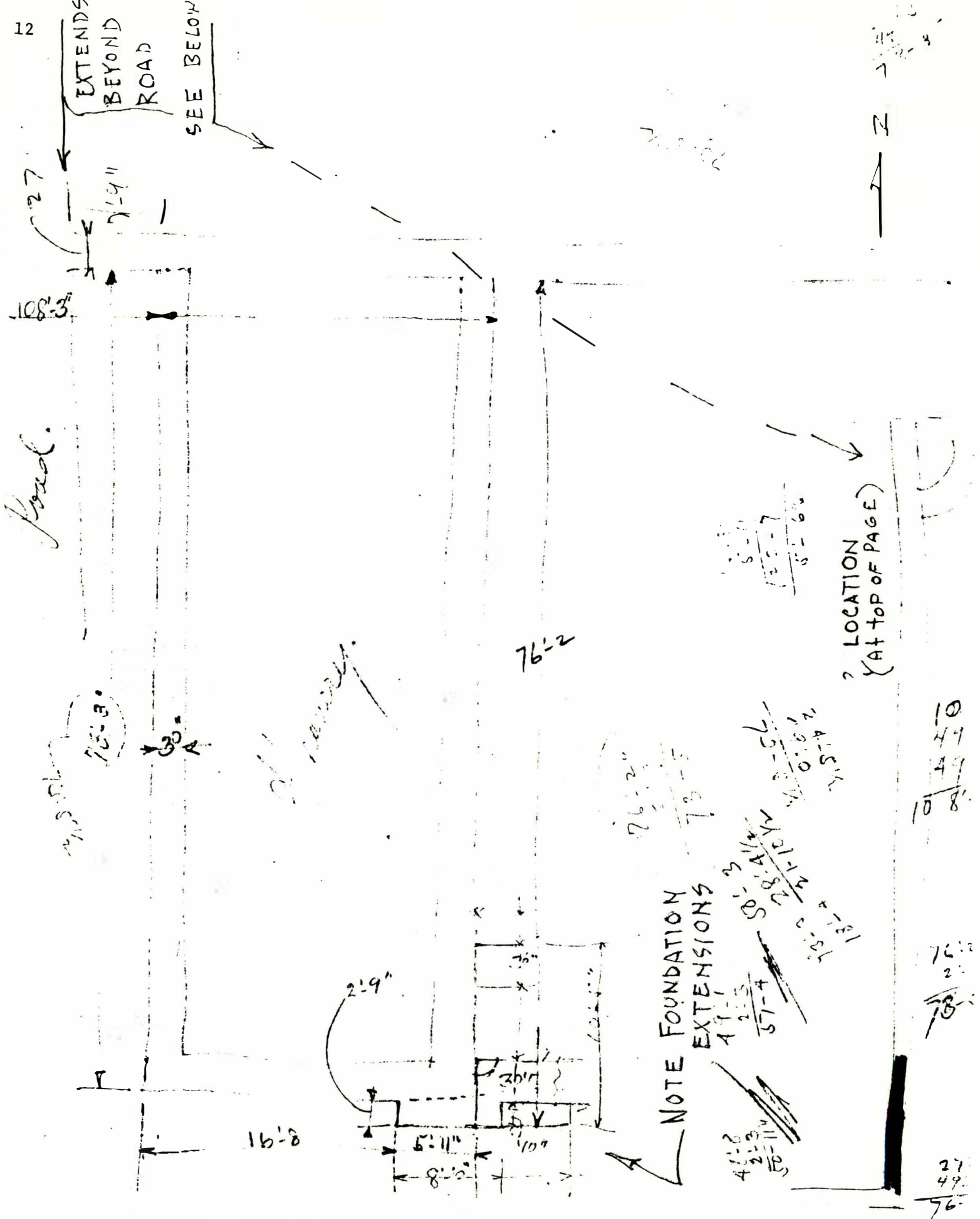


Figure 5. Granary floor plan. Note extended footings at S-E corner for possible bastion.

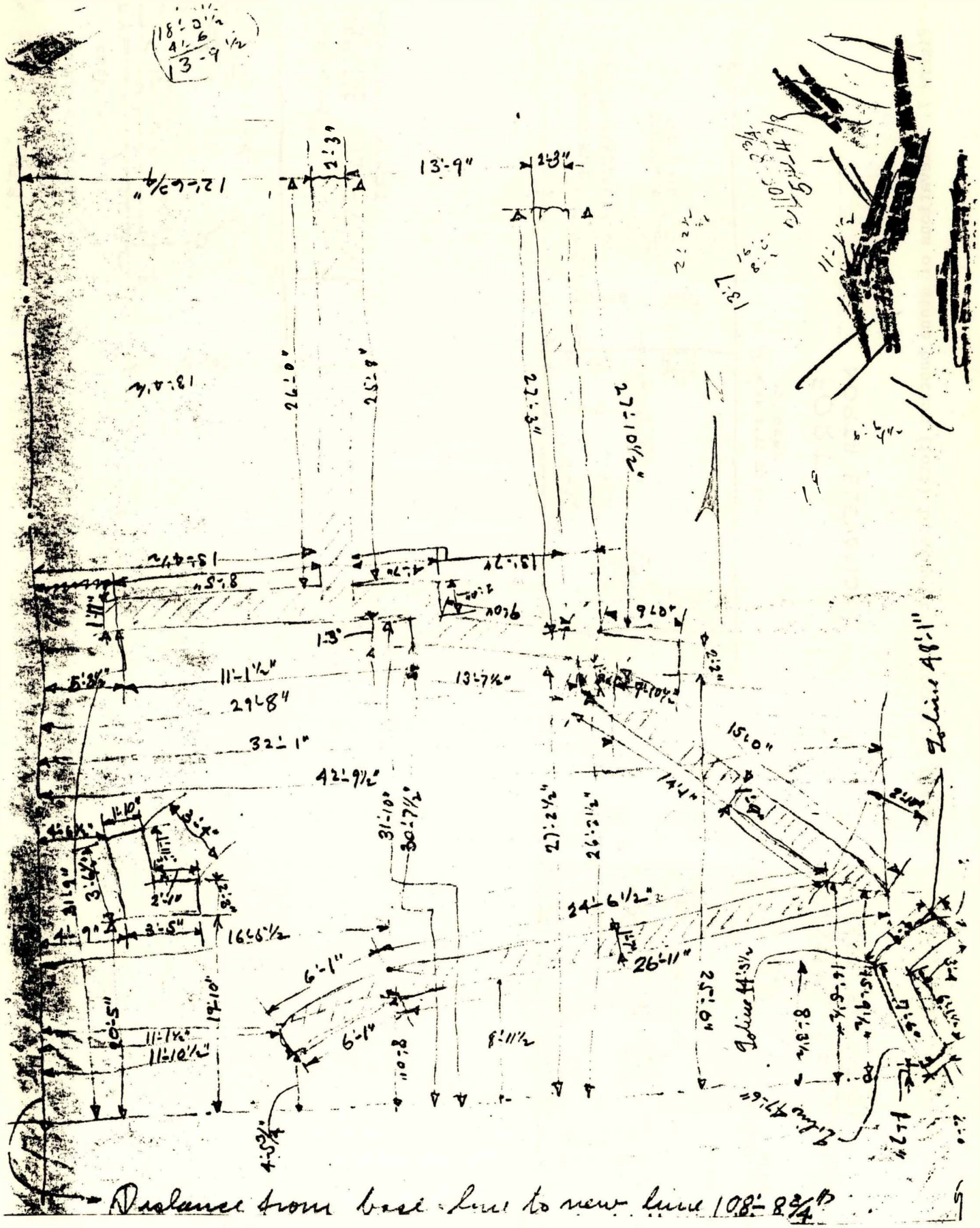
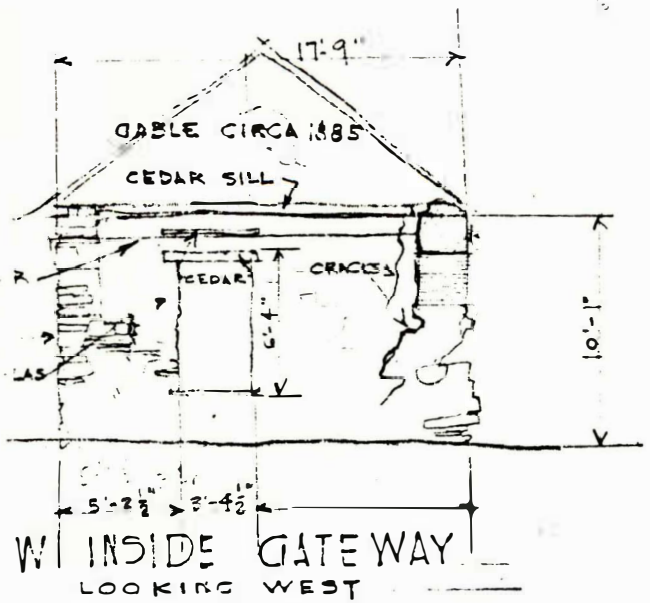
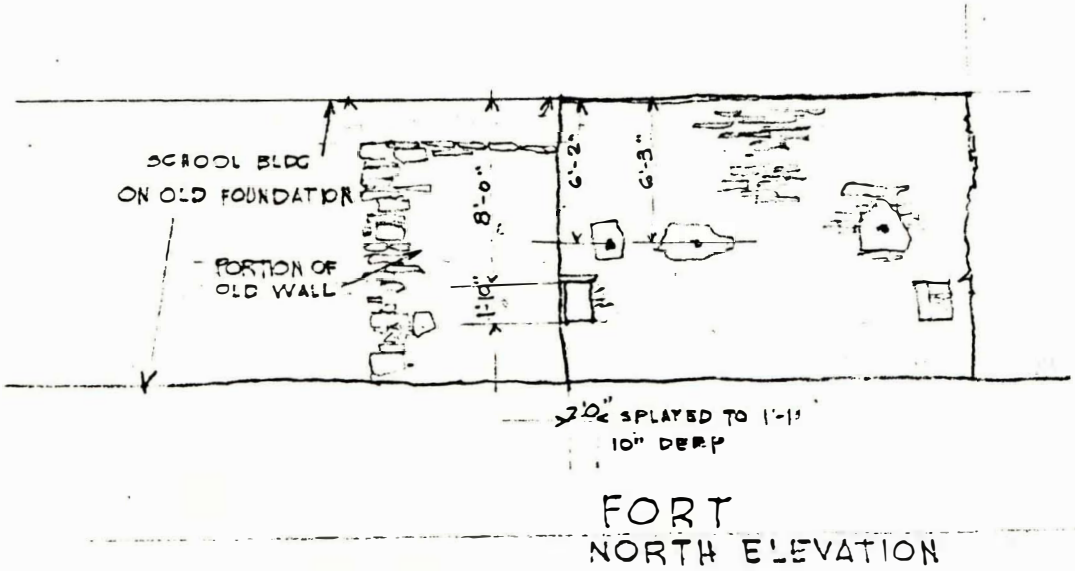


Figure 6. Plan of isolated foundations, located in the north center of the plaza. Note similarity of shape to the west fortified entrance.





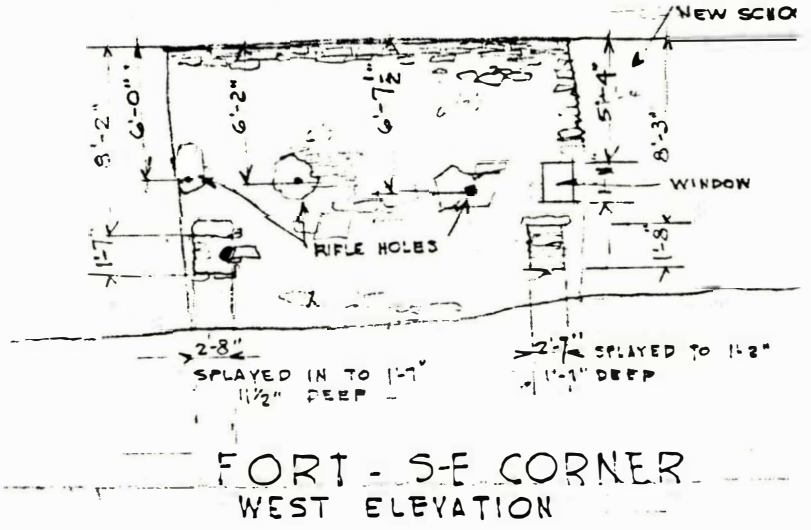


Figure 7. Elevations of stone bastion (fort) located at S-E corner of plaza.

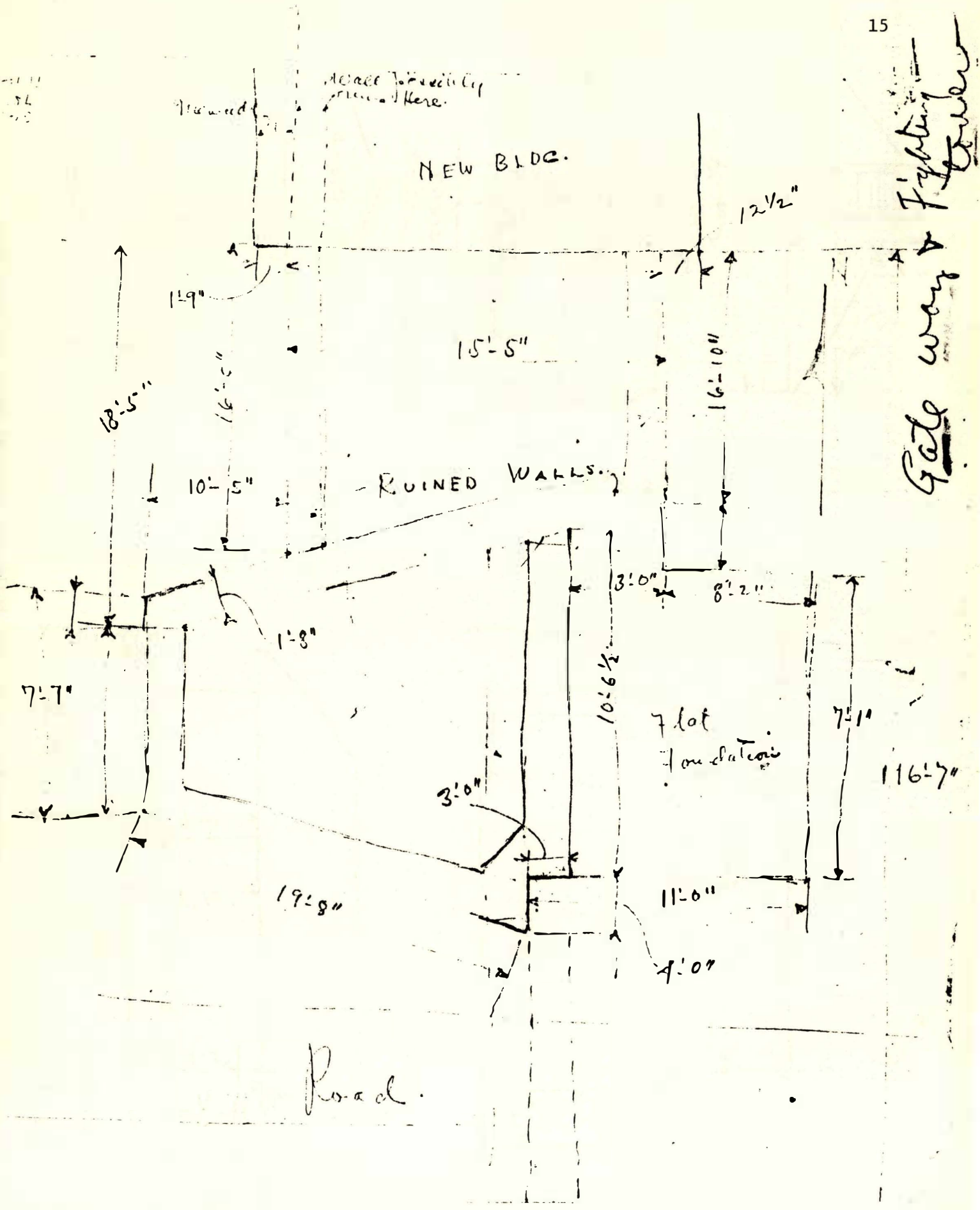


Figure 8. Plan of fortified west entrance.

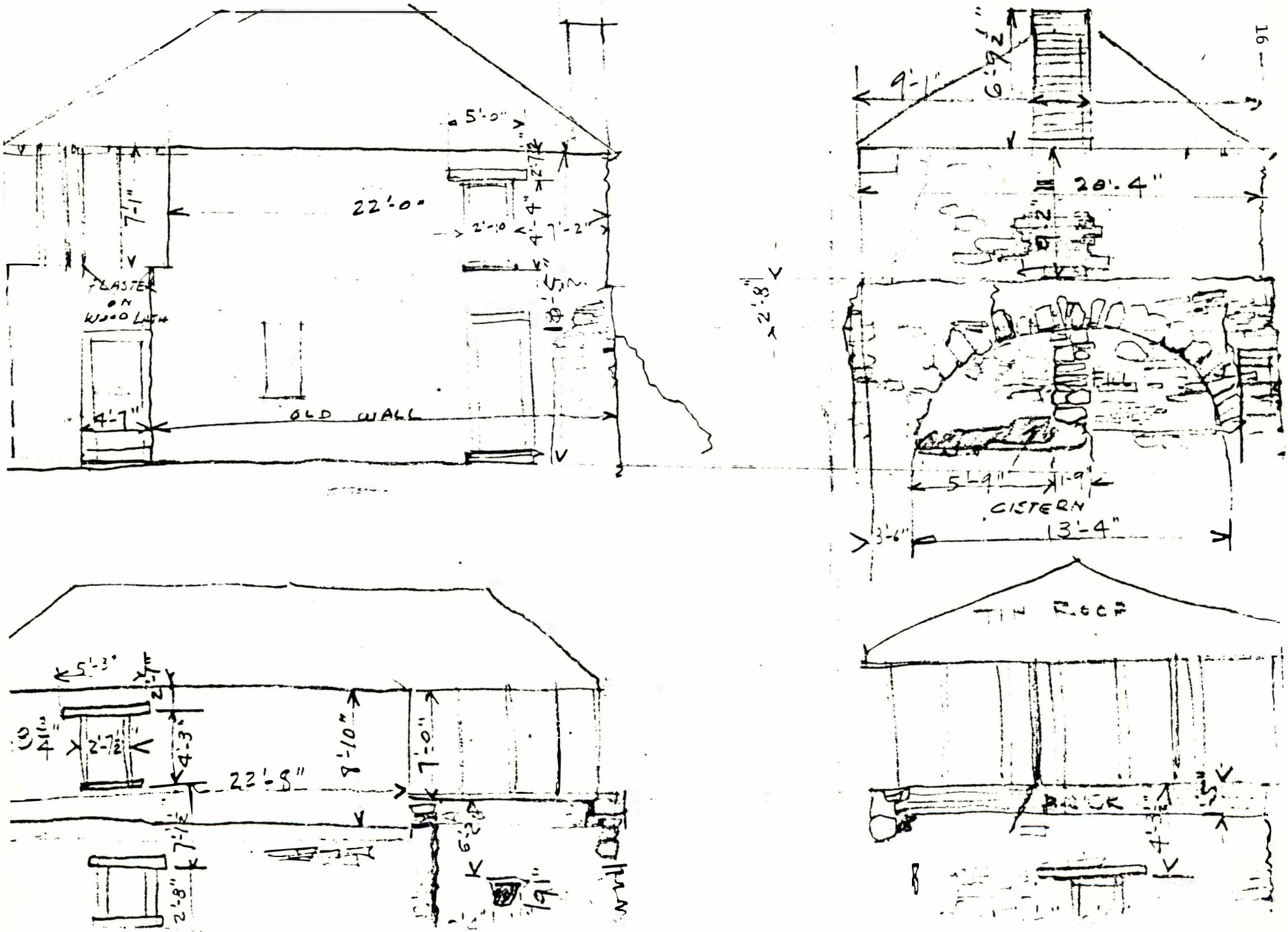


Figure 9. Nineteenth century construction, as of 1934, built over original walls and buildings.

shows a striking similarity of plan. The possibility of another fortified entrance is surely suggested. Smith does not specifically note any rifle ports in the north and south entrances; however, these wall areas are protected by the river on the north and the bastion on the south. The east wall would also be covered by the bastion, to complete the defenses.

The record would indicate that Espada's defenses were tested on numerous occasions and were found to be adequate. Conflicts between missionaries and Indians punctuated the period of settlement, and these were followed by the large scale battle between the Texans, led by Bowie and Fannin, and the Mexican forces.

Although Smith completed his initial investigations and restoration plans by 1934, funds were not forthcoming until 1955. Between June of 1955 and October of 1956 he directed the major portions of the restoration work. At this time, most of the non-original "additions" were replaced, and the little mission assumed a great deal of its original character (Figure 9).

Since no historic or physical records of the superstructures could be found, the granary foundations were re-covered and those of the large church were stabilized just above the ground line. Thus, only a plan of the church is visible today allowing the visitor to supply his own completion to the restoration, while placing the structure accurately on the plaza. Limited funds prevented further investigations of the several unrelated foundations located during the excavations. When a footing or other foundation was uncovered, it was carefully followed with a minimum of excavation width to avoid excess disturbance (Clark 1980:9). Unskilled labor prevented any detailed removal of soil and midden deposit, but accurate measurements were taken to provide a lasting record for those research specialists that would come later.

CONCLUSIONS

Personal recollections recall the fact that Mr. Smith held <u>authenticity</u> and <u>restraint</u> above other directions and goals in the pursuit of research and restoration of our historic past (Brooks 1936:140-141). His lectures and papers reflected a painstaking attention to detail in his continuing search for information of the rich heritage that belongs to south Texas.

The extensiveness of each restoration or preservation project was always a matter of deep concern to the architect. Espada was no exception. As he investigated and researched the remaining record, he commented many times on the wide variety of information that applied to various parts of the mission complex. Some elements were gone with no trace and no record. Others were standing, intact, with all the patina of original disposition. To give a sensitive and appropriate response to each building and each part was his continuing desire. The drawings we may see that remain for the record reflect his belief in accurate reporting of original construction before restoration and preservation.

[Editor's Note: Many of the drawings reproduced here have not previously been published, yet they are of exceptional archaeological value in terms of features and structures not presently visible. Our sincere thanks to the author for making these drawings available from his father's private records.]

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COVER ARTIST Rose Marie Siebenhausen

The view of Mission Espada shown on the cover of this issue is the work of Rose Marie Siebenhausen, a well-known San Antonio artist. She holds membership in the Fine Arts Association, Metropolitan Art League (Victoria), River Art Group, and the Helotes Art Guild.

A native of Dallas, Rose Marie has been interested in art since childhood and has continued to develop this talent through study and application. She attended Victoria College, Dominican College of Houston, and Incarnate Word College, at which she received her B.A. in Art.

Notecards showing this cover scene and other San Antonio Missions by Rose Marie Siebenhausen are available at:

San José Gift Shop
Institute of Texan Cultures
River Art Gallery, La Villita
Frost Brothers

or from the artist:

254 Rosemont
San Antonio TX 78228

INCISED STONES FROM KINNEY AND WEBB COUNTIES

Tom S. Beasley

ABSTRACT

In a 1972 article appearing in the *Bulletin of the Lower Plains Archeological Society*, T. C. Hill, Jr., J. W. House and Thomas Roy Hester described eight incised and grooved stones from southern and western Texas. Three incised specimens similar to those in the article by Hill, et al, are described and illustrated in this report.

THE ARTIFACTS

Specimen 1 (Fig. 1, A) is a light tan, oblong, limestone cobble; the only non-fragmentary specimen of the three stones reported here. The reverse face and edges of this stone show no evidence of use or alteration. Seven short (22 mm-33 mm) lines have been incised on the utilized face of this cobble, with the five interior lines being most deeply cut. To one side of the lines is a small hole which appears to have occurred prior to use. A dark gray, forked line transverses the incised lines, and may have been painted over those lines. This specimen was found during controlled excavation in a burned rock midden in northeastern Kinney County; the depth was 17.5 cm. A *Scallorn* arrowpoint was found in the same grid (4' x 4' in dimension) at a depth of 7 cm.

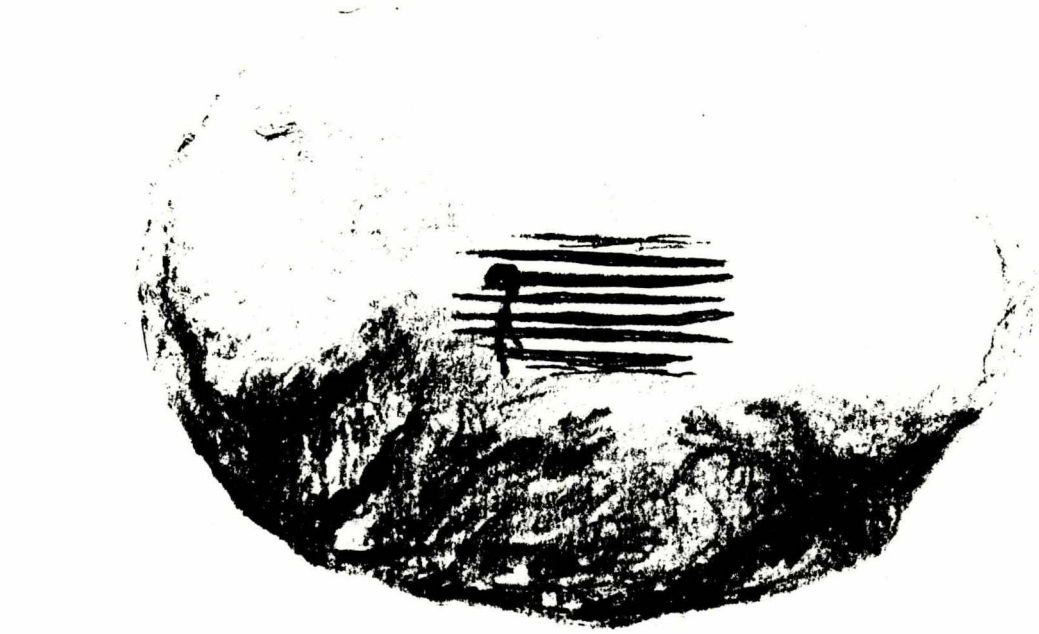
Specimen 2 (Fig. 1, B) is made of a dark gray, dense limestone cobble; this fragment has seven deeply incised lines on one of its faces. As is the case with Specimen 3, the fragmentary nature of this stone prevents a determination of the length of the incised lines. Along a curved portion of this stone a burnished or polished area occurs, and the ridges between the lines have been worn down somewhat, apparently through polishing. This specimen was excavated at a depth of 15.5 cm from the same burned rock midden as Specimen 1.

Specimen 3 (Fig. 1, C). Unlike the other two artifacts described above, this specimen is made of a highly polished, purple quartzite cobble. It was found during surface investigation in an open campsite near Santa Isabel Creek in northwestern Webb County. The reverse side of this artifact appears to have been virtually flat, while the side with the incised lines was fairly rounded. Three clearly defined incised lines of undetermined length are exhibited on this specimen, with a fourth line showing faintly.

DISCUSSION

The three specimens described above closely resemble the eight artifacts described and illustrated in the 1972 article by Hill, et al., except that none of the three are grooved. It is not possible, however, to say for sure that the two fragmentary specimens described above were not in fact grooved.

In their section on Summary and Discussion, Hill, et al. noted that "Kelley (1948) speculated at length about the function of these unusual artifacts. He compared the grooved specimens to the arrow-shaft straighteners of the southwestern United States (Kidder, 1932; Cummings, 1940), though he noted that examples in that area were much more elaborate than the Texas specimens. As for the specimens with only incised lines, he suggested a variety of possible uses including ' ... tally stones, abrading stones, bark beaters, pottery stamps, or as a pigment stamp for painting the body' (Kelley, 1948:83). He further suggested (ibid.) that since they are often associated with the grooved specimens, and since incised lines are characteristic of both groups, that 'perhaps in the Central Texas area the idea of the arrow-shaft straightener was borrowed from the Uvalde Focus of the Edwards Plateau and in the process the idea of the shaft groove was lost. In the Round Rock Focus, reed arrows may have been heated in ashes placed directly in the parallel incisions



A

B

C

Figure 1. Incised Stones from Kinney and Webb Counties, Southern Texas. Specimens A and B, Kinney County; Specimen C, Webb County.

which then served likewise to hold the joint of the reed in place while the heated shaft was bent to the proper straightness. If so, diffusion of the Southwestern technique of arrow-shaft straightening into the alien cultural tradition of the Balcones Phase has produced a new type of implement through loss or degeneration of specialized features and development of new functions for the conventionalized remnants of the old features, in this case, the incisions.' Perhaps it may even be that this artifact form had some sort of ceremonial, rather than utilitarian, significance in southern, central and western Texas" (Hill, et al, 1972:3,4).

Concerning the age of these artifacts, it was noted that age was uncertain because "all except the Val Verde County specimen are from eroded open sites in southern Texas. All of these sites have both Archaic and Late Prehistoric artifacts" (ibid.:4). The same is true of the site which produced the Webb County Specimen. However, the incised stones from Kinney County were recovered *in situ* from a zone (0-20 cm) which has distinct affiliations with the Late Archaic and early Late Prehistoric. In addition to *Scallorn* arrowpoints, other diagnostic arrowpoints found in this zone include *Edwards*, triangular (*Fresno* ?) and several fragmentary arrowpoints. This zone has also yielded a variety of dart points, with *Ensor* and *Frio* being the most common. This Kinney County site is located on a small, dry tributary of the West Fork of the Nueces River, which supports the suggestion by Hill, et al, that " ... it is possible that the south Texas specimens represent some sort of movement by some of the Edwards Plateau groups down the Nueces to the northern part of the coastal Plain" (ibid.:4).

The most significant feature common to the three specimens described here and the eight stones illustrated in the 1972 article is the basically parallel arrangement of the incised lines. Among the various incised stones which the author has found in Webb County, Specimen 3 is the only example evidencing such a parallel pattern. No such stones were reported from Webb County in the article by Hill, et al, or by the authorities cited in their article. However, artifacts are occasionally found in Webb County which have a definite Trans-Pecos or southwest Texas affiliation, such as *Langtry* and *Shumla* dart points, *Toyah* arrowpoints, and fragments of grinding stones made of basalt. It is therefore not surprising to find in Webb County an incised stone similar to incised stones found in those regions.

Somewhat farther afield is an incised stone from Live Oak County which exhibited " ... nine parallel lines with another straight line bisecting these at one end and extending below them, ... " (Warren, 1975:16). While the function or purpose of the Live Oak County specimen, and in fact, all reported specimens, remains open to speculation, it is quite possible that these stones shared a common use. More reports and descriptions of such stones would be helpful in resolving the question of their function, and examples of stones with a combination of a groove and incised lines found in association with incised stones would further strengthen Kelley's arrow-shaft straightener theory.

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A LANCEOLATE POINT FROM WEBB COUNTY

Fred Ball

The point shown in Figure 1 was found in northwestern Webb County near the Webb County-Maverick County line and the road from El Indio to Laredo. It was a surface find of Paul Ivy.

Although some parallel flake scars can be seen, the blade is marked by random scars over most of its surface. Basal thinning was not completed, but apparently was attempted as evidenced by two short, steep flake scars made longitudinally on one face. Little or no smoothing of lateral edges and of the basal concavity has been done. A similar point at the same stage of completion was described by Meier and Hester (1976:16).

The material used is cream-colored, fine-grained, and opaque; patina is absent in this Webb County specimen. Dimensions of this specimen include: length, 79mm; maximum width 23 mm; basal width 19 mm; maximum thickness 7 mm. The depth of the basal concavity is approximately 2½ mm.

The dimensions, outline, and flaking fall within the *Plainview* type (Suhm, Krieger, and Jelks 1954:472) as does the method of attempted basal thinning (Johnson 1964:49).

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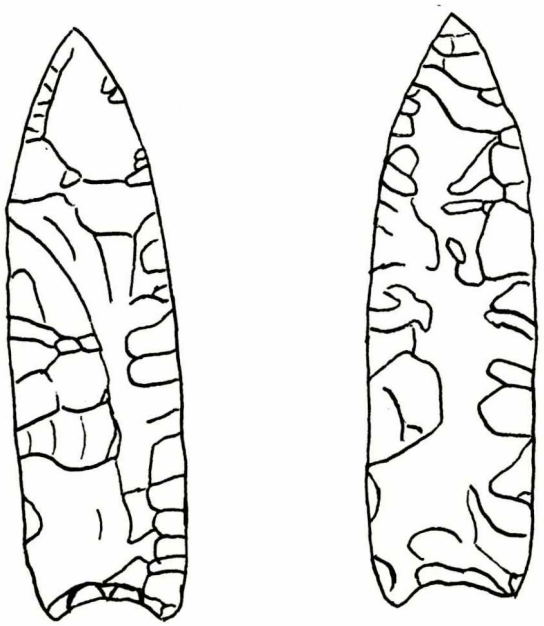

Figure 1. Lanceolate point from northwestern Webb County (actual size).

A BANNERSTONE FROM PADRE ISLAND ON THE TEXAS COAST

Jimmy L. Mitchell, Thomas R. Hester
and Wayne Parker

ABSTRACT

Half of a slate bannerstone was recovered from the sand dunes of Padre Island by Mr. Don Veach of Port Isabel, Texas. The specimen is half of a "winged" bannerstone, and is encrusted with some type of coating. This unusual artifact has no exact provenience but is documented because of its uniqueness in the Texas coastal area. Winged bannerstones are not uncommon in the Mississippi and Ohio valleys, and tend to date in the late Archaic and early to middle Woodland periods in those areas.

INTRODUTION

Wayne Parker of the Crosby County Historical Commission forwarded an unusual artifact for study in April of 1979. He noted that the ground stone specimen was an atlatl weight from Padre Island. It had been found by Mr. Don Veach of Port Isabel, Texas, in an area of the dunes which was fairly high and dry. No other artifacts were found in the vicinity and Mr. Veach does not believe that the location was a site as such. The artifact was found resting on the sand surface.

ANALYSIS

This artifact appears to be half of a "winged"-type bannerstone. It is made of a dark greenish material which could be slate. The color is between "olive gray," 5Y/3/2 and "grayish olive green," 5GY 3/2 (GSA Rock Color Chart). It is definitely beach-rolled and rounded. The specimen has pockmarks on it as if sand-pitted or sand "blasted." It also has a filmy coating which has some brownish discoloration, almost as if from a long submersion in the sea (this is an impressionistic, not a scientific conclusion).

The specimen (see Figures 1 and 2) is 48 mm in width and is 16.5 mm thick. Its partial length is about 78 mm but the complete specimen would have been at least twice this length or a bit more, or approximately 160 to 170 mm. The perforation represented by the broken edge of the specimen represents an imcomplete drilling through the center portion of the bannerstone. Perforation was attempted from one edge only and was continued to 90 percent completion. There is no indication why it was not completed; the specimen may have broken prior to the final drilling.

Bannerstones such as this specimen are not uncommon in the Mississippi Valley and the adjacent Ohio River drainage system. Frequently such bannerstones are made of banded slate, but specimens of other materials are known. The greenish slate of this specimen would be unusual in the Mississippi-Ohio archaeological complex but would not be particularly noticeable. In those areas, bannerstones are most frequently encountered in a late Archaic or Woodland context (Mitchell 1970).

The so-called bannerstones were named by early collectors who hypothesized that they functioned as a banner-like decoration, much as the American Eagle is often used to top a flagstaff in modern times. In more recent times, the bannerstones have been hypothesized to be weights for use on an atlatl or spear-thrower (Kellar, 1955). Atlatl weights are found in all parts of the United States and Mexico. However, the most unusual and diverse shapes are found generally in the Eastern Woodlands, particularly in the Ohio valley and adjacent states.

Such ground stone artifacts are rarely found in Southern Texas (Mitchell 1975; Hester, Schmiedlin, and Birmingham 1978). Though they are rare, many of those which

Figures 1 and 2. Two views of the Padre Island Bannerstone. (Photos courtesy of the Center for Archaeological Research, The University of Texas at San Antonio.)

have been reported were found on the coast or along major river drainage systems. Some of the ground stone artifacts which have been recorded include "boatstones" which are also thought to be atlatl weights (ibid.).

While atlatl weights have previously been reported in Southern Texas, the present specimen is the first known incidence of a winged bannerstone being found on the Texas coast or in the Southern Texas region. Even though the exact provenience of the artifact is not known, it must still be considered an important and significant find, and thus worthy of documentation and reporting.

ACKNOWLEDGEMENT

Our thanks to Mr. Don Veach, Editor of *Travel Tropical Texas*, for his reporting his find and submitting the specimen for study. His cooperation and interest is greatly appreciated.

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D I D Y O U S E E . . .

It's a Banner Year for Archaeology. *U. S. News & World Report*, May 19, 1980:72-73.

Two UTSA Center for Archaeological Research photos from Southern Texas (the St. Mary's Hall and Baker Cave sites) highlight a brief article on the state of archaeology in the world today.

Who Was That Man? - In Search of the Paleo-Indian. *Texas Highways*, June 1980:18-23.

Reports on the current status of early man studies in Texas and adjacent areas; includes a very excellent photo of Texas Highway Department Archaeologist Jerry Henderson holding *Clovis* and *Folsom* points and a Paleo-Indian scraper at site 41 BX 52 (IH 10 and Highway 1604) in northern Bexar County.

COMMENTS ON THE GIBSON LITHIC CACHE

L. W. Patterson

INTRODUCTION

There is a real need for archeological reports giving clear, detailed descriptions of prehistoric lithic technology. Curtis Tunnell (1978), Texas State Archeologist, has recently set a high standard in a report describing a lithic cache of possible Archaic age from west-central Texas. This collection is called the Gibson Lithic Cache and is from Oak Creek Reservoir. The cache consists of 72 large chert flakes found as a single group. These flakes were trimmed, with some thinning on dorsal survaces, to form fairly uniform shaped pieces. It appears that these shaped flakes were intended to be used as preforms for the manufacture of stone tools.

Tunnell presents general background information on the archeological site, along with data on available lithic resources and descriptions of some other known lithic caches. The highlight of this report is the good illustrations of the artifacts. There are high quality photographs of the dorsal and ventral surfaces of all specimens, supplemented by clear line drawings of several specimens. A number of the physical attributes of the flakes are discussed and quantitative measurements are given in detail.

Tunnell's report should be of interest to anyone studying Texas prehistoric lithic technology, and I do not hesitate to congratulate Tunnell for his fine overall effort. However, I do have problems with some of his interpretations and conclusions, as discussed below.

GIBSON CACHE LITHIC TECHNOLOGY

Tunnell feels that the Gibson Cache represents fairly uniform prismatic blade technology, which produced specialized flakes that were then trimmed and thinned on dorsal surfaces to produce oval shaped preforms. His descriptions of the finished products appears valid but the production technology used may not be as completely uniform as stated.

Production of prismatic blades by direct percussion is emphasized in the Gibson Cache report and the use of direct percussion seems entirely likely, judging by the various flake attributes. A prismatic blade is a specialized flake generally defined as having a length at least twice the width. Lateral edges should be fairly parallel and there should be one or more straight dorsal ridges (arrises) roughly parallel to the lateral edges. Blades are removed from prepared cores by force application directly above ridges on the core face adjacent to the striking platform. Sollberger and Patterson (1976) have given details on the experimental manufacture of prismatic blades using several force application methods.

It is well known that some prismatic blades can be produced fortuitously during general flake manufacture and during bifacial thinning. To convincingly demonstrate the presence of a prismatic blade industry, polyhedral cores should be found with several parallel flake scars on each core, in addition to prismatic blade specimens. If cores are not available, it is probably still valid to state that a prismatic blade industry is indicated if a high percentage of blades is present in a flake collection. For example, some experiments (Patterson and Sollberger 1978:110) have shown less than two percent prismatic blades were produced fortuitously during bifacial thinning.

Unfortunately, there were no polyhedral cores directly associated with the Gibson Cache. Tunnell (1978:Fig. 1) does illustrate some flakes and crude polyhedral cores from an adjacent quarry site. While true blades are present, no really well made uniform polyhedral cores are shown that would indicate a refined prismatic blade industry.

I will attempt to show here that the flakes in the Gibson Cache were not all made by a uniform prismatic blade technology, but rather by a more random type of production strategy that produced some true blades, some miscellaneous prismatic flakes and some irregular shaped flakes. These various types of flakes were all then trimmed and thinned to produce a fairly uniform end product. This mix of flake types is fairly common in experimental quarrying activities that I have done and observed, when removing successive flakes from cores. Without really resorting to refined prismatic blade technology, a knapper can easily increase the percentage of blades produced by simply giving closer attention to the position of flake scar ridges on cores. To efficiently remove a large number of successive blades, however, requires careful striking platform edge preparation (Sollberger and Patterson 1976), and the Gibson Cache specimens do not show this. As noted above, Tunnell does not illustrate any corresponding well-made polyhedral cores with large numbers of flake scars.

It was noted that only three specimens (4%) of the collection did not have some cortex remaining on the dorsal surfaces. This would indicate that only the outer portion of each core was used for flake production. This is not indicative of a developed prismatic blade industry where most blades would be interior flakes with no remaining cortex due to core face preparation and the removal of more than one layer of blades. Of course, raw material size limitations can influence flake removal strategies and could offer some explanation as to the high percentage of flakes with remaining cortex in the Gibson Cache. However, in refined prismatic blade industries it is not common to find many product blades with remaining cortex. A skilled flintknapper would remove cortex as a general part of core preparation.

Tunnell describes the Gibson Cache as a collection of 72 blades. Using his very good photographs and drawings, I would estimate the following types of original flakes were used to produce these artifacts:

Original flake shape	Number	Percent
Questionable, much thinning	28	38.9
Prismatic expanding	11	15.3
True blades	28	38.9
Irregular shaped flake	5	6.9
	72	100.0

In the first category, over one-third of the flakes in the collection have too much trimming and thinning to judge what type of original flake was used. I have experimentally produced many trimmed flakes of this nature starting with irregular shaped non-prismatic flakes, for use in biface manufacture. Further, if preforms are desired for biface production, true prismatic blades will be avoided because of limitations in geometry and difficulties in clearing off dorsal ridges (Patterson 1979a). I judge that the type of original flake is questionable for specimens 1, 2, 3, 4, 5, 6, 8, 11, 12, 13, 17, 20, 21, 27, 29, 38, 40, 41, 45, 48, 50, 51, 63, 66, 67, 68, 70 and 73.

In the second flake category, it is normal to produce some prismatic flakes with expanding distal ends in quarrying operations, from random flake scar ridges present on cores. In a true blade industry, attention is given to producing carefully aligned ridges perpendicular to the striking platform to produce parallel edged blades. I judge that specimens 10, 23, 24, 25, 26, 36, 42, 43, 44, 49 and 60 are products from expanding prismatic flakes.

I feel that 5 specimens (Nos. 37, 56, 57, 58, 69) are definitely products of trimming and thinning irregular shaped flakes rather than starting with true blades. By the way, colateral thinning flakes can create a ridge effect where no ridge originally existed.

Judging by the amounts of trimming and thinning on many specimens, it would be difficult to see how all of the original starting flakes were parallel edged true blades. True blades in the Gibson Cache could include specimens 7, 9, 14, 15, 16,

18, 19, 22, 28, 30, 31, 32, 33, 34, 35, 39, 46, 47, 52, 53, 54, 55, 59, 61, 62, 64, 65, and 71. Thus, in my opinion only slightly over one-third of the total collection can be positively identified as true blades.

In summary, I do not feel that the Gibson Cache demonstrates an industry that produced all prismatic blades or even selectively chose all prismatic blades. Instead it reflects a variety of flake production strategies that does include prismatic blades. This conclusion should not be surprising. I know of no pure blade site in North America. Even on sites where large prismatic blades were very important, such as the Akmak level of the Onion Portage site in Alaska (Anderson 1970), other types of flakes were also produced.

A variety of flake production strategies are possible. Single cores could be used to produce only prismatic blades, while in other cases single cores could be used to make only irregular shaped flakes. In still other cases, single cores could be used to produce both blades and irregular shaped flakes. What appears to be important for the Gibson Cache is a uniform product, but several original flake types could have been used to do this.

As a miscellaneous comment on the Gibson Cache lithic technology, Tunnell (1978:28) feels that a high percentage of eraillures on specimen flakes probably indicates use of direct percussion with a hammerstone. Sollberger and Patterson (1976:Table 3) have shown little correlation between force application methods and the production of eraillures.

Tunnell (1978:22) has presented data on the depths of curvature of the ventral surfaces of flakes in the Gibson Cache. I would suggest that depth of curvature divided by flake length would be a more useful parameter for study since it would more accurately reflect the degree of curvature. Only arcs of curvature over the entire flake length should be considered. More localized curvatures due to ripple marks should be ignored in curvature studies or treated as a separate type of variable.

In referring to experimental work on prismatic blade replication by Sollberger and Patterson (1976), Tunnell (1978:49) states that "maximum width is used as a primary characteristic for comparative purposes" in assessing the results of various force application methods. This misses the point. What is important is the *shape* of the blade width distribution curve. Indirect percussion and pressure techniques allow better control of force placement and produces high percentages of blade widths centered around some idealized flake size. Direct percussion techniques tend to produce less defined blade width distribution curves with percentages more broadly distributed over the range of blade widths produced (Sollberger and Patterson 1976: Table 2).

Data given by Tunnell (1978:Fig. 9) for flake widths of the Gibson Cache have been plotted as a flake width distribution curve, shown in Figure 1. Percentages of flakes are rather unevenly and broadly distributed over the range of widths. Based on the above comments, use of a direct percussion technique is possibly indicated. However, the broad width distribution of flakes in the Gibson Cache could simply indicate a lack of uniform flake selection by the Indian knapper.

OTHER BLADE TECHNOLOGIES

In the Gibson Cache report, Tunnell has drawn several conclusions on other blade technologies which I feel warrant comments:

1. Tunnell (1978:Fig. 31) concludes that small ground platforms indicate use of indirect percussion. Of course large blades can be made by indirect percussion, as Tixier (Prideaux 1973:85) has demonstrated so well. However, Sollberger and Patterson (1976) show that small ground residual striking platforms are a product of striking platform abrasion and sometimes platform isolation which a skillful flintknapper will use to prepare cores for any type of force application. Ground striking platforms are used extensively in many types of flintknapping to produce easier, more uniform fractures (Patterson 1979b). Platform isolation by striking platform notching helps control size of the initial fracture and thus the size of

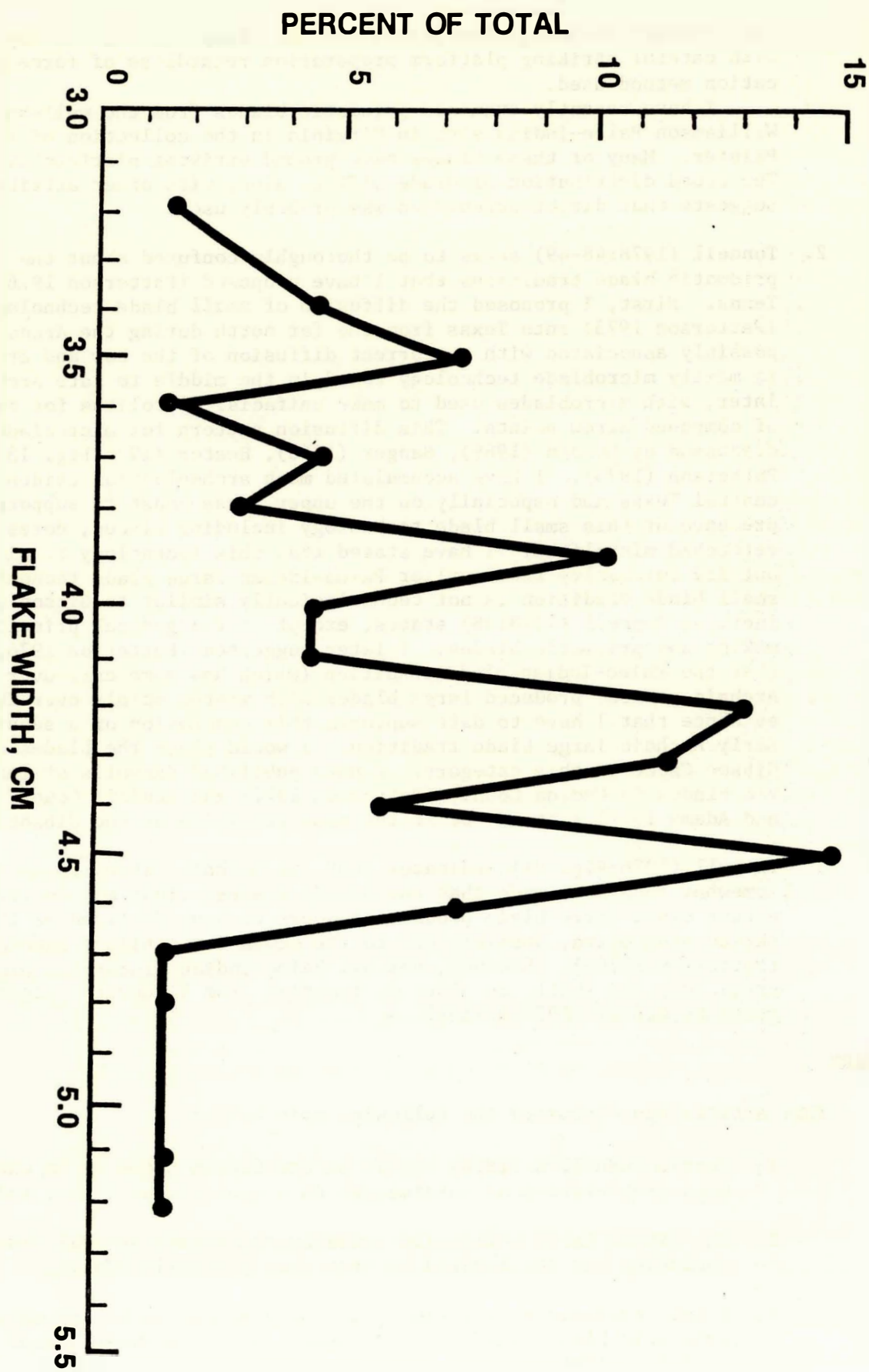

Figure 1. Gibson Cache Flake Width Distribution

the residual striking platform on flakes. Knapping results improve with careful striking platform preparation regardless of force application method used.

I have recently examined prismatic blades from the well-known Williamson Paleo-Indian site in Virginia in the collection of Floyd Painter. Many of these blades have ground striking platform edges. The broad distribution of blade widths, along with other attributes, suggests that direct percussion was probably used.

2. Tunnell (1978:48-49) seems to be thoroughly confused about the *two* prismatic blade traditions that I have proposed (Patterson 1976) for Texas. First, I proposed the diffusion of *small* blade technology (Patterson 1973) into Texas from the far north during the Archaic period, possibly associated with concurrent diffusion of the bow and arrow. This is mostly microblade technology found in the middle to late Archaic and later, with microblades used to make unifacial microliths for components of compound arrow points. This diffusion pattern for microblades is discussed by Borden (1969), Sanger (1968), Hester (1976:Fig. 13-5) and Patterson (1973). I have accumulated much archeological evidence in south-central Texas and especially on the upper Texas coast to support the presence of this small blade technology including blades, cores and retouched microliths. I have stated that this technology is widespread but did not evolve from earlier Paleo-Indian large blade technology. This small blade tradition is not technologically similar to Gibson Cache artifacts as Tunnell (1978:48) states, except in the general principles of making any prismatic blades. I later suggested (Patterson 1976, 1977) that the Paleo-Indian blade tradition (which has some carryover into the Archaic period) produced large blades with widths mainly over 20 mm. All evidence that I have to date supports this conclusion of a separate Paleo/Early Archaic large blade tradition. I would place the blades from the Gibson Cache in this category. I have published examples of large prismatic blades in Medina County (Patterson 1977) and Kendall County (Patterson and Adams 1977) that may be in the same tradition as the Gibson Cache blades.

3. Tunnell (1978:Fig. 31) indicates that the Archaic Gibson Cache blades are somewhat less well made than the *Clovis* blades. This may be true to some extent since large blade production seems to have declined as the Archaic period progressed, possibly due to the emphasis on biface manufacture (Patterson 1978a). However, not all Paleo-Indian blades are examples of great knapping skill, as shown by examples from Blackwater Locality No. 1 given by Hester (1972:92-106).

SUMMARY

This article has discussed the following main items:

1. Curtis Tunnell's (1978) report on the Gibson Cache is an exceptionally good presentation of information on a specialized lithic collection.

2. The Gibson Cache collection probably represents several flake types, including but not limited to only true prismatic blades.

3. I have restated my position that there appear to be two separate prismatic blade traditions in Texas. One is a Paleo-Indian large blade tradition that has some carryover into the Archaic period. The other is a small blade tradition, mostly microblades under 11 mm wide, that

starts in the middle Archaic period and is possibly associated with early use of the bow and arrow. These two blade traditions do not appear to be related, especially in consideration of the widely different types of end products being made by the two separate traditions. The Gibson Cache large size blades are possibly related to the Paleo-Indian tradition.

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FLAKES, BLADES, AND CORES

J. B. Sollberger

ABSTRACT

The author believes that the term "blade" implies a cultural specialization which, for proper identification, requires the presence of true blade cores. It is argued that the expression, "a blade is a flake whose length is two or more times its width," is a misleading definition that should be applied only to long flakes. Flake-blades do not imply a *cultural specialty* because they lack the refined attributes of pure blade specialization.

INTRODUCTION

Tunnell (1978) published a report of the Gibson Cache, documenting the recovery of 72 flint objects from a site in Coke County, Texas. These objects were extensively analyzed, drawn and photographed, and compared to other blade caches -- most admirably. Tunnell declared the objects to be, not flakes, not flake-blades, but "true blades." In reviewing the Gibson report, one senses a need to prove the proposed classification because of the lengthy itemization of attributes to identify blades. Finally, in concluding the report, there is an attempt to explain the lack of blade cores at the probable manufacturing quarry sites.

Obviously, to me at least, there is a problem. Otherwise, where are the true blades and blade cores and why argue the point that the Gibson Cache are true blades? In answer to this problem, may I suggest that it stems from our era of naming point types and describing objects by definition. During this period, wide flakes were separated from long flakes with the latter being assigned the term "flake-blade." Loose usage of the definition led to dropping the adjective "flake." Today, as Tunnell (1978) uses it, the definition for a blade is an object two or more times longer than wide. Those who study lithics world-wide find that definition to be a trap that implies a blade industry where such may not be true. This trap is a delicate problem because blade cores and blades have a great range in size, production methods, and special attributes.

ANALYSIS

Tunnell (p. 49) suggests that Paleo-Indian blades may have been produced by pressure flaking. I offer the following in this regard in lieu of his speculation.

The average Gibson Cache item is 8.48 cm long, 4.18 cm wide, and 1.39 cm thick. It weighs 51.24 grams. For comparison, an average size *Folsom* point weighs about 5 grams. It takes about eight flute flakes to weigh 5 grams. I find no one who has the strength in direct pressure flaking who can remove these flute flakes from fine chert preforms.

Personal experiments with iron levers indicate that with using a 10/1 mechanical advantage plus 150 lbs. on the lever end was required to produce pressure flakes of similar size and thickness to the Gibson Cache items. Those items produced in this manner were shorter in length than the Paleo-Indian blades (Tunnell 1978: Fig. 32). For the above experiments in pressure flaking, it was necessary to use 3/8-inch rods to immobilize the cores; antler simply crushed under the load. I ask you: Where did the plains Indians get the necessary ±7,000 psi to do their flaking? Where did they get the iron pins to replace the crushed antler?

Tunnell's (1978:49) conclusion of pressure flaking as well as the comments of Sollberger and Patterson (1976:530) appear to be premature and based on insufficient data. Tunnell may be correct and I may be wrong, but in my opinion the Gibson Cache "true" blades are no more nor less than judiciously applied core trimming and shaping

flakes whose "blade" dimensions, poorly defined prismatic facets, and ridges were dictated to the knapper by the physical dimensions of the core and serial flaking. Further, the knapper had no intention of applying "blade technology" or the evidence would be at hand from either the quarry sites or from the cache items themselves.

Tunnell's data on the quarry sites and Gibson Cache items are the most complete I have ever seen. From it we know that after platforming, the cores ranged from about 6 cm to about 12 cm in length. It is clearly indicated by flake length, width, platform spacing and cortex on 69 of the 72 items, that core diameters seldom exceeded their lengths. Tunnell's Figures 9, 12, and 15 show maximum flake thickness to be below mid-length. Profile drawings clearly show that the specimens terminate (Figs. 15 and 16) below the core's outer face, near or through the under face. Evidence for serial flaking is limited to one "round" because from 20 cores only 3 flakes are cortex free.

All cores must be contoured before serious flaking can follow. Some of these shaping flakes will be used, some will not. Cortex is no basis for rejection if flake thickness allows its later removal. Cores which have small diameter flaking platforms must have closely spaced flake removals or the core is quickly ruined. Shaping flakes must curl under the core bottom to contour the core which either sets up or maintains a usable flaking platform angle. These flake curvatures and thick distal ends identify core shaping flakes (Tunnell 1978:Fig. 15).

After a core is prepared, the second round of serial flaking starts. These flakes are intentionally straighter than are the initial round of core shaping flakes. Second round flakes are more evenly thick, which greatly reduces bifacing problems.

How then does one separate blades from flakes? Similar length to width ratios can be produced by billet, hard hammer, punched, and pressure flakes. Flute flakes and flakes from *Plainview, Angostura, Allen* and *Scottsbluff* points are all commonly two or more times longer than wide. For them, platform isolation, etc. is indicative of blade technology. Ribbon flakes are comparable to microblades. Careful core preparation for flakes is also blade technology.

CONCLUSIONS

I think the answer must be in cultural preference for tool design and usage. Therein is determined the extent of modification on a flake or blade after it is detached from a core. Also involved is the form of hafting used (in slots, etc.) as is the edge character of the tool; retouch by unifacial or bifacial flaking or straight with no retouch. Certainly, it is not a matter of skill where suitable flint was available. I can only conclude that "long" cores require "long" flakes. Serial flaking, then, can produce only "long" parallel ridges on the flakes and cores.

We can all equate prismatic blades to cores in MesoAmerica, or Hopewell blades and cores, Poverty Point, Alaska or in the Old World. All over, in space and time, these things go together--like Man and Wife. When they don't equate, something is wrong. I think it's our constructs and definitions and the typologies we use for communication. Some of these can be traps and false!

To me, the Gibson Cache items resemble "blade" cultural products only by formula. In more detailed comparison, they are clumsy; they are irregularly thick, wide, and crooked. These attributes describe not blades, but flakes--especially, core trimming and forming flakes.

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RESPONSE TO PATTERSON AND SOLLBERGER

Curtis Tunnell

The comments by Patterson and Sollberger on the Gibson Cache report are appreciated. Nothing is more frustrating than dropping a brick in a well and never hearing a splash or a thunk. Several points in the reviews deserve comment.

1. The reviewers' principal complaints involve classification of the Gibson Cache specimens as blades. I carefully avoided use of the term "prismatic blades" because of the image that brings to peoples' minds, and I also objected to the simple definition of blades being twice longer than wide. However, using the seven criteria for blades proposed in the article, the Gibson Cache specimens, as a group, fit a blade classification, although I concede they are a scruffy lot. Even Mr. Patterson classifies over half of the collection as "expanding prismatic" or "true" blades and states that in certain of their experiments "less than two percent prismatic blades were produced fortuitously."

2. Both reviewers say that polyhedral blade cores must be present to define a blade industry. Caches are a very special type of phenomenon and cores were not often transported and buried with blades. The blade cores were left on the surface of lithic procurement areas and are rare today because of constant reuse of procurement areas during the prehistoric period, and good quality cores were eventually used up. Where several blades can be refit, as in the Gibson Cache, we can reconstruct what the cores looked like--and I would interpret them as blade cores. They certainly fit Patterson's definition of such cores as having "several parallel flake scars."

3. Both reviewers comment on the fact that most of the Gibson specimens have cortex. Patterson concludes: "This would indicate that only the outer portion of each core was used for flake production;" Sollberger concludes they are core trimming flakes. I believe an equally valid conclusion is that dozens of better quality blades from the core interiors were selected for transporting away from the quarry, and these outer blades were cached for possible later utilization. On page 51, I estimate that as many as 130 additional blades may have resulted from the knapping session. Refit specimens in some of the core groups (Fig. 22) reveal a sequence of as many as seven removals in one area of the core. Core edge preparation by means of carefully placed short removals kept a good sequence of parallel blades coming off the core and there is no reason to believe the knapper would suddenly terminate a successful sequence when all cortex was removed. In fact, some sequences include one or two interior blades and I assume many others were selected for transportation.

4. While I respect Mr. Sollberger's prowess as a flintknapper, many of his experiments have been conducted using leverage devices and metal tools not known to have been present in the prehistoric period. After examining the *Clovis* Cache specimens in detail, I agree with Green (1963) that the small, carefully isolated, and heavily ground platforms and small bulbs bespeak removal by indirect percussion, while the characteristics of virtually all specimens in the Gibson (middle prehistoric) and Weaver-Ramage (late prehistoric) caches indicate removal by direct percussion. This contradicts the opinion expressed by Sollberger and Patterson (1976:530).

5. The curvature of the Gibson blades also concerns Sollberger, and he says second round flakes are "intentionally straighter." However, the *Clovis* blades, which I assume are widely accepted as true blades, and some of which show no cortex, are far more curved than the Gibson specimens. Sollberger fails to comment on other interesting knapping considerations in the report, such as refitted blades, sequences of removals in the core groups, and possible righthandedness of the knapper.

In general, I'm disappointed that the reviewers stopped with comments on blade definition and a few knapping considerations and failed to respond to equally important hypotheses concerning preforming and transportation of lithic materials in the southern plains region.

I wish to reiterate that, based on examination of many lithic caches, I feel production of blades as tool preforms throughout much of the prehistoric period in the Southern Plains is a reality deserving serious consideration by knappers and scholars.

References

Green, F. Earl
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1976 Prismatic Blade replication. *American Antiquity* 41(4):517-531.

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EL PASO ARCHAEOLOGICAL SOCIETY

The El Paso Archaeological Society meets each month except July at the Wilderness Park Museum. Field trips are scheduled throughout each year to archaeological sites. Seminars or workshops are held each year on some aspect of archaeology.

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THOMAS R. HESTER is the Director, Center for Archaeological Research, the University of Texas at San Antonio, and one of the founders of the STAA. Dr. Hester has been one of the primary contributors for *La Tierra* with well over 30 articles (authored or coauthored) since 1974. He has recently returned from a field season in Belize where he is directing the excavation of Colha, a massive early Mayan city.

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LEE PATTERSON is a very active avocational archaeologist who lives and works in Houston. Lee is well known to most readers of this journal for his wide variety of site reports, area summaries, and articles on lithics. He recently published an extensive area summary on southeast Texas in the 50th anniversary issue of the *Bulletin of the Texas Archeological Society* (1979).

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J. B. SOLLBERGER is also well known to most readers; a special issue of the journal honored Mr. Sollberger for his contributions to the archaeology of South Texas in October 1978. A flint knapper of the first rank, Solly resides in Dallas.

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THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among amateur and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership; To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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