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ARCHAEOLOGICAL MONITORING OF THE HISTORIC GAN'S DAM AT BERRY CREEK PRESERVE FOR THE WILLIAMSON COUNTY PARKS DEPARTMENT, WILLIAMSON COUNTY, TEXAS

Texas Antiquities Permit Number 6674

By

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and

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American Archaeology Group, LLC
Report of Investigations Number 187

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ABSTRACT

Archaeological monitoring of repairs to the historic Gan's Dam, previously recorded as one historic component of archaeological site (41WM17), was conducted October 2-12, 2013 at the Berry Springs Preserve in Williamson County, Texas. Previous storm damage caused the dam to fail and impounded pond waters pushed the surface portion of the historic dam downstream. Williamson County Parks Department contracted with a construction firm to make repairs to the dam. Consequently, AAG was contacted about the discovery of the subsurface old historic dam limestone blocks and this led to discussions with the Texas Historical Commission, Archeology Division, and with the U.S. Army Corps of Engineers (COE), Fort Worth District. Subsequently, a Texas Antiquities Permit (6674) for monitoring was obtained and all work was also conducted under the auspices of Section 106 of the National Historic Preservation Act. Construction resumed with AAG on-site to ensure that the remnant historic dam features were not disturbed. The remaining dam portions were encapsulated with cement to provide a strong retention dam and to provide for long-term preservation of the historic dame and any potential remaining cultural deposits. No artifacts or features were encountered during monitoring, therefore, only project records are curated at the Center for Archaeological Research at the University of Texas at San Antonio.

ACKNOWLEDGEMENTS

American Archaeology Group LLC (AAG) is grateful to those whose cooperation made the completion of this project possible. Mr. Randy Bell, Director of Parks for the Williamson County Parks Department served as our primary contact and visited the project area to ensure the proper areas were examined and provided the survey crew with engineering maps. He is also thanked for his avid interest in protecting and preserving local cultural resources. Additional staff at the Williamson County Parks Department that assisted in the project were Terry Roberts, Park Superintendent, and Mr. Michael Young, Parks Program Manager. Mr. Dustin Mortensen, P.E. from Freese and Nichols Inc. is thanked for his extra efforts to help protect the historic Gan's Dam while still achieving the desired repairs. Herbert G. Uecker served as Principal Investigator for the project, and Michael R. Bradle served as Project Archaeologist, assisted by Robert L. Bradle and Ethan A. Bradle. Mr. Mark Denton in the Archeology Division of the Texas Historical Commission served as our lead reviewer for this project and he is thanked for his assistance and advice during this project, especially on-site. Mr. William A. Martin, also from the Archeology Division of the Texas Historical Commission was very helpful and provided advice initially to help get the project launched.

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INTRODUCTION

Archaeological monitoring of repairs to the historic Gan's Dam, previously recorded as one historic component of archaeological site (41WM17), was conducted October 2-12, 2013 at the Berry Springs Preserve in Williamson County, Texas. Previous storm damage caused the dam to fail and impounded pond waters pushed the surface portion of the historic dam downstream. Williamson County Parks Department contracted with a construction firm to make repairs to the dam. Consequently, AAG was contacted about the discovery of the subsurface old historic dam limestone blocks and this led to discussions with the Texas Historical Commission, Archeology Division, and with the U.S. Army Corps of Engineers (COE), Fort Worth District. Subsequently, a Texas Antiquities Permit (6674) for monitoring was obtained and all work was also conducted under the auspices of Section 106 of the National Historic Preservation Act. Construction resumed with AAG on-site to ensure that the remnant historic dam features were not disturbed. The remaining dam portions were encapsulated with cement to provide a strong retention dam and to provide for long-term preservation of the historic dame and any potential remaining cultural deposits. No artifacts or features were encountered during monitoring, therefore, only project records are curated at the Texas Archeological Research Laboratory.

The Berry Creek Preserve Park Project north of Georgetown, Texas which is owned and operated by Williamson County Parks Department instituted the dam repair project. Apparently the top portion of the dam washed away a few years ago after torrential rains associated with a hurricane. The dam (Figure 1) was originally recorded by AAG as a part of our survey project in 2003 under TAC Permit Number 3256 as a historic feature within the boundaries of site 41WM17. The site served as a mill, originally built by John Berry in 1846 as one of the earliest mills in Texas and was later operated as Gan's Mill through 1916.

During the current construction, the contractor (Westar Construction) encountered two separate aspects of the dam that are worthy of discussion. First, while excavating prior to any monitoring permit issued and AAG's involvement and cutting into bedrock to create an anchor for the new dam footing, they found old pipes and certain components related to the Gan's Mill operation (Figure 2). These components were placed onto a trailer for disposition. Upon discussions with the THC, and due to the severe impacts to these mangled pipes and remnant wood, THC recommended that a Petition to Discard be provided so that Williamson County Parks & Recreation can salvage aspects for use in historic interpretation within the Berry Springs Park. The second feature discovered was the base of the dam deep within the soil deposits (Figures 3-6). It is the same dam that was recorded in 2003 but the entire top portion is now missing.

The dam was recorded in 2003 as 16 inches thick and 151 feet long and built to the natural contour with concrete, limestone and mortar. The problem is that new specifications were developed without knowing the exact footprint of the old dam. Accordingly, as the new base support area was trenched, a small portion of the original dam base was impacted. Construction was halted and the Texas Historical Commission

MAP REMOVED TO PROTECT SITE LOCATION

Figure 1. Location of Project Area on 7.5' USGS Map Quad *Georgetown.*

was contacted as well as AAG. Since AAG was the original recorder of the dam site, we were called and requested to assist in handling the situation. Upon communication with the THC, we agreed to conduct an on-site inspection which did occur on July 3, 2013.

AAG met on-site with representatives from Williamson County Parks, Freese & Nichols and Westar Construction. After reviewing the remains of the original dam walls, AAG concluded that the proposed new dam construction appeared to be parallel to the original dam wall. AAG obtained photos from all involved to present to the THC during consultations. Since the construction needed to extend down-slope with respects to OSHA shoring requirements (deep trenching), the best strategy for long-term stabilization and preservation was designed to pour cement capping over the existing dam wall, and with a new concrete dam wall immediately uphill from the historic dame associated with concrete aprons to the sides of the dam. This will also provide a long-term preservation technique for the wall as long as a barrier between the new concrete and the original wall is put into place. This approach will work also, as long as minimal impacts occur on the down-slope side of the original dam wall.

Figure 2. Pipes and internal components discovered during impact trenching of original dam wall prior to AAG monitoring the construction.

Figure 3. Deep trenching operation for the new dam wall. Note the old historic dam wall to the left of the trench and remnant walls at the edge of the water.

Figure 4. View of the old dam wall on the left side of the water, new trench upslope from the historic dam wall.


Figure 5. Trenching down into bedrock, original historic dam wall at left of trenching machine, in the mud.

Figure 6. Close-up of buried historic dam wall in soil deposits.

ENVIROMENTAL SETTING

General

The project area is located within the Texan biotic province as defined by Blair (1950:110-102). This province includes the broad ecotone between the forests of the Austroriparian and Carolinian provinces of eastern Texas and Oklahoma and the grasslands of the western parts of these states (Dice 1943). According to Blair (1950:100), the southwestern boundary is arbitrarily defined by soil type at the line separating pedalfers from pedocals. The Balcones escarpment forms an abrupt western boundary for the central part of this province in Texas, and the western boundary in north Texas corresponds to the western boundary of the Western Cross Timbers. Rainfall in the Texan province barely exceeds water need, and the region is classified by Thornthwaite (1948) as a moist subhumid climate with a moisture surplus index of from zero to 20 percent.

Soils

There is one soil series in the study area depicted on sheet 37 of the Soil Survey of Williamson County, Texas (Werchan and Coker, 1980): Oakalla. The soils developed on the bedrock, colluvial, and alluvial deposits associated with the upland, ancient terraces, modern floodplain and modern channel of Berry Creek. The Oakalla soils are alkaline, alluvial, soils and have high preservation potential for buried, intact artifacts.

The Oakalla series consists of deep well drained, loamy soils found formed in alluvium on bottom lands of the North San Gabriel River. Slopes are less than 1 percent. The solum ranges in thickness from 69 to 152 centimeters. The A horizon is 0 to 81 centimeter thick, dark grayish brown to dark brown, silty clay loam. The B horizon is calcareous and moderately alkaline. The B horizon is about 70 centimeter thick, light yellowish brown, silty clay loam. The horizon is moderately alkaline and contains common fine threads of calcium carbonate (Werchan and Coker, 1980).

Vegetation

The vegetation of this area has been described in detail by Tharp (1939). The demarcation line for the Texan province is the boundary between moisture surplus and moisture deficiency. Sandy soils in this region support an oak-hickory forest dominated by post oaks (*Quercus stellata*), blackjack oaks (*Quercus marilandica*), and hickory (*Carya buckleyi*). Clay soils in the area originally supported a tall-grass prairie, much of which was cultivated during the modern historic era. The reader is referred to Blair (1950) for a comprehensive description of the Texan Biotic province.

ARCHAEOLOGICAL BACKGROUND

Williamson County is located in the North Central Texas cultural-geographical region as defined by Biesaart et al. (1985:76). This area is referred to as Central Texas by most archaeologists and is rich in archaeological sites.

Summaries relevant to the prehistory of Williamson County and vicinity have been prepared by various archaeologists, primarily as a result of work at the Fort Hood Military Installation (Guderjan et al. 1980; Skinner et al. 1981, Thomas 1978; Roemer et al. 1985, Carlson et al. 1986), Belton Reservoir (Shafer et al. 1964), the Youngsport site (Shafer1963), and Stillhouse Hollow Reservoir (Shafer et al. 1964: Sorrow et al. 1967). Weir (1976), and Prewitt (1981, 1985) have published summaries of the region. Additional work by Prewitt (1974) at the Loeve-Fox site has also provided information concerning the prehistoric inhabitants of Williamson County. Two comprehensive syntheses concerning the archaeology and paleoecology of Central Texas recently appeared in Volume 66 of the *Bulletin of the Texas Archeological Society*: "Forty Years of Archeology in Central Texas," by Michael B. Collins (1995), and "Implications of Environmental Diversity in the Central Texas Archeological Region" by Linda Wootan Ellis, G. Lain Ellis, and Charles D. Frederick (1995). The following discussion is adapted primarily from these works.

Paleoindian Period

Although according to Willey and Phillips (1958:80), problems exist with the term "Paleoindian,". Nevertheless, the term is used ubiquitously in the archaeological literature, often to refer to prehistoric cultures oriented toward big game procurement as a primary means of subsistence. Collins (1995:381) posited instead that during Clovis times, Paleoindians exploited a diverse range of fauna that not only included large herbivores such as mammoth, bison, and horse, but also included smaller animals such as turtles, land tortoises, alligators, mice, badgers, and raccoons. The results of excavation of a cultural pavement at Kincaid Rockshelter suggest that the Paleoindian inhabitants of the site returned there repeatedly as part of a regular hunting and gathering strategy, in contrast with the migratory subsistence pattern of nomadic hunters who only pursued big game. Thus, it is probable that the Clovis diet included a broad array of plants (Collins 1990; Collins et al. 1989).

According to Skinner et al. (1981:13), the Paleoindian period is one of the least understood time periods in Central Texas prehistory, primarily because so few sites have been excavated. For example, as of 1985, only two Paleoindian sites had been reported for Bell County (Biesaart et al. 1985:125). Evidence of Paleoindian cultures consists primarily of surface-collected materials found over much of Central Texas. At Fort hood, distinctive Paleoindian projectile points were found in multi-component surface sites and as isolated finds (Carlson et al. 1986:125). Generally, it is believed that this period lasted from about 10,000 B.C. until 6000 B.C. Diagnostic artifacts of the period include dart points of the *Angostura, Clovis, Folsom, Golondrina, and Plainveiw* types as defined by Suhm and Jelks (1962) and Turner and Hester (1985).

These early sites are often found on old terraces of major river drainages and are typically more distant from major streams than more recent occupations (Bryan 1931). Some rockshelters, such as the Levi site, were intensively occupied even though they are located a considerable distance from major rivers. The only example of a Paleoindian occupation site in Central Texas adjacent to a major drainage is the Horn Shelter (41BQ46) in Bosque County (Redder 1985). Collins (1999) recently reported on archaeological work at the Gault Site, a major Clovis site in Bell County that was still being studied at this writing.

Archaic Period

The Archaic is a comparatively lengthy cultural period, which persisted in Central Texas from approximately 8500-1250 Before Present (B.P.). According to Prewitt (1981:71), "The Archaic Stage dominates all other remains in Central Texas." Prewitt (1981) has subdivided the Archaic into eleven phases. Johnson (1987) has questioned the validity of the phase concept as used by Prewitt, especially the phases occurring before the Middle Archaic. Carlson et al. (1986:15) grouped these into Early, Middle, Late, and Terminal Periods.

According to Prewitt (1981:77-78), during the Early Archaic there was a "strong orientation toward the gathering aspect rather than the hunting, and a mobile population was of low density." These characteristics apparently were predominant during the Circleville, San Geronimo, and Jarrell phases (8500-5000 B.P.). In the Middle Archaic, food gathering apparently became very specialized as evidenced by the presence of numerous burned rock middens/mounds (Prewitt 1981:78-80). Prewitt divides the Middle Archaic into the Oakalla, Clear Fork, Marshall Ford, and Round Rock phases (5000-2600 B.P.). It appears that considerably fewer burned rock middens were formed during the Late Archaic than in the earlier Archaic. The archaeological record indicates that bison were important in the diet of prehistoric peoples, but were not necessary the principal food source, during this time (Prewitt 1981:80-81). The Late Archaic occurred during the San Marcos and Uvalde phases (2600-1750 B.P.). The terminal Archaic, according to the classification by Carlson et al. (1986), includes the Twin Sisters and Driftwood phases (1750-1250 B.P.). An increase in the importance of gathering and an apparent peak in site density seems to have occurred during Prewitt's (1981:82) Driftwood phase. A majority of the sites in Williamson County are Archaic in age, which, according to Prewitt (1981:Figure 3), lasted from 8500-1250 B.P. This interpretation is supported by the by Collinss (1995:383) assertion that "two-thirds of the prehistory of Central Texas is 'Archaic' in character."

Late Prehistoric Period

This period has been characterized in the archaeological literature as the Neo-American Stage (Suhm et al. 1954), the Neo-archaic (Prewitt 1981), and the Post-Archaic (Johnson and Goode 1994). The Late Preshistoric is typically divided into the Austin (1250-650 B.P.) and Toyah (650-200 B.P.) phases. Technological changes are the

primary distinguishing characteristic of this stage. The archaeological record indicates that during this period, the bow and arrow became the principal weapon for hunting and warfare, and that the use of ceramics and the practice of horticulture first appeared in central Texas and surrounding regions.

According to Collins (1995:385), during the Late Prehistoric of central Texas, the bow and arrow was the first of these cultural innovations to be adopted, then pottery appeared, and finally agriculture developed last in the sequence, but was of relatively minor importance. Until the onset of these Late Preshistoric adaptations, most cultural groups continued to practice hunting and gathering as their principal means of subsistence, as had their ancestors throughout the Archaic and Paleoindian periods. However, in about 800 B.P., evidence for a different subsistence adaptation appears in the archaeological record and this cultural time boundary marks the separation between the late Archaic and the Austin and Toyah phases of the Late Prehistoric period (Collins 1995:385).

The most obvious of the changes that emerged at the beginning of the Late Prehistoric period was the introduction of the bow and arrow and decreased use of the *atlatl* or spear thrower. Otherwise, life ways in the Late Prehistoric were probably quite similar to those in the earlier Archaic period (Prewitt 1981:74; Weir 1976). A chronological model of bison presence and absence periods on the southern plains suggests that bison were present during the Toyah phase but during the preceding Austin phase (Dillehay 1974).

Historic Period

Collins (1995:386) divides the historic period of Central Texas into three sub-periods: early, middle, and late. The archaeological record of the first two of these sub-periods contains vestiges of occupations by both indigenous and European peoples; however, evidence of indigenous culture is almost completely absent for the third sub-period. The early historic sub-period in Central Texas began in the late seventeenth century with the arrival of the first Europeans to that area. Williamson County is situated within the historic range of the indigenous Tonkawa Indians who inhabited the area in the sixteenth century (Newcomb 1986). By the nineteenth century, they had broken ties with the Comache and Wichita and were associated with the Lipan Apache (Aten 1983:32). The Apache have been described as typical southern Plains Indians who were hunters and gathers and who lived along the streams and rivers of Central Texas. Remains of this group have not been found in an historic context in Williamson County.

During this period, several aboriginal groups, including the Caddo, Jumano, Tonkawa, Comanche, and Lipan Apache occupied Texas (Newcomb 1986), and trade existed between the Jumanos and the Caddos. The Lipan Apaches, and subsequently the Comanches, entered the region from the Southern High Plains while following migrating game herds. Contact-period occupations are often identified by the presence at local archaeological sites of glass beads, gun parts, gunflints, metal projectile points, and European manufactured ceramics. The archival search by AAG did not discover the

existence of any Historic Indian sites in Williamson County. In nearby Coryell County, a blue glass bead was found with one of the burials at 41CV1, a group burial along the Leon River (Jackson 1931), and a steel arrow point has been reported as an isolated find on Horse Creek in the extreme east corner of Coryell County (Campbell 1952).

The earliest European expedition likely to have visited present-day Williamson County was led by Spaniard Alvar Nunez Cabeza de Vaca. That party wandered throughout Texas from 1528 to 1536. Some researchers believe that the eight months they apparently spent among the Avavares Indians was actually spent with the Tonkawas of the Williamson County area (Scarbrough 1973:52).

The next recorded European incursion was led by the French governor of Texas, Robert Cavalier, Sieur de la Salle. In 1686 and 1687, La Salle met Indians and described landmarks that, according to some scholars, were in Williamson County (Hackett 1931:519-520).

In 1688, in response to French activity in Texas, Captain Alonso de Leon followed Spanish government orders and began construction of the system of royal roads that eventually spanned Texas and several surrounding regions known as the Caminos Reales (The King's Highway). These roads were used to establish several missions in east Texas. It was soon discovered that the segment of the camino real just to the east of present Williamson County became impassable when heavy rains overflowed the streams. In such wet times, De Leon designated a route to the west and north as the Camino de Arriba (the Upper Route). This road crossed Brushy Creek, the San Gabriel River, and the Brazos River just north of its confluence with the Little River. In his recorded trip along this route, De Leon left "a bull, a cow, a stallion, and a mare at each river he crossed," thus significantly contributing to the mustang and longhorn population of Texas" (Gard 1954). The construction of this trail through the heart of Williamson County by De Leon instigated the first Spanish exploration of the area immediately surrounding the project area.

In 1691, Spanish governor of Texas Domingo Teran de los Rios brought herds of cattle to the missions established the year before. Consisting of 50 soldiers and 13 churchmen, his entourage passed through southeastern Williamson County (Casteneda 1936 I:362, Bancroft 1884 XV:391, and Gard 1954:5).

The next Spanish expedition to pass through Williamson County occurred under the leadership of Captain Domingo Ramon and the dashing French trader Lois Juchereau de Saint Denis. The Ramon-St. Denis expedition, consisting of 75 men, 64 oxen, 490 horses and mules, and more than a thousand sheep and goats, spent several weeks in present-day Williamson and adjoining Milam Counties. They met and traded with several thousand Native Americans of various tribes. One of the clergy, Fray Espinosa, named several of the streams (Casteneda 1936 II:42, and 51).

Joseph de Azlor de Verta, a wealthy Coahuilan who had obtained the title of Second Marquis de San Miguel de Aguayo, conducted the most ambitious Spanish

expedition that ever entered present-day Williamson County. In fall of 1720, the Marques de Aguayo launched what is probably the largest expedition ever made to establish Spanish dominion over the province of Texas. It consisted of 500 men, 600 loads of supplies, 4000 horses, 600 cattle, 900 sheep, and almost 800 mules. After traveling nearly a thousand miles, the huge delegation reached the Colorado River. From there, it proceeded northeastward, crossing Chandler Branch and the South and North branches of the San Gabriel River in central Williamson County (Scarbrough 1973:55-56, citing Castaneda 1936 II:131, 137). After traveling across the Lampasas, Salado, San Andres (now the Little San Andreas), and Brazos Rivers to the north, the entourage turned eastward near present-day Waco to reestablish the inactive Spanish missions founded in 1691. Some scholars believe that in successfully reestablishing the Spanish presence in Texas, this last of the major expeditions kept the French from capturing the state (Bolton 1962:144, Bolton 1939:17-18, and Morfi 1935 I:221-223).

In general, the expedition followed present-day Interstate 35 through Williamson County (Hackett 1931:474). Heeding the advice of a Tonkawan chief, El Cuilon (also called Juan Rodriguez), Aguayo followed the El Camino de Arriba through Williamson County, rather than taking the more heavily traveled El Camino Real which the chief had deemed to be impassable for this huge expedition because of marshes and thick woods (Hackett 1931:474).

The Spanish Army waged war against the Lipan Apache in the Williamson County area for 14 years. The area became renowned for its buffalo (Morfi 1935 I:221-223; Bolton 1939:17-18; Bolton 1962:27-28, 30, 141; and Hackett 1931:492). A particularly large Indian settlement called Rancheria Grande attracted frequent Spanish visitations during the first four decades of the eighteenth century to recruit candidates for the San Antonio missions. In 1746, the Spanish established Mission San Francisco Xavier de Horcasitas on the San Gabriel River just east of Williamson County to address the spiritual needs of the Native Americans and to fend off French incursions by also establishing a trade network with the local tribes (Bolton 1962:45, 150-151, 153-156, 160, 166, 185; Gilmore 1969:143).

Just two years later, the mission was destroyed by the Apache. However, by the 1749, two new missions, San Ildefonso and Nuestra Señora de la Candelaria, opened, and Mission Xavier was rebuilt. All three missions were in use for the next seven years. To add protection, Presidio San Francisco Xavier de Gigedo was established in the ara in 1751. But tragedy struck as infighting among the Spanish left the Native American neophytes discouraged and many retreated into the wilderness. In 1756, the missions were abandoned. Although now actually in Williamson County, these three missions and the presidio influenced the daily lives of the many Native Americans who lived within a large part of central Texas (Scarbrough 1973:63-64).

As soon as the early 1820s, a few pioneers of Austin's Colony drifted beyond the colony's boundaries to settle in the valleys of Brushy Creek and San Gabriel River. The majority of Williamson County was once part of the Robertson Colony. Early historic-era settlement of the area occurred in 1835 at Salado, in Bell County. Most of Williamson

County's earliest residents came from Bastrop and the Webber's Prairie area to the south and the Brazos River to the east (Scarbrough 1973:64-70).

Within the State of Coahuila and Texas, the earliest regional governing body of today's Williamson County area was the Municipality of the District of Viesca. This district was northwest of the Camino Real, extending to the east beyond the Brazos valley. Along the Brazos, Tenoxtitlan, a Mexican military post abandoned in 1832, became a large trading post, the closest one to the settlements of Williamson County. The seats of government also were located on the West Bank of the Brazos, first in Sarahville de Viesca, five miles north of Marlin, Falls county, and then in Nashville, between present-day Gause and Hearne (Scarbrough 1973:71-77).

Far removed from protection by the Spanish garrisons, these remote area were the scenes of frequent Indian attacks. Surveyor Thomas A. Graves was ambushed by Indians while working on the San Gabriel River in the fall of 1835. A surveyor named Lang was killed by Indians in 1836 while working at the headwaters of Brushy Creek (Scarbrough 1973:76). Neil McLennan and his family suffered several dangerous encounters in the San Gabriel Valley. These attacks stimulated the organizing of one of the three original Texas Ranger companies in 1835. The rangers built a cedar facility near present Leander called the Tumlinson Block House (Barker 1925:329-330, 361, Smithwick 1900:213, Yoakum 1856 II:265-267, Webb 1952 II:690, Brown 1896:85, De Shields 1912:90-93, Wilbarger 1985:190-192).

In 1835, the District was renamed the Municipality of Milam. The Mexican Army invaded Texas to put down the Revolution. This precipitated the Runaway Scrape, causing many of the Anglo-American settlers in the Williamson County area to flee. During this time, Tumlinson's Block House Fort was burned by Indians (Makemson 1904 and Smithwick 1900). Most of this company of Rangers had departed to assist General Sam Houston at San Jacinto. The company was commanded by Major Robert M. Williamson (Bolton 1962:141).

With General Houston's victory at San Jacinto, the Republic of Texas began to govern the vast territory. Milam was made a county, one of 23 original counties in the Republic. In 1837, the United States suffered a widespread devastating crop failure and depression. Many of these newest immigrants settled in Milam County. Many Swedish immigrants settled in present-day Williamson County. The first organized settlement in Williamson County was Kenney's Fort, located just east of present-day Round Rock. Dr. Thomas Kenney built a house and fort on elevated above a cove along the south bank of Brushy Creek, just west of where Dyer Branch flows northward into Brushy Creek. Indian raids plagued the first settlers. In 1839, a particularly bloody conflict, the Battle of Brushy Creek, resulted in the death of several colonists and about 20-30 Native Americans. The Williamson County area was the setting for several other major skirmishes with Indians (Scarbrough 1973:80-97).

Williamson County played a crucial role in two salient incidents involving ongoing relations between Texas and Mexico. One was the Flores-Cordova Affair, and

the other was the Santa Fe Expedition. In 1839, a prolonged chase led to the Texas Rangers' capturing a party of Mexican officials between the North and South San Gabriel. The Mexicans were cornered on a steep bluff of the North San Gabriel River. Although most escaped, the Texians recovered at least 156 horses and mules, several hundred pounds of gunpowder, and a variety of luggage. In the bags, they discovered several official communications revealing a plot to incite Indians against the government of Texas (Scarbrough 1973:89-92). Two years later, Texas forces met a Kenney Fort and other sites north of Austin to head for New Mexico. The expedition met with bitter failure, as the forces were poorly organized and New Mexico remained loyal to the government of Mexico (Scarbrough 1973:98-101).

Relations between Native Americans and Euro-American settlers remained hostile, producing deadly conflicts throughout this period. Dr. Thomas Kenney, founder of Kenny Fort, was killed by Indians. A renowned mediator who resolved numerous conflicts between Indians and settlers was Delaware tribesman Jim Shaw (Scarbrough 1973:103-108).

The 1840s witnessed steady growth of this area. New communities arose around mills, churches, and general stores. Makemson (1904) identifies the location of these settlements: "At the time the county was organized, with few exceptions, the settlements were confined to Brushy Creek and San Gabriel River. Comparatively few settlements were made far out in the prairies until the era of barbed wire and the advent of railroads (Makemson 1904). New stage lines were added. A line connecting San Antonio to Waco was the first to run through the heart of Williamson County area. The first general mercantile store in the county was opened by Nelson Morey in 1848 just south of present Hutto. That same year, R. H. Taliaferro organized Missionary Baptist Church, the area's first Protestant church (Scarbrough 1973:108-115). Also in 1848, the county's first school was built at Moss's Spring, just west of present Round Rock (Makemson 1904).

Led by San Jacinto hero Washington Anderson, a campaign was launched in 1848 to create a new county in this area north of Travis County. It was impractical to travel all the way to Nashville to conduct Milam County government business. The population well exceeded the 250 estimated by various historians. The legislature agreed, naming the area after longtime Judge Robert McAlpin Williamson on March 13, 1848. The Judge officiated many times at courts throughout Milam County.

In May 1848, a tract of land lying between the North and South San Gabriel Rivers, just south of their confluence, was donated by George Washington Glasscock for the count seat. In his honor, it was named "Georgetown" (Scarbrough 1973:113-127). It was located near the post office of Brushy Creek, which had been established the year before (Scarbrough 1973:145).

Troubles with Indians gradually declined throughout the 1850s as the Indians became increasingly friendly (Scarbrough 1973:141). The last victims of Indian attack occurred as Mr. and Mrs. Wofford Johnson and their daughter were killed in western Williamson County on August 15, 1863. After that time, Comanches still ranged the area,

although attacks were rare because of the presence of the Texas Rangers. Most of these lawmen were called to the Confederate cause in the Civil War, but the survivors reorganized and returned to duty after the war (Makemson 1904:11-12, and Maltby 1906:20, 23-34, 26-27, 150-152, and 204).

By 1850, the population of Williamson County had grown to 1,568, and it reached 3,779 by 1858 (Scarbrough 1973:141). In the 1860 Census, the County's population was 4,529, which rose slightly during the tumultuous Civil War and Reconstruction years to 6,368 by 1870. During the post-bellum industrialization and tenant farm transition, population exploded to 15,155 in 1880, the highest rate of increase over a 10-year period in the County's history. By 1870, Indian violence against settlers had been halted, encouraging much greater settlement. Population continued to increase but at a slightly lower rate, being 25,909 in 1890, 38,072 in 1900, and 42,228 in 1910. From 1920 to 1970, population levels actually declined, but they exploded in the past 25 years as Williamson County became part of the Austin Metropolitan Area (Texas Almanac 1993: 335).

The City of Georgetown experienced a similar population increase. From 1850 to 1870, it experienced the modest growth from 200 to 320. From 1870 to 1880, it rose to 1,354, and almost doubled to 2,447 in 1890. Increases were slight through 1960, except when populations slightly declined prior to 1920 (United States Census).

The frontier moved westward, leaving in its wake a growing population and farming area in western central Texas. The earliest farms grew commodities necessary for sustaining life for the pioneer settlers. Of the 249,528 acres of land comprising the County in 1858, only 22,618 acres were in cultivation. These consisted of 11,100 acres planted in corn, 9,350 in wheat, and 1,378 in cotton. The 1858 Williamson County tax rolls listed four thousand horses and 25,000 cattle were listed as property of the citizens. Peaches and hogs also are listed as agricultural commodities. In the 1850 United States Census, three-fourths of the men were listed as "farmers," and most of the others' occupations were listed jointly with "farmer" (United States Census, 1850).

John S. Knight planted some of the first massive amounts of cotton in the County in 1870. Many acres of eastern Williamson County were planted in Cotton during the 1870s and 1880s. Gins and mills involving the spin-off cottonseed industry flourished in Circleville, Granger, Taylor, and Georgetown. In 1899-1900, Williamson County led the state in number of bales of cotton produced. The county's first gristmill was built by Wash Anderson on the north bank of Brushy creek in 1843, at present Round Rock.

After destruction of this mill by a flood in 1845, others were built and maintained in the area throughout the nineteenth century. Other antebellum mills include Gann's Mill on Berry's Creek, operated from 1846 to 1916 (which is located on the current project area); Gooch's mills, which began in 1849; Mather's mill, which began in 1852; Ira Chalk's mill, which was stared in 1855; and the Knight's Springs mills of Benjamin Gooch and John W. Owens, which thrived between 1852 and 1855 (Scarbrough 1973:161-162). Throughout the postbellum period to the end of the nineteenth century,

numerous mills flourished throughout the county processing corn, syrup, and other products. Conducted mostly in the western portions of the county, the cattle industry reached its zenith from 1875 to 1900 (Scarbrough 1973:233-235).

Historic Associations of the Project Area

The project area was once a key part of the rural Texas homestead of famous American frontiersman John Berry (1786-1866). He is the person for whom Berry Creek is named and whose remains rest in the small Berry family cemetery on the property. The information in this section about Berry and his equally renowned family is summarized from Pope (ed. 1988). The interested reader is referred to Pope's work for additional information about the Berry's.

Born in 1786 in Louisville, Kentucky, John Berry also lived during the course of his life in Indiana and Texas. He was twice a widower, and he and his three wives brought eighteen children into the world. Berry was generally a man of simple means, being a blacksmith, gunsmith, and miller, but he nevertheless lived an illustrious and exemplary life.

Berry was a veteran of the War of 1812, having fought under the command of his first wife's father, Bill Smothers, at the Battles of Tippecanoe and the Thames. Smothers came in 1813 to the part of Mexico that later became Texas, where he explored the untamed Brazos River valley for several years before becoming a scout for Stephen F. Austin in 1821. His stories of Texas apparently encouraged John Berry to relocate there from Indiana in 1826 with his second wife, Gracie, his three sons Joseph, John Bate, and Andrew Jackson, and his three daughters Elizabeth, Hannah, and Margaret. The Berrys settled in the Atascosito District in what is now far southeast Texas. Before coming to Texas, Berry had homesteaded with his first wife, Betsy, in 1816 near the small rural settlement of Blue Spring, Indiana, where he helped operate the family-owned grist mill on Indian Creek, near Hamilton. Betsy died in about 1818.

In 1831, Berry received a town lot in Liberty from the Mexican government because of his skill as a blacksmith and gunsmith. In 1834, Berry and his family moved to the new town of Mina (later Bastrop), where they received two town lots and a 12-acre farm tract. Pope (ed. 1988:1) indicates that shortly before the Battle of the Alamo in 1836, famous frontiersman, hunter, statesman, and Texian Alamo defender David Crockett, who was born in the same year as Berry, came to Berry for repair of Crockett's famous flintlock rifle, "Old Betsey," while the Berrys were at Mina.

Berry's second wife, Gracie, died in 1830, and in 1831 he took a third wife, Hannah, just a few years prior to moving to Mina and re-establishing his blacksmith trade there. John and his three eldest sons became Robertson Colonists in late 1835. By that time, the struggle for Texas independence had begun. Except for the three eldest sons, who joined the Texian forces, the Berry family fled to Fort Parker for protection from Santa Anna's army during the Runaway Scrape that occurred after the Battle of the

Alamo in the spring of 1836. Sons Bate and Jack fought at San Jacinto. Joseph was also present but apparently did not engage directly in the action (Pope ed. 1988:13).

Both before and after the war, these three also served with the rangers under such commanders as Seth Billingsley, John G. McGehee, William W. Hill, and John L. Lynch. All fought against hostile Indians in the famous Battle of Plum Creek in August, 1840. Joseph and Bate were members of the ill-fated Mier Expedition to Mexico, where Joseph was bayoneted to death by a Mexican soldier after being incapacitated with a broken leg. After being captured, escaping, and being re-captured and confined to Perote prison near Mexico City, Bate drew a white bean and thereby escaped execution. But he remained a prisoner until September, 1844. Bate, Andrew, and several of Berry's younger sons also served in the Civil War.

In August, 1845, John Berry received title from the Republic of Texas of a league and a labor of land in western Milam County (later Williamson County), about three miles northeast of present Georgetown. The AAG project area is the part of that grant near the location of Berry's last home. It contains the spring where Berry established a large grist mill used by farmers from surrounding areas to grind corn and wheat. It was one of the first grist mills in the county and its burrstone is currently displayed on the grounds of the courthouse in Georgetown.

Berry also built a blacksmith shop and forge within the Berry league. He and his sons cleared the property, erected split-rail fences, and built several cabins on it for their respective families. Some of the pecan trees present along Berry Creek at the time of this writing are alleged to have been planted by the Berry's (Pope ed. 1988:16). As a commissioner appointed by the Texas Legislature, John Berry helped organize the county and establish the county seat, and he served as a member of the county's first grand jury. Until a church was built, the home of Berry and his third wife Hannah along Berry Creek served as the meeting place for the local Baptist congregation for more than 14 years.

PREVIOUS INVESTIGATIONS

The Texas Archeological Research Laboratory files contain copies of numerous communications from landowners and artifact collectors documenting or describing sites and artifacts found in Williamson County. Also present in those files are copies of unpublished manuscripts, some of which do not provide sources or dates of preparation. Information regarding previous work in other parts of Williamson County appears in the various references cited above.

Williamson County has been the scene of numerous investigations by professional archaeologists at various levels from small projects by private contractors, universities, and state agencies to large area surveys such as that at Granger and North Fork Reservoirs, the first large-scale project in the county. Virtually no systematic archaeological work was done in Williamson County prior to the initial survey of the proposed North Fork, South Fork, and Laneport reservoirs (later referred to as Granger Reservoir) in 1963 (Shafer and Corbin 1965) as part of the Texas Archeological Salvage Project (TASP). Prior to this effort, two articles documenting archaeological work in the county were published by T.N. Campbell (1948) and Mardith K. Schuetz (1957).

In 1963, the TASP surveyed the sites of the proposed reservoirs. At North Fork, 44 sites were recorded, over half of which are burned rock middens or sites buried in alluvial deposits (ceramics were only found at one site [41WM71]); at South Fork, 30 sites were identified, almost half of which were burned rock middens; and at Laneport 10 sites were recorded. At this latter reservoir, both burned rock middens and alluvial terrace sites were found, but it was concluded that only the latter type of site can be said to be typical of the Laneport area (Shafer and Corbin 1965:47). Approximately 10 miles north of Taylor, Laneport Reservoir is the site of the closest major archaeological survey to the project area except for surveys along Brushy Creek about five miles to the southeast. Additional work in the area was conducted by Frank W. Eddy (1973) at Laneport, William S. Sorrow (Jackson 1974) at North Fork and Prewitt (1974) at Granger.

These early studies were not conducted using intensive or systematic sampling procedures. Therefore, in May 1976 the Anthropology Laboratory at Texas A&M University (TAMU) began an intensive archaeological site survey and assessment program of all government owned lands in the North Fork and Granger reservoir boundaries (Patterson and Moore 1976). The TAMU work consisted of a preliminary assessment (Patterson and Moore 1976), an archeological survey of the Granger Reservoir area (Moore, Shafer and Weed 1978) and the North Fork River basin (Patterson and Shafer 1980).

Several sites were tested prior to the inundation of Granger Reservoir. Site 41WM21 was tested by TAMU. In 1976, Gary L. Moore tested sites 41WM21, 41WM124, and 41WM133 (Shafer and Moore 1976). Clell L. Bond (1978) tested 41WM30, 41WM284, and 41WM294 in 1977. Site 41WM21 was determined to be the remains of an intermittent occupation during the Early, Middle, and Late Archaic periods of Texas prehistory.

The work at sites 41WM30, 41WM284, and 41WM294 was designed to determine possible similarities in lithic procurement and reduction at the three sites and to explain behavior patterns manifested in the archaeological deposits at 41WM130. This study established that 41WM130 had been periodically occupied from the Twin Sisters through Toyah phases. It was determined that the subsistence pattern of the site's inhabitants remained nearly constant through time and included the wide-ranging exploitation of resources found in the San Gabriel Valley. It was postulated that the availability of lithic resources was one of the principal reasons that this site was reused as during such a lengthy interval.

A single site (41WM283) is located about three miles northwest of the center of Taylor on the east bank of the north fork of Mustang Creek at the former Wilson Springs community. This site was recorded in 1976 (TARL site files). It is described as an Archaic occupation and quarry site. Additional surveys by Espey, Huston & Associates (Foster 1994) revisited 41WM432, 41WM546, and 41WM547. They also recorded one new site, 41WM808. Bradle et al (1998) surveyed along the North Fork San Gabriel River in Georgetown, Texas and recorded 41WM432, 41WM930, 41WM931, 41WM932, and 41WM933. Bradle et al. (2002a,b) conducted other nearby surveys that are worth noting.

An archaeological survey of approximately 126.602 acres for the proposed Berry Creek Preserve park project was conducted by American Archaeology Group, LLC (Bradle et al. 2003). (AAG) in October and November 2003. This project was performed for the Williamson County Parks Department. This investigation was performed using the pedestrian survey method supported by shovel testing and probing, by subsurface mechanical trenching and augering. One archaeological site (41WM17) was identified within the project area that contains prehistoric components ranging in age from Middle Archaic to Transitional Archaic (2000 B.C. to A.D. 700). The historic components range in age from 1845 to the present. 41WM17 was recorded as a large multicomponent site consisting of a historic farmstead, historic cemetery, prehistoric lithic scatter, large burned rock midden, former historic springhouse, historic Berry Spring site with associated Gan’s Mill dam (the focus of the current project) and ponds. This site is eligible for inclusion on the National Register of Historic Places (NRHP) and worthy of designation as a State Antiquities Landmark (SAL). The entire project area was recommended for a National Register district. On July 16, 2004, the THC designated site 41WM17 as a State Antiquities Landmark and months previously, the State Historic Preservation Officer determined that the site was eligible for inclusion on the National Register of Historic Places.

FIELD METHODS

Background Research

Before entering the field, a background investigation was conducted by AAG. The TARL site records were checked for previously recorded sites in the project area and vicinity. In addition, site reports documenting work in the region were examined for information concerning archaeological surveys and other work relevant to the project area. AAG coordinated carefully with the Williamson County Parks Department to ensure that all of the project area was included in the investigation.

Field Survey

Archaeological monitoring of repairs to the historic Gan's Dam, previously recorded as one historic component of archaeological site (41WM17), was conducted October 2-12, 2013 at the Berry Springs Preserve in Williamson County, Texas. Trenching adjacent to the historic remnant Gan's Dam (Berry Springs) was conducted by Michael R. Bradle and Herbert G. Uecker with assistance from Robert L. Bradle and Ethan A. Bradle. Constant supervision with periodic close inspections were conducted daily to ensure that no further impacts would occur. Each phase of the trenching and dam construction were documented through photography and copies of all engineering designs are attached in Appendix II for future historic preservation planning and preservation use. No artifacts or features were encountered during the monitoring phase of this project, therefore, only records were curated at the Texas Archeological Research Laboratory.

AAG developed in concert with the engineers and contractors a more proactive approach to the trenching adjacent to the remnant dam wall by constructing a temporary soil barrier uphill from the dam (Figure 7). Then a small hole was excavated between the remnant dam and the soil barrier to pump excess water that was seeping into the area (Figure 4). This was done to keep the historic dam portion observable (Figure 8) and to ensure that current trenching operations would not impact the remnant dam portion. A second hole was excavated uphill between the soil barrier and the pond where spring water continued to flow. This was done in order to pump water around the dam and avoid any further water build up. This approach was very successful, and the final concrete cap was successfully constructed over the remnant historic Gan's Dam (Figure 9). Prior to concrete being poured, a thick "pond liner" material that is tough and very durable, yet flexible to ensure long-term preservation.

Figure 7. View of soil barrier and trench for new concrete dam.

Figure 8. View of the remnant limestone wall from Gan's Dam.

Figure 9. View of the concrete dam built over the Gan's Dam.

RESULTS AND CONCLUSIONS

Archaeological monitoring of repairs to the historic Gan's Dam, previously recorded as one historic component of archaeological site (41WM17), was conducted October 2-12, 2013 at the Berry Springs Preserve in Williamson County, Texas. Previous storm damage caused the dam to fail and impounded pond waters pushed the surface portion of the historic dam downstream. Williamson County Parks Department contracted with a construction firm to make repairs to the dam. Consequently, AAG was contacted about the discovery of the subsurface old historic dam limestone blocks and this led to discussions with the Texas Historical Commission, Archeology Division, and with the U.S. Army Corps of Engineers (COE), Fort Worth District. Subsequently, a Texas Antiquities Permit (6674) for monitoring was obtained and all work was also conducted under the auspices of Section 106 of the National Historic Preservation Act. Construction resumed with AAG on-site to ensure that the remnant historic dam features were not disturbed. The remaining dam portions were encapsulated with cement to provide a strong retention dam and to provide for long-term preservation of the historic dame and any potential remaining cultural deposits. No artifacts or features were encountered during monitoring, therefore, only project records are curated at the Texas Archeological Research Laboratory.

RECOMMENDATIONS

American Archaeology Group, LLC monitored trenching and construction in and adjacent to the historic Gan's (Berry) Dam and no artifacts or features were encountered during the monitoring phase of this project. Any future construction or subsurface disturbances in or around the dam may impact potential buried cultural materials. Therefore, any archeological resources that may be discovered from any flooding or erosional impacts, or any planned construction should be evaluated by the Archeology Division of the Texas Historical Commission, in consultation with American Archaeology Group LLC, and Williamson County Parks Department.

REFERENCES CITED

Adams, Johnathan, 2003, North America During the Last 150,000 Years; Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tenn., pgs. 15.

Bancroft, Hubert Howe
1884 History of the North Mexican States and Texas, Volume I. San Francisco: A. L. Bancroft & Co.

Barker, Eugene C.
1925 The Life of Stephen F. Austin. Nashville: Cokesbury Press.

Barnes, V. E.
1974 Geologic Atlas of Texas: Austin Sheet; Bureau of Economic Geology, The University of Texas at Austin.

Bernhardt, G. T.
1990 The Role of Slump Block Formation in Scarp Retreat, Lampasas Cut Plain, Central Texas, Unpublished Report, Baylor University, Waco, Texas, 46 pp.

Biesaart, Lynne A., Wayne R. Roberson, and Lisa Clinton Spotts
1985 *Prehistoric Archaeological Sites in Texas*: *A statistical Overview.* Office of the State Archaeologist, Special Report 28.

Black, S. L. and A. J. McGraw
1985 *The Panther Springs Creek Site: Cultural Change and Continuity within the Upper Salado Creek Watershed, South-Central Texas*. Center for Archaeological Research, The University of Texas at San Antonio Archaeological Survey Report 100.

Black, S. L., L. W. Ellis, D. G. Creel, and G. T. Goode
1997 *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas*. Volumes 1 and 2. Studies in Archeology 22. Texas Archeological Research Laboratory, The University of Texas at Austin.

Black, S. L., K. Jolly, C. D. Frederick, J. R. Lucas, J. W. Karbula, P. R. Takac, and D. R. Potter
1998 Investigation and Experimentation at the Higgins Site (41BX184). In *Archeology Along the Wurzbach Parkway*, Module 3, Volumes I and II. Studies in Archeology 27. Texas Archeological Research Laboratory, The University of Texas at Austin.

Blair, W. Frank
1950 The Biotic Provinces of Texas. *Texas Journal of Science 11 (1):93-116.*

Blum, M. D. and S. Valastro, Jr.
1989 Response of the Pedernales River of Central Texas to late Holocene climatic change; Annals of the Association of American Geographers, vol. 79, p.435-456.

1994 Late Quaternary sedimentation, lower Colorado River, Gulf Coastal Plain of Texas; Geological Society of America Bulletin, (106):1002-1016.

Bolton, Herbert Eugene
1939 Wider Horizons of American History. New York: D. Appleton-Century Company.

1962 Texas in the Middle Eighteenth Century. New York: Russell & Russell, Inc.

Bond, Clell
1978 Three Sites at Hoxie Bridge, Williamson County, Texas. Texas A&M University Research Foundation.

Bradle, Michael R., James S. Belew, and K. Lee Hilliard
1998 An Archaeological Survey of the 1998 Georgetown Park in Williamson County, Texas. American Archaeology Group, Inc. Report of Investigations Number 21.

Bradle, Michael R., Gilbert T. Bernhardt and James S. Belew
2002a Archaeological Survey of the San Gabriel Park for the City of Georgetown, Williamson County, Texas. American Archaeology Group Inc. Report of Investigations Number 49.

2002b Archaeological Survey of the San Gabriel River Bridge on Rivery Boulevard for the City of Georgetown, Williamson County, Texas. American Archaeology Group Inc. Report of Investigations Number 52.

Bradle, Michael R., Gilbert T. Bernhardt, and Herbert G. Uecker
2003 Archaeological Survey of the Berry Creek Preserve for the Williamson County Parks Department, Williamson County, Texas. American Archaeology Group LLC, Report of Investigations Number 78.

Brown, John Henry
1896 Indian Wars and Pioneers of Texas. Austin: L. R. Daniell.

Byran , F.
1931 Notes on the Archeology of Central Texas. *American Anthropologist 33(1):16-31*

Campbell, T. N.
1948 The Merrill Site: Archeological Remains Associated with Alluvial Terrace Deposits in Central Texas. *Bulletin of the Texas Archeological and Paleontological Society* 19:7-35.

1952 Note written by T.N. Campbell dated October 24, 1952. On file at the Texas Archeological Research Laboratory in Austin, Texas.

Carlson, David L., Shawn B. Carlson, Fredrick L. Briuer, Erwin Roemer, Jr., and William E. Moore
1986 *Archaeological Survey at Fort Hood, Texas Fiscal Year 1983, The Eastern Training Area.* United States Army Fort Hood, Archaeological Resource Management Series, Research Report 11.

Casteneda, Carlos E.
1936 Our Catholic Heritage in Texas, 5 volumes. Austin: Von Boeckmann-Jones.

Collins, Michael B.
1990 The Archaeological Sequence at Kincaid Rockshelter, Uvalde County, Texas. In *Transaction of the 25th Regional Archeological Symposium for Southeastern New Mexico and Western Texas,* pp. 25-33. Midland Archeological Society, Midland.

1995 Forty Years of Archeology in Central Texas. *Bulletin of the Texas Archeological Society 66:361-400.*

1999 Re-Thinking the Peopling of the Americas.Heritage 17 (4):6-11.

Collins, M. B.
1991 Thoughts on Future Investigation of Burned Rock Middens. In *The Burned Rock Middens of Texas: An Archeological Symposium* edited by T. R. Hester, pp. 1-24. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Collins, Michael B., G.L. Evans, Thomas Nolan Campbell, M.C. Winans, and C.E. Mear
1989 Clovis Occupation at Kincaid Shelter, Texas, *Current Research in the Pleistocene 6:3-4.*

Creel, D. G.
1986 A Study of Prehistoric Burned Rock Middens of West Central Texas. Unpublished Ph. D. dissertation. Department of Anthropology, The University of Arizona, Tucson.

1991 Assessing the Relationship Between Burned Rock Midden Distribution and Archaic Subsistence in West Central Texas. In *The Burned Rock Middens of Texas: An Archeological Symposium* edited by T. R. Hester, pp. 33-44. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

DeShields, James T.
1912 Border Wars Of Texas. Tioga, Texas: Herald Company.

Dice, L. R.
1943 *The Biotic Provinces of North America*. University of Michigan Press, Ann Arbor.

Dillehay, Tom D.
1974 Late Quaternary Bison Population Changes on the Southern Plains. *Plains Anthropologist 19(65):180-169.*

Eddy, Frank
1973 Salvage Archeology in the Laneport Reservoir District, Central Texas. Unpublished manuscript released to the National Park Service by the Texas Archeological Survey.

Ellis, Linda Wootan, G. Lain Ellis, and Charles D. Frederick
1995 Implication of Environmental Diversity in the Central Texas Archeological Region. *Bulletin of the Texas Archeological Society 66:401-426.*

Gard, Wayne
1954 The Chisholm Trail. Norman: The University of Oklahoma Press.

Gilmore, Kathleen Kirk
1969 The San Xavier Missions: A Study in Historic Site Identification. Austin: Archeological Program, State Building Commission, Report No. 16.

Guderjan, Thomas H., George B. Thomas, and Howard R. Cramer
1980 Existing Data Inventory of Cultural Resource and Paleontological Information, Fort Hood, Texas. Soil Systems, Inc. Marietta, Georgia.

Hackett, Charles Wilson
1931 Translation into English of Pichardo's Treatise On the Limits of Louisiana and Texas, Vol. I. Austin: The University of Texas Press.

Hester, T. R.
1985 *UTSA Archeological Field School Excavations in Bandera and Victoria Counties, Texas*. Friends of Archaeology Newsletter No. 2. Center for Archaeological Research, The University of Texas at San Antonio.

Hester, T. R. (ed.)
1991 *The Burned Rock Middens of Texas: An Archeological Symposium*. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Howard, M. A.
1991 Burned Rock Midden Excavations, Hearths, and Botanical Remains. In *The Burned Rock Middens of Texas: An Archeological Symposium* edited by T. R. Hester, pp. 45-69. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Jackson, A. T.
1931 Excavation of a Burial Site on Fred Acree Farm, Coryell County, Texas, January 29 to February 3, 1931. Unpublished manuscript on file at he Texas Archeological Research Laboratory in Austin, Texas.

Jackson, Marsha
1974 Archeological Resources of the North Fork Reservoir Area: Results of Survey and Testing, 1970 Season. Report submitted to the National Park Service by the Texas Archeological Survey, Austin.

Johnson, LeRoy, Jr.
1987 A Plague of Phases: Recent Sociocultural Taxonomy in Texas Archeology. *Bulletin of the Texas Archeological Society 57:1-26*

Johnson, LeRoy, Jr. (continued)
1995 *Past Cultures and Climates at Jonas Terrace, 41ME29, Medina County, Texas*. Office of the State Archeologist Report 40. Texas Department of Transportation and Texas Historical Commission, Austin.

Johnson, LeRoy, Jr., and Glenn T. Goode
1994 A New Try at Dating and Characterizing Holocene Climates, as well as Archeological Periods, on the Eastern Edwards Plateau. *Bulletin of the Texas Archeological Society 65:1-51.*

Makemson, W. K.
1904 Historical sketch of First Settlements and Organization of Williamson County. Georgetown, Texas: Sun Print

Maltby, W. J.
1906 Captain Jeff, or Frontier Life in Texas with the Texas Rangers, Colorado City, Texas: Whipkey Printing Company.

Moore, G., H. Shafer, and C. Weed
1978 Archeological Surveys of Granger and North Fork Reservoirs. Volume 1: The Granger Report.

Morfi, Juan Augustin
1935 History of Texas 1673-1779, 2 volumes. Translated into English by Carlos E. Casteneda. Albuquerque: The Quivira Society.

Newcomb, William W., Jr.
1986 *The Indians of Texas: From Prehistoric to Modern Times.* The University of Texas Press.

Patterson, P. E. and Gary Moore
1976 An Archeological Study of North Fork and Granger Reservoirs, A Preliminary Report. Anthropology Research Laboratory Report No. 34. Texas A&M University.

Patterson, Patience and Harry J. Shafer
1980 Archeological Surveys of Granger and North Fork Reservoirs. Report No. 34b, Anthropology Research Laboratory, Texas A&M University.

Prewitt, Elton R.
1974 Archeological Investigations at the Loeve-Fox site, Williamson County, Texas. Texas Archeological Survey, Research Report 49. Austin.

Prewitt, Elton R. (continued)

1981 Cultural Chronology in Central Texas. *Bulletin of the Texas Archeological Society 52:65-89.*

1985 From Circleville to Toyah: Comments on Central Texas Chronology. *Bulletin of the Texas Archeological Society 54:201-238.* (for 1983)

1991 Burned Rock Middens: A Summary of Previous Investigations and Interpretations. *The Burned Rock Middens of Texas: An Archeological Symposium* edited by T. R. Hester, pp. 25-32. Studies in Archeology 13. Texas Archeological Research Laboratory, The University of Texas at Austin.

Redder, Albert J.

1985 Horn Shelter Number 2: The South End a Preliminary Report. *Central Texas Archeologist 10:37-65.*

Rice, R. J.

1988 Fundamentals of Geomorphology, Second Addition; Longman Scientific and Technical.

Roemer, Erwin, Jr., Shawn Bonath Carlson, David L. Carlson, and Frederick L Briuer

1985 *Archaeological Surveys at Fort Hood, Texas, The Fiscal Year 1982 Range Construction Projects.* United States Army, Fort Hood Archaeological Resource Management Series, Research Report Number 10.

Scarbrough, Clara Stearns

1973 Land of Good Water: A Williamson County, Texas, History. Georgetown, Texas: Williamson County Sun Publishers.

Schuetz, Mardith

1957 A Report on Williamson County Mound Material. *Bulletin of the Texas Archeological Society* 28:135-168.

Shafer, Harry J.

1963 Test Excavations at the Youngsport Site: A Stratified Terrace Site in Bell County, Texas. *Bulletin of the Texas Archeological Society 34:57-81.*

Shafer, H. and G. Moore

1976 An Archeological Assessment of Sites 41WM21, 41WM124, 41WM133 in Granger Reservoir, Williamson County, Texas.

Shafer, Harry J. and James Corbin
1965 An Appraisal of the Archeological Resources of the North Fork, South Fork, and Laneport Reservoirs, Williamson County, Texas. Report submitted to the National Park Service by the Texas Archeological Salvage Project.

Shafer, Harry J., Dee Ann Suhm, and J. D. Scurlock
1964 An Investigation and Appraisal of the Archeological Resources of Belton Reservoir, Bell and Coryell Counties, Texas: 1962. Texas Archaeological Salvage Project, Miscellaneous Papers, No. 1. The University of Texas at Austin.

Skinner, S. Alan, Frederick L. Briuer, George B. Thomas, Ivan Show, and Eli Mishuck
1981 *Initial Archaeological Survey at Fort Hood, Texas, Fiscal Year 1978.* United States Army, Fort Hood Archaeological Resource Management Series, Research Report Number 1.

Smithwick, Noah
1900 The Evolution of a state. Austin: Gammel Book Company.

Sorrow, William M., Harry J. Shafer, and Richard E. Ross
1967 *Excavations at Stillhouse Reservoir.* Papers of the Texas Archeological Salvage Project, Number 11 Austin.

Suhm, Dee Ann, Alex D. Krieger, and Edward B. Jelks
1954 An Introductory Handbook of Texas Archeology. *Bulletin of the Texas Archeological Society 25.* (entire volume).

Texas Almanac,
1964-1965 1963 Dallas: A. H. Belo Corporation.

Texas Almanac,
1994-1995 1993 Dallas: The Dallas Morning News, Inc.

Texas Almanac,
1998-1999 1997 Dallas: The Dallas Morning News, Inc.

Tharp, B. C.
1939 *The Vegetation of Texas*. Texas Academy of Science.

Thomas, George B.
1978 A Survey and Assessment of the Archeological Resources of Fort Hood, Texas. *Bulletin of the Texas Archeological Society* 49:195-240.

Thornthwaite, C. W.
1948 An Approach Toward a Rational Classification of Climate. *Geography Review* 38:55-94.

Turner, Ellen Sue, and Thomas R. Hester
1985 *A Field Guide to Stone Artifacts of Texas Indians.* Texas Monthly Press.

United states Department of Commerce, Bureau of the census
1850, 1860, 1870, 1880, 1890, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, Washington, DC

Webb, Walter Prescott, editor
1952 The Handbook of Texas, 2 volumes. Austin. Texas State Historical Association.

Weir, Frank A.
1976 The Central Texas Archaic. Unpublished Ph.D. Dissertation, Washington State University. Pullman. On file at the Texas Archeological Research Laboratory in Austin, Texas

Werchan, Leroy E. and John L. Coker
1983 Soil survey of Williamson County, Texas. Published by The United States Department of Agriculture, soil conservation service.

Wilbarger, John Wesley
1985 *Indian Depredations in Texas: Original Narrative of Texas History and Adventure.* (Reprints originally published by the author in 1889). Eakin Press: State House Books.

Willey, Gordon R. and Phillip Phillips
1958 *Method and Theory in American Archeology.* The University of Chicago Press, Chicago.

Williams, J. R., C. A. Jones, and P. T. Dyke
1984 A modeling approach to determine the relationship between erosion and soil productivity: Transactions ASAE; 129-144 pgs. 129.

Williamson, County of
1858 Official Tax Rolls, in Police Court Minutes, Vol. P, 1849-1859. Georgetown, Texas.

Yoakum, Henderson K.
1856 History of Texas, 2 volumes. New York: Redfield.

APPENDIX I: MONITORING SCOPE OF WORK

American Archaeology Group LLC

Scope of Work for Archaeological Monitoring
Berry Springs Dam Project, Williamson County, Texas

Herbert G. Uecker & Michael R. Bradle

October 1, 2013

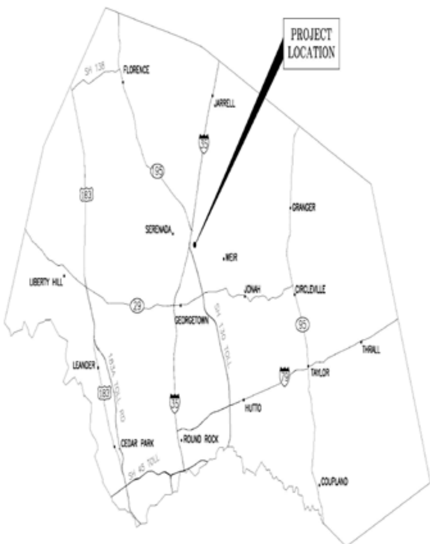
As previously coordinated with the Texas Historical Commission, monitoring for this project will focus on construction activities near the existing remnants of a limestone retaining wall on the high side of Berry Springs Dam. It will be done according to the Commission's *Chapter 26 Rules of Practice and Procedure for the Antiquities Code of Texas*, which specifies "…having a professional archeologist on-site to observe construction activities that may or will damage cultural resources and… …report findings and impacts to sites to the commission. If previously unrecorded and significant archeological deposits are recorded during a monitoring investigation, then construction activities in the immediate area of the find must stop and the principal investigator shall notify the Archeology Division within 24 hours."

APPENDIX II: BERRY SPRINGS PARK DAM REPAIR DRAWINGS

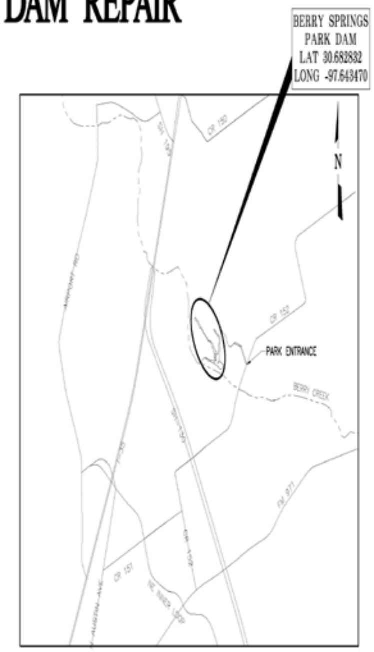
WILLIAMSON COUNTY

PLANS FOR

BERRY SPRINGS PARK DAM REPAIR



PROJECT LOCATION



VICINITY MAP

SUBMITTED FOR APPROVAL BY:

DUSTIN G. MORTENSEN P.E. — 3-15-2013
REGISTERED PROFESSIONAL ENGINEER — DATE
FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

This Record Drawing is a combination of the sealed engineering contract drawings for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of
FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON:
12/06/2013

DECEMBER 2013

RECORD DRAWINGS

FREESE AND NICHOLS

10814 Jollyville Road Building IV, Suite 100
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

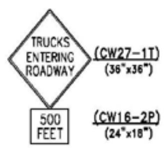
WIC12486

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	COVER
1	GENERAL NOTES AND LEGEND
2	WORK ITEMS
3	SITE PLAN
4	EAST EMBANKMENT PLAN VIEW
5	WEST EMBANKMENT PLAN VIEW
6	OUTLET REMOVAL
7	CONCRETE NOTES AND JOINT DETAILS
8	WALL REPLACEMENT
9	OVERFLOW WALL DETAILS
10	SLOPE PAVING AND OVERFLOW WALL DETAILS
10A	SLOPE PAVING AND OVERFLOW WALL DETAILS
11	SLIDE GATE AND ROCK PLATING REPAIR
12	SPRING OUTLET
13	EROSION AND SEDIMENTATION CONTROL NOTES

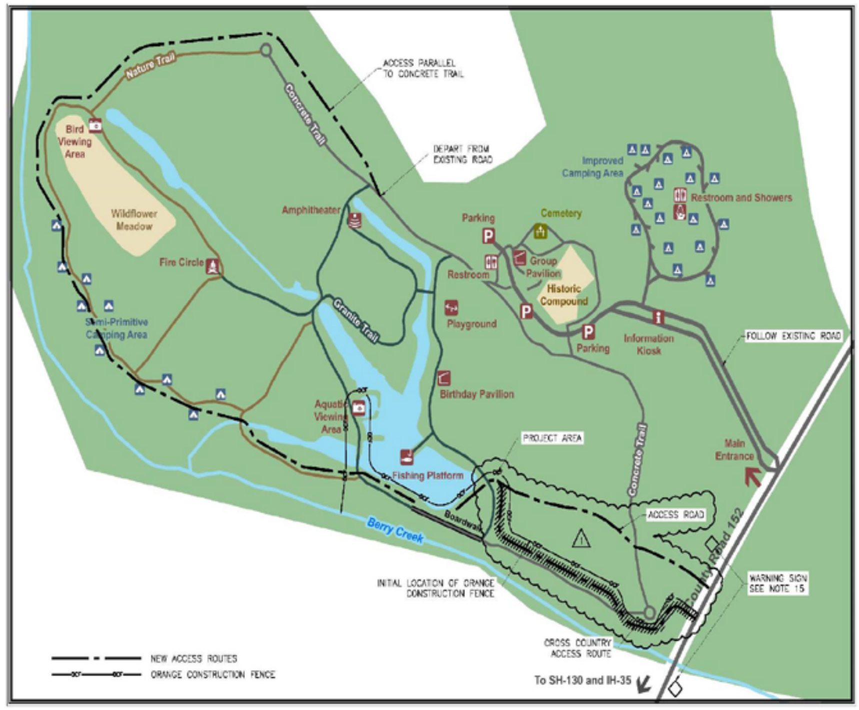
GENERAL NOTES:

1. NO FISHING IS ALLOWED.
2. CONTRACTOR SHALL NOTIFY COUNTY BEFORE REMOVING ANY TREES.
3. EXISTING ROADS, ACCESS DRIVES, UTILITIES AND PROPERTY DAMAGED BY CONTRACTOR AND ALL DISTURBED AREAS SHALL BE REPAIRED BY CONTRACTOR TO SAME OR BETTER CONDITION AT END OF CONSTRUCTION.
4. CONTRACTOR TO ESTABLISH TEMPORARY ACCESS ROAD IN GENERAL CONFORMANCE WITH LINES SHOWN AS DIRECTED BY OWNER'S REPRESENTATIVE. CONTRACTOR WILL CLEARLY MARK WORK AREA WITH ORANGE SECURITY FENCE IN AREAS NOTED. ADDITIONAL AREA MAY BE REQUIRED. CONTRACTOR TO STAY WITHIN THE WORK AREA AND ACCESS ROADS.
5. COUNTY WILL IDENTIFY APPROVED ACCESS ROUTES DURING PRE-CONSTRUCTION MEETING.
6. ALL SURVEY COORDINATES SHOWN ARE TEXAS STATE PLANE COORDINATE SYSTEM NAD83 CENTRAL ZONE.
7. NO CONSTRUCTION FILL OR MATERIALS SHALL BE PLACED OR STORED IN AREAS NOT SPECIFICALLY DESIGNATED FOR THAT PURPOSE.
8. WORK UNDER THIS CONTRACT IS AUTHORIZED UNDER THE TERMS AND CONDITIONS OF THE U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO. 3.
9. CONSTRUCT THE STAGING AREAS AND STOCKPILE AREAS IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS.
10. REFER TO SHEET 9 FOR EROSION AND SEDIMENTATION NOTES AND DETAILS.
11. BENCH EXISTING SLOPES WHEN PLACING FILL.
12. ALL DEBRIS INCLUDING EXISTING ROCK WALL ARE TO BE DISPOSED OF OFF SITE.
13. ~~REMOVE ALL TREES FROM DAM EMBANKMENT UNLESS MARKED BY COUNTY TO SAVE. TREE REMOVAL SHALL REMOVE ROOTS WITH MINIMAL DAMAGE TO EXISTING SLOPES.~~ △1
14. WORK HOURS TO BE MONDAY THROUGH FRIDAY, 7AM TO 5PM.
15. PROVIDE WARNING SIGNS 500 FT FROM CONSTRUCTION ENTRANCE. SIGNS TO BE 36"X36" CW27-1T "TRUCKS ENTERING ROADWAY" AND 24"X18" CW16-2P "500 FT"



LEGEND:

- CREST RAISE
- SCOUR PROTECTION
- 1' SURVEY CONTOURS
- 2' AERIAL CONTOURS
- NORMAL LAKE LEVEL AFTER REPAIRS
- ORANGE CONSTRUCTION FENCE
- CUT
- FILL



CONTRUCTION ACCESS ROUTES

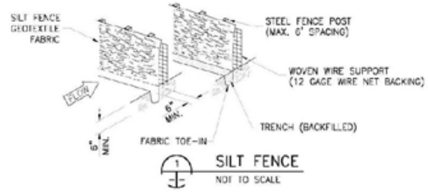
FREESE NICHOLS

WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
GENERAL NOTES AND LEGEND

SHEET 1
1 OF 14

SILT FENCE INSTALLATION:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE.
2. THE TOE OF THE SILT FENCE SHALL BE PLACED IN A TRENCH A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE. THE TRENCH SHALL BE BACKFILLED WITH COMPACTED MATERIAL. THE MINIMUM HEIGHT OF THE SILT FENCE ABOVE THE EXISTING GROUND SHALL BE 24 INCHES.
3. WHERE FENCE CAN NOT BE TRENCHED (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON THE UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER THE FENCE.
4. SILT FENCE SHALL BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE WEEKLY AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED, BY THE CONTRACTOR.
6. WHEN SILT REACHES A DEPTH OF 6 INCHES, IT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
7. SILT FENCE SHALL BE REMOVED AFTER THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE THE FLOW OF STORM FLOW OR DRAINAGE.



1 SILT FENCE
NOT TO SCALE

EROSION/SEDIMENTATION CONTROL NOTES:

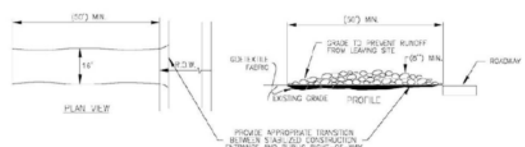
1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING AND GRUBBING, EXCAVATION, DRILLING, OR ROAD CONSTRUCTION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE ENVIRONMENTAL CRITERIA SPECIFICATIONS AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
3. ANY SIGNIFICANT VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS MUST BE APPROVED BY THE OWNER.
4. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER 1/2" INCH STORM EVENT WITHIN 24 HOURS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
5. PRIOR TO FINAL ACCEPTANCE, TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT AND DEBRIS REMOVED FROM THE WATERWAY, AND THE AREA RESTORED TO THE ORIGINAL CONDITION IN ACCORDANCE WITH THE PROJECT AUTHORIZATION UNDER USACE NATIONWIDE PERMIT NO. 3.
6. FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF THE CONSTRUCTION TO CORRECT CONTROL INADEQUACIES. MAJOR REVISIONS MUST BE APPROVED BY THE OWNER.

EROSION CONTROL PLAN NOTES:

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) REGULATIONS IN ACCORDANCE WITH TEXAS WATER CODE 26.040 AND CLEAN WATER ACT SECTION 402 CONCERNING EROSION AND SEDIMENT CONTROL.
2. THE CONTRACTOR SHALL IMPLEMENT THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES; AND (A) SIGN A COMPLETED SITE NOTICE (ATTACHMENT 1 OF THE TPDES GENERAL PERMIT WITHIN THE SWPPP); (B) POST A SIGNED COPY OF THE SITE NOTICE AT THE CONSTRUCTION SITE IN A LOCATION WHERE IT IS READILY AVAILABLE FOR VIEWING PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, AND (C) MAINTAIN THE NOTICE IN THAT LOCATION UNTIL COMPLETION OF THE CONSTRUCTION ACTIVITY.
3. THE CONTRACTOR SHALL COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN AND STORM WATER MANAGEMENT PLANS, AS PART OF THE ABOVE REGULATIONS. THE INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION MEASURES SHALL BE THE CONTRACTORS RESPONSIBILITY THROUGHOUT ALL PHASES OF THE CONSTRUCTION.
4. THE EROSION CONTROL DETAILS SHOWN ON THIS SHEET SHALL BE USED BY THE CONTRACTOR AS A GUIDE. THESE DETAILS DO NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS GOVERNING EROSION AND SEDIMENT CONTROL. ADDITIONAL EROSION CONTROL MEASURES SHALL BE PROVIDED IF NECESSARY BY THE CONTRACTOR IN ORDER TO COMPLY WITH ALL REGULATIONS, AT NO EXTRA COST TO THE OWNER.
5. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITIES. THEY SHALL REMAIN IN PLACE UNTIL AFTER CONSTRUCTION IS COMPLETE AND THE SITE HAS BEEN STABILIZED.
6. THE MINIMUM EROSION AND SEDIMENT CONTROL DEVICES TO BE USED ON THIS PROJECT SHALL BE HAY BALES AND/OR SILT FENCE.
7. THE CONTRACTOR SHALL TAKE MEASURES NECESSARY TO PREVENT THE TRACKING OR FLOWING OF SEDIMENT ONTO ANY ADJACENT STREETS OR INTO THE RIVER OR LAKE DURING ALL PHASES OF CONSTRUCTION.
8. THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) PROPOSES TO ISSUE A GENERAL PERMIT (GENERAL PERMIT NO. TXR150000) FOR CONSTRUCTION STORM WATER RUNOFF.

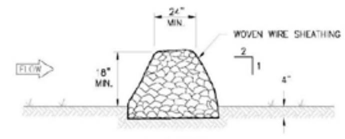
GENERAL ENVIRONMENTAL NOTES:

1. PREVENT POLLUTION OF WATERS WITH PETROLEUM PRODUCTS OR OTHER HAZARDOUS OR REGULATED SUBSTANCES. TAKE SPECIAL MEASURES TO PREVENT CHEMICALS, FUELS, OILS, GREASES, HERBICIDES, AND INSECTICIDES FROM ENTERING DRAINAGE WAYS.
2. PROMPTLY REPAIR EQUIPMENT LEAKING OIL, HYDRAULIC FLUID, HYDROCARBONS, FUEL, ETC. IMMEDIATELY REMOVE AND REPLACE, AS NECESSARY, ALL SOILS ON WHICH SUCH LEAKAGE OCCURS. PREVENT THE SPREAD OF LEAKED FLUIDS OR FLUID CONTAMINATED MATERIALS FROM THE ORIGINAL LEAK AREA. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROPER HANDLING AND DISPOSAL OF ALL SUCH CONTAMINATED MATERIALS.
3. PROVIDE SECONDARY CONTAINMENT AROUND ANY FUEL AND CHEMICAL STORAGE AREAS TO ENSURE THAT SPILLS FROM ANY SUCH AREAS DO NOT DISCHARGE FROM THE SECONDARY CONTAINMENT AREA. THE SECONDARY CONTAINMENT CAPACITY SHALL BE ADEQUATE TO CONTAIN THE CAPACITY OF THE LARGEST TANK/CONTAINER PLUS SUFFICIENT FREEBOARD TO CONTAIN PRECIPITATION.
4. PRECAUTION SHALL BE TAKEN DURING EQUIPMENT FUELING AND CHEMICAL TRANSFER OPERATIONS IN ORDER TO PREVENT SPILLS FROM OCCURRING AND TO MINIMIZE THE IMPACT OF ANY SPILL THAT DOES OCCUR. ALL FUEL AND CHEMICAL TRANSFERS SHALL BE CONTINUOUSLY MONITORED. ADDITIONALLY, THERE SHALL BE A PROHIBITION AGAINST ON-SITE TOPPING OFF OF TANKS AND EQUIPMENT.
5. MAINTAIN APPROPRIATE EQUIPMENT ON SITE FOR RESPONDING TO ANY OIL, FUEL, OR HAZARDOUS SUBSTANCE SPILL.
6. PROVIDE PROTECTED STORAGE FOR CHEMICALS, SOLVENTS, AND OTHER POTENTIALLY HAZARDOUS MATERIALS.
7. DO NOT ALLOW WATER USED IN ON-SITE MATERIAL PROCESSING AND CLEANUP, AND OTHER WASTEWATERS TO ENTER A DRAINAGE WAY OR STREAM.

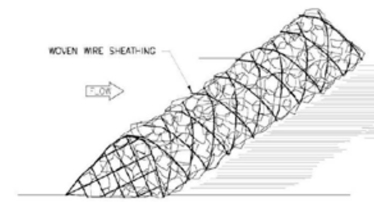


NOTES:
1. STONE SIZE: 3"-5" OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 50'.
3. THICKNESS: NOT LESS THAN 8".
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. PROVIDE GEOTEXTILE FABRIC BETWEEN NATURAL GRADE AND 3"-5" ROCK.

2 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



CROSS SECTION



3 ROCK BERM DIVERSION DIKE
NOT TO SCALE

ROCK BERM:

1. USE ONLY OPEN GRADE ROCK 4-8 INCH DIAMETER FOR STREAM FLOW CONDITION; USE OPEN GRADED ROCK 3-5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM ONE INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE FOOT.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

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Texas Registered Engineering Firm F-2144

WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
EROSION AND SEDIMENTATION CONTROL NOTES

FN JOB NO. WIC12486
DATE 12/3/2013
DESIGNED DCM
DRAWN CJC
CHECKED CJC
CHECKED LKM
DCM 12-06-13
FILE NAME WII-WIC-DT-CRDS.dwg

RECORD DRAWING
VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE.

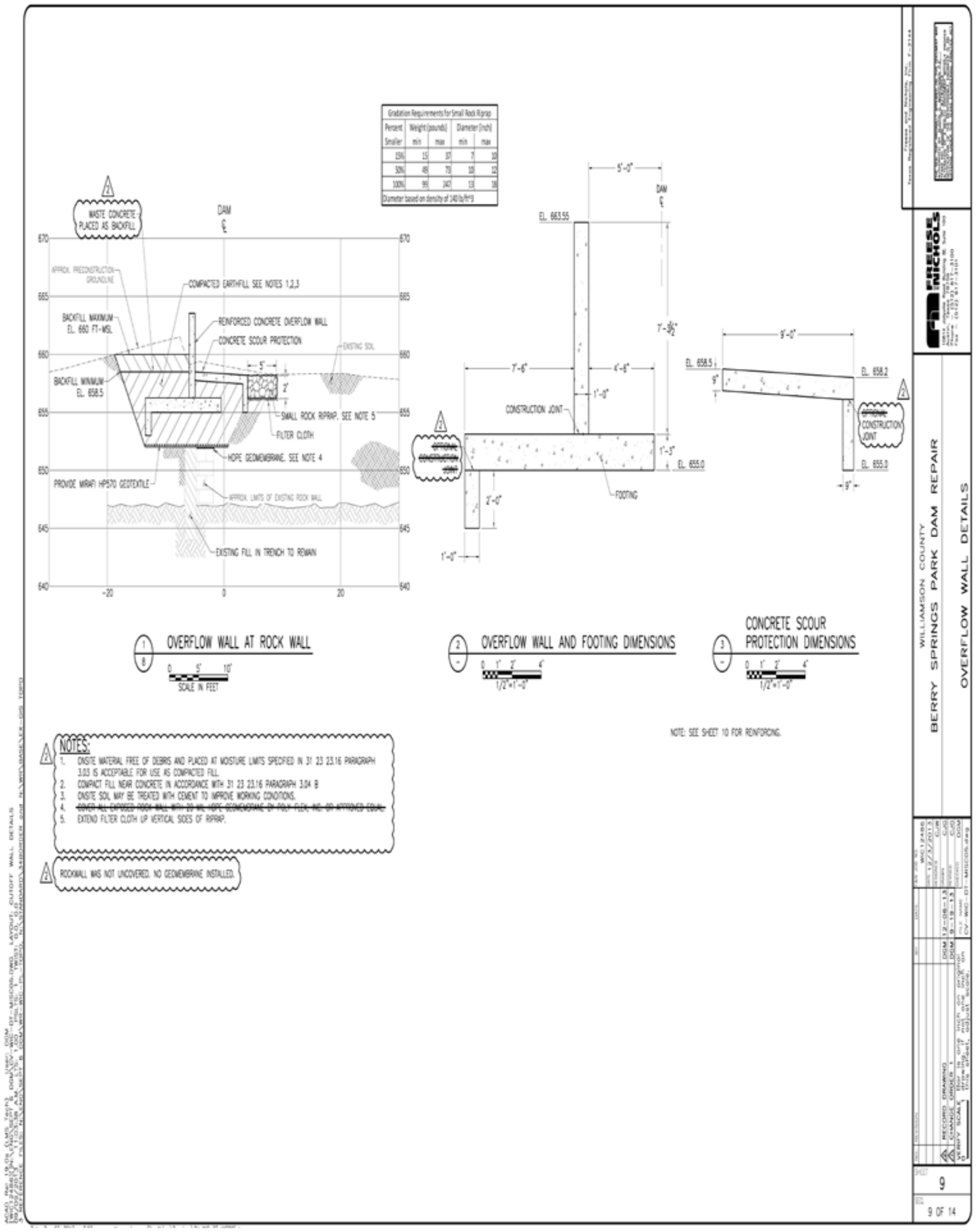
SHEET 13
14 OF 14

NOTES:
1. ROCK TO BE BETWEEN 6" AND 12" IRREGULAR SHAPE. FINISH SURFACE SHALL BE UNEVEN.
2. TOP SURFACE OF ROCK TO BE FREE FROM GROUT. SEE PHOTO IN DETAIL 5 FOR EXAMPLE.
SPRING OUTLET PLAN VIEW
SPRING OUTLET CROSS SECTION
SPRING OUTLET PROFILE
SPRING OUTLET WALL CROSS SECTION
EXAMPLE OF ACCEPTABLE GROUTED RIPRAP
NOT TO SCALE
SCALE IN FEET
GROUTED ROCK
MATCH TOP OF BANK
MORTARED ROCK WALL
TRANSITION ENDS INTO EXISTING GRADE AND EXISTING EL AS NECESSARY
INSTALL GROUTED ROCK RIPRAP
PROTECT TREE
SPRING
EL. 663.55
MIN. EL. 664.2
NOTE: TRANSITION ENDS INTO EXISTING GRADE
NOTE: TOP OF MORTARED WALL TO BE 3 INCHES BELOW TOP OF LOW POINT ON SLOPE GATE WALL.
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
SPRING OUTLET
FREESE NICHOLS
SHEET 12
DWG 13 OF 14

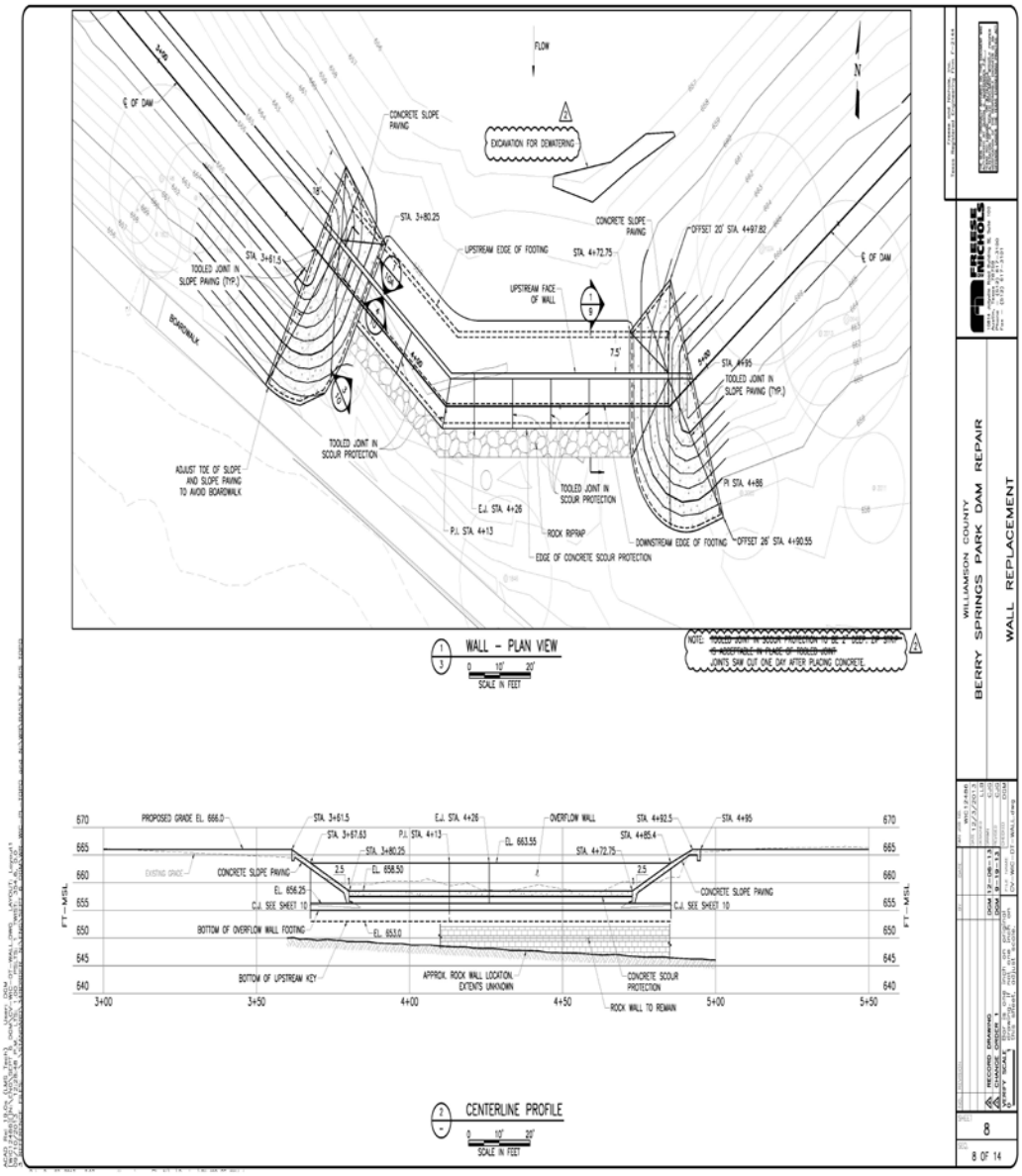
N
10'
FILL VOID WITH EARTH
FILL AND PLACE 12" THICK
LAYER GROUTED LIMESTONE
PIECES TO MATCH
GROUTED LIMESTONE PIECES.
EXISTING
BRIDGE
EXISTING ROCK WALL
EXISTING GROUTED
LIMESTONE PIECES
ROCK WALL
PLAN VIEW
SCALE IN FEET
EXISTING ROCK WALL
40"
EXISTING END OF WALL
10'
EXISTING GROUTED
LIMESTONE ROCK
FILL VOIDS AND PLATE
EXISTING SLOPE WITH
GROUTED LIMESTONE PIECES,
TO MATCH EXISTING
SEE PLAN VIEW
ROCK WALL ELEVATION VIEW
SCALE IN FEET
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
SLIDE GATE AND ROCK PLATING REPAIR
FREESE NICHOLS
11
12 OF 14

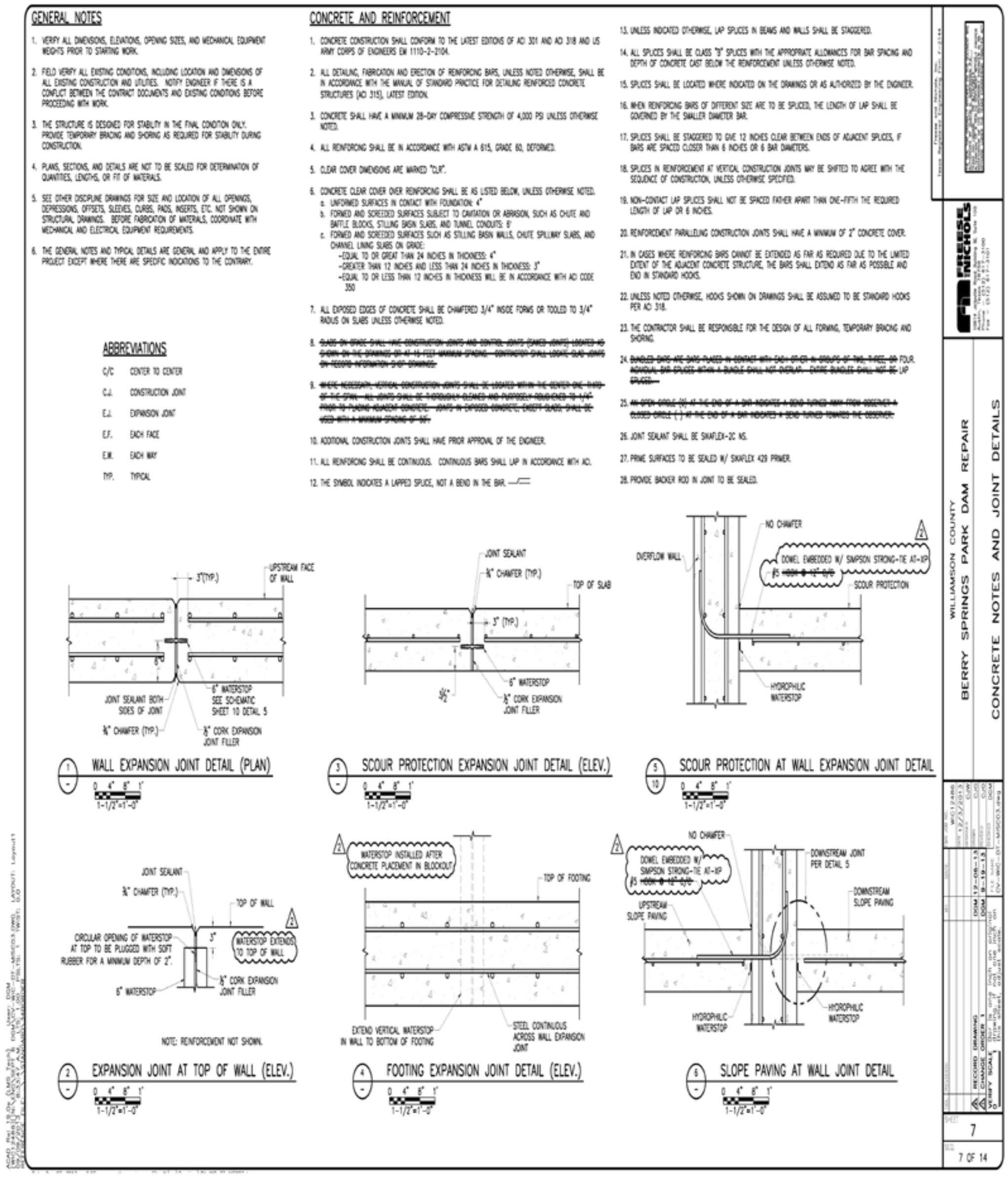
SLOPE PAVING AND OVERFLOW WALL DETAILS
BERRY SPRINGS PARK DAM REPAIR
WILLIAMSON COUNTY
FREESE NICHOLS
10A
11 OF 14
2-ADDITIONAL #5 @ WALL STEM
#5 @ 12"
#5 @ 12" C/C, E.F.
STA. 4+13
12" MAX.
#6 @ 12" C/C, E.F. (TYP.)
8-#6 EQUALLY SPACED, E.F.
3 - FOOTING REINFORCEMENT AT P.I.
1/2"=1'-0"
STA. 4+13, PI IN OVERFLOW WALL
EQUALLY SPACED #5 BARS
12" MAX.
12" SPACING
9"
#5 BARS
2 - SCOUR PROTECTION REINFORCEMENT AT P.I.
1/2"=1'-0"
1 - UPSTREAM SLOPE PAVING SECTION
3/4"=1'-0"
SLOPE PAVING
2.5
1
REINFORCING SEE SECTION 3 SHEET 10
COMPACTED FILL
TOP OF FOOTING EL. 656.25 FT-MSL
FOOTING REINFORCEMENT NOT SHOWN
#5 @ 12"
MAXIMUM FILL EL. 660 FT-MSL
MINIMUM FILL EL. 658.5 FT-MSL
COMPACTED FILL
STA. 3+80.25 RIGHT ALIGNMENT
STA. 4+72.75 LEFT ALIGNMENT

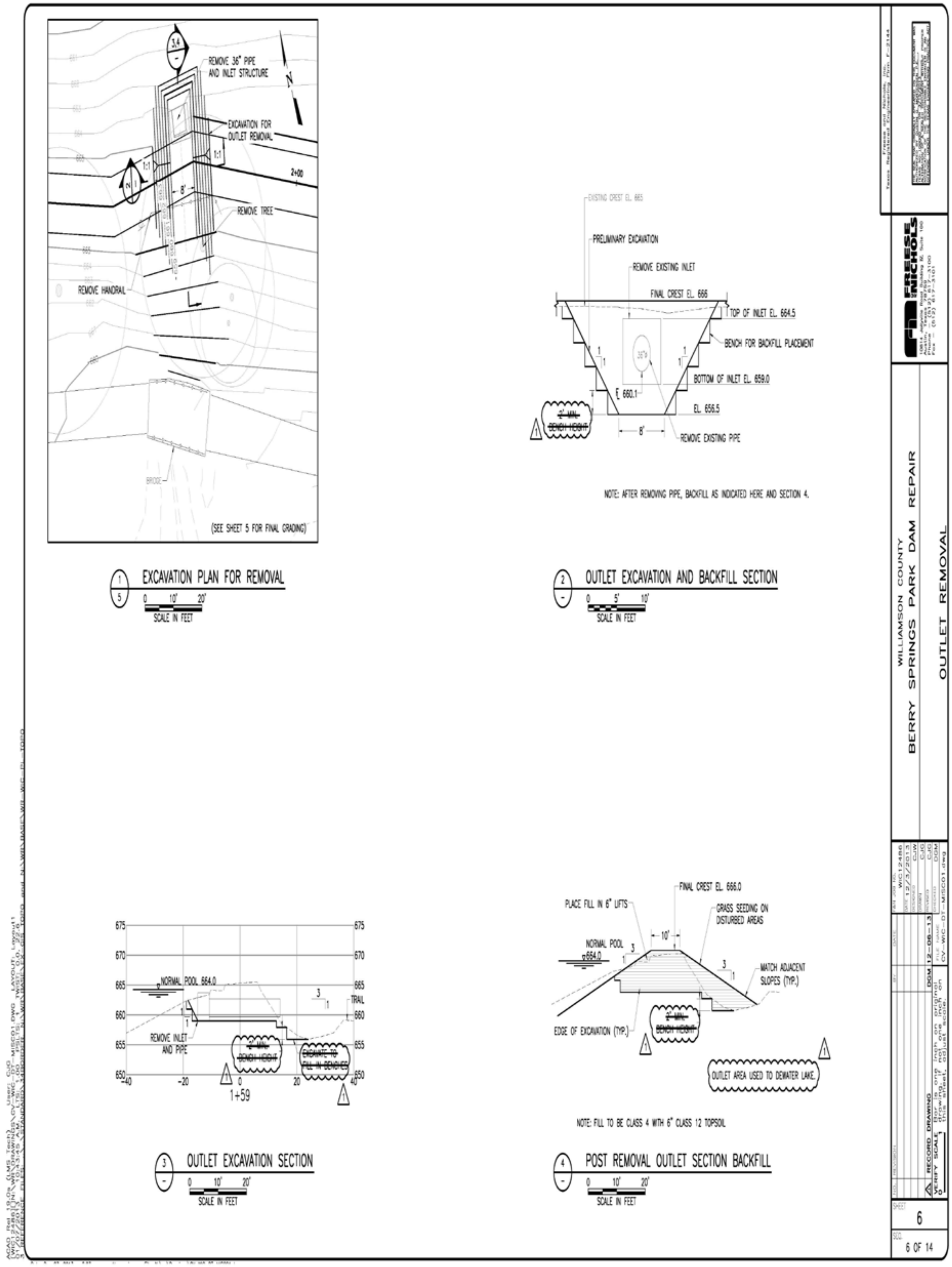
SLOPE PAVING AND OVERFLOW WALL DETAILS
BERRY SPRINGS PARK DAM REPAIR
WILLIAMSON COUNTY
FREESE NICHOLS
10
10 OF 14
TYPICAL REINFORCEMENT OVERFLOW WALL AND SCOUR PROTECTION
PVC WATERSTOP CONFIGURATION AT EXPANSION JOINT
WATERSTOP SCHEMATIC
CONCRETE SLOPE PAVING SECTION
CONCRETE SLOPE PAVING SECTION AT APRON
NOTES:
1. ADEQUATE COVER NOT PROVIDED ON WALL STEM BETWEEN EL. 656.25 TO 657.25 AT A FEW LOCATIONS. AN ADDITIONAL 1.5" WAS ADDED LATER.
2. SINGLE ROD TIES USED ON FORM WORK AND BROKEN OFF FLUSH WITH EDGE OF CONCRETE.
NOTES:
1. PVC WATERSTOP SHALL BE GREENSTREAK 732 OR APPROVED EQUAL.
2. FUSION FACTORY FABRICATION OF ALL TEES.
3. HORIZONTAL WATERSTOP BUTS INTO DOWNSTREAM FACE OF WALL.
4. FIELD WELDING OF STRAIGHT LENGTHS SHALL BE ALLOWED.
5. HYDROPHILIC WATERSTOP TO BE GREENSTREAK HYDROTITE

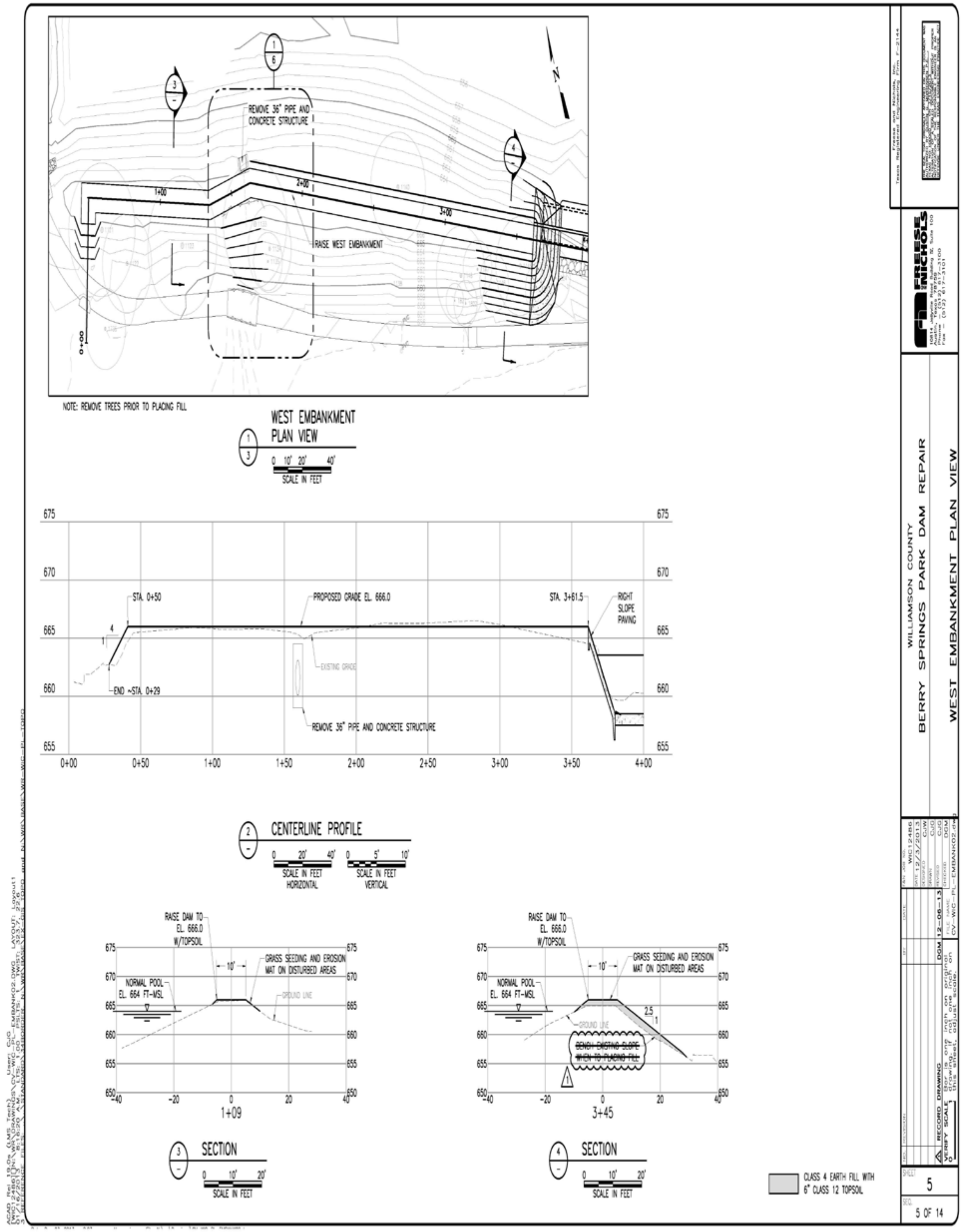


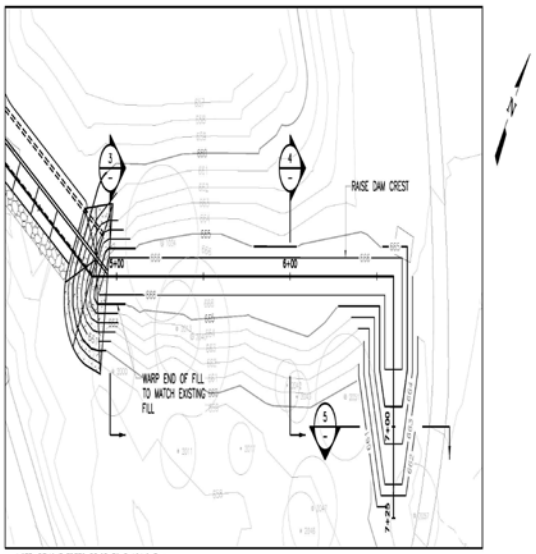
Gradation Requirements for Small Rock Riprap				
Percent Smaller	Weight (pounds) min	Weight (pounds) max	Diameter (inch) min	Diameter (inch) max
15%	15	37	7	10
50%	49	79	10	12
100%	99	247	13	18
Diameter based on density of 140 lb/ft^3				


FLOW
N
℄ OF DAM
CONCRETE SLOPE PAVING
EXCAVATION FOR DEWATERING
STA. 3+80.25
CONCRETE SLOPE PAVING
OFFSET 20' STA. 4+97.82
UPSTREAM EDGE OF FOOTING
STA. 4+72.75
STA. 3+61.5
TOOLED JOINT IN SLOPE PAVING (TYP.)
UPSTREAM FACE OF WALL
BOARDWALK
7.5'
STA. 4+95
TOOLED JOINT IN SLOPE PAVING (TYP.)
TOOLED JOINT IN SCOUR PROTECTION
ADJUST TOE OF SLOPE AND SLOPE PAVING TO AVOID BOARDWALK
TOOLED JOINT IN SCOUR PROTECTION
P.I. STA. 4+86
C.J. STA. 4+26
P.I. STA. 4+13
ROCK RIPRAP
DOWNSTREAM EDGE OF FOOTING
OFFSET 26' STA. 4+90.55
EDGE OF CONCRETE SCOUR PROTECTION
WALL - PLAN VIEW
SCALE IN FEET
NOTE: JOINTS SAW CUT ONE DAY AFTER PLACING CONCRETE.
PROPOSED GRADE EL. 666.0
STA. 3+61.5
C.J. STA. 4+26
OVERFLOW WALL
STA. 4+92.5
STA. 4+95
STA. 3+67.63
P.I. STA. 4+13
EL. 663.55
STA. 4+85.4
STA. 3+80.25
STA. 4+72.75
EXISTING GRADE
CONCRETE SLOPE PAVING
2.5
EL. 658.50
2.5
EL. 656.25
CONCRETE SLOPE PAVING
C.J. SEE SHEET 10
C.J. SEE SHEET 10
BOTTOM OF OVERFLOW WALL FOOTING
EL. 653.0
BOTTOM OF UPSTREAM KEY
APPROX. ROCK WALL LOCATION. EXTENTS UNKNOWN
CONCRETE SCOUR PROTECTION
ROCK WALL TO REMAIN
FT - MSL
670
665
660
655
650
645
640
3+00
3+50
4+00
4+50
5+00
5+50
CENTERLINE PROFILE
SCALE IN FEET
FRIESE NICHOLS
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
WALL REPLACEMENT
RECORD DRAWING
CHANGE ORDER 1
8
8 OF 14


GENERAL NOTES
1. VERIFY ALL DIMENSIONS, ELEVATIONS, OPENING SIZES, AND MECHANICAL EQUIPMENT WEIGHTS PRIOR TO STARTING WORK.
2. FIELD VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. NOTIFY ENGINEER IF THERE IS A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS BEFORE PROCEEDING WITH WORK.
3. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.
4. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.
5. SEE OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, ETC. NOT SHOWN ON STRUCTURAL DRAWINGS. BEFORE FABRICATION OF MATERIALS, COORDINATE WITH MECHANICAL AND ELECTRICAL EQUIPMENT REQUIREMENTS.
6. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
ABBREVIATIONS
C/C CENTER TO CENTER
C.J. CONSTRUCTION JOINT
E.J. EXPANSION JOINT
E.F. EACH FACE
E.W. EACH WAY
TYP. TYPICAL
CONCRETE AND REINFORCEMENT
1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF ACI 301 AND ACI 318 AND US ARMY CORPS OF ENGINEERS EM 1110-2-2104.
2. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS NOTED OTHERWISE, SHALL BE IN ACCORDANCE WITH THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315), LATEST EDITION.
3. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI UNLESS OTHERWISE NOTED.
4. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A 615, GRADE 60, DEFORMED.
5. CLEAR COVER DIMENSIONS ARE MARKED "CLR".
6. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS LISTED BELOW, UNLESS OTHERWISE NOTED.
a. UNFORMED SURFACES IN CONTACT WITH FOUNDATION: 4"
b. FORMED AND SCREEDED SURFACES SUBJECT TO CAVITATION OR ABRASION, SUCH AS CHUTE AND BAFFLE BLOCKS, STILLING BASIN SLABS, AND TUNNEL CONDUITS: 6"
c. FORMED AND SCREEDED SURFACES SUCH AS STILLING BASIN WALLS, CHUTE SPILLWAY SLABS, AND CHANNEL LINING SLABS ON GRADE:
-EQUAL TO OR GREAT THAN 24 INCHES IN THICKNESS: 4"
-GREATER THAN 12 INCHES AND LESS THAN 24 INCHES IN THICKNESS: 3"
-EQUAL TO OR LESS THAN 12 INCHES IN THICKNESS WILL BE IN ACCORDANCE WITH ACI CODE 350
7. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS OTHERWISE NOTED.
8. (struck through)
9. (struck through)
10. ADDITIONAL CONSTRUCTION JOINTS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.
11. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP IN ACCORDANCE WITH ACI.
12. THE SYMBOL INDICATES A LAPPED SPLICE, NOT A BEND IN THE BAR.
13. UNLESS INDICATED OTHERWISE, LAP SPLICES IN BEAMS AND WALLS SHALL BE STAGGERED.
14. ALL SPLICES SHALL BE CLASS "B" SPLICES WITH THE APPROPRIATE ALLOWANCES FOR BAR SPACING AND DEPTH OF CONCRETE CAST BELOW THE REINFORCEMENT UNLESS OTHERWISE NOTED.
15. SPLICES SHALL BE LOCATED WHERE INDICATED ON THE DRAWINGS OR AS AUTHORIZED BY THE ENGINEER.
16. WHEN REINFORCING BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH OF LAP SHALL BE GOVERNED BY THE SMALLER DIAMETER BAR.
17. SPLICES SHALL BE STAGGERED TO GIVE 12 INCHES CLEAR BETWEEN ENDS OF ADJACENT SPLICES, IF BARS ARE SPACED CLOSER THAN 6 INCHES OR 6 BAR DIAMETERS.
18. SPLICES IN REINFORCEMENT AT VERTICAL CONSTRUCTION JOINTS MAY BE SHIFTED TO AGREE WITH THE SEQUENCE OF CONSTRUCTION, UNLESS OTHERWISE SPECIFIED.
19. NON-CONTACT LAP SPLICES SHALL NOT BE SPACED FATHER APART THAN ONE-FIFTH THE REQUIRED LENGTH OF LAP OR 6 INCHES.
20. REINFORCEMENT PARALLELING CONSTRUCTION JOINTS SHALL HAVE A MINIMUM OF 2" CONCRETE COVER.
21. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
22. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.
24. (struck through) FOUR (struck through) LAP (struck through)
25. (struck through)
26. JOINT SEALANT SHALL BE SIKAFLEX-2C NS.
27. PRIME SURFACES TO BE SEALED W/ SIKAFLEX 429 PRIMER.
28. PROVIDE BACKER ROD IN JOINT TO BE SEALED.
1 WALL EXPANSION JOINT DETAIL (PLAN)
3 SCOUR PROTECTION EXPANSION JOINT DETAIL (ELEV.)
5 SCOUR PROTECTION AT WALL EXPANSION JOINT DETAIL
2 EXPANSION JOINT AT TOP OF WALL (ELEV.)
4 FOOTING EXPANSION JOINT DETAIL (ELEV.)
6 SLOPE PAVING AT WALL JOINT DETAIL
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
CONCRETE NOTES AND JOINT DETAILS
FREESE NICHOLS
7
7 OF 14

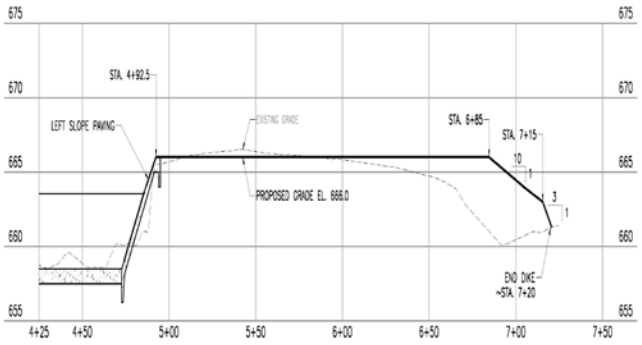

REMOVE 36" PIPE AND INLET STRUCTURE
EXCAVATION FOR OUTLET REMOVAL
REMOVE TREE
REMOVE HANDRAIL
BRIDGE
(SEE SHEET 5 FOR FINAL GRADING)
EXCAVATION PLAN FOR REMOVAL
SCALE IN FEET
EXISTING CREST EL. 665
PRELIMINARY EXCAVATION
REMOVE EXISTING INLET
FINAL CREST EL. 666
TOP OF INLET EL. 664.5
BENCH FOR BACKFILL PLACEMENT
BOTTOM OF INLET EL. 659.0
EL. 656.5
REMOVE EXISTING PIPE
2' MIN. BENCH HEIGHT
NOTE: AFTER REMOVING PIPE, BACKFILL AS INDICATED HERE AND SECTION 4.
OUTLET EXCAVATION AND BACKFILL SECTION
NORMAL POOL 664.0
REMOVE INLET AND PIPE
EXCAVATE TO FILL IN BENCHES
TRAIL
1+59
OUTLET EXCAVATION SECTION
FINAL CREST EL. 666.0
PLACE FILL IN 6" LIFTS
GRASS SEEDING ON DISTURBED AREAS
MATCH ADJACENT SLOPES (TYP.)
EDGE OF EXCAVATION (TYP.)
OUTLET AREA USED TO DEWATER LAKE.
NOTE: FILL TO BE CLASS 4 WITH 6" CLASS 12 TOPSOIL
POST REMOVAL OUTLET SECTION BACKFILL
FREESE NICHOLS
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
OUTLET REMOVAL
RECORD DRAWING
6
6 OF 14


NOTE: REMOVE TREES PRIOR TO PLACING FILL
WEST EMBANKMENT PLAN VIEW
SCALE IN FEET
REMOVE 36" PIPE AND CONCRETE STRUCTURE
RAISE WEST EMBANKMENT
CENTERLINE PROFILE
STA. 0+50
PROPOSED GRADE EL. 666.0
STA. 3+61.5
RIGHT SLOPE PAVING
EXISTING GRADE
END ~STA. 0+29
REMOVE 36" PIPE AND CONCRETE STRUCTURE
SCALE IN FEET HORIZONTAL
SCALE IN FEET VERTICAL
RAISE DAM TO EL. 666.0 W/TOPSOIL
GRASS SEEDING AND EROSION MAT ON DISTURBED AREAS
NORMAL POOL EL. 664 FT-MSL
GROUND LINE
BENCH EXISTING SLOPE WHEN TO PLACING FILL
SECTION
CLASS 4 EARTH FILL WITH 6" CLASS 12 TOPSOIL
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
WEST EMBANKMENT PLAN VIEW
FREESE NICHOLS
RECORD DRAWING
SHEET 5
5 OF 14



1/3 EAST EMBANKMENT PLAN VIEW

0 10' 20' 40'
SCALE IN FEET



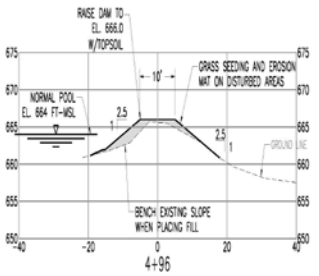
2/- CENTERLINE PROFILE

0 20' 40'
SCALE IN FEET HORIZONTAL

0 5' 10'
SCALE IN FEET VERTICAL

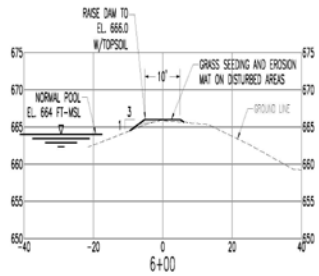
1

ONSITE MATERIAL
~~CLASS 4 EARTH FILL WITH 6" CLASS 10 TOPSOIL~~



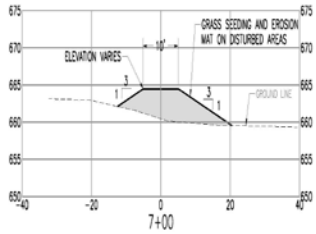
3/- SECTION

0 10' 20'
SCALE IN FEET



4/- SECTION

0 10' 20'
SCALE IN FEET



5/- SECTION

0 10' 20'
SCALE IN FEET

WILLIAMSON COUNTY

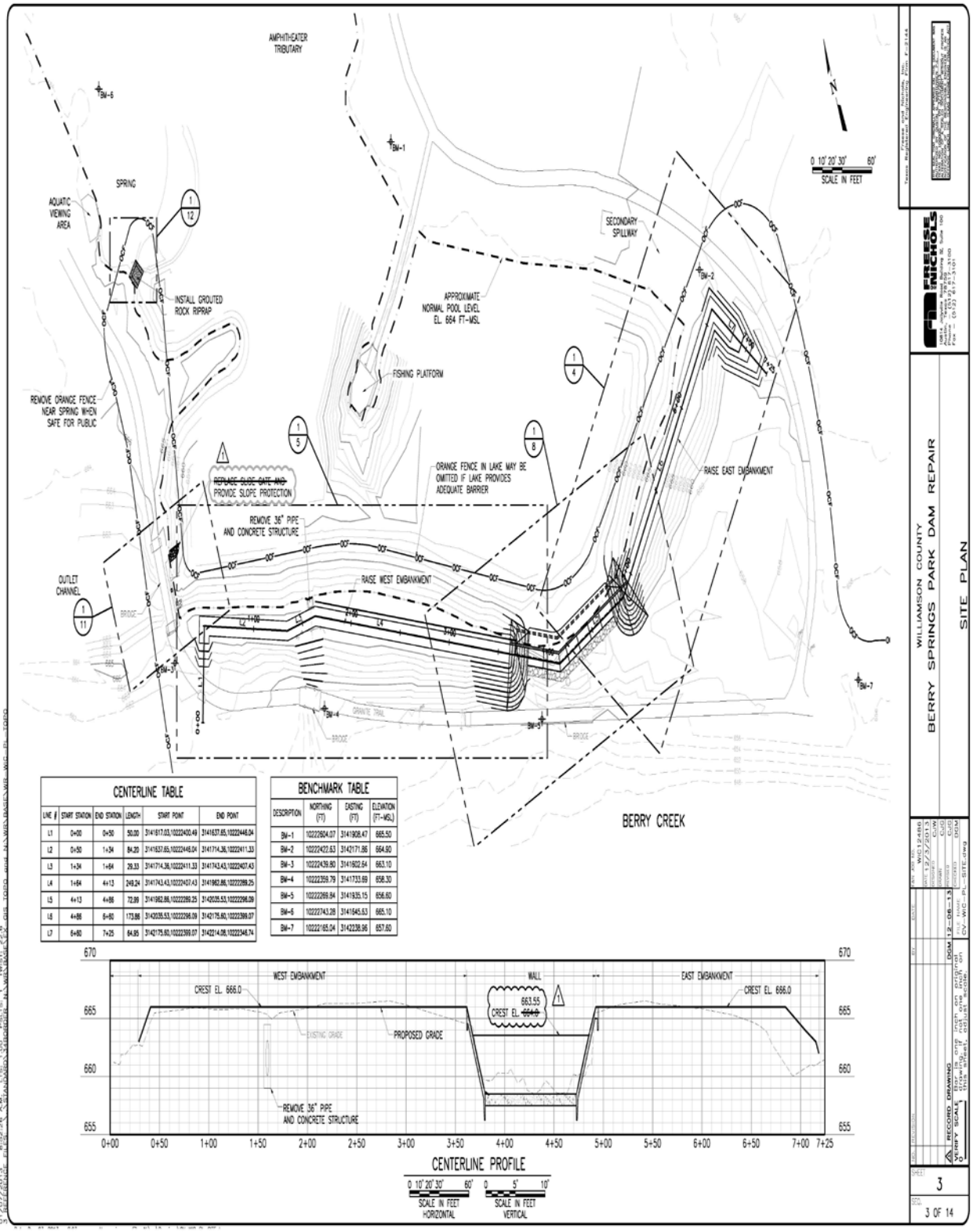
BERRY SPRINGS PARK DAM REPAIR

EAST EMBANKMENT PLAN VIEW

FREESE NICHOLS

SHEET 4

4 OF 14



CENTERLINE TABLE

LINE #	START STATION	END STATION	LENGTH	START POINT	END POINT
L1	0+00	0+50	50.00	3141617.03,10222400.49	3141637.65,10222446.04
L2	0+50	1+34	84.20	3141637.65,10222446.04	3141714.36,10222411.33
L3	1+34	1+64	29.33	3141714.36,10222411.33	3141743.43,10222407.43
L4	1+64	4+13	249.24	3141743.43,10222407.43	3141962.86,10222299.25
L5	4+13	4+86	72.99	3141962.86,10222299.25	3142035.53,10222296.09
L6	4+86	6+60	173.66	3142035.53,10222296.09	3142175.60,10222309.07
L7	6+60	7+25	64.95	3142175.60,10222309.07	3142214.08,10222348.74

BENCHMARK TABLE

DESCRIPTION	NORTHING (FT)	EASTING (FT)	ELEVATION (FT-MSL)
BM-1	10222604.07	3141908.47	665.50
BM-2	10222422.53	3142171.86	664.90
BM-3	10222439.80	3141602.64	663.10
BM-4	10222359.79	3141733.69	658.30
BM-5	10222269.84	3141935.15	656.60
BM-6	10222743.28	3141545.53	665.10
BM-7	10222165.04	3142238.96	657.60

CENTERLINE PROFILE

0 10' 20' 30' 60' SCALE IN FEET HORIZONTAL

0 5' 10' SCALE IN FEET VERTICAL

FREESE NICHOLS

WILLIAMSON COUNTY

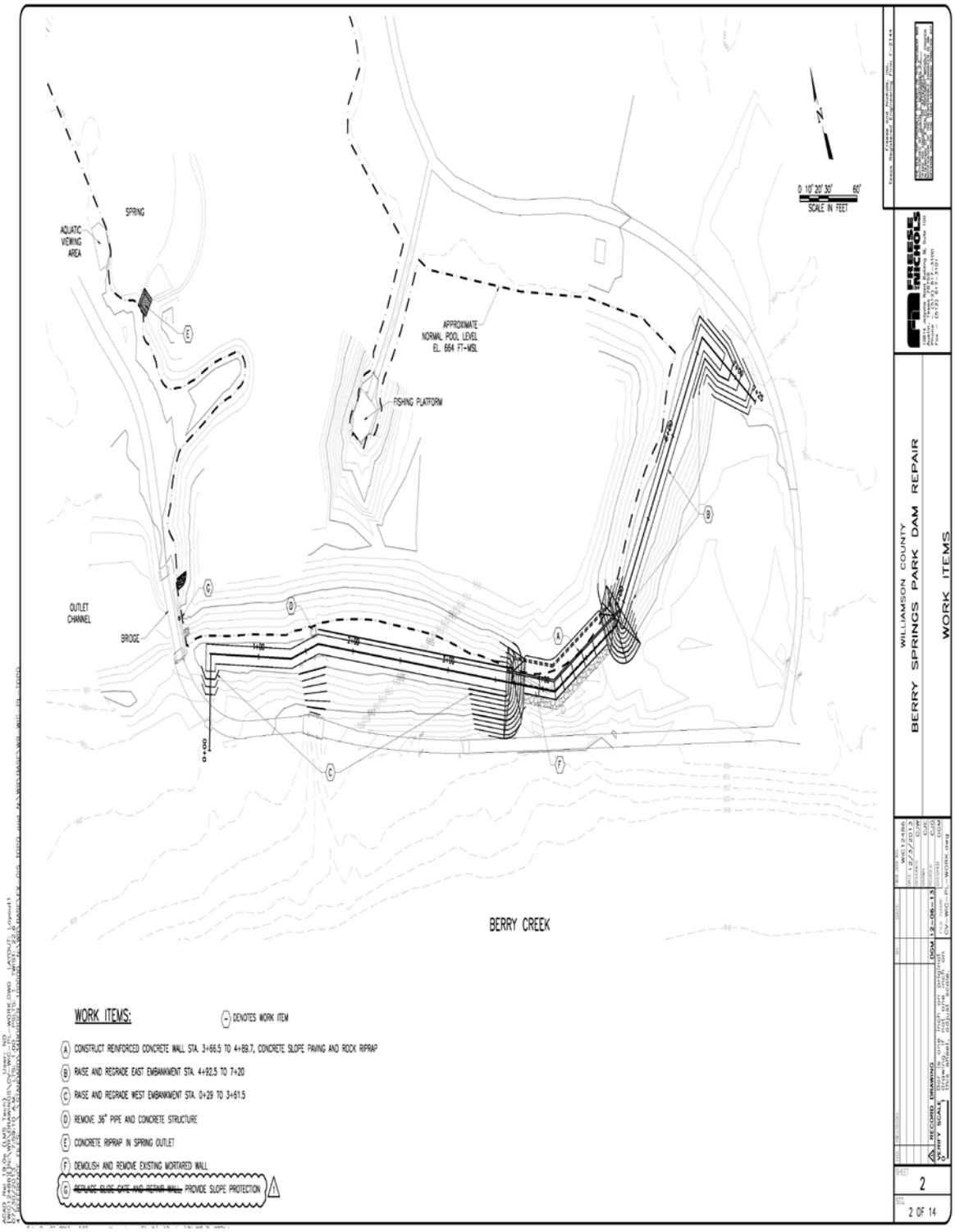
BERRY SPRINGS PARK DAM REPAIR

SITE PLAN

RECORD DRAWING

SHEET 3

3 OF 14


SPRING
AQUATIC VIEWING AREA
APPROXIMATE NORMAL POOL LEVEL EL. 664 FT-MSL
FISHING PLATFORM
OUTLET CHANNEL
BRIDGE
0+00
BERRY CREEK
N
0 10' 20' 30' 60'
SCALE IN FEET
WORK ITEMS:
(-) DENOTES WORK ITEM
(A) CONSTRUCT REINFORCED CONCRETE WALL STA. 3+66.5 TO 4+89.7, CONCRETE SLOPE PAVING AND ROCK RIPRAP
(B) RAISE AND REGRADE EAST EMBANKMENT STA. 4+92.5 TO 7+20
(C) RAISE AND REGRADE WEST EMBANKMENT STA. 0+29 TO 3+61.5
(D) REMOVE 36" PIPE AND CONCRETE STRUCTURE
(E) CONCRETE RIPRAP IN SPRING OUTLET
(F) DEMOLISH AND REMOVE EXISTING MORTARED WALL
(G) ~~REPLACE SLIDE GATE AND REPAIR WALL~~ PROVIDE SLOPE PROTECTION
WILLIAMSON COUNTY
BERRY SPRINGS PARK DAM REPAIR
WORK ITEMS
FREESE NICHOLS
2
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