(Minimal Impacts)

Lack Road Bridge (over New River) Improvement Project

Imperial County, California north of the City of Westmoreland and West of the City of Brawley

Lack Road Bridge No. 58C0101

August 2019

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Summary

This report presents the findings of general reconnaissance biological surveys of the project site. No special-status plant and two special-status wildlife species and migratory bird nesting have limited potential to occur within the Biological Study Area, therefore preconstruction surveys are recommended.

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1. Introduction

1.1 History

The project is located approximately 5.8 miles north of the city of Westmorland where Lack Road crosses the New River at bridge No. 58C0101 in Imperial County, California. The approximate limits of the project area will extend along Lack Road from approximately 300 feet south to 350 feet north of the New River. Due to severe deterioration of some of the pile supports, the existing bridge has been closed to traffic for well over a year now. The County proposes to replace the existing 7-span timber bridge with a new precast concrete bridge designed to current AASHTO standards with California amendments.

Project Purpose and Need

The proposed new bridge will be a single-span bridge with four precast/prestressed bulb-tee girders supported on two abutments. The new bridge dimensions will be 35 feet and 6 inches wide by 125 feet long, with a structure depth of 7 feet and 0.875 inches. The selection of a precast bridge structure eliminates the need for construction to take place within the New River.

The proposed roadway would remain one travel lane in each direction, and geometry for the project will be based on applicable Imperial County (County) and American Association of State Highway and Transportation Officials (AASHTO) standards. Lack Road Bridge will be reconstructed the same alignment with two 12-foot lanes designed for a 55-mile-per-hour (mph) vehicle speed. Shoulder widths will be four feet on the bridge and will transition to the existing width at the roadway conform points. The new bridge is designed to accommodate the 100-year flood event of the New River.

The existing bridge will be removed without the need to be in the New River. All operations are anticipated to take place from the banks. If the existing timber piles cannot be completely extracted, they will be cut-off above the current water surface elevation and left in place.

Lack Road is a farm to market roads. Lack Road is a north/south road that offers direct access from SR 86 to S30 which accesses Westmorland, Brawley and Calipatria for local commuters as well as farming and geothermal vehicles. Re-opening the structure to traffic will reduce the lengthy detour for all commuters that either live, or work along that stretch of Lack Road.

2. Study Methods

2.1 Regulatory Requirements

The primary regulations affecting biological resource impacts are discussed in this section. If construction of this project, or related activities associated with construction, impact federal- and/or state-listed species, the project may be subject to the California Endangered Species Act (CEPA) and the federal Endangered Species Act (ESA). If activities directly impact migratory birds or cause the destruction or abandonment of nests, the project would be subject to the

Migratory Bird Treaty Act. Additional regulations could also apply to the project. The following paragraphs provide a brief summary of the applicable provisions of these regulations.

2.1.1 Federal Endangered Species Act

The federal ESA provides protection for plants and animals listed as threatened or endangered by U.S. Wildlife and Forestry Service (USWFS) and the National Oceanic and Atmospheric Administration (NOAA) Marine Fisheries Service. Section 9 of the ESA (50 CFR 17.3) prohibits the take, possession, sale, or transport of any federal ESA-listed species. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, capture, collect, or attempt to engage in any such conduct" (16 U.S. Code [USC] Section 1532(19)). Federal regulation 50 CFR 17.3 further defines the term harm in the take definition to mean any act that actually kills or injures a federally listed species, including significant habitat modification or degradation. For plants, the federal ESA prohibits removing, possessing, maliciously damaging, or destroying any listed plant on areas under federal jurisdiction, and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 USC Section 1538(a)(2)(B)).

The federal ESA requires the federal government to designate critical habitat for any species listed under the federal ESA but also allows areas to be excluded from critical habitat (16 USC Section 1533(b)(2)). Critical habitat is a specific area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may also include specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.

Section 7 of the federal ESA requires federal agencies to consult with USFWS and/or NOAA Marine Fisheries Service for any federal activity that may affect any federally listed species or its critical habitat. Informal consultation may precede, and obviate the need for formal consultation if USFWS and/or NOAA Marine Fisheries Service concur that the proposed agency action is not likely to adversely affect listed species. In the formal consultation process, USFWS and/or NOAA Marine Fisheries Service must issue a Biological Opinion as to the potential for effect to listed species. USFWS and/or NOAA Marine Fisheries Service may issue an incidental take permit, allowing take of the species that is incidental to an authorized activity, provided that the action will not jeopardize the continued existence of the species. Section 10(a) of the ESA provides for issuance of incidental take permits for private actions that have no federal involvement, through the development of a Habitat Conservation Plan (HCP).

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) provides protection for migratory birds. Conditions for permits to "take" migratory birds (as defined in the MBTA) are set forth in 50 CFR Part 13 [General Permit Procedures] and 50 CFR Part 21 [Migratory Bird Permits]). Unless expressly authorized in the regulations or by permit, activities such as hunting, pursuing, capturing, killing, selling, and shipping migratory birds are prohibited. The MBTA allows USFWS to issue permits to qualified applicants for certain types of activities. This protection extends to all migratory birds, parts, nests, and eggs. The full list of species protected under this act is found in 50 CFR 10.13.

2.1.3 California Endangered Species Act

The California Endangered Species Act (CESA) provides protection for candidate plants and animal species as well as those listed as threatened or endangered by CDFW. CESA prohibits the take of any such species unless authorized; however, California case law has not interpreted habitat destruction, alone, as included in the state's definition of take. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Cal. Fish and Game Code §86). CDFW administers the act and authorizes take through Section 2081 agreements, Section 2080.1 consistency determinations (for species that are also listed under the federal ESA) or NCCPs.

2.1.4 Porter-Cologne Water Quality Control Act, as amended

This act is administered by the State Water Resource Control Board (SWRCB) to protect water quality and is an avenue to implement CA responsibilities under the federal Clean Water Act. This act regulates discharge of waste into a water resource.

2.1.5 Clean Water Act, 1972 (CWA 33 U.S.C. 1251 et seq.)

This act regulates discharges into waters of the U.S. Army Corp of Engineers (ACOE) is given the responsibility to implement programs to prevent pollution.

2.2 Studies Required

2.2.1 Literature Search

Prior to conducting field surveys, a review of pertinent literature, regulatory requirements, special-status species lists and recorded occurrences was conducted to determine if the proposed bridge repairs are within the range of sensitive resources such as state and/or federal listed threatened and/or endangered species. Available literature was reviewed including the California Natural Diversity Database (CNDDB) for the Westmoreland E U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle and the surrounding eight quadrangles within the United States including Wiest, Iris, Niland, Obsidian Butte, Westmoreland W, Brawley NW, Brawley, Alamorio.

Survey Methodologies
Marie Barrett and Jacob Calanno performed the biological assessment surveys within and adjacent to the Biological Study Area (BSA).

All proposed impact areas within the BSA were visited on foot and any nests were evaluated for activity.

2.2.2 Personnel and Survey Dates

Marie Barrett and Jacob Calanno of Barrett's Biological Surveys performed the biological assessment survey on July 25, 2019 (85-88ºF, clear, 3-4 mph between 0645-0800). Resumes are attached.

2.2.3 Limitations That May Influence Results

Due to a wet fall and winter, rain fall was sufficient to germinate seeds and therefore, botanical specimens were present.

This area is highly disturbed by vehicles during all seasons and typical damage was observed.

3. Results: Environmental Setting

3.1 Description of the Existing Biological and Physical Conditions

3.1.1 Biological Study Area (BSA)

This site is located within the Colorado Desert which is a subdivision of the larger Sonoran Desert and covers approximately 7 million acres. The desert encompasses Imperial County and includes parts of San Diego County, Riverside County, and a small part of San Bernardino County. This site is in Imperial County.

This desert lies at a relatively low elevation, below 1,000 feet, with the lowest point of the desert floor is 275 feet below sea level at the Salton Sea; northeast of the site. The highest peaks of the Peninsular Ranges which reach elevations of nearly 10,000 feet are to the west of the site.

The Colorado Desert's climate differs from other deserts. The region experiences greater summer daytime temperatures (up to 120ºF) than higher-elevation deserts and rarely experiences frost. In addition, the Colorado Desert experiences two rainy seasons per year usually in the winter and late summer in this portion. This area is within the agricultural portion that is irrigated by Colorado River water delivered through water conveyance structures maintained by the Imperial Irrigation District (IID). This Lack Road Bridge spans the New River which drains into the Salton Sea

3.1.2 Physical Conditions

The original timber bridge has degraded requiring replacement. While the bridge is closed, traffic is rerouted via a five mile detour to bypass the closed bridge and access the nearest bridge over New River.

3.1.3 Biological Conditions in the Study Area

The top of the bridge is wooden and is not biologically sensitive. Underneath the bridge, over the New River, little flora or fauna were observed. No swallows were observed nesting beneath the bridge. Tables 1 and 2 (below) list species observations within the buffer zone of the site.

Table 1: Vegetation Found in Vicinity

Common Name	Scientific Name	Cal-IPC Rating*
Iodine bush	*Allenrolfea occidentalis*	
Saltcedar	*Tamarix spp.*	*Ca Noxious Weed* *Cal-IPC rating: High*

No vegetation was found that would be considered endangered, threatened or species of concern.

Table 2: Animals/Insects Found in Vicinity

Common Name	Scientific Name
Blackbird	*Turdus merula*
Canine tracks	*unknown*
Cottontail rabbit	*Sylvilagus audubonii*
Cabbage butterfly	*Pieris rapae*
Bees	*Aphis sp.*

No animals were found that would be considered endangered, threatened or species of concern.

3.1.4 Habitat Connectivity

The habitat is divided by Lack Road which runs from SR 78 to S30. Lack Road can be accessed by wildlife. This project will not change the existing connectivity.

3.2 Regional Species and Habitats/Natural Communities of Concern

3.2.1 Habitat/Natural Communities of Special Concern

There are no Habitat/Natural Communities of Special Concern found within the BSA.

3.2.2 Special-Status Plant Species

Appendix: Sensitive Botanical and Zoological Species (CNDDB/CNPS) Westmoreland E Quadrangle (Nine Quad Search) July 2019 (attached) listed 4 botanical species within the 9 Quadrangles searched. Of these, none would be expected within the site.

3.2.3 Special-Status Animal Species

Appendix: Sensitive Botanical and Zoological Species (CNDDB/CNPS) Westmoreland E Quadrangle (Nine Quad Search) July 2019 (attached) listed 36 zoological species within the 9 Quadrangles searched. Of these, two species Ridgeway's Rail (*Rallus obsoletus)* and Burrowing owl (*Athene cunicularia*) could be expected within the BSA.

4. Results: Biological Resources, Discussion of Impacts & Mitigation

4.1 Habitats/Natural Communities of Special Concern

There are no habitats/Natural Communities of Special Concern.

4.2 Special-Status Plant Species

No special-status plant species are expected as there is no habitat to support them.

4.2.1 Discussion of Plant Species

Survey Results
None observed within the BSA during survey.

Project Impacts
None are expected.

Avoidance and Minimization Efforts/Compensatory Mitigation
A preconstruction survey should be conducted by a qualified biologist.

4.3 Special-Status Animal Species

Ridgway Rail (Yuma clapper rail) is rated Federally as Endangered. It is a chickenlike marsh bird with a long, slightly drooping bill and an often upturned tail. Light brownish with dark streaks above. Rust-colored breast; bold, vertical gray and white bars on the flanks; white undertail coverts and lives in freshwater and brackish marshes. Prefers dense cattails, bulrushes, and other aquatic vegetation. Nests in riverine wetlands near upland, in shallow sites dominated by mature vegetation, often in the base of a shrub. Prefers denser cover in winter than in summer and is very shy. None observed or heard; Cattails found in a limited dense stand within Q lateral west of bridge replacement; no suitable habitat on site or in adjacent drains.

Burrowing Owl (*Athene cunicularia*) is considered a California Department of Fish and Wildlife: Species of Special Concern. They are small raptors that nest in burrows that have been borrowed from other species or by the raptor in open grassland areas and water conveyance structures in Imperial County. BUOW have adapted well in Imperial County using canals/drains/ditches to establish burrows and foraging for insects in agricultural fields. Owls/burrows not found on site or off site on IIDROW/field ditches. Observed in area over one mile outside of BSA

4.3.1 Discussion of Animal Species

Survey Results

BUOW or Ridgway Rail were not found within the BSA during the survey. No bulrushes, cattails were observed within the study area. BUOW were observed approximately one mile outside the survey area.

Project Impacts
No impacts are expected with avoidance and minimization efforts.

Avoidance and Minimization Efforts/Compensatory Mitigation
1. Nesting bird surveys by qualified biologists during nesting season (February through August); preferably time construction during non nesting season (September through January). Time nesting surveys within 3-5 days prior to start of construction. BUOW preconstruction survey within 14 days of start of construction.

2. Worker environmental awareness training for nesting birds and Burrowing Owl(BUOW) which will include the following aspects:

    - Biology and status of the BUOW;
    - Protection measures designed to reduce potential impacts to the species, function of flagging designating authorized work areas;
    - Reporting procedures to be used if a BUOW is encountered in the field; and driving procedures and techniques, for commuting, and driving on, to the project site
    - Identification of nesting birds and procedures to follow if nesting is suspected.

3. Areas outside of the project footprint will be designated as an "Environmentally Sensitive Area" (ESA) on project plans. No project-related activities will take place within the ESA-designated areas.

5. Conclusions & Regulatory Determination

5.1 Agency Coordination

Consultation should begin with U.S. Army Corps of Engineers Regulatory Division to obtain the required permit for working within a waterway that drains into waters of the United States.

California Department of Fish and Wildlife, Bermuda Dunes, should be contacted regarding a Streambed Alteration Permit.

6. References

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7. Appendix

Sensitive Botanical and Zoological Species (CNDDB/CNPS) Niland Quadrangle (Nine Quad Search) July, 2019

Biological Study Area Map

Photographs

Engineering Plans

Resumes

SENSITIVE BOTANICAL AND ZOOLOGICAL SPECIES (CNDDB/CNPS) SPECIES

APPENDIX A SENSITIVE BOTANICAL AND ZOOLOGICAL SPECIES (CNDDB/CNPS) Westmorland E Quadrangle (Nine Quad Search) July 2019				
BOTANICAL SPECIES	**STATUS[1]**	**DESCRIPTION OF SPECIES**	**HABITAT**	**OBSERVATION/ SITE POTENTIAL**
gravel milk-vetch *Astragalus sabulonum*	2B.2	Desert brush scrub	a dicot, is an annual herb that is native to California and is also found outside of California but is confined to western North America.	L No desert brush scrub habitat
Abrams' spurge *Euphorbia abramsiana*	2B.2	CNPS list: 2	Annual herbaceous blooms Sept/Nov. Common spurge in area has large purple spot and is prostrate; Abram's is not as colorful. Sonoran Desert Shrub	L No Sonoran desert scrub habitat
Glandular ditaxis *Ditaxis claryana*	CNPS: 2.2	Staminate flower: sepals 5, edges abutting in bud; petals 5; stamens 5–15, generally in 2 sets, some > others, filaments fused into a column, staminodes 0–3 at column tip	Sandy soils, Creosote Bush Scrub	L No Creosote brush scrub habitat

BOTANICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Munz's Cholla *Opuntia munzii*	CNDDB Ranks: G3, S1.2; CNPS: 1B.3	Shrub to tree-like, 6.4 - 12.8 feet (2-4 meters) tall, almost as wide. Main trunk 4-6 inches (10-15cm) thick. Stem succulent. Lower branches rather bare. Tubercles (small, wart-like projections) strongly raised, 3/8 - 5/8 inches (10-16mm) long, 2/8 inch (5-6mm) wide. Areoles (area bearing spines) with short, tan bristles, and 10-12 yellowish, somewhat equal spines, 3/8 - 5/8 inches (1-2cm) long. Flowers few. Petals yellowish-green, 5/8 - 6/8 inches (1.5-2cm) long. Fruit is dry. Seeds are somewhat rounded, 1/8 inch (3mm).	Dry, gravelly or sandy places. Creosote bush scrub. Elevation 480 - 1,920 feet (150-600 meters).	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Yellow Warbler *Dendroica petechia brewsteri*	CNDDB Rank: G5T3, S2; CDFW: SC	A Family of seed-eating, small to moderately large passerine birds that have strong, stubby beaks, which in some species can be quite large. They have a bouncing flight, alternating flapping with gliding on closed wings. Most sing well.	Yellow warblers in southern California breed in lowland and foothill riparian woodlands dominated by cottonwoods, alders, or willows and other small trees and shrubs typical of low, open-canopy riparian woodland (Garrett and Dunn 1981). During migration, they occur in lowland and foothill woodland habitats such as desert oases, riparian woodlands, oak woodlands, mixed deciduous-coniferous woodlands, suburban and urban gardens and parks, groves of exotic trees, farmyard windbreaks, and orchards (Small 1994).	L Sparse thickets
Crissal Thrasher *Toxostoma crissale*	CDFW Species of Special Concern	A large thrasher found in the Southwestern United. The bird grows to 32 cm (12.5 inches), and has a deeply	Dense vegetation along streams/washes in mesquite/willows/arrowweed	L

		curved bill. It can be found near water in dense underbrush, and in the low desert near canyon chaparral; seldom flies in the open.		None observed; scarce habitat
Black Skimmer *Rynchops niger*	Fed: - CDFW: SSC	A medium-sized to large waterbird with long red and black bill. Black back and cap.Underparts white with very short red legs.	Fairly common summer resident at the Salton Sea. Forages on small fishes and crustaceans in calm, shallow water. Roosts on sandy beaches or gravel bars	L No suitable habitat
Short-eared owl *Asio flammeus*	CDFW: SSC	Medium sized with light and dark brown mottled upperparts with dark-streaked, pale buff underparts. The head has large, round, pale buff facial disk with fine, brown tinges, black around eyes, and small ear tufts. Eyes are yellow and bill is black. Flight is erratic with flopping wing beats. Hunts day or night.	Found in fresh and saltwater swamplands, lowland meadows and irrigated alfalfa fields. Requires tall grass or cattail patches for nesting and cover. Nests on dry ground in depression concealed in vegetation.	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site

black storm-petrel *Oceanodroma melania*	CDFW: SSC Species of Special Concern	a small seabird of the storm petrel family Hydrobatidae. It is 23 cm in length, with a wingspan of 46–51 cm.	The species breeds colonially on islands off the southern California coast of the United States and off the Baja Peninsula and Gulf of California of Mexico. Nesting sites are usually in rock crevices, occasionally in small burrows in soft earth.	L No suitable habitat
black tern *Chlidonias niger*	SSC	As its name suggests, it has predominantly dark plumage.	generally found in or near inland water in Europe and North America.	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
California Black Rail *Laterallus jamaicensis coturniculus*	CDFW: Threatened	The smallest of all rails, the black rail is slate-colored, with a black bill, red eyes and a white-speckled back. The legs are moderately long and the toes are unwebbed. The sexes are similar.	Most commonly occurs in tidal emergent wetlands dominated by pickleweed or in brackish marshes with bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass and in immediate vicinity of tidal sloughs. Typically occurs in the high wetland zones near upper limit of tidal flooding, not in low wetland areas with considerable annual or daily fluctuations in water levels. Nests are concealed in dense vegetation, often pickleweed, near upper limits of tidal flooding	L None observed; no habitat on site
Gila woodpecker *Melanerpes uropygialis*	CDFW: SSC	a medium-sized woodpecker	Found in the desert regions of the southwestern United States and western Mexico. In the U.S., they range through southeastern California, southern Nevada, Arizona, and New Mexico.	L No suitable habitat; no palm trees for nesting

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
American white pelican *Pelecanus erythrorhynchos*	CDFW: Unlisted	The American white pelican rivals the trumpeter swan, with a similar overall length, as the longest bird native to North America. Both very large and plump, it has an overall length of about 50–70 in (130–180 cm), courtesy of the huge beak which measures 11.3–15.2 in (290–390 mm) in males and 10.3–14.2 in (260–360 mm) in females. It has a wingspan of about 95–120 in (240–300 cm).	American white pelicans nest in colonies of several hundred pairs on islands in remote brackish and freshwater lakes of inland North America. The most northerly nesting colony can be found on islands in the rapids of the Slave River between Fort Fitzgerald, Alberta, and Fort Smith, Northwest Territories. About 10–20% of the population uses Gunnison Island in the Great Basin's Great Salt Lake as a nesting ground. The southernmost colonies are in southwestern Ontario and northeastern California.	L None observed; no habitat
California least tern *Sternula antillarum browni*	CDFW: SSC	Both the Californian subspecies and the nominate race of least tern are approximately 23 centimeters in length. Both have conspicuous black markings on their outermost primaries and fly over water with a distinctive hunchback appearance, with bills pointing slightly downward.	Wintering locations are actually unknown, but suspected to include the South American Pacific Coast. The California least tern arrives at its breeding grounds in late April.	L None observed; no habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Northern harrier *Circus cyaneus hudsonius*	CDFW Species of Concern	The northern harrier is 41–52 cm (16–20 in) long with a 97–122 cm (38–48 in) wingspan.	It breeds throughout the northern parts of the northern hemisphere in Canada and the northernmost USA. While many taxonomic authorities split the northern harrier and the hen harrier into distinct species, others consider them conspecific.	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site
Le Conte's thrasher *Toxostoma lecontei*	CDFW: SC Species of Concern	Large, long-tailed songbird. Pale sandy gray all over. Long, down-curved bill. Dark tail. Pale reddish undertail.	Desert scrub, mesquite, tall riparian brush and, locally, chaparral.	L No habitat
Loggerhead shrike *Lanius ludovicianus*	CDFW: SC Species of Concern	It measures approximately 9 inches from bill to tail. The wing and tail length is about 3.82 and 3.87 inches long, respectively. It weighs on average 50 grams, with a range of 45-60 grams for a healthy adult shrike.	The bird requires an open habitat with an area to forage, elevated perches and nesting sites.	L No prey on site

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Gull-billed tern *Gelochelidon nilotica*	CDFW: SSC Species of Speical Concern	This is a fairly large and powerful tern, similar in size and general appearance to a Sandwich tern, but the short thick gull-like bill, broad wings, long legs and robust body are distinctive.	It breeds in warmer parts of the world in southern Europe, temperate and eastern Asia, both coasts of North America, eastern South America. This bird has a number of geographical races, differing mainly in size and minor plumage details.	L No habitat
Least Bell's vireo *Vireo bellii pusillus*	Fed: Endangered State: Endangered	Little brown bird	The Least Bell's Vireo, Vireo bellii pusillus, is one of four subspecies of Bell's Vireo recognized by the American Ornithologist's Union (AOU 1957). It is the western-most subspecies, breeding entirely within California and northern Baja California.	L No habitat
Least bittern *Lxobrychus exilis*	CDFW: SSC Species of Special Concern	The least bittern is one of the smallest herons in the world, with perhaps only the dwarf bittern and the black-backed bittern averaging smaller in length. It can measure from 28 to 36 cm (11 to 14 in) in length, and the wingspan ranges from 41 to 46 cm (16 to 18 in).	These birds nest in large marshes with dense vegetation from southern Canada to northern Argentina. The nest is a well-concealed platform built from cattails and other marsh vegetation. The female lays four or five eggs, in extreme cases from two to seven.	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Wood stork *Mycteria americana*	CDFW: SSC Species of SpecialConcern	The adult wood stork is a large bird which stands 83 to 115 cm (33–45 in) tall with a wingspan of 140 to 180 cm (55–71 in). The male typically weighs 2.5 to 3.3 kg (5.5–7.3 lb), with a mean weight of 2.7 kg (6.0 lb); the female weighs 2.0 to 2.8 kg (4.4–6.2 lb), with a mean weight of 2.42 kg (5.3 lb).	It is found in subtropical and tropical habitats in the Americas, including the Caribbean. In South America, it is resident, but in North America, it may disperse to as far as South America.	L No habitat
Southwestern willow flycatcher *Empidonax traillii extimus*	Fed: Endangered State: Endangered	Adults have brown-olive upperparts, darker on the wings and tail, with whitish underparts; they have an indistinct white eye ring, white wing bars and a small bill. The breast is washed with olive-gray. The upper part of the bill is gray; the lower part is orangish.	Their breeding habitat is deciduous thickets, especially willows and often near water, across the United States and southern Canada. They make a cup nest in a vertical fork in a shrub or tree.	L No habitat
Western snowy plover *Charadrius alexandrinus nivosus*	Fed: Threatened CDFAW: Species of Special Concern	A pale plover with a sand-colored dorsum, white venter, thin dark bill, dark or grayish feet and legs, and (in adults)	along Pacific coast north to Washington (most numerous from San Francisco Bay south), south to Oaxaca, and locally (but in larger numbers) inland	L No habitat

		a partial breast band and dark ear patch (females may lack the black areas in the plumage); immatures have light edges on dorsal body feathers, resulting in a scaly pattern	from Oregon and California (especially the San Joaquin Valley, Mojave Desert, and Salton Sea regions)	
ZOOLOGICAL SPECIES	**STATUS[1]**	**DESCRIPTION OF SPECIES**	**HABITAT**	**OBSERVATION/ SITE POTENTIAL**
Mountain plover *Charadrius montanus*	CDFW: SSC Species of Speical Concern	is a medium-sized ground bird in the plover family	it lives on level land. Unlike most plovers, it is usually not found near bodies of water or even on wet soil; it prefers dry habitat with short grass (usually due to grazing) and bare ground.	L Irrigated alfalfa in vicinity could provide forage area during winter if grazed or burned. No nesting areas on site
Willow Flycatcher *Empidonax trailii*	State: Endangered	Willow Flycatchers are brownish olive overall with a slight yellow wash to the belly. They have 2 whitish wingbars and a white throat that contrasts with the brownish olive breast.	Breeds in moist, shrubby areas, often with standing or running water. Winters in shrubby clearings and early successional growth.	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW: SSC Species of SpecpialConcern	Adults have a pointed bill. The adult male is mainly black with a yellow head and breast; they have a white wing patch sometimes only visible in flight. The adult female is mainly brown with a dull yellow throat and breast.	These birds forage in the marsh, in fields or on the ground; they sometimes catch insects in flight. They mainly eat seeds and insects. Outside the nesting period, they often feed in flocks, often with related species.	L No habitat; none observed
Sonoran Desert toad *Incillius alvarius*	CDFW: SSC	Smooth, typically olive-green/brown skin, cranial crests, and prominent, elongated glands on both sides of the back of the head and on the hind legs. Young toads have small dark, orange-tipped spots on the back. Larger tadpoles are gray or brown with a rounded tail tip, and grow to about 2.25”.	Sonoran Desert scrub, semi-desert grasslands. May be found many miles from water, particularly during the summer monsoons. Most Sonoran Desert toads are found at night during the monsoon season, but they may emerge a month or more before the summer rains begin, particularly in areas of permanent water. Can be found in rodent burrows or underground retreats.	L None observed. No habitat present on site.

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Lowland leopard frog *Lithobates yavapaiensis*	Species of Special concern	Tan, gray-brown or light gray-green to green above; yellow below. Vague upper lip stripe, tuberculate skin. Dark network on rear of thighs; yellow groin color often extends onto rear of belly and underside of legs. Male will exhibit a swollen and darkened thumb base.	Find in desert grassland and in woodlands. Uses permanent water sources, stays near water. Breed Feb-April. Bullfrogs are predators	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Flat-tailed horned lizard *Phrynosoma mcallii*	CNDDB Rank: G3; S2 CDFW: SSC	A small (up to 87 mm or 3.4" from snout to vent), exceptionally flat and wide lizard with a long (for a horned lizard) broad, flat tail and a dark stripe running down the middle of the back.	Occupy a small range in the Sonoran Desert of southwestern California, southwestern Arizona, and extreme northern Mexico.	L No habitat
American Badger *Taxidea taxus*	CDFW: Species of Concern	Burrowing animals that feed on ground squirrels, rabbits, gophers and other small animals. Prefer grasslands, agricultural areas.	Found in drier open areas with friable soils	L None seen; no burrows observed with badger characteristics observed. Not expected because of farming activities
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	CDFW: Species of Special Concern	Adult size is total length 202–340 mm (7.9–13 in); tail 87–122 mm (3.4-4.8 in), frequently broken or stubbed; hind foot 29–35 mm (1-1.3 in); ear 16–20 mm (0.6-0.9 in); mass 50-250 g (1.7-9 oz)	The southern edge of the S. hispidus distribution is likely near the Rio Grande, where it meets the northern distribution of S. toltecus (formerly S. h. toltecus). The northern extent of S. hispidus distribution is to the Platte River in Nebraska and from Arizona to Virginia.	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Colorado Desert fringe-toed lizard *Uma notata*	CDFW: SSC	A medium-sized, flat-bodied, smooth-skinned lizard	inhabits areas of loose sand. Sparsely-vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. Needs fine, loose sand for burrowing.	L No habitat
coastal whiptail *Aspidoscelis tigris stejnegeri*	CDFW: SSC	A slim-bodied lizard with a long slender tail, a pointed snout, and large symmetrical head plates. Scales on the back are small and granular, and scales on the tail are keeled.	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.	L No habitat
Palm Springs pocket mouse	CDFG: SC	Small heteromyid rodent with length of about 110 to 151 mm and weight from 8 to 11 g. There are usually two small patches of lighter hairs at the base of the ear. There is no a tail-crest, and an unlobed antitragus in the outer ear.	Creosote scrub, desert scrub, and grasslands, with loosely packed or sandy soils with sparse tomoderately dense vegetative cover. P. l. bangsi occurs only in the Coachella Valley, where substantial agricultural and urban/suburban conversion of habitat, especially in the valley floor, has occurred over the last century. The species occurs only in native habitats.	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Desert Pupfish *Cyprinodon macularius*	CNDDB Rank: G1; S1 Federal: Endangered; Cal: Endangered	The body of the desert pupfish is thickened and markedly compressed laterally in adult males. The mouth is superior, highly protractile, armed with tricuspid teeth. The scales bear spine-like projections. The dorsal profile of the fish is smoothly rounded.	The pupfish occupies shallow waters of springs, small streams, and marshes.	L No drains located near Salton Sea near site
Razorback Sucker *Xyrauchen texanus*	Fed/CA: Endangered	One of the largest suckers in North America can grow to up to 13 pounds and lengths exceeding 3 feet. The razorback is brownish-green with a yellow to white-colored belly and has an abrupt, bony hump on its back shaped like an upside-down boat keel	Colorado River	L No habitat

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Pocketed free-tailed bat *Nyctinomops femorosaccus*	CNDDB Rank: G4, S2S3; CDFG: SC	A small fold, or "pocket" in the wing membrane of the free-tailed bat, near its knee, gives this bat its common name. Pocketed free-tailed bats have large ears and long wings, and fly rapidly, generally pursuing insects on the wing. They eat many kinds of insects, but seem to prefer small moths.	It occurs in the arid lowlands of the desert Southwest, and primarily roosts in crevices in rugged cliffs, slopes, and tall rocky outcrops.	L No habitat
Western Mastiff Bat *Eumops perotis californicus*	CNDDB Rank: G5T4, S3; CDFG: SC	Eumops perotis can be distinguished from all other North American molossid (free-tail) species based on size. With a forearm of 73-83 mm, it is North America's largest species.	In California, the E. perotis is most frequently encountered in broad open areas. Generally, this bat is found in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	L None observed under bridge

ZOOLOGICAL SPECIES	STATUS[1]	DESCRIPTION OF SPECIES	HABITAT	OBSERVATION/ SITE POTENTIAL
Pallid Bat *Antrozous pallidus*	Species of concern	Pallid bats have larger eyes than most other species of bats in North America and have pale, long, and wide ears; their fur is generally lightly colored. They have on average a total length of 92 to 135 mm (3.6 to 5.3 in).	They primarily sleep in rock crevices and buildings. Pallid bats are skilled at climbing and crawling.	L None observed under bridge
California Leaf-nosed Bat *Macrotus californicus*	Species of concern	The California leaf-nosed bat weighs between 12 and 20 grams, has a wingspan of over 30 centimeters and a body length of over 6 centimeters, and is brown in color. As its name implies, it has a triangular fleshy growth of skin, called a noseleaf, protruding above the nose.	Its natural habitat is hot deserts.	L No habitat

Special Status Species that Occur in Imperial County (USFWS)				
Common Name ***Scientific Name***	**Status[1]** **Federal/CDFW / CNPS**	**DESCRIPTION OF SPECIES**	**Habitat**	**Suitability Of Habitat In Survey Area**
Plants				
Peirson's milk-vetch *Astragalus magdalenae var. peirsonii*	T/E/1B	Silvery, short-lived perennial plant that is somewhat broom like in appearance. A member of the pea and bean family, it can grow to 2.5 feet tall and is notable among milkvetches for its greatly reduced leaves. Peirson´s milkvetch produces attractive, small purple flowers, generally in March or April, with 10 to 17 flowers per stalk. It yields inflated fruit similar to yellow-green pea pods with triangular beaks.	Desert dune habitats. In California, known from sand dunes in the Algodones Dunes system of Imperial County. Was known historically from Borrego Valley in San Diego County and at a site southwest of the Salton Sea in Imperial County	L No dune habitat

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Birds				
California brown pelican *Pelecanus occidentalis* No longer endangered	Unlisted; CDFW Protected species	Large size and brown color. Adults weigh approximately 9 pounds, and have a wingspan of over 6 feet. They have long, dark bills with big pouches for catching and holding fish. Pelicans breed in nesting colonies on islands without mammal predators. Roosting and loafing sites provide important resting habitat for breeding and non-breeding birds.	Open water, estuaries, beaches; roosts on various structures, such as pilings, boat docks, breakwaters, and mudflats	L None observed. No open water

Common Name ***Scientific Name***	**Status[1] Federal/CDFG /CNPS**	**DESCRIPTION OF SPECIES**	**Habitat**	**Suitability Of Habitat In Survey Area**
Southwestern willow *Empidonax tpllii extimus*	E/-/-	Small; usually a little less than 6 inches in length, including tail. Conspicuous light-colored wingbars. Lacks the conspicuous pale eye-ring of many similar *Empidonax* species. Overall, body brownish-olive to gray-green above. Throat whitish, breast pale olive, and belly yellowish. Bill relatively large; lower mandible completely pale. The breeding range of extimus includes Arizona and adjacent states.	At low elevations, breeds principally in dense willow, cottonwood, and tamarisk thickets and in woodlands, along streams and rivers. Migrants may occur more widely. Prefers riparian willow/cottonwood but will use salt cedar thickets	L No habitat

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Mountain plover *Charadrius montanus*	FPT/SC/-	Medium-sized plover with pale brown upperparts, white underparts, and brown sides. Head has brown cap, white face, and dark eyestripe. Upperwings are brown with black edges and white bars; underwings are white. Tail is brown-black with white edges. Sexes are similar.	Avoids high and dense cover. Uses open grass plains, plowed fields with little vegetation, and open sagebrush areas. Likes to follow livestock grazing or burned off fields.	L Irrigated alfalfa in vicinity could provide forage area during winter if grazed or burned. No nesting areas on site
Black rail *Laterallus jamaicensis coturniculus*	-/T/-	The smallest of all rails, the black rail is slate-colored, with a black bill, red eyes and a white-speckled back. The legs are moderately long and the toes are unwebbed. The sexes are similar.	Most commonly occurs in tidal emergent wetlands dominated by pickleweed or in brackish marshes with bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass and in immediate vicinity of tidal sloughs. Typically occurs in the high wetland zones near upper limit of tidal flooding, not in low wetland areas with considerable annual or daily fluctuations in water levels. Nests are concealed in dense vegetation, often pickleweed, near upper limits of tidal flooding	L None observed; no habitat

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Raptors				
Peregrine Falcon *Falco peregrinus*	D/E/-	Large, powerful falcon; pointed winged falcon silhouette. Strong shallow wingbeats may dive at speeds up to 100 mph. Dark with dark hooded effect. Blue gray below with narrow bars Long-winged, long tailed hawk. Habitually flies low over open fields and marshes watching and listening for prey such as rodents and birds. (I observed Harrier with a white faced ibis as prey). Perches low or on ground. Low slow flight. Nests in reeds. Grey with black wingtips.	Most often found along coastlines or marshy habitats. Nest in cliffs and have been known to nest in tall buildings	L None observed; rare visitors to area outside of the Salton Sea. No waterfowl for prey or cliffs/tall buildings for nesting

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Northern harrier *Circus cyaneus*	-/SC/-	Blue gray above pale reddish below; small size. Tip of tail squared off. Nesting occurs in dense tree stands which are cool, moist, well shaded and usually near water. Hunt in openings at the edges of woodlands and also brushy pastures.	Marshes, open fields. Nests in reeds	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site
Sharp-shinned Hawk *Accipiter striatus*	-/SC/-	Gray and white with black on shoulders and under bend of wing. Graceful flyer. Adults have bright red eyes. Medium size hawk; about 15 inches long and about 12 ounces. Males pale with rufous shoulders and thigh feathers. White tail washed with rufous. Wide head wings in shallow v when soaring.	Sharp-shinned hawks may appear in woodland habitats during winter and migration periods and are often common in southern California in the coastal lowlands and desert areas; winters in woodlands and other habitats except alpine, open prairie and bare desert	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
White tailed Kite *Elanus leucurus*	/E/		Found in open country; like to perch on treetop. May be seen hovering prior to attack of a rodent.	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site
Ferruginous hawk *Buteo regalis*	/SC/		Found in arid to semiarid regions, as well as grasslands and agricultural areas in southwestern Canada, western United States, and northern Mexico.	L Irrigated alfalfa in vicinity could provide hunting area. No nesting areas on site
Mammals				
Bighorn sheep *Ovis canadensis*	E/E/-	Sheep have short hair which is light gray to grayish brown, except around their stomachs and rump, where it is creamy white. Their tails are about four inches long. Full-grown rams weigh between 180 and 240 pounds,	Desert Bighorn sheep occupy a variety of plant communities, ranging from mixed-grass hillsides, shrubs. Avoids dense vegetation	L None observed; no habitat

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Jaguar *Panthera onca*	-/-/-	Typically yellow-brown with black spots, called rosettes, but they can also be black with black spots. They are nocturnal and have a keen sense of smell and hearing. Excellent swimmers, tree climbers, and move easily on the ground.	Occurs in tropical rainforests, arid scrub, and wet grasslands. Prefers dense forests or swamps with a ready supply of water	L None observed; no habitat

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Reptiles and Amphibians				
Desert tortoise *Gopherus agassizii*	T/T/-	A herbivore that may attain a length of 9 to 15 inches in upper shell (carapace) length. The tortoise is able to live where ground temperature may exceed 140 degrees F because of its ability to dig underground burrows and escape the heat. At least 95% of its life is spent in burrows. Their shells are high-domed, and greenish-tan to dark brown in color. Desert tortoises can grow from 4–6"in height and weigh 8–15 lb (4–7 kg) when fully grown. The front limbs have heavy, claw-like scales and are flattened for digging. Back legs are more stumpy and elephantine	Dry, flat, and gravelly or sandy ground in desert shrub communities where annual and perennial grasses are abundant. Frequent habitats with a mix of shrubs, forbs, and grasses	L None observed; habitat not favorable

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Flat-tailed horn lizard *Phrynosoma mcallii*	PT/-/-	Closely related to Desert horned lizard (scat indistinquishable); only found in Imperial, Riverside County,Ca and Yuma area, Az. Small round lizard with distinquishing round spots on back. Diet of ants; needs sandy soil, shade bushes to survive.	Desert washes/sandy areas with vegetative cover. Diet of ants	L No habitat; none observed
Fish				
Desert pupfish *Cyprinodon macularius*	E/E/-	Small, silvery-colored fish with 6 to 9 dark bands on its sides. Grows to a full average length of only 2.5 inches; develop quickly, sometimes reaching full maturity within 2 to 3 months. Although their average life span is 6 to 9 months, some survive more than one year. Pupfish have a short, scaled head with an upturned mouth.	Springs, seeps, and slow-moving streams in Salton Sink basin and backwaters and sloughs of the Colorado River	L None observed; no habitat; drains not adjacent to Salton Sea

Common Name *Scientific Name*	Status[1] Federal/CDFG /CNPS	DESCRIPTION OF SPECIES	Habitat	Suitability Of Habitat In Survey Area
Razorback Sucker *Xyrauchen texanus*	Fed/CA: Endangered	One of the largest suckers in North America can grow to up to 13 pounds and lengths exceeding 3 feet. The razorback is brownish-green with a yellow to white-colored belly and has an abrupt, bony hump on its back shaped like an upside-down boat keel	Colorado River	L None observed; no habitat

USFWS Birds of Conservation Concern					
Common Name	**Species Name**	**Habitat**	**Potential Onsite**	**Region 8 Imperial County**	**National Rating**
Bald Eagle	*Haliaeetus leucocephalus*	Nests on tall trees or on cliffs in forested areas near large bodies of water. Winters in coastal areas, along large rivers, and large unfrozen lakes.	Low Not expected. No tall trees; not observed in area	X	X
Swainson's Hawk	*Buteo swainsoni*	Breeds in open country such as grassland, shrubland, and agricultural areas. Usually migrates in large flocks often with Broad-winged Hawks. Winters in open grasslands and agricultural areas of Southern America.	L May migrate through. Not observed in area		X
Peregrine Falcon	*Falco peregrinus*	Inhabits open wetlands near cliffs for nesting. Also uses large cities and nests on buildings.	M No open wetlands or nesting area; could hunt in vicinity	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Black Rail	*Laterallus jamaicensis*	Nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation.	Low	X	X
			No salt or freshwater marshes; no vegetation		
Snowy Plover	*Chardrius alexandrinus*	Barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or sailne lakes, reservoirs, and ponds.	Low No habitat; not observed	X	X
Mountain Plover	*Charadrius montanus*	Breeds on open plains at moderate elevations. Winters in short-grass plains and fields, plowed fields, and sandy deserts.	Low Irrigated alfalfa in vicinity could provide forage area during winter if grazed or burned. No nesting areas on site	X	X
Black Oystercatcher	*Haematopus bachmani*	Rocky seacoasts and islands, less commonly sandy beaches.	Low No habitat; not observed	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Solitary Sandpiper	*Tringa solitaria*	Breeds in taiga, nesting in trees in deserted songbird nests. In migration and winter found along freshwater ponds, stream edges, temporary ponds, flooded ditches and fields, more commonly in wooded regions, less frequently on mudflats and open marshes.	Low No habitat; not observed		X
Lesser Yellowlegs	*Tringa flavipes*	Breeds in open boreal forest with scattered shallow wetlands. Winters in wide variety of shallow fresh and saltwater habitats.	Low No habitat; not observed		X
Upland Sandpiper	*Bartramia longicauda*	Native prairie and other dry grasslands, including airports and some croplands.	Low No habitat; not observed		X
Whimbrel	*Numenius phaeopus*	Breeds in various tundra habitat, from wet lowlands to dry heath. In migration, frequents various coastal and inland habitats, including fields and beaches. Winters in tidal flats and shorelines, occasionally visiting inland habitats.	Low Could use fields for foraging vicinity if planted to alfalfa or bermuda	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Long-billed Curlew	*Numenius americanus*	Nests in wet and dry uplands. In migration and winter found on wetlands, grain fields, lake and river shores, marshes, and beaches.	Low Could use fields for foraging in vicinity if planted to alfalfa or bermuda	X	X
Short-billed Dowitcher	*Limnodromus griseus*	Breeds in muskegs of taiga to timberline, and barely into subarctic tundra. Winters on coastal mud flats and brackish lagoons. In migration prefers saltwater tidal flats, beaches, and salt marshes. Also found in freshwater mud flats and flooded agricultural fields.	Medium Could use fields for foraging if planted to alfalfa or bermuda	X	X
Aleutian Tern	*Sterna aleutica*	Nest on flat vegetated islands on or near the coast. Vegetation includes dwarf-shrub tundra, grass and sedgemeadows, and coastal marsh. Migration and winter habitat not known, probably pelagic.	Low No habitat; not observed		X
Least Tern	*Sterna antillarum*	Seacoasts, beaches, bays, estuaries, lagoons, lakes and rivers, breeding on sandy or gravelly beaches and banks of rivers or lakes, rarely on flat rooftops of buildings.	Low No habitat; not observed		X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Gull-billed Turn	*Sterna nilotica*	Breeds on gravelly or sandy beaches. Inters in salt marshes, estuaries, lagoons and plowed fields, along rivers, around lakes and in freshwater marshes.	Low No habitat; not observed		X
Black Skimmer	*Rynchops niger*	Breeds in large colonies on sandbars and beaches. Forages in shallow bays, inlets, and estuaries.	Low No habitat; not observed	X	X
Yellow-billed Cuckoo	*Coccyzus americanus*	Open woodlands with clearings, orchards, dense scrubby vegetation, mainly cottonwood, willow, and adler, often along water.	Low No habitat; not observed	X	X
Black Swift	*Cypseloides niger*	Nests on steep ledges on cliffs or canyons. Migrates and winters over coastal lowlands.	Low No habitat; no swifts observed in area	X	X
Costa's Hummingbird	*Calypte costae*	Primarily low deserts and arid brushy foothills, but also chaparral and coastal sage scrub closer to the coast. Often visits ornamental plantings and feeders in desert communities. In migration and winter frequents a wider variety of habitats, occasionally ranging into pine-oak woodlands.	Low No habitat; not observed – no feeders or nectar sources in area	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Calliope Hummingbird	*Stellula calliope*	Open montane forest, mountain meadows, and thickets of willow and alder. In migration and winter also in chaparral, oak and pine-oak woodlands, deserts, and gardens.	Low No habitat; not observed	X	X
Rufous Hummingbird	*Selasphorus rufus*	Breeds in a variety of forested habitats where flowers are found. Frequents montane meadows and just about anywhere else with flowers or feeders during migration. Winters primarily in pine and pine-oak forests in Mexico, but most birds wintering farther north are attracted either to flowers or feeders in gardens.	Low No habitat; not observed – no feeders or nectar in area.		X
Allen's Hummingbird	*Selasphorus sasin*	Breeds in coastal sage scrub, chaparral, and riparian corridors within coastal forests. In Mexico winters in forest edge and scrub clearings with flowers. The resident population on the mainland of southern California is largely restricted to suburban neighborhoods where feeders and flowers are plentiful.	Low No habitat; not observed. No feeders or nectar in area	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Lewis's Woodpecker	*Melanerpes lewis*	Breeds in open arid conifer, oak, and riparian woodlands: rare in coastal areas. Winters in breeding habitat, and oak savannas, orchards, and even in towns.	Low No habitat; not observed	X	X
Olive-sided Flycatcher	*Contopus cooperi*	Montane and northern coniferous forests, at forest edges and openings such as meadows, and at ponds and bags. Winters at forest edges and clearings where tall trees or snags are present.	Low No habitat; not observed	X	X
Willow Flycatcher	*Empidonax trailii*	Breeds in moist, shrubby areas, often with standing or running water. Winters in shrubby clearings and early successional growth.	Low No habitat; not observed	X	X
Loggerhead Shrike	*Lanius ludovicianus*	Open or brushy areas.	Low No habitat; not observed. No thickets or thorny trees available. Could pass through fields	X	X
Bell's Vireo	*Vireo bellii*	Dense, low, shrubby vegetation generally early successional stages in riparian areas, brushy fields, young second-growth forest or woodland, scrub oak, coastal chaparral, and mesquite brushlands, often near water in arid regions.	Low No habitat; not observed. No thickets available. Could pass through fields	X	X

Common Name	Species Name	Habitat	Potential Onsite	Region 8 Imperial County	Common Name
Black-chinned Sparrow	*Spizella atrogularis*	Arid brushland, commonly in tall and fairly dense sagebrush, and dry chaparral. Often in rocky, rugged country from sea level to around 8,900 ft (2700m).	Low No habitat; not observed	X	X
Tricolored Blackbird	*Agelaius tricolor*	Breeds in marsh vegetation, particulalry cattails, near grain fields, riparian scrublnd, and forests, but always near water. Dairies and feedlots also commonly used for foraging. Urban and suburban areas occasinoally utilized, particularly park lawns. Cultivated lands also suitable for foraging. Large night-time roosts form during nonbreeding season in cattail marshes near foraging grounds.	Low No habitat; not observed	X	X
Lawrence's Goldfinch	*Carduelis lawrencei*	Prefers dry interior foothills, mountain valleys, open woodlands, chaparral, and weedy fields. Often found near isolated water sources such as springs and cattle troughs.	Low No habitat; not observed	X	X

CNPS Species or Community Level	
G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.	
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.	
G3 = 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.	
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.	
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.	
State Ranking	
The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.	The R-E-D Code contains information on Rarity, Endangerment, and Distribution, ranked as a 1, 2, or 3 for each value (as below). This code was originally known as the R-E-V-D Code (through the 3rd edition 1980), and the V (Vigor) was removed in the 4th edition (1984).
S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres	**R - Rarity**
S1.1 = very threatened	1 – Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time
S1.2 = threatened	2 – Distributed in a limited number of occurrences, occasionally more if each occurrence is small
S1.3 = no current threats known	3 – Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres	**E - Endangerment**
S2.1 = very threatened	1 – Not very endangered in California
S2.2 = threatened	2 – Fairly endangered in California
S2.3 = no current threats known	3 – Seriously endangered in California
S3 = 21-80 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres	**D - Distribution**
S3.1 = very threatened	1 – More or less widespread outside California
S3.2 = threatened	2 – Rare outside California
S3.3 = no current threats known	3 – Endemic to California
S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.	
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.	

Sources: CDFW/CNDDB 2019, California Wildlife 2018; CNPS 2019; USFWS, 2016	
State/CDFW:	[1]**Status: Federal:**
E = Listed as an endangered species; or previously known as "rare, fully protected"	E = Listed as an endangered species
T = Listed as a threatened species	T = Listed as a threatened species
SC = species of special concern (designation intended for use as a management tool and for information; species of special concern have no legal status (www.dfg.ca.gov/wildlife/species/ssc/birds.html))	C = Candidate for listing
CNPS (California Native Plant Society):	D = Delisted
1B = Rare, threatened, or endangered in California or elsewhere	PD = Proposed for delisting/PT = Proposed for threatened status
2= Plants rare, threatened, or endangered in Ca, but more common elsewhere	
3=Plants about which more information is needed	
Habitat Suitability Codes: H = Habitat is of high suitability for this species M = Habitat is of moderate suitability for this species L = Habitat is of low suitability for this species	

BIOLOGICAL RESOURCES MAP


Lack Road at New River Bridge
Agriculture
IID Drain
Lack Road
New River
Agriculture
Abandoned lot
Site
Agriculture
Hay Stack lot
Google Earth
©2018 Google
N
300 ft

ENGINEERING PLANS

COUNTY OF IMPERIAL

LACK ROAD BRIDGE REPLACEMENT OVER NEW RIVER, BR. NO. 58C-XXXX

COUNTY PROJECT NO. 6421

GENERAL NOTES

STREET IMPROVEMENT GENERAL NOTES

1. COUNTY ENCROACHMENT PERMIT CONDITIONS AND PROVISIONS SHALL TAKE PRECEDENCE OVER THE APPROVED PLANS AND SPECIFICATIONS FOR ANY CONFLICTS.
2. THE STRUCTURAL SECTION SHALL BE IN ACCORDANCE WITH IMPERIAL COUNTY STANDARDS (OR CALTRANS IF IN STATE R/W) AND AS APPROVED BY THE PUBLIC WORKS DIRECTOR (OR CALTRANS).
3. APPROVAL OF THESE IMPROVEMENT PLANS AS SHOWN DOES NOT CONSTITUTE APPROVAL OF ANY CONSTRUCTION OUTSIDE THE PROJECT BOUNDARY.
4. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO CONSTRUCTION OF BERM, CURB, CROSS GUTTER AND PAVING.
5. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO OTHER EXISTING FACILITIES EXCEPT AS SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN HEREON AND ANY OTHER THAT IS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
6. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK. CONTRACTOR WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
7. UTILITIES COORDINATION

   NO LESS THAN 3 WORKING DAYS PRIOR TO ANY EXCAVATION OR TRENCHING, EACH CONTRACTOR DOING SUCH WORK SHALL CONTACT THE FOLLOWING AGENCIES SO THAT EXISTING UNDERGROUND UTILITIES MAY BE LOCATED. THE AGENCY MAY REQUIRE AN INSPECTOR TO BE PRESENT.

1. IMPERIAL IRRIGATION DISTRICT (POWER)	(760)	339-9280
2. IMPERIAL IRRIGATION DISTRICT (WATER)	(760)	339-9263
3. AT&T	(800)	422-4133
4. SOUTHERN CALIFORNIA GAS CO.	811	
5. THE CABLE COMPANY (SBC)	(760)	312-6512

   EXISTING UNDERGROUND UTILITIES

   BEFORE EXCAVATING FOR THIS CONTRACT, VERIFY LOCATION OF UNDERGROUND UTILITIES. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS ONLY AND MAY NOT REFLECT ALL EXISTING UTILITIES. LOCATION OF ALL EXISTING UTILITIES SHALL BE CONFIRMED BY FIELD MEASUREMENTS BY CONTRACTOR PRIOR TO CONSTRUCTION OF WORK.

   CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN HEREON AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

   ACCURATE VERIFICATIONS AS TO SIZE, LOCATION AND DEPTH OF EXISTING UNDERGROUND SERVICES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL NOTIFY THE SOUTHERN CALIFORNIA GAS COMPANY, AT&T, IMPERIAL IRRIGATION DISTRICT AND ANY OTHER AFFECTED UTILITY AGENCIES PRIOR TO STARTING HIS WORK NEAR SUCH UTILITY FACILITIES AND SHALL COORDINATE HIS WORK WITH UTILITY REPRESENTATIVES. FOR LOCATION OF UNDERGROUND UTILITIES AND APPURTENANCES, CONTACT "UNDERGROUND SERVICE ALERT" AT 811.
8. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CONTACT THE UTILITY AGENCIES, ADVISE THEM OF THE PROPOSED IMPROVEMENTS AND BEAR THE COST OF RELOCATIONS, IF NEEDED.
9. NO PAVING SHALL BE DONE UNTIL EXISTING POWER POLES ARE RELOCATED OUTSIDE THE AREAS TO BE PAVED.
10. PRIVATE ROAD IMPROVEMENTS SHOWN HEREON ARE FOR INFORMATION ONLY. COUNTY OFFICIALS SIGNATURE HEREON DOES NOT CONSTITUTE APPROVAL OR RESPONSIBILITY OF ANY KIND FOR THE DESIGN OR CONSTRUCTION OF THESE PRIVATE IMPROVEMENTS.
11. ALL SIGNS TO BE ALUMINUM WITH 3M HIGH INTENSITY TYPE REFLECTIVE FACE OR EQUIVALENT.
12. CONTRACTOR WILL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY STRIPING, PAVEMENT MARKERS, OR LEGENDS OBLITERATED BY THE CONSTRUCTION OF THIS PROJECT.
13. THE CONTRACTOR SHALL DO ALL NEW STRIPING AND SANDBLASTING OF REDUNDANT STRIPING.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO SECURE AN ENCROACHMENT PERMIT FROM THE COUNTY OF IMPERIAL DEPARTMENT OF PUBLIC WORKS FOR ANY EXCAVATION OR CONSTRUCTION WITHIN COUNTY ROAD RIGHT-OF-WAY. FOR INSPECTIONS, 48 HOUR MINIMUM NOTICE IS REQUIRED, (760) 482-4462. ADDITIONALLY, UNDERGROUND SERVICE ALERT (USA) MUST BE CALLED TWO WORKING DAYS BEFORE THE CONTRACTOR MAY EXCAVATE. THEIR CONTACT NUMBER IS 811. ALL WORK AND MATERIALS ARE SUBJECT TO THE INSPECTION AND APPROVAL FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS OR THEIR REPRESENTATIVE.
15. NO REVISIONS OF ANY KIND SHALL BE MADE TO THESE PLANS WITHOUT THE PRIOR WRITTEN APPROVAL OF BOTH THE COUNTY ENGINEER (OR HIS REPRESENTATIVE) AND THE ENGINEER OF RECORD. A REPRODUCIBLE AS-BUILT PLAN SET WILL BE PROVIDED TO THE PUBLIC WORKS DEPARTMENT AS A CONDITION OF SUBSTANTIAL CONSTRUCTION COMPLETION AND PRIOR TO ACCEPTANCE.
16. ALL WORK AND MATERIALS SHALL CONFORM TO THESE PLANS AND SPECIFICATIONS, THE IMPERIAL COUNTY DEPARTMENT OF PUBLIC WORKS STANDARDS AND ENCROACHMENT PERMIT CONDITIONS, AND ANY REFERENCED STANDARDS AND SPECIFICATIONS OF THE AGENCIES REFERRED TO HEREIN. ALL WORK SHOWN OR INDICATED BY THESE PLANS SHALL BE COMPLETED IN ACCORDANCE WITH THE STANDARDS, POLICIES AND REGULATIONS OF IMPERIAL COUNTY; WHERE, OR IF, CONFLICTS OCCUR, THEN THE IMPERIAL COUNTY REQUIREMENTS SHALL GOVERN.
17. UNLESS SPECIFICALLY INDICATED OTHERWISE METHODS EMPLOYED AND MATERIAL USED IN THE CONSTRUCTION OF ALL OFFSITE IMPROVEMENTS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE "STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2018". ALL WORK IS SUBJECT TO INSPECTION AND APPROVAL AS REQUIRED.
18. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AN EXCAVATION PERMIT FROM THE STATE OF CALIFORNIA DIVISION OF SAFETY AND TO ADHERE TO ALL PROVISIONS OF THE STATE CONSTRUCTION SAFETY ORDERS AND STANDARDS.
19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A GENERAL CONSTRUCTION ACTIVITY STORM WATER PERMIT FROM THE STATE WATER RESOURCES CONTROL BOARD DIVISION OF WATER QUALITY. CONTACT "STATE WATER RESOURCES CONTROL BOARD, DIVISION OF WATER QUALITY, ATTENTION: STORM WATER PERMIT UNIT, P.O. BOX 1977, SACRAMENTO, CALIFORNIA, 95812".
20. CONSTRUCTION PROJECTS DISTRUBING MORE THAN ONE ACRE MUST OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT. OWNER/DEVELOPERS ARE REQUIRED TO FILE A NOTICE OF INTENT (NOI) WITH THE STATE WATER RESOURCES CONTROL BOARD, PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND MONITORING PLAN FOR THE SITE.
21. EXISTING STORM DRAIN PIPES/CULVERTS WHETHER TO BE CONNECTED TO, EXTENDED, ADJUSTED, DRAINED TO, OR JUST IN PROJECT VICINITY SHALL BE REPAIRED AND/OR CLEANED TO MAKE THEM FUNCTIONAL AND ACCEPTABLE AS DIRECTED BY THE PUBLIC WORKS DIRECTOR.
22. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE CALIFORNIA SUPPLEMENT AS DIRECTED BY THE IMPERIAL COUNTY TRAFFIC ENGINEER.
23. ANY EXISTING SURVEY MONUMENTS OR COUNTY RECOGNIZED BENCHMARKS SHALL BE PROTECTED BY THE CONTRACTOR. SHOULD ANY SUCH MONUMENTS OR BENCHMARKS BE REMOVED, DAMAGED, OBLITERATED OR ALTERED BY THE CONTRACTOR'S OPERATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER RESETTING OF THE SAME AS PER THE SUBDIVISION MAP ACT, THE PROFESSIONAL LAND SURVEYORS ACT AND THE SATISFACTION OF THE COUNTY SURVEYOR/DIRECTOR OF PUBLIC WORKS. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY AS APPROPRIATE SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER.
24. DUST SHALL BE CONTROLLED BY THE CONTRACTOR IN ACCORDANCE WITH ALL IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT (APCD) FUGITIVE DUST CONTROL RULES AND REGULATIONS AND SHALL COMPLY WITH THEIR PERMITTING REQUIREMENTS, IF APPLICABLE.

ABBREVIATIONS

AB	AGGREGATE BASE	LF	LINEAR FEET
AC	ASPHALT CONCRETE	Lt	LEFT
BB	BEGINNING OF BRIDGE	LVC	LENGTH OF VERTICAL CURVE
BC	BEGIN HORIZONTAL CURVE	Max	MAXIMUM
BVC	BEGIN VERTICAL CURVE	Min	MINIMUM
℄	CENTERLINE	N	NORTH
Ctr	CENTER	No.	NUMBER
Dwg	DRAWING	OG	ORIGINAL GROUND
E	EAST	(P)	PROPOSED
(E)	EXISTING	PCC	PORTLAND CEMENT CONCRETE
EB	END OF BRIDGE	PG	PROFILE GRADE
EC	END HORIZONTAL CURVE	PVI	POINT OF VERTICAL INTERSECTION
Elev	ELEVATION	R	RADIUS
EP	EDGE OF PAVEMENT	RCP	REINFORCED CONCRETE PIPE
ETW	EDGE OF TRAVELED WAY	Rd	ROAD
EVC	END VERTICAL CURVE	Rt	RIGHT
FG	FINISH GRADE	R/W	RIGHT OF WAY
FO	FIBER OPTIC	S	SOUTH
GB	GRADE BREAK	Sta	STATION
Horiz	HORIZONTAL	Typ	TYPICAL
HP	HIGH POINT, HINGE POINT	Var	VARIES
ICDPW	IMPERIAL COUNTY DEPARTMENT OF PUBLIC WORKS	Vert	VERTICAL
		W	WEST
IID	IMPERIAL IRRIGATION DISTRICT	WS	WATER SURFACE

BENCHMARK

PROJECT BASIS OF BEARING:

THE BASIS OF BEARING IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, NAD83, ZONE 6, BASED LOCALLY ON CONTROL STATION "DW0512". VERTICAL CONTROL IS BASED ON NAVD88.

PROJECT BENCHMARK:

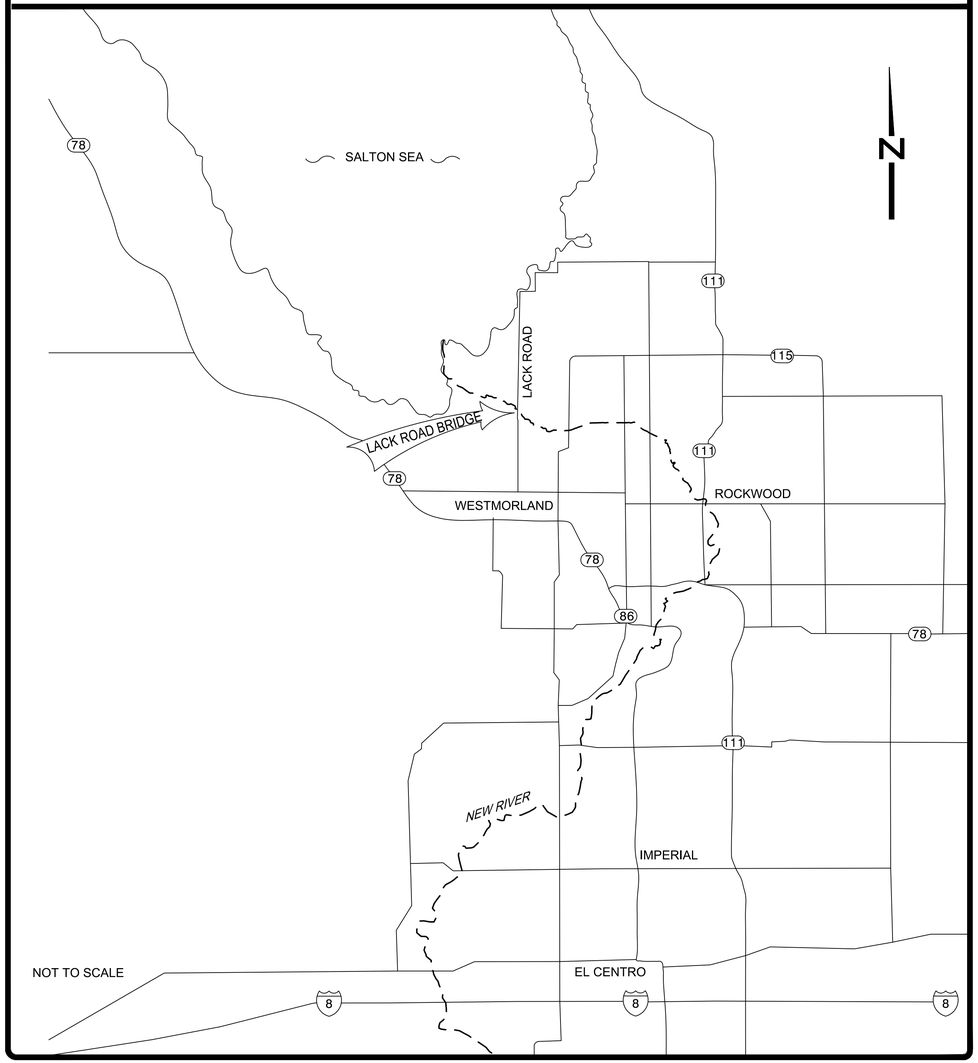
TOP OF BRASS DISK STAMPED "CO C 24 1971 CA-025" SET ON TOP OF NORTHEAST CORNER OF THE CONCRETE HEADWALL FOR THE SIPHON OF DELIVERY 160 RUNNING UNDER FOULDS ROAD, LOCATED AT THE SOUTHWEST QUADRANT OF THE INTERSECTION OF LACK ROAD AND FOULDS ROAD.

NATIONAL GEODETIC SURVEY DESIGNATION "CO C 24" AND PID "DW052".

ELEVATION = -207.24 (NAVD 88)

EQUATION = ADD 996.91 FEET TO OBTAIN POSITIVE ELEVATION NUMBER VALUES = 789.67

VICINITY MAP



SYMBOLS

ITEM NO.	ITEM	SYMBOL
1	RIGHT OF WAY	
2	CENTERLINE/BASELINE	
3	(E) GAS LINE	G
4	(E) OVERHEAD ELECTRICAL LINE	OH
5	(E) STORM DRAIN LINE	SD
6	ABANDON (E) UTILITY	
7	(E) EDGE OF PAVEMENT	
8	(P) EDGE OF PAVEMENT	
9	DAYLIGHT LINE	
10	COLD PLANE AC PAVEMENT	
11	ASPHALT CONCRETE PAVING	
12	ASPHALT CONCRETE (TYPE A)	
13	CLASS 2 AGGREGATE BASE	
14	CRASH CUSHION	
15	DIRECTION OF FLOW	
16	LINE AND CURVE NUMBER	1
17	CONTOURS - MAJOR	980
18	CONTOURS - MINOR	
19	CONTROL	△ N-17
20	SPOT ELEVATION	× 961.44

SHEET INDEX

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 811 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF IMPERIAL IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

NV5
15092 AVENUE OF SCIENCE, SUITE 200
SAN DIEGO, CA 92128

_____ DATE

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER — PHILLIP REUSS — No. 82850 — Exp. 9/30/20 — CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:

PHILLIP REUSS, P.E.
NV5

82850 R.C.E. No.

9/6/19 DATE

9/30/20 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER — JOHN A. GAY — No. 62028 — Exp. 9-30-19 — CIVIL — STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT APPROVED FOR CONSTRUCTION BY:

JOHN A. GAY, P.E.
ROAD COMMISSIONER

62028 R.C.E. No.

DATE

9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

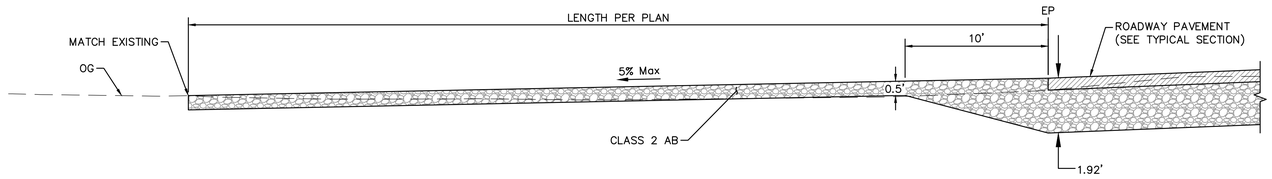
DATE 9/6/2019
DRAWN PAR
SCALE AS SHOWN
CHECKED JLA

LACK ROAD BRIDGE REPLACEMENT OVER NEW RIVER BRIDGE NO. 58C-XXXX

TITLE SHEET

REFERENCE T-1

SHEET 1 OF 18

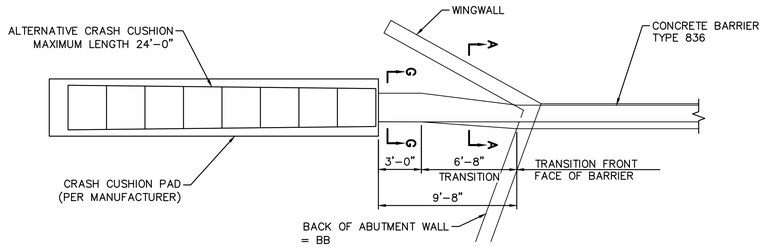


DRIVEWAY DETAIL

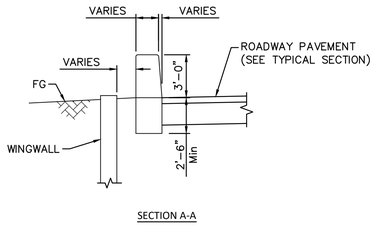
NO SCALE

NOTES:

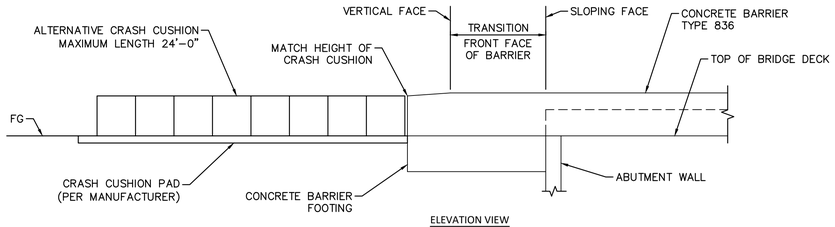
1. PARTIAL VIEW OF ALTERNATIVE CRASH CUSHION IS SHOWN FOR REFERENCE ONLY. FOR COMPLETE DETAILS, SEE MANUFACTURERS' PRODUCT MANUAL OF SELECTED CRASH CUSHION.
2. FOR ABUTMENT AND WINGWALL DETAILS, SEE BRIDGE PLANS.
3. FOR CONCRETE BARRIER DETAILS NOT SHOWN, SEE CALTRANS REVISED STANDARD PLAN RSP B11–79 AND RSP B11–80.



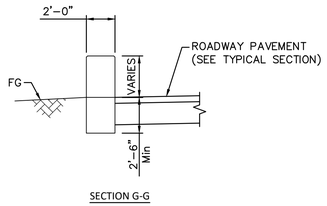
PLAN VIEW



SECTION A-A



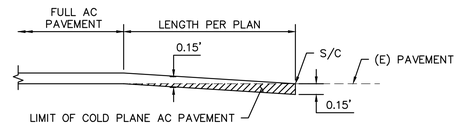
ELEVATION VIEW



SECTION G-G

CRASH CUSHION DETAIL

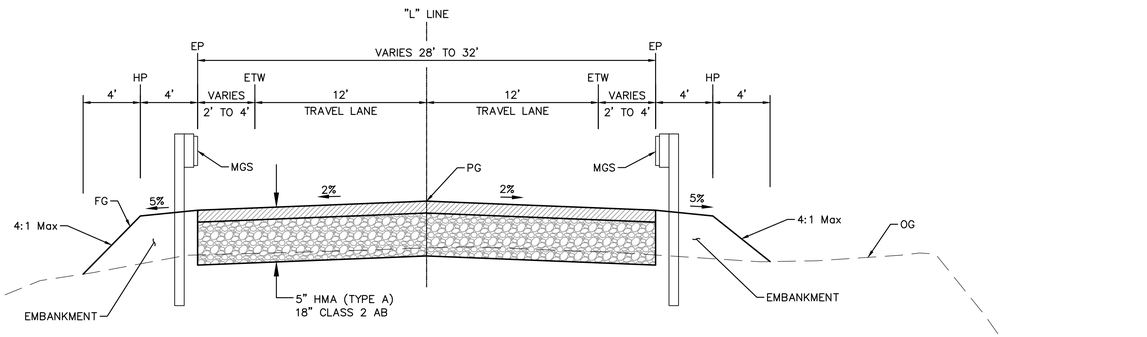
NO SCALE



PAVEMENT CONFORM DETAIL

NO SCALE

NOTE:
FOR LOCATION OF MGS, SEE DRAWING PP–1.



LACK ROAD

"L" Sta 18+00.00 TO Sta 20+23.58 (BB)
"L" Sta 21+48.58 (EB) TO Sta 24+50.00

TYPICAL SECTION

NO SCALE

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER — PHILLIP REUSS — No. 82850 — Exp. 9/30/20 — CIVIL — STATE OF CALIFORNIA

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82850 R.C.E. No.
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JOHN A. GAY, P.E.
ROAD COMMISSIONER
62028 R.C.E. No.
DATE
9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

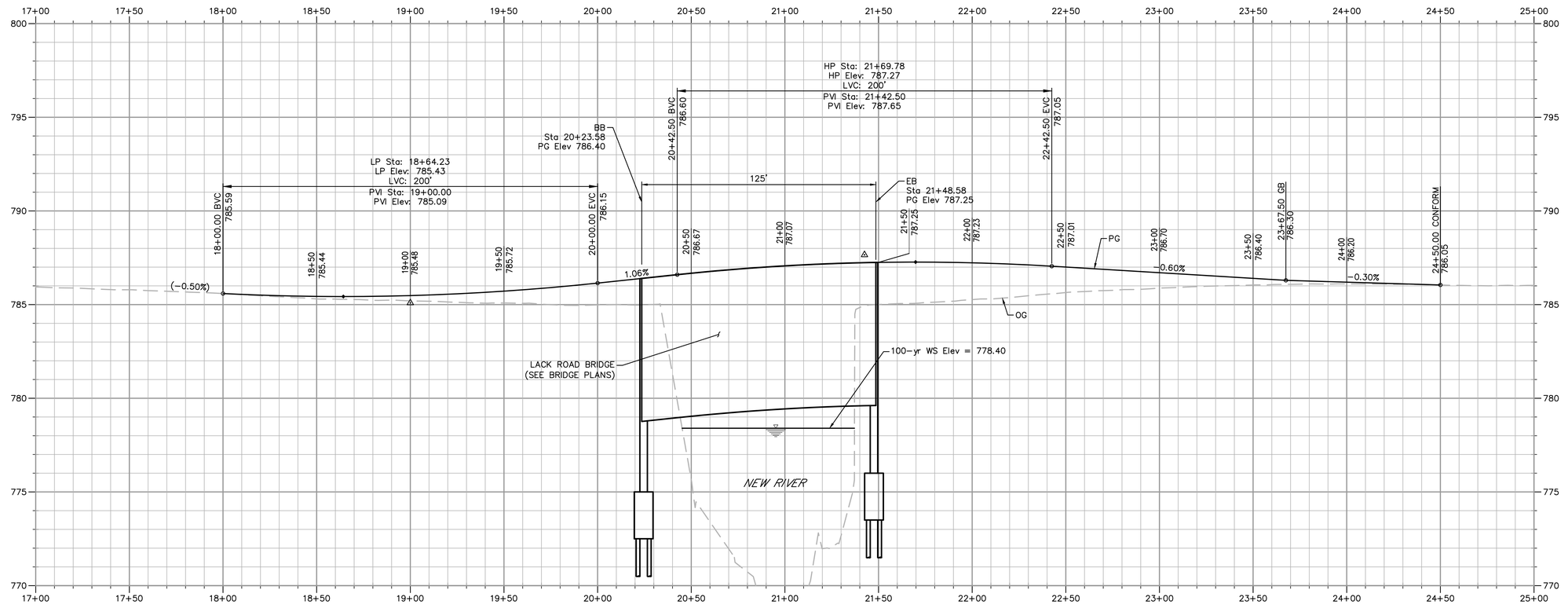
DATE 9/6/2019
DRAWN PAR
SCALE AS SHOWN
CHECKED JLA

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

TYPICAL SECTION
AND DETAILS

REFERENCE X-1

SHEET 2 OF 18



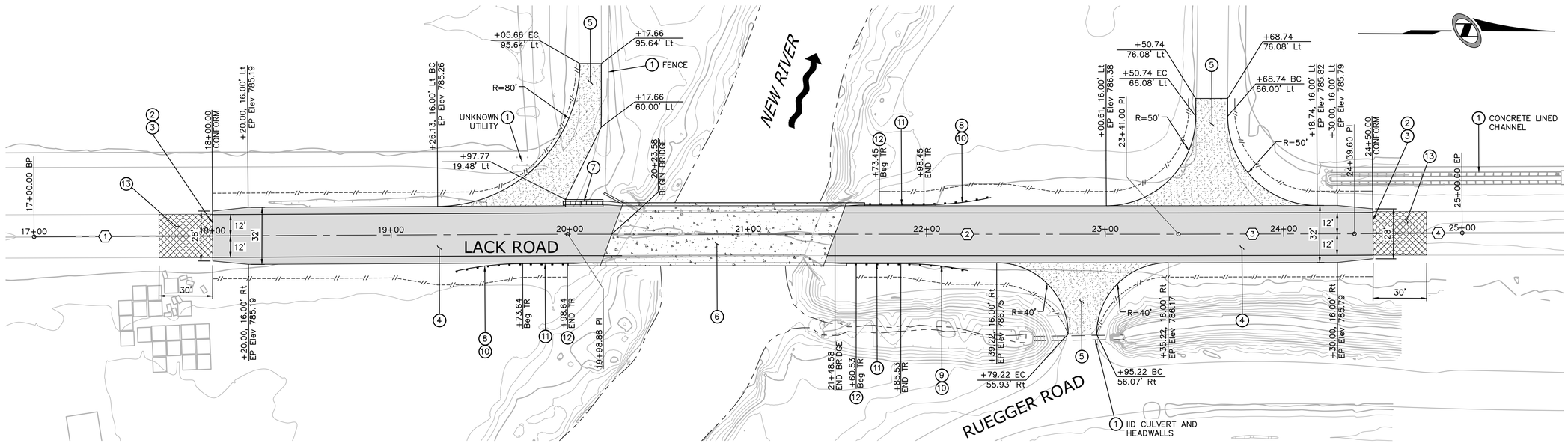
LACK ROAD - PROFILE

SCALES: Horiz 1"=30'
Vert 1"=3'

CONSTRUCTION NOTES

1. PROTECT IN PLACE.
2. SAWCUT EXISTING ASPHALT CONCRETE PAVEMENT.
3. MATCH EXISTING PAVEMENT. SEE ICDPW Dwg No. 453 FOR ADDITIONAL DETAILS.
4. NEW PAVEMENT SECTION PER TYPICAL SECTIONS. SEE ICDPW Dwg No. 440 FOR ADDITIONAL DETAILS.
5. GRADED DRIVEWAY. SEE DRAWING X−1 FOR DETAILS.
6. LACK ROAD BRIDGE. SEE BRIDGE PLANS.
7. ALTERNATIVE CRASH CUSHION. SEE CONSTRUCTION DETAIL ON DRAWING X−1.
8. MIDWEST GUARDRAIL SYSTEM FOR STRUCTURE APPROACH (TYPE 12B LAYOUT) PER CALTRANS STANDARD PLAN A77Q1.
9. MIDWEST GUARDRAIL SYSTEM FOR STRUCTURE DEPARTURE (TYPE 12BB LAYOUT) PER CALTRANS REVISED STANDARD PLAN A77Q4.
10. ALTERNATIVE FLARED TERMINAL SYSTEM. SEE SPECIAL PROVISIONS.
11. MIDWEST GUARDRAIL SYSTEM TRANSITION RAILING (TYPE WB−31) PER CALTRANS REVISED STANDARD PLAN A77U4.
12. MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING PER CALTRANS STANDARD PLAN A77U1 AND A77U2.
13. COLD PLANE ASPHALT CONCRETE PAVEMENT. SEE DRAWING X−1 FOR DETAILS.

LINE DATA		
No.	BEARING	LENGTH
1	N0°28'33"W	298.88'
2	N0°11'42"W	342.12'
3	N0°18'50"W	98.60'
4	N0°40'08"W	60.40'



LACK ROAD - PLAN

SCALE: 1"=30'

GRAPHIC SCALE

0' 30' 60' 90'

SCALE 1"= 30'

REVISION	DATE	COMMENTS

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EL CENTRO, CALIFORNIA

DATE 9/6/2019
DRAWN PAR
SCALE AS SHOWN
CHECKED JLA

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

PLAN AND PROFILE
LACK ROAD

REFERENCE PP-1

SHEET 3 OF 18

LEGEND

XX — PAINTED TRAFFIC STRIPE PER CALTRANS STRIPING DETAILS. SEE STANDARD PLAN A20A THRU A20E.

EXISTING OBJECT MARKER

SURVEY CONTROL

SURVEY CONTROL DIAGRAM

BASIS OF COORDINATES

COORDINATES SHOWN HEREON ARE IN TERMS OF THE CALIFORNIA COORDINATE SYSTEM ZONE 6, NAD83, EPOC 2009.00. EXISTING FIRST ORDER GPS CONTROL POINTS FOUND AND USED TO CONSTRAIN NETWORK.

FIRST HORIZONTAL ORDER (NAD 83) REPEATER STATION IDENTIFIED AS "CRRS" "WESTMORLAND" LOCATED AT 7.7 MILES APPROXIMATELY NORTH AND ALONG STATE HIGHWAY 86 FROM THE CITY OF WESTMORLAND, THE STATION IS LOCATED IMMEDIATELY EAST OF THE NORTH BOUND LANE OF SAID STATE HIGHWAY 86 AND BY THE SOUTH CORNER OF THE EXISTING WATER RESERVOIR AND WAS USED FOR HORIZONTAL CALIBRATION, ACCORDING TO PUBLICATION FROM THE CALIFORNIA REAL TIME NETWORK (CRTN) AT SCRIPPS ORBIT AND PERMANENT ARRAY CENTER (SOPAC).

DESIGNATION – WESTMORLAND, CODE CRRS
NORTHING = 1969415.9770; EASTING = 6719424.2770

VERTICAL CONTROL

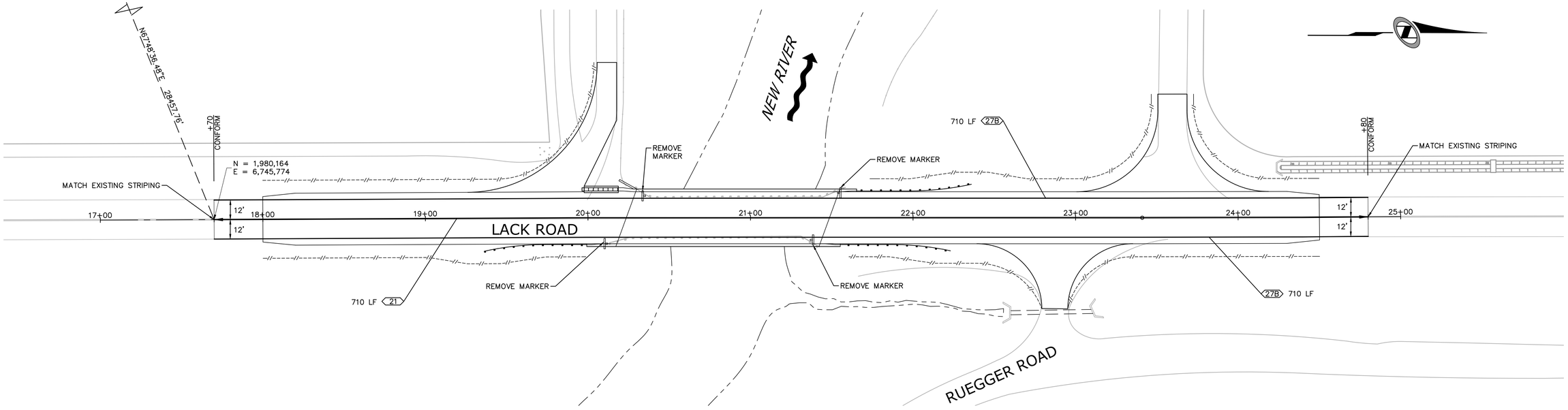
PROJECT BENCHMARK:

TOP OF BRASS DISK STAMPED "CO C 24 1971 CA–025" SET ON TOP OF NORTHEAST CORNER OF THE CONCRETE HEADWALL FOR THE SIPHON OF DELIVERY 160 RUNNING UNDER FOULDS ROAD, LOCATED AT THE SOUTHWEST QUADRANT OF THE INTERSECTION OF LACK ROAD AND FOULDS ROAD.

NATIONAL GEODETIC SURVEY DESIGNATION "CO C 24" AND PID "DW052".

ELEVATION = –207.24 (NAVD 88)

EQUATION = ADD 996.91 FEET TO OBTAIN POSITIVE ELEVATION NUMBER VALUES = 789.67



LACK ROAD - PLAN
SCALE: 1"=30'

GRAPHIC SCALE
0' 30' 60' 90'
SCALE 1"= 30'

REVISION	DATE	COMMENTS

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DATE — 9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
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EL CENTRO, CALIFORNIA

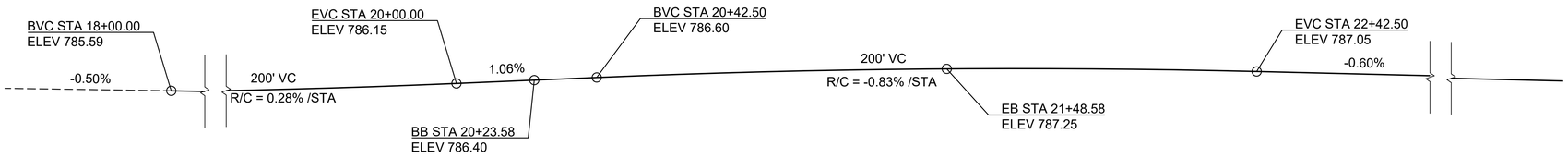
DATE 9/6/2019
DRAWN PAR
SCALE AS SHOWN
CHECKED JLA

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

STRIPING PLAN
LACK ROAD

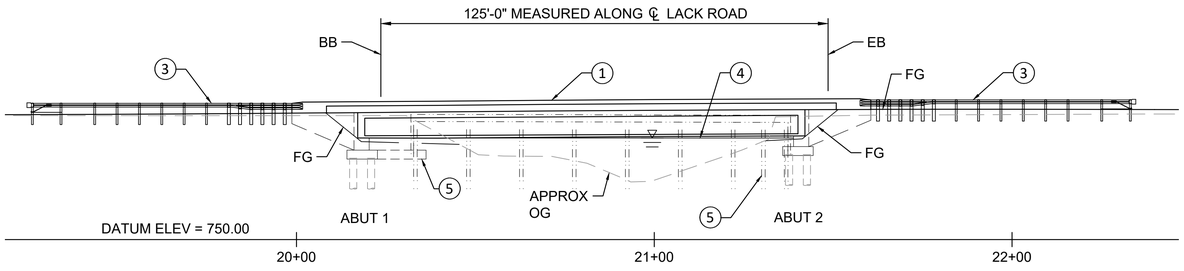
REFERENCE PD-1

SHEET 4 OF 18



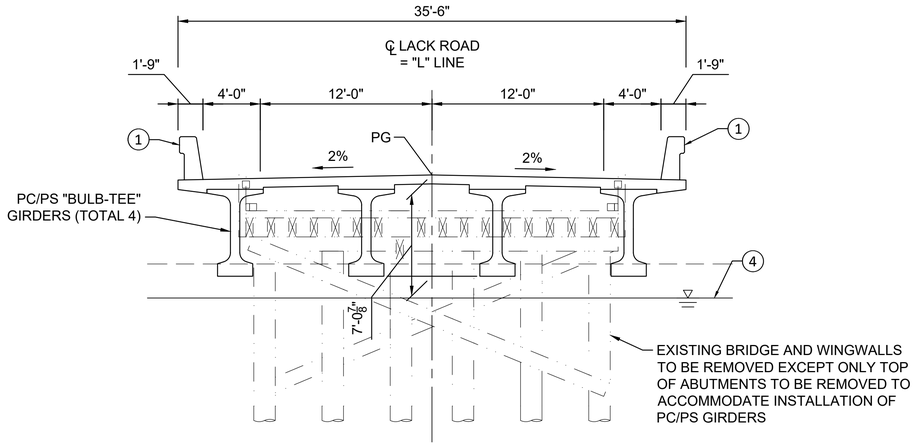
PROFILE GRADE

SCALE: 1"=20'



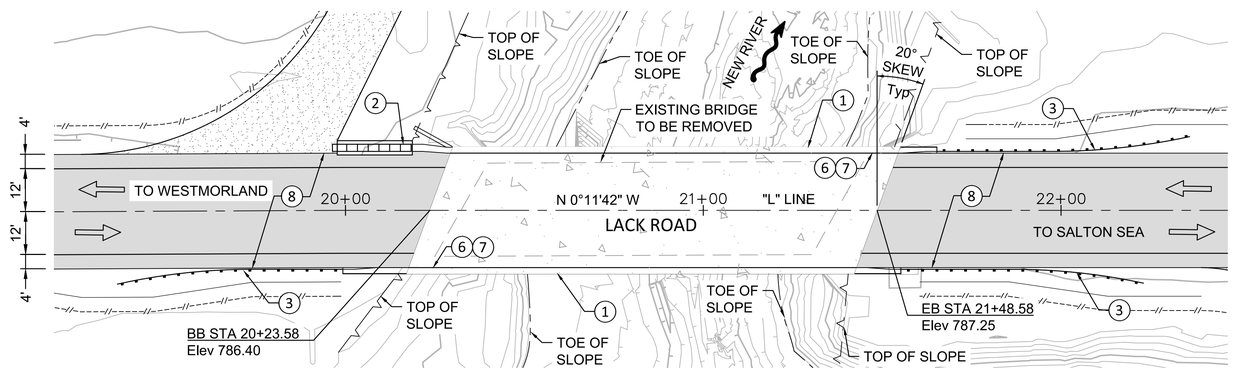
ELEVATION

SCALE: 1"=20'



TYPICAL SECTION

SCALE: 1"=5'



PLAN

SCALE: 1"=20'

LEGEND:

- INDICATES DIRECTION OF TRAFFIC
- INDICATES EXISTING BRIDGE
- INDICATES PROPOSED BRIDGE
- INDICATES DIRECTION OF FLOW

NOTES :

1. CONCRETE BARRIER (TYPE 836)
2. CRASH CUSHION, SEE ROADWAY PLANS
3. MIDWEST GUARDRAIL SYSTEM, SEE ROADWAY PLANS
4. Q100 WATER SURFACE ELEVATION = 778.40
5. EXISTING BRIDGE ABUTMENT REMAINS IN PLACE, CUT TOP PORTION TO AVOID NEW BRIDGE GIRDERS
6. PAINT BRIDGE NAME "LACK ROAD BRIDGE"
7. PAINT BRIDGE NUMBER "58C-0101"
8. AC PAVEMENT OVER AGGREGATE BASE, SEE "PLAN AND PROFILE" SHEET

GRAPHIC SCALE
0' 10' 20' 30' 40' 60' 80'
SCALE 1"= 20'

NOTES :

ANY UTILITIES LOCATED BY THE CONTRACTOR NOT SHOWN ON THESE PLANS
SHALL BE PROTECTED IN PLACE OR REPLACED IN KIND IF DAMAGED BY THE CONTRACTOR.

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER C. DANIEL SUN No. 40064 CIVIL STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:
DANIEL SUN, P.E. NV5 — 40064 R.C.E. No.
9/6/19 DATE — 12/30/19 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER JOHN A. GAY No. 62028 Exp. 9-30-19 CIVIL STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:
JOHN A. GAY, P.E. ROAD COMMISSIONER — 62028 R.C.E. No.
DATE — 9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

GENERAL PLAN

REFERENCE S-01

SHEET 5 OF 18

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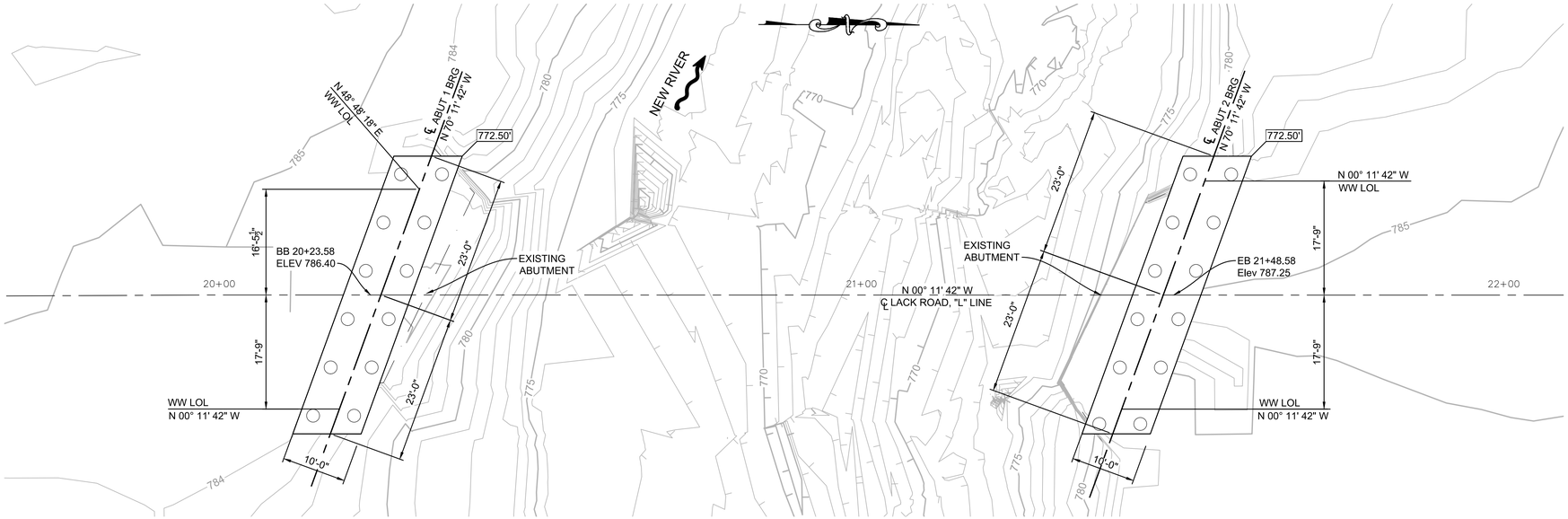


PLAN

SCALE: 1"=10'-0"

HYDROLOGIC SUMMARY			
	DESIGN FLOOD	BASE FLOOD	OVER TOPPING FLOOD
FREQUENCY (YEARS)	100 YEAR	100 YEAR	>>> 500 YEAR
DISCHARGE (CUBIC FEET/SEC)	1550	1550	X
WATER SURFACE (ELEVATION AT BRIDGE)	778.7 ft	778.7 ft	X

* FEMA Q100 = 1200 CFS, WATER SURFACE ELEVATION = 777.9 FT
* IID MEASURED Q = 1550CFS MEASURED AT DOWNSTREAM STATION 5000FT FROM BRIDGE ON AUGUST 2ND, 2012

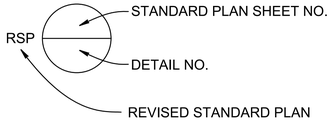
SCOUR DATA TABLE		
SUPPORT NO.	LONG TERM (DEGRADATION AND CONTRACTION) SCOUR ELEVATION (FT)	SHORT TERM (LOCAL) SCOUR DEPTH (FT)
ABUT 1	0.0	2.0
ABUT 4	0.0	2.0

PILE DATA TABLE					
LOCATION	PILE TYPE	NOMINAL RESISTANCE (KIPS)		DESIGN TIP ELEVATION (FT)	SPECIFIED TIP ELEVATION (FT)
		COMPRESSION	TENSION		
ABUT 1	CLASS 200 24" CIDH	400	0	681.5 (A), 713.5 (B), 686.5 (C)	681.5'
ABUT 2	CLASS 200 24" CIDH	400	0	681.5 (A), 728.0 (B), 688.0 (C)	681.5'

PILE DATA NOTES:
1. DESIGN TIP ELEVATIONS ARE CONTROLLED BY: (A) COMPRESSION, (B) LATERAL LOAD, (C) SETTLEMENT.
2. THE SPECIFIED TIP ELEVATION SHALL NOT BE RAISED ABOVE THE DESIGN TIP ELEVATIONS FOR TENSION, LATERAL, AND TOLERABLE SETTLEMENT.
3. THE NOMINAL DRIVING RESISTANCE REQUIRED IS EQUAL TO THE NOMINAL RESISTANCE NEEDED TO SUPPORT FACTORED LOAD PLUS DRIVING RESISTANCE FROM THE LIQUEFIABLE SOIL LAYER WHICH DOES NOT CONTRIBUTE TO THE DESIGN RESISTANCE.

CALTRANS STANDARD PLANS DATED APRIL 2018

	A3A	ABBREVIATIONS (SHEET 1 OF 3)
	A3B	ABBREVIATIONS (SHEET 2 OF 3)
	A3C	ABBREVIATIONS (SHEET 3 OF 3)
	A10A	LEGEND - LINES AND SYMBOLS (SHEET 1 OF 5)
	A10B	LEGEND - LINES AND SYMBOLS (SHEET 2 OF 5)
	A10C	LEGEND - LINES AND SYMBOLS (SHEET 3 OF 5)
	A10D	LEGEND - LINES AND SYMBOLS (SHEET 4 OF 5)
	A10E	LEGEND - LINES AND SYMBOLS (SHEET 5 OF 5)
	A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE
RSP	B0-1	BRIDGE DETAILS
	B0-3	BRIDGE DETAILS
	B0-5	BRIDGE DETAILS
	B0-13	BRIDGE DETAILS
	B2-3	24" CAST IN DRILLED HOLE CONCRETE PILE
	B6-21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
	B8-5	CAST-IN-PLACE POST TENSIONED GIRDER DETAILS
RSP	B11-79	CONCRETE BARRIER TYPE 836 DETAIL No 1
RSP	B11-80	CONCRETE BARRIER TYPE 836 DETAIL No 2



GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION AND THE CALTRANS AMENDMENTS, PREFACE DATED MARCH 10, 2015

SEISMIC DESIGN: CALTRANS SEISMIC DESIGN CRITERIA (SDC), VERSION 2.0 DATED APRIL 2019

DEAD LOAD: INCLUDES 35 PSF FOR FUTURE WEARING SURFACE.

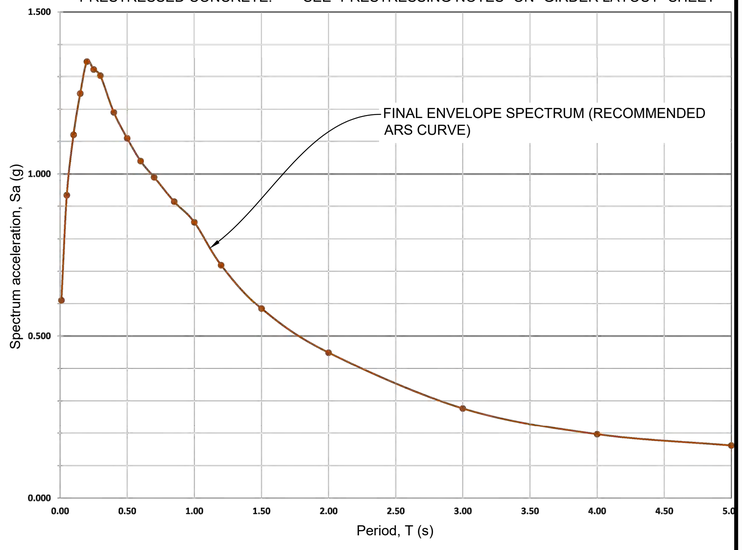
LIVE LOAD: HL93 AND PERMIT DESIGN LOAD

SEISMIC LOAD:

SOIL PROFILE: (VS30 = 985 ft/sec)
MAXIMUM MAGNITUDE: 7.7
PEAK GROUND ACCELERATION: 0.59g

REINFORCED CONCRETE: fy = 60 ksi
f'c = 4.0 ksi
n = 8

PRESTRESSED CONCRETE: SEE "PRESTRESSING NOTES" ON "GIRDER LAYOUT" SHEET



ARS CURVE

SITE SPECIFIC ACCELERATION RESPONSE SPECTRA CURVE

LEGEND:

INDICATES EXISTING ABUTMENT
INDICATES NEW BRIDGE
INDICATES DIRECTION OF FLOW
INDICATES BOTTOM OF FOOTING ELEVATION
INDICATES CAST-IN DRILLED HOLE CONCRETE PILE

NOTES:

FOR SURVEY CONTROL AND BENCHMARK, SEE "STRIPING PLAN" SHEET PD-1.

REVISION	DATE	COMMENTS

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PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
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CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

FOUNDATION PLAN

REFERENCE S-02

SHEET 6 OF 18

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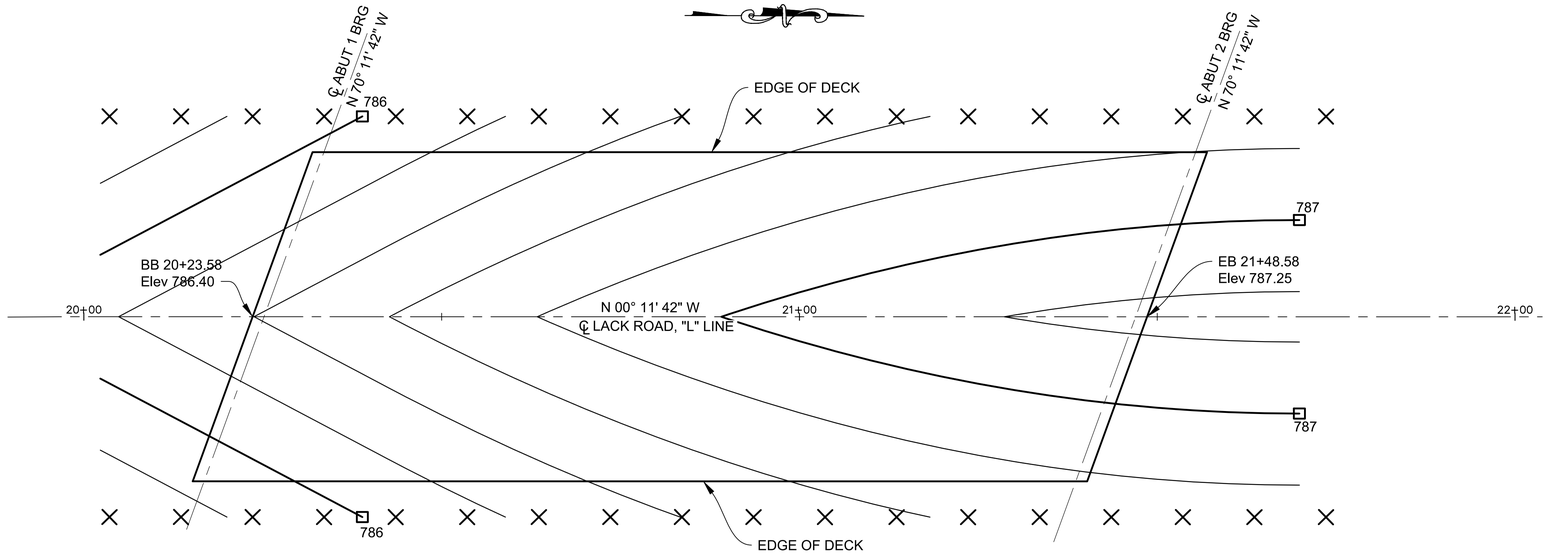
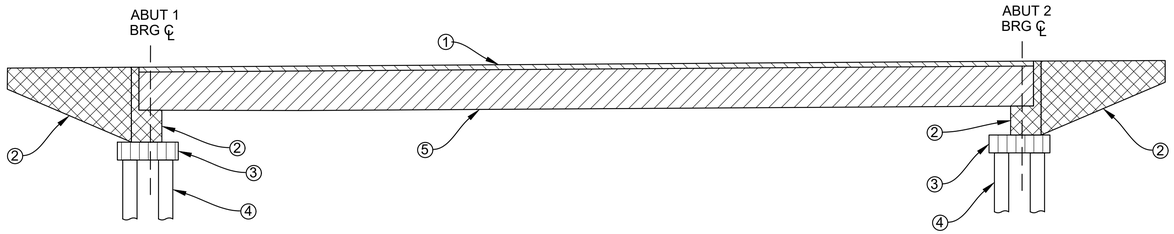


DECK CONTOURS

SCALE: 1"=10'

NOTES

1. CONTOUR INTERVALS = 0.20 FT.
2. CONTOURS DO NOT INCLUDE CAMBER
3. □ - INDICATES EVEN FOOT CONTOUR
4. × - INDICATES 10FT INTERVALS



① STRUCTURAL CONCRETE, BRIDGE (F'C = 4,500 PSI AT 28 DAYS)
② STRUCTURAL CONCRETE, BRIDGE (F'C = 4,000 PSI AT 28 DAYS)
③ STRUCTURAL CONCRETE, BRIDGE FOOTING (F'C = 4,000 PSI AT 28 DAYS)
④ STRUCTURAL CONCRETE, BRIDGE PILE (F'C = 4,000 PSI AT 28 DAYS)
⑤ STRUCTURAL CONCRETE, BRIDGE GIRDER (F'C = 6,500 PSI AT 28 DAYS)

CONCRETE TYPE LIMITS

SCALE: NTS

REVISION	DATE	COMMENTS

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EL CENTRO, CALIFORNIA

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LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

DECK CONTOURS

REFERENCE S-03

SHEET 7 OF 18

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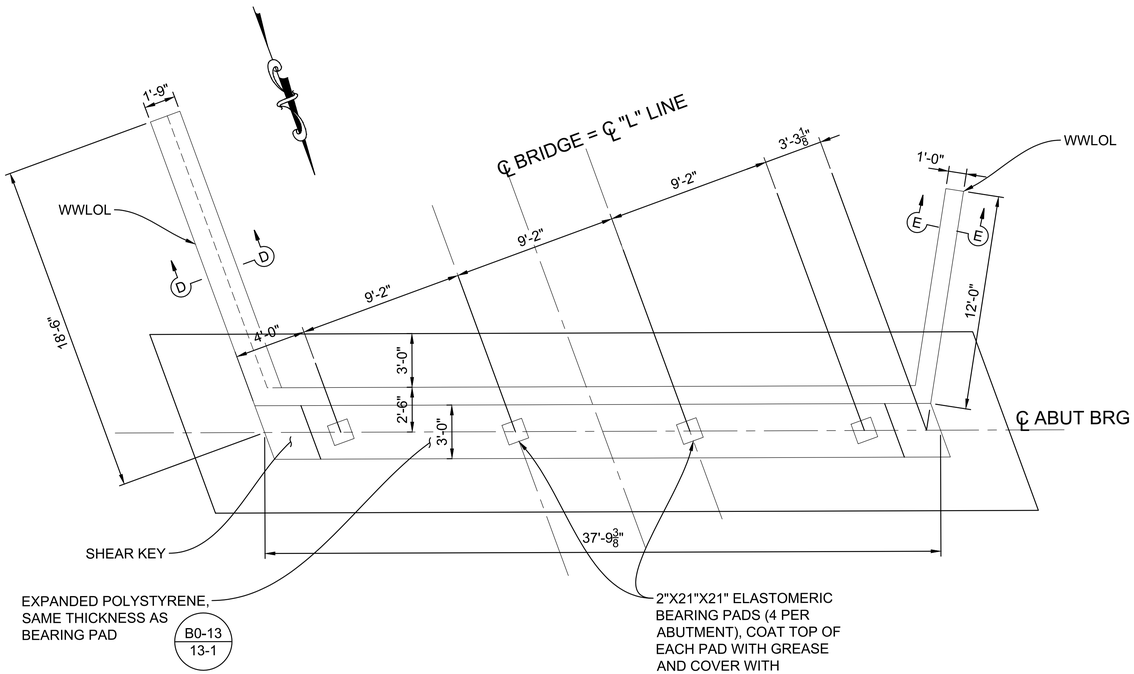
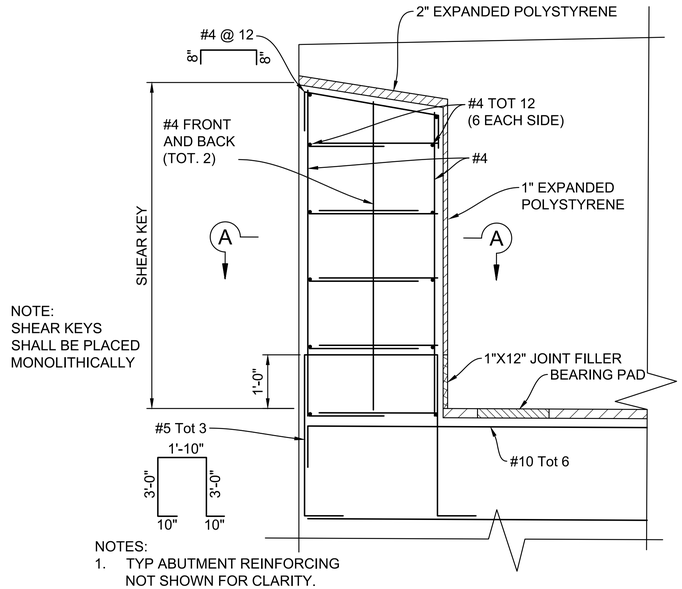


ABUTMENT 1 PLAN

SCALE: ¾" = 1'-0"

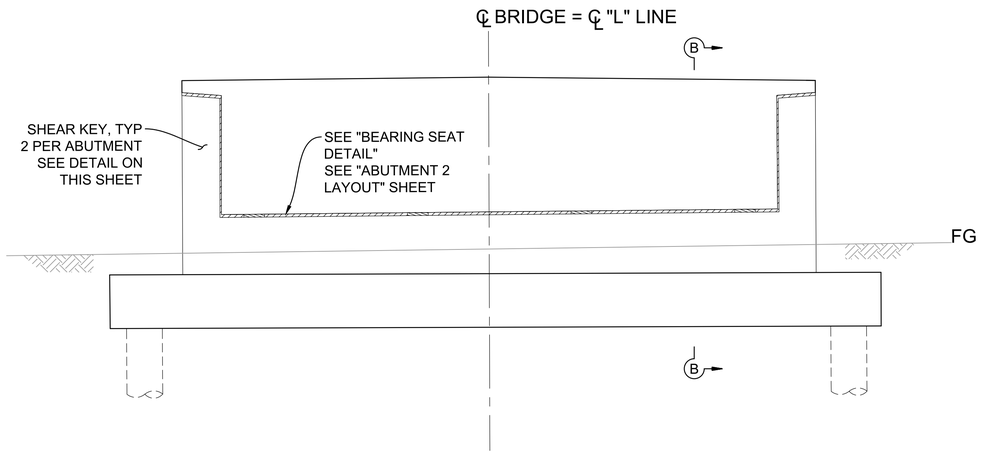


NOTE:
SHEAR KEYS SHALL BE PLACED MONOLITHICALLY

NOTES:
1. TYP ABUTMENT REINFORCING NOT SHOWN FOR CLARITY.
2. TYP ABUTMENT REINFORCING SHALL NOT EXTEND INTO SHEAR KEY.

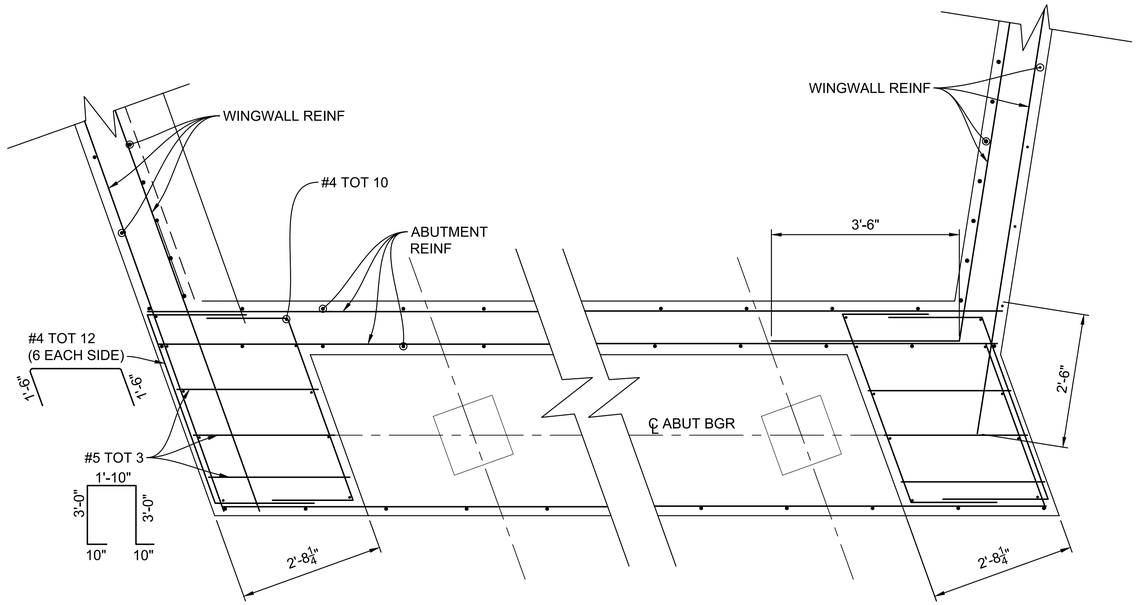
TYPICAL SHEAR KEY

SCALE: ¾" = 1'-0"



ABUTMENT 1 ELEVATION

SCALE: ¼" = 1'-0"



NOTE:
FOR SECTION B-B, D-D AND E-E SEE "ABUTMENT DETAILS -1" SHEET

SECTION A-A

SCALE: ¾" = 1'-0"

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PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
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LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

ABUTMENT 1 LAYOUT

REFERENCE S-04

SHEET 8 OF 18

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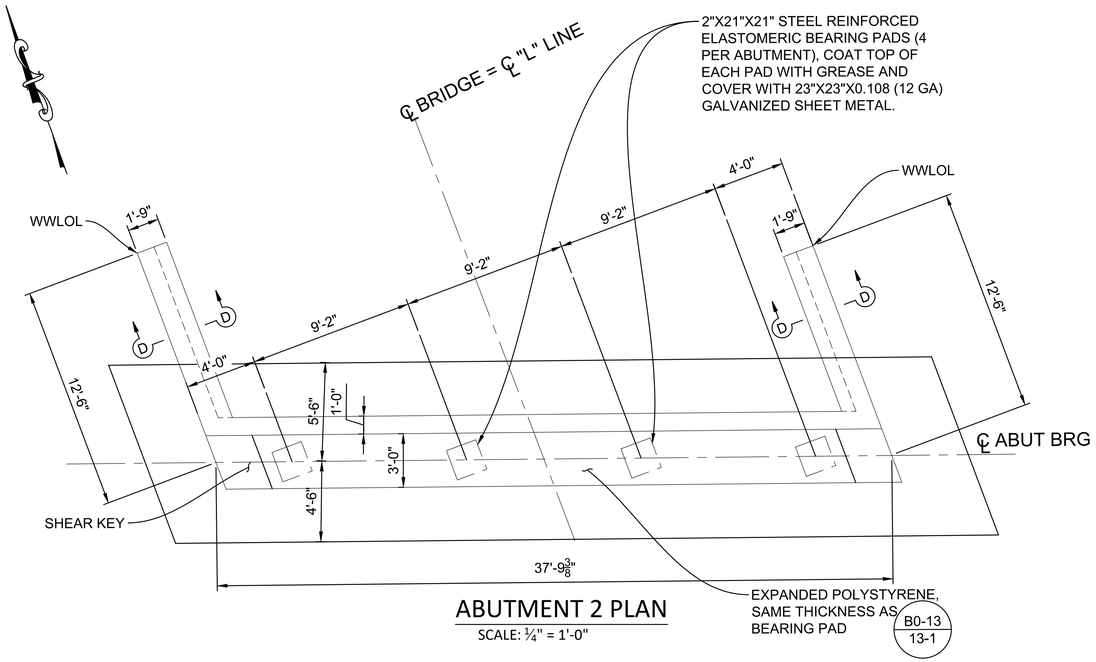
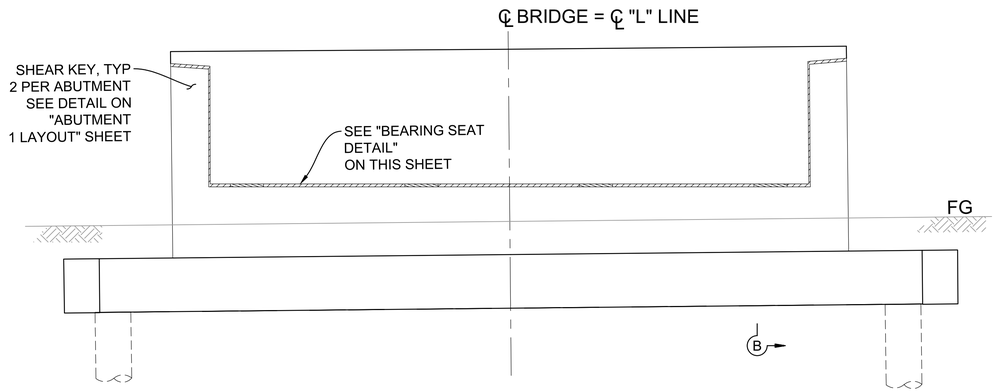


ABUTMENT 2 PLAN

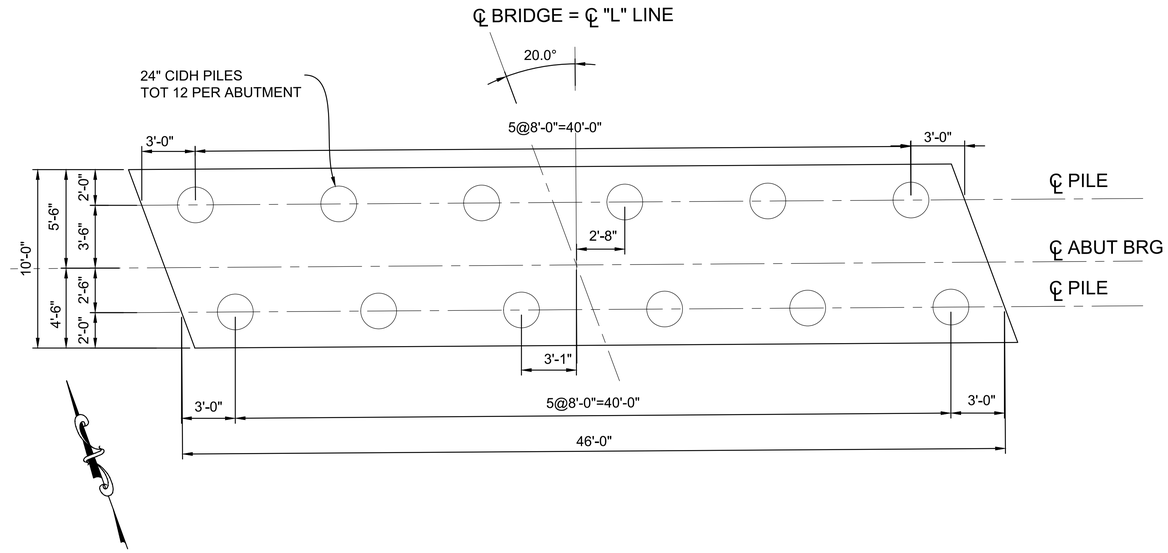
SCALE: ¼" = 1'-0"



ABUTMENT 2 ELEVATION

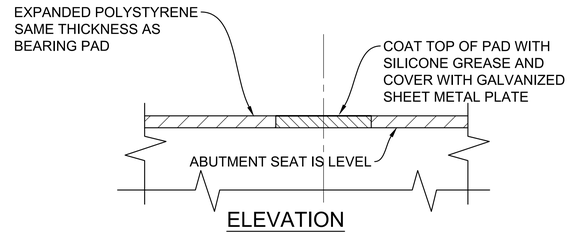
SCALE: ¼" = 1'-0"

NOTE:
FOR SECTION B-B AND D-D, SEE "ABUTMENT DETAILS -1" SHEET

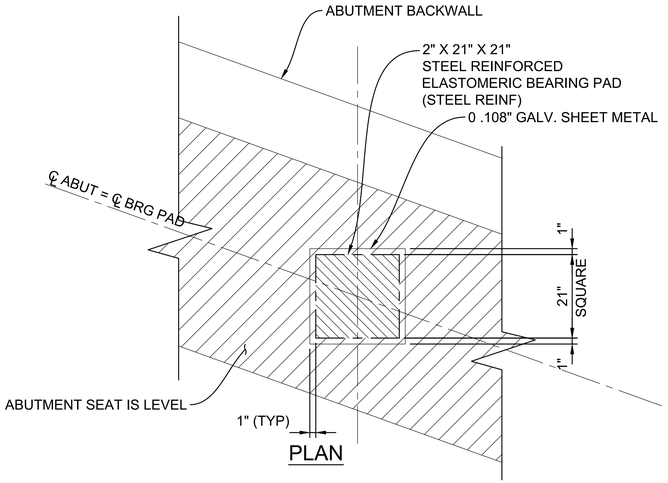


ABUTMENT 2 FOOTING LAYOUT - ABUTMENT 1 SIMILAR

SCALE: ¼" = 1'-0"



ELEVATION



PLAN

BEARING SEAT DETAIL

SCALE: 1" = 1'-0"

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PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT OVER NEW RIVER BRIDGE NO. 58C-XXXX

ABUTMENT 2 LAYOUT

REFERENCE S-05

SHEET 9 OF 18

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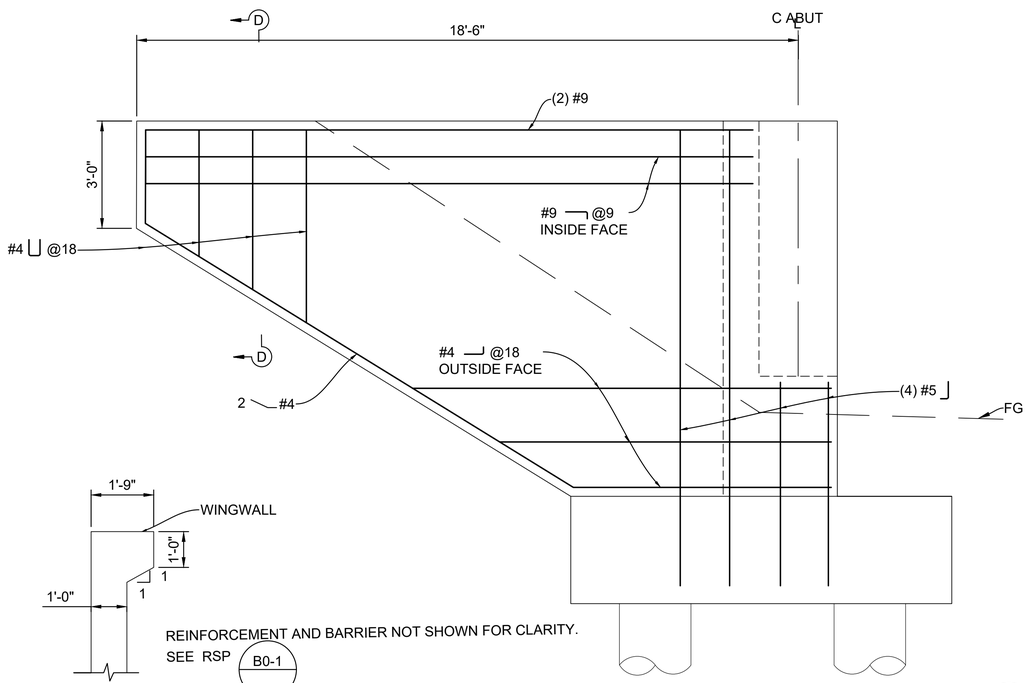
65



ABUTMENT 1 EAST WINGWALL ELEVATION

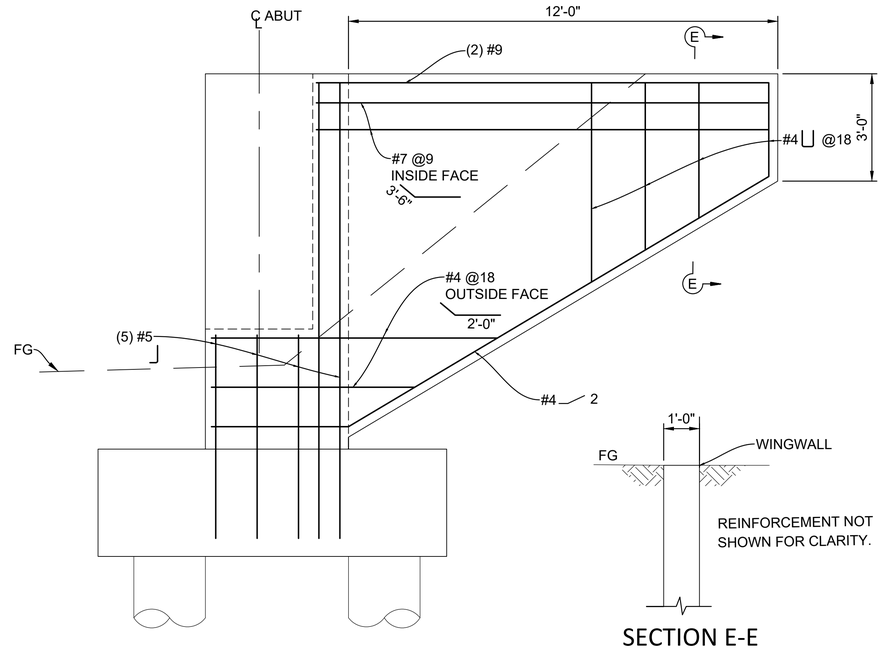
SCALE: ½" = 1'-0"

B0-1

REINFORCEMENT AND BARRIER NOT SHOWN FOR CLARITY.
SEE RSP B0-1

SECTION D-D

SCALE: ½" = 1'-0"



ABUTMENT 1 WEST WINGWALL ELEVATION

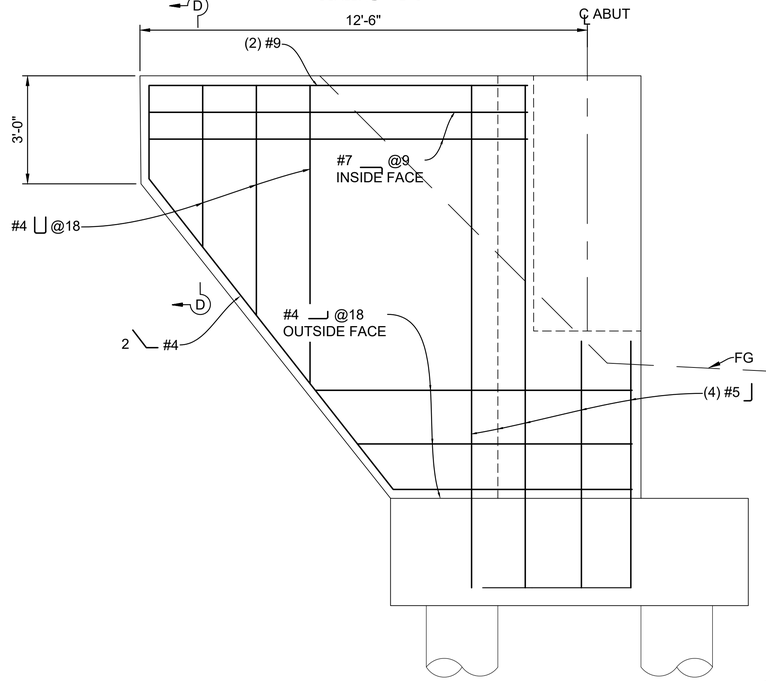
SCALE: ½" = 1'-0"

B0-1

REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION E-E

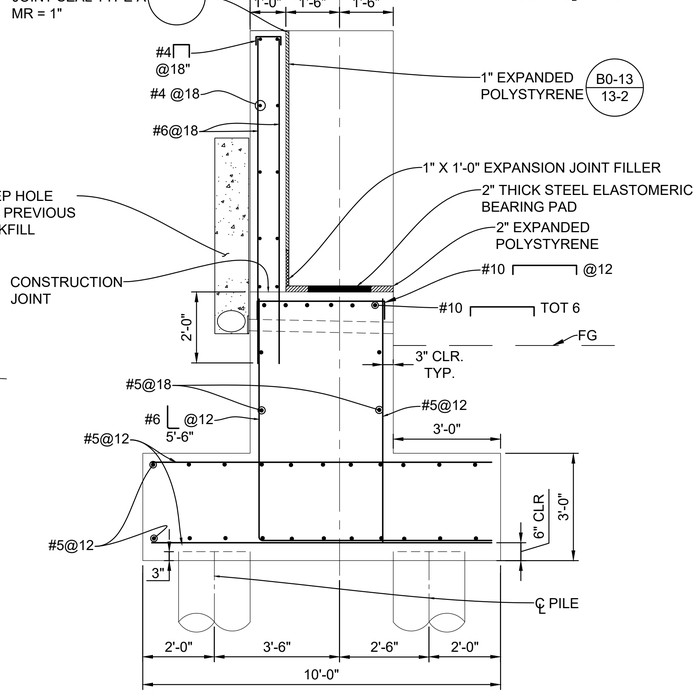
SCALE: ½" = 1'-0"



ABUTMENT 2 WINGWALL ELEVATION

SCALE: ½" = 1'-0"

B0-1



TYPICAL ABUTMENT SECTION B-B

SCALE: ½" = 1'-0"

NOTES:
1. ABUTMENT BACKWALL TO BE PLACED AFTER DECK CONSTRUCTION.
2. GIRDER TO BE FABRICATED FOR LEVEL BEARING

REVISION	DATE	COMMENTS

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PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

ABUTMENT DETAILS-1

REFERENCE S-06

SHEET 10 OF 18

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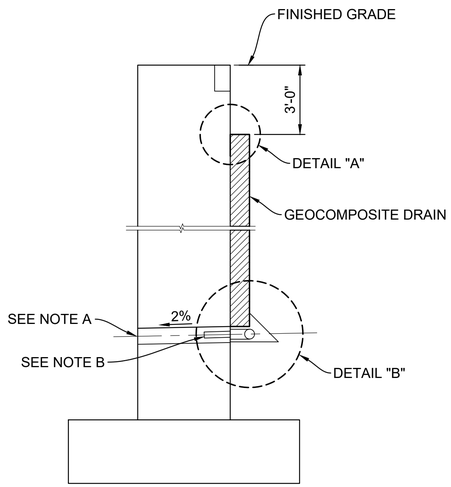
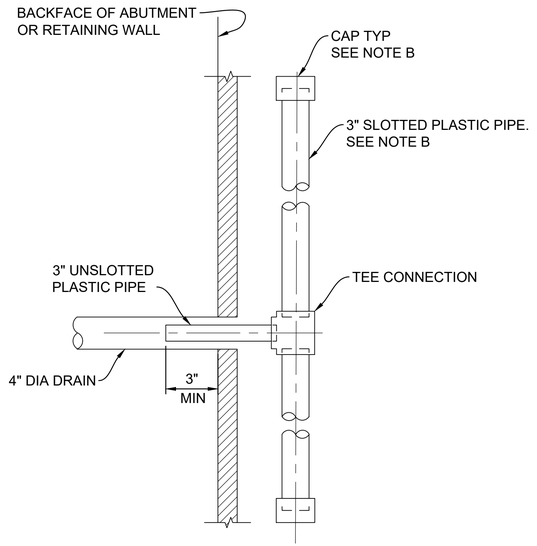
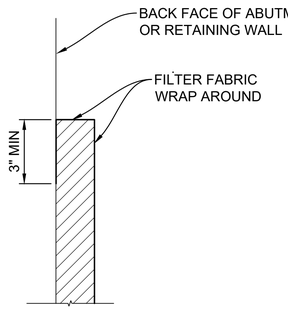


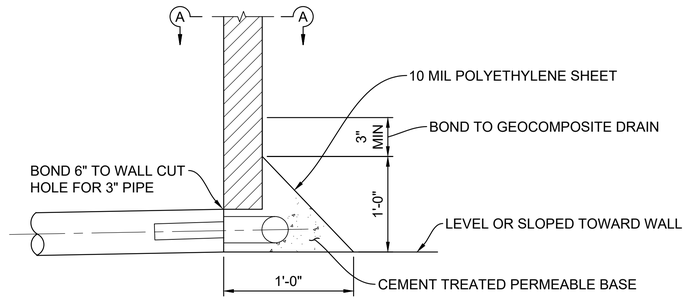
WALL SECTION
SCALE: NTS



SECTION A-A
SCALE: NTS



DETAIL A
SCALE: NTS



DETAIL B
SCALE: NTS

WEEP HOLE AND GEOCOMPOSITE DRAIN
ALTERNATIVE TO BRIDGE DETAIL B0-3 / 3-1

NOTES:

A. 4" DIA DRAINS AT INTERMEDIATE SAG POINTS AND AT 25' MAX. CENTER TO CENTER. EXPOSED WAII DRAINS SHAII DE IOCATED 4" ± ABOVE FINISHED GRADE.

B. GEOCOMPOSITE DRAIN, CEMENT TREATED PERMEABIE BASE, AND 3" DIA SIOTTED PIASTIC PIPE CONTINUOUS BEHIND RETAINING WAIIS AND ABUTMENTS. CAP ENDS OF PIPE. PROVIDE "TEE" CONNECTION AT EACH 4" DIA DRAIN.

C. CONNECT THE IOW END OF PIASTIC PIPE TO THE MAIN OUTIET PIPE AS APPIICABIE.

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER C. DANIEL SUN No. 40064 CIVIL STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:
DANIEL SUN, P.E. NV5 — 40064 R.C.E. No.
9/6/19 DATE — 12/30/19 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER JOHN A. GAY No. 62028 Exp. 9-30-19 CIVIL STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:
JOHN A. GAY, P.E. ROAD COMMISSIONER — 62028 R.C.E. No.
DATE — 9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

ABUTMENT DETAILS-2

REFERENCE S-07

SHEET 11 OF 18

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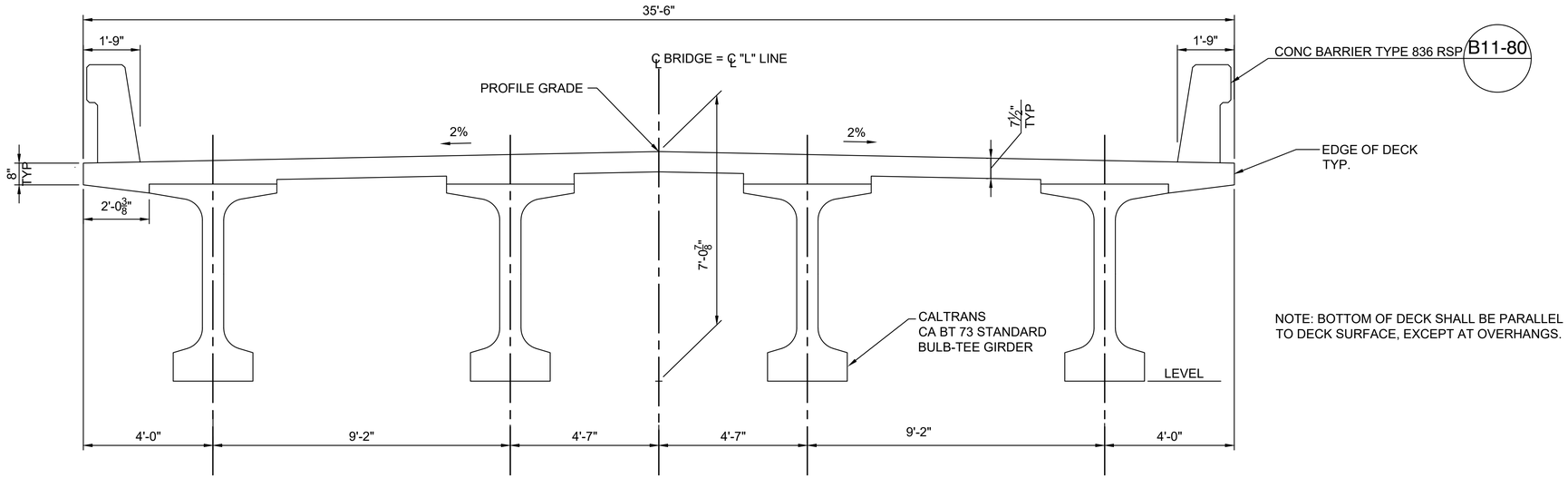
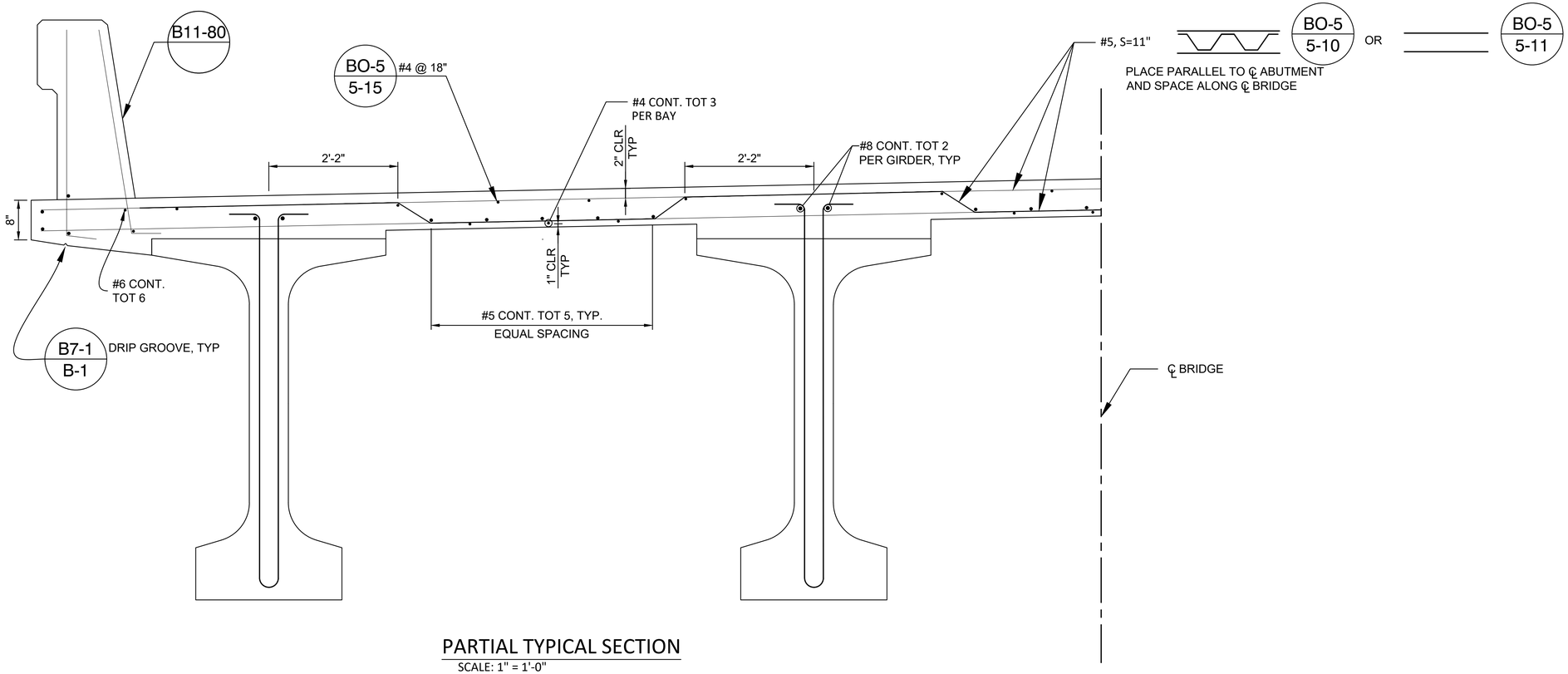


NOTE: BOTTOM OF DECK SHALL BE PARALLEL TO DECK SURFACE, EXCEPT AT OVERHANGS.

TYPICAL SECTION

SCALE: ½" = 1'-0"



PARTIAL TYPICAL SECTION

SCALE: 1" = 1'-0"

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER — C. DANIEL SUN — No. 40064 — CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:
DANIEL SUN, P.E. — 40064 R.C.E. No.
NV5
9/6/19 DATE — 12/30/19 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER — JOHN A. GAY — No. 62028 Exp. 9-30-19 — CIVIL — STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:
JOHN A. GAY, P.E. — 62028 R.C.E. No.
ROAD COMMISSIONER
DATE — 9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

TYPICAL SECTION

REFERENCE S-08

SHEET 12 OF 18

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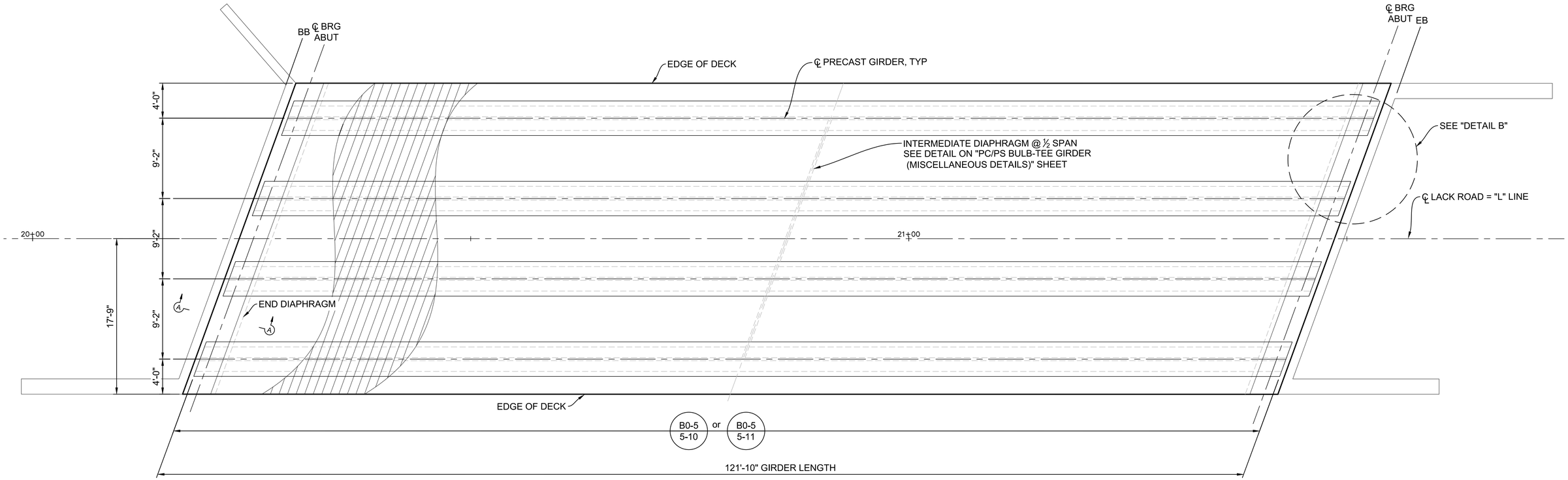
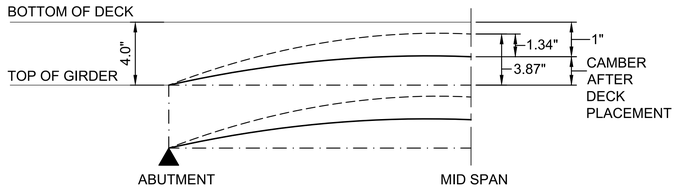


PLAN

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

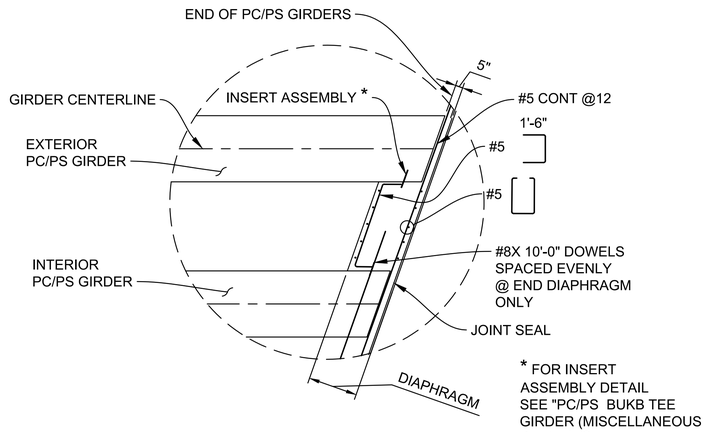


LEGEND:

- UN-DEFORMED SHAPE
- DEFORMED SHAPE (BEFORE DECK PLACEMENT)
- DEFORMED SHAPE (AFTER DECK PLACEMENT)

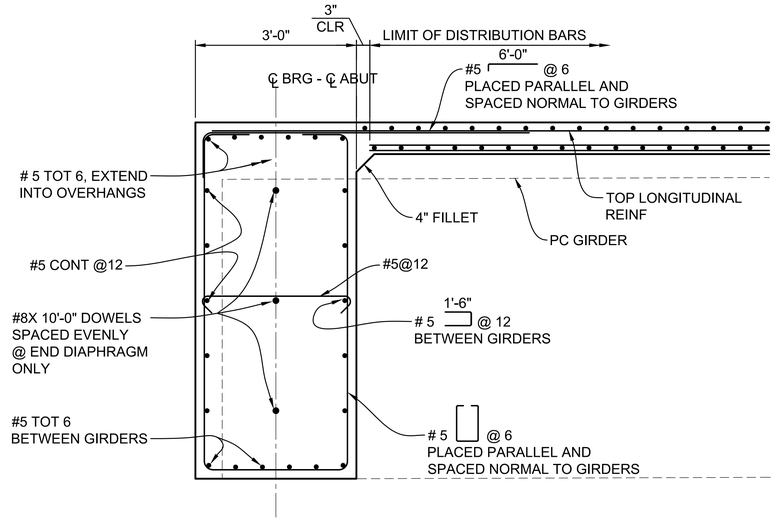
GIRDER HAUNCH THICKNESS

SCALE: NTS



DETAIL B

SCALE: 1/4" = 1'-0"



SECTION A-A

NOT TO SCALE

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER — C. DANIEL SUN — No. 40064 — CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:

DANIEL SUN, P.E.
NV5

40064
R.C.E. No.

9/6/19
DATE

12/30/19
REG. EXP.

REGISTERED PROFESSIONAL ENGINEER — JOHN A. GAY — No. 62028 Exp. 9-30-19 — CIVIL — STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:

JOHN A. GAY, P.E.
ROAD COMMISSIONER

62028
R.C.E. No.

DATE

9/30/19
REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 9/4/2019
DRAWN SRD
SCALE AS SHOWN
CHECKED CDS

LACK ROAD BRIDGE REPLACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

GIRDER LAYOUT

REFERENCE S-09

SHEET 13 OF 18

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09

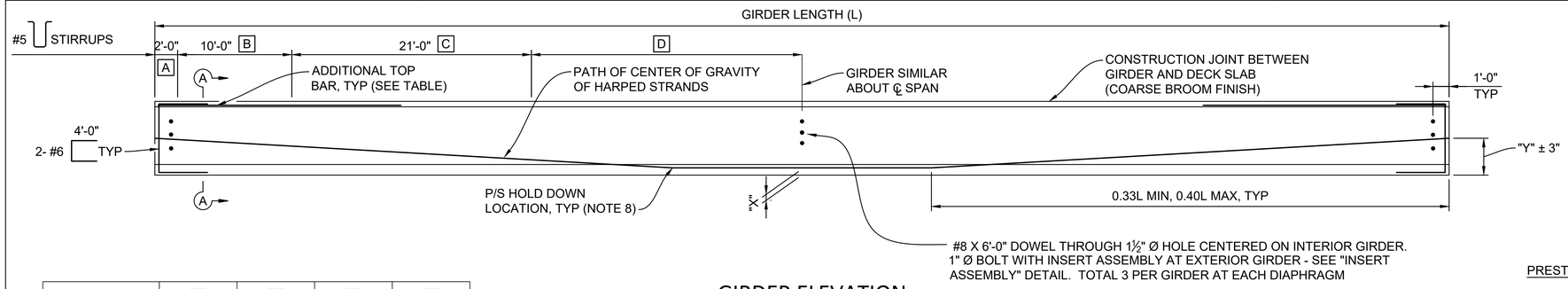
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	IMP	N/A		10	18

C. DANIEL SUN — REGISTERED CIVIL ENGINEER — 9/6/19 DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER — C. DANIEL SUN — No. 40064 — CIVIL — STATE OF CALIFORNIA



LOCATION	A	B	C	D
GIRDER ALL	#5 @ 3"	#5 @ 6"	#5 @ 12"	#5 @ 18"

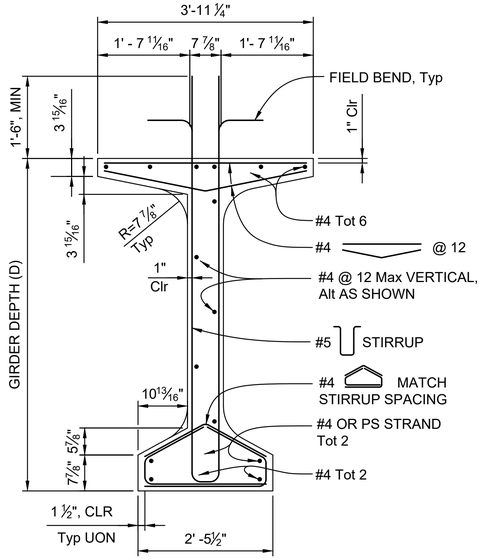
GIRDER ELEVATION

NOTE:
GIRDER ENDS TO BE CAST SUCH THAT A LEVEL SURFACE IS PROVIDED AT BEARING PADS

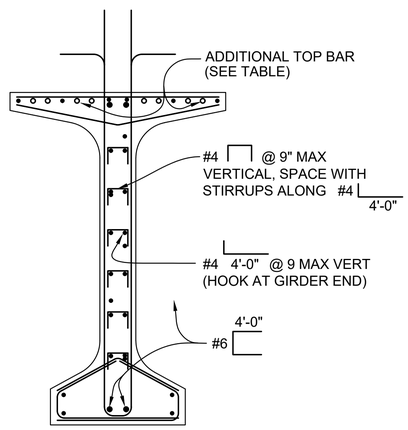
LOCATION	GIRDER LENGTH (L)	GIRDER DEPTH (D)	"X" (in)	JACKING FORCE (P) (kips)	As, Min (in^2)	"Y" (in)	CONCRETE STRENGTH (ksi)		MIDSPAN DEAD LOAD DEFLECTION (in)		ADDITIONAL TOP BAR (EACH END)
							f 'ci	f 'c	DECK	RAIL	
ALL	121'-10"	6'-0 7/8"	4	1640	9.24	35	6.0	6.5	2.77	0.50	8 # 4 x 15' Tot 8
			6	1690	9.78						

PRESTRESSING NOTES:

1. THE JACKING FORCE (P) IS THE JACKING FORCE REQUIRED AT THE POINT OF CONTROL ALONG THE SPAN. THE JACKING FORCE DOES NOT INCLUDE ANY FABRICATION SPECIFIC LOSSES
2. THE MAXIMUM TENSILE STRESS IN THE PRESTRESSING STEEL UPON RELEASE SHALL NOT EXCEED 75% OF THESPECIFIED MINIMUM ULTIMATE TENSILE STRENGTH OF THE PRESTRESSING STEEL
3. THE MAXIMUM TEMPORARY TENSILE STRESS (JACKING STRESS) IN THE PRESTRESSING STEEL SHALL NOT EXCEED 80% OF THE SPECIFIED MINIMUM ULTIMATE TENSILE STRENGTH OF THE PRESTRESSING STEEL
4. CONCRETE STRENGTH:
   F'CI IS AT TIME OF INITIAL STRESSING
   F'C IS AT 28 DAYS
5. DEFLECTION COMPONENTS ARE INFORMATIONAL AND WILL BE USED TO SET SCREED LINE ELEVATIONS
6. SCREED LINE ELEVATIONS FOR DECK CONCRETE WILL BE DETERMINED BY THE ENGINEER
7. CONTRACTOR MAY INTERPOLATE "P" AND "X" VALUES BETWEEN THE LIMITS SHOWN, AS APPROVED BY THE ENGINEER
8. THERE SHALL BE A MINIMUM OF TWO HOLD DOWNS PER GIRDER FOR THE PRESTRESSING
9. PRESTRESSING STRAND SHALL BE 270 KSI LOW RELAXATION
10. AS, MIN IS THE MINIMUM AREA REQUIRED OF PRESTRESSING STEEL

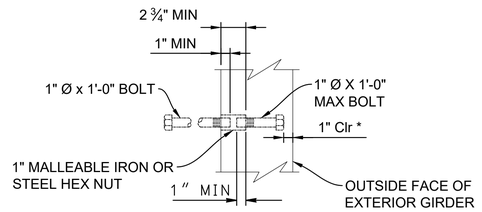


TYPICAL GIRDER SECTION



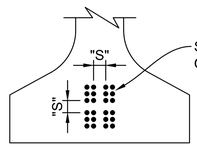
NOTE:
FOR DETAILS NOT SHOWN, SEE "TYPICAL GIRDER SECTION"

SECTION A-A



* DIMENSION MAY BE INCREASED WHEN INSERT ASSEMBLY IS USED AT END BLOCK

INSERT ASSEMBLY



CLEARANCES FOR PRETENSIONED STRANDS

NOTES:

1. Strands may be bundled in groups consisting of 3 vertically, 2 horizontally, and separated at the ends
2. The minimum distance "S" between groups or individual strands is 1-3/4" for 1/2" Ø strands and 2" for 0.6" Ø strands
3. "S" is measured between centers of adjacent strands
4. Approval by Engineer is required for deviation

NOTE:
For "WELDED WIRE REINFORCEMENT (WWR) ALTERNATIVE", see "PC/PS BULB-TEE GIRDER (MISCELLANEOUS DETAILS)" sheet

S-10

STANDARD DRAWING

FILE NO. xs8-010

APPROVAL DATE July 2014

DS OSD 2147A (ENGLISH STANDARD DRAWING "XS" BORDER REV. (02-02-11)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

UNIT: X
PROJECT NUMBER & PHASE: X
CONTRACT NO.: X

FILE => $REQUEST

BRIDGE NO. 58C-XXXX
POST MILE X

LACK ROAD BRIDGE REPLACEMENT OVER NEW RIVER

PC/PS BULB-TEE GIRDER (HARPED STRANDS)

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9.6.2019			_	10	18

September 6, 2019 Jarrod Egley

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	IMP	N/A		10	18

C. DANIEL SUN — REGISTERED CIVIL ENGINEER — 9/6/19 DATE

PLANS APPROVAL DATE

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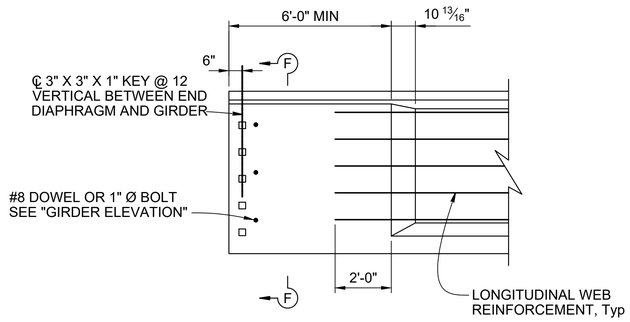
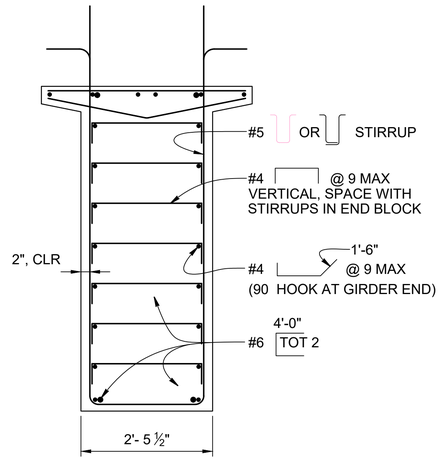
REGISTERED PROFESSIONAL ENGINEER — C. DANIEL SUN — No. 40064 — CIVIL — STATE OF CALIFORNIA



OPTIONAL END BLOCK - ELEVATION

SCALE: NTS



NOTE:

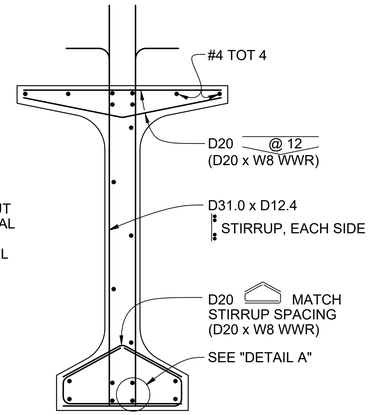
FOR DETAILS NOT SHOWN, SEE "TYPICAL GIRDER SECTION" DETAIL

SECTION F-F

SCALE: NTS

NOTE:

1. FOR DETAILS SHOWN BUT NOT NOTED, SEE "TYPICAL
2. GIRDER SECTION" DETAIL W8 WWR NOT SHOWN

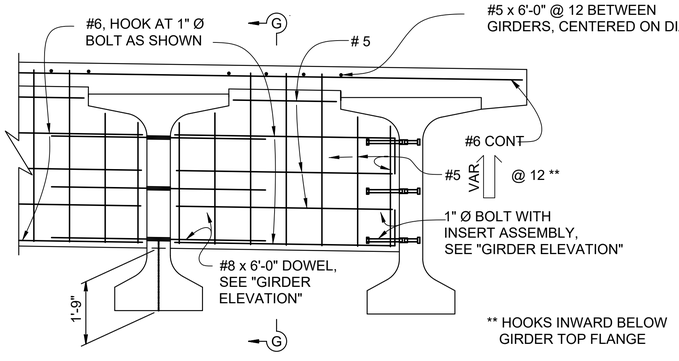


WELDED WIRE REINFORCEMENT (WWR) ALTERNATIVE

SCALE: NTS

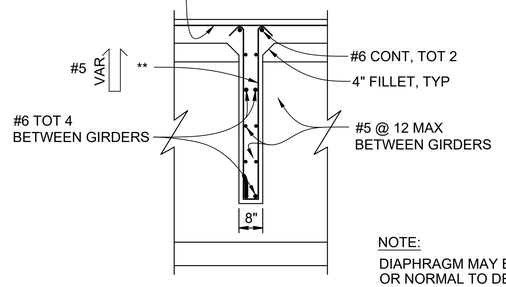
NOTE:

FOR "GIRDER ELEVATION" AND "TYPICAL GIRDER SECTION", SEE "PC/PS BULB-TEE GIRDER (DEBONDED STRANDS)" SHEET



INTERMEDIATE DIAPHRAGM

SCALE: NTS

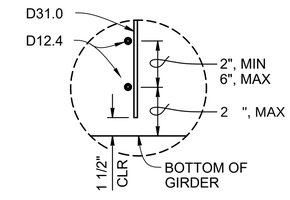


NOTE:

DIAPHRAGM MAY BE VERTICAL OR NORMAL TO DECK GRADE

SECTION G-G

SCALE: NTS



DETAIL A

SCALE: NTS

NOTE:

1. BOTTOM OF STIRRUP WWR DETAIL SHOWN, TOP SIMILAR
2. LONGITUDINAL WIRE AREA SHALL BE 40% OR GREATER OF VERTICA DEFORMED WIRE'S AREA

S-11

STANDARD DRAWING FILE NO. xs8-010 APPROVAL DATE July 2014	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES	BRIDGE NO. 58C-XXXX POST MILE X	LACK ROAD BRIDGE REPLACEMENT OVER NEW RIVER PC/PS BULB-TEE GIRDER (MISCELLANEOUS DETAILS)	
DS OSD 2147A (ENGLISH STANDARD DRAWING "XS" BORDER REV. (02-02-11)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	UNIT: X PROJECT NUMBER & PHASE: X CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES: 9.6.2019	SHEET 11 OF 18

FILE => $REQUEST

September 6, 2019 Jarrod Egley

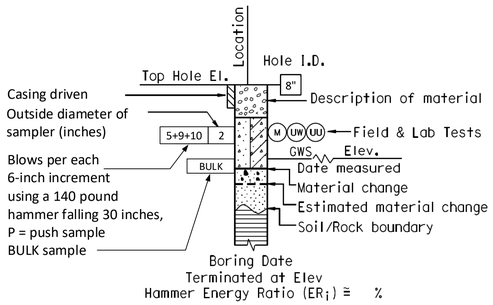
REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
Size	A	Auger Boring
Size	R P	Rotary drilled boring Rotary percussion boring (air)
Size / NQ	R	Rotary drilled diamond core
Size / SS	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
⬚	O	Other
Note: Size in inches.		

CONSISTENCY OF COHESIVE SOILS				
Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

PLASTICITY OF FINE-GRAINED SOILS	
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.



HOLLOW STEM AUGER

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER — CARL FRANCISCO HENDERSON — No. 2886 — GEOTECHNICAL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:
Carl Henderson
2886 G.E. No.
8/30/19 DATE
6/30/21 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER — JOHN A. GAY — No. 62028 Exp. 9-30-19 — CIVIL — STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:
JOHN A. GAY, P.E.
ROAD COMMISSIONER
62028 R.C.E. No.
DATE
9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 8/30/19
DRAWN GC
SCALE AS SHOWN
CHECKED CH

LOG OF TEST BORINGS-1

LACK ROAD BRIDGE REPACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

SOIL LEGEND

S-12

SHEET 16 OF 18

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GM	SILTY GRAVEL SILTY GRAVEL with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL
SP	Poorly graded SAND Poorly graded SAND with GRAVEL
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SM	SILTY SAND SILTY SAND with GRAVEL
SC	CLAYEY SAND CLAYEY SAND with GRAVEL
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL
PT	PEAT
	COBBLES COBBLES and BOULDERS BOULDERS

Graphic/Symbol	Group Names
CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90)
Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166)
Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

REVISION	DATE	COMMENTS

REGISTERED PROFESSIONAL ENGINEER CARL FRANCISCO HENDRICKS No. 2886 GEOTECHNICAL STATE OF CALIFORNIA

PREPARED UNDER THE DIRECT SUPERVISION OF:
Carl Hendricks
2886 G.E. No.
8/30/19 DATE
6/30/21 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER JOHN A. GAY No. 62028 Exp. 9-30-19 CIVIL STATE OF CALIFORNIA

COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT
APPROVED FOR CONSTRUCTION BY:
JOHN A. GAY, P.E.
ROAD COMMISSIONER
62028 R.C.E. No.
DATE
9/30/19 REG. EXP.

PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 8/30/19
DRAWN GC
SCALE AS SHOWN
CHECKED CH

LOG OF TEST BORINGS-2

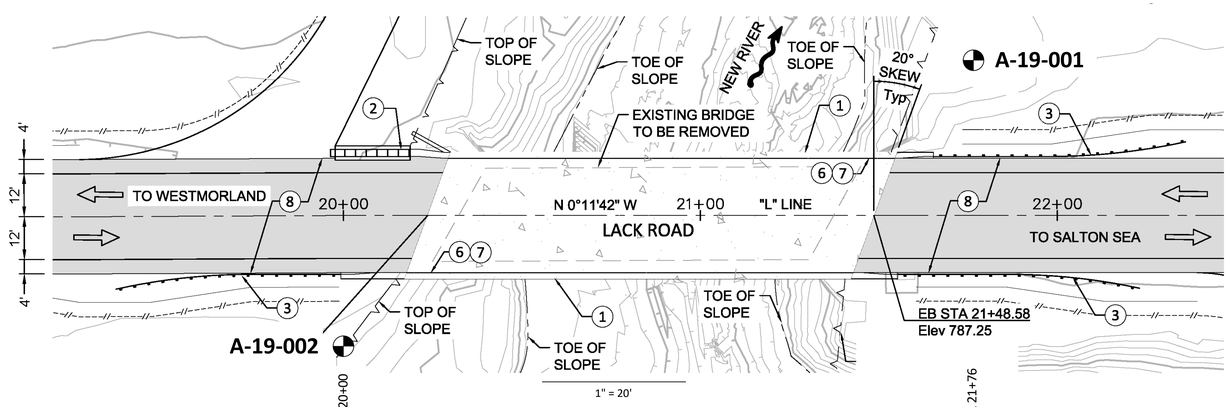
LACK ROAD BRIDGE REPACEMENT
OVER NEW RIVER
BRIDGE NO. 58C-XXXX

SOIL LEGEND

S-13

SHEET 17 OF 18

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)



Auger Boring A-19-002

El. 785.0		8"	
		M EI R	Silty SAND (SM), brown, moist, trace of gravel, fine to medium sand
BULK 2+4+18 2		M EI R	Lean Clay (CL), brown, moist to wet
		M	Stiff
4+5+9 3		M UW DS PP	Lenses of fat CLAY (CH)
BULK 2+2+2 2		CR PA PI	
		M	Soft
El. 766.0 ft GWS			
4+5+5 3		M UW CR PA PI PP	Medium stiff
1+1+3 2		M CR PA PI	Soft
			Silty SAND (SM), loose, brown, wet, fine sand
1+2+3 2		PA PI	Loose
9+13+15 3		M UW DS PA	Medium dense
4+5+8 2		PA PI	Medium dense
19+24+29 3		M UW PA PI	Dense
9+15+17 2		PA PI	Dense
			Lean CLAY (CL), stiff, brown, wet, with fine sand
5+6+6 2		M	
6+8+10 2			Lenses of fat CLAY (CH), very stiff
6+7+8 3		M UW PP	Medium stiff
			Silty SAND (SM), medium dense, brown, wet, fine sand
6+8+8 2		PA	
12+14+19 2		M PA	Dense
12+18+24 2		PA	
27+44+50/4" 2		M	Very Dense
15+30+34 2			
18+28+36 2			Lean CLAY (CL), very stiff, brown, wet, with fine sand
9+9+12 2			Lenses of fat CLAY (CH), very stiff

3-18-19
Terminated at El. 685.0
$Er_I \cong 67.9\%$

PROFILE
Vertical Scale 1" = 10'

Auger Boring A-19-001

El. 785.0		8"	
		M EI R	Silty SAND (SM), brown, moist, trace of gravel, fine to medium sand
BULK 4+7+8 2		M EI R	Lean Clay (CL), brown, moist, trace of gravel with fine to medium sand
		M	Silty SAND (SM), medium dense, brown, moist, trace of gravel, fine sand
4+5+5 3		M UW DS	Lean Clay (CL), brown, moist to wet, 6% fine sand
1+2+2 2		M CR PA PI	Lenses of fat CLAY (CH), soft
El. 767.0 ft GWS			
BULK 1+1+2 2		CR PA PI	
		M	Soft
6+7+9 3		M UW CR PA PI PP	
BULK 2+3+4 2		M	Medium stiff
			Stiff
3+5+7 2			Silty SAND (SM), dense, brown, wet, fine sand
9+17+28 3		M UW PA PI	
14+17+19 2		M PA PI	
7+8+14 3		M UW DS PA PP	Lean Clay (CL), stiff, brown, wet, with fine sand
4+4+6 2			
4+5+9 2		M	Lenses of fat CLAY (CH), stiff
7+13+22 2			Hard
			Silty SAND (SM), dense, brown, wet, fine sand
12+17+20 2		PA	
13+18+19 3		M UW PA	
18+19+37 2		PA	Very dense
11+21+24 2			Dense
27+42+50/4" 3		M UW	Very dense
10+26+33 2			
14+25+39 2			

3-19-19
Terminated at El. 685.0
$Er_I \cong 67.9\%$

REVISION	DATE	COMMENTS

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ROAD COMMISSIONER
62028 R.C.E. No.
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PUBLIC WORKS DEPARTMENT
COUNTY OF IMPERIAL
EL CENTRO, CALIFORNIA

DATE 8/30/19
DRAWN GC
SCALE AS SHOWN
CHECKED CH

LOG OF TEST BORINGS-3

LACK ROAD BRIDGE REPACEMENT OVER NEW RIVER BRIDGE NO. 58C-XXXX

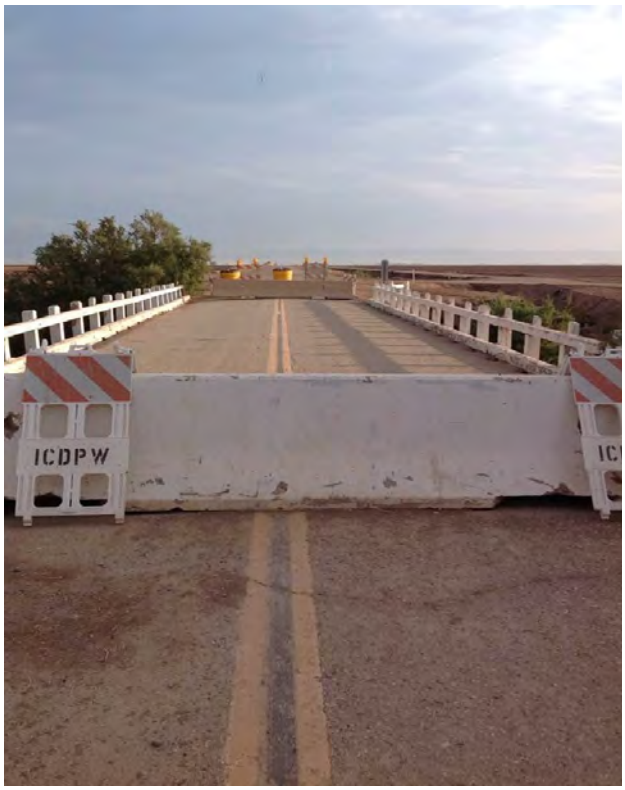
LOG OF TEST BORINGS

S-14

SHEET 18 OF 18

PHOTOGRAPHS

PHOTOGRAPHS



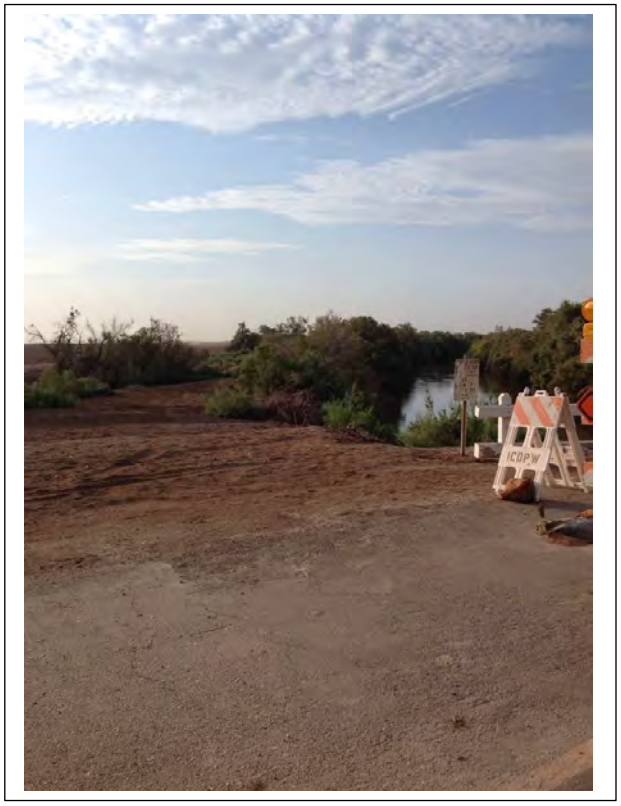
1. New River bridge on Lack Rd. looking north.

2. On Lack Road; west to the left is Sudan grass and to the right and salt cedar to the right.

3. South end of the New River bridge looking south on Lack Rd.

4. On Lack Rd. looking south across the New River Bridge.

5. On north side of river on Lack Rd. looking west.

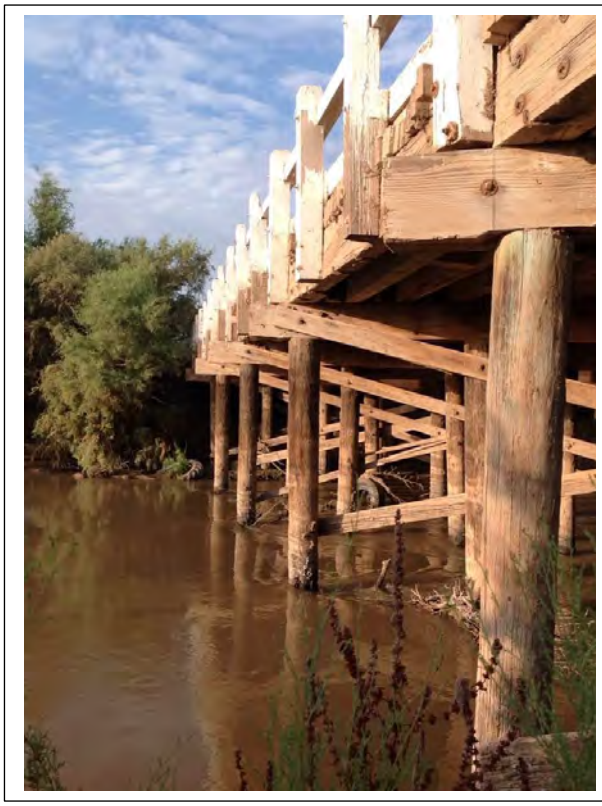


6. North side of river on Lack Rd. looking east.

7. Under the bridge on the north bank no nesting birds or bats were observed.

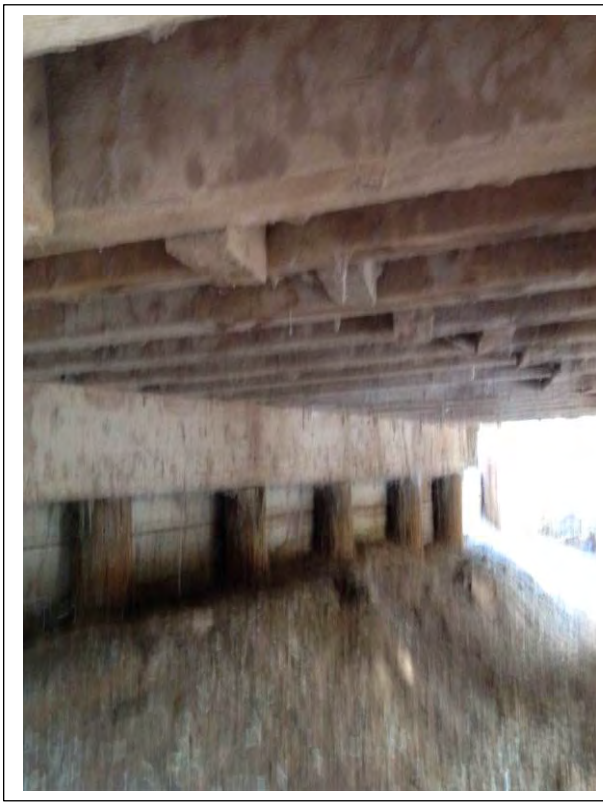
8. From the south Bank of the New River the picture taken is from the midsection of the bridge looking south, no nesting birds or bats were observed.

9. Under the New River Bridge on the east side looking west, no nesting birds or bats were observed.



10. From the north bank east side of New River Bridge looking south.

11. South bank looking at the north bank, no nesting birds or bats were observed.



12. East side of the New River Bridge looking west.

QUALIFICATIONS

MARIE S. BARRETT 2035 Forrester Road, El Centro, CA 92243 (760) 352 4159 mariebarrett@roadrunner.com

LICENSES/CERTIFICATES

Flat Tailed Horn Lizard Surveyor CDFG/BLM
Burrowing Owl Surveyor (CDFG/USFWS)
USFW Desert Tortoise Egg Handling Desert Tortoise Council Survey Techniques Workshop Certificate
BCI Bat Conservation and Management Workshop (Acoustic) Certificate
Southwestern Willow Flycatcher Workshop Kernville, CA 2010
CA Scientific Collection Permit 126/USFWS Salvage Permit MB52633B-1

CAREER HISTORY

Barrett's Biological Surveys, El Centro, California ***BIOLOGIST*** **3/95 -present**

Helped established protocol and perform Vegetative Baseline Studies and Biological Surveys for Mining Reclamation Plans in Imperial County. Have performed numerous (over 20,000 acres) surveys involving varied wildlife including burrowing owl, nesting birds and plant species and writing reports and biological assessments. Certified to perform Flat Tailed Horned Lizard Surveys; completed Desert Tortoise workshops; approved to handle desert tortoise (American Girl Mine/BLM project, 1/2013). Work closely with governmental agencies such as such as Bureau of Land Management, State Office of Mining Reclamation, California Department of Fish and Game. Written over ten Environmental Assessments for BLM, El Centro office. Over 150 days spent in field monitoring/surveying for FTHL; 98 days in field monitoring/surveying for desert tortoise and 32,000 acres surveyed for burrowing owl and nesting birds; 2 IID Burrowing owl surveys with AECOM (2011/12- 226 hrs). Wrote Imperial Irrigation District Artificial Burrow Installation Manual (2009). Over 25 active burrowing owl burrows passively relocated and 50 artificial burrows installed. Volunteered for desert tortoise work (20 hrs) with Dr. Jeff Lovich. Coachella Valley Projects: Torres-Martinez (Desert Cahuilla Composting Facility Biological Resource Technical Report/Surveys 60 acres, SR 86/Ave 84, 2013; Augustine Tribe (Solar Farm Biological Resource Technical Report/Surveys 10 acres, La Quinta,CA, 2010); Benitez Family Trust Therapeutic Community, Dillon and Cabazon Roads, 10 acres,2008); Chandri Group (Dairy Queen Chill/Grill Project, 1.5 acres, Date Palm Drive/I-10, La Quinta, CA, 2014). Blythe 8Minutenergy Mt. Signal Solar 5000 acres Preconstruction surveys/construction monitoring and BUOW Post construction monitoring; Biological report. 2010-2017
Black Mt. MetTower Installation: desert tortoise survey and monitoring approved by BLM, El Centro office
Salton City Burrtec Landfill FTHL monitoring/clearance 2010-2014 (42.5 hrs); Superior Redi Mix: FTHL surveys, Oat Pit Environmental Assessment for BLM, El Centro, 2009-14. (20 hours) SDG&E La Rosite Pole Replacement FTHL Monitoring 2012-2013(410 hrs); Imperial County Department of Public Works, FTHL surveys for Coyote Mine Environmental Assessment, BLM, El Centro, 2008. (10 hours) All American Aggregates, FTHL surveys, Boyd Road Mine Environmental Assessment, BLM El Centro, 2007. (9.5 hours) All American Aggregates, FTHL surveys, Wheeler Road Mine Environmental Assessment, BLM, El Centro, 2006. (8.5 hours); ValRock, FTHL surveys, Ocotillo ByPass Road Environmental Assessment, County of Imperial/BLM, El Centro, 2004. (7 hours). USFWS Authorized desert tortoise biologist: American Girl Mine and Mesquite Mine.

Citizens' Congressional Task Force on the New River, Brawley, Ca ***PROGRAM COORDINATOR*** **1/98 - present**

Assisted with design, construction, planting and monitoring of four constructed wetlands in Imperial County. Responsible for coordinating activities relating to student and public outreach education to promote the water quality opportunities of wetlands ponding systems on the New River.

Imperial Valley College, Imperial, California ***ENVIRONMENTAL MANAGEMENT PROJECT COORDINATOR*** **9/95-12/99**

Responsible for establishing an Environmental Technology curriculum, presenting public forums, short courses and certificate courses in hazardous materials and safety areas. In conjunction with Division Chairman, established a budget for 96-98 program and obtained funding of $131,000 based on 95-96 program performance. Established short courses that trained over 700 people in hazardous materials safety programs. Compiled a survey of employers, which provided direction for the program.

VOLUNTEER ORGANIZATIONS

CALIFORNIA NATIVE PLANT SOCIETY: Imperial Valley Coordinator, 2006-2016.
SALTON SEA INTERNATIONAL BIRD FESTIVAL: Coordinator: 2001-2010. Organize bird festival in the Imperial Valley that attracts over 300 birders.
COLORDO RIVER WATER QUALITY CONTROL BOARD: Board member Dec 05-Sept 06.
FRIENDS OF SONNY BONO NATIONAL WILDLIFE REFUGE: Board Chairman, May 2015- 16

EDUCATION

University of Arizona, Tucson, Arizona
Masters of Science Degree – AGRICULTURAL EDUCATION
Thesis: Survey and training protocol for documenting burrowing owls and habitat in Imperial County, California
California State Polytechnic College, Kellogg-Voorhis Campus, Pomona, California
Bachelor of Science Degree.- AGRICULTURAL BIOLOGY
Imperial Valley College, Imperial, California *Associate of Science Degree. AGRICULTURE*

Jacob Calanno
Post Office Box 458
Niland, California 92257
760-550-4214

SPECIALTIES: Environmental Remediation and Monitoring, Mechanical Process Applications, Field operations.

EDUCATION: Imperial Valley College, Imperial, Ca. - Municipal Water and Waste Water Treatment; Licensing pending.

COMPUTER SKILLS: Basic computer skills, Lab View for Engineers.

SPECIALIZED TRAINING: Environmental Review & Compliance for Natural Gas Facilities Seminar- June 5-7, 2012
Desert tortoise Surveying, Monitoring and Handling Techniques Certificate Nov. 5-6, 2012
Flat Tail Horn Lizard Training- June 20, 2012
40 Hour Hazwoper Feb. 8, 2013
CALIFORNIA OSHA TITLE-2011
Confine Space Training, 2005
Lockout/Tagout , 2005
Respirator Training, 2005
Operators Safety Training, 2005
Foreman Field Crew Supervisory and Operations Training, 2005

SUMMARY: <u>Field Operations Crew Foreman/Operations Technician</u>

I have 15 years' experience in the environmental remediation industry. My area of expertise is in remedial mechanical applications, equipment operations and maintenance programs. For the past 5 years I have been specifically working on construction, operation and maintenance for soil vapor direct and indirect fire extraction systems, applied to groundwater remediation projects. I have strong equipment application, organization and field crew tasking skills. I communicate well, ascertain direction and always work as a team player.

Training and hands on experience working in the field with endangered species; Desert Tortoise and the Flat Tail Horned Lizard, followed compliance policy and procedure when encountering endangered species. This training was received while working on specific projects such as:
USDOD, Navy Clean I Program, Salton Sea, Imperial, California; Barrett's Biological Surveys field work and monitoring.

WORK EXPERIENCE:

2013-18 Barrett's Biological Surveys
Project Salton City Burrtec Landfill: 320 acre FTHL clearance and provided FTHL training to construction crew/Nesting bird surveys (52 hrs)
Project Mesquite Mine: 30 acre desert tortoise clearance; fence installation monitoring (25 hrs)
Project: North Baja Bore Hole Project desert tortoise monitoring (12 hrs)
Project Oat Mine: FTHL monitoring (186 hrs)
Project CalTrans: FTHL monitoring (50 hrs)
Project Niland Wastewater Project BUOW/Biological surveys (5 days)
BLM, El Centro, CA office: Volunteer Bat Surveys with Pat Brown (20 hours)