County of Santa Barbara
Department of Public Works
Transportation Division
Brent Clavin, Resident Engineer

MCM Construction, Inc.
19010 Slover Ave
Bloomington, CA 92316
(909) 875-0533
Daniel J. Shaw, P.E.
Project Manager / Engineer
Cell (714) 305-2470

DISPUTES RESOLUTION BOARD

Revised RECOMMENDATION
on
NOPC #1

payment for
costs of a
Differing Site Condition at Pier No. 4

For Construction of Floradale Avenue Bridge No. 51C-0370,
over Santa Ynez River
approximately 0.75 mile north of Central Avenue
west of the City of Lompoc in the 3rd Supervisorial District,
Santa Barbara County, Project No. 862032, Fed. # BRLSZD-5951(060)

		Member
	CHAIRMAN	Member
Mr. Alan Haag, P.E.	Mr. Ronald P. Reading	Mr. Dan J. Peterson

Contractor -	**MCM Construction, Inc.** 19010 Slover Avenue Bloomington, California 92316
Project Manager	Mr. Daniel J. Shaw, P.E.
Owner -	**County of Santa Barbara** 620 West Foster Road Santa Maria, CA 93455
Resident Engineer	Mr. Brent Clavin, P.E.
Standard Specifications	**State of California, Department of Transportation dated, 2018**
Standard Plans	**State of California, Department of Transportation dated, 2018**

July 22, 2022

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INTRODUCTION:

Revised Recommendation Explanation:

On July 16, 2022, the Board provided a recommendation for this NOPC, based on the knowledge that a Differing Site Condition had not occurred for Pier No. 4, because the contract Log of Test Borings indicated "hard soil" or difficult drilling at the elevation where the Contractor encountered difficult drilling or (high 'oscillator' pressures).

On July 20, 2022, the Contractor requested a re-consideration of the Boards recommendation, stating that the difficult drilling at Pier No. 4, was not caused by 'hard soil', but by 'soft soil' as described in Earth Mechanics, Inc., a Geotechnical Engineering firm drilling logs performed after the Pier No. 4, pile work was complete.

This revised recommendation is based on this unrecognized or unknown knowledge, by the board, at the time of the NOPC hearing.

Hearing information:

On July 15, 2022, between 9:00 A.M. and 11:15 A.M., the Board held a hearing at:
Embassy Suites, 1201 North H Street, Lompoc, CA 93436

The purpose was to hear presentations by the Contractor, **MCM Construction, Inc.** , and the **County of Santa Barbara** regarding support of their respective positions for NOPC No. 1. The Board had previously reviewed the some of the written presentations of both parties. The written position of each party is summarized herein. The complete position papers are included at the end of the recommendation.

In addition to the Resident Engineer and the Contractor's Project Manager, the following participants made presentations or were present:

Contractor	County of Santa Barbara
Harry McGovern, President	Gaston, Philip, P.E., Structures and Capitol Projects Section Manager
Manny Martinez, Project Superintendent	

Project History

Bids were opened for this project on January 21, 2021. The work included replacing the existing Floradale Avenue Bridge No. 51C-006 with a new 4-span cast-in-place post-tensioned box girder bridge on 10-foot diameter CIDH piles at each pier and seat abutments on 4-foot diameter CIDH piles. The replacement Floradale Ave Bridge No. 51C-0370 and approach road will be constructed parallel to the existing bridge. Provisions for utility owners to relocate sewer facilities onto the new bridge during construction are required.

Additional items of work include HMA roadway, dry wells, rock slope protection, fence, aesthetic concrete bridge approach railing, crash cushions, erosion control, biological and archeological monitoring, and other appurtenances. The total contract value of the work is $14,991,931.00, and contract time is 400 working days.

The Contract Items involved in this dispute are:

Bid Item No.	Description	Quantity	Unit Price	Original Amount
33	120" Cast-in-drilled-hole Concrete Piling	430 LF	$3,600.00/LF	$1,548,000.00

Specific Dispute Contract Terms
The specifications controlling Differing Site Conditions are:

NOTICE TO BIDDERS AND SPECIAL PROVISIONS

NOTICE TO BIDDERS

Bridge general plan and foundation plan sheets and all information handout material are available at https://www.planetbids.com/portal/portal.cfm?CompanyID=43874. The Plans, Specifications, and Bid Book will be available on December 21.

County MODIFICATIONS TO STANDARD SPECIFICATIONS

49 PILING

Add to section 49-1.03:

Expect difficult pile installation due to the conditions shown in the following table:

Pile location		
Bridge no.	*Support location*	*Conditions*
51C-0370	*All Supports*	*The on-site earth materials consist of coarse-grained gravelly soils with cobbles. These soils susceptible to caving. High groundwater is also anticipated.*

STANDARD SPECIFICATIONS

2-1.06B Supplemental Project Information
The Department makes supplemental information available as specified in the special provisions.

Logs of test borings are supplemental project information.

4-1.06 DIFFERING SITE CONDITIONS (23 CFR 635.109)
4-1.06A General
Reserved

4-1.06B Contractor's Notification
Promptly notify the Engineer if you find either of the following conditions:
1. Physical conditions differing materially from either of the following:
1.1. Contract documents
1.2. Job site examination

4-1.06C Engineer's Investigation and Decision
Upon your notification, the Engineer investigates job site conditions and:

1. *Notifies you whether to resume affected work*
2. *Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both*

PLANS

Sheet No. 70 of 71, LOG OF TEST BORING NO. 4 (S-27)

DESCRIPTION OF THE DISPUTE:

The dispute involves a Differing Site Condition encountered during the drilling for the 120-inch diameter, Cast-in-drilled-hole (CIDH) concrete pile at Pier No. 4 for the Floraldale Avenue Bridge construction.

CONTRACTOR'S POSITION summarized:[1]

★ that the difficult drilling encountered at Pier No. 4, indicated that the soil conditions shown in the Contract Plans Log of Test Borings are different that indicated on the Plans.

★ the request for reconsideration explained that the "difference" is the 'soft soil' described in the County's tests performed after the Pile No. 4, work was complete

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COUNTY'S POSITION summarized:[2]

♦ that the difficult drilling encountered at Pier No. 4, was due to the Contractor's means and methods of performing the pile construction work and was not due to any different soil condition.

♦ that the County's tests performed after the Pile No. 4, work was complete did not an indicate a "difference" in the soil shown on the Foundation Report

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Differing Site Condition specification in construction contracts

BACKGROUND

In 1926, the Federal Board of Contracts and Adjustments required the inclusion of a DSC clause in all Federal construction contracts. The Board's action was taken to reduce or eliminate the contingency factor for subsurface conditions and to limit the latent costs incurred by contractors for pre-bid subsurface explorations. The original clause only applied where the conditions varied materia1ly from those indicated. In 1935, the clause was broadened to include situations where the contract is silent regarding subsurface conditions, but the contractor encounters unforeseen, unusual conditions which differ materially from conditions ordinarily encountered.

DSC PURPOSE

The purpose is to provide guidelines on the practical application of a -Differing Site Condition-(DSC) contract clause, as related to subsurface conditions, and to address the variable nature of soil and rock materials when used as a foundation or construction material. This guideline should be of benefit to Geotechnical, Design and Construction personnel.

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1 See detailed Contractor's Position attached hereto and a part of this recommendation

2 See detailed State's Position attached hereto and a part of this recommendation

Recommendations are provided on disclosure and presentation of subsurface information to bidders. The objective of these recommendations is, in part, to decrease bidding contingencies on subsurface items, address unexpected subsurface problems early, and provide a basis for equitable resolution of contractor claims based on differing subsurface conditions. Without a DSC clause, the risk of subsurface conditions is borne by the contractors who in turn must increase the price bid to mitigate the risk.

Contract Requirements for DSC

2018 Standard Specifications states:

4-1.06B Contractor's Notification

Promptly notify the Engineer if you find either of the following conditions:

1. Physical conditions differing materially from either of the following:

1.1. Contract documents

4-1.06C Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions

County's modification to the 2018 Standard Specifications states:

Expect difficult pile installation due to the conditions . . .(of) *soils susceptible to caving*

DISCUSSION

Background

- the new Floradale Bridge foundations consists of 2 abutments and 3 piers,
- all the foundations for the bridge are on cast-in-drilled-hole (CIDH) concrete piles
- the abutments are supported by 4-foot diameter CIDH piles, 101 &116 feet deep and the piers are supported by 10-foot diameter CIDH piles, 140 & 142 feet deep,
- drilling for the abutment piles and two of the three pier piles was completed without any drilling difficulties.
- a report of the contractor's drilling operations and procedures, is described in the position papers included herein
- during drilling of the CIDH pile for Pier No. 4, the contractor encountered 'High Pressures', approximately half way down the pile shaft.
- as required by Section ***4-1.06B*** of the 2018 Standard Specifications, the contractor notified the County that because of these high pressures, it indicated that the equipment had encountered a Differing Site Condition (DSC)
- after the DSC notification by the Contractor, the County did not perform any testing of the existing soil, except to monitor the contractor's drilling operations, and observe the soil being removed from the excavation
- other than MCM's drilling log, there was no other testing or analysis of the cause of the DSC, at the time the DSC was notified/discovered.
- samples of the excavation material were provided to the Board from Pier No. 4, spoil pile.
- after the pile work was completed, the County denied the contractors request for payment of the DSC.

Pile Drilling, (County)

- it is obvious by the hearing testimony and contractor & county records, that the drilling conditions at Pier No. 4, were different from the drilling conditions at Piers No. 2 & 3.
- this, in itself, does not confirm that the soil encountered at Pier No. 4, is different than what is shown on the contract Log of test Borings.
- the County believes
  - that there is *not* a DSC
  - that the difficult drilling was caused by the Contractors "means & methods" in drilling the pile
  - that there is *not* any ground condition that is different than what was shown on the Contract Log of Test Borings
- the 2018 Standard Specifications specifies that the County is responsible for investigating and determining the cause of the DSC.
- the County did not perform any investigation, during the pile construction, except to monitor the soil from the pile drilling excavation,

Foundation Report

- the County's reply to the request for reconsideration states:
  - *information included in the Foundation Report (FR) and our previously discussed position. Section 13.4 of the FR states, "these soils are susceptible to caving and difficult drilling*
- it is unclear if the "Foundation Report" is part of the Contract documents
- Notice to Bidders states;
  - *Bridge general plan and foundation plan sheets and all information handout material are available*
- The Foundation Report is not described
- Section ***2-1.06B*** of the 2018 Standard Specifications ***Supplemental Project Information*** states:
  - *The Department makes supplemental information available as specified in the special provisions*
- The Special Provisions do not specify the "Foundation Report"(FR), therefore, statements in the FR report are not considered in the DSC consideration.
- In addition, the above statement in the FR is not to be considered in determining payment for a DSC, because it is a 'self-serving statement' to the agency.
- The purpose of the DSC, as stated above, is to prevent a contractor from "guessing" or adding a contingency in its bid to cover some unknown, unanticipated costs. The very purpose of a DSC clause is to prevent this type of guessing by contractors. The DSC is designed to put all contractors on a 'level playing field', wherein they price their costs on known conditions, as shown in the plan Log of Test Borings, that are part of the contract documents.
- The FR statement *soils are susceptible to caving and difficult drilling* is not included on the contract Log of Test Borings, nor in Section 49 of the Special Provisions

Pile Drilling Work, (Contractor)

- the contractor believes that there *is* something different in the soil at Pier No. 4, than what is shown on the contract Log of Test Borings, because of the increased effort (high 'drilling' pressures) required to drill the pile at Pier No. 4.
- there is no doubt that the drilling was more difficult at Pier No. 4, than all the other piers.

- there is no dispute between the contractor and the county that the drilling method of all three pier piles was the same prior to encountering the "high (drilling) pressures at Pier No. 4.
- However, while drilling for Pier No. 4, the drill encountered (high-pressures) and the contractor had to:
  - *"refill the drilled hole twice in order to stabilize the pockets of loose material and provide a shield thru which the successful pile was constructed"*
- the question is - - - was the (high drilling pressures) - - -caused by different soil at pier No. 4, or by the drilling methods of the contractor?
- the contractor used the same drilling methods for Pier No. 4, before encountering the 'high drill pressures', as were used on Pier Nos. 2 & 3
- Pier Nos. 2 & 3 were completed without any "high(drilling)pressures" or encountering *pockets of loose material* that were NOT shown on the contract Log of Test Borings.
- the Contractor believed that due to the difficult drilling at Pier No. 4, that the ground conditions were different than what was shown in the Contract.
- the Contractor notified the County of these changes in encountering *pockets of loose material*
- the Contractor eventually completed drilling the pile to the specified tip elevation.
- in the Contractor's request for re-consideration of the Boards original recommendation, it explained that "soft soil' or loose soil causes the casing to "bind-up" while drilling, causing the "high [drilling] pressures
- the Contractor explained that encountering "hard soil" as described in the contract Log of Test Borings prevents caving against the casing and permits the drilling to proceed normally.
- "Soft-soil" causes the casing to 'bind-up' causing the oscillator pressures to increase or an indication of different ground conditions

Measured Mile determination of DSC

- the Contractor believed that because they encountered ("high [drilling] pressures") at pier No 4, but did not encounter these high drilling pressures at Pier No. 2 & 3 , that this indicated that there was a DSC at Pier No. 4.
- the Contractor called this a 'Measured Mile' indication of a DSC.
- Measured Mile is commonly used to determine additional costs for a construction work change.
- Measured Mile does not in itself conclude that the soil encountered is different that the soil specified in the Contract Log of Test Borings.
- It is obvious that the drilling effort of Pier No. 4, was different than the drilling effort at Pier No. 2 & 3.
- However, the contract DSC criteria is:
  - that the "difference" for determining a DSC, is that there shall be a difference of what is shown on the contract documents, vs. what is discovered at the work site, not a difference in drilling efforts.
  - Different drilling efforts may be an indication of a difference in the soil, but is not the determining factor to justify a DSC.

Testing after Pile Completion

- after the pile was completed, the county engaged Earth Mechanics, Inc., a Geotechnical Engineering firm, to drill 5 test holes 2 to 3 feet away from the outside of the completed Pier No. 4 pile, to determine the condition of the soil outside of the pile.

- Five borings were drilled. Three of the five borings confirmed that the soil was consistent with the contract Log of Test Borings.
- however, two of the borings encountered drilling difficulties or an obstruction, at about the same elevation as where the contractor's drilling equipment encountered ("high-pressure").
- the Geologists soil sampler (drilling equipment) could not continue drilling for these 2 tests.
- the Geologist's description of this 'obstruction' is that it is normally an indication of:
  - *"(1) a gravel/cobble layer with voids between the gravel and cobble pieces*
  - *(2) a zone of very soft soil that cannot support the weight of the column of drilling fluid above, or*
  - *(3) a void"*

Contract Log of Test Borings

- contract Log of Test Borings No. 4 at -76 feet to -96 describes the soil as:

  Poorly graded GRAVEL with SILT, SAND, and COBBLES (GP-GM); very dense; olive gray; wet; 45% fine to course angular to subrounded gravel; max 1 in. dia.; 44% medium to course SAND 11% nonplastic fines, hard drilling; rig chattered from elevation -76 feet to -96 feet.
- two of the three above Geologists descriptions of the soil 2 to 3 feet outside of the completed Pier No. 4, pile are different that the description in the Contract Log of Test Borings.
- the contract Log of Test Borings does not describe "soft-soil, very soft soil or voids"
- this is an indication of what the contractor encountered, when the drill equipment encountered "high-Pressures". [binding-up of the casing]
- the contract Log of Test Borings for Pier No 2 & No. 3, do not show any soft soil at the same elevation, for Pier Nos. 2 & 3, and the contractor did not encounter any "high pressures" during the Pier No. 2 & 3 CIDH drilling.

Majority CONCLUSION

- That the contractor encountered "high-(drilling) pressures" during the drilling of Pier No. 4.
- this "high-(drilling) pressures" indicated to the Contractor that the soil was different that what was shown on the contract Log of Test Borings
- that two of five test borings performed, by the County, after the Pier No. 4, pile was complete, could not drill deeper than elevation -76, due to the drill hole collapsing and soft soil
- the contract Log of Test Borings do not describe "soft soil" at approximately the same elevation that the Contractor encountered "high(drilling)pressures"
- that the Geologists description of the reason that the test boring drill equipment could not continue drilling deeper that -76 feet could be caused by the some of the following:
  - *(1) a gravel/cobble layer with voids between the gravel and cobble pieces*
  - *(2) a zone of very soft soil that cannot support the weight of the column of drilling fluid above, or*
  - *(3) a void"*
- two of the three above descriptions are different than the descriptions in the contract Log of Test Borings.
- that these ('very soft soil' or 'voids') probably are the cause of the ("high-Pressures") at Pier No. 4.
- that the contractor encountered *soft soil* (high pressures) at approximately elevation-76
- therefore, there is a difference in what is shown in the contract documents and what was encountered at Pier No. 4.

Majority RECOMMENDATION

☛ That the Contractor encountered "soft soil" at pier No. 4. Soft soil causes high [drilling] pressures on the drilling equipment. Soft soil is not described on the contract Log of Test Borings. Therefore, additional compensation is required by the County for encountering this DSC of "soft soil".

Minority DISCUSSION

- Drilling for the abutment piles and two of the three pier piles was completed without any apparent drilling difficulties. The Contractor used an oscillator with water slurry for advancing a casing down to specified tip for the piers 2, 3 and 4.
- On Friday August 13, during drilling of the CIDH pile for Pier No. 4, the Contractor reached specified tip elevation . The time of excavation for pier no. 4 was approximately 30 hours as compared to approximately 71 hours for pier 2 and approximately 90 hours for pier 3.
- According to the Contractors drill log, the material was described as sand and no excessive oscillator pressures were noted by The Contractor or COSBPW at that time
- Over the weekend of August 14, the contractor experienced high pressures when turning the casings for Pier No. 4.
- On Monday August 16, the oscillator casing experienced very high pressure. The hole was drilled to past the specified tip to loosen the casing. The casing had to be removed and the hole was backfilled with 2 sack cement slurry.
- The Contractor submitted an RFI at this time, notifying COSBPW that it had encountered difficult drilling conditions.
- On August 23, the Contractor restarted the excavation operation at Pier No. 4, but again encountered difficult drilling. Eventually the casing broke before reaching specified tip. The casing was partly removed and the excavation backfilled to approximately -76 feet with drilling spoils. This backfilled material was not compacted.
- On September 1, the pier excavation for pier no.4 was restarted with the excavation proceeding to specified tip. The Contractor used synthetic slurry instead of water slurry during this operation.
- Mr. Randy Nottnagle, an experienced CIDH expert, was brought in to direct operations at Pier No. 4, which was completed in 4 days. Pier No. 4, was then tested and accepted on September 15. There were no problems documented during this excavation of this CIDH pile.
- In November 2021, COSBPW performed exploratory borings around Pier No. 4, to determine if there was evidence of disturbance (caused by the excavation and backfilling of the Pier No. 4, several times) that would lead to a loss of skin friction capacity. Three of the (test) borings proved consistent with the contract Log of Test borings, while 2 of the (test) borings were inconclusive due to caving at approximately -76 feet elevation.
- Section 49 Piles of the Contract Special Provisions states clearly to expect difficult drilling . It also states that these soils are susceptible to caving.
- The Measured Mile discussion is not relative to this Differing Site Condition PCR.
- The Foundation Report (FR) is included in the Information Handout as referred to in Section 2-1.06B Supplemental Project Information of the Special Provisions
- Since the FR is included in Information Handout via the Special Provisions (and bid documents), it is considered part of the Contract.

Minority CONCLUSION

- The August 12/13 boring log for the Pier No. 4, excavation, does not show differing materials from the log of test boring. The specified tip elevation was achieved. There are no notes on the log stating a DSC or any problems encountered.
- At this point, the conditions encountered for the excavation of Pier No. 4, reflect the log of test borings and Foundations Report and no differing site conditions.
- The Contractor excavated to specified tip elevation in 30 hours. This is over twice as fast as the excavations of Pier No. 2 and Pier No. 3, that had similar dimensions and characteristics.
- There were several documents included in COSBPW position paper that detailed the importance of performing this operation slowly and controlled to minimize binding. Synthetic slurry was also recommended to lubricate the casing.
- The Contractor chose to not follow these recommendations.
- The Contractor chose their means and methods of operation that resulted in the excavation problems that occurred at Pier No. 4.
- The Contractor experienced difficult drilling and caving as noted in Section 49 of the Special Provisions.
- The excavation for Pier No. 4, was successful on the third attempt, without issue after operations were fine tuned and the updated PIP was followed.
- The soil conditions experienced at Pier No. 4, effectively reflected the log of test borings, as provided in the project plans.
- Any "sand packing" conditions as defined in Contractor reconsideration letter dated July 20, 2022, were the result of the contractors means and methods.

Minority RECOMMENDATION

Although "high pressures" and/or difficult drilling were experienced at Pier No. 4, this did not determine a Differing Site Condition. Therefore, there is no merit to this claim.

The Board appreciates the cooperation of all parties involved and the information provided to make this recommendation. Please remember to respond to the DRB and the other party regarding your acceptance or rejection of the DRB recommendation within 30 days. A non-response by either party will be considered acceptance of the recommendation. The 30 day response period will end on September 1, 2022

We certify that we participated in all of the meetings of the DRB regarding the Dispute indicated above and concur with the findings and recommendations.
Respectfully submitted,

Member	CHAIRMAN	Member
Mr. Alan Haag, P.E.	Mr. Ronald P. Reading	Mr. Dan J. Peterson

Complete Dispute Contract Terms

The specifications controlling Differing Site Conditions are:

NOTICE TO BIDDERS AND SPECIAL PROVISIONS

NOTICE TO BIDDERS

*Bids open at **2:00 PM** on Thursday, **January 21, 2021** for:*

FLORADALE AVE BRIDGE NO. 51-C0370 OVER SANTA YNEZ RIVER, 0.75 MI NORTH OF CENTRAL AVENUE, WEST OF CITY OF LOMPOC, IN THE 3RD SUPERVISORIAL DISTRICT

*COUNTY PROJECT No. 862032, **FEDERAL AID PROJECT No. BRLSZD-5951(060)***

General project work description:

Replace existing Floradale Avenue Bridge No. 51C-006 with a new 4-span cast-in-place post-tensioned box girder bridge on 10-foot diameter CIDH piles at each pier and seat abutments on 4-foot diameter CIDH piles. The replacement Floradale Ave Bridge No. 51C-0370 and approach road will be constructed parallel to the existing bridge. Provisions for utility owners to relocate sewer facilities on to the new bridge during construction are required. Additional items of work include HMA roadway, dry wells, rock slope protection, fence, aesthetic concrete bridge approach railing, crash cushions, erosion control, biological and archeological monitoring, and other appurtenances.

Bridge general plan and foundation plan sheets and all information handout material are available at https://www.planetbids.com/portal/portal.cfm?CompanyID=43874. The Plans, Specifications, and Bid Book will be available on December 21.

County MODIFICATIONS TO STANDARD SPECIFICATIONS

49 PILING

Add to section 49-1.03:

Expect difficult pile installation due to the conditions shown in the following table:

Pile location		
Bridge no.	*Support location*	*Conditions*
51C-0370	*All Supports*	*The on-site earth materials consist of coarse-grained gravelly soils with cobbles. These soils susceptible to caving. High groundwater is also anticipated.*

STANDARD SPECIFICATIONS

2 BIDDING

2-1.01 GENERAL

Section 2 includes specifications related to bid eligibility and the bidding process.

2-1.06 BID DOCUMENTS

2-1.06A General

The Bid book includes bid forms and certifications, including forms not submitted through the electronic bidding service.

The Notice to Bidders and Special Provisions includes the Notice to Bidders, revised standard specifications, and special provisions.

The Bid book, including Bid book forms not available through the electronic bidding service, Notice to Bidders and Special Provisions, project plans, and any addenda to these documents may be accessed at the Department's Office of Construction Contract Awards website.

The Standard Specifications and Standard Plans may be viewed at the Department's Office of Construction Contract Awards website and may be purchased at the Publication Distribution Unit.

2-1.06B Supplemental Project Information

The Department makes supplemental information available as specified in the special provisions.

Logs of test borings are supplemental project information.

If an Information Handout or electronic design files are available, you may view them at the Contract Plans and Special Provisions link at the Department's Office of Construction Contract Awards website. Electronic design files contain design information such as cross sections, digital models, and roadway design alignments and profiles.

If rock cores are available, you may view them by sending a request to Coreroom@dot.ca.gov.

If other supplemental project information is available for inspection, you may view it by phoning in a request.

Make your request at least 7 days before viewing. Include in your request:
1. District-County-Route
2. Contract number
3. Viewing date
4. Contact information, including telephone number

For rock cores, also include the bridge number in your request.

If bridge as-built drawings are available:

1. *For a project in District 1 through 6 or 10, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357*
2. *For a project in District 7, 8, 9, 11, or 12, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357, and they are available at the Office of Structure Maintenance and Investigations, Los Angeles, CA, telephone (213) 897-0877*

As-built drawings may not show existing dimensions and conditions. Where new construction dimensions are dependent on existing bridge dimensions, verify the field dimensions and adjust the dimensions of the work to fit the existing conditions.

4 SCOPE OF WORK

4-1.01 GENERAL

Section 4 includes specifications related to the scope of work.

4-1.06 DIFFERING SITE CONDITIONS (23 CFR 635.109)

4-1.06A General

Reserved

4-1.06B Contractor's Notification

Promptly notify the Engineer if you find either of the following conditions:

1. *Physical conditions differing materially from either of the following:*
   - *1.1. Contract documents*
   - *1.2. Job site examination*
2. *Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract*

Include details explaining the information you relied on and the material differences you discovered.

If you fail to promptly notify the Engineer, you waive your claim of a differing site condition for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing-site-condition claim.

4-1.06C Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions and:

1. *Notifies you whether to resume affected work*
2. *Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both*

PLANS

Sheet No. 70 of 71, LOG OF TEST BORING NO. 4 (S-27)

Contractor's Reconsideration Position

NOPC#1 Pier 4 CIDH DSC, Reconsideration of the Board Decision

Apparently, we did not adequately describe the process for the construction of large diameter CIDH piles with full length casing and an oscillator as the board's basis for denial of the differing site condition claim is simply based on the fact that the material was hard.

The lower 30'-50' of material was hard (very dense — 30' of refusal at Pier 4) at all three piers which is positive in the drilling business as it means that the hole cannot possibly cave against the casing. Any experienced Geotech or drifter would, with absolute certainty, tell you that, based on the representations in the borings, these holes constructed in this hard (very dense) material would never collapse against the casing.

The decision by the board is also flawed in that several notes regarding background information are incorrect:

Pg. 5: The bottom 30' of Pier 4 was hard to penetrate for the casing and hard digging with the grab all as expected based on the boring information — some elevated pressures were seen when the teeth were cutting into the dense material but, no indication of binding up was observed until later.

Pg. 6: We did not modify the drilling methods or change any methods. The only change to the method was to refill the drilled hole twice in order to stabilize the pockets of loose material and provide a shield thru which the successful pile was constructed.

Pg.7: The County did perform additional investigations which determined that very soft soil existed at approx. elev. Pg. 7: The existence of a soft layer of soil at Elev.-76 is explicitly different than what is shown in the test boring that is 80' away from Pier 4 but, represented to be applicable to the soil conditions for Pier 4.

Pg. 8: Drilling hard (dense) soils is preferred as any caving of that soil against the casing and into the °/«" clearance zone is impossible. Any boring showing refusal can be likened to rock.

Enclosed is a drawing showing how a loose pocket of sand (confirmed by the County's investigative borings 4a and 4e and described by EMI'S report on page 3) can cause a phenomenon called sand packing that will cease up the casing. The sand dribbles into the °/«" clearance zone below and, as the casing turns back and forth, wedges and packs between the casing and the dense soil further and further up until the friction is too great and the oscillator can no longer turn the casing.

Please review this additional information in order to reconsider and revise your recommendation.

Contractor's Position

DESCRIPTION OF THE DISPUTE

MCM Construction contends that the duration and cost of the Cast-in-Drilled-Hole foundation construction at Pier 4 was significantly increased because of a differing site condition due to extremely unstable material that was inconsistent with the project documents.

The County believes the material in question is as described in the project documents and the instability described by the contractor was due to the methods employed by the Contractor during the initial attempt at drilling the Pier 4 CIDH.

Contractor's Position

The foundation for Floradale Ave Bridge required MCM Construction to construct three 120" diameter Cast-in-Drilled-Hole piles at Piers 2, 3, and 4. The Piers are all roughly the same length: Piers 2 and 3 at 142', and Pier 4 at 136'. The Piers also have similar specified tip elevations: - 97 at Pier 2, -105 at Pier 3, and -101 at Pier 4 (See Appendix D– Project Plans).

Accordingly, MCM's approach to constructing the Piers was the same for each pier; the only exception being the need to accommodate a permanent isolation casing at Pier 2. The plan for all three Piers utilized an oscillator to advance a casing down to tip and excavate the CIDH using water as slurry in accordance with the Special Provisions.

MCM constructed the piles in order and began at Pier 2. Once the actual drilling began, the construction of Piers 2 and 3 progressed as planned, and were completed expeditiously (See Appendix F – CIDH Timeline). Moving to Pier 4, MCM expected that the two completed Piers were the "measured mile" indicator and planned to complete Pier 4 in a similar timeframe, especially considering Pier 4 was 6' shorter than the other piers.

On the first attempt at Pier 4 with the oscillator, the operation appeared to be progressing similarly to the first two piers, with the drilling operation nearly complete heading into a weekend. When the Pile Superintendent came on Saturday to oscillate the casing to prevent any possible "set up", he found that there was an abnormal amount of pressure required to oscillate the casing. This is an indication of an unstable hole as the surrounding material is caving against the casing and increasing friction. Sunday's revisit to turn the casing again revealed high pressures. When drilling resumed on Monday, it was found that material inside of the casing was about 5' higher than the last measured drill depth elevation (note: normal "settlement" of suspended material out of the slurry is only around 1'). Further attempts to oscillate and drill were met with increasingly high pressures, and material continuing to push back up into the hole. MCM assessed that this was clearly a sign of soil instability at the tip of the excavation. Soil/sand was coming up through the tip of the casing, creating an increasingly unstable situation. MCM notified the Engineer to investigate, and proceeded to backfill the hole with slurry.

For the second attempt, the CIDH pile plan was modified to include synthetic slurry to decrease oscillator casing friction. Though the operation initially seemed to be progressing better, increasing pressures and material intrusion were present once again. As the pressure increased and the oscillator casing became more and more difficult to turn, the top piece of the casing sheared apart from the rest. Though the crew was able to do enough repair to free the casing and prevent it from getting stuck in the hole, the attempt was abandoned, and the hole was backfilled with slurry spoils.

After the casing was repaired, and after the hole was backfilled twice to solidify the sides of the hole, the CIDH was completed in 4 days.

Though the Pier was complete, discussions and investigation into Pier 4 continued. The County retained a company to perform exploratory borings around Pier 4. When the driller encountered unknown underground conditions which caused them to lose fluid in their small exploratory hole, they were unable to complete the boreholes to tip. The County concluded that there was unstable material caused by the MCM's operations, and that ground improvement would be necessary to satisfy the Geotechnical Engineer's confidence in the CIDH's skin friction. MCM concluded, however, that the driller's inability to complete the hole is proof of unstable material, but also proof of a differing site condition.

As directed, MCM brought in a Compaction Grouting Subcontractor, Keller, to complete ground improvement around Pier 4. Their work was completed without any significant influx of grout material, and pressures were consistently high. They did, however, abandon one hole location because they were unable to drill past an unknown obstruction, including two other attempts 1 foot away from this location.

CONCLUSION:

The result of the differing site condition of unstable soil at Pier 4 drastically increased the costs (Appendix G).

In summary, the following are the key points to show this is a Differing Site Condition:

1. Full length casing with an oscillator is the safest and most reliable procedure for the construction of large diameter CIDH piles.
2. The borings and foundation report indicate competent materials ideal for the water slurry full length casing method.
3. The equipment furnished was suitable for the intended work method.
4. The crew was well experienced on this method of large diameter CIDH construction. Similar projects include Yuba City, Marysville, Jelly's Ferry, and Durham.
5. The County's own soil exploration drilling company (SoCal Drilling) lost fluid in their small diameter hole confirming loose soils at depth.
6. At the County's direction, Keller North America Inc. was hired to perform compaction grouting. They were unable to get the soil to receive any grout thereby proving that MCM did not disturb the soil around the pile. They did run into an impenetrable obstruction at depth which could have been a contributing factor to the problem at Pier 4.
7. The nearest boring to Pier 4 is approximately 80' from Pier 4, so nobody really knows what the soil conditions are at Pier 4.
8. The very purpose of backfilling the hole is to prevent further unravelling of the sides of the hole and to create a stable wall in those areas of instability in order to re-dig back through and successfully complete the pile. This effort is a clear indication of a differing site condition.
9. The borings all show pretty much the same soil conditions everywhere; therefore, the stable soil conditions experienced at Piers 2 and 3 clearly established the **MEASURED MILE** expectation for completion of work at Pier 4.

The Board should recommend that Claim #1, Pier 4 CIDH Differing Site Condition, has merit and that the Contractor is entitled to additional compensation.

County's reconsideration Position

As a follow-up to our letter dated Monday, July 25, 2022, the County appreciates the opportunity to provide a detailed response to MCM's NOPC#1 Pier 4 CIDH DSC Reconsideration of the Board Decision, dated July 20, 2022. The County respectfully provides the following information as a continuation of and builds on what was already stated in our 7/25/22 letter.

MCM's statement "any experienced Geotech or driller would, with absolute certainty, tell you that, based on the representations in the borings, these holes constructed in this hard (very dense) material would never collapse against the casing" contradicts the information included in the Foundation Report (FR) and our previously discussed position. Section 13.4 of the FR states, "these soils are *susceptible to caving and difficult drilling* [emphasis added]. A full-length casing installed using either an oscillator or a rotator can be allowed for *controlling caving* [emphasis added]. In lieu of the full-length casing, *caving can also be controlled* [emphasis added] using a temporary casing and polymer drilling fluid." Therefore, the Geotech that prepared the FR, provided information that the material could collapse against the casing. If the material was so hard and dense that it could not collapse against the casing, this would provide a scenario which could allow open hole drilling, but this was not recommended in the FR.

The County does not dispute that "the bottom 30' of pier 4 was hard…", as evidenced by the drilling logs showing the rate of excavation was lower in this zone compared to the rest of the pile. However, this is consistent with the foundation report identifying "hard drilling" in this zone. This was discussed in the County's position and recognized by the DRB. MCM's statement, "no indication of binding up was observed until later," contradicts the drilling foreman who, during an 8/25/21 meeting between MCM, County, and Cornerstone, mentioned that the hole was binding up a bit at the end of the day on 8/13/21, but this was the first time that either the County or Cornerstone had heard of this.

The County's position paper already presented evidence regarding the discussion of MCM's methods. This is summarized in the conclusion section of that document, and recognized by the DRB's Recommendation on NOPC #1.

MCM makes two statements, "the County did perform additional investigations which determined that very soft soil existed at approx.. elev. -76" and "the existence of a soft layer of soil…", and both statements are misleading because they draw a conclusion which is unsupported by the findings from the exploratory borings performed in November 2021. As discussed at the hearing, this work *did not confirm* any soil condition at elevation -76, but indicated possible soil conditions at 2 of the 5 locations drilled below elevations -76 and -79. Any suspected soil condition in this zone was revealed to be unsupported by the results from Keller's corrective work performed in April 2022. The results and conclusions drawn from Keller's work prompted EMI to state, "the minimal grout take in the compaction grouting columns indicates that the soils surrounding the pile are *dense to very dense* [emphasis added], consistent with the conditions encountered in the 3 successful geotechnical borings." Therefore, the results from Keller's corrective work supersede the possible soil conditions indicated in EMI's December 2021 memo.

The County would like to restate that the purpose of the exploratory drilling by EMI was a direct result of MCM's decision to backfill the hole with uncompacted drilling spoils on 8/26/21, before the County had an opportunity to weigh in or authorize this action. After backfilling occurred, MCM was notified that the geotechnical engineer, EMI, was concerned that the material in the hole is not in a confined state when backfilled with uncompacted material, and the outside of the hole relaxed to some extent and lost skin friction. Following Keller's work, EMI's acceptance memo concluded, "the collapse of the two geotechnical borings is expected to be the result of a limited zone of loose material with abundant gravel that caused the loss of drill fluid and hole collapse," and this limited zone could be reasonably attributed to the zone of uncompacted backfill placed at the same elevation, especially considering the sequence of events.

MCM states, "a loose pocket of sand (confirmed by the County's investigative borings 4a and 4e and described by EMI's report…", but there is no documentation that proves there is "a loose pocket of sand." As stated above, the results from Keller's corrective work supersede any possible soil conditions indicated in EMI's December 2021 memo, and the "limited zone of loose material with abundant gravel" is consistent with the log of test borings (LOTB) which identifies the following around elevation -76: "poorly-graded gravel with silt, sand, and cobbles (GP-GM)…" The "loose sand pocket", shown on the Casing Wall X-Section, is unsupported by the FR and the findings from the November 2021 exploratory borings and Keller's April 2022 corrective work. Given that there is no evidence of a "loose pocket of sand," there could not be a "sand packing" scenario as presented by MCM.

The County thanks the DRB for the opportunity to refute the elements of MCM's request for reconsideration, and believes that, after considering all presented information, the DRB will maintain its original recommendation of "no additional compensation is required by the County for encountering 'high pressures' or difficult drilling."

County's Position

Position Statement **-Summary-**

MCM seeks entitlement and payment for additional costs beyond their bid price for the 120-inch diameter cast-in-drilled-hole (CIDH) concrete piling at pier #4, Station 24+65. MCM maintains that the "measured mile" analysis comparing CIDH piling at piers #2 and #3 to CIDH piling at pier #4 is *de facto* evidence of a "differing site condition." (DSC)

The County of Santa Barbara Public Works Department, Transportation Division, (COSBPW) maintains MCM is not entitled to payment for *any* additional costs given the lack of evidence for a DSC. The lack of evidence for a DSC is seen in the MCM drilling spoils, the SoCal drilling (November 2021) exploratory boring spoils, and the Keller corrective work reports (April 2022) agreeing with the 2018 Foundation Report by Earth Mechanics Inc. (EMI) (FR)

The "measured mile" method of analysis is used to calculate the cost impact of a change or delay from the work as bid. It is not standalone proof of a change or differing site condition without the existence of physical conditions or other supporting evidence.

That is the case we have here.

The physical evidence shows agreement between the log of test borings in the FR, the MCM drilling construction spoils, the SoCal Drilling borings, and the Keller borings.

The physical evidence for a differing site condition is lacking in MCM's claim statements to-date.

All additional costs incurred by MCM are due to their means and methods during the course of the work.

COSBPW seeks that the DRB render a written recommendation that entitlement for additional cost is not due MCM based on the body of evidence in this position statement and the Common Reference Documents.

-Background & Evidence-

1. The COSBPW published a Notice to Bidders (NTB) on December 11, 2020. MCM submitted the lowest responsive and responsible bid to COSBPW on January 21, 2021 for $14,991,931.00, with 120" CAST-IN-DRILLED-HOLE (CIDH) CONCRETE PILING bid at the unit price of $3,600.00 per linear foot and were self-performing the work. Their bid submission was acknowledgment that they had examined the job site and bid documents per Section 2-1.07 of the 2018 Caltrans Standard Specifications (CSS:)

2-1.07 JOB SITE AND DOCUMENT EXAMINATION

Examine the job site and bid documents. Notify the Department of apparent errors and patent ambiguities in the plans, specifications, and Bid Item List. Failure to do so may result in rejection of a bid or rescission of an award.

Bid submission is your acknowledgment that you have examined the job site and bid documents and are satisfied with:

1. General and local conditions to be encountered

2. Character, quality, and scope of work to be performed

3. Quantities of materials to be furnished

4. Character, quality, and quantity of surface and subsurface materials or obstacles

5. Requirements of the contract

2. COSBPW provided the project foundation report (FR) from 2018 by Earth Mechanics Inc.(EMI) as part of the NTB solicitation. The report detailed the subsurface material properties found on the job site using data from five (5) four-inch diameter test borings (one adjacent to each foundation element, abutments 1 & 5, and piers 2, 3, & 4) taken in 2018, plus Cone Penetration Testing logs from 1999 by EMI, test boring data from 1997 by Taber, and the test boring data from 1968 by Taber used for the existing bridge design.

   The subsurface material properties near the subject pier at an elevation of -100 were described as "Silty Sand with Gravel and Cobbles (SM); very dense; gray; wet; mostly fine sand; little non-plastic fines; hard drilling; rig chatter; 1% gravel; 83% fine sand; 16% fines" in the FR.

   The subsurface material properties were described as "Very dense greenish gray; very fine; coarse Sand; with scattered fine-coarse Gravel and thin interbeds of fine-coarse Gravelly Clay" by Taber in 1997 at an elevation of -65, and as "Dense to very dense grayish green SILTY very fine-coarse SAND and fine-coarse Gravel" at elevation of -70. (FR)

   The subsurface material near the subject pier was described as "Very dense, gray, very fine, silty Sand" by Taber in 1968 (FR.)
   The FR made clear that "the on-site earth materials consist of coarse-grained gravelly soils with cobbles. These soils are susceptible to caving and difficult drilling." It also made clear that casing and polymer drilling fluid could be employed to construct the piles, but that "construction means and methods remain the responsibility of the pile contractor."

3. COSBPW awarded the construction contract to MCM on March 16, 2021 with a base bid of $14,991,931.00, supplemental funds totaling $220,700.00 and a contingency of $773,132.00. The preconstruction meeting for the project was held on March 31, 2021. The 120" CIDH CONCRETE PILING Installation Plan (PIP) was first received by COSBPW from MCM on May 11, 2021.
   The subject pile is a "Type II Shaft" per Caltrans (Ref. FM, SDC.) A Type II shaft (CIDH pile) is "a drilled shaft foundation that is at least 24 inches larger than the maximum dimension of the supported column and has a reinforcing cage diameter larger than that of the supported column."

   The PIP initially showed a deep (approximately 30 feet below ground surface) construction joint, full depth temporary casing driven by hydraulic oscillator using water slurry except if oscillator rotation pressure consistently exceeded 2500 psi it called for reducing the proposed five-foot soil plug or adding synthetic slurry to lubricate the casing. COSBPW noted that a construction joint as described would require shop drawings and a contract change order as no construction joint was shown in the contract.

After multiple iterations of the PIP, COBPW and MCM held a pile preconstruction meeting on the job site on June 28, 2021. This meeting was attended by COSBPW representatives and their consultants, as well as by MCM and their subcontractors CMC Rebar and Earth Spectives (Gamma Gamma Logging (GGL) and Cross Hole Sonic Logging (CSL).)

The PIP was subsequently authorized by COSBPW on July 6, 2021, without the previously shown deep construction joint. Instead, a rebar cage "marry detail" was included to allow for picking and holding the column reinforcing cage and the pile reinforcing cage together with one crane. Equipment specified in the PIP included a Liebherr HS-895 HD crane for digging with a Special Hammer Grab (approximately 15 feet long & 24 tons) and connected to the Leffer VRM3800T1580 oscillator; the oscillator casing size specified for use had an outside diameter of 3200 millimeters or 10.4987 feet which was to go a full 5 feet past the specified tip elevation, holding a 5-foot soil plug, with a total planned casing length of 177.5 feet. A Liebherr LR-1300 crane was specified for lifting the reinforcing steel cages into the pile.

Water storage tanks ("Baker" tanks,) pumps, hoses, and a network of pipes were also called for to hold fresh well water from the Federal Correctional Complex Farm (FCC) for achieving compliance with SP section 49-3.02B(6)(d) which specified a maximum unit weight of water of 63.5 pounds per cubic foot and a sand content of less than or equal to 0.5%.

4. Excavation with the hammer grab began at pier #2 on July 13, 2021 but was then halted by MCM drilling superintendent Lou Saechao on July 14 because MCM did not have the correct size gaskets on hand for the oscillator casing joints. Excavation with the hammer grab restarted at pier #2 on July 21 upon receipt of the correct gaskets.
Excavation was delayed by equipment failure on July 22 around midday and no excavation was performed on July 23. The excavation with the hammer grab was completed on Saturday, July 24, 2021. The duration of excavation with the hammer grab at pier #2 from the start to finish during these three days was approximately 15 hours and 30 minutes not including down time, for an excavation rate of 8.99 feet per hour (139.8 feet divided by 15.55 hours.) The total duration, including down time and between shifts, was 71 hours (3:30 PM on July 21 to 2:25PM on July 24)(FN & CEI)

   The material at the bottom was described as "cobble/sand;" (FN) no excessive oscillator pressures were noted by MCM FN or COSBPW CEI; (MCM drill log; note that the length of casing described in the PIP, 177.5 feet, differed from the 172.6 feet in the field reports) The FR described the subsurface material near pier #2, at a depth of -90 feet, as "poorly graded Sand with Silt, Gravel and Cobbles (SP-SM); very dense; dark grayish brown; wet; some fine to coarse gravel; max. 1.5 in. dia.; mostly fine to coarse Sand; few nonplastic fines; hard drilling." Lou Saechao turned the oscillator casing on Sunday July 25. Circulation of the water slurry, picking and setting the reinforcing steel along with welding them together occurred between July 26 and July 28, and the concrete placement and oscillator casing extraction occurred on July 29, with a total of 475 cubic yard of concrete placed. (theoretical value 464 cubic yards given MCM plan to "over pour" the concrete by 2.5 feet)

   Excavation with the hammer grab began at pier #3 on Friday July 30, 2021, to approximately 40 feet deep and ended early for the weekend, approximately 12:47 PM.

Excavation with the hammer grab continued at pier #3 on Monday, August 2 and August 3, when they finished excavation with the hammer grab. The duration of excavation with the hammer grab at pier #3 from the start to finish during these three days was approximately 14 hours and 20 minutes with approximately one half hour of downtime, for a excavation rate of 9.46 feet per hour (135.6 feet divided by 14.34 hours.) The total duration, including down time and between shifts, was approximately 94 hours (11:30 AM on July 30 to 9:50 AM on August 3) (FN & CEI)

The material at the tip was described as "sand;" no excessive oscillator pressures are noted by MCM or COSBPW; (MCM drill log.) The FR described the subsurface material near pier #3, at a depth of -128.3 feet, as "Silty Sand with Gravel and Cobbles (SM); very dense; gray; wet; mostly fine sand; few nonplastic fines." Final cleanout, circulation of the water slurry, picking and setting the reinforcing steel along with welding them together occurred between August 4 and 5, and the concrete placement and oscillator casing extraction occurred on August 6, with a total of 475 cubic yard of concrete placed. (theoretical value 464 cubic yards given MCM plan to "over pour" the concrete by 2.5 feet)

Excavation with the hammer grab began at pier #4 on Thursday, August 12, 2021 and reached to approximately 130 feet deep from approximate ground elevation of 50 feet at end of the shift. Excavation with the hammer grab continued at pier #4 and they reached tip elevation of -101 feet on Friday, August 13, at approximately 1:26 PM.

The material was described as "sand" (MCM drill log) and no excessive oscillator pressures were noted by MCM or COSBPW. (The material from the bottom of the hole is available for all to view here today in samples collected on August 16, 2021.) MCM left the hammer grab in the hole over the weekend, with Lou Saechao planning to stay in the area in order to turn the casing intermittently during the weekend; COSBPW did not inspect the site over the weekend. The duration of excavation with the hammer grab at pier #4 from the start to finish during these two days was approximately 12 hours and 53 minutes with 3 hours of downtime, for an excavation rate of 9.99 feet per hour (128.7 feet divided by 12.88 hours) The total duration, including down time and between shifts, was approximately 30 hours (7:45 AM on August 12 to 1:26 PM on August 13) (FN,CEI)

For the actual time of excavation, the rate of drilling excavation at pier #4 was 6% faster than pier #3 and 11% faster than at pier #2. However, from start to finish, the total duration at pier #4 was *three times as fast* as pier #3 and more than *twice as fast* as pier #2.

By reducing the total duration of the oscillator casing driving and excavation by over 100%, MCM increased the risk of the oscillator casing binding up in the very dense sandy subsurface materials. MCM increased the rate of excavation between the piles without analyzing the risks of "increased production." This increased rate of driving the oscillator casing and excavation increased effective stresses and thus binding, or sticking, of the oscillator steel to the adjacent subsurface materials. This principle is outlined in the FM regarding driven piles; although it is not specific to oscillator driven temporary casing for CIDH work, the FM states, that "*Driving …. in stages"* reduces binding of driven piles to the subsurface materials(FM, emphasis added.)

In addition, the Leffer oscillator manual (LM) clearly states that the casing must be installed with a "pumping" action, slowly progressing up & down, that the user is to "Repeat this procedure every 2 m – 6´ 6" in order to release cuttings and to *reduce the friction* on the casing column." (LM, emphasis added)

The extreme reduction in the duration of excavation at pier #4 relative to piers #2 and #3 was the primary cause of the high effective stresses that led to binding of the casing at pier #4 rather than a DSC.

5. On the morning of August 16, 2021, MCM began to recirculate the water slurry in the hole, but material was accumulating in the bottom of the hole to the point the pump was clogging. COSBPW discussed the situation with MCM before noon and MCM indicated that this was unexpected, that their oscillator casing was binding up with very high pressures, and that they needed to retrieve the casing by backfilling with 2-sack cement slurry placed under tremie as soon as tomorrow.

   Before agreeing to this course of action, COSBPW structure representative (SR) Philip Gaston told MCM to document the issue and submit a Request For Information (RFI). COSBPW SR discussed the issue with Delfidio Carpio, MCM Site Superintendent and Mr. Saechao. COSBPW SR asked "wouldn't the first thing to do be to add synthetic drilling slurry to the hole given the casing was "binding" up and pressures exceeding 2500 psi?" Lou said no.

   SR called MCM project manager Dan Shaw at 11:48 AM and asked him the same thing and Dan said switching to synthetic slurry wouldn't help, and that MCM just needed to get the casing out.

   COSBPW staff on-site investigated the depths inside the casing, and noted that MCM had drilled past the tip of their casing at 11:59 AM (51.03 feet approximate ground elevation, plus 18.1 feet up to the top of the oscillator casing, minus 172.6 feet of casing to approximately -103.5 feet for casing but a measured depth to material of -105.2.) At this time this would have caused additional destabilization of the subsurface material back into the excavation.

   MCM's Lou Saechao told COSBPW he was on-site 4 hours Saturday and Sunday trying to turn casing. He also said he had to lift the casing up over the weekend to be able to turn the casing successfully, on the order of approximately two feet.

   At approximately 1:00 PM MCM sends COSBPW a letter with notification per section 4-1.06 regarding DSC. COSBPW responds that the drill spoils show consistency with contract documents so a DSC is not evident at this time but will continue to investigate.

   The fact that the casing was raised over the weekend when it became stuck and that the excavation was progressing past the casing on August 16 show that the "unexpected heaving" MCM described was caused by their own actions, not a DSC.

4-1.06 DIFFERING SITE CONDITIONS (23 CFR 635.109)

4-1.06A General

Reserved

4-1.06B Contractor's Notification

Promptly notify the Engineer if you find either of the following conditions:

1. Physical conditions differing materially from either of the following:

1.1. Contract documents

1.2. Job site examination

2. Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract

Include details explaining the information you relied on and the material differences you discovered. If you fail to promptly notify the Engineer, you waive your claim of a differing site condition for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing-site-condition claim.

4-1.06C Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions and:

1. Notifies you whether to resume affected work

2. Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both

6. Once MCM restarted the excavation operation on August 23, 2021, around 7:30AM using ShorePac synthetic slurry instead of water slurry. A revised, pier #4 specific, PIP was submitted around midday on August 24. On August 25, 2021, around 11:00 AM COSBPW staff on site observed that the Leffer was experiencing very high oscillator pressures, with little progress and the 895 Crane was sliding off the crane mat and also starting to tilt from level.

   During the day the crane was repositioned and crane mat pad improvement work occurred to rectify the issue of the pad sinking from level (Northeast corner sank). The excavation work was restarted later in the day, but the slurry viscosity measurements were not in specification range and MCM was not following their PIP. The measured viscosities were as low as 29 seconds per quart (SP called for between 33 and 74). A meeting was held to discuss their operation continuing even though the new PIP submitted, specifying ShorePac, had not been authorized yet. COSBPW staff along with representatives from Cornerstone Structural Engineering Group (CSEG) and EMI were in attendance along with MCM field and office staff for a 1:00PM conference call meeting. In that meeting it was made clear that

   MCM did not have the ShorePac representative on site as required by their revised PIP (CSS Section 49-3.02C(9)©), they were not recirculating the ShorePac slurry in the hole as their revised PIP stated they would, and that MCM stated the high oscillator pressures were not unique to that day, the 25th. MCM stated that high oscillator pressures were in fact occurring on Friday August 13, 2021.

   The resolution of the meeting was that COSBPW would send back the new MCM PIP again marked Revise and Resubmit with Cornerstone's comments and adding in notes regarding the switch to the "liquid form" of ShorePac that was mentioned in the 1:00PM meeting and requirements for ShorePac synthetic slurry rep being on site.

   In addition MCM stated they would follow their as-submitted PIP and recirculate the ShorePac synthetic slurry and take the measurements and track them as required that afternoon.

5. On August 25, between 5:00 and 6:00 PM the casing broke between the 8th (top-most) and the 7th casing pieces. Emergency welding of plates to connect the two pieces commenced over night and continued on into the morning of Thursday, August 26.

MCM notified COSBPW that MCM would proceed "to fill the hole with drilling spoils" and extract casing to make needed permanent repairs to the oscillator casing. COSBPW ordered MCM to submit a written plan for this. SR spoke with MCM PM Dan Shaw between 10:00 and 11:00 AM, and MCM made assurances they would submit a plan. When asked why they wanted to backfill with spoils, Dan said MCM did not want to use 2sack cement slurry again because they think it was too strong and caused the binding up that occurred yesterday. However, by 10:30 AM MCM was already placing drilling spoils back in the hole without authorization. COSBPW responded notifying MCM that their unauthorized backfill would require further investigation and corrective work, possibly compaction grouting around the pile (given MCM's unauthorized work of pulling up the casing without a self-consolidating backfill material placed simultaneously disturbed the foundation material surrounding the pile, as there was no method of measuring consolidation or compaction of the drilling spoils backfill for a length of approximately 18 feet, and thus compromised the skin friction in that region (from approximately El. -94 to -76.))

6. A meeting was held on August 31, 2021 to discuss the pier #4 specific PIP submittal, attended by COSBP, CSEG, EMI, and MCM along with Randy Nottnagle a CIDH expert consultant for MCM. During this meeting the proposed work was discussed and EMI agreed that MCM could proceed with the work without interfering with any future corrective work that may be needed.

   When MCM recommenced the excavation operation again, on Wednesday, September 1, they were being assisted in the field by Mr. Nottnagle. This was specified in the new, revised, PIP, which was authorized between around 7:30 AM on the 1st. On August 31 Mr. Nottnagle directed the crew to install a steel brace frame "template" or "mattress" system to help stabilize the area under the crane and the oscillator. Leffer oscillator instructions specify the use of a steel mattress system if the soil cannot bear the weight of the oscillator.

   The Leffer manual also states that if pressures over 2175 psi are reached the "rapid oscillating motion is no longer permitted!" and that "When driving down the casings, do not exceed 200 bar – 2900 psi for oscillating. Otherwise it may become impossible to extract the casings after concreting." (LM) Mr. Nottnagle relayed that he would have used the steel mattress or "template" setup along with synthetic slurry at all three 120-inch diameter CIDH piers from the beginning given the sandy subsurface materials. After excavation with the hammer grab recommenced at pier #4 on the morning of September 1 the excavation was at tip by the end of shift. ShorePac was used with AccuViz "bombs" and the viscosities were within specification (approximately 33 seconds per quart).

   Mr. Nottnagle stated that going down slow and steady while drilling can help with advancing the casing down, "let the casing go down on its own weight, if it doesn't go down on its own, turn it more" & that synthetic slurry helps with pulling the sediment out of the hole and makes cleaning the hole easier too. (CEI)

7. Steel reinforcing was placed in the pier #4 excavation on September 2, with welding between the column and pile cages finishing on September 3. The concrete placement occurred on September 4 with a total of 437 cubic yards placed. The amount of concrete placed was equivalent to the theoretical amount with MCM plan to "over pour" the concrete by 2.5 feet indicating no soil anomalies adjacent that were filled by additional, unforeseen, concrete. The CIDH pile was later tested with GGL and CSL on September 9 by EarthSpectives; no anomalies were detected and the concrete pile was structurally accepted on September 15, 2021, with payment being made on the September 2021 pay estimate. The fact that pile concrete volume matched theoretical and there were no anomalies is further evidence that a DSC did not exist in the subsurface materials at pier #4.

8. COSBPW, through consultant contracts with CSEG/EMI, mobilized SoCalDrilling to the job site in November 2021 to perform exploratory borings around pier#4 to determine if there was any evidence of disturbance such that there was a loss of skin friction capacity due to the unauthorized spoil backfill on August 26 by MCM. SoCalDrilling utilized a mud-rotary drill rig and performed 4" borings, 5 total, between November 2 and November 6, 2021. The first and last both lost circulation in the boring and were abandoned between elevation -75 and 80. The other 3 borings made it to tip elevation. All 5 borings yielded subsurface material samples consistent with the LOTB and the MCM drilling. The material at -75 on the first boring was described as "Greenish/gray, very dense, moist, Sand with Gravel (SP.)" The material at the second boring was "Poorly Graded Sand with Silt (SP-SM); very dense; green/gray moist; mostly coarse to fine Sand; few non-plastic fines" at approximate elevation -100. The two borings that lost circulation were determined by COSBPW and its design team to be evidence of a discontinuity in the subsurface material that required corrective work.

   On January 12, 2022 COSBPW notified MCM of the need for corrective work to ensure the skin friction design capacity was provided at pier #4. Notification was not provided earlier due to internal deliberations between COSBPW and its design team, the winter holidays, and the winter work suspension in the Santa Ynez River jurisdictional area.

   On January 17, 2022, MCM submitted a response letter stating that the 2 of 5 borings in November that lost circulation were in fact evidence of the DSC and sought to account for end bearing and the additional actual surface friction area given the diameter of the oscillator casing was greater than the 10 feet specified and thus no corrective work was needed.

   COSBPW responded to this letter January 25, 2022 outlining the chronology of the work pointing to evidence that there was not a DSC given that MCM did not follow their authorized PIP during the initial excavation of pier #4 or the second attempt and the drilling spoils were in fact consistent with the LOTB. It was also noted that "significant uncertainty on the extent and stability of the "irregular soil conditions" still exists. Because of the uncertain stability, the capacity of the pile could be further reduced from the current estimates and therefore skin friction increases due to the thickness of the oscillator casing and additional capacity available from end bearing" were insufficient for pile acceptance at that time. Thus, corrective work was required.

   On February 23, 2022 MCM responded again claiming a DSC because the first two piers went without incident with the same crew and equipment and that if "the matter isn't resolved without further cost to the Contractor" a claim would be brought and perfected.

9. On March 1, 2022 COSBPW, CSEG, EMI and MCM met to discuss the issues at pier#4 and options going forward. At the conclusion of this meeting, MCM agreed to proceed to draft and submit a drilled pile alternative mitigation plan and EMI would review. Then on March 7, MCM indicated they were changing course and would pursue compaction grouting. MCM subsequently solicited bids for compaction grouting corrective work and received 2; from Keller and Advanced Geosolutions, Inc. MCM decided to proceed with Keller and COSBPW agreed with this course of action. A meeting to discuss corrective work plan contents and submittal thereof was conducted with COSBPW, CSEG, EMI, MCM, and Keller on April 5, 2022. The Keller work plan was authorized on April 13, 2022 and the crew mobilized to the site on April 25. Keller performed compaction grouting at the northeast quadrant of the pile and achieved high pressures and little grout take on multiple holes, such that EMI determined "the soil conditions are considered acceptable and consistent with the design."

In addition, the Keller work showed that "the collapse of the two geotechnical borings is expected to be the result of a limited zone of loose material with abundant gravel that caused the loss of drill fluid and hole collapse. Neither the concrete pour log nor the GGL inspection testing indicates the presence of large irregular conditions around the pile. "(AM)

Thus, the Keller corrective work is further evidence that there is not a DSC in the subsurface materials at pier #4.

10. On March 14, 2022, MCM submitted their initial notice of potential claim for the additional costs incurred at pier #4. The measured mile method was described as de facto proof of a DSC. This method of cost analysis when work is "impacted." The impacts could be suspension by the owner, stacking of trades, limited site access, or materially different conditions on the job site from what was described in the bid documents. This method does not apply because there was no impact or DSC. There was no outside change to the contract that would make this analysis applicable. MCM does have additional costs, but they are due to their means and methods.

-Conclusion-

The cost estimate for the affected work is approximately $640,000 based on a Force Account Analysis. No impact to the completion date for the contract occurred due to the impacted work (Final completion date on the 8/21/21 Data Date CPM was October 23, 2023; final completion date on the 9/21/21 Data Date CPM was October 6, 2023.)

It is our position that the background and evidence above demonstrate the following;

- 1 - MCM's bid submittal was certification that they had investigated the Contract, including the FR, and the job site.

-2 - Based on the FR, MCM had no reason to expect easy drilling or that water slurry could be used successfully on all three 120-inch CIDH piles.

-3- MCM indicated they knew water slurry would not work on all the 120-inch CIDH piles by including synthetic drilling slurry as a contingency in their original PIP.

-4- The duration of excavation from start to finish was decreased by over 100 percent at pier #4 from the successfully constructed CIDH piles at piers #2 and #3. This was not in the authorized PIP, was an unfortunate change to previous means and methods, and this accelerated driving of the casing caused it to bind up in the very dense fine sand. MCM's drilling spoils samples, material from near the tip of pier #4, is on hand here today for us to see and feel; it is consistent with the FR and with the subsequent borings. The material is not "differing" from what was presented to MCM at the time of NTB.

-5 - MCM pulled their casing up over the weekend, because it was stuck, destabilizing the plug at the tip, and thus causing the "unexpected" heaving of material; then MCM drilled past their casing on the 16th of August 2021. This was not in the PIP and the PIP section calling for switching to synthetic slurry was ignored, along with COSBPW staff bringing this up as an option on the 16th of August.

-6- MCM's re-start of excavation at pier #4 CIDH with synthetic slurry began before the new PIP was authorized and the PIP was not followed, with slurry viscosities not in tolerance and without recirculating the slurry as required.

-7- MCM broke the casing and subsequently placed unauthorized backfill material without waiting for COSBPW to respond to their "plan."

-8- Industry publications and the expert consultant MCM provided indicated that drilling too fast could lead to binding of the casing, that a steel frame should be installed, and that the synthetic slurry does in fact lubricate the casing. When the well-crafted and thought through MCM PIP was followed and contract specifications were achieved, MCM reached and maintained tip.

-9- Pier #4 CIDH was finished expeditiously, following the MCM PIP, with no anomalies (both piers #2 and #3 had anomalies) and a concrete volume that matched the theoretical amount, indicating there were no subsurface materials adjacent into which concrete unexpectedly traveled.

-10- COSBPW (SoCalDrilling) exploratory borings showed consistency with the FR, but 2 out of 5 holes were inconclusive due to loss of circulation and thus corrective work was ordered to ensure that the skin friction design capacity conditions exist adjacent to the pier #4 pile.

-11 – Keller's corrective work showed that the area of concern caused by the two (2) SoCalDrilling inconclusive borings done previously were rather insignificant and fully mitigated by the compaction grouting. If this work had produced different results, such as low compaction grout pressures, and high-volume grout takes, it could have furthered MCM's claim that the SoCalDrilling boring was "evidence of a DSC." Instead the opposite is the case: the Keller work showed that the SoCalDrilling borings that lost circulation were not significant indicators of large voids or other subsurface irregularities or "differences."

-12- The "measured mile" method of analysis is used to calculate the cost impact of a change or delay from the work as bid, but it is not standalone proof of a change or differing site condition without the existence of physical conditions or other supporting evidence. As noted throughout, the physical evidence for a DSC is lacking.

COSBPW would like to thank the DRB members for their commitment to help mitigate disputes on this project and for their time reading this position statement.

In conclusion, COSBPW believes the background and evidence presented demonstrates that MCM has no entitlement for additional costs at the pier #4 CIDH pile. COSBPW implores the DRB to consider the overwhelming evidence that the DSC claim is merit less and issue a finding of no entitlement for MCM in this matter.