

Department of Transportation and Public Works 111 NW 1st •Street Suite 1410 Miami, Florida 33128-1970 T 305-375-2930 F 305-375-2931 miamidade.gov

December 6, 2022

RESPONSE LETTER NO. 1 TO REQUEST FOR INFORMATION

Project Title: Car Cleaner Platform Replacement Project

Project No.: IRP234 / RPQ #412223 R1

E-mail from Mr. Joseph Papitto, Kiewit Infrastructure South Co; dated Thursday, November 10, 2022, 3:01 P.M. (attached)

- QUESTION: 1) Please confirm that both the Inspector General Audit Fee of 1/4% and the User Access Program Fee of 2% apply to this project
- RESPONSE: 1) Confirmed, both fees will apply.
- QUESTION: 2) The platform end stairways have different details on plan sheet A2.0 5 treads, versus plan sheet S-1.1 7 treads, which detail is correct?
- RESPONSE: 2) Use Drawing A2.0 as a basis for treads. Refer to the structural plan call out for shop drawings submittal for guardrails and stairs.
- QUESTION 3) Plan sheet A1.0 shows reusing the concrete slab at the south end of the new platform, plan sheet S-1.0, foundation plan, shows replacing the slab, which detail is correct?
- RESPONSE: 3) Mentioned slab is new. Existing slab at the south end is to be removed.
- QUESTION 4) The plans do not show any platform slab joint spacing, are contraction joints required, if so at what spacing?
- RESPONSE: 4) Control joints should be at every gridline, every 20 ft.
- QUESTION 5) Please confirm that column base anchor bolts are galvanized and not stainless steel.
- RESPONSE: 5) Anchor bolts are to be galvanized.
- QUESTION 6) Are there any as-built plans for the existing platform available?



- RESPONSE: 6) As built plans are not available.
- QUESTION 7) If no as-built plans are available, what size should we assume the buried concrete footings to be removed are for bidding purposes?
- RESPONSE: 7) Please assume 3 feet embedded in concrete.
- QUESTION 8) Spec section 01 50 00, 4.01: Project Sign, says the sign is to be provided by DTPW, spec section 01 58 13, Project Construction Signs, says the contractor is to provide 2 construction signs, which spec is correct?
- RESPONSE: 8) Two signs will be provided by DTPW. Both signs will be installed and maintained throughout the project by the contractor. This includes removing and reinstalling in the event of a hurricane warning is declared during the Hurricane Season.
- QUESTION 9) Is the contractor responsible for paying for a Project building permit, if so, what is the fee?
- RESPONSE: 9) Miscellaneous Construction Contracts (MCC) required the contractor to be responsible for permit fees. Permits are not reimbursable, please factor the cost into the bid price.

Please refer to MCC 7360, section: 2.19 PERMITS/INSPECTIONS, FEES and TAXES:

"CONTRACTORS shall obtain all permits, certificates, inspections and licenses, pay all charges, taxes, royalties and fees and give all notices necessary and incidental to the lawful performance of the Work. The County will not pay nor reimburse the CONTRACTOR for any permits, fees. Etc. or any penalties as a result of the CONTRACTOR'S failure to obtain all permits, inspections and approvals in a timely manner."

- QUESTION 10) Are special inspections to be paid for by the Contractor or by the County? Special Inspections Note 4 on plan sheet S-0.0, indicates the special inspector is hired by the County.
- RESPONSE: 10) The special inspector is the CE&I (Construction, Engineering, and Inspection staff) hired by DTPW.



E-mail from Mr. Luis Pasos, J.R.T. Construction, Co.; dated Thursday, November 10, 2022, 3:16 P.M. (attached)

- QUESTION: 1) Invitation to Bid document does provide your contact info to send RFI's and Bid questions but does not mention a deadline for submitting such questions. Please provide us with a final day for submitting Pre-Bid questions
- RESPONSE: 1) Deadline for questions is 72 hours before bid opening.
- QUESTION: 2) Special Provision to the Contract does mention in Article 20.0 the User Access Program. Please clarify and confirm if UAP 2% fees apply to this project.
- RESPONSE: 2) UAP fees applies to this project.
- QUESTION 3) Please clarify if Inspector General Audit Service Deduction of 0.25% apply to this project.
- RESPONSE: 3) Inspector General Audit Service applies to this project.
- QUESTION 4) The General Conditions of the Contract, Item 7-E-1 regarding Permit fees states that "For payment of Permits, see Special Provisions", but Special Provisions do not mention if Permit Fees will be reimbursed to the Contractor or not. Please clarify if ALL Permit Fees are to be included in the Base Bid or if they will be reimbursed by Owner to Contractor.
- RESPONSE: 4) Miscellaneous Construction Contracts (MCC) required the contractor to be responsible for permit fees. Permits are not reimbursable, please factor the cost into the bid price.

Please refer to MCC 7360, section: 2.19 PERMITS/INSPECTIONS, FEES and TAXES:

"CONTRACTORS shall obtain all permits, certificates, inspections and licenses, pay all charges, taxes, royalties and fees and give all notices necessary and incidental to the lawful performance of the Work. The County will not pay nor reimburse the CONTRACTOR for any permits, fees. Etc. or any penalties as a result of the CONTRACTOR'S failure to obtain all permits, inspections and approvals in a timely manner."

QUESTION 5) Specification section 011100 Summary of Work, Article 1.4-D calls for a Contractors Field Office trailer to hold meetings (conference table with 8 chairs) as required. Please confirm Field Office with meeting conference table



capabilities is a requirement. Please provide a Proposed Staging Location for the temporary field office trailer.

- RESPONSE: 5) Contractor staging area for office trailer/container is being coordinated with FPL to be outside of the Yard at the west easement. Contractor is responsible to fence and restore the area once turnover back to FPL.
- QUESTION 6) Specifications Section 014523 regarding Testing Laboratory Services, Article 1.01 states that "All Testing shall be made at the expense of the Contractor" so it is the responsibility of the Contractor to pay for MDC Independent Testing Laboratory Services. This Article conflicts with several Articles of the General Conditions of the Contract in which they call for the Owner to hire an Independent Testing Lab, especially Article 7-C-1 which states that testing "will be made at <u>the expense of the Owner</u> by the project testing laboratory". Please clarify if the Contractor is to include ALL testing, including Concrete Testing and Soil Testing (Proctors, densities, etc.) Services as part of the Base Bid.
- RESPONSE: 6) The County will pay for the first test. Any fail test will be the responsibility of the Contractor. See contract Language below:

"When Contractor informs Engineer that the Work is ready for inspection and testing, Engineer may request, from a County approved laboratory, the tests necessary to confirm that the required material, compaction, or work specifications are met. If the results of the tests reveal that the applicable specifications have not been met, Contractor, without additional compensation, must perform, to the satisfaction of Engineer, all work necessary to meet the applicable specifications and is responsible for the costs of all re-testing required by Engineer and the Contract Documents.

The Department will pay the laboratory for the first test (pass or fail); any retesting will be the responsibility of Contractor. The Department will only pay for re-testing when authorized, in writing, by Engineer.

Contractor must comply with the conditions of the agreement between Miami-Dade County and Laboratory."

- QUESTION 7) Specification Section 01500 regarding Project Sign, Article 4.01 states that the Project Sign is to be supplied by DTPW and installed by the Contractor, but conflicts with Specification Section 015813, Article 1.1, which states that the Project Signs will be provided by the Contractor. Please clarify which instruction prevails.
- RESPONSE: 7) Two (2) signs will be provided by DTPW and installed and maintained throughout the project by the contractor. This includes removing and reinstalling when required during the Hurricane Season.



- QUESTION 8) Construction Safety Manual includes the MDT Security Requirements and mentions that all Contractors and personnel working at the site must be in possession of a photo ID card issued by MDT. If payment for ID is required, please provide the cost for the background checks and badge for each employee and subcontractors.
- RESPONSE: 8) New badging process is being finalized and pending final approval. The cost is \$37.50 per person (subject to change).
- QUESTION 9) Plan and Documents do not provide the Proposed location (or locations) for the Staging area that will be required by the Contractor, where we can place trash dumpsters for debris removal, and temporary piles of removed/excavated materials for loading and hauling off-site, as this will greatly impact the Demolition operations required. Please provide a proposed location for a staging area(s) that would be acceptable for the continued operations of the Yard.
- RESPONSE: 9) Contractor will have its own staging area outside the yard. Contractor must remove all construction debris every day to allow for train movement every night. The yard is in operation 7 days a week, 24 hours a day. Please refer to site restrictions.
- QUESTION 10) Plan Sheet D1.0 includes General Removal Note #2 and calls for the demolition and removal of the existing steel columns and concrete footings of the wood platform, but documents contain no information on the quantity of columns, quantity, size, and depth of footings. Are there individual concrete pads for each column? Please provide As-Built Plans for the existing wood platform showing quantities, the size and depth of all concrete footings to be removed.
- RESPONSE: 10) As-Built plans are not available. All existing platform elements shall be removed.
- QUESTION: 11) Plan Sheet D1.0 includes pictures showing the existing steel columns are in close proximity to the existing rail wood sleepers to remain, and the existing concrete footings will be even closer and may extend partially under a portio.n of the existing wood sleepers. Has this possibility been explored at the time of design? Please provide results of any exploratory findings and existing dimensions regarding the locations of the existing footings to be removed and the proximity to the rail wood sleepers to remain.

RESPONSE: 11) Existing wood sleepers shall remain in place. Demolition means and methods from the Contractor shall preserve existing sleepers.



- QUESTION: 12) Demolition plan Sheet D1.0 does not mention any existing electrical, plumbing, water or sewer lines serving or crossing the existing wood platform area. Please confirm there are no existing electrical, plumbing, water, or sewer, that needs relocations, demolition, or removals. If there are, please provide As-Built plans of all utilities within the proposed demolition areas.
- RESPONSE: 12) As-Built plans are not available. Assume possibility of relocation of unforeseen MEP components.
- QUESTION: 13) Demolition plan Sheet D1.0 does show three existing drains/waste connections that are to remain under the platform but fails to show the underground pipes/lines routes serving such drains. Please provide As-Built plans of ALL existing utility lines crossing or serving the affected proposed Work Area.
- RESPONSE: 13) As-Built plans are not available. Assume possibility of relocation of unforeseen utilities.
- QUESTION: 14) Plan Sheet D1.0 includes pictures showing the existing wood platform to be made of Pressure Treated (PT) wood, which in some cases may have been treated with Arsenic or other hazardous materials and may require special handling and disposal procedures. Has the existing PT wood been tested for such materials? Please provide results of any testing on the PT wood to be removed.
- RESPONSE: 14) Demolition is part of means and methods from the Contractor, which shall consider handling and disposal of existing PT wood and shall be included in the submitted price.
- QUESTION 15) If no testing has been done on the PT wood, will the Owner be providing testing before the start of the Contract? And if it turns out that the wood does require special handling or abatement, will this be considered an "unforeseen condition" and be subject to a change order for the added removal expenses? Please clarify how do you want us to proceed and define what should be included in the Base Bid.
- RESPONSE: 15) Demolition is part of means and methods from the Contractor shall consider handling and disposal of existing PT wood. DTPW will not perform any testing, price for abatement and disposal shall be included in the proposal.



- QUESTION 16) Plan Sheet C2.0 includes section A/C2.0 and shows a 6" deep composite concrete slab for the new proposed platform, but Structural plan S-1.1 in sections A/S-1.0 and in Detail #1 calls for the proposed composite slab to be a 4" slab. Please clarify if Structural Plans instructions prevails.
- RESPONSE: 16) Please follow structural plans.
- QUESTION 17) Plan Sheet C-2.0 includes section A/C2.0 and shows the platform slab with a continuous steel angle running from column to column to support the slab, but Structural Plan S-1.1 calls for using a HSS 6"x6" steel tube to support the slab. Please clarify if Structural Plans instructions prevails.
- RESPONSE: 17) Please follow structural plans.
- QUESTION 18) Plan Sheet C2.0 includes Architectural Note C regarding the Metal Roofing, and it proposes to use a 22 ga metal roofing by American Buildings with a NOA #17-0501.05. Unfortunately, the referenced NOA has expired, and one of our roofing subs mentioned the manufacturer seems to NOT be working in extending this NOA for the 22 ga. structural roofing panels. Please provide Alternate manufacturer and Model for the required structural metal roofing panels, with a current NOA.
- RESPONSE: 18) Contractor to provide an equivalent alternate product for review and approval with a current NOA.
- QUESTION 19) Plan Sheet C3.0 General Note #4 calls for the Contractor to obtain all permits "and pay all fees connected to his work". Please clarify if Owner will reimburse the Contractor for all Permit Fees, or if all fees should be included in the Base Bid.
- RESPONSE: 19) Per mentioned note #4, Contractor shall pay all fees connected to the work.
- QUESTION 20) Plan Sheet A1.0 and A2.0 include notes calling for "all steel surfaces to be painted", but Plan S-0.0 Structural Steel note #3 calls for all structural steel exposed to weather "Shall be Hot Dipped Galvanized". Having Hot Dipped Galvanized steel members being attached using field welding will destroy the galvanized protection around the welded areas and will require extensive galvanized paint touch-ups, field applied. Please clarify which instruction is to prevail and indicate final finish on all exposed structural steel members.
- RESPONSE: 20) All field welds shall follow AWS specifications, including Hot Dipped Galvanized members. All steel members shall be painted using products described as per note D, sheet A2.0.



- QUESTION 21) Plan Sheet S-0.0 includes Concrete Note #6 and calls for the Owner to contract an Independent Testing Lab to perform all required concrete testing. Please confirm Owner will provide all concrete testing services, as mentioned in the General Conditions of the Contract, under Article 7-C-1.
- RESPONSE: 21) See response to question 6 above .
- QUESTION 22) Plan Sheet S-0.0 includes Foundation Note #7, and Earthwork Note #7 and #8, all calling for a Geotechnical Engineer to verify the Soil Conditions before installing any rebars or pouring any concrete, and to inspect the Soil Compaction during the earthwork. Please clarify if Owner will provide and pay for the services of the Geotechnical Engineer for all observations and Soil Certifications required.
- RESPONSE: 22) CE&I will inspect the area prior pouring the concrete, contractor must submit the copies of the certified testing reports.
- QUESTION: 23) Please confirm if Owner will also provide and pay for all Soil Testing for the earthwork, such as required Proctors, Densities, soil classifications, etc.
- RESPONSE: 23) Please, refer to Response 6.
- QUESTION: 24) Plan Sheet S-1.1 showing the Typical Foundation Plan for each proposed spread footing to be an 8' wide by 8' long pad and section A/S-1.0 above, shows the depth of excavation required to be 4'-6" deep from the existing grade. The Specific Purpose Survey by J. Bonfill & Associates provided shows the distance between the existing rails to remain, to be 10.1' wide to what seems to be the steel tracks, and not considering that the wood sleepers encroach into the 10.1' distance from both sides. The footing design shown in plans will require an excavation to within inches (or extending under the rails due to angle of repose of the fill/soil material) from the existing steel tracks and to be 4'-6" deep and it may leave a portion the existing wood sleepers resting on air, above the excavation.

We are concerned that the proposed 8' wide excavation width is intruding into the zone of influence of the load carried by the wood sleepers and that because the existing soil strata is made of fill (not rock) it may also cause cave-in of the existing fill layer under the wood sleepers to remain. Please advise if footing design can be revised to a lesser width and less depth or advise on how to re-design the proposed footings to prevent the excavations from encroaching into the existing wood sleepers' areas.



RESPONSE: 24) An alternate footing design can be proposed by the contractor which limits the width but will require a greater depth considering the various load factors on the structure. Contractor assumes all responsibilities and costs associated with the alternate footing design, subject to approval by DFTPW.

The design loads are included in this RFI as requested. ` Attachment C and reactions

Please note that the adjacent tracks must be back in service at the end of each day to allow train movement. No exceptions to this requirement, tracks will be reenergized.

E-mail from Mr. Joseph Papitto, Kiewit Infrastructure South Co; dated Monday, November 14, 2022, 2:54 P.M. (attached)

- QUESTION: 1) Plan sheet S-1.0 shows 34 platform gridlines, the civil and architectural plans show 32 gridlines, please clarify.
- RESPONSE: 1) There are 32 gridlines which define the limits of the platform. Please refer to the Civil/Architectural for the correct layout and spacing of the gridlines. The plan views on Sheet S-1.0 should show gridlines 30, 31, and 32 to the right of the break lines.
- QUESTION: 2) Will the Contractor be provided a staging area within the Lehman Yard or at a site nearby?
- RESPONSE: 2) Contractor will have its own staging area outside the yard. Contractor must remove all construction debris every day to allow for train movement every night. The yard is in operation 7 days a week, 24 hours a day. Please refer to site restrictions.
- QUESTION 3) Please identify what the actual damages may be and the maximum cost per day of such damages referenced in Section 8 detailed below?

RPQ No.: 412223-R1 Solicitation Documents (Page 209 of 516) – Section 8. Contract Time – F Liquidated Damages and Liquidated Indirect Costs 4) In the event the Contractor fails to perform any other covenant or condition (other than time-related) of this Contract relating to the Work, the Contractor shall become liable to the Owner for any actual damages which the Owner may sustain as a result of such failure on the part of the Contractor. The Owner reserves the right to retain these amounts from monies due the Contractor.

RESPONSE: 3) Liquidated damages apply to contractor's failure to complete the project by the contractual due date. Liquidated damages are \$1,950.93/day. Actual



damages are not time related, and we will not know the nature of the damages until such event happens.

- QUESTION 4) If someone is unable to make it to scheduled site visit, can they make arrangements to visit the site at a later date?
- RESPONSE: 4) Site visit is mandatory and a one-time event. No additional site visits will be allowed. Refer to Addendum No. 1

E-mail from Ms. Chantel Mirecki, Kiewit Infrastructure South Co; dated Tuesday, November 22, 2022, 1:54 P.M. (attached)

- QUESTION 1) Electrical Legend on Sheet E1.0 details NEMA 3R Junction Box (6"x6"x4) where Typical Electrical Detail D on Sheet E2.0 details (8"x8"x6") please clarify.
- RESPONSE: 1) All identified NEMA 3R Junction Box (6"x6"x4), should be sized to 8"x8"x6", per the typical Electrical Detail D on Sheet E2.0.

E-mail from Mr. David Moran, Epic Consultants; dated Wednesday, November 23, 2022, 3:21 P.M. (attached)

- QUESTION 1) Please specify the construction working hours. It was stated during the prebid meeting that construction working hours would be from 8:00 AM to 4:00 PM. Please confirm.
- RESPONSE: 1) Contractor needs to provide a schedule with the proposed work hours. The facility is open 7 days a week/24 hours a day. Work hours could be shifts of: 8 hours, 10 hours, 12 hours or 20 hours.
- QUESTION 2) Please confirm if the quality control manager can be the safety manager.
- RESPONSE: 2) Quality Control Manager may have a dual role if he/she doesn't report to the superintendent or Project manager. As mentioned at the Prebid meeting, the proposed person must be experienced in both fields and will be interviewed before approval for the dual role as Quality Control/Safety manager.
- QUESTION 3) During excavation, dirt will be placed on the outside but next to the tracks. What distance should be keep from the tracks?



- RESPONSE: 3) The excavated material may be stored on the proposed stage area at the south end of the road. Contractor must review if the material will be reused as backfill, if not, please remove from the site as it is excavated.
- QUESTION 4) During the execution of new work, are we going to be permitted to leave material next the track if so what distance should we keep from the track or do we have to take all material on a daily basis back to the lay down area.
- RESPONSE: 4) The area must be clear from the tracks to allow for train and site operation movement. Please refer to the site restrictions.

E-mail from Mr. Luis Pasos, J.R.T. Construction, Co.; dated Tuesday, November 29, 2022, 4:55 P.M. (attached)

- QUESTION: 1) Plan Sheet C1.0 and plan Sheet A1.0 (including the proposed Site Plan) both show the proposed new car cleaner platform to be built between Gridlines #1 thru #32, with a distance of 20' for each bay, but Structural plan S-1.0 shows the gridlines extending further to Gridline #34. Also, plan Sheet D1.0 has a note calling for phasing the project and mentions Phase 2 extending thru Gridline #38. Please clarify and confirm the gridline number that should be the end of the proposed scope of work for this project including the new car cleaner platform.
- RESPONSE: 1) There are 32 gridlines which define the limits of the platform. Please refer to the Civil/Architectural for the correct layout and spacing of the gridlines. The plan views on Sheet S-1.0 should show gridlines 30, 31, and 32 to the right of the break lines.
- QUESTION: 2) Plan Sheet A2.0 contains Section A/A2.0 and shows a distance of 11'-0" between the existing steel rails (adjacent to the platform on both sides), but such dimension is in conflict with Specific Purpose Survey prepared by J. Bonfill & Associates that shows the same dimension as 10.1'; almost an entire foot less. Please clarify which dimension is correct.
- RESPONSE: 2) The survey plans govern the dimension in question.
- QUESTION 3) We would like the record to reflect that during the Site Visit after the Pre-Bid Meeting held on 10/17/2022, Contractors were not allowed to be within close proximity to the existing racks/rails for safety reasons. Therefore, Contractors were not able to take their own field measurements and perform their own field verifications. Consequently, Contractors will be required to rely on the dimensions and measurements provided to us in the Bid Documents and one



the written responses to any Pre-bid Questions or RFI's that will be issued via Addendum.

- RESPONSE: 3) Contactors are responsible to field verify all dimensions before proceeding with any work and notify the Owner immediately of any discrepancies.
- QUESTION 4) Please provide distance the sleepers (or ties) extend from the steel track to the end of the ties. This dimension is not found on the plans.
- RESPONSE: 4) The existing distances that the sleepers (ties) extend beyond the track (rail) vary based on the type of sleeper (ties). Per the field visit held after the Pre-Bid meeting on November 17, the composite ties extended approximately 18" beyond the rail.
- QUESTION 5) Please provide the clear distance between the ends of ties on both sides of the platform. This dimension is not found on the plans.
- RESPONSE: 5) Since the tie lengths vary, per question 4 above, the clear distances vary from the end of the tie to the platform.
- QUESTION 6) The proposed civil plans seem to identify a proposed new drain sewer line. However, plan Sheet D1.0 (including the existing Site Plan) includes a note that states "waste connectors under platform are to remain. Protect during removal". Please clarify if the intent is to protect an existing drain line? If so, please note that any waste connector drain lines running underground below the proposed new car platform will be interrupted and cut at the location of each new footing being excavated and built. Please clarify the intent of this note and what needs protection.
- RESPONSE: 6) The intent of the note on Sheet D1.0 is to protect the existing drain line until the proposed drain and associated piping is installed. Please follow the civil plan details for the proposed piping that in portions of the platform is being suspended below the platform. The portion of the proposed piping that runs underground shall be integrated into the proposed foundations.
- QUESTION 7) Plan Sheet S-1.1, Detail A/S1.0, shows an excavation depth for the proposed new footings of 4.5' deep. As a result of this and due to the narrow work area and extreme proximity to the existing railway ties and tracks to remain, we are considering using sheet piling to maintain the existing soil under the existing tracks from caving in at the new footing locations. The Geotechnical Report included in the Bid Documents does NOT contain a Sheet Pile recommendation for the type and depth of Sheet Pile required to retain the existing soil under the existing tracks. Given the existing soil conditions identified in the Geotechnical Report, please have a Geotechnical Engineer



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provide recommendations for the Sheet pile type and depth required to retain the existing soil under the tracks (at the footing locations) as an Addendum to the existing Geotechnical Report.

- RESPONSE: 7) The Contractor has the ability to develop an alternate design or approach for construction of the current platform footing design, which shall be required to be submitted to DTPW for review/approval prior to construction. The alternate design or approach for construction shall follow the required maintenance of train operations and phasing of the work.
- QUESTION 8) As a follow up to the previous question, please advise if the Owner will approve and allow leaving any installed Sheet Pile (used to retain the existing earth under the existing tracks) in situ (or in place) after construction of the new footings for the new car cleaner platform is complete.
- RESPONSE: 8) See response to previous question.
- QUESTION 9) Please confirm the Contractor has wide discretion to use any means and methods the Contractor deems necessary for design and construction of the car platform footings in order to ensure the existing soil under the existing tracks does not cave in.
- RESPONSE: 9) The Contractor has the ability to develop an alternate design for the platform footings, which shall be required to be submitted to DTPW for review/approval prior to construction. The alternate design shall follow the required maintenance of train operations and phasing of the work. Contractor assumes all responsibilities to coordinate the design.



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END OF REQUEST FOR INFORMATION No. 1

Sincerely,

Alfredo E. Muñoz, P.E. Chief, Capital Improvements Division Department of Transportation and Public Works (DTPW)

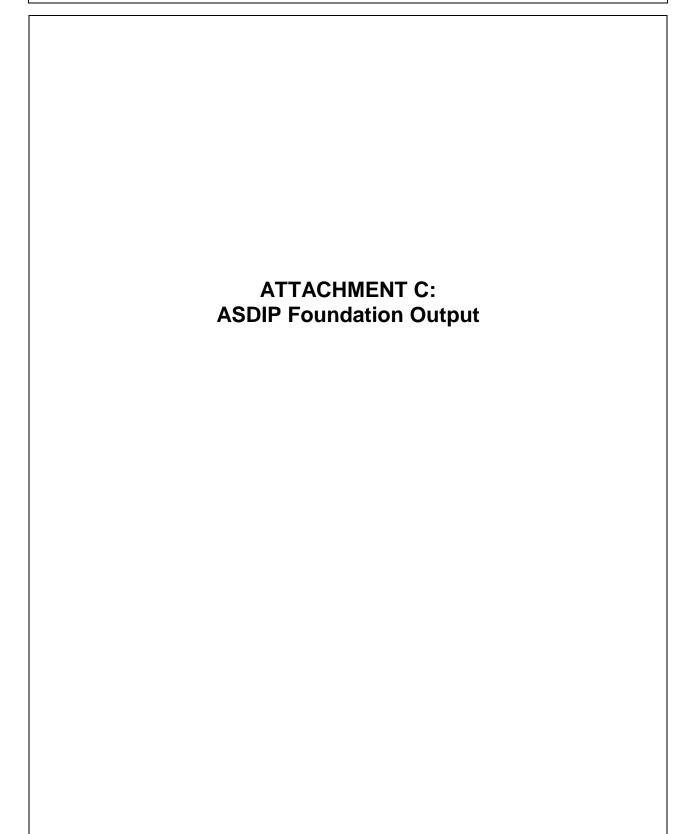
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Elva Reyes, DTPW Malka Rodriguez, DTPW Project File Marcia Martin, ISD Clerk of the Board



PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C1 OF C11





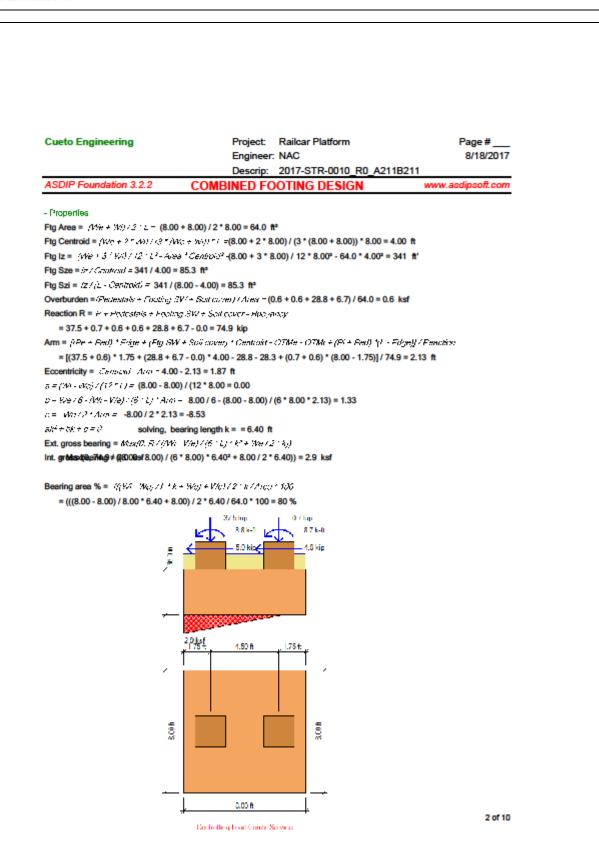
PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C2 OF C11

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PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C3 OF C11





PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C4 OF C11

Cueto Engineering	Engineer		Page # 8/18/2017
ASDIP Foundation 3.2.2 CO		2017-STR-0010_R0_A211 OTING DESIGN	B211 www.asdipsoft.com
C.		JOHNO DESIGN	
	FURNING CALCU	LATIONS (Comb. Service)	
- Overturning about Z-Z			
Ext Moment Mz = 8.8 k-ft			
Ext Shear Vx = 5.0 kip Arm = 1.00 + 36.0 / 12 = 4.00 ft		Moment = 5.0 * 4.00 = 20.0 k-ft	
Ext Overturning moment = 8.8 + 20.0 = 28.	8 6.0	Mollient - 0.0 4.00 - 20.0 Kit	
int Moment Mz = 8.7 k-ft			
Int Shear Vx = 4.9 kip			
Arm = 1.00 + 36.0 / 12 = 4.00 ft		Moment = 4.9 * 4.00 = 19.6 k-ft	
Int Overturning moment = 8.7 + 19.6 = 28.3	k-ft		
- Passive Force = 0.0 kip	Arm = 1.20 ft	Moment = 0.0 * 1	1.20 = 0.0 k-ft
Overturning moment Z-Z= 28.8 + 28.3 - Mi - Resisting about 7-7	n (0, 37.5) * 1.8 - M	in (0, 0.7) * (8.0 - 1.8) = 57.1 k-ft	
Ext Vertical P = 37.5 kip			
Arm = .Frig:: = 1.75 ft		Moment = 37.5 * 1.75 = 65.6 k-ft	
Ext Pedestal = 3/ *2 *A Density =24.07	12 * 24.0 / 12 * 1.0	0.15 = 0.6 kip	
Arm = = 1.75 ft		Moment = 0.6 * 1.75 = 1.1 k-ft	
Int Vertical P = 0.7 kip			
Arm = 2 - Edge - 8.00 - 1.75 = 6.25 ft		Moment = 0.7 * 6.25 = 4.4 k-ft	
Int Pedestal = 3/1/1/ (Acrosby = 24.07	12 * 24.0 / 12 * 1.0		
Arm = 2 - Edge = 8.00 - 1.75 = 6.25 ft	(8.00 + 8.0)	Moment = 0.6 * 6.25 = 3.8 k-ft	0 10
Footing SW = (V/e + A%) / 2 1 L 1 Trick 1 De Arm = (Convert) = 4.00 ft	161/ - (6.00 + 6.00	Moment = 28.8 * 4.00 = 115.2 k-f	
Soil cover = {(Ae + VA)/2*1 - Ae - Ai) · S	C ≦ Denatv –		
= ((8.00 + 8.00) / 2 * 8.00 - 24.0 / 12	No. Contractor and a second second	12 * 24.0 / 12) * 1.00 * 120 = 6.7	kip
Arm = Centrold =4.00 ft		Moment = 6.7 * 4.00 = 26.9 k-ft	N58
- Resisting moment Z-Z = 65.6 + 1.1 + 4.4 +	3.8 + 115.2 + 26.9	= 216.9 k-ft	
Ourstanding contexts factor 7.7 -	g normant21	6.9 - 2 90 - 15 OF	
- Overturning safety factor Z-Z = <u> Overturning</u>	ig noment 5	= 3.80 > 1.5 OK	
51	DING CALCULAT	IONS (Comb. Service)	
private friction angle = 28 deg (assumed)	Act	ive coefficient ka = 0.36	
Passive coefficient Sp = 7/Sy = 1/0.36 =			
Pressure at mid-depth = xp *//consity * (Con	or + 1 Mok 7.2) = 2	.77 * 120 / 1000 * (1.00 + 36.0 / 12	/ 2) = 0.83 ksf
Passive force = Thessure 1 Thick * Walth	- 0.83 * 36.0 / 12 *	8.00 = 19.9 kip	
Friction force = Resisting force * Friction of	n::# = Max (0, 74.)	9 * 0.45) = 33.7 kip	
Use 100% of Pessive + 100% of Fridilay for	siloling resistance		
Silding safety factor = //orizontal.ka		00*19.9+1.00*33.7 5.0+4.9 = 5.42	> 1.50 OK
		ONS (Comb. Service)	



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		D #
Cueto Engineering	Project: Railcar Platform Engineer: NAC	Page # 8/18/2017
	Descrip: 2017-STR-0010_R0_A21	
ASDIP Foundation 3.2.2	COMBINED FOOTING DESIGN	www.asdipsoft.com
	INE-WAY SHEAR CALCULATIONS (Comb. Factored)	
Concrete fc = 5.0 ksi	Steel fy = 60.0 ksi Soil density = 1	120 pcf
d Top X-dir = Theory Constant A-dear	crov/ 2 = 36.0 - 3.0 - 0.8 / 2 = 32.6 in	
d Bot X-dir = Thick - Cover - X-diam	eie: 2 - 36.0 - 3.0 - 0.8 / 2 = 32.6 in	
d Top Z-dir = Thick Cown X diam	ctor Z disanctor / 2 = 36.0 - 3.0 - 0.8 - 0.8 / 2 = 31.9 in	
	nster - 2-diameter / 2 = 36.0 - 3.0 - 0.8 - 0.8 / 2 = 31.9 in	
- At exterior colorin		
	(x) = 2 * 0.75 * √(5000) * 8.00 * 12 * 32.3 / 1000 = 328.4 kip	
	30 - 2 * 0.75 * √(5000) * 8.00 * 12 * 32.3 / 1000 = 328.4 kip	
· · ·	v critecularent = 0.0 kip < 328.4 kip OK v critecularen = 35.3 kip < 328.4 kip OK	
- At interior culumi	striktwarba - auto kip - szata kip OK	
	x = 2 * 0.75 * √(5000) * 8.00 * 12 * 32.3 / 1000 = 328.4 kip	ACI Eq. (11-3)
-	00 - 2 * 0.75 * √(5000) * 8.00 * 12 * 32.3 / 1000 = 328.4 kip	
Vux (- Side) = Boaring volume and	s cuitaculance = 7.3 kip < 328.4 kip OK	
Vux (+ Side) = Besning volume unde	rentice/area = 15.1 kip < 328.4 kip OK	
	S/K	
	4.8% 5.0 kbp	
	Vician 19 kiu	
	13 kp	
	likys	
	6 kip	
	19 kiu	
	36 klp	
	SHEAR DIAGRAM (Comb. Factored)	
	59 k-/u	
	28 k m	
	20 841	
	104-0	
	10 641	
	201-0	
	28 k ft	
	OSKM MOMENT DIAGRAM (Comb. Lactored)	
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PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C6 OF C11

CALCULATION SHEET

Cueto Engineering	Project: Railcar Platform	Page #
	Engineer: NAC	8/18/2017
	Descrip: 2017-STR-0010_R0_A21	1B211
ASDIP Foundation 3.2.2	COMBINED FOOTING DESIGN	www.asdipsoft.com
	FLEXUHE CALCULATIONS (Comb. Factored)	
- At exerior colorin	ter ny anatarahan katalogo metawan karekata a tekano asalah sa	
Eff. Length 1 a = 1 col + a + 1 dia (a	. +α(30) -24.0 + 31.9 + Min (31.9, 1.75 * 12) = 76.9 in	
Footing width =(A% - Wel/L*Edy	e / Ae - (8.00 - 8.00) / 8.00 * 1.75 + 8.00 = 8.00 ft	
Eff. width Wz = 9/72 9/4m/72 =	Max (0, 8.00 / 2 - 24.0 / 12 / 2) = 3.00 ft	
Plain \$Mnx =5 1\$ 7 ///c) - Le 11-/ (6 = 5 * 0.55 * √(5000) * 78.9 / 12 * 36.0° / 6 / 1000 = 269.1 k-	ACI Eq. (22-2)
Use 12 #8 Z Bars (T) =	/w/lesi=5.3/(76.9 * 31.9) = 0.0022	q = 0.0022 * 60 / 5.0 = 0.028
Bending strength with = & * (c * d	iftetatil-0x0tax	ACI 10.2.7
\$Mnx top = 0.90 * 76.9 * 31.9* * 5.0	0 * 0.026 * (1 - 0.59 * 0.026) = 745.8 k-ft	
Mux top = (08 - Reg) * %%*/ 2*/ c	= Max (0, 0.7 - 1.1) * 3.00° / 2 * 76.9 / 12 = 0.0 k-ft < 745	8 k-R OK
Z-As min = 01012 'Le* I Nov =	0.0018 * 76.88 * 36.0 = 5.0 in* < 5.3 in* OK	
Z-Cover factor = 1.5% (2.5. Alazze) +	ally 12 Species (12, 7 ally) = Min (2.5, (3.0 + 0.75 / 2, 7.0 / 2) / 0).75) = 2.5
Straight 7-1 d top = Max (1216, 37-	49 ° () / (fc) G * Size * Location / Cover * db * rakey	ACI Eq. (12-1)
Z-Ld top = Max (12.0, 3 / 40 * 60.0	* 1000 / (5000)% * 0.8 * 1,3 / 2.5 * 0.75 * 0.00) = 12.0 in	
$ZI $ the top = $0.02^{+6} \phi/(t_{\odot}) \sim 1 db \sim 100^{-6}$	й.7 Мах (6, 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.7 * 0.00) ·	= 6.0 in ACI 12.5
+Z Ld provided = (Width - Col) / 2 -	Cover = 8.00 * 12 / 2 - 24.0 / 2 - 3.0 = 33.0 in > 12.0 in (OK
Use 12 48 Z Bars (C) =	/is//Lev/=5.3/(76.9 * 31.9) = 0.0022	q = 0.0022 * 60 / 5.0 = 0.028
Bending strength etter = e*ic*c	"fotat(l-0:0ta)	ACI 10.2.7
\$Mnx bot = 0.90 * 76.9 * 31.9* * 5.0	0 * 0.026 * (1 - 0.59 * 0.026) = 745.8 k-ft	
Mux bot = (08 - Reg) * %%*/2*/ c	:= Max (0, 0.7 - 1.1) * 3.00° / 2 * 76.9 / 12 = 12.9 k-ft < 745	8 k-ft OK
Z-As min = 01018 'Le* I Alex =	0.0018 * 76.88 * 36.0 = 5.0 in ^a < 5.3 in ^a OK	
Z-Cover factor = 1.5% (2.5. Alazze) +	ally 12 Species (12, 7 ally) = Min (2.5, (3.0 + 0.75 / 2, 7.0 / 2) / 0).75) = 2.5
Straight 7-1 d cor = Nov (12.6, 37-	49 ° (77 (fc) 51 * Size * Location 7 Cover * db * ratio)	ACI Eq. (12-1)
Z-Ld bot = Max (12.0, 3 / 40 * 60.0	* 1000 / (5000)% * 0.8 * 0.0 / 2.5 * 0.75 * 0.02) = 12.0 in	
714h bat = 0.02 *6/ (fs)/+1db *	й.7 Мах (6, 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.7 * 0.02) -	= 6.0 in ACI 12.5
+Z Ld provided = (Weigh - Col)/2 -	Cover = 8.00 * 12 / 2 - 24.0 / 2 - 3.0 = 33.0 in > 12.0 in (DK
- At interior calarm		
Eff. Length $1 a = 1 \cos(t - a + 1) da (a$. +α(χς) -24.0 + 31.9 + Min (31.9, 1.75 * 12) = 76.9 in	
Footing width =(Ale - VAL/L*Edge	e / W - (8.00 - 8.00) / 8.00 * 1.75 + 8.00 = 8.00 ft	
Eff. width Wz = 3/72 - 3/4x/72 =	Max (0, 8.00 / 2 - 24.0 / 12 / 2) = 3.00 ft	
Plain \$Mnx =5 1\$ 7 ///0) 169 1970	6 = 5 * 0.55 * √(5000) * 76.9 / 12 * 36.0° / 6 / 1000 = 269.1 k-	ACI Eq. (22-2)
Use 12 #8 Z Ears (T) =	/w/Let / =5.3 / (76.9 * 31.9) = 0.0022	q = 0.0022 * 60 / 5.0 = 0.026
Bending strength when = & * (c * d	l'fotaril-0x0tar	ACI 10.2.7
Mnx top = 0.90 * 76.9 * 31.9* * 5.0	0 * 0.026 * (1 - 0.59 * 0.026) = 745.8 k-ft	
Mux top = (OS_Brg) 1984/24/c	= Max (0, 0.7 - 1.1) * 3.00 ² / 2 * 76.9 / 12 = 0.0 k-ft < 745	8 k-R OK
Z-As min = 01018 'Le*1/Nov =	0.0018 * 76.88 * 36.0 = 5.0 in* < 5.3 in* OK	
Z-Cover factor = 1.8% (2.5. Alazze) +	- att /2: Specieg / 2, / att.) = Min (2.5, (3.0 + 0.75 / 2, 7.0 / 2) / 0).75) = 2.5
Straight 7-1 d top = Max / 12 0, 37-	49 ° (77 (fs)17 ° Sizo ° Location 7 Coxes * do * rahor	ACI Eq. (12-1)
Z-Ld top = Max (12.0, 3 / 40 * 60.0	* 1000 / (5000)½ * 0.8 * 1.3 / 2.5 * 0.75 * 0.00) = 12.0 in	
$71 \sin i c \rho = 0.02 \cos (f c)/s^{-1} db \sin (f c)$	й 7 Мах (6, 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.7 * 0.00) -	= 6.0 in ACI 12.5



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Cueto Engineering	Project: Railcar Platform Engineer: NAC	Page # 8/18/2	
	Descrip: 2017-STR-0010 F	25 STR. 17 St. 1	1017
ASDIP Foundation 3.2.2	COMBINED FOOTING DESIGN		com
1644 16 28 7 Park (P.	August 1 - 5 3 ((78 0 * 31 0) = 0.0022	a = 0.0022 * 60 / 5.0 =	0.000
Use 12 #8 Z Cars (C) μ Bending strength ∞Mπ = &*(c *c	- /w / Le :/ -5.3 / (76.9 * 31.9) = 0.0022. // fectors/1. / 2005ov	q = 0.0022 * 60 / 5.0 =	10.2.7
	0 * 0.026 * (1 - 0.59 * 0.026) = 745.8 k-ft	- Nor 1	1000 C
	:= Max (0, 0.7 - 1.1) * 3.00° / 2 * 76.9 / 12 = 21.5 k-f	< 745.8 k-ft OK	
수영한 바라는 가슴이는 것같은 그 것입니다. 것	0.0018* 76.88* 36.0 = 5.0 in* < 5.3 in* O		
Z-Cover factor = 1.8% (2.5. //Circler -	+ al. /2. Species / 2, / al.) = Min (2.5, (3.0 + 0.75 / 2, 7	1.0/2)/0.75) = 2.5	
Straight 7-1 d cov = Max / 12 6, 37	40 f (77 (fc) G * Size f Location / Cover †db *raher	ACI Eq. ((12-1)
Z-Ld bot = Max (12.0, 3 / 40 * 60.0	* 1000 / (5000)% * 0.8 * 0.0 / 2.5 * 0.75 * 0.03) = 12	2.0 in	
714h bot = 9.02 ° 6y / (frij) = 1db r	6.7 Max (6, 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.1	7 * 0.03) = 6.0 in AC	1 12.5
+Z Ld provided = (16/as) - Cal) / 2 - X-reinf	- Cover = 8.00 * 12 / 2 - 24.0 / 2 - 3.0 = 33.0 in > 1	2.0 in OK	
uao 12 40 Loo Hars 👘 🔗 🖉	= As / b d = 5.3 / (8.00 * 12 * 32.6) = 0.0017	q = 0.0017 * 60 / 5.0 =	0.020
Use lấ xố Bol Berz 🧼 p -	- As / D d - 5.3 / (8.00 * 12 * 32.6) = 0.0017	q = 0.0017 * 60 / 5.0 =	0.020
Bending strength & Mr = & * h * d	*N: 19 *(* 0.55 *9)	ACI	10.2.7
\$Mn Top = 0.90 * 8.00 * 12 * 32.6	** 5.0 * 0.020 * (1 - 0.59 * 0.020) = -765.9 k-#		
Mn Bot = 0.90 * 8.00 * 12 * 32.6 ³ From the moment diagram,	* 5.0 * 0.020 * (1 - 0.59 * 0.020) = 765.9 k-ft		
Max. Negative Mu = -24.1 k-ft	< -765.9 k-tt OK		
Max. Positive Mu = 39.3 k-ft	< 765.9 k-ft OK		
As min =Milt (4/5 * As (90, M3X)			1 10.3
	0.2, 0.003 * √5000) / 60 * 8.00 * 12 * 32.6) = 0.2 in ³		
As min Bot = Min (4/3 * 0.3, Max (0.2, 0.003 * √5000) / 60 * 8.00 * 12 * 32.6) = 0.4 in ^a	< 5.3 sr OK	
	PUNCHING SHEAR CALCULATIONS (Comb. Fa	ctorod)	
- At exterior column			
X-Edge = <i>Exiye / 2 Oilset Col / 3</i> Z-Edge = <i>d-2</i> = 32.3 / 2 = 16.1 in		asx = 10	
as = csx / asr - 10 + 20 = 30	Col type = Edge β = 1/1/ - 24.0/24	.0 = 1.00 ACI 11.1	121
장애 이 이 것 같은 것 같은 것 같은 것 같은 것 같이 있다.	$P + X Frigg) + case i 10^{-i}W + it / 2 + 7 Frigg)$	ACI 11.1	
	9.0) + 20 / 10 * (24.0 + 32.3 / 2 + 16.1) = 154.5 in		A CONTRACTOR
	W/+ d/2+Z Edget) +24.0 + 32.3/2+9.0) * (24.0 +	32.3/2 + 16.1) = 2763.3 in ^a	
♦Vc = ¢ *//// (2 + 47β. as * 67b		ACI 11.1	11.2.1
¢Vc = 0.75 * Min (2 + 4 / 1.00, 3	0 * 32.3 / 154.5 + 2, 4) * √(5000) = 212.1 psi		
Punching force F = P + Poctastal	+ Abo * Thick * Describy - Repring		
	36.0 / 12 * 0.15 - 18.9 = -5.0 kip		
b1 = 1 + d / 2 + X Suy# -24.0 + 32	$3/2 + 9.0 = 49.1$ in $b^2 = W + d/2 + Z Cayer - 2$	4.0 + 32.3 / 2 + 16.1 = 56.3 in	
yvx factor = /-	$\frac{1}{1+(2/3)\sqrt{(56.3/49.1)}}=0.42$	for the second	1007000
2011년 2011년 <u>-</u> 1997년 -	944 ULT 1922/2020 COLONN COLONN CONTRACTO	ACI Eq. (1	1.
	1	ACI Eq. (13-1)
vz factor = 1 - 1 /+/2/3/1/67/2	= 1 - = 0.38		



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CALCULATION SHEET

Cueto Engineering Project: Railcar Platform Page # Engineer: NAC 8/18/2017 Descrip: 2017-STR-0010_R0_A211B211 www.asdipsoft.com ASDIP Foundation 3.2.2 COMBINED FOOTING DESIGN $X2z = \frac{142}{(2 + b)} + \frac{12}{(2 + 49.1^2)} (2 + 49.1 + 56.3) = 15.6$ in X2x = 12/2 - 56.3/2 = 28.1 in Jcz= 61*d'/0+61*d/0+2*61*d*(61/2-200)*+62*d*225* ACIR111172 Jcz = 49.1 * 32.3 * / 6 + 49.1 * 32.3 / 6 + 2 * 49.1 * 32.3 * (49.1 / 2 * 15.6) * + 56.3 * 32.3 * 15.6 * = 1607828 in/ $Jax = b2^{+}a^{1}/(12 + b2^{2})d/(12 + 2^{-}b)^{-1}d^{-1}d/(2/2)^{2}$ ACI R11.11.7.2 Jcx = 56.3 * 32.3* / 12 * 2 * 49.1 * 32.3 * (56.3 / 2)* = 3141928 in' Stress due to P = / / // o / // 1022 = -5.0 / (154.5 * 32.3) * 1000 = 1.0 psi Stress due to Mz = yvz * 4(000 * v3z/ycz = 0.42 * 28.3 * 12 * 15.6 / 1607828 * 1000 = 0.4 psi Punching stress = 7-spass / Marshass - 1.0 + 0.4 = 1.4 psi < 212.1 psi OK At interim enhana X-Edge = Edgs / 2 - Offset - Col / 2 = 1.75 * 12 - 24.0 / 2 = 9.0 in asx = 10 Z-Edge = :1/2 - 32.3/2 = 16.1 in asz = 20as = cos + cos = 10 + 20 = 30Col type = Edge β= 4 = 24.0/24.0 = 1.00 ACI 11 11 2 1 Perimeter bo - azz / 10 * /L + 8 / 2 + X-Eage) + azz / 10 * (W + d / 2 + Z-Eage) ACI 11.11.1.2 bo = 20 / 10 * (24.0 + 32.3 / 2 + 9.0) + 20 / 10 * (24.0 + 32.3 / 2 + 16.1) = 154.5 in Area Ato = (L + 3/2 + X-Edge) * (V + 0/2 + 2-Edge) #24.0 + 32.3/2 + 9.0) * (24.0 + 32.3/2 + 16.1) = 2763.3 in* ♦Vc = ♦ 11.80 (2+41β, as ' d1bc + 2, 4) ' - (fc) ACI 11.11.2.1 ♦Vc = 0.75 * Min (2 + 4 / 1.00, 30 * 32.3 / 154.5 + 2, 4) * √(5000) = 212.1 psi Punching force | F = F / Pedestel / Abb / Thick * Density - Deaving F = 37.5 + 0.7 + 0 * 2763.3 / 144 * 36.0 / 12 * 0.15 - 30.4 = 20.3 kip b1=2+0/2+7-cope=24.0+32.3/2+9.0=49.1 in b2=W+d/2+2-cope=24.0+32.3/2+16.1=56.3 in 1 1 $\operatorname{vvx} \operatorname{factor} = ? \quad \frac{1}{7 + (2/3) \cdot ((2^2/3))} = 1 - \frac{1}{1 + (2/3) \cdot ((56.3/49.1))}$ - = 0.42 ACI Eq. (11-37) 7 1 ACI Eq. (13-1) yvz factor = $\frac{1}{1 + (2/3)\sqrt{(49.1/56.3)}} = 1 - \frac{1}{1 + (2/3)\sqrt{(49.1/56.3)}}$ = 0.38 $X2z = \frac{\partial t^2}{\partial 2} + \frac{\partial t^2}{\partial 2} = \frac{49.1^2}{(2^*49.1 + 56.3)} = 15.6$ in $X2x = \Delta^2/2 = 56.3/2 = 28.1$ in Jez = bi '04/\$ (018 '076 (2101'0'/01/2-X2)*(12'0' X22* ACI R11.11.7.2 Jcz = 49.1 * 32.3 * 6 + 49.1 * 32.3 / 6 + 2 * 49.1 * 32.3 * (49.1 / 2 * 15.6) * + 56.3 * 32.3 * 15.6 = 1607828 in/ Jex = b2 * d*/ 12 + b2** d/ 12 + 2 * b1 * d * (b2 / 2)* ACI R11.11.7.2 Jcx = 56.3 * 32.3* / 12 + 2 * 49.1 * 32.3 * (56.3 / 2)* = 3141928 in/ Stress due to P = F / (bo ⁺ d) ⁺ (000 = 20.3 / (154.5 * 32.3) * 1000 = 4.1 psi Stress due to Mz = yez * Z OTM * X2z/ iku = 0.42 * 28.8 * 12 * 15.6 / 1607828 * 1000 = 0.4 psi Punching stress = P-smass + Mn-smass = 4.1 + 0.4 = 4.5 psi < 212.1 psi OK MATERIALS DESIGN CODES Concrete Design ACI 318-11 Columns Footing Load Combinations User-defined Concrete fc 5.0 5.0 ksi Reinf. Steel fy 60.0 60.0 ksi Soil Cover Density 120.0 pcf 7 of 10



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CALCULATION SHEET

Cueto Engineering	Project: Railcar Platform	Page #
	Engineer: NAC	8/18/2017
ASDIP Foundation 3.2.2	Descrip: 2017-STR-0010_R0_A21	
ASUIP Foundation 3.2.2	COMBINED FOOTING DESIGN	www.asdipsoft.com
LC	AD TRANSFER CALCULATIONS (Comb. Factored)	
- Atexariar column	No. No. No.	
Area 41= cs1 *cs1x = 24.0*24.0	= 576.0 in ²	
Sx = 20/W/20/L//6-24.0*24.0*7		
Bearing Phile PTAT + Mat / Ree	0.1/576.0 + 28.3 * 12/2304.0 = 0.1 ksi	
Min edge = ///// (Edge - col/L / 2, 17//		
Min edge = Min (1.75 * 12 - 24.0 / 2,	199 W. 199 W. 199 W. 199	
Area 42=(coli +2*idin cdea)*ico		ACI R10.14.1
A2 = (24.0 + 2 * 9.0) * (24.0 + 2 * 9.0		
그는 말을 알고 있는 것을 만들고 있는 것이 아파는 것이 있었다.	·//2//1)/=0.65 * 0.85 * 5.0 * Min [2, √(1764.0 / 576.0)]	
Footing $\phi(2\pi s = \phi^2 A s^2 + \gamma^2 A f = 0.6$		ACI 10.14.1
양성하면 지수지 않는 그 같은 요즘 방송에서는 말감 옷이 했다.	-4.8+0.2=5.1 ksi > 0.1 psi OK	
Column grave g 1030 */c = 0.65*		100000000000000000000000000000000000000
Column ≱™s - \$ As Ty At - 0.6		ACE 10.14.1
TANK AND A TRANSPORT AND A DAMAGE AND A	= 2.8 + 0.2 = 3.0 ksi > 0.1 psi OK	
Shear friction \$1/7 = \$ 145 Friday = 0		ACI Eq (11-25)
Shear Vu = 0.0 kip < 95.0 kip C		ACI E- 142 41
Straight 1 a = 12ax (12 a) 3 - 40 * iy / (철상 방법을 얻는 것을 다 있는 것이 집에서 가지 않는 것 같아요. 이 것이 가지 않는 것이 같아요. 이 있는 것이 없는 것이 같아요. 이 있는 것이 없는 것이 않는 것이 없는 것이 않는 것이 없는 것이 않는 것이 없는 것이 않는 것이 않는 것이 없는 것이 않는 것이 않는 것이 않는 것이 없는 것이 없는 것이 않는 것이 없는 것이 않는 것이 않는 것이 않는 것이 않는 것이 않는 것이 없는 것이 않는 것이 않는 것이 없는 것이 않는 것이 없는 것이 않는 것이 없는 것이 없는 것이 않는 것이 않 않 않는 것이 않 않는 것이 않는 것이 않이 않이 않는 것이 않이 않이 않는 것이 않는 것이 않이 않이 않이 않이 않이 않이 않이 않	ACI Eq. (12-1)
그 같은 것 같은 것 같은 것 같은 것 같은 것 같은 것 같이 많을까?	/ (5000)% * 0.8 / 2.5 * 0.75 * 0.08) = 12.0 in (2.7 = 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.7 * 0.08 = 6	3.0 in ACI 12.5
2017년 66.22년원 - 2만성 - 2월 - 2만만만만 2만만	v = 1.00 * 12 - 3.0 = 24.0 in > 12.0 in OK	AGI 12.5
	- 36.00 - 3.0 = 33.0 in > 6.0 in OK	
- At interior column		
Area A1- COL CONV- 24.0 * 24.0	= 576.0 in ²	
Sx = col W *col (*/8 = 24.0 * 24.0*/		
Bearing //bu = ///A/ + //z/Sx =	0.1/576.0 + 28.8 * 12/2304.0 = 0.1 ksi	
Min edge = 1/3x (Edge - co/L / 2 - V/7		
Min edge = Min (1.75 * 12 - 24.0 / 2,	8.00 * 12/2 - 24.0/2) = 9.0 in	
Area A2 - (ccit i 2ª iAm eage, * ico	N V7 + 2 * Min edgel	ACI R10.14.1
A2 = (24.0 + 2 * 9.0) * (24.0 + 2 * 9.0	0) = 1764.0 in ²	
Footing \$14nc = \$ 0.85 *10 Milh 12.	√42 / 4 19 =0.65 * 0.85 * 5.0 * Min [2, √(1764.0 / 576.0)]	= 4.8 ksi
Footing ≱Pos = ≱ 1/As 1 Gr///1 = 0.6	5 * 3.52 * 60.0 / 576.0 = 0.2 ksi	ACI 10.14.1
Footing bearing ⪻ = &Prr + &Prs	= 4.8 + 0.2 = 5.1 ksi > 0.1 psi OK	
Column #7%:-# 10.85 */2 - 0.65*	0.85 * 5.0 = 2.8 ksi	
Column @Pos = \$ * As * Fy / A t = 0.6	5 * 3.52 * 60.0 / 576.0 = 0.2 ksi	ACI 10.14.1
Column bearing \$131 = \$1315 + \$1315	= 2.8 + 0.2 = 3.0 ksi > 0.1 psi OK	
Shear friction $\frac{1}{2}\sqrt{2\pi} = \frac{1}{2}\sqrt{2\pi} + \frac{1}{2}\sqrt{2\pi} = 0$.75 * 3.52 * 60.0 * 0.6 = 95.0 kip	ACI Eq (11-25)
Shear Vu = 0.0 kip < 95.0 kip C	ж	
Straight Lo - Max (\$2.0, 37.10 * (y7)	Tojik *Sue / Cover : do *rallo)	ACI Eq. (12-1)
Ld = Max (12.0, 3 / 40 * 60.0 * 1000	/ (5000)% * 0.8 / 2.5 * 0.75 * 0.07) = 12.0 in	
	0.7 = 0.02 * 60.0 * 1000 / (5000)% * 0.75 * 0.7 * 0.07 = 6	3.0 in ACI 12.5
I d movided = P-stestal twistal Cover	- 1.00 * 12 - 3.0 = 24.0 in > 12.0 in OK	



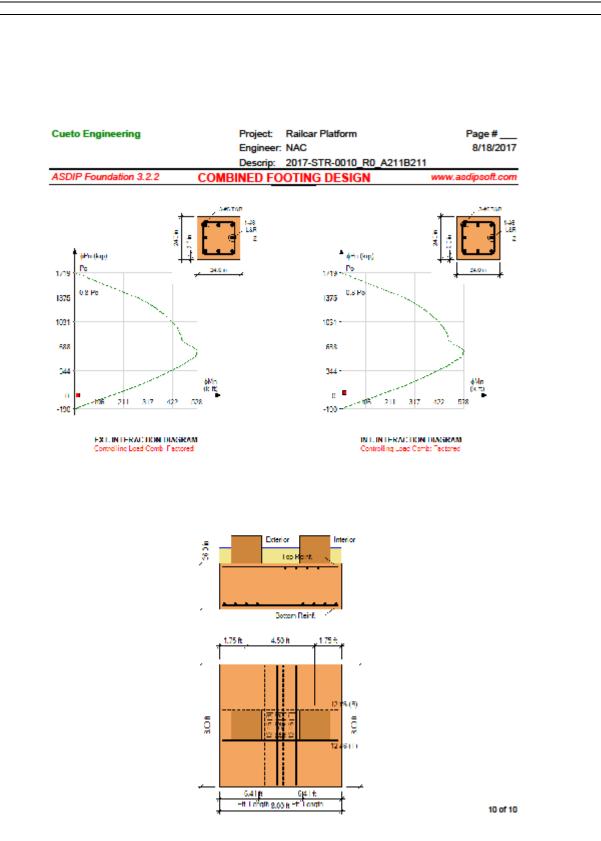
PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C10 OF C11

Engineer: NAC 8/18/2017 Descrip: 2017-STR-0010_R0_A2118211 SDIP Foundation 3.2.2 COMBINED FOOTING DESIGN www.aadipsoft.com COMBINED FOOTING DESIGN COMBINE DESIGN COMBINED FOOTING DESIGN <td cols<="" th=""><th></th><th></th></td>	<th></th> <th></th>		
Engineer: NAC 8/18/2017 Descrip: 2017-STR-0010_R0_A2118211 SDIP Foundation 3.22 COMBINED FOOTING DESIGN www.aadipooft.com COLUMN CALCULATIONS (Comb: Factored) COLUMN CALCULATIONS (Comb: Factored) Constraint = 0.003 Increte Fc = 50_ksi Max. strain = 0.003 ACI 85.1 uping Modular $x \in x \in x \in f(c, 1:00)^{5/2} : 1000 = 0.53_ksi ACI 85.1 phare f = 2.5^{-1} f(c, 1:00)^{5/2} : 1000 = 7.5^{-1} (5000)^{5/2} : 1000 = 0.53_ksi ACI 85.2 phare f = 2.5^{-1} f(c, 1:00)^{5/2} : 1000 = 7.5^{-1} (5000)^{5/2} : 1000 = 0.53_ksi ACI 85.2 vertor columa Es = 29000_ksi ACI 85.2 vertor columa Es = 29000_ksi ACI 85.2 vertor columa Es = 29000_ksi ACI 158.2.1 detail weight = 12.0^{-1} A kip Es = 2000_ksi ACI 158.2.1 detail weight = 0.005 - 1.4 kip Es = 2000_ksi ACI 158.2.1 non-more tMc = 0.001_ksi = 0.01 + 100 - 13.6 kft trial end encr. fectraf axis depth P = c / d = 0.11 no: force Fc = 0.5 - Sont (Fc) - Sont (Fc) / CS = 0.205 j, it Sont (S = 0.001 / f(S + 0.017) + (L = 0.02 k kft no: fore 0.801_0.301 / f(L + 0.9 + 663.3) = 0.0017 AC$			
Descrip: 2017-STR-0010_R0_A2118211 SDIP Foundation 3.22 COMBINED FOOTING DESIGN www.asdipsoft.com COLUMN CALCULATIONS (Conto: Factored) COLUMN CALCULATIONS (Conto: Factored) Increte for = 5.0 kal Max.strain = 0.0030 ACI 8.5.1 ung's Modulus $-e_{2} = e_{1}^{-1} f(e^{-1} Strip)^{2} - 15.6^{-1} Strip)^{2} + 1000^{2} = 4031 kal ACI 8.5.1 ung's Modulus -e_{2} = e_{1}^{-1} f(e^{-1} Strip)^{2} + 100^{-1} 24.0^{-1} 100^{-$		and the second	
SDIP Foundation 3.2.2 COMBINED FOOTING DESIGN www.aadipaofi.com COLUMN CALCULATIONS (Conto: Factored) Accession of the contored of the			
Increte Fc = 5.0 ksi Max. strain = 0.0030 ung's Modulus $r_{0}r_{0}r_{0}r_{1}r_{0}r_{1}r_{0}r_{0}r_{0}r_{0}r_{1}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0$		www.asdipsoft.com	
Increte Fc = 5.0 ksi Max. strain = 0.0030 ung's Modulus $r_{0}r_{0}r_{0}r_{1}r_{0}r_{1}r_{0}r_{0}r_{0}r_{0}r_{1}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0}r_{0$	COLUMN CALOUR A 1/2012 (Combined)		
pture $k = 7.5^{\circ} / (k = 1000)^{26} / 1000 = 7.5^{\circ} (5000)^{26} / 1000 = 0.53 kal ACI Eq. (9-10) left y = 60.0 kai Ea = 29000 kai ACI 8.5.2 kator column eff AS Longeturbule Class , As = 3.52 k2, p = 0.006 (be Test 20) d' = 3.8 inmin c (i(k) * i * c' = 0.005 * 24.0 * 24.0 * 24.0 + 2.88 kf < 3.52 kf OK ACI 15.8.2.1destal weight = 1.20 * i / i / i + Cervely = 1.20 * 24.0 / 12 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kgall Pu = 0.7 * 0.7 = 1.4 kgear Vux = 4.9 kdment Muz = 8.7 * 4.9 * 1.00 = 13.6 kdttrial and error, neutral axis depth k = c/d = 0.11nc. force Fc = 2 - Euror (i(c) - Lon (i(c) - 40) = 180.2 kdtminal flow.und skore (k(c) = 4.00 + 180.2 k kdtminal flow.und skore (k(c) = 0.01 + 180.2 k kdtminal flow.und skore (k(c) = 0.01 + 180.2 k kdtminal flow.und skore (k(c) = 0.017 + (i(L - 0.9* 663.3) = -0.0017ACI 9.3.22actor slope = (0.65 - 0.0017 + (i(L - 0.9* 663.3) = -0.0017ACI 9.3.22actor = Mor (0.5, Max (0.65, -0.017* (i(L - 0.9* 663.3) + 0.0)] = 0.90al strength i(n = 0.3* 0.357 · k(i(A(n)) = 180.2 k kdtminal flow.und skore (A(n)) = 0.0017 + (i(L - 0.9* 663.3) + 0.0)] = 0.90al strength i(n = 0.3* 0.357 · k(i(A(n)) = 462.2 kdtACI 9.3.2.1actor = Mor (0.5, Max (0.65, -0.017* (i(L - 0.9* 663.3) + 0.0)] = 0.90al strength i(n = 0.3* 0.457 · k(i(A(n)) = Max (i(L / (0.65* 2113.3), 13.6 / 162.2) = 0.094 · 1.0 OKtertor columnmin = 0.2035 * L * V = 0.005 i(n = 766 × 21.12ACI 9.3.2 kipear Vux = 5.0 kdtment Muz = 8.8 + 5.0* 1.00 = 13.8 kdttrial and error, neutral axis depth k = c/d = 0.12m. more FC = C = Son (f(c) = Son (f(c / i(j) - a(j) = 200.5 kdtminal flow.und istrength Min i(s + 167 - 0.13 + 200.5 = 210.8 kdtactor slope = (0.65 - 0.00) / (0.65 * 114.46 - 0.9* 663.3) = -0.017ACI 9.3.22actor slope = (0.65 - 0.00) / (0.65 * 114.46 - 0.9* 663.3) = -0.017ACI 9.3.22actor slope = (0.65 - 0.00) / (0.65 *$			
eff y= 60.0 ksi Es = 29000 ksi ACI85.2 Xterfor column #####X10xquardial dExists As = 3.52 kf, p = 0.006 Cher Tess ##7 d = 3.8 kn #####X10xquardial dExists As = 3.52 kf, p = 0.006 Cher Tess #7 d = 3.8 kn ACI 15.8.2.1 destal weight = 7.87 k.9 * 1.00 = 13.5 k.ft This = 0.7 k 0.7 ± 1.4 klp East weight = 7.87 ± 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 ± 1.00 = 13.5 k.ft This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 ± 1.00 ± 0.7 kn 0.2 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 0.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 0.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 0.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.7 kn 0.2 ± 1.00 ± 0.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.2 ± 1.00 ± 0.00 ± 1.00 kf This = 0.7 kn 0.7 kn 0.2	/oung's Modulus → c = 0 < 7 (* 1000) ^{1/2} =57 * (5000) ^{1/2} = 4031 ksi	ACI 8.5.1	
$ \frac{1}{2} 1$	Rupture // – 7.5 * //c = 1000) [%] : 1009 – 7.5 * (5000) [%] / 1000 = 0.53 ksi	ACI Eq. (9-10)	
$ d^{2} d^{2} Comparison density defines , As = 3.52 m^{2}, p = 0.006 Com Trans 27 d^{2} = 3.8 in min = 0.005 * 1 * 0 * 24.0 * 24.0 = 2.88 in * < 3.52 in * OK ACI 15.8.2.1 detail weight = * 20 * 3 * 1 * 1 * 0 + 0.005 * 24.0 + 1.20 * 24.0 / 12 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kip al Pu = 0.7 + 0.7 = 1.4 kip ear Vux = 4.9 kit meant Muz = 8.7 + 4.9 * 1.00 = 13.6 kit trial and error, neutral axis depth k = c/d = 0.11 no. force Fc = 0 - Com (TC) - Com (FC) + 0.01 + 180.2 kit minal flexural strength Mn = 1/45 + Mo = 0.0 + 180.2 kit minal flexural strength Mn = 1/45 + Mo = 0.0 + 180.2 kit com store = (0.55 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) + 0.901 / 7 = 0.005 / 7 = 0.005 / 7 = 0.0017 ACI 9.3.2.2 extor slope = (0.55 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) + 0.91 = 0.90 ais trength 1/9 = 0.87 * 1/8 / 1 + 0.9 * 0.63 + 0.91 = 0.90 ais trength 1/9 = 0.87 * 1/8 / 1 + 0.9 * 0.63 + 0.91 = 0.90 ais trength 1/9 = 0.87 * 1/8 / 1 + 0.9 * 0.63 + 0.91 = 0.90 ais trength 1/9 = 0.87 * 1/8 / 1 + 4.5 + 1/8 + 6.8 * 0.8 * 0.5 * 0.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip sign flexural strength 4/40 = 0.90 * 180.2 = 180.2 kit ACI 9.3.2 = 10.2 kit Aci 0.05 * 0.07 * 1/4 - 0.9 * 663.3) + 0.91 = 0.90 ais trength 1/9 = 0.87 * 0.7 * 1/4 + 0.9 * 0.83 * 0.5 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip sign flexural strength 4/40 = 0.90 * 180.2 = 162.2 kit Aci 19.3.2 = 0.08 * 1.0 OK terlor column Aci 9.3 * 0.91 * 10.0 = 13.8 kit Aci 9.3.2 = 0.08 * 1.0 OK terlor column ain = 0.205 * 1.4 * 0.90 * 24.0 = 2.88 in * < 3.52 in * OK Aci 15.8.2 1 ain min = 0.205 * 1.0 = 0.5 * 0.005 * 24.0 * 24.0 * 12 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kip ais 1 m min = 0.205 * 1.0 0.0 = 13.8 kit trial and error, neutral axis depth k = c/d = 0.12 no. force Fc = 0 - Som (FG) + Som (Ga * Aci 7 - 60) = 20.5 kit minal flexural strength Mn = 1/4 + 1/9 - 0.03 + 20.05 = 210.8 kit trial and error, neutral axis depth k = c/d = 0.12 no. force Fc = 0 - Som (FG) + Som (Ga * Aci 7 - 60) = 20.05 kit min$	Steel fy = 60.0 ksi Es = 29000 ksi	ACI 8.5.2	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Exterior column		
destal weight = $(20^{+} k^{+})^{-} (k^{+})^{-} (2e^{+} 8k) - 1.20^{+} 24.0 / 12^{+} 1.0^{+} 0.15 = 0.7 kip al Pu = 0.7 + 0.7 = 1.4 kip ear Vux = 4.9 kit ment Muz = 8.7 + 4.9 + 1.00 = 13.6 kit tial and error, neutral axis depth k = q/d = 0.11nc. force Fc = 0 - 5wn (Fc) - 5wn (Fc) * (0/2 - di) = 180.2 kitminal flexural strength Mn = Ms + Mo = 0.0 + 180.2 = 180.2 kitactor slope = (0.55 - 0.90) / (0.65 * For flax/socyd) - 0.9 * For (5x - 2.005)actor slope = (0.65 - 0.90) / (0.65 * For flax/socyd) - 0.9 * For (5x - 2.005)actor slope = (0.65 - 0.90) / (0.65 * 10/2 - 0.00) + 180.2 = 180.2 kitactor slope = (0.65 - 0.90) / (0.65 * 10/2 - 0.00) + 180.2 = 180.2 kitactor slope = (0.65 - 0.90) / (0.65 * 10/2 - 0.00) + 180.2 = 180.2 kitactor slope = (0.65 - 0.90) / (0.65 * 10/2 - 0.00) + 180.2 = 180.2 kitactor slope = (0.65 - 0.90) / (0.65 * 10/2 - 0.00) + 180.2 = 182.2 kitength rds = Max (Fc) (Fa) - 0.00 + 180.2 = 182.2 kitength rds = Max (Fc) (Fa) - 0.00 + 180.2 = 182.2 kitength rds = 0.8* 0.35 * for *(A) - As - 4* / As = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kipsign flexural strength \phiMn = 0.90 * 180.2 = 182.2 kitength rds = Max (Fc) (Fa) - Max (4.4/0.65 * 2113.3), 13.6 / 182.2) = 0.08 + 1.0 OKterlor columnc A 400 / respiration Rave , As = 3.52 in*, p = 0.006 / Arr Trav.87 df = 3.8 in ment Muz = 8.8 + 50 * 1.00 = 13.8 kit tial and error, neutral axis depth k = c/d = 0.12nc. force Fc = 0 - swn (Fa) - Swn (Fa) * (A/2 + 20.3 kipnc. moment Mc = Swn (Fa) - Swn (Fa) * (A/2 + 20.3 kipnc. moment Mc = Swn (Fa) = Swn (Fa) * (A/2 + 0.05 = 210.8 kitminal flexural strength Mn = (A + Ma - 10.3 + 200.5 = 210.8 kitminal flexural strength Mn = (A + Ma - 10.3 + 200.5 = 210.8 kitminal flexural strength Mn = (A + Ma - 10.3 + 200.5 = 210.8 kitminal flexural strength Mn = (A + Ma - 10.3 + 60.3) = -0.0017 Act 9.3.5 = 2113.3 kipactor slope = (0.65 - 0.00) / (0.65 * 1144.4.6 - 0.9 * 663.3) + 0.09) = 0.90al strength Pa - 0.8^{+} (0.85 + 10.4 + (A + 2 + (-4.48 - 0$	/se 8 48 Longituditud Dans As = 3.52 in* ,p = 0.006 Univ Ties 47 d = 3.	8 in	
al Pu = 0.7 + 0.7 = 1.4 kip ear Vux = 4.9 kit ment Muz = 8.7 + 4.9 * 1.00 = 13.6 kit trial and error, neutral axis depth $F = c/c = 0.11$ nc. force Fc = $C - 2cm (Fc) - 2cm (Fc) * (c) * (d) = 180.2 kitminal flexural strength Mn = //s + //s = 0.0 + 180.2 = 180.2 kitactor slope = (0.85 - 0.90) / (0.65 * 174 / 660 - 0.12 = 180.2 kitactor slope = (0.85 - 0.90) / (0.65 * 174 / 660 - 0.12 = 180.2 kitactor slope = (0.85 - 0.90) / (0.65 * 174 / 660 - 0.12 = 180.2 kitactor slope = (0.85 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.3.2.2actor = Actr / 0.2 Actor / 0.5 + 0.0017 * (1.4 - 0.9 * 663.3) = 0.0017 AC19.3.2.2actor = Actr / 0.2 Actor / 0.5 + 0.0017 * (1.4 - 0.9 * 663.3) = 0.0017 AC19.3.2.2actor = Actr / 0.2 Actor / 0.5 + 0.0017 * (1.4 - 0.9 * 663.3) + 0.9) = 0.90al strength f/n = 0.8 * (20.7 + 0.7 + 0.4 + 0.5 * 50.7 * (576 - 3.5) + 60 * 3.5 = 2113.3 kipsign flexural strength Mn = 0.90^{*} 180.2 = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X-in / Xor (Actor) = 162.2 kitendfin ratio = Xox / For X = 0.05 * 24.0 * 24.0 = 2.88 in2 < 3.52 in2 OKAC115.82.1destal weight = 2.27 · X = 2.117 · Crosony = 1.20 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kipal Pu = 37.5 + 0.7 = 38.2 kipear Vux = 5.0 kitminal flexural strength M = //s + 182 - 10.3 * 200.5 = 210.3 kitninal flexural strength M = //s + 182 - 10.3 * 200.5 = 210.5 kitminal flexural strength M = //s + 182 - 10.3 * 200.5 = 210.5 kitminal flexural strength M = //s + 182 - 10.3 * 200.5 = 210.5 kitminal flexural strength M = 1/s + 182 - 10.3 * 200.5 = 210.5 kitminal flexural strength M = 1/s + 182 - 10.3 * 200.5 = 210.5 kitminal flexural strength M = 1/s + 182 - 10.3$	As min = () (%) */ * (V = 0.005 * 24.0 * 24.0 = 2.88 in* < 3.52 in* OK	ACI 15.8.2.1	
eer Vux = 4.9 k-ft ment Muz = 8.7 + 4.9 * 1.00 = 13.5 k-ft tisl and error, neutral axis depth $k = q/d = 0.11$ nc. frome FC = $(2 - 2wn)(70) - 2wn)(70 + 40(-195.8 kip)$ nc. moment Mc = Nam (Mc) = Swn (Fc) * (n/2) + 180.2 k-ft minial flexural strength Mn = $(4s + Mc) = 0.0 + 180.2 = 180.2 k-ft$ actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 all strength (Mn = 0.90 * 180.2 = 162.2 k-ft actor slope = (0.45 - 0.90) / (0.45 * 1144.6 - 0.9 * 663.3) + 0.9)) = 0.90 all strength (Mn = 0.90 * 180.2 = 162.2 k-ft AC19.32.1 ength ratio = Nam (Av) (Avis) = Max (1.4 / (0.65 * 2113.3), 13.6 / 162.2) = 0.06x 1.0 OK teafor column ar 4.60 magnitudinal Rans , As = 3.52 in*, p = 0.006 (Avis Taus 40) d = 3.8 in min = 0.005 * L * W = 0.005 * 24.0 * 24.0 = 2.88 in* < 3.52 in* OK AC115.82.1 destal weight = 2.2 * X * L * 117 Denoty = 1.20 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kip all Pu = 37.5 + 0.7 = 38.2 kip ear Vux = 5.0 kift mind flexural strength Mn = (As + 8x / As = 0.12 nc. force FC = O = Swn (Fc) = Swn (fc) * (n/2 - 0.0) S k-ft mini flexural strength Mn = (As + 8x / - 10.3 + 200.5 + 210.3 kip nc. moment Mc = Swn (Ax) = Swn (fc) * (n/2 - 0.0) S k-ft mini flexural strength Mn = (As + 8x / - 10.3 + 200.5 + 210.8 k-ft actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) + 0.0017 AC19.32.2 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) + 0.0017 AC19.32.2 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) + 0.90) = 0.90 al strength $(N - 0.8^{+}(0.85 + (0.017 * (3.82 - 0.9 * 663.3) + 0.9)) = 0.90 al strength (N - 0.8^{+}(0.85 + (0.017 * (3.82 - 0.9 * 663.3) + 0.9)) = 0.90 al strength (N - 0.8^{+}(0.85 + (0.017 * (3.82 - 0.9 * 663.3) + 0.9)) = 0.90 al strength (N - 0.8^{+}(0.85 + (0.017 * (3.82 - 0.9 * 663.3) + 0.9)) = 0.90 al strength (N - 0.8^{+}(0.85 + (0.017 * (3.82 - 0.9 * 663.3) + 0.9$	Pedestal weight = 1.20 * W 1 L 1 H 1 Devisity - 1.20 * 24.0 / 12 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kip		
ment Muz = 8.7 + 4.9 * 1.00 = 13.6 k-ft trial and error, neutral axis depth $k = c/d = 0.11$ nc. force Fc = $2 - 2wn(7b)^2 - 2wn(7b)^2 (h) = 180.2 k-ft$ minal fexural strength Mn = $3b + 3b = 0.0 + 180.2 = 180.2 k-ft$ actor slope = $(0.55 - 0.30)/(0.65 * 114.6 - 0.9 * 663.3) = 180.2 k-ft$ actor slope = $(0.55 - 0.30)/(0.65 * 114.6 - 0.9 * 663.3) = 0.0017$ actor = $4wn(0.5, 4wer(0.55 worke^2/(0r - 0.5' fr)/(2s - 0.05))$ actor = $4wn(0.5, 4wer(0.55 worke^2/(0r - 0.5' fr)/(2s - 0.05)) = 0.90$ al strength $(19 - 0.8^{+}0.35^{+}7b^{-}74) - 4s + h^{+}4s = 0.8^{+}0.85^{+}5.0^{+}(576 - 3.5) + 60^{+}3.5 = 2113.3 kip$ sign flexural strength ϕ Mn = 0.90 * 180.2 = 162.2 k-ft ength ratio = $4x_0 + e^{y_0}e^{y_0}$, $4x_0 + \phi^{y_0}e^{y_0}$, $e^{y_0}e^{y_0}e^{y_0}$, $e^{y_0}e^{y_$	lotai Pu = 0.7 + 0.7 = 1.4 kip		
trial and error, neutral axis depth $k = q/d = 0.11$ nc. force Fc = $2 - Even (Fo)! - Even (Fc) + A(y) - 195.8 kip nc. moment. Mc = Svan (Mc)! = Svan (Fc) + (h/2) + (h) = 180.2 k-ft actor slope = (0.65 - 0.90) / (0.65 * 1Pa (Subsecve)) + (h) * Pn (Co = 2.003) actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = 0.0017 ACI 9.32.2 actor = Kah (D g, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) = 0.0017 actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 ail strength (Ma = 0.39 * 0.55 * 1/c * 4/ + 4/s - 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip sign flexural strength (Mn = 0.90 * 180.2 = 162.2 k-ft actor actor = Kah (D g, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 ail strength (Mn = 0.90 * 180.2 = 162.2 k-ft actor actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 ail strength (Mn = 0.90 * 180.2 = 162.2 k-ft actor actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 ail strength actor actor (Mn = 0.90 * 180.2 = 162.2 k-ft actor actor = Min (0.9, Max (0.65 * 24.0 * 24.0 = 2.88 in2 < 3.52 in2 OK ACI 9.32.1 actor actor = Min (0.9, Max (0.65 * 0.10 * 0.12 * 0.06 (Par Time #)) df = 3.8 in min = 0.005 * 2.4 * V = 0.005 * 24.0 * 24.0 = 2.88 in2 < 3.52 in2 OK ACI 15.82.1 destal weight = 1.20 * A' + 2 * 11 * Develop = 1.20 * 24.0 / 12 * 24.0 / 12 * 1.0 * 0.15 = 0.7 kip ail Pu = 37.5 + 0.7 = 38.2 kip ear Vix = 5.0 k-ft ment Muz = 8.8 + 5.0 * 1.00 = 13.8 k-ft trial and error, neutral axis depth k = c/d = 0.12nc. force FC = C = Sion (Fo)! = Sion (Fo! * (h/2) - 20.5 S k-ft minial flexural strength Min = 1/4 * 45 * - 1/0 * 20.5 = 2110.8 k-ft actor slope = (0.65 * 0.00) / (0.65 * 1144.6 * 0.9 * 663.3) = 0.0017 ACI 9.32.2 actor slope = (0.65 * 0.00) / (0.65 * 1144.6 * 0.9 * 663.3) = 0.0017 ACI 9.32.2 actor slope = (0.65 * 0.00) / (0.65 * 1144.6 * 0.9 * 663.3) = 0.0017 ACI 9.32.2 actor slope = (0.65 * 0.00) / (0.65 * 1144.6 * 0.9 * 663.3) = 0.0017 ACI 9.32.2 actor slope = (0.65 * 0.00) / $	Shear Vux = 4.9 k-ft		
Inc. force Fc = $0 - 5\omega n (To)^2 - 5\omega n (Fc)^2 A(0) - 195.8 kip Inc. moment Mc = Size (Ko) = Sum (Fc)^2 (10) = 180.2 k-ft actor stope = (0.65 - 0.90) / (0.65 * Fn (2wb mcvd) - (0.9* Pn (Co = 2.005)) actor stope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9* 663.3) = 0.0017 ACI 9.32.2 actor = Man (0.9, Max (0.65, -0.0017 * (1.4 - 0.9* 663.3) + 0.9)) = 0.90 at strength (Pa = 0.8* 0.35 * Pc * (A) - As + n' As = 0.8 * 0.85 * 5.0 * (576 - 3.5) * 60 * 3.5 = 2113.3 kip sign flexural strength \phi Mn = 0.90 * 180.2 = 162.2 k-ftactor isope = (0.65 - 0.90) / (0.65 * 10.0* 180.2 = 162.2 k-ftactor isope = (0.65 - 0.90) / (0.65 * 10.0* 180.2 = 162.2 k-ftactor isope = (0.65 - 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 + 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 + 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 + 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.90) * 180.2 = 162.2 k-ftactor isope = (0.65 * 0.10 + 13.8 k-fttrial and error, neutral axis depth k = 0/d = 0.12actor isope = (0.65 * 0.90) = Sum (iso Aug) = 220.5 k-ftminal flexural strength Mn = 1/3 * 1/3 * 200.5 = 210.8 k-ftactor isope = (0.65 * 0.90) / (0.65 * 114.6 * 0.9 * 663.3) = 0.0017AC19.32.2actor isope = (0.65 * 0.90) / (0.65 * 10.3 * 10.3 * 200.5 = 210.8 k-ftactor isope = (0.65 * 0.90) / (0.65 * 10.3 * 0.9 * 10.7 * 0.9 * 10.7 * 0.9 * 10.7 * 0.9 * 10.2 * 10.9 * 10.8 * 10.2 * 10.9 * 10.5 * 10.3 * 10.3 * 10.3 * 10.0 * 10.8 * 10.3 * 10.3 * 10.0 * 10.8 * 10.3 * 20.0 5 = 210.8 k-ftactor isope = (0.65 * 0.90) / (0.65 * 10.9 * 10.5 * 10.5 * 10.9 * 10.6 * 10.9 * 10.5 * 10.8 * 10.5 * 10.9 * 10.5 * 10.9 * 10.5 * 10.9 * 10.5 * 10.5 * 10.9 * 10.5 * 10.0 * 10.5 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 * 10.5 * 10.0 *$	Aoment Muz = 8.7 + 4.9 * 1.00 = 13.6 k-ft		
nc. moment Mc = Size (667) = Size (F3 * (7/2 + d)) = 180.2 k-ft minal flexural strength: Mn = //5 + 450 = 0.0 + 180.2 = 180.2 k-ft actor slope = (0.55 + 0.90) / (0.55 + 1144.6 + 0.9 * 663.3) = -0.0017 ACI 9.3.2.2 actor = Min (0.9, Max (0.55 + 0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 all strength: //9 = 0.8 * 0.35 * 7c * i/4/ + 4s + i/4/3s = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip sign flexural strength: \$Mn = 0.90 * 180.2 = 162.2 k-ft ACI 9.35 = 10.00K terr for column ACI 9.32 if $2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 $	By trial and error, neutral axis depth $k = \sigma/\sigma = 0.11$		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Conc. force Fc = D + Sum (Fo) + Sum (fc; *Aci) - 195.8 kp		
actor slope = $(0.5^{\circ} 0.90)/(0.65^{\circ} Pr/(2450x; ed)) 0.9^{\circ} Pr/(2450x; ed)$ actor slope = $(0.65 - 0.90)/(0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017$ actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9^{\circ} 663.3) + 0.9)) = 0.90 ial strength //4 = 0.8^{\circ} 0.35^{\circ} 7c^{\circ} /4/ - 4s + 4t^{\circ} 4s = 0.8^{\circ} 0.85^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 kip sign flexural strength $\phi Mn = 0.90^{\circ} 180.2 = 162.2 k \cdot ft$ actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9^{\circ} 663.3) + 0.9)) = 0.90 ial strength //4 = 0.8^{\circ} 0.35^{\circ} 7c^{\circ} /4/ - 4s + 4t^{\circ} 4s = 0.8^{\circ} 0.85^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 kip sign flexural strength $\phi Mn = 0.90^{\circ} 180.2 = 162.2 k \cdot ft$ actor olumn act $d D/1$ magnitudinal Rans \cdot , As = 3.52 in ² , $p = 0.006$ (Jar Tas 40) d = 3.8 in min = $0.005^{\circ} t^{2} t^{\circ} V = 0.005^{\circ} 24.0^{\circ} 24.0 = 2.88 in^{2} < 3.52 in^{2} OK$ ACI 15.8.2.1 destal weight = $t^{2.27} \cdot 4^{\circ} t^{-1/11}$ Density = 1.20^{\circ} 24.0 / 12^{\circ} 24.0 / 12^{\circ} 1.0^{\circ} 0.15 = 0.7 kip ial Pu = 37.5 + 0.7 = 38.2 kip ear Vux = 5.0 k \cdot ft ment Muz = 8.8 + 5.0^{\circ} 1.00 = 13.8 k \cdot ft trial and error, neutral axis depth $k = c/d = 0.12$ nc. force Fc = $C = Sum (F_{0.0}) = Sum (far + A_{0.0}) = 220.3 kip$ nc. moment Mc = Sum (Fo.) = Sum (far + A_{0.0}) = 200.5 k \cdot ft minal flexural strength Mn = /4s + 36c - 10.3 + 200.5 = 210.8 k \cdot ft actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017$ ACI 9.3.22.2 actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ ACI 9.3.22.2 actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ ACI 9.3.25 = 2113.3 kip	Conc. moment Mc =/Svn (Mc) = .Svn (Fc) *(0.72 -vii) = 180.2 k-ft		
actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017$ ACI 9.3.2.2 actor = $K01 / 0.2$, $Kee (0.65, excert * (Pu - 0.6^{\circ} (Pt) / (Ce - 0.005)) + 0.9)$ actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9^{\circ} 663.3) + 0.9)) = 0.90 ial strength $/ Pi = 0.8^{\circ} 0.35^{\circ} Pi * (A) + As + Hir / As = 0.8^{\circ} 0.85^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 klp sign flexural strength \phi Mn = 0.90^{\circ} 180.2 = 162.2 k-ft ACI 9.3.5 + 10^{\circ} (As + Pi + 26A) + As = 3.52 k-ft ACI 9.3.2.1ength ratio = Max (Pp + 26A) - Max (1.4 / (0.65^{\circ} 2113.3), 13.6 / 162.2) = 0.084^{\circ} 1.0^{\circ} OKtheritor columnof H = 0.035^{\circ} L^{\circ} H = 0.005^{\circ} 24.0^{\circ} 24.0^{\circ} 24.0^{\circ} 24.0^{\circ} 24.0^{\circ} 12^{\circ} 24.0 / 12^{\circ} 10.0^{\circ} 0.15 = 0.7 klpial Pu = 37.5 + 0.7 = 38.2 klpear Vux = 5.0 k-ftment Muz = 8.8 + 5.0^{\circ} 1.00 = 13.8 k-fttrial and error, neutral axis depth k = c/d = 0.12nc. force Fc = O = Sum (Fa) = Sum (Fa) + (h/2 - at), p = 200.5 k-ftminal flexural strength Mn = (As + Ms) - 10.3 + 200.5 = 210.8 k-ftactor slope = (0.65 - 0.90) / (0.65^{\circ} 1Ph / 2akancod) - 0.3^{\circ} Ph (Fs = 2.005)actor slope = (0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017ACI 9.3.2.2actor slope = (0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017ACI 9.3.2.2actor = Min (0.9, Max (0.65, -0.0017^{\circ} (3.8 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = 0.0017$ actor = Min (0.9, Max (0.65, -0.0017^{\circ} (3.8 - 0.9^{\circ} 663.3) + 0.9)) = 0.90 ial strength $Ph2.8^{\circ} 0.85^{\circ} (Pi / 148 - 0.8^{\circ} 0.85^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 klp$	lominal flexural strength Mn = 1/8 + 1/0 = 0.0 + 180.2 = 180.2 k-ft		
actor = $A(n) (0.5, Max (0.65, accore ^{*}(Cu - 0.5^{+}(N_{1}/Cs - 0.005)) + 0.5))$ actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 aid strength ($A_{2} = 0.8^{*} 0.35^{*}/Ct ^{*}/A! + As + At^{*}/As = 0.8^{*} 0.85^{*} 5.0^{*} (576 - 3.5) + 60^{*} 3.5 = 2113.3 kip ACI 9.32.1 sign flexural strength (Mn = 0.90^{*} 180.2 = 162.2 k-ft ACI 9.32.1 ength ratio = M_{23} + Cp_{12} + Sen_{11} + As_{12} + At^{*} + At^{*} + As^{*} = 0.8^{*} 0.85^{*} 5.0^{*} (576 - 3.5) + 60^{*} 3.5 = 2113.3 kip sign flexural strength (Mn = 0.90^{*} 180.2 = 162.2 k-ft ACI 9.32.1 ength ratio = M_{23} + Cp_{12} + Sen_{11} + As_{12} + At^{*} + At^{*} + As^{*} = 0.8^{*} 0.85^{*} 5.0^{*} (576 - 3.5) + 60^{*} 3.5 = 2113.3 kip sign flexural strength (Mn = 0.90^{*} + Bax (1.47) (0.65^{*} 2113.3), 13.67 162.2) = 0.065^{*} 1.0^{*} OK ACI 9.32.1 min = 0.005^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 23.52 in^{2} OK ACI 15.82.1 destal weight = 1.20^{*} A^{*} A^{*} + V^{*} = 0.005^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 24.0^{*} 12^{*} 24.0^{*} 12^{*} 1.0^{*} 0.15^{*} = 0.7 kip all Pare 37.5 + 0.7 = 38.2 kip ear Vux = 5.0 k-ft ment Muz = 8.8 + 5.0^{*} 1.00 = 13.8 k-ft trial and error, neutral axis depth k = 0/d = 0.12 n.c. moment Muz = 8.8 + 5.0^{*} 1.00 = 13.8 k-ft trial and error, neutral axis depth k = 0/d = 0.12 actor alope = (0.65^{*} 0.00)7 (0.65^{*} Pn (Sel 0.005) = 200.5 k-ft minal flexural strength Mn = iAs + KS^{*} + 0.3^$	-factor slope = (0.95 0.901 / (0.65 ' Pri (Galarized) 0.9 ' Pri (Co = 0.005)		
actor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength ($7n = 0.8 * 0.35 * 7e^{-t}(At) - As - e^{-t}A' + As = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip sign flexural strength (4Mn = 0.90 * 180.2 = 162.2 k \cdot ft AC19.3.2.1 ength ratio = A_{CN} + P_{LV} + F_{CN} + As - 4b^{-t}As = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip AC19.3.2.1 ength ratio = A_{CN} + P_{LV} + F_{CN} + Ab^{-t}Ab^{-t}As = 162.2 k \cdot ft AC19.3.2.1 ength ratio = A_{CN} + P_{LV} + F_{CN} + Ab^{-t}Ab^{-t}As = 162.2 k \cdot ft AC19.3.2.1 ength ratio = A_{CN} + P_{LV} + F_{CN} + Ab^{-t}Ab^{-t}Ab^{-t}As = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip AC19.3.2.1 ength ratio = A_{CN} + P_{LV} + F_{CN} + Ab^{-t}Ab^{-t$	-factor slope =(0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017	ACI 9.3.2.2	
al strength $1^{n} = 0.8^{+} 0.35^{-} 2e^{+}(A)^{+} As^{-} + A^{+} As^{-} = 0.8^{+} 0.85^{+} 5.0^{+} (576 - 3.5) + 60^{+} 3.5 = 2113.3 kip$ sign flexural strength $\frac{1}{2}Mn = 0.90^{+} 180.2 = 162.2 k \cdot ft$ ength ratio = $\frac{1}{2}As^{-} e^{\frac{1}{2}}as^{-} As^{-} (\frac{1}{2}As^{-} e^{\frac{1}{2}}) = Max (1.4^{+} (0.65^{+} 2113.3), 13.6^{+} 162.2) = 0.084^{-} 1.0^{-} OK$ teafor column $e^{-R} \frac{1}{2}M^{-} e^{\frac{1}{2}}as^{-} As^{-} \frac{1}{2}As^{-} as^{-} as^{-} s^{-} s^{-} \frac{1}{2} = 0.084^{-} 1.0^{-} OK$ $Act 15.8.2.1^{-}$ destal weight = $\frac{1}{2}2^{+}A^{+} \frac{1}{2} \cdot 11^{+} Deseny = 1.20^{+} 24.0^{+} 12^{+} 24.0^{+} 12^{+} 10^{+} 0.15 = 0.7$ kip al Pu = 37.5 + 0.7 = 38.2 kip ear Vux = 5.0 k-ft ment Muz = 8.8 + 5.0^{+} 1.00 = 13.8 k-ft trial and error, neutral axis depth $k = \frac{1}{2} - \frac{1}{2} \cdot 220.3$ kip nc. moment Mc = $\frac{1}{2}Sam^{-}(Es) - \frac{1}{2}Sam^{-}(Es^{-} - \frac{1}{2}) - \frac{2}{20.3}$ kip nc. moment Mc = $\frac{1}{2}Sam^{-}(Es) - \frac{1}{2}Sam^{-}(Es^{-} - \frac{1}{2}) - \frac{2}{20.3}$ kip actor slope = $(0.65 - 0.90)^{+}(0.65^{+} Pm \frac{1}{2}) + \frac{1}{2} \cdot 20.5 k \cdot ft$ minal flexural strength Mn = $\frac{1}{2} \cdot \frac{1}{2} \cdot$	Hactor = _Min (0 \$, Max (0.65, etope *(Pu - 0 \$ (Pn (Ex - 0.005)) + 0 \$))		
sign flexural strength ϕ Mn = 0.90 * 180.2 = 162.2 k-ft ACI 9.3.2.1 ength ratio = 3/qx/(Pp/yEm) //(x) //	Hactor = Min (0.9, Max (0.65, -0.0017 * (1.4 - 0.9 * 663.3) + 0.9)) = 0.90		
ength ratio = $3\sqrt{2}e^{-p_{1}}e^{-p_{1}}e^{-p_{1}}e^{-p_{2}}e^{-p_{1}}e^{-p_{2}}e^{-$	Voial strength /?4 = 0.8 * 0.35 ` ?c * /A / - As. + A ′ As = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113	.3 kip	
Interform	Design flexural strength	ACI 9.3.2.1	
$\begin{aligned} & c R \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$		ĸ	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Interfor column		
destal weight = $i 23^{\circ} A^{\circ} + 11^{\circ} Decemp = 1.20^{\circ} 24.0 / 12^{\circ} 24.0 / 12^{\circ} 1.0^{\circ} 0.15 = 0.7 kip$ ial Pu = $37.5 \pm 0.7 = 38.2 kip$ ear Vux = $5.0 k \cdot ft$ ment Muz = $8.8 \pm 5.0^{\circ} 1.00 = 13.8 k \cdot ft$ trial and error, neutral axis depth $k = c/c = 0.12$ nc. force Fc = $C = Sam(Ec) = Sam(Ec) = Sam(Ec) = 220.3 kip$ nc. moment. Mc = $Sam(Mc) = Sam(Ec) = 60.12 + 60.5 k \cdot ft$ minal flexural strength. Mn = $i/ds + Mc = -10.3 \pm 200.5 k \cdot ft$ minal flexural strength. Mn = $i/ds + Mc = -10.3 \pm 200.5 k \cdot ft$ actor slope = $(0.65 + 0.90) / (0.65^{\circ} Pm (Salancod)) = 0.02^{\circ} Pm (Fs = 0.0017)$ actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017$ actor = $Min (0.9 Max (0.65, -0.0017^{\circ} (38.2 - 0.9^{\circ} 663.3) + 0.9)) = 0.90$ ial strength. $Pn = 0.8^{\circ} 0.85^{\circ} 7.5^{\circ} / (A^{\circ} - A_{2} + 6^{\circ} (A - 8^{\circ} - 0.8^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 kip$			
al Pu = 37.5 + 0.7 = 38.2 kip ear Vux = 5.0 k-ft ment Muz = 8.8 + 5.0 * 1.00 = 13.8 k-ft trial and error, neutral axis depth $k = c/d = 0.12$ nc. force Fc = $C = Sam(Fc) = Sam(Fc) + a(b) = 200.5$ k-ft minal flexural strength Mn = /ds / $3c = 10.3 + 200.5 = 210.8$ k-ft actor slope = $(0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017$ actor slope = $(0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017$ actor = $46c / 0.5 - 46c / 0.55 slow + (Fc) - 0.5 - Fc / Es = 0.0017$ actor = $46c / 0.5 - 46c / 0.55 slow + (Fc) - 0.5 - Fc / Es = 0.0017$ actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength $Pn - 0.8 + 0.85 / Fc / (At - As) + (6 / As - 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip$		ACI 15.8.2.1	
ear Vux = 5.0 k-ft ment Muz = 8.8 + 5.0 * 1.00 = 13.8 k-ft trial and error, neutral axis depth $k = c/ci = 0.12$ nc. force Fc = $C = Sam(Es) = Sam(Har)/(2c) = 20.3$ kip nc. moment. Mc = Sam(Ma) = Sam(Har)/(2c) + ab) = 200.5 k-ft minal flexural strength Mn = /ds / Mar - 10.3 + 200.5 = 210.8 k-ft actor slope = $(0.65 - 0.90)/(0.65 * Pri (Salancod)) = 0.0 * Pri (Fs = 0.0017 actor slope = (0.65 - 0.90)/(0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90)/(0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90)/(0.65 * 0.0017 * (38.2 - 0.9 * 663.3) = 0.9017 actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength Pn - 0.8^{-1} 0.85^{-1} Pi (Ai + As) + (6^{-1} As = -0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip $			
ment Muz = 8.8 + 5.0 * 1.00 = 13.8 k-ft trial and error, neutral axis depth $k = c/d = 0.12$ nc. force Fc = $C = Sam (Fa) = Sam (Fa) * (h/2 + a)) = 200.5$ k-ft minal flexural strength Mn = /ds / No = 10.3 + 200.5 = 210.8 k-ft actor slope = $(0.05 - 0.00) / (0.65 * Pm (Salancod) = 0.02 * Pm (Fa = 0.0007) actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength Pn - 0.8 * 0.85 * fo * /(A) - Az + (6 * Az - 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip $			
trial and error, neutral axis depth $k = c/d = 0.12$ nc. force $Fc = C = Sam(Fo) = Sam(4a + Acl) = 220.3 kip nc. moment Mc = Sam(Mc) = Sam(4a + Acl) = 200.5 k-ft minal flexural strength Mn = ids + Mc = 10.3 + 200.5 = 210.8 k-ft actor slope = (0.05 - 0.00) / (0.05 + Pn (Salancod) - 0.0 + Pn (Fs = 0.005) actor slope = (0.65 - 0.90) / (0.65 + 1144.6 - 0.9 + 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 + 1144.6 - 0.9 + 663.3) = -0.0017 actor slope = (0.65 - 0.90) / (0.65 + 1144.6 - 0.9 + 663.3) = -0.0017 actor = Min (0.5 Max (0.65, -0.0017 + (38.2 - 0.9 + 663.3) + 0.9)) actor = Min (0.9, Max (0.65, -0.0017 + (38.2 - 0.9 + 663.3) + 0.9)) = 0.90$ ial strength $Pn - 0.8 + 0.8 + 7A^2 + A^2 + (4 + As - 0.8 + 0.85 + 5.0 + (576 - 3.5) + 60 + 3.5 = 2113.3 kip $			
nc. force Fc = $O = Sum(Fo)^2 = Sum(Fo)^2 + 20.3$ kip nc. moment Mc = Sum(Fo)^2 = Sum(Fo)^2 + 20.5 k-ft minal flexural strength Mn = //ds / Mc^2 = 10.3 + 200.5 = 210.8 k-ft actor slope = (0.05 - 0.00) / (0.05 * Pm (Salancos)) 0.0 * Pm (Fy = 0.000) actor slope = (0.05 - 0.00) / (0.05 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor slope = (0.65 - 0.00) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor = $Min(0.9, Max(0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9))$ actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength $Pm - 0.8^{-1} 0.8^{-1} Pc^{-1} / (4^{-1} - 4z) + (4^{-1} 4x - 0.8^{-1} 0.85 * 5.0^{-1} (576 - 3.5) + 60 * 3.5 = 2113.3 kip $			
nc. moment Mc = Sum (Mc) = Sum (Fa * (h / P - at)) = 200.5 k-ft minal flexural strength Mn = /As / Ma - 10.3 + 200.5 = 210.8 k-ft actor slope = (0.05 / 0.60) / (0.05 * Pm (Saliancost)) 0.0 * Pm (Fa = 0.005) actor slope = (0.05 / 0.00) / (0.05 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor slope = (0.65 - 0.90) / (0.65 * 1144.6 - 0.9 * 663.3) = -0.0017 AC19.32.2 actor = Min (0.5 Mam (0.25 stoller ' (F) - 0.5 - Fn (Es = 0.025)) + 0.3)) actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength Pn - 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip			
minal flexural strength Mn = /45 / 45 - 10.3 + 200.5 = 210.8 k-ft actor slope = $(0.55 - 0.60) / (0.55 * Pn (Salkoccol) - 0.0 * Pn (Fs = 0.005)$ AC19.3.2.2 actor slope = $(0.55 - 0.90) / (0.55 * 1144.6 - 0.9 * 663.3) = -0.0017$ AC19.3.2.2 actor = $46n (0.5 - 46n (2.55 stolle - (Fs - 0.5 - Fn (Cs - 0.625)) + 0.5))$ actor = $46n (0.5 - 0.90) / (0.55 * -0.0017 * (38.2 - 0.9 * 663.3) = -0.0017$ actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength $Cn - 0.8 * (0.85 * 7.5 * / 41 - 42) + (4 - 48 - 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip $			
actor slope = (0.55 ^{-0.00}) / (0.65 ⁺ Pri (telencod) - 0.0 ⁺ Pri (Fe = 0.006) actor slope = (0.65 - 0.90) / (0.65 ⁺ 1144.6 - 0.9 ⁺ 6663.3) = -0.0017 ACI 9.32.2 actor = Min (0.5 Max (0.55, stolle ' (Fr. 0.5 Fr. (Cs - 0.005)) + 0.5)) actor = Min (0.9, Max (0.65, -0.0017 ⁺ (38.2 - 0.9 ⁺ 6663.3) + 0.9)) = 0.90 ial strength (Pri - 0.8 ⁺ 0.85 ⁺ Pc ⁺ / A ⁺ - A ₂ , + (4 ⁺ A ₂ - 0.8 ⁺ 0.85 ⁺ 5.0 ⁺ (576 - 3.5) + 60 ⁺ 3.5 = 2113.3 kip			
actor slope = $(0.65 - 0.90) / (0.65^{\circ} 1144.6 - 0.9^{\circ} 663.3) = -0.0017$ AC19.3.2.2 actor = $Min (0.5 Max (0.35, store ' (F) - 0.5 - Fn (Ex - 0 (0.5)) + 0.5))$ actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9^{\circ} 663.3) + 0.9)) = 0.90 ial strength $Pn - 0.8^{\circ} 0.85^{\circ} Px^{\circ} (A^{\circ} - A_{2}, + 6 + A_{2} - 0.8^{\circ} 0.85^{\circ} 5.0^{\circ} (576 - 3.5) + 60^{\circ} 3.5 = 2113.3 kip$	2017년 1월 201		
actor = Min (0.9 Max (0.85, stope ' (F): 0.9 Fn (Es = 0 605)) + 0.9)) actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength [Pn = 0.8 ¹ 0.85 ¹ 1.5 ⁺ / A ⁺ - A ₂ + (i - / A9 = 0.8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip			
actor = Min (0.9, Max (0.65, -0.0017 * (38.2 - 0.9 * 663.3) + 0.9)) = 0.90 ial strength <i>Pro - 0.8 * 0.85 * Ps * 1/A * Az, + (+ i Az - 0.</i> 8 * 0.85 * 5.0 * (576 - 3.5) + 60 * 3.5 = 2113.3 kip		ACI 9.3.2.2	
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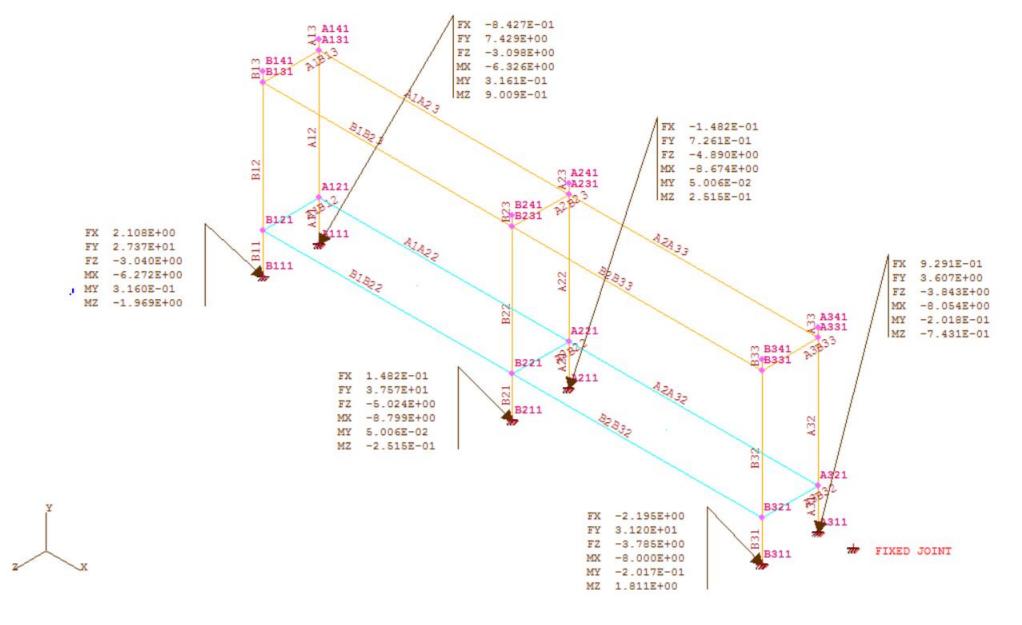


PROJECT: DTPW Railcar Cleaner Platform CALC NO.: 2017-STR-0010, REV 0 ORIGINATED BY: NAC SHEET NO.:C11 OF C11

CALCULATION SHEET



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From:	Joseph.Papitto <joseph.papitto@kiewit.com></joseph.papitto@kiewit.com>
Sent:	Thursday, November 10, 2022 3:01 PM
То:	Reyes, Elva (DTPW)
Cc:	Clerk of the Board (COC); Ricardo.Cummings; Travis.Brilliant; Chantel.Mirecki
Subject:	412223-R1: Car Cleaner Platform Replacement - RFI

EMAIL RECEIVED FROM EXTERNAL SOURCE

Please review and respond to the following RFI's for Project 412223-R1: Car Cleaner Platform Replacement project:

- 1.
- Please confirm that both the Inspector General Audit Fee of 1/2% and the User Access Program Fee of 2% apply to
- 2. This playifaotom end stairways have different details on plan sheet A2.0 5 treads, versus plan sheet S-1.1 7 treads, which detail is correct?
- 3. Plan sheet A1.0 shows reusing the concrete slab at the south end of the new platform, plan sheet S-1.0, foundation plan, shows replacing the slab, which detail is correct?
- 4. The plans do not show any platform slab joint spacing, are contraction joints required, if so at what spacing?
- 5. Please confirm that column base anchor bolts are galvanized and not stainless steel.
- 6. Are there any as-built plans for the existing platform available?
- 7. If no as-built plans are available, what size should we assume the buried concrete footings to be removed are for bidding purposes?
- 8. Spec section 01 50 00, 4.01: Project Sign, says the sign is to be provided by DTPW, spec section 01 58 13, Project Construction Signs, says the contractor is to provide 2 construction signs, which spec is correct?
- 9. Is the contractor responsible for paying for a Project building permit, if so, what is the fee ?
- 10. Are special inspections to be paid for by the Contractor or by the County? Special Inspections Note 4 on plan sheet S-0.0, indicates the special inspector is hired by the County.

Please let me know if you need any further information regarding the above. Thank you.

Joe Papitto Sr. Estimator **Kiewit Infrastucture South Co.** 1580 Sawgrass Corporate Pkwy., Ste 300 Sunrise, FL 33323 954-835-2228, Cell: 954-205-4108

From:	Luis Pasos <lpasos@tarafaconstruction.com></lpasos@tarafaconstruction.com>
Sent:	Thursday, November 10, 2022 3:16 PM
То:	Reyes, Elva (DTPW)
Cc:	Clerk of the Board (COC); Jeovanni Tarafa
Subject:	Car Cleaner Platform Replacement Pre-Bid Questions & Clarification No. 01
Attachments:	Car Cleaner Platform Replacement - Questions & Clarifications No. 1.doc; Car Cleaner Platform
	Replacement - Questions & Clarifications No. 1.pdf

EMAIL RECEIVED FROM EXTERNAL SOURCE

Ref: Car Cleaner Platform Replacement RPQ No.: 412223-R1

Attn: Ms. Elva Reyes,

Good afternoon. Attached to this email please find J.R.T.'s Bid Questions & Clarifications No. 01 for the Car Cleaner Platform Replacement project in both PDF and MS Word format.

Please provide us with responses to our questions. Thank you.

If you have any questions for us, please do not hesitate to contact our team at any time.

Regards,

Luis B. Pasos Sr. Estimator



Luis B. Pasos Sr. Estimator

J.R.T. Construction, Co. 3050 NW 77th Ct., Doral, FL 33122 O. 305.557.9911, Ext. 1009 F. 305.557.9922

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3050 N.W. 77 Court, Doral, FL 33122 • Tel: 305-557-9911 • Fax: 305-557-9922

November 10, 2022

Miami Dade - Department of Transportation and Public Works Capital Improvements Division 111 NW 1st Street, Suite 1410 Miami, FL 33128

SENT VIA E-MAIL (4) Page(s) Total

Attn: Ms. Elva Reyes – Engineer 2 – revesel@miamidade.gov

Re: Car Cleaner Platform Replacement Project RPQ: No. 412223-R1 Project Location: 6601 N.W. 72nd Avenue, Miami

Subj: Pre- Bid Questions & Clarifications No. 01

Dear Ms. Reyes,

Herein below please find J.R.T. Construction, Co.'s Bid Questions & Clarifications for the above-referenced project.

- Invitation to Bid document does provide your contact info to send RFI's and Bid questions but does not mention a deadline for submitting such questions. Please provide us with a final day for submitting Pre-Bid questions.
- 2) Special Provision to the Contract does mention in Article 20.0 the User Access Program. Please clarify and confirm if UAP 2% fees apply to this project.
- 3) Please clarify if Inspector General Audit Service Deduction of 0.25% apply to this project.
- 4) The General Conditions of the Contract, Item 7-E-1 regarding Permit fees states that "For payment of Permits, see Special Provisions", but Special Provisions do not mention if Permit Fees will be reimbursed to the Contractor or not. Please clarify if ALL Permit Fees are to be included in the Base Bid or if they will be reimbursed by Owner to Contractor.
- 5) Specification section 011100 Summary of Work, Article 1.4-D calls for a Contractors Field Office trailer to hold meetings (conference table with 8 chairs) as required. Please confirm Field Office with meeting conference table capabilities is a requirement. Please provide a Proposed Staging Location for the temporary field office trailer.
- 6) Specifications Section 014523 regarding Testing Laboratory Services, Article 1.01 states that "All Testing shall be made at the expense of the Contractor" so it is the responsibility of the Contractor to pay for MDC Independent Testing Laboratory Services. This Article conflicts with several Articles of the General Conditions of the Contract in which they call for the Owner to hire

an Independent Testing Lab, especially Article 7-C-1 which states that testing "will be made at <u>the expense of the Owner</u> by the project testing laboratory". Please clarify if the Contractor is to include ALL testing, including Concrete Testing and Soil Testing (Proctors, densities, etc.) Services as part of the Base Bid.

- 7) Specification Section 01500 regarding Project Sign, Article 4.01 states that the Project Sign is to be supplied by DTPW and installed by the Contractor, but conflicts with Specification Section 015813, Article 1.1, which states that the Project Signs will be provided by the Contractor. Please clarify which instruction prevails.
- 8) Construction Safety Manual includes the MDT Security Requirements and mentions that all Contractors and personnel working at the site must be in possession of a photo ID card issued by MDT. If payment for ID is required, please provide the cost for the background checks and badge for each employee and subcontractors.
- 9) Plan and Documents do not provide the Proposed location (or locations) for the Staging area that will be required by the Contractor, where we can place trash dumpsters for debris removal, and temporary piles of removed/excavated materials for loading and hauling off-site, as this will greatly impact the Demolition operations required. Please provide a proposed location for a staging area(s) that would be acceptable for the continued operations of the Yard.
- 10) Plan Sheet D1.0 includes General Removal Note #2 and calls for the demolition and removal of the existing steel columns and concrete footings of the wood platform, but documents contain no information on the quantity of columns, quantity, size, and depth of footings. Are there individual concrete pads for each column? Please provide As-Built Plans for the existing wood platform showing quantities, the size and depth of all concrete footings to be removed.
- 11) Plan Sheet D1.0 includes pictures showing the existing steel columns are in close proximity to the existing rail wood sleepers to remain, and the existing concrete footings will be even closer and may extend partially under a portion of the existing wood sleepers. Has this possibility been explored at the time of design? Please provide results of any exploratory findings and existing dimensions regarding the locations of the existing footings to be removed and the proximity to the rail wood sleepers to remain.
- 12) Demolition plan Sheet D1.0 does not mention any existing electrical, plumbing, water or sewer lines serving or crossing the existing wood platform area. Please confirm there are no existing electrical, plumbing, water, or sewer, that needs relocations, demolition, or removals. If there are, please provide As-Built plans of all utilities within the proposed demolition areas.
- 13) Demolition plan Sheet D1.0 does show three existing drains/waste connections that are to remain under the platform but fails to show the underground pipes/lines routes serving such drains. Please provide As-Built plans of ALL existing utility lines crossing or serving the affected proposed Work Area.
- 14) Plan Sheet D1.0 includes pictures showing the existing wood platform to be made of Pressure Treated (PT) wood, which in some cases may have been treated with Arsenic or other hazardous materials and may require special handling and disposal procedures. Has the existing PT wood been tested for such materials? Please provide results of any testing on the PT wood to be removed.

- 15) If no testing has been done on the PT wood, will the Owner be providing testing before the start of the Contract? And if it turns out that the wood does require special handling or abatement, will this be considered an "unforeseen condition" and be subject to a change order for the added removal expenses? Please clarify how do you want us to proceed and define what should be included in the Base Bid.
- 16) Plan Sheet C2.0 includes section A/C2.0 and shows a 6" deep composite concrete slab for the new proposed platform, but Structural plan S-1.1 in sections A/S-1.0 and in Detail #1 calls for the proposed composite slab to be a 4" slab. Please clarify if Structural Plans instructions prevails.
- 17) Plan Sheet C-2.0 includes section A/C2.0 and shows the platform slab with a continuous steel angle running from column to column to support the slab, but Structural Plan S-1.1 calls for using a HSS 6"x6" steel tube to support the slab. Please clarify if Structural Plans instructions prevails.
- 18) Plan Sheet C2.0 includes Architectural Note C regarding the Metal Roofing, and it proposes to use a 22 ga metal roofing by American Buildings with a NOA #17-0501.05. Unfortunately, the referenced NOA has expired, and one of our roofing subs mentioned the manufacturer seems to NOT be working in extending this NOA for the 22 ga. structural roofing panels. Please provide Alternate manufacturer and Model for the required structural metal roofing panels, with a current NOA.
- 19) Plan Sheet C3.0 General Note #4 calls for the Contractor to obtain all permits "and pay all fees connected to his work". Please clarify if Owner will reimburse the Contractor for all Permit Fees, or if all fees should be included in the Base Bid.
- 20) Plan Sheet A1.0 and A2.0 include notes calling for "all steel surfaces to be painted", but Plan S-0.0 Structural Steel note #3 calls for all structural steel exposed to weather "Shall be Hot Dipped Galvanized". Having Hot Dipped Galvanized steel members being attached using field welding will destroy the galvanized protection around the welded areas and will require extensive galvanized paint touch-ups, field applied. Please clarify which instruction is to prevail and indicate final finish on all exposed structural steel members.
- 21) Plan Sheet S-0.0 includes Concrete Note #6 and calls for the Owner to contract an Independent Testing Lab to perform all required concrete testing. Please confirm Owner will provide all concrete testing services, as mentioned in the General Conditions of he Contract, under Article 7-C-1.
- 22) Plan Sheet S-0.0 includes Foundation Note #7, and Earthwork Note #7 and #8, all calling for a Geotechnical Engineer to verify the Soil Conditions before installing any rebars or pouring any concrete, and to inspect the Soil Compaction during the earthwork. Please clarify if Owner will provide and pay for the services of the Geotechnical Engineer for all observations and Soil Certifications required.
- 23) Please confirm if Owner will also provide and pay for all Soil Testing for the earthwork, such as required Proctors, Densities, soil classifications, etc.

24) Plan Sheet S-1.1 showing the Typical Foundation Plan for each proposed spread footing to be an 8' wide by 8' long pad and section A/S-1.0 above, shows the depth of excavation required to be 4'-6" deep from the existing grade. The Specific Purpose Survey by J. Bonfill & Associates provided shows the distance between the existing rails to remain, to be 10.1' wide to what seems to be the steel tracks, and not considering that the wood sleepers encroach into the 10.1' distance from both sides. The footing design shown in plans will require an excavation to within inches (or extending under the rails due to angle of repose of the fill/soil material) from the existing steel tracks and to be 4'-6" deep and it may leave a portion the existing wood sleepers resting on air, above the excavation.

We are concerned that the proposed 8' wide excavation width is intruding into the zone of influence of the load carried by the wood sleepers and that because the existing soil strata is made of fill (not rock) it may also cause cave-in of the existing fill layer under the wood sleepers to remain. Please advise if footing design can be revised to a lesser width and less depth or advise on how to re-design the proposed footings to prevent the excavations from encroaching into the existing wood sleepers' areas.

Your response to these issues will be greatly appreciated.

If you have any questions, please don't hesitate to contact me at any time.

Sincerely yours, J.R.T. Construction, Co.

Luis B. Pasos Chief Estimator

- cc: Clerk of the Board: <u>clerkbcc@miamidade.gov</u>
- cc: Jeovanni Tarafa: jtarafa@tarafaconstruction.com

From:Joseph.Papitto <joseph.papitto@kiewit.com>Sent:Monday, November 14, 2022 2:54 PMTo:Reyes, Elva (DTPW)Cc:Clerk of the Board (COC); Ricardo.Cummings; Travis.Brilliant; Chantel.MireckiSubject:412223-R1: Car Cleaner Platform Replacement - RFI

EMAIL RECEIVED FROM EXTERNAL SOURCE

Please review and respond to the following RFI's for Project 412223-R1: Car Cleaner Platform Replacement project:

- 1. Plan sheet S-1.0 shows 34 platform gridlines, the civil and architectural plans show 32 gridlines, please clarify.
- 2. Will the Contractor be provided a staging area within the Lehman Yard or at a site nearby?
- 3. Please identify what the actual damages may be and the maximum cost per day of such damages referenced in Section 8 detailed below?

RPQ No.: 412223-R1 Solicitation Documents (Page 209 of 516) – Section 8. Contract Time – F Liquidated Damages and Liquidated Indirect Costs 4) In the event the Contractor fails to perform any other covenant or condition (other than time-related) of this Contract relating to the Work, the Contractor shall become liable to the Owner for **any actual damages** which the Owner may sustain as a result of such failure on the part of the Contractor. The Owner reserves the right to retain these amounts from monies due the Contractor.

4. If someone is unable to make it to scheduled site visit, can they make arrangements to visit the site at a later date ?

Please let me know if you need any further information regarding the above. Thank you.

Joe Papitto Sr. Estimator **Kiewit Infrastucture South Co.** 1580 Sawgrass Corporate Pkwy., Ste 300 Sunrise, FL 33323 954-835-2228, Cell: 954-205-4108

From:	Chantel.Mirecki <chantel.mirecki@kiewit.com></chantel.mirecki@kiewit.com>
Sent:	Tuesday, November 22, 2022 1:54 PM
То:	Reyes, Elva (DTPW)
Cc:	Clerk of the Board (COC); Ricardo.Cummings; Travis.Brilliant; Joseph.Papitto
Subject:	412223-R1: Car Cleaner Platform Replacement - RFI

EMAIL RECEIVED FROM EXTERNAL SOURCE

Please review and respond to the following RFI for Project 412223-R1: Car Cleaner Platform Replacement Project:

Electrical Legend on Sheet E1.0 details NEMA 3R Junction Box ($6^{"}x6^{"}x4$) where Typical Electrical Detail D on Sheet E2.0 details ($8^{"}x8^{"}x6^{"}$) – please clarify.

Thank you,



Chantel Mirecki, EIT Estimator

Kiewit Infrastructure South Co. 1580 Sawgrass Corporate Parkway Suite 300, Sunrise, FL 33323 Office: (954) 233-1023 Cell: (770) 371-3023 From:David Moran <dmoran@epic-consultants.com>Sent:Wednesday, November 23, 2022 3:21 PMTo:Reyes, Elva (DTPW); Clerk of the Board (COC)Cc:Marila FernandezSubject:412223-R1

EMAIL RECEIVED FROM EXTERNAL SOURCE

Please respond:

- 1. Please specify the construction working hours. It was stated during the prebid meeting that construction working hours would be from 8:00 AM to 4:00 PM. Please confirm
- 2. Please confirm if the quality control manager can be the safety manager.
- 3. During excavation, dirt will be placed on the outside but next to the tracks. What distance should be keep from the tracks?
- 4. During the execution of new work, are we going to be permitted to leave material next the track if so what distance should we keep from the track or do we have to take all material on a daily basis back to the lay down area.

Thank you,

David Moran, P.E.

Principal +638,株:<08::7#### ###gp_rudgC_hs近Cfrgvxodgw近frp_



From:	Luis Pasos <lpasos@tarafaconstruction.com></lpasos@tarafaconstruction.com>
Sent:	Tuesday, November 29, 2022 4:55 PM
То:	Reyes, Elva (DTPW)
Cc:	Clerk of the Board (COC); Jeovanni Tarafa
Subject:	Car Cleaner Platform Replacement - Pre Bid Questions & Clarifications No. 02
Attachments:	Car Cleaner Platform Replacement - Questions Clarifications No. 2.doc; Car Cleaner Platform
	Replacement - Questions Clarifications No. 2.pdf

EMAIL RECEIVED FROM EXTERNAL SOURCE

Ref: Car Cleaner Platform Replacement RPQ No.: 412223-R1

Attn: Ms. Elva Reyes,

Good afternoon. Attached to this email please find J.R.T.'s Bid Questions & Clarifications No. 02 for the Car Cleaner Platform Replacement project in both PDF and MS Word format.

Please provide us with responses to our questions. Thank you.

If you have any questions for us, please do not hesitate to contact our team at any time.

Regards,

Luis B. Pasos Sr. Estimator



Luis B. Pasos Sr. Estimator

J.R.T. Construction, Co. 3050 NW 77th Ct., Doral, FL 33122 O. 305.557.9911, Ext. 1009 F. 305.557.9922

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November 29, 2022

Miami Dade County Department of Transportation and Public Works Capital Improvements Division 111 NW 1st Street, Suite 1410 Miami, FL 33128 SENT VIA E-MAIL (2) Page(s) Total

Attn: Ms. Elva Reyes - Engineer 2 - revesel@miamidade.gov

Re: Car Cleaner Platform Replacement Project RPQ: No. 412223-R1 Project Location: 6601 N.W. 72nd Avenue, Miami

Subj: Pre- Bid Questions & Clarifications No. 02

Dear Ms. Reyes,

Herein below please find J.R.T. Construction, Co.'s added Bid Questions & Clarifications for the abovereferenced project.

- Plan Sheet C1.0 and plan Sheet A1.0 (including the proposed Site Plan) both show the proposed new car cleaner platform to be built between Gridlines #1 thru #32, with a distance of 20' for each bay, but Structural plan S-1.0 shows the gridlines extending further to Gridline #34. Also, plan Sheet D1.0 has a note calling for phasing the project and mentions Phase 2 extending thru Gridline #38. Please clarify and confirm the gridline number that should be the end of the proposed scope of work for this project including the new car cleaner platform.
- 2) Plan Sheet A2.0 contains Section A/A2.0 and shows a distance of 11'-0" between the existing steel rails (adjacent to the platform on both sides), but such dimension is in conflict with Specific Purpose Survey prepared by J. Bonfill & Associates that shows the same dimension as 10.1'; <u>almost an entire foot less</u>. Please clarify which dimension is correct.
- 3) We would like the record to reflect that during the Site Visit after the Pre-Bid Meeting held on 10/17/2022, Contractors were not allowed to be within close proximity to the existing racks/rails for safety reasons. Therefore, Contractors were not able to take their own field measurements and perform their own field verifications. Consequently, Contractors will be required to rely on the dimensions and measurements provided to us in the Bid Documents and one the written responses to any Pre-bid Questions or RFI's that will be issued via Addendum.
- 4) Please provide distance the sleepers (or ties) extend from the steel track to the end of the ties. This dimension is not found on the plans.

- 5) Please provide the clear distance between the ends of ties on both sides of the platform. This dimension is not found on the plans.
- 6) The proposed civil plans seem to identify a proposed new drain sewer line. However, plan Sheet D1.0 (including the existing Site Plan) includes a note that states "waste connectors under platform are to remain. Protect during removal". Please clarify if the intent is to protect an existing drain line? If so, please note that any waste connector drain lines running underground below the proposed new car platform will be interrupted and cut at the location of each new footing being excavated and built. Please clarify the intent of this note and what needs protection.
- 7) Plan Sheet S-1.1, Detail A/S1.0, shows an excavation depth for the proposed new footings of 4.5' deep. As a result of this and due to the narrow work area and extreme proximity to the existing railway ties and tracks to remain, we are considering using sheet piling to maintain the existing soil under the existing tracks from caving in at the new footing locations. The Geotechnical Report included in the Bid Documents does NOT contain a Sheet Pile recommendation for the type and depth of Sheet Pile required to retain the existing soil under the existing soil conditions identified in the Geotechnical Report, please have a Geotechnical Engineer provide recommendations for the Sheet pile type and depth required to retain the existing soil under the tracks (at the footing locations) as an Addendum to the existing Geotechnical Report.
- 8) As a follow up to the previous question, please advise if the Owner will approve and allow leaving any installed Sheet Pile (used to retain the existing earth under the existing tracks) in situ (or in place) after construction of the new footings for the new car cleaner platform is complete.
- 9) Please confirm the Contractor has wide discretion to use any means and methods the Contractor deems necessary for design and construction of the car platform footings in order to ensure the existing soil under the existing tracks does not cave in.

Your response to these issues will be greatly appreciated.

If you have any questions, please don't hesitate to contact me at any time.

Sincerely yours, J.R.T. Construction, Co.

Luis B. Pasos Chief Estimator

cc: Clerk of the Board: <u>clerkbcc@miamidade.gov</u> Jeovanni Tarafa: <u>itarafa@tarafaconstruction.com</u>