

STRUCTURAL GENERAL NOTES

- 1. All work shall conform to applicable portions of the Hawaii Standard Specification for Road and Bridge Construction, 2005, of the State of Hawaii unless otherwise indicated.
- 2. The contractor shall verify all repair quantities with the Engineer before proceeding with the repair work.
- 3. The contractor shall verify all field dimensions, existing elevations and conditions against the contract drawings prior to starting work. All discrepancies shall be reported to the Engineer.
- 4. The Contractor is responsible for visiting and inspecting the site in order to ascertain site conditions; to properly gage the extent of concrete damage; to determine appropriate construction methods; to anticipate difficulties in the sequencing and lay out construction operations; and to prepare accurate material, labor, and cost estimates. Any claims for additional payment, based upon work difficulties that arise from failure of the Contractor to fully inspect the site or to closely read the available plans, shall be denied by the Engineer.
- 5. All work specified in the contract but not listed separately shall be considered incidental and will not be paid for separately.
- 6. During construction, the contractor shall be responsible for jobsite safety. The contractor shall assume responsibility for the design and provision of all temporary bracing, shoring, guys, etc. in accordance with all national, state and local safety ordinances.
- 7. All omissions or conflicts between the various elements of the contract drawings and/or specifications shall be brought to the attention of the Engineer before starting any work.
- 8. Notes and details on drawings shall take precedence over general notes and typical details. Should there be conflicts between the requirements of the drawings or specifications, the more stringent requirement shall apply.
- 9. Details shown on the drawings shall be typical for all similar conditions. Modify details for special conditions as directed by the Engineer.
- 10. Contractor shall protect existing surfaces and objects to remain from damage. Any item to remain that is damaged by the contractor shall be replaced or repaired to match existing adjacent surfaces at no additional cost.
- 11. The contractor shall provide all necessary measures to protect the new work and existing structures during the construction.
- 12. All existing utilities to remain shall be protected from damages during construction. Any damages by the contractor shall be repaired at no additional cost to the State.
- 13. Information shown on the drawings has been obtained from field observations. The accuracy and completeness of the drawings are not guaranteed. Dimensions of the structure shown on the drawings may not be exact. Contractor shall verify all existing conditions and structure dimensions before commencing work. Notify the Engineer of any discrepancies.

- 14. No debris shall be allowed to enter the water. The contractor shall provide a temporary platform or other suitable positive means of capturing debris from construction and demolition operations. These facilities shall be in place prior to starting demolition work.

DESIGN CRITERIA (For New Work Only)

- 1. AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Seventh Edition, 2014, including Interim revisions.
- 2. Design Criteria for Bridges and Structures, August 8, 2014, State of Hawaii, Department of Transportation, Highways Division.

DESIGN LOADS (For New Work Only)

- 1. Dead Loads:
 - A. An allowance of 25 PSF (from curb-to-curb) for future A.C. wearing surface has been provided for in the design.
 - B. An allowance of 150 PLF for future utilities in addition to known or existing utility loads on the structure.
- 2. Live Load: HL-93 Design Truck or Design Tandem, and Design Lane Load.
- 3. Median Areas:
 - Live Load: 250 PSF.

EPOXY MATERIAL NOTES

- 1. Refer to drawings for structures that require epoxy embedded connections. Refer to Standard Specs Section 656 - "Drilling Holes and Installing Dowel Reinforcing Bars." Cost shall be incidental to Section 602 Reinforcing Steel.
- 2. Epoxy shall be installed in strict conformance to manufacturer installation instructions. Holes shall be properly cleaned by air hose and/or manufacturer air nozzles.
- 3. Holes shall be drilled with a rotary impact drill or rock drill. Coring of holes is not permitted. Do not over drill depth of hole.
- 4. Confirm epoxy expiration date shown on packaging.
- 5. Contractor shall submit product data of proposed product including International Code Council Evaluation reports for Engineer's review prior to construction.
- 6. To prevent damage, contractor shall locate existing steel reinforcing by non-destructive methods prior to drilling holes. Contractor is responsible for repair of existing reinforcing if damage is caused.
- 7. Epoxy adhesive shall be Simpson Set-XP Epoxy, Hilti HIT-RE 500-SD, or approved equal. Epoxy for epoxied reinforcing steel dowels shall be fully cured prior to pouring concrete.

SITE CAST CONCRETE

- 1. High early strength concrete shall be a mixture of cement, fine aggregate, coarse aggregate, plasticizing admixture, corrosion inhibitor admixture, fiber, and water. It shall have a minimum compressive strength of 3,000 PSI when opened to traffic and no later than 2 hours after casting. Minimum compressive strength of concrete shall be 6,000 PSI at 7 days.
- 2. Aggregates shall be basalt, no larger than 3/4" and otherwise conform to the State Standard Specifications and Special Provisions.
- 3. Unless otherwise indicated, plasticizer admixtures shall be used at the Contractor's option subject to approval of the Engineer.
- 4. Concrete mix design shall be submitted to the Engineer for review.
- 5. Minimum clear cover of concrete over outer reinforcing bars or ties shall be as shown on drawings, unless otherwise noted. See Standard Specification Table 602.03-2 for additional information.
- 6. Concrete admixtures containing chloride salts shall not be used.
- 7. Do not feather edge repairs.
- 8. All exposed rebars shall be cleaned of all scale, rust, dirt, oil and other deleterious materials.
- 9. All forms shall be water tight, concrete and water with cementitious particles shall not overflow formwork. Formwork and joints shall be sealed to prevent concrete and water with cementitious particles from leaking.
- 10. Unless otherwise noted, existing deck reinforcing steel shall not be removed or damaged. Reinforcing steel shall be re-used in the new deck and placed in the same orientation and location as originally shown on the existing drawings.
- 11. All roughened surfaces in concrete shall be made with a minimum amplitude of 1/4".
- 12. Unless otherwise noted on drawings, all exterior corners and re-entrant angles 90 degrees or less in concrete work shall be chamfered 3/4"x3/4".
- 13. Contractor shall hire a certified independent testing lab to take and test a minimum of seven 4"x8" test cylinders per 300 SF of deck per day. Three cylinders shall be tested before opening deck to traffic, three cylinders tested at 7 days, and one held as reserve. Cost is incidental.
- 14. Contractor option to use Maturity Method per ASTM C1074 prior to opening deck to traffic.
- 15. Clean and coat new concrete and existing concrete surfaces within 5 feet of all new work with a concrete penetrating sealer such as Sika Ferrogard 903, or pre-reviewed equal. Clean and apply per sealant manufacturer literature.
- 16. Precast Concrete Plank Notes: Refer to sheet S-17.

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HAWAII	HAW.	92A-02-17M	2017	ADD. 9	40

NON-SHRINK GROUT

- 1. Non-Shrink grout shall have a minimum 28 day compressive strength of 7,000 PSI.

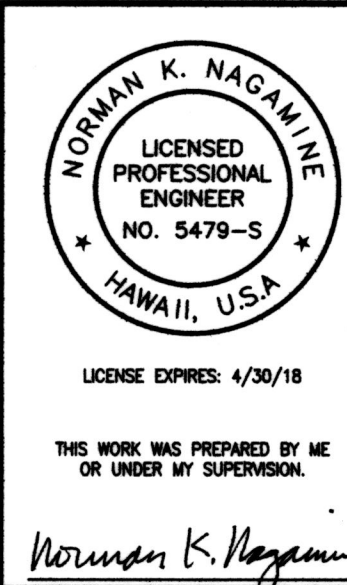
REINFORCING STEEL FOR SITE CAST CONCRETE

- 1. Reinforcing steel bars shall be AASHTO M31 (ASTM A-615) Grade 60, unless otherwise noted. Provide ASTM A706 Grade 60 where noted on drawings.
- 2. Reinforcing steel bars shall be uncoated, unless otherwise noted.
- 3. Splices in reinforcing steel shall not be permitted, unless otherwise noted.
- 4. All reinforcing steel bars, anchor bolts, dowels and other embedded items shall be securely tied in place before concrete pour.
- 5. All reinforcing steel bar bends shall be made cold. Field bending of reinforcing steel bar larger than #5 shall not be permitted. Refer to Standard Specifications Section 602.03 (C) (2).
- 6. Welding of reinforcing steel shall not be permitted, unless otherwise noted.

INSPECTION REQUIREMENTS

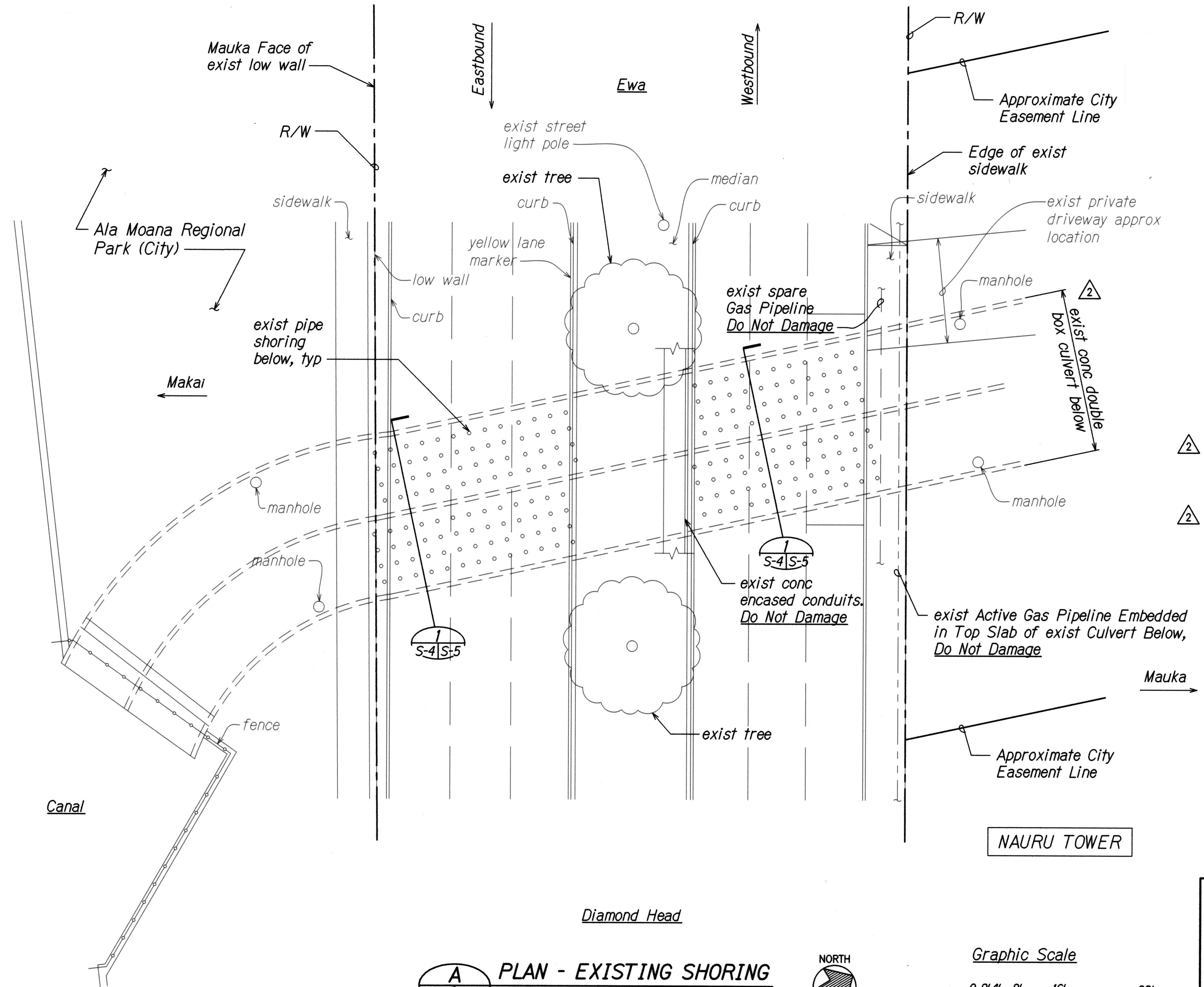
- 1. Contractor shall refer to Standard Specifications Section 105.11 - "Inspection of the Work and Materials."
 - 2. The work items that will require inspection by the Engineer shall be, but not be limited to, the following items:
 - A. Reinforcing steel / Prestress Strands
 - B. Concrete
 - C. Epoxy embedded reinforcing steel dowels
- Contractor shall notify the Engineer at least 7 working days prior to the above inspections. Inspection items listed are applicable to both site cast and precast concrete.

DATE	_____
DESIGNED BY	_____
TRACED BY	_____
NOTED BY	_____
CHECKED BY	_____
NO.	_____



2	Revised Note
	06/01/17
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STRUCTURAL GENERAL NOTES	
ALA MOANA BOULEVARD DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIIKOI STREET Project No. 92A-02-17M	
Scale: None	Date: May 5, 2017
SHEET No. S-1 OF 18 SHEETS	

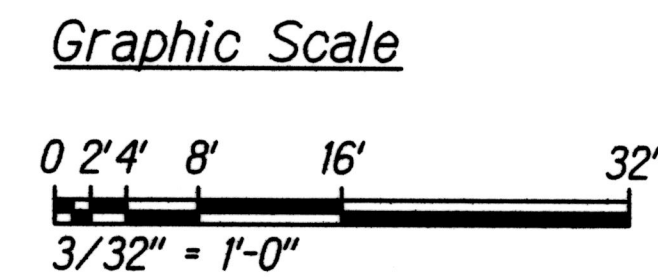
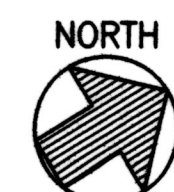
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 12	40



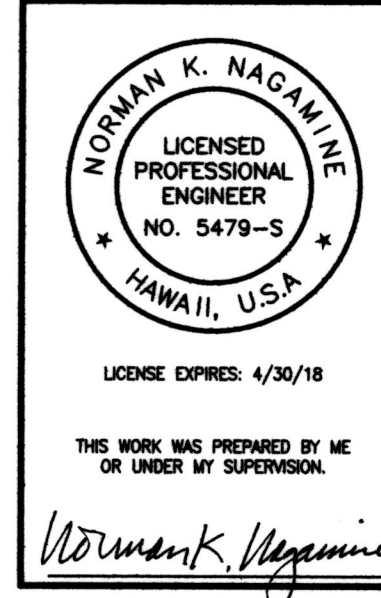
- Shoring Notes:**
- Existing pipe shoring is property of the State and shall be returned to the State after completion of the project. Contractor shall save shoring and deliver shoring to location approved by the State. Contact Richard Luster at 831-6700 ext 100.
 - Contractor's Option: Existing pipe shoring may be used by Contractor during construction of this project. If Contractor chooses to use existing shoring, Contractor shall inspect condition of shoring at start of project and shall use existing shoring at own risk.
 - Existing concrete top slab is in poor condition, under both roadway and the median areas.
 - Contractor shall review integrity of shoring after heavy rains.

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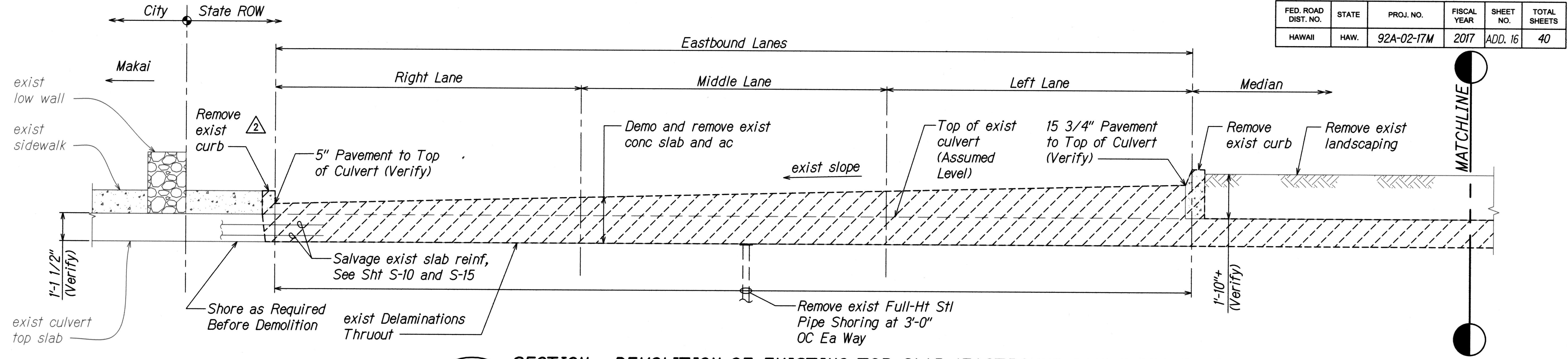
PLAN - EXISTING SHORING
 Scale: 3/32" = 1'-0"



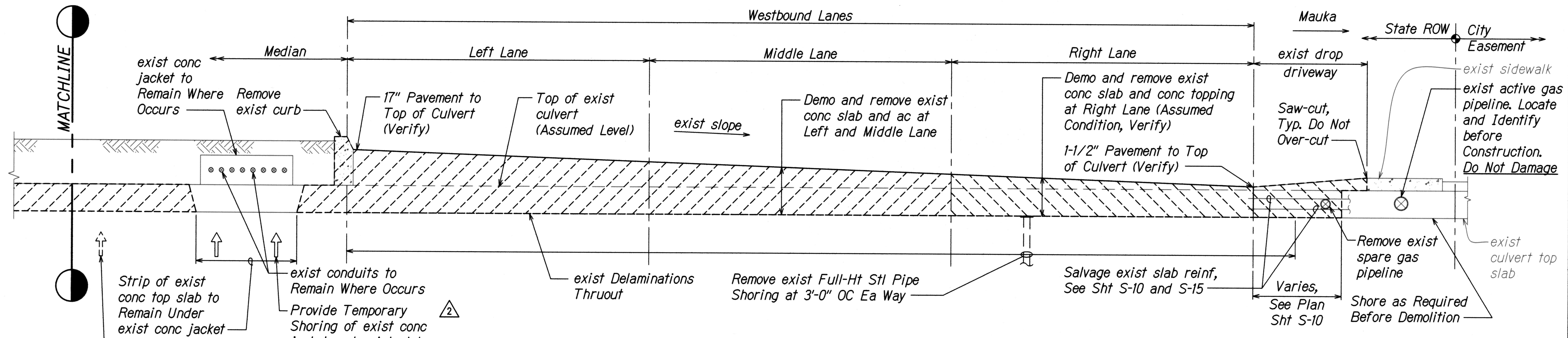
2	Added Notes. Revised Existing Culvert Graphic
06/01/17	
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PLAN - EXISTING SHORING ALA MOANA BOULEVARD DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIIKOI STREET Project No. 92A-02-17M Scale: 3/32" = 1'-0" Date: May 5, 2017 SHEET No. S-4 OF 18 SHEETS	



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HAWAII	HAW.	92A-02-17M	2017	ADD. 16	40

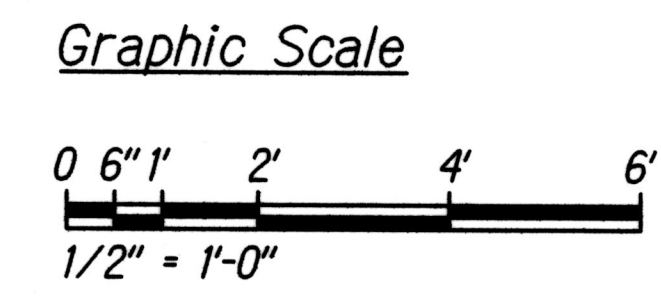


1 SECTION - DEMOLITION OF EXISTING TOP SLAB (EASTBOUND LANES AND PARTIAL MEDIAN)
 S-3 | S-8 Scale: 1/2" = 1'-0"

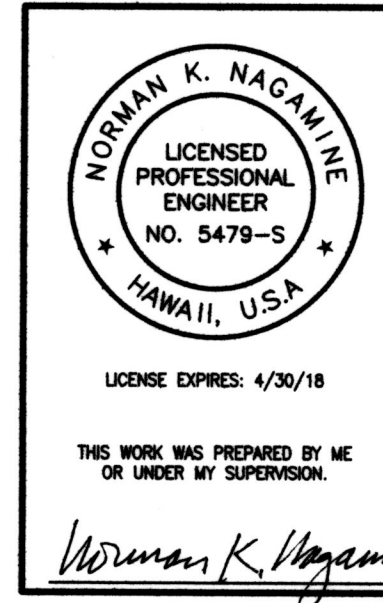


2 SECTION - DEMOLITION OF EXISTING TOP SLAB (WESTBOUND LANES AND PARTIAL MEDIAN)
 S-3, S-6 | S-8 Scale: 1/2" = 1'-0"

- Notes:**
1. Demo and rebuild Eastbound or Westbound lanes separately, not simultaneously.
 2. Topo of existing conditions was not available. Contractor shall field verify all dimensions and existing conditions prior to demolition and construction.

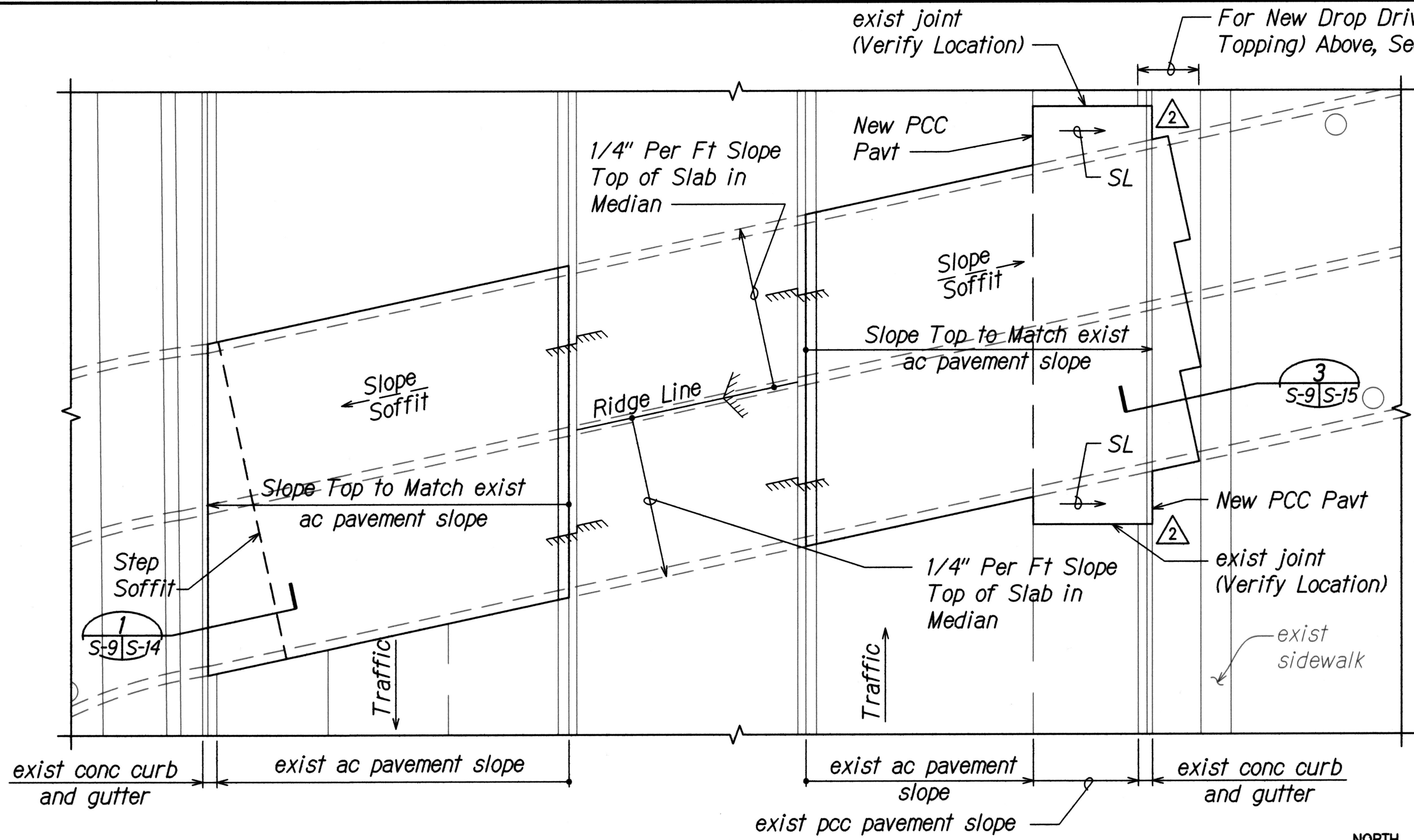


<div> <div>2</div> <div>Remove Existing Curb on Makai Side</div> <div>06/01/17</div> <div>Shoring Clarification</div> </div>	DATE
	REVISION
<div> <div>STATE OF HAWAII</div> <div>DEPARTMENT OF TRANSPORTATION</div> <div>HIGHWAYS DIVISION</div> <div>SECTIONS - DEMOLITION OF CONCRETE TOP SLAB</div> <div>ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIKOI STREET</div> <div>Project No. 92A-02-17M</div> <div>Scale: 1/2" = 1'-0"</div> <div>Date: May 5, 2017</div> </div>	
SHEET No. S-8 OF 18 SHEETS	



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HAWAII	HAW.	92A-02-17M	2017	ADD. 17	40



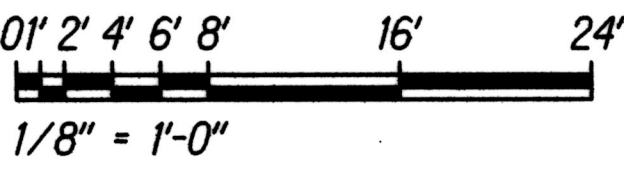
Typical Slab Notes:

- Contractor shall measure and record existing top of pavement elevations prior to demolition. Contractor shall provide these existing elevations to the State and Engineer prior to beginning demolition. New top of slab elevations shall match the top elevations for the pavement that it is replacing. Provide smooth transitions throughout and smooth transitions to existing AC roadway approach at each end of culvert.
- Final finish slopes and elevations of slab shall account for dead load deflection of slab and precast planks self-weight after removal of shores. Contractor shall submit final finish slopes, top of topping elevation and top of precast plank elevations to State and Engineer for review prior to construction.
- Contractor shall submit planned methods and materials for temporary measures to allow for use of roadway in the event that work is not complete in the designated weekend closure periods. Submittal shall be stamped by a Hawaii licensed Structural Engineer and submitted to the State for information only.
- Shoring shall not be removed until concrete topping and cast-in-place pour strips have cured for 14 days minimum. See Standard Specs Section 503.
- Cast-in-place concrete shall be cured 1 hour minimum prior to opening to traffic and attain 3000 PSI minimum concrete strength. Refer to Special Provisions Section 503 for further requirements.
- Provide curing compound after casting concrete. Curing Material shall conform to ASTM C1315 and ASTM C 309 Type II, Class B White pigment. Acceptable product is Unitex K.C. White Acrylic Cure, or approved equal.
- Time finish concrete surface in roadway. See Standard Specs Section 503 - Concrete Structures. Time direction shall be transverse to direction of traffic.
- Broom finish concrete surface in new drop driveway to match existing drop driveway finish. Provide transverse and longitudinal control joints (score lines) to match existing score lines.
- For existing Gas Pipeline, refer to Construction Notes on Sheet T6.
- For striping plan, see Civil drawings.

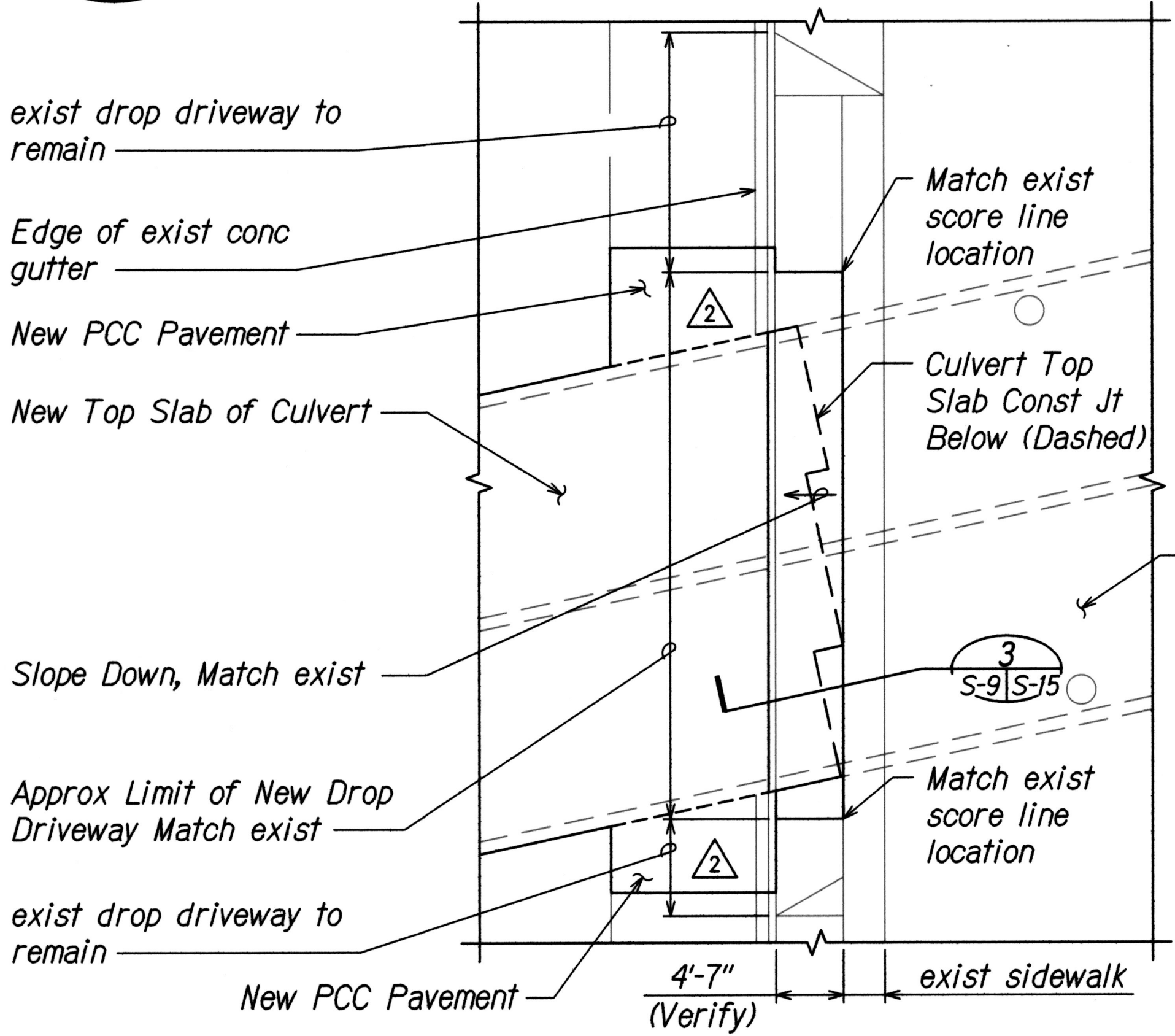
Legend:

- Step in Concrete
- Ridge in Concrete

Graphic Scale



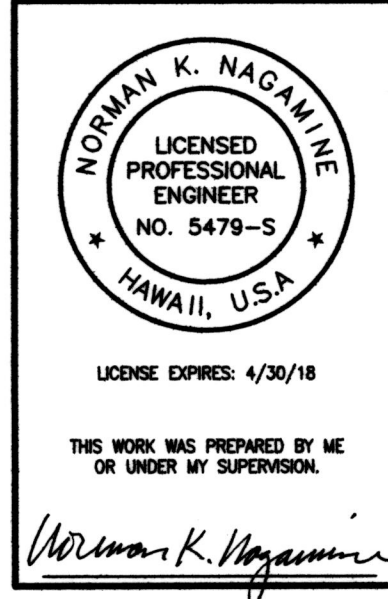
1 FINISH SLAB ELEVATIONS S-5, S-6, S-7, S-9 Scale: 1/8" = 1'-0"



Note:
Score lines in new drop driveway not shown. Field verify and match existing locations.

2 PLAN - NEW DROP DRIVEWAY S-9/S-9 Scale: 1/8" = 1'-0"

2	Revised PCC Pavement and Gutter/Curb Replacement Extent
06/01/17	DATE
REVISION	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
FINISH SLAB ELEVATIONS	
ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIKOI STREET	
Project No. 92A-02-17M	
Scale: 1/8" = 1'-0"	Date: May 5, 2017
SHEET No. S-9 OF 18 SHEETS	

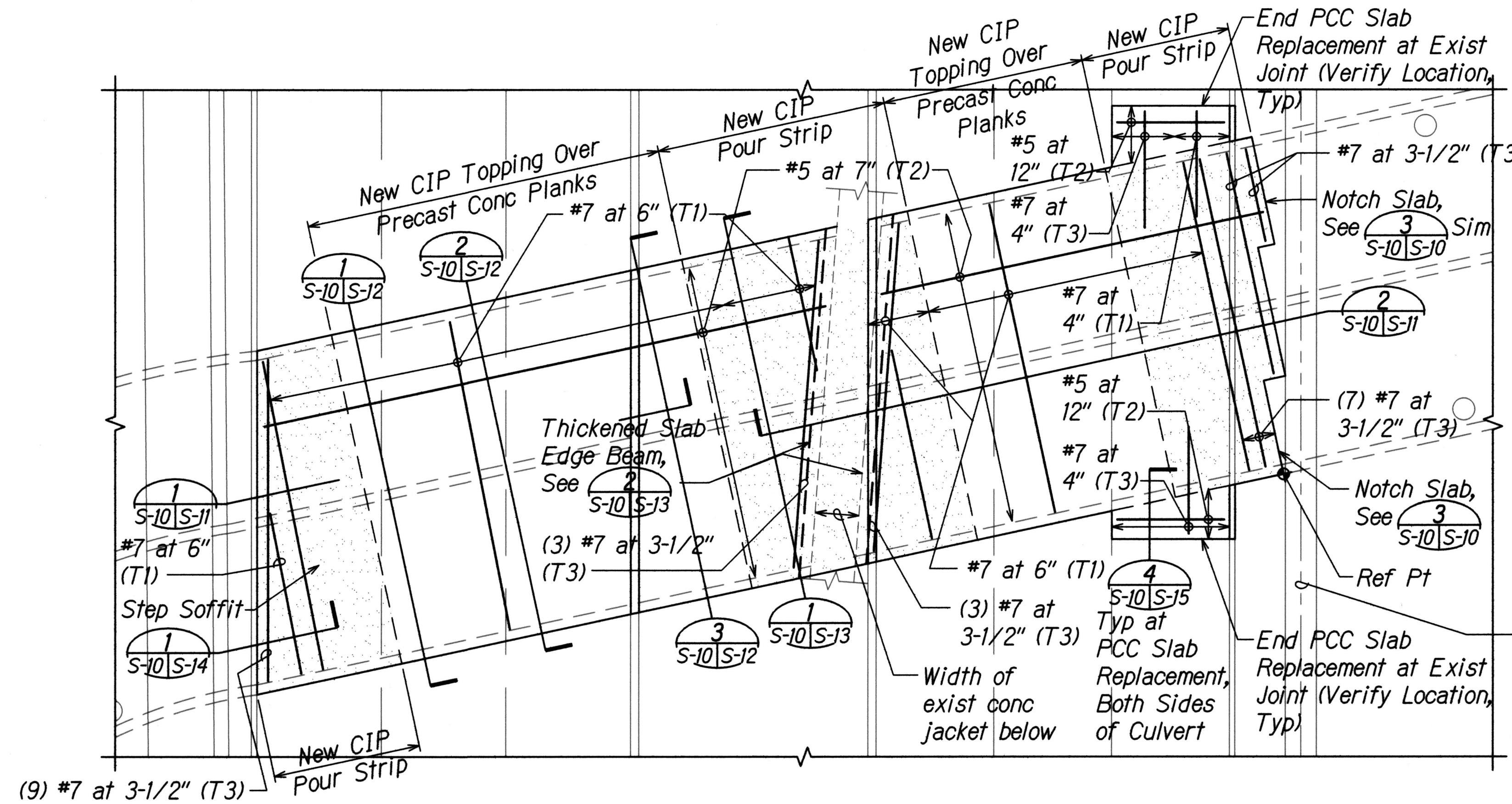


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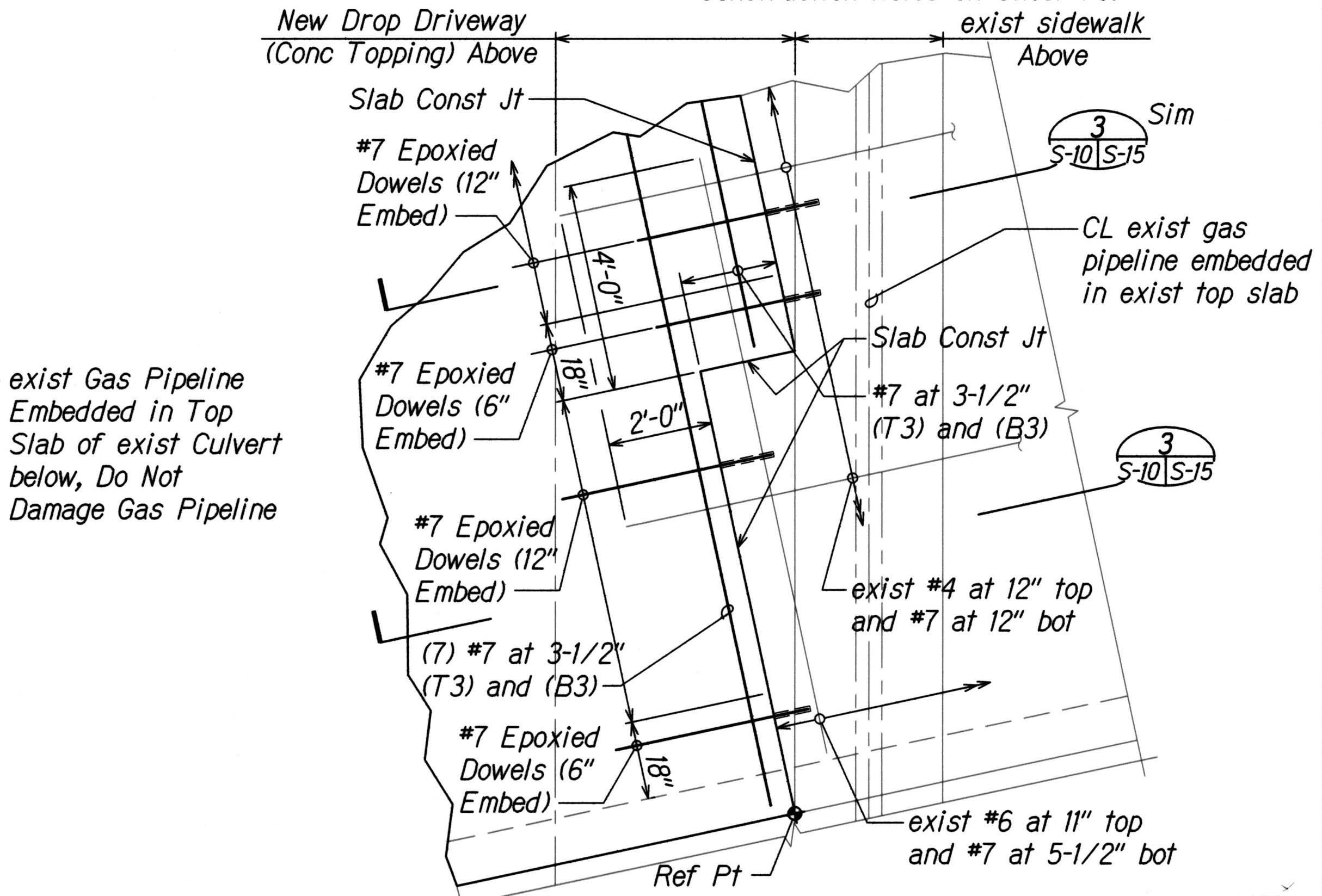
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Typical Slab Reinforcing Notes:

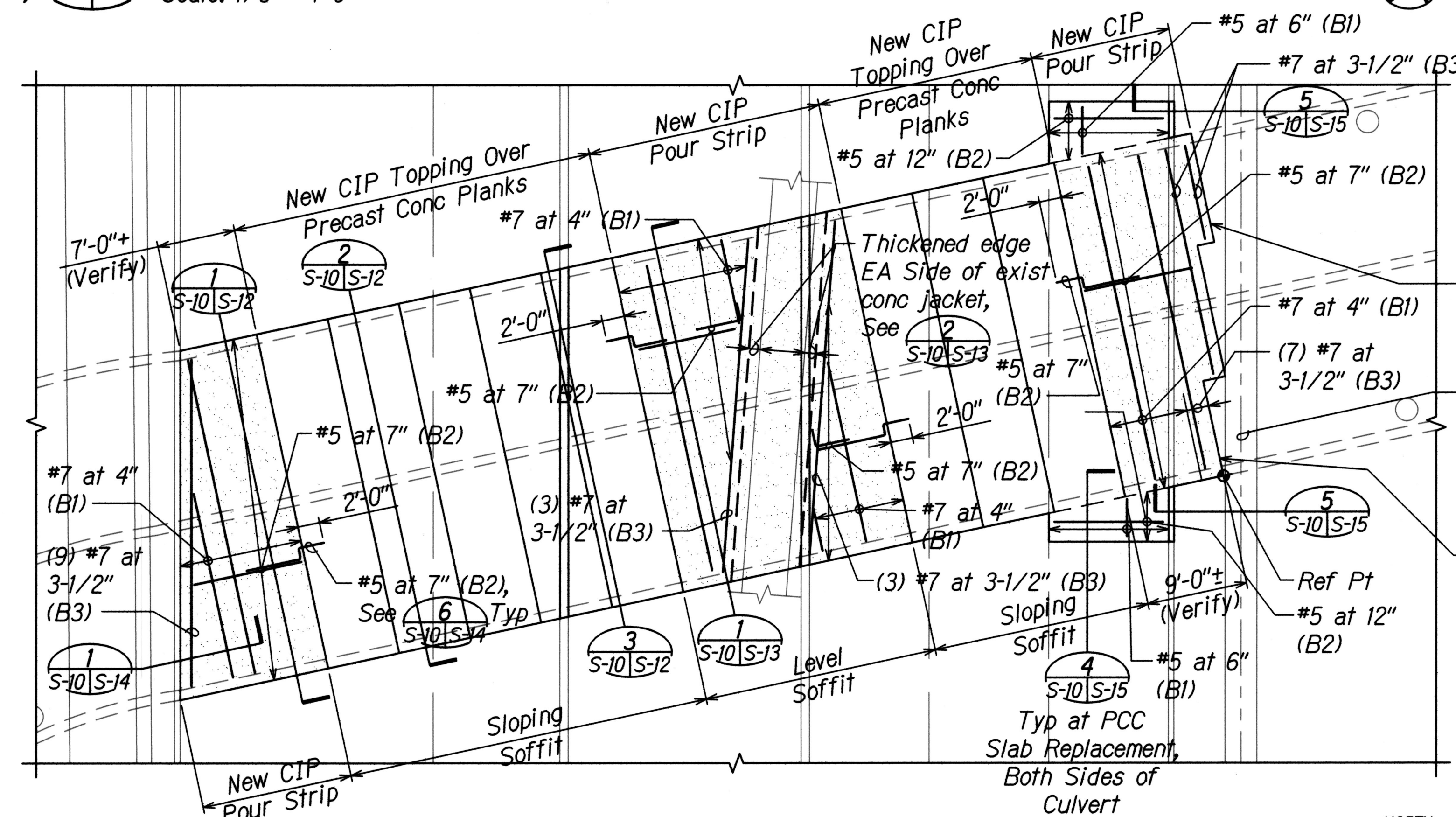
- Added bars and epoxied dowels not shown for clarity. See sheets S-10, S-14 and S-15.
- Unless otherwise noted, salvage and clean existing slab reinforcing and incorporate into new concrete slab.
- Laps of #5 bars shall be 3'-6" minimum, typical unless otherwise noted.
- See (4) S-10/S-10 for steel layering.
- Mechanical butt splices for rebar shall be Cadweld by Lenton/Erco or pre-reviewed equal. Splice shall develop at least 150 percent of ultimate strength of the connected rebar. Submit product data sheets for Engineer's review. Refer to Standard Specifications Section 602.03 (EX3)(b).
- For existing Gas Pipeline, refer to Construction Notes on Sheet T6.



1 PLAN - TOP REINFORCEMENT LAYOUT
S-10, S-12/S-10 Scale: 1/8" = 1'-0"

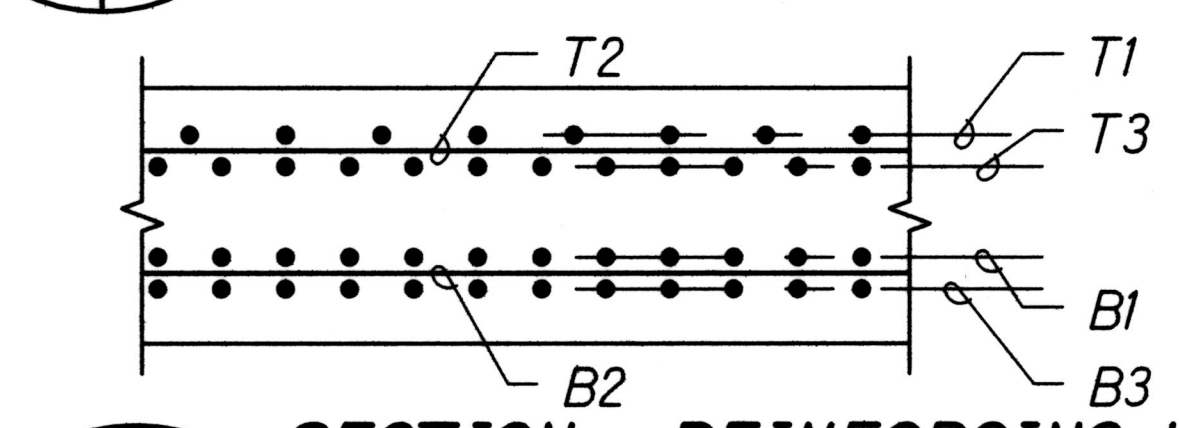


3 ENLARGED PLAN OF NOTCH
S-10/S-10 Scale: 1/2" = 1'-0"



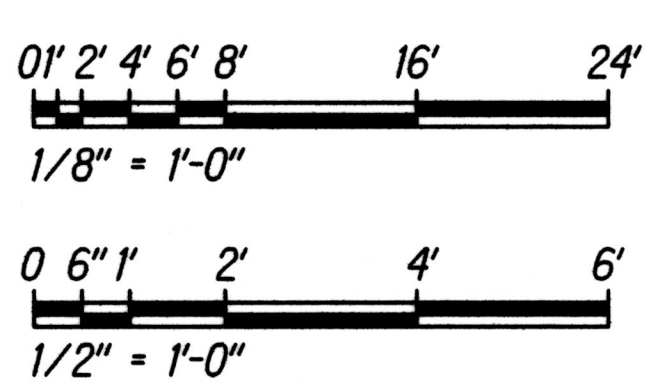
2 PLAN - PRECAST PLANK AND BOTTOM REINFORCEMENT LAYOUT
S-10, S-12/S-10 Scale: 1/8" = 1'-0"

Notch Slab, See (3) S-10/S-10
exist Gas Pipeline Embedded in Top Slab of exist Culvert below, Do Not Damage Gas Pipeline
Notch Slab, See (3) S-10/S-10

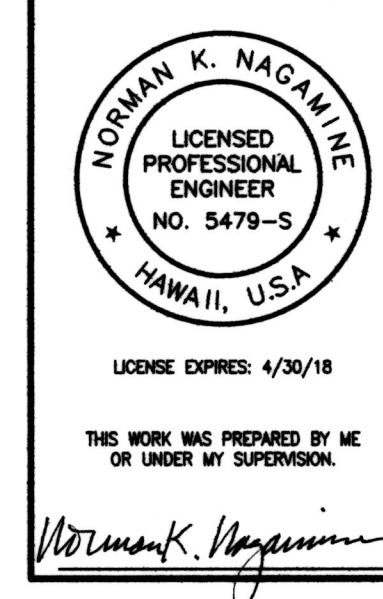


4 SECTION - REINFORCING LAYERING
S-10/S-10 Not To Scale

Graphic Scale



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Clarified Reinforcing Layering Over Planks. Revised Reinforcing in CIP Pour Strip DATE 06/01/17	
REVISION STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TOP AND BOTTOM REINFORCEMENT LAYOUT ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIKOI STREET Project No. 92A-02-17M Scale: As Noted Date: May 5, 2017 SHEET No. S-10 OF 18 SHEETS	

This technical cross-section diagram illustrates the layout and construction details of a highway bridge deck. The deck is divided into four main sections from left to right: City, State ROW, Travel Lane (Right Lane), Travel Lane (Middle Lane), Travel Lane (Left Lane), and Median. The diagram shows the existing infrastructure, including a low wall, curb line, and top slab of a box culvert. New construction elements are highlighted, such as new concrete curbs, toppings, and precast planks. The diagram also indicates the flow direction and the location of a matchline.

Labels and Callouts:

- City**: Direction of travel to the left.
- State ROW**: Right of Way boundary.
- Makai**: Direction of travel to the left.
- Mauka**: Direction of travel to the right.
- Travel Lane (Right Lane)**: Rightmost travel lane.
- Travel Lane (Middle Lane)**: Middle travel lane.
- Travel Lane (Left Lane)**: Leftmost travel lane.
- Median**: Separation between travel lanes.
- MatchLINE**: Boundary of the construction section.
- Flow**: Indicated by a wavy arrow pointing left.
- exist low wall**: Existing structure on the left.
- exist curb line**: Existing curb boundary.
- exist top slab of box culvert**: Existing culvert structure.
- New CIP Pour Strip**: New concrete pour strip.
- Ref Top of exist culvert wall beyond and soffit of exist top slab**: Reference point for existing culvert wall.
- New Precast Planks**: New precast concrete planks.
- Finish Slope, Match exist**: Slope matching existing conditions.
- New Conc Topping Cast with Rapid Setting Conc**: New concrete topping.
- New Conc Curb, Per (4) S-11 S-16, Typ**: New concrete curb.
- New Landscaping to Match exist**: New landscaping.
- Sloping Soffit**: Sloping soffit of the culvert.
- Level Soffit**: Level soffit of the culvert.
- New CIP Pour Strip**: New concrete pour strip at the bottom.
- Typ**: Typical section.
- S-11 S-14**, **S-11 S-12**, **S-11 S-16**, **S-11 S-12**, **S-11 S-12**, **S-11 S-16**: Section numbers and typicality markers.

MATCHLINE

Makai ←

Median

Travel Lane (Left Lane)

Travel Lane (Middle Lane)

Travel Lane (Right Lane)

Mauka →

State ROW City Easement

exist conduits, typ
exist conc jacket
to Remain

New Conc Curb,
Per S-11/S-16, Typ

S-11/S-16

Typ

Sim

S-11/S-12

New Conc Topping
Cast with Rapid
Setting Conc

Finish Slope,
Match exist

See S-11/S-16, Typ

S-11/S-12

Varies,
See Plan

exist curb line

New Conc Drop
Driveway

exist active
gas pipeline.
Do Not Damage

S-11/S-15

Thickened Slab
Edge EA Side of
exist conc jacket

Level
Soffit

Sloping
Soffit

Flow

New Precast
Planks

Ref Top of exist
culvert wall beyond and
soffit of exist top slab

New CIP Pour Strip

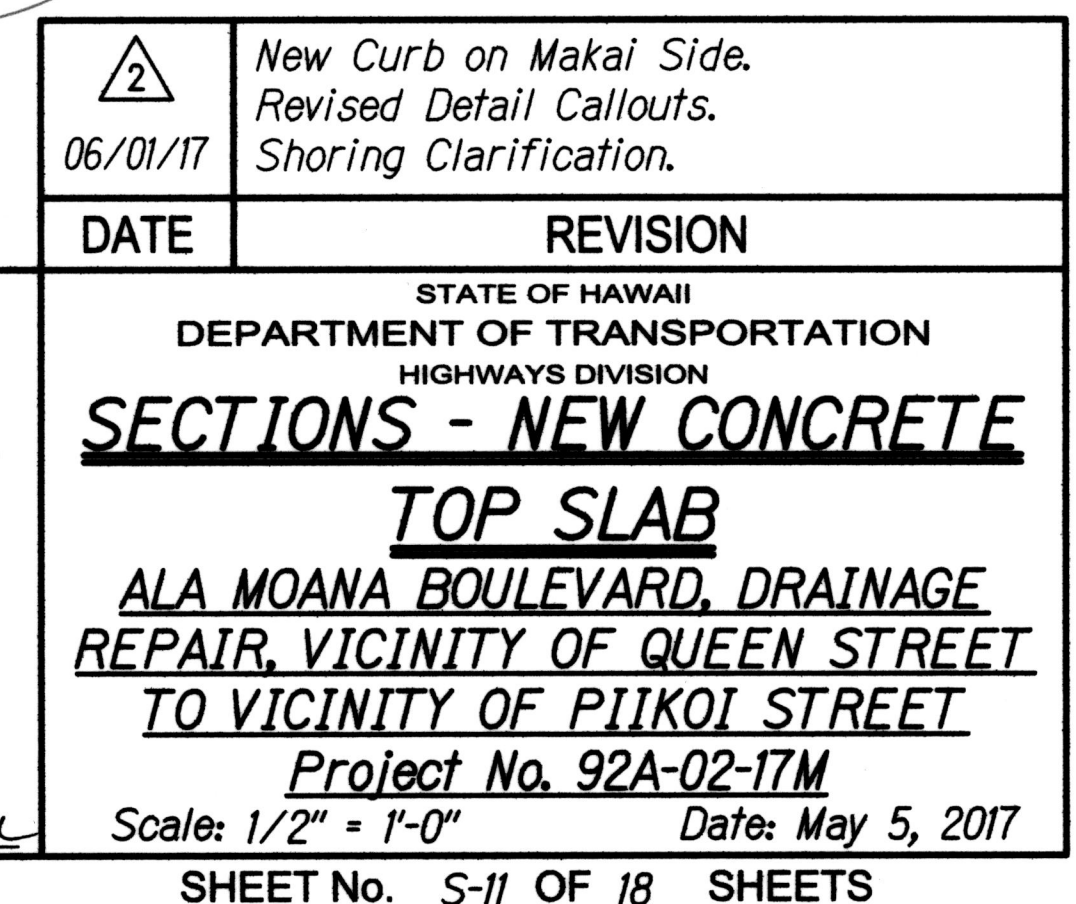
exist top slab
of box culvert

Provide Temporary
Shoring of existing conc
jacket and existing slab
strip below until new
slab is cast and cured

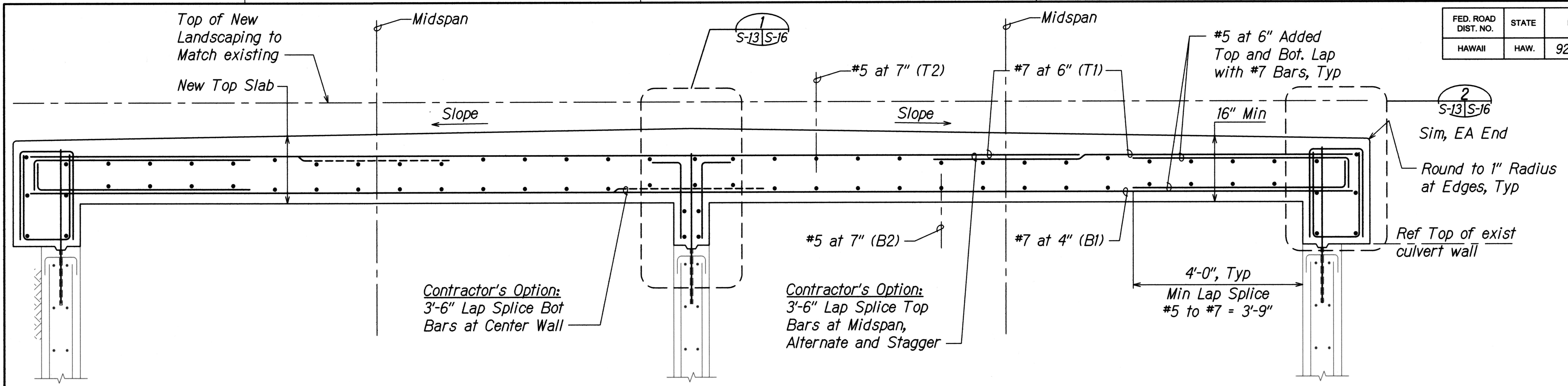
△2	New Curb on Makai Side. Revised Detail Callouts. Shoring Clarification.
DATE	REVISION
06/01/17	

0 6" 1' 2' 4'

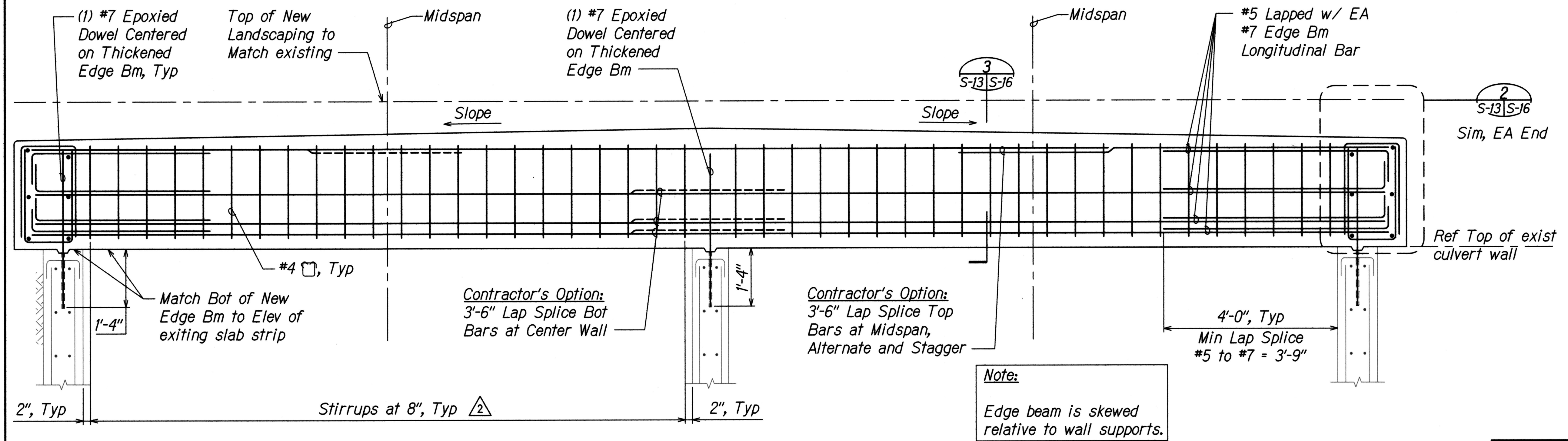
$1/2" = 1'-0"$



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HAWAII	HAW.	92A-02-17M	2017	ADD. 21	40



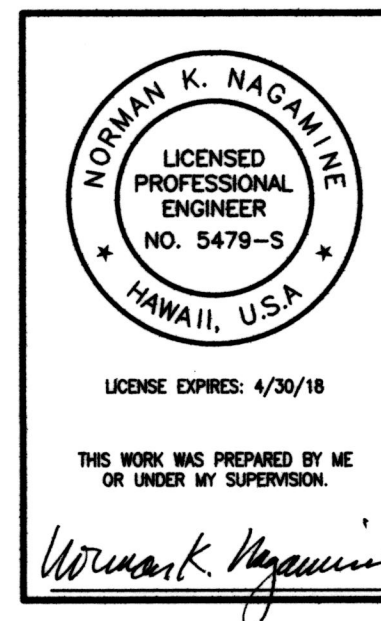
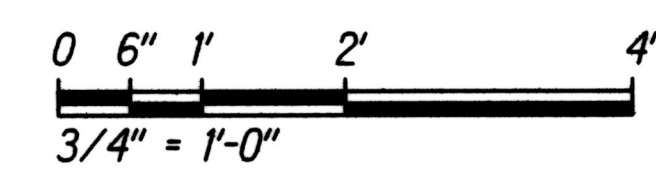
1 SECTION - NEW SITE CAST TOP SLAB AT MEDIAN
S-10, S-11, S-13 Scale: 3/4" = 1'-0"



2 SECTION - NEW SITE CAST BEAM ON SIDES OF EXISTING CONCRETE JACKET
S-10, S-13 Scale: 3/4" = 1'-0"

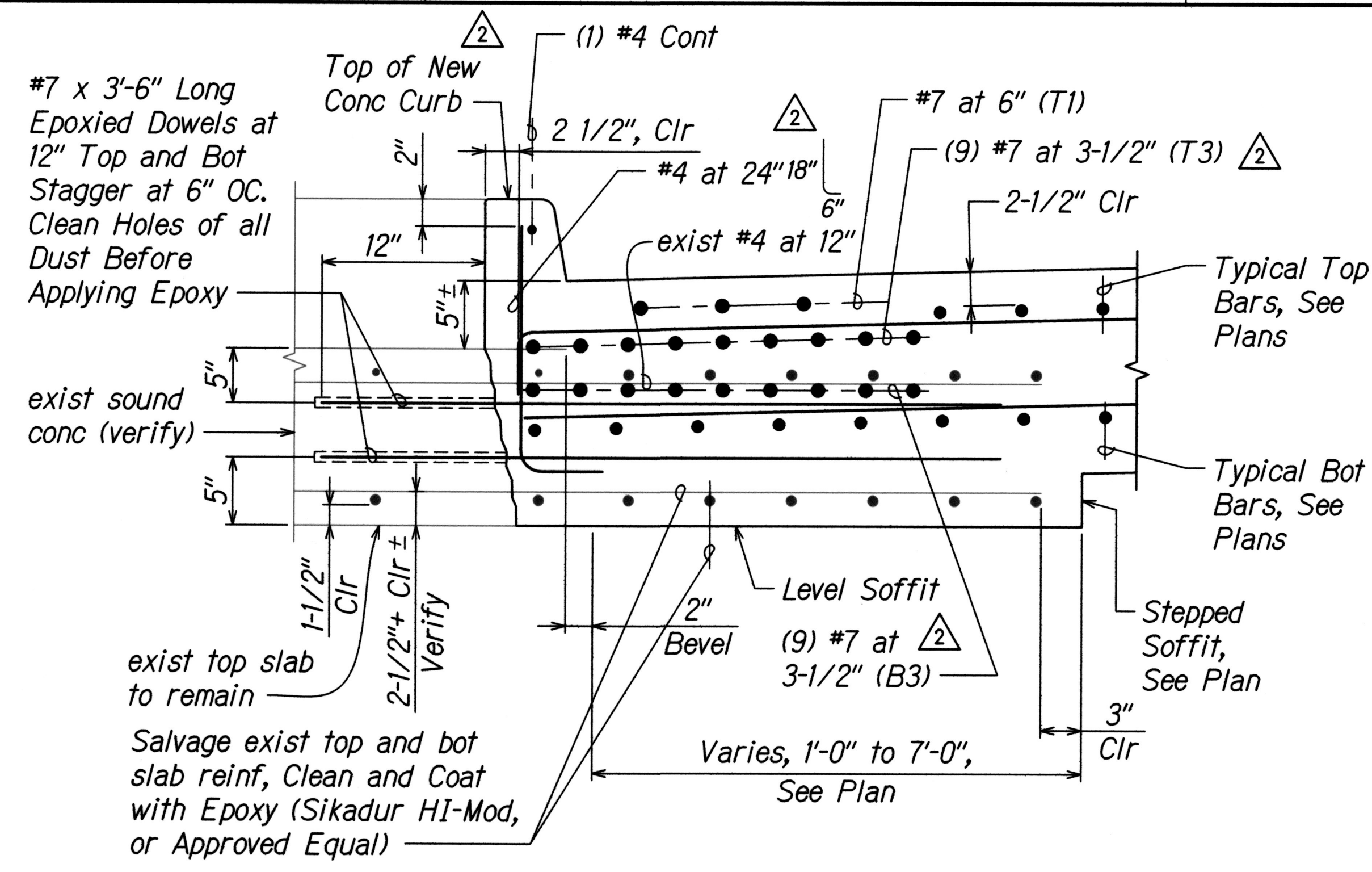
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Graphic Scale

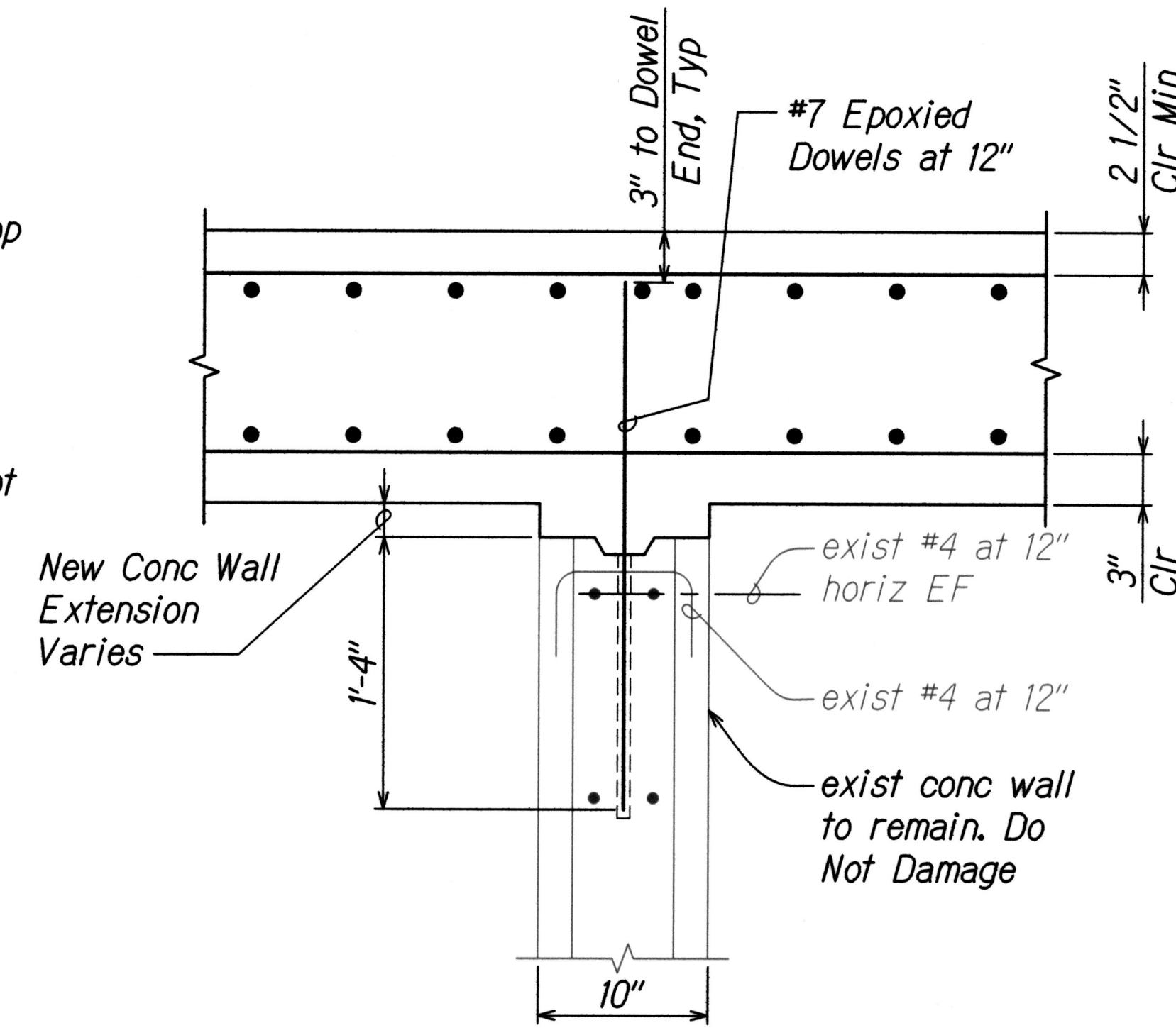


2	Revised Beam Stirrups Spacing
06/01/17	
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION SECTION - NEW TOP SLAB REINFORCING ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIKOI STREET Project No. 92A-02-17M Scale: 3/4" = 1'-0" Date: May 5, 2017 SHEET No. S-13 OF 18 SHEETS	

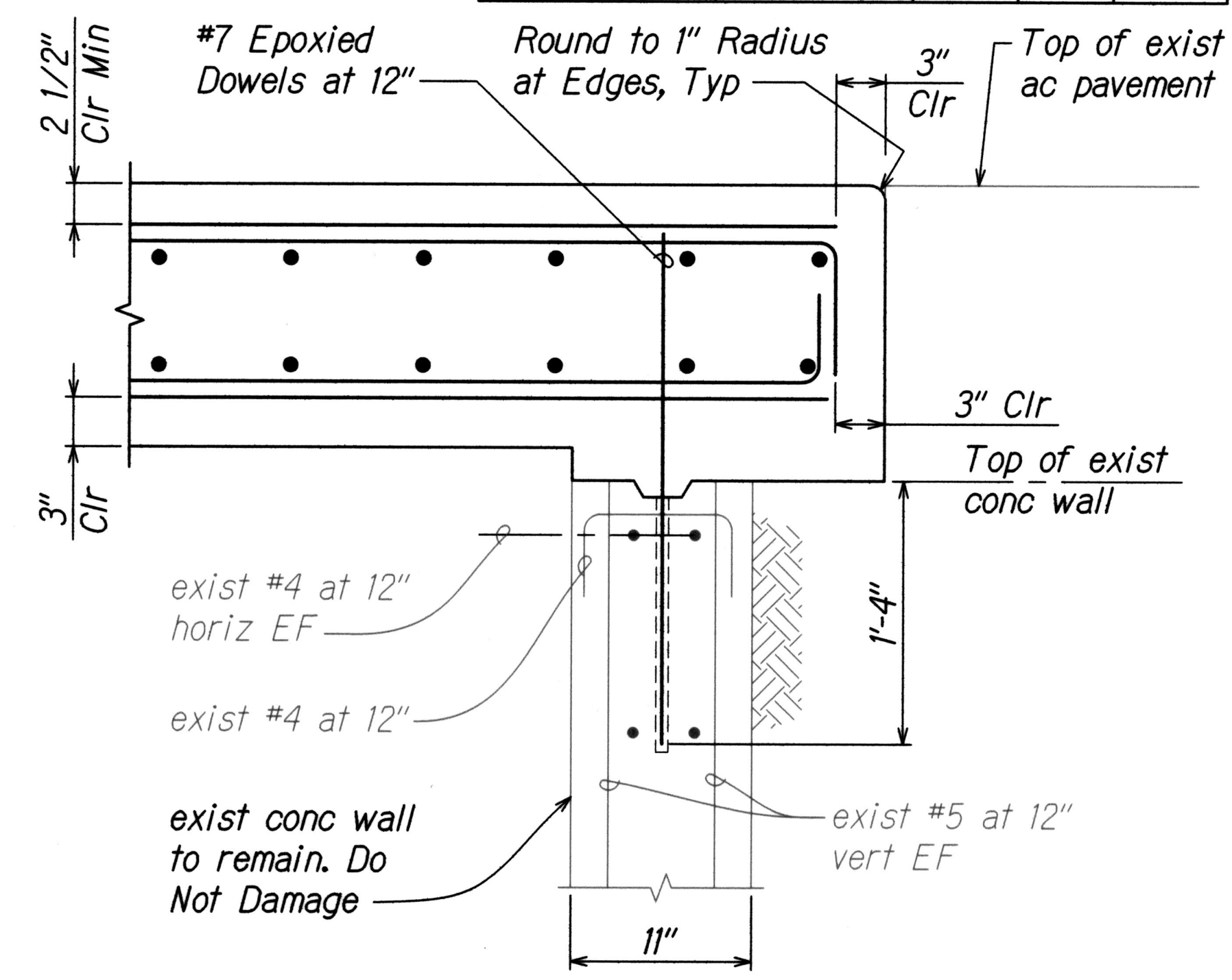
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 22	40



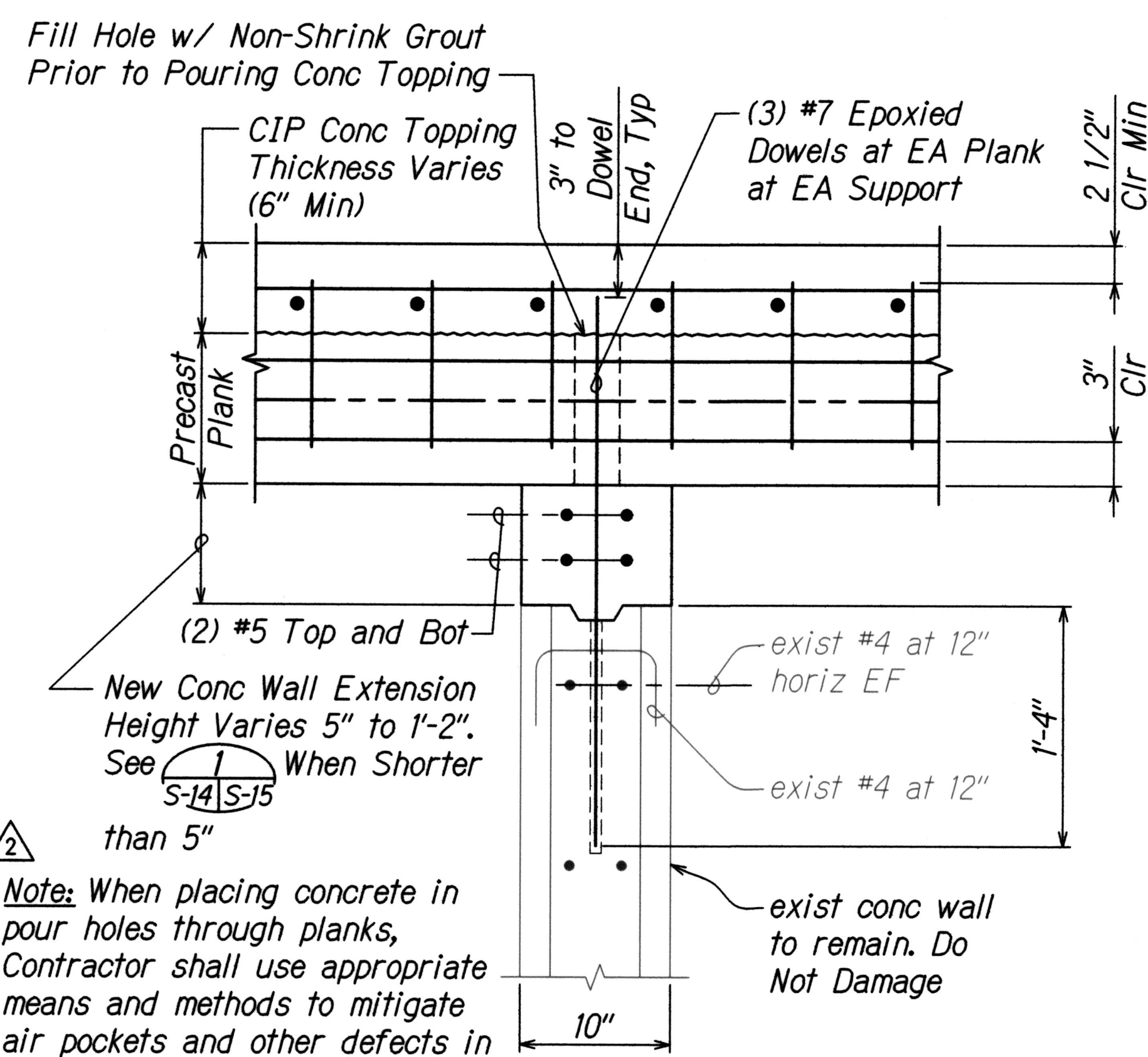
1 DETAIL/SECTION
S-8, S-9, S-10, S-11, S-14 Scale: 1-1/2" = 1'-0"



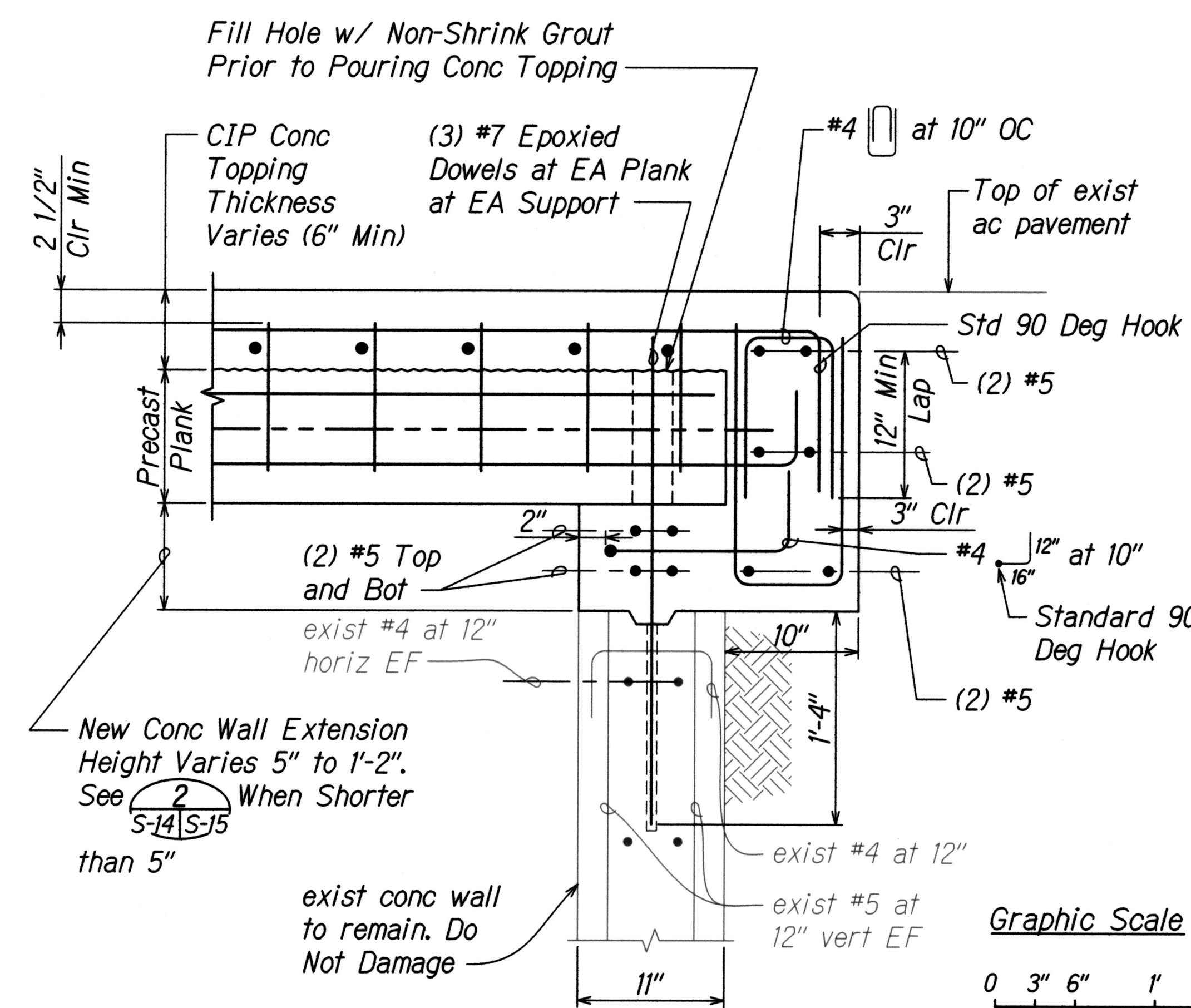
2 DETAIL/SECTION
S-12, S-16, S-14 Scale: 1-1/2" = 1'-0"



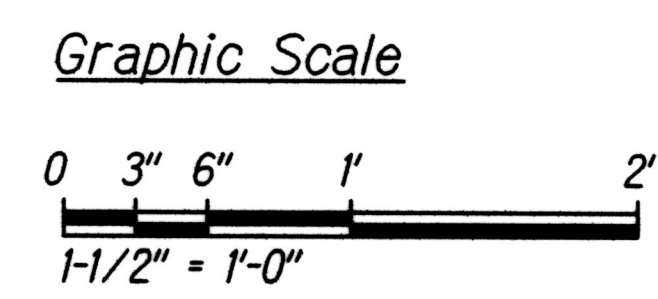
3 DETAIL/SECTION
S-12, S-16, S-14 Scale: 1-1/2" = 1'-0"



4 DETAIL/SECTION
S-12, S-15, S-14 Scale: 1-1/2" = 1'-0"

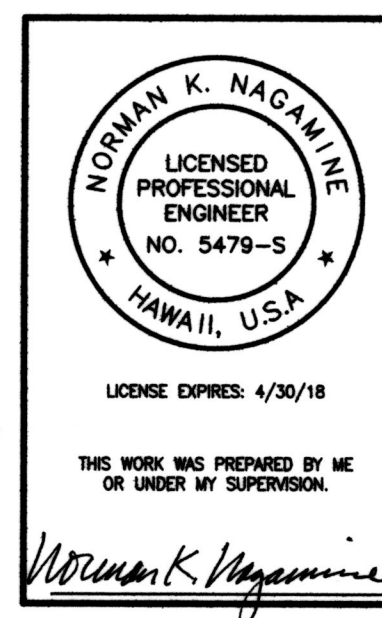


5 DETAIL/SECTION
S-12, S-15, S-14 Scale: 1-1/2" = 1'-0"

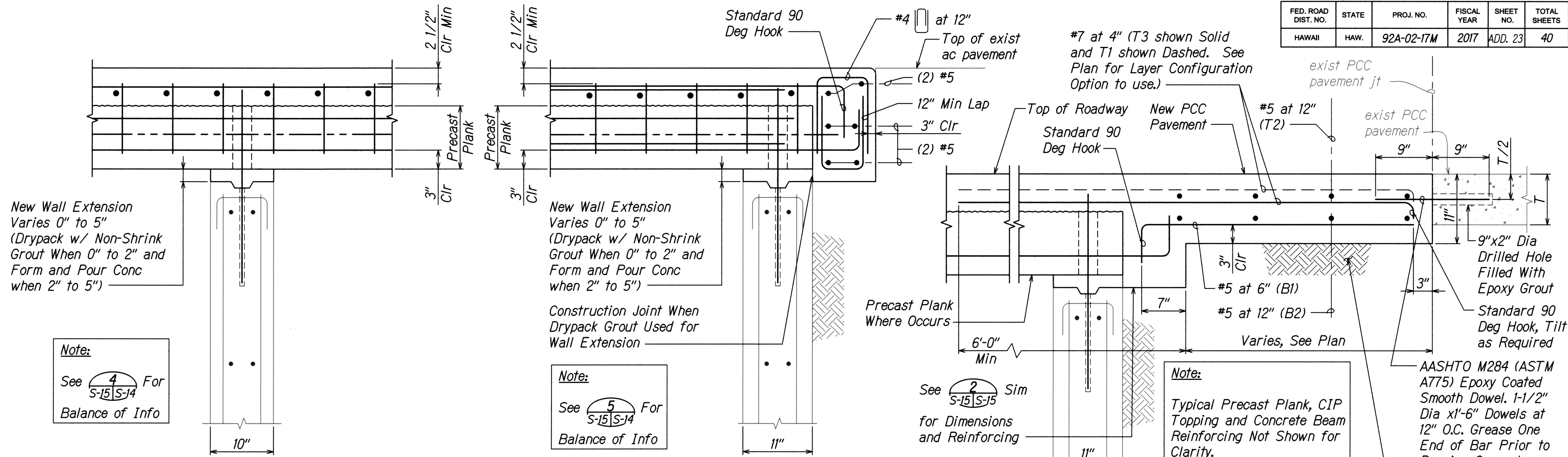


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ORIGINAL PLAN	
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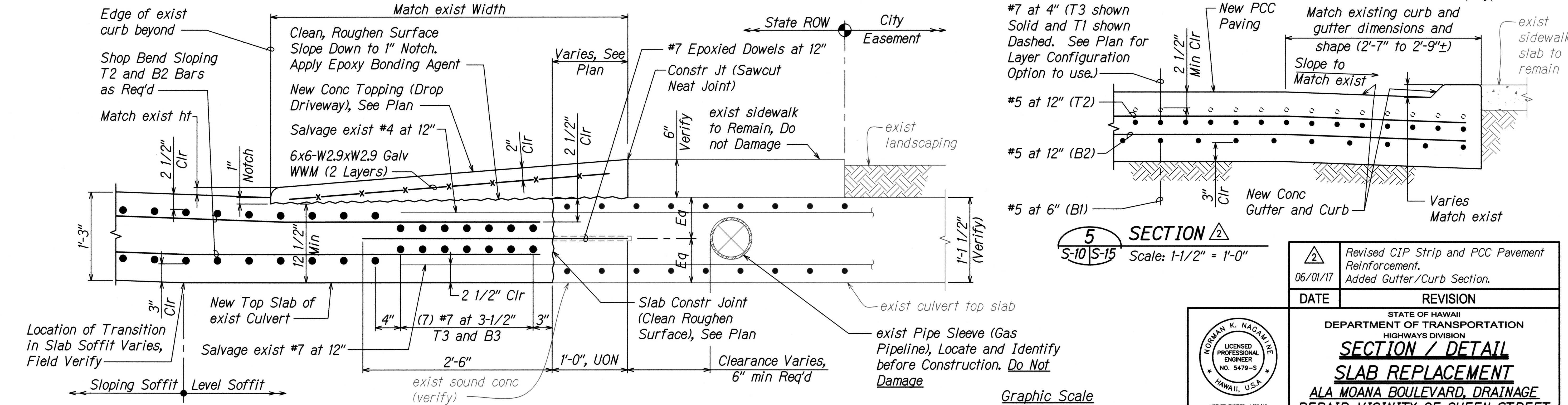
2	Added New Curb. Revised Reinforcing. Added Note.
06/01/17	
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
SECTION / DETAIL SLAB REPLACEMENT	
ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIIKOI STREET	
Project No. 92A-02-17M	
Scale: 1-1/2" = 1'-0"	Date: May 5, 2017
SHEET No. S-14 OF 18 SHEETS	



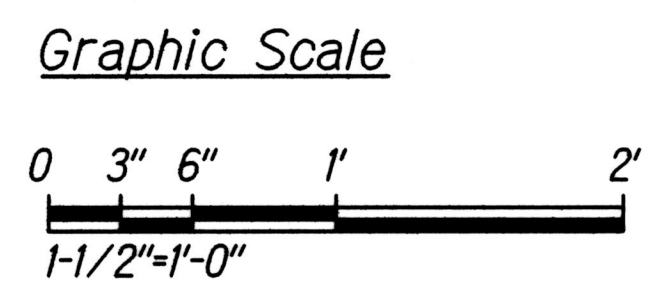
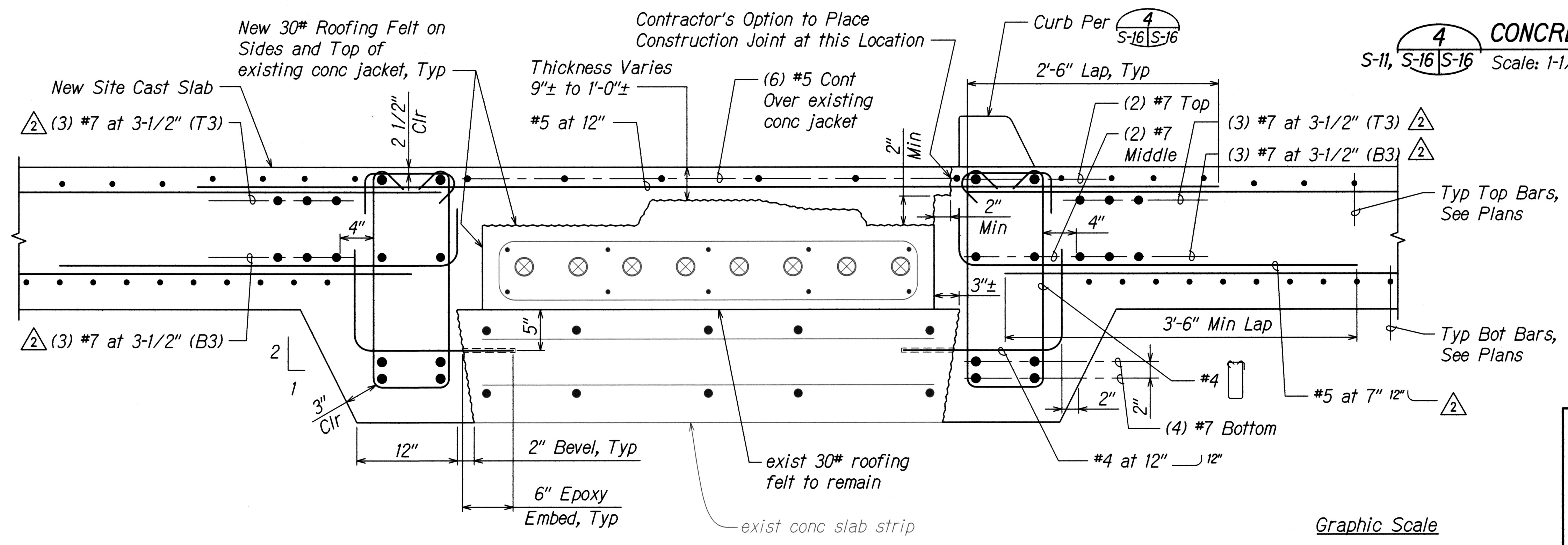
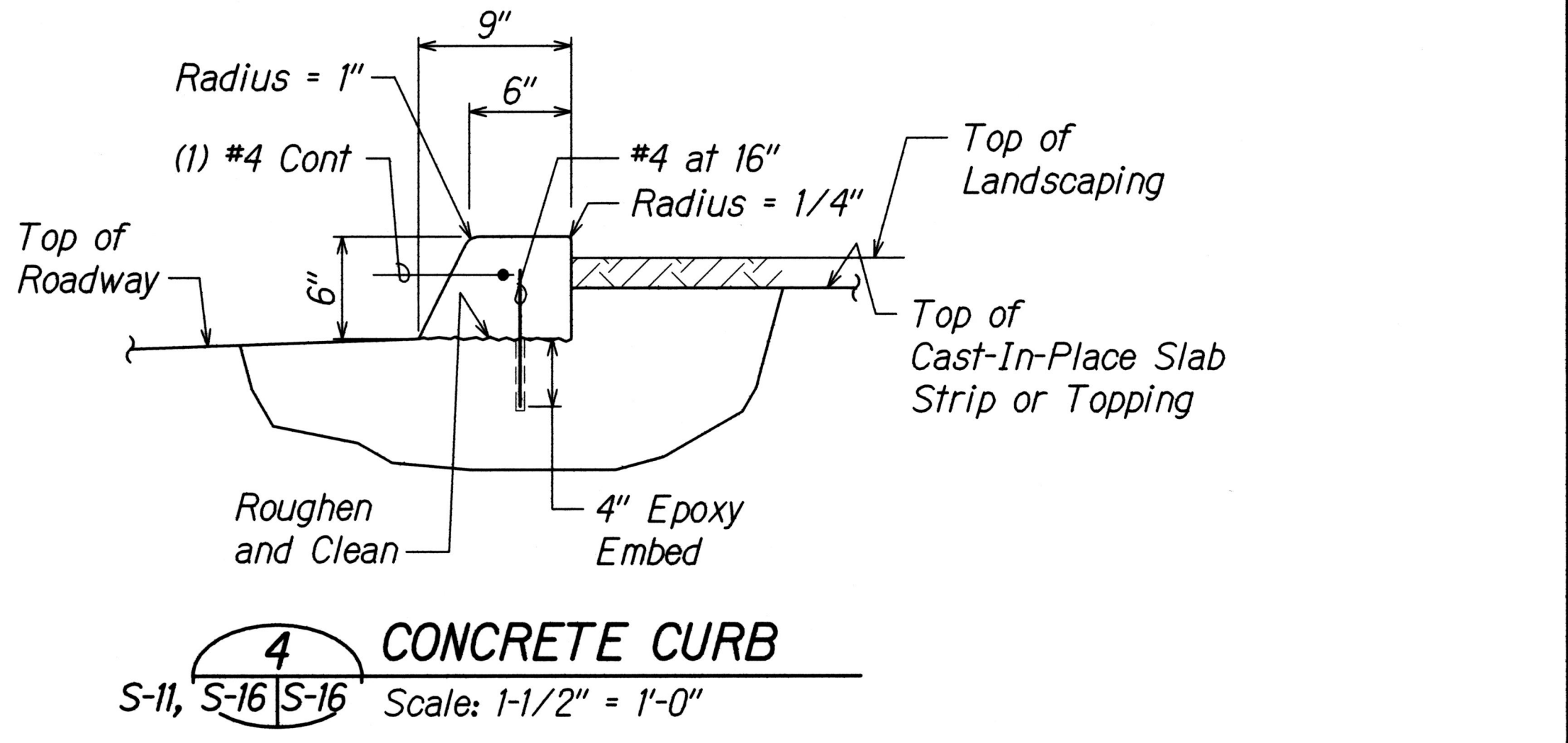
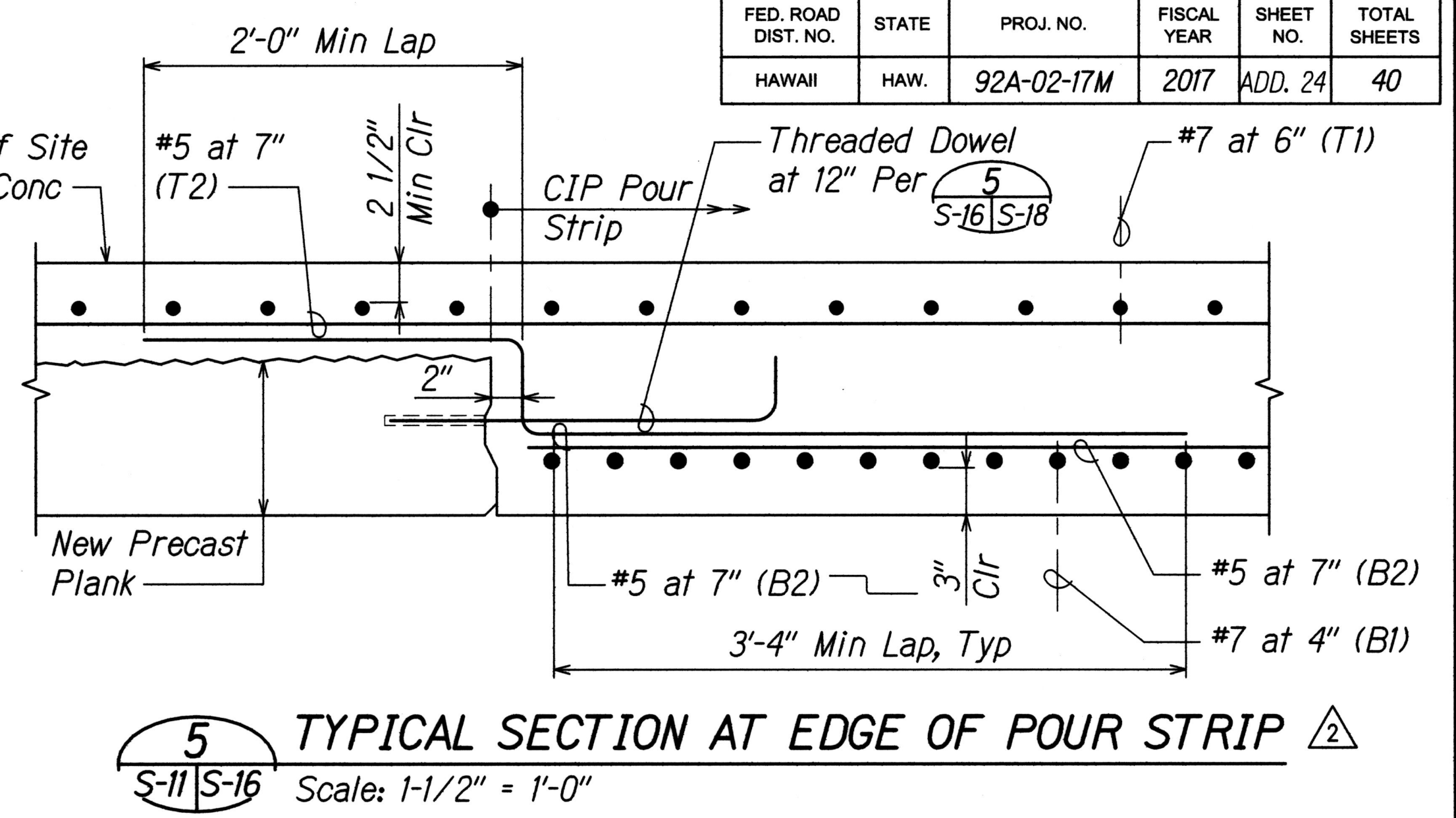
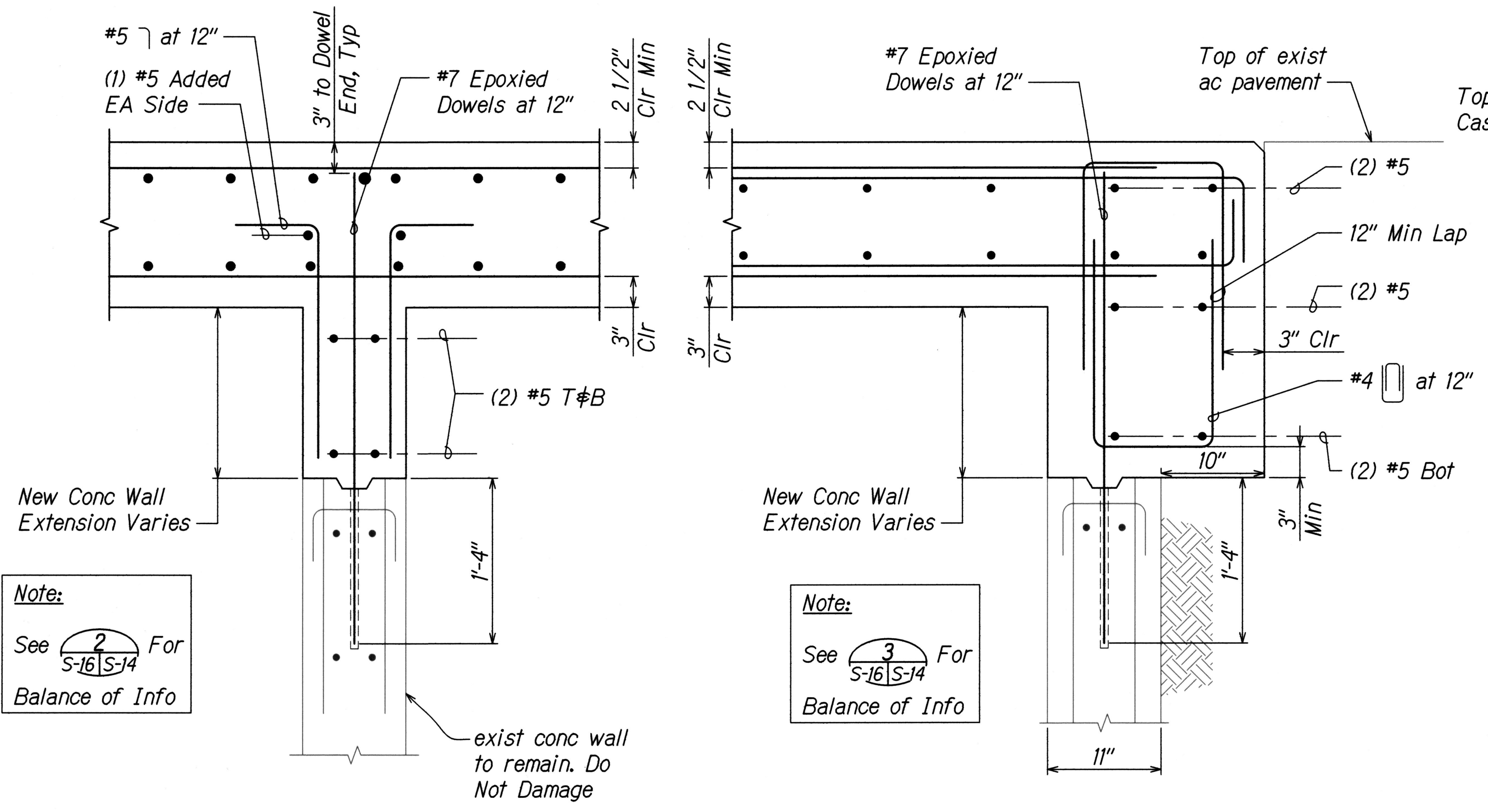
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 23	40



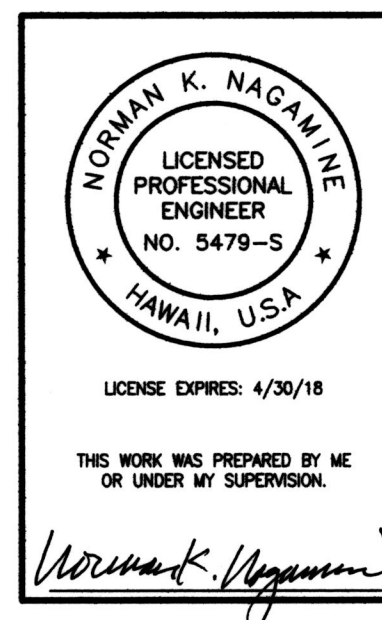
4 PCC PAVEMENT REPLACEMENT
S-10|S-15 Scale: 1-1/2" = 1'-0"



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 24	40

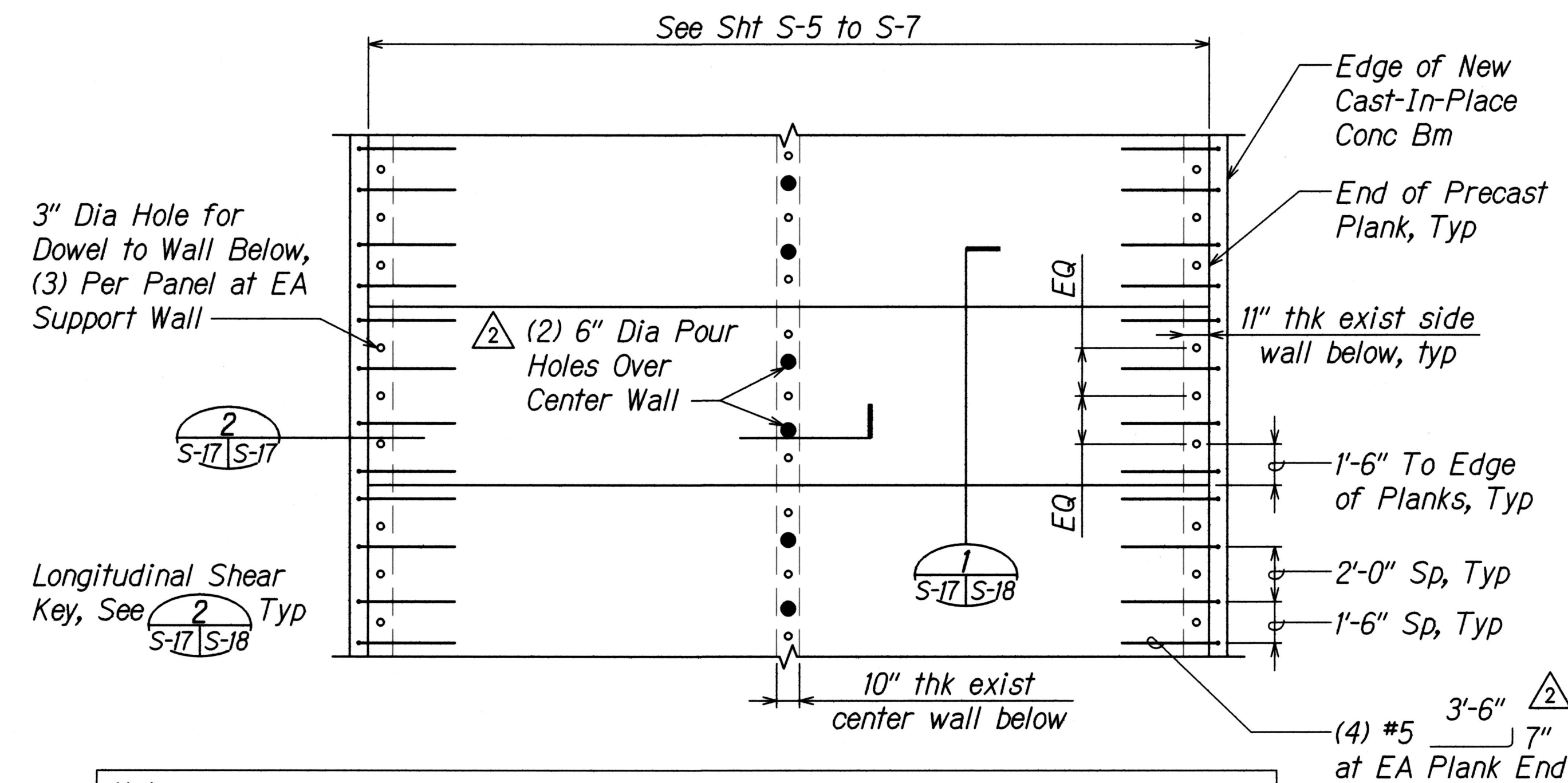


2	Clarified Rebar Spacing. Added Edge of Pour Strip Section.
06/01/17	DATE
REVISION	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
SECTION / DETAIL SLAB REPLACEMENT ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIIKOI STREET Project No. 92A-02-17M Scale: 1-1/2" = 1'-0" Date: May 5, 2017	
SHEET No. S-16 OF 18 SHEETS	



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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 25	40

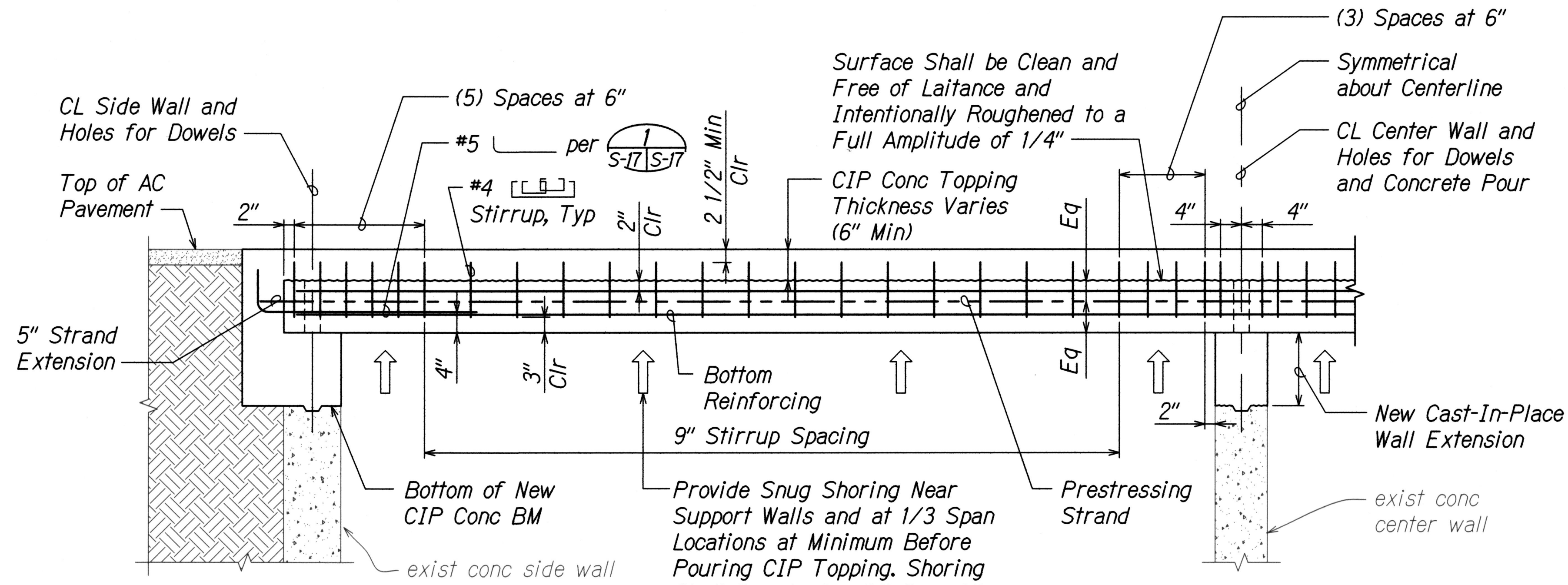


- Note:**
1. Typical plank and topping reinforcing not shown for clarity.
 2. When placing concrete in pour holes, Contractor shall use appropriate means and methods to mitigate air pockets and other defects in concrete placement.

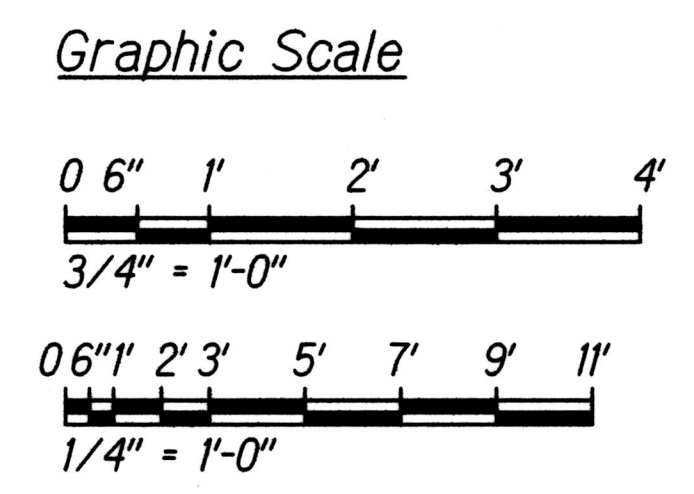
1 TYPICAL PLANK LAYOUT PLAN
S-17, S-18, S-19 Scale: 1/4" = 1'-0"

Precast Concrete Plank Notes:

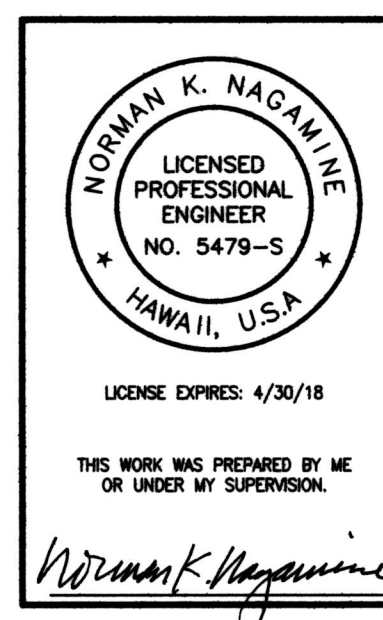
1. Minimum concrete compressive strength of prestressed planks shall be as follows:
 - A. Final Concrete Strength = 6,000 PSI at 28 days
 - B. Concrete Strength at Transfer = 4,000 PSI
2. Prestressed strands shall be seven wire 1/2" diameter low relaxation steel strands (Area = 0.153 Sq In) with ultimate strength of 270 KSI. For properties, see standard specifications.
3. Non-prestressed reinforcing steel shall be AASHTO M31 (ASTM A615) grade 60, unless otherwise noted on plans. Provide ASTM A706 grade 60 where noted on drawings. For properties, see standard specifications. Cost of non-prestressed reinforcing steel shall be incidental to precast concrete work.
4. Reinforcing steel bars shall be uncoated, unless otherwise noted.
5. Splices in reinforcing steel shall not be permitted, unless otherwise noted.
6. All reinforcing steel bars, anchor bolts, dowels and other embedded items shall be securely tied in place before concrete pour.
7. All reinforcing steel bar bends shall be made cold. Field bending of steel shall not be permitted.
8. Welding of reinforcing steel shall not be permitted, unless otherwise noted.
9. Effective prestressing force is after all losses. Losses shall take into consideration creep, shrinkage, elastic shortening and relaxation of prestressing steel.
10. Dead load deflection is due to weight of topping.
11. Strand pattern shall be symmetrical about the longitudinal centerline of prestressed plank.
12. Strand release sequence shall not include any lateral deflection of the prestressed plank.
13. The Contractor shall submit his proposed strand pattern and releasing sequence to the engineer for review.
14. During curing, care shall be taken to avoid any lateral deflection of the prestressed plank due to improper orientation.
15. Elastic shortening shall be included in determining the length of the prestressed planks.
16. The Contractor shall incorporate all inserts, dowels and other embedded items required in the prestressed planks during fabrication.



2 TYPICAL PRECAST PLANK ELEVATION
S-17, S-18, S-19 Scale: 3/4" = 1'-0"

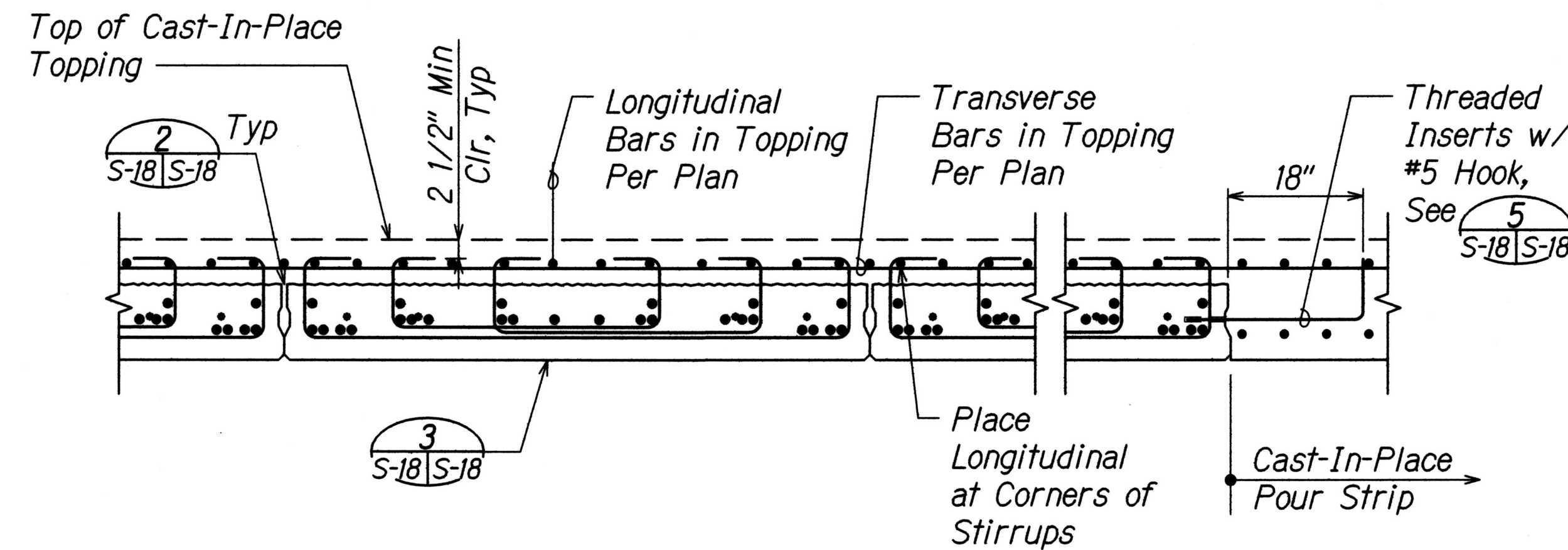


<div> <div>2</div> <div>06/01/17</div> </div>	Typical Plank Layout Plan - Revised Hole Locations. Revised Hooked Rebar Locations. Added Note 2.
	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PRECAST PLANK DETAILS ALA MOANA BOULEVARD, DRAINAGE REPAIR, VICINITY OF QUEEN STREET TO VICINITY OF PIIKOI STREET Project No. 92A-02-17M Scale: As Noted Date: May 5, 2017 SHEET No. S-17 OF 18 SHEETS	

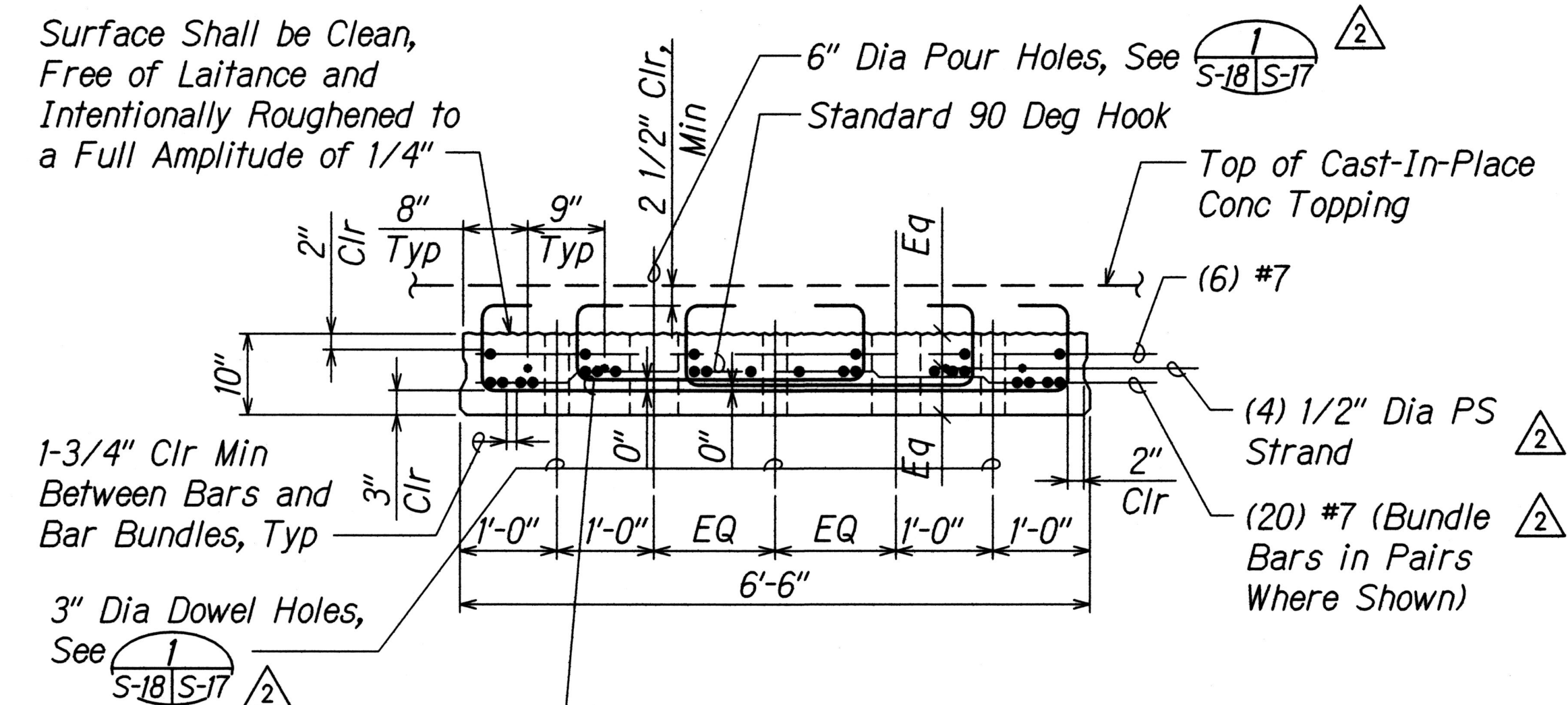


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QUANTITIES BY	
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-02-17M	2017	ADD. 26	40



1 TYPICAL PLANK SECTION
S-17, S-18/S-18 Scale: 3/4" = 1'-0"

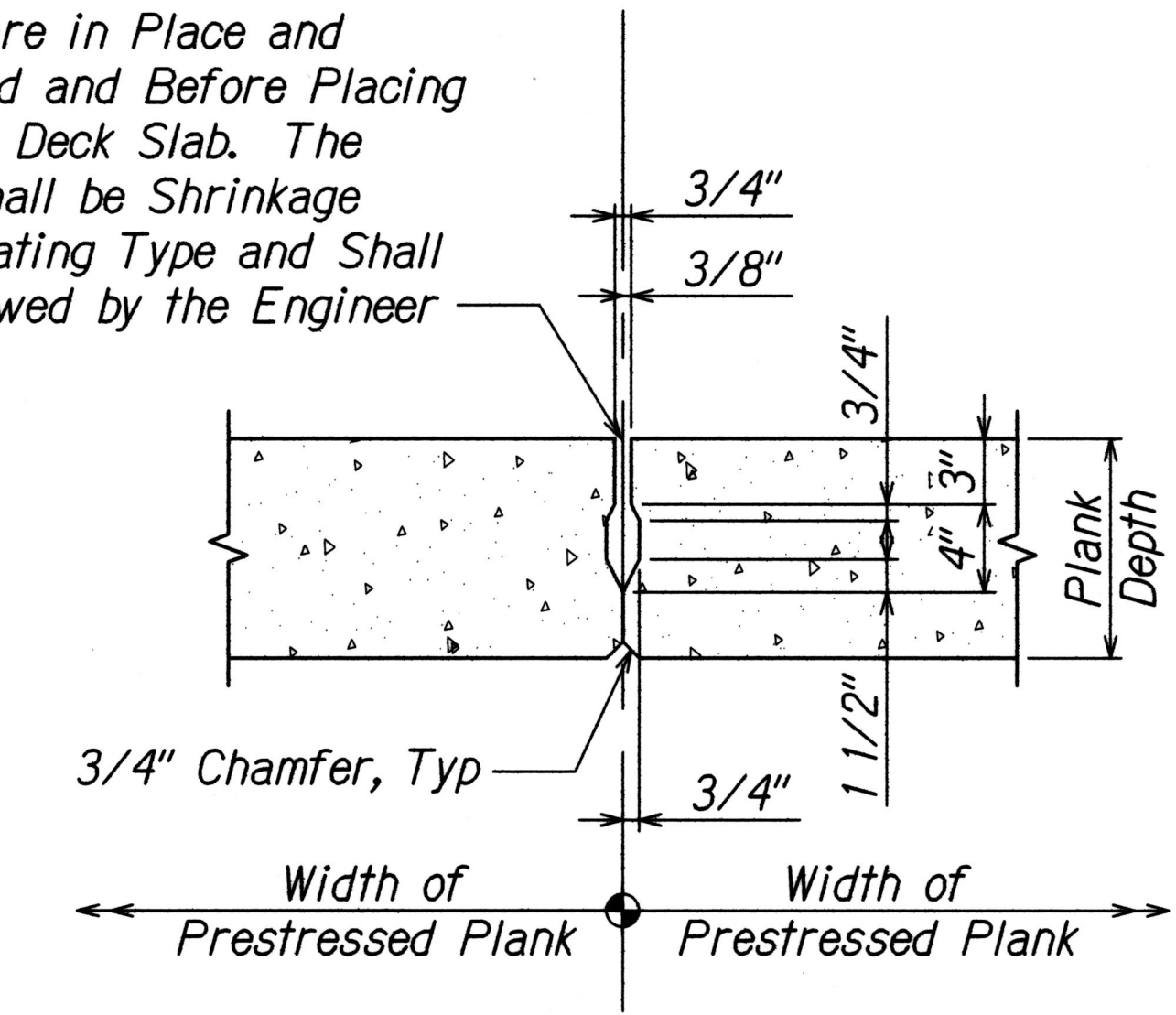


Note:

- Design effective prestress per strand after losses = 25.0 kips.
- See S-18/S-18 For Topping Reinf.

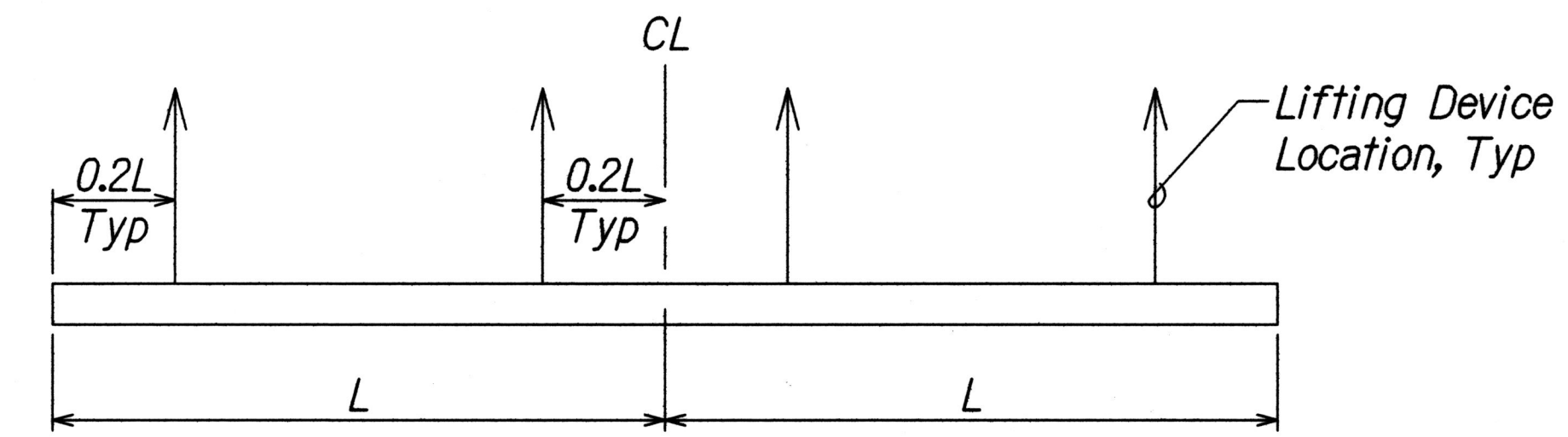
3 TYPICAL PLANK CROSS SECTION
S-18/S-18 Scale: 3/4" = 1'-0"

Continuous Space Between Planks Shall be Filled w/ Non-Shrink Grout After Planks are in Place and Connected and Before Placing Concrete Deck Slab. The Grout Shall be Shrinkage Compensating Type and Shall be Reviewed by the Engineer



2 KEY DETAIL
S-18/S-18 Scale: 1-1/2" = 1'-0"

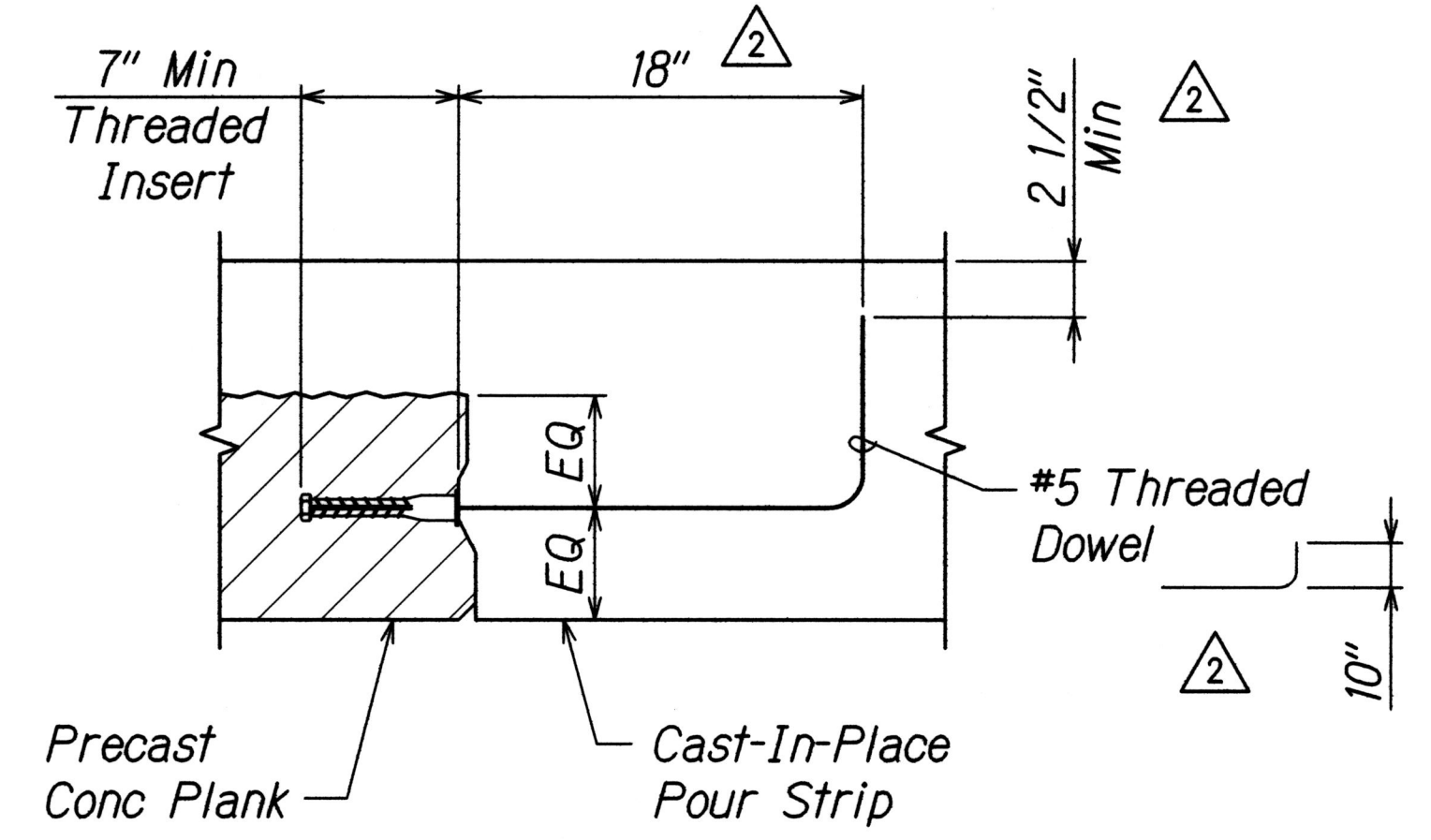
- Note:**
- Threaded dowel shall come from the same manufacturers as the threaded insert.
 - Threaded insert shall be Dayton Superior D108A Headed Dowel bar or pre-reviewed equal. Minimum Allowable Tension = 2.5 kip. Minimum Allowable Shear = 1.5 kip.



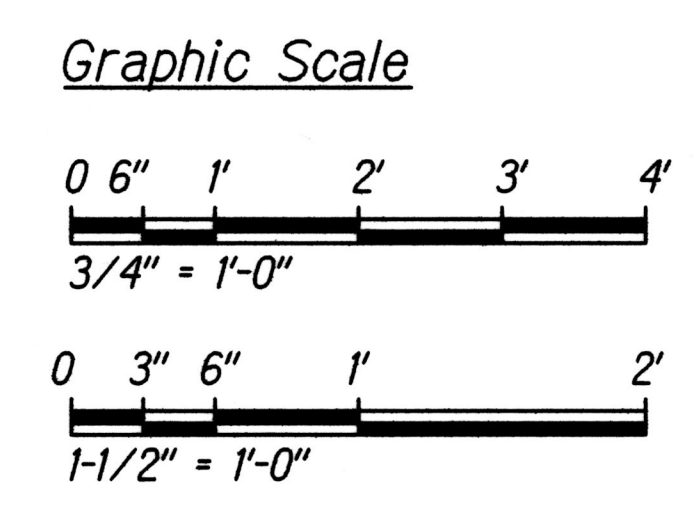
Note:

Lifting devices shall be placed as close to the locations shown in this detail as possible. Details and locations of lifting devices shall be submitted to the engineer for review. Such review does not relieve the contractor of his responsibilities if the prestressed plank is damaged due to failure of the lifting devices.

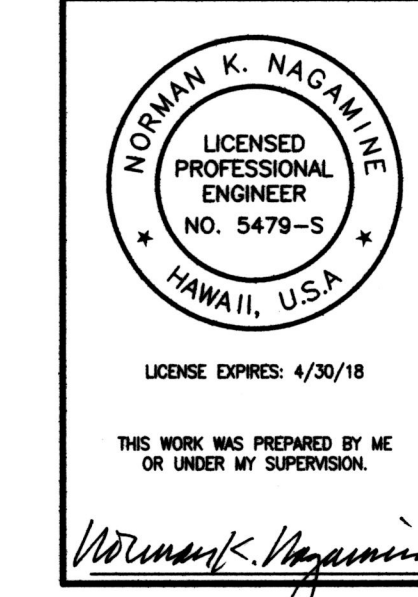
4 LIFTING DIAGRAM
S-18/S-18



5 THREADED INSERT DETAIL
S-16, S-18/S-18 Scale: 1-1/2" = 1'-0"



DATE	REVISION
06/01/17	Revised Reinforcing and Hole Location in Plank. Added Note. Revised Dowel Dimensions



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRECAST PLANKS
DETAILS

ALA MOANA BOULEVARD, DRAINAGE
REPAIR, VICINITY OF QUEEN STREET
TO VICINITY OF PIKOI STREET
Project No. 92A-02-17M
Scale: As Noted Date: May 5, 2017
SHEET No. S-18 OF 18 SHEETS

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