

PART 5 BACKDRAINS

- 5.1 Reference Standards (American Society for Testing and Materials)
 - 5.1.1 ASTM D-3034 Polyvinyl Chloride Pipe (PVC)
- 5.2 Products
 - 5.2.1 Drain Rock - ½-inch by ¾-inch clean crushed drain rock which is placed in maximum 12-inch thick lifts and vibrated into place using mechanical equipment.
 - 5.2.2 Filter Fabric - Mirafli 140N, or approved equivalent, filter fabric shall surround drain rock where the drainrock is in contact with earth materials.
 - 5.2.3 Perforated Drain Pipe - Schedule 40 PVC perforated drain pipe (minimum 4-inch diameter) shall be placed within drainrock or Class 2 Permeable Material (minimum 3 inches cover) in the temporary excavation to act as a subdrain sloping to drain at minimum 1% and shall discharge via tight-line Schedule 40 PVC Pipe.
 - 5.2.4 Non-Perforated Drain Pipe - Schedule 40 PVC drain pipe (minimum 4-inch diameter) shall be used to collect perforated drain pipe and convey water to discharge location.
 - 5.2.5 Cleanouts - The upslope ends of the subdrain pipes shall be connected with two 45° PVC couplings to a 4-inch diameter non-perforated Schedule 40 PVC cleanout pipe extending to the ground surface and equipped with a removable cap to facilitate cleaning.
 - 5.2.6 Utility Box - The cleanout cap shall be protected in a Christy F08BOX utility box (or approved equivalent).
 - 5.2.7 Rip Rap - The energy dissipator rip rap shall conform to Caltrans Backing No. 1 Class rock.
- 5.3 Installation
 - 5.3.1 The backdrain shall be minimum 1.5 feet wide (~2 feet wide) and installed in a manner to prevent contamination of the drainrock.
 - 5.3.2 Perforated pipe shall be installed with the holes down and all pipe sections shall be glued with manufacturer approved cleaner and glue.

PART 6 PAVEMENT

- 6.1 Reference Standards, American Society for Testing and Materials (ASTM)
 - 6.1.1 ASTM D-422 Particle Size Analysis
 - 6.1.2 ASTM D-698 Laboratory Compaction Characteristics of Soil -Standard Effort
 - 6.1.3 ASTM D-1557 Laboratory Compaction
 - 6.1.4 ASTM D-5195 In-Place unit weight by Nuclear Methods
- 6.2 Products
 - 6.2.1 Aggregate Base Rock - The Aggregate Base rock shall conform to the provisions of Section 26 of Caltrans Standard Specifications for 3/4-inch maximum, Class 2 Aggregate Base.
 - 6.2.2 Asphaltic Concrete - Asphaltic Concrete shall conform to the provisions of Section 39, 92 and 94 of 2010 Caltrans Standard Specifications for Type A, 3/8-inch maximum aggregate.
 - a. Asphaltic binder shall be steam refined paving asphalt, viscosity grade AR4000.
 - b. Prime coat shall be liquid asphalt, SC-250.
 - c. Tack coat (paint binder) shall be penetration type, slow setting asphaltic emulsion, Type SS-1, conforming to requirements of Section 94, Caltrans State Specifications.
- 6.3 Installation
 - 6.3.1 Contractor shall saw cut at the limit of the new pavement.
 - 6.3.2 Aggregate Base shall be at least 9 inches thick and be compacted to at least 95 percent Relative Compaction (RC) as determined by ASTM D1557-12 with scarification 8 inches deep and compacted to 95% RC below base.
 - 6.3.3 Asphaltic Concrete shall be at least 3 inches thick and conform to the applicable provisions of Section 39 of the Caltrans Standard Specifications.
 - 6.3.4 Type A Asphaltic Concrete dike shall be installed to the limits shown and conform to the applicable provisions of Section 39 of the Caltrans Standard Specifications. The AC dike shall be installed on pavement only.

PART 7 ENGINEERED EARTH FILL

- 7.1 Reference Standards, American Society for Testing and Materials (ASTM)
 - 7.1.1 ASTM D-422 Particle Size Analysis
 - 7.1.2 ASTM D-698 Laboratory Compaction Characteristics of Soil-Standard Effort
 - 7.1.3 ASTM D-4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 7.1.4 ASTM D-3034 Polyvinyl Chloride Pipe (PVC)
 - 7.1.5 ASTM D-1248 Corrugated Plastic Pipe
 - 7.1.6 ASTM D-1557 Laboratory Compaction
 - 7.1.7 ASTM D-5195 In-Place Unit Weight by Nuclear Methods
- 7.2 Products
 - 7.2.1 Engineered Earth Fill - Compacted soil material shall be on site soils (from excavations and pier drilling) provided they are free of organics, materials larger than 4 inches in maximum dimension, and approved by the Engineer, unless otherwise specified in the drawings. Imported soil material if required, shall be free of organic materials, shall have a PI <16, shall have no rock fragments greater than 4 inches in maximum dimension, and shall be approved by the Engineer (if import soil is required, a sample of the import soil shall be provided to the Engineer for approval a minimum of 72 hours prior to placement). Imported soil shall also be free of contamination (per State of California) and if coming from a non-licensed source, the necessary laboratory test results shall be provided. AC grinding are not acceptable.
 - 7.2.2 Spoils - All spoils left over from excavations, drilling and compaction/backfill shall be legally disposed of off site. The Contractor can temporarily stockpile spoils at an approved and agreed upon location on the Owner's Property. All trash and non-soil debris shall be legally disposed of off-site at the Contractor's expense. At no time shall loose spoils be placed or stockpiled on slopes steeper than 4:1 (H:V), compacted spoils shall not be placed or stockpiled on slopes greater than 1.5:1 (H:V).

7.3 General

- 7.3.1 General - Prior to all work related to Engineered Earth Fill, Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work related to Engineered Earth Fill. The site shall be taken "as found".
- 7.3.2 Site Preparation - The Contractor shall remove all vegetation, utilities, debris, concrete and deliterious material and legally dispose of these materials off site. All excavation work shall be executed to lines indicated and as required to permit installation of forms and similar work prior to performing the work.
- 7.3.3 Approvals - The Contractor shall not allow or cause any of the work performed or installed to be covered up or enclosed by work prior to all required inspections, tests, and approvals. The Contractor shall schedule the work so at least three (3) working days notice is given before any work is to be covered. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Owner. After the work has been completely tested, inspected, and approved, the Contractor shall make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.
- 7.3.4 Unauthorized Excavation - Any unauthorized excavations under or adjacent to foundations, or retaining walls shall be filled with lean concrete to return the elevation to its proper position, if acceptable to the Engineer. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations and backfills.

7.4 Excavation

- 7.4.1 Stripping - Strip the upper 3 to 6 inches of surface soil containing organic matter and stockpile for later use. Remove material to the elevations indicated. Further excavate to remove undesirable material as recommended by the Engineer.
- 7.4.2 Stability of Excavation - Temporary cut slopes during the dry season in bedrock shall not exceed 5-foot vertical or 1:1 (H:V) where height exceeds 5 feet, provided that they are inspected and approved by the Engineer, and monitored daily during construction. All excavations shall comply with applicable local, State and Federal safety regulations. Where sloping is not possible due to space restrictions or stability concerns, excavations shall be shored and braced.
- 7.4.3 The Contractor shall excavate to the lines and grades shown on these plans.
- 7.4.4 Shoring and Bracing - Shoring and bracing shall comply with local codes and authorities having jurisdiction. The shoring and bracing shall be extended as the excavation extends and shall be installed regardless of the duration the excavation will be open.
- 7.4.5 Dewatering - The Contractor shall prevent surface and subsurface (groundwater) water from flowing into the excavation and from flooding the project site. The Contractor shall not allow water to accumulate in excavations, and any water which does accumulate shall be removed to prevent softening and soil changes detrimental to the strength and stability of subgrades. The Contractor shall provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from the excavation. The water shall be discharged away from planned improvements and excavations.

7.5 Installation

- 7.5.1 The upper 6 inches of exposed material in areas to receive fill shall be moisture conditioned to obtain a moisture content of at least optimum or greater, scarified and compacted to minimum 90% relative compaction (ASTM D1557-12).
- 7.5.2 Engineered Fill shall be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to at least 2% above optimum moisture, and compacted by mechanical means to a minimum of 90% of relative compaction as determined by the ASTM D 1557-12 standard. Engineered fill placed beneath all structures and/or roads shall be compacted to at least 95% relative compaction to a minimum depth of 12 inches below pavement.
- 7.5.3 Grading - Graded surfaces shall be uniformly graded, including adjacent transition areas. The finished surface shall be smooth, stiff and free of loose material. The Contractor shall "over-build" the slope and cut-back to the design grade to ensure specified compaction at the slope face.
- 7.5.4 Moisture Conditioning - Where the subgrade or fill material requires moisture conditioning (adding water) to achieve the specified moisture content, water shall be applied uniformly to the exposed surface to prevent free water from appearing on the surface. In the event that the material is too wet (has a moisture content which precludes achieving the specified relative compaction), the material can be removed and replaced, scarified and air-dried, or mixed with drier material.

7.6 Erosion Control

- 7.6.1 The Contractor shall provide adequate erosion control during construction (including necessary straw bales, sand bags and/or silt fencing) to prevent mud and/or debris from spilling into drainage channels and streets in accordance with the recommendations and designs shown in the California Stormwater Best Management Practices for Construction Activities.
- 7.6.2 The Contractor shall treat all graded, denuded or disturbed slopes higher than 3 feet, and steeper than 33 percent (3:1) with North American Green SC150 Double Net Straw Coconut Blanket (or approved equivalent) and seed (native grass mix as approved by Owner). All other grounds disturbed by construction activities shall be treated with hydroseed prior to exposure to rain.
- 7.6.3 The Contractor shall keep the graded and disturbed areas moist at all times throughout the grading operation to control dust.

7.7 Testing

- 7.7.1 Compaction testing shall be provided by the Engineer and paid for by the Owner.
- 7.7.2 The Engineer must inspect and approve subgrades and fill layers before further construction work is performed thereon.
- 7.7.3 If, in the opinion of the Engineer, based on testing and/or inspection, subgrade or fills which have been placed are below specified unit weight or relative compaction or are pumping (yielding), the Contractor shall provide additional compaction and testing at no additional expense, or the failing material shall be removed and replaced with suitable material.
- 7.7.4 Where tests indicate that the unit weight of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture content is in evidence, the particular layer or portion shall be reworked until the required unit weight and/or moisture content has been attained. No additional fill shall be placed over an area until the last placed lift of fill has been tested and found to meet the relative compaction and moisture requirements, and that lift has been approved by the Engineer.
- 7.7.5 Where the work is interrupted by heavy rains, fill operations shall not be resumed until the field observation and tests by the Engineer indicate that the moisture content and relative compaction of the previously placed and "passed" fill are within the limits previously specified.
- 7.7.6 All grading inspections must be made by the Engineer.

PART 8 STORM DRAIN STRUCTURES

8.1 Products

- 8.1.1 HDPE Pipe - HDPE pipe shall be corrugated exterior, smooth wall interior HDPE pipe. The pipe shall be 12-inch interior diameter, N-12 WT 1B pipe (per AASHTO) manufactured by Advanced Drainage Systems, Inc. (ADS), or approved equivalent.
- 8.1.2 Drop Inlet - Drop Inlet shall be US Concrete Precast Model CB3636 with appropriately sized knock-outs and galvanized welded H20 traffic rated steel grate or approved equivalent.
- 8.1.3 Rip Rap - The energy dissipator rip rap shall conform to Caltrans Backing No. 1 Class rock.

8.2 Installation

- 8.2.1 All HDPE connections shall be water-tight and as recommended by the approved manufacturer.
- 8.2.2 The connections between the drop inlet and the HDPE pipes shall be watertight and as recommended by the approved manufacturer.
- 8.2.3 Drop Inlets - Drop Inlets shall be installed level, on firm subgrade and backfilled around with compacted fill, Controlled Density Fill or lean concrete.
- 8.2.4 The HDPE pipe shall be staked to the slope using manufacturer approved stakes and collars.
- 8.2.5 The rip rap for the energy dissipator shall be keyed Min 12" to 18" into the slope with a drain trench


NO.	REVISIONS	BY	DATE	APP'D

COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

330 Village Lane
Los Gatos, California 95030
(408) 354-5542 Fax: (408) 354-1852

FOR: Chad Moseley
City of Cupertino
10300 Torre Ave.
Cupertino, California 95014

DESIGNED: David T. Schrier, P.E. 4/5/17 DATE
DRAWN: John Wallace, 4/5/17 DATE
CHECKED: DATE

SUBMITTED: 



DRAWING TITLE:

**Technical Specifications
(Parts 5, 6, 7 and 8)**

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO.	C-3
SHEET NO.	3 of 11
CSA PROJECT NO.	E5177

Notes: Base map compiled from detailed (2-foot contour interval) topographic survey by Cotton, Shires and Associates, Inc. on February 28, 2017. Elevation data is based on arbitrary datum set by Cotton, Shires and Associates, Inc., and is not based on an established City or State elevation datum.

1. This is not a map of a boundary survey. No property corners have been set as part of this work.
2. Survey monuments found in the course of this mapping are set by others, and have been used only as a reference for the purpose of topographic mapping, without our verification of their agreement with applicable legal descriptions and seniority of deeds.
3. Relation of topographic features (i.e., fences, walls, trees, power poles, etc.) to property lines as shown on this map is subject to the adjustments that a boundary survey may require.
4. This survey was prepared without the benefit of a Title Report. Easements, if any, are not shown on this map.
5. If this map is provided in an electronic format as a courtesy to client, delivery of the electronic file does not constitute delivery of a professional work product. The signed paper print delivered with this electronic file constitutes our professional work product and, in the event the electronic file is altered, the print must be referred to for the original and correct survey information. We shall not be responsible for any modifications made to the electronic file or for any products derived from the electronic file which are not reviewed, signed and sealed by us.

(N) DI W/ H2O GRATE, CONNECT TO
(N) 12"Ø PIPE WITH WATER-TIGHT
CONNECTIONS, TYP.

(N) SAWCUT PAVEMENT AND PLACE
2 FEET OF (N) 3" AC OVER 9" AB
(RECONSTRUCT SUBGRADE AS
NECESSARY TO PLACE NEW
PAVEMENT SECTION)

(N) BACKFILL BEHIND LAGGING
WITH ENGINEERED FILL

(N) AC DIKE

(N) RETAINING WALL BACKDRAIN, TYP.

(N) ABANDON (E) 8" PIPE W/
(N) CONCRETE PLUG

(N) DI W/ H2O GRATE, CONNECT TO
(N) 12"Ø PIPE WITH WATER-TIGHT
CONNECTIONS, SAWCUT PAVEMENT
FOR INSTALLATION TYP.

(N) SAWCUT AND PLACE
(N) 3" AC OVER 9" AB FOR
CULVERT TRENCH PATCH

(N) 12"Ø HDPE PIPE
STAKED TO SLOPE W/
MANUFACTURER
APPROVED COLLAR
AND STAKE AT MAX. 8'
INTERVALS, TYP.

(N) 12"Ø HDPE PIPE
STAKED TO SLOPE W/
MANUFACTURER
APPROVED COLLAR
AND STAKE AT MAX. 8'
INTERVALS, TYP.

(N) AC DIKE

(N) CLEANOUT, TYP.

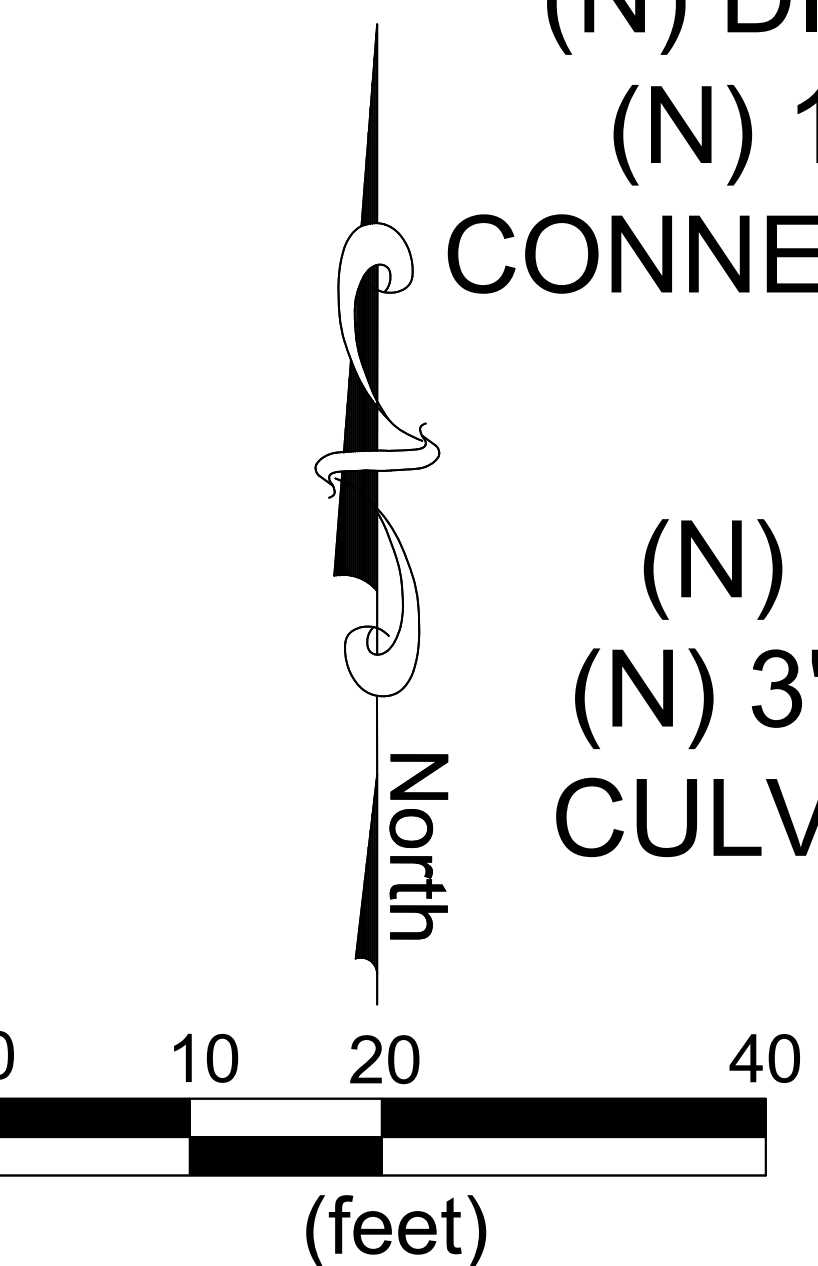
(N) SOLDIER PILE PIER
AND NO., TYP.

(N) CONCRETE LAGGING
TYP.

(N) DISCHARGE BACKDRAIN BELOW
LAGGING ONTO (3) 12"Ø RIP RAP
ENERGY DISSIPATOR BOULDERS KEYED
INTO SLOPE WITH OUTLET TRENCH

(N) REMOVE (E) EUCALYPTUS TREE
(N) REMOVE (E) 8" PIPE

(N) DISCHARGE STORM DRAIN ONTO (6)
12"Ø RIP RAP ENERGY DISSIPATOR
BOULDERS KEYED INTO SLOPE WITH
OUTLET TRENCH, AND LOCATED ABOVE
ORDINARY HIGH WATER MARK, TYP.



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SUBMITTED: _____

CUPERTINO

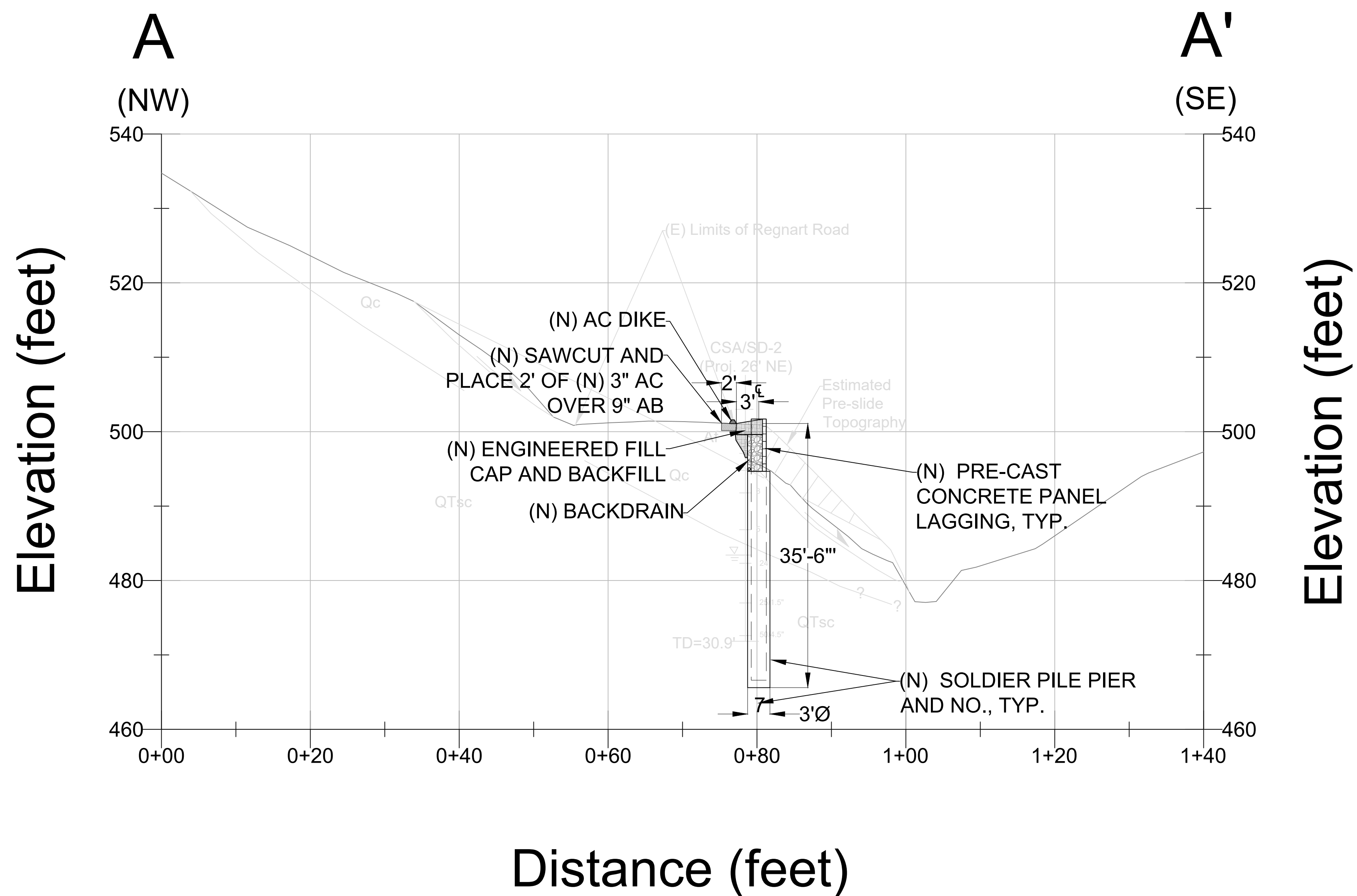
DRAWING TITLE:
Roadway Stabilization Plan

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO.
C-4

SHEET NO.
4 of 11

CSA PROJECT NO.
E5177



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COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

David T. Schrier, P.E. 4/5/17
DESIGNED DATE

David T. Schrier, P.E. 4/5/17
DRAWN DATE

John Wallace, 4/5/17
CHECKED DATE

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FOR:
Chad Mosley
City of Cupertino
10300 Torre Ave.
Cupertino, California 95014

NO. 47816
EXP. 12/31/17
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA



DRAWING TITLE:
Cross Section A-A'

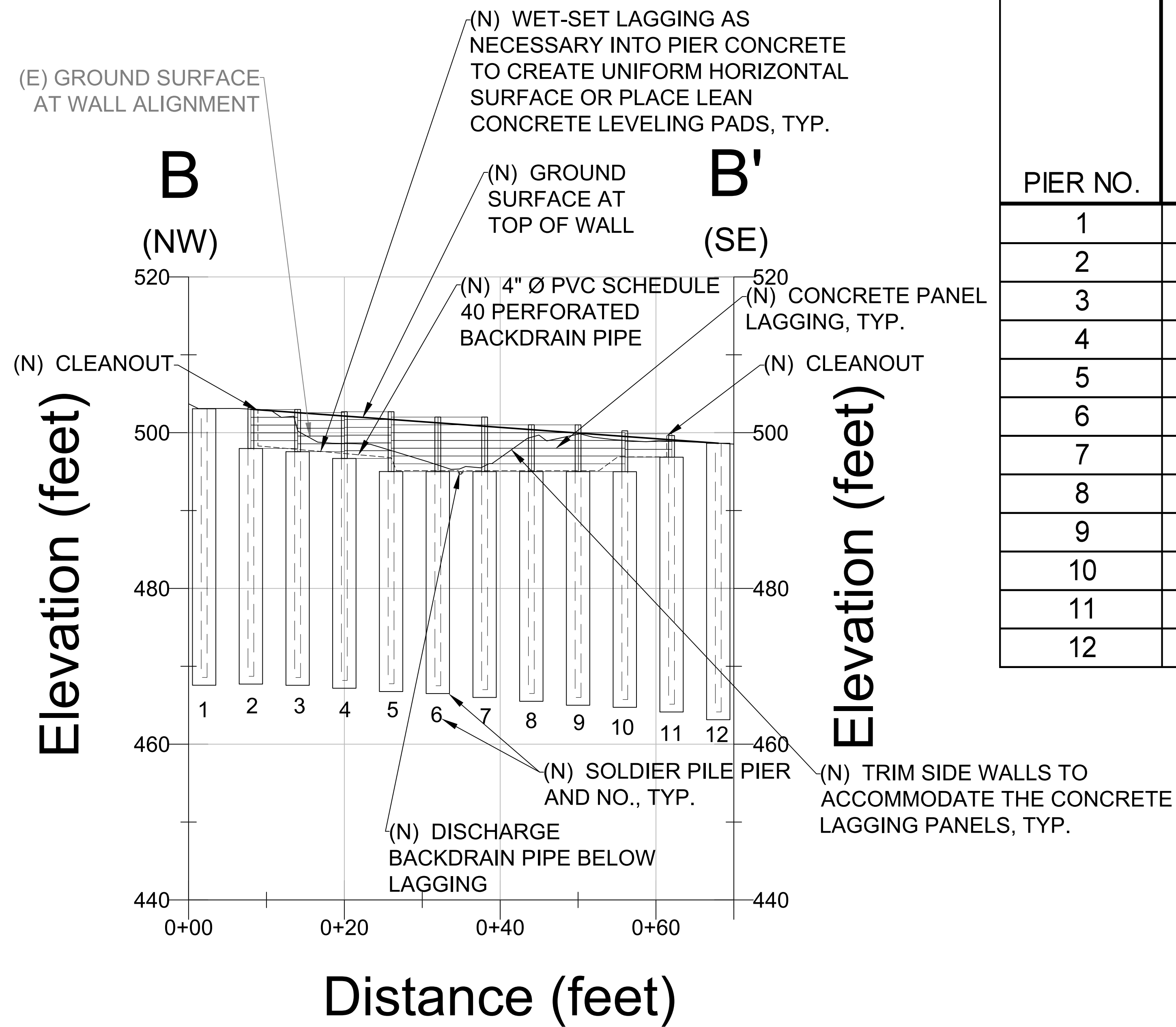
REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO.
C-5

SHEET NO.
5 of 11

CSA PROJECT NO.
E5177

SOLDIER PILE PIER AND LAGGING SCHEDULE



PIER NO.	NO. OF 6X12 LAGGING IN THE BAY TO THE RIGHT OF THE PIER (NO)	CANTILEVERED HEIGHT OF BEAM (FT)	PIER DEPTH (FT)	LENGTH OF BEAM (FT)	TOTAL LENGTH {TOP OF SOLDIER PILE/BEAM TO BOTTOM OF PIER} (FT)	BEAM	PIER DIAMETER (FT)
1	0	0	35.5	34.5	35.5	W24x94	3
2	5	5	30.5	34.5	35.5	W24x94	3
3	5	5	30.5	34.5	35.5	W24x94	3
4	6	6	29.5	34.5	35.5	W24x94	3
5	7	7	28.5	34.5	35.5	W24x94	3
6	7	7	28.5	34.5	35.5	W24x94	3
7	6	6	29.5	34.5	35.5	W24x94	3
8	6	6	29.5	34.5	35.5	W24x94	3
9	5	5	30.5	34.5	35.5	W24x94	3
10	3	3	32.5	34.5	35.5	W24x94	3
11	0	0	35.5	34.5	35.5	W24x94	3
12	0	0	35.5	34.5	35.5	W24x94	3

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CIVIL
STATE OF CALIFORNIA



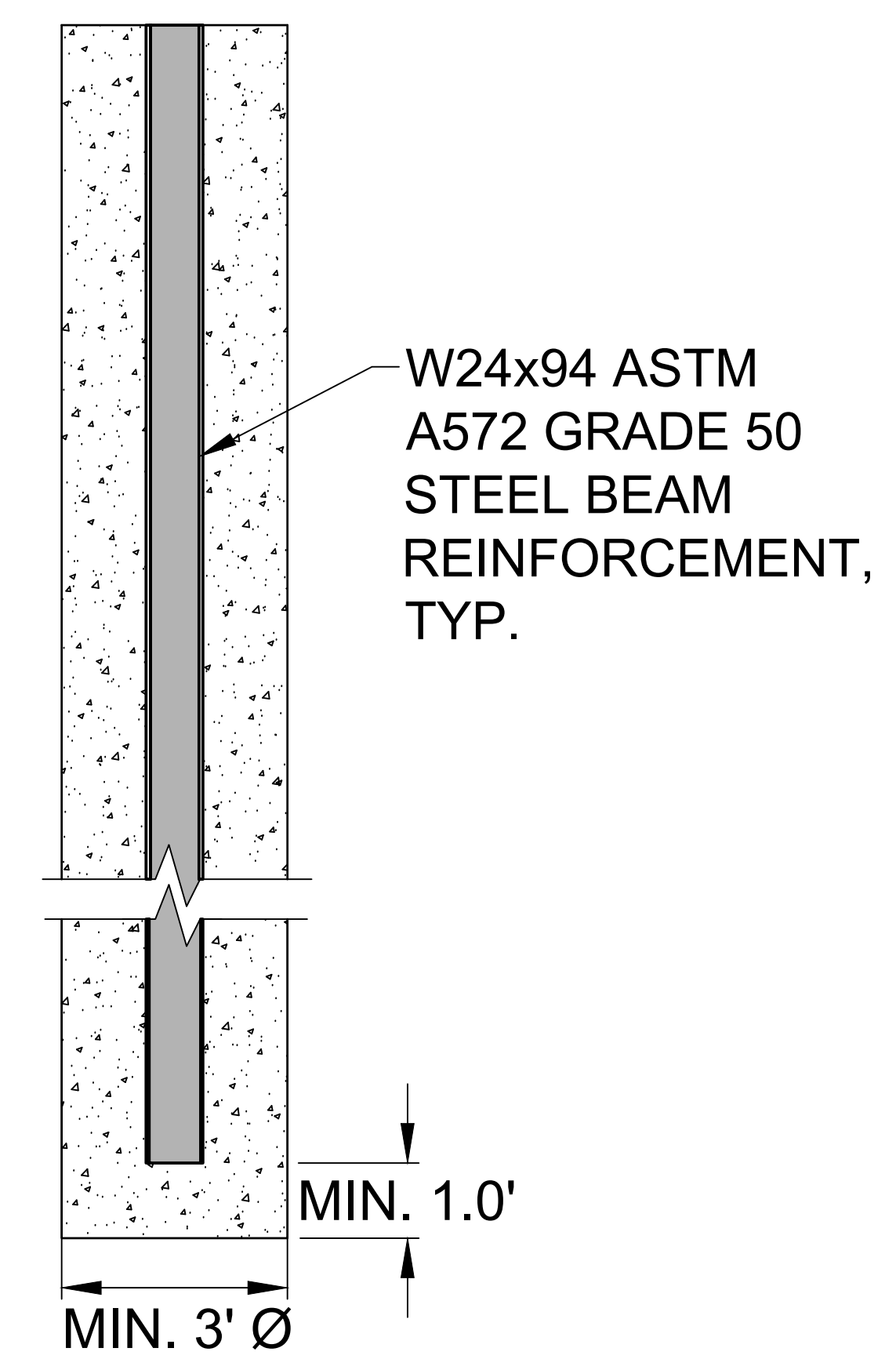
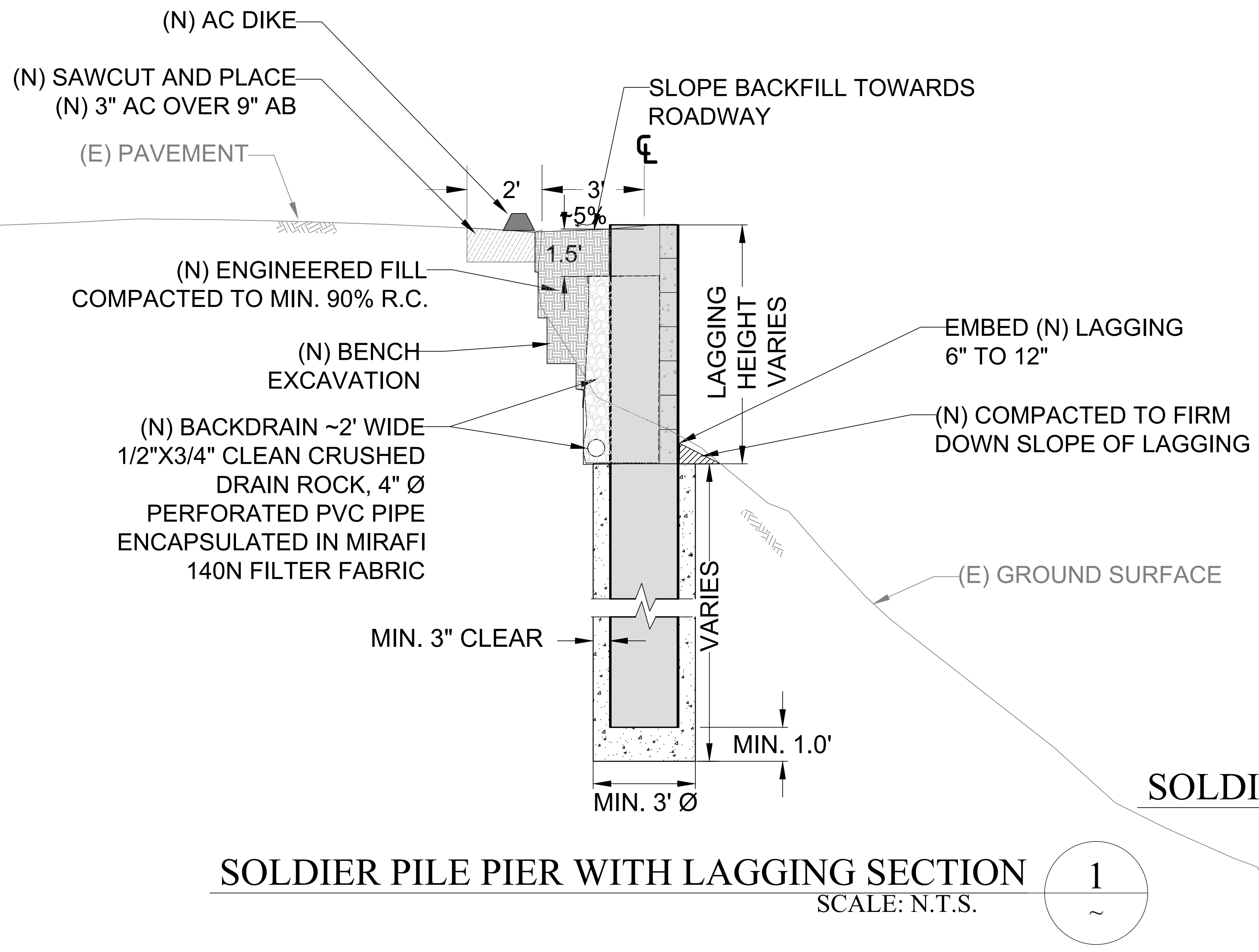
DRAWING TITLE:
Elevation B-B' and Pier and Lagging Schedule

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO.
C-6

SHEET NO.
6 of 11

CSA PROJECT NO.
E5177



SOLDIER PILE PIER WITH LAGGING SECTION
SCALE: N.T.S.

1
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SOLDIER PILE PIER WITHOUT LAGGING SECTION
SCALE: N.T.S.

2
~

NO.	REVISIONS	BY	DATE	APP'D

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SUBMITTED: _____

REGISTERED PROFESSIONAL ENGINEER
DAVID T. SCHRIER
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EXP. 12/31/17
CIVIL
STATE OF CALIFORNIA



DRAWING TITLE: **Detail 1**

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO. **C-7**

SHEET NO. **7 of 11**

CSA PROJECT NO. **E5177**

(N) SECURE UPPER LAGGING MEMBER TO EACH FLANGE WITH A PLATE WELDED ONTO THE TOP OF EACH FLANGE

(N) A572 GRADE 50 KSI W24X94 STEEL BEAM WITH ALL EXPOSED PORTIONS AND 3' INTO CONCRETE TREATED WITH AMERLOCK 400 EPOXY COATING, OR APPROVED EQUIVALENT, AND PAINTED CITY SELECTED TOPCOAT

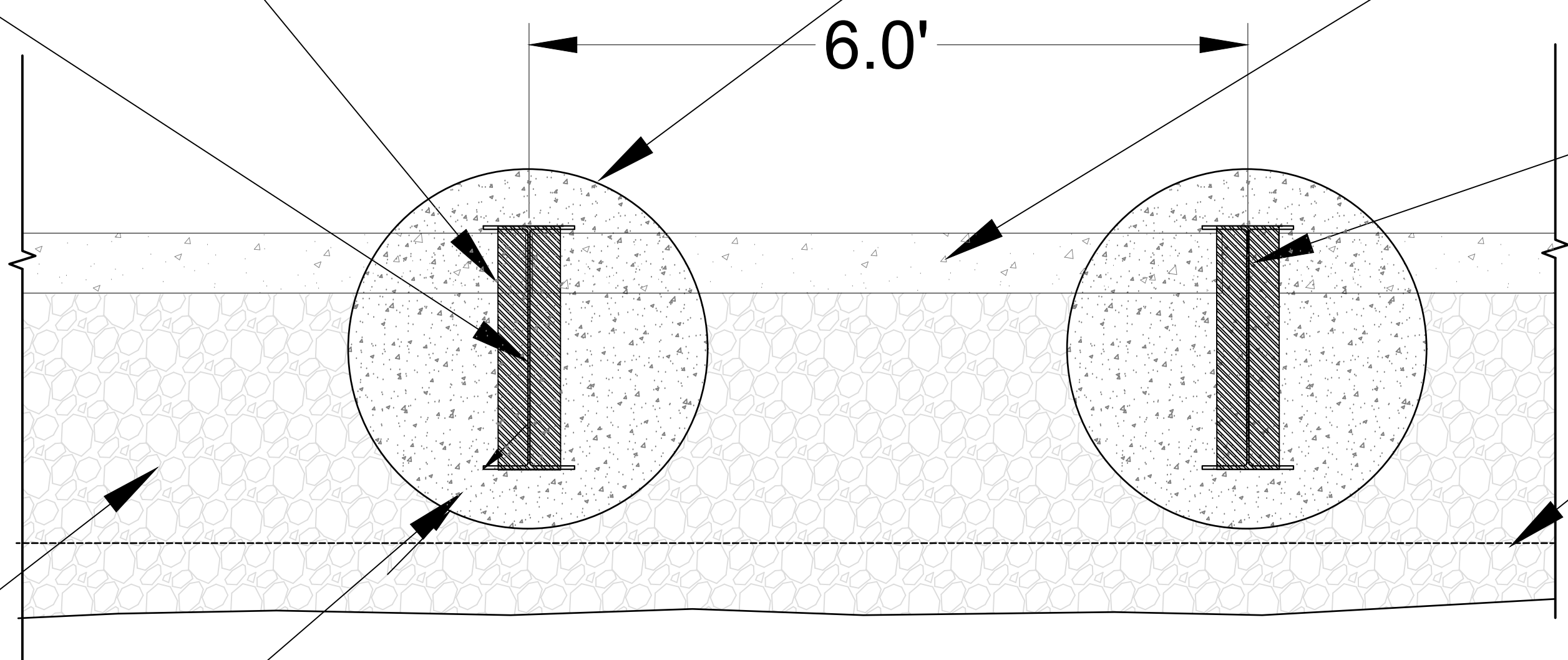
(N) ~24" WIDE $\frac{1}{2}$ " X $\frac{3}{4}$ " CLEAN CRUSHED DRAIN ROCK WRAPPED IN MIRAFI 140N FILTER FABRIC OR APPROVED EQUIVALENT
Min. 3" CLEAR ON ALL SIDES

(N) 36-INCH Ø SOLDIER PILE PIER WITH 3,000 PSI CONCRETE

(N) 6" x 12" PRE-CAST CONCRETE PANELS FOR LAGGING

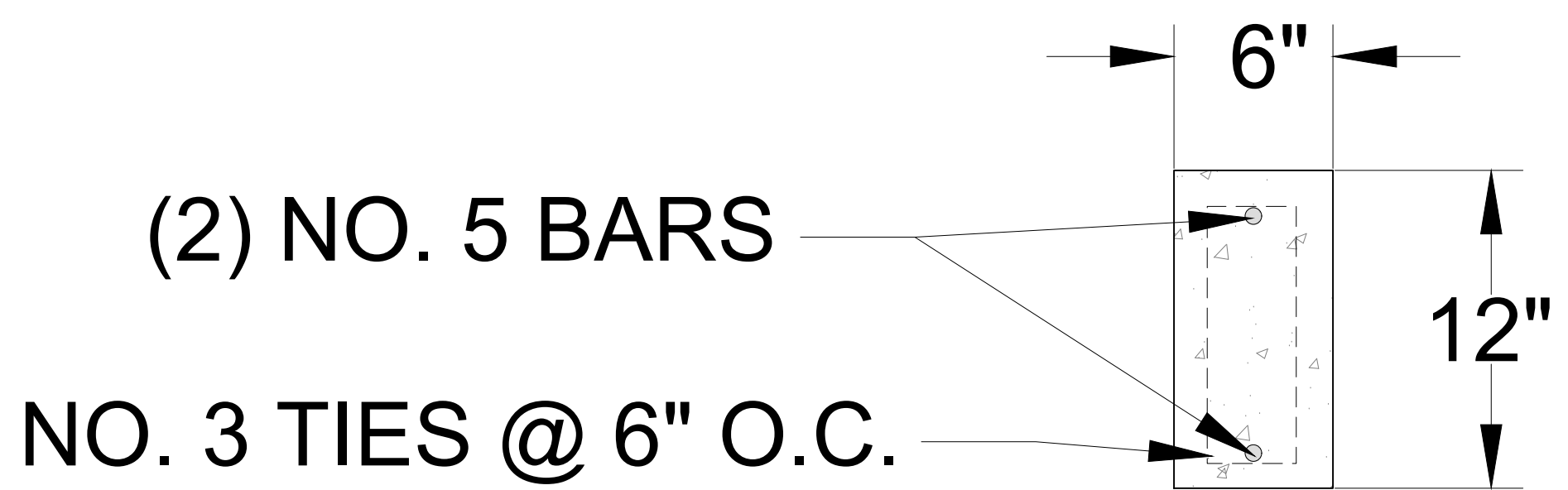
(N) LAGGING TO FIT TIGHT TO BEAM WEB, MIN 3" OVERLAP W/ FLANGE

(N) 4" Ø SCH. 40 PVC RIGID PERFORATED DRAIN PIPE WITH PERFORATIONS DOWN ON 2" TO 3" OF DRAINROCK



RETAINING WALL TYPICAL PLAN
SCALE: N.T.S.

3
~



PRE-CAST CONCRETE PANEL LAGGING DETAIL
SCALE: N.T.S.

4
~

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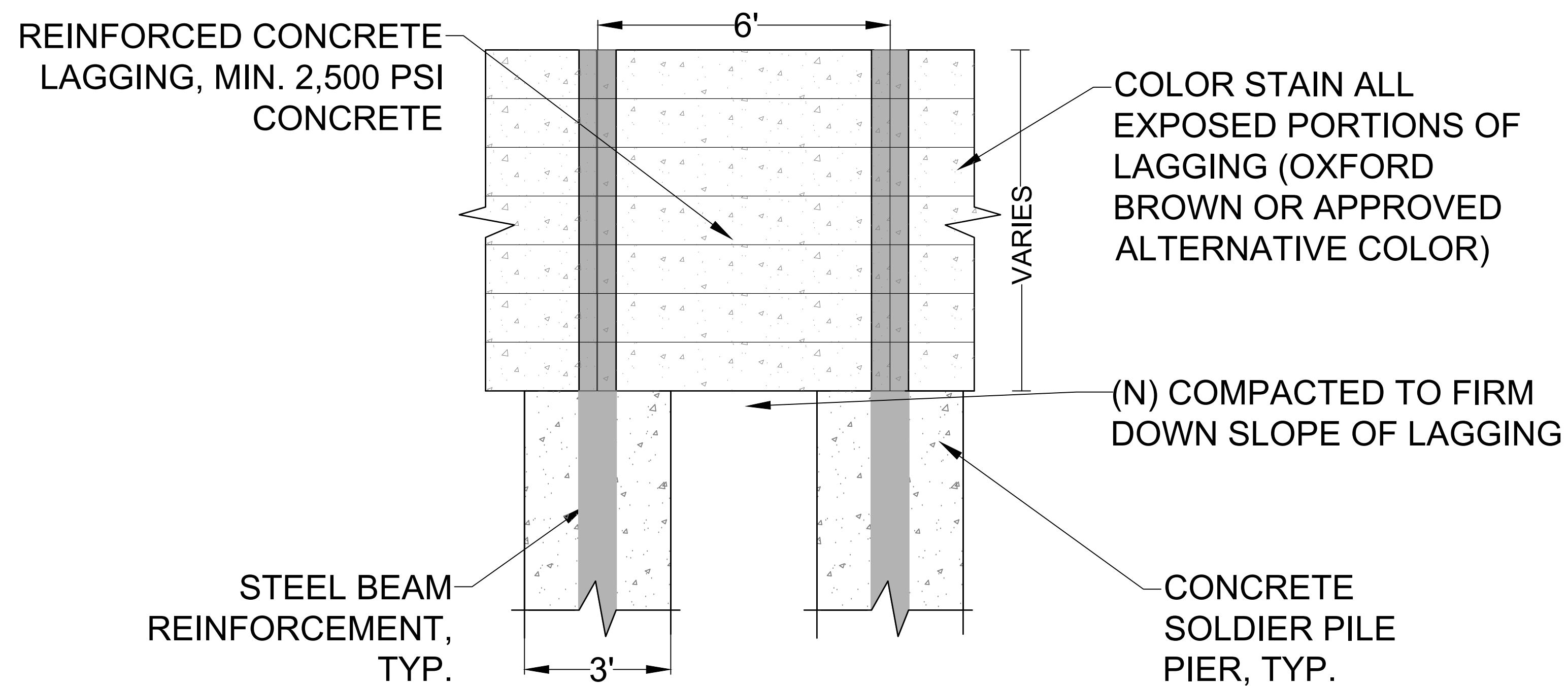


FOR: Chad Mosley
City of Cupertino
10300 Torre Ave.
Cupertino, California 95014



DRAWING TITLE: Detail 2
REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

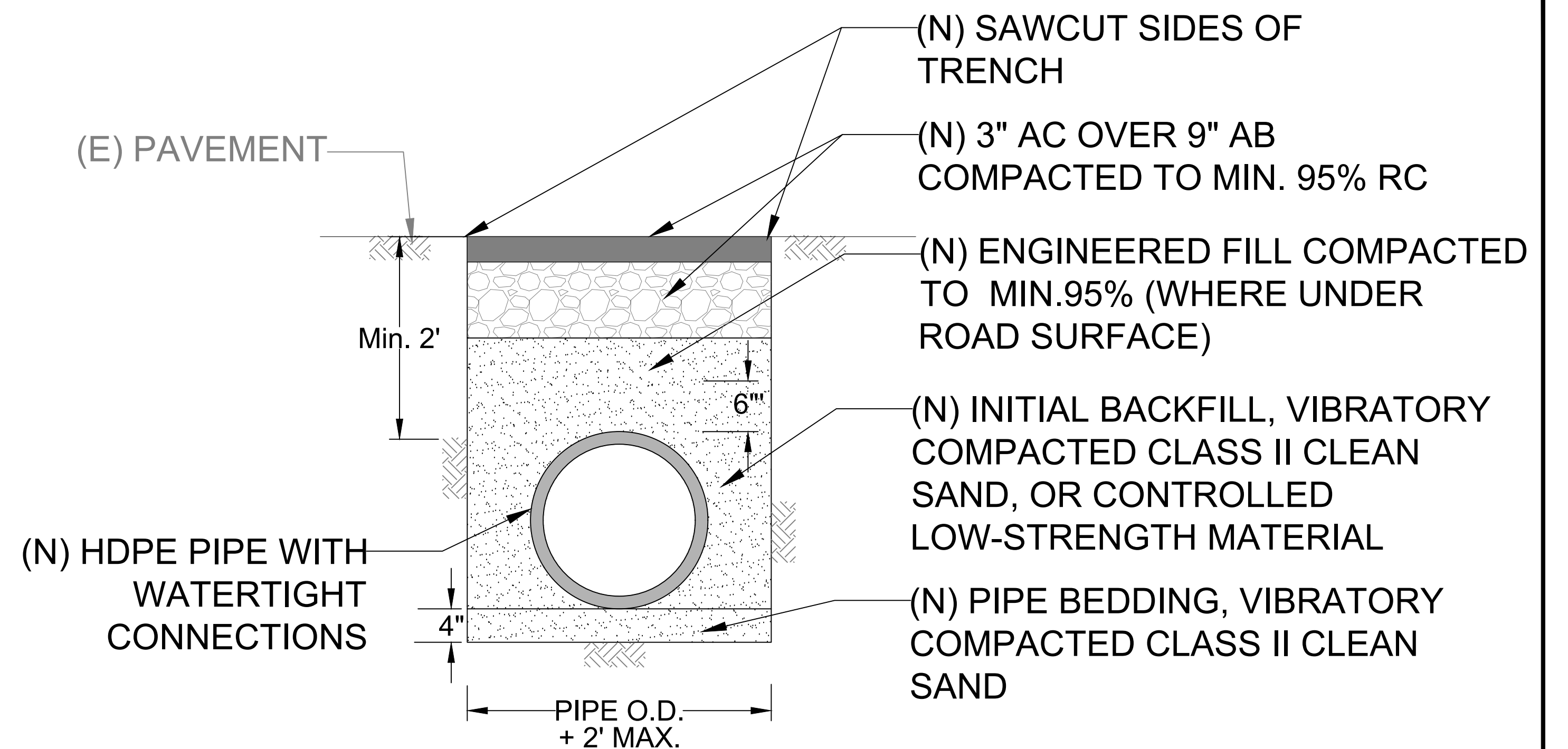
DRAWING NO. C-8
SHEET NO. 8 of 11
CSA PROJECT NO. E5177



CONCRETE LAGGING ELEVATION DETAIL

SCALE: N.T.S.

5

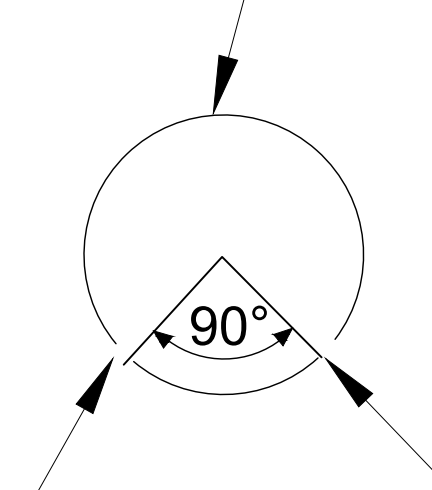


TYPICAL BURIED PIPE DETAIL

SCALE: N.T.S.

6

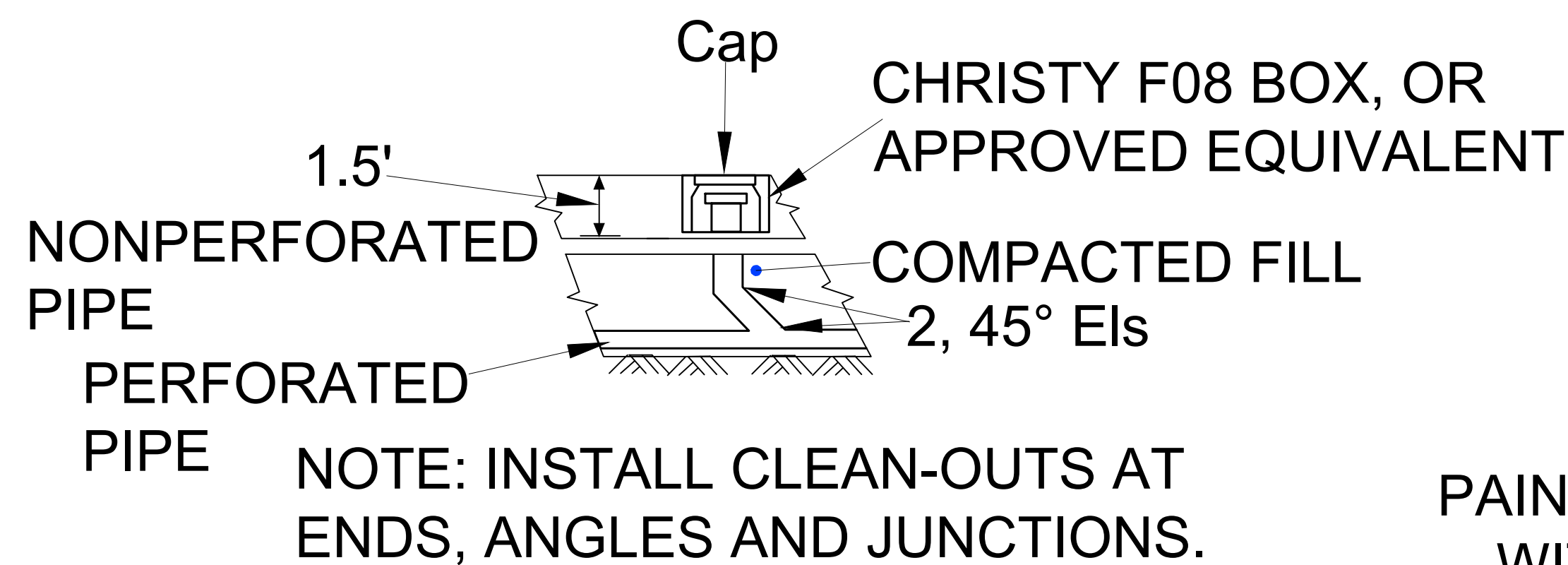
4 IN. Ø PERFORATED PVC SCH. 40 WALL BACKDRAIN PIPE



PVC DRAIN PIPE PERFORATION DETAIL

SCALE: N.T.S.

7



PROTECT TOP OF CLEAN-OUT WITH CHRISTY BOX MODEL F08 BOX WITH REINFORCED CONCRETE LID, OR APPROVED EQUIVALENT, INSTALLED FLUSH WITH GROUND SURFACE.

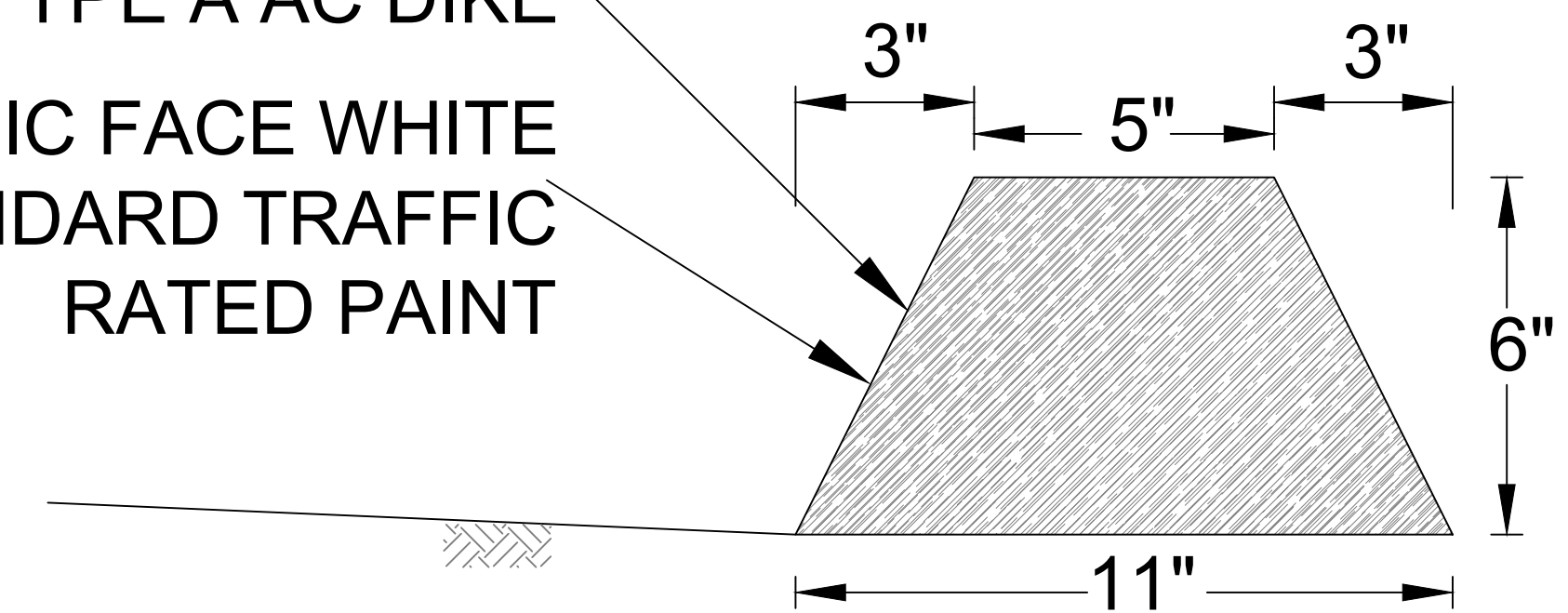
BACKDRAIN CLEAN-OUT DETAIL

SCALE: N.T.S.

8

CALTRANS STANDARD TYPE A AC DIKE

PAINT TRAFFIC FACE WHITE WITH STANDARD TRAFFIC RATED PAINT



AC DIKE DETAIL

SCALE: N.T.S.

9

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Los Gatos, California 95030
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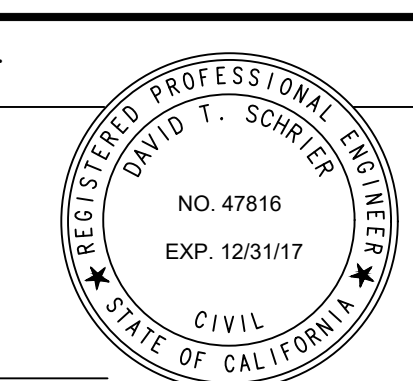
FOR:
Chad Mosley
City of Cupertino
10300 Torre Ave.
Cupertino, California 95014

DESIGNED: David T. Schrier, P.E. 4/5/17
DATE: _____

DRAWN: David T. Schrier, P.E. 4/5/17
DATE: _____

CHECKED: John Wallace, 4/5/17
DATE: _____

SUBMITTED: _____



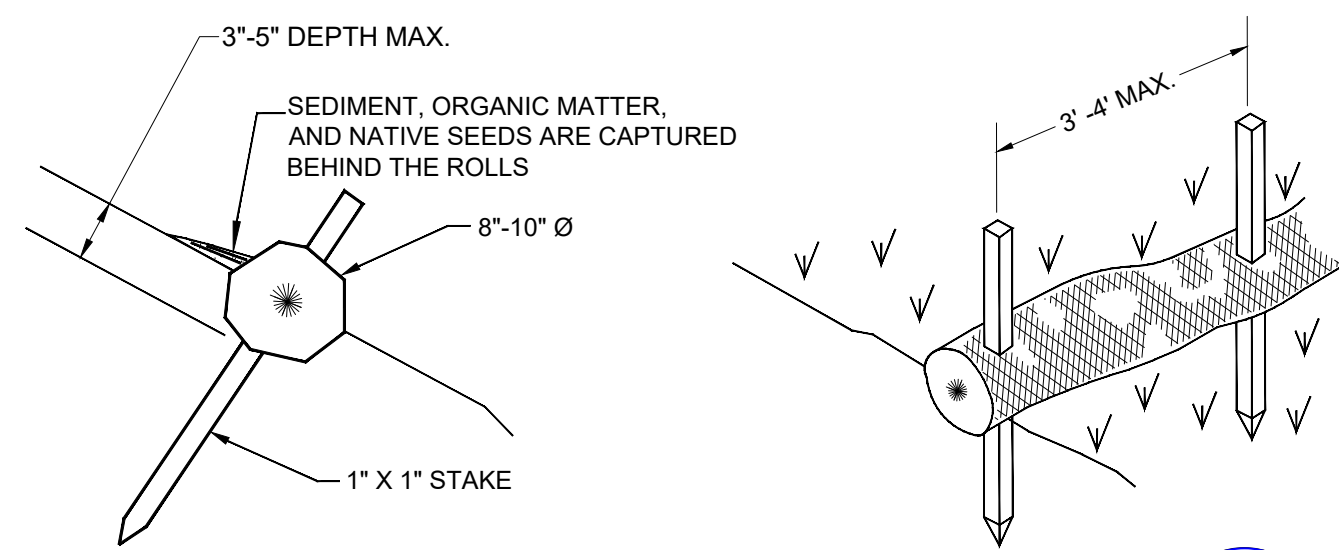
DRAWING TITLE:
Detail 3

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

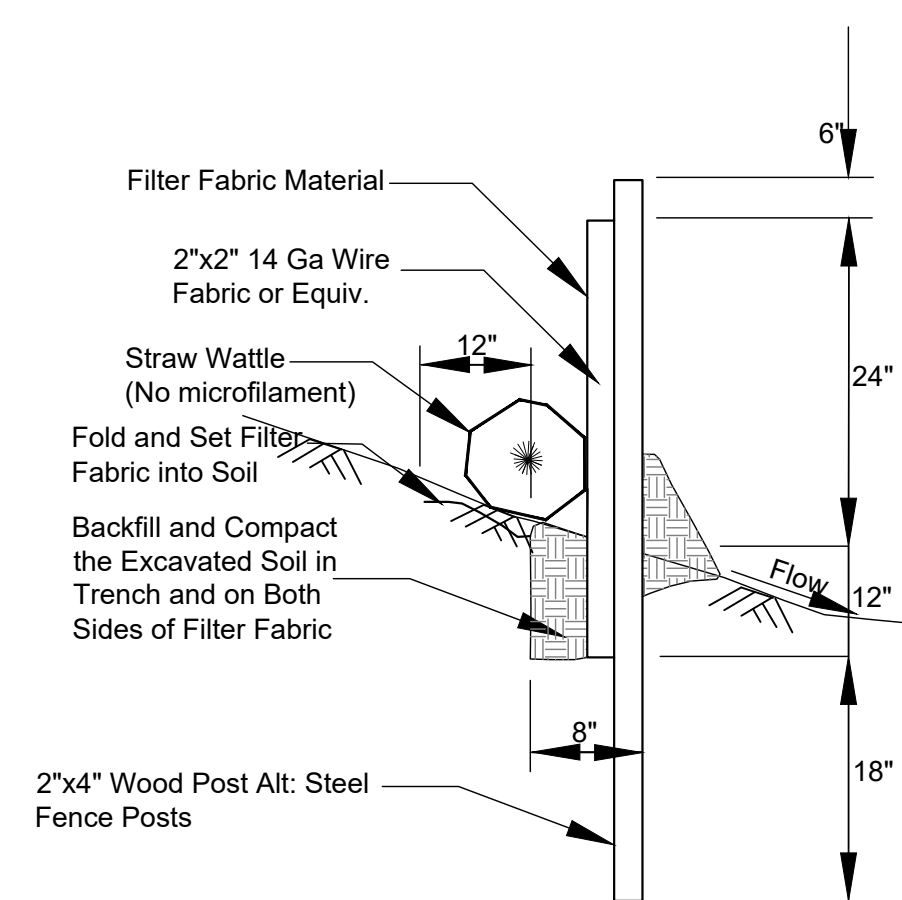
DRAWING NO.
C-9

SHEET NO.
9 of 11

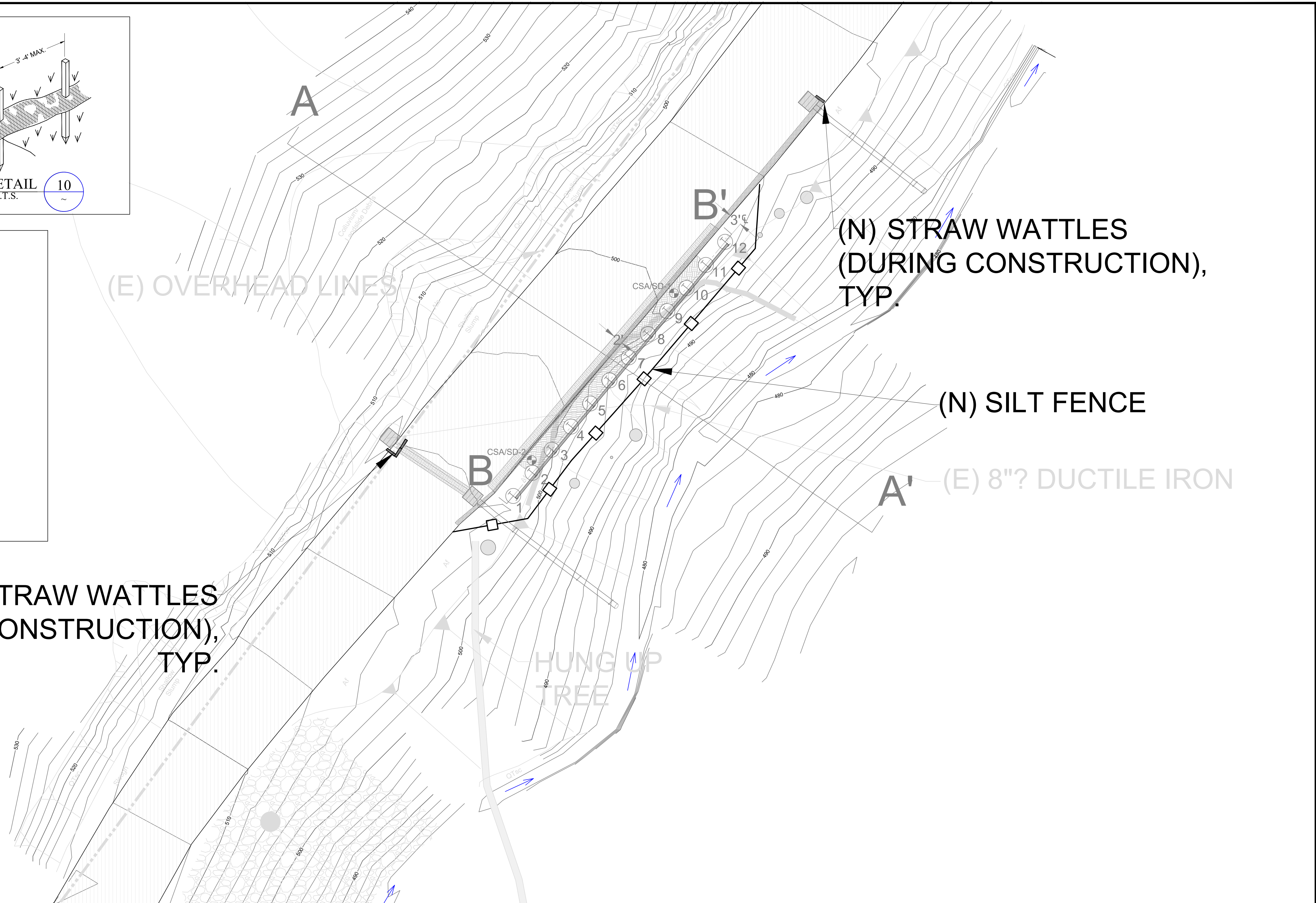
CSA PROJECT NO.
E5177



STRAW WATTLE INSTALLATION DETAIL 10
SCALE: N.T.S.



SILT FENCE DETAIL 11
SCALE: N.T.S.



(N) STRAW WATTLES
(DURING CONSTRUCTION),
TYP.

(N) STRAW WATTLES
(DURING CONSTRUCTION),
TYP.

(N) SILT FENCE

(E) 8" DUCTILE IRON

NO.	REVISIONS	BY	DATE	APP'D

COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

330 Village Lane
Los Gatos, California 95030
(408) 354-5542 Fax: (408) 354-1852

FOR:
Chad Mosley
City of Cupertino
10300 Torre Ave.
Cupertino, California 95014

DESIGNED: David T. Schrier, P.E. 4/5/17
DATE: _____
DRAWN: David T. Schrier, P.E. 4/5/17
DATE: _____
CHECKED: John Wallace, 4/5/17
DATE: _____

SUBMITTED: _____

REGISTERED PROFESSIONAL ENGINEER
DAVID T. SCHRIER
NO. 47816
EXP. 12/31/17
CIVIL
STATE OF CALIFORNIA



DRAWING TITLE: **Erosion Protection Plan**

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO. **C-10**

SHEET NO. 10 of 11

CSA PROJECT NO. E5177

COTTON, SHIRES AND ASSOCIATES, INC.
LOG OF EXPLORATORY DRILLING

Project Regnart Road Boring CSA/SD-1
Location Regnart Road (northeast of the failure) Project No. E5177
Drilling Contractor/Rig Cenezoic Exploration/ 2400 SK-1 Date of Drilling March 7, 2017
Ground Surface Elev. ~500 feet Logged By KW Hole Diameter 6" solid stem
Surface shoulder of road Weather sunny, somewhat warm

Depth (feet)	Graphic Log	USCS Class	Geotechnical Description	Sample Desig.	Dry Unit Weight (pcf)	Moisture Content (%)	SPT Blows/ft	Sample Type	Recov. (%)	Remarks
0-2	CL	CL	ARTIFICIAL FILL (AF) 0-5ft: Silty/Clayey SAND with GRAVEL, tan and dark brown, very loose, wet to saturated, angular to subrounded	T1	99	21.0	2	MC		Driller: Mike Helper: Theran 7:34 AM - started drilling 9"18" @ 7:38
5-7	SM	SM	5-7ft: Silty SAND with rare GRAVEL, medium brown, loose, wet, angular, 5cm	T2 T3	105	18.7	3 6	MC		LL=28, PI=5 TX/UU 2,290 (2000) 12"18" @ 7:43
7-9	SM	SM	7-9ft: Silty SAND, light tan/yellow, very loose, wet, poorly graded/well sorted	T4 T5	100	21.4	3 3	MC		LL=30, PI=8 15"18" @ 7:50
9-14	SM	SM	COLLUVIUM (Qc) 9-14ft: Silty SAND, light tan with very light yellow hue, dense, wet, poorly graded/well sorted	T6 T7	104	20.4	8 12	MC		TX/UU 4106 (2,980) 15"18" @ 7:57
14-26	cong	cong	Santa Clara Formation (Qsc) 14-18ft: CONGLOMERATE, Sandy Gravel, brown/red/orange, dense, wet, well rounded to subrounded, ranging from 3mm to 1in, well graded 18-25ft: SANDSTONE, slightly silty, tan and light grey, soft, friable, dry	T8 T9			25 26 27	MC		18"18" @ 8:08
25-26	ss	ss	25-26ft: SANDSTONE, slightly silty, medium grey to dark grey, almost aphanitic, dry	T10			40 30.4	MC		9"12" @ 8:25
TD = 26 feet			no groundwater encountered	B1			30 10.6	SPT		12"12" @ 8:42

Sheet 1 of 1

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

COTTON, SHIRES AND ASSOCIATES, INC.
LOG OF EXPLORATORY DRILLING

Project Regnart Road Boring CSA/SD-2
Location Regnart Road (southwest of the failure) Project No. E5177
Drilling Contractor/Rig Cenezoic Exploration/ 2400 SK-1 Date of Drilling March 7, 2017
Ground Surface Elev. ~503 feet Logged By KW Hole Diameter 6" solid stem
Surface shoulder of road Weather sunny, warm

Depth (feet)	Graphic Log	USCS Class	Geotechnical Description	Sample Desig.	Dry Unit Weight (pcf)	Moisture Content (%)	SPT Blows/ft	Sample Type	Recov. (%)	Remarks
0-8.5	SM	SM	ARTIFICIAL FILL (AF) 0-5ft: Silty SAND with rare gravel, medium brown/orange, loose, wet, angular, ranges from 5mm to 1"	T1	100	20.9	2	MC		Driller: Mike Helper: Theran 7:34 AM - started drilling 9"18" @ 9:22
5-8.5	SM	SM	5-8.5ft: Silty SAND with rare gravel, dark brown and tan clasts, loose, wet, angular, 5mm	T2 T3	96	23.8	2 3	MC		LL=28, PI=5 TX/UU 2,290 (2000) 12"18" @ 7:43
8.5-18	ML-SM	ML-SM	COLLUVIUM (Qc) 8.5-18ft: Silty SAND with rare gravel, dark brown, very loose to loose, wet, angular, 5mm	T4 T5	102	17.9	2 2	MC		11"18" @ 9:32
18-30.9	ss	ss	Santa Clara Formation (Qsc) 18-25ft: sandstone, tan/orange, soft, wet, well sorted, slightly oxidized groundwater encountered at 20ft 25-30ft: sandstone, tan and light grey, soft, friable, well sorted	T6 T7 T8 T9 T10 T11 T12	104	17.3	3 2 3 6 12 24 25.1 25.1	MC		15"18" @ 9:41 LL=25, PI=3 17"18" @ 9:50 18"18" @ 10:04 12.5"7.5" @ 10:15

Sheet 1 of 2

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

Project Regnart Road Date 3/7/2017 Boring CSA/SD-2

Depth (feet)	Graphic Log	USCS Class	Geotechnical Description	Sample Desig.	Dry Unit Weight (pcf)	Moisture Content (%)	SPT Blows/ft	Sample Type	Recov. (%)	Remarks
30-30.9ft	ss	ss	30-30.9ft: sandstone, medium grey, soft, well sorted	B1			60.4 80.4	SPT		10.5"/10.5" @ 10:35

Sheet 2 of 2

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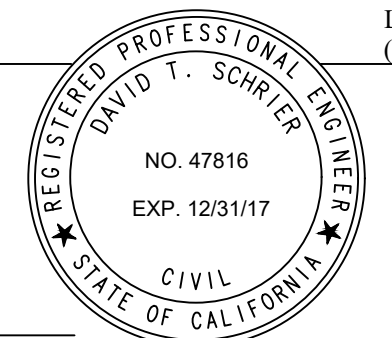
NO.	REVISIONS	BY	DATE	APP'D

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CHECKED: John Wallace, 4/5/17 DATE

SUBMITTED: 



DRAWING TITLE: **Boring Logs**

REGNART ROAD SLOPE STABILIZATION PROJECT
Regnart Road, Cupertino, California

DRAWING NO. **C-11**

SHEET NO. 11 of 11

CSA PROJECT NO. E5177