# TOWN OF FAIRFAX
## STAFF REPORT
## August 3, 2022

**TO:** Mayor and Town Council

**FROM:** Heather Abrams, Town Manager

**SUBJECT:** Adopt Resolution Authorizing Notice Inviting Bids for 78 Wreden Avenue Storm Damage Repair, Town Project No. 51-826

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**RECOMMENDATION**

Adopt the attached resolution authorizing notice inviting bids.

**DISCUSSION**

An existing concrete retaining wall which supports the downslope side of the roadway near 78 Wreden Avenue was damaged during a period of severe storms and heavy rainfall in February 2019. Erosion and instability within the swale below the wall resulted in undermining and loss of foundation support for the structure. The planned repair consists of constructing a new reinforced concrete retaining wall downslope of the existing wall. The new wall is approximately 35-feet-long, up to about eight feet in retained height and will be supported on drilled shaft foundations. The new wall will be constructed a few feet downslope of the existing wall and will provide additional lateral support for the structure. Details of the proposed retaining wall and related improvements are provided in the attached project plans.

As there is another similar repair project near 378 Scenic Avenue, staff will consider combining the two projects into a single bid solicitation in order to realize more competitive bids and streamline construction contract oversight.

**FISCAL IMPACT**

The engineer's construction cost estimate for this project is $240,000. Actual project costs are unknown until the contractor bids are opened. Funding for this project was not appropriated in the current (FY2022-23) adopted CIP budget A budget appropriation will be requested when the Council considers contract award in September.

**ATTACHMENTS**

A. Resolution
B. Plans

**RESOLUTION 22-__**

**A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF FAIRFAX AUTHORIZING NOTICE INVITING BIDS FOR CONSTRUCTION OF 78 WREDEN AVENUE STORM DAMAGE REPAIR PROJECT**

**WHEREAS,** construction of 78 Wreden Avenue Storm Damage Repair ("the Project"), was identified in the current adopted budget; and

**WHEREAS,** delivery of the Project utilizing all of the appropriated funds requires that the Town invite formal bids as provided for in the Town Code and under the California Uniform Construction Cost Accounting Act of 1983; and

**WHEREAS,** the Project is categorically exempt from the application of the California Environmental Quality Act ("CEQA") under Class 1 inasmuch as it involves the repair of an existing facility.

**NOW, THERFORE, BE IT RESOLVED,** that the Fairfax Town Council hereby authorizes issuance of notice inviting construction bids for the Project and authorizes the Town Manager to do everything necessary and proper to complete the bid package and notice the request for bids.

The foregoing Resolution was duly passed and adopted at a regular meeting of the Town Council of the Town of Fairfax, at a regular meeting held on the 3rd day of August 2022, by the following vote, to wit:

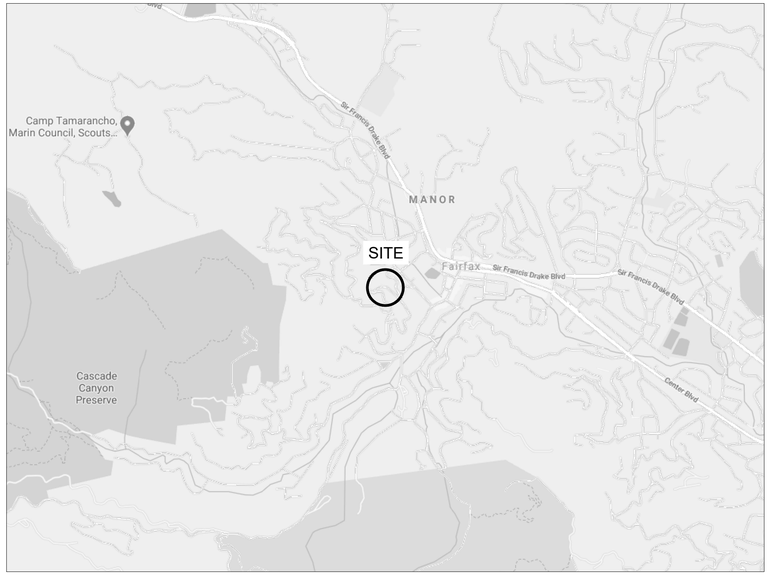
AYES:
NOES:
ABSENT:

_____
Stephanie Hellman, Mayor

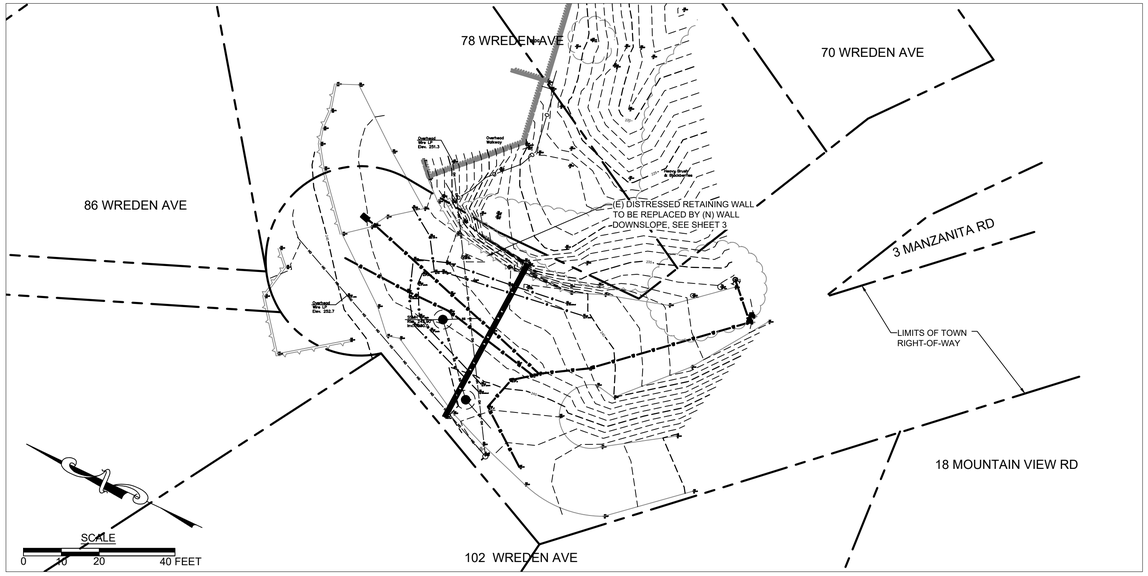
Attest: _____
Michele Gardner, Town Clerk

ATTACHMENT A

# TOWN OF FAIRFAX
# STORM DAMAGE REPAIR, 78 WREDEN AVE
# FEMA DR-4431-CA
# FAIRFAX, CALIFORNIA




SITE LOCATION MAP
(NO SCALE)




PROPERTY MAP
(SCALE: 1" = 20'-0")

ABBREVIATIONS & SYMBOLS

| | |
|---|---|
| APPROX | APPROXIMATELY |
| BW | BOTTOM OF WALL ELEVATION |
| CONC | CONCRETE |
| (E) | EXISTING |
| FT | FEET |
| IN | INCH |
| LF | LINEAR FEET |
| (N) | NEW |
| STD | CALTRANS STANDARD DETAIL |
| TW | TOP OF WALL ELEVATION |
| UCS | MARIN CO. UNIFORM CONSTRUCTION STANDARDS |
| | APPROX BORING LOCATION BY MILLER PACIFIC |

INDEX OF SHEETS



GENERAL

1. ALL CONDITIONS AND DIMENSIONS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR. ANY DISCREPANCIES THAT REQUIRE CLARIFICATION OR REVISIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE STARTING WORK.
2. THE CONTRACTOR SHALL POSSES A CLASS "A" LICENSE.
3. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SAFETY, AND SEQUENCE.
4. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT PRIOR TO START OF ANY CONSTRUCTION. CONTRACTOR SHALL NOTIFY ALL PUBLIC OR PRIVATE UTILITY COMPANIES A MINIMUM OF 48 HOURS PRIOR TO COMMENCEMENT OF WORK ADJACENT TO EXISTING UTILITY LINES.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL EXISTING UTILITIES IN THE FIELD. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
6. TOWN OF FAIRFAX ENCROACHMENT PERMIT IS REQUIRED FOR ALL WORK, INCLUDING STAGING OF MATERIALS AND EQUIPMENT IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN ENCROACHMENT PERMIT IN ACCORDANCE WITH THE PERMIT REQUIREMENTS.
7. THE CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ESTABLISH THE RETAINING WALL LAYOUT PRIOR TO BEGINNING WALL CONSTRUCTION.
8. THE CONTRACTOR SHALL HAUL AWAY ALL UNUSED/EXCESS EXCAVATED MATERIAL OFF SITE FOR LEGAL DISPOSAL.
9. NO CONSTRUCTION MATERIALS, EQUIPMENT, DEBRIS OR WASTE SHALL BE PLACED OR STORED WHERE IT MAY BE SUBJECT TO WIND OR RAIN EROSION AND DISPERSION.
10. WORKMANSHIP TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS ALONG WITH 2018 CALTRANS STANDARD SPECIFICATIONS, MARIN COUNTY AND CITY OF SAUSALITO STANDARDS AND GENERALLY ACCEPTED CONSTRUCTION PRACTICES.

SURVEY NOTES

1. TOPOGRAPHY BASED ON A FIELD SURVEY PERFORMED BY WILLIS SURVEYING. CONTOURS ARE SHOWN EVERY ONE VERTICAL FOOT.
2. THIS IS NOT A BOUNDARY SURVEY. THE LINE WORK SHOWN WAS COMPILED FROM RECORD INFORMATION ONLY AND AS SUCH IT SHOULD NOT BE REPRESENTED OR CONSTRUED AS ACTUAL ENTITLEMENT.
3. VERTICAL DATUM: USE WP1 AS A TEMPORARY BENCHMARK (TBM). WP1, A MAG NAIL SET IN THE DRIVEWAY, ELEVATION IS 242.82 FEET NAVD88 BASED ON STATIC GPS OBSERVATION AND PROCESSED BY NGS OPUS SYSTEM.
4. HORIZONTAL DATUM: CCS ZONE 3, NAD 83 (2011) (EPOCH:2010.0000) BASED ON STATIC GPS OBSERVATION AND PROCESSED BY NGS OPUS SYSTEM.

DRILLED PIERS

1. REFER TO TECHNICAL SPECIFICATION SECTION 2632 FOR DRILLED SHAFT REQUIREMENTS.
2. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO ESTABLISH THE DRILLED SHAFT LAYOUT PRIOR TO BEGINNING DRILLING.
3. "HARD ROCK" DRILLING IS DEFINED AS A PENETRATION RATE SLOWER THAN 30 MINUTES OF CONTINUOUS DRILLING PER FOOT USING A ROCK CORE BAREL OR OTHER HARD ROCK DRILLING EQUIPMENT WITH AT LEAST 15,000 POUNDS OF ROTARY TORQUE. EXCAVATION AND DETERMINATION OF HARD ROCK SHALL BE CONFIRMED BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF HARD ROCK EXCAVATION CONDITIONS ARE ENCOUNTERED.

CONCRETE

1. REFER TO TECHNICAL SPECIFICATION SECTION 3315 FOR CAST-IN-PLACE CONCRETE REQUIREMENTS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 301: SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS. ALL STRUCTURAL CONCRETE SHALL COMPLY WITH THE PROVISIONS OF ACI 318-14.
3. READY-MIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94.
4. SUBMIT AND OBTAIN APPROVAL OF ALL MIX DESIGNS PRIOR TO PLACING CONCRETE.
5. CONCRETE SHALL BE NORMAL WEIGHT AND READY-MIXED WITH A MAXIMUM WATER TO CEMENT RATIO 0.45 AND A MAXIMUM MEASURED SLUMP OF 8 INCHES FOR DRILLED SHAFTS AND 4 INCHES FOR THE GRADE BEAM AND WALL STEM.
6. CEMENT SHALL CONFORM TO ASTM C150, TYPE II.
7. ALL AGGREGATE SHALL CONFORM TO ASTM C33.
8. ALL WATER SHALL BE CLEAN, POTABLE AND NOT DETRIMENTAL TO THE CONCRETE QUALITY.
9. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.

CONCRETE PIPE

1. CONCRETE PIPE FOR NEW CULVERT SHALL CONFORM TO ASTM C76, CLASS III .

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR 60.
2. CONCRETE COVER SHALL BE A MINIMUM OF 3 INCHES.
3. REINFORCING STEEL BENDS, HOOKS, DEVELOPMENT LENGTHS AND SPLICES SHALL BE IN ACCORDANCE WITH DETAIL 6/SHEET 4.

ASPHALT PAVEMENT

1. PAVEMENT CONSTRUCTION SHALL CONFORM TO TECHNICAL SPECIFICATION SECTION 2578 & SECTION 39 OF THE CALTRANS STANDARD SPECIFICATIONS.
2. ASPHALT OVERLAY SHALL BE CONSTRUCTED USING TYPE A, 1/2-INCH GRADED AGGREGATE.

EROSION & SEDIMENT CONTROL

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH ALL REQUIREMENTS OUTLINED IN THE MARIN COUNTY STORMWATER POLLUTION PREVENTION PROGRAM (MCSTOPPP) MINIMUM CONTROL MEASURES FOR SMALL CONSTRUCTION PROJECTS AS OUTLINED IN THE MCSTOPPP CONSTRUCTION EROSION AND SEDIMENT CONTROL PLAN APPLICANT PACKAGE.
2. ANY AREAS IN WHICH GROUND SURFACE AND VEGETATIVE COVER HAS BEEN DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE COVERED WITH A PRE-APPROVED SEED MIX AND BIODEGRADABLE EROSION CONTROL MATS UPON COMPLETION OF CONSTRUCTION.
3. EROSION CONTROL MATS SHALL CONSIST OF NORTH AMERICAN GREEN SC150 OR APPROVED EQUAL.

RIP RAP

1. RIP RAP SHALL CONFORM TO CLASS 2 ROCK SLOPE PROTECTION IN ACCORDANCE WITH SECTION 72 OF THE 2018 CALTRANS STANDARD SPECIFICATIONS.
2. ROCK SLOPE PROTECTION FABRIC SHALL CONSIST OF MIRAFI 500X OR APPROVED EQUAL.

WALL DRAINAGE

1. PERMEABLE MATERIAL USED FOR WALL DRAINAGE AND BACKFILLING UNDERMINED PORTION OF EXISTING RETAINING WALL SHALL CONSIST OF CALTRANS TYPE A CLASS 1 PERMEABLE MATERIAL.
2. FILTER FABRIC SHALL CONSIST OF MIRAFI 140N OR APPROVED EQUAL.

DRAINAGE PIPE FOR CULVERT EXTENSION

1. DRAINAGE PIPE AND FITTINGS FOR CULVERT EXTENSION SHALL CONSIST OF POLYVINYL CHLORIDE (PVC) WHICH CONFORMS TO ASTM D3034.
2. FLEXIBLE COUPLER WHICH CONNECTS EXISTING CONCRETE CULVERT AND NEW PVC CULVERT EXTENSION SHALL CONSIST OF COUPLING 12" CONCRETE X 12" PLASTIC (PART NO. 1006-1212) BY FERNCO INC. OR APPROVED EQUAL.

SPECIAL INSPECTIONS

1. SPECIAL INSPECTION SHALL BE PERFORMED BY MILLER PACIFIC OR A QUALIFIED TESTING AND INSPECTION AGENCY DURING CONSTRUCTION, INCLUDING THE FOLLOWING:

1.1 DRILLED SHAFTS: INTERMITTENT OBSERVATION OF DRILLING. FINISHED DRILLED HOLE EXCAVATIONS SHALL BE OBSERVED PRIOR TO INSTALLING REINFORCING STEEL.

1.2 CONCRETE: INTERMITTENT OBSERVATION DURING PLACEMENT. CONCRETE SHALL BE SAMPLED AND CYLINDERS SHALL BE CAST FOR STRENGTH TESTING IN CONFORMANCE WITH ASTM C39. A MINIMUM OF 1 CYLINDER SHALL BE TESTED AT 7 DAYS AND A MINIMUM OF 3 CYLINDERS SHALL BE TESTED AT 28 DAYS.

1.3 REINFORCEMENT: REINFORCING STEEL SHALL BE OBSERVED PRIOR TO PLACEMENT INTO DRILLED HOLES FOR DRILLED SHAFTS AND PRIOR CONCRETE PLACEMENT FOR GRADE BEAM AND WALL STEM.

1.4 WALL DRAINAGE: FILTER FABRIC, CLASS 1 PERMEABLE MATERIAL AND WEEPHOLES SHALL BE OBSERVED PRIOR TO COVERING WITH BACKFILL.

1.5 WALL BACKFILL: WALL BACKFILL PLACEMENT SHALL BE OBSERVED AND FIELD DENSITY SHALL BE PERFORMED DURING BACKFILLING.

ATTACHMENT A

| Revisions | | | |
|---|---|---|---|
| Description | Mark | Date | By |
| 90% DESIGN SUBMITTAL | | 3/22/2021 | RCA |
| 100% DESIGN SUBMITTAL | | 7/5/2022 | RCA |
| BID SET | | 7/18/2022 | RCA |


504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

MILLER PACIFIC ENGINEERING GROUP




FILE: 201.182 Drawings, Rev 0, 100% Design Submittal.dwg

Designed RCA Date
Drawn RCA Date
Checked SAS Date

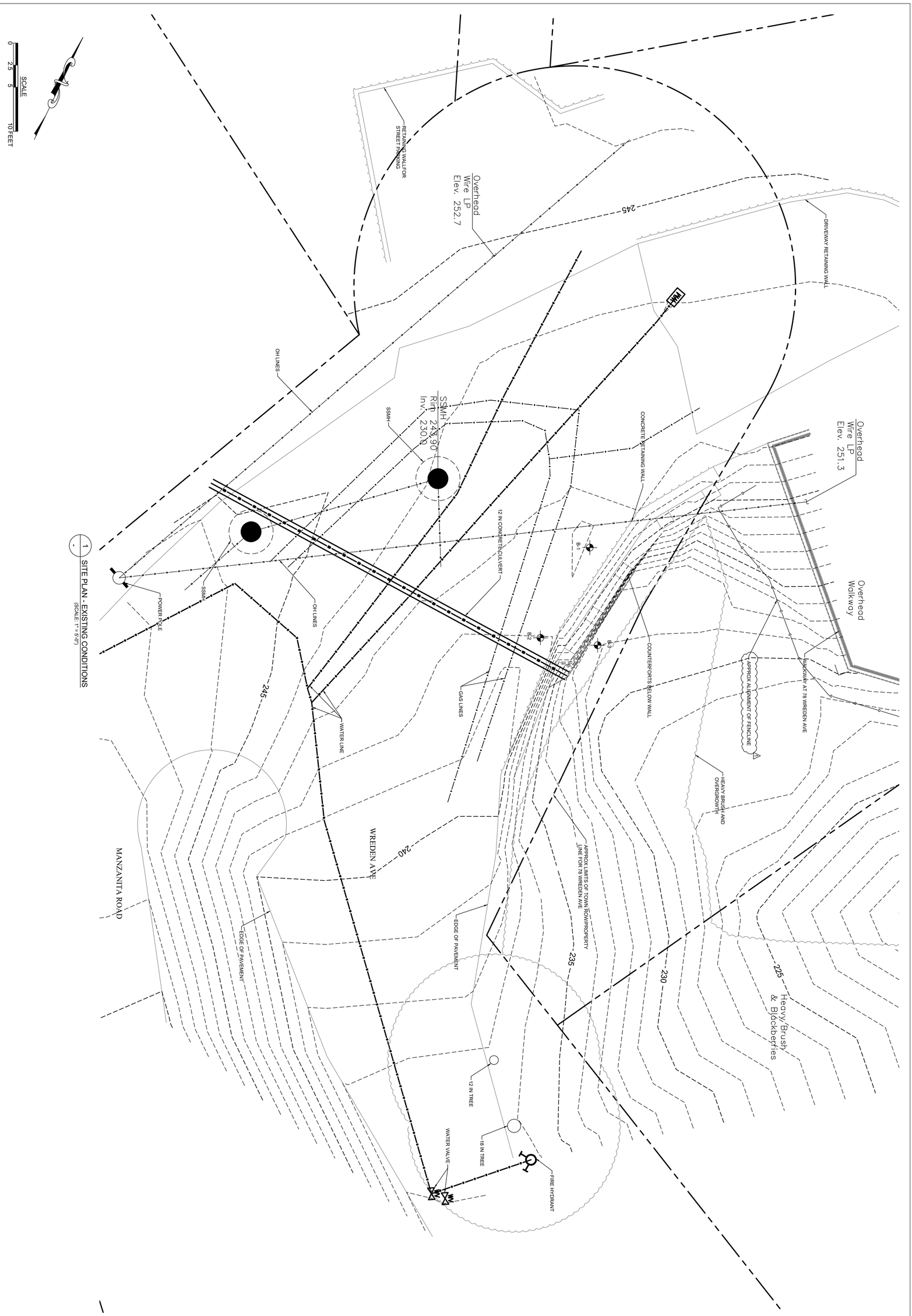
TITLE SHEET & NOTES

Storm Damage Repair
78 Wreden Ave
Fairfax, California

Project No. 201.182

REGISTERED PROFESSIONAL ENGINEER
RUSSELL C. ARNOLD
No. 3053
Exp. 6/30/23
GEOTECHNICAL
STATE OF CALIFORNIA

SHEET
1




1 - SITE PLAN - EXISTING CONDITIONS (SCALE: 1" = 5')

SHEET 2

SITE PLAN - EXISTING CONDITIONS

Storm Damage Repair
78 Wreden Ave
Fairfax, California

Project No. 201.182

| Designed | Date |
|---|---|
| RCA | |
| Drawn | Date |
| RCA | |
| Checked | Date |
| SAS | |

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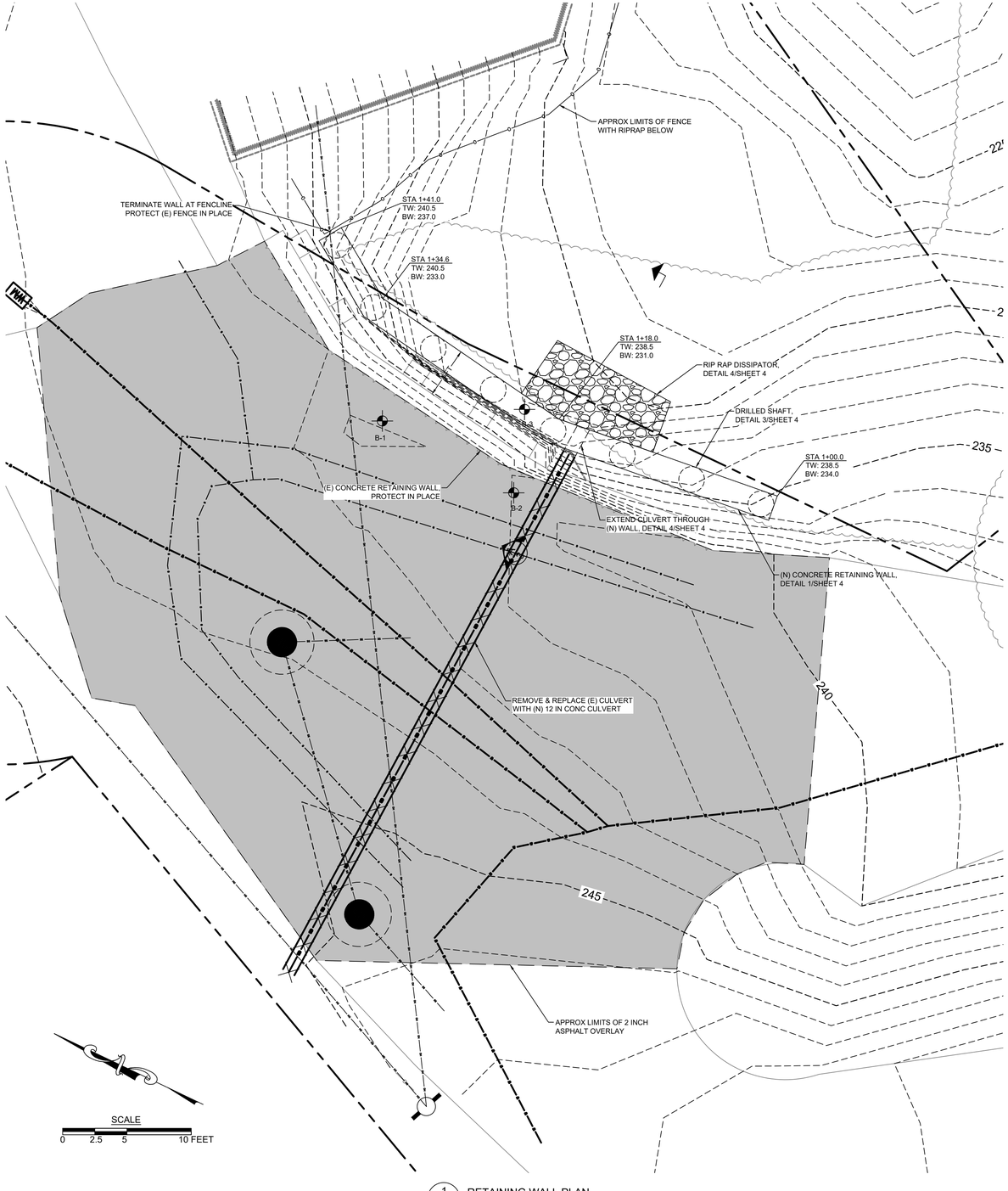
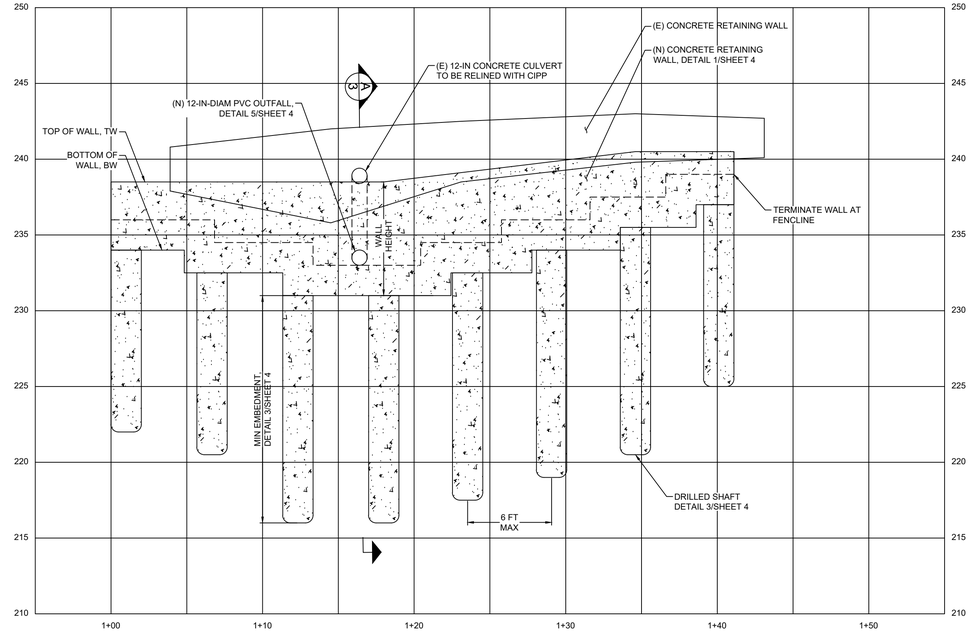
| 100% DESIGN SUBMITTAL | | 7/5/2022 | RCA |
| BID SET | | 7/18/2022 | RCA |

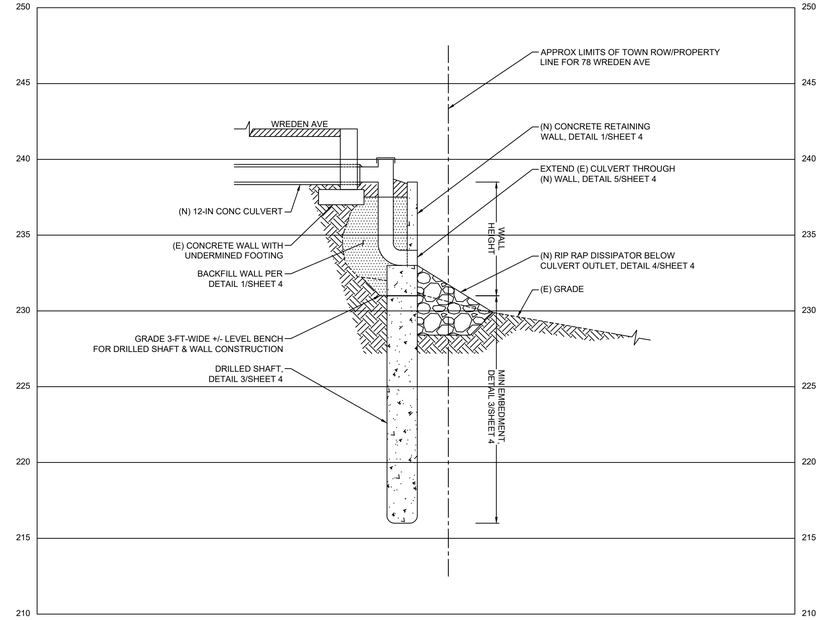
Revisions




1 - RETAINING WALL PLAN
(SCALE: 1" = 5'-0")




2 - RETAINING WALL PROFILE
(SCALE: 1" = 5'-0")




A - RETAINING WALL SECTION
(SCALE: 1" = 5'-0")

| Revisions | | | |
|---|---|---|---|
| Description | Mark | Date | By |
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| 100% DESIGN SUBMITTAL | 1 | 7/5/2022 | RCA |
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FILE: 201.182 Drawings, Rev 0, Bid Set.dwg

RETAINING WALL PLAN, PROFILE & SECTION

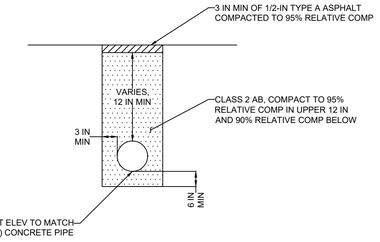
| Designed | Date | Drawn | Date | Checked | Date |
|---|---|---|---|---|---|
| RCA | | RCA | | SAS | |

Storm Damage Repair
78 Wreden Ave
Fairfax, California

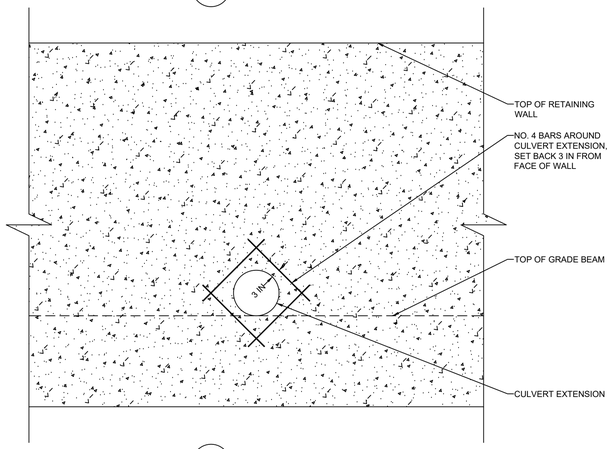
Project No. 201.182

REGISTERED PROFESSIONAL ENGINEER
RUSSELL C. ARCHIBALD
No. 3035
Exp. 6/30/23
CIVIL
GEOTECHNICAL
STATE OF CALIFORNIA

SHEET
3




8 - CONCRETE CULVERT
(NO SCALE)




7 - REINFORCING AT CULVERT EXTENSION
(NO SCALE)

DEVELOPMENT LENGTH

| 28-DAY COMP STRENGTH | LOCATION | BAR SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NO.3 | NO. 4 | NO. 5 | NO. 6 | NO. 7 | NO. 8 | NO. 9 | NO. 10 | NO. 11 |
| 4,000 PSI | TOP | 12 IN | 15 IN | 23 IN | 23 IN | 37 IN | 47 IN | 58 IN | 70 IN | 84 IN |
| | BOTTOM | 12 IN | 12 IN | 17 IN | 18 IN | 29 IN | 36 IN | 44 IN | 54 IN | 65 IN |
| 5,000 PSI | TOP | 12 IN | 14 IN | 20 IN | 20 IN | 33 IN | 42 IN | 52 IN | 63 IN | 75 IN |
| | BOTTOM | 12 IN | 12 IN | 16 IN | 16 IN | 26 IN | 32 IN | 40 IN | 49 IN | 58 IN |

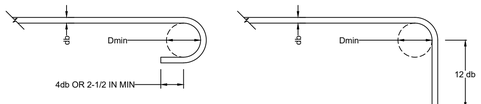
HOOKED DEVELOPMENT LENGTH

| 28-DAY COMP STRENGTH | LOCATION | BAR SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NO.3 | NO. 4 | NO. 5 | NO. 6 | NO. 7 | NO. 8 | NO. 9 | NO. 10 | NO. 11 |
| 4,000 PSI | N/A | 8 IN | 10 IN | 12 IN | 15 IN | 17 IN | 19 IN | 22 IN | 24 IN | N/A |
| 5,000 PSI | N/A | 7 IN | 9 IN | 11 IN | 13 IN | 15 IN | 17 IN | 20 IN | 22 IN | N/A |

LAP SPLICE LENGTH

| 28-DAY COMP STRENGTH | LOCATION | BAR SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NO.3 | NO. 4 | NO. 5 | NO. 6 | NO. 7 | NO. 8 | NO. 9 | NO. 10 | NO. 11 |
| 4,000 PSI | TOP | 12 IN | 20 IN | 29 IN | 29 IN | 48 IN | 62 IN | 75 IN | 91 IN | 109 IN |
| | BOTTOM | 12 IN | 15 IN | 23 IN | 23 IN | 37 IN | 47 IN | 58 IN | 70 IN | 84 IN |
| 5,000 PSI | TOP | 12 IN | 18 IN | 26 IN | 26 IN | 43 IN | 54 IN | 67 IN | 82 IN | 98 IN |
| | BOTTOM | 12 IN | 14 IN | 20 IN | 20 IN | 33 IN | 42 IN | 52 IN | 63 IN | 75 IN |

MINIMUM REBAR BEND DIAMETERS (Dmin)



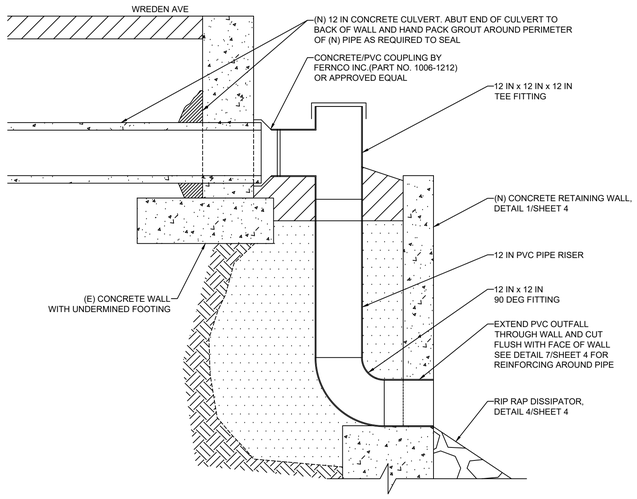

180° HOOK

| PRINCIPAL REINFORCMENT | |
|---|---|
| BAR SIZE | Dmin |
| NO. 3 TO NO. 8 | 6 x db |
| NO. 9 TO NO. 11 | 8 x db |
| NO. 14 TO NO. 18 | 10 x db |

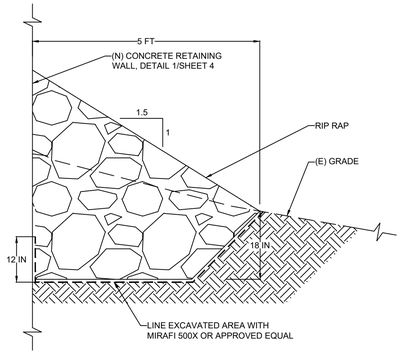
90° HOOK

| HOOPS & STIRRUPS | |
|---|---|
| BAR SIZE | Dmin |
| NO. 3 | 1-1/2 IN |
| NO. 4 | 2 IN |
| NO. 5 | 2-1/2 IN |

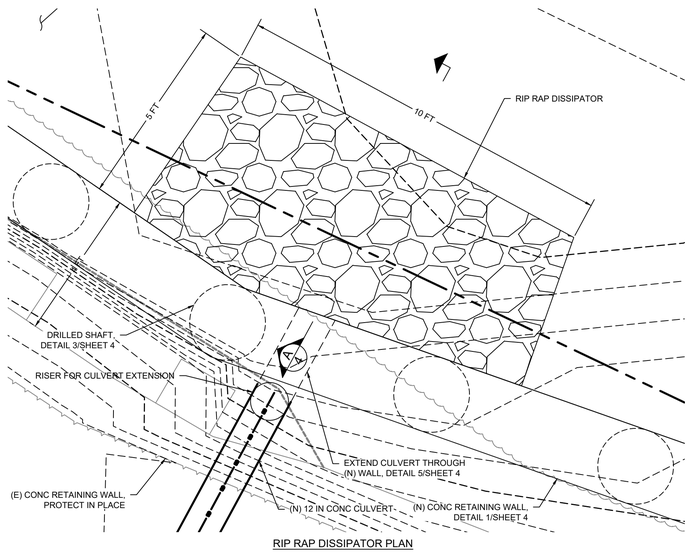
6 - REINFORCING DETAILS
(NO SCALE)




5 - CULVERT EXTENSION
(NO SCALE)



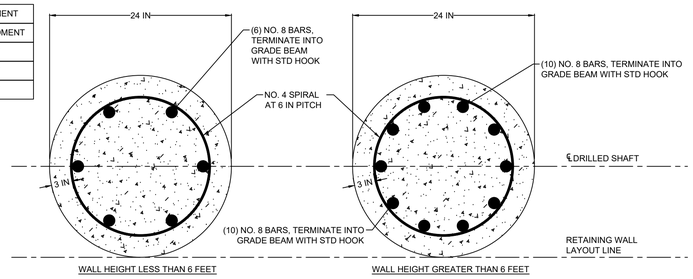

RIP RAP DISSIPATOR SECTION



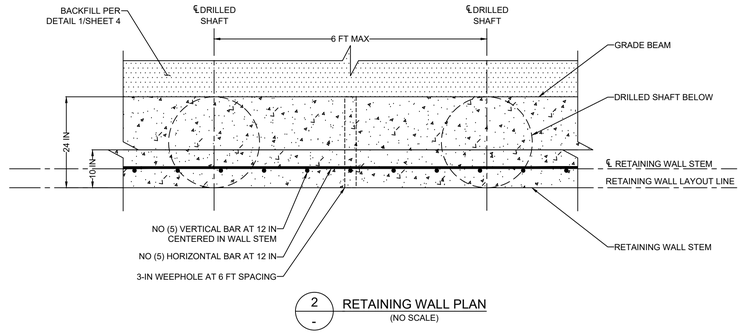

RIP RAP DISSIPATOR PLAN

4 - RIP RAP DISSIPATOR DETAIL
(NO SCALE)

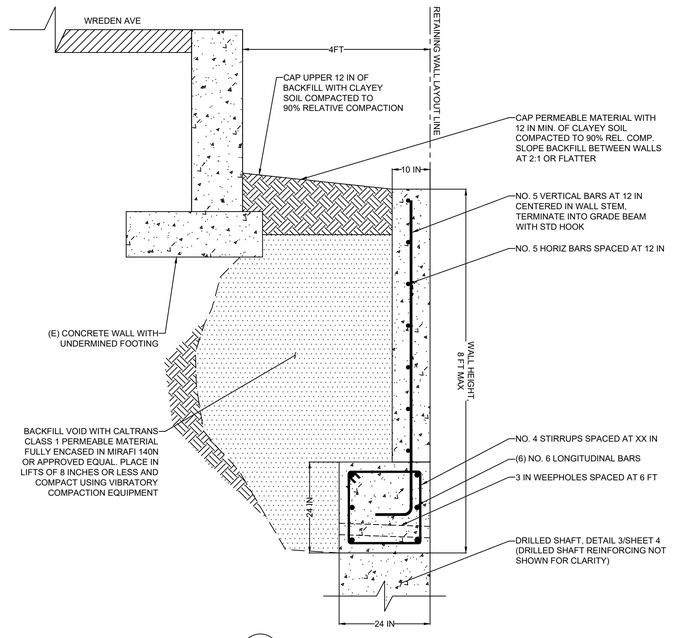
| DRILLED SHAFT EMBEDMENT | |
|---|---|
| WALL HEIGHT | MIN. EMBEDMENT |
| 4 FT OR LESS | 10 FT |
| 4 TO 6 FT | 12 FT |
| 6 TO 8 FT | 15 FT |




3 - DRILLED SHAFT DETAIL
(NO SCALE)




2 - RETAINING WALL PLAN
(NO SCALE)




1 - RETAINING WALL DETAIL
(NO SCALE)

| Revisions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Description | Mark | Date | By |
| 90% DESIGN SUBMITTAL | | 3/22/2021 | RCA |
| 100% DESIGN SUBMITTAL | 1 | 7/5/2022 | RCA |
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MILLER PACIFIC ENGINEERING GROUP
MPEG



FILE: 201.182 Drawings, Rev 0, 100% Design Submittal.dwg

| Designed | Date | Drawn | Date | Checked | Date |
|---|---|---|---|---|---|
| RCA | | RCA | | SAS | |

DETAILS

Storm Damage Repair
78 Wreden Ave
Fairfax, California

Project No. 201.182

REGISTERED PROFESSIONAL ENGINEER
RUSSELL C. ARNOLD
No. 2603
Exp. 6/30/23
GEOTECHNICAL
STATE OF CALIFORNIA

SHEET
4

| MAJOR DIVISIONS | | SYMBOL | DESCRIPTION |
|---|---|---|---|
| COARSE GRAINED SOILS over 50% sand and gravel | CLEAN GRAVEL | GW | Well-graded gravels or gravel-sand mixtures, little or no fines |
| | | GP | Poorly-graded gravels or gravel-sand mixtures, little or no fines |
| | GRAVEL with fines | GM | Silty gravels, gravel-sand-silt mixtures |
| | | GC | Clayey gravels, gravel-sand-clay mixtures |
| | CLEAN SAND | SW | Well-graded sands or gravelly sands, little or no fines |
| | | SP | Poorly-graded sands or gravelly sands, little or no fines |
| | SAND with fines | SM | Silty sands, sand-silt mixtures |
| | | SC | Clayey sands, sand-clay mixtures |
| FINE GRAINED SOILS over 50% silt and clay | SILT AND CLAY liquid limit <50% | ML | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity |
| | | CL | Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays |
| | | OL | Organic silts and organic silt-clays of low plasticity |
| | SILT AND CLAY liquid limit >50% | MH | Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts |
| | | CH | Inorganic clays of high plasticity, fat clays |
| | | OH | Organic clays of medium to high plasticity |
| HIGHLY ORGANIC SOILS | | PT | Peat, muck, and other highly organic soils |
| ROCK | | | Undifferentiated as to type or composition |

## KEY TO BORING AND TEST PIT SYMBOLS

CLASSIFICATION TESTS

| | |
|---|---|
| PI | PLASTICITY INDEX |
| LL | LIQUID LIMIT |
| SA | SIEVE ANALYSIS |
| HYD | HYDROMETER ANALYSIS |
| P200 | PERCENT PASSING NO. 200 SIEVE |
| P4 | PERCENT PASSING NO. 4 SIEVE |

STRENGTH TESTS

| | |
|---|---|
| UC | LABORATORY UNCONFINED COMPRESSION |
| TXCU | CONSOLIDATED UNDRAINED TRIAXIAL |
| TXUU | UNCONSOLIDATED UNDRAINED TRIAXIAL |
| | UC, CU, UU = 1/2 Deviator Stress |
| DS (2.0) | DRAINED DIRECT SHEAR (NORMAL PRESSURE, ksf) |

SAMPLER TYPE

- MODIFIED CALIFORNIA
- STANDARD PENETRATION TEST
- THIN-WALLED / FIXED PISTON
- HAND SAMPLER
- ROCK CORE
- X DISTURBED OR BULK SAMPLE

SAMPLER DRIVING RESISTANCE

Modified California and Standard Penetration Test samplers are driven 18 inches with a 140-pound hammer falling 30 inches per blow. Blows for the initial 6-inch drive seat the sampler. Blows for the final 12-inch drive are recorded onto the logs. Sampler refusal is defined as 50 blows during a 6-inch drive. Examples of blow records are as follows:

- 25 sampler driven 12 inches with 25 blows after initial 6-inch drive
- 85/7" sampler driven 7 inches with 85 blows after initial 6-inch drive
- 50/3" sampler driven 3 inches with 50 blows during initial 6-inch drive or beginning of final 12-inch drive

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the excavation location during the time of exploration. Subsurface rock, soil or water conditions may vary in different locations within the project site and with the passage of time. Boundaries between differing soil or rock descriptions are approximate and may indicate a gradual transition.

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SOIL CLASSIFICATION CHART
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Fairfax, California
Project No. 201.182 Date: 7/18/2022
Drawn RCA Checked
B-1 FIGURE

## FRACTURING AND BEDDING

| Fracture Classification | Spacing | Bedding Classification |
|---|---|---|
| Crushed | less than 3/4 inch | Laminated |
| Intensely fractured | 3/4 to 2-1/2 inches | Very thinly bedded |
| Closely fractured | 2-1/2 to 8 inches | Thinly bedded |
| Moderately fractured | 8 to 24 inches | Medium bedded |
| Widely fractured | 2 to 6 feet | Thickly bedded |
| Very widely fractured | greater than 6 feet | Very thickly bedded |

## HARDNESS

| | |
|---|---|
| Low | Carved or gouged with a knife |
| Moderate | Easily scratched with a knife, friable |
| Hard | Difficult to scratch, knife scratch leaves dust trace |
| Very hard | Rock scratches metal |

## STRENGTH

| | |
|---|---|
| Friable | Crumbles by rubbing with fingers |
| Weak | Crumbles under light hammer blows |
| Moderate | Indentations <1/8 inch with moderate blow with pick end of rock hammer |
| Strong | Withstands few heavy hammer blows, yields large fragments |
| Very strong | Withstands many heavy hammer blows, yields dust, small fragments |

## WEATHERING

| | |
|---|---|
| Complete | Minerals decomposed to soil, but fabric and structure preserved |
| High | Rock decomposition, thorough discoloration, all fractures are extensively coated with clay, oxides or carbonates |
| Moderate | Fracture surfaces coated with weathering minerals, moderate or localized discoloration |
| Slight | A few stained fractures, slight discoloration, no mineral decomposition, no affect on cementation |
| Fresh | Rock unaffected by weathering, no change with depth, rings under hammer impact |

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the location and time of exploration. Subsurface rock, soil and water conditions may differ in other locations and with the passage of time.

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B-2 FIGURE

## BORING 1

EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger
DATE: 10/25/2019
ELEVATION: 242 feet*
*REFERENCE: Topographic Survey by Randall T. Willis (undated)

| DEPTH meters | DEPTH feet | SAMPLE | SYMBOL (4) | | BLOWS / FOOT (1) | DRY UNIT WEIGHT pcf (2) | MOISTURE CONTENT (%) | SHEAR STRENGTH psf (3) | OTHER TEST DATA | OTHER TEST DATA |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | | | 12 Inches of Asphalt over 6 inches of Aggregate Base | | | | | | |
| | | | | Sandy CLAY with Gravel (CL) brown, moist, medium stiff to stiff, low plasticity, asphalt and concrete fragments noted in sample | 10 | 111 | 15.3 | 1000 UC | LL 35 PL 26 PI 9 | |
| | | | | | 12 | 107 | 16.9 | 800 UC | | |
| 1 | 5 | | | CLAY (CL) brown, moist, soft to medium stiff, low plasticity, trace gravel | 5 | 109 | 19.9 | 400 UC | LL 32 PL 22 PI 10 | |
| 2 | 10 | | | Sandy SILT with Gravel (ML) mottled tan/orange/gray, moist, soft to medium stiff, low plasticity | | | | | | |
| 3 | 10 | | | SANDSTONE orange and gray, low to moderate hardness, weak, highly weathered, includes thin clay seams | 29 | 105 | 22.6 | 2600 UC | | |
| 4 | 15 | | | harder drilling | | | | | | |
| 5 | 15 | ☑ | | Bottom of boring at 15.3 feet No groundwater observed during drilling | 50/3" | | 10.0 | | | |
| 6 | 20 | | | | | | | | | |

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m³ = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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B-3 FIGURE

## BORING 2

EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger
DATE: 10/25/2019
ELEVATION: 242 feet*
*REFERENCE: Topographic Survey by Randall T. Willis (undated)

| DEPTH meters | DEPTH feet | SAMPLE | SYMBOL (4) | | BLOWS / FOOT (1) | DRY UNIT WEIGHT pcf (2) | MOISTURE CONTENT (%) | SHEAR STRENGTH psf (3) | OTHER TEST DATA | DRILL RATE |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | | | 12 Inches of Asphalt over 6 inches of Aggregate Base | | | | | | |
| | | | | Sandy CLAY with Gravel (CL) orange-brown, moist, medium stiff to stiff, low to medium plasticity | 6 | 103 | 11.7 | | | |
| 1 | 5 | | | | 10 | 103 | 11.7 | 500 UC | | |
| 2 | 10 | | | CLAY (CL) brown, moist, stiff, low to medium plasticity | 15 | 108 | 17.0 | 2800 UC | | |
| 3 | 10 | | | Sandy SILT with Gravel (ML) brown, moist, stiff, low to medium plasticity | | | | | | |
| 4 | 15 | | | SANDSTONE orange and gray, low to moderate hardness, weak, highly weathered, includes thin clay seams | 45 | 122 | 13.0 | 5400 UC | | |
| 5 | 15 | ☑ | | harder drilling | 50/2" | | 6.3 | | | 10 MIN/FT |
| 6 | 20 | | | Bottom of boring at 16.5 feet Minor groundwater seepage noted in bottom of hole prior to backfilling | | | | | | 15 MIN/FT |

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m³ = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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B-4 FIGURE

## BORING 3

EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger
DATE: 10/25/2019
ELEVATION: 231 feet*
*REFERENCE: Topographic Survey by Randall T. Willis (undated)

| DEPTH meters | DEPTH feet | SAMPLE | SYMBOL (4) | | BLOWS / FOOT (1) | DRY UNIT WEIGHT pcf (2) | MOISTURE CONTENT (%) | SHEAR STRENGTH psf (3) | OTHER TEST DATA | DRILL RATE |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | | | Sandy CLAY with Gravel (CL) gray and brown, soft, wet, low to medium plasticity | 4 | 86 | 30.5 | 400 UC | | |
| 1 | 5 | | | | 4 | 104 | 20.5 | 200 UC | | |
| 2 | 10 | | | SANDSTONE tan and gray, moderate hardness, moderate strength, highly weathered | 27 | 121 | 13.8 | 2000 UC | | |
| 3 | 10 | | | sample includes shale interbedded within sandstone | 75 | 126 | 11.1 | | | |
| 4 | 15 | ▽ | | harder drilling | | | | | | |
| 5 | 15 | ☑ | | Bottom of boring at 15.5 feet Groundwater measured at 12.5 feet upon completion of drilling | 50/6" | | 7.9 | | | |
| 6 | 20 | | | | | | | | | |

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m³ = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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B-5 FIGURE

| Revisions | | | |
|---|---|---|---|
| Description | Mark | Date | By |
| 90% DESIGN SUBMITTAL | 1 | 3/22/2021 | RCA |
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| | | | |
|---|---|---|---|
| Designed | RCA | Date | |
| Drawn | RCA | Date | |
| Checked | SAS | Date | |

BORING LOGS

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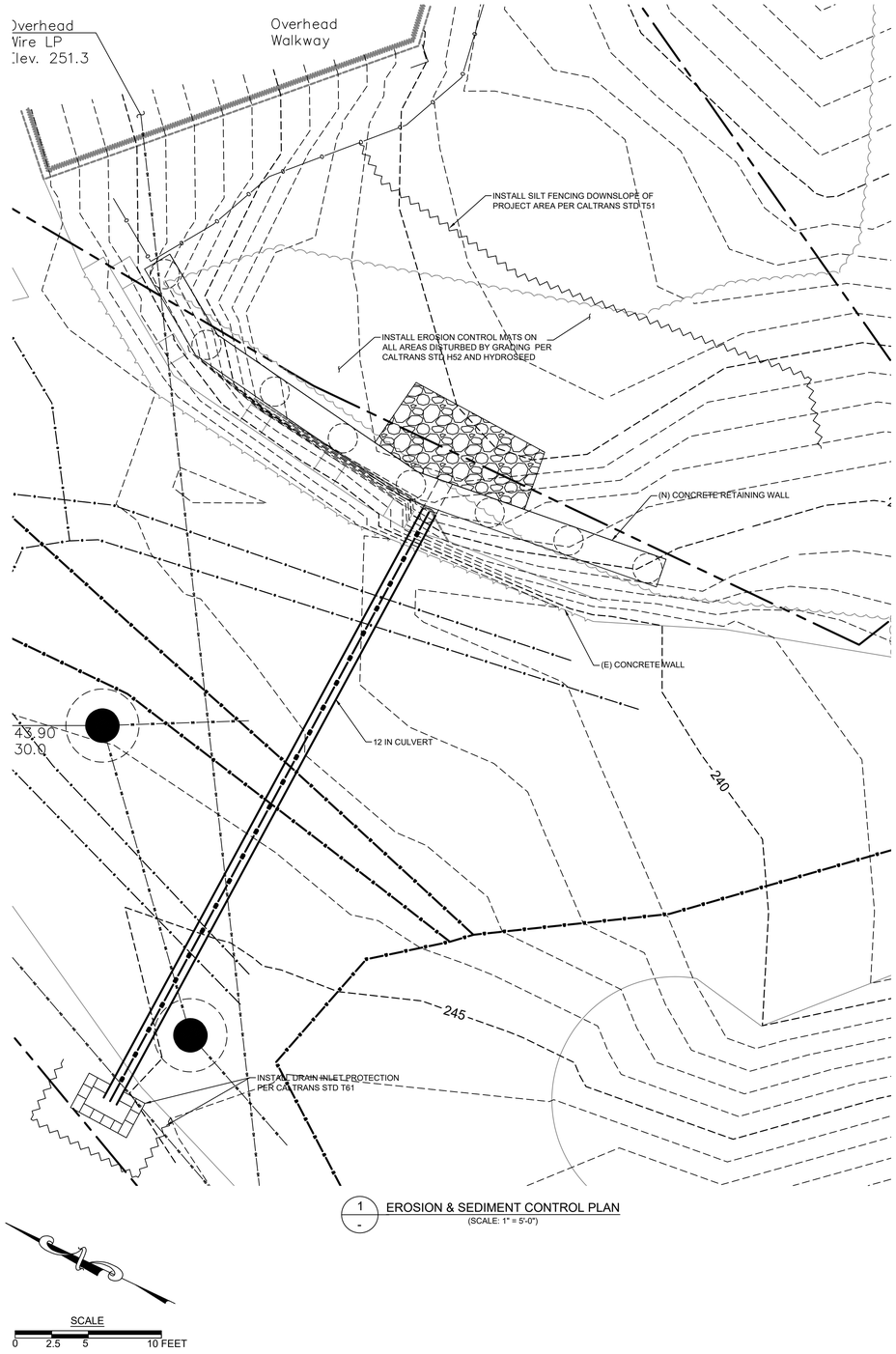
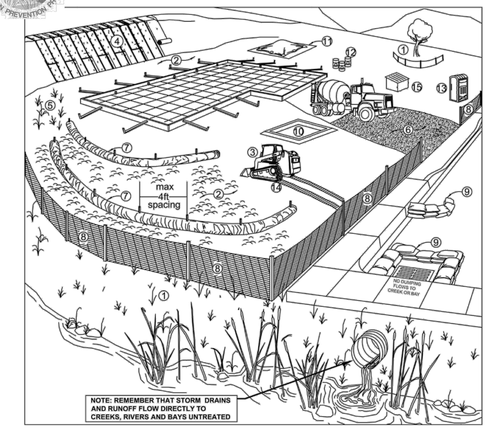
SHEET 5




1 EROSION & SEDIMENT CONTROL PLAN
(SCALE: 1" = 5'-0")

## Marin County Stormwater Pollution Prevention Program

### Minimum Control Measures For Small Construction Projects

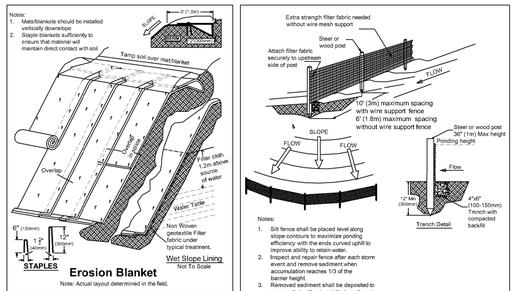



| Erosion Controls | Sediment Controls | Good Housekeeping |
|---|---|---|
| NS Scheduling | 6. Tracking Controls | 10. Concrete Washout |
| 1. Preserve Vegetation & Creek Set Backs | 7. Fiber Rolls | 11. Stockpile Management |
| 2. Soil Cover | 8. Silt Fence | 12. Hazardous Material Management |
| 3. Soil Preparation/ Roughening | 9. Drain Inlet Protection | 13. Sanitary Waste Management |
| 4. Erosion Control Blankets | NS Trench Dewatering | 14. Equipment and Vehicle Maintenance |
| 5. Revegetation | | 15. Litter and Waste Management |

NS=not shown on graphic

**Note:** Select an **effective combination of control measures from each category**, Erosion Control, Sediment Control, and Good Housekeeping. Control measures shall be **continually implemented and maintained throughout the project** until activities are complete, disturbed areas are stabilized with permanent erosion controls, and the local agency has signed off on permits that may have been required for the project. **Inspect and maintain the control measures** before and after rain events, and as required by the local agency or state permit.
More detailed information on the BMPs can be found in the related California Stormwater Quality Association (CASQA) and California Department of Transportation (Caltrans) BMP Factsheets. CASQA factsheets are available by subscription in the *California Best Management Practices Handbook Portal: Construction* at http://www.casqa.org. Caltrans factsheets are available in the *Construction Site BMP Manual March 2003* at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm.
Visit www.mcstoppp.org for more information on construction site management and Erosion and Sediment Control Plans.

**If you require materials in alternative formats, please contact:**
**415-473-4381 voice/TTY or disabilityaccess@co.marin.ca.us**




| Control Measure | | General Description |
|---|---|---|
| **Erosion Control Best Management Practices** | | |
| N/A | Scheduling | Plan the project and develop a schedule showing each phase of construction. Schedule construction activities to reduce erosion potential, such as scheduling ground disturbing activities during the summer and phasing projects to minimize the amount of area disturbed. *For more info see the following factsheets: CASQA: EC-1; or Caltrans: SS-1.* |
| 1 | Preserve Existing Vegetation and Creek Setbacks | Preserve existing vegetation to the extent possible, especially along creek buffers. Show creek buffers on maps and identify areas to be preserved in the field with temporary fencing. Check with the local Planning and Public Works Departments for specific creek set back requirements. *For more info see the following factsheets: CASQA: EC-2; or Caltrans: SS-2.* |
| 2 | Soil Cover | Cover exposed soil with straw mulch and tackifier (or equivalent). *For more info see the following factsheets: CASQA: EC-3, EC-5, EC-6, EC-7, EC-8, EC-14, EC-16; or Caltrans: SS-2, SS-4, SS-5, SS-6, SS-7, SS-8.* |
| 3 | Soil Preparation/ Roughening | Soil preparation is essential to vegetation establishment and BMP installation. It includes soil testing and amendments to promote vegetation growth as well as roughening surface soils by mechanical methods (decompacting, scarifying, stair stepping, etc.). *For more info see the following factsheets: CASQA: EC-15.* |
| 4 | Erosion Control Blankets | Install erosion control blankets (or equivalent) on disturbed sites with 3:1 slopes or steeper. Use wildlife-friendly blankets made of biodegradable natural materials. Avoid using blankets made with plastic netting or fixed aperture netting. See: http://www.coastal.ca.gov/nps/Wildlife-Friendly_Products.pdf. *For more info see the following factsheets: CASQA: EC-7; or Caltrans: SS-7.* |
| 5 | Revegetation | Re-vegetate areas of disturbed soil or vegetation as soon as practical. *For more info see the following factsheets: CASQA: EC-4; or Caltrans: SS-4.* |
| **Sediment Control Best Management Practices** | | |
| 6 | Tracking Controls | Stabilize site entrance to prevent tracking soil offsite. Inspect streets daily and sweep street as needed. Require vehicles and workers to use stabilized entrance. Place crushed rock 12-inches deep over a geotextile, using angular rock between 4 and 6-in. Make the entrance as long as can be accommodated on the site, ideally long enough for 2 revolutions of the maximum tire size (18-20 feet long for most light trucks). Make the entrance wide enough to accommodate the largest vehicle that will access the site, ideally 10 feet wide with sufficient radii for turning in and out of the site. Rumble pads or rumble racks can be used in lieu of or in conjunction with rock entrances. Wheel washes may be needed where space is limited or where the site entrance and sweeping is not effective. *For more info see the following factsheets: CASQA: TC-1; TC-3; or Caltrans: TC-1; TC-3.* |
| 7 | Fiber Rolls | Use fiber rolls as a perimeter control measure, along contours of slopes, and around soil stockpiles. On slopes space rolls 10 to 20 feet apart (using closer spacing on steeper slopes). Install parallel to contour. If more than one roll is used in a row overlap roll do not abut. J-hook end of roll upslope. Install rolls per either Type 1 (stake rolls into shallow trenches) or Type 2 (stake in front and behind roll and lash with rope). Use wildlife-friendly fiber rolls made of biodegradable natural materials. Avoid using fiber rolls made with plastic netting or fixed aperture netting. See: http://www.coastal.ca.gov/nps/Wildlife-Friendly_Products.pdf. Manufactured linear sediment control or compost socks can be used in lieu of fiber rolls. *For more info see the following factsheets: CASQA: SE-5 (Type 1); SE-12, SE-13; or Caltrans: SC-5 (Type 1 and Type 2).* |
| 8 | Silt Fence | Use silt fence as a perimeter control measure, and around soil stockpiles. Install silt fence along contours. Key silt fence into the soil and stake. Do not use silt fence for concentrated water flows. Install fence at least 3 feet back from the slope to allow for sediment storage. Wire backed fence can be used for extra strength. Avoid installing silt fence on slopes because they are hard to maintain. Manufactured linear sediment control can be used in lieu of silt fences. *For more info see the following factsheets: CASQA: SE-1; SE-12; or Caltrans: SC-1.* |
| 9 | Drain Inlet Protection | Use gravel bags, (or similar product) around drain inlets located both onsite and in gutter as a last line of defense. Bags should be made of a woven fabric resistant to photo-degradation filled with 0.5-1-in washed crushed rock. Do not use sand bags or silt fence fabric for drain inlet protection. *For more info see the following factsheets: CASQA: SE-10; or. Caltrans: SC-10.* |
| N/A | Trench Dewatering | Follow MCSTOPPP BMPs for trench dewatering. http://www.marincounty.org/depts/pw/divisions/mcstoppp/development/~/media/Files/Departments/PW/mcstoppp/development/TrenchingSWReqMCSTOPPPFinal6_09.pdf. *For more info see the following factsheets: CASQA: NS-2; or Caltrans: NS-2.* |
| **Good Housekeeping Best Management Practices** | | |
| 10 | Concrete Washout | Construct a lined concrete washout site away from storm drains, waterbodies, or other drainages. Ideally, place adjacent to stabilized entrance. Clean as needed and remove at end of project. *For more info see the following factsheets: CASQA: WM-8; or. Caltrans: WM-8.* |
| 11 | Stockpile Management | Cover all stockpiles and landscape material and berm properly with fiber rolls or sand bags. Keep behind the site perimeter control and away from waterbodies. *For more info see the following factsheets: CASQA: WM-3 or Caltrans: WM-3.* |
| 12 | Hazardous Material Management | Hazardous materials must be kept in closed containers that are covered and within secondary containment; do not place containers directly on soil. *For more info see the following factsheets: CASQA: WM-6; or Caltrans: WM-6.* |
| 13 | Sanitary Waste Management | Place portable toilets near stabilized site entrance, behind the curb and away from gutters, storm drain inlets, and waterbodies. Tie or stake portable toilets to prevent tipping and equip units with overflow pan/tray (most vendors provide these). *For more info see the following factsheets: CASQA: WM-9; or Caltrans: WM-9.* |
| 14 | Equipment and Vehicle Maintenance | Prevent equipment fluid leaks onto ground by placing drip pans or plastic tarps under equipment. Immediately clean up any spills or drips. *For more info see the following factsheets: CASQA: NS-8, NS-9, and NS-10; or Caltrans: NS-8, NS-9, and NS-10.* |
| 15 | Litter and Waste Management | Designate waste collection areas on site. Use watertight dumpsters and trash cans; inspect for leaks. Cover at the end of each work day and when it is raining or windy. Arrange for regular waste collection. Pick up site litter daily. *For more info see the following factsheets: CASQA: WM-5; or Caltrans: WM-5.* |

| Revisions | | | |
|---|---|---|---|
| Description | Mark | Date | By |
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