

CLIENT/LAND OWNER:
 HOWARD COUNTY
 DEPARTMENT OF PUBLIC WORKS
 BUREAU OF ENVIRONMENTAL SERVICES
 9801 BROKEN LAND PARKWAY
 COLUMBIA, MARYLAND 21046-3143
 PHONE: 410.313.6429

REVISIONS		
NO.	DATE	DESCRIPTION

PLANS APPROVED BY
 Harald W. Van Aller, P.E.
Harald W. Van Aller
 December 19, 2019
 19-MR-0018
 Dam Safety Division
 Maryland Dept. of the Environment

SITE INFORMATION
 STREET ADDRESS:
 ADJACENT TO:
 8409 SWEET CHERRY LANE
 LAUREL, MARYLAND 20723
 HOWARD COUNTY MARYLAND DEPT. PARKS
 AND RECREATION
 LOT: 28, 45
 PARCEL: 0190 TAX MAP: 46 GRID: 0010
 ELECTION DISTRICT: 4
 PLAT NO.: 6928

CENTURY
 ENGINEERING
 CONSULTING ENGINEERS - PLANNERS
 10710 GILROY ROAD
 HUNT VALLEY, MARYLAND 21031
 PHONE: (443) 589-2400 FAX: (443) 589-2401

**CHERRYTREE FARM SWM
 POND REPAIR**

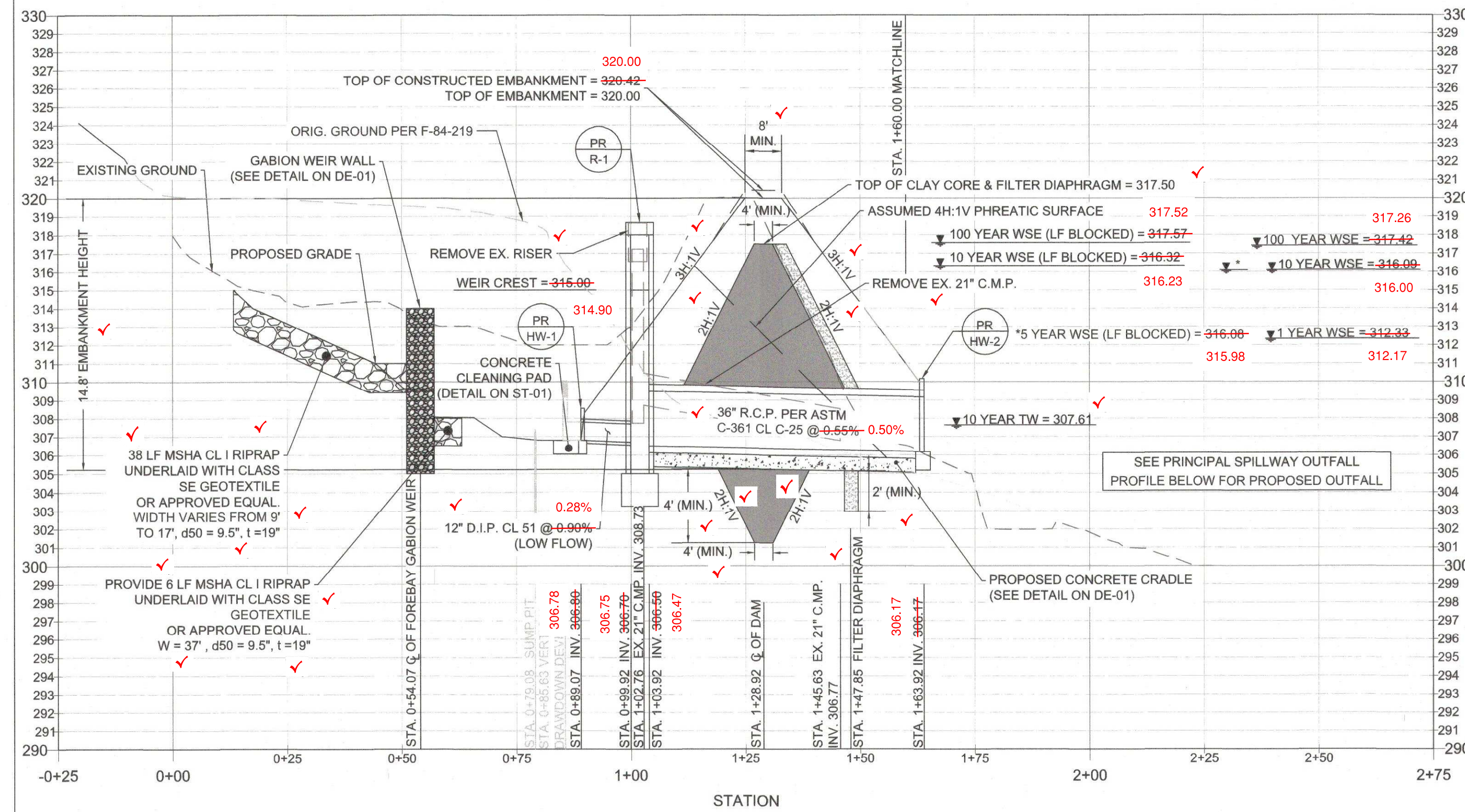
GRADING PLAN

PROJECT NO:	121104.63	SCALE:	1" = 10'	DATE:	03/01/2019
DESIGN:	EMM	CHECK:	MRJ	DWG NO:	
SHEET NO:			GP-01 OF GP-01		
DATE:			04 OF 20		
10/22/19			19-MR-0018		

EXISTING CONDITIONS LEGEND	
1' MINOR CONTOUR (SURVEY)	5
5' MAJOR CONTOUR (SURVEY)	5
SOIL BOUNDARY	MaD (HSG-B)
TREE LINE	WUS - WUS
WATERS OF THE U.S.	SB - SB
STREAM BUFFER	
TREE / SPECIMEN TREE	
WETLAND	WL - WL
WETLAND BUFFER (25')	WB - WB
100 YR FLOODPLAIN	FP - FP
STORM DRAIN	
RIPRAP	
IMPERVIOUS AREA	
FENCE	X - X
POST	o
PROPERTY BOUNDARY	- - - - -
UTILITY RIGHT-OF-WAY	- - - - -
TRAVERSE POINT (REBAR AND CAP)	Δ
EX. SANITARY LINE	- SAN - SAN -
EX. COLONIAL GAS LINE	- G - G -
PROPOSED FEATURES LEGEND	
1' CONTOUR	5
5' CONTOUR	
STORM DRAIN PIPE	
RIPRAP	
GABION	
CLAY CORE/CUTOFF TRENCH	
FILTER DIAPHRAGM	
NO-WOODY VEGETATION ZONE	
SOIL BORING LOCATION	
TREE LINE	
TREE TO BE REMOVED	
SILL STONE	
CLASS II RIPRAP	

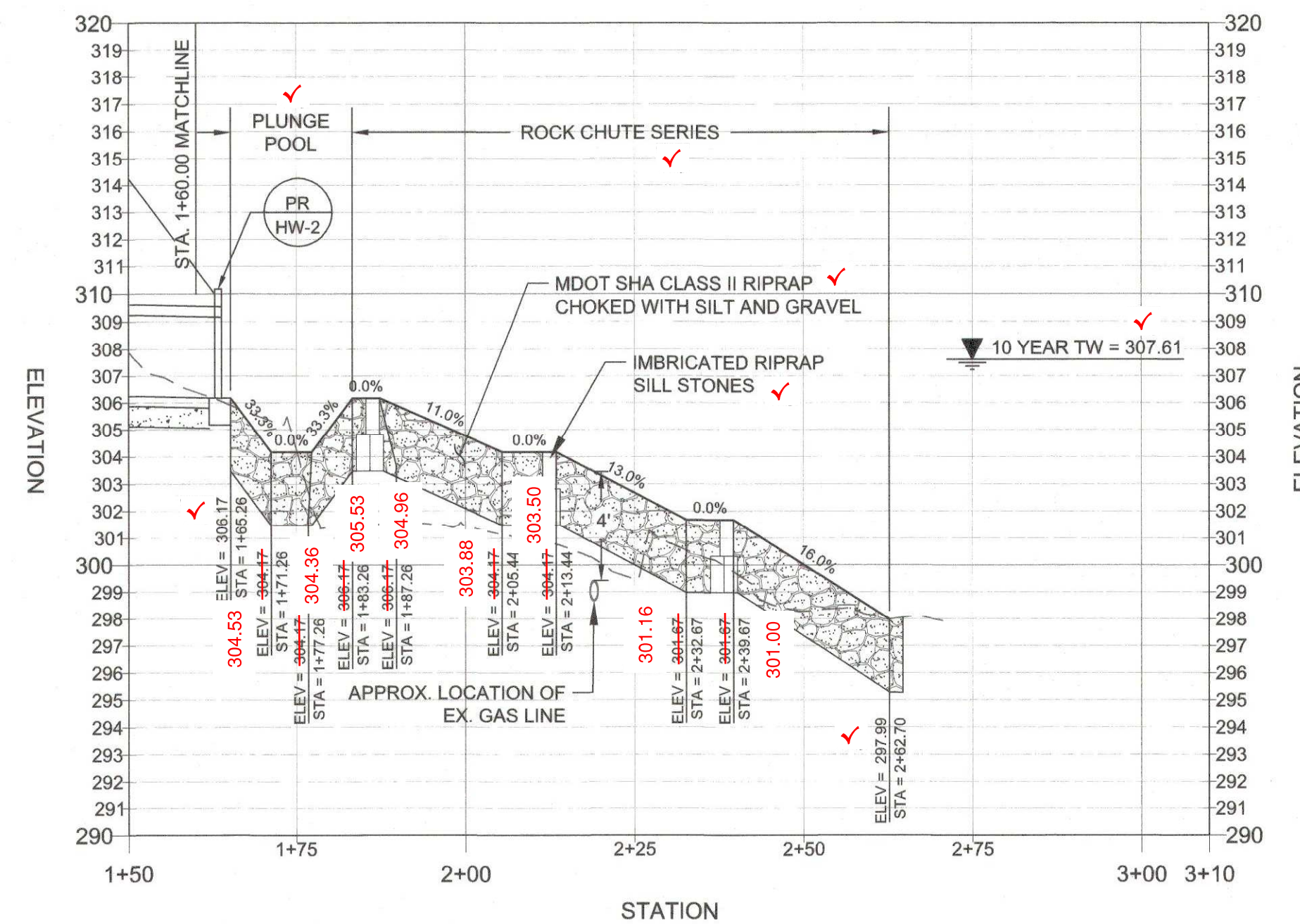


Mark S. Richmond
 CHIEF, STORMWATER MANAGEMENT DIVISION
 DATE: 2/13/2020



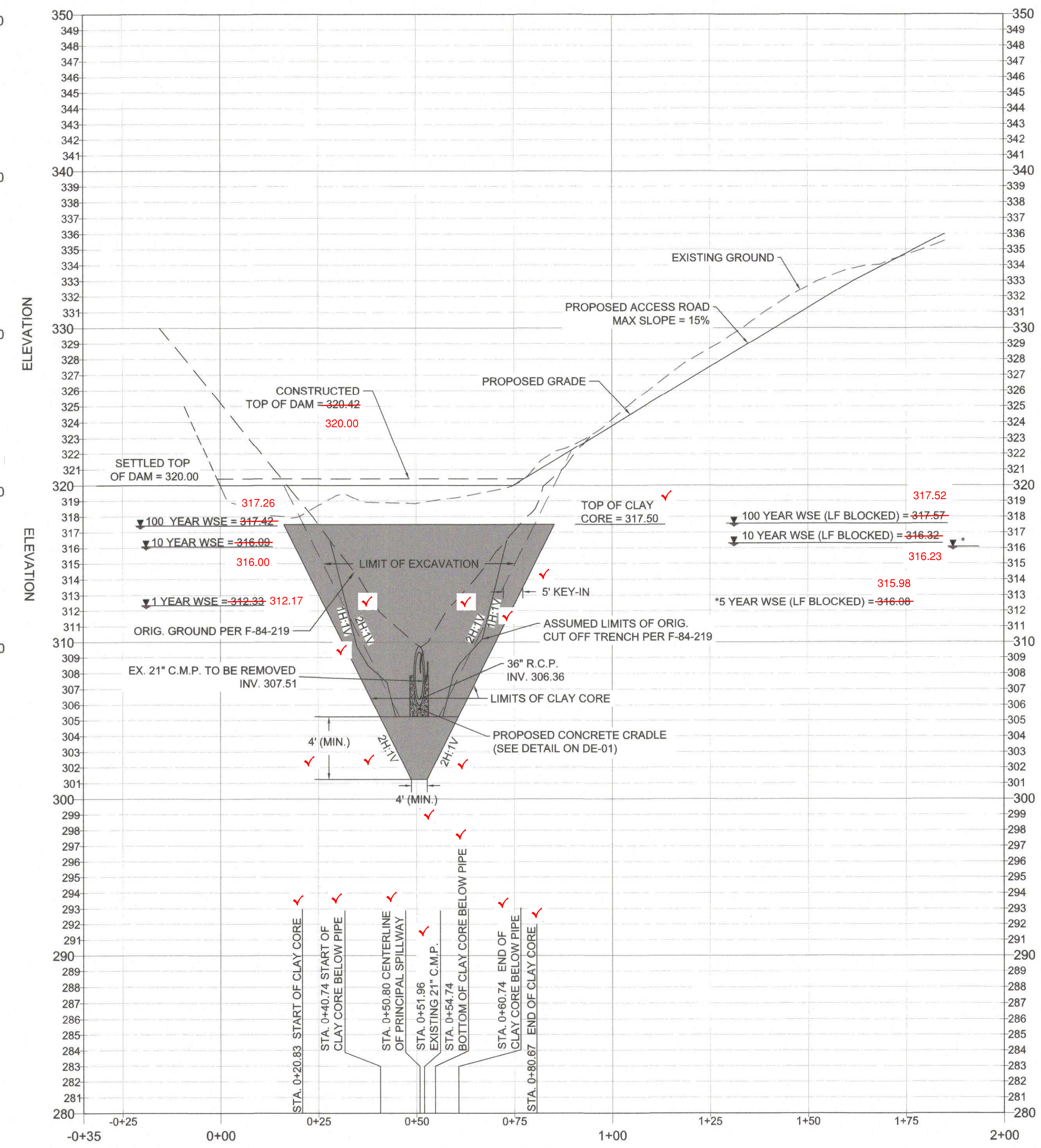
PRINCIPAL SPILLWAY PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



PRINCIPAL SPILLWAY OUTFALL PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



EMBANKMENT CENTERLINE PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



- NOTE:
 1. ROCK ENCOUNTERED DURING EXCAVATION FOR THE CLAY CUTOFF TRENCH AND/OR CONCRETE CRADLE SHALL BE EXCAVATED TO THE REQUIRED DEPTH USING JACKHAMMER. NO BLASTING IS PERMITTED. IF ROCK IS NOT RIPPIABLE, NOTIFY THE ENGINEER IMMEDIATELY.
 2. PRINCIPAL SPILLWAY OUTFALL TO MEET CHERRYTREE FARM STREAM RESTORATION PROJECT IN-LINE AND ON-GRADE UNLESS CONSTRUCTED SEPARATELY. REFER TO THE CHERRYTREE FARM STREAM RESTORATION DESIGN PLANS FOR ADDITIONAL INFORMATION.

Mark A. ...
CHIEF, STORMWATER MANAGEMENT DIVISION

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HOWARD COUNTY MARYLAND DEPT. PARKS
AND RECREATION
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PARCEL: 0190 TAX MAP: 46 GRID: 0010
ELECTION DISTRICT: 4
PLAT NO.: 6928

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**CHERRYTREE FARM SWM
POND REPAIR**

EMBANKMENT PROFILES

PROJECT NO.: 121104.63 SCALE: AS SHOWN DATE: 03/01/2019

DESIGN: EMM CHECK: MRJ

DWG NO.: PR-01 OF PR-01

SHEET NO.: 06 OF 20

10/22/19
STATE OF MARYLAND
PROFESSIONAL ENGINEER
LICENSE # 16887 EXPIRES: 07/15/2020

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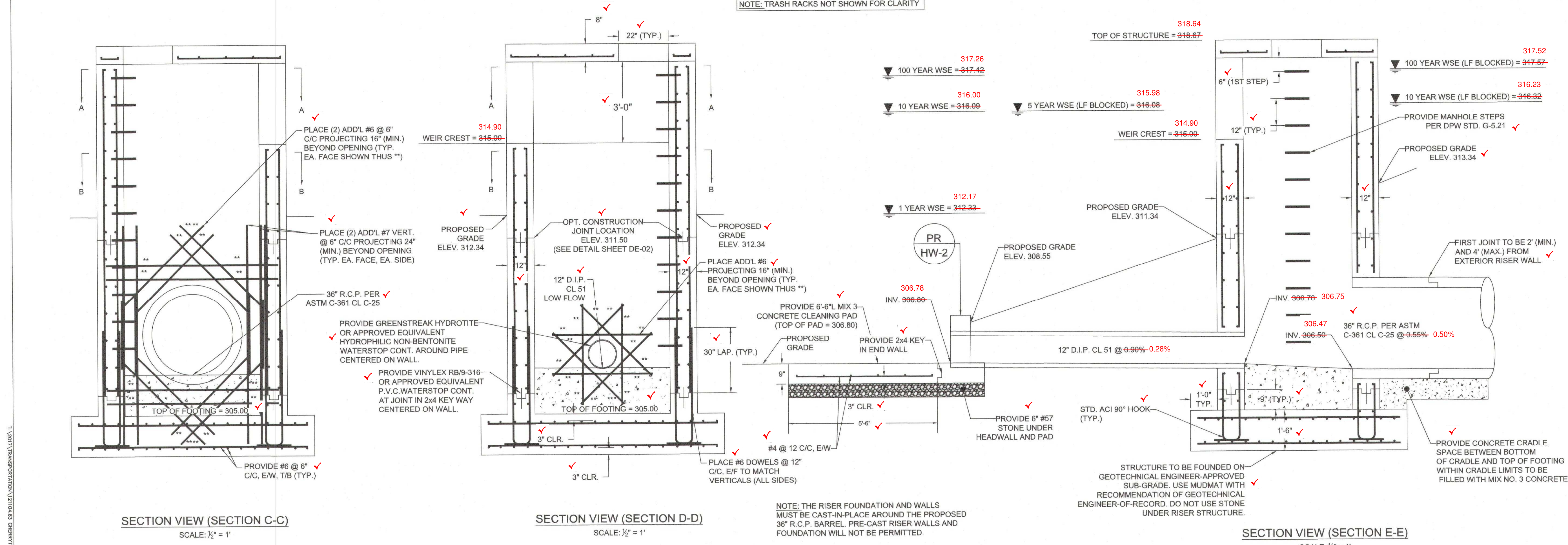
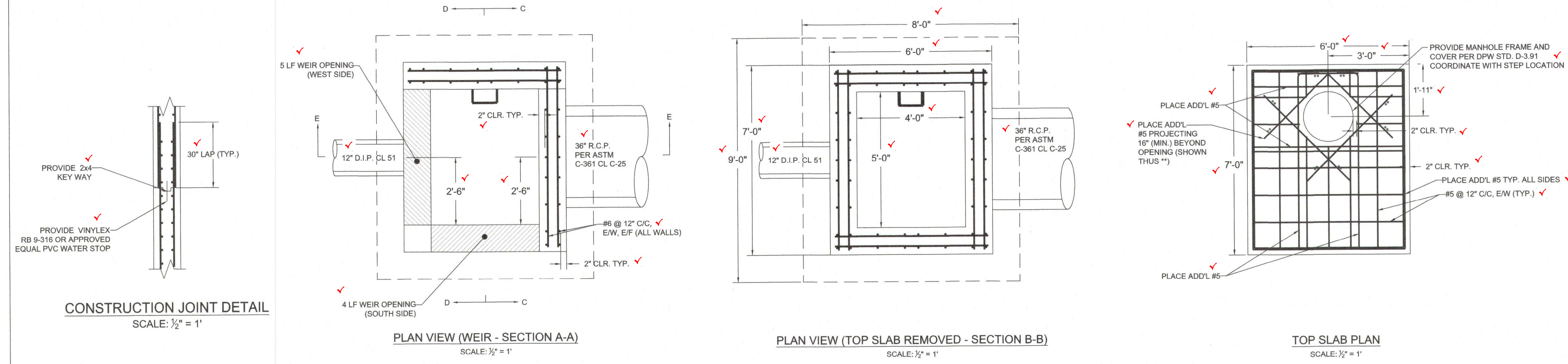
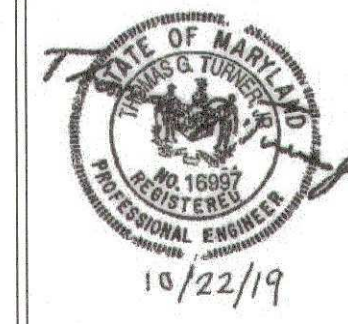
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**CHERRYTREE FARM SWM
 POND REPAIR**

**RISER STRUCTURE
 (R-1)**

PROJECT NO:	121104.63	SCALE:	AS SHOWN	DATE:	03/01/2019
DESIGN:	EMM	CHECK:	MRJ		
DWG NO:					
SHEET NO:					

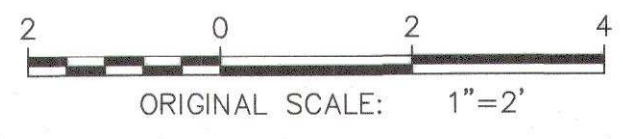


NOTE: TRASH RACKS NOT SHOWN FOR CLARITY

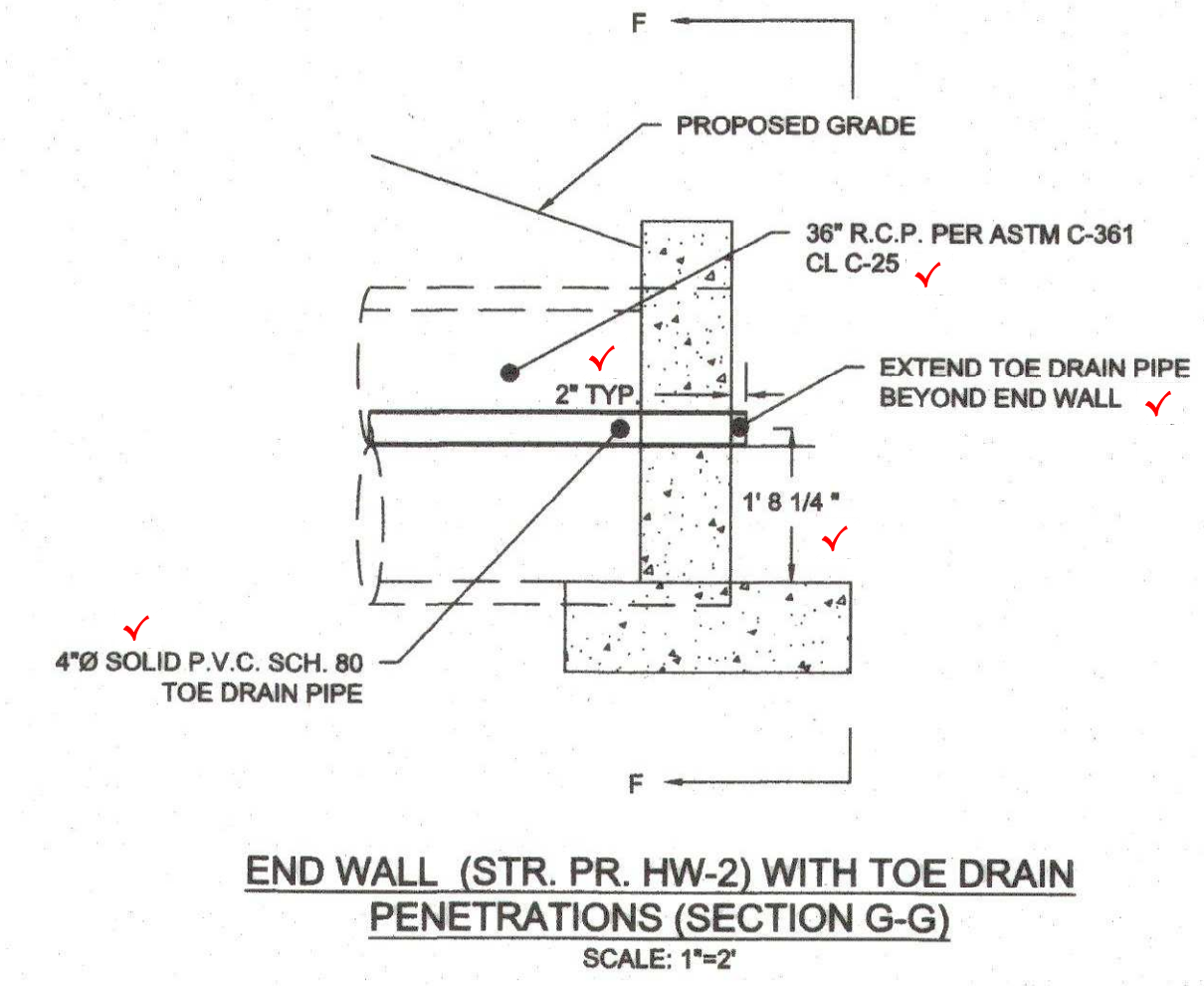
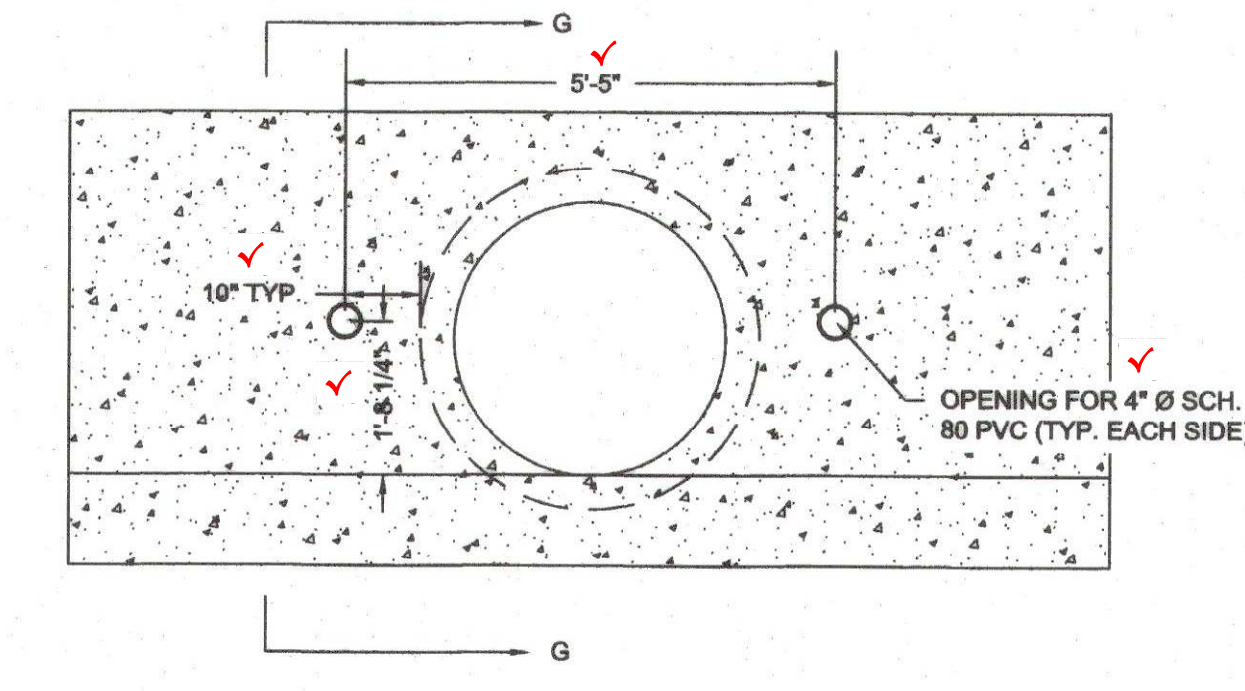
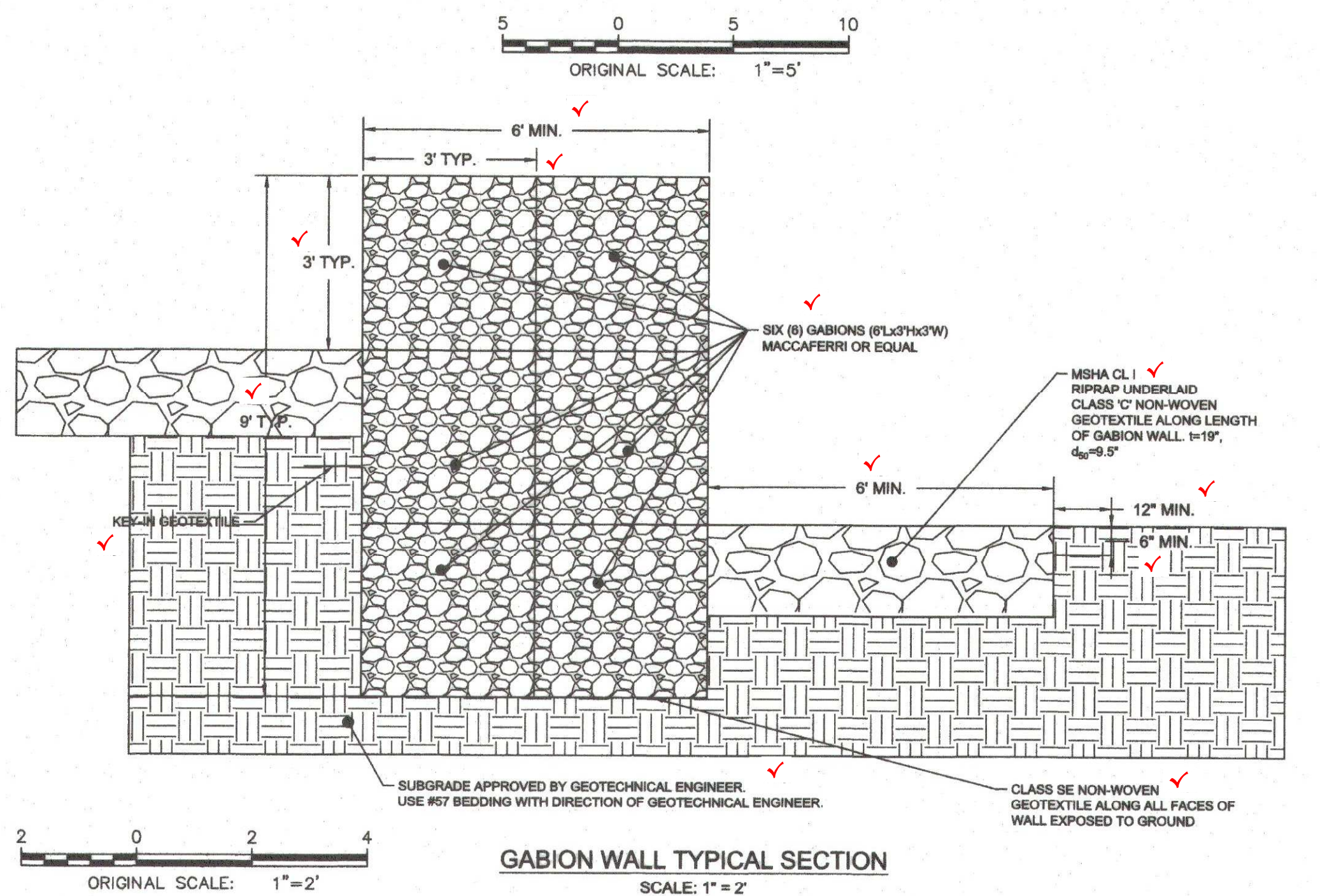
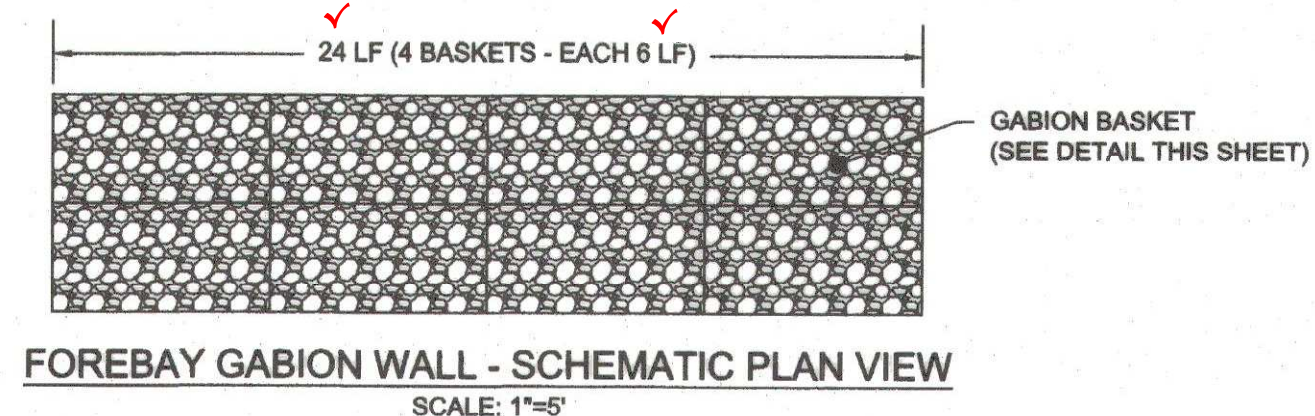
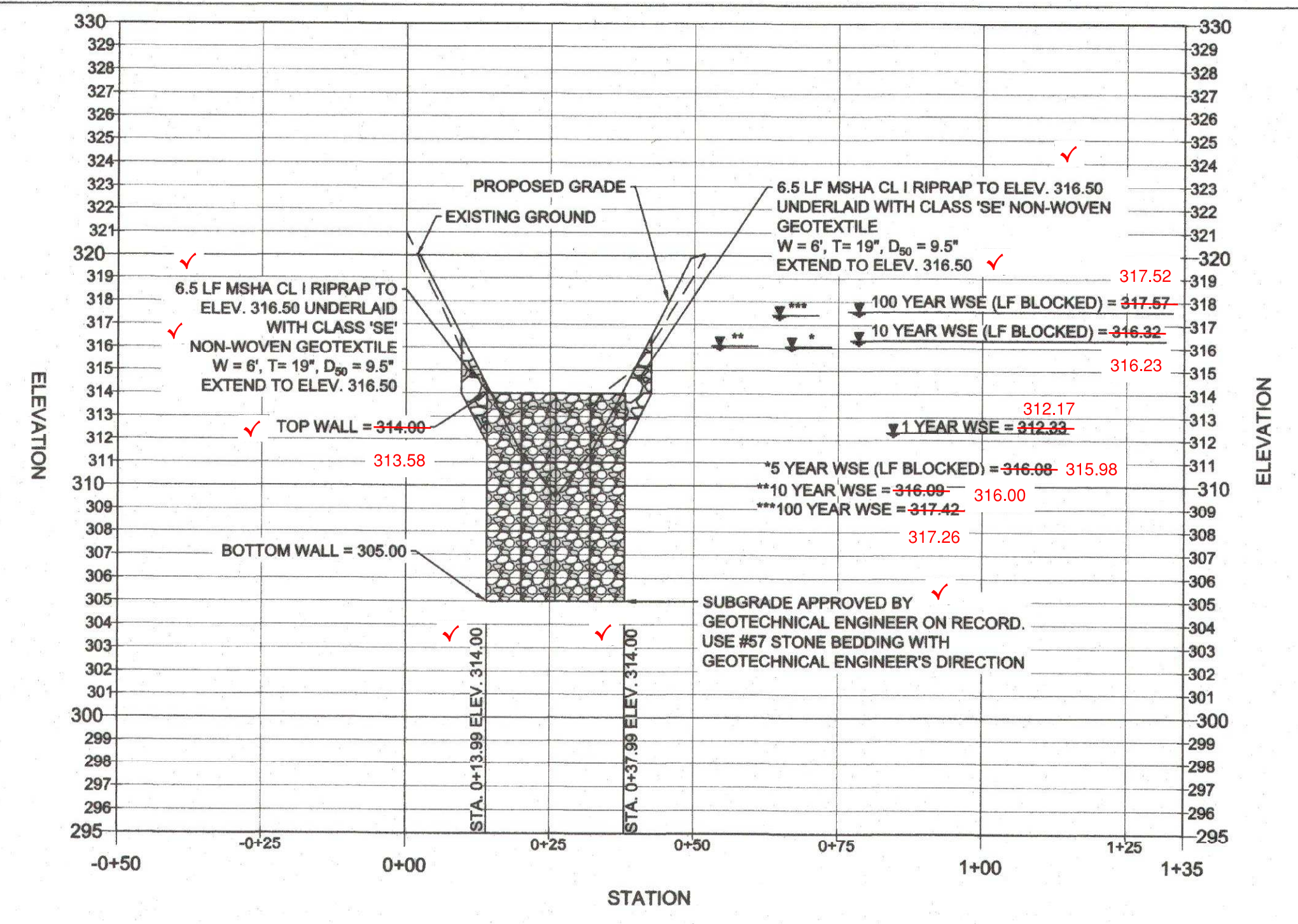
NOTE: THE RISER FOUNDATION AND WALLS MUST BE CAST-IN-PLACE AROUND THE PROPOSED 36" R.C.P. BARREL. PRE-CAST RISER WALLS AND FOUNDATION WILL NOT BE PERMITTED.

T:\CADD\TRANSMISSION\121104.63 CHERRYTREE FARM SWM POND REPAIR\DWG\ST-01-07.dwg

Mark S. Richmond 2/13/2020
 CHIEF, STORMWATER MANAGEMENT DIVISION DATE



EP-18-25

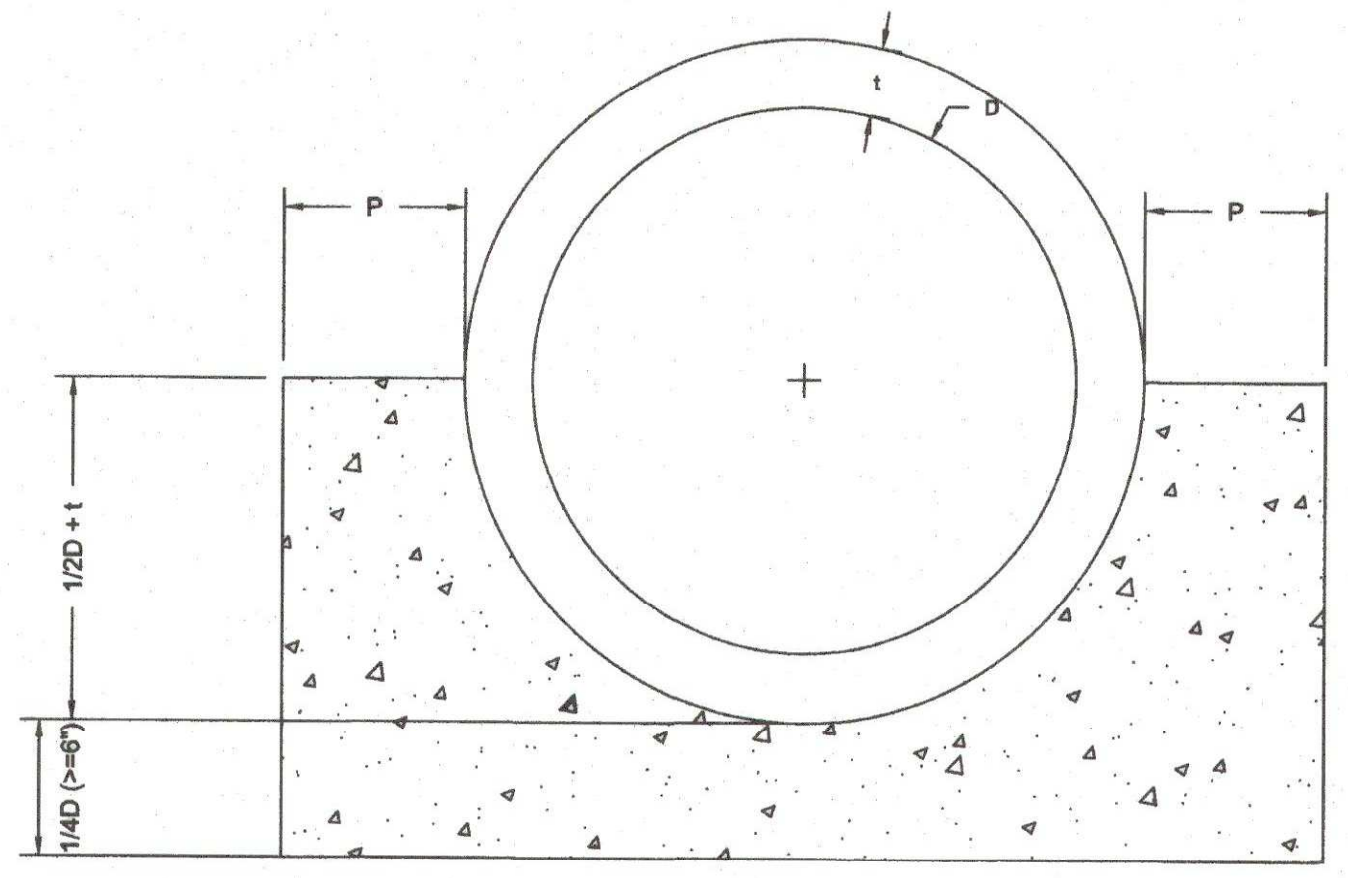


STRUCTURE SCHEDULE					
ID	TYPE	STATION	TOP ELEV.	STANDARD	COMMENT
PR HW-1	TYPE 'C' HEADWALL	0+89.07	308.77 308.03	D-5.21	Ø = 12", 6'-6" X 5'-6" CONCRETE PAD - SEE DETAIL ON ST-01
PR R-1	RISER	1+01.93	318.84 338.67	N/A	SEE STRUCTURAL SHEET ST-01
PR HW-2	TYPE 'C' HEADWALL	1+62.92	310.85 330.37	D-5.21	MODIFIED - SEE DETAIL ON THIS SHEET

PIPE SCHEDULE						
STRUCTURE	FROM	TO	LENGTH	SIZE	PIPE	CLASS
PR HW-1	PR R-1		11 LF	12 INCH	D.I.P.	CL 51
PR R-1	PR HW-2		60 LF	36 INCH	R.C.P. ASTM C-361	CL C-25

GABION WALL CONSTRUCTION NOTES

- GABIONS ARE BASKETS MANUFACTURED FROM 6X10 DOUBLE TWISTED HEXAGONAL WOVEN STEEL WIRE MESH PER ASTM A975-11. GABIONS ARE FILLED WITH STONE AT THE PROJECT SITE TO FORM FLEXIBLE PERMEABLE MONOLITHIC STRUCTURES SUCH AS RETAINING WALLS, CHANNEL LININGS, AND WEIRS FOR EROSION CONTROL PROJECTS.
- WIRE MESH
 - USE GALVANIZED, PVC COATED 6X10 HEXAGONAL DOUBLE TWIST WIRE MESH TYPE PER ASTM A975-11
 - MINIMUM DIAMETER OF 0.106 IN (INTERNAL), 0.146 IN (EXTERNAL)
 - MINIMUM OPENING WIDTH OF 3.25 IN.
- LACING WIRE
 - MINIMUM DIAMETER OF 0.087 IN (INTERNAL), 0.127 IN (EXTERNAL)
 - MAXIMUM TENSILE STRENGTH OF 75 KSI PER ASTM A641/A641M
 - ELONGATION SHALL NOT BE LESS THAN 12% PER ASTM A370
 - SHALL HAVE MINIMUM QUANTITIES OF ZINC COATING PER ASTM A641/A641M
 - SHALL BE COATED WITH P.V.C. COATED (NOMINAL - 0.02 IN., MINIMUM - 0.015 IN.)
- STONE
 - USE CRUSHED ANGULAR STONE MEETING THE FOLLOWING GRADATION PER ASTM D422:
 - D₁₀₀ = 8"
 - D₅ = 4"
- SUBMITTALS
 - PRIOR TO FABRICATION AND INSTALLATION, THE FOLLOWING SUBMITTALS MUST BE SUBMITTED AND APPROVED BY THE OWNER'S ENGINEER:
 - GABION MANUFACTURER
 - GABION WIRE MESH
 - GABION LACING WIRE
 - GABION STONE
- FOUNDATION PREPARATION
 - EXCAVATE TO SUBGRADE ELEVATION AS SHOWN ON PLAN. SUBGRADE SHALL BE LEVEL, SMOOTH AND FREE OF IRREGULARITIES, LOOSE MATERIAL, AND VEGETATION. OBTAIN GEOTECHNICAL ENGINEER'S APPROVAL OF SUBGRADE PRIOR TO INSTALLING GABIONS. WITH GEOTECHNICAL ENGINEER'S RECOMMENDATION, SPECIFICATION AND DIRECTION, A BEDDING OF #67 STONE MAY BE USED.
 - INSTALL CLASS 'C' NON-WOVEN GEOTEXTILE AROUND SIDES AND BOTTOM OF GABIONS THAT WILL CONTACT SOIL. KEY-IN GEOTEXTILE A MINIMUM OF 24 INCHES WITH SIX INCHES OF COVER.
- INSTALLATION
 - ASSEMBLE AND INSTALL GABIONS PER PLAN FOR LOCATION, ELEVATION, AND ORIENTATION AND PER MANUFACTURER'S DIRECTION AND SPECIFICATION.
 - DO NOT TRACK CONSTRUCTION EQUIPMENT DIRECTLY ON GABION WALL.



DIMENSION TABLE		
D	36	INCHES
t	4.5	INCHES
P	12	INCHES
1/2 D + t	22.5	INCHES
1/2 D (Ø = 6")	9	INCHES

- NOTES:**
- DO NOT PLACE GRAVEL UNDER CRADLE.
 - DEWATER ALL GROUNDWATER THROUGH FILTER BAG.
 - CRADLE SHALL BE POURED AGAINST UNDISTURBED EARTH OR FORMED. FORMS SHALL BE REMOVED PRIOR TO BACKFILL.
 - CONCRETE SHALL MEET MD SHA MIX NO. 3 (f_c = 3,500 PSI).
 - POUR CRADLE IN ONE CONTINUOUS POUR.

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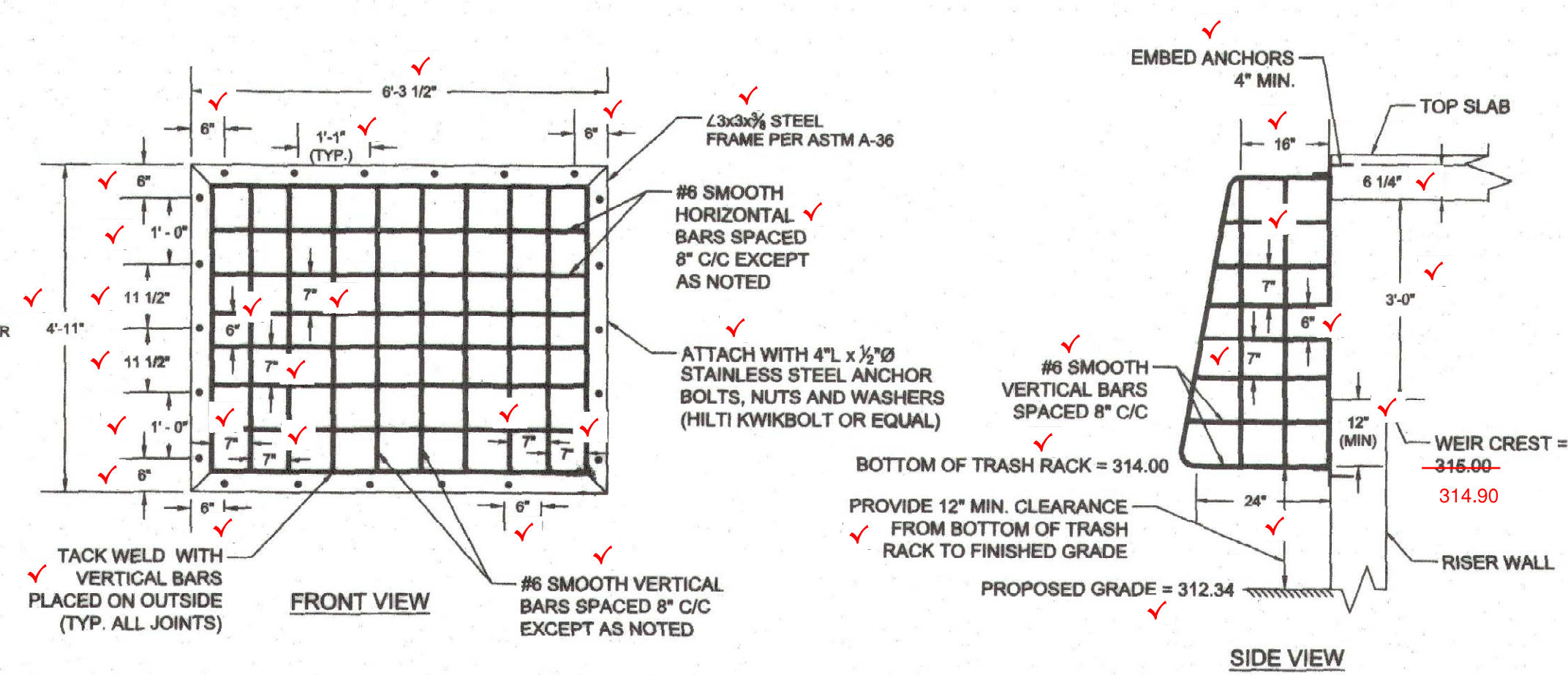
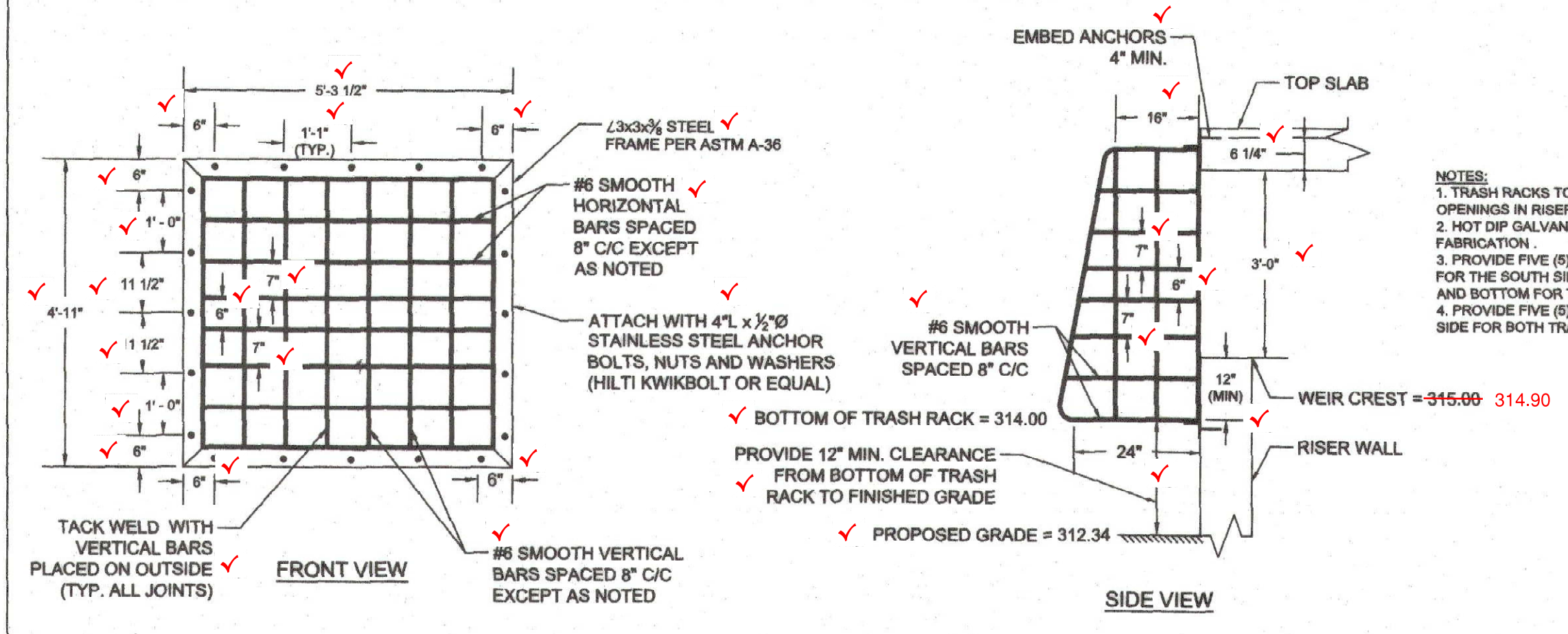
CHERRYTREE FARM SWM POND REPAIR

SWM DETAILS

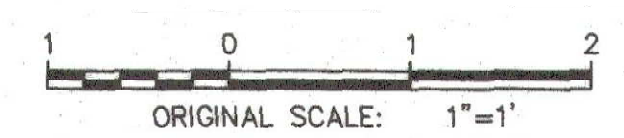
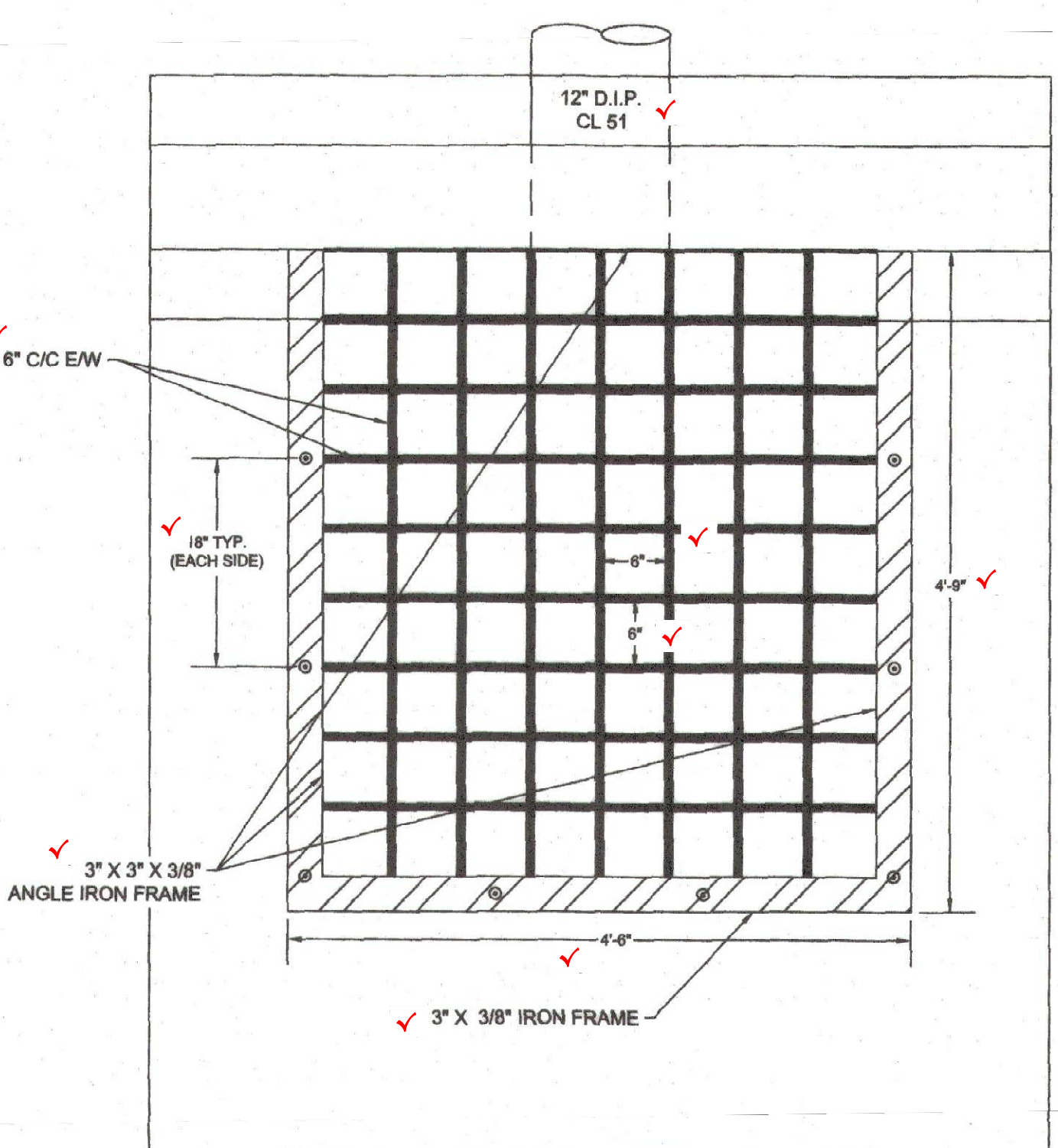
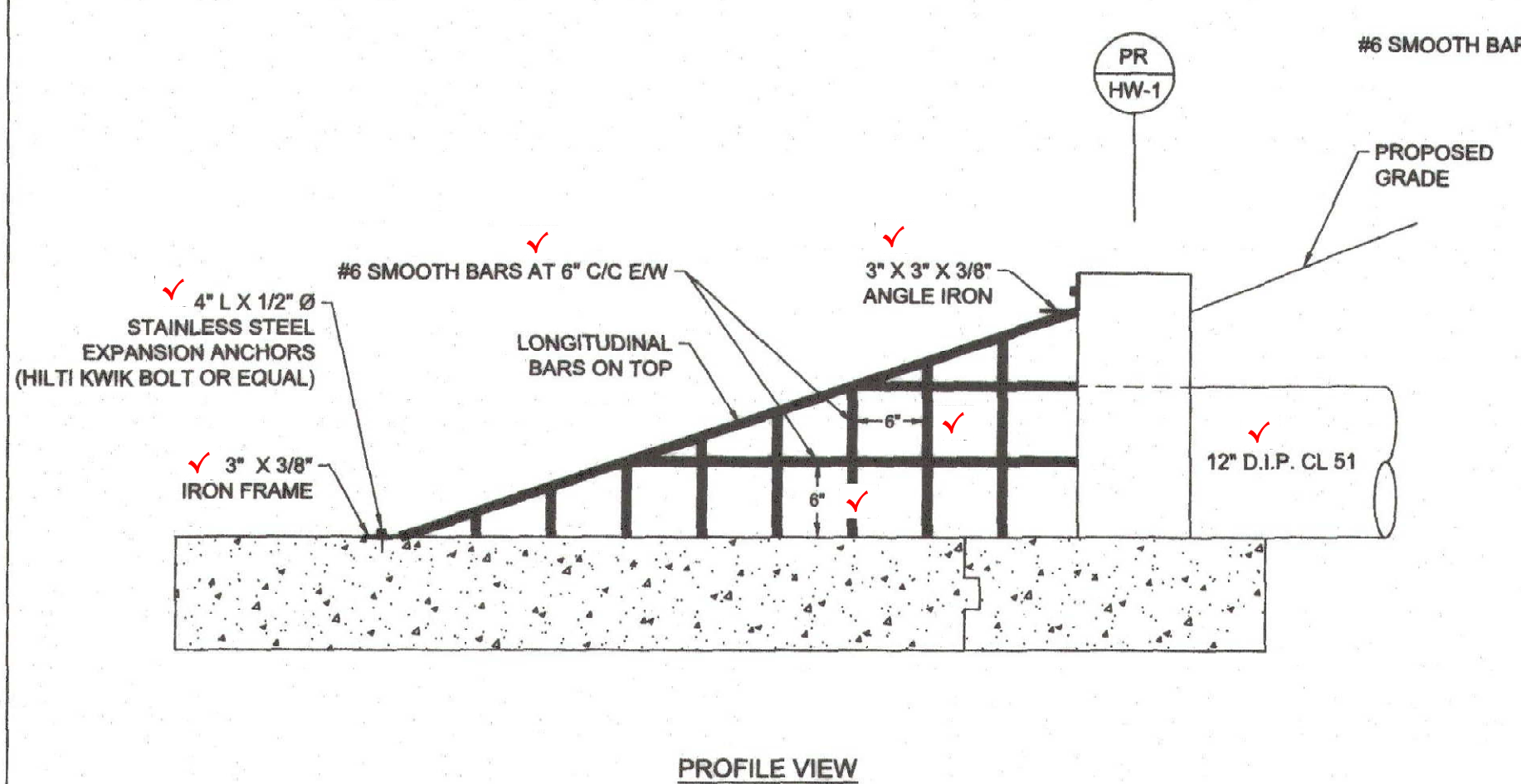
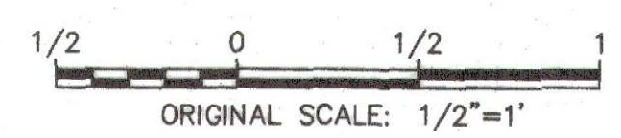
PROJECT NO.: 121104.83	SCALE: AS SHOWN	DATE: 03/01/2019
DESIGN: EMM	CHECK: MRJ	
SHEET NO.: DE-01 OF DE-04		
DATE: 08 OF 20		
18/22/19		

Mark S. Richmond
 CHIEF, STORMWATER MANAGEMENT DIVISION
 DATE: 2/13/2020

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NOTES:
 1. TRASH RACKS TO BE INSTALLED OVER ALL WEIR OPENINGS IN RISER.
 2. HOT DIP GALVANIZE TRASH RACK AFTER FABRICATION.
 3. PROVIDE FIVE (5) BOLTS (MIN.) TOP AND BOTTOM FOR THE SOUTH SIDE AND SIX (6) BOLTS (MIN.) TOP AND BOTTOM FOR THE WEST SIDE.
 4. PROVIDE FIVE (5) BOLTS (MIN.) LEFT AND RIGHT PER SIDE FOR BOTH TRASH RACKS.



- CONCRETE CONSTRUCTION NOTES**
- GOVERNING SPECIFICATIONS**
 - a. ALL REINFORCED CONCRETE CONSTRUCTION SHALL MEET OR EXCEED CONCRETE CONSTRUCTION SPECIFICATIONS OF:
 - i. ACI 318: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, LATEST EDITION
 - ii. ACI 308: ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, LATEST EDITION
 - iii. MARYLAND DEPARTMENT OF TRANSPORTATION, MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION
 - EXISTING CONDITIONS**
 - a. EXISTING DIMENSIONS SHOWN ARE APPROXIMATE. ALL DIMENSIONS AFFECTED BY THE GEOMETRY AND/OR LOCATION OF THE EXISTING STRUCTURE SHALL BE FIELD-VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH ANY CONSTRUCTION AND BEFORE ANY MATERIALS ARE ORDERED OR FABRICATED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS. THE DIMENSIONS SHOWN WITH DIMENSIONS DO NOT INDICATE ANY DEGREE OF PRECISION. THESE MARKS (s) INDICATE EXISTING DIMENSIONS THAT MAY VARY AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR.
 - b. THE CONTRACTOR SHALL WORK WITH EXTREME CARE AROUND EXISTING STRUCTURES DURING DEMOLITION AND CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DOCUMENT AND REPORT ANY EXISTING DEFECTS ON EXISTING STRUCTURES TO THE OWNER PRIOR TO PROCEEDING WITH DEMOLITION. ANY DAMAGE CAUSED TO EXISTING STRUCTURES DURING DEMOLITION SHALL BE REPAIRED OR REPLACED IN-KIND BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
 - CONCRETE**
 - a. ALL REINFORCED CONCRETE SHALL MEET MD SHA MIX NO. 6 (f_c = 4,500 PSI) FOR CAST-IN-PLACE CONCRETE AS DETAILED IN THE MD SHA STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION.
 - REINFORCING STEEL**
 - a. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60.
 - b. MINIMUM COVER FOR ALL REINFORCING STEEL IN WALLS, SLABS, AND BEAMS SHALL BE TWO (2) INCHES.
 - c. MINIMUM COVER FOR ALL REINFORCING STEEL IN FOUNDATIONS SHALL BE THREE (3) INCHES.
 - FORMWORK**
 - a. FORMWORK SHALL CONFORM TO SPECIFICATIONS FOR ACI 347, LATEST EDITION
 - b. CHAMFER ALL EDGES WITH 1/2" X 1/4" WOOD CHAMFER STRIPS
 - SUBMITTALS**
 - a. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER'S ENGINEER OF THE FOLLOWING SUBMITTALS:
 - b. REINFORCING STEEL SHOP DRAWING PREPARED BY THE STEEL SUPPLIER. STEEL DRAWING SHALL INCLUDE A SCHEDULE OF ALL REQUIRED BENDS DETAILING BEND DIMENSIONS, BAR SIZES, AND REQUIRED QUANTITIES. REPRODUCTION OF THE REINFORCEMENT PLAN DRAWINGS IS NOT ACCEPTABLE.
 - c. CONCRETE MIX DESIGNS
 - d. WATER STOP IF EQUIVALENT TO THE SPECIFIED PRODUCT(S) IS PROPOSED TO BE USED
 - e. ASSOCIATED CONCRETE PRODUCTS SUCH AS BONDING AGENT, EPOXY GROUT, ETC. IF EQUIVALENT TO THE SPECIFIED PRODUCT IS PROPOSED TO BE USED
 - f. APPURTENANCES INCLUDING ORIFICE PLATES, TRASH RACKS, MANHOLE COVERS, VALVES, STEM EXTENSIONS, ETC.
 - SUPERVISION AND INSPECTION**
 - a. CONCRETE CONSTRUCTION SHALL BE COMPLETED UNDER SUPERVISION OF A TECHNICIAN OPERATING UNDER RESPONSIBLE CHARGE OF A PROFESSIONAL GEOTECHNICAL ENGINEER.
 - b. PRIOR TO INSTALLING FORM WORK, REINFORCEMENT OR CONSTRUCTION OF ANY KIND FOR ANY CONCRETE STRUCTURE FOUNDATION, THE SUBGRADE SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER OF RECORD. A MUD MAT MAY BE USED TO PROVIDE SUITABLE SUBGRADE AS SPECIFIED BY THE GEOTECHNICAL ENGINEER IF THE EXISTING SUBGRADE IS UNSUITABLE. DO NOT USE GRAVEL UNDER THE RISER.
 - c. ALL CONCRETE DEMOLITION WORK SHALL BE INSPECTED AFTER COMPLETION OF DEMOLITION. THE CONTRACTOR SHALL NOT PROCEED WITH NEW CONSTRUCTION UNTIL THE ALL DEMOLITION WORK HAS BEEN INSPECTED.
 - d. ALL REINFORCEMENT AND FORM WORK SHALL BE INSPECTED PRIOR TO CLOSING FORMS AND POURING CONCRETE.
 - CURING**
 - a. ALL CONCRETE CONSTRUCTION AND CURING TO BE PERFORMED AS APPLICABLE ACCORDING PER SPECIFICATIONS OF:
 - i. ACI 308: GUIDE TO CURING CONCRETE, LATEST EDITION
 - ii. ACI 306: GUIDE TO HOT WEATHER CONCRETING, LATEST EDITION
 - iii. ACI 306: GUIDE TO COLD WEATHER CONCRETING, LATEST EDITION
 - b. FORMWORK SHALL REMAIN ON CURING CONCRETE FOR A MINIMUM OF THREE (3) DAYS AFTER POUR.
 - c. DO NOT BACKFILL AROUND CURED CONCRETE UNTIL TESTING HAS CONFIRMED IT HAS REACHED THE DESIGN 28-DAY STRENGTH.

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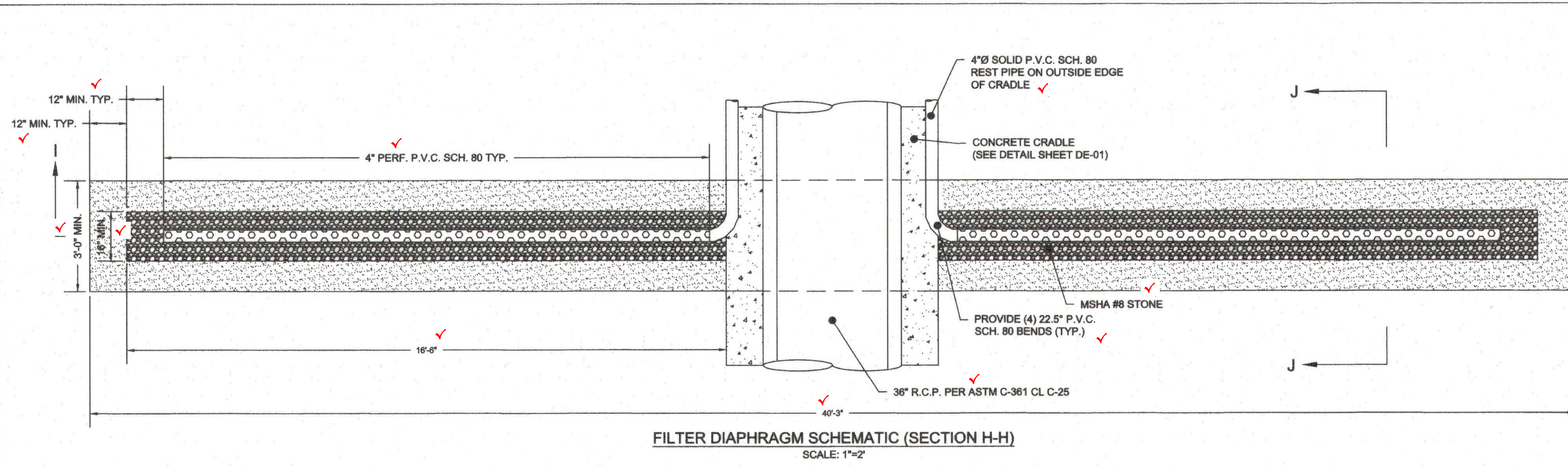
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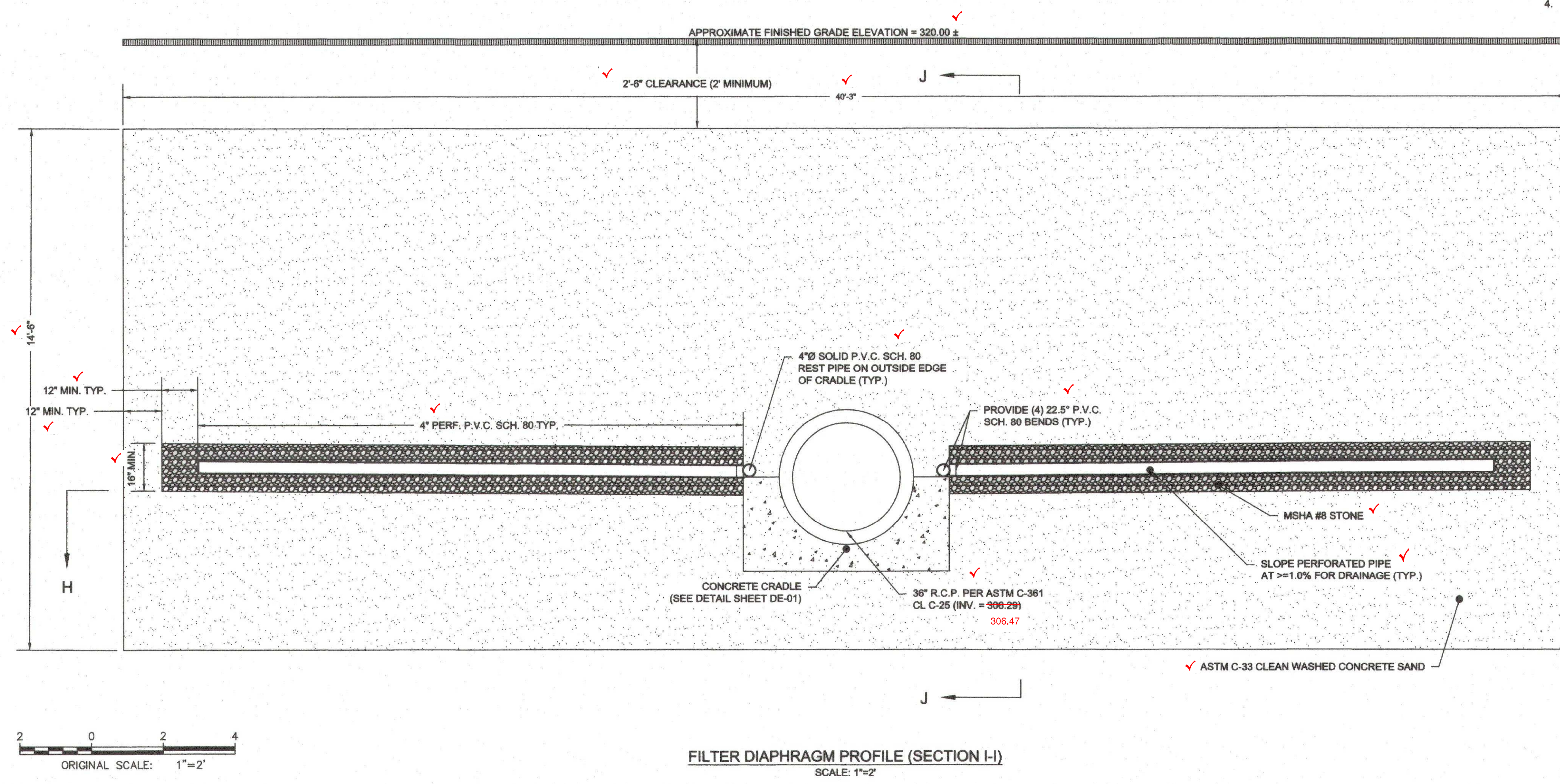
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PROJECT NO. 121104.63	SCALE AS SHOWN	DATE 03/01/2019
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SHEET NO. 09 OF 20		
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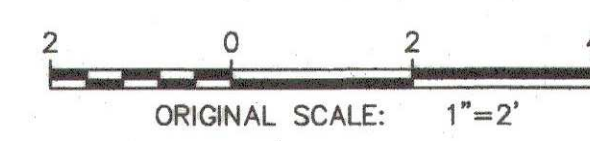
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FILTER DIAPHRAGM SCHEMATIC (SECTION H-H)
SCALE: 1"=2'



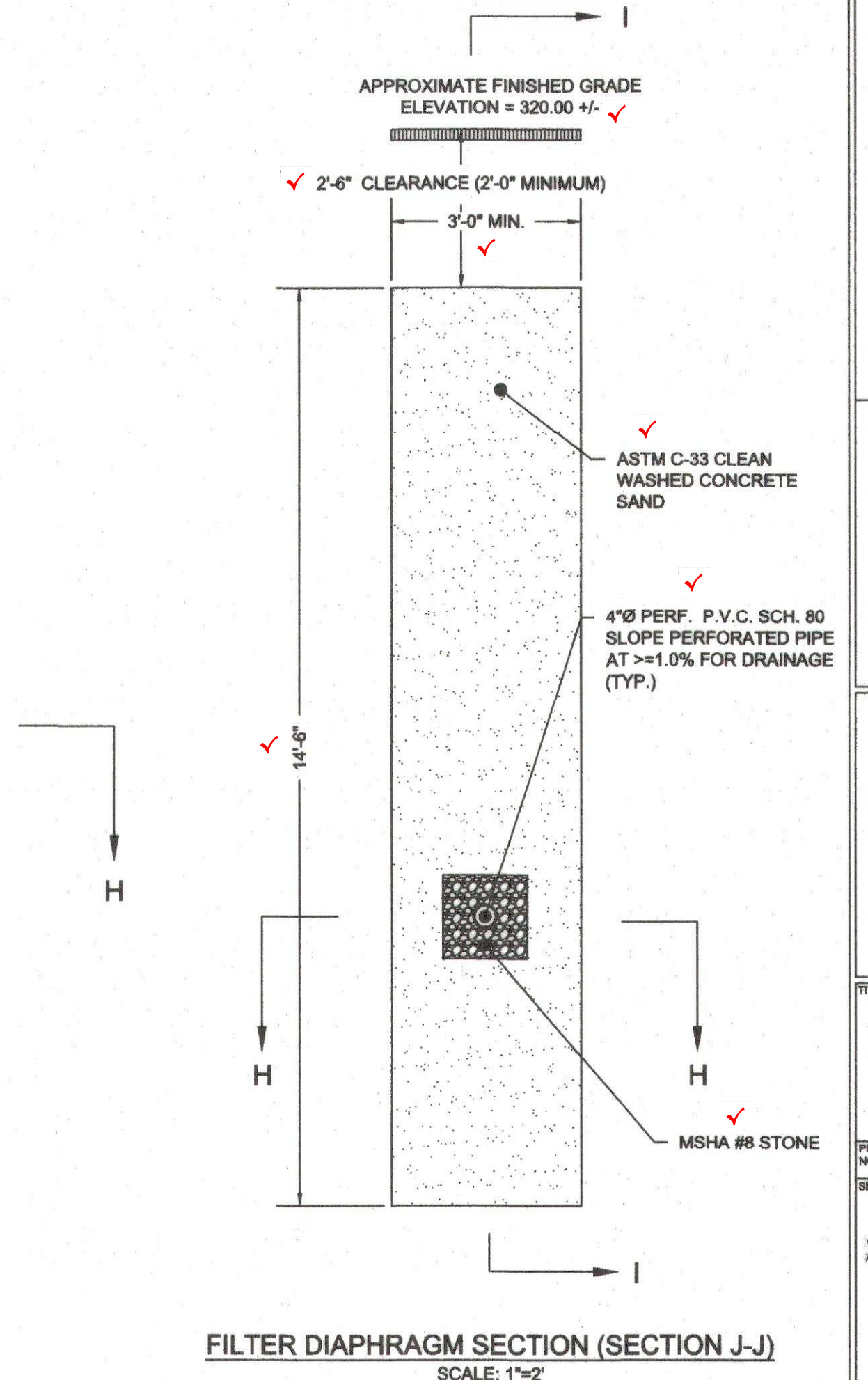
FILTER DIAPHRAGM PROFILE (SECTION I-I)
SCALE: 1"=2'



Mark Richmond
CHIEF, STORMWATER MANAGEMENT DIVISION
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FILTER DIAPHRAGM INSTALLATION NOTES

- LOCATION AND GEOMETRY
 - THE FILTER DIAPHRAGM SHALL BE LOCATED IMMEDIATELY DOWNSTREAM OF THE IMPERVIOUS CORE.
 - THE FILTER DIAPHRAGM SHALL BE A MINIMUM OF THREE (3) FEET THICK.
 - THE FILTER DIAPHRAGM SHALL BE CONSTRUCTED TO DEPTH OF TWO (2) FEET BELOW THE CONCRETE CRADLE.
 - THE TOP ELEVATION OF THE FILTER DIAPHRAGM SHALL BE AT A MINIMUM ELEVATION EQUAL TO THE 100 YEAR WSE OR WITHIN TWO FEET OF THE FINISHED GRADE ELEVATION OF THE EMBANKMENT.
- MATERIALS
 - THE FILTER DIAPHRAGM MATERIAL SHALL CONSIST OF SAND MEETING ASTM C-33 FINE CONCRETE AGGREGATE REQUIREMENTS, STONE MEETING MSHA #8 GRADATION REQUIREMENTS, AND PIPE MEETING SCHEDULE 80 P.V.C. REQUIREMENTS.
 - PERFORATED P.V.C. SHALL HAVE PERFORATIONS MEASURING 3/8 INCHES Ø SPACED EVENLY AROUND THE CIRCUMFERENCE OF THE PIPE EVERY 90° (FOUR (4) PER RING) AND FOUR (4) INCHES LONGITUDINALLY ALONG THE ENTIRE LENGTH OF THE DESIGNATED PERFORATED P.V.C. PIPE SECTION. HOLES MAY BE MACHINED AS PART OF PIPE FABRICATION OR DRILLED ON-SITE.
 - SLOTTED P.V.C. MAY BE USED IN LIEU OF PERFORATED P.V.C. SUBJECT TO THE FOLLOWING: THE SLOTTED P.V.C. PIPE SHALL HAVE SLOTS FOUR (4) SLOTS PER ROW WITH EACH SLOT MEASURING 1.2 INCHES± IN LENGTH AND 1/2 INCHES IN WIDTH. SLOTS SHALL BE SPACED A MINIMUM OF THREE (3) INCHES APART LONGITUDINALLY ALONG THE ENTIRE LENGTH OF THE DESIGNATED PERFORATED P.V.C. PIPE SECTION.
- PLACEMENT
 - THE SAND SHALL BE PLACED IN UNIFORM EIGHT (8) INCH LIFTS (MEASURED BEFORE COMPACTION).
 - WET EACH LIFT THOROUGHLY WITH POTABLE WATER PRIOR TO COMPACTION.
 - COMPACT WITH A MINIMUM OF TWO (2) PASSES OF A VIBRATORY PLATE COMPACTOR WEIGHING AT LEAST 160 POUNDS. THE COMPACTOR SHALL HAVE A MINIMUM CENTRIFUGAL FORCE OF 2,450 POUNDS AT A VIBRATING FREQUENCY OF NO LESS THAN 5,000 CYCLES PER MINUTE (OR BY A MINIMUM OF TWO PASSES OF A VIBRATORY SMOOTH WHEELED ROLLER WEIGHING NO LESS THAN AT LEAST 325 POUND WITH A CENTRIFUGAL FORCE OF 2,250 POUNDS AT A VIBRATING FREQUENCY OF NO LESS THAN 4,500 CYCLES PER MINUTE. THE SAND SHALL BE PLACED TO AVOID SEGREGATION OF PARTICLE SIZES AND TO ENSURE CONTINUITY AND INTEGRITY OF ALL ZONES.
 - THE CONTRACTOR SHALL TAKE PROPER MEASURES TO PREVENT CONTAMINATION OF THE FILTER MEDIA BY ADJACENT SOIL LIFTS, CONSTRUCTION DEBRIS, OR OTHER MATERIALS. CONTAMINATED AREAS SHOULD BE REMOVED AND REPLACED.
 - ANY DAMAGE TO THE FOUNDATION SURFACE OR THE TRENCH SIDES OR BOTTOM OCCURRING DURING PLACEMENT OF SAND FILTER MEDIA SHALL BE REPAIRED BEFORE THE SAND FILTER MEDIA PLACEMENT IS CONTINUED.
 - THE UPPER SURFACE OF THE SAND FILTER ZONE CONSTRUCTED CONCURRENTLY WITH ADJACENT ZONES OF EARTHFILL SHALL BE MAINTAINED AT A MINIMUM ELEVATION OF ONE (1) FOOT ABOVE THE UPPER SURFACE OF ADJACENT EARTHFILL.
 - THE FILTER DIAPHRAGM TOE DRAIN(S) SHALL OUTLET AT THE PRINCIPAL SPILLWAY END WALL AND EXTEND TWO (2) INCHES (MIN.) BEYOND THE DOWNSTREAM FACE OF THE END WALL.
- REFER TO SHEETS SP-01 THROUGH SP-03.



FILTER DIAPHRAGM SECTION (SECTION J-J)
SCALE: 1"=2'

CLIENT/LAND OWNER:
HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENVIRONMENTAL SERVICES
8601 BROKEN LAND PARKWAY
COLUMBIA, MARYLAND 21046-3143
PHONE: 410.313.6429

REVISIONS		
NO.	DATE	DESCRIPTION

PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
December 19, 2019
19-MR-0018
Dam Safety Division
Maryland Dept. of the Environment

SITE INFORMATION
STREET ADDRESS:
ADJACENT TO:
8409 SWEET CHERRY LANE
LAUREL, MARYLAND 20723
HOWARD COUNTY MARYLAND DEPT. PARKS
AND RECREATION
LOT: 28, 45
PARCEL: 0190 TAX MAP: 46 GRID: 0010
ELECTION DISTRICT: 4
PLAT NO.: 6928

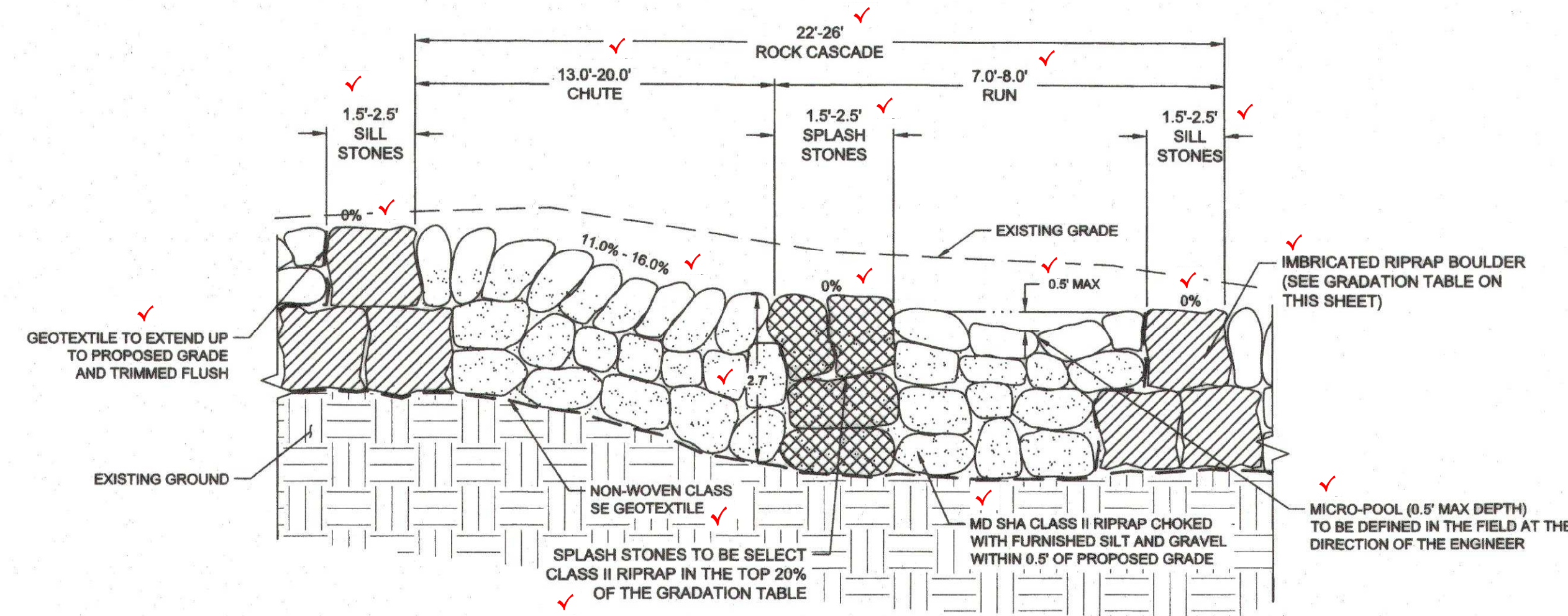
MM CENTURY
ENGINEERING
CONSULTING ENGINEERS - PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MARYLAND 21031
PHONE: (443) 589-2400 FAX: (443) 589-2401

CHERRYTREE FARM SWM
POND REPAIR

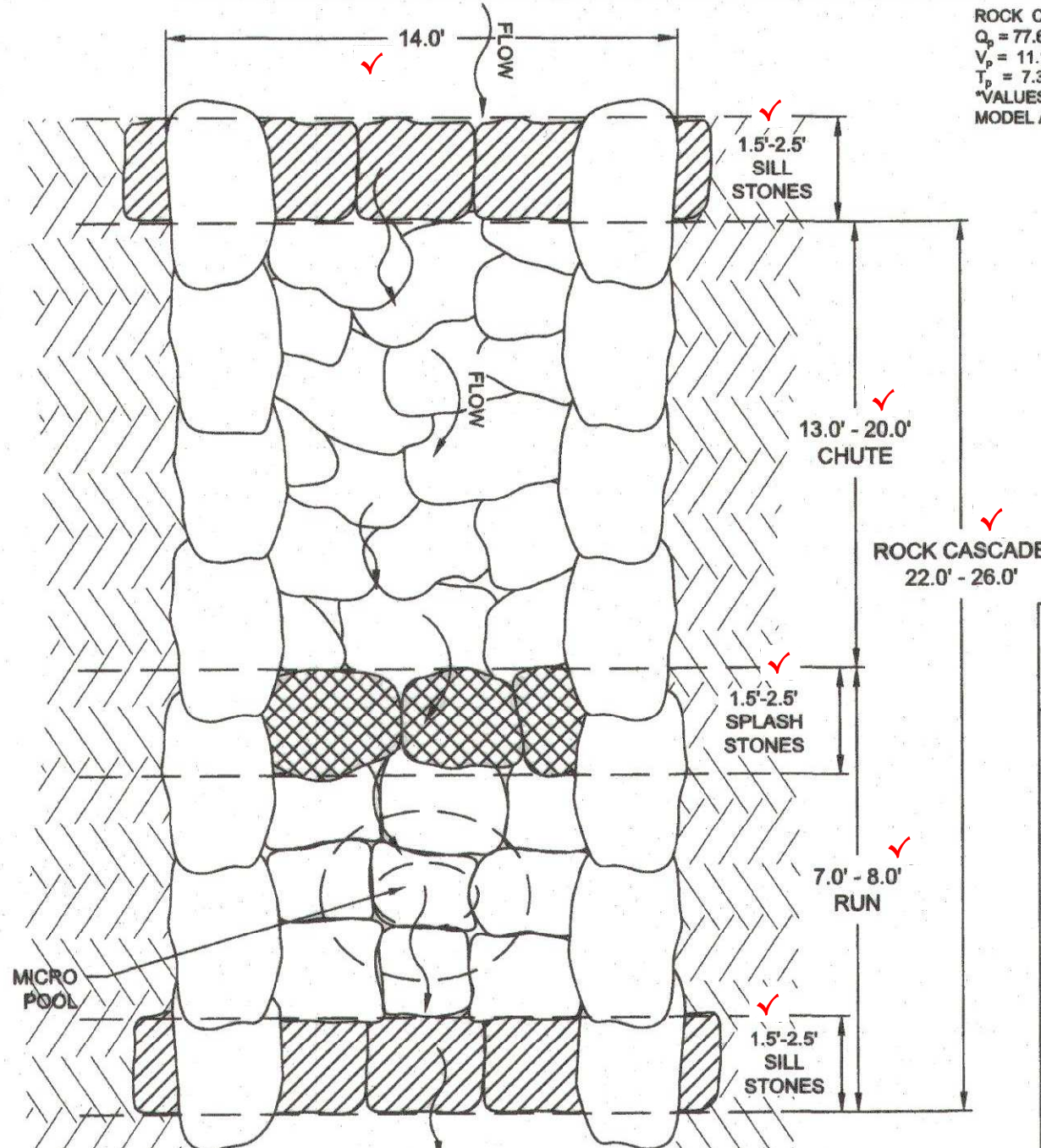
**FILTER DIAPHRAGM
DETAILS**

PROJECT NO: 121104.63 SCALE: AS SHOWN DATE: 03/01/2019
DESIGN: EMM CHECK: MRJ
DWG NO: DE-03 OF DE-04
SHEET NO: 10 OF 20
10/22/19

STATE OF MARYLAND
DEPARTMENT OF ENVIRONMENTAL & GENERAL SERVICES
DIVISION OF WATER CONTROL
LICENSE # 1987 EXPIRES: 07/15/2020



ROCK CASCADE TYPICAL - PROFILE



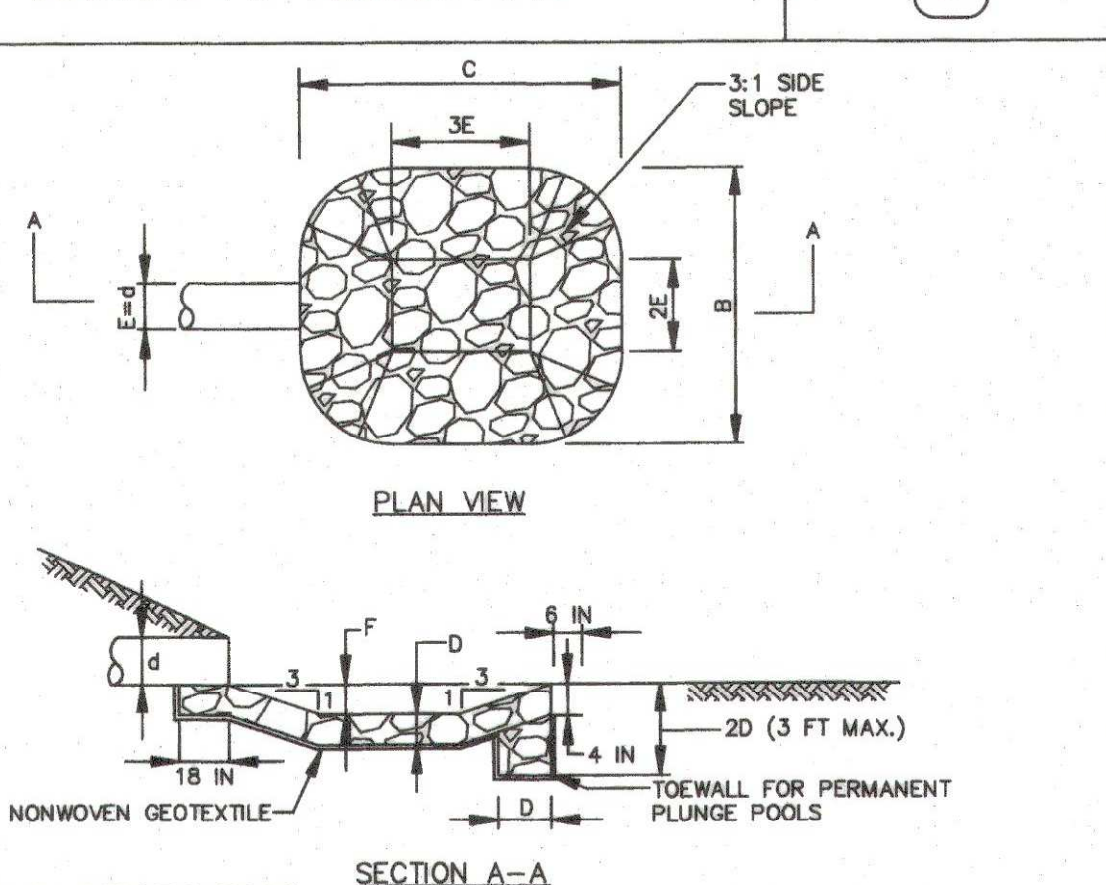
ROCK CASCADE TYPICAL - PLAN VIEW

ROCK CASCADE PEAK DESIGN VALUES*
 $Q_p = 77.8$ CFS (60-YR STORM EVENT)
 $V_p = 11.1$ FT/SEC
 $T_p = 7.3$ HRS (60-YR STORM EVENT)
 *VALUES SHOWN ARE BASED ON THE PROPOSED CONDITIONS HEC-RAS MODEL AND ARE THE PEAK VALUES UP TO THE 60-YR STORM EVENT.

MARYLAND APPLICATION CLASS	TYPE OF GEOTEXTILE	GEOTEXTILE		PERMITTIVITY (SEC) D4491	APPARENT OPENING SIZE, MAX (mm) D4761	TRAPEZOID TEST STRENGTH (MD*) D4852
		GRAB STRENGTH (LB) D4632	PUNCTURE STRENGTH (LB) D8841			
SE	NONWOVEN	160	310	0.20	0.30	80

NOTES:
 1. ALL PROPERTY VALUES IN THE ABOVE TABLE ARE BASED ON MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPLE DIRECTION EXCEPT FOR APPARENT OPENING SIZE.
 2. THE ULTRAVIOLET STABILITY SHALL BE 50 PERCENT AFTER 500 HOURS OF EXPOSURE FOR ALL CLASSES.
 *MACHINE DIRECTION

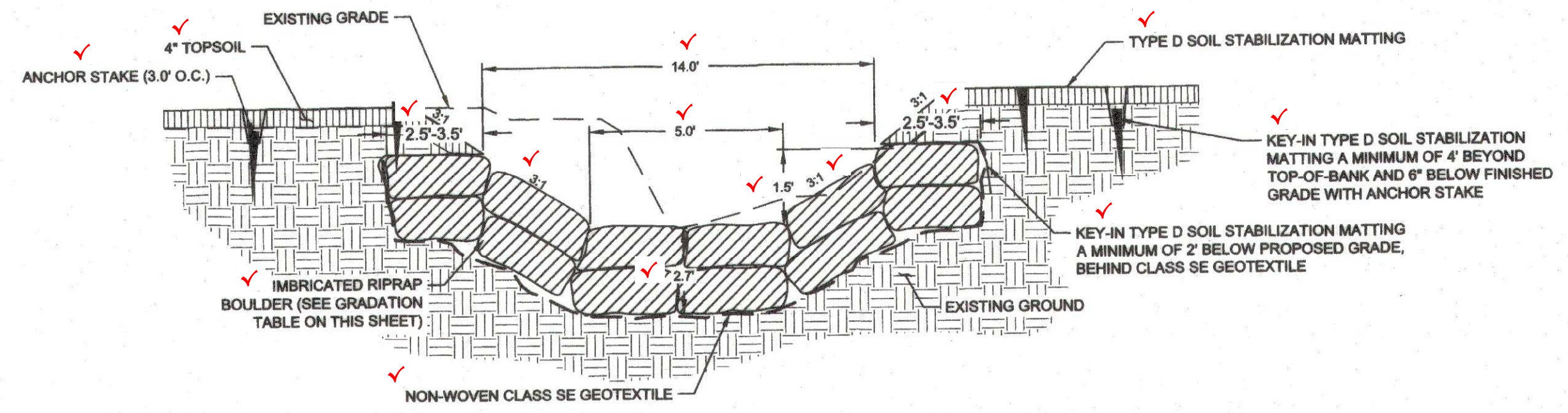
DETAIL D-4-2 PLUNGE POOL



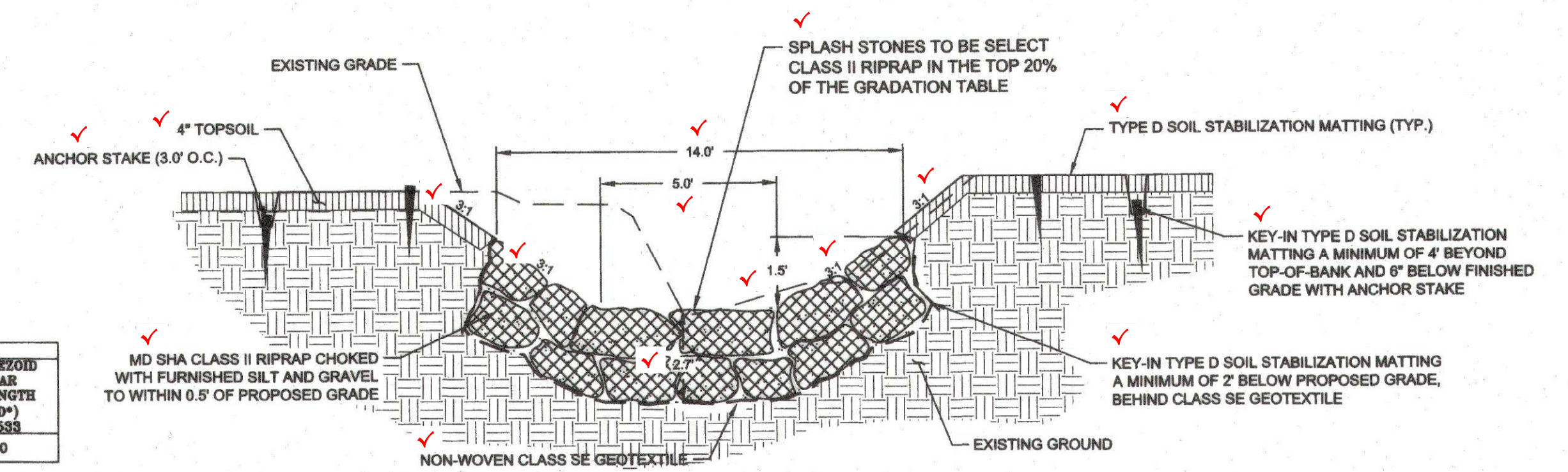
CONSTRUCTION SPECIFICATIONS

- USE SPECIFIED CLASS OF RIPRAP.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.
- PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
- STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS. FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLOADED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

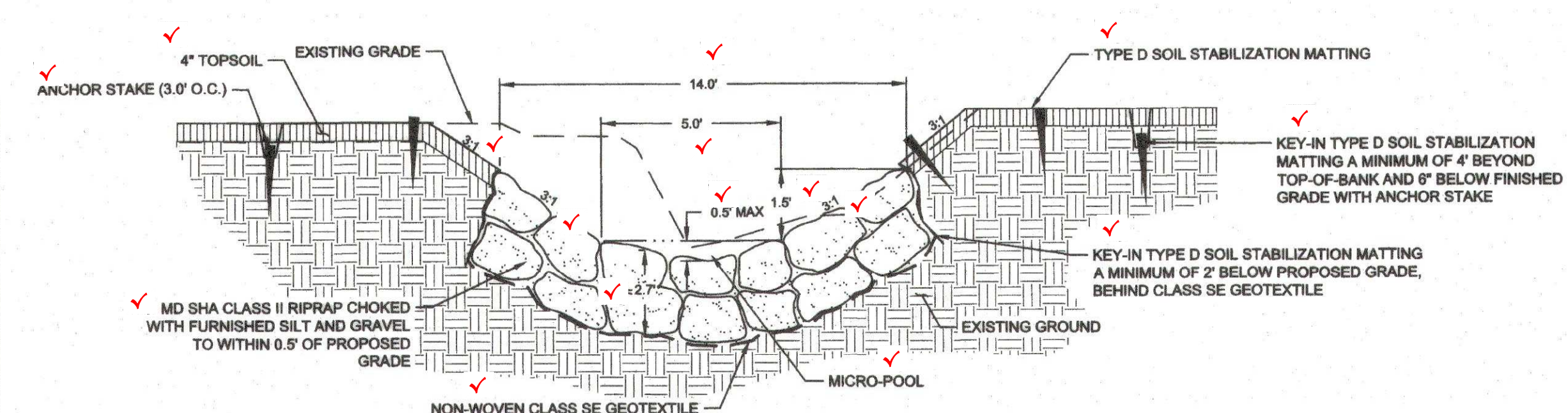
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



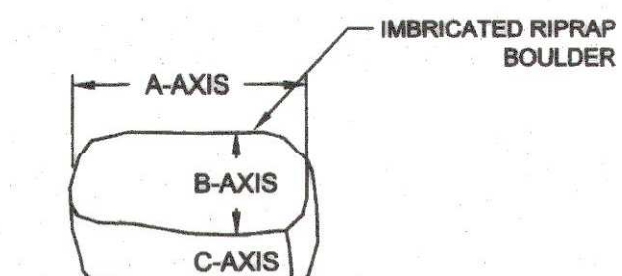
SILL - SECTION VIEW



CHUTE / SPLASH STONE - SECTION VIEW



MICRO-POOL - SECTION VIEW



	IMBRICATED RIPRAP BOULDER*		
	A AXIS (LONG)	B AXIS (INTERMEDIATE)	C AXIS (SHORT)
MINIMUM SIZE	2.5 FT.	1.5 FT.	1.0 FT.
MAXIMUM SIZE	3.5 FT.	2.5 FT.	2.0 FT.

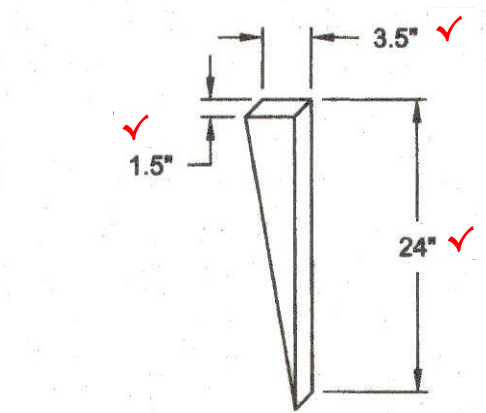
*IMBRICATED RIPRAP BOULDER SHALL HAVE A DENSITY GREATER THAN 160 LBS/FT³.

% PARTICLE SIZE LESS THAN	PARTICLE DIAMETER PASSING THROUGH SIEVE (IN) OR SIZE NO.	
	D ₆₀	D ₁₀₀
100	2.5 in.	
85	1 in.	
60	0.5 in.	
30	No. 40	
15	No. 200	

MDOT SEA CLASS II RIPRAP	
D ₆₀	18.0 in.
D ₁₀₀	24.0 in.

TYPE D SOIL STABILIZATION MATTING
 Type D Soil Stabilization Matting for the bank treatment areas shall consist of a machine produced mat of degradable natural fibers and shall meet the following minimum specifications:

Material:	Woven coir fiber yarn or twine
Thickness:	0.25 in.
Elongation (Dry/Wet):	29%/25%
Weight:	20 oz/SY
Open Area:	50%
Size:	6 ft. wide X 150 ft in length (100 SY per roll)
Flow Velocity:	8 ft./sec.
Life Expectancy:	3 years



ANCHOR STAKE DETAIL

NOTE: ANCHOR STAKES SHALL BE TAPERED TWO FOOT LONG WOODEN STAKES CONSISTING OF STANDARD 2" X 4" WOODEN BOARDS CUT DIAGONALLY.

- NOTES
- EXCAVATE THE BED AND BANKS ACCORDING TO THE PLANS TO OBTAIN THE NECESSARY SUBGRADE. PLACE GEOTEXTILE CLASS SE AS ILLUSTRATED ON THE CONTRACT DOCUMENTS. GEOTEXTILE TORN OR DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. GEOTEXTILE SHALL BE KEYED-IN AND TRIMMED TO AVOID EXPOSED EDGES UPON COMPLETION OF CONSTRUCTION.
 - CLASS II RIPRAP SHALL BE PLACED SO THAT SMALL AND LARGE STONES ARE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. DUMPING OF STONE WILL NOT BE PERMITTED. STONES SHALL BE SEATED FIRMLY AND SHALL NOT ROCK OR ROTATE IN PLACE. STONES SHALL BE PLACED SO THAT THEY SHINGLE IN A DOWNSTREAM AND DOWN VALLEY DIRECTION.
 - PLACED MATERIAL NOT CONFORMING TO THE SPECIFIED LIMITS SHALL BE REMOVED AND REPLACED AS DIRECTED.
 - SURFACE ELEVATIONS, WIDTHS, AND SLOPES SHALL CONFORM TO THE PROPOSED DESIGN STREAM PROFILE AND CROSS-SECTIONS SPECIFIED ON THE CONTRACT DRAWINGS. TOLERANCES OF THE FINISHED STRUCTURE ARE AS FOLLOWS:
 SURFACE ELEVATION: +/- 0.2 FEET
 SLOPE: +/- 0.1 PERCENT
 - SILT AND GRAVEL SHALL BE WASHED INTO ALL FURNISHED STONE TO FILL VOID SPACES AND PROMOTE SURFACE FLOW. SURFACE FLOW MUST BE ACHIEVED AND APPROVED BY THE ENGINEER.

Mark Schimidt 2/13/2020
 CHIEF, STORMWATER MANAGEMENT DIVISION DATE

CLIENTLAND OWNER:
 HOWARD COUNTY
 DEPARTMENT OF PUBLIC WORKS
 BUREAU OF ENVIRONMENTAL SERVICES
 9801 BROKEN LAND PARKWAY
 COLUMBIA, MARYLAND 21046-3143
 PHONE: 410.313.6429

REVISIONS		
NO.	DATE	DESCRIPTION

PLANS APPROVED BY
 Harald W. Van Aller, P.E.
 December 19, 2019
 19-MR-0018
 Dam Safety Division
 Maryland Dept. of the Environment

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**CHERRYTREE FARM SW
 POND REPAIR**

OUTFALL DETAILS

PROJECT NO:	121104.63	SCALE:	N/A	DATE:	03/01/2
DESIGNER:	EMM	CHECKER:	MRJ		
DRAWING NO.:	DE-04	OF DE-C			
SHEET NO.:	11	OF 20			
DATE:	10/22/19				