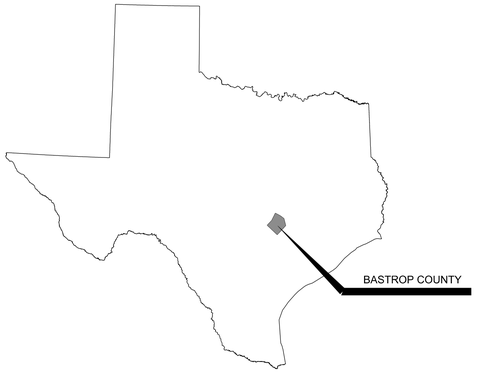
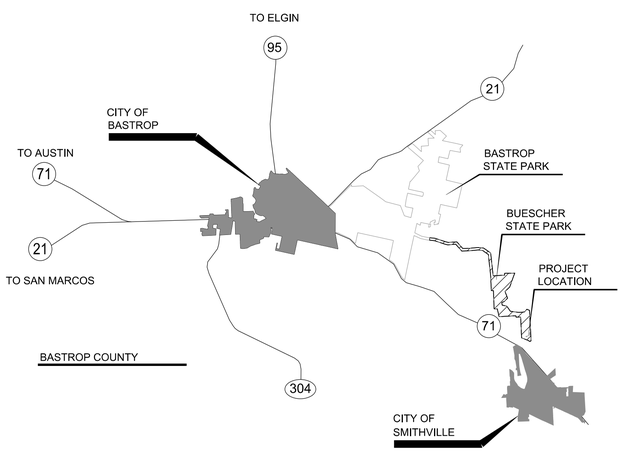


COUNTY LOCATION MAP

NOT TO SCALE

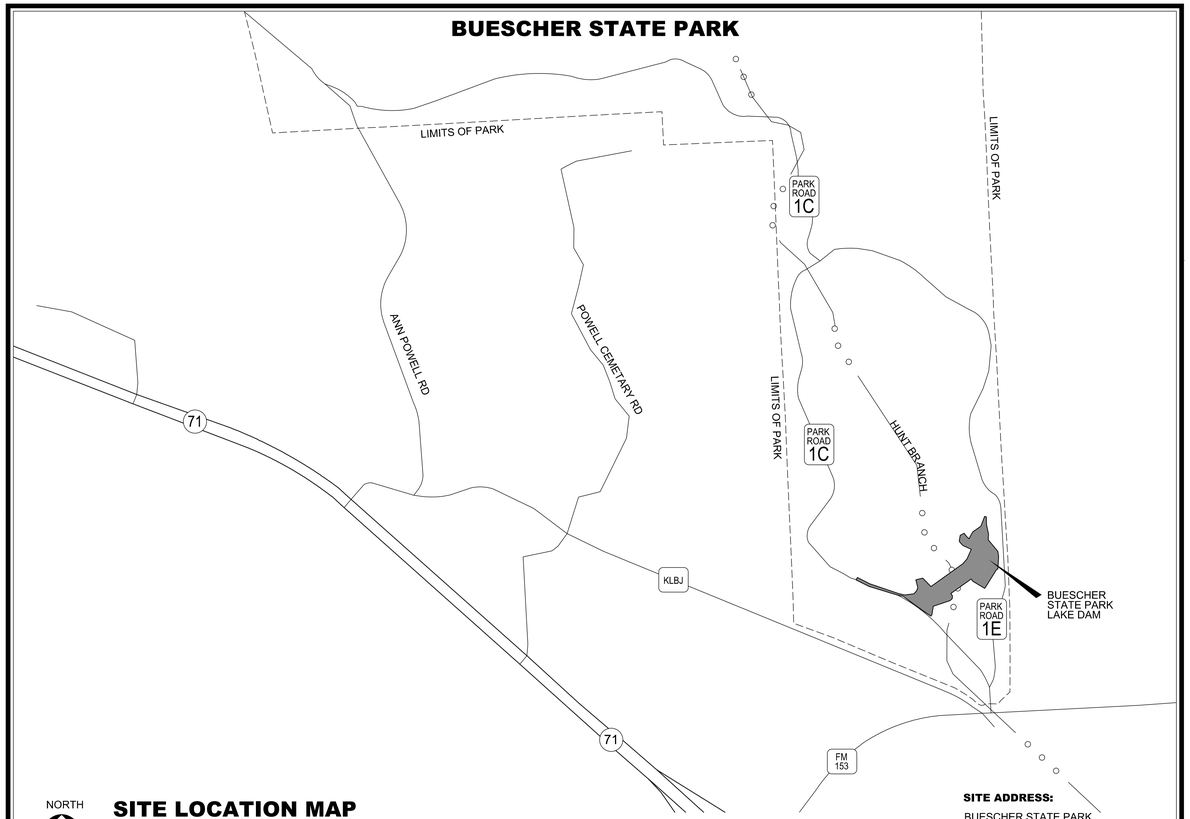
NORTH



VICINITY MAP

NOT TO SCALE

NORTH



NORTH

SITE LOCATION MAP

NOT TO SCALE

SITE ADDRESS:

BUESCHER STATE PARK
100 PARK RD 1-C
SMITHVILLE, TX 78957

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HALFF

psi

PROJECT

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS (TX02711)

PROJECT NO. 118686 DATE: 1/20/2021

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SCOPE OF WORK

THE PROJECT CONSISTS OF DEMOLITION AND RECONSTRUCTION OF THE EXISTING SPILLWAY AND INCREASING THE EMBANKMENT HEIGHT OF THE BUESCHER STATE PARK LAKE DAM. INCREASING THE SPILLWAY LENGTH BY 65 FEET AND INCREASING THE EMBANKEMENT HEIGHT BY 3 TO 4 FOOT WILL PROVIDE ADDITIONAL HYDRAULIC CAPACITY TO ALLOW THE DAM TO CONVEY 75% OF THE PMF STORM EVENT AS REQUIRED BY TCEQ REGULATION FOR DAMS CLASSIFIED AS HIGH HAZARD.

TEXAS PARKS & WILDLIFE

TEXAS PARKS AND WILDLIFE
INFRASTRUCTURE DIVISION

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JEFFREY L. NAGY
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PROFESSIONAL ENGINEER
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TEXAS PARKS & WILDLIFE

RELEASED FOR SOLICITATION

INFRASTRUCTURE DIVISION

100% PLANS

AVO: 36506.001

GENERAL NOTES

1. ALL CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO PROJECT SPECIFICATIONS.

2. THE CONTRACTOR SHALL PROVIDE RED LINED MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.

3. THE CONSTRUCTION SCHEDULE SHALL BE SUCH THAT THERE IS A MINIMUM OF INTERFERENCE WITH TRAFFIC ALONG OR ADJACENT TO THE PROJECT. CONTRACTOR IS TO FOLLOW DIVISION 1 REQUIREMENTS FOR PRE-CONSTRUCTION ACTIVITIES INCLUDING THOSE FOR NOTIFYING A TPWD ODR OF THE START DATE OF ONSITE CONSTRUCTION ACTIVITY. ALL BARRICADES, WARNING SIGNS, LIGHT DEVICES, ETC., FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS SHALL BE IN ACCORDANCE WITH CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS GUIDELINES. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING GENERAL SAFETY AT AND ADJACENT TO THE PROJECT AREA, INCLUDING THE PERSONAL SAFETY OF THE CONSTRUCTION CREW AND GENERAL PUBLIC.

4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION SEQUENCING AND TEMPORARY TRAFFIC CONTROL PLAN TO ADDRESS ALL ISSUES NOT COVERED BY THE CONSTRUCTION PLANS. A SCHEDULE SHALL BE SUBMITTED TO ADDRESS TIME OF COMPLETION OF EACH STAGE OF THE CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL UPDATE THIS SCHEDULE ON A MONTHLY BASIS. THE CONSTRUCTION SCHEDULE SHALL ADDRESS MEASURES TO BE TAKEN IN THE EVENT OF HEAVY RAIN OR WET WEATHER DURING CONSTRUCTION. CONSTRUCTION MAY NOT BEGIN EARLIER THAN 8:00 AM ON WEEKDAYS NOR CONTINUE AFTER 5:00 PM WITHOUT PERMISSION FROM TPWD. CONSTRUCTION ON SATURDAY AND SUNDAY IS PROHIBITED WITHOUT SPECIAL PERMISSION FROM TPWD. THE CONTRACTOR SHALL FOLLOW THE SEQUENCE OF CONSTRUCTION PROVIDED IN THESE PLANS. ANY DEVIATIONS FROM THE PLANS MUST BE SUBMITTED IN WRITING TO THE TPWD FOR APPROVAL.

5. THE CONTRACTOR SHALL MAINTAIN TRAFFIC AND TRAFFIC CONTROL AT ALL TIMES NEAR AND AT CONSTRUCTION ENTRANCE.

6. CONTRACTOR SHALL PROTECT ALL BENCHMARKS AND PROPERTY MONUMENTATION AND SHALL REPLACE OR REPAIR, AT ITS OWN EXPENSE, BENCHMARKS AND MONUMENTATION DISTURBED DURING CONSTRUCTION. IF CONTRACTOR SETS NEW BENCHMARKS, THE VERTICAL ELEVATION SHALL BE SET WITHIN A TOLERANCE OF 0.01 OF A FOOT. CONTRACTOR SHALL PROVIDE THIRD PARTY RPLS DOCUMENTATION TO VERTICAL AND HORIZONTAL ACCURACY.

7. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY RECORDS AND PLANS AND ARE CONSIDERED APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT HIS EXPENSE. THE ENGINEER SHALL BE NOTIFIED IN WRITTING WHEN PROPOSED FACILITY GRADES CONFLICT WITH EXISTING UTILITY GRADES.

8. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO TPWD PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, PLANTERS AND LAWN SPRINKLERS, IRRIGATION SYSTEMS, SURFACE DRAINS AT NO COST TO THE OWNER. THIS WORK SHALL BE COMPLETED WITH EQUAL OR BETTER QUALITY MATERIAL AND MAINTAIN THE FUNCTIONALITY OF THE EXISTING SYSTEM AS DIRECTED BY THE TPWD AND APPROVED BY THE RESPECTIVE PARTY. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT, UNLESS OTHERWISE NOTED, AND IS NOT A SEPARATE PAY ITEM.

9. IN ACCORDANCE WITH SPECIFICATION 01 50 00 TEMPORARY FACILITIES, CONTRACTOR SHALL INSTALL AND MAINTAIN A TEMPORARY FENCING AS REQUIRED UNDER CONSTRUCTION SITE PLAN AND FENCING TEMPORARY FENCE INSTALLATION SHALL BE CONTINUOUS AND APPROVED BY THE TPWD ODR. TEMPORARY FENCE WORK SHALL BE SUBSIDIARY TO THE CONTRACT AND IS NOT A SEPARATE PAY ITEM.

10. THE CONTRACTOR SHALL PROVIDE TEMPORARY DRAINAGE MEASURES DURING CONSTRUCTION INCLUDING ANY DEWATERING OF GROUNDWATER AND LOWERING OF LAKE LEVEL SUBSIDIARY TO THE CONTRACT. DURING CONSTRUCTION THE LAKE LEVEL SHALL BE MAINTAINED AT 340-FT. IF SEEPAGE CONTINUES COORDINATE FURTHER LAKE DRAWDOWN WITH ENGINEER AND TPWD ODR. CONSTRUCTION IS WITHIN THE SPILLWAY OF A DAM. CONTRACTOR SHALL NOT STOCKPILE MATERIALS OR EQUIPMENT WITHIN THE SPILLWAY THAT COULD RESTRICT CONVEYANCE OF STORMWATER. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AT ALL TIMES AND IS RESPONSIBLE FOR ANY DAMAGES RELATED TO FLOODING TO EXISTING IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A CARE OF WATER PLAN TO INCLUDE, BUT NOT LIMITED TO, COFFER DAM DESIGN SIGNED AND SEALED BY A TEXAS PROFESSIONAL ENGINEER, LAKE LEVEL LOWERING PLAN, AND EXCAVATION CARE OF WATER PLAN.

11. THE PROJECT AREA IS LOCATED WITHIN A FLOOD PRONE AREA. SPOIL STORAGE IS PROHIBITED WHEN WEATHER FORECAST IS PREDICTING A 1-INCH RAINFALL OR GREATER. CONTRACTOR TO MONITOR WEATHER FORECAST AND SHALL REMOVE ANY STOCKPILED SPOILS UP GRADIENT FROM THE FLOOD PRONE AREAS TO PREVENT FLOOD STORAGE REDUCTION.

12. THE CONTRACTOR SHALL REMOVE FROM THE PROJECT AREA ALL SURPLUS MATERIAL. THIS WORK SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM. SURPLUS MATERIAL FROM EXCAVATION INCLUDING CONCRETE, TRASH, ETC., SHALL BE PROPERLY DISPOSED.

13. MATERIAL TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE UNIFORM GENERAL CONDITIONS AND SPECIAL SPECIFICATIONS OF THE CONTRACT.

14. ALL EXCAVATION ON THIS PROJECT IS MEASURED IN ITS ORIGINAL POSITION AND THE VOLUME IN CUBIC YARDS DETERMINED BY AVERAGE END AREA METHOD.

15. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS GOVERNING EXCAVATION. CONTRACTOR SHALL PROVIDE ALL REQUIRED SHEETING, SHORING OR BRACING AS NEEDED. ALL TRENCHING AND EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH OSHA STANDARDS.

16. ALL UTILITIES SUPPLIED BY TPWD TO THE CONTRACTOR FOR CONSTRUCTION ARE OUTLINED IN THE SPECIAL SPECIFICATION OF THE CONTRACT.

17. ALL ROADS SHALL BE KEPT CLEAN AND FREE OF MUD AND DEBRIS. CONTRACTOR SHALL WASH DOWN AND CLEAN/SWEEP ROADS AT THE END OF EACH WORK DAY OR AS REQUESTED BY TPWD.

18. PRIOR TO FINAL ACCEPTANCE OF PROJECT, TPWD MAY REQUIRE A FIELD SURVEY PROVIDED BY A REGISTERED PROFESSIONAL SURVEYOR TO VERIFY THAT THE AS-BUILT COORDINATES MATCH THE APPROVED DESIGN.

TREE PROTECTION NOTES

1. CONTRACTOR SHALL SUBMIT TO TPWD A PLAN FOR TREE TRIMMING AND TREE REMOVAL PRIOR TO START OF WORK. PROTECTIVE MEASURES SHALL BE TAKEN PRIOR TO THE START OF ANY WORK IN THE AREA AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. ALL SUCH MEASURES SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM.

2. THE CONTRACTOR SHALL EMPLOY A CERTIFIED ARBORIST FOR ALL WORK REQUIRED FOR TREE CARE TO ENSURE UTILIZATION OF BEST HORTICULTURAL PRACTICES AND PROCEDURES.

3. ALL TREES WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED DURING CONSTRUCTION WITH PLANKING AND OTHER MEASURES AS NEEDED INCLUDING PRUNING OF LIMBS. CONTRACTOR SHALL INSPECT EACH WORK SITE IN ADVANCE AND ARRANGE TO HAVE ANY TREE LIMBS PRUNED THAT MIGHT BE DAMAGED BY EQUIPMENT OPERATIONS. PRUNING OF LIMBS TO PROVIDE CLEARANCE FOR CONSTRUCTION EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS TO PREVENT DAMAGE TO TREES BY RIPPING AND TEARING OF BRANCHES. PRUNED LIMBS OF 1-INCH DIAMETER AND OR LARGER SHALL BE THOROUGHLY TREATED AS SOON AS POSSIBLE WITH A TREE WOUND DRESSING.

4. NOTHING SHALL BE STORED OVER THE TREE ROOT SYSTEM WITHIN THE DRIP LINE LIMITS OF ANY TREE. NO TOPSOIL DRESSING OR FILL GREATER THAN 4 INCHES SHALL BE PERMITTED WITHIN DRIP LINE AREAS.

5. TREE DAMAGE FOR THE PURPOSE OF THIS PROJECT IS DEFINED AS ANY DAMAGE TO TREES SUCH AS BRUISING, SCARRING, TEARING, OR BREAKING OF STEMS OR BRANCHES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO TREES AND VEGETATION. THE CONTRACTOR SHALL BE ASSESSED DAMAGE IN THE FOLLOWING MANNER:

   a. THE AMOUNT OF CIRCUMFERENCE DAMAGED AT ONE OR A COMBINATION OF POINTS ALONG THE STEM AND/OR LIMBS WILL BE DETERMINED BY MEASUREMENT AT THE WOUND AROUND THE TRUNK OF LIMB INVOLVED. THE PERCENTAGE OF THE CIRCUMFERENCE DAMAGED WILL BE MULTIPLIED BY THE APPROPRIATE VALUE FOR THE SIZE OF THE TREE INVOLVED, AS GIVEN BY THE FOLLOWING TABLE, TO DETERMINE THE AMOUNT OF PENALTY. LONG, NARROW, VERTICAL WOUNDS OVER ONE (1) FOOT LONG WILL BE MEASURED EVERY FOOT ALONG THE TRUNK TO DETERMINE THE TOTAL PERCENTAGE OF DAMAGE.

TREE DIAMETER AT BREAST HEIGHT	VALUE ASSIGNED PER INCH OF TREE DIAMETER
UP TO 5-INCH INCLUSIVE	$150
6-INCHES AND LARGER	$1000

   b. TREES LESS THAN BREAST HEIGHT (4.5-FEET) WILL BE CALLIPERED SIX INCHES ABOVE GROUND.
   c. THE TOTAL AMOUNT OF SUCH PENALTIES SHALL BE DEDUCTED FROM THE FINAL PAYMENT TO THE CONTRACTOR.

6. NO TREE GREATER THAN 8-INCHES IN DIAMETER SHALL BE REMOVED UNLESS SHOWN IN THE PLANS FOR REMOVAL. TREE REMOVAL LESS THAN 8-INCHES IS SUBSIDIARY TO ITEM SITE PREPARATION AND MOBILIZATION. REMOVAL OF TREES SHALL INCLUDE STUMP AND ROOT BALL REMOVAL, LOADING, HAULING, AND DUMPING.

7. TREES TO BE REMOVED SHALL BE CUT APPROXIMATELY 24-36 INCHES ABOVE THE GROUND LEAVING A WELL-DEFINED STUMP THAT CAN BE USED IN THE ROOTBALL REMOVAL PROCESS.

8. THE STUMP AND ROOTBALL SHALL BE REMOVED BY PULLING THE STUMP, OR BY USING A TRACK-MOUNTED BACKHOE TO LOOSEN THE ROOTBALL BY PULLING ON THE STUMP AND THEN EXTRACTING THE STUMP AND ROOTBALL ALL TOGETHER.

9. THE REMAINING ROOT SYSTEM AND LOOSE SOIL AT THE STUMP EXTRACTION SITE SHALL BE REMOVED BY EXCAVATING THE SIDES OF THE CAVITY TO SLOPES NO STEEPER THAN 1H:1V AND BENCHING THE BOTTOM OF THE CAVITY TO APPROXIMATELY HORIZONTAL.

10. BACKFILL OF THE CAVITY AND OVER EXCAVATION SHALL BE IN ACCORDANCE WITH PLANS AND SPECIFICATIONS FOR EMBANKMENT.

GRADING GENERAL NOTES

1. PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS ARE UNDER THE JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS' LOP1. THE CONTRACTOR SHALL RESTORE ALL PORTIONS OF THE CHANNEL AND BANK THAT ARE TEMPORARILY FILLED, CLEARED OF VEGETATION, FLOODED, EXCAVATED, GRADED OR DRAINED DURING CONSTRUCTION TO PRE-PROJECT GRADES AND CONDITIONS, INCLUDING HAUL ROUTE BETWEEN CONSTRUCTION ENTRANCE AND PROJECT SITE IN ACCORDANCE WITH SAID PERMIT.

2. NO GRADING OR EARTHWORK SHALL COMMENCE UNTIL PREPARATION AND IMPLEMENTATION OF THE SWPPP BY THE CONTRACTOR. THE CONSTRUCTION SITE NOTICE SHALL BE POSTED ON-SITE AND A COPY PROVIDED TO THE TPWD AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION WITH APPROVAL OF TPWD.

3. THE CONTRACTOR IS REQUIRED TO INSPECT THE EROSION AND SEDIMENT CONTROLS AT WEEKLY INTERVALS AND AFTER RAINFALL EVENTS GREATER THAN 0.5-INCHES TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT AT CONTROLS MUST BE REMOVED WHEN THE ACCUMULATED SEDIMENT DEPTH IS GREATER THAN SIX INCHES.

4. PRIOR TO FINAL ACCEPTANCE, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT MUST BE REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE PRE-PROJECT GRADES.

5. THE CONTRACTOR SHALL REMOVE AND STOCKPILE EXISTING TOPSOIL TO LATER BE RESPREAD, SEED AND FERTILIZE IN ALL AREAS DISTURBED BY CONSTRUCTION AS SHOWN ON THE PLANS, INCLUDING AREAS OUTSIDE THE CONSTRUCTION BOUNDARY DISTURBED BY THE CONTRACTOR. ALL REVEGITATION AREAS SHOWN ON PLANS SHALL RECEIVE A MINIMUM OF FOUR (4) INCHES OF TOPSOIL. FERTILIZER AND TOPSOIL SHALL BE SUBSIDIARY TO PAY ITEM SEEDING FOR SITE STABILIZATION. THE CONTRACTOR SHALL PROVIDE WHATEVER MEASURES ARE NEEDED, INCLUDING TEMPORARY IRRIGATION AND MOWING, TO ENSURE ESTABLISHMENT OF GRASS.

   EXCEPT WHERE SHOWN ON THE PLANS, AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED WITH THE GENERAL SEEDING MIX SHOWN BELOW AT 6 LB/ACRE. IN WINTER MONTHS, CEREAL RYE SHALL ALSO BE APPLIED AT 20LB/ACRE.

	APPLICATION RATE [LBS/ACRE]
GENERAL SEEDING MIX	6
SPECIES:	-
LITTLE BLUESTEM	-
BIG BLUESTEM	-
BLACK-EYED SUSAN	-
BROOMSEDGE BLUESTEM	-
COMMON SUNFLOWER	-
CROTON	-
GREEN SPRANGLETOP	-
INDIAN BLANKET	-
INDIANGRASS	-
LEMON MINT	-
PARTRIDGE PEA	-
PLAINS COREOPSIS	-
PRAIRIE WILDRYE	-
PURPLETOP	-
RATTLESNAKE MASTER	-
RED LOVEGRASS	-
SWITCHGRASS	-
TALL DROPSEED	-
TALL GOLDENROD	-
TEXAS BLUEBONNET	-
PURPLE THREE AWN	-
MAXIMILIAN SUNFLOWER	-
WHITE PRAIRIE CLOVER	-
CEREAL RYE	20

THE FOLLOWING CHANNEL SEEDING MIX SHALL BE APPLIED TO THE RECEIVING CHANNEL BELOW THE SPILLWAY AS SHOWN ON THE PLANS AT A RATE OF 6LB/ACRE. DURING WINTER MONTHS, CEREAL RYE SHALL ALSO BE APPLIED AT 20 LB/ACRE.

CHANNEL SEEDING MIX	APPLICATION RATE [LBS/ACRE]
	6
SPECIES:	-
BIG BLUESTEM	-
BROOMSEDGE BLUESTEM	-
EASTERN GAMAGRASS	-
GREEN SPRANGLETOP	-
PRAIRIE WILDRYE	-
SWITCHGRASS	-
CEREAL RYE	20

6. ALL AREAS BEYOND LIMITS OF PROPOSED IMPROVEMENTS DISTURBED BY THE CONTRACTOR AS DEFINED BY LIMIT OF GRADING ON PLAN, SHALL BE ADEQUATELY STABILIZED AND REVEGETATED BY THE CONTRACTOR TO PREVENT FUTURE EROSION. ANY STABILIZATION MEASURES BEYOND THOSE SHOWN ON THESE PLANS WILL BE CONSIDERED SUBSIDIARY TO THE PROJECT. THE CONTRACTOR SHALL USE THE FOLLOWING GUIDELINES FOR STABILIZATION:

   a. APPROVED STRUCTURAL MEASURE FOR SLOPES 2:1 OR STEEPER.
   b. ROCK RIPRAP FOR SLOPES STEEPER THAN 3:1 LESS THAN 2:1.
   c. TOPSOIL, TURF REINFORCEMENT MATTING, AND SEEDING FOR SLOPES STEEPER THAN 4:1 LESS THAN 3:1.
   d. TOPSOIL AND SEEDING FOR SLOPES FLATTER THAN 4:1.

7. ALL GRADING SHALL CONFORM TO THE GEOTECHNICAL ENGINEERING STUDY PREPARED BY PSI ENGINEERING, INC. DATED OCTOBER 5, 2020. [PSI PROJECT NO. 0312-1939]

8. THE TERM 'MATCH EXISTING' SHALL BE UNDERSTOOD TO SIGNIFY HORIZONTALLY AND VERTICALLY.

USACE PERMITTING REQUIREMENTS

1. THE PROJECT AREA IS IDENTIFIED AS POTENTIAL HOUSTON TOAD HABITAT.

2. PRIMARY WORK AREA(S), PRIMARY CONSTRUCTION STAGING AREA AND TEMPORARY CONSTRUCTION ACCESS SHALL HAVE A TOAD FENCE (EXCLUSION) BARRIER INSTALLED FOR THE DURATION OF CONSTRUCTION (SEE DETAIL).

3. IN ORDER TO PROTECT ANY HOUSTON TOADS THAT MAY BE IN THE AREA DURING CONSTRUCTION, STOCKPILED NON-AGGREGATE MATERIALS SHALL BE KEPT ELEVATED OFF NATURAL GROUND VIA STAGING ON HORIZONTAL SUPPORT STRUCTURES TO MINIMIZE THE CREATION OF ARTIFICIAL TOAD HABITAT. CONTRACTOR SHALL USE WOODEN PALLETS OR OTHER METHOD APPROVED BY TPWD. STOCKPILED MATERIAL TO BE STORED ON PALLETS SHALL INCLUDE GEOTEXTILE ROLLS, EROSION CONTROL PRODUCTS, ETC.

4. CONTRACTOR COORDINATION WITH USFWS, TPWD BIOLOGISTS AND OTHER PARTIES MAY BE REQUIRED TO ESTABLISH DAILY HOUSTON TOAD MONITORING DURING BREEDING SEASON BETWEEN THE DATES OF JAN 1 THRU JUNE 30.

5. GASOLINE AND DIESEL FUELED FIELD EQUIPMENT MUST BE INSPECTED DAILY FOR SIGNS OF FUEL OR HYDRAULIC LEAKS; SUCH LEAKS MUST BE REPAIRED PROMPTLY AND MEASURES WILL BE TAKEN TO PREVENT SOIL CONTAMINATION. ALL HAZARDOUS MATERIALS RELATED TO CONSTRUCTION OR MAINTENANCE ACTIVITIES WILL BE PROPERLY CONTAINED, USED, AND/OR DISPOSED OF.

6. IN THE EVENT A TOAD IS FOUND IN THE CONSTRUCTION AREA CONTRACTOR SHALL CEASE WORK IMMEDIATELY AND NOTIFY TPWD STAFF TO CONFIRM THE IDENTIFICATION OF THE ANURAN SPECIES, INCLUDING THE HOUSTON TOAD. IF POSITIVELY IDENTIFIED, WORK SHALL CEASE WHILE THE HOUSTON TOAD(S) MOVES THROUGH THE AREA ON ITS OWN AND THE USFW'S AUSTIN ECOLOGICAL SERVICES FIELD OFFICE WILL BE CONTACTED IMMEDIATELY AT 512-490-0057 BY TOAD MONITORING STAFF (BLANTON & ASSOCIATES). ONCE THE AREAS ARE CLEAR OF HOUSTON TOAD(S), WORK MAY RESUME BY TOAD MONITORING STAFF (BLANTON & ASSOCIATES).

TCEQ DAM SAFETY

1. PLANS AND SPECIFICATIONS WILL NOT BE SUBSTANTIALLY CHANGED WITHOUT EITHER WRITTEN APPROVAL OF THE CONTRACTING OFFICER BEFORE THE WORK IS STARTED, OR NOTIFICATION OF THE CHANGES AS DEFINED IN 30 TAC 299.26. 'CONSTRUCTION CHANGE ORDERS.'

2. THE CONTRACTOR SHALL PREARE, IMPLEMENT AND MAINTAIN A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) GENERAL PERMIT NUMBER TXR150000.

3. AT THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL PROVIDE TO THE DESIGN ENGINEER IN WRITING:

   A. PROPOSED CONSTRUCTION SCHEDULE
   B. NAME AND ADDRESS OF PRIME AND ALL SUBCONTRACTORS
   C. NAME, CONTACT INFORMATION OF THE SUPERINTENDENT THAT WILL BE ONSITE DURING CONSTRUCTION.

4. THE CONTRACTOR SHALL PROVIDE THE CONSTRUCTION INSPECTOR AND ENGINEER.

   MONTHLY DAM SAFETY REPORTS SHALL AT A MINIMUM INCLUDE:

   A. THE DATES OF THE REPORTING PERIOD
   B. A DESCRIPTION OF WORK ACCOMLISHED DURING THE MONTH
   C. PERCENTAGE OF CONTRACT TIME USED
   D. PERCENTAGE COMPLETION OF THE PROJECT
   E. DESCRIPTION OF PROBLEM AREAS ENCOUNTERED DURING CONSTRUCTION
   F. COPIES OF MATERIALS TESTING REPORTS
   G. ANY CHANGES IN THE CONTACT INFORMATION

5. ALL CONSTRUCTION, MATERIALS, TESTING AND WORKMANSHIP SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

6. IN ACCORDANCE WITH THE TCEQ DAM SAFETY REQUIREMENTS IN TAC 299.25 A PROFESSIONAL ENGINEER OR A QUALIFIED INSPECTOR, PROVIDED THE INSPECTOR IS UNDER DIRECT SUPERVISION OF THE OWNER'S PROFESSIONAL ENGINEER, SHALL CONDUCT INSPECTIONS OF THE CONSTRUCTION WORK TO DETERMINE IF THE WORK IS FOLLOWING THE APPROVED CONSTRUCTION PLANS, SPECIFICATIONS AND ACCEPTED ENGINEERING PRACTICES. THE CONTRACTOR SHALL ADHERE TO ALL REQUEST OF THE CONSTRUCTION INSPECTOR.

7. THE CONTRACTOR SHALL PROVIDE RED LINED MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.

THE FOLLOWING CODES APPLY TO TPWD PROJECTS:

A. INTERNATIONAL CODE COUNCIL ADOPTIONS*

   1. BUILDING CODE — International Building Code 2015
   2. STRUCTURAL CODE — International Building Code 2015
   3. PLUMBING CODE — International Plumbing Code 2015
   4. MECHANICAL CODE — International Mechanical Code 2015
   5. GAS CODE — International Fuel Gas Code 2015
   6. RESIDENTIAL CODE — International Residential Code 2015
   7. EXISTING BUILDINGS — International Existing Buildings Code 2015

   * INTERNAL FIRE CODE OMITTED IN LIEU OF TPWD'S IMPLEMENTATION OF NATIONAL FIRE PROTECTION ASSOCIATION CODES. INTERNATIONAL ENERGY CONSERVATION CODE 2015 OMITTED IN LIEU OF ENERGY STANDARD FOR BUILDINGS, ASHREAE/IESNA STANDARD 90.1 (2013)

B. NATIONAL FIRE PROTECTION ASSOCIATION

   1. ELECTRICAL CODE — National Electric Code NFPA-70 2020
   2. FIRE CODE — NFPA-1 2015
   3. LIFE SAFETY CODE — NFPA-101 2015

C. STATE ENERGY CONSERVATION OFFICE (SECO)/TEXAS COMPTROLLERS OFFICE

   1. ENERGY CODE FOR STATE BUILDINGS - ENERGY CONSERVATION DESIGN STANDARDS: TEXAS ADMINISTRATIVE CODE, TITLE 34, PART 1, CH. 19, SUBCHAPTER C.

      a. COMPLIANCE WITH THE ENERGY CONSERVATION DESIGN STANDARD OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/ASHRAE/ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA), ENERGY STANDARD FOR BUILDINGS, ANSI/ASHRAE/IESNA STANDARD 90.1 (2013)
      SEE SECO WEBSITE FOR STATE FUNDED BUILDINGS, NEW CONSTRUCTION AND MAJOR RENOVATION REQUIREMENTS AND SECO COMPLIANCE CERTIFICATION FORMS.

   2. WATER CONSERVATION STANDARDS FOR STATE BUILDINGS - ENERGY CONSERVATION DESIGN STANDARDS: TEXAS ADMINISTRATIVE CODE, TITLE 34, PART 1, CH. 19, SUBCHAPTER C

      a. COMPLIANCE WITH THE WATER CONSERVATION DESIGN STANDARDS FOR STATE BUILDINGS AND INSTITUTIONS OF HIGHER EDUCATION FACILITIES, STATE ENERGY CONSERVATION OFFICE (SECO), 2016
      SEE SECO WEBSITE FOR TEXAS WATER CONSERVATION DESIGN STANDARDS, REQUIREMENTS AND SECO COMPLIANCE CERTIFICATION / REPORTING FORM.

D. ACCESSIBILITY CODES

   1. US DEPT. OF JUSTICE, 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
   2. ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES; OUTDOOR DEVELOPED AREAS, NOVEMBER 25, 2013
   3. 2012 TEXAS ACCESSIBILITY STANDARDS, ELIMINATION OF ARCHITECTURAL BARRIERS, TEXAS GOVERNMENT CODE, CHAPTER 469.

E. PLAYGROUND SAFETY CODE

   1. ASTM F1487-17, STANDARD CONSUMER SAFETY PERFORMANCE SPECIFICATIONS FOR PLAYGROUND EQUIPMENT FOR PUBLIC USE
   2. ASTM F2223-15, STANDARD GUIDE FOR ASTM STANDARDS ON PLAYGROUND SURFACING

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER

Revision No.	Date	Description
-	-	-

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title: GENERAL NOTES
Sheet Number: G1.01

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SEQUENCE OF CONSTRUCTION NARATIVE

CONTRACTOR MAY ADJUST THE SEQUENCE OF CONSTRUCTION WITH ENGINEER APPROVAL. CONTRACTOR SHALL PROVIDE THE REQUEST IN WRITING TO THE ENGINEER AND TPWD ODR FOR APPROVAL.

CONSTRUCTION SHALL BE PERFORMED IN PHASES. SUB-PHASING AND SEQUENCING WITHIN EACH PHASE IS CONTRACTORS MEANS AND METHODS.
PHASE 1: SPILLWAY AND CHUTE DEMOLITION AND SUBSEQUENT RECONSTRUCTION
PHASE 2: EMBANKMENT HEIGHT MODIFICATIONS
PHASE 3: SHORELINE STABILIZATION

PHASE 1

1. PREPARE AND SUBMIT SWPPP TO TCEQ FOR REVIEW AND APPROVAL.
2. PREPARE AND SUBMIT COFFER DAM DESIGN SEALED BY TEXAS PROFESSIONAL ENGINEER TO INSPECTOR AND ENGINEER FOR APPROVAL.
3. PREPARE AND SUBMIT TRAFFIC CONTROL PLAN SHOWING LOCATIONS AND TYPES OF ALL PROPOSED SIGNS TO BE USED. ALL SIGNAGE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF TMUTCD.
4. DOCUMENT PRE-CONSTRUCTION CONDITION OF WORK AREA, STAGING AREA, AND HAUL ROADS/ROUTES PER SPECIFICATION. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ROADS TO PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE PROJECT.
5. INSTALL TRAFFIC CONTROL UPON APPROVAL OF PLAN.
6. BEGIN LAKE DRAW DOWN TO ELEVATION 340.00 PER APPROVED CARE OF WATER PLAN.
7. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS TREE PROTECTION MEASURES PER APPROVED SWPPP. ONCE TOAD EXCLUSION FENCE PERIMITER HAS BEEN ESTABLISHED COORDINATE SITE CLEARING WITH TOAD MONITORS BEFORE BEGINING CONSTURUCTION/DEMOLITION.
8. INSTALL COFFER DAM PER APPROVED PLAN.
9. REMOVE TREES PER PLAN FOR PHASE 1 CONSTRUCTION AND STAGING AREA ACCESS.
10. DEMOLISH EXISTING SPILLWAY AND HAUL MATERIAL OFF SITE.
11. EXCAVATE ALL MATERIAL IN SPILLWAY AREA. ALL SANDSTONE BOULDERS LARGER THAN 1-FT DIAMETER, EXCEPT WHERE NOTED, SHALL BE SALVAGED AND PROVIDED TO THE PARK DIRECTOR (RANGER). LOCATION OF STOCKPILE TO BE DETERMINED BY TPWD. NATIVE/SALVAGED SANDSTONE MAY ALSO BE REPURPOSED FOR ARMORING.
12. CONSTRUCT PHASE 1 IMPROVEMENTS AT SPILLWAY, CHUTE AND DOWNSTREAM RECEIVING CHANNEL.
13. REVEGETATE ALL DISTURBED AREAS FROM PHASE 1 PRIOR TO COMMENCING PHASE 2.

PHASE 2

14. NOTIFY TXDOT FOR USE OF STAGING AREA C. AFTER APPROVAL, SET UP STAGING AREA AND REQUIRED TRAFFIC CONTROL.
15. REMOVE REMAINING TREES PER PLAN AT EMBANKMENT AREA FOR PHASE 2 CONSTRUCTION.
16. EXCAVATE BENCHING IN EXISING EMBANKMENT PER PLAN.
17. CONSTRUCT PHASE 2 IMPROVEMENTS AT EMBANKMENT PER PLANS.
18. REVEGETATE ALL DISTURBED PHASE 2 AREAS.

PHASE 3

19. CONSTRUCT PHASE 3 SHORELINE STABILIZATION ITEMS
20. RECONSTRUCT SALVAGED CANOE SHED
21. REVEGETATE ALL DISTURBED PHASE 3 AREAS.
22. DOCUMENT POST-CONSTRUCTION CONDITION OF OVERALL WORK AREA, STAGING AREA, AND HAUL ROADS/ROUTES PER SPECIFICATION. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ROADS TO PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO TPWD.
23. CONDUCT WALK THROUGH WITH ENGINEER AND TPWD STAFF.
24. REMOVE TEMPORARY COFFER DAM UPON COMPLETION OF PUNCHLIST ITEMS
25. REMOVE EROSION CONTROL AND TREE PROTECTION MEASURES.
26. REMOVE TRAFFIC CONTROL MEASURES.

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LAKE DAM IMPROVEMENTS
TPWD# 118686

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1-20-2021

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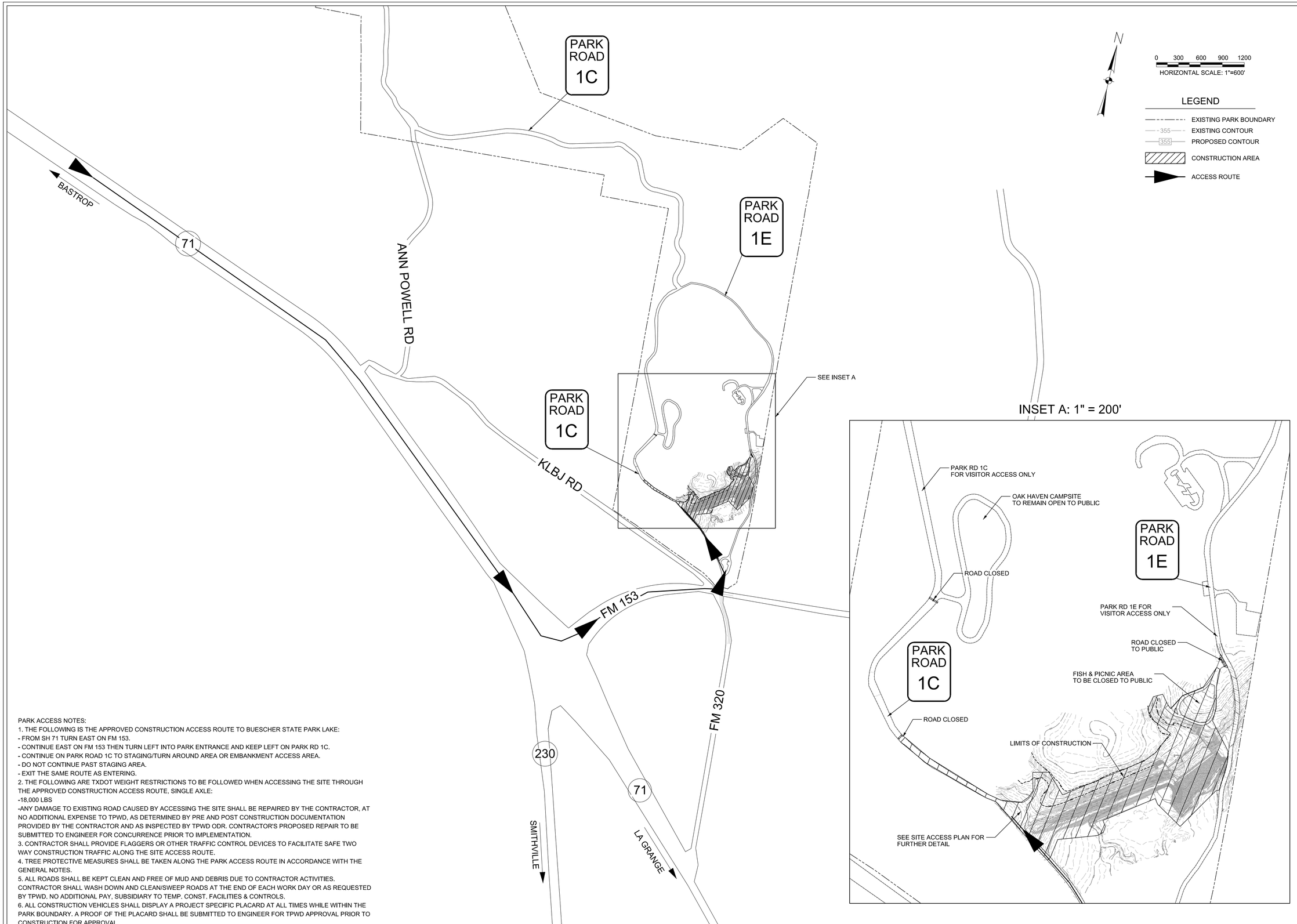

PARK ACCESS NOTES:

1. THE FOLLOWING IS THE APPROVED CONSTRUCTION ACCESS ROUTE TO BUESCHER STATE PARK LAKE:
- FROM SH 71 TURN EAST ON FM 153.
- CONTINUE EAST ON FM 153 THEN TURN LEFT INTO PARK ENTRANCE AND KEEP LEFT ON PARK RD 1C.
- CONTINUE ON PARK ROAD 1C TO STAGING/TURN AROUND AREA OR EMBANKMENT ACCESS AREA.
- DO NOT CONTINUE PAST STAGING AREA.
- EXIT THE SAME ROUTE AS ENTERING.

2. THE FOLLOWING ARE TXDOT WEIGHT RESTRICTIONS TO BE FOLLOWED WHEN ACCESSING THE SITE THROUGH THE APPROVED CONSTRUCTION ACCESS ROUTE, SINGLE AXLE:
-18,000 LBS
-ANY DAMAGE TO EXISTING ROAD CAUSED BY ACCESSING THE SITE SHALL BE REPAIRED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE TO TPWD, AS DETERMINED BY PRE AND POST CONSTRUCTION DOCUMENTATION PROVIDED BY THE CONTRACTOR AND AS INSPECTED BY TPWD ODR. CONTRACTOR'S PROPOSED REPAIR TO BE SUBMITTED TO ENGINEER FOR CONCURRENCE PRIOR TO IMPLEMENTATION.

3. CONTRACTOR SHALL PROVIDE FLAGGERS OR OTHER TRAFFIC CONTROL DEVICES TO FACILITATE SAFE TWO WAY CONSTRUCTION TRAFFIC ALONG THE SITE ACCESS ROUTE.

4. TREE PROTECTIVE MEASURES SHALL BE TAKEN ALONG THE PARK ACCESS ROUTE IN ACCORDANCE WITH THE GENERAL NOTES.

5. ALL ROADS SHALL BE KEPT CLEAN AND FREE OF MUD AND DEBRIS DUE TO CONTRACTOR ACTIVITIES. CONTRACTOR SHALL WASH DOWN AND CLEAN/SWEEP ROADS AT THE END OF EACH WORK DAY OR AS REQUESTED BY TPWD. NO ADDITIONAL PAY, SUBSIDIARY TO TEMP. CONST. FACILITIES & CONTROLS.

6. ALL CONSTRUCTION VEHICLES SHALL DISPLAY A PROJECT SPECIFIC PLACARD AT ALL TIMES WHILE WITHIN THE PARK BOUNDARY. A PROOF OF THE PLACARD SHALL BE SUBMITTED TO ENGINEER FOR TPWD APPROVAL PRIOR TO CONSTRUCTION FOR APPROVAL.

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LAKE DAM IMPROVEMENTS
TPWD# 118686

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Sheet Title
PARK ACCESS PLAN

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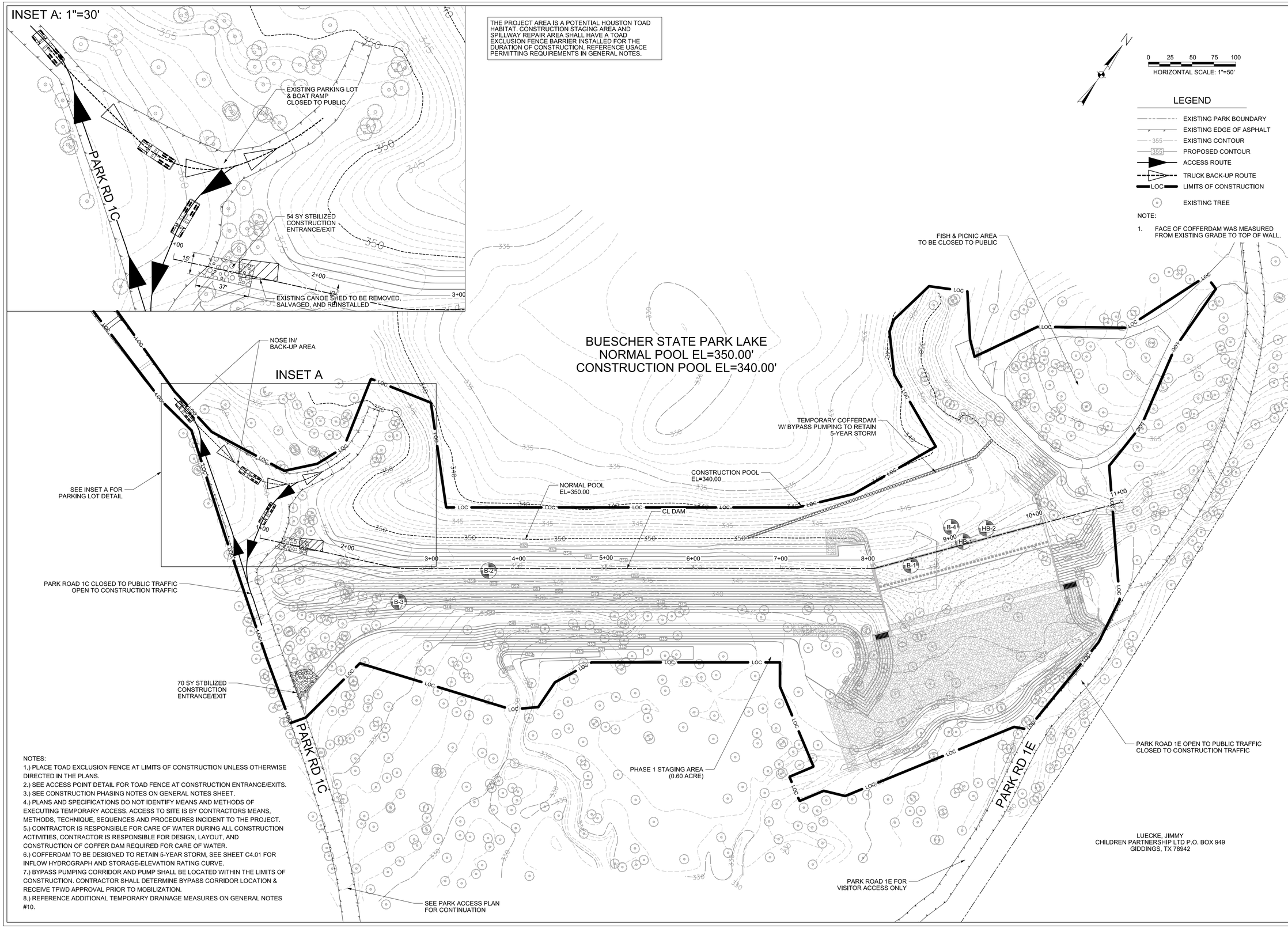

NOTES:

1.) PLACE TOAD EXCLUSION FENCE AT LIMITS OF CONSTRUCTION UNLESS OTHERWISE DIRECTED IN THE PLANS.
2.) SEE ACCESS POINT DETAIL FOR TOAD FENCE AT CONSTRUCTION ENTRANCE/EXITS.
3.) SEE CONSTRUCTION PHASING NOTES ON GENERAL NOTES SHEET.
4.) PLANS AND SPECIFICATIONS DO NOT IDENTIFY MEANS AND METHODS OF EXECUTING TEMPORARY ACCESS. ACCESS TO SITE IS BY CONTRACTORS MEANS, METHODS, TECHNIQUE, SEQUENCES AND PROCEDURES INCIDENT TO THE PROJECT.
5.) CONTRACTOR IS RESPONSIBLE FOR CARE OF WATER DURING ALL CONSTRUCTION ACTIVITIES, CONTRACTOR IS RESPONSIBLE FOR DESIGN, LAYOUT, AND CONSTRUCTION OF COFFER DAM REQUIRED FOR CARE OF WATER.
6.) COFFERDAM TO BE DESIGNED TO RETAIN 5-YEAR STORM, SEE SHEET C4.01 FOR INFLOW HYDROGRAPH AND STORAGE-ELEVATION RATING CURVE.
7.) BYPASS PUMPING CORRIDOR AND PUMP SHALL BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTOR SHALL DETERMINE BYPASS CORRIDOR LOCATION & RECEIVE TPWD APPROVAL PRIOR TO MOBILIZATION.
8.) REFERENCE ADDITIONAL TEMPORARY DRAINAGE MEASURES ON GENERAL NOTES #10.

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SITE ACCESS PLAN
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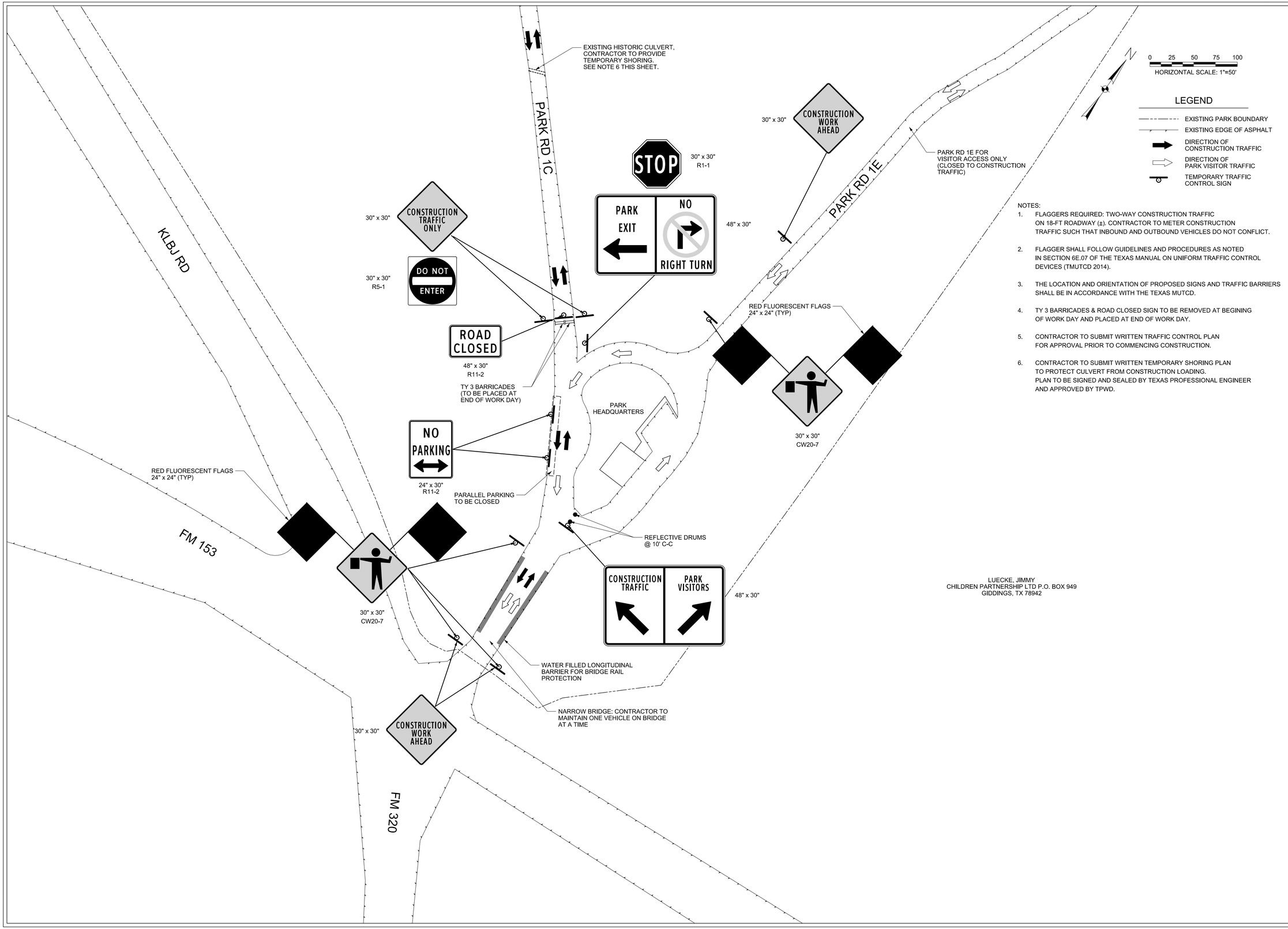

NOTES:

1. FLAGGERS REQUIRED: TWO-WAY CONSTRUCTION TRAFFIC ON 18-FT ROADWAY (±). CONTRACTOR TO METER CONSTRUCTION TRAFFIC SUCH THAT INBOUND AND OUTBOUND VEHICLES DO NOT CONFLICT.
2. FLAGGER SHALL FOLLOW GUIDELINES AND PROCEDURES AS NOTED IN SECTION 6E.07 OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD 2014).
3. THE LOCATION AND ORIENTATION OF PROPOSED SIGNS AND TRAFFIC BARRIERS SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD.
4. TY 3 BARRICADES & ROAD CLOSED SIGN TO BE REMOVED AT BEGINING OF WORK DAY AND PLACED AT END OF WORK DAY.
5. CONTRACTOR TO SUBMIT WRITTEN TRAFFIC CONTROL PLAN FOR APPROVAL PRIOR TO COMMENCING CONSTRUCTION.
6. CONTRACTOR TO SUBMIT WRITTEN TEMPORARY SHORING PLAN TO PROTECT CULVERT FROM CONSTRUCTION LOADING. PLAN TO BE SIGNED AND SEALED BY TEXAS PROFESSIONAL ENGINEER AND APPROVED BY TPWD.

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TRAFFIC CONTROL PLAN
1 OF 2

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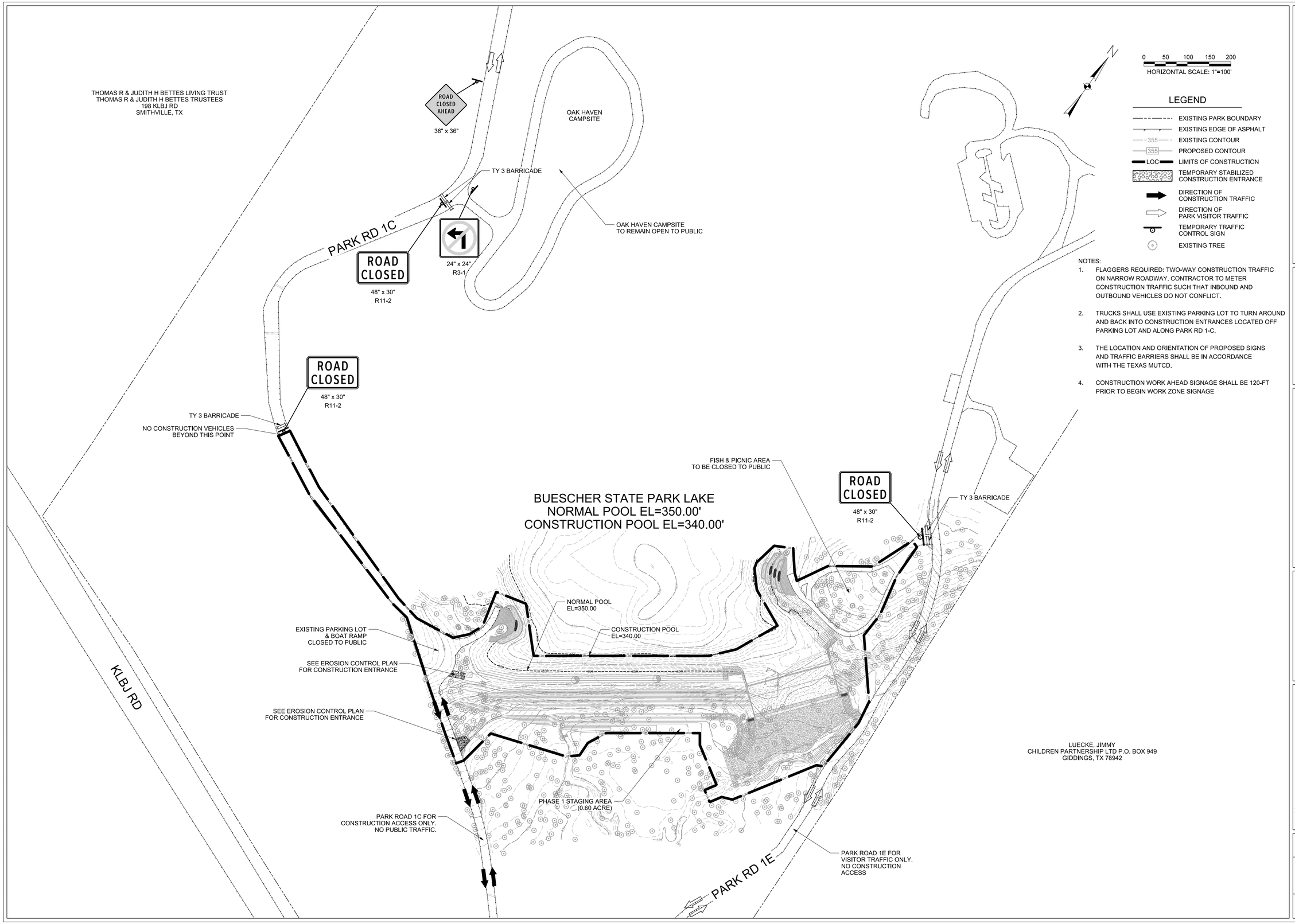

NOTES:

1. FLAGGERS REQUIRED: TWO-WAY CONSTRUCTION TRAFFIC ON NARROW ROADWAY. CONTRACTOR TO METER CONSTRUCTION TRAFFIC SUCH THAT INBOUND AND OUTBOUND VEHICLES DO NOT CONFLICT.
2. TRUCKS SHALL USE EXISTING PARKING LOT TO TURN AROUND AND BACK INTO CONSTRUCTION ENTRANCES LOCATED OFF PARKING LOT AND ALONG PARK RD 1-C.
3. THE LOCATION AND ORIENTATION OF PROPOSED SIGNS AND TRAFFIC BARRIERS SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD.
4. CONSTRUCTION WORK AHEAD SIGNAGE SHALL BE 120-FT PRIOR TO BEGIN WORK ZONE SIGNAGE

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Sheet Title
TRAFFIC CONTROL PLAN
2 OF 2

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

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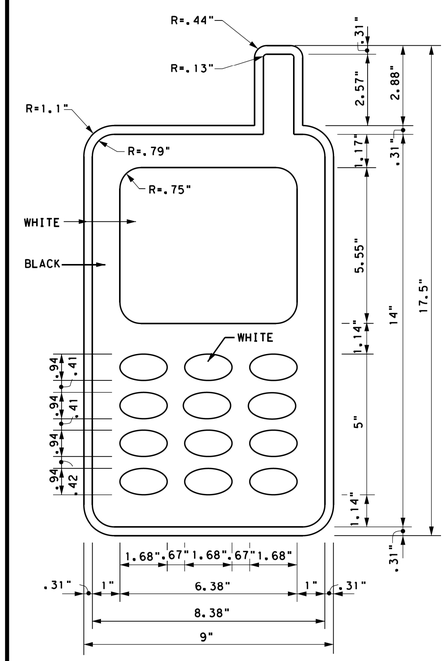

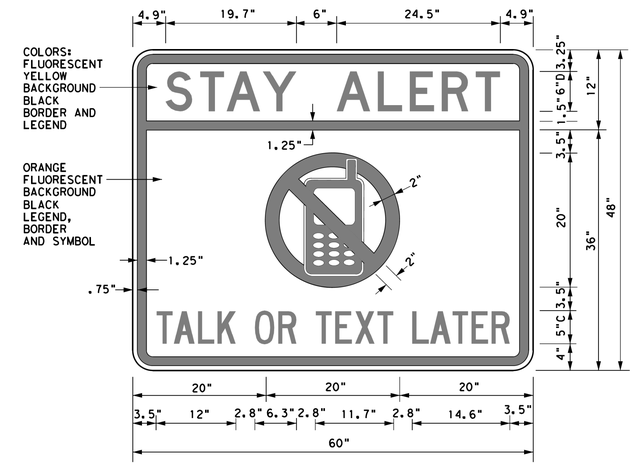

3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
[STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
[TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

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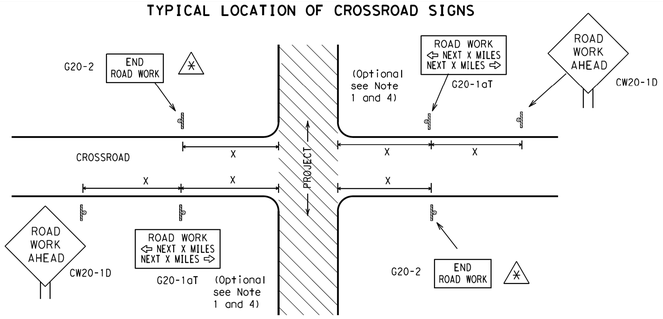
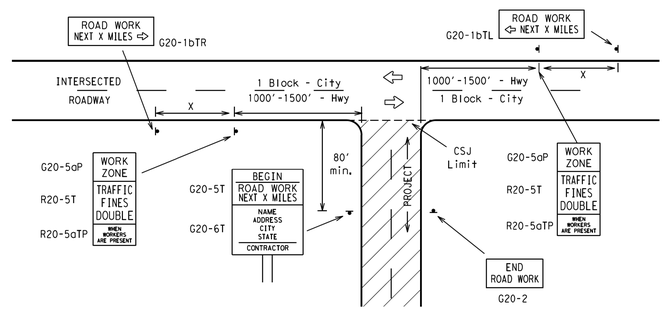
TYPICAL LOCATION OF CROSSROAD SIGNS



✱ May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign Spacing "X" △
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
✱	✱[3]

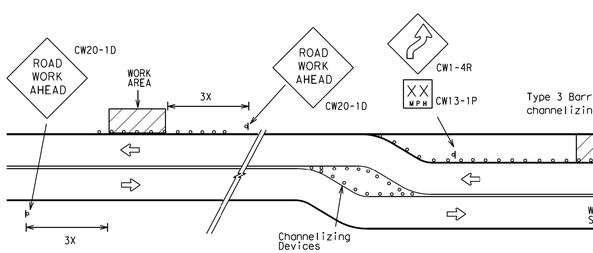
✱ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

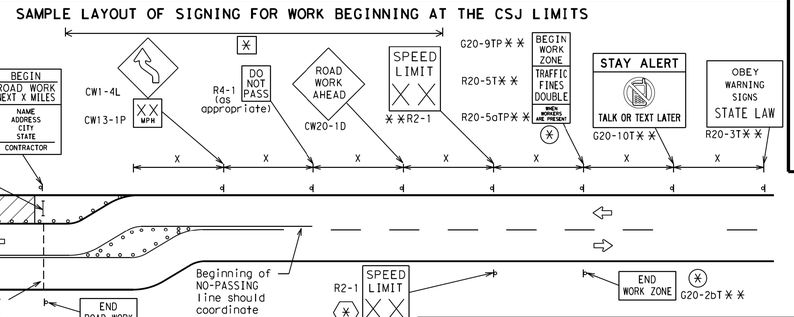
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

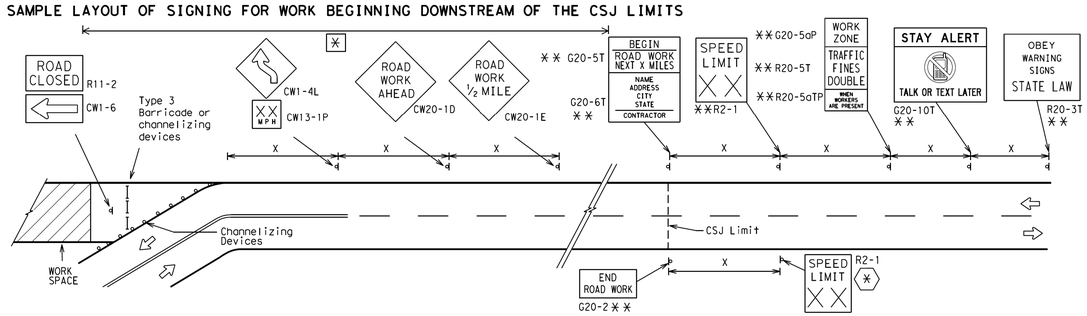


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

(✱) The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

✱✱ Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[✱] Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

(✱) Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13	DIST		COUNTY	SHEET NO.

96

DATE:
FILE:

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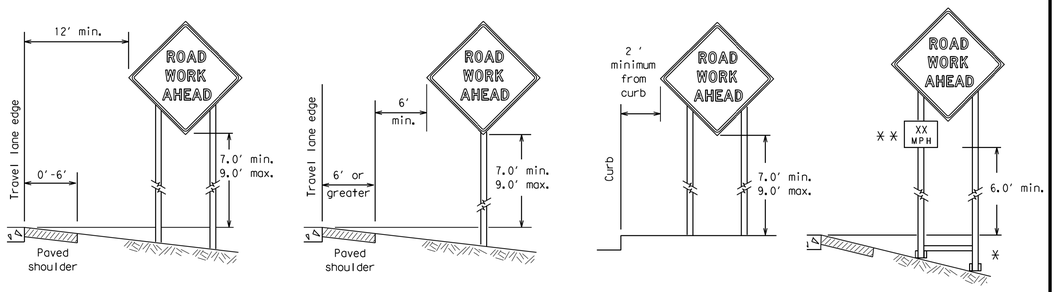
TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title: TRAFFIC CONTROL DETAILS 2 OF 6
Sheet Number: C1.06
009 of 74

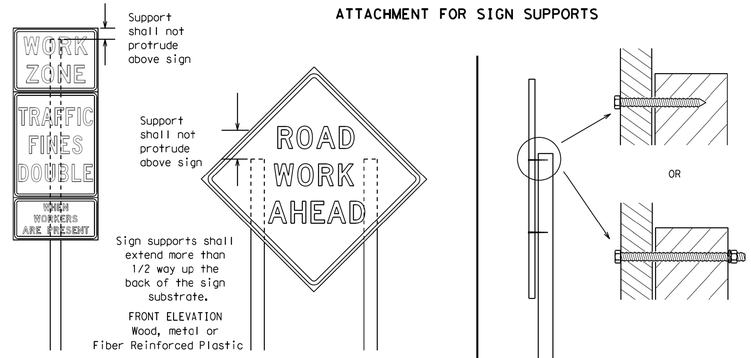
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



✳ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

✳✳ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



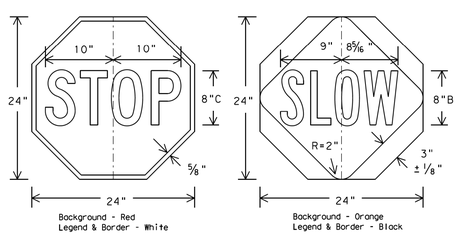
Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

SHEET 4 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
TRAFFIC CONTROL DETAILS 3 OF 6

Sheet Number
010 of 74
C1.07

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

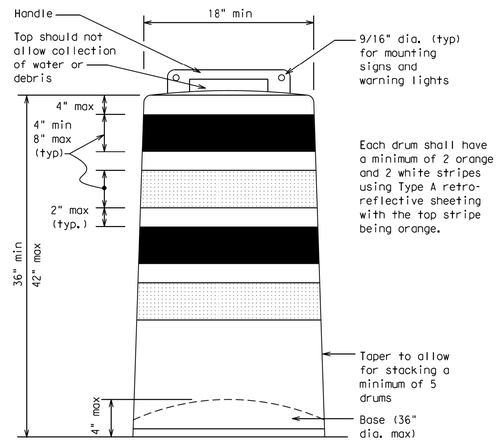
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

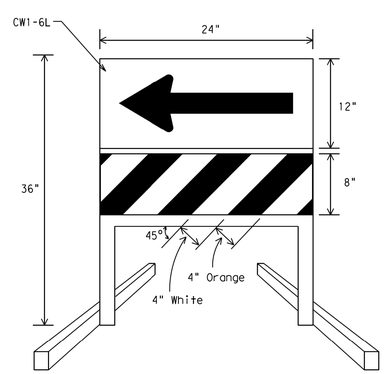
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

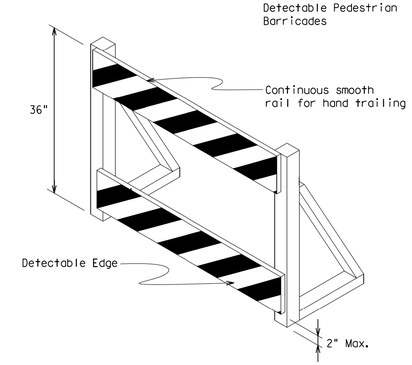




DIRECTION INDICATOR BARRICADE

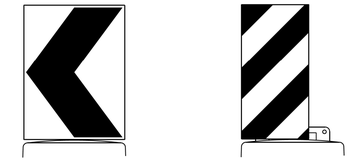
1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign (Maximum Sign Dimension) Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer

12" x 24" Vertical Panel mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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102

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TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
TRAFFIC CONTROL DETAILS 4 OF 6

Sheet Number
011 of 74
C1.08

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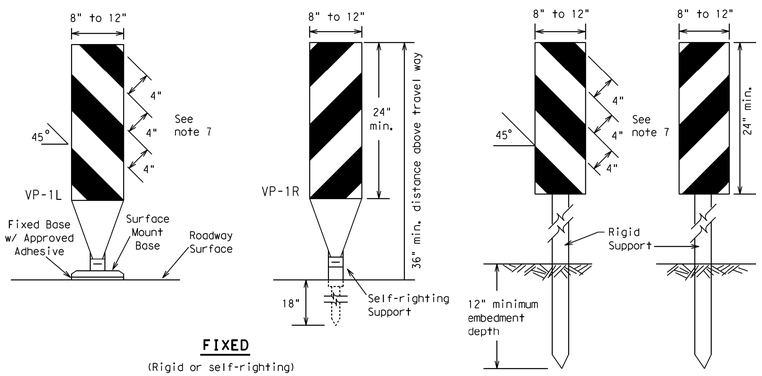
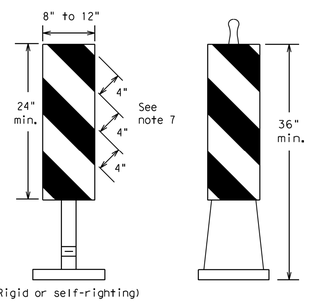


FIXED

(Rigid or self-righting)

DRIVEABLE

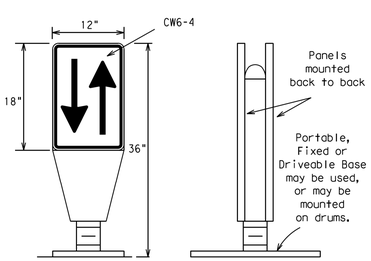


(Rigid or self-righting)

PORTABLE

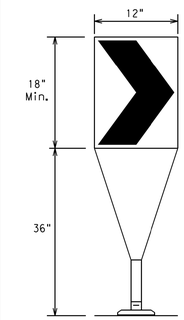
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



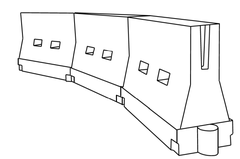
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title: TRAFFIC CONTROL DETAILS 5 OF 6
Sheet Number: C1.09
012 of 74

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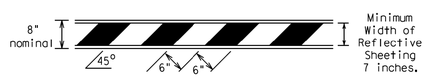
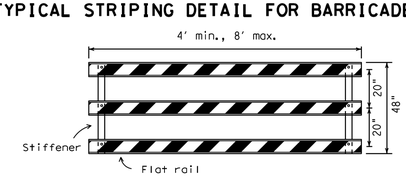
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



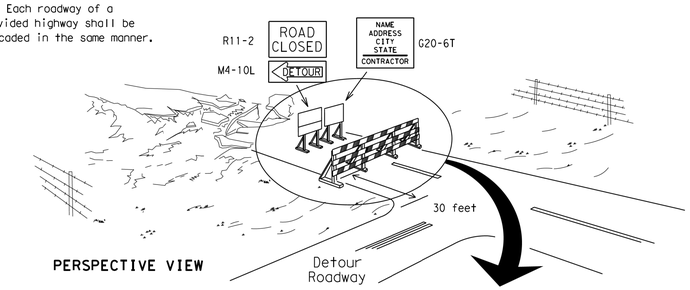
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

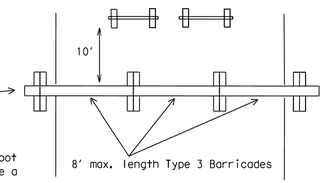
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

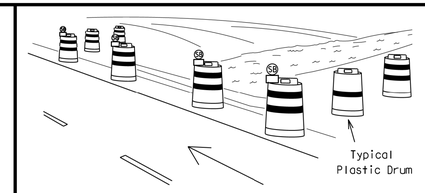
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

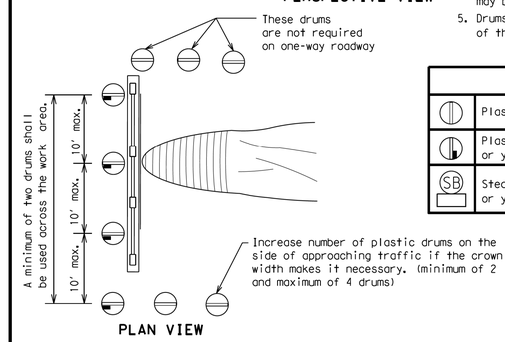
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

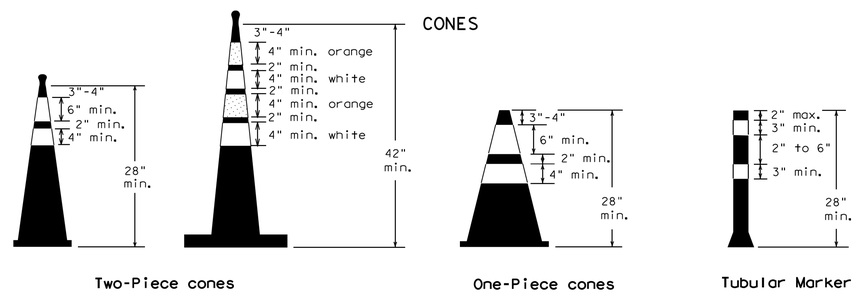
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



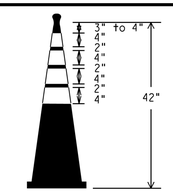
Two-Piece cones One-Piece cones Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

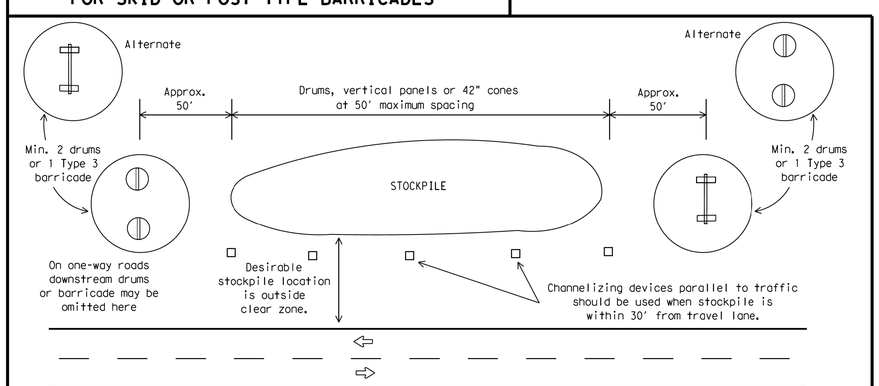
1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title: TRAFFIC CONTROL DETAILS 6 OF 6
Sheet Number: C1.10
013 of 74

THOMAS R & JUDITH H BETTES LIVING TRUST
THOMAS R & JUDITH H BETTES TRUSTEES
198 KLBJ RD
SMITHVILLE, TX

PARK ROAD 1C CLOSED SOUTH OF OAK HAVEN CAMPSITE (SEE TRAFFIC CONTROL PLAN) (PHASE 1)

OAK HAVEN CAMPSITE

APPROXIMATE LOCATION OF HISTORIC CULVERT

APPROXIMATE LOCATION OF HISTORIC CULVERT

PARK RD 1C

KLBJ RD

BUESCHER STATE PARK LAKE
NORMAL POOL EL=350.00'
CONSTRUCTION POOL EL=340.00'

PHASE 1 & PHASE 2 STAGING AREA

PROPOSED EAST SIDE SHORELINE IMPROVEMENTS (PHASE 3)

PROPOSED COFFERDAM (PHASE 1)

FISH & PICNIC AREA (CONTRACTOR EMPLOYEE PARKING ONLY - NO STAGING, STOCKPILING ON OR WITHIN LOOP ROAD)

PROPOSED WEST SIDE SHORELINE IMPROVEMENTS (PHASE 3)

APPROXIMATE LOCATION OF EXISTING HISTORIC CULVERT, CONTRACTOR TO PROVIDE TEMPORARY SHORING (PHASE 1)

PROPOSED SPILLWAY, STILLING BASIN, AND DISCHARGE CHANNEL (PHASE 1)

PROPOSED EMBANKMENT IMPROVEMENTS (PHASE 2)

SEE EROSION CONTROL PLAN FOR CONSTRUCTION ENTRANCE

PROPOSED FREESTANDING V-NOTCH WEIR (PHASE 2)

PROPOSED SPILLWAY MAINTENANCE ACCESS CROSSING (PHASE 1)

PHASE 1 STAGING AREA (0.52 ACRE)

2C'S & 4J'S INVESTMENTS LLC
523 KAANAPALI LN
BASTROP, TX 78602

WALICEK, WALTER W & LUCY I
126 FM 153
SMITHVILLE, TX 78957

LINDNER FAMILY LIVING TRUST
DENNIS HENRY LINDNER TRUSTEE
20723 HIGHLAND HOLLOW LN
HOUSTON, TX 77073

LINDNER FAMILY LIVING TRUST
DENNIS HENRY LINDNER TRUSTEE
20723 HIGHLAND HOLLOW LN
HOUSTON, TX 77073

DEPINE, CHRISSY
162 FM 153
SMITHVILLE, TX 78957

APPROXIMATE LOCATION OF EXISTING HISTORIC CULVERT, CONTRACTOR TO PROVIDE TEMPORARY SHORING (PHASE 1)

PARK RD 1E

NEWELL, GLENN A & LAURA J JOHNSON NEWELL
127 KLBJ RD
BASTROP, TX 78602

FORESTER, KELLY RENEA
121 KLBJ RD
BASTROP, TX 78602

LUECKE, JIMMY
CHILDREN PARTNERSHIP LTD P.O. BOX 949
GIDDINGS, TX 78942

FM 153

PARK HEADQUARTERS

PHASE 2 STAGING AREA (1.15 ACRE)

EVANS, ROBERT H & CYNTHIA L
161 FM 153
SMITHVILLE, TX 78957

MCDONALD, LOUIS CHRISTOPHER
169 MC 153
SMITHVILLE, TX 78957

GUTIERREZ, GARY & JEANETTE
P.O. BOX 125
BASTROP, TX 78602

MCCLAIN, JIM & JUDY
240 TWO MILE LN
SMITHVILLE, TX 78957

EXISTING HISTORIC STONE WORK AT PARK ENTRANCE CULVERT. TRAFFIC CONTROL/PROTECTION (PHASE 1)

SMITHVILLE INVESTMENT LLC
11842 WILCREST DR
HOUSTON, TX 77031

ALEXANDER, SANDRA L
P.O. BOX 972
SMITHVILLE, TX 78957

BOEHK, KAREN S
157 FM 153
SMITHVILLE, TX 78957

FM 153

SH 71

0 100 200 300 400
HORIZONTAL SCALE: 1"=200'

LEGEND

- EXISTING PARK BOUNDARY
- EXISTING PROPERTY LINE
- EXISTING EDGE OF ASPHALT
- CREEK CENTERLINE
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- LOC LIMITS OF CONSTRUCTION
- EXISTING ORDINARY HIGH WATER MARK
- EXISTING TREE

NOTES:
1. SEE PARK ACCESS PLAN, SITE ACCESS PLAN, AND TRAFFIC CONTROL PLAN FOR MORE INFORMATION.
2. SEE GENERAL NOTES FOR SEQUENCE OF CONSTRUCTION NARRATIVE.

TEXAS PARKS AND WILDLIFE
CIVIL ENGINEERING SERVICE
INFRASTRUCTURE AND PLANNING DESIGN
MAILING ADDRESS:
4200 SMITH SCHOOL ROAD
AUSTIN,TX 78744
TEL: (512) 389-4800 FAX: (512) 389-8628

HALFF
9500 AMBERGLEN BLVD.
BUILDING F SUITE 125
AUSTIN, TX 78729
TEL: (512) 777-4600
FAX (512) 252-8141
TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
PROJECT LAYOUT OVERVIEW

Sheet Number
014 of 74
C1.11

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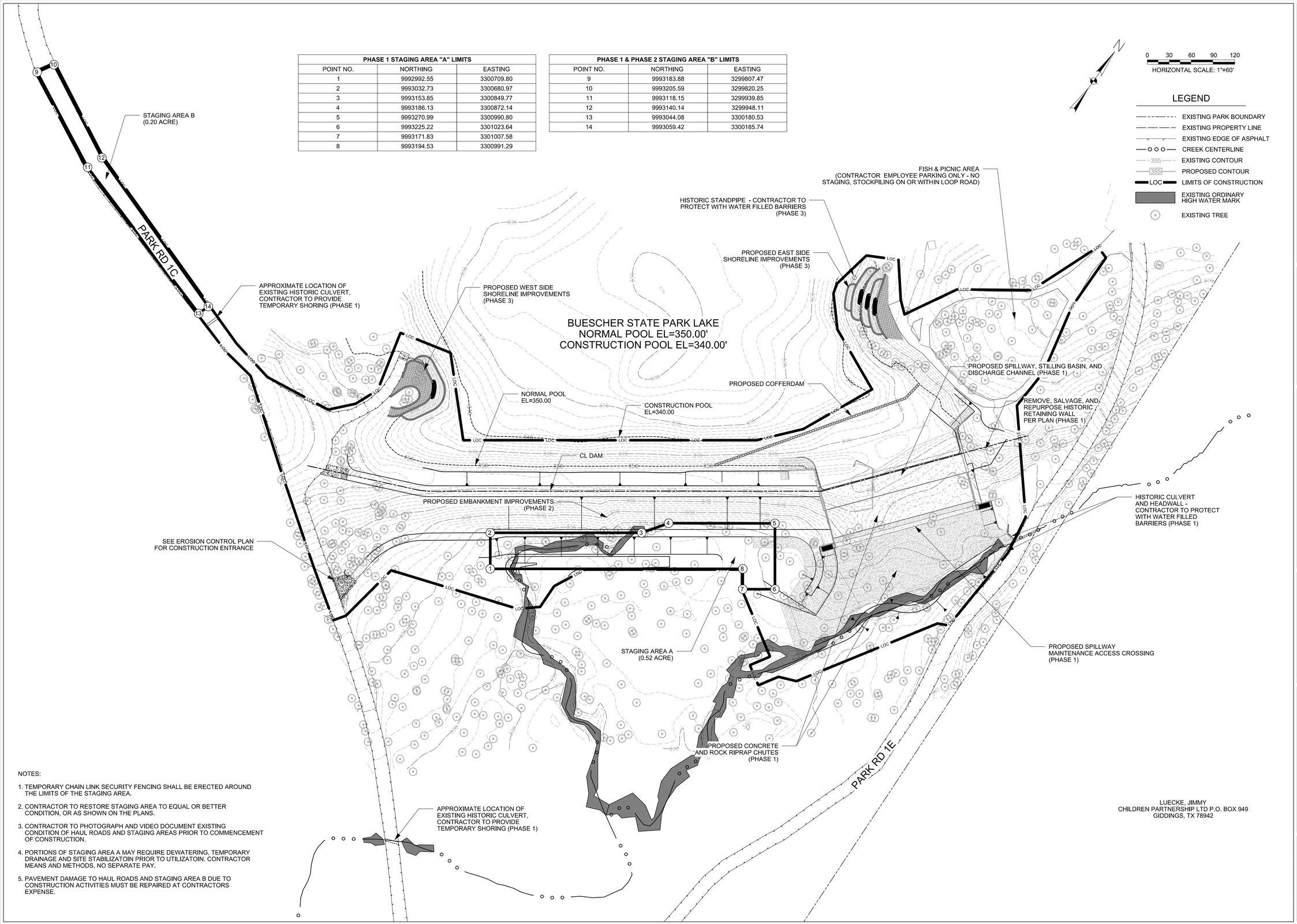
PHASE 1 STAGING AREA "A" LIMITS		
POINT NO.	NORTHING	EASTING
1	9992992.55	3300709.80
2	9993032.73	3300680.97
3	9993153.85	3300849.77
4	9993186.13	3300872.14
5	9993270.99	3300990.80
6	9993225.22	3301023.64
7	9993171.83	3301007.58
8	9993194.53	3300991.29

PHASE 1 & PHASE 2 STAGING AREA "B" LIMITS		
POINT NO.	NORTHING	EASTING
9	9993183.88	3299807.47
10	9993205.59	3299820.25
11	9993118.15	3299939.85
12	9993140.14	3299948.11
13	9993044.08	3300180.53
14	9993059.42	3300185.74



NOTES:

1. TEMPORARY CHAIN LINK SECURITY FENCING SHALL BE ERECTED AROUND THE LIMITS OF THE STAGING AREA.
2. CONTRACTOR TO RESTORE STAGING AREA TO EQUAL OR BETTER CONDITION, OR AS SHOWN ON THE PLANS.
3. CONTRACTOR TO PHOTOGRAPH AND VIDEO DOCUMENT EXISTING CONDITION OF HAUL ROADS AND STAGING AREAS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
4. PORTIONS OF STAGING AREA A MAY REQUIRE DEWATERING, TEMPORARY DRAINAGE AND SITE STABILIZATOIN PRIOR TO UTILIZATOIN. CONTRACTOR MEANS AND METHODS, NO SEPARATE PAY.
5. PAVEMENT DAMAGE TO HAUL ROADS AND STAGING AREA B DUE TO CONSTRUCTION ACTIVITIES MUST BE REPAIRED AT CONTRACTORS EXPENSE.

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TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

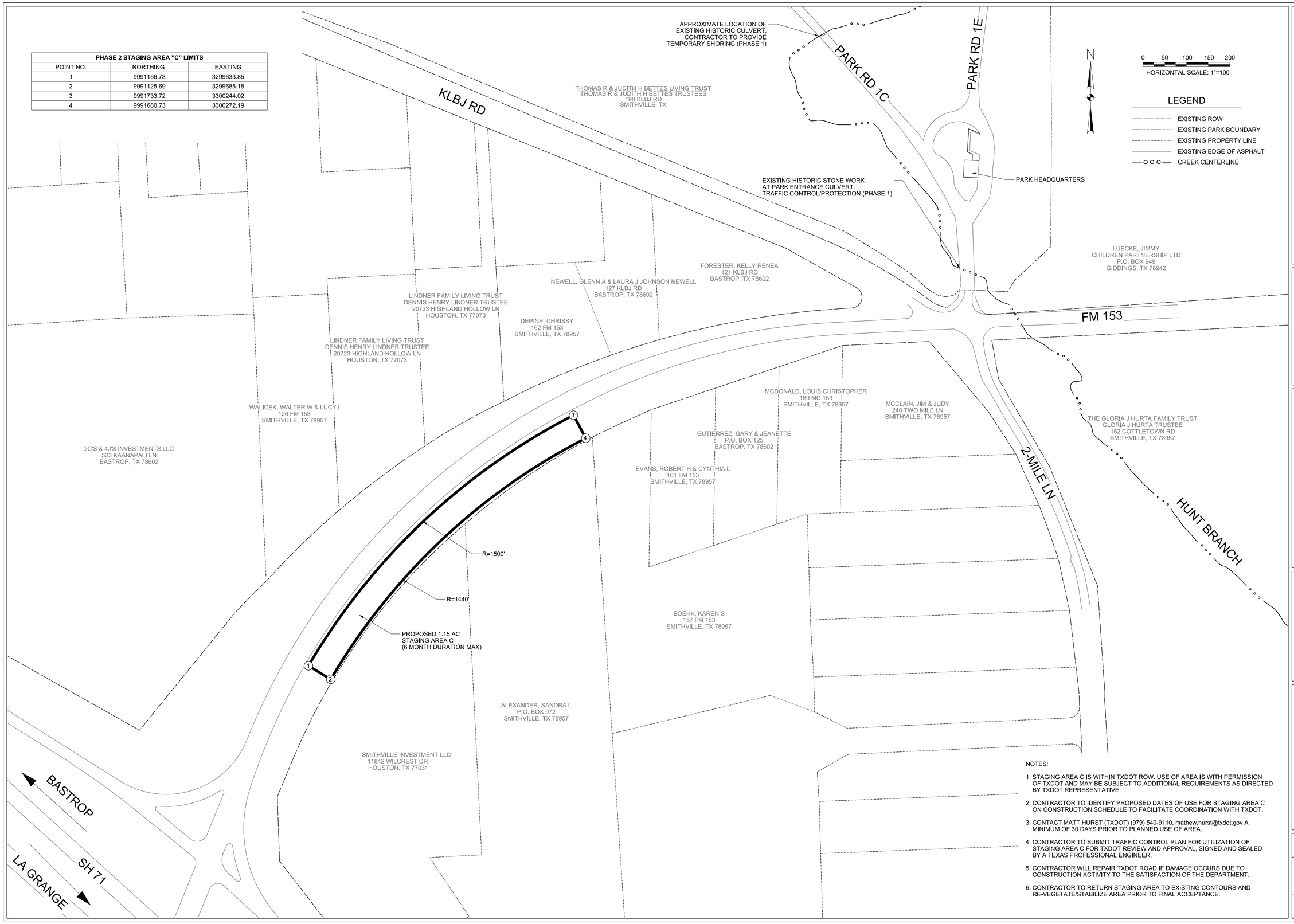
Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
PROJECT LAYOUT DETAILS
1 OF 2

Sheet Number
015 of 74
C1.12

PHASE 2 STAGING AREA "C" LIMITS		
POINT NO.	NORTHING	EASTING
1	9991156.78	3299633.85
2	9991125.69	3299685.18
3	9991733.72	3300244.02
4	9991680.73	3300272.19



NOTES:

1. STAGING AREA C IS WITHIN TXDOT ROW. USE OF AREA IS WITH PERMISSION OF TXDOT AND MAY BE SUBJECT TO ADDITIONAL REQUIREMENTS AS DIRECTED BY TXDOT REPRESENTATIVE.
2. CONTRACTOR TO IDENTIFY PROPOSED DATES OF USE FOR STAGING AREA C ON CONSTRUCTION SCHEDULE TO FACILITATE COORDINATION WITH TXDOT.
3. CONTACT MATT HURST (TXDOT) (979) 540-9110, mathew.hurst@txdot.gov A MINIMUM OF 30 DAYS PRIOR TO PLANNED USE OF AREA.
4. CONTRACTOR TO SUBMIT TRAFFIC CONTROL PLAN FOR UTILIZATION OF STAGING AREA C FOR TXDOT REVIEW AND APPROVAL, SIGNED AND SEALED BY A TEXAS PROFESSIONAL ENGINEER.
5. CONTRACTOR WILL REPAIR TXDOT ROAD IF DAMAGE OCCURS DUE TO CONSTRUCTION ACTIVITY TO THE SATISFACTION OF THE DEPARTMENT.
6. CONTRACTOR TO RETURN STAGING AREA TO EXISTING CONTOURS AND RE-VEGETATE/STABILIZE AREA PRIOR TO FINAL ACCEPTANCE.

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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PROFESSIONAL ENGINEER
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
PROJECT LAYOUT DETAILS
2 OF 2

Sheet Number
016 of 74
C1.13

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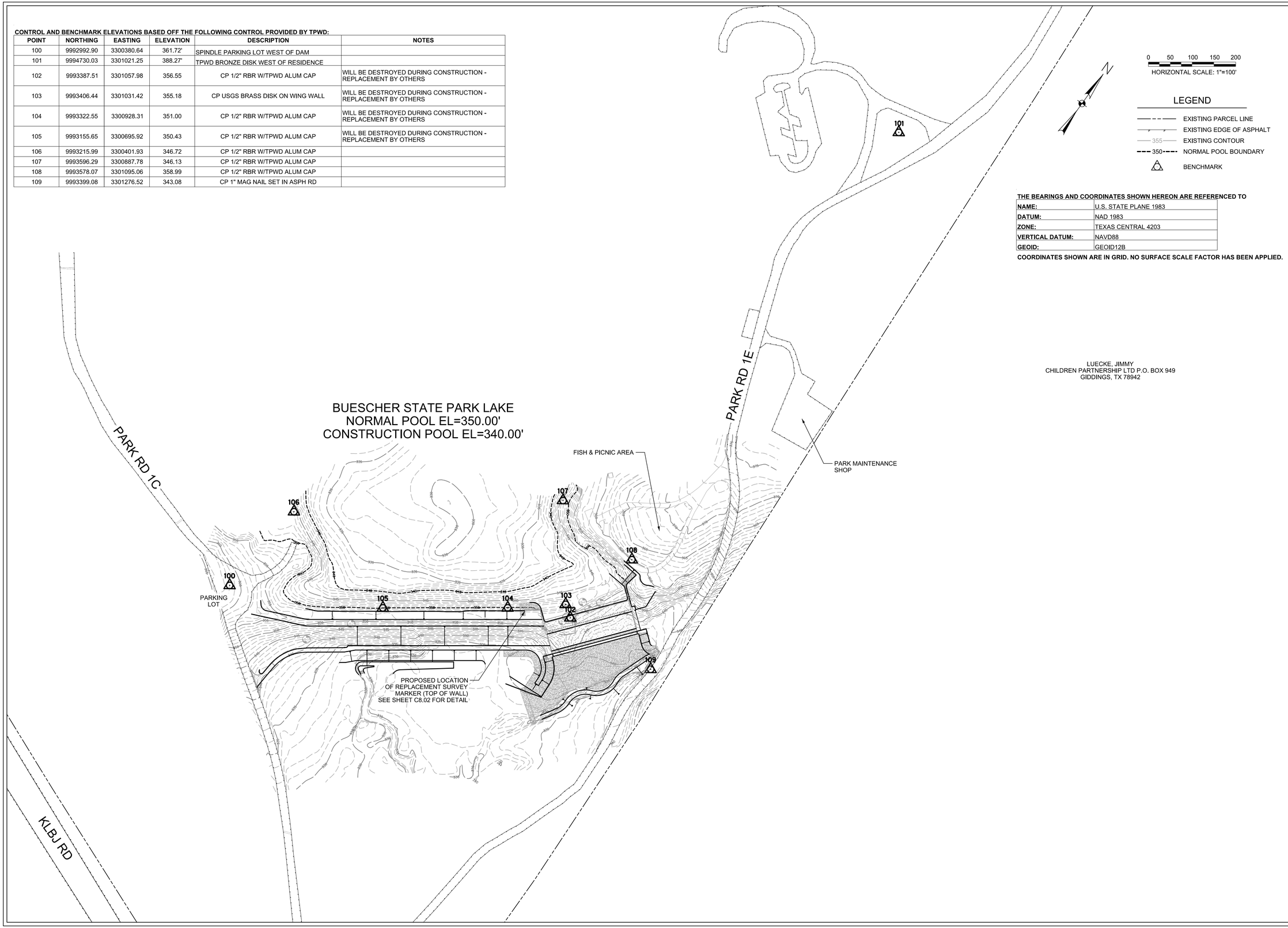
CONTROL AND BENCHMARK ELEVATIONS BASED OFF THE FOLLOWING CONTROL PROVIDED BY TPWD:

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTES
100	9992992.90	3300380.64	361.72'	SPINDLE PARKING LOT WEST OF DAM	
101	9994730.03	3301021.25	388.27'	TPWD BRONZE DISK WEST OF RESIDENCE	
102	9993387.51	3301057.98	356.55	CP 1/2" RBR W/TPWD ALUM CAP	WILL BE DESTROYED DURING CONSTRUCTION - REPLACEMENT BY OTHERS
103	9993406.44	3301031.42	355.18	CP USGS BRASS DISK ON WING WALL	WILL BE DESTROYED DURING CONSTRUCTION - REPLACEMENT BY OTHERS
104	9993322.55	3300928.31	351.00	CP 1/2" RBR W/TPWD ALUM CAP	WILL BE DESTROYED DURING CONSTRUCTION - REPLACEMENT BY OTHERS
105	9993155.65	3300695.92	350.43	CP 1/2" RBR W/TPWD ALUM CAP	WILL BE DESTROYED DURING CONSTRUCTION - REPLACEMENT BY OTHERS
106	9993215.99	3300401.93	346.72	CP 1/2" RBR W/TPWD ALUM CAP	
107	9993596.29	3300887.78	346.13	CP 1/2" RBR W/TPWD ALUM CAP	
108	9993578.07	3301095.06	358.99	CP 1/2" RBR W/TPWD ALUM CAP	
109	9993399.08	3301276.52	343.08	CP 1" MAG NAIL SET IN ASPH RD	



THE BEARINGS AND COORDINATES SHOWN HEREON ARE REFERENCED TO

NAME:	U.S. STATE PLANE 1983
DATUM:	NAD 1983
ZONE:	TEXAS CENTRAL 4203
VERTICAL DATUM:	NAVD88
GEOID:	GEOID12B

COORDINATES SHOWN ARE IN GRID. NO SURFACE SCALE FACTOR HAS BEEN APPLIED.

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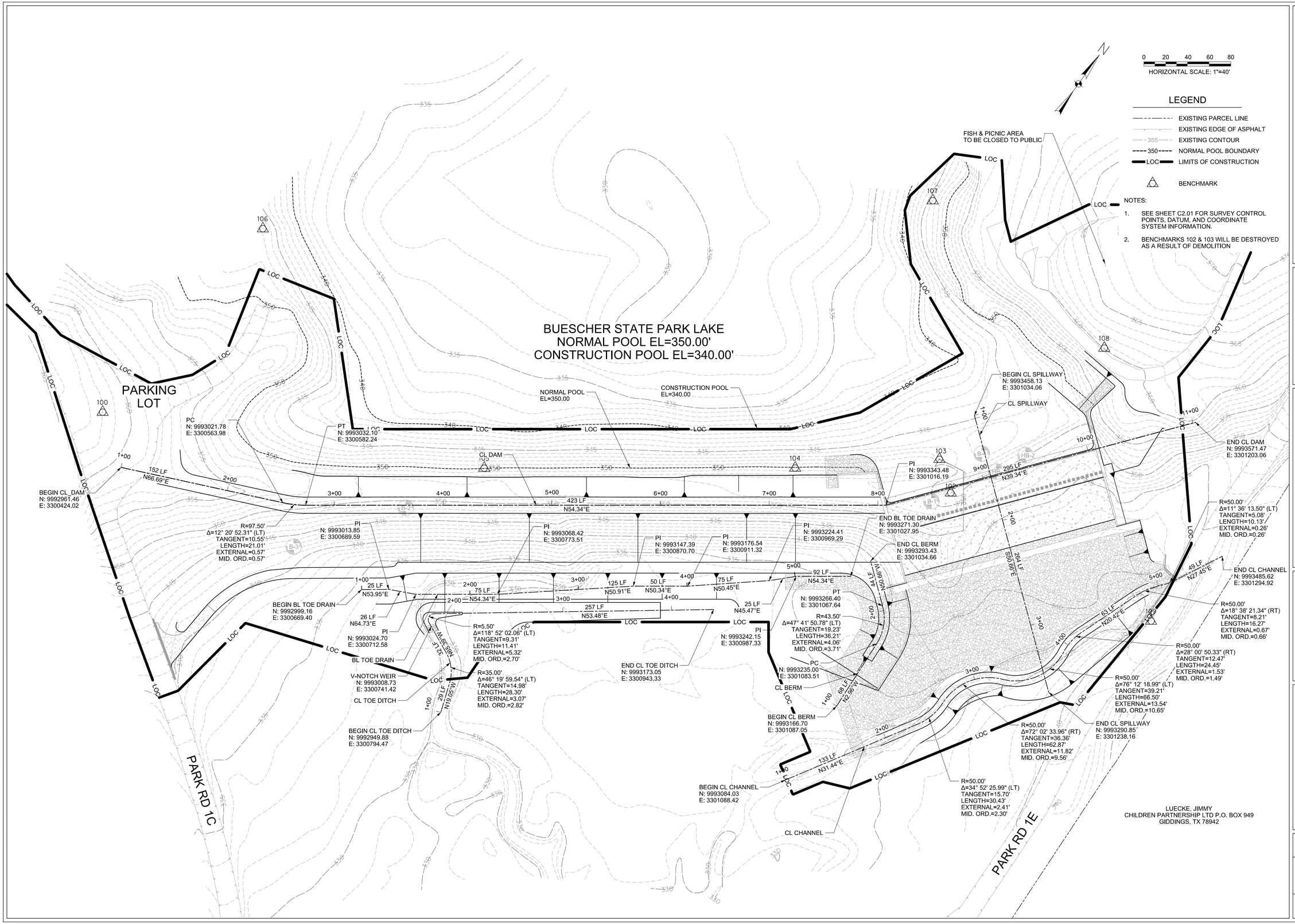
TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
REGISTERED
PAUL L. EASLEY
4432
PROFESSIONAL
LAND SURVEYOR
12/18/2020

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/18/2020
Sheet Title
SURVEY CONTROL
Sheet Number
017 of 74
C2.01



NOTES:

1. SEE SHEET C2.01 FOR SURVEY CONTROL POINTS, DATUM, AND COORDINATE SYSTEM INFORMATION.
2. BENCHMARKS 102 & 103 WILL BE DESTROYED AS A RESULT OF DEMOLITION

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

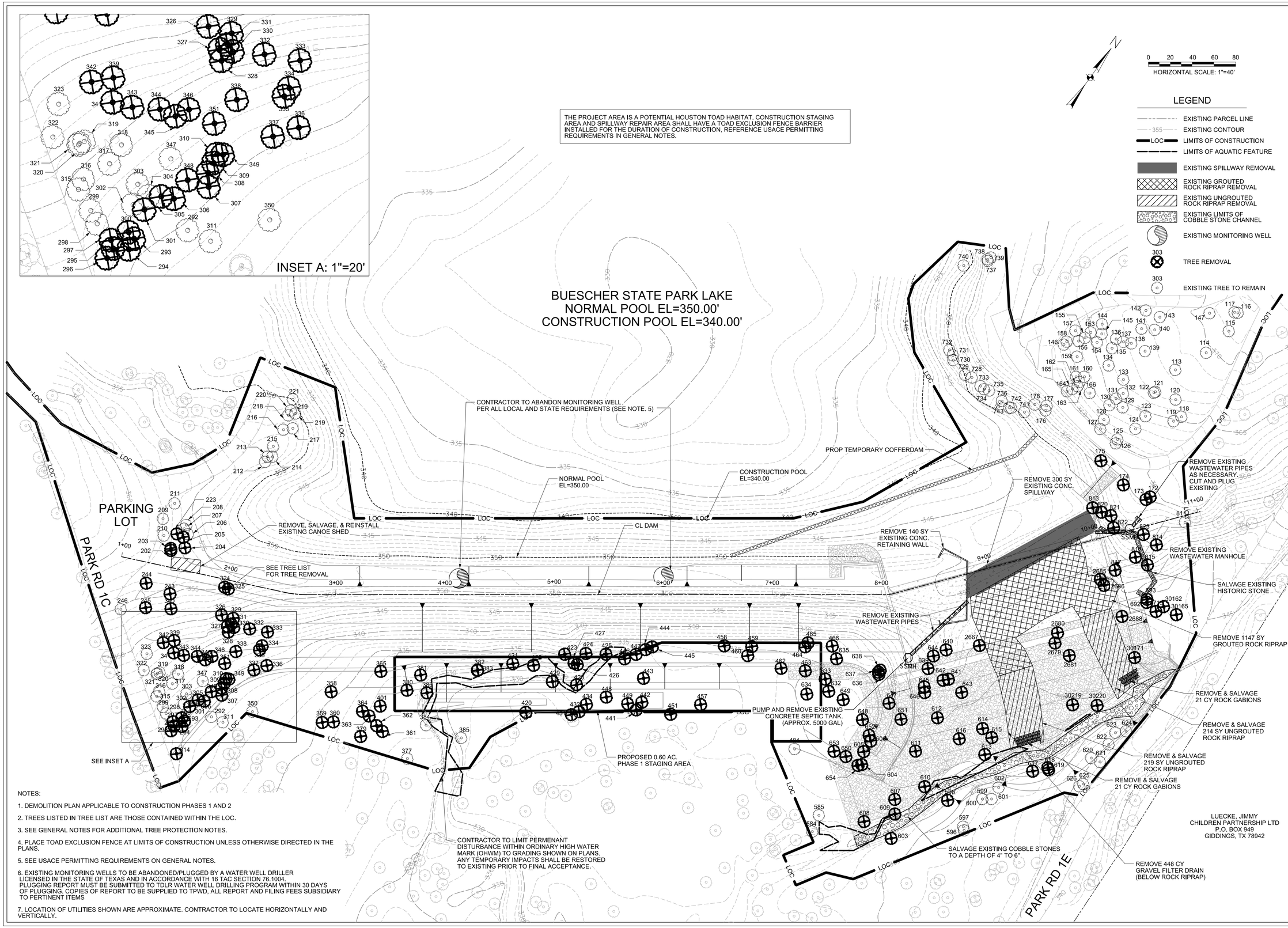
STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED PROFESSIONAL ENGINEER
F.R.E. 1/20/2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DIMENSION CONTROL

Sheet Number
C2.02



NOTES:

1. DEMOLITION PLAN APPLICABLE TO CONSTRUCTION PHASES 1 AND 2
2. TREES LISTED IN TREE LIST ARE THOSE CONTAINED WITHIN THE LOC.
3. SEE GENERAL NOTES FOR ADDITIONAL TREE PROTECTION NOTES.
4. PLACE TOAD EXCLUSION FENCE AT LIMITS OF CONSTRUCTION UNLESS OTHERWISE DIRECTED IN THE PLANS.
5. SEE USACE PERMITTING REQUIREMENTS ON GENERAL NOTES.
6. EXISTING MONITORING WELLS TO BE ABANDONED/PLUGGED BY A WATER WELL DRILLER LICENSED IN THE STATE OF TEXAS AND IN ACCORDANCE WITH 16 TAC SECTION 76.1004. PLUGGING REPORT MUST BE SUBMITTED TO TDLR WATER WELL DRILLING PROGRAM WITHIN 30 DAYS OF PLUGGING. COPIES OF REPORT TO BE SUPPLIED TO TPWD, ALL REPORT AND FILING FEES SUBSIDIARY TO PERTINENT ITEMS
7. LOCATION OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO LOCATE HORIZONTALLY AND VERTICALLY.

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
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PROFESSIONAL ENGINEER

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
DEMOLITION PLAN
Sheet Number
019 of 74
C3.01

TAG#	TYPE	CHARACTERISTICS	DIAMETER	CRZ DIAMETER	PROTECT	REMOVE
113	POST OAK	SINGLE	15"	30'	X	
114	POST OAK	SINGLE	17"	34'	X	
115	POST OAK	SINGLE	13"	26'	X	
116	LIVE OAK	SINGLE	6"	12'	X	
117	LIVE OAK	SINGLE	8"	16'	X	
118	ASH JUNIPER CEDAR	SINGLE	8"	16'	X	
119	POST OAK	SINGLE	15"	30'	X	
120	POST OAK	SINGLE	16"	32'	X	
121	POST OAK	SINGLE	7"	14'	X	
122	POST OAK	SINGLE	7"	14'	X	
123	POST OAK	SINGLE	9"	18'	X	
124	POST OAK	SINGLE	13"	26'	X	
125	CEDAR ELM DEAD	SINGLE	8"	16'	X	
126	CEDAR ELM	SINGLE	14"	28'	X	
127	POST OAK	SINGLE	14"	28'	X	
128	ASH JUNIPER CEDAR	SINGLE	9"	18'	X	
129	POST OAK	SINGLE	19"	38'	X	
130	POST OAK	SINGLE	24"	48'	X	
131	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
132	ASH JUNIPER CEDAR	SINGLE	8"	16'	X	
133	POST OAK	SINGLE	19"	38'	X	
134	POST OAK	SINGLE	16"	32'	X	
135	POST OAK	SINGLE	14"	28'	X	
136	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
137	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
138	ASH JUNIPER CEDAR	SINGLE	8"	16'	X	
139	POST OAK	SINGLE	13"	26'	X	
140	POST OAK	SINGLE	13"	26'	X	
141	POST OAK	SINGLE	8"	16'	X	
142	POST OAK	SINGLE	15"	30'	X	
143	ASH JUNIPER CEDAR	SINGLE	11"	22'	X	
144	ASH JUNIPER CEDAR	SINGLE	10"	20'	X	
145	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
146	CEDAR ELM	SINGLE	17"	34'	X	
147	POST OAK	SINGLE	14"	28'	X	
153	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
154	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
155	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
156	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
157	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
158	CEDAR ELM	SINGLE	12"	24'	X	
159	ASH JUNIPER CEDAR	SINGLE	11"	22'	X	
160	ASH JUNIPER CEDAR	SINGLE	10"	20'	X	
161	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
162	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
163	ASH JUNIPER CEDAR	SINGLE	6"	12'	X	
164	ASH JUNIPER CEDAR	SINGLE	8"	16'	X	
165	ASH JUNIPER CEDAR	SINGLE	12"	24'	X	
166	ASH JUNIPER CEDAR	SINGLE	10"	20'	X	
172	POST OAK	SINGLE	11"	22'		X
173	POST OAK	SINGLE	8"	16'		X
174	ASH JUNIPER CEDAR	SINGLE	10"	20'		X
175	POST OAK	SINGLE	22"	44'		X
176	ASH JUNIPER CEDAR	SINGLE	9"	18'	X	
177	POST OAK	SINGLE	6"	12'	X	
178	POST OAK	SINGLE	8"	16'	X	
202	CEDAR ELM	SINGLE	6"	12'		X
203	CEDAR ELM	SINGLE	8"	16'		X
204	CEDAR ELM	SINGLE	10"	20'		X
205	CEDAR ELM	SINGLE	8"	16'		X
206	CEDAR ELM	SINGLE	6"	12'	X	
207	CEDAR ELM	SINGLE	7"	14'	X	
208	CEDAR ELM	SINGLE	6"	12'	X	
209	CEDAR ELM	SINGLE	16"	32'	X	
210	CEDAR ELM	SINGLE	22"	44'	X	
211	CEDAR ELM	SINGLE	16"	32'	X	
212	LIVE OAK	SINGLE	21"	42'	X	
213	LIVE OAK	SINGLE	17"	34'	X	
214	LIVE OAK	SINGLE	33"	66'	X	
215	CEDAR ELM	SINGLE	6"	12'	X	
216	CEDAR ELM	SINGLE	6"	12'	X	
217	CEDAR ELM	SINGLE	8"	16'	X	
218	CEDAR ELM	SINGLE	8"	16'	X	
219	CEDAR ELM	SINGLE	9"	18'	X	
220	CEDAR ELM	SINGLE	12"	24'	X	
221	LIVE OAK	SINGLE	14"	28'	X	
223	CEDAR ELM	SINGLE	21"	42'		X
243	LIO	SINGLE	25"	50'		X
244	HACKBERRY	SINGLE	6"	12'		X
245	ASH JUNIPER CEDAR	SINGLE	12"	24'		X
246	CEDAR ELM	SINGLE	23"	46'	X	
292	ASH JUNIPER CEDAR	SINGLE	14"	28'	X	
293	PECAN	SINGLE	15"	30'		X
294	PECAN	SINGLE	10"	20'		X

TAG#	TYPE	CHARACTERISTICS	DIAMETER	CRZ DIAMETER	PROTECT	REMOVE
295	PECAN	SINGLE	8"	16'		X
296	PECAN	SINGLE	12"	24'		X
297	PECAN	SINGLE	15"	30'		X
298	PECAN	SINGLE	13"	26'	X	
299	PECAN	SINGLE	8"	16'	X	
300	PECAN	SINGLE	6"	12'		X
301	ASH JUNIPER CEDAR	SINGLE	12"	24'		X
302	PECAN	SINGLE	15"	30'	X	
303	PECAN	SINGLE	9"	18'	X	
304	PECAN	SINGLE	9"	18'	X	
305	PECAN	SINGLE	10"	20'		X
306	PECAN	SINGLE	10"	20'		X
307	ASH JUNIPER CEDAR	SINGLE	14"	28'		X
308	PECAN	SINGLE	13"	26'		X
309	PECAN	SINGLE	10"	20'		X
310	PECAN	SINGLE	10"	20'		X
311	LIVE OAK	SINGLE	14"	28'	X	
314	PECAN	SINGLE	9"	18'		X
315	CEDAR ELM	SINGLE	10"	20'	X	
316	CEDAR ELM	SINGLE	9"	18'	X	
317	CEDAR ELM	SINGLE	12"	24'	X	
318	CEDAR ELM	SINGLE	10"	20'	X	
319	CEDAR ELM	SINGLE	11"	22'	X	
320	CEDAR ELM	SINGLE	9"	18'	X	
321	CEDAR ELM	SINGLE	6"	12'	X	
322	CEDAR ELM	SINGLE	9"	18'	X	
323	HACKBERRY	SINGLE	6"	12'	X	
324	CEDAR ELM	SINGLE	11"	22'	X	
325	CEDAR ELM	SINGLE	8"	16'		X
326	CEDAR ELM	SINGLE	6"	12'		X
327	ASH JUNIPER CEDAR	SINGLE	8"	16'		X
328	CEDAR ELM	SINGLE	7"	14'		X
329	ASH JUNIPER CEDAR	SINGLE	7"	14'		X
330	HACKBERRY	SINGLE	7"	14'		X
331	CEDAR ELM	SINGLE	6"	12'		X
332	PECAN	SINGLE	8"	16'		X
333	CEDAR ELM	SINGLE	9"	18'		X
334	PECAN	SINGLE	8"	16'		X
335	UNKNOWN	SINGLE	7"	14'		X
336	UNKNOWN	SINGLE	17"	34'		X
337	ASH JUNIPER CEDAR	2X	24.5" (18" 13")	49'		X
338	ASH JUNIPER CEDAR	SINGLE	12"	24'		X
339	CEDAR ELM	SINGLE	9"	18'		X
340	CEDAR ELM	SINGLE	7"	14'		X
341	CEDAR ELM	SINGLE	10"	20'		X
342	CEDAR ELM	SINGLE	6"	12'		X
343	CEDAR ELM	SINGLE	7"	14'		X
344	CEDAR ELM	SINGLE	7"	14'		X
345	CEDAR ELM	SINGLE	13"	26'		X
346	ASH JUNIPER CEDAR	SINGLE	8"	16'		X
347	PECAN	SINGLE	9"	18'	X	
348	PECAN	SINGLE	12"	24'		X
349	PECAN	SINGLE	8"	16'		X
350	LIVE OAK	SINGLE	23"	46'	X	
351	HACKBERRY	SINGLE	8"	16'		X
358	CEDAR ELM	SINGLE	8"	16'		X
359	POST OAK	SINGLE	6"	12'		X
360	ASH JUNIPER CEDAR	SINGLE	6"	12'		X
361	CEDAR ELM	SINGLE	6"	12'		X
362	CEDAR ELM	SINGLE	16"	32'		X
363	PECAN	SINGLE	17"	34'		X
364	WHITE OAK	SINGLE	23"	46'		X
365	CEDAR ELM	SINGLE	32"	64'		X
377	CEDAR ELM	SINGLE	17"	34'	X	
379	CEDAR ELM	SINGLE	6"	12'		X
380	LIVE OAK	SINGLE	6"	12'		X
381	CEDAR ELM	SINGLE	32"	64'		X
382	CEDAR ELM	SINGLE	22"	44'		X
383	CEDAR ELM	SINGLE	24"	48'		X
384	PECAN	SINGLE	17"	34'	X	
385	CEDAR ELM	SINGLE	55"	110'	X	
386	SYCAMORE	SINGLE	9"	18'		X
401	CEDAR ELM	SINGLE	7"	14'		X
420	LIVE OAK	SINGLE	47"	94'		X
421	SYCAMORE	SINGLE	24"	48'		X
422	SYCAMORE	SINGLE	8"	16'		X
423	POST OAK	SINGLE	44"	88'		X
424	POST OAK	SINGLE	22"	44'		X
425	SYCAMORE	SINGLE	21"	42'		X
426	HACKBERRY	SINGLE	9"	18'		X
427	HACKBERRY	SINGLE	9"	18'		X
428	SYCAMORE	SINGLE	14"	28'		X
429	PECAN	SINGLE	10"	20'		X
431	CEDAR ELM	SINGLE	7"	14'		X

TAG#	TYPE	CHARACTERISTICS	DIAMETER	CRZ DIAMETER	PROTECT	REMOVE
432	PINE	SINGLE	44"	88'		X
434	CEDAR ELM	SINGLE	11"	22'		X
441	PECAN	SINGLE	10"	20'		X
442	COTTONWOOD	SINGLE	11"	22'		X
443	COTTONWOOD	SINGLE	7"	14'		X
444	COTTONWOOD	SINGLE	31"	62'		X
445	SYCAMORE	SINGLE	17"	34'		X
446	COTTONWOOD	SINGLE	10"	20'		X
447	COTTONWOOD	SINGLE	16"	32'		X
448	PECAN	SINGLE	10"	20'		X
449	CEDAR ELM	SINGLE	7"	14'		X
451	CEDAR ELM	SINGLE	10"	20'		X
457	HACKBERRY	SINGLE	6"	12'		X
458	COTTONWOOD	SINGLE	34"	68'		X
459	COTTONWOOD	SINGLE	30"	60'		X
460	PECAN	SINGLE	10"	20'		X
462	HACKBERRY	SINGLE	17"	34'		X
463	PECAN	SINGLE	18"	36'		X
464	COTTONWOOD	SINGLE	21"	42'		X
465	COTTONWOOD	SINGLE	25"	50'		X
466	COTTONWOOD	SINGLE	31"	62'		X
484	PECAN	SINGLE	12"	24'	X	
584	CEDAR ELM	SINGLE	9"	18'	X	
585	CEDAR ELM	SINGLE	26"	52'	X	
596	CEDAR ELM	SINGLE	16"	32'	X	
597	CEDAR ELM	SINGLE	16"	32'	X	
598	PECAN	SINGLE	27"	54'		X
599	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
600	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
601	PECAN	SINGLE	24"	48'	X	
602	ASH JUNIPER CEDAR	SINGLE	8"	16'	X	
603	CEDAR ELM	SINGLE	11"	22'		X
604	HACKBERRY	SINGLE	18"	36'		X
605	CEDAR ELM	SINGLE	24"	48'		X
606	CEDAR ELM	SINGLE	11"	22'		X
607	CEDAR ELM	SINGLE	8"	16'		X
608	CEDAR ELM	SINGLE	12"	24'		X
609	CEDAR ELM	SINGLE	7"	14'		X
610	CEDAR ELM	SINGLE	48"	96'		X
611	CEDAR ELM	SINGLE	20"	40'		X
612	CEDAR ELM	SINGLE	16"	32'		X
613	CEDAR ELM	SINGLE	9"	18'		X
614	POST OAK	SINGLE	24"	48'		X
615	ASH JUNIPER CEDAR	SINGLE	9"	18'		X
616	CEDAR ELM	SINGLE	21"	42'		X
617	LIVE OAK	SINGLE	42"	84'		X
618	COTTONWOOD	SINGLE	6"	12'		X
619	COTTONWOOD	SINGLE	10"	20'		X
620	COTTONWOOD	SINGLE	7"	14'	X	
621	COTTONWOOD	SINGLE	6"	12'	X	
622	LIVE OAK	SINGLE	7"	14'	X	
623	LIVE OAK	SINGLE	13"	26'	X	
624	LIVE OAK	SINGLE	23"	46'	X	
625	COTTONWOOD	SINGLE	7"	14'	X	
626	LIVE OAK	SINGLE	40"	80'	X	
632	PECAN	SINGLE	14"	28'		X
633	HACKBERRY	SINGLE	7"	14'		X
634	COTTONWOOD	SINGLE	7"	14'		X
635	COTTONWOOD	SINGLE	8"	16'		X
636	HACKBERRY	SINGLE	12"	24'		X
637	COTTONWOOD	SINGLE	15"	30'		X
638	COTTONWOOD	SINGLE	17"	34'		X
639	LIVE OAK	SINGLE	46"	92'		X
640	LIVE OAK	SINGLE	9"	18'		X
641	COTTONWOOD	SINGLE	8"	16'		X
642	HACKBERRY	SINGLE	9"	18'		X
643	LIVE OAK	SINGLE	32"	64'		X
644	ASH JUNIPER CEDAR	SINGLE	12"	24'		X
645	CEDAR ELM	SINGLE	13"	26'		X
646	LIVE OAK	SINGLE	33"	66'		X
647	HACKBERRY	SINGLE	9"	18'		X
648	HACKBERRY	SINGLE	12"	24'		X
649	HACKBERRY	SINGLE	10"	20'		X
650	HACKBERRY	SINGLE	12"	24'		X
651	COTTONWOOD	SINGLE	30"	60'		X
652	HACKBERRY	SINGLE	7"	14'		X
653	HACKBERRY	SINGLE	6"	12'		X
654	COTTONWOOD	SINGLE	8"	16'		X
692	OAK	SINGLE	13"	26'		X
693	LIVE OAK	SINGLE	23"	46'		X
715	POST OAK	SINGLE	25"	50'		X
728	CEDAR ELM	SINGLE	10"	20'	X	
729	CEDAR ELM	SINGLE	13"	26'	X	
730	ASH JUNIPER CEDAR	SINGLE	10"	20'	X	

TAG#	TYPE	CHARACTERISTICS	DIAMETER	CRZ DIAMETER	PROTECT	REMOVE
731	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
732	CEDAR ELM	SINGLE	10"	20'	X	
733	CEDAR ELM	SINGLE	19"	38'	X	
734	CEDAR ELM	SINGLE	12"	24'	X	
735	ASH JUNIPER CEDAR	SINGLE	7"	14'	X	
736	CEDAR ELM	SINGLE	11"	22'	X	
737	LIVE OAK	SINGLE	14"	28'	X	
738	LIVE OAK	SINGLE	9"	18'	X	
739	LIVE OAK	SINGLE	9"	18'	X	
740	ASH JUNIPER CEDAR	SINGLE	11"	22'	X	
741	CEDAR ELM	SINGLE	8"	16'	X	
742	CEDAR ELM	SINGLE	7"	14'	X	
743	CEDAR ELM	SINGLE	7"	14'	X	
811	POST OAK	SINGLE	26"	52'	X	
813	CEDAR ELM	2X	15" (10" 10")	30'		X
814	POST OAK	SINGLE	22"	44'		X
815	OAK	SINGLE	11"	22'		X
816	PINE	SINGLE	12"	24'		X
817	ASH JUNIPER CEDAR	SINGLE	11"	22'		X
820	POST OAK	SINGLE	7"	14'		X
821	POST OAK	SINGLE	6"	12'		X
822	POST OAK	SINGLE	9"	18'		X
823	COTTONWOOD	SINGLE	11"	22'		X
2667	ELM	SINGLE	19"	38'		X
2679	POST OAK	SINGLE	21"	42'		X
2680	RED CEDAR	SINGLE	7"	14'		X
2681	POST OAK	SINGLE	15"	30'		X
2685	PINE	SINGLE	15"	30'		X
2686	PINE	SINGLE	14"	28'		X
2688	POST OAK	SINGLE	18"	36'		X
30162	POST OAK	SINGLE	22"	44'		X
30165	CEDAR ELM	SINGLE	18"	36'		X
30171	POST OAK	SINGLE	21"	42'		X
30219	POST OAK	SINGLE	27"	54'		X
30220	POST OAK	SINGLE	20"	40'		X

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER

Revision No.	Date	Description

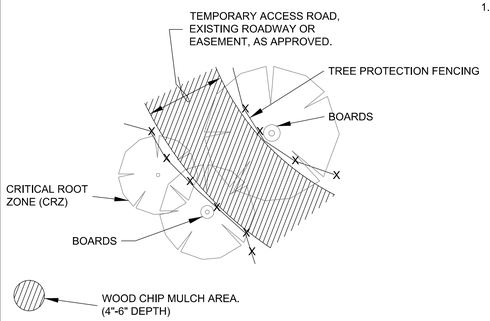
PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
TREE LIST

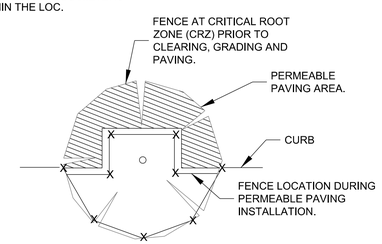
Sheet Number
020 of 74 C3.02

NOTE:

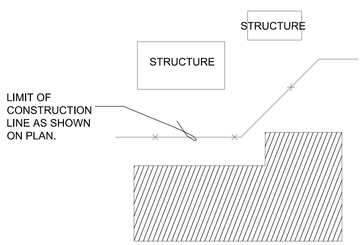
1. CRITICAL ROOT ZONE (CRZ) DIAMETER IS DEFINED AS 2x THE TREE TRUNK DIAMETER CONVERTED TO FEET. SEE SHEET C3.02 FOR CRZ DIAMETERS OF TREES WITHIN THE LOC.



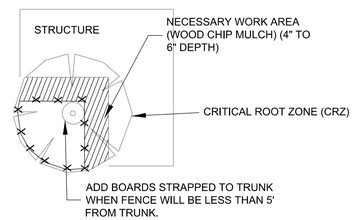
LINEAR CONSTRUCTION THROUGH TREES



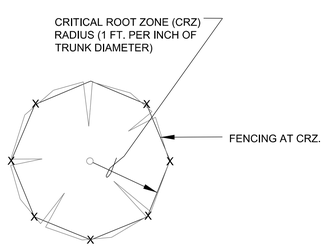
TREES IN PAVING AREA



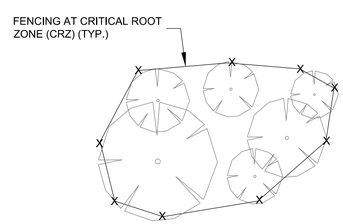
NATURAL AREAS



TREES NEAR CONSTRUCTION ACTIVITY

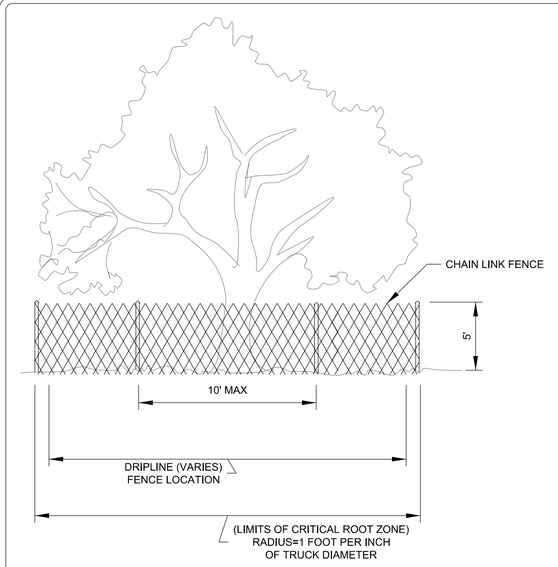


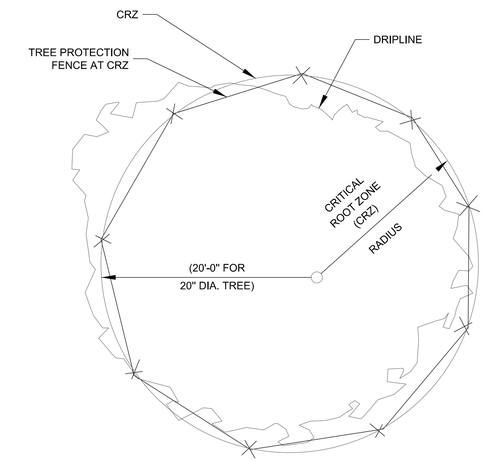
INDIVIDUAL TREE



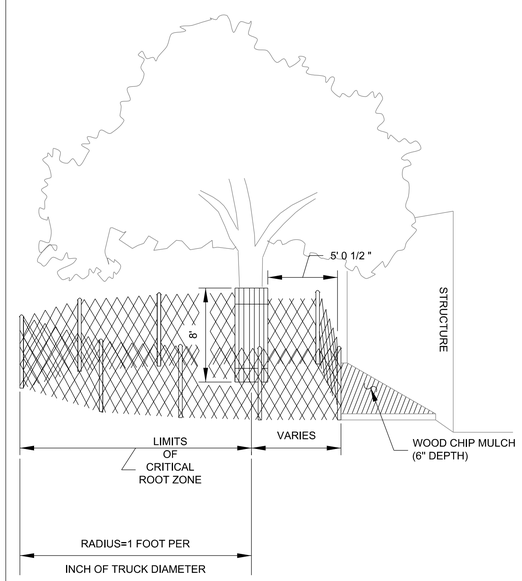
GROUP OF TREES

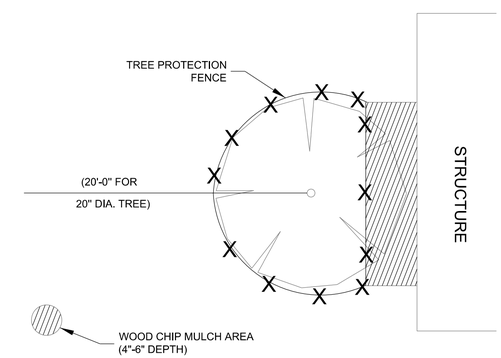
TREE PROTECTION FENCE LOCATIONS





TREE PROTECTION FENCE - CHAIN LINK





*AS NEEDED TO PROVIDE NECESSARY WORK SPACE. IF LESS THAN 5', THEN ADD BOARDS STRAPPED TO TRUNK.

TREE PROTECTION FENCE (MODIFIED) - CHAIN LINK

TREE PROTECTION FENCE CHAIN LINK

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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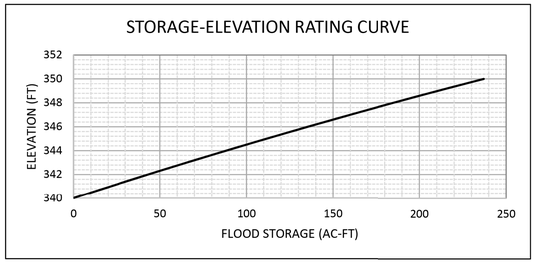
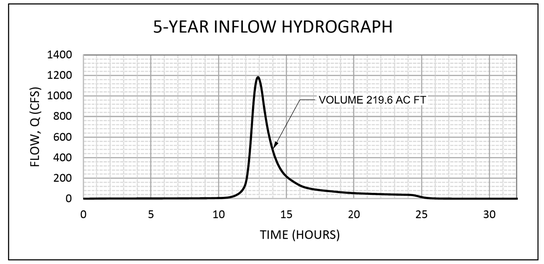
LICENSED
PROFESSIONAL ENGINEER
1-22-2021

Revision No.	Date	Description

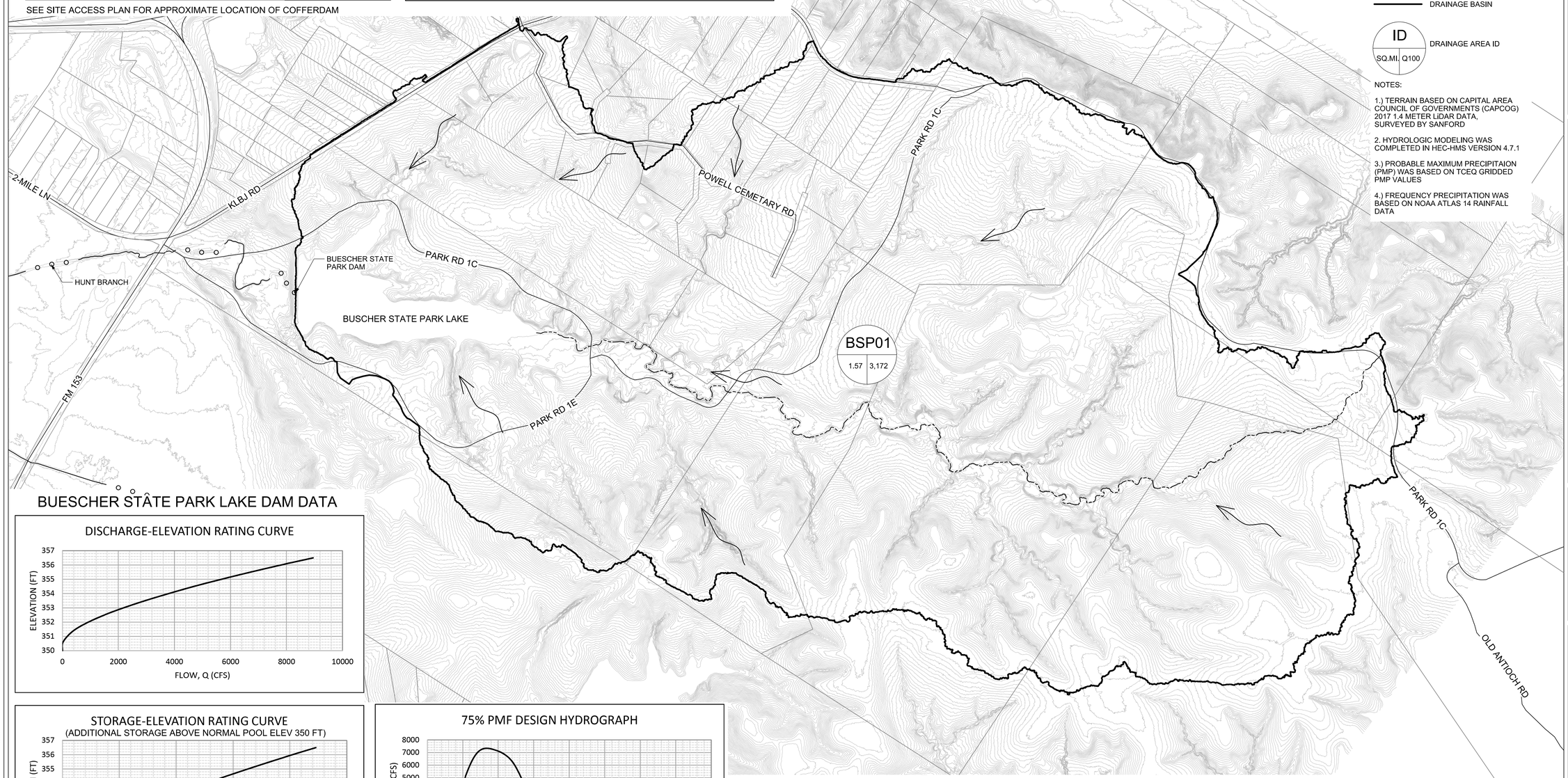
PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
TREE PROTECTION DETAILS
Sheet Number
021 of 74
C3.03

5-YEAR STORM EVENT DATA FOR COFFERDAM STORAGE





SEE SITE ACCESS PLAN FOR APPROXIMATE LOCATION OF COFFERDAM



0 250 500 750 1000

HORIZONTAL SCALE: 1"=500'

LEGEND

- EXIST PARCEL LINE
- EXISTING 2 FT CONTOUR
- ROADWAY CENTERLINES
- HUNT BRANCH CENTERLINE
- LONGEST FLOW PATH
- DRAINAGE BASIN

ID — DRAINAGE AREA ID
SQ.MI. | Q100

NOTES:

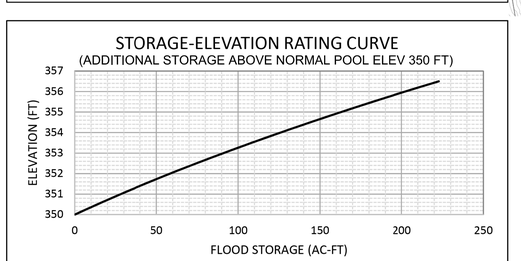
1.) TERRAIN BASED ON CAPITAL AREA COUNCIL OF GOVERNMENTS (CAPCOG) 2017 1.4 METER LiDAR DATA, SURVEYED BY SANFORD

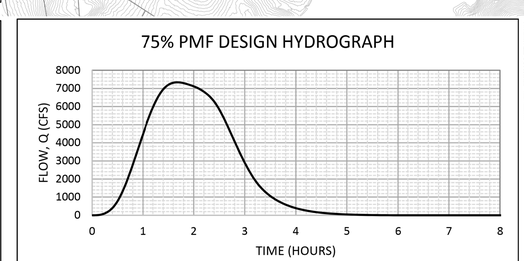
2. HYDROLOGIC MODELING WAS COMPLETED IN HEC-HMS VERSION 4.7.1

3.) PROBABLE MAXIMUM PRECIPITAION (PMP) WAS BASED ON TCEQ GRIDDED PMP VALUES

4.) FREQUENCY PRECIPITATION WAS BASED ON NOAA ATLAS 14 RAINFALL DATA

BUESCHER STATE PARK LAKE DAM DATA





HYDROLOGIC DATA						
BASIN NAME	AREA (SQ. MI.)	CN (AMC II)	CN (AMC III)	% IMPERVIOUS	LONGEST FLOW PATH (FT)	LAG TIME (MIN)
BSP01	1.57	71	85	3.5%	12,350	46.7

100-YR				75% PMF			
NOAA ATLAS 14, 24-HR PRECIP. DEPTH = 12.6"				2-HR PRECIP. DEPTH = 21.6" (CRITICAL STORM)			
Q (IN), CFS	Q (OUT), CFS	W.S. ELEV., MSL	STORAGE, AC-FT (ABOVE NORMAL POOL)	Q (IN), CFS	Q (OUT), CFS	W.S. ELEV., MSL	STORAGE, AC-FT (ABOVE NORMAL POOL)
3,172	2,868	353.4	106.3	7,337	7,104	355.7	189.4

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

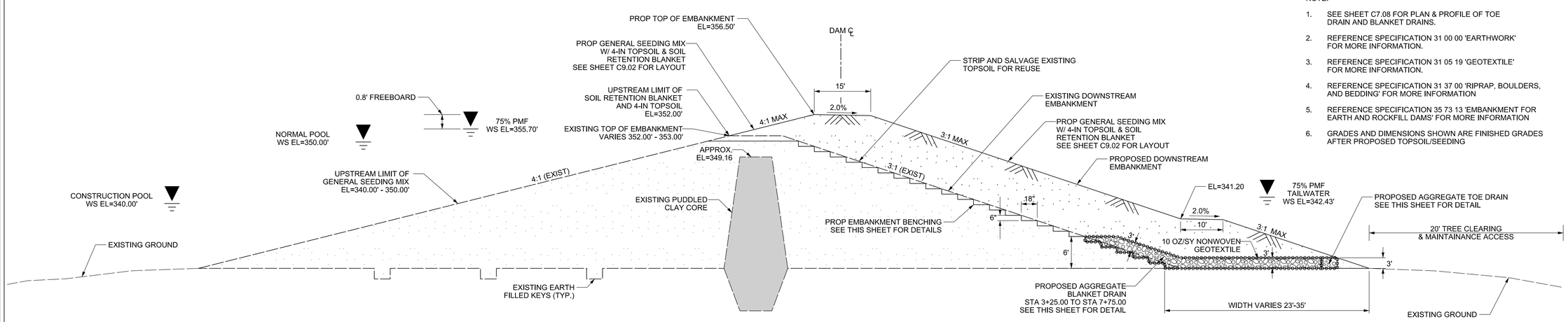
F-3112 01/20/021
STATE OF TEXAS
MARITA E. MOYA
138242
LICENSED
PROFESSIONAL ENGINEER

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
OVERALL DRAINAGE AREA MAP

Sheet Number
022 of 74
C4.01

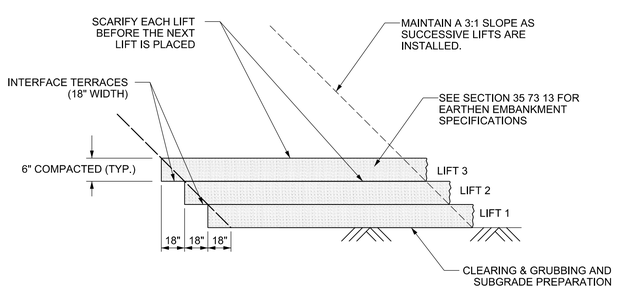


NOTE:

1. SEE SHEET C7.08 FOR PLAN & PROFILE OF TOE DRAIN AND BLANKET DRAINS.
2. REFERENCE SPECIFICATION 31 00 00 'EARTHWORK' FOR MORE INFORMATION.
3. REFERENCE SPECIFICATION 31 05 19 'GEOTEXTILE' FOR MORE INFORMATION.
4. REFERENCE SPECIFICATION 31 37 00 'RIPRAP, BOULDERS, AND BEDDING' FOR MORE INFORMATION
5. REFERENCE SPECIFICATION 35 73 13 'EMBANKMENT FOR EARTH AND ROCKFILL DAMS' FOR MORE INFORMATION
6. GRADES AND DIMENSIONS SHOWN ARE FINISHED GRADES AFTER PROPOSED TOPSOIL/SEEDING

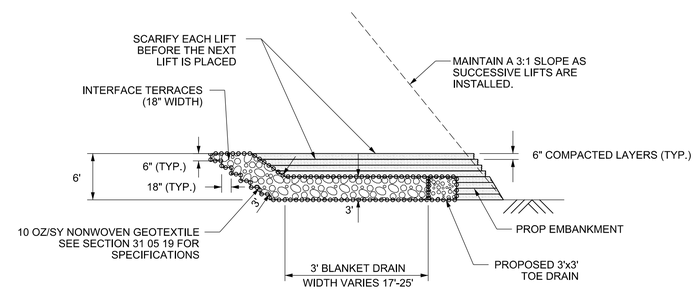
PROPOSED EMBANKMENT TYPICAL SECTION STA 1+85.46 TO STA 8+07.53

(N.T.S.)



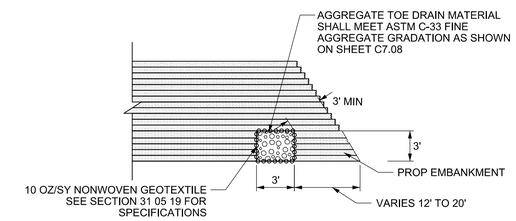
EMBANKMENT BENCHING DETAIL

(N.T.S.)



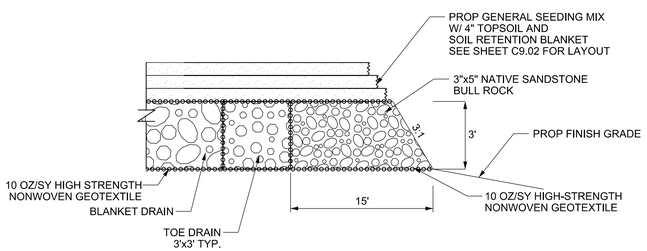
EMBANKMENT BENCHING DETAIL (W/ BLANKET DRAIN)

(N.T.S.)
STA 3+75 TO STA 4+25
STA 5+00 TO STA 5+50
STA 7+25 TO STA 7+75



AGGREGATE TOE DRAIN DETAIL

(N.T.S.)
STA 3+25 TO STA 3+75
STA 4+25 TO STA 5+00
STA 5+50 TO STA 7+25



3" X 5" BULL ROCK NATIVE STONE	
SIEVE SIZE	% RETAINED
5"	0
4"	0-20
3"	30-60
2"	80-100
1"	90-100
1/2"	95-100

ROCK RIPRAP OUTFALL DETAIL

(N.T.S.)
STA 3+75 TO STA 4+25

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
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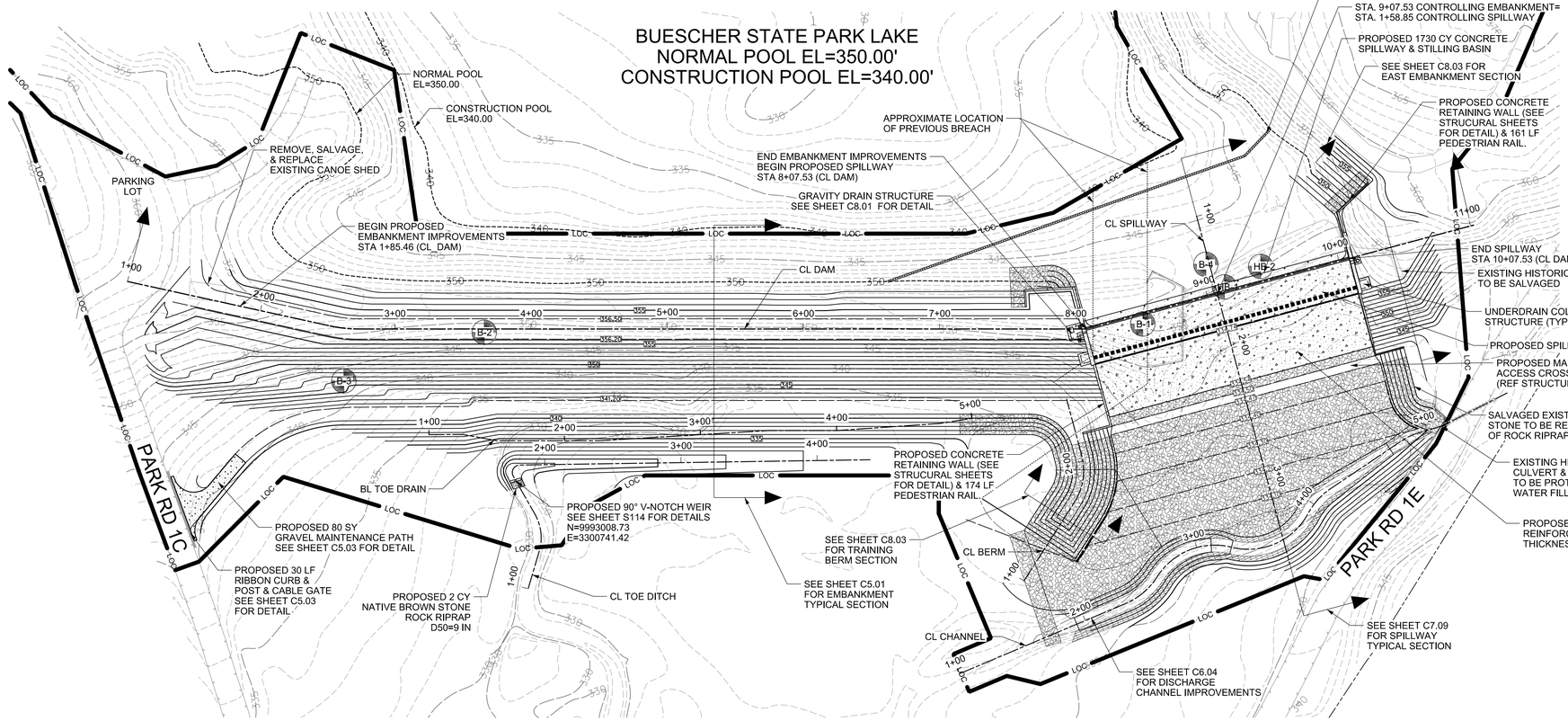
Revision	
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
EMBANKMENT
TYPICAL SECTION &
TOE DRAIN DETAILS

Sheet Number
023 of 74
C5.01

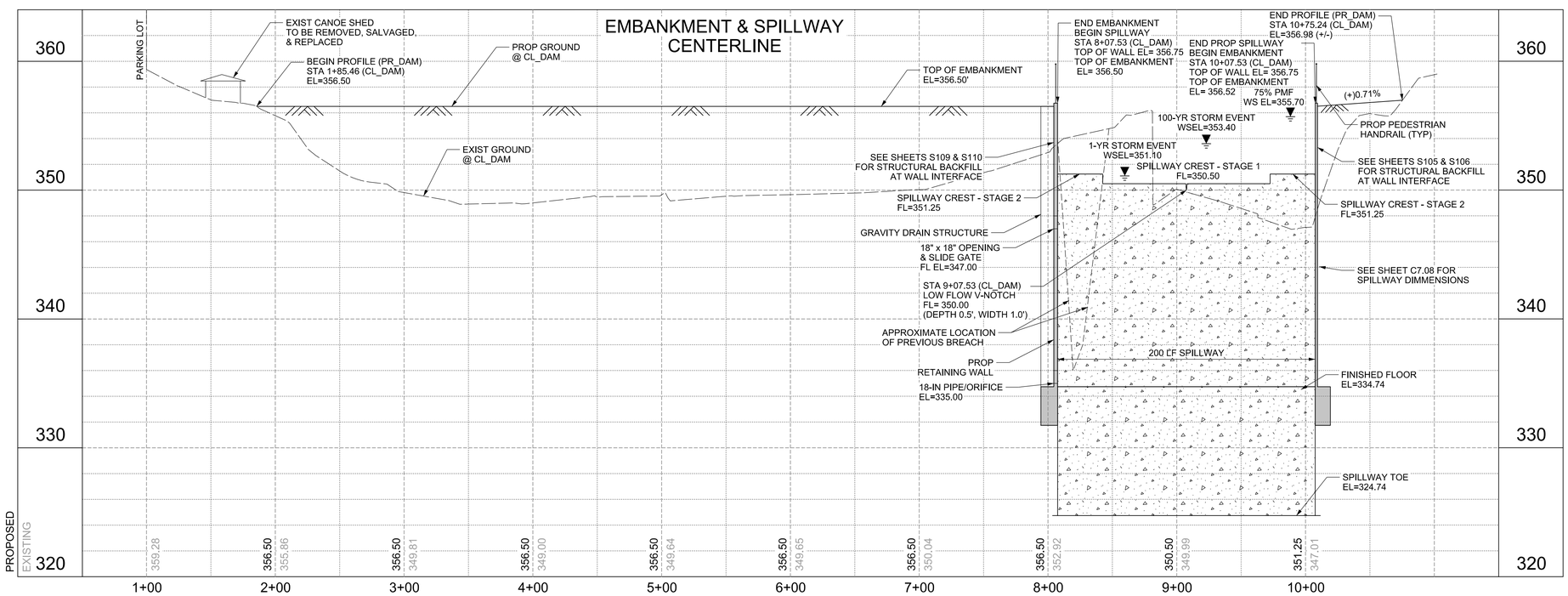


LEGEND

- EXISTING PARCEL LINE
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- EXISTING SPILLWAY
- 355 PROPOSED CONTOUR
- 356.50 CONTOUR BREAK LINE
- 350 NORMAL POOL BOUNDARY
- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE
- PROPOSED ROCK RIPRAP
- B-1 BORE HOLE LOCATION

NOTES:

1. SEE DIMENSION CONTROL SHEET C2.02 FOR HORIZONTAL LAYOUTS
2. SEE APPENDIX A IN GEOTECHNICAL ENGINEERING STUDY FOR BORING LOCATION MAP AND BORE LOGS.
3. SEE SHEET C6.03 FOR RIPRAP LAYOUT



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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision	
No.	Date	Description

PROJECT NUMBER: 118686
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Sheet Title
DAM PLAN & PROFILE

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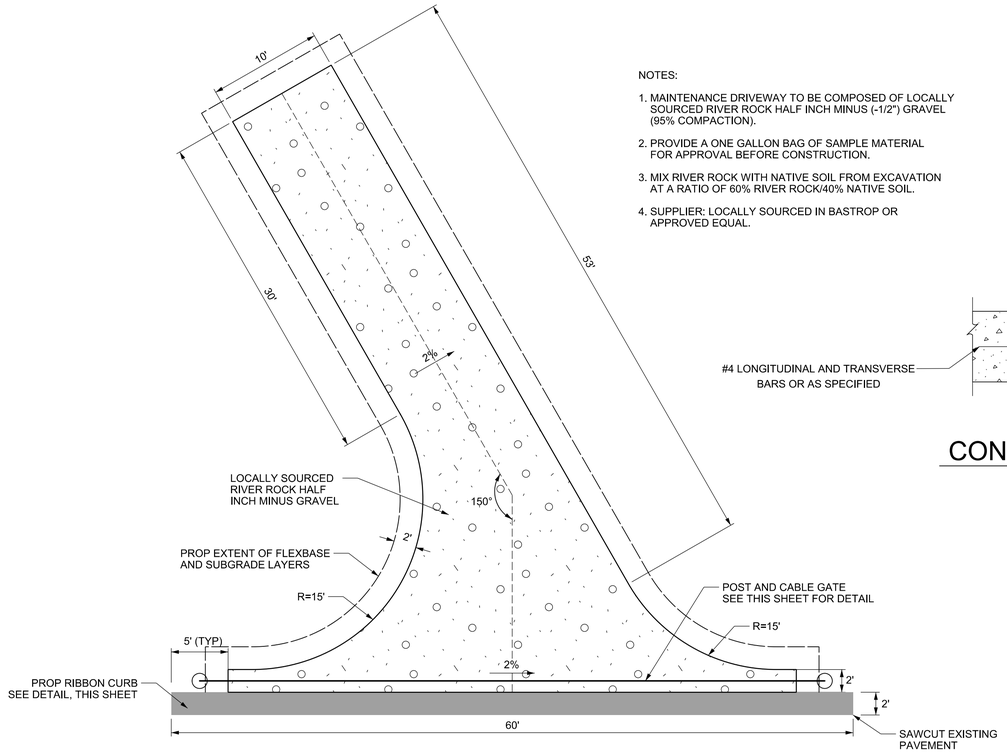
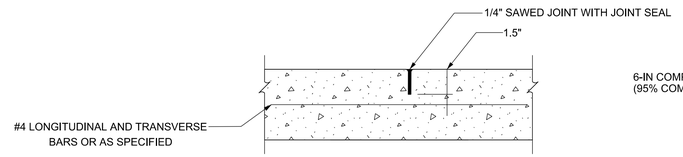
C5.02

NOTES:

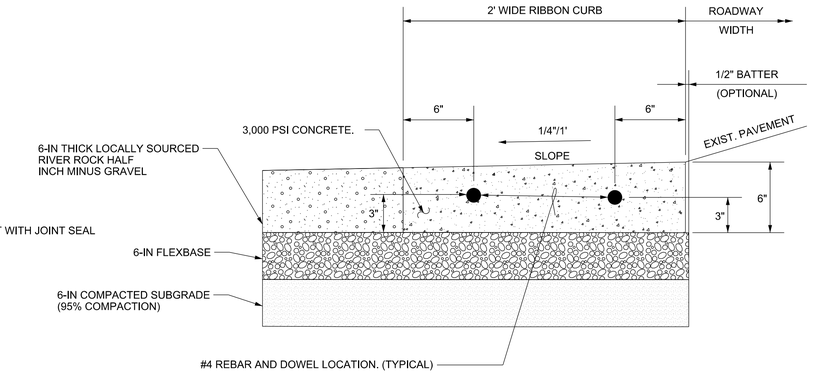
1. MAINTENANCE DRIVEWAY TO BE COMPOSED OF LOCALLY SOURCED RIVER ROCK HALF INCH MINUS (-1/2") GRAVEL (95% COMPACTION).
2. PROVIDE A ONE GALLON BAG OF SAMPLE MATERIAL FOR APPROVAL BEFORE CONSTRUCTION.
3. MIX RIVER ROCK WITH NATIVE SOIL FROM EXCAVATION AT A RATIO OF 60% RIVER ROCK/40% NATIVE SOIL.
4. SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.



GRAVEL MAINTENANCE DRIVEWAY DETAIL
(N.T.S.)



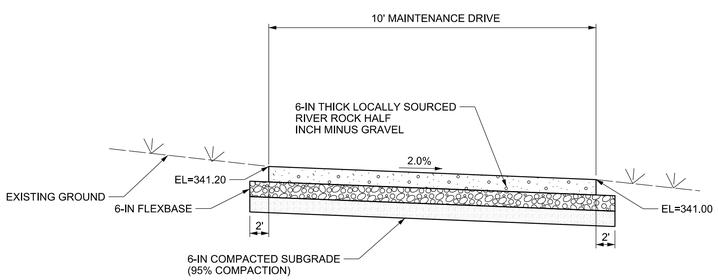
CONTROL JOINT DETAIL
(N.T.S.)



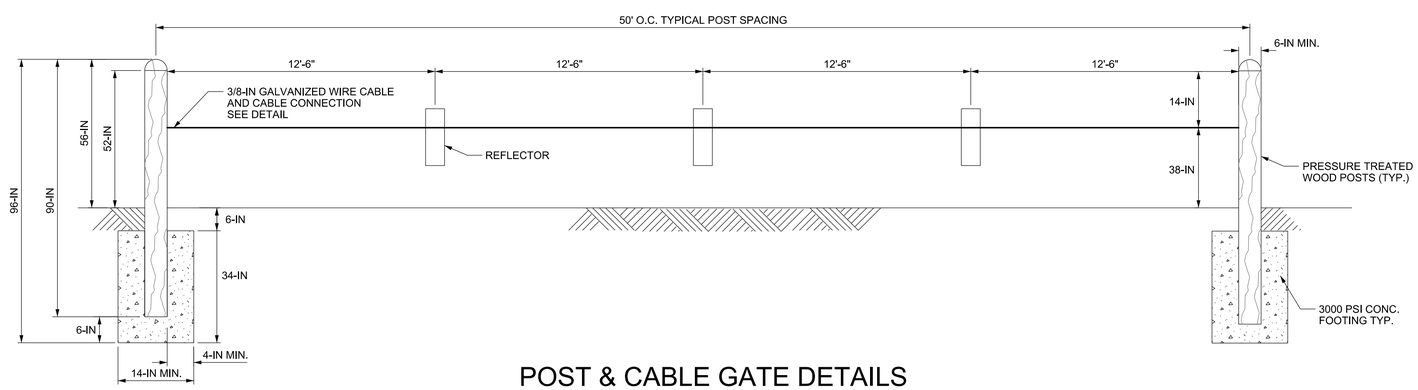
RIBBON CURB DETAIL
(N.T.S.)

NOTES:

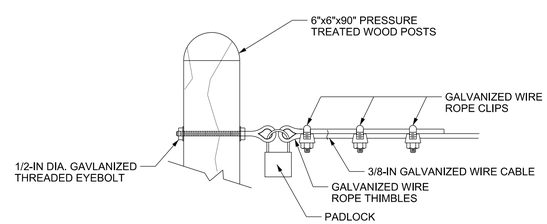
1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309 AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTROL JOINT SPACING SHALL NOT EXCEED 10'-0'.
3. ALL CURBS SHALL HAVE A MINIMUM OF 4" OF COMPACTED FLEXIBLE BASE BETWEEN BOTTOM OF CURB AND TOP SUBGRADE THAT SHALL EXTEND A MINIMUM OF 18" BEHIND BACK OF CURB. TOTAL DEPTH OF FLEXIBLE BASE UNDER AND BEHIND CURB SHALL BE: (TOTAL DEPTH OF FLEXIBLE BASE) LESS (6-INCHES). SEE EARTHWORK SPECIFICATIONS FOR GROUND SURFACE PREPARATION.
4. ALL CURBS SHALL CONFORM TO THESE DETAILS INDEPENDANT OF THE CONSTRUCTION METHODS USED.
5. SEE SPECIFICATIONS FOR CONCRETE PREPARATION AND STEEL REINFORCEMENT.



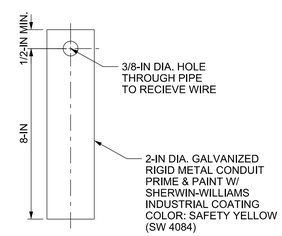
MAINTENANCE ACCESS DRIVE TYPICAL SECTION
(N.T.S.)



POST & CABLE GATE DETAILS
(N.T.S.)



CABLE CONNECTION (TURNBUCKLES & EYEBOLTS)
(N.T.S.)



REFLECTOR
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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED PROFESSIONAL ENGINEER
1-20-2021

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PAVEMENT DETAILS
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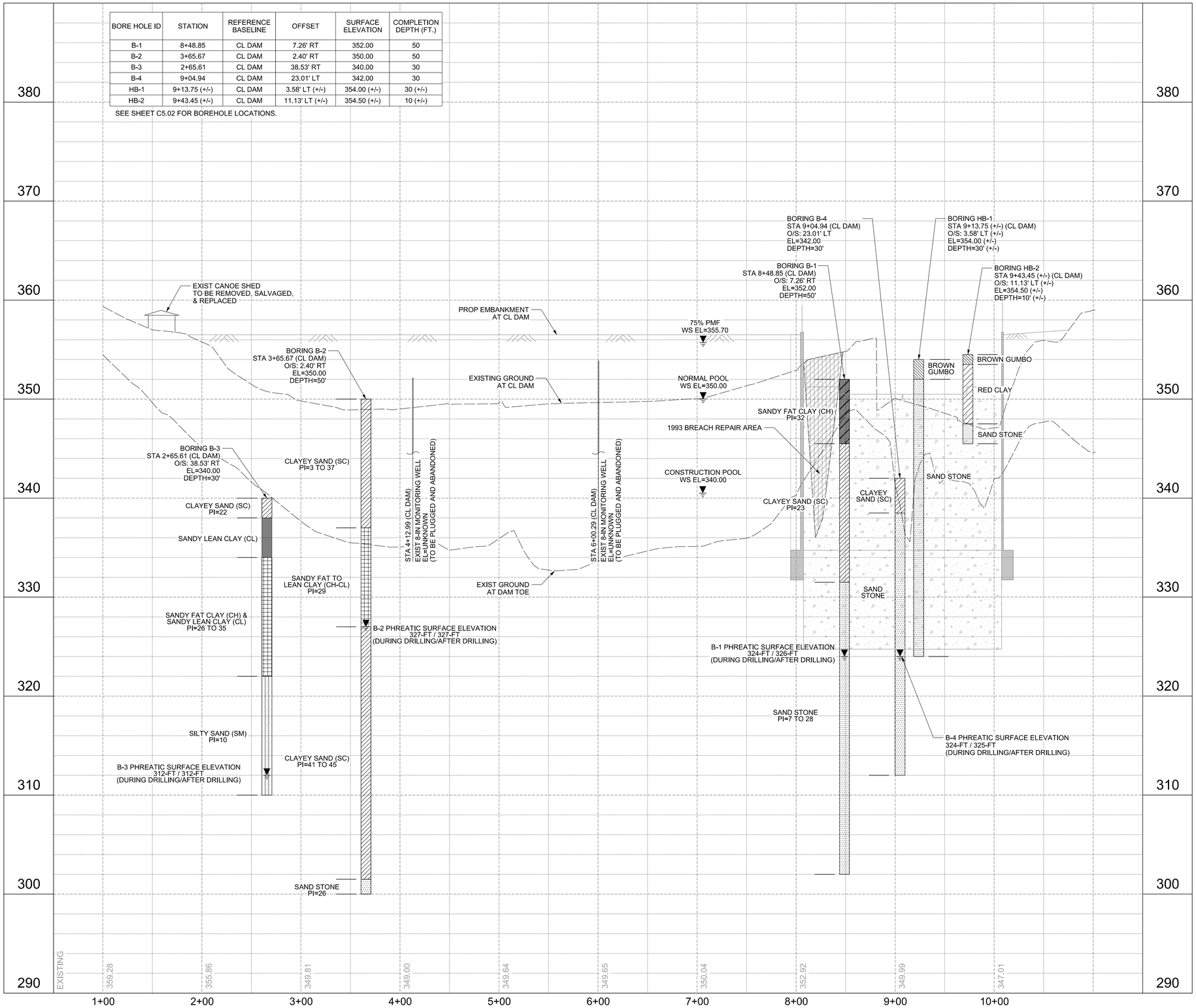
C5.03

BORE HOLE ID	STATION	REFERENCE BASELINE	OFFSET	SURFACE ELEVATION	COMPLETION DEPTH (FT.)
B-1	8+48.85	CL DAM	7.26' RT	352.00	50
B-2	3+65.67	CL DAM	2.40' RT	350.00	50
B-3	2+65.61	CL DAM	38.53' RT	340.00	30
B-4	9+04.94	CL DAM	23.01' LT	342.00	30
HB-1	9+13.75 (+/-)	CL DAM	3.58' LT (+/-)	354.00 (+/-)	30 (+/-)
HB-2	9+43.45 (+/-)	CL DAM	11.13' LT (+/-)	354.50 (+/-)	10 (+/-)

SEE SHEET C5.02 FOR BOREHOLE LOCATIONS.



0 25 50 75 100
HORIZONTAL SCALE: 1"=50'

0 2.5 5 7.5 10
VERTICAL SCALE: 1"=5'

BORE LOG LEGEND

- CLAYEY SAND (SC)
- SILTY SAND (SM)
- SANDY LEAN CLAY (CL)
- SANDY FAT CLAY (CH) & SANDY LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- BROWN GUMBO
- RED CLAY
- SAND STONE

NOTE:

1. BORES & LOGS CONDUCTED BY PSI INTERTEK. SEE GEOTECHNICAL REPORT DATED MARCH 4, 2020 FOR MORE INFORMATION.

2. LAKE LEVEL WAS NOT RECORDED AT THE TIME OF DRILLING AND MEASUREMENT OF THE PHREATIC WATER SURFACE. IT IS ESTIMATED THE LAKE LEVEL WAS APPROXIMATELY 343-FT(+/-) IN ELEVATION BASED ON VISUAL INSPECTION OF LAKE LEVEL COMPARED TO CONTOUR MAP.

3. HISTORIC BORES LABELED HB-1 AND HB-2 PER HISTORICAL DRAWINGS PROVIDED BY TPWD DATED 1933. HORIZONTAL AND VERTICAL ELEVATIONS APPROXIMATE AND FOR REFERENCE ONLY.

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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LICENSED PROFESSIONAL ENGINEER
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
SOIL BORING PROFILE
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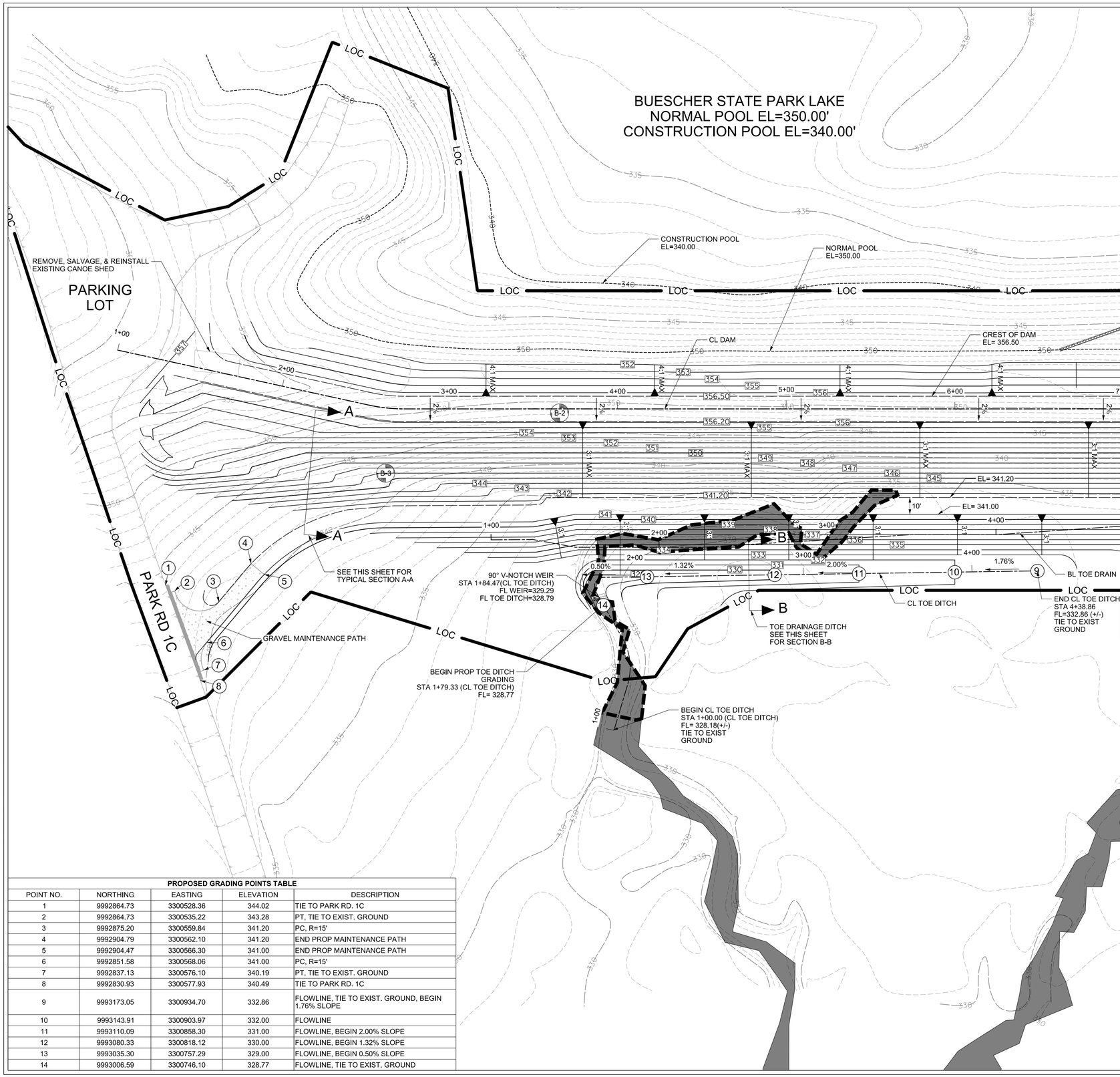
C5.04



PROPOSED GRADING POINTS TABLE				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	9992864.73	3300528.36	344.02	TIE TO PARK RD. 1C
2	9992864.73	3300535.22	343.28	PT, TIE TO EXIST. GROUND
3	9992875.20	3300559.84	341.20	PC, R=15'
4	9992904.79	3300562.10	341.20	END PROP MAINTENANCE PATH
5	9992904.47	3300566.30	341.00	END PROP MAINTENANCE PATH
6	9992851.58	3300568.06	341.00	PC, R=15'
7	9992837.13	3300576.10	340.19	PT, TIE TO EXIST. GROUND
8	9992830.93	3300577.93	340.49	TIE TO PARK RD. 1C
9	9993173.05	3300934.70	332.86	FLOWLINE, TIE TO EXIST. GROUND, BEGIN 1.76% SLOPE
10	9993143.91	3300903.97	332.00	FLOWLINE
11	9993110.09	3300858.30	331.00	FLOWLINE, BEGIN 2.00% SLOPE
12	9993080.33	3300818.12	330.00	FLOWLINE, BEGIN 1.32% SLOPE
13	9993035.30	3300757.29	329.00	FLOWLINE, BEGIN 0.50% SLOPE
14	9993006.59	3300746.10	328.77	FLOWLINE, TIE TO EXIST. GROUND

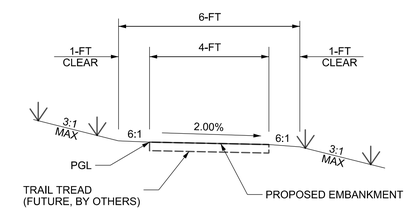
0 15 30 45 60
HORIZONTAL SCALE: 1"=30'

LEGEND

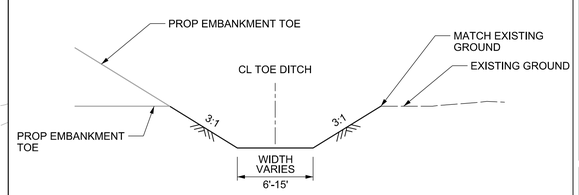
- EXISTING PARCEL LINE
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- 356.50 CONTOUR BREAK LINE
- 350 NORMAL POOL BOUNDARY
- LIMITS OF AQUATIC FEATURE
- LOC LIMITS OF CONSTRUCTION
- EXISTING ORDINARY HIGH WATER MARK
- PROPOSED SPILLWAY
- B-1 BORE HOLE LOCATION

NOTES:

1. SEE SURVEY CONTROL SHEET C2.02 FOR HORIZONTAL LAYOUT.
2. EXISTING TREES NOT SHOWN.
3. LIMITS OF OHWM LOCATED IN PROPOSED GRADING AREA MAY REQUIRE DEWATERING AND OVER-EXCAVATION OF ORGANIC MATERIAL PRIOR TO PLACEMENT OF EMBANKMENT FILL.
4. GRADES AND DIMENSIONS SHOWN ARE FINISHED GRADES AFTER TOPSOIL/SEEDING AND SOIL RETENTION BLANKET.



ON GRADE TRAIL TYPICAL SECTION A-A
(N.T.S.)



SECTION B-B
(N.T.S.)

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BUESCHER STATE PARK
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TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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LICENSED
PROFESSIONAL ENGINEER

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
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GRADING PLAN
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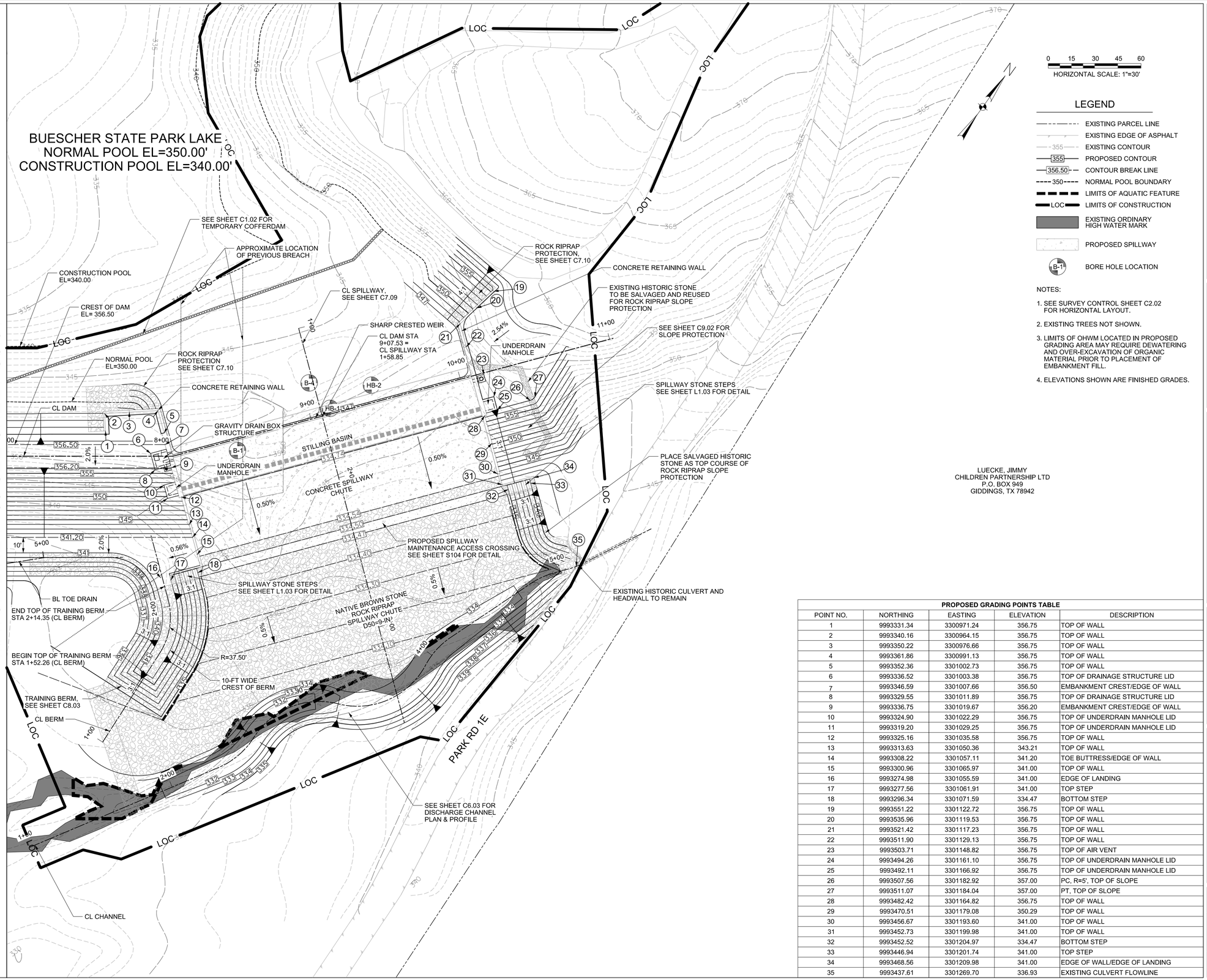

NOTES:

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2. EXISTING TREES NOT SHOWN.
3. LIMITS OF OHWM LOCATED IN PROPOSED GRADING AREA MAY REQUIRE DEWATERING AND OVER-EXCAVATION OF ORGANIC MATERIAL PRIOR TO PLACEMENT OF EMBANKMENT FILL.
4. ELEVATIONS SHOWN ARE FINISHED GRADES.

PROPOSED GRADING POINTS TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	9993331.34	3300971.24	356.75	TOP OF WALL
2	9993340.16	3300964.15	356.75	TOP OF WALL
3	9993350.22	3300976.66	356.75	TOP OF WALL
4	9993361.86	3300991.13	356.75	TOP OF WALL
5	9993352.36	3301002.73	356.75	TOP OF WALL
6	9993336.52	3301003.38	356.75	TOP OF DRAINAGE STRUCTURE LID
7	9993346.59	3301007.66	356.50	EMBANKMENT CREST/EDGE OF WALL
8	9993329.55	3301011.89	356.75	TOP OF DRAINAGE STRUCTURE LID
9	9993336.75	3301019.67	356.20	EMBANKMENT CREST/EDGE OF WALL
10	9993324.90	3301022.29	356.75	TOP OF UNDERDRAIN MANHOLE LID
11	9993319.20	3301029.25	356.75	TOP OF UNDERDRAIN MANHOLE LID
12	9993325.16	3301035.58	356.75	TOP OF WALL
13	9993313.63	3301050.36	343.21	TOP OF WALL
14	9993308.22	3301057.11	341.20	TOE BUTTRESS/EDGE OF WALL
15	9993300.96	3301065.97	341.00	TOP OF WALL
16	9993274.98	3301055.59	341.00	EDGE OF LANDING
17	9993277.56	3301061.91	341.00	TOP STEP
18	9993296.34	3301071.59	334.47	BOTTOM STEP
19	9993551.22	3301122.72	356.75	TOP OF WALL
20	9993535.96	3301119.53	356.75	TOP OF WALL
21	9993521.42	3301117.23	356.75	TOP OF WALL
22	9993511.90	3301129.13	356.75	TOP OF WALL
23	9993503.71	3301148.82	356.75	TOP OF AIR VENT
24	9993494.26	3301161.10	356.75	TOP OF UNDERDRAIN MANHOLE LID
25	9993492.11	3301166.92	356.75	TOP OF UNDERDRAIN MANHOLE LID
26	9993507.56	3301182.92	357.00	PC, R=5', TOP OF SLOPE
27	9993511.07	3301184.04	357.00	PT, TOP OF SLOPE
28	9993482.42	3301164.82	356.75	TOP OF WALL
29	9993470.51	3301179.08	350.29	TOP OF WALL
30	9993456.67	3301193.60	341.00	TOP OF WALL
31	9993452.73	3301199.98	341.00	TOP OF WALL
32	9993452.52	3301204.97	334.47	BOTTOM STEP
33	9993446.94	3301201.74	341.00	TOP STEP
34	9993468.56	3301209.98	341.00	EDGE OF WALL/EDGE OF LANDING
35	9993437.61	3301269.70	336.93	EXISTING CULVERT FLOWLINE

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Revision	
No.	Date	Description

PROJECT NUMBER: 118686
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Sheet Title
GRADING PLAN
2 OF 2
Sheet Number
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C6.02

0 10 20 30 40
HORIZONTAL SCALE: 1"=20'

LEGEND

- EXISTING PARCEL LINE
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- LOC LIMITS OF CONSTRUCTION
- 350 NORMAL POOL BOUNDARY
- PROPOSED LIMITS OF ROCK RIPRAP
- PROPOSED ROCK RIPRAP
- B-1 BORE HOLE LOCATION
- TREE REMOVAL
- EXISTING TREE TO REMAIN

NOTES:

1. BEDDING MATERIAL REQUIRED UNDER PROPOSED RIPRAP, SEE SHEET C8.04 FOR BEDDING DETAIL.
2. REFERENCE SPECIFICATION 31 37 00 'RIPRAP, BOULDERS, AND BEDDING' FOR MORE INFORMATION.
3. ROCK RIPRAP SHALL BE NATIVE BROWN SANDSTONE, LIMESTONE IS NOT ALLOWABLE.
4. SPECIFIED ROCK RIPRAP AND BEDDING THICKNESSES ARE NORMAL TO THE SLOPE.
5. ELEVATIONS SHOWN ARE FINISHED ROCK RIPRAP GRADES.

ROCK RIPRAP LAYOUT POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	9993324.45	3300962.67	354.67	TOP OF SLOPE
2	9993347.26	3300944.32	347.00	BOT. OF SLOPE
3	9993364.85	3300965.92	347.00	PC, R=20', BOT. OF SLOPE
4	9993364.56	3300992.36	347.00	PT, BOT. OF SLOPE
5	9993340.57	3300962.54	351.66	EDGE OF WALL
6	9993330.72	3300970.46	354.67	TOP OF SLOPE
7	9993518.14	3301115.23	347.00	BOT. OF SLOPE
8	9993519.10	3301105.23	347.00	BOT. OF SLOPE
9	9993554.63	3301112.18	356.33	TOP OF SLOPE
10	9993553.74	3301122.20	356.55	TOP OF SLOPE
11	9993226.54	3300986.15	336.00	BOT. OF SLOPE PROTECTION
12	9993238.72	3300977.40	341.00	EDGE OF TOE BUTTRESS
13	9993256.65	3301028.11	336.00	PC, R=17', BOT. OF SLOPE PROTECTION
14	9993268.84	3301019.37	341.00	PC, R=32', EDGE OF TOE BUTTRESS
15	9993255.97	3301048.77	336.00	PT, BOT. OF TRAINING BERM

ROCK RIPRAP LAYOUT POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
16	9993268.09	3301057.68	341.00	PT, TOP OF TRAINING BERM
17	9993278.14	3301065.94	341.00	TOP OF TRAINING BERM
18	9993289.12	3301076.21	335.00	BOT. OF TRAINING BERM
19	9993246.70	3301058.98	336.00	BOT. OF TRAINING BERM
20	9993255.60	3301071.06	341.00	TOP OF TRAINING BERM
21	9993261.54	3301079.11	341.00	TOP OF TRAINING BERM
22	9993272.22	3301093.59	335.00	BOT. OF TRAINING BERM, EDGE OF CHUTE
23	9993217.86	3301064.39	336.00	BOT. OF TRAINING BERM
24	9993187.71	3301058.77	334.60	LAUNCHABLE STONE SECTION
25	9993196.97	3301065.47	334.92	BOT. OF TRAINING BERM, LAUNCHABLE STONE SECTION
26	9993160.67	3301115.62	334.00	PC, R=47', LAUNCHABLE STONE SECTION
27	9993178.55	3301132.45	334.00	PT, R=47', TOP OF CHANNEL
28	9993202.20	3301146.01	334.00	PC, R=42.50', TOP OF CHANNEL
29	9993226.44	3301152.24	334.00	PRC, R=58.55', TOP OF CHANNEL
30	9993246.13	3301154.67	334.00	TOP OF CHANNEL, EDGE OF CHUTE

ROCK RIPRAP LAYOUT POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
31	9993276.78	3301176.60	334.00	PCC, R=29.71', TOP OF CHANNEL, EDGE OF CHUTE
32	9993282.23	3301187.14	334.00	PRC, R=41', TOP OF CHANNEL, EDGE OF CHUTE
33	9993327.66	3301218.85	334.00	PRC, R=59', TOP OF CHANNEL, EDGE OF CHUTE
34	9993345.56	3301219.20	334.00	PT, TOP OF CHANNEL, EDGE OF CHUTE
35	9993365.36	3301226.57	334.00	TOP OF CHANNEL, EDGE OF CHUTE
36	9993403.92	3301244.12	334.00	TOP OF CHANNEL, EDGE OF CHUTE
37	9993146.25	3301135.54	332.68	LAUNCHABLE STONE SECTION
38	9993137.25	3301128.48	332.22	LAUNCHABLE STONE SECTION
39	9993301.09	3301067.91	334.54	CONCRETE CHUTE TO ROCK RIPRAP
40	9993455.77	3301194.70	334.54	CONCRETE CHUTE TO ROCK RIPRAP
41	9993296.63	3301073.35	334.50	ROCK RIPRAP CHUTE, EDGE OF WALL
42	9993451.33	3301200.12	334.50	ROCK RIPRAP CHUTE, EDGE OF WALL
43	9993292.84	3301077.98	334.47	ROCK RIPRAP CHUTE, EDGE OF PATH
44	9993447.54	3301204.75	334.47	ROCK RIPRAP CHUTE, EDGE OF PATH
45	9993450.63	3301207.28	335.00	BOT. OF SLOPE, EDGE OF CHUTE
46	9993464.54	3301218.70	341.00	TOP OF SLOPE, TOP OF STEP
47	9993433.29	3301228.43	335.00	PC, R=30', BOT. OF SLOPE, EDGE OF CHUTE
48	9993445.84	3301241.52	341.00	PC, R=6', TOP OF SLOPE
49	9993426.74	3301251.31	335.00	PT, BOT. OF SLOPE, EDGE OF CHANNEL
50	9993444.89	3301247.07	341.00	PT, TOP OF SLOPE
51	9993429.36	3301263.35	335.00	EDGE OF CHANNEL
52	9993448.03	3301256.58	342.53	BOT. OF EXISTING RET. WALL
53	9993430.87	3301269.91	337.75	BOT. OF EXISTING RET. WALL
54	9993445.66	3301258.08	343.26	BOT. OF EXISTING RET. WALL
55	9993444.33	3301269.49	343.41	BOT. OF EXISTING RET. WALL

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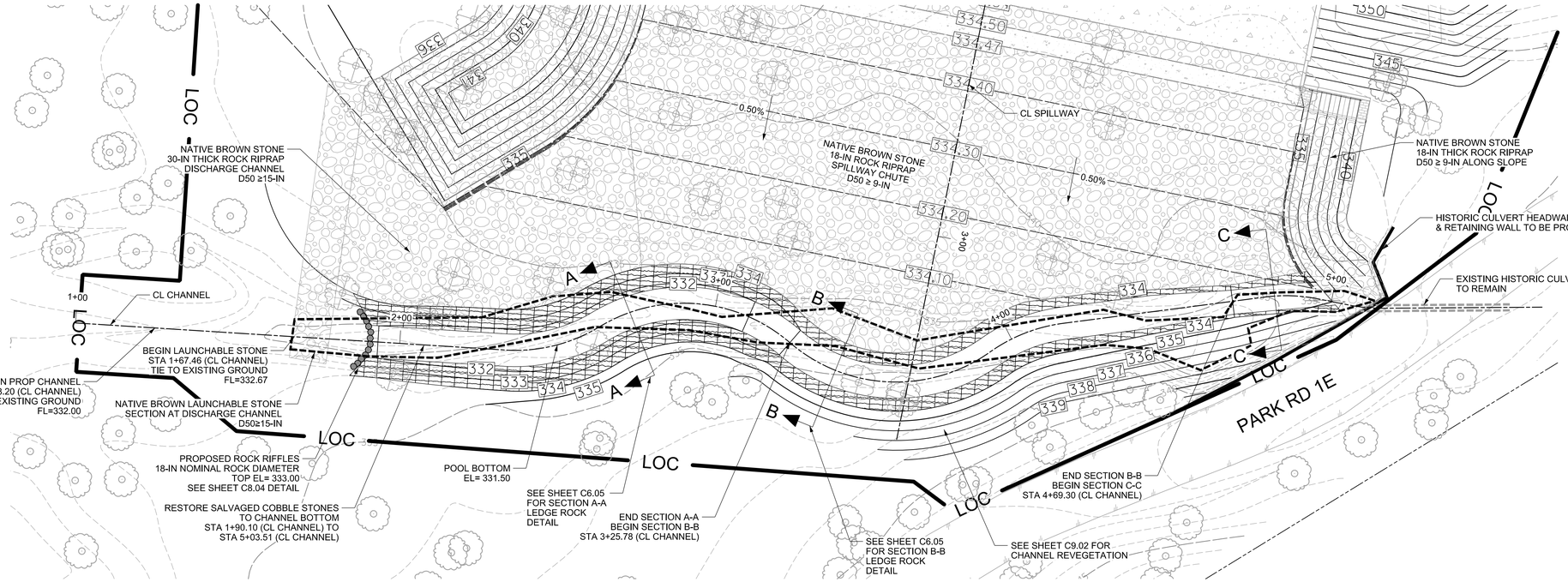
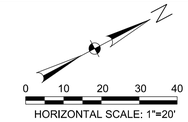
BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
ROCK RIPRAP LAYOUT
Sheet Number
029 of 74
C6.03



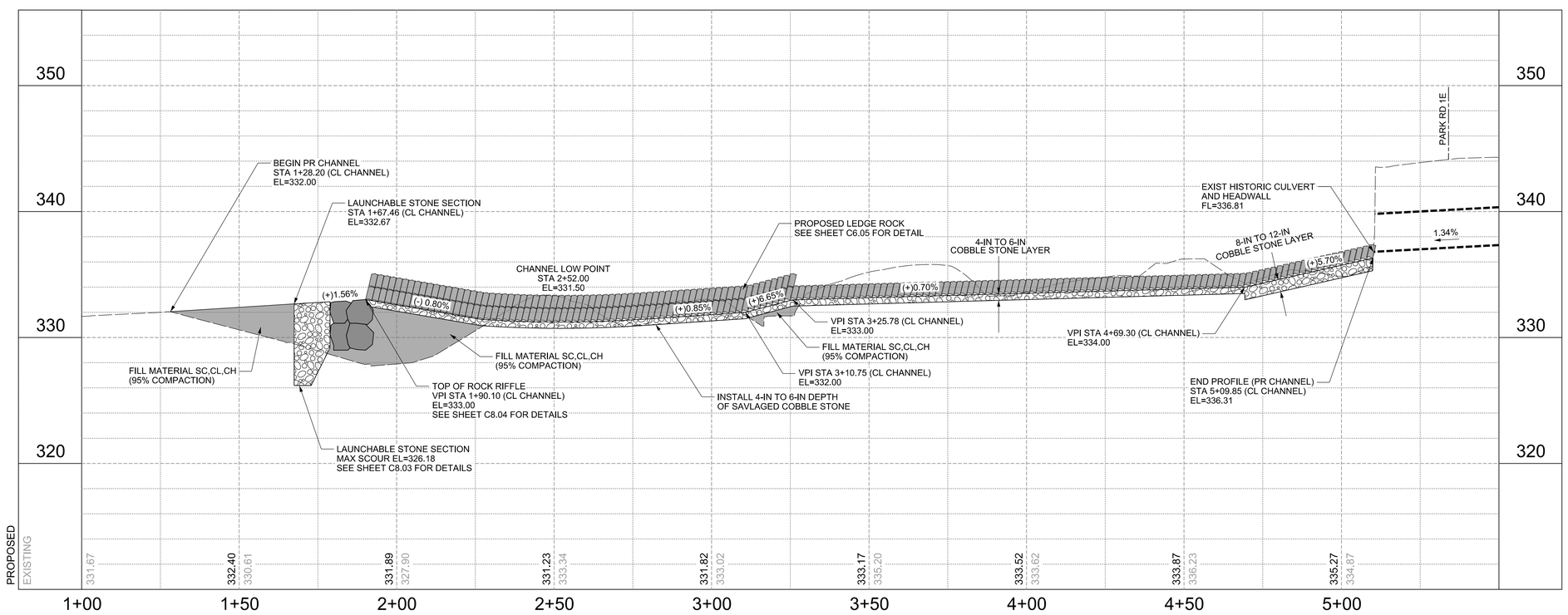


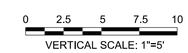
LEGEND

- EXISTING PARCEL LINE
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- 356.50 CONTOUR BREAK LINE
- 350 NORMAL POOL BOUNDARY
- EXISTING LIMITS OF COBBLE STONE CHANNEL
- PROPOSED ROCK RIPRAP CHUTE
- PROPOSED LEDGE ROCK
- TREE REMOVAL
- EXISTING TREE TO REMAIN

NOTES:

1. SEE SURVEY CONTROL SHEET C2.02 FOR HORIZONTAL LAYOUT.
2. HISTORIC CULVERT, CULVERT HEADWALL, AND ADJACENT ROCK RETAINING WALL TO BE PROTECTED WITH WATER FILLED BARRIERS.
3. SEE SHEET C8.03 FOR LAUNCHABLE STONE SECTIONS AT DISCHARGE CHANNEL AND TRAINING BERM
4. SEE RIPRAP, BOULDERS, AND BEDDING SECTION IN SPECIFICATIONS FOR D50 GRADATION AND RIPRAP COMPOSITION.





NOTE:

1. STATION AND PROPOSED ELEVATION CALLOUTS ARE MEASURED TO TOP OF COBBLE STONE LAYER.

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1-13-2021

Revision	
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DISCHARGE CHANNEL
PLAN & PROFILE

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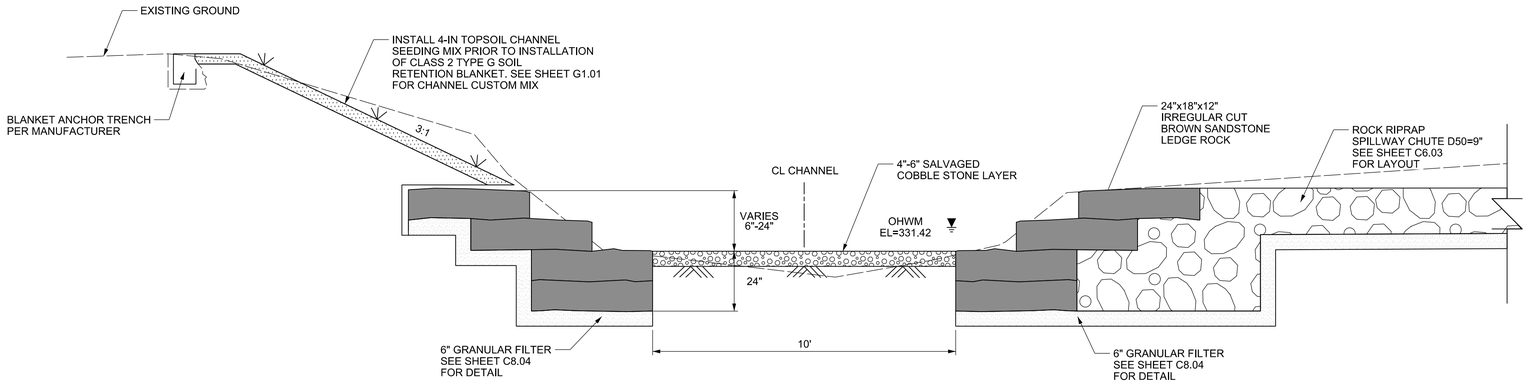
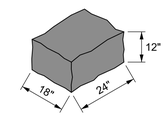
030 of 74
C6.04



DISCHARGE CHANNEL TYP. SECTION A-A

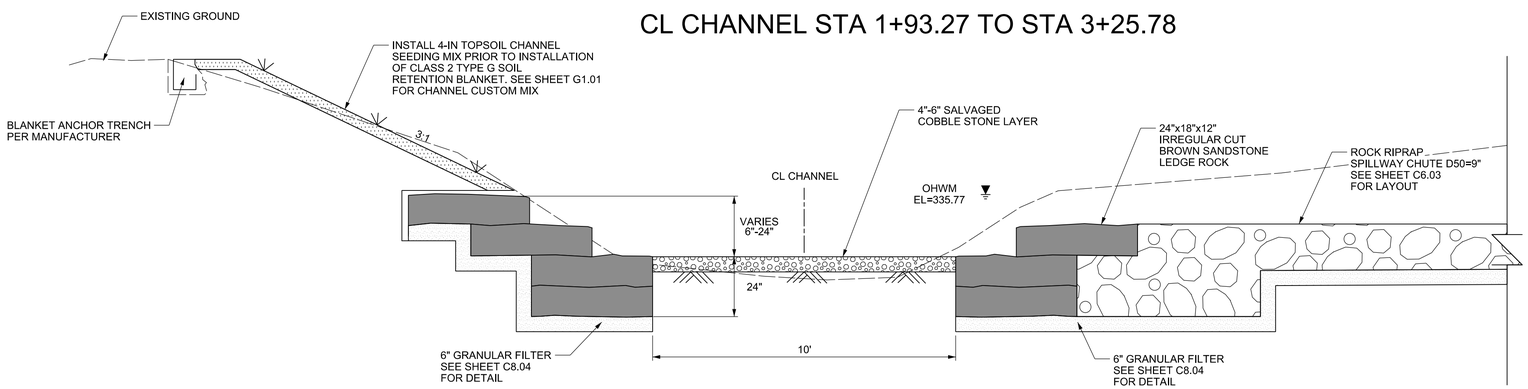
(N.T.S.)

CL CHANNEL STA 1+93.27 TO STA 3+25.78



LEDGE ROCK DIMENSIONS

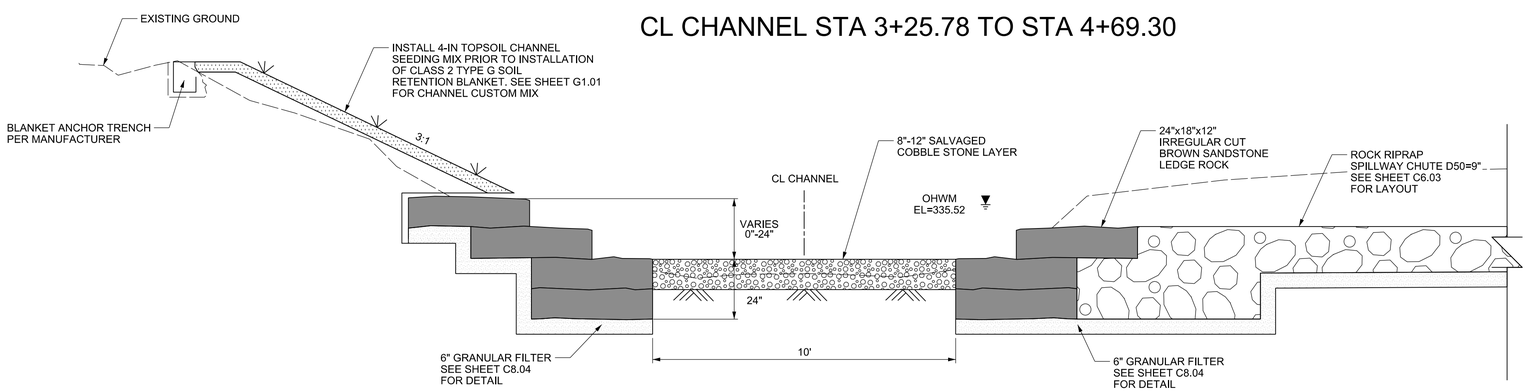
(N.T.S.)



DISCHARGE CHANNEL TYP. SECTION B-B

(N.T.S.)

CL CHANNEL STA 3+25.78 TO STA 4+69.30



DISCHARGE CHANNEL TYP. SECTION C-C

(N.T.S.)

CL CHANNEL STA 4+69.30 TO STA 5+03.51

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
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1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DISCHARGE CHANNEL DETAILS

Sheet Number
031 of 74
C6.05

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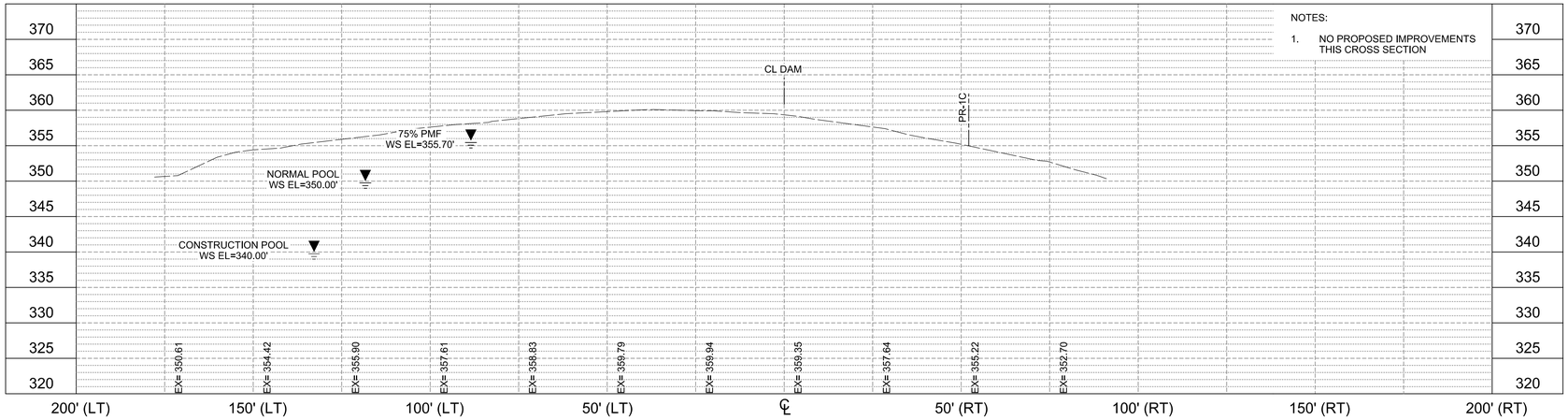
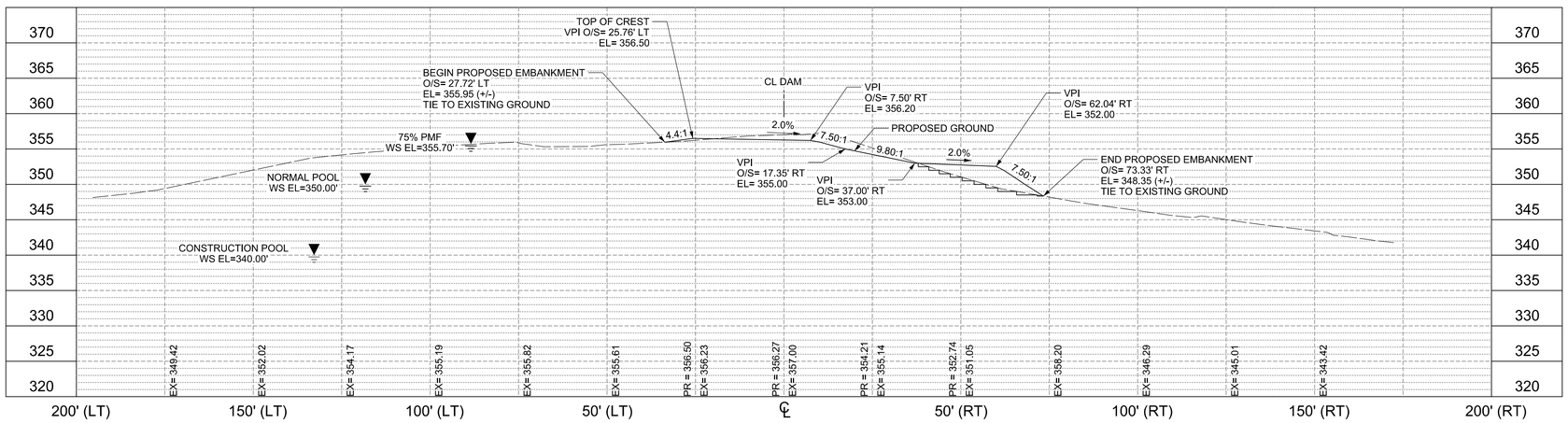
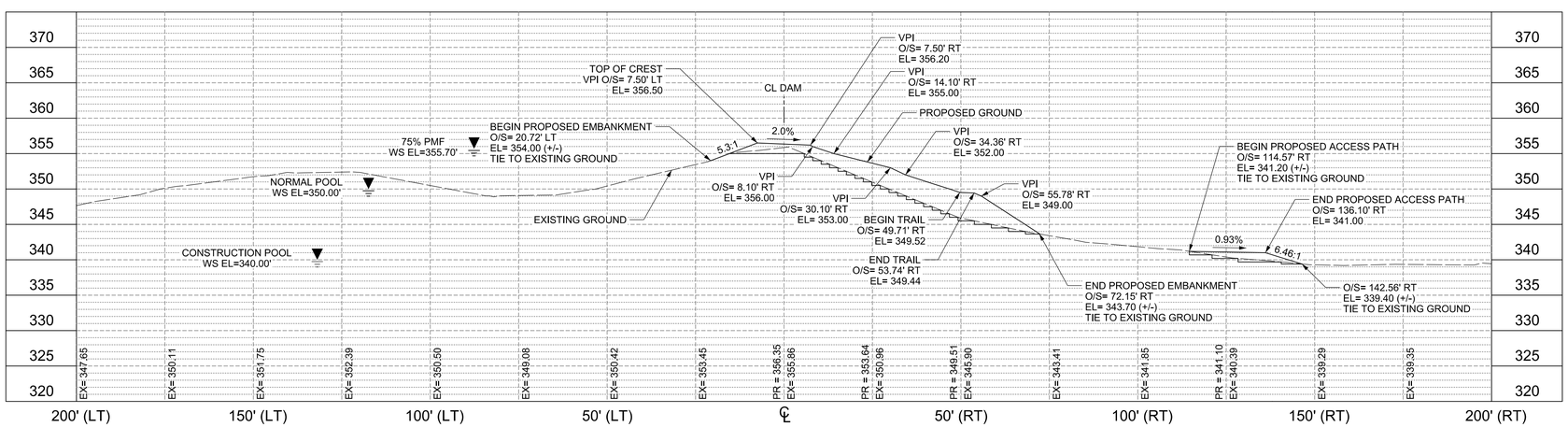
3/11/2021



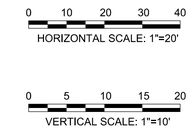
STA 1+00



STA 1+50



STA 2+00



NOTES:

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7. BEGIN TOE DRAIN STA 3+25.00 (CL DAM) END TOE DRAIN STA 4+75.00 (CL DAM) SEE TOE DRAIN PLAN & PROFILE SHEET C7.08 FOR MORE INFORMATION.
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TPWD# 118686

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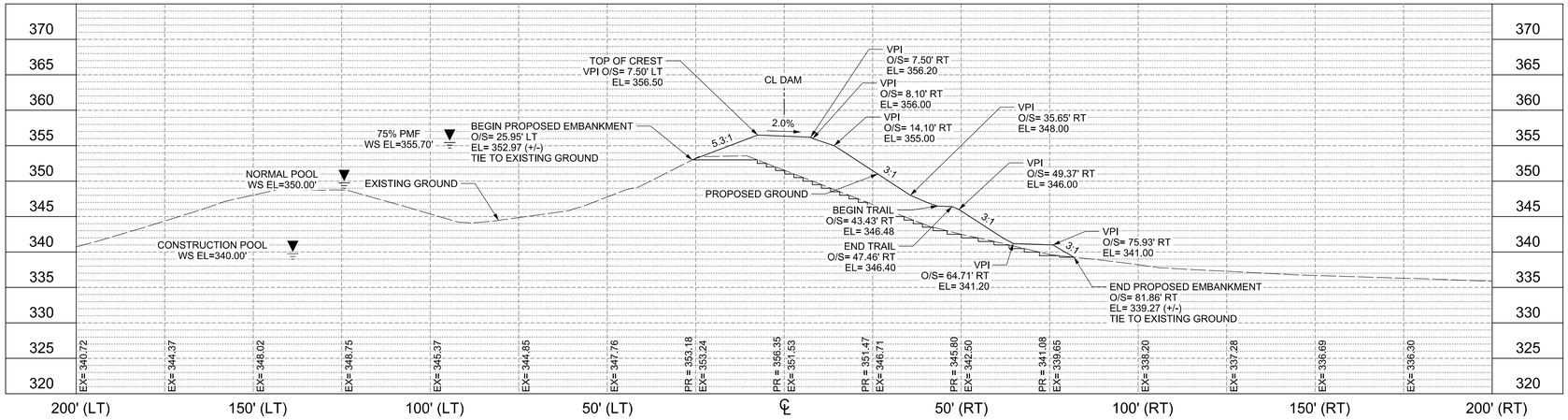
1-20-2021

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DAM CROSS SECTIONS
STA 1+00 TO STA 2+00

Sheet Number
032 of 74
C7.01



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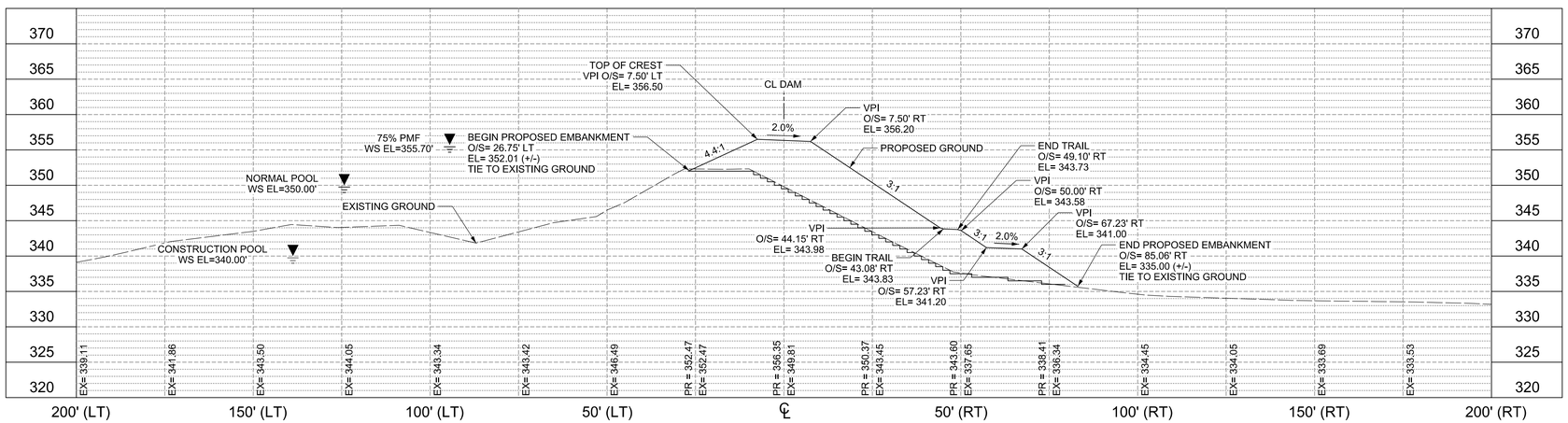
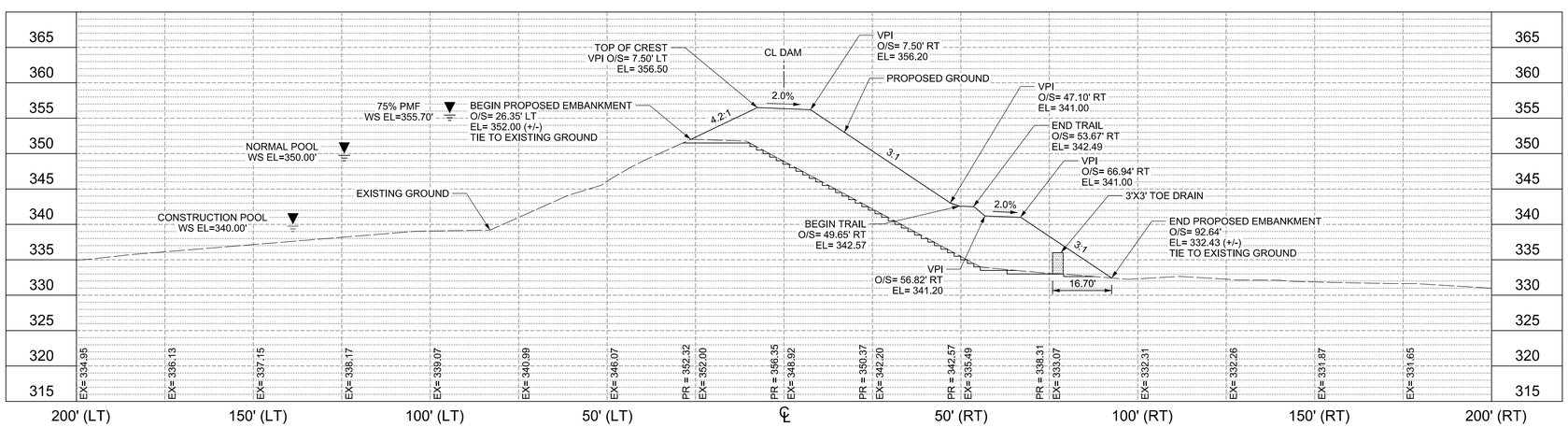


STA 3+00



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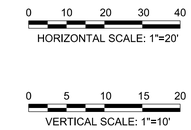

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BUESCHER STATE PARK
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TPWD# 118686

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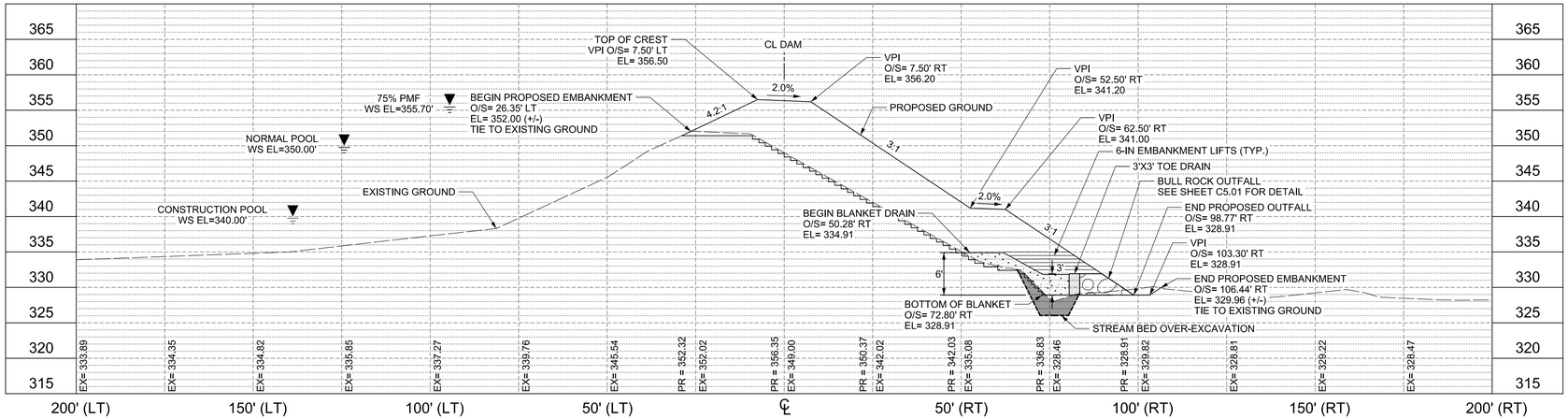
1-20-2021

Revision		
No.	Date	Description

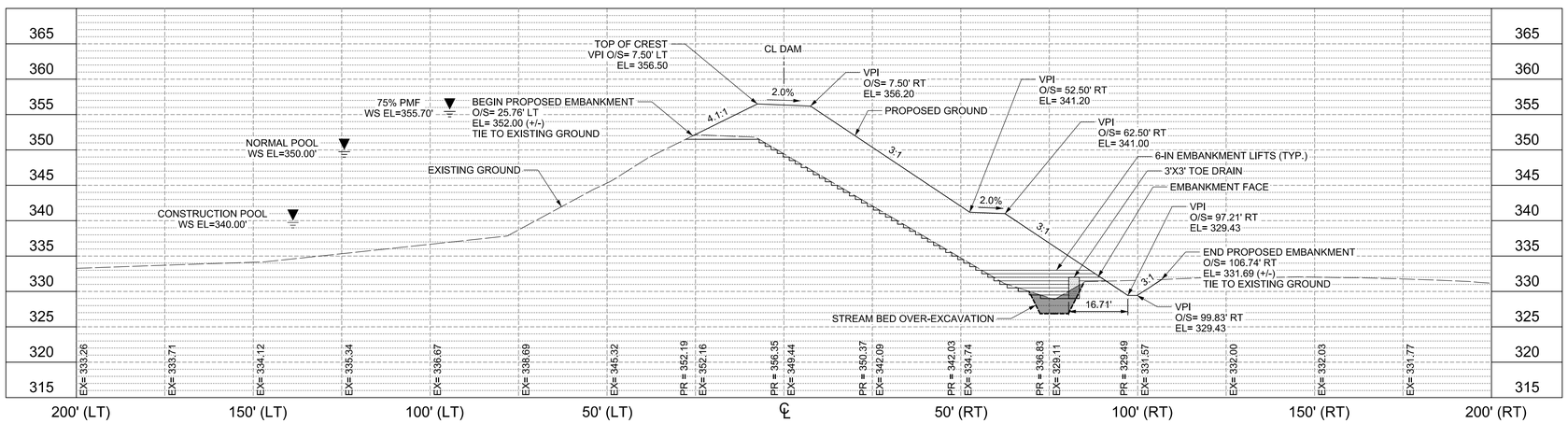
PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DAM CROSS SECTIONS
STA 2+50 TO STA 3+50

Sheet Number
033 of 74
C7.02



STA 4+00



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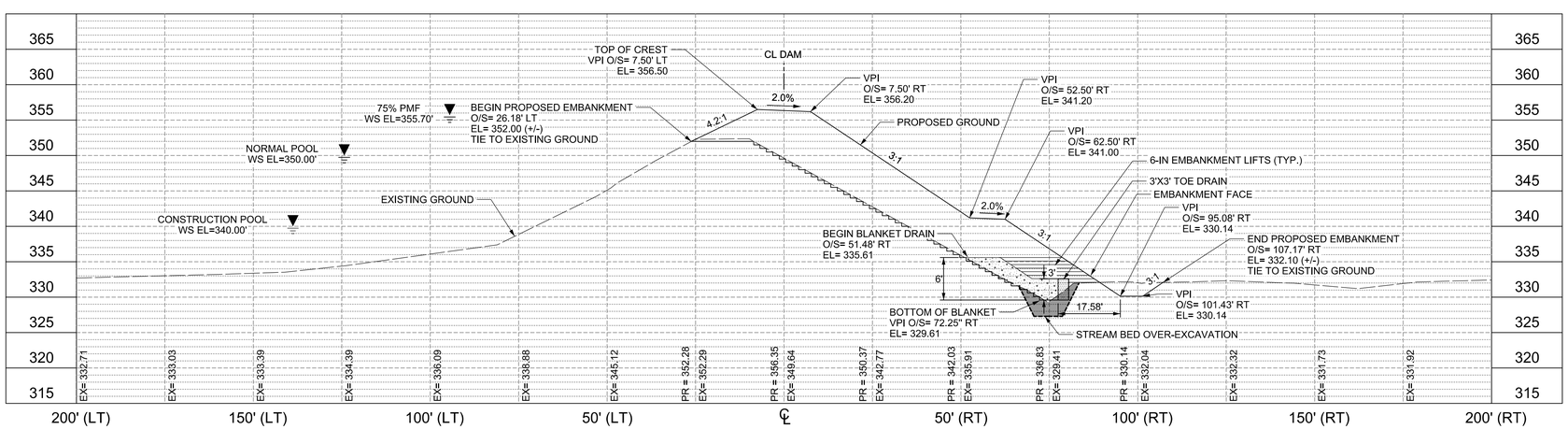

STA 5+00

0 10 20 30 40
HORIZONTAL SCALE: 1"=20'

0 5 10 15 20
VERTICAL SCALE: 1"=10'

NOTES:

1. SEE SPECIFICATIONS 31 20 00 'EARTHWORK', 35 73 13 'EMBANKMENT FOR EARTH DAMS' AND GEOTECHNICAL REPORT FOR MATERIALS, EXCAVATION, AND EMBANKMENT PLACEMENT INFORMATION.
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TPWD# 118686

STATE OF TEXAS
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Revision		
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PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
DAM CROSS SECTIONS
STA 4+00 TO STA 5+00
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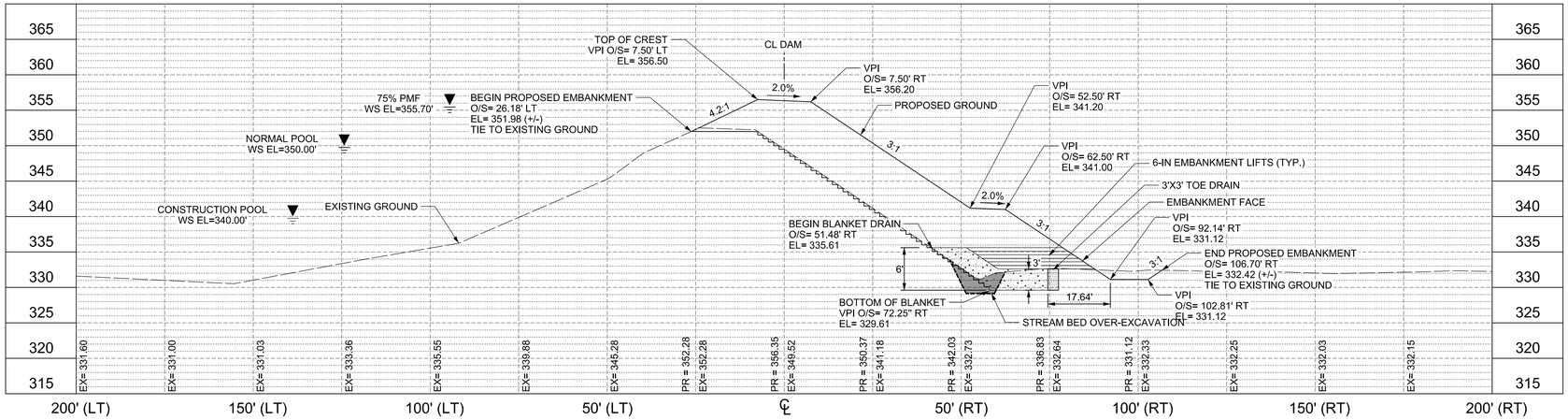
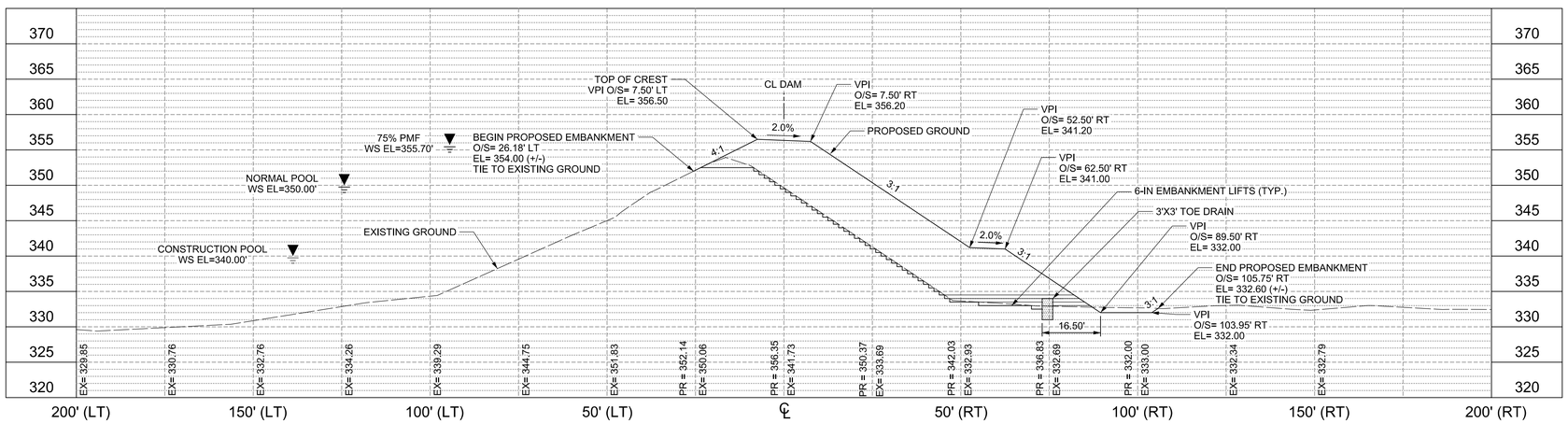
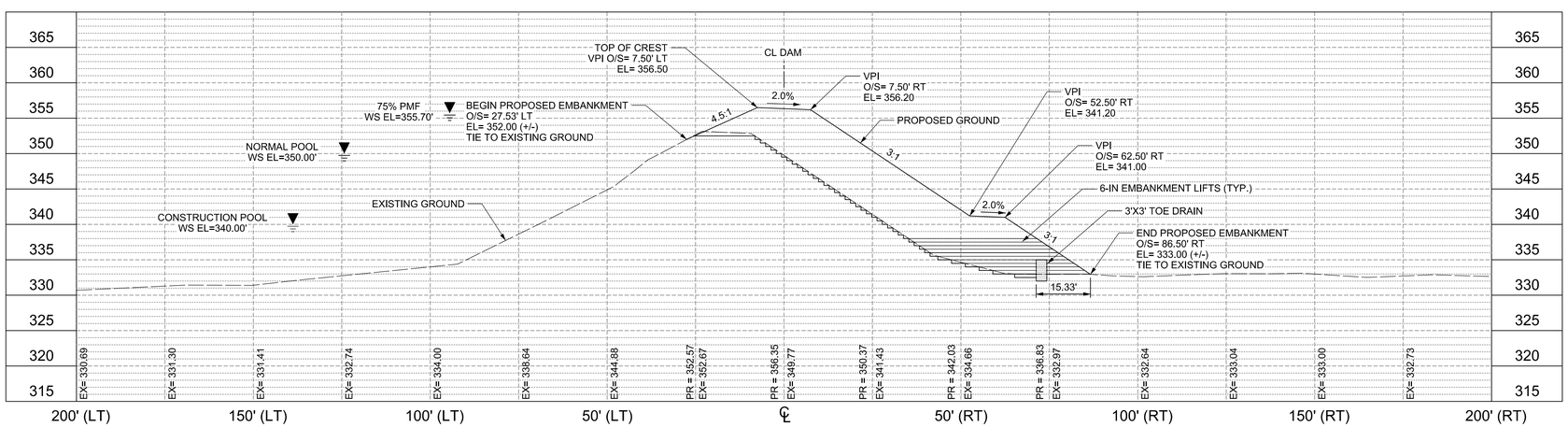


STA 5+50



STA 6+00



STA 6+50

0 10 20 30 40
HORIZONTAL SCALE: 1"=20'

0 5 10 15 20
VERTICAL SCALE: 1"=10'

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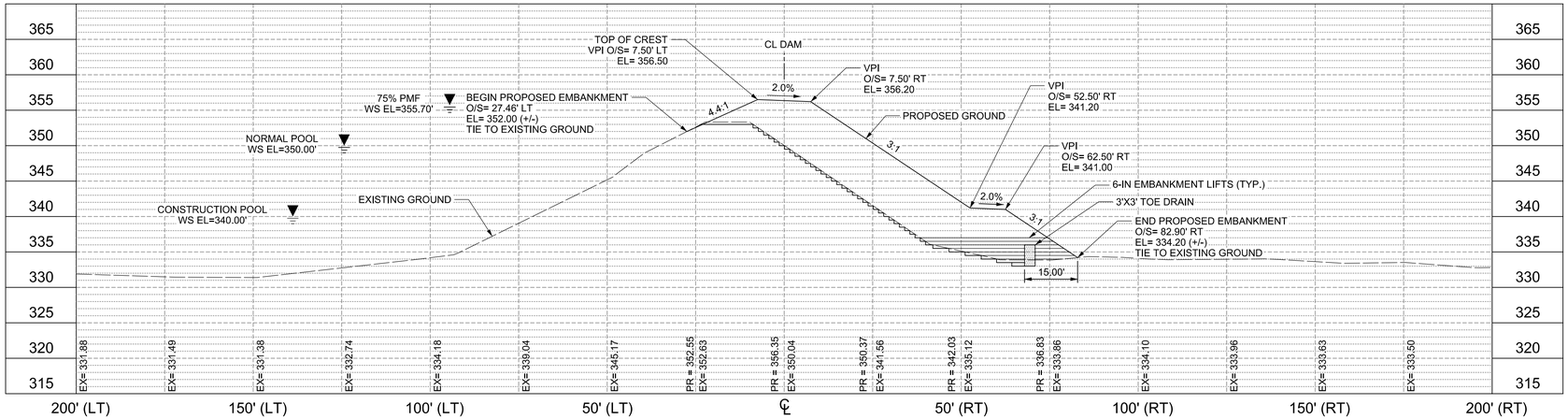
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DAM CROSS SECTIONS
STA 5+50 TO STA 6+50

Sheet Number
035 of 74
C7.04



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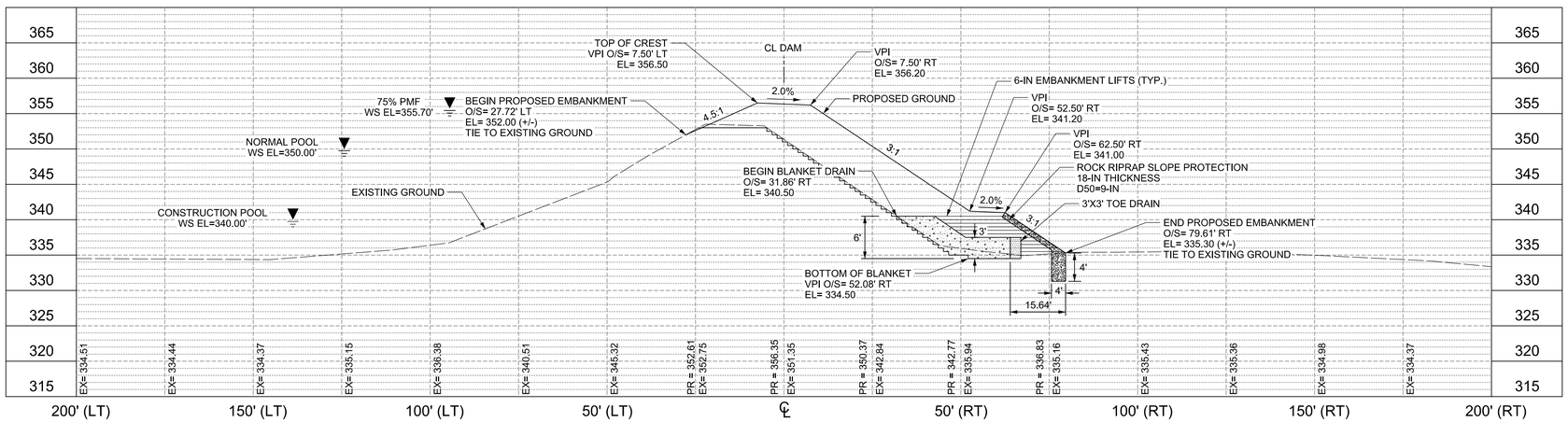
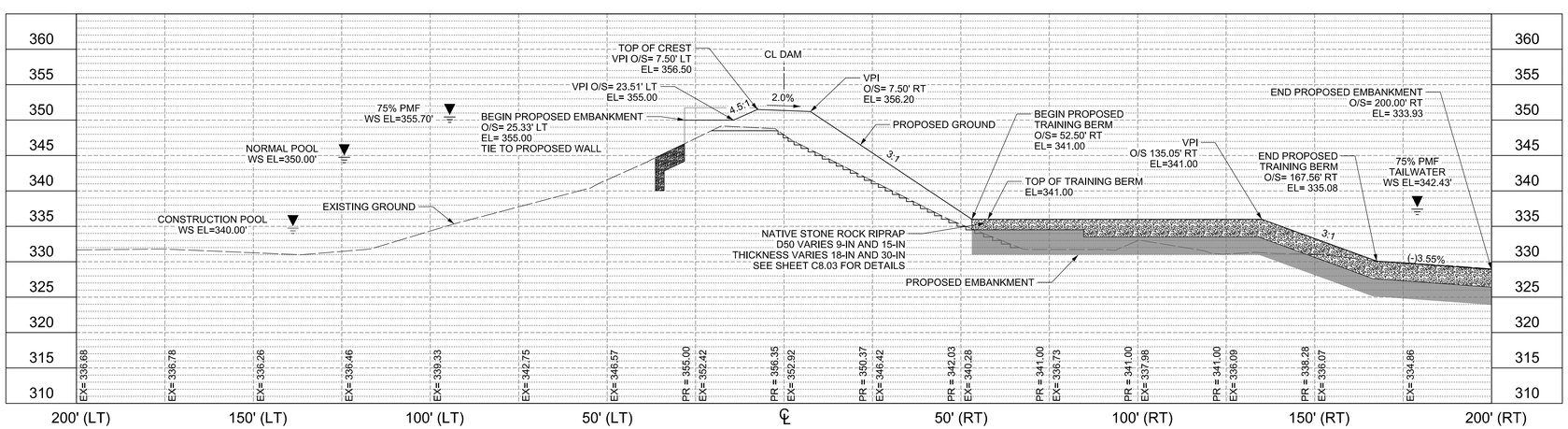
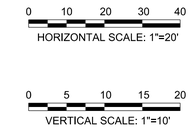


STA 7+50



STA 8+00



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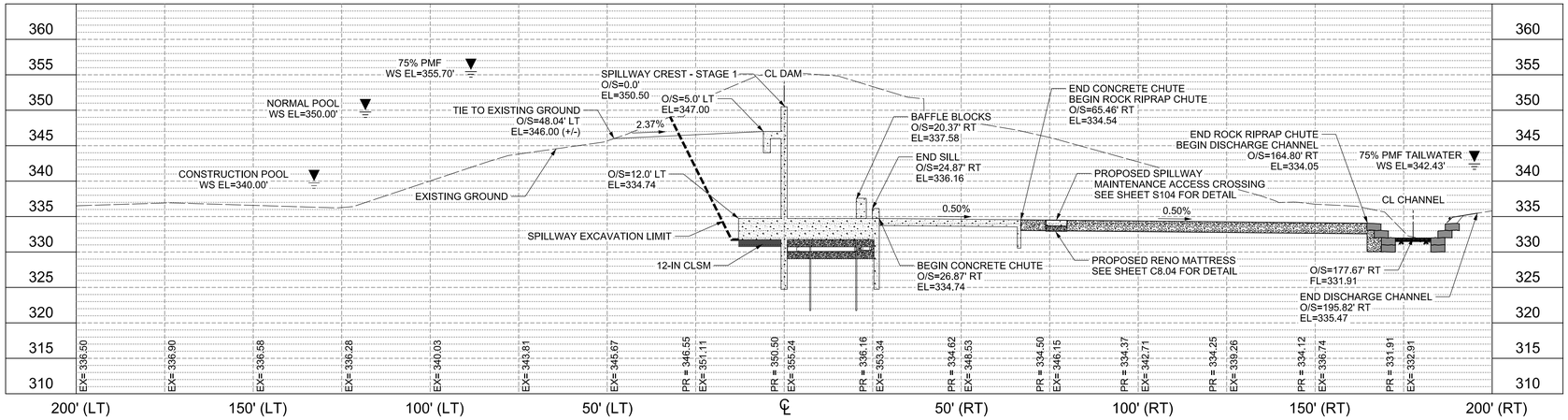
No.	Date	Description

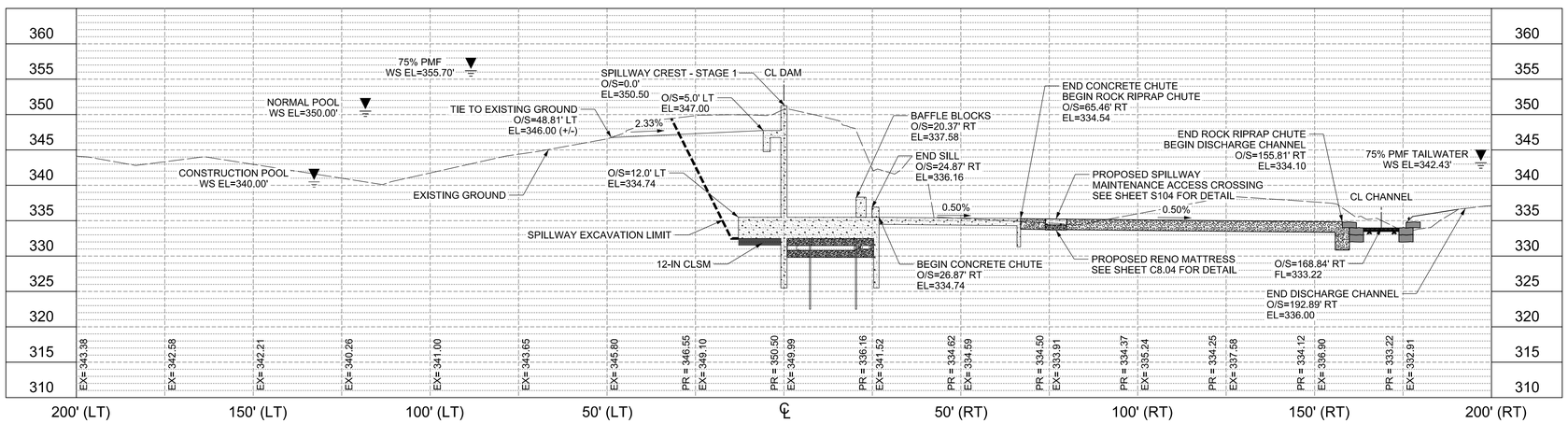
PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DAM CROSS SECTIONS
STA 7+00 TO STA 8+00

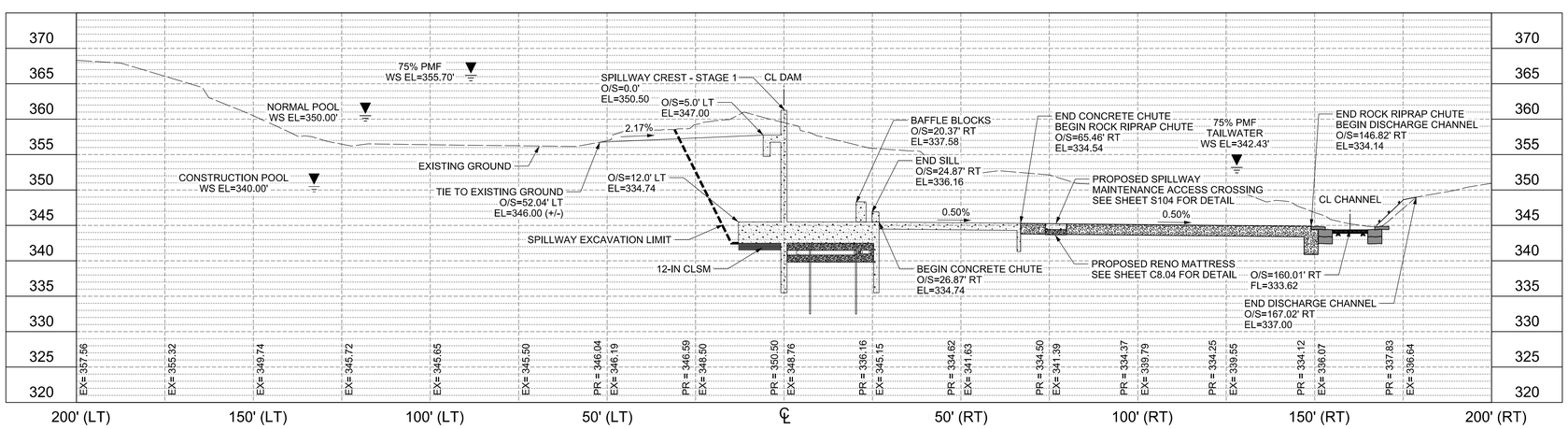
Sheet Number
036 of 74
C7.05



STA 8+50



STA 9+00



STA 9+50

0 10 20 30 40
HORIZONTAL SCALE: 1"=20'

0 5 10 15 20
VERTICAL SCALE: 1"=10'

NOTES:

1. SEE SPECIFICATIONS 31 20 00 'EARTHWORK', 35 73 13 'EMBANKMENT FOR EARTH DAMS' AND GEOTECHNICAL REPORT FOR MATERIALS, EXCAVATION, AND EMBANKMENT PLACEMENT INFORMATION.
2. CONTRACTOR TO STRIP & STOCKPILE TOPSOIL FOR FUTURE USE.
3. CONTRACTOR TO SCARIFY EXISTING EMBANKMENT SURFACE TO A MIN. DEPTH OF 8 INCHES.
4. MAXIMUM COMPACTED LIFT OF EMBANKMENT NOT TO EXCEED THICKNESS OF 6 INCHES.
5. EMBANKMENT PLACEMENT SHALL BE LIMITED TO 6-FT VERTICAL PER CONSTRUCTION DAY.
6. SEE EMBANKMENT BENCHING DETAIL ON SHEET C5.01 FOR MORE INFORMATION.
7. BEGIN TOE DRAIN STA 3+25.00 (CL DAM) END TOE DRAIN STA 4+75.00 (CL DAM) SEE TOE DRAIN PLAN & PROFILE SHEET C7.08 FOR MORE INFORMATION.
8. SEE SHEET C8.03 FOR ROCK RIPRAP TOE DETAIL.
9. GRADES AND DIMENSIONS SHOWN ARE FINISHED SPILLWAY AND ROCK RIPRAP GRADES.
10. TEMPORARY COFFERDAM NOT SHOWN. SEE SHEET C1.02 FOR LOCATION AND SHEET C4.01 FOR 5-YEAR STORM EVENT DATA.

TEXAS PARKS AND WILDLIFE
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INFRASTRUCTURE AND PLANNING DESIGN
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TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
DAM CROSS SECTIONS
STA 8+50 TO STA 9+50

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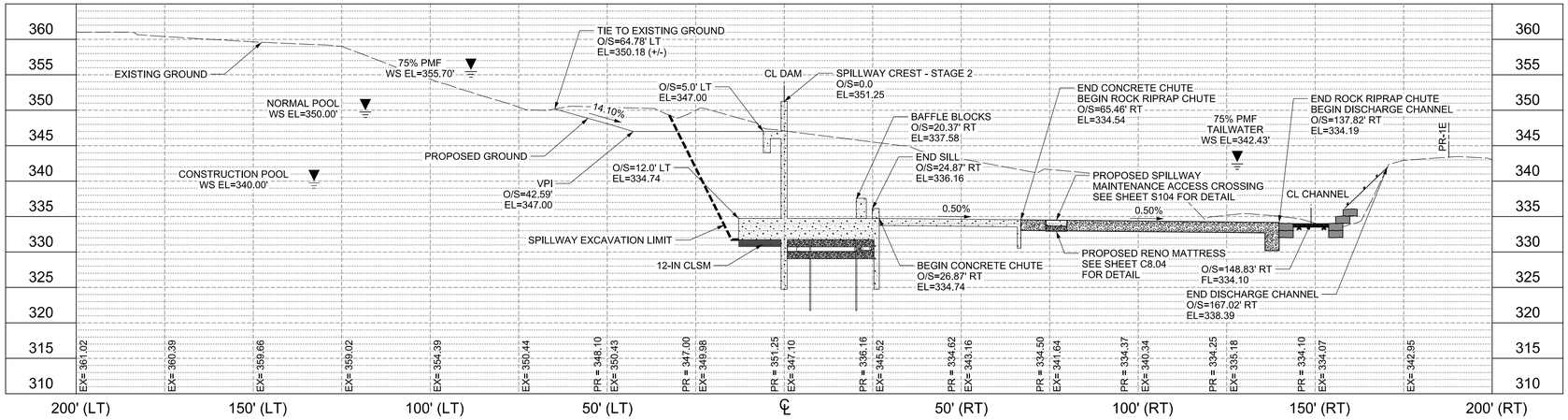
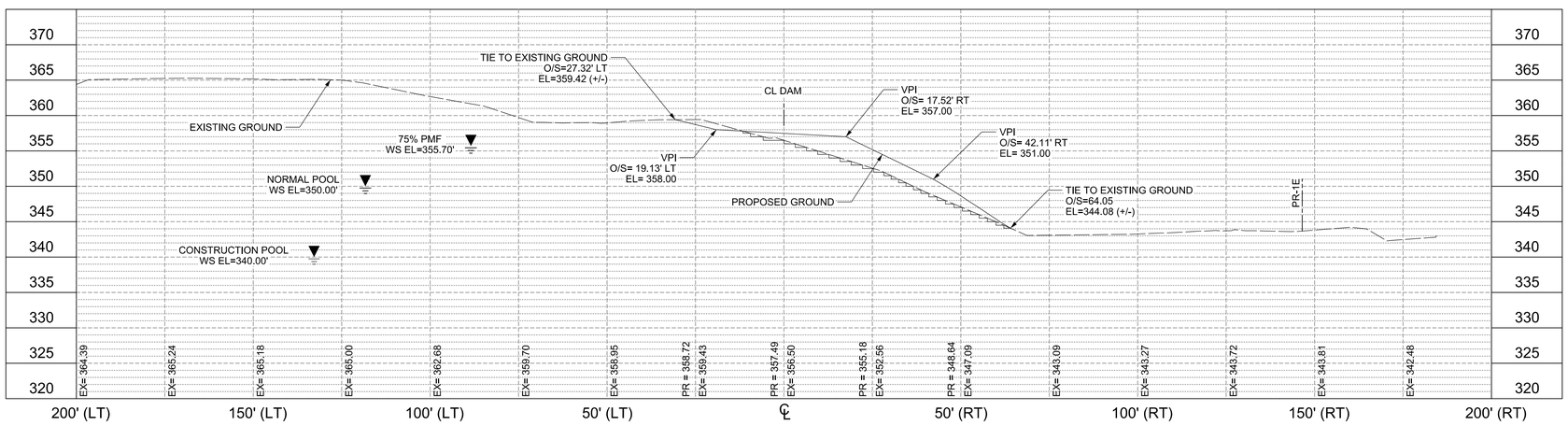
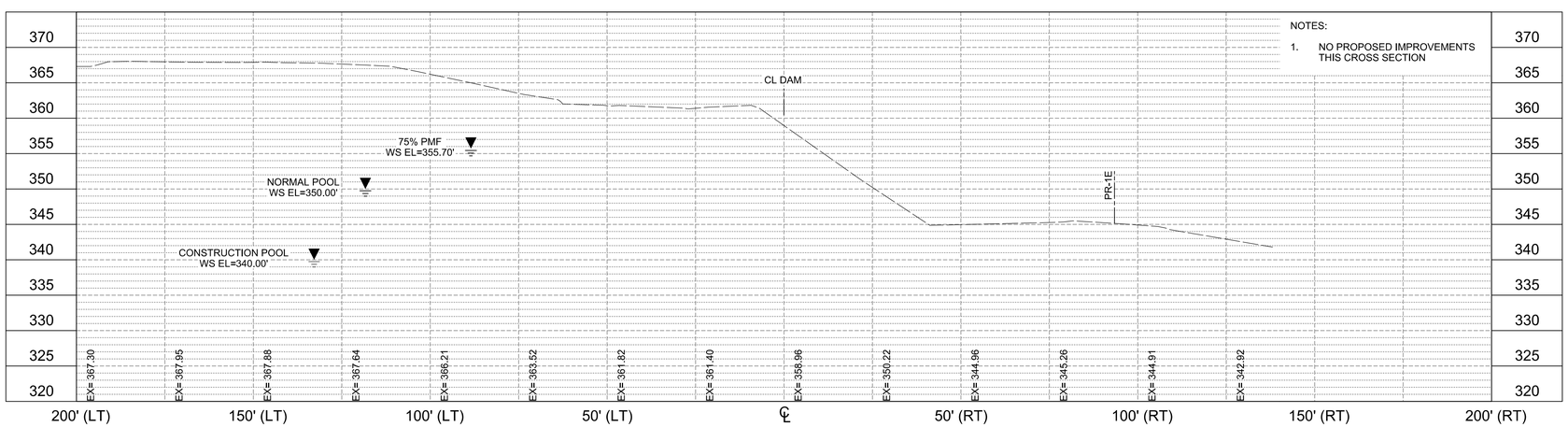
037 of 74
C7.06



STA 10+00



STA 10+50



STA 11+00

0 10 20 30 40
HORIZONTAL SCALE: 1"=20'

0 5 10 15 20
VERTICAL SCALE: 1"=10'

NOTES:

1. SEE SPECIFICATIONS 31 20 00 'EARTHWORK', 35 73 13 'EMBANKMENT FOR EARTH DAMS' AND GEOTECHNICAL REPORT FOR MATERIALS, EXCAVATION, AND EMBANKMENT PLACEMENT INFORMATION.
2. CONTRACTOR TO STRIP & STOCKPILE TOPSOIL FOR FUTURE USE.
3. CONTRACTOR TO SCARIFY EXISTING EMBANKMENT SURFACE TO A MIN. DEPTH OF 8 INCHES.
4. MAXIMUM COMPACTED LIFT OF EMBANKMENT NOT TO EXCEED THICKNESS OF 6 INCHES.
5. EMBANKMENT PLACEMENT SHALL BE LIMITED TO 6-FT VERTICAL PER CONSTRUCTION DAY.
6. SEE EMBANKMENT BENCHING DETAIL ON SHEET C5.01 FOR MORE INFORMATION.
7. BEGIN TOE DRAIN STA 3+25.00 (CL DAM) END TOE DRAIN STA 4+75.00 (CL DAM) SEE TOE DRAIN PLAN & PROFILE SHEET C7.08 FOR MORE INFORMATION.
8. SEE SHEET C8.03 FOR ROCK RIPRAP TOE DETAIL.
9. GRADES AND DIMENSIONS SHOWN ARE FINISHED SPILLWAY AND ROCK RIPRAP GRADES.
10. TEMPORARY COFFERDAM NOT SHOWN. SEE SHEET C1.02 FOR LOCATION AND SHEET C4.01 FOR 5-YEAR STORM EVENT DATA.

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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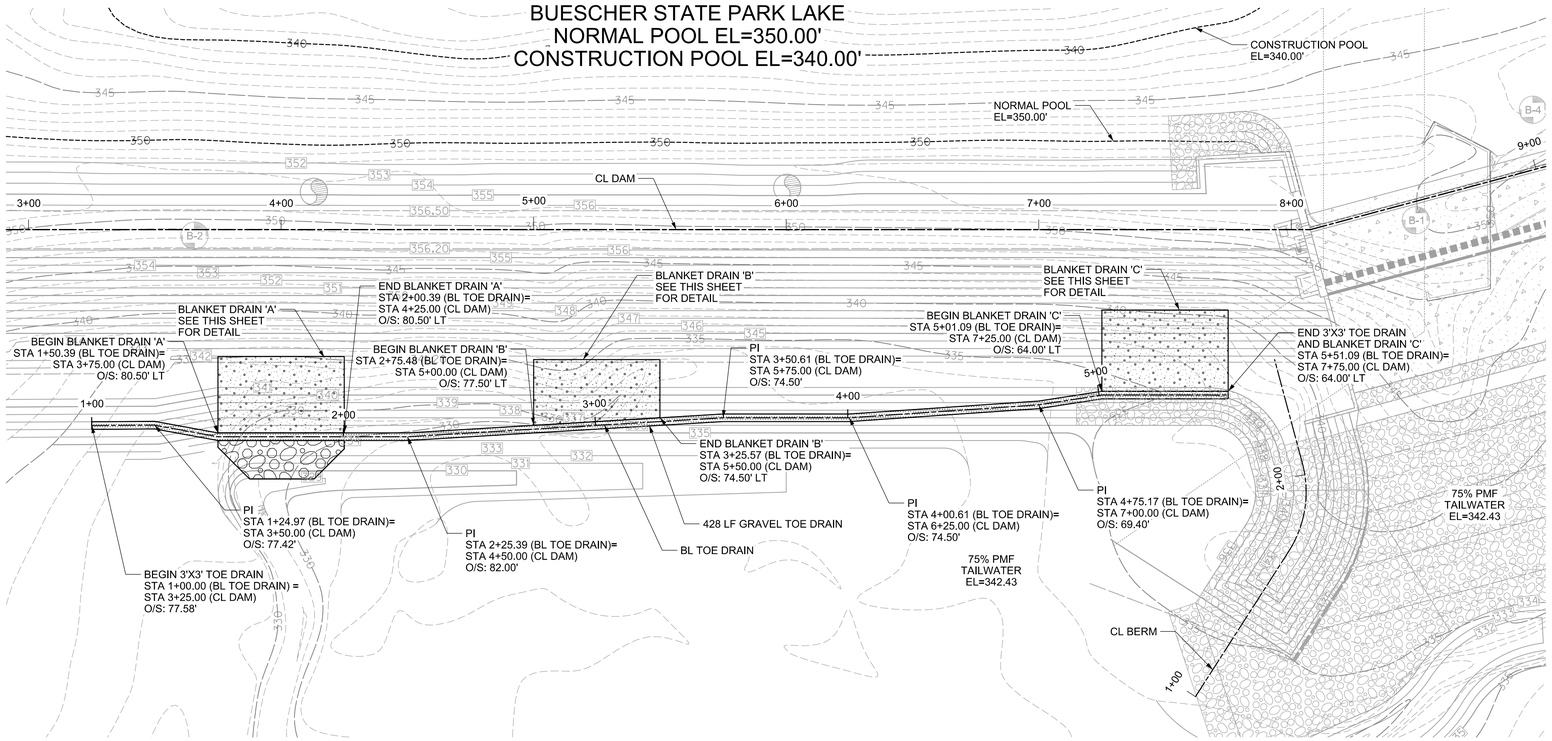
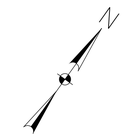
PROFESSIONAL ENGINEER
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
DAM CROSS SECTIONS
STA 10+00 TO STA 11+00
Sheet Number
038 of 74
C7.07





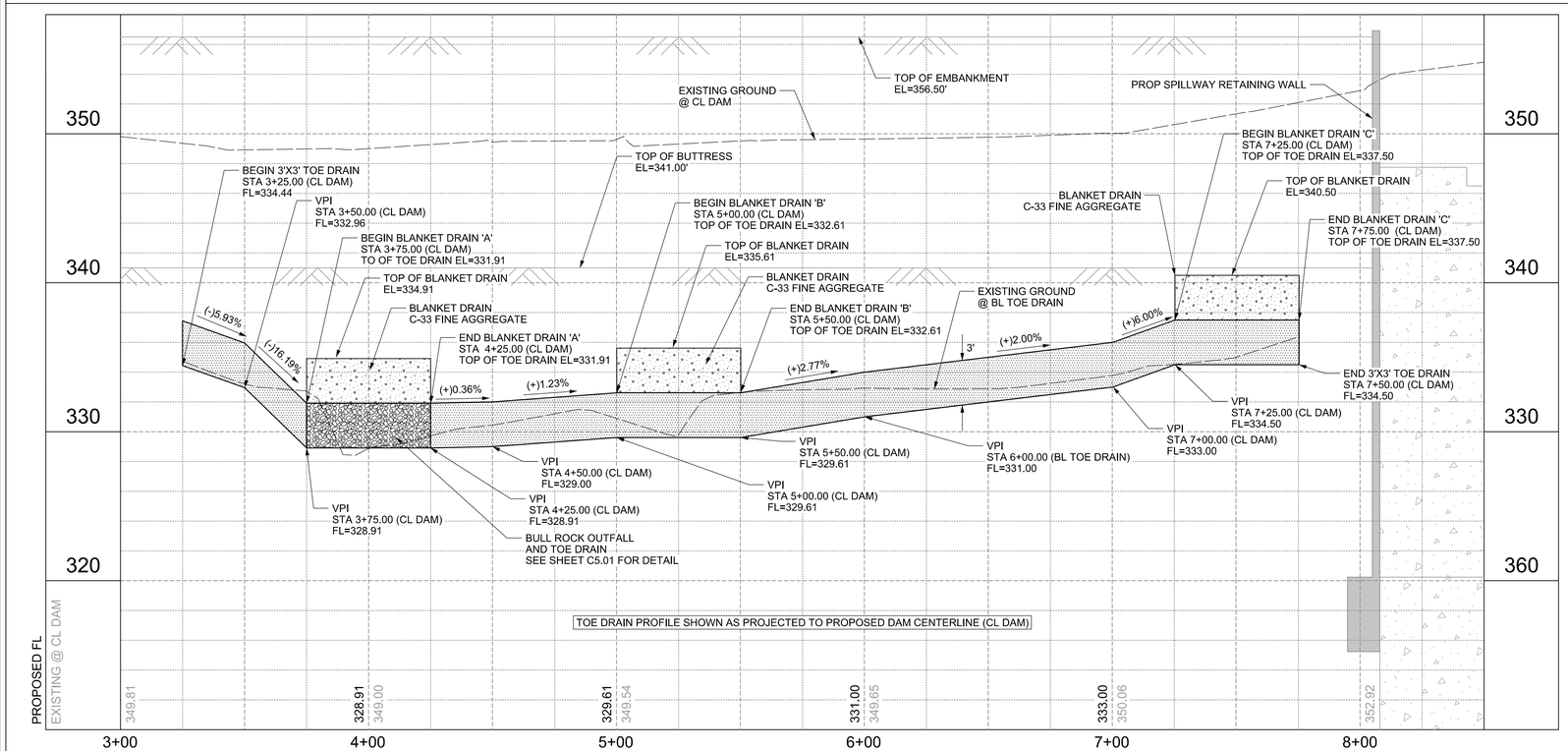
0 15 30 45 60
HORIZONTAL SCALE: 1"=30'

LEGEND

- EXISTING PARCEL LINE
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- 356.50 CONTOUR BREAK LINE
- 350 NORMAL POOL BOUNDARY
- PROPOSED SPILLWAY
- EXISTING MONITORING WELL
- B-1 BORE HOLE LOCATION

NOTES:

1. SEE SURVEY CONTROL SHEET C2.02 FOR HORIZONTAL LAYOUT.
2. SEE SHEET C5.01 FOR ADDITIONAL TOE DRAIN AND BLANKET DETAIL.
2. SEE SHEET C5.01 FOR BULL ROCK GRADATION TABLE.
4. ALL OFFSETS ARE MEASURED TO THE LEFT OF BASELINE
5. WRAP BLANKET DRAIN AND TOE DRAIN IN 10 OZ/SY NON-WOVEN GEOTEXTILE.
6. WRAP BULL ROCK IN 10 OZ HIGH STRENGTH NON-WOVEN GEOTEXTILE.



0 2.5 5 7.5 10
VERTICAL SCALE: 1"=5'

BLANKET AND TOE DRAIN AGGREGATE GRADATION (ASTM C33 FINE AGGREGATE)	
SIEVE	PERCENT PASSING
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	0-10

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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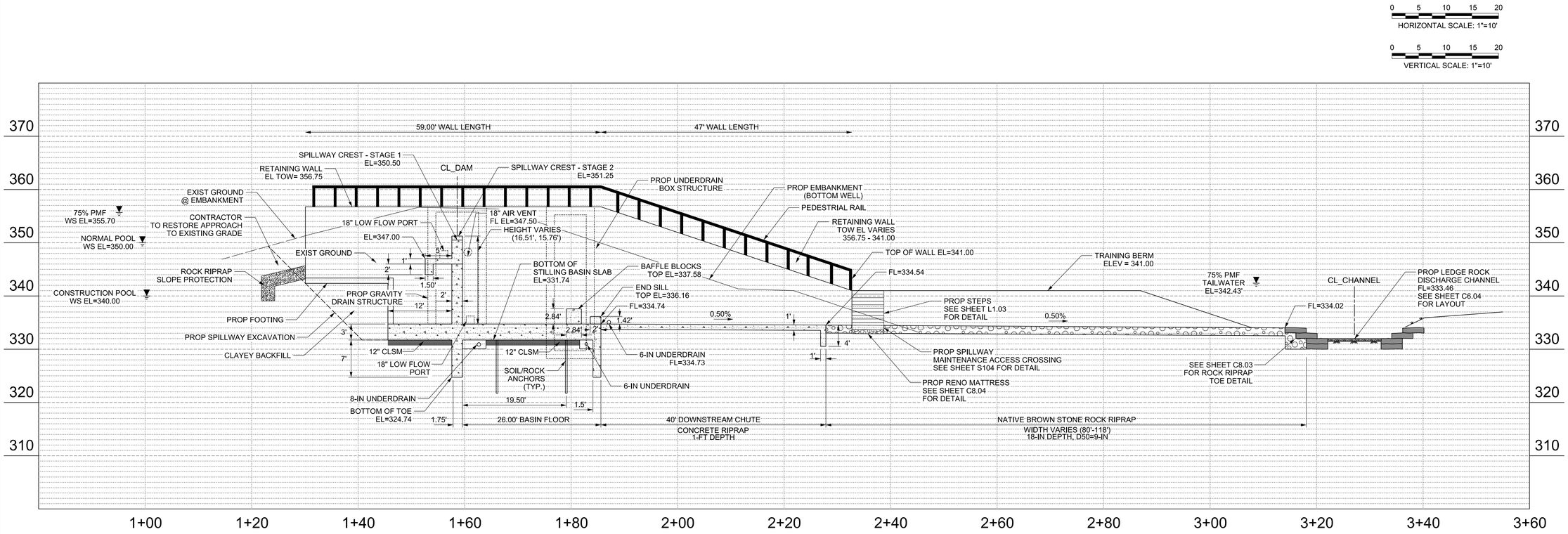
LICENSED PROFESSIONAL ENGINEER
1-20-2021

Revision	
No.	Date	Description

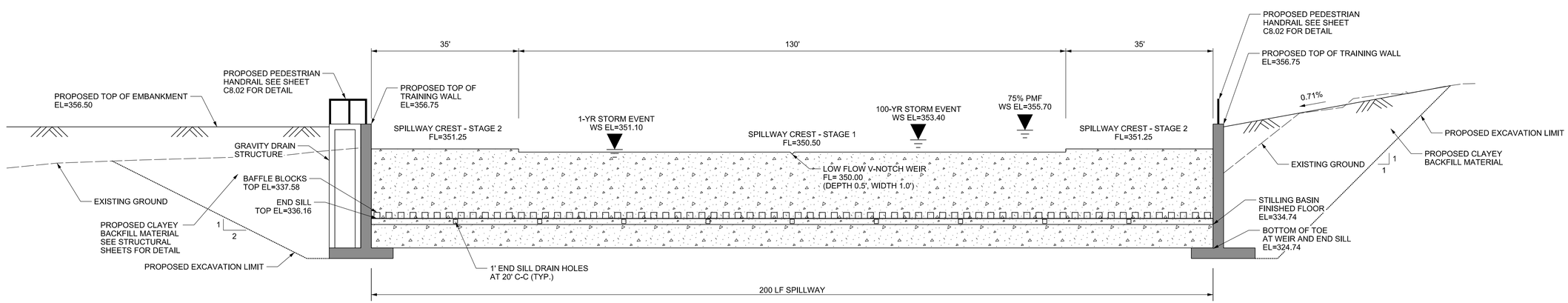
PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
TOE DRAIN PLAN & PROFILE
Sheet Number
039 of 74
C7.08



PROPOSED SPILLWAY TYPICAL SECTION

NOTES:

1. CLAYEY BACKFILL MATERIAL TO MEET CRITERIA PRESENTED IN TABLE TABLE 3.9 OF SECTION 3.12.1 IN GEOTECHNICAL REPORT.



PROPOSED SPILLWAY DIMENSIONS

(N.T.S.)

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
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LICENSED PROFESSIONAL ENGINEER

Revision	
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
SPILLWAY TYPICAL SECTIONS

Sheet Number
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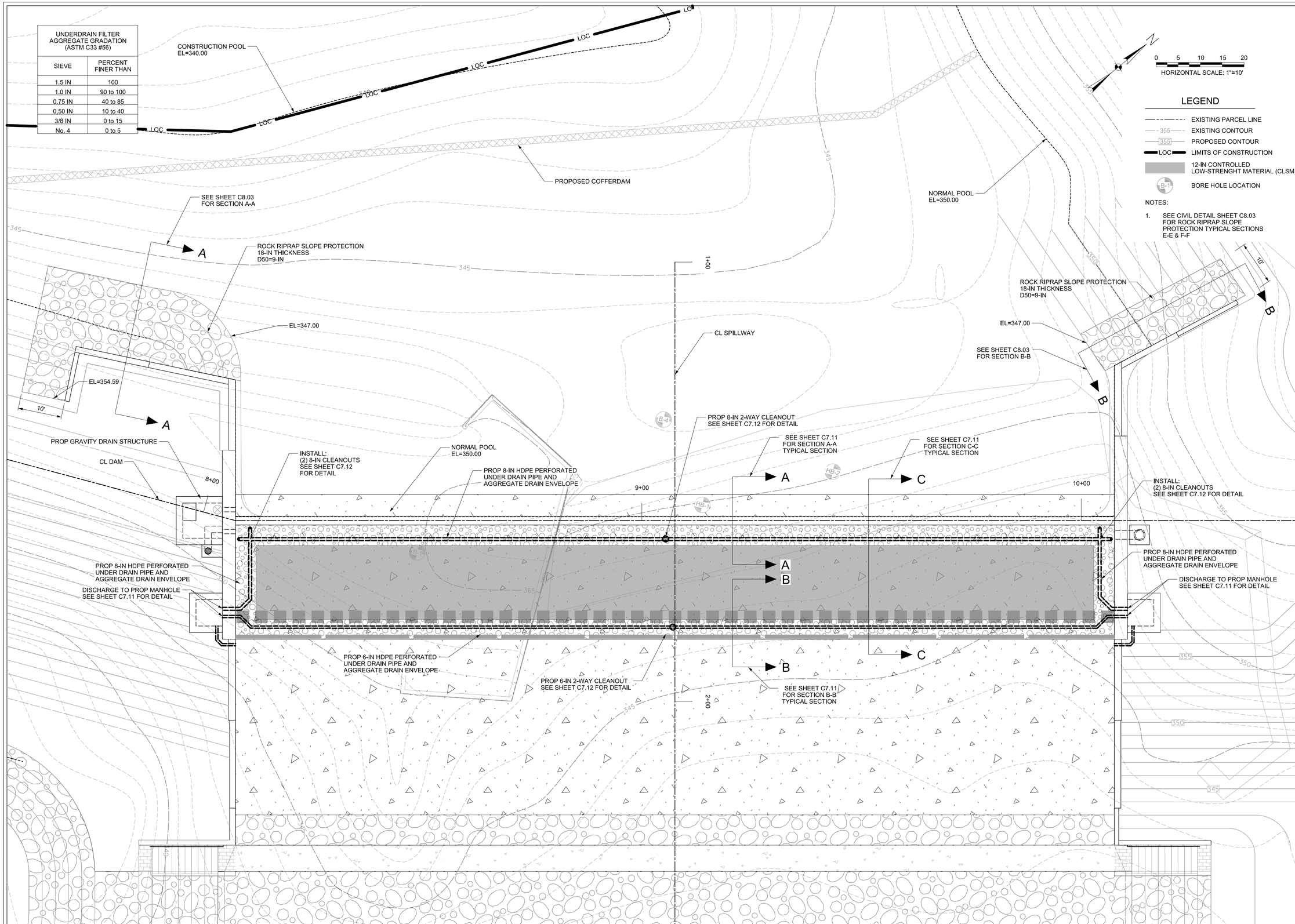
C7.09

UNDERDRAIN FILTER AGGREGATE GRADATION (ASTM C33 #56)	
SIEVE	PERCENT FINER THAN
1.5 IN	100
1.0 IN	90 to 100
0.75 IN	40 to 85
0.50 IN	10 to 40
3/8 IN	0 to 15
No. 4	0 to 5



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BUESCHER STATE PARK
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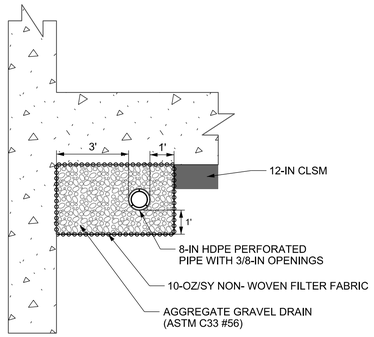
1-20-2021

Revision		
No.	Date	Description

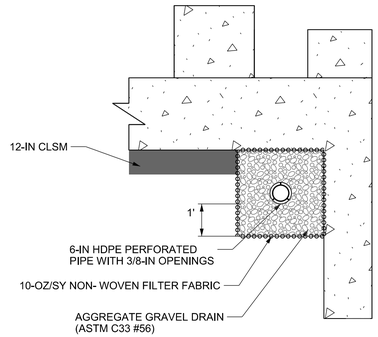
PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
SPILLWAY UNDERDRAIN SYSTEM

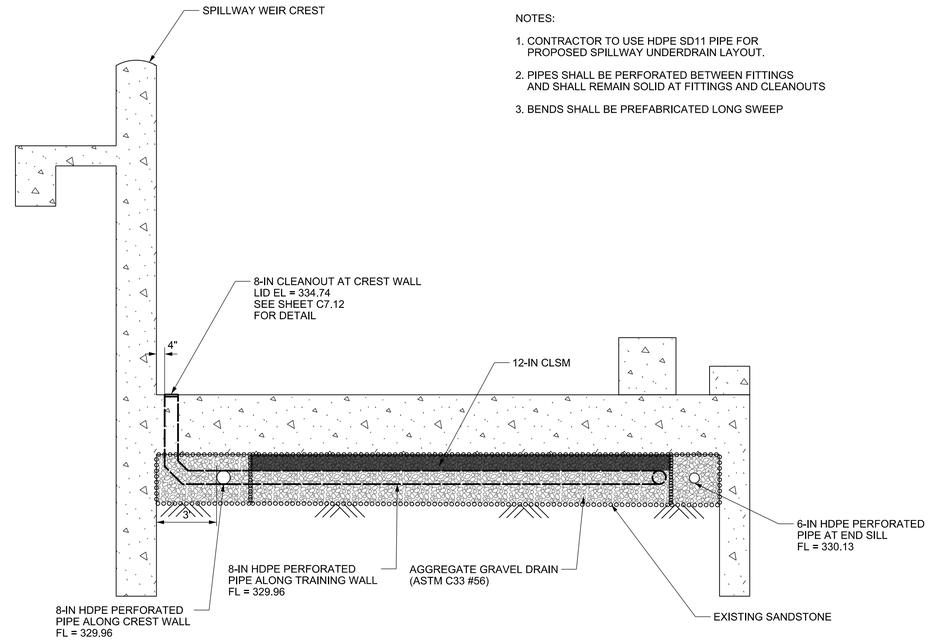
Sheet Number
041 of 74
C7.10



SECTION A-A TYPICAL SECTION
(N.T.S.)



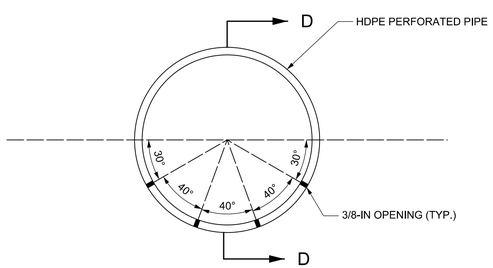
SECTION B-B TYPICAL SECTION
(N.T.S.)



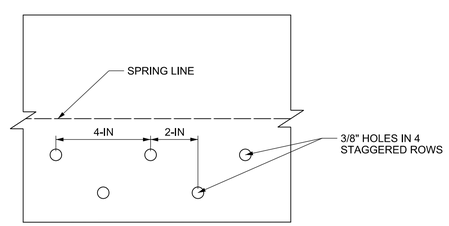
NOTES:

1. CONTRACTOR TO USE HDPE SD11 PIPE FOR PROPOSED SPILLWAY UNDERDRAIN LAYOUT.
2. PIPES SHALL BE PERFORATED BETWEEN FITTINGS AND SHALL REMAIN SOLID AT FITTINGS AND CLEANOUTS
3. BENDS SHALL BE PREFABRICATED LONG SWEEP

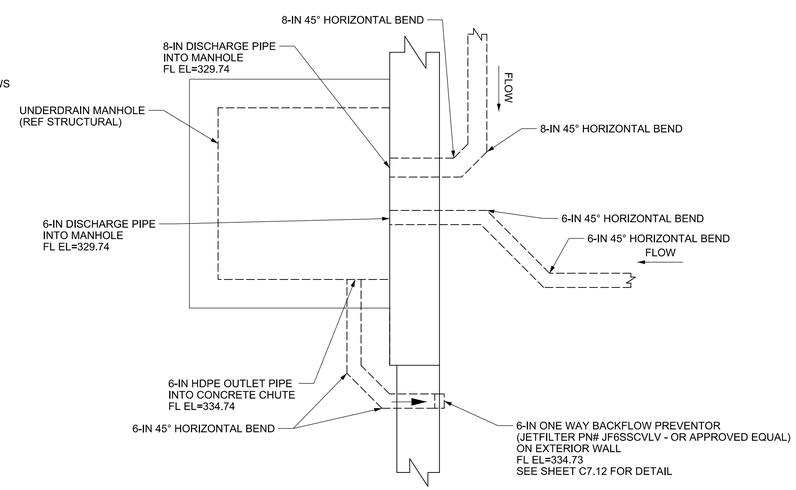
SECTION C-C TYPCIAL SECTION
(N.T.S.)



PERFORATED PIPE DETAIL
(N.T.S.)



SECTION D-D TYPICAL SECTION
(N.T.S.)



UNDER DRAIN DISCHARGE DETAIL
(N.T.S.)

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
SPILLWAY UNDERDRAIN DETAILS
1 OF 2

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C7.11

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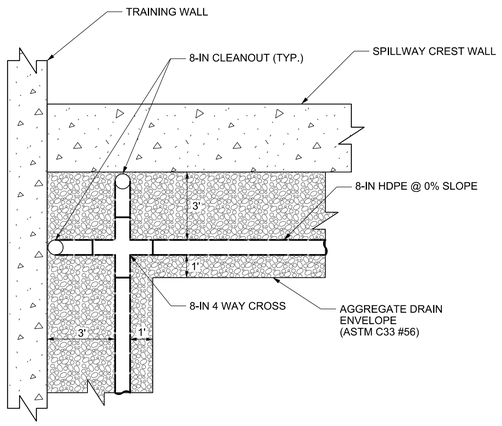
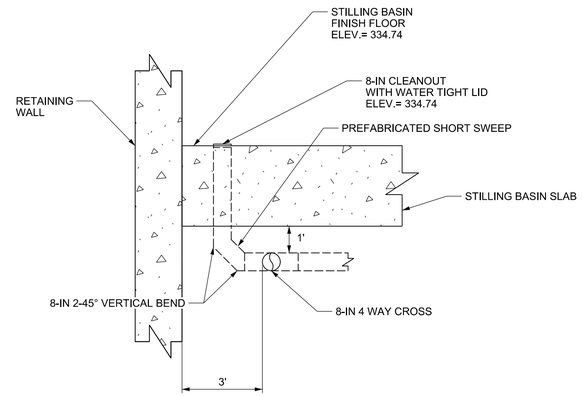
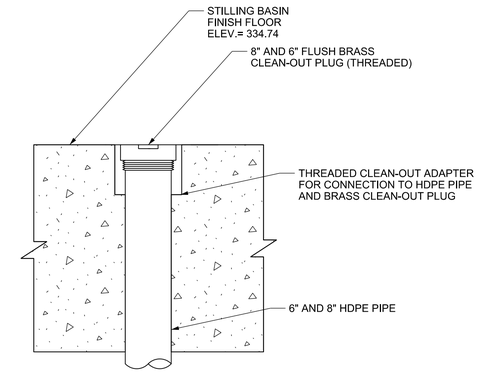


CLEANOUT DETAIL (PLAN VIEW)
(N.T.S.)

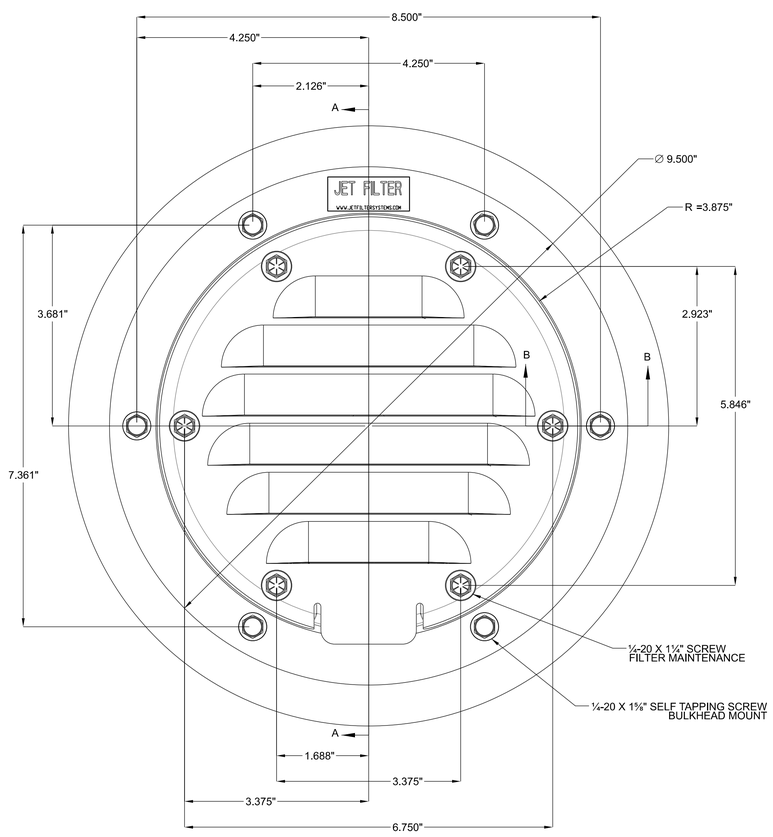


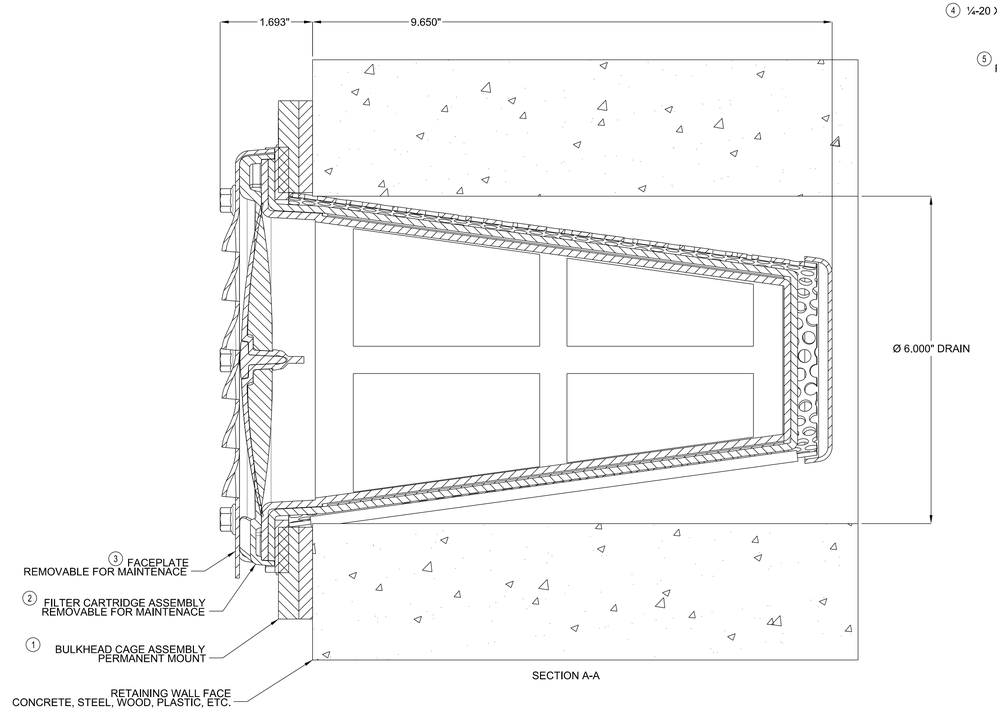
CLEANOUT DETAIL (PROFILE VIEW)
(N.T.S.)



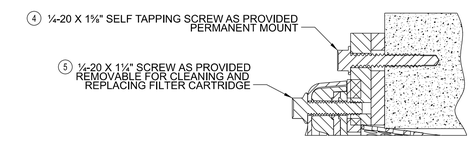
NOTE: CONTRACTOR SHALL SUPPLY TWO CLEAN-OUT PLUG WRENCHES COMPATIBLE WITH CLEAN-OUT PLUGS.

CLEANOUT CAP DETAIL (PROFILE VIEW)
(N.T.S.)





SECTION A-A



SECTION B-B
RECOMMENDED BULKHEAD AND FILTER ASSEMBLY MOUNTING

ITEM	NUMBER	DESCRIPTION	QTY
1	EV-10783	BULKHEAD CAGE ASSEMBLY	1
2	EV-10812	FILTER CARTRIDGE ASSEMBLY	1
3	EV-10791	FACEPLATE	1
4	1⅝"SCREW	¼-20 X 1⅝" SELF TAPPING SCREW	6
5	1¼" SCREW	¼-20 X 1¼" SCREW	6

BACKFLOW PREVENTOR DETAIL
(N.T.S.)

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BUESCHER STATE PARK
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TPWD# 118686

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JEFFREY L. NAGY
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1-20-2021

Revision	
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
SPILLWAY UNDERDRAIN DETAILS
2 OF 2

Sheet Number
043 of 74
C7.12

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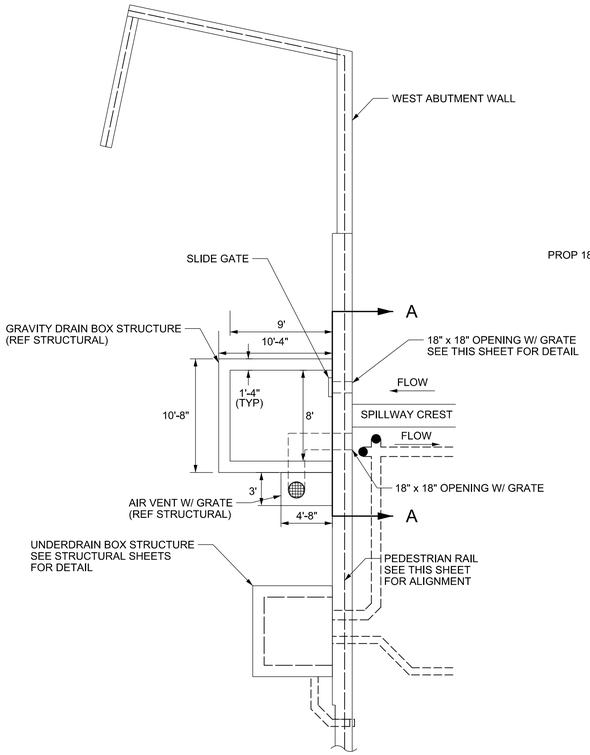
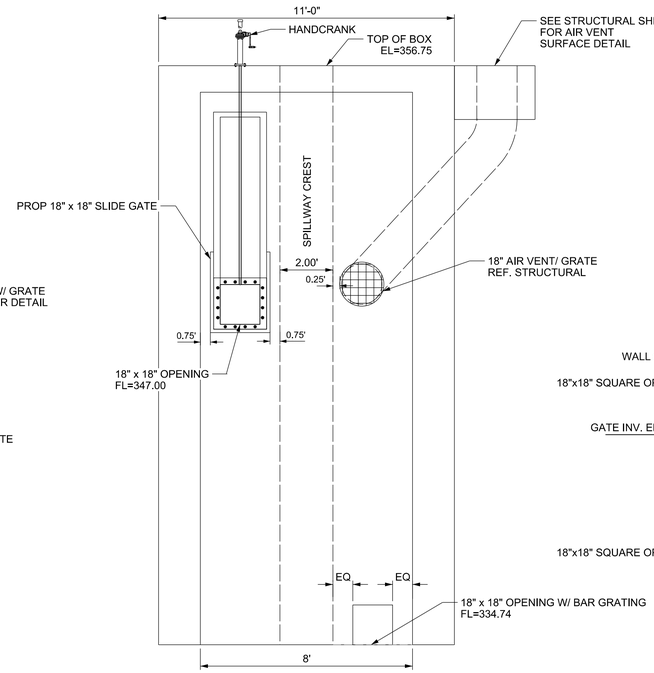
3/11/2021



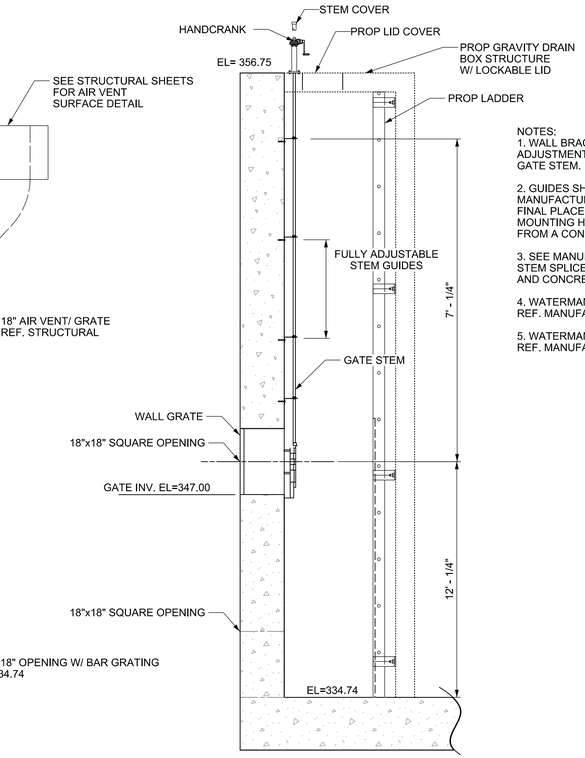
GRAVITY DRAIN SYSTEM DETAIL

(N.T.S.)



SECTION A-A

(N.T.S.)



NOTES:

1. WALL BRACKET AND STEM GUIDES SHALL HAVE SUFFICIENT ADJUSTMENT TO INSURE A VERTICAL MOUNTING FOR THE GATE STEM.

2. GUIDES SHALL BE SPACED BASED ON THE MANUFACTURER'S MINIMUM SPACING RECOMMENDATIONS, FINAL PLACEMENT OF THE GUIDES SHALL ENSURE THAT MOUNTING HOLES SHALL NOT BE PLACED CLOSER THAN 2" FROM A CONSTRUCTION JOINT.

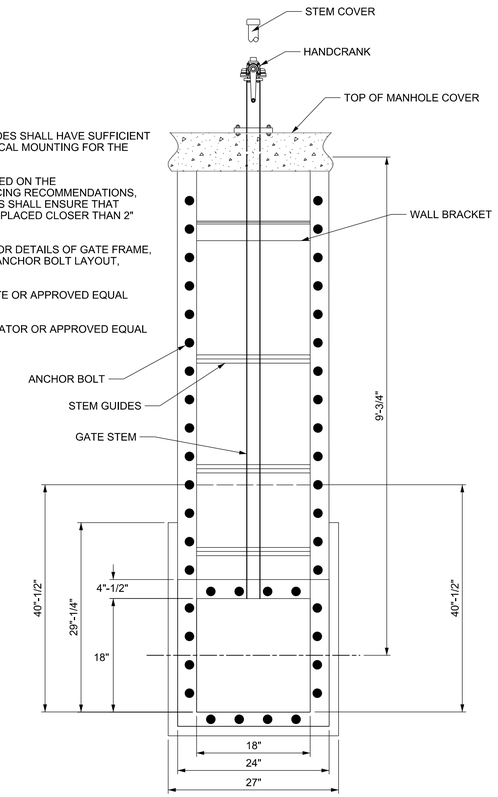
3. SEE MANUFACTURER'S DATA FOR DETAILS OF GATE FRAME, STEM SPLICES, GUIDE SPACING, ANCHOR BOLT LAYOUT, AND CONCRETE BLOCKOUTS.

4. WATERMAN SS-251-1 SLIDE GATE OR APPROVED EQUAL REF. MANUFACTURER SPEC.

5. WATERMAN HANDCRANK OPERATOR OR APPROVED EQUAL REF. MANUFACTURER SPEC.

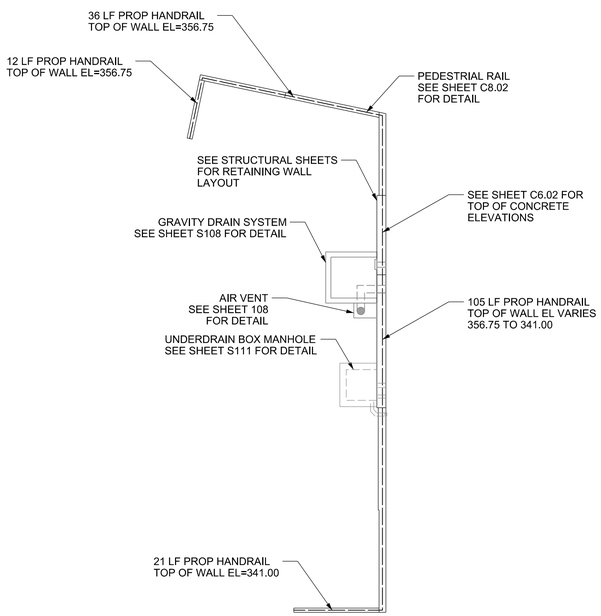
18" x 18" SLIDE GATE DETAILS

(N.T.S.)



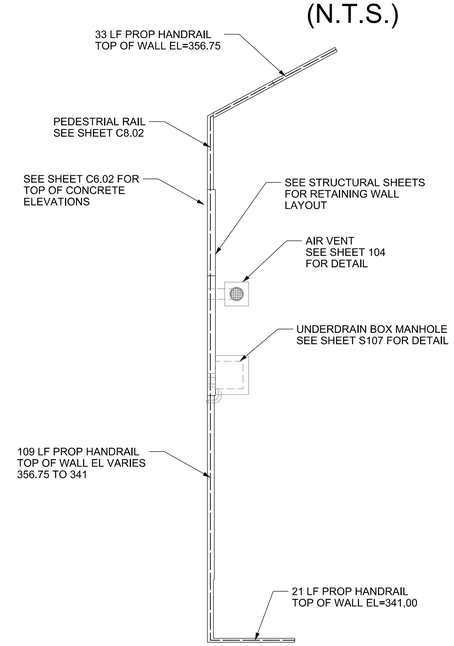
18" x 18" SLIDE GATE(FRONT VIEW)

(N.T.S.)



PEDESTRIAL RAIL PLAN VIEW LAYOUT (WEST WALL)

(N.T.S.)



PEDESTRIAL RAIL PLAN VIEW LAYOUT (EAST WALL)

(N.T.S.)

TEXAS PARKS AND WILDLIFE
CIVIL ENGINEERING SERVICE
INFRASTRUCTURE AND PLANNING DESIGN
MAILING ADDRESS:
4200 SMITH SCHOOL ROAD
AUSTIN,TX 78744
TEL: (512) 389-4800 FAX: (512) 389-8628

TEXAS PARKS & WILDLIFE

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9500 AMBERGLEN BLVD.
BUILDING F SUITE 125
AUSTIN, TX 78729
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FAX (512) 252-8141
TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision	
No.	Date	Description

PROJECT NUMBER: 118686

DATE: 1/20/2021

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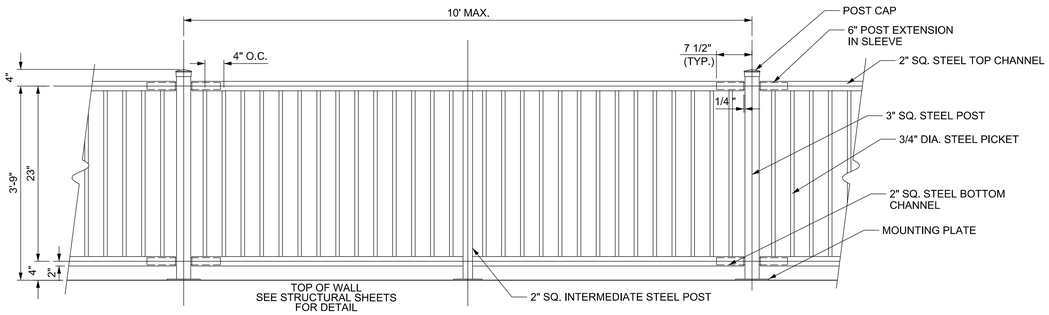
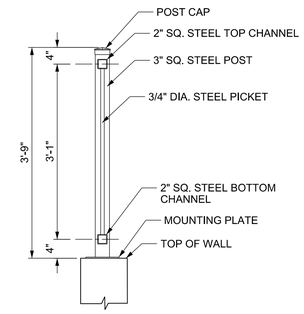
C8.01

NOTE:

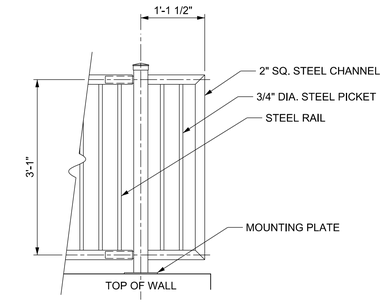
1. ALL STEEL COMPONENTS SHALL BE PRIME AND PAINTED. FINISH PAINT COLOR SHERWIN-WILLIAMS SW-4016 CORRUGATE BROWN
2. SEE SPECIFICATION 05 52 00 'METAL RAILINGS' FOR MORE INFORMATION



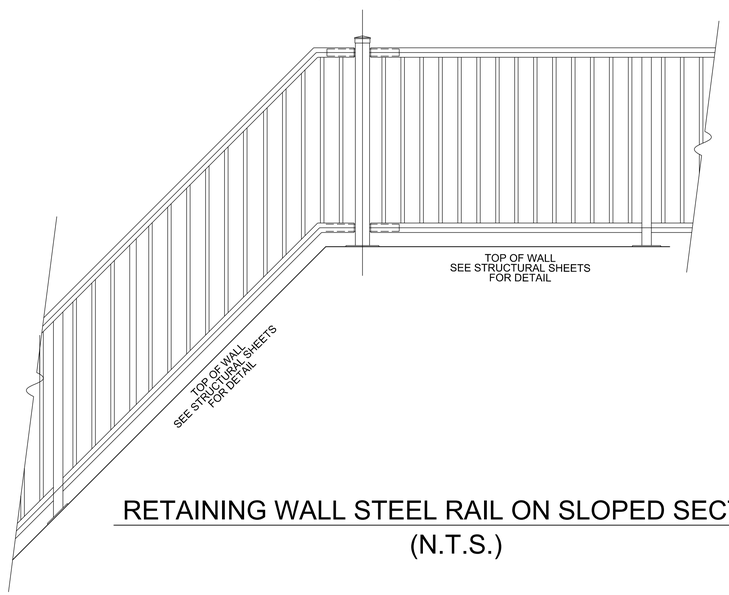
RETAINING WALL STEEL RAIL
(N.T.S.)



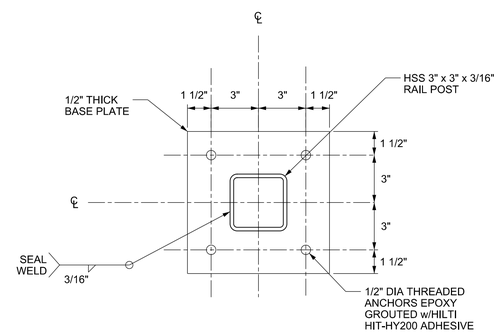
STEEL RAIL DETAIL
(N.T.S.)



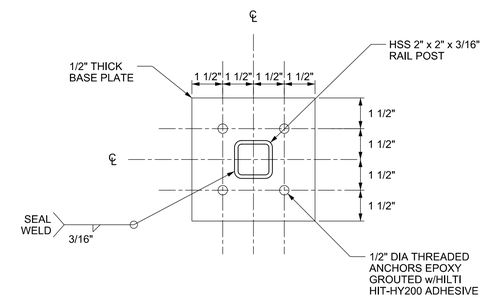
STEEL RAIL END POST DETAIL
(N.T.S.)



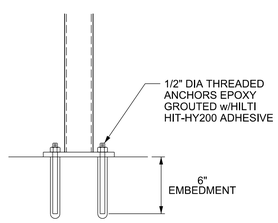
RETAINING WALL STEEL RAIL ON SLOPED SECTION
(N.T.S.)



MOUNTING PLATE DETAIL
(N.T.S.)



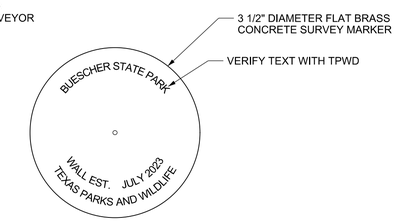
MOUNTING PLATE DETAIL (END POST)
(N.T.S.)



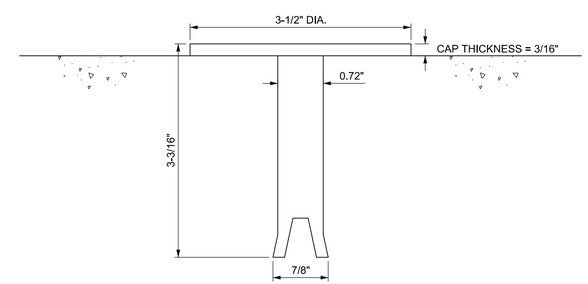
THREADED ANCHOR DETAIL
(N.T.S.)

NOTES:

1. VERIFY EXACT LOCATION & TEXT WITH TPWD
2 COORDINATE WITH TPWD CONTRACTED SURVEYOR FOR RELOCATION OF BENCHMARK



BRASS CONCRETE SURVEY MARKER DETAIL
(N.T.S.)



BRASS CONCRETE SURVEY MARKER DETAIL (PROFILE VIEW)
(N.T.S.)

TEXAS PARKS AND WILDLIFE
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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
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PROFESSIONAL ENGINEER

Revision No.	Date	Description

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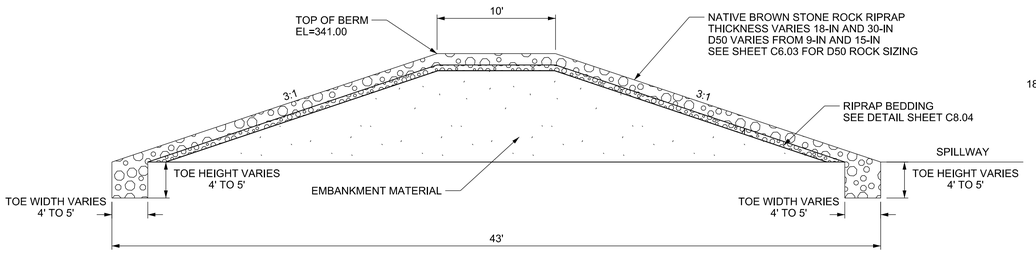
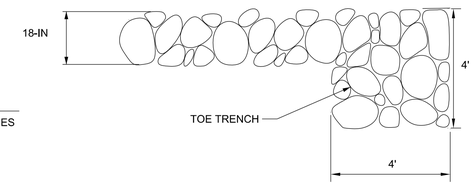
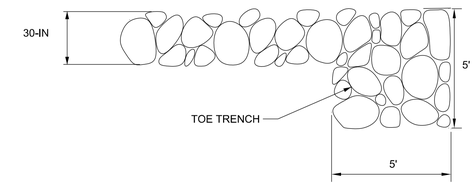


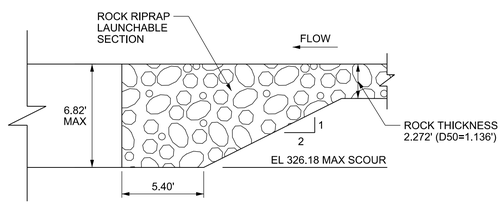
PROPOSED TRAINING BERM SECTION
(N.T.S.)



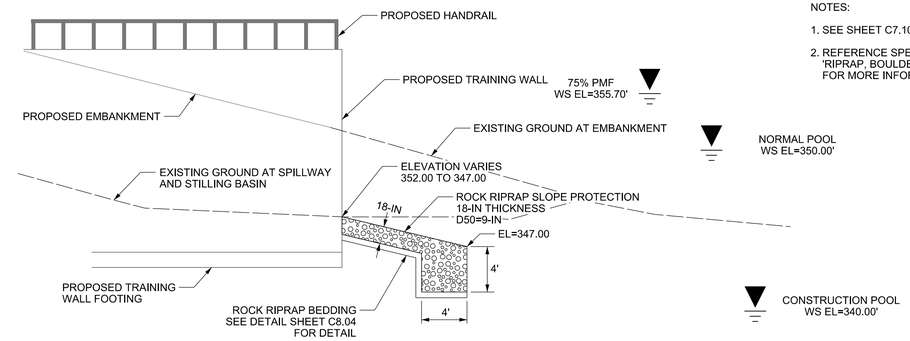
ROCK RIPRAP TOE FOR 18-IN THICKNESS
(N.T.S.)



ROCK RIPRAP TOE FOR 30-IN THICKNESS
(N.T.S.)



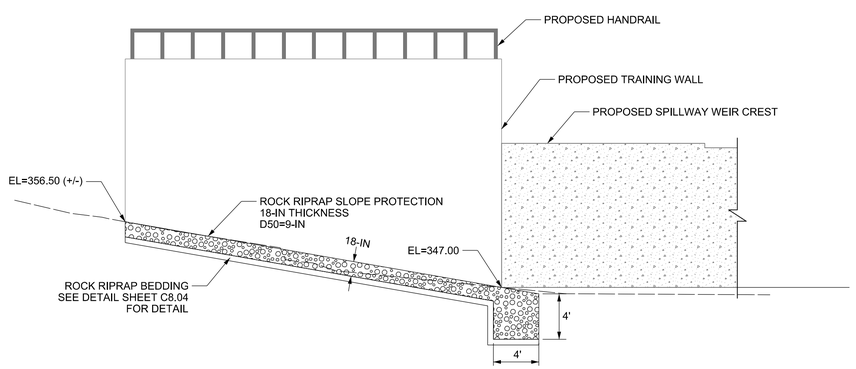
LAUNCHABLE STONE SECTION AT DISCHARGE CHANNEL
(N.T.S.)



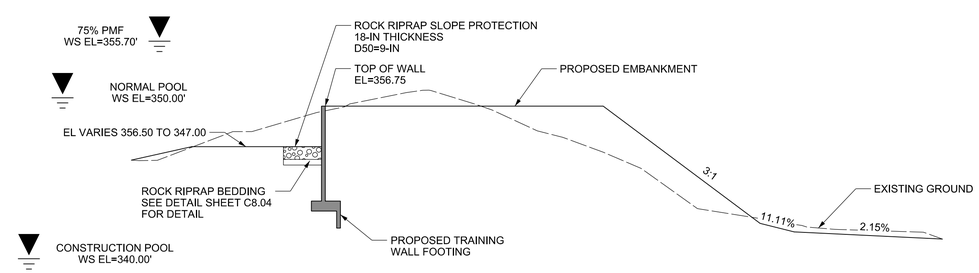
NOTES:

1. SEE SHEET C7.10 FOR RIPRAP PLAN.
2. REFERENCE SPECIFICATION 31 37 00 'RIPRAP, BOULDERS, AND BEDDING' FOR MORE INFORMATION.

ROCK RIPRAP SLOPE PROTECTION SECTION A-A
(N.T.S.)



ROCK RIPRAP SLOPE PROTECTION SECTION B-B
(N.T.S.)



EAST EMBANMENT SECTION
(N.T.S.)

TEXAS PARKS AND WILDLIFE
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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
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1-20-2021

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C8.03

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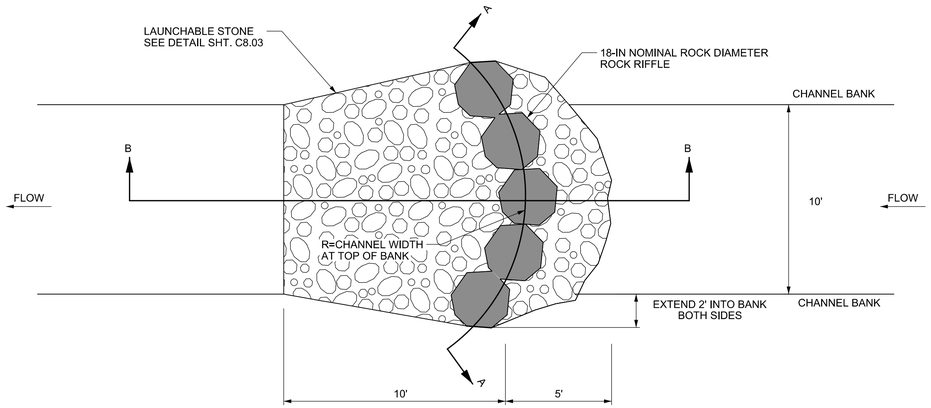
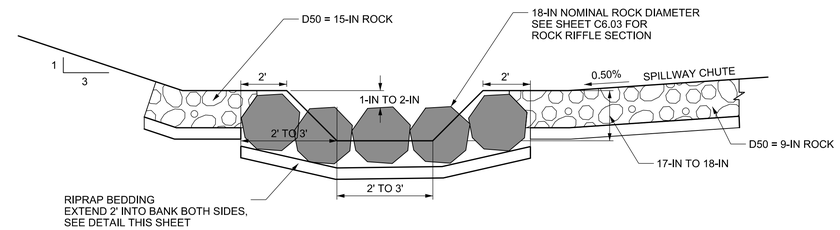
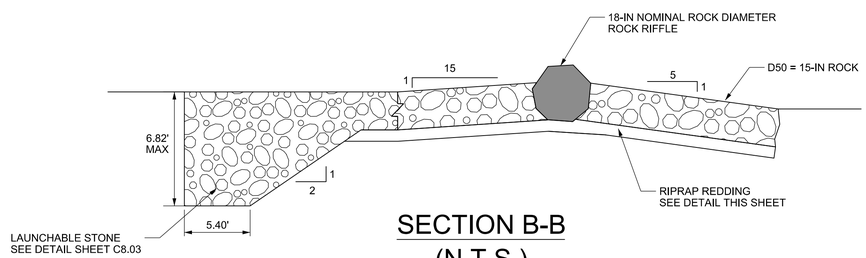


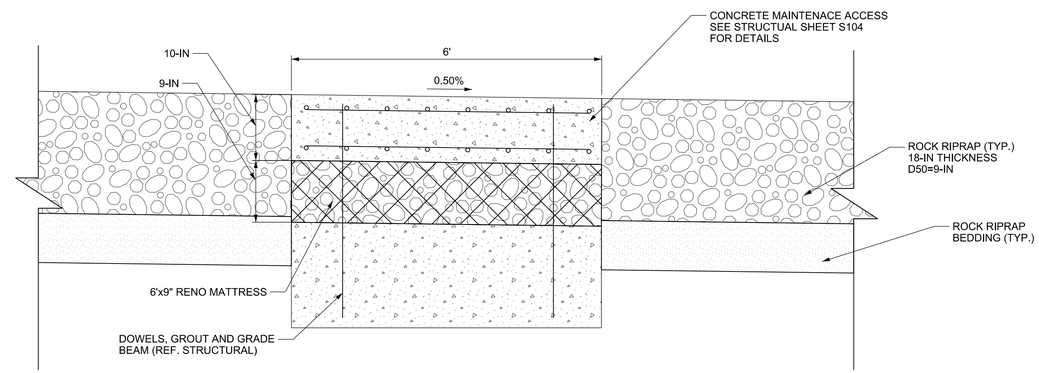
ROCK RIFFLE DETAIL (PLAN VIEW)
(N.T.S.)



CREST VIEW A-A
(N.T.S.)



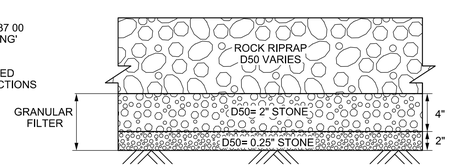
SECTION B-B
(N.T.S.)



MAINTENACE ACCESS RENO MATTRESS DETAIL
(N.T.S.)

NOTES:

1. REFERENCE SPECIFICATION 31 37 00 'RIPRAP, BOULDERS, AND BEDDING' FOR GRADATIONS.
2. BEDDING MATERIAL TO BE PLACED UNDERNEATH ROCK RIPRAP SECTIONS AND ELSEWHERE AS SPECIFIED IN THE PLANS.



RIP RAP BEDDING DETAIL
(N.T.S.)

GABION ROCK GRADATION:
SIZE -- PERCENT BY WEIGHT PASSING
8-IN -- 100%
4-IN -- 0-5%
3-IN -- 0%
COLOR: BROWN

NOTES

1. RENO MATTRESS IS TO BE FULLY CAGED WITH GALVANIZED WIRE MESH CONFORMING TO ASTM A-975.
2. ALL LACING WIRE AND CONNECTING WIRE SHALL BE 13.5 GAGE GALVANIZED STEEL, CLASS 3 CONFORMING TO ASTM A-641.

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L NAGY
133255
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1-20-2021

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PROJECT NUMBER: 118686
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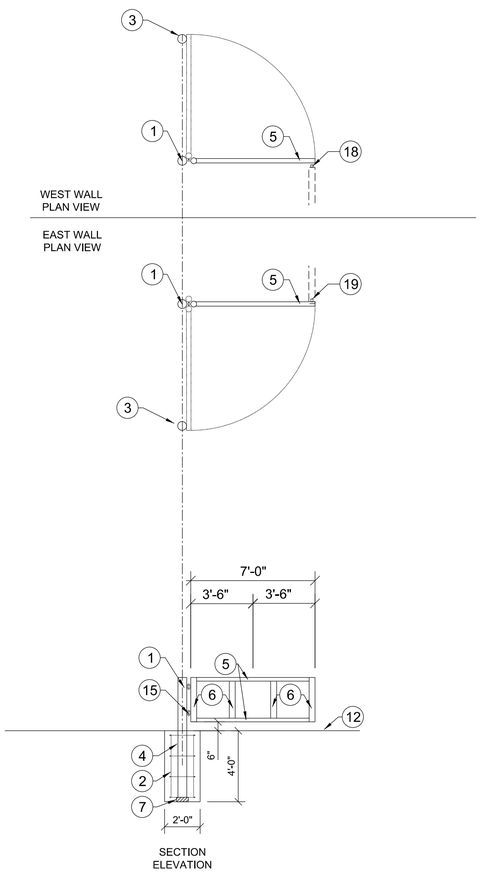
ab3310
4/56/5 PM
3/11/2021



KEY:

1. 6" O.D. SCH 40 STEEL PIPE, 1/4" THICK, GATE POST.
2. 4-1/2" O.D. SCH 40 STEEL PIPE, 1/4" THICK, HINGE POST, WELD CAP AT TOP OF POST.
3. 4-1/2" O.D. SCH 40 STEEL PIPE, 1/4" THICK, RETAINER POST, WELD CAP AT TOP OF POST.
4. REINF. CONCRETE FOOTING - 3000 PSI MIN., 6' DEPTH, 24" DIA. W/ (4)#4 VERTICAL BARS. TIE W/ #3 HOOPS @ 12" O.C. 12" THICK CONCRETE COLUMN FOOTING PER DIMENSIONS SHOWN WITH #4 BARS @ 18" MAX O.C.E.W. FORM AND POUR MONOLITHIC WITH HINGE POST FOOTING.
5. HSS 2"X2"X1/8", CONTINUOUS WELD ALL END CONNECTIONS.
6. HSS 4"X2"X1/8", CONTINUOUS WELD ALL END CONNECTIONS.
7. MASONARY BRICK AT BASE OF HINGE POST
8. 12"X9"X1/4" STEEL LOCK PLATE, WELD TO FRAME - CONTINUOUS ALL AROUND, CUT SLOT AS SHOWN FOR GATE WITHOUT LOCK TAB.
9. LOCK TAB - 1/4" THICK X 3" L X 2-1/2" W, ANGLE SUPPORT WELDED TO GATE AND POSTS, DRILL 3/4" DIA. HOLE ROUND EDGES.
10. 3"X1" CUT SLOT TO RECEIVE LOCK TAB.
11. MASONRY BRICK AT BASE OF HINGE POST.
12. FINISHED GRADE.
13. L4"X3"X1/4", CONTINUOUS 3/16" THICK WELD TO POST AND ANCORED INTO STRUCTURAL WALL
14. RETAINING WALL W1/E9 (REF. STRUCTURAL)
15. (2) ORIGINAL BADASS HINGES BY D&D TECHNOLOGIES PER GATE ARM. (2) TOTAL GATES, (1) ARMS EA. WELD-ON INSTALLATION. LOAD RATION: 2000 LBS. ZINC PLATED. PART #CI3000
16. (4) 5/8" DIA. THREADED RODS EPOXY GROUTED WITH HIT HY200 BY HILTI OR APPROVED EQUAL.
17. CONCRETE ENCASEMENT - 3000 PSI MIN, 1' LENGTH X 1' WIDTH X 2' DEPTH
18. HSS 4"X2"X1/8" RECEIVING POST MOUNTED TO WEST WALL.
19. END POST OF RAIL ON TOP OF EAST WALL TO SERVE AS RECEIVING POST, WELD #9 TAB TO END POST TO RECEIVE LOCKING PLATE GATE CLOSURE.

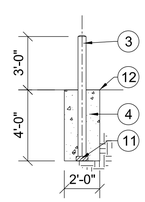
****NOTE****

REFER SPECIFICATION 05 52 00 'METAL RAILINGS' FOR METAL FABRICATION AND FINISHING NOTES

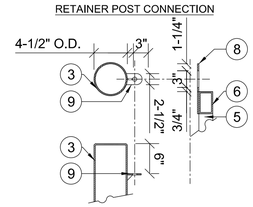
D&D TECHNOLOGIES - THE ORIGINAL BADASS HINGE

D&D TECHNOLOGIES
800-716-0888
17531 METZLER LANE
HUNTINGTON BEACH, CA 92647
INFO@DDTECHUSA.COM

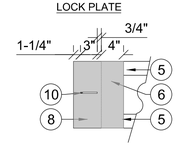
RETAINER POST



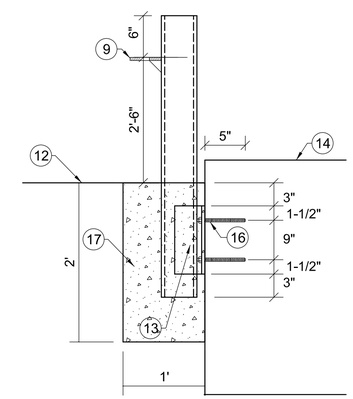
RETAINER POST CONNECTION



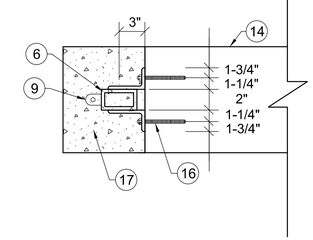
LOCK PLATE



RECEIVING POST AT WEST WALL



RECEIVING POST (PLAN VIEW)



MAINTENANCE ACCESS SWING GATE (7' LEAF)

(N.T.S.)

TEXAS PARKS AND WILDLIFE
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LIMITS OF CONSTUCTION POINT LAYOUT		
POINT NO.	NORTHING	EASTING
1	9992809.75	3300576.01
2	9993016.00	3300288.15
3	9993023.24	3300219.44
4	9993116.28	3299939.11
5	9993183.04	3299804.66
6	9993208.23	3299819.48
7	9993141.98	3299963.30
8	9993040.79	3300214.70
9	9993028.10	3300308.09
10	9993040.30	3300401.72
11	9993068.83	3300427.69
12	9993101.72	3300441.39
13	9993183.86	3300421.00
14	9993201.65	3300492.66
15	9993133.70	3300557.48

LIMITS OF CONSTUCTION POINT LAYOUT		
POINT NO.	NORTHING	EASTING
16	9993349.05	3300903.88
17	9993398.79	3300947.01
18	9993484.30	3300985.70
19	9993537.18	3300892.89
20	9993581.21	3300870.04
21	9993587.90	3300868.17
22	9993642.74	3300875.38
23	9993663.44	3300917.77
24	9993620.65	3300952.29
25	9993613.55	3300959.25
26	9993677.38	3301006.62
27	9993736.18	3301090.28
28	9993837.39	3301117.85
29	9993831.86	3301147.32
30	9993749.66	3301148.58

LIMITS OF CONSTUCTION POINT LAYOUT		
POINT NO.	NORTHING	EASTING
31	9993672.55	3301165.42
32	9993595.95	3301166.23
33	9993478.28	3301265.35
34	9993424.88	3301274.24
35	9993296.11	3301266.22
36	9993282.90	3301248.00
37	9993112.28	3301140.99
38	9993102.76	3301117.45
39	9993077.16	3301101.80
40	9993092.87	3301076.25
41	9993118.47	3301091.89
42	9993170.42	3301007.36
43	9993193.14	3300991.06
44	9993067.39	3300815.82
45	9993024.27	3300794.86

LIMITS OF CONSTUCTION POINT LAYOUT		
POINT NO.	NORTHING	EASTING
46	9992990.03	3300795.87
47	9992969.94	3300772.48
48	9992911.74	3300600.59
49	9992825.00	3300586.48

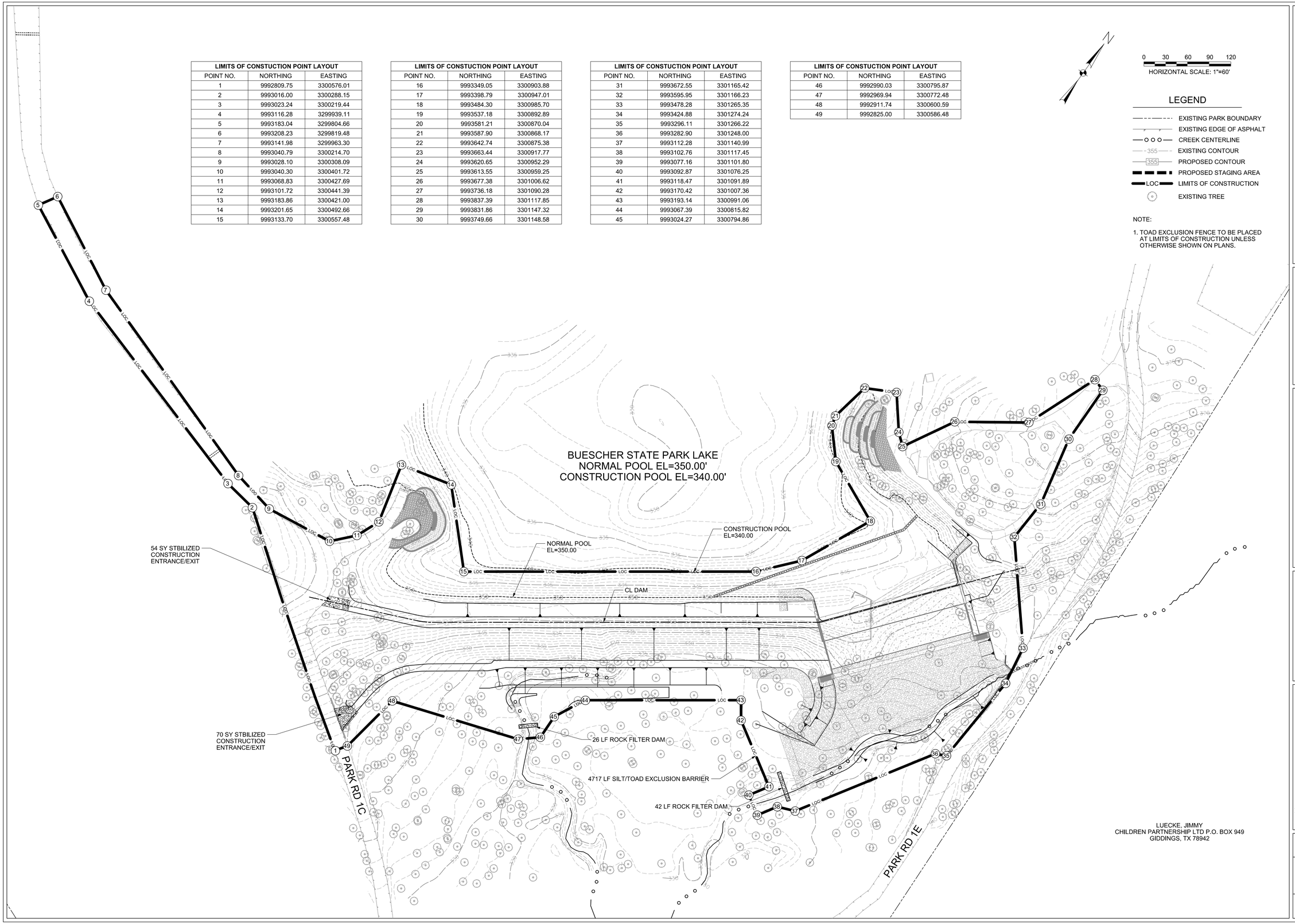
0 30 60 90 120
HORIZONTAL SCALE: 1"=60'

LEGEND

- EXISTING PARK BOUNDARY
- EXISTING EDGE OF ASPHALT
- CREEK CENTERLINE
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- PROPOSED STAGING AREA
- LOC LIMITS OF CONSTRUCTION
- EXISTING TREE

NOTE:

1. TOAD EXCLUSION FENCE TO BE PLACED AT LIMITS OF CONSTRUCTION UNLESS OTHERWISE SHOWN ON PLANS.



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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
JEFFREY L. NAGY
133255
LICENSED
PROFESSIONAL ENGINEER
1-20-2021

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
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Sheet Title
EROSION CONTROL PLAN

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TOTAL DISTURBED AREA = 7.34 AC +/-
TOTAL PROJECT AREA = 7.34 AC +/-

CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE TCEQ TPDES GENERAL PERMIT NO. TXR150000.

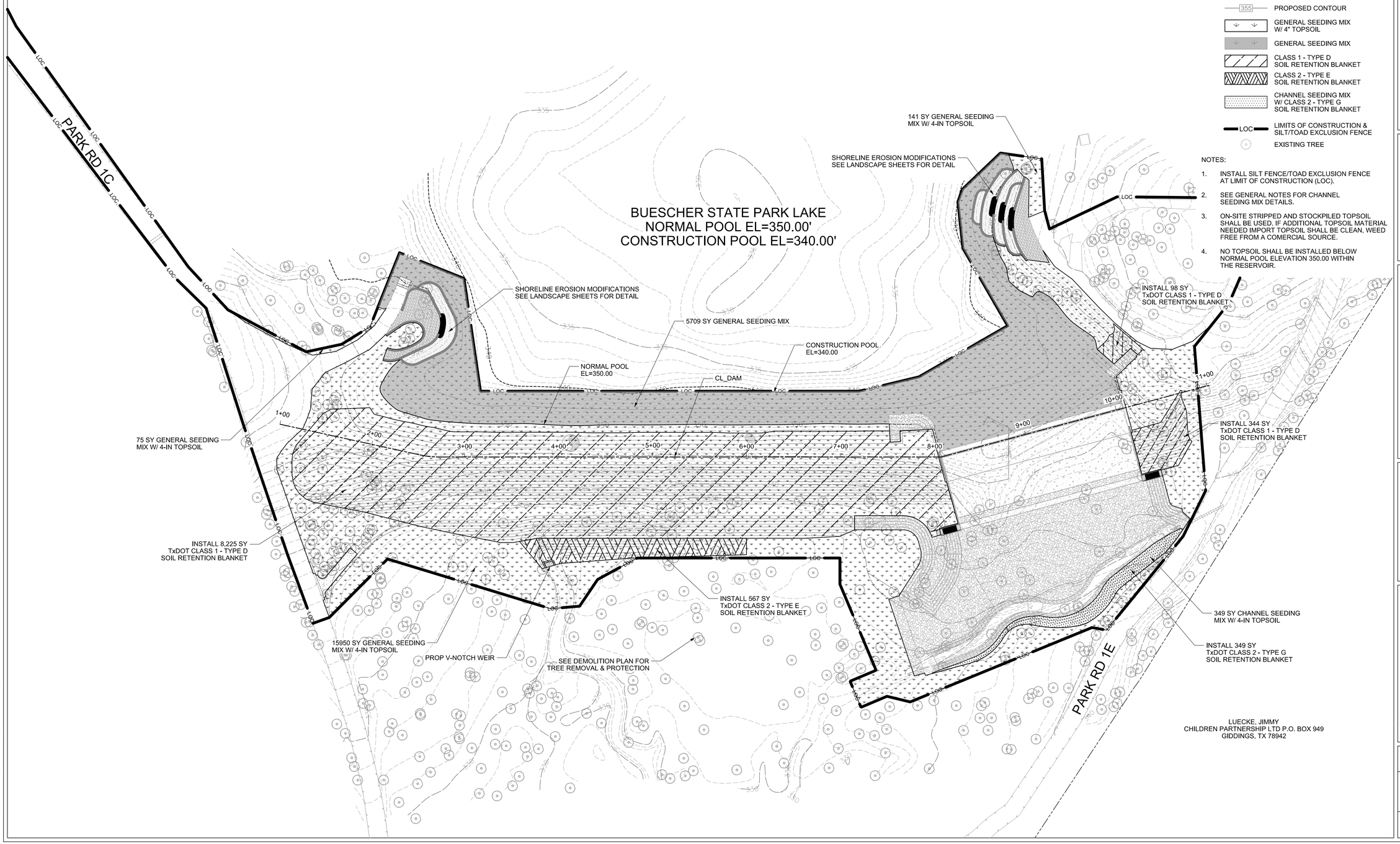
0 25 50 75 100
HORIZONTAL SCALE: 1"=50'

LEGEND

- EXISTING PARK BOUNDARY
- EXISTING EDGE OF ASPHALT
- 355 EXISTING CONTOUR
- 355 PROPOSED CONTOUR
- GENERAL SEEDING MIX W/ 4" TOPSOIL
- GENERAL SEEDING MIX
- CLASS 1 - TYPE D SOIL RETENTION BLANKET
- CLASS 2 - TYPE E SOIL RETENTION BLANKET
- CHANNEL SEEDING MIX W/ CLASS 2 - TYPE G SOIL RETENTION BLANKET
- LOC LIMITS OF CONSTRUCTION & SILT/TOAD EXCLUSION FENCE
- EXISTING TREE

NOTES:

1. INSTALL SILT FENCE/TOAD EXCLUSION FENCE AT LIMIT OF CONSTRUCTION (LOC).
2. SEE GENERAL NOTES FOR CHANNEL SEEDING MIX DETAILS.
3. ON-SITE STRIPPED AND STOCKPILED TOPSOIL SHALL BE USED. IF ADDITIONAL TOPSOIL MATERIAL NEEDED IMPORT TOPSOIL SHALL BE CLEAN, WEED FREE FROM A COMERCIAL SOURCE.
4. NO TOPSOIL SHALL BE INSTALLED BELOW NORMAL POOL ELEVATION 350.00 WITHIN THE RESERVOIR.



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PROJECT NUMBER: 118686
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Sheet Title
SITE STABILIZATION PLAN

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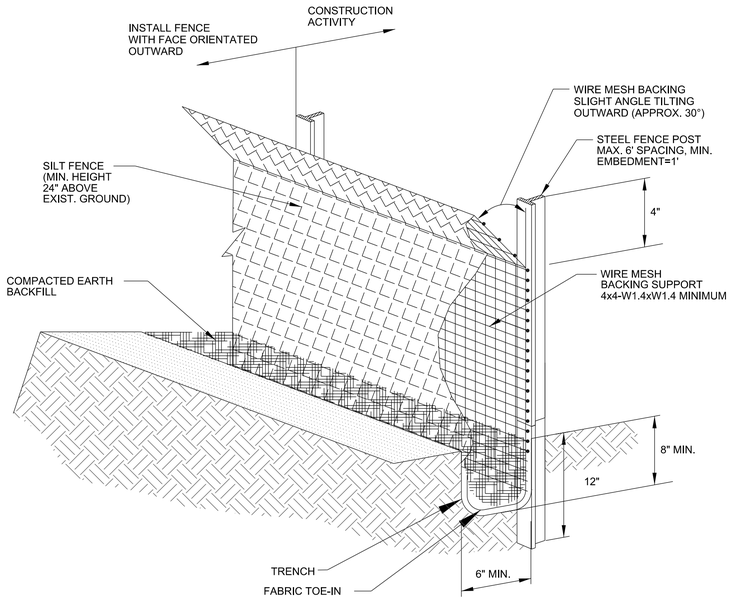


TOAD FENCE ISOMETRIC PLAN VIEW
N.T.S.

TOAD FENCE GENERAL NOTES

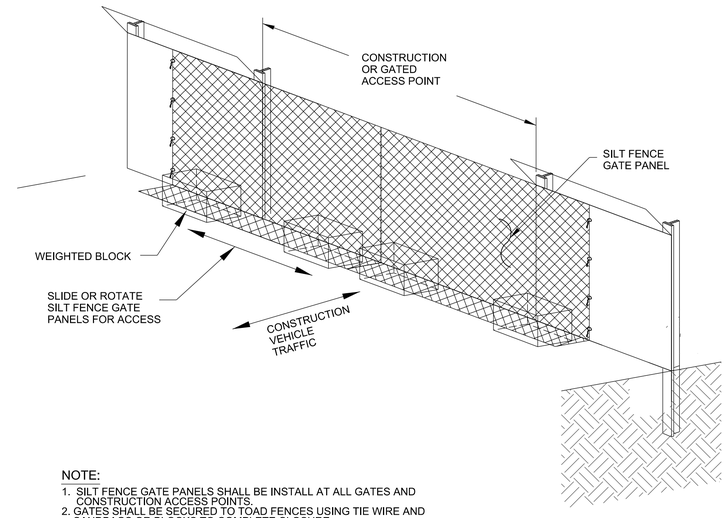
(1) STEEL POSTS WHICH SUPPORT THE TOAD FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TILTING OUTWARD. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

(2) THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT.

(3) THE TRENCH MUST BE A MINIMUM OF 8 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

(4) SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

(5) INSPECTION SHALL BE MADE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF ANY STORM THAT PRODUCES 0.5 INCHES OF RAINFALL OR MORE AT THE SITE. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

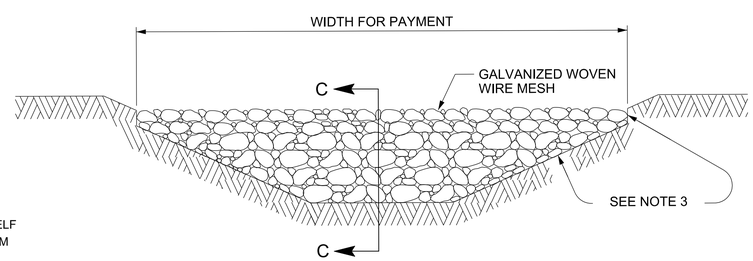


NOTE:
1. SILT FENCE GATE PANELS SHALL BE INSTALL AT ALL GATES AND CONSTRUCTION ACCESS POINTS.
2. GATES SHALL BE SECURED TO TOAD FENCES USING TIE WIRE AND SANDBAGS OR BLOCKS TO COMPLETE CLOSURE.

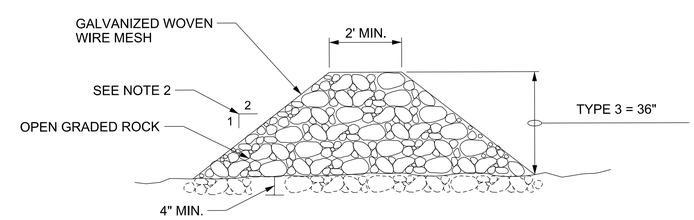
TOAD FENCE ACCESS POINT DETAIL
N.T.S.

FILTER DAM GENERAL NOTES

1. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE PLANS.
2. SIDE SLOPES SHOULD BE 2:1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDESLOPES OF 6:1 OR FLATTER.
3. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO EXISTING GROUND.
4. ROCK FILTER DAM SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT & SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.



FILTER DAM AT CHANNEL SECTIONS
(N.T.S.)



SECTION C-C
(N.T.S.)

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Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021
Sheet Title
EROSION CONTROL DETAILS 1 OF 2
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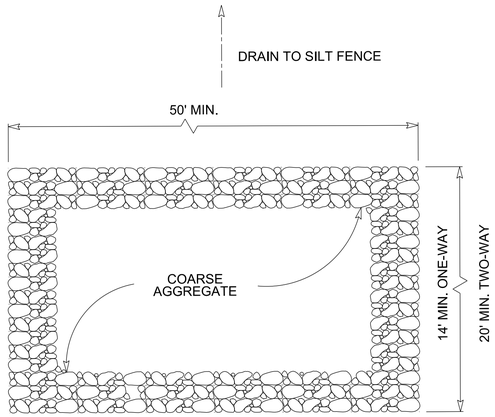
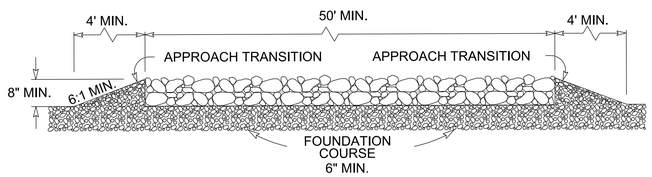


PLAN VIEW



ELEVATION VIEW

CONSTRUCTION ENTRANCE/EXIT (TYPE 1)

ROCK CONSTRUCTION N.T.S.

NOTES

1. THE LENGTH OF THE CONSTRUCTION EXIT TYPE 1 SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIALAS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.
7. CONSTRUCT EXITS WITH A WIDTH OF AT LEAST 14 FT. FOR ONE-WAY AND 20 FT. FOR TWO-WAY TRAFFIC FOR THE FULL WIDTH OF THE EXIT, OR AS DIRECTED BY THE ENGINEER.

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Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 1/20/2021

Sheet Title
EROSION CONTROL DETAILS
2 OF 2

Sheet Number
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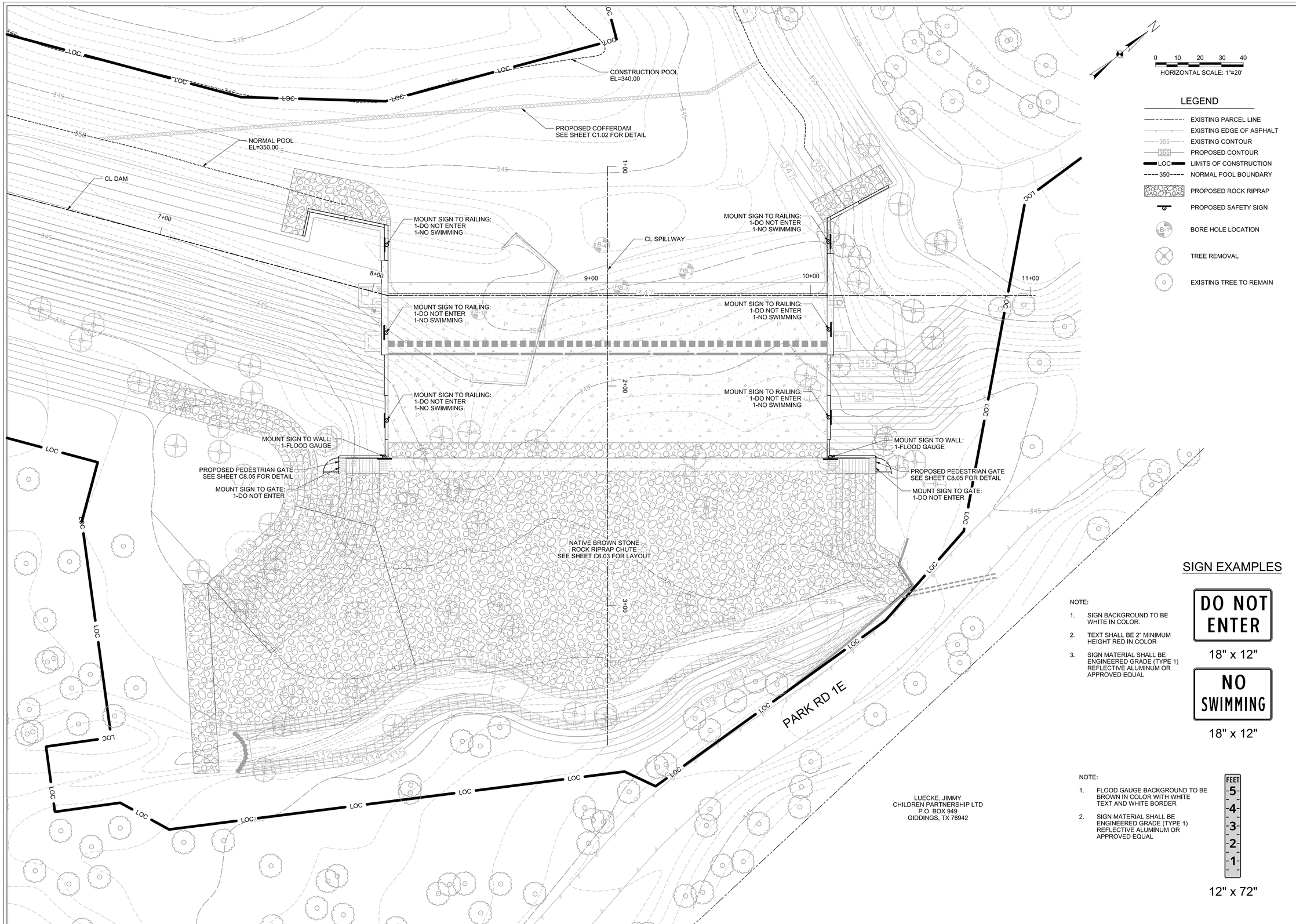

SIGN EXAMPLES

NOTE:

1. SIGN BACKGROUND TO BE WHITE IN COLOR.
2. TEXT SHALL BE 2" MINIMUM HEIGHT RED IN COLOR
3. SIGN MATERIAL SHALL BE ENGINEERED GRADE (TYPE 1) REFLECTIVE ALUMINUM OR APPROVED EQUAL

DO NOT
ENTER

18" x 12"

NO
SWIMMING

18" x 12"

NOTE:

1. FLOOD GAUGE BACKGROUND TO BE BROWN IN COLOR WITH WHITE TEXT AND WHITE BORDER
2. SIGN MATERIAL SHALL BE ENGINEERED GRADE (TYPE 1) REFLECTIVE ALUMINUM OR APPROVED EQUAL

FEET
5
4
3
2
1

12" x 72"

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Sheet Title
SPILLWAY SAFETY SIGNAGE PLAN

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GENERAL

1. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND THE SPECIFICATIONS.

2. COMPLETE SHOP DRAWINGS FOR THE STRUCTURAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS. REVIEW OF SHOP DRAWINGS BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR CORRECT FABRICATION AND CONSTRUCTION OF THE WORK.

3. ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURES OR ANY PART OF THE STRUCTURES SHOWN ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN-WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.

4. THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS AT THE SITE AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE ACTUAL CONDITIONS AND INFORMATION SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK.

5. PRINCIPAL OPENINGS ARE SHOWN ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL REFER TO CIVIL DRAWINGS FOR DETAILS NOT SHOWN. SIZE AND LOCATION OF ALL OPENINGS SHALL BE VERIFIED BY THE CONTRACTOR. ANY DEVIATION FROM OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR APPROVAL PRIOR TO CONSTRUCTION.

6. THE STRUCTURAL DRAWINGS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

7. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHODS OF CONSTRUCTION UNLESS SO STATED OR NOTED. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORKMEN AND OTHER PERSONS DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SHORING OF ALL STRUCTURAL WORK AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONDITION WHICH, IN HIS OPINION, MIGHT ENDANGER THE STABILITY OF THE STRUCTURE OR CAUSE DISTRESS IN THE STRUCTURE.

9. IF ANY INCONSISTENCIES OR DISCREPANCIES OCCUR WITHIN OR BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE GREATER QUANTITY OF ITEMS SHOWN, AND THE MOST COSTLY PRODUCT OR INSTALLATION METHOD SHALL BE PROVIDED, UNLESS INSTRUCTED OTHERWISE BY THE ENGINEER. IT SHALL BE DEEMED THAT THE CONTRACTOR BID AND INTENDS TO EXECUTE THE MORE STRINGENT OR HIGHER QUALITY REQUIREMENTS WITHOUT ANY INCREASE TO THE CONTRACT SUM OR CONTRACT TIME.

BAR GRATING

1. BAR GRATING SHALL BE 3/4" x 3/16" MINIMUM WELDED GW SERIES AS MANUFACTURED BY McNICHOLS OR APPROVED EQUAL. ALL DESIGN AND DETAILING SHALL BE BY THE BAR GRATING MANUFACTURER.

2. ALL BAR GRATING SHALL BE GALVANIZED.

3. ALL BAR GRATING SHALL BE MECHANICALLY CONNECTED TO THE CONCRETE STRUCTURE.

ALUMINUM HATCHES

1. ALUMINUM HATCHES SHALL BE TYPE K AS MANUFACTURED BY BILCO OR APPROVED EQUAL.

AIR VENTS

1. AIR VENTS SHALL BE NEW STRUCTURAL STEEL PIPE IN CONFORMANCE WITH ASTM A-53 TYPE "E" OR "S" GRADE B.

2. AIR VENTS SHALL BE GALVANIZED.

EARTHWORK AND FOUNDATIONS

1. THE FOUNDATION DESIGN IS IN ACCORDANCE WITH A GEOTECHNICAL REPORT (PROJECT NO. 0312-1939) BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PSI) DATED OCTOBER 5, 2020. EXCERPTS FROM THE ABOVE REFERENCED REPORTS ARE PROVIDED FOR INFORMATIONAL PURPOSES. REFER TO THE GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS.

2. ACCESS TO THE SITE SHALL BE GRANTED FOR THE GEOTECHNICAL ENGINEER TO OBSERVE ALL GRADING OPERATIONS AND THE REQUIRED TESTING FOR IMPLEMENTING THE RECOMMENDATIONS OF THE AFOREMENTIONED GEOTECHNICAL REPORT AND THE SPECIFICATIONS. THESE TESTS AND OBSERVATIONS SHOULD INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING:

   o OBSERVATION AND TESTING DURING SITE PREPARATION AND EARTHWORK
   o OBSERVATION OF SLAB EXCAVATIONS AND VERIFICATION THAT THE SOILS OF THE DESIGN BEARING CAPACITY HAVE BEEN ENCOUNTERED
   o CONSULTATION AS REQUIRED DURING CONSTRUCTION.

3. LOCATE ALL UTILITIES AND UNDERGROUND SERVICES PRIOR TO EXCAVATION. THE ENGINEER SHALL BE NOTIFIED IN CASE OF CONFLICT.

4. EXCAVATIONS SHALL BE FREE OF SOFT OR LOOSE MATERIAL AND WATER WHEN CONCRETE IS PLACED. WATER SHALL NOT BE ALLOWED TO STAND IN THE EXCAVATIONS. IF THE EXCAVATION SUBGRADE IS SOFTENED BY WATER, THE FOUNDATION SHALL BE UNDERCUT TO AN UNDISTURBED SUBGRADE.

5. FOUNDATIONS SHALL BEAR ON SANDSTONE OR EXCAVATIONS FILLED WITH FLOWABLE FILL REFER TO SECTION 3.12 FOR THE PREPARATION OF AREAS TO RECEIVE FOUNDATIONS. REFER TO TABLE 3.11 FOR COMPACTION AND TESTING REQUIREMENTS.

6. FREE DRAINING COARSE AGGREGATE BEHIND THE RETAINING WALL SHALL BE GRADES 2 OR 3 (TXDOT ITEM 421) AND SHALL BE WRAPPED AS SHOWN WITH FILTER FABRIC. REFER TO THE CIVIL DRAWINGS AND SPECIFICATIONS FOR FREE DRAINING MATERIALS FOR THE UNDERDRAIN SYSTEM.

7. FILTER FABRIC SHALL CONFORM TO TxDOT DEPARTMENTAL MATERIAL SPECIFICATION D-9-6200. FILTER FABRIC SPLICES SHALL HAVE A MINIMUM OVERLAP OF 18 INCHES.

8A. DESIGN OF THE DRAINED RETAINING WALLS IS BASED ON THE FOLLOWING VALUES:

   SILTY SANDS
   EQUIVALENT ACTIVE LATERAL FLUID PRESSURE ... 38 PCF
   EQUIVALENT PASSIVE LATERAL FLUID PRESSURE .. 434 PCF
   TOTAL SOIL UNIT WEIGHT .... 128 PCF
   ALLOWABLE SOIL BEARING PRESSURE .... 1000 PSF
   SURCHARGE .... 50 PSF
   COEFFICIENT OF FRICTION (CONCRETE ON SOIL) 0.4

   REFER TO TABLE 3:10 LATERAL EARTH PRESSURE COEFFICENTS AND EQUIVALENT FLUID DENSITIES FOR SILTY SAND BACKFILL BEHIND THE DRAINED RETAINING WALLS. BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTIONS 3.12.1 AND 3.12.2.

8B. THE DESIGN OF THE UNDRAINED RETAINING WALLS IS BASED ON THE FOLLOWING VALUES.

   CLAYEY BACKFILL
   EQUIVALENT ACTIVE LATERAL FLUID PRESSURE ... 62 PCF
   EQUIVALENT PASSIVE LATERAL FLUID PRESSURE .. 257 PCF
   TOTAL SOIL UNIT WEIGHT .... 126 PCF
   ALLOWABLE SOIL BEARING PRESSURE .... 1000 PSF
   SURCHARGE .... 50 PSF
   COEFFICIENT OF FRICTION (CONCRETE ON SOIL) 0.35

   REFER TO TABLE 3.9: CLAYEY BACKFILL MATERIALS FOR BACKFILL BEHIND THE UNDRAINED RETAINING WALL. BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTIONS 3.12.1 AND 3.12.2.

9. COMPACTION WITHIN FIVE FEET OF WALLS SHALL BE ACHIEVED WITH HAND COMPACTION EQUIPMENT. THE CONTRACTOR SHALL RELEVEL ALL AREAS OF BACKFILL WHERE SETTLEMENT OCCURS. THIS WORK SHALL BE CONSIDERED INCIDENTAL, AND NOT A SEPARATE PAY ITEM.

GENERAL NOTES FOR UPLIFT ANCHORS

THE WORK DETAILED IN THIS DOCUMENT SHALL CONSIST OF CONSTRUCTION OF PASSIVE CONCRETE GROUT ANCHORS IN THE SPILLWAY'S STILLING BASIN AND UNDRAINED RETAINING WALLS.

A. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND ANCHOR DETAILS AND ANCHOR CONSTRUCTION SPECIFICATIONS. THE MATERIALS USED, THEIR TYPES AND GRADES, AND CORRESPONDING SPECIFICATIONS ARE SHOWN IN THE FOLLOWING TABLE.

MATERIALS	TYPE AND GRADE	STANDARDS
ADMIXTURES	-	ASTM C494
CEMENT	PORTLAND CEMENT	ASTM C150 TYPE I OR II, III, OR V
GROUT	f'c = 4000 PSI	ASTM C109
EPOXY COATED BAR	GRADE 75	ASTM A615

B. OTHER APPURTENANT FABRICATION AND INSTALLATION MATERIALS SHALL CONFORM TO MANUFACTURER'S STANDARDS AND TO THE REQUIREMENTS SPECIFIED IN THE PLANS AND DETAILS.

C. REFER GEOTECHNICAL ENGINEERING CIRCULAR NO. 4: 1999 FHWA IF-99-015 GROUND ANCHORS AND ANCHORED SYSTEMS.

D. STILLING BASIN ALLOWABLE ANCHOR UPLIFT CAPACITY.

# OF ANCHORS	DESIGN AXIAL LOAD PER ANCHOR (KIPS)
40	37.5

NOTE: BONDED LENGTH FOR STILLING BASIN ANCHORS IS BASED ON ALLOWABLE UPLIFT CAPACITY OF 37.5 KIPS.

E. CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES AND SURVEY CONTROL.

F. FIVE PERCENT OF THE ANCHORS SHALL BE PERFORMANCE TESTED TO A MAXIMUM TEST LOAD EQUAL TO 1.33 TIMES THE DESIGN LOAD. THE REMAINING ANCHORS SHALL BE PROOF TESTED TO A MAXIMUM TEST LOAD EQUAL TO 1.20 TIMES THE DESIGN LOAD.

ANCHOR TEST			
ITEMS	UNIT	QUANTITIES	TEST LOAD (K)
PERFORMANCE TEST	EACH	2	50
PROOF TEST	EACH	38	45

G. REFER TO SHEET S115 FOR ANCHOR REQUIREMENTS BENEATH THE UNDRAINED RETAINING WALLS.

CAST-IN-PLACE REINFORCED CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.

2. MILD STEEL REINFORCING BARS SHALL BE DOMESTIC (MADE IN THE USA) AND CONFORM TO ASTM A615. EPOXY-COATED REINFORCED BARS SHALL CONFORM TO ASTM A775. NO. 3 BARS SHALL BE GRADE 40. NO. 4 AND LARGER BARS SHALL BE GRADE 60.

3. MILD STEEL REINFORCEMENT AND ACCESSORIES SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH ACI SP-66.

4. PORTLAND CEMENT SHALL BE A SINGLE BRAND CONFORMING TO ASTM C150, TYPE 1, UNLESS OTHERWISE APPROVED.

5. NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C33. ALL CONCRETE SHALL USE NORMAL WEIGHT AGGREGATES, UNLESS NOTED OTHERWISE. MAXIMUM NOMINAL SIZE OF COARSE AGGREGATE SHALL BE 1".

6. ALL ADDITIVES FOR AIR ENTRAINMENT, WATER REDUCTION, AND SET CONTROL SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.

7. MIXES SHALL BE DESIGNED TO PROVIDE CONCRETE WITH A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI, UNO.

8. CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED AS INDICATED IN THE SPECIFICATIONS. AIR CONTENT SHALL BE CHECKED BY AN ACI APPROVED TESTER WITH AN AIR METER.

9. CONCRETE SLUMPS SHALL BE AS FOLLOWS:

   -CONCRETE CONTAINING SUPERPLASTICIZER .... 8" MAX.
   -CONCRETE AT SLOPING SURFACES .... 3" MAX.
   -ALL OTHER CONCRETE .... 4" MAX.

10. MILD STEEL REINFORCEMENT SHALL BE PLACED AND SECURED IN ACCORDANCE WITH CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS."

11. THE TESTING LABORATORY SHALL BE NOTIFIED AFTER THE MILD STEEL REINFORCEMENT AND EMBEDS ARE POSITIONED PRIOR TO EACH CONCRETE PLACEMENT. NO CONCRETE SHALL BE PLACED UNTIL THESE ITEMS ARE CHECKED AND APPROVED BY THE TESTING LABORATORY.

12. EACH AREA OF CONCRETE WORK SHALL BE FINISHED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS. 3/4" CHAMFERS SHALL BE PROVIDED AT ALL EXPOSED EDGES.

13. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4"

14. ALL CONCRETE SHALL BE INTEGRALLY COLORED CONCRETE. COLOR TO BE SELECTED BY TPWD REFER SPECIFICATION SECTION 03 30 00.00.

15. ALL EXPOSED CONCRETE SHALL HAVE A CLASS A SURFACE FINISH.

DRILLING AND ANCHOR INSTALLATION

A. EACH SOIL ANCHOR LOCATION WILL BE ACCURATELY LAID OUT IN ADVANCE OF DRILLING. LOCATIONS ARE PER THE DRAWING AND ANCHOR SCHEDULE SHOWN ON THESE DESIGN DRAWINGS.

B. SELECT THE APPROPRIATE DRILLING METHOD TO MINIMIZE THE DISTURBANCE TO SOIL AND NEARBY EXISTING STRUCTURES.

C. HOLES FOR ANCHORS SHALL BE DRILLED AT THE LOCATIONS AND TO THE LENGTH AND DIAMETER SHOWN ON THE DRAWINGS USE TEMPORARY CASING IF SLOUGHING SOILS OR WATER ARE ENCOUNTERED.

D. ANCHOR SHAFT EXCAVATION SHALL NOT REMAIN OPEN MORE THAN 8 HOURS PRIOR TO GROUT PLACEMENT.

E. INSERT THE STEEL BAR AS SPECIFIED ON THE DRAWINGS AND THE SCHEDULE INTO THE DRILL HOLE TO THE DESIRED DEPTH/ELEVATION.

F. INJECT GROUT FROM THE TOE OF THE DRILL HOLE BEFORE OR AFTER INSERTING THE BAR. GROUT TUBES SHALL BE USED TO PLACE THE GROUT. THE QUANTITY OF GROUT AND THE GROUT PRESSURE SHALL BE RECORED.

G. IF NECESSARY THE OUTER DRILL CASING WILL BE RETRACTED AND PRESSURE GROUTED IN THE BOND ZONE IN STAGES.

H. GROUT CUBES WILL BE TAKEN EACH DAY GROUTING IS PERFORMED, LABELED AND SENT TO A LAB FOR COMPRESSIVE STRENGTH TESTING.

I. UPON INSTALLATION AND CURING OF THE SOIL ANCHORS, THE ANCHORS WILL BE TESTED IN TENSION IN ACCORDANCE WITH THE SPECIFIED PERFORMANCE AND PROOF TESTING SCHEDULE.

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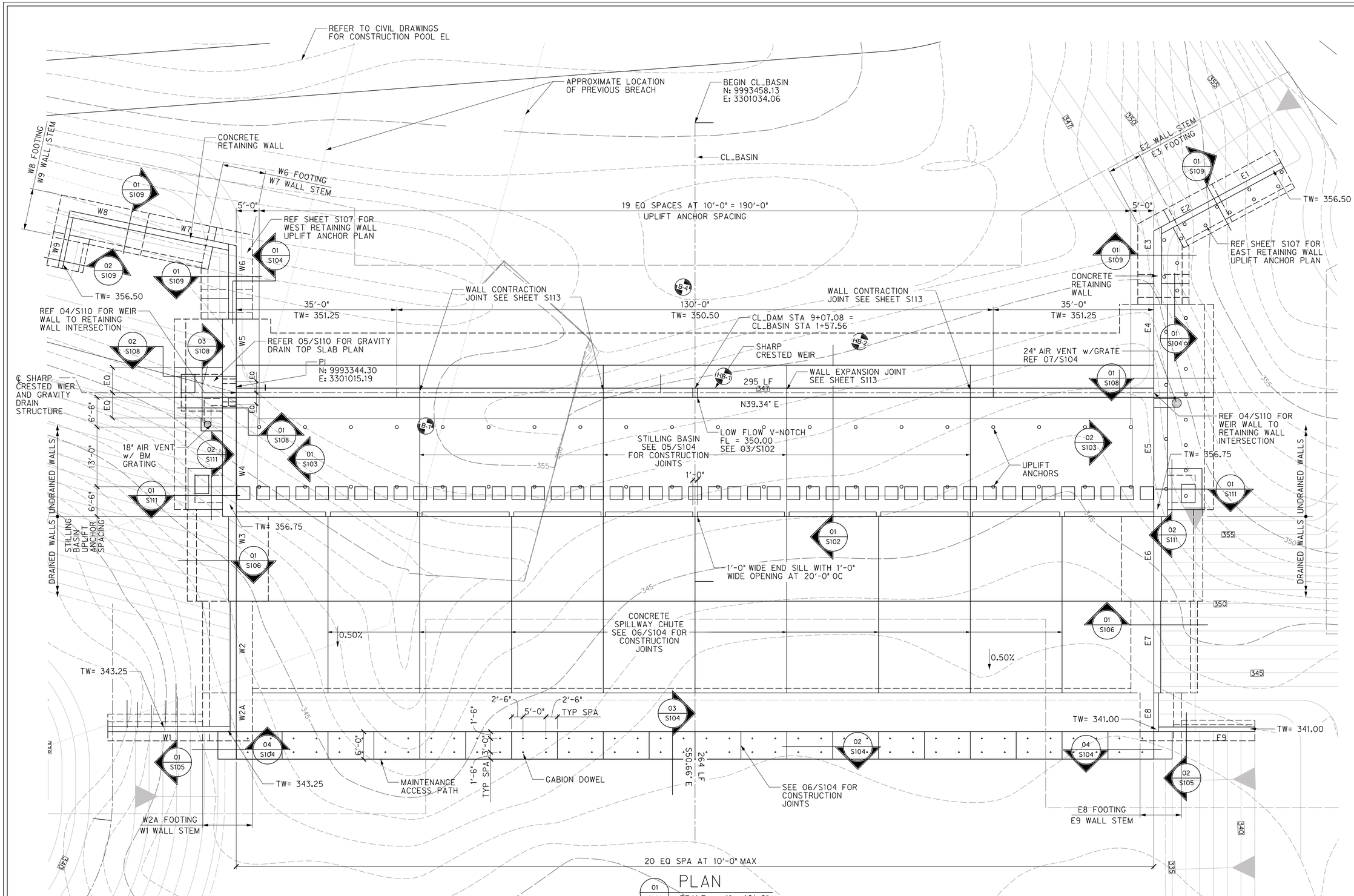
BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
PAUL J. RIELLY
61307
LICENSED
PROFESSIONAL ENGINEER
12/18/2020

Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/18/2020
Sheet Title
STRUCTURAL GENERAL NOTES
Sheet Number
S100



01 S101 PLAN
SCALE = 1" = 10'-0"

NOTE:

1. REFER TO THE CIVIL DRAWINGS FOR THE UNDERDRAIN SYSTEM.
2. REF SHEET S107 FOR UNDERDRAINED RETAINING WALL UPLIFT ANCHOR PLANS.

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Revision No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/18/2020

Sheet Title
SPILLWAY AND RETAINING WALL PLAN

Sheet Number
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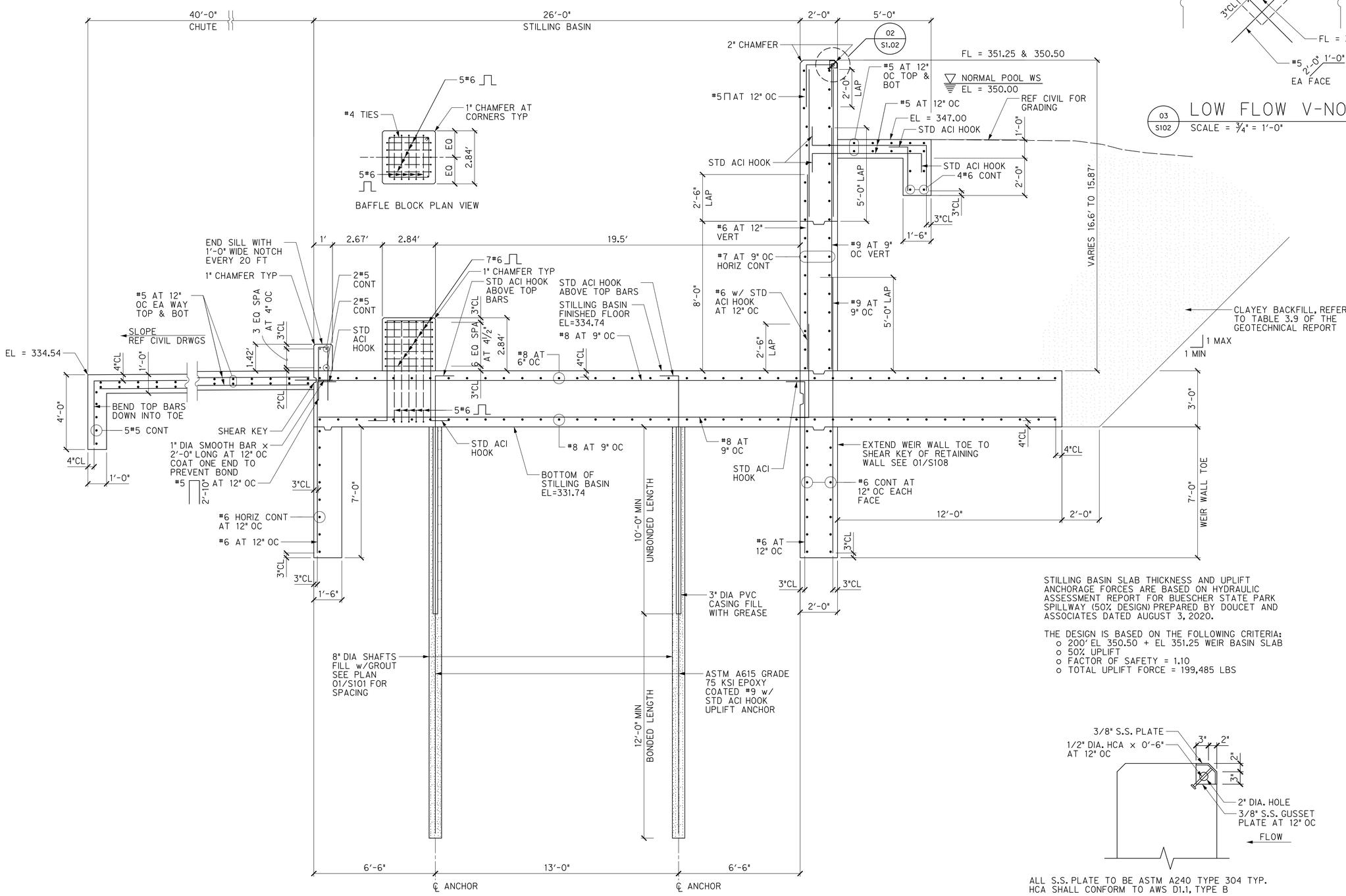
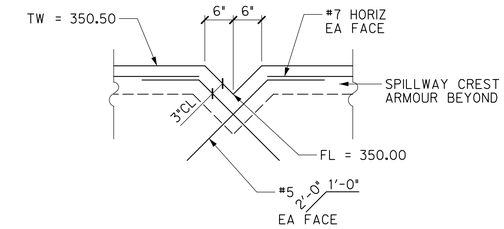
S101



01 S102 STILLING BASIN AND SHARP CRESTED WEIR SECTION

SCALE = 1/8" = 1'-0"

REF CIVIL DRWGS FOR UNDERDRAIN SYSTEM



03 S102 LOW FLOW V-NOTCH WEIR

SCALE = 3/4" = 1'-0"

STILLING BASIN SLAB THICKNESS AND UPLIFT ANCHORAGE FORCES ARE BASED ON HYDRAULIC ASSESSMENT REPORT FOR BUESCHER STATE PARK SPILLWAY (50% DESIGN) PREPARED BY DOUCET AND ASSOCIATES DATED AUGUST 3, 2020.

THE DESIGN IS BASED ON THE FOLLOWING CRITERIA:

- 200' EL 350.50 + EL 351.25 WEIR BASIN SLAB
- 50% UPLIFT
- FACTOR OF SAFETY = 1.10
- TOTAL UPLIFT FORCE = 199,485 LBS

ALL S.S. PLATE TO BE ASTM A240 TYPE 304 TYP.
HCA SHALL CONFORM TO AWS D1.1, TYPE B

02 S102 SPILLWAY CREST ARMOUR SECTION

SCALE = 1" = 1'-0"

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Sheet Title
STILLING BASIN AND SHARP CRESTED WEIR SECTION

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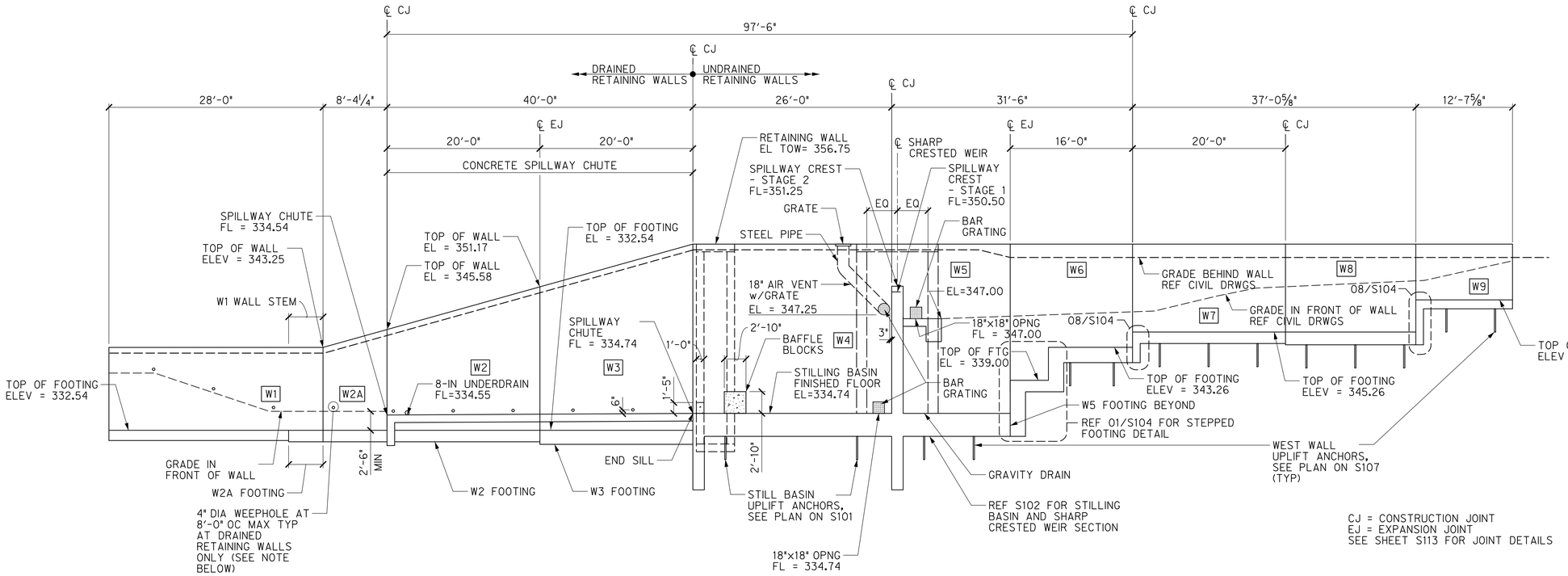
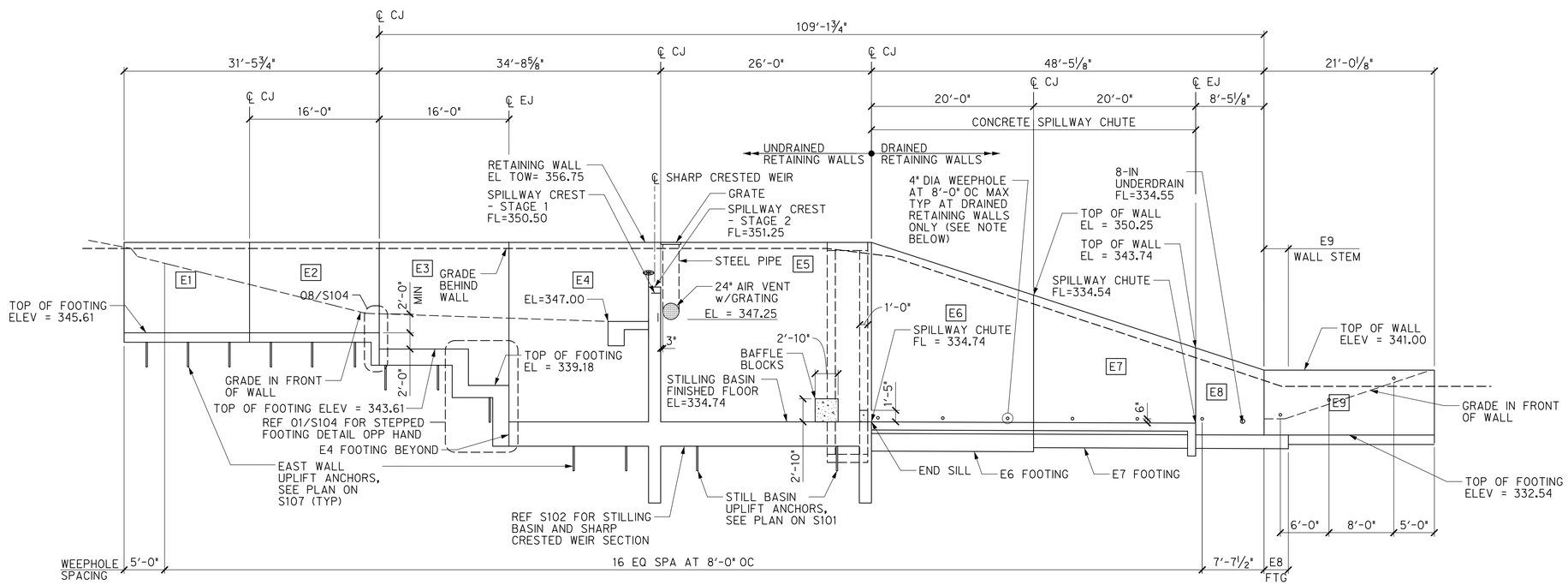
S102



01 S103 WEST WALL ELEVATION

SCALE = ⅛" = 1'-0"

REFER CIVIL DWGS FOR UNDERDRAIN SYSTEM.



NOTE: WEEPHOLES SHALL CONTAIN A CHECK VALVE AS MANUFACTURED BY JET FILTER SYSTEMS OR APPROVED EQUAL.

02 S103 EAST WALL ELEVATION

SCALE = ⅛" = 1'-0"

REFER CIVIL DWGS FOR UNDERDRAIN SYSTEM.

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Revision No.	Date	Description

PROJECT NUMBER: 118686

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Sheet Title

WALL ELEVATIONS

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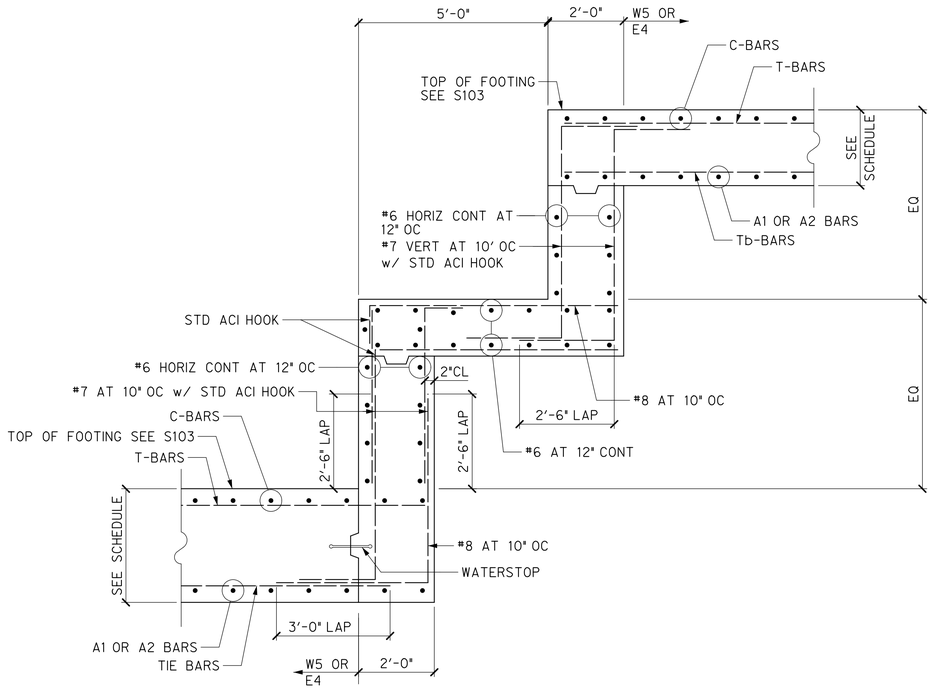
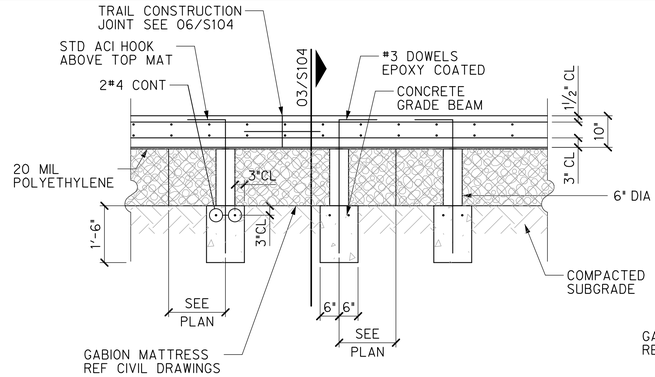
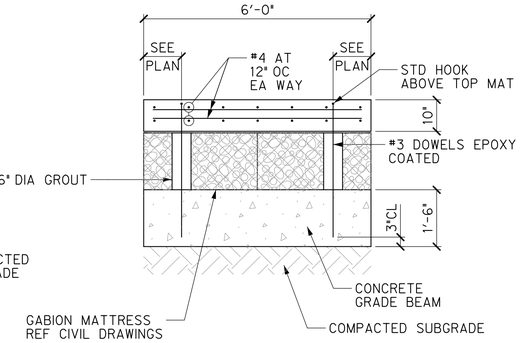
S103



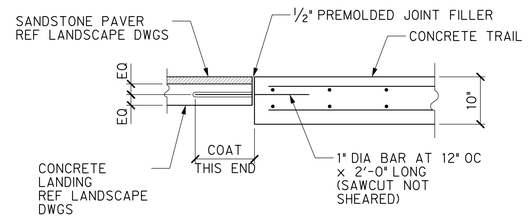
01 S104 SECTION AT FOOTING STEP
SCALE = 1/2" = 1'-0"



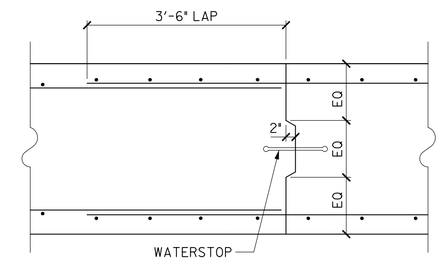
02 S104 MAINTENANCE ACCESS PATH GABION DOWEL SECTION
SCALE = 1/2" = 1'-0"



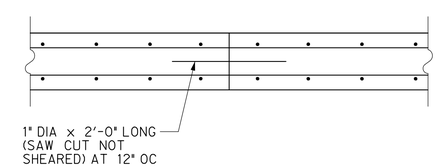
03 S104 TRANSVERSE CONCRETE MAINTENANCE ACCESS PATH SECTION
SCALE = 1/2" = 1'-0"



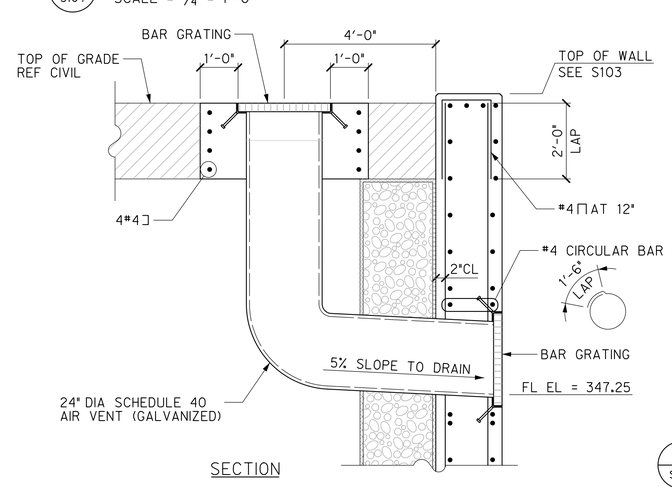
04 S104 MAINTENANCE ACCESS PATH TO LANDING JOINT DETAIL
SCALE = 3/4" = 1'-0"

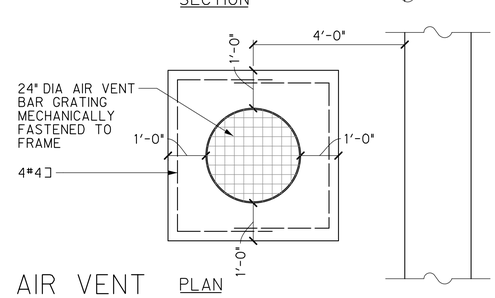


05 S104 STILLING BASIN CONSTRUCTION JOINT
SCALE = 3/4" = 1'-0"

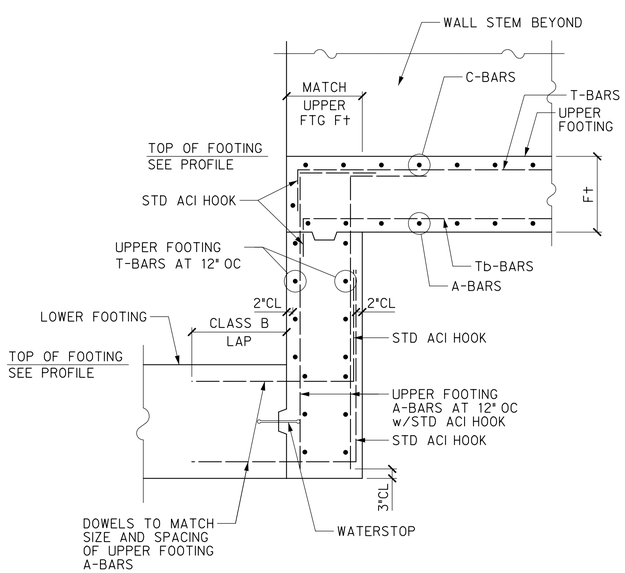


06 S104 SPILLWAY CHUTE & MAINTENANCE ACCESS PATH CONSTRUCTION JOINT
SCALE = 3/4" = 1'-0"





07 S104 EAST WALL AIR VENT
SCALE = 1/2" = 1'-0"



08 S104 TYPICAL STEPPED FOOTING DETAIL
SCALE = 1/2" = 1'-0"

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STRUCTURAL DETAILS
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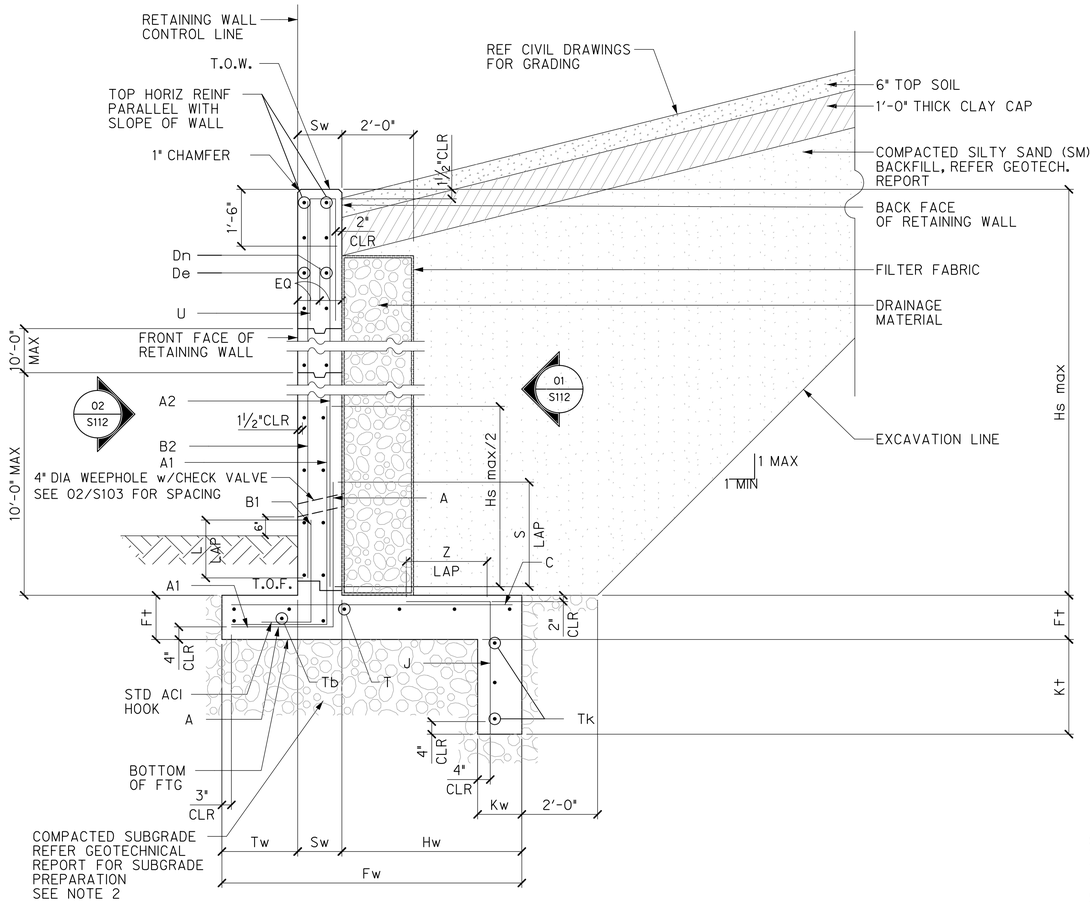
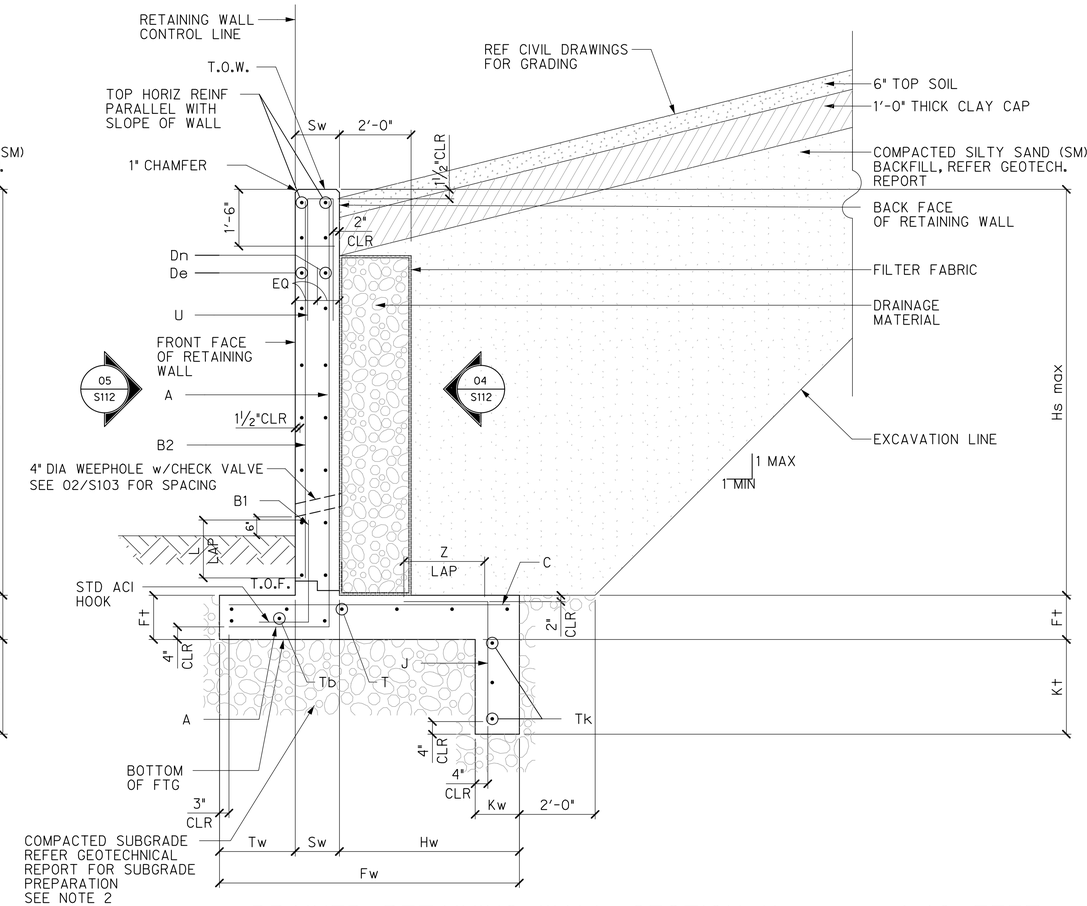
S104



01 S105 DRAINED RETAINING WALL, SECTION Hs max > 10 FEET

SCALE = NTS

REF. SHT S113 FOR RETAINING WALL DETAILS



02 S105 DRAINED RETAINING WALL, SECTION Hs max ≤ 10 FEET

SCALE = NTS

REF. SHT S113 FOR RETAINING WALL DETAILS

	EAST RETAINING WALL SCHEDULE																												
	CONCRETE DIMENSIONS										REINFORCING SCHEDULE														LAP LENGTHS			
	WALL TYP	SECTION	Hs Max	Sw	Fw	Tw	Hw	Kt	Kw	Ft	A	A1	A2	B	B1	De	Dn	C	J	T	Tb	Tk	U	L	S	Z	AREA ft²
UNDRAINED	E1	01/S109	11'-3"	1'-4"	10'-10"	4'-0"	5'-6"	2'-6"	1'-4"	1'-6"	#8 @ 12"	#8 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#5 @ 12"	#7 @ 12"	#5 @ 12"	12 #6	4 #5	3 #5	#4 @ 12"	1'-3"	4'-6"	1'-0"	172.50
UNDRAINED	E2	01/S109	11'-3"	1'-4"	10'-10"	4'-0"	5'-6"	2'-6"	1'-4"	1'-6"	#8 @ 12"	#8 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#5 @ 12"	#7 @ 12"	#5 @ 12"	12 #6	4 #5	3 #5	#4 @ 12"	1'-3"	4'-6"	1'-0"	178.50
UNDRAINED	E3	01/S109	17'-7"	2'-0"	20'-0"	8'-0"	10'-0"	4'-6"	2'-0"	2'-2"	#9 @ 14"	#9 @ 14"	#6 @ 7"	#6 @ 12"	#6 @ 12"	#6 @ 9"	#5 @ 10"	#8 @ 7"	#6 @ 12"	21 #7	9 #6	5#6	#5 @ 12"	1'-8"	5'-6"	2'-6"	281.00
UNDRAINED	E4	01/S109	22'-0"	3'-0"	25'-0"	12'-0"	10'-6"	5'-6"	3'-0"	3'-0"	#9 @ 12"	#9 @ 12"	#7 @ 12"	#6 @ 12"	#6 @ 12"	#8 @ 10"	#6 @ 10"	#8 @ 8"	#8 @ 12"	30 #8	14 #8	6 #8	#5 @ 12"	1'-8"	5'-6"	2'-6"	341.20
UNDRAINED	E5	01/S108	22'-0"	3'-0"	NA	NA	10'-6"	5'-6"	3'-0"	3'-0"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	572.30
DRAINED	E6	01/S106	24'-3"	1'-8"	15'-2"	5'-0"	8'-6"	4'-0"	1'-8"	2'-2"	#9 @ 16"	#9 @ 16"	#6 @ 16"	#5 @ 12"	#5 @ 12"	#6 @ 10"	#5 @ 10"	#8 @ 8"	#6 @ 12"	13 #7	5 #7	4 #6	#4 @ 12"	2'-0"	5'-6"	2'-6"	411.81
DRAINED	E7	01/S106	17'-9"	1'-6"	11'-6"	4'-0"	6'-0"	2'-6"	1'-6"	1'-8"	#7 @ 24"	#7 @ 24"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#5 @ 12"	#7 @ 12"	#5 @ 12"	12 #6	4#6	3 #6	#4 @ 12"	2'-0"	3'-6"	2'-0"	251.10
DRAINED	E8	01/S105	11'-2"	1'-2"	9'-2"	3'-0"	5'-0"	2'-0"	1'-2"	1'-4"	#6 @ 24"	#6 @ 24"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#4 @ 12"	#6 @ 12"	#5 @ 12"	11 #5	4 #5	3 #5	#4 @ 12"	1'-3"	4'-6"	1'-0"	82.83
DRAINED	E9	02/S105	8'-6"	12"	7'-0"	2'-0"	4'-0"	2'-0"	1'-0"	1'-2"	#5 @10"	NA	NA	#4 @ 12"	#4 @ 12"	#5 @ 12"	#4 @ 12"	#5@ 12"	#5 @ 12"	8 #5	3 #5	2 #5	#4 @ 12"	1'-0"	NA	2'-0"	177.80

S = 2469.04

NOTES:

1. CLAYEY BACKFILL SHALL NOT BE USED AS BACKFILL BEHIND DRAINED RETAINING WALLS.
2. REFER SECTION 3.12 OF THE GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION BENEATH THE FOOTING.

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12/18/2020

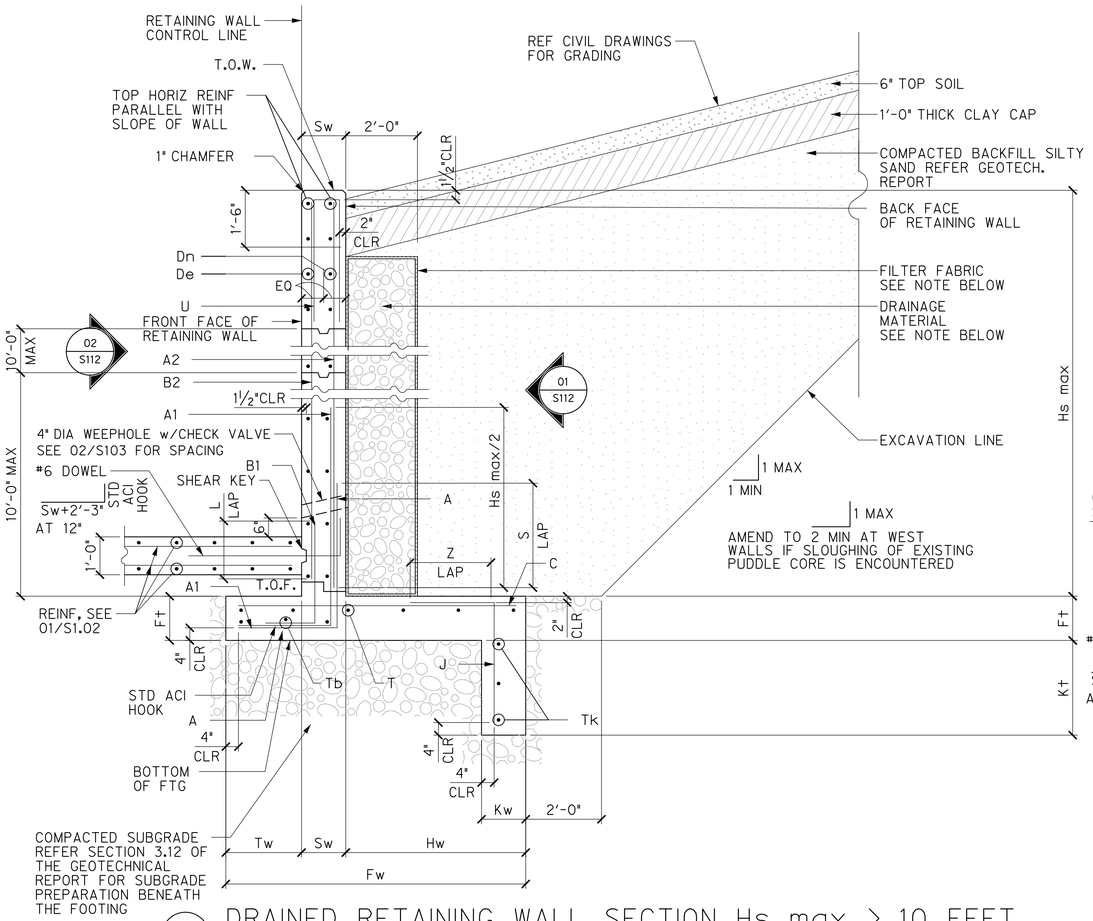
Revision		
No.	Date	Description

PROJECT NUMBER: 118686

DATE: 12/18/2020

Sheet Title
EAST RETAINING WALL SECTIONS AND SCHEDULES

Sheet Number
S105

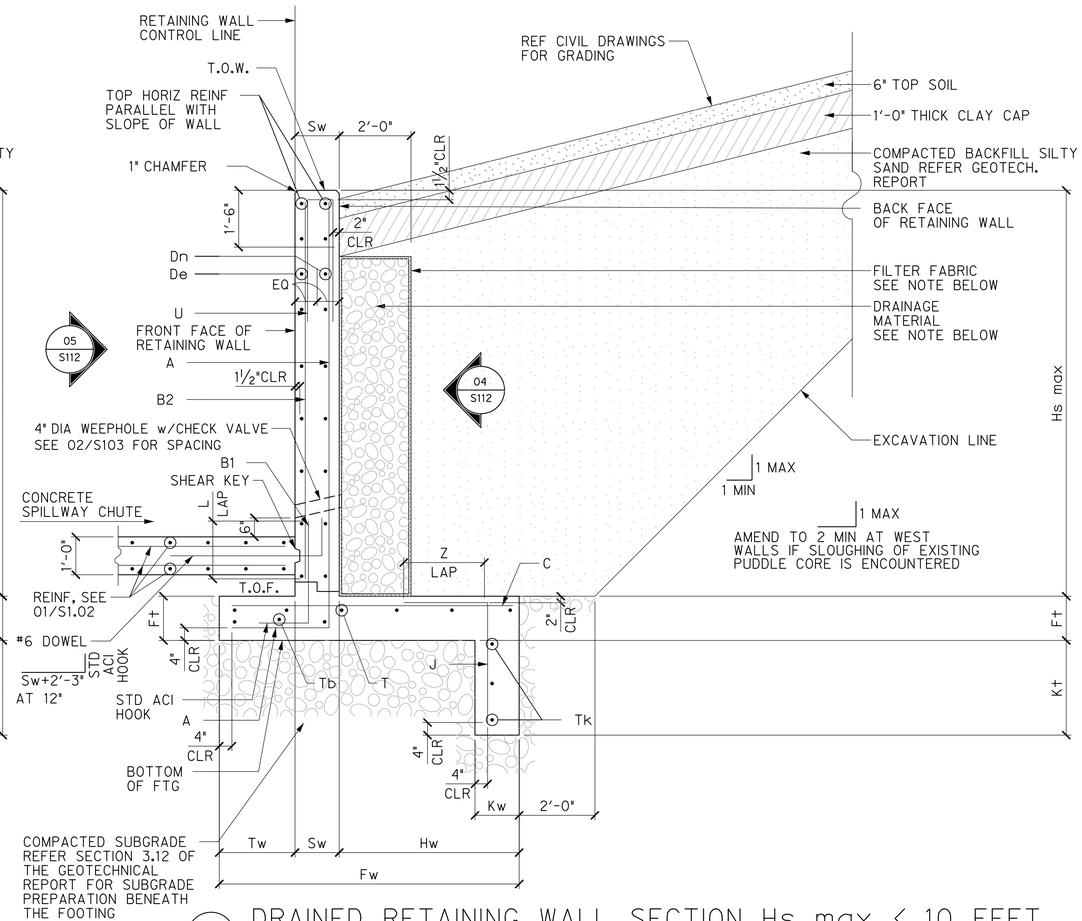


01 S106 DRAINED RETAINING WALL, SECTION Hs max > 10 FEET

SCALE = NTS

REF. SHT S113 FOR RETAINING WALL DETAILS

SEE EARTHWORKAND FOUNDATION GENERAL NOTES 6 & 7 FOR DRAINAGE MATERIAL AND FILTER FABRIC BEHIND THE RETAINING WALLS



02 S106 DRAINED RETAINING WALL, SECTION Hs max ≤ 10 FEET

SCALE = NTS

REF. SHT S113 FOR RETAINING WALL DETAILS

SEE EARTHWORKAND FOUNDATION GENERAL NOTES 6 & 7 FOR DRAINAGE MATERIAL AND FILTER FABRIC BEHIND THE RETAINING WALLS

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PROJECT NUMBER: 118686
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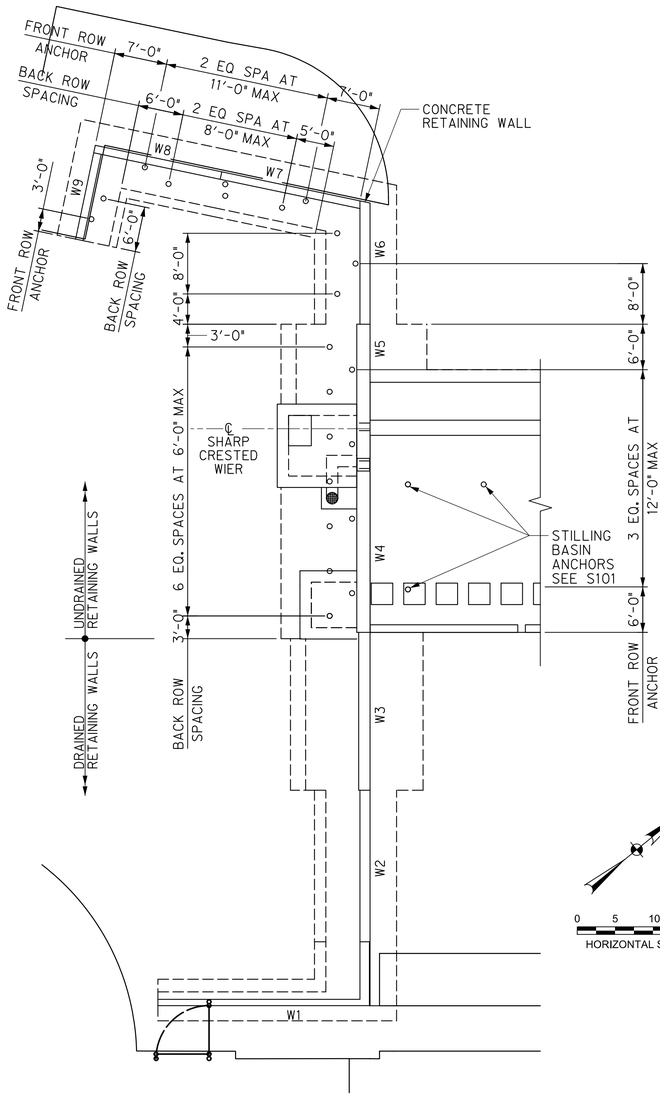
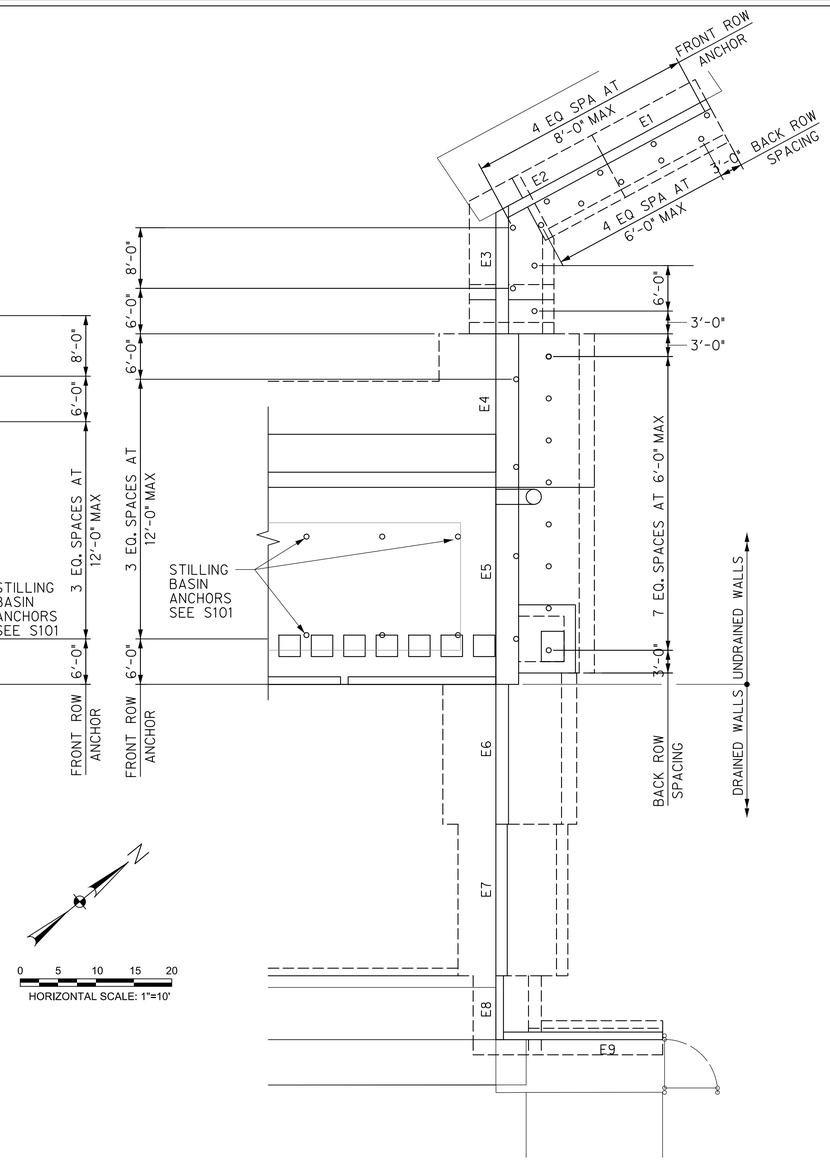


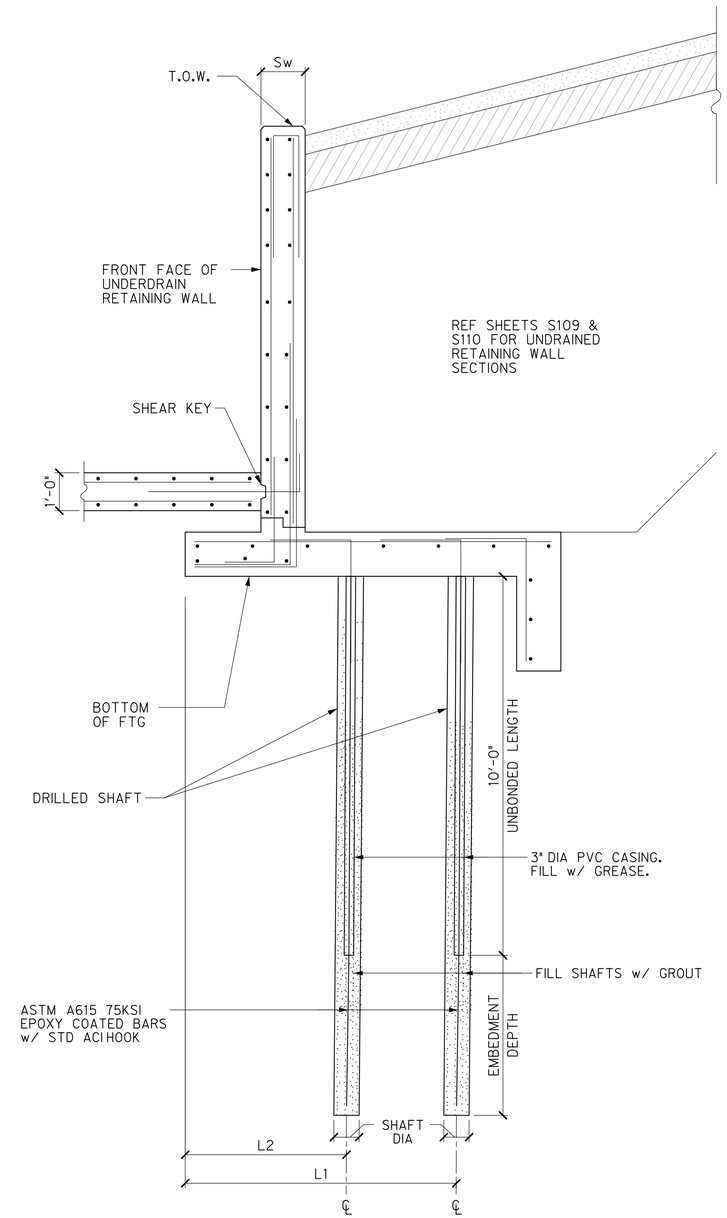
WEST RETAINING WALL UPLIFT ANCHOR PLAN

01 S107 SCALE = 1" = 10'-0"



EAST RETAINING WALL UPLIFT ANCHOR PLAN

02 S107 SCALE = 1" = 10'-0"



UNDRAINED RETAINING WALL UPLIFT ANCHOR SECTION

03 S107 SCALE = N.T.S.

WEST RETAINING WALL													
FRONT ROW ANCHOR SCHEDULE							BACK ROW ANCHOR SCHEDULE						
WALL	UPLIFT	SHAFT DIA	ANCHOR SIZE	MIN. EMBED	MAX SPACING	L_2	WALL	UPLIFT	SHAFT DIAMETER	ANCHOR SIZE	MIN. EMBED	MAX SPACING	L_1
W4	59.4 kips	6"	#7	7'-0"	12'-0"	12'-6"	W4	103.5 kips	8"	#9	12'-0"	6'-0"	16'-8"
W5	59.4 kips	6"	#7	7'-0"	12'-0"	12'-6"	W5	103.5 kips	8"	#9	12'-0"	6'-0"	16'-8"
W6	23.3 kips	6"	#6	5'-0"	16'-0"	5'-10"	W6	40.1 kips	6"	#6	7'-0"	8'-0"	7'-9"
W7	20.3 kips	6"	#6	5'-0"	20'-0"	5'-5"	W7	39.7 kips	6"	#6	7'-0"	10'-0"	7'-3"
W8	20.3 kips	6"	#6	5'-0"	20'-0"	5'-5"	W8	39.7 kips	6"	#6	7'-0"	10'-0"	7'-3"
W9	20.3 kips	6"	#6	5'-0"	20'-0"	5'-5"	W9	39.7 kips	6"	#6	7'-0"	10'-0"	7'-3"

EAST RETAINING WALL													
FRONT ROW ANCHOR SCHEDULE							BACK ROW ANCHOR SCHEDULE						
WALL	UPLIFT	SHAFT DIA	ANCHOR SIZE	MIN. EMBED	MAX SPACING	L_2	WALL	UPLIFT	SHAFT DIAMETER	ANCHOR SIZE	MIN. EMBED	MAX SPACING	L_1
E1	20.3 kips	6"	#6	5'-0"	20'-0"	5'-5"	E1	39.7 kips	6"	#6	7'-0"	10'-0"	7'-3"
E2	20.3 kips	6"	#6	5'-0"	20'-0"	5'-5"	E2	39.7 kips	6"	#6	7'-0"	10'-0"	7'-3"
E3	23.3 kips	6"	#6	5'-0"	16'-0"	5'-10"	E3	40.1 kips	6"	#6	7'-0"	8'-0"	7'-9"
E4	59.4 kips	6"	#7	7'-0"	12'-0"	12'-6"	E4	103.5 kips	8"	#9	12'-0"	6'-0"	16'-8"
E5	59.4 kips	6"	#7	7'-0"	12'-0"	12'-6"	E5	103.5 kips	8"	#9	12'-0"	6'-0"	16'-8"

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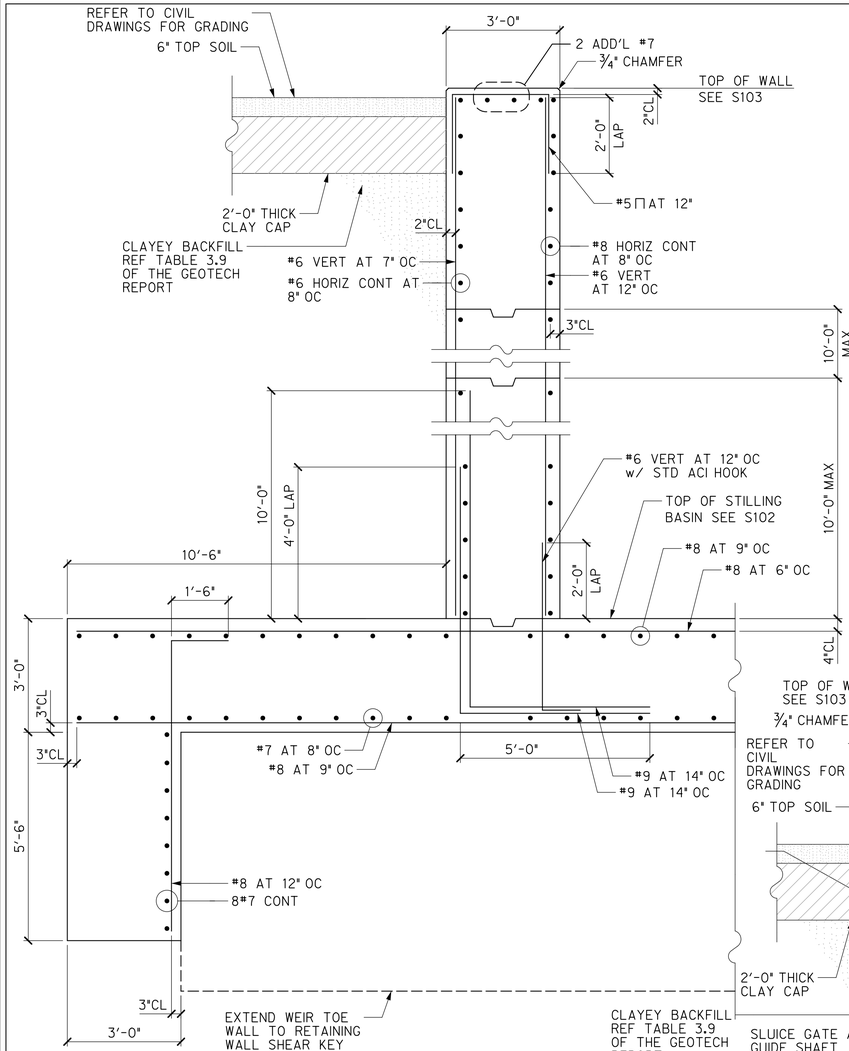
BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
PAUL J. RIELLY
61307
LICENSED PROFESSIONAL ENGINEER
12/18/2020

Revision No.	Date	Description

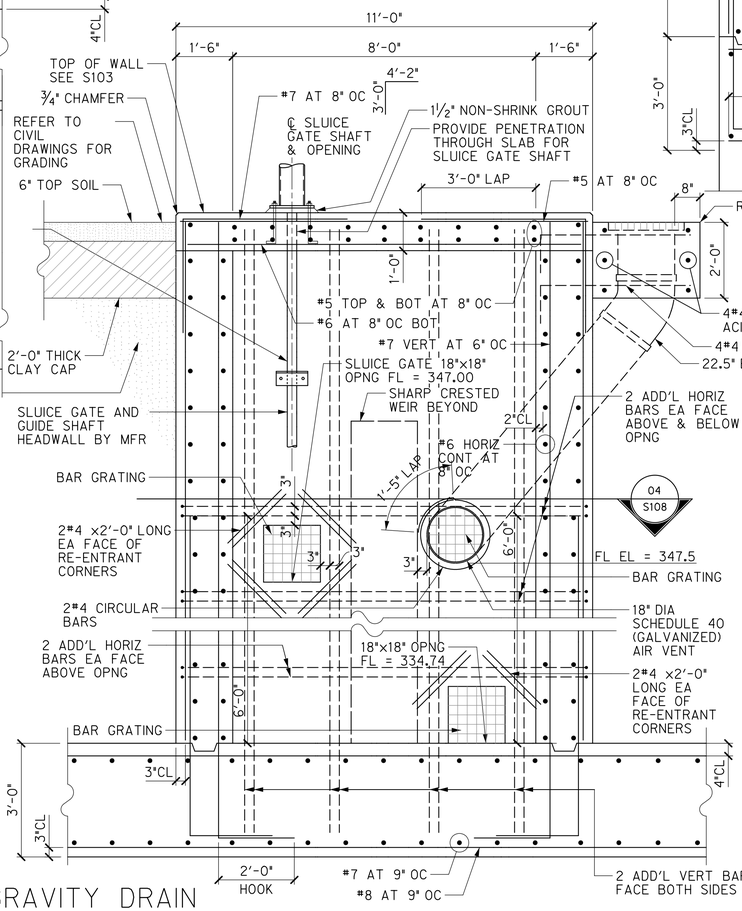
PROJECT NUMBER: 118686
DATE: 12/18/2020
Sheet Title: UNDRAINED RETAINING WALL UPLIFT ANCHOR, PLAN, SECTION, & SCHEDULE
Sheet Number: S107
061 of 74



STILLING BASIN SECTION

01 / S108 — SCALE = 1/2" = 1'-0"

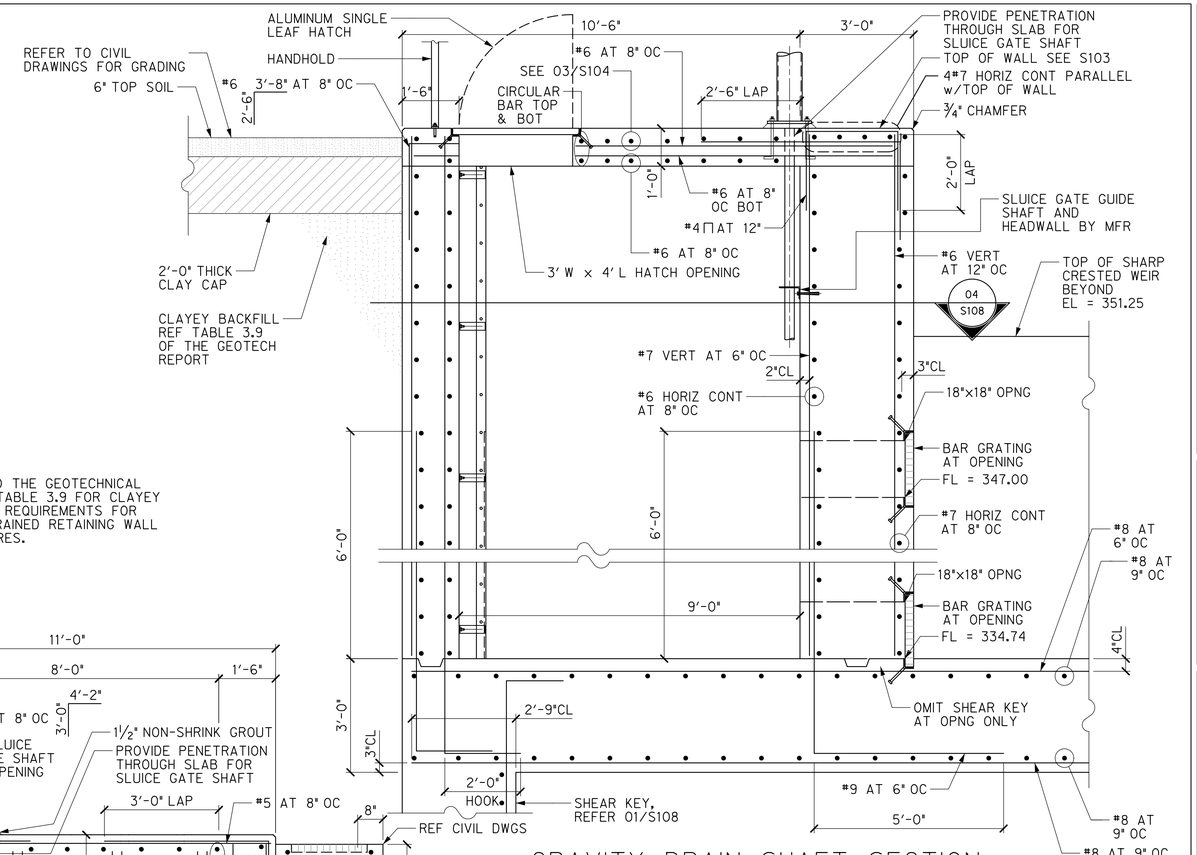
NOTE:
REFER TO THE GEOTECHNICAL REPORT TABLE 3.9 FOR CLAYEY BACKFILL REQUIREMENTS FOR THE UNDRAINED RETAINING WALL STRUCTURES.



GRAVITY DRAIN SHAFT SECTION

03 / S108 — SCALE = 1/2" = 1'-0"

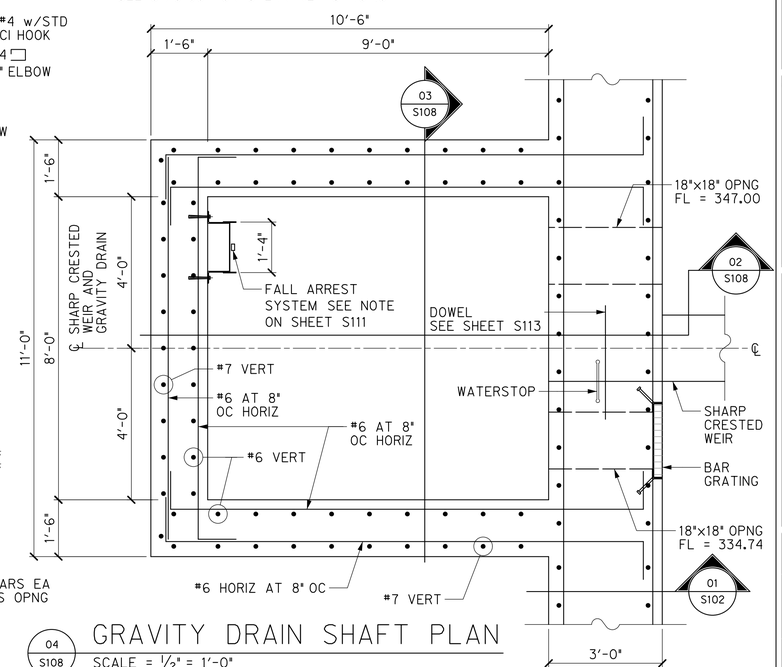
SEE 01/S108 FOR SHEAR KEY SPACING



GRAVITY DRAIN SHAFT SECTION

02 / S108 — SCALE = 1/2" = 1'-0"

SEE 01/S108 FOR SHEAR KEY SPACING



GRAVITY DRAIN SHAFT PLAN

04 / S108 — SCALE = 1/2" = 1'-0"

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TPWD# 118686

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12/18/2020

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
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Sheet Title
GRAVITY DRAIN SECTION AND DETAILS

Sheet Number
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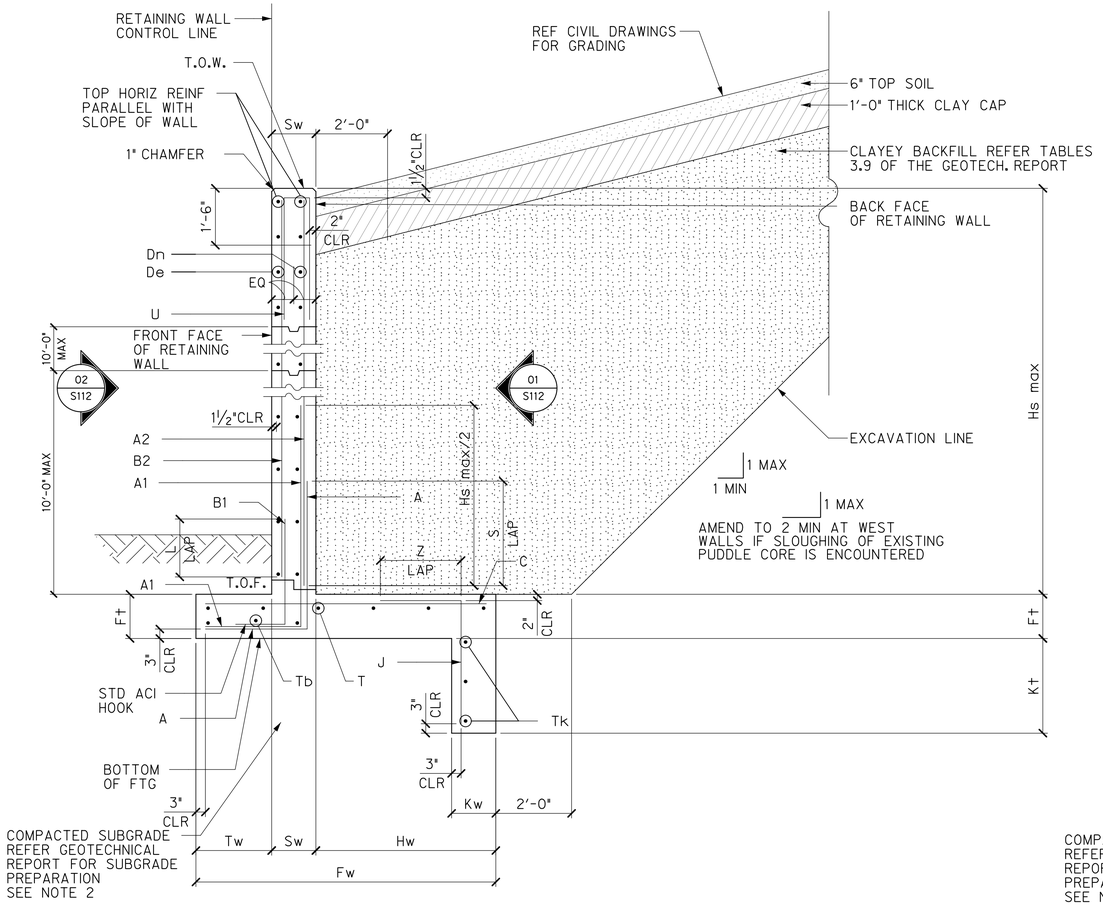
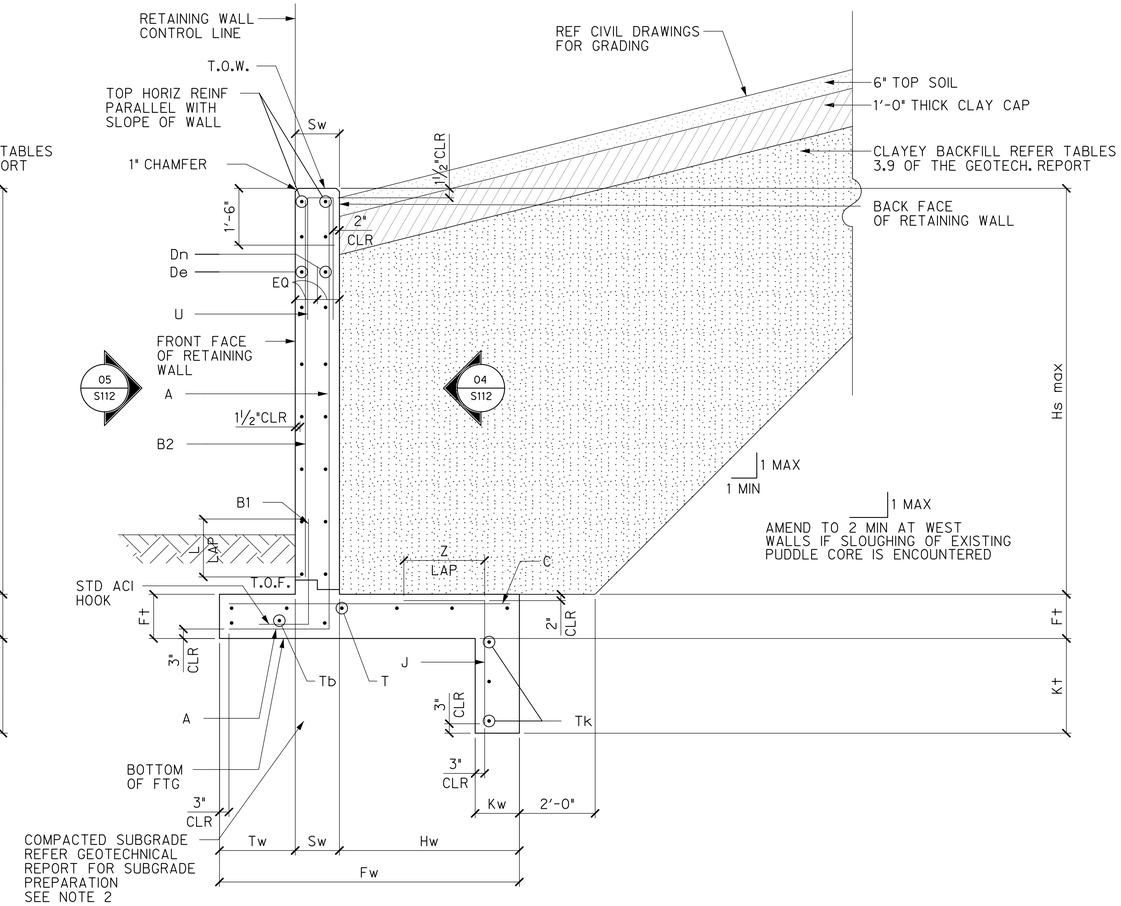


01 S109 UNDRAINED RETAINING WALL, SECTION Hs max > 10 FEET

SCALE = NTS

REF. SHT S113- FOR RETAINING WALL DETAILS



02 S109 UNDRAINED RETAINING WALL, SECTION Hs max < 10 FEET

SCALE = NTS

REF. SHT S113 FOR RETAINING WALL DETAILS

	WEST RETAINING WALL SCHEDULE																													
	CONCRETE DIMENSIONS										REINFORCING SCHEDULE															LAP LENGTHS			
	WALL TYP	SECTION	Hs Max	Sw	Fw	Tw	Hw	Kt	Kw	Ft	A	A1	A2	B	B1	De	Dn	C	J	T	Tb	Tk	U	L	S	Z	AREA ft^2
DRAINED	W1	01/S105	10'-9"	1'-2"	9'-2"	3'-0"	5'-0"	2'-0"	1'-2"	1'-4"	#5 @ 24"	#5 @ 24"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#5@ 10"	#4@ 10"	#5 @ 10"	#5 @ 12"	8 #5	3 #5	3#5	#4 @ 12"	1'-0"	1'-8"	1'-0"	389.20
DRAINED	W2A	01/S105	13'-0"	1'-4"	11'-4"	4'-0"	6'-0"	3'-0"	1'-4"	1'-6"	#7 @ 24"	#7 @ 24"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#4 @ 12"	#7 @ 12"	#5 @ 12"	10 #6	4#6	3 #6	#4 @ 12"	1'-3"	3'-0"	1'-0"	110.10
DRAINED	W2	01/S106	18'-8"	1'-4"	11'-4"	4'-0"	6'-0"	4'-0"	1'-4"	1'-6"	#9 @ 24"	#9 @ 24"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#5 @ 12"	#9 @ 11"	#7 @ 12"	10 #6	4 #6	3 #6	#4 @ 12"	2'-0"	4'-6"	2'-6"	317.00
DRAINED	W3	01/S106	24'-3"	1'-8"	13'-2"	4'-6"	7'-0"	4'-6"	1'-8"	1'-10"	#9 @ 12"	#9 @ 12"	#6 @ 12"	#5 @ 12"	#5 @ 12"	#7 @ 12"	#5 @ 12"	#9 @ 6"	#8 @ 12"	13 #6	4 #7	4 #6	#5 @ 12"	2'-0"	4'-6"	2'-6"	428.40
UNDRAINED	W4	01/S108	22'-0"	3'-0"	NA	NA	10'-6"	5'-6"	3'-0"	3'-0"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	572.30
UNDRAINED	W5	01/S109	22'-0"	3'-0"	25'-6"	12'-0"	10'-6"	5'-6"	3'-0"	3'-0"	#9 @ 12"	#9 @ 12"	#7 @ 12"	#6 @ 12"	#6 @ 12"	#8 @ 10"	#6 @ 10"	#8 @ 8"	#8 @ 12"	30 #8	14 #8	6 #8	#5 @ 12"	1'-8"	5'-6"	1'-6"	341.20
UNDRAINED	W6	01/S109	17'-9"	2'-0"	20'-0"	8'-0"	10'-0"	4'-6"	2'-0"	2'-2"	#9 @ 14"	#9 @ 14"	#6 @ 7"	#6 @ 12"	#6 @ 12"	#6 @ 9"	#5 @ 10"	#8 @ 7"	#6 @ 12"	21 #7	9 #6	5#6	#5 @ 12"	1'-8"	5'-6"	2'-6"	284.00
UNDRAINED	W7	01/S109	11'-6"	1'-4"	14'-4"	5'-0"	8'-0"	3'-0"	1'-4"	1'-6"	#7 @ 20"	#7 @ 20"	#5 @ 10"	#4 @ 12"	#4@ 12"	#6 @ 12"	#4 @ 12"	#7 @ 10"	#5 @ 12"	15 #6	6#5	4 #5	#4 @ 12"	1'-0"	3'-0"	1'-0"	230.00
UNDRAINED	W8	01/S109	11'-6"	1'-4"	14'-4"	5'-0"	8'-0"	3'-0"	1'-4"	1'-6"	#7 @ 20"	#7 @ 20"	#5 @ 10"	#4 @ 12"	#4@ 12"	#6 @ 12"	#4 @ 12"	#7 @ 10"	#5 @ 12"	15 #6	6#5	4 #5	#4 @ 12"	1'-0"	3'-0"	1'-0"	196.00
UNDRAINED	W9	02/S109	7'-4"	12"	9'-0"	3'-0"	5'-0"	1'-6"	1'-0"	1'-2"	#5 @ 12"	NA	NA	#4 @ 12"	#4 @ 12"	#5 @ 12"	#4 @ 12"	#6 @ 12"	#4 @ 12"	10 #5	3 #5	2 #5	#4 @ 12"	1'-0"	NA	1'-0"	117.00

S = 2985.20

NOTES:

1. REFER TO THE GEOTECHNICAL REPORT TABLE 3.9 FOR CLAYED BACKFILL REQUIREMENT FOR THE UNDRAINED RETAINING WALLS.
2. REFER SECTION 3.12 OF THE GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION BENEATH THE FOOTING.

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TPWD# 118686

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STATE OF TEXAS
12/18/2020

Revision No.	Date	Description

PROJECT NUMBER: 118686

DATE: 12/18/2020

Sheet Title
UNDRAINED RETAINING WALL SECTIONS AND SCHEDULES

Sheet Number S109

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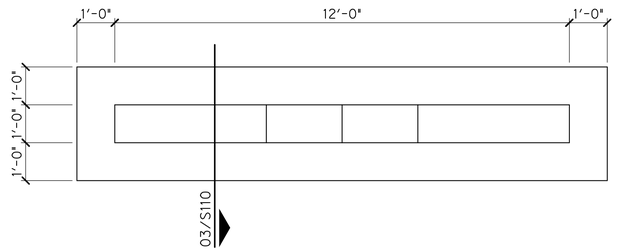
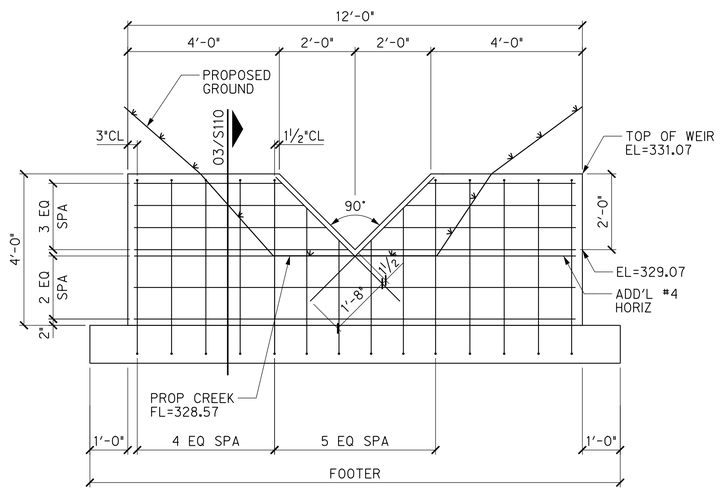
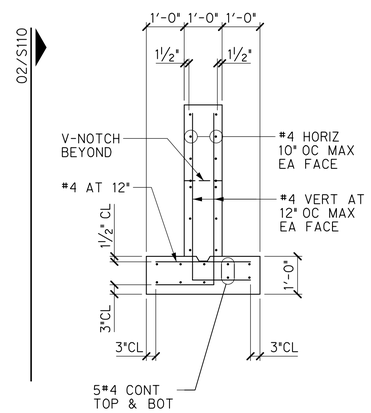


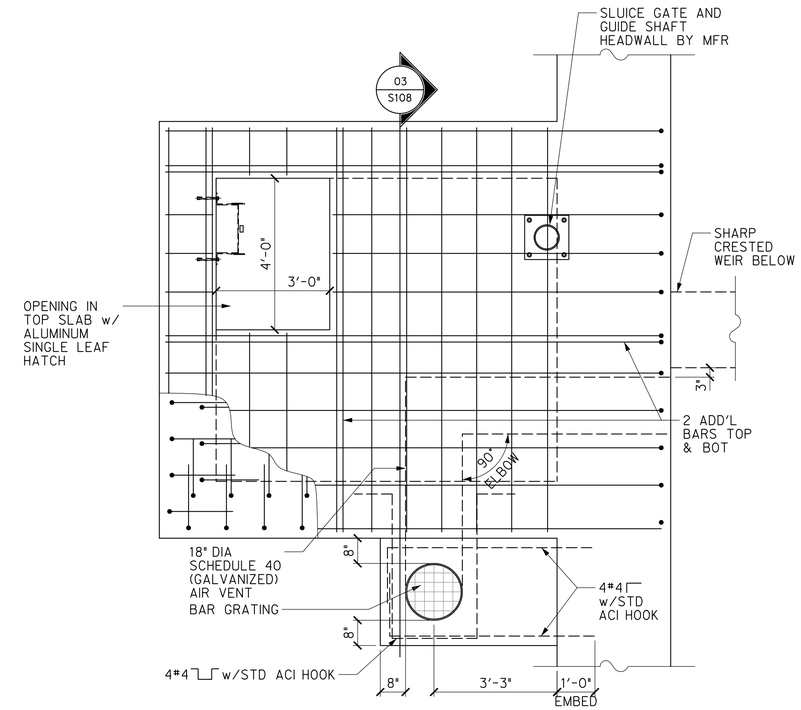
01 S110 90° V-NOTCH WEIR PLAN
SCALE = 1/2" = 1'-0"



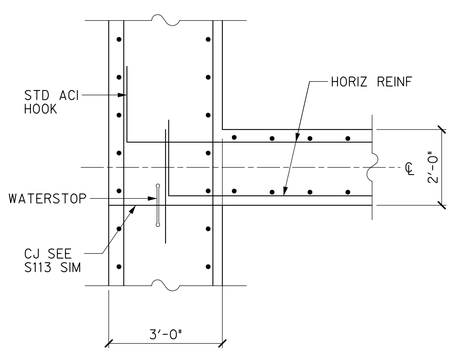
02 S110 90° V-NOTCH WEIR ELEVATION
SCALE = 1/2" = 1'-0"



03 S110 90° V-NOTCH WEIR SECTION
SCALE = 1/2" = 1'-0"



05 S110 GRAVITY DRAIN TOP SLAB PLAN
SCALE = 1/2" = 1'-0"



04 S110 PLAN VIEW SHARP CRESTED WIER TO RETAINING WALL INTERSECTION
SCALE = 1/2" = 1'-0"

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TPWD# 118686

12/18/2020

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PROJECT NUMBER: 118686
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V-NOTCH WIER PLAN, ELEVATION AND SECTION
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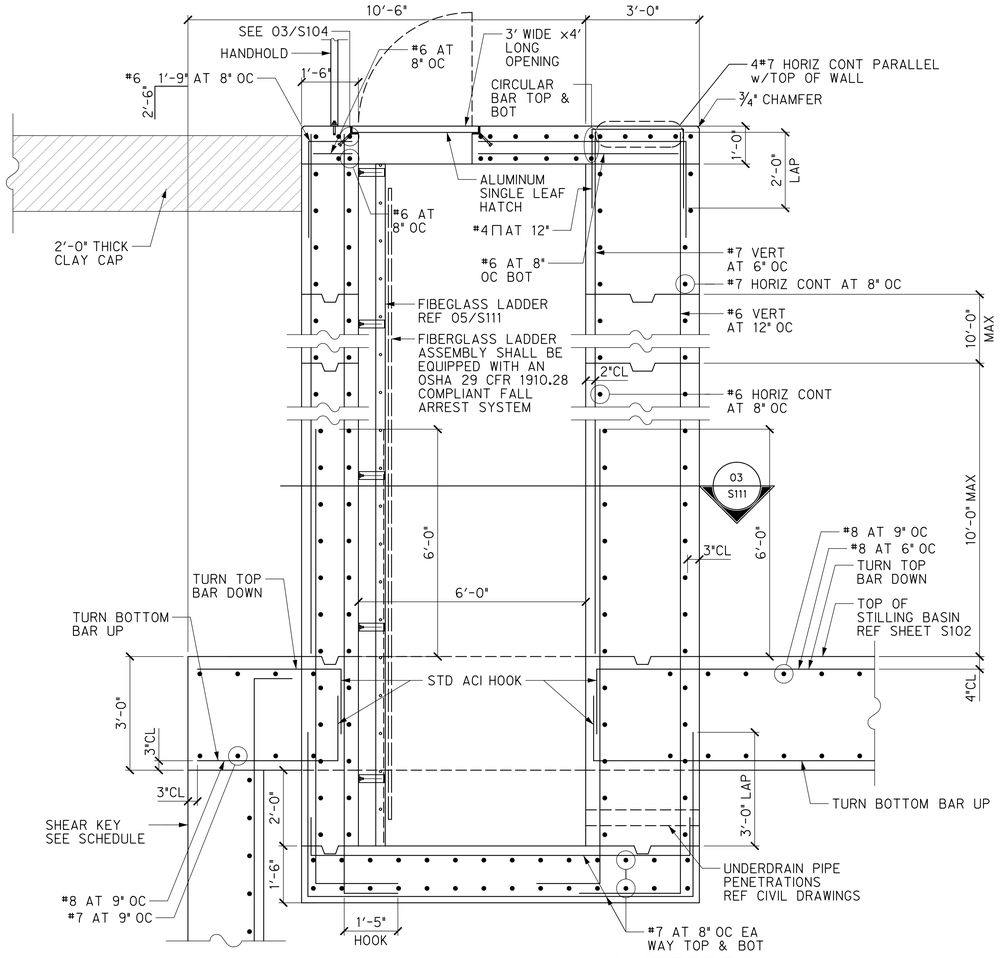
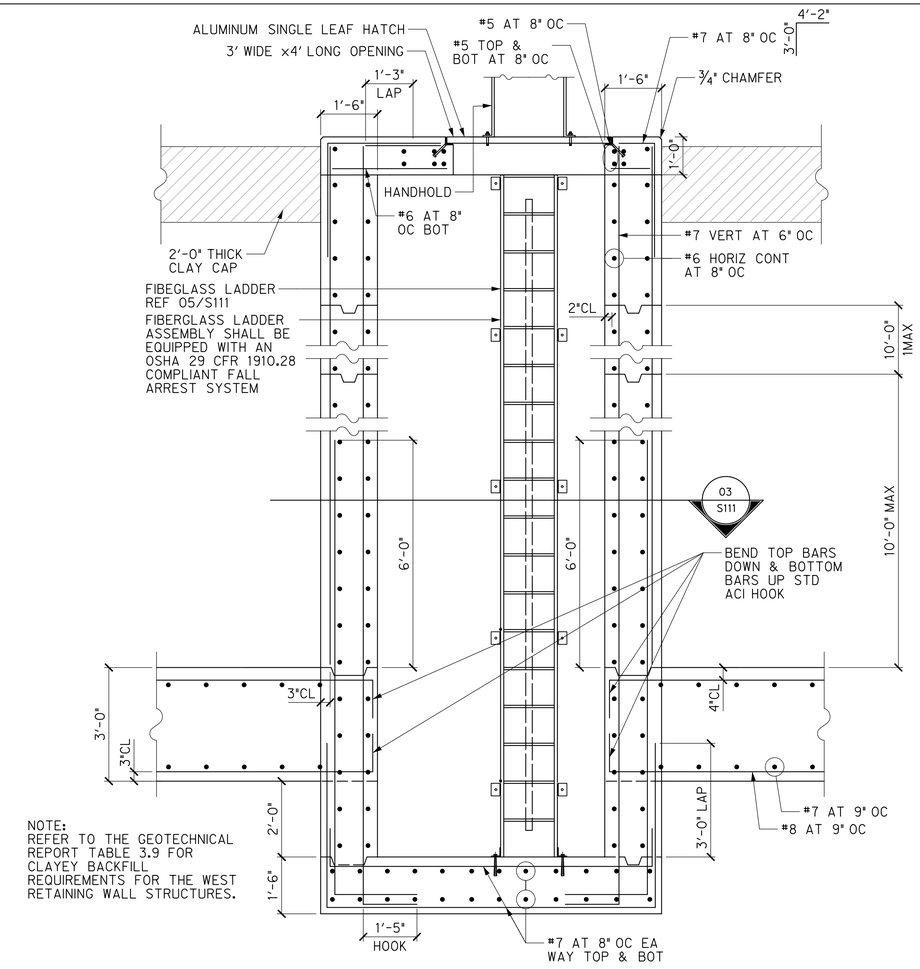


01 S111 UNDERDRAIN MANHOLE SECTION

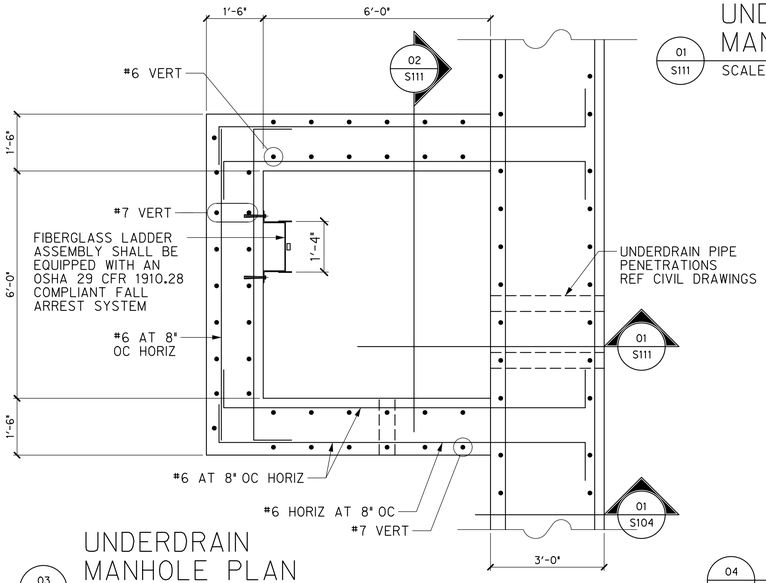
SCALE = ½" = 1'-0"



NOTE:
REFER TO THE GEOTECHNICAL REPORT TABLE 3.9 FOR CLAYEY BACKFILL REQUIREMENTS FOR THE WEST RETAINING WALL STRUCTURES.

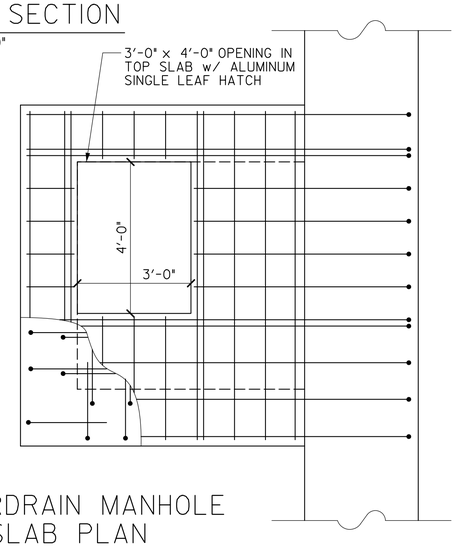
02 S111 UNDERDRAIN MANHOLE SECTION

SCALE = ½" = 1'-0"



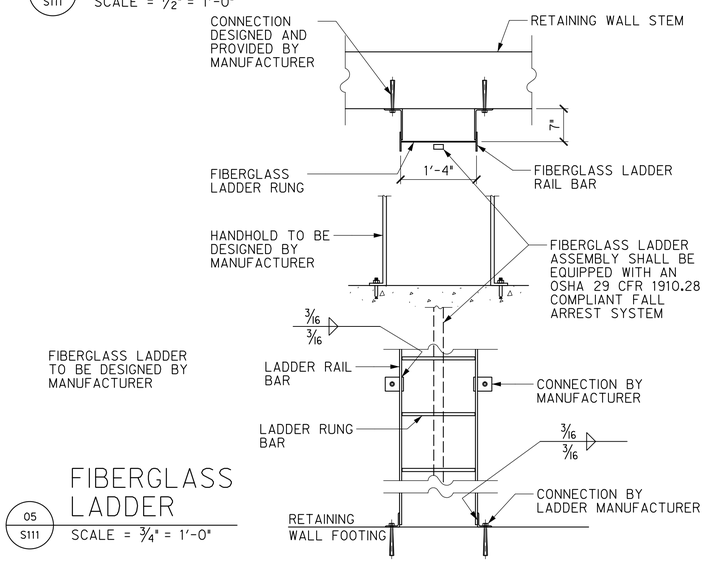
03 S111 UNDERDRAIN MANHOLE PLAN

SCALE = ½" = 1'-0"



04 S111 UNDERDRAIN MANHOLE TOP SLAB PLAN

SCALE = ½" = 1'-0"



05 S111 FIBERGLASS LADDER

SCALE = ¾" = 1'-0"

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Revision		
No.	Date	Description

PROJECT NUMBER: 118686

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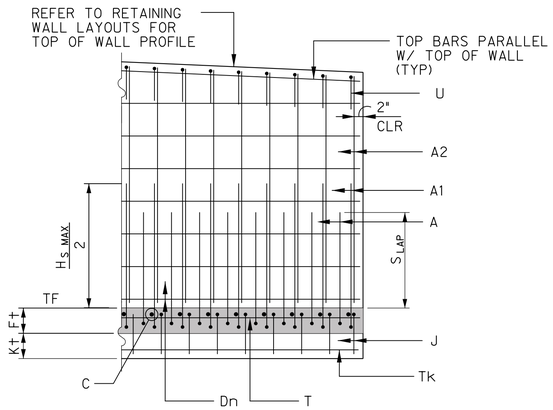
Sheet Title
UNDERDRAIN MANHOLE SECTIONS

Sheet Number
S111



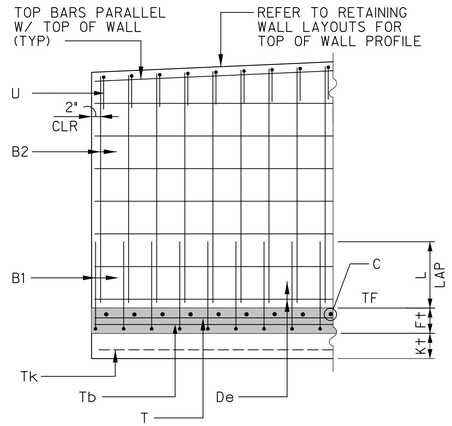
NON EXPOSED FACE

THE A1 BARS SHALL BE EQUALLY SPACED BETWEEN THE A BARS

PARTIAL RETAINING WALL ELEVATION Hs_{MAX} > 10 FEET

01 / S112

REF. SHT S105 & S106 FOR EAST RETAINING WALL SECTION
REF. SHT S109 & S110 FOR WEST RETAINING WALL SECTION

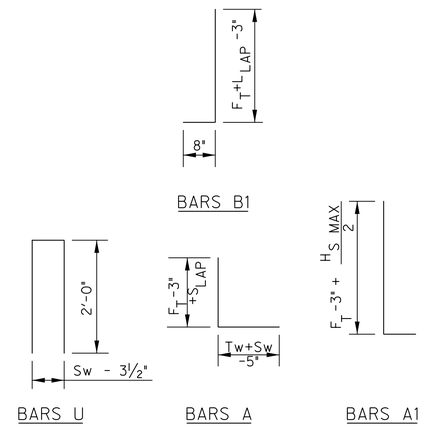


EXPOSED FACE

PARTIAL RETAINING WALL ELEVATION Hs_{MAX} > 10 FEET

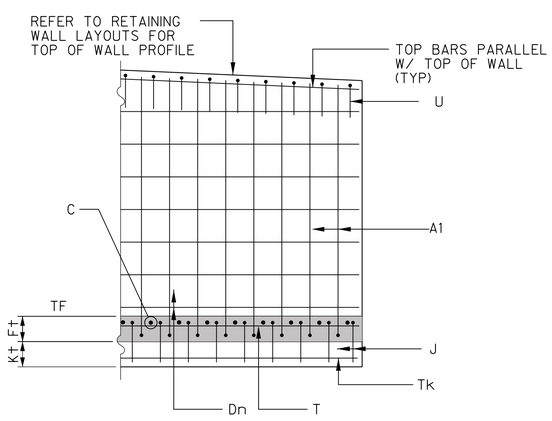
02 / S112

REF. SHT S105 & S106 FOR EAST RETAINING WALL SECTION
REF. SHT S109 & S110 FOR WEST RETAINING WALL SECTION



BAR DIAGRAM RETAINING WALL HEIGHTS Hs_{MAX} > 10 FEET

03 / S112

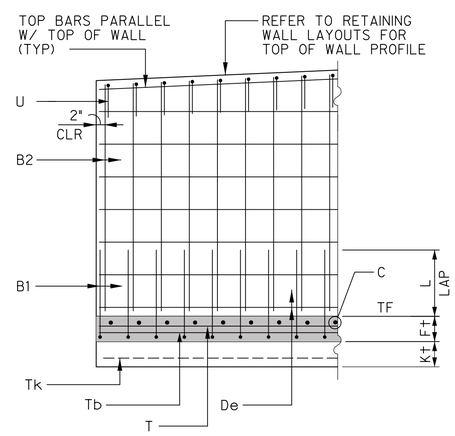


NON EXPOSED FACE

PARTIAL RETAINING WALL ELEVATION $Hs_{MAX} \leq 10$ FEET

04 / S112

REF. SHT S105 & S106 FOR EAST RETAINING WALL SECTION
REF. SHT S109 & S110 FOR WEST RETAINING WALL SECTION

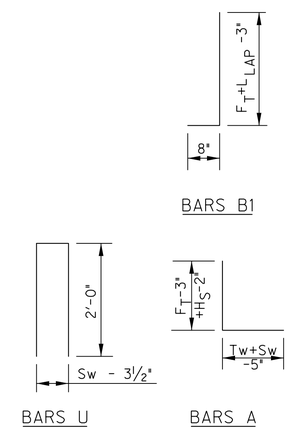


EXPOSED FACE

PARTIAL RETAINING WALL ELEVATION $Hs_{MAX} \leq 10$ FEET

05 / S112

REF. SHT S105 & S106 FOR EAST RETAINING WALL SECTION
REF. SHT S109 & S110 FOR WEST RETAINING WALL SECTION



BAR DIAGRAM RETAINING WALL HEIGHTS $Hs_{MAX} \leq 10$ FEET

06 / S112

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No.	Date	Description

PROJECT NUMBER: 118686
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Sheet Title
RETAINING WALL BAR ELEVATIONS AND DIAGRAMS

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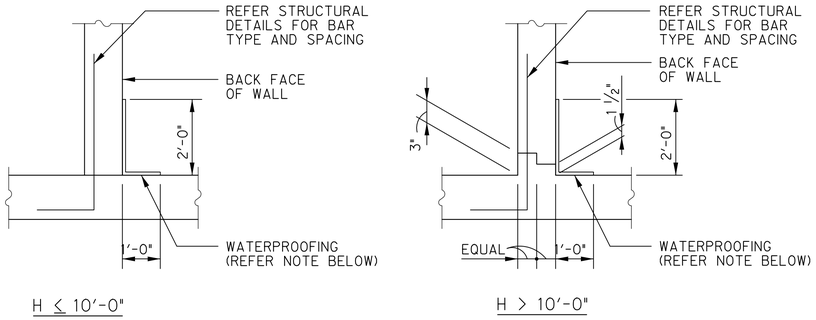
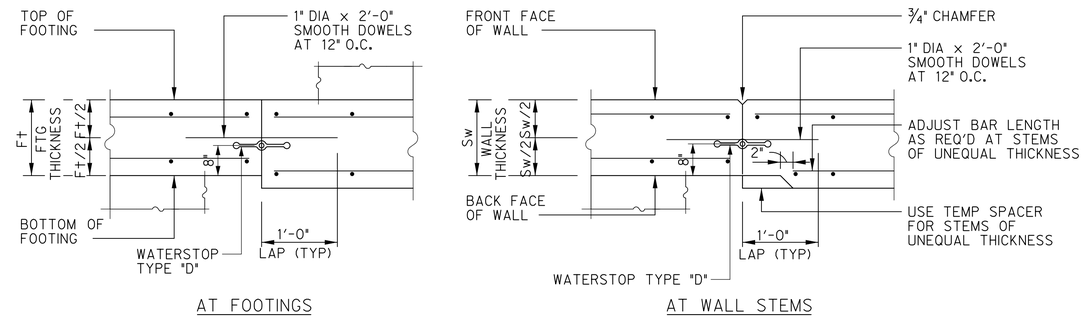
S112



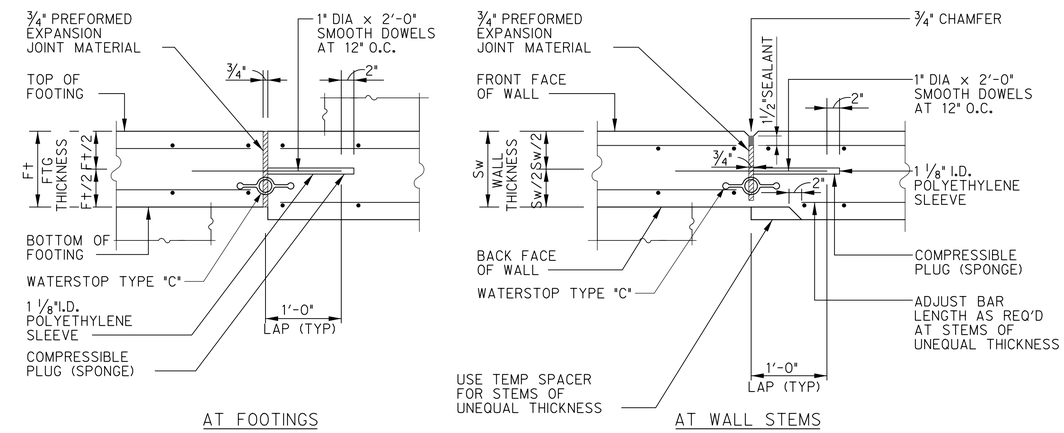
WALL STEM/FOOTING JOINT AND WATERPROOFING DETAILS

1. WATERPROOFING SHALL BE TYPE 4 OR TYPE 6. TYPE 4 WATERPROOFING SHALL CONSIST OF A SELF-ADHERING POLYETHYLENE WITH A RUBBERIZED ASPHALT MASTIC MATERIAL. TYPE 6 WATERPROOFING SHALL CONSIST OF A SELF-ADHERING, BUILTUP MEMBRANE OF RUBBERIZED ASPHALT FORMED ON A PREFORMED BOARD, WITH COLD APPLIED ASPHALTIC PRIMER.



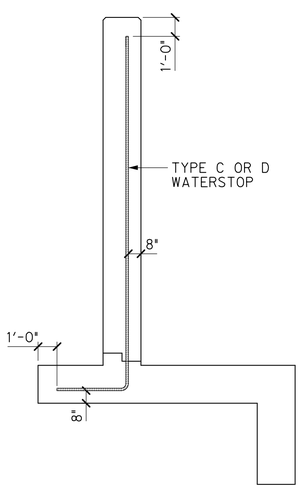
TYPICAL CONTRACTION JOINTS

1. CONTRACTION JOINTS SEE PLANS AND PROFILES
2. ALL DOWELS SHALL BE SAWCUT TO LENGTH, NOT SHEARED, AND FREE FROM BURRS.
3. ALL DOWELS SHALL BE SECURELY PLACED PERPENDICULAR TO JOINT SURFACE BOTH VERTICALLY AND HORIZONTALLY TO PROMOTE FREE MOVEMENT OF THE JOINT.



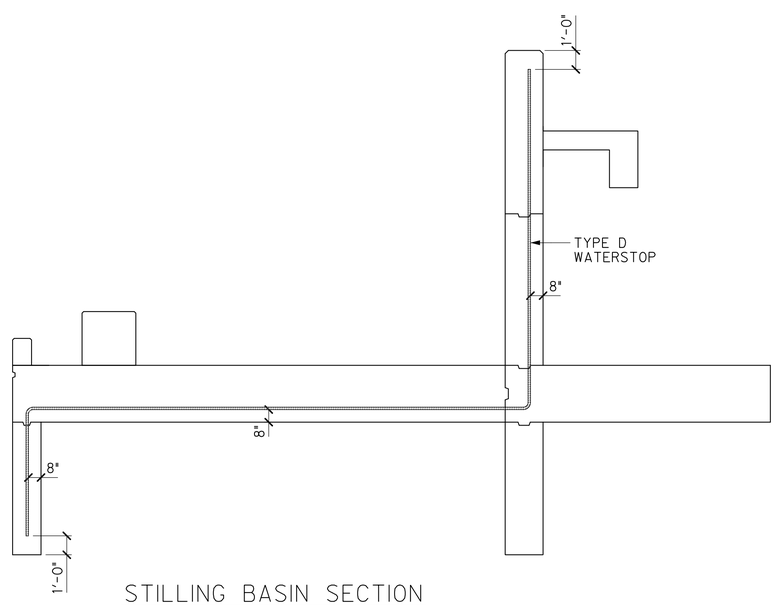
TYPICAL EXPANSION JOINTS

1. EXPANSION JOINTS SEE PLANS AND PROFILES
2. ALL DOWELS SHALL BE SAWCUT TO LENGTH, NOT SHEARED, AND FREE FROM BURRS.
3. ALL DOWELS SHALL BE SECURELY PLACED PERPENDICULAR TO JOINT SURFACE BOTH VERTICALLY AND HORIZONTALLY TO PROMOTE FREE MOVEMENT OF THE JOINT.



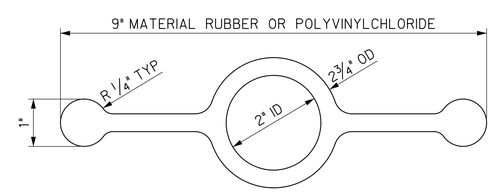
RETAINING WALL SECTION

SCALE: N.T.S.



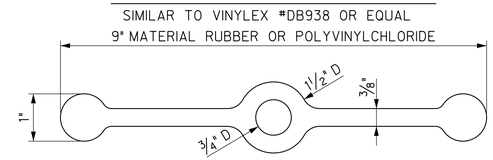
STILLING BASIN SECTION

SCALE: N.T.S.



WATERSTOP TYPE "C"

SIMILAR TO VINYLEX #DB938 OR EQUAL



WATERSTOP TYPE "D"

SIMILAR TO VINYLEX #DLB938 OR EQUAL

TEXAS PARKS AND WILDLIFE
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TEXAS PARKS & WILDLIFE

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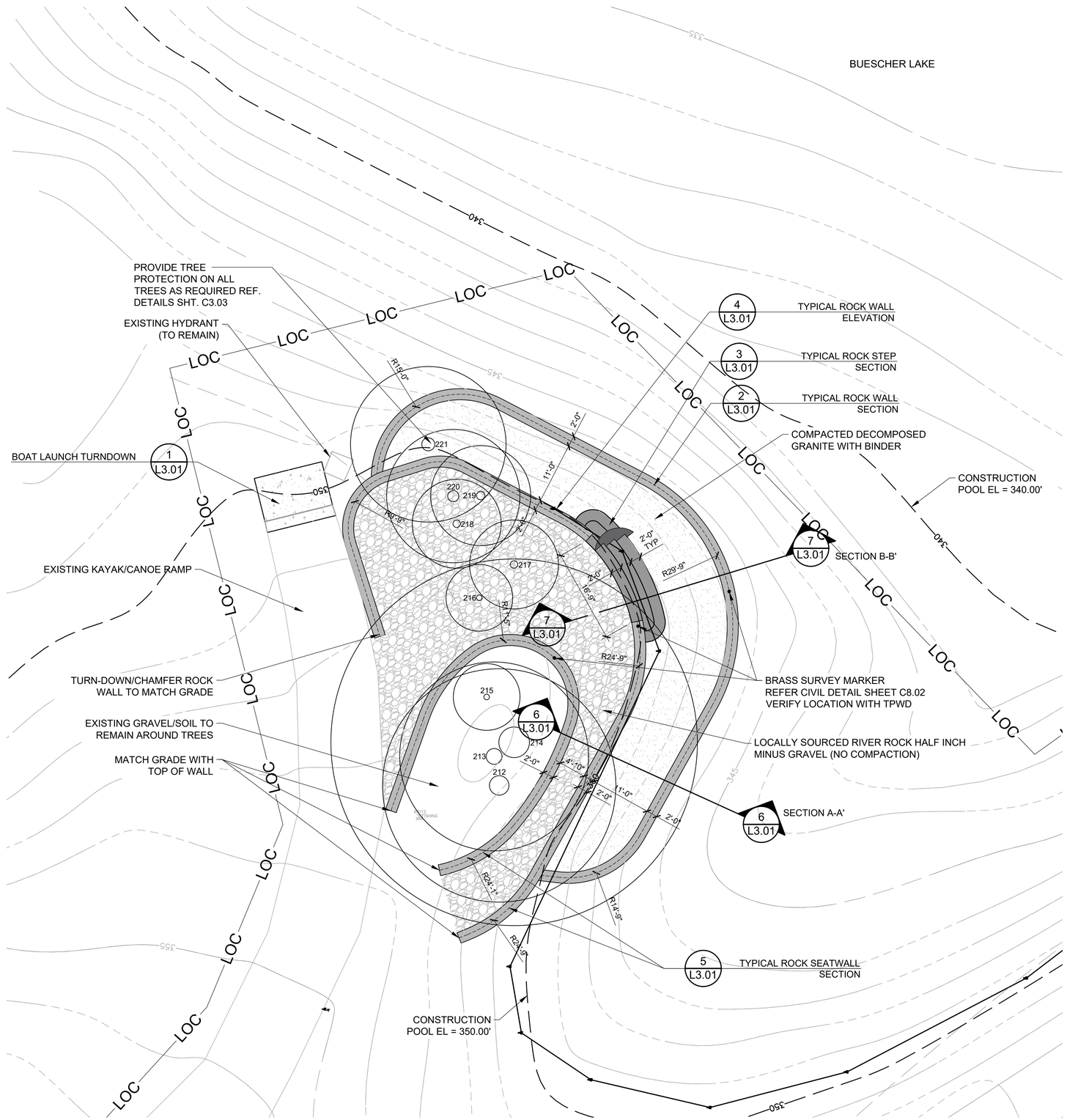
9500 AMBERGLEN BLVD.
BUILDING F SUITE 125
AUSTIN, TX 78729
TEL (512) 777-1300
FAX (512) 869-0039
TBPELS ENGINEERING FIRM #312

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

STATE OF TEXAS
PAUL J. RIELLY
61307
LICENSED
PROFESSIONAL ENGINEER
12/18/2020

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/18/2020
Sheet Title
TYPICAL RETAINING WALL DETAILS
Sheet Number
067 of 74
S113



MATERIAL SPECIFICATIONS

NOTE: MATERIALS SPECIFIED ARE FOR USE AT THE WEST AND EAST SHORELINE AND WEST AND EAST SPILLWAY PEDESTRIAN IMPROVEMENT AREAS ONLY.

ROCK WALL BLOCK (WEST/EAST SHORELINE IMPROVEMENTS)

1) MIN. 8"HEIGHT X 24"WIDE CUT SANDSTONE BLOCK. LENGTH VARIES FROM 12" TO 30" MAXIMUM. ROCK PATTERN SHALL BE EQUIVALENT TO PATTERN SHOWN ON ROCK WALL ELEVATION.
2) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
3) MOCK-UP: A SIX FOOT LONG SECTION OF WALL (PER DETAIL) WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

ROCK STEP BLOCK (WEST/EAST SHORELINE IMPROVEMENTS)

1) MIN. 8"HEIGHT X 24"WIDE CUT SANDSTONE BLOCK. LENGTH VARIES FROM 24" TO 30" MAXIMUM.
2) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
3) MOCK-UP: A SIX FOOT WIDE, TWO STEP HIGH MINIMUM SECTION OF STEPS (PER DETAIL) WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

MASONRY MORTAR (WEST/EAST SHORELINE & SPILLWAY PEDESTRIAN IMPROVEMENTS)

1) MORAR TO BE NON-SHRINK, SETTING/POINTING MORTAR.
2) ALL MORTAR BEDS SHALL BE 1/2" MIN.
3) MORTAR JOINTS ON FACE OF ROCK WALLS AND STEPS SHALL BE RECESSED A MINIMUM OF 1-1/2".
4) SAMPLE: PROVIDE MORTAR SAMPLE, COLOR TO MATCH ROCK.
5) SUPPLIER: CONTRACTORS CHOICE.

DECOMPOSED GRANITE (WEST/EAST SHORELINE IMPROVEMENTS)

1) QUARTER INCH MINUS (-1/4") UNWASHED TEXAS GRANITE AGGREGATE AND CLAY FINE MIXTURE.
2) SAMPLE: PROVIDE A ONE GALLON BAG OF MATERIAL FOR APPROVAL.
3) SUPPLIER: COLLIER MATERIALS, INC. - MARBLE FALLS, TEXAS, OR APPROVED EQUAL.

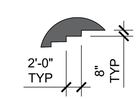
DECOMPOSED GRANITE BINDER (WEST/EAST SHORELINE IMPROVEMENTS)

1) STALOK ™ CONCENTRATE DECOMPOSED GRANITE BINDER.
2) INSTALL PER MANUFACTURER SPECIFICATIONS.
3) SUPPLIER: STABILIZER SOLUTIONS (STABILIZERSOLUTIONS.COM) OR APPROVED EQUAL.

RIVER ROCK/NATIVE SOIL MIX (WEST/EAST SHORELINE IMPROVEMENTS)

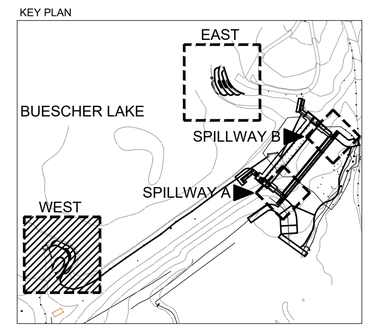
1) HALF INCH MINUS (-1/2") RIVER ROCK.
2) SAMPLE: PROVIDE A ONE GALLON BAG OF MATERIAL FOR APPROVAL.
3) MIX RIVER ROCK WITH NATIVE SOIL FROM WALL/STEP EXCAVATION AT A RATIO OF 60% RIVER ROCK/40% NATIVE SOIL.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

STEP TREAD INDICATOR



NOTE: TREE PROTECTION WITH BOARDS STRAPPED TO TRUNKS REQUIRED FOR ALL TREES IN THE SHORELINE CONSTRUCTION AREA. REFER SHEET C3.03

KEY PLAN



0 5 10 20
SCALE 1" = 10'

NORTH

TEXAS PARKS AND WILDLIFE
CIVIL ENGINEERING SERVICE
INFRASTRUCTURE AND PLANNING DESIGN
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4200 SMITH SCHOOL ROAD
AUSTIN,TX 78744
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HALFF
9500 AMBERGLEN BLVD., BLDG. F, SUITE 125
AUSTIN, TEXAS 78729-1102
TEL (512) 777-4600
FAX (512) 252-8141

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

REGISTERED LANDSCAPE ARCHITECT
BRIAN R. BINKOWSKI
STATE OF TEXAS
12.18.20

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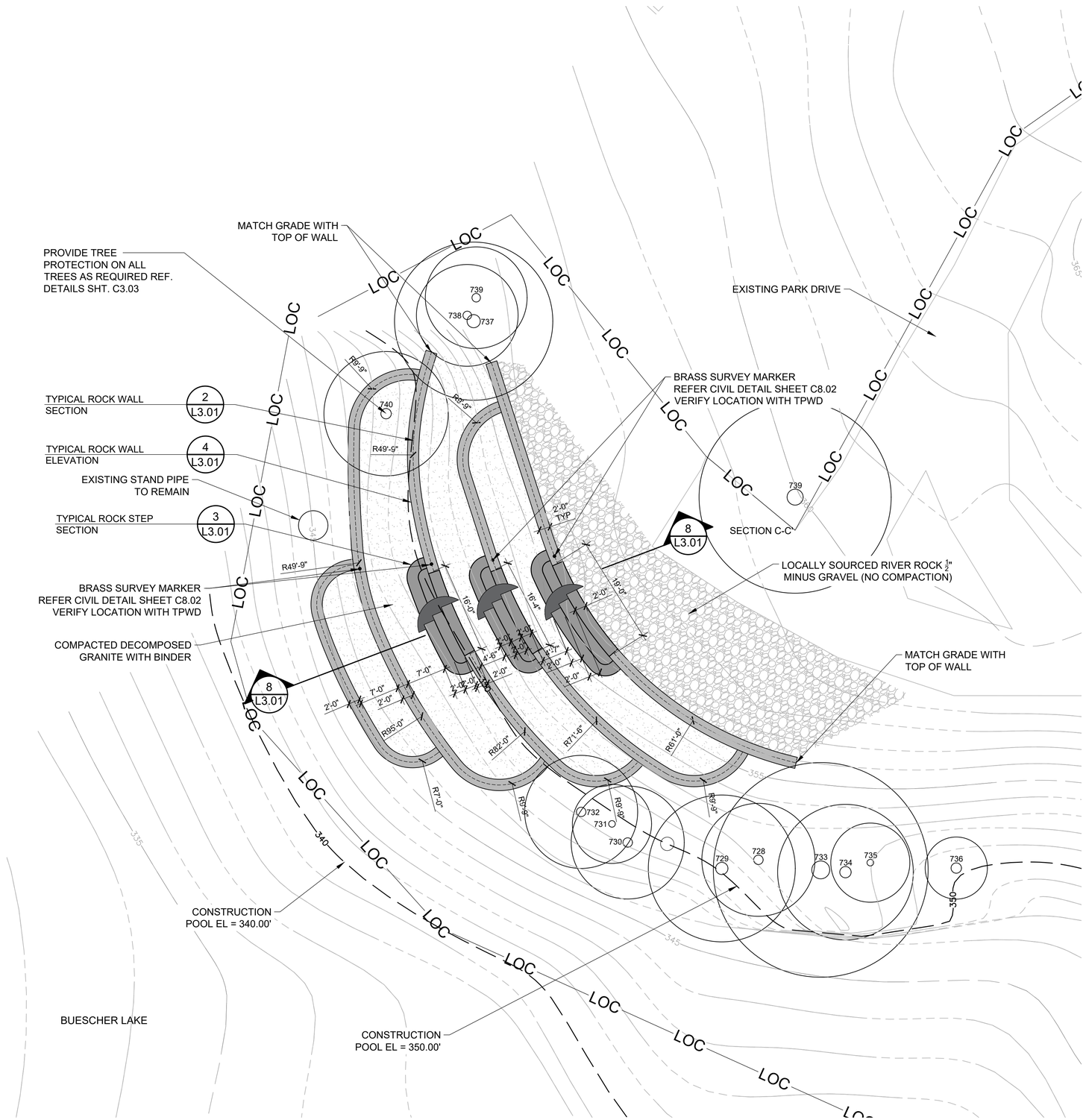
Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/04/2020
Sheet Title
SHORELINE IMPROVEMENTS
SITE LAYOUT PLAN (WEST)
Sheet Number
068 of 74
L1.01



MATERIAL SPECIFICATIONS | MOCK-UPS

NOTE: MATERIALS SPECIFIED ARE FOR USE AT THE WEST AND EAST SHORELINE AND WEST AND EAST SPILLWAY PEDESTRIAN IMPROVEMENT AREAS ONLY.

ROCK WALL BLOCK (WEST/EAST SHORELINE IMPROVEMENTS)

1) MIN. 8"HEIGHT X 24"WIDE CUT SANDSTONE BLOCK. LENGTH VARIES FROM 12" TO 30" MAXIMUM. ROCK PATTERN SHALL BE EQUIVALENT TO PATTERN SHOWN ON ROCK WALL ELEVATION.
2) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
3) MOCK-UP: A SIX FOOT LONG SECTION OF WALL (PER DETAIL) WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

ROCK STEP BLOCK (WEST/EAST SHORELINE IMPROVEMENTS)

1) MIN. 8"HEIGHT X 24"WIDE CUT SANDSTONE BLOCK. LENGTH VARIES FROM 24" TO 30" MAXIMUM.
2) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
3) MOCK-UP: A SIX FOOT WIDE, TWO STEP HIGH MINIMUM SECTION OF STEPS (PER DETAIL) WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

MASONRY MORTAR (WEST/EAST SHORELINE & SPILLWAY PEDESTRIAN IMPROVEMENTS)

1) MORAR TO BE NON-SHRINK, SETTING/POINTING MORTAR.
2) ALL MORTAR BEDS SHALL BE 1/2" MIN.
3) MORTAR JOINTS ON FACE OF ROCK WALLS AND STEPS SHALL BE RECESSED A MINIMUM OF 1-1/2".
4) SAMPLE: PROVIDE MORTAR SAMPLE, COLOR TO MATCH ROCK.
5) SUPPLIER: CONTRACTORS CHOICE.

DECOMPOSED GRANITE (WEST/EAST SHORELINE IMPROVEMENTS)

1) QUARTER INCH MINUS (-1/4") UNWASHED TEXAS GRANITE AGGREGATE AND CLAY FINE MIXTURE.
2) SAMPLE: PROVIDE A ONE GALLON BAG OF MATERIAL FOR APPROVAL.
3) SUPPLIER: COLLIER MATERIALS, INC. - MARBLE FALLS, TEXAS, OR APPROVED EQUAL.

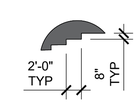
DECOMPOSED GRANITE BINDER (WEST/EAST SHORELINE IMPROVEMENTS)

1) STALOK ™ CONCENTRATE DECOMPOSED GRANITE BINDER.
2) INSTALL PER MANUFACTURER SPECIFICATIONS.
3) SUPPLIER: STABILIZER SOLUTIONS (STABILIZERSOLUTIONS.COM) OR APPROVED EQUAL.

RIVER ROCK/NATIVE SOIL MIX (WEST/EAST SHORELINE IMPROVEMENTS)

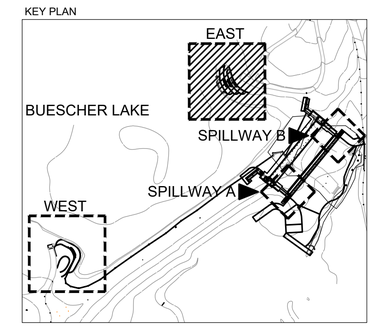
1) HALF INCH MINUS (-1/2") RIVER ROCK.
2) SAMPLE: PROVIDE A ONE GALLON BAG OF MATERIAL FOR APPROVAL.
3) MIX RIVER ROCK WITH NATIVE SOIL FROM WALL/STEP EXCAVATION AT A RATIO OF 60% RIVER ROCK/40% NATIVE SOIL.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

STEP TREAD INDICATOR



NOTE: TREE PROTECTION WITH BOARDS STRAPPED TO TRUNKS REQUIRED FOR ALL TREES IN THE SHORELINE CONSTRUCTION AREA. REFER SHEET C3.03

KEY PLAN



0 5 10 20
SCALE 1" = 10'

NORTH

TEXAS PARKS AND WILDLIFE
CIVIL ENGINEERING SERVICE
INFRASTRUCTURE AND PLANNING DESIGN
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4200 SMITH SCHOOL ROAD
AUSTIN,TX 78744
(512) 389-4800 FAX: (512) 389-8628

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9500 AMBERGLEN BLVD., BLDG. F, SUITE 125
AUSTIN, TEXAS 78729-1102
TEL (512) 777-4600
FAX (512) 252-8141

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

REGISTERED LANDSCAPE ARCHITECT
BRIAN R. BINKOWSKI
STATE OF TEXAS
12.18.20

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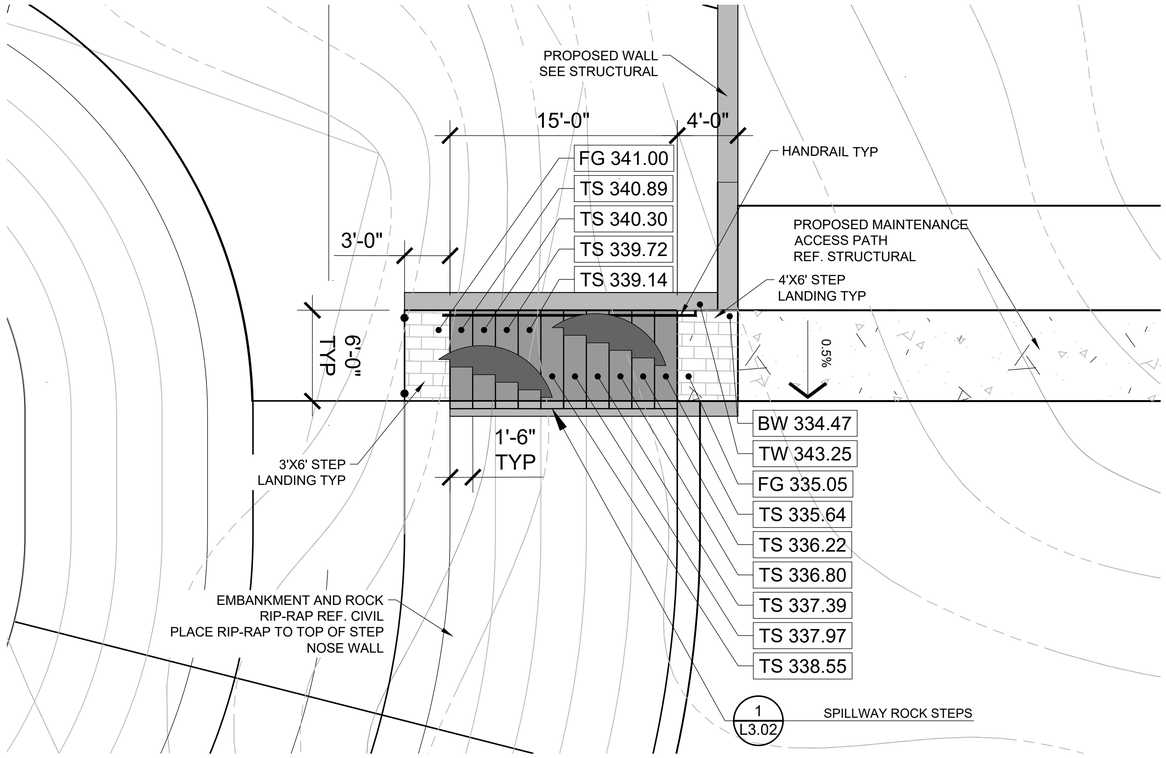
Revision		
No.	Date	Description

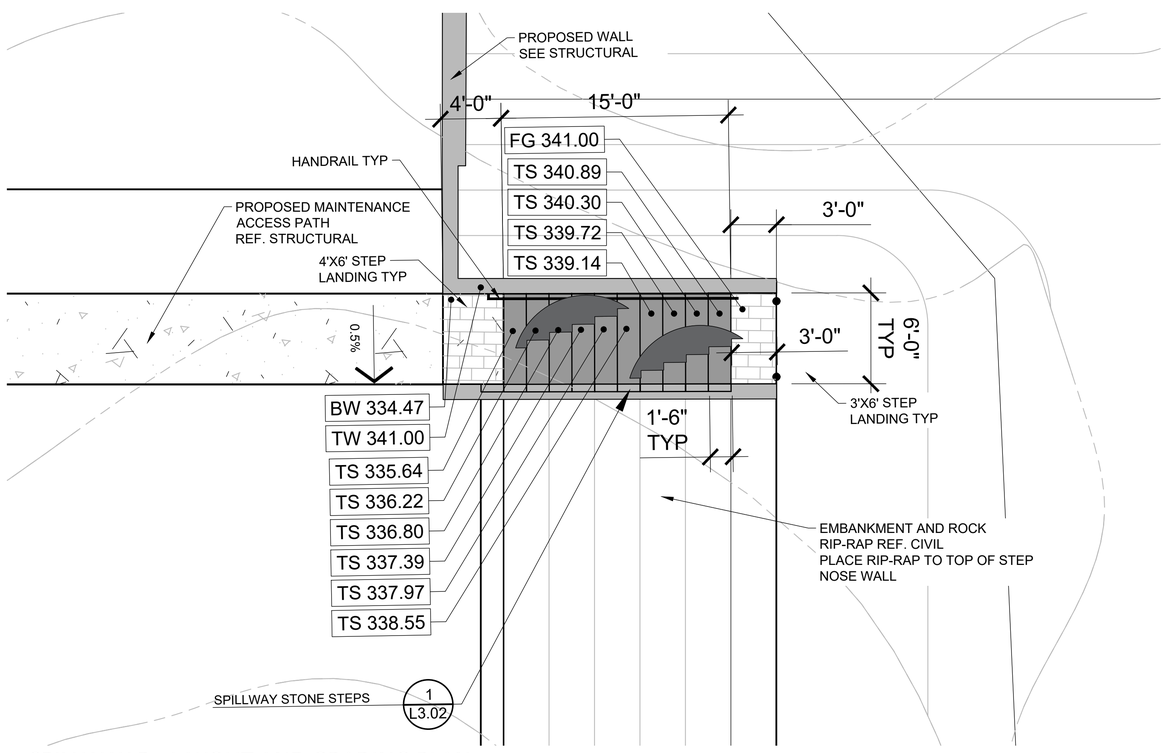
PROJECT NUMBER: 118686
DATE: 12/04/2020

Sheet Title
SHORELINE IMPROVEMENTS
SITE LAYOUT PLAN (EAST)

Sheet Number
069 of 74
L1.02



SPILLWAY A - LAYOUT AND GRADING PLAN



SPILLWAY B - LAYOUT AND GRADING PLAN

MATERIAL SPECIFICATIONS

NOTE: MATERIALS SPECIFIED ARE FOR USE AT THE WEST AND EAST SHORELINE AND WEST AND EAST SPILLWAY PEDESTRIAN IMPROVEMENT AREAS ONLY.

ROCK STEP AND NOSE WALL BLOCK (WEST/EAST SPILLWAY PEDESTRIAN IMPROVEMENTS)

1) STEPS: MIN. 8"HEIGHT X 24"WIDE CUT SANDSTONE BLOCK. LENGTH VARIES FROM 24" TO 30" MAXIMUM.
2) NOSE WALL: 8" THICK X 12" HEIGHT CUT SANDSTONE BLOCK. LENGTH VARY AND WILL BE FIELD CUT TO MATCH STEP SLOPE.
3) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
4) MOCK-UP: A SIX FOOT WIDE, TWO STEP HIGH MINIMUM SECTION OF STEPS WITH NOSE WALL (PER DETAILS), WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
5) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

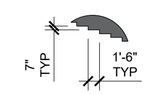
ROCK STEP LANDING FLAGSTONE (WEST/EAST SPILLWAY PEDESTRIAN IMPROVEMENTS)

1) 2"THICK MIN. X 12" TO 24" WIDE RANDOM CUT SANDSTONE FLAGTONE.
2) ROCK SAMPLES: PROVIDE THREE STONE SAMPLES, SIMILAR IN SIZE, TEXTURE AND COLOR FOR APPROVAL. COLOR TO MATCH EXISTING ROCK USED ON STRUCTURES IN THE PARK.
3) MOCK-UP: A FOUR FOOT SQUARE AREA MINIMUM WILL BE CONSTRUCTED ON SITE FOR REVIEW/APPROVAL BY OWNER/DESIGN CONSULTANT. THE MOCK-UP MAY BE BUILT AS PART OF THE FINAL PROJECT, AT THE CONTRACTORS RISK. UNACCEPTED MOCK-UPS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE OWNER.
4) SUPPLIER: LOCALLY SOURCED IN BASTROP OR APPROVED EQUAL.

MASONRY MORTAR (WEST/EAST SHORELINE & SPILLWAY PEDESTRIAN IMPROVEMENTS)

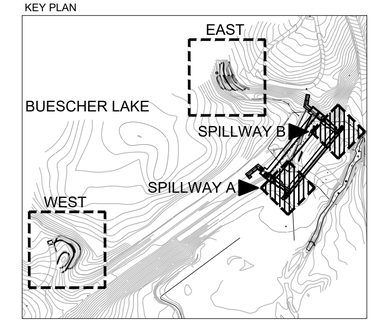
1) MORAR TO BE NON-SHRINK, SETTING/POINTING MORTAR.
2) ALL MORTAR BEDS SHALL BE 1/2" MIN.
3) MORTAR JOINTS ON FACE OF ROCK WALLS AND STEPS SHALL BE RECESSED A MINIMUM OF 1-1/2".
4) SAMPLE: PROVIDE MORTAR SAMPLE, COLOR TO MATCH ROCK.
5) SUPPLIER: CONTRACTORS CHOICE.

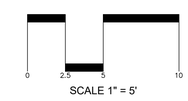
STEP TREAD INDICATOR



NOTE: TREE PROTECTION WITH BOARDS STRAPPED TO TRUNKS REQUIRED FOR ALL TREES IN THE SHORELINE CONSTRUCTION AREA. REFER SHEET C3.03

KEY PLAN





TEXAS PARKS AND WILDLIFE
CIVIL ENGINEERING SERVICE
INFRASTRUCTURE AND PLANNING DESIGN
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AUSTIN, TEXAS 78729-1102
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FAX (512) 252-8141

BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

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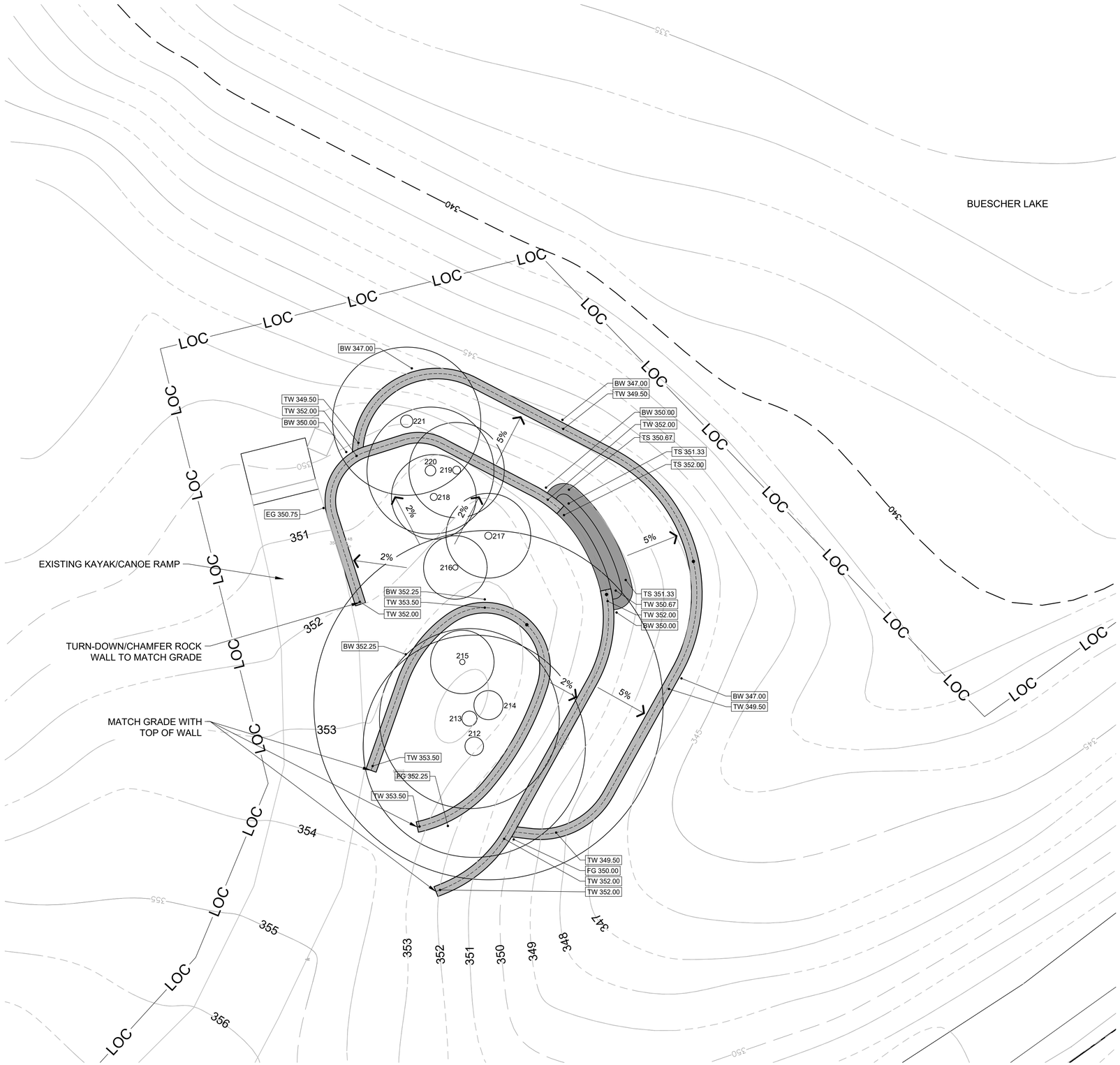
Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/04/2020

Sheet Title
SITE LAYOUT AND GRADING PLAN
SPILLWAY IMPROVEMENTS

Sheet Number
070 of 74
L1.03



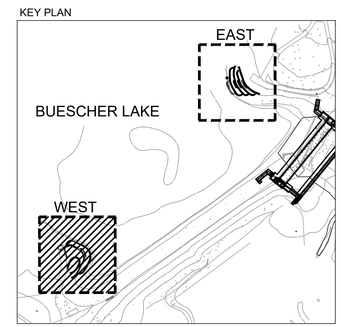
GRADING NOTES

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. THE CONTRACTOR SHALL CONSTRUCT EARTHEN EMBANKMENTS WITH SLOPES NO STEEPER THAN 3:1
3. AREAS OF SOIL DISTURBANCE ARE LIMITED TO GRADING AND IMPROVEMENTS SHOWN. ALL OTHER AREAS WILL NOT BE DISTURBED.
4. EXISTING TOPOGRAPHIC INFORMATION TAKEN FROM ON THE GROUND SURVEY. VERTICAL AND/ OR HORIZONTAL ADJUSTMENTS DURING CONSTRUCTION TO ACCOMMODATE ACTUAL FIELD CONDITIONS MAY BE REQUIRED. ALIGNMENT AND GRADE CHANGES SHALL BE APPROVED BY THE DESIGN CONSULTANT.

GRADING LEGEND

FG 598.00	PROPOSED FINISHED GRADE
TW 598.00	TOP OF WALL
TS 598.00	TOP OF STEP
BS 598.00	BOTTOM OF STEP
598	EXISTING GRADE
598	PROPOSED GRADE

KEY PLAN



0 5 10 20
SCALE 1" = 10'

NORTH

TEXAS PARKS AND WILDLIFE
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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

REGISTERED LANDSCAPE ARCHITECT
BRIAN R. BINKOWSKI
STATE OF TEXAS
12.18.20

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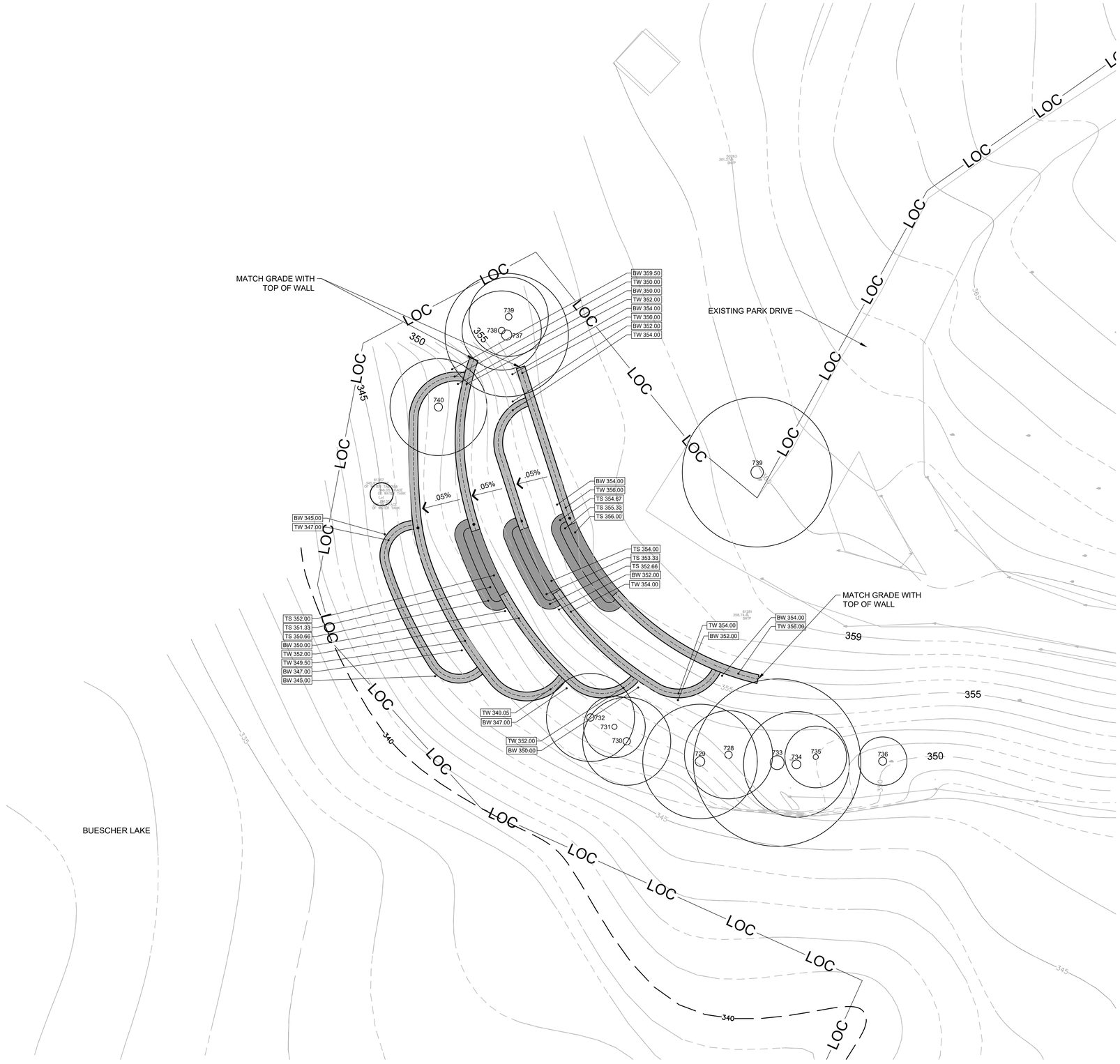
Revision	
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/04/2020
Sheet Title
GRADING PLAN (WEST)
Sheet Number
071 of 74
L2.01



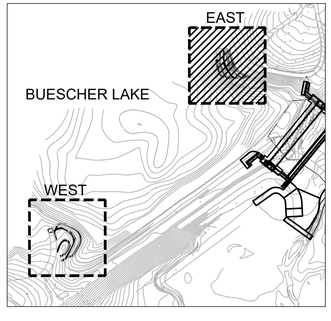
GRADING NOTES

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. THE CONTRACTOR SHALL CONSTRUCT EARTHEN EMBANKMENTS WITH SLOPES NO STEEPER THAN 3:1
3. AREAS OF SOIL DISTURBANCE ARE LIMITED TO GRADING AND IMPROVEMENTS SHOWN. ALL OTHER AREAS WILL NOT BE DISTURBED.
4. EXISTING TOPOGRAPHIC INFORMATION TAKEN FROM ON THE GROUND SURVEY. VERTICAL AND/ OR HORIZONTAL ADJUSTMENTS DURING CONSTRUCTION TO ACCOMMODATE ACTUAL FIELD CONDITIONS MAY BE REQUIRED. ALIGNMENT AND GRADE CHANGES SHALL BE APPROVED BY THE DESIGN CONSULTANT.

GRADING LEGEND

FG 598.00	PROPOSED FINISHED GRADE
TW 598.00	TOP OF WALL
TS 598.00	TOP OF STEP
BS 598.00	BOTTOM OF STEP
598	EXISTING GRADE
598	PROPOSED GRADE

KEY PLAN



0 5 10 20
SCALE 1" = 10'

NORTH

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BUESCHER STATE PARK
LAKE DAM IMPROVEMENTS
TPWD# 118686

REGISTERED LANDSCAPE ARCHITECT
BRIAN R. BINKOWSKI
1895
STATE OF TEXAS
12.18.20

The Texas Board of Architectural Examiners, P.O. BOX 12337 Austin, Texas 78711, telephone (512)305-8543, has jurisdiction over individuals licensed under the Landscape Architects Registration Law Article 249c, Vernon's Texas Civil Statutes.

Revision		
No.	Date	Description

PROJECT NUMBER: 118686
DATE: 12/04/2020
Sheet Title
GRADING PLAN (EAST)
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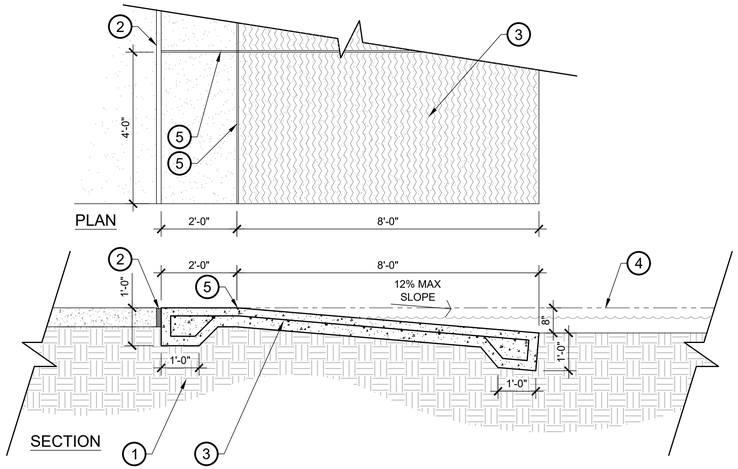


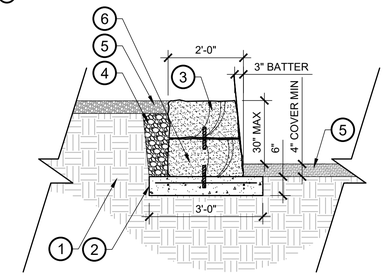
1. COMPACTED SUBGRADE TO 95% MAX. DENSITY
2. SAW CUT EXISTING ASPHALT RAMP. 3/4" BITUMINOUS BOARD FULL DEPTH BETWEEN ASPHALT AND CONCRETE
3. 5" THICK REINFORCED CONCRETE RAMP WITH JITTER BUG/RAKE FINISH AND #3 REBAR AT 18" O.C.E.W.
4. NORMAL POOL ELEVATION 350.00'
5. 1/4" WIDE X 5/8" DEPTH CONTROL JOINT, TOOLED/SAW CUT

1 BOAT LAUNCH TURNDOWN

1/2" = 1'-0"

P-TR-19

1. COMPACTED SUBGRADE TO 95% MAX. DENSITY
2. 6" REINFORCED CONCRETE FOOTING (3000 PSI MIN.) WITH #3 REBAR AT 18" O.C.E.W.
3. 8"X30" MIN CUT SANDSTONE BLOCK. 1/2" GROUT MIN IN PLACE WITH RECESSED JOINTS ON EXPOSED ROCK FACES. PROVIDE A MINIMUM OF TWO THREADED DOWELS PER BLOCK EMBEDDED AND EPOXY SET A MINIMUM OF 2 INCHES BETWEEN INDIVIDUAL BLOCK LAYERS AND BASE BLOCK/CONCRETE FOOTING.
4. AGGREGATE DRAINAGE ROCK
5. GRAVEL MIX OR COMPACTED DECOMPOSED GRANITE WITH BINDER (VARIES REF SITE PLAN)
6. 12" HEIGHT MIN BASE SANDSTONE BLOCK

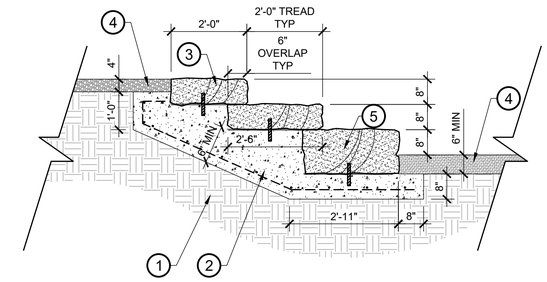


2 TYPICAL ROCK WALL SECTION

1/2" = 1'-0"

P-TR-BUE-02

1. COMPACTED SUBGRADE TO 95% MAX. DENSITY
2. REINFORCED CONCRETE FOOTING (3000 PSI MIN.) PER DIMENSION SHOWN WITH ONE LAYER #3 BARS AT 18" O.C. BOTH DIRECTIONS, PROVIDE #3 NOSING BAR AT CORNER OF EACH RISER. TIE FOOTING TO ADJACENT WALL FOOTINGS
3. 8"X30" MIN CUT SANDSTONE BLOCK. 1/2" GROUT MIN IN PLACE WITH RECESSED JOINTS ON EXPOSED ROCK FACES. PROVIDE A MINIMUM OF TWO THREADED DOWELS PER BLOCK EMBEDDED AND EPOXY SET A MINIMUM OF 2 INCHES BETWEEN INDIVIDUAL BLOCK LAYERS AND CONCRETE FOOTING.
4. GRAVEL MIX OR COMPACTED DECOMPOSED GRANITE WITH BINDER. REFER PLAN (VARIES REF. SITE PLAN)
5. 12" HEIGHT MIN BASE SANDSTONE BLOCK

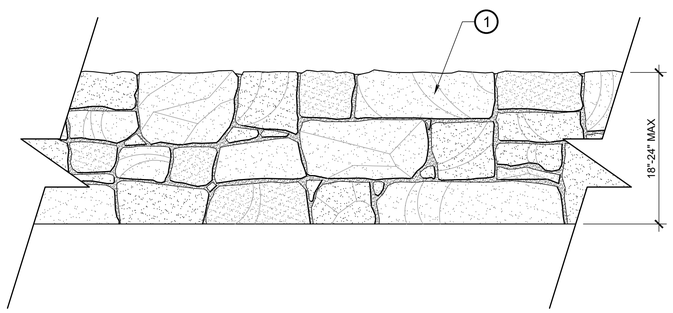


3 TYPICAL ROCK STEP SECTION

1/2" = 1'-0"

P-TR-BUE-03

1. 8"X30" MIN CUT SANDSTONE BLOCK. 1/2" GROUT MIN. IN PLACE WITH RECESSED JOINTS ON EXPOSED ROCK FACES

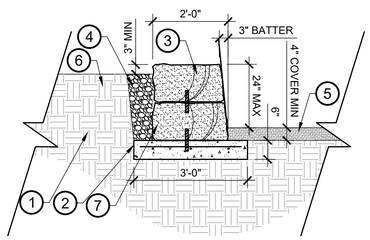


4 TYPICAL ROCK WALL ELEVATION

1" = 1'-0"

P-TR-20

1. COMPACTED SUBGRADE TO 95% MAX. DENSITY
2. 6" REINFORCED CONCRETE FOOTING (3000 PSI MIN.) WITH #3 REBAR AT 18" O.C.E.W.
3. 8"X30" MIN CUT SANDSTONE BLOCK. 1/2" GROUT MIN. IN PLACE WITH RECESSED JOINTS ON EXPOSED ROCK FACES. PROVIDE A MINIMUM OF TWO THREADED DOWELS PER BLOCK EMBEDDED AND EPOXY SET A MINIMUM OF 2 INCHES BETWEEN INDIVIDUAL BLOCK LAYERS AND BASE BLOCK/CONCRETE FOOTING.
4. AGGREGATE DRAINAGE ROCK
5. GRAVEL MIX OR COMPACTED DECOMPOSED GRANITE WITH BINDER
6. UNDISTERBED AREA AROUND TREES
7. 12" HEIGHT MIN BASE SANDSTONE BLOCK

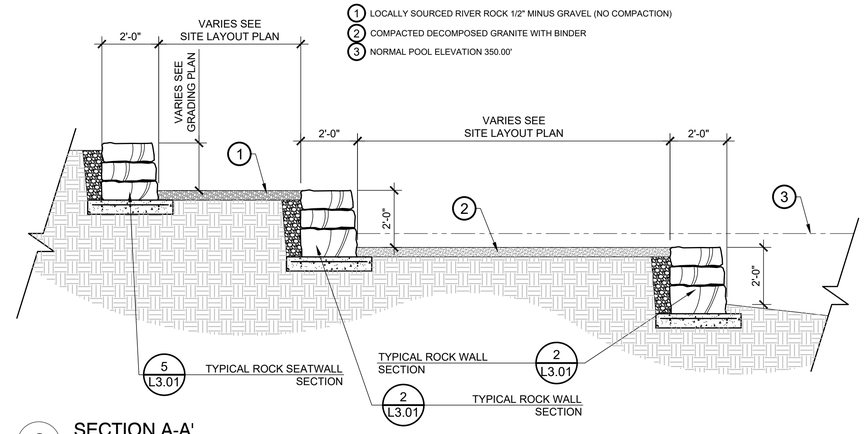


5 TYPICAL ROCK SEATWALL SECTION

1/2" = 1'-0"

P-TR-BUE-08

1. LOCALLY SOURCED RIVER ROCK 1/2" MINUS GRAVEL (NO COMPACTION)
2. COMPACTED DECOMPOSED GRANITE WITH BINDER
3. NORMAL POOL ELEVATION 350.00'

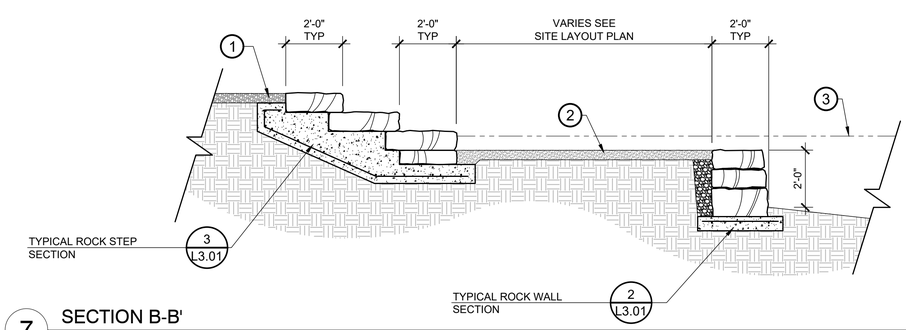


6 SECTION A-A'

3/8" = 1'-0"

NOTE: REFER GRADING PLAN FOR WALL ELEVATIONS

1. LOCALLY SOURCED RIVER ROCK 1/2" MINUS GRAVEL (NO COMPACTION)
2. COMPACTED DECOMPOSED GRANITE WITH BINDER
3. NORMAL POOL ELEVATION 350.00'



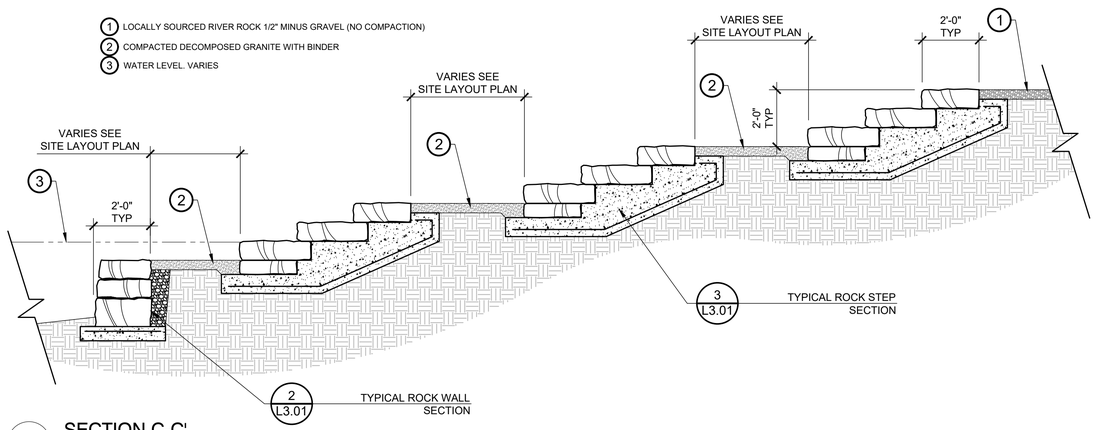
7 SECTION B-B'

3/8" = 1'-0"

NOTE: REFER GRADING PLAN FOR STEP AND WALL ELEVATIONS

P-TR-BUE-06

1. LOCALLY SOURCED RIVER ROCK 1/2" MINUS GRAVEL (NO COMPACTION)
2. COMPACTED DECOMPOSED GRANITE WITH BINDER
3. WATER LEVEL. VARIES



8 SECTION C-C'

3/8" = 1'-0"

NOTE: REFER GRADING PLAN FOR STEP AND WALL ELEVATIONS

P-TR-21

NOTE: REFER MATERIALS SPECIFICATIONS SHEETS L1.01, 1.02 AND 1.03

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TPWD# 118686

REGISTERED LANDSCAPE ARCHITECT
BRIAN R. SINAK
1895
STATE OF TEXAS
12.18.20

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Revision		
No.	Date	Description

PROJECT NUMBER: 118686

DATE: 12/04/2020

Sheet Title
DETAILS

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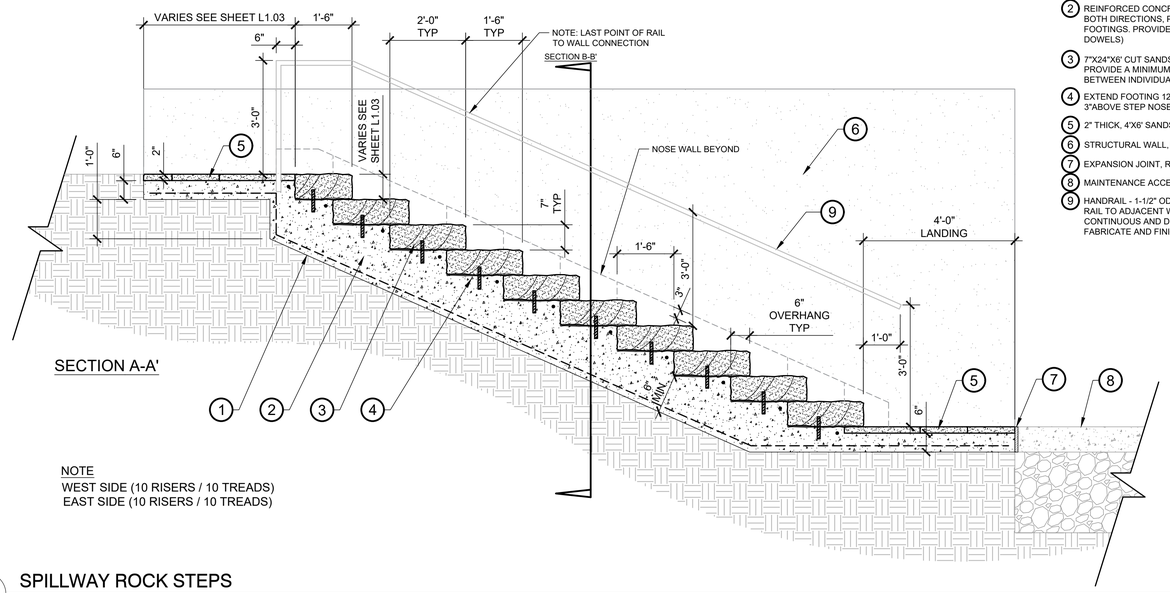
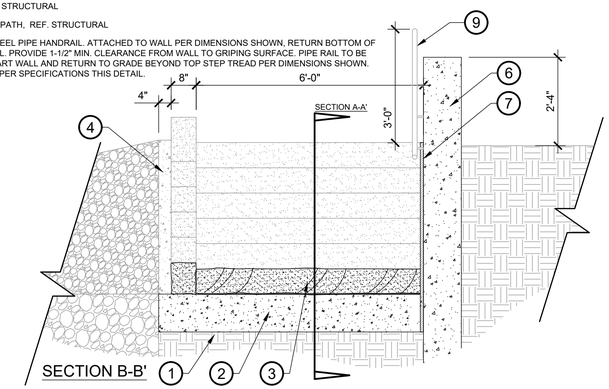


NOTE
WEST SIDE (10 RISERS / 10 TREADS)
EAST SIDE (10 RISERS / 10 TREADS)

1 SPILLWAY ROCK STEPS
1/2" = 1'-0"

1. COMPACTED SUBGRADE TO 95% MAX. DENSITY. EMBANKMENT REF. CIVIL
2. REINFORCED CONCRETE FOOTING (3000 PSI MIN.) PER DIMENSION SHOWN WITH ONE LAYER #3 BARS AT 18" O.C. BOTH DIRECTIONS, PROVIDE #3 NOSING BAR AT CORNER OF EACH RISER. TIE FOOTING TO ADJACENT WALL FOOTINGS. PROVIDE 3/4" BITUMINOUS BOARD FULL DEPTH BETWEEN STEP FOOTING AND STRUCTURE WALL (NO DOWELS)
3. 7"X24"X6' CUT SANDSTONE BLOCK. 1/2" GROUT MIN IN PLACE WITH RECESSED JOINTS ON EXPOSED ROCK FACES. PROVIDE A MINIMUM OF TWO THREADED DOWELS PER BLOCK EMBEDDED AND EPOXY SET A MINIMUM OF 2 INCHES BETWEEN INDIVIDUAL BLOCK LAYERS AND CONCRETE FOOTING.
4. EXTEND FOOTING 12" TO ACCOMMODATE 8" WIDE X 12" HEIGH MIN. NOSE WALL BLOCK. NOSE WALL BLOCK TO BE 3"ABOVE STEP NOSE TREAD
5. 2" THICK, 4X6' SANDSTONE FLAGSTONE LANDING
6. STRUCTURAL WALL, REF. STRUCTURAL
7. EXPANSION JOINT, REF. STRUCTURAL
8. MAINTENANCE ACCESS PATH, REF. STRUCTURAL
9. HANDRAIL - 1-1/2" OD STEEL PIPE HANDRAIL. ATTACHED TO WALL PER DIMENSIONS SHOWN, RETURN BOTTOM OF RAIL TO ADJACENT WALL. PROVIDE 1-1/2" MIN. CLEARANCE FROM WALL TO GRIPING SURFACE. PIPE RAIL TO BE CONTINUOUS AND DEPART WALL AND RETURN TO GRADE BEYOND TOP STEP TREAD PER DIMENSIONS SHOWN. FABRICATE AND FINISH PER SPECIFICATIONS THIS DETAIL.



METAL FABRICATION & FINISHING NOTES

*NOTES APPLY TO ALL METAL FABRICATED SITE ELEMENTS - LANDSCAPE ARCHITECTURAL DESIGN PLANS

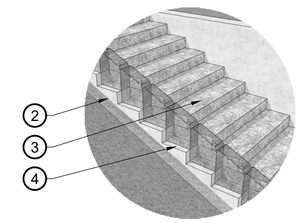
SHOP DRAWINGS REQUIRED FOR ALL METAL PRODUCTS FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO FABRICATION.

MATERIALS
1. ALL METAL SHALL BE STANDARD WEIGHT AND CONFORM TO ASTM SPECIFICATION A53 GRADE B OR A501.

WELDS
1. ALL SHOP AND FIELD WELDS SHALL BE MADE BY WELDERS WHO HAVE BEEN QUALIFIED AND CERTIFIED TO MAKE THE REQUIRED WELDS WITHIN THE PREVIOUS YEAR IN ACCORDANCE WITH THE LATEST AMERICAN WELDING SOCIETY SPECIFICATIONS AWS D.1.1.
2. ALL WELDS SHALL BE FULL PENETRATION WELDS ALL AROUND UNLESS NOTED.
3. GRIND AND WELD SPLATTER SMOOTH.
4. GRIND ALL WELDS SMOOTH.
5. REMOVE ALL SLAG PRIOR TO PAINTING.

PRIME PAINTING
1. THOROUGHLY CLEAN ALL SURFACES OF DIRT, SCALE, OR OTHER FOREIGN MATERIAL.
2. PRIME ALL METAL SURFACES WITH ONE COAT SHERWIN-WILLIAMS RED OXIDE PRIMER, B65RW552.

FINISH PAINTING
1. LIGHTLY SAND ALL SURFACES TO BE PAINTED.
2. POWER-COAT OR ROLL BRUSH WITH SHERWIN-WILLIAMS INDUSTRIAL COATING OR APPROVED EQUAL, COLOR: SW4016 CORRUGATE BROWN. SUBMIT COLOR SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL.



NOSE WALL ENLARGEMENT EXHIBIT: NTS

NOTE: REFER GRADING PLAN FOR STEP AND WALL ELEVATIONS

P-TR-BUE-10

NOTE: REFER MATERIALS SPECIFICATIONS SHEETS L1.01, 1.02 AND 1.03

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