



## Technical Memorandum

Subject: Filtration Facility Erosion and Sediment Control Drawings

PWB Project #s: W02229

Date: January 12, 2024

To: Lyda Hakes, P.E., Project Manager  
Portland Water Bureau

From: Mark Graham, P.E., Project Manager  
Stantec

Prepared by: Rafael Gaeta, P.E.  
Emerio Design



in association with  
  
and other firms

Reviewed by: Mark Graham, P.E.  
Stantec



The set of drawings attached to this technical memorandum (TM) were prepared in support of the City of Portland Water Bureau’s Bull Run Treatment Facilities’ land use applications in Multnomah County, specifically the *Filtration Facility ESC Review Application Narrative*. These drawings reflect the current status of the Filtration Facility design, which is approximately 90% complete as of the date of this TM. The drawings have been prepared and compiled for the specific purpose of addressing conformance to Multnomah County land use requirements as expressed in the Multnomah County Code.

The contents of this set of drawings are listed in the table below.

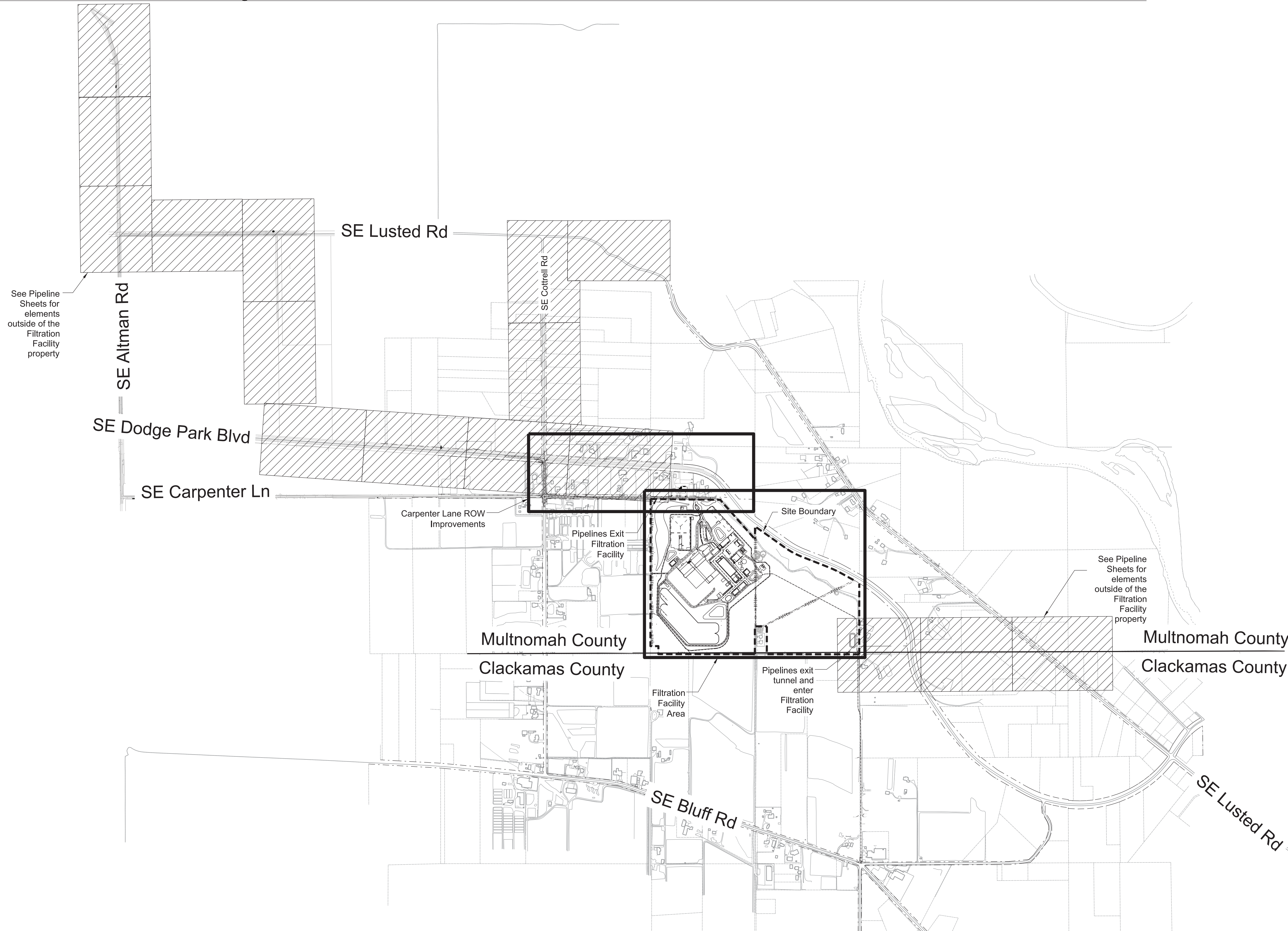
Table 1. Erosion and Sediment Control Drawings	
Drawing Number	Drawing Name
00-LU-500	Cover Sheet
00-LU-501	General Notes
00-LU-502	Existing Conditions - Carpenter Lane
00-LU-503	Proposed Conditions - Carpenter Lane
00-LU-504	Existing Conditions - FF
00-LU-505	Construction Plan - FF
00-LU-506	Grading Plan - FF
00-LU-507	Stormwater Plan - FF
00-LU-508	Landscape Plan - FF
00-LU-509	Detail 1
00-LU-510	Detail 2
00-LU-511	Storm Pond Sections
00-LU-512	Flow Control Structures
00-LU-513	Storm Details – 1
00-LU-514	Storm Details – 2

## **Attachment A: Erosion and Sediment Control Drawings**

# Filtration Facility Erosion Control Land Use Submittal

## Drawing Index

00-LU-500	Cover Sheet
00-LU-501	Erosion Control Notes
00-LU-502	Existing Conditions Carpenter Lane
00-LU-503	Proposed Conditions Carpenter Lane
00-LU-504	Existing Conditions Site Plan
00-LU-505	Construction Site Plan
00-LU-506	Proposed Site Plan
00-LU-507	Stormwater Management Plan
00-LU-508	Landscape Site Plan
00-LU-509	Erosion Control Details 1
00-LU-510	Erosion Control Details 2
00-LU-511	Erosion Control Storm Pond Sections
00-LU-512	Erosion Control Flow Control Structures
00-LU-513	Erosion Control Storm Details 1
00-LU-514	Erosion Control Storm Details 2
LU-400	Facility Enlargement 1
LU-401	Facility Enlargement 2
LU-402	Tower Area Enlargement



**Multnomah County** Land Use Planning Division

**Erosion and Sediment Control**

No Ground Disturbance Allowed

Minimal Impact Project (MIP)

MCC / Case #: **T1-2023-16571**

Date: **5/24/24**

Signature: Lisa Estlin

**Approval**



User: stanpw11cs03\$ W02229\_FF\_00-LU-500.dgn 1/8/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	Design Mgr	LSH
Drawn By	Const Mgr	TG
Checked By	Const Supvr	RM
Project Mgr	Date	MFG

David W. Peters, Engineering Manager, PE No 16683



**Bull Run Filtration Facility**

**Land Use Plans**

Erosion Control  
Cover Sheet

SAP Project No <b>W02229</b>
1/4 Section
Sheet No <b>00-LU-500</b>
of

**ESCP GENERAL NOTES**

- THE CONTRACTOR WILL MAINTAIN A LIST OF ALL PERSONNEL (BY NAME AND POSITION) THAT ARE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF STORMWATER CONTROL MEASURES), AS WELL AS THEIR INDIVIDUAL RESPONSIBILITIES.
- VISUAL MONITORING INSPECTION REPORTS WILL BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS TO INSPECT ON THE INITIAL DATE THAT LAND DISTURBING ACTIVITIES COMMENCE, WITHIN 24 HOURS OF ANY STORM EVENT, AND AT LEAST ONCE EVERY 14 DAYS REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
- INSPECTION LOGS WILL BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS USING DEQ FORM 1 AND 2. CONSTRUCTION SITE BUMP INSPECTION REPORT & CHECKLIST FOR COMPLIANCE WITH OREGON NPDES 1200-C GENERAL PERMIT. INSPECTION FORMS WILL DOCUMENT OBSERVATIONS, THE IMPLEMENTATION AND PRESENCE OF EROSION AND SEDIMENT CONTROLS, APPARENT DISCHARGES, AND CONSTRUCTION ACTIVITIES PERTINENT TO EROSION AND SEDIMENT CONTROL INCLUDING BUT NOT LIMITED TO INGRESS, EGRESS, AND STOCKPILING.
- A COPY OF THE ESCP AND ALL REVISIONS WILL BE RETAINED ON SITE AND AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY.
- CLEARING AND GRADING WILL BE SEQUENCED TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION TO THE MAXIMUM EXTENT POSSIBLE BY PROVIDING TEMPORARY STABILIZATION AS DESCRIBED BELOW AND PER EROSION AND SEDIMENT CONTROL CONSTRUCTION DETAILS ON SHEETS 00-LU-509 AND 00-LU-510.
- CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING PROTECTED TREES AND ASSOCIATED ROOTING ZONATION AREAS TO BE PRESERVED ARE IDENTIFIED, MARKED, AND PROTECTED (BY CONSTRUCTION FENCING) AS SHOWN ON SHEETS 00-LU-502 THROUGH 00-LU-508 PER DETAIL ON 00-LU-510. VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS, AND OTHER AREAS TO BE PRESERVED ARE SHOWN ON SHEETS 00-LU-502 THROUGH 00-LU-508.
- PRESERVE EXISTING VEGETATION OUTSIDE OF PROJECT LIMITS AS DELINEATED BY TREE PROTECTION FENCING AND SEDIMENT FENCING AND RE-VEGETATE ALL UNPAVED AREAS WITHIN THE PROJECT LIMITS. TEMPORARY RE-VEGETATION IS REQUIRED DURING CONSTRUCTION AS INDICATED BELOW AND PERMANENT RE-VEGETATION IS REQUIRED FOLLOWING COMPLETION OF CONSTRUCTION. PROPOSED VEGETATIVE SEED MIX OF SERILE WHEAT GRASS-REGREEN, QUICKGUARD, OR AN APPROVED EQUAL AT A RATE OF 50 POUNDS PER ACRE, OR HORDEUM VULGARE VAR. POCO-POCO BARLEY AT A RATE OF 60 POUNDS PER ACRE.
- A NATURAL BUFFER OF 100 FEET WILL BE MAINTAINED AROUND JOHNSON CREEK AS SHOWN ON SHEET 00-LU-504.
- INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AND SEDIMENT AND BARRIERS PER THE DETAILS ON SHEETS 00-LU-509 AND 00-LU-510 PRIOR TO LAND DISTURBANCE.
- CONTROL OF STORMWATER RUNOFF DURING CONSTRUCTION WILL BE COLLECTED THROUGH DITCHES WITH STRAW WATTLES ADJACENT TO CONSTRUCTION ACTIVITIES. THE STORMWATER IS HELD IN DETENTION PONDS UNTIL CLEAN THEN DISCHARGED TO JOHNSON CREEK. EROSION AT OUTLETS AND CHANNELS WILL BE MINIMIZED THROUGH FILTER SOCKS OR WATTLES. REFER TO DETAILS ON SHEETS 00-LU-509 AND 00-LU-510 AND TO THE STORMWATER REPORT INCLUDED SEPARATELY IN THIS APPLICATION.
- SEDIMENT ALONG THE PERIMETER OF THE PROJECT LIMITS AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS WILL BE CONTROLLED AT ALL TIMES DURING CONSTRUCTION WITH SEDIMENT BARRIER INSTALLED ALONG THE COMPLETE UNPAVED PERIMETER OF THE PROJECT LIMITS.
- ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK AS SHOWN ON SHEET 00-LU-505.
- APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES, PER DETAILS ON 00-LU-509 AND 00-LU-510.
- MATERIAL AND WASTE STORAGE AREAS OUTSIDE OF RIGHTS-OF-WAY WILL BE ESTABLISHED BY THE CONTRACTOR AND EROSION CONTROL MEASURES TO PROTECT MATERIAL AND WASTE STORAGE AREAS WILL COMPLY WITH THE EROSION CONTROL CONSTRUCTION DETAILS ON 00-LU-509 AND 00-LU-510. MATERIAL WILL NOT BE STOCKPILED WITHIN THE RIGHT-OF-WAY.
- WASTE CONTAINER LIDS WILL BE KEPT CLOSED OR COVERED TO PREVENT EXPOSURE TO PRECIPITATION WHEN NOT IN USE. CONTRACTOR WILL TRANSPORT WASTE MATERIALS OFFSITE TO STAGING YARDS FOR COLLECTION PRIOR TO DISPOSAL. WASTE MATERIALS WILL NOT BE STORED WITHIN THE RIGHT-OF-WAY.
- TIRE WASHES WILL BE PROVIDED AT THE CONSTRUCTION ENTRANCE OFF SE CARPENTER LANE AT THE FACILITY ENTRANCE (SEE SHEET 00-LU-505) AND AT THE CONSTRUCTION ENTRANCE ON THE SE EXIT ROAD (SEE SHEET 00-LU-505) TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC ROADS. PUBLIC ROADS WILL BE SWEEP DAILY. PRIVATE FARM ROADS UTILIZED DURING CONSTRUCTION WILL BE IMPROVED WITH GRAVEL PRIOR TO LAND DISTURBING ACTIVITIES. THESE BMPs MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
- CONCRETE WASH-OUTS WILL BE PROVIDED AT THE CONSTRUCTION ENTRANCE OFF SE CARPENTER LANE AT THE FACILITY ENTRANCE (SEE SHEET 00-LU-505) TO PREVENT CONCRETE DISCHARGES FROM LEAVING THE CONSTRUCTION SITE.
- STEEP SLOPE AREAS WHERE CONSTRUCTION ACTIVITIES ARE NOT OCCURRING WILL BE DELINEATED BY SEDIMENT FENCE TO PREVENT DISTURBANCE
- PERMANENT RESTORATION OF UNPAVED AREAS WITHIN RIGHTS-OF-WAY WILL INCLUDE SOIL AMENDMENT FOR FILTER STRIPS FOR STORMWATER DISPERSION, AND PERMANENT RESTORATION OF AGRICULTURAL SOILS ON PRIVATE PROPERTY WILL BE REQUIRED TO MEET SPECIFIC COMPACTION REQUIREMENTS. POST-CONSTRUCTION TESTING AND INSPECTION WILL BE PERFORMED TO IDENTIFY RESTORATION AREAS WHICH HAVE BEEN DISTURBED AND A CORRECTION NOTICE WILL BE ISSUED TO THE CONTRACTOR.
- CONTRACTOR BEST MANAGEMENT PRACTICES INCLUDING SECONDARY CONTAINMENT WILL BE USED TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. A WRITTEN SPILL PREVENTION PLAN WILL BE PREPARED AND SUBMITTED BY THE CONTRACTOR ADDRESSING RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
- ENGINEERED SOILS USING AMENDMENTS SUCH AS FLY-ASH OR PORTLAND CEMENT WILL NOT BE USED.
- A DEWATERING PLAN WILL BE PREPARED AND SUBMITTED BY THE CONTRACTOR FOR ACCUMULATED WATER FROM PRECIPITATION AND UNCONTAMINATED GROUNDWATER SEEPAGE IN EXCAVATIONS. DEWATERING SYSTEMS WILL BE REQUIRED TO FILTER THE DISCHARGE THROUGH AT LEAST TWO SEDIMENT BARRIERS INCLUDING A FILTER BAG AND SEDIMENT FENCE. DEWATERING SYSTEMS WILL BE REQUIRED TO LIMIT DISCHARGE QUANTITY TO MEET STORMWATER PREDEVELOPMENT RATES.
- DUST CONTROL WILL BE ADDRESSED BY WATER SPRAYING AND COVERING OF SOIL PILES TO MITIGATE WIND-BLOWN SOIL.

- THE APPLICATION RATE OF ORGANIC FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW PROJECT SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. ABIDE BY ANY SETBACKS ON PRODUCT LABELS AND USE IN SUCH A WAY THAT THE PRODUCT DOES NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF APPLICABLE WATER QUALITY STANDARDS.
- TEMPORARILY STABILIZE SOILS WITH BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR.
- AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES WILL BE STABILIZED OR COVERED, OR OTHER BMPs WILL BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
- SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. REMOVE SEDIMENT TO APPROVED DISPOSAL SITE. SEDIMENT FENCES ARE SHOWN ON SHEETS 00-LU-502 AND 00-LU-505, DETAILS ON SHEET 00-LU-509.
- OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. REMOVE SEDIMENT TO APPROVED DISPOSAL SITE. OTHER SEDIMENT BARRIERS ARE SHOWN ON DETAILS ON SHEET 00-LU-509 AND 00-LU-510.
- CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. REMOVE SEDIMENT TO APPROVED DISPOSAL SITE. CATCH BASINS, SEDIMENT BASINS AND SEDIMENT TRAPS ARE SHOWN ON DETAILS ON SHEET 00-LU-509 AND 00-LU-510.
- WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED, INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DEPARTMENT OF STATE LANDS REQUIRED TIMEFRAME.
- NO INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS IS PROPOSED. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP WILL BE USED TO CLEANUP RELEASED SEDIMENTS.
- IDENTIFY ON EROSION CONTROL INSPECTION FORMS ANY PORTION(S) OF THE SITE WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WILL BE TEMPORARILY INACTIVE FOR 14 OR MORE CALENDAR DAYS.
- PROVIDE TEMPORARY STABILIZATION FOR ANY PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR LONGER WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. APPLY TEMPORARY SEEDING OF SERILE WHEAT GRASS-REGREEN, QUICKGUARD, OR AN APPROVED EQUAL AT A RATE OF 50 POUNDS PER ACRE, OR HORDEUM VULGARE VAR. POCO-POCO BARLEY AT A RATE OF 60 POUNDS PER ACRE.
- DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS WILL BE REMOVED AND DISPOSED OF PROPERLY, UNLESS NEEDED FOR LONG TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE.
- EROSION AND SEDIMENT MUST NOT ENTER PUBLIC RIGHT-OF-WAY OR BE DEPOSITED INTO ANY WATER BODY. WHEN WORKING IN THE PUBLIC RIGHT-OF-WAY, NO VISIBLE OR MEASURABLE EROSION OR SEDIMENT CAN ENTER THE ROADWAY OR BE DEPOSITED IN WATER BODIES.
- PERMANENT PLANTINGS AND ANY REQUIRED EROSION CONTROL AND DRAINAGE MEASURE SHALL BE INSTALLED AS SOON AS PRACTICAL IN COMPLIANCE WITH NOTE 38 HEREIN.
- AN ENERGY DISSIPATER IN THE FORM OF A FLOW SPREADER IS USED TO SPREAD FLOWS, REDUCE RELEASE WATER VELOCITY, AND AVOID POINT DISCHARGE.
- INITIATE THE INSTALLATION OF TEMPORARY STABILIZATION MEASURES (SEE NOTE 25), FINAL VEGETATION COVER, OR PERMANENT STABILIZATION MEASURES IMMEDIATELY WHENEVER ANY LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WILL BE TEMPORARILY INACTIVE ON ANY PORTION OF THE SITE FOR 14 OR MORE CALENDAR DAYS. DOCUMENT THE DAY THE ACTIVITIES CEASE AND THE LOCATION ON SITE IN THE VISUAL MONITORING REPORT. COMPLETE THE INSTALLATION OF STABILIZATION MEASURES AS SOON AS PRACTICABLE, BUT NO LATER THAN SEVEN CALENDAR DAYS AFTER STABILIZATION HAS BEEN INITIATED.

SITE CONDITION	MINIMUM INSPECTION FREQUENCY
1. ACTIVE PERIOD	ON INITIAL DATE THAT LAND DISTURBANCE ACTIVITIES COMMENCE.  WITHIN 24 HOURS OF ANY STORM EVENT, INCLUDING RUNOFF FROM SNOW MELT, THAT RESULTS IN DISCHARGE FROM THE SITE.  AT LEAST ONCE EVERY 14 DAYS, REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
2. INACTIVE PERIODS GREATER THAN 14 CONSECUTIVE CALENDAR DAYS	THE INSPECTOR MAY REDUCE THE FREQUENCY OF INSPECTIONS IN ANY AREA OF THE SITE WHERE THE STABILIZATION STEPS IN NOTES HAVE BEEN COMPLETED TO TWICE PER MONTH FOR THE FIRST MONTH, NO LESS THAN 14 CALENDAR DAYS APART, THAN ONCE PER MONTH.
3. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER	IF SAFE, ACCESSIBLE AND PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT DISCHARGE POINT, OR DOWNSTREAM LOCATION OF THE RECEIVING WATERBODY.
4. PERIODS DURING WHICH CONSTRUCTION ACTIVITIES ARE SUSPENDED AND RUNOFF IS UNLIKELY DUE TO FROZEN CONDITIONS.	VISUAL MONITORING INSPECTIONS MAY BE TEMPORARILY SUSPENDED. IMMEDIATELY RESUME MONITORING UPON THAWING, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.
5. PERIODS DURING WHICH CONSTRUCTION ACTIVITIES ARE CONDUCTED AND RUNOFF IS UNLIKELY DURING FROZEN CONDITIONS.	VISUAL MONITORING INSPECTIONS MAY BE REDUCED TO ONCE A MONTH. IMMEDIATELY RESUME MONITORING UPON THAWING, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

**SITE INFORMATION**

- TYPE OF DEVELOPMENT: CAPITAL IMPROVEMENT
- CONSTRUCTION ACTIVITY WILL CONSIST OF:
  - A) CLEARING SEPTEMBER 2023
  - B) MASS GRADING APRIL 2024
  - C) UTILITY CONSTRUCTION JUNE 2024
  - D) VERTICAL CONSTRUCTION JUNE 2025
  - E) OFFSITE PUBLIC ROADWAY IMPROVEMENTS JUNE 2026
  - F) FINAL STABILIZATION JUNE 2027
- PROJECT TIMELINE: BEGINNING DATE: JUNE 2023 COMPLETION DATE: SEPTEMBER 2027
- PROJECT SITE AREAS:
  - TOTAL AREA: 4,138,200 SF /95 AC
  - DISTURBED AREA: 3,615,480 SF /83 AC
  - PERCENT OF SITE DISTURBED: 87%
- OFFSITE PUBLIC IMPROVEMENT AREA:
  - IMPROVEMENT LENGTH: 4897 FT
- ONSITE SOIL TYPES:
  - A) BORGES SILTY CLAY LOAM, 0-8% SLOPES
  - B) CAZADERO SILTY CLAY LOAM, 0-7% SLOPES
  - C) CAZADERO SILTY CLAY LOAM, 0-8% SLOPES
  - D) CAZADERO SILTY CLAY LOAM, 8-15% SLOPES
  - E) HAPLUMBREPTS, VERY STEEP
  - F) WOLLENT SILT LOAM
- CUT AND FILL DATA:
  - CUT: 419,241 CY
  - FILL: 381,001 CY
  - NET ADJUSTED: 38,240 CY

**BMP MATRIX FOR CONSTRUCTION PHASE**

1200-C PHASES	PHASE 1		PHASE 2	PHASE 3	PHASE 4
PHASE/BMP	CLEARING	MASS GRADING	UTILITY CONSTRUCTION	VERTICAL CONSTRUCTION	FINAL STABILIZATION
<b>EROSION PREVENTION</b>					
GROUND COVER	X	X	X	X	X
PLASTIC SHEETING	X	X	X	X	
DUST CONTROL	X	X	X	X	
TEMPORARY STABILIZATION (STRAW MULCH/HYDROSEED)		X	X	X	
PERMANENT STABILIZATION				X	X
BUFFER ZONE (FROM RAVINE)	X	X	X	X	X
<b>SEDIMENT CONTROL</b>					
SEDIMENT FENCE (PERIMETER)	X	X	X	X	X
SEDIMENT FENCE (INTERIOR)	X	X	X	X	
STRAW WATTLES	X	X	X	X	X
INLET PROTECTION	X	X	X	X	
DEWATERING		X	X	X	
<b>RUN OFF CONTROL</b>					
CONSTRUCTION ENTRANCE	X	X	X	X	
EXISTING OUTLET PROTECTION					
NEW OUTLET PROTECTION		X	X	X	X
EXISTING CURB INLET CHECK DAMS				X	X
<b>POLLUTION PREVENTION</b>					
HAZARD WASTE MANAGEMENT					
SPILL KIT ONSITE	X	X	X	X	X
CONCRETE WASHOUT AREA			X	X	

OWNER/DEVELOPER                      SURVEYOR                      SITE CONTRACTOR

DESIGN ENGINEER                      BMP INSTALLER/MAINTAINER:                      CESCL:

BMP INSTALLER/MAINTAINER:                      ESCP PREPARER:                      RAIN GUAGE:

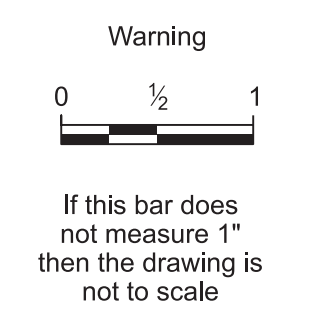
**REVISED**  
10:52 am, May 24, 2024

User: stanpw11ics03\$ W02229\_FF\_00-LU-501-Aggressive Grading.dgn 1/12/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	BYS	Const Mgr	TG
Checked By	LCS	Const Supvr	RM
Project Mgr	MFG	Date	



David W. Peters, Engineering Manager, PE No 16683                      Date



**Bull Run Filtration Facility**

**Civil**

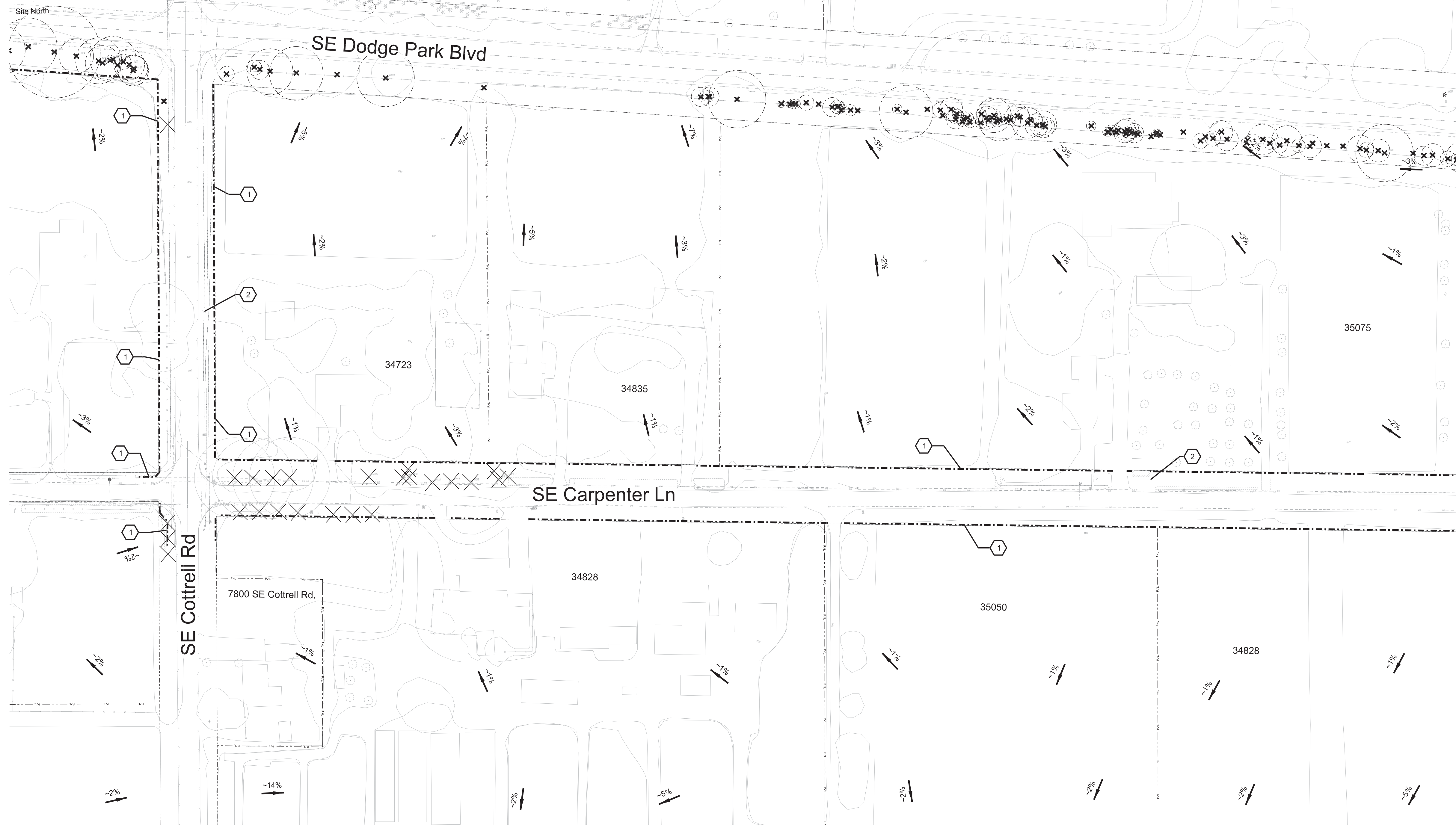
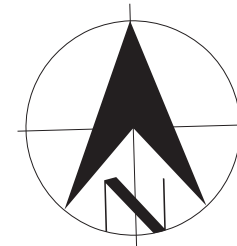
Erosion Control  
General Notes

SAP Project No  
**W02229**

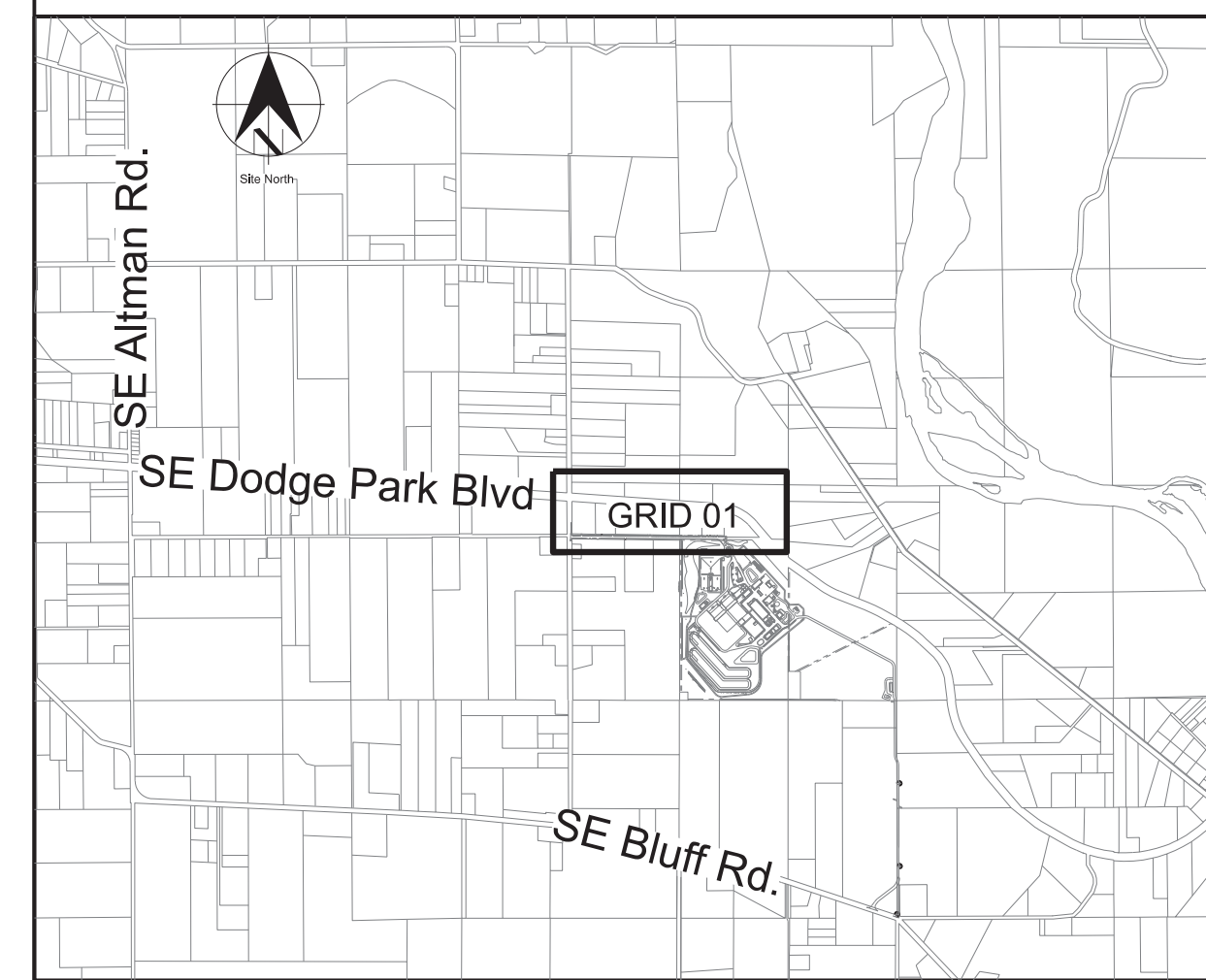
1/4 Section  
3765 / 3766

Sheet No  
00-LU-501

of



**KEY PLAN**



**Sheet Keynotes**

1. Install Temporary Silt Fence, See Detail 2 on Sheet 00-LU-509
2. Install Inlet Protection, See Detail 6 on Sheet 00-LU-509

**Legend**

- Install Silt Fence
- Limits of Grading
- Tree Removal
- Flow Direction
- Mailbox
- Gas Valve
- Utility Pole
- Sign
- Water Valve
- Fire Hydrant
- Coniferous Tree
- Deciduous Tree
- Right of Way
- Property Line
- Major Contour
- Minor Contour
- Water Line
- Gas Line
- Overhead Utility Line
- Communications Line
- Fence
- Flow Arrow

**General Sheet Notes**

1. No unsupported finish slopes.

**REVISED**  
10:52 am, May 24, 2024



\$\$\$\$\$FILENAME\$\$\$\$\$  
\$\$\$\$\$USER\$\$\$\$\$  
\$\$\$\$\$DATE\$\$\$\$\$

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	BS	Const Mgr	TG
Checked By	RG	Const Supvr	RMI
Project Mgr	MFG	Date	

Warning  
0 1/2 1  
If this bar does not measure 1" then the drawing is not to scale



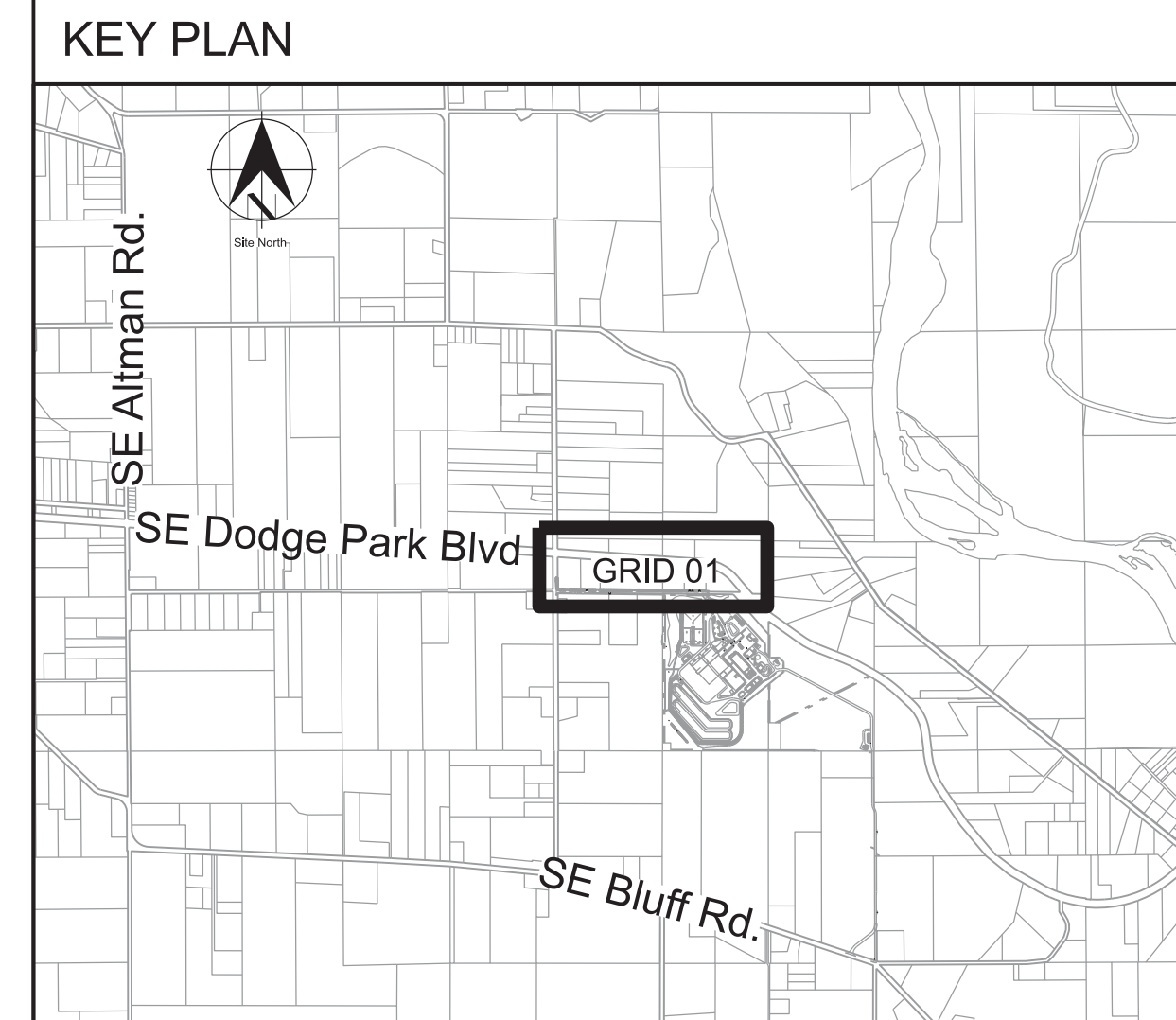
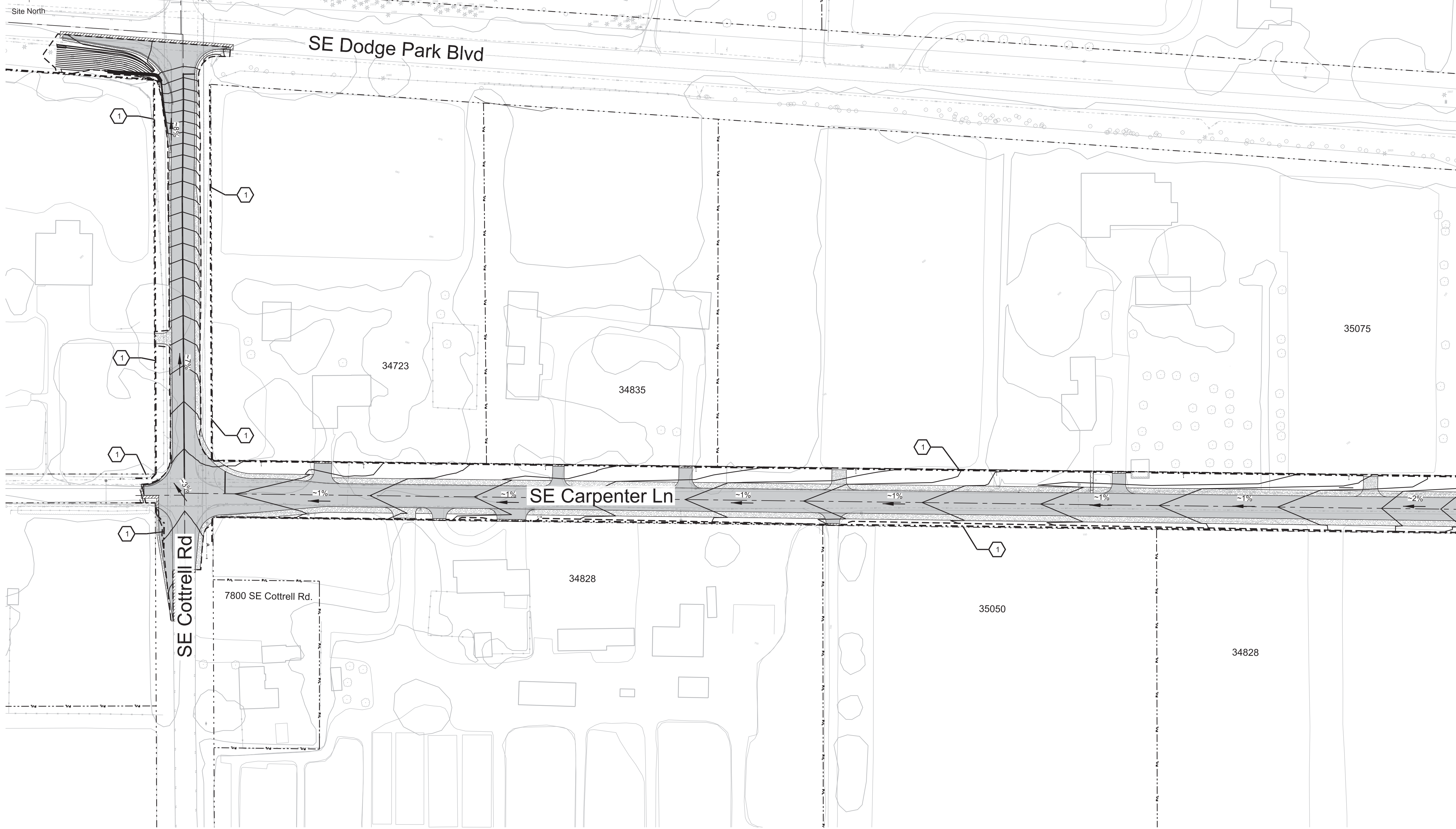
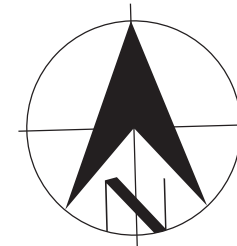
David W. Peters, Engineering Manager, PE No 16683

Date



**Bull Run Filtration Facility**  
**Civil**  
Erosion Control  
Existing Conditions  
Carpenter Lane

SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
00-LU-502  
of

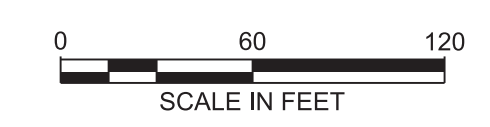


- Sheet Keynotes**
- 1. Temporary Silt Fence, See Detail 2 on Sheet 00-LU-509

- Legend**
- - - - - Silt Fence
  - - - - - Limits of Grading
  - Flow Arrow

- General Sheet Notes**
- 1. No unsupported finish slopes.

**REVISED**  
10:50 am, May 24, 2024



User: stanpw11cs03\$ W02229\_FF\_00-LU-503.dgn 1/8/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	BS	Const Mgr	TG
Checked By	RG	Const Supvr	RM
Project Mgr	MFG	Date	

Warning  
0 1/2 1  
If this bar does not measure 1" then the drawing is not to scale

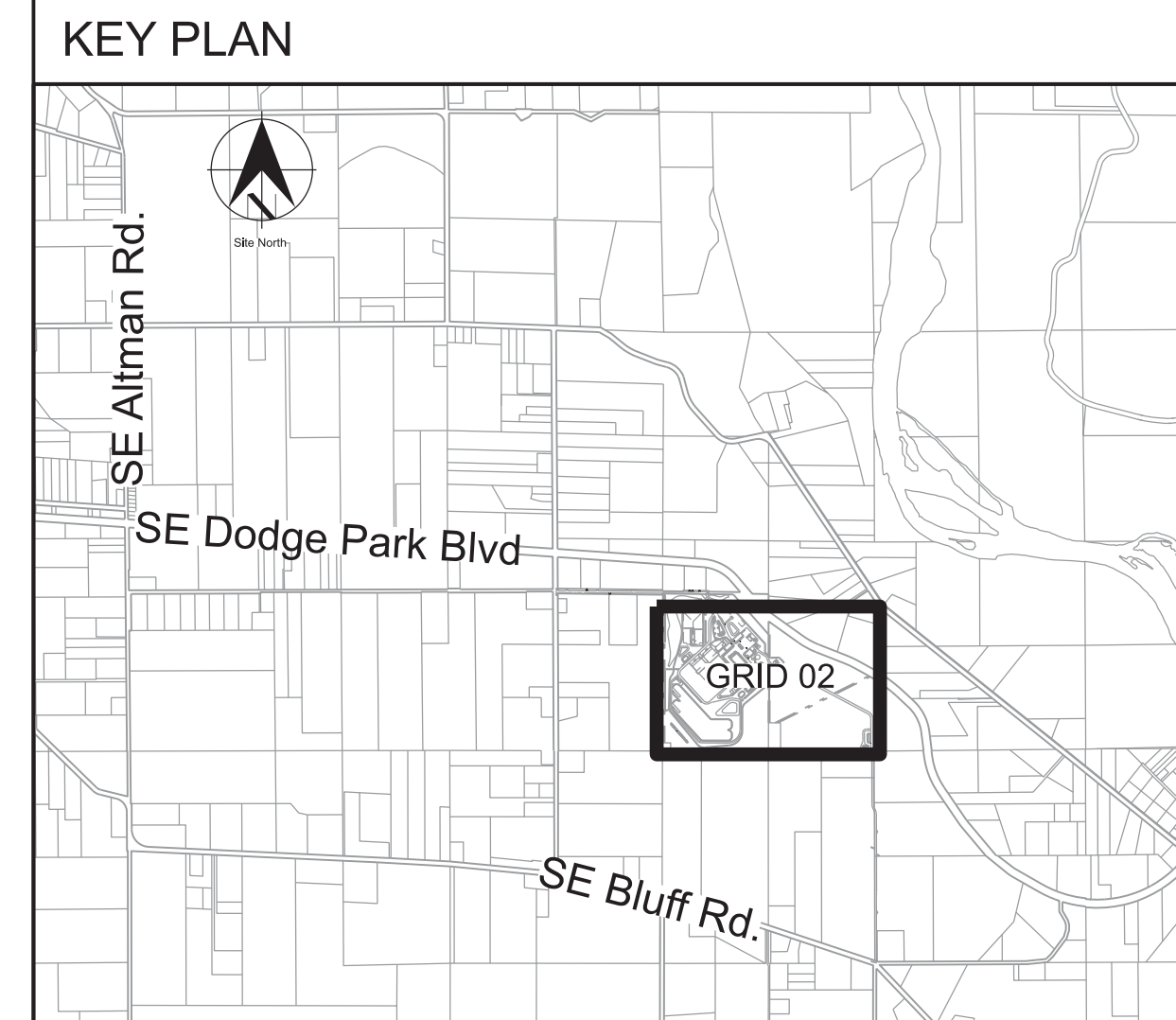
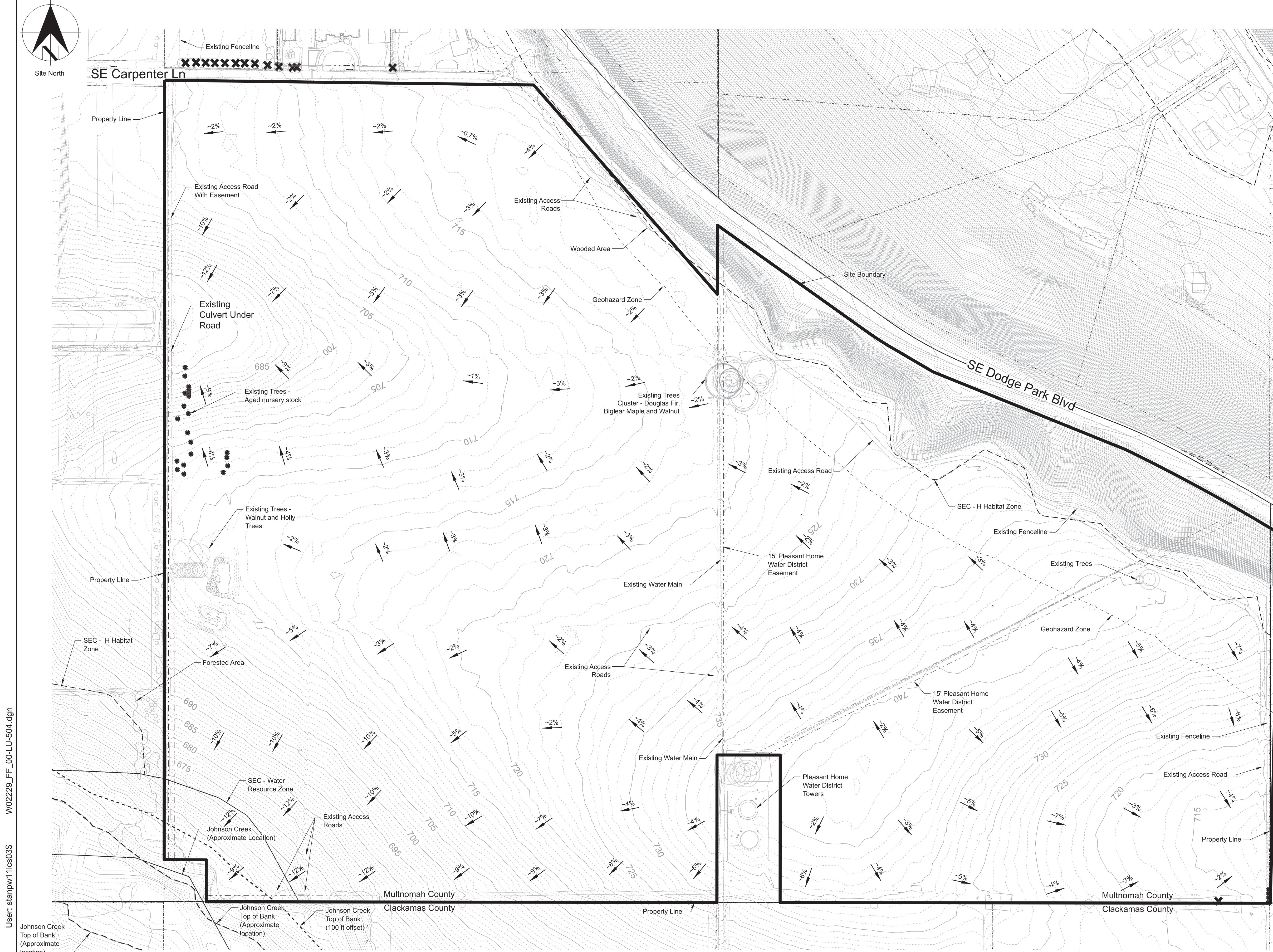


David W. Peters, Engineering Manager, PE No 16683



**Bull Run Filtration Facility**  
**Civil**  
Erosion Control  
Proposed Conditions  
Carpenter Lane

SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
00-LU-503  
of



- General Sheet Notes**
1. Refer to Erosion and Sediment Control notes, Sheet 00-LU-501.
  2. Site is currently cultivated as nursery stock.
  3. Protect all existing structures and trees not shown for demolition.
  4. Upon project completion remove gravel surfacing from all staging areas and restore topsoil and seed.
  5. Remove Silt Fence and tree protection fence upon final site stabilization.

- Legend**
- - - Significant Environmental Concern (SEC) Zones - See Labels
  - Lot Line
  - - - ROW Line
  - - - Topographic Lines - 5' Interval
  - ▭ Structure
  - - - Existing Fencing
  - Edge of Existing Vegetation Areas
  - ✕ Tree and Vegetation Removal
  - Monitor Well
  - Flow Arrow

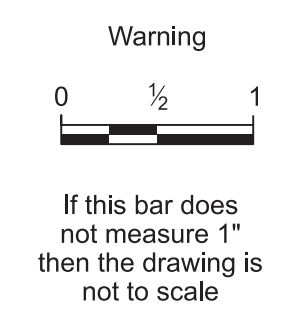


User: stanpw11ics03\$ W02229\_FF\_00-LU-504.dgn 1/10/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	USL	Design Mgr	LSH
Drawn By	BS	Const Mgr	TG
Checked By	RG	Const Supvr	RM
Project Mgr	MFG	Date	



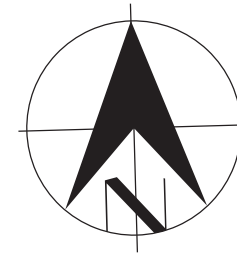
David W. Peters, Engineering Manager, PE No 16683



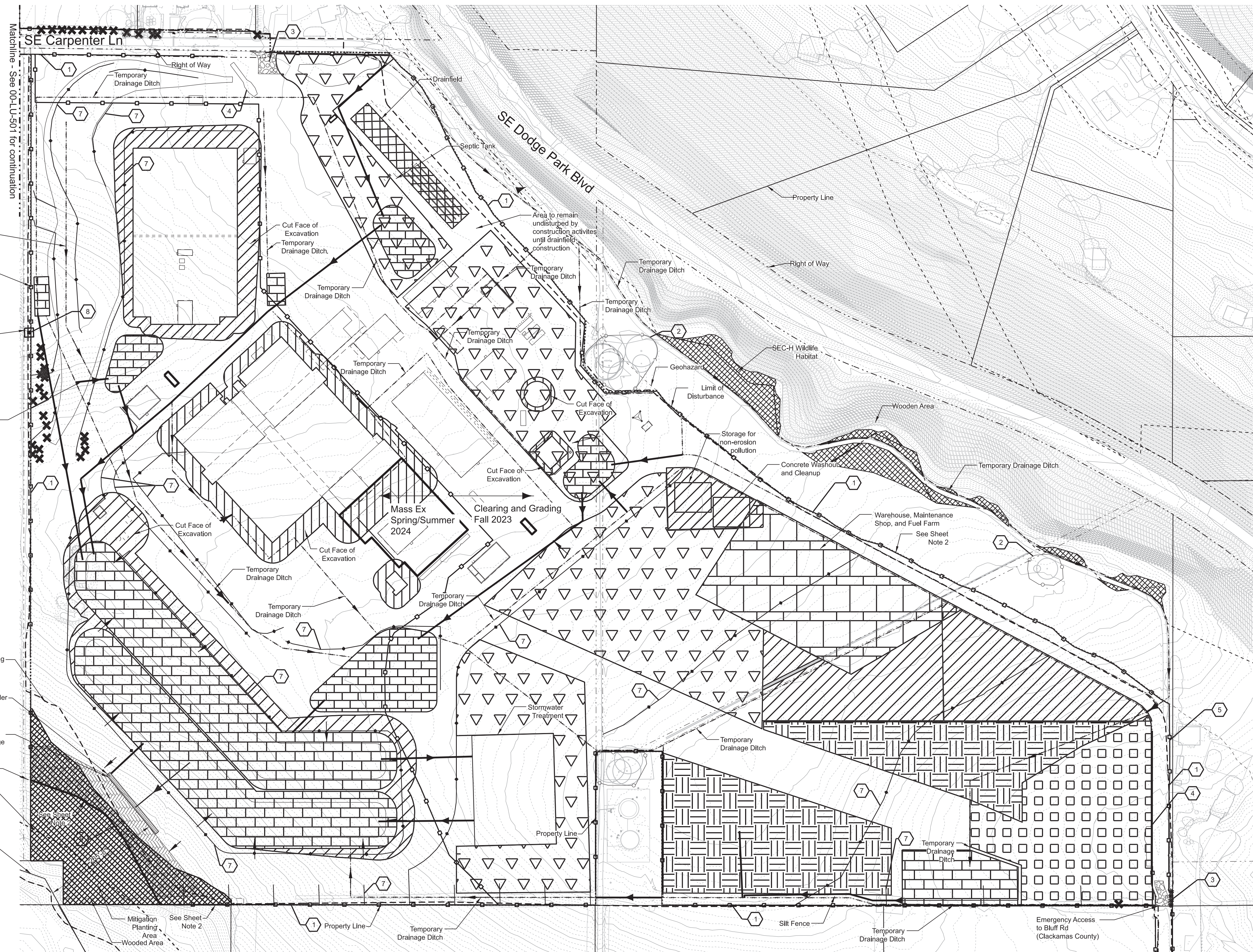
**Bull Run Filtration Facility**  
Civil  
Erosion Control  
Existing Conditions  
Filtration Facility

SAP Project No  
**W02229**  
1/4 Section  
Sheet No  
**00-LU-504**  
of

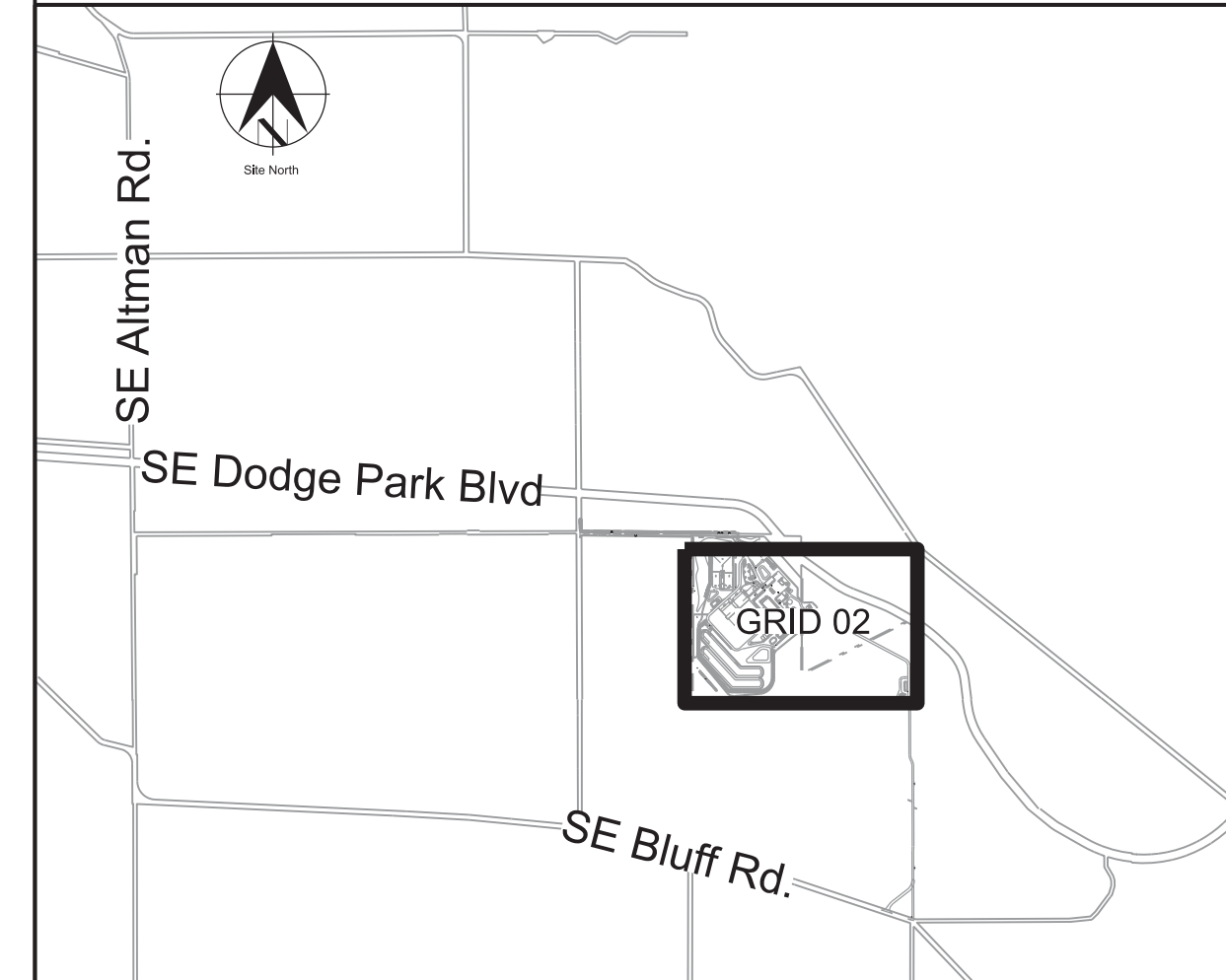




Site North



### KEY PLAN



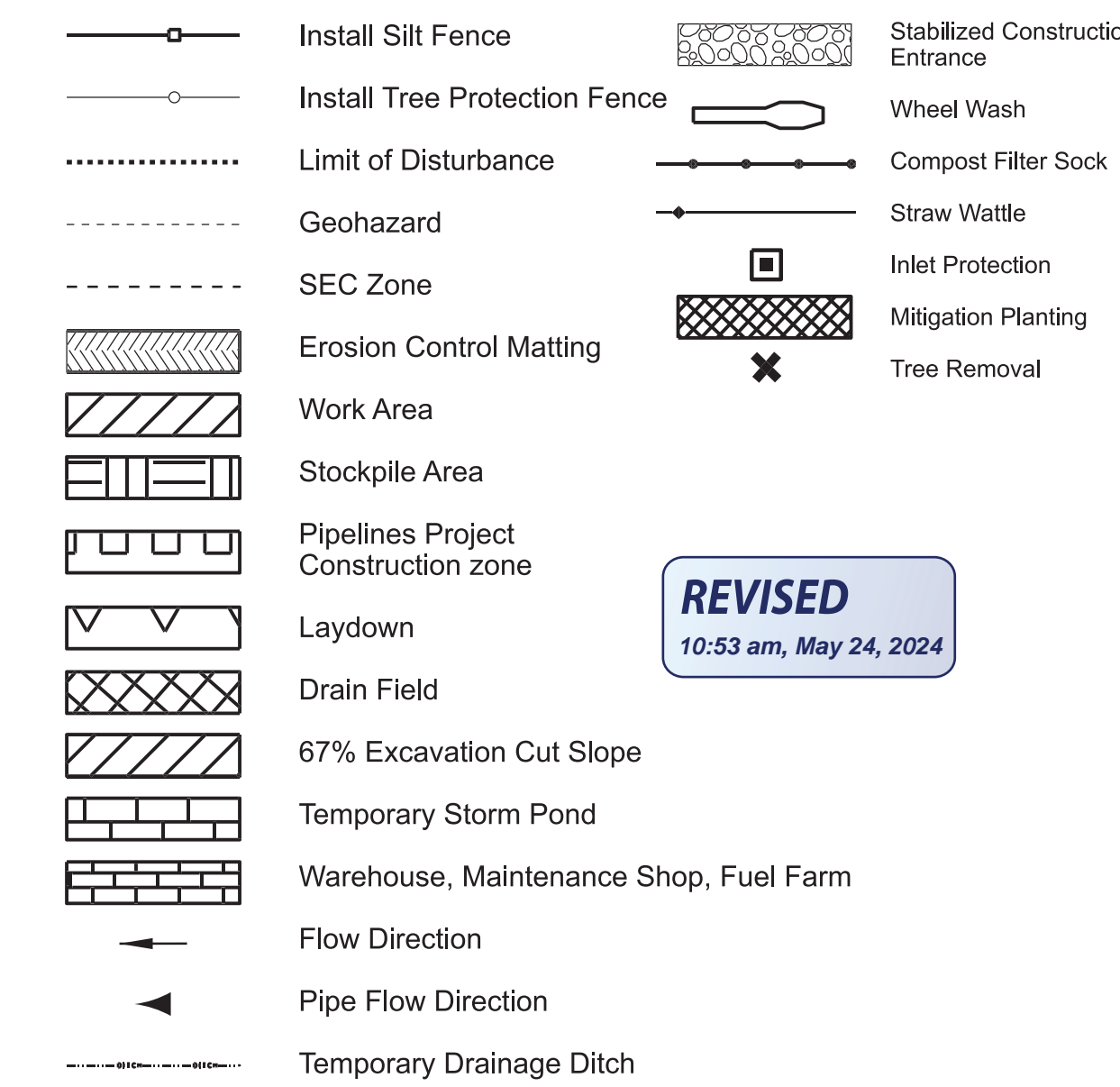
### General Sheet Notes

- No unsupported finish slopes on site.
- Limit of Disturbance is 1ft from Geohazard line, property line, or SEC-WR line. Temporary Silt Fence is placed at Limit of Disturbance.

### Sheet Keynotes

- Install Temporary Silt Fence, See Detail 2 on Sheet 00-LU-509.
- Install Tree Protection Fence, See Detail 1 on Sheet 00-LU-510.
- Install Stabilized Construction Entrance, See Detail 1 on Sheet 00-LU-509.
- Install Wheel Wash, See Detail 3 on Sheet 00-LU-509.
- Protect Existing Fence. Place Temporary Silt Fence minimum 1ft from existing fence.
- Install Compost Filter Sock, See Detail 2 on Sheet 00-LU-510.
- Install Straw Wattle, See Detail 2 on Sheet 00-LU-510.
- Install Inlet Protection, See Detail 6 on Sheet 00-LU-509.

### Legend



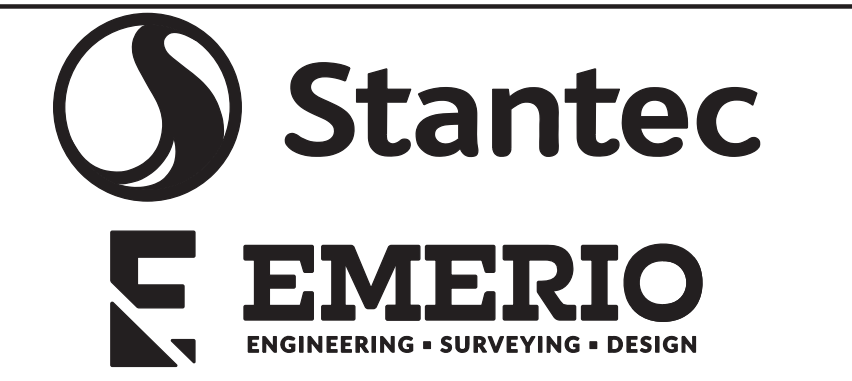
**REVISED**  
10:53 am, May 24, 2024



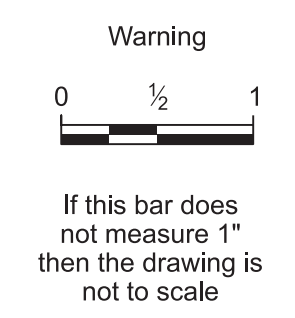
User: stanpw11cs03\$ W02229\_FF\_00-LU-505.dgn

1/10/2024

No	Date	Description	Appd



Designed By	JSL	Design Mgr	LSH
Drawn By	BS	Const Mgr	TG
Checked By	RG	Const Supvr	RM
Project Mgr	MFG	Date	



David W. Peters, Engineering Manager, PE No 16683

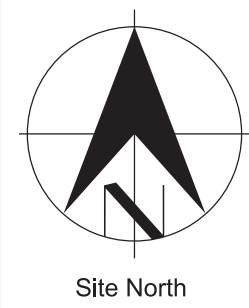


**Bull Run Filtration Facility**

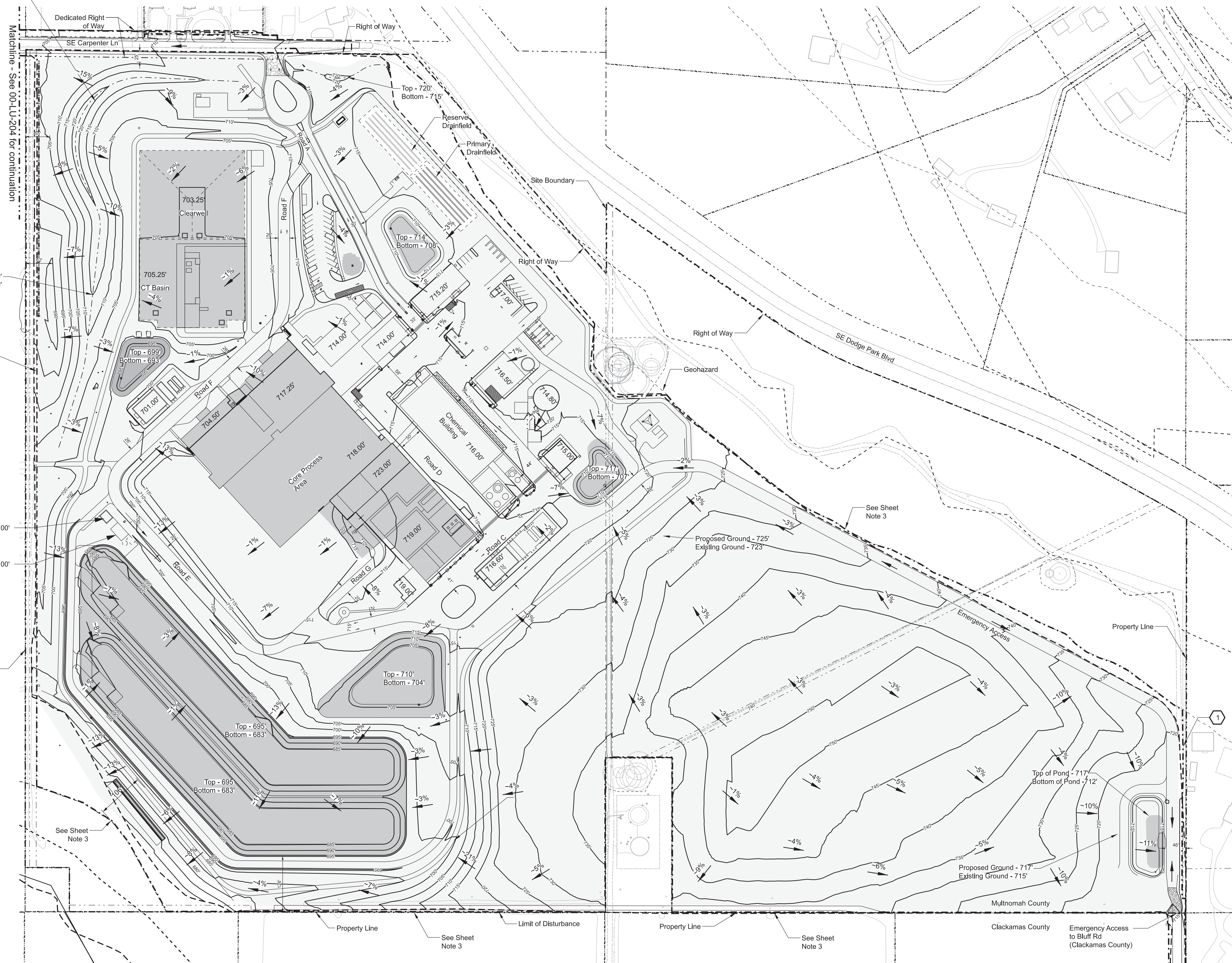
Civil

Erosion Control Construction Plan Filtration Facility

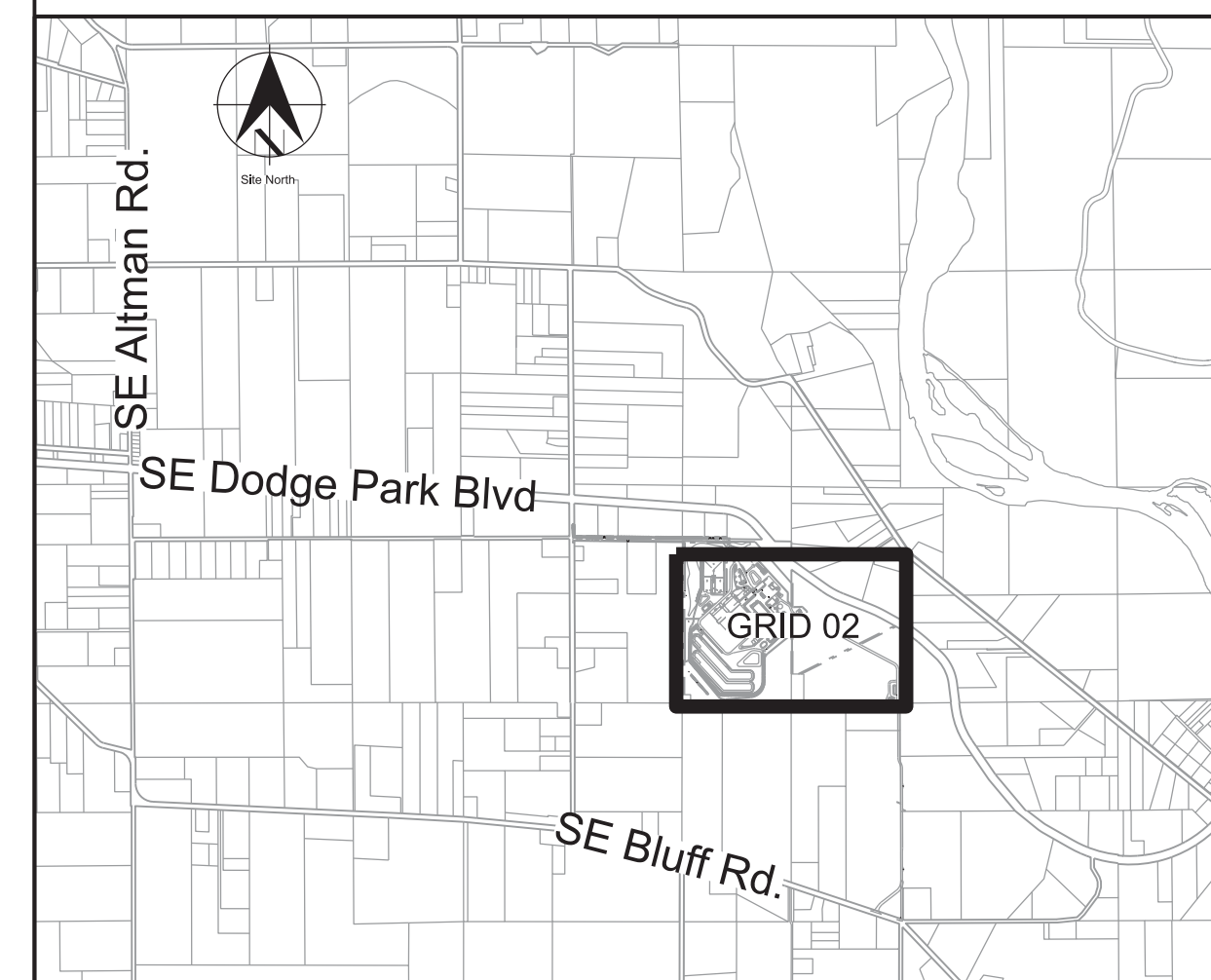
SAP Project No **W02229**  
1/4 Section  
3765 / 3766  
Sheet No **00-LU-505**  
7 of 10



Top of Berm - 720'  
Bottom of Berm - 705'



### KEY PLAN



### General Sheet Notes

1. See 00-LU-507 for stormwater plan.
2. See 00-LU-508 for landscape plan.
3. Limit of Disturbance is 1ft from Geohazard line, property line, or SEC-WR line. Temporary Silt Fence is placed at Limit of Disturbance.

### Sheet Keynotes

1. Protect Fence. Maintain Temporary Silt Fence minimum 1ft from existing fence.

### Legend

- Major Contour
- Minor Contour
- - - Existing Major Contour
- - - Existing Minor Contour
- - - SEC Zone
- - - Geohazard
- - - Limit of Disturbance
- Deciduous Tree
- Evergreen Tree
- - - Existing Water Line
- - - Existing Fence
- - - Existing Gas Line
- - - Existing Overhead line
- - - Existing Structure
- - - Existing Edge of Vegetation
- - - Property Line
- - - Right-of-Way
- - - Easement
- - - Ditch
- Water Valve
- Utility Pole
- Sanitary Maintenance Hole
- Edge of Gravel
- Fire Hydrant
- - - Site Boundary
- - - Silt Fence
- - - Tree Protection Fence
- Inlet Protection
- ▬ Cut
- ▬ Fill



0 120 240  
SCALE IN FEET

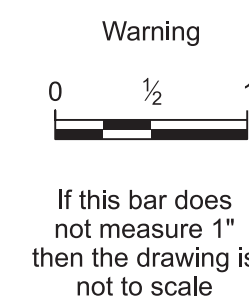
User: stanpw11ics03\$ W022229\_FF\_00-LU-506-Aggressive.dgn

1/12/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	BYS	Const Mgr	TG
Checked By	LCS	Const Supvr	RM
Project Mgr	MFG	Date	

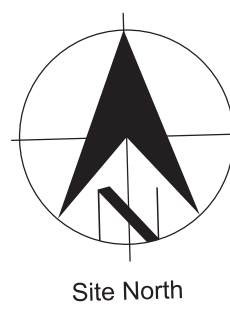


David W. Peters, Engineering Manager, PE No 16683



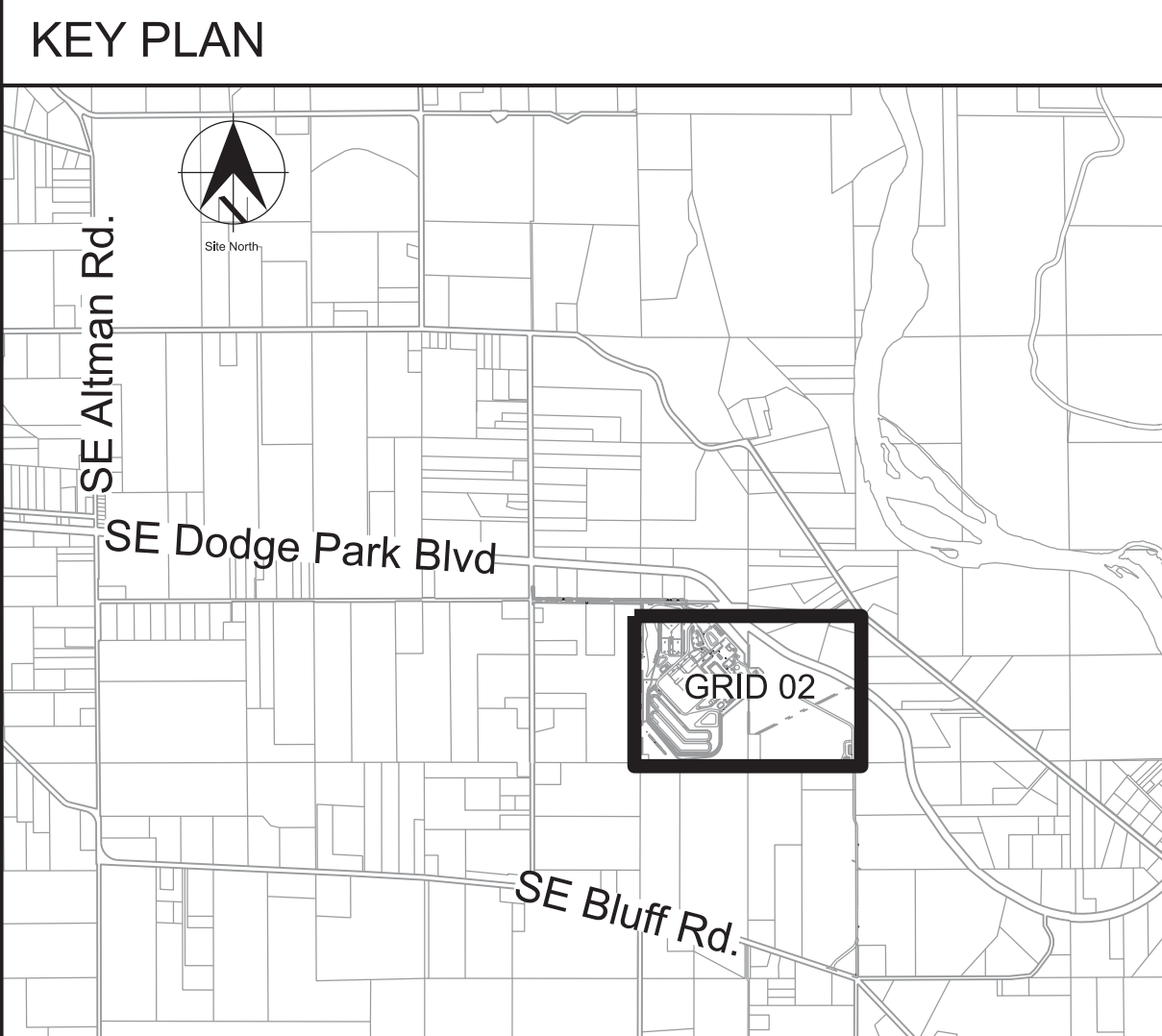
**Bull Run Filtration Facility**  
Civil  
Erosion Control Grading Plan  
Filtration Facility

SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
00-LU-506  
of



Dedicated ROW

Matchline - See 00-LU-205 for continuation



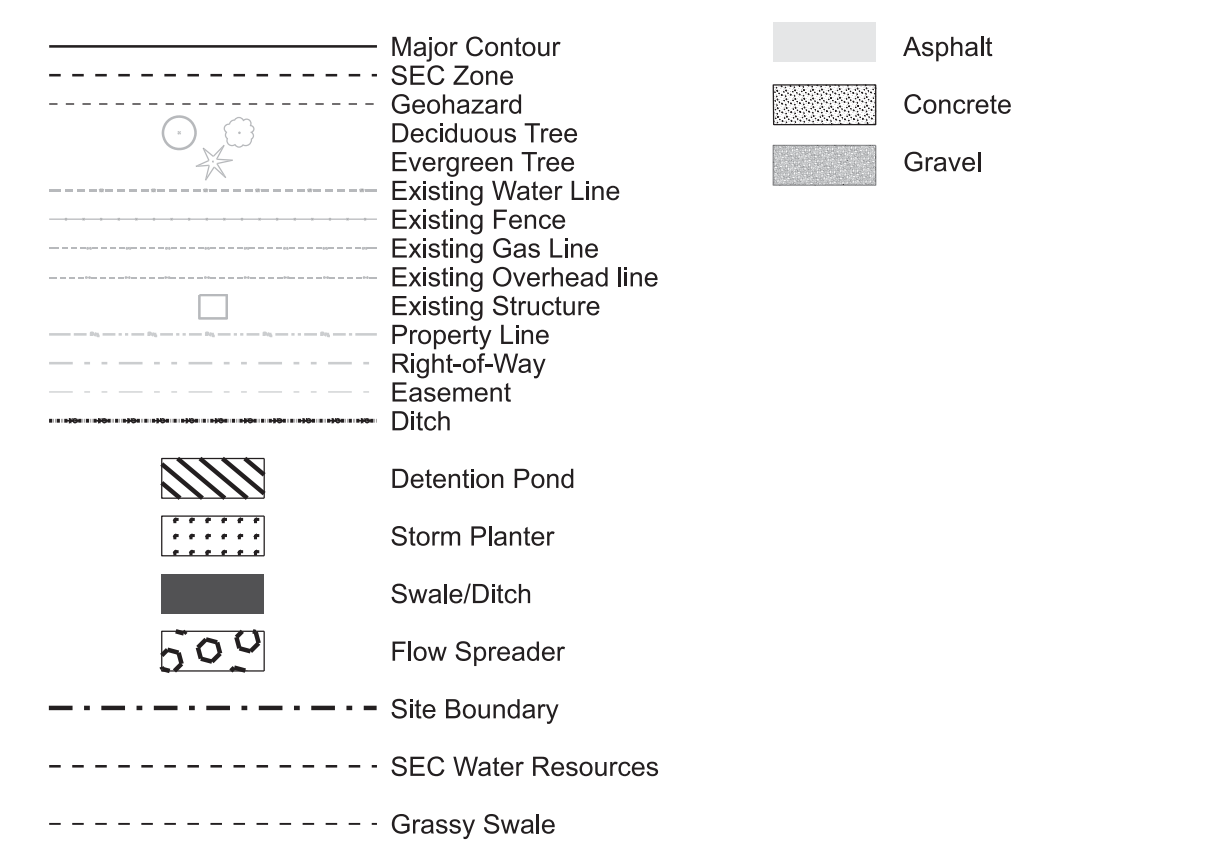
### General Sheet Notes

1. Refer to Filtration Facility Stormwater Report (Appendix H.1) for stormwater calculations and sizing.
2. See 00-LU-506 (Grading Plan) for ground disturbance limits.
3. See 00-LU-508 (Landscape Plan) for proposed vegetation.

### Sheet Keynotes

1. Drainage Ditch per detail B/00-LU-513
2. Storm Pipes
3. Detention Pond
4. Water Quality Swale per detail C/00-LU-513
5. Stormwater Planter per detail E/00-LU-513
6. Flow Control Maintenance Hole
7. Stormwater Basin per detail D/00-LU-513
8. Outfall Flow Spreader per detail A/00-LU-513
9. Septic Tank
10. Stilling Basin per detail A/00-LU-514

### Legend



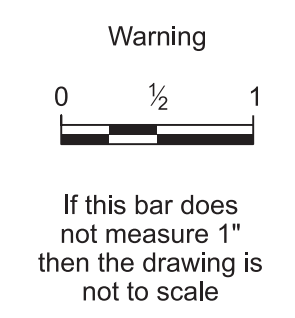
User: stanpw11cs03\$ W02229\_FF\_00-LU-507-Aggressive.dgn

1/15/2024

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	SPK
Drawn By	BYS	Const Mgr	XXX
Checked By	ERG	Const Supvr	MMX
Project Mgr	MMK	Date	



David W. Peters, Engineering Manager, PE No 16683



**Bull Run Filtration Facility**

**Civil**

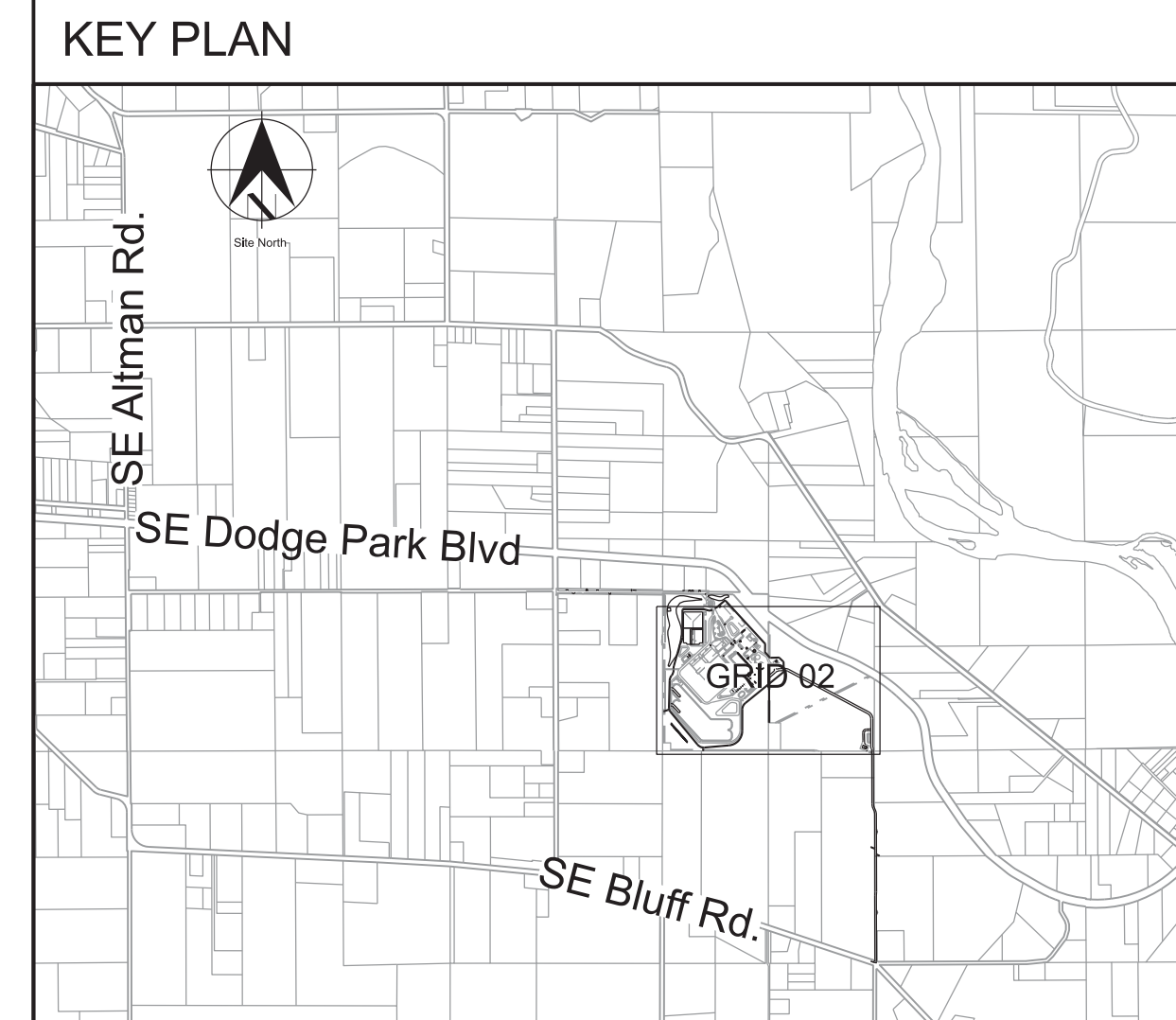
Erosion Control  
Stormwater Plan  
Filtration Facility

SAP Project No  
**W02229**

1/4 Section  
3765 / 3766

Sheet No  
**00-LU-507**

of



- Sheet Keynotes**
- |                                |   |
|--------------------------------|---|
| 1. Administration Building     | 12. Emergency Access Route                            |
| 2. Maintenance Building        | 13. Raw Water Pipeline Cover (At-Grade)               |
| 3. General Storage Building    | 14. Pleasant Home Water Towers (Off-Site)             |
| 4. Mechanical Dewatering Bldg. | 15. Communication Tower Area (See Planting Note 1)    |
| 5. Chemical Building           | 16. Existing Trees to Remain                          |
| 6. Chemical Storage Tanks      | 17. Planted Berm for Screening                        |
| 7. Washwater Clarification     | 18. Plantings at Facility Entry (See Planting Note 2) |
| 8. Electric Building           | 19. Parking Area plantings (See Planting Note 3)      |
| 9. Filtration Basins           | 20. SEC Water Resource Area (See Planting Note 4)     |
| 10. Overflow Basins            |   |
| 11. Pleasant Home Pumpstation  |   |

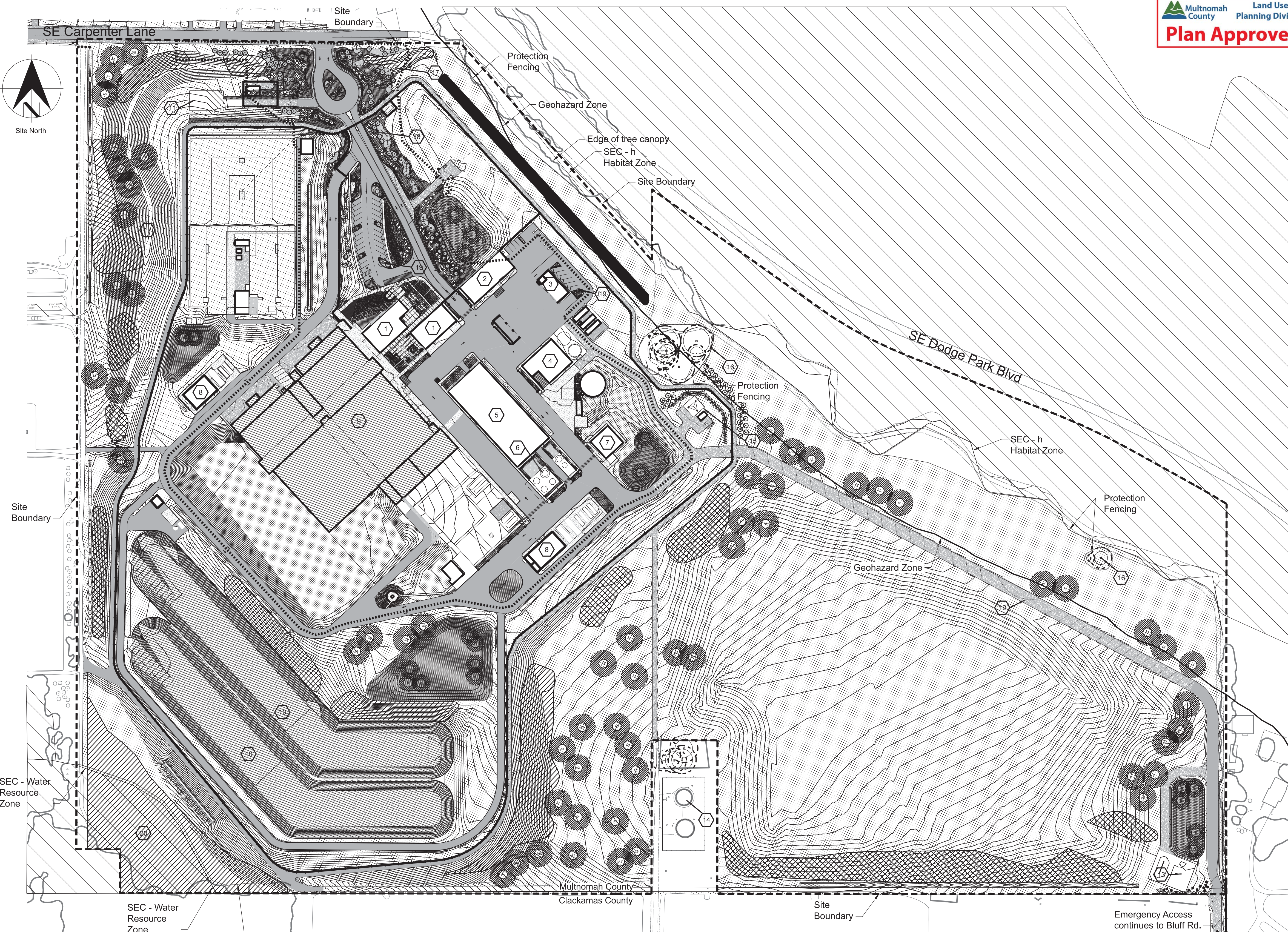
- Planting Notes**
- Communication Tower Area planting is designed to meet screening and parking requirements. See sheet LU-403 for enlargement and more detail on specific requirements.
  - Plantings around facility buildings are of a more ornamental nature and are proposed as containerized plants which will have supplemental irrigation. See sheet LU-400, 401 and 402 for enlargements to see plant sizes and locations in this area. Additional seeded areas shown within facility also may receive supplemental irrigation as a fire risk mitigation measure. See outlined area.
  - Parking Area plantings - See sheets LU-400 and LU-402 for enlargements to see locations of parking islands with plant sizes to meet parking lot planting requirements and listed by Multnomah County.
  - SEC Water Resource Area - This area is currently under agricultural use and has bare soil. Proposed plans have no additional disturbance within this zone. Proposed plantings to be all native species installed with hand tools only.

- General Sheet Notes**
- No development or construction activity proposed within SEC zones on Filtration Site. Native plantings only within these zones.

**Legend**

Asphalt Paving	Swale Planting
Concrete Paving	Stormwater Planting
Gravel Paving	Screen Mix: Forested Planting
Basins	Screen Mix: Shrubby Planting
Facility Fenceline	Tree / Shrub Planting Clusters
Protection Fencing	Proposed Trees - Deciduous and Evergreen
Areas to receive supplemental irrigation	Landscape Bed - Shrubs, Groundcover, Mulch
Native Grass / Forb Mixes	Existing tree to remain
Mitigation Planting Area	Significant Environmental Concern (SEC) Zone

0 120 240  
SCALE IN FEET



**PLAN**  
 SCALE: 1" = 120'-0"

Protection Fencing placed outside of SEC Zone and Driplines

User: stanpw11cs03\$ W02229\_FF\_00-LU-508-Aggressive.dgn 1/16/2024

		Designed By	JSL	Design Mgr	LSH								
		Drawn By	BS	Const Mgr	TG								
<table border="1"> <thead> <tr> <th>No</th> <th>Date</th> <th>Description</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		No	Date	Description	Appd					Checked By	RG	Const Supvr	
		No	Date	Description	Appd								
Project Mgr		Date											

Warning

If this bar does not measure 1" then the drawing is not to scale

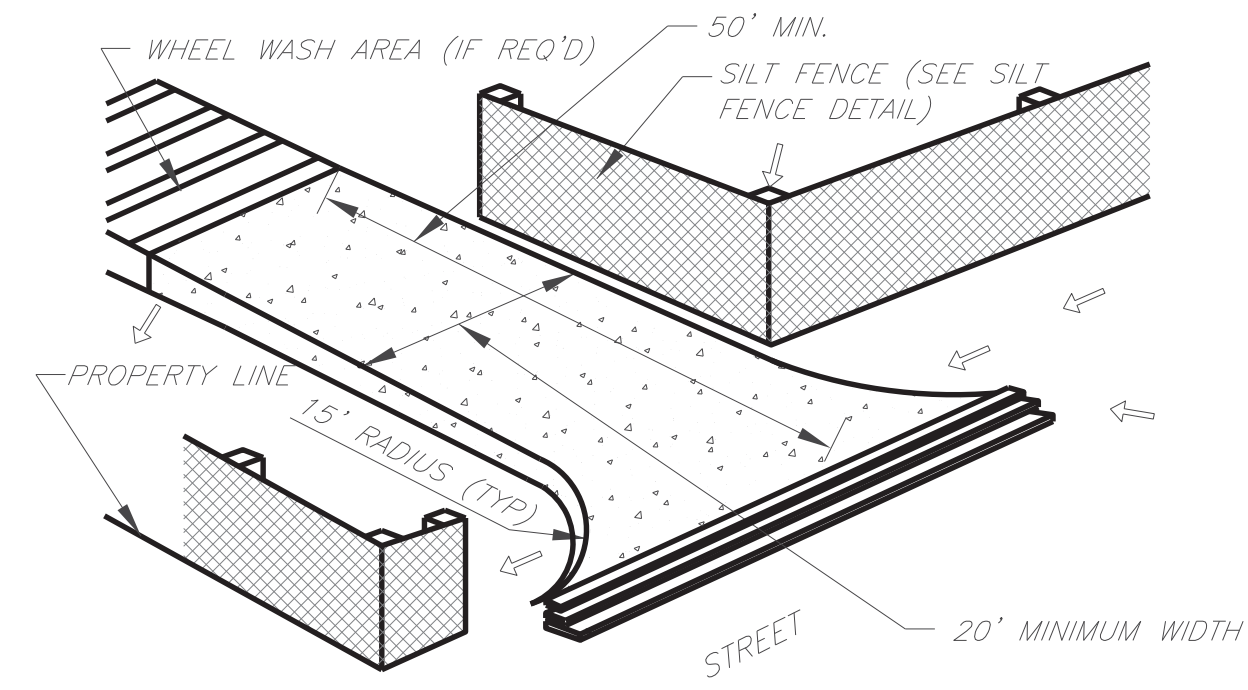


David W. Peters, Engineering Manager, PE No 16683

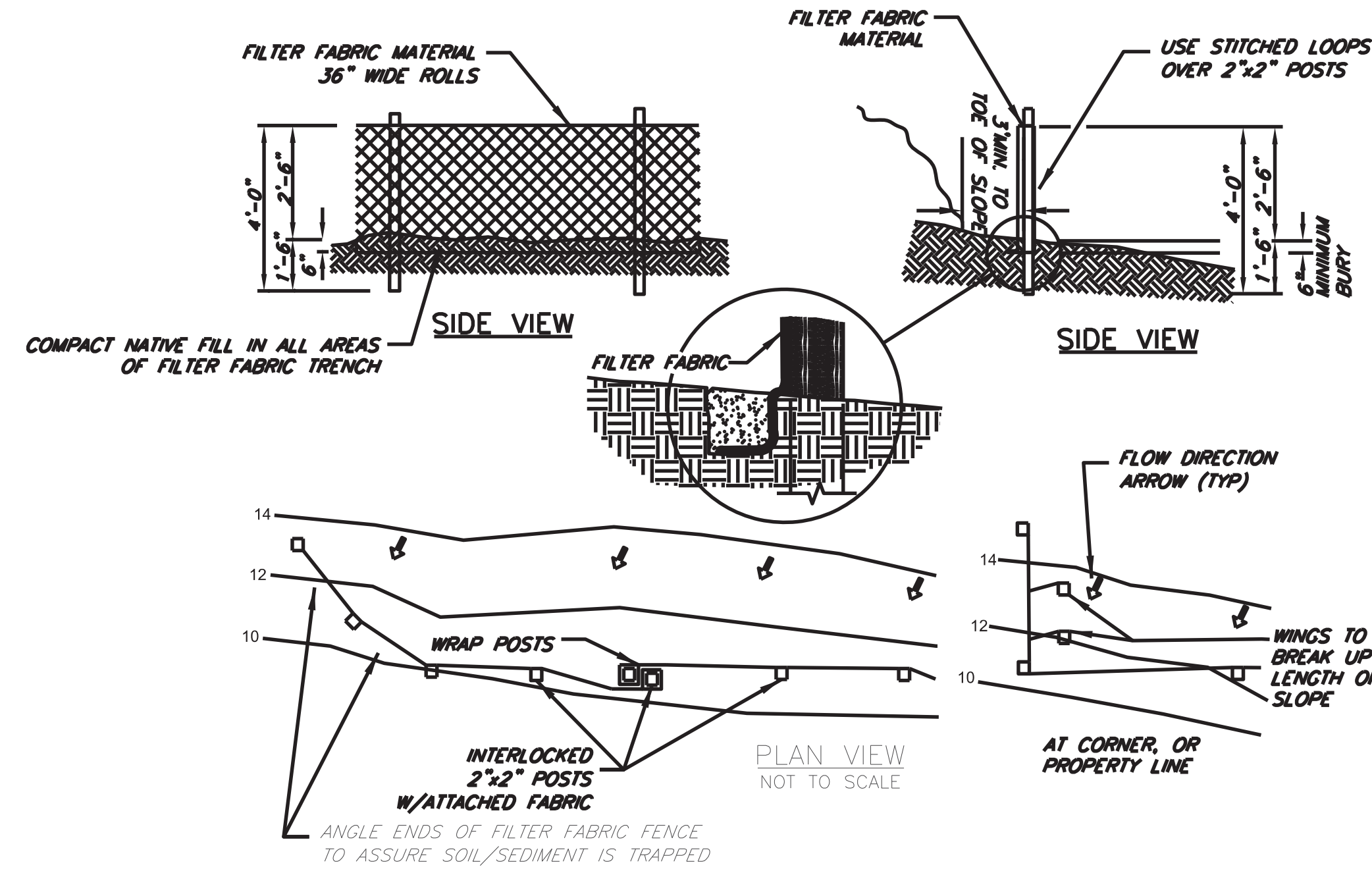


**Bull Run Filtration Facility**  
**Land Use Plans**  
 Erosion Control  
 Landscape Plan  
 Filtration Facility

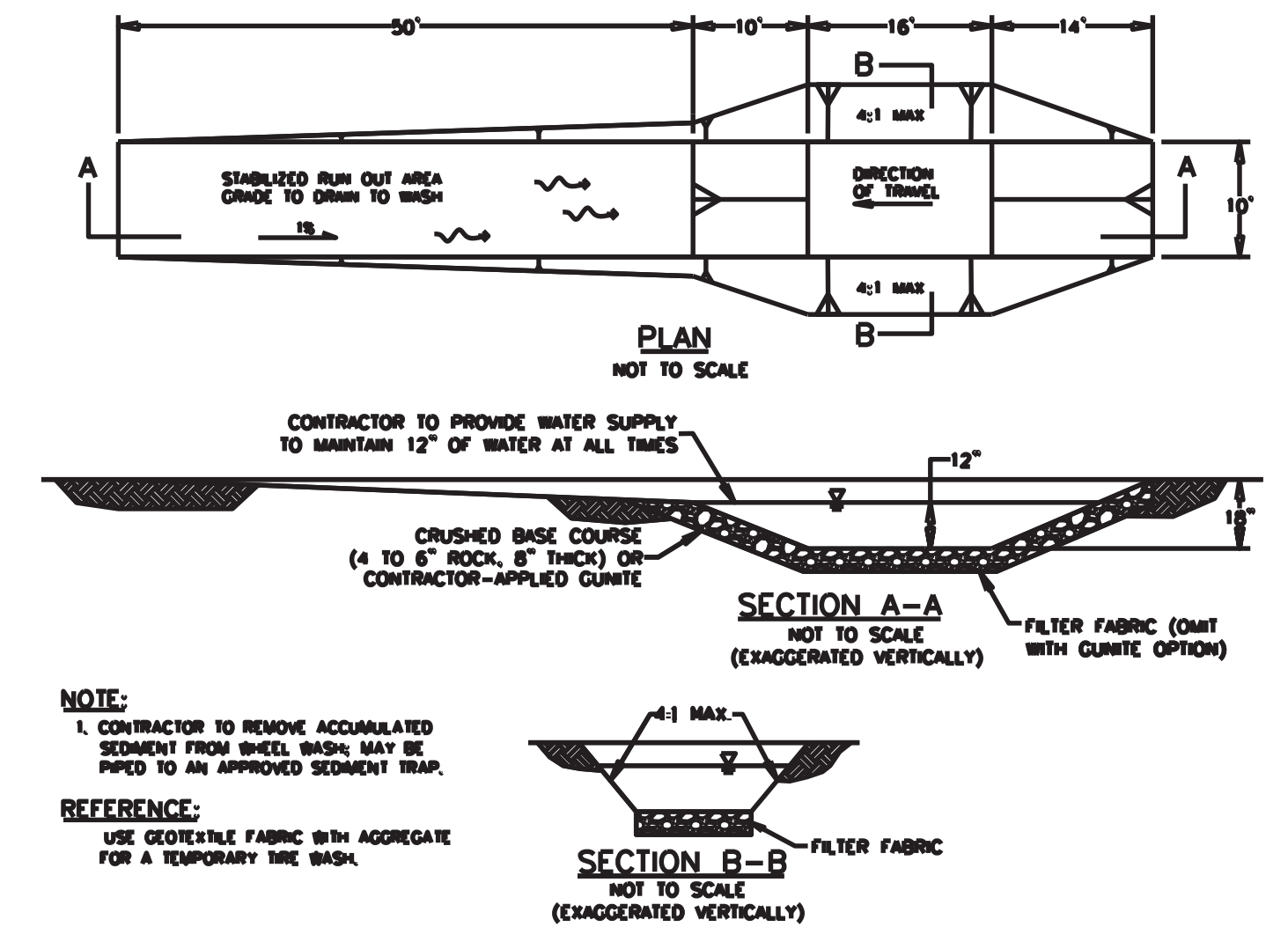
SAP Project No  
**W02229**  
 1/4 Section  
 Sheet No  
**00-LU-508**  
 of



**1** GRAVEL CONSTRUCTION ENTRANCE  
00-LU-509 NOT TO SCALE

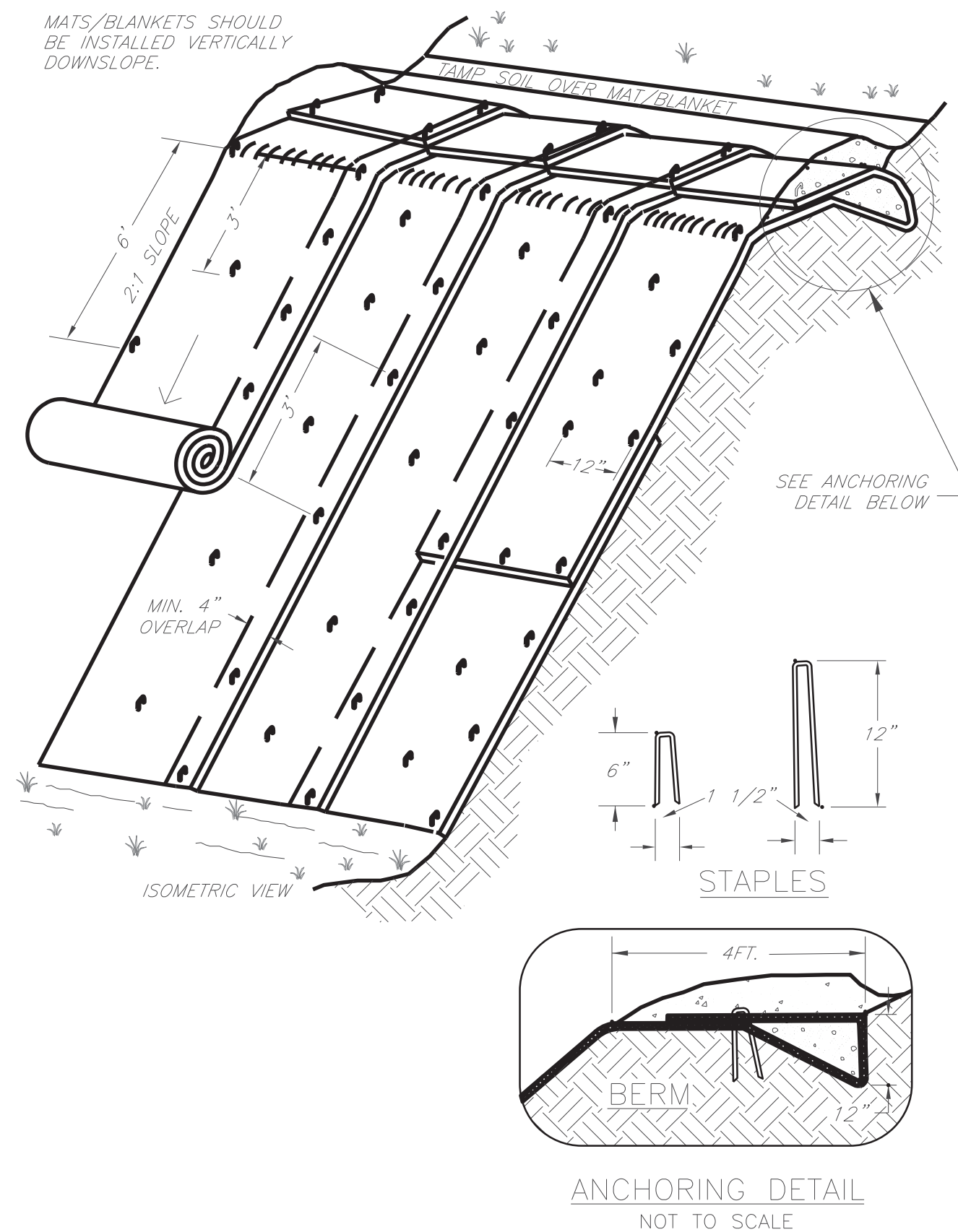


**2** TEMPORARY SILT FENCE  
00-LU-509 NOT TO SCALE

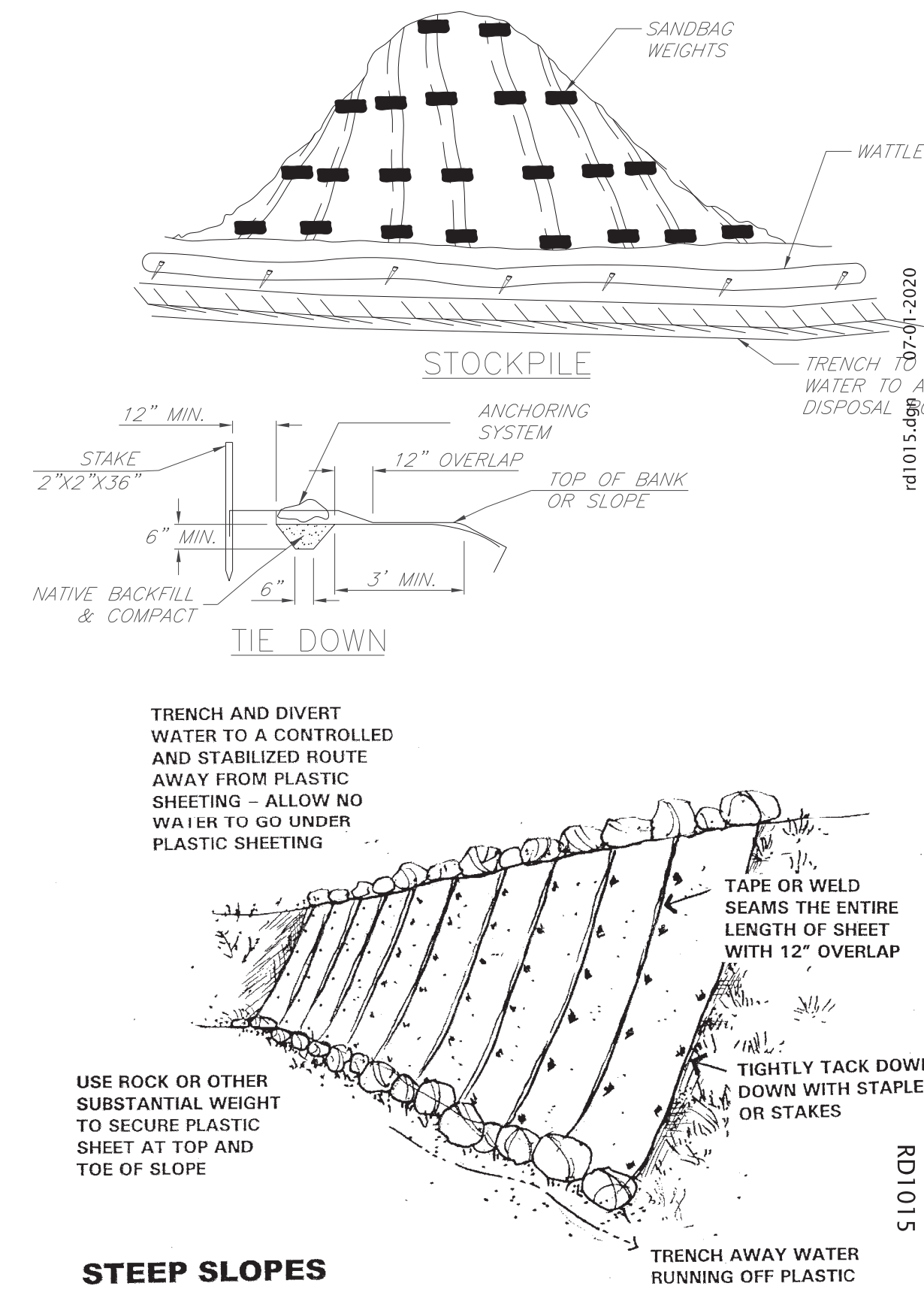


**NOTE:**  
1. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH; MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.  
**REFERENCE:**  
USE GEOTEXTILE FABRIC WITH AGGREGATE FOR A TEMPORARY WHEEL WASH.

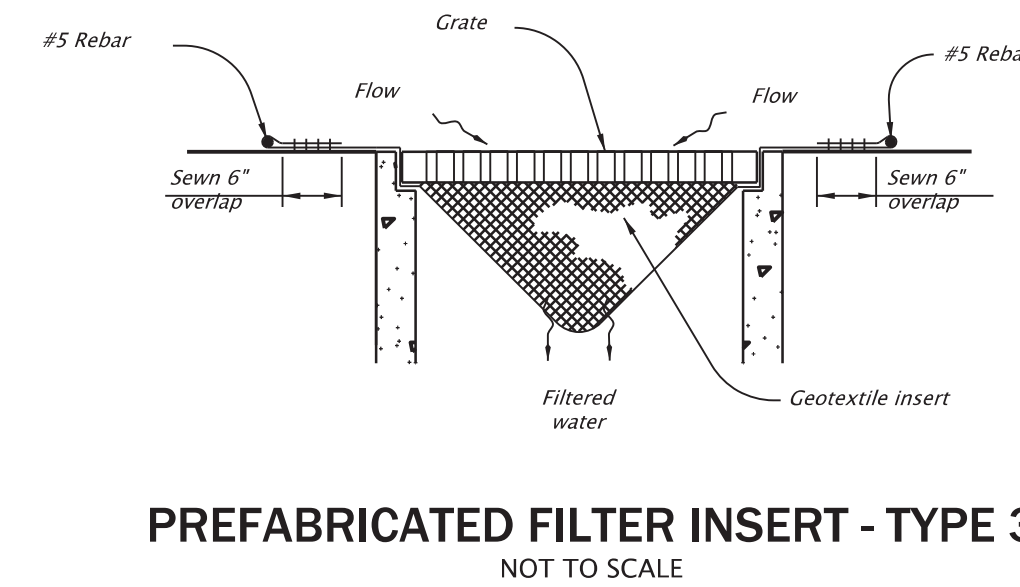
**3** WHEEL WASH  
00-LU-509 NOT TO SCALE



**4** SLOPE STABILIZATION  
00-LU-509 NOT TO SCALE



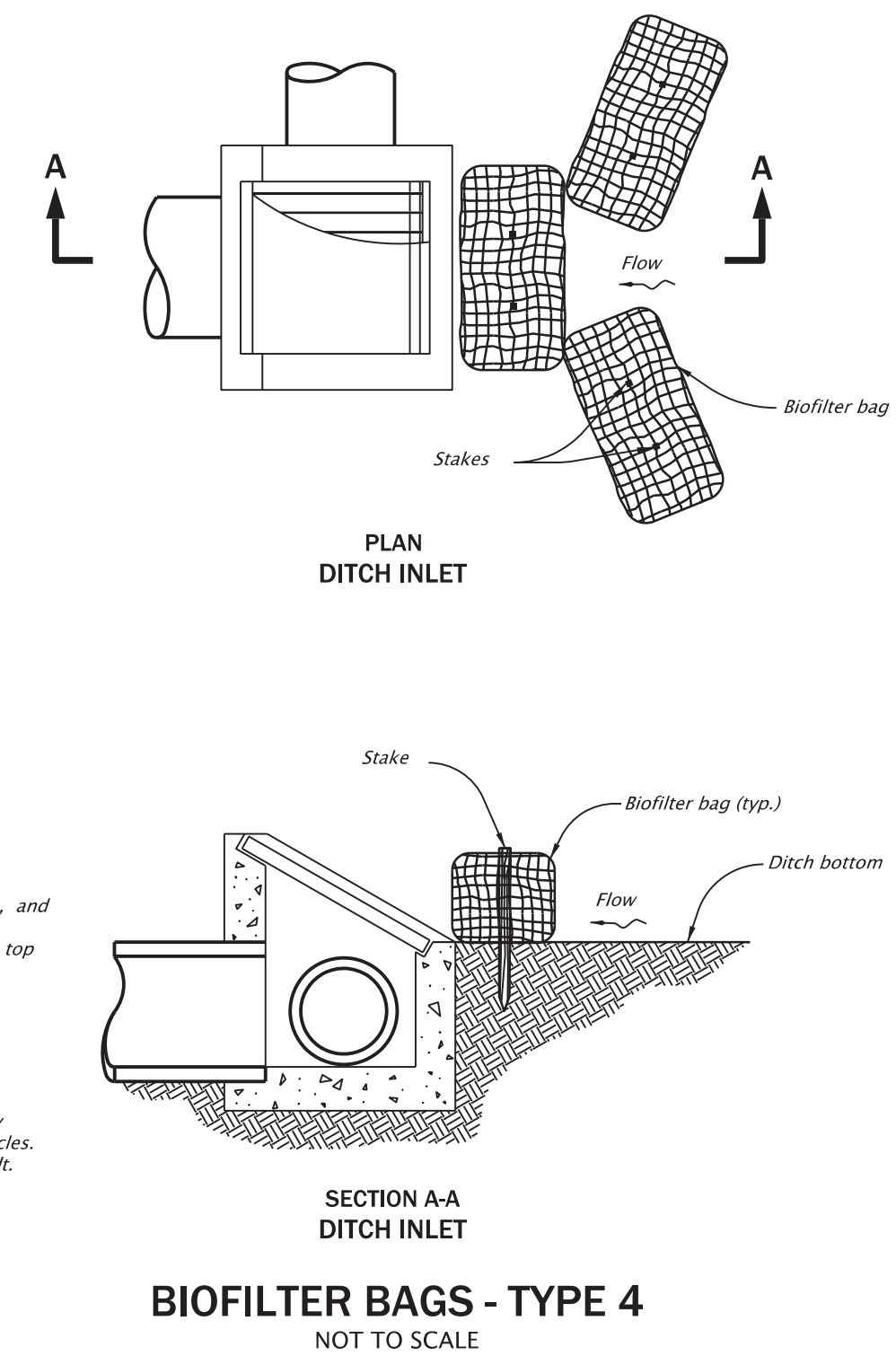
**5** TEMPORARY SLOPE PROTECTION  
00-LU-509 NOT TO SCALE



**NOTES:**  
Type 3 - Prefabricated filter inserts  
Install prefabricated filter inserts according to the plans, special provisions, and manufacturer recommendations.  
Prefabricated inserts with provisions for overflow are allowed only when accompanied by additional BMP's to prevent the potential of sediments entering project storm systems.  
Field fabricated inserts are not allowed.

Type 7 - Compost filter sock  
Drive 2"x2" wood stakes a minimum of 6" into ground and flush with the top of the sock.  
Overlap ends of sock per manufacturers recommendations (12" min., 36" max.).  
Use 8" to 12" dia sock on curbside in traffic areas.  
Use 12" to 18" dia sock in non-traffic areas or areas where the larger socks can be used safely.  
Use synthetic mesh socks for temporary installations.

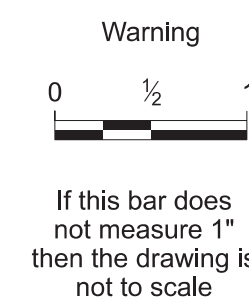
**NOTES, Type 4:**  
1. Stake biofilter bags with 2"x2"x36" wood stakes, and use a minimum 2 stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags.  
2. Omit stakes when bags are placed on pavement surface.  
3. Overlap all bag joints 6".  
4. Biofilter bags used on active roadways are easily displaced and made ineffective if struck by vehicles. If struck by a cyclist, falls with injury could result. On active roadways alternative inlet protection should be considered.



**6** INLET PROTECTION  
00-LU-509 NOT TO SCALE



Designed By	JSL	Design Mgr	LSH
Drawn By	BS	Const Mgr	TG
Checked By	RG	Const Supvr	RM
Project Mgr	MFG	Date	



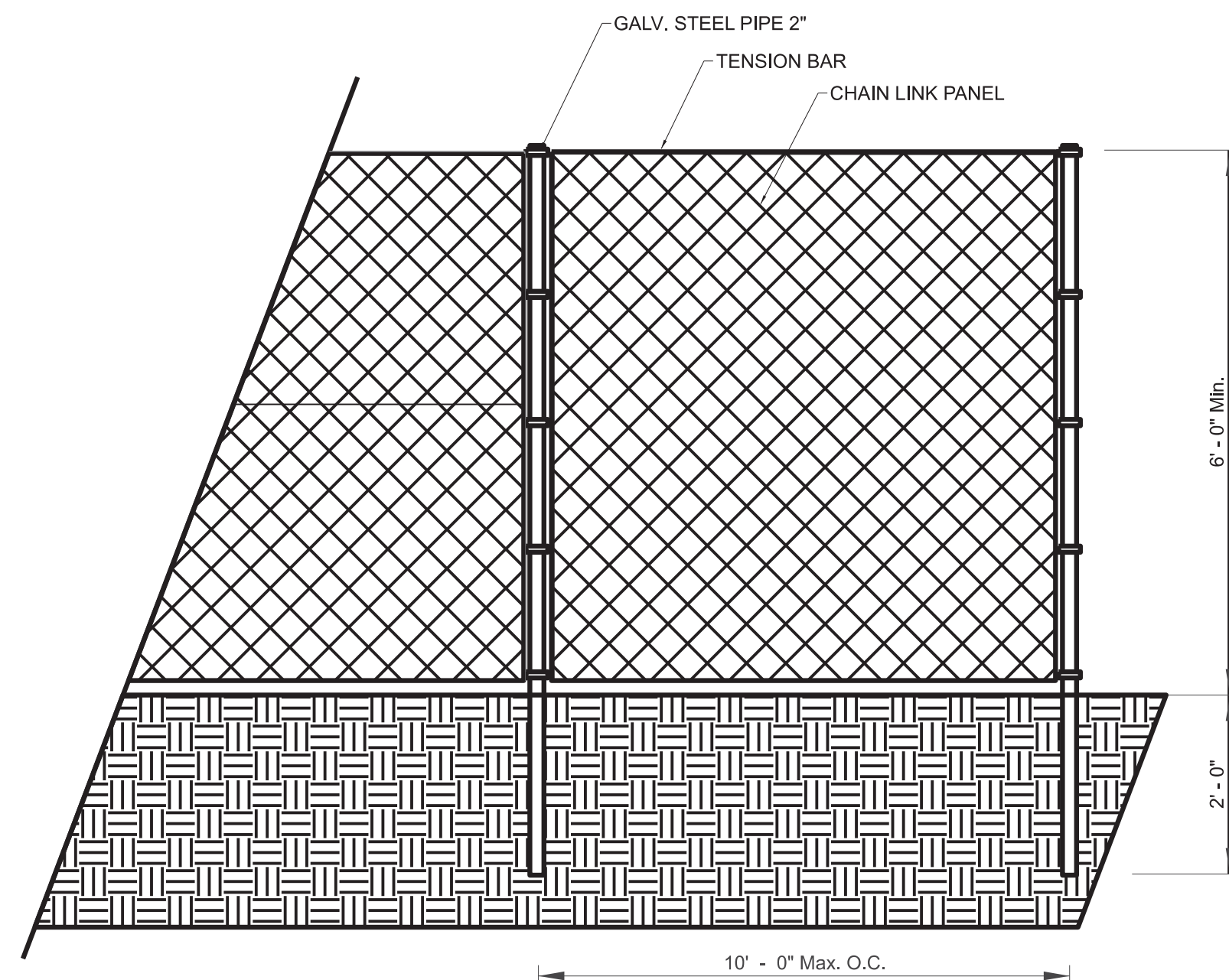
David W. Peters, Engineering Manager, PE No 16683



Bull Run Filtration Facility  
Civil  
Erosion Control  
Detail 1

SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
00-LU-509  
of

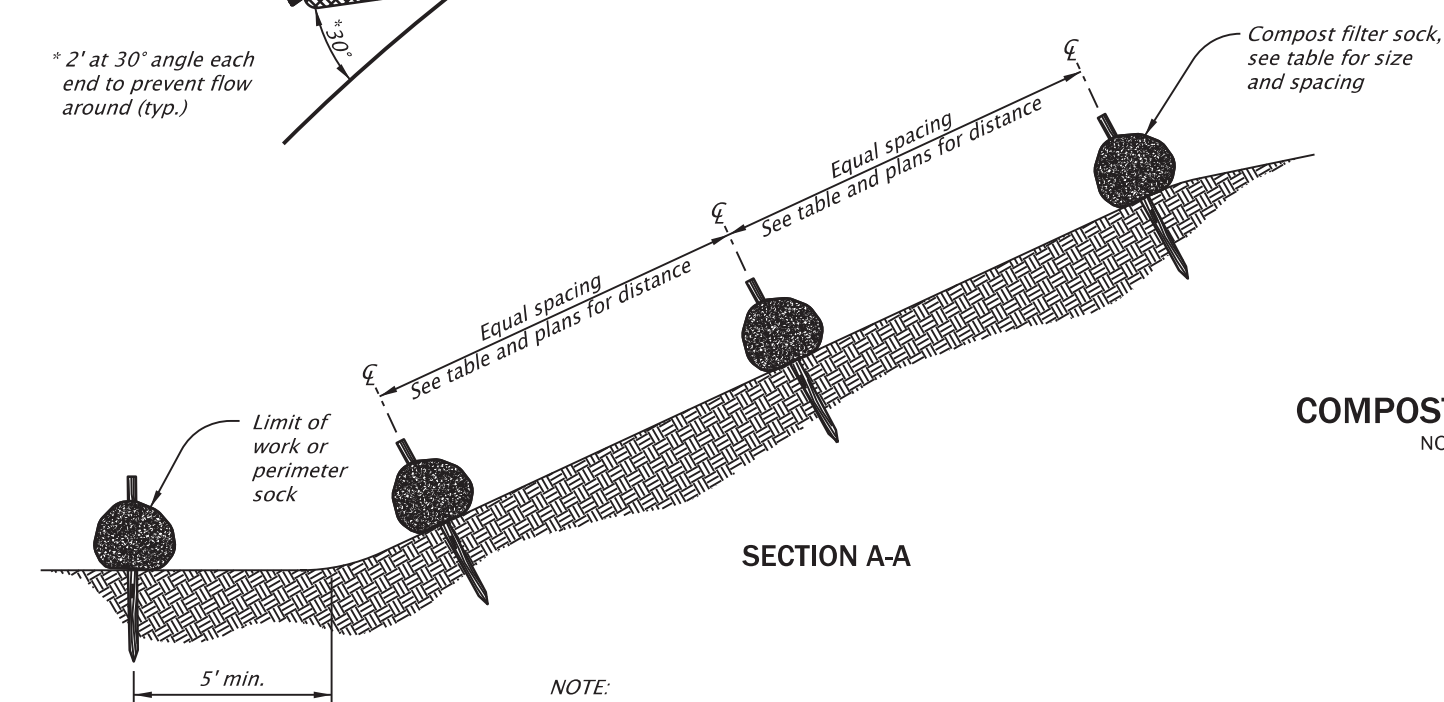
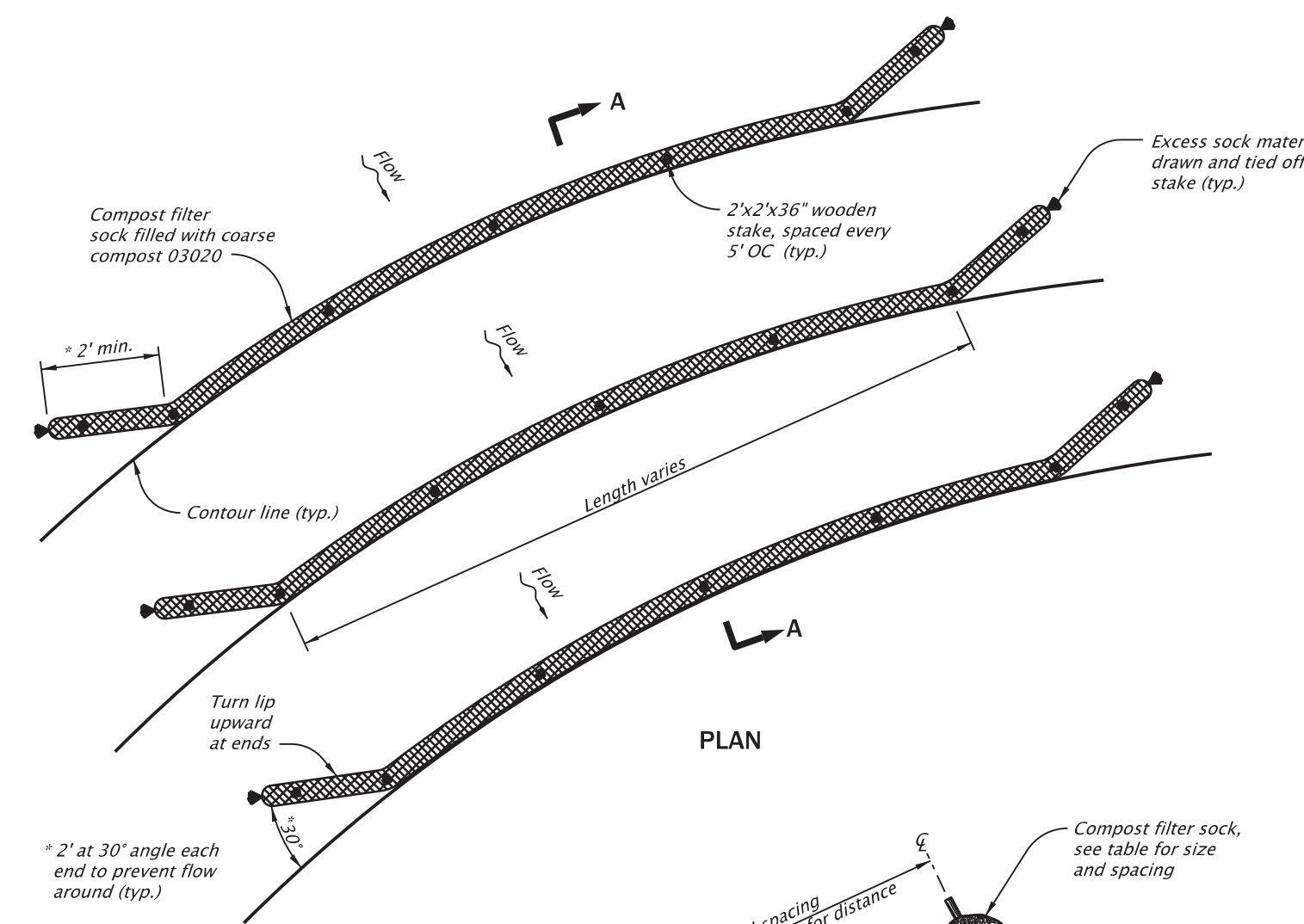
\$\$\$\$DATE\$\$\$\$  
\$\$\$\$USER\$\$\$\$  
\$\$\$\$FILENAME\$\$\$\$



**1 TREE PROTECTION FENCING**  
00-LU-510 N.T.S.

**NOTES**

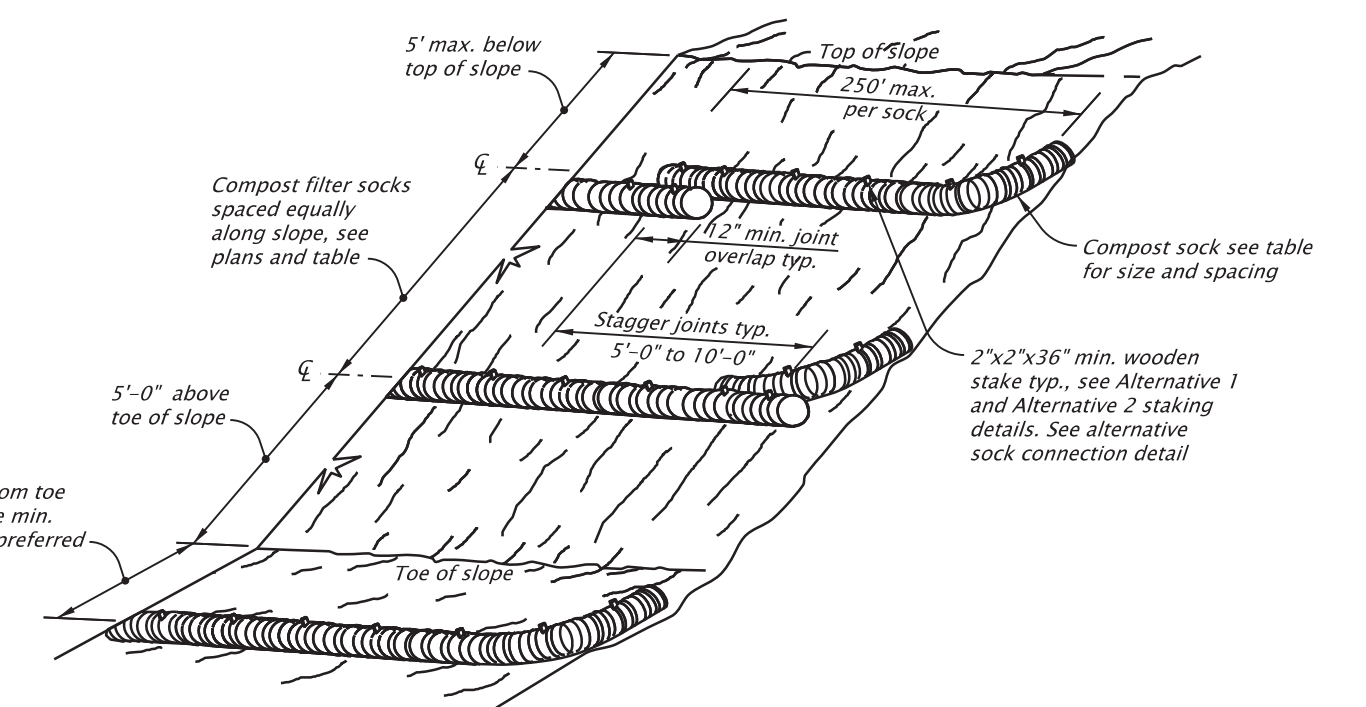
1. Install tree protection fence before any ground disturbing activities including storage of equipment or materials, clearing and grubbing, grading, or construction starts. Fencing shall remain in place until final inspection.
2. The following is prohibited within the tree protection fence: ground disturbance or construction activity including vehicle or equipment access; storage of equipment or materials including soil, temporary or permanent stockpiling, trenching or other work activities.
3. Place any required erosion control devices at the tree protection fence if the base of the tree is at, or below, the new grade elevation. Any erosion control device installed at the fence must not be trenched into the ground but must be designed to prevent the ingress of any materials or fluids beyond the fence line.



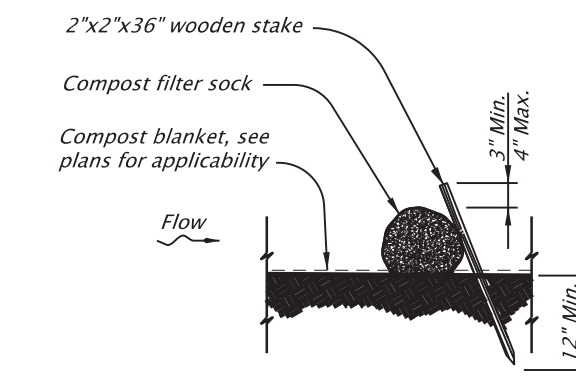
**NOTE:**  
Fully biodegradable compost sock mesh is recommended for permanent installations. Where compost socks must be moved or removed, synthetic sock mesh should be used.

**COMPOST FILTER SOCK**  
NOT TO SCALE

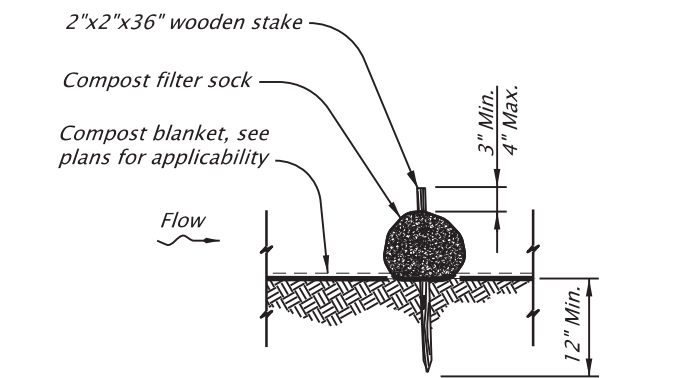
**2 COMPOST FILTER SOCK**  
00-LU-510 N.T.S.



**SLOPE APPLICATION - PERSPECTIVE VIEW**



**ALTERNATIVE 1 (Staking)**



**ALTERNATIVE 2 (Staking)**

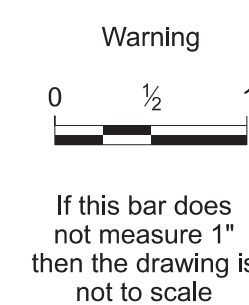
COMPOST FILTER SOCK DIAMETER AND SPACING BASED ON SLOPE		
SLOPE	SPACING (ft)	DIAMETER (in)
<1:50	250	8
1:50 - 1:10	125	12
1:10 - 1:5	100	12
1:5 - 1:2	50	18
>1:2	25	18

\$\$\$\$DATE\$\$\$\$  
\$\$\$\$USER\$\$\$\$  
\$\$\$\$FILENAME\$\$\$\$

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	BYS	Const Mgr	TG
Checked By	LCS	Const Supvr	RM
Project Mgr	MFG	Date	



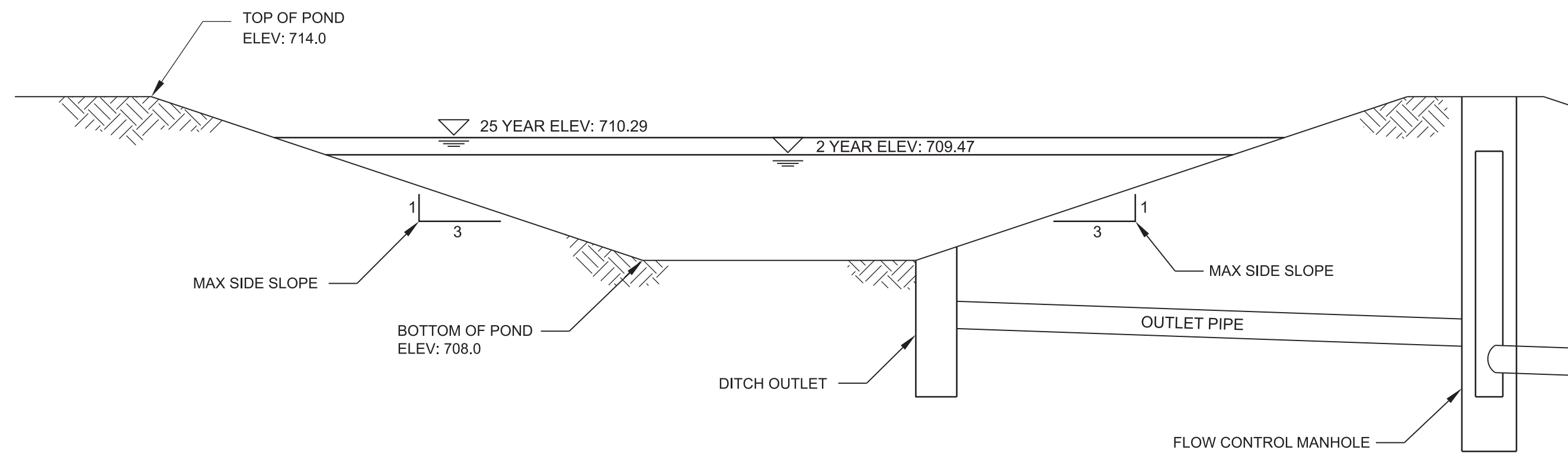
David W. Peters, Engineering Manager, PE No 16683



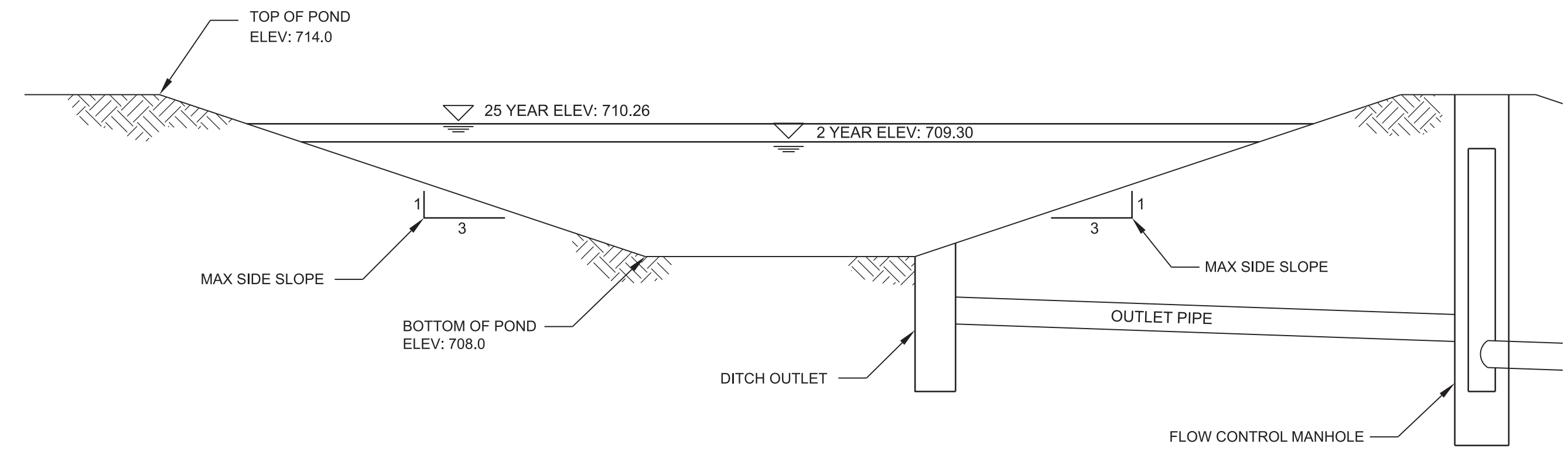
**Bull Run Filtration Facility**  
**Civil**  
Erosion Control  
Detail 2

SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
00-LU-510  
of

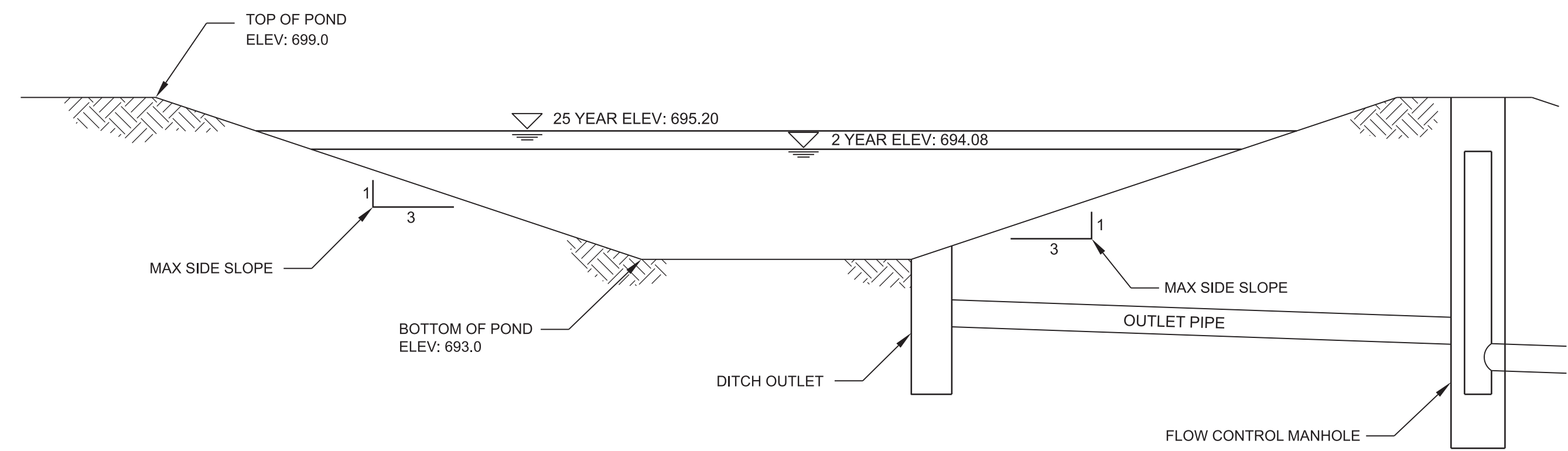
User: stanpw11cs03\$ W02229\_FF\_00-LU-51.dgn 1/8/2024



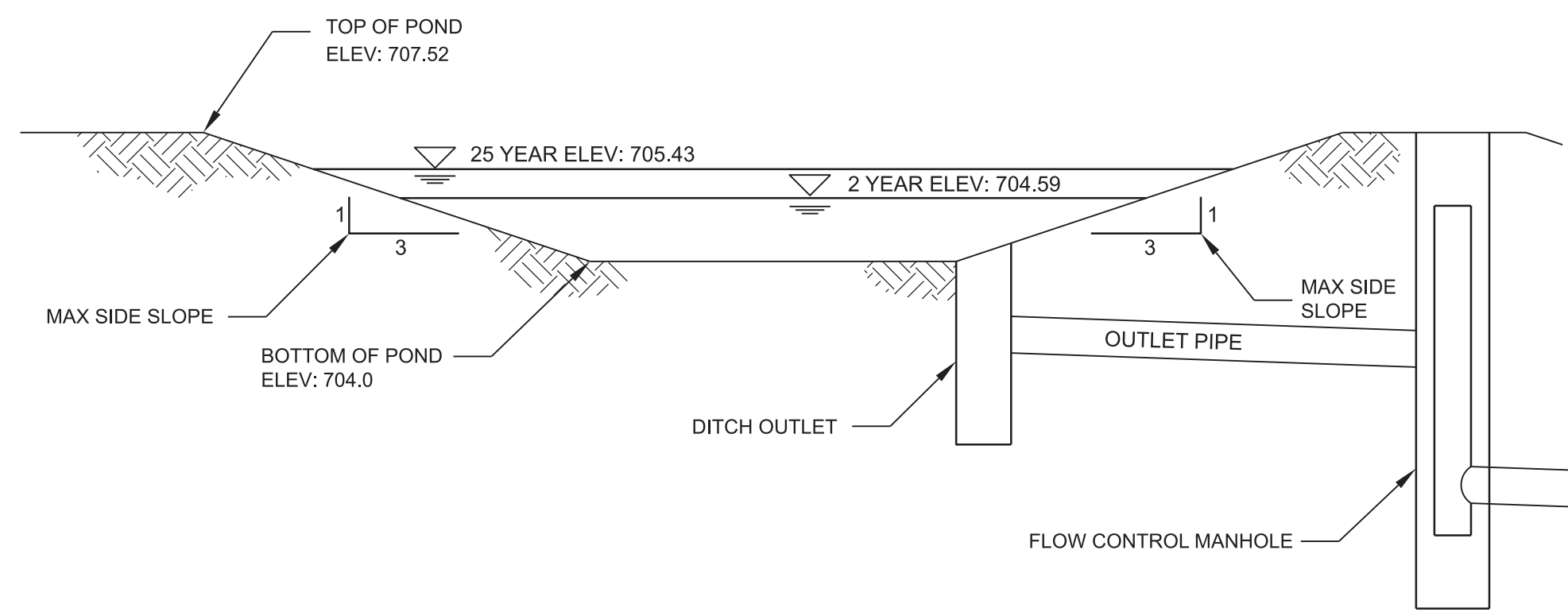
**A** Pond A  
00-LU-51 N.T.S.



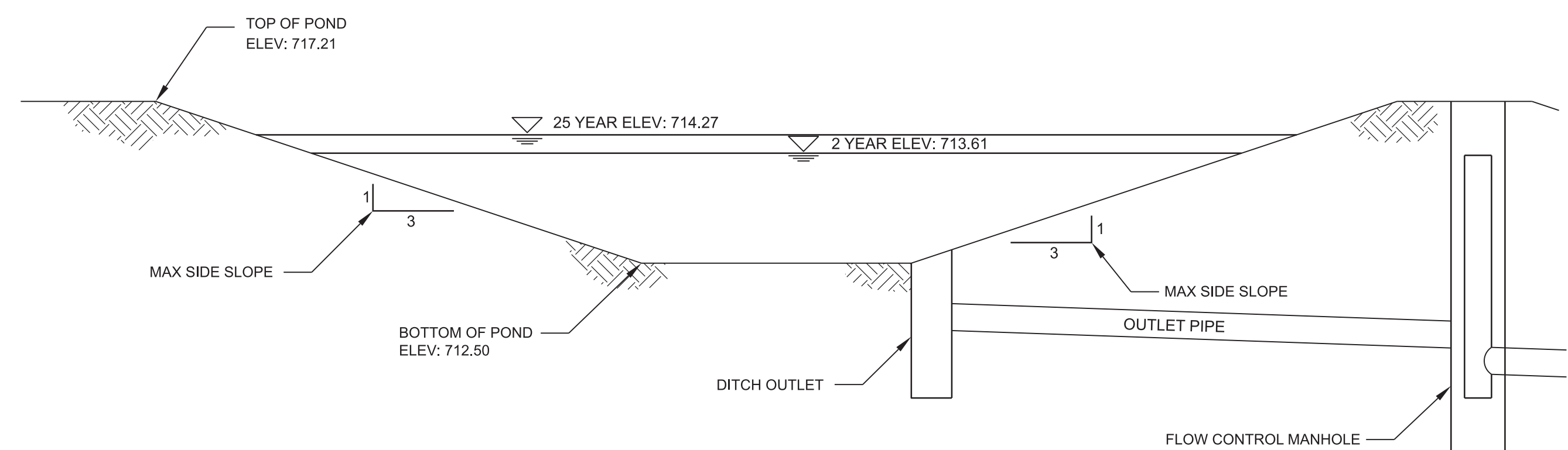
**B** Pond B  
00-LU-51 N.T.S.



**D** Pond D  
00-LU-51 N.T.S.



**C** Pond C  
00-LU-51 N.T.S.



**E** Pond E  
00-LU-51 N.T.S.

No	Date	Description	Appd
Revision			
Survey			



Designed By	JSL	Design Mgr	LSH
Drawn By	KRF	Const Mgr	TG
Checked By	LCS	Const Supvr	RM
Project Mgr	MFG	Date	

Warning  
0 1/2 1  
If this bar does not measure 1" then the drawing is not to scale

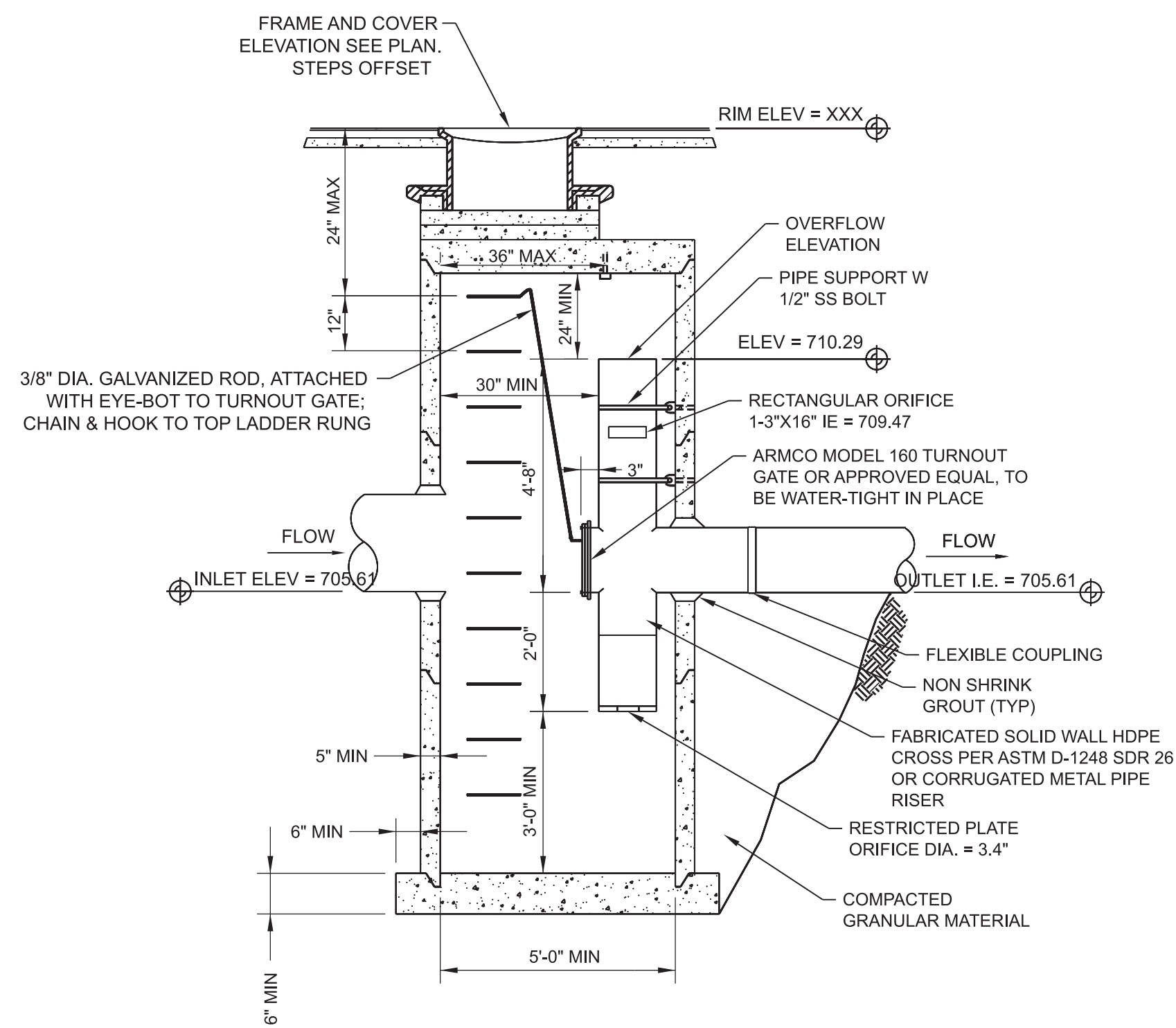


David W. Peters, Engineering Manager, PE No 16683

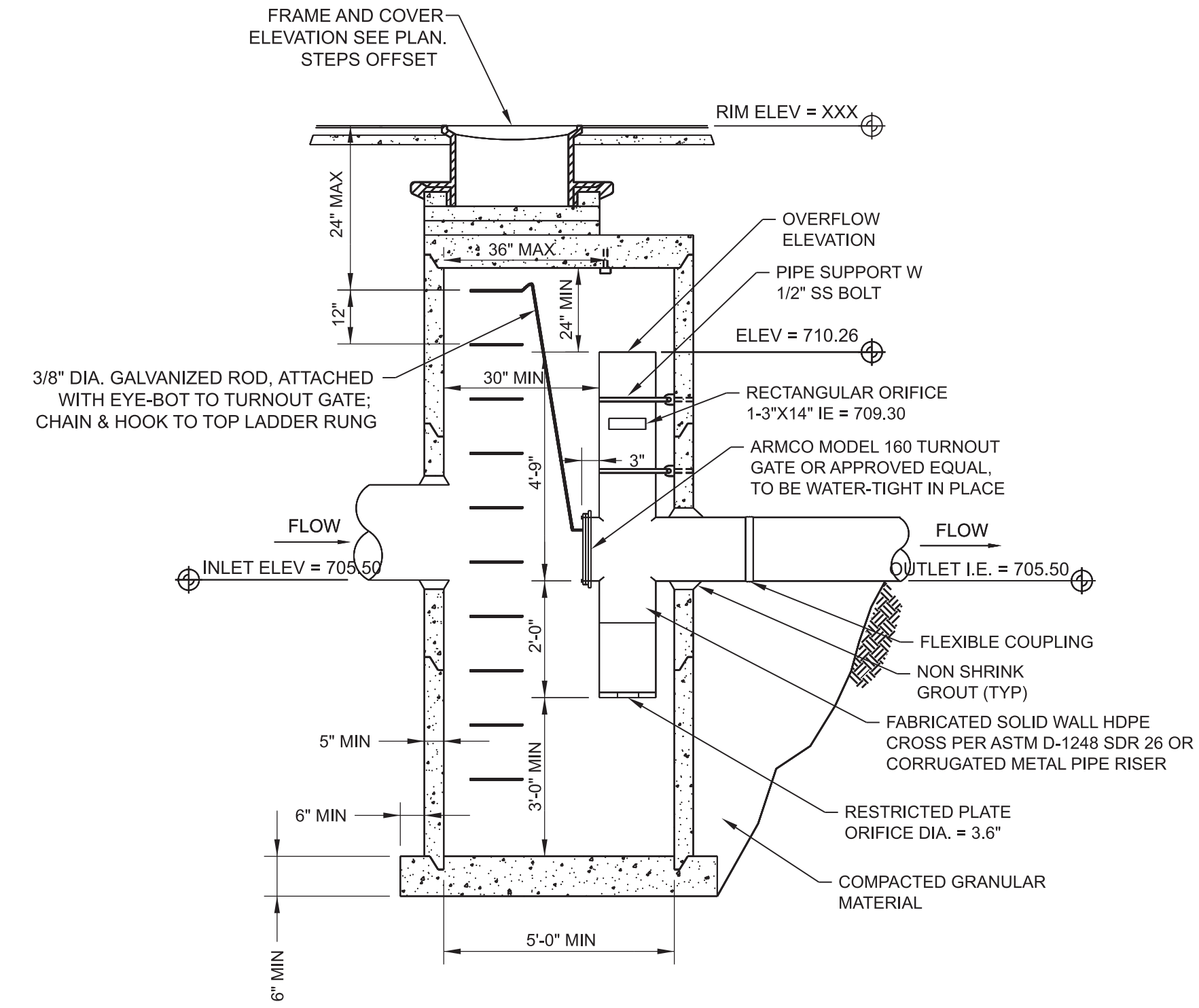


**Bull Run Filtration Facility**  
**Civil**  
Erosion Control  
Storm Pond Sections

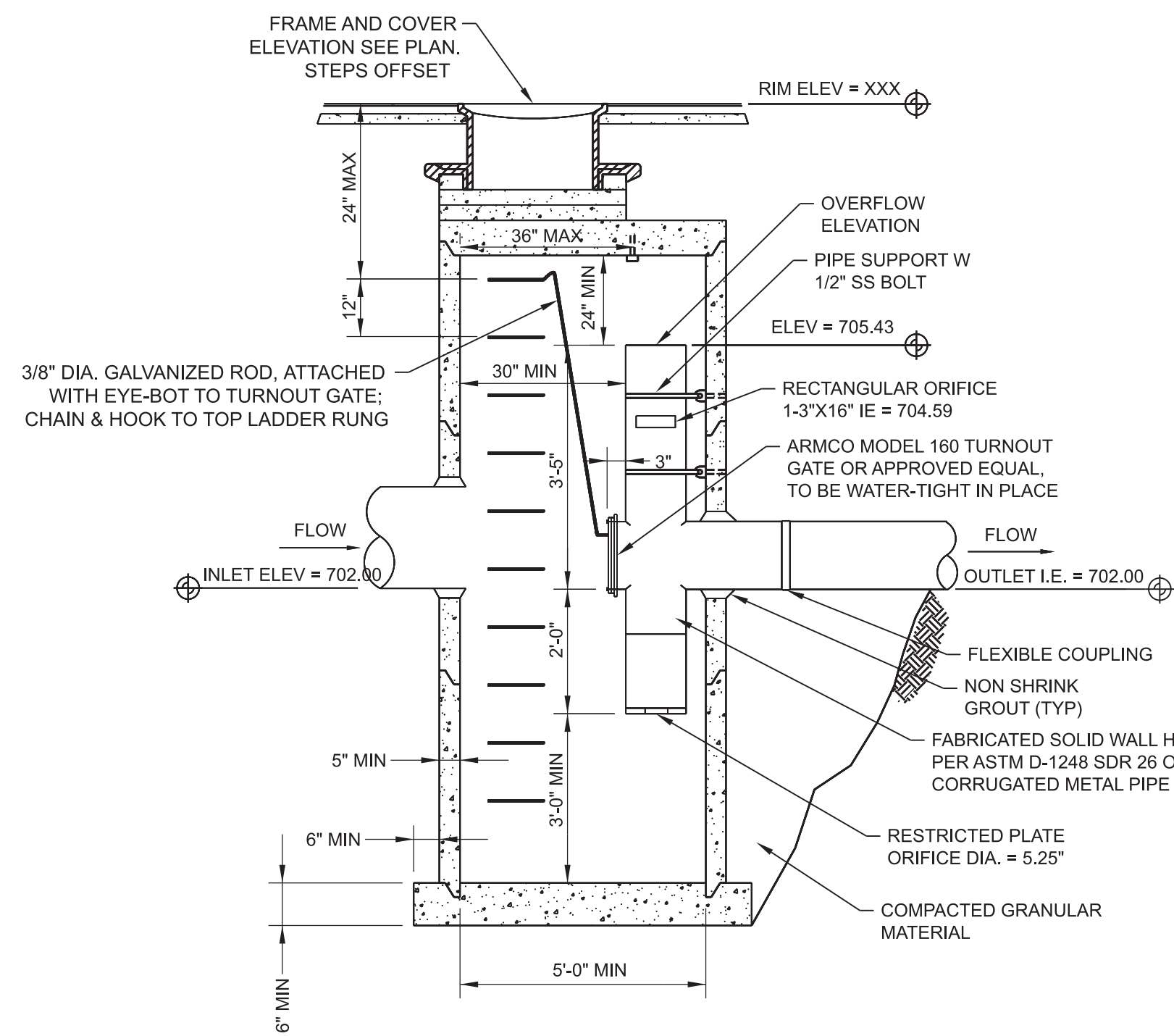
SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
**00-LU-511**  
of



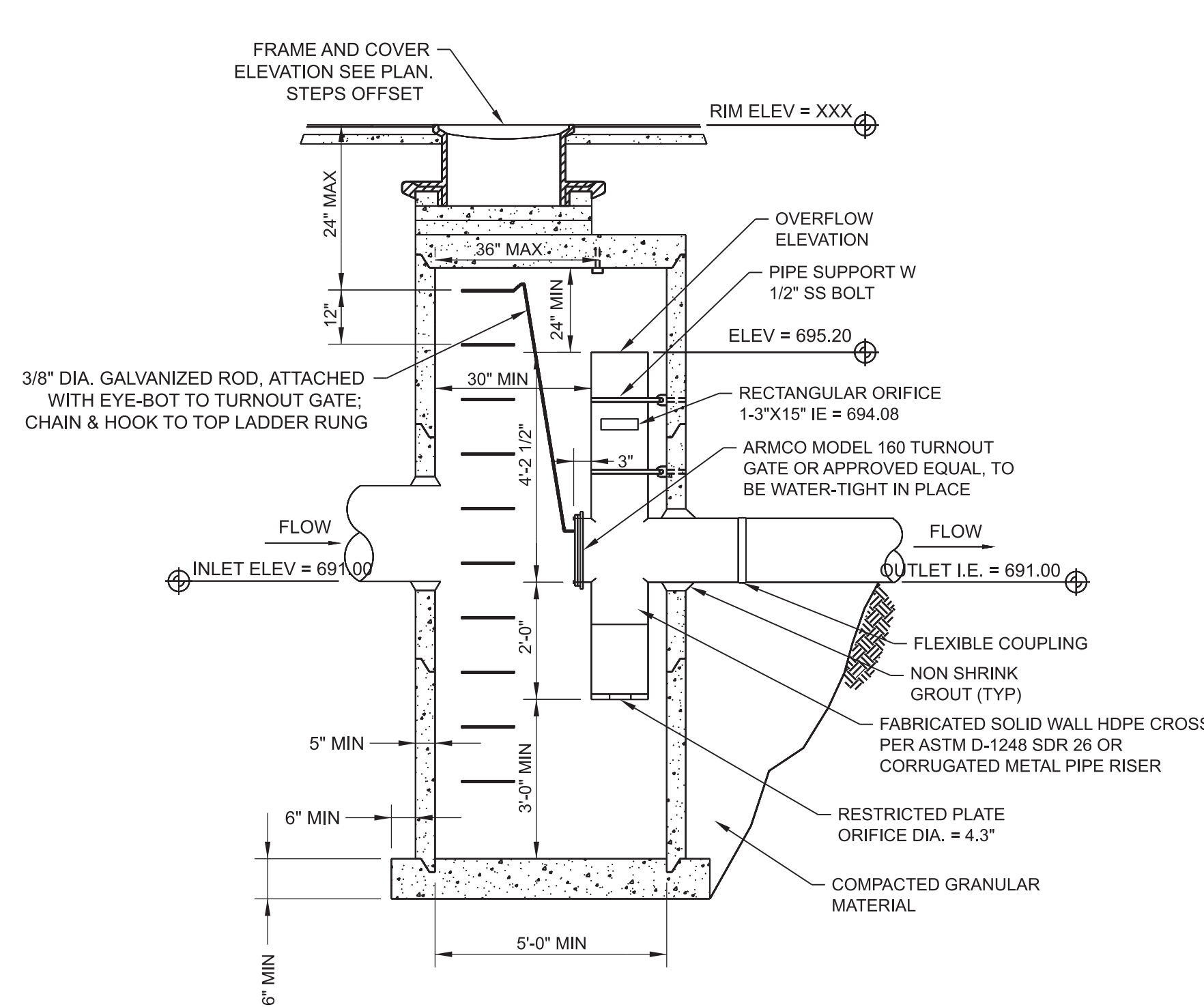
**A** Flow Control Maintenance Hole - Pond A  
10-LU-512 N.T.S.



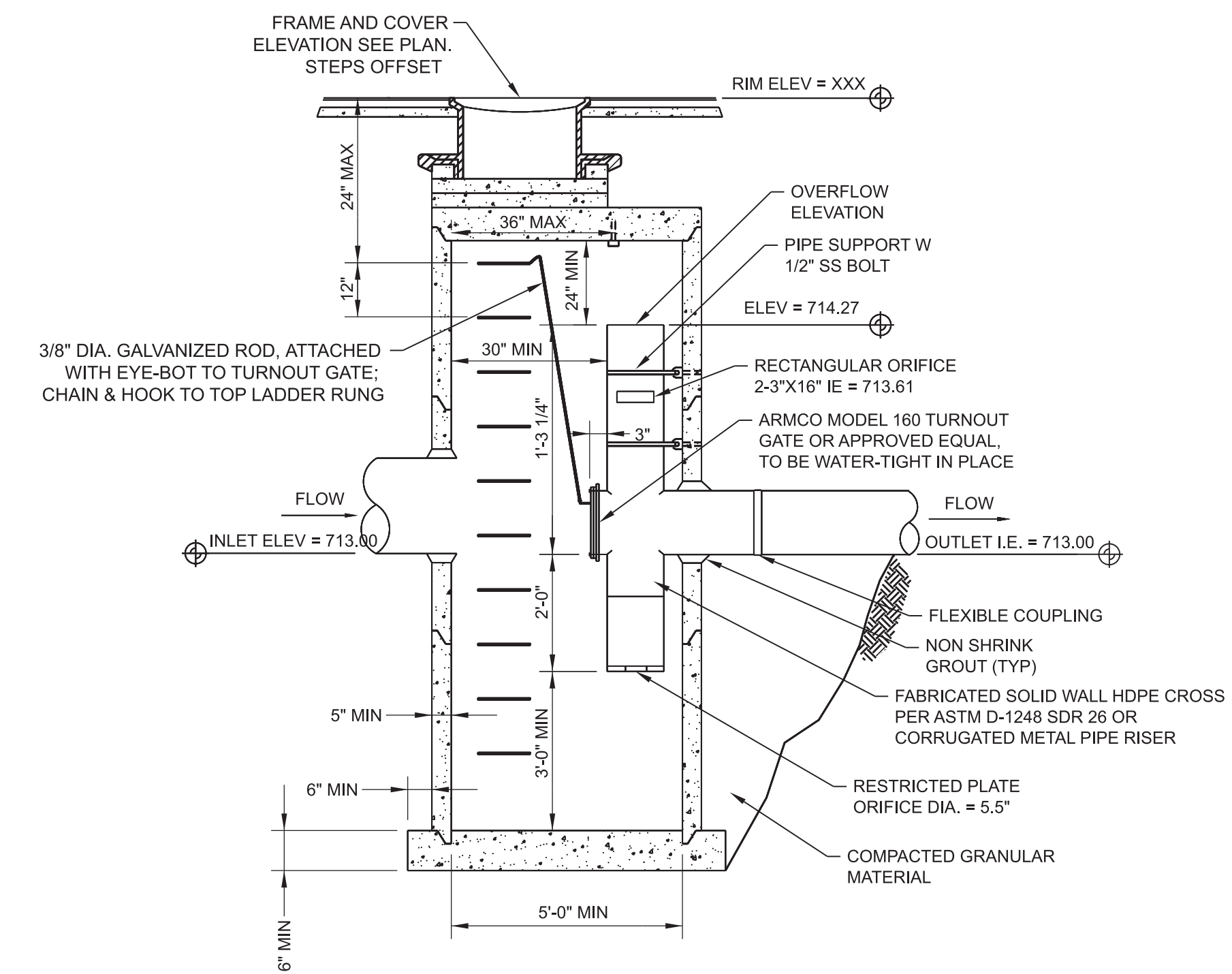
**B** Flow Control Maintenance Hole - Pond B  
10-LU-517 N.T.S.



**C** Flow Control Maintenance Hole - Pond C  
10-LU-512 N.T.S.



**D** Flow Control Maintenance Hole - Pond D  
10-LU-512 N.T.S.



**E** Flow Control Maintenance Hole - Pond E  
10-LU-512 N.T.S.



Designed By	KRF	Design Mgr	MSX
Drawn By	KRF	Const Mgr	MSX
Checked By	LCS	Const Supr	MSX
Project Mgr	MSX	Date	

Warning  
0 1/2 1  
If this bar does not measure 1" then the drawing is not to scale



David W. Peters, Engineering Manager, PE No 16683



Bull Run Filtration Facility  
Civil  
Erosion Control  
Flow Control Structures

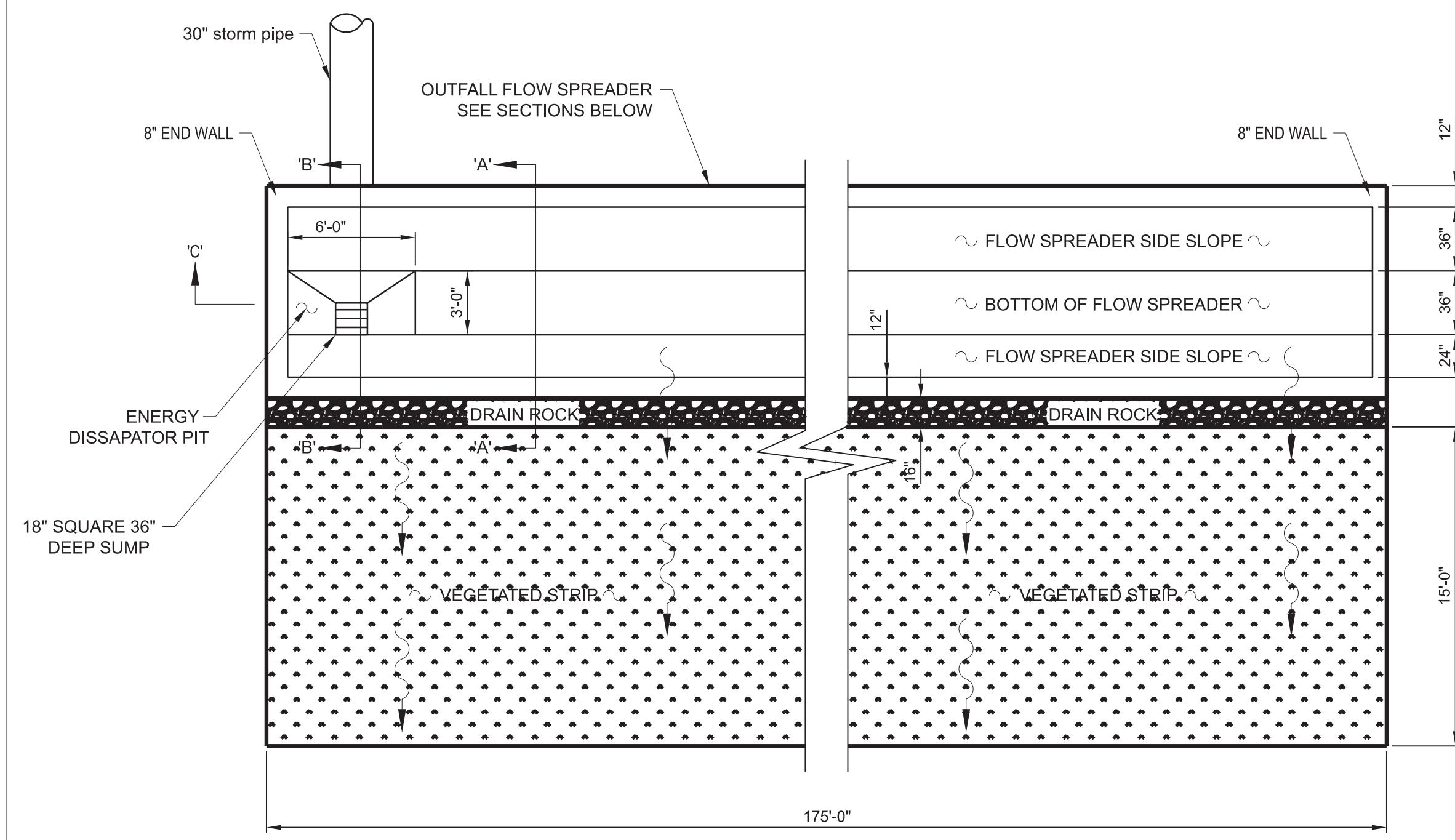
SAP Project No	W02229
1/4 Section	3765 / 3766
Sheet No	00-LU-512
of	

User: stanpw11cs03\$ W02229\_FF\_00-LU-512.dgn

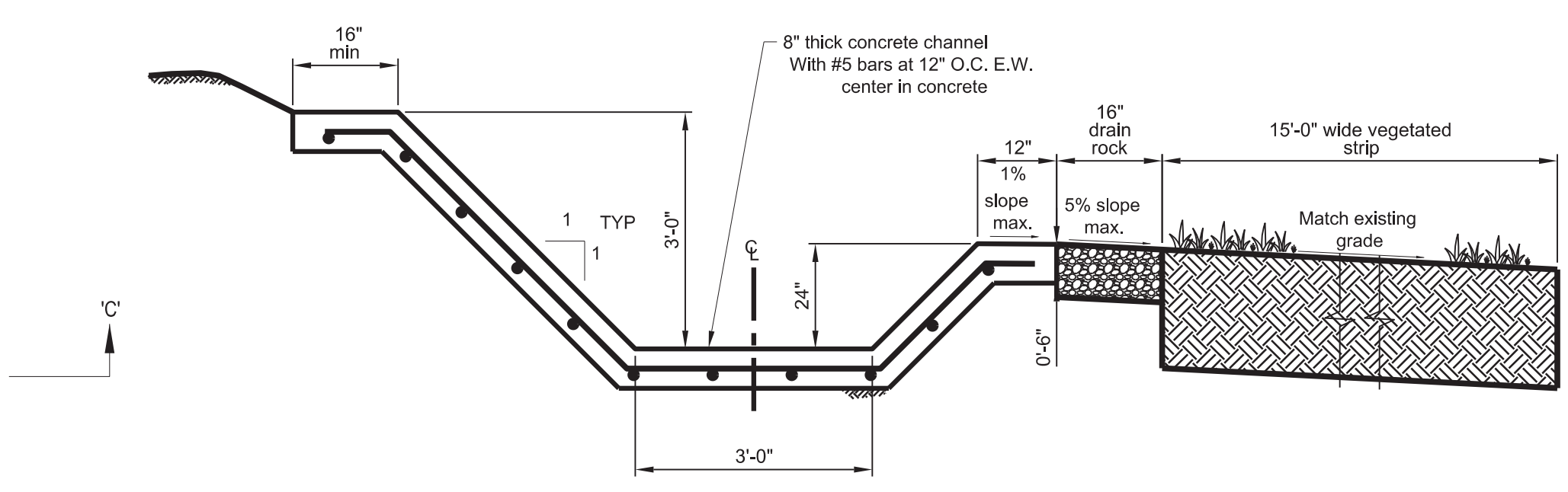
1/8/2024

No	Date	Description	Appd
Revision			
Survey			

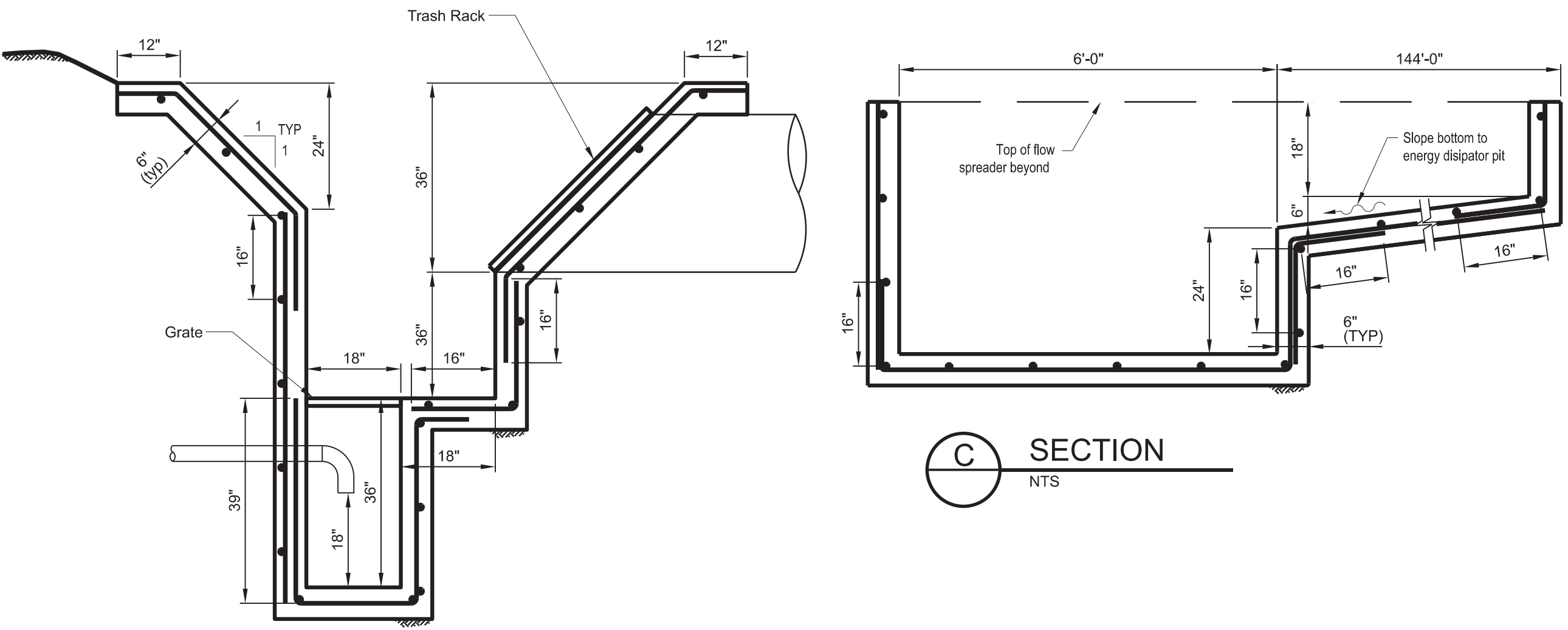




**1** OUTFALL FLOW SPREADER  
10-LU-517 N.T.S.

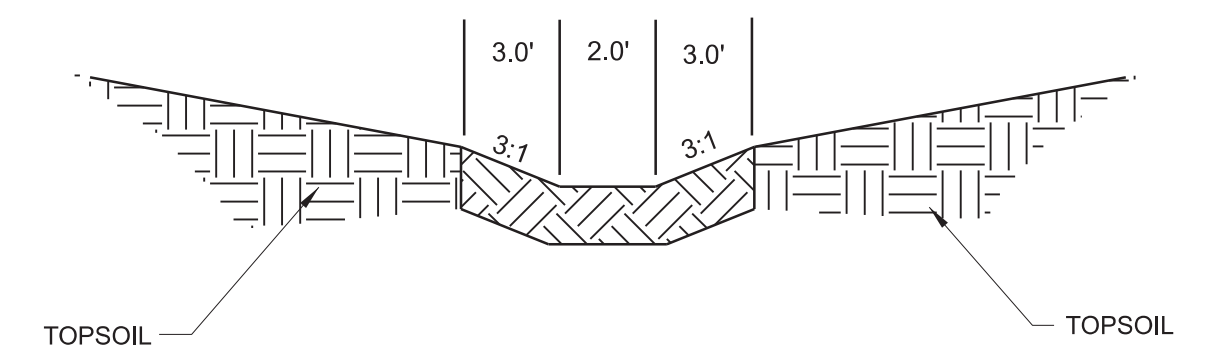


**A** SECTION  
N.T.S.

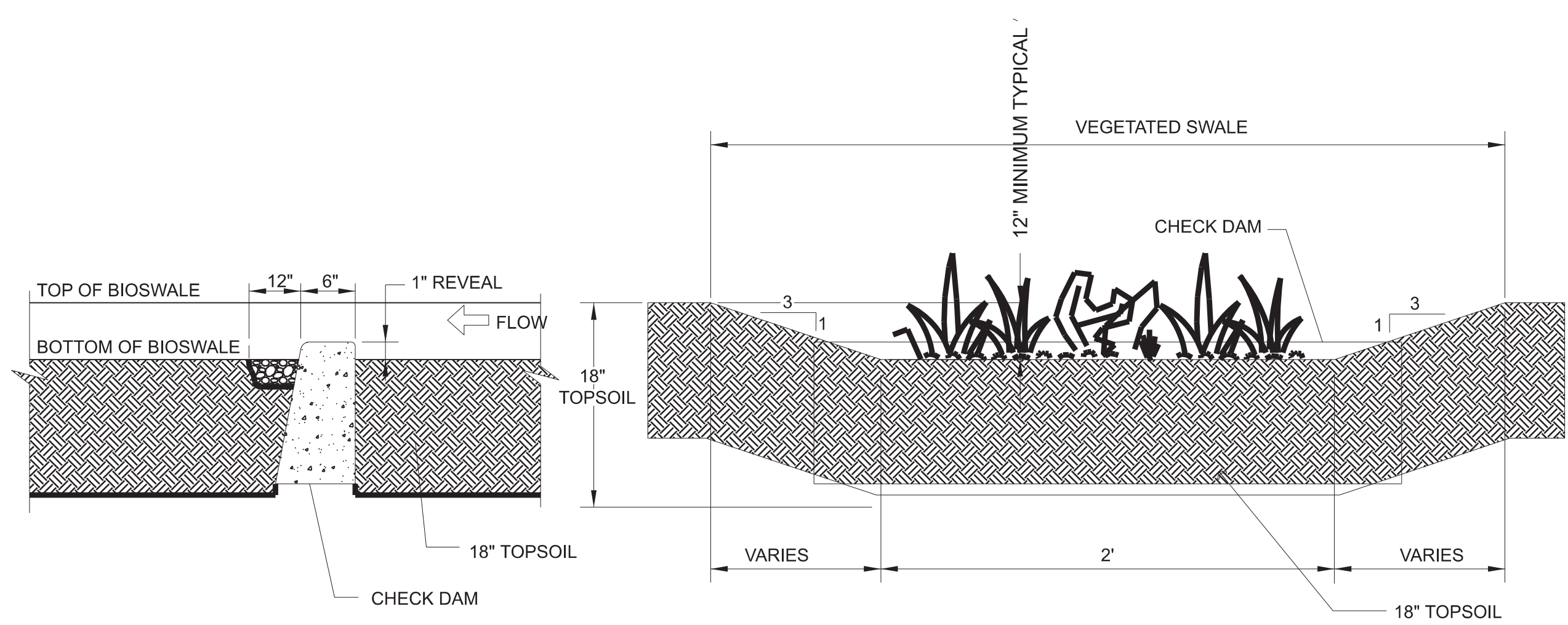


**B** SECTION  
N.T.S.

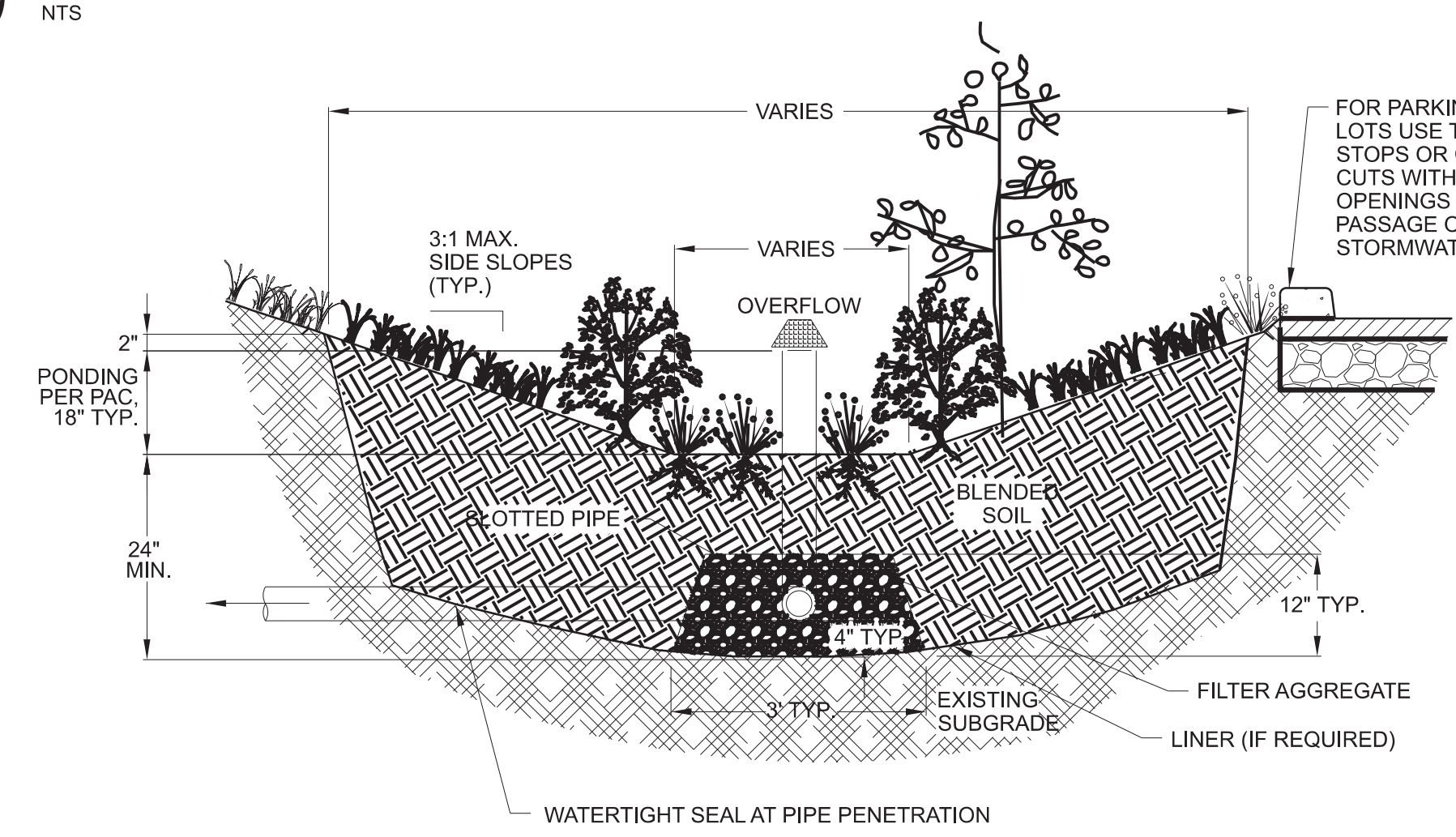
**C** SECTION  
N.T.S.



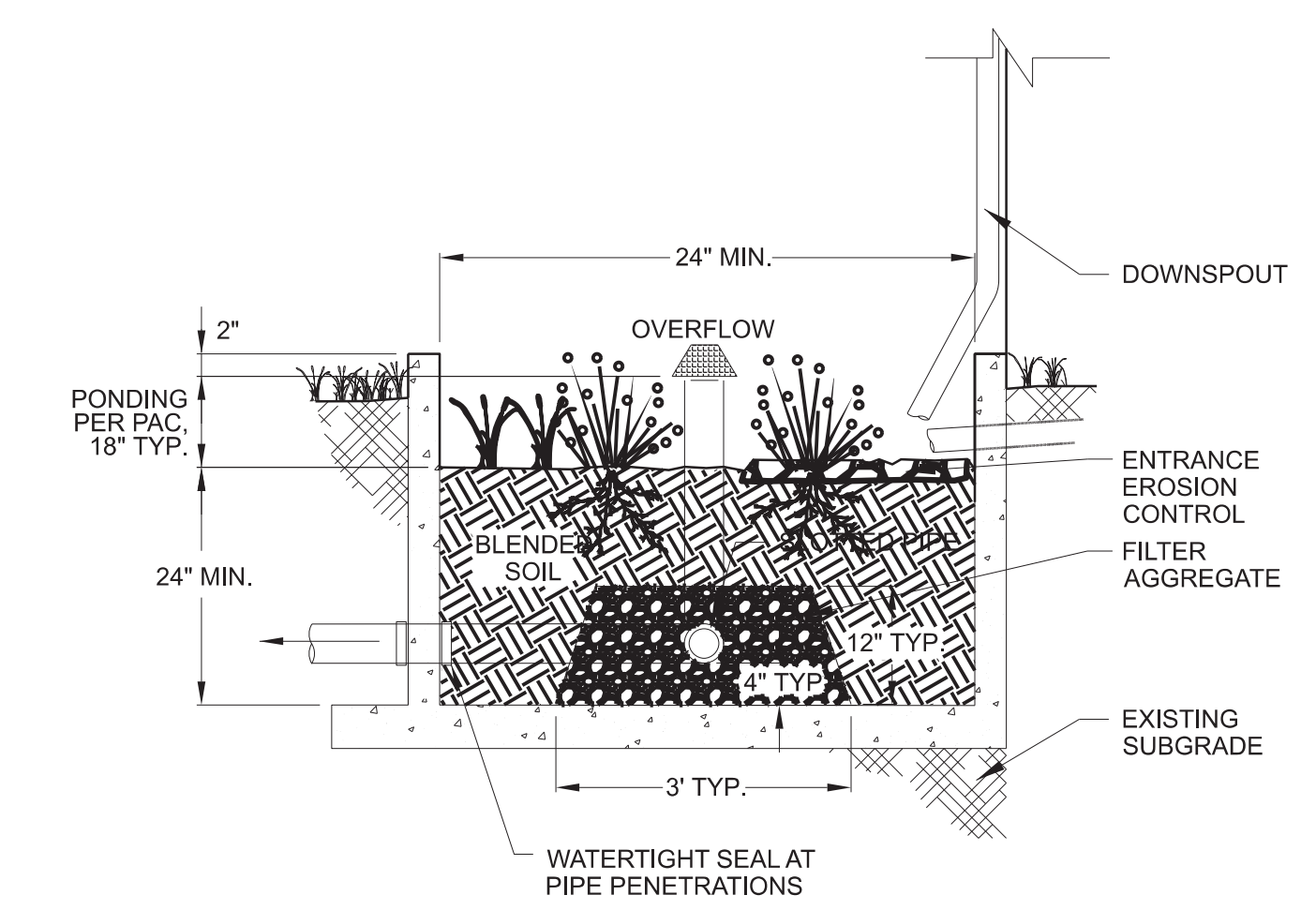
**B** Roadside Ditch  
10-LU-517 N.T.S.



**C** Typical Grassy Swale  
10-LU-517 N.T.S.



**D** Basin With Underdrain  
10-LU-517 N.T.S.



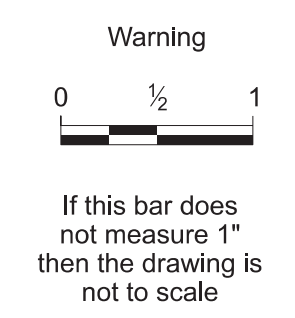
**E** Planter With Underdrain  
10-LU-517 N.T.S.

\$\$\$\$\$FILENAME\$\$\$\$\$  
\$\$\$\$\$USER\$\$\$\$\$  
\$\$\$\$\$DATE\$\$\$\$\$

No	Date	Description	Appd
Revision			
Survey			



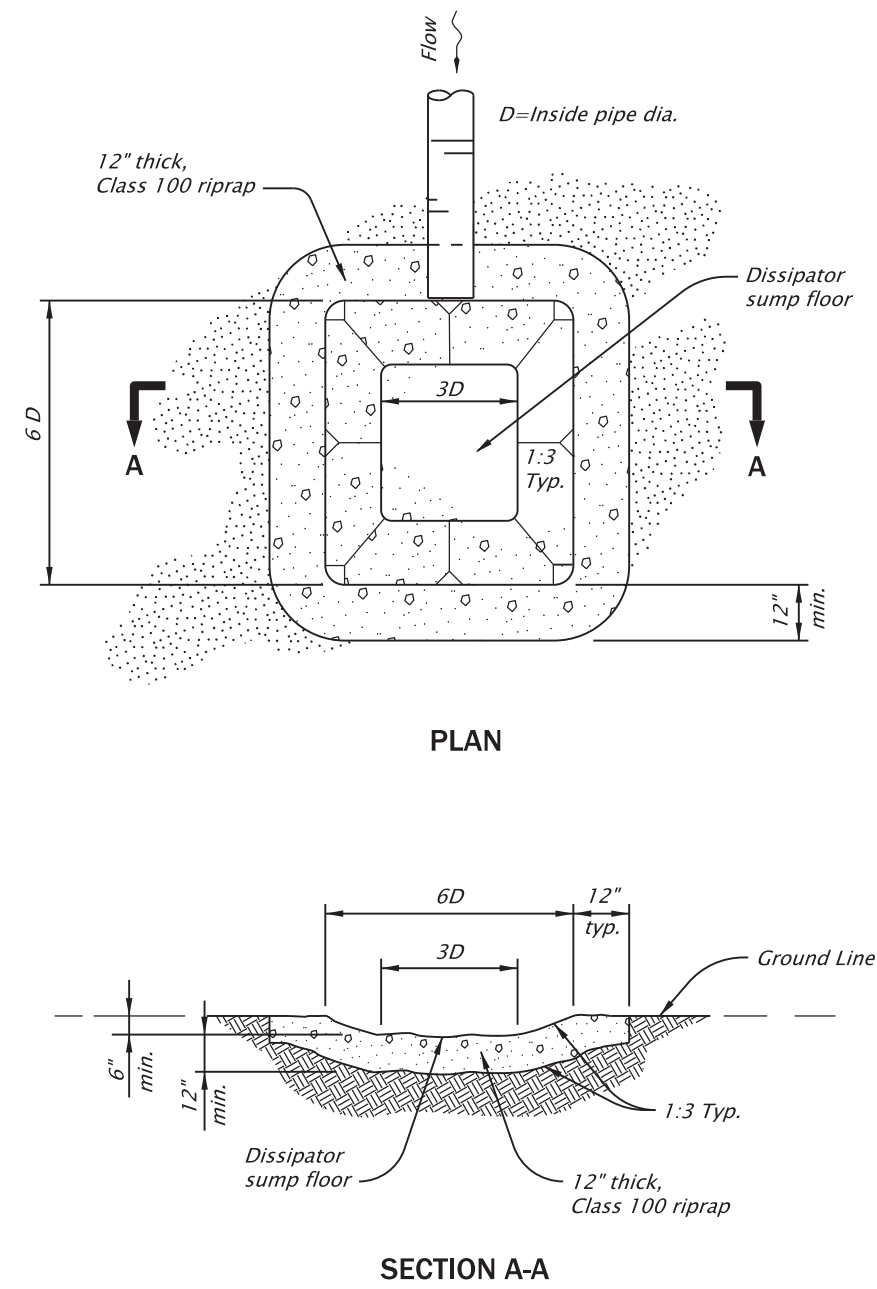
Designed By	KRF	Design Mgr	LSH
Drawn By	KRF	Const Mgr	TG
Checked By	LCS	Const Supvr	RMI
Project Mgr	MFG	Date	



David W. Peters, Engineering Manager, PE No 16683 Date

**Bull Run Filtration Facility**  
**Civil**  
Erosion Control  
Storm Details - 1

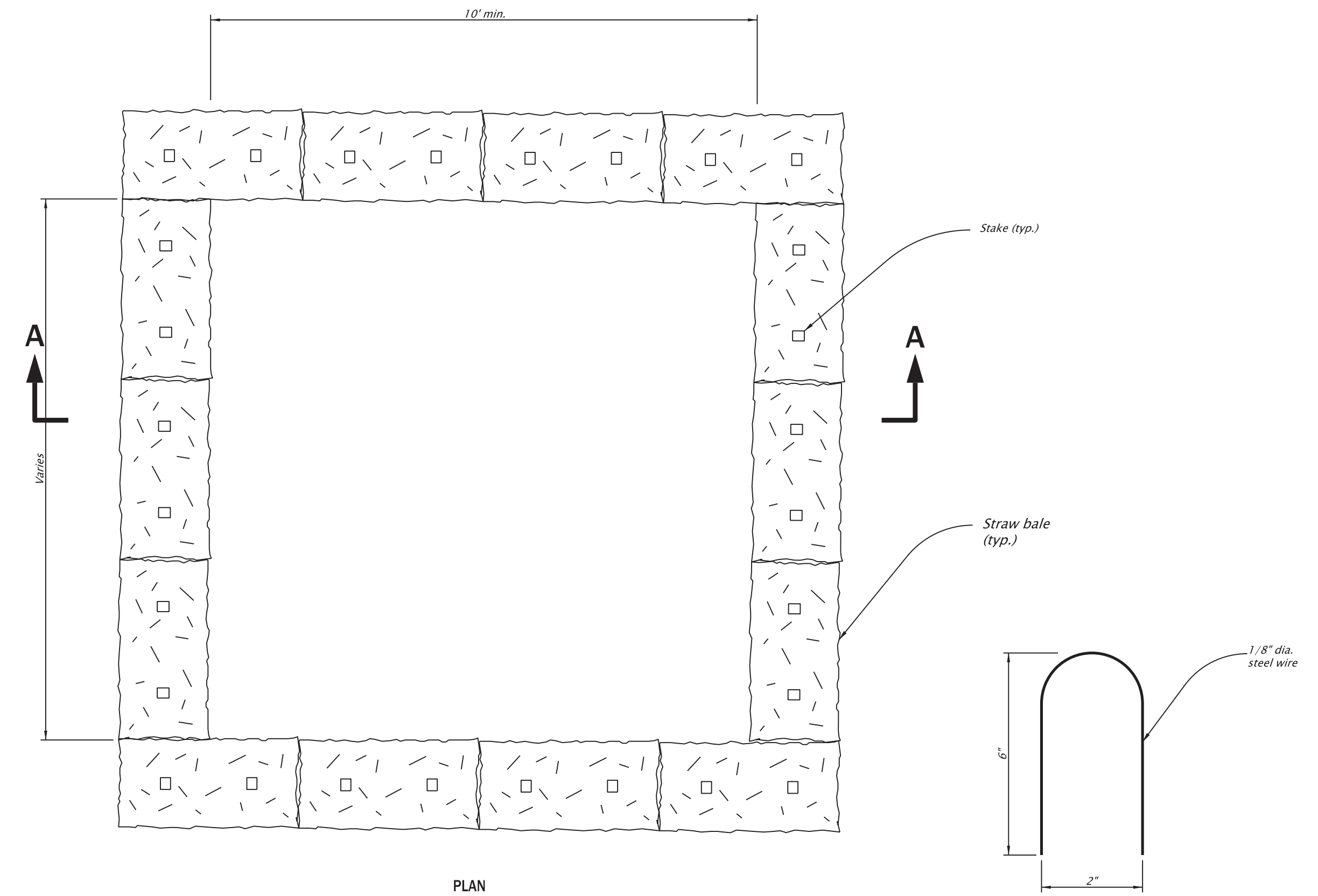
SAP Project No  
**W02229**  
1/4 Section  
3765 / 3766  
Sheet No  
**00-LU-513**  
of



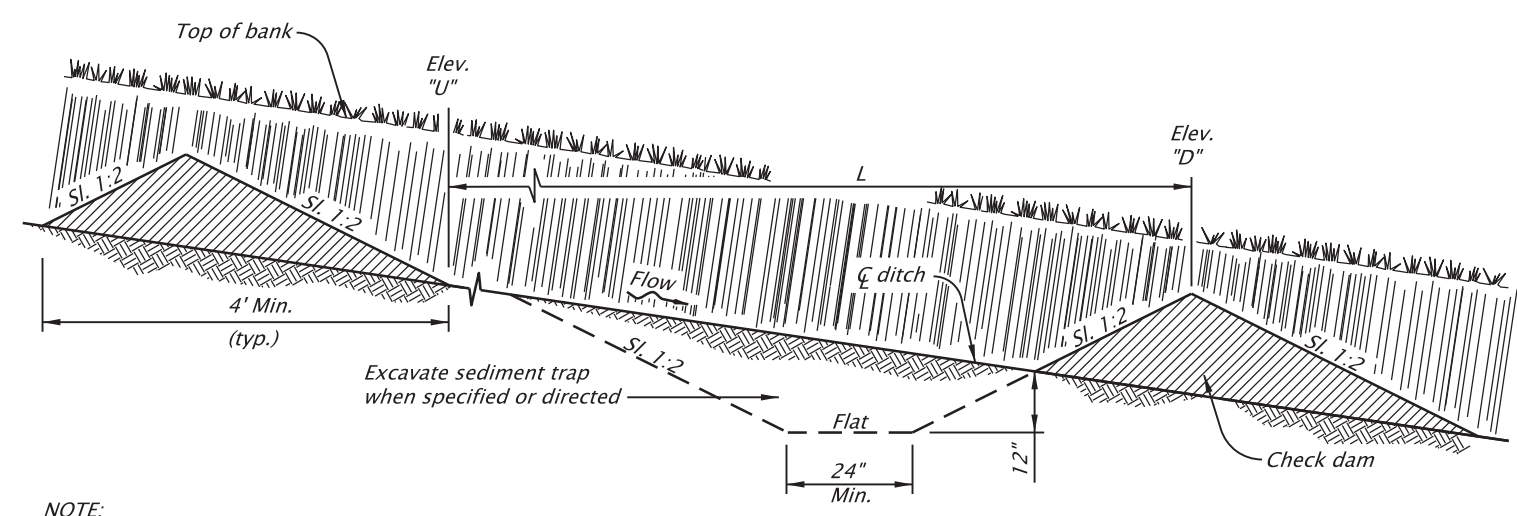
NOTES:  
 1. All dimensions not indicated will be as directed.  
 2. Install level spreader, sediment barriers, check dams or other appropriate BMPs to address volume, velocity and turbidity of discharge water.

TEMPORARY SCOUR BASIN / ENERGY DISSIPATOR  
 NOT TO SCALE

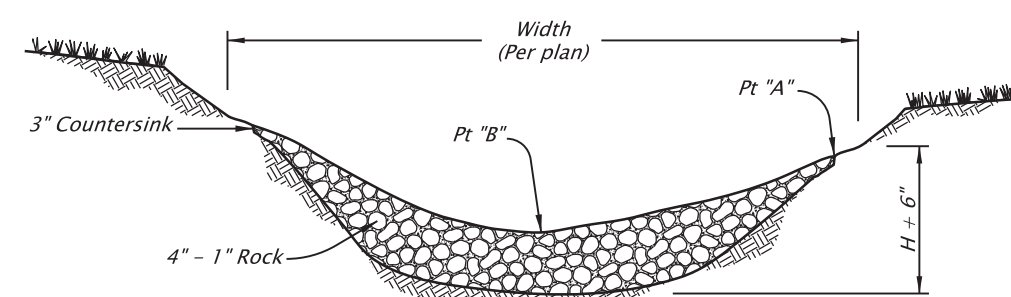
1 SCOUR BASIN  
 10-LU-514 N.T.S.



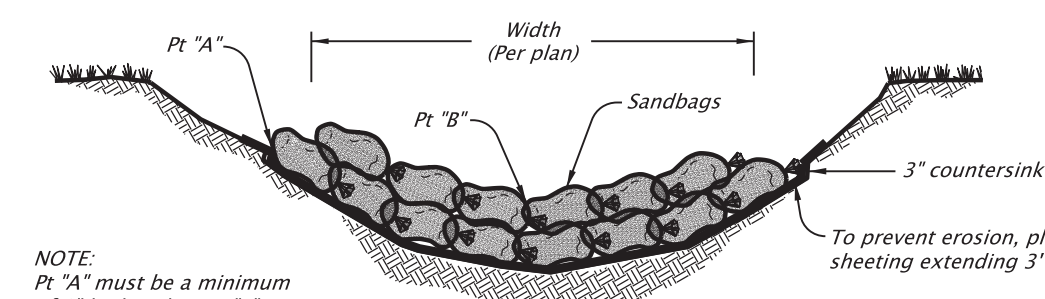
STAPLE DETAIL  
 NOT TO SCALE



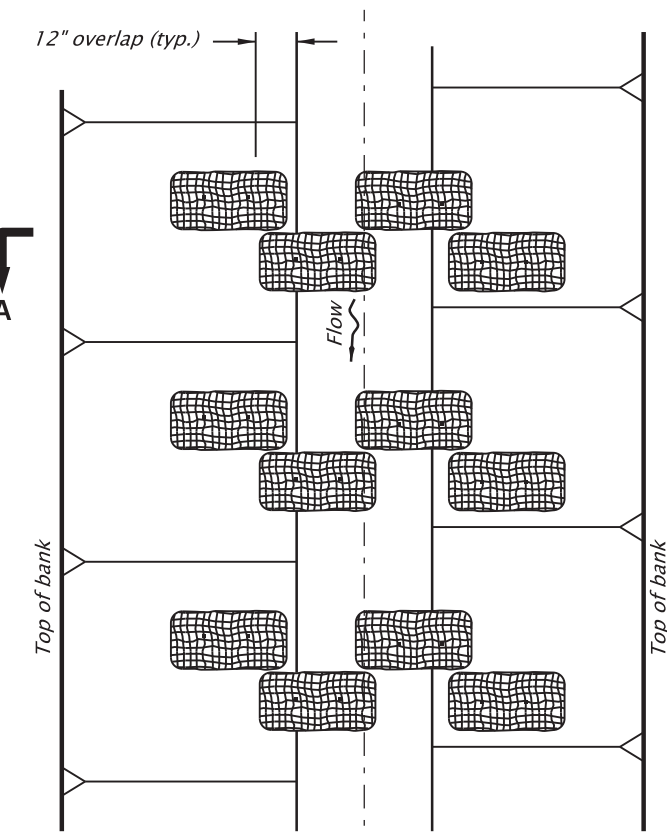
TYPICAL PROFILE SECTION CHECK DAMS  
 (SHOWN WITH AGGREGATE)  
 NOT TO SCALE



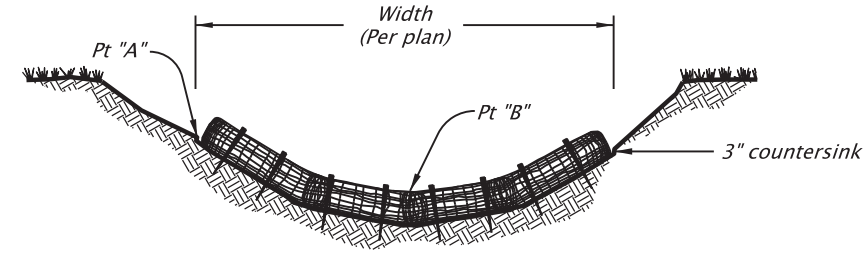
AGGREGATE CHECK DAM - TYPE 1  
 NOT TO SCALE



SANDBAG CHECK DAM - TYPE 4  
 NOT TO SCALE



PLAN



SECTION A-A

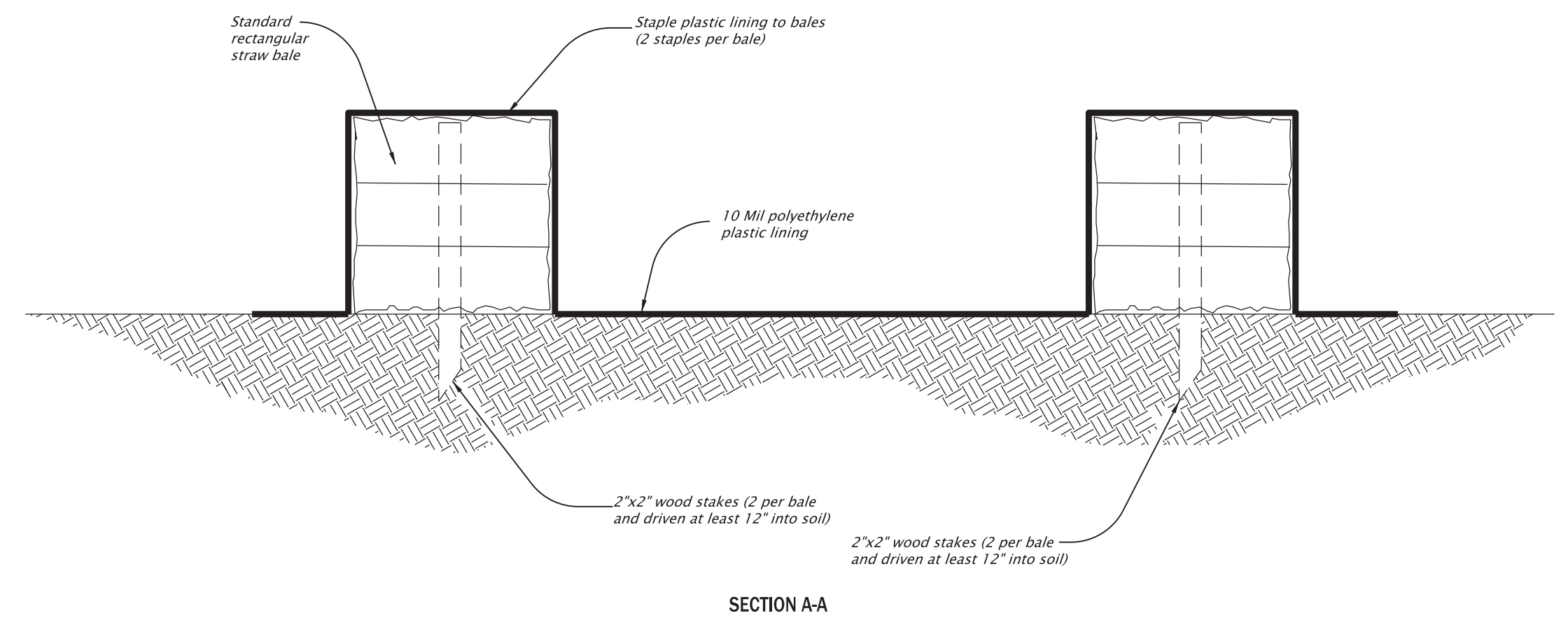
BIOFILTER BAG CHECK DAM - TYPE 3  
 NOT TO SCALE

MAXIMUM CHECK DAM  
 SPACING "L"

Ditch Grade	H = Min. dam height			
	H=8'	H=12'	H=18'	H=24'
10%	15'	20'	25'	30'
9%	16'	21'	26'	31'
8%	17'	22'	27'	32'
7%	18'	23'	28'	33'
6%	19'	24'	29'	34'
5%	20'	25'	30'	35'
4%	21'	26'	31'	36'
3%	22'	27'	32'	37'
2%	23'	28'	33'	38'
1%	24'	29'	34'	39'

\*\* Not allowed H = Min. dam height

NOTES:  
 1. Type 3 - stake biofilter bags with two 2"x2"x18" (minimum) wood stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags. Omit stakes if placed over paved surfaces. Overlap bags 12" minimum at each joint.  
 2. Type 4 - Tightly abut or overlap ends of sandbags at each joint.  
 3. Spacing between check dams for all check dam types shall comply with the typical profile section shown above.



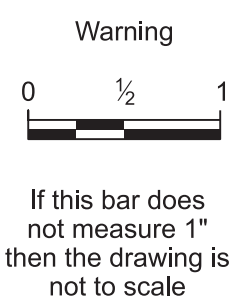
SECTION A-A

3 CONCRETE WASHOUT FACILITY  
 10-LU-514 N.T.S.

2 CHECK DAM  
 10-LU-514 N.T.S.



Designed By	KRF	Design Mgr	LSH
Drawn By	KRF	Const Mgr	TG
Checked By	LCS	Const Supvr	RM
Project Mgr	MFG	Date	



David W. Peters, Engineering Manager, PE No 16683

Date



Bull Run Filtration Facility  
 Civil  
 Erosion Control  
 Storm Details - 2

SAP Project No  
**W02229**  
 1/4 Section  
 3765 / 3766  
 Sheet No  
 00-LU-514  
 of

User: stanpw11ics03\$ W02229\_FF\_00-LU-514.dgn 1/9/2024

No	Date	Description	Appd
Revision			
Survey			