Lower Colorado River Authority
3700 Lake Austin Blvd.
Austin, TX 78703

Date: 3/5/2025

Curt Campbell
Westward
#4 Shooting Club Rd
Boerne TX 78006
ccampbell@westwardenv.com

RE: Burnet Quarry
Application #2024-5606 U1
Address: 3221 FM 3509, Burnet, TX 78611

Dear Curt Campbell,

We have reviewed the plans for the referenced permit application. The project proposes the use of Quarry Pits to meet the Performance Standards established by LCRA's Highland Lakes Watershed Ordinance. We have the following comments regarding the plans and application:

Notice of the Application
-in accordance with Section 6.0(e) of the Highland Lakes Watershed Ordinance.

A parcel map and supportive adjacent property owner information (10853-256) documented was submitted to demonstrate the applicant mailed a notice of the permit application to persons who own property located within 500 feet to the site or within 1,000 feet of the project limits.

1. Provide the first-class mailed receipts proving that each adjacent property owner identified on the parcel map was mailed the permit application notice.

   U1- Comment addressed.

2. Please confirm with supportive documentation that a notice of quarry-mine activity was mailed to officials of nearby municipalities, county, and groundwater conservation district.

   U1- Comment addressed.

Quarry Mine Operator/Owner
-in accordance with Section 3.0 of the Highland Lakes Watershed Ordinance.

The permit application was submitted listing Asphalt Inc, LLC as the owner. The evidence of ownership documentation demonstrates HVPR4 LLC (grantor) selling the subject property to Burnet Ranch Investments, LLC. Burnet County Appraisal District documents the property (ID No. 47495) owned by Burnet Ranch Investments LLC.

3. The permittee is a landowner or quarry mine operator authorized to undertake development or quarry mine activities pursuant to a permit granted. Please provide legal supportive documentation demonstrating an authorized agent of Burnet Ranch Investments LLC has allowed an authorized agent of Asphalt Inc LLC to be the permittee.

   U1- Comment addressed.

Cost Estimates for Erosion/Sediment Control Fiscal Security

4. Review the following items in the engineer's cost estimate for erosion and sediment controls document:

    - Compare the cost per unit prices to the LCRA Cost Estimate for ESC Fiscal Security bulletin. Please update the prices accordingly or provide counter cost estimates from local contractors or recent bids to propose a price that is less than what is listed.

    U1- Comment partially addressed. LCRA's standard minimum pricing for seeding is $2.00/ SY (Cost estimate technical bulletin: lcra.org/download/cost-estimates-for-esc-tech-bulletin/?wpdmdl=31259). At $2.00/SY, the total revegetation cost for approximately 1,040,440 SY would be $2,080,880.00. The Cost per Unit pricing proposed for the "Seed Mixture (per acre)" item does not meet LCRA's revegetation minimum pricing. Please revise and update the cost per unit to meet LCRA's minimum pricing and provide an updated cost estimate.

5. Add a quantity and pricing for a concrete washout to account for the wheel wash area.

    U1- Comment addressed.

6. Add a quantity and pricing for the diversion/interception/perimeter berms item to account for the proposed berm areas.

    U1- Comment addressed.

7. Add a quantity and pricing for rock berms, check dams, and high service rock berms. Refer to the markups on sheet C.2 for more information.

    U1- Comment partially addressed. Based on LCRA's rock berm spacing requirements for varying slopes, the rock berm quantity will need to be updated. Please see markup on sheet 1 referencing the spacing revisions. Are these rock berms temporary or will they remain in place once the initial phase of construction is completed?

8. All proposed work, including the final conditions need to be included within the limits of construction. The total acreage within the limits of construction needs to be the amount of seeding proposed (Seed mixture+ Hydromulching= Acreage within limits of construction).

    U1- Comment partially addressed. Pit number 4 is exempt from the revegetation acreage measurement since the pit floor will be actively mined and the drainage will be self-contained within the pit walls.

Cost Estimates for Erosion/Sediment Control Fiscal Security Additional Comments- U1

9. Changes to the Erosion and Sedimentation Control Plan have been requested. Please revise the cost estimate to include these changes. Once the cost estimate is approved, a letter of credit or other form of financial security acceptable to LCRA must be provided prior to issuance of a permit. A Letter of Credit shall have a minimum expiration of 3 years or shall renew automatically until LCRA determines that the project has achieved final stabilization. A letter of credit template can be found in the Development permit application [hyperlink: https://www.lcra.org/download/hlwo-developer-application-packet-1-pdf/?wpdmdl=19704]

Hydrologic Report
-in accordance with Section 5.2(b)(iv)(1)(a) of the Highland Lakes Watershed Ordinance.

1.2 Site Description, Post Development Conditions

10. Revise the section to describe any offsite areas draining to the project site or if those areas will be redirected around the site. Also, see comment below regarding offsite drainage.

    The eastern property boundary has multiple drainage lows conveying offsite drainage through the property. The final conditions show berm breaks allowing offsite drainage to enter the main pit. If the drainage is not diverted from the quarry pit and the intent is to impound the offsite drainage, coordination with TCEQ and LCRA may be needed for the proposed impoundment.

    U1- Comment partially addressed. If you intend to impound water in the quarry, please provide LCRA with a written determination by TCEQ of whether the impounded water would be state water.

11. Revise the section to describe the drainage features located onsite that drain into Peters Creek and reference the soil resource report included in this section.

    U1- Comment partially addressed. The buffer zone was denoted as a "Potential Wetland" on sheet 3 of the Quarry and Mine Plans. Please provide a description within the hydrologic report of the drainage features and the stock pond since they appear on the US Fish and Wildlife wetlands mapper.

12. Revise the section to include a detailed description of the 40-acre processing plant area including information about the rock crusher (stationary or portable), storage of chemicals used in washing of the aggregates, proposed water well (protection measures), process water storage area, reuse of water (e.g. closed-loop design), and include a description of best management practices designed to control runoff directly impacting this area or if all of it is diverted to on pit.

    U1- Comment partially addressed. If applicable, please provide information within the report and on the Quarry plan sheets regarding the following items within the processing plant area:

    - The storage of chemicals, the types of chemicals, proposed containment for the chemicals, and measures that will be implemented should any hazardous spills occur.
    - The proposed water well, how it will be protected from daily processing activity, and what setbacks will be provided.
    - The process water storage areas, a description of how the process water will be used, a description if a closed loop system will be utilized, and how/when/where the process water will be disposed of.
    - Description of fuel types that will be located at the pad site and what types of containment will be utilized for the fueling areas. Will there be an SPCC plan for the tanks or any fuel located on this site? Please describe what measures will be taken to prevent stormwater contamination should any spills take place.
    - Buildings, pad areas, and parking areas.
    - Although the stockpiles drain to the pit, any drainage on these piles still has the potential to leave the processing pad site. Describe what practices will be implemented within the immediate vicinity of the stockpiles to prevent them from discharging sediment. For instance, this can be done with the use of internal berms around stockpiles. Whichever practice is proposed, it needs to be included on the Erosion and Sedimentation control plan as a note.

13. Provide a plan sheet to illustrate the processing plant area details. Include what is described above.

    U1- Comment partially addressed. Provide a separate plan sheet for the processing plant area and include the items stated above within the plan sheet.

14. Provide a plan sheet to illustrate the schematic of the office area, parking, scale house and proposed onsite sewage facilities (illustrate setbacks).

    U1- Comment addressed. If the location of either changes, revisions will need to be submitted to LCRA HLWO.

15. State what the proposed depth for the quarry pit will be.

    U1- Comment addressed.

16. Revise section to clarify the proposed Garman Pits (corrected to Gorman Pit) to include purpose of the pits (e.g. initial quarrying area), approximate mining depth, proposed future use of the area, if applicable.

    U1- Comment partially addressed. Will walls be installed between the gorman pits to create stepped/terraced drainage from one pit to the other? Please show if applicable. Also, provide grading contour labels for the gorman pits and provide calculations proving these pits are self-containing as stated within the report.

17. Will the Gorman Pits have a liner installed underneath?

    U1- Comment addressed.

18. It is stated that two Gorman pits are proposed but the initial conditions plan sheet (C.2 of C.4) shows 3 pits with a total acreage of 6.99 acres.

    U1- Comment partially addressed. The hydrologic report states “approximately 4.6 acres” within the Post-development Conditions but the plan sheets are showing 6.9 acres. Please revise.

19. Add to the following statement*: In an effort to be extremely conservative the site has been evaluated assuming that impervious surface may be placed anywhere onsite. This is a very conservative approach since there is no intent to develop the entire site as impervious surface.* Include language that other improvements that are not illustrated on the Final Conditions plan sheet will be submitted to LCRA for permit revision and approval.

    U1- Comment partially addressed. What precautions will be taken to prevent development in drainage areas 3A and 2B? If these are to be left undisturbed, they must remain in their natural state. Also, what precautions will be taken to prevent additional development within Drainage areas 1 and 2A once the pits are constructed?

20. In accordance with Section 5.2(b)(ii) of the Highland Lakes Watershed Ordinance a quarry pit can be used as a permanent BMP if it is sufficiently sized to contain the runoff of a 10-year (24-hr) storm without discharging during a rain event. At least five of the “pit BMPs” (pits 2B, 2A, 1, 3B & 3A) described in this report are in areas not proposed for quarrying activity. Please clarify the pit BMPs are designed for a 10-year (24-hour) storm event without any discharge. Additional information requested below.

    U1- Comment addressed.

21. “Appendix I- Stormwater Runoff Calculations” was not provided in this submittal.

    U1- Comment addressed.

1.2 Site Description, Post Development Conditions Additional Comments- U1

22. The hydrologic report on sheet 4 states “each of the six pits” but the quarry plans and calculations only show three. Please revise this statement within the report.

XX Erosion Sedimentation Control

23. Add a section that briefly describes the erosion and sedimentation controls in place during the initial phases of the quarry project. The information should align with plan sheet C.1 and C.2, include details about sedimentation ponds in drainage areas DA-1 and DA-2.

    U1- Comment addressed.

24. Describe a timeline when the initial phase will move into a more operational phase and how the BMPs will be updated. Refer to the language included in plan sheet notes. Also, describe the erosion control phasing for the various quarrying phases.

    U1- Comment addressed.

25. Describe measures proposed to manage erosion and sedimentation during the operational stages of the quarry project. For example, use of water trucks, wheel wash, berms to direct runoff, etc.

    U1- Comment addressed.

XX Onsite Features

26. Reference the wells described in the Hydrogeologic Report and state if the two wells (S-1 & S-3) will be maintained or closed.

    U1- Comment partially addressed. Include the proposed well that will be located on the processing plant pad within this description.

27. Reference the man-made stock ponds described in the Hydrogeologic Report and state if the stock ponds (S-2, S-4, & S-5) will be maintained onsite or mined through.

    U1- Comment addressed.

2 Buffer Zones

28. Please revise section to include any details how the buffer zone will be protected from any heavy equipment, disturbances, and how access to the buffer zone will be prevented.

    U1- Comment addressed.

29. The buffer zone was not delineated correctly on the Quarry and Mine plan sheets based on the field visit. The buffer zone boundary is currently shown 50' from the creek centerline, not 75'. Please revise.

    U1- Comment partially addressed. Provide a buffer zone delineation to the proposed point of beginning based on the sites existing conditions. Based on LCRA's drainage area delineations for the buffer zone, the point of beginning is located further upstream than what is currently proposed on the quarry plan sheets (approximately 840 feet further upstream). The drainage area that feeds into the proposed point of beginning is roughly 340 acres.

    Please revise the drainage area delineation and the limits of the buffer zone. If needed, contact LCRA to schedule a meeting regarding this comment.

3 Roadway Treatment

30. Revise section to describe how the natural vegetative filter strip (NVFS) will be protected from vehicles. Revise to account for emergency shoulders, as needed, but please illustrate in the plan sheets.

    U1- Comment addressed. FYI, the limits of the NVFS and pit bmps will need to be recorded via an easement once the project is close to being permitted.

31. Describe how the NVFS was sized for the haul road and what type of NVFS is proposed.

    U1- Comment addressed.

32. Describe if any roads will be proposed around the perimeter of the project site and what treatment will be proposed.

    U1- Comment addressed.

33. Describe and illustrate access roads to stormwater pits for maintenance purposes.

    U1- Comment addressed.

34. Describe and illustrate any access roads between the property line and the earthen berms.

    U1- Comment addressed.

4 Proposed Stormwater Earthen Berms

35. Revise section to include language about perimeter buffer.

    U1- Comment addressed.

36. Proof needs to be provided that the diversion berms and swales are sized for the 10-year, 24-hour storm event based on the criteria stated in section 2.2.3 sheet 270 within the HLWO technical manual.

    U1- Comment addressed.

37. Swales are mentioned as a stormwater conveyance feature for the site. Revise the quarry plan sheets showing the proposed grading and locations of these swales.

    U1- Comment addressed.

XX Stormwater Basins (Pits)

38. Add a section for Stormwater Basins (Pits) and update Stormwater Earthen Berm section as applicable. Provide the following details related to the basins in the narrative and supportive plan sheets.

    - BMP sizing calculations need to be provided showing that these pit BMPs were designed based on the impervious cover assumptions for each drainage area and sized for the 10-year, 24-hour storm event.

      U1- Comment addressed.

    - Describe how any recharge features (e.g. fractures, cavities) on the floor will be mitigated during construction of these pits.

      U1- Comment addressed.

    - Describe how the collected stormwater will be managed.

      U1- Comment partially addressed. Please describe how stormwater within the basins will be managed. For instance, if the water will be reused or how dewatering activities stated within the BMP maintenance plan-will be incorporated to make sure the storage requirements of the basins are being met after subsequent rainfall events.

      Also, please clarify what contaminants will be treated by the BMP quarry pits.

    - Describe if the basins will incorporate outfalls or spillways and what storm event they're designed for.

      U1- Comment partially addressed. The Quarry and Mine Activity Section within the HLWO technical manual (Section 2.4 Buffer Sones, sheet 276) requires proper dissipation of high energy flow before entering buffer zones. As stated in the manual, "By-pass flows from storms in excess of the basin design storm must be conveyed in a stable manner through the buffer zone to the receiving water body. This can be accomplished through application of the outfall stabilization [rip-rap apron, scour hole design] and level spreader systems presented in Section I, Chapter 3." Please provide rip-rap aprons sized for the BMP quarry pit discharges. Refer to LCRA's pipe end treatment for riprap apron sizing and dimensioning (PIPE END TREATMENT).

    - Describe if those potential discharges will go through additional water quality best management practices prior to discharging the site.

      U1- Comment partially addressed. In the event of a high precipitation storm event causing the pits to overflow, what measures will the permittee take to mitigate sediment laden discharge onsite and offsite once the storm event has passed? Please include these within the BMP maintenance plan.

    - Provide supportive plan sheets with construction details of each individual basin.

      U1- Comment partially addressed. Provide an inset for pit 3.

39. Within this section it states that there will be basin walls, but the pits are shown as embankments. Will any of the pits use retaining walls?

    U1- Comment addressed.

40. Add sediment depth markers to the basins.

    U1- Comment addressed.

XX Dewatering

41. Include a section that describes any dewatering activities in accordance with Section 3.3.14 of the LCRA HLWO technical manual (starts on sheet 149).

    U1- Comment partially addressed. Describe how often the BMP pits will be dewatered and what practices will be used to treat the sediment laden discharge. The BMP pits will lose storage capacity during periods of recurring rain events or over time from accumulated stormwater leading to a higher potential for a discharge to take place.

XX Quarry Pit (319.1-acre)

42. Include a section that describes the quarry pit ("Pit 4" 319.1-acres) and describe the approximate timeframe for quarrying the area.

    U1- Comment addressed.

43. Describe the depth of the pit using the unit of ft below ground surface (bgs) to match well data and elevation.

    U1- Comment addressed.

44. Describe how any recharge features (e.g. cavities or fractures) located on the surface of the quarry floor will be mitigated in accordance with Section 5.2(b)(ii) of the Highland Lakes Watershed Ordinance and Section 2.3.2 of the LCRA technical manual.

    U1- Comment addressed.

5 Groundwater Monitoring Statement

This request is under review based on supportive information provided and review of hydrogeologic report

45. Describe the approximate separation depth proposed between the quarry pit floor and water table.

    U1- Comment addressed.

46. Please revise the section to state LCRA will be contacted if during quarrying activity groundwater is encountered.

    U1- Comment addressed.

47. Has any groundwater monitoring been completed for this site that can establish background conditions?

    U1- Comment addressed.

6 Surface Water Monitoring Statement

This request is under review based on supportive information provided

48. Add a statement that monitoring information collected to meet TCEQ MSGP permit requirements will be submitted to LCRA in an annual report.

    U1- Comment addressed.

Hydrogeologic Report
-in accordance with Section 5.2(b)(iv)(1)(b) of the Highland Lakes Watershed Ordinance.

49. Describe the tributaries to Peters creek located onsite in the Hydrogeologic Report, which is illustrated in the Soil Resource Report Soil Map attached to the Hydrologic Report.

    U1- Comment partially addressed. The hydrogeologic report needs to describe the existing onsite drainage and the ridgeline to the east. Also, provide a description of Peter's creek and the drainage features located on site within the hydrogeologic report.

50. Describe the buffer setback for the tributary located near the western property boundary.

    U1- Comment partially addressed. A description for the buffer zone dedicated for the onsite drainages was not included within this report. Please revise.

4.2 Karst Identification

It is stated*, A field investigation was performed at the site by Connor P. Tierney, P.G. on August 29, 2024*.

51. Please describe how the field study was conducted. For example, walking in equally spaced transects across the site etc.

    U1- Comment addressed.

52. Please describe if any additional field investigations were completed at the site by Westward Geologist(s).

    U1- Comment addressed.

5.2 DRASTIC Classification

DRASTIC Classification was calculated at 121.

53. Depth to Water Table referenced a well located 0.75 miles NW of the site. This well is not available in the Well & Spring Inventory map. Revise the Depth to Water Table criteria to reference one of the wells illustrated in the Well & Spring Inventory Map.

    U1- Comment addressed.

54. Topography (Slope) documents a 4.61 percent slope for the site and noted a rating of 5. The table documents a rating of 9. Revise the table or noted rating in the narrative.

    U1- Comment partially addressed. Section 1.2 of the hydrologic report states "Onsite slopes average approximately 3%" please match the descriptions in both reports to reflect the correct sloping and update the slope rating if applicable.

7.0 Well & Spring Inventory

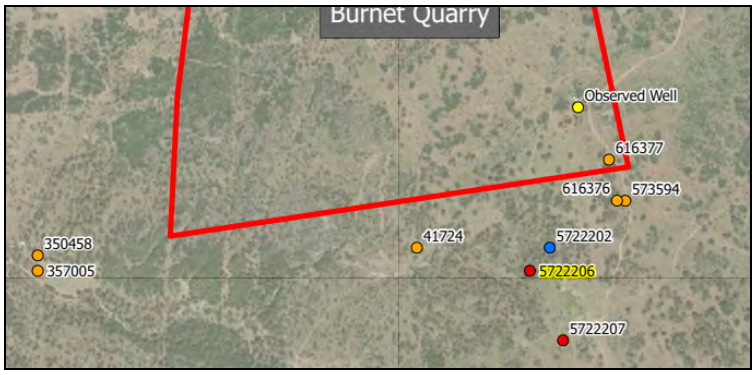
55. Update the following statement, if the location of this specific well was confirmed. *Well 164367 is mapped onsite, however the well address is for a location north of FM 3509. No evidence of this well was observed during the field investigation.*

    U1- Comment addressed.

8.0 Discussion

Discussion states, *given the absence of sensitive karst features at the Site and significant depth to groundwater, quarrying activities likely will not impact groundwater quality. A groundwater monitoring plan is not proposed.*

The south and southeast portion of Burnet Quarry is proposed to be the main pit, approximately 319.1-acres to have a depth of approximately 80 feet from the surface level. A few wells identified in the vicinity range from 100-300 feet depth.



Well & Spring Inventory Map

WELL	DEPTH	WELL	DEPTH
350458	300 feet	616377	740 feet
357005	200 feet	573594	736 feet
41724	100 feet	616376	740 feet
Observed Well	No data	5722202	No data
5722207	650 feet	5722206	100 feet

56. Please provide additional supportive information to support a groundwater monitoring plan is not required with this submittal.

    U1- Comment Addressed.

Mine & Quarry Plan

-in accordance with Section 5.2(b)(iv)(1)(c) of the Highland Lakes Watershed Ordinance.

57. Please see marked up sheets to address any changes requested for this section or other sections.
    - Plan sheet C.1 Erosion & Sedimentation Control Plan
    - Plan sheet C.2. Initial Conditions
    - Plan sheet C.3 Final Conditions
    - Plan sheet C.4 Temporary General Notes

    U1- Comment partially addressed. Please see plan sheet markups.

58. Only one sheet was submitted as an erosion control plan. Since the quarry will expand gradually, ESC plan sheets need to be provided for the initial conditions, intermediate conditions, and the final conditions. The appropriate ESC's for each phase will need to be provided.

    U1- Comment Addressed.

General Reclamation Guidance Plan

-in accordance with Section 5.2(b)(iv)(1)(e) of the Highland Lakes Watershed Ordinance.

BMP Maintenance Plan

59. Revise the maintenance plan to include the following:

    - An introduction paragraph stating the type of BMP's to be maintained on site.

      U1- Comment addressed.

    - A schedule for maintenance activities.

      U1- Comment partially addressed. The maintenance plan only states for inspections to occur a minimum of twice annually. Please propose more frequent intervals to perform inspections. Also, a schedule or specific criteria for the stormwater pit dewatering.

    - Provision for access to the tract by LCRA or other designated inspectors.

      U1- Comment addressed.

    - Name, qualifications, and contact information for the party(ies) responsible for maintaining the BMP's.

      U1- Comment addressed. The BMP maintenance plan will need to be signed by both parties before the permit is issued.

60. Provide a detailed description of the various dewatering practices to be used for the pit basins.

    U1- Comment partially addressed. Be more descriptive and propose features specifically for dewatering. For insatance, how the pits will be dewatered should the sediment depth surpass 3 feet or how the accumulated storm water from various events will be removed. Include what features will potentially be used, where and how the stormwater will be disposed of/used , and finally what specific dewatering practices will be used to prevent sediment laden discharge from leaving the site (example: dewatering bag, faircloth skimmer, etc.).

61. Within the detailed inspection section, include the second paragraph from section 5.5.1 within the HLWO technical manual.

    U1- Comment addressed.

62. Within the maintenance plan describe how often the settled sediment will be removed from the BMP pits and how the sediment will be disposed of.

    U1- Comment partially addressed. It is stated that "All sediment shall be used onsite…" Please clarify how this sediment will be used on site. Our concern is the sediment will be composed of fines and if not used properly, could potentially leave the site.

63. Provide an example of an inspection form.

    U1- Comment addressed.

64. Include a BMP specific section within the maintenance plan and include the following statement for the proposed VFS, “No portion of the filter area will be greater than a 10% slope. The vegetated density must be greater than 80% with no large bare areas. The filter area should be densely vegetated with a mix of erosion-resistant plant species that effectively bind the soil. Native or adapted Grasses are appropriate because they require less fertilizer and are more drought resistant than exotic plants.”

    U1- Comment addressed.

65. Before the “Name and Signature of Responsible Party for maintenance of BMP’s” section, Include the following paragraphs:

    The OWNER or SUBSEQUENT OWNER shall bear all expenses for the operation and maintenance of these permanent Best Management Practices (BMP) including but not limited to all general maintenance activities needed to keep this system in proper operation condition. If this system is abused or not maintained, then it may contribute to malfunction of the storm water system. All designated BMP areas shall remain free of construction, development, and encroachments.

    You as the OWNER of this property have a responsibility to provide any SUBSEQUENT OWNER or your real estate agent with a copy of this Best Management Practices (BMP) Maintenance Plan if this facility is sold so that the BMPs can be properly maintained and operated. The same rights, duties, and responsibilities borne by the current OWNER shall be borne by each subsequent OWNER.

    An amended copy of this document will be provided to the LCRA within thirty (30) days of any changes in the following information:

    Responsible Party for Maintenance: [Insert New Owner name]

    Address: [Insert Street Address]

    City, State, Zip: [Insert Information]

    Telephone Number: [Insert BMP Maintenance Provider Telephone Number]

    U1- Comment partially addressed please edit the following to state “PERMITTEE” on sheet 5.

BMP Maintenance Plan Additional Comments- U1

66. Include a wheel wash section within the BMP maintenance plan and provide specific maintenance criteria for the wheel wash.

67. Include a section for the maintenance of the Gorman Pits regarding dewatering and the removal/ disposal of the sediment within the Gorman Pits.

68. See comment #39, Bullet Point #5 -U1.

Other Local, State, and Federal Regulations (5.2(b)(iii))
-in accordance with Section 5.2(b)(iii) of the Highland Lakes Watershed Ordinance.

69. Provide the status for the following permitting/authorization applicable to the proposed quarry project. Please state if an authorization is not applicable and provide a copy of an approval, if issued.

- EPA National Pollutant Discharge Elimination System (NPDES) permit

  U1- Comment Addressed. Please provide a copy of the authorization to LCRA upon approval.

- Mine Safety and Health Administration (MSHA/OSHA) authorization

  U1- Comment Addressed. Please provide a copy of the authorization to LCRA upon approval.

- US Army Corp 404 permit

  U1- Comment Addressed.

- TCEQ MSGP permit, Air New Source permit, Aggregate Production Operation (APO) registration

  U1- Comment Addressed. Please provide LCRA with a copy of the TCEQ MSGP NOI, Issued Standard Air Permit,

- Central Texas Groundwater Conservation District (GCD) well approval

  U1- Comment Addressed. Once approved, please provide LCRA a copy of the well approval.

- TxDOT safety certificate

  U1- Comment Addressed. Once approved, please provide LCRA a copy of the safety certificate.

If you have any questions about these comments, please call me at 512-578-7500, or by e-mail at hlwo@lcra.org.

Additional information addressing these comments or revised application materials must be provided within 30 calendar days from the date of this letter. An extension of time to provide information may be requested, however the cumulative amount of time to provide additional information may not exceed 6 months from the date that the application for permit was filed.

Thank you,

Brian Burkitt
Water Quality Protection

CC: Herb Darling, Burnet County
Brett Poage, Burnet County
Mitchell Sodek, Central Texas Groundwater Conservation District

Provide riprap apron sized for weir discharge

Provide a detail for Pit 3, Need to ensure depth and proposed grading correlate with proposed storage volume.

Need to be spaced at 20' since approximately 15% slope on this side Refer to spacing table on sheet 348 within HLWO technical manual.

Specify type of matting to be used and provide specific matting detail.

Pit 2 will need to be moved upstream to capture all drainage before entering the buffer zone (Red).

Provide riprap apron sized for weir discharge

Provide a weir detail. What will the outfall weir's be composed of?

Within the callouts provide typical lengths for the check dams and rock berms.

Specify type of blankets to be used and provide specific blanket.

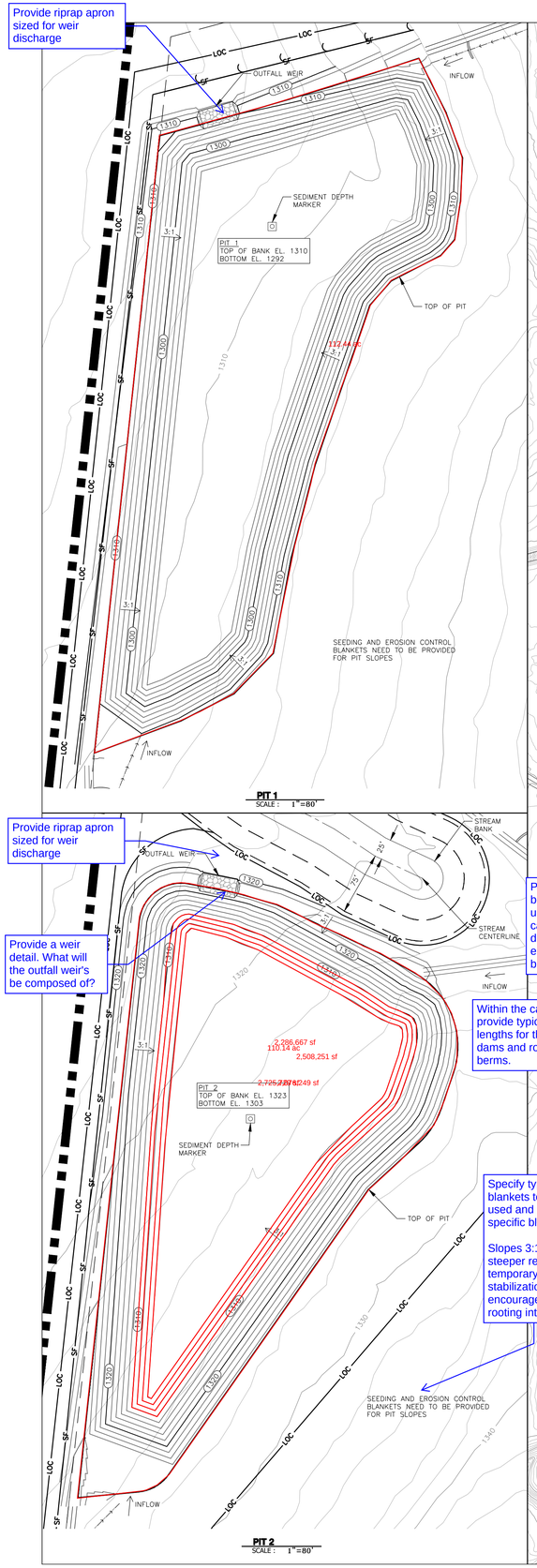
Slopes 3:1 or steeper require temporary stabilization to encourage seeds rooting into soils.

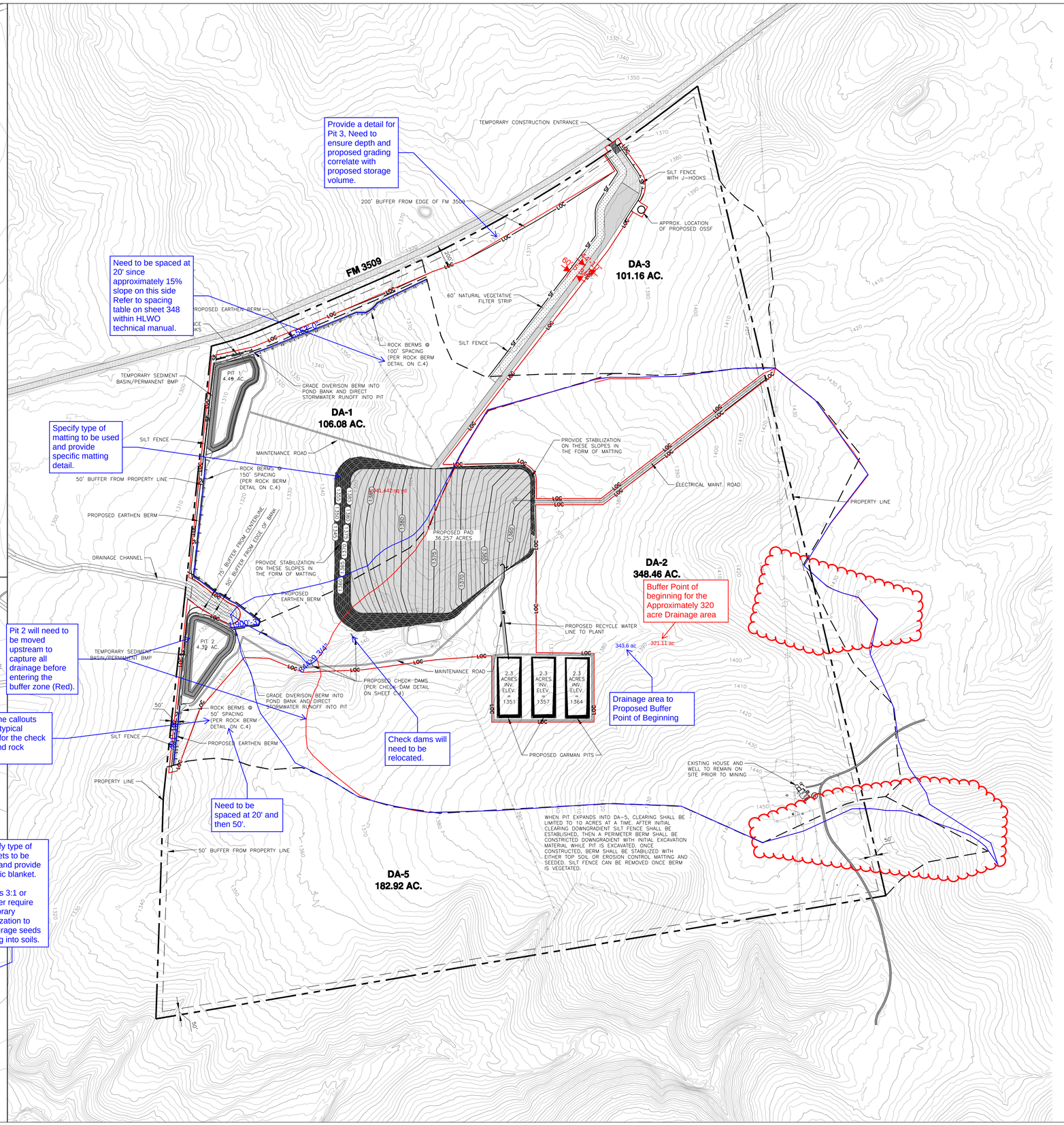
Check dams will need to be relocated.

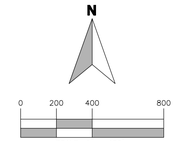
Need to be spaced at 20' and then 50'.

Buffer Point of beginning for the Approximately 320 acre Drainage area

Drainage area to Proposed Buffer Point of Beginning







LEGEND

- PROPERTY LINE
- EXISTING FENCELINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DRAINAGE AREAS
- DITCH–SWALE
- LOC LIMITS OF CONSTRUCTION
- SF SILT FENCE
- BERM (TOP & TOE OF SLOPE)
- STK STOCKPILE
- W WATER WELL
- ASPHALT AREA
- BASE AREA
- VEGETATIVE FILTER STRIP
- TEMPORARY CONSTRUCTION ENTRANCE
- MATTING

NOTE:

- NO EXCAVATION IS PROPOSED IN THE 50' BUFFER FROM THE PROPERTY LINE OR THE 200' BUFFER FROM FM 3509.
  - 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
  - NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC ROADWAYS.
- BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS – ENCROACHMENT INTO A BUFFER ZONE OR DAME TO BUFFER ZONE AREAS WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
- ENTRANCE ROAD IS 45' WIDE, 12' WIDE DRIVING LANES, WITH 10' SHOULDERS.
- DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.
- PITS 1 AND 2 WILL ACT AS TEMPORARY SEDIMENT BASINS UNTIL THEY ARE FULLY DEVELOPED AND THEN THEY WILL REMAIN ON SITE AS PERMANENT BMPS.
- OUTFALL WEIRS DESIGNED TO BE 50' WIDE AT TOP, 42' WIDE AT BOTTOM, TOP OF WEIR IS 2' ABOVE BOTTOM OF WEIR WITH 2:1 SLOPES FROM TOP TO BOTTOM. THE WEIR IS 10' LONG ACROSS THE TOP OF THE BERM.

IMAGE:	N/A
ISSUE DATE:	2/17/2025
DRAWN BY:	JPW
CHECKED BY:	CGC
SCALE: 1" =	400'
JOB NO.:	10853-256

SHEET NO.:

C.1

OF C.4

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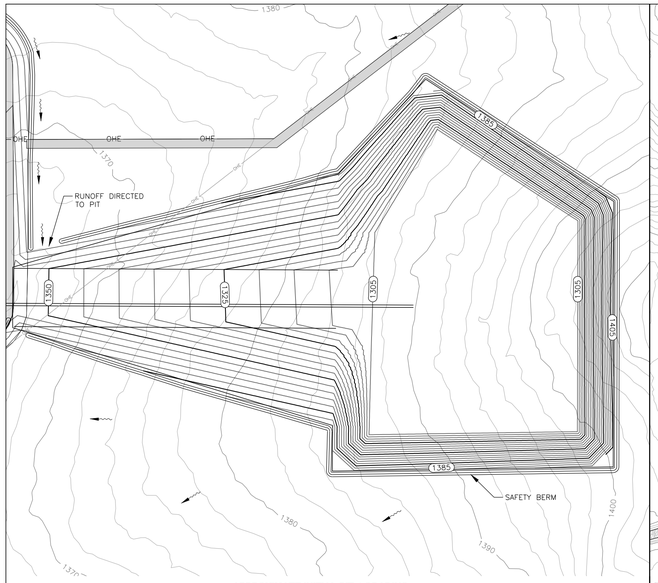
REV.	DESCRIPTION	BY	DATE

STATE OF TEXAS
CURT GARRETT CAMPBELL
106851
LICENSED PROFESSIONAL ENGINEER

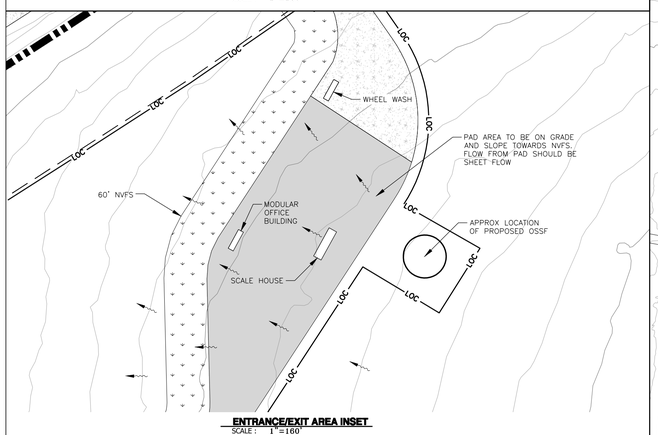
Curt G. Campbell, P.E.
License No. 106851
2/17/2025

EROSION & SEDIMENTATION CONTROL PLAN

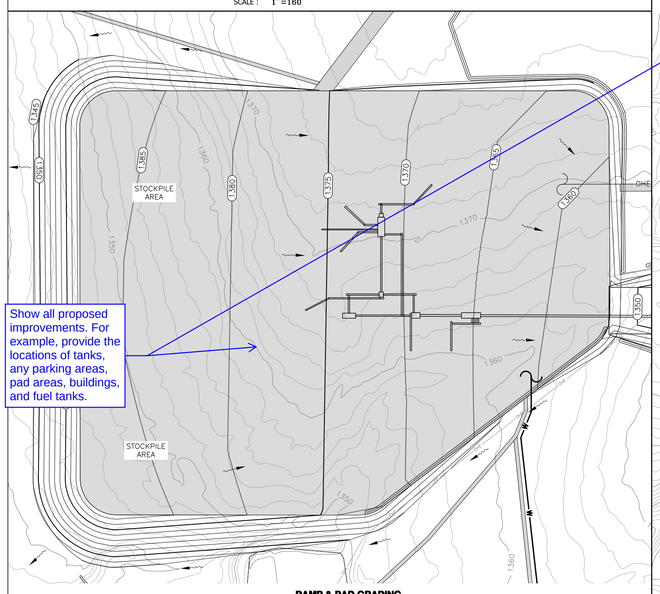
LCRA PERMITTING – BURNET QUARRY
ASPHALT INC.
3221 FM 3509, BURNET, TX 78611



APPROXIMATE INITIAL PIT 4 GRADING
SCALE : 1"=160'

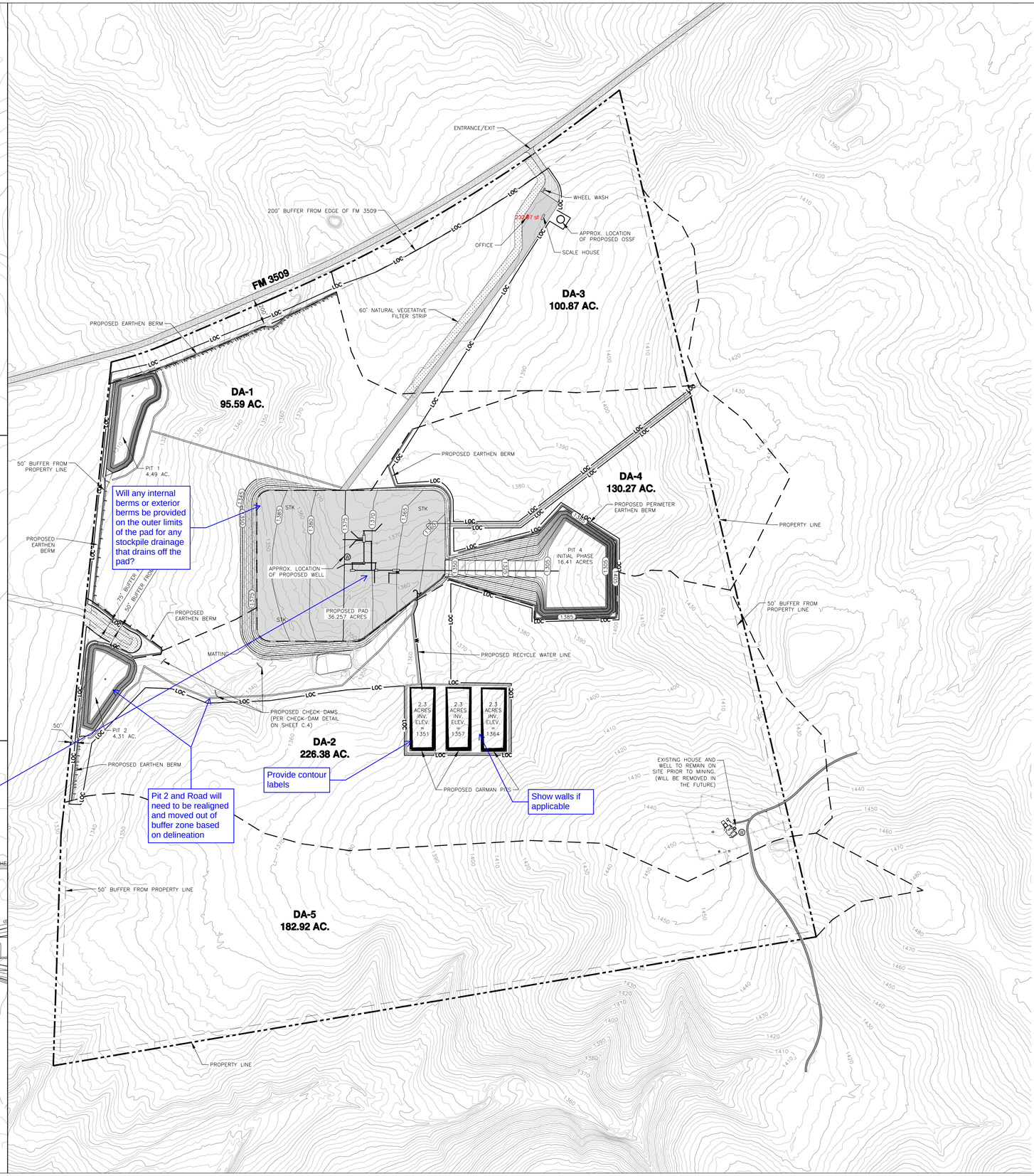


ENTRANCE/EXIT AREA INSET
SCALE : 1"=160'



RAMP & PAD GRADING
SCALE : 1"=200'

Show all proposed improvements. For example, provide the locations of tanks, any parking areas, pad areas, buildings, and fuel tanks.



Will any internal berms or exterior berms be provided on the outer limits of the pad for any stockpile drainage that drains off the pad?

Provide contour labels

Pit 2 and Road will need to be realigned and moved out of buffer zone based on delineation

Show walls if applicable

N

0 200 400 800

SCALE: 1" = 400'

LEGEND

- PROPERTY LINE
- EXISTING FENCELINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DRAINAGE AREAS
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- BERM (TOP & TOE OF SLOPE)
- STK — STOCKPILE
- WATER WELL
- FLOW ARROW
- ASPHALT AREA
- BASE AREA
- VEGETATIVE FILTER STRIP

NOTES

1. BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS. ENCROACHMENT INTO A BUFFER ZONE OR DAMAGE TO BUFFER ZONE AREA WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
2. DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.

NOTE:

- NO EXCAVATION IS PROPOSED IN THE 50' BUFFER FROM THE PROPERTY LINE OR THE 200' BUFFER FROM FM 3509.
- ** 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
- ** NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC ROADWAYS.
- ACTUAL PIT SLOPE WILL VARY AND WILL BE BASED ON HIGH WALL STABILITY OF IN PLACE MATERIAL.

IMAGE:	N/A
ISSUE DATE:	2/17/2025
DRAWN BY:	JPW
CHECKED BY:	CGC
SCALE: 1" =	400'
JOB NO.:	10853-256

SHEET NO.:

C.2

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REV.	DESCRIPTION	BY	DATE

STATE OF TEXAS
CURT GARRETT CAMPBELL
106851
LICENSED PROFESSIONAL ENGINEER
2/17/2025

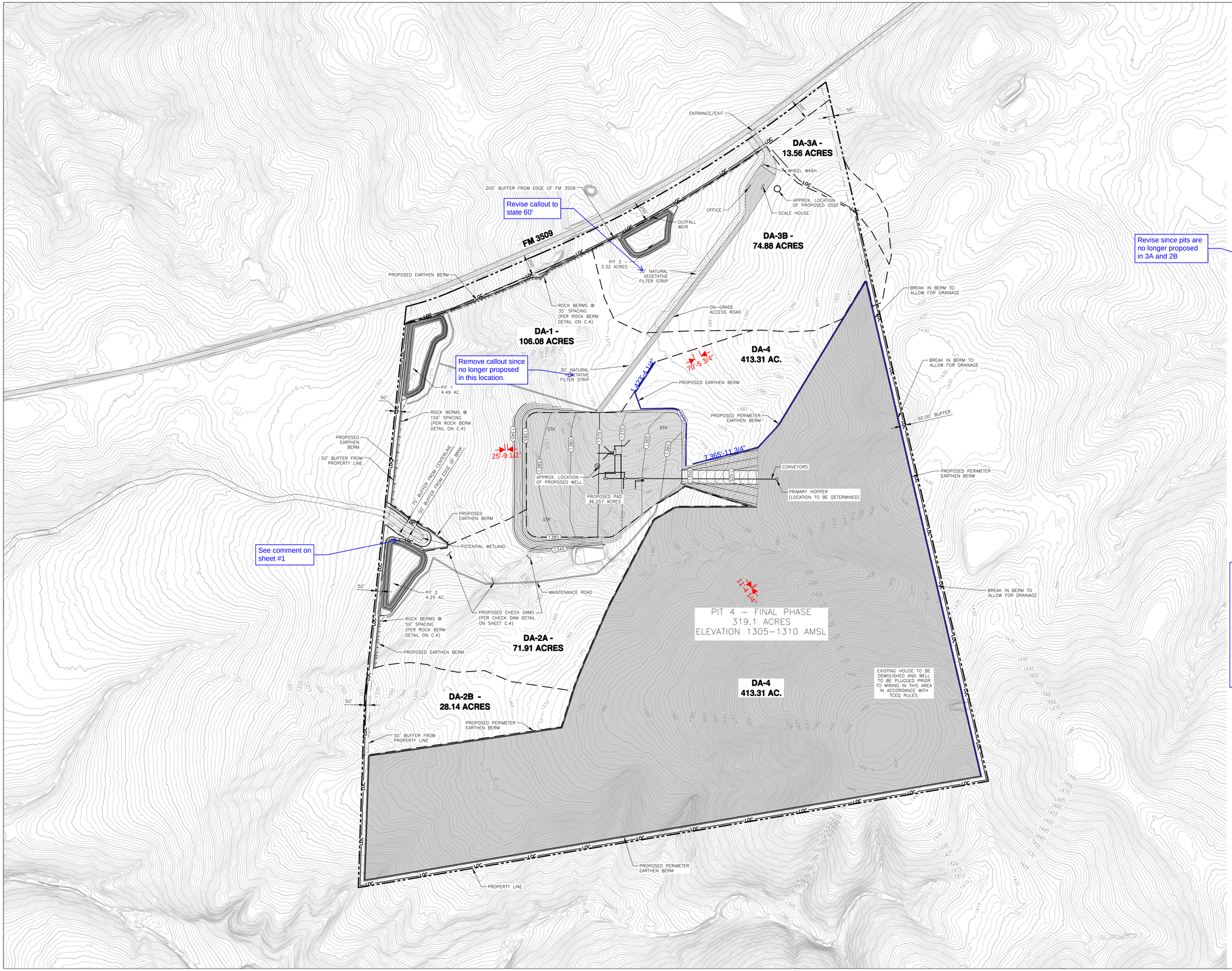
Curt G. Campbell, P.E.
License No. 106851

INITIAL CONDITIONS

LCRA PERMITTING – BURNET QUARRY

ASPHALT INC.

3221 FM 3509, BURNET, TX 78611



N

0 200 400 800

SCALE: 1" = 400'

LEGEND

- PROPERTY LINE
- EXISTING FENCELINE
- 900 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 950 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DRAINAGE AREAS
- LOC LIMITS OF CONSTRUCTION
- SF SILT FENCE
- BERM (TOP & TOE OF SLOPE)
- STK STOCKPILE
- W WATER WELL
- ASPHALT AREA
- BASE AREA
- VEGETATIVE FILTER STRIP

Revise since pits are no longer proposed in 3A and 2B

NOTES:

- PROPOSED RETENTION PITS 3A, 3B, & 2B NOT NECESSARY AT START OF CONSTRUCTION.
  - VEGETATIVE FILTER STRIP WILL BE SUFFICIENT UNLESS IMPERVIOUS COVER IS ADDED ON DOWN SLOPE OF ROAD OR WITHIN THEIR RESPECTIVE DRAINAGE AREAS.
  - THE SAME IS TRUE FOR DRAINAGE AREA 2B UNLESS IMPERVIOUS COVER IS ADDED WITHIN THE DRAINAGE AREA THE RETENTION PIT IS NOT NECESSARY FOR THE TIME BEING.
  - THE PURPOSE OF THESE PITS IS TO INCLUDE THEM IN THE PLAN JUST IN CASE ADDITIONAL IMPERVIOUS SURFACE IS ADDED IN THE FUTURE. THERE IS NO PLAN TO ADD IMPERVIOUS SURFACE AT THIS TIME ABOVE WHAT IS SHOWN. THIS CONSERVATIVE DESIGN APPROACH INTENDS TO INFORM THE OPERATOR THAT IF THEY DO WORK IN OTHER AREAS IN THE FUTURE ADDITIONAL BMPs WILL BECOME NECESSARY.
- NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC ROADWAYS.
  - BERM IS ONLY NECESSARY ALONG EDGE OF "PIT" AT OR WITHIN 200' OF THE ROADWAY.
- 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
- PAD DESIGNED TO DRAIN BACK TO MAIN PIT DEVELOPMENT.
  - WHILE IN EARLY DEVELOPMENT PAD WILL DRAIN TO SOUTHEAST CORNER AND FLOW INTO RETENTION PIT 2A.
- VEGETATIVE FILTER STRIP TO BE REMOVED AND REPLACED BY RETENTION PIT 3B IF IMPERVIOUS COVER IS ADDED TO DRAINAGE AREA 1B.
- PERIMETER BERMS PROPOSED AROUND MAIN PIT DEVELOPMENT.
- 25' BUFFER ZONE REQUIRED FROM TOP OF THE CHANNEL BANK WHERE THE LIMITS OF THE 320 ACRE CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO 5.2(c)(i))
- BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS – ENCROACHMENT INTO A BUFFER ZONE OR DAME TO BUFFER ZONE AREAS WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
- DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.

Include the following note:

"All development is limited to what is shown on the Final Conditions plan sheet."

"Any future development needs to be submitted to LCRA for technical review and permit revision approval."

IMAGE:	N/A
ISSUE DATE:	2/17/2025
DRAWN BY:	JPW
CHECKED BY:	CGC
SCALE: 1" =	400'
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SHEET NO.:

C.3

OF C.4

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REV	DESCRIPTION	BY	DATE

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2/17/2025

FINAL CONDITIONS

LCRA PERMITTING – BURNET QUARRY

ASPHALT, INC.

3221 FM 3509, BURNET, TX 78611

PROPOSED SEQUENCE OF CONSTRUCTION

THE GENERAL SEQUENCE OF CONSTRUCTION CONSISTS OF ESTABLISHING THE CONSTRUCTION ENTRANCE, CLEARING VEGETATION A[...]O PROVIDE STABILIZATION OF ANY DISTURBED AREAS, INSTALLATION OF TEMPORARY BEST MANAGEMENT PRACTICES (BMPS), AND SIMULTANEOUS GRADING AND FOUNDATION LAYING WHILE PERMANENT BMPS ARE INSTALLE[...]WILL BEGIN IN THE PROPOSED PLANT AREA (A) FIRST, FOLLOWED BY INITIATING THE INITIAL PIT AREA B.

A – PLANT AREA: WORK WILL BEGIN WITHIN THE IMMEDIATE AREA OF THE PROPOSED PLANT LOCATION AND EXPAND OUTWARD AT NO MORE THAN FIVE ACRES WITHIN ONE DRAINAGE AREA AT A TIME UNTIL PERMANENT BMPS HAVE BEEN CONSTRUCTED SUFFICIENTLY TO ACT AS PITS. SILT FENCE AND ROCK FILTER DAMS MAY BE USED AS TEMPORARY BMPS FOR INITIAL WORK AREAS. TREES AND BRUSH WILL BE CLEARED AND MULCHED IN PLACE PROVIDING STABILIZATION FOR DISTURBED AREAS. TEMPORARY BMPS WILL BE INSTALLED, PONDS 1 AND 2 WILL BE ROUGHED IN AND UTILIZED AS SEDIMENTATION BASINS IN INITIAL PHASE UNTIL COMPLETED, THEN DRILLING AND BLASTING WILL COMMENCE TO BEGIN EXCAVATION OF THE PLANT AREA. TEMPORARY BERMS MAY BE USED TO DIRECT RUNOFF FROM DISTURBED AREAS TO THE PITS DURING CONSTRUCTION AS NEEDED TO ENSURE RUNOFF FROM DISTURBED AREAS DOES NOT LEAVE UNTREATED. CUT AND FILL ACTIVITIES WILL PREPARE THE PLANT PAD AND PROVIDE MATERIALS FOR THE CONSTRUCTION OF THE PROPOSED EARTHEN BERMS AND FINAL PITS. AFTER CONSTRUCTION OF NECESSARY BERMS AND PITS (INCLUDING THEIR OUTFALL STRUCTURES) IS COMPLETED, MINING OF GORMAN PITS WILL BEGIN, AND THE PLANT EQUIPMENT WILL BE BROUGHT IN AND ERECTED. NEXT, EXCAVATION WILL BEGIN FOR THE FRESHWATER/PROCESS WATER POND, AND UPON COMPLETION OF THE PLANT AND FRESHWATER POND CONSTRUCTION, CRUSHING ACTIVITIES WILL COMMENCE. LATER, EXCAVATION WILL BEGIN IN THE ENTRANCE AREA INCLUDING A TEMPORARY BUILDING PAD. THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, PITS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.

B – QUARRY PIT WORK WILL BEGIN IN THE PROPOSED INITIAL PIT AREA AFTER THE WORK IN THE PLANT AREA HAS STARTED. CLEARING AND MULCHING WILL TAKE PLACE TO STABILIZE THE CLEARED AREAS, FOLLOWED BY EXCAVATION TO A DEPTH OF AT LEAST 2.5 FEET AT NO MORE THAN TEN ACRES OF DISTURBANCE. ONCE THE INITIAL PIT EXCAVATION IS COMPLETED, MULCH WILL BE REMOVED FROM AREAS UPGRADIENT OF THE INITIAL PIT AREA AND THE PIT EXCAVATION WILL BE EXPANDED. FOR PIT EXPANSION AREAS THAT DO NOT NATURALLY DRAIN TO THE PIT NO MORE THAN FIVE ACRES WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DIRECTED INTO THE PIT. THE INITIAL PIT WILL RETAIN 10 YEAR 24-HOUR STORM RUNOFF FROM ALL OF SUB-BASIN DA-04, APPROXIMATELY 16.41 ACRES OF DISTURBANCE, WHICH DRAINS TO THE PIT. MATERIALS EXCAVATED WILL BE USED FOR TEMPORARY BERMS SURROUNDING THE INITIAL PIT AREA. THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, TEMPORARY SEDIMENTATION BASINS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.

THE FINAL RESTORATION OF THE SITE WILL INCLUDE REMOVAL OF BUILDINGS AND STRUCTURES SUCH AS THE SCALE, OFFICE, PROCESSING PLANT, AND THEIR ASSOCIATED FOUNDATION MATERIALS, WHERE PRACTICABLE. THE SITE WILL BE REVEGETATED, AS APPROPRIATE. MULCH CREATED AND STORED FROM INITIAL CLEARING ACTIVITIES CAN BE SPREAD ACROSS THE DISTURBED AREAS TO PROVIDE STABILIZATION. ROADWAYS WILL REMAIN IN PLACE THROUGHOUT THE SITE TO ALLOW ACCESS FOR MONITORING PURPOSES.

Show where the freshwater pond will be located. Is this referencing the Gorman Pits? Please clarify if so.

Make the last two sentences in both sections The first two sentences.

ROAD CROSSINGS

A VARIETY OF TECHNIQUES MAY BE USED DEPENDING ON LOCAL TOPOGRAPHY AND SOIL CONDITIONS. THESE INCLUDE FORD CROSSINGS, CULVERT CROSSINGS, DRAGLINE MATS, AND BRIDGES.

GENERAL CONSIDERATIONS

CONSTRUCT TEMPORARY CROSSINGS AT PROPOSED ROADWAY CROSSINGS AND ANY ADDITIONAL CROSSING POINTS. MINIMIZE THE NUMBER OF ADDITIONAL CROSSINGS TO REDUCE IMPACT TO CREEKS.

WHERE A STREAM CROSSING IS REQUIRED, SELECT A CROSSING SITE WITH THESE FEATURES:
1. STRAIGHT AND NARROW CREEK CHANNEL WITH HIGH BANKS;
2. STABLE CREEK BANKS THAT PROVIDE SOLID FOUNDATION FOR A CROSSING.
MINIMAL ELEVATION CHANGES (0–10% PREFERRED) ON ROAD/TRAIL LEADING TO CROSSING.

INSTALLATION

- KEEP HEAVY EQUIPMENT OUT OF CREEK.
- CONSTRUCT A SWALE OR BERM ACROSS THE APPROACH TO THE CROSSING ON BOTH SIDES OF THE CROSSING. OTHER WATER DIVERSION DEVICES (BROAD BASED DIPS, WATER BARS, ETC.) SHOULD BE USED ON LONG APPROACHES TO MINIMIZE THE AMOUNT OF WATER FLOWING TO THE CROSSING).

STABILIZE EXPOSED SOIL AROUND THE CROSSING WITH MULCH, TEMPORARY SEEDING AND/OR EROSION CONTROL BLANKETS/MATTING.
MAINTENANCE

- KEEP CROSSING SURFACE FREE OF SOIL AND DEBRIS THAT COULD ENTER STREAM.
CHECK CROSSING COMPONENTS WEEKLY AND AFTER RAINFALL TO MAINTAIN STRENGTH AND INTEGRITY.
REMOVE LARGE BRANCHES OR OTHER FLOW OBSTRUCTIONS THAT COULD IMPAIR THE FUNCTION OF THE CROSSING OR CAUSE A FAILURE OF THE CROSSING.

REMOVAL & RESTORATION

- CLEAN OFF CROSSING SURFACE; KEEP DEBRIS OUT THE CREEK CHANNEL.
CAREFULLY REMOVE CROSSING MATERIALS, MINIMIZING DISTURBANCE TO THE CREEK CHANNEL.
PERMANENTLY STABILIZE DISTURBED PORTIONS OF CREEK BANK AND APPROACHES WITH PERENNIAL GRASSES, EROSION CONTROL BLANKETS/MATTING AND/OR RIP RAP
- LEAVE APPROPRIATE WATER DIVERSION STRUCTURES IN PLACE ON BOTH SIDES OF CREEK.

CREEK CROSSINGS

CREEK CROSSINGS SHOULD BE MADE PERPENDICULAR TO THE CREEK FLOWLINE.

IN-STREAM CONTROLS SHOULD ONLY BE USED AS A SECONDARY BMP. STORMWATER RUNOFF APPROACHING A CREEK CROSSING SHOULD BE DIVERTED TO A SEDIMENT TRAPPING BMP BEFORE IT REACHES THE CREEK
IF BASEFLOW IS PRESENT, LCRA PERSONNEL SHOULD BE CONSULTED, AS IT MAY BE NECESSARY TO DIVERT OR PUMP WATER AROUND THE CONSTRUCTION AREA.

EVERY EFFORT SHOULD BE MADE TO KEEP THE ZONE OF IMMEDIATE CONSTRUCTION FREE OF SURFACE AND GROUND WATER. FOR CONSTRUCTION IN THE CREEK CHANNEL, A PIPE OF ADEQUATE SIZE TO DIVERT NORMAL STREAM FLOW SHOULD BE PROVIDED AROUND THE CONSTRUCTION AREA. DIVERSION MAY BE BY PUMPING OR GRAVITY FLOW USING TEMPORARY DAMS

WHERE WATER MUST BE PUMPED FROM THE CONSTRUCTION ZONE, DISCHARGES SHOULD BE IN A MANNER THAT WILL NOT CAUSE SCOURING OR EROSION. ALL DISCHARGES SHALL BE ON THE UPSTREAM OR UPSLOPE SIDE OF EMPLACED EROSION CONTROL STRUCTURES. IF DISCHARGES ARE
NECESSARY IN EASILY ERODIBLE AREAS, A STABILIZED, ENERGY-DISSIPATING DISCHARGE APRON SHALL BE CONSTRUCTED OF RIPRAP WITH MINIMUM STONE DIAMETER OF 6 INCHES AND MINIMUM DEPTH OF 12 INCHES. SIZE OF THE APRON IN LINEAR DIMENSIONS SHALL BE APPROXIMATELY 10 TIMES THE DIAMETER OF THE DISCHARGE PIPE.

NOTES FOR CONSTRUCTION IN CREEKS

SCHEDULE WORK WHEN A MINIMUM OF 30 DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

KARST FEATURES

NO SENSITIVE KARST FEATURES WERE IDENTIFIED ON SITE.

CEDAR MULCH

CEDAR MULCH CAN BE USED AS AN AID TO CONTROL EROSION ON CRITICAL SITES DURING LAND CLEARING AND PERIODS OF CONSTRUCTION WHEN RE-VEGETATION IS NOT PRACTICAL. THE BEST RESULTS ARE OBTAINED FROM ROUGH, LONG CUT (3 – 6 INCH) MULCHING. THE MOST COMMON USES ARE AS BERMS AT THE BOTTOM OF LONG, STEEP SLOPES AND AS A BLANKET IN CHANNELS WHERE DESIGNED FLOW DOES NOT EXCEED 3.5 FEET PER SECOND; ON INTERCEPTOR SWALES AND DIVERSION DIKES WHEN DESIGN FLOW EXCEEDS 6 FEET PER SECOND; AND ON LONG SLOPES WHERE RILL EROSION HAZARD IS HIGH AND PLANTING IS LIKELY TO BE SLOW TO ESTABLISH ADEQUATE PROTECTIVE COVER.

MATERIALS:

CEDAR MULCH IS EASILY OBTAINED AS A BY-PRODUCT OF LAND CLEARING OPERATIONS. IT CAN ALSO BE A COST SAVING ITEM BECAUSE IT IS A RECYCLED MATERIAL AND DOES NOT HAVE TO BE REMOVED FROM THE SITE.

INSPECTION AND MAINTENANCE GUIDELINES:

- CEDAR MULCH SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY EROSION.
- EROSION FROM STORMS OR OTHER DAMAGE SHOULD BE REPAIRED AS SOON AS PRACTICAL BY APPLYING NEW LAYERS OF MULCH.

DEWATERING/DIVERSION PLAN

CREEK CROSSING CONSTRUCTION:
THE CONTRACTOR MUST OBTAIN LCRA APPROVAL OF THE DEWATERING/DIVERSION PLAN BEFORE BEGINNING WORK ON THE PROPOSED ACCESS ROAD CROSSING.

EXTENDED DETENTION BASINS:
A 40-HOUR MINIMUM DELAY MUST BE OBSERVED BEFORE DEWATERING FROM EXTENDED DETENTION BASINS CAN TAKE PLACE. DISCHARGE MUST BE DONE IN A MANNER THAT DOES NOT CAUSE EROSION.

SLOPES

DURING CONSTRUCTION IF SLOPES ARE GREATER THAN 3:1, COORDINATE WITH PROJECT ENGINEER AND LCRA INSPECTOR FOR APPROPRIATE STABILIZATION OR VERIFICATION THAT CUT IN ROCK IS STABLE ENOUGH AND DOES NOT REQUIRE ADDITIONAL STABILIZATION.

BUFFER ZONES

BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS – ENCROACHMENT INTO A BUFFER ZONE OR DAMAGE TO BUFFER ZONES ARES WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.

SEDIMENT RUNOFF PREVENTION

HIGH POINTS ALONG EACH CREEK CROSSING APPROACH WILL BE MAINTAINED IN ORDER TO PREVENT SEDIMENT LADEN RUNOFF FROM FLOWING INTO THE CREEK VIA THE CREEK CROSSING

BMP TYPE

WHEN SILT FENCE INSTALLATION ISN'T PRACTICABLE, MULCH FROM INITIAL CLEARING ACTIVITIES WILL BE UTILIZED TO STABILIZE ROCKY AREAS PRIOR TO SURFACE DISTURBANCE.

CONTRACTOR MAY OPT TO USE MULCH SOCKS/LOGS IN LIEU OF SILT FENCING BASED ON SURFACE CONDITIONS.

MULCH BERMS

MULCH BERMS MADE FROM MULCH PRODUCED ON SITE DURING INITIAL SITE CLEARING WILL BE USED FOR STABILIZATION IN FLAT AREAS OR UPGRADIENT OF SILT FENCE UPON APPROVAL BY LCRA INSPECTOR.

PERMANENT ROCK BERMS AND LEVEL SPREADERS

PERMANENT ROCK BERMS AND LEVEL SPREADERS CONSTRUCTED PER THE "ROCK BERM" LIP OPTION IN FIGURE 3-7 OF THE LCRA TECHNICAL MANUAL MUST USE METALLIC-COATED OR PVC-COATED STEEL WITH A MINIMUM WIRE SIZE OF 14 GAUGE (0.080 INCH OR 2.0 MM DIAMETER).

PRIOR TO CONSTRUCTION OF LEVEL SPREADERS, THE LEVEL SPREADERS MUST BE STAKED IN THE FIELD AND INSPECTED BY LCRA. THE OWNER OR HIS AUTHORIZED REPRESENTATIVE IS RESPONSIBLE FOR CONTACTING LCRA FOR AN INSPECTION. IT IS RECOMMENDED THAT THE DESIGN ENGINEER BE PRESENT AT THE INSPECTION.

LEVEL SPREADERS MUST BE TURNED UP GRADIENT AT THE ENDS AS NECESSARY TO PREVENT FLOW FROM SPILLING AROUND THE ENDS.

LCRA [...]
1. THE C[...]OSION/SEDIMENTATION CONTROLS PRIOR TO ANY SITE PREPARATION WORK (CLEARING, [...]
2. THE F[...]NTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE LCRA WATER QUALITY MANAGEMEN[...] APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
3. A PRE[...] SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT [...]MENT INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY THE LCRA INSPECTOR, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.
4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE LCRA WATERSHED MANAGEMENT PROGRAM. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE LCRA WATERSHED MANAGEMENT INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
5. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER RAINFALL EVENTS IN EXCESS OF 0.5" TO INSURE 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 ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
6. PRIOR TO FINAL ACCEPTANCE BY THE LCRA, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
7. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS (EXCEPT ROCK OUTCROP). SALVAGED TOPSOIL FROM THE SITE SHOULD BE USED WHENEVER POSSIBLE. IMPORTED TOPSOIL SHALL BE WEED FREE WITH
A. A MINIMUM 20% ORGANIC CONTENT. TOPSOIL PLACED ON SLOPES EXCEEDING 5 HORIZONTAL TO 1 VERTICAL SHALL HAVE A RELATIVELY HIGH RESISTIVITY TO EROSION.
B. THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS (SELECT ONE OF THE THREE SEED COMBINATIONS LISTED BELOW):

Reference dewatering activities within BMP maintenance plan. Accumulated sediment will decrease storage capacity of pits.

Dates	Climate	Species (lb/ac)	
Year Round	Permanent Cool/Warm Season (Native Species)	Purple three-awn (Aristida purpurea)	1.4
		Sideoats grama (Bouteloua curtipendula)	2.0
		Silver bluestem (Bothriochloa laguroides)	6.0
		Buffalograss (Buchloe dactyloides)	1.4
		Canadian wildrye (Elymus Canadensis)	1.4
		Engelmann's daisy (Engelmannia pinnatifida)	0.6
		Green sprangletop (Leptochloa dubia)	2.6
		Mexican hat (Ratibida columnifera)	1.0
		Little bluestem (Schizachyrium scoparium)	1.8
		Indiangrass (Sorghastrum nutans)	1.8
		Texas Wintergrass (Nassella leucotricha)	15.0
		Total	35.0
Mar 30-Oct 1	Permanent Warm Season	Bermuda (Cynodon dactylon)(hulled)	45.0

APPENDIX 2.7.2

Dates	Climate	Species (lb/ac)	
Oct 1-Mar 30	Permanent Cool/Warm Season	Bermuda (Cynodon dactylon)(unhulled)	70.0
		*Cereal Rye (Secale cereale)	90.0
		Total	160.0

Seeding table not visible

TAKE CARE TO DISTRIBUTE SEED EVENLY, BY SOWING FINE AND LARGE SEEDS SEPARATELY OR BY USING A FINE SEED BOX. WHEN BROADCASTING SEEDING, THE APPLICATION RATE SHOULD BE DOUBLED AND THE AREA ROLLED TO ENSURE A GOOD SEED/SOIL CONTACT

*FROM SEPTEMBER 15 TO MARCH 1, OATS (21 LB/ACRE) AND WINTER WHEAT (30 LB/ACRE) MAY BE SUBSTITUTED FOR RYE. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 3500 LB/ACRE (HAY), 4500 LB/ACRE OR 2500 LB/ACRE (HYDRAULIC MULCH). TACKIFIER, IF USED SHALL BE BIODEGRADABLE.

C. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF ½ INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK.

D. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH 70% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST. CRITICAL AREAS INCLUDING CREEK CROSSINGS, SLOPES, STORMWATER DISCHARGE POINTS MUST BE COMPLETELY STABILIZED. PERMANENT WATER QUALITY BMPS MUST ATTAIN 80% COVERAGE.

8. DEVELOPER INFORMATION:

OWNER______________________________ PHONE #_______________

ADDRESS____

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

_________ _______________________PHONE #_______________

PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE:

_________ _______________________PHONE #_______________

PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE:

_________ _______________________PHONE #_______________

9. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE LCRA WATERSHED MANAGEMENT INSPECTOR AT LEAST 48 HOURS PRIOR WITH THE LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL.

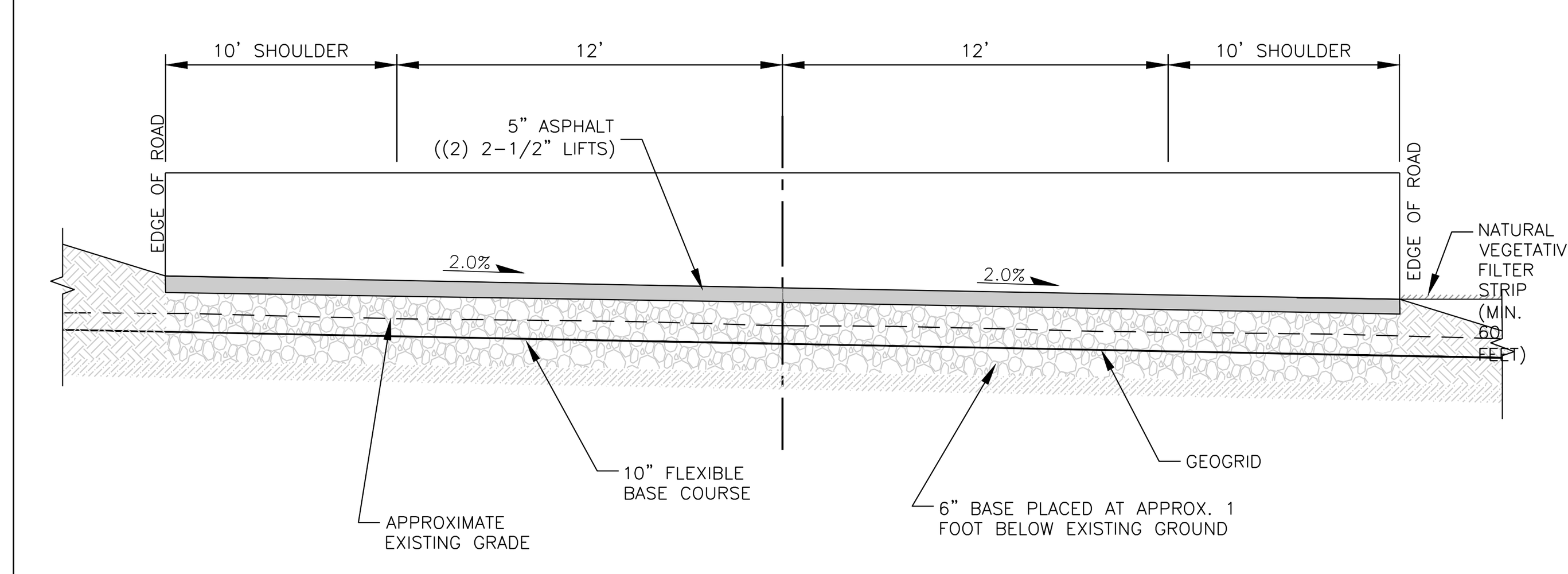
NOTES FOR CONSTRUCTION IN CREEKS:

SCHEDULE WORK WHEN A MINIMUM OF _(INCLUDE A SUFFICIENT TIME PERIOD TO COMPLETE THE WORK)_DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY.

REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

NOTE:
ROAD SECTION IS PRELIMINARY TO BE DETERMINED BY PENDING FINAL GEOTECH REPORT.



TYPICAL DRIVEWAY SECTION

NOTES:
1. FLEXIBLE BASE SHOULD MEET TXDOT SPECIFICATION ITEM 247 GRADE 1–2, TYPE A. FLEXIBLE BASE SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MATERIAL'S MAXIMUM MODIFIED PROCTOR DENSITY (ASTM D 1557) AT A MOISTURE CONTENT OF ±2 PERCENTAGE POINTS OF OPTIMUM MOISTURE.
2. RE-COMPACTED SUBGRADE SHOULD BE SCARIFIED TO A DEPTH OF SIX INCHES AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MATERIAL'S MAXIMUM MODIFIED PROCTOR DRY DENSITY (ASTM D 1557) AND WITHIN A RANGE OF ±2 PERCENTAGE POINTS OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT.
3. GEOGRID SHOULD CONSIST OF TENSAR TX7 AND BE PLACED AT THE BOTTOM OF THE FLEXIBLE BASE MATERIAL

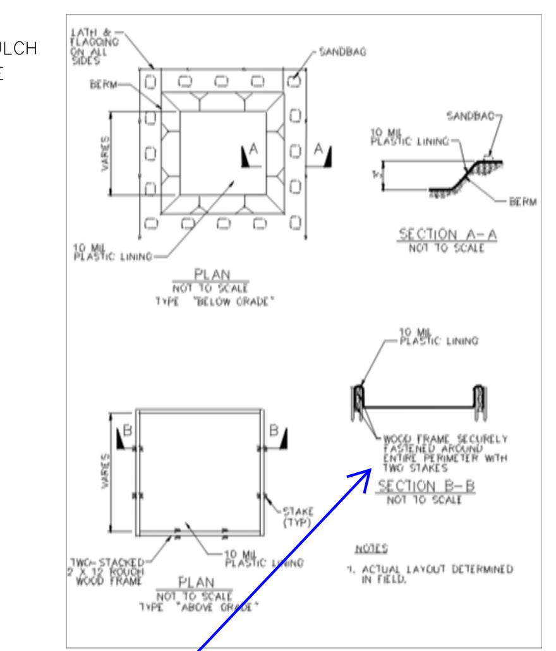


Figure 3-35 Schematic Diagrams of Concrete Washout Areas

3 - 108

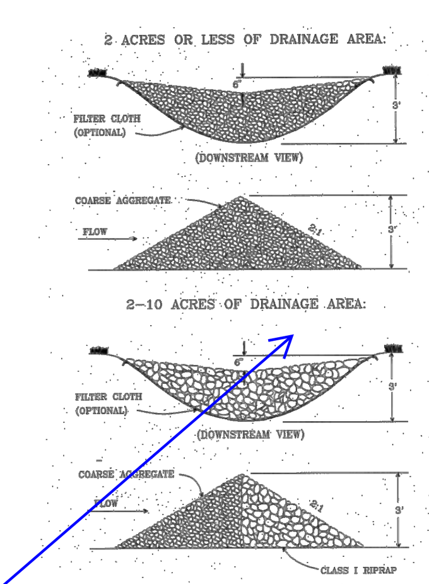
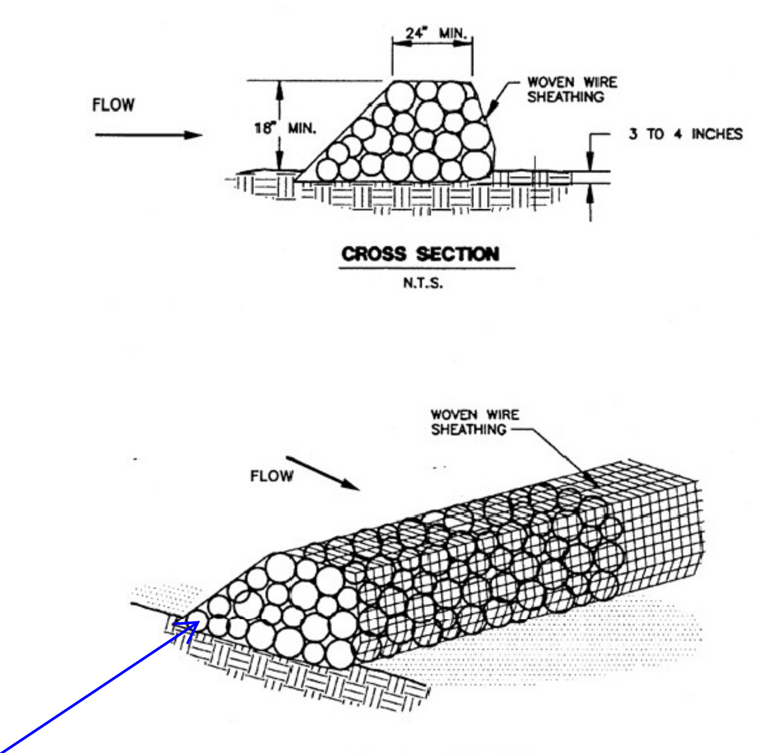


Figure 3-26 Diagram of a Rock Check Dam

3 - 78

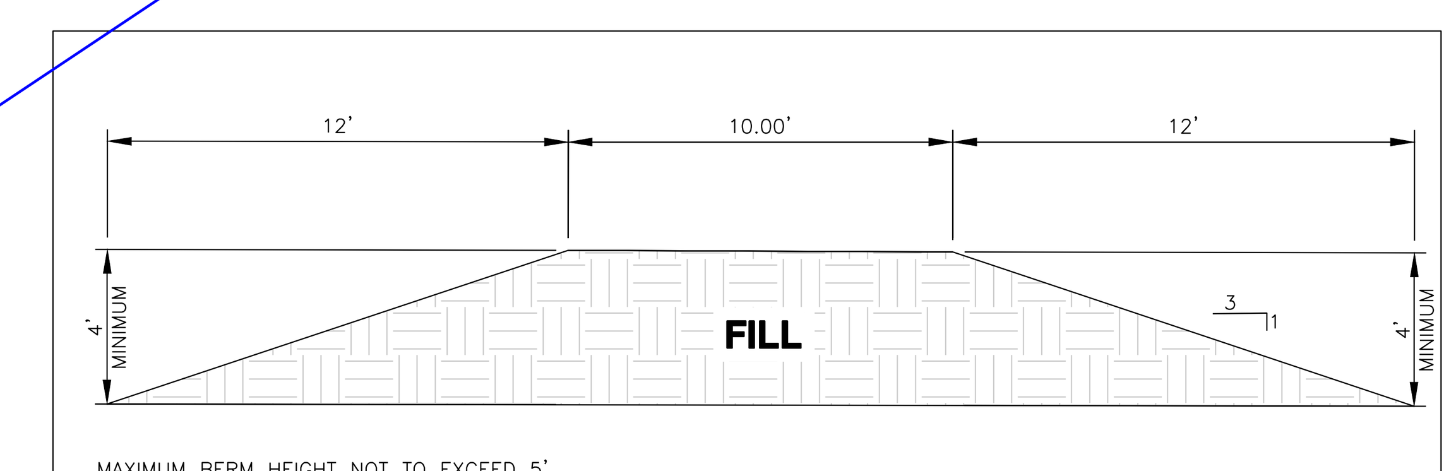


ROCK BERM

COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE (TEMPORARY):
INSPECT BERMS ONCE A MONTH UNTIL SUFFICIENTLY VEGETATED. REPLACE AS NECESSARY.



MAXIMUM BERM HEIGHT NOT TO EXCEED 5'

Provide wheel wash detail

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE. A SCHEMATIC ILLUSTRATION OF A SILT FENCE IS SHOWN IN FIGURE 3-20.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORNE SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW. SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

USE J-HOOKS TO TRAP AND POND RUNOFF FLOWING ALONG UPHILL SIDE OF SILT FENCE AS SHOWN IN FIGURE 3-21 OF THE LCRA HIGHLAND LAKES WATERSHED ORDINANCE WATER QUALITY MANAGEMENT TECHNICAL MANUAL. THIS WILL FILTER OR SETTLE OUTFLOWS AND PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES OF THE FENCE.

MATERIALS:
- SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4 OZ/YD, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
- FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT2, AND BRINDELL HARDNESS EXCEEDING 140.
- WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

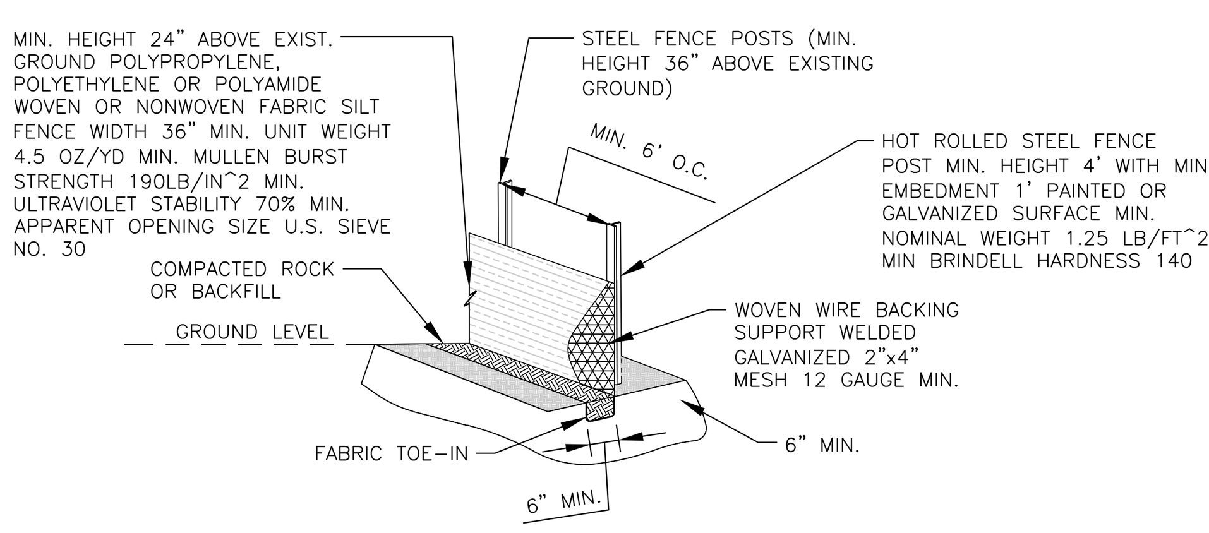
INSTALLATION:
- STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1- FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
- LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. UTILIZE J-HOOKS AS NECESSARY AS SHOWN IN FIGURE 3-21 . THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.
- THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
- THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
- SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
- SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS:
- FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.
- FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE)
- FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES)
- FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE)

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL IN EXCESS OF 0.5 INCH OR MORE.
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.
- WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

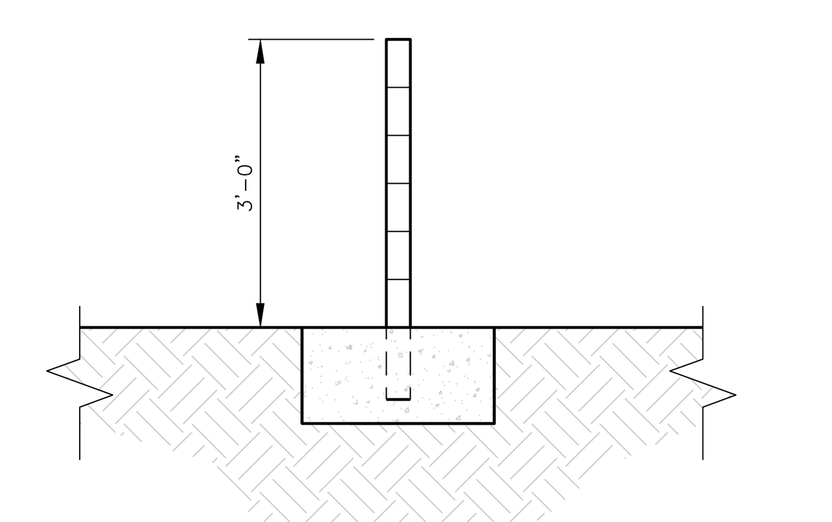
SILT FENCE SPACING ON SLOPING SITES

SLOPE ANGLE	SILTY SOILS	CLAYS	SANDY SOILS
VERY STEEP (1:1)	50 FT.	75 FT.	100 FT.
STEEP (2:1)	75 FT.	100 FT.	125 FT.
MODERATE (4:1)	100 FT.	125 FT.	150 FT.
SLIGHT (10:1)	125 FT.	150 FT.	200 FT.



SILT FENCE WITH TRENCHED TOE
NOT TO SCALE

FIGURE 3-20



DETAIL SHEET C1 SEDIMENT DEPTH MARKER SCALE: 1/2" = 1'-0"

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

MATERIALS:
- THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
- CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION:
- LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
- BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
- PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM (FIGURE 3-23), TO A HEIGHT NOT LESS THAN 18".
- WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
- BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
- THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

COMMON TROUBLE POINTS:
- INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM)
- BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE)

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

HYDROMULCH

SEED: PROVIDE SEED FROM THE PREVIOUS SEASON'S CROP MEETING THE REQUIREMENTS OF THE TEXAS SEED LAW, INCLUDING THE TESTING AND LABELING FOR PURE LIVE SEED (PLS = PURITY X GERMINATION). USE WITHIN 12 MO. FROM THE DATE OF THE ANALYSIS. WHEN BUFFALOGRASS IS SPECIFIED, USE SEED THAT IS TREATED WITH KNO3 (POTASSIUM NITRATE) TO OVERCOME DORMANCY. USE TABLE 1 TO DETERMINE THE APPROPRIATE SEED MIXTURE AND APPLICATION RATES. FOR TEMPORARY COLD SEASON PLANTING, CONSULT TABLES 3 & 4 IN SECTION 3.2.2 OF THE ESC PLAN. IMMEDIATELY AFTER PLANTING THE SEED OR SEED MIXTURE, APPLY CELLULOSE FIBER MULCH UNIFORMLY OVER THE SEEDED AREA AT THE FOLLOWING RATES:

- SANDY SOILS WITH SLOPES OF 3:1 OR LESS 2500 LB. PER ACRE.
- SANDY SOILS WITH SLOPES GREATER THAN 3:1 3000 LB. PER ACRE.
- CLAY SOILS WITH SLOPES OF 3:1 OR LESS 2000 LB. PER ACRE.
- CLAY SOILS WITH SLOPES GREATER THAN 3:1 2300 LB. PER ACRE.

CELLULOSE FIBER MULCH RATES ARE BASED ON DRY WEIGHT OF MULCH PER ACRE. MIX CELLULOSE FIBER MULCH AND WATER TO MAKE A SLURRY AND APPLY UNIFORMLY OVER THE SEEDED AREA USING SUITABLE EQUIPMENT. USE A TACKING AGENT APPLIED IN ACCORDANCE WITH THE MANUFACTURER'SRECOMMENDATIONS OR A CRIMPING METHOD ON ALL STRAW OR HAY MULCH OPERATIONS. REVEGETATION IS CONSIDERED AS 80% COVERAGE WITH NO LARGE BARE AREAS.

These details are not visible, provide a seperate sheet to make sure these are visible.

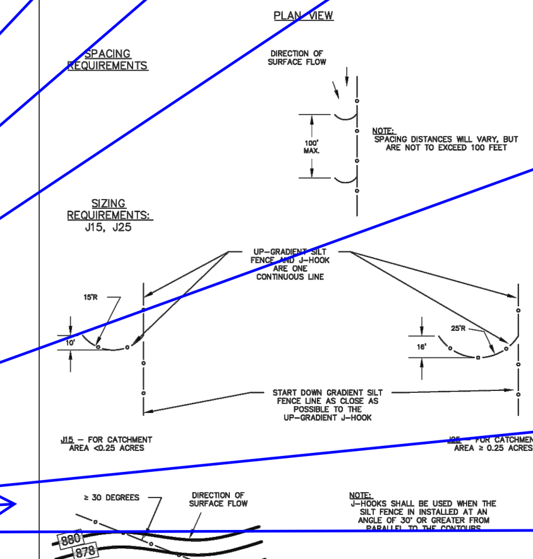


FIGURE 3-21

Installation:

Proper installation of blankets and matting is necessary for these materials to function as intended. They should always be installed in accordance with the manufacturer's recommendations. Proper anchoring of the material and preparation of the soil are two of the most important aspects of installation. Typical anchoring methods are shown in Figure 14 and Figure 15.

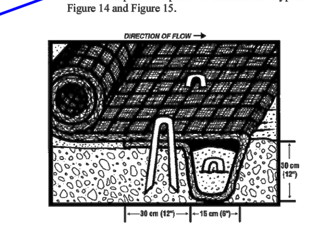


Figure 3-14 Initial Anchor Trench for Blankets and Mats

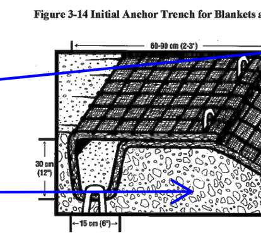
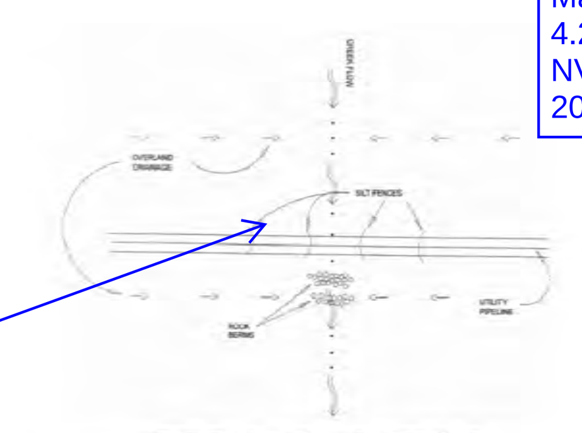


Figure 3-15 Terminal Anchor Trench for Blankets and Mats



Utility Crossing or Excavation within Creek

APPENDIX 2.7.1

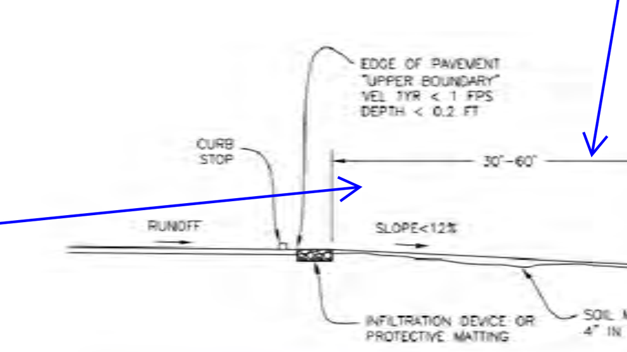


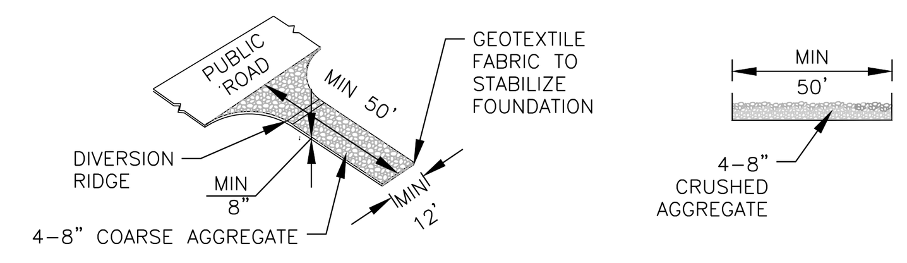
Figure 4-14: Natural Vegetative Filter Strip

Provide notes per LCRA Technical Manual Section 4.2.7 5-8 for NVFS Sheets 204-205

STABILIZED CONSTRUCTION ENTRANCE

INSTALLATION:
1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12' OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE 50' LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–8" HIGHT WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSION AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. INSTALL A PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

MAINTENANCE: INSPECT WEEKLY. REPLACE STONE AS NECESSARY TO PREVENT TRACKING OFF-SITE.



STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

GEOTEXTILE FABRIC PROPERTIES:

- MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN MULLEN BURST.
- EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- GRADE SLOPE TO DRAIN.
- ADD ADDITIONAL STONE AS REQUIRED.
- STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

IMAGE: N/A	
ISSUE DATE:	2/17/2025
DRAWN BY:	JPW
CHECKED BY:	CGC
SCALE: 1" =	AS NOTED
JOB NO.:	10853-256

SHEET NO.:
C.4
OF C.4

WESTWARD
Environmental. Engineering. Natural Resources.
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(830) 249-8284 Fax: (830) 249-0221
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TBPG REG. NO.: 50112

REV.	DESCRIPTION	BY	DATE

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106851
LICENSED PROFESSIONAL ENGINEER
2/17/2025
Curt G. Campbell, P.E.
License No. 106851

TEMPORARY BMP GENERAL NOTES

LCRA PERMITTING – BURNET QUARRY
ASPHALT, INC.
3221 FM 3509, BURNET, TX 78611