4833 Spicewood Springs Road, Suite 204
Austin, TX 78759
512.342.6868

ADDENDUM NO. 2

TO: ALL PLAN HOLDERS

DATE: January 4, 2024

PROJECT: NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
TxDOT CSJ NO. 2415NEWBR
NEW BRAUNFELS, TEXAS

The Specifications and Contract Documents are modified as described below. All bidders shall acknowledge receipt of this and all other addenda on page **5 of 6** of the Bid Form issued with this addendum. This addendum becomes a part of the contract documents. All provisions of the original plans, specifications, and contract documents shall remain in full force and effect, except as modified by this addendum.

1. **Pre-Bid Meeting:**

   A non-mandatory pre-bid meeting was held on December 19, 2023. The pre-bid meeting agenda and sign-in sheet is enclosed.

2. **Bid Form:**

   The bid form is modified to include the following:

   - **Bid Item 1.02 – Quantity revised from 1,800 LF to 2,300 LF to include silt fence required around the staging area.**
   - **Bid Item 1.11 – Description modified from 42" Sloped End Treatment (4:1) to TxDOT CH-FW-0 Concrete Wingwall With 4:1 Flared Wings.**
   - **Bid Item 1.17 – Quantity revised from 1,200 SY to 3,000 SY to include disturbed area encompassing the outfall channel grading.**
   - **Add new Bid Item 1.19 – TxDOT 247 6" Flexbase Compacted in Place (Type D Grade 1-2) for the temporary construction access road.**

3. **Technical Specifications:**

   Item 1.02 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control: Section 102-5.1 Items C-102-5.1b and C-102-5.1c have been modified to clarify that the payment includes installation and removal of each item specified.

   Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures: The bid item description in Section 752-5.1 has been modified from 42" Sloped End Treatment (4:1) to TxDOT CH-FW-0 Concrete Wingwall With 4:1 Flared Wings.

4. **Plan Sheets:**

The following clarifications or modifications are made to the plan sheets:

- **Plan Sheet G02 Summary of Quantities and Index of Sheets – Modified bid item 1.11 description from 42" Sloped End Treatment (4:1) to TxDOT CH-FW-0 Concrete Wingwall With 4:1 Flared Wings and added Bid Item 1.19 – TxDOT 247 6" Flexbase Compacted in Place (Type D Grade 1-2).**
- **Plan Sheet G03 Project Notes – Revised Note 4 in the Contractor's Staging/Storage Area, Stockpile Area, and Disposal Areas to add clarity that all removed materials shall be disposed of legally off airport property.**
- **Plan Sheet C01 Project Layout – Revised haul route location and added flex base temporary construction access road.**
- **Plan Sheets C07-C08A Drainage Area Maps and Calculations – Drainage areas and calculations were revised for City permitting purposes. Sizes of drainage infrastructure for bidding purposes remain unchanged.**
- **Plan Sheets C09-C13 Storm Drain Plan and Profile – Added inlet sizes and notes on grate rating design standards.**
- **Plan Sheet C14 Storm Drain Line B Plan and Profile STA 4+20 to End – Revised riprap and weir structure length to match height specified in the detail.**
- **Plan Sheet C24 Erosion Control Plan I – Revised location of stabilized construction exit.**
- **Plan Sheet C26 Erosion Control Plan III – Revised scale bar from 60 to 40 scale to match the scale of the sheet.**

5. **Responses to Pre-Bid Questions:**

See attached for 2415NEWBR Pre-Bid questions and responses.

ADDENDUM NO. 2 ISSUED BY:
KSA

Grayson Cox, P.E.
Project Manager

Attachments:
2415NEWBR Pre-Bid Agenda
2415NEWBR Pre-Bid Conference Sign-In Sheets
2415NEWBR Pre-Bid Question Responses
Re-Issued Under Separate Cover:
2415NEWBR Bid Form Revised via Addendum 2
2415NEWBR Spec C-102-5.1 Revised via Addendum 2
2415NEWBR Spec D-752-5.1 Revised via Addendum 2
2415NEWBR Plans Sheets Revised via Addendum 2

KSA A·DYNAMIC·PERSPECTIVE

Pre-Bid Meeting

Airport: New Braunfels National Airport

Organizer: Grayson Cox

Date: Tuesday, December 19, 2023

KSA Project No.: 101203

Project: North Apron Reconstruction and Rehabilitation

Client Project No.: 2415NEWBR

I. **Sign-In Sheet**

II. **Introductions and Roles**

A. Dr. Robert Lee, Airport Director, New Braunfels National Airport

B. Brendan Haas, Airport Ops Supervisor, New Braunfels National Airport

C. Robert Johnson, P.E., Project Manager, TxDOT Aviation

D. Grayson Cox, P.E., Project Manager, KSA

III. **Bidding Procedures**

A. See Notice to Bidders and Instructions to Bidders section in Contract Documents for bidding information.

B. All bidders are encouraged to review all contract documents including Mandatory Federal Contract Provisions, TxDOT General Provisions, Special Provisions, and Specifications.

C. Technical questions/comments should be submitted to Grayson Cox, P.E., (gcox@ksaeng.com, 512.342.6868) by Wednesday, January 3, 2023, at 5:00p. Questions must be in writing and received prior to date mentioned.

D. For other information visit the Aviation website or call Sheri Quinlan at 512.971.5974.

E. Sealed bids for the construction of airport improvements at the New Braunfels National Airport are due to be delivered to TxDOT Aviation Division, Attn: Sheri Quinlan, 6230 E. Stassney Lane, 2nd Floor, Austin, Texas 78744 on Thursday, January 11, 2024, at 2:00p. At that time, bids will be publicly opened and read aloud. Any bid received after closing time will be returned unopened.

F. Bid Proposal

1. Bidders must utilize the bid proposal form provided on TxDOT's website.

2. Bidders must provide pricing for ALL items. The contract award will be based on the lowest qualified bid.

G. Each bid should be furnished with a Bidder Qualifications as stated in the Contract Documents.

H. Bidder shall reference the Aviation Division General Construction Contract Provisions.

1. http://txdot.gov/inside-txdot/division/aviation/general-provisions.html

I. Contract will be awarded within __60__ calendar days from bid opening.

J. Federally funded project

1. DBE Goal is 9%. Questions regarding DBE Goal and Good Faith Efforts should be directed to Sheri Quinlan at 512.971.5974. DBE Plan **MUST** be submitted within 5 calendar days after bid opening to TxDOT Aviation via email to AVNRFQ@txdot.gov.

2. Wage rate requirements will be required as shown in the Contract Documents.

3. Buy American – Steel and Manufactured Products for Construction Contracts (See Special Notice to Bidders).

IV. **Scope of Work**

A. Base Bid – North Apron Reconstruction and Rehabilitation

1. Construct Drainage Improvements
2. Remove Portions of Existing Apron Pavement and Construct New Apron Pavement
3. Mill Portions of Existing Apron Pavement and Install New Apron Surface Course
4. Mark Apron and Adjacent Taxilane/Taxiway Pavement

V. **Site Access / Staging Areas**

A. Site Access and Staging Area

1. See Plan Sheet C01 for Staging Area

VI. **Safety and Phasing Plan**

A. Contractor will be required to be in compliance with FAA Advisory Circular 150/5370-2G, Operational Safety on Airports During Construction.

B. Phase 1

1. Partial closure of north apron and Taxiway A
2. Demolition and cold milling of apron pavement
3. Excavation including stockpile of topsoil
4. Installation of drainage infrastructure
5. Lime treated subgrade
6. Application of crushed aggregate base
7. Application of hot mix asphalt pavement
8. Replace stockpiled topsoil and install sod
9. Install tiedowns and perform placement of markings
10. Clean all paved surfaces to remove FOD
11. Remove (if any) low profile barricades
12. Remove all equipment, materials, and personnel from work area

C. Phase 2

1. Partial closure of north apron and Taxiway A
2. Demolition and cold milling of apron pavement
3. Excavation including stockpile of topsoil
4. Installation of drainage infrastructure
5. Lime treated subgrade
6. Application of crushed aggregate base
7. Application of hot mix asphalt pavement
8. Replace stockpiled topsoil and install sod
9. Install tiedowns and perform placement of markings
10. Clean all paved surfaces to remove FOD

11. Remove (if any) low profile barricades
12. Remove all equipment, materials, and personnel from work area

D. Phase 3

1. Partial closure of north apron and Taxiway A
2. Demolition and cold milling of apron pavement
3. Lime treated subgrade
4. Application of crushed aggregate base
5. Application of hot mix asphalt pavement
6. Replace stockpiled topsoil and install sod
7. Install tiedowns and perform placement of markings
8. Clean all paved surfaces to remove FOD
9. Remove (if any) low profile barricades
10. Remove all equipment, materials, and personnel from work area

VII. **Other Information**

A. Contract Time

1. _180_ **Calendar** days for Base Bid.
2. Liquidated Damages are $1,000 per calendar day

B. RPR Office (as required per Specification KSA-100)

C. Materials Acceptance by Owner / Materials Quality Control by Contractor

D. Protection of any existing utilities in the project area is the responsibility of the Contractor. Engineer has endeavored to show all known utilities within the Contract documents, but this shall not relieve the Contractor from full responsibility in anticipating all underground obstruction, whether or not shown on the plans; Contractor should call for utility locates and verify locations of all utilities prior to starting construction.

E. SW3P – Contractor Responsibility

F. Engineer's estimate is $6,463,517

Notes:

SIGN-IN SHEET

City of New Braunfels
New Braunfels National Airprot TxDOT CSJ No. 2415NWBR
Pre-Bid Conference
Tuesday, December 19, ~~2024~~ 2023 10:30 a.m.

NAME	COMPANY	PHONE	EMAIL
Brandon Alcala	DJ Jackson Const.	214 790 5403	info@djctx.com
Jonathan Salter	Ambroz: Contracting	816.200.0708	jsalter@ambroz:.com
Garrett Meek	Jordan Foster	210-414-1605	gmeek@jordanfostar construction.com
Gillermo Zertuche	JR RAMON DEMO	210-225-4583 210-912-9021	Gillermo@RAMONDEMOLITION.com
Grayson Cox	KSA	512.560.2640	gcox@ksaeng.com

SIGN-IN SHEET

City of New Braunfels
New Braunfels National Airprot TxDOT CSJ No. 2415NWBR
Pre-Bid Conference
Tuesday, December 19, ~~2021~~ 2023 10:30 a.m.

NAME	COMPANY	PHONE	EMAIL
Norma Alvarado	Henock Construction	210-661-2737	norma@henockconstruction.com
MARK PARNIN	SPAWGLASS Civil	210-723-3772	MARK.PARNIN@spawglass.com
Mike Perez	Allen Keller Co.	830-997-2118	Mperez@AllenKellerCo.com
Robert Johnson	TX DOT	512-701-9702	robert.n.johnson@txdot.gov

SIGN-IN SHEET

City of New Braunfels
New Braunfels National Airprot TxDOT CSJ No. 2415NWBR
Pre-Bid Conference
Tuesday, December 19, ~~2021~~ 2023 10:30 a.m.

NAME	COMPANY	PHONE	EMAIL
Pedro Mendoza	DanWilliamscompany	512-320-1410	pmendoza@danwilliamscompany.com
Manny Ibarra	Capital Excavation	512 214 2531	estimating@capitalexcavation.com
BRENT WATSON	JERDON ENTERPRISE	210-317-7074	BRENT@JERDONLP.com
KEN HOSANG	KSJ	936-499-8367	KHOSANG5259@GMAIL.COM
Matt Vestal	TSC	830 237 8062	Matthew.Vestal@strlco.com
ROBERT LEE	KBAZ	830 221 4095	RLEE@NEWBRAUNFELS.GOV
BRENDAN HAAS	KBAZ	830 221-4292	bhaas@NEWBRAUNFELS.GOV

2415NEWBR Responses to Pre-Bid Questions

Issued via Addendum No. 2

1. Is the elevated sidewalk above the outfall on Storm Drain Line B to be demolished?

   This sidewalk no longer exists.

2. Is base removal included on bid item P-101-5.1b - Demolish HMA Pavement to Subgrade?

   Yes, please refer to Item P-101 Preparation/Removal of Existing Pavements within the technical specifications.

3. Can we reuse the existing base?

   No, the base material must meet the material specifications.

4. This project is majority self-performed work by the general contractor, what scopes of work did you use when determining the 9% DBE goal?

   The DBE goal is set by TxDOT Aviation.

5. What reliable and competent DBE contractors did you use to determine DBE goal?

   The DBE goal is set by TxDOT Aviation.

6. Can we leave asphalt, base, and dirt on site at the existing stockpile site?

   No, all removed material must be legally disposed of off-site. Refer to the project notes on Plan Sheet G03.

7. Do you have a preliminary construction schedule you can provide? How did you determine the 180 calendar days? Can we work nights and weekends being a tight schedule? Or will you allow additional time on this project?

   The awarded contractor is required to provide a construction schedule. The contract time specified is reflective of the disruption this work will create to the Airport and its tenants. Work may only be performed when the Air Traffic Control Tower is open 7:00 am to 7:00 pm daily.

8. I do not see any gates or fencing along the route to the proposed project location, is there any type of security including badging, escorts, flagging etc. the contractor will be required to provide?

   Refer to the project notes on sheet G03. Airport has confirmed all gates will remain open during construction. Badging won't be required.

9. Can we work out of phase?

   No. Any proposed adjustments to the phasing can be discussed at the pre-construction conference.

10. Can you explain why the bid form is divided into 3 schedules? Will this be awarded based on all 3 schedules?

    The three schedules are for construction administration purposes only. Contract award will be based upon lowest qualified total bid.

11. Who is the supplier for the anchor tie down rod?

    Both the plan detail and anchors referenced in the technical specification are acceptable.

12. Specifications include number of blows or gyrations being 50. Does this mean we are allowed to provide a Superpave C 64-22 SAC-B Virgin design?

    Material must meet the technical specifications.

13. Due to the difficulty of the P-209 base specification for various reasons, the local quarries have requested the two attached base specifications be allowed?

    Material must meet the technical specifications. Material submittals will be reviewed after award of the construction contract.

14. Our suppliers have offered is a blended P-209 product, but this product will not meet the sodium or magnesium soundness. Will this be allowed?

    Material must meet the technical specifications.

15. Are all utilities relocated out of conflict in contractors work area?

    Engineer has endeavored to show all known utilities within the Contract documents, but this shall not relieve the Contractor from full responsibility in anticipating all underground obstruction, whether or not shown on the plans; Contractor should call for utility locates and verify locations of all utilities prior to starting construction.

16. Who is responsible for the testing on this project?

    The contractor is responsible for their own quality control testing. The owner will provide material acceptance testing. Refer to Item C-100 within the technical specifications.

17. Do the inlets and grates need to be airport rating (H-20 or FAA standards). The plans or specs did not indicate either.

    Refer to the notes on plan sheets C12-C16 included with this addendum.

18. The Plans for the Tie-Downs show an anchor detail .75"x 2.5' long rod with a helix screw in auger. The spec calls for a ductile iron anchor with a minimum external dimensions shall be 4-1/2" x 7-1/2" x 3-1/2" high. This spec is usually for a Neenah Foundry type anchor.

    Both the plan detail and anchors referenced in the technical specification are acceptable.

19. The bid items call for a 42" Sloped End Treatment but the plans show a PROPOSED TXDOT CH-FW-0 CONCRETE WINGWALL WITH 4:1 FLARED WINGS?

    Bid Item 1.11 description has been revised to TxDOT CH-FW Concrete Wingwall with 4:1 Flared Wings.

20. Suppliers in the local vicinity do not make the P-209 base material. Due to the distance the material will have to be hauled, there is a good possibility of segregation of the material during transport and may not meet the specification when delivered on site. Please advise on what will be required to rectify the situation.

    The typical quality assurance testing schedule includes at least one aggregate base sample per day. These samples must meet specifications.

21. Bid Item 1.02 specifies Installation and Removal of Silt Fence. Does the Rock Construction Exit (1.03) and Erosion Control Logs (1.04) remain in place or get removed? If they are to be removed, where do they get paid for removal?

    Removals of all temporary construction erosion controls are included in the installation bid items. See the revised specification issued via this addendum.

22. Should the 42" SET (1.11) be a 36" Headwall / Flared Wingwall structure? Can we use a precast structure?

    Structure must meet the specs for TxDOT CH-FW-0 Concrete Wingwall Structure with 4:1 Flared Wings.

23. Will a maintenance bond be required for this project?

    TxDOT Aviation specifies a one-year warranty, but a bond for this warranty is not required. For all TxDOT Aviation projects a one-year warranty inspection will be conducted, and the contractor will be required to correct any deficiencies covered by this warranty.

24. Is there a bid item for re-grading of the channel?

    Channel grading is covered in Bid Item 2.02.

25. Is the 4000 CY unclassified excavation for grade changes in the apron area and reshaping of the outfall for Storm Drain Line B?
    Yes.

26. It looks like there is a 1' – 2' berm on the Storm Drain Line B outfall, where is this embankment paid for?

    Embankment earthwork is covered utilizing the excavation from the apron and channel.

27. How do the contours tie in on the north side of the outfall for Storm Drain Line B?

    Contours will daylight down at 4:1 to tie in beyond the weir structure and top of embankment berm. See the revised Plan Sheet C14.

28. Looks like all of the drainage pipe needs to be backfilled to subgrade with flowable fill, is this correct?

    Refer to Details 1 and 2 on Plan Sheet C16.

29. If broken up asphalt is allowed to be left on site will it need to be sized?

    All removed material shall be legally disposed of offsite.

30. Is this project subject to Davis- Bacon Act wages?

    Refer to the contract documents.

31. P-152-4.2b - Undercut and Replace Unsuitable Subgrade – Can on-site material (IE existing flexbase) be used to replace the unsuitable subgrade?

    Refer to Detail 3 on Sheet C22.

32. Bid Item C-102-5.1a-Installation and Removal of Silt Fence 1,800 LF: Does this item cover the additional 500 LF that is needed but not shown for the outer limits of the stockpile/staging area?

    Silt fence quantity is updated to include the silt fence required around the contractor's staging area.

33. Note 4 on sheet G-03 under contractor's staging/storage area, stockpile area, and disposal areas states that "All waste and/or spoil materials shall be disposed of off airport property by the contractor in a licensed landfill, unless otherwise noted." Is there a specific licensed landfill you would like us to take this?

    All removed material shall be legally disposed of offsite. The reference to a "licensed landfill" is removed via this addendum.

34. On sheet C-26 can you confirm if this is 60 scale or 40 scale? The scale appears to be off.

    The scale is corrected and Plan Sheet C26 is reissued via this addendum.

35. Bid Item Undercut and replace unsuitable subgrade 500 CY. How many locations will there be that this occurs?

    This will be determined by the RPR in the field during construction.

36. Which of the 6 inlets is the 5'x5' Grate Inlet? It is not called out in the plans.

    Refer to the notes on Plan Sheets C12-C16 included with this addendum.

Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Engineer ~~Resident Project Representative (RPR)~~ during the life of a contract to control pollution of air and water, soil erosion, and siltation, through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed, and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the Engineer ~~RPR~~ before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The Engineer and RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the Engineer ~~RPR~~.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the Engineer ~~RPR~~.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the Engineer ~~RPR~~. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the Engineer ~~RPR~~, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The Engineer ~~RPR~~ may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance, and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of

silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the Engineer ~~RPR~~.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the Engineer ~~RPR~~. Completed and accepted work will be measured as follows:

a. Installation and removal of silt fence will be measured by the linear foot (meter). This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation and maintenance of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

b. Rock Construction Exits will be measured by each exit installed and accepted by the Engineer in accordance with the plans and specifications. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation and maintenance of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

c. Erosion Control Logs will be measured by the linear feet installed and accepted by the Engineer in accordance with the plans and specifications. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation and maintenance of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

d. All work performed and materials furnished as prescribed for the Stormwater Pollution Prevention Plan (SWP3) Document shall be measured as a lump sum price for "Stormwater Pollution Prevention Plan (SWP3) Document". The total lump sum shall be paid pro-rata per month and the monthly amount shall be calculated by dividing the lump sum by the contract time in months. If the Contractor fails to update the SWP3, and provide and properly maintain control measures in compliance with the Contract requirements, as determined by the Engineer, the Contractor will be considered in noncompliance with this Item. Each month's pay request will not be processed until the SWP3 has been updated. The total payment for this Item will not exceed 10% of the total Contract amount before 70% native vegetative cover has been established or final stabilization has been approved by the Engineer and the NOT has been submitted in accordance with the TPDES GP TXR150000. If all work is completed in accordance with the TPDES GP TXR 150000 and accepted by the Engineer and before payment of the amount allowed by this Item, the balance due shall be paid on the next estimate after the Engineer's approval that 70% native background vegetative cover is met or equivalent permanent stabilization have been employed in accordance with the TPDES GP TXR 150000.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the Engineer ~~RPR~~ and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1a	Installation and removal of silt fence per linear feet (meter)
Item C-102-5.1b	Installation and removal of Rock Construction Exit – per each

Item C-102-5.1c	Installation and removal of Erosion Control Logs – per linear feet
Item C-102-5.1d	Storm Water Pollution Prevention Plan (SWPPP) – per lump sum

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the Engineer ~~RPR~~ will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33	*Hazardous Wildlife Attractants on or Near Airports*
AC 150/5370-2	*Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461	*Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures

DESCRIPTION

752-1.1 This item shall consist of reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

752-2.1 Concrete. Reinforced concrete shall meet the requirements of Item P-610.

CONSTRUCTION METHODS

752-3.1 Unclassified excavation.

a. Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for excavation.

d. All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for excavation.

e. After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

752-3.2 Backfilling.

a. After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils and 95% of the maximum density for noncohesive soils. The maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

b. No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.

c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for "unclassified excavation for structures."

752-3.3 Weep holes. Weep holes shall be constructed as shown on the plans.

752-3.4 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankment, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

752-4.1 The quantity of each structure shall be for each structure, completed and in place, according to the plans. These prices shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item. No measurements, payment, or other allowances shall be made for cofferdams, pumping, bracing, or finishing. Required bedding material will not be paid for individually and shall be incidental to the structure.

BASIS OF PAYMENT

752-5.1 Payment will be made at the contract unit price per each TxDOT CH-FW-0 Concrete Wingwall with 4:1 Flared Wings for 36" RCP.

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and placing the materials, and for all labor, equipment, tools, and incidentals necessary to complete the structure.

Payment will be made under:

Item D-752-5.1	TxDOT CH-FW-0 Concrete Wingwall With 4:1 Flared Wings - per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

END OF ITEM D-752

SUMMARY OF QUANTITIES

Base Bid Schedule 1: General Items

Item No.	Spec. No.	Description	Units	Estimated Quantity	Actual Quantity
1.01	C-100-14	Contractor Quality Control Program (CQCP)	LS	1	
1.02	C-102-5.1a	Installation and Removal of Silt Fence	LF	2,300	
1.03	C-102-5.1b	Rock Construction Exit	EA	1	
1.04	C-102-5.1c	Erosion Control Logs	LF	200	
1.05	C-102-5.1d	Storm Water Pollution Prevention Plan (SWPPP)	LS	1	
1.06	C-105-6	Mobilization	LS	1	
1.07	D-701-5.1a	24" RCP (Class V)	LF	1,070	
1.08	D-701-5.1b	36" RCP (Class V)	LF	390	
1.09	D-751-5.1a	4' x 4' Grate Inlet	EA	5	
1.10	D-752-5.1b	5' x 5' Grate Inlet	EA	1	
1.11	D-752-5.1	TxDOT CH-FW-0 Concrete Wingwall With 4:1 Flared Wings	EA	1	
1.12	P-152-4.2b	Undercut and Replace Unsuitable Subgrade	CY	500	
1.13	P-620-5a	Pavement Marking Removal	SF	900	
1.14	P-620-5b	Reflective Yellow Markings	SF	6,750	
1.15	P-620-5c	Non-Reflective Black Markings	SF	9,250	
1.16	P-620-5d	Non-Reflective Green Markings	SF	6,250	
1.17	T-904-5.1	Sodding	SY	3,000	
1.18	T-905-5.1	Topsoil (Obtained on Site)	CY	140	
1.19	TxDOT 247	6" Flexbase Compacted in Place (Type D Grade 1-2)	SY	810	
1.20	TxDOT 420-5	Concrete Well Structure	EA	1	
1.21	TxDOT 432-5	Stone Riprap	CY	5	
1.22	KSA-105-3.1	Barricades and Markings for Pavement Closures	LS	1	
1.23	KSA-105-3.2	Preparation of the Safety Plan Compliance Document	LS	1	
1.24	KSA 702-5.1	Aircraft Tiedowns	EA	264	

Base Bid Schedule 2: Apron Reconstruction

Item No.	Spec. No.	Description	Units	Estimated Quantity	Actual Quantity
2.01	P-101-5.1b	Demolish HMA Pavement to Subgrade	SY	37,000	
2.02	P-152-4.2a	Unclassified Excavation	CY	4,000	
2.03	P-155-8.2a	12" Lime Treated Subgrade	SY	37,000	
2.04	P-155-8.2b	Lime (6%)	TON	980	
2.05	P-209-5.1	9" Crushed Aggregate Base Course	SY	37,000	
2.06	P-401-8.1	Asphalt Surface Course	TON	8,500	
2.07	P-602-5.1	Emulsified Asphalt Prime Coat	GAL	11,000	
2.08	P-603-5.1	Emulsified Asphalt Tack Coat	GAL	3,000	

Base Bid Schedule 3: Apron Rehabilitation

Item No.	Spec. No.	Description	Units	Estimated Quantity	Actual Quantity
3.01	P-101-5.1a	Cold Mill 2" HMA Pavement	SY	22,000	
3.02	P-401-8.1	Asphalt Surface Course	TON	2,500	
3.03	P-602-5.1	Emulsified Asphalt Prime Coat	GAL	6,600	

SHEET INDEX

MARK	REVISION	DATE
1	REVISED PER ADDENDUM 2	1/3/24

SHEET NAME: SUMMARY OF QUANTITIES AND INDEX OF SHEETS

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION NEW BRAUNFELS, TEXAS

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/19/2023
KSA JOB NO.:	101203

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LICENSED
PROFESSIONAL ENGINEER

SEAL: 12/5/2023
TBPE Firm Registration No. F-1356

SHEET NO.
G02

GENERAL:

1. THE TERM "CITY" USED THROUGHOUT THE PLANS AND SPECIFICATIONS SHALL REFER TO THE CITY OF NEW BRAUNFELS, TEXAS.

2. THE TERM "AIRPORT" USED THROUGHOUT THE PLANS AND SPECIFICATIONS SHALL REFER TO THE NEW BRAUNFELS NATIONAL AIRPORT. THE TERM "AIRPORT" SHALL ALSO BE INTERPRETED TO MEAN "AIRPORT MANAGEMENT AND / OR OPERATIONS STAFF".

3. THE TERM "OWNER" USED THROUGHOUT THE PLANS AND SPECIFICATIONS SHALL REFER TO THE CITY OF NEW BRAUNFELS. THE TERM "OWNER" SHALL ALSO BE INTERPRETED TO MEAN "OWNER'S REPRESENTATIVE". THE TERM "OWNER" MAY ALSO BE USED INTERCHANGEABLY WITH THE TERM "CITY" AND / OR "AIRPORT", AS APPLICABLE.

4. THE AIR OPERATIONS AREA (AOA) IS DEFINED AS ALL AREAS OF THE AIRPORT INSIDE THE PERIMETER FENCE AND INCLUDES, BUT IS NOT LIMITED TO, APRONS, TAXIWAYS, RUNWAYS, AND RUNWAY AND TAXIWAY SAFETY AREAS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HIS OWN PROJECT OFFICE, TOILET FACILITIES, EQUIPMENT, SUPPLIES, AND OTHER INCIDENTALS AND / OR FACILITIES NECESSARY FOR WORK ON THE PROJECT. THE OWNER WILL NOT PROVIDE FACILITIES TO THE CONTRACTOR DURING CONSTRUCTION.

6. ALL EQUIPMENT REQUIRED TO COMPLETE THE PROJECT SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE PROJECT.

7. THE CONTRACTOR SHALL VIDEO AND / OR PHOTOGRAPH THE ENTIRE WORK AREA AND SURROUNDING AREAS AFTER THE PRE-CONSTRUCTION MEETING AND PRIOR TO MOBILIZATION OF PERSONNEL AND EQUIPMENT. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COPY OF THE PICTURE(S) AND / OR VIDEO(S) TAKEN. THIS DOCUMENTATION SHALL BE USED TO DETERMINE THE AMOUNT OF DAMAGE, IF ANY, CAUSED TO EXISTING FACILITIES (PAVEMENT, UTILITIES, BUILDINGS, ETC.) BY THE CONTRACTOR AND THE QUALITY OF CONSTRUCTION WHICH SHALL BE REQUIRED FOR THE REPAIRS.

8. WORK SHALL BE ACCOMPLISHED BETWEEN THE HOURS OF 7 A.M. CST TO 6 P.M. CST, MONDAY THROUGH FRIDAY, UNLESS OTHERWISE APPROVED BY THE OWNER.

9. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL HORIZONTAL AND VERTICAL CONSTRUCTION STAKING AS REQUIRED FOR THE PROJECT DEVELOPMENT. CONSTRUCTION STAKING SHALL BE PERFORMED BY THE CONTRACTOR AND SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE PROJECT.

10. CONSTRUCTION ACCESS AND HAUL ROUTES

    A. ACCESS TO THE JOB SITE SHALL BE THROUGH DESIGNATED ROUTES AS SHOWN ON THE PLANS.
    B. ACCESS ROUTES FOR EACH CONSTRUCTION PHASE WILL BE COORDINATED WITH THE OWNER. ACCESS ROUTES DEPICTED ON THE PLANS ARE PRELIMINARY ONLY AND ARE SUBJECT TO APPROVAL AND ADJUSTMENT BY THE OWNER.
    C. THE PAVEMENTS ON THE ACCESS ROUTES MAY NOT SUPPORT LOADS IMPOSED BY CONSTRUCTION EQUIPMENT OR VEHICLES. THE CONTRACTOR SHALL LIMIT LOADS AS NECESSARY TO PREVENT DAMAGE OR SHALL INCLUDE IN HIS BID ADEQUATE BUDGET TO REPAIR DAMAGE TO THE PAVEMENT.
    D. AIRCRAFT SHALL ALWAYS HAVE RIGHT OF WAY.
    E. CONTRACTOR EMPLOYEE PARKING SHALL BE DESIGNATED BY THE OWNER.
    F. CONSTRUCTION EQUIPMENT AND VEHICLES SHALL NOT EXCEED 15 MPH WITHIN THE AIRPORT PROPERTY.

11. CONSTRUCTION EQUIPMENT AND VEHICLES SHALL TRAVEL A MINIMUM AMOUNT ON PAVEMENTS SO THAT THE PAVEMENT AREAS WILL NOT BE DAMAGED.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE, AS COMPARED TO PRE-CONSTRUCTION CONDITIONS, CAUSED BY THE CONTRACTOR TO ANY EXISTING FACILITIES (PAVEMENTS, UTILITIES, BUILDINGS, ETC.) WHICH WERE NOT DESIGNATED FOR RECONSTRUCTION OR REPLACEMENT. ALL REPAIRS MUST BE MADE TO EQUAL OR BETTER QUALITY AND IN COMPLIANCE WITH THE OWNER, TXDOT, AND / OR FAA REQUIREMENTS - THE STRICTEST OF WHICH WILL APPLY. ALL REPAIR AND REPLACEMENT COSTS FOR DAMAGED FACILITIES SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION WORK AREA. THE CONTRACTOR SHALL PERFORM CLEANUP OPERATIONS ON A DAILY BASIS.

14. THE CONTRACTOR SHALL PREPARE A FOREIGN OBJECT DEBRIS (FOD) PLAN THAT, AT MINIMUM, WILL INCLUDE A MOTORIZED MECHANICAL SWEEPER THAT SHALL REMAIN ONSITE DURING ALL CONSTRUCTION OPERATIONS ON OR ADJACENT TO PAVEMENTS. THE FOD PLAN SHALL BE PROVIDED BY THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING AND SHALL BE EXPLAINED BY THE CONTRACTOR TO THE MEETING ATTENDEES. THE FOD PLAN IS SUBJECT TO APPROVAL BY THE OWNER. THE FOD PLAN AND ASSOCIATED DAILY ACTIVITIES SHALL BE COORDINATED WITH THE OWNER.

15. IT IS IMPERATIVE THAT A FIRM SUBGRADE BE MAINTAINED IN THE PAVEMENT CONSTRUCTION AREAS AT ALL TIMES. THE CONTRACTOR SHALL SHAPE THE SUBGRADE TO DRAIN AND SHALL PROVIDE, MAINTAIN, AND OPERATE PORTABLE PUMPS AS NECESSARY TO PREVENT THE PONDING OF WATER ON THE SUBGRADE OR BASE COURSE. PUMPING SHALL COMMENCE AS SOON AS POSSIBLE FOLLOWING THE COMPLETION OF A RAINSTORM.

16. NO TRENCHES IN ACTIVE RUNWAY AND TAXIWAY SAFETY AREAS SHALL REMAIN OPEN OVERNIGHT OR WHEN THE CONTRACTOR FINISHES WORK FOR THE DAY IN THE AREA. TRENCHES NOT BACKFILLED SHALL BE COVERED WITH STEEL PLATES TO ALLOW SAFE PASSAGE BY AIRCRAFT ACROSS THE TRENCH, IF APPROVED BY THE AIRPORT MANAGEMENT.

17. THE CONTRACTOR SHALL PROVIDE PORTABLE HAND-HELD 2-WAY RADIOS (AVIATION BAND) SET TO A PREDETERMINED FREQUENCY ALLOWING FLAGMEN, SUPERINTENDENTS, AND THE RPR TO KEEP IN CONSTANT CONTACT WITH THE AIR TRAFFIC CONTROL TOWER. THE CONTRACTOR SHALL MAINTAIN ALL RADIOS THROUGHOUT THE DURATION OF THE PROJECT. AT THE END OF CONSTRUCTION THE RPR SHALL RETURN THE RADIO SET TO THE CONTRACTOR. MONITOR NEW BRAUNFELS NATIONAL AIRPORT GROUND CONTROL ON 120.175 FROM 7 A.M. TO 7 P.M. MONITOR THE COMMON TRAFFIC ADVISORY FREQUENCY ON 127.05 AFTER HOURS.

18. IT IS THE INTENT OF THESE PLANS TO MINIMIZE INTERFERENCE TO AIRCRAFT MOVEMENT; THEREFORE, IN ACTIVE PORTIONS OF THE AOA AIRCRAFT MOVEMENT SHALL HAVE THE RIGHT-OF-WAY.

19. AIRPORT SECURITY IS OF UTMOST IMPORTANCE. THE CONTRACTOR SHALL SUPPLY HIS OWN LOCK FOR ACCESS GATES, AND SHALL KEEP THE GATES LOCKED OR GUARDED AT ALL TIMES, EXCEPT FOR THE BRIEF PERIOD REQUIRED FOR PASSAGE OF AUTHORIZED VEHICLES OR EQUIPMENT.

20. FLAG MEN OR ESCORTS WILL BE REQUIRED TO DIRECT THE CONTRACTOR'S TRUCKS AND EQUIPMENT WHICH ARE OPERATING ON ACTIVE PORTIONS OF THE AOA.

21. ALL WORK SHALL BE IN ACCORDANCE WITH AC 150/5370-2G, "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

22. GENERAL SAFETY REQUIREMENTS: DURING PERFORMANCE OF THIS CONTRACT, THE AIRPORT RUNWAYS, TAXIWAYS, AND AIRCRAFT PARKING APRONS SHALL REMAIN IN USE BY AIRCRAFT TO THE MAXIMUM EXTENT POSSIBLE. AIRCRAFT USE OF AREAS NEAR THE CONTRACTOR'S WORK WILL BE CONTROLLED TO MINIMIZE DISTURBANCE TO THE CONTRACTOR'S OPERATION. THE CONTRACTOR SHALL NOT ALLOW HIS/HER EMPLOYEES, SUBCONTRACTOR'S SUPPLIERS, OR ANY PERSON OVER WHO HE/SHE HAS CONTROL TO ENTER OR REMAIN IN ANY PART OF THE AIRPORT WHICH WOULD BE HAZARDOUS TO PERSONS OR TO AIRCRAFT OPERATIONS. WHENEVER AIRCRAFT OPERATIONS REQUIRE, THE ENGINEER MAY ORDER THE CONTRACTOR TO SUSPEND OPERATIONS, MOVE PLANT, PERSONNEL, EQUIPMENT, AND MATERIALS TO A SAFE LOCATION AND STAND BY UNTIL AIRCRAFT USE IS COMPLETED.

23. CONTRACTOR SHALL NOTIFY THE RPR AT LEAST 72 HOURS BEFORE ANY NOTAMS ARE REQUIRED. RPR WILL THEN COORDINATE WITH AIRPORT MANAGEMENT TO ENSURE NOTAMS ARE PUBLISHED APPROPRIATELY. ALL OPENINGS AND CLOSURES OF PORTIONS OF THE AOA OR RESTRICTIONS ON AIRPORT OPERATIONS SHALL BE INITIATED AND CANCELED BY THE OWNER.

24. CONSTRUCTION WORKERS WILL NOT BE ALLOWED TO ESTABLISH OVERNIGHT RESIDENCE ON THE PREMISES. ALL CONSTRUCTION WORKERS SHALL LEAVE THE CONSTRUCTION SITE AT THE END OF THEIR WORK PERIOD.

25. WORK CANNOT COMMENCE IN EACH PHASE UNTIL:

    A. SUFFICIENT BARRICADES ARE IN PLACE TO CONFINE THE WORK AREA AND CREATE A BARRIER BETWEEN AIRCRAFT AND VEHICLE MOVEMENT AREAS AND THE CONSTRUCTION AREA.
    B. ALL SAFETY EQUIPMENT FOR PERSONNEL AND CONSTRUCTION EQUIPMENT IS IN PLACE AND OPERABLE.
    C. ALL NOTAM'S ARE ACTIVE.

26. WEEKLY PROGRESS MEETINGS ARE MANDATORY. THE DAY OF THE WEEK FOR THESE MEETINGS MAY BE DETERMINED BY AGREEMENT BETWEEN THE AIRPORT MANAGEMENT, THE RPR AND THE CONTRACTOR. THESE MEETINGS SHALL BE CONDUCTED BY THE RPR.

27. EACH WEEK THE CONTRACTOR SHALL SUBMIT HIS CONSTRUCTION WORK SCHEDULE TO THE ENGINEER, PROJECTING HIS UPCOMING WORK FOR THE NEXT THREE WEEKS. THE ENGINEER, AIRPORT MANAGEMENT, AIR TRAFFIC CONTROL TOWER REPRESENTATIVE AND RESIDENT PROJECT REPRESENTATIVE SHALL REVIEW THIS PLAN WEEKLY WITH THE CONTRACTOR SO THAT INVOLVED PARTIES ARE AWARE OF UPCOMING CONSTRUCTION EVENTS.

28. INTERIM PROJECT SCHEDULES SHALL BE PROVIDED ON THE FIRST OF EACH MONTH AND INCLUDE:
    A. ORIGINAL BASELINE
    B. UPDATE TO CURRENT CONSTRUCTION ACTIVITY.
    C. ADJUSTED CRITICAL PATH, AND TAXIWAY SHUTDOWN DATES TO BE CLEARLY NOTED.

29. THE CONTRACTOR'S PROJECT SUPERINTENDENT SHALL PARTICIPATE IN A COORDINATION MEETING WITH AIRPORT MANAGER, CONTROL TOWER PERSONNEL, AND RPR PRIOR TO COMMENCEMENT OF EACH PHASE.

30. THE CONTRACTOR'S PROJECT SUPERINTENDENT SHALL PARTICIPATE IN A PAVING CONFERENCE TO BE HELD PRIOR TO PLACING THE TEST STRIP.

31. THE CONTRACTOR'S PROJECT SUPERINTENDENT OR OTHER SUPERVISORY PERSONNEL MUST BE ON SITE DURING ALL WORK ACTIVITIES BY EITHER THE CONTRACTOR'S PERSONNEL OR BY ANY SUB-CONTRACTOR.

32. ALL CORRESPONDENCE WITH THE AIRPORT WILL BE MADE THROUGH THE RPR. THE RPR SHALL BE THE POINT OF CONTACT FOR THE CONTRACTOR ON ALL NOTAMS OR OTHER COMMUNICATION.

CONTRACTOR'S STAGING / STORAGE AREA, STOCKPILE AREA, AND DISPOSAL AREAS:

1. STOCKPILES, STAGING / STORAGE AREAS, AND / OR DISPOSAL AREAS SHALL BE AS SHOWN IN THE PLANS, OR AS ADJUSTED IN THE FIELD AND COORDINATED WITH THE OWNER. THESE AREAS SHALL NOT CREATE ANY PONDING OF WATER OR ALTER DRAINAGE PATTERNS OF THE AIRPORT PROPERTY. IF REQUIRED THE CONTRACTOR SHALL PLACE TEMPORARY EROSION CONTROL FENCING AROUND TOPSOIL STOCKPILES TO AVOID SILTING BEYOND THE VICINITY OF THE STOCKPILE.

2. STOCKPILES, STAGING / STORAGE AREAS, AND / OR DISPOSAL AREAS WILL NOT BE PLACED WITHIN ANY WATER OF THE UNITED STATES, INCLUDING WETLANDS, WATERBODIES, AND STREAM BEDS. THESE AREAS SHALL BE CONSTRUCTED IN A MANNER TO PROHIBIT THE RUNOFF OF POLLUTANTS AND CONTROL SILT / SEDIMENT MOVEMENT. ALL WATERWAYS SHALL BE CLEARED AS SOON AS PRACTICAL OF TEMPORARY EMBANKMENTS, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING, DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT PART OF THE FINISHED WORK.

3. ACCESS TO THE JOB SITE SHALL BE AS SHOWN IN THE PLANS, OR AS ADJUSTED IN THE FIELD AND COORDINATED WITH THE OWNER AND THE OWNER.

4. ALL WASTE AND / OR SPOIL MATERIALS SHALL BE LEGALLY DISPOSED OF OFF AIRPORT PROPERTY BY THE CONTRACTOR IN A LICENSED LANDFILL, UNLESS OTHERWISE NOTED.

UTILITIES:

1. THE CONTRACTOR SHALL ANTICIPATE ALL UNDERGROUND OBSTRUCTIONS SUCH AS, BUT NOT LIMITED TO, WATER MAINS, GAS LINES, STORM AND SANITARY SEWERS, TELEPHONE, ELECTRIC LIGHT, OR POWER DUCTS, CONCRETE, AND DEBRIS. ANY SUCH LINES OR OBSTRUCTIONS INDICATED IN THE PLANS SHOW ONLY THE APPROXIMATE LOCATIONS AND SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE OWNER AND ENGINEER HAVE ENDEAVORED IN THESE PLANS TO FAMILIARIZE THE CONTRACTOR WITH ALL KNOWN UTILITIES AND OBSTRUCTIONS, BUT THIS SHALL NOT RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY IN ANTICIPATING ALL UNDERGROUND OBSTRUCTIONS, WHETHER OR NOT SHOWN IN THE PLANS.

2. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED TO HAVE THEIR UTILITIES LOCATED AND MARKED IN THE FIELD. ALL UNDERGROUND UTILITIES SHALL THEN BE UNCOVERED BY THE CONTRACTOR TO VERIFY LOCATION AND ELEVATION PRIOR TO COMMENCING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY OWNER IF A UTILITY INSPECTOR MUST BE ON SITE WHEN LOCATING OR EXCAVATING NEAR UTILITIES. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE PROJECT.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING UP HIS OWN WATER SOURCES WITH THE CITY. ALL CONSTRUCTION WATER WILL BE METERED BY THE CITY-OWNED METERS AND ONLY THOSE METERS. THE CONTRACTOR WILL BE RESPONSIBLE FOR PAYING ALL RELATED FEES TO THE CITY.

4. AT HIS OWN EXPENSE, THE CONTRACTOR SHALL MAINTAIN IN PROPER WORKING ORDER AND WITHOUT INTERRUPTION OF SERVICE ALL EXISTING UTILITIES AND SERVICES WHICH MAY BE ENCOUNTERED IN THE WORK. WITH THE CONSENT OF THE UTILITY OWNER, SUCH SERVICE CONNECTIONS MAY BE TEMPORARILY INTERRUPTED TO PERMIT THE CONTRACTOR TO REMOVE DESIGNATED LINES OR TO MAKE TEMPORARY CHANGES IN THE LOCATIONS OF SERVICES.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INSPECTIONS, AS NECESSARY, OF ANY UTILITY WORK BY THE UTILITY OWNER THROUGHOUT THE PROJECT.

ENVIRONMENTAL NOTES:

1. IN THE EVENT THAT UNANTICIPATED ARCHEOLOGICAL DEPOSITS ARE ENCOUNTERED DURING CONSTRUCTION, WORK IN THE IMMEDIATE AREA WILL CEASE AND THE OWNER WILL CONTACT PROFESSIONAL ARCHEOLOGISTS TO INITIATE POST-REVIEW DISCOVERY PROCEDURES UNDER THE PROVISIONS OF 36 CFR 800.13.

2. IN THE EVENT THAT UNANTICIPATED HAZARDOUS MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, WORK IN THE IMMEDIATE AREA WILL CEASE, AND THE OWNER SHALL BE NOTIFIED.

3. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND RESTRICTIONS FOR SERVICING AND MAINTAINING EQUIPMENT AND DISPOSAL OF USED LUBRICANTS, ETC.

4. ANY HAZARDOUS WASTE SPILLS SHALL BE IMMEDIATELY REPORTED TO THE OWNER.

5. THE FEDERAL MIGRATORY BIRD TREATY ACT (MBTA) (16 USC §703-711.), 50 CFR 10, AND FISH AND GAME CODE §3503 §3513, AND §3800, PROTECT MIGRATORY AND NON-GAME BIRDS, THEIR OCCUPIED NESTS, AND THEIR EGGS. IN THE EVENT THAT MIGRATORY BIRDS ARE ENCOUNTERED ONSITE DURING PROJECT CONSTRUCTION FROM FEBRUARY 15 TO OCTOBER 1, THE CONTRACTOR MUST TAKE REASONABLE CARE TO AVOID IMPACTS TO PROTECTED BIRDS, THEIR OCCUPIED NESTS, AND THEIR EGGS. WHEN MIGRATORY BIRD NESTS ARE DISCOVERED THAT MAY BE ADVERSELY AFFECTED BY CONSTRUCTION ACTIVITIES, OR WHEN A BIRD IS FOUND INJURED OR KILLED AS A RESULT OF CONSTRUCTION ACTIVITY, IMMEDIATELY STOP WORK WITHIN 50 FEET OF THE NEST OR BIRD AND NOTIFY THE OWNER.

    A. IF THERE IS A BURROWING OWL, ON THE NEST, AND THAT OWL DOES NOT LEAVE THE NEST WHEN APPROACHED, ASSUME THERE ARE EGGS OR CHICKS IN THE HOLE REGARDLESS OF THE TIME OF YEAR. NO WORK MAY OCCUR WITHIN 100 FEET OF AN ACTIVE NEST. THE ACTIVE NEST(S) MUST BE PROTECTED BY ORANGE MESH SAFETY FENCING.

DEMOBILIZATION NOTES:

1. CONDITIONS OF THE PROJECT AREA AND SURROUNDING AREAS UPON COMPLETION OF THE JOB SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK, IN ADDITION TO THE WORK ITEMS LISTED.

2. THE PROJECT SHALL BE FREE OF ANY CONTRACTOR STOCKPILE MATERIALS UPON COMPLETION OF THE JOB, UNLESS OTHERWISE DIRECTED BY THE OWNER.

3. UPON COMPLETION OF THE PROJECT, ALL HAUL ROUTES SHALL BE PROPERLY CLEANED TO PREVENT OBSTRUCTION AND / OR CAUSE INCONVENIENCE TO NORMAL REGULAR TRAFFIC. ALL TEMPORARY HAUL ROUTES SHALL BE REMOVED.

4. ALL CONSTRUCTION EQUIPMENT AND ANY FACILITIES TEMPORARILY PLACED ON SITE FOR THE PROJECT SHALL BE REMOVED FROM THE SITE.

5. ANY PROPERTIES BELONGING TO THE OWNER SHALL BE RETURNED TO THE OWNER.

6. PROPER DRAINAGE (NO LOCALIZED PONDING) SHALL BE MAINTAINED, PRIOR TO, DURING, AND AFTER MOBILIZATION / DEMOBILIZATION.

7. DEMOBILIZATION SHALL BE COMPLETED TO THE SATISFACTION OF THE OWNER AND SHALL BE COMPLETED IN A MANNER THAT WILL MINIMIZE INCONVENIENCE TO AIRPORT OPERATIONS. ANY DAMAGE TO THE AIRPORT FACILITIES DURING DEMOBILIZATION SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.

8. THE CONTRACTOR SHALL VIDEO AND / OR PHOTOGRAPH THE ENTIRE WORK AREA AND SURROUNDING AREAS AFTER COMPLETION OF ALL PROJECT CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COPY OF EACH OF THE PICTURE(S) AND / OR VIDEO(S) TAKEN.

MARK	REVISION	DATE
1	REVISED PER ADDENDUM 2	12/21/23

SHEET NAME: PROJECT NOTES

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS
NEW BRAUNFELS, TEXAS

DRAWN BY:	DESIGNED BY:	LATEST REVISION:	KSA JOB NO.:
ED	AT	8/19/2023	101203

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12/5/2023
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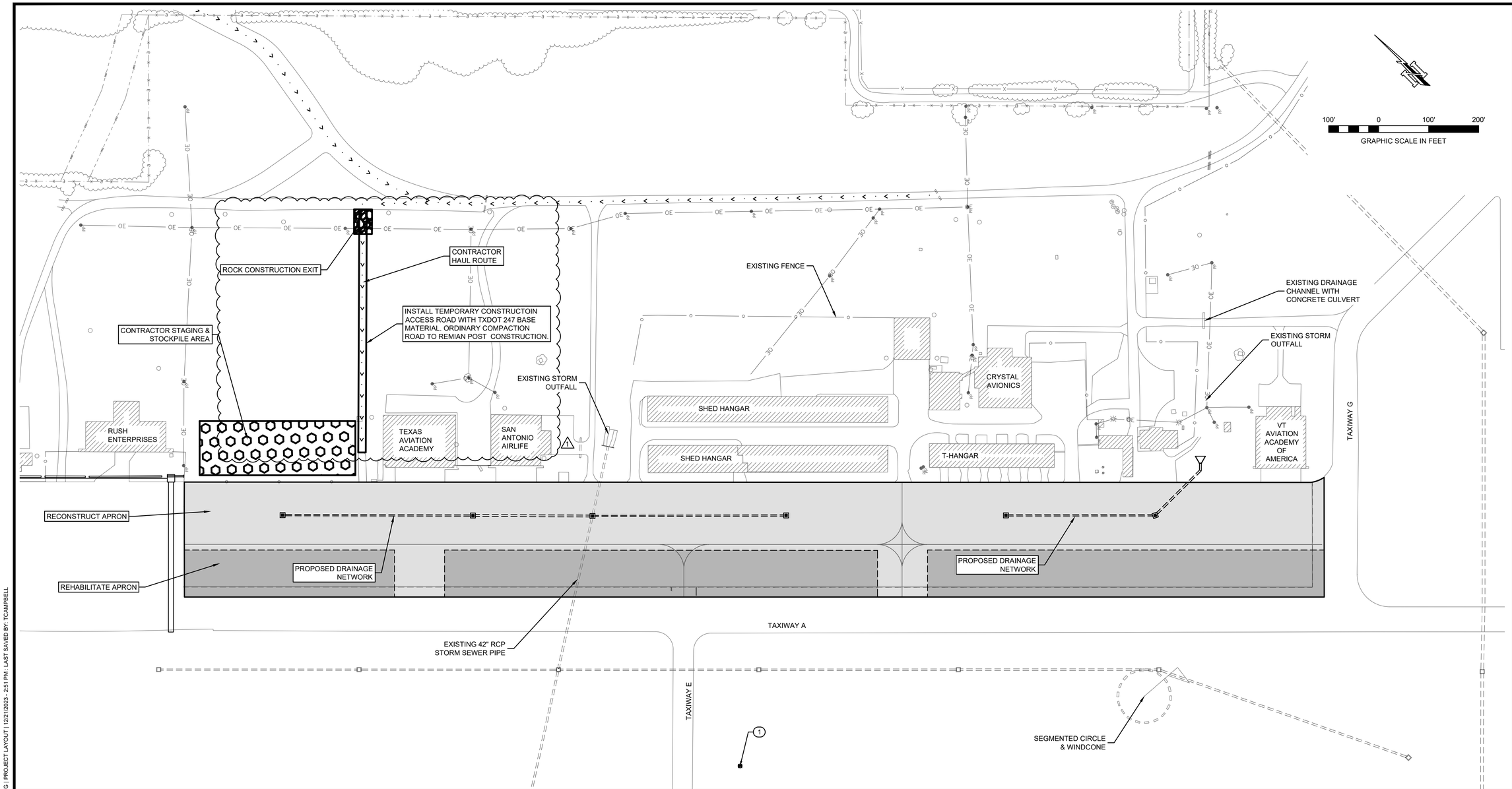
SHEET NO.
G03



PROJECT SCOPE:

BASE BID
- DRAINAGE
- MARKINGS
- EROSION CONTROL
- DEMOLISH & RECONSTRUCT APRON
- REHABILITATE APRON W/ MILL & OVERLAY

NOTE:
THE LOCATION OF THE BOUNDARY BETWEEN CONCRETE AND ASPHALT MAY BE ADJUSTED BY THE ENGINEER BASED ON BID PRICES AND PROJECT BUDGET TO MAXIMIZE RECONSTRUCTION AREA. CONTRACTOR SHALL PROVIDE EQUAL UNIT PRICES FOR PAY ITEMS THAT APPEAR IN BOTH BID ALTERNATIVES

BENCHMARK INFORMATION SHOWN ABOVE:
POINT IS A SECONDARY AIRPORT CONTROL STATION (SAC)
DESIGNATION IS 3R5 A
HORIZONTAL DATAM BASED ON NAD 83
VERTICAL DATAM BASED ON NAD 88
LAST RECOVERY DATE IS JAN. 3, 2008

STOCKPILE/HAUL ROUTE NOTES:

1. CONTRACTOR SHALL PROVIDE FLAGGERS, BROOM, AND ANY OTHER EQUIPMENT TO KEEP ALL PAVEMENTS, INCLUDING PUBLIC ROADS, CLEAN AT ALL TIMES.
2. GATES SHALL BE KEPT LOCKED AT ALL TIMES EXCEPT WHEN HAUL OPERATIONS ARE IN PROGRESS. A GATE GUARD SHALL BE PRESENT WHEN GATE IS NOT LOCKED.
3. ANY DAMAGE DONE TO THE ANY AND ALL EXISTING PAVEMENT, INCLUDING PUBLIC ROADS, SHALL BE REPAIRED TO EXISTING OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE.
4. IF REQUIRED, AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE TEMPORARY GATES AND REPAIR ANY FENCING TO EXISTING OR BETTER CONDITIONS.
5. HAUL ROUTE BEYOND ROCK CONSTRUCTION ENTRANCE IS UNPAVED. CONTRACTOR IS RESPONSIBLE FOR ALL IMPROVEMENTS NECESSARY TO UTILIZE AS A HAUL ROUTE, INCLUDING PLACING DRAINAGE PIPES IN EXISTING DITCHES.
6. ALL COST ASSOCIATED WITH THIS HAUL ROUTE SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
7. THE CONTRACTOR SHALL INSTALL TEMPORARY SILT FENCE ALONG THE OUTER LIMITS OF THE STOCKPILE/STAGING AREA TO PREVENT EROSION FROM OCCURRING BEYOND THOSE LIMITS. IF NECESSARY THE CONTRACTOR SHALL SEED THIS AREA ONCE EQUIPMENT AND MATERIALS HAVE BEEN REMOVED FROM THE SITE AT THE COMPLETION OF THE PROJECT. ALL COST FOR THESE ITEMS SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
8. ANY TEMPORARY DRAINAGE STRUCTURES NEEDED WILL NOT BE PAID FOR DIRECTLY AND SHOULD BE INCLUDED IN MOBILIZATION.

PROJECT LAYOUT LEGEND

	CONTRACTOR'S STAGING AREA
	CONSTRUCTION ENTRANCE
	STOCKPILE AREA
	PAVEMENT DEMOLITION
TSA(e)	TAXIWAY SAFETY AREA
RSA(e)	RUNWAY SAFETY AREA
< · < ·	CONTRACTOR'S HAUL ROUTE
o	EXISTING FENCE

NOTE:
CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL UTILITIES PRIOR TO ANY EXCAVATION TAKING PLACE.

MARK	REVISION	DATE
1	REVISED PER ADDENDUM 2	12/21/22

SHEET NAME: PROJECT LAYOUT

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/19/2023
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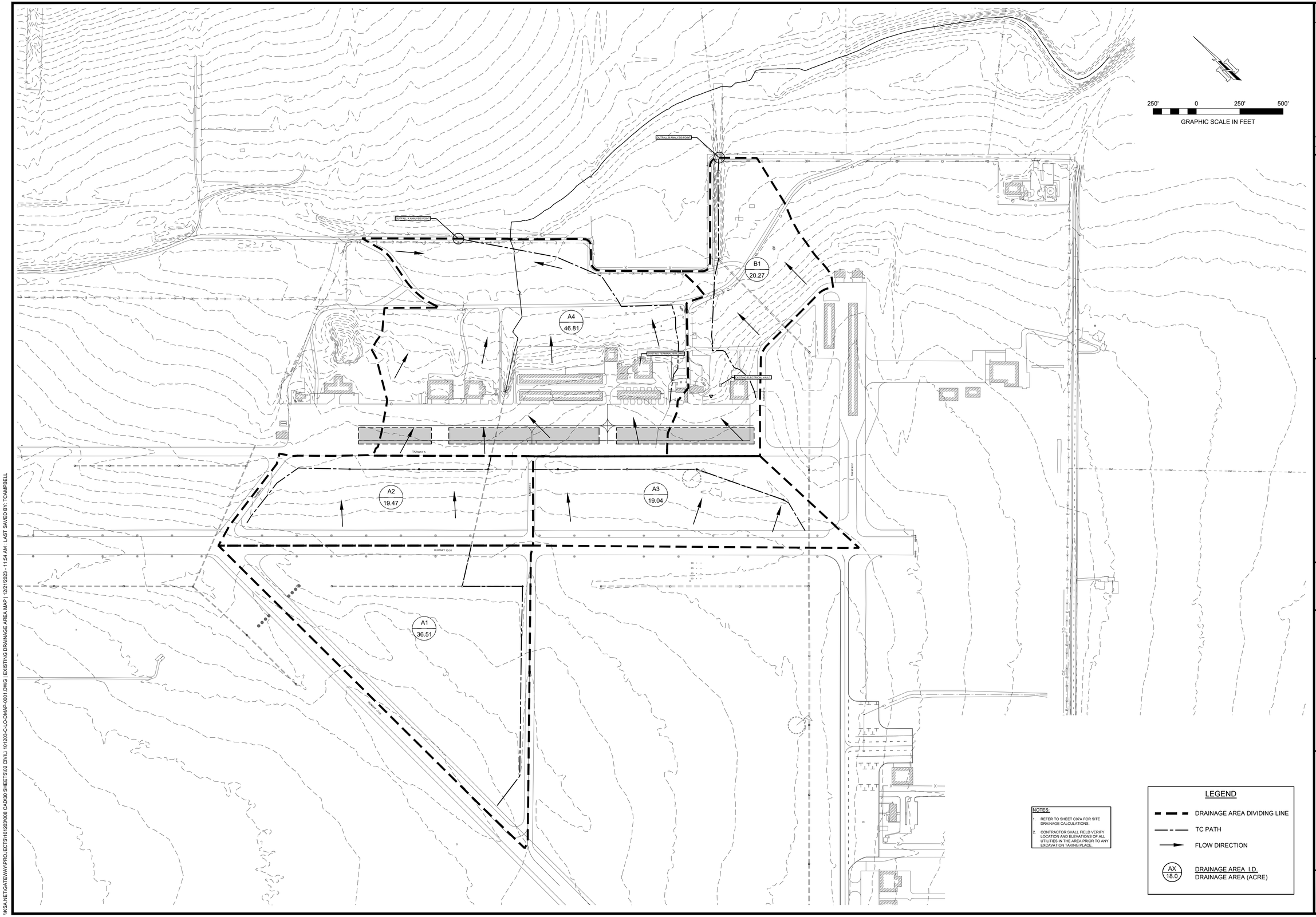
SHEET NO.
C01



MARK	REVISION	DATE
	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23

SHEET NAME:
EXISTING DRAINAGE AREA MAP

PROJECT NAME:
NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/18/2023
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SHEET NO.
C07

EXISTING DRAINAGE AREA CALCULATIONS

Area No.	Acres	C2	C5	C10	C25	C50	C100	CA2	CA5	CA10	CA25	CA50	CA100	TC (min.)	I2 (in./hr.)	Q2 (c.f.s.)	I5 (in./hr.)	Q5 (c.f.s.)	I10 (in./hr.)	Q10 (c.f.s.)	I25 (in./hr.)	Q25 (c.f.s.)	I50 (in./hr.)	Q50 (c.f.s.)	I100 (in./hr.)	Q100 (c.f.s.)	Notes	Area No.
A1	36.51	0.34	0.37	0.40	0.44	0.47	0.51	12.46	13.68	14.48	16.01	17.17	18.70	42.0	2.48	30.89	3.10	42.42	3.64	52.71	4.38	70.12	4.95	84.99	5.58	104.33	Basin for Offsite Inlet	A1
A2	19.47	0.36	0.40	0.42	0.46	0.49	0.54	7.06	7.74	8.17	8.99	9.62	10.44	26.9	3.14	22.18	3.93	30.40	4.60	37.58	5.53	49.73	6.25	60.13	7.03	73.41	Basin for Offsite Inlet	A2
A3	19.04	0.36	0.39	0.42	0.46	0.49	0.53	6.86	7.52	7.94	8.74	9.36	10.16	21.1	3.57	24.50	4.46	33.53	5.23	41.53	6.29	55.00	7.12	66.63	8.01	81.39	Basin for Offsite Inlet	A3
A4	46.81	0.46	0.50	0.52	0.57	0.60	0.64	21.46	23.25	24.38	26.45	28.05	30.12	32.4	2.88	61.79	3.60	83.70	4.22	102.89	5.07	134.10	5.73	160.72	6.44	193.95	Basin Draining Offsite to Analysis Point A	A4
B1	20.27	0.40	0.43	0.46	0.50	0.53	0.57	8.04	8.77	9.24	10.11	10.77	11.64	25.4	3.27	26.30	4.08	35.79	4.78	44.15	5.75	58.11	6.50	70.03	7.32	85.24	Basin Draining Offsite to Analysis Point B	B1

EXISTING TIME OF CONCENTRATION CALCULATIONS

Basin Information				Sheet Flow Component						Shallow Concentrated Flow Component					Pipe Flow Component						Channel Flow Component								Σ Time		
Basin ID	Land Use	Area (ac)	P2 (in)	Surface	Length (ft)	Slope (ft/ft)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Surface	Length (ft)	Slope (ft/ft)	Velocity (ft/sec)	Travel Time (min)	Length (ft)	Slope (ft/ft)	Diameter (in)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Length (ft)	Slope (ft/ft)	BW (ft)	Depth (ft)	SS (H:V)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Minimum TC (Optional)	Travel Time TC (min)	SCS Lag Time TL (min)
A1	Light Industrial District	36.51	4.08	Short grass prairie	100	0.006	0.15	0.12	13.69	Unpaved	1206	0.002	0.77	26.22	589.5	0.002	42	0.013	4.82	2.04	0	0	0	0	0	0	0.00	0.00	41.95	41.95	25.17
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A2	Light Industrial District	19.47	4.08	Short grass prairie	100	0.007	0.15	0.13	12.99	Unpaved	633.4	0.004	1.02	10.40	878.4	0.002	42	0.013	4.22	3.47	0	0	0	0	0	0	0.00	0.00	26.85	26.85	16.11
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A3	Light Industrial District	19.04	4.08	Short grass prairie	100	0.007	0.15	0.13	12.99	Unpaved	120.7	0.005	1.16	1.74	1470	0.001	42	0.013	3.86	6.35	0	0	0	0	0	0	0.00	0.00	21.08	21.08	12.65
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A4	Light Industrial District	46.81	4.08	Short grass prairie	100	0.017	0.15	0.18	9.35	Unpaved	1796	0.006	1.30	23.06	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	32.41	32.41	19.44
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
B1	Light Industrial District	20.27	4.08	Short grass prairie	100	0.011	0.15	0.15	10.94	Unpaved	1416	0.01	1.63	14.46	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	25.40	25.40	15.24
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			

EXISTING COMPOSITE RUNOFF COEFFICIENT CALCULATIONS

Composite "C2" Calculation

0.75	0.25	1	0.5		
Paving (0.75)	Grass (0.25)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.34
191370.5	656683.2			848053.724	0.36
183232.9	646355.1			829588.015	0.36
849746.5	1189243			2038989.85	0.46
259333.3	623645.7			882979.03	0.40

Composite "C25" Calculation

0.88	0.34	1	0.5		
Paving (0.88)	Grass (0.34)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.44
191370.5	656683.2			848053.724	0.46
183232.9	646355.1			829588.015	0.46
849746.5	1189243			2038989.85	0.57
259333.3	623645.7			882979.03	0.50

Composite "C5" Calculation

0.8	0.28	1	0.5		
Paving (0.8)	Grass (0.28)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.37
191370.5	656683.2			848053.724	0.40
183232.9	646355.1			829588.015	0.39
849746.5	1189243			2038989.85	0.50
259333.3	623645.7			882979.03	0.43

Composite "C50" Calculation

0.92	0.37	1	0.5		
Paving (0.92)	Grass (0.37)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.47
191370.5	656683.2			848053.724	0.49
183232.9	646355.1			829588.015	0.49
849746.5	1189243			2038989.85	0.60
259333.3	623645.7			882979.03	0.53

Composite "C10" Calculation

0.83	0.3	1	0.5		
Paving (0.83)	Grass (0.3)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.40
191370.5	656683.2			848053.724	0.42
183232.9	646355.1			829588.015	0.42
849746.5	1189243			2038989.85	0.52
259333.3	623645.7			882979.03	0.46

Composite "C100" Calculation

0.97	0.41	1	0.5		
Paving (0.97)	Grass (0.41)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.51
191370.5	656683.2			848053.724	0.54
183232.9	646355.1			829588.015	0.53
849746.5	1189243			2038989.85	0.64
259333.3	623645.7			882979.03	0.57

MARK	REVISION	DATE
	SHEET ADDED PER PI20023-0049 RFI 1	8/18/23

EXISTING SITE DRAINAGE CALCULATIONS

SHEET NAME:

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY:	DESIGNED BY:	LATEST REVISION:	KSA JOB NO.:
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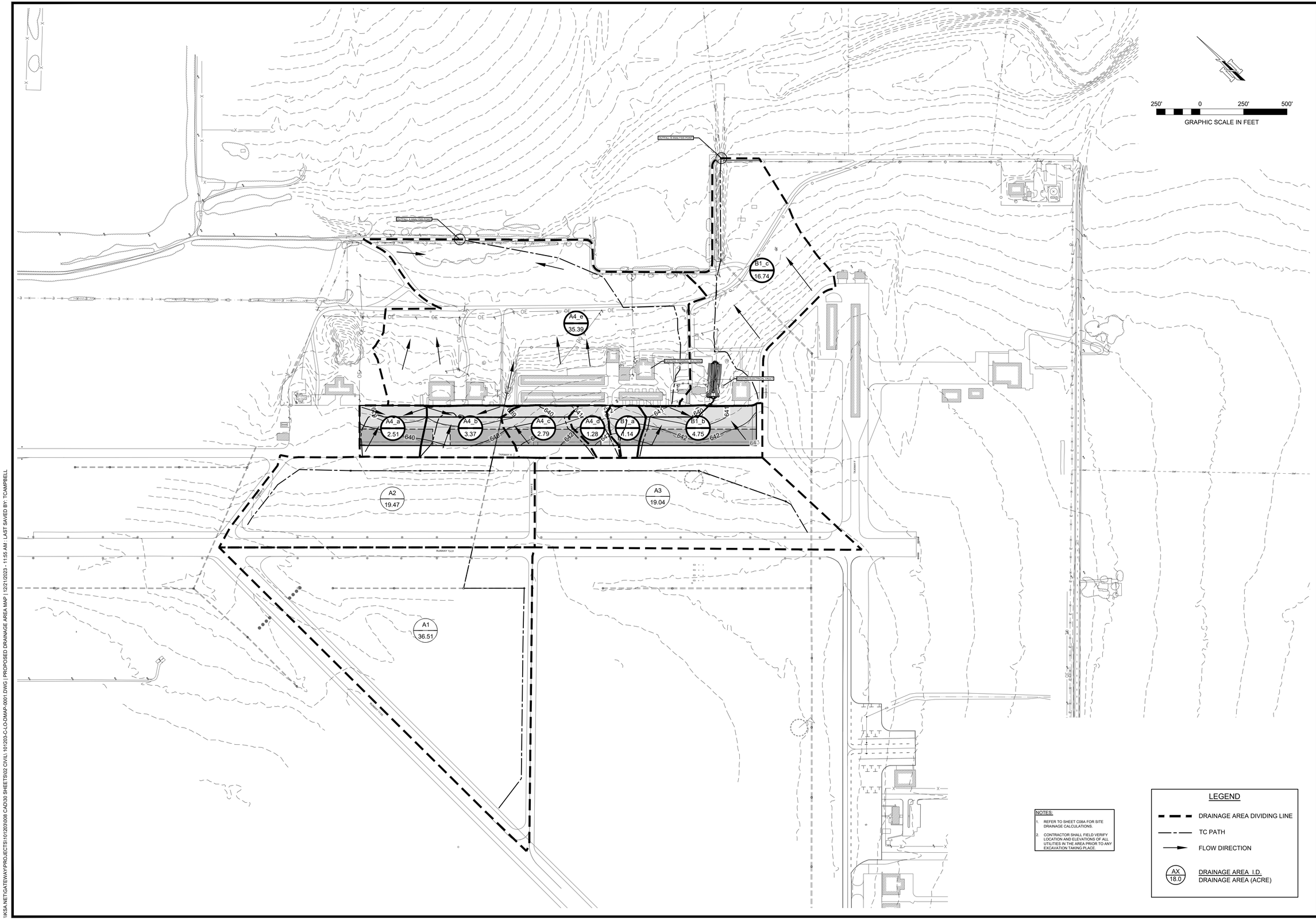
SHEET NO.

C07A



MARK	REVISION	DATE
	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23

SHEET NAME: PROPOSED DRAINAGE AREA MAP

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION NEW BRAUNFELS, TEXAS

DRAWN BY: ED
DESIGNED BY: AT
LATEST REVISION: 8/19/2023
KSA JOB NO.: 101203

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SHEET NO.
C08

PROPOSED DRAINAGE AREA CALCULATIONS

Area No.	Acres	C2	C5	C10	C25	C50	C100	CA2	CA5	CA10	CA25	CA50	CA100	TC (min.)	I2 (in./hr.)	Q2 (c.f.s.)	I5 (in./hr.)	Q5 (c.f.s.)	I10 (in./hr.)	Q10 (c.f.s.)	I25 (in./hr.)	Q25 (c.f.s.)	I50 (in./hr.)	Q50 (c.f.s.)	I100 (in./hr.)	Q100 (c.f.s.)	Notes	Area No.
A1	36.51	0.34	0.37	0.40	0.44	0.47	0.51	12.46	13.68	14.48	16.01	17.17	18.70	42.0	2.48	30.89	3.10	42.42	3.64	52.71	4.38	70.12	4.95	84.99	5.58	104.33	Basin for Offsite Inlet	A1
A2	19.47	0.36	0.40	0.42	0.46	0.49	0.54	7.06	7.74	8.17	8.99	9.62	10.44	26.9	3.14	22.18	3.93	30.40	4.60	37.58	5.53	49.73	6.25	60.13	7.03	73.41	Basin for Offsite Inlet	A2
A3	19.04	0.36	0.39	0.42	0.46	0.49	0.53	6.86	7.52	7.94	8.74	9.36	10.16	21.1	3.57	24.50	4.46	33.53	5.23	41.53	6.29	55.00	7.12	66.63	8.01	81.39	Basin for Offsite Inlet	A3
A4_a	2.51	0.75	0.80	0.83	0.88	0.92	0.97	1.88	2.01	2.08	2.21	2.31	2.43	12.7	4.54	8.55	5.71	11.47	6.72	14.00	8.13	17.96	9.25	21.36	10.42	25.37	Basin for Inlet A1	A4_a
A4_b	3.37	0.75	0.80	0.83	0.88	0.92	0.97	2.53	2.70	2.80	2.97	3.10	3.27	11.0	4.87	12.31	6.13	16.53	7.23	20.22	8.78	26.04	9.99	30.97	11.26	36.81	Basin for Inlet A2	A4_b
A4_c	2.79	0.75	0.80	0.83	0.88	0.92	0.97	2.09	2.23	2.32	2.46	2.57	2.71	10.0	5.05	10.57	6.36	14.20	7.50	17.37	9.12	22.39	10.38	26.64	11.70	31.66	Basin for Inlet A3	A4_c
A4_d	1.28	0.75	0.80	0.83	0.88	0.92	0.97	0.96	1.02	1.06	1.13	1.18	1.24	10.0	5.05	4.85	6.36	6.51	7.50	7.97	9.12	10.27	10.38	12.22	11.70	14.53	Basin for Inlet A4	A4_d
B1_a	1.14	0.75	0.80	0.83	0.88	0.92	0.97	0.86	0.91	0.95	1.00	1.05	1.11	10.0	5.05	4.32	6.36	5.80	7.50	7.10	9.12	9.15	10.38	10.89	11.70	12.94	Basin for Inlet B1	B1_a
B1_b	4.75	0.75	0.80	0.83	0.88	0.92	0.97	3.56	3.80	3.94	4.18	4.37	4.61	10.0	5.05	17.99	6.36	24.17	7.50	29.57	9.12	38.12	10.38	45.36	11.70	53.91	Basin for Inlet B2	B1_b
A4_e	35.39	0.36	0.40	0.42	0.46	0.50	0.54	12.91	14.14	14.93	16.42	17.57	19.06	32.4	2.88	37.19	3.60	50.89	4.22	62.99	5.07	83.27	5.73	100.66	6.44	122.77	Basin Draining Offsite to Analysis Point A	A4_e
B1_c	16.74	0.32	0.36	0.38	0.42	0.45	0.49	5.40	5.95	6.31	7.00	7.53	8.22	25.4	3.27	17.65	4.08	24.27	4.78	30.15	5.75	40.26	6.50	48.94	7.32	60.19	Basin Draining Offsite to Analysis Point B	B1_c

PROPOSED TIME OF CONCENTRATION CALCULATIONS

Basin Information				Sheet Flow Component						Shallow Concentrated Flow Component					Pipe Flow Component						Channel Flow Component								Σ Time		
Basin ID	Land Use	Area (ac)	P2 (in)	Surface	Length (ft)	Slope (ft/ft)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Surface	Length (ft)	Slope (ft/ft)	Velocity (ft/sec)	Travel Time (min)	Length (ft)	Slope (ft/ft)	Diameter (in)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Length (ft)	Slope (ft/ft)	BW (ft)	Depth (ft)	SS (H:V)	Manning's n	Velocity (ft/sec)	Travel Time (min)	Minimum TC (Optional)	Travel Time TC (min)	SCS Lag Time TL (min)
A4_a	Light Industrial District	2.51	4.08	Smooth surfaces	100	2E-04	0.0155	0.19	8.91	Paved	280.3	0.009	1.95	2.40	380.6	0.004	24	0.013	4.55	1.39	0	0	0	0	0	0	0.00	0.00	12.70	12.70	7.62
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A4_b	Light Industrial District	3.37	4.08	Smooth surfaces	100	3E-04	0.0155	0.22	7.57	Paved	290.2	0.007	1.71	2.82	239.1	0.005	36	0.013	6.67	0.60	0	0	0	0	0	0	0.00	0.00	11.00	11.00	6.60
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A4_c	Light Industrial District	2.79	4.08	Smooth surfaces	100	0.01	0.0155	0.91	1.84	Paved	543.9	0.007	1.72	5.28	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	10.00	7.12	6.00
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A4_d	Light Industrial District	1.28	4.08	Smooth surfaces	100	0.008	0.0155	0.83	2.02	Paved	328.8	0.008	1.85	2.96	387.3	0.005	24	0.013	5.09	1.27	0	0	0	0	0	0	0.00	0.00	10.00	6.25	6.00
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
A4_e	Light Industrial District	35.39	4.08	Short grass prairie	100	0.017	0.15	0.18	9.35	Unpaved	1796	0.006	1.30	23.06	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	32.41	32.41	19.44
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
B1_a	Light Industrial District	1.14	4.08	Smooth surfaces	100	0.009	0.0155	0.84	1.98	Paved	237.3	0.009	1.89	2.09	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	10.00	4.07	6.00
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
B1_b	Light Industrial District	4.75	4.08	Smooth surfaces	100	0.001	0.0155	0.36	4.68	Paved	406.5	0.007	1.73	3.92	141	0.002	36	0.013	4.22	0.56	0	0	0	0	0	0	0.00	0.00	10.00	9.16	6.00
										Unpaved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
B1_c	Light Industrial District	16.74	4.08	Short grass prairie	100	0.011	0.15	0.15	10.94	Unpaved	1416	0.01	1.63	14.46	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00	25.40	25.40	15.24
										Unpaved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			
										Paved	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0	0	0.00	0.00			

PROPOSED COMPOSITE RUNOFF COEFFICIENT CALCULATIONS

Composite "C2" Calculation					
0.75	0.25	1	0.5		
Paving (0.75)	Grass (0.25)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.34
191370.5	656683.2			848053.724	0.36
183232.9	646355.1			829588.015	0.36
109276.7	0			109276.651	0.75
146760.2	0			146760.171	0.75
121437.8	0			121437.828	0.75
55708.91	0			55708.9068	0.75
49746.89	0			49746.8947	0.75
207121.1	0			207121.05	0.75
354189	1187388			1541576.88	0.36
105752	623604.5			729356.505	0.32

Composite "C5" Calculation					
0.8	0.28	1	0.5		
Paving (0.8)	Grass (0.28)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.37
191370.5	656683.2			848053.724	0.40
183232.9	646355.1			829588.015	0.39
109276.7	0			109276.651	0.80
146760.2	0			146760.171	0.80
121437.8	0			121437.828	0.80
55708.91	0			55708.9068	0.80
49746.89	0			49746.8947	0.80
207121.1	0			207121.05	0.80
354189	1187388			1541576.88	0.40
105752	623604.5			729356.505	0.36

Composite "C10" Calculation					
0.83	0.3	1	0.5		
Paving (0.83)	Grass (0.3)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.40
191370.5	656683.2			848053.724	0.42
183232.9	646355.1			829588.015	0.42
109276.7	0			109276.651	0.83
146760.2	0			146760.171	0.83
121437.8	0			121437.828	0.83
55708.91	0			55708.9068	0.83
49746.89	0			49746.8947	0.83
207121.1	0			207121.05	0.83
354189	1187388			1541576.88	0.42
105752	623604.5			729356.505	0.38

Composite "C25" Calculation					
0.88	0.34	1	0.5		
Paving (0.88)	Grass (0.34)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.44
191370.5	656683.2			848053.724	0.46
183232.9	646355.1			829588.015	0.46
109276.7	0			109276.651	0.88
146760.2	0			146760.171	0.88
121437.8	0			121437.828	0.88
55708.91	0			55708.9068	0.88
49746.89	0			49746.8947	0.88
207121.1	0			207121.05	0.88
354189	1187388			1541576.88	0.46
105752	623604.5			729356.505	0.42

Composite "C50" Calculation					
0.92	0.37	1	0.5		
Paving (0.92)	Grass (0.37)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.47
191370.5	656683.2			848053.724	0.49
183232.9	646355.1			829588.015	0.49
109276.7	0			109276.651	0.92
146760.2	0			146760.171	0.92
121437.8	0			121437.828	0.92
55708.91	0			55708.9068	0.92
49746.89	0			49746.8947	0.92
207121.1	0			207121.05	0.92
354189	1187388			1541576.88	0.50
105752	623604.5			729356.505	0.45

Composite "C100" Calculation					
0.97	0.41	1	0.5		
Paving (0.97)	Grass (0.41)	Building (1)	Gravel (0.5)	Total (SF)	"C"
289949	1300242			1590190.99	0.51
191370.5	656683.2			848053.724	0.54
183232.9	646355.1			829588.015	0.53
109276.7	0			109276.651	0.97
146760.2	0			146760.171	0.97
121437.8	0			121437.828	0.97
55708.91	0			55708.9068	0.97
49746.89	0			49746.8947	0.97
207121.1	0			207121.05	0.97
354189	1187388			1541576.88	0.54
105752	623604.5			729356.505	0.49

207121.1	0			207121.05	0.97
354189	1187388			1541576.88	0.54
105752	623604.5			729356.505	0.49

MARK	REVISION	DATE
1	SHEET ADDED PER PI2023-0049 RFI 1	8/18/23

SHEET NAME: PROPOSED SITE DRAINAGE CALCULATIONS

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION NEW BRAUNFELS, TEXAS

DRAWN BY: ED
DESIGNED BY: AT
LATEST REVISION: 8/18/2023
KSA JOB NO.: 101203

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100090
LICENSED
PROFESSIONAL ENGINEER

SEAL: 12/5/2023
TBPE Firm Registration No. F-1356

SHEET NO.
C08A

INLET CALCULATIONS

Inlet #	Inlet Size	Grate Size	HWallowable	P	y (opening)	de	Qweir	Qcapacity	Qrunoff	Controlled
			(feet)	(feet)	(inches)	(feet)	(cfs)	(cfs)	(cfs)	
A1	6' x 6'	5' x 5'	0.33	16.5	0.5	0.1	17.5	12.8	11.5	weir
A2	6' x 6'	5' x 5'	0.33	16.5	0.5	0.1	17.5	12.8	16.5	weir
A3	6' x 6'	5' x 5'	0.33	16.5	0.5	0.1	17.5	12.8	14.2	weir
A4	6' x 6'	5' x 5'	0.33	16.5	0.5	0.1	17.5	12.8	6.5	weir
B1	6' x 6'	5' x 5'	0.33	16.5	0.5	0.1	17.5	12.8	5.8	weir
B2	6' x 6'	5' x 5'	0.58	16.5	0.5	0.3	17.5	25.6	24.2	orifice

STORM DRAIN CALCULATIONS

	STORM CALCS																																		
Runoff		Pipe	Drainage Area						Time of Concentration			Design Flow					Box Culvert					Hydraulic Grade		Head Loss Calculations								Invert Elevation			Comments
Design Point		Length	Incremental		Total	Runoff	Incr.	Total	Inlet	Travel	Total	5-Year	Q 5	Upstream	Gutterflow	Q	Storm	No. of	Storm	Storm	Manning	Hydr	Line Elevation		V1	V2		Loss		Head Loss	Design	Dwnstrm	Upstrm	TC / FG	
Dwnstrm	Upstrm	Between	Area	Area	Area	Coeff			Time	Time	Time	Intensity	Runoff	Carryover	Bypass	in Pipe	Pipe	Storm Drain	Drain	Drain	n	Grade	Dwnstrm	Upstrm	Flow (In)	Flow (Out)	V1^2 / 2g	V2^2 / 2g	Coeff	K(V1^2 / 2g	"Hk"	at Structure	HGL	Elev		
Station	Station	Points	No.	(Acres)	(Acres)							"I"	"Q"	"Q"	"Q"	"Q"	Diameter	Spans	Width	Height	Value	"Sf"			(f.p.s.)	(f.p.s.)	(feet)	(feet)	(kj)	(feet)		(feet)	(feet)	(feet)		
				"A"	"A"	"C"	"CA"	"CA"	(min.)	(min.)	(min.)	(in./hr)	(c.f.s.)	(c.f.s.)	(c.f.s.)	(c.f.s.)	(in.)		(ft)	(ft)		(ft./ft.)													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18a	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
EXISTING STORM LINE																																				
312.42	0.00	312.42	A1 & A2 & A3	75.02	75.02	0.39	29.18	29.18	43.26	0.56	43.82	3.06	89.30	0.00	0.00	89.30	42				0.013	0.0079	638.03	640.49		9.28		1.34	1.25		1.67	642.17	632.08	632.66	640.00	
455.39	312.42	142.97	A4_a & A4_b & A4_c & A4_d	9.95	84.97	0.80	7.96	37.14	43.82	0.20	44.03	3.02	112.17	0.00	0.00	112.17	42				0.013	0.0124	634.48	636.26	9.28	11.66	1.34	2.11	0.25	0.33	1.78	638.03	631.82	632.08	638.69	
STORM DRAIN LINE A WEST																																				
03+80.59	+.00	380.59	A4_a	2.51	2.51	0.80	2.01	2.01	12.70	1.74	14.44	5.71	11.47	0.00	0.00	11.47	24				0.013	0.0026	636.72	637.70		3.65		0.21	1.25		0.26	637.96	633.38	634.90	638.05	Drop Inlet
06+19.66	03+80.59	239.07	A4_b	3.37	5.88	0.80	2.70	4.70	14.44	1.09	15.52	5.51	25.92	0.00	0.00	25.92	36				0.013	0.0015	636.26	636.62	3.65	3.67	0.21	0.21	0.50	0.10	0.11	636.72	632.08	633.28	637.91	45° Bend
STORM DRAIN LINE A EAST																																				
619.66	1007.00	387.34	A4_d	1.28	1.28	0.80	1.02	1.02	10.00	3.11	13.11	6.36	6.51	0.00	0.00	6.51	24				0.013	0.0008	636.26	636.58		2.07		0.07	1.25		0.10	636.68	632.08	634.02	638.69	
STORM DRAIN LINE B																																				
298.43	0.00	298.43	B1_a	1.14	1.14	0.80	0.91	0.91	10.00	2.69	12.69	6.36	5.80	0.00	0.00	5.80	24				0.013	0.0007	636.97	637.17		1.85		0.05	1.25		0.10	637.27	636.53	637.12	641.09	
425.74	298.43	127.31	B1_b	4.75	5.89	0.80	3.80	4.71	12.69	0.56	13.25	5.71	26.91	0.00	0.00	26.91	36				0.013	0.0016	636.56	636.77	1.85	3.81	0.05	0.22	0.50	0.03	0.20	636.97	635.17	635.43	639.85	
440.67	425.74	14.93		0.00	5.89	0.00	0.00	4.71	13.25	0.07	13.32	5.71	26.91	0.00	0.00	26.91	36				0.013	0.0016	636.44	636.46	3.81	3.81	0.22	0.22	0.35	0.08	0.10	636.56	635.14	635.17	639.12	

MARK	REVISION	DATE
1	SHEET ADDED PER PI2023-0049 RFI 1	8/18/23

INLET AND STORM DRAIN CALCULATIONS

SHEET NAME:

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY: ED
DESIGNED BY: AT
LATEST REVISION: 8/19/2023
KSA JOB NO.: 101203

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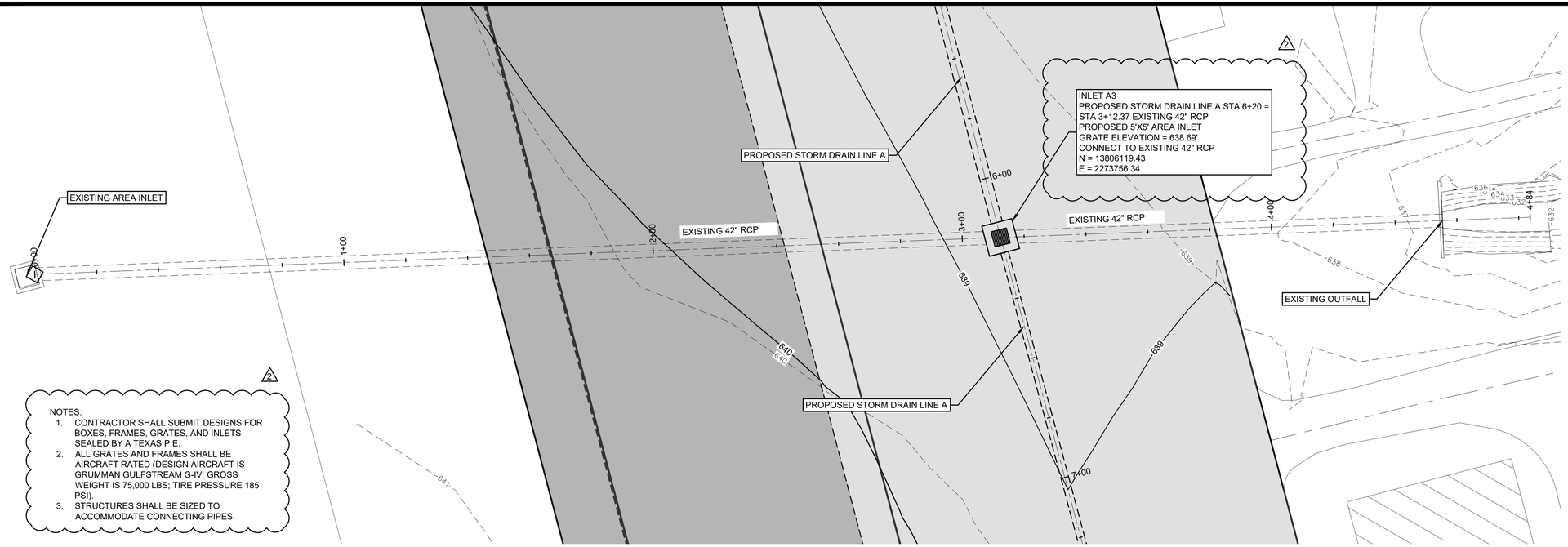
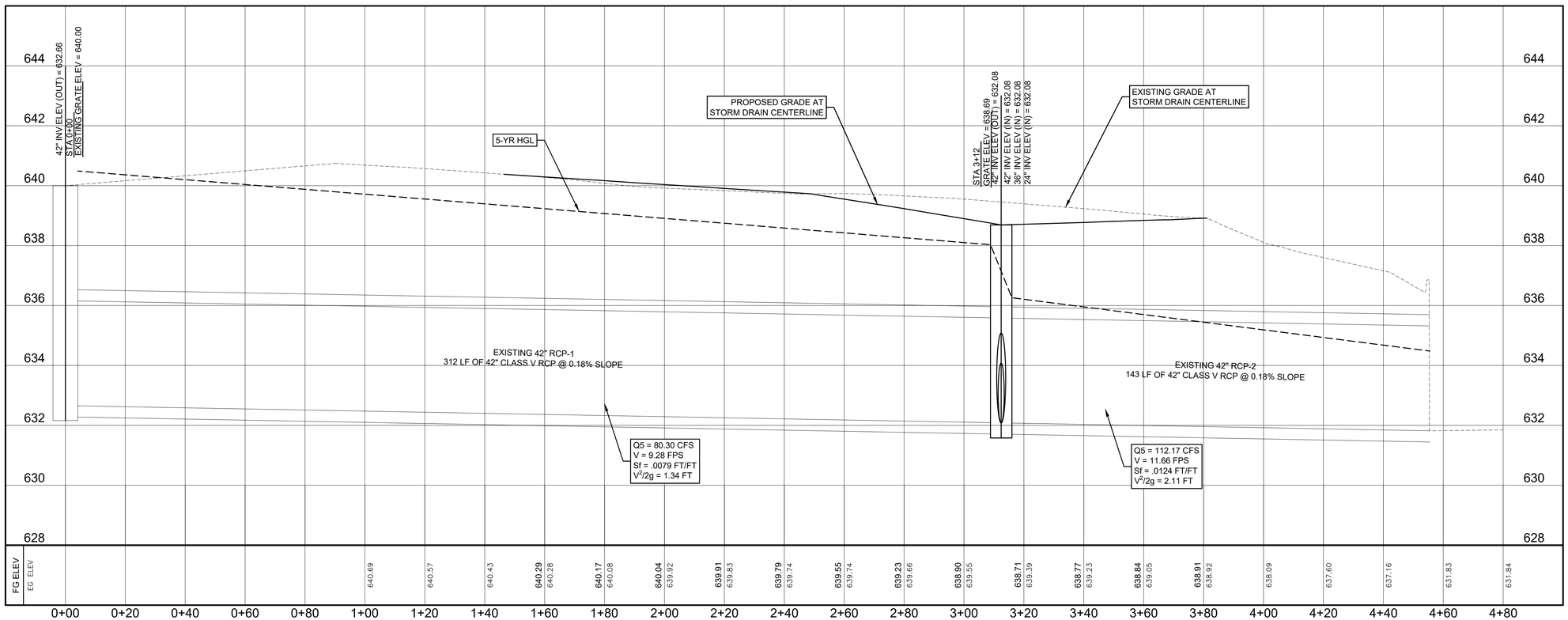
PROFESSIONAL ENGINEER

SEAL: 12/5/2023
TBPE Firm Registration No. F-1356

SHEET NO.
C08B





EXISTING 42 IN RCP PROFILE

MARK	REVISION	DATE
1	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
2	REVISED PER ADDENDUM 2	2/21/23

SHEET NAME: EXISTING 42 IN RCP PLAN AND PROFILE

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION NEW BRAUNFELS, TEXAS

DRAWN BY:	DESIGNED BY:	LATEST REVISION:	KSA JOB NO.:
ED	AT	8/18/2023	101203

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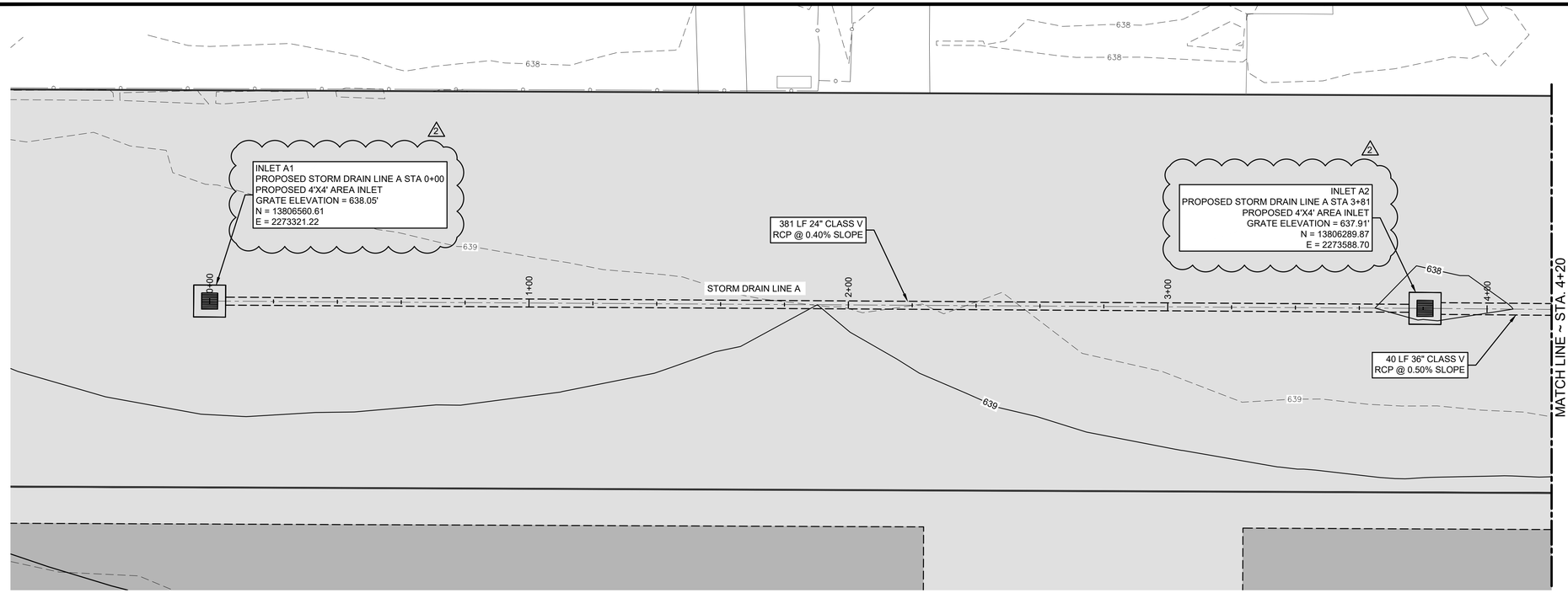
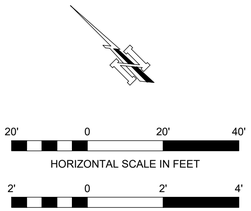
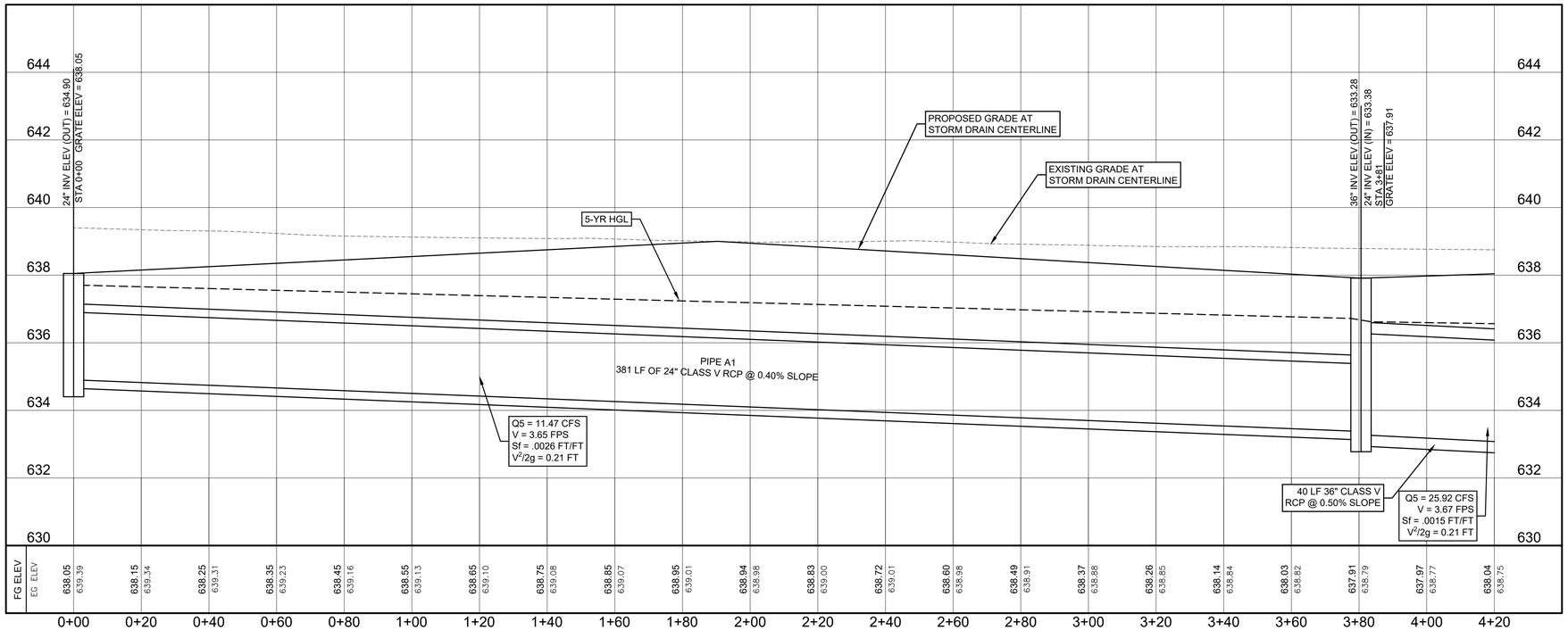
SEAL: 12/5/2023
TBPE Firm Registration No. F-1356

SHEET NO.
C09





NOTES:
1. CONTRACTOR SHALL SUBMIT DESIGNS FOR BOXES, FRAMES, GRATES, AND INLETS SEALED BY A TEXAS P.E.
2. ALL GRATES AND FRAMES SHALL BE AIRCRAFT RATED (DESIGN AIRCRAFT IS GRUMMAN GULFSTREAM G-IV: GROSS WEIGHT IS 75,000 LBS; TIRE PRESSURE 185 PSI).
3. STRUCTURES SHALL BE SIZED TO ACCOMMODATE CONNECTING PIPES.



PROPOSED STORM DRAIN LINE A PROFILE

MARK	REVISION	DATE
2	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
2	REVISED PER ADDENDUM 2	2/21/23

STORM DRAIN LINE A PLAN AND PROFILE STA 0+00 TO 4+20

SHEET NAME:

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/18/2023
KSA JOB NO.:	101203

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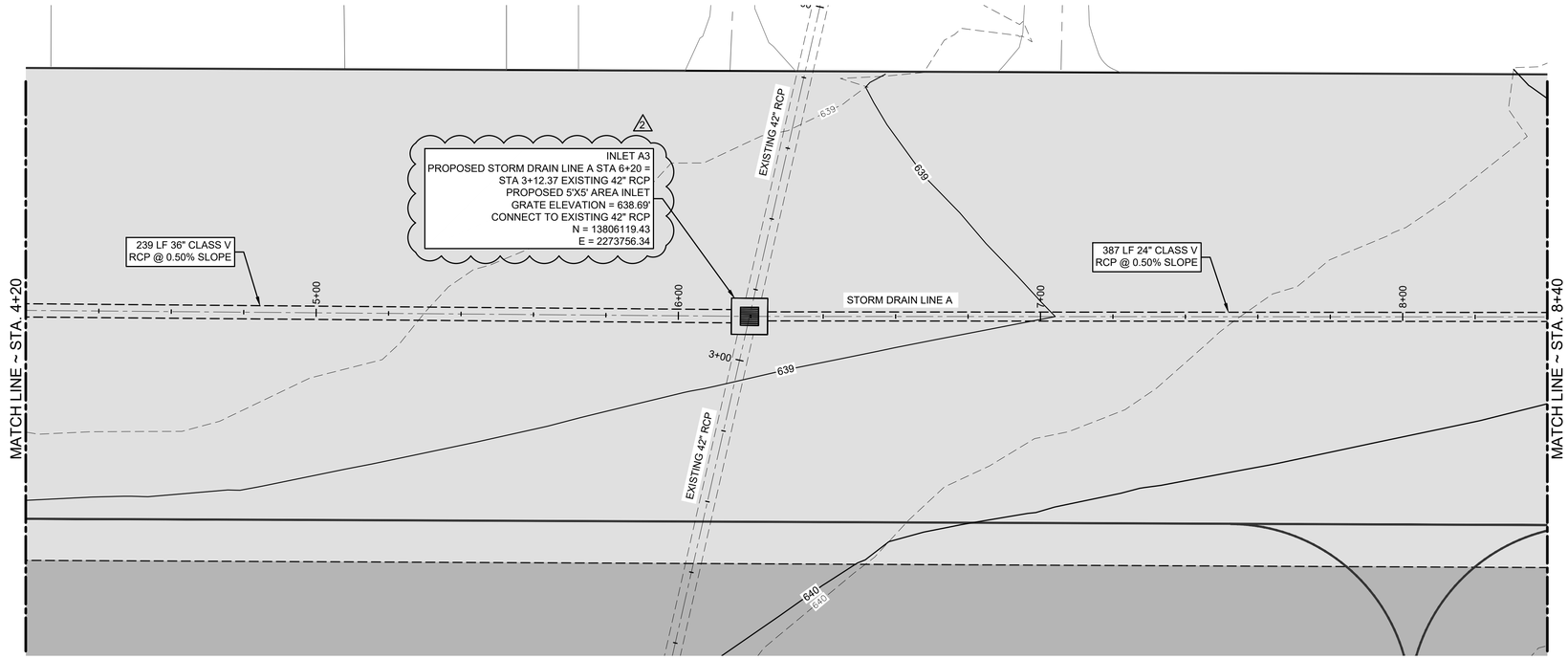
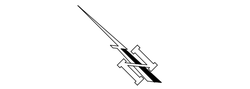
12/5/2023

SEAL:
TBPE Firm Registration No. F-1356

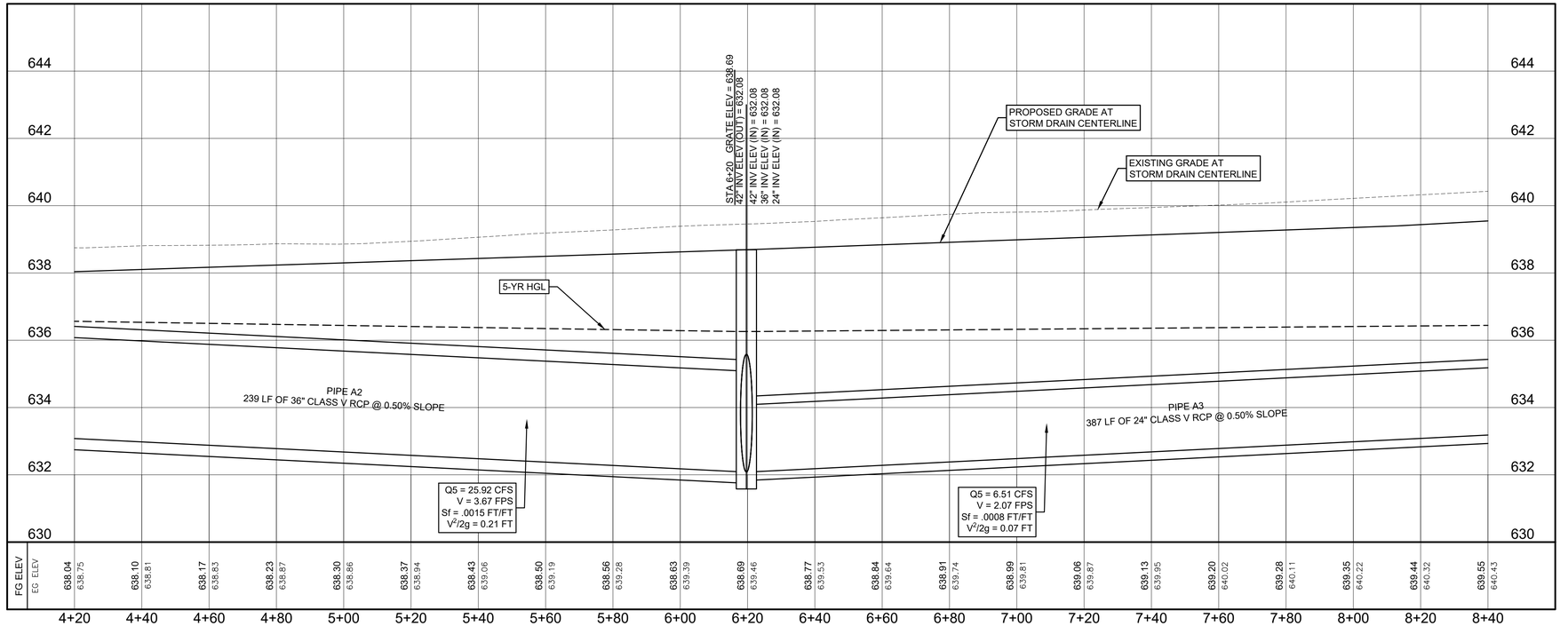
SHEET NO.

C10





NOTES:
1. CONTRACTOR SHALL SUBMIT DESIGNS FOR BOXES, FRAMES, GRATES, AND INLETS SEALED BY A TEXAS P.E.
2. ALL GRATES AND FRAMES SHALL BE AIRCRAFT RATED (DESIGN AIRCRAFT IS GRUMMAN GULFSTREAM G-IV: GROSS WEIGHT IS 75,000 LBS; TIRE PRESSURE 185 PSI).
3. STRUCTURES SHALL BE SIZED TO ACCOMMODATE CONNECTING PIPES.



PROPOSED STORM DRAIN LINE A PROFILE

MARK	REVISION	DATE
2	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
1	REVISED PER ADDENDUM 2	2/21/23

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

SHEET NAME:
STORM DRAIN LINE A PLAN AND PROFILE STA 4+20 TO 8+40

PROJECT NAME:
NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/18/2023
KSA JOB NO.:	101203

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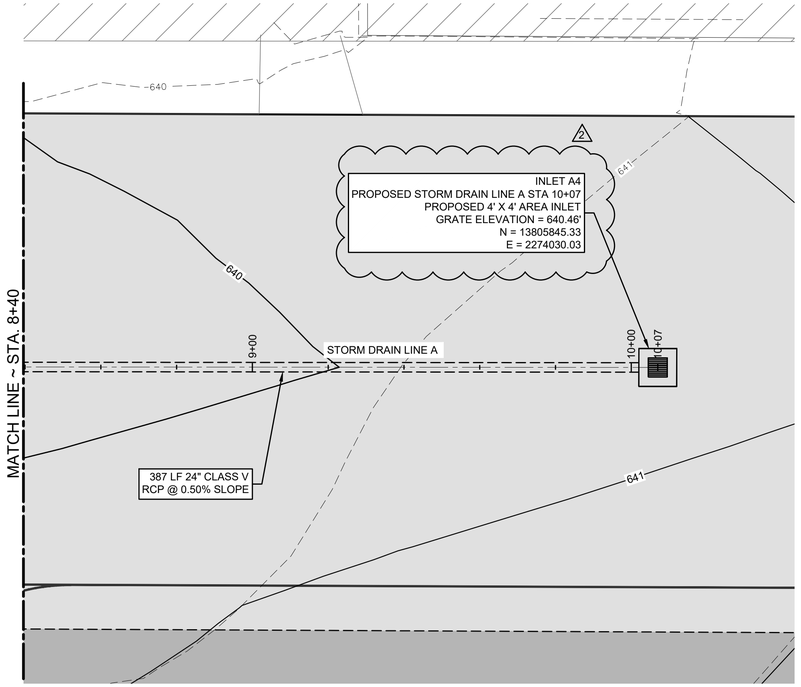
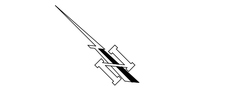
12/5/2023
SEAL:
TBPE Firm Registration No. F-1356

SHEET NO.
C11





20' 0 20' 40'

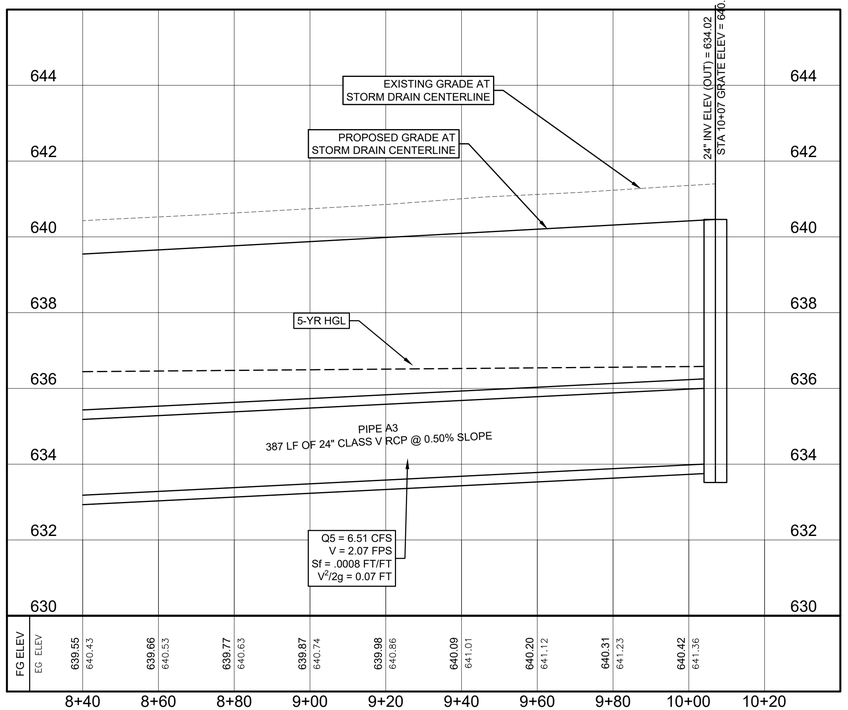
HORIZONTAL SCALE IN FEET

2' 0 2' 4'

VERTICAL SCALE IN FEET

2

NOTES:
1. CONTRACTOR SHALL SUBMIT DESIGNS FOR BOXES, FRAMES, GRATES, AND INLETS SEALED BY A TEXAS P.E.
2. ALL GRATES AND FRAMES SHALL BE AIRCRAFT RATED (DESIGN AIRCRAFT IS GRUMMAN GULFSTREAM G-IV: GROSS WEIGHT IS 75,000 LBS; TIRE PRESSURE 185 PSI).
3. STRUCTURES SHALL BE SIZED TO ACCOMMODATE CONNECTING PIPES.



PROPOSED STORM DRAIN LINE A PROFILE

MARK	REVISION	DATE
1	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
2	REVISED PER ADDENDUM 2	2/21/23

STORM DRAIN LINE A PLAN AND PROFILE STA 8+40 TO END

SHEET NAME:

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/19/2023
KSA JOB NO.:	101203

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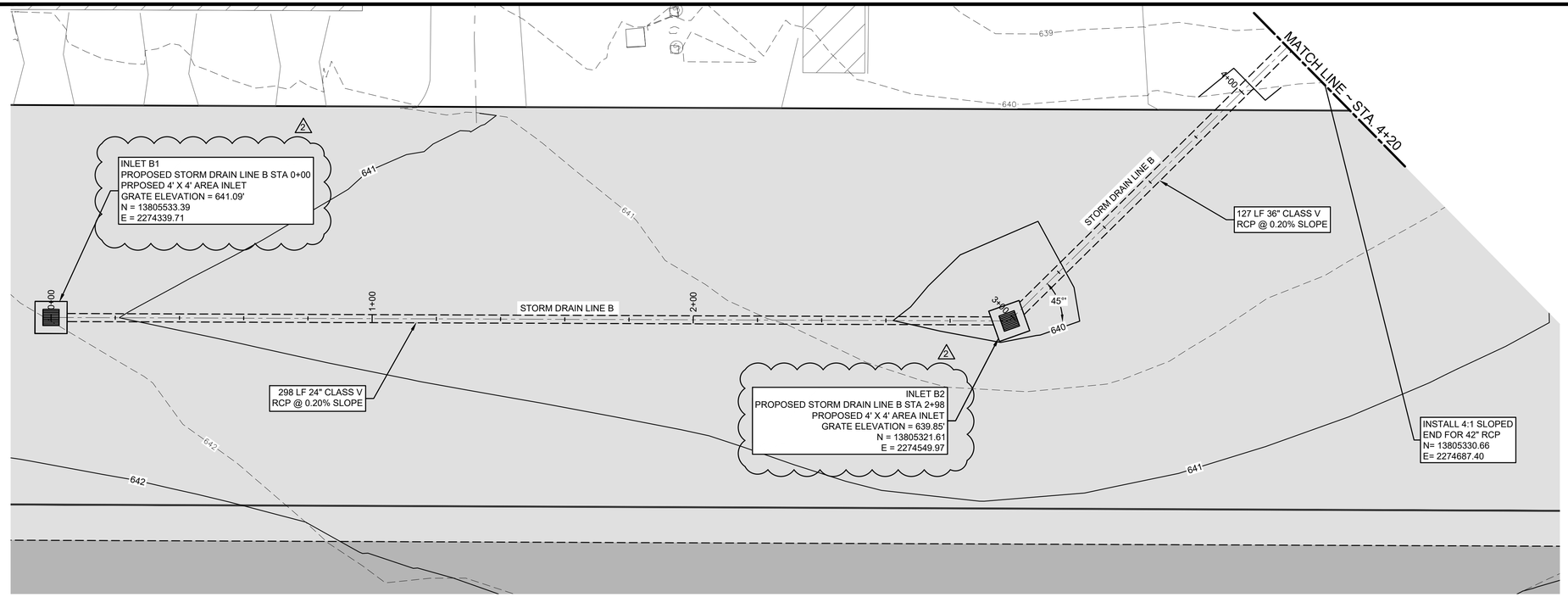
12/5/2023

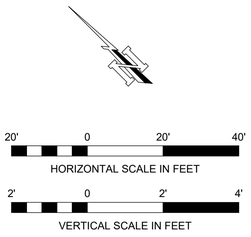
SEAL:

TBPE Firm Registration No. F-1356

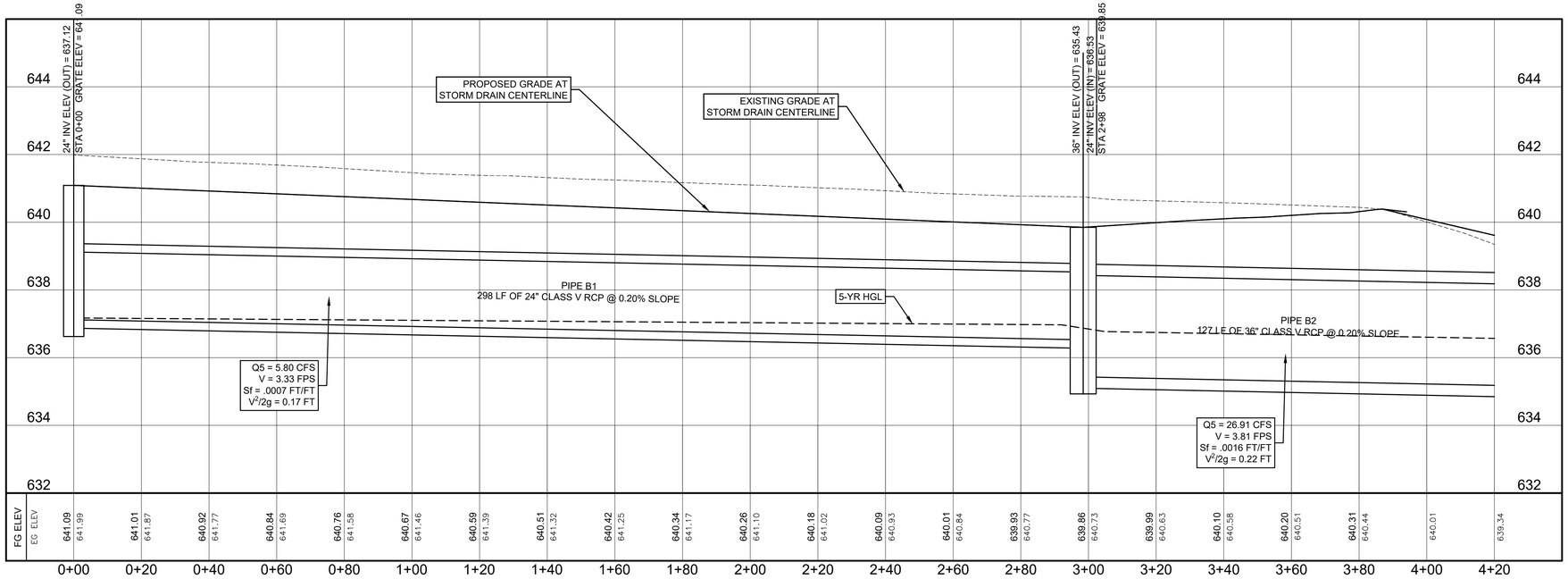
SHEET NO.

C12





NOTES:
1. CONTRACTOR SHALL SUBMIT DESIGNS FOR BOXES, FRAMES, GRATES, AND INLETS SEALED BY A TEXAS P.E.
2. ALL GRATES AND FRAMES SHALL BE AIRCRAFT RATED (DESIGN AIRCRAFT IS GRUMMAN GULFSTREAM G-IV: GROSS WEIGHT IS 75,000 LBS; TIRE PRESSURE 185 PSI).
3. STRUCTURES SHALL BE SIZED TO ACCOMMODATE CONNECTING PIPES.



PROPOSED STORM DRAIN LINE B PROFILE

MARK	REVISION	DATE
	SHEET REVISED PER PI2023-0049 RFI 1	9/18/23
	REVISED PER ADDENDUM 2	2/21/23

STORM DRAIN LINE B
PLAN AND PROFILE
STA 0+00 TO 4+20

SHEET NAME:

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/18/2023
KSA JOB NO.:	101203

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SEAL:
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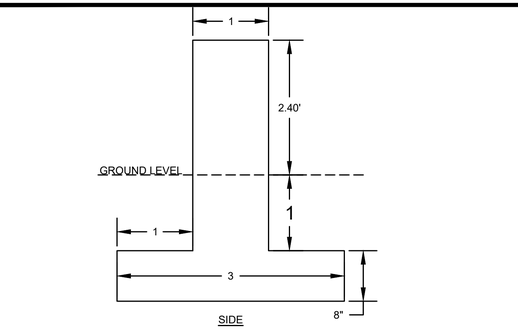
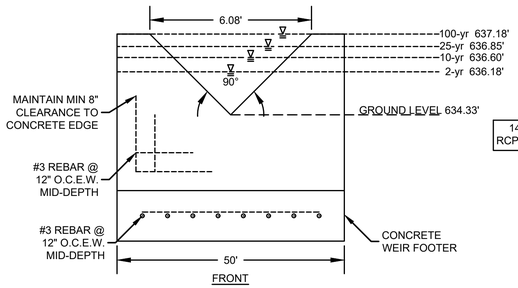
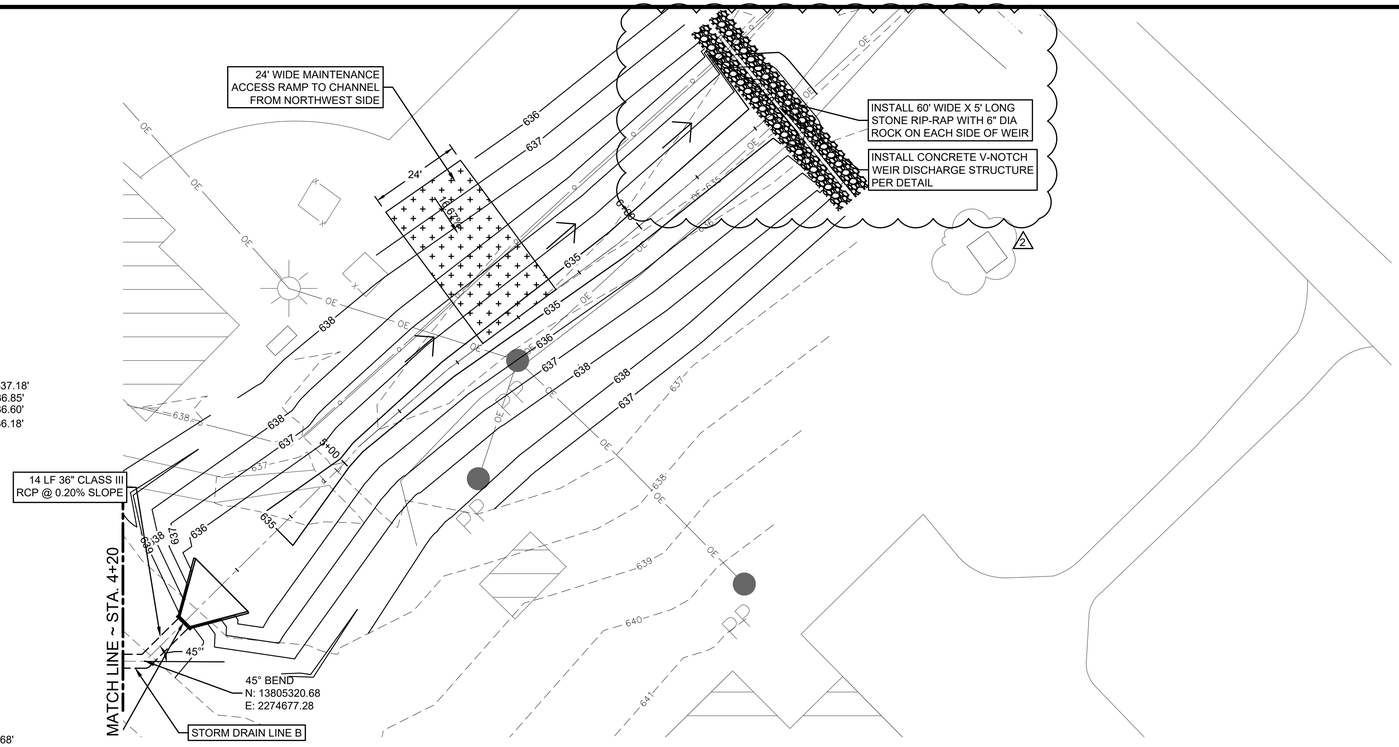
SHEET NO.
C13

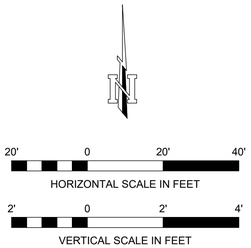


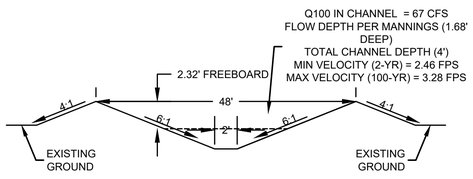


WEIR DETAIL

N.T.S.







TYPICAL DITCH SECTION

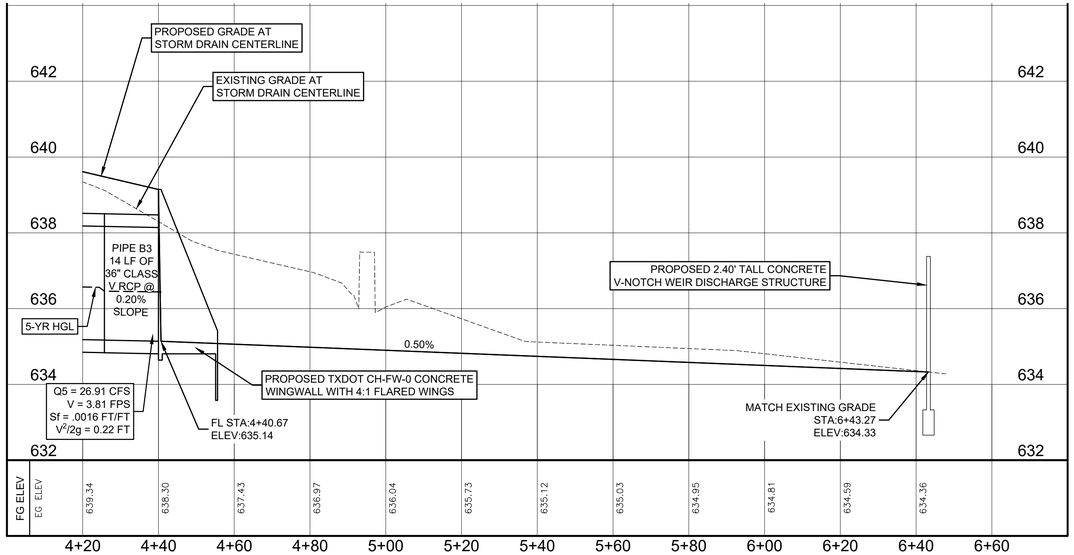
N.T.S.

HMS Summary Table and Weir Calculations

Design Storm (yr)	Existing Flow at Analysis Point A (cfs)	Proposed Flow at Analysis Point A (cfs)	Existing Flow at Analysis Point B (cfs)	Proposed Flow at Analysis Point B Before Mitigation (cfs)	Flow Increase at Analysis Point B (cfs)	Proposed Flow Modeled at Storm Drain Line B Outfall (cfs)	Required Discharge Over V-Notch Weir to Mitigate (cfs)	Weir Crest	Angle of V-Notch (degrees)	Ku	Head on Apex of V-Notch (ft)	Water Surface Elevation (ft)	Proposed Flow at Analysis Point B After Mitigation (cfs)
2	132.60	119.50	26.30	35.90	9.60	21.30	11.70	634.33	90.00	2.50	1.85	636.18	26.30
10	225.20	202.80	44.20	60.70	16.50	36.00	19.50				2.27	636.60	44.20
25	297.40	269.40	58.10	80.20	22.10	47.30	25.20				2.52	636.85	58.10
100	437.40	400.90	85.20	117.90	32.70	67.00	34.30				2.85	637.18	85.20

MAINTENANCE SCHEDULE

Maintenance Schedule:	
1	Accumulated paper, trash and debris should be removed every six (6) months or as necessary.
2	Vegetation within the basin shall not exceed eighteen (18) inches in height at any time.
3	Corrective maintenance is required any time draw-down does not occur within twenty-four (24) hours.
4	The basin should be inspected annually and repairs should be made if necessary.
5	In detention basin, silt shall be removed and the basin restored to original lines and grades when standing water conditions occur or the basin storage volume is reduced by more than 10%.
6	To limit erosion, no unvegetated area shall exceed 10 square feet.
7	Structural integrity of basins shall be maintained at all times.



PROPOSED STORM DRAIN LINE B PROFILE

MARK	REVISION	DATE
	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
	REVISED PER ADDENDUM 2	2/21/23

SHEET NAME: STORM DRAIN LINE B PLAN AND PROFILE STA 4+20 TO END

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME: NEW BRAUNFELS NATIONAL AIRPORT NORTH APRON RECONSTRUCTION AND REHABILITATION NEW BRAUNFELS, TEXAS

DRAWN BY: ED
DESIGNED BY: AT
LATEST REVISION: 8/19/2023
KSA JOB NO.: 101203

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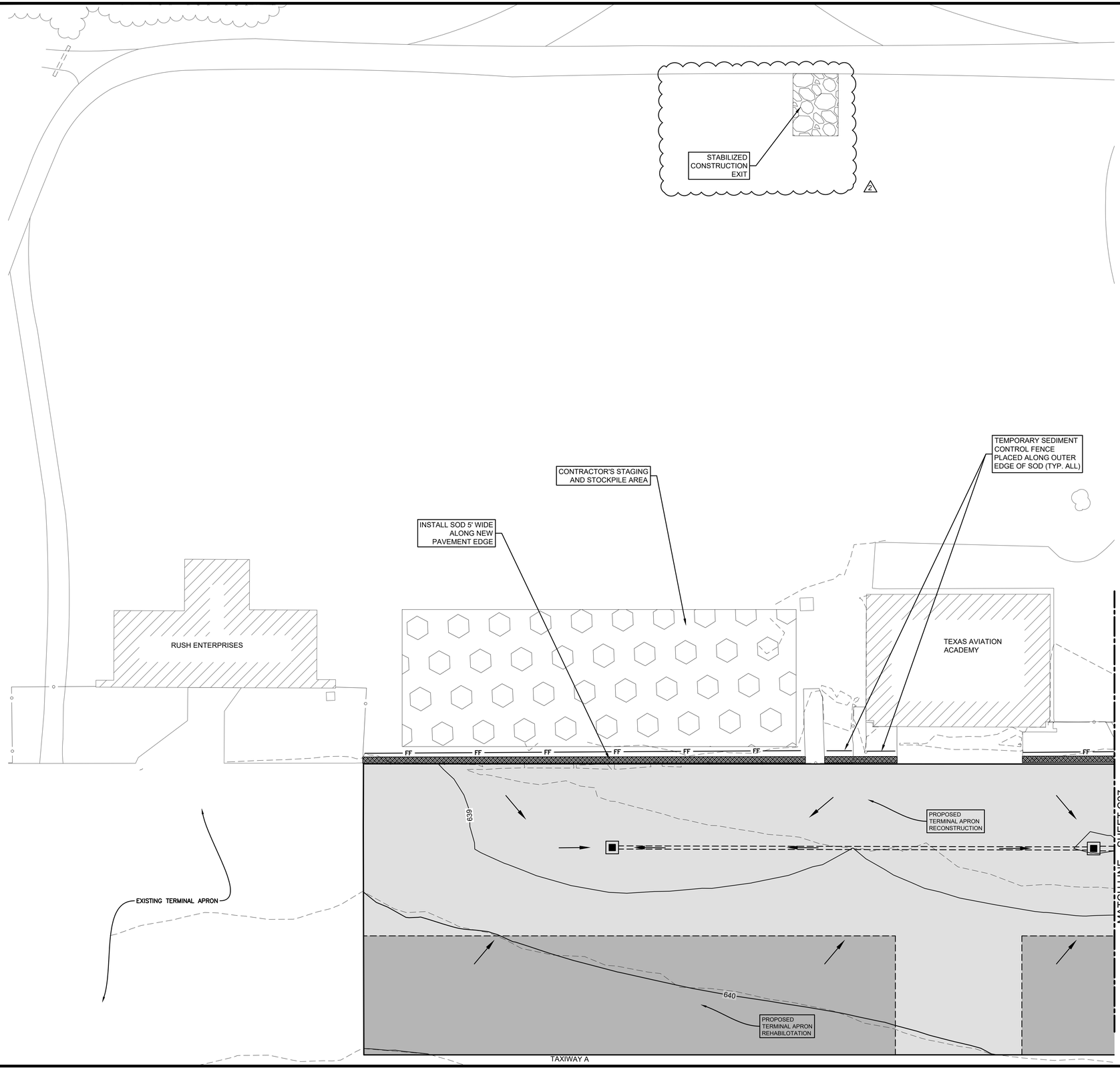
TBPE Firm Registration No. F-1356

SHEET NO.
C14



40' 0 40' 80'

GRAPHIC SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	DITCH FLOWLINE
	PROPOSED UNDERGROUND DRAINAGE PIPE
	PROPOSED PAVEMENT
	PROPOSED SOD 5' WIDE ALONG PAVEMENT EDGE
	EROSION CONTROL LOG
FF	TEMPORARY SEDIMENT CONTROL FENCE
	EROSION CONTROL LOGS
	DIRECTION OF FLOW

NOTES:

1. SEE SHEET C17 - C19 FOR GRADING PLAN.
2. SEE SHEET C27 FOR EROSION CONTROL DETAILS.
3. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE IN FRONT OF UPSTREAM INLET OF EACH STORM PIPE FROM CLOGGING AND CARRYING SOIL DOWNSTREAM.
4. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARY OR PERMANENT) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE STABILIZATION.
5. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

EROSION CONTROL NOTES:

FERTILIZER

1. FERTILIZER WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE SUBSIDIARY TO THE OTHER BID ITEMS.
2. WATERING OPERATIONS FOR WARM SEASON GRASSES SHALL BE DELAYED UNTIL SOIL TEMPERATURE EXCEEDS 70 DEGREES F.
3. PROVIDE EVEN SPRAY PATTERNS THAT DO NOT DISTURB SEED BED AND/OR, DISLODGE SEED FROM SEED BED.
4. WATER WILL BE EVENLY DISTRIBUTED OVER ENTIRE AREA(S) DESIGNATED FOR SEEDING AND/OR SODDING.
5. IF 1/4 INCH OR MORE OF RAINFALL OCCURS ONSITE ON ANY GIVEN WORKING DAY, NO VEGETATIVE WATERING WILL BE NEEDED ON THAT WORKING DAY (NOTE: 1/4 INCH RAIN EQUALS 7000 GALLONS OF WATER PER ACRE).
6. SHOULD THE CONTRACTOR FAIL TO APPLY THE SPECIFIED AMOUNT OF WATER WITHIN THE TIME ALLOWED, ANY SEED OR SOD IN POOR CONDITION WILL BE REPLACED, FERTILIZED, AND WATERED AT THE CONTRACTOR'S EXPENSE.
7. NO WATERING SHALL OCCUR BETWEEN THE HOURS OF 1:00 PM AND 8:00 PM WHEN DAYTIME TEMPERATURES EXCEED 95 DEGREES.
8. AFTER INITIAL ESTABLISHMENT PERIOD, PROVIDE INTERMITTENT WATERING (APPROX. 1"/ WEEK) TO NEWLY ESTABLISHED SEED OR SOD DURING SUMMER MONTHS UNTIL END OF CONTRACT.
9. ALL WATERING EQUIPMENT WILL HAVE A METERING DEVICE.

SODDING FOR EROSION CONTROL

1. ALL SOD (BLOCKS OR ROLLS) WILL BE PLACED WITHIN 24 HOURS OF DELIVERY TO THE SITE.
2. SOD BLOCKS WILL BE PLACED FIRMLY AGAINST ADJACENT SOD BLOCKS.
3. SOD WILL BE PLACED WITH JOINTS ALTERNATING ON EACH ROW TO PREVENT ALL JOINTS FROM LINING UP.
4. SODDING 4' WIDE SHALL BE PLACED AROUND ALL GRATE INLETS, AND SHALL BE PLACED 8' WIDE IN PROPOSED CHANNEL FLOWLINE AND OUTER BOTTOM EDGE OF SLOPE.

MARK	REVISION	DATE
1	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23
2	REVISED PER ADDENDUM 2	12/1/23

SHEET NAME:
EROSION CONTROL PLAN I

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

PROJECT NAME:
NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

DRAWN BY:	ED
DESIGNED BY:	AT
LATEST REVISION:	8/18/2023
KSA JOB NO.:	101203

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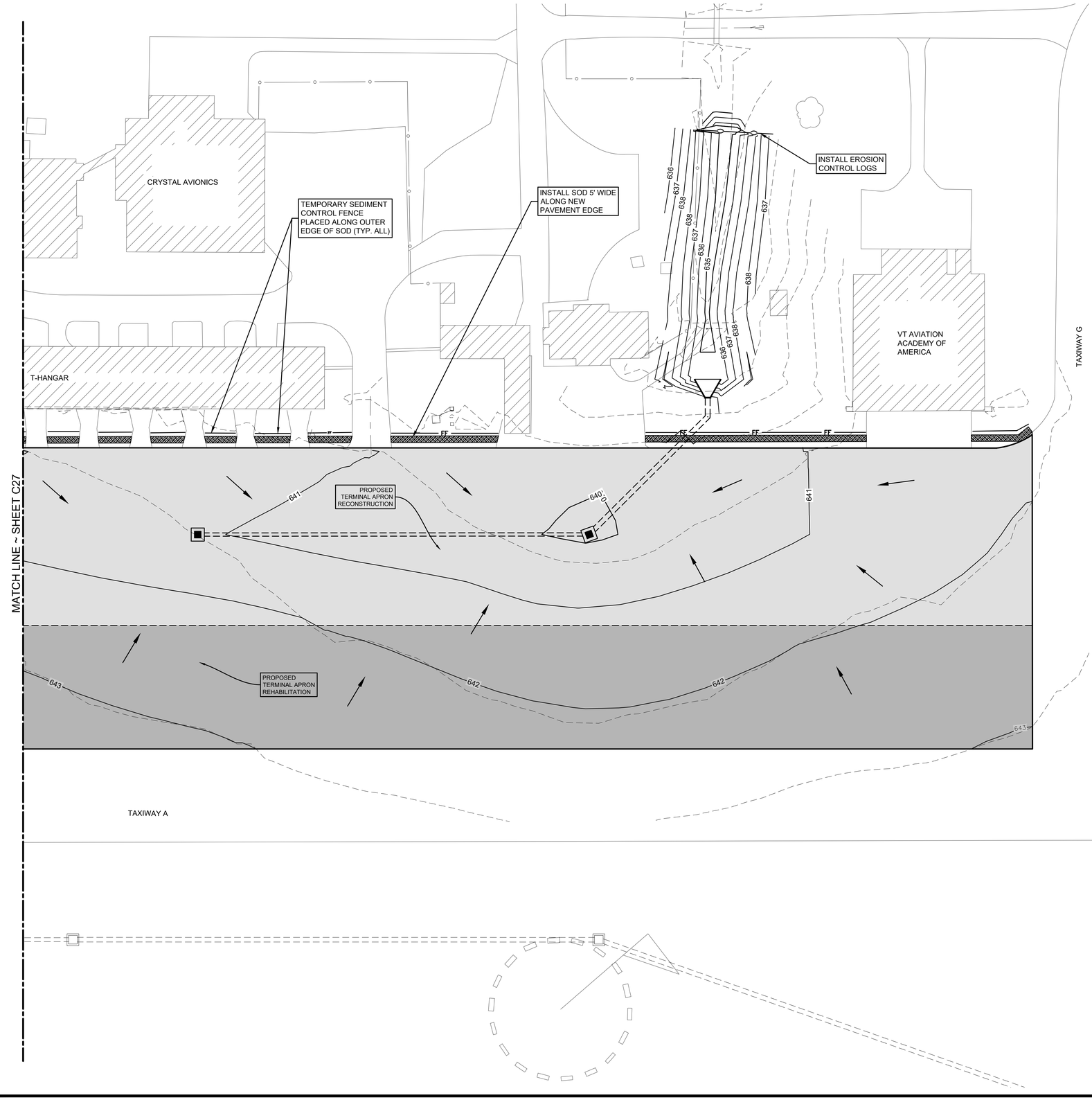
12/5/2023
SEAL:
TBPE Firm Registration No. F-1356

SHEET NO.
C24

\\KSA.NET\GATEWAY\PROJECTS\101203\908 CAD\30 SHEETS\02 CIVIL\101203-C-LO-EROS-0001.DWG | EROSION CONTROL PLAN I | 12/21/2023 - 11:56 AM | LAST SAVED BY: TCAMPBELL



40' 0 40' 80'

GRAPHIC SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	DITCH FLOWLINE
	PROPOSED UNDERGROUND DRAINAGE PIPE
	PROPOSED PAVEMENT
	PROPOSED SOD 5' WIDE ALONG PAVEMENT EDGE
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FF	TEMPORARY SEDIMENT CONTROL FENCE
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	DIRECTION OF FLOW

NOTES:

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MARK	REVISION	DATE
	SHEET REVISED PER PI2023-0049 RFI 1	8/18/23

NORTH APRON RECONSTRUCTION AND REHABILITATION - NEW BRAUNFELS, TEXAS

EROSION CONTROL PLAN III

SHEET NAME:

NEW BRAUNFELS NATIONAL AIRPORT
NORTH APRON RECONSTRUCTION AND REHABILITATION
NEW BRAUNFELS, TEXAS

PROJECT NAME:

DRAWN BY:	DESIGNED BY:	LATEST REVISION:	KSA JOB NO.:
ED	AT	8/18/2023	101203

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SHEET NO.

C26