



# DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION

WHITE SANDS MISSILE RANGE, NEW MEXICO

## RR7 MM4 CULVERTS

BID SET 100% DESIGN

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY XXX	DESIGNED BY	RR7 MM4 CULVERTS  COVER SHEET		
CHECKED BY XX				
SUBMITTED XX				
PROJECT MANAGER RECOMMENDED				
BRANCH CHIEF John Morgan				
APPROVED John Morgan CHIEF, ENGINEERING DIVISION	DRAWING NUMBER WS-85110-2023-C-C-01		PLATE 01	
DATE March 2023	SCALE None	SHEET 1 OF 10		

General Notes:

1. Contractor shall submit a traffic control plan for approval prior to beginning construction, per NMSHTD and the MUTCD. Contractor is responsible for maintaining all traffic control devices and maintaining vehicular access 24 hours a day 7 days a week.
2. All materials and equipment shall be installed in accordance with manufacture's published recommendations, contract documents, industry standards and all federal, state, and local codes and amendments as adopted by the government for service intended by the Contracting Officer (KO). The install of all materials and equipment shall be made by experience and licensed craftsman in a neat workman like manner. All materials, supervision, labor, tool, costs and services necessary to completely install a functional system shall be furnished by the contractor.
3. The term "provide" used in the drawings and scope of work implies the contractor is to furnish, transport, install, connect, warrant, and start-up, inclusively.
4. The drawings are diagrammatic only but shall be followed as closely as actual construction conditions and work of other trades permit.
5. Upon completion of work, contractor shall provide within 10 days, manufacture's operating & maintenance manual for all equipment including replacement parts list.
6. Contractor shall report discrepancies between field conditions and new construction drawings to the KO in writing before the RFI deadline during the solicitation phase.
7. Should there be any concern by the contractor, the contractor shall submit a Request For Information (RFI) through the proper procedures to have his/her concerns resolved.
8. Contractor shall field verify all quantities. Contractor shall field verify all existing utilities prior to any excavation. No heavy equipment shall be used. Contractor shall hand excavate or pothole all utilities to verify locations. Report any damage to the COR immediately.
9. Contractor shall remove and dispose of any existing asphalt pavement or rigid concrete. Contractor shall dispose rigid concrete at the WSMR Hughes Reclamation Area (Main Cantonment) located at the intersection of Watertown and Hughes Ave. Rigid concrete shall be free of rebar and/or all debris. Contractor shall provide a report to the COR of quantities disposed of.
10. Contractor shall provide an as-built survey with existing grading elevations within 10 days upon completion of the project..
11. Contractor shall apply water for dust control per section 158 of the Federal Highway Administration (FP-03). Contractor shall utilize fire hydrant located at LAT= 32.4802, long = -106.4186, Approximately 4 miles South of project. the contractor must install a back flow prevention device that is approved by WSMR Water Plant manager, 575-678-1917. Alternate water source is located at LAT: 32.9022, LONG: -106.4322, a pond, contractor shall supply pump approximately 30 miles North of project. Metering of water usage shall be required and reported to the COR on a weekly basis by the amount of truck loads used per day
12. Contractor shall clear and grub 30' wide area for bypass road, see site plan.
13. Vegetation shall be deposited at borrow site specified for this project, located at LAT: 32.5129, LONG: -106.4295. No foreign debris shall be placed at borrow site; concrete, pavement, rebar, rocks ect.
14. Contractor shall saw cut and remove existing asphalt to replace culvert structure.
15. A borrow pit is available for use, located at LAT: 32.5129, LONG: -106.4295, 1 mile south of the project. COR shall be notified at least 5 working days prior to removing any material. Quantities of material removed shall be reported to the COR on a weekly basis. When finished using borrow pit, contractor shall remove any grubbed vegetation and leave side slopes at a 4H:1V or flatter slope.

Traffic Sign Notes:

1. All sign materials and installation shall comply with the latest edition of the Manual on Uniform Traffic Control Devices, Section 701 of NMSHTD and Plan Sheet 8.
2. All sign panels shall conform to ASTM B 209. Sign panels shall be constructed of 0.125" Aluminum.
3. All sign sheeting shall comply with ASTM D4956 Type IX Diamond Grade VIP Sheeting.
4. NCHRP 350 compliant breakaways sleeves shall be required on all sign installations with the exception of delineators.

5. All new traffic signs, specifications and placement distances shall be per sign details and sign distance tables of the "standard highway signs" standard manual, 2009 edition.
6. All new signs shall be installed at designated areas and new sign posts shall have a "slipbase system" & shall be installed at a safe clear distance from the existing curb or edge of pavement.
7. All traffic signs and posts shall be disposed offsite at a State Licensed Landfill.

### Pre-cast Box Culvert:

1. All materials and workmanship shall conform to the New Mexico Department of Transportation Specifications for Highway and Bridge Construction and NMDOT Standards..
2. All concrete shall be class "AA" (4000psi). Chamfer all exposed edges  $\frac{3}{4}$ ".
3. Contractor shall install 8EA 12 X 10 precast box culverts, contractor shall field verify all dimensions.
4. Approved Waterproofing membrane and adhesive shall extend to outside barrels and one foot lap down outer wall.
5. Contractor shall provide an OSHA approved Trench safety system.
6. Type III Object Markers shall be provided and installed per plan sheet 8.
7. Re-grade and compact upstream and downstream channel bed (200' from edge of apron and full width. Grade to original profile to match existing elevation of apron.

### Pavement Marking Notes:

1. All pavement markings & striping shall be 4" wide, white or yellow as indicated on the details and plan sheets 8 and shall conform to standard highway colors.
2. All pavement markings shall be installed by using Type "B" Waterborn pavement marking material with glass beads per section 634.05 of the FP-03 & Plan sheet 8 of drawings. TY 1 glass beads shall be applied at a minimum rate of 6 pounds per gallon of paint.
3. All specifications for pavement markings are as per Manual of Uniform Traffic Control Devices (MUTCD) and standard manual 2009 Edition.
4. Contractor shall prepare Road surface prior to applying roadway markings per manufacture specifications.

### Material Testing:

1. The contractor shall control the quality of the work and shall provide adequate testing to assure compliance with the specifications.
2. After completion of paving work, all paving shall be flooded with water and any resulting "birdbaths" shall be ringed with chalk. Such hollows shall be corrected with addition of asphalt paving materials and re-rolling until all paving is completely level and free from hollows and high spots at no additional cost to the government.
3. Contractor shall perform in-place density and compaction test of the completed pavement in accordance with CTM No. 375 to determine compliance with specified requirements. Test density core for each 250 tons of HMA. Maximum area size shall be 500 tons with a minimum of 3 test per location and 1 test for each 50 tons after. Each pavement area shall be an independent lot. Compaction shall be taken as an average for a pavement area. COR shall determine core location.

Berms & RipRap:

1. Wire for riprap shall be "W" or hexagonal mesh and meet the required listed sections of 602 of the NMDOT Standards Specifications for Highway and Bridge Construction Current Edition.
2. Steel Stakes shall be galvanized steel pipe or 4" X 4" X 3/8" steel angles. Steel stakes shall project 6" above top of riprap.

3. Where splicing is necessary an overlap of at least 1 foot shall be provided.
4. Top of Earth Berm shall be constructed level with top of wing wall.
5. Contractor shall use native rock or other suitable materials for rock berms.

BID SET 100% DESIGN

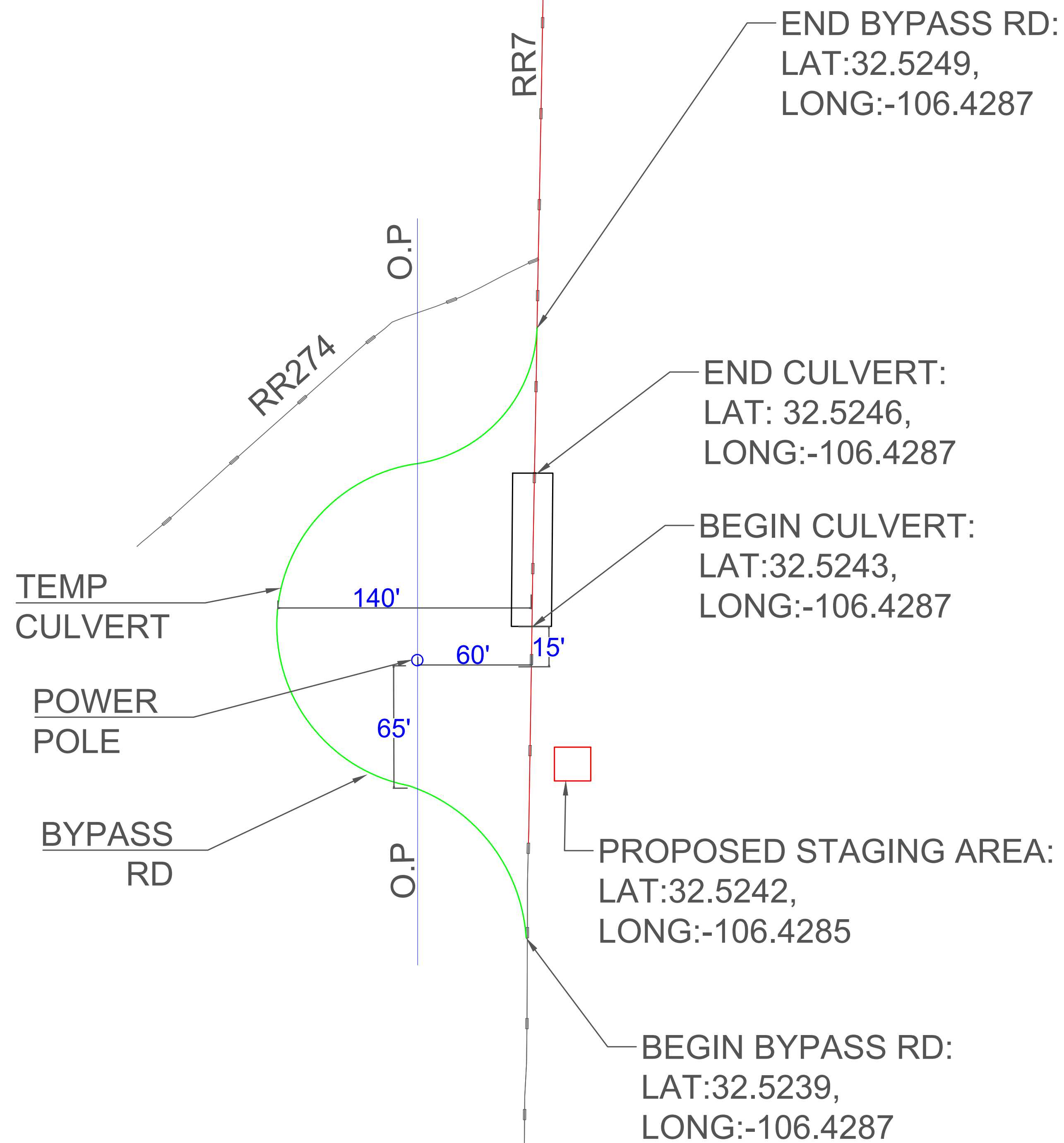
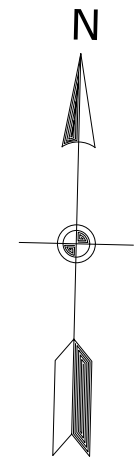

NO.	DATE	DESCRIPTION	BY	APPROVED
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## REVISIONS

**WHITE SANDS MISSILE RANGE, N.M.  
DIRECTORATE OF PUBLIC WORKS  
ENGINEERING DIVISION**

DRAWN BY xxx		DESIGNED BY		RR7 MM4 CULVERTS
CHECKED BY xx				
SUBMITTED				
xx				
PROJECT MANAGER				
RECOMMENDED				GENERAL NOTES
xx				
BRANCH CHIEF				
APPROVED		DRAWING NUMBER		PLATE
John Morgan CHIEF, ENGINEERING DIVISION		WS-85110-2023-C-GN-02		02
DATE	SCALE	SHEET		
March 2023	None	2 OF 10		





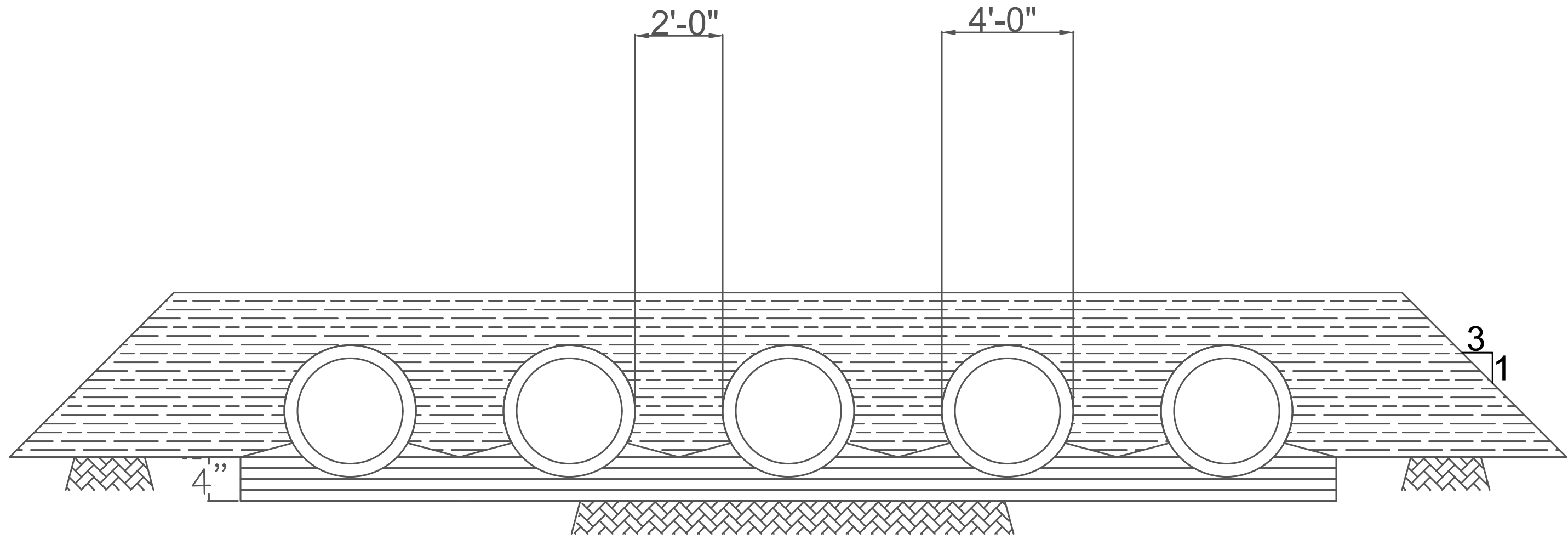
GENERAL NOTES:

1. Reconstruct a portion of Range Road 7 per detail 1 on Sheet 6.
2. Contractor shall clear & grub the 30' temporary bypass road to a smooth and continuous alignment with a minimum radius of 150'. Elevation to match existing pavement elevation of Range Road 7. Dispose of vegetation at borrow site.
3. Contractor shall remove and dispose of silt, sedimentation and rock in the arroyo prior to constructing bypass.
4. Contractor may use borrow pit to build up bypass road. Grade and compact bypass road to 98% as per ASTM D1557. All work shall be performed in a manner that provides safe traffic flow 24 hours a day, 7 days a week, access through the project area and adjacent roads. Contractor is responsible for the traffic control necessary to allow such access.
5. Contractor shall install 5 runs of temporary 48" CMP aligned with the flow of the channel. Contractor shall maintain two way vehicular access 7 days per week 24 hours per day service to this bypass road. Remove and dispose of bypass road at project completion
6. Saw-cut and remove existing roadway and substrate. Dispose of any existing asphalt pavement or rigid concrete. Contractor shall dispose rigid concrete at the WSMR Hughes Reclamation Area (Main Cantonment) located at the intersection of Watertown and Hughes Ave. Rigid concrete shall be free of rebar and/or all debris. Contractor shall provide a report to the COR of quantities disposed of.
7. Remove and dispose of existing 1EA 48" CPM approximately 60LF. Replace with 8 - 12' x 10' precast concrete box culverts.

BID SET 100% DESIGN

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY	DESIGNED BY	RR7 MM4 CULVERTS SITE PLAN		
XXX				
CHECKED BY				
XX				
SUBMITTED				
XX		RR7 MM4 CULVERTS SITE PLAN		
PROJECT MANAGER				
RECOMMENDED				
XX				
BRANCH CHIEF				
APPROVED	John Morgan	DRAWING NUMBER	PLATE	
CHIEF, ENGINEERING DIVISION		WS-85110-2023-C-SP-03	03	
DATE	March 2023	SCALE	None	
		SHEET	3 OF 10	





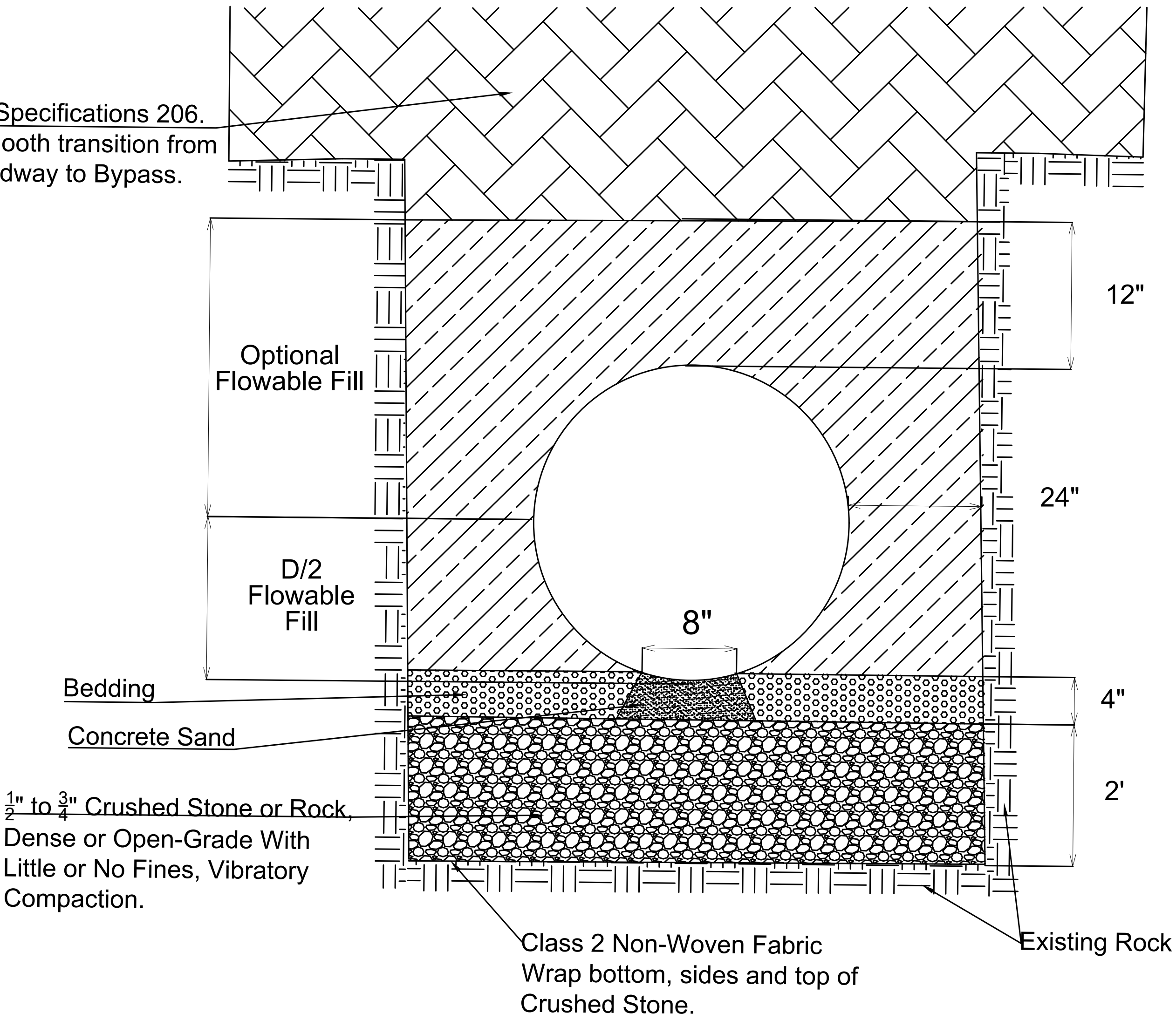
DETAIL 2- TYPICAL BYPASS CROSS-SECTION  
Scale: None

BYPASS CONSTRUCTION NOTES:

- Contractor shall construct and maintain the temporary bypass road throughout the duration of the project per NMDOT SSHBC 405.
- Contractor shall clear and grub the 30' temporary bypass road to a smooth and continuous alignment with a minimum radius of 150'. Elevation to match existing pavement elevation of Range Road 1.
- Contractor shall remove and dispose of rock sedimentation and silt in the arroyo in order to install CMP, prior to constructing bypass 30' wide road with embankment slopes no steeper than 3:1. Contractor may use WSMR borrow pits.
- Contractor shall install 5-48” diam. steel CMP as per specification section 206 NMDOT SSHBC. CMP shall be galvanized gage 16. The alignment of the CMP shall be skewed to match what was removed, align with the center of the arroyo's flow path crossing the road.
- All work shall be performed in a manner that provides safe traffic flow 24 hours a day, 7 days a week, access through the project area and adjacent roads. Contractor is responsible for the traffic control necessary to allow such access.
- Apply water for dust control per Section 158 of the Federal Highway Administration FP-03. Contractor may utilize the fire hydrant located at LAT= 32.4802, long = -106.4186, Approximately 4 miles South of project. the contractor must install a back flow prevention device that is approved by WSMR Water Plant manager, 575-678-1917.

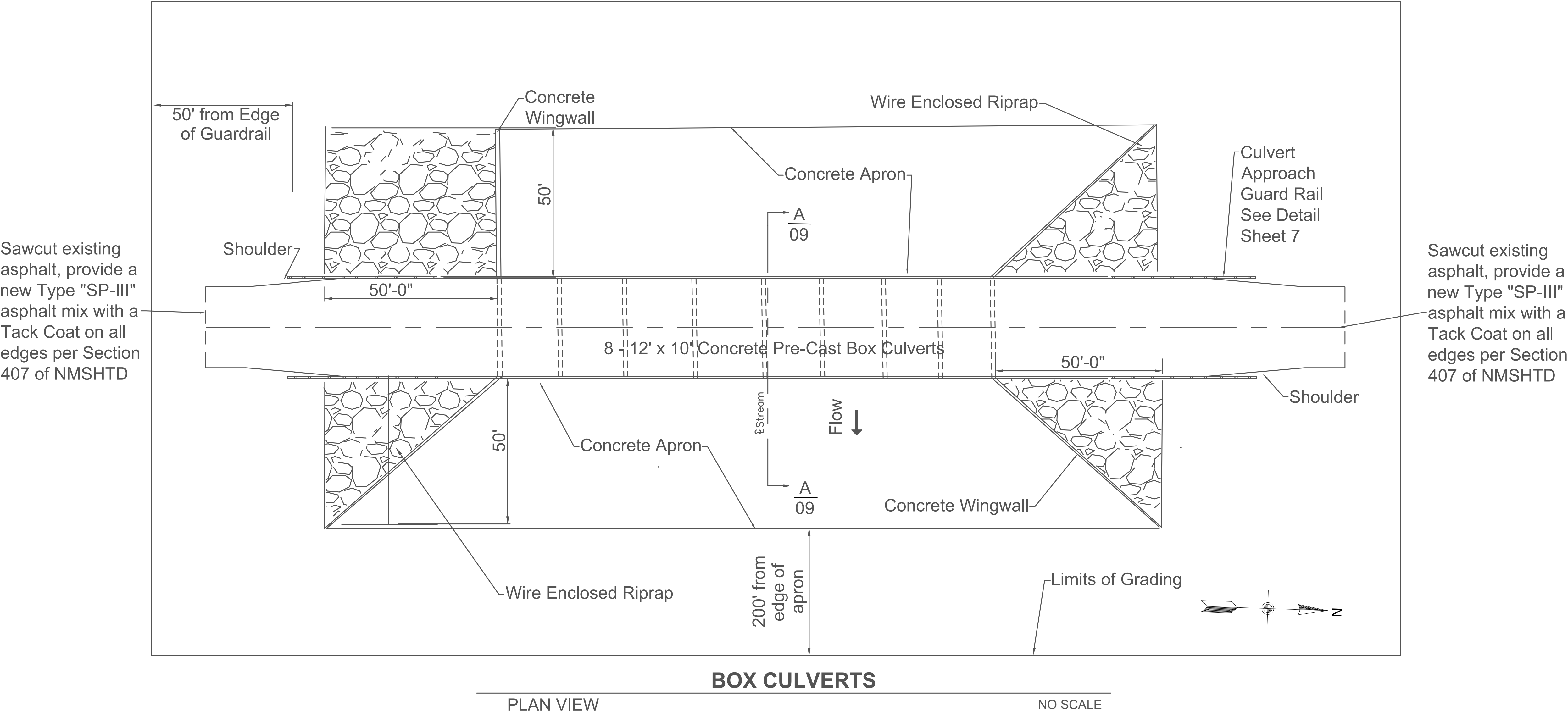
- Upon completion and acceptance of the project, the contractor shall remove the temporary bypass road and dispose of the excess soil to the borrow pit. reestablish surrounding area to original or better condition with the surface runoff flow into the arroyo. Demolish existing CMP and dispose.

Backfill Per Specifications 206.  
Ensure a smooth transition from  
existing Roadway to Bypass.

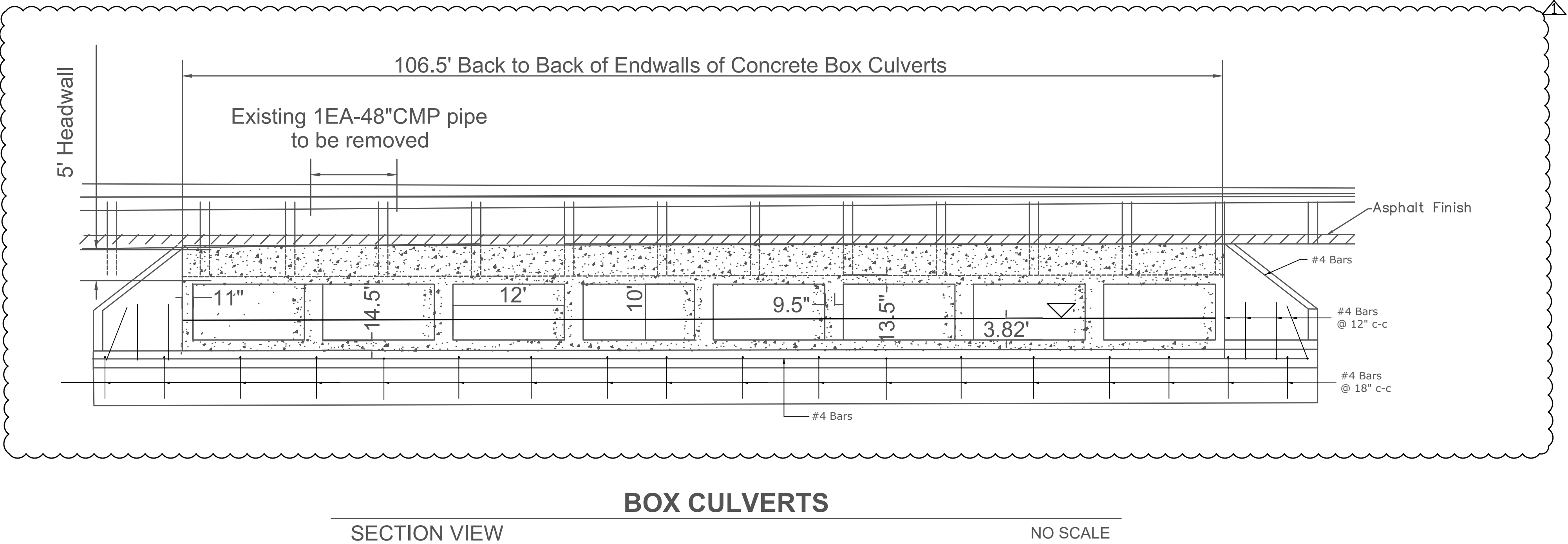



BID SET 100% DESIGN

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY xxx	DESIGNED BY	RR7 MM4 CULVERTS  Bypass Details		
CHECKED BY xx				
SUBMITTED xx				
PROJECT MANAGER xx				
RECOMMENDED xx				
BRANCH CHIEF xx				
APPROVED John Morgan CHIEF, ENGINEERING DIVISION	DRAWING NUMBER WS-85110-2023-C-DT-04		PLATE 04	
DATE March, 2023	SCALE None	SHEET 4 OF 10		

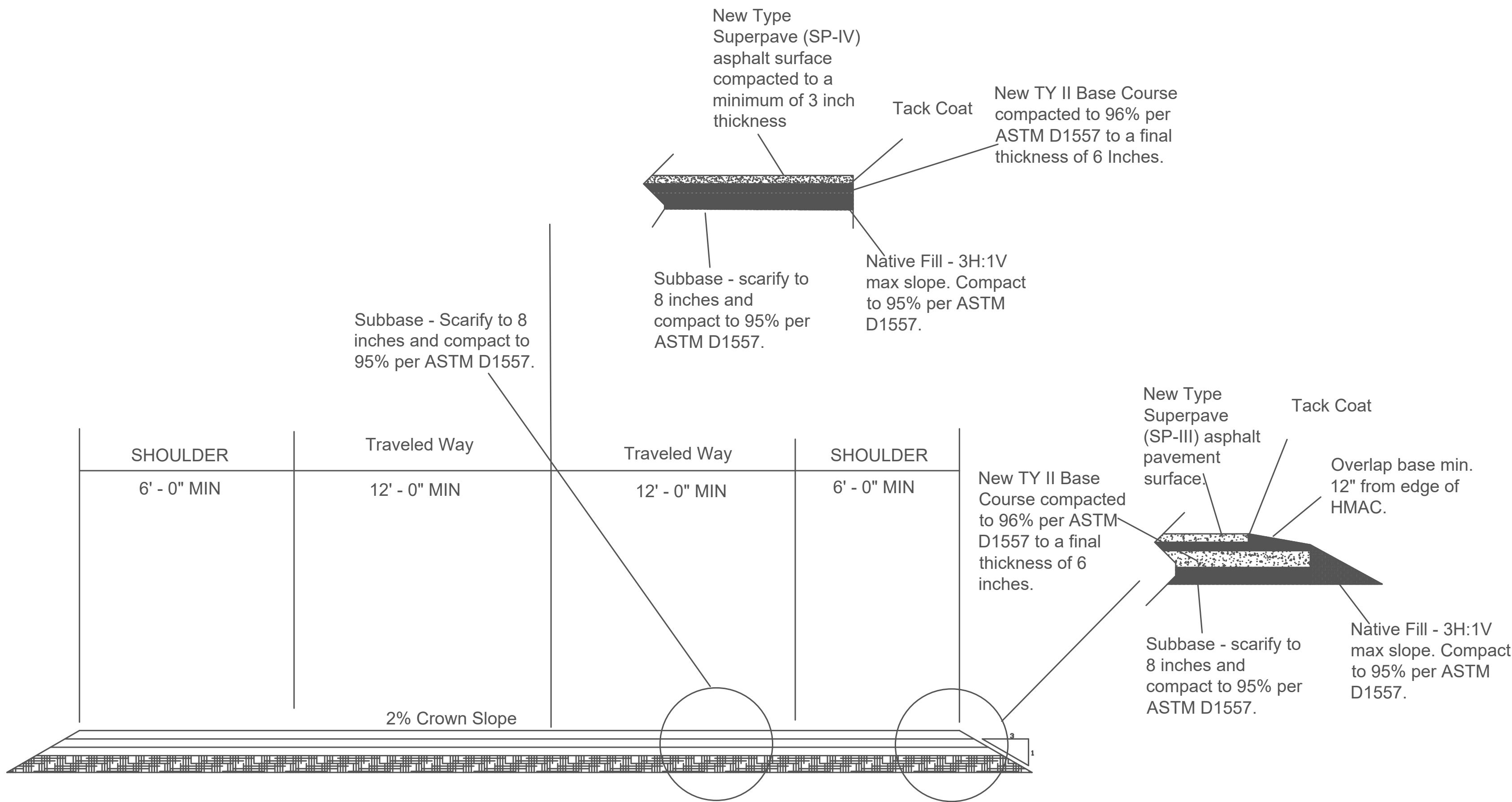


- Pre-cast Box Culvert:**
1. All materials and workmanship shall conform to the New Mexico Department of Transportation Specifications for Highway and Bridge Construction and NMDOT Standards..
  2. All concrete shall be class "AA" (4000psi). Chamfer all exposed edges  $\frac{3}{4}$ ".
  3. Contractor shall install 8EA 12 X 10 precast box culverts. Contractor shall field verify all quantities, locations and dimensions. Align culverts with the natural flow of the channel.
  4. Approved Waterproofing membrane and adhesive shall extend to outside barrels and one foot lap down outer wall.
  5. Steel Tube Drain shall be installed two per face, Standard Drawing 511-66-5/6.
  6. Contractor shall provide an OSHA approved Trench safety system.
  7. Type III Object Markers shall be provided and installed per plan sheet 8.
  8. Re-grade and compact upstream and downstream channel bed 200' from edge of apron and full width. Grade to original profile to match existing elevation of apron.



BID SET 100% DESIGN					
	9.11.2023	Measurements corrected to reflect NMDOT Standards		RP	
NUMBER	DATE	DESCRIPTION		BY	APPROVED
REVISIONS					
WHITE SANDS MISSILE RANGE, NEW MEXICO DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION					
DESIGNED BY		RR7 MM4 CULVERTS  BOX CULVERT			
DRAWN	CHECKED				
SUBMITTED					
PROJECT MANAGER					
RECOMMENDED					
XX					
CHIEF DESIGN BRANCH					
APPROVED		DRAWING NUMBER		PLATE	
John Morgan		WS-85210-2023-C-ST-05		05	
CHIEF, ENGINEERING DIVISION					
DATE	MARCH 2023	SCALE	None	SHEET 5	OF 10





DETAIL 1- TYPICAL ROADWAY CROSS-SECTION  
Scale: None

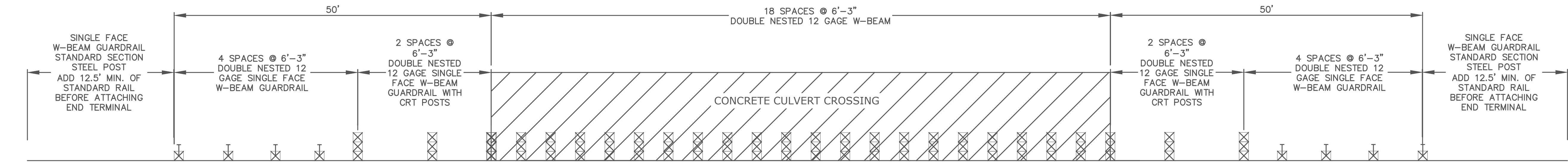
## Final Road Width

- SW = Final Shoulder Width = 6 feet.
- TW = Traveled Way Width = 12 feet.
- Apply new center line to match existing on all new paved areas per Section 634.05 of the Federal Highway Administration (FP-03).
- Apply new shoulder line to all new paved areas per Section 634.05 of the FP-03.
- Contractor shall field verify all quantities.

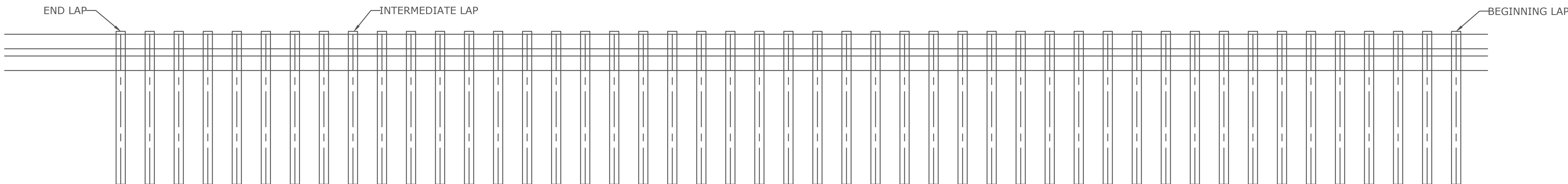
## ROADWAY CONSTRUCTION NOTES

- Roadway shall be replaced with 8" of subgrade compacted to 95% density, 6" TY II base course compacted to 96% per section 303 (NMSHTD). Apply tack coat and 3" of HMAC Superpave (SP-III) per 423. Asphalt shall be placed in 1.5" lifts, apply tack coat between lifts. Restripe to match existing.
- All work shall be performed in a manner that provides 24 hour vehicular access through the project area and adjacent roads in a safe manner. Contractor is responsible for the traffic control necessary to allow such access.
- Contractor shall ensure there is a smooth transition from existing roadway to new roadway, with matching elevations. Re-grade shoulders to a 2% cross slope from edge of pavement.
- Apply water for dust control per Section 158 of the Federal Highway Administration FP-03.
- Upon completion and acceptance of the roadway opening to traffic, the contractor shall demolish and remove the temporary bypass road. Remove excess soils from project site and haul to borrow pit.

BID SET 100% DESIGN				
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY XXX	DESIGNED BY --	RR7 MM4 CULVERTS  <b>Roadway Details</b>		
CHECKED BY XX				
SUBMITTED XX				
PROJECT MANAGER RECOMMENDED				
BRANCH CHIEF APPROVED				
John Morgan CHIEF, ENGINEERING DIVISION		DRAWING NUMBER	PLATE	
DATE March 2023		SCALE None		WS-85110-2023-C-DT-06
		SHEET 6 OF 10		06



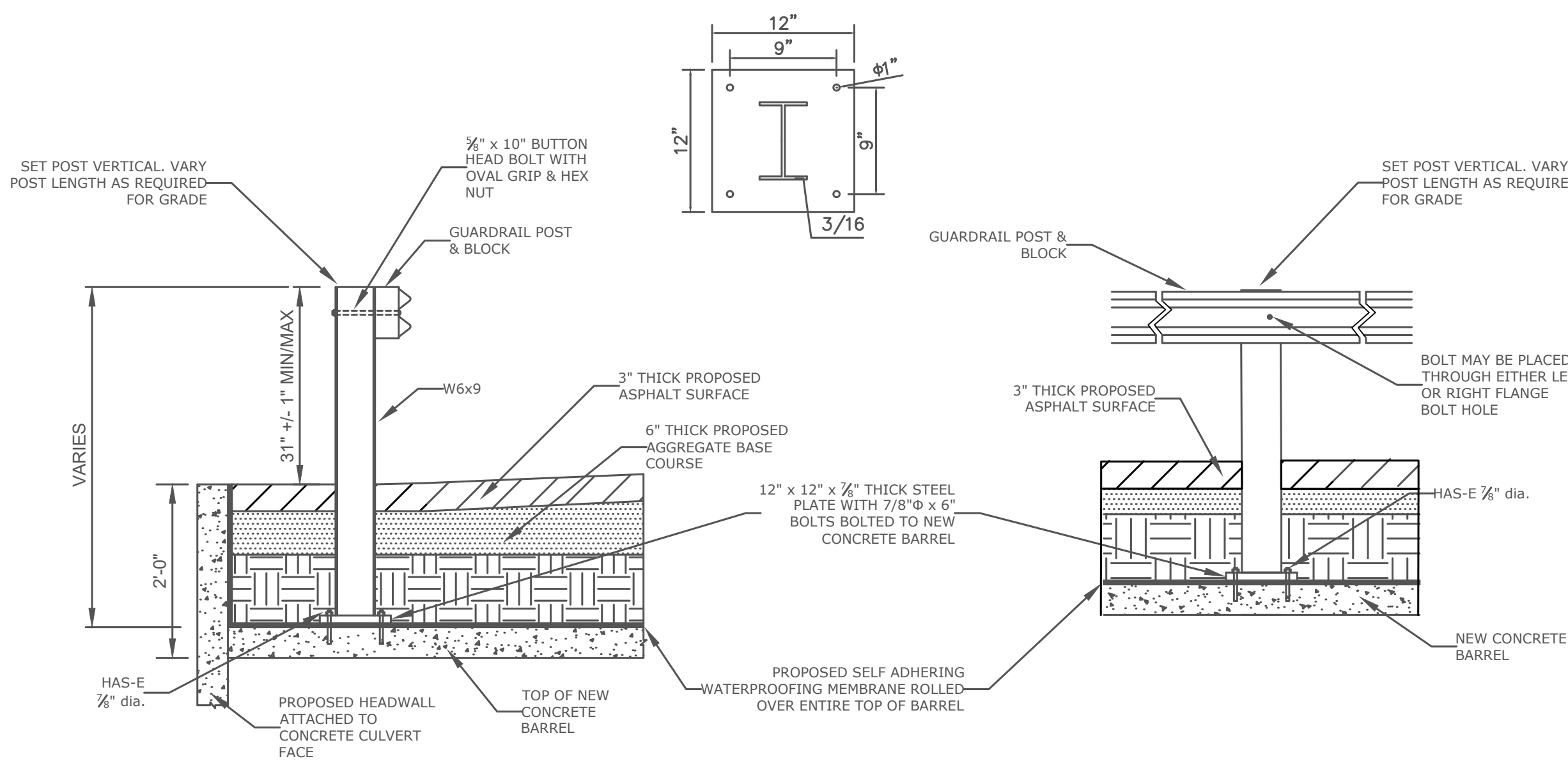
DIRECTION OF TRAVEL



## PROPOSED GUARDRAIL

SECTION VIEW

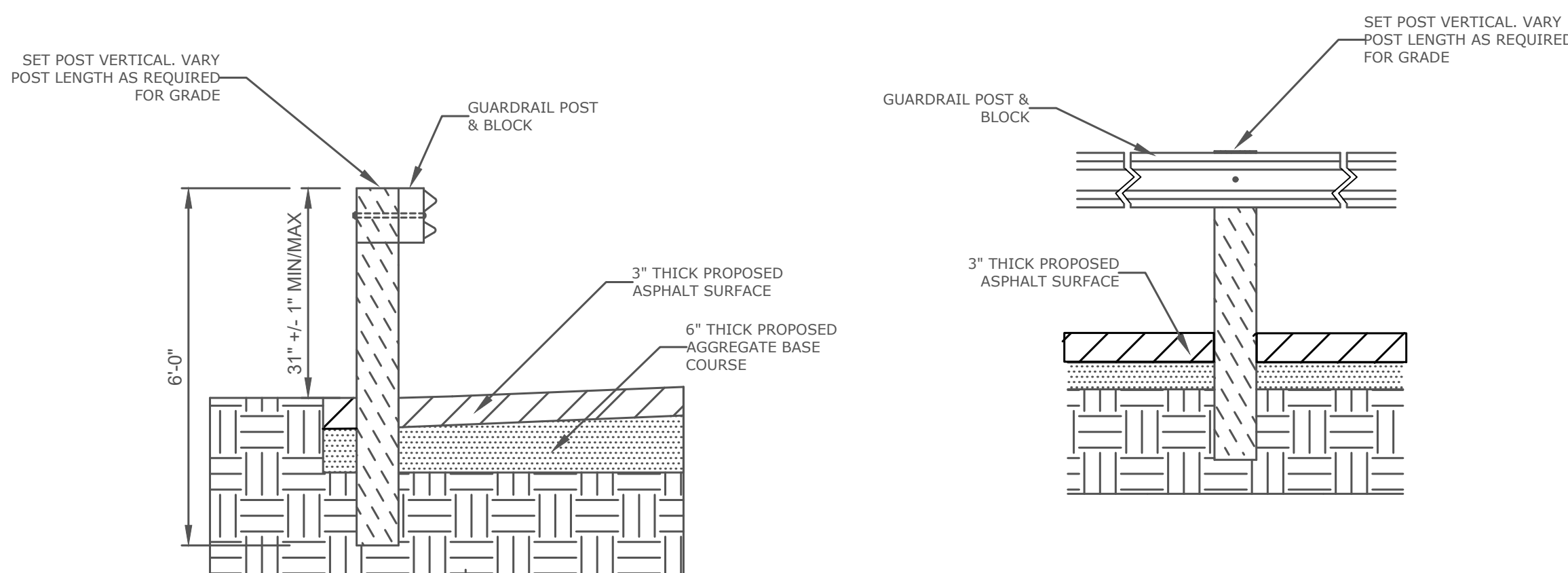
NO SCALE



### GUARDRAIL ATTACHED TO CONCRETE CULVERT

DETAIL 1

NO SCALE



### GUARDRAIL BEYOND CONCRETE CULVERT

DETAIL 2

NO SCALE

#### Guardrail Notes:

- End treatment shown is a general depiction of an SKT-SP (Sequential Kinking Terminal-Standard Post System) 50' NMDOT accepted end terminal that is FHWA accepted as crashworthy at Test Level 3 (TL-3) and may be used for all posted speeds.
- Accepted systems, on the Departments Approved Product List, shall be installed according to manufactures' installation instructions.
- Contractor shall grade guardrail installation area to a 10:1 slope or flatter.
- A reflectorized object marker shall be installed. Adhesive backed reflective sheeting may be applied directly to guardrail end treatment impact head as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. Reflective material shall be Type VIII with yellow background and black chevron stripes. Stripes shall be oriented with their tops away from traffic and angles down at 45° toward traffic.
- These end treatments do not require an offset at the end. End treatments shall be installed ensuring that the end piece is 2' off the shoulder. A maximum flare of 25:1 or flatter over the length of the treatment is allowed.
- End treatments shall be of the length and test level specified in these drawings and as specified by the manufacturer for the intended end treatment type and test level. Only end treatments currently on the NMDOT Approved Product List will be accepted for installation. For specific end treatment details, see manufacturers' drawings.
- Contractor shall warp all grade transitions to create smooth surface contours.

## BID SET 100% DESIGN

NO. DATE DESCRIPTION BY APPROVED

#### REVISIONS

WHITE SANDS MISSILE RANGE, N.M.  
DIRECTORATE OF PUBLIC WORKS  
ENGINEERING DIVISION

DRAWN BY

xxx

CHECKED BY

xx

SUBMITTED

xx

PROJECT MANAGER

RECOMMENDED

xx

BRANCH CHIEF

APPROVED

John Morgan

CHEF, ENGINEERING DIVISION

DATE

March 2023

SCALE

None

DRAWING NUMBER

WS-85110-2023-C-CT-07

PLATE

07

SHEET

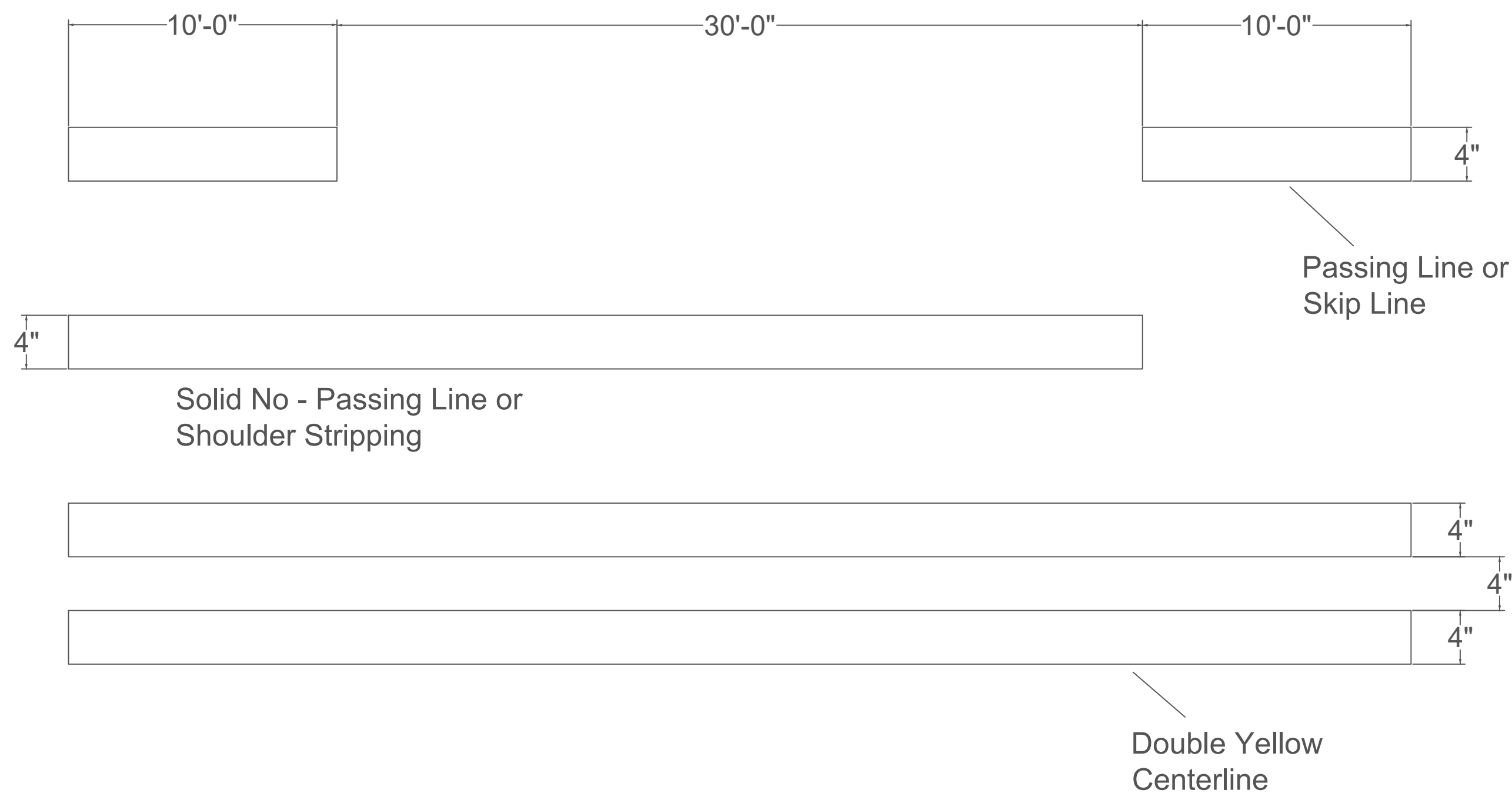
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OF

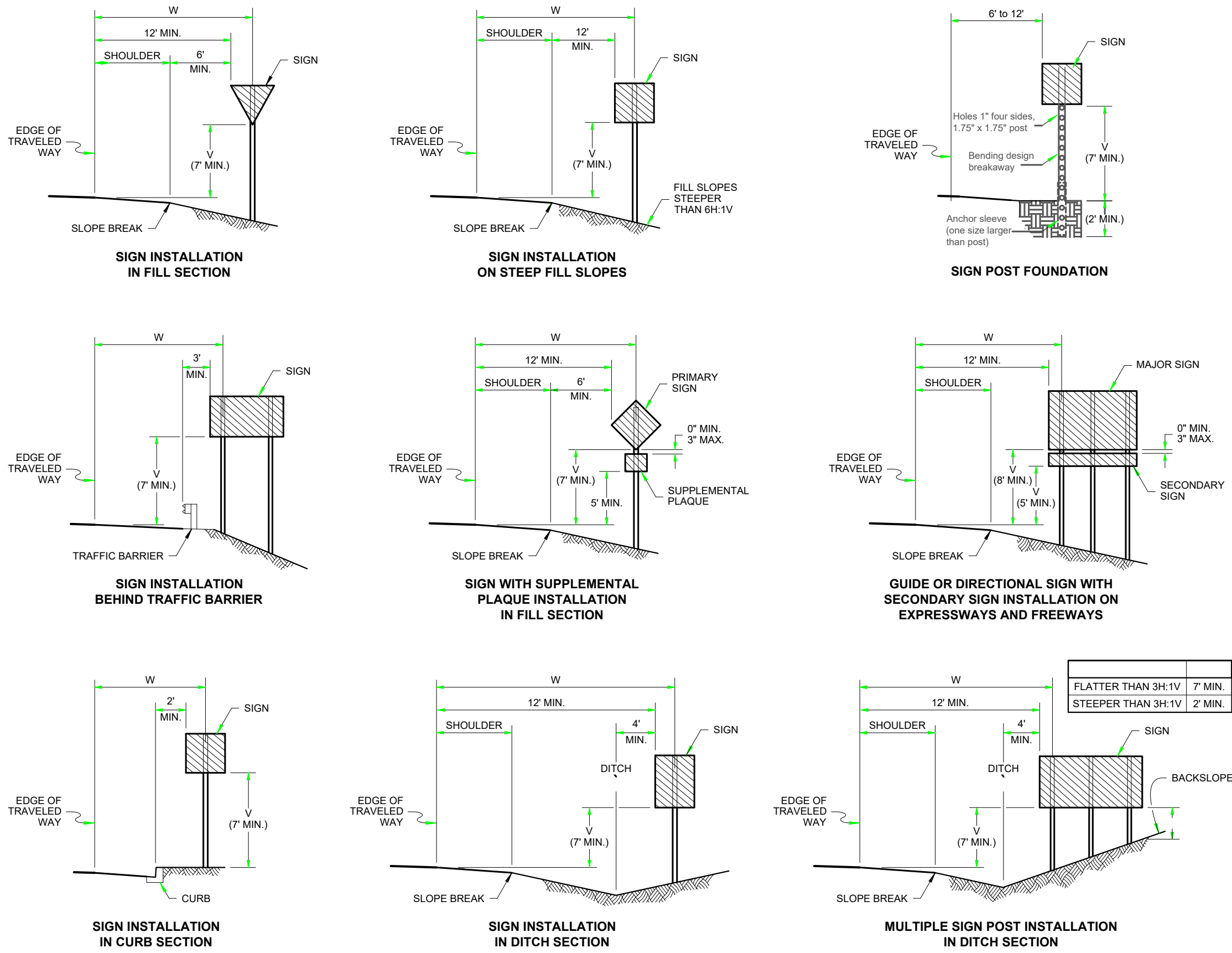
10



- Stripe Notes:
- 1. All Waterborn Markings shall comply with the Manual of Uniform Traffic Control Devices.
  - 2. Apply Waterborn Traffic Markings with glass beads per Section 634.05 of the FP-03. Glass beads shall be applied at a minimum rate of 6 pounds per gallon of paint..
  - 3. Restripe shoulder and centerline to match existing.



D2 PAVEMENT MARKING NO SCALE TYPICAL SHOULDER/CENTER STRIPE DIMENSIONS



D1 TRAFFIC SIGNS NO SCALE TYPICAL SHOULDER ROADWAY SIGNAGE

Traffic Sign Notes:

- 1. All sign materials and installation shall comply with the latest edition of the Manual on Uniform Traffic Control Devices.
- 2. All sign panels shall conform to ASTM B 209. Signs panels shall be constructed of 0.125" Aluminum.
- 3. Sign Posts shall be 1.75"x1.75" galvanized square post conforming to ASTM A 1011, grade 55.
- 4. All sign sheeting shall comply with ASTM D4956 Type III High Intensity Prismatic Sheeting.
- 5. NCHRP 350 compliant breakaways required on all sign installations EXCEPT delineators.

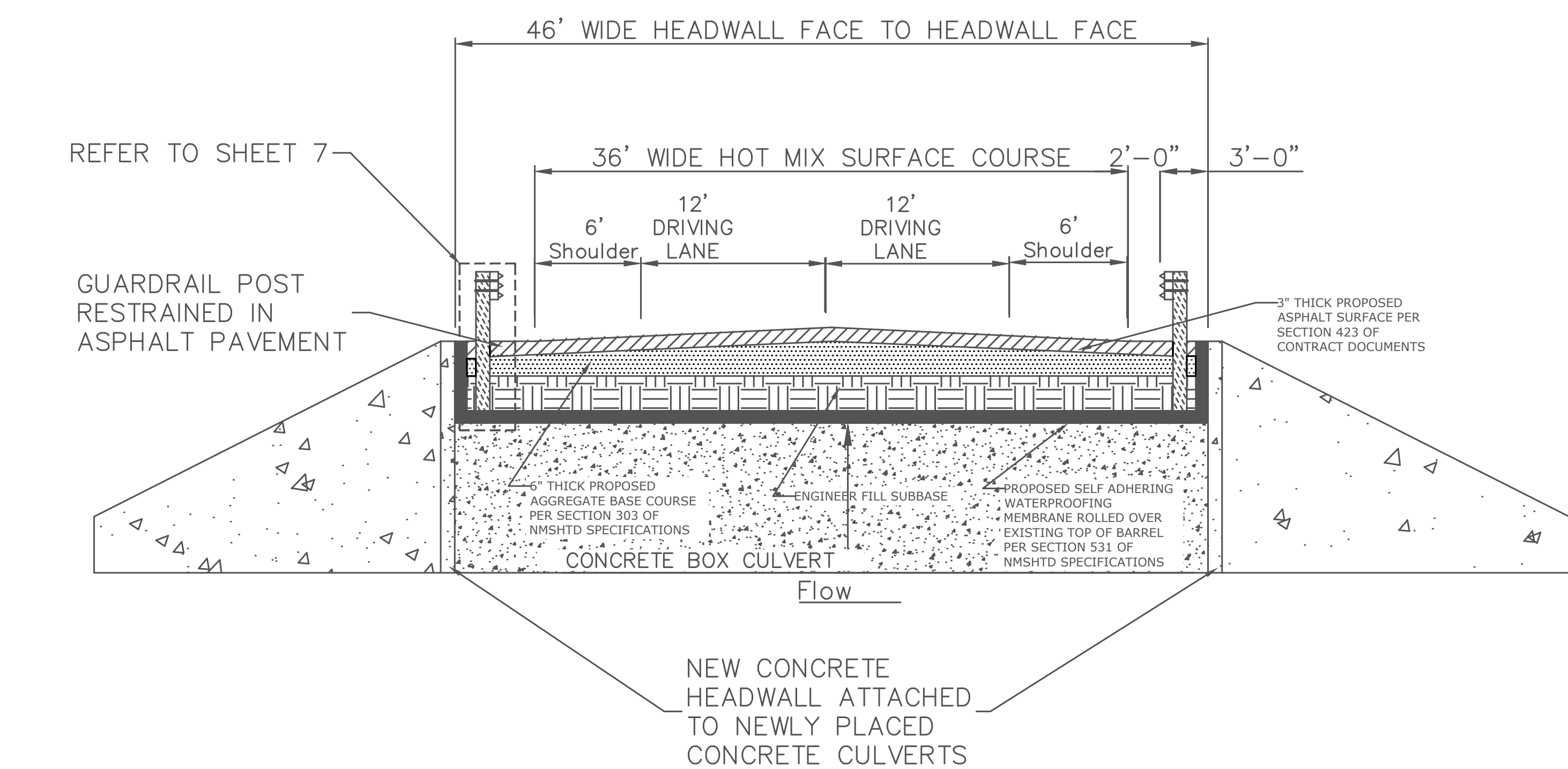
Roadway Markings/Stripe Notes:

- 1. Restripe all new paved surfaces.
- 2. Contractor shall match existing shoulder and center stripping. Contractor shall document the existing centerline layout prior to reconstruction of the roadway.
- 3. All pavement markings shall be a 4" Type "B" Waterborn Traffic Marking.
- 4. All traffic markings shall comply with the Manual of Uniform Traffic Control Devices and the Federal Highway Administration FP-03, 634.05.
- 5. Prepare road surface and apply per mfg. instructions.

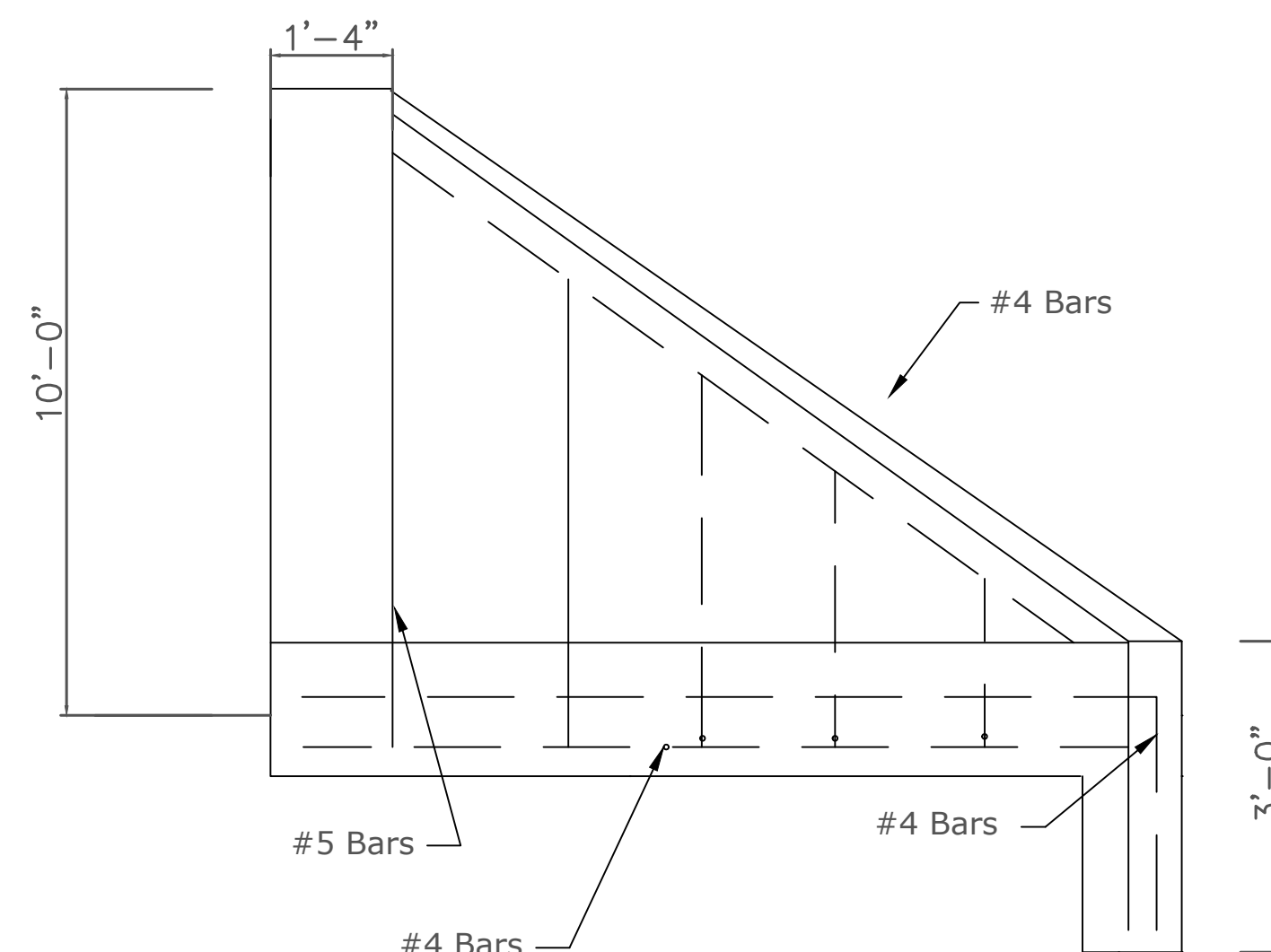
ROUTE 7 MM 4 SIGN INSTALLATION							
MUTCD SIGN CODE	DESCRIPTION	SURFACE TYPE	SIZE (IN)	QTY	LAT	LONG	NOTES
OM3-R	OBJECT MARKER	Diamond Grade VIP*	12 X 36	2	32.5243	-106.4286	Requires single square posts
OM3-L	OBJECT MARKER	Diamond Grade VIP*	12 X 36	2	32.5246	-106.4287	Requires single square posts
*All sign sheeting shall comply with ASTM D4956 Type IX Diamond Grade VIP							

BID SET 100% DESIGN				
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY xxx	DESIGNED BY	RR7 MM4 CULVERTS  TRAFFIC SIGN DETAILS		
CHECKED BY xx				
SUBMITTED xx				
PROJECT MANAGER RECOMMENDED				
BRANCH CHIEF APPROVED				
John Morgan CHIEF, ENGINEERING DIVISION		DRAWING NUMBER		PLATE
DATE March 2023		SCALE None		WS-85110-2023-C-DT-08 08
		SHEET 8 OF 10		

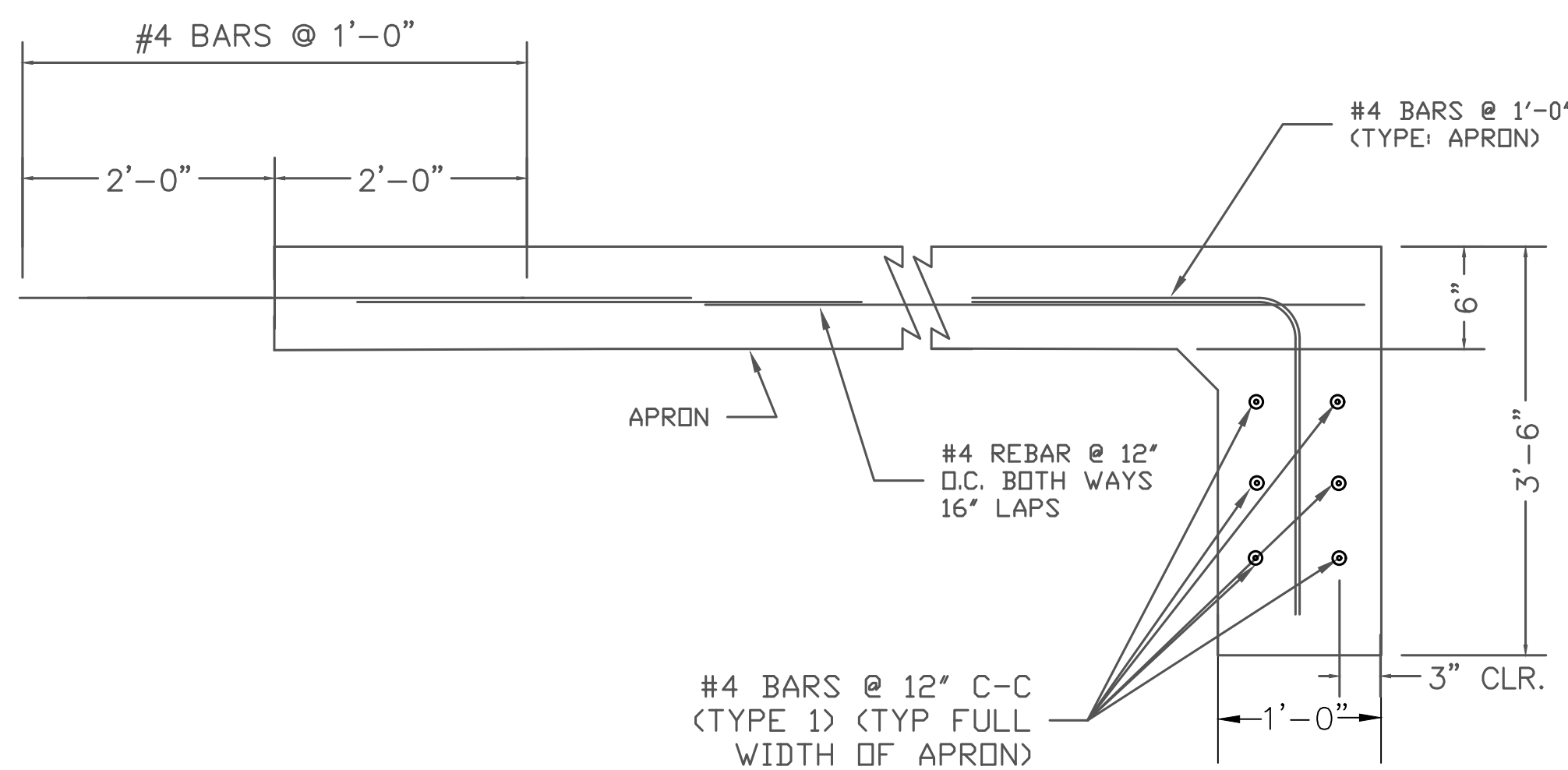




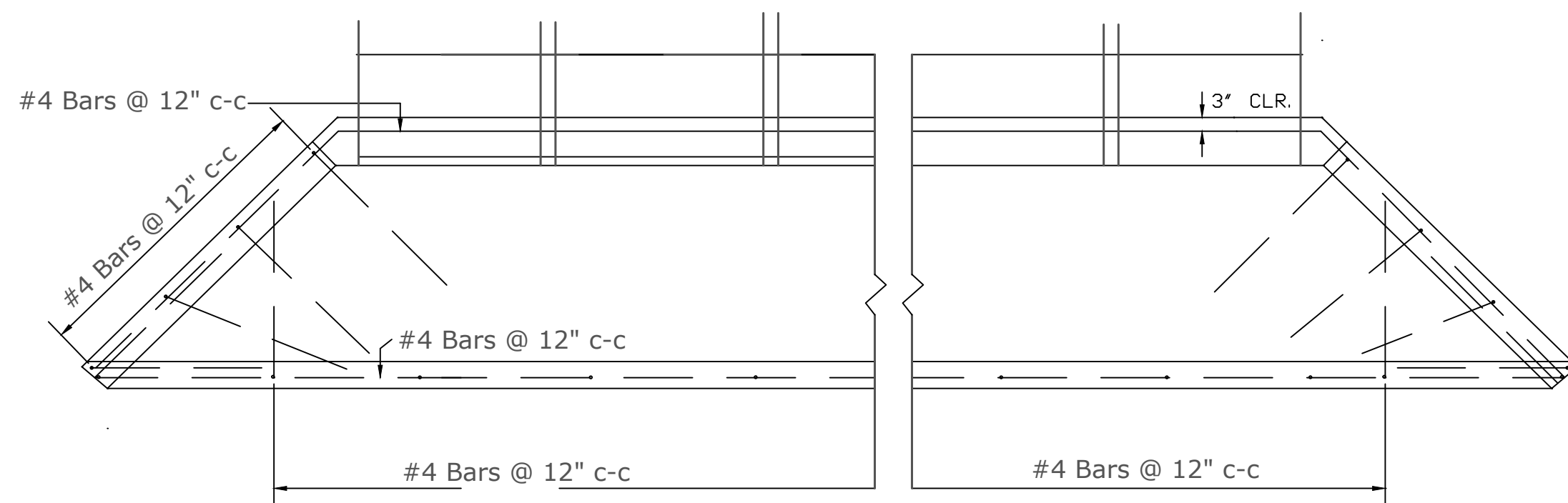
**SECTION AA**  
SECTION VIEW NO SCALE



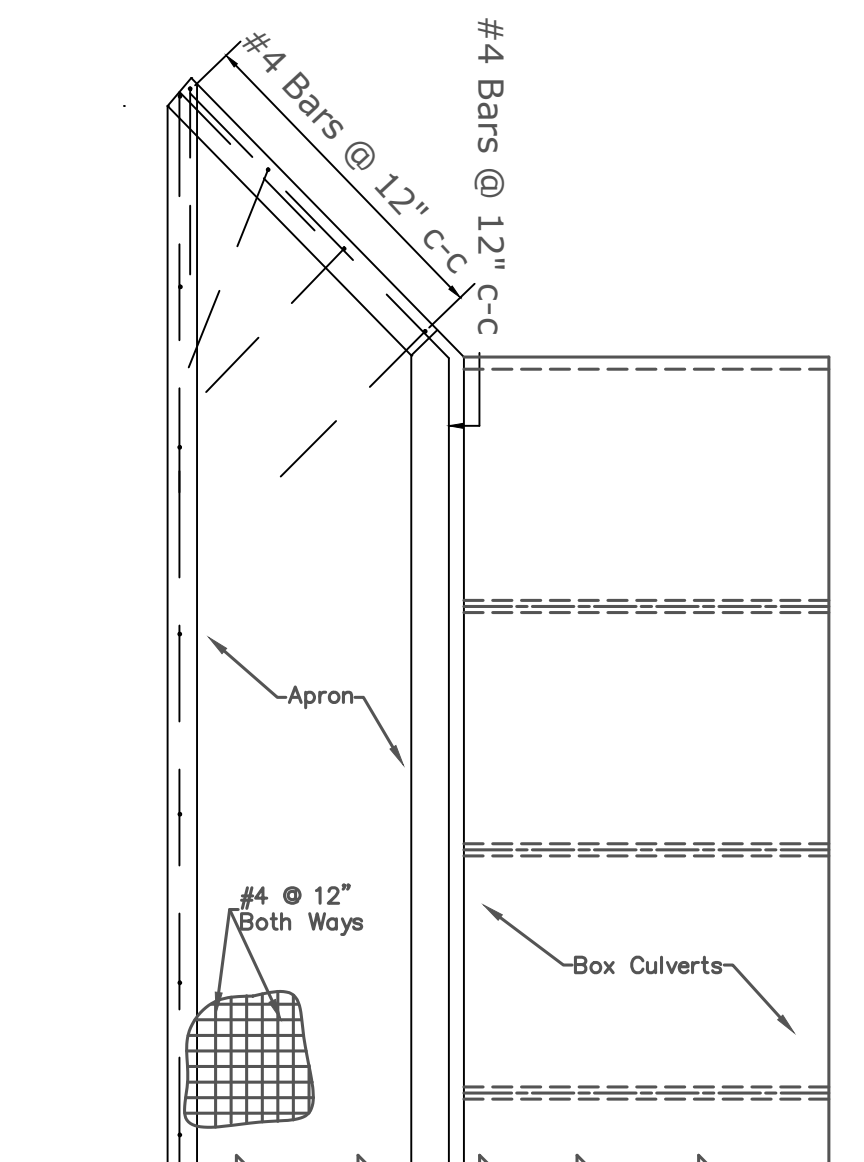
**CONCRETE WING WALL**  
SECTION VIEW NO SCALE



**CONCRETE APRON**  
DETAIL NO SCALE



**CONCRETE APRON**  
PLAN VIEW NO SCALE



**CONCRETE APRON**  
PARTIAL PLAN NO SCALE

**Box Culvert Notes:**

1. Provide Object Marker signs per locations shown, D5/this Plan Sheet.
2. Remove loose concrete from headwalls, wingwalls and center column and provide a concrete mortar (Class 2 Rubbed Surface) finish to all tops and streamside faces of headwalls, columns and wingwalls and for 6 inches down the back side of wingwalls per Section 511.3.9.3 Concrete Structures of the New Mexico State Highway & Transportation Department 2019 Edition. Unless otherwise approved by the Engineer, use only hand tools or power-driven chipping hammers (15-lb. class maximum) to remove concrete.
3. Remove trees and vegetation from both upstream and downstream aprons.

BID SET 100% DESIGN

NO.	DATE	DESCRIPTION	BY	APPROVED
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REVISIONS

WHITE SANDS MISSILE RANGE, N.M.  
DIRECTORATE OF PUBLIC WORKS  
ENGINEERING DIVISION

DRAWN BY	DESIGNED BY
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CHECKED BY	
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SUBMITTED	
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PROJECT MANAGER	
RECOMMENDED	
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BRANCH CHIEF	
APPROVED	
John Morgan	
CHIEF, ENGINEERING DIVISION	

RR7 MM4 CULVERTS

CULVERT DETAILS

DRAWING NUMBER

WS-85110-2023-C-DT-09

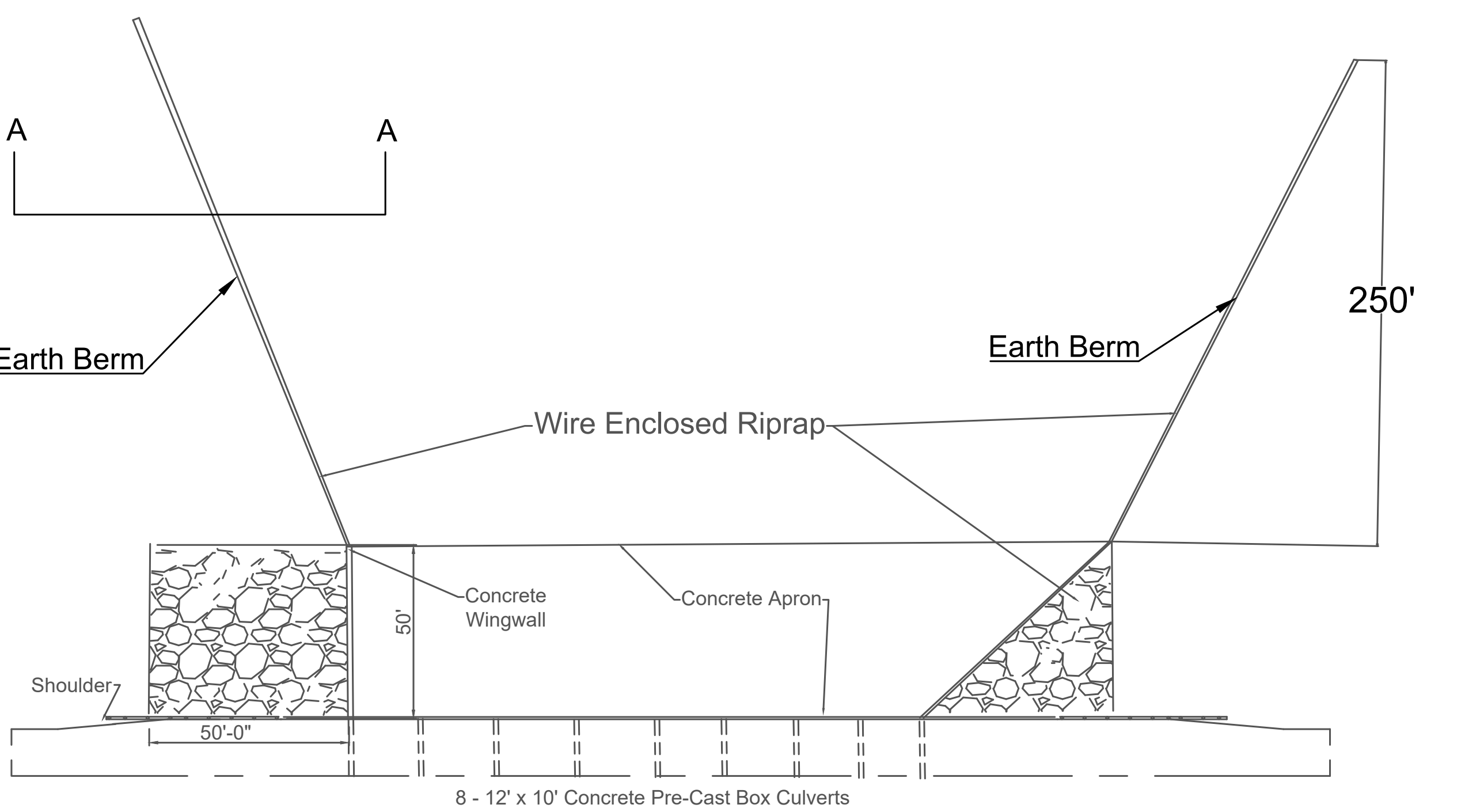
DATE

March 2023

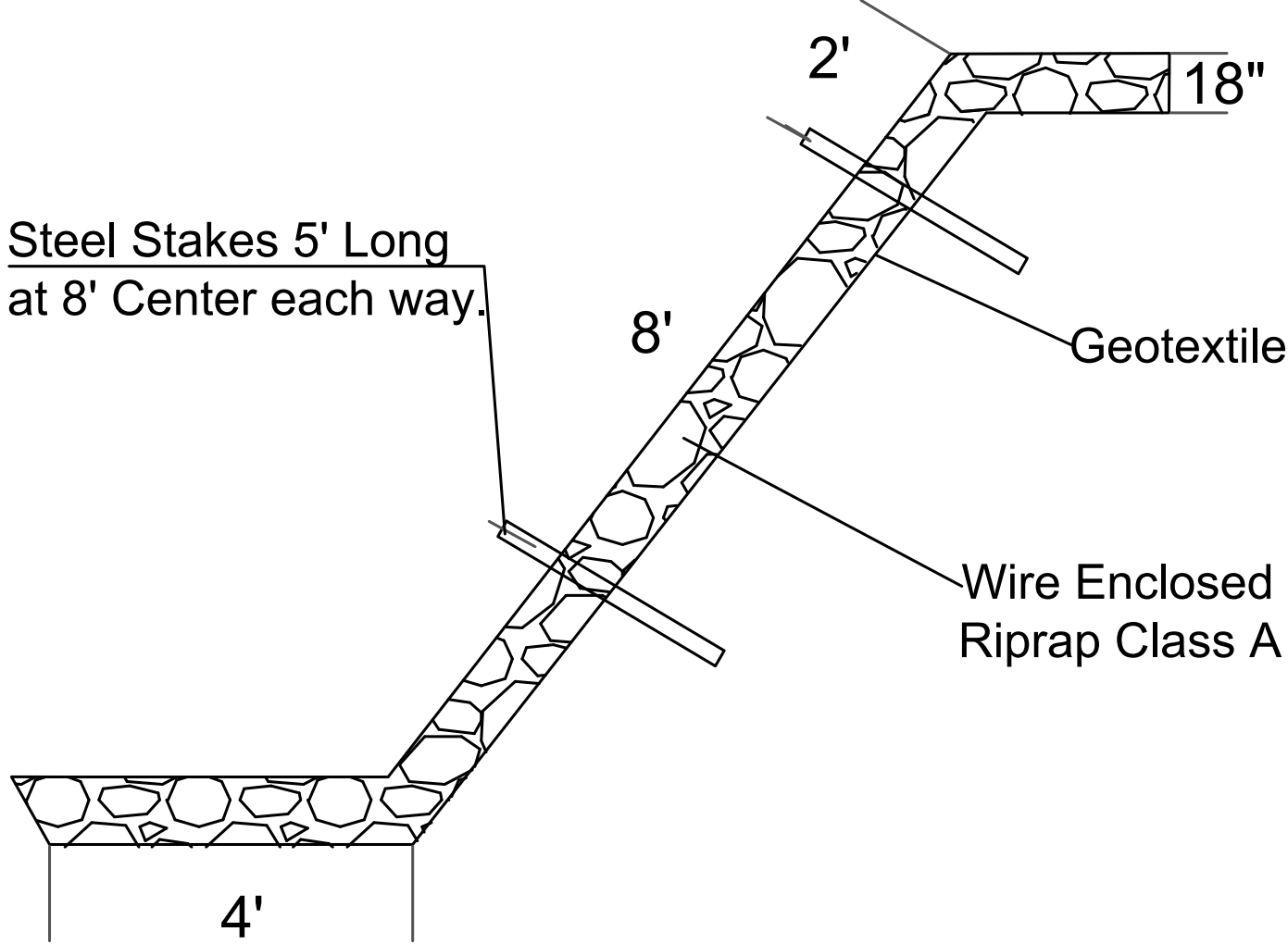
SCALE

None

SHEET 9 OF 10

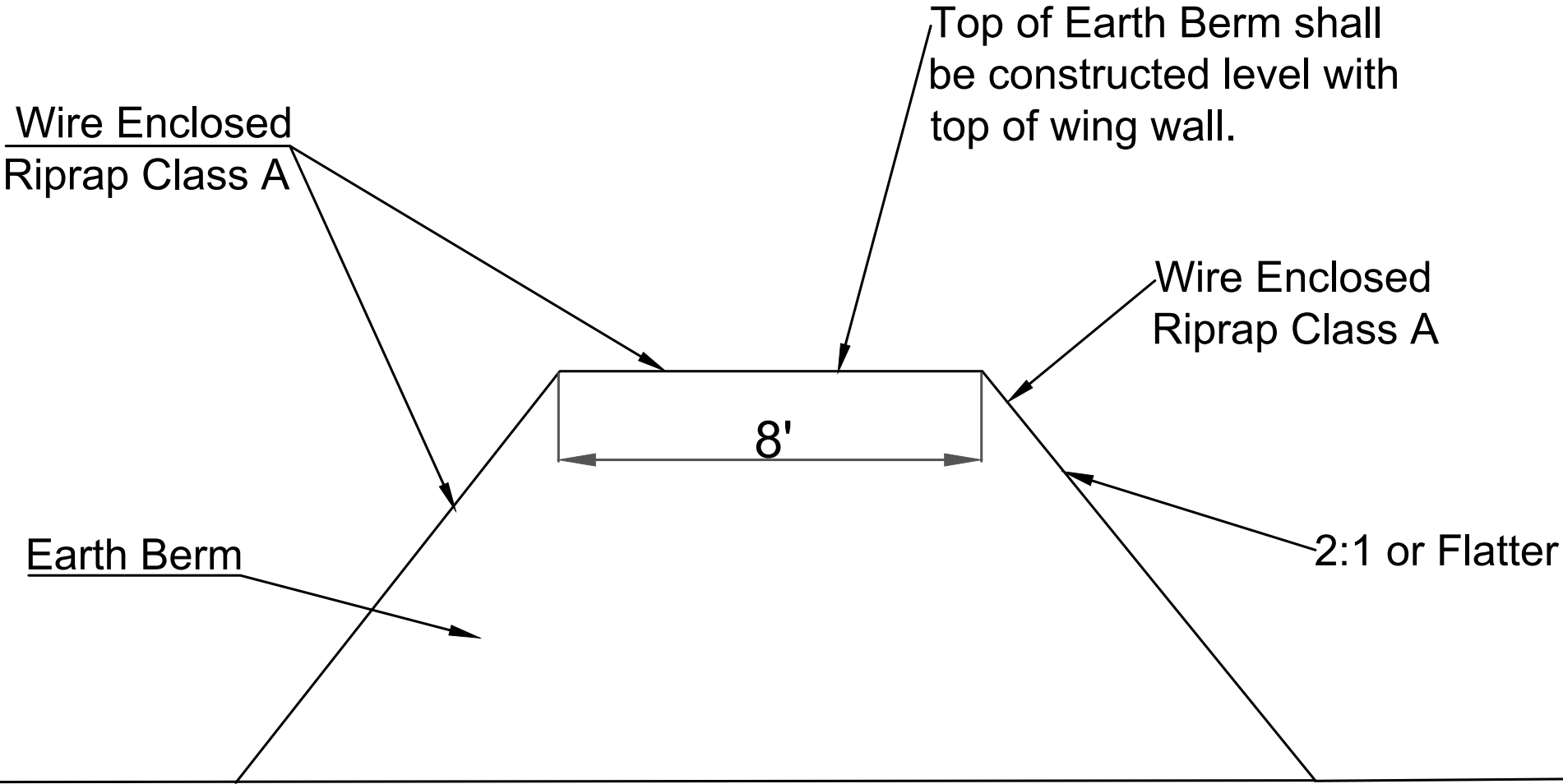


**Earth Berm**  
PLAN VIEW NO SCALE



**Wire Enclosed Riprap**  
NO SCALE

- General Notes:**
- Wire enclosed riprap shall use native materials or other suitable material.
  - Wire fabric for riprap shall be "W" or hexagonal mesh and meet the current of the NMDOT standard specifications for highway and bridge construction, current edition. Mesh shall be staked to the stream bed prior to aggregate placement.
  - Steel Stakes shall be galvanized steel pipe or 4" X 4" X 3/8" steel angles. Steel stakes shall project 6" above top of Rock filter dams.
  - Embed posts at least 18 in. deep, or adequately anchor, if in rock, with a spacing of 6 to 8 ft. and install on a slight angle toward the runoff source.
  - Place the aggregate on the mesh and then fold the mesh at the upstream side over the aggregate and secure it to itself on the downstream side with wire ties, or hog rings.



**EARTH BERM SECTION A-A**  
NO SCALE

BID SET 100% DESIGN				
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				
WHITE SANDS MISSILE RANGE, N.M. DIRECTORATE OF PUBLIC WORKS ENGINEERING DIVISION				
DRAWN BY XXX	DESIGNED BY -	RR7 MM4 CULVERTS  Berms and Riprap Details		
CHECKED BY XX				
SUBMITTED XX				
PROJECT MANAGER XX				
RECOMMENDED XX				
APPROVED John Morgan CHIEF, ENGINEERING DIVISION		DRAWING NUMBER WS-85110-2023-C-DT-10	PLATE 10	
DATE March 2023	SCALE None	SHEET 10	OF 10	