

Alternatives

for

Arena/Stable Rehabilitation Meadowood Special Recreation Management Area Lorton, Va

April, 2008



NE View



SE View



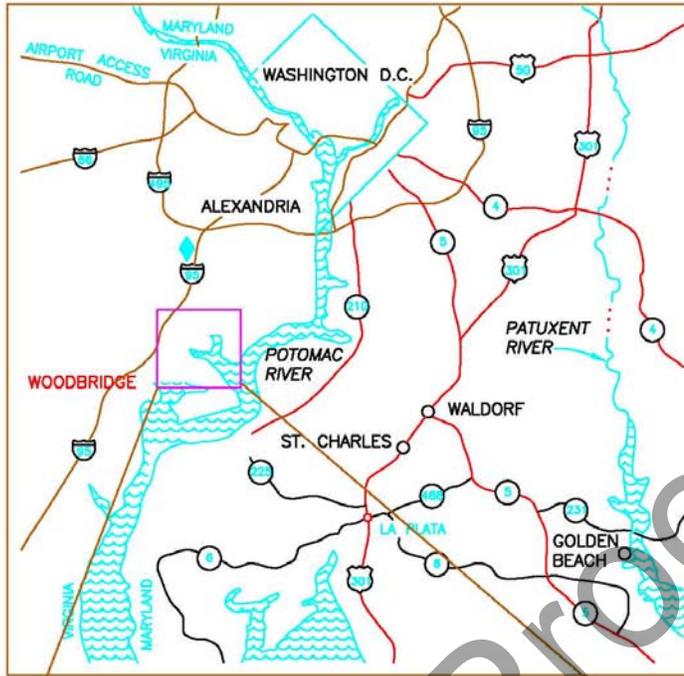
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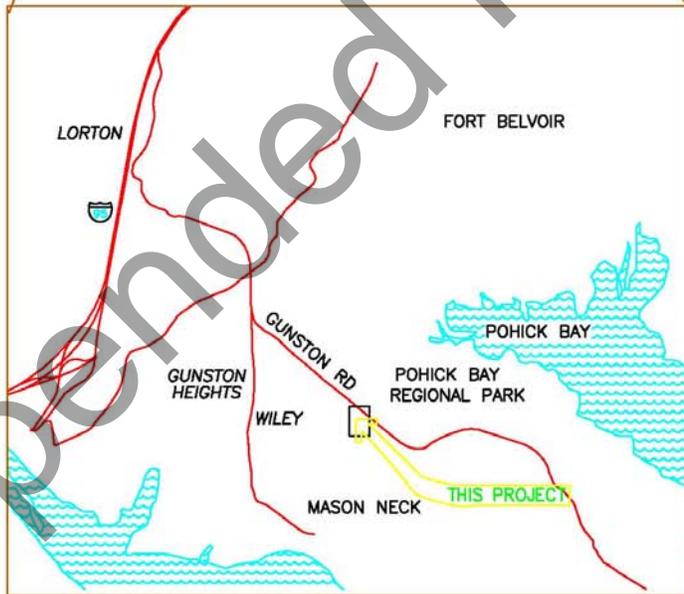
OC Project Number
AE-ES-007

ALTERNATIVES FOR ARENA/STABLE REHABILITATION
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REGIONAL MAP



VICINITY MAP

BACKGROUND

The objective of the investigation was to assess the present conditions, needs, and integrity of the Arena/Stable facilities at the Meadowood Special Recreation Management Area (SRMA) located in Lorton, Virginia, about 18 miles south of Washington DC. The Department of the Interior, Bureau of Land Management, Eastern States acquired 800 acres of the Meadowood SRMA in 2001 with the primary purpose of managing the open space for recreation, environmental education, and wild horse and burro interpretation.

The Barn/Stable is one of many structures which make up the original riding complex/farm that was initially a private facility before being transferred to the Government. Though not an exchange, per se, the acquisition was tied to the transfer of approximately 235 acres of federal land that had been identified for residential development under the 1999 Reuse Plan at the former Lorton Prison site.

The Barn/Stable building (104ft wide by 248ft long) was constructed in 1976 and consists of a light gage metal siding applied to wood framing with horse stalls located along the perimeter of the two long sides with adjacent aisles for access which are each about 13 feet wide. The complex has stalls for about 48 horses, with an office area, toilet room, mechanical room for pumps, two horse washing bays and an overhead mister system for dust suppression. The arena, located in the center of the building, has double trusses at eight foot centers which clear span approximately 60 feet. The arena is approximately 190 feet long, with a platform area at one end. Behind the platform is a set-up area which takes up the remainder of the barn at approximately 40 feet in length.

In order to maintain continuity and public relations, the horse boarding function and use of the facility was maintained after acquisition. This continued use was to be blended with the primary purpose of open space management as stated above. After some initial inspections, it became apparent there were several shortcomings of the complex, of which one was life safety and stock safety based on potential fire. In 2005, after initial site visits from our office (NOC), it was determined that a water line should be extended onto the property from the main road for fire protection. After several delays and construction difficulties, the waterline was recently completed, with a fire hydrant now available and stub out for fire suppression system(s) at the site.

The structural integrity of the Barn/Stable was also called into question as to the ability to carry the additional loading of a fire suppression system as well as the current condition of the electrical distribution for both power and lighting. In addition, the automatic horse watering system is in constant need of repair and with the current above ground distribution system to the stalls requires that the piping be heat taped and wrapped with insulation. The use of heat tape, for this application, is widely discouraged due to the risk of fire if the tape is not applied correctly or is physically displaced by accidental impact.

This document is intended to provide technical information regarding the condition, recommended treatment and cost estimates for the Barn/Stable structure to determine the

best course of action. The approach of this investigation was to first examine the condition of the facility to determine what corrections needed to be made. The next step was to assess the feasibility of utilizing the existing structure, which has several irresolvable shortcomings, such as an arena which does not meet current recommended United States Equestrian Federation criteria and which cannot be feasibly expanded to meet these criteria. In this evaluation process, due to the extent of retrofit required, consideration was given to building new facilities which would meet recommended size requirements or augmenting certain functions to new facilities.

STABLE/ARENA DESIGN GUIDELINES

General:

The United States Equestrian Federation (USEF- www.usef.org) has established rules and procedures for equestrian competition. The rules for Dressage completion are sited below for arenas. (Note: Unit conversion: one meter equals 3.28ft).

There are many recommendations for stable design, but an official standard or code has not been established. Penn State Agriculture Department has a guideline which is cited below (www.hordestable.psu.edu/horstableindex.html).

Stables:

Minimum stable size should be 10' by 10' and the recommended size is 12' by 12', with some of the stalls being double size for mare/foal use. Also, it is recommended each stall have a window or outside air source.

Arenas:

A Small Arena shall be 40 meters (131ft) long by 20 meters (66ft) wide and a Standard Arena shall be 60 meters long (197ft) by 20 meters wide (66ft). For an indoor arena, the minimum distance from the dressage arena fence side rails to the inside face of the exterior wall shall be 2 meters (7ft) and the minimum distance from the dressage arena fence end rails to the inside face of the exterior end walls shall be 10 meters (33ft). The separation from the arena from the public should be a minimum of 15 meters (50ft) and 3 meters (10ft) for indoor competitions. Additional requirements for rail construction and configuration are available at USEF.

EXISTING CONDITIONS

General Observations:

The site is relatively accessible, with the office located on the parking side of the barn. The metal siding and roof shows signs of wear and tear, with many loose fasteners which hold the metal wall and roof panels on. The roof leaks at various places, but apparently none are detrimental to the supporting structure or significantly impact the use below.

Site Utilities:

Water:

The building and site currently utilize a well located Northwest of the barn in a fenced-off treed area. All of the buildings, horse troughs and site water are obtained from the on-site well. As mentioned previously, a new 6 inch water line has been brought along the access drive from the main road and is currently terminated adjacent to the Barn/Stable, with a fire hydrant across the driveway.

Waste:

The horse wash bays (2) and the bathroom, all located at the South end of the building, drain to a septic tank located immediately outside the Southeast aisle door. During a recent effort to pump the septic tank, it was discovered that the sediment in the tank had solidified and was nearly impossible to remove. Even after excessive effort at backwashing and probing, only a marginal amount of material was able to be removed. The existing septic tank is essentially unusable due to reduced capacity and needs to be replaced. Also, due to the age of the leach field and the probability of contamination by solids, the leach field should also be replaced.

Power:

Presently there is buried electrical service to the building. The power panel, located in the Office, is currently at capacity and needs to be replaced.

BARN/ARENA BUILDING

General:

The building has served as a stable/riding arena since it was built 28 years ago. The stables are located along the two long sidewalls of the barn/arena and are 10' by 10' with an adjacent 12' wide access aisle which has tack boxes intermittently spaced in the aisle adjacent to the arena fence/columns. Windows are located along the sidewalls at approximately 20' centers. The arena is approximately 60' wide by 190' in length with an observation platform at one end.

Corrective Actions Required:

Fire Suppression: There is no fire suppression system or detectors in the building. The structure is constructed of wood, except for the siding and roofing which is metal, with incidental areas of combustible materials, such as hay, leading to the possibility that if fire should start, there would be little that could be done to prevent its spread and probably the loss of many horses. While the value of the structure is questionable, the value of the contents (horse) is high.

Lighting: Lighting utilizes dated fixtures which are not weatherproof or energy efficient all of which requires replacement to meet current code.

Power: The power panel is undersized by current standards and circuits for layout are not coordinated. Electrical runs are through metal conduit which utilizes boxes and connections which are not weather-tight. The interior of the building is subject to moisture from the dust suppression system, condensation, roof leaks and portions are also subject to animal contact (licking/saliva etc.). The electrical runs and fixtures should meet an exterior exposure (waterproof/weatherproof) standard. All wiring, panels, boxes and fixtures should be replaced.

Bathroom: The current bathroom has dated fixtures, poor layout and does not meet accessibility standards.

Water: The water distribution system which furnishes water to the automatic horse watering troughs is currently above grade, which requires it to be wrapped in heat tape and insulation. The use of heat tape, while historically used for this purpose, causes an unacceptable risk for fire and is not recommended to be used for this application by current guidelines. In addition, the current watering system requires continuous repairs due to its age. The entire water distribution system and watering devices should be replaced.

Structural: The roof framing has some deficiencies, but in general the structure appears adequate to support current loads as well as the new sprinkler piping. The arena roof joists (2X4's) should be doubled, additional bracing should be applied to the arena trusses and some of the truss anchor points require additional blocking which is in place at most areas, but for some reason left off at others.

Alternatives Considered:

See Preliminary Estimate Comparisons for listing of activities under each alternative.

Alternate 1 - Overhaul existing Arena/Barn complex keeping existing footprint.

Alternate 1A - Alternate 1 plus replacing metal roofing & siding and adding windows.

Alternative 2 - Overhaul existing Arena/Barn complex, delete arena and reduce the footprint by almost half (42%). The arena function would be accomplished by constructing a separate new metal arena.

Alternative 3 - Construct New Metal Building Stables (2) with new stalls at a different location than the existing barn. Upon completion, demolish the existing barn/arena and construct a new arena.

Cost Estimates:

Preliminary ("Class B") estimates are based upon proposed actions with consideration given to local costs for the geographic area. Costs were developed for the three basic alternatives and for the construction of an arena. A contingency of 25% was used with retrofitting existing facilities and a 15% contingency was used for new facilities with no

inflation parameters used. The detailed estimates are located in the Attachments with a summary given below:

MEADOWOOD PRELIMINARY ESTIMATE COMPARISONS	ALT-1	ALT-1A	ALT-2	ALT-3
DESCRIPTION				
ARENA/BARN				
Demolition			49,891	99,781
Structural-Truss bracing	42,714	42,714	47,250	
Exterior Repairs-Building	55,485	2,835	33,615	
Exterior Repairs-Site	25,650	25,650	25,650	
Bathroom & Plumbing	17,985	17,985	17,985	
Utility/Storage Rooms/Office	10,463	10,463	10,463	
Sprinkler System & Detection/Alarm	118,982	118,982	73,620	
Horse Stall – Replace Watering System	64,222	64,222	62,618	
Horse Stall - New 12ftX12ft System Stalls			66,447	
Electrical	83,599	83,599	60,028	
Replace Exterior Walls		61,695		
Replace Roof		297,633		
Add Windows		8,775		
SUBTOTAL FOR ALL ABOVE WORK	439,099	754,553	467,566	99,781
Contingency @ 25%	109,775	188,638	116,891	24,945
TOTAL FOR ALL ABOVE WORK	548,874	943,191	584,457	124,727
New Stables A & B				681,898
New Arena-Open			211,635	211,635
New Arena-Encl. (Add)			72,153	72,153
SUBTOTAL NEW WORK			283,788	965,686
Contingency @15%			42,568	144,853
TOTAL NEW WORK			326,357	1,110,539
TOTAL FOR REHAB & NEW	548,874	943,191	910,814	1,235,266

OTHER PLANNING CONSIDERATIONS

The activities associated with boarding horses and managing an arena is generally a non-government activity, typically done by concessioners. Due to the operating expense of the complex, it has been suggested that all of the existing buildings located in the Barn/Arena area be turned over to a concessioner and the BLM relocate their management facilities to a different location which would not be as readily accessible from the concessioner area. One such scenario placed the BLM office and yard facilities at a location about a half mile southeast of the existing facilities (at the old farm house location) but still usable from a resource management and visitor contact point of view. These scenarios were submitted under separate cover and should be taken under consideration when determining appropriate action at the Barn/Arena complex.

SUMMARY

There are many issues to consider when trying to determine the correct course of action at this particular facility. Due to the age of the existing Barn/Arena and the costs associated with upgrading the facility, it appears justified to look at the complex from a much broader point of view and to determine what the overall objectives and associated activities/functions should be and where they should be located.

The costs associated with various levels of corrective work have been provided. Depending on the long term uses and functions desired, one of the attached alternatives or variation thereof will be adopted.

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CHRONOLOGY

- Waterline Contract Work May, 2004
- General office scoping trip December, 2005
- Scoping Trip by Structural August 2006
- Additional site determinations November 2007

ATTACHMENTS

- Alternatives Estimate 1 (xcel)
- Stall Design_PennState (pdf)
- Horse Stall Costs (pdf)
- Horse Waterers (pdf)

SEPARATE ATTACHMENTS

- Arena/Barn Existing Conditions 8 Sheets - 11X17 Drawings-(pdf)
- Arena /Barn Alternatives 6 Sheets - 11X17 Drawings-(pdf)
- Olympia Metal Building Drawings (pdf)
 - Open Arena Drawings (pdf) and cost estimate (doc)
 - Open Arena Drawings (pdf) and cost estimate (doc)
 - Stable Drawings (pdf) and cost estimate (doc)

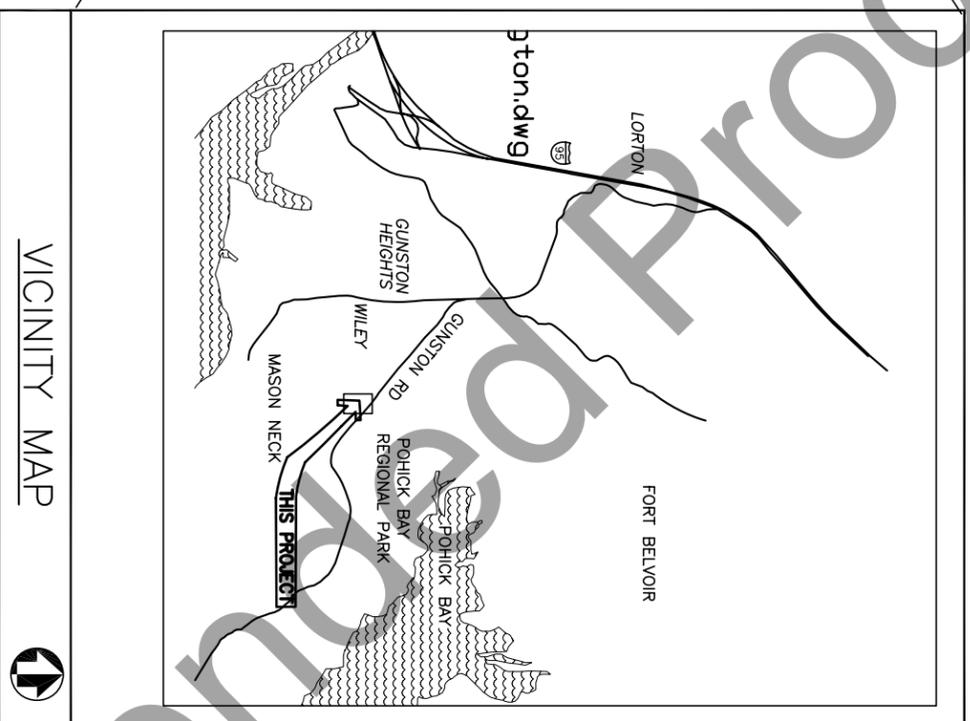
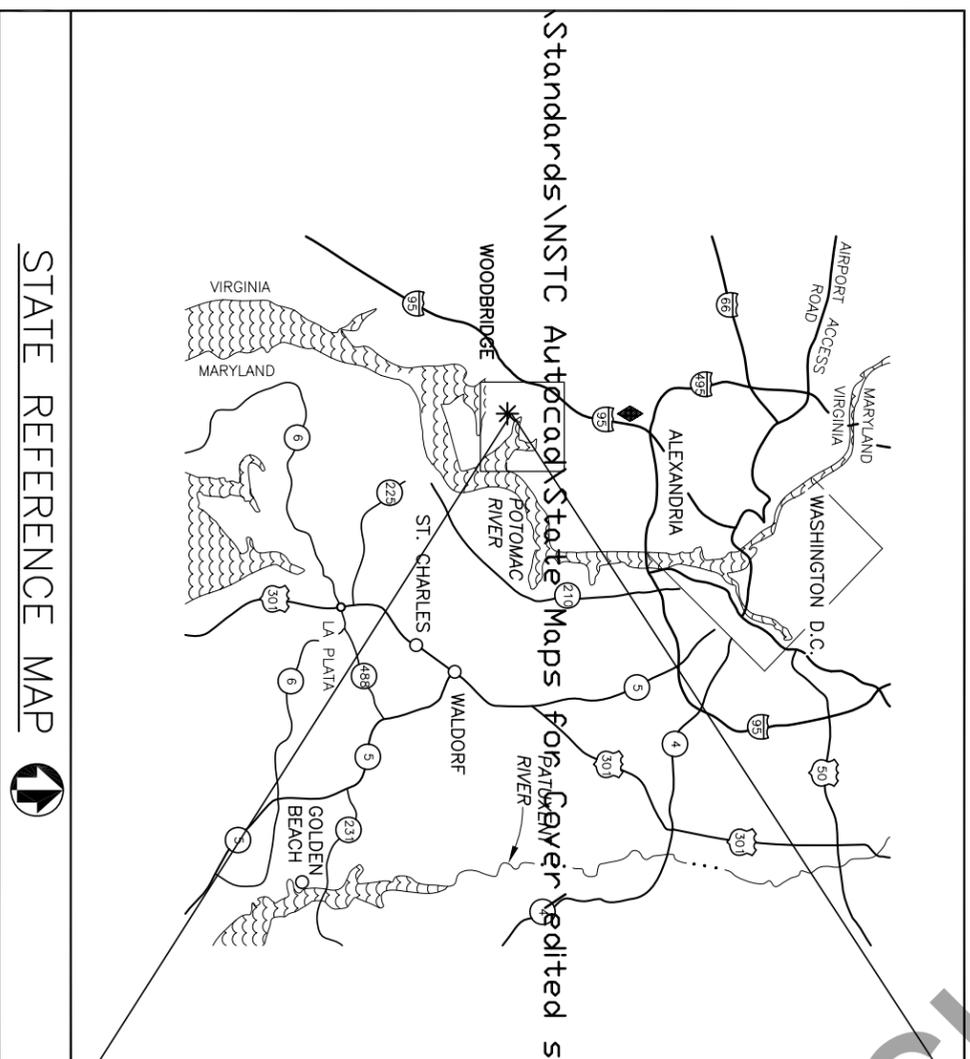


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ARENA/BARN EXISTING CONDITIONS

MEADOWWOOD

EASTERN STATES OFFICE



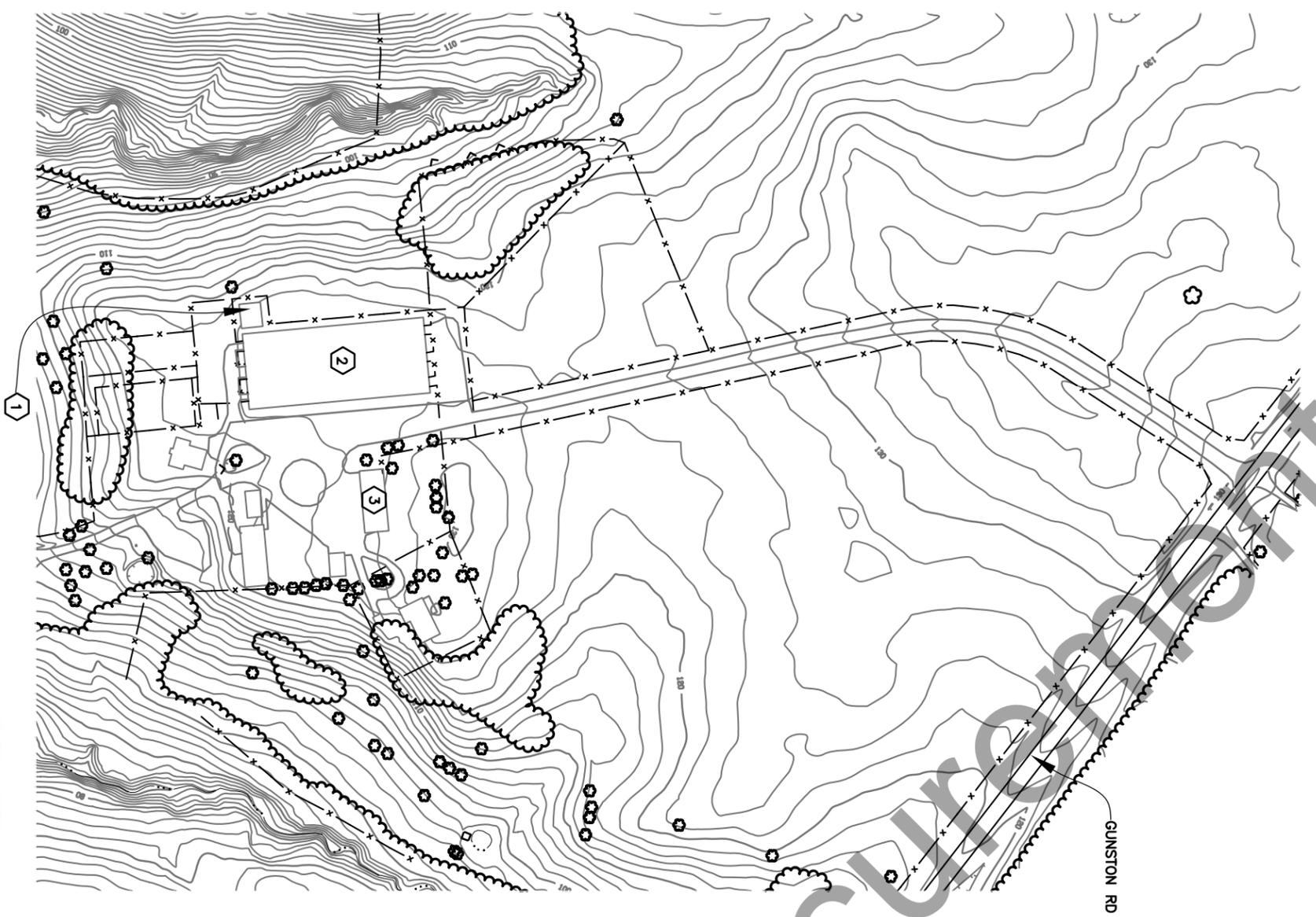
DRAWING INDEX

SHEET	SUB SHEET	TITLE OF SHEET
1	G1	COVER SHEET
CIVIL-EXISTING CONDITIONS		
2	L1	SITE PLAN
3	C1	UTILITY PLAN
ARCHITECTURAL-EXISTING CONDITIONS		
4	A1	FLOOR PLAN & DETAILS
5	A2	ROOF PLAN & DETAILS
6	A3	SECTION & DETAILS
7	A4	PHOTO ELEVATIONS
ELECTRICAL-EXISTING CONDITIONS		
8	E1	PLAN & DETAILS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	INTERSTATE HIGHWAY		STATE CAPITOL
	U.S. HIGHWAY		BLM STATE OFFICE
			BLM DISTRICT OFFICE

ALWAYS THINK SAFETY

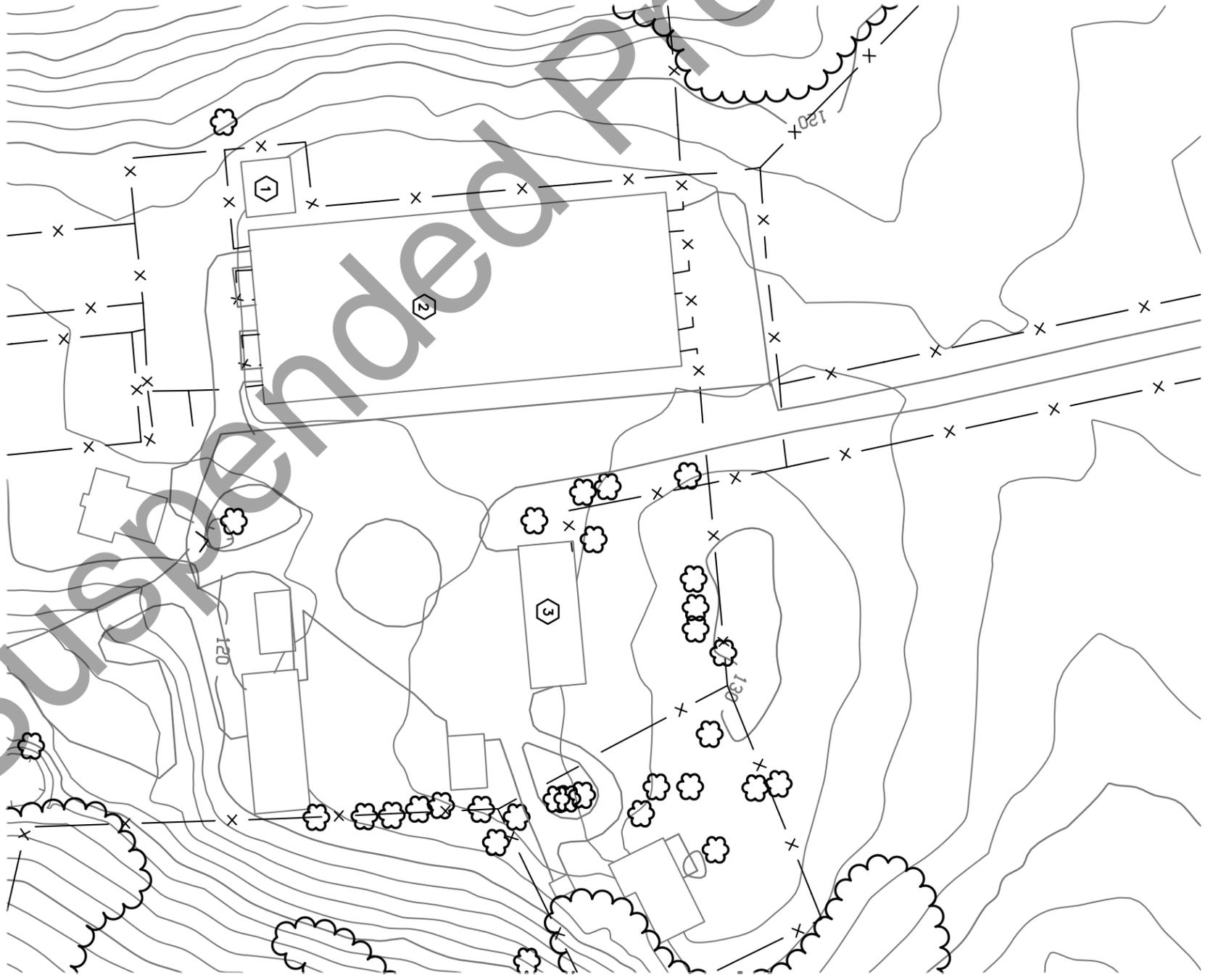
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RECOMMENDED BY: XXX DATE: XX						
APPROVED BY: XXX DATE: XX						



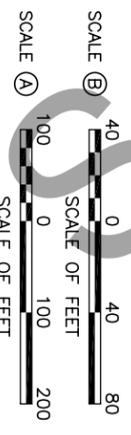
A
L1
SITE PLAN
SCALE Ⓐ



- KEYED NOTES**
- ① HAY BARN
 - ② HORSE BARN/ARENA
 - ③ EQUIPMENT BARN.



B
L1
ENLARGED SITE PLAN
SCALE Ⓑ



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DRAWN BY: R. WELTON				
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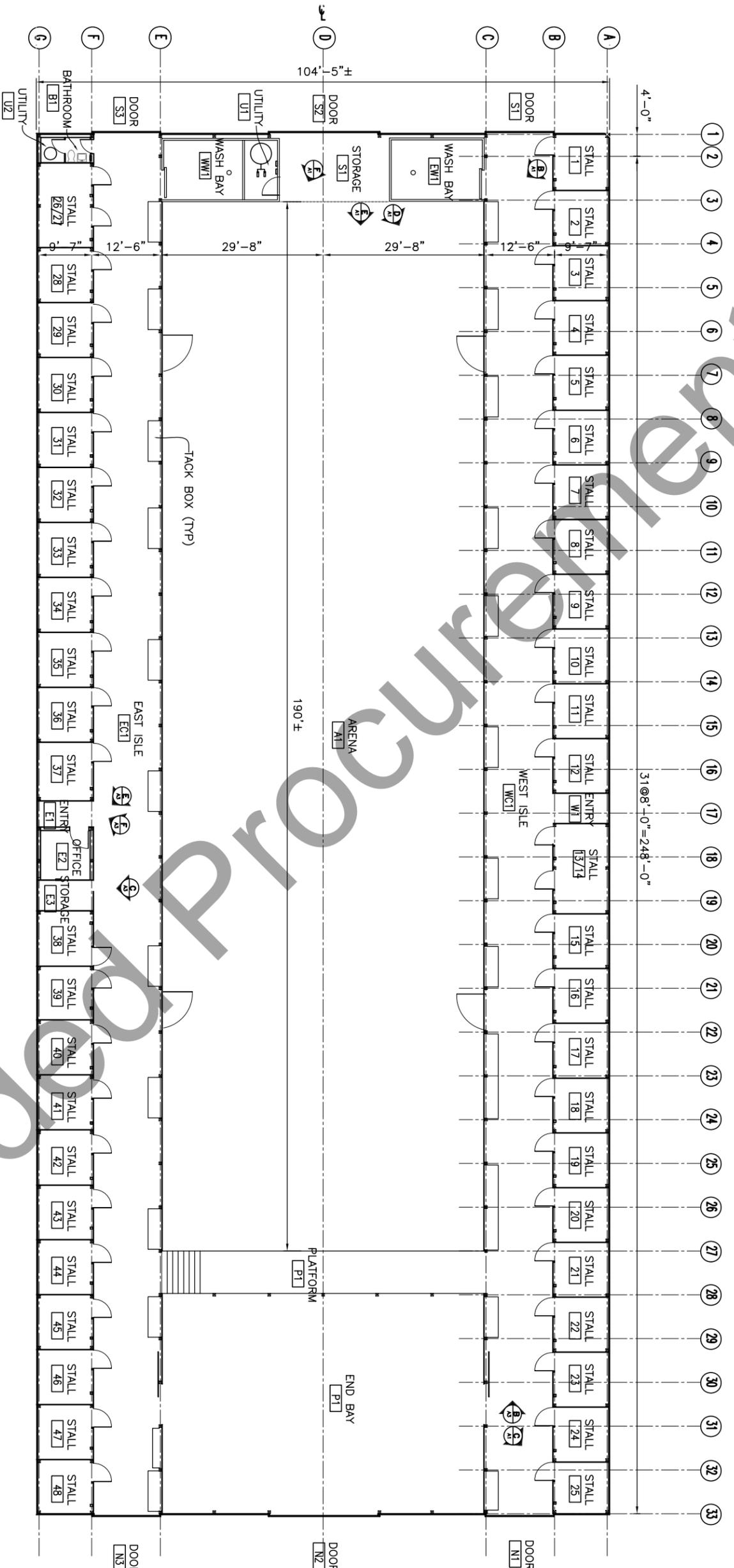
SITE PLAN

ARENA/BARN REHABILITATION

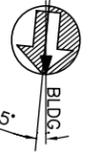
LOWER POTOMAC

VIRGINIA





A FLOOR PLAN
SCALE 1/8" = 1'-0"



B WASH BAY DOOR
NO SCALE



C TYP. STALL
NO SCALE



D INTERIOR VIEW-ARENA
NO SCALE



E INTERIOR VIEW-ARENA
NO SCALE



F INTERIOR VIEW-ARENA
NO SCALE



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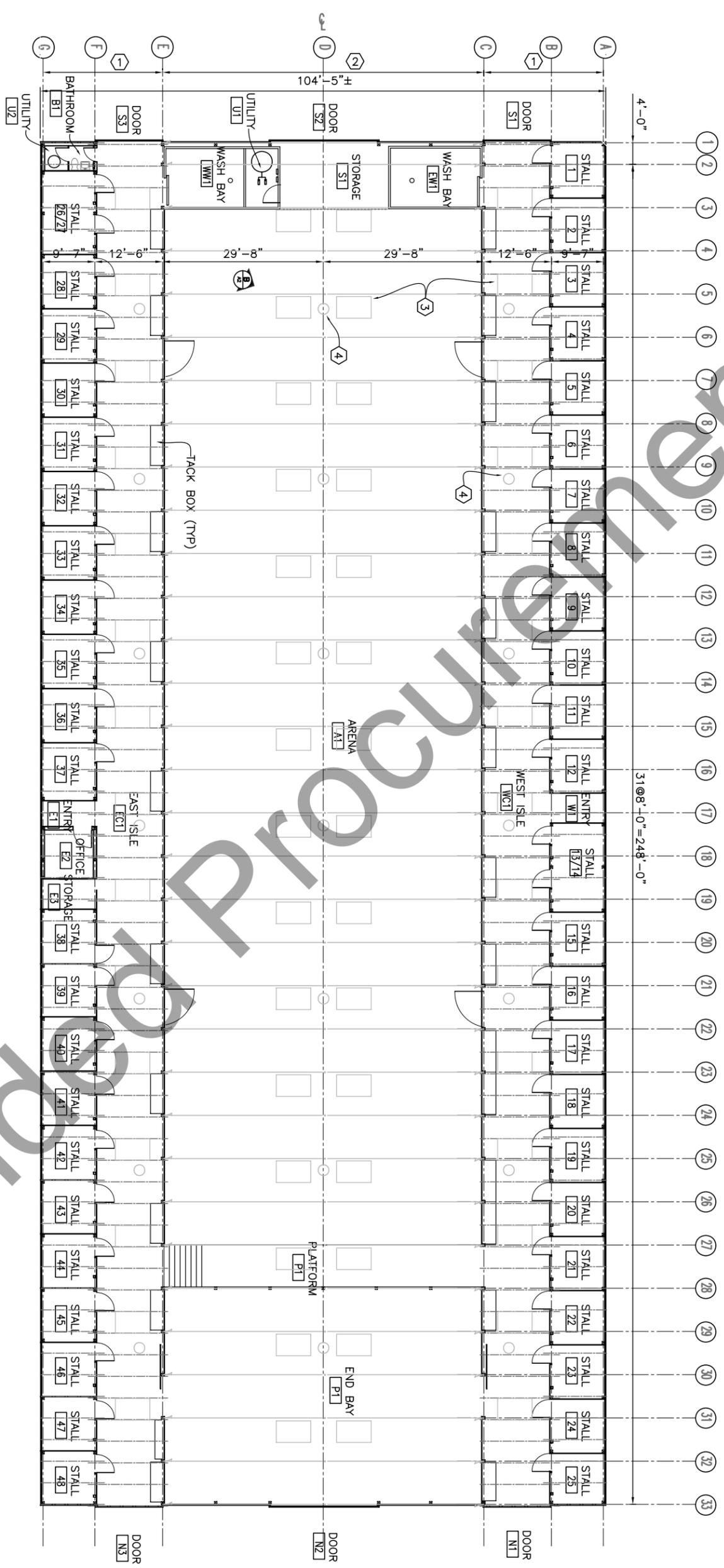
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FLOOR PLAN & DETAILS

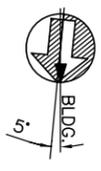
EXISTING CONDITIONS

EASTERN STATES OFFICE



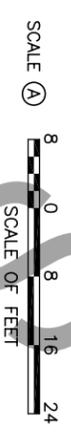


A ROOF FRAMING PLAN
SCALE (A)



KEYED NOTES

- 1 2X10 RAFTERS @ 4'-0" O.C.
- 2 2X10 DOUBLE TRUSSES @ 8'-0" O.C.
- 3 4'X7' TRANSLUCENT PANEL (TYP).
- 4 ROOF VENTILATOR (TYP).



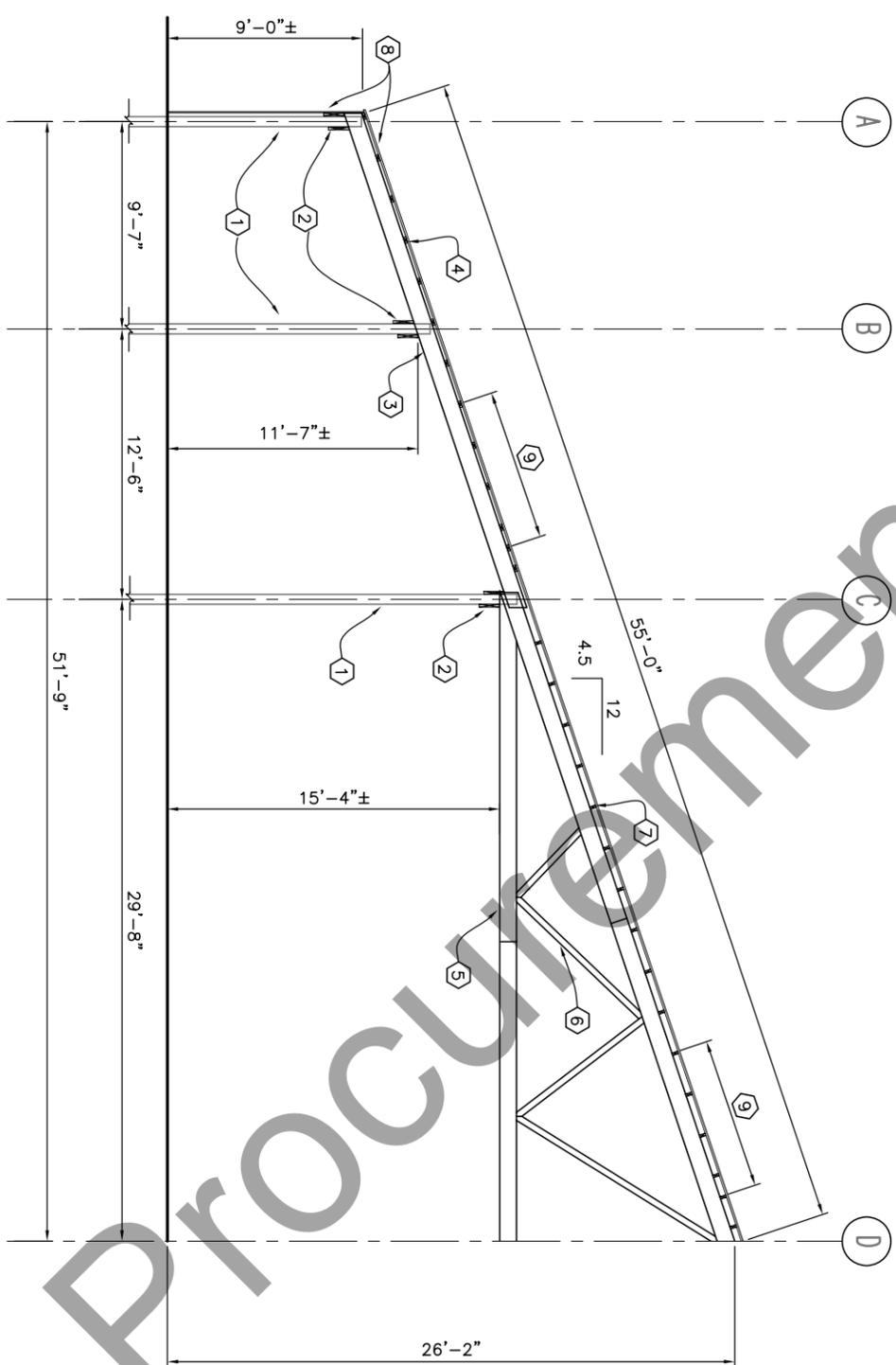
B INTERIOR VIEW-TRUSS
NO SCALE



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ROOF PLAN & DETAILS
EXISTING CONDITIONS

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VIRGINIA



A ARENA/BARN SECTION
SCALE Ⓐ



E OFFICE DOOR
NO SCALE



F ENTRY BY OFFICE
NO SCALE



G BATHROOM
NO SCALE



H UTILITY RM
NO SCALE



C STORAGE RM
NO SCALE



B INTERIOR VIEW-ISLE
NO SCALE



D TYP. STALL WINDOW
NO SCALE



J OFFICE WINDOW
NO SCALE

- KEYED NOTES**
- ① 6X6 TREATED TIMBER POST.
 - ② 2X12 EACH SIDE OF POST.
 - ③ 2X10 RAFTERS @ 4'-0" O.C.
 - ④ 2X4 STRINGERS 2'-0" O.C. FLAT.
 - ⑤ 2X10 DOUBLE TRUSSES @ 8'-0" O.C.
 - ⑥ 2X4 TRUSS DIAGONALS.
 - ⑦ 2X4 STRINGERS @ 2'-0" O.C.
 - ⑧ CORRUGATED METAL SHEATHING.
 - ⑨ 4'X7' TRANSLUCENT PANELS LOCATED @ 16 FT CENTERS ALONG STRUCTURE.

SCALE Ⓐ



SCALE Ⓐ

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SECTION AND DETAILS

EXISTING CONDITIONS

EASTERN STATES OFFICE

VIRGINIA





A SOUTH ELEVATION
SCALE Ⓟ

KEYED NOTES

- ① HAY BARN
- ② HORSE BARN/ARENA.
- ③ EQUIPMENT BARN.
- ④ TRANSLUCENT PANEL (TYP).
- ⑤ ROOF VENTILATOR (TYP).
- ⑥ EXTERIOR LIGHT.



B NE ELEVATION
SCALE Ⓟ



C NW ELEVATION
SCALE Ⓟ



NOTE: SCALE IS APPROXIMATE AND COMPENSATION MUST BE ALLOWED FOR DISTORTION AND/OR PERSPECTIVE.



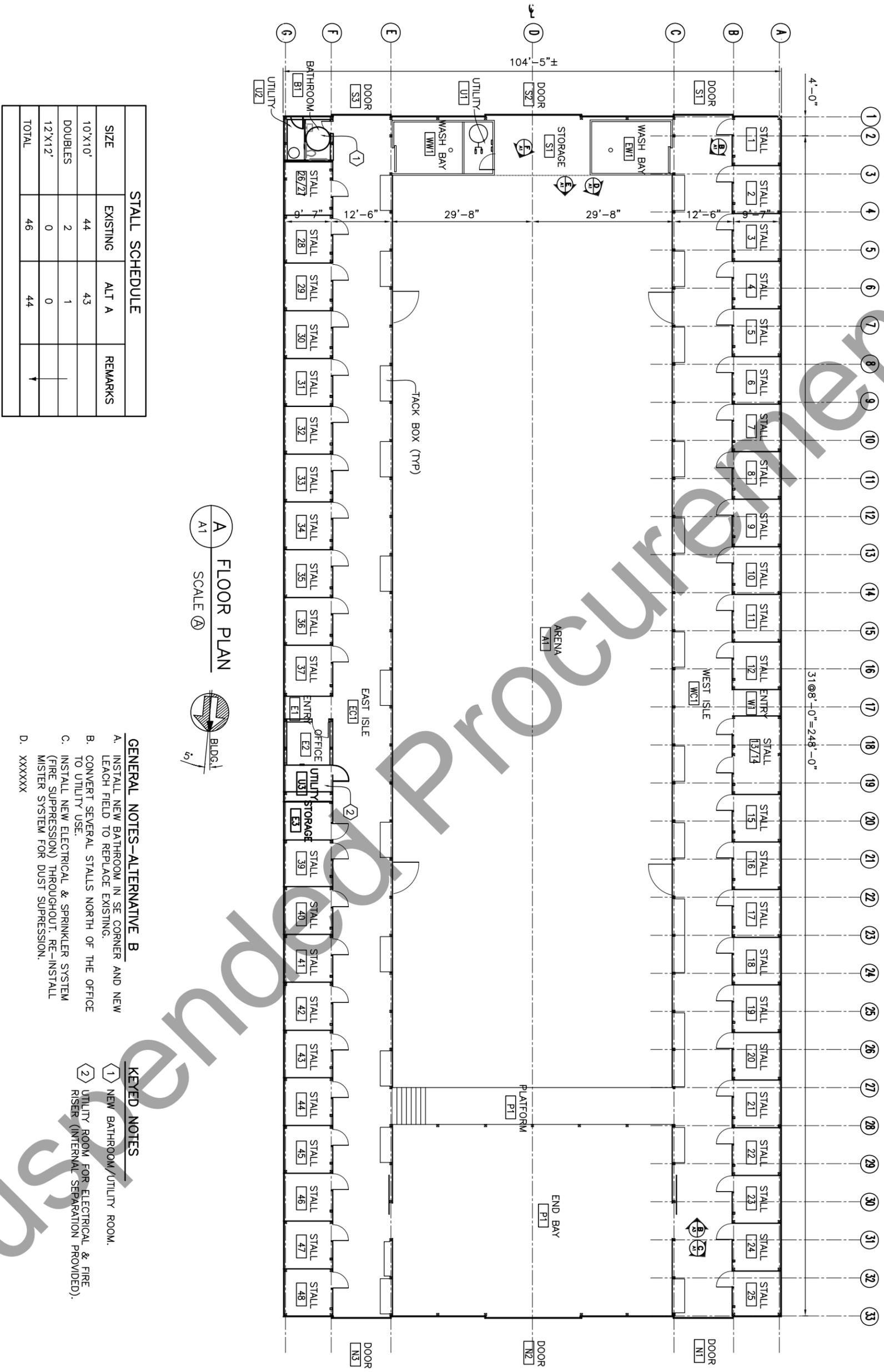
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PHOTO ELEVATIONS
EXISTING CONDITIONS

EASTERN STATES OFFICE

VIRGINIA

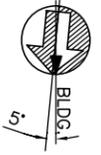
MARK	DESCRIPTION	DATE	APPROVED

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STALL SCHEDULE			
SIZE	EXISTING	ALT A	REMARKS
10'X10'	44	43	
DOUBLES	2	1	
12'X12'	0	0	
TOTAL	46	44	↑

A
A1
FLOOR PLAN
SCALE



- GENERAL NOTES-ALTERNATIVE B**
- A. INSTALL NEW BATHROOM IN SE CORNER AND NEW LEACH FIELD TO REPLACE EXISTING.
 - B. CONVERT SEVERAL STALLS NORTH OF THE OFFICE TO UTILITY USE.
 - C. INSTALL NEW ELECTRICAL & SPRINKLER SYSTEM (FIRE SUPPRESSION) THROUGHOUT. RE-INSTALL MISTER SYSTEM FOR DUST SUPPRESSION.
 - D. XXXXXX

- KEYED NOTES**
- 1 NEW BATHROOM/UTILITY ROOM.
 - 2 UTILITY ROOM FOR ELECTRICAL & FIRE RISER (INTERNAL SEPARATION PROVIDED).



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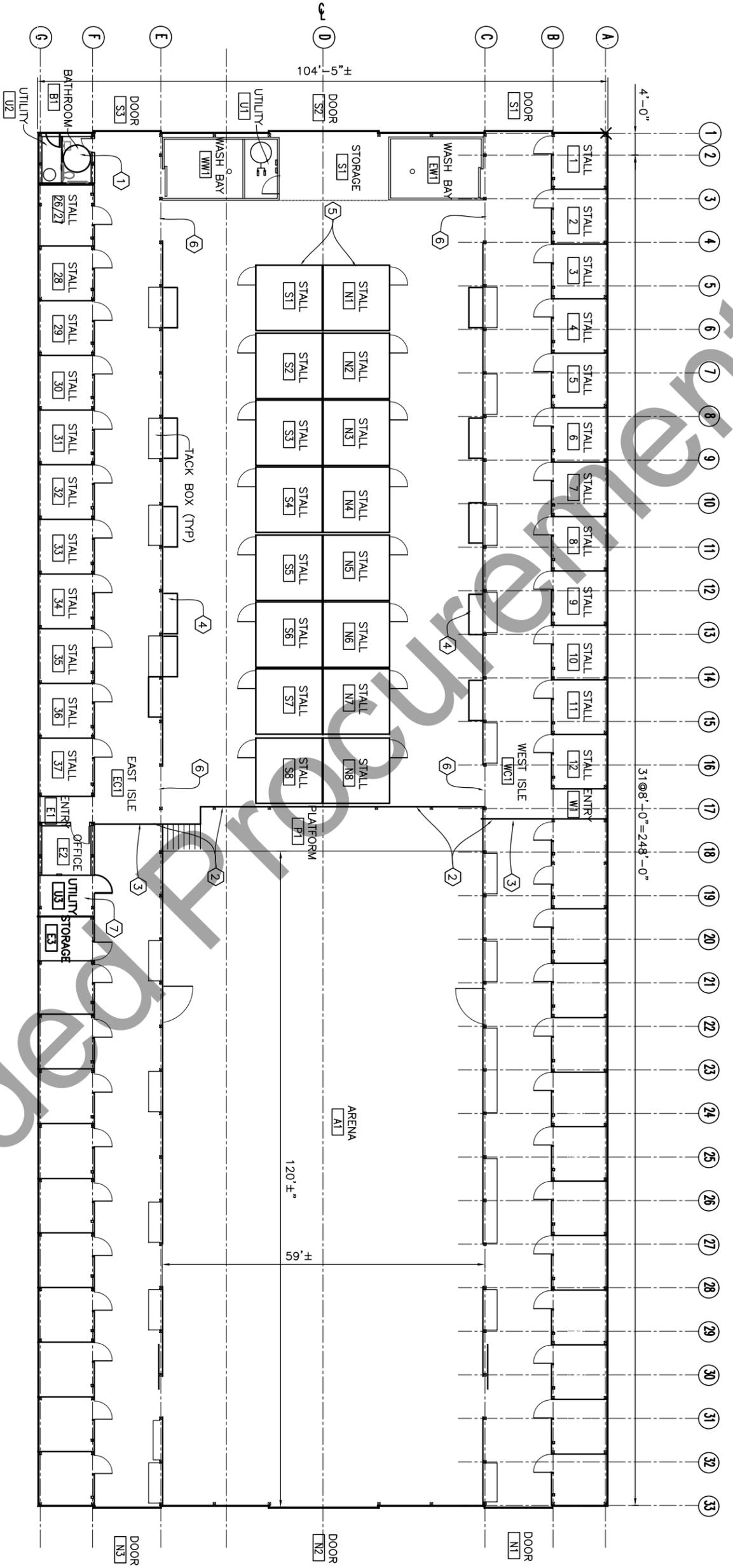
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FLOOR PLAN & DETAILS

ALTERNATE A

VIRGINIA





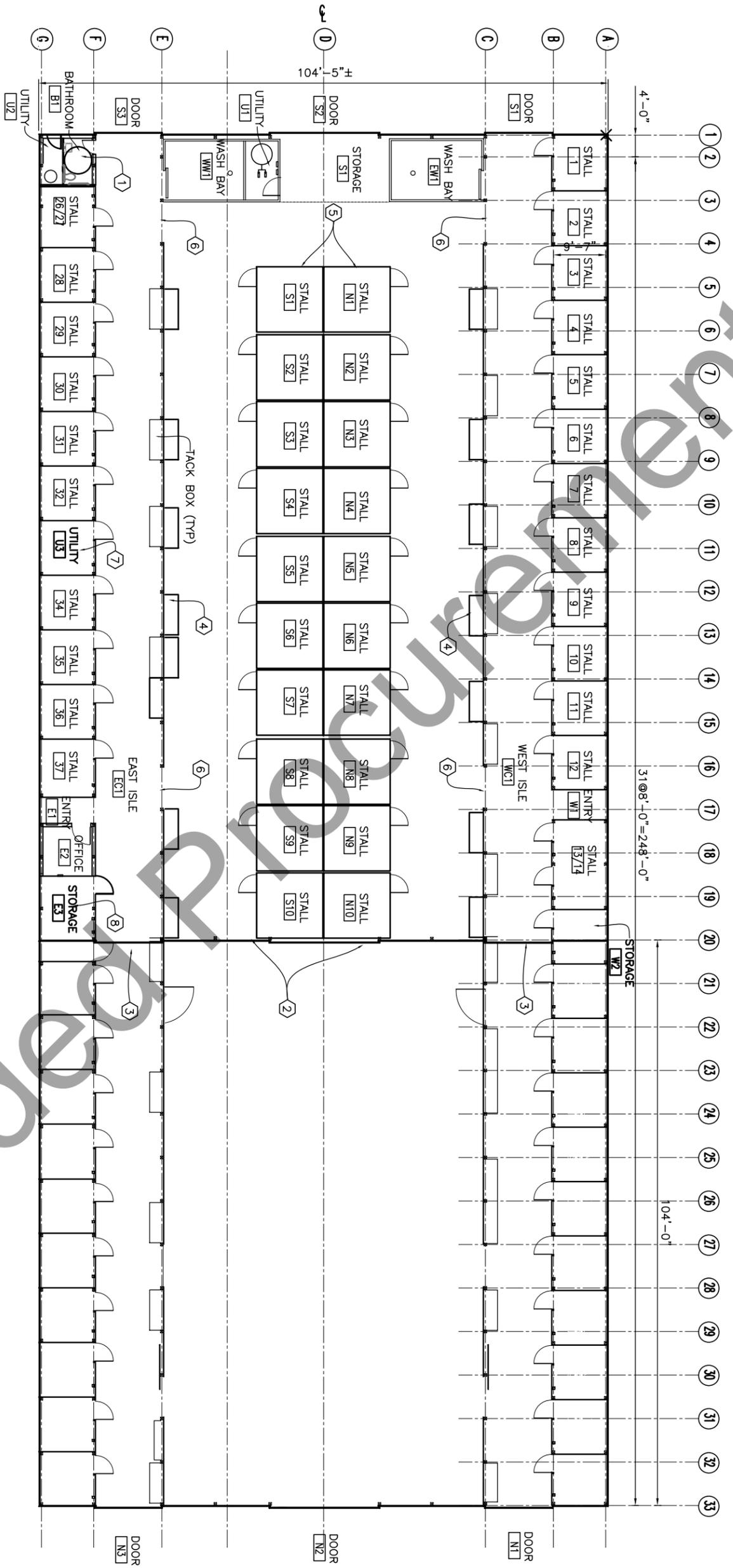
A FLOOR PLAN
A2 SCALE (A)

STALL SCHEDULE			
SIZE	EXISTING	ALT B	REMARKS
10'X10'	44	23	
DOUBLES	2	0	
12'X12'	0	16	
TOTAL	46	39	

- GENERAL NOTES-ALTERNATIVE B**
- A. INSTALL NEW BATHROOM IN SE CORNER AND NEW LEACH FIELD TO REPLACE EXISTING.
 - B. CONVERT SEVERAL STALLS NORTH OF THE OFFICE TO UTILITY USE.
 - C. INSTALL NEW ELECTRICAL & SPRINKLER SYSTEM (FIRE SUPPRESSION) THROUGHOUT. RE-INSTALL MISTER SYSTEM FOR DUST SUPPRESSION.
 - D. ABANDON STALLS IN THE NORTH PORTION OF THE BARN AND MOVE THE ARENA TO THE NORTH.
 - E. INSTALL NEW STALLS (12'X12') IN THE CENTER OF THE SOUTH PORTION OF THE BARN.
 - F. INSTALL NEW INTERIOR WALL BETWEEN ARENA AND STALL AREA.
- KEYED NOTES**
- 1 NEW BATHROOM/UTILITY ROOM.
 - 2 NEW INTERIOR WALL SEPARATION.
 - 3 NEW DOORS.
 - 4 RELOCATE TACK BOXES.
 - 5 NEW STALLS.
 - 6 ACCESS ROUTES.
 - 7 UTILITY ROOM FOR ELECTRICAL & FIRE RISER (INTERNAL SEPARATION PROVIDED).



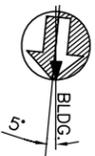
PROJECT NO: AE-ES-007				UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT					
DESIGN OFFICE: NSTC-DENVER				FLOOR PLAN & DETAILS					
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DRAWN BY: R. WELTON				EASTERN STATES OFFICE					
CHK'D BY:				VIRGINIA					
APPROVED BY:									
DATE: 09/07		MARK		DESCRIPTION		DATE		APPROVED	



STALL SCHEDULE			
SIZE	EXISTING	ALT C	REMARKS
10'X10'	44	22	
DOUBLES	2	1	
12'X12'	0	20	
TOTAL	46	43	

BARN AREA REDUCTION
(104/248) = 42%

A FLOOR PLAN
A3 SCALE (A)



GENERAL NOTES-ALTERNATIVE B

- A. INSTALL NEW BATHROOM IN SE CORNER AND NEW LEACH FIELD TO REPLACE EXISTING. CONVERT SEVERAL STALLS NORTH OF THE OFFICE TO UTILITY USE.
- B. CONVERT SEVERAL STALLS NORTH OF THE OFFICE TO UTILITY USE.
- C. INSTALL NEW ELECTRICAL & SPRINKLER SYSTEM (FIRE SUPPRESSION) THROUGHOUT. RE-INSTALL MISTER SYSTEM FOR DUST SUPPRESSION.
- D. DEMOLISH STALLS IN THE NORTH PORTION OF THE BARN AND BUILD NEW ARENA TO THE NORTH.
- E. INSTALL NEW STALLS (12'X12') IN THE CENTER OF THE SOUTH PORTION OF THE BARN.
- F. MOVE EXTERIOR WALL TO NEW LOCATION.

KEYED NOTES

- 1 NEW BATHROOM/UTILITY ROOM.
- 2 RELOCATE EXTERIOR WALL.
- 3 RELOCATE NEW DOORS.
- 4 RELOCATE TACK BOXES.
- 5 NEW STALLS.
- 6 ACCESS ROUTES.
- 7 UTILITY ROOM FOR FIRE RISER.
- 8 STORAGE & ELECTRICAL ROOM.



PROJECT NO: AE-ES-007					
DESIGN OFFICE: NSTC-DENVER					
DESIGNED BY:					
DRAWN BY: R. WELTON					
CHK'D BY:					
APPROVED BY:					
DATE: 09/07	MARK	DESCRIPTION	DATE	APPROVED	EASTERN STATES OFFICE

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FLOOR PLAN & DETAILS

ALTERNATIVE C

VIRGINIA



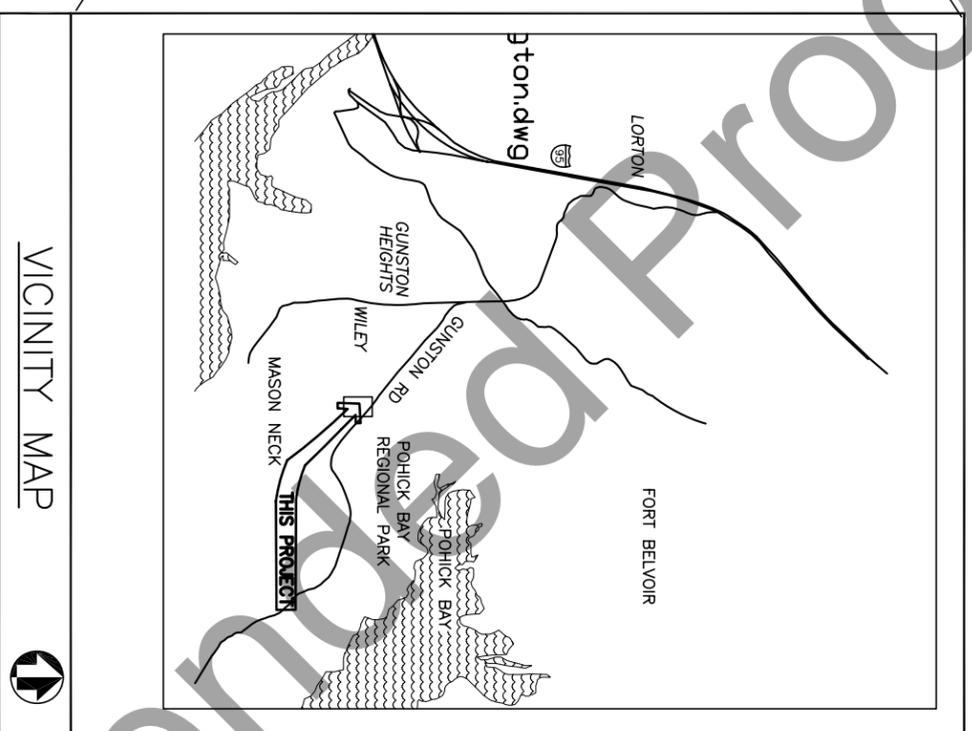
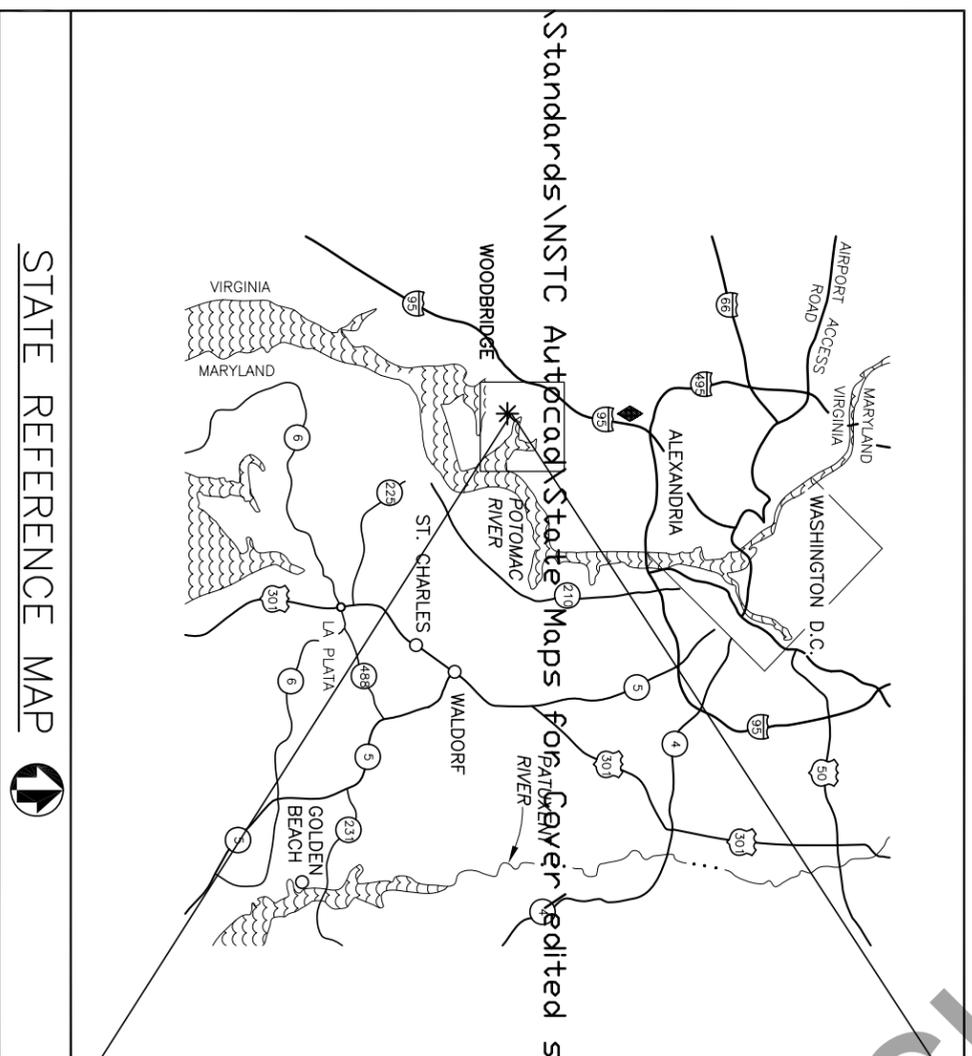


UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

ARENA / BARN ALTERNATIVES

MEADOWWOOD

EASTERN STATES OFFICE



DRAWING INDEX

SHEET	SUB SHEET	TITLE OF SHEET
1	G1	COVER SHEET
2	L1	SITE PLAN
ARCHITECTURAL		
3	A1	REHAB EXISTING ARENA/BARN
4	A2	MODIFY EXISTING STALL/ARENA LAYOUT
5	A3	RELOCATE STALLS & BUILD SEPARATE ARENA

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	INTERSTATE HIGHWAY		STATE CAPITOL
	U.S. HIGHWAY		BLM STATE OFFICE
			BLM DISTRICT OFFICE

PROJECT NO:	MARK	REVISION	DATE	APPROVED
AE-ES-007				
DESIGN OFFICE: NSTC-DENVER				
XXX	XX			
RECOMMENDED BY	DATE			
XXX	XX			
APPROVED BY	DATE			

EXISTING CONDITION

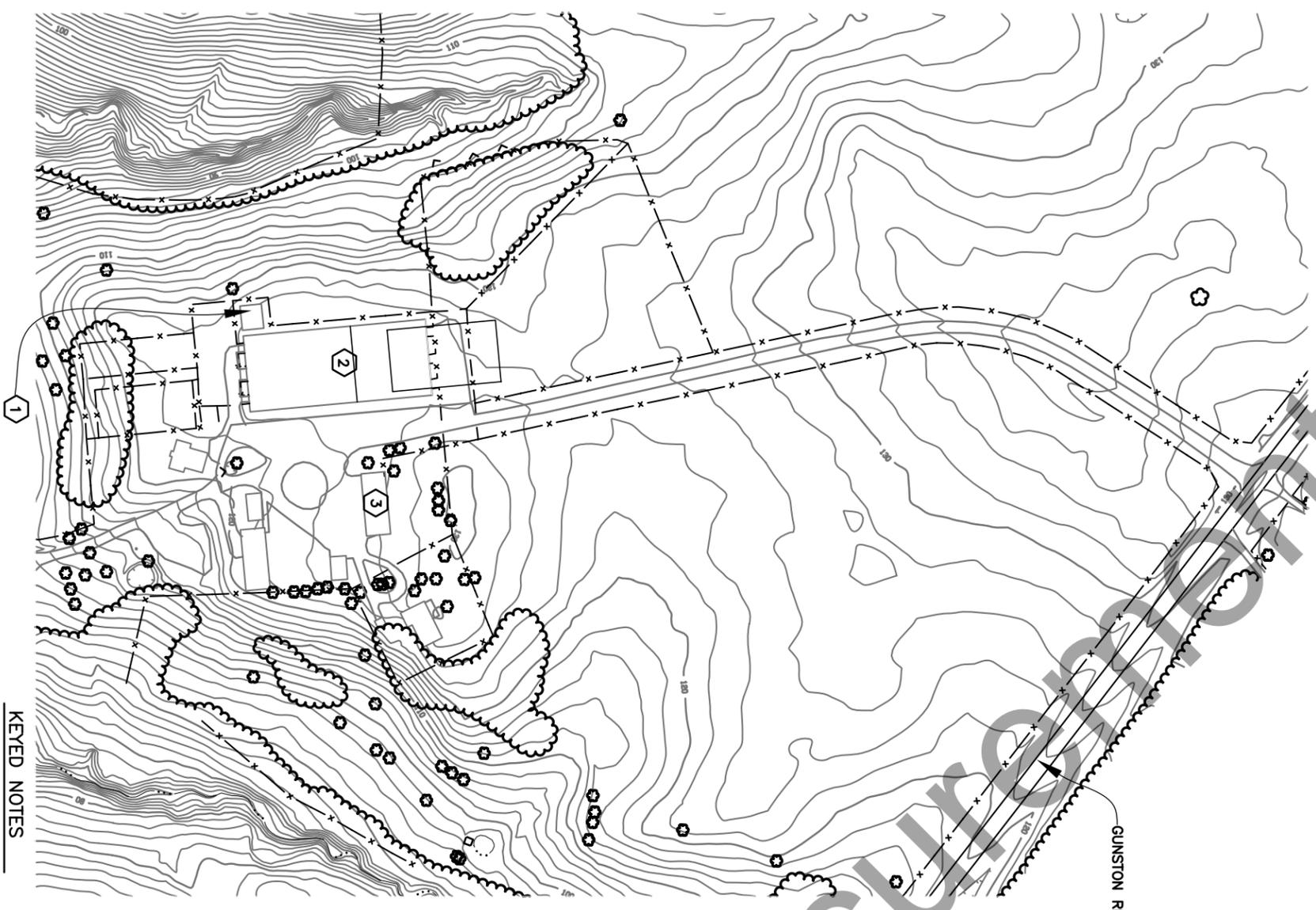
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TITLE SHEET

LOWER POTOMAC

VIRGINIA





A
L1
SITE PLAN
SCALE **A**



- KEYED NOTES**
- 1 HAY BARN
 - 2 HORSE BARN/ARENA
 - 3 EQUIPMENT BARN.
 - 4 NEW ARENA 150FT X 85FT



B
L1
ENLARGED SITE PLAN
SCALE **B**



PROJECT NO: AE-ES-007				
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DRAWN BY: R. WELTON				
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APPROVED BY:				
DATE: 09/07	MARK	DESCRIPTION	DATE	APPROVED

UNITED STATES DEPARTMENT OF THE INTERIOR
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SITE PLAN
ALTERNATE C

LOWER POTOMAC VIRGINIA

