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DESIGN REPORT

Shooting Range Study

Department of Natural Resources

Prepared for:

Glen Clickner, P.E.

Section Chief

Wisconsin Department of Natural Resources

Prepared by:

Collins Engineers, Inc.

2033 West Howard Avenue

Milwaukee, WI 53221

August 24, 2012

DFD Project No. 12C2M

DSF Contract No. 5130

Collins Project No. 7553

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Appendix A

Engineer's Opinion of Probable Cost

Appendix B

Yellowstone Shooting Range Study Concept Plans

Memorandum of Record from C. Vargas and Associates, LTD dated August 24, 2012

August 24, 2012

Shooting Range Study
Yellowstone Wildlife Area Shooting Range
Lafayette County, WI
Department of Natural Resources

DSF Project Number: 12C2M

For the Division of State Facilities

Project Manager: Glen Clickner, P.E. Phone: (608) 267-4585

Civil Engineer: Collins Engineers, Inc. Milwaukee, WI 53221
Phone: 414.282.6905

Shooting Range Expert: C. Vargas & Associates, LTD Jacksonville, FL 32211
Phone: (904) 722-2294

1. Project Description

The Wisconsin Department of Natural Resources has identified the need for site improvements to the Yellowstone Wildlife Area Shooting Range in Lafayette County, WI. This report covers the preliminary assessment of the following:

- Analysis of existing range and preliminary improvements proposed in the Preliminary Plan as prepared by Gerald Dorscheid dated February 2012.
- Recommendations for range improvements, accommodations for concealed weapon training, future lead removal accommodations as recommended by Shooting Range Expert.
- ADA site accommodations with site roadway access improvements and signage replacement.

2. Authorized Budget and Funding Source

- a. Total Study Budget: \$60,000
- b. Funding Source: Federal Pittman-Robertson funds
- c. Construction Budget: Estimate established with this analysis

3. Preliminary Schedule

SBC Approval	October 2012
A/E Selection	November 2012
Design Report	February 2013
Bid Opening	March 2013
Start Construction	May 2013
Substantial Completion	September 2013
Final Completion	October 2013

4. Budget Summary

	<i>Engineer's Estimate of Probable Cost</i>
Construction	\$216,000
*A/E Design Fee and other fees	\$35,000
**DFD Project Delivery Fee	\$10,000
Contingency (10%)	\$22,000
<hr/>	
Total Estimated Project Budget	\$283,000

*Includes preliminary estimate for purposes of budgeting only at this time. Fee for A/E, survey, and geotech analysis (if necessary) to be finalized if project is approved for construction.

**Includes 4% (construction + contingency)

5. Original Project Scope

As part of the May 2012 DFD Small Project Solicitations, Wisconsin Department of Natural Resources had requested analysis and evaluation for various DNR-owned Shooting Ranges Statewide. Scope of services were to include pre-design, including facility condition assessments and preparation of a Program Statement (including cost estimating, scheduling, and scope) for a future shooting range project or projects.

6. Revised Scope and Budget

Per Scoping Meeting held on June 14, 2012, the scope of the study was limited to the Yellowstone Wildlife Area Shooting Range located in Lafayette County on County Road F between Darlington and Blanchardville. This shooting range currently consists of a 100-yard range and a 50-yard range with existing earthen backstops and gravel parking. Alternatives to the existing Yellowstone Shooting Range Preliminary Plan as prepared by Gerald Dorscheid dated February 2012 were to be analyzed and recommendations to be made by Shooting Range Expert – C. Vargas and Associates.

7. Design Considerations

The following improvements were analyzed in the study and considered in the preliminary cost estimate as follows:

Relocation of 100-yard Range

Analysis of 100-yard range identified maintaining the existing location with new berm construction, target, firing line with ADA shooting appurtenances and drainage improvements. Backstop improvements should include consideration of future lead removal in the backstop. Firing line shelter should include baffles. These improvements are conceptually represented in the preliminary plans.

Modifications to 50-yard Range

Analysis of 50-yard range identified maintaining the existing location with berm construction, backstop, target, firing line with ADA shooting appurtenances improvements. Backstop improvements should include consideration of future lead removal in the backstop. These improvements are conceptually represented in the preliminary plans.

New 50-foot Range

Recommendation for addition of a 50-foot range is identified in the conceptual plans. This range includes a new berm, backstop, target, and fire line improvements for use with concealed weapon training.

Site Access

Parking lot improvements with ADA access are conceptually presented in the preliminary plans and should be implemented for final construction. Various site amenities such as access gate, entrance roadway rehabilitation, and signage are recommended for implementation in final design.

Further summation of the analysis can be found in the Memorandum of Record from C. Vargas and Associates, LTD dated August 24, 2012 included in the Appendix.

8. Budget

See Design Report Appendix A for Engineer's Estimate of Probable Cost for construction.

DESIGN REPORT APPENDIX

DIVISION OF FACILITIES DEVELOPMENT
101 East Wilson Street
P.O. Box 7866
Madison, WI 53707

Design Report Appendix

Appendix A

Engineer's Opinion of Probable Cost

Appendix B

Yellowstone Shooting Range Study Concept Plans

Memorandum of Record from C. Vargas and Associates, LTD dated August 24, 2012

APPENDIX A



Job No.: 7553
 By: MAC Date: 08/24/12
 Chkd. By: RAT Date: 08/24/12

Shooting Range - Engineer's Estimate of Probable Cost for Construction
Yellowstone Wildlife Area, Lafayette County, WI
 DFD Project No. 12C2M

Site Improvements Construction

Item Description	Unit	Unit Cost	Est. Qty	Est. Cost
Mobilization	LS	\$ 15,000.00	1	\$ 15,000.00
Clearing/Tree Removal	LS	\$ 5,000.00	1	\$ 5,000.00
*General Excavation-Soil (Onsite Material)	CY	\$ 5.00	7650	\$ 38,250.00
**Excavation-Soil (Haul Off)	CY	\$ 15.00	950	\$ 14,250.00
***Backstops (Includes Sand and ADS Pipe)	EA	\$ 10,000.00	2	\$ 20,000.00
****Repair and Regrade Existing Driveway (Fill Pot Holes w/ 3/4" Agg)	LS	\$ 1,500.00	1	\$ 1,500.00
Concrete Parking Lot- 6" depth (Handicap Parking Stalls)	SF	\$ 5.00	1030	\$ 5,150.00
****Base Aggregate Dense 3/4-inch (Under Concrete Parking)	TN	\$ 15.00	70	\$ 1,050.00
Concrete Sidewalk- 5" Depth	SF	\$ 5.00	770	\$ 3,850.00
****Gravel Parking Lot- 3/4 inch Dense Aggregate	TN	\$ 15.00	1120	\$ 16,800.00
Parking Lot Striping (ADA Striping Only)	LS	\$ 1,500.00	1	\$ 1,500.00
Culvert 18" RCP Pipe	LF	\$ 30.00	135	\$ 4,050.00
*****Culvert Settling Basin (Excavation)	CY	\$ 20.00	270	\$ 5,400.00
Culvert Outfall Structure	EA	\$ 1,500.00	1	\$ 1,500.00
Erosion and Sediment Control	LS	\$ 7,500.00	1	\$ 7,500.00
Landscaping (Including topsoil, seeding, mulching)	LS	\$ 5,000.00	1	\$ 5,000.00
100-Yard Shooting Shed	SF	\$ 10.00	950	\$ 9,500.00
100-Yard Shooting Shed Concrete Foundation- 4-inch Depth	SF	\$ 4.00	950	\$ 3,800.00
100-Yard Shooting Shed Baffles	LF	\$ 140.00	40	\$ 5,600.00
50-Yard Shooting Shed	EA	\$ 10.00	500	\$ 5,000.00
50-Yard Shooting Shed Concrete Foundation- 4-inch Depth	SF	\$ 4.00	500	\$ 2,000.00
50-Yard Shooting Shed Baffles	LF	\$ 140.00	30	\$ 4,200.00
50-Foot Shooting Shed	EA	\$ 10.00	650	\$ 6,500.00
50-Foot Shooting Shed Concrete Foundation- 4-inch Depth	SF	\$ 4.00	650	\$ 2,600.00
50-Foot Shooting Shed Baffles	LF	\$ 140.00	36	\$ 5,040.00
Chain Link Fence	LF	\$ 13.00	380	\$ 4,940.00
Pistol Bench	EA	\$ 400.00	15	\$ 6,000.00
Rifle Bench	EA	\$ 400.00	8	\$ 3,200.00
Pistol Target and Number Board	EA	\$ 300.00	15	\$ 4,500.00
Rifle Target and Number Board	EA	\$ 300.00	8	\$ 2,400.00
Entrance Gate	EA	\$ 1,500.00	1	\$ 1,500.00
Sign	EA	\$ 500.00	5	\$ 2,500.00

*Topsoil placement was assumed to use 100% onsite material.

**Further determination is required to see if excavation haul off material can potentially be placed on the property, away from the new improvements. If verified, this cost can be reduced by nearly 50%.

***Sand material for backstop installation was assumed to hauled in from offsite and not found onsite. Will analyze using onsite material for cost savings during final design.

****Base Aggregate based on 2.3 Tons/CY.

*****Assumes above ground detention system.

Project Sub Total	\$ 215,080
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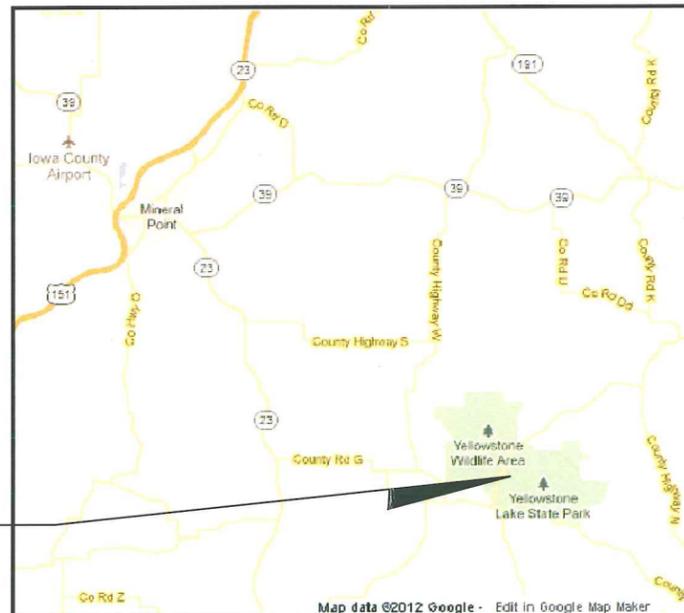
Project Total	\$216,000.00
A/E Project Management (4%)	\$10,000.00
A/E Consultant	\$35,000.00
Contingency (10%)	\$22,000.00

Project Total =	\$283,000.00
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APPENDIX B

WISCONSIN DIVISION OF STATE FACILITIES YELLOW STONE SHOOTING RANGE STUDY LAFAYETTE COUNTY, WISCONSIN

PROJECT LOCATION



VICINITY MAP

SCALE: 1" = 5000'



PROJECT LOCATION

PREPARED THRU:

COLLINS ENGINEERS, INC.
2033 WEST HOWARD AVENUE
MILWAUKEE, WI 53221
Phone : (414)-282-6905
EMAIL: rtranel@collinsengr.com
www.collinsengr.com

PREPARED FOR:

WISCONSIN DEPARTMENT OF NATURAL
RESOURCES
101 S. WEBSTER street
MADISON, WI 53707-7921

PREPARED BY:

C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
8808 ARLINGTON EXPRESSWAY
JACKSONVILLE, FLORIDA 32211
PHONE: (904) 722-2294
E-MAIL: cvargas@cvaltd.com
website: cvaltd.com

WISCONSIN DIVISION OF STATE FACILITIES
YELLOW STONE SHOOTING RANGE STUDY

C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
8808 ARLINGTON EXPRESSWAY
JACKSONVILLE, FLORIDA 32211 (904) 722-2294

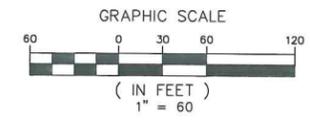


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NOTE:
 TOPOGRAPHIC SURVEY IS AS PROVIDED BY
 COLLINS ENGINEERS INC. ON 06-26-12

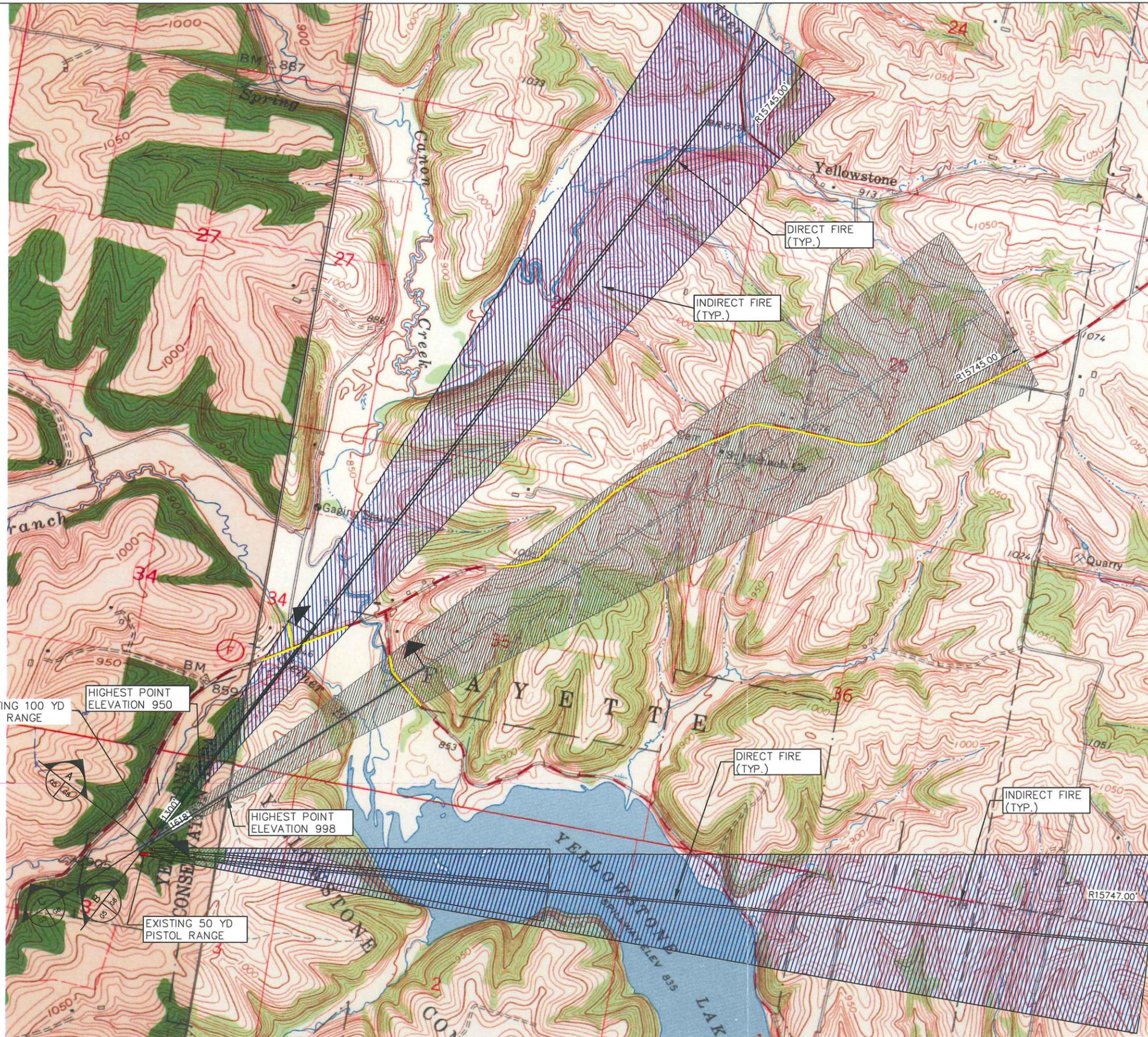
TOPOGRAPHIC SURVEY
 SCALE: 1" = 60'



G3

<p>C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 12014.00 PHONE: 920.222.2297 FAX: 920.222.2297 12014.00</p>		WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY		TOPOGRAPHIC SURVEY	
DRAWN BY _____ CHECKED BY C. VARGAS SUBMITTED BY _____	DATE _____ DATE _____ DATE _____	REG. ENGR. NO. _____	NO. _____	REVISION _____	DATE _____ BY _____
PROJECT NO. 12014.00		SHEET 3 OF 24		APPROVED FOR CONSTRUCTION DATE: _____	

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LEGEND

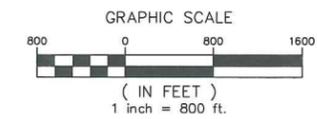
- BALLISTIC SHADOW
- CONE OF FIRE AND SURFACE DANGER ZONE (CSDZ)
- AREA OF 99% OF SHOT FALL
- CONE OF FIRE AND SURFACE DANGER ZONE (CSDZ) OF RELOCATED 100 YD RIFLE RANGE ROTATED TO THE EAST OF THE EXISTING LOCATION

ROAD WAY SUBJECT TO IMPACT

NOTE:

AERIAL PHOTOGRAPH TAKEN FROM GOOGLE EARTH.

EXISTING SURFACE DANGER ZONES
SCALE: 1" = 800'



G5

NO.	REVISION	DATE	BY

SURFACE DANGER ZONES

WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY



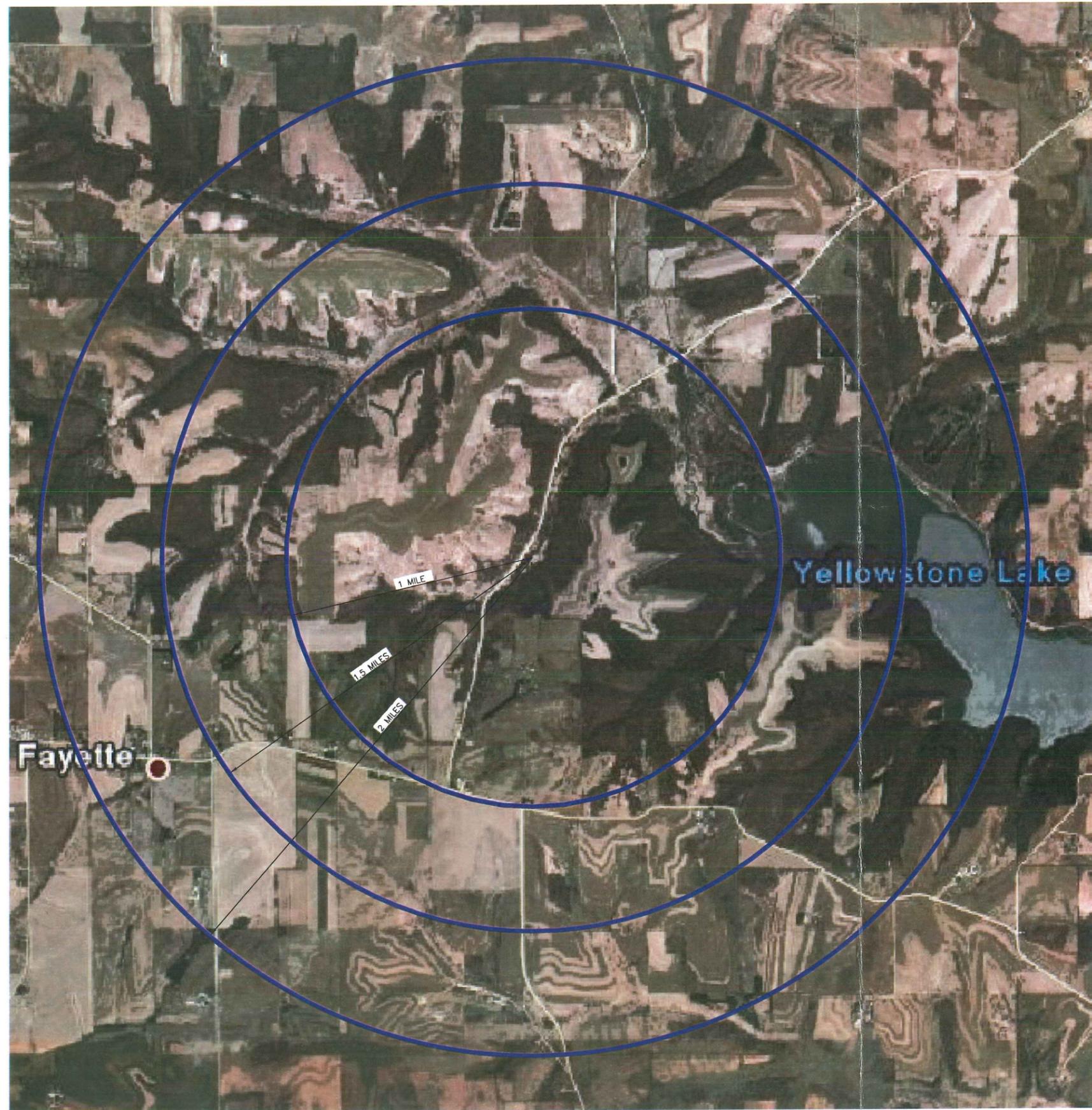
C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
1200 W. WISCONSIN AVENUE, SUITE 200
MILWAUKEE, WISCONSIN 53233
PHONE: 414.224.1100 FAX: 414.224.2887
E-MAIL: CVARGAS@CVAENGINEERS.COM

DRAWN BY: _____ CHECKED BY: C. VARGAS DATE: 08/22/12
SUBMITTED BY: _____ REG. ENGR. NO. _____

C.A.D.D. FILE PROJECT NO. 12014.00 SHEET 5 OF 24

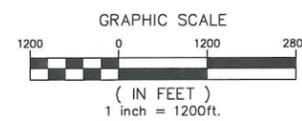
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DISTANCE IN FEET	DECIBEL LEVEL
1.25	134
2.5	128
5	122
10	116
20	110
40	104
80	98
160	92
320	86
640	80
1,280	74
2,560	68
5,120	62
10,240	56

2 MILE RADIUS "TABLE TOP
SOUND STUDY APPROXIMATION
SCALE: 1" = 1,200'



NOTE
AERIAL PHOTO GRAPH TAKEN FROM GOOGLE MAPS.

G6

<p>C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1000 W. WISCONSIN ST., SUITE 200 MILWAUKEE, WI 53233 PHONE: 800.772.2284 FAX: 908.772.2287 WWW.CVARGAS.COM</p>	DRAWN BY _____ CHECKED BY <u>C. VARGAS</u> DATE <u>08/22/12</u> SUBMITTED BY _____ REG. ENGR. NO. _____
	PROJECT NO. 12014.00 SHEET 6 OF 24
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY	
2 MILE RADIUS SOUND PRESSURE VALUES	
NO.	REVISION
DATE	BY

DO NOT SCALE DRAWINGS

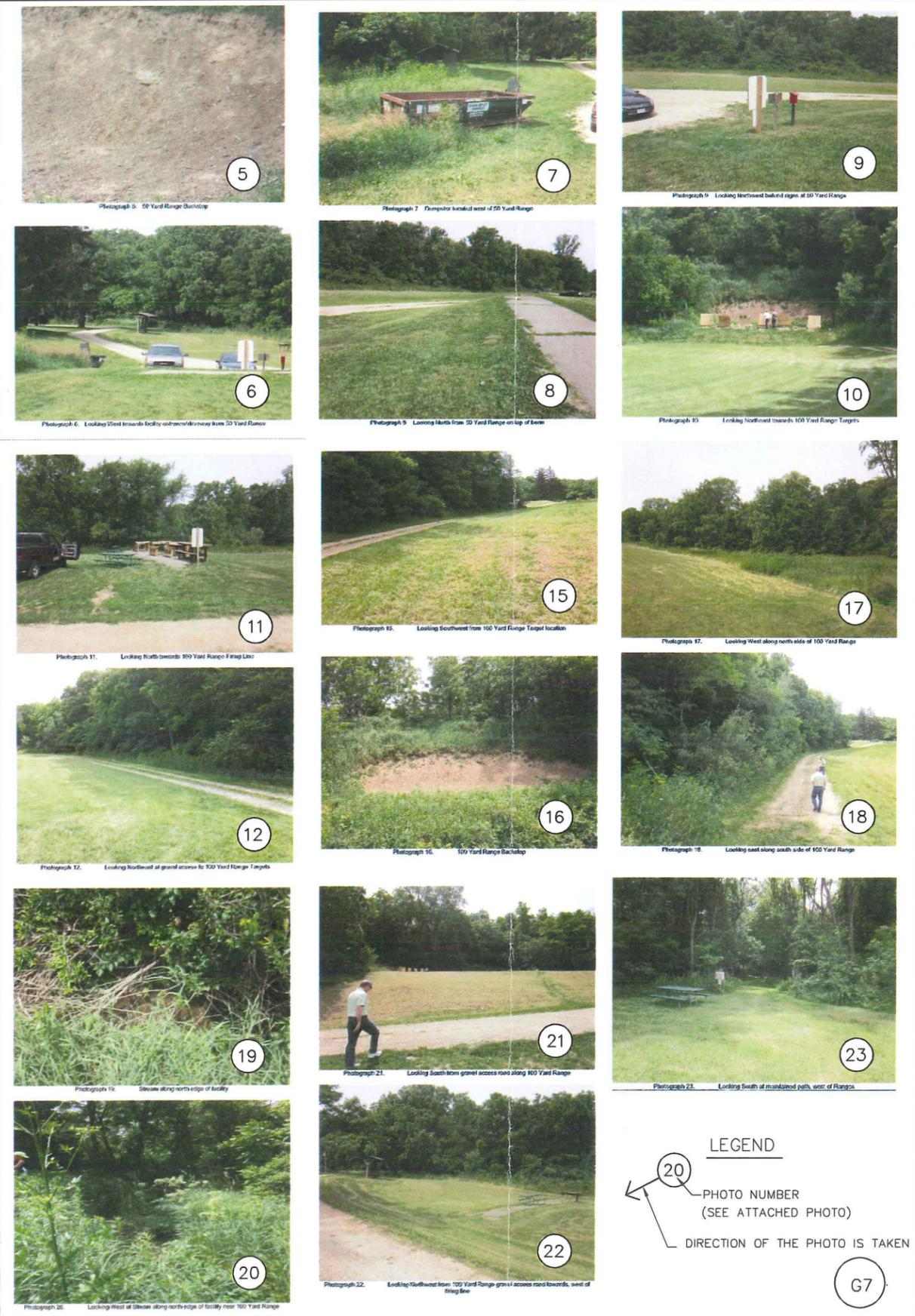
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NOTE: PICTURES ARE SEQUENTIALLY NUMBERED AS SHOWN IN THE PHOTO LOG APPENDIX. OTHERS NOT SHOWN ARE IN THE STUDY DOCUMENTS

EXISTING RANGE AERIAL PHOTOGRAPH
SCALE: 1" = 40'



LEGEND
 (20) PHOTO NUMBER (SEE ATTACHED PHOTO)
 DIRECTION OF THE PHOTO IS TAKEN

C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1800 ALABAMA EXPRESSWAY MILWAUKEE, WISCONSIN 53224 PHONE: 414-222-2274 FAX: 414-752-2287 WWW.CVA-ENGINEERS.COM		DATE: 08/22/12
CHECKED BY: C. VARGAS	REC. ENGR. NO.:	
DRAWN BY:	SUBMITTED BY:	
C.A.D.D. FILE:		
PROJECT NO. 12014.00		
SHEET		
7 OF 24		

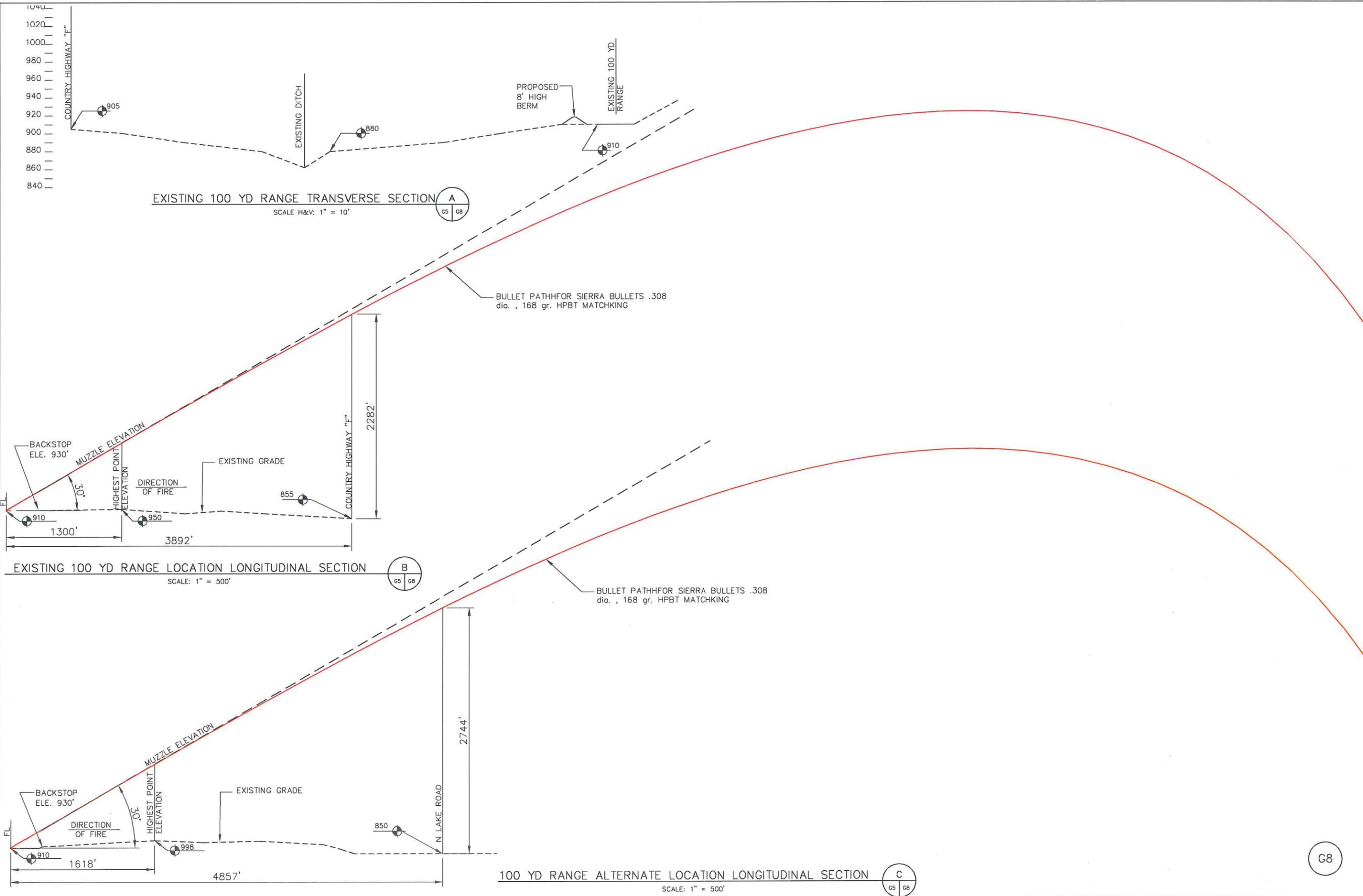
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY

EXISTING RANGE AERIAL PHOTOGRAPH AND PICTURES

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C. VARGAS & ASSOCIATES, LTD. REGISTERED PROFESSIONAL ENGINEERS CONSULTING ENGINEERS 1000 WISCONSIN EXPRESSWAY MILWAUKEE, WISCONSIN 53219 PHONE 414-227-2284 FAX 414-227-2287 WWW.CVARGAS.COM		DRAWN BY _____ CHECKED BY C. VARGAS DATE 08/22/12		REG. ENGR. NO. _____	
C.A.D.D. FILE		PROJECT NO. 12014.00		SHEET 8 OF 24	
APPROVED FOR CONSTRUCTION DATE: _____		NOT TO SCALE DRAWINGS		DO NOT SCALE DRAWINGS	
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY		FIRING RANGE LONGITUDINAL SECTIONS		NO. _____	
				REVISION _____	
				DATE _____	
				BY _____	

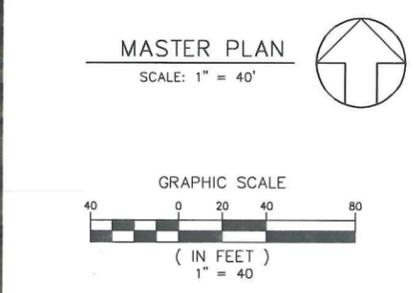
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- PROGRAM SPACE**
- ① 50 YD PISTOL RANGE 6 POS. @ 5'-0"
 - ② 50 FT PISTOL RANGE 9 POS. @ 4'-0"
 - ③ 100 YD RIFLE RANGE 8 POS. @ 5'-0"

- LEGEND:**
- PAVED ROAD
 - BATHROOM LOCATION
 - PAVILION
 - GROUP PICNIC FAMILY SHELTER
 - INDIVIDUAL PICNIC SHELTER
 - PARKING SPACE



	NO. _____
	REVISION _____
	DATE _____
	BY _____

MASTER PLAN

WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY

C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
1000 ANTON DRIVE
MILWAUKEE, WI 53212
PHONE: 414.722.2234 FAX: 414.722.2297
WWW.CVA-ENGINEERS.COM

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 SUBMITTED BY _____ REG. ENGR. NO. _____

C.A.D.D. FILE _____

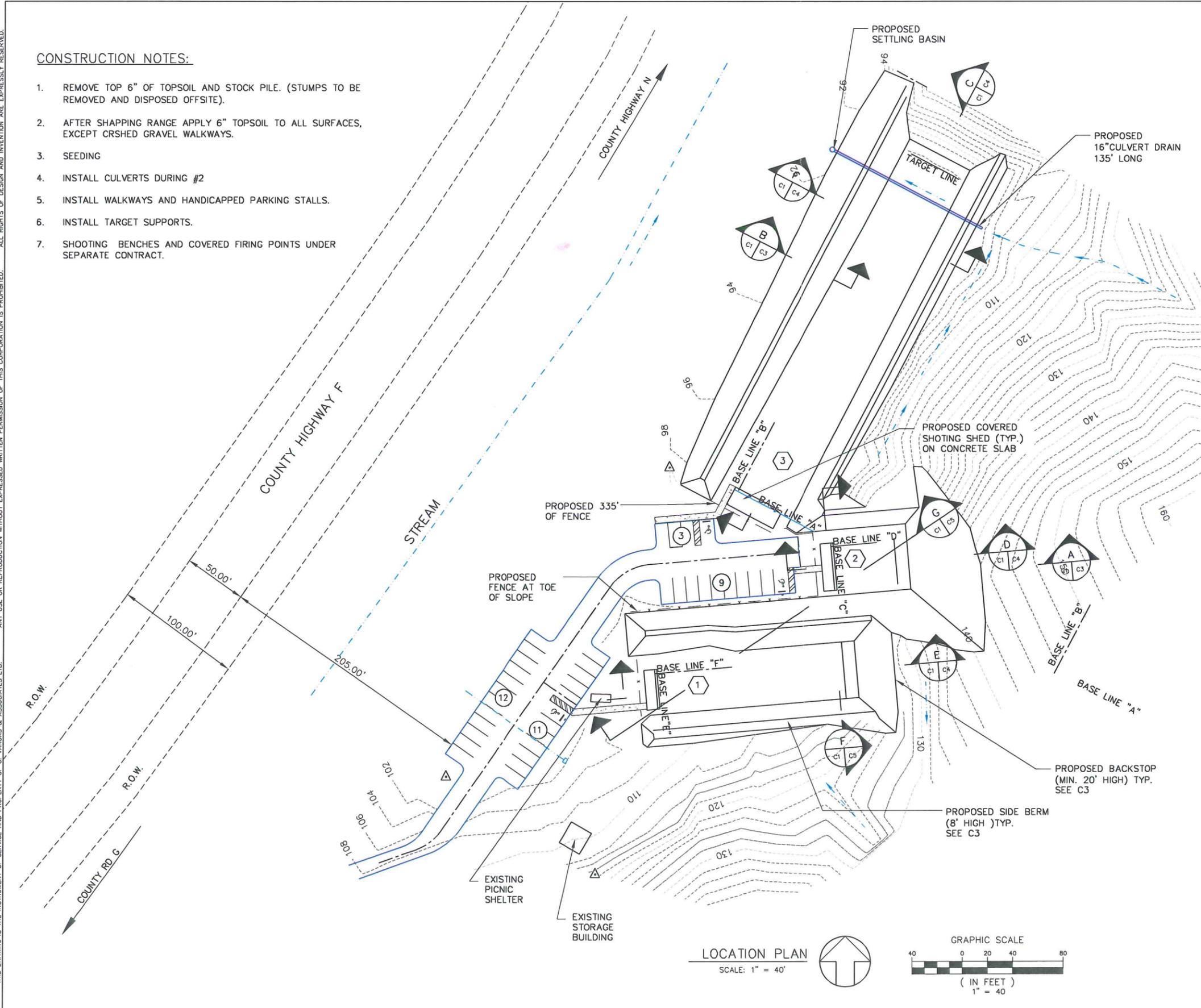
PROJECT NO. 12014.00
 SHEET 9 OF 24

APPROVED FOR CONSTRUCTION DATE: _____

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CONSTRUCTION NOTES:

1. REMOVE TOP 6" OF TOPSOIL AND STOCK PILE. (STUMPS TO BE REMOVED AND DISPOSED OFFSITE).
2. AFTER SHAPPING RANGE APPLY 6" TOPSOIL TO ALL SURFACES, EXCEPT CRSHED GRAVEL WALKWAYS.
3. SEEDING
4. INSTALL CULVERTS DURING #2
5. INSTALL WALKWAYS AND HANDICAPPED PARKING STALLS.
6. INSTALL TARGET SUPPORTS.
7. SHOOTING BENCHES AND COVERED FIRING POINTS UNDER SEPARATE CONTRACT.

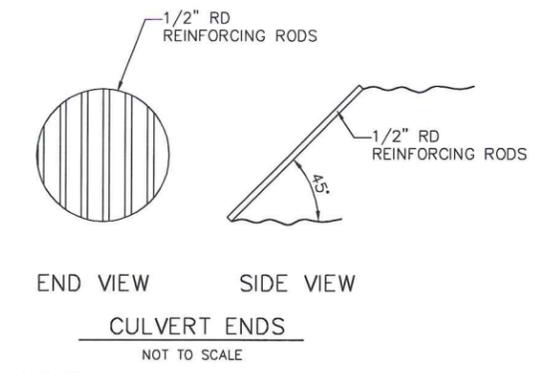


PROGRAM SPACE

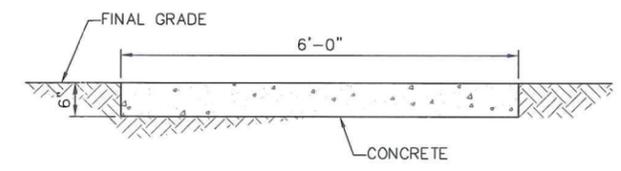
- 1 50 YD PISTOL RANGE 6 POS. @ 5'-0"
- 2 50 FT PISTOL RANGE 9 POS. @ 4'-0"
- 3 100 YD RIFLE RANGE 8 POS. @ 5'-0"

LEGEND:

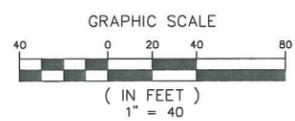
- PAVED ROAD
- BATHROOM LOCATION
- PAVILION
- GROUP PICNIC FAMILY SHELTER
- INDIVIDUAL PICNIC SHELTER
- PARKING SPACE



NOTE: PROVIDE BAR SCREEN PROTECTION AT EACH END



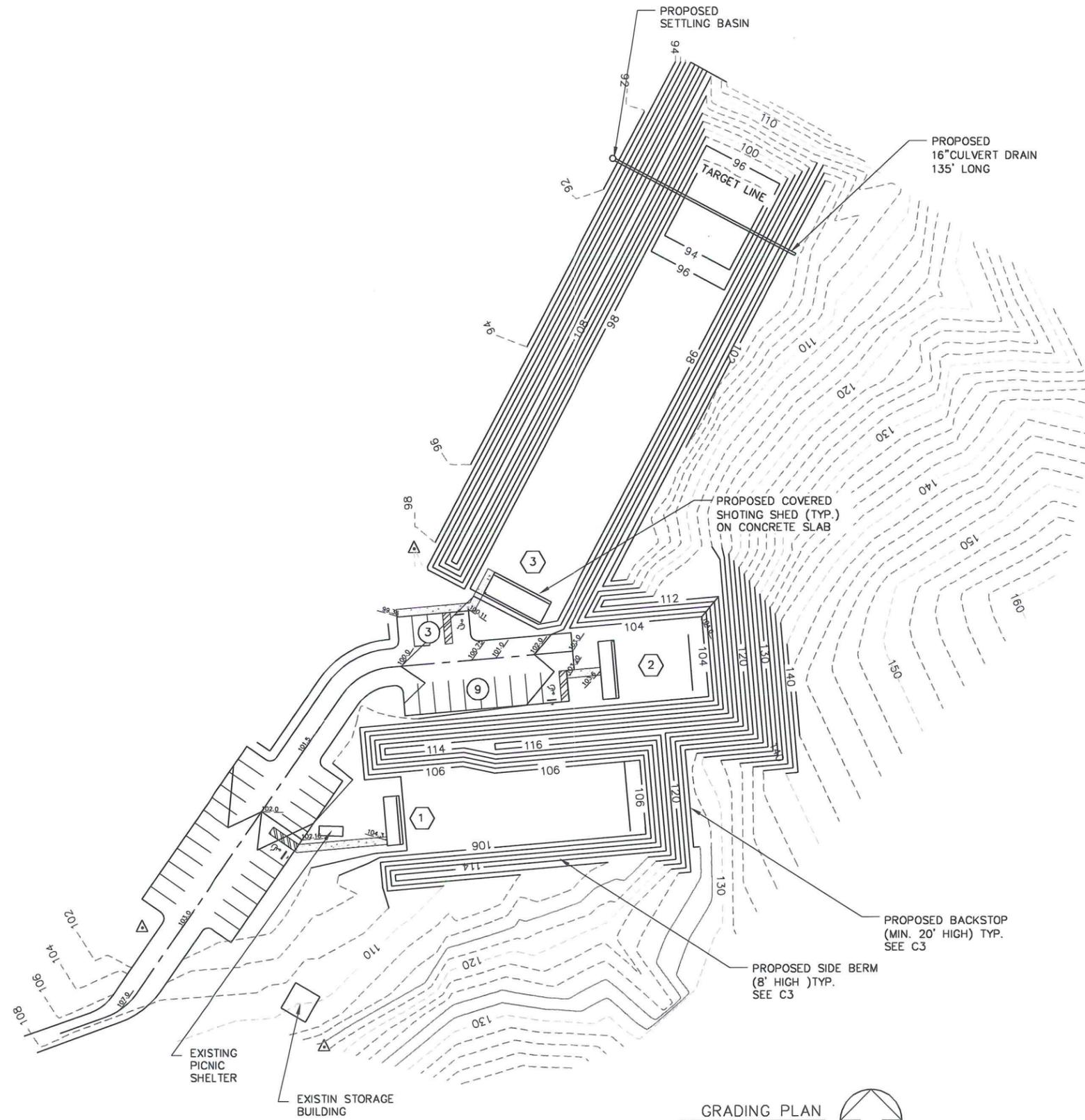
LOCATION PLAN
SCALE: 1" = 40'



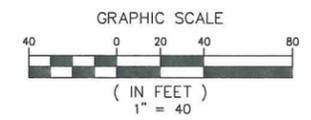
WALK CROSS SECTION
SCALE: 3/4"=1'-0"

<p>WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY</p>	<p>LOCATION PLAN</p>
<p>C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1000 ARLINGTON DRIVE MILWAUKEE, WISCONSIN 53212 PHONE: 414-772-2284 FAX: 414-772-2287</p>	<p>DATE: 08/22/12 REG. ENGR. NO. _____</p>
<p>DRAWN BY: _____ SUBMITTED BY: _____</p>	<p>APPROVED FOR CONSTRUCTION DATE: _____</p>
<p>C.A.D.D. FILE</p>	<p>PROJECT NO. 12014.00</p>
<p>SHEET</p>	<p>10 OF 24</p>

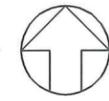
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- PROGRAM SPACE**
- ① 50 YD PISTOL RANGE 6 POS. @ 5'-0"
 - ② 50 FT PISTOL RANGE 9 POS. @ 4'-0"
 - ③ 100 YD RIFLE RANGE 8 POS. @ 5'-0"



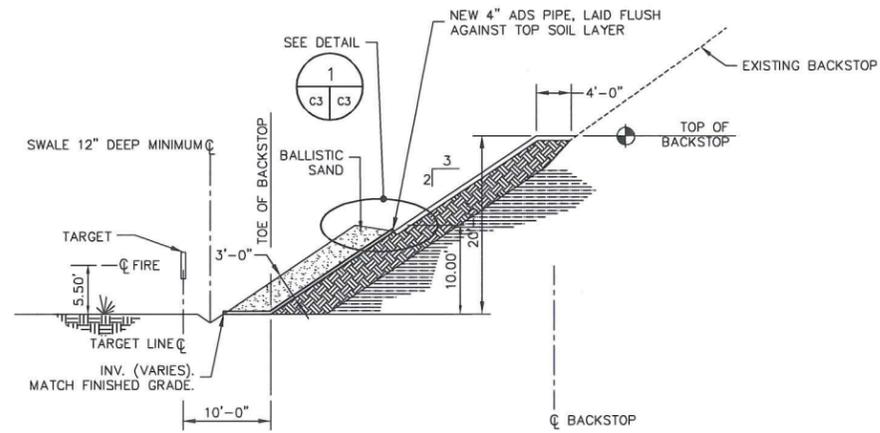
GRADING PLAN
SCALE: 1" = 40'



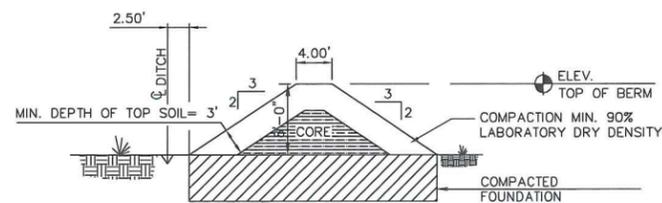
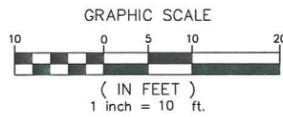
C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 12014.00 PHONE: 272.7074 FAX: 800.772.2287 WWW.CVARGAS.COM		DATE: 08/22/12	REG. ENGR. NO. _____
DRAWN BY _____	CHECKED BY C. VARGAS	DATE: 08/22/12	REG. ENGR. NO. _____
C.A.D.D. FILE		SUBMITTED BY _____	
PROJECT NO. 12014.00		SHEET	
11 OF 24		APPROVED FOR CONSTRUCTION DATE: _____	
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY		NO.	REVISION
GRADING PLAN		DATE	BY

C2

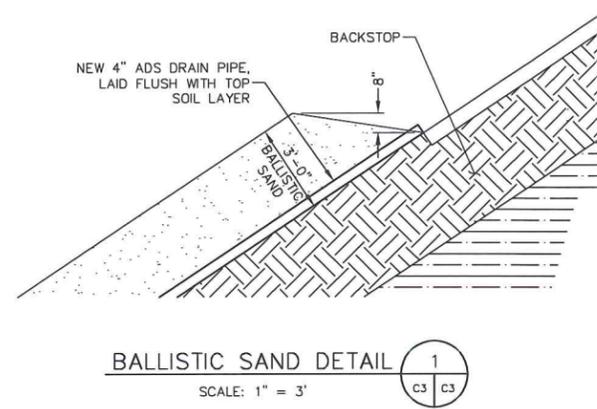
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TYPICAL BACKSTOP SECTION
SCALE: 1" = 10'



SIDE BERM SECTION
SCALE: 1" = 10'



BACKSTOP NOTES:

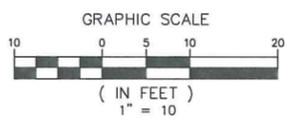
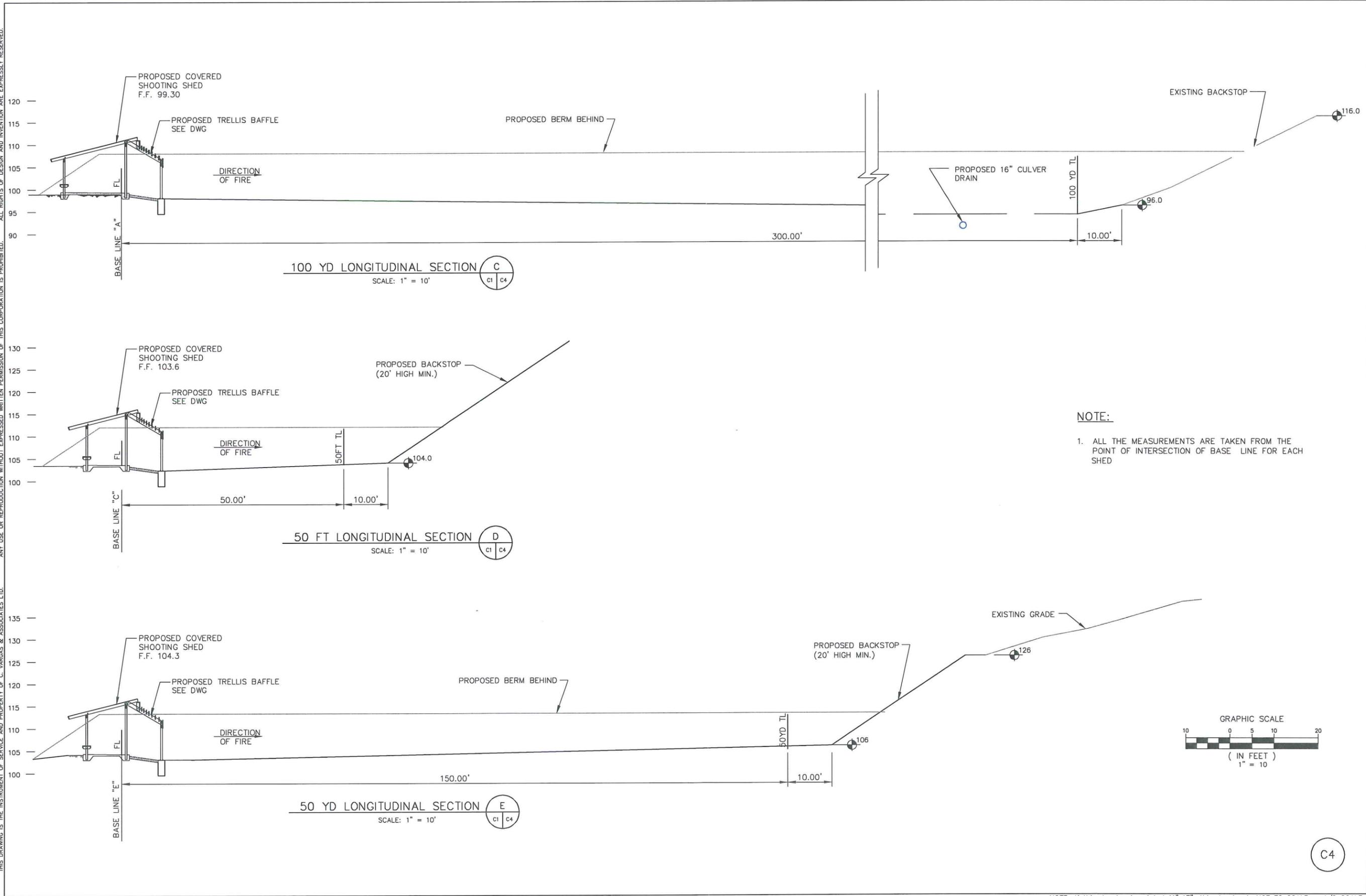
1. BALLISTIC SAND SHALL BE SCREENED MATERIAL LOAM AND A MIXTURE CLAY MIX TO HOLD THE SLOPES SHOWN, OR ECOBOND AS PER MANUFACTURERS RECOMMENDATION.
2. METHODS OF SLOPE STABILIZATION SHALL BE SOLID SODDINGS
3. COMPACT BERM BASE FOUNDATION TO 95% LABORATORY DRY DENSITY. DEPTH OF FOUNDATION TO BE DETERMINED BY SITE CONDITIONS.

C3

C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1000 WISCONSIN STREET MILWAUKEE, WISCONSIN 53233 PHONE 772-2784 FAX 904-752-2997 WWW.CVA-ENGINEERS.COM	DATE: 08/22/12
	CHECKED BY: C. VARGAS REG. ENGR. NO. _____
PROJECT NO. 12014.00	DATE: _____
SHEET 12 OF 24	DATE: _____
APPROVED FOR CONSTRUCTION	
NOT TO SCALE DRAWINGS	
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY	
TYPICAL SECTIONS	
NO.	REVISION
DATE	BY

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C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 3800 UNIVERSITY AVENUE, SUITE 200 MILWAUKEE, WISCONSIN 53212 PHONE: 224.2744 FAX: 224.72297 E-MAIL: CVAS@CVA-ENGINEERS.COM		DATE: 08/22/12	REG. ENGR. NO. _____
DRAWN BY: _____	CHECKED BY: C. VARGAS	DATE: _____	REG. ENGR. NO. _____
C.A.D.D. FILE		SUBMITTED BY: _____	
PROJECT NO. 12014.00		DATE: _____	
SHEET		APPROVED FOR CONSTRUCTION	
13 OF 24		DATE: _____	

FIRING RANGE
LONGITUDINAL SECTIONS

WISCONSIN DIVISION
OF STATE YELLOWSTONE
FACILITIES
SHOOTING RANGE STUDY

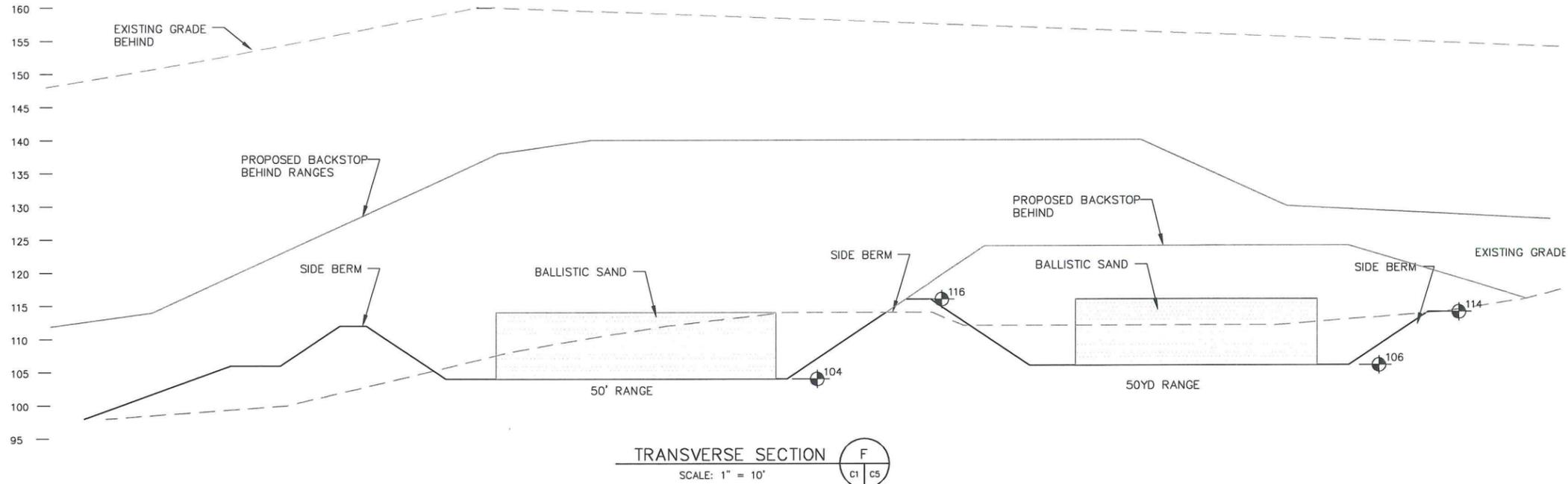


MASTER PLAN

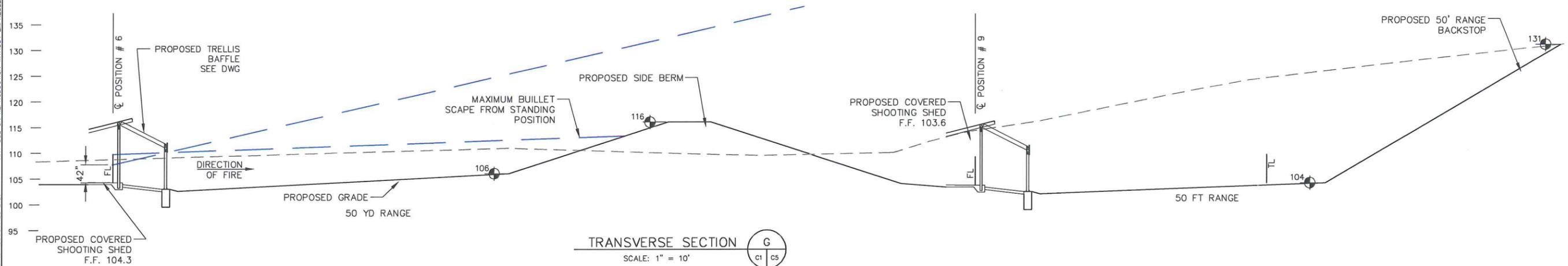
NO.	REVISION	DATE	BY

C4

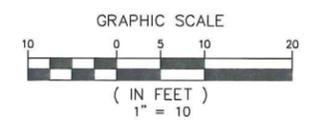
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TRANSVERSE SECTION **F**
SCALE: 1" = 10'



TRANSVERSE SECTION **G**
SCALE: 1" = 10'



NO.	REVISION	DATE	BY

FIRING RANGE
LONGITUDINAL SECTIONS

WISCONSIN DIVISION
OF STATE YELLOWSTONE
FACILITIES
SHOOTING RANGE STUDY



C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
1000 WISCONSIN STREET
MILWAUKEE, WISCONSIN 53233
PHONE: 414.224.2297
FAX: 414.224.2297
REG. ENGR. NO. 100000772

DRAWN BY: _____ CHECKED BY: **C. VARGAS** DATE: **08/22/12**
SUBMITTED BY: _____ REG. ENGR. NO. _____

C.A.D.D. FILE
PROJECT NO. 12014.00
SHEET
14 OF 24

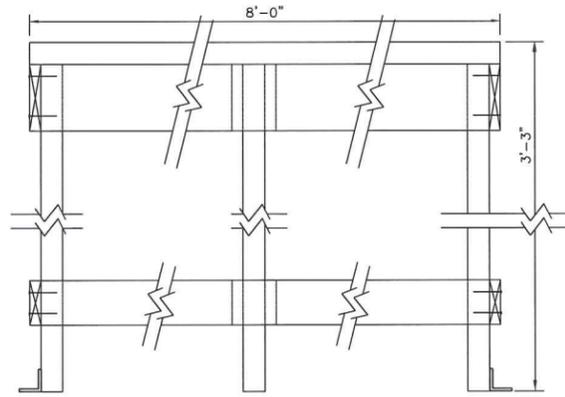
C5

DO NOT SCALE DRAWINGS

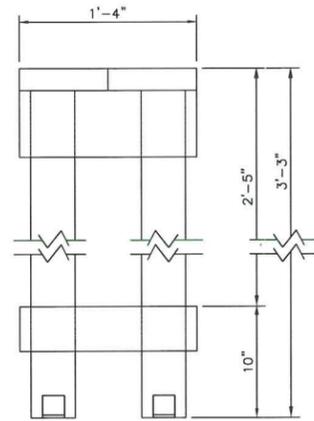
MASTER PLAN

APPROVED FOR CONSTRUCTION DATE: _____

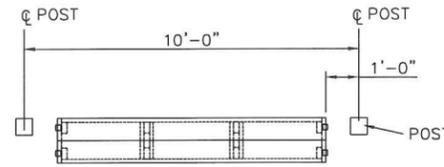
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ELEVATION
SCALE: 1 1/2" = 1'-0"



SIDE ELEVATION
SCALE: 1 1/2" = 1'-0"



PLAN
SCALE: 3/8" = 1'-0"

PORTABLE WOOD BENCHREST TABLE
SCALE AS NOTED



C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
12014.00
12014.00
12014.00

PROJECT NO.
12014.00

SHEET

15 OF 24

WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY



WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY

PORTABLE WOOD BENCHREST TABLE

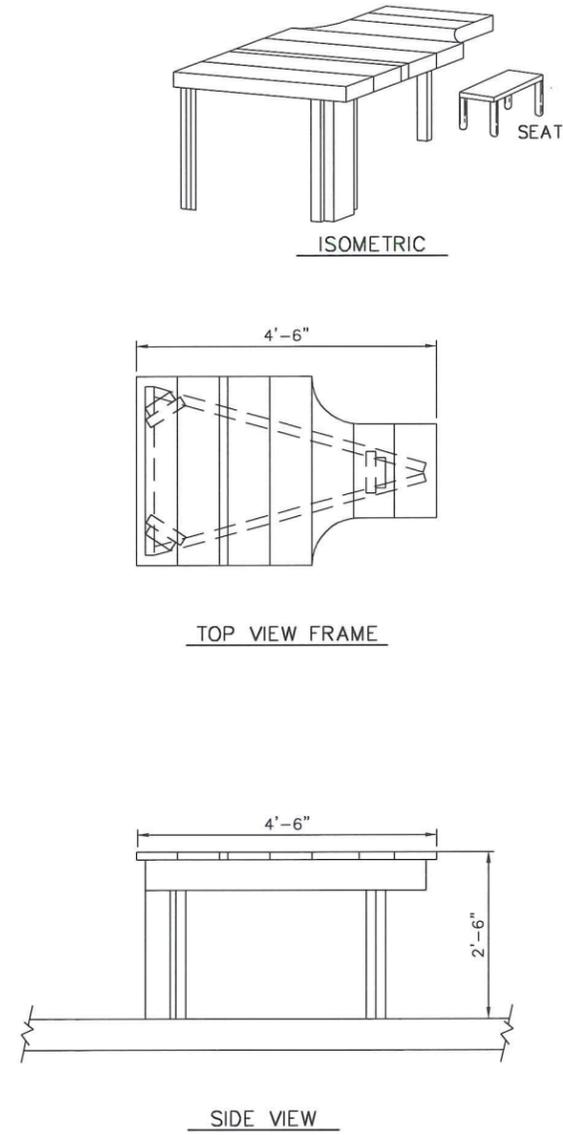
NO.	REVISION	DATE	BY

NOT APPROVED FOR CONSTRUCTION DATE: 12/14/09

C10

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OPTION
PORTABLE WOOD RIFLE BENCH
NOT TO SCALE

C11

C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
1800 MANLY BLVD. SUITE 200
WISCONSIN RAPIDS, WI 54481
PHONE 722-2294 FAX 722-2297
E-MAIL CVARGAS@CVAENGINEERS.COM

DRAWN BY _____ CHECKED BY C. VARGAS DATE 08/22/12
SUBMITTED BY _____ REG. ENGR. NO. _____

C.A.D.D. FILE PROJECT NO. 12014.00 SHEET 16 OF 24



WISCONSIN DIVISION
OF STATE YELLOWSTONE
FACILITIES
SHOOTING RANGE STUDY

PORTABLE WOOD
RIFLE BENCHREST

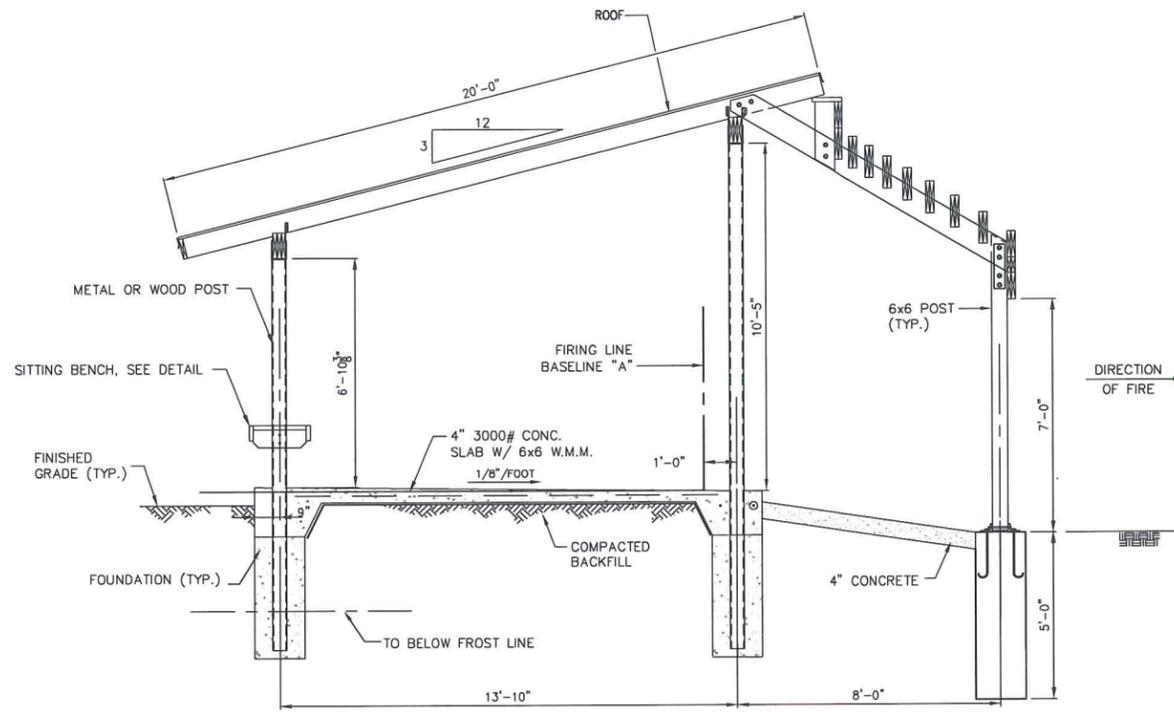
NO.	REVISION	DATE	BY

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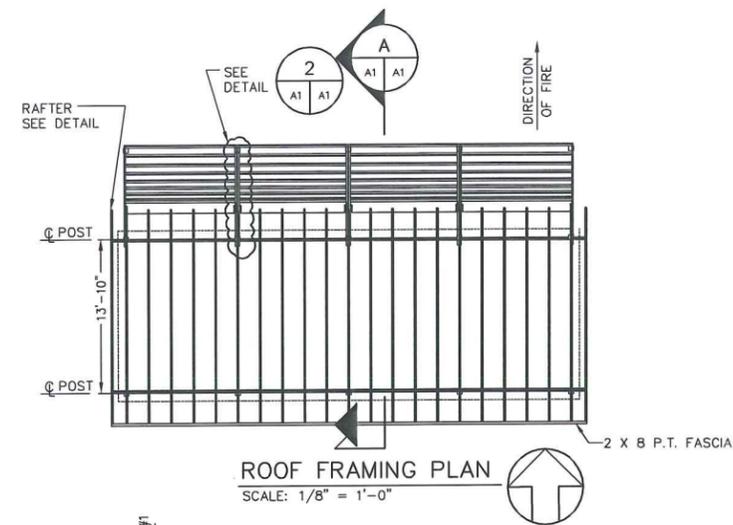
DO NOT SCALE DRAWINGS

APPROVED FOR CONSTRUCTION DATE: _____

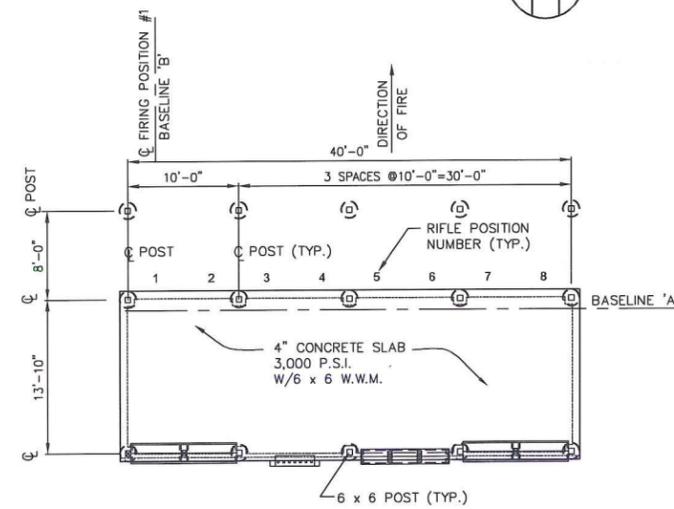
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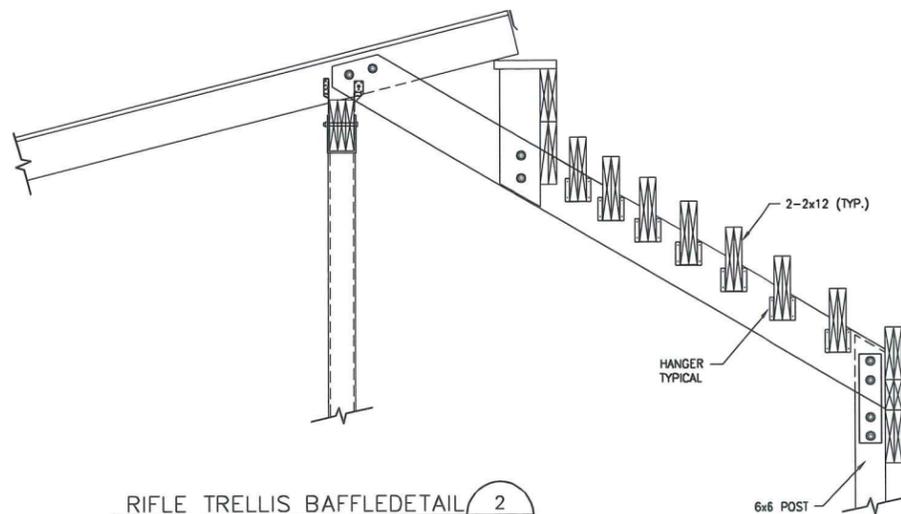
SECTION A
SCALE: 3/8" = 1'-0"



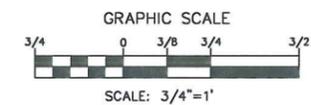
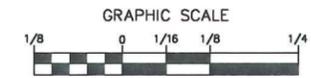
ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"



RIFLE SHOOTING SHED FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



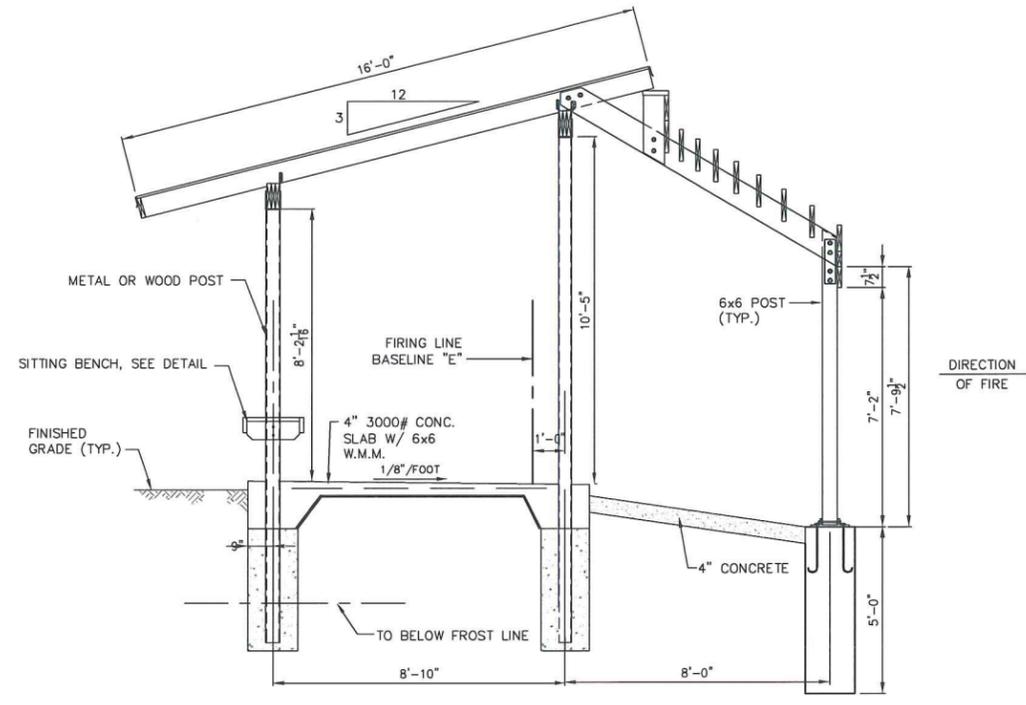
RIFLE TRELLIS BAFFLE DETAIL 2
SCALE: 3/4" = 1'-0"



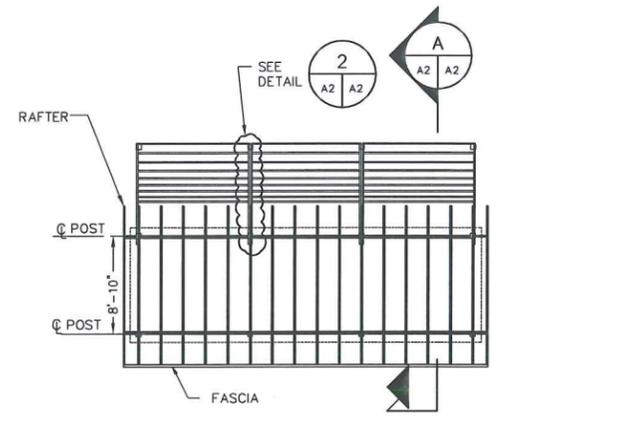
A1

<p>WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY</p>	<p>RIFLE COVERED FIRING LINE WITH BAFFLES PLAN AND SECTIONS</p>
<p>C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1000 UNIVERSITY AVENUE, SUITE 100 MADISON, WISCONSIN 53706 PHONE: 608-278-2254 FAX: 608-722-2297 WWW.CVA-ENGINEERS.COM</p>	<p>DATE: 08/22/12 REG. ENGR. NO. _____</p>
<p>DRAWN BY: _____ SUBMITTED BY: _____</p>	<p>CHECKED BY: C. VARGAS DATE: 08/22/12</p>
<p>C.A.D.D. FILE</p>	<p>PROJECT NO. 12014.00</p>
<p>SHEET</p>	<p>APPROVED FOR CONSTRUCTION DATE: _____</p>
<p>18 OF 24</p>	<p>NO. _____ REVISION _____ DATE _____</p>

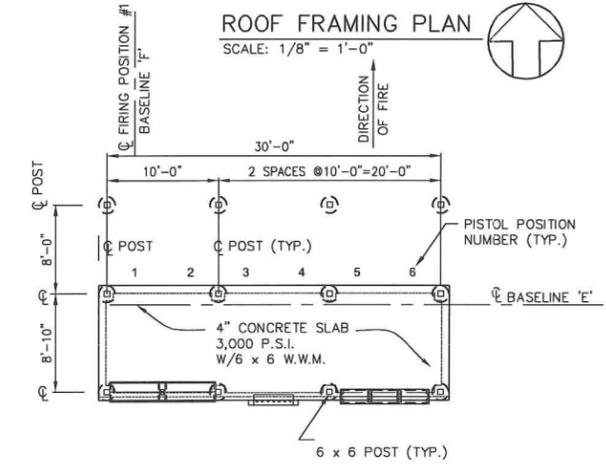
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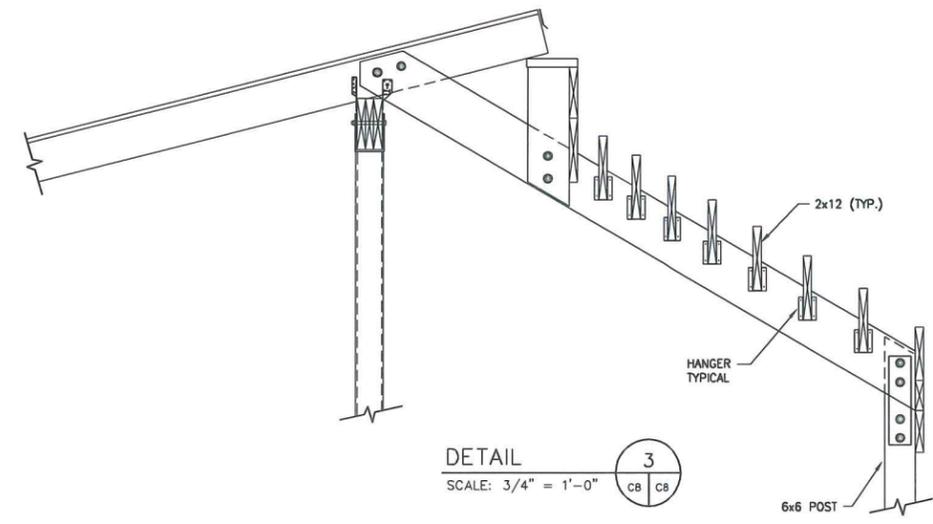
SECTION B
SCALE: 3/8" = 1'-0"



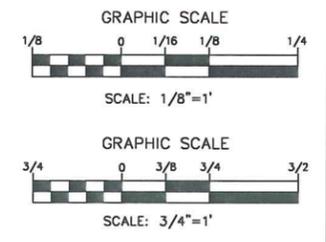
ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"



50 YD SHOOTING SHED FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



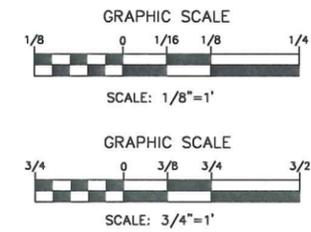
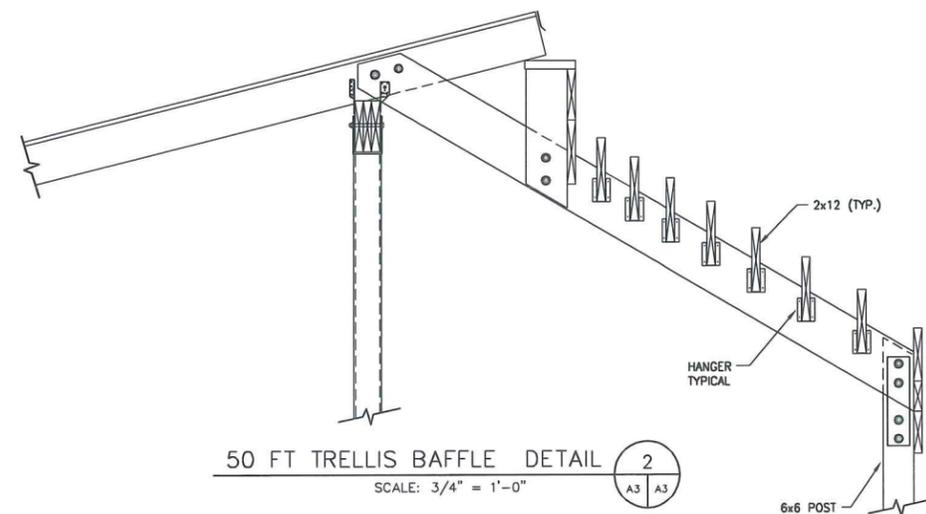
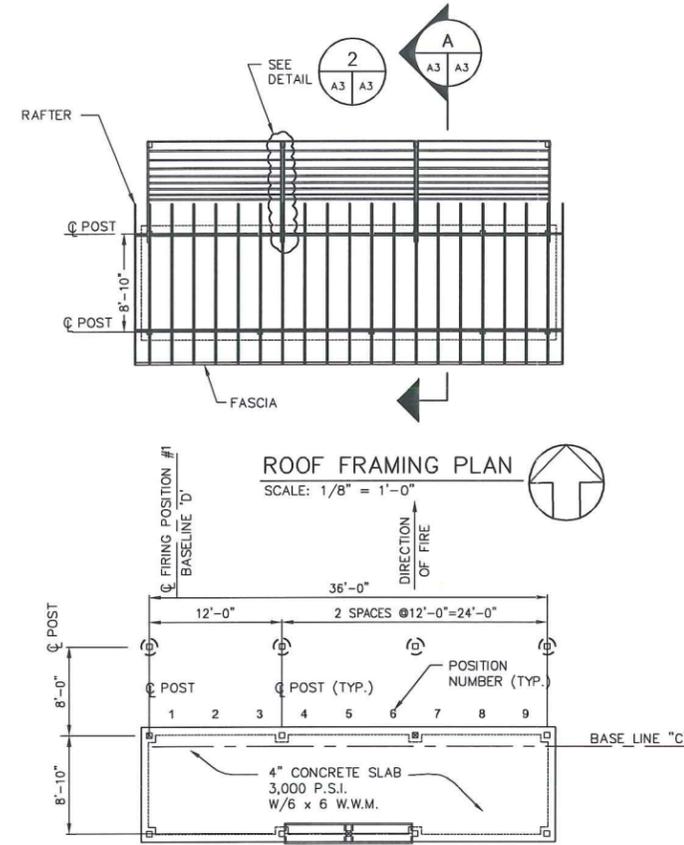
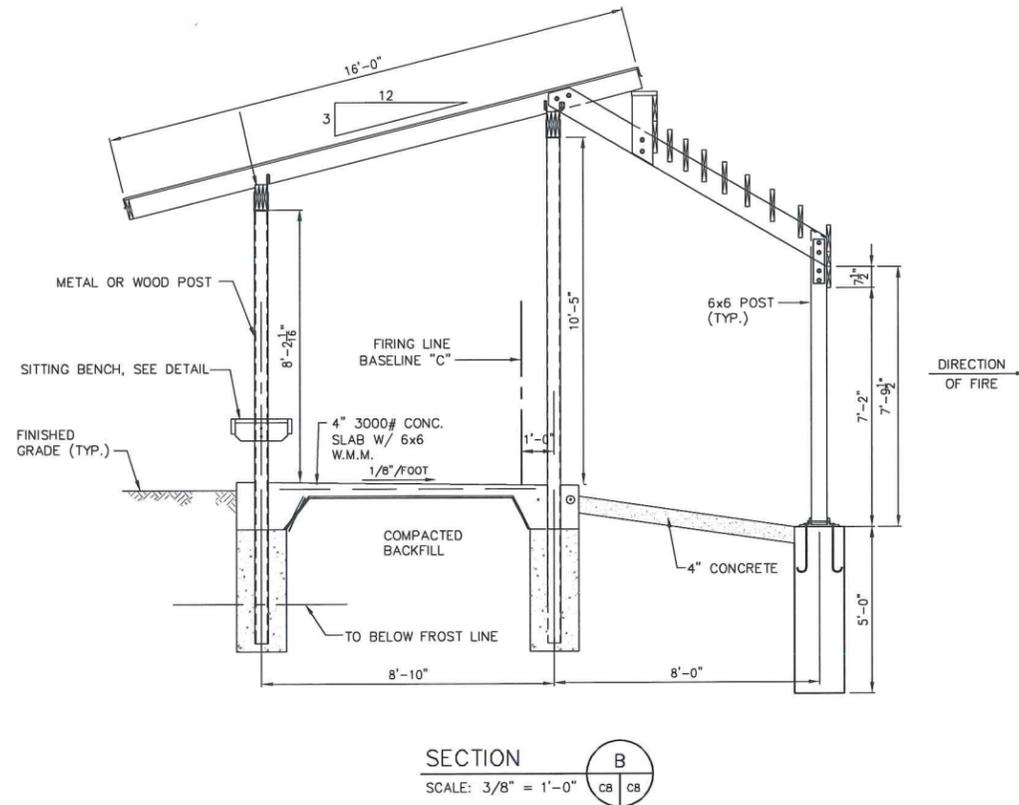
DETAIL 3
SCALE: 3/4" = 1'-0"



A2

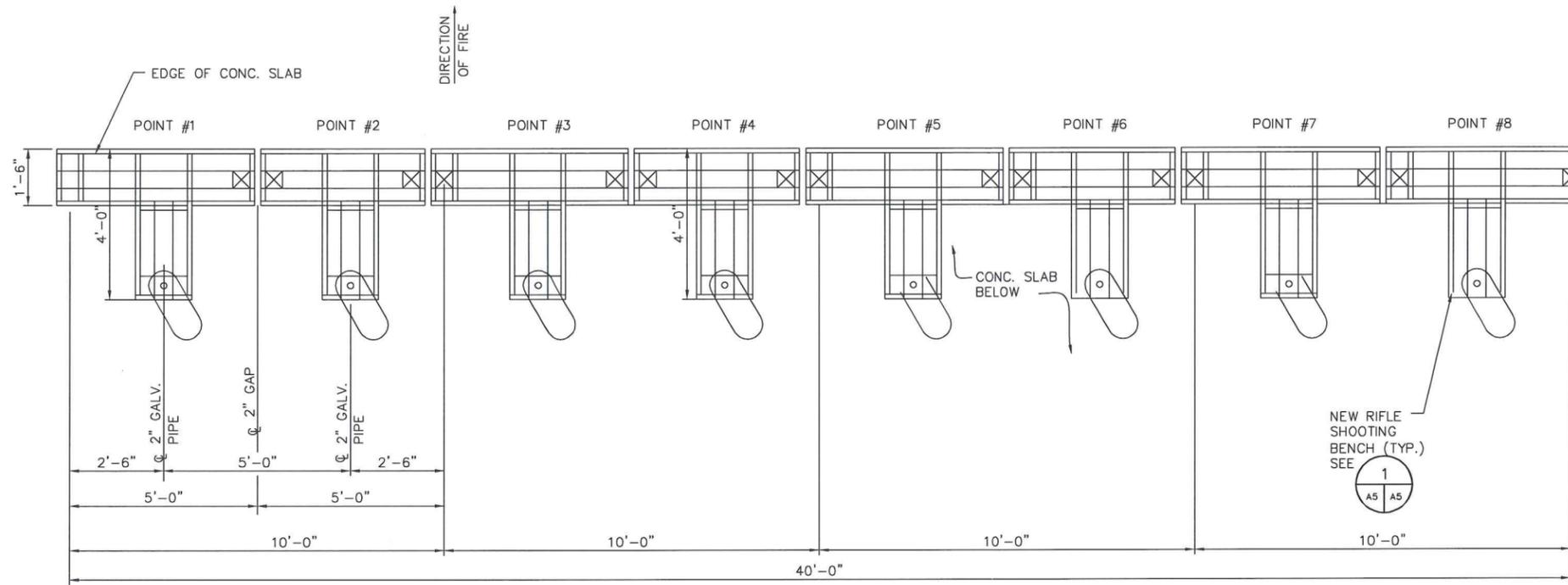
C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 1000 WISCONSIN STREET MADISON, WISCONSIN 53703 PHONE: (608) 261-1111 FAX: (608) 261-1112	
DRAWN BY: _____ CHECKED BY: C. VARGAS SUBMITTED BY: _____	DATE: 08/22/12 REG. ENGR. NO.: _____
PROJECT NO. 12014.00 SHEET 19 OF 24	
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY	
50 YARD PISTOL COVERED FIRING LINE WITH BAFFLES PLAN AND SECTIONS	
NO.	REVISION
DATE	BY

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DRAWN BY: _____	CHECKED BY: C. VARGAS	DATE: _____	REG. ENGR. NO. _____
C.A.D.D. FILE		PROJECT NO. 12014.00	
SUBMITTED BY _____		SHEET	
APPROVED FOR CONSTRUCTION		20 OF 24	
DATE: _____		BY _____	
REVISION		NO.	
50 FEET PISTOL COVERED FIRING LINE WITH BAFFLES		PLAN AND SECTIONS	
WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES		SHOOTING RANGE STUDY	
DO NOT SCALE DRAWINGS		A3	

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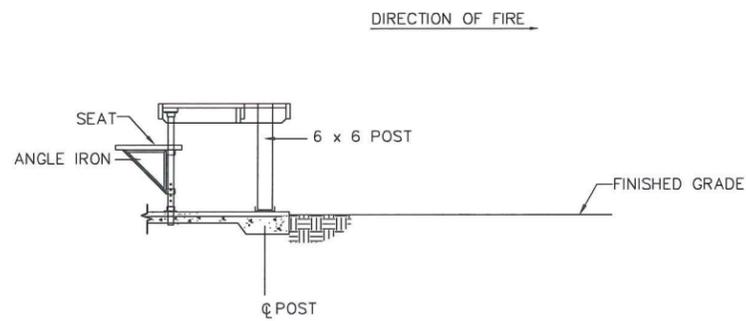
ALTERNATE RIFLE BENCH REST DETAIL

SCALE: 1/2" = 1'-0"



NOTES:

1. ALL LUMBER TO BE TREATED.
2. ALL HARDWARE AND FASTENERS TO BE HOT DIPPED GALVANIZED.
3. FINAL ELEVATIONS OF SITTING/SHOOTING BENCHES TO BE DETERMINED AT TIME OF CONSTRUCTION.
4. ALL LUMBER TO BE 2 x 6 UNLESS OTHERWISE SPECIFIED.
5. PROVIDE A SIGN WHICH READS "RIFLE RANGE".



RIFLE SHOOTING BENCH SECTION

SCALE: 3/8" = 1'-0"



NOTE: 6 x 6 ROOF SUPPORT POST NOT SHOWN FOR CLARITY.

NO.	REVISION	DATE	BY

RIFLE BENCH

WISCONSIN DIVISION
OF STATE YELLOWSTONE
FACILITIES
SHOOTING RANGE STUDY

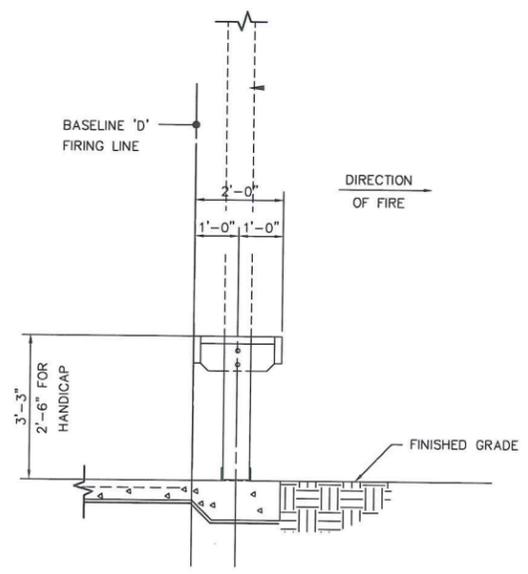


C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
PROFESSIONAL ENGINEERS
PHONE: 920.722.2297 FAX: 920.722.2297
CHECKED BY: C. VARGAS DATE: 08/22/12
SUBMITTED BY: REG. ENGR. NO. _____

C.A.D.D. FILE
PROJECT NO. 12014.00
SHEET 22 OF 24

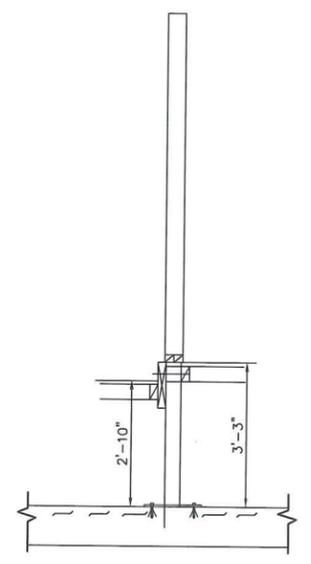
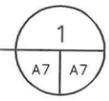
A5

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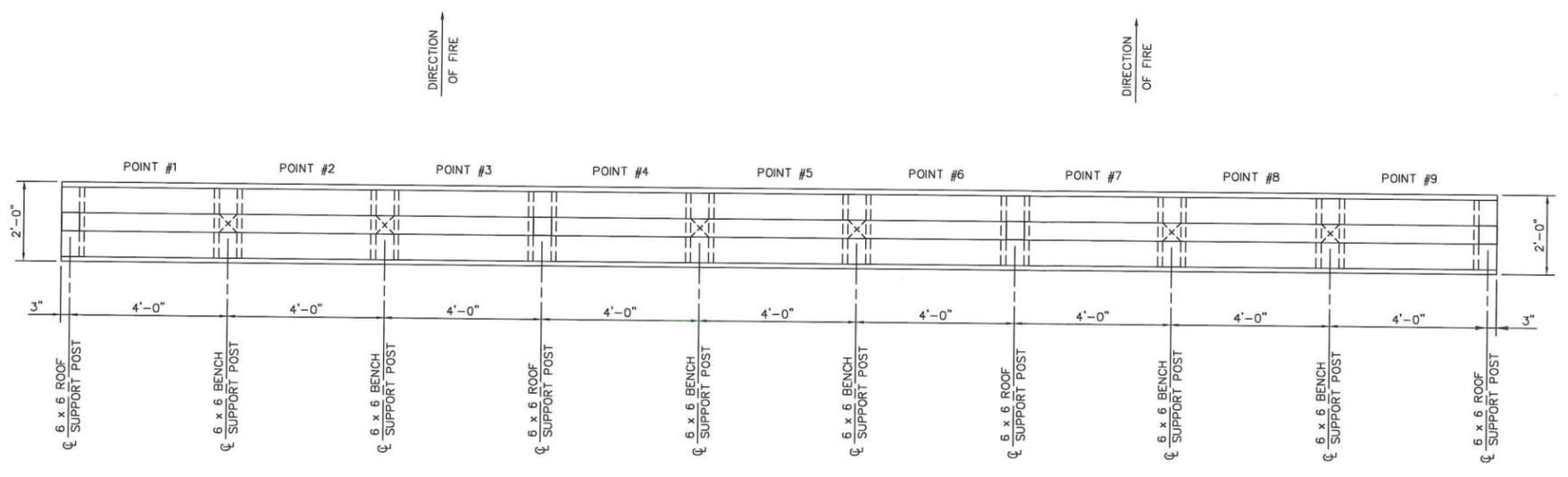
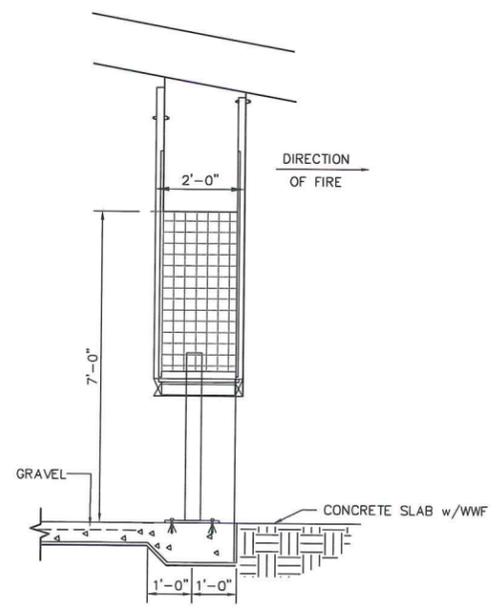
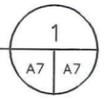
PISTOL BENCH DETAIL

SCALE: 1/2"=1'



PISTOL SCREEN DETAIL

SCALE: 1/2"=1'



50 FT PISTOL SHOOTING BENCH DETAILS

SCALE: 1/2" = 1'-0"



NOTES:

1. ALL LUMBER TO BE PRESSURE TREATED.
2. ALL HARDWARE AND FASTENERS TO BE HOT DIPPED GALVANIZED.
3. ALL LUMBER TO BE 2"x 6" UNLESS NOTED OTHERWISE.
4. ALL STEEL PAINTED.
5. ALL FASTENERS CORROSION RESISTANT.

A7

<p>C. VARGAS & ASSOCIATES, LTD. CONSULTING ENGINEERS 12014.00 PROJECT NO.</p>		<p>WISCONSIN DIVISION OF STATE YELLOWSTONE FACILITIES SHOOTING RANGE STUDY</p>		<p>50 FT PISTOL SHOOTING BENCH DETAILS</p>	
<p>DRAWN BY: _____</p>	<p>CHECKED BY: C. VARGAS</p>	<p>DATE: 08/23/12</p>	<p>REG. ENGR. NO. _____</p>	<p>NO.</p>	<p>REVISION</p>
<p>PROJECT NO. 12014.00</p>	<p>SHEET 24 OF 24</p>	<p>DATE</p>	<p>BY</p>	<p>DATE</p>	<p>BY</p>

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C. VARGAS & ASSOCIATES, LTD.
Consulting Engineers

MEMORANDUM FOR RECORD

TO: Rachel Tranel, P.E.
COLLINS ENGINEERS, INC

FROM: Ing. Clark Vargas, P.E.
C. VARGAS AND ASSOCIATES, LTD.

DATE: August 24, 2012

SUBJECT: **Wisconsin DNR Shooting Range Study**
Proj# 12014.00

Pursuant to our Draft Report Review Conference call on August 14, 2012, CVA has completed the Range Study of the Yellowstone Shooting Range. We have incorporated the comments and present our final report. The Mater Plan is as shown on Dwg. G-9.

CVA has utilized as the basis of the Analysis the “NRA Range Source Book” of 1999.

CVA has analyzed the facility as shown on Dwgs G-3 and G-4 with respect to safety of ballistics, sound, and lead abatement according to the Best Management Practices for Shooting Ranges.

In addition, CVA has considered the owner requested evaluation of the rotation of the 100 yard range to the East as shown on the Appendix A in the Wisconsin DNR Concept Plan and the owner agrees with our evaluation.

The Draft Concept Drawings are the result of the Study and depict the surface danger zone for an un-baffled range as shown on Dwg. G-5.

The study also provides the table top model of what sound level can be expected within 2 miles from the range site as shown on Dwg G-6

Range photographs are shown on Dwg G-7.

Project work schedule is as follows:

1. Analyzed of the existing Concept Plan prepared by the Wisconsin DNR dated February 2012.
2. Provided initial recommendations/modifications to be implemented and Draft Concept Plan July 18, 2012.
3. Provided subsequent coordination with DNR and Collins Engineers, Inc. regarding the Draft Concept Plan and recommendations/revisions to be pursued.
4. Provide final Concept Plans herein August 24, 2012.

The following was analyzed in the Range Study:

1. We considered the relocation of the 100 yard range rotated to the east as per DNR Draft Concept with the firing line shifted in line with the 50 yard range firing line.
CVA conducted a Range Site Safety Analysis evaluating the site and the proposed Wisconsin DNR Concept Plan. CVA determined that the rotation created a lot more of exposure of shot fall on the road, as shown on Dwg. G-5, than the existing range alignments. The higher backstop to the east does not afford much protection that far out. Based on that determination, we recommend the 100 yd range stay where it is and have a baffled front.
We are now working with partial topographic data, See Dwg G-3. The DNR topography provided only covers the limited area of the proposed work and is on an assumed datum EL 100' or so. CVA had to use the USGS maps available and was able to obtain a 10' interval USGS Quad map to confirm our conclusions. The USGS datum is at EL 900' comparatively speaking so the analysis on Dwg G-6 is independent of the assumed datum.
Either location of the 100 yard range will require a shooting shed with a trellis baffle to limit over shots.
We request that additional topography be provided on the State Plane Coordinate Datum to be able to design this site.
2. The Analysis then considered a short 50ft range for accommodation of concealed carry training.
We considered the Wisconsin requirements for Concealed Carry Training and Practice to be very necessary to the public and we recommended it. We provided a specific bay for this practice. Since this range results in a side hill, cut and fill material generated will be fully used to build the required berms in the project. Otherwise, more off-site borrow material will be required.

3. Provided for ADA access, parking lot and handicap parking. One each handicap space, concrete parking and sidewalks are provided for each range.

Since the range is ADA accessible, firing lines have to be concrete slabs.

4. Considered lowering the 50 yard range to accommodate ADA accessibility.

The entire range is graded to be ADA accessible.

5. Considered covered ranges for 100 yard firing line with a back to deter firing view from parking lot. We firmly recommend that the back of all firing lines be visible.

We recommend covered firing for all range as per DNR Concept Plan and modified to not include back walls.

6. Evaluated earthwork, berm grading, and drainage improvements. Total cut is 8,600 cy. Total fill is 7650 cy. Excess is 950 cy. Drainage is not yet fully designed.

7. Considered future lead removal in backstop concept. Ballistic sand backstop is proposed with adequate access for recycle and maintenance.

8. Provided for new fencing gates and signage, new target supports, and ADA shooting benches.

CVA proposes movable benches, the same style or fixed rifle and pistol benches as shown on dwgs. C-10 and C-11.

CVA recommends furring strip material 1" x 2" for the target holder that can easily be replaced as shown on dwg. C-12

4" x 4" lumber target holders as requested will be destroyed and are expensive to replace.

We recommend that the proposed shooting sheds be built with a diagonal trellis baffle in front so that all shots are contained within the backstop from the standing shooting position. These are shown on Dwgs. A-1, 2 and 3.

9. Recommended the alternative of a pit toilet. The State will handle the facility under a separate cover.

10. Included fine grading improvements to the existing entrance road. Included base for filling potholes and reshaping.

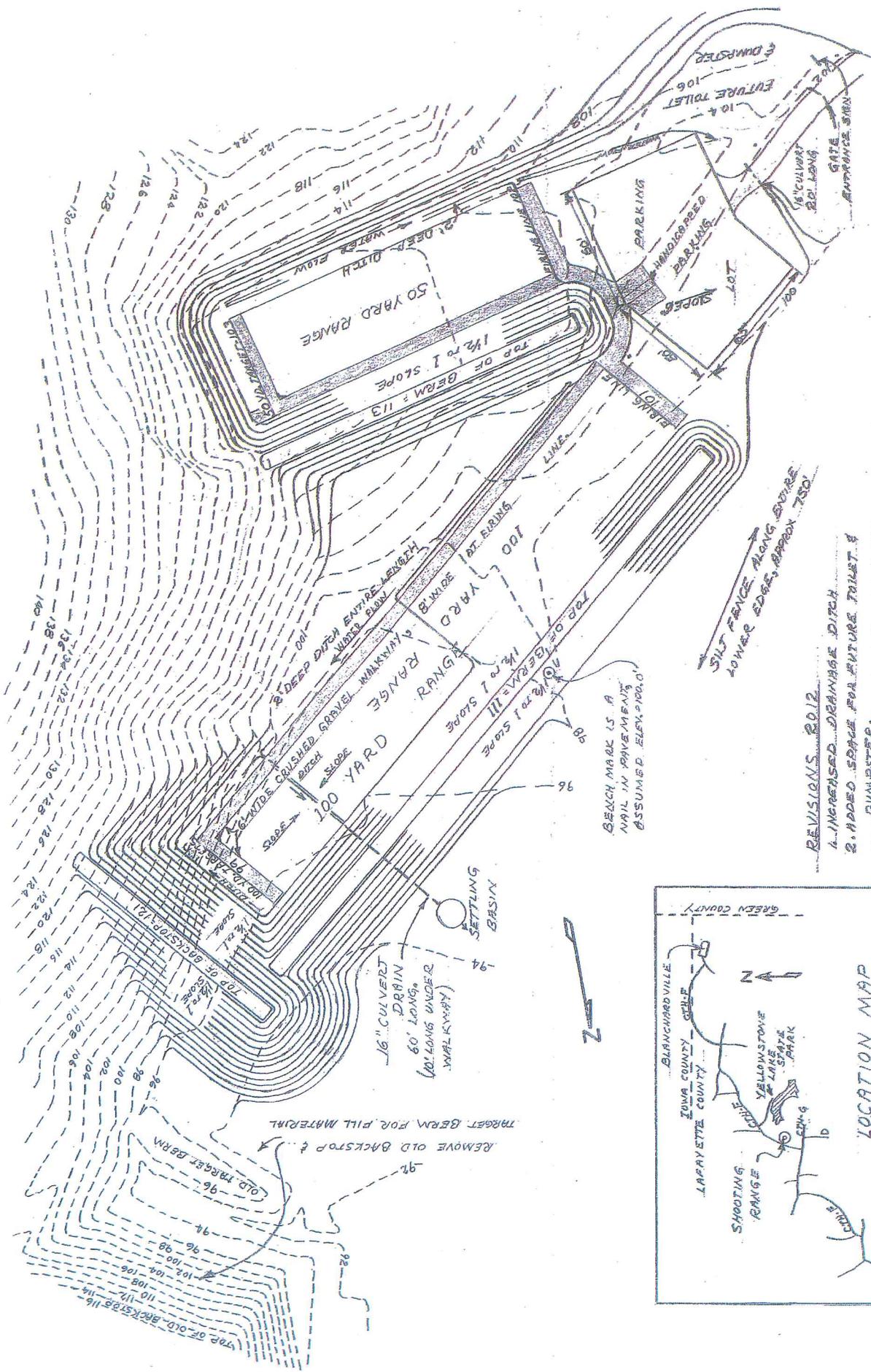
APPENDIX A

Wisconsin DNR Concept Drawings



C. VARGAS & ASSOCIATES, LTD.
Consulting Engineers

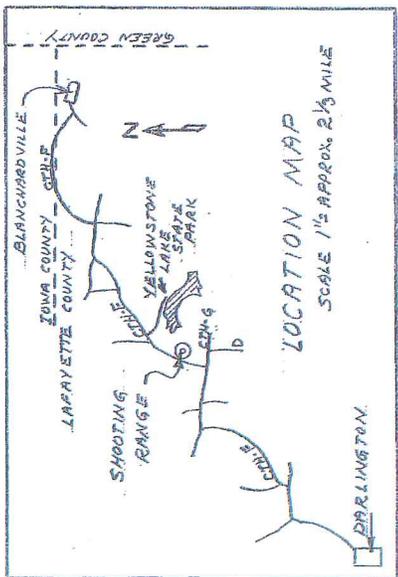
YELLOWSTONE SHOOTING RANGE
 SCALE 1" = 30'
 DRAWN BY GERALD W. DORSCHEID
 SHEET 1 OF 4



- REVISIONS 2012
1. INCREASED DRAINAGE DITCH
 2. ADDED SPACE FOR FUTURE TRINET & DUMPSTER.
 3. ENTRANCE SIGN & GATE LOCATIONS.
 4. COVERED FIRING POINTS
 5. SILT FENCE

BEACH MARK IS A NAIL IN PAVEMENTS ASSUMED ELEV. 100.0'

SILT FENCE ALONG SWIRE LOWER EDGE, APPROX. TSD



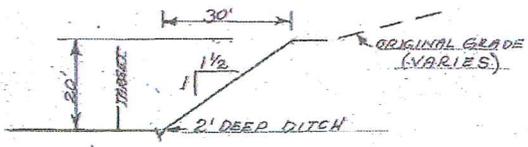
REMOVE OLD BACKSTOP & TARGET BERM FOR PILL MATERIAL

16" CULVERT DRAIN 60' LONG, 60" UNDER WALKWAY

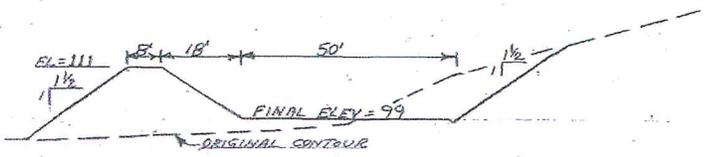
SETTLING BASIN



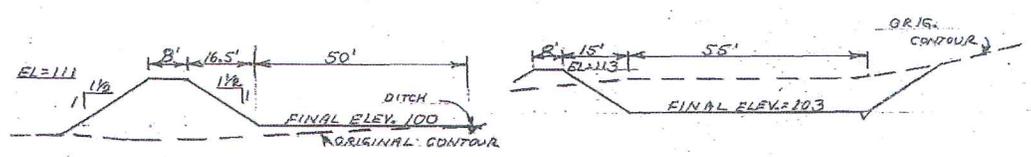
- NOTE:** (SUGGESTED CONSTRUCTION SEQUENCE)
1. REMOVE TOP 6" OF TOPSOIL AND STOCK PILE.
(STUMPS TO BE REMOVED AND DISPOSED OPPOSITE)
 2. AFTER SHARING RANGE, APPLY 6" TOPSOIL TO ALL SURFACES, EXCEPT CRUSHED GRAVEL WALKWAYS.
 3. SEEDING.
 4. INSTALL CULVERTS DURING #2.
 5. INSTALL WALKWAYS & HANDICAPPED PARKING STALLS.
 6. INSTALL TARGET SUPPORTS.
 7. SHOOTING BENCHES AND COVERED FIRING PLANTS UNDER SEPARATE CONTRACT.



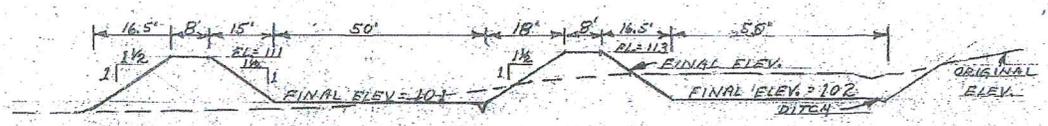
TYPICAL BACKSTOP CROSS SECTION
SCALE 1" = 20'



CROSS SECTION AT 100 YARD LINE
LOOKING DOWN RANGE
SCALE 1" = 20'

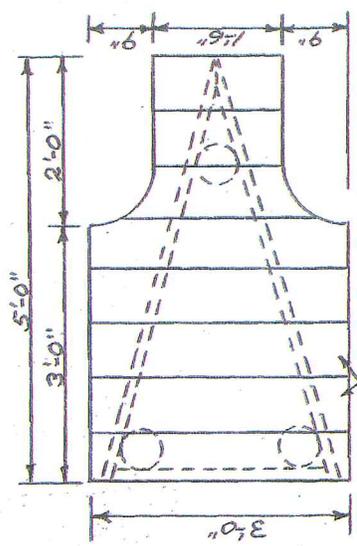


CROSS SECTIONS AT 50 YARD LINES
LOOKING DOWN RANGE
SCALE 1" = 20'

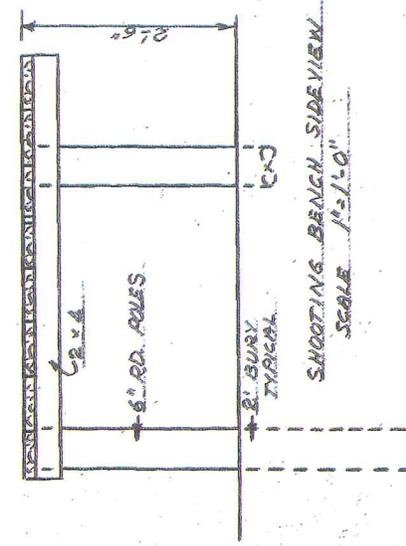


CROSS SECTION AT FIRING LINE
LOOKING DOWN RANGE
SCALE 1" = 20'

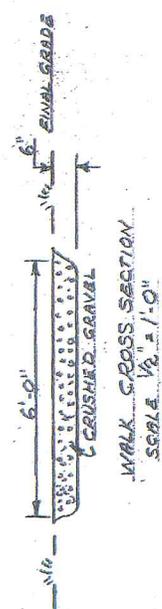
YELLOWSTONE SHOOTING RANGE
MAY 2007 SCALE 1" = 20' CROSS SECTIONS
DRAWN BY GERALD W. DORSCHWEID
SHEET 2 OF 4



SHOOTING BENCH TOP
SCALE 1"=1'-0"

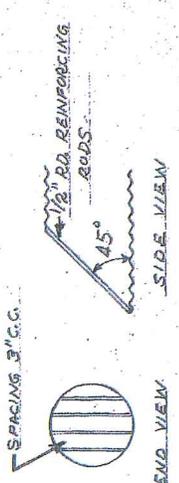


SHOOTING BENCH SIDEVIEW
SCALE 1"=1'-0"



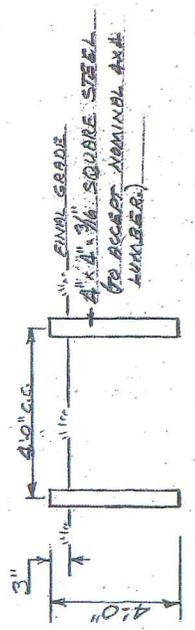
WALK CROSS SECTION
SCALE 1/2"=1'-0"

- NOTE:**
- 1. ALL LUMBER PRESSURE PRESERVATIVE TREATED.
 - 2. 6 BENCHES ON 50 YARD RANGE.
 - 3. BENCHES ON 100 YARD RANGE.
 - 4. ALL BENCHES UNDER SEPARATE CONTRACT.



END VIEW
SIDE VIEW

CULVERT ENDS - 6 REQUIRED
SCALE 3/4"=1'-0"

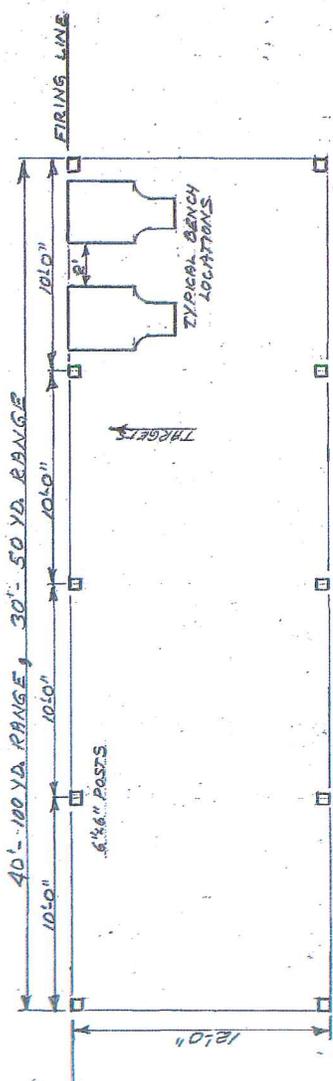


TARGET SUPPORTS - 14 SETS REQ.
NO SCALE

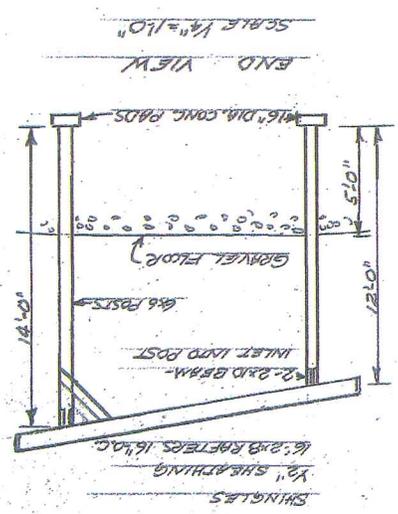
YELLOWSTONE SHOOTING RANGE

BENCH, WALK, CULVERT, & TARGET SUPPORT DETAILS
SCALE AS SHOWN

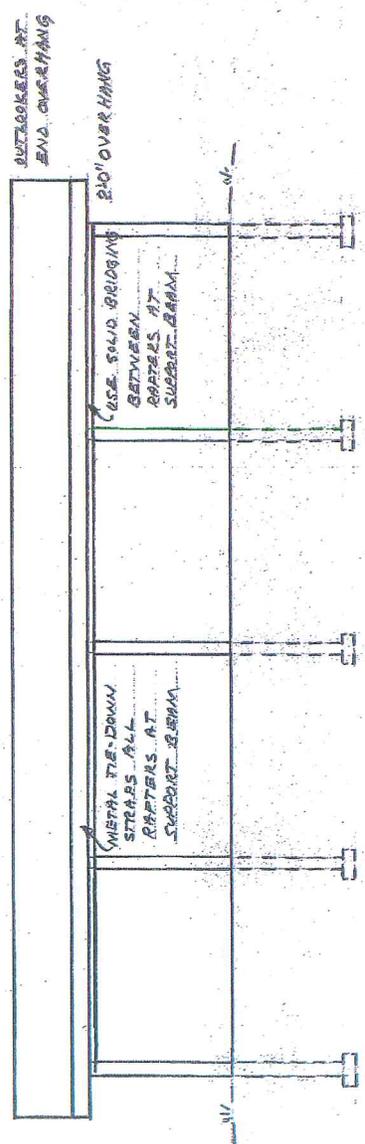
DRAWN BY GERALD W. DOERSCHIED
SHEET 3 of 4



TOP VIEW OF FLOOR
SCALE 1/4" = 1'0"



END VIEW
SCALE 1/4" = 1'0"



BACK - LONGITUDINAL VIEW
SCALE 1/4" = 1'0"

YELLOWSTONE SHOOTING RANGE

FIRING POINT COVER 2-18-12

SCALE AS SHOWN

DRAWN BY GERRARD W. DOBSCHEWICZ

SHEET 4 OF 4

APPENDIX B

PHOTOLOG



C. VARGAS & ASSOCIATES, LTD.
Consulting Engineers



Photograph 1. Looking South towards storage building located on property.



Photograph 2. Looking East towards 50 Yard Range Targets



Photograph 3. Looking North from 50 Yard Range.



Photograph 4. 50 yard Range Targets



Photograph 5. 50 Yard Range Backstop



Photograph 6. Looking West towards facility entrance/driveway from 50 Yard Range



Photograph 7 Dumpster located west of 50 Yard Range



Photograph 8 Looking North from 50 Yard Range on top of berm



Photograph 9. Looking Northwest behind signs at 50 Yard Range



Photograph 10. Looking Northeast towards 100 Yard Range Targets



Photograph 11. Looking North towards 100 Yard Range Firing Line



Photograph 12. Looking Northeast at gravel access to 100 Yard Range Targets



Photograph 15. Looking Southwest from 100 Yard Range Target location



Photograph 16. 100 Yard Range Backstop



Photograph 17. Looking West along north side of 100 Yard Range



Photograph 18. Looking east along south side of 100 Yard Range



Photograph 19. Stream along north edge of facility



Photograph 20. Looking West at Stream along north edge of facility near 100 Yard Range



Photograph 21. Looking South from gravel access road along 100 Yard Range



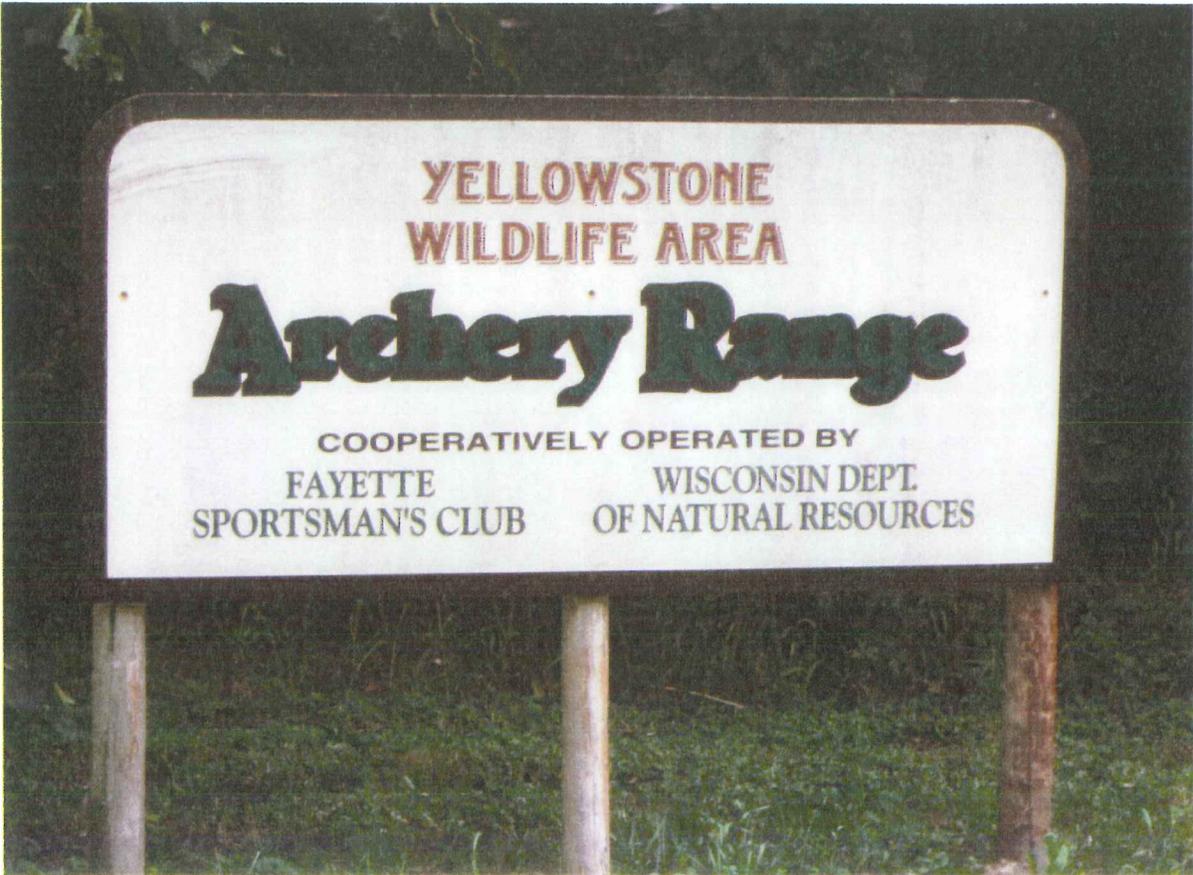
Photograph 22. Looking Northwest from 100 Yard Range gravel access road towards, west of firing line



Photograph 23. Looking South at maintained path, west of Ranges



Photograph 24. Sign at maintained path noted in previous picture



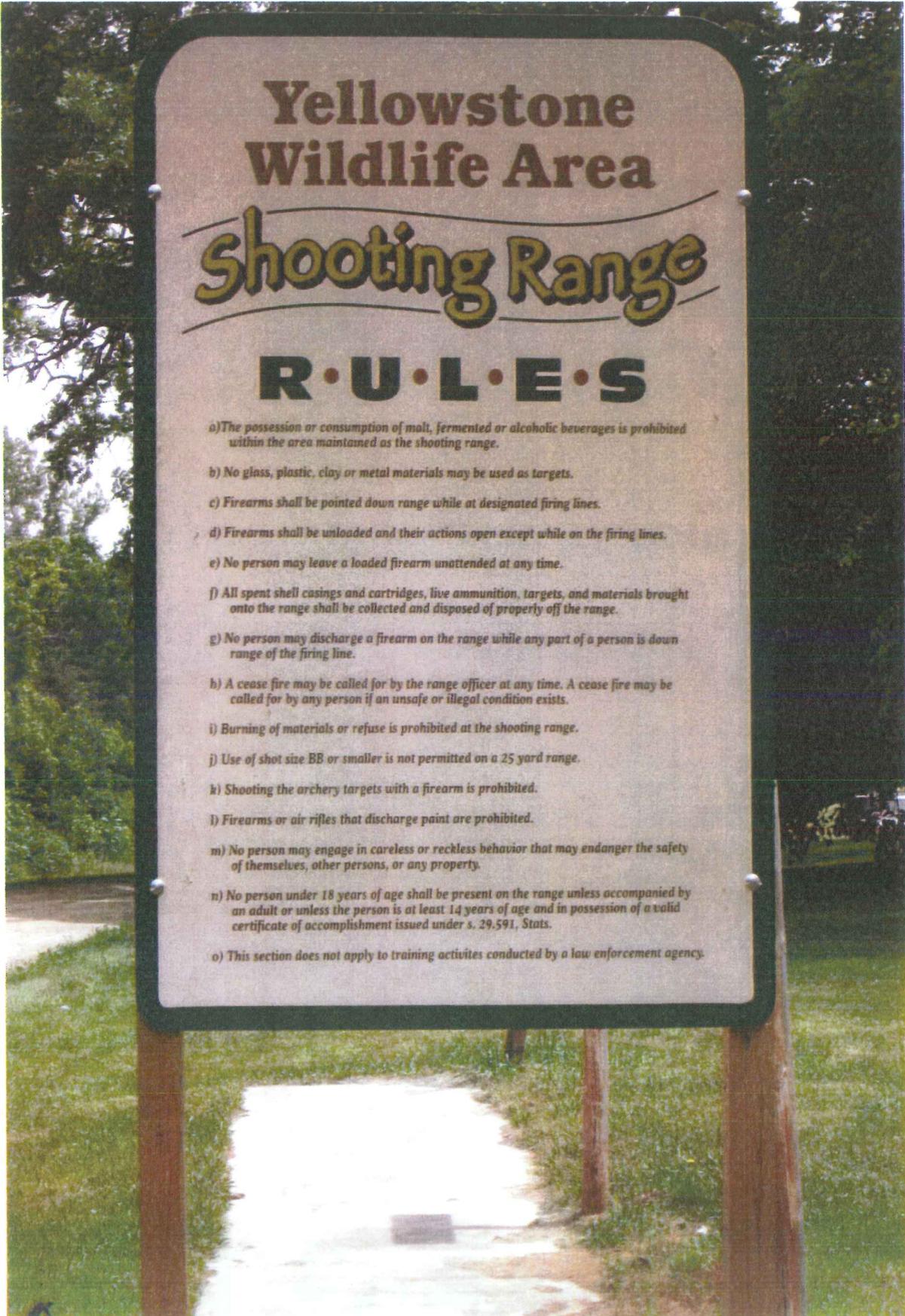
Photograph 25. Entrance sign



Photograph 26. Cleared area for miscellaneous training



Photograph 27. Sign at cleared area noted in previous picture



Photograph 28.

Sign along gravel entrance road into the facility



Photograph 29. Buried telephone cable marker located west of ranges at gravel entrance road to the facility



Photograph 30. Looking West from entrance towards facility along gravel entrance road



Photograph 31. Entrance sign located along north side of gravel entrance road



Photograph 32 Informational Sign



Photograph 33. Gate at entrance to facility



Photograph 34. Upstream end of culvert crossing gravel entrance road



Photograph 35. Looking Southwest at 50 Yard Range from bottom of berm

APPENDIX C

VAULTED BATHROOM



C. VARGAS & ASSOCIATES, LTD.
Consulting Engineers

Fed. Supply Contract #GS-07F-0095M
Pennsylvania COSTARS Contract #014-096
Ohio STS Contract # 7756400307
CMAS CONTRACT #4-04-54-0011A State of California Contractor's License # 849246
TXMAS CONTRACT # TXMAS-5-56030
New Mexico Price Agreement #70-000-00-04031

BUDGETARY ESTIMATE ONLY - NOT FOR PURCHASE DOCUMENTS		
Date:	7/16/2012	
Job:	Wisconsin Shooting Range	
Customer:	C. Vargas and Associates, LTD	
Contact:	Clark Vargas	
Address:		
City:		
State:	WI	Zip Code: 54602
Phone:		
Fax:		
E-mail:		

This is not a formal quote or proposal from Romtec, this is an 'estimate only' given for budgetary purposes - costs will change over time				
Quantity	Model	Description	Comm. Price	Extension
1	1018	SST Aspen Concrete Pioneer Double with steel, wood or log post & beam covered entry (6' roof extension) Building Kit Package	\$19,663.00	\$19,663.00
Building estimate includes all accessories, fixtures, and building components for a permanent site-built structure such as doors, windows, locks, toilets, sinks, faucets, flush valves, roofing, etc. Does not include concrete and rebar for footing, foundation, and slab, however those are included below in the installation estimate. Custom items and/or upgrades will typically affect the costs of your project.				
SUBTOTAL				\$19,663.00
DISCOUNT: Government Discount				-\$983.15
Design Services			\$1,850.00	\$1,850.00
Shipping & Handling Estimate From Roseburg, OR to:			Zip Code:	\$5,312.50
Building Subtotal				\$25,842.35
INSTALLATION ESTIMATE ONLY				
BUILDING TURNKEY INSTALLATION ESTIMATE: This is an estimate only for construction of your building. THIS IS NOT A QUOTE. Too much information is unknown at this time to provide a real or accurate quote. Romtec does assume that this is a prevailing wage job which is semi-truck accessible. This includes site prep, building erection and finish work. Nothing outside the footprint of the building is included. This Turnkey Installation assumes there are no bonding requirements.				Installed by Others
TOTAL				\$25,842.35

EXCLUSIONS: All equipment, trades, and labor required to unload and install the building and fixtures. Other exclusions: engineered fill, concrete, slab sealer, mortar, grout, paint, sidewalks, plumbing rough-in, plumbing installation and trim, floor drains, drain valves, backflow check valve, electrical rough-in, electrical installation and trim, circuit breakers, fluorescent tubes for light fixtures, switches, and outlets.	
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ROMTEC IS HUBZONE CERTIFIED

DO NOT ISSUE A PURCHASE ORDER BASED ON THIS BUDGETARY ESTIMATE - YOU MUST ASK ROMTEC FOR AN ACTUAL QUOTATION.

Romtec cannot assure you that the actual costs will be similar to the estimate as other factors come into play. Romtec cannot be legally held to this estimate, however, we will assist you in every way possible to meet budget and job restraints. Many factors, including site conditions, local labor costs, custom materials, upgrades, etc. can affect the overall cost of a product. Until we actually cost out the exact design you approve, this estimate is simply to help you have a budget idea in the earliest stages of a project.

* This quote does not include any applicable sales or use taxes. Subsequent Purchase Order must include sales or use tax unless customer provides Romtec with a resale certificate or proof of exemption.

