

DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

FOR

THE GATE 5 REDEVELOPMENT

AT

F. E. WARREN AIR FORCE BASE, WYOMING

28 MAY 2020

Prepared by: 90 CES/CEIEC
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1. INTRODUCTION

F. E. Warren Air Force Base (FEW) proposes to reconfigure the Gate 5 Entry Control Point (ECP) to address safety and security deficiencies. The FEW Environmental Planning Function (EPF) conducted this Environmental Assessment (EA) for the proposed action in accordance with 32 CFR 989 *Environmental Impact Analysis Process*. This EA incorporates by reference the *Final Programmatic Environmental Assessment (EA) for Minor Construction Projects at F. E. Warren Air Force Base, Wyoming* which resulted in a Finding of No Significant Impact (FONSI) and was signed by the 90MW/CC on 7 August 2013.

2. PURPOSE AND NEED FOR ACTION

There are two major purposes for the proposed action. The primary purpose is to eliminate traffic hazards caused by the current layout of Central Avenue and the Gate 5 ECP. During high volume traffic hours, this critical access point features significant traffic queuing that affects north and southbound traffic along Central Avenue. In addition to providing access to Gate 5, Central Avenue also provides access to the Wyoming National Guard's Joint Forces Readiness Center (JFRC), the Wyoming National Guard Armory, the Wyoming Game and Fish Department Headquarters, and the Wyoming Department of Transportation Headquarters. During periods of peak traffic, Department of Defense (DoD) employees and other travelers are put into an unsafe situation by having to swerve into oncoming traffic to avoid delays in the westbound lane heading into the Gate 5 ECP. A new ECP is planned to be constructed to the north of Central Avenue between the Joint Forces Readiness Center and Wyoming National Guard buildings.

The second purpose of this project is to re-design the Gate 5 ECP to meet DoD requirements for Anti-Terrorism/Force Protection (ATFP). Currently, the Security Forces personnel that operate the ECP do not have enough time to safely deploy the existing final denial Active Vehicle Barrier (AVB). The distance from the vehicle checkpoint to the AVB is not sufficient to successfully deploy this counter measure during a breach attempt. The current design proposes a new exit drive from the gatehouse area west to Roger's Road. The new drive will serve only passenger vehicles not commercial vehicles. The proposed drive features a serpentine alignment to slow threat vehicles but is wide enough to allow trucks to maneuver and exit the base. There will be a new AVB at the end of the new exit drive to stop threat vehicles. The design of the exit lane along with the final denial barrier will meet all applicable DoD requirements to deter threat vehicles. The exit drive will intersect with Roger's Road using a new single lane roundabout.

The need for the proposed action is to alleviate traffic congestion, address safety deficiencies, meet the Department of Defense requirements for ECPs and to improve the security posture of the Gate.

3. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

A description of the proposed action and alternative is as follows:

- 3.1. Alternative 1, Redevelopment of Gate 5 (Preferred Alternative): The proposed action will construct two additional lanes of Central Avenue approximately ½ mile in length. The widening will originate from the transition of the four lane section of Central Avenue, which is owned by the City of Cheyenne, and the two lane section owned by FEW. These improvements will accommodate the additional traffic from both the JFRC, and the sole Commercial Vehicle Inspection facility currently located at Gate 5. Additionally, the project will reconfigure the existing roadway west of the Guard House to increase the window for Security Forces to deploy the final denial barrier in the event of a security threat.

This gate is designated as the Primary Explosive Route for critical ICBM Weapons System Mission Convoys. The existing two lane roadway will increase from 5,574 square meters (sm) of pavements into an estimated 11,140 sm with two additional lanes. All other necessary work such as traffic signals, storm water drainage tiles, curb and gutter, and fence realignment will be included.

- 3.2. Alternative 2, Reopen Gate 3: This alternative would re-open Gate 3, which is located along the southern portion of the base and intersected with Happy Jack Road. This alternative would require significant improvements and the construction of a new ECP. This option was not carried forward for analysis for two major reasons. The first is that Happy Jack Road would require significant upgrades to accommodate the amount of traffic volume currently carried by Gate 5. Specifically, Gate 3 lacks an enclosed commercial inspection facility and is not equipped to handle commercial traffic. The lack of a covered commercial inspection bay does not meet the requirements and standards for secure DoD and Air Force vehicle inspection as detailed in UFC 4-022-01 *Security Engineering: Entry Control Facilities / Access Control Points*. The second is that the presence of Gate 2 would render the addition of a gate at this location redundant. For these reasons this alternative was not carried forward for detailed analysis.
- 3.3. Alternative 3, no action alternative: This alternative would take no action. This action is not viable as it would not address any of the safety issues that currently exist at Gate 5. In addition, the no action alternative would not address the current ATFP deficiencies at Gate 5.

4. SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) is required by the Air Force Environmental Impact Analysis Process (32 CFR § 989), the National Environmental Policy Act (Public Law 91-190) and Council on Environmental Quality (CEQ) Regulations (40 CFR §1500-1508). This EA identifies, describes, and evaluates the potential direct, indirect, and cumulative environmental impacts that could result from the execution of the proposed action.

FEW conducted multiple scoping meetings after review of all current design documents and relevant design specifications. FEW reviewed all available environmental documentation in order to sharpen the focus of this analysis. This review determined that the proposed action would have no potential to impact the Air Installation Compatible Use Zone/Land Use, Hazardous Materials/Waste, or Socioeconomic Resources. FEW did not carry any of these categories forward for analysis in this EA. During the scoping process the Environmental Planning Function (EPF) determined that the proposed action has the potential to affect Air Quality, Water Resources, Safety/Occupational Health, Biological Resources, Cultural Resources and Geology/Soils.

5. AFFECTED ENVIRONMENT

- 5.1. Air Quality. Under provisions of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for air pollutants considered harmful to public health and the environment. The CAA established two types of national air quality standards. One set of limits (the primary standard) protects health; another set of limits (the secondary standard) is intended to prevent environmental and property damage. A geographic area that meets or does better than the primary standard is called an attainment area; areas that don't meet the primary standard are called non-attainment areas. Laramie County is designated as an attainment area for all criteria air pollutants. Air quality also includes impacts arising from noise. Existing sources of noise on the installation include fixed-wing aircraft from the Cheyenne Airport, rotary-wing aircraft from the installation's helicopter operations, the Burlington Northern Santa Fe railroad, vehicle traffic on surface streets, and dispersed construction areas. Also, Explosive Ordnance Disposal (EOD) activities occurring on base also contribute to noise as well as the adjacent Cheyenne Skeet and Trap Club located to the south of the project area.
- 5.2. Water Resources: The proposed action has the potential to impact water resources. The installation is located within the Crow Creek Watershed, which is part of the South Platte River Basin. Perennial surface water resources located on the Base include Diamond Creek, Crow Creek, North and South Pearson Lakes, and Lake Centennial. The installation contains approximately 127 acres of wetlands delineated in the U.S. Fish and Wildlife Service National Wetlands Inventory. While variable, depth to groundwater generally exceeds five feet throughout the installation.
- 5.3. Safety and Occupational Health: The proposed action has the potential to impact safety and occupational health, specifically traffic congestion. Traffic congestion on Base normally peaks in the early morning, during lunchtime, and at the end of the workday. Congestion occurs at Gate 1, Gate 2, and Gate 5 as people enter and leave the Base. Traffic congestion also occurs at the intersection of Rogers Drive, Randall Avenue, and Vesle Drive. Traffic congestion at the FEW ECPs has the potential to impact traffic along the I-25 Corridor. Traffic counts per day for Central Avenue east of the JFRC number approximately 3,500 and includes approximately 150 commercial vehicles. Traffic counts for Central Avenue east of

Rogers Road number approximately 2,500 total vehicles per day with approximately 125 commercial vehicles.

- 5.4. Biological Resources: The proposed action has the potential to impact biological resources including wetlands/floodplains, flora and fauna. The proposed action has the potential to impact migratory birds and is within the U.S. Fish and Wildlife Service (USFWS) defined Area of Influence (AOI) for several threatened and endangered species. Threatened species, under the Endangered Species Act (ESA), are any species that are likely to become and endangered species within the foreseeable future. Endangered species are those species that are in danger of extinction throughout all or a significant portion of their range. The federally listed species with AOIs covered by the project area include: the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*), the Piping Plover (*Charadrius melodus*), the Ute Ladies'-tresses (*Spiranthes diluvialis*), the Western Prairie Fringed Orchid (*Platanthera praeclara*), the Least Tern (*Sterna antillarum*), the Whooping Crane (*Grus Americana*) and the Pallid Sturgeon (*Scaphirhynchus albus*) None of the project area is within any designated critical habitat as defined by the USFWS. The proposed action is unlikely to have any significant impact on non-threatened and non-endangered flora and fauna in the area
- 5.5. Cultural Resources: Cultural Resources in the vicinity include the Fort D. A. Russell National Historic Landmark District (NHLD). Originally designated as a Historic District in 1969 under the provisions of the National Historic Preservation Act [16 U.S.C. 470 et seq.], FEW was later designated a National Historic Landmark in 1975. The Fort D. A. Russell NHLD features over 240 the Fort D. A. Russell historic properties. The vast majority of these properties are located within the central core of the base along Randall Avenue to the south of the proposed action. FEW also contains 131 archaeological sites; of which, 71 are eligible or potentially eligible for inclusion in the National Register of Historic Places (30 C.F.R. 60).
- 5.6. Geology/Soils: FEW is located within the High Plains section of the Great Plains Physiographic Province. Rocks within the region range in age from Pre-Cambrian to recent, and are composed primarily of shale with small amounts of sandstone, siltstone, and limestone. The base is in minor seismic event probability zone. Base topography is characterized by broad plateaus that are nearly flat in the historic core, and increase in slope along the ridgelines and along Crow Creek. Elevation ranges from 6,080 feet in the southeastern portion of the base, to 6,365 feet in the northern portion. Most areas with slopes of 10 percent or greater, which are generally considered unsuitable for construction, are located in the undeveloped northern third of the base. The predominant soil series on the base is classified texturally as loamy, with an average topsoil depth ranging from four to six inches. The subsoil is primarily alluvial clay that extends from a depth of approximately 6 to 36 inches.

6. ENVIRONMENTAL IMPACTS

Environmental Impact analysis includes consideration of direct, indirect and cumulative impacts.

6.1. Air Quality: A short-term increase in fugitive dust will be generated by ground disturbing activities during construction activities. There will also be a short-term increase in vehicle emissions generated by construction equipment. Increase in localized vehicle emissions associated with operation and use of the gates is not expected, as these gates are already in use. FEW is within an attainment area, therefore, an air conformity analysis is not needed. The proposed actions may have a positive impact on local air quality. Better traffic patterns should facilitate more efficient entry onto FEW and reduce the amount of time vehicles spend idling. Improvements to Gate 5, when combined with the impacts of other projects on or proximate to the base, does not significantly impact installation air quality. Planned future land use patterns will not change significantly from existing land use configurations. Planned future development is not expected to change the air quality status on the base or in the surrounding area.

There will be a short-term increase in noise associated with construction activities. However, noise generated by construction activities should not constitute a nuisance. Since noise associated with traffic is already present in each of the proposed locations, long-term impacts are expected to be insignificant. Improvements at Gate 5, when combined with other projects on or proximate to the base, will not cause significant noise impacts. Planned future land use patterns will not change significantly from existing land use configurations. The increase in noise, other than during construction activities, resulting from future development is expected to be insignificant.

6.2. Water Resources: A Wyoming Pollutant Discharge Elimination System (WYPDES) storm water construction permit will be required. A storm water construction permit will be needed because construction activities will disturb more than one acre. During previous construction at Gate 5, a riparian area was created to the immediate south of the project area, which serves as a detention pond for storm water. Any storm water runoff generated by the increased impervious surface is expected flow into this riparian area, possibly increasing its size. Planning and management of storm water at Gate 5 follows Section 438 of the Energy Independence and Security Act (EISA) which dictates “pre-development hydrology” is preserved at Federal facilities to the maximum extent practicable.

The proposed drainage plan for the new improvements generally matches the existing plan to the maximum extent possible. Drainage from the guard house and east side of the ECP will continue draining to the south into the existing pond area at the same low points. Storm water from the proposed driveway improvements on the west side of the gatehouse will flow to the east, southeast through a proposed curb cut to the existing detention pond. Storm water from the Central Avenue improvements will sheet flow across the new pavement and into the existing wetland. There is an existing corrugated metal pipe (CMP) culvert which crosses Central Avenue that will be removed and replaced as part of the new improvements to accommodate the widening of Central Avenue. The new culvert will be reinforced concrete

pipe (RCP) and will match the existing culvert diameter of 18". The new culvert will continue conveying flows from the north to the existing wetland as originally intended. Drainage from the new exist drive will flow from a high point in the center of the drive to low points on the east and west sides of the drive. Both low points will include curb cuts and rip rap pads to prevent erosion at the edge of the pavement section. Drainage from the new roundabout and improvements along Roger's Road will sheet flow from the pavement section to the adjacent roadside ditches. There are two proposed 24" RCP culverts located under the new exit drive. These culverts will help maintain the overflow path from the east basin. The low points at the east and west ends of the new exit drive are 6165.24 and 6166.50, respectively. This will provide for a maximum overflow elevation of 6166.50 in the west basin at the west low point of the new exit drive. In the event of flooding, storm water will only pond to the crown of the low point in Central Avenue, then it will spill over the low point at the west side of the exit drive. Ultimately, flows will then drain south to the existing culvert which conveys flows under Roger's Road to the east towards Pearson's Lake. This design will allow minimal inundation at the low point of Central Avenue. No new permanent water quality features are included in the design as the existing native ground cover with mild slopes is recommended to be left in place to promote infiltration and water treatment. The areas draining to the existing native vegetation are intended to be roadways without permanent parking lots or commercial areas generating pollutants. Erosion control during and after construction is accomplished using a temporary and permanent best management practices (BMP's). The temporary BMP's include sediment logs, rock socks, inlet protection and silt fence. Permanent BMP's include rip-rap located at storm water conveyance outfall points. The BMP's are shown on the grading and erosion control plans.

- 6.3. Safety and Occupational Health: There would be no impacts related to human health and safety from the proposed action area during demolition and anticipated site use thereafter. The proposed action will change the traffic patterns at Gate 5 and have a positive impact on traffic safety. Other impacts would be negligible and insignificant. All personnel shall follow OSHA and AF regulations to ensure safety on the work site. A long-term positive impact on health and safety is anticipated at Gate 5, as the proposed project will alleviate the problem of traffic backing up onto Interstate 25. Construction at Gate 5, when combined with the impacts of other projects on or proximate to the base, will not cause a significant health and safety impact.
- 6.4. Biological Resources: FEW conducted a biological assessment of the property and determined that it would not adversely affect any threatened or endangered species or their designated critical habitat as identified in paragraph 5.4 of this EA. There were no other species of flora or fauna identified which would be significantly impacted. FEW communicated this finding to the U.S. Fish and Wildlife Service on 5 MAY 2020 and requested USFWS concurrence with their "not likely to adversely affect" determinations.
- 6.5. Cultural Resources: The FEW Cultural Resources Manager reviewed the proposed undertaking and determined that it would have no effect to historic properties identified in paragraph 5.5 of this EA. FEW determined that the proposed action would have no effect to

historic properties and communicated this finding to with Wyoming State Historic Preservation Office (WYSHPO). WYSHPO concurred with this finding on 24 May 2019.

- 6.6. Geology/Soils: Ground disturbance during construction will create a short-term increase in the potential for soil erosion. The use of best management practices during construction will mitigate the potential for soil erosion. Construction at Gate 5, when combined with other projects on or proximate to the base, will not significantly impact the soils on the installation. Development on the installation will disturb soils in the future. This is not expected to adversely impact soils on the installation.

7. PERSONS AND AGENCIES CONSULTED

The following agencies/individuals were contacted and/or provided a copy of the EA during its original preparation in order to afford an opportunity for comment on the content of the document. Agency consultations are required per 32 CFR 989.14(d).

Wyoming State Historic Preservation Office
2301 Central Avenue
Barrett Building, Third Floor
Cheyenne, Wyoming 82002

United States Fish and Wildlife Service
Ecological Services
334 Parsley Blvd Cheyenne WY 82001

United States Army Corps of Engineers
2232 Dell Range Blvd, Suite 210
Cheyenne, Wyoming 82009

8. REFERENCES

29 CFR §1910, *Occupational Safety and Health Standards*

32 CFR § 989, *Department of the Air Force Environmental Impact Analysis Process (EIAP)*

36 CFR § 800, *Protection of Historic Properties*

95% Design Analysis, Gate 5/Central Avenue Interchange, The Farnsworth Group, 9 March 2017.

Air Force Manual 32-7003, *Environmental Conservation*, 20 April 2020.

Clean Air Act of 1963, 42 U.S.C. 7401 et seq.

Clean Water Act of

FEW Engineering Specification Section 01010 *Environmental Protection*

FEW *Integrated Cultural Resources Management Plan*, 2020

FEW *Integrated Natural Resources Management Plan*, 2020

Final Programmatic EA for Minor Construction Projects, FONSI signed 7 August 2013

UFC 4-022-01 *Security Engineering: Entry Control Facilities/Access Control Points*, 27 July 2017.

9. LIST OF PREPARERS AND REVIEWERS

a. Preparers

Name	Organization	Title
Travis Beckwith	90CES/CEIE	NEPA Coordinator

b. Reviewers

Name	Organization	Title
Travis Beckwith	90 CES/CEIE	NEPA Coordinator
D. Michael Tucker	90 MW/JA	Attorney -Advisor
Andy McKinley	90 CES/CEI	Chief, Installation Management
Russell Littlejohn	90 CES/CEIE	Chief, Environmental Element

TABLE 1: COMPARISON OF PREDICTED ENVIRONMENTAL IMPACTS.

Environmental Protocol	Alternative A (Preferred Alternative): Redevelop Gate 5	Alternative B: Construct new ECP at Gate 3.	Alternative C: No Action
Air Quality			
Water Quality			
Safety and Occupational Health	Potential risks for safety and occupational health due to noise and lead dust.	Potential risks for safety and occupational health due to noise and lead dust	Potential negative impacts from traffic congestion.
Biological Resources	Potential positive impacts to biological resources.	No anticipated impacts to biological resources.	No Impacts.
Cultural Resources	No impacts to cultural resources.	No impacts to cultural resources.	No Impacts.
Geology & Soils			

APPENDIX 1: LOCATION MAP



USGS Topographic Map illustrating the location of the proposed undertaking ((U. S. Geological Survey *Cheyenne North Quadrangle, Wyoming*. 1:24,000. 7.5 minute series. Reston, Virginia: USGS, 2015).

APPENDIX 2: AGENCY CORRESPONDENCE

APPENDIX 3: SITE PHOTOGRAPHS



Photograph 1: View looking east at the Gate 5 ECP (Photograph by T. Beckwith, May 2020).



Photograph 2: View looking west along Central Avenue at its intersection with Rogers Road (Photograph by T. Beckwith, May 2020).



Photograph 3: View looking south along Rogers Road from its intersection with Central Avenue (Photograph by T. Beckwith, May 2020).



Photograph 4: View looking north along Rogers Road from its intersection with Central Avenue. (Photograph by T. Beckwith, May 2020).



Photograph 5: View looking east at the project location from Rogers Road (Photograph by T. Beckwith, May 2020).



Photograph 6: View looking west at the intersection of Rogers Road and Central Avenue (Photograph by T. Beckwith, May 2020).



Photograph 7: View looking west along the southern edge of Central Avenue from a location south of the Gate 5 ECP (Photograph by T. Beckwith, May 2020).



Photograph 8: View looking east from a location south of Central Avenue and the Gate 5 ECP. The proposed action will construct a chicane on this portion of the project area (Photograph by T. Beckwith, May 2020).



Photograph 9: View looking north at the south elevation of the Gate 5 ECP (Photograph by T. Beckwith).



Photograph 10: View looking west at the Gate 5 ECP from the intersection of Bishop Boulevard and Central Avenue. Traffic queuing during peak periods of peak traffic congestion often back up onto this portion of Central Avenue creating a safety hazard (Photograph by T. Beckwith, May 2020).



Photograph 11: View looking east towards the Gate 5 ECP from Central Avenue. The proposed action will widen this portion of Central Avenue to address safety deficiencies (Photograph by T. Beckwith, May 2020).



Photograph 11: View looking southwest at the non-jurisdictional wetland to the south of the project area. The proposed action is outside of the boundary of this wetland and will not be negatively impacted (Photograph by T. Beckwith, May 2020).



Photograph 12: View looking west at the Gate 5 ECP (Photograph by T. Beckwith, May 2020).

APPENDIX 4: DESIGN DOCUMENTS

GATE 5/CENTRAL AVENUE INTERCHANGE

FOR FE WARREN AFB, WYOMING



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA



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CHECKED BY:	CONTRACT NO.:	W912BF-10-D-0011
SUBMITTED BY:	PROJECT CODE:	GHNL 12.3100
DATE:	SIZE:	WARREN AFB PROJECT NO.:
MARK	DESCRIPTION	

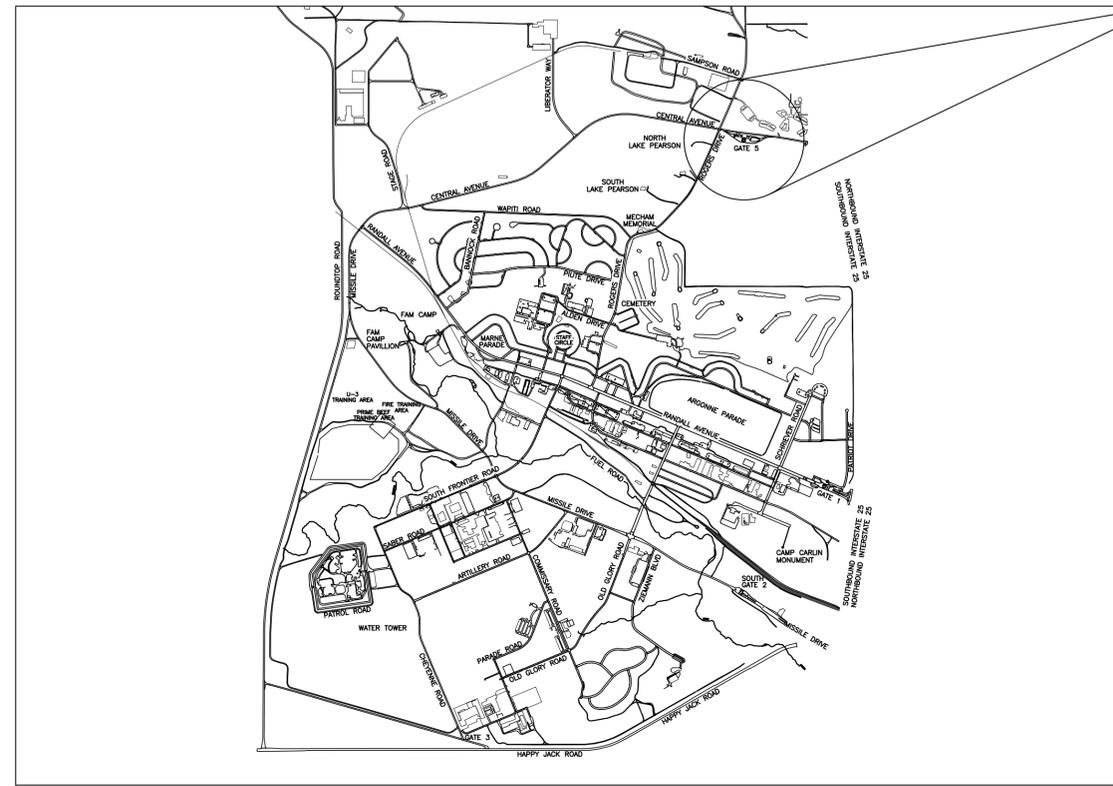
GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

COVER SHEET

SHEET ID
G-000

SHEET OF

Sheet List Table	
Sheet Number	Sheet Title
GENERAL	
G-000	COVER SHEET
G-002	GENERAL NOTES
G-003	CONSTRUCTION PHASING PLAN
CIVIL	
C-000	SURVEY SHEET
C-001	SURVEY SHEET
C-002	TYPICAL ROAD SECTIONS
C-003	OVERALL SITE PLAN
C-004	OVERALL SITE PLAN
C-100	DEMOLITION PLAN
C-101	DEMOLITION PLAN
C-102	ROGERS AND CENTRAL INTERSECTION-GEOMETRIC PLAN
C-103	ROGERS ROAD ROUNDABOUT-GEOMETRIC PLAN
C-104	GATE 5 EXIT ROAD-GEOMETRIC PLAN
C-105	CENTRAL AVE-GEOMETRIC PLAN
C-106	CENTRAL AVE-GEOMETRIC PLAN
C-107	CENTRAL AVE-GEOMETRIC PLAN
C-108	ROGERS ROAD ROUNDABOUT - GRADING, EROSION CONTROL PLAN
C-109	GATE 5 EXIT ROAD-GRADING, EROSION CONTROL PLAN AND PROFILE
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C-111	GATE 5 GRADING AND EROSION CONTROL PLAN
C-112	CENTRAL AVE-GRADING, EROSION CONTROL PLAN AND PROFILE
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C-114	GATE 5 EXIT ROAD-CROSS SECTIONS
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C-116	CENTRAL AVE-CROSS SECTIONS
C-117	CENTRAL AVE-CROSS SECTIONS
C-118	CENTRAL AVE-CROSS SECTIONS
C-119	CENTRAL AVE-CROSS SECTIONS
C-120	SITE LIGHTING PLAN
C-121	SITE LIGHTING PLAN
C-122	SIGNING AND STRIPING PLAN
C-123	SIGNING AND STRIPING PLAN
C-124	STORM SEWER CULVERT PLAN AND PROFILES
C-125	CIVIL SITE WORK DETAILS
C-126	CIVIL SITE WORK DETAILS
C-127	CIVIL UTILITY DETAILS
C-128	CIVIL EROSION CONTROL DETAILS
C-129	CIVIL EROSION CONTROL DETAILS
C-130	CIVIL ACTIVE VEHICLE BARRIER DETAILS
C-131	TRAFFIC SIGNAL INSTALLATION DETAILS
C-132	TRAFFIC SIGNAL INSTALLATION DETAILS
C-133	SITE LIGHTING DETAILS



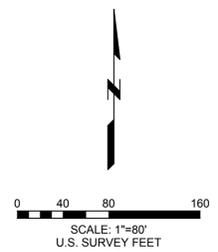
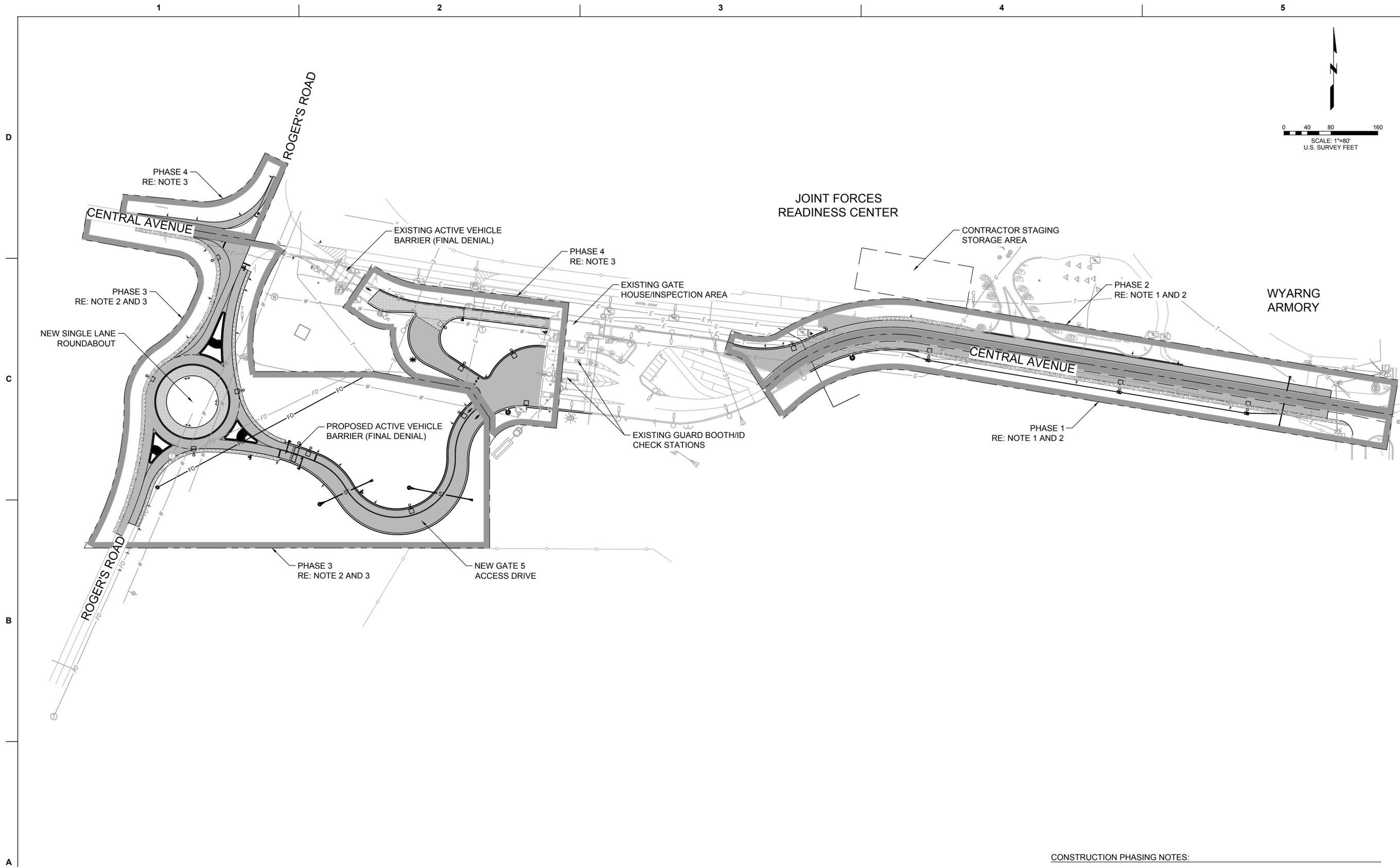
BASE MAP
SCALE 1" = 2000'



VICINITY MAP
SCALE 1" = 500'

PROPOSED LEGEND

- | | | | |
|-------|---------------------------------|---|---------------------------|
| ----- | PERMANENT EASEMENT | ● | ELECTRIC MANHOLE |
| ----- | TEMPORARY CONSTRUCTION EASEMENT | ▲ | ELECTRIC PEDESTAL |
| ----- | INDEX CONTOUR (PROPOSED) | □ | ELECTRIC BOX |
| ----- | INTERMEDIATE CONTOUR (PROPOSED) | ⊙ | ELECTRIC STREET LIGHT |
| ----- | FENCE | ⊛ | ELECTRIC PARKING LIGHT |
| ----- | SECTION LINE | ⊙ | UTILITY POLE |
| ----- | RIGHT-OF-WAY LINE | ⊙ | GUY ANCHOR |
| ----- | PROPERTY LINE | ⊙ | SIGNAL BOX |
| ----- | | ⊙ | SIGN |
| ----- | | ⊙ | SIGN-DOUBLE POST |
| ----- | | ⊙ | BENCHMARK |
| ----- | | ⊙ | SURVEY CONTROL POINT |
| ----- | | ⊙ | ANCHOR MONUMENT |
| ----- | | ⊙ | FOUND CHISELED "X" |
| ----- | | ⊙ | FOUND SECTION CORNER |
| ----- | | ⊙ | FOUND R/W MARKER AS NOTED |
| ----- | | ⊙ | HANDICAP PARKING OR RAMP |
-
- PROPOSED (EXAMPLE)**
- | | | | | | |
|---|------------------------|---|--------------------------|---|---------------------------|
| ⊙ | FIRE HYDRANT | ⊙ | SHRUB | ● | ELECTRIC MANHOLE |
| ⊙ | YARD HYDRANT | ⊙ | AREA LIGHT | ▲ | ELECTRIC PEDESTAL |
| ⊙ | WATER METER | ⊙ | BOLLARD | □ | ELECTRIC BOX |
| ⊙ | WATER VALVE | ⊙ | MONITOR WELL | ⊙ | ELECTRIC STREET LIGHT |
| ● | WATER MANHOLE | ⊙ | UTILITY MANHOLE | ⊙ | ELECTRIC PARKING LIGHT |
| ▼ | THRUST BLOCK | ⊙ | MAIL BOX | ⊙ | UTILITY POLE |
| ● | SEWER MANHOLE | ⊙ | RAILROAD SIGNAL | ⊙ | GUY ANCHOR |
| ▲ | SEWER CLEAN-OUT | ⊙ | TEST HOLE | ⊙ | SIGNAL BOX |
| ● | STORM MANHOLE | ⊙ | BORE HOLE | ⊙ | SIGN |
| ■ | STORM INLET CURB TYPE | ⊙ | FLAG POLE | ⊙ | SIGN-DOUBLE POST |
| ■ | STORM INLET GRATE TYPE | ⊙ | CATHODE PROTECTION | ⊙ | BENCHMARK |
| ▬ | FLARED END SECTION | ⊙ | CABLE TV PEDESTAL | ⊙ | SURVEY CONTROL POINT |
| ⊙ | DOWNSPOUT | ⊙ | TELEPHONE PEDESTAL | ⊙ | ANCHOR MONUMENT |
| ⊙ | GAS METER | ● | TELEPHONE MANHOLE | ⊙ | FOUND CHISELED "X" |
| ● | GAS VALVE | ⊙ | IRRIGATION CONTROL BOX | ⊙ | FOUND SECTION CORNER |
| ⊙ | DECIDUOUS TREE | ⊙ | IRRIGATION SPRINKLER BOX | ⊙ | FOUND R/W MARKER AS NOTED |
| ⊙ | CONIFEROUS TREE | ⊙ | ELECTRIC METER | ⊙ | HANDICAP PARKING OR RAMP |



CONSTRUCTION PHASING NOTES:

1. ONE LANE TO REMAIN OPEN AT ALL TIMES ALONG CENTRAL AVE. DURING PHASE 1 AND 2.
2. GATE 5 TO REMAIN OPEN DURING PHASE 1, 2 AND 3. ALL TRAFFIC TO BE DETOURED AROUND PHASE 3 CONSTRUCTION ZONE.
3. GATE 5 TO BE CLOSED DURING PHASE 4. ALL TRAFFIC TO BE NOTIFIED TO PROCEED TO OTHER BASE ACCESS GATES. NEW GATE 5 ACCESS DRIVE TO BE CLOSED TO ALL TRAFFIC DURING PHASE 4.



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA



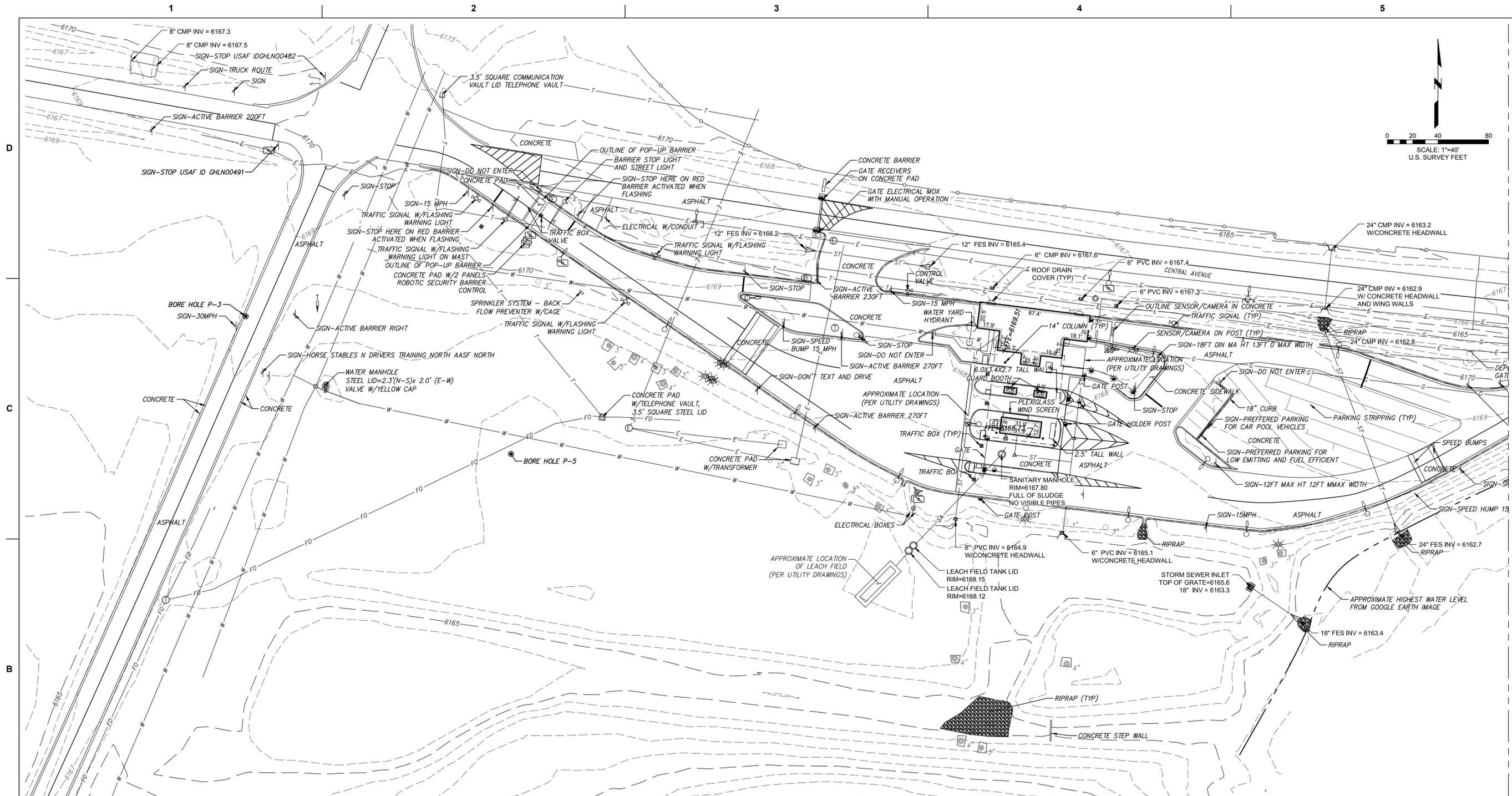
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112 EAST MORENO AVENUE
COLORADO SPRINGS, CO 80903-3918
719-473-7063
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DRAWN BY:	SOLICITATION NO.:	
CHECKED BY:	CONTRACT NO.:	W9128F-10-D-0011
SUBMITTED BY:	PROJECT CODE:	GHLN 12.3100
FARNSWORTH GROUP	WARREN AFB PROJECT NO.:	
ANSI 'D'	DATE	
MARK	DESCRIPTION	

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

**CONSTRUCTION PHASING
PLAN**

SHEET ID
G-003
SHEET OF



PROJECT HORIZONTAL AND VERTICAL DATUM IS THE CITY OF CHEYENNE COORDINATE SYSTEM.

HORIZONTAL DATUM IS NAD83(2011)
 VERTICAL DATUM IS NAVD88 (GEOID12B)
 DISTANCE UNITS ARE US SURVEY FEET

MAPPING PROJECTION IS MODIFIED WYOMING STATE PLANE (EAST ZONE)
 COMBINED SCALE FACTOR IS 1.000346919
 NORTHING TRUNCATION IS 160,799.32'
 EASTING TRUNCATION IS 156,284.14'

LEGEND

- FLOOD LIGHT
- STREET LIGHT
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL W/MAST
- GUY WIRE
- UTILITY POLE DROP
- UTILITY POLE W/TRANSFORMER
- BOLLARD WITH LIGHT
- BOLLARD
- DELINEATOR
- SPRINKLER BOX
- WATER METER
- FIRE HYDRANT
- WATER VALVE
- WATER MANHOLE
- STORM SEWER CLEANOUT
- STORM SEWER MANHOLE
- FLARED END SECTION (FES)
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- ELECTRICAL PEDESTAL
- ELECTRICAL BOX
- ELECTRICA MANHOLE
- ROCK
- CHAIN LINK FENCE
- PRIVACY FENCE
- 5015 INDEX CONTOUR (EXISTING)
- 5014 INTERMEDIATE CONTOUR (EXISTING)

Gate 5 Topographic Survey Control

Point Number	NAD83(2011)				Wyoming State Plane Zone 4901				Combined Scale Factor	City Of Cheyenne			Description
	Latitude	Longitude	Ellipse Ht.	Geoid Ht.	Northing (m)	Easting (m)	Elevation (m)	Northing (usf)		Easting (usf)	Elevation (usf)		
200	41d10'06.61729"	-104d51'00.52718"	1,864.320	-16.014	74,281.560	226,560.879	1,880.334	0.999654406	82,990.64	587,282.21	6,169.06	Set rebar with Red Plastic Cap marked FGI Control	
201	41d10'03.55137"	-104d50'53.83413"	1,863.938	-16.026	74,187.553	226,717.239	1,879.964	0.999654568	82,682.11	587,795.38	6,167.85	Set rebar with Red Plastic Cap marked FGI Control	
202	41d10'05.40867"	-104d50'46.56292"	1,864.077	-16.035	74,245.468	226,886.521	1,880.112	0.999654658	82,872.19	588,350.95	6,168.33	Set rebar with Red Plastic Cap marked FGI Control	
BRAVO	41d09'53.99187"	-104d51'15.81392"	1,870.535	-15.997	73,890.813	226,205.943	1,886.533	0.999653203	81,708.22	586,117.32	6,189.40	FE WARREN CP BRAVO 3.25 Inch Brass Cap	
CHARLIE	41d09'45.03737"	-104d51'24.49331"	1,862.107	-15.989	73,613.864	226,004.600	1,878.099	0.999654393	80,799.29	585,456.52	6,161.73	FE WARREN CP CHARLIE 3.25 Inch Brass Cap	
DELTA	41d10'03.73236"	-104d51'41.52112"	1,872.192	-15.955	74,189.155	225,605.619	1,888.154	0.999652562	82,687.37	584,147.10	6,194.72	FE WARREN CP DELTA 3.25 Inch Brass Cap	

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 OMAHA DISTRICT
 OMAHA, NEBRASKA

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DRAWN BY: TJK	CONTRACT NO.:	DATE:	MARK:
DESIGNED BY: TJK	PROJECT CODE:	DATE:	MARK:
DESIGNED BY: TJK	PROJECT CODE:	DATE:	MARK:

SURVEY SHEET

GATE 5/CENTRAL AVENUE INTERCHANGE
 FE WARREN AFB, WYOMING

SHEET ID
C-000
 SHEET OF

MATCHLINE
SEE SHEET C-001

1

2

3

4

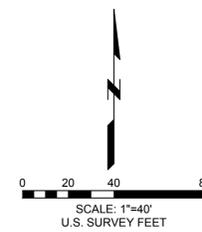
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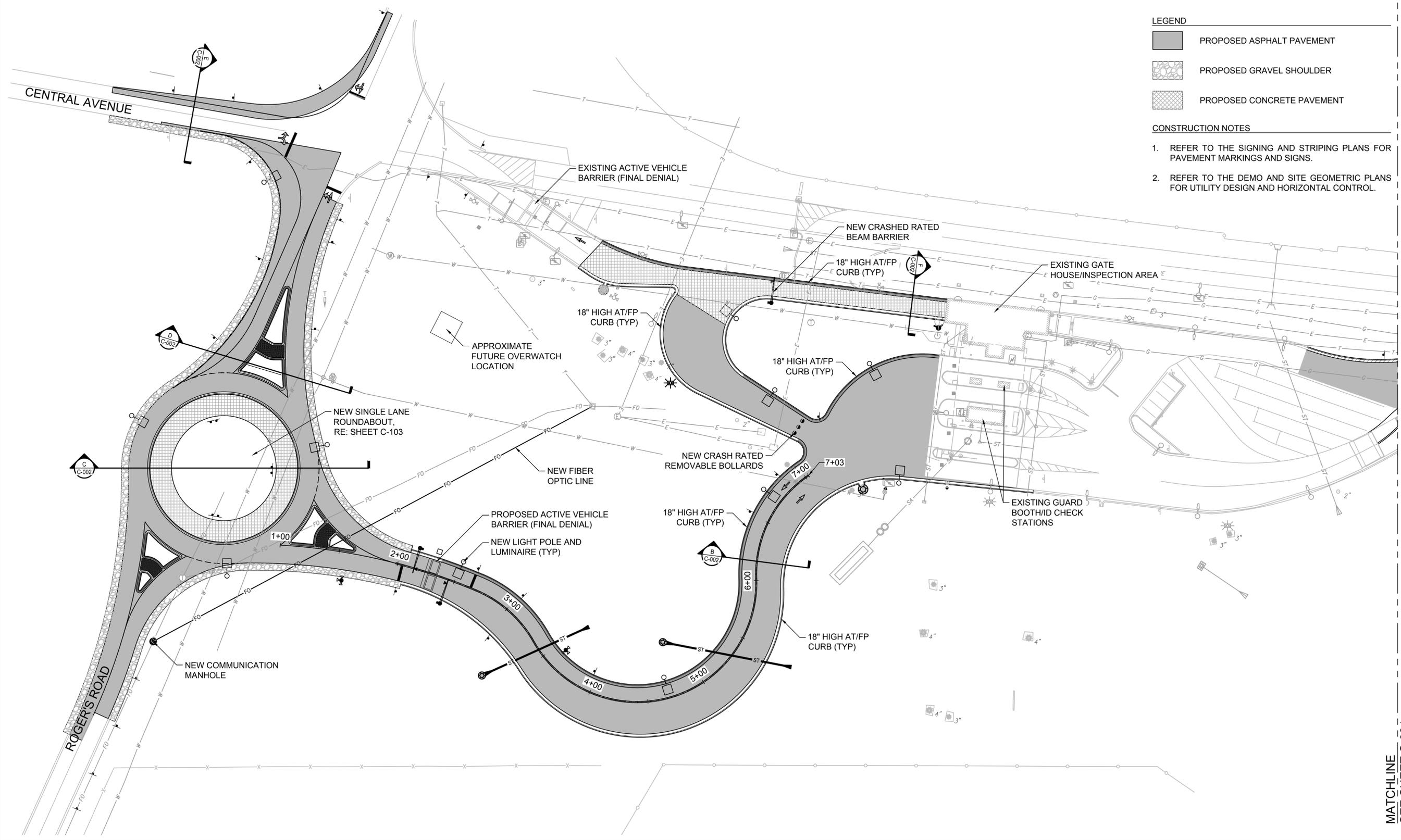
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- LEGEND**
- PROPOSED ASPHALT PAVEMENT
 - PROPOSED GRAVEL SHOULDER
 - PROPOSED CONCRETE PAVEMENT

- CONSTRUCTION NOTES**
1. REFER TO THE SIGNING AND STRIPING PLANS FOR PAVEMENT MARKINGS AND SIGNS.
 2. REFER TO THE DEMO AND SITE GEOMETRIC PLANS FOR UTILITY DESIGN AND HORIZONTAL CONTROL.



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA

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101 COLLEGE AVENUE, SUITE 105
WARREN, NEBRASKA 68090



DESIGNED BY: TWK	ISSUE DATE: 07 JANUARY 2019
DRAWN BY: DJM	SOLICITATION NO.:
CHECKED BY: TWK	CONTRACT NO.:
SUBMITTED BY: FARNSWORTH GROUP	PROJECT NO.:
DATE:	PROJECT CODE: GHLN 123100
DESCRIPTION:	ANSI ID:
MARK:	DATE:

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

OVERALL SITE PLAN

SHEET ID
C-003

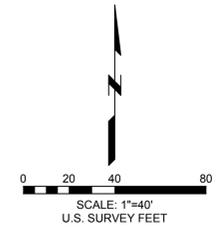
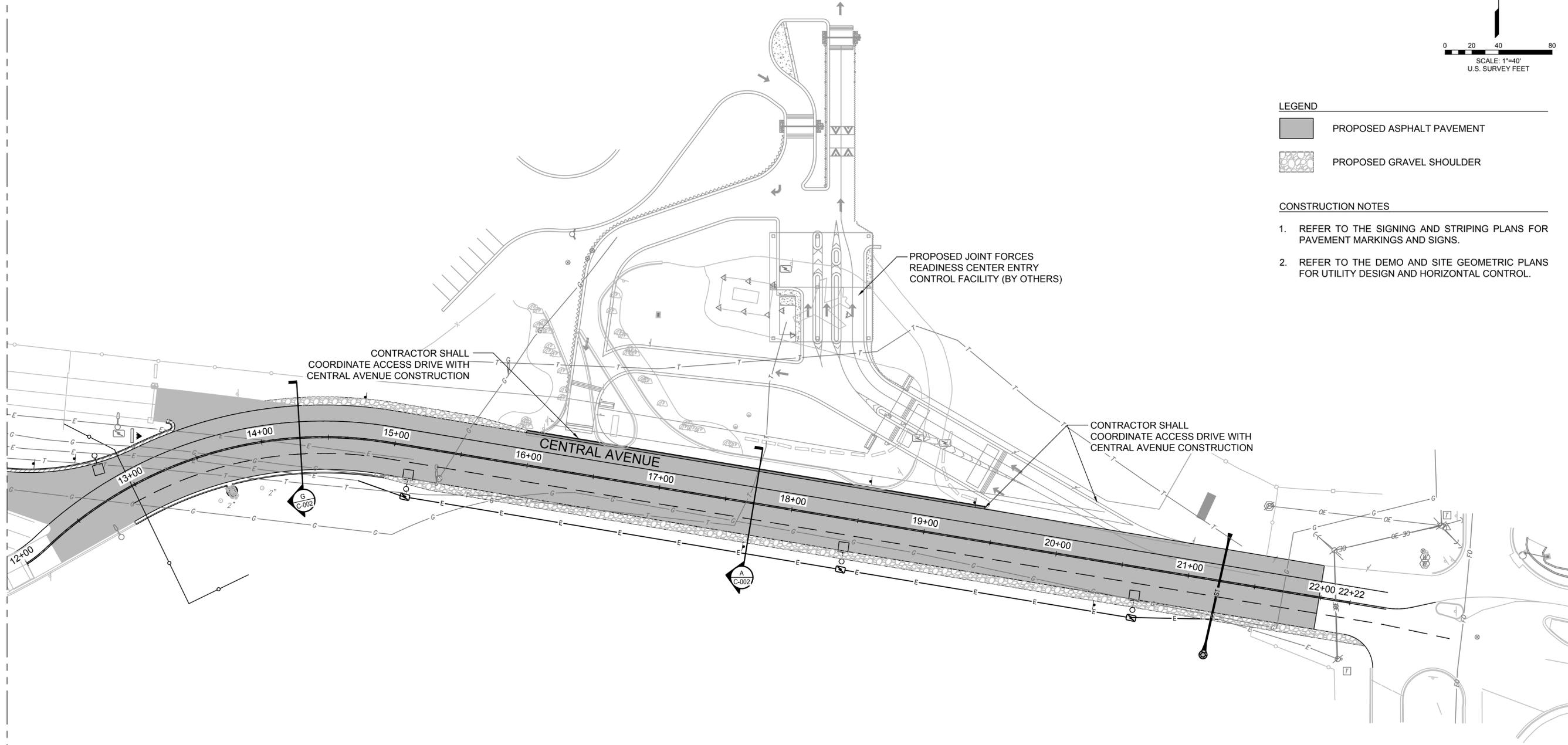
SHEET OF

MATCHLINE
SEE SHEET C-004

100% DESIGN

A B C D

MATCHLINE
SEE SHEET C-003



LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SHOULDER

CONSTRUCTION NOTES

1. REFER TO THE SIGNING AND STRIPING PLANS FOR PAVEMENT MARKINGS AND SIGNS.
2. REFER TO THE DEMO AND SITE GEOMETRIC PLANS FOR UTILITY DESIGN AND HORIZONTAL CONTROL.



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OMAHA, NEBRASKA

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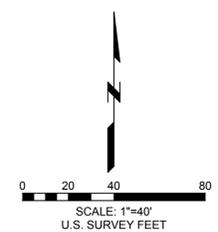
DESIGNED BY:	ISSUE DATE:	07 JANUARY 2019
DRAWN BY:	SOLICITATION NO.:	
CHECKED BY:	CONTRACT NO.:	W9128F-10-D-0011
DATE:	PROJECT CODE:	GHNL 12.3100
DESIGNER:	PROJECT NAME:	WARREN AFB PROJECT NO.:
DATE:	ANSI 'D'	
DESCRIPTION	MARK	

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

OVERALL SITE PLAN

SHEET ID
C-004

SHEET OF



LEGEND

-  REMOVE EXISTING CONCRETE CURB AND GUTTER
-  REMOVE EXISTING ASPHALT PAVEMENT
-  REMOVE EXISTING CONCRETE PAVEMENT
-  DISTURBED LAND (APPROXIMATE LIMITS)

CONSTRUCTION NOTES

1. ALL EXISTING CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR.
2. ALL EXISTING UTILITIES NOT SHOWN TO BE REMOVED SHALL BE PROTECTED IN PLACE.
3. REMOVE AND RELOCATE EXISTING IRRIGATION VALVES AND LINES AFFECTED BY CONSTRUCTION. CONTRACTOR TO DESIGN BUILD NEW LINE LOCATIONS.

FLAG NOTES

-  REMOVE EXISTING CURB AND GUTTER
-  REMOVE AND RELOCATE EXISTING LIGHT POST, RE: GEOMETRIC PLANS
-  REMOVE AND RELOCATE EXISTING SIGN, RE: SIGNING AND STRIPING PLANS
-  REMOVE EXISTING DRAINAGE PAN
-  REMOVE AND RELOCATE EXISTING FIRE HYDRANT AND YARD HYDRANT, RE: GEOMETRIC PLANS
-  REMOVE EXISTING TREE (4-TOTAL)
-  SAWCUT EXISTING PAVEMENT
-  REMOVE EXISTING COMMUNICATION MANHOLE, RE: GEOMETRIC PLANS
-  REMOVE EXISTING SIGN
-  REMOVE EXISTING LIGHT POST, POST AND LUMINAIRE
-  REMOVE AND RELOCATE EXISTING ELECTRIC BOXES RE: GEOMETRIC PLANS
-  REMOVE AND RELOCATE GATE POST, RE: GEOMETRIC PLANS

MATCHLINE
SEE SHEET C-101



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OMAHA DISTRICT
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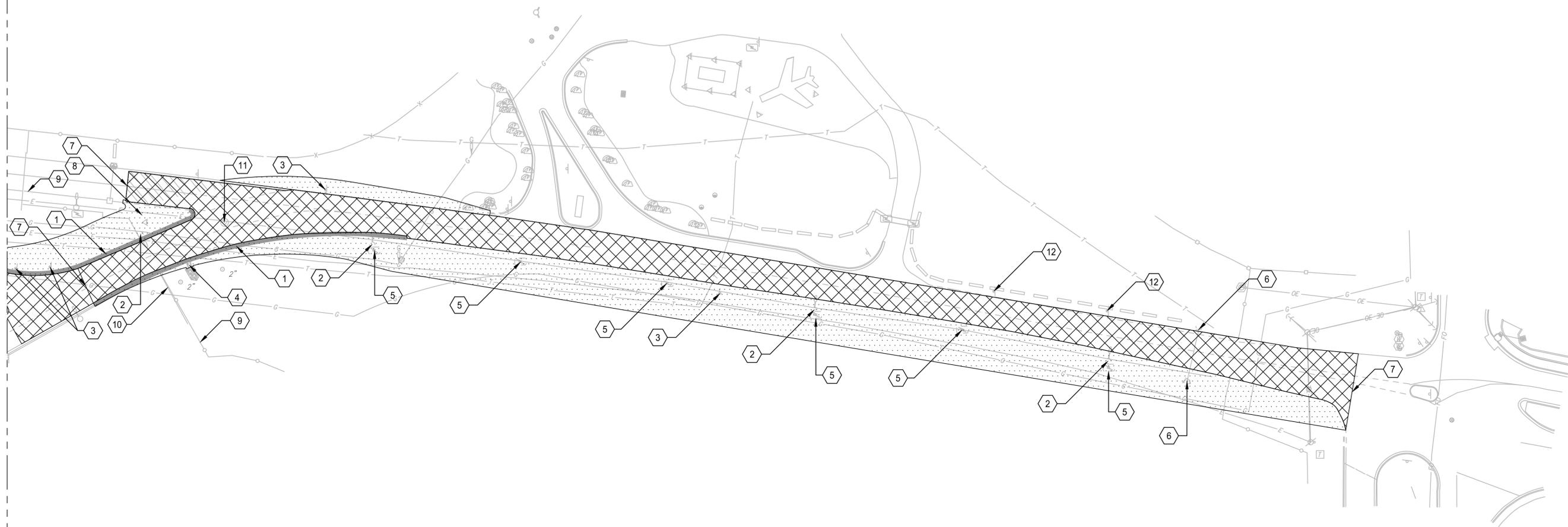
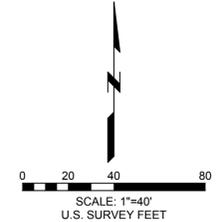
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DRAWN BY:	DJM	SOLICITATION NO.:	
CHECKED BY:	TWK	CONTRACT NO.:	W912BF-10-D-0011
SUBMITTED BY:	FARNSWORTH GROUP	PROJECT CODE:	GHNL 12.3100
DATE:		ANSI ID:	
DESCRIPTION:		MARK:	

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING
DEMOLITION PLAN

SHEET ID
C-100
SHEET OF

D
C
B
A



LEGEND

-  REMOVE EXISTING CONCRETE CURB AND GUTTER
-  REMOVE EXISTING ASPHALT PAVEMENT
-  REMOVE EXISTING CONCRETE PAVEMENT
-  DISTURBED LAND (APPROXIMATE LIMITS)

CONSTRUCTION NOTES

1. ALL EXISTING CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR.
2. ALL EXISTING UTILITIES NOT SHOWN TO BE REMOVED SHALL BE PROTECTED IN PLACE.

FLAG NOTES

- 1 REMOVE EXISTING CURB AND GUTTER
- 2 REMOVE AND RELOCATE EXISTING LIGHT POST, RE: GEOMETRIC PLANS
- 3 REMOVE AND RELOCATE EXISTING SIGN, RE: SIGNING AND STRIPING PLANS
- 4 REMOVE EXISTING DRAINAGE PAN
- 5 REMOVE AND RELOCATE EXISTING ELECTRICAL BOX, RE: GEOMETRIC PLANS
- 6 REMOVE AND REPLACE EXISTING STORM SEWER AND HEADWALL, RE: GEOMETRIC PLANS
- 7 SAWCUT EXISTING PAVEMENT
- 8 REMOVE AND RELOCATE "FE WARREN AFB" MONUMENT SIGN AND LIGHT, RE: SHEET C-124
- 9 REMOVE AND RELOCATE EXISTING FENCING, RE: GEOMETRIC PLANS
- 10 REMOVE EXISTING GATE, RE: GEOMETRIC PLANS
- 11 PROTECT EXISTING MANHOLE IN PLACE. RAISE COVER TO NEW FINISHED GRADE.
- 12 REMOVE EXISTING SIGN

MATCHLINE
SEE SHEET C-100



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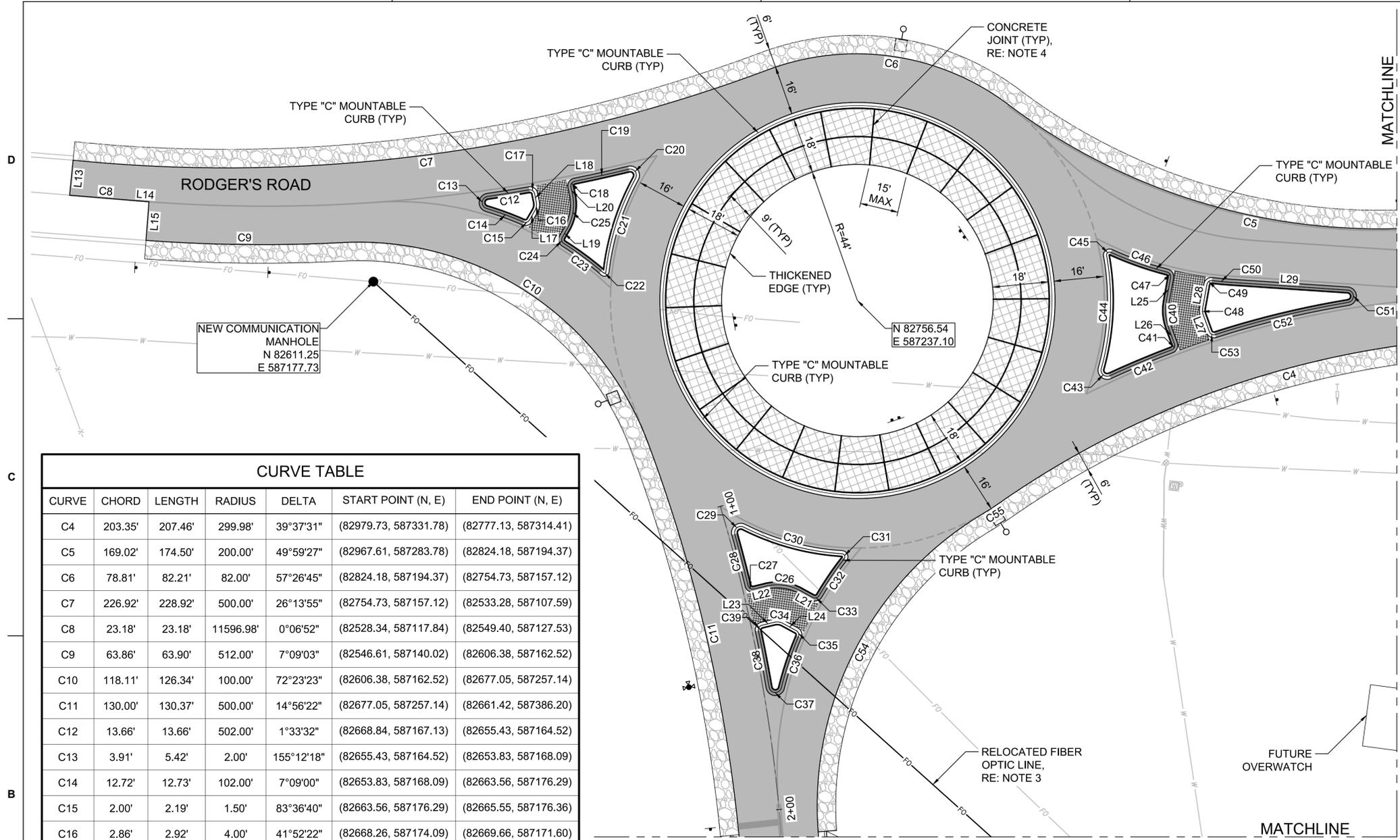
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DATE:	GHLN 123100
DESIGNED BY:	PROJECT NO.:
DRAWN BY:	WARREN AFB PROJECT NO.:
CHECKED BY:	
DATE:	
DESCRIPTION	MARK

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

DEMOLITION PLAN

SHEET ID
C-101
SHEET OF

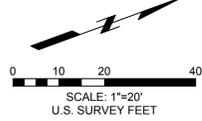


LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SHOULDER
- CONCRETE TRUCK APRON

CONSTRUCTION NOTES

- REFER TO THE SIGNING AND STRIPING PLANS FOR PAVEMENT MARKINGS AND SIGNS.
- REFER TO SURVEY DRAWINGS FOR SITE BENCHMARK, VERTICAL DATUM AND CONTROL INFORMATION.
- PROVIDE PVC CONDUIT FOR FIBER OPTIC LINES UNDER NEW ROADWAY.
- CONTRACTOR SHALL SUBMIT JOINT PLAN FOR APPROVAL. CONTRACTOR SHALL REFERENCE JOINT DETAILS SHOWN ON SHEET C-126.



LINE TABLE

LINE	LENGTH	BEARING	START POINT (N, E)	END POINT (N, E)
L13	11.38'	S64°16'40.81"E	(82533.28, 587107.59)	(82528.34, 587117.84)
L14	2.61'	N24°30'12.12"E	(82549.40, 587127.53)	(82551.77, 587128.61)
L15	12.52'	S65°38'46.46"E	(82551.77, 587128.61)	(82546.61, 587140.02)
L17	3.53'	N39°52'51.84"W	(82665.55, 587176.36)	(82668.26, 587174.09)
L18	2.80'	N81°45'13.83"W	(82669.66, 587171.60)	(82670.06, 587168.82)
L19	2.95'	N39°52'51.84"W	(82673.70, 587185.19)	(82675.96, 587183.30)
L20	2.51'	N81°45'13.83"W	(82681.53, 587173.32)	(82681.89, 587170.84)
L21	4.46'	S48°32'15.89"W	(82710.14, 587322.34)	(82707.18, 587319.00)
L22	3.89'	S06°19'50.91"W	(82696.96, 587313.69)	(82693.09, 587313.26)
L23	4.13'	N06°19'50.91"E	(82691.53, 587325.16)	(82695.64, 587325.62)
L24	4.92'	N48°32'15.89"E	(82698.19, 587326.94)	(82701.45, 587330.63)
L25	7.90'	S59°43'00.48"E	(82854.42, 587264.82)	(82850.43, 587271.65)
L26	5.68'	N89°59'14.47"E	(82848.25, 587279.72)	(82848.25, 587285.40)
L27	5.89'	S89°59'14.47"W	(82860.25, 587285.61)	(82860.25, 587279.71)
L28	7.82'	N59°43'00.48"W	(82860.79, 587277.70)	(82864.74, 587270.95)
L29	38.06'	N23°47'32.99"E	(82872.07, 587272.90)	(82906.90, 587288.26)

CURVE TABLE

CURVE	CHORD	LENGTH	RADIUS	DELTA	START POINT (N, E)	END POINT (N, E)
C4	203.35'	207.46'	299.98'	39°37'31"	(82979.73, 587331.78)	(82777.13, 587314.41)
C5	169.02'	174.50'	200.00'	49°59'27"	(82967.61, 587283.78)	(82824.18, 587194.37)
C6	78.81'	82.21'	82.00'	57°26'45"	(82824.18, 587194.37)	(82754.73, 587157.12)
C7	226.92'	228.92'	500.00'	26°13'55"	(82754.73, 587157.12)	(82533.28, 587107.59)
C8	23.18'	23.18'	11596.98'	0°06'52"	(82528.34, 587117.84)	(82549.40, 587127.53)
C9	63.86'	63.90'	512.00'	7°09'03"	(82546.61, 587140.02)	(82606.38, 587162.52)
C10	118.11'	126.34'	100.00'	72°23'23"	(82606.38, 587162.52)	(82677.05, 587257.14)
C11	130.00'	130.37'	500.00'	14°56'22"	(82677.05, 587257.14)	(82661.42, 587386.20)
C12	13.66'	13.66'	502.00'	1°33'32"	(82668.84, 587167.13)	(82655.43, 587164.52)
C13	3.91'	5.42'	2.00'	155°12'18"	(82655.43, 587164.52)	(82653.83, 587168.09)
C14	12.72'	12.73'	102.00'	7°09'00"	(82653.83, 587168.09)	(82663.56, 587176.29)
C15	2.00'	2.19'	1.50'	83°36'40"	(82663.56, 587176.29)	(82665.55, 587176.36)
C16	2.86'	2.92'	4.00'	41°52'22"	(82668.26, 587174.09)	(82669.66, 587171.60)

CURVE TABLE

CURVE	CHORD	LENGTH	RADIUS	DELTA	START POINT (N, E)	END POINT (N, E)
C17	2.08'	2.30'	1.50'	88°01'15"	(82670.06, 587168.82)	(82668.84, 587167.13)
C18	2.13'	2.36'	1.50'	90°16'19"	(82681.89, 587170.84)	(82683.60, 587169.57)
C19	17.99'	17.99'	502.00'	2°03'12"	(82683.60, 587169.57)	(82701.44, 587171.91)
C20	3.66'	4.62'	2.00'	132°20'07"	(82701.44, 587171.91)	(82702.53, 587175.40)
C21	31.73'	31.94'	82.00'	22°18'50"	(82702.53, 587175.40)	(82683.15, 587200.53)
C22	0.89'	1.09'	0.50'	124°31'01"	(82683.15, 587200.53)	(82682.26, 587200.55)
C23	15.93'	15.94'	102.00'	8°57'23"	(82682.26, 587200.55)	(82673.48, 587187.27)
C24	2.09'	2.31'	1.50'	88°04'19"	(82673.48, 587187.27)	(82673.70, 587185.19)
C25	11.43'	11.69'	16.00'	41°52'22"	(82675.96, 587183.30)	(82681.53, 587173.32)
C26	11.52'	11.79'	16.00'	42°12'25"	(82707.18, 587319.00)	(82696.96, 587313.69)
C27	2.12'	2.36'	1.50'	90°01'56"	(82693.09, 587313.26)	(82691.76, 587311.60)
C28	17.16'	17.16'	502.00'	1°57'32"	(82691.76, 587311.60)	(82693.37, 587294.52)
C29	3.66'	4.62'	2.00'	132°20'07"	(82693.37, 587294.52)	(82696.82, 587293.30)

CURVE TABLE

CURVE	CHORD	LENGTH	RADIUS	DELTA	START POINT (N, E)	END POINT (N, E)
C30	33.02'	33.25'	82.00'	23°13'52"	(82696.82, 587293.30)	(82723.83, 587312.30)
C31	1.77'	2.17'	1.00'	124°28'31"	(82723.83, 587312.30)	(82723.96, 587314.06)
C32	14.47'	14.48'	112.00'	7°24'21"	(82723.96, 587314.06)	(82712.22, 587322.51)
C33	2.08'	2.30'	1.50'	87°57'35"	(82712.22, 587322.51)	(82710.14, 587322.34)
C34	2.88'	2.95'	4.00'	42°12'25"	(82695.64, 587325.62)	(82698.19, 587326.94)
C35	2.02'	2.21'	1.50'	84°27'33"	(82701.45, 587330.63)	(82701.42, 587332.65)
C36	17.45'	17.47'	112.00'	8°56'13"	(82701.42, 587332.65)	(82690.55, 587346.30)
C37	3.91'	5.45'	2.00'	156°08'10"	(82690.55, 587346.30)	(82686.93, 587344.83)
C38	18.62'	18.62'	502.00'	2°07'32"	(82686.93, 587344.83)	(82689.88, 587326.44)
C39	2.09'	2.31'	1.50'	88°15'38"	(82689.88, 587326.44)	(82691.53, 587325.16)
C40	8.36'	8.46'	16.00'	30°17'45"	(82850.43, 587271.65)	(82848.25, 587279.72)
C41	2.11'	2.34'	1.50'	89°23'06"	(82848.25, 587285.40)	(82846.77, 587286.90)
C42	21.73'	21.73'	302.00'	4°07'24"	(82846.77, 587286.90)	(82825.06, 587287.92)

CURVE TABLE

CURVE	CHORD	LENGTH	RADIUS	DELTA	START POINT (N, E)	END POINT (N, E)
C43	3.63'	4.55'	2.00'	130°17'13"	(82825.06, 587287.92)	(82823.27, 587284.76)
C44	36.48'	36.78'	82.00'	25°42'07"	(82823.27, 587284.76)	(82837.34, 587251.11)
C45	1.77'	2.17'	1.00'	124°28'31"	(82837.34, 587251.11)	(82839.02, 587250.56)
C46	19.34'	19.36'	112.00'	9°54'14"	(82839.02, 587250.56)	(82853.97, 587262.83)
C47	2.04'	2.25'	1.50'	85°52'39"	(82853.97, 587262.83)	(82854.42, 587264.82)
C48	2.09'	2.12'	4.00'	30°17'45"	(82860.25, 587279.71)	(82860.79, 587277.70)
C49	2.06'	2.27'	1.50'	86°32'41"	(82864.74, 587270.95)	(82866.71, 587270.36)
C50	5.93'	5.93'	112.00'	3°02'08"	(82866.71, 587270.36)	(82872.07, 587272.90)
C51	3.97'	5.82'	2.00'	166°49'35"	(82906.90, 587288.26)	(82905.73, 587292.05)
C52	44.31'	44.35'	302.00'	8°24'51"	(82905.73, 587292.05)	(82861.69, 587287.10)
C53	2.08'	2.30'	1.50'	87°46'58"	(82861.69, 587287.10)	(82860.25, 587285.61)
C54	116.02'	122.21'	110.00'	63°39'21"	(82771.38, 587315.71)	(82685.86, 587394.12)
C55	5.89'	5.89'	80.00'	4°13'16"	(82777.13, 587314.41)	(82771.38, 587315.71)



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA

Farnsworth
GROUP
102 EAST MORENO AVENUE
COLORADO SPRINGS, CO 80903-3918
719-473-7063
www.farnsworth.com



DESIGNED BY:	TRK	10 JANUARY 2019	ISSUE DATE:	10 JANUARY 2019
DRAWN BY:	DJM		SOLICITATION NO.:	
CHECKED BY:	TWK		CONTRACT NO.:	W9128F-10-D-0011
SUBMITTED BY:	FARNSWORTH GROUP		PROJECT CODE:	GHJLN 123100
SIZE:	WARREN AFB		PROJECT NO.:	
ANSI 'D'			DATE	
DESCRIPTION			MARK	

**ROGERS ROAD
ROUNDABOUT-GEOMETRIC
PLAN**

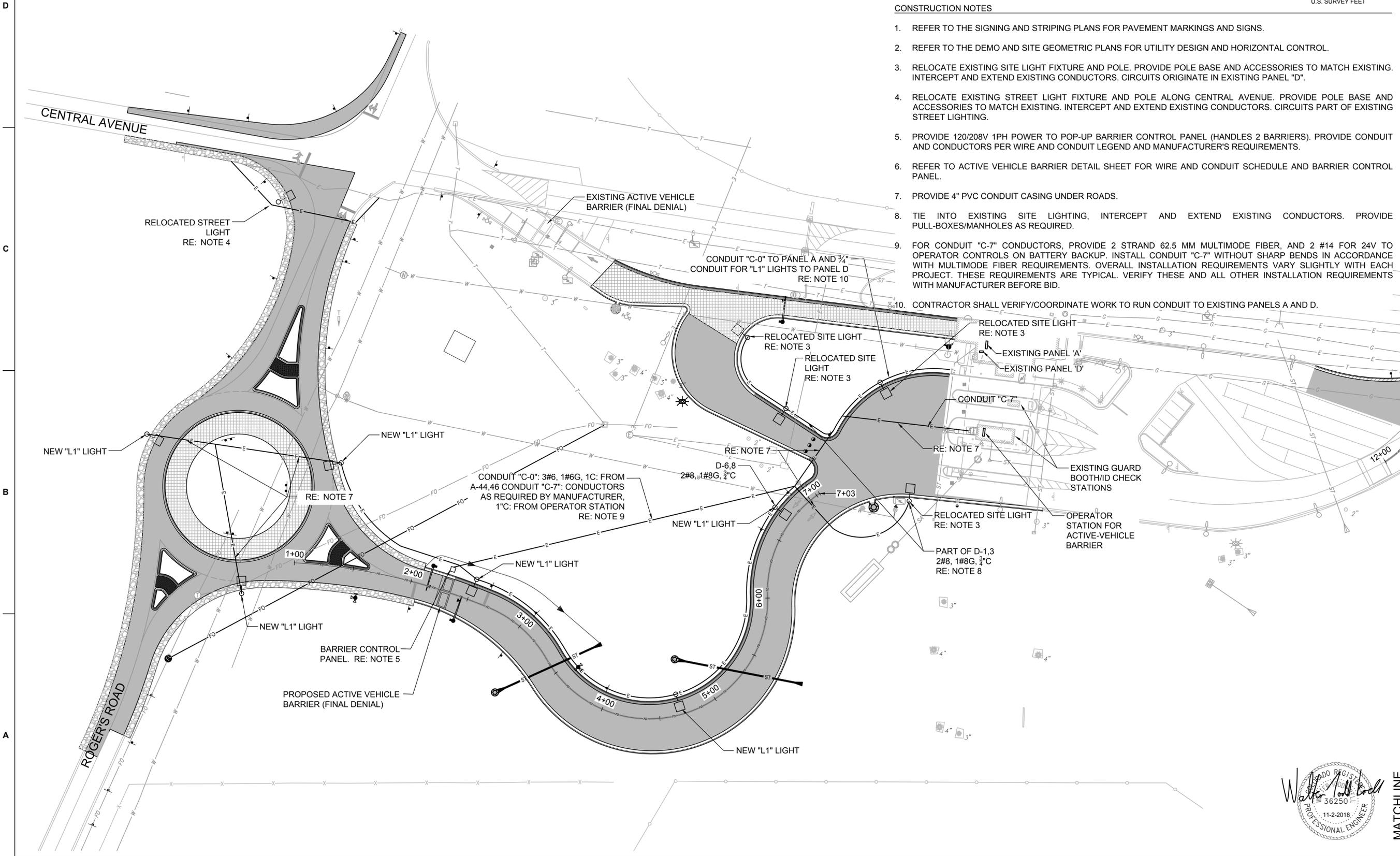
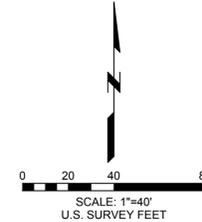
SHEET ID
C-103
SHEET OF

LEGEND

-  PROPOSED ASPHALT PAVEMENT
-  PROPOSED GRAVEL SHOULDER
-  PROPOSED CONCRETE PAVEMENT

CONSTRUCTION NOTES

1. REFER TO THE SIGNING AND STRIPING PLANS FOR PAVEMENT MARKINGS AND SIGNS.
2. REFER TO THE DEMO AND SITE GEOMETRIC PLANS FOR UTILITY DESIGN AND HORIZONTAL CONTROL.
3. RELOCATE EXISTING SITE LIGHT FIXTURE AND POLE. PROVIDE POLE BASE AND ACCESSORIES TO MATCH EXISTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. CIRCUITS ORIGINATE IN EXISTING PANEL "D".
4. RELOCATE EXISTING STREET LIGHT FIXTURE AND POLE ALONG CENTRAL AVENUE. PROVIDE POLE BASE AND ACCESSORIES TO MATCH EXISTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. CIRCUITS PART OF EXISTING STREET LIGHTING.
5. PROVIDE 120/208V 1PH POWER TO POP-UP BARRIER CONTROL PANEL (HANDLES 2 BARRIERS). PROVIDE CONDUIT AND CONDUCTORS PER WIRE AND CONDUIT LEGEND AND MANUFACTURER'S REQUIREMENTS.
6. REFER TO ACTIVE VEHICLE BARRIER DETAIL SHEET FOR WIRE AND CONDUIT SCHEDULE AND BARRIER CONTROL PANEL.
7. PROVIDE 4" PVC CONDUIT CASING UNDER ROADS.
8. TIE INTO EXISTING SITE LIGHTING, INTERCEPT AND EXTEND EXISTING CONDUCTORS. PROVIDE PULL-BOXES/MANHOLES AS REQUIRED.
9. FOR CONDUIT "C-7" CONDUCTORS, PROVIDE 2 STRAND 62.5 MM MULTIMODE FIBER, AND 2 #14 FOR 24V TO OPERATOR CONTROLS ON BATTERY BACKUP. INSTALL CONDUIT "C-7" WITHOUT SHARP BENDS IN ACCORDANCE WITH MULTIMODE FIBER REQUIREMENTS. OVERALL INSTALLATION REQUIREMENTS VARY SLIGHTLY WITH EACH PROJECT. THESE REQUIREMENTS ARE TYPICAL. VERIFY THESE AND ALL OTHER INSTALLATION REQUIREMENTS WITH MANUFACTURER BEFORE BID.
10. CONTRACTOR SHALL VERIFY/COORDINATE WORK TO RUN CONDUIT TO EXISTING PANELS A AND D.



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DESIGNED BY:	ISSUE DATE:
DRAWN BY:	07 JANUARY 2019
CHECKED BY:	SOLICITATION NO.:
DATE:	
CONTRACT NO.:	
PROJECT NO.:	
PROJECT CODE:	
WARREN AFB PROJECT NO.:	

MARK	DESCRIPTION	DATE

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

SITE LIGHTING PLAN

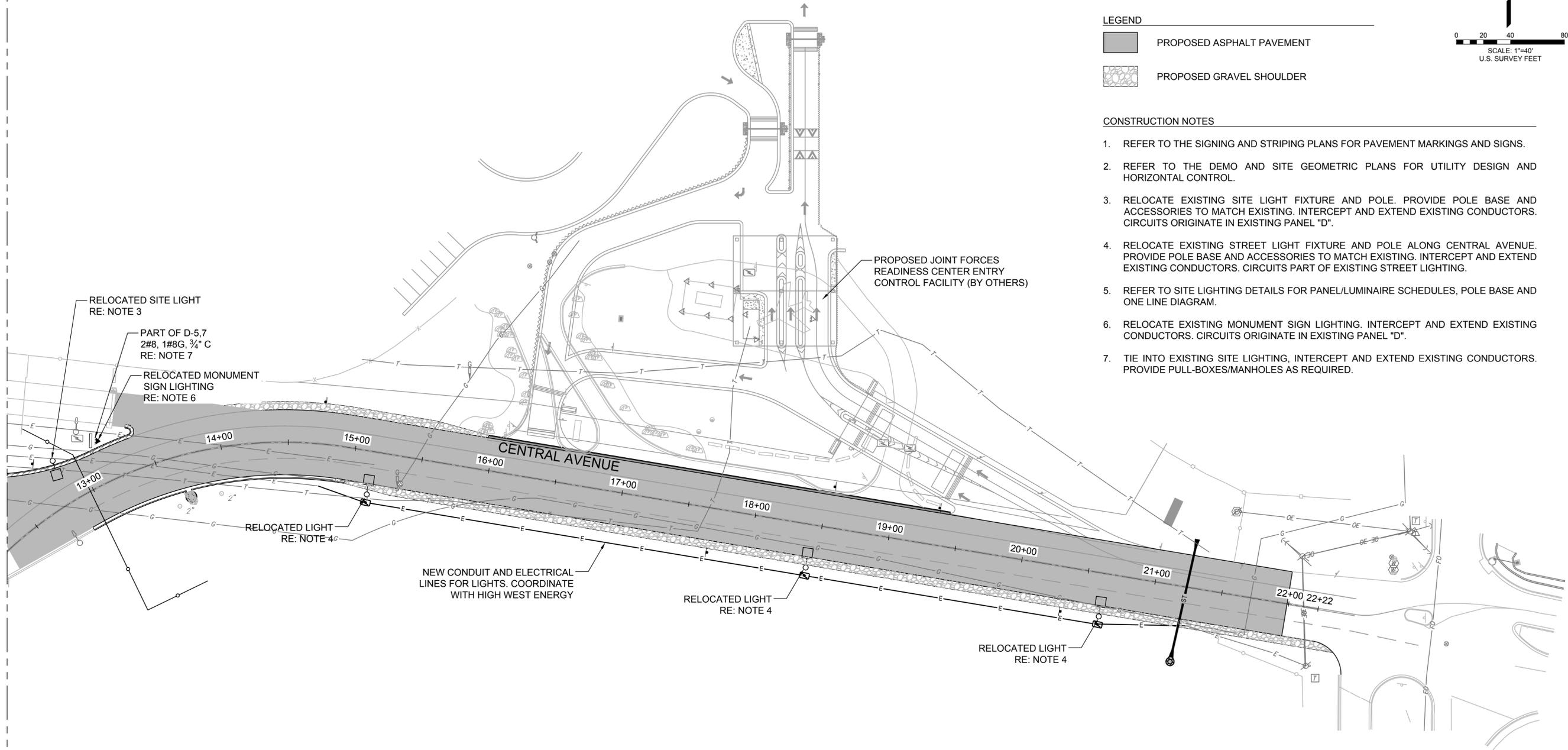
SHEET ID
C-120
SHEET OF



MATCHLINE
SEE SHEET C-121

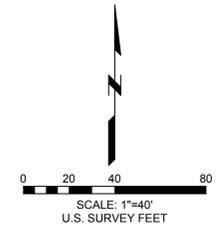
D
C
B
A

MATCHLINE
SEE SHEET C-120



LEGEND

-  PROPOSED ASPHALT PAVEMENT
-  PROPOSED GRAVEL SHOULDER



CONSTRUCTION NOTES

1. REFER TO THE SIGNING AND STRIPING PLANS FOR PAVEMENT MARKINGS AND SIGNS.
2. REFER TO THE DEMO AND SITE GEOMETRIC PLANS FOR UTILITY DESIGN AND HORIZONTAL CONTROL.
3. RELOCATE EXISTING SITE LIGHT FIXTURE AND POLE. PROVIDE POLE BASE AND ACCESSORIES TO MATCH EXISTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. CIRCUITS ORIGINATE IN EXISTING PANEL "D".
4. RELOCATE EXISTING STREET LIGHT FIXTURE AND POLE ALONG CENTRAL AVENUE. PROVIDE POLE BASE AND ACCESSORIES TO MATCH EXISTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. CIRCUITS ORIGINATE IN EXISTING STREET LIGHTING.
5. REFER TO SITE LIGHTING DETAILS FOR PANEL/LUMINAIRE SCHEDULES, POLE BASE AND ONE LINE DIAGRAM.
6. RELOCATE EXISTING MONUMENT SIGN LIGHTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. CIRCUITS ORIGINATE IN EXISTING PANEL "D".
7. TIE INTO EXISTING SITE LIGHTING. INTERCEPT AND EXTEND EXISTING CONDUCTORS. PROVIDE PULL-BOXES/MANHOLES AS REQUIRED.



US ARMY CORPS OF ENGINEERS
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RESIGNED BY:	ISSUE DATE:	CONTRACT NO.:	PROJECT CODE:	DATE	DESCRIPTION
TKW	07 JANUARY 2019	W9128F-10-D-0011	GHJLN 12.3100		
DJM	SOLICITATION NO.:				
TKW	CHECKED BY:				
TKW	SUBMITTED BY:				
FARNSWORTH GROUP	ANSI D'				
WARREN AFB PROJECT NO.:					

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING
SITE LIGHTING PLAN



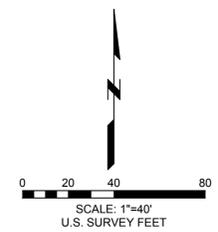
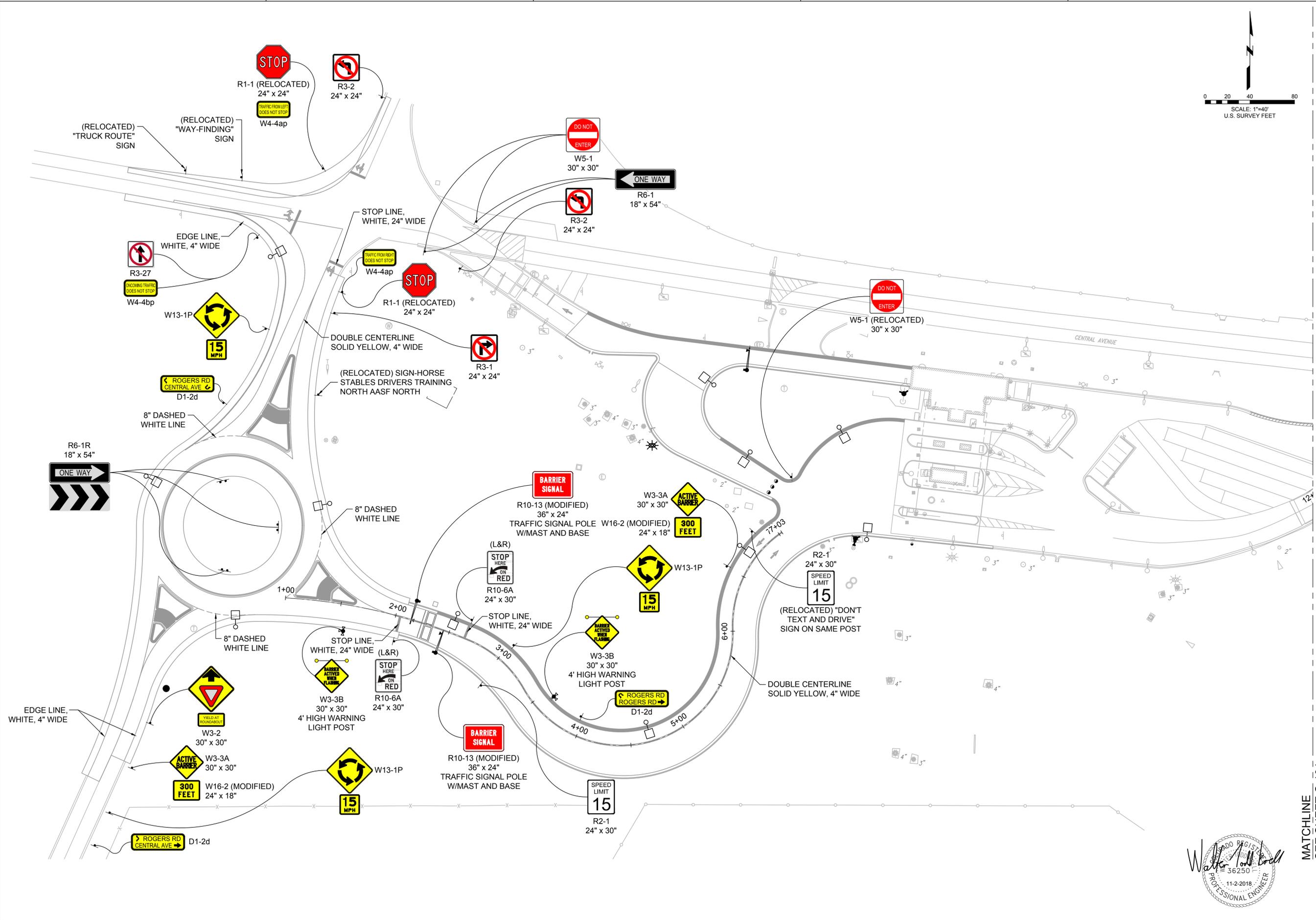
SHEET ID
C-121
SHEET OF

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US ARMY CORPS OF ENGINEERS
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DESIGNED BY:	TRK	ISSUE DATE:	07 JANUARY 2019
DRAWN BY:	DJM	SOLICITATION NO.:	
CHECKED BY:	TWK	CONTRACT NO.:	W912BF-10-D-0011
SUBMITTED BY:	FARNSWORTH GROUP	PROJECT CODE:	GHNL 12.3100
DATE:		ANSI ID:	
DESCRIPTION:		MARK:	

GATE 5 CENTRAL AVENUE INTERCHANGE
 FE WARREN AFB, WYOMING

SIGNING AND STRIPING PLAN

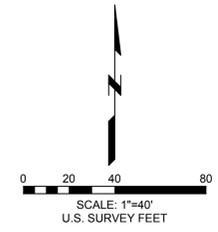
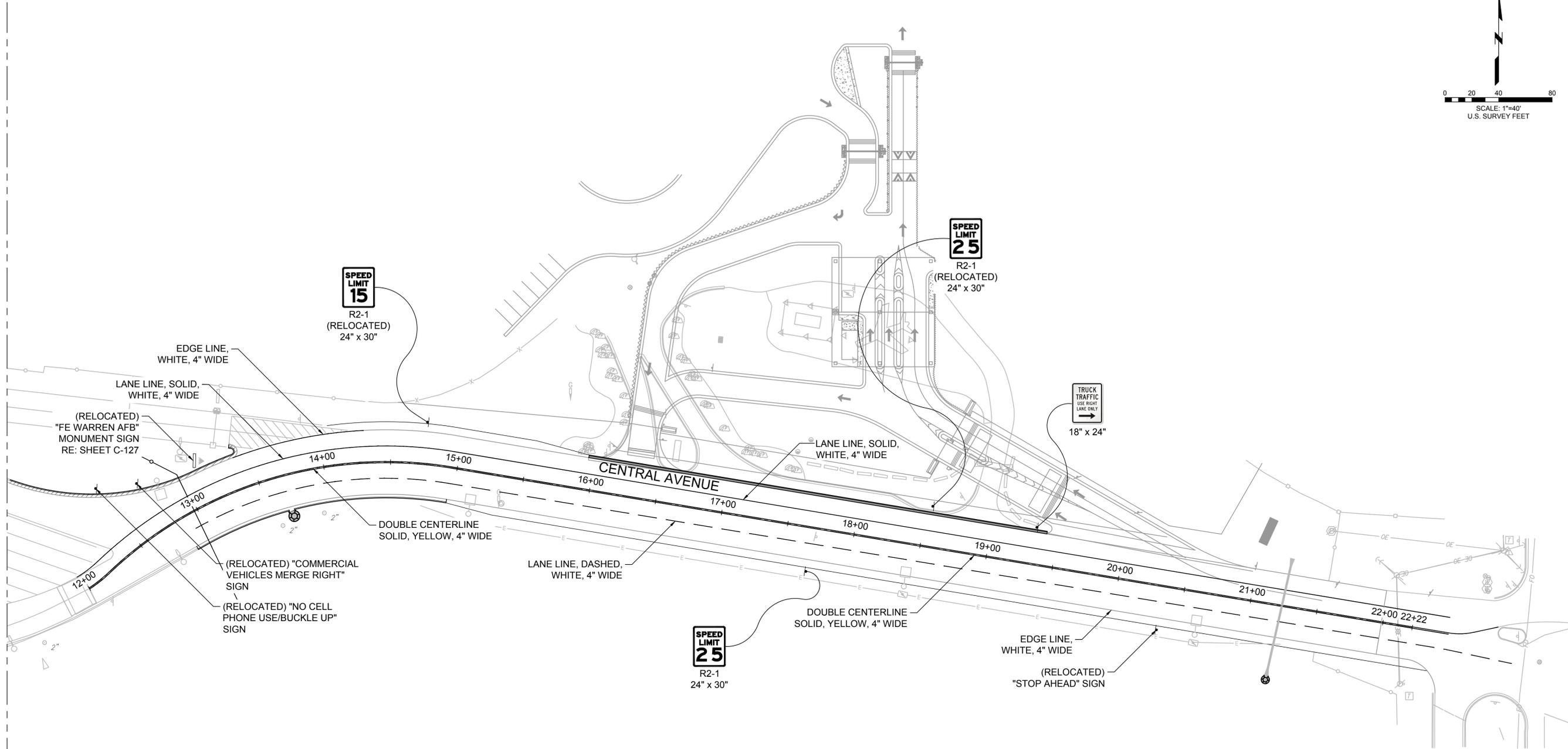
SHEET ID
C-122
 SHEET OF



MATCHLINE
 SEE SHEET C-101

D
C
B
A

MATCHLINE
SEE SHEET C-100



US Army Corps of Engineers
OMAHA DISTRICT
OMAHA, NEBRASKA

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ISSUE DATE	ISSUE DESCRIPTION	DATE	DESCRIPTION	MARK
07 JANUARY 2019	SUBMITTED BY: FARNSWORTH GROUP			
	CHECKED BY: TWK			
	DESIGNED BY: TWK			
	DRAWN BY: DJM			
	CONTRACT NO.: W9128F-10-D-0011			
	SUBMITTAL NO.: 1			
	PROJECT CODE: GHNL 12.3100			
	PROJECT NAME: WARREN AFB PROJECT NO.			

GATE 5/CENTRAL AVENUE INTERCHANGE
FE WARREN AFB, WYOMING

SIGNING AND STRIPING PLAN



SHEET ID
C-123
SHEET OF