

**DECISION RECORD and FINDING OF  
NO SIGNIFICANT IMPACT for the  
Brown Cow II POD Coalbed Natural  
Gas Project  
Carbon County, Wyoming**

**September 2006**



**MISSION STATEMENT**

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.



# United States Department of the Interior



BUREAU OF LAND MANAGEMENT  
Rawlins Field Office  
P.O. Box 2407 (1300 North Third Street)  
Rawlins, Wyoming 82301-2407

September 20, 2006

In Reply Refer To:  
1790  
Brown Cow II POD CBNG

Re: Environmental Assessment for the Atlantic  
Rim Interim Drilling: Brown Cow II Pod  
CBNG Project

Dear Reader:

We are providing you a copy of the enclosed Decision Record for your information and use. The Decision Record identifies BLM's decision, explains the rationale for reaching the decision, and includes the additional requirements for implementation of the Brown Cow II POD Coalbed Natural Gas (CBNG) Project.

On July 28, 2006, the BLM released the *Environmental Assessment for the Atlantic Rim Coalbed Natural Gas Development Project, Brown Cow II POD*. The Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act and other regulations and statutes in order to fully disclose the potential environmental impacts of the alternatives (Proposed Action and No Action alternatives). In addition, the release of the EA served to solicit public comment on the alternatives and analysis. The EA identifies mitigation measures incorporated into the Proposed Action to reduce potential impacts.

A notification of this decision and a link to this Decision Record has been sent to governmental entities, individuals, and organizations who commented on this project or who have expressed interest in mineral-related activities proposed on BLM-administered public lands.

The BLM wishes to thank those individuals and organizations who provided input during this process. Your input has been essential in considering issues important to you.

If you require additional information regarding this decision, please contact Travis Bargsten, Project Manager, at the Rawlins address or phone (307) 328-4387.

Sincerely,

Field Manager

**DECISION RECORD AND FINDING OF NO  
SIGNIFICANT IMPACT**

Anadarko Petroleum Corporation (APC) and Warren E & P, Inc (Warren)  
Brown Cow II POD CBNG Development Project EA (BCII POD EA)  
EA No. WY-030-06-EA-194

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Introduction

APC (of Houston, Texas) and Warren (of Casper, Wyoming) have proposed to explore and potentially develop coalbed natural gas resources in the Brown Cow II POD Project Area (BCIIPA) within the Atlantic Rim Natural Gas Field Development Project Area (ARPA) located in Carbon County, Wyoming. The BCIIPA is located on federal surface and mineral estate administered by the Bureau of Land Management (BLM), Rawlins Field Office (RFO).

Because of the length of time necessary to complete the Atlantic Rim Environmental Impact Statement (AREIS), the operators asked the RFO to consider allowing exploratory drilling (and subsequent development, if feasible) within the ARPA to gather information for the AREIS and reduce leaseholder hardship. On June 1, 2001 an Interim Drilling Policy (IDP) was sent to all operators participating in the proposal to develop natural gas resources in the ARPA. The IDP was prepared by the RFO AREIS Interdisciplinary Team, with recommendations from the BLM's Reservoir Management Group. Interim drilling activities will be monitored by the RFO to ensure that activities do not significantly affect the environment or prejudice decisions to be made as a result of the analysis conducted in the AREIS. The draft AREIS was completed in December of 2005, and the RFO is currently working on development of the final EIS.

In December of 2003, 12 CBNG wells and associated infrastructure were authorized in the Brown Cow POD ("Brown Cow I POD"). The Brown Cow II POD consists of the construction, drilling, completion, and production of a total of 12 additional coalbed natural gas well locations, the construction, maintenance, and use of appurtenant access roads, utility corridors, gas-gathering and water-gathering pipelines, and appurtenant facilities. Produced water would be disposed of by injection wells, which may include the conversion of four existing, idle wellbores to deep injection wells and the drilling of one additional injection well at an existing location. The BCIIPA (which includes the original Brown Cow I POD project) encompasses approximately 3,692 acres. The life of the project is estimated to be 10-20 years.

The BCIIPA is located in Township 14 North, Range 91 West, in Carbon County, Wyoming. Access to the BCIIPA is provided by State Highway 789 and BLM Road 3309 (Wild Horse Road) from Interstate I-80. The BCIIPA is located approximately 7.5 miles north of Baggs, Wyoming.

### Alternatives Considered

The Environmental Assessment (EA) for the BCII POD EA considered two alternatives. The Proposed Action Alternative assessed and disclosed the projected effects of the proponents' proposal as outlined above and detailed in the "Proposed Action" portion of the environmental assessment. The "No Action" alternative assessed the effects of not implementing any portion of the proposal. Under the No Action Alternative, the RFO analyzed the effects of a denial of any further development associated with this project. This alternative provides a benchmark, enabling the decision-maker to compare the magnitude of the environmental effects of the alternatives.

Alternate project component locations were considered, but not analyzed further due to (1) agreement by the Proponents that the locations changed at the request of RFO during onsite inspections would be incorporated into the Proposed Action and (2) the new locations being considered the best feasible sites for 80-acre development within the BCIIIPA by the BLM IDT. The IDP limits the placement of interim activities within the ARPA to areas where sensitive resources do not exist. The location of both the BCIPA and BCIIIPA was chosen, in part, due to the existing infrastructure and previous disturbance resulting from the development of the historical Browning Oil Field, located within and adjacent to the BCIIIPA.

### Decision

Based upon the analysis of the potential environmental impacts described in the EA, and in consideration of the public, agency, and industry comments received for the environmental assessment, the RFO has selected the Proposed Action alternative to be implemented. The decision incorporates the Conditions of Approval provided in Appendix C to this Decision Record.

### Approved Project Components

The decision authorizes the permit approvals for the following project components within the BCIIIPA, subject to the the Conditions of Approval/Terms & Conditions applied to each APD (Appendix C) or Right-of-Way.

- Construction, drilling, completion, production, and reclamation at 12 natural gas well locations within the BCIIIPA.
- Construction of new access roads and facilities associated with natural gas development, including gas-gathering pipelines, water-gathering pipelines, utility corridors, and production facilities.
- Upgrade, use, and maintenance of existing roads.
- Conversion of up to 4 wellbores to deep injection wells, drilling of one additional injection well at an existing location.

### Rationale for Decision

The decision to approve the operator's proposed development was based upon the following factors:

1. Consistency with the Great Divide Resource Management Plan
2. National policy
3. Agency statutory requirements
4. Relevant resource and economic considerations
5. Application of measures to avoid or minimize environmental harm
6. Finding of no significant impact
7. Public comments, and
8. Consistency with the purpose and need for action

**1. Consistency with Land Use and Resource Management Plans**

The proposed action is in conformance with the planning direction developed for this area. The objective for oil and gas management decisions described in the Great Divide Resource Management Plan (1990) is to “provide for leasing, exploration, and development of oil and gas while protecting other resource values.”

**2. National Policy**

Private exploration and development of federal oil and gas leases is an integral part of the Bureau of Land Management’s oil and gas leasing program, under the authority of the *Mineral Leasing Act of 1920* and the *Federal Land Policy and Management Act of 1976*. The United States continues to rely heavily upon foreign energy sources. Oil and gas leasing encourages development of domestic oil and gas reserves, and reduces the United States’ dependence upon foreign energy supplies. Therefore, the decision is consistent with national policy.

**3. Agency Statutory Requirements**

The decision is consistent with all federal, state, and county authorizing actions required to implement the proposed action. All pertinent statutory requirements applicable to this proposal were considered.

**4. Relevant Resource and Economic Considerations**

Environmental impacts from the project to resources identified in the EA are minor and all deemed acceptable. Positive economic benefits are expected from this proposal.

**5. Application of Measures to Avoid or Minimize Environmental Harm**

Federal environmental protection laws such as the *Clean Air Act*, the *Clean Water Act*, and *The Historic Preservation Act* apply to all lands and are included as part of the standard oil and gas lease terms. The adoption of the mitigation and monitoring measures identified in Chapters 2 and 4 of the project EA, along with the site-specific Conditions of Approval found in the Applications for Permit to Drill

(APD) or Rights-of-Way, represent the best means to avoid or minimize environmental impacts.

**6. Finding of No Significant Impact**

Based upon the analysis of potential environmental impacts contained in the EA, the Authorized Officer has determined that the Proposed Action, with implementation of the site-specific Conditions of Approval applied to each APD, would not cause a significant impact to the quality of the human environment. An Environmental Impact Statement is not necessary.

**7. Public Comments**

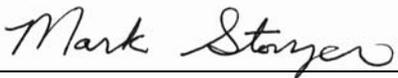
The BLM requested comments on the prepared EA from the public, local landowners; and Federal, State, Local and County Agencies. The BLM released a press release with a brief summary of the proposed action, location of the project, and information about how the public could comment. In addition, the EA and its appendices and reference documents were posted on the BLM Wyoming internet site for review and downloading and copies of the EA were available in Wyoming BLM Public Information Access Centers ("reading rooms") in Rawlins and Cheyenne. The comment period ran from July 28, 2006 to August 28, 2006. A total of six comments were received by the BLM. The summarized comments and BLM's responses are found in Appendix B of this Decision Record.

**8. Purpose and Need for Action**

The purpose of the proposed development is to exercise the lease holders' rights within the project to drill for, extract, and market gas products. National mineral leasing policies and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation is not incurred.

Appeal

Under BLM regulation this decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003 within 20 business days of the date this Decision Record is received or considered to have been received.

  
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Field Manager, Rawlins Field Office

September 20, 2006  
\_\_\_\_\_  
Date

Appendix A to the Decision Record

ERRATA

Modifications and Corrections To The  
Brown Cow II POD CBNG Development Project  
Environmental Assessment

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**Chapter 2 –Proposed Action and Alternatives**

Page 2-11, "Performance Standards" should be replaced with the following:

"Reclamation will be considered successful at 2 and 5 years after seeding if the criteria in the following two subsections are met:

**Two Years after Seeding**

- 3–4 seedlings per square foot or
- 30–50 percent of predisturbance ground cover, *and*
- Erosion features equal to or less than surrounding area.

**Five Years after Seeding**

- 50–80 percent of predisturbance ground cover,
- 90 percent desirable species,
- 0 percent invasive weed, *and*
- Erosion features equal to or less than surrounding area.

These standards may be adjusted if, in future assessment of the project reclamation activities, different standards would prove to be more protective of the environment and in consideration of site-specific outcomes."

**Chapter 3 –Affected Environment**

Page 3-45, Section 3.9.2 ("Other Recreation") first sentence:

Add "historic trail visitation."

Page 3-48, Section 3.11.2 ("Excavation Data") change second sentence to:

"Surveys were conducted at the proposed exploratory well pad sites and proposed injection well sites.

**Chapter 6 – References**

Add:

Manning, Robert. 2003. What to Do About Crowding and Solitude in Parks and Wilderness?  
*Journal of Leisure Research*. V.35, No.1, pp 107-118.

Sawyer, Hall. 2006. Progress Report for the Atlantic Rim Mule Deer Study.

**End Errata**

Appendix B to the Decision Record

Summary of EA Comments and BLM Responses

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The EA was released for a 30-day public review period on July 28, 2006. A total of six comment letters were received (three after the close of comment period but prior to decision). The letters have been reviewed to determine whether the information they provided would warrant a determination other than a Finding of No Significant Impact (FONSI). Substantive comments are summarized below, with BLM responses to the comments in italics. The RFO would like to thank all who commented for taking the time to review the EA.

**1. State of Wyoming, Game and Fish Department**

- a) "Wildlife will be less impacted if all pipelines and powerlines are buried under roads to reduce the project's footprint."**

*The project would allow for pipelines and powerlines to be buried within the 80'-wide disturbance corridor associated with each access road [EA at Page 2-8 and MSUP at A-5]. The impacts analysis addresses this disturbance to wildlife generally [EA at Page 4-10, and elsewhere]. Burying pipelines under the roadway was not proposed by the operators, as we understand, due to operational constraints.*

- b) "...wildlife would benefit if operators avoided removing tall shrubs and junipers."**

*During the onsite inspections, the Proposed Action was reviewed in the field. As noted in the EA [Page 2-21], the originally-staked AR Federal 1491 11-11 location was moved to avoid serviceberry shrubs. It is not anticipated that any tall shrubs (greater than 6' in height) or juniper trees would be removed.*

- c) Preliminary data show that deer used the main north-south drainage in the project area during the last two years to move to summer range from winter range, indicating this may be an important migration corridor. We suggest the BLM and operators work to minimize or move obstacles from this area. Using remote sensing equipment on wells to reduce site visits during the winter-spring and reducing disturbance to wintering and migrating mule deer... will further lessen impacts."**

*The preliminary data mentioned is referred to in the document [EA at Page 3-29]. Seasonal restrictions will be implemented from November 15 to April 30 [EA at Page 4-12] to reduce impacts to mule deer Crucial Winter Range. The impacts to the potential migration corridor are unknown, but are not anticipated to be significant as a result of project implementation. Mitigation measures to address impacts to potential migration corridors are currently being developed with the Wyoming Game and Fish Department.*

## **2. Alliance for Historic Wyoming**

- a) “[We] were surprised to see that visitation to the Cherokee Trail is not even listed among your recreation uses. We do not believe this is an accurate assessment.”**

*On Page 3-45, the EA states “During spring and summer, small numbers of visitors participate in rock collecting, camping, hiking, wildlife observation, outdoor photography, picnicking, pleasure driving, and off-road vehicle use.” Although trail visitation is not specifically mentioned, that activity was intended to be included under the section entitled “Other Recreation.” This has been clarified in the Errata.*

- b) “...we strongly encourage the BLM to work with the Fletchers in determining the most accurate routes of the Cherokee Trail and to use the most up-to-date information in siting the well pads and associated facilities...”**

*A survey of the trail to determine alignment(s) and to identify contributing segments has been completed. This information was used in review of the Proposed Action and placement of facilities and wells.*

- c) “...we trust you will undertake and continue consultation with all of the interested and affected tribes to ensure that their interests in this area, and in these historic trails, will be protected.”**

*In accordance with BLM policy and in compliance with the protocol agreement between the State of Wyoming Historic Preservation Officer (SHPO) and the Wyoming BLM, tribal consultation is not necessary for this project.*

- d) “...We continue to believe that a 0.25 mile buffer zone for the trails viewshed is wholly inadequate and continue to encourage a much expanded viewshed,...”**

*The protection distances for historic trails have been determined in consultation with the SHPO, and are outside the scope of this document to change.*

- e) “...we would encourage you to seek another route for access to the AR Federal 1491 11-2, one that would not include crossing the Cherokee Trail.”**

*The segment of trail crossed has been determined to be “non-contributing.” The proposed access route for the AR Federal 1491 11-2 is constrained by topography, among other things. The proposed route was reviewed at an onsite inspection and determined to be the most feasible route to reach the well location.*

- f) “...we noticed that no cultural resource surveys have yet been completed at the proposed injection well sites...”**

*Class III cultural resource surveys have subsequently been completed for all project components, including the proposed injection wells. This has been clarified in the Errata.*

- g) "We also hope that you will take every step possible to ensure that visitors to these historic trails are not subjected to the constant flow of heavy truck traffic near this historic trail."**

*The proposed action will not result in a constant flow of heavy truck traffic. As provided in Chapter 2- page 2-10, Table 2-2, traffic activity is expected throughout the life of the project. Traffic represents a cost to the Operator, and thus it is assumed that unnecessary traffic is minimized by the Operator in order to reduce costs. A certain amount of traffic is necessary for the production operations, even if remote sensing is used. This traffic will "...potentially affect the recreation setting due to visual impacts and increased traffic on roads." (EA at Page 4-15). Traffic will vary depending upon the phase of operations. Initially, drilling and construction activities will result in the most traffic. This activity will decrease as production operations continue.*

- h) "...for those wishing to follow the Cherokee Trail, avoiding the project area by going elsewhere is not an available option."**

*The Proposed Action would result in disturbance within the viewshed of the Trail. Through consultation with SHPO, the project has incorporated or been assigned mitigation strategies (see Conditions of Approval, Appendix C to this Decision Record) to reduce impacts to trail visitors. The segments affected have been determined to be "non-contributing." However, effects to those segments regardless of status, would result in trail visitors having to encounter the project components if such visitation were to occur.*

- i) "...we did not see any mention in the EA of proposed training for employees on this project with regards to the importance of protecting the cultural resources they will encounter in the field."**

*In accordance with BLM policies, the BLM relies upon pre-disturbance inventories and monitoring during construction by BLM-approved archaeologists where potential for cultural resources is high. Project employees will also be required to stop work should they identify cultural resources in the field during operations. The BLM has encouraged Operators to provide the necessary training for such identification. The BLM believes that these measures are appropriate and provide full compliance with regulatory requirements.*

### **3. Anadarko Petroleum Corporation**

- a) "We believe the reclamation timelines presented on page 2-11 fail to account for the limits and unpredictability of nature."**

*Reclamation success criteria ("performance standards") have been utilized as a tool for the objective assessment of reclamation success for many years within the Rawlins Field Office (see "Continental Divide/Wamsutter II Reclamation Plan-August 1998); as such, the criteria provide a repeatable and objective standard to consider reclamation success.*

*These criteria, it is acknowledged by the BLM, may be difficult to obtain in certain circumstances and in years with low precipitation. Furthermore, the BLM acknowledges that factors outside of the control of operators influence*

reclamation success. These criteria, then, may be considered a standard that is not attainable in all years. The BLM has an accumulated and storied understanding of the unpredictability of reclamation success.

However, the goal of reclamation may broadly be stated as the stabilization of disturbed areas in the short-term, and the restoration of plant communities and ecosystem function in the long-term. To set the standards too low, thereby assuring success even in the years where reclamation is the most difficult to achieve, does not allow for the emphasis and urgency reclamation is due.

In practice, the BLM routinely inspects disturbances associated with oil & gas activities. Likewise, operators are encouraged to monitor reclamation success associated with their own operations. When operator-monitoring is not provided (as in this project, where the proponents did not provide a plan for such monitoring in the Master Surface Use Plan), the BLM has the obligation to ensure expectations are set with regard to reclamation success. It is unlikely that any standards for reclamation success could be perfectly formulated for the various settings (soils, vegetation productivity, aspect, slope, micro-climate) over the BCIIPA and uncertain future conditions (precipitation, growing season length, plant community dynamics, foraging pressure, etc.). Thus, the BLM must set reasonable standards that provide objectives for the operator to meet, and for impacts to be judged.

Practically, when the criteria for reclamation success are not met, the operator is contacted to initiate planning and implementation of reclamation methods to adjust to site-specific and time-specific conditions. The BLM allows operators broad latitude in finding methodologies (i.e., mulching, surface texture manipulation, seed distribution, etc.) that fit the site-specific conditions.

In the comment, you imply that this standard could lead the BLM to "require reseeding each year" with corresponding soil disturbance and reclamation then being "virtually impossible to achieve."

It is the operator's responsibility to develop the correct procedures for reclamation; your request that the BLM proscribe the procedures ("...too much focus on results and not enough on the reclamation process") would only lead to the weight of reclamation success being placed upon the BLM, not on the entity responsible—the operator.

Due to recent changes in the BLM's criteria for reclamation success within the AREIS effort, the criteria have been changed to reflect that effort and make this project consistent in standard with future authorizations within the ARPA (see "Errata"). However, your main contention still remains, and the above response still applies.

**b) "On page 3-22, BLM asserts there are four wetlands features located within the EA project area... Anadarko does not believe that any wetlands... exists (*sic*) within the project boundaries."**

As described in the EA, the BLM relied upon USFWS National Wetland Inventory (NWI) data to screen the potential for wetlands to occur within the project area. This dataset indicated that four wetlands exist. As stated on Page 4-p "At the time of the site visit no wetland indicators were observed at the proposed well

site. Therefore, no direct impacts to jurisdictional wetlands or riparian areas are expected to occur.”

The BLM is obligated to use the best-available information in preparing an EA. The NWI dataset is a recognized source for screening potential for wetland occurrence, and so the dataset results were disclosed. Since the project components were reviewed in the field during the onsite inspections and no wetland features were observed to be directly impacted by the proposed action, the analysis led to the conclusion that no direct impacts to wetlands would occur. The BLM can not reasonable support a conclusion that no wetlands exist within the project area, since a field inventory effort has not been conducted to support or refute such a claim.

**c) “...Anadarko believes it is unnecessary for BLM to consider Colorado’s [air quality] standards given the location of the project area and the lack of any meteorological data supporting a potential to impact Colorado.”**

The analysis includes Colorado air quality standards due to the proximity of the project (7 miles) to the Colorado border. It is conceivable that air quality impacts from a project could realized seven miles distant, given “The atmospheric conditions in the BCII PA result in excellent dispersion of pollutants” (EA at Page 3-5).

**d) “...the draft Atlantic Rim [EIS] fully considers to (sic) the potential impacts of the whole project,... negating any need to analyze any such impacts in this document.”**

This EA is not tiered to the AREIS, and a decision has not yet been made in regards to the AREIS. Since this document does not tier to the AREIS, impacts from this project need to be analyzed and disclosed in accordance with BLM policy and NEPA.

**e) “...Anadarko again questions the relevance of the Colorado data. ...to ensure consistency with the Atlantic Rim EIS, BLM should employ the standards used in that document.”**

The AREIS also considers Colorado as within the potentially effected environment (see AREIS Air Quality Technical Support Document Map 1.1:)

[http://www.wy.blm.gov/nepa/rfodocs/atlantic\\_rim/25techsuppdoc.pdf](http://www.wy.blm.gov/nepa/rfodocs/atlantic_rim/25techsuppdoc.pdf)

Features such as Mt. Zirkel wilderness are considered in the far-field visibility analysis. Mt. Zirkel is located in northern Colorado.

As such, the EA is consistent with the Atlantic Rim EIS approach to considering potential impacts to air quality resources.

- f) **"On page 3-17 in section 3.5.2.3, BLM asserts that '[m]ost of the surface water features in the BCIIPA qualify as waters of the U.S.' ...we believe this statement is overly broad and unnecessary for the purposes of this EA."**

*"Surface water features" in the project area may be defined as ephemeral draws with a defined channel, intermittent stream channels, and any stock ponds fed by natural flow. All surface water features in the BC II PA are potential waters of the U.S., depending upon final jurisdictional determination by the Army Corps of Engineers (ACE). Since the BLM did not request jurisdiction determination by the ACE, a decision was made to conservatively consider the possibility that all such features could be considered waters of the U.S.*

- g) **"BLM fails to note that Anadarko is currently treating these areas for weeds and is employing all reasonable methods to reduce the spread of noxious weeds."**

*Weed populations are present, as provided in the EA (see Page 3-22 and 3-23). In 2005 the BLM conducted compliance inspections of several wells authorized under the first Brown Cow POD. Due to a lack of adequate reclamation success and weed control, the BLM ordered Anadarko to treat weed populations and conduct additional work to initiate reclamation.*

- h) **"BLM has failed to take into consideration more recent information provided to the BLM by Anadarko in the context of the Atlantic Rim EIS, which contradicts the information presented here. Anadarko hired Public Opinion Strategies to conduct a telephone survey of 300 adult resident of Carbon County... According to the results of this study,... (78%) indicated support for increased natural gas production..."**

*The information provided in Anadarko's survey does not contradict the data summarized in Section 3.12.4 of the EA. The questions asked in each of the surveys are clearly different ("more important" versus "support for"). The results of the 1996 survey cited in the EA could likely be similar to a survey conducted today, if identical questions were asked.*

- i) **"On page 4-3, in section 4.4.1, BLM sets out a number of significance criteria with respect to soils... Anadarko questions the technical and scientific support for these standards... Without defining what BLM will employ as pre-disturbance productivity levels, we are at a loss as to how BLM determined whether this criterion would be exceeded such that impacts might be deemed significant."**

*The impact significance criteria for soils were taken from the Atlantic Rim EIS effort. It is outside the scope of this document to revise the EIS significance criteria for soils.*

- j) **"...BLM makes a statement [Page 4-20] regarding worker safety... We question the relevance of the statement given the age of the supporting document and the lack of any other substantive information to support this statement."**

*This is the latest local available information for consideration of potential occupational hazards associated with local CBM activities. You did not provide any more recent or contradictory information source. As such, the BLM cites a concern in this portion of the document that, to the BLM's knowledge, may still exist.*

- k) "...BLM makes the following statement: 'Other recreational use, such as automobile tours and wildlife viewers, would also relocate and use other areas.' BLM has provided no support in the document for this statement..."**

*This prediction of potential impacts was made based upon the results of several studies conducted elsewhere, including R. E. Manning, 2003 ("An impaired visitor experience has the potential to lead to reduced visitation and eventually displacement of visitors.") and Regula & Robertson, 1994 ("Researchers hypothesize that recreationists who are not satisfied with their experience because of less than desirable setting attributes go elsewhere..."). Please contact us if you require full citations.*

#### **4. Biodiversity Conservation Alliance**

- a) "What is the purpose and need for a second exploratory pod in the Brown Cow area? It appears that all of the objectives raised on page 2-1 of the EA should be able to be met by the original (and adjacent) Brown Cow drilling."**

*The objectives on Page 2-1 do not constitute the purpose and need of the project. The purpose and need for the project is provided on Page 1-1. This project is in compliance with the guidance provided in the Interim Drilling Policy (IDP), if a Finding of No Significant Impact can be found and the project does not limit the choice of reasonable alternatives under the EIS.*

- b) "Surface well spacing should not be allowed to be denser than 160-acre spacing, lest this project limit the alternatives available for implementation in the [AREIS]."**

*The development of other interim AREIS PODs at 80-acre spacing (i.e., Cow Creek, Blue Sky, Sun Dog, etc.) has not limited the available alternatives, and the proposed action will not, either. The interim PODs are being used to collect information that is being considered under the full-development scenario of the EIS. Such information include the necessary well spacing to recover the natural gas, successes and limitations of produced water disposal methodologies, techniques to minimize surface disturbance, potential effects to resources from drilling activities, etc. In light of the on-going studies, (such as the mule deer collar study begun in 2005) the interim PODs allow for observations and incorporation of best management practices developed during implementation of POD activity. The interim PODs provide valuable information in the refinement of alternatives and best management practices.*

**c) "Special measures should be required to minimize the visual impacts of the proposed drilling on the viewshed of [BLM Road 3309]."**

*As described in Section 2.3, the location of facilities has been scrutinized to minimize obtrusive cut and fill slopes, and to utilize topography to screen facilities, where possible. In addition, the operator will be required to utilize site-appropriate colors for painting above-ground facilities (see COAs, Appendix C).*

**d) "...the failure to provide a complete analysis of aquifer drawdown in the Brown Cow II EA constitutes a violation of NEPA."**

*On Page 4-5 of the EA, impacts to water are considered. The EA states "Ground water would be removed from the coal seam aquifers within the Mesaverde Group... The targeted coal seams are classified as confined to semi-confined aquifers because they are bounded by confining layers that consist of impervious to semi-pervious layers of shale and siltstone. Hydraulic connection between the coal seams and any aquifer stratigraphically above or below the coal seam is limited."*

*A drawdown analysis is not necessary; the proposed action will dewater the targeted coal seams. Due to the presence of confining layers, drawdown "...from an aquifer stratigraphically above or below the affected coal seams would be small." (EA at Page 4-5).*

**e) "Other impacts [from the Proposed Action] include methane migration to the ground surface (posing a serious health risk to humans as well as wildlife, soils, and vegetation), ground surface subsidence, soil erosion from the well discharges and the documented risk of underground fires sparked by spontaneous combustion. These issues must be fully analyzed in a supplemental NEPA document..."**

*The depth of the targeted coal seams is relatively deep ("...2,025 feet to 3,325 feet" EA at Page 2-6). Due to the depth, discontinuous nature of the coal seams, and distance to outcrop, ground subsidence, methane seep, and spontaneous combustion is unlikely. No surface discharge of produced water is proposed, thus your concern regarding "...soil erosion from the well discharges" is not applicable.*

**f) "The Brown Cow II Pod Violates FLPMA... The Brown Cow II Pod is outside the reasonably foreseeable development scenario of the Great Divide Resource Management Plan."**

*The RMP states that the entire planning area is open to oil and gas leasing and does not make a distinction as to whether oil and gas development is conventional or otherwise. The minerals management program policy and goals described in the RMP are to provide the opportunity for leasing, exploration, and development of oil and gas while protecting other resource values. CBM-related activity is not unanticipated just because the RMP does not use the specific words "coalbed methane". "Methane" and "natural gas" are used interchangeably regardless of the source. No specific formation, bed, or seam was identified in the RMP as being suitable or unsuitable for oil and gas development. Natural gas production operations are very similar, and CBM development is no exception. Development and production sequence described in the Oil and Gas Appendix in the Draft Environmental Impact Statement for the Medicine Bow-Divide Resource*

*Management Plan (later the Great Divide RMP) describes typical development operations, even to the point that water may need to be removed during natural gas production. Therefore, even if coalbed methane has not been specifically mentioned, the activity is clearly consistent with the terms, conditions, and decisions of the approved plan [43 CFR 1610.0-5(b)].*

*In the Interior Board of Land Appeals' (IBLA) order denying the request for stay by the Wyoming Outdoor Council (IBLA 2003-358), the IBLA stated that "We have scrutinized the Great Divide RMP/EIS and conclude that its analysis of oil and gas impacts adequately analyzed impacts associated with potential CBM exploration and development in the RFO area, which is located outside the Powder River Basin. Although the BLM did not flag CBM as a discrete topic in the draft and final EIS's, those documents did address the issues typically associated with natural gas production in general and CBM production in particular (e.g. water volume, quality, discharge/disposal, contamination of surface and groundwater, sodium adsorption ratio (SAR), and the uses to which produced water can be put)."*

**g) A number of your comments address your contention that this project violates NEPA and other rules because of the use of an IDP (i.e., "Because the IDP has never been subjected to public scrutiny under NEPA, this policy is illegal and no drilling can legally be tiered to this illegally created rule."). These comments have been considered in the response, below.**

*A June 13, 2006 decision by the Interior Board of Land Appeals (IBLA, # 2003-57 & 2003-58) found that "An Interim Drilling Policy that establishes numerous conditions and criteria designed to ensure that exploratory drilling activity does not exceed the limitations on interim actions specified by 40 CFR 1506.1 is not itself independently subject to review and analysis under NEPA, so long as when and to the extent it is incorporated into a proposed agency action, full NEPA review of the effects of that action is undertaken." The Brown Cow II POD EA constitutes "full NEPA review" for the proposed action.*

**h) "The EA violated NEPA by failing to evaluate a range of reasonable alternatives. ...the BLM has stated in the Brown Cow II Pod EA, 'Only alternatives addressing allowable actions specified in the Interim Drilling Policy are considered in this analysis... All other alternatives would only be considered in the Atlantic RIM (sic) EIS analysis. As a result, no alternatives to the project, other than the No Action Alternative, were considered in this analysis' EA at p.2-22."**

*The quotation that you provide, and thus the basis of the argument that 'The EA violated NEPA by failing to evaluate a range of reasonable alternatives', is not present in the Brown Cow II POD EA. We are unsure where this quote originated. Our assumption is that you mistakenly brought this quote forward from another comment letter on another EA.*

*Alternatives are described in Chapter 2 of the EA. No unresolved resource conflicts were established by the BLM IDT or during EIS scoping that would lead to full analysis of additional alternatives beyond the Proposed Action and No Action alternatives.*

**i) "The EA relies on inadequate mitigation measures for sage grouse."**

*The mitigation measures provided for sage grouse have been developed in consultation with Wyoming Game & Fish Department. The mitigation measures provided in the EA are consistent with current BLM policy, including Instruction Memorandum WY-030-2006-001, "Statement of Policy Regarding Greater Sage-Grouse Management Definitions and Use of Protective Stipulations and Conditions of Approval (COAs)."*

**j) "While the EA does address the cumulative impacts of all 200 interim wells, it does not address impacts from existing CBM development in the area of the [AREIS Project]."**

*Section 4.17 of the EA addresses cumulative impacts. The Area of Influence, domains for conducting cumulative impacts analysis, are provided along with the rationale for area delineation. We believe that you may, again, be confusing your review of a different document with the Brown Cow II POD EA.*

**k) "BLM could run the same [sage grouse demographic] model for the ARPA, and must if it is to adequately satisfy NEPA's hard look requirements... This argument also applies to burrowing owls and Wyoming pocket gophers... Supplemental NEPA documentation is needed to establish the BLM's scientific integrity as mandated in the "hard look" requirements of NEPA before the Sun Dog EA can become a legal document."**

*The subject EA does not consider development in the Sun Dog POD. It appears that this comment was directed towards the Sun Dog development, and so is not being considered further.*

**l) "Upon comparing [BCA's own list] to Appendix D in the EA, we noticed that the pale milk snake, Hooker wild buckwheat and western phacelia were wrongfully excluded."**

*The Brown Cow II POD EA does not contain an Appendix D, so we are not sure which document you are referring to.*

**m) "Total acreage disturbed is actually much greater because roads and pipelines are crisscrossed throughout the pod. The total effects of fragmentation and other indirect effects... must be included in the disturbance estimates."**

*Table 2-3 is intended to summarize total surface disturbance within the BCIIPA. The maps and narrative describing the proposed action make clear the distribution of the activities throughout the project area.*

*The EA addresses displacement and fragmentation in the impacts analysis, Chapter 4 (see Page 4-10 and 4-28).*

**n) "The EA does not disclose the extent of hydraulic fracturing inherent to the project..."**

*Hydraulic fracturing of target formations is not part of the proposed action.*

- o) "The effects of the project on biological soil crusts have not been examined."**

*Potential effects to biological soil crusts are described and analyzed on Page 4-4.*

- p) "The EA requires that a 500-foot buffer of vegetation will be maintained between surface disturbances and drainage channels, but then leaves open the possibility that 'exceptions' may be granted. EA at 2-21."**

*The quotation that you provide is not present in the Brown Cow II POD EA. We are unsure where this quote originated. Our assumption is that you mistakenly brought this quote forward from another comment letter on another EA.*

- q) "Reserve pits should be traded in for pitless drilling..."**

*No unresolved resource conflicts were identified that require pitless drilling, and so this alternative was not considered.*

- r) "The EA should be amended to clarify that each road and wellsite should receive a fossil survey and clearance prior to... activities."**

*A BLM geologist has reviewed the site-specific actions, and determined that paleontologic surveys are unnecessary, in accordance with BLM protocol.*

- s) "The project area should be block-cleared by botanical survey for Gibben's beardtongue..."**

*A BLM biologist has reviewed the site-specific actions, and determined that the likelihood of encountering Gibben's beardtongue is low, and that botanical surveys are unnecessary.*

- t) "...the BLM has failed to develop a full range of reasonable alternatives including a minimum footprint directional drilling alternative."**

*No unresolved resource conflicts were identified that require consideration of mandated directional drilling.*

- u) "BLM must analyze the use of alternative [road] layouts and construction standards to minimize impacts to the environment... Over-engineering these access routes to a standard crown-and-ditch gravel road constitutes and (*sic*) unnecessary and undue degradation of the viewshed... two-tracks are commonly used for well access in the Powder River Basin and seem to accommodate drilling rigs and other equipment just fine."**

*The BLM is required to follow BLM Manual Section 9113 for authorization of new roads on BLM-administered public lands, which provides design standards for safe roads. Furthermore, use of two-tracks does not allow for the necessary year-round access to the exploratory POD without adverse environmental effects.*

- v) **"The connecting road between AR Fed 7-11 and AR Fed 1-11 should be eliminated as it is unnecessary and duplicative; the well site can more readily be accessed from the east via existing roads, avoiding any additional cut-and-fill disturbance on steep slopes."**

*Figure 2-1 displays the proposed action; there is no proposed road between these two wells (although there is a pipeline/utility corridor proposed between the wells). An historical two-track exists between these wells, but would not be used for oil & gas activities. This road segment is very steep and not suited for road construction.*

- w) **"The access (sic) roads to AR Fed 11-2 and Kaiser-Browning 4-2 should be re-sited to avoid any new crossings of the historic Cherokee Trail route."**

*This Cherokee Trail segment is non-contributing, and construction of the proposed road alignment was considered in the BLM's consultation with the SHPO. The proposed road alignment is the only feasible route to reach the well location, which is located in the preferred location to minimize cut and fill volumes and still maintain an 80-acre spacing of wells.*

#### **5. Coalbed Methane Coordination Coalition JPB**

- a) **"...no long term, deleterious impacts from this development appear evident at this time."**

*No substantive issues were brought forward.*

#### **6. National Wildlife Federation and Wyoming Wildlife Federation**

- a) **"...the discussion of environmental consequences, and, particularly, of cumulative impacts, should take into account the information developed in the Atlantic Rim EIS..."**

*The Cumulative Impacts Analysis (Section 4.17) addresses the potential for additional development within the AREIS area. The AREIS will analyze and disclose the full effects of the AREIS development. It is outside the scope of this document to consider all of those impacts (i.e., "...15-30% of the entire [AREIS] area would be affected by dust and disturbance..."). The Brown Cow II POD EA analyzes the direct, indirect, and cumulative impacts from the proposed action described in Chapter 2. The 2000-well development is not being considered in this analysis.*

- b) **"The Brown Cow II EA defines the purpose and need of the project in a fashion that is excessively narrow... [The listed purposes] do not [negate] the BLM's other obligations to conserve multiple resources and prevent unnecessary and undue degradation of the public lands."**

*Because a BLM obligation to protect resources in accordance with various other rules and regulations (Federal Land Policy Management Act; Clean Water Act; Comprehensive Environmental Response, Compensation, & Liability Act; Archaeological Resources Protection Act; etc.) is not specifically cited in the Purpose & Need does not allow the BLM to disregard these requirements. Where*

appropriate, the EA addresses these rules and regulations (see EA at Page 2-18, Page 2-20, Page 3-17, Page 3-20, Page 4-2, Page 4-13, and others).

Mitigation measures have been applied specifically to address other uses of the BLM-administered public lands (see Section 2.1.10 and Appendix C to this Decision Record). The BLM does not have a "...single-minded focus on facilitating [extraction of oil and gas]..." The purpose and need does not exclude protective mitigation or employment of best management practices. Furthermore, the purpose and need does not preclude the decision-maker from selecting the No Action alternative.

- c) "the Interim Drilling [Policy] does not require full development of each POD, but merely sets the parameters within which development must take place."**

The Interim Drilling Policy does not preclude selection of a No Action alternative, nor does it require a FONSI be reached for all proposed actions analyzed. The No Action alternative remains available to the decision-maker. The EA in Section 1.2.1 merely points out that the proposed action does not exceed the guidance provided in the IDP. Furthermore, the BLM would have considered fewer than 12 wells (yielding less than 24 total wells in the Brown Cow area) if that was proposed by the operator. The operator's proposed action entailed the drilling of 12 additional wells, and the BLM subsequently prepared the Brown Cow II POD EA.

- d) "BLM should consider the alternative of deferring additional development on Brown Cow II until following completion of the Atlantic Rim EIS and ROD... so that additional development at Brown Cow II does not prejudice foreclose (sic) alternatives currently under consideration for the [AREIS] ROD."**

CEQ guidance indicates that interim action "...prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives." (40 CFR 1506.1). The 12 additional CBM wells proposed for the Brown Cow II POD project are located adjacent to 12 previously-approved CBM wells, which was placed adjacent to the Browning Field historical oil development. The 12 additional wells are not extensive or intensive in nature relative to the AREIS project area, and are being authorized in the context of the existing infrastructure developed by the Browning Field activity.

The initial 12 CBM wells (Brown Cow I POD) did not foreclose alternatives or alternative development under the AREIS, and the additional 12 CBM wells in the proposed action would not, either.

- e) "What are the consequences if the performance standards for revegetation and reclamation are not met as prescribed."**

Please note that the performance standards have changed (see Errata). This question is already discussed; see response to question #39(a), above.

**f) "...remote monitoring of project facilities [should] be utilized to the greatest extent possible during the production phase."**

*The use of remote monitoring does not negate the need for continued well-site visitation, although the traffic activity associated with the project will be reduced upon the initiation of production operations, and the end of drilling and construction activity. An alternative requiring mandated remote monitoring was not developed, as there were no unresolved resource conflicts identified by the BLM IDT. The development of the mitigation that you propose could be implemented if found to be necessary (see response to Comment #6(g), below) .*

**g) "[The EA] has no discussion or analysis of the effect of the project on now-identified migration routes, [or] methods that might be employed to diminish those impacts..."**

*The on-going mule deer study has provided some indication that mule deer may migrate through or adjacent to the Brown Cow II Project Area (Sawyer, 2006).*

*It is unknown what the impacts to migrating mule deer may be as a result of this project. The Proposed Action entails the construction, drilling, and operating of 12 CBM wells and appurtenant infrastructure. This activity would be located adjacent to the existing 12 Brown Cow I POD wells, and the historical Browning Field oil development. The presence of the apparent migration corridors near this existing development supports the contention that mule deer will acclimate to the types of activity proposed.*

*The EA addresses the potential for adverse impacts to mule deer utilizing the project area on Page 4-11 and Page 4-28, and acknowledges the potential for "...fragmentation of migration corridors."*

*The on-going mule deer study would provide a means of monitoring potential impacts from the Brown Cow II POD activity. This would result in an opportunity to determine if and to what extent impacts might affect migrating mule deer. Consistent with the approach of interim activity yielding lessons for development and implementation of mitigation (such as remote monitoring), the observations could be used to develop mitigation measures for subsequent AREIS planning efforts, if adverse effects are observed.*

**h) "BLM's assessment, avoidance, and mitigation of impacts to sage-grouse should be informed by the best available science..."**

*See response to comment #4(i), above.*

**i) "[Researching and mapping winter habitat of sage grouse] should be done prior to commencement of the project so that well pads and other facilities are not placed directly in winter habitat."**

*Through review of the proposed action on the ground during the onsite inspections and consultation with Wyoming Game & Fish Department, the potential for sage grouse winter habitat was assessed. None of the project components are located within apparent sage grouse winter habitat.*

Appendix C to the Decision Record

APD Conditions of Approval

Government Contacts

(First Page of COAs Contains Information Subject to the Privacy Act [5 U.S.C. § 552a] and has been withheld)

GENERAL PERMITTING REQUIREMENTS

1. All lease operations are subject to the terms of the lease and its stipulations, the regulations of 43 CFR Part 3100, Onshore Oil and Gas Orders, Notices to Lessees (NTL's), the approved APD, and any written instructions or orders of the Authorized Officer. The following requirements are emphasized.

Abandonment: In the event abandonment of the hole is desired, oral approval may be granted by this office but must be followed within 5 days with a Notice of Intention to Abandon (Form 3160-5). Unless the plugging is to take place immediately upon receipt of oral approval, the BLM Branch of Minerals must be notified at least 24 hours in advance of the plugging of the well in order that a representative can witness the plugging operation. The Subsequent Report of Abandonment (Form 3160-5) must be submitted within 30 days after the actual plugging of the wellbore, reporting where the plugs were placed and volumes of cement used, along with copies of the service company invoice and job log.

The Operator shall promptly plug and abandon each newly completed, re-completed or producing well which is not capable of producing in paying quantities. No well may be temporarily abandoned for more than 30 days without prior approval of the Authorized Officer. When justified by the Operator, the Authorized Officer may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment from the site of a well, which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with a plan first approved or prescribed by the Authorized Officer.

Completion Report: If the well is completed as a dry hole or as a producer, Well Completion or Recompletion Report and Log (Form 3160-4) must be submitted within 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3160. Copies of all open hole and cased hole logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, daily drilling reports, daily completion reports, and all other surveys or data obtained and compiled during the drilling, completion, and/or workover operations, will be filed with Form 3160-4. Copies of all logs, as noted above, shall be submitted to this office on a Compact Disc in an ".las" digital file format and shall have a precision readout increment of 1.0 foot.

A copy of formation test reports, stimulation reports, directional survey (if applicable), etc. shall be promptly submitted to this office.

2. Approval of this APD does not warrant that any party holds equitable or legal lease title.
3. This permit is valid for a period of one year from the day of approval or until lease expiration/termination, whichever is shorter. If the permit terminates, any surface disturbance created under the application shall be reclaimed in accordance with the approved plan.
4. The spud date shall be reported to the BLM Authorized Officer's representative within 24 hours following spudding. A follow-up report on Form 3160-5 confirming the date of spud shall be promptly submitted to this office within 5 working days from date of spud.
5. Verbal notification shall be given to the BLM Authorized Officer's representative at least 24 hours in advance of pluggings, DST's and/or other formation tests, BOP tests, running and cementing casing (other than conductor casing), and drilling over lease expiration dates.
6. Verbal notification shall be given to the BLM's natural resource specialist at least 48 hours in advance of access road/well pad construction, seeding, and the initiation of any reclamation work.
7. Operations that deviate from the approved APD shall require prior written approval from the Authorized Officer. Emergency approval may be obtained orally but such approval does not waive the written report requirement.

8. All lease exploration, development, production and construction operations shall be conducted in a manner which conforms with all applicable Federal, State, and local laws and regulations.

9. Historic, Cultural, and Paleontological Resources

The Operator shall be responsible for informing all persons associated with this project that they shall be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site. If archaeological, historical, or vertebrate fossil materials are discovered, the Operator shall suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations shall not resume until written authorization to proceed is issued by the Authorized Officer.

Within five (5) working days, the Authorized Officer will evaluate the discovery and inform the Operator of actions that will be necessary to prevent loss of significant cultural or scientific values.

The Operator shall be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the Operator shall be allowed to resume operations.

*Master Drilling Plan*

BOP:

1. All BOPE shall meet or exceed the requirements of a 2M system as set forth in Onshore Order No. 2.
2. The ram type preventer(s) shall be tested to the approved BOP stack working pressure when a test plug is used. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing.
3. The annular type preventer(s) shall be tested to 50% of the approved BOP stack working pressure.
4. A Sundry Notice (Form 3160-5), along with a copy of the BOP test report, shall be submitted to this office within 5 working days following the test. Test reports shall include time and pressure charts and accumulator tests.

Casing and Cementing:

1. Pea Gravel or other material shall not be used to fill up around the surface casing in the event cement fall back occurs.
2. A Sundry Notice (Form 3160-5) along with a copy of the service company's materials ticket and job log shall be submitted to this office within 5 working days following the running and cementing of all casing strings.
3. All casing strings shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing.
4. Any change in the casing and cement design will be approved by the Authorized Officer prior to running casing and cementing.
5. No freshly hard-banded rough carbide pipe/collars will be rotated in the surface casing.
6. Surface and Production casing strings to be cemented back to the surface. In the event that cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to bring cement to surface. (OO#2, III, B., 1(c))

Mud Programs:

1. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.

Other:

1. A summary of the drilling operation and/or completion operation shall be submitted on Sundry Notice (Form 3160-5) to this office, along with letter-size copies of the final daily drilling reports and/or daily completion reports, upon completion of the well.
2. Any permanent plug placed in the well during drilling and/or completion operations must have prior approval of the Authorized Officer.
3. Gas produced from this well may not be vented or flared beyond an initial test period, 30 days or 50 MMcf, whichever first occurs, without approval of the Authorized Officer(as provided in NTL-4A).
4. DST's shall meet or exceed the requirements set forth in Onshore Oil & Gas Order No. 2.
5. If the well is completed as a dry hole, approval shall be obtained prior to the commencement of abandonment. Approval may be given orally by the authorized officer before abandonment operations are initiated. This oral request and approval shall be followed by a written notice of intent to abandon filed not later than the fifth business day following oral approval. Failure to obtain approval prior to commencement of abandonment operations shall result in immediate assessment under 43 CFR 3163.1(b)(3). (OO#2, III, G).

*Master Surface Use Plan*

Roads to be Constructed or Reconstructed:

1. Roads alignments shall be constructed as shown on the attached POD Map ("Exhibit A").
2. The sub-base of the proposed road shall be thoroughly compacted (to at least 85% maximum dry density), and surfaced with at least 4" (four inches) of gravel prior to drilling. A temporary variance to this condition of approval may be granted if the Operator requests such a variance, in advance and in writing, during periods when soil moisture is low.
3. Before proposed road construction activities begin, the topsoil (to a depth of 6") must be bladed to the side of the road and stockpiled to a depth of no greater than 24 inches. The topsoil stockpile shall be contoured so as to prevent water ponding or flow concentration. Once the barrow ditch and the cut slopes are constructed, the topsoil shall be spread over the cut slopes.
4. The cattleguard installed north of the AR Federal 1491 #3-14 shall be a minimum of 16 feet wide and 8 feet long, and will be designed consistent with AASHTO H-20 standards. Installed cattleguards shall be set on timber, precast concrete, or cast-in-place concrete bases at right angles to the roadway (see the attached diagrams: 9a, 9b, 10a, 10b, & 10c). Backfill around cattleguards shall be compacted. A 16 foot wide bypass gate shall be built adjacent to cattleguard structures. Fence end panels on either side of cattleguards shall be constructed using 3 posts with braces.
5. Wing ditches shall be placed in accordance with the table in Illustration 9 of the BLM Manual Section 9113. The Erosion Index of 20 shall be used. Wing ditches shall be staked on a slope of ½%-1%. Centerline stakes must be installed on no more than 100' spacing. If excessive road surface erosion occurs during the life of the project, additional culverts or wing ditches shall be installed, at the discretion of the BLM Authorized Officer.

Existing and/or Proposed Facilities If Productive:

1. The Operator shall comply with all federal, state, and local laws/regulations, including the use of properly permitted and authorized produced water disposal sites.
2. All open vent stack equipment such as heater treaters, separators, dehydration units, and flare stacks shall be designed and constructed to prevent birds and bats from entering or nesting in or on such units, and to the extent practical, to discourage birds from perching on the stacks.
3. Construction trenches and other openings left overnight shall be covered. Covers shall be secured in place and strong enough to prevent livestock or wildlife from falling through.

Location and Type of Water Supply:

1. The water supply source(s) for drilling must be approved and authorized by the State of Wyoming.

Methods for Handling Waste Disposal:

1. The Operator shall comply with applicable codes, rules, and regulations regarding the transport, handling, storage, and disposal of hazardous materials. In the event of any oil, produced water, or hazardous substance (per CERCLA Section 101(14)) release, the BLM shall be notified within 24 hours of the event. The Operator shall take all efforts to control and contain any such releases, and shall conduct appropriate response and clean-up activities as the situation warrants to protect human health and the environment.
2. The Operator shall maintain a hazardous materials/oil & gas release contingency response plan that applies to the Brown Cow II POD project, and shall provide the BLM with a copy of the current plan and any subsequent changes made to the plan.
3. Fluids containing any hydrocarbons (condensate, diesel, etc.) shall not enter the reserve pit.
4. The reserve pits shall be lined with an impermeable liner. The impermeable liner shall have a permeability less than or equal to  $1 \times 10^{-7}$  cm/sec. The liner shall be installed so that the liner will not leak and shall be chemically compatible with all substances which may be placed into the pits. Liners made of any man-made synthetic material shall be of sufficient strength and thickness to withstand normal installation and pit use.
5. After evaporation and when dry, the reserve pit liners shall be cut off as near to the mud surface as possible and hauled to a legal landfill prior to backfilling the pit with a minimum of 5 feet of soil material.
6. For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting is required over reserve pits which have been identified as containing oil or hazardous substances (per CERCLA Section 101(14)). The mesh diameter of netting shall be no larger than one inch.

Well Site Layout:

1. Construction, subsequent operations, and reclamation shall ensure to strictly adhere to the approved APD, including pad dimensions and disturbance limitations. If additional surface disturbance is necessary, the Operator shall receive approval for expanded well dimensions in advance and in writing.
2. The reserve pit shall be fenced on four sides upon construction, on three sides during drilling, and the working side shall be fenced immediately after the drilling rig is moved. Fencing shall meet BLM specifications. The reserve pit shall remain fenced until reclamation is initiated.

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3. If ground water is encountered within 50 feet of the surface, during construction of the rathole, reserve pit, or drilling, the Operator must contact the BLM Authorized Officer.
4. No spoil material shall be pushed into drainages or over a break in slope greater than 8%.

Surface Reclamation Plans:

1. The following seed mixture shall be used:

Species	Scientific Name	Variety	Pounds PLS/Acre*
<b>Grasses</b>			
Slender wheatgrass	Agropyron techycaulum		2.0
Thickspike wheatgrass	Agropyron dasystachyum	Critana	4.0
Western wheatgrass	Agropyron smithii		2.0
Indian ricegrass	Oryzopsis hymenoides		1.0
Bottlebrush squirreltail	Sitanion hystrix		1.0
Needle-and-thread	Stipa comata		1.0
<b>Shrubs</b>			
Gardner's saltbush	Atriplex gardnerii		1.0
<b>Total</b>			<b>12.0</b>

\*These seed rates are for drill seeding, in pounds PLS (Pure Live Seed). If broadcast seeding, double the rates provided.

2. The Operator shall submit an annual report to the BLM Authorized Officer detailing the status of interim or final reclamation work, and in accordance with Atlantic Rim Natural Gas Field Development requirements, if/when applicable.
3. The reserve pit area shall be adequately mounded to allow for settling and to promote positive surface drainage away from the pit.
4. The Operator shall prepare a plan for the clean-up and removal (where possible) of existing and/or discarded equipment and facilities associated with the historical Browning Field. The plan shall include the painting of the remaining above-ground facilities to an appropriate color, remediation of several small oil and other substance releases, and revegetation of the existing disturbances. The plan shall be submitted by Sundry Notice to the BLM, and shall include a timeline for completion. Upon BLM approval of the plan, the Operator shall implement the plan and provide notification to the BLM upon completion.
5. The Operator shall initiate a weed monitoring and control effort upon authorization. The Operator shall at least annually provide a report to the BLM with (1) a map of the well locations, facilities, and road segments reviewed; (2) a map of any identified weed populations, labeled by species; and (3) a plan for treatment and control (including documentation of previous control efforts).

Resource Protection Measures

Cultural Resource Protection:

1. The Operator shall have a BLM-approved archaeologist on-site to monitor the construction of the project components identified in the table, below. The Archaeologist must then submit a report to the BLM Authorized Officer detailing the location of any historical or archaeological resources discovered during the course of operations. If any such resources are discovered, operations shall cease until avoidance measures can be agreed upon and written permission (with appropriate conditions) to proceed is granted by the BLM Authorized Officer.

Well Name & Number	Well Pad	Access Road	Utility Corridor/Pipelines
AR Federal 1491 #1-11	X	X	X
AR Federal 1491 #7-11	X	X	X

- The Operator shall have a BLM-approved archaeologist conduct an open-trench inspection for the pipeline trenches associated with the following wells:

Well Name & Number
AR Federal 1491 #1-11
AR Federal 1491 #7-11

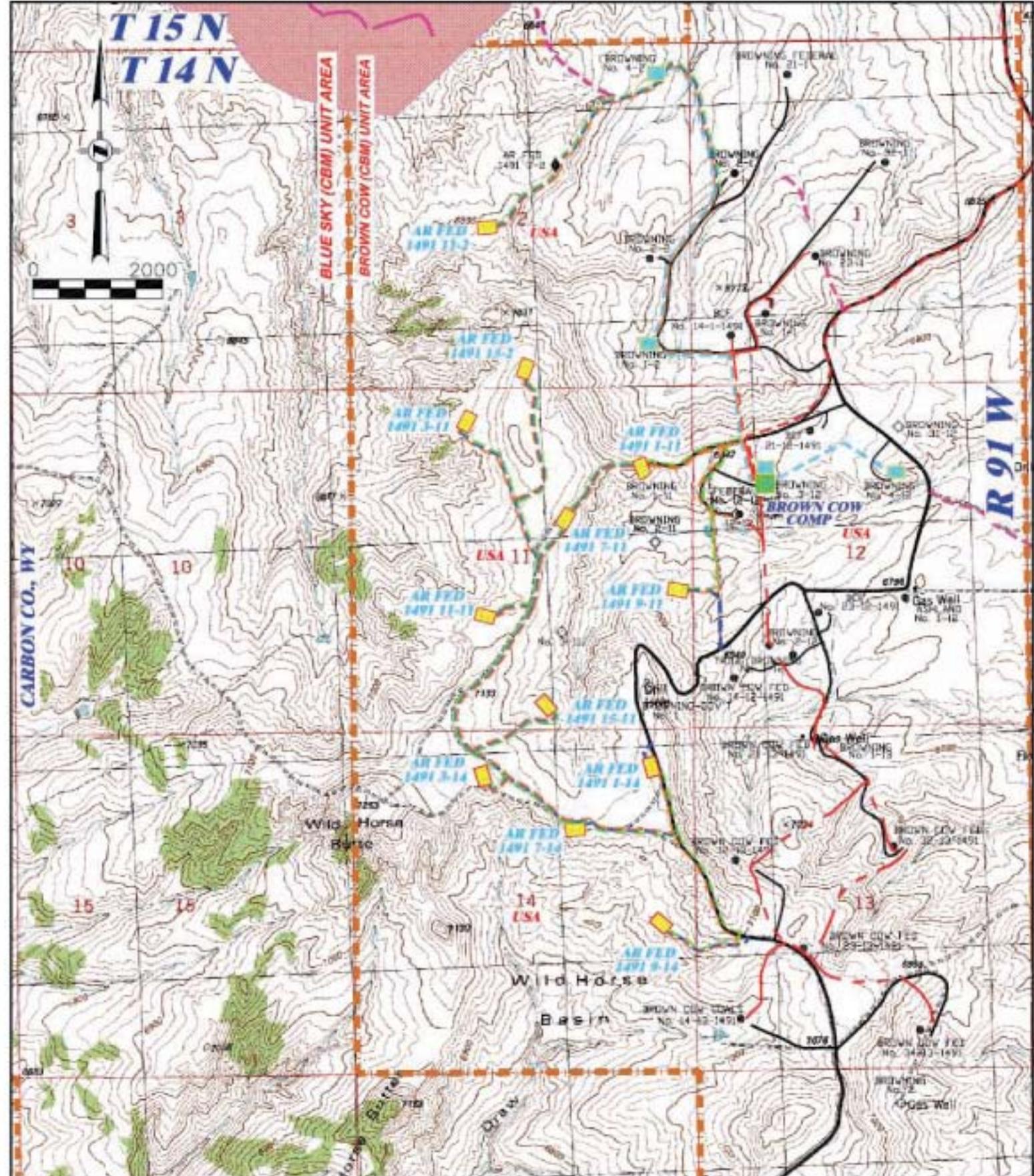
Recreational and Visual Resources Protection:

- All above-ground structures, production equipment, tanks, transformers, and insulators not subject to coloring requirements for safety shall be painted the color of "Shale Green" (5Y 4/2). Further detail on the coloring requirements may be obtained from the BLM Authorized Officer, if necessary.
- Road surfacing materials shall be of a color compatible with the local environment.

Wildlife Resource Protection:

Refer to text below table for required stipulation associated with each well	1-11	1-14	3-11	3-14	7-11	7-14	9-11	9-14	11-2	11-11	15-2	15-11
Raptor (1)	X	X	X	X	X	X	X	X	X	X	X	X
CWR (2)		X	X	X	X	X	X	X		X	X	X
Sage Grouse (3)	X	X	X	X	X	X	X	X	X	X	X	X
Mountain plover (4)	X								X			

- Construction, drilling and other activities potentially disruptive to nesting raptors are prohibited during the period of February 1 to July 31 for the protection of raptor nesting areas.
- Construction, drilling and other activities potentially disruptive to wintering wildlife are prohibited during the period of November 15 to April 30 for the protection of big game winter habitat.
- Construction, drilling and other activities potentially disruptive to strutting and nesting sage/sharp-tailed grouse are prohibited during the period of March 1 to July 15 for the protection of sage/sharp-tailed grouse nesting areas.
- Construction, drilling, reclamation and other activities are prohibited during the reproductive period of April 10 to July 10 for mountain plover.



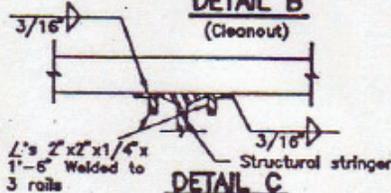
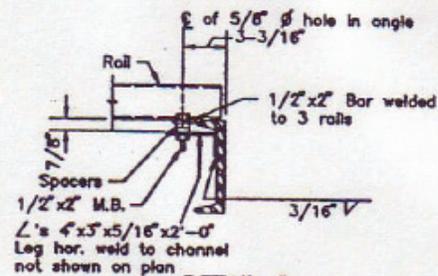
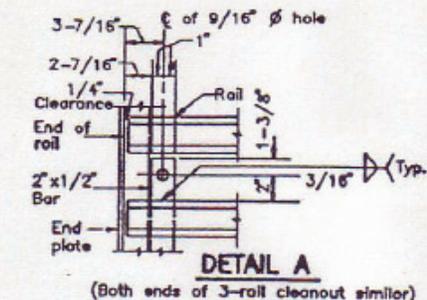
**DRG** RIFFIN & ASSOCIATES, INC.  
 1414 ELK ST ROCK SPRINGS, WY 82901

**BROWN COW II POD**  
**Anadarko**  
 Petroleum Corporation

EXISTING ROAD	—————	INJECTION WELL	■
PROPOSED ROAD	- - - - -	HP WATER LINE	— — — — —
EXISTING PIPELINE	— · — · —	PROPOSED PIPELINE	— · — · —
HISTORIC TRAIL	—————	PROPOSED ELECTRICAL	— · — · —

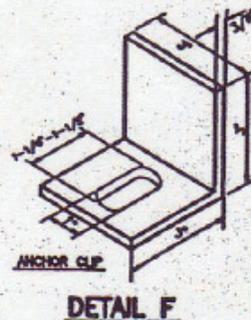
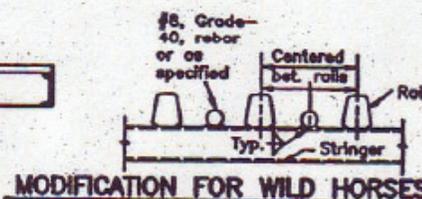
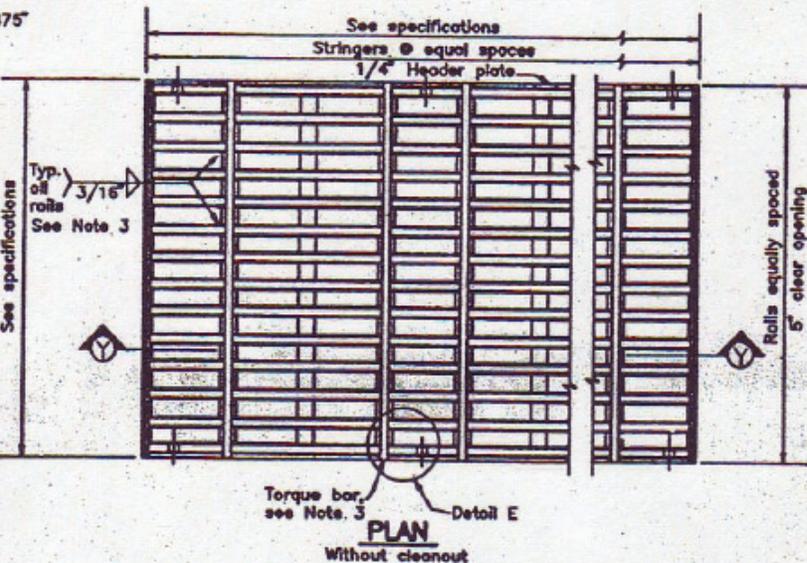
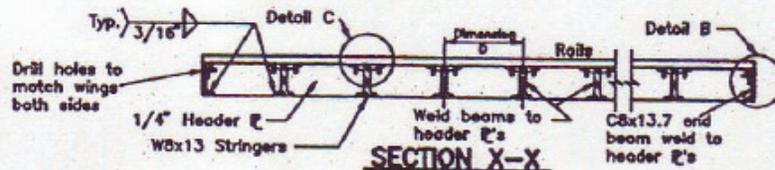
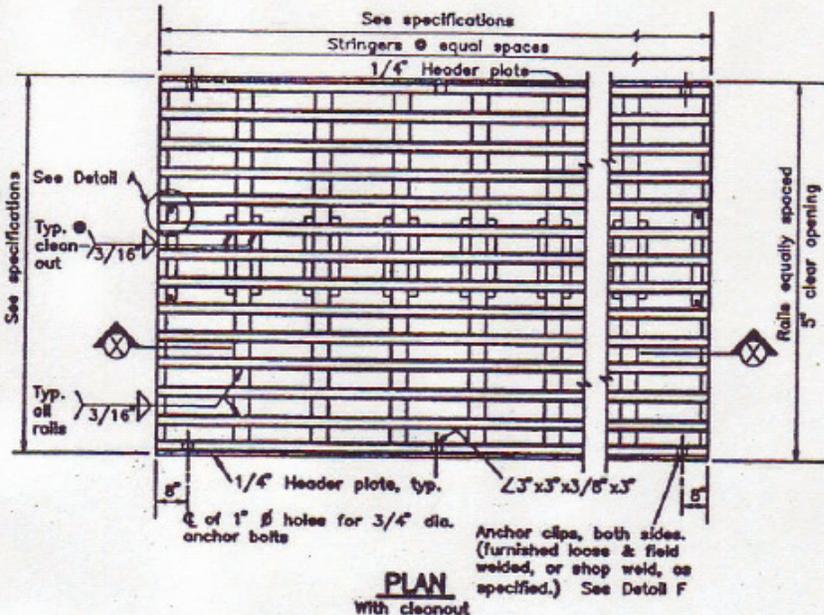
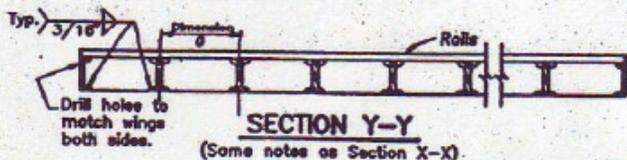
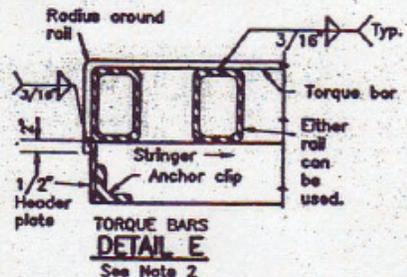
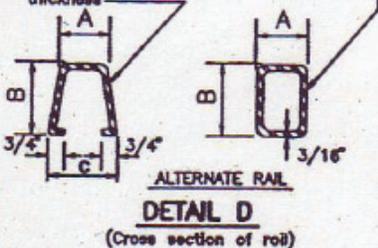
JOB No. 9635	SCALE: 1" = 2000'
REVISED: 6/14/06	EXHIBIT A

# Figure 9 a. Steel Tube Cattleguard



Rail, cold-formed from ASTM A242 steel plate 7-gauge min. thickness

Cold-formed structural steel tubing, ASTM A500, grade B, min. T33"x2"x0.1875"

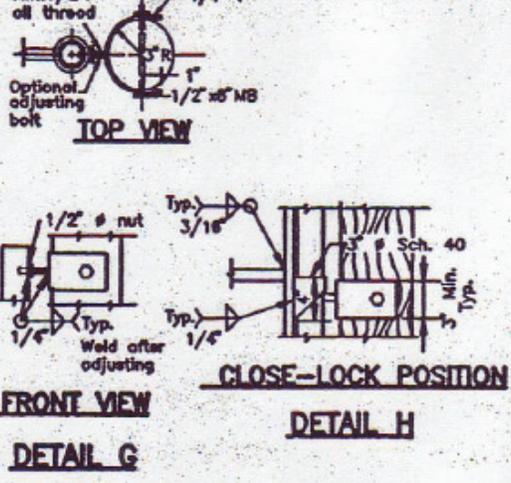
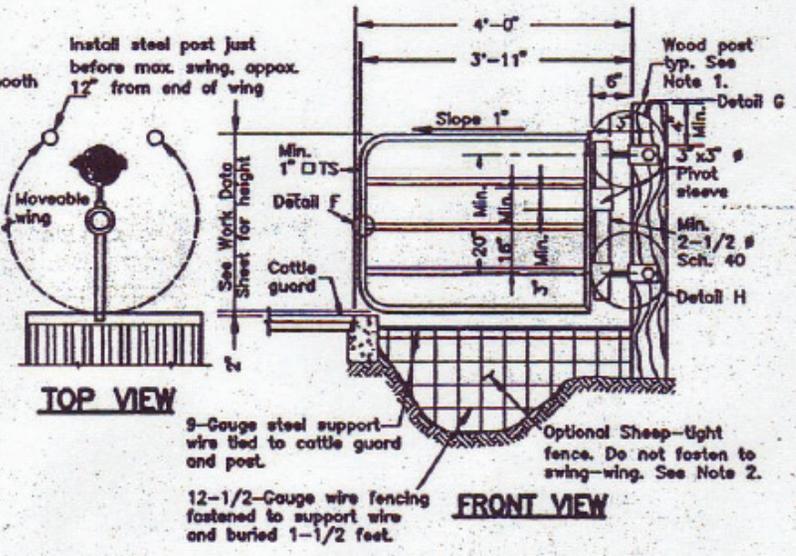
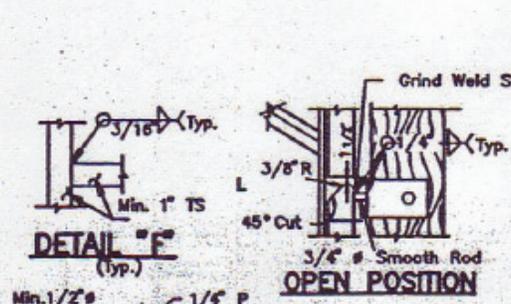
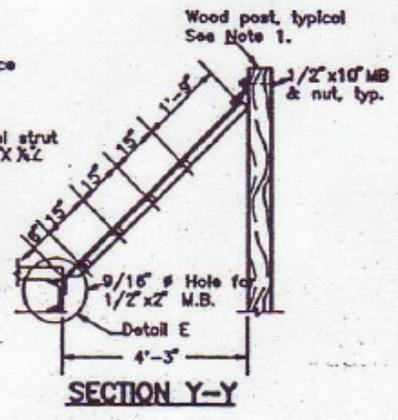
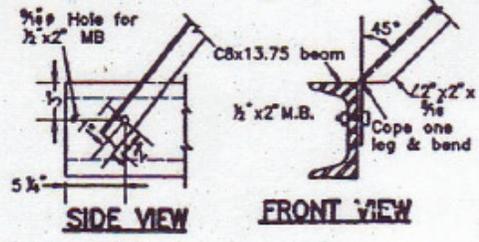
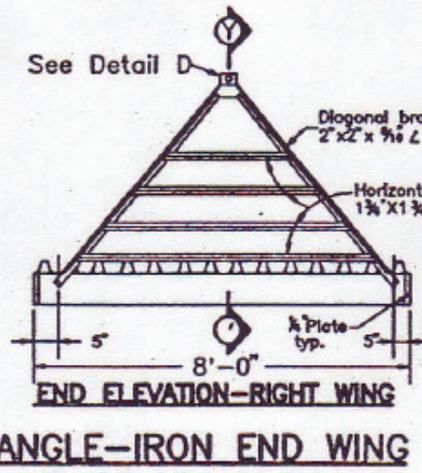
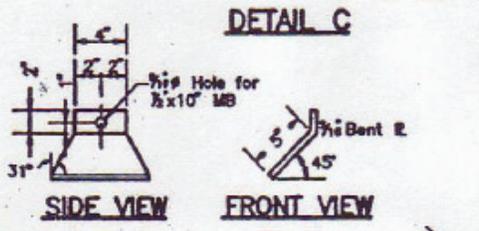
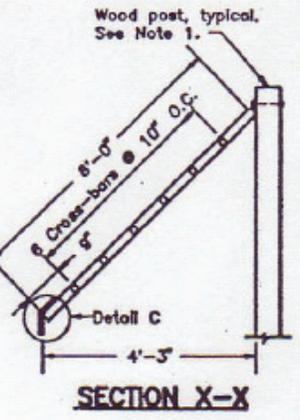
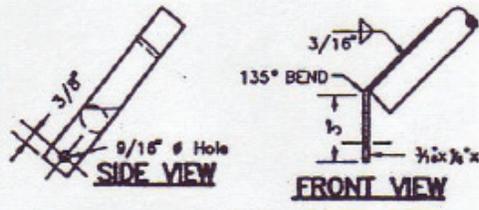
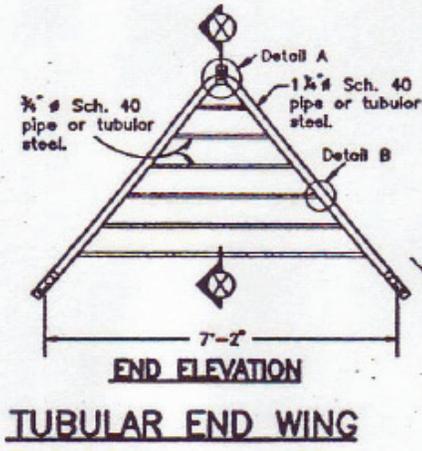
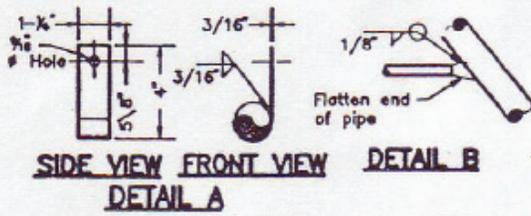


## NOTES:

1. Design loading of grid conforms to AASHTO H-20-44.
2. Provide 4-2x1/4 torque bars on grids without cleanout, full length, spaced as shown, and welded with 3/16 fillet welds to top of rails as required or shown in specifications. See Detail E.
3. End plate flush with, and welded to, rails except cleanout panel.

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# Figure 9 b. Cattleguard Wings



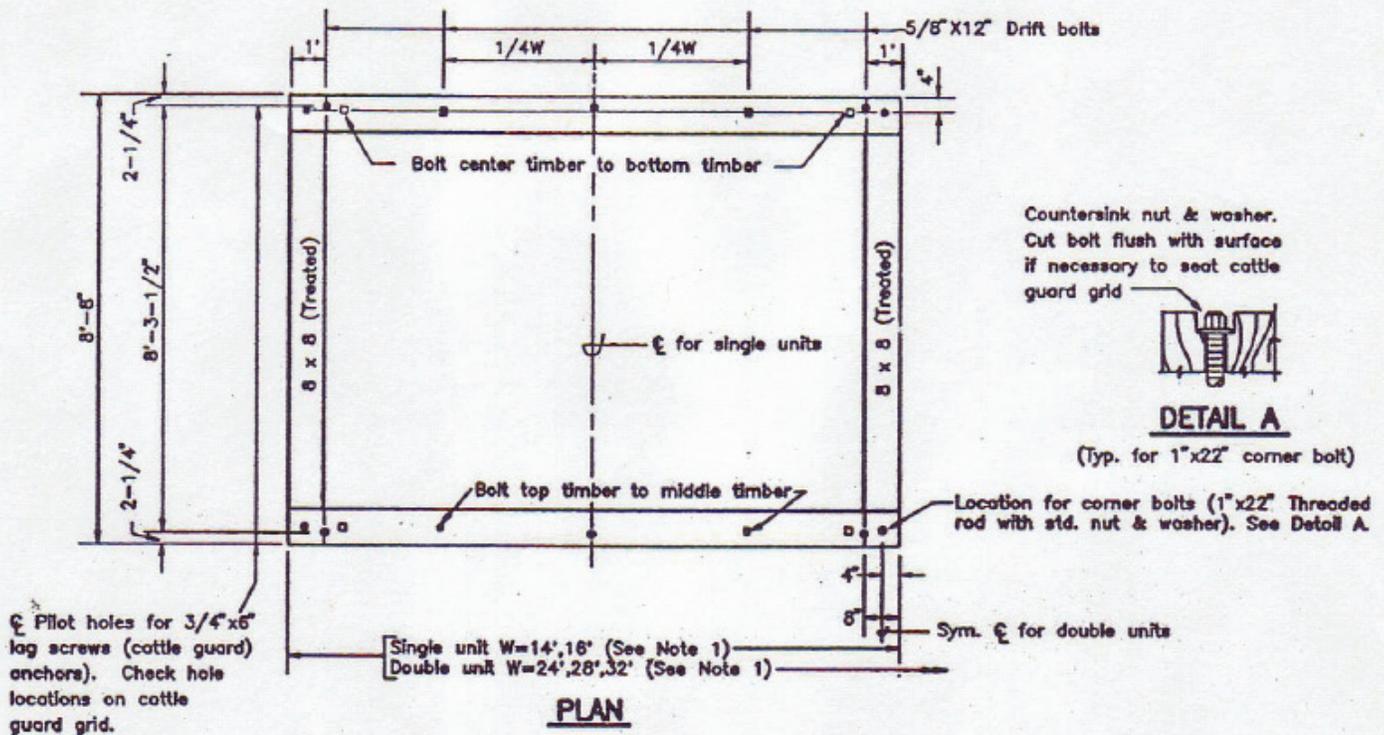
## SWING WING

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### NOTES:

1. Wing shall be fastened to separate wood fence post, 6" x 6" long with 2'-0" in the ground.
2. The sheep fence may be installed with cattle guard wings using 6" x 6" woven wire fencing or according to Specification Section 02834 - Wire Fences and Gates.

# Figure 10 a. Timber Cattleguard Base

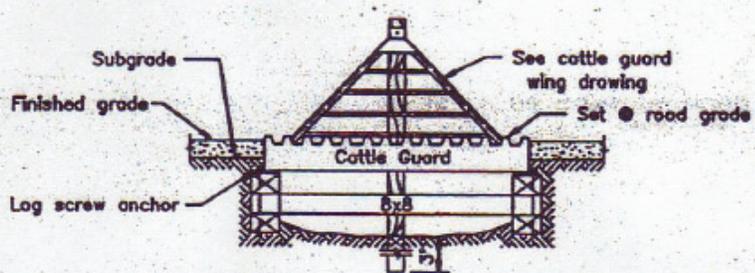
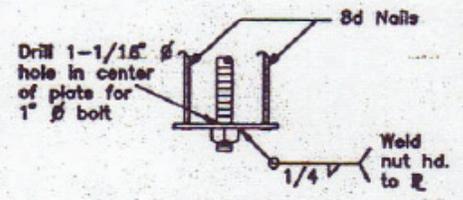
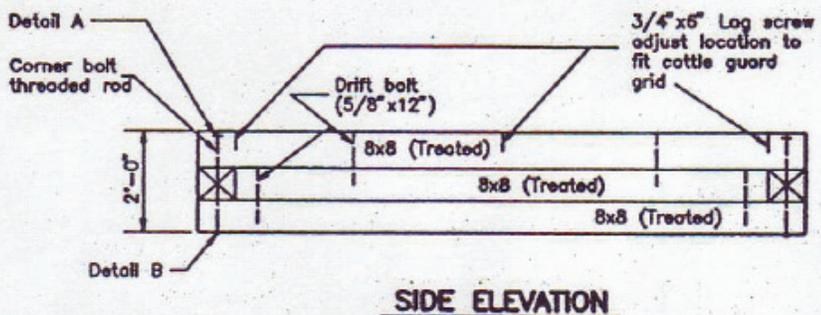


Countersink nut & washer. Cut bolt flush with surface if necessary to seat cattle guard grid



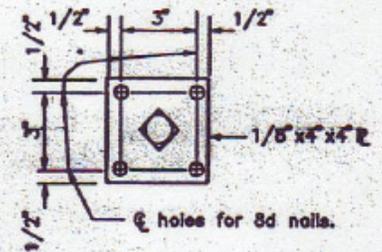
**DETAIL A**

(Typ. for  $1" \times 22"$  corner bolt)



**SECTION AT ROAD**

(With grid and wings in place)



**DETAIL B**

(Typ. for  $1" \times 22"$  corner bolt)

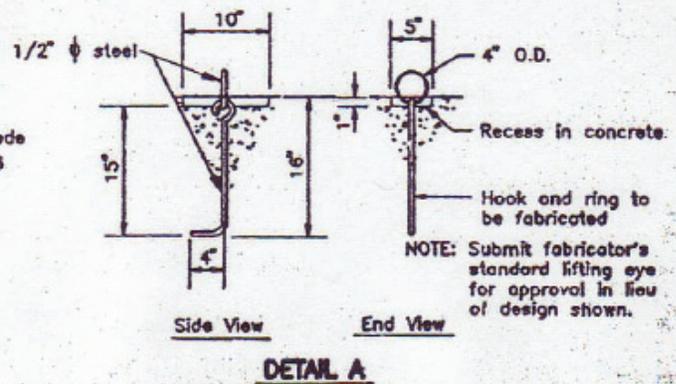
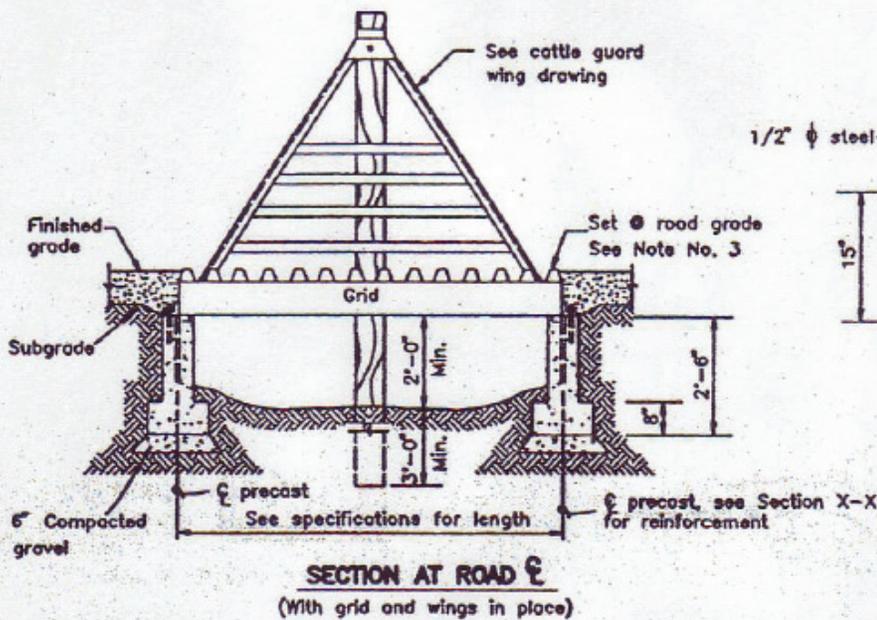
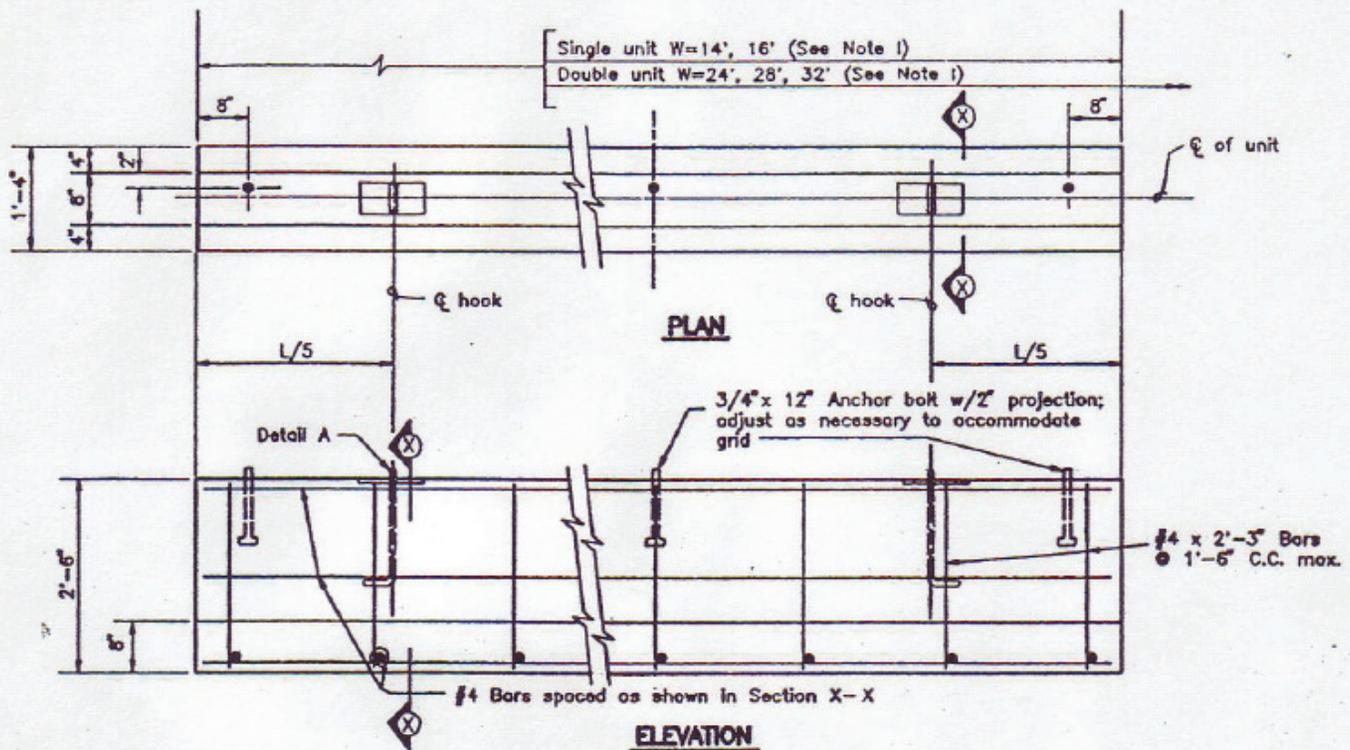
**NOTES:**

1. See specifications for width (W).
2. Cattle guard anchor angles with  $3/4" \times 6"$  log screw with standard washer to be furnished with each single grid.
3. On earth-surfaced roads, set top of cattle guard eight inches above subgrade unless plans or stakes indicate another elevation. Taper fill back from cattle guard approx. 50 ft. in both directions.
4. Dimensions for lumber are nominal unless otherwise noted.

**WELDING SYMBOL LEGEND**

- Weld all around
- Weld this side
- Weld other side

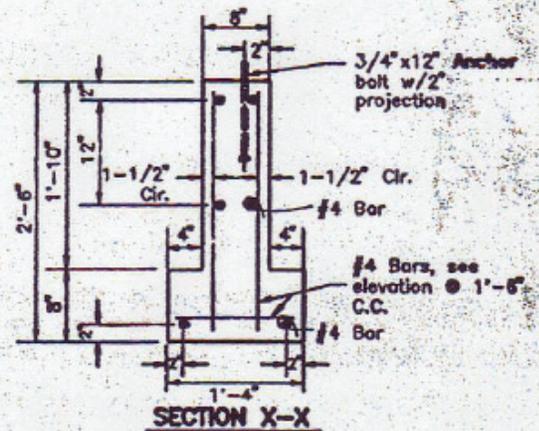
# Figure 10 b. Precast Cattleguard Base



**NOTES:**

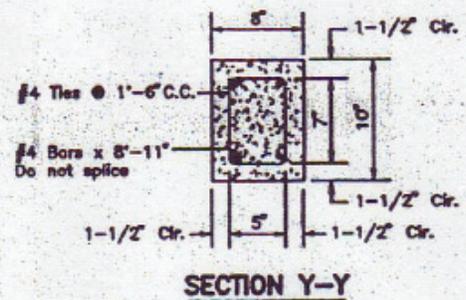
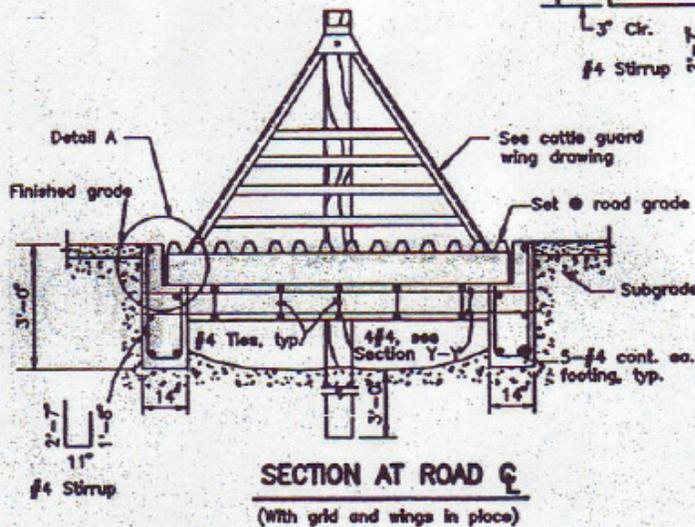
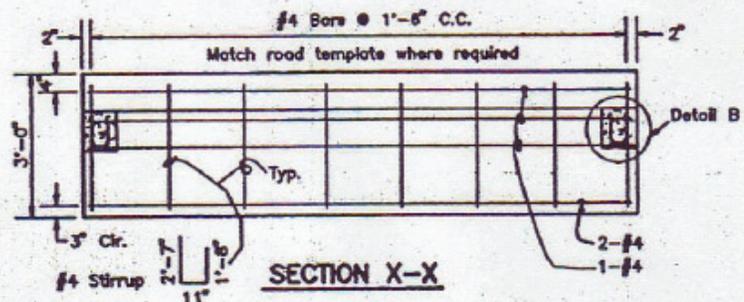
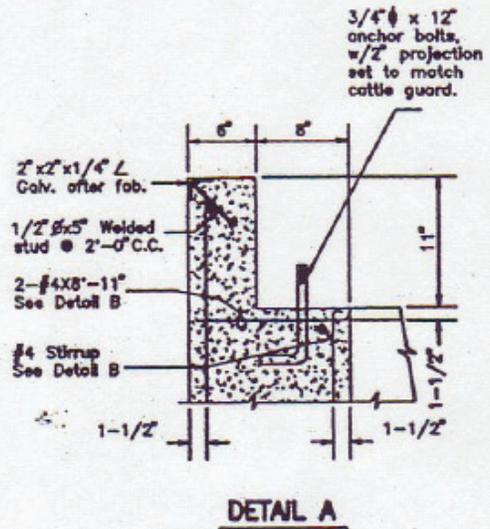
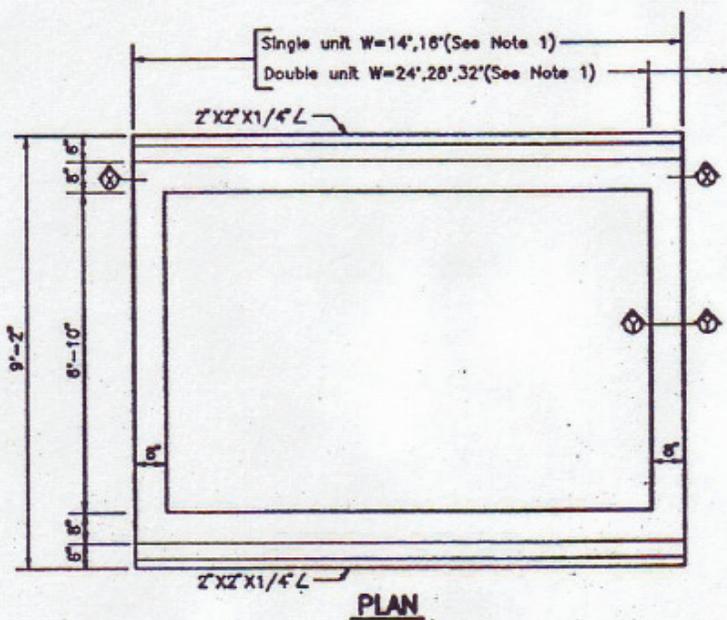
1. See specifications for width (W).
2. Standard nuts & washers shall be furnished with each foundation unit including anchor angles. Weld or bolt anchor angles to cattle guard.
3. On earth-surfaced roads, set top of cattle guard eight inches above subgrade unless plans or stakes indicate another elevation. Taper fill back from cattle guard approx. 50' in both directions.
4. #4 Reinforcement may be spliced with 24" lap unless prohibited.

DESCRIPTION	QUANTITIES				
	14'	16'	24'	28'	32'
CONCRETE	2.2 C.Y.	2.5 C.Y.	3.6 C.Y.	4.4 C.Y.	5.0 C.Y.
#4 REINFORCING STEEL	276 LF.	311 LF.	471 LF.	543 LF.	624 LF.



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# Figure 10 c. Cast-in-place Cattleguard Base



**NOTES:**

1. See specifications for width (W).
2. Cattle guard grid dimensions shall be verified prior to construction.
3. On earth-surfaced roads, set top of cattle guard foundation eight inches above subgrade unless plans or stakes indicate another elevation. Taper fill back from cattle guard approx. 50 ft. in both directions.
4. #4 Reinforcement may be spliced with 24" lap unless prohibited.

ESTIMATED QUANTITIES FOR REINFORCED CONCRETE FOUNDATION					
DESCRIPTION	QUANTITIES				
UNIT WIDTHS	14'	16'	24'	28'	32'
CONCRETE	3.3c.y.	3.7c.y.	5.4c.y.	6.3c.y.	7.1c.y.
#4 REINFORCING STEEL	324 LF.	355 LF.	486 LF.	547 LF.	618 LF.
L2" x 2" x 1/4"	28 LF.	32 LF.	48 LF.	58 LF.	64 LF.

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