

# ABENER TEYMA MOJAVE

14522 South Outer Forty Road  
Chesterfield, MO 63017

Phone: 314-275-1100  
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**Subject:** 09-AFC-5C (Mojave Solar Plant)

**Condition Number:** SOIL&WATER-1

**Description:** Drainage Erosion and Sedimentation Control Plan

**Submittal Number:** SWAT1-01-01

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March 4, 2011

Mr. Joe Douglas, CPM  
California Energy Commission  
1516 Ninth Street (MS-2000)  
Sacramento, CA 95814  
[JDouglas@energy.state.ca.us](mailto:JDouglas@energy.state.ca.us)

Dear Mr. Douglas,

The following submittal is in response to the comments issued by Mr. Chris Dennis and Ms. Ann Crisp.

Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Juan G. Lozano  
**TEYMA USA INC.**  
14522 South Outer Forty Road  
Chesterfield, MO 63017  
Office: (314) 275-1135  
Cell: (480) 455-8278

Attachments: Desert Tortoise Exclusion Fencing Plans

Tortoise Exclusion Fence Construction, Erosion, and Sediment Control  
Technical Memorandum

----- Forwarded by Kathleen Sullivan/Solar/Abengoa on 03/03/2011 01:39 PM -----

# ABENGOA SOLAR

**Abengoa Solar Inc.**

**Erin Bradley**

03/03/2011 01:38 PM

Send To: "Kathleen Sullivan" <kathleen.sullivan@solar.abengoa.com>

cc:

Subject: Fw: Abengoa S&W-1 tortoise fence DESC

**From:** Christopher Dennis [CDennis@energy.state.ca.us]

**Sent:** 03/03/2011 12:22 PST

**To:** Erin Bradley

**Cc:** Joseph Douglas <JDouglas@energy.state.ca.us>; Paul Marshall <Pmarshall@energy.state.ca.us>

**Subject:** Abengoa S&W-1 tortoise fence DESC

Hi Erin, the technical memorandum you submitted looks fine except that it is missing BMPs. At minimum, the following CASQA BMPs should be briefly discussed and referenced in the text of the document and added as an attachment.

NS-9 Vehicle and Equipment Fueling. During fence trenching the backhoe(s) will have to be refueled.

NS-10 Vehicle and Equipment Maintenance. BMPs should be in place for vehicle and equipment maintenance

SE-5 Fiber Rolls. Should be on hand and installed immediately downstream of any washes crossed during a storm event.

TC-1 Stabilized Construction Entrance-Exit. The soil is very dusty out there and sticks to shoes and tires. BMPs should be in place to reduce the amount of dust brought on to the public roads.

TC-3 Entrance-Outlet Tire Wash. Necessary if there is a storm event.

WM-4 Spill Control and Prevention. This is simply good planning. Hydraulic leaks on backhoes are frequent enough. Leaks can occur during refueling events also.

WM-9 Sanitary-Septic Waste Management. Necessary for the onsite workers.

Once these BMPs have been added to the document, we make a final review and can approve S&W-1 as ongoing and in compliance.

Thanks,  
Chris

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Christopher B. Dennis, PG

Engineering Geologist  
**California Energy Commission**  
1516 Ninth Street, MS 46  
Sacramento, CA 95814  
(916) 654-4399 wk  
(916) 651-8868 fax

[cdennis@energy.state.ca.us](mailto:cdennis@energy.state.ca.us)



# TEYMA USA

**Kathleen Sullivan**

03/03/2011 09:59 PM

Para: Erin Bradley/Solar/Abengoa, "Juan Guillermo Lozano Varona" <juan.lozano@teyma.abengoa.com>

cc:

bcc:

Asunto: Fw: Abengoa SW-1

Historial:  Este mensaje ha sido remitido.

Please see below.  
Thank you!

----- Original Message -----

From: Joseph Douglas [JDouglas@energy.state.ca.us]

Sent: 03/03/2011 19:00 PST

To: Kathleen Sullivan

Subject: Fw: Abengoa SW-1

Fyi

----- Message from Andrea Martine <AMartine@energy.state.ca.us> on Thu, 3 Mar 2011 12:17:56 -0800

-----

**To:** Ann Crisp <ACrisp@energy.state.ca.us>, Joseph Douglas  
<JDouglas@energy.state.ca.us>

**Subject**  
: Re:

Joe,

Abengoa will need to have desert tortoise exclusion fencing around any construction yard or laydown area. They should include this language in the details of their proposed work.

Andrea

>>> Joseph Douglas 3/2/2011 2:42 PM >>>

Hi all,

Please look at SW-1 for the laydown area, or anything else. thanks

Joe D

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**TECHNICAL MEMORANDUM**

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**SUBJECT:** **Abengoa Mojave Solar Project**  
Tortoise Exclusion Fence Construction and Erosion and Sediment Control

**DATE:** March 3, 2011

**FROM:** Stewart S. Vaghti, P.E.  
Project Civil Engineer  
Gannett Fleming, Inc.

**COPIES:** Nasir Raza and Byron Dixon (Gannett Fleming, Inc.)



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**TORTOISE EXCLUSION FENCE CONSTRUCTION:**

The tortoise exclusion fence will be constructed two feet inside the Mojave Solar Plant project boundary and around the tortoise exclusion fence installer's lay-down area(s) as shown on the attached plans. The galvanized fence shall be of 16 gauge or heavier material. It will consist of 1-inch horizontal by 2-inch vertical galvanized welded wire, 36-inches in width. Other materials include hog-rings, steel T-posts or #4 rebars with safety caps and smooth livestock wire. The material shall conform to standards approved by the U.S. Fish and Wildlife Service. The fence material will be buried a minimum of 12 inches below the ground surface while 24-36 inches of the fence material will be above ground. A trench will be excavated in order to place the fence material below the ground. The excavated earth will be backfilled and compacted to minimize erosion. The fence will be secured through T-posts or rebars that will be driven into the ground. Hog rings will further secure the fence to the T-posts or rebars.

Temporary sanitary facilities will be provided on-site for construction workers. These facilities will be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to risk of high winds, they will be secured to prevent overturning. These facilities will be serviced and pumped, and no wastewater will be discharged or buried within the project site. Please refer to the attached California Stormwater Quality Association (CASQA) Best Management Practice (BMP) WM-9 for further details.

A construction yard or laydown area is designated on the project site within the Alpha West area and along the west side of Harper Lake Road for storing the construction materials and equipment. The construction yard or laydown area is within the project boundary. Fueling of equipment will be done off-site at the closest regulated gas station if practical. If fueling is necessary on-site, it will be done at a designated location within the fenced staging area. This area was selected because it was the previous site of a gas station and has the necessary level, impervious surface for fueling operations. If refueling is necessary at this location, all requirements noted in the attached CASQA BMP NS-9 will be followed. As with fueling, all efforts will be made to perform equipment maintenance and repairs off-site at a permitted service station. If maintenance service is required on-site, it will be conducted in the staging area at the aforementioned abandoned gas station site, and all requirements for on-site vehicle maintenance and repair noted in the attached CASQA BMP NS-10 will be followed. While all

efforts will be made to limit potential for hazardous spills on-site, the attached CASQA BMP WM-4 will be implemented to address need to prepare for the unlikely event of a minor spill.

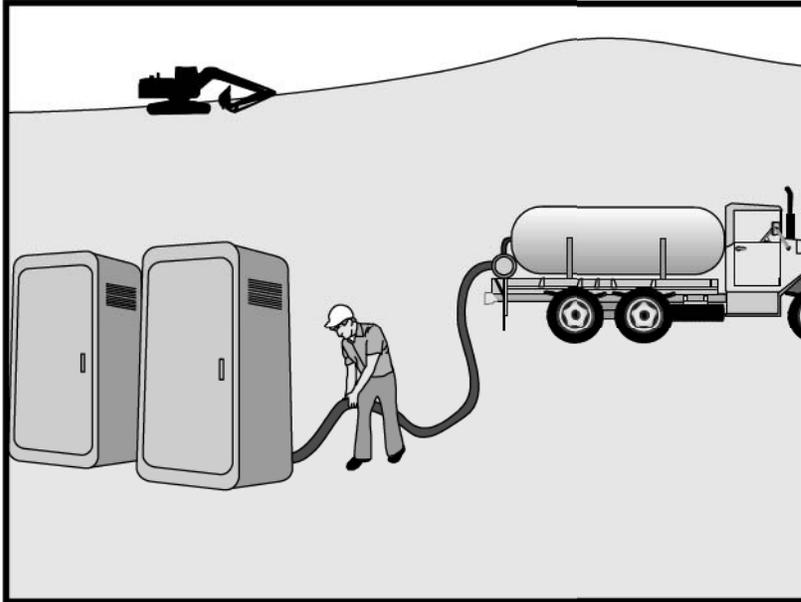
#### **TORTOISE EXCLUSION FENCE EROSION AND SEDIMENT CONTROL:**

The tortoise exclusion fence construction will involve minimal excavation of soil (12 inch deep and approximately 2 feet wide trench). The excavated soil, temporarily placed along the side of the trench, will be backfilled and compacted in-place. Excavated material will be backfilled and compacted within 48 hours and before a predictable rainfall event. Weather and storm predicting can be obtained via the internet at [www.wrh.noaa.gov](http://www.wrh.noaa.gov). A separate stockpile will be avoided in order to efficiently excavate and backfill the material after installation of the fence and its appurtenances such as the posts/rebars.

It should be noted that the storm water runoff flows in a northeasterly to easterly direction in accordance with the general terrain of the watershed. With regards to the project site, the major flow from the south enters the depressed Lockhart Road at the west end of the Alpha project area and flows east along this dirt roadway to ultimately discharge at Harper Lake Road or further east at the east end of the project. Most of the remaining offsite flow is similarly intercepted by the depressed perimeter dirt roads or the powerline corridor along the west and south sides of the Alpha and Beta project areas and diverted away from the project site and the tortoise fences that are built on relatively higher ground (a few inches to 2 feet higher than the adjacent roadways or powerline corridor). During larger storm events (such as the 100-year storm) the flow can potentially pass through the tortoise fence and sheet northeasterly across the site towards Harper Lake. Work is planned to be suspended during a storm event, but fiber rolls will be kept on-hand in the event that any washes are crossed with fence excavation during a storm event. Should this situation occur, the fiber rolls will be installed downslope of the exposed wash area in accordance with the attached CASQA BMP SE-5.

The contractor shall provide erosion and sediment control for the project by placing the excavated dirt along the fence trench (and above the depressed dirt roadways which behave as storm water conveyance channels) and backfilling the trench expeditiously after installation of the fence and prior to any rainfall event. The backfilled material will be compacted to minimize erosion. In order to control track-out of sediment and dust in the paved roads within the public right-of-way, equipment will be blasted with a high pressure air compressor to remove sediment before exiting onto these roads. Work is planned to be suspended during storm events. However, any equipment on-site during the rain events will be washed with a high pressure water sprayer atop a gravel blanket before exiting the site onto the paved roads within the public right-of-way. These methods are in-lieu of CASQA BMP TC-1 and TC-3, which are not practical for this linear perimeter construction effort.

# Sanitary/Septic Waste Management WM-9



## Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

## Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

## Limitations

None identified.

## Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

## Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.

## Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	<input checked="" type="checkbox"/>

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	<input checked="" type="checkbox"/>
Oil and Grease	
Organics	<input checked="" type="checkbox"/>

## Potential Alternatives

None



# **WM-9 Sanitary/Septic Waste Management**

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- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.

## ***Education***

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

## **Costs**

All of the above are low cost measures.

## **Inspection and Maintenance**

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.

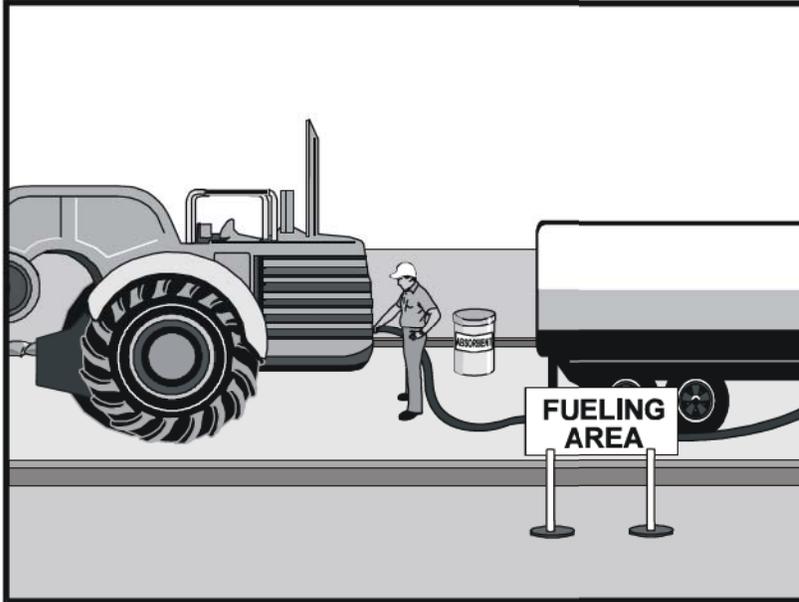
# **Sanitary/Septic Waste Management WM-9**

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## **References**

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.



## Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

## Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

## Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/ Exit.

## Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage “topping-off” of fuel tanks.

## Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	

### Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

## Potential Alternatives

None



- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runoff and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runoff, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

**Costs**

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

**Inspection and Maintenance**

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

## References

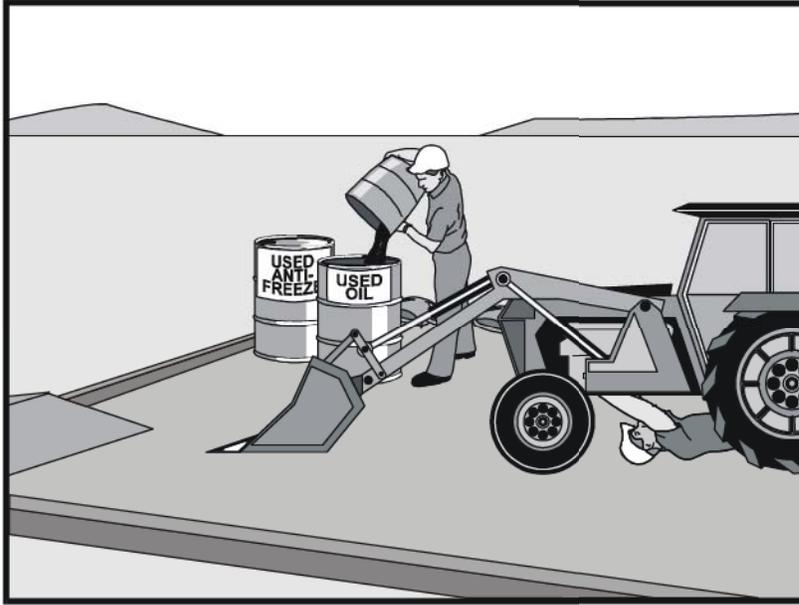
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

# Vehicle & Equipment Maintenance NS-10



## Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a “dry and clean site”. The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

## Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

## Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

## Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	

### Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

## Potential Alternatives

None



# **NS-10 Vehicle & Equipment Maintenance**

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## **Implementation**

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runoff and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the adsorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

# Vehicle & Equipment Maintenance NS-10

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Listed below is further information if you must perform vehicle or equipment maintenance onsite.

## ***Safer Alternative Products***

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an “environmentally friendly” label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

## ***Waste Reduction***

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The “chlor” term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

## ***Recycling and Disposal***

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like, -trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

## **Costs**

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

# **NS-10 Vehicle & Equipment Maintenance**

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## **Inspection and Maintenance**

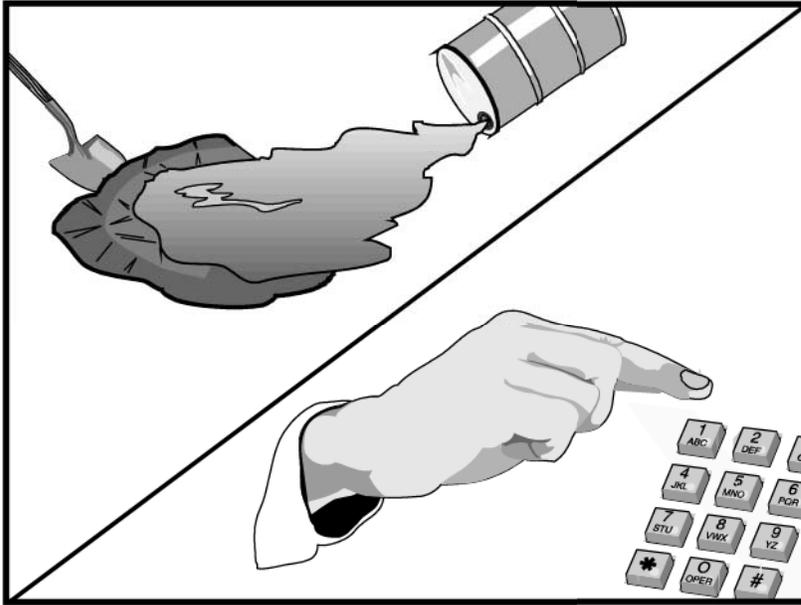
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

## **References**

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



## Objectives

EC	Erosion Control	
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## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

## Potential Alternatives

None

## Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

## Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals



- Fuels
- Lubricants
- Other petroleum distillates

## **Limitations**

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

## **Implementation**

The following steps will help reduce the stormwater impacts of leaks and spills:

### ***Education***

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a “significant spill” is for each material they use, and what is the appropriate response for “significant” and “insignificant” spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor’s superintendent or representative oversee and enforce proper spill prevention and control measures.

### ***General Measures***

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn’t compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

## ***Cleanup***

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

## ***Minor Spills***

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

## ***Semi-Significant Spills***

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

### ***Significant/Hazardous Spills***

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

### ***Reporting***

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

## ***Vehicle and Equipment Maintenance***

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

## ***Vehicle and Equipment Fueling***

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

## **Costs**

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

## **Inspection and Maintenance**

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

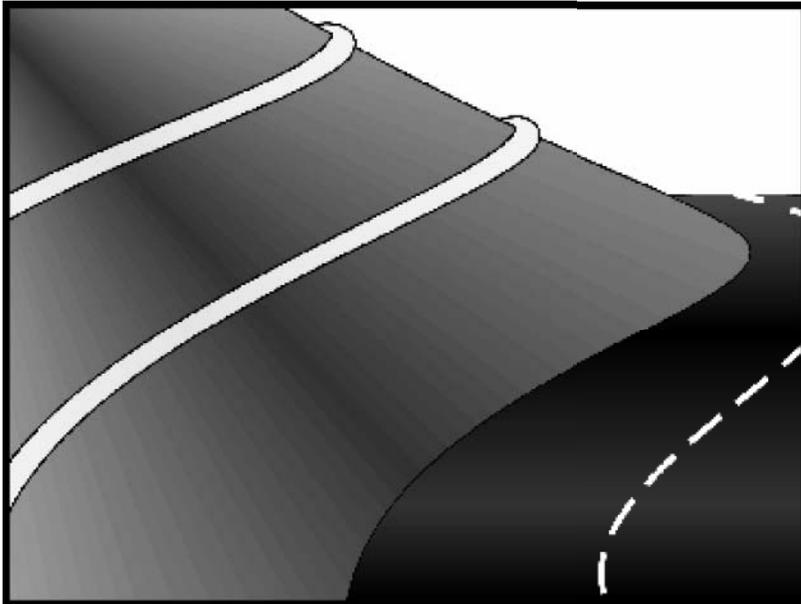
- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

## References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.



## Description and Purpose

A fiber roll consists of straw, flax, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

## Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the end of a downward slope where it transitions to a steeper slope
- Along the perimeter of a project
- As check dams in unlined ditches
- Down-slope of exposed soil areas
- Around temporary stockpiles

## Limitations

- Fiber rolls are not effective unless trenched

## Objectives

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-9 Straw Bale Barrier



- Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.).
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.

**Implementation*****Fiber Roll Materials***

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

***Assembly of Field Rolled Fiber Roll***

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft along length of roll with jute-type twine.

***Installation***

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

***Removal***

- Fiber rolls are typically left in place.

- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

## Costs

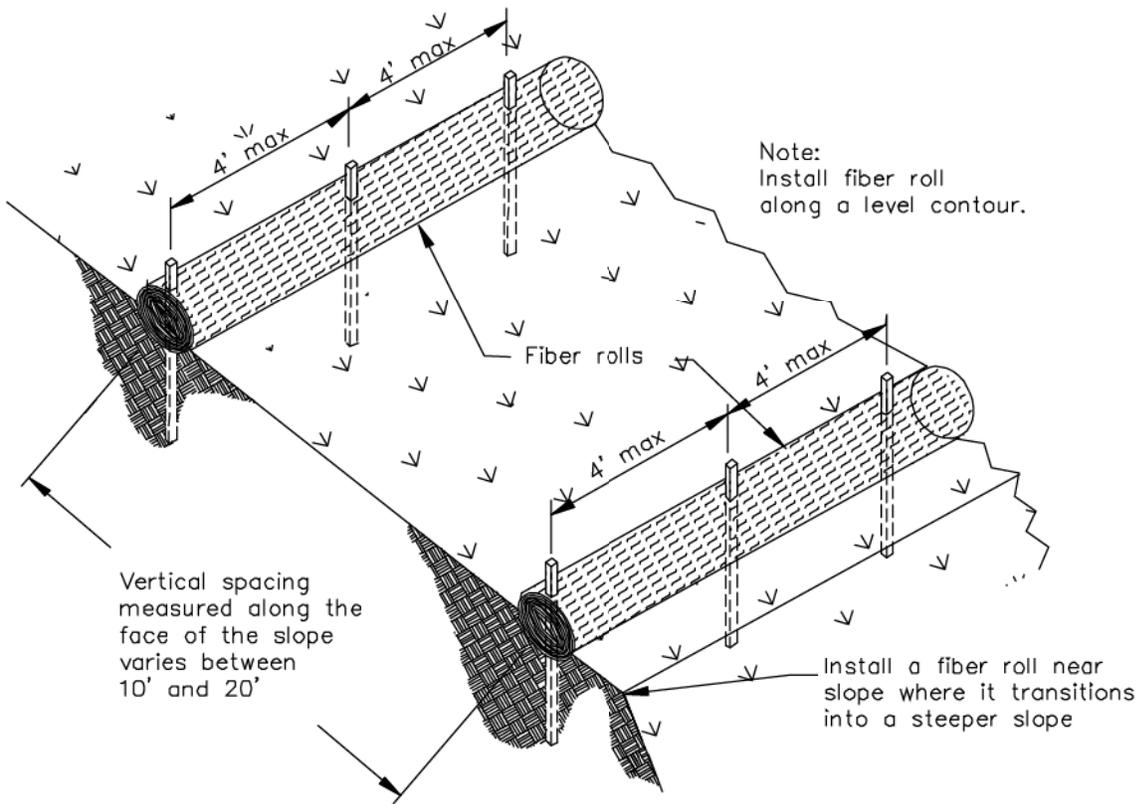
Material costs for fiber rolls range from \$20 - \$30 per 25 ft roll.

## Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- If fiber rolls are used for erosion control, such as in a mini check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.

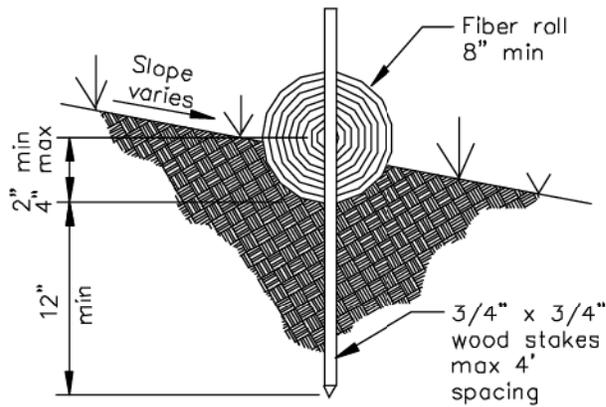
## References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



TYPICAL FIBER ROLL INSTALLATION

N.T.S.



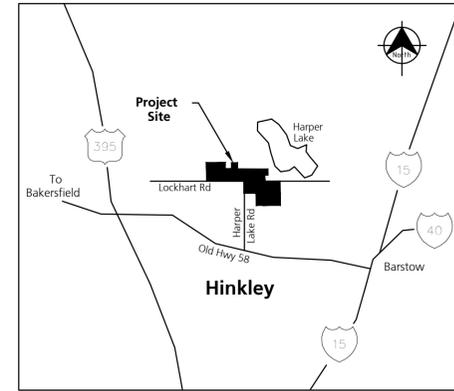
ENTRENCHMENT DETAIL

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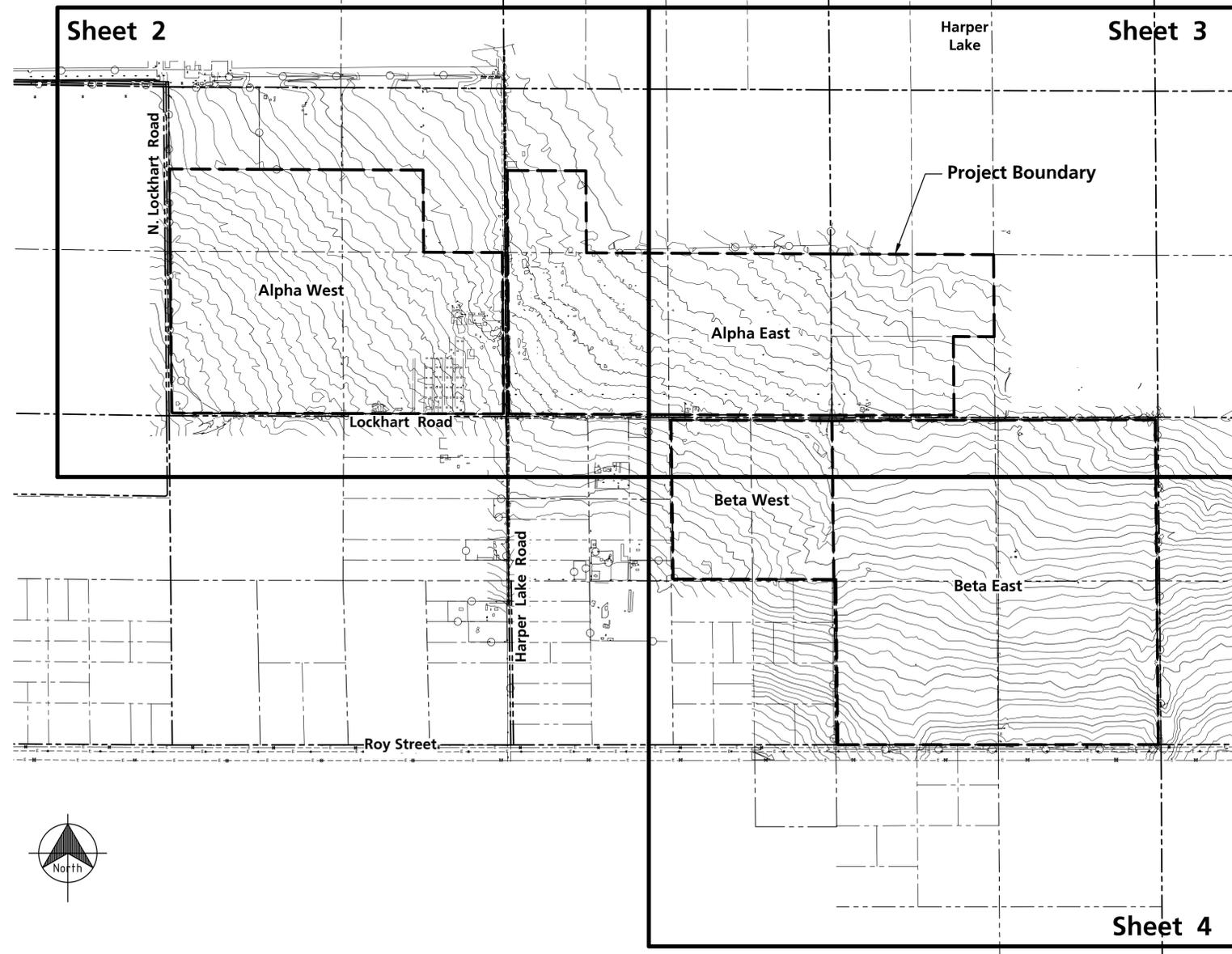
# Desert Tortoise Exclusion Fencing Plans

For

# MOJAVE SOLAR PLANT



Location Map



Key Map

### Sheet Index:

Sheet No.	Plan No.	Description
1	6007-PLN-GFE-00-50-C001	Sheet Index and Key Map
2	6007-PLN-GFE-00-50-C002	Enlarged Plan
3	6007-PLN-GFE-00-50-C003	Enlarged Plan
4	6007-PLN-GFE-00-50-C004	Enlarged Plan
5	6007-PLN-GFE-00-50-C005	Fence Details

### Fence Linear Feet:

Fence Area 1	18,640
Fence Area 2	22,524
Fence Area 3	26,199
<b>Total</b>	<b>67,363</b>

### Basis of Bearings:

California state plane coordinate system nad 83, zone 5



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Situation:

MOJAVE SOLAR LLC

MOJAVE SOLAR PLANT

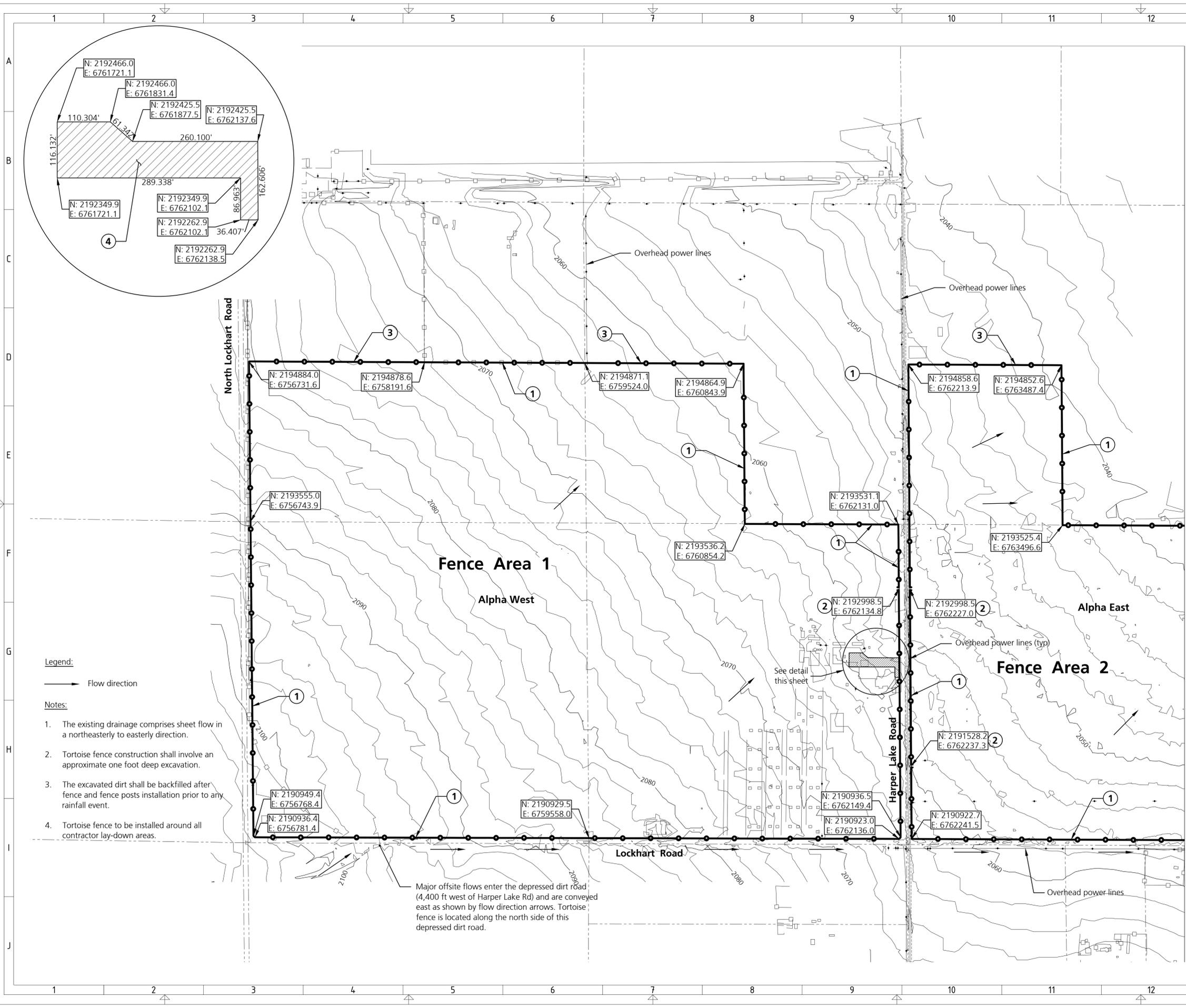


ABENER TEYMA MOJAVE

Scale: 1" = 1,200'	Urban Development and Buildings Civil Works - General	Plan No: 6007-PLN-GFE-00-50-C001
	Desert Tortoise Exclusion Fencing Plans Sheet Index and Key Map	Sheets: 5 Sheet No: 1
		Plan No. int:

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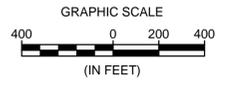
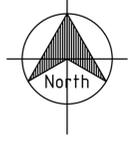
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**Legend:**  
 → Flow direction

- Notes:**
- The existing drainage comprises sheet flow in a northeasterly to easterly direction.
  - Tortoise fence construction shall involve an approximate one foot deep excavation.
  - The excavated dirt shall be backfilled after fence and fence posts installation prior to any rainfall event.
  - Tortoise fence to be installed around all contractor lay-down areas.

Major offsite flows enter the depressed dirt road (4,400 ft west of Harper Lake Rd) and are conveyed east as shown by flow direction arrows. Tortoise fence is located along the north side of this depressed dirt road.



- Key Notes:**
- Place new desert tortoise exclusion fence 2' from property line. See detail A on sheet 5.
  - Install new 24' wide pipe frame gate. See detail C on sheet 5.
  - Place new desert tortoise exclusion fence at designated location.
  - Available contractor lay-down area - maximum area = 40,063 sq ft



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**MOJAVE SOLAR LLC**

**MOJAVE SOLAR PLANT**

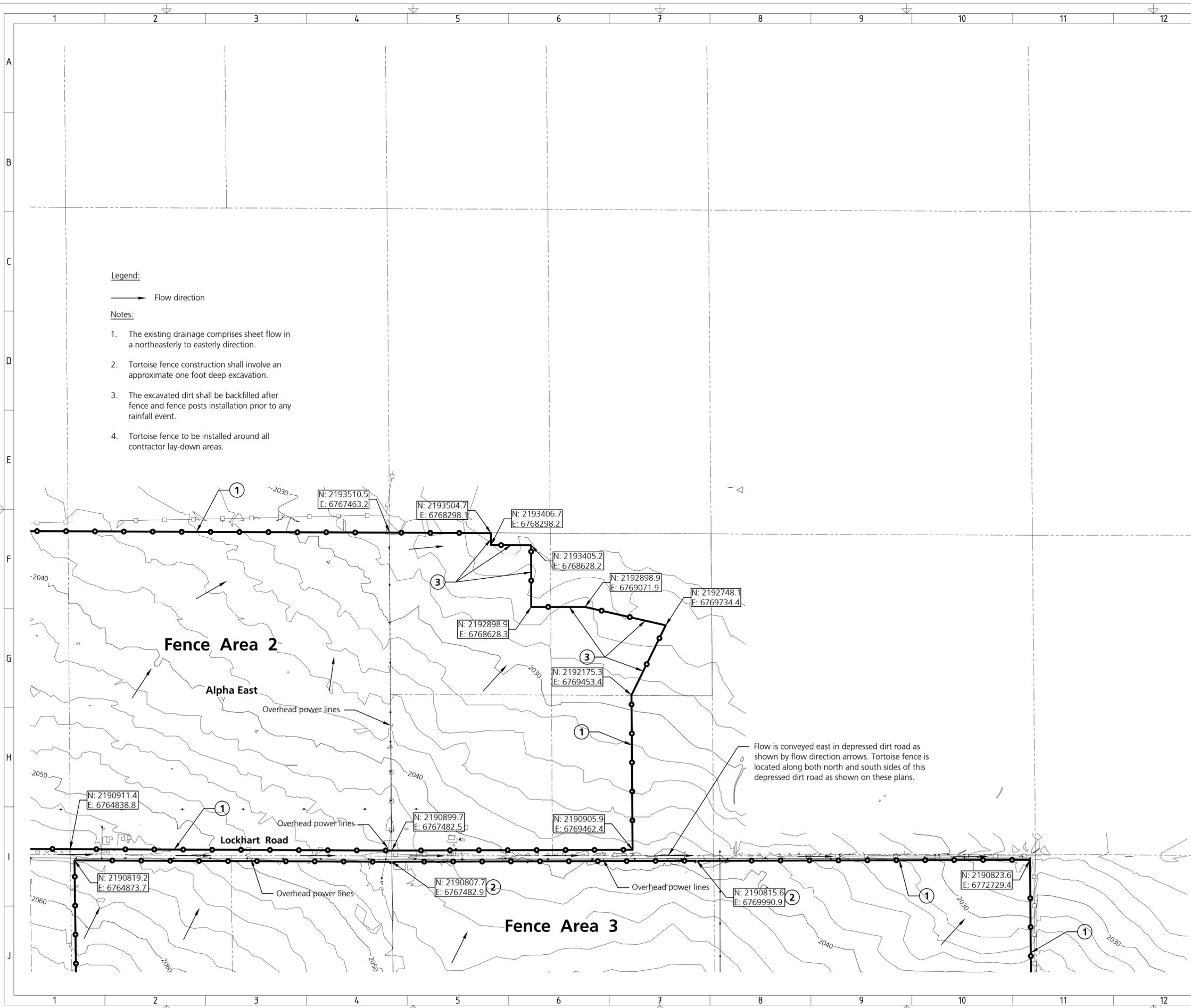


**ABENER TEYMA MOJAVE**

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	Desert Tortoise Exclusion Fencing Plans Enlarged Plan	Sheets: 5 Sheet No: 02
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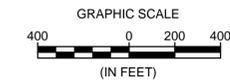
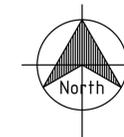


**Legend:**

→ Flow direction

**Notes:**

1. The existing drainage comprises sheet flow in a northeasterly to easterly direction.
2. Tortoise fence construction shall involve an approximate one foot deep excavation.
3. The excavated dirt shall be backfilled after fence and fence posts installation prior to any rainfall event.
4. Tortoise fence to be installed around all contractor lay-down areas.



**Key Notes:**

- ① Place new desert tortoise exclusion fence 2' from property line. See detail A on sheet 5.
- ② Install new 24' wide pipe frame gate. See detail C on sheet 5.
- ③ Place new desert tortoise exclusion fence at designated location.



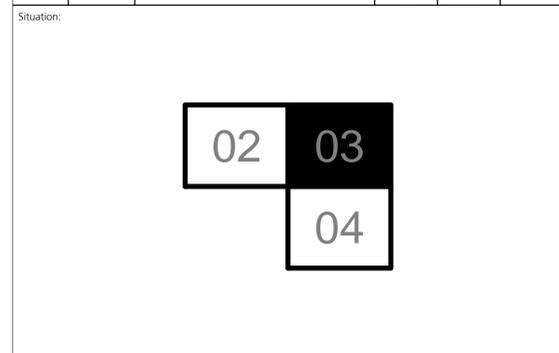
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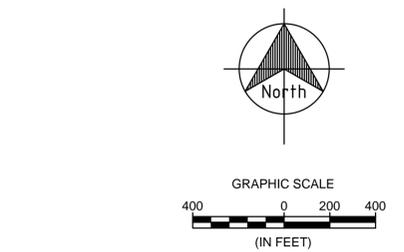
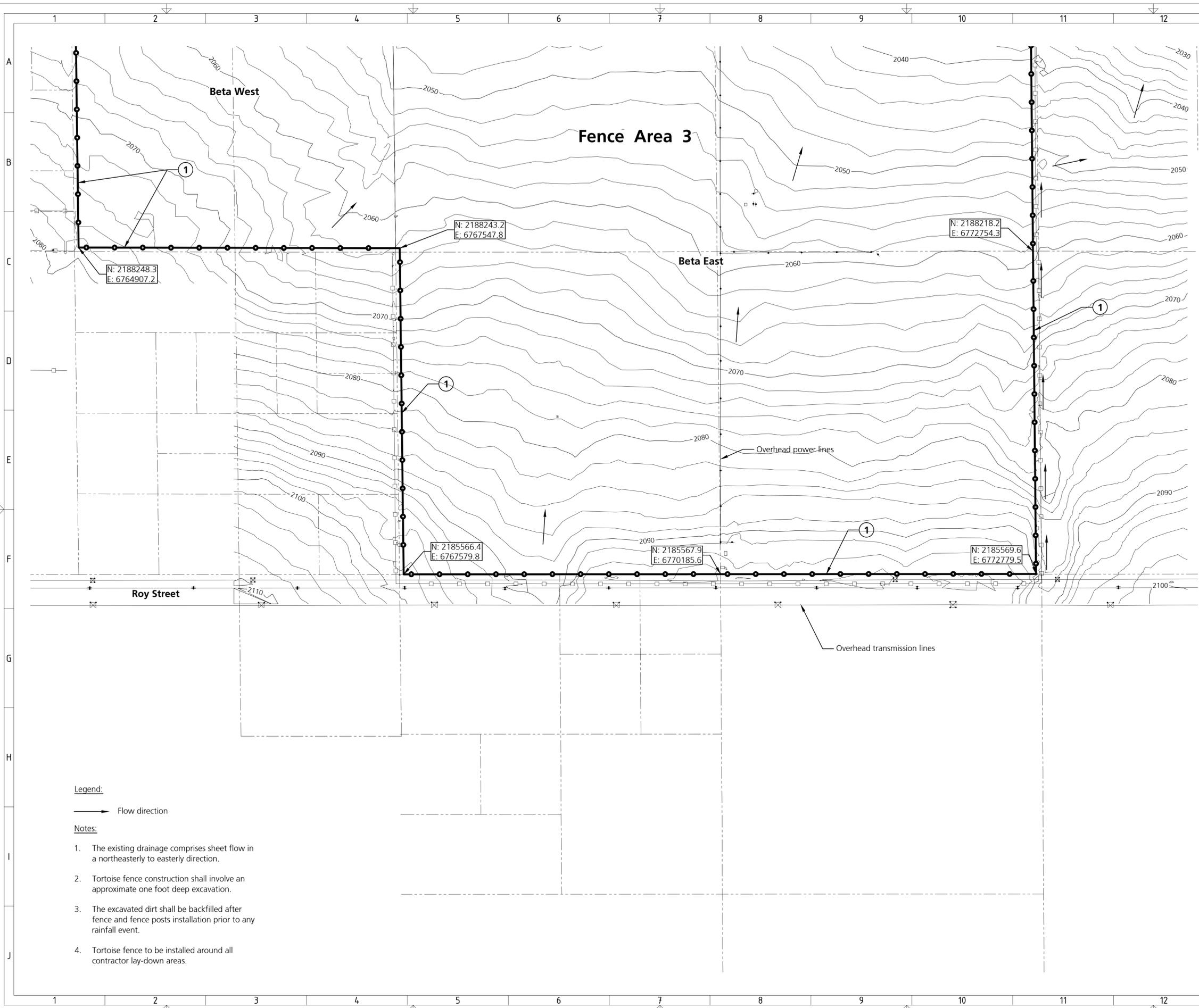
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			Signature	Signature	Signature
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0	01/26/11	Issued for bid.	Drawn	Checked	Pass



<b>MOJAVE SOLAR LLC</b>		<b>MOJAVE SOLAR PLANT</b>	
		<b>ABENER TEYMA MOJAVE</b>	
4722 N. 24th Street, Suite 250 Phoenix, AZ 85016-4652 Phone (602) 553-8817 Fax (602) 553-8815 Web www.gfm.com		Plan No: 6007-PLN-GFE-00-50-C003	Sheets: 5 Sheet No: 03
Scale: 1" = 400'		Urban Development and Buildings Civil Works - General	
Desert Tortoise Exclusion Fencing Plans Enlarged Plan		Plan No. int:	

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- Key Notes:**
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  - ③ Place new desert tortoise exclusion fence at designated location.



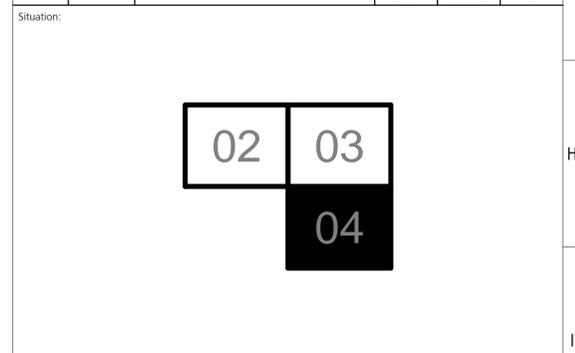
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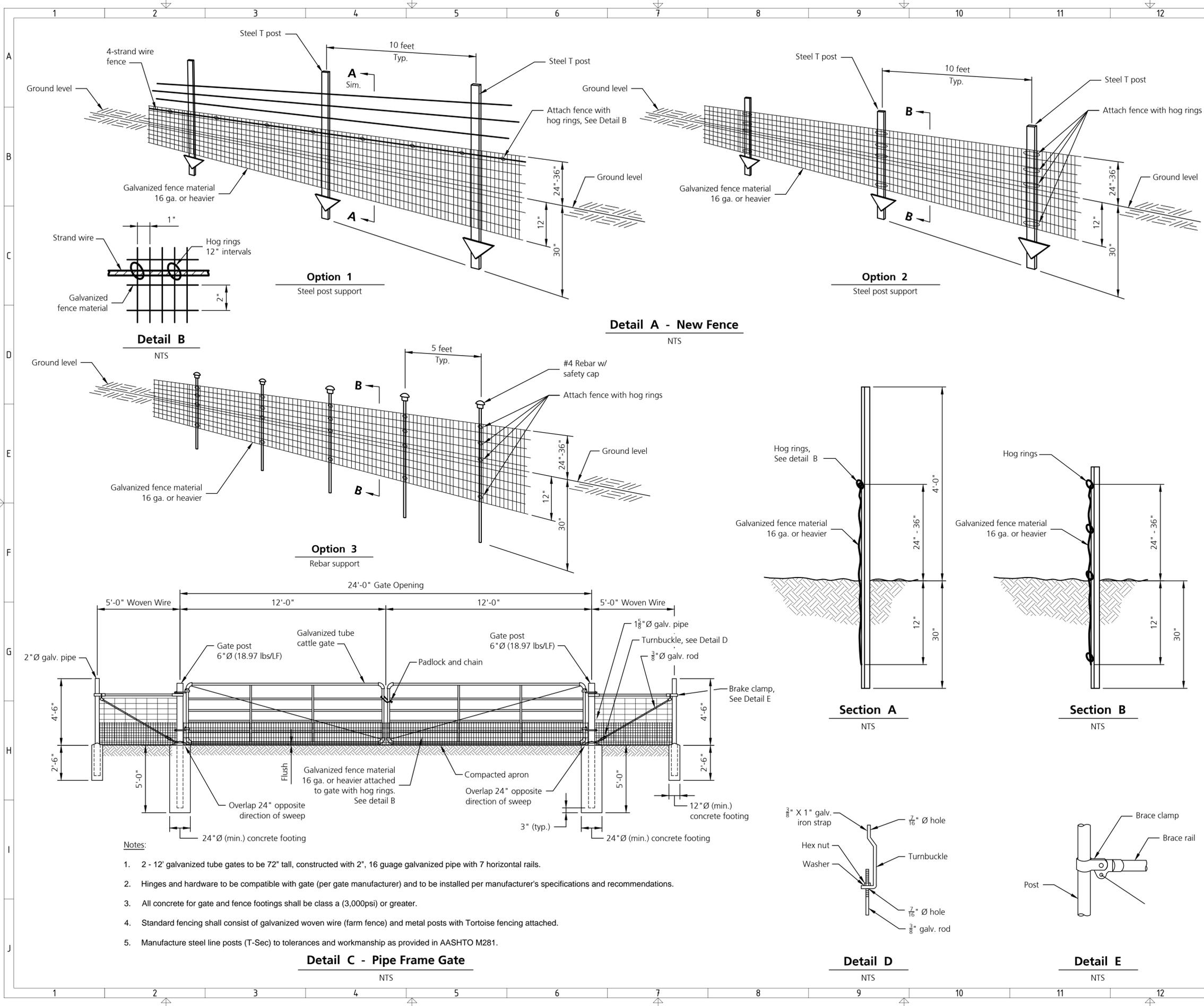


- Legend:**
- Flow direction
- Notes:**
- The existing drainage comprises sheet flow in a northeasterly to easterly direction.
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<b>Gannett Fleming</b>	<b>ABENER TEYMA MOJAVE</b>
Scale: 1" = 400'	Plan No: 6007-PLN-GFE-00-50-C004
Urban Development and Buildings Civil Works - General	Sheets: 5 Sheet No: 04
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 XREF: 6007-PLN-GFE-00-50-0099.dwg  
 XREF: 6007-PLN-GFE-00-50-0100.dwg



- Notes:**
- 2 - 12' galvanized tube gates to be 72" tall, constructed with 2", 16 guage galvanized pipe with 7 horizontal rails.
  - Hinges and hardware to be compatible with gate (per gate manufacturer) and to be installed per manufacturer's specifications and recommendations.
  - All concrete for gate and fence footings shall be class a (3,000psi) or greater.
  - Standard fencing shall consist of galvanized woven wire (farm fence) and metal posts with Tortoise fencing attached.
  - Manufacture steel line posts (T-Sec) to tolerances and workmanship as provided in AASHTO M281.

- General Notes:**
- Ensure that fence posts and material conform to the standards approved by the U.S. Fish and Wildlife Service.
  - Ensure that the height above ground level is no less than 24 inches and no higher than 36 inches.
  - Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.

- Fence Installation:**
- Prior to ground disturbance, the entire project site shall be fenced with desert tortoise exclusion fence.
  - To avoid impacts to desert tortoise during fence construction, the proposed fence alignment shall be flagged and the alignment surveyed within 24 hours prior to fence construction.

- Timing and Supervision of Fence Installation:**
- The exclusion fencing shall be installed prior to site clearing and grubbing.
  - The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors.



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Rev.	Date	Description	Drawn	Checked	Pass
1	03/01/11	Respond to comments by CEC/BV.	Drawn	Checked	Pass
0	01/26/11	Issued for bid.	Drawn	Checked	Pass

Situation:

MOJAVE SOLAR LLC	MOJAVE SOLAR PLANT
<b>Gannett Fleming</b>	<b>ABENER TEYMA MOJAVE</b>

Scale: NTS	Urban Development and Buildings Civil Works - General Desert Tortoise Exclusion Fencing Plans Fence Details	Plan No: 6007-PLN-GFE-00-50-C005 Sheets: 5 Sheet No: 5 Plan No. int:
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