



**TESORO LOGISTICS OPERATIONS, LLC.
HIGH PLAINS PIPELINE SYSTEM – ND**

**BEULAH BASIN
RAIL LOADING 10" PIPELINE
PROJECT**

CONSTRUCTION SPECIFICATIONS

PIPELINE CONSTRUCTION SPECIFICATIONS

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1.0 RIGHTS-OF-WAY AND PERMITS; DAMAGE SETTLEMENTS SEGMENT PROGRESS**1.1 RIGHTS-OF-WAY AND PERMITS****1.1.1 DEFINITIONS**

MAINTAINED RIGHT-OF-WAY: The area within TESORO's right-of-way easements, including the pipeline route and certain access routes, which are maintained by TESORO on an ongoing basis.

CONSTRUCTION RIGHT-OF-WAY: The maintained right-of-way plus any supplemental area along the pipeline route arranged for by TESORO on a temporary basis for construction purposes.

WORK AREA: The construction ROW plus any area outside the construction right-of-way which has been previously disturbed by construction, access roads, staging, storage, etc., or has had side-cast material placed on it.

1.1.2 By TESORO

TESORO will obtain rights-of-way and access easements for the routing, operation and maintenance of the line within both the maintained right-of-way and the construction right-of-way. TESORO will obtain all permits necessary for construction that must be obtained, as required by governmental authorities.

TESORO will furnish a summary of right-of-way and permit conditions affecting construction of the pipeline and appurtenant facilities as included in Permits / Restrictions / Right-Of-Way / Easements Section. CONTRACTOR shall comply with these conditions unless specifically amended by TESORO in writing.

Drawings and reference documents pertinent to rights-of-way, easements, land, and permits are included in Permits / Restrictions / Right-Of-Way / Easements Section as available, and will be provided to CONTRACTOR as obtained by TESORO during the course of work.

1.1.3 By CONTRACTOR

Any additional permits required for actual construction, including those which by regulation must be obtained by the CONTRACTOR actually performing the work, shall be obtained and paid for by CONTRACTOR. CONTRACTOR shall report to TESORO in writing

identifying necessary permits and shall transmit copies of such permits to TESORO when received.

CONTRACTOR shall identify, obtain, and pay for access arrangements to cross property, traverse private roads, pass through gates to reach the construction right-of-way or provide additional work space outside the construction right -of-way.

TESORO shall approve these arrangements prior to the CONTRACTOR paying for these access agreements.

CONTRACTOR shall obtain and pay for use of private property for staging or storage areas which is not within the construction right-of-way unless furnished by TESORO per the Materials Section.

CONTRACTOR shall report to TESORO in writing describing these arrangements for crossing or use of property, and shall submit releases or waivers by the affected landTESOROs or tenants upon completion of construction and cleanup. TESORO will not release contract retention until evidence of landTESORO acceptance is delivered by CONTRACTOR to TESORO.

CONTRACTOR shall arrange and pay for any additional service required by authorities or TESOROs at crossings of railroads, streets, roads, foreign pipelines, canals or streams, including permits, easements, or necessary permission for these crossings. This additional service includes items arising from inspection, operation, or safety requirements either during or after completion of construction work, or necessary subsequent maintenance or repair work either impossible to accomplish at the time of construction or resulting from incomplete or inadequate construction.

CONTRACTOR shall inform TESORO in writing of all such arrangements made with authorities and TESOROs.

1.1.4 Authority of Government Agency to Direct Work

Federal, State, City, and/or County Agency representatives have no authority to directly alter CONTRACTOR'S work of construction of the pipeline other than for safety or regulatory requirements. If an agency representative attempts to alter or direct CONTRACTOR'S work, CONTRACTOR shall immediately contact TESORO. CONTRACTOR will resolve any issues with the agency and provide TESORO with Proof of resolution.

1.2 DAMAGE SETTLEMENTS WITH PROPERTY TESOROS AND TENANTS

1.2.1 Paid by TESORO

Prior to construction, TESORO will settle directly with property TESOROs and tenants for damages necessary for construction within the construction right-of-way only.

1.2.2 Paid by CONTRACTOR

CONTRACTOR shall be solely responsible for settling claims arising from damage to public or private property caused by CONTRACTOR other than damages settled by TESORO, if any, as stated in Section 1.2.1 above, to the satisfaction of TESOROs, tenants, and TESORO. CONTRACTOR shall promptly report to TESORO such claims as they arise.

CONTRACTOR shall negotiate directly with land TESOROs and tenants, and pay settlements for damages during construction for which he is responsible. CONTRACTOR is not entitled to any additional compensation from TESORO as a result of these settlements.

In the event CONTRACTOR is unable to negotiate a settlement with the land TESORO or tenant, TESORO will negotiate a settlement and deduct payments from CONTRACTOR'S compensation.

1.3 GOOD WILL

The "good will" of property TESOROs and tenants is a valuable asset to TESORO. CONTRACTOR shall make every effort to make a lasting positive impression on property TESOROs and tenants. CONTRACTOR shall also cooperate wholeheartedly with TESORO in all public relations matters.

1.4 SEGMENT PROGRESS

Continuous Progress of Segment Activities

Except as otherwise approved by TESORO, CONTRACTOR shall perform the work as a continuous segment operation, completing all activities affecting land use (ditching or stringing through ground restoration). TESORO may require CONTRACTOR to alter his rate of progress on any portion of work or to stop the commencement of work on new property until cleanup has been entirely completed at all places where any activity affecting land use began more than 10 days previously. CONTRACTOR shall not be entitled to reimbursement for unproductive time resulting from enforcement of the provisions of this Section.

Distance Between Construction Crews

During construction, CONTRACTOR shall not allow the distance between the crews to exceed the distance governed by the regulatory agencies and or as stated in the Permits / Restrictions / Right-Of-Way / Easements Section:

If a temporary interruption of work is required during construction, the filler/cap pass welders shall complete all welds made by the root/hot pass welders before leaving the job.

All welds started shall be completed during the same day.

2.0 MATERIALS

2.1 MATERIALS FURNISHED BY TESORO

Quantities of each material item, anticipated delivery dates, receiving points or TESORO-maintained warehouse locations are listed in the Materials Section. TESORO will provide only those materials as specifically listed in the Materials Section or designated as "By TESORO" on project drawings.

Storage sites provided or arranged for by TESORO are identified in the Materials Section.

Items to be off-loaded by CONTRACTOR from carriers' trucks or railcars arranged for by TESORO are identified in the Materials Section.

2.2 MATERIALS MANAGEMENT

2.2.1 General

CONTRACTOR shall handle materials as required to perform the work. The term "handle" shall mean to collect, receive, tally, load, transport, and unload, store, uncrate, and warehouse. CONTRACTOR shall handle all materials in conformance to applicable codes, standards and specifications listed in the Exhibits Section and manufacturers' specifications and instructions.

2.2.2 Responsibility for Materials

CONTRACTOR shall be responsible for proper control and care of materials furnished by TESORO and shall perform necessary warehouse administrative duties. CONTRACTOR shall tally material receipts, report shortages and damages, and inventory surplus material remaining on completion of construction. All TESORO-furnished material withdrawn by CONTRACTOR but not permanently installed, shall be returned to TESORO, or be replaced or paid for by CONTRACTOR.

CONTRACTOR shall take necessary steps such as painting, greasing, installation of rust preventative oil, or covering to protect material from mechanical damage or corrosion. Instruments, control panels, and electrical equipment sensitive to conditions of humidity and temperature shall be suitably stored.

CONTRACTOR shall apply color codes for identification of alloy materials, if utilized, when they are received to ensure that these alloy materials are properly installed and that the correct weld rod is used.

CONTRACTOR shall be solely responsible for (damage, lost, stolen, etc.) to TESORO-furnished materials after CONTRACTOR has received them.

2.2.3 Diversion or Re-consignment of Material

Any additional cost for diversion or re-consignment of material being shipped by TESORO, only to suit CONTRACTOR'S convenience, shall be at CONTRACTOR'S expense.

2.2.4 Demurrage Charges

When TESORO provides transportation services for pipe and other materials from suppliers, CONTRACTOR shall promptly unload or load out the pipe and other materials so as to avoid demurrage charges, provided that TESORO has notified CONTRACTOR at least 24 hours in advance of the arrival of the carrier's transportation equipment and has not otherwise delayed CONTRACTOR. CONTRACTOR shall reimburse TESORO for any transportation charges incurred by TESORO because of CONTRACTOR'S delay in unloading or loading out.

2.3 MATERIALS HANDLING

Pipe, valves, fittings, and other materials shall be loaded and/or unloaded with adequately sized equipment in good, safe condition. Slings shall be constructed or padded so as to prevent damage to pipe or coating. End hooks may be used only with TESORO approval; if used, they shall be rubber or brass coated to prevent damage to beveled ends and pipe walls. Chains shall NOT be used to handle pipe.

When transporting pipe, valves, fittings and other materials, adequate tie-downs shall be used. Cradles, padding or other strapping necessary to protect materials during transportation shall be placed to prevent shifting loads.

2.4 PIPE

2.4.1 Pipe Identification

CONTRACTOR shall maintain identification of pipe grade and pipe specification, serial number, wall thickness, manufacturer, etc., when mill identification markings are cut off or obliterated, by clearly marking each partial joint of pipe.

2.4.2 Pipe Documentation and Inventory

For each size, wall thickness, grade, and type of coating, CONTRACTOR shall maintain a weekly inventory showing total pipe received, pipe laid, pipe on hand at storage areas, pipe on CONTRACTOR'S trucks or in CONTRACTOR'S double-jointing or temporary storage yards.

2.4.3 Pipe Transport by CONTRACTOR

When CONTRACTOR is responsible for shipments of pipe from pipe coating plants, shipments shall conform to the applicable API Recommended Practice and to regulations and rules of the carrier. Truck shipments shall conform to recommendations of API RP 5L 1, Recommended Practice for Railroad Transportation of Line Pipe.

Bare pipe shall be stacked so that the longitudinal weld seams, if applicable, do not touch adjacent pipe surfaces.

Padding shall be provided to protect coated pipe from damage to the coating. CONTRACTOR shall submit details for protection of pipe coating to TESORO for approval at least 5 days before shipments are scheduled to begin.

When coated pipes are transported, the bottom tier of pipe shall be supported by padded cradles. The cradles should be sized (scalped) for the specific diameter of the coated pipe being transported or otherwise designed to ensure that the pipe joints do not move during transport. Padding shall be replaced when it becomes worn.

Three-inch minimum clearance between the bottom of the pipe joints in the bottom tier and the bed of the transporting vehicle shall be provided to allow for flexing.

Pipe should be secured by padded straps or straps made of a resilient material. No chains, trailer stakes, or other metal objects including the devices used to tighten the straps shall come in contact with the coating.

During transport, the coated pipes shall be protected from loose or flying objects that would damage the coating. Flat bed trailers shall have solid beds. Bogie trailers shall have mud flaps on the wheels and canvas or other effective protective cover between the bottom tier of pipe and the road.

Full-encirclement separation bands on coated pipe must be kept in place during transport, including stringing. The separation bands shall be at least three-eighths inch thick, made of rubber hard enough to resist noticeable compression, or equivalent; nylon or polypropylene rope may be used when approved by TESORO. Sufficient bands spaced equidistant shall be used to avoid any contacts between pipe joints, at least three for 40-foot joints and at least five for 60- and 80-foot joints.

2.4.4 Stockpiling

Pipe shall be racked in neat rows and tiers so as to prevent damage to pipe and coating and to be accessible during all types of weather conditions.

The storage area shall be located on relatively high ground and shall have adequate drainage so as to prevent any water puddle formation during rain storms. The area shall have adequate bearing strength so that no ground settling occurs which would adversely affect the piping arrangement.

The bottom row of pipe shall be elevated at least 6 inches off the ground on sand windrows or earthen berms covered with polyethylene sheeting or sufficiently padded wooden skids.

Pipe joints should be adequately restrained at all times to prevent rolling by using blocks or stanchions for the pipe to rest against. For coated pipe, if the blocks or stanchions are metal or wood, rubber strips shall be provided at bearing contacts with the pipe. Stowing cables used to secure the pipe shall be isolated from any contact with pipe by a protective layer such as rubber strips.

Storage areas shall be organized so that racks of different joint lengths, diameters, wall thickness and type of coating can be readily accessed for handling and load-out.

Bare pipe shall be stacked in a staggered pattern so that each pipe in the stack is supported for the full length of pipe by two pipes in the lower row. Bare submerged-arc welded pipe shall be racked so that the longitudinal weld seams do not touch adjacent pipe surfaces.

Full-encirclement separation bands must be in place on spiral-weld pipe joints and coated pipe joints; see Section 2.4.3. Pipe with coating subject to deterioration under ultra-violet exposure shall be covered with an ultra-violet-resistant material while stockpiled for periods longer than two months.

2.4.5 Pipe and/or Coating Damaged in Transport or Installation

CONTRACTOR shall repair or cut off, as specified by TESORO, sections of pipe and/or coating damaged in shipment to delivery points or during installation. Once CONTRACTOR takes possession of pipe and fittings, CONTRACTOR shall be liable for the pipe and fittings while in CONTRACTOR'S possession. Pipe will be considered damaged prior to receipt by CONTRACTOR only if CONTRACTOR notifies TESORO of damage so that TESORO can inspect damage before CONTRACTOR handles pipe in any manner. Any pipe or coating

damage not called to TESORO's attention before CONTRACTOR handles it shall be repaired or replaced by CONTRACTOR at his own expense. Pipe or coating damaged in transport by CONTRACTOR or during construction shall be repaired or replaced at CONTRACTOR'S expense.

2.4.6 Pipe Pups

Pipe required to replace welds cut out of the line shall be cut from pieces of pipe shorter than 6 feet, when available. The replacement piece shall be of same wall thickness, grade and specification as that cut out.

For sizes NPS 6 and larger, all pieces of pipe exceeding 6 feet in length which are cut off when making tie-in welds or for other reasons shall be hauled ahead and welded into the pipeline in locations where pipe of same wall thickness, grade, and specification is being laid. Pieces over 6 feet in length of same wall thickness, grade, and specification remaining at the end of the work shall be welded into approximate 40-foot joints, hydrostatically tested to the pressures specified in the Exhibits Section, ends beveled, hauled to and stacked at storage sites as directed by TESORO.

2.5 MATERIALS FROM TESORO STORAGE

2.5.1 Materials Withdrawal

For TESORO furnished materials to be issued to CONTRACTOR at a TESORO storage yard, CONTRACTOR shall prepare a list of the materials required and shall arrange with TESORO for pick-up of the materials. This list shall include a brief description of the material and shall include a reference drawing number indicating where the material is to be used. CONTRACTOR'S requests for withdrawal of such material shall be limited by quantities shown on the drawings or Lists of Materials supplied by TESORO. CONTRACTOR shall obtain approval from TESORO before requesting material in excess of such quantities. Two copies of this list of materials shall be submitted to TESORO when picking up materials; one copy will be returned to CONTRACTOR with the materials, the second will be signed by CONTRACTOR and retained by TESORO. CONTRACTOR shall load all materials.

2.5.2 Material Return to TESORO Storage

When TESORO furnished materials are found to be excess items, CONTRACTOR shall return and unload such materials, accompanied by a list of material describing them, in duplicate, at TESORO storage yard designated by TESORO.

2.5.3 End-of-Job Consolidation of TESORO Furnished Surplus Materials

CONTRACTOR shall supply a detailed list of TESORO-furnished

material withdrawn from TESORO storage and not permanently installed within one week after the final successful hydro-test. CONTRACTOR shall return all TESORO surplus material to TESORO storage locations designated by TESORO.

3.0 PRELIMINARY AND GENERAL CONSTRUCTION REQUIREMENTS

3.1 PRELIMINARY ARRANGEMENTS

CONTRACTOR shall familiarize himself with all provisions affecting construction included in the pipeline right-at-way agreements and easements secured by TESORO. CONTRACTOR shall comply with the requirements of right-of-way agreements, easements, leases, and other agreements obtained by TESORO or CONTRACTOR relating to the work and shall cooperate with TESORO in satisfying all reasonable requirements of property TESOROs. Work necessary to comply with right-of-way easements and permit conditions contained in documents included in the Permits / Restrictions / Right-Of-Way / Easements Section shall be performed by CONTRACTOR at no additional cost to TESORO. CONTRACTOR'S demonstrated costs for other such work will be reimbursed as an adjustment to his compensation. CONTRACTOR shall notify and consult the property TESOROs or tenants in advance of construction and entrance on any property to determine the procedure that will result in the least damage to or interference with the TESOROs' or tenants' operations.

3.2 DOCUMENTATION BEFORE CLEARING

Prior to clearing, CONTRACTOR shall document the undisturbed right-of-way condition. This documentation shall be done with video cameras and color photographs taken at 400 foot intervals or maximum line-of-sight, whichever is less, in agricultural and developed lands, and taken at greater intervals to show of typical conditions in undeveloped lands. Videos and photographs shall be taken at every road and railroad crossing, with views showing the full length of the crossing on the road or railroad right-of-way. Videos and photographs shall be taken at river and watercourse crossings and in all areas where grading is to be done. Videos and photographs shall be taken of private roads which will be used for access to the construction right-of-way. Each video and picture shall be narrated and labeled with the stationing or location and direction toward which it was viewed; the access road narration and label shall include the right-of-way stationing accessed by the road. Two copies of this report shall be provided to TESORO within 14 calendar days of beginning clearing.

3.3 PROPERTY PROTECTION

Clearing, grading, ditching, boring, pipe stringing, bending, welding, coating, laying, and backfilling activities along the pipeline route shall be confined to the width of the construction right-of-way and specific temporary access routes arranged for by CONTRACTOR. Arrangements for temporary access shall be made in accordance with Section 1.2.2. CONTRACTOR'S operations shall be so

conducted that no unnecessary damage or inconvenience is caused to the public or to TESOROs and tenants of property.

CONTRACTOR shall exercise every care to prevent interference with the normal supply and distribution of water in irrigated lands.

CONTRACTOR shall be responsible for designing and providing access to the job site, including temporary roads and bridges, modifications to roads (widening or curve straightening, for example) and bridges (widening or reinforcing, for example), and any other necessary temporary facilities. CONTRACTOR shall secure permission of the landTESOROs or controlling authorities. All such construction or modifications, with permits, shall be submitted for TESORO review prior to work taking place.

CONTRACTOR shall exercise due care to avoid damaging existing improvements or facilities, utilities, fences, and trees and shrubbery that are not to be removed in clearing operations. All trees and shrubbery that are not to be removed, pole lines, fences, signs, survey markers and monuments, buildings and structures, conduits, cables, pipelines under or above ground, sewer and waterlines, all highway or street facilities, and any other improvements or facilities within or adjacent to the work area shall be protected by CONTRACTOR from injury or damage. If such objects are injured or damaged by CONTRACTOR'S operations, they shall be replaced or restored at CONTRACTOR'S expense, to a condition equal to that prior to construction.

CONTRACTOR shall secure approval of the landTESOROs or controlling authorities before filling or bridging public or natural ditches, drains, or canals along the construction right-of-way for passage of equipment. CONTRACTOR'S design for these crossings must be submitted to TESORO for review prior to construction.

When crossing highways, railroads, or hard surfaced roads which may be damaged by moving equipment, CONTRACTOR shall sufficiently shield such surfaces to prevent damage. Surfaces damaged due to CONTRACTOR'S equipment shall be repaired by CONTRACTOR to the satisfaction of the controlling authority and TESORO at CONTRACTOR'S expense.

3.4 ROAD CLOSURES

CONTRACTOR shall obtain prior approval from the controlling authority prior to any road closure, regardless of the duration. CONTRACTOR shall make every effort possible to minimize road closures and traffic delays, and to schedule road closures so they will not interfere with normal commute and school traffic.

3.5 PERMANENT SURVEY MONUMENTS

CONTRACTOR shall preserve permanent survey monuments and bench marks. In the event CONTRACTOR disturbs any permanent monument or bench marks, they shall be replaced by a Registered Land Surveyor acting under TESORO's

instructions; replacement cost will be deducted from CONTRACTOR'S compensation.

3.6 WORKS AROUND EXISTING PIPELINES AND OTHER BURIED FACILITIES

3.6.1 General

Where pipeline construction work parallels or crosses existing pipelines, cables, power lines, conduits, structures, or facilities either owned by TESORO or others, extreme care shall be exercised by CONTRACTOR at all times. CONTRACTOR shall be responsible for contacting authorities and TESOROs, and locating such facilities before driving over them or excavating. In the event CONTRACTOR damages or breaks any pipelines, cables, power lines, conduits, structures or facilities, CONTRACTOR shall be liable for all damages or losses, including product losses, cleanup and pipeline shutdown time costs, and shall fully indemnify and hold TESORO harmless from any attendant personal injury or property damage claims.

TESORO hereby notifies CONTRACTOR that it has not done any research in identifying existing pipelines and other buried facilities not shown on the construction drawings.

The fact that any existing facility is not shown on the plans and drawings shall not relieve CONTRACTOR of his responsibility for ascertaining the existence of any underground or aboveground improvements or facilities, which may be subject to damage by reason of CONTRACTOR'S operations.

The CONTRACTOR shall adequately support exposed substructures to the satisfaction of the substructure TESORO and/or the TESORO Representative.

The clearance between the pipe and other substructures shall be at least twenty four (24) inches unless closer proximity is specifically authorized in each instance by the TESORO Representative and is allowed by permit authorities.

All utilities shall be repaired immediately in accordance with the standards of the TESORO / agency having jurisdiction.

3.6.2 Underground Service Alert Notification

Prior to extensive grading or any excavation operation, CONTRACTOR shall advise Underground Service Alert Center (or other underground utility locating services, where available) of the location of the grading or excavation; notification shall be a minimum of 48 hours before performing work. CONTRACTOR shall also notify TESOROs of facilities or structures that will be exposed during excavation or crossed by the

new line at least three days prior to excavation. CONTRACTOR shall confirm to TESORO not later than the day before beginning the grading or excavation that these notifications have been made.

3.6.3 Locating Existing Pipelines

Where grading, ditching or other work crosses or parallels existing pipelines (whether active or inactive), CONTRACTOR shall locate and mark the pipeline regardless of any prior similar work by TESORO or its surveyor. Before any grading, including grubbing, CONTRACTOR shall confirm the location of foreign lines. Location of existing lines shall be confirmed by exposing ("daylighting") the top of the existing pipeline. Daylighting shall be done by hand.

CONTRACTOR shall not expose the existing pipelines unless Pipeline TESOROs Representative and TESORO Representative are present.

3.6.4 Parallel Pipelines

CONTRACTOR shall not cross existing parallel pipelines with any equipment and shall not work within 5 feet of existing pipelines, unless specifically approved by TESORO / pipeline TESOROs in writing.

Visual confirmation of the location of parallel TESORO pipelines by exposing ("daylighting") the top half of the existing pipeline will be required at all horizontal PI's (points of intersection) greater than 3 degrees, at all foreign pipeline crossings, and at a maximum spacing of 200 feet. Daylighting shall be done by hand. A backhoe shall not be used unless specifically approved by TESORO. If the use of a backhoe is approved, the bucket shall be blinded (teeth removed) and the backhoe positioned to dig parallel to the highest existing pipe.

Any coating damage done to the foreign pipeline by the CONTRACTOR shall be reported and repaired to the satisfaction of the foreign pipeline TESORO.

3.6.5 Provision for Cathodic Protection Test Leads

TESORO intends to coordinate the installation of test leads for cathodic protection interference testing between TESORO's new pipeline and any foreign steel pipeline being crossed.

This may require leaving the crossing exposed for several days until all interested parties can be present. This will not be the basis for an adjustment to CONTRACTOR'S compensation. CONTRACTOR shall not attempt to install any device or do any other work on pipeline crossings without a TESORO Representative present or prior written TESORO approval.

3.7 DUST CONTROL

CONTRACTOR shall control dust as required by authorities and to TESORO's satisfaction. TESORO approved additives may be used to minimize water requirements. CONTRACTOR shall submit his additive proposal for TESORO's approval 30 days prior to use for dust control.

3.8 CLEAN-UP

During the performance of the work, CONTRACTOR shall keep a reasonable degree of order at all work sites by disposing of accumulated rubbish and excess material, and at the completion of the work all areas of CONTRACTOR'S work shall be cleared of debris, left-over tools, consumable supplies, and material which may have accumulated as a result of CONTRACTOR'S performance of the work. Where CONTRACTOR, after due notice, fails to keep the areas of his work reasonably clean and safe, or fails to clean these areas at the completion of the work, TESORO may perform this work. The cost of such work will be deducted from CONTRACTOR'S compensation.

Excess pipe, other materials and equipment supplied by TESORO, or for which TESORO has paid, shall be picked up from the right-of-way and delivered to a designated TESORO facility.

Roads, driveways, trails, gates, bridges or other structures and access routes used and damaged by CONTRACTOR during construction shall be replaced or repaired and left in good condition by CONTRACTOR. The right-of-way shall be returned to as near original condition as possible.

3.9 NIGHT CAPS

Open ends of pipeline sections, when unattended, shall be effectively closed or plugged immediately by using a "night cap" approved by TESORO to prevent dirt, debris or animals from entering the pipe.

4.0 CONSTRUCTION ROUTE MARKING, LINE INVENTORY, AND SURVEYING

4.1 GENERAL CONSTRUCTION MARKING

TESORO will set markers at intervals along the route to identify the pipeline alignment and easement. CONTRACTOR shall set additional markers (if necessary) to establish the pipeline alignment, easement and the construction right-of-way as required for his construction activities. CONTRACTOR shall re-establish the survey line and restore any marker knocked out or lost prior to ditching the line, or section thereof, because of CONTRACTOR'S activities such as stringing, right-of-way preparation, etc. Markers at reference points for survey control points, such as PI's, shall not be disturbed or covered by CONTRACTOR'S operations.

4.2 SURVEYING - LINE INVENTORY

TESORO will measure as-built length of the pipeline and stationing of appurtenances.

5.0 FENCING, CLEARING AND GRADING

5.1 FENCES

All existing fences removed by CONTRACTOR shall be replaced with new materials in kind or better. All temporary fences constructed by CONTRACTOR shall be 4-strand, 12 1/2 gauge barbed wire fences with treated wooden posts. Posts shall be set at least 2'-8" below natural grade and shall extend 5'-0" above finished grade. The fence shall follow the land contours so that the lowest wire is never more than 18" above grade.

5.2 TEMPORARY GATES

Temporary wire gates shall be constructed wherever fences cross the construction right-of-way or access routes, except where adequate gates are already present. Posts and braces shall be installed on each side of the gate, and fence wires shall be tensioned and securely fastened before the fence is cut. CONTRACTOR'S watchmen shall be stationed wherever gates are left open. CONTRACTOR shall be solely responsible for any losses resulting from his failure to adequately provide gates or to fence private or public property.

Unless TESORO specifies that permanent gates are to be installed at certain locations, CONTRACTOR shall, after completion of pipeline construction, restore the fences to not less than their original condition.

5.3 PERMANENT GATES

Where specified in the drawings and the Contract Documents, CONTRACTOR shall install permanent gates of the type shown on project drawings.

5.4 CLEARING REGULATIONS

Clearing of the construction right-of-way where it passes through wooded land and environmentally sensitive habitats shall be done by CONTRACTOR in accordance with the Permits / Restrictions / Right-Of-Way / Easements Section and laws and regulations governing such lands, including fire protection, disposal, and cleanup.

5.5 BRUSH AND TREE REMOVAL

CONTRACTOR shall remove only as necessary brush and timber from the right-of-way prior to disturbing the topsoil. CONTRACTOR shall make every effort possible to minimize tree cutting and brush removal. This includes minor pipeline alignment changes as directed by TESORO. These shall be made at no additional cost to TESORO if the lines remain within 50 feet of the original

alignment. Brush and tree removal shall be in accordance to the Permits / Restrictions / Right-Of-Way / Easements Section.

5.6 DEBRIS DISPOSAL

Trees, brush, stumps, or other material shall not be pushed from the construction right-of-way. Merchantable timber shall be cut and delivered to property TESOROs, if so requested, or as directed by TESORO. Non-merchantable timber, stumps, brush, etc., shall be properly disposed of by CONTRACTOR offsite. Alternatively, CONTRACTOR may chip non- merchantable timber, stumps, brush, etc. and stockpile it along the right-of-way for use in restoration. Debris disposal shall be in accordance to the Permits / Restrictions / Right-Of-Way / Easements Section.

5.7 TOPSOIL SEGREGATION

After trees and shrubs have been removed as necessary, six inches of native topsoil or as specified in the Permits / Restrictions / Right-Of-Way / Easements Section (including grasses and very small brush) shall be removed from the way. Topsoil from deep cuts made to achieve a graded work area shall also be stockpiled upslope of the graded right-of-way. A drainage diversion ditch shall be installed upslope of the native topsoil stockpile. Care shall be taken to minimize ground cover disturbance at the edge of the construction right-of-way.

5.8 SLOPE LIMITS

Cut slopes shall not be steeper than the angle of repose of soil or 1: 1 without TESORO approval.

Slope limitations shall be in accordance to the Permits /Restrictions, Drawings or Exhibits Sections.

5.9 SIDE-CAST MATERIALS

CONTRACTOR shall make every effort to contain side-cast materials. This may require installing temporary fences and/or retaining walls to prevent damage by falling material and to limit the work area required for final grading and restoration.

6.0 DITCHING

6.1 CHARACTER OF DITCH AND DEPTH OF COVER

The ditch shall be of sufficient width and in such alignment as to permit laying the pipe therein without straining the pipe and without injury to the protective coatings. Except as otherwise specified in this Specification or on drawings, the ditch shall provide minimum cover between the top of the pipe and the original or

final ground surface, whichever is lower, as required by the applicable Federal 49 CFR Part 195, or by other regulatory requirements if more stringent.

All excavations shall be in accordance to the California Code of Regulations. The CONTRACTOR shall be responsible for the required OSHA permit for excavations or trenches five (5) feet in depth or deeper.

The CONTRACTOR shall supply to the TESORO detailed plans, specifications, and calculations prepared by a civil engineer currently registered in the State of California when such information is required by "state" mandate. No person will enter an excavation not in compliance with this mandate.

The CONTRACTOR shall be responsible for immediately notifying the TESORO in the event any suspected contaminated soil is encountered.

6.1.1 Additional Cover

CONTRACTOR shall provide additional cover to meet special construction requirements contained in the drawings, right-of-way and permit conditions as included in the Permits / Restrictions Section. Where additional cover is required by TESORO and is not shown on the drawings or in the Permits / Restrictions Section, CONTRACTOR shall provide the cover required and receive additional compensation. Where additional cover is required at crossings of roads, railroads, rivers, streams, ditches, other pipelines, culverts, or similar obstructions, it is considered as "foreseeable" and shall be provided at no additional cost to TESORO.

6.1.2 Watercourse Crossings

At rivers, streams, ditches, washes, and gullies the ditch shall be dug to allow the pipe to gradually sag into and rise away from the lowest point. The minimum cover between high water limits of water courses, both natural and constructed, shall be 60 inches, unless otherwise indicated in the Permits / Restrictions Section.

6.1.3 Bedding

The bottom of the ditch shall be free of sharp rocks, debris, or any foreign material which might damage protective coatings, and shall be graded and bedded so that it will afford sufficient bearing to support the pipe without visible deflection along its length.

At locations where there is extensive continuous rock, and at TESORO'S request, CONTRACTOR shall provide and install a double thickness of heavy-duty TESORO-approved "rockshield" around the pipe.

6.2 PROTECTION AT OPEN DITCHES

CONTRACTOR shall provide suitable barricades or fencing around open ditches in areas where vehicular traffic, cattle or other livestock are located, or where the public could fall.

CONTRACTOR shall provide dirt plugs in the ditch where necessary to allow livestock crossing. Open ditches within 20 feet of paved roads may require flagmen and signs to control and alert traffic.

Local authorities may require that no open ditch remain unattended. These requirements shall be fulfilled by CONTRACTOR at no additional cost to TESORO.

Protection of open ditches shall be in accordance to the Permits / Restrictions / Right-Of-Way / Easements Section.

6.3 SHORING AND BRACING

Where personnel enter excavations 5 feet or more in depth, the excavation shall be protected by a support system of shoring or bracing meeting OSHA standards. Such protection shall also be provided in excavations less than 5 feet deep where hazardous earth movement may be expected. Shoring or bracing systems shall be inspected daily and after a rainstorm or other hazard-increasing occurrence.

6.4 EXISTING PIPELINES AND/OR STRUCTURES

6.4.1 See Section 3.6 regarding CONTRACTOR'S responsibility for locating existing buried facilities, and provision for cathodic protection test leads. Minimum clearance between crossed lines and other structures shall be 24 inches, except in specific cases where TESORO may approve less in writing. CONTRACTOR shall comply with crossing requirements of the TESOROs of other pipelines or facilities if more stringent than required by this specification.

6.5 ROCK EXCAVATION AND BLASTING

6.5.1 General

Where excavation for grading or ditching is in loose or solid rock, extreme care shall be exercised so as not to scatter loose rock or cause damage to property. If loose rock is scattered in tillable lands, CONTRACTOR shall pick up and dispose of such rock.

Solid rock is rock in its natural formation that cannot be ditched by using a track hoe or equivalent or a dozer equipped with a ripper, sized and operated in accordance with good pipeline practice; but requires removal by sawing, drilling and blasting. In addition, where the bottom of the ditch is in rock, or has hard protrusions capable of damaging pipe coating, ditch bottom must be padded as specified in Section 6.1.4.

6.5.2 Ditching Where Rock is encountered

Where continuous rock is encountered for distances greater than 100 feet at a depth that will not permit the minimum cover specified for normal ditching operations, TESORO may authorize in writing less cover but none less than required by ANSIIASME B31.4 and CFR Title 49, Part 195 for liquid lines. Reduction of normal minimum depth of cover will only be considered when excavation cannot be accomplished with a dozer equipped with a ripper, rooters, plows, or other similar equipment. Bid prices for rock excavation shall be based on the cubic yard of rock removed, and shall be paid in addition to the normal per foot lay price.

Extra ditch width and depth obtained due to removing more material than required shall not be included in calculation of extra cost.

6.5.3 Blasting

Blasting shall not be permitted.

6.6 TOPSOIL SEGREGATION

In cultivated agricultural areas topsoil overlaying infertile material shall be separately excavated and placed so that it may be replaced into the upper portion of the backfill. Where indicated on project drawings or defined elsewhere in this specification or the Contract Documents, this shall be done at no additional cost to TESORO.

6.7 RESTRICTED USE OF EXCAVATION EQUIPMENT

In cases where shrubbery, fruit trees or valuable growing timber is encountered in the construction right-of-way, and in locations where, in the opinion of TESORO, the use of normal trenching equipment may result in unnecessary damage or injury to property, or where excessive side cuts and excavations would be required, TESORO may require the ditch to be excavated with special light equipment. Where foreseen or indicated on project drawings this shall be done at no additional cost to TESORO. Where enforceable, additional compensation to CONTRACTOR will be in accordance with the Uniform Bid Sheets Section.

Where the pipeline crosses existing lines, CONTRACTOR shall locate and expose these existing lines by hand prior to performing any other work at that location. CONTRACTOR shall not expose the crossing pipelines unless TESORO Representative and pipeline TESORO's Representative are present. See Sections 3.3 and 3.6.

7.0 STRINGING, BENDING, LINEUP

7.1 STRINGING

7.1.1 Handling of Pipe

Loading-out, hauling, and stringing of pipe along the construction right-of-way shall be done so as not to damage coating, dent the pipe, or scar the bevels; see Section 2.4.

7.1.2 Changes in Pipe/Coating

Stringing shall conform to stationing locations specified on alignment sheets for changes in pipe size, wall thickness, grade, and type of coating. Deviations from these locations must be approved by TESORO in writing. Where stationing may not be specific -- such as related to topographic features, property lines, etc. -- CONTRACTOR shall report stationing as actually strung to TESORO Representative the same day as strung.

7.1.3 Sequence with Ditching

Stringing shall not precede normal ditching operations or blasting unless specifically approved by TESORO in writing.

7.2 BENDING

7.2.1 Field Bends

CONTRACTOR shall make field bends so that the pipe will conform to the bottom of the ditch. Pipe shall not be bent ahead of ditching unless TESORO approves in writing.

Bending equipment shall be suitably designed and adequately padded to avoid damage to pipe coating. An internal mandrel shall be used if needed to produce smooth bends. Hot bending, miters, and wrinkle bends are not permitted.

7.2.2 Field Bend Limits

7.2.2.1 Minimum Radius of Bends

Unless otherwise approved by TESORO, the radius of field bends in feet shall not be less than the following:

For fusion-bonded epoxy coating: 3.2 x pipe NPS

Tighter bends up to limits as permitted by ANSI/ASME B31.4, shall only be made with written TESORO approval.

7.2.2.2 Diameter Reduction Limit

The pipe diameter at bends shall not be reduced by more than 2.5% of the nominal pipe diameter.

7.2.2.3 Wall Thickness Reduction Limit

Pipe wall thickness after bending shall not be less than the minimum permitted by the specification under which the pipe was manufactured. For seamless pipe with varying wall thickness around the circumference, the thinnest wall thickness of the pipe joint shall be at the inside of the bend. For API Specification 5L pipe the minimum wall thickness is 0.875 x nominal wall thickness for pipe NPS 18 and smaller; 0.92 x nominal wall thickness for welded NPS 20 and larger; 0.90 x nominal wall thickness for seamless NPS 20 and larger.

7.2.2.4 Minimum Tangent Length

Minimum tangent length of straight pipe at each end of a bent joint shall be 6 feet.

7.2.3 Cold Weather Precautions

7.2.3.1 When atmospheric temperature is below 40°F, the pipe shall be preheated to 60°F, measured by temp-sticks, before bending. The pipe shall be preheated to a distance of 3 feet on either side of the bend, and the heat shall be maintained during the bending operation. Surface temperature of coated pipe shall not exceed 120°F, measured with temp-sticks. Bends must be made smoothly and slowly without sudden strains.

7.2.4 Shop-fabricated Bends or Fittings

Shop-fabricated bends or fittings furnished by TESORO shall be installed in the line by CONTRACTOR. All fittings, pipe bends, both shop-fabricated and field bent, shall be checked before being welded into the line by pulling a sizing plate completely through the bent section. The sizing plate assembly shall be furnished by CONTRACTOR and approved by TESORO. The sizing plate shall be of three-eighths inch thick Aluminum plate. The assembly shall maintain the sizing plate in a position normal to the longitudinal axis of the pipe.

The diameter of the sizing plate shall be 97.5% of the nominal internal diameter of the pipe. Each sizing plate shall be stamped with the pipe size, nominal wall thickness, and plate diameter.

After successfully running the sizing plate to the satisfaction of the TESORO, the sizing plate shall be turned over to the TESORO for their D.O.T. files.

7.3 LINE-UP

7.3.1 Internal Obstructions

Before welding, the inside of each length of pipe shall be thoroughly examined to make sure that it is free of dirt, animals, or other obstructions. If dirty or obstructed in any way, the pipe shall be swabbed out before being welded into the pipeline.

7.3.2 Longitudinal Weld Seams

When lining-up pipe having a longitudinal weld seam, the pipe shall be aligned and welded so that the seam will be located on the upper surface of the line and within 30 degrees of top center. Successive joints shall be rotated to right or left to avoid aligning the seams in adjacent joints, and so as to have a minimum distance between seams at the joint of two inches.

7.3.3 Temporary Pipe Supports (Skids)

Temporary pipe supports of sufficient strength, size, and number shall be used to support the pipe alongside the ditch, or when necessary over the ditch without collapsing the ditch. Special pads, approved by TESORO, shall be placed between the supports and coated pipe to prevent coating damage resulting from weight and thermal expansion of the pipe. The spacing of the supports shall be such that loads on individual supports will not cause coating damage.

7.3.4 Wall-thickness Transitions

Joint design for pipe of different wall thickness exceeding one-sixteenth inch mismatch shall conform to ANSI/ASME B31.4. If the thicker-wall pipe or fitting is the same or higher grade as the thinner wall pipe, it's inside wall shall be ground to a smooth 4:1 taper.

If the thicker wall pipe or fitting is the lower grade, a transition piece made of the same grade as the thinner wall pipe shall be used and with a wall thickness equal to the thicker wall pipe or fitting. Length of the transition piece shall be 1.5 times pipe diameter (12 inch minimum) up through NPS 24, and 1 times pipe diameter for larger sizes. Both ends shall be beveled for butt-welding, with an internal 4:1 machined taper to match the internal diameter of the thinner wall pipe.

8.0 PIPE WELDING

Welding of the pipeline and associated piping facilities shall conform to API Standard 1104 (latest edition).

8.1 WELDING PROCEDURE QUALIFICATION

Procedure qualification shall be in accordance with API Standard 1104, TESORO's welding procedures, attached, and the following.

8.1.1 Procedure Specifications by TESORO

TESORO will provide forms as included in the attached. CONTRACTOR has the option to propose alternative Procedure Specifications, subject to TESORO approval; in this case and for welding situations not covered by Procedure Specifications included in the attached. CONTRACTOR shall qualify procedures in accordance with Section 8 and TESORO's welding procedures.

8.1.2 Procedure Specifications by CONTRACTOR

CONTRACTOR shall submit for TESORO review and approval a Procedure Specification for each essential variable grouping on forms similar to Figures shown in API Standard 1104 at least 7 days before scheduled pipeline welding work. The Procedure Specifications shall be approved by TESORO before CONTRACTOR makes qualification test welds. Procedure Specifications shall cover all welding situations anticipated for the project, such as new pipe to new pipe, new pipe to existing pipe, and branch connections, and shall cover the sizes, wall thicknesses and grades of pipe and fittings for the project.

8.1.3 Test Joints and Testing

Welding and testing of joints shall be in accordance to API Standard 1104. Testing shall be done by an independent testing laboratory approved by TESORO. Coupon test reports shall be on forms similar to Figures shown in API Standard 1104.

TESORO Representative will witness welding of test joints and will review and accept or reject the test results. CONTRACTOR shall notify TESORO of time and place of qualification welding at least 2 days in advance.

In addition to the required mechanical testing for compliance to API 1104, the CONTRACTOR shall have an independent testing laboratory perform Rockwell C hardness (HRC) tests of procedure welds in accordance with the Drawings. No single hardness reading shall exceed HRC 22. The results of each survey shall be made a part of the permanent WPS record.

A weld repair procedure shall be qualified in accordance with API 1104 and hardness testing of the repair area performed as required above.

8.1.4 Approval of Procedures

Procedures with accepted test results shall be submitted to TESORO for final approval. TESORO reserves the right to reject any procedure which in TESORO's opinion will not produce acceptable welds.

Acceptance or approval by TESORO shall not alter CONTRACTOR'S responsibility for producing acceptable welds.

8.1.5 Qualified and Approved Procedures

Qualified and approved procedures shall be adhered to during construction. If CONTRACTOR proposes a change in essential variables requiring a new procedure, the new procedure must be qualified and approved. In the event TESORO rejects a procedure during the course of the work, CONTRACTOR shall immediately cease production welding per that procedure until the rejected procedure is remedied and replaced by a new qualified and approved procedure.

8.1.6 Costs of Procedure

Costs of procedure qualifications and testing shall be at CONTRACTOR'S expense, except TESORO will provide line pipe for test qualifications.

8.2 WELDER QUALIFICATION

8.2.1 Welder Qualification

Welder qualification shall be in accordance with API Standard 1104 and the following. All welders employed or engaged by CONTRACTOR for pipeline welding must successfully complete either the single or multiple qualification tests for each of the previously qualified welding procedures.

Welder qualification for butt welds by radiography per API Standard 1104 is not permissible except by TESORO's written direction for exceptional circumstances.

Testing shall be done by an independent testing laboratory approved by TESORO. Results shall be reported on forms similar to Figures shown in API Standard 1104.

TESORO Representative will witness test welding, review test results, and will promptly notify CONTRACTOR as to the qualification or failure to qualify of each welder. CONTRACTOR shall notify TESORO of time and location of qualification test welding at least 2 days in advance.

Costs of welding tests and testing shall be at CONTRACTOR'S expense, except TESORO will provide line pipe for test qualifications.

8.2.2 Qualified Welders

Each welder must be qualified for the type and method of welding he will perform. Multiple qualifications are required for welders performing branch connection or doing manifold fabrication welding.

A welder making a successful Procedure Qualification test weld is automatically qualified for that procedure.

8.2.3 Additional Tests

Welders must be re-qualified if there is any change in the essential variables for welder qualification.

TESORO reserves the right to require and witness additional tests at any time if there is doubt about the competence of a welder. TESORO will reimburse CONTRACTOR for the cost of such additional tests only if the test is passed.

Welders who do not pass retests shall not be permitted to weld on the remainder of the project.

8.3 WELDER IDENTIFICATION

CONTRACTOR shall issue an identification number to each qualified welder. Each weld made by that welder shall be so identified. Any weld worked on by more than one welder shall be identified by the number of each welder participating in the weld.

All welds shall be marked by each welder with an ink or "Paint Stick" pipe marker on the top quarter of the pipe using the identification number assigned to him, and shall clearly designate each area that each welder has welded, including passes. Any weld not identified by the welder(s) shall be subject to cutout at CONTRACTOR'S expense. CONTRACTOR shall keep TESORO currently supplied with an up-to-date list of the identification numbers, welders' names, and procedure(s) and scope each is qualified. If a welder leaves the job, his number shall not be reassigned.

8.4 PRODUCTION WELDING

Production welding, including tie-ins, branch connections, and manifold fabrication, shall be done in accordance with API Standard 1104, the applicable ANSI/ASME Code, applicable Federal and State regulations, TESORO'S welding procedures and the following:

8.4.1 Surface Cleaning and Bevel Preparation

The internal and external surfaces of each pipe shall be machine buffed for a nominal distance of 2 inches back from the bevel to remove rust,

scale, dirt or other foreign materials before aligning for welding. Grinding shall not be used for this purpose.

All bevels shall be buffed or wire brush cleaned to a bright finish prior to welding. Beveled ends damaged during handling shall be satisfactorily repaired or re-beveled. Pieces of pipe which have been previously cut off for tie-ins or other reasons shall be re-beveled before welding.

If use of air-driven tools results in an oil film on the bevels, the oil film shall be removed using a suitable solvent.

8.4.2 Pipe Material Flaws and Defects

The welder or his supervisor shall report, and TESORO

Representative shall be notified, whenever any flaws, laminations, inclusions, etc. in the pipe material or other defects such as dents or arc burns are found during the cleaning, beveling, or welding operations.

8.4.3 Arc Burns

CONTRACTOR shall insure that arcing does not occur between the ground leads of the welding machines and the pipe or fittings or alignment clamp. Striking an arc on the pipe or fittings at any point other than the welding groove shall not be permitted. Any arc burn shall be removed by cutting out a cylinder of pipe containing the arc burn not less than 1.5 times pipe diameter in length (12 inches minimum) for sizes through NPS 24, and 1 times pipe diameter for larger sizes.

All arc burns shall be reported to TESORO Representative.

8.4.4 Preheating

Pipe ends shall be preheated to 100°F minimum whenever the atmospheric temperature is below 50°F or when pipe is wet or damp. Anyone of the following conditions requires 150-200°F minimum preheat to be maintained during welding:

When the atmospheric temperature is below 40°F. The normal welding procedure technique shall be augmented by: Once started, the weld shall be completed in a continuous operation without allowing the stringer bead or subsequent pass to cool below 60°F. If either of these passes cools below 60°F while slag, scale or oxide is being removed, the pipe shall be reheated for a distance of 3 inches on either side of the weld to a 150-200°F minimum.

All repair welds except for recapping. Repair welds shall be preheated in the area of repair extending a minimum of

3 inches beyond the ends of the repair cavity. Back welding shall not be allowed.

When, for any reason, it is necessary for specific welding procedure and material combinations to alleviate existing conditions that would limit the welding technique or adversely affect the quality of the weld.

Preheating shall be accomplished by a method acceptable to TESORO and shall cover a band at least 3 inches wide on each side of the weld. The minimum preheat temperature shall be maintained throughout the welding and shall be checked frequently by use of temperature indicating crayons. Welders shall have crayons on hand during preheat operations.

8.4.5 Weather Conditions

In the case of cold, windy, or stormy weather, CONTRACTOR shall provide protection for the welding and shall protect the welds from sudden variations in temperature until welds have cooled.

Welding shall not be carried on when the TESORO Representative indicates that the weather is unsuitable for welding operations.

8.4.6 Protection of Pipe Coating

Nonflammable sleeves at least 18 inches wide shall be wrapped around coated pipe adjacent to the weld area during welding to prevent damage to the coating by weld splatter. The sleeves should be held in place to make an all-around snug fit.

8.5 PRODUCTION WELD EXAMINATION AND TESTING

8.5.1 Inspection of Pipeline

Inspection of pipeline girth welds shall be in accordance with API Standard 1104 and the following. Normal inspection will be radiography. 100% of all girth welds shall be x-rayed. All girth weld inspection is for 100% of the circumference.

Radiographic Inspection of the girth welds shall be performed by a third party contracted by CONTRACTOR.

8.5.2 Weld Acceptability

Weld acceptability by non-destructive testing will be in accordance with API Standard 1104 as modified by the following:

Cracks are not permitted.

Inadequate penetration, lack of fusion and root-pass undercutting as defined in API 1104 are not permitted.

Radiograph interpretation will be by the radiographic technician and TESORO Representative. TESORO reserves the right to reject any weld, in accordance with API 1104.

8.5.3 Test Field Girth Welds

TESORO may at any time sample and test field girth welds to ensure that the required quality and mechanical properties are maintained. The welds will be destructively tested per API 1104.

The cost of cut-out, test, re-weld and subsequent radiography will be borne by TESORO if the weld passes the test or by CONTRACTOR if the weld fails the test.

8.6 REPAIR OR REMOVAL OF DEFECTIVE WELDS

8.6.1 Repair or cut-out of defective welds shall be in accordance with API Standard 1104.

8.6.2 Defective welds may be repaired or cut out at CONTRACTOR'S option, unless TESORO Representative directs that the defective weld shall be cut out.

8.6.3 Repairs

Welds may be repaired within the following limits:

8.6.3.1 Flame gouging shall not be used to remove the defective area. Air-arc gouging may be used to remove flaws providing that the procedure and welder are qualified to perform this repair.

8.6.3.2 An area covering a minimum of 3 inches on each side of the repair shall be preheated to 200°F minimum, and temperature maintained during welding.

8.6.3.3 All repair cavities shall be a minimum of two inches in length.

8.6.3.4 Only one repair shall be allowed in any given area of the weld. Repairs to previous repairs are not permitted.

8.6.3.5 Repair of cracks is not permitted.

8.6.3.6 Back welding to repair root bead defects shall not be allowed.

8.6.4 Cut-outs

8.6.4.1 Whenever cutting out a weld leaves the two ends of the pipe so that they cannot be properly spaced without damaging the line, they shall be joined by welding in a short piece of pipe not less than 1.5 times the pipe diameter (12 inch minimum) for sizes through NPS 24, and 1 times pipe diameter for larger sizes. The two new welds will be radiographed and accepted in the same manner as production welds.

8.6.5 Excessive Repairs and Cut-outs

8.6.5.1 When a high rate of unacceptable welding occurs, TESORO may direct CONTRACTOR to cease production welding until the cause is identified and remedied, by either revising the welding procedure or removing the welder(s) responsible for poor workmanship from the job. Normally TESORO considers more than one repair or reject per ten welds to be a high rate of unacceptable welding.

8.6.6 Costs

8.6.6.1 Costs for repairs, cut-outs and additional radiography or other non-destructive testing to examine the repaired welds and the new welds at cut-outs shall be at CONTRACTOR'S expense.

9.0 COATINGS**9.1** GENERAL**9.1.1** Definitions

"Coating" describes anything additional to the bare pipe such as shop-applied Fusion Bond Epoxy (FBE) as well as field-applied epoxy.

"Field joint" is used to describe any field coating necessary to maintain the continuity or integrity of the pipe coating system including but not limited to coating at girth welds and branch connections of shop-coated pipe.

9.1.2 Handling of Shop-Coated Pipe

CONTRACTOR shall take special care in handling coated pipe to avoid damage to the coating.

TESORO's approval of CONTRACTOR'S proposed method for stacking and handling of coated pipe does not relieve CONTRACTOR of his responsibility for testing of coating and repairs

9.1.3 Storage and Protection of Coating Materials

Coating materials shall be stored and handled by CONTRACTOR in strict conformance with manufacturer's instructions and recommendations.

9.1.4 Inspection and Testing of Coating

All pipe coating shall be cleaned and tested by CONTRACTOR using suitable holiday detection equipment after field joints are applied. As a minimum, the coating shall be inspected visually and electrically tested (jeeped) first after field joints are applied and visual damages have been repaired, and finally behind the last lowering-in cradle. Voltage levels shall be in accordance with NACE Standard HP0274-74 or for fusion-bonded epoxy coating the applicable NACE Standard, or at 125 - 150 volts per mil thickness of coating. CONTRACTOR'S proposed testing equipment and procedure shall be submitted to TESORO for approval at least 10 days prior to beginning of coating work. CONTRACTOR shall have on hand suitable equipment to verify voltage of the holiday detection equipment.

Where pipe is not immediately shaded after lowering in, coating shall be visually inspected at time of backfilling, and repairs made before backfilling if coating is damaged.

Field joints shall be approved by TESORO Representative before pipe is lowered into the ditch.

9.1.5 Repair of Coating Damage and Defects

Coating damage and defects found visually or by "jeeping" shall be repaired by CONTRACTOR at no additional cost to TESORO, unless damage to TESORO-furnished coated pipe is reported to TESORO at time of receipt by CONTRACTOR and verified at that time by TESORO Representative. The repair method shall be as specified in Section 9.0. CONTRACTOR shall "Jeep" the pipe.

9.1.6 Training for Installation of FBE to the Girth Welds

Prior to the application of FBE to the girth welds, CONTRACTOR shall have a representative of the supplier of the induction coil equipment, provide a site training session for all CONTRACTOR personnel who will perform girth weld coating or coating repair work. CONTRACTOR shall notify TESORO at least 3 days ahead as to the location and time of the training session.

9.1.7 Weather Conditions

Application of coating, field joints, and repairs, and holiday detection testing shall not be done during inclement weather, unless weather

protection and other measures approved by TESORO are provided by CONTRACTOR.

9.2 PROJECT COATING SYSTEMS

Pipe and fittings shall be coated by TESORO with FBE.

9.3 FUSION-BONDED EPOXY COATING ON FIELD JOINTS

Fusion-Bond Epoxy coating of field joints shall be applied in accordance to the specifications attached by CONTRACTOR.

9.4 FIELD COATING OF SHOP-FABRICATED BENDS

All shop fabricated bends (hot bends or fittings) shall be shop coated. CONTRACTOR shall handle the shop fabricated bends in accordance with Section 2.0.

9.5 REPAIRS TO FUSION-BONDED EPOXY

9.5.1 Materials and Application

CONTRACTOR supplied Fusion Bond Epoxy patch and repair materials shall be compatible with the specified coating system.

9.5.2 Surface Preparation for Fusion-Bonded Epoxy

Damaged coating materials shall be removed, and remaining adhering coating feathered.

Bare pipe and 3 inches of sound coating shall be wiped clean of any dirt, oil, or grease per SSPC-SP-1. Gasoline, kerosene, shall not be used. Bare pipe surfaces shall be cleaned with power wire brushes per SSPC-SP-3. Joint area surfaces shall be in accordance with SSPC-VIS-1.

The sound coating adjacent to the defect shall be roughened using at least the equivalent of 80 grit emery papers.

After cleaning, a" dirt, grit, and other particles remaining on the prepared surfaces shall be blown off with clean dry, oil-free air or by other effective means approved by TESORO. Repair application shall be within 20 minutes of cleaning.

9.5.3 Repairs to Fusion-bonded Epoxy Coatings

CONTRACTOR provided patch sticks for field holiday' and damaged coating repair shall be compatible to original pipe mill coating.

9.6 COATING OF CADWELDED ANODE AND TEST LEAD CONNECTIONS

9.6.1 Materials and Application

A" cadwelded anode and test lead connections shall be coated in accordance to Section 9.3.

10.0 LOWERING-IN, BACKFILLING, TIE-INS, RESTORATION

10.1 GENERAL

10.1.1 CONTRACTOR shall assure that inventory and location measurements have been recorded before the pipe is lowered in and backfilled.

10.1.2 The pipeline shall conform to the bottom of the ditch at a depth providing at least the specified minimum cover. See Section 6.1.

10.1.3 Pipe with buckles, wrinkles, distortion, flattening, gouging, grooves, notches, dents exceeding those allowed by ASME/ANSI Code or other damage shall not be laid. A dent containing a stress concentrator, such as a scratch, gouge, groove or arc burn shall be removed. Damaged pipe shall be removed at CONTRACTOR'S expense, and the value of pipe and coating will be deducted from CONTRACTOR'S compensation.

10.2 LOWERING-IN

10.2.1 The pipe shall not be lowered into the ditch until protective coatings have been applied and satisfactorily tested, and the ditch bottom has been properly prepared to receive the pipe without damaging the coating. Preparation of the ditch shall be in accordance to Section 6.1 and includes, but is not limited to, removing all scrap materials, debris and loose rock.

10.2.2 The pipeline shall be lowered into the ditch in such a manner that the proper amount of slack is secured, taking into consideration ambient temperatures and design operating temperature of the pipeline.

10.3 BACKFILLING

10.3.1 Shading

Immediately after the pipe has been lowered, it shall be shaded by filling at least 12 inches around and on top of the pipe with loose dirt or sand free from sharp edged rocks, rocks larger than one (1) inch in diameter, vegetation, and foreign objects, so that the pipe coating is not damaged by the shading material. CONTRACTOR shall keep the shading as close as possible to the lowering-in operation and at no time shall the distance between the two operations exceed the distance governed by the regulatory agencies, permits or 1,000 feet. All pipe that has been lowered into the ditch shall be shaded by the end of each working day, except where necessary to leave exposed to make tie-ins, repairs to pipe or coating, or to connect cathodic protection leads or other appurtenances.

Where suitable rock free (one inch or less) material is not available within 100' of the backfill location, CONTRACTOR shall obtain and install Select Backfill Material on top of the pipe. CONTRACTOR shall be compensated for this Select Backfill Material in accordance with the Uniform Bid Sheets.

10.3.2 Backfilling

Backfilling shall proceed without delay after shading so as to minimize hazards and interruptions to surface use of the land.

Remaining backfill may contain rock, but shall be graded so that rock in the next 12 inches of backfill (within 18 inches of pipe) shall be less than 6 inches in diameter.

In cultivated agricultural areas where topsoil has been segregated in ditching operations, the topsoil shall be placed in the upper part of the backfill. See Section 6.6.

A 6 to 12-inch berm of soil shall be placed over the trench to allow for settlement after all other compaction and restoration requirements are met, except where this would prevent meeting special restoration provisions. This crown shall be wheel rolled and shaped by suitable pneumatic-tired equipment, except in terrain where use of such equipment is not practical.

10.3.3 "Rock Shield"

Where suitable rock-free material for shading and backfill around and over the first 6 inches above the pipe cannot be economically segregated or imported, CONTRACTOR may install a TESORO-approved "rockshield" around the pipe before lowering in, in lieu of select shading and backfill material. Acceptable "rockshield" types are:

- Rockguard
- Tapecoat TerraShield, one-quarter inch thick, perforated.
- Conwed Square Mesh (flat backed)
- Plastinet III (flat backed)

10.3.4 CONTRACTOR shall be compensated for the installation of the rock shield in accordance with the Uniform Bid Sheets.

Agricultural and Grazing Lands

In cultivated areas backfilling shall be completed the same day as the pipe is shaded.

In agricultural areas and grazing lands no rock shall be placed in the top of the backfill which would interfere with plowing, cultivating, or re-seeding for grazing. Surplus rock shall be disposed of to the satisfaction of TESORO, landTESORO, and/or tenant at no additional cost to TESORO. The work area shall be restored to its original topography, contour and erosional resistance.

CONTRACTOR shall reconstruct or repair irrigation ditches across the pipeline right-of-way and wherever disturbed by CONTRACTOR'S operations, as required by TESORO, landTESORO, and/or tenant.

10.3.5 Railroad, Highway and Road Crossings, Levees, Waterways

Backfilling and resurfacing, at railroads, highways, roads, driveways, levees, canals, rivers, ditches, creeks, streams, shall be done in a manner acceptable to the private TESORO or government authority having jurisdiction as listed in the Permits /Restrictions Section.

Backfill over the shading material shall be granular material placed in lifts no thicker than 6 inches compacted thickness, and compacted with hand-operated compaction equipment to obtain the percentage of compaction required by the TESORO or controlling authority.

Sidewalks, curbs, gutters, and shoulders, damaged or removed by CONTRACTOR, shall be repaired or replaced.

Backfill shall be compacted to a minimum relative compaction of 95% dry density per ASTM D-1556 or D-2922 and D-3017 under railroads, highways, roads, driveways and at levees, and 90% at banks of other water courses. Unless directed otherwise by TESORO or controlling authority.

Field dry density tests shall be performed, as a minimum, for each 200 square feet of lift surface. Tests shall be distributed throughout the length and depth of the trench. TESORO reserves the right to choose test locations or to request additional tests. If such additional tests show densities to be less than specified herein, or by the TESORO or controlling authority, CONTRACTOR shall pay for the additional tests; otherwise, TESORO will reimburse CONTRACTOR for the tests.

10.3.6 Trench Plugs

CONTRACTOR shall furnish and install sacked (sacks filled with a minimum of one cubic foot of earth / sand per sack) plugs to surface at locations directed by TESORO.

Additional lump sum unit compensation for the trench plug shall be in accordance with the Uniform Bid Sheets Section.

10.3.7 TIE-INS

This section covers the tie-ins between continuous sections of the pipeline at intervals and at locations such as crossings and appurtenances where normal pipe laying is interrupted. (As used here, the term "tie-in" does not refer to work done to connect the new pipeline to an existing pipeline system or operating facility).

The lengths between continuous sections lowered into the ditch shall provide for (a) pipe bends conforming to the ditch and (b) proper "slack" in the line considering pipe temperatures when laid and operating temperatures.

Tie-ins at a crossing shall be made only after all requirements and testing for the crossing are complete.

Radiographic inspection must be performed on tie-in welds, coating at tie-ins must be visually inspected and if necessary "jeeped", and inventory data recorded before backfilling.

10.4 GRADING AND EROSION CONTROL

10.4.1 Final grading

CONTRACTOR shall perform final grading to restore the work area to original contours, unless otherwise shown on project drawings or defined in permits and right-of-way conditions or directed by TESORO in writing.

Surplus rock larger than 1" in diameter shall be disposed off to the satisfaction of TESORO and LandTESORO at no additional cost to TESORO.

Side-cast materials, both inside and outside the construction right-of-way, shall be retrieved and graded over the work area. Care shall be taken to minimize disturbance to adjacent areas and native ground cover.

10.4.2 Topsoil Replacement

Topsoil removed and stockpiled during clearing shall be evenly spread over the entire work area.

10.4.3 Cross Drain Ditches (Water Bars)

CONTRACTOR shall construct cross drain ditches at approximately 50-foot intervals across the work area where ground slopes are steeper than 3:1 (horizontal: vertical) or in accordance with the Permits / Restrictions / Right-Of-Way / Easements Section or as directed by TESORO.

10.4.4 Special Erosion Control Measures

Where shown on project drawings or in accordance with the Permits/Restriction Section, CONTRACTOR shall provide and construct special erosion control measures.

10.4.5 Re-vegetation

CONTRACTOR shall re-vegetate the pipeline right-of-way in accordance to the requirements stated in the Permits/Restrictions Section.

10.4.6 Documentation After Restoration

After clean-up and restoration, CONTRACTOR shall document the right-of-way after construction. This shall include video and color photographs in agricultural and developed lands as described in Section 3.2. One copy of this documentation shall be provided to TESORO within 30 calendar days of completing restoration, other than re-vegetation.

11.0 CATHODIC PROTECTION TEST AND BONDING LEADS AND FACILITIES

11.1 GENERAL

CONTRACTOR shall install cathodic protection test and bonding leads and test stations, anode cables, and other cathodic protection facilities.

TESORO will furnish materials only as described in the Materials Section.

11.2 TEST AND BONDING STATIONS

11.2.1 Test and bonding leads and stations shall be installed at locations designated by TESORO. Pipeline coating shall be applied at leads in accordance with Section 9.3. CONTRACTOR shall protect leads and stations from damage by clean-up and grading crews. After final grading is complete in the area of any station. CONTRACTOR shall make a continuity check on the leads, and shall replace leads found to be faulty.

11.2.2 At crossings of existing TESORO-owned pipelines CONTRACTOR shall install test and bonding leads and stations on the existing lines.

11.2.3 At crossing of foreign pipelines, CONTRACTOR shall leave the foreign lines exposed until the foreign operator has installed his test leads and test stations, or has witnessed the installation by CONTRACTOR.

12.0 LINE MARKERS AND SIGNS

12.1 MARKERS AND SIGNS

CONTRACTOR shall install line marker posts or warning signs, and identification signs at appurtenances where directed by TESORO.

Line marker posts are not shown on drawings but shall be installed by CONTRACTOR in such a manner that each line marker post is visible from the next line marker post. Installation shall conform to API Recommended Practice RP 1109 and other applicable regulations.

Warning signs shall be installed on line marker posts at:

- Each side of road and railroad crossings.
- Each side of a waterway.
- Fence lines across open or agricultural property.

- Crossings of other lines (irrigation, oil, gas, telephone, utilities) where practical.

Details for markers and signs are shown on project drawings.

13.0 MAJOR CROSSINGS

13.1 GENERAL

CONTRACTOR shall install the pipeline at crossings in accordance with requirements of the TESORO or authority having jurisdiction over the crossed facility.

13.2 RIVER AND WATERCOURSE CROSSINGS

At rivers, streams, and major canals CONTRACTOR shall install the pipeline in accordance with project drawings. See Section 6.1.3 regarding excavation at rivers, streams and other natural watercourses.

14.0 COMPLETION TESTS

14.1 GENERAL

CONTRACTOR shall perform completion tests on the pipeline, including furnishing pumps, temporary piping and instrumentation, scrapers, etc. required for the testing. Hydrostatic testing shall be in accordance with API Recommended Practice 1110 and the following sections.

14.1.1 Testing Program

CONTRACTOR shall submit for TESORO approval a description of his proposed hydrostatic testing program at least 15 days in advance of testing, with diagrams, data on rated flow/pressure capacity of pumps, type of scrapers, personnel organization and work schedule, communications, etc.

14.1.2 Test Report

CONTRACTOR shall submit to TESORO within 5 days after testing a complete hydrostatic test report in duplicate for each section of pipeline tested, including but not limited to:

- 14.1.2.1 Detailed description of test equipment, with diagram of test equipment hook-up from water source to the mainline and diagram of test facilities along with the pipeline under test.
- 14.1.2.2 Certification documents for the deadweight tester and calibrated pressure instruments.
- 14.1.2.3 Description of the pipeline test section, with profile and data on size, wall thickness, grade, type of manufacture.
- 14.1.2.4 Test Record and Certification Form as shown in API RP 1110
- 14.1.2.5 Deadweight tester pressure versus time log (original).
Original pressure recording charts, showing:

- Description of pipeline test section.
- Name and address of CONTRACTOR (and testing sub-CONTRACTOR, if any).
- Names of TESORO and CONTRACTOR
- Representatives witnessing the test.
- Test pressure.
- Test medium.
- Explanation of any pressure variations that appear on the chart.
- Serial number of recorder.
- Pressure reading verifications of recorder against the deadweight tester before and after use.
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Other reporting data as may be required by Federal, State and local regulations.

14.2 COMPLETION TESTS

Completion tests include a scraper test by running a series of scrapers through the line, one with a sizing plate, and a hydrostatic pressure test. Testing shall be done after the line, or a major section as designated by TESORO, has been laid, with all connections and line appurtenances installed.

14.2.1 Water for Tests

CONTRACTOR shall acquire the permit for water withdrawal; provide the water for the hydro test and transporting it to the job site.

14.2.2 Scraper Test

CONTRACTOR shall test the completed line by filling it with water and running pipeline scrapers designed for the size of pipe. A series of three scrapers shall be run through the full length of each section of the line.

Scrapers shall be three or four-cup displacement pigs. The third pig shall have a gauging plate in front of the first cup or in the center of the pig. The gauging plate diameter shall be 97.5% of the minimum nominal internal diameter of pipe in the test section.

Pumping equipment or compressors for running scrapers shall have sufficient capacity to move scrapers at a speed of not less than one mile per hour.

Depending upon the condition of the scrapers at the end of the run and upon the quality of cleaning performed by the scrapers, TESORO may direct CONTRACTOR to run additional scrapers through the line. The cost of running these additional scrapers to further verify the adequacy of the line or to obtain satisfactory cleaning shall be at no additional cost to TESORO.

The progress of the scrapers shall be followed by CONTRACTOR as they travel through the line. Any obstruction which stops the scrapers (other than a regular scraper trap) shall be immediately removed and the line promptly repaired. When such repairs have been made, the line shall not be backfilled until inspected and approved by TESORO.

After successfully running the sizing plates CONTRACTOR shall provide TESORO the sizing plates for their D.O.T. files.

14.2.3 Hydrostatic Test

After the completed line, or a section thereof, has been filled with water by the scraper test, CONTRACTOR shall perform a hydrostatic test which stresses the pipe at the low point of the section being tested to the pressures specified in the Hydrotest Section. TESORO will compute the test pressure required and will designate the length and location of each section of line that may be covered by one test. The line shall hold the specified test pressure without further pumping for a minimum stabilized period of 8 hours. While pressuring the line, CONTRACTOR shall patrol

sections of the line where leakage would likely cause damage or hazard to others.

Test pressure shall be applied against temporary test valves, blind flanges, spectacle blinds or weld caps. In no instance shall a closed mainline valve be utilized as a test block valve.

The hydrotest procedure shall incorporate the following:

- When approximately 75% of the test pressure is reached, increase pressure gradually in increments of about 2.5% of test pressure every ten minutes unless pump capacity is limiting. While pressuring observe and record at five-minute intervals (a) pressures, using the deadweight tester and the test gage, (b) volume of water pumped as measured in the tank, and (c) pump stroke counter reading. At about 20-minute intervals check the pressure recorder readings against the deadweight pressures to confirm that the recorder is functioning properly. If there should be a sudden drop in pressure, indicating a line break, record the pressure just before the drop and stop pumping.
- When the test pressure is reached, stop the test pump. If the pressure should drop below test pressure within a few minutes and then appear to stabilize, resume pumping to raise the pressure to test pressure again while continuing to observe and record data. Disconnect the pump from the line. Continue observing and recording deadweight pressures at 5-minute intervals for at least an hour, and 15 minutes thereafter until the end of the test.
- In the event warm ground temperatures cause the line pressure to increase above the maximum test pressure, water must be bled slowly and carefully from the line to lower the pressure to test pressure. The water shall be drained to the tank and the volume accurately measured, at the same time taking pressure data with the deadweight tester. If line pressure again rises to the maximum, this operation shall be repeated.
- When the pressure has stabilized and held steady for at least 8 hours, the test can be considered satisfactory.

Pressure instrumentation should be calibrated and include the following:

- A Bourdon-tube pressure test gage, calibrated immediately before the test, with a reading accuracy of 0.1 % of full scale.
- A deadweight pressure tester, capable of measuring increments of 1.0 psi, certified for accuracy and traceable to the National Institute of Standards and Technology (formerly National

Bureau of Standards) calibrated a maximum of six (6) months before the test.

- A 24-hour pressure recorder, checked against the deadweight tester immediately before and after use with a supply of correct range chart paper. Test pressure should be about 80% of the recorder's maximum scale.
- Pressure gages, calibrated within one month before the test, with reading accuracy of 1% of full scale for use at locations along the line where pressures are observed. If ambient or night chill temperatures are below 35°F, CONTRACTOR shall take measures to prevent freezing in aboveground mainline piping and test piping and instrumentation.

14.3 REPAIRS AND RETESTS

CONTRACTOR shall have available during the progress of completion tests crews which can be dispatched to perform any necessary repair work. If leakage is found, CONTRACTOR shall make repairs immediately, after which the test shall be repeated. CONTRACTOR shall bear the expense of repairs and retests due to his faulty workmanship or defective or unsatisfactory material furnished by CONTRACTOR. TESORO will bear the expense of repairs and retests due to defective material furnished by TESORO.

14.3.1 DEWATERING

CONTRACTOR shall arrange for and dispose the hydrostatic test water.