CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 2

DATE: July 21, 2017
FROM: City of Grand Junction Purchasing Division
TO: All Offerors
RE: Persigo Wastewater Treatment Plant Diffuser Outfall Improvements Project IFB-4396-17-DH

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. Replace the original Bid Schedule with the updated Bid Schedule that is attached to this Addendum. The updated Bid Schedule includes the following changes:
    1. Temporary Diversion (Coffer Dam) has been changed to a Lump Sum pay item.
    2. A separate pay item for Traffic Control (Complete in Place) has been added to the Bid Schedule.
    3. Minor Contract Revisions dollar amount has been increased to $100,000.
    4. At bottom of Bid Schedule, Bidder is required to which method of boring they intend to use on the project.

2. Specification Section 15064, High Density Polyethylene Pipe, is hereby revised for this project as follows:

    Replace sheet 15064-1 with the updated sheet 15064-1 attached to this Addendum.

3. The City learned after the pre-bid meeting that there is an 8 to 10-week lead time on the Tideflex diffuser manifold. Once a construction contract is executed and signed, the Contractor shall order the Tideflex diffuser manifold. The City is going to contact Tideflex and discuss options for trying to get the diffuser ordered prior to a construction contract being signed.

4. Remove and replace the first sentence in Special Condition 3.3.9 with the following:

    Time of Completion: The scheduled time of completion for the Project is **143 Calendar Days** from the starting date specified in the Notice to Proceed. City holidays recognized during this period are Thanksgiving (Nov. 23rd), the day after Thanksgiving (Nov. 24th), Christmas (Dec. 25th), and New Year's (Jan. 1st).

Construction work on the Friday after Thanksgiving is negotiable. All other holidays are to be no work days.

5. If necessary, Bidders can download construction plans from Stantec Engineering's ftp site at the following link:

   Browser link: https://tmpsftp.stantec.com
   Login name: s0727145938
   Password: 1922132
   Disk Quota: 2GB
   Expiry Date: 7/27/2017

6. Attached to this Addendum is an email from Joel Berschauer, CDOT Utility Permit Coordinator, regarding the bore under I-70. Per Joel's email, CDOT would consider allowing the contractor to shorten the bore up by about 50-ft on the south side of the interstate. See email for more details.

   Also attached to this Addendum is a blank copy of a standard CDOT Utility Permit, CDOT's Standard Provisions for Utilities/Relocation/Special-Use Permits, and CDOT's Region 3 Guidelines for Trenchless Technology Construction. All Bidders should be familiar with these documents prior to submitting a bid.

   The Special Provisions that will be included in CDOT's final utility permit that will be issued at a later date will reference Project Specification 02612 and this Addendum. See Joel's email.

7. Specification Section 02612, Steel Pipe and Fittings, is hereby revised for this project as follows:

   In section 3.1 – Steel Casing Pipe Installation, replace subsection 3.1.D.3 with the following:

   3. Frequency of visual and survey inspections during boring operations underneath both the eastbound and westbound asphalt pavement surfaces shall be as follows:
      - Contractor shall plan for three visual inspections per day (morning, noon, afternoon) of roadway surface during boring operations.
      - Contractor shall drive I-70 at least once a day in both the eastbound and westbound directions to see if any vertical change in roadway surface is noticeable in a vehicle.
      - Contractor shall have roadway surface surveyed every third working day to compare elevations with the baseline survey points to see if any movement has occurred.

8. All Bidders shall be aware that if CDOT's emergency maintenance crews are required to close or provide traffic control on I-70 due to a changed roadway surface as a result of the boring operation, that CDOT will bill the Contractor at an hourly rate until the

Contractor is able to get control of the situation and take over on traffic control and repair operations. All repair costs on I-70, if required due to the boring operation, will be the responsibility of the Contractor. See Specification Section 02612.

Questions from Bidders and answers are provided below:

Q-1: Is there an ASTM classification for the acceptable HDPE? Specifically, I would like to know if Contech's steel reinforced HDPE pipe is acceptable?

A-1: Replace sheet 15064-1 in specification section 15064, High Density Polyethylene Pipe, with the revised sheet 15064-1 that is attached to this addendum. Steel reinforced HDPE pipe will not be accepted on this project.

Q-2: Will there be any domestic requirements on this project? ie: the steel casing pipe crossing I-70?

A-2: Per the Specifications and City of Grand Junction's contract documents, there are no domestic requirements for steel products on this project.

Q-3: What is the estimated largest diameter cobble rock that will be encountered during the boring operation?

A-3: Mike Berry, with Huddleston-Berry Engineering and Testing, answered that there could be the potential to encounter a large cobble that is 12-inches and greater in size, but the vast majority of cobble rocks encountered should be 6-inches and smaller. The City dug a test hole on Friday, July 14th in the southwest corner of the Persigo property to show the bidders the size rock that should be typical during this project.

Q-4: Who performs the dye test on the diffuser?

A-4: Per Special Condition 3.3.34, the Owner (City) will perform the dye test.

Q-5: What type of RCP pipe gasket is required on this project?

A-5: Information is provided in Specification Section 15074, Part 2 – Products, 2.1 Fabrication, subsection B.

Q-6: Please clarify the 7-day bypass pumping set up location on sheet 11 of 17, approximately 80-ft temporary pipe with open discharge to Persigo Wash?

A-6: The discharge pipe alignment shown on sheet 11 of 17 is shown incorrectly. The discharge pipe shall go from the pump assembly to the Persigo Wash discharge headwall area which is about 80-ft in distance. There is no discharge into the existing manhole.

Q-7: Dewatering of Coffer Dam open discharge downstream into Colorado River?

A-7: It's the responsibility of the Contractor to obtain a CDPHE Dewatering Permit and to discharge per the requirements of the Dewatering Permit.

Q-8: Does dewatering permit have any discharge requirements? (i.e. NTU requirement/discharge testing)

A-8: It's the responsibility of the Contractor to obtain a CDPHE Dewatering Permit and to discharge per the requirements of the Dewatering Permit.

Q-9: The time frame seems unusually tight for a project of this size given the dewatering, cofferdam and boring. The materials will not be ready for at least 30 days after submittal and approval. The boring subcontractors are telling us their duration for the project will be 90 days of work. We are seeing this as a 200 working day project.

A-9: See revised time of completion in this Addendum.

Q-10: The HDPE 54" pipe in the 60" casing shows no casing spacer detail; will a detail be provided?

A-10: See Detail #2 on sheet 14 of 17 in the construction plans. Also refer to Specification Section 02612, Steel Pipe and Fittings, for information regarding the casing spacers.

Q-11: The 60-inch casing is unusually small for the carrier pipe, leaving little room for an annular grout tube, will the casing be upsized?

A-11: Upsize is permitted. The specified 61.5-inch O.D. casing is considered the minimum casing diameter permitted. Standard size casing is accepted above 61.5 inches, which meet the other contract document requirements. Filling of annular space between casing and carrier pipe will still be required along with casing seals and casing spacers.

Q-12: The 54-inch HDPE pipe will have an exterior weld bead, how are we to deal with this to insure weld integrity as the pipe is pushed through the casing, this bead will be subject to abnormal wear and tearing as it is forced through the casing?

A-12: It is the responsibility of the Contractor to determine the best means and methods for installing the new 54-inch HDPE pipe inside the casing pipe without damaging and/or exerting unreasonable pulling/pushing forces on the HDPE pipe. Also, the casing spacers should help to keep the HDPE pipe elevated in the casing pipe so the weld beads are not getting hung up in the casing pipe. The Contractor can also grind off the weld beads if necessary.

Q-13: Has the City and Engineer reviewed alternate pipe materials, Hobas pipe or DIP for the carrier pipe under I-70?

A-13: No.

Q-14: If RCP pipe is used in lieu of HDPE, will the larger casing and bore be paid for as a value engineered change order?

A-14: Reinforced Concrete Pipe (RCP) will not be used inside of the casing pipe.

Q-15: Please confirm that there is no existing prescribed City or Stantec plan in place for water control at the river work?

A-15: There is no existing prescribed City or Stantec plan for controlling the river water. It's the Contractor's responsibility to come up with a plan for diverting river water and dewatering the pipe trench in the river channel. The City and Stantec will review the Contractor's proposed means and methods for diverting the water as part of the submittal review process.

Q-16: Please confirm that the shown limits of construction in the Colorado river are nonexclusive of any cofferdam work?

A-16: The coffer dam needs, to the best of the contractor's ability, to stay within the easements the project obtained from the Colorado Parks and Wildlife.

Q-17: Will the cofferdam need to remain in place throughout the testing period?

A-17: No.

Q-18: How will the City determine if the contractors planned cofferdam and associated work is beyond the work limits?

A-18: The Contractor is responsible for having the temporary construction easements staked early on in the project so the project limits are shown in the field. The City and Contractor will have to "eyeball" the coffer dam out in the river to see that it's within the easements acquired.

Q-19: Is builders risk insurance required on this project?

A-19: No. Insurance requirements for City projects are shown within the City of Grand Junction's Standard Contract Documents. These contract documents are available on the City's website under the Engineering webpage at: *http://www.gjcity.org/residents/engineering/manualspermits/*

Q-20: If the boring operation takes place 24/7 will sufficient inspection time be allocated by the City?

A-20: If circumstances require that the boring contractor needs to work 24/7 on the boring operations, the City will work to see that proper inspection is provided. CDOT acceptance will also be needed for the boring contractor to work at night. Further discussion will be necessary if the Contractor is pursuing a 24-hour work schedule.

Q-21: Will a rolling closure be accepted for the survey check daily on I-70?

A-21: The City left a voicemail message with CDOT's Joel Berschauer, Utility Permit Coordinator, regarding a rolling closure. At the time of issuance of Addendum #2, the City hadn't heard from Joel. The City believes CDOT would be okay if the Contractor decided to use a rolling closure for the I-70 survey checks.

Q-22: Will Uniform Traffic Control (UTC) be required for the daily survey checks?

A-22: Traffic control will be required for the survey checks along I-70, both eastbound and westbound. Traffic control plan will have to be approved by CDOT prior to any survey work is allowed within CDOT right-of-way.

Q-23: What is the duration of the risk assigned to the I-70 settlement failure? Is this under the standard warranty, is this extended, does the City share any risk with this bore? Should the warranty time frame be extended?

A-23: The City's standard warranty period is one-year. The one-year warranty period starts on the date Final Acceptance is given to the Contractor. The one-year warranty will cover all work the Contractor performs, including any repairs made to I-70. Refer to Specification Section 02612, Steel Pipe and Fittings, for the Contractor's responsibilities for the boring operation.

Q-24: Is there a designated location for the pipe spoils within the City limits?

A-24: No.

Q-25: Please clarify the number of trees to be removed on the project.

A-25: The majority of large vegetation that needs to be removed along the alignment of the diffuser pipeline and in the area of the boring operations are large tamarisk plants. It's believed that the actual count on trees to be removed is zero. However, large tamarisk plants will need to be removed in a couple areas. The number of tamarisk plants to be removed is unknown at this time as a result of the tamarisk being grouped together and not knowing where one plant ends and the other plant starts.

Q-26: Please verify the diameter of the pipe from the current drop box to the outfall that will need to be flow-filled.

A-26: 48-inch RCP Pipe. See description of pay item for "Abandon Effluent Pipe in Place" in Specification Section 01025.

Q-27: Will CLSM, flashfill be acceptable for filling the abandoned pipe?

A-27: Both Controlled Low Strength Material (CLSM) and Flashfill will be acceptable methods for abandoning the effluent pipe and manhole structure.

Q-28: Will the bypass of the effluent need to remain operational while the State reviews the operation and approves the new diffuser?

A-28: I believe the bypass pumping assembly (be on standby at least) will have to remain operational while the City and State test the diffuser.

Q-29: Can the color dye test be performed in the dry?

A-29: No. The City and the State what to see how the diffuser mixes with the river water.

Q-30: If this test is performed in the wet and the design of the system is a failure or unaccepted by the state, whom is responsible for the reinstallation of the coffer dam structure, liquidated damages and corrective actions?

A-30: There's not going to be a failure! As long as the diffuser and all the piping is installed per plan, the diffuser should operate the way it was designed in computer fluid dynamics modeling.

Q-31: When will the Colorado River be clear enough, per 3.3.34 paragraph 2, and whom makes the determination?

A-31: During the late fall and winter season, the Colorado River should be clear enough to perform the dye testing. The City will make the call on the clarity of the river. As long as there hasn't been a recent rainstorm or a quick snowmelt, the river water should be clear enough to perform the dye test.

Q-32: Should this water clarity issue interfere with contractor's normal operations on other projects, will the City be covering the cost to re-mobilize and return to the project for completion?

A-32: This discussion can happen when there is a construction contract in-place and the project is at that stage. Right now the City isn't going to commit to such a request.

Q-33: Please provide a timeline for State acceptance of the diffuser?

A-33: The Colo. Dept. of Public Health and Environment (CDPHE/State) will make periodic inspection visits to the project to see the progress being made and to answer any questions that might need the State to answer. The State intends to visit the project about 14-days prior to the projects final completion. In this 14-day period the project will need to be at a point for performing the dye testing. The City and the Contractor will work together on coordinating the State's visit for dye testing and making sure the State is satisfied with the project and the projects outcome.

Q-34: Does the effluent box require standard or epoxy rebar?

A-34: Standard (Black) rebar per Specification Section 03200, Concrete Reinforcement.

Q-35: Can a traffic control line item be added to the project?

A-35: Yes. See updated Bid Schedule attached to this Addendum.

Q-36: Can a potholing item be added to the project?

A-36: No. If potholing is necessary during the project, the City and Contractor can discuss potholing at that time.

Q-37: What is the landscape maintenance and warranty duration?

A-37: Duration for landscape maintenance is 1-year. Project warranty is 1-year from the Final Acceptance date.

Q-38: Can the City provide a waterproofing detail into the plan set on the diffuser box, or a list of what is expected or currently installed?

A-38: To the best of the City's knowledge, no waterproofing is required on the concrete for the effluent box modifications. Rx Waterstop is called out to be installed in the cold joint locations of the effluent box.

Q-39: Will there be a special condition on the wetland topsoil storage? Will this material need to be constantly wetted? Will a pay item be added for the extra handling and care with the Wetland Topsoil?

A-39: Topsoil and Wetland Topsoil shall be per Section 207, Topsoil, of the CDOT Specifications.

Q-40: Please clarify the material, size and construction method of the groundwater barriers as shown in the plans.

A-40: Groundwater Barriers (Cutoff Walls) shall be installed along the diffuser pipeline at locations shown to inhibit the movement of ground water through the screen rock bedding. Barrier walls shall be 5 to 10 feet long and consist of material meeting the requirements provided in specification section 02300. Barrier walls shall be constructed by discontinuing the installation of bedding and haunch backfill material and installing approved native or imported materials.

Q-41: The specs show that these groundwater barriers are constructed of bedding material is this correct?

A-41: No. See response above and see Specification Section 02300, Subsection 2.3.F, Barrier Material.

Q-42: Please confirm that these are slab base 72" Dia. Manholes, and not cast in place box base manhole bases with precast riser stacks.

A-42: Yes, CDOT manhole slab base details are to be used on this project. For 48-inch RCP pipe and 54-inch HDPE pipe, a 90-inch diameter manhole is needed.

Q-43: Please provide a detail sheet showing the "drop" manhole and its invert at the transition from the 48" pipe to the diffuser stack.

A-43: Due to time, no additional detail is available for the drop manhole other than the elevations shown for the drop manhole on sheet 10 of 17 in the construction plans.

Q-44: Are the manholes coated or dampproofed on the exterior, there are no notes addressing this in the plans?

A-44: No coating or damp-proofing on the exterior of the manholes is required.

Q-45: Due to the timeframe required for the completion of the tunnel, we request that the time of completion be extended.

A-45: See revised time of completion in this Addendum.

Q-46: The geotech report states that micro-tunneling (MTBM) is the preferred method and that HDD can also be considered for the trenchless crossing. Are these the only two allowable methods? We don't believe that HDD is a viable option in this diameter, at this length, at .5% grade, at 0.1' tolerance, under I-70 and in these ground conditions.

A-46: Other trenchless alternative methods will be considered, as long as the contract specifications can be met or exceeded. Consideration will need to account for the geotechnical conditions encountered along the bore, including cobbles and a 0.5% grade which limits the number of trenchless technologies that can achieve these requirements. Dewatering is permitted.

Q-47: We don't believe that any open-face method – auger boring or TBM - is feasible in these saturated, running ground conditions.

A-47: Micro-tunneling is the preferred method for a number of reasons including, but not limited to the ability to achieve line and grade requirements. Horizontal Auger Boring and Guided Auger Boring through saturated soils containing gravel, cobbles and sand is not recommended. Horizontal Direction Drilling is not recommended.

Q-48: We don't believe that a grade critical pipe ram is feasible at a length of 420 LF.

A-48: The use of pipe ramming and guided pipe ramming would be difficult to achieve the grade requirements provided in the contract documents. Pipe ramming is not a recommended trenchless technology for this application.

Q-49: The 61.5" O.D. casing as spec'd is a non-standard size for tunnel equipment. Will an upsize in casing diameter be allowed?

A-49: Upsize is permitted. The specified 61.5-inch O.D. casing is considered the minimum casing diameter permitted. Standard size casing is accepted above 61.5 inches, which meet the other contract document requirements. Filling of annular space between casing and carrier pipe will still be required along with casing seals and casing spacers.

Q-50: Would 48" I.D. restrained joint Ductile Iron Pipe (TR Flex or Fastite) be allowed as an alternate to the 54" OD HDPE carrier pipe? There isn't sufficient room for the tail ditch necessary to pull in the 420' fused string of HDPE.

A-50: Restrained joint ductile iron pipe will not be considered as an alternative. The HDPE pipe can be fused in stages or segments and requires a minimum bending radius that is compliant with the site geometry. Refer to sheet 2 for easements.

Q-51: A MTBM (micro-tunneling) operation will require roughly 7,500 SF at the downstream end of the tunnel for equipment setup. Will an additional easement be provided?

A-51: The site laydown area can be extended to the easement extent, which contains over 7,500 SF at the downstream end of the trenchless connection as well as over 40 LF that can be used for the launch pit. Refer to sheet 2 for easement constraints that must be maintained.

Q-52: The tunnel operation generally runs as a 10 – 12 hour workday with the possibility of 24/7 if difficulties are encountered. Will the work hour restrictions be adjusted to allow for this?

A-52: Hours may be extended if difficulties in operation due to various reasons are encountered. Advanced written notice with a minimum of 48-hours in advance and approval by the City prior to extending shift hours. Consideration may be granted for extending daily working hours. It is the intent to have the owner or owner's representative onsite during excavation. Extending hours for items such as set-up and cleaning of the slurry separation system post excavation, if excavation is not performed, may be considered.

Emergency work may be done with prior consent provided the Contractor notifies the Project Engineer prior to beginning the work.

Q-53: The geotech report notes the presence of cobbles in all five (5) of the tunnel alignment borings. However, the size, density, and nesting of the cobbles is not indicated. All three of these factors determine whether the MTBM method is feasible or not. Can test pits at either end and/or the middle of the tunnel alignment be dug by the City prior to the bid to allow a visual of what will be encountered so that the proper tunnel method may be determined?

A-53: The USCS classification system indirectly defines the size and density of gravel and cobbles. Definitions such as Sandy GRAVEL and COBBLES (GW) indicate a range of greater than 50% of the material encountered will be gravel or cobbles. Additionally, blow counts are provided in the geotechnical boring logs which provide a relative density

where samples were taken. A test pit was provided by the City for those who attended the pre-bid meeting.

Q-54: After discussion at the pre-bid, observation of the test pit dug near BH-5, and the limited information provided with the soils report, can the contractor assume for bidding purposes that the largest cobble to be encountered will be 9-inches, and if larger cobble is encountered, it will be considered a change in conditions?

A-54: The Contractor shall be fully aware that this bore is taking place in cobble rock that is classified as GW material per the geotech report with groundwater present. The City can't guarantee what size of cobble rocks will be encountered and the City will not commit to a changed conditions scenario at this stage of the bidding process. During the pre-bid meeting, Mike Berry with Huddleston-Berry Engineering and Testing commented that there could be the potential to encounter large cobble rock(s) that are 12-inches and greater in size, but the vast majority of cobble rocks encountered should be 6-inches and smaller. The test pit the City dug on Friday, July 14th in the southwest corner of the Persigo property showed the bidders the size rock that should be typical during this project which appears to be 6-inch minus cobbles. The boring contractor should prepare their bid with the understanding that larger cobbles could potentially be encountered.

Q-55: Can we get a Castings MH-310-24 bolt down approved for the manhole covers? Less money per each than the Neenah R-1574's shown on the plans.

A-55: The City will allow both the Neenah R-1574 and the Castings MH-310-24 bolt down (locking) lids for use on this project.

Q-56: Can the project deadline be extended if river work is accomplished within specified time? We feel there is not adequate time in 82 days to complete the entire project.

A-56: See revised time of completion in this Addendum.

Bid Schedule: Persigo WWTP - Diffuser Outfall Improvements Project

Addendum #2

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
1	201, 01025	Clearing and Grubbing	1.	Lump Sum	$ _____	$ _____
2	202, 01025	Removal of Fence (Southwest Corner of the Persigo Property near SSMH-0014)	50.	Lin. Ft.	$ _____	$ _____
3	207, 01025	Topsoil	2,500.	Cu. Yd.	$ _____	$ _____
4	207, 01025	Stockpile Topsoil	2,500.	Cu. Yd.	$ _____	$ _____
5	208, 01025	Silt Fence	250.	Lin. Ft.	$ _____	$ _____
6	208, 01025	Erosion Log Type 1 (20 Inch)	250.	Lin. Ft.	$ _____	$ _____
7	208, 01025	Temporary Berms	4,000.	Lin. Ft.	$ _____	$ _____
8	208, 01025	Soil Lifts (3' High) (Includes Soil Retention Blanket, Topsoil, Fill, Stakes/Staples)	100.	Lin. Ft.	$ _____	$ _____
9	208, 01025	Storm Drain Inlet Protection (Type 1)	20.	Lin. Ft.	$ _____	$ _____
10	208, 01025	Sediment Trap	3.	Each	$ _____	$ _____
11	208, 01025	Pre-fabricated Concrete Washout Structure	2.	Each	$ _____	$ _____
12	208, 01025	Vehicle Tracking Pad	2.	Each	$ _____	$ _____
13	208, 01025	Erosion Control Management (ECM)	1.	Lump Sum	$ _____	$ _____
14	208, 01025	Temporary Diversion (Coffer Dam) (Colorado River)	1.	Lump Sum	$ _____	$ _____
15	208, 01025	Temporary Stream Crossing (Persigo Wash)	1.	Lump Sum	$ _____	$ _____
16	212, 02935	Seeding (Native)	4.1	Acre	$ _____	$ _____
17	212, 02935	Soil Conditioning	4.1	Acre	$ _____	$ _____
18	213	Mulching (Hydraulic)	4.1	Acre	$ _____	$ _____

Bid Schedule: Persigo WWTP - Diffuser Outfall Improvements Project

Addendum #2

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
19	214, 01025	Landscape Maintenance (One-Year from Landscape Completion)	1.	Lump Sum	$ _____	$ _____
20	506, 01025	Riprap (D_{50} = 9 Inch)	120.	Cu. Yd.	$ _____	$ _____
21	607, 01025	Fence Double Gate (6' High) (Chain-Link, Barbed Wire Top, Top Rail) (Southwest Corner of the Persigo Property near SSMH-0014)	24.	Lin. Ft.	$ _____	$ _____
22	01025, 02612	Furnish and Install 60" I.D. Steel Pipe Casing (Trenchless)	420.	Lin. Ft.	$ _____	$ _____
23	01025, 15064	Furnish and Install 54" O.D. HDPE Pipe	720.	Lin. Ft.	$ _____	$ _____
24	01025, 15074	Furnish and Install 48" RCP Pipe	1,250.	Lin. Ft.	$ _____	$ _____
25	604, 01025	Manhole Slab Base (10 Foot)	4.	Each	$ _____	$ _____
26	604, 01025	Manhole Slab Base (15 Foot)	2.	Each	$ _____	$ _____
27	604, 01025	Manhole Slab Base (20 Foot)	1.	Each	$ _____	$ _____
28	01025, 03300	Effluent Box	1.	Lump Sum	$ _____	$ _____
29	01025, 11001	Diffuser Structure	1.	Lump Sum	$ _____	$ _____
30	202, 01025	Remove 24 LF Existing Effluent Pipe and Headwall	1.	Lump Sum	$ _____	$ _____
31	01025, 02300	Abandon Effluent Pipe in Place (Includes Flow-fill)	1.	Lump Sum	$ _____	$ _____
32	01025	Cleanup and Restoration	1.	Lump Sum	$ _____	$ _____
33	01025	Rock Excavation (Bedrock)	200.	Cu. Yd.	$ _____	$ _____
34	01025	Bypass Pumping (Effluent Flows) (7-Calendar Days) (Includes 48" pipe plug)	1.	Lump Sum	$ _____	$ _____
35	614	Traffic Control (Complete in Place) (All Traffic Control shall met CDOT Standard Requirements and Details)	1.	Lump Sum	$ _____	$ _____
36	620	Sanitary Facility	2.	Each	$ _____	$ _____

Bid Schedule: Persigo WWTP - Diffuser Outfall Improvements Project

Addendum #2

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
37	625	Construction Surveying	1.	Lump Sum	$ _____	$ _____
38	629	Survey Monumentation (Complete in Place)	1.	Each	$ _____	$ _____
39	01025	Mobilization and Demobilization	1.	Lump Sum	$ _____	$ _____
MCR		Minor Contract Revisions	---	---	---	$ 100,000.00
				Bid Amount:		**$** _____

Bid Amount:

_____ **dollars**

Contractor Name:
Contractor Address:
Contractor Phone #:
Contractor's Proposed Boring Method:

PART 1 – GENERAL

1.1 DESCRIPTION: The work in this section consists of providing High Density Polyethylene (HDPE) pipe and fittings.

1.2 RELATED WORK SPECIFIED ELSEWHERE: Earthwork and Trenching – Section 02300.

1.3 QUALITY ASSURANCE: References, American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), Federal Specifications (FS), International Standards Organization (ISO), and manufacturer's printed recommendations.

1.4 SUBMITTALS: Material list naming each product to be used identified by manufacturer and type number, in accordance with Section 01340.

1.5 PRODUCT HANDLING: Handle pipe and fittings to insure delivery in a sound undamaged condition.

1.6 JOB CONDITIONS: Do not lay pipe when trenches or weather conditions are not suitable for such work.

PART 2 – MATERIALS

2.1 PIPE:

A. Pipe shall be manufactured from a resin which meets ASTM D 3350 with a minimum cell classification of 445574C. HDPE resin shall be PE4710 as characterized by ASTM D3035. Pipe shall be manufactured to the dimensions of ASTM F 714. Pipe shall be have a minimum pressure ratings of:

DR 21 101 psi

The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All HDPE pipe diameters on the drawings shall be "minimum finished outside diameter" and shall have a dimension ratio of 21.

2.2 FITTINGS:

A. Butt Fusion Fittings - Fittings shall be made from HDPE pipe resin meeting ASTM D 3350 with a minimum cell classification of 445574C.

Persigo WWTP- Diffuser Outfall Improvements Project

Berschauer - CDOT, Joel

Wed 7/19/2017 9:03 AM

To:Anthony Lee Cooper <leec@gjcity.org>;

3 attachments (2 MB)

Boring Special provisions.pdf; R3 Trenchless Technology Guidelines.pdf; 3, Standard Provisions Page 3.pdf;

Lee,

After a discussion with internal CDOT utility personnel we would like to see the boring contractors do a Risk Assessment to see which means of Trenchless Technology would be the safest, surest way for doing this bore. Then as a team with the prime and boring contractors, Geotech company, the Engineer of Record, CDOT and City of GJ we will make the decision on which way to go.

Also after the site inspection on Monday I wanted to throw the option out to shorten the bore a bit. Moving the bore pit on the south side between the bike path and the ROW line, instead of outside the south ROW fence would shorten the bore by over 50'. Of course a secure construction fence would be needed to secure the bike path users from the construction zone and bore pit. Also the casing would still need to extend out past the ROW line. The remaining casing installation could be done by open cut to outside the south ROW line. The reason this can be allowed is the existing path fence that keeps access off I-70, unlike the North side where the ROW fence is the access line as well.

As far as sending out the actual permit prior to bidding, I cannot do that but attached are our Standard and Special Provisions and the Region 3 Guidelines for Trenchless Technology. The final permit will reference the Section 02612 from the Bid document.

Also be certain to stress to all bidders the importance of I-70, being a Federal Highway and everything is to higher standards. The safety and traffic control action plans need to be for any immediate emergency closures of I-70. Traffic control personnel must be at the ready the entire time of the bore.

Please let me know if you need anything else.

Thanks,

Joel Berschauer

Region 3 Utility and Special Use Permit Coordinator

Colorado Department of Transportation

P 970.683.6288 | C 970.250.3356 | F 970.683.6290

222 South 6th St, Room 100 Grand Junction, CO 81501
joel.berschauer@state.co.us | www.codot.gov | www.cotrip.org
http://www.coloradodot.info/business/permits

COLORADO
Department of Transportation
Region 3 Traffic Section
222 South 6th Street Room 100
Grand Junction, Colorado 81501
(970) 683-6288 Fax: (970) 683-6290

Click here to enter text.	**Permit No**
Click here to enter text.	**Highway No**
Click here to enter text.	**Mile Marker**
Click here to enter text.	**Patrol No**

SPECIAL PROVISIONS FOR UTILTY INSTALLATIONS

THE SPECIAL PROVSIONS ARE TERMS AND CONDTIONS OF THIS PERMIT

CDOT IS NOT A UNCC MEMBER AND UNCC WILL NOT LOCATE CDOT FACILITIES.
PERMITTED WORK REQUIRES PERMITTEE OR CONTRACTORS TO CONTACT CDOT (970) 384-3354, FOR LOCATES IF ANY CDOT SIGNALS, FLASHING BEACONS, ELECTICAL SIGNS, LUMINARIES, AND WEATHER STATIONS ARE LOCATED WITHIN 3000 FEET OF CONSTRUCTION AREA
NOTICE- NO UNDERGROUND INSTALLATIONS SHALL BE PERFORMED FROM 15 NOVEMBER TO 15 APRIL, UNLESS THE CDOT INSPECTOR ON THE PERMIT HAS APPROVED OF THE INSTALLATION DURING THIS TIME FRAME. REVIEW & COMPLY WITH THE ATTACHED "SPECIAL PROVISIONS FOR LATE FALL, WINTER AND SPRING".

TRAFFIC CONTROL

1. The complete permit for this work, including approved Colorado Department of Transportation (to be known as CDOT or the Department) permit, construction and traffic control plans, will be kept at the work site at all times. *The permittee is responsible for providing traffic control plans that conforms to and meets the requirements of the* ***Manual on Uniform Traffic Control Devices (MUTCD) and the Colorado supplements*****.**

2. To meet conditions encountered in the field, minor changes or additions may be ordered and approved by the CDOT Field Inspector.

3. All CDOT employees shall be considered as inspectors when the safety of the traveling public, safety of contractors, employees, or integrity of the property of CDOT is at risk.

4. All work shall cease when weather creates a safety hazard for the traveling public and/or barrow ditch is wet enough to leave tire or cleat marks.

5. Advanced warning and construction signs, flashers, barricades and flag people must conform to the Manual on Uniform Traffic Control Devices and, Colorado Supplements, and must be in place before work starts each day.

6. Any advance warning signs not in use for a particular activity shall be removed, placed outside of the clear zone, or laid flat at least 4' from the edge of the shoulder and not on landscaped areas or sidewalks. This applies to both signs and structures.

7. Lane closures must be as short as possible and as per the MUTCD. Flaggers are required for each lane closure. Advance warning signs must be placed as per MUTCD. All temporary traffic control signs shall be removed, covered or laid on the ground during non-working hours.

8. Two-way traffic shall be maintained at all times in the construction area in accordance with the M.U.T.C.D. and Colorado Supplements.

GENERAL

9. The permittee must notify the CDOT inspector no less than two (2) days prior to any work on highway right-of-way. The CDOT Inspector's name, phone number, and email is on the permit. If a break in work exceeds 7 days, the CDOT inspector shall be notified of the changed work schedule. Notification may be given by phone or email.

10. No work shall proceed beyond the expiration date specified on the permit without written approval of the Department.

11. On three (3) day weekend holidays, the project shall be shut down by 12:00 Noon on Friday, and not resume prior to the following Tuesday morning.

12. Work hours for this permit are from one hour after sunrise to one hour before sunset, unless otherwise stated in the permit.

13. Permittee is responsible for the safety of the traveling public at all times when work is being done.

14. Forty-eight (48) hour notification must be given for the underground location of CDOT owned facilities. Phone 970.384.3354.

15. Any damage to highway facilities, such as traffic lights, streetlights, concrete walkways, bike paths, asphalt, signing, etc., shall be repaired and reported immediately and notification must be given to the CDOT Inspector or contact CSP Dispatch 970.824.6501 Craig & 970.249.4392 Montrose.

16. Should any excavation encounter plant or animal fossils, the remains of historic or prehistoric structures, historic or prehistoric artifacts (bottle dumps, charcoal from subsurface hearths, pottery, potsherds, stone tools, arrowheads, etc.), the operation shall cease at once and the permittee shall contact the CDOT Environmental Office 970.683.6251 for guidance.

17. Permittee assumes all responsibility for any and all land survey monuments within the permitted area of the right-of-way. If disturbed or destroyed, the permittee bears full cost for replacement. Construction may need to be re-routed to avoid disturbing High Accuracy Reference Network Survey Land Markers Direct any questions within five (5) days prior to construction to: Region Survey Coordinator at 970.683.6231.

18. If petroleum or other potentially hazardous material is encountered during excavation, work shall cease immediately and the permittee shall contact the CDOT Environmental Office 970.683.6251 for guidance. The proper disposal of any soils or other material determined to be hazardous and/or contaminated by fugitive petroleum uncovered or excavated during the performance of utility construction shall be the sole responsibility of the Utility and shall be accomplished in accordance with all applicable Federal, State and Local laws and regulations. Such clean up and disposal shall be at no cost to CDOT.

19. All construction vehicles, delivery vehicles and traffic control vehicles shall be equipped with flashing amber/yellow beacons, which are visible from all directions. Only construction vehicles involved in the construction are to be at the work site. It is important to limit the number of extraneous vehicles at each work site. Staging areas shall be pre-approved.

20. Staging and material storage areas, within the right of way must be pre-approved and beyond the clear zone. Employee parking within the right of way shall be restricted and shall not be allowed, except in pre-approved contractor staging areas and beyond the clear zone. The only vehicles allowed within the highway clear zone are the construction vehicles necessary for the operation. Parking along the shoulder of the highway is not allowed.

21. Minimum cover depth for this installation will be 48 inches or 60 inches if within 15 feet of roadway.

22. All utilities located at inlets or outlets of all major or minor structures and roadway drainage and irrigation ditches shall be encased or placed at a cover depth of forty-eight (48) inches or 60 inches if within 15 feet of roadway below the finished ditch grade.

23. All above ground structures, (poles, pedestals, anchors, guys, etc.) will be placed outside of, or within five (5) feet of the right of-way line.

24. Valve and manhole covers will be set ½ inch below finished grade.

25. All backfill is subject to AASHTO standard compaction T-99 or T-180 as appropriate. Compaction and materials testing may be required at the discretion of the Department of Transportation. Flow fill shall be used for all parallel and traverse installations within 6 feet of the asphalt.

26. The installed line shall be encased in pipe, which shall be steel at least ¼ inch wall thickness or comparable material. This encasement for the highway crossing shall be a minimum of forty-eight inches below ditch surface. Encasement may be required to go from right-of-way (ROW) line to right-of-line.

27. No bore pits allowed within **15'** of the roadway pavement or curb line.

28. All work shall stop and CDOT shall be notified immediately if any problems occur during the bore; including but not limited to, surfacing of frac material, over pressuring of frac mud, loss of bore heads, etc. CDOT shall determine the next course of action.

29. All county roads, asphalt driveways, bike path crossings required because of this construction shall be bored. Graveled driveway crossings may be bored rather than cut. Immediate access shall be provided in the event of an emergency on all open cut road/driveway crossings.

30. No open cut allowed inside the toe of fill slopes or barrow ditch line or within 15 feet of the paved shoulder or curb line, whichever is further from the centerline.

31. All pavement markings removed or damaged during the utility installation will be replaced.

32. No open pits or trenches are allowed within thirty (30) feet of any traveled lane at night, weekends or holidays, unless protected by type VII barriers, as required by M.U.T.C.D. and Colorado Supplements.

33. Safety devices as per the AASHTO and the Colorado M & S Standards must protect all construction equipment that cannot be transported from the work area, and is within the "Clear Zone". Protective guardrail/barrier devices shall meet the requirements of the State of Colorado M Standards, section 606-12. Clear Zone requirements are found in AASHTO Road Side Design Guide, Section 3. Equipment that can be transported to a location that is not within the Clear Zone or otherwise protected by existing guardrail, shall be clearly delineated as per the MUTCD manual.

34. Areas of roadway and right-of-way disturbed during this installation will be restored to the original contour and condition by grading to drain, top soiled, fertilized, mulched and reseeded with approved material at specified proportions. Mulch, fertilizer and seed shall be "certified weed free". Refer to Section 212 & 213 of the "***Colorado Department of Transportation Standard Specifications for Road and Bridge Construction***".

35. Permittee shall develop and implement a two-year noxious weed control plan for areas within the Highway right-of-way disturbed by this installation/construction.

36. No equipment or materials will be allowed on the main lanes or the roadway during construction.

37. The utility shall be marked at the right-of-way line on both sides of the highway.

38. Highway right of way fences shall not be cut.

39. All work and materials to meet or exceed the most current issue of the ***Colorado Department of Transportation Standard Specifications for Road and Bridge Construction & Colorado Department of Transportation Standard Plans- M & S Standards***.

40. Unacceptable work shall be promptly removed and replaced in an acceptable manner.

41. If proposed utility is not placed in area applied for, the utility permit is void, and the utility is deemed illegal.

42. All procedures and work are subject to CDOT approval.

43. All work to be as per permit and submitted plans.

MISCELLANEOUS

44. The permittee hereby assumes, releases and agrees to indemnify, defend, protect and save the State of Colorado harmless from and against any loss of and/or damage to the property of the State of Colorado, third parties or the permittee's facilities including loss of services, loss and/or damage on account of injury to or death of any person, whosoever, arising at any time, caused by or growing out of the occupation of Colorado State Transportation rights-of-way the permittee's facilities or any part thereof, unless such loss and/or damage is the direct result of any willful and wanton act of the State of Colorado or its employees.

45. Permittee is prohibited from any illicit or non-storm water discharges that are prohibited by State Water Quality laws. Permittee agrees that it shall be responsible for obtaining all necessary environmental clearances and permits from all agencies (U.S. Army Corps of Engineers, Colorado Divisions of Wildlife, U.S. Forrest Service, U.S. Bureau of Land Management, Colorado Department of Health & Environment, county health department, etc.) before commencing any work under this permit. Without these clearances & permits, this permit shall be not in effect.

Permittee also agrees to assume all responsibility and liability in connection with potential environmental hazards encountered in connection with its work under this permit. The permittee must show all environmental permits and clearances to CDOT (Utility Inspector or Environmental Officer) on request and prior to construction.

46. In the event of extreme fire danger and/or fire bans in Colorado Counties, permittee shall develop a fire plan. Plan shall include fire protection/prevention equipment at the work site & the accountability of personnel.

CDOT UTILITY/RELOCATION/SPECIAL USE PERMIT STANDARD PROVISIONS

The following Standard Provisions are terms and conditions of this permit:

Effective January 1, 2008

Utility work authorized under this permit shall comply with the requirements of the State Highway Utility Accommodation Code, and applicable federal, state, local, and industry codes and regulations.

Construction of any portion of the highway facility, including the pavement structure, subsurface support, drainage, landscaping elements and all appurtenant features, shall comply with the provisions of the CDOT Standard Specifications for Road and Bridge Construction, and with the Colorado Standard Plans (M & S Standards).

1. COMMENCEMENT AND COMPLETION

Work on highway Right of Way (ROW) shall not commence prior to issuance of a fully endorsed and validated permit.

Permittee shall notify the CDOT inspector:

a. At least 2 working days prior to commencing work, or resuming operations which have been suspended for five or more consecutive working days
b. When suspending operations for 5 or more working days
c. Upon completion of work.

Work shall not proceed beyond a completion date specified in the Special Provisions without written approval of the Department.

2. PLANS, PLAN REVISIONS, ALTERED WORK

Plans or work sketch (EXHIBIT A) are subject to CDOT approval. A copy of the approved plans or sketch must be available on site during work. Plan revisions or altered work differing in scope or nature from that authorized under this permit, are subject to CDOT prior approval. Permittee shall promptly notify the CDOT inspector of changed or unforeseen conditions, which may occur on the job.

3. INSURANCE

Insurance Requirements for Utility and Special-Use Permits (Revised 7-05 per State Requirements)

A. The Permittee shall obtain, and maintain at all times during the performance of work authorized by this Permit, insurance in the following kinds and amounts. The Permittee shall require any Contractor working for them within the State Highway Right of Way to obtain like coverage. The Permittee shall also require any Contractor or Consultant performing work described in sub-paragraph 4) below, to obtain Professional Liability Insurance.

1) Workers' Compensation Insurance as required by state statute, and Employer's Liability Insurance covering all employees acting within the course and scope of their employment and work on the activities authorized by this Permit.

2) Commercial General Liability Insurance written on ISO occurrence form CG 00 01 10/93 or equivalent, covering premises operations, fire damage, independent Consultants, products and completed operations, blanket contractual liability, personal injury, and advertising liability with minimum limits as follows:

a. $1,000,000 each occurrence;

b. $2,000,000 general aggregate;

c. $2,000,000 products and completed operations aggregate; and

d. $50,000 any one fire.

e. For any permanent Permittee-owned installations located within the State Highway Right of Way, highway repairs, or site restoration, Completed Operations coverage shall be provided for a minimum period of one year following final acceptance of work.

If any aggregate limit is reduced below 1,000,000 because of claims made or paid, the Permittee, or as applicable - their Contractor, shall immediately obtain additional insurance to restore the full aggregate limit and furnish to CDOT a certificate or other document satisfactory to CDOT showing compliance with this provision.

3) Automobile Liability Insurance covering any auto (including owned, hired and non-owned autos) with a minimum limit as follows: $1,000,000 each accident combined single limit.

4) For any: a) engineering design; b) construction inspection; or, c) traffic control plans approved by a Traffic Control Supervisor; done in association with the operations or installations authorized by this permit, Professional Liability Insurance with minimum limits of liability of not less than $1,000,000 Each Claim and $1,000,000 Annual Aggregate. If the policy is written on a Claims Made form, the Permittee, or, as applicable – their Consultant or Contractor, shall renew and maintain Professional Liability Insurance for a minimum of two years following final acceptance of the work, or provide a project specific Policy with a two year extended reporting provision.

5) Pollution Legal Liability Insurance with minimum limits of liability of $1,000,000 Each Claim and $1,000,000 Annual Aggregate. CDOT shall be named as an additional insured to the Pollution Legal Liability policy. If the Policy is a component of the Professional Liability Policy, the Additional Insured requirement is waived, and the Policy shall be written on a Claims Made form, with an extended reporting period of at least two year following final acceptance of the work.

6) Umbrella or Excess Liability Insurance with minimum limits of $1,000,000. This policy shall become primary (drop down) in the event the primary Liability Policy limits are impaired or exhausted. The Policy shall be written on an Occurrence form and shall be following form of the primary. The following form Excess Liability shall include CDOT as an additional insured.

B. CDOT shall be named as additional insured on the Commercial General Liability and Automobile Liability Insurance policies. Completed operations additional insured coverage shall be on endorsements CG 2010 11/85, CG 2037, or equivalent. Coverage required by the Permit will be primary over any insurance or self-insurance program carried by the State of Colorado.

C. The Insurance shall include provisions preventing cancellation or non-renewal without at least 30 days prior notice to CDOT by certified mail.

D. The Permittee, or, as applicable – their Contractor or Consultant, will require all insurance policies in any way related to the Permit and secured and maintained by the Permittee, Contractor or Consultant, to include clauses stating that each carrier will waive all rights of recovery, under subrogation or otherwise, against CDOT, its agencies, institutions, organizations, officers, agents, employees and volunteers.

E. All policies evidencing the insurance coverages required hereunder shall be issued by insurance companies satisfactory to CDOT.

F. The Permittee, or as applicable - their Contractor or Consultant, shall provide certificates showing insurance coverage required by this Permit to CDOT prior to commencing work. No later than 15 days prior to the expiration date of any such coverage, the Permittee, Contractor or Consultant, shall deliver CDOT certificates of insurance evidencing renewals thereof. At any time during the term of this contract, CDOT may request in writing, and the

Permittee, Contractor or Consultant, shall thereupon within 10 days supply to CDOT, evidence satisfactory to CDOT of compliance with the provisions of this section.

G. Notwithstanding subsection A of this section, if the Permittee is a "public entity" within the meaning of the Colorado Governmental Immunity Act CRS 24-10-101, et seq., as amended ("Act'), the Permittee shall at all times during the term of this permit maintain only such liability insurance, by commercial policy or self-insurance, as is necessary to meet its liabilities under the Act. Upon request by CDOT, the Permittee shall show proof of such insurance satisfactory to CDOT. Public entity Permittees are not required to name CDOT as an Additional Insured.

H. If the Permittee engages a Contractor and/or Consultant to act independently from the Permittee on the permitted work, that Contractor and/or Consultant shall be required to provide an endorsement naming CDOT as an Additional Insured on their Commercial General Liability, Auto Liability, Pollution Legal Liability and Umbrella or Excess Liability policies.

4. WORK WHERE DEPARTMENT LACKS AUTHORITY

Utility work within municipal boundaries (pursuant to 43-2-135 CRS), on certain public lands, or on private property, may require separate approval of the appropriate jurisdictional agency or property owner.

5. INSTALLATIONS ON FREEWAYS

CDOT may permit utility accommodations on freeways, including but not limited to the Interstate System, only in accordance with Utility Accommodation Code provisions. Special case exceptions as defined therein may be permitted only in accordance with FHWA-approved Departmental policy.

6. JOINT USE ALTERNATIVES

As directed or approved by CDOT, if necessary for the safe and efficient use of the ROW, Permittee shall utilize joint use facilities such as the placement of two or more separate lines in a common trench, or attachment to the same overhead support. The Permittee will be responsible for proper coordination with other affected utilities.

7. ATTACHMENT TO HIGHWAY STRUCTURES

Permittee is responsible for designing structure attachments, subject to the approval of the CDOT Staff Bridge Design Engineer.

8. DRAINAGEWAYS AND WATERCOURSES

The flow of water shall not ever be impaired or interrupted. Where possible, crossings of ditches, canals or water-carrying structures shall be bored or jacked beneath. Irrigation ditch or canal crossings require approval of the ditch company or owner. Permittee shall repair damage to any drainage facility to the satisfaction of the owner.

9. TRAFFIC CONTROL PLAN

a. Prior to commencing work, the Permittee shall develop and submit to the Department for acceptance, a Traffic Control Plan (TCP) for any accommodation work that will affect traffic movement or safety. The Permittee shall implement the TCP and utilize traffic control devices as necessary to ensure the safe and expeditious movement of traffic around and through the work site.

b. The Permittee shall develop the TCP, and Methods of Handling Traffic (MHT's) included therein, in conformance with the Manual on Uniform Traffic Control Devices (MUTCD), the Colorado Supplement thereto adopted by the Commission pursuant to sections 42-4-104 and 42-4-105 CRS, the Department's standard specifications for temporary traffic control and the Department's standard plans for signing - Standard Plans S 630-1 and S 630-2. The TCP shall include provisions for the passage of emergency vehicles through the work zone, and shall conform to the requirements of the Americans with Disabilities Act. The TCP and MHT's shall contain sufficient detail to demonstrate conformity with all applicable requirements.

c. The Permittee shall have a competent person at the work site at all times in responsible charge of temporary traffic control. In situations where the TCP goes beyond any Typical Application shown in the MUTCD, or particularly dangerous roadway or traffic conditions exist, the Department may require the Permittee to have a Traffic Control Supervisor (TCS) develop or approve the TCP or to have a TCS on-site during work. The TCS shall be certified as a worksite traffic supervisor by either the American Traffic Safety Services Association (ATSSA) or the Colorado Contractors Association (CCA), and shall have a current CDOT flaggers' certification card. The TCS shall be responsible for the planning, preparation, coordination, implementation, and inspection of the TCP.

d. The Permittee shall not start the permitted work before the Department accepts the TCP.

e. The Department may review and order changes to the TCP and MHT's during performance of the work, as required.

f. The Permittee shall comply with the TCP at all times during performance of the work.

g. The Permittee shall keep a copy of the TCP at the work site at all times during performance of the work for inspection.

h. The TCP shall ensure that closure of intersecting streets, road approaches and other access points is minimized. On heavily traveled highways, the Department will not permit operations that interfere with traffic during periods of peak traffic flow.

i. When Permittee operations coincide with highway construction or maintenance operations, the Permittee shall develop and implement the TCP in cooperation and coordination with the highway agency and/or its contractors and as otherwise directed by the Department in the permit.

j. All flaggers shall have a current CDOT flagger certification card and shall be capable of communicating with the traveling public and others at the work site.

10. NCHRP 350 CRASHWORTHINESS REQUIREMENTS FOR WORK ZONE TRAFFIC CONTROL DEVICES

Work zone devices designated by FHWA as: Category I, including but not limited to single-piece drums, tubes, cones and delineators; Category II, including but not limited to barricades, vertical panels with light, drums or cones with light, portable sign supports, intrusion detectors and type III barricades; or as Category III, including but not limited to concrete barriers, fixed sign supports, crash cushions, and other work zone devices not meeting the definitions of Category I or II; shall meet NCHRP 350 crash test requirements. The Permittee, or their contractor shall obtain and make available upon request, the manufacturer's written NCHRP 350 certification, or as applicable, the FHWA Acceptance Letter, for each type of device. FHWA Acceptance Letters for Category II or Category III Work Zone Devices may be accessed through the FHWA website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

11. WORKER SAFETY AND HEALTH

a. All workers within the State Highway right of way shall comply with their employer's safety and health policies/procedures and all applicable U.S. Occupational Safety and Health Administration (OSHA) regulations - including, but not limited to the applicable sections of 29 CFR Part 1910 - Occupational Safety and Health Standards and 29 CFR Part 1926 - Safety and Health Regulations for Construction.

b. Personal protective equipment (PPE) (e.g. head protection, footwear, high visibility apparel, safety glasses, hearing protection, respirators, gloves, etc.) shall be worn as appropriate for the work being performed, and as specified in regulation. At a minimum, all workers in the SH ROW, except when in their vehicles, shall wear the following personal protective equipment:

1) Head protection that complies with the ANSI Z89.1standard;

2) At all construction sites or whenever there is danger of injury to feet, workers shall comply with OSHA's PPE requirements for foot protection per 29 CFR 1910.136, 1926.95, and 1926.96. If required, such footwear shall meet the requirements of ANSI Z41;

3) High visibility apparel, which shall, at a minimum comply with the Class 2 specifications of the ANSI/ISEA 107standard. Class 3 apparel shall be considered for use at night or in particularly hazardous situations.

4) The most recent version of the ANSI standards listed above shall apply.

12. ADA REQUIREMENTS

The Permittee shall comply with the applicable provisions of the Americans With Disabilities Act, with respect to both permanent facilities installations and temporary work zones.

13. CLEAR ROADSIDE CONSIDERATIONS

a. CDOT is committed to provide a roadside area that is as free as practical from nontraverseable hazards and fixed objects ("clear zone"). New above ground installations may be permitted within the clear zone only upon a showing that no feasible alternate locations exist. Permittee must utilize appropriate countermeasures to minimize hazards.

b. Permittee shall remove materials and equipment from the highway ROW at the close of daily operations. The traffic control plan must include protective measures where materials and equipment may be stored on ROW. Protection of open trenches and other excavations within highway ROW shall be addressed in the Permittee's traffic control plan. All excavations shall be closed at the end of daily operations, and no open excavation will be allowed in the clear zone after dark. The Permittee agrees to promptly undertake mitigating or corrective actions acceptable to the Department upon notification by CDOT that the installation permitted herein has resulted in a hazardous situation for highway users.

14. GENERAL CONSTRUCTION REQUIREMENTS

a. Work shall not be performed at night or on Saturdays, Sundays, or holidays without prior authorization or unless otherwise specified in this permit. CDOT may restrict work on ROW during adverse weather conditions or during periods of high traffic volume.

b. Those areas within ROW, which must be disturbed by permit operations, shall be kept to a practical minimum. Permittee shall not spray, cut, or trim trees or other landscaping elements within highway ROW, unless such work is otherwise specified in this permit, or clearly indicated on the approved plans. Cleated or tracked equipment shall not work on or move over paved surfaces without mats, or pads on tracks.

c. Material removed from any portion of the roadway prism must be replaced in like kind with equal or better compaction. Segregation of material is not permitted. The permitted facility shall be of durable materials in conformity with accepted practice or industry standards, designed for long service life, and relatively free from routine servicing or maintenance.

d. Construction or compaction by means of jetting, puddling, or water flooding is prohibited within all highway ROW.

e. Thrust blocks are required on all vertical and horizontal bends in pressure pipes.

f. Meters shall not be placed on highway ROW except within corporate limits where municipal regulations allow such use.

15. ALIGNMENT, COVER, CLEARANCE

a. Location and alignment of Permittee's facilities shall only be as specified in this permit or as otherwise indicated in the approved plans or work sketch (EXHIBIT A).

b. Parallel installations will not be permitted under roadways (including curbing and/or shoulders) or median areas, except within corporate boundaries, subject to municipal regulations.

c. Parallel installations should be located as near as practicable to the ROW line. Crossings shall be as nearly perpendicular to the highway as feasible.

d. Where no feasible alternate locations exist, the Department may permit parallel installations along roadside areas within 15 feet from edge of shoulder or back of curb. In these cases, the facility must be so located and safeguarded as to avoid potential conflict with necessary highway appurtenances (signs, guard rail, delineators, etc.). Specific safeguards such as increasing depth of cover to 60 inches, capping, or encasement, shall be specified in this permit's Special Provisions.

e. Parallel installations shall follow a uniform alignment, wherever practical. Due consideration must be given to conserving space available for future utility accommodations. The standard allowable deviation from the approved horizontal alignment is ± 18 inches.

f. Minimum cover shall conform to the Special Provisions. Normal specified cover will be 48 inches or greater; reduced cover may be approved where site conditions warrant, subject to other safeguards as may be specified or approved in the permit. Minimum overhead clearance shall conform to the Special Provisions, consistent with Utility Accommodation Code criteria.

16. PAVEMENT CUTS AND REPAIRS

Paved surfaces shall not be cut unless otherwise specified in this permit. No more than one half the width of the roadbed may be opened at a time, when otherwise permitted. Pavement shall be sawed or wheel-cut to a neat line. Pavement shall be replaced to a design equal to or greater than that of the surrounding undisturbed pavement structure. Pavement repair shall conform to the Special Provisions or the approved plans.

17. BORING, JACKING, ENCASEMENT

Unless otherwise specified, buried crossings shall be bored or jacked beneath the roadway, at least from toe of slope to toe of opposite slope. Portals for untrenched crossings more than 5 feet in depth shall be bulk headed in conformance with OSHA construction and safety standards. Portal limits of untrenched crossings shall be established safely beyond the highway surface and clear zone and in no case shall the lateral distance from the surfaced area of the highway to the boring or jacking pit be less than the vertical difference in elevation between such surface and the bottom of the pit. Water jetting or tunneling is not permitted. Water assisted boring may be permitted as determined by the CDOT Inspector. Boring hole shall be oversized to the minimum amount required to allow pull-through of the conduit being installed. Resultant voids shall be grouted or otherwise backfilled, subject to CDOT approval. Ends of bored sections shall not be covered before being inspected. Encasement shall be consistent with Utility Accommodation Code provisions. CDOT may require protective casing for shallow installations or certain conduit materials. Encased crossings shall extend at least from toe of slope to toe of slope, or the full width between access-control lines on freeways, including the Interstate System.

18. INSPECTION AND ACCEPTANCE

a. CDOT will determine the extent of inspection services necessary for a given installation. Permittee shall attend final inspection as may be required. If the initial performance of permitted work was unacceptable, as determined by the Department, the Permittee shall perform any reconstruction or improvement of that work as ordered by the Department, in a timely manner and prior to any further construction. If permitted operations are not being carried out in compliance with the terms and conditions of this permit, the Department may order the Permittee to perform whatever corrective measures are necessary to attain compliance with the permit. If there is an immediate danger to the public's health, safety or welfare, the Department may order the Permittee to cease all operations and if necessary, to remove all equipment and facilities from the SHROW.

b. Final acceptance does not relieve Permittee of maintenance obligations toward those elements of the highway facility constructed under this permit. Final acceptance begins the two-year warranty period (see requirement under "Operation and Maintenance" below).

19. ENVIRONMENTAL CLEARANCES/PERMITS

a. It is the responsibility of the Permittee to determine which environmental clearances and/or regulations apply to their activities and to obtain any clearances that are required directly from the appropriate regulatory agency prior to commencing work. Please refer to or request a copy of the "CDOT Environmental Clearance Information Summary" (ECIS) for details. The ECIS may be obtained from CDOT Permitting Offices or may be accessed via the CDOT webpage at http://www.dot.state.co.us/UtilityProgram/Forms.cfm. Failure to comply with regulatory requirements may result in suspension or revocation of your CDOT permit, or enforcement actions by other agencies.

b. The Special Provisions of this permit shall list any specific environmental clearances or permits that the Department has been notified by the Permittee or by the administering regulatory agency apply to the operations authorized by this permit. The Special Provisions shall require the Permittee obtain the listed environmental clearances/permits prior to beginning work.

c. The Permittee shall comply with all requirements described in the CDOT Environmental Clearances Information Summary, including those pertaining to:

1) Ecological Resources
2) Cultural Resources
3) Discharges of Stormwater or Process Water
4) Hazardous Materials
5) Discharges of Dredged or Fill Material
6) Erosion and Sediment Control
7) Disposal of Drilling Fluids
8) Concrete Washout
9) Spill Reporting
10) Transportation of Hazardous Materials

d. Disturbance of any wildlife shall be avoided to the maximum extent practicable. If threatened or endangered species or archeological or historical artifacts are encountered during the progress of a project, work in the subject area shall be halted and the CDOT regional permitting office shall be contacted immediately for direction as to how to proceed.

e. All discharges of stormwater or process water are subject to the applicable provisions of the Colorado Water Quality Control Act and the Colorado Discharge Permit Regulations.

f. There shall be no disposal of hazardous materials in the state highway right of way. Solid waste shall be removed from the state highway right of way and disposed of at a permitted facility or designated collection point (such as the Permittee's own dumpster). Drilling fluids must be disposed of as described in the ECIS.

g. If pre-existing solid waste or hazardous materials contamination (including oil or gasoline contaminated soil, asbestos, chemicals, mine tailings, etc.) are encountered during the performance of work, the Permittee shall halt work in the affected area and immediately contact the CDOT regional permitting office for direction as to how to proceed.

h. Spills shall be reported immediately using the CDOT Illicit Discharge Hotline (303) 512-4446. Spills on the highway, into waterways, or that may otherwise present an immediate danger to the public, shall be reported by calling 911 or the Colorado State Patrol at (303) 239-4501, and the Colorado Department of Public Health and Environment at 1-(877) 518-5608.

20. RESTORATION OF RIGHT OF WAY

Prior to final acceptance, all disturbed portions of highway right of way shall be cleaned up and restored to their original condition, subject to CDOT approval. Seeding, sodding, and planting shall be as specified, or otherwise approved by CDOT. Construction, maintenance and watering requirements shall conform to the CDOT Standard Specifications. Where landscape restoration must be delayed due to seasonal requirements, such work may be authorized by separate permit. Permittee shall use only certified weed-free seed and mulch. Permittee shall clean equipment before transporting it into or out of the state to prevent the migration of noxious weeds.

21. OPERATION AND MAINTENANCE

a. Permittee agrees to own and maintain the installation permitted herein. The facility shall be kept in an adequate state of repair and maintained in such a manner as to cause the least interference with the normal operation and maintenance of the highway.

b. If any element of the transportation facility, constructed or replaced as a condition of this permit, fails within 24 months due to improper construction or materials, Permittee shall make all repairs immediately as notified in writing by CDOT.

c. Routine, periodic maintenance and emergency repairs may be performed under the general terms and conditions of this permit. CDOT shall be given proper advance notice whenever maintenance work will affect the movement or safety of traffic. In an emergency, the CDOT Region office and the State Patrol shall immediately be notified of possible traffic hazards. Emergency procedures shall be coordinated beforehand, where possible.

d. Maintenance activities requiring new excavation or other disturbance within highway ROW may require separate permit. Where highway construction or maintenance operations so require, Permittee will shut off lines, remove all combustible materials from the highway right of way, or provide other temporary safeguards.

22. MARKERS, LOCATION AIDS, LOCATION ASSISTANCE

a. The utility shall take all practical measures to ensure that buried utility facilities are surface-detectable by standard geophysical methods. Where the utility facilities, by the nature of their material properties, burial depth or other factors, may by themselves not be surface-detectable, the utility shall, where feasible, incorporate detection wire or other detection aids in the installation of those facilities. In instances where detection aids are not feasible or would be ineffective and surface-detectability cannot be ensured, surface markers shall be installed as directed by the Department and as-constructed plans and showing the accurate horizontal and vertical location of the buried facilities shall be provided to the Department.

b. All plowed or trenched installations must include color-coded (using the American Public Works Association color coding system) warning tape placed not less than 12 inches vertically above the top of the line. The warning tape shall be surface-detectable if needed to facilitate detection of the line.

c. The utility shall place readily identifiable markers at the right of way line where it is crossed by pipelines carrying transmittants which are flammable, corrosive, expansive, energized, or unstable, particularly if carried at high pressure or potential, except where a vent will serve as a marker.

d. The utility shall place markers for longitudinal underground facilities vertically above the facilities or at a known horizontal offset, unless otherwise approved in writing by the Department. Each marker shall provide a fore- and backsight to succeeding and preceding markers. Markers shall be installed at suitable intervals along tangent sections, at angle points or points of curvature and at reasonable intervals along curves.

e. The utility shall maintain any markers required by this Code for the life of the installation.

f. The Department may require the utility to submit "as-constructed" plans. The Department may enter into an agreement with the utility whereby the Department can rely on those plans for the exact location of the utility for any future excavations, and need not give notice to the utility under Article 1.5 of Title 9, C.R.S.

g. The utility will comply with the applicable requirements of Article 1.5 of Title 9 C.R.S., including any requirement to participate in the State's Notification Association pursuant to 9-1.5-105 C.R.S.. All owners of underground utilities within the SHROW, with the exception of the Department itself, must become members of the UNCC Notification Association.

h. In addition to complying with the provisions of Article 1.5 of Title 9 C.R.S (One-Call Statute) in response to the Department's notification of planned excavations, utility owners shall surface-mark their buried utility facilities that are located within the SHROW in order to facilitate Departmental engineering and design activities, upon reasonable request from the Department, and at no cost to the Department. The Permittee shall respond to such request within a reasonable timeframe acceptable to the Department, but no longer than 14 calendar days from the date of request, and the accuracy of the surface marking shall be within 18 inches of either side of the actual location of the buried facility.

23. ADJUSTMENTS DUE TO HIGHWAY CONSTRUCTION

If for any transportation purpose it becomes necessary to remove, adjust, or relocate this facility, Permittee will do so promptly, at no cost to the CDOT except as provided by law, upon written notice from CDOT and in accordance with the utility relocation permit issued to cover the necessary work. The utility shall perform the relocation at or within a time convenient to and in proper coordination with the project or transportation-related activity, to minimize public inconvenience and cost, as directed by the Department in the permit authorizing the relocation. The utility company shall pay for damages caused by the company's delay in the performance of utility relocation work or interference with the performance of transportation project work done by others. Such damages include, but are not limited to, payments made by the Department to any third party based on a claim that performance of the transportation project work was delayed or interfered with as a direct result of the utility company's failure to timely perform the utility relocation work. Damages resulting from delays in the performance of the utility relocation work or interference with the transportation project work that are caused by events beyond the utility company's ability to reasonably foresee or control (a force majeure) shall not be charged to the utility company.

24. ABANDONMENT, RETIREMENT, CHANGE IN OWNERSHIP

a. The Permittee shall notify the Department in writing of the planned retirement or abandonment of its facility or any portion thereof. The Department will notify the Permittee in writing if it determines that the facilities may be retired or abandoned in place, along with any special conditions that may apply.

b. Retired facilities shall remain the Permittee's sole responsibility, subject to all provisions of the Utility Accommodation Code and all of the terms and conditions of the permit issued for that facility, including maintenance and relocation requirements.

c. The Permittee shall promptly remove all abandoned facilities from the SH ROW and promptly restore the SH ROW to pre-existing or other conditions prescribed by the Department unless the Department in writing expressly allows the facility to remain in place. Written notice from the Department, allowing an abandoned facility to remain in place, may include special conditions.

d. If utility facilities are retired or abandoned in place, the utility shall comply with that decision if directed by the Department:

1) cap, plug or fill lines,
2) furnish suitable location records for any such buried facilities,
3) maintain its own records of such facilities and respond to locate notices/requests from the UNCC and/or excavators, In providing such locates, the utility will indicate to the requesting entity whether or not the subject facilities are retired or abandoned.
4) perform any other actions as deemed necessary by the Department to protect the transportation facility and/or the traveling public.

e. If the ownership of utility facilities is transferred, both the original Permittee and the new owner shall notify the Department in writing prior to the change in ownership, and such notice shall state the planned date of change in ownership. The notice from the new owner shall include a written statement accepting all terms and conditions of the existing permit, effective upon the planned date of the change in ownership.

f. Utility facilities containing asbestos may not be abandoned in-place. Ordinarily, such facilities must be removed from the SHROW when take out of service. On a case-by-case basis, the Department may allow such facilities to be retired in-place, with the owner retaining full legal ownership and responsibility for the facilities.

25. SUSPENSION AND CANCELLATION

a. The CDOT inspector may suspend operation due to:

1) Non compliance with the provisions of this permit
2) Adverse weather or traffic conditions
3) Concurrent transportation construction or maintenance operations in conflict with the permitted work.
4) Any condition deemed unsafe for workers or for the general public.

b. Work may resume when grounds for suspension no longer exist.

This permit is subject to cancellation due to:
1) Persistent noncompliance with permit provisions
2) Abandonment or transfer of ownership
3) Superseded by new permit covering the same installation
4) Conflict with necessary planned transportation construction.

c. Permittee must promptly terminate occupancy upon notice of cancellation of permit, unless a new permit is applied for and granted.

d. Where Permittee does not fulfill an obligation to repair or maintain any portion of the highway facility, or control and safely maintain the flow of traffic thereon, CDOT reserves the right, in lieu of canceling this permit, to accomplish the required work by any other appropriate means, and Permittee shall be liable for the actual costs thereof.

COLORADO DEPARTMENT OF TRANSPORTATION
Environmental Clearances Information Summary

PURPOSE - This summary is intended to inform entities external to CDOT that may be entering the state highway right-of-way to perform work related to their own facilities (such as Utility, Special Use or Access Permittees), about some of the more commonly encountered environmental permits/clearances that may apply to their activities. This listing is not all-inclusive - additional environmental or cultural resource permits/clearances may be required in certain instances. Appropriate local, state and federal agencies should be contacted for additional information if there is any uncertainty about what permits/clearances are required for a specific activity. **IMPORTANT – Please Review The Following Information Carefully – Failure to Comply With Regulatory Requirements May Result In Suspension or Revocation of Your CDOT Permit, Or Enforcement Actions By Other Agencies**

CLEARANCE CONTACTS - As indicated in the permit/clearance descriptions listed below, the following individuals or agencies may be contacted for additional information:

- Colorado Department of Public Health and Environment (CDPHE): General Information – (303) 692-2035
  Water Quality Control Division (WQCD): (303) 692-3500
  Environmental Permitting Website http://www.cdphe.state.co.us/permits.asp.
- CDOT Water Quality Program Manager: Rick Willard (303) 757-9343 http://www.coloradodot.info/programs/environmental/water-quality
- CDOT Asbestos Project Manager: Theresa Santangelo-Dreiling, (303) 512-5524
- Colorado Office of Archaeology and Historic Preservation: (303) 866-3395
- U.S. Army Corps of Engineers, District Regulatory Offices:
  Omaha District (NE Colorado), Denver Office (303) 979-4120 http://www.nwo.usace.army.mil/html/od-tl/tri-lakes.html
  Sacramento Dist. (Western CO), Grand Junction Office (970) 243-1199 http://www.spk.usace.army.mil/cespk-co/regulatory/
  Albuquerque District (SE Colorado), Pueblo Reg. Office (719)-543-6915 http://www.spa.usace.army.mil/reg/
- CDOT Utilities, Special Use and Access Permitting: (303) 757-9654 http://www.dot.state.co.us/Permits/

Ecological Resources – Disturbance of wildlife shall be avoided to the maximum extent practicable. Entry into areas of known or suspected threatened or endangered species habitat will require special authorization from the CDOT permitting office. If any threatened or endangered species are encountered during the progress of the permitted work, work in the subject area shall be halted and the CDOT Regional Permitting Office and Region Planning and Environmental Manager shall be contacted immediately. Authorization must be provided by CDOT prior to the continuation of work. Information about threatened or endangered species may be obtained from the CDOT website, http://coloradodot.info/programs/environmental/wildlife/guidelines, or the Colorado Division of Wildlife website http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/. Additional guidance may be provided by the appropriate Region Planning and Environmental Manager (RPEM).

Cultural Resources – The applicant must request a file search of the permit area through the Colorado Office of Archaeology and Historic Preservation (OAHP), Denver, to ascertain if historic or archaeological resources have previously been identified. Inventory of the permit area by a qualified cultural resources specialist may be necessary, per the recommendation of CDOT. If archaeological sites/artifacts or historic resources are known to exist prior to the initiation of the permitted work or are encountered as the project progresses, all work in the subject area shall be halted and the CDOT Regional Permitting Office and Region Planning and Environmental Manager shall be contacted immediately. Authorization must be provided by CDOT prior to the continuation of work. Additional guidance may be provided by the Regional Permitting Office and RPEM. ***Contact Information:*** Contact the OAHP for file search at (303) 866-3395.

Paleontological Resources - The applicant must request a fossil locality file search through the University of Colorado Museum, Boulder, and the Denver Museum of Nature and Science to ascertain if paleontological resources have been previously identified. Inventory of the permit area by a qualified paleontologist may be necessary, per the recommendation of CDOT. If fossils are encountered during the permitted work, all work in the subject area shall be halted and the CDOT Regional Permitting Office and Region Planning and Environmental Manager shall be contacted immediately. Authorization must be provided by CDOT prior to the continuation of work. Additional guidance may be provided by the Regional Permitting Office in the Permit Special Provisions. **Contact Information:** Contact the CDOT Paleontologist at (303) 757-9632.

Hazardous Materials, Solid Waste - The Solid Wastes Disposal Sites and Facilities Act C.R.S. 30-20-100, et al, and Regulations Pertaining to Solid Waste Disposal Sites and Facilities (6 CCR 1007-2), prohibit solid waste disposal without an approved Certificate of Designation (a landfill permit). The Colorado Hazardous Waste Act C.R.S. 25-15-301 et al, and the Colorado Hazardous Waste Regulations (6 CCR 1007-3) prohibit the transfer, storage or disposal (TSD) of hazardous waste except at permitted TSD sites. There are no permitted landfills or TSD sites within the State Highway Right of Way. Therefore, all solid or hazardous wastes that might be generated by the activities of entities entering the State Highway Right of Way must be removed from the ROW and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). If pre-existing solid waste or hazardous materials contamination (including oil or petroleum contaminated soil, asbestos, chemicals, mine tailings, etc.) is encountered during the performance of work, the permittee shall halt work in the affected area and immediately contact the CDOT Regional Permitting Office for direction as to how to proceed. ***Contact Info:*** Andy Flurkey, CDOT Hazardous Materials Project Manager, (303) 512-5520.

Asbestos Containing Materials, Asbestos Contaminated Soil – All work on asbestos containing materials (ACM) must comply with the applicable requirements of the CDPHE Air Pollution Control Division's (APCD) Regulation 8. Disposal of ACM, and work done in asbestos-contaminated soil, must comply with the CDPHE Hazardous Materials and Waste Management Division's (HMWMD) Solid Waste Regulations. The application for any CDOT permit must specifically identify any ACM involved in the work for which authorization is being requested. Additional guidance or requirements may be specified in the permit special provisions. ***Contact Info:*** CDPHE APCD and HMWMD Regulations can be accessed via the CDPHE Environmental Permitting Website listed above. Additional information **concerning clearance on CDOT projects** is available from the CDOT Asbestos Project Manager (303) 512-5519, or Theresa Santangelo-Dreiling, Property Management Supervisor (303) 512-5524.

Transportation of Hazardous Materials - No person may offer or accept a hazardous material for transportation in commerce unless that person is registered in conformance with the United States Department of Transportation regulations at 49 CFR, Part 171. The hazardous material must be properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized by applicable requirements, or an exemption, approval or registration has been issued. Vehicles requiring a placard, must obtain authorization and a State HAZMAT Permit from the Colorado Public Utilities Commission. ***Contact Information:*** For authorization and more info call the Federal Motor Safety Carrier Administration, US DOT for inter- and intra-state HAZMAT Registration (303) 969-6748. Colorado Public Utilities Commission: (303) 894-2868.

Discharge of Dredged or Fill Material – 404 Permits Administered By the U.S. Army Corps of Engineers, and Section 401 Water Quality Certifications Issued by the CDPHE WQCD - Corps of Engineers 404 Permits are required for the discharge of dredged or fill materials into waters of the United States, including wetlands. There are various types of 404 Permits, including Nationwide Permits, which are issued for activities with relatively minor impacts. For example, there is a Nationwide Permit for Utility Line Activities (NWP #12). However, depending upon the specific circumstances, it is possible that either a "General" or "Individual" 404 permit would be required. If an Individual 404 Permit is required, Section 401 water quality certification from the CDPHE WQCD is also required. Contact the appropriate Corps District Regulatory Office for information about what type of 404 permit may be required (contact information above). Contact the CDPHE Water Quality Control Division at (303) 692-3500.

Working on or in any stream or its bank - In order to protect and preserve the state's fish and wildlife resources from actions that may obstruct, diminish, destroy, change, modify, or vary a natural existing stream or its banks or tributaries, it may be necessary to obtain a Senate Bill 40 certification from the Colorado Department of Natural Resources. A stream is defined as 1) represented by a solid blue line on USGS 7.5' quadrangle maps; and/or 2) intermittent streams providing live water beneficial to fish and wildlife; and/or 3) segments of streams supporting 25% or more cover within 100 yards upstream or downstream of the project; and/or 4) segments of streams having wetlands present within 200 yards upstream or downstream of the project. The Colorado Division of Wildlife (CDOW) application, as per guidelines agreed upon by CDOT and CDOW, can be accessed at http://www.coloradodot.info/programs/environmental/wildlife/guidelines.

Stormwater Construction Permit (SCP) and Stormwater Discharge From Industrial Facilities - Discharges of stormwater runoff from construction sites disturbing one acre or more - or certain types of industrial facilities, such as concrete batch plants - requires a CDPS Stormwater Construction Permit. ***Contact Information:*** For Utility/Special Use activities being performed in conjunction and coordination with a CDOT highway construction contract, please contact the CDOT Water Quality Program Manager at (303) 757-9343. Otherwise, contact the CDPHE Water Quality Control Division at (303) 692-3500. Website: http://www.cdphe.state.co.us/wq/PermitsUnit/index.html.

Construction Dewatering (Discharge or Infiltration) – Discharges of water encountered during excavation or work in wet areas may require a Construction Dewatering Discharge Permit. ***Contact Information:*** For Construction Dewatering Discharge Permits, contact the CDPHE WQCD at (303) 692-3500. For Dewatering Application and Instructions, see Section 3 at the CDPHE website: http://www.cdphe.state.co.us/wq/PermitsUnit/FORMSandApplications/Appsandformsnewpage.html

Municipal Separate Storm Sewer System (MS4) Discharge Permit – Discharges from the storm sewer systems of larger municipalities, and from the CDOT highway drainage system that lies within those municipalities, are subject to MS4 Permits issued by the CDPHE WQCD. For facilities that lie within the boundaries of a municipality that is subject to an MS4 permit, the owner of such facility should contact the municipality regarding stormwater related clearances that may have been established under that municipality's MS4 permit. All discharges to the CDOT highway drainage system or within the Right of Way (ROW) must comply with the applicable provisions of the Colorado Water Quality Control Act and the Colorado Discharge Permit Regulations Permit # COS-000005 (http://www.coloradodot.info/programs/environmental/water-quality/documents/CDOT%20MS4%20Permit.doc/view) and COR-030000 (http://www.cdphe.state.co.us/wq/PermitsUnit/PERMITs/SWpermitsrats/SWConstructionPErmit.pdf). Discharges are subject to inspection by CDOT and CDHPE. Contact the CDPHE Water Quality Control Division at (303) 692-3500 for a listing of municipalities required to obtain MS4 Permits, or go to http://www.cdphe.state.co.us/wq/permitsunit/MS4/MS4Permittees.pdf.

General Prohibition – Discharges - All discharges are subject to the provisions of the Colorado Water Quality Control Act and the Colorado Discharge Permit Regulations. Prohibited discharges include, but are not limited to, substances such as wash water, paint, automotive fluids, solvents, oils or soaps and sediment. Allowable non-stormwater discharges can be found at http://www.coloradodot.info/programs/environmental/water-quality/glossary.html#AllowableDischarge. ***Contact Information****:* Contact the CDOT Water Quality Program Manager at (303) 757-9343, or the Colorado Department of Public Health and Environment, Water Quality Control Division at (303) 692-3500.

General Authorization - Allowable Non-Stormwater Discharges - Unless otherwise identified by CDOT or the WQCD as significant sources of pollutants to the waters of the State, the following discharges to stormwater systems are allowed without a Colorado Discharge Permit System permit: landscape irrigation, diverted stream flows, uncontaminated ground water infiltration to separate storm sewers, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, uncontaminated springs, footing drains; water line flushing, flows from riparian habitats and wetlands, and flow from fire fighting activities. ***Contact Information****:* The CDOT Water Quality Program Manager or the CDPHE Water Quality Control Division (telephone #'s listed above).

Erosion and Sediment Control Practices - For activities requiring a Stormwater Construction Permit, erosion control requirements will be specified through that permit. In those situations where a stormwater permit is not required, all reasonable measures should be taken in order to minimize erosion and sedimentation according to CDOT 208 specifications. In either case, the CDOT Erosion Control and Stormwater Quality Guide (most recent version) should be used to design erosion controls and to restore disturbed vegetation. ***Contact Information****:* The CDOT Erosion Control and Stormwater Quality Guide may be obtained from the Bid Plans Office at (303) 757-9313 or from: http://www.dot.state.co.us/environmental/envWaterQual/wqms4.asp

Disposal of Drilling Fluids - Drilling fluids used in operations such as Horizontal Directional Drilling may be classified as "discharges" or "solid wastes", and in general, should be pumped or vacuumed from the construction area, removed from the State Highway Right of Way, and disposed of at permitted facilities that specifically accept such wastes. Disposal of drilling fluids into storm drains, storm sewers, roadside ditches or any other type of man-made or natural waterway is prohibited by Water Quality Control and/or Solid Waste regulations. Small quantities of drilling fluid solids (less than 1 cubic yard of solids) may be left on-site after either being

separated from fluids or after infiltration of the water, provided: 1) the drilling fluid consists of only water and bentonite clay, or, if required for proper drilling properties, small quantities of polymer additives that are approved for use in drinking water well drilling; 2) the solids are fully contained in a pit, and are not likely to pose a nuisance to future work in the area, 3) the solids are covered and the area restored as required by CDOT permit requirements (Utility, Special Use, or Access Permits, etc.). ***Contact Information:*** Contact the CDOT / CDPHE Liaison or CDOT Water Quality Program Manager.
Concrete Washout - Waste generated from concrete activities shall NOT be allowed to flow into the drainage ways, inlets, receiving waters, or in the CDOT ROW. Concrete waste shall be placed in a temporary concrete washout facility and must be located a minimum of 50 feet from state waters, drainageways, and inlets. Concrete washout shall only be performed as specified by the CDOT Environmental Program and shall be in accordance to CDOT specifications and guidelines. ***Contact Information****:* Contact the CDOT Water Quality Program Manager at (303) 757-9343. Website: http://www.coloradodot.info/programs/environmental/water-quality/revised-m-standards; refer to the link *Revision of Sections 101, 107, 208, 213 and 620 Water Quality Control One or More Acres of Disturbance* for additional guidance.
Spill Reporting - Spills shall be contained and cleaned up as soon as possible. Spills shall NOT be washed down into the storm drain or buried. All spills shall be reported to the CDOT Illicit Discharge Hotline at (303) 512-4446 (4H20), as well as the Regional Permitting Office and Regional Maintenance Supervisor. Spills on highways, into waterways, any spill in the highway right-of-way exceeding 25 gallons, or that may otherwise present an immediate danger to the public shall be reported by calling 911, and shall also be reported to the CDPHE at 1-877-518-5608.
About This Form - Questions or comments about this Information Summary may be directed to Alex Karami, CDOT Safety & Traffic Engineering, Utilities Unit, at (303) 757-9841, alex.karami@dot.state.co.us.

Best management practices for industrial facility permittees

Industrial facilities can use best management practices during construction of the facility and when operating the facility. Best management practices are schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution entering CDOT's storm drain system. BMPs also include treatment, operating procedures, and practices to control site runoff, spillage or leaks, waste disposal, or drainage from material storage. BMPs include structural and nonstructural controls.

Resources for BMPs during construction of a facility

- EPA Storm Water Phase II Menu of BMP's
  http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm
- International Stormwater BMP Database
  www.bmpdatabase.org
- International Erosion Control Association
  www.ieca.org/resources/TS6ErosionSedimentControl.asp

Resources for BMPs during operation of a facility

- Industrial and Commercial Handbook
  www.cabmphandbooks.com/Industrial.asp
- Industrial Facilities Best Management Practices
  www.ci.santa-cruz.ca.us/pw/Stormwater2004/Att16.pdf
- Best Management Practices for Industrial Storm Water Pollution Control
  www.emd.saccounty.net/Documents/Info/Sacramento%20Industrial%20BMP%20Manual%20Nov.pdf

For more information on CDOT Utility Permits:
www.dot.state.co.us/UtilityProgram/

For more information on CDOT Access Permits:
www.dot.state.co.us/AccessPermits/index.htm

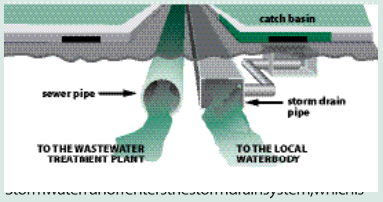
For more information on CDOT's Water Quality Program:

Contact: Water Quality Program Manager
4201 East Arkansas Avenue
Shumate Building
Denver, CO 80222

303-757-9343

CDOT's stormwater program website: www.cdoth2o.com
CDOT Illicit Discharge Hotline: 303-512-4H2O (4426)

Water Quality Program
INDUSTRIAL FACILITIES PROGRAM



differentfromthewastewatersystem.Stormwaterrunoff drains to waterways untreated.

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like roads and sidewalks prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into CDOT's storm drain system or directly into a stream, river, lake, wetland, or reservoir. Anything that enters CDOT's storm drain system is discharged untreated into the waterways we use for fishing, swimming, and providing drinking water.

CDOT has a permit from the Colorado Department of Public Health and the Environment (CDPHE) to discharge stormwater from its storm drain system. The permit states that only stormwater (and a few other allowable discharges like landscape irrigation overflow) can be discharged from CDOT's storm drain system. Pollutants, such as dirt; fertilizers; pesticides; and oil and grease, antifreeze; and other automotive fluids are strictly prohibited from being disposed of in CDOT's storm drain system.

As part of the permit, CDOT has several different programs to prevent pollutants from entering the storm drain system. The programs are:

- Construction sites program
- New development and redevelopment program
- Illicit discharges program
- Industrial facilities program
- Public education and involvement program
- Pollution prevention and good housekeeping program
- Wet weather monitoring program

CDOT has a program to identify and eliminate any discharge to their storm drain system that is not composed entirely of stormwater (unless authorized by another permit from CDPHE). Allowable discharges into CDOT's storm drain system include the following:

- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration to separate storm sewers
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Individual residential swimming pool and hot tub discharges
- Individual residential street washing
- Water-line flushing
- Flows from riparian habitats and wetlands
- Flows from emergency fire fighting activities
- Water incidental to street sweeping (including associated side walks and medians) and that is not associated with construction

CDOT's Utility and Access Permitting Program

The Utilities (www.dot.state.co.us/utilitiesprogram) and Access Permitting Programs (www.dot.state.co.us/Accesspermits) are responsible for providing services in the following areas:

- Utility/Highway Project Coordination—Region utilities engineers work with other CDOT employees and utility companies to identify the utilities that are within highway project boundaries and coordinate any necessary relocation of these facilities to facilitate highway construction activities.
- Utility and Special Use Permitting—Utility and Special Use Permits are issued to entities external to CDOT to manage the installation of utilities, or the performance of other types of work, within the state highway right-of-way.
- Access Permits—Access Permits are required by any entity when a vehicle access needs to be constructed, modified, or relocated within the highway right-of-way.

CDOT does not permit or track indirect connections (e.g., overland flow) to its storm drain system.

Industrial Facilities Program Elements

The goal of the Industrial Facilities Program is to do the following:

1. Educate those directly discharging into CDOT's storm drain system
2. Track direct dischargers
3. Detect and remove any illicit discharges
4. Submit an annual report to CDPHE containing the number of informational brochures distributed, and a summary by region of the number of Utility and Special Use Permits and Access Permits issued.

Education

There are instances when a utility company or other entity doing work in the state highway right-of-way will require some type of environmental permit or clearance for that work. CDOT has put together an Environmental Clearances Information Summary for those applying for a CDOT Utility and Special Use Permit or Access Permit to obtain all required clearances. This fact sheet is given to each permittee and is available at www.dot.state.co.us/UtilityProgram/Announcements/Announcements.cfm#enviro and www.dot.state.co.us/AccessPermits/index.htm.

In addition, CDOT's MS4 permit requires the development of an additional brochure that promotes the "proper management of potential pollutants in stormwater discharges from industrial facilities" and includes "references to guidance manuals for BMPs that industries can implement to protect stormwater quality." This fact sheet was developed in 2007 and is given to each permittee. This fact sheet is available at www.dot.state.co.us/environmental/envWaterQual/WhatcanIdo.asp.

Tracking

CDOT tracks all Utility and Special Use and Access permittees.

Illicit Discharges

Another requirement of the MS4 permit is a program to detect and remove illicit discharges and improperly disposed of materials from CDOT's storm drain system. Inspections may be conducted in response to the permitting process, a report of unpermitted work in CDOT's right-of-way, or a reported illicit discharge. If CDOT employees see or suspect that an industrial facility is discharging an unallowable pollutant into CDOT's storm drain system, they should call 303-512-4H2O (CDOT's illicit discharge hotline).

Annual Reporting

Regions 1, 2, and 6 submit to CDOT headquarters the number of permits issued each year for its annual report to CDPHE.

CDOT defines a utility or utility facility as any privately, publicly, or cooperatively owned line, facility, or system producing, transmitting, or distributing the following

- Communications
- Cable television
- Power
- Electricity
- Light
- Heat gas
- Oil
- Crude products
- Water
- Steam
- Waste
- Stormwater not connected with highway drainage
- Other similar commodity

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION
Region 3 Traffic & Safety
Utility Permit Section
222 South 6th Street, Room 100
Grand Junction, Colorado 81501
(970) 683-6271

LATE FALL, WINTER AND SPRING SPECIAL PROVISIONS FOR WORK WITHIN CDOT ROW

It's that time of year again when work within the Right of Way (ROW) becomes a special concern. Due to Northwest Colorado's unpredictable weather, work in the ROW can create several types of hazards for the traveling public, contractors, and their personnel. The condition of the highway can change quickly. Mud tracked onto the highway by equipment, or ice and snowpack are just a few of the conditions that make the roadway more hazardous for all concerned. The terrain within the ROW must be kept clear of hazards as well. Holes, trenches, equipment and materials can make the terrain "unrecoverable" for a driver should his/her vehicle leave the highway. **Activities must be shut down when the roadway is other than dry.** The use of frozen materials for backfilling will only lead to settlement. The contractor must make extra effort to compact the excavation. In the spring, any settlement of backfill shall be repaired. The re-vegetation shall take place yet this fall or early next spring.

REGION 3 GUIDELINES
for Utility Permits
for Trenchless Technology Construction

A. Definitions

CDOT Utility and Special Use Permit Coordinator (CDOT Project Manager) - CDOT person authorized to write the Utility or Special Use permit for this project and administer the day to day construction activities of this permit.

Drill Superintendent - The person identified by the trenchless technology Contractor as being the Superintendent on site, in charge of day to day operations.

Engineer of Record - A Professional Engineer who, in the design phase, develops the report, design or exploratory drilling criteria, performs analysis as required, and is responsible for the preparation of the engineering documents and recommendations. During the construction phase, the Engineer of Record provides expertise to CDOT, is the communication liaison between CDOT and the Permittee and supervises the bore inspectors.

Frac out - An unintentional release of drill fluids into surface waters, subsurface locations or onto the surface of the ground or roadway. These fluids are the responsibility of the Permittee to mitigate. When a frac out occurs, it is the Permittee's responsibility to stop all work, notify the CDOT Project Manager and appropriate regulatory agency and comply with any requirements from these agencies.

Local Agency - City and/or County staff who may issue permits with additional requirements for the Permittee.

Professional Engineer - An Engineer registered in the State of Colorado, supplying expertise in specific subject areas. This documents references these different specialties: Geotechnical Report, bore pipe design, hydraulics engineer, construction expertise and construction inspection. Depending on the situation, the Permittee may engage multiple Professional Engineers to fulfill the permit requirements.

Third party representative - Defined in 2 C.C.R. 601-18, section 2.2.4 Utility Permits Requiring Third Party Approval:

1. A US Forest Service or Bureau of Land Management representative will be named by the agency to oversee the project where Colorado Department of Transportation (CDOT) highway Rights of Way are on Forest Service or Bureau of Land Management property. The roles and responsibilities of the federal agencies and CDOT are defined in the current Memorandum of Understanding between the Forest Service, Bureau of Land Management and Colorado Department of Transportation.
2. **National Park Service…**
3. State Land Board will assign a representative as the contact person to oversee the project where Colorado Department of Transportation (CDOT) highway is on State Land Board property.
4. Provisions of State Utility Code Section 2.2.4.1.1 applies in these cases.

Traffic Control Supervisor – An individual meeting the requirements of Section 630, Traffic Control Management of the Standard Specifications for Road and Bridge Construction, latest edition.

Trenchless technology - The installation of conduits beneath roadways without open-cutting as referenced in NCHRP Synthesis 242, *Trenchless Installation of Conduits Beneath Roadways*.

Trenchless technology inspector (Inspector) - Professional staff who is hired by the Permittee.

Trenchless technology contractor (Contractor) - The specialty contractor selected by the Permittee to conduct trenchless installation activities.

C. Excerpted from *Construction Specifications for Highway Projects Requiring Horizontal Earth Boring and/or Pipe Jacking Techniques*

Auger method - This method involves the process of simultaneously jacking a casing through the earth while removing the spoil (soil) inside the encasement by means of a continuous rotating flight auger. The auger Horizontal Earth Boring method is traditionally classified as : (1) track-type or (2) cradle-type. The major components of the track type system include the track system, machine, casing pipe, cutting head and the augers. The cradle-type machine is supported by the trailing end of the casing pipe, eliminating the need for the track system. However, hoisting equipment are required to support the casing pipe as the Trenchless Excavation Construction proceeds. Optional additional components of the system include a bentonite lubrication system, a steerable (grade control) head, a casing leading edge band, a water internal injection system and a ditch water level indicator. Four major factors of concern include (1) minimizing torque, (2) minimizing thrust, (3) locating the leading end of casing, and (4) being able to control the direction of the leading end of the casing. The steerable (grade control) head and the ditch water level system are not applicable to the cradle-type methods.

Compaction method - This method forms the borehole by compressing the earth that immediately surrounds the compacting device. The soil is not removed, it is displaced. This method is only applicable to small diameter lines (i.e. less than 6 inches) in compressible soil conditions. This method is divided into three sub-classifications which are: (1) push rod method, (2) rotary method and (3) percussion (impact) method. These methods are commonly referred to as expansive installation techniques, which mean that the volume of the installed pipe exceeds the volume of the excavated soil. Although these techniques have been used for many years, their use has been limited because of their inherent unpredictable degree of accuracy. Improved location and steering systems have been developed within the past few years that have reduced the risk and extended the allowable distance that may be accomplished with these methods.

Slurry Horizontal Rotary Drilling (SRD) method - This method is distinguished from horizontal auger boring in that it uses drill bits and drill tubing in lieu of augers and cutting heads. A drilling fluid (such as a bentonite slurry, water, or air) is used to facilitate the drilling process by keeping the bit clean and aiding in spoil removal. Because a drilling fluid is used, this method is often confused with the jetting method; however, unlike the jetting method, the Slurry Horizontal Rotary Drilling method does not use the drill fluid to cut the face or to wash out a hole. The face is mechanically cut with a drill bit and washouts are prevented by controlling the drill fluid rate of flow and pressure. Slurry Horizontal Rotary Drilling offers the distinct advantage of being able to install a small diameter pilot hole before the main bore hole is developed. This ensures the accuracy of line and grade. The Slurry Horizontal Rotary Drilling method is primarily suited for small diameter (up to 6 inches) sizes, although larger sizes are installed where soil conditions permit. The recommended bore length is a function of soil conditions but it should be limited to approximately 40 feet unless drill bit location and directional control systems are used.

Water jetting method - This method uses the principle of soil liquefaction to create a borehole. Water pressure and flow rate create a jetting action that places the soil in a quick (liquid) condition for the purpose of eroding the borehole. This method requires a minimum investment in equipment. The equipment includes a source of pressurized water, a flexible

hose, a probe, and a nozzle. The probe is usually a rigid small diameter pipe that is used to direct the water as it cuts or washes out a borehole. Although this method is simple and economical, it has serious adverse long term effects associated with significant subsidence problems. Many organizations have banned its use.

Pipe ramming method - This method uses a percussion (impact) tool as a driving hammer to force direct burial of pipe. The two basic methods are closed face and open face. The closed face method utilizes the soil expansion principle, which does not require removal of the soil. The open face method uses the same equipment but the spoil is removed from within the pipe. Bentonite may be used to reduce skin friction. Accuracy is a function of soil conditions and the presence of obstructions. Directional control is dependent upon the degree of accuracy established during the initial set up. Casing leading edge detection systems have been used with success, but they are not commonly used.

Directional drilling method - This method is an outgrowth of the technology and methods that have been developed for the directional drilling of oil wells. Use of these techniques, which have revolutionized complicated pipeline river crossings, are also viable for highway and railroad crossings. The two-stage directional drilling process consists of: (1) drilling a small diameter pilot hole along the desired centerline of the proposed pipeline, (2) enlarging the pilot hole to the desired diameter to accommodate the pipeline. The pilot hole is drilled with a specially built drill rig that allows the drill string to enter the ground at an angle of entry that can vary from 5 to 30 degrees; however the optimum angle is 12 degrees. The drill rig forces the drill stem into the ground, and bentonite drilling mud is pumped through the drill stem to a down hole motor located behind the bit. The drill mud operates the down hole motor, functions as a coolant and facilitates spoil removal by washing the cuttings to the surface where they settle out in a retention pit. The drill stem is approximately 3 inches in diameter, nonrotating, and contains a slightly bent section which is called a bent housing. The bent housing is used to create a steering bias. A curved or a straight profile is achieved by steering the drill rod as it is being pushed into the ground. The steering is controlled by positioning the bent housing. The pilot hole path is monitored by a down hole survey system that is located behind the bent housing and provides data on the inclination, orientation and azimuth of the leading end. This data is transmitted to the surface where it is interpreted and plotted. During the drilling operation, a 5-inch diameter steel washover pipe is rotated over the pilot drill stem to relieve friction, resist pressure caused by the cuttings mixed with the drill mud, and provide rigidity to the pilot drill stem. Bentonite slurry is pumped between the washover pipe and the pilot drill stem. The rotation of the washover pipe allows the diameter of the borehole to be increased to approximately 11 inches. The pilot drill stem is withdrawn through the washover pipe after the pilot hole has been constructed. Reaming devices are attached to the washover pipe and pulled back through the pilot hole to enlarge it to the desired diameter for the pipeline.

Micro-tunneling method - These methods of horizontal earth boring employ the use of highly sophisticated, laser-guided and remotely controlled equipment that can be monitored and accurately adjusted for alignment and grade. This classification group applies to sizes of lines up to 36 inches that are too small for workers to work inside of efficiently. Larger machines of this type are also used for jacking larger size pipe, which may employ workmen to remove the spoil material, but the term Microtunneling does not apply. The state-of-the-art technology of this equipment permits it to be used to install small diameter pipelines in soft, unstable, water-bearing soils. This is accomplished automatically and continuously by the mechanical earth pressure counter-balance system that coordinates excavation speed, cutting face pressure and thrust force. This permits operation in water saturated sands, silts, clays, and gravels without dewatering or compressed air. The system utilizes a slurry pumping system to transport the

excavated material from the cutting face to the disposal process. All systems are electronically monitored and controlled from a single operation panel.

I-70 Eastbound lanes- Void resulting from incorrect construction of 20 inch High Pressure Gas bore

D. Geotechnical Report

For all bores over 10 inch in diameter, or in location identified by CDOT as possible problematic areas, a Geotechnical Report (Report) will be required. If there is more than one bore for the same project, the Report will include the all bores. Prior to starting on the Report, the Permittee is required to hold a pre-geotechnical investigation meeting to discuss requirements of the Report. The Permittee must give the CDOT Project Manager a minimum of 10 working days notice when requesting a meeting. Required participants are the Geotechnical Engineer, a representative from the Permittee's organization, the CDOT Project Manager and the Traffic Control Supervisor.

The Geotechnical Report shall be prepared under the direction of, and sealed by, a Professional Engineer. The report shall be submitted in both hard copy and electronic format. The electronic copy will be kept on file for future reference both internally within CDOT and externally.

The intent of this document is to produce a report that is useful to the drilling contractor. The report will provide information to guide the trenchless technology Contractor in (1) determining the drilling characteristics of the in site materials and aid in the selection of the drilling method, (2) development of a schedule for the drilling operation, (3) alerting the Contractor to possible drilling challenges, (4) providing a longitudinal profile that will be as-built by the Contractor.

An example Agenda is included in Appendix A. Agenda items for discussion and decisions at the meeting

prior to the drilling for the Geotechnical Report shall include:

1. Construction plans.
   A. Location and planned depth of bore
2. Site conditions
   A. Describe the physical location such as accesses with the vicinity of both bore pits, bike paths, parks, bridges, structures or other significant item pertaining to the geotechnical investigation or installation of bore.
   B. Vegetation and proximity to surface waters.
   C. Care should be taken to identify environmental concerns.
   D. Terrain
   E. Number and location of bore holes. Discuss geotechnical hole backfill method.
3. Geology
4. Geologic Hazards
   A. Slope Instability
   B. Erosion
   C. Groundwater table
   D. Seasonal or rain event related flooding
   E. Expansive or collapsing soils
   F. Faults
   G. Mine tailings
5. Subsurface condition
6. Laboratory test results
   A. Design parameters for selected casing or cathodic protection
   B. Geochemical (water soluble sulfate, chloride content, pH, electro-conductivity, etc.)
7. Conclusions and recommendations
   A. Concrete
   B. Excavation and shoring
   C. Adverse weather conditions (rain, runoff, ponding)
   D. Boring (environmental concerns, groundwater, soil properties affecting the bore)
8. Sources of information, data and references.

E. Geotechnical meeting decisions

1. The geotechnical investigation shall extend a reasonable distance beyond the start and end of each bore. This distance will be decided on at the meeting. The length shall be such that if the bore needs to be deepened (and therefore lengthened) in the field, the Contractor will have adequate subsurface information to complete a successful bore without needing to do additional exploratory drilling.
2. The minimum depth of the exploratory holes will be decided upon at the meeting. The depth should be a minimum of 5 feet below the expected bore elevation. However, experience in the Eagle River Valley suggests that the exploratory holes should be drilled a minimum of 10 feet below the expected bore elevation to accommodate field changes in depth.
3. A minimum of three exploratory holes will be required, one at the beginning, middle and end of the bore. Ideally, there will be one exploratory hole at the maximum depth of the bore, and for long bores, exploratory holes would be spaced every 500 feet. The number, location and minimum depth of the exploratory holes will be determined at the meeting and will depend on the total length of the bore, site conditions, and other factors. All holes shall be offset from the centerline of the bore by a distance equal to twice the diameter of the final bore. This is to prevent frac out through these exploratory holes during the bore installation.
4. The content of the Geotechnical Report will be determined at the meeting and will be dictated by the complexity of the installation. The characterization of the drill logs shall be shown along the

profile of the bore. The profile shall show CDOT infrastructure, known utilities and water level. The profile will be drawn to scale. This document will be produced by the Geotechnical Engineer in a format such that when it is handed off the Permittee, the Contractor will be able to as-built it.

5. The Permittee shall take notes at this meeting and distribute them to all participants and interested parties within 1 week after the meeting.

F. Pipe Design for Bores

The Utility Accommodation Code requires that all permits, leases easements and other regulatory requirements be completed prior to the CDOT utility permit being issued. Applicants are cautioned to determine ownership of land early in the process. If the pipeline crosses Forest Service, Bureau of Land Management, National Park Service or Colorado State Land Board managed lands, there are additional steps required which will impact the timeline of the CDOT permit process.

1. If this project is on Forest Service or Bureau of Land Management lands, the Memorandum of Understanding defines the relationship between these federal agencies and CDOT. NEPA requires that the decision document be signed prior to final design taking place.
2. **If this project is on National Park Service lands, …** National Park Service lands for Region 3 include:
    a. Black Canyon of the Gunnison
    b. Colorado National Monument
    c. Old Spanish National Historic Trail (two locations)
    d. Whitewater Boat launch
    e. Holly Park (Uncompaghre RiverWay Trail), west of 550, on Otter Road. Inline skate park, trail, picnic facilities, rest rooms
    f. Curecanti National Recreation Area

The State Utility Code contains additional requirements for pipe design if bores cross under CDOT infrastructure. These requirements may be extended to longitudinal placement not under the travel lanes but still within CDOT Right of Way, as determined by CDOT (e.g., when additional lanes are going to be added to an existing highway.) There are other regulations that also apply to pipe design. For Region 3, the Permittee needs to comply with these requirements:

1. The design shall be stamped by the Engineer of Record.
2. The design shall include a typical section showing backfill materials and method for the entry and exit pits.
3. Design must be for CDOT traffic live loads. Discuss the differences between AASHTO loads and CDOT design live loads if necessary.
4. The design shall include the following scenarios (as applicable to the situation):
    A. Installation in a slide area. There are two situations which occur in Region 3:
        - Along the toe of active slide areas (for example, the slide complex at the intersection of US-6 and SH-24). This scenario puts the pipeline in tension and compression as the slide moves against the pipe. Discuss the need for long term stress relief and how this will be accomplished.
        - Installation along the length of the active slide area (for example, SH-139 Douglas Pass). This scenario put the pipeline in tension as the slide moves downhill and pulls the length of the pipe. Discuss the need for long term stress relief and how this will be accomplished.
    B. Trenchless technology (bores) installations which may experience erosion or downcutting when bores are under waterways. If exposed, the pipe may fail due to several causes (e.g., the 1,000 gallons of crude that Exxon spilled into the Yellowstone River in 2011.) Permittee may need to engage a hydraulics engineer to estimate how much erosion or downcutting may take place over the life of the utility.
    C. Special case: Burial in a roadway going under an overpass (either highway or railroad). This scenario is an impact force on the pipeline when a vehicle or railroad car leaves the upper

road surface and impacts the lower highway. Region 3 has documented two different situations where vehicles were on an elevated structure above the highway and during the incident, vehicles left the elevated structure and impacted the highway below.

G. Pipe Design for Bores - High Pressure Natural Gas Pipelines

For Region 3, the Permittee needs to comply with these requirements:

1. The design shall specify coating(s), pipe wall thickness and grade of steel for both the bore and the pipe that is being connected to the bore.
2. The design shall include a chart similar to the one below, reflecting the following requirements: MAOP shall be specified by the Permittee and will be made part of the special provision of the permit. Design factor shall be **0.40** and the Class shall be **4.** CDOT Project Manager will use this chart to review and accept the design requirements per section 3.3.11.1.2 of the Code.

Line Size: 16" MAOP is 1200 psi

at Design Factor of 0.60, Class 2

	Wall Th.	Material Grade					
		Gr. B	X-42	X-52	X-60	X-65	X-70
	0.250	656	788	975	1125	1219	1313
Std/Sch40	0.375	984	1181	1463	1688	1828	1969
X Hvy	0.500	1313	1575	1950	2250	2438	2625
	0.625	1641	1969	2438	2813	3047	3281
	0.750	1969	2363	2925	3375	3656	3938
Sch 80	0.844	2216	2659	3292	3798	4115	4431
	Calculated minimum wall th.						
		0.457	0.381	0.308		0.246	0.229

H. Contractor qualifications

The permit special provisions will specify the minimum qualifications for the trenchless technology Contractor and when this documentation is to be submitted to the CDOT Project Manager.

I. Preconstruction Conference

Prior to the start of Trenchless Technology installation, the Permittee shall hold a Preconstruction Conference, however, the required attendees will need to be notified 5 working days minimum in advance of the meeting. The Conference shall be scheduled within 2 working days prior to the start of the drilling operations. Mandatory attendees shall include the Professional Engineer for construction services, Inspector(s), Contractor's Superintendent, Traffic Control Supervisor, CDOT Project Manager and third party representatives (if applicable). The Permittee shall discuss all items in the Preconstruction Agenda and take and distribute meeting minutes. The meeting minutes and submittals shall be submitted to the CDOT Project Manager prior to the Contractor mobilizing. A suggested Preconstruction Agenda is included in Appendix A.

1. Permittee shall submit the Contractor's proposed method of trenchless technology construction. This method shall be based on the Geotechnical Report. CDOT reserves the right to reject the method of installation that has insufficient preliminary site characterization or unsound recommendations.
2. The Permittee shall submit the Contractor's project schedule. The schedule may be a bar chart. At a minimum, the schedule should include number of days, work times, and holidays and weekends not worked.
3. The Permittee shall submit the Contractor's Methods Statement per Section 108, CDOT Standard Specifications for Road and Bridge Construction, current edition. At a minimum, the Methods

Statement should include:

- anticipated rig capacity
- proposed equipment
- method for advancing the borehole through expected soil conditions
- angles, depth and the location of the exit ditch
- pilot hole diameter
- the proposed reaming plan, including the number and diameter of pre-reams/back-reams, and diameter for the final reamed borehole
- contingency equipment
- plans for dealing with soil conditions that could reasonably expect to be encountered at the proposed installation site
- anticipated hours of operation during the drilling and installation process
- minimum number of personnel, and their responsibilities on-duty and on-site during all drilling operations.
- method and location of disposal of waste material
- construction testing and post installation testing of pipe
- spill prevention and mitigation measures
- lighting plan in the event that the drilling operation must proceed after civil twilight.
- personnel contact list including name, title, responsibilities on-duty and on-site during all drilling operations, 24 hour contact phone number, e-mail address and fax number (if applicable.)

4. The Permittee shall submit the Contractor's Project Safety Management Plan. The plan shall comply with provisions in Section 107 CDOT Standard Specifications for Road and Bridge Construction, current edition.
5. The Permittee shall submit the Contractor's detailed Fracture Mitigation (frac out) Plan. This plan shall include:
    - method of monitoring and capturing the return of drilling fluids with particular attention to prevention of inadvertent escape of drilling fluids where they could undermine structures or enter a surface body of water.
    - contact list of agencies that will be notified if a frac out occurs.
    - communications flow when a frac out occurs.
    - MSDS sheets
6. A pre & post boring surface survey will be submitted to CDOT for reference to highway movement as a result of the bore.

J. Roles, Responsibilities and Qualifications of Inspector

The Inspector's work shall be under the direction of the Engineer of Record. The Inspector will communicate directly with CDOT Project Manager when unusual circumstances occurs on the drill site. The Inspector's only duty is to protect the CDOT infrastructure and this individual will not be assigned other project duties and responsibilities without prior approval by the CDOT Project Manager.

The Inspector's responsibilities shall include project communication, documentation and status updates to the Engineer of Record. Specifically, the duties shall include:

- Provide daily inspection reports to the Engineer of Record.
- If drilling difficulties are encountered, the Inspector shall immediately notify the Engineer of Record and CDOT Project Manager.
- The Inspector is expected to provide onsite monitoring of the project drilling operations any time they are occurring.
- The Inspector must be available 24 hours a day, 7 days a week, and 365 days a year by cell phone to the Drill Superintendent.
- Report unusual circumstances or any delays immediately to Engineer of Record and CDOT Project Manager. Examples of unusual circumstances include settlement of the highway or shoulder, frac out, drill equipment stuck, on-site accidents, unusual or large amounts of material

being removed or used in the drilling operation, local environment (rivers, railroads, or highways) being impacted by operations, and severe weather or geologic conditions impacting operations.
- Maintain a daily diary of visitors, weather, and general drilling operations. Collect daily diary from Drill Superintendent and review for accuracy and completeness. Transmit both Inspector and Drill Superintendent daily diaries to Engineer of Record on a daily basis.
- Take meeting notes and transmit a copy to the Engineer of Record.
- Monitor the existing ground and surface water for movement or frac out fluids during the drilling, reaming and pullback processes. The installation process shall cease immediately if movement is detected. The situation shall be immediately reported to the Engineer of Record and CDOT Project Manager.
- Review and monitor lighting plan if drilling operations are after civil twilight or before civil daylight.

K. Roles, Responsibilities and Qualifications of the Professional Engineer of Record for the bore

This individual shall be a Professional Engineer registered in the State of Colorado and will act as the Engineer of Record for the bore. This individual communicates directly with CDOT Project Manager. The Engineer of Record's only duty is to protect the CDOT infrastructure and this individual will not be assigned other project duties and responsibilities without prior approval by the CDOT Project Manager.

- Report all frac out situations and other unusual circumstances and report the situation immediately to the CDOT Project Manager. coordinate with the Inspector on the cleanup of the frac out material. Produce a stamped report to CDOT detailing the incident and providing photographs as needed.
- Transmit Inspector daily diaries, Drill Superintendent daily diaries and meeting notes to CDOT Project Manager on a routine basis.
- Monitor the hours the Inspector is working. If the work time is excessive, the Engineer of Record will process a timely request to the Permittee to supply additional inspectors.
- Supervise second inspector if there is more than one drill site or if operations needs to proceed 24 hours a day due to site conditions.
- ? Monitor survey along bore alignment for humping and settlement of in situ material. Notify CDOT immediately when either condition is experienced.

L. Operations during boring

Drill Superintendent shall keep a Daily Log and shall turn in a copy to the Inspector by the next morning. The Daily Log should include the following information:

- drill fluid (type, manufacturer)
- drill equipment (specific type, manufacturer and size)
- dewatering equipment
- all other equipment (such as front end loaders) on site
- name and position of employees
- weather
- conditions encountered in drill (in-situ material, groundwater, unidentified utilities)
- problems encountered and solutions initiated
- time of drilling activities (morning start up, start of actual drilling, down time and reason)
- names, employing organization and title of on-site inspectors and visitors
- pipe specification and welding method used

The Drill Superintendent shall notify the Inspector immediately when the drilling operations encounters a problem.

Operations may be extended to 24-hour per day operation, if needed, with prior CDOT approval. Lighting shall be required for the entire length of the drilling during night time work. The intent of this is for the project personnel to quickly determine if the drilling operation encounters a problem. This will

The Contractor shall establish a Survey Grid Line and provide a program of monitoring and documenting the actual location of the borehole during drilling operations. The intent of this requirement is to upload the information into the CDOT geospatial software.

M. Post boring requirements

Submit all outstanding documents and as-built drawings including both horizontal and profile plans to CDOT Project Manager.

N. References

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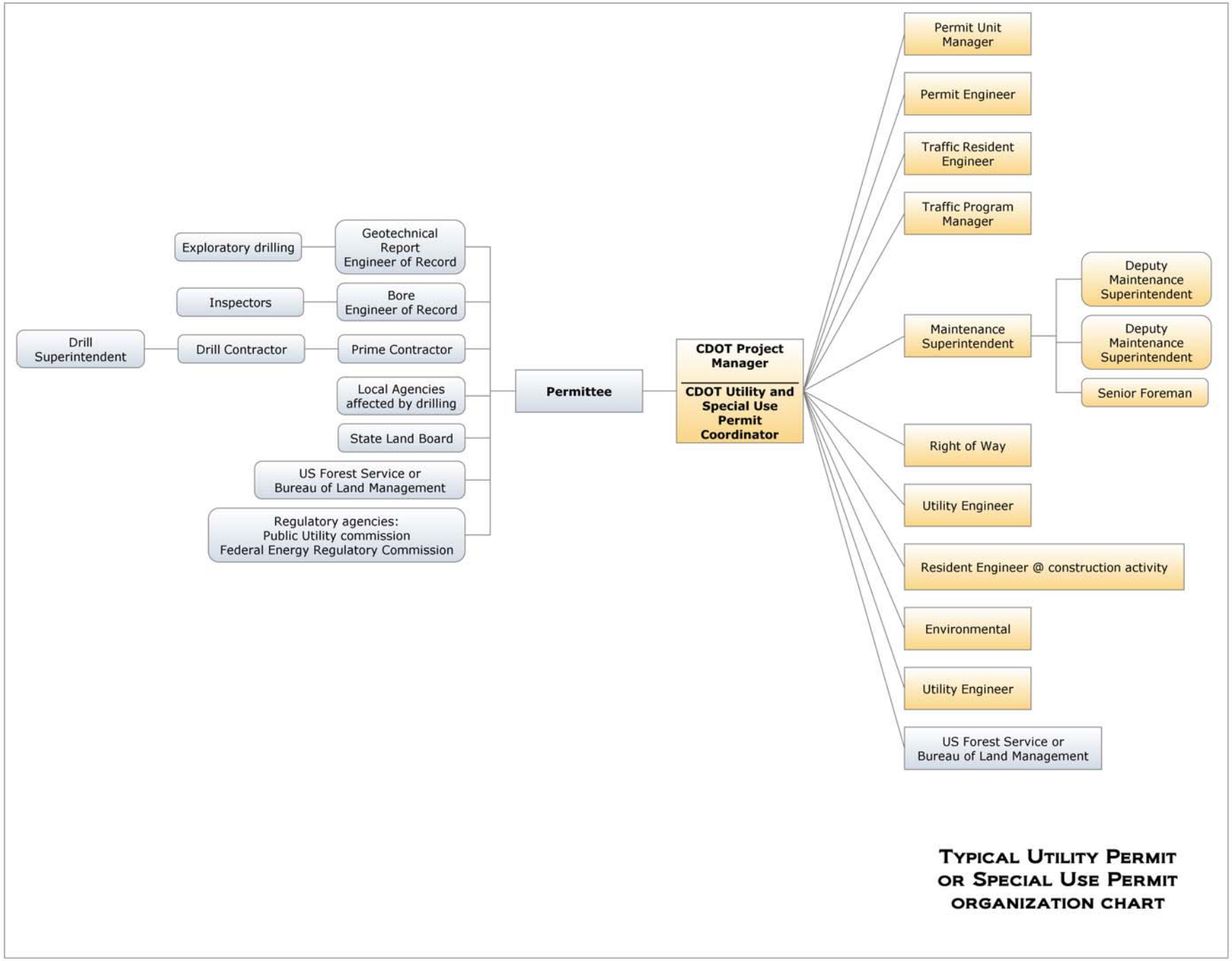
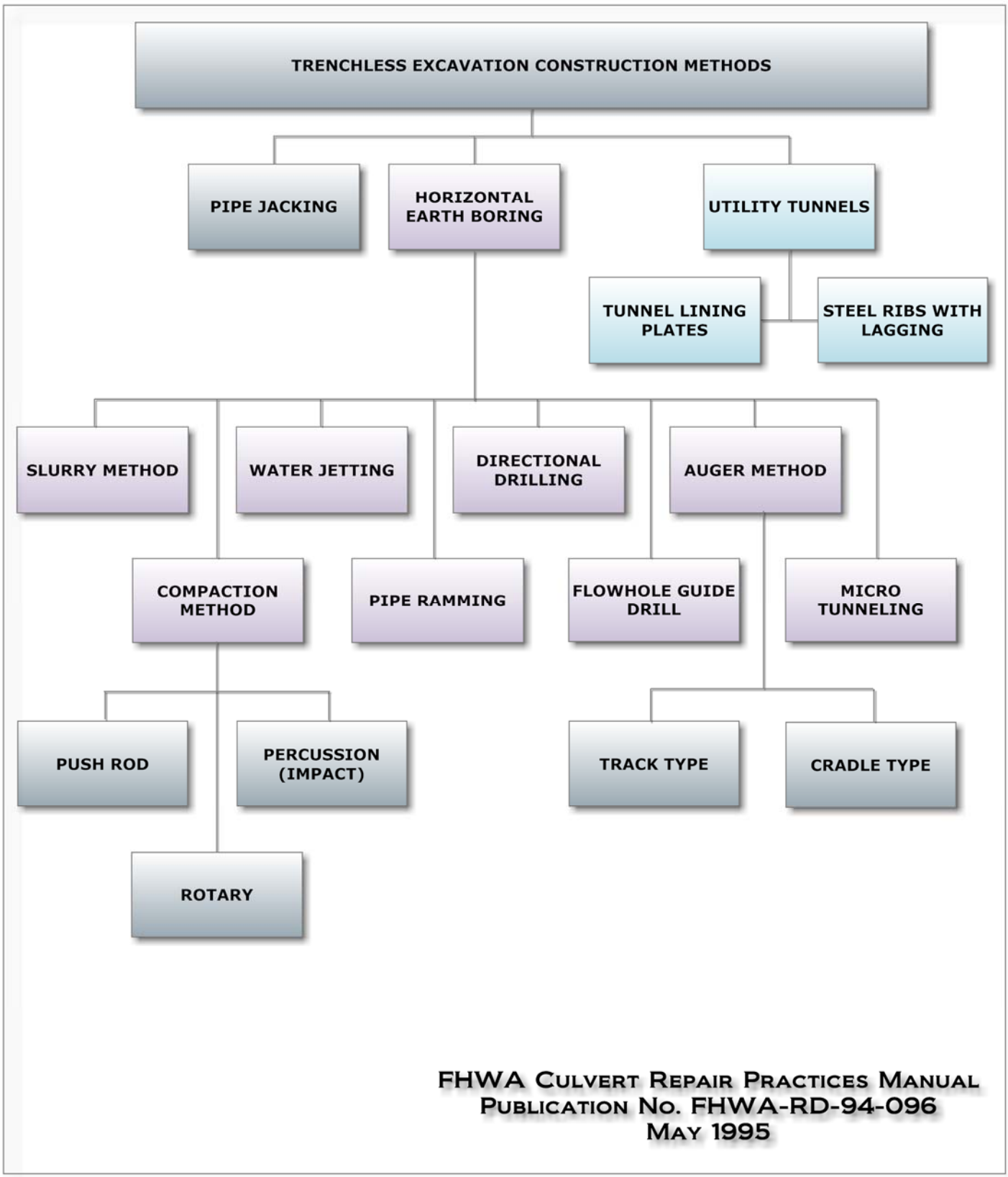


TYPICAL UTILITY PERMIT OR SPECIAL USE PERMIT ORGANIZATION CHART


TRENCHLESS EXCAVATION CONSTRUCTION METHODS
PIPE JACKING
HORIZONTAL EARTH BORING
UTILITY TUNNELS
TUNNEL LINING PLATES
STEEL RIBS WITH LAGGING
SLURRY METHOD
WATER JETTING
DIRECTIONAL DRILLING
AUGER METHOD
COMPACTION METHOD
PIPE RAMMING
FLOWHOLE GUIDE DRILL
MICRO TUNNELING
PUSH ROD
PERCUSSION (IMPACT)
TRACK TYPE
CRADLE TYPE
ROTARY
FHWA Culvert Repair Practices Manual
Publication No. FHWA-RD-94-096
May 1995

Appendix A

Agendas
Attendance roster
Examples

Agenda
for geotechnical exploration
to fulfill requirements for the Geotechnical Report

1. Introduction
2. Safety
3. Report format
4. The geotechnical investigation
   A. reasonable distance beyond the start and end of each bore
   B. minimum depth of the exploratory holes
   C. number and location of the exploratory holes
5. Geotechnical Report content
   A. surrounding area
   B. water table
   C. longitudinal profile
   D. items that will affect the trenchless technology contractor's estimate, schedule, or construction procedures
6. CDOT ROW considerations
   A. interstate A-line
   B. non-interstate items
7. Traffic control
8. Other permit provisions
   A. construction procedures
9. Permittee takes notes and distributes notes. This includes an organization chart.
10.

Agenda
for Trenchless Technology installation within CDOT ROW
Preconstruction Conference

1. Introductions
2. Safety
   A. Wildfire
   B. Site security (vandalism)
   C. Medical/security emergency response agency
   D. DERA for spills and frac out
3. Surface bodies of water and drainages in the vicinity
4. Weather constraints
5. Traffic Control
6. Submittals
   A. Proposed trenchless technology method
   B. Project schedule
   C. Methods Statement per Section 108, CDOT Standard Specifications for Road and Bridge Construction, current edition
   D. Project Safety Management Plan per Section 107 CDOT Standard Specifications for Road and Bridge Construction, current edition
   E. Detailed Fracture Mitigation (Frac Out) Plan
7. When and how the Inspector and Superintendent Daily Diaries are transmitted to the CDOT Project Manager.
8. Lines of communication, especially when there is a problem with the bore or the boring operation needs to go past working time limitations listed in the permit. This discussion may produce a communications chart.
9. Subsurface investigations, including the Geotechnical report
10. Access pits and vertical shafts
11. Materials
12. Lighting
13. Casing/carrier void filler
14. Obstruction/changed conditions
15. Measurements
16. Groundwater control
17. Surface water
18. Right of Way or easements
19. Accuracy
20. Ventilation
21. Bulkheads
22. Abandonment
23. Payment
24. Existing utilities and other infrastructure
25. Wildlife issues
26. Permittee takes notes and distributes notes. This includes an organization chart and a communications chart.

Example attendance roster

Permittee Name: Utility or Special Use Permit number (if available): Proposed bore location (highway, milemarker, City, County): Date: Location of meeting:	
Name	
Title for Project	
Organization	
Business Phone	
Cell Phone	
Business Fax	
E-mail	
Business Address	
Name	
Title for Project	
Organization	
Business Phone	
Cell Phone	
Business Fax	
E-mail	
Business Address	
Name	
Title for Project	
Organization	
Business Phone	
Cell Phone	
Business Fax	
E-mail	
Business Address	