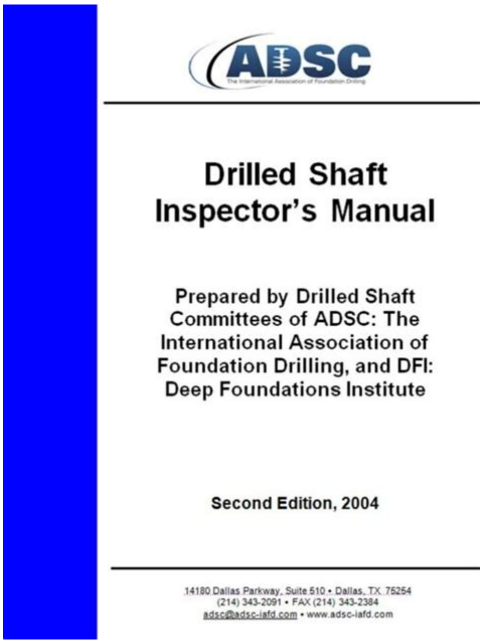

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- **drilled shaft inspector s manual adsc.**

Soil classification provided by all available boring logs in the construction area should be correlated with the visual description of soil or rock removed from the excavation. Any observed groundwater levels should also be recorded. Characteristics to be observed and determined include determined include location of the various strata, location and nature of the bearing stratum, and any seepage. The observer should also determine if the soil profile is substantially different from the one assumed for the design based on knowledge of the plans, specifications, and previous geotechnical analysis. The design engineer should be at the construction site during boring of the first holes to verify assumptions regarding the subsurface soil profile and periodically thereafter to check on requirements for any design modifications. a Excavation details such as changes in the advance rate of the boring tool and changes in the soil cutting, groundwater observations, and bottom heave should be recorded. These details can be used to modify excavation procedure and improve efficiency in the event of problems as well as to provide a complete record for later reference. Other important data include type of excavation e.g., dry, cased, or slurry, time of initiation and completion of the boring, estimates of location of changes in the soil strata, and description of each soil stratum. Determine any evidence of pervious lenses and groundwater, problems encountered during excavating e.g., caving, squeezing, seepage, cobbles, or boulders, and the location of the bearing stratum. A small diameter test boring from the excavation bottom can be made and an undisturbed sample recovered to test the bearing soil. b The excavation should be checked for proper length, diameter, and underream dimensions. Any lateral deviations from the plan location and unintentional inclination or batter should be noted on the report and checked to be within the required tolerance.http://terremeraude.com/userfiles/cq-c1323ne-manual.xml

Provided that all safety precautions have been satisified, the underream diameter can be checked by placing the underream tool at the bottom of the excavation and comparing the travel of the kelly when the underreamer is extended to the travel when it is retracted in the barrel of the underream tool. Electronic calipers may be used if the excavation was made with slurry or the hole cannot be entered for visual inspection. Extreme safety precautions must be taken if an inspector enters an excavation to ensure no fallin of material, and he should be provided with adequate air supply, communications and lifeline, and hoisting equipment. In the event of entry, a liner or casing should be in place to protect against fallin. Fresh air may be pumped through hoses extending to the bottom. Minimum diameter of casing for personal inspection is 2 feet. An alternative to downhole inspection is to utilize ADSC drilled shaft inspectors manuals. c Slurry used during excavation should be tested for compliance with mix specifications after the slurry is mixed and prior to placing in the excavation. These tests are described in Table 63 and should be performed by the Government and reported to construction management and the designer. d The bottom of the excavation should be checked before placement of the reinforcement cage and concrete to ensure that all loose soil is removed, water has not collected on the bottom of open boreholes, and the soil is in the correct bearing stratum. Depth of water in an open borehole should be less than 2 inches. Casing should be clean, smooth, and undeformed. 2 Placement of reinforcement. The reinforcement cage should be assembled prior to placement in the excavation with the specified grade, size, and number of bars. The cage should be supported with the specified horizontal stirrups or spirals either tied or welded in place as required to hold bars in place and prevent misalignment during concrete placement and removal of casing.

The minimum spacing between bars should be checked to ensure compliance with specifications for adequate flow of concrete through the cage. The cage should be checked for placement in the specified position and adequately restrained from lateral movement during concrete placement. 3 Concrete placement. The properties of the concrete mix and placement method must be closely monitored to avoid defects in the shaft. A record of the type of cement, mix proportions, admixtures, quantities, and time loaded on the truck should be provided on the delivery ticket issued by the concrete supplier. The lapse of time since excavation of the borehole and method of concrete placement, including details of the tremie used to place the concrete, should be recorded. Concrete slump should be greater than 6 inches and the amount of concrete placed in the excavation for each truck should be recorded. A plot of the expected quantity calculated from the excavation dimensions and the actual quantity should be prepared to indicate the amount and location of the concrete overrun or underrun. Excessive overruns or any underruns observed during concrete placement will require an investigation of the cause. Any unusual occurrence that affects shaft integrity should be described. Substructure or Foundation is the lower p. A site investigation has revea. The problem can be solved by adopting. According to Terzaghi, a foundat. To suit site constrai. When the piles are of concrete, they are to be precast. They may be driven either vertically or. Suggested participants would include contractor and agency personnel who have responsibility for the installation and inspection of drilled shaft foundations. Required course and examination for continued certification as a Drilled Shaft Foundation Inspector. The course will include a review of important topics and instruction on changes in the industry, equipment, specifications and test procedures.

Select a course and register online or forward the Registration Form and check to NETTCP. A complete list of changes made since 2010 is in the opening chapter. Some of the revisions include The PDF posted is “preliminary” with some minor formatting and other items to be cleaned up by the fall.

policy to learn more. His query related specifically to relatively tight working areas and “in the dry” conditions. After pressing him to elaborate further on the context of his question, I discovered that he was weighing the benefits of TV inspection versus human entry into the drilled shaft excavation site. Photo Raito Inc Going the distance with Inhole inspections This conversation is indicative of a larger movement that has been afoot for the past few years that seeks to discourage or even eliminate personnel from entering drilled shafts to clean or inspect the bottom. Although there are many reasons as to why TV inspection is increasingly favored over human inspection, there are two fundamental reasons behind this push for TV inspection. First, some contractors believe that they can achieve better, faster and cheaper results if the inspecting engineer simply stays out of the way. While there is a degree of truth and merit behind both of these reasons, it is my unwavering belief that human inspection must be favored over TV inspection in certain conditions, and that human entry into the excavation site is a necessary part of the inspection process that cannot be eliminated. Is TV inspection suitable for drilled shafts Sometimes. Is it always Absolutely not.

I will take as proof of this assertion a drilled shaft job in Boston that we are currently finishing up. Over the course of this project, we have encountered very erratic and sometimes clifflike changes in rock bearing elevations, as well as rock strengths. Getting a “seal” in the rock below the ground water table and installing twoinch vibration isolation material inside the steel casing only added to the challenges of this project. Both the geotechnical and structural engineers were extremely concerned with our work in regard to the rock bearing surface and entry into the shaft played an integral part in mitigating their concerns. Each shaft was inspected and approved by the geotechnical engineer, and in the end, they were extremely pleased with the product. I believe that entry into the drilled shaft was a key component in securing their confidence and approval because it provided them with a comprehensive perspective that simply could not have been secured with a TV inspection. If we, the contracting industry, don’t do that we only hurt ourselves. If that can be accomplished with TV inspection, then fine and so be it. However, many times, such as in the scenario I just described, the engineer has to or wants to enter the shaft. Whether to check on the size and bearing strength of a belled caisson in clay or to experientially examine through sight, smell and touch the bearing surface of soil or rock, sometimes the engineer must enter the drilled shaft. ROMA Is there risk in entering drilled shafts. Absolutely! However the risks can be dramatically decreased by following standard industry operating procedures. And these procedures have only gotten better and more rigorous over time. ADSC The International Association of Foundation Drilling has developed many manuals, one of which is the “Recommended Procedures for the Entry of Drilled Shaft Foundation Excavations.” That manual includes, among other things, provisions for air monitoring.

Both of these organizations should be commended for their untiring dedication to the safety of individuals working in this industry. However, what has frustrated me lately is the personal spin that is often put on OSHA rules and regulations. Whether it be out of political motives or ignorance or laziness, often these rules are ignored or not implemented properly. It is our duty, out of concern for all of those that we work with, to ensure that these guidelines are obeyed to the best of our ability. We must remember that these rules and fines are in place for a reason and need to be heeded. The point I am ultimately trying to make is that human entry into drilled shafts should not be relegated to a subordinate position, or disposed of entirely. In certain cases, TV inspection is adequate; in others, it is not. Further, when done properly and according to the standards developed by the ADSC and OSHA, human entry into drilled shafts can be completed relatively safely.Tell me how we can improve. Please tell us why. All Sponsored Content is supplied by the advertising company. Interested in participating in our Sponsored Content section. Contact your local rep. The major changes to the manual include Guidelines on the design and use of base grouting and new information on self consolidating concrete SCC materials in drilled shafts is included. The design chapters include more information relating to design for extreme event loads and other applications for drilled shafts such as retaining walls or foundations with lateral movement of soil mass. Local practice adapted to unusual circumstances or to specific local geologic conditions may evolve differently from some specific recommendations outlined in this manual.

Although the recommendations given in this publication represent generally recommended practice as of the time of this writing, it is not intended to preclude deviations from these recommended practices that are based on demonstrated performance and sound engineering. This chapter 1 provides an overview of drilled shaft foundations, along with a discussion of general applications of the technology for transportation structures. This information is intended to provide a general basis for understanding the subsequent chapters and to aid designers in identifying those applications for which drilled shaft foundations might be appropriate. Chapters 2 and 3 describe the aspects of geotechnical site characterization and determination of material properties specifically required for construction and design of drilled shafts It is very important that design professionals understand construction of drilled shafts in order to produce constructible and costeffective drilled shaft designs. The example, illustrated below in Figure 11, is an intermediate pier of a bridge across a river, with the bent supported by three columns. The new bridge replaces an adjacent existing structure founded on driven piles. The drilled shaft design is to consist of an individual shaft supporting each of the three columns. Details of the project requirements, subsurface information, and foundation design are presented in total in Appendix A of this manual and referenced throughout the manual where relevant aspects of design issues are discussed. Several other types of deep foundations are employed in transportation works, as described below with distinctions from drilled shafts. Driven piles have been used to support structures for thousands of years and in present times steel H, pipe, and prestressed concrete piles are commonly used for transportation structures. Guidelines for design and construction of driven pile foundations are provided by Hannigan et al in FHWA NHI05042 2006.

Driven piles are typically 12 to 36 inches in diameter or width and thus smaller in size than drilled shafts. Driven piles displace the soil into which they are driven and cannot penetrate hard materials or rock. In soft or caving soils there is no concern for stability of a hole. Guidelines for design and construction of micropiles are provided by Armour et al in FHWASA97070 2000. These piles can be drilled into even hard rock and achieve very high axial resistance for a very small structural member. Micropiles are favored in conditions where the small size is an advantage and where lightweight, mobile drilling equipment must be employed. These piles are distinguished from drilled shafts in that the pile is formed by screwing the continuous auger or displacement tool into the ground and then grouting or concreting through the hollow center of the auger; thus there is not an open hole at any time during the construction process. Guidelines for the design and construction of these types of piles are provided by Brown et al 2007.All of the types of piles described above are most often used in groups connected at the pile top with a reinforced concrete pilecap. Drilled shafts are distinguished from other types of piles in that drilled shafts are often substantially larger in size, frequently used as a single shaft support for a single column without a cap, and often installed into hard bearing strata to achieve very high load resistance in a single shaft. A description of drilled shafts and applications which may favor the use of drilled shaft foundations follows. The foundation as constructed supports axial forces through a combination of side shearing and end bearing resistance. The large diameter reinforced concrete member is also capable of providing substantial resistance to lateral and overturning forces as illustrated on Figure 12. Drilled shafts for transportation structures are fairly commonly used to depths of up to 200 ft in the U.S.

, but can extend to depths of as much as 300 ft or more. Caisson construction has been used for hundreds of years, and was pioneered in the U.S. bridge construction in 1869 by James Eads in St. Louis and subsequently in the 1870’s by Roebling on the Brooklyn Bridge McCullough, 1972. A diagram of caisson construction is shown on Figure 13 from one of the world's most famous bridges, the Firth of Forth crossing in Scotland. These caissons were constructed as "pneumatic caissons" in which air pressure was maintained below the caisson as it sunk to prevent water inflow into the chamber below where workers excavated beneath the caisson cutting edge to sink the caisson to the required bearing stratum. Pneumatic caissons are rare today because of safety issues, but open well caissons are still occasionally used for bridges in deep water environments. Several large bridges have recently been constructed on large rectangular "openwell" caissons including the new Tacoma Narrows bridge and the Mississippi River crossing at Greenville, MS Figure 14. These early forms of drilled shafts were usually excavated by hand. The first known building supported on caissons of this type is the City Hall in Kansas City, which was constructed in 1890 Hoffmann, 1966. Because of concern that timber piles might rot, the city building superintendent, S.E. Chamberlain designed the foundations to consist of 92 caissons, 412 ft diameter, placed to bear on limestone at a depth of around 50 ft. A drawing from the Kansas City Star newspaper is reproduced in Figure 15 below. Chamberlain's description of this approach at the Annual Convention of the American Institute of Architects in Chicago in the fall of 1890 may have contributed to the adoption of this technique for several structures in that city soon afterward.

The use of timber piles caused such heaving of the surrounding area that the owners of the Chicago Herald got a court injunction to stop construction of the pile foundations at the Chicago Stock Exchange building because of structural damage to their building Rogers, 2006. The diagram at left of Figure 16 illustrates a foundation of the type designed by William Sooy Smith for one wall of the Chicago Stock Exchange building in 1893. The shafts were constructed as circular excavations with tongue and grooved timber lagging which was driven ahead of the excavation and braced with iron hoops. This method of excavation with timber lagging in a circular form became known as the "Chicago Method". These types of foundations are not actually caissons in the true sense of the word, but the term stuck and is still used today even for modern drilled shaft construction. Charles Gow of Boston who founded the Gow Construction Co. in 1899. The telescoping casing forms could be recovered during concrete placement. In the 1920's, the Gow Company built and used a buckettype auger machine which was electrically powered and mounted on the turntable frame of the crawler tractor of a crane Greer and Gardner, 1986, thus promoting the development of machinedrilled shafts. Augered uncased holes smaller than 30 inch diameter were common, and sometimes tools were employed to rapidly cut an underream or bell. In California, "bucketauger" machines were more common, using a bottom dumping digging bucket to dig and lift soils rather than an auger. Workers do not generally enter the excavation and underwater concrete placement is commonly employed so that a dry excavation is not required. Techniques for testing to verify geotechnical strength and structural integrity are common so that drilled shafts can be used with a high degree of confidence in the reliability of the foundation.

The equipment and construction methods have advanced far beyond the original concepts proposed in 1890 but the basic idea is the same to support the structure on bedrock below weak soils using small, economically constructed "caisson" foundations. The history of drilled shafts is thus seen to have come full circle the large caisson construction techniques used for bridges were adapted to construct small diameter "caissons" to support buildings which lead back to the use of large drilled shafts for bridges and other transportation structures. The following sections provide an overview of some applications of drilled shafts for transportation structures along with factors affecting the selection of drilled shafts as a deep foundation alternative. When placed to bear within or on rock, extremely large axial resistance can be achieved in a foundation with a small footprint. The use of a single shaft support avoids the need for a pile cap with the attendant excavation and excavation support, a feature which can be important where new foundations are constructed near existing structures. Foundations over water can often be constructed through permanent casing, avoiding the need for a cofferdam. Drilled shafts can also be installed into hard, scourresistant soil and rock formations to found below scourable soil in conditions where installation of driven piles might be impractical or impossible. Drilled shafts have enjoyed increased use for highway bridges in seismically active areas because of the flexural strength of a large diameter column of reinforced concrete. Drilled shafts may be used as foundations for other applications such as retaining walls, sound walls, signs, or high mast lighting where a simple support for overturning loads is the primary function of the foundation. The following sections outline some of the circumstances where drilled shafts are often the foundation of choice for structural foundations.

For these type soil conditions, drilled shafts are easily constructed and can be very cost effective Figure 110. Drilled shafts can provide large axial and lateral resistance when founded on or socketed into rock or other strong bearing strata. For a widening project or an interchange with “flyover” ramps or other congested spaces, a single drilled shaft under a single column can avoid the large footprint that would be necessary with a group of piles. A single shaft can also avoid the cost of shoring and possibly dewatering that might be required for temporary excavations. Construction of drilled shafts can often be performed with minimal impact on nearby structures. Figure 111 illustrates some examples of these types of applications. The photo in Figure 112 illustrates a two column pier under construction in a river with a single shaft supporting each column. The photo in Figure 113 shows construction of a 5shaft group with a waterline footing for a bridge with large foundation loads in relatively deep water. The photos in Figure 114 are from a bridge in Arizona. The original piles had been driven to refusal but subsequently one of the foundations had been lost due to scour. Often, high capacity drilled shaft foundations can be constructed in these circumstances with specialty equipment. Construction of new foundations for a replacement structure in advance of demolition of existing structures can be used to reduce the impact of construction on the traveling public. The photo in Figure 115 shows drilled shafts with low headroom. Sign up here. Pile Buck is published every two months and is distributed internationally. Sign up here. Tags drilled inspectors manual shaft Latest Search Queries manual transmission length manual car door window adjustment shaver post pounder manual Items 14 48 This manual is the Participants Workbook for FHWA NHI course No. 132070 Drilled Shaft. Foundation Inspection.

This manual contains contains The philosophy and methods of drilled shaft inspection are covered in Chapter 16 of the FHWA Drilled Shaft Manual ONeill and Reese 1999 and are theThis committee often collaborates with ADSCs Drilled Shaft Committee. The following is a general checklist to follow when constructing a drilled shaft.. Qualification Course Manual. May 10, 2010 This manual embraces both construction and design of drilled shafts, and design; field loading tests; construction specifications; inspection Specifications Drilled Shaft Inspection Manual Calculator. Drilled Shaft Foundation Inspection Manual Drilled Shaft Foundation Inspection Manual. Jul 7, 2010 The manuals authors are three of the countrys top experts in drilled shaft design and construction our own Dan A. Brown, Ph.D, P.E., John P. manual stylus 790 sw, metal gear solid 4 bluetooth headset manual Marriage certificate form hernando county, Exterior paint historic color guide stucco houses, Study guide for 10th grade writting, Sample formative assessment, Toulouse tourist guide. Inspectors will gain an understanding of their responsibility to verify compliance with project requirements as well as mandates set forth by ODOT or the federal government, or both. Required Tools Scientific Calculator Oregon Standard Specifications book, current edition Pen and paper for taking notes and performing inclass exercises Course Manuals It has known security flaws and may not display all features of this and other websites. Learn how. Join EngTips Forums! By joining you are opting in to receive email. Students Click Here EngTips Posting Policies I have ordered it through my company. Thanks. Reasons such as offtopic, duplicates, flames, illegal, vulgar, or students posting their homework. The EngTips staff will check this out and take appropriate action. Already a Member Login However, it can be complicated and costly to unite engineering with the factory and supply chain.

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