Standard Construction Notes
Appendix B

Notes:

1) NOSD Notes Required on Drawings. Per PWDS 1.11.d.1, all applicable NOSD standard notes are to be included on construction drawings submitted for NOSD review and approval. Supplemental notes may be added at the discretion of the design engineer.

2) The developer's engineers can request the standard construction notes in digital format from the NOSD Engineer. The current version of the notes available from the NOSD Engineer shall be utilized, whether or not the current version has been published in an updated PWDS manual.

3) The developer's engineer is responsible to fill in the blanks in the NOSD standard notes as applicable *(ie. elevation datum reference, geotech report reference, etc.)*.

4) All provisions in the current NOSD standard construction notes shall apply to any sewer system construction permit issued by the NOSD, or to any infrastructure work performed within its jurisdiction, regardless of whether or not a particular note is included on the drawings prepared for such work,

GENERAL NOTES:

1. All work and materials shall conform to the requirements of Tillamook County, the Netarts Oceanside Sanitary District (NOSD) and the Oregon Standard Specifications for Construction – OSSC (ODOT/APWA), current edition. In the event of a conflict between NOSD policies and regulations and the OSSC (ODOT/APWA), the more stringent shall control unless otherwise directed by NOSD. Issuance of an NOSD sewer construction permit does not relieve the contractor from obtaining any and all reviews and permits required under building, plumbing or electrical codes that any portions of the work may be subject to, or from any requirements under permits which may be required for the project by other agencies with jurisdiction.

2. Contractor shall notify NOSD, County, ODOT and all utility companies a minimum of 72 hours *(3 business days)* prior to the start of construction or resuming work after shutdowns except for normal resumption of work after Sundays or Holidays. Contractor shall comply with all notice and marking requirements of agencies with jurisdiction over the work, including requirements of OAR 952 *(Oregon Utility Notification Center)* as applicable *(excavation work shall not commence until at least the third business day after providing such notice)*.

3. Weekly Construction Schedule. By close of business each week, the Contractor shall submit a weekly work schedule for the following week to the NOSD, summarizing the class of work and areas where work will occur during the following week, and any anticipated inspection requirements.

4. Contractor shall perform all work necessary to complete the project in accordance with the approved construction drawings including such incidentals as may be necessary to meet applicable agency requirements and provide a completed project.

5. Contractor shall procure a right-of-entry permit from ODOT State Highway Division for all work within the State right-of-way and conform to all conditions of the permit.

6. Contractor shall obtain all required permits and licenses prior to the start of construction.

7. Full-Size Approved Drawings & Permits Required at Site. A copy of final approved full-size construction drawings and any required permits/approval letters shall be kept on-site at all times, for reference and/or review by inspectors upon request.

8. Contractor shall provide all bonds and insurance required by public or private agencies having jurisdiction, including NOSD.

9. Any permit or authorization to procced with construction issued by the NOSD is considered to be a "written contract" for purposes of triggering "additional insured" coverage of the NOSD and NOSD Engineer under the Contractor's required insurance policy(s) *(including insurance certificates provided by subcontractors)*, and for bonding purposes.

10. All grading, rocking, paving, utility *(water, sewer, storm, etc.)* and related work shall conform

to drawing requirements, Oregon Standard Specifications for Construction - OSSC (ODOT/APWA), 2024 edition and applicable ODOT/APWA details, or local jurisdiction specifications, standards & details, whichever is more stringent.

11. All materials and workmanship for facilities in street right-of-way or easements shall conform to approving agencies' construction specifications wherein each has jurisdiction, including but not limited to the NOSD, County, ODOT, Oregon Health Authority –Drinking Water Services (OHA-DWS) and the Oregon Department of Environmental Quality (DEQ).

12. Contractor shall maintain a copy of the OSSC (ODOT/APWA) on the job site at all times during construction.

13. Unless otherwise approved by NOSD, construction of sanitary sewer improvements shall be done between 7:00 a.m. and 6:00 p.m., Monday through Saturday. Work outside these hours shall be approved in writing by NOSD prior to the start of construction outside normal work hours.

14. Any inspection by NOSD shall not, in any way, relieve the Contractor from any obligation to perform the work in strict compliance with the applicable codes and agency requirements.

15. All traffic control plans & measures shall be approved by the agency with jurisdiction and in place prior to any construction activity. Contractor shall erect and maintain barricades, warning signs, traffic cones *(and all other traffic control devices required)* per NOSD, County and ODOT requirements in accordance with the current MUTCD *(including Oregon amendments)*. Access to driveways and buildings shall be maintained at all times for residential, business, fire and emergency vehicles.

16. Unless specifically approved in writing by agency with jurisdiction prior to start of construction, full street closures or detours are prohibited, and excavation work is to be staged to maintain one-way traffic during construction, and to restore two way traffic during non-construction hours. Any proposed detours must be approved in writing by the County, Fire Department, police, and transit authority if applicable prior to any full street closure or detour *(Contractor shall also obtain ODOT approval where applicable)*.

17. Unless authorized in writing by the NOSD prior to the start of the work, no work within any existing public roadway shall disrupt traffic flow for more than 14 consecutive days *(timeframe applies independently and separately to each block or intersection where traffic control work is required)*.

18. **Record Drawings**. The Contractor shall maintain one complete set of approved drawings on the construction site at all times whereon will be recorded any approved deviations in construction from the approved drawings, as well as the station locations and depths of all existing utilities encountered *(whether or not existing utilities are shown on the construction drawings)*. These field record drawings shall be kept up to date at all times and shall be available for inspection by the NOSD upon request. Information on the field record drawings shall include reference measurements and materials type. Upon completion of construction of

public facilities, Contractor shall submit a clean set of field record drawings containing all as-built information to the Design Engineer for use in the preparation of As-Built drawings which must be submitted to the NOSD prior to the first final walkthrough inspection.

19. Proposed changes to the approved drawings shall be made only after such changes are submitted in writing to the NOSD by the developer's engineer and approved in writing by NOSD.

20. The Contractor shall submit a suitable warranty/maintenance bond prior to final payment or final approval where required by public and/or private agencies having jurisdiction.

21. 1200-C Permit. Contractor shall procure and conform to DEQ stormwater permit No. 1200C for construction activities where 1 acre or more are disturbed.

22. 1200-C Erosion Control Permit & Inspection Responsibilities: For NOSD funded projects where a 1200-C permit is required, the Contractor shall (after contract award and prior to construction) formally transfer (into Contractor's name) the 1200-C permit and the responsibility for erosion control inspection under the permit. The Contractor shall notify the NOSD Superintendent & NOSD Engineer in writing when the transfer is complete. No ground disturbing work shall be performed on the project until the 1200-C permit has been transferred and DEQ has been notified of the change in inspector responsibility.

23. Elevations shown on the drawings are based from _____(OSHD, etc) Bench Mark _____, Elevation _____(adjusted 19__), consisting of a _____(brass cap; monument, etc.) Located at _____, *which is based on the* NVGD 1929 *datum corresponding to the FEMA flood map elevations.*

24. Address Numbers. Per OFC 505.1, all new and existing buildings shall have approved address numbers *(4" minimum number height, color to contrast with background)* placed in a position that is plainly legible and visible from the fronting street. For flaglots or other situations where the structure is not visible from the public street, an address sign shall be installed near the entrance to the driveway or private road. Temporary address signs shall be mounted in a visible location prior to and during any construction, and the permanent numbers mounted prior to occupancy, in a position that is plainly legible and visible from the street fronting the property.

25. Contractor is solely responsible for assuring that any site, street or utility work within the jurisdiction of the NOSD, meets or exceeds any and all legal requirements and any and all industry best practices in the design, construction and/or performance of such site, street or utility work *(including compliance with all federal, state and local safety requirements, which remains the sole responsibility of the Contractor without reservation)*. Contractor is solely responsible for payment of any assessment, fine, penalty, claim, damages or costs that result from Contractor's (a) performing site, street or utility work or (b) failing to perform site, street or utility work that meets or exceeds any and all legal requirements and industry best practices. The NOSD may require and Contractor shall provide the NOSD with confined space entry plans conforming with the requirements of OR-OSHA, traffic control plans, or other plans or

performance descriptions necessary or desirable for the NOSD Superintendent to assure that these requirements can be met in performing the work. The NOSD's acceptance, review, or comments on or about the adequacy of any such plan shall not remove or reduce Contractor's sole responsibility to meet any and all legal requirements, administrative requirements, or industry best practices, and Contractor specially assumes, will defend, and will indemnify the NOSD against any claims, liability, damages, fines, fees or assessments related in any manner to Contractor's site, street or utility work.

26. The Contractor shall provide the NOSD and the project engineer with the names and 24 hour telephone numbers of at least two persons associated with the project who can be contacted outside of regular work hours in case of emergencies.

27. Notice to Property Owners, Contractor Responsibility. When work performed by Contractor will impact or interrupt water/sewer/storm drainage utility service or interrupt vehicular or pedestrian access to any public or private property, Contractor shall notify all the affected parties prior to the anticipated impact a minimum of 48 hours in advance. In addition, Contractor shall provide door hangers or equivalent a minimum of 24 hours *(and a maximum of 48 hours)* before such interruption of utility service *(or vehicular/pedestrian access)* to all residences, structures or businesses impacted by the work *(Contractor is responsible to coordinate with the NOSD staff a minimum of 1 week prior in order to verify area of impact or interruption)*. In addition to the written notice, a representative of the Contractor shall knock on the front door of all affected residences or businesses on the morning that the work will commence, and attempt to notify the residents or businesses regarding the start of the work.

28. Fire, Police, Transit, School Bus Notification. Contractor shall provide a minimum of 48 hours *(2 work days)* notice to police, fire department and Post Office prior to any work that will impact vehicular traffic, and ensure that alternate emergency access is available. Provide a minimum 1 week *(5 work days)* notice to any transit district or school district of any traffic impacts on streets which are on bus routes *(Contractor to verify routes)*, and verify that arrangements are made for alternate routes.

29. Garbage/Recycle Notification. Contractor shall provide a minimum 1 week advance notice for the garbage/recycle collector, and make arrangements for the garbage and/or recycle receptacles at all properties to be placed at a location where they can be collected on the appropriate day(s).

30. Construction Staking. Contractor shall ensure that surveying services are provided necessary to stake the project prior to and during construction, in conformance with NOSD Standards. Construction staking shall be adequate to ensure that all streets, sewer and other improvements & utilities are properly installed to design alignments & grades, as well as with respect to easements, right-of-ways and property lines. All construction staking shall be clearly marked *(with elevations, offsets, etc.)* on lathe in the field *(or painted on the surface in the case of PK nails in asphalt)* for reference by the Contractor, inspectors, etc. during construction. Even when GPS is used during construction, adequate field staking shall be provided to allow verification of locations, alignments, depths, etc. during construction and inspection.

31. Material/Equipment Submittals from Contractor Required. Per PWDS G-1300, construction submittals shall be provided by the Contractor for review by the NOSD, for all material & equipment which will incorporated into work covered under the PWDS.

CONNECTIONS, TIMING & COORDINATION:

32. Timing of Connections to NOSD Utilities. Unless otherwise approved in writing by the NOSD Superintendent, connections to existing in-service sewer mainlines *(or installation of fittings on or in such pipelines)* shall not occur on a weekend, on a Friday or on any day that precedes a holiday.

33. Coordination of Connections, Contractor Availability. The Contractor shall coordinate to ensure that the NOSD staff are notified and have the opportunity to be present during connection operations. After completing the connection work to existing in-service sewer mainlines, the Contractor shall ensure that a work crew remains at the site and is immediately available to NOSD staff until after all in-service mainlines have been returned to service **AND** have been verified to be fully operational by the NOSD.

EXISTING UTILITIES & FACILITIES:

34. Utility Locate Requirements. ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0001 through OAR 952-001-0100. You may obtain copies of the rules by calling the center. *(Note: the telephone number for the Oregon Utility Notification Center is 503-232-1987 or 811).* These requirements include, but are not limited to, responsibility for pre-marking by excavator, responsibility for notice to Oregon Utility Notification Center by excavator, responsibility of contractor to wait the specified time before starting excavation, responsibility of excavator to maintain marks during the excavation period to ensure that the original marks remain effective for the life of the project or the locate ticket life *(ticket life as defined under OAR 952-001-0010)*, whichever is the shorter period.

35. Potholing Requirements. Contractor shall field verify location and depth of all existing utilities where new utilities or facilities cross or are closely parallel to the existing utilities *(or which are otherwise in close proximity to new utilities)*. All existing utilities which are either (A) marked in the field or (B) which are shown on the drawings, shall be potholed using hand tools or other non-invasive methods prior to excavating or boring to determine the exact location and depth of the existing utility *(see OAR 952-001-0090 for State required potholing limits & depths).* Persistent failure *(as determined by the NOSD)* to follow these NOSD & State rules regarding exposing & determining the exact location and depth of existing utilities shall be grounds for suspension or cancellation of the permit, or termination of the contract *(at the sole discretion of the NOSD).*

36. The location and description of existing NOSD facilities shown on the drawings are compiled from available records and/or field surveys. NOSD does not guarantee the accuracy or the completeness of such records. Contractor shall field verify sizes and locations of all existing NOSD facilities prior to construction.

37. Existing Survey Monument Location & Marking. Contractor or developer shall retain a surveyor to research, locate and mark all existing property and street monuments within or adjacent to the work areas prior to construction. Any survey monuments disturbed that will be during construction of the sanitary sewerage improvements shall be referenced *(prior to construction)* and replaced *(following construction)* by a Registered Land Surveyor at the Contractor's expense. The monuments shall be replaced within a maximum of 90 days, and the County Surveyor shall be notified in writing and/or a survey document recorded as required by ORS 209 140, ORS 209.150 and/or ORS 209.155 as applicable.

38. Contractor shall be responsible for exposing potential utility and other conflicts far enough ahead of construction to determine necessary grade, alignment or depth modifications without delaying the work or requiring otherwise unnecessary materials, fittings or structures. If grade, alignment or depth modification is necessary, Contractor shall notify the Developer's Engineer, and the Developer's Engineer shall obtain approval from NOSD prior to construction.

39. All existing NOSD facilities shall be maintained in-place by the Contractor unless otherwise shown or directed by NOSD. Contractor shall take all precautions necessary to support, maintain or otherwise protect existing facilities at all times during construction. Contractor shall leave existing facilities in an equal or better-than-original condition and to the satisfaction of NOSD.

40. Temporary Fencing. If existing fencing or other barriers are temporarily removed during construction for any reason, the Contractor shall coordinate in advance with the affected property owner or agency, and shall provide temporary fencing adequate to provide equivalent security as provided by the existing fencing or barriers which are removed *(including but not limited to containing or enclosing pets, livestock, children, etc.)*.

41. Except where otherwise shown on the drawings and explicitly approved in writing by NOSD, existing NOSD utilities crossed, intercepted by or in the vicinity of new utility lines or facilities *(of the same system)* shall be connected to the new NOSD utility system at locations as required by the NOSD Engineer and NOSD Superintendent. Existing NOSD utility lines which are parallel with, or which are replaced or superseded by the new utility lines *(as determined by the NOSD)*, shall be abandoned or removed as part of the project *(and existing facilities or structures served by the abandoned lines shall be connected to the new system as applicable)*, as required by the NOSD Engineer and NOSD Superintendent.

42. NOSD Utilities that are abandoned in place, or interfering portions of utilities, shall be removed by the Contractor to the extent necessary to accomplish the work. The Contractor shall plug the remaining exposed ends of the abandoned utilities.

43. Contractor shall remove all existing signs, mailboxes, fences, landscaping, etc., as required to avoid damage during construction and replace them to existing or better condition.

44. Contractor shall seed and mulch all exposed slopes and disturbed areas which are not scheduled to be landscaped, including trench restoration areas. Mulch shall be either

hydromulch or finely chopped fescue or rygrass mulch conforming with OSSC (ODOT/APWA) Section 01030.15

As noted in the OSSC, CEREAL GRAIN STRAW *(wheat or similar)* IS NOT AN ACCEPTABLE SUBSTITUTE without specific written approval.

Unless otherwise approved in writing by the NOSD *(based on the seeded areas being irrigated)*, final seeding shall occur between 3/1 and 5/15 or between 9/1 and 11/15, during periods when environmental conditions are conducive to satisfactory growth *(see also OSSC (ODOT/APWA) 01030.43 & 01030.60)*.

45. Construction of all curbs, sidewalks, driveways and other concrete structures shall conform to the applicable requirements of OSSC (ODOT/APWA) Section 00759, Miscellaneous Portland Cement Concrete Structures, including placement, curing, finishing and the repairing of minor defects. Major defects *(as determined by the Agency with jurisdiction)* will require removal and replacement of the defective portions as directed.

46. Unless a different thickness is noted on the drawings and approved in writing by the Agency with jurisdiction, all concrete for sidewalks, driveways or other structures shall be placed on a minimum of 4-inches of compacted granular baserock (3/4"-0 granular baserock unless otherwise specified).

47. Landscape Block Retaining Structures & Block Adhesive. Landscape blocks shall be installed as necessary *(whether or not specifically shown on the drawings)* to retain soil or backfill around manholes, cleanouts or other improvements, along alignments and to heights as determined and directed by the NOSD Engineer or the NOSD Superintendent. All landscape blocks shall be secured together with landscape block adhesive *(Loctite PL500 or equal waterproof and temperature resistant adhesive)* in order to prevent separation, slippage or displacement of blocks after construction.

SANITARY SEWAGE FACILITIES:

48. **Interruption of Sewer Service**. Sewer service from buildings, upstream and affected properties shall be maintained during construction unless prior written NOSD approval is granted *(authorized a minimum of 1 week prior to the work)*. In addition, Contractor shall notify the NOSD and all affected residents and businesses a minimum of 24 business hours *(1 business day)* prior to any actual interruption of service.

49. **Sewer Bypass System**. Bypass pumping or other methods used to maintain sewer flows shall be the Contractor's design, subject to approval by the NOSD *(NOSD approval required a minimum of 48 hours prior to initiation of the bypass operations)*. The bypass system shall be capable of conveying flows peak flows in the sewers during the time that the works is done, as applicable. Normal unrestricted flows shall be restored at the end of each work day. Bypass pump systems left in place or operated outside normal working hours shall be monitored continuously by the Contractor personnel unless alternate arrangements proposed by the Contractor are acceptable to the NOSD *(ie. high level & pump fail alarm callouts, etc.)*. The

Contractor shall provide for NOSD review all submittal information required to demonstrate *(to the satisfaction of the NOSD)* compliance with these requirements. Contractor shall be responsible for any and all costs related to cleanup, damages and fines resulting from any sewerage spill or overflow associated with any methods used to convey sewage flows during construction.

50. Contractors are hereby notified that many of the original sewer trenches within the NOSD were mostly backfilled with sand. Contractors connecting to or replacing existing sewer mains are responsible to have appropriate equipment available to deal with conditions associated with sand backfilled trenches which may be encountered during construction. Encountering sand along new pipe trenchlines or encountering existing trenches backfilled with sand will not be considered to be differing site conditions for NOSD funded projects.

51. To the maximum extent practical, Contractor shall have all fittings, valves, pipe spools, etc. pre-assembled and ready for installation prior to shutdown of existing pipelines.

52. Witnessing & Inspection of Connections at Existing Mainlines Required. Contractor shall arrange to have any and all connections *(including both tapping work and cutting in work)* to existing NOSD sewers witnessed by NOSD staff during installation, and inspected by NOSD staff prior to backfilling. Failure to coordinate for such inspection will result in a requirement that the connection be exposed for inspection, at no additional cost to the NOSD.

53. Unless otherwise noted, materials and workmanship for sanitary sewer shall conform to OSSC (ODOT/APWA) Specifications, most recent edition.

54. Unless otherwise noted, all rocking and paving to conform to OSSC (ODOT/APWA) Specifications, most recent edition.

55. Curbs shall be stamped with an 'S' at the point where each sanitary sewer water service lateral crosses the curb. Letters shall be a minimum of 2-inches high.

56. Root Protection. Where trees are located adjacent to trench lines and are not scheduled or noted for removal, protect all roots two inches in diameter or larger, unless otherwise approved in writing by Public Works on a case-by-case basis.

57. Smooth Bottom Trenches. The Contractor shall have appropriate equipment on site to produce a firm, smooth, undisturbed subgrade at the trench bottom, true to grade. The bottom of the trench excavation shall be smooth, free of loose materials or tooth grooves for the entire width of the trench prior to placing the granular bedding material.

58. **Trench Foundation Stabilization**. If trenches are over-excavated for any reason, over-excavation shall be filled to the design trench subgrade *(ie. to the bottom of the 6" thick pipe bedding layer)* with compacted, well-graded granular backfill as specified *(the use of open-graded rock for trench foundation stabilization is prohibited unless it is completely encapsulated in geotextile fabric & approved in writing by the NOSD)*.

59. **Pipe Bedding and Trench Backfill.** All sanitary sewer pipes shall be bedded with a minimum of 6-inches of 3/4" minus granular backfill *(crushed rock)* bedding and backfilled with compacted 3/4" minus granular backfill in the pipe zone *(granular backfill shall extend a minimum of 12-inches over the top of the pipe in all cases)*. Granular trench backfill shall be used under all improved areas, including sidewalks.

60. Granular Trench Backfill Requirements. Granular backfill shall be ¾"-0 conforming to OSSC (ODOT/APWA) 02630.10 (Dense Graded Base Aggregate), including specified percent of fractured faces. In addition, the backfill shall also contain no more than 10% passing the #40 sieve and no more than 5% passing the #200 sieve. Laboratory test results demonstrating compliance shall be approved by the NOSD prior to placement of granular trench backfill.

61. Granular Trench Backfill Moisture Control. Granular trench backfill shall be moisture controlled *(prior to or during placement)* prior to compaction. Compaction of dry granular backfill without adequate moisture is not acceptable.

62. Granular Trench Backfill Compaction. Granular trench bedding and granular backfill in the pipe zone shall be compacted to be firm and unyielding, even though compaction testing is not required in this zone. Granular trench backfill above the pipe zone shall be compacted in lifts to 92% of the maximum dry density per AASHTO T-180 test method *(Modified Proctor, ASTM D1557)*.

63. Trench Backfill Compaction Testing in Lifts. Trench backfill shall tested in lifts for trenches deeper than 4 foot to top of pipe, as well as at the finish rock grade. As a minimum for deeper trenches, compaction testing shall occur at half the trench depth *(to a maximum of 4 feet down in the trench)*, based on the same compaction methodology being used for the deeper portions of the trench as at the tested depths.

64. Submittal of Trench Backfill Compaction Test Results. Prior to placing AC pavement or concrete trench surfacing, written compaction test results for trench backfill must be received by the NOSD.

65. Trench Pavement Mix Design. Trench restoration AC Pavement shall conform to OSSC (ODOT/APWA) 00744 (hot mixed Asphalt Concrete Pavements (ACP)), and shall be approved by the NOSD prior to placement. Unless otherwise approved in writing and required by the County or ODOT for streets under their jurisdiction, pavement mix shall consist of 1/2 inch mix for both base course paving and for wearing/leveling course paving *(Level 2 JMF)*.

66. Pavement Compaction. Trench restoration AC Pavement shall be compacted to a minimum of 91% of maximum density *(at all locations)* as determined by the Rice standard method, based on nuclear density testing.

67. Submittal of Trench Pavement Compaction Test Results. After paving, written compaction test results for AC trench restoration must be received by the NOSD.

68. Permanent thrust restraint *(concrete thrust blocks)* shall be provided on all bends, tees and other direction changes on pressure pipe per local jurisdiction requirements and as specified or shown on the drawings. Plastic shall be placed around all fittings & pipe prior to placement of concrete. All concrete shall conform to the requirements of OSSC (ODOT/APWA) 00440, Commercial Grade Concrete, 3300 psi min @ 28 days, max 5" slump, 4.5% air (±1.5%). Concrete mix design shall be submitted to the NOSD for review and approval prior to use. If hand mixed sack-crete type concrete is proposed by the Contractor and approved by the NOSD Superintendent on a case-by-case basis *(for each location proposed)*, it shall be a 4000 psi minimum crack-resistant mix *(Quikrete 1006 or equal QPL listed mix must be approved by the NOSD prior to use)*, mixed with the minimum amount of water necessary for workability *(5" slump or stiffer)*. In no case will dry sack-crete mix *(either in bags or as loose mix)* be considered as an acceptable substitute for an approved mixed concrete.

69. It shall be the Contractor's responsibility to coordinate with the NOSD for visual inspection and verification of all thrust restraint and thrust blocking *(including but not limited to size, configuration, plastic placement, etc.)* prior to placing concrete, covering or backfilling. Failure to coordinate for such inspection will result in a requirement that the thrust restraint or thrust block be exposed for inspection, at no additional cost to the NOSD.

70. Temporary thrust restraint on pressure pipelines shall be provided at all locations where necessary due to construction sequencing shown on the drawings, required by NOSD standards or chosen by the Contractor. The adequacy of the temporary thrust restraint shall be the Contractor's sole responsibility, but shall be acceptable to the NOSD and any other agency with jurisdiction. Any movement of the pipe or fittings during pressurization of the pipeline or connection shall be considered evidence that the temporary thrust restraint is not adequate, and the pipeline or connection shall be depressurized and the thrust restraint increased as necessary. Re-pressure testing, if deemed necessary at the sole discretion of the NOSD, shall be completed at the Contractor's expense.

71. Trench backfill in the pipe zone shall be achieved by mechanical means in horizontal lifts to ninety percent (90%) of the maximum dry density per AASHTO T-180 test method.

72. Compaction in the backfill zone *(more than 12" above the top of pipe)* and within the street right of way shall be achieved by mechanical means in horizontal lifts to ninety-two percent (92%) of the maximum dry density per AASHTO T-180 test method unless a greater degree of compaction is required by another agency with jurisdiction.

73. Crushed granular baserock *(trench backfill)* shall substantially conform to the requirements of OSSC (ODOT/APWA) 02630.10 (Dense Graded Base Aggregate), and shall be approved by the NOSD prior to placement.

74. Prior to Paving. Paving of trenches or maintenance access routes shall not be allowed until after completion of all required testing and inspection of new sewer lines under paved areas by the NOSD.

75. Pavement Mix Design. AC Pavement shall conform to OSSC (ODOT/APWA) 00744 (hot

mix Asphalt Concrete Pavement) unless otherwise approved by the NOSD & Tillamook County. For paving on state highways, ODOT requires ½" Level 3 mix for all lifts.

76. Pavement Compaction Standard *(for public & private roads & maintenance access routes)*. AC Pavement shall be compacted to a minimum of 91% of maximum density *(at all locations)* as determined by the Rice standard method, based on nuclear density testing.

77. Pavement surface shall be a smooth, well-sealed, tight mat without depressions or bird baths. Bony or open graded pavement surfaces shall be repaired to the satisfaction of the NOSD & County, prior to final acceptance of the work.

78. Hot mix AC pavement mixtures shall be placed only when the surface is dry and weather conditions are such that proper handling, finishing and compaction can be accomplished. In no case shall HMAC mixtures be placed when the surface temperature is below the minimum established under OSSC (ODOT/APWA) 00744.40 (Season and Temperature Limitations) or the project specifications, whichever is more stringent.

79. Contractor shall protect new pavement against traffic as required, until it has cooled sufficiently to avoid tracking.

80. All existing or constructed manholes, cleanouts, sewer valves and similar structures shall be adjusted by the Contractor to match finish grade of the pavement, sidewalk, landscaped area or median strip wherein they lie.

81. All NOSD piped facilities abandoned in place shall have all openings closed with watertight plugs or caps, OR with concrete plugs with a minimum length equal to two (2) times the diameter of the abandoned pipe.

82. The end of all utility stubs shall be marked with a painted 2-x-4, extending 2 feet minimum above finish grade, and wired to pipe stub *(painted white for sanitary sewer)*. Tracer wire shall be extended *(and attached)* to the top of the 2-x-4 post. Type of utility *(ie. sewer)* and depth below grade to pipe invert shall be clearly & permanently labeled on the marker post.

83. **Tracer (Toning) Wire**. All sanitary sewer piping shall have an electrically conductive insulated 12 gauge solid core copper tracer wire the full length of the installed pipe using green wire for sanitary sewer piping.
--Tracer wire shall be taped to the top of the pipe at 10 foot maximum intervals and shall be extended up into all manholes and cleanout boxes and accessible from the surface.
-- All tracer wire splices shall be made with corrosion resistant waterproof wire nuts *(DBR direct bury splice kit by 3M Company, or equal)*.
--Tracer wire penetrations into manholes shall be within 18 inches of the rim elevation and adjacent to manhole steps. The tracer wire shall be tied to the top manhole step or otherwise supported to allow retrieval from the outside of the manhole or catch basin.

84. **6-inch wide Warning Tape**. All underground sanitary sewer piping shall have a 6-inch wide detectable warning tape installed in the upper reaches of the trench as shown on Detail 301

(green color & "Caution: Buried Sewer Below" wording as required). Underground warning tape shall be continuous the entire length of mainlines, and along service laterals from the mainline to the back of the PUE as applicable.

85. No trenches in roads or driveways shall be left in an open condition overnight. All such trenches shall be closed before the end of each work day and normal traffic flows restored.

86. Trench Compaction Prior to Mandrel Testing or TV Inspection. Before mandrel testing, TV inspection or final acceptance of gravity sewer pipelines, all trench compaction shall be completed and all sewers and storm drains flushed & cleaned to remove all mud, debris & foreign material from the pipelines. All debris shall be removed from the mainlines & manholes by vactor truck, and not flushed into the downstream sewer.

87. **Sanitary Sewer & Waterline Crossings**. Where new waterlines cross below or within 18-inches vertical separation above a sewer main or sewer service lateral, center one full length of waterline pipe at point of crossing the sewer line or sewer lateral. Unless otherwise approved in writing by the NOSD Superintendent, existing sewer mains and/or service laterals within this zone shall be replaced with a full 12 foot length of new pipe *(D2241 PVC-DR 32.5, C-900 PVC-DR 18 or CL 50 ductile iron)*, centered at the crossing in accordance with OAR 333-061 and local jurisdiction requirements. Connect to existing sewer lines with approved flexible reinforced couplings *(MaxAdaptor Coupling by Gripper Gasket LLC or approved equal)*. Example: For an 8-inch waterline with 36-inches cover, 4-inch service lateral inverts within 5.67-feet *(68-inches)* of finish grade must have this pipe centered at the crossing.

88. Per DEQ requirements, Developer/Contractor shall have sanitary sewerage facilities inspected, tested per OSSC (ODOT/APWA) procedures and certified by a licensed engineer.

89. Unless otherwise specified, gravity sanitary sewer pipe shall be PVC in conformance with ASTM D-3034, SDR 35, including sewer service laterals from the mainline to the right-of-way or easement boundary. Minimum stiffness shall be 46 psi per ASTM D-2412 and joint type shall be elastomeric gasket conforming to ASTM D-3212. All other appurtenances and installation shall conform to NOSD requirements.

90. Gravity Sewer Lateral Size. Gravity sanitary sewer laterals for single family residential & each side of duplexes shall be a minimum of 4-inches in diameter *(6-inch minimum for all multi-family, industrial, commercial or public type laterals)*, and shall include toning wire and warning tape per NOSD standard details.

91. Gravity sanitary sewer manholes shall have precast base sections of monolithic construction and shall be manufactured such that the base section is integral with the base slab. The minimum base thickness shall be 6-inches. Manhole bases shall have core drilled openings and flexible manhole to pipe connectors *(rubber boots)* for the connections to pipe stub outs. Flexible joints for pipe openings shall be "Res-seal" as manufactured by Price Brothers Co., "Kor-n-seal" as manufactured by National Pollution Control Systems, Inc. or NOSD approved equal.

92. Manhole precast sections shall meet or exceed ASTM C-478 and shall have watertight O-ring or Mastic Keylock joint.

93. Manholes shall be installed with steps. Steps to be factory installed polypropylene plastic with grade 60 reinforcing rod.

94. Flat top manholes shall be used for all manholes less than 6 feet rim to invert, or with pipe connections within 5 feet of the rim elevation.

95. Lockdown lids required on manholes outside of public right-of-way only where specifically required by the NOSD Superintendent.

96. Where future extensions are shown upstream of new manholes, pipe stubs *(with gasketed caps)* shall be installed at design grades to a point 2' minimum outside of the structure.

97. Interior Debeading. Where butt-fused HDPE is used for gravity flow applications, fusion joint bead projections shall be removed from the interior of all fused pipe as each joint is fused, by means of a mechanical cutting head, for all pipe 18-inches in diameter (IPS) or less. The de-beading cut shall be flush with inside circumference of the pipe.

98. Openings for connections to existing manholes shall be made by core-drilling the existing manhole structure and installing a rubber boot. Connections to be watertight and shall provide a smooth flow into and through the manhole. Small chipping hammers or similar light tools which will not damage or crack the manhole base may be used to shape channels. Use of large pneumatic jackhammers shall be prohibited.

99. Core-Hole Separation from Manhole Barrel Joints. The standard minimum separation between the edge of a core-hole and the nearest manhole barrel joint is 6 inches for manholes 48 to 72 inch in diameter. For manholes greater than 72 inch diameter, the minimum separation shall increase to 8 inches.

100. Grouting & Channels to be Smooth. All interior joints, penetrations & any exposed lifting holes shall be grouted following manhole assembly. The grouting and channels of all manholes shall be smooth and uniform, and shall not retain water or debris. Any grout or concrete splatters *(in channels, on channel benches, on walls or on steps)* shall be removed by the Contractor.

101. All concrete for manhole channeling shall conform to the requirements of OSSC (ODOT/APWA) 00440, Commercial Grade Concrete, 3300 psi min @ 28 days, max 5" slump, 4.5% air (±1.5%). Concrete mix design shall be submitted to the NOSD Superintendent and/or the NOSD Engineer for review and approval prior to use. If hand mixed sack-crete type concrete is proposed by the Contractor and approved by the NOSD Superintendent on a case-by-case basis, it shall be a 4000 psi minimum mix *(approved by the NOSD prior to use)*, mixed with the minimum amount of water necessary for workability *(5" slump or stiffer)*.

102. Manhole channel depths *(sewer & storm)* shall be to the heights shown on the drawings, but in no case shall be the channel depth be less than 2/3 of the pipe diameter. Flow channels in manholes shall be of such shape *(semi-circular bottoms)* and slope to provide smooth transition between inlet and outlet sewer size/ invert to minimize turbulence and to ensure that the manhole channels are self-cleaning. Channels, as well as shelves between the channels and the manhole walls, shall be sloped to drain per plan details.

103. Unless otherwise approved in writing by the NOSD Superintendent and the NOSD Engineer, manhole steps shall be installed in any manhole which does not have existing steps, and which is connected to or otherwise altered in any way.

104. Sanitary sewer laterals for single family residential & each side of duplexes shall be a minimum of 4-inches in diameter *(6-inch minimum for all multi-family, industrial, commercial or public type laterals)*, and shall include warning tape per NOSD standard details.

105. Gravity Sewer Pipe Couplings. Couplings for new PVC sewer pipe connecting to other PVC or solid wall HDPE pipe shall be gasketed solid sleeve PVC slip couplings. Couplings for connection of PVC to other pipe types *(including concrete pipe)* shall be MaxAdaptor Coupling *(by Gripper Gasket LLC)* for sizes up to and including 16-inch diameter *(standard non-reinforced Fernco style rubber couplings are not allowed on mainline pipe joints or connections, or on sewer service laterals between the mainline and the back of the street frontage PUE, without specific prior written approval by the NOSD Superintendent)*.

106. Sewer Service Lateral Connection to Existing Gravity Sewers. Unless otherwise approved in writing by NOSD Superintendent and the NOSD Engineer, connections to existing gravity sewer mainlines shall be with Insert-a-Tee fittings (Fatboy style) per NOSD standard details. The coring machine and Insert-a-Tee drilling guide shall be anchored to the pipe in strict conformance with the manufacturer's recommendations. If lateral connections are larger than 2 pipes sizes smaller than the mainline pipe, cut-in tees will be required *(utilizing PVC slip couplings or MaxAdaptor Couplings as applicable)* unless otherwise approved in writing by the NOSD Engineer and NOSD Superintendent.

107. All buried valves shall be provided with new valve boxes, including new valves installed by the Contractor, or existing valves which are excavated around as part of the work, and existing valves which are located within newly paved, newly concreted or newly graveled surfaces. Valve boxes shall conform to NOSD standard details. Reuse of existing valve boxes will only be allowed is they fully conform with current NOSD standard details, are accurately centered on the valve nut, are clean of excess rock or debris around the valve nut, and are approved in writing by the NOSD on a case-by-case basis.

108. **Gravity Sewer Pipe Cleaning**. After manhole channeling and prior to mandrel or air testing, flush and clean all sewers to remove all foreign materials from mainlines and manholes. Failure to clean all dirt and debris from pipelines prior to TV inspection will result in the need to re-clean and re-TV the lines.

109. **Gravity Sewer Pipe Leakage Testing (Air Test)**. Conform to OSSC (ODOT/APWA)

00455.72.c and the procedure listed on the test form in PWDS Appendix A. All sanitary sewer mains, services and appurtenances shall be tested for leakage by low pressure air testing, after installation of all mainlines, laterals and cleanout risers for each manhole-to-manhole segment. Leakage tests shall include an air test of all sewer mains and laterals prior to paving. A separate air test shall be performed on any sewer mains and laterals where all utilities which cross sewer laterals were not complete prior to initial air testing *(following excavation and backfilling of any franchise utility trenches or other utility work that crosses sanitary sewer laterals)*. Unless otherwise approved in writing by the NOSD Superintendent, NOSD staff shall be present for all sewer leakage testing.

110. **Gravity Sewer Pipe Deflection Testing**. Conform to OSSC (ODOT/APWA) 00445.73. Contractor shall conduct deflection test of flexible sanitary sewer pipes by pulling an approved mandrel through all completed sewer mains following trench compaction and testing. The diameter of the mandrel shall be 95% of the initial pipe diameter. Unless otherwise approved in writing by the NOSD Superintendent, NOSD staff shall be present for all sewer mandrel testing.

111. **Gravity TV Inspection of Sanitary Sewers.** Upon completion of all sewer construction, testing and repair *(including channeling of sanitary sewer manholes)*, the Contractor shall arrange with NOSD for a color TV acceptance inspection of all mainlines and/or laterals in accordance with OSSC (ODOT/APWA) 445.74 to determine compliance with grade requirements of OSSC (ODOT/APWA) 445.40.b *(no deviation greater than 1/32-inch per inch of pipe diameter [1/2-inch max for pipes >16-inch diameter], AND no reverse sloping pipe), AND* to verify pipelines are adequately cleaned *(minimum 72 hours' notice required)*. The TV inspection will be conducted by NOSD personnel. Sufficient water to reveal low areas or reverse grades shall be discharged into the pipe by the Contractor immediately prior to initiation of the TV inspection. Failure to completely clean all new mainlines & laterals will result in cancelation of the TV inspection trip.

112. **Pressure Sewer Pipe Leakage Testing (Hydrostatic Test)**. All pressure sewer mains or services shall be pressure tested for leakage *(hydrostatic testing at 150% of working pressure, 150 psi minimum, for 2 hours)*. All testing shall conform to requirements as outlined on NOSD testing forms contained in the PWDS Appendix A. Prior to the start of each pressure test, the position of all mainline valves and other appurtenances in the test segment shall verified. All tests shall be witnessed by NOSD staff or NOSD inspector.

113. MH Inflow Inserts. All sanitary sewer manholes in low areas which are subject to flooding or water ponding *(including all lawn, landscape or gravel areas, or low areas of parking lots, or manholes closer than 4 feet clear of parking lot curblines or existing/future street curbs, adjacent to ditches, etc.)* shall be provided with inflow protector lid inserts *(whether or not such MH inserts are specifically noted on each applicable drawing sheet)*. Manhole inflow inserts shall be of ABS or HDPE plastic, and shall include integral lifting lugs on each side of the insert allowing removal with a manhole hook *(lift straps are not an acceptable alternate)*, a factory installed closed cell neoprene rubber gasket bonded to the underside of the insert rim. Unless waived in writing by the NOSD Superintendent *(case by case basis)*, a clog-free vent-valve valve *(rubber check by Tideflex)* shall be provided on

each unit. Inserts shall be ManPan manhole inserts or approved equal.

114. Sanitary Sewer Manhole Vacuum Testing & Witness. All manhole testing shall conform to requirements as outlined on NOSD testing forms contained in the PWDS. Unless otherwise approved in writing by the NOSD Superintendent, NOSD staff shall be present for all sanitary sewer manhole testing. Visible groundwater infiltration or leakage constitutes a failed sanitary sewer manhole test, whether or not the vacuum test is successful. Any sewer manholes which exhibit visible leakage after assembly shall be injection grouted by a qualified grouting subcontractor *(retained by the Contractor)* acceptable to the NOSD *(surface plugging of manhole leaks with non-shrink grout is not a permanent repair, and is not acceptable)*.

115. Manhole Testing *(New SS MHs)*. Conform to Section OSSC (ODOT/APWA) 00471.b or NOSD approved vacuum test procedure.

116. Vacuum Testing *(Existing SS MHs)*. Existing sanitary sewer manholes to which new pipes are connected *(or where existing pipe connections are modified)* shall be sealed as required and pass a vacuum test prior to final approval.

117. Vacuum Testing *(Resurfacing around Existing SS MHs)*. Existing sanitary sewer manholes where pavement or surfacing is replaced around the manhole shall be sealed as required and pass a vacuum test following completion of paving or final surface restoration.

118. Manhole Cleaning. All manholes shall be thoroughly cleaned prior to being placed in service and/or accepted by the NOSD, including removal of any debris, excess grout in manhole channels or on manhole steps, etc.

119. Prior to or concurrent with connection of a building sewer to a sanitary sewer lateral, it shall be demonstrated to the NOSD that the sewer lateral is not obstructed. This shall be accomplished by "snaking" the service lateral downstream of the connection point to the mainline, or similar method acceptable to the NOSD. NOSD personnel or authorized agent shall be present during the "snaking" or other demonstration method.

120. Plug Abandoned Sewer Laterals Watertight at Mainline Connection. If existing sewer service laterals are abandoned or not used, the sewer service lateral shall be disconnected and sealed watertight at the mainline connection in a manner acceptable to NOSD Superintendent *(if there is evidence of leakage at the existing mainline tee connection, the existing connection shall be sealed with a repair band or other approved method to seal the mainline tap watertight)*. All such abandoned and sealed sewer service lateral connections shall be inspected by NOSD prior to backfilling, and shall be TV inspected during the following winter to verify that the plug, cap or repair remains watertight. Any repairs necessary will be required to be completed at the expense of the Contractor. The remaining portion of the disconnected lateral pipe shall be either be removed entirely, or shall be capped or plugged watertight at both ends if it is abandoned in place.

121. Manhole channel depths *(sewer)* shall be to the heights shown on the drawings, but in no case shall be the channel depth be less than 2/3 of the pipe diameter. Flow channels in

manholes shall be of such shape *(semi-circular bottoms)* and slope to provide smooth transition between inlet and outlet sewer size/ invert to minimize turbulence and to ensure that the manhole channels are self-cleaning. Channels, as well as shelves between the channels and the manhole walls, shall be sloped to drain per plan details.

122. For all sanitary sewer manholes, external mastic wrap joint seal *(9-inch minimum width)* shall be installed on all manhole barrel joints & pickholes after assembly, prior to backfilling *(Bidco External Joint Wrap BW-9T by Trelleborg, or equal)*. The exterior of the manhole barrels adjacent to each joint shall be clean *(under the mastic wrap)* to ensure a good seal *(use wire brush to clean the exterior surface under the mastic wrap to remove all dirt, loose particles or deleterious material)*. The mastic wrap shall be held in place with plastic stretch wrap *(ie. pallet wrap plastic, 3 layers minimum)* during backfilling *(ie. to protect the external mastic wrap from displacement during backfill installation &/or compaction)*. Plastic wrap shall be installed immediately after the mastic wrap is placed. Coordinate with NOSD for inspection of exterior joint wrap prior to backfilling.

123. MH Frame & Cover Style. All manhole frames & covers shall be standard non-lockdown style except where explicitly called out on the drawings *(2 hole lids for sanitary sewer, 16 hole lids for storm)*. Incorrect frame or cover styles shall be replaced at no additional cost to the NOSD.

124. MH Rim Elevations. Contractor shall be responsible to verify manhole finish rim elevations match with finish grade or are set above finish grade as required to conform with NOSD standard details. Manhole rim elevations shall be adjusted as required to conform with this requirement.

125. Re-inspection of the gravity sanitary sewer system using TV inspection plus any or all of the above test methods shall be performed as required by NOSD near the completion of the 18 month warranty period, as well as visual inspection of all sanitary sewer manholes during the wet weather season *(any visible groundwater infiltration or leakage constitutes a failed manhole test, and will require warranty correction)*. The results of these test(s) will be used by NOSD to determine if final acceptance of the system is warranted and what corrective work is required prior to final acceptance. The cost of these re-inspections and any corrective work are the responsibility of the Developer. The warranty period will not be considered to be complete, and warranty/maintenance bonds will not be released until after all warranty inspections are finished and any resulting corrective work is completed.

FRANCHISE & PRIVATE UTILITIES

126. Contractor shall coordinate with gas, power, telephone, communication companies and/or applicable agencies as required for relocation of conduits, wires, pedestals, vaults, poles, etc., which are in conflict with new NOSD utilities shown on the drawings, as well as arranging for utility company inspectors to be present for critical crossings, work close to critical utilities, etc. as may be required utility company or agency standards.

127. Horizontal Separation. Installation of private utilities *(including either franchise utilities or private water, sewer or storm services)* in a common trench with NOSD sewer mains mainlines

is prohibited. Any parallel utilities *(including private or franchise utilities or private water, sewer or storm services)* shall be installed with a minimum of 5 feet horizontal separation *(ie. clear separation)* from parallel public sewer mains, except at crossings *(all crossings to be as close to perpendicular as possible)*.

TESTING AND INSPECTION:

128. The Contractor shall be responsible to ensure that all required or necessary inspections are completed by authorized inspectors prior to proceeding with subsequent work which covers or that is dependent on the work to be inspected. Failure to obtain necessary inspection(s) and approval(s) shall result in the Contractor being fully responsible for all problems and/or corrective measures arising from uninspected work.

129. Unless otherwise specified, the attached "Minimum Required Testing and Frequency" table outlines the minimum testing schedule for the project. This testing schedule is not complete, and does not relieve the Contractor of the responsibility of obtaining all necessary inspections or observations for all work performed, regardless of who is responsible for payment. Cost for retesting shall be borne by the Contractor. Copies of all test reports shall be submitted to the designated NOSD representative.

MINIMUM REQUIRED TESTING AND FREQUENCY TABLE (see note 1)

Contractor shall notify NOSD prior to all testing, to allow NOSD staff to be present. Non-witnessed testing may be required to be repeated with NOSD staff present, at the District's discretion.

		Notes
Piped Utilities, All (including backfill in lifts & AC restoration at manholes, etc.)		
Trench Backfill	1 Test/200 Foot Trench/Lift (4 min)	See note 2
Trench AC Restoration	1 Test/300 Foot Trench (4 min)	See note 2
Locate testing of each tracer wire system installed prior to paving (water, sewer & storm drainage mains & services)		See note 7
Sanitary Sewer		
Air Test	Per NOSD Requirements (see PWDS form)	See note 4
Mandrel	95% of actual inside diameter	See note 4
TV Inspection	All. Lines must be cleaned prior to TV work	
Manhole	Vacuum test each manhole, witnessed by City representative.	See note 4
Pressure Test (force main)	Hydrostatic pressure test, witnessed by NOSD representative.	See note 4
Concrete, Block, etc.		
Slump, Air & Cylinders for all structures, reinforced or structural concrete & PCC pavements. Unless otherwise specified, one set of cylinders per 100 cubic yards (or portion thereof) of concrete poured per day. Slump & air tests required on same load as cylinders.		See note 2
Building permit inspection & Special Inspection for structural concrete, reinforced masonry, epoxy anchors, etc. as required by current building codes.		See note 6
Retaining Walls		
Building permit inspection and Special Inspection, as well as compaction testing on backfill, all in conformance with all building code requirements		See note 5 & note 6

Note 1: The NOSD considers the Contractor as responsible for scheduling any and all required testing. All testing must be completed prior to performing subsequent work. Additional or more frequent tests may be required by Building Official.

Note 2: Testing must be performed by an approved independent testing laboratory/firm.

Note 3: Reserved.

Note 4: To be witnessed by NOSD representative. The Contractor shall perform pretests prior to scheduling witnessed waterline or sanitary sewer pressure tests, or pipeline mandrel test.

Note 5: The approved independent laboratory retained by the Contractor shall provide a certification (stamped by an engineer licensed in the State of Oregon) that the subgrade was prepared and all engineered fills were placed in accordance with the provisions of the construction drawings and the contract documents.

Note 6: Regardless of who is responsible for payment, the Contractor is responsible for scheduling and coordinating any and all required inspections and Special Inspections as required by applicable building codes or jurisdictions having authority.

Note 7: Tracer wire testing will be conducted by NOSD staff, employing methods & locate equipment acceptable to the NOSD. Contractor responsible to pretest all tracer wire and verify (in writing) successful pretest prior to scheduling NOSD locate test.

EROSION CONTROL NOTES

The erosion control notes and details contained in these PWDS apply to work under an NOSD permit. County Codes also requires that erosion control measures be provided for work, to minimize runoff, siltation and pollution both during and after construction.

1. Approval of an erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design *(e.g. size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.)*

2. The implementation of ESC plans and the construction, maintenance, replacement and upgrading of ESC facilities is the responsibility of the applicant/contractor until all construction is completed and approved and vegetation/landscaping is established as provided for on the construction drawings, or until 75% coverage without bare spots *(ie. vegetation well established and not just showing)*.

3. The erosion control measures shown on the ESC plan are considered the minimum required for anticipated site conditions, and shall be supplemented and/or upgraded by the applicant/contractor as required to control erosion or sediment within the project boundaries and avoid impacts to adjacent property. Additional measures shall be installed as required to ensure that all paved areas are kept clean for the duration of the project.

4. The boundaries of the clearing limits shown on the plans shall be clearly flagged in the field prior to construction. During the construction period, no disturbance beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the applicant/contractor for the duration of construction. Sediment fence may be used as the flagging for the clearing limits at the discretion of the Contractor.

5. The ESC facilities must be installed and maintained in conjunction with all clearing, grading and construction activities, and in such a manner as to ensure that sediment and sediment laden water do not enter the drainage system, roadways, or violate applicable water standards. The Contractor shall be financially responsible for all costs, violations, fines and/or penalties resulting from failure to adequately control erosion or sediment.

6. Erosion control facilities and sediment fences on active sites shall be inspected by the Contractor at least daily during any period with measurable precipitation. Any required repairs or maintenance shall be completed immediately. The erosion control facilities on inactive sites shall be inspected and maintained by the Contractor a minimum of once a month or within 24 hours following the start of a storm event, or within 24 hours of notification for failure of erosion control devices.

7. Sediment protection *(silt sack inserts with biobags)* for storm drain inlets, catch basin and area drains shall be installed and maintained for the duration of the project, and until permanent vegetation/landscaping is established.

8. At no time shall sediment accumulation within a trapped catch basin exceed 50% of the sediment capacity. All catch basins and conveyance lines shall be cleaned prior to paving, by

the Contractor as their cost. The cleaning operation shall not flush sediment laden water into the downstream system. Contractor shall also verify that all catch basins and conveyance lines are clean, and all trash or sediment deposits are removed, prior to requesting final inspection of the project.

9. In addition to hydroseeding, for slopes 2H:1V or steeper *(or where slope protection matting or erosion control blanket is indicated on the drawings or required by County Public Works)*, the erosion blanket/matting shall be a type that has an extended term functional longevity *(ie. minimum 24 months degradability)* and specifically designed for use of 2:1 or steeper slopes to ensure that the steep slopes are protected until they have adequate vegetation cover established before the matting biodegrades away. Erosion control blanket/matting shall be SC150 Erosion Control Blanket by North American Green, or approved equal *(consisting of a full layer of 70% straw and 30% coconut fiber stitched with degradable thread between a heavyweight UV stabilized polypropylene top net and a lightweight photodegradable polypropylene bottom net)*.

10. The Contractor shall provide *(at Contractor's expense)* site watering as necessary to prevent wind erosion of fine-grained soils, and to support vegetation until it is established as specified herein, or as required by an erosion control permit or to comply with County/state/federal erosion control standards.

11. Soil or native fill stockpiles placed or left in place during wet weather periods shall be covered with UV resistant plastic or tarps anchored and weighted in place. Stockpile covering shall also include installation of sediment fences or other sediment barrier around the stockpile on all sides. Inactive stockpiles shall not be left uncovered for more than 7 days during dry weather periods.

Sediment Fences

12. Sediment fences shall consist of standard strength filter fabric fastened securely to stitched post loops, and shall be installed on the upslope side of the posts, with 6 inches of the fabric extended into a trench along the sediment fence alignment. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

13. The sediment fence *(filter fabric barrier)* shall be purchased in a continuous roll cut to the length of the barrier to minimize joints. When joints are necessary, the sediment fence shall be spliced together only at a support post. The support post ends of each sediment fence section shall be twisted together by at least 2 turns and both stakes installed into the ground together.

14. The filter fabric fence shall be installed to follow the contours where feasible. The fence posts shall be spaced a maximum of 6 feet apart and driven securely into the ground, and shall be provided with additional support as required to contain all silt and sediment capture. Filter fabric shall not be stapled to the existing trees.

15. Sediment fences shall be inspected by applicant/contractor immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

16. Sediment fences shall be removed by the Contractor when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

Gravel Construction Entrances

17. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wheel wash basins, may be required to ensure that all paved areas are kept clean for the duration of the project. Where provided or required by the County, wheel wash basins shall be periodically *(or as directed by County inspector)* drained, cleaned of sediment and refilled with clean water.

18. The area of the entrance shall be cleared of all vegetation, roots, and other objectionable material. The gravel shall be placed to the specified dimensions.

19. The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public right-of-way.

20. The entrance may require periodic top dressing with additional stone as conditions demand, and repair and/or cleanout of any structures used to trap sediment.

21. The Contractor shall verify that all trucks are well sealed when transporting saturated soils from the site. Water drippage from trucks transporting saturated soils must be reduced to less than 1 gallon per hour prior to leaving the site.

22. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately by the Contractor at their expense and to the satisfaction of the NOSD Superintendent or his/her designee, or Tillamook County.