DIVISION 03: CONCRETE

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 ENVIRONMENTAL REQUIREMENTS

A. PROVIDE COLD WEATHER AND/OR HOT WEATHER PROTECTION AS RECOMMENDED IN ACI 306 AND ACI 305.

B. UNLESS ADEQUATE PROTECTION IS PROVIDED, CONCRETE SHALL NOT BE PLACED DURING RAIN, SLEET OR SNOW. PROTECT CONCRETE FROM RAIN WATER, MAINTAIN CONCRETE WATER RATIO AND PROTECT CONCRETE SURFACE.

C. ALL CONCRETE SHALL BE ADEQUATELY PROTECTED AFTER POURING TO PREVENT DAMAGE FROM FREEZING, BY THE USE OF SUITABLE COVER. FROZEN AND DAMAGED CONCRETE MUST BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE CONCRETE ON FROZEN EARTH.

PART 2 - PRODUCTS

2.01 CONCRETE MIX AND STRENGTH

A. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE CONSISTING OF A PROPORTIONED MIXTURE OF PORTLAND CEMENT, FINE AND COARSE AGGREGATE AND WATER.
   1. CONCRETE PROPORTIONS SHALL BE SELECTED ON THE BASIS OF TRIAL MIXES CONFORMING TO ACI 211.1.

B. ALL CONCRETE, UNLESS OTHERWISE NOTED, SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.

C. ALL EXTERIOR CONCRETE SHALL BE AIR-ENTRAINED, AIR CONTENT SHALL BE 5% ±1%.

D. ADMIXTURES TO RETARD OR ACCELERATE SETTING, REDUCE WATER RATIO OR PREVENT FREEZING SHALL NOT BE USED WITHOUT PRIOR APPROVAL FROM OWNER OR ENGINEER.

E. MAXIMUM AGGREGATE SIZE SHALL BE 3/4 INCH AND SHALL CONFORM TO THE FOLLOWING AND SHALL NOT EXCEED TOLERANCES ON OVERSIZE AS PER ASTM C33 (LATEST REVISION).

2.02 PRODUCTION

A. READY-MIXED CONCRETE SHALL CONFORM TO ASTM C94 (LATEST REVISION) AND THE NATIONAL READY MIX CONCRETE ASSOCIATION. USE OF NON-AGITATING TRUCKS IS NOT PERMITTED.

B. USE OF RETEMPERED CONCRETE IS NOT PERMITTED.

C. THE ADDITION OF WATER AT THE JOB SITE IS PERMITTED PROVIDING ONLY SUFFICIENT WATER IS USED TO PROVIDE A WORKABLE MIX AND THE DESIGN WATER CEMENT RATION IS NOT EXCEEDED. THE ADDITION OF CEMENT AT JOB SITE TO MAINTAIN WATER CEMENT RATIO IS NOT PERMITTED.

D. IF AIR-ENTRAINED PORTLAND CEMENT IS NOT USED, AIR-ENTRAINING ADMIXTURES SHALL BE INTRODUCED INTO THE CONCRETE, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PART 3 - EXECUTION

3.01 FORMWORK

A. CONSTRUCT FORMS TO THE SHAPE, LINES, GRADES, AND DIMENSIONS CALLED FOR ON THE DRAWINGS. STAKE WOOD OR STEEL FORMS SECURELY IN PLACE, TRUE TO LINE AND GRADE. BRACE FORMS TO PREVENT CHANGE OF SHAPE OF MOVEMENT IN ANY DIRECTION RESULTING FROM THE WEIGHT OF THE CONCRETE DURING PLACEMENT.

B. ALLOWABLE TOLERANCES: TOPS OF FORMS SHALL NOT DEPART FROM GRADE LINE MORE THAN 1/8-INCH WHEN CHECKED WITH 10-FOOT STRAIGHTEDGE. ALIGNMENT OF STRAIGHT SECTIONS SHALL NOT VARY MORE THAN 1/8-INCH IN 10 FEET.

3.02 FINISHING

A. AFTER THE PAVEMENT HAS BEEN STRUCK OFF AND CONSOLIDATED, IT SHALL BE SCRAPED WITH A STRAIGHTEDGE EQUIPPED WITH A HANDLE TO PERMIT OPERATION FROM THE EDGE OF THE PAVEMENT. ANY EXCESS WATER SHALL BE REMOVED FROM THE SURFACE OF THE PAVEMENT. IRREGULARITIES SHALL BE CORRECTED BY ADDING OR REMOVING CONCRETE. ALL DISTURBED PLACES SHALL BE AGAIN STRAIGHTEDGED.

B. AFTER THE CONCRETE HAS BEEN GIVEN A PRELIMINARY FINISH, THE SURFACE OF THE PAVEMENT SHALL BE CHECKED BY THE CONTRACTOR WITH A STRAIGHTEDGE DEVICE. EACH SUCCESSIVE CHECK WITH THE STRAIGHTEDGE DEVICE SHALL LAP THE PREVIOUS CHECK PATH BY AT LEAST HALF THE LENGTH OF THE STRAIGHTEDGE. SURFACE DEVIATIONS EXCEEDING 0.01 FOOT SHALL BE CORRECTED. UPON COMPLETION OF THE SURFACE FLOATING, BUT BEFORE ANY REQUIRED EDGE TOOLING OR JOINT TOOLING, AND BEFORE INITIAL SET OF THE SURFACE PAVEMENT, THE PAVEMENT SHALL BE GIVEN A TEXTURED FINISH PERPENDICULAR TO MATCH THE EXISTING. THE TEXTURED FINISH SHALL BE ACCOMPLISHED BY A STEEL TINE TOOL THAT WILL MARK THE FINISHED PAVEMENT TO A DEPTH OF 1/8 INCH PLUS OR MINUS 1/16 OF AN INCH. MATCH FINISH OF EXISTING PAVEMENT WHERE NEW PAVEMENT IS ADJACENT. THE SURFACE OF THE PAVEMENT SHALL NOT VARY FROM A TRUE SURFACE, WHEN TESTED WITH A 12 FOOT TESTING STRAIGHTEDGE, MORE THAN 1/8 INCH IN 12 FEET.

C. FINISH SHALL BE A LIGHT BROOM FINISH FOR SLIP RESISTANT SURFACE. BROOM PATTERN TO BE PARALLEL TO SLOPE.

3.03 JOINTS

A. CONTRACTION JOINTS:
   1. LONGITUDINAL CONTRACTION JOINTS SHALL CONSIST OF PLANES OF WEAKNESS CREATED BY FORMING GROOVES IN THE SURFACE OF THE PAVEMENT.
   2. MAXIMUM JOINT SPACING SHALL BE 5 FEET FOR SIDEWALKS.

3.04 CURING AND REPAIR

A. MINIMUM CURING PERIOD: 3 DAYS.

B. UNIFORMLY APPLY COMPOUND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AFTER FINAL CONCRETE FINISHING IS COMPLETE, AND AFTER ALL FREE WATER HAS DISAPPEARED FROM PAVEMENT SURFACE.

C. PROTECT CONCRETE FROM DAMAGE, MECHANICAL INJURY, LOAD STRESSES AND ELEMENTS DURING CURING PROCESS.

D. APPLY TO CONCRETE EDGES IMMEDIATELY AFTER FORMWORK REMOVAL.

E. DO NOT USE MEMBRANE COMPOUND METHOD IF PAVEMENT WILL BE EXPOSED TO DE-ICING CHEMICALS WITHIN 30 DAYS FOLLOWING CURING PERIOD COMPLETION.

F. CONTRACTOR SHALL REPAIR, AT NO ADDITIONAL COST, ANY BLEMISHED, CRACKS, OR IMPERFECTIONS IN CONCRETE IF IN THE OPINION OF THE OWNER OR ENGINEER THE FINAL PRODUCT WILL BE DIMINISHED IN APPEARANCE OR USABILITY.

3.05 FIELD QUALITY CONTROL

A. FIELD TESTS:
   1. OBSERVANCE AND APPROVAL OF SUBGRADE AND BASE ROCK COMPACTION.
   2. CONCRETE CYLINDER STRENGTH TESTS. CONCRETE FLEXURAL STRENGTH TESTS.
   3. SLUMP AND AIR TESTS.

B. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.

C. SPECIAL INSPECTIONS FOR CODE COMPLIANCE: OBTAIN BUILDING INSPECTOR APPROVALS.

3.06 CLEANING

A. INCLUDING WORK OF OTHER TRADES, CLEAN, REPAIR AND TOUCH-UP, OR REPLACE WHEN DIRECTED PRODUCTS WHICH HAVE BEEN SOILED, DISCOLORED, OR DAMAGED BY WORK OF THIS SECTION.

B. UPON COMPLETION OF THE WORK OF THIS SECTION, PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

END OF SECTION

DIVISION 31: EARTH MOVING

SECTION 31 23 33 - TRENCHING AND BACKFILL

PART 1 - GENERAL

1.01 REFERENCED SPECIFICATIONS

A. ODOT STANDARD SPECIFICATIONS (CURRENT EDITION).

1.02 DEFINITIONS

A. ROCK: MATERIAL THAT CANNOT BE REMOVED BY ONE-YARD SHOVEL, BY BACKHOE WITH 9,500 LB. DIGGING FORCE, BY PICK AND SHOVEL, OR BY 200 HP CRAWLER FITTED WITH NORMAL EXCAVATING EQUIPMENT. RIPPER ATTACHMENT AS MIGHT BE HOOKED INTO SEAM IS NOT CONSIDERED “NORMAL” EXCAVATING EQUIPMENT.

B. UNSTABLE SOIL: SOFT, LOOSE, WET, OR DISTURBED GROUND THAT IS INCAPABLE OF SUPPORTING MATERIAL, EQUIPMENT, PERSONNEL, OR STRUCTURE.

1.03 SUBMITTALS

A. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION.
   1. FIELD TESTS
   2. SPECIAL INSPECTIONS FOR CODE COMPLIANCE

1.04 QUALITY REQUIREMENTS

A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

C. PRODUCT/MATERIAL QUALIFICATIONS:
   1. DESIGN DATA: COMPACTION TESTING SHALL BE IN ACCORDANCE WITH PART 3 OF THIS SECTION.
   2. TEST REPORTS: PROVIDE IMPORTED MATERIAL GRADATION TEST REPORTS. PROVIDE MATERIAL COMPACTION TEST REPORTS.

1.05 DELIVERY, STORAGE, AND HANDLING

A. DELIVERY, STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
   1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.06 ADVANCE NOTICES

A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 CRUSHED ROCK

A. IMPORTED, CLEAN, 3/4" - 0 CRUSHED ROCK OR CRUSHED GRAVEL, FREE FROM FOREIGN MATERIAL AND MEETING THE REQUIREMENTS OF ODOT STANDARD SPECIFICATIONS (CURRENT EDITION) 02630.

B. TO BE USED FOR PIPE BASE MATERIAL, PIPE ZONE MATERIAL, AND TRENCH BACKFILL.

2.02 NATIVE MATERIAL

A. EXCAVATED ON-SITE SOIL, NATIVE TO PROJECT SITE, FREE OF ORGANICS, SOLIDS LARGER THAN 3-INCH DIAMETER, WEEDS AND OTHER DELETERIOUS MATERIALS AND APPROVED BY THE ENGINEER FOR USE AS ON-SITE BACKFILL.

2.03 TRACER WIRE

A. ELECTRICALLY CONDUCTIVE TRACER WIRE, 18 - GAUGE, INSULATED COPPER OR HEAVIER, GREEN IN COLOR, OR OTHER APPROVED MATERIAL. TO BE PLACED FULL LENGTH OF TRENCH WITH NON - METALLIC PIPE.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. PRIOR TO STARTING WORK OF THIS SECTION, VERIFY THAT EXISTING GRADES AND FIELD CONDITIONS AGREE WITH DRAWINGS. NOTIFY ENGINEER OF DEVIATIONS.

B. DO NOT START WORK OF THIS SECTION UNTIL ALL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.

C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 PROTECTION

A. MONUMENTS: CAREFULLY MAINTAIN BENCH MARKS, MONUMENTS, AND OTHER REFERENCE POINTS. IF DISTURBED OR DESTROYED, REPLACE AS DIRECTED.

B. EXISTING UTILITIES: EXISTING UTILITIES SHALL BE FIELD LOCATED. PROTECT ACTIVE UTILITY LINES ENCOUNTERED. REPAIR OR REPLACE UTILITY LINES DAMAGED BY WORK OF THIS SECTION.

C. PAVEMENT CLEANING: MAINTAIN PAVEMENTS AND WALKWAYS CLEAN AT ALL TIMES.

D. DUST CONTROL: PROTECT PERSONS AND PROPERTY AGAINST DAMAGE AND DISCOMFORT CAUSED BY DUST; WATER AS NECESSARY AND WHEN DIRECTED.

E. OTHER WORK AND ADJACENT PROPERTY: PROTECT AGAINST DAMAGE CAUSED BY WORK OF THIS SECTION.

3.03 GENERAL REQUIREMENTS

A. CONTRACTOR SHALL DO ALL TRENCHING AND EXCAVATING NECESSARY OR REQUIRED FOR PROPER CONSTRUCTION OF THE WORK AND PLACEMENT OR INSTALLATION OF MATERIALS. TUNNELING OR JACKING SHALL NOT BE USED UNLESS APPROVED IN WRITING BY THE ENGINEER.

B. CUTTING PAVEMENTS: CUT VERTICAL, STRAIGHT - LINE JOINTS USING POWER SAW DESIGNED FOR CUTTING PAVEMENTS. CUT MINIMUM ONE FOOT BEYOND EACH SIDE OF TRENCH.

C. OBSTRUCTIONS: REMOVE ALL OBSTRUCTIONS ENCOUNTERED WITHIN THE TRENCH AREA OR ADJACENT THERETO. IF REQUESTED BY CONTRACTOR, ENGINEER MAY MAKE MINOR CHANGES IN TRENCH ALIGNMENT TO AVOID MAJOR OBSTRUCTIONS, PROVIDED SUCH ALIGNMENT CHANGES CAN BE MADE WITHOUT ADVERSELY AFFECTING THE INTENDED FUNCTION OF THE FACILITY. CONTRACTOR SHALL PAY ANY ADDITIONAL COSTS RESULTING FROM SUCH ALIGNMENT CHANGES.

D. TRENCHING: MINIMUM TRENCH WIDTH TO BE 12 INCHES GREATER THAN OUTSIDE DIAMETER OF PIPE. MAXIMUM TRENCH WIDTH AT TOP OF TRENCH SHALL NOT BE LIMITED EXCEPT WHERE EXCESS WIDTH OF EXCAVATION WOULD CAUSE DAMAGE OR CREATE DAMAGE TO ADJACENT STRUCTURES OR FACILITIES.

E. LINE AND GRADE: EXCAVATE TRENCH TO LINES AND GRADES SHOWN ON THE DRAWINGS OR AS ESTABLISHED BY THE ENGINEER WITH PROPER ALLOWANCES FOR PIPE THICKNESS AND SPECIAL BEDDING WHEN REQUIRED.

F. SHORING: SHORE TRENCH WHEN NECESSARY TO PREVENT CAVING DURING EXCAVATION IN UNSTABLE MATERIAL, OR TO PROTECT ADJACENT STRUCTURES, PROPERTY, WORKERS, AND THE PUBLIC OR AS REQUIRED BY LOCAL, STATE, OR FEDERAL AGENCIES. SHORING SHALL BE REMOVED, AS THE BACKFILLING IS DONE, IN A MANNER THAT WILL NOT DAMAGE PIPE OR PERMIT VOIDS IN THE BACKFILL. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT SAFETY REQUIREMENTS ARE MET.

G. TEMPORARY STOCKPILING OF EXCAVATED MATERIAL: LOCATE AT LEAST 2 FEET FROM TRENCH EDGES. PLACE EXCAVATED MATERIAL ONLY WITHIN APPROVED AREAS. DO NOT OBSTRUCT ROADWAYS, BIKEWAYS, OR PEDESTRIAN WALKWAYS. CONFORM TO ALL FEDERAL, STATE AND LOCAL CODES GOVERNING THE SAFE LOADING OF EXCAVATED MATERIALS ADJACENT TO TRENCHES.

H. EXCESS EXCAVATION: WHERE EXCAVATION, THROUGH CONTRACTOR'S ERROR, IS CARRIED TO LEVELS LOWER THAN THOSE SHOWN ON DRAWINGS, BACKFILL WITH SPECIFIED BEDDING MATERIAL TO PROPER LEVELS AT CONTRACTOR'S EXPENSE.

I. DRAINAGE: AT ALL TIMES KEEP TRENCHES DRY. PROVIDE AND OPERATE PUMPING EQUIPMENT NECESSARY TO KEEP EXCAVATIONS FREE FROM STANDING WATER. DISPOSE OF WATER IN MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY AND AS REQUIRED BY GOVERNING JURISDICTION.

J. IF ROCK OR UNSTABLE SOIL ARE ENCOUNTERED, NOTIFY ENGINEER. REMOVAL OF ROCK OR UNSTABLE SOIL WILL BE PAID FOR AS AN ADDITION TO THE CONTRACT.

3.04 EXCAVATION

A. EXCAVATE TRENCHES TO THE LINE AND GRADES SHOWN ON THE DRAWINGS.

3.05 BACKFILL

A. BACKFILLING SHALL NOT COMMENCE UNTIL AFTER PIPE, CONDUIT, STRUCTURES, AND OTHER EQUIPMENT AND APPURTENANCES PLACED IN TRENCH OR SIMILAR EXCAVATIONS HAVE BEEN PROPERLY CONSTRUCTED OR INSTALLED, AS APPLICABLE, AND INSPECTED. BACKFILL SHALL BE PLACED IN SUCH A MANNER AS NOT TO DISTURB, DAMAGE, OR SUBJECT SUCH FACILITIES TO UNBALANCED LOADS OR FORCES. MAKE FILLS AS SOON AS FEASIBLE AFTER ENGINEER'S REVIEW AND ACCEPTANCE.

B. PIPE BASE: PLACE REQUIRED THICKNESS OF PIPE BASE MATERIAL OVER FULL WIDTH OF TRENCH. PROVIDE UNIFORM BEARING UNDER ENTIRE LENGTH OF EACH PIPE.

C. PIPE ZONE: PLACE REQUIRED THICKNESS OF PIPE ZONE MATERIAL OVER FULL WIDTH OF TRENCH.

D. ABOVE PIPE ZONE: BACKFILL FULL WIDTH OF TRENCH TO PAVING SUBGRADE ELEVATION OR TO WITHIN DEPTH OF LOAM IN LANDSCAPED AREAS WITH TRENCH BACKFILL.

E. COMPACTION: TRENCH BACKFILL SHALL BE COMPACTED IN MAXIMUM 12-INCH LIFTS TO:
   1. 95 PERCENT COMPACTION UNDER PAVEMENT AREAS PER ASTM D698 AT AN OPTIMUM MOISTURE CONTENT OF ±2 PERCENT.
   2. 90 PERCENT COMPACTION ELSEWHERE PER ASTM D698 AT AN OPTIMUM MOISTURE CONTENT OF ±2 PERCENT.
   3. WATER SETTLING OF TRENCH BACKFILL WILL NOT BE CONSIDERED AN ACCEPTABLE COMPACTION PROCEDURE.

3.06 MAINTENANCE OF TRENCH BACKFILL

A. CONTRACTOR SHALL MAINTAIN ALL BACKFILLED TRENCH SURFACES UNTIL ALL WORK HAS BEEN COMPLETED AND ACCEPTED. SUCH MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, ADDITION OF APPROPRIATE BACKFILL MATERIAL ABOVE THE PIPE ZONE TO KEEP BACKFILLED TRENCH SURFACE SMOOTH, FREE FROM RUTS AND POTHOLES, AND SUITABLE FOR TRAFFIC FLOW.

3.07 DISPOSAL OF WASTE MATERIAL AND EXCESS EXCAVATION

A. REMOVE FROM SITE EXCESS MATERIAL AND THAT UNSUITABLE FOR BACKFILLING.

3.08 SETTLEMENT

A. ANY SETTLEMENT IN TRENCH BACKFILL WHICH OCCURS DURING THE WARRANTY PERIOD AND IS ATTRIBUTABLE TO CONSTRUCTION PROCEDURES, SUCH AS IMPROPER REMOVAL OF SHORING OR INSUFFICIENT COMPACTION, SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE. ANY PIPING OR FACILITIES DAMAGED BY SUCH SETTLEMENT SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

3.09 FIELD QUALITY CONTROL

A. FIELD TESTS:
   1. MATERIAL COMPACTION TESTING:
      a. TRENCH COMPACTION: A MINIMUM OF ONE FIELD DENSITY TEST SHALL BE CONDUCTED ON COMPACTED MATERIAL FOR EVERY 100 LINEAR FEET, OR FRACTION THEREOF, OF TRENCH AND FOR EVERY 3 FEET, OR FRACTION THEREOF, OF FILL PLACED.
   2. IMPORTED MATERIAL GRADATION TESTING.

B. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.

C. SPECIAL INSPECTIONS FOR CODE COMPLIANCE: OBTAIN BUILDING/PLUMBING INSPECTOR APPROVALS.

3.10 CLEANING

A. UPON COMPLETION OF THE WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.11 PROTECTION

A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.

B. REPLACE, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

SECTION 31 25 00 - EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 REFERENCED SPECIFICATIONS

A. ODOT STANDARD SPECIFICATIONS (CURRENT EDITION).

1.02 QUALITY REQUIREMENTS

A. ALL MEASURES INDICATED IN THIS SPECIFICATION MAY NOT BE REQUIRED. CONTRACTOR RESPONSIBLE FOR IMPLEMENTING EROSION AND SEDIMENT CONTROLS ADEQUATE TO COMPLY WITH PERMIT REQUIREMENTS.

B. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.

C. INSTALLERS QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

D. REGULATORY REQUIREMENTS:
   1. DO NOT BEGIN CLEARING, GRADING, OR OTHER WORK INVOLVING DISTURBANCE OF GROUND SURFACE COVER UNTIL APPLICABLE PERMITS HAVE BEEN OBTAINED.
   2. OWNER WILL WITHHOLD PAYMENT TO CONTRACTOR EQUIVALENT TO ALL FINES RESULTING FROM NON-COMPLIANCE WITH APPLICABLE REGULATIONS.

E. EROSION ON SITE: MINIMIZE WIND, WATER, AND VEHICULAR EROSION OF SOIL ON PROJECT SITE DUE TO CONSTRUCTION ACTIVITIES FOR THIS PROJECT.
   1. CONTROL MOVEMENT OF SEDIMENT AND SOIL FROM TEMPORARY STOCKPILES OF SOIL.
   2. PREVENT DEVELOPMENT OF RUTS DUE TO EQUIPMENT AND VEHICULAR TRAFFIC.
   3. IF EROSION OCCURS DUE TO NON-COMPLIANCE WITH THESE REQUIREMENTS, RESTORE ERODED AREAS AT NO COST TO OWNER.

F. EROSION OFF SITE: PREVENT EROSION OF SOIL AND DEPOSITION OF SEDIMENT ON OTHER PROPERTIES CAUSED BY WATER LEAVING THE PROJECT SITE DUE TO CONSTRUCTION ACTIVITIES FOR THIS PROJECT.
   1. PREVENT WINDBLOWN SOIL FROM LEAVING THE PROJECT SITE.
   2. PREVENT TRACKING OF MUD ONTO PUBLIC ROADS OUTSIDE SITE.
   3. PREVENT MUD AND SEDIMENT FROM FLOWING ONTO SIDEWALKS AND PAVEMENTS.
   4. IF EROSION OCCURS DUE TO NON-COMPLIANCE WITH THESE REQUIREMENTS, RESTORE ERODED AREAS AT NO COST TO OWNER.

G. SEDIMENTATION OF WATERWAYS ON SITE: PREVENT SEDIMENTATION OF WATERWAYS ON THE PROJECT SITE, INCLUDING OPEN DRAINAGE WAYS AND STORM SEWERS.
   1. IF SEDIMENTATION OCCURS, INSTALL OR CORRECT PREVENTIVE MEASURES IMMEDIATELY AT NO COST TO OWNER; REMOVE DEPOSITED SEDIMENTS AND RELOCATE ON SITE; COMPLY WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

H. SEDIMENTATION OF WATERWAYS OFF SITE: PREVENT SEDIMENTATION OF WATERWAYS OFF THE PROJECT SITE, INCLUDING OPEN DRAINAGE WAYS, STORM SEWERS, AND SANITARY SEWERS.
   1. IF SEDIMENTATION OCCURS, INSTALL OR CORRECT PREVENTIVE MEASURES IMMEDIATELY AT NO COST TO OWNER; REMOVE DEPOSITED SEDIMENTS AND RELOCATE ON SITE; COMPLY WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

I. OPEN WATER: PREVENT STANDING WATER THAT COULD BECOME STAGNANT.

J. MONITORING AND INSPECTION:
   1. CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING THE CONSTRUCTION EROSION CONTROL MEASURES AND SHALL MAKE ADJUSTMENTS TO MEASURES, IN ACCORDANCE WITH THE DRAWINGS AND PERMIT, TO ACCOMMODATE CHANGES IN EARTHWORK OPERATIONS AND WEATHER CONDITIONS.

1.03 DELIVERY, STORAGE, AND HANDLING

A. DELIVERY, STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
   1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.04 ADVANCE NOTICES

A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

1.05 COORDINATION

A. COORDINATE WITH OTHER TRADES AFFECTING OR AFFECTED BY WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 SEDIMENT FENCE

A. SEDIMENT FENCE FABRIC: POLYPROPYLENE GEOTEXTILE RESISTANT TO COMMON SOIL CHEMICALS, MILDEW, AND INSECTS; NON-BIODEGRADABLE; IN LONGEST LENGTHS POSSIBLE; FABRIC INCLUDING SEAMS WITH THE FOLLOWING MINIMUM AVERAGE ROLL LENGTHS.

B. APPARENT OPENING SIZE: 30 U.S. STD. SIEVE, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM D4751 (LATEST REVISION).

C. PERMITTIVITY: 0.05 SEC-1/, MINIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM D4491 (LATEST REVISION).

D. ULTRAVIOLET RESISTANCE: RETAINING AT LEAST 70 PERCENT OF TENSILE STRENGTH, WHEN TESTED IN ACCORDANCE WITH ASTM D4355 (LATEST REVISION) AFTER 500 HOURS EXPOSURE.

E. GRAB TENSILE STRENGTH-SUPPORTED: 100 LB-F, MINIMUM, IN CROSS-MACHINE DIRECTION; 120 LB-F, MINIMUM, IN MACHINE DIRECTION; WHEN TESTED IN ACCORDANCE WITH ASTM D4632 (LATEST REVISION).

F. GRAB TENSILE STRENGTH-UNSUPPORTED: 90 LB-F, MINIMUM, IN CROSS-MACHINE DIRECTION; 100 LB-F, MINIMUM, IN MACHINE DIRECTION; WHEN TESTED IN ACCORDANCE WITH ASTM D4632 (LATEST REVISION).

G. COLOR: MANUFACTURER'S STANDARD, WITH EMBEDMENT AND FASTENER LINES PREPRINTED.

H. MANUFACTURERS:
   1. BP AMOCO, AMOCO FABRICS AND FIBERS; WWW.GEOTEXTILE.COM.
   2. TC MIRAFI; WWW.TCMIRAFI.COM.
   3. SYNTHETIC INDUSTRIES; WWW.FIXSOIL.COM.

2.02 SAND BAGS

A. PROVIDE 24” X 12” X 6” DURABLE, WEATHER-RESISTANT, TIGHTLY WOVEN BAGS SUFFICIENT TO PREVENT LEAKAGE OF FILLER MATERIAL. FILL BAGS WITH AT LEAST 75 LBS. OF FIRMLY PACKED FILE PCC AGGREGATE 3/8” - 0 OR ROUND 3/8” - 3/16” PEA GRAVEL.

2.03 CATCH BASIN INSERT BAG / CURB INLET SEDIMENT DAM (AS NEEDED)

A. PROVIDE PREFABRICATED FILTER INSERTS MANUFACTURED SPECIFICALLY FOR COLLECTING SEDIMENT IN DRAINAGE INLETS. INCLUDE HANDLES AND/OR FASTENERS SUFFICIENT TO KEEP THE INSERT FROM FALLING INTO THE INLET DURING MAINTENANCE AND REMOVAL OF THE INSERT FROM THE INLET. INSERT BAGS SHALL BE INCLUDED ON THE OREGON QUALIFIED PRODUCTS LIST (QPL) FOR TYPE 3 INLET PROTECTION OR APPROVED. CURB INLET SEDIMENT DAMS SHALL BE INCLUDED ON THE OREGON QPL FOR TYPE 6 INLET PROTECTION OR APPROVED.

2.04 GRASS SEED FOR PERMANENT GROUND COVER

A. SELECT A SPECIES APPROPRIATE TO CLIMATE, PLANTING SEASON, AND INTENDED PURPOSE, AS APPROVED BY THE OWNER.

B. SEEDS SHALL BE OF BLUE TAG STOCK AND FROM THE CURRENT OR LATEST SEASON'S CROP AND SHALL BE IN CONTAINERS LABELED IN ACCORDANCE WITH OREGON STATE AND U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. EXAMINE SITE AND IDENTIFY EXISTING FEATURES THAT CONTRIBUTE TO EROSION RESISTANCE; MAINTAIN SUCH EXISTING FEATURES TO GREATEST EXTENT POSSIBLE.

B. DO NOT START WORK OF THIS SECTION UNTIL ALL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.

C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES

A. INSTALL AS SHOWN ON DRAWINGS, OR AS DIRECTED BY ENGINEER, EROSION AND SEDIMENT CONTROL INSPECTOR, OR LOCAL AUTHORITY HAVING JURISDICTION.

3.03 SEEDING

A. WHEN HYDRAULIC SEEDER IS USED, SEEDBED PREPARATION IS NOT REQUIRED.

B. WHEN SURFACE SOIL HAS BEEN SEALED BY RAINFALL OR CONSISTS OF SMOOTH, UNDISTURBED CUT SLOPES AND CONVENTIONAL OR MANUAL SEEDING IS TO BE USED, PREPARE SEEDBED BY SCARIFYING SUFFICIENTLY TO ALLOW SEED TO LODGE AND GERMINATE.

C. IF TEMPORARY MULCHING WAS USED ON PLANTING AREA BUT NOT REMOVED, APPLY NITROGEN FERTILIZER AT 1 POUND PER 1000 SQ. FT.

D. ON SOILS OF VERY LOW FERTILITY, APPLY 10-10-10 FERTILIZER AT RATE OF 12 TO 16 POUNDS PER 1,000 SQ. FT.

E. INCORPORATE FERTILIZER INTO SOIL BEFORE SEEDING.

F. APPLY SEED UNIFORMLY; IF USING DRILL OR CULTIPACKER SEEDER, PLACE SEED 1/2 TO 1 INCH DEEP.

G. IRRIGATE AS REQUIRED TO THOROUGHLY WET SOIL TO DEPTH THAT WILL ENSURE GERMINATION WITHOUT CAUSING RUNOFF OR EROSION.

H. REPEAT IRRIGATION AS REQUIRED UNTIL GRASS IS ESTABLISHED.

3.04 PROTECTION

A. MONUMENTS: CAREFULLY MAINTAIN BENCHMARKS, MONUMENTS, AND OTHER REFERENCE POINTS. IF DISTURBED OR DESTROYED, REPLACE AS DIRECTED.

B. EXISTING UTILITIES: EXISTING UTILITIES SHALL BE FIELD LOCATED. PROTECT ACTIVE UTILITY LINES ENCOUNTERED. REPAIR OR REPLACE UTILITY LINES DAMAGED BY WORK OF THIS SECTION.

C. PAVEMENT CLEANING: MAINTAIN PAVEMENTS AND WALKWAYS CLEAN AT ALL TIMES.

D. DUST CONTROL: PROTECT PERSONS AND PROPERTY AGAINST DAMAGE AND DISCOMFORT CAUSED BY DUST; WATER AS NECESSARY AND WHEN DIRECTED.

E. OTHER WORK AND ADJACENT PROPERTY: PROTECT AGAINST DAMAGE CAUSED BY WORK OF THIS SECTION.

3.05 FIELD QUALITY CONTROL

A. SPECIAL INSPECTIONS FOR CODE COMPLIANCE:
   1. OBTAIN BUILDING/PLUMBING APPROVALS FROM LOCAL AUTHORITY HAVING JURISDICTION.

3.06 MAINTENANCE

A. MAINTAIN TEMPORARY MEASURES UNTIL PERMANENT MEASURES HAVE BEEN ESTABLISHED.

B. REPAIR DEFICIENCIES IMMEDIATELY.

3.07 CLEANING

A. REMOVE TEMPORARY MEASURES AFTER PERMANENT MEASURES HAVE BEEN INSTALLED, UNLESS PERMITTED TO REMAIN BY ENGINEER OR OWNER.

B. CLEAN OUT TEMPORARY SEDIMENT CONTROL STRUCTURES THAT ARE TO REMAIN AS PERMANENT MEASURES.

C. WHERE REMOVAL OF TEMPORARY MEASURES WOULD LEAVE EXPOSED SOIL, SHAPE SURFACE TO AN ACCEPTABLE GRADE AND FINISH TO MATCH ADJACENT GROUND SURFACES.

3.08 PROTECTION

A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.

B. REPLACE AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

JTE
Janet Turner Engineering, LLC

REGISTERED PROFESSIONAL ENGINEER
56487PE
OREGON
JULY 09, 2002
JANET L. TURNER
EXPIRATION DATE: 06/30/22

RALEIGH PARK ES
3670 SW 78TH AVE
PORTLAND OR, 97225

NO.	DATE	DESCRIPTION

DATE	07–15–2021
DESIGNED	JLT
DRAWN	JR
CHECKED	JLT

SPECIFICATIONS

C3.0

DIVISION 32: EXTERIOR IMPROVEMENTS

SECTION 32 12 00 - FLEXIBLE PAVING

PART 1 - GENERAL

1.01 REFERENCED SPECIFICATIONS

A. 2021 OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION, HMAC PAVEMENT REFERENCE, SECTION 00744.

1.02 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING PERFORMANCE, CONSTRUCTION, AND FABRICATION INFORMATION.
   1. SUBMIT FOR JOB MIX FORMULAS (JMF).

B. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION:
   1. FIELD TESTS.

1.03 QUALITY ASSURANCE

A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

1.04 DELIVERY, STORAGE, AND HANDLING

A. DELIVERY, STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
   1. PROTECT MATERIALS AND MAINTAIN PRODUCT TEMPERATURE DURING DELIVERY.

PART 2 - PRODUCTS

2.01 CRUSHED ROCK PAVEMENT BASE

A. HMAC MIXTURE: IMPORTED CLEAN 3/4"-0 OR 1-1/2"-0 DENSE GRADED CRUSHED ROCK OR CRUSHED GRAVEL, FREE OF FOREIGN MATERIAL AND MEETING THE REQUIREMENTS OF ODOT STANDARD SPECIFICATIONS (CURRENT EDITION) 02630, BASE AGGREGATE.

2.02 HOT MIXED ASPHALT CONCRETE (HMAC)

A. ASPHALT MIXTURE: THE ASPHALT CONCRETE MIXTURE SHALL BE A WELL-GRADED, UNIFORM COATED, DURABLE MIX OF THE MIX TYPE(S) AS SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER.

BROADBAND LIMITS

DENSE GRADED MIXTURE

SIEVE SIZE PASSING	PERCENTAGE OF TOTAL AGGREGATE (BY WEIGHT) 1/2" DENSE	PERCENTAGE OF TOTAL AGGREGATE (BY WEIGHT) 3/4" DENSE
1"	--	99-100
3/4"	99-100	92-100
1/2"	90-100	75-91
1/4"	52-80	50-70
NO. 10	21-46	21-41
NO. 40	8-25	6-24
NO. 200	3-8	2-7
ASPHALT CEMENT	4-8	4-8

B. ASPHALT CEMENT (BINDER): PER OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION, (CURRENT EDITION). USE PG (PERFORMANCE GRADE) 64-22 FOR BASE AND WEARING COURSES.

C. AGGREGATE FOR BASE COURSE MIX: PER OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION (CURRENT EDITION).

D. FINE AGGREGATE: PER OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION (CURRENT EDITION).

E. MINERAL FILLER: FINELY GROUND PARTICLES OF LIMESTONE, HYDRATED LIME, OR OTHER MINERAL DUST, FREE OF FOREIGN MATTER.

F. ASPHALT TACK COAT: TYPE CSS-1, CSS-1H, CMS-2, CMS-2S, CMS-2H, CRS-2, HFRS-2 OR HFMS_2 EMULSIFIED ASPHALT (EA) CONFORMING TO STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

G. RECLAIMED ASPHALT PAVEMENT (RAP) MATERIAL: SHALL NOT EXCEED 30% IN THE NEW PAVEMENT. RAP MATERIAL NOT PERMITTED IN OPEN GRADED OR LEVEL 4 HMAC PAVEMENT, IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION). ASPHALT MIXTURES INCLUDING RAP TO MEET ALL NORMAL SPECIFICATION AND OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION (CURRENT EDITION) REQUIREMENTS.

2.03 JOB MIX FORMULA (JMF)

A. MIX FORMULA: THE CONTRACTOR SHALL SUBMIT A JMF FOR EACH MIXTURE TO BE USED ON THE PROJECT AND MEETING THE LEVEL 2 CRITERIA OF OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION.

B. THE CONTRACTOR SHALL SUPPLY THE JOB MIX DESIGN TO THE ENGINEER TEN (10) WORKDAYS PRIOR TO PRODUCTION. THE JOB MIX FORMULA SHALL BE NO MORE THAN FIVE (5) YEARS OLD.

C. APPROVAL: NO PAVING SHALL OCCUR UNTIL THE CONTRACTOR RECEIVES WRITTEN APPROVAL OF THE CONTRACTOR'S JOB MIX FORMULA.

2.04 MODIFICATION OF MIXES

A. MODIFICATION: THE ENGINEER RESERVES THE RIGHT TO MODIFY SPECIFIED MIXES FOR USE UNDER VARIOUS TRAFFIC CONDITIONS ON VARIOUS SEGMENTS OF THE WORK AND FOR FEATHERING, SPOT PATCHING, AND OTHER SPECIAL PURPOSES. THE CONTRACTOR SHALL PROVIDE MIXES PROPORTIONED AS DIRECTED BY THE ENGINEER FOR SUCH PURPOSES.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. PRIOR TO STARTING OF THE WORK OF THE SECTION VERIFY THAT EXISTING GRADES AND FIELD CONDITIONS AGREE WITH DRAWINGS. NOTIFY ENGINEER OF DEVIATIONS.

B. DO NOT START WORK OF THIS SECTION UNTIL ALL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.

C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 WEATHER LIMITATIONS

A. SURFACE TEMPERATURE: ASPHALT CONCRETE SHALL BE PLACED ON A DRY PREPARED SURFACE WHEN THE SURFACE TEMPERATURE IS NOT LESS THAN SPECIFIED BELOW.

NOMINAL SPECIFIED
COMPACTED THICKNESS
OF INDIVIDUAL COURSES
2" TO 2-1/2" 50F
2-1/2" AND OVER 40F

B. WEATHER: ASPHALT CONCRETE SHALL NOT BE PLACED DURING RAIN OR OTHER ADVERSE WEATHER CONDITIONS. HOWEVER, IF APPROVED BY THE ENGINEER, THE MIX IN TRANSIT AT THE TIME THE ADVERSE CONDITIONS OCCUR MAY BE LAID IF THE MIX HAS BEEN COVERED DURING TRANSIT AND IS AT THE SPECIFIED TEMPERATURE, IF THE FOUNDATION IS FREE FROM POOLS OR FLOW OF WATER, AND IF ALL OTHER REQUIREMENTS OF THESE SPECIFICATIONS ARE MET. ASPHALT CONCRETE MIXTURES SHALL NOT BE PLACED WHEN THE FOUNDATION IS FROZEN OR WHEN, IN THE OPINION OF THE ENGINEER, EXISTING OR EXPECTED WEATHER CONDITIONS WILL PREVENT THE PROPER HANDLING, FINISHING, OR COMPACTION OF THE MIXTURES. DENSE AND OPEN GRADED MIXES SHALL ONLY BE PLACED FROM 3/15 - 9/30.

C. AMBIENT TEMPERATURE CAUTION: THE CONTRACTOR IS CAUTIONED THAT PLACING ASPHALT CONCRETE ON COOL DAYS WHEN THE TEMPERATURE IS LESS THAN 60F MAY REQUIRE AN ADJUSTMENT IN CONTRACTOR'S NORMAL PLACING AND COMPACTION PROCEDURES SO THAT SPECIFIED MINIMUM COMPACTION REQUIREMENTS WILL BE MET. THE TEMPERATURES SHOWN IN THE TABLE IN THIS SECTION ARE NOT RECOMMENDED TEMPERATURES FOR PAVING, BUT PAVING MAY BE ALLOWED AT THESE TEMPERATURES ON THE CONDITION THAT SPECIFIED PAVEMENT COMPACTION IS ACHIEVED.

3.03 COMPACTORS

A. ROLLERS: ROLLERS SHALL BE STEEL WHEEL, PNEUMATIC TIRE, VIBRATORY OR A COMBINATION OF THESE TYPES. THEY SHALL BE IN GOOD CONDITION AND CAPABLE OF REVERSING WITHOUT BACKLASH.

3.04 PREPARATION OF FOUNDATION

A. BASES: ALL BASES AND FOUNDATIONS ON WHICH THE PAVEMENT IS TO BE CONSTRUCTED SHALL MEET THE APPLICABLE SPECIFICATIONS AND BE APPROVED PRIOR TO THE START OF PAVING. EXISTING BASES AND FOUNDATIONS SHALL BE RECONDITIONED AS SPECIFIED OR DIRECTED.

B. EDGES: BROKEN OR RAGGED EDGES OF EXISTING PAVED SURFACES UNDERLYING OR ABUTTING THE NEW PAVEMENT SHALL BE TRIMMED BACK TO FIRM MATERIAL. SURFACES AGAINST WHICH ASPHALT CONCRETE IS TO BE PLACED SHALL BE TREATED WITH AN ASPHALT TACK COAT.

C. TACK COAT: PRIOR TO PLACING EACH LIFT OF ASPHALT CONCRETE, TACK COAT ASPHALT SHALL BE APPLIED TO COMPLETELY COVER ALL COLD LONGITUDINAL JOINT AND ALL PREPARED EXISTING ASPHALT AND PORTLAND CEMENT CONCRETE SURFACES. IMMEDIATELY BEFORE APPLYING THE TACK COAT, THE SURFACE TO BE TACKED SHALL BE CLEAN AND DRY. THE APPLICATION RATE SHALL BE BETWEEN 0.05 AND 0.20 GALLONS PER SQUARE YARD OF SURFACE AREA TO ACHIEVE UNIFORM, THOROUGH COVERAGE AND AS APPROVED BY THE ENGINEER. EMULSIFIED ASPHALT TEMPERATURE TO BE BETWEEN 140 AND 185F AND APPLICATION TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.05 CRUSHED ROCK PAVEMENT BASE PLACEMENT

A. EXCAVATE TO THE LINE AND GRADE SHOWN ON THE PLANS.

B. PLACE CRUSHED ROCK PAVEMENT BASE MATERIAL IN 12-INCH MAXIMUM LOOSE LIFTS AND COMPACT TO A MINIMUM DENSITY OF 95 PERCENT RELATIVE COMPACTION, PER A MAXIMUM DRY DENSITY OF ASTM D698 (LATEST REVISION) AT AN OPTIMUM MOISTURE CONTENT OF ±2 PERCENT.

3.06 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. PLACE ASPHALT WITHIN 24 HOURS OF APPLYING TACK COAT. DO NOT PLACE HMAC PAVEMENT ON THE TACK COAT UNTIL THE ASPHALT SEPARATES FROM THE WATER (BREAKS), BUT BEFORE IT LOSES ITS TACKINESS.

B. PLACE UP TO 3-INCH COMPACTED THICKNESS IN ONE LIFT.

C. COMPACT PAVEMENT BY ROLLING. DO NOT DISPLACE OR EXTRUDE PAVEMENT FROM POSITION. USE HAND-OPERATED COMPACTING EQUIPMENT IN AREAS INACCESSIBLE TO ROLLING EQUIPMENT.

3.07 HAULING, DEPOSITING AND PLACING

A. HAULING: COVER HMAC IF RAIN OR COLD AIR TEMPERATURES ARE ENCOUNTERED ANY TIME BETWEEN LOADING AND PLACEMENT. ENGINEER MAY REJECT MATERIAL COMPROMISED (BELOW SPECIFIED TEMPERATURE, SLUMPING OR SEPARATING, SOLIDIFYING OR CRUSTING). REJECTED LOADS WILL BE DISPOSED OF OFF-SITE AT THE CONTRACTOR'S EXPENSE.

B. DEPOSITING: MATERIAL SHALL BE DEPOSITED FROM VEHICLES TO PREVENT SEGREGATION.

C. PLACING: DO NOT PLACE MATERIAL DURING RAIN OR OTHER ADVERSE WEATHER CONDITIONS, UNLESS ALLOWED BY ENGINEER. MATERIAL PLACED IN ADVERSE CONDITIONS IS TO MEET ALL NORMAL CONTRACT SPECIFICATION REQUIREMENTS. MATERIAL IN TRANSIT AT THE TIME ADVERSE CONDITIONS OCCUR MAY BE PLACED IF IT HAS BEEN COVERED DURING TRANSPORT, IT IS PLACED IN AREAS FREE OF STANDING OR FLOWING WATER, TEMPERATURE AND ALL OTHER REQUIREMENTS ARE MET.

3.08 TEMPERATURE CONTROL

A. TEMPERATURE OF MIXTURE:
   1. THE TEMPERATURE OF THE MIXTURE AT THE TIME IT IS PLACED IN FINAL POSITION SHALL BE WITHIN 10 DEGREES OF 280F. THE ENGINEER MAY ADJUST THE LAY-DOWN TEMPERATURE IN 10-DEGREE INCREMENTS TO ATTAIN MAXIMUM WORKABILITY AND COMPACTION. IN NO CASE SHALL THE LAY-DOWN TEMPERATURE OF MIXTURE BE LESS THAN 240F.

3.09 COMPACTION

A. GENERAL:
   1. THE TYPE, NUMBER, AND WEIGHT OF ROLLERS (OR OTHER COMPACTORS FOR PROPOSED PROJECT CONSTRAINTS) SHALL BE SUFFICIENT TO COMPACT THE MIXTURE WHILE IT IS STILL WITHIN THE SPECIFIED TEMPERATURE RANGE. ROLLERS SHALL NOT BE OPERATED IN VIBRATORY MODE WHEN THE TEMPERATURE OF THE MIXTURE HAS DROPPED BELOW 180 DEGREES.
   2. ANY MIXTURE THAT BECOMES LOOSE AND BROKEN, CONTAMINATED, SEGREGATED, OR IS IN ANY WAY DEFECTIVE, SHALL BE REMOVED AND REPLACED WITH NEW MIXTURE AT NO EXPENSE TO THE OWNER.
   3. ALONG CURBS AND WALLS, ON WALKS, IRREGULAR AREAS, AND OTHER AREAS NOT PRACTICABLY ACCESSIBLE TO SPECIFIED ROLLERS, THE MIXTURE SHALL BE COMPACTED WITH APPROVED SELF-PROPELLED ROLLERS, MECHANICAL TAMPERS, HOT HAND TAMPERS, OR HEAVY HAND ROLLERS. ON DEPRESSED AREAS, A TRENCH ROLLER MAY BE USED OR CLEATED COMPRESSION STRIPS MAY BE USED UNDER THE ROLLER TO TRANSMIT COMPRESSION TO THE DEPRESSED AREA.

B. DENSITY REQUIREMENTS:
   1. THE CONTRACTOR IS RESPONSIBLE FOR PROCESS CONTROL AND SHALL CONDUCT SAMPLING, TESTING, MEASUREMENT AND INSPECTION. A COPY OF ALL COMPACTION TEST REPORTS SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR TO IMMEDIATELY TAKE CORRECTIVE MEASURES WHEN IT IS DETERMINED THAT SPECIFIED COMPACTION DENSITY IS NOT ACHIEVED. IF SPECIFIED COMPACTION DENSITY CANNOT BE ACHIEVED THE CONTRACTOR SHALL REMOVE AND REPLACE THE DEFECTIVE ASPHALT AREAS AT THE CONTRACTOR'S EXPENSE.
   2. ASPHALT COMPACTION BELOW 88 PERCENT AS DETERMINED BY RICE DENSITY TEST AASHTO T 209 AS MODIFIED BY ODOT TM 306 IS NOT ACCEPTABLE.
   3. THE OWNER WILL DETERMINE THE SUITABILITY OF THE FINAL PRODUCT THROUGH FINAL ACCEPTANCE TESTING.

3.10 PAVEMENT SMOOTHNESS

A. TOLERANCE: THE SURFACE OF THE FINISHED PAVEMENT SHALL BE WITHIN 0.02 FOOT OF THE SPECIFIED LINE, GRADE, AND CROSS SECTION.

B. TEXTURE: THE COMPLETED SURFACE OF ALL COURSES OF THE MIXTURE SHALL CLOSELY PARALLEL THAT SPECIFIED FOR THE TOP SURFACE OF THE FINISHED PAVEMENT AND SHALL BE SMOOTH, UNIFORM ON TEXTURE AND CONFORM TO THE SPECIFIED CROWN AND GRADE.

C. ROUGHNESS: WHEN TESTS SHOW THE PAVEMENT IS NOT WITHIN THE ABOVE TOLERANCES, THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO CORRECT EQUIPMENT OR PROCEDURES IN THE PAVING OPERATIONS TO ELIMINATE THE UNACCEPTABLE PAVEMENT ROUGHNESS.

D. METHOD OF CORRECTION: ANY SURFACE IRREGULARITIES EXCEEDING THE ABOVE TOLERANCES SHALL BE CORRECTED BY THE CONTRACTOR USING A METHOD OR METHODS LISTED BELOW AND APPROVED BY THE ENGINEER.

3.11 FIELD QUALITY CONTROL

A. FIELD TESTS:
   1. BASE ROCK COMPACTION TESTING.
   2. ASPHALTIC CONCRETE PAVEMENT COMPACTION TESTING.
   3. ASPHALTIC CONCRETE PAVEMENT GRADATION TESTING.

B. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO PAVING OPERATIONS.

3.12 CORRECTIVE ACTION

A. CORRECTIVE MEASURES: THE ENGINEER SHALL REQUIRE ONE OR MORE OF THE FOLLOWING CORRECTIVE MEASURE BE PERFORMED ON THE DEFICIENT AREAS:
   1. REMOVE AND REPLACE THE SURFACE COURSE.
   2. PLACE AN OVERLAY OF A THICKNESS APPROVED BY THE ENGINEER.
   3. GRIND THE PAVEMENT SURFACE UTILIZING DIAMOND BLADES UP TO A MAXIMUM DEPTH OF 0.3 INCH AND APPLY AN EMULSION FOG COAT AS DIRECTED BY THE ENGINEER.

B. ADDITIONAL CORRECTIVE WORK: AFTER COMPLETION OF THE CORRECTIVE WORK, IF THE ENGINEER FINDS IT IS STILL NOT SATISFACTORY, THE CONTRACTOR SHALL PERFORM ADDITIONAL CORRECTIVE WORK ON AREAS STILL NOT MEETING THE ABOVE TOLERANCES.

C. EXPENSE: ALL CORRECTIVE WORK, INCLUDING FURNISHING OF MATERIALS, SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE AND NO ADJUSTMENT IN CONTRACT TIME WILL BE MADE FOR CORRECTIVE ACTION WORK.

D. LOCALIZED SURFACE IRREGULARITIES: WHERE SURFACE IRREGULARITIES ARE LOCALIZED OR WHERE THE ENGINEER DETERMINES CORRECTIVE WORK WOULD NOT BE IN THE OWNER'S BEST INTERESTS, THE ENGINEER MAY DEDUCT FROM PAYMENT DUE THE CONTRACTOR AMOUNTS EQUIVALENT TO THE ENGINEER'S ESTIMATE OF WORK COSTS HAD THE CORRECTIVE WORK BEEN DONE.

3.13 CLEANING

A. TRIM AND REMOVE EXCESS ASPHALT CONCRETE ACCUMULATIONS FROM ABUTTING STRUCTURES SUCH AS CURBS, MANHOLES, CATCH BASINS, AND OTHER STRUCTURE.

B. INCLUDING WORK OF OTHER SECTIONS, CLEAN, REPAIR AND TOUCH-UP, OR REPLACE WHEN DIRECTED, PRODUCTS WHICH HAVE BEEN SOILED, DISCOLORED, OR DAMAGED BY WORK OF THIS SECTION. REMOVE EXCESS SPILLED MATERIAL AND DEBRIS FROM PROJECT SITE UPON WORK COMPLETION OR SOONER, IF DIRECTED.

C. UPON COMPLETION OF THE WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.14 PROTECTION

A. IN ADDITION TO OTHER REQUIRED PROVISIONS FOR TRAFFIC, THE FOLLOWING SHALL APPLY TO PAVEMENT CONSTRUCTION: NO TRAFFIC OR EQUIPMENT SHALL COME IN CONTACT WITH THE COMPACTED MIXTURE UNTIL IT HAS COOLED AND SET SUFFICIENTLY TO PREVENT MARKING; EDGES SHALL BE PROTECTED FROM BEING BROKEN DOWN; AND EDGE DROP-OFF(S) ONE INCH OR MORE IN HEIGHT SHALL BE MARKED WITH APPROVED REFLECTORIZED AND/OR FLASHING WARNING DEVICES VISIBLE BY DAY AND NIGHT TO THE TRAVELING PUBLIC, AND PLACED AT SPACINGS AS SPECIFIED BY THE ENGINEER.

B. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.

C. REPLACE AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

JTE
Janet Turner Engineering, LLC

RALEIGH PARK ES
3670 SW 78TH AVE
PORTLAND OR, 97225

NO.	DATE	DESCRIPTION

DATE	07–15–2021
DESIGNED	JLT
DRAWN	JR
CHECKED	JLT

SPECIFICATIONS

C3.1

DIVISION 32: UTILITIES

SECTION 33 30 00 - SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING PERFORMANCE, CONSTRUCTION, FABRICATION, AND INSTALLATION INFORMATION.
   1. SUBMIT FOR: PIPE, FITTINGS, AND CLEANOUT COVERS.

B. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION:
   1. FIELD TESTS
   2. SPECIAL INSPECTIONS FOR CODE COMPLIANCE

1.02 QUALITY ASSURANCE

A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

1.03 DELIVERY, STORAGE, AND HANDLING

A. PACKING AND SHIPPING: DELIVER PRODUCTS IN ORIGINAL, UNOPENED PACKAGING WITH LEGIBLE MANUFACTURER'S IDENTIFICATION.

B. STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
   1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.04 ADVANCE NOTICE

A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 SANITARY SEWER PIPE AND FITTINGS (8 INCH AND LARGER)

A. SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE WITH RUBBER GASKET JOINTS. MANUFACTURING STANDARD: ASTM D-3034 (LATEST REVISION) SDR 35 FOR PIPE SIZES 8"-15" AND ASTM F679 (LATEST REVISION) FOR PIPE SIZES 18"_24". PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.

2.02 SANITARY SEWER PIPE AND FITTINGS (6 INCH AND SMALLER)

A. SHALL BE SCHEDULE 40 ABS (DWV), ASTM D2661 (LATEST REVISION), WITH SOLVENT CEMENT JOINTS.

B. PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.

2.03 CLEANOUTS

A. SHALL BE CONSTRUCTED FROM SOLID WALL PIPE AND FITTINGS SPECIFIED ABOVE WITH LOCKING TRAFFIC GRADE FRAME AND COVER. FRAME AND COVER SHALL BE H20 RATED CAST IRON VALVE BOX AS DETAILED ON DRAWINGS WITH "SEWER" MARKING. OLYMPIC FOUNDRY 910.

2.04 CONCRETE

A. CONCRETE SHALL BE READY-MIXED CONFORMING TO SECTION 03 30 00, CAST-IN-PLACE CONCRETE, AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. MAXIMUM SIZE OF AGGREGATE SHALL BE 1-1/2 INCHES.

2.05 OTHER MATERIALS

A. RECOMMENDED BY MANUFACTURER AND SUBJECT TO ENGINEER'S REVIEW AND ACCEPTANCE. PROVIDE ALL MATERIALS REQUIRED TO COMPLETE AND MAKE DRAINAGE SYSTEM OPERATIONAL.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. PRIOR TO STARTING WORK OF THIS SECTION, CAREFULLY INSPECT TRENCH, EXCAVATIONS, AND PIPE BEDDING TO VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.

B. DO NOT INSTALL WORK OF THIS SECTION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.

C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 TRENCHING AND BACKFILL

A. TRENCHING AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 31 23 33, TRENCHING AND BACKFILL.

3.03 PIPE INSTALLATION

A. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ALL PIPE ENDS AND INTERIORS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER AND SHALL BE KEPT CLEAN DURING INSTALLATION. WHEN WORK IS NOT IN PROGRESS, ALL OPEN ENDS OF PIPE AND FITTINGS SHALL BE SECURELY CLOSED SO THAT NO WATER, EARTH, ANIMAL LIFE, OR OTHER SUBSTANCE MAY ENTER.

B. CUTTING PIPE SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER BY METHOD WHICH WILL NOT DAMAGE PIPE AND AS RECOMMENDED BY MANUFACTURER.

C. INSTALL PIPING WITHIN 0.02 FOOT OF INDICATED GRADE AND LOCATION.

D. ALL DUCTILE IRON PIPE JOINTS AND FITTING JOINTS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING SHALL BE FULLY COVERED WITH ASPHALTIC COATING. WRAP DUCTILE IRON PIPE AND FITTINGS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING WITH POLYWRAP.

3.04 CLEANOUTS

A. CONSTRUCT ON COMPACTED 4" MINIMUM DEPTH 3/4" - 0 CRUSHED ROCK BASE LEVEL, PLUMB, AND SQUARE WITH ADJACENT SURFACES. SET RIM FLUSH WITH ADJACENT FINISHED SURFACES UNLESS OTHERWISE NOTED.

3.05 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.

B. SPECIAL INSPECTIONS FOR CODE COMPLIANCE:
   1. PROVIDE HYDROSTATIC TEST OR AIR TEST PER STATE OF OREGON PLUMBING SPECIALTY CODE.
   2. OBTAIN PLUMBING INSPECTOR APPROVALS AND SUBMIT TO ENGINEER.

3.06 CLEANING

A. PRIOR TO FINAL ACCEPTANCE, CONTRACTOR SHALL FLUSH AND CLEAN ALL ELEMENTS OF THE COMPLETED SYSTEM. ALL PIPE AND STRUCTURES SHALL BE CLEAN AND FREE OF ALL CONSTRUCTION DEBRIS, ROCKS, GRAVEL, MUD, SAND, SILT, AND OTHER FOREIGN MATERIAL, AND AS DIRECTED BY THE ENGINEER.

B. UPON COMPLETION OF WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.07 PROTECTION

A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.

B. REPLACE AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

SECTION 33 40 00 - STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING PERFORMANCE, CONSTRUCTION, FABRICATION, AND INSTALLATION INFORMATION.
   1. SUBMIT FOR: PIPE AND FITTINGS AND CLEANOUT COVERS.

B. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION:
   1. FIELD TESTS
   2. SPECIAL INSPECTIONS FOR CODE COMPLIANCE

1.02 QUALITY ASSURANCE

A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

1.03 DELIVERY, STORAGE, AND HANDLING

A. PACKING AND SHIPPING: DELIVER PRODUCTS IN ORIGINAL, UNOPENED PACKING WITH LEGIBLE MANUFACTURER'S IDENTIFICATION.

B. STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
   1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.04 ADVANCE NOTICES

A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 STORM PIPE AND FITTINGS (UNLESS OTHERWISE NOTED)

A. EITHER OF THE FOLLOWING PIPE MATERIALS MAY BE USED.
   1. PVC SOLID WALL: SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE WITH RUBBER GASKET JOINTS. MANUFACTURING STANDARD: ASTM D3034 (LATEST REVISION) SDR 35 FOR PIPE SIZES 4"-15", T-1 WALL THICKNESS. PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.
   2. POLYETHYLENE PIPE: CORRUGATED POLYETHYLENE MEETING THE REQUIREMENTS OF AASHTO M252 TYPE S (PIPE SIZES 3" - 10"). JOINT SHALL BE WATERTIGHT ACCORDING TO THE REQUIREMENTS OF ASTM D3212 (LATEST REVISION). GASKETS SHALL BE MADE OF POLYISOPRENE MEETING THE REQUIREMENTS OF ASTM F477 (LATEST REVISION) WITH THE ADDITION THAT THE GASKETS SHALL NOT HAVE ANY VISIBLE CRACKING WHEN TESTED ACCORDING TO ASTM D1149 (LATEST REVISION) AFTER 72 HOUR EXPOSURE IN 50 PPHM OZONE AT 104 F. GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. JOINTS SHALL REMAIN WATERTIGHT WHEN SUBJECTED TO A 1.5 AXIAL MISALIGNMENT. A JOINT LUBRICANT SUPPLIED BY THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY. FITTINGS SHALL CONFORM TO AASHTO M252 OR AASHTO M294. FABRICATED FITTINGS SHALL BE WELDED TO THE INTERIOR AND EXTERIOR AT ALL JUNCTIONS. HANCOR OR ADS.

2.02 FLEX-TRANSITION COUPLER

A. SHALL BE FERNCO, 1000 SERIES. USE FITTINGS MANUFACTURED FOR THE SPECIFIC PIPE SIZE AND MATERIAL TYPES BEING CONNECTED.

2.03 CLEANOUTS

A. SHALL BE CONSTRUCTED FROM SOLID WALL PIPE AND FITTINGS SPECIFIED ABOVE WITH TRAFFIC GRADE FRAME AND COVER. FRAME AND COVER SHALL BE H20 RATED CAST IRON VALVE BOX WITH FLANGE TOP AS DETAILED ON DRAWINGS WITH "STORM" MARKING. VARICAST VB910 RICH VALVE BOX.

2.04 RIGID TRANSITION COUPLINGS

A. DUCTILE IRON TO PVC PIPE CONNECTIONS TO BE "501-H" COUPLING BY ROMAC INDUSTRIES, INC..

2.05 CONCRETE

A. CONCRETE SHALL BE READY-MIXED CONFORMING TO SECTION 03 30 00, CAST-IN-PLACE CONCRETE, AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. MAXIMUM SIZE OF AGGREGATE SHALL BE 1½ INCHES.

2.06 OTHER MATERIALS

A. RECOMMENDED BY MANUFACTURER AND SUBJECT TO ENGINEER'S REVIEW AND ACCEPTANCE. PROVIDE ALL MATERIALS REQUIRED TO COMPLETE AND MAKE DRAINAGE SYSTEM OPERATIONAL.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. PRIOR TO STARTING WORK OF THIS SECTION, CAREFULLY INSPECT TRENCH, EXCAVATIONS, AND PIPE BEDDING TO VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.

B. DO NOT INSTALL WORK OF THIS SECTION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.

C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 TRENCHING AND BACKFILL

A. TRENCHING AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 31 23 33, TRENCHING AND BACKFILL.

3.03 PIPE INSTALLATION

A. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ALL PIPE ENDS AND INTERIORS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER AND SHALL BE KEPT CLEAN DURING INSTALLATION. WHEN WORK IS NOT IN PROGRESS, ALL OPEN ENDS OF PIPE AND FITTINGS SHALL BE SECURELY CLOSED SO THAT NO WATER, EARTH, ANIMAL LIFE, OR OTHER SUBSTANCE MAY ENTER.

B. CUTTING PIPE SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER BY METHOD WHICH WILL NOT DAMAGE PIPE AND AS RECOMMENDED BY MANUFACTURER.

C. INSTALL PIPING WITHIN 0.02 FOOT OF INDICATED GRADE AND LOCATION.

D. ALL DUCTILE IRON PIPE JOINTS AND FITTING JOINTS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING SHALL BE FULLY COVERED WITH ASPHALTIC COATING. WRAP DUCTILE IRON PIPE AND FITTINGS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING WITH POLYWRAP.

3.04 CLEANOUTS

A. CONSTRUCT ON COMPACTED 4" MINIMUM DEPTH 3/4" - 0 CRUSHED ROCK BASE LEVEL, PLUMB, AND SQUARE WITH ADJACENT SURFACES. SET RIM FLUSH WITH ADJACENT FINISHED SURFACES UNLESS OTHERWISE NOTED.

3.05 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.

B. SPECIAL INSPECTIONS FOR CODE COMPLIANCE: OBTAIN PLUMBING INSPECTOR APPROVALS.

3.06 CLEANING

A. PRIOR TO FINAL ACCEPTANCE, CONTRACTOR SHALL FLUSH AND CLEAN ALL ELEMENTS OF THE COMPLETED SYSTEM. ALL PIPE AND STRUCTURES SHALL BE CLEAN AND FREE OF ALL CONSTRUCTION DEBRIS, ROCKS, GRAVEL, MUD, SAND, SILT, AND OTHER FOREIGN MATERIAL, AND AS DIRECTED BY THE ENGINEER.

B. UPON COMPLETION OF WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.07 PROTECTION

A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.

B. REPLACE, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

JTE
Janet Turner Engineering, LLC

REGISTERED PROFESSIONAL ENGINEER
56487PE
OREGON
JULY 09, 2002
JANET L. TURNER
EXPIRATION DATE: 06/30/22

RALEIGH PARK ES
3670 SW 78TH AVE
PORTLAND OR, 97225

NO.	DATE	DESCRIPTION

DATE	07–15–2021
DESIGNED	JLT
DRAWN	JR
CHECKED	JLT

SPECIFICATIONS

C3.2