

Appendix B – Sample Plan Notes

The Sample plan notes included in this Appendix are the most frequently used. Each note is accompanied by a “Designer Note” in an attempt to give some guidance as to when the note should be used and how to estimate quantities for some of the items where the methods for quantity calculations are not obvious.

The following note categories are included:

<u>Category</u>	<u>Letter Prefix</u>
Drainage Notes	D
Erosion Control Notes	E
Water Quality Notes	W

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DRAINAGE (D), EROSION CONTROL (E), & WATER QUALITY (W)

<u>No.</u>	<u>NAME</u>
D101	Item 611 - Catch Basin Grate
D103	Item Special - Fill and Plug Existing Conduit
D104	Crossings and Connections to Existing Pipes and Utilities
D105	Pipe Connections to Corrugated Metal Structures
D106	Item 611 - Tunnel Liner Plate Structure
D107	Farm Drains
D108	Item 605 - Aggregate Drains
D109	Spring Drains
D110	Drainage Discharge Continuance
D111	Unpermitted Drainage Discharge Removal
D112	Item 611 - Conduit Bored or Jacked
D113	Item 611 - Conduit Under Railroad
D114	Review of Drainage Facilities
D117	Manholes, Catch Basins and Inlets Removed or Abandoned
D119	Item Special - Miscellaneous Metal
D120	Item 611 - Slotted Drain
D121	Item Special - Pipe Cleanout
D122	Item 611 - Conduit Misc.: Cured-In-Place Pipe Liner
D123	Existing Underdrains
D124	Temporary Drainage Items
E101	Seeding and Mulching
E102	Sodding
W99	Post Construction Storm Water Treatment
W100	Deleted
W101	Bioretention Cell(s)
W102	Infiltration Trench (or Basin)
W103	Manufactured Water Quality Structure
W104	Vegetated Filter Strip
W105	Vegetated Biofilter
W106	Extended Detention Basin

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D101 ITEM 611 - CATCH BASIN GRATE

EXISTING CATCH BASINS SHALL BE MODIFIED BY REPLACING THE EXISTING GRATES WITH BICYCLE SAFE GRATES. QUANTITIES AND LOCATIONS ARE SHOWN IN THE PLANS AND SHALL BE PAID FOR AT THE CONTRACT PRICE FOR ITEM 611, EACH, CATCH BASIN GRATE, TYPE _____.

Designer Note: The above note should be used on projects where existing catch basin grates are not bicycle safe. The size and type of grate to be supplied must be indicated. There may be more than one type and size on a project.

If specific locations are not shown in the plan, or additional grates are to be included on a contingency basis, the following should either replace the second sentence in the note or be added to the note:

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR REPLACEMENT OF EXISTING CATCH BASIN GRATES WITH BICYCLE SAFE GRATES:

611, CATCH BASIN GRATE, TYPE _____, _____ EACH

D103 ITEM SPECIAL - FILL AND PLUG EXISTING CONDUIT

THIS ITEM SHALL CONSIST OF THE CONSTRUCTION OF BULKHEADS IN AN EXISTING _____ IN DIAMETER CONDUIT AND FILLING THE AREA THUS SEALED OFF WITH ITEM 613, SAND OR OTHER MATERIAL APPROVED BY THE ENGINEER.

BULKHEADS SHALL BE LOCATED AT THE LIMITS OF THE AREA TO BE FILLED AS INDICATED ON THE PLANS. THE BULKHEADS SHALL CONSIST OF BRICK OR CONCRETE MASONRY WITH A MINIMUM THICKNESS OF 12 INCHES.

THE FILL MATERIAL SHALL BE PUMPED INTO PLACE, OR PLACED BY OTHER MEANS APPROVED BY THE ENGINEER, SO THAT, AFTER SETTLEMENT, AT LEAST 90 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CONDUIT, FOR ITS ENTIRE LENGTH, SHALL BE FILLED. THE LENGTH OF FILLED AND PLUGGED CONDUIT TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF FEET (MEASURED ALONG THE CENTERLINE OF EACH CONDUIT FROM OUTER FACE TO OUTER FACE OF BULKHEADS) FILLED AND PLUGGED AS DESCRIBED ABOVE.

IN LIEU OF FILLING AND PLUGGING THE EXISTING CONDUIT, THE PIPE MAY BE CRUSHED AND BACKFILLED IN ACCORDANCE WITH THE PROVISIONS OF 203, OR IT MAY BE REMOVED. THE LENGTH, MEASURED AS PROVIDED ABOVE, SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR, ITEM SPECIAL, FILL AND PLUG EXISTING CONDUIT.

Designer Note: The above note should be used when it is desired to abandon an existing conduit by filling and plugging rather than more conventional methods. If the conduit is in shallow fill, the designer may delete the crush and backfill option specified in the fourth paragraph. Add pay item 202E70000 "202, Special – Fill and plug existing conduit, ___ ft" to the plans.

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D104 CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

Designer Note: The above note is to be used when the designer is unsure of the exact location of a conduit that will require an extension or where the potential for interference between proposed and existing conduits exists.

D105 PIPE CONNECTIONS TO CORRUGATED METAL STRUCTURES

CONNECTIONS OF PROPOSED LONGITUDINAL DRAINAGE TO CORRUGATED METAL STRUCTURES SHALL BE MADE BY MEANS OF A SHOP FABRICATED OR FIELD WELDED STUB ON THE STRUCTURE. THE STUB SHALL MEET THE REQUIREMENTS OF 707 AND HAVE A MINIMUM LENGTH OF 2 FEET AND A MINIMUM WALL THICKNESS OF 0.064 INCHES.

THE LOCATION AND ELEVATION OF THE STUB ARE TO BE CONSIDERED APPROXIMATE AND MAY BE ADJUSTED BY THE ENGINEER TO AVOID CUTTING THROUGH JOINTS IN THE STRUCTURE.

THE FIELD WELDED JOINT, IF USED, SHALL BE THOROUGHLY CLEANED AND REGALVANIZED OR OTHERWISE SUITABLY REPAIRED. WELDING SHALL MEET THE REQUIREMENTS OF 513.21.

A MASONRY COLLAR, AS PER STANDARD DRAWING DM-1.1, WILL BE REQUIRED TO CONNECT THE LONGITUDINAL DRAINAGE TO THE STUB, WHEN PIPE OTHER THAN CORRUGATED METAL IS PROVIDED FOR THE LONGITUDINAL DRAINAGE.

PAYMENT FOR CUTTING INTO THE STRUCTURE AND PROVIDING THE CONNECTION DESCRIBED, SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 611 OR 522.

Designer Note: Use the above note on all projects where connections are proposed to existing corrugated metal conduits.

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D106 ITEM 611 - TUNNEL LINER PLATE STRUCTURE

IN LIEU OF THE PROVISIONS OF 611.02, MATERIAL FURNISHED FOR THE LINER PLATE STRUCTURE SHALL BE AS MANUFACTURED BY: AMERICAN COMMERCIAL, INC.; COMMERCIAL INTERTECH, CORP.; CONTECH CONSTRUCTION PRODUCTS, INC.; OR AN APPROVED EQUAL. BASE METAL COMPOSITION, DEPTH AND SPAN OF THE CORRUGATIONS, AND SIZE AND SPACING OF BOLTS AND BOLT HOLES SHALL BE IN ACCORDANCE WITH THE DETAILS OF THE MANUFACTURER. INSTALLATION OF THE STRUCTURE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE PLATE THICKNESS AND SECTION MODULUS OF THE MATERIAL FURNISHED SHALL NOT BE LESS THAN THAT INDICATED ON THE STRUCTURE DETAILS.

GALVANIZING, IF SPECIFIED, SHALL BE IN ACCORDANCE WITH 707.03 AND SHALL BE DONE AFTER CORRUGATING, FORMING, AND PUNCHING THE PLATES AND BOLT HOLES. GRANULAR BEDDING WILL NOT BE REQUIRED. THE COMPLETED STRUCTURE SHALL CONFORM TO THE REQUIREMENTS OF 707. BITUMINOUS COATING, IF SPECIFIED, SHALL MEET THE REQUIREMENTS OF 707.05.

Designer Note: If the space between the tunnel excavation and the tunnel liner plate is to be filled with grout, the composition of the grout and spacing of the grout couplings should be shown.

D107 FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE (RIGHT OF WAY)(CONSTRUCTION) LIMITS BY ITEM 611 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 611 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 611, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-1.1, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE.

PAYMENT FOR THE EROSION CONTROL PADS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEMS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

611 _____	"	CONDUIT, TYPE B	_____	FT
611 _____	"	CONDUIT, TYPE E	_____	FT
611 _____	"	CONDUIT, TYPE F	_____	FT
601		ROCK CHANNEL PROTECTION TYPE C WITH FILTER	_____	CU. YD

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Designer Note: The above note is to be used where excavation may conflict with existing farm drains. Use of a lateral field interceptor tile located on a temporary easement outside the limited access right of way may be appropriate on limited access facilities.

D108 ITEM 605 - AGGREGATE DRAINS

AGGREGATE DRAINS SHALL BE PLACED AT 50 FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT 25 FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

Designer Note: This note should be used on long projects with aggregate drains. On short projects, such as bridge replacements, the station and side for aggregate drain placement should be specified in the plans.

D109 SPRING DRAINS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR DRAINING ANY SPRINGS SHOWN IN THE PLAN OR ENCOUNTERED DURING CONSTRUCTION. THE FOLLOWING TYPES OF PIPES MAY BE USED: 707.33, 707.41, 707.42 or 707.45 PERFORATED PER 707.31.

SPRING DRAINS SHALL BE CONSTRUCTED AS SHOWN ON STANDARD CONSTRUCTION DRAWING DM-1.1 AND PAID FOR AT THE CONTRACT PRICE FOR:

605, 6" UNCLASSIFIED PIPE UNDERDRAINS FOR SPRINGS _____ FT.
605, AGGREGATE DRAINS FOR SPRINGS _____ FT.
611, PRECAST REINFORCED CONCRETE OUTLET _____ EACH

Designer Note: This note should be used only where springs are present in the project area and/or the project area is known to have spring activity. In addition to quantities required to drain springs located by field work, estimated contingency quantities should be included for draining springs encountered during construction.

D110 DRAINAGE DISCHARGE CONTINUANCE

FURNISH A DRAINAGE DISCHARGE CONTINUANCE FOR ANY DRAINAGE DISCHARGE DISTURBED BY THE WORK AND NOT SHOWN IN THE PLANS. THE LOCATION, TYPE (CONDUIT OR SWALE), SIZE AND GRADE OF THE DRAINAGE DISCHARGE CONTINUANCE WILL BE AGREED TO BY THE ENGINEER

FURNISH AN INSPECTION WELL AT THE RIGHT OF WAY LINE IN ACCORDANCE WITH SCD DM-3.1 FOR EACH DRAINAGE DISCHARGE THAT OUTLETS THROUGH A CURB OPENING, OR INTO A STORM SEWER OR DRAINAGE STRUCTURE. THE COST IS INCLUDED IN ITEM 611, INSPECTION WELL.

FURNISH A WELL GRADED TRANSITION BETWEEN THE DITCH AND THE SWALE WHEN OUTLETTING A SWALE TO A DITCH. THE COST FOR THE GRADED TRANSITION IS INCLUDED IN ITEM 203, EMBANKMENT AS PER PLAN

FURNISH AN EROSION CONTROL PAD AS SHOWN IN SCD DM-1.1 WHEN OUTLETTING A CONDUIT TO A DITCH. THE COST FOR THE EROSION CONTROL PAD IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE.

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FURNISH A DRILLED HOLE OR A CURB SECTION WITH A HOLE WHEN OUTLETING A CONDUIT THROUGH A CURB OPENING. THE COST OF DRILLING, OR FURNISHING THE CURB SECTION WITH HOLE IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE.

FURNISH A DRILLED CORE HOLE WHEN OUTLETING INTO A STORM SEWER OR DRAINAGE STRUCTURE. THE COST OF THE DRILLED CORE HOLE IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE.

DOCUMENTATION

THE CONTRACTOR SHALL FURNISH WRITTEN DOCUMENTATION TO THE ENGINEER AND TO THE DISTRICT R/W PERMIT OFFICE. THE DOCUMENTATION INCLUDES THE CONSTRUCTION PROJECT NUMBER, PID, COUNTY, ROUTE, SECTION, LATITUDE AND LONGITUDE OF THE DRAINAGE DISCHARGE AT THE R/W, THE NAME OF PROPERTY OWNER WITH ADDRESS, THE DATE THE DRAINAGE DISCHARGE WAS LOCATED, THE DATE THE DRAINAGE DISCHARGE CONTINUANCE WAS FURNISHED, A DETAILED DESCRIPTION OF THE WORK AND PICTURES OF THE DRAINAGE DISCHARGE CONTINUANCE (IN PDF OR JPEG FORMAT). THE DOCUMENTATION IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE OR ITEM 203, EMBANKMENT AS PER PLAN

DRAINAGE DISCHARGE CONTINUANCE REMOVAL

THE ENGINEER MAY REQUIRE THE NEWLY INSTALLED DRAINAGE DISCHARGE CONTINUANCE TO BE REMOVED.

REMOVE THE NEWLY INSTALLED CONDUIT AND ANY EXISTING CONDUIT TO THE RIGHT OF WAY LINE. FOR CONDUIT THAT OUTLETS THROUGH THE CURB RESTORE THE CURB BY FILLING THE HOLE WITH CLASS QC 1 CONCRETE OR REPLACE THE CURB SECTION. FOR CONDUIT THAT OUTLETS TO A STORM SEWER OR DRAINAGE STRUCTURE LEAVE 6 INCHES PROTRUDING OUTSIDE OF THE CONDUIT . PLUG THE PROTRUDING CONDUIT WITH EITHER A MANUFACTURED CAP OR CLASS QC 1 CONCRETE. FOR CONDUIT THAT OUTLETS TO THE DITCH REMOVE THE EROSION CONTROL PAD. RESTORE ALL AREAS AS REQUIRED. PLUG THE EXISTING CONDUIT REGARDLESS OF SIZE AT THE RIGHT OF WAY LINE WITH CLASS QC 1 CONCRETE AND RESTORE ALL AREAS AS REQUIRED. ALL COSTS ARE INCLUDED IN ITEM 202, REMOVAL MISC. CONDUIT.

DAM THE SWALE THAT OUTLETS TO THE DITCH AT THE R/W AS DIRECTED BY THE ENGINEER. ALL COSTS ARE INCLUDED IN ITEM 203, EMBANKMENT AS PER PLAN

REMOVE THE INSPECTION WELL AND RESTORE ALL AREAS AS REQUIRED. THE COST IS INCLUDED IN ITEM 202, REMOVAL MISC. INSPECTION WELL.

CONDUIT MATERIAL TYPES

THE FOLLOWING CONDUIT MATERIAL TYPES MAY BE USED: 707.33, 707.41 NON-PERFORATED, 707.42, 707.43, 707.45, 707.46, 707.47, 707.51, AND 707.52 SDR35.

PAY ITEMS

EACH OF THE PAY ITEMS LISTED BELOW FOR CONDUIT MISCELLANEOUS TYPES B, C, E AND F FOR DRAINAGE DISCHARGE CONTINUANCE INCLUDE CONDUIT SIZES 2 INCH TO 10 INCH. THERE IS NO COST DIFFERENTIATION FOR SIZE IN THESE PAY ITEMS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IN MAKING THE ABOVE DRAINAGE DISCHARGE CONTINUANCE:

ITEM 611, _____ EACH INSPECTION WELL
ITEM 611, _____ FT.CONDUIT, MISC TYPE B FOR DRAINAGE DISCHARGE CONTINUANCE

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ITEM 611, _____ FT.CONDUIT, MISC TYPE C FOR DRAINAGE DISCHARGE
CONTINUANCE
ITEM 611, _____ FT.CONDUIT, MISC TYPE E FOR DRAINAGE DISCHARGE
CONTINUANCE
ITEM 611, _____ FT.CONDUIT, MISC TYPE F FOR DRAINAGE DISCHARGE
CONTINUANCE
ITEM 202, _____ FT. REMOVAL MISC CONDUIT
ITEM 202, _____ EACH REMOVAL MISC INSPECTION WELL
ITEM 203, _____ CUBIC YARD EMBANKMENT AS PER PLAN

Designer Note: The designer shall make a complete investigation within the project limits for the presence of any drainage discharge of:

- Treated septic, treated wastewater, treated curtain/gradient drains, treated foundation floor drains
- Sanitary wastewater, Sanitary curtain/gradient drains, or Sanitary foundation floor drains
- Roof drains, footer drains, or yard drains

Written documentation is to be sent to the District R/W Permit Office for all drainage discharge discovered by the investigation. The documentation includes the PID, county, route, section, latitude and longitude of the drainage discharge location at the R/W, the name of property owner with address, a detailed description of the inspection including date and pictures of the drainage discharge (in pdf or jpeg format).

The District R/W Permit Office will direct the designer as to the continuance or removal and plugging of each drainage discharge discovered by the investigation. If the District R/W Permit Office requires the drainage discharge be removed and plugged, include plan note D111.

Add note D110 **only** if any drainage discharge locations are discovered during the investigation and if the investigation yields any possibility that additional drainage discharge locations could be discovered during construction.

Furnish a minimum of 5 feet for each lane mile of project length rounded up to the next 5 foot increment for each listed type of conduit above.

Furnish a minimum of 1 inspection well for each 20 feet of conduit estimated above.

Furnish a minimum of 25% of the conduit estimated above rounded up to the next 5 foot increment to determine the length of Item 202 Removal Misc. Conduit.

Furnish a minimum of 10% of the above estimated Item 611 Inspection Well for Item 202, Removal Misc. Inspection Well rounded up to the next whole number.

Furnish 50 cubic yard for Item
Item 203, _____ cubic yard Embankment As Per Plan

D111 UNPERMITTED DRAINAGE DISCHARGE REMOVAL

AT THE LOCATIONS SHOWN IN THE PLANS, REMOVE THE CONDUIT REGARDLESS OF SIZE TO THE RIGHT OF WAY LINE AND PLUG THE CONDUIT WITH CLASS QC 1 CONCRETE. FOR CONDUIT THAT OUTLETS THROUGH THE CURB, RESTORE THE CURB BY FILLING THE HOLE WITH CLASS QC 1 CONCRETE OR REPLACE THE CURB SECTION. FOR CONDUIT THAT OUTLETS TO A STORM SEWER OR DRAINAGE STRUCTURE, LEAVE 6 INCHES OF THE CONDUIT PROTRUDING. PLUG THE PROTRUDING CONDUIT WITH EITHER A MANUFACTURED CAP OR CLASS QC 1 CONCRETE. FOR CONDUIT THAT OUTLETS TO THE DITCH, REMOVE THE EROSION CONTROL PAD. RESTORE ALL AREAS AS REQUIRED. PLUG THE EXISTING CONDUIT REGARDLESS OF SIZE AT THE RIGHT OF WAY LINE WITH CLASS QC 1 CONCRETE. ALL COSTS ARE INCLUDED IN ITEM 202, REMOVAL MISC. CONDUIT.

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AT THE LOCATIONS SHOWN IN THE PLANS, DAM THE SWALE THAT OUTLETS TO THE DITCH AT THE R/W AS DIRECTED BY THE ENGINEER. ALL COSTS ARE INCLUDED IN ITEM 203, EMBANKMENT AS PER PLAN.

AT THE LOCATIONS SHOWN IN THE PLANS, REMOVE THE INSPECTION WELL AND RESTORE ALL AREAS AS REQUIRED. THE COST IS INCLUDED IN ITEM 202, REMOVAL MISC. INSPECTION WELL.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY:

ITEM 202, _____ FT. REMOVAL MISC CONDUIT
ITEM 202, _____ EACH REMOVAL MISC INSPECTION WELL
ITEM 203, _____ CUBIC YARD EMBANKMENT AS PER PLAN
_____ EACH

Designer Note: This note is to be used when the District R/W Permit Office has identified specific locations for the removal of unpermitted drainage discharges.

Furnish the total length of conduit for the length of Item 202 Removal Misc. Conduit.

If a conduit size greater than 10 inch is known furnish that size removal item in the plans.

Furnish 50 cubic yard for Item 203 Embankment As Per Plan

Furnish the total number of Inspection Wells required for removal for Item 202, Removal Misc. Inspection Well

D112 ITEM 611 - CONDUIT BORED OR JACKED

WHERE IT IS SPECIFIED THAT A CONDUIT BE INSTALLED BY THE METHOD OF BORING OR JACKING, NO TRENCH EXCAVATION SHALL BE CLOSER THAN _____ FEET TO THE (EDGE OF PAVEMENT) (NEAREST RAIL). PROVIDE A STEEL CASING PIPE CONFORMING TO 748.06 HAVING JOINTS WITH A CIRCUMFERENTIAL FULLY PENETRATING B-U4B WELD THAT IS PERFORMED BY AN ODOT APPROVED FIELD WELDER. THE INSTALLED CASING PIPE IS THE STORM WATER CONVEYANCE CARRIER UNLESS OTHERWISE SPECIFIED IN THE PLANS. HYDROSTATIC TESTING IS NOT REQUIRED FOR THE CASING PIPE.

Designer Note: The pay item in the General Summary shall read, 611 Conduit Bored or Jacked, “, Type _____, _____ Ft. Where a conduit is installed by this method under a railroad, the designer should coordinate with the Rail Company to determine the allowable distance from the nearest rail and add note D113 to the plans. Specify a concrete masonry collar between the casing pipe and adjacent conduit material if the casing pipe is used as the final carrier pipe.

D113 ITEM 611 – CONDUIT UNDER RAILROAD

THE STATE SHALL PAY TO THE RAIL COMPANY ALL COSTS FOR WATCHMEN OR FLAGGERS DEEMED NECESSARY BY THE RAIL COMPANY, OR OCCASIONED BY THE OPERATIONS OF THE CONTRACTOR, OR ANY SUB-CONTRACTOR, IN CARRYING FORWARD THE INSTALLATION OF PIPE OR CONDUIT UNDER THE RAILROAD PER THE PLAN. THE COSTS FOR WATCHMEN OR FLAGGERS REQUIRED BY AN ALTERNATE METHOD OF INSTALLATION SHALL BE PAID TO THE RAIL COMPANY BY THE CONTRACTOR. THE COSTS FOR WATCHMEN OR FLAGGERS OCCASIONED BY THE NEGLIGENCE OF THE CONTRACTOR, OR ANY SUB-CONTRACTOR, IN CONNECTION

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WITH THE INSTALLATION OF THE PIPE OR CONDUIT SHALL BE PAID BY THE CONTRACTOR.

TRACK SUPPORTS REQUIRED BY THE RAIL COMPANY IN CONNECTION WITH THE INSTALLATION OF THE PIPE OR CONDUIT PER THE PLAN SHALL BE INCLUDED IN THE COMPANY FORCE ACCOUNT WORK AND PAID BY THE STATE. THE COST OF ANY TRACK SUPPORTS REQUIRED BY AN ALTERNATE METHOD OF INSTALLATION OF THE PIPE OR CONDUIT SHALL BE PAID TO THE RAIL COMPANY BY THE CONTRACTOR.

THE CONTRACTOR SHALL SECURE APPROVAL OF HIS OPERATIONS FROM THE STATE AND THE RAIL COMPANY. THE RAIL COMPANY WILL PERFORM AN ENGINEERING REVIEW OF METHODS OF OPERATIONS AND ENGINEERING SUPERVISION OF CONSTRUCTION WITHOUT COST TO THE CONTRACTOR.

PRIOR TO BIDDING, THE CONTRACTOR SHALL COORDINATE WITH THE RAIL COMPANY TO AGREE UPON THE REQUIREMENTS OF WATCHMEN AND FLAGGERS TO PROTECT RAILROAD TRAFFIC DURING THE CONTRACTOR'S OPERATIONS. THE CONTRACTOR SHALL EXECUTE A BOND IN FAVOR OF BOTH THE STATE AND THE COMPANY AS REQUIRED BY SECTION 5525.16 OF THE REVISED CODE OF OHIO.

THE CONTRACTOR SHALL CO-OPERATE WITH THE RAILROAD OFFICIALS CONCERNING WORK ADJACENT TO RAILROAD TRACKS, IN ORDER TO AVOID DELAY TO, OR INTERFERENCE WITH RAILROAD TRAFFIC, AND SHALL NOTIFY THE COMPANY _____ HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

Designer Note: Provide this note when placing pipe culverts, sewers, or water lines under railroads. Through coordination with the railroad complete the _____ hours that the railroad would like to be notified by.

D114 REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

Designer Note: This note is to be used on projects where existing drainage facilities are to remain in service.

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D117 MANHOLES, CATCH BASINS AND INLETS REMOVED OR ABANDONED

ALL CASTINGS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT OF WAY FOR SALVAGE BY (STATE) (CITY) (VILLAGE) (COUNTY) FORCES.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 202 ITEM.

Designer Note: This note shall only be used where it has been determined that the owner desires to retain the existing castings.

D119 ITEM SPECIAL- MISCELLANEOUS METAL

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED TYPE, SIZE AND STRENGTH (HEAVY OR LIGHT DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIAL SHALL MEET ITEM 611 OF THE SPECIFICATIONS AND SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

SPECIAL, MISCELLANEOUS METAL _____ POUNDS
THE CONTRACTOR IS CAUTIONED TO USE EXTREME CARE IN THE REMOVAL, STORAGE AND REPLACEMENT OF ALL EXISTING CASTINGS. CASTINGS DAMAGED BY THE NEGLIGENCE OF THE CONTRACTOR, AS DETERMINED BY THE ENGINEER, SHALL BE REPLACED WITH THE PROPER NEW CASTINGS AT THE EXPENSE OF THE CONTRACTOR.

Designer Note: Use this note if existing castings are to be reused and which may be unsuitable.

D120 ITEM 611 - ()", SLOTTED DRAIN, TYPE ()

THIS ITEM SHALL CONSIST OF ____ INCH DIAMETER SLOTTED DRAIN ALUMINUM COATED STEEL CONDUIT 707.01 WITH 6 INCH TRAPEZOIDAL GALVANIZED SOLID BAR GRATE AS APPROVED BY THE ENGINEER. ALL COSTS FOR LABOR AND MATERIALS, INCLUDING TYPE 2 BEDDING, AND BACKFILLING AS DETAILED ON STANDARD CONSTRUCTION DRAWING DM-1.3 SHALL BE INCLUDED IN THE PRICE BID PER FOOT FOR ITEM 611 - ____ " SLOTTED DRAIN,TYPE ____ .

Designer Note: This plan note should be used in conjunction with Standard Construction Drawing DM-1.3. Outlet slotted drain pipe into a catch basin.

D121 ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL,

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EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

SPECIAL, PIPE CLEANOUT, 24" AND UNDER	_____	FT.
SPECIAL, PIPE CLEANOUT, 27" TO 48"	_____	FT.
SPECIAL, PIPE CLEANOUT, OVER 48"	_____	FT.

Designer Note: This item may not be eligible for federal participation.

D122 ITEM 611 - CONDUIT MISC.: CURED-IN-PLACE PIPE LINER

INSTALL A CONTINUOUS (JOINT-LESS) CURED-IN-PLACE PIPELINER SYSTEM TO LINE THE INTERIOR OF THE HOST PIPE TO BE REHABILITATED. THE LINER PIPE MUST BE ABLE TO MOLD ITSELF OR FIT TIGHTLY TO THE SHAPE OF THE EXISTING PIPE. THE LINER MUST PROVIDE FOR COMPLETE STRUCTURAL INTEGRITY, INDEPENDENT OF THE LOAD BEARING CAPACITY OF THE EXISTING HOST PIPE. THE PIPELINER MUST BE CAPABLE OF CONFORMING TO THE PIPELINE BENDS IN THE HOST PIPE WITHOUT SPLITTING, RUPTURING, OR WRINKLING OF THE PIPE LINER MATERIAL. THE LINING MUST PROVIDE A FLOW CAPACITY EQUAL TO, OR GREATER THAN, THAT OF THE HOST PIPE PRIOR TO REHABILITATION. CURED-IN-PLACE PIPELINERS SHALL CONFORM TO ASTM D5813 AND BE DESIGNED ACCORDING TO ASTM F1216 AS A FULLY DETERIORATED GRAVITY PIPE. REFER TO SUPPLEMENTAL SPECIFICATION 833, SPECIFICALLY SECTION 833.04 ITEM 1. AND TABLES 833.01 AND 833.03 FOR THE DESIGN PARAMETERS.

INSTALLATION SHALL BE PER ASTM F 1216, ASTM F 1743, ASTM 2019 AND PER THE MANUFACTURER'S RECOMMENDATIONS. ALL PROCESS WATER AND CONDENSATE FROM STEAM USED IN THE INSTALLATION AND CURING PROCESS SHALL BE MANAGED PER 107.19 AS A LIQUID WASTE.

INSPECT THE EXISTING HOST PIPE USING EXPERIENCED PERSONNEL TRAINED IN LOCATING BREAKS, OBSTACLES, AND SERVICE CONNECTIONS BY CLOSED-CIRCUIT TELEVISION OR MAN ENTRY BEFORE AND AFTER INSTALLATION OF THE PIPELINER. CLEAN, REMOVE DEBRIS, AND REPAIR CONDUIT WALLS AND JOINTS PRIOR TO INSTALLING THE PIPELINER. RESTORE ACTIVE SERVICE CONNECTIONS AFTER INSTALLATION OF THE PIPELINER. PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 611, CONDUIT MISC.; CURED-IN-PLACE PIPE LINER.

Designer Note: Contact the Office of Hydraulic Engineering before specifying this item in the plans.

D123 EXISTING SUBSURFACE DRAINAGE

PROVIDE UNOBSTRUCTED OUTLETS FOR ALL EXISTING UNDERDRAINS OR AGGREGATE DRAINS ENCOUNTERED DURING CONSTRUCTION.

PROVIDE AN OUTLET PER STANDARD CONSTRUCTION DRAWING DM-1.1 FOR ALL UNDERDRAINS THAT OUTLET TO A SLOPE. UNDERDRAINS THAT CAN BE CONNECTED TO THE NEW OR EXISTING UNDERDRAINS AT THE END OF THE PROJECT LIMITS AS WELL AS ALL NECESSARY BENDS OR BRANCHES REQUIRED FOR CONNECTION ARE INCLUDED IN THE BASIS OF PAYMENT FOR UNCLASSIFIED PIPE UNDERDRAINS.

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THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

601, TIED CONCRETE BLOCK MAT, TYPE 1	_____	SQ. YD.
605, AGGREGATE DRAINS	_____	FT.
611 _____" CONDUIT, TYPE F	_____	FT.
611, PRECAST REINFORCED CONCRETE OUTLET	_____	EACH
605 _____" UNCLASSIFIED PIPE UNDERDRAINS	_____	FT.

Designer Note: The note is to be used on projects if there are existing underdrains or aggregate drains within the project limits that are to remain. The designer shall make a complete investigation for the presence of existing underdrain outlet locations or potential conflict areas within the project limits and show them on the plan view sheets.

D124 TEMPORARY DRAINAGE ITEMS

TEMPORARY DRAINAGE ITEMS LABELED ON THE MAINTENANCE OF TRAFFIC PLAN ARE ITEMIZED ON THE MOT PLANS. PAYMENT FOR THE TEMPORARY DRAINAGE ITEMS ARE ITEMIZED AND CARRIED TO THE GENERAL SUMMARY.

Designer Note: Provide this note when temporary drainage items are required in accordance to section 1010 of the L&D. Furnish drainage items for each phase of the maintenance of traffic operations. Removal items may be required between individual phases. Utilize drainage structures furnished for final drainage design where feasible.

E101 SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, SOIL ANALYSIS TEST	_____	EACH
659, TOPSOIL	_____	CU. YD.
659, SEEDING AND MULCHING	_____	SQ. YD.
659, REPAIR SEEDING AND MULCHING	_____	SQ. YD.
659, INTER-SEEDING	_____	SQ. YD.
659, COMMERCIAL FERTILIZER	_____	TON
659, LIME	_____	ACRES
659, WATER	_____	M. GAL.
659, MOWING	_____	M. SQ. FT.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

Designer Note: The above quantities should be used on all projects that require grading work. The following is a basic guideline for estimating quantities for the above items. These quantities may be omitted from the note if they are itemized elsewhere in the plan. Calculations for all items should be shown in the plans.

659, Soil Analysis Test (Each)

Soil Analysis Tests are used to field adjust the rate of Lime based on soil conditions.

A. Soil Analysis Test is not specified.

1. The standard rate for Lime will be used without adjustment.

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- B. Soil Analysis Test is specified. If specified, minimum of two tests.
1. If no Topsoil to be placed - One test per 10 Acres (one test per 48400 Sq. Yd.) of permanent seeded area and sodded area.
 2. If placing Topsoil - One test per 10000 Cu. Yds. of Topsoil.

659, Topsoil (Cu. Yd.)

111 Cu. Yds. per 1000 Sq. Yd. of permanent seeded area. Topsoil is optional. However, it is recommended, especially for projects involving A4 silty materials, granular embankment or granular materials due to severe erosion problems.

659, Seeding and Mulching (Sq. Yd.)

This quantity is usually calculated by the end width method using the cross sections. On short projects, seeding quantities may be determined by other methods. For example, the area for seeding may be estimated by calculating an area per Plan & Profile sheet determined by multiplying an average width (based on construction limits or right-of-way lines) by the distance on each sheet, and then deducting for paved surface areas. A deduction should be taken for 660 and 670 items.

659, Repair Seeding and Mulching (Sq. Yd.)

5 % of the permanent seeding and mulching area.

659, Inter-seeding (Sq. Yd.)

5% of the permanent seeding and mulching area.

659, Commercial Fertilizer (Ton)

30 pounds per 1000 Sq. Ft. (one Ton per 7410 Sq. Yd.) of permanent seeded area. This rate includes 20 pounds per 1000 Sq. Ft. for the first application and 10 pounds per 1000 Sq. Ft. for the second application. If Inter-seeding is provided, use an additional 20 pounds per 1000 Sq. Ft. of commercial fertilizer for the Inter-seeding area.

659 Lime (Acre)

Apply over permanent seeded area.

659, Water (M. Gal.)

Two applications each at 300 Gallons per 1000 Sq. Ft. (0.0027 M Gallons per Sq. Yd.) of permanent seeded area. The above rate is for a single application. If Inter-seeding is provided, use an additional 300 Gallons per 1000 Sq. Ft. of water for the Inter-seeded area.

659, Mowing (M. Sq. Ft.)

25 % of the permanent seeded area for projects expected to last more than one construction season.

E102 SODDING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SODDED AREAS.

659, SOIL ANALYSIS TEST	_____	EACH
659, TOPSOIL	_____	CU. YD.
659, COMMERCIAL FERTILIZER	_____	TON
659, LIME	_____	ACRE
659, WATER	_____	M. GAL.
660, SODDING, UNSTAKED, STAKED, REINFORCED	_____	SQ. YD.

Designer Note: The above quantities should be used on all projects that have pay item(s) for permanent sodding. The following is a basic guideline for estimating quantities for the above items. These quantities may be omitted from the note if they are itemized elsewhere in the plan. Calculations for all items should be shown in the plans.

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659, Soil Analysis Test (Each)

Soil Analysis Tests are used to field adjust the rate of Lime based on soil conditions.

C. Soil Analysis Test is not specified.

1. The standard rate for Lime will be used without adjustment.

D. Soil Analysis Test is specified. If specified, minimum of two tests.

1. If no Topsoil to be placed - One test per 10 Acres (one test per 48400 Sq. Yd.) of permanent sodded area.

2. If placing Topsoil - One test per 10000 Cu. Yds. of Topsoil.

659, Topsoil (Cu. Yd.)

111 Cu. Yds. per 1000 Sq. Yd. of permanent sodded area. Topsoil is optional. However, it is recommended, especially for projects involving A4 silty materials, granular embankment or granular materials due to severe erosion problems.

659, Commercial Fertilizer (Ton)

30 pounds per 1000 Sq. Ft. (one Ton per 7410 Sq. Yd.) of permanent sodded area. This rate includes 20 pounds per 1000 Sq. Ft. for the first application and 10 pounds per 1000 Sq. Ft. for the second application.

659, Lime (Acre)

Apply over permanent sodded area.

659, Water (M. Gal.)

1 application every 7 days for an additional 2 months beyond the requirements of 660.09. The rate shall be 300 gallons per 1000 Sq. Ft. (0.0027 M. Gallons per Sq. Yd.) of permanent sodded area.

660, Sodding (Sq. Yd.)

This is the actual number of Sq. Yds. of permanent sodded area.

W99 POST CONSTRUCTION STORM WATER TREATMENT

THIS PLAN UTILIZES STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) FOR POST CONSTRUCTION STORM WATER TREATMENT.

Designer Note: This plan note shall be used on all projects that have post construction storm water management BMP's. The note shall be followed by the below notes if applicable.

W101 BIORETENTION CELL(S)

CONSTRUCT THE BIORETENTION CELL(S) AFTER ALL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED AS SHOWN ON THE CONTRACT PLANS. DO NOT OPERATE HEAVY EQUIPMENT WITHIN THE PERIMETER OF A BIORETENTION CELL. USE ALL SUITABLE EXCAVATED MATERIAL IN THE WORK. ALTERNATIVELY, LEGALLY USE, RECYCLE, OR DISPOSE OF ALL EXCAVATED MATERIALS ACCORDING TO 105.16 AND 105.17.

EXCAVATE THE BIORETENTION CELL TO THE DIMENSIONS, WITH VERTICAL SIDES, TO THE ELEVATIONS SPECIFIED. MINIMIZE THE COMPACTION OF THE BOTTOM OF THE BIORETENTION CELL. EXCAVATION WILL BE MEASURED AND PAID AS ITEM 203, EXCAVATION AS PER PLAN..

THE BIORETENTION CELL CONSISTS OF FOUR DISCRETE LAYERS: BIORETENTION PLANTING SOIL LAYER, FINE AGGREGATE LAYER, COARSE AGGREGATE NO. 78 LAYER, AND COARSE AGGREGATE NO. 57 LAYER AND AN UNDERDRAIN SYSTEM. THE MATERIALS AND VOLUMES FOR EACH LAYER ARE AS SHOWN:

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BIORETENTION CELL		PROJECT QUANTITY (CY)
BIORETENTION PLANTING SOIL LAYER PLUS 3 INCH COVER		
COMPOSITION BY VOLUME		
5	PARTS SAND – CMS FINE AGGREGATE AS PER 703.20	
1	PART TOPSOIL – CMS 659.05	
2	PARTS COMPOST – CMS 659.06	
FINE AGGREGATE AS PER CMS 703.20		
COARSE AGGREGATE SIZE NO. 78 PER 703.20		
COARSE AGGREGATE SIZE NO. 57 PER 703.20		
TOTAL CUBIC YARDS		

CONSTRUCT THE UNDERDRAIN SYSTEM AS SPECIFIED.

PLACE THE BIORETENTION PLANTING SOIL IN 12 INCH LIFTS. THE BIORETENTION PLANTING SOIL LAYER PLUS 3 INCH COVER IS 3 INCHES GREATER THAN THE DEPTH SPECIFIED TO ACCOUNT FOR EXPECTED SETTLING OF THE UNCOMPACTED SOIL.

THE BIORETENTION PLANTING SOIL SHALL BE A UNIFORM MIX THAT IS FREE OF STONES, STUMPS, ROOTS, OR ANY OTHER OBJECT LARGER THAN TWO INCHES. THE SOIL MAY CONSIST OF EXISTING SOIL, FURNISHED SOIL, OR A COMBINATION OF BOTH PROVIDED THAT THE PH IS BETWEEN 5.2 – 8.0 AND MEETS THE COMPOSITION REQUIREMENTS LISTED ABOVE. PHOSPHORUS CONCENTRATIONS OF THE PLANTING SOIL SHALL FALL BETWEEN 15 AND 60 MG/KG (PPM) AND DETERMINED BY THE MEHLICH III TEST.

THOROUGHLY MIX THE BIORETENTION PLANTING SOIL PRIOR TO PLACEMENT.

PLACE OBSERVATION WELL AND CLEANOUT WHERE SPECIFIED. CONNECT THE OBSERVATION WELL AND CLEANOUT TO THE PERFORATED UNDERDRAIN WITH THE APPROPRIATE MANUFACTURED CONNECTIONS. EXTEND THE OBSERVATION WELL AND CLEANOUT 4 INCHES ABOVE THE SURFACE ELEVATION. CAP THE OBSERVATION WELL AND CLEANOUT WITH A THREADED SCREW CAP. CAP THE ENDS OF PERFORATED UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL AND CLEANOUT OR CONNECTED TO OTHER CONDUITS.

PLACE SEED, TURF, TREES, SHRUBS, OR OTHER PLANT MATERIALS FOR BIORETENTION FACILITIES AS SPECIFIED. PLANT MATERIALS WILL BE MEASURED AND PAID FOR PER CMS ITEM(S) 659, 660, OR 661 DEPENDING ON THE PLANT MATERIALS SPECIFIED. APPLY NO PESTICIDES, HERBICIDES, LIME, AND FERTILIZERS. INSTALL ITEM 611 AS SPECIFIED. INSTALL TEMPORARY EROSION CONTROL MAT TYPE A, B, C, OR E PER CMS 671 WITH EITHER STRAW MULCH OR COMPOST OR AS SPECIFIED IN THE PLANS.

BIORETENTION CELLS WILL BE PAID FOR AS ITEM 601, BIORETENTION CELL CU YD. AND ITEM 601, TIED CONCRETE MAT SQ YD. EXCAVATION FOR BIORETENTION CELLS SHALL BE FOR VERTICAL SIDES ONLY AS SPECIFIED AND PAID FOR AS ITEM 203, EXCAVATION AS PER PLAN CU YD. PERFORATED UNDERDRAINS, OBSERVATION WELLS, AND ASSOCIATED FITTINGS AND COUPLERS WILL BE PAID FOR AS ITEM 605, UNDERDRAIN AS PER PLAN. NON PERFORATED OUTLET PIPES FOR BIORETENTION CELLS SHALL BE PAID FOR AS ITEM 611. SEEDING AND MULCHING FOR THE BIORETENTION CELL SHALL BE PAID FOR AS ITEM 659 SEEDING AND MULCHING SQ YD. EROSION CONTROL MATS SHALL BE PAID FOR AS ITEM 671, EROSION CONTROL MATS SQ YD.

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Designer Note: This plan note shall be used on all projects that have bioretention cell(s) identified in the plan.

Add plan note that states: "ITEM 203, EXCAVATION, AS PER PLAN VERTICAL SIDES ONLY" on plan sheets showing bioretention cell cross section.

W102 INFILTRATION TRENCH (OR BASIN)

THIS PLAN UTILIZES INFILTRATION FOR POST CONSTRUCTION STORM WATER TREATMENT. CONSTRUCT THE COMPLETED INFILTRATION TRENCH(ES) (AND OR BASIN(S)) AFTER ALL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED AS SHOWN IN THE CONTRACT PLANS AND TO THE SATISFACTION OF THE ENGINEER. DO NOT USE INFILTRATION DEVICES AS TEMPORARY SEDIMENT CONTROL FACILITIES DURING CONSTRUCTION. DO NOT OPERATE HEAVY EQUIPMENT WITHIN THE PERIMETER OF AN INFILTRATION DEVICE DURING EXCAVATION OR BACKFILLING OF THE FACILITY.

Designer Note: This plan note shall be used on all projects that have infiltration trenches and or basins identified in the plan. Embankment work to create the impoundment will be constructed and paid for as Item 203 Embankment, using natural soils, 703.16.A.

W103 MANUFACTURED WATER QUALITY STRUCTURE

THIS PLAN UTILIZES MANUFACTURED WATER QUALITY STRUCTURES FOR WATER QUALITY TREATMENT. AREAS HAVE BEEN SHOWN IN THE PLANS FOR PLACEMENT OF AN OFF-LINE SYSTEM. PAYMENT FOR THESE DEVICES SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR ITEM 895, MANUFACTURED WATER QUALITY STRUCTURE, TYPE ____.

Designer Note: This plan note shall be used on all projects that have manufactured water quality structures identified in the plan. If more than one manufactured water quality structure is provided in the plans, a table shall be provided to indicate the location and type of each structure used. Supplemental specification 895 outlines the different types of structures (1-4). **Manufactured systems may not be installed under the roadway or downstream of a connecting pipe more than ten feet deep without approval of the Office of Hydraulic Engineering.**

VEGETATED FILTER STRIP

W104

THIS PLAN UTILIZES VEGETATED FILTER STRIP(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AND ITEM 670, SLOPE EROSION PROTECTION TO ALL DISTURBED AREAS DESIGNATED AS VEGETATED FILTER STRIPS, THE EDGE OF SHOULDER, AND THE FORESLOPE AS SPECIFIED IN THE PLANS.

Designer Note: Use this plan note on all projects that have vegetated filter strips identified in the plan. Pay for grass planting and topsoil as Item 659 or Item 660 and include with quantities for the rest of the project. Pay for erosion control mat as Item 670, slope erosion protection and include with quantities for the rest of the project.

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W105 VEGETATED BIOFILTER

THIS PLAN UTILIZES VEGETATED BIOFILTER(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AS SHOWN IN THE PLANS TO ANY DISTURBED AREA ON THE SHOULDER AND FORESLOPE DRAINING TO A VEGETATED BIOFILTER. THE DITCH FOR EACH VEGETATED BIOFILTER SHALL BE TRAPEZOIDAL, AS SHOWN IN THE PLAN CROSS SECTIONS. PROVIDE ITEM 670 AS SPECIFIED IN THE PLANS.

Designer Note: Use this plan note on all projects that have vegetated biofilters identified in the plan. Pay for grass planting and topsoil as Item 659 or Item 660 and include with quantities for the rest of the project. Pay for erosion control mat as Item 670, ditch erosion protection and include with quantities for the rest of the project.

W106 EXTENDED DETENTION BASIN

THIS PLAN UTILIZES EXTENDED DETENTION BASIN(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. DETENTION BASINS MAY BE USED AS SEDIMENT CONTROL DEVICES DURING CONSTRUCTION. FOLLOWING STABILIZATION OF THE TRIBUTARY AREA, FINAL GRADING OF THE DETENTION BASIN MUST MATCH THE PLANS. THE DETENTION BASIN OUTLET STRUCTURE FOR CONSTRUCTION SEDIMENT CONTROL MUST BE REMOVED AND THE OUTLET STRUCTURE MUST BE MADE TO MATCH THE DESIGN SHOWN IN THE PLANS.

Designer Note: This plan note shall be used on all projects that have extended detention basins identified in the plan. This note may be modified for retention basins or constructed wetlands, if those are included in the plans.