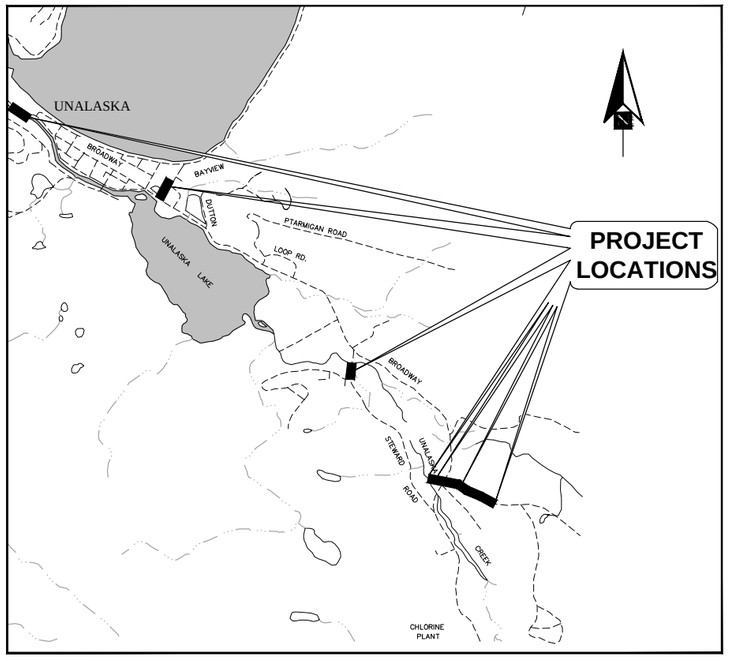
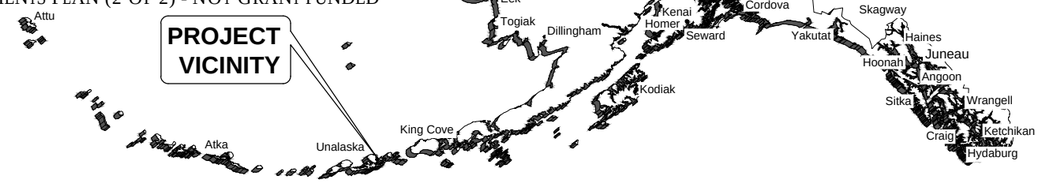
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

DPW PROJECT #14101
NOVEMBER 2015



DRAWING INDEX



PROJECT VICINITY

STATE OF ALASKA

THIS PROJECT IS FUNDED WITH QUALIFIED OUTER CONTINENTAL SHELF OIL AND GAS REVENUES BY THE COASTAL IMPACT ASSISTANCE PROGRAM, FISH AND WILDLIFE SERVICE, U.S. DEPARTMENT OF THE INTERIOR.

ISSUED FOR BID
NOVEMBER 13, 2015

REV	DATE	DESCRIPTION
0	11/13/15	ISSUED FOR BID

STATE OF ALASKA 49 TH
Paul Kendall
CE-11665
REGISTERED PROFESSIONAL ENGINEER
DATE: 11/13/15

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PND ENGINEERS, INC.

PROJECT: CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE: COVER SHEET & INDEX

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 1 OF 18

LEGEND

- FOUND MONUMENT
- FOUND ALCAP
- GEOTECHNICAL BOREHOLE/TESTPIT
- SANITARY SEWER MANHOLE GROUND LOCATE
- SANITARY SEWER CLEAN OUT GROUND LOCATE
- SANITARY SEWER LIFT STATION
- SANITARY SEWER MANHOLE AT RIM
- WATER VALVE
- WATER VALVE GROUND LOCATE
- FIRE HYDRANT
- ELECTRIC TRANSFORMER
- ELECTRIC VAULT
- ELECTRIC PEDESTAL
- ELECTRIC METER
- ELECTRIC VAULT GROUND LOCATE
- LIGHT POLE
- WARNING LIGHT
- ANTENNA
- TELEPHONE VAULT
- TELEPHONE PEDESTAL
- CABLE TV PEDESTAL
- FUEL VAULT
- SIGN
- BOLLARD
- STORM DRAIN MANHOLE
- STORM DRAIN MANHOLE ASBUILT LOCATION
- PROPOSED STORM DRAIN CATCH BASIN
- EXISTING STORM DRAIN CATCH BASIN
- EXISTING STORM DRAIN CATCH BASIN

EXISTING		PROPOSED	
SD	STORM DRAIN	SD	STORM DRAIN
S	SEWER LINE		GUARDRAIL
FM	PRESSURE SEWER LINE		SWALE
UGE	UG ELECTRIC		EROSION CONTROL FABRIC
UC	UG CABLE TV		CULVERT
COMM	UG COMMUNICATIONS		
W	WATER LINE		
	BUILDING LINE		
	CULVERT		
	EDGE OF GRAVEL ROAD		
	GUARDRAIL		
	ROAD ROW		
	EXISTING GRADE		
	VEGETATION		
	SWALE		
X	FENCE		
	PROPERTY LINE		
	FILL LIMITS		
	CUT LIMITS		
	STREAM EDGE		
	ABANDONED PIPE		
	PAVEMENT		
	CONCRETE		

METRIC CONVERSION

1 INCH	2.54	CENTIMETERS
1 FOOT	0.30	METERS
1 SQUARE FOOT	0.09	SQUARE METERS
1 CUBIC YARD	0.76	CUBIC METERS
1 U.S. TON	0.91	METRIC TON
1 LB/SQ.FT	47.88	PASCALS

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AC	ALUMINUM CAP
ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AK-CESCL	ALASKA CERTIFIED EROSION SETTLEMENT CONTROL LEAD
AM	ALUMINUM MONUMENT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BC	BRASS CAP
CD	CHECK DAM
CESCL	CERTIFIED EROSION AND SEDIMENT CONTROL LEAD
CP	CONTROL POINT
CMP	CORRUGATED METAL PIPE
CPEP	CORRUGATED POLYETHYLENE PIPE
COMM	COMMUNICATIONS
CY	CUBIC YARD
D, DIA	DIAMETER
DIP	DUCTILE IRON PIPE
E	EAST, EASTING, ELECTRIC
EL	ELEVATION
EPA	ENVIRONMENTAL PROTECTION AGENCY
EW	EACH WAY
FD	FOUND
FOP	FIELD OPERATING PROCEDURE
FT	FEET
HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTH, NORTHING
NTS	NOT TO SCALE
NO	NUMBER
NW	NORTHWEST
O.C.	ON CENTER
OD	OUTTER DIAMETER
RBR	REBAR
ROW	RIGHT OF WAY
S	SEWER, SOUTH
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SE	SOUTHEAST
SS	STORM SEWER
STA	STATION
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
T	TELEPHONE
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
VE	VERTICAL
W	WATER
W/	WITH
WAQTC	WESTERN ALLIANCE FOR QUALITY TRANSPORTATION CONSTRUCTION
WWF	WELDED WIRE FABRIC

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PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
LEGEND & ABBREVIATIONS

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 2 OF 18

KING STREET PROJECT CONTROL

RECOVERED MONUMENTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
418	1182629.550	5319206.183	10.56	FD RBR
419	1182553.522	5319324.228	11.55	FD RBR

STEWARD PROJECT CONTROL

RECOVERED MONUMENTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
20	1179373.754	5322958.694	18.29	SET SPIKE
411	1179470.730	5322960.111	28.38	FD RBR/AC[7624-S]: ROW USS778 TRA B6 2007
412	1179266.004	5322959.030	29.37	FD AM[7624-S]: ROW L9C B6 SRS-2 L9B B6 SRS-2 2007
413	1179349.838	5322905.451	29.12	FD BC[7624-S]: PND ROW L8A R.S. 2007

OVERLAND PROJECT CONTROL

RECOVERED MONUMENTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
3	1176477.452	5325974.189	203.93	SET SPIKE
414	1176528.908	5325961.317	210.78	FD AC[4758-S]: DOWL ROW PC3 1994
415	1176518.731	5326093.456	218.81	FD AC[4758-S]: DOWL ROW PC4 1994
416	1177032.889	5324922.884	86.45	FD AC[5152-S]: ROW L1 L2 1994
417	1177076.824	5324853.945	77.56	FD RBR/YPC[5144-S]: PN&D
421	1177113.903	5324795.578	68.21	FD RBR
422	1176994.742	5324982.719	89.62	FD RBR/AC[8859-S]: SEGESSER SURVEYS ROW L1 L2 2007
423	1177019.210	5324744.794	67.74	FD AM[5144-S]: MCLAUGHLIN SUBD ROW L-1 2014
424	1177071.129	5325270.942	135.56	FD RBR

SURVEY NOTES:

1. BASIS OF COORDINATES FOR THIS SURVEY ARE NAD 83, ALASKA STATE PLANE ZONE 10 IN U.S. SURVEY FEET WAS DERIVED BY GPS OBSERVATION CONSTRAINING UNALASKA CITY CONTROL POINT 10 "ATS 1446 TR B WCMC1 C2" HOLDING COORDINATES SHOWN ON THE CITY OF UNALASKA SURVEY CONTROL SHEET AS N=1185503.5503 E=5316696.4184.
2. THE VERTICAL CONTROL FOR THIS PROJECT IS BASED ON THE NOAA PUBLISHED 10/24/2011 ELEVATION OF BENCHMARK "9462620 – 2620 P 1997," HOLDING THE MEAN LOWER LOW WATER HEIGHT OF 11.726 FEET (3.574 METERS). BENCHMARK IS A 3-1/4" DOMED BRASS CAP, CEMENTED TO THE CONCRETE BASE OF AN ELECTRICAL TRANSFORMER AT THE INTERSECTION OF WEST BROADWAY AVE, AND CATHEDRAL WAY, UNALASKA, AK.
3. THE FIELD SURVEY WAS PERFORMED OCTOBER 4–14, 2014 BY PND ENGINEERS.
4. ALL DIMENSIONS AND COORDINATES ARE IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
5. THIS SURVEY WAS COMPLETED USING GNSS AND CONVENTIONAL SURVEY TECHNIQUES. REAL TIME KINEMATIC (RTK) OBSERVATIONS WERE STORED USING TRIMBLE R8 MODEL 2, 3, AND 4, GNSS RECEIVERS AND POST PROCESSED USING TRIMBLE BUSINESS CENTER v3.30 SOFTWARE. CONVENTIONAL OBSERVATIONS WERE COLLECTED USING A LEICA TCRP1203 TOTAL STATION.
6. UTILITY LOCATES WERE SURVEYED WHERE MARKED BY LOCATE COMPANIES.

LOWER ILIULIUK RIVER RESOTRATION PROJECT CONTROL

RECOVERED MONUMENTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
401	1184598.314	5316074.227	7.34	FD RBR/AC[4758-S]: ROW 1995
2	1184290.510	5316730.830	11.73	FD BC[NOS]: STATION 2620 P 1997
402	1184370.423	5316369.473	9.62	FD RBR/AC[4758-S]: ROW 1995
403	1184338.452	5316769.750	10.07	FD RBR/YPC[2234-S]: AK RIM ENG.
404	1184314.371	5316739.920	10.12	FD RBR/YPC[2234-S]: AK RIM ENG.
405	1183899.062	5317085.520	14.85	FD BC[7624-S]: PND C.S. L1 2004
406	1183986.817	5317005.586	13.65	FD BC[7624-S]: PND C.S. L1 2004
420	1183752.202	5317117.387	13.46	FD RB/AC[6089-S]: 1996

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PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
SURVEY CONTROL TABLES

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 3 OF 18

GENERAL NOTES

OWNER: CITY OF UNALASKA

1. SCOPE OF WORK

THIS PROJECT WILL CONSIST OF ALL WORK, MATERIALS, AND LABOR REQUIRED TO CONSTRUCT STORMWATER IMPROVEMENTS THROUGHOUT THE UNALASKA LAKE DRAINAGE AND THE LOWER ILIULIUK RIVER AS SHOWN ON THESE PLANS. MAJOR ELEMENTS INCLUDE DRAINAGE DITCHES, DETENTION PONDS, STORM DRAIN SYSTEM, AND EROSION PROTECTION. SITE PREPARATION WILL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING DRAINAGE STRUCTURES.

ALL WORK SHALL BE COMPLETED BY APRIL 30TH, 2016.

2. APPLICABLE CODES AND SPECIFICATIONS

THE INFORMATION CONTAINED IN THESE GENERAL NOTES IS IN ADDITION TO THE DETAILS AND NOTES PROVIDED ON THE INDIVIDUAL PLAN SHEETS. IN CASE OF CONFLICT BETWEEN NOTATION IN THESE GENERAL NOTES AND NOTES AND DETAILS ON INDIVIDUAL SHEETS, THE FOLLOWING PRIORITY SHALL BE FOLLOWED:

1. ALL PROJECT PERMIT REQUIREMENTS
2. NOTES ON INDIVIDUAL PLAN SHEETS
3. DETAILS AND CALLOUTS ON INDIVIDUAL PLAN SHEETS
4. THESE GENERAL NOTES
5. LOCAL CODES
6. STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES CONSTRUCTION SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

3. SURVEY INFORMATION

SEE SURVEY CONTROL TABLES SHEET 3.

4. ADOPTED STANDARDS AND SPECIFICATIONS

ANY MATERIAL OR PERFORMANCE CRITERIA NOT SPECIFIED ON THE DRAWINGS OR IN THESE NOTES SHALL CONFORM TO THE 2015 EDITION OF THE STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES CONSTRUCTION SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

5. MATERIALS AND EXCAVATION

ALL PROCUREMENT REQUIREMENTS FOR EQUIPMENT OR PRODUCTS MUST COMPLY WITH BUY–AMERICAN REQUIREMENTS IN 43 CFR PART 12, SUBPART E, BUY AMERICAN REQUIREMENTS FOR ASSISTANCE PROGRAMS.

CONTRACTOR SHALL PROVIDE CUSTOMERS 5 DAYS NOTICE PRIOR TO ANY DISRUPTIONS IN UTILITY SERVICES FOR EXCAVATION OR CONSTRUCTION.

A – SITE DEMOLITION & PREPARATION

REMOVE, DISPOSE, AND/OR RELOCATION OF ALL ITEMS IDENTIFIED TO BE REMOVED. REFUSE MATERIALS MUST BE REMOVED AND APPROPRIATELY DISPOSED OF. AGGREGATE MATERIAL TO BE DISPOSED OF SHALL BE STOCKPILED AT THE LANDFILL. ANY SALVAGED FRAME AND GRATES SHALL BE OFFERED TO THE CITY FOR CITY USE.

CLEAR AND GRUB VEGETATION WITHIN PROJECT FOOTPRINT. ORGANIC MATERIALS CAN BE EITHER REMOVED ENTIRELY OR SORTED THROUGH TO FIND RECYCLABLE MATERIALS SUITABLE FOR TOPSOIL. ALL DEBRIS AND REFUSE SHALL BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS.

B – EXCAVATION AND EMBANKMENT

WORK SHALL INCLUDE ALL EXCAVATION AND EMBANKMENT NECESSARY TO ACHIEVE GRADES SHOWN ON PLANS. NO ADDITIONAL PAYMENT SHALL BE MADE BASED ON MATERIAL ENCOUNTERED IN EXCAVATIONS. EXCAVATIONS MAY INCLUDE BEDROCK, BEDDING, COBBLES, GRADING SANDS, SILT, ORGANICS, ETC. EXCAVATED MATERIALS MAY NOT MEET SPECIFICATIONS FOR INCORPORATION INTO THE PROJECT.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT THIRD PARTY TESTING OF EMBANKMENT GRADATION AND DENSITY. AS A MINIMUM, TESTING SHALL INCLUDE THE FOLLOWING: ALL QUALITY TESTS INDICATED FOR EACH AGGREGATE INCORPORATED IN THE PROJECT, ONE GRADATION PER 10,000 CY OF SELECTED MATERIAL, ONE GRADATION PER 1,000 TONS OF CRUSHED AGGREGATE SURFACE COURSE, ONE DENSITY TEST PER 10,000 SQUARE FEET OF SURFACING. ALL SAMPLE COLLECTION AND FIELD TESTING SHALL BE COORDINATED WITH AND OBSERVED BY THE OWNERS REPRESENTATIVE. ALL TEST RESULTS FOR AGGREGATE PREPARED FOR THIS PROJECT SHALL BE PROVIDED WITHIN 14 DAYS OF SAMPLING.

ALL SELECTED MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 8 INCHES LOOSE THICKNESS TO NOT LESS THAN 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T180.

SELECTED MATERIAL TYPE A – AGGREGATE CONTAINING NO MUCK, FROZEN MATERIAL, ROOTS, SOD OR OTHER DELETERIOUS MATTER AND WITH A PLASTICITY INDEX NOT GREATER THAN 6 AS TESTED BY WAQTC FOPS FOR AASHTO T 89 AND T 90. MEET THE FOLLOWING GRADATION AS TESTED BY WAQTC FOP FOR AASHTO T 27/T 11:

SIEVE	PERCENT PASSING BY WEIGHT
8"	100%
NO. 4	20–55%
NO. 200	0–6%, DETERMINED ON THE MINUS 3–INCH PORTION OF THE SAMPLE

C – GRAVEL SURFACING AND LEVELING COURSE

ALL GRAVEL SURFACING SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 8 INCHES LOOSE THICKNESS TO NOT LESS THAN 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T180.

GRAVEL SURFACING AND LEVELING COURSE SHALL MEET THE FOLLOWING GRADATION:

CRUSHED AGGREGATE SURFACE COURSE, E–1 – CRUSHED STONE OR CRUSHED GRAVEL, CONSISTING OF SOUND, TOUGH, DURABLE PEBBLES OR ROCK FRAGMENTS OF UNIFORM QUALITY. FREE FROM CLAY BALLS, VEGETABLE MATTER, OR OTHER DELETERIOUS MATTERS. MEET THE FOLLOWING REQUIREMENTS:

PROPERTY	VALUE	TEST
L.A. WEAR,%	50, MAX	AASHTO T96
DEGRADATION VALUE	45, MIN	ATM 313
FRACTURE %	70, MIN	WAQTC FOP FOR AASHTO TP61
LIQUID LIMIT	35, MAX	WAQTC FOP FOR AASHTO T89
PLASTIC INDEX	10, MAX	WAQTC FOP FOR AASHTO T90
SODIUM SULFATE LOSS, % (5 CYCLES)	9, MAX	AASHTO T104

MEET THE FOLLOWING GRADATION AS TESTED BY WAQTC FOP FOR AASHTO T 27/T 11:

SIEVE	PERCENT PASSING BY WEIGHT
1 IN	100%
3/4 IN	70–100%
3/8 IN	50–85%
NO. 4	35–65%
NO. 8	20–50%
NO. 50	15–30%
NO. 200	4–15%

D – BEDDING AND BACKFILL

BEDDING AND BACKFILL SHALL BE INCIDENTAL TO ASSOCIATED STRUCTURE OR PIPE. BEDDING AND BACKFILL SHALL BE SELECTED MATERIAL, TYPE A PASSING THE 3 INCH MINUS SIEVE. SUBEXCAVATE TO THE ELEVATIONS AND DEPTHS SHOWN ON PLANS PRIOR TO PLACING BEDDING. THE BEDDING AND BACKFILL SHALL BE PLACED IN UNIFORM LAYERS NOT MORE THAN 12 INCHES DEEP AND COMPACTED TO 95% MAXIMUM DENSITY AT DETERMINED BY AASHTO T180.

E – RIPRAP

MANIPULATE THE ROCK SUFFICIENTLY USING A BACKHOE, ROCK TONGS, OR OTHER SUITABLE EQUIPMENT TO SECURE A REASONABLY REGULAR SURFACE AND STABILITY.

RIPRAP SHALL MEET THE FOLLOWING REQUIREMENTS: EVENLY GRADED STONES THAT ARE HARD, ANGULAR, AND HAVE NO MORE THAN 50% WEAR AT 500 REVOLUTIONS AS DETERMINED BY AASHTO T 96. USE STONES WITH BREADTH AND THICKNESS AT LEAST ¼ OF ITS LENGTH. DO NOT USE ROUNDED BOULDERS OR COBBLES ON SLOPES STEEPER THAN 2:1.

CLASS I 0–50% WEIGHING UP TO 25 POUNDS
0–10% WEIGHING MORE THAN 50 POUNDS

CLASS II 50–100% WEIGHING 200 POUNDS OR MORE
0–15% WEIGHING UP TO 25 POUNDS
0–10% WEIGHING MORE THAN 400 POUNDS

PLACE STONES TO THE THICKNESS, HEIGHT, AND LENGTH SHOWN ON THE PLANS, OR AS STAKED, IN A WELL GRADED MASS WITH A MINIMUM OF VOIDS. FILL IN UNACCEPTABLE VOIDS WITH SMALLER STONES. PLACE RIPRAP TO ITS FULL COURSE THICKNESS IN ONE OPERATION. AVOID DISPLACING THE UNDERLYING MATERIAL. DO NOT PLACE RIPRAP IN LAYERS OR USE METHODS LIKELY TO CAUSE SEGREGATION.

F – TRENCHING

TRENCHING SHALL BE PERFORMED AS REQUIRED TO ACCOMMODATE INSTALLATION OF NEW STORM DRAIN PIPE FOLLOWING OSHA GUIDELINES.

G – TOPSOIL & SEEDING

WORK SHALL INCLUDE TOPSOIL, SEED, MULCH, FERTILIZER, AND WATERING AS NECESSARY TO ESTABLISH A PERMANENT VEGETATIVE MAT. SEEDING SHALL BE COMPLETED PRIOR TO SUBSTANTIAL COMPLETION.

HYDROSEEDING – FURNISH TOPSOIL THAT IS REPRESENTATIVE OF THE EXISTING NATURAL ORGANIC BLANKET OF THE PROJECT AREA. SOIL WITH A MINIMUM OF 5% ORGANIC CONTENT, AS DETERMINED BY ATM 203, MAY BE USED AS TOPSOIL. REMOVE ROOTS, STUMPS, UNNATURAL MATERIAL, AND ROCKS GREATER THAN 3 INCH IN DIAMETER.

SEED MIX SHALL BE 40% BOREAL RED FESCUE, 40% NORTRAN TUFTED HAIRGRASS, AND 20% GLAUCOUS TUNDRA BLUE. CONTRACTOR MAY SUBMIT ALTERNATE SEED MIXES THAT ADHERE TO THE RECOMMENDATIONS FROM "REVEGETATION MANUAL FOR ALASKA" PUBLISHED BY THE DEPARTMENT OF NATURAL RESOURCES. SEED SHALL BE APPLIED AT 1.0 LBS PER 1,000 SQUARE FEET. FERTILIZER WITH AN N–P–K OF 20–20–10 SHALL BE APPLIED AT A RATE OF 12.0 LBS PER 1,000 SQUARE FEET.

APPLY SEED WITH A BONDED FIBER MATRIX MULCH SUCH AS "FLEXTERRA" OR APPROVED EQUAL. MULCH SHALL BE APPLIED A RATE OF 70.0 LBS PER 1,000 SQUARE FEET.

PRIOR TO SEEDING, TOPSOIL SHALL BE TRACK WALKED, OR OTHERWISE PREPARED, TO PROVIDE GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE.

SEEDING SHALL BE DONE THROUGH HYDRO SEEDING USING A COMMERICAL–TYPE HYDRO–SEEDER THAT HAS A BUILT–IN AGITATION SYSTEM WITH CAPACITY SUFFICIENT TO AGITATE, SUSPEND, AND HOMOGENEOUSLY MIX SLURRY. ALL HYDRO–SEED APPLICATIONS TO BE APPLIED IN A SWEEPING MOTION.

CONDUCT ALL SLURRY PREPARATIONS AT THE JOB SITE: WATER, MULCH, FERTILIZER, BINDER AND OTHER INGREDIENTS SHALL BE ADDED TO THE TANK SIMULTANEOUSLY; SEED SHALL BE ADDED LAST AND SHALL BE DISCHARGED WITHIN 2 HOURS. LOADS HELD OVER 2 HOURS SHALL BE RECHARGED WITH ½ THE SEED RATE BEFORE APPLICATION. ONCE FULLY LOADED THE COMPLETE SLURRY SHALL BE AGITATED FOR 3–5 MINUTES TO ALLOW FOR UNIFORM MIXING.

THE ENGINEER WILL PERFORM A VISUAL INSPECTION OF SEEDING TO DETERMINE FINAL STABILIZATION. THE ENGINEER WILL ACCEPT SEEDING THAT HAS BECOME A VEGETATIVE MAT WITH 70% COVER DENSITY IN THE INSPECTION AREA. RESEED AREAS THAT ARE NOT ACCEPTABLE TO THE ENGINEER.

ESTABLISHMENT PERIODS EXTEND FOR ONE COMPLETE GROWING SEASON FOLLOWING ACCEPTABLE SEEDING. EMPLOY ALL POSSIBLE MEANS TO PRESERVE THE NEW VEGETATIVE MAT IN A HEALTHY AND VIGOROUS CONDITION TO ENSURE SUCCESSFUL ESTABLISHMENT. RESEED AREAS THAT DO NOT MEET THE SPECIFICATIONS. WATERING AND RESEEDING AFTER THE FINAL INSPECTION ARE SUBSIDIARY.

THE ENGINEER MAY, BUT IS NOT REQUIRED TO, DETERMINE THE PROJECT IS COMPLETE EXCEPT FOR THE PERIOD OF ESTABLISHMENT, AND ISSUE A LETTER OF FINAL ACCEPTANCE. AFTER FINAL ACCEPTANCE, WORK OR MATERIALS DUE UNDER THIS SUBSECTION DURING ANY REMAINING PERIOD OF ESTABLISHMENT ARE CONSIDERED WARRANTY OBLIGATIONS THAT CONTINUE TO BE DUE FOLLOWING FINAL ACCEPTANCE IN ACCORDANCE WITH THE GENERAL CONDITIONS.

BEACH WILDRYE SPRIGS – SITE PREPARATION AND PLANTING OF SPRIGS SHALL BE DONE IN ACCORDANCE WITH PROCEDURES DESCRIBED IN, BEACH WILDRYE PLANTING GUIDE FOR ALASKA BY STONEY WRIGHT, PULISHED 1994 AND 2010.

H – COIR LOGS

CHECK DAMS SHALL BE CONSTRUCTED WITH 16" DIAMETER HIGH DENSITY (9LBS/CU.FT MIN.) BIODEGRADABLE COIR LOGS SUCH AS GEI WORKS OR ENGINEER APPROVED EQUAL. COIR LOGS SHALL BE PLACED AND STAKED AS SHOWN IN THE PLANS. COIR LOGS FOR OTHER PURPOSES SHALL BE 8" DIAMETER BIODEGRADABLE COIR LOGS WITH DENSITY (7LBS/CU.FT MIN.).

I – EROSION CONTROL FABRIC

FABRIC SHALL BE CONSISTENT THICKNESS WITH THE COCONUT EVENLY DISTRIBUTED OVER THE ENTIRE AREA OF THE FABRIC BLANKET. THE BLANKET SHALL BE COVERED ON THE TOP AND BOTTOM WITH HEAVYWEIGHT POLYPROPYLENE NETTING HAVING ULTRAVIOLET ADDITIVES TO DELAY BREAKDOWN AND APPROXIMATE 0.625 x 0.625 INCH OR SMALLER MESH. THE BLANKET SHALL BE SEWN TOGETHER ON 1.50 INCH CENTERS WITH UV STABLE THREAD. FABRIC SHALL HAVE A MINIMUM LONGEVITY OF 3 YEARS SUCH AS NORTH AMERICAN GREEN ROLLMAX C125 OR ENGINEER APPROVED EQUAL.

STAPLE EROSION CONTROL BLANKETS AT JOINTS, EDGES, AND FIELD AS RECOMMENDED BY THE MANUFACTURER. MAINTAIN THE EROSION CONTROL BLANKETS UNTIL ALL WORK ON THE PROJECT IS COMPLETE AND ACCEPTED.

J – STORM DRAIN PIPE

STORM DRAIN PIPE SHALL BE CORRUGATED POLYETHYLENE PIPE WITH SMOOTH INTERIOR WALLS MEETING AASHTO M252 TYPE S. STORM DRAIN PIPE TO BE INSTALLED AS SHOWN IN PLANS. FINAL INVERT LOCATIONS, ELEVATIONS, AND CULVERT LENGTH SHALL BE FIELD VERIFIED. ALL FITTINGS SHALL BE WATER TIGHT.

K – CATCH BASIN/MANHOLES

CATCH BASINS/MANHOLES SHALL BE PRECAST CONCRETE AS SPECIFIED IN THE PLANS. INSTALL PRECAST CONCRETE CATCH BASINS AND MANHOLES CONSISTING OF A BASE, RISERS, FLAT TOP; WITH LADDER RUNGS, PIPE BOOTS, FRAME AND COVER AS SHOWN ON THE PLANS. FLEXIBLE WATERTIGHT GASKET SHALL BE USED BETWEEN CONCRETE SECTIONS.

CATCH BASINS & MANHOLES SHALL BE INSTALLED AT THE LOCATION AS SHOWN IN THE PLANS. FINAL GRATE AND INVERT ELEVATIONS FOR CATCH BASINS SHALL BE FIELD VERIFIED TO MAINTAIN ADEQUATE DRAINAGE AND MINIMUM 0.5% SLOPE FOR NEW STORM DRAIN PIPE.

ALL INVERT ELEVATIONS OF THE EXISTING DRAINAGE STRUCTURES ARE TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION OR FABRICATION OF CATCH BASIN MANHOLES.

L – CULVERTS

ALL CULVERTS SHALL BE SCHEDULE 40 STEEL PIPE AS ONE PIECE. WELD PIECES IF REQUIRED. CULVERT PIPE TO BE INSTALLED AS SHOWN IN PLANS. FINAL INVERT LOCATIONS, ELEVATIONS, AND CULVERT LENGTH SHALL BE FIELD VERIFIED.

CULVERT DELINEATORS SHALL CONSIST OF RED CARSONITE ROAD MARKERS (CRM 375), OR APPROVED EQUAL. DELINEATORS SHALL BE INSTALLED IN ROAD EMBANKMENT ABOVE CULVERT.

M – DOUBLE SIDED GUARDRAIL

ALL GUARDRAIL, POSTS, BLOCKS, FASTENERS SHALL CONFORM WITH SECTION 710 OF THE STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES (ADOT&PF) STANDARD SPECIFICATIONS. INSTALL GUARDRAIL AND TERMINALS AT THE LOCATIONS SHOWN ON THE PLANS. GUARDRAIL CONSTRUCTION SHALL CONFORM WITH SECTIONS 606 3.03, 3.04, AND 3.05 OF ADOT&PF STANDARD SPECIFICATIONS. GUARDRAIL POSTS SHALL BE WOOD POST LENGTH AS INDICATED IN THE PLANS. REFERENCE G–10.01 BEAM GUARDRAIL POST INSTALLATION (CASE 3). THE MAXIMUM SPACING OF GUARDRAIL POSTS SHALL BE 6'–3".

N – GEOTEXTILES

SEPARATION GEOTEXTILES SHALL BE WOVEN AND MEET AASHTO M 288 FOR SEPARATION CLASS I, EXCEPT PROVIDE A MINIMUM PERMITTIVITY OF 0.05/SEC.

SURFACE PREPARATION – PREPARE SURFACE BY REMOVAL OF STUMPS, BRUSH, BOULDERS, AND SHARP OBJECTS. FILL HOLES AND LARGE RUTS WITH MATERIAL SHOWN ON THE PLANS OR AS APPROVED.

PLACEMENT – PLACE GEOTEXTILE FABRIC AS PER MANUFACTURERS INSTRUCTIONS, AVOIDING ANY TEARS OR PUNCTURES.

JOINING – JOIN GEOTEXTILE FOR SEPARATION BY OVERLAPPING. OVERLAPPED SECTIONS MUST OVERLAP A MINIMUM OF 3 FEET. OVERLAP SUCCESSIVE GEOTEXTILE SHEETS IN THE DIRECTION OF FLOW SO THAT THE UPSTREAM SHEET IS PLACED OVER THE DOWNSTREAM SHEET AND/OR UPSLOPE OVER THE DOWNSLOPE.

O – PICNIC TABLES

SHALL BE COMMERCIAL GRADE WITH TREATED SOUTHERN PINE TOPS AND SEATS, 2–3/8" O.D. HDG STEEL FRAMES AND HDG HARDWARE. SECURE WITH 3/8" HDG CHAIN & DEADMAN ANCHOR.

ISSUED FOR BID
NOVEMBER 13, 2015

REV	DATE	DESCRIPTION
0	11/13/15	ISSUED FOR BID

STATE OF ALASKA
49 TH
Paul Kendall
CE-11665
REGISTERED PROFESSIONAL ENGINEER
DATE: 11/13/15

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PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
GENERAL NOTES (1 OF 2)

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 4 OF 18

GENERAL NOTES

P – CONNECTION TO EXISTING MANHOLE

CONNECTION TO EXISTING MANHOLES SHALL BE INCIDENTAL TO STORM DRAIN. CONNECTIONS TO EXISTING MANHOLES OR CATCH BASINS SHALL BE MADE IN A WORKMANLIKE MANNER. THE INVERT SHALL BE BROUGHT INTO THE EXISTING MANHOLE AT THE ELEVATION SHOWN ON THE DRAWINGS. THE DOWNSTREAM PIPE IN MANHOLES SHALL BE SCREENED TO PREVENT ENTRY OF MORTAR OR OTHER DEBRIS FROM ENTERING THE SYSTEM. AFTER CONNECTION IS MADE TO A STORM DRAIN MANHOLE AND THE MORTAR HOLDING THE PIPE IN PLACE HAS SET, CUT THE PIPE OFF EVENLY SO THAT NO MORE THAN TWO INCHES (2") OF PIPE PROTRUDES INTO THE MANHOLE AND ANY SCREENING SHALL BE REMOVED. FINAL INVERT ELEVATION SHALL BE FIELD VERIFIED PRIOR TO INSTALLING THE CONNECTION.

Q – TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO THE OWNER FOR APPROVAL. PLAN SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE CONTRACT DOCUMENTS. CONTRACTOR SHALL NOT CLOSE ROADS NOR CAUSE DELAYS EXCEEDING 10 MINUTES.

R – EROSION CONTROL

CONTRACTOR TO FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING STORMWATER RUNOFF FROM THE CONSTRUCTION. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE ALASKA GENERAL CONSTRUCTION PERMIT CONDITIONS.

S – AK–CESCL TRAINING

CONTRACTOR TO PROVIDE AND ORGANIZE (2) SEPARATE, NON–OVERLAPPING AK–CESCL TRAINING CLASSES FOR 25 PARTICIPANTS, EACH CLASS, IN UNALASKA, TO PROVIDE CERTIFICATION FOR CITY ROADS WORKERS AND INTERESTED PARTIES OF THE PUBLIC. CONTRACTOR SHALL PROVIDE INDOOR MEETING SPACE WITH ADEQUATE SEATING, REFRESHMENTS FOR ALL ATTENDEES, QUALIFIED INSTRUCTOR (APPROVED BY AK–CESCL) AND ASSOCIATED TRAVEL COSTS, INSTRUCTIONAL MATERIALS, ETC. CONTRACTOR SHALL ADVERTISE CLASSES ON THE LOCAL RADIO & TV STATIONS, AS WELL AS PUBLIC BULLETIN BOARDS 14 DAYS IN ADVANCE.

T – PERMITS

THE OWNER HAS ACQUIRED THE FOLLOWING PERMITS FOR THIS PROJECT:

1. ADEC WATER – WASTEWATER APPROVAL TO CONSTRUCT
2. USACE NATIONWIDE PERMIT

U – SUBMITTALS & DEADLINES

CONSTRUCTION MEETINGS WILL BE HELD WEEKLY WITH THE ENGINEER AND PROJECT TEAM.

CONTRACTOR TO PROVIDE 24 HOURS NOTICE OF COMMENCEMENT OF WORK EVERY TIME THERE IS A BREAK IN WORK.

CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE ENGINEER FOR ANY MATERIAL, PRODUCT, OR ITEMS IDENTIFIED IN THE PLANS AND SPECS. SUBMITTALS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING. BEFORE ANY WORK STARTS, OWNER HAS 10 WORKING DAYS FOR REVIEW.

1. EMBANKMENT GRADATIONS
2. AGGREGATE QUALITY TEST RESULTS
3. STORM DRAIN PIPE
4. MULCH AND SEEDING MIX
5. FERTILIZER
6. COIR LOGS
7. GUARDRAIL
8. RIPRAP
9. PICNIC TABLE PRODUCT DATA
10. AK–CESCL INSTRUCTOR QUALIFICATIONS
11. AK–CESCL TRAINING LOCATION
12. AK–CESCL ADVERTISEMENTS
13. CRITICAL PATH SCHEDULE
14. TRAFFIC CONTROL PLAN
15. RED–LINE AS–BUILT DRAWINGS
16. STORM STRUCTURE SHOP DRAWINGS
17. STORM DRAIN LAMP TEST RESULTS
18. GEOTEXTILE FABRIC
19. EROSION CONTROL FABRIC
20. CULVERT MATERIAL

6. MEASUREMENT AND PAYMENT

ALL WORK, MATERIALS, AND LABOR REQUIRED TO CONSTRUCT EACH OF THE PROJECT SITES LISTED BELOW SHALL BE PAID LUMP SUM PER PROJECT SITE.

1. AK–CESCL TRAINING – BASE BID
2. ARMSTRONG CT DRAINAGE IMPROVEMENTS (SHEET 6) ADDITIVE ALTERNATE 1
3. STEWARD ROAD IMPROVEMENTS (SHEETS 7,8) BASE BID
4. OVERLAND DRIVE DIVERSION CULVERT (SHEET 10) ADDITIVE ALTERNATE 2
5. OVERLAND DRIVE STORM DRAIN (SHEETS 11,12) ADDITIVE ALTERNATE 3
6. OVERLAND DRIVE BASIN IMPROVEMENTS (SHEET 13) ADDITIVE ALTERNATE 4
7. OVERLAND DRIVE OUTLET SWALE (SHEET 14) BASE BID
8. LOWER ILIULIUK RIVER IMPROVEMENTS – NOT COVERED UNDER GRANT FUNDING (SHEET 15, 16) ADDITIVE ALTERNATE 5

ISSUED FOR BID
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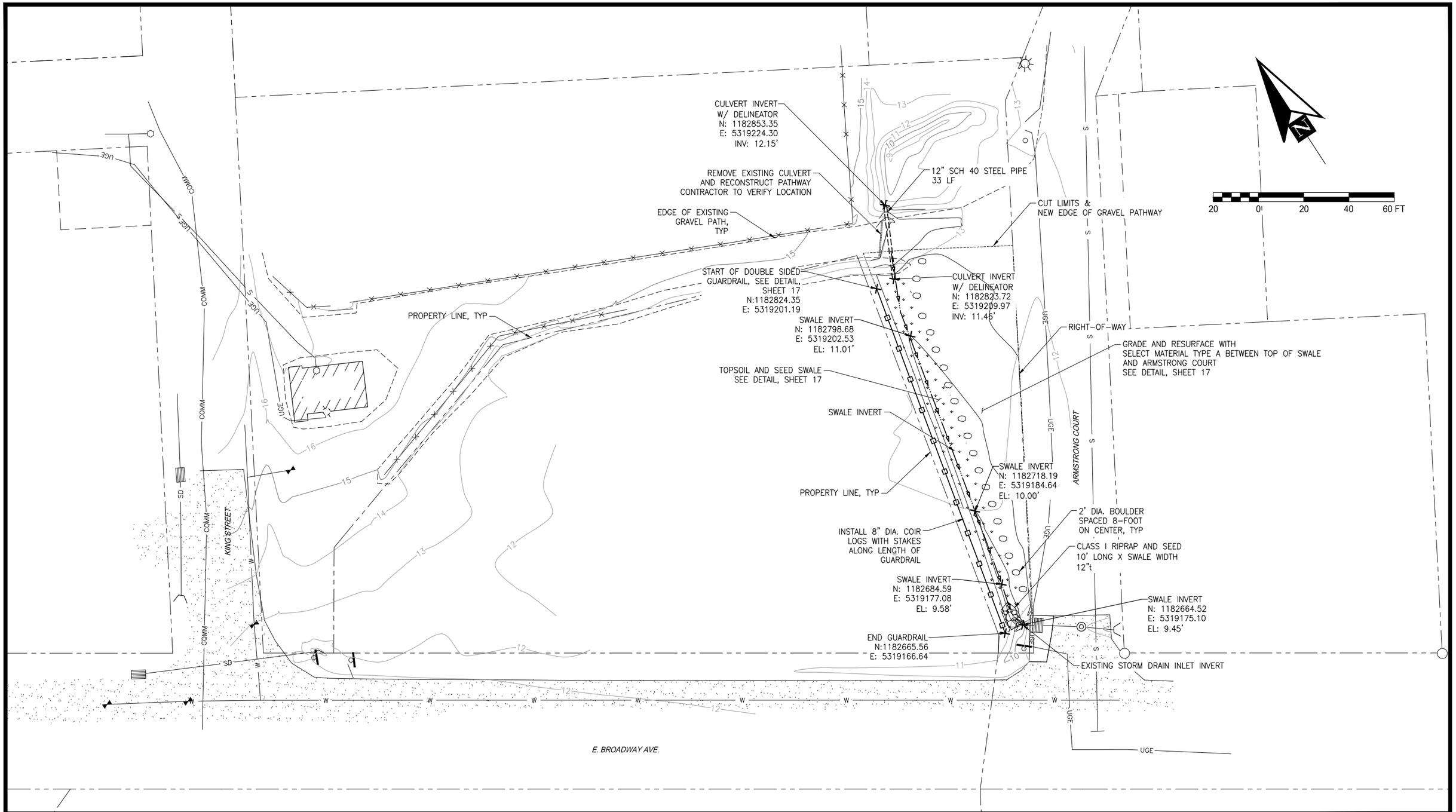
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
GENERAL NOTES (2 OF 2)

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 5 OF 18



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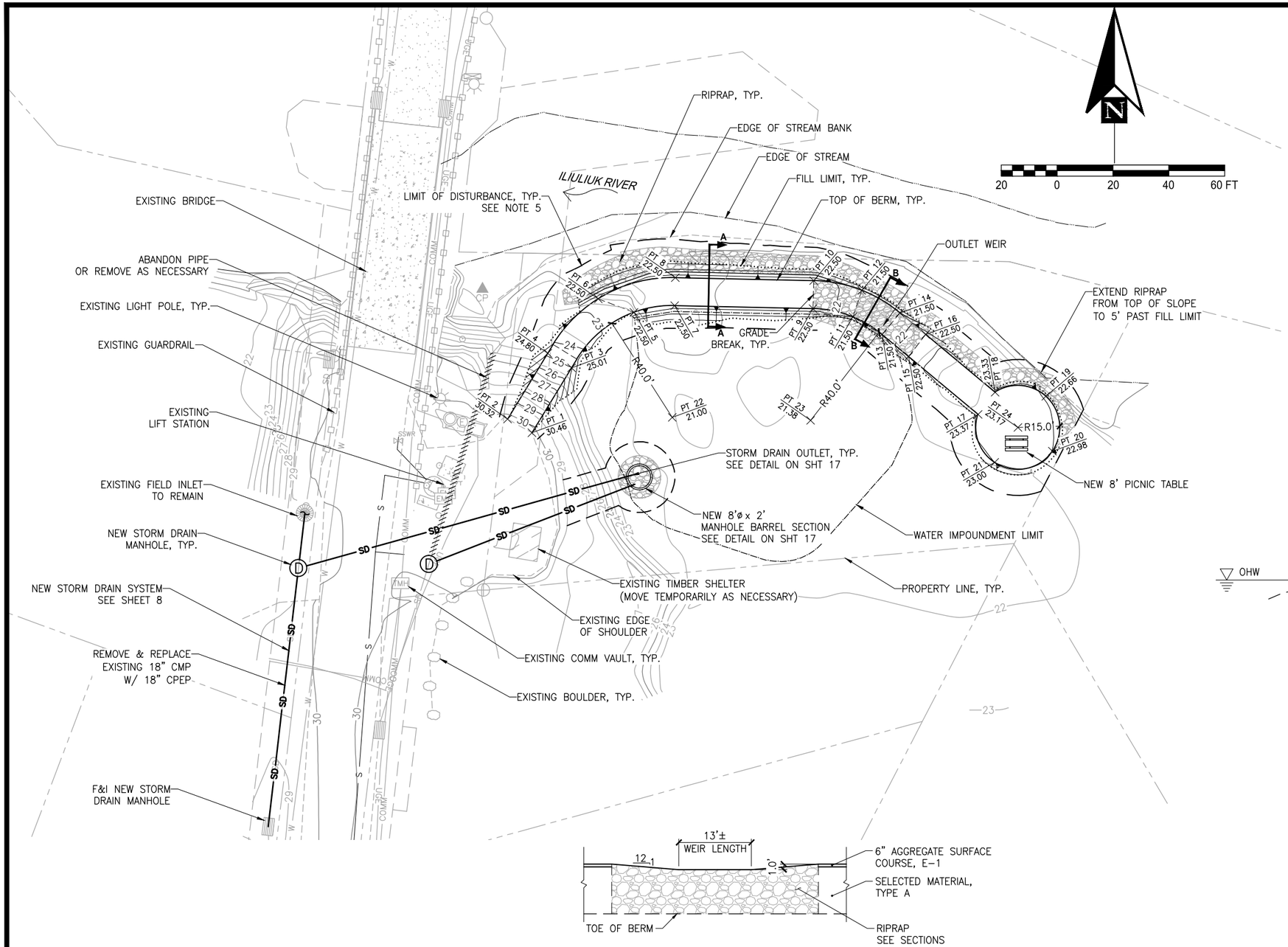
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
ARMSTRONG COURT DRAINAGE IMPROVEMENTS
(ADDITIVE ALTERNATE 1)

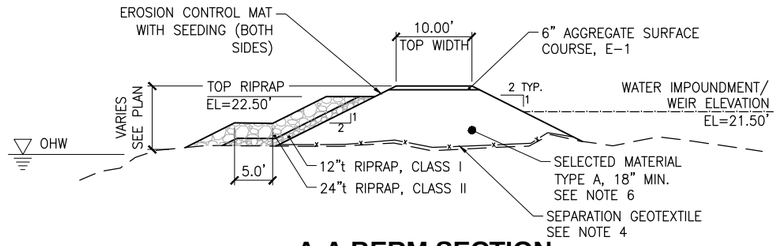
DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 6 OF 18

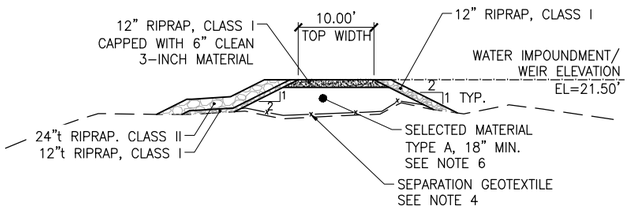


NOTES:

1. EXCAVATE AT NEW STORM DRAIN OUTLET AS NECESSARY TO PROVIDE ELEVATIONS SHOWN.
2. SEED ALL DISTURBED AREAS
3. PROPOSED CONTOURS ARE TO TOP OF SELECT MATERIAL, TYPE A AND SURFACE COURSE. RIPRAP CONTOURS NOT SHOWN.
4. EXISTING GRADE MAY BE SOFT AND SATURATED. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL MEASURES REQUIRED TO CONSTRUCT THE EARTHEN BERM AT THEIR OWN COST.
5. LIMIT AREA OF DISTURBANCE TO WITHIN 3' OF FILL LIMITS.
6. EXCAVATE AS NECESSARY TO PROVIDE MINIMUM THICKNESS.
7. SEE SHEET 8 FOR POINT LAYOUT TABLE.
8. WHERE RIPRAP WILL BE TRAVERSED BY PEDESTRIANS, CAP WITH A 10 FOOT WIDE 6" THICK LAYER OF CLEAN 3-INCH MATERIAL.



A-A BERM SECTION



B-B WEIR SECTION

OUTLET WEIR ELEVATION

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NOVEMBER 13, 2015

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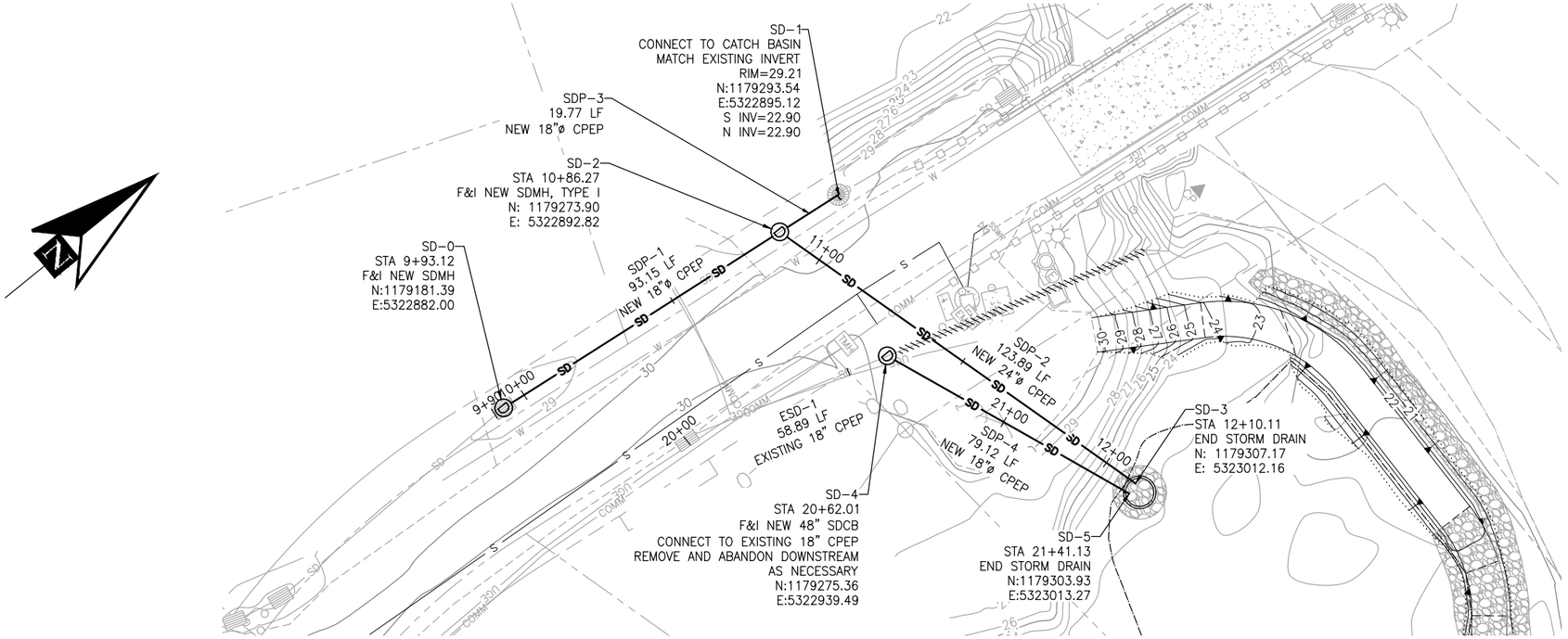
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
STEWARD ROAD
IMPROVEMENTS PLAN

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

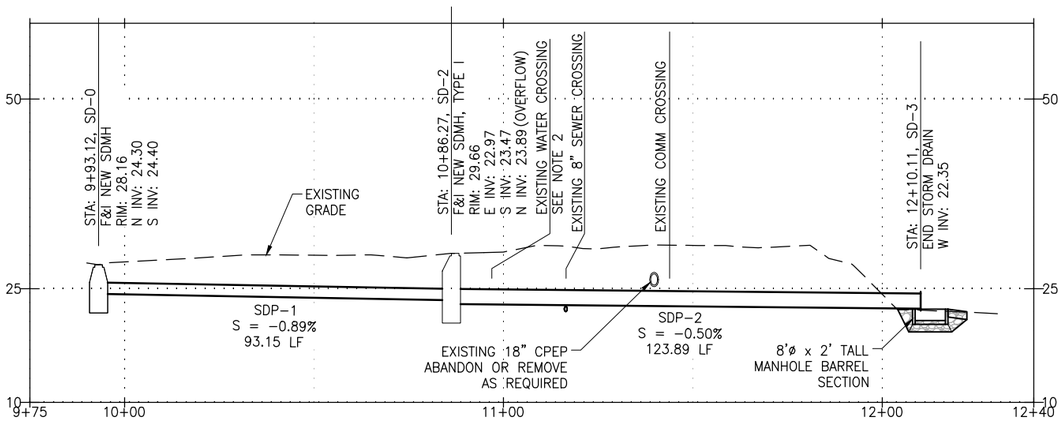
SHEET NO: 7 OF 18

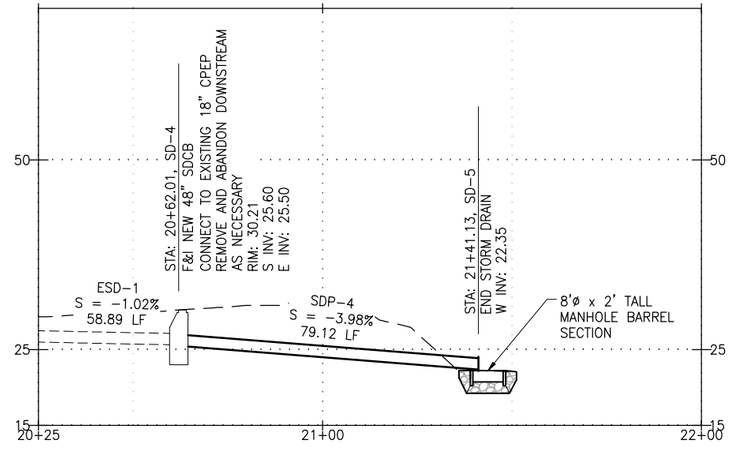


STORM DRAIN PLAN

20 0 20 40 60 FT

COORDINATE LAYOUT TABLE				
POINT NO	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1,179,322.34	5,322,976.42	30.46	MATCH EXISTING
2	1,179,327.23	5,322,967.70	30.32	MATCH EXISTING
3	1,179,345.58	5,322,990.62	25.01	TOP OF BERM
4	1,179,350.79	5,322,982.08	24.80	TOP OF BERM
5	1,179,365.42	5,323,012.95	22.50	TOP OF BERM
6	1,179,370.26	5,323,000.18	22.50	TOP OF BERM
7	1,179,367.83	5,323,027.53	22.50	TOP OF BERM
8	1,179,377.83	5,323,027.75	22.50	TOP OF BERM
9	1,179,366.76	5,323,077.03	22.50	TOP OF BERM
10	1,179,376.75	5,323,077.28	22.50	TOP OF BERM
11	1,179,363.79	5,323,091.30	21.50	TOP OF BERM
12	1,179,373.27	5,323,094.49	21.50	TOP OF BERM
13	1,179,357.52	5,323,101.74	21.50	TOP OF BERM
14	1,179,365.20	5,323,108.14	21.50	TOP OF BERM
15	1,179,349.59	5,323,111.28	22.50	TOP OF BERM
16	1,179,357.52	5,323,117.37	22.50	TOP OF BERM
17	1,179,328.91	5,323,136.14	23.37	TOP OF BERM
18	1,179,336.84	5,323,142.24	23.33	TOP OF BERM
19	1,179,335.41	5,323,160.42	22.66	TOP OF BERM
20	1,179,315.72	5,323,162.74	22.98	MATCH EXISTING
21	1,179,311.75	5,323,142.10	23.00	MATCH EXISTING
22	1,179,327.84	5,323,026.66	21.00	CENTER
23	1,179,326.77	5,323,076.16	21.38	CENTER
24	1,179,324.25	5,323,150.40	23.17	CENTER





STORM DRAIN PROFILE

NOTES:

1. SEE DETAIL ON SHEET 18 FOR TYPICAL PIPE TRENCH SECTION.
2. EXISTING WATER MAIN ELEVATIONS UNKNOWN. RELOCATE VERTICALLY AS NECESSARY PER DETAIL ON SHEET 18.

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STATE OF ALASKA 49TH
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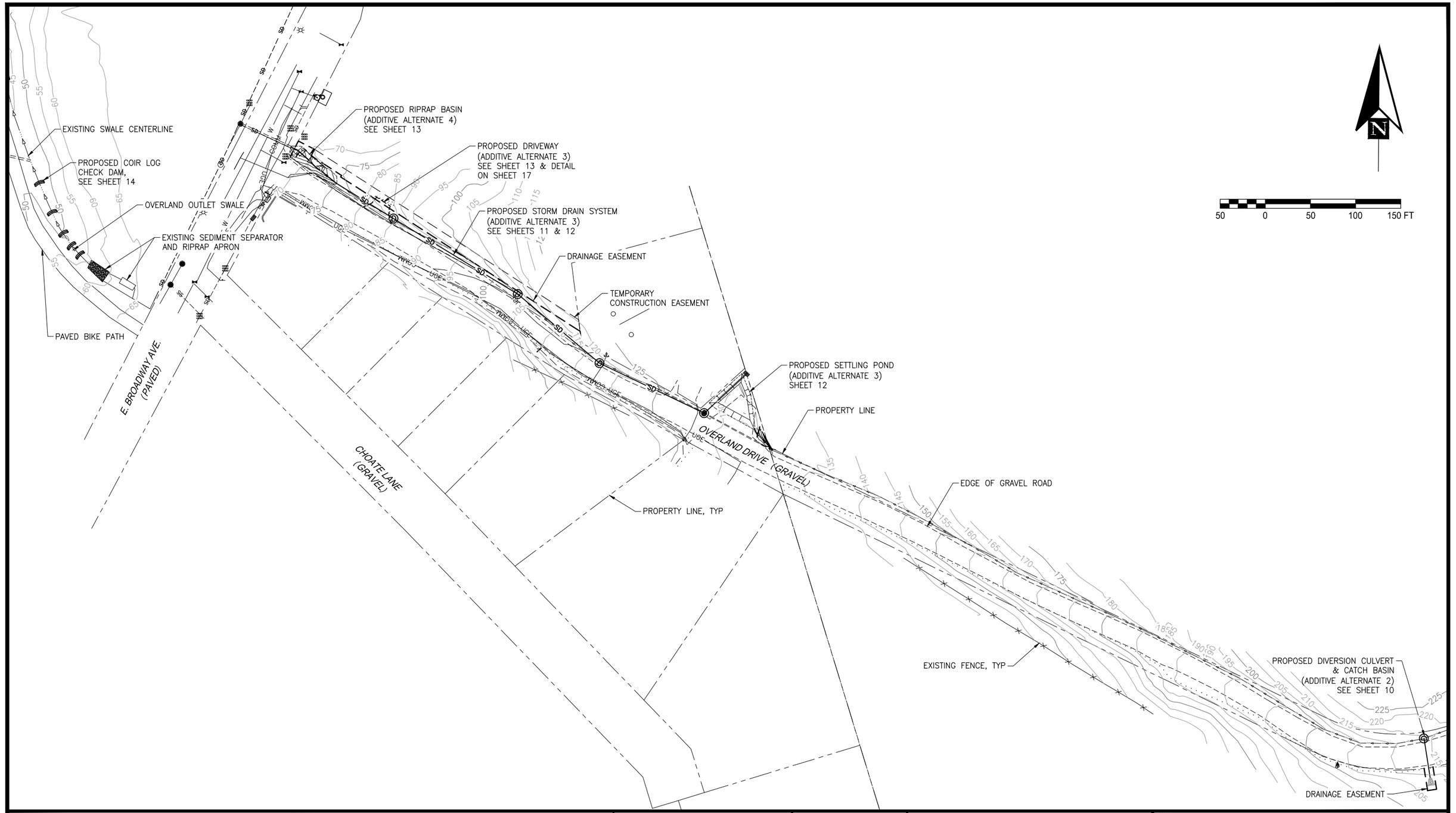
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
STEWARD ROAD IMPROVEMENTS
PLAN & PROFILE STORM DRAIN

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 8 OF 18



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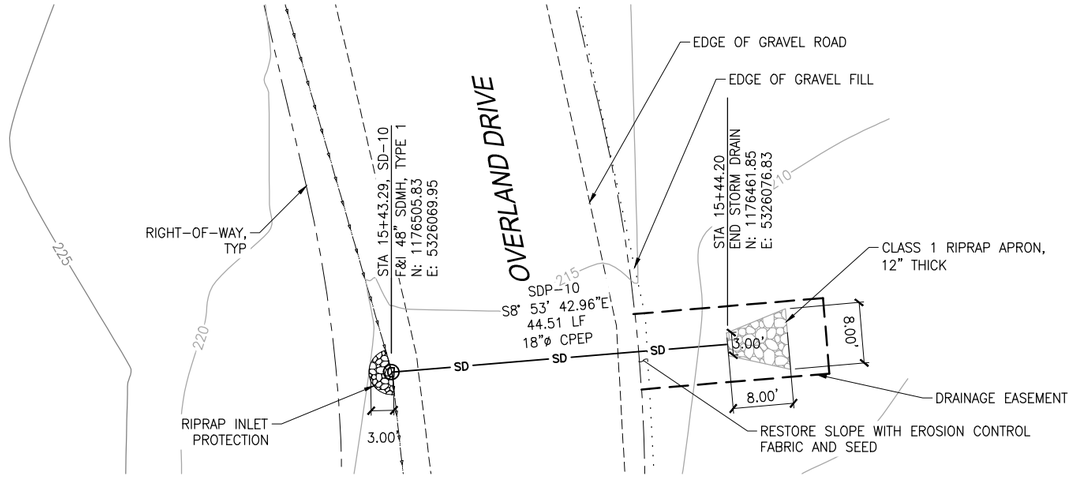
PND ENGINEERS, INC.

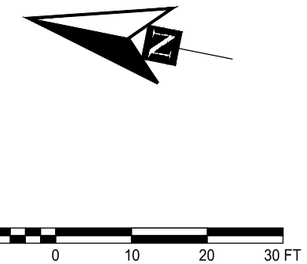
PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

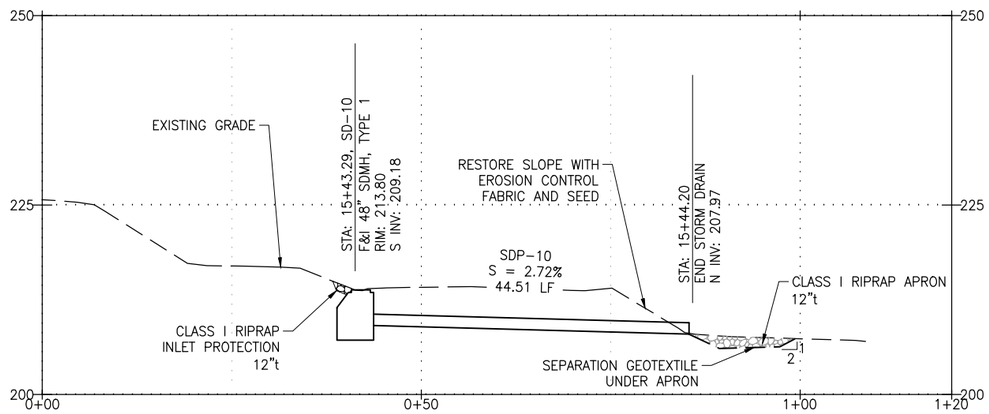
TITLE:
OVERLAND DRIVE IMPROVEMENTS
OVERVIEW PLAN

DESIGNED BY: AEW	DATE: 11/13/15	SHEET NO: 9 OF 18
CHECKED BY: PK	PROJECT NO: 141100	



STORM DRAIN PLAN





STORM DRAIN PROFILE

SCALE: 1H:1V

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STATE OF ALASKA 49 TH
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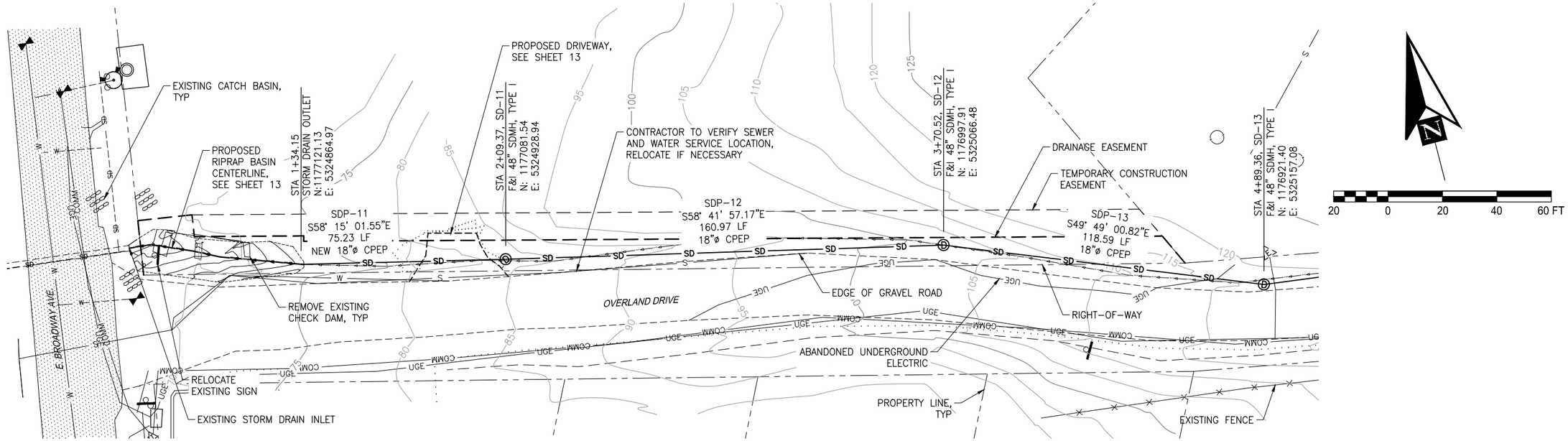
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

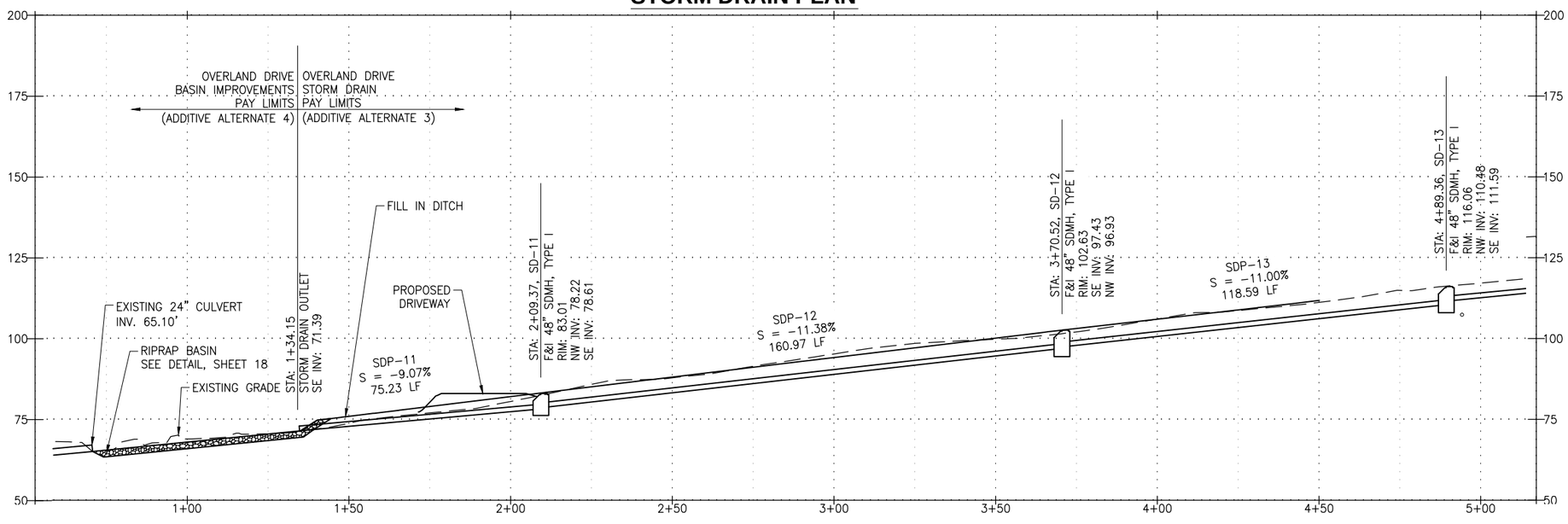
TITLE:
OVERLAND DRIVE DIVERSION CULVERT PLAN & PROFILE (ADDITIVE ALTERNATE 2)

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: **10** OF 18



STORM DRAIN PLAN



STORM DRAIN PROFILE

SCALE: 1H:1V

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NOVEMBER 13, 2015

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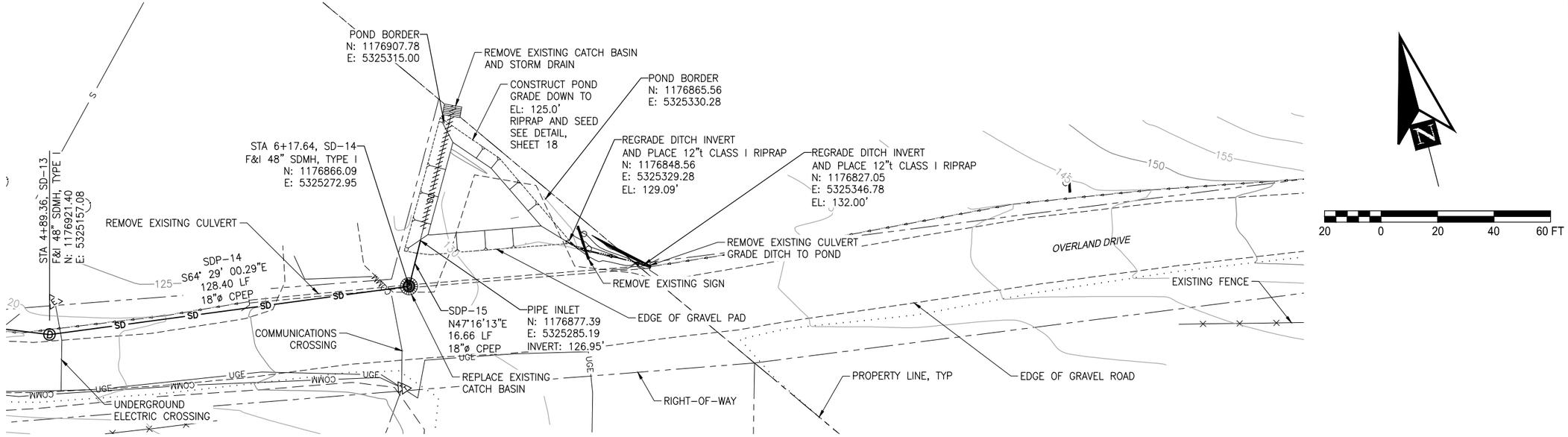
PND ENGINEERS, INC.

PROJECT: **CITY OF UNALASKA**
LAKE & RIVER RESTORATION PROJECTS

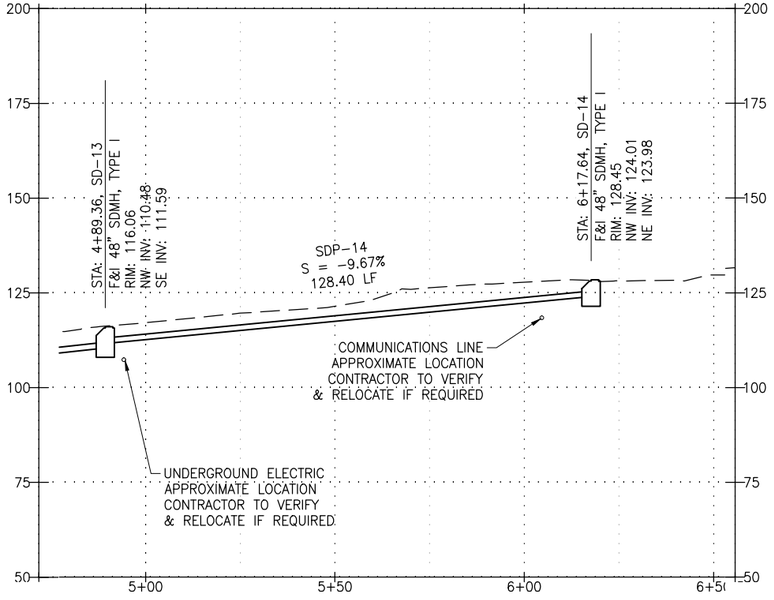
TITLE: OVERLAND DRIVE STORM DRAIN PLAN & PROFILE (1 OF 2) ADDITIVE ALTERNATE

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 11 OF 18



STORM DRAIN PLAN



STORM DRAIN PROFILE

SCALE: 1H:1V

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NOVEMBER 13, 2015

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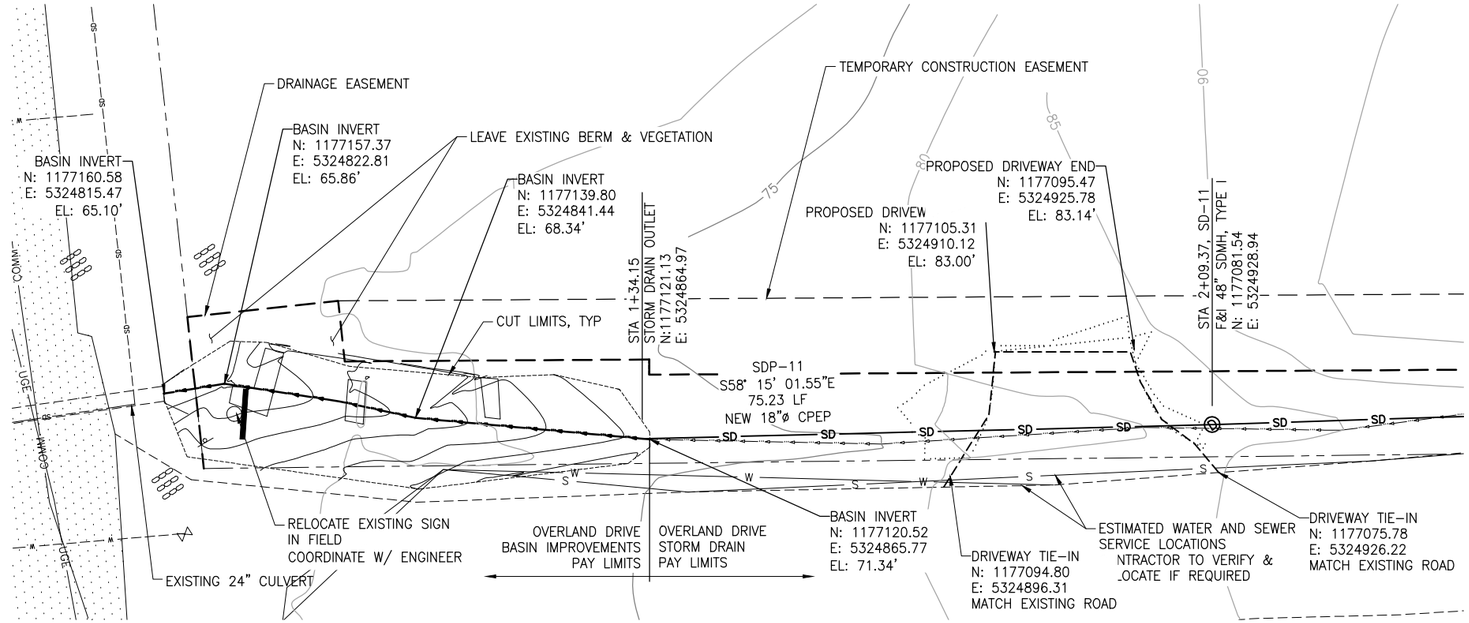
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

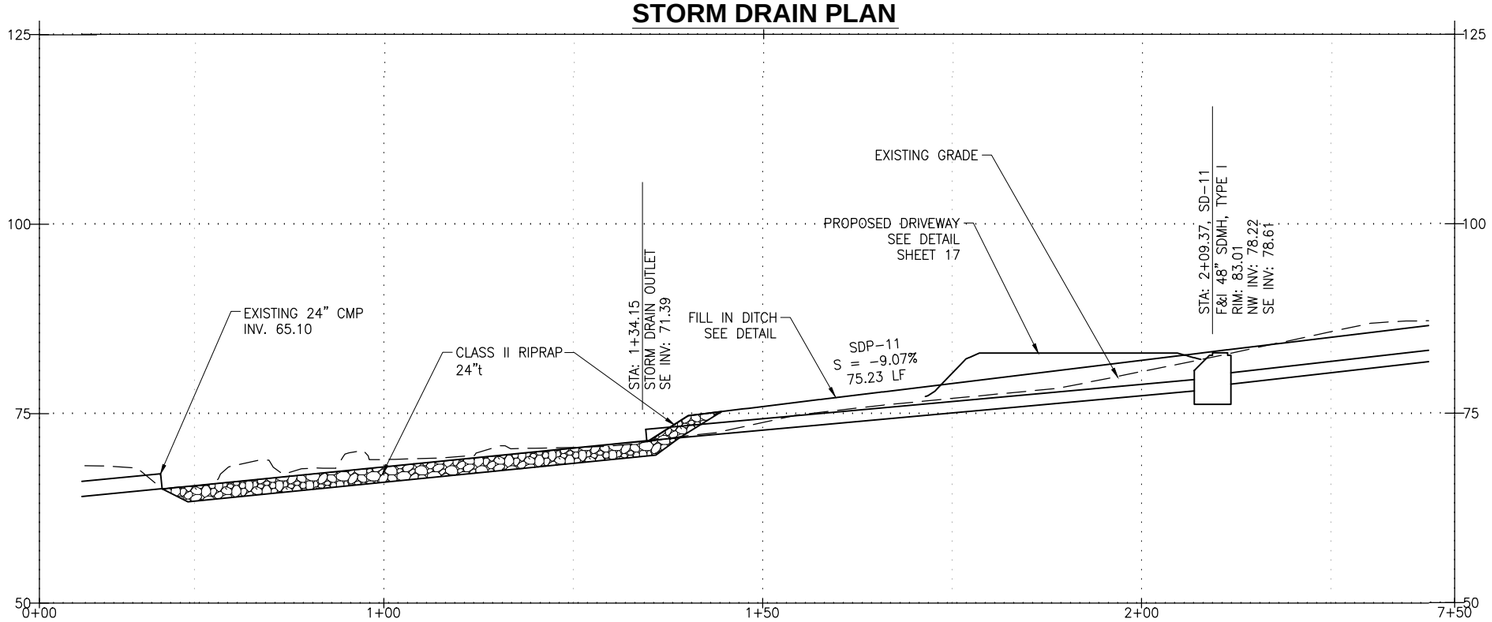
TITLE:
OVERLAND DRIVE STORM DRAIN PLAN & PROFILE
(2 OF 2) ADDITIVE ALTERNATE 3

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: **12** OF 18

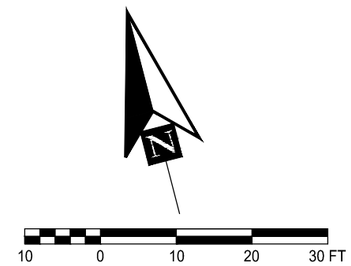


STORM DRAIN PLAN



STORM DRAIN PROFILE

SCALE: 1H:1V



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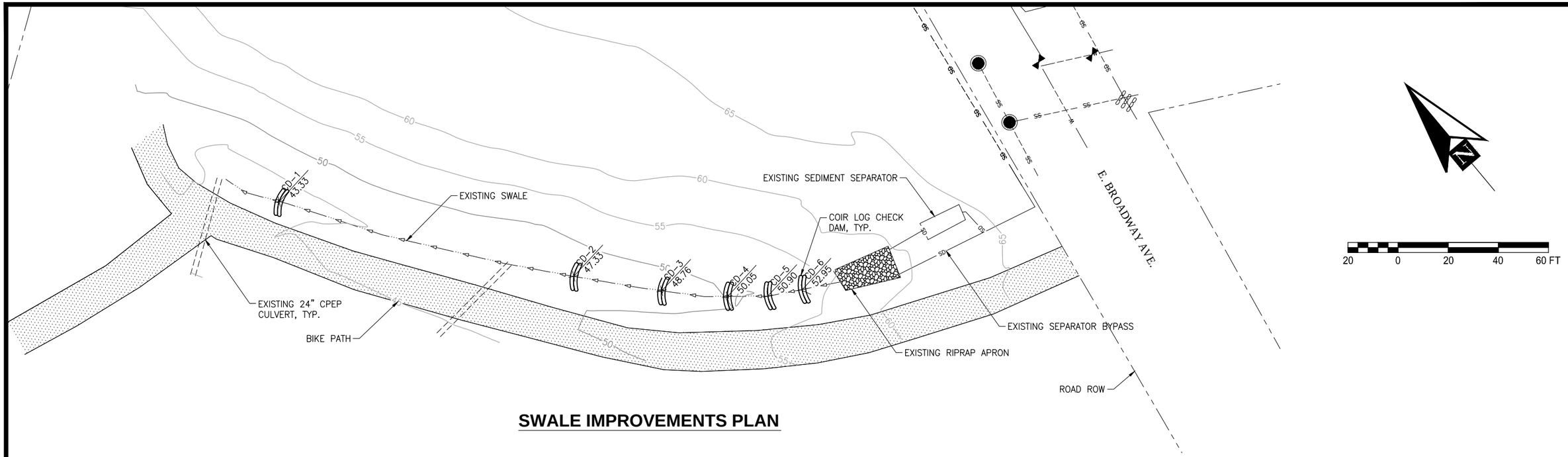
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

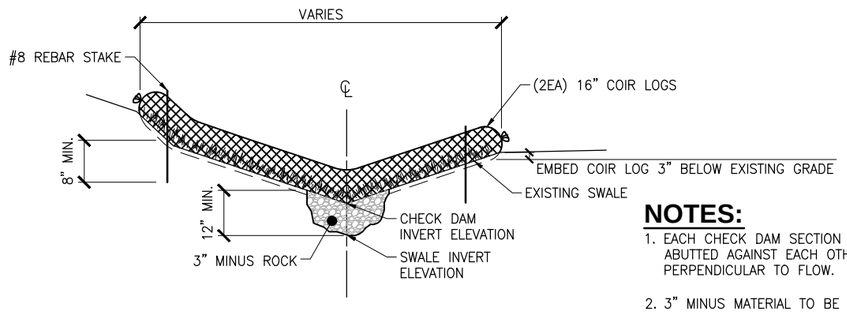
TITLE:
OVERLAND DRIVE BASIN IMPROVEMENTS
(ADDITIVE ALTERNATE 4)

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 13 OF 18



SWALE IMPROVEMENTS PLAN



CHECK DAM SECTION

NTS

NOTES:

1. EACH CHECK DAM SECTION SHALL CONSIST OF (2) COIR LOGS ABUTTED AGAINST EACH OTHER TO CREATE A THICKER DAM PERPENDICULAR TO FLOW.
2. 3" MINUS MATERIAL TO BE PLACED AT CENTER OF SWALE INVERT ONLY DIRECTLY UNDER EACH CHECK DAM SECTION.
3. OVERFLOW ELEVATION OF THE CHECK DAM TO BE A MINIMUM OF 6" LOWER THAN ITS EDGES.
4. EMBED DAM BOTTOM AND SIDES 3" INTO THE EXISTING SWALE.
5. SEED ALL DISTURBED AREAS.
6. WIDTH OF CHECK DAMS SHOWN ARE APPROXIMATE. CONTRACTOR TO SUPPLY 160 LF OF COIR LOGS. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO DETERMINE EXACT LOCATION AND EXTENTS OF COIR LOGS.
7. HEAVY EQUIPMENT SHALL NOT BE USED ON BIKE PATH, SWALE, OR ADJACENT SLOPES. CONTRACTOR SHALL TAKE CARE TO MINIMIZE DISTURBANCE OF PROJECT SITE.

COORDINATE LAYOUT TABLE				
POINT NO	NORTHING	EASTING	DESCRIPTION	INVERT ELEVATION
1	1177236.4690	5324498.2102	CHECK DAM (CD-1)	43.33'
2	1177121.4353	5324536.5639	CHECK DAM (CD-2)	47.33'
3	1177088.8228	5324550.6490	CHECK DAM (CD-3)	48.76'
4	1177065.5073	5324562.8101	CHECK DAM (CD-4)	50.05'
5	1177052.0115	5324571.7362	CHECK DAM (CD-5)	50.90'
6	1177041.8849	5324581.3007	CHECK DAM (CD-6)	52.95'

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NOVEMBER 13, 2015

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STATE OF ALASKA 49 TH
Paul Kendall CE-11665
REGISTERED PROFESSIONAL ENGINEER
DATE: 11/13/15

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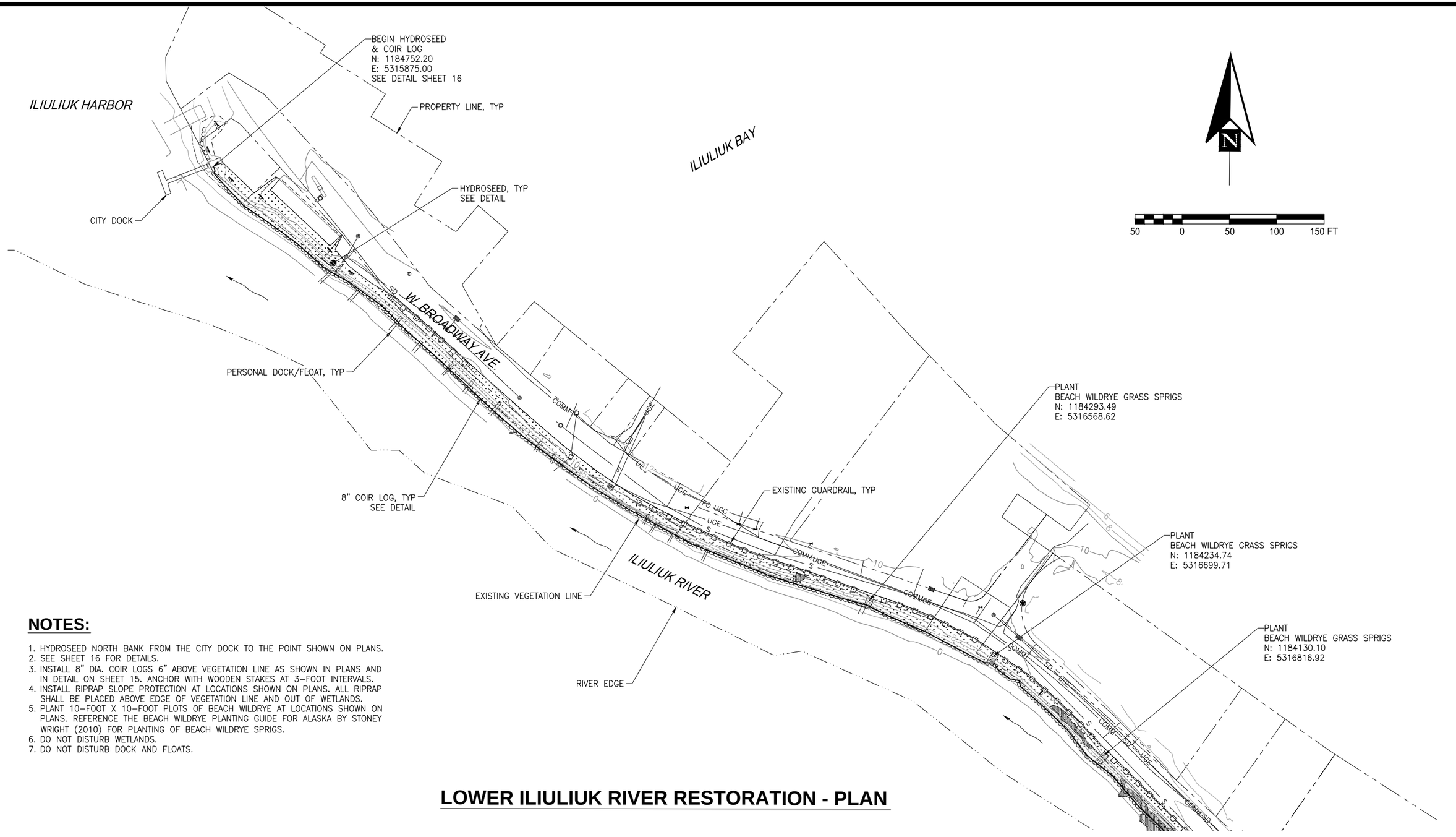
www.pndengineers.com
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
OVERLAND DRIVE
OUTLET SWALE

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 14 OF 18



NOTES:

1. HYDROSEED NORTH BANK FROM THE CITY DOCK TO THE POINT SHOWN ON PLANS.
2. SEE SHEET 16 FOR DETAILS.
3. INSTALL 8" DIA. COIR LOGS 6" ABOVE VEGETATION LINE AS SHOWN IN PLANS AND IN DETAIL ON SHEET 15. ANCHOR WITH WOODEN STAKES AT 3–FOOT INTERVALS.
4. INSTALL RIPRAP SLOPE PROTECTION AT LOCATIONS SHOWN ON PLANS. ALL RIPRAP SHALL BE PLACED ABOVE EDGE OF VEGETATION LINE AND OUT OF WETLANDS.
5. PLANT 10–FOOT X 10–FOOT PLOTS OF BEACH WILDRYE AT LOCATIONS SHOWN ON PLANS. REFERENCE THE BEACH WILDRYE PLANTING GUIDE FOR ALASKA BY STONEY WRIGHT (2010) FOR PLANTING OF BEACH WILDRYE SPRIGS.
6. DO NOT DISTURB WETLANDS.
7. DO NOT DISTURB DOCK AND FLOATS.

LOWER ILIULIUK RIVER RESTORATION - PLAN

NOTE: THIS PORTION OF THE PROJECT IS NOT GRANT FUNDED.

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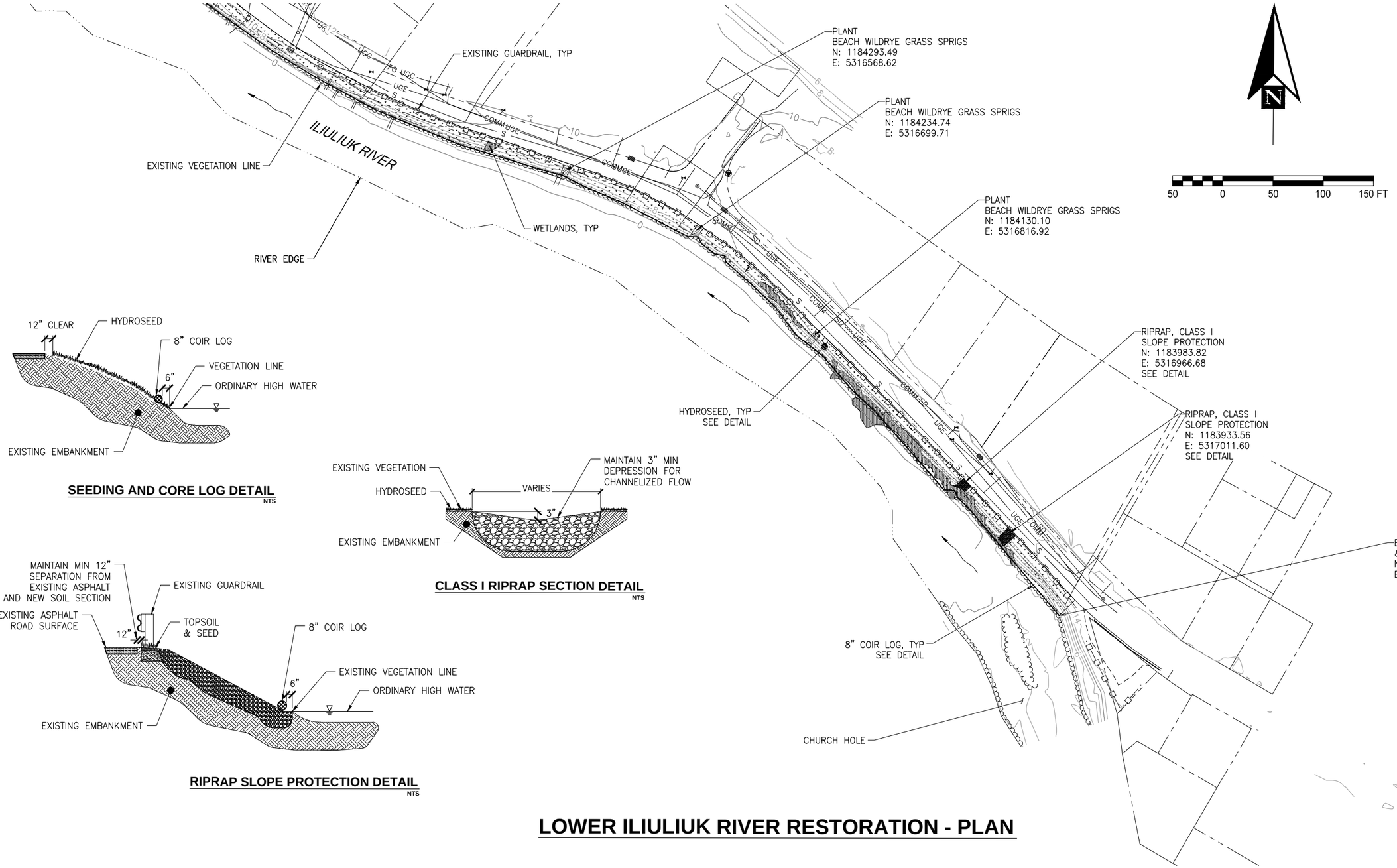
PND ENGINEERS, INC.

PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

TITLE:
LOWER ILIULIUK RIVER IMPROVEMENTS
PLAN (1 OF 2) ADDITIVE ALTERNATE 5

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: **15** OF 18



SEEDING AND CORE LOG DETAIL
NTS

CLASS I RIPRAP SECTION DETAIL
NTS

RIPRAP SLOPE PROTECTION DETAIL
NTS

LOWER ILIULIUK RIVER RESTORATION - PLAN

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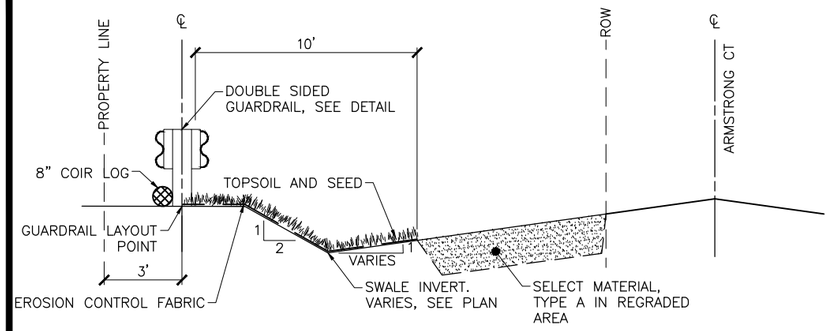
PROJECT:
CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

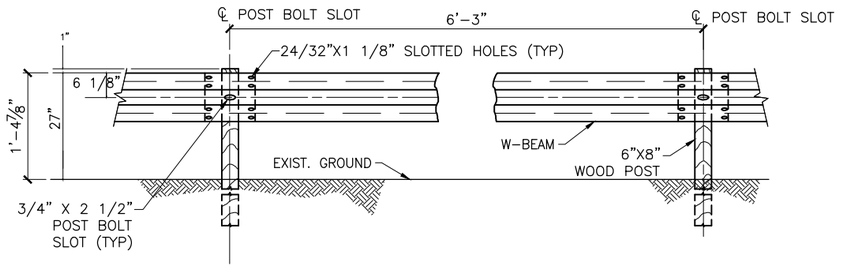
TITLE:
LOWER ILIULIUK RIVER IMPROVEMENTS
PLAN (2 OF 2) ADDITIVE ALTERNATE 5

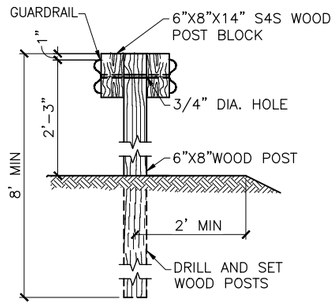
DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

SHEET NO: 16 OF 18

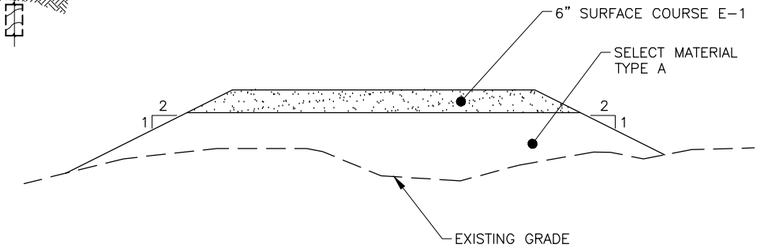


ARMSTRONG DRAINAGE SWALE

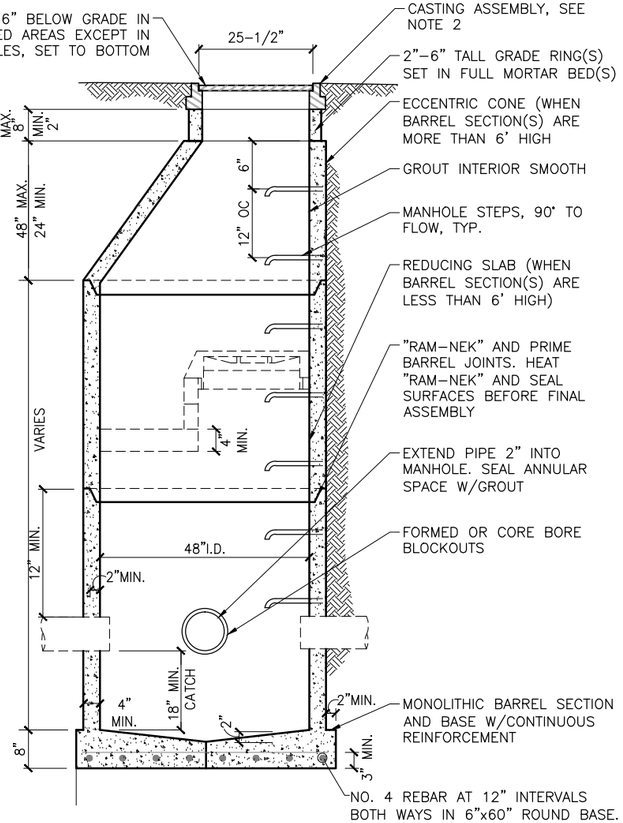




DOUBLE SIDED GUARDRAIL POST AND RAILING DETAILS



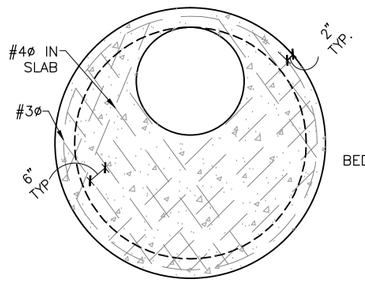
OVERLAND DRIVE DRIVEWAY SECTION



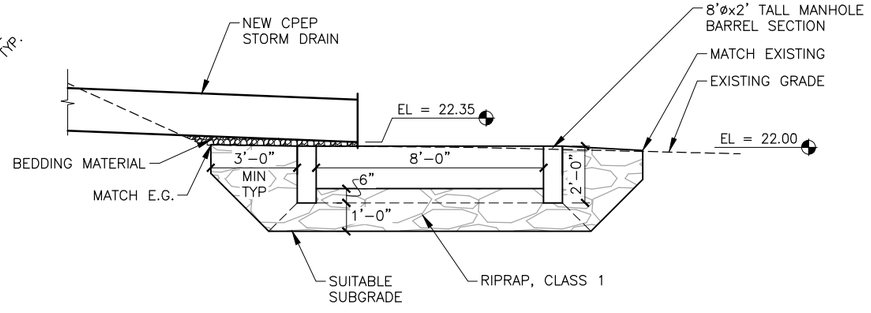
STORM DRAIN MANHOLE, TYPE I

NOTES:

1. REFER TO A.S.T.M. DESIGNATION C-470-69 FOR DESIGN REQUIREMENTS.
2. FRAME AND GRATE SHALL BE EJIW PART NUMBERS 264010 AND 264030 OR ENGINEER APPROVED EQUAL.
3. MIN. STEEL REQ'D FOR BARREL AS PER A.S.T.M. C-478-69 SHALL BE EMBEDDED IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
4. PRIMARY LEADS NOT TO EXCEED 30" CMP, PCMP, CPEP OR 27" RCP WITH INCLUDED ANGLE BETWEEN LEADS NO LESS THAN 135° OR PRIMARY LEAD NOT TO EXCEED 24" CMP, PCMP, CPEP OR 21" RCP WITH INCLUDED ANGLE LESS THAN135°.
5. BLOCKOUTS TO BE FORMED.
6. RUNGS TO BE PLACED 12" ON CENTER ON UNOBSTRUCTED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 6" MAX. FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, BOTTOM RUNG TO BE PLACED 6" OVER SMALLEST PIPE.
7. BACKFILL AROUND MANHOLE WITH 36" THICK CLASSIFIED FILL.
8. SET BASE ON 12" CLASSIFIED FILL.



PRECAST REDUCING SLAB



STORM DRAIN OUTLET DETAIL

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NOVEMBER 13, 2015

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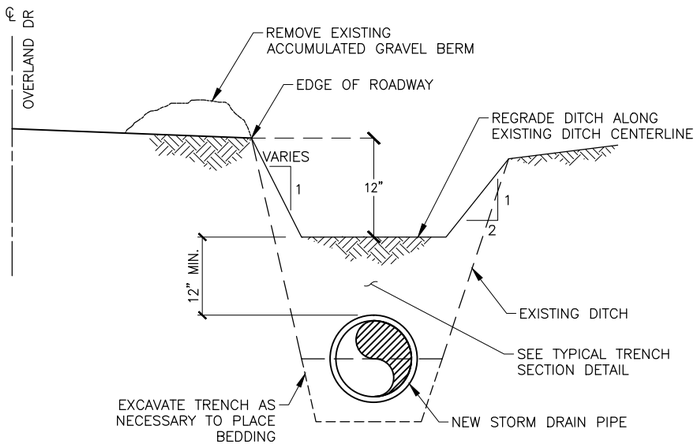
PROJECT: CITY OF UNALASKA
LAKE & RIVER RESTORATION PROJECTS

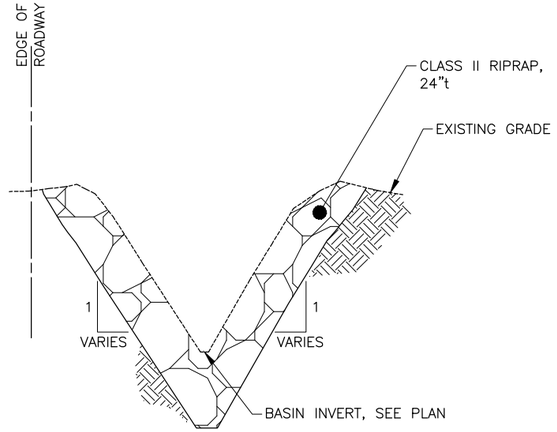
TITLE: DETAILS (1 OF 2)

DESIGNED BY:	AEW	DATE:	11/13/15
CHECKED BY:	PK	PROJECT NO:	141100

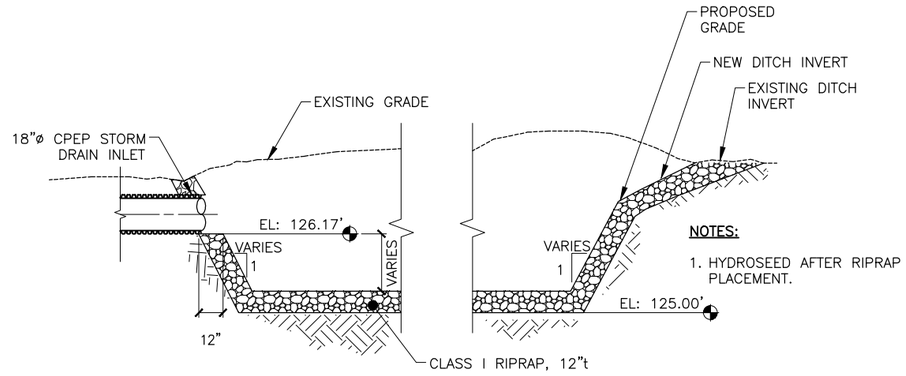
SHEET NO: 17 OF 18



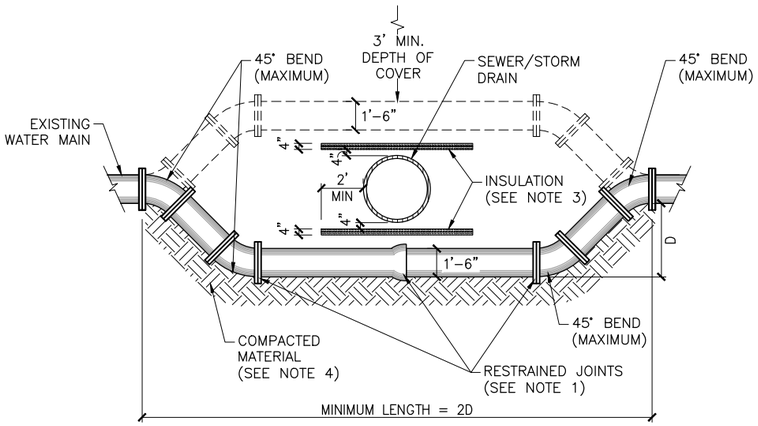
OVERLAND DITCH DETAIL



OVERLAND BASIN IMPROVEMENTS SECTION



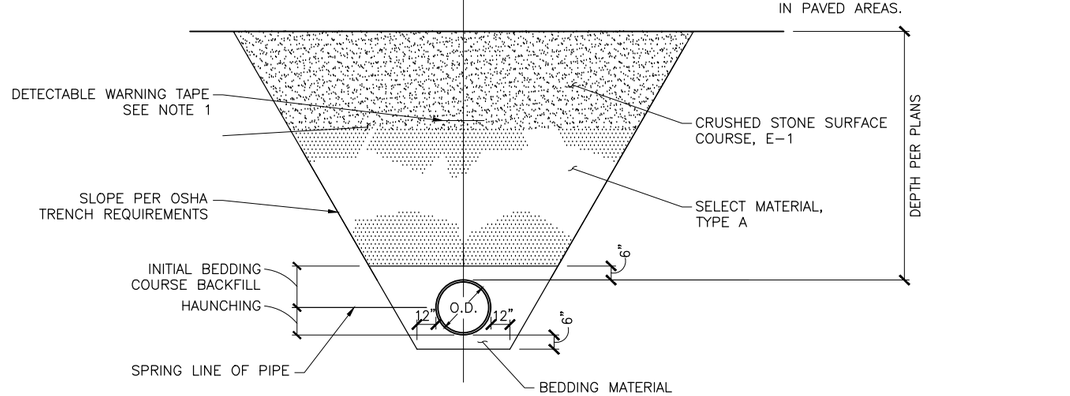
OVERLAND SETTLING POND SECTION



SEWER / STORM DRAIN DETAIL

NOTES:

1. ALL PIPE, CLASS 52 DI AND FITTINGS SHALL BE RESTRAINED BY USE OF MEGALUG® AND/OR FIELD LOK® GASKETS OR EQUAL.
2. RELOCATED WATER MAIN SHALL HAVE A MINIMUM SEPARATION OF THIRTY–SIX INCHES (36") BETWEEN STORM AND WATER. IF LESS THAN THIRTY–SIX INCHES (36") OF SEPARATION CANNOT BE OBTAINED THEN FOUR INCHES (4") OF INSULATION IS REQUIRED. IF EIGHTEEN INCHES (18") OF SEPARATION CANNOT BE MAINTAINED BETWEEN WATER AND SEWER OR STORM AN ADEC WAIVER IS REQUIRED.
3. RIGID BOARD INSULATION SHALL BE HIGH DENSITY EXTRUDED POLYSTYRENE, MIN. 60 P.S.I., EQUIVALENT TO R–20 PER FOUR INCH (4") THICKNESS. INSULATION SHALL BE BE POSITIONED NO LESS THAN OR EQUAL TO FOUR INCHES (4") FROM STORM SEWER.
4. ALL BACKFILL MATERIAL AROUND RELOCATED WATER MAIN SHALL BE NFS AND COMPACTED TO 95% MAX. DENSITY.
5. ALL MATERIALS USED TO RELOCATE WATER LINE SHALL BE APPROVED BY THE OWNER.



TYPICAL TRENCH SECTION STORM DRAIN PIPE

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PROJECT: CITY OF UNALASKA
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TITLE: DETAILS (2 OF 2)

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SHEET NO: 18 OF 18