

Padden Creek Daylighting Open House Presentation

June 4, 2013



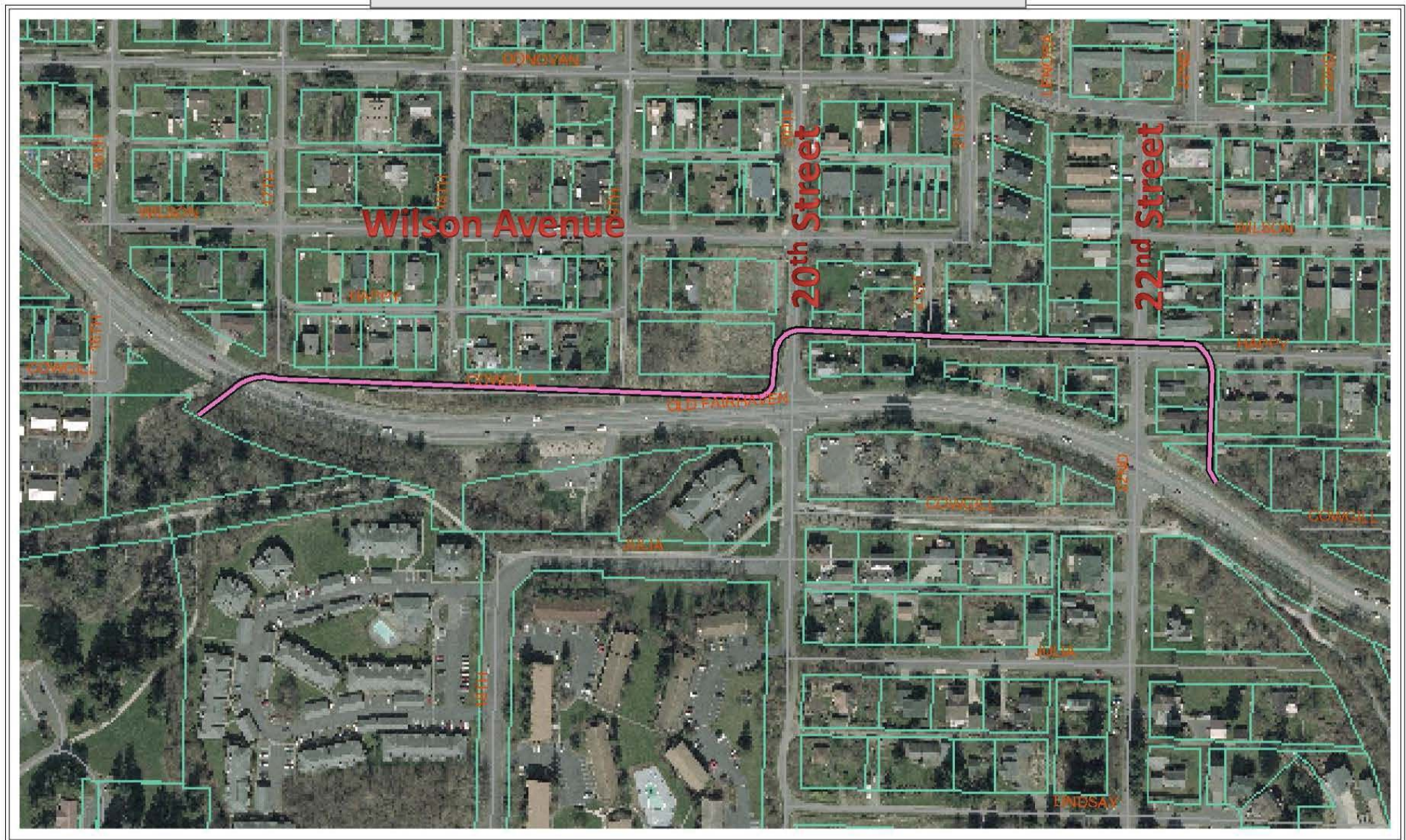
City of
Bellingham



Challenges

- Padden Creek, between 17th and 22nd streets, flows in a tunnel constructed in the 1890's
 - The tunnel is the major blockage to fish passage (67% blockage by WDFW rating)
 - The tunnel is undersized and results in approximately 15 city blocks of residential housing that are in the flood plain

Padden Creek Area



FEMA Floodway and Floodplain



Stakeholders

- Padden Creek Alliance
 - Adjacent property owners
 - Concerned citizens
 - Fish advocates
 - Happy Valley Neighborhood Association
- WA Department of Fish and Wildlife
- WA Department of Transportation
- Nooksack Salmon Enhancement Association
- City of Bellingham



Upstream end of tunnel



Downstream end of tunnel



Padden Creek Lagoon

What is the project?

- Construction of a creek channel between 17th and 22nd streets along Old Fairhaven Parkway
- Project removes the major fish blockage for the creek
- Project eliminates reliance on a 1890's tunnel to convey Padden Creek

What more is the project?

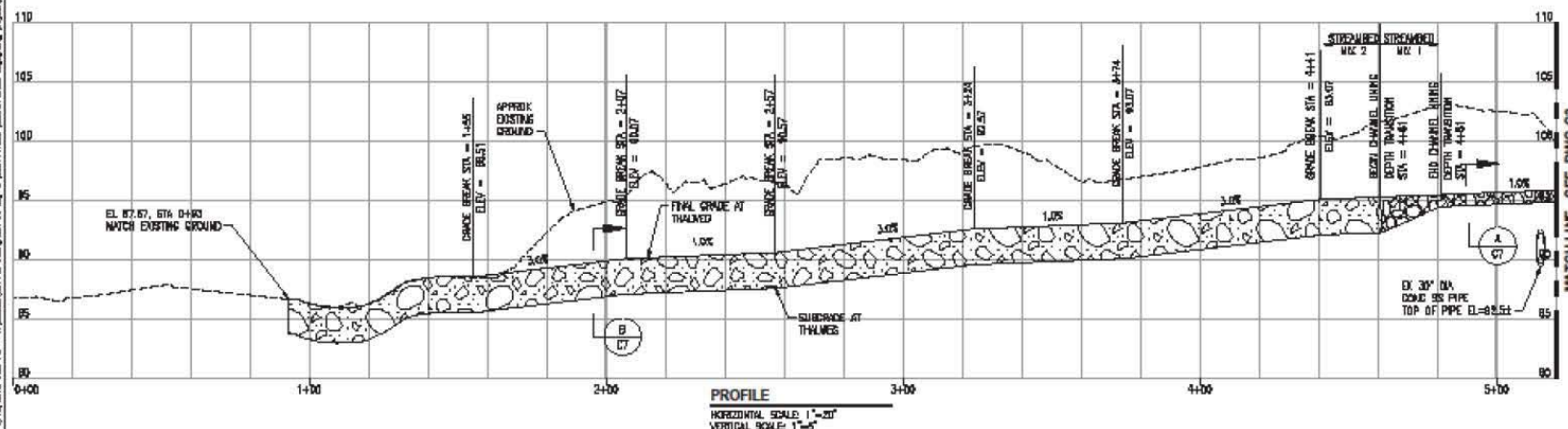
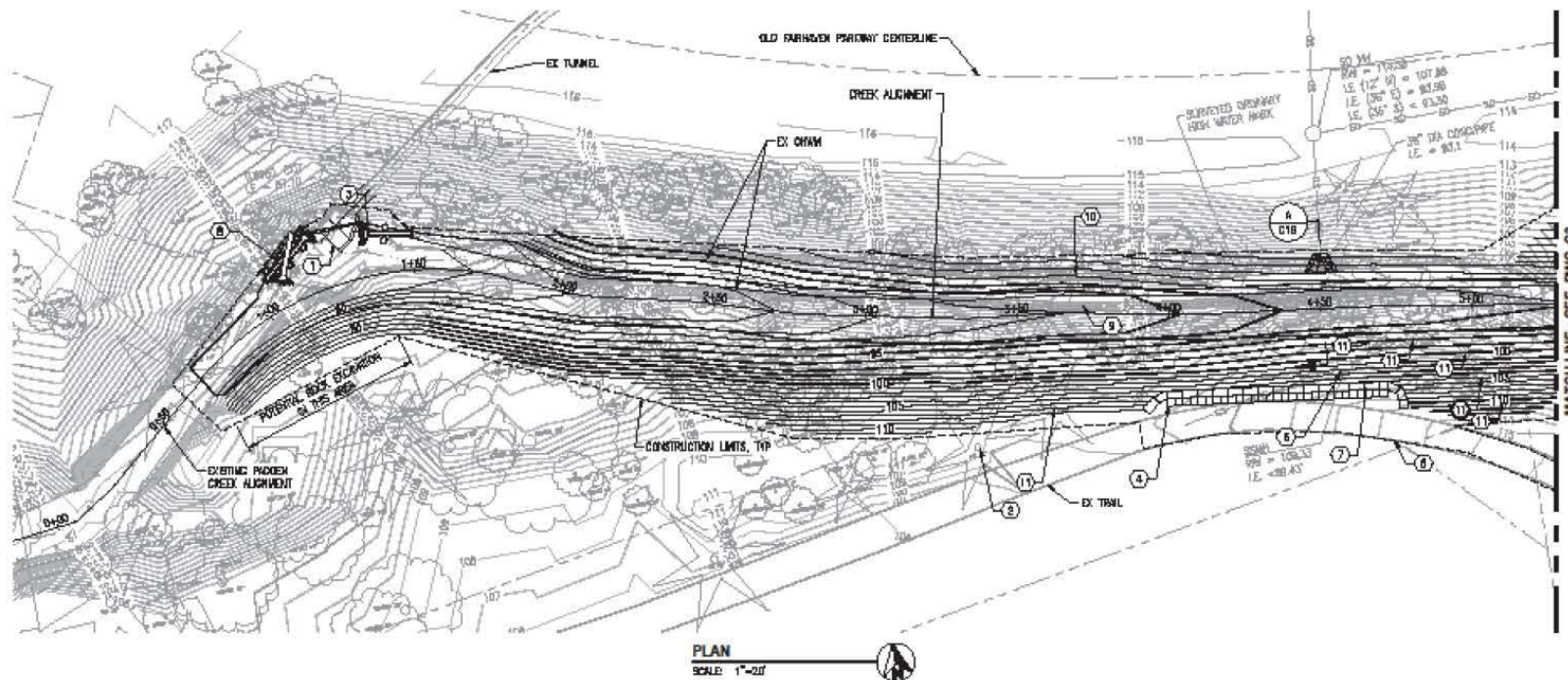
- Construction of the channel should alleviate the flood hazard for approximately 80 residences. This would result in savings on insurance for the property owners.

Work to date

- 1997- Present: Work sessions with Padden Creek Alliance, interested parties and the City of Bellingham
- 2001: Feasibility study by City (RW Beck) which removes tunnel
- 2002: Feasibility study by Jones Engineering for Padden Creek Alliance which retains tunnel
- 2011: DOE Revolving loan of \$1,426,000 and Centennial Grant of \$500,000 received

Work to date

- Property acquisition
- 2012: SAIC (formerly RW Beck) teamed with Jones Engineers begin work on design
- 2013: Currently at 60% design stage for the creek
- 2013: WSDOT begins bridge construction on Old Fairhaven Parkway for future creek channel

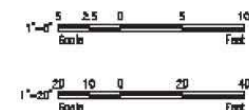


GENERAL NOTES

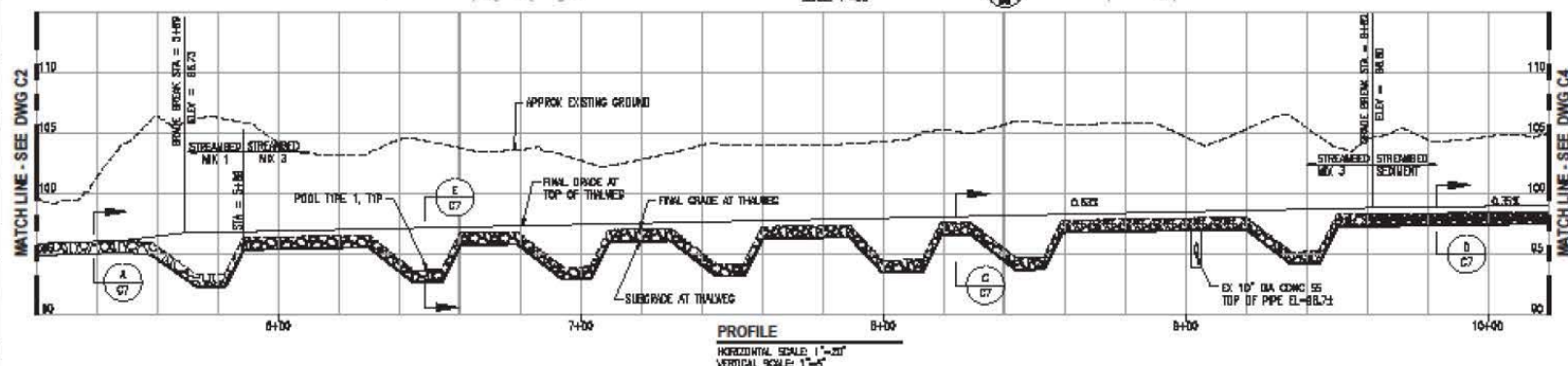
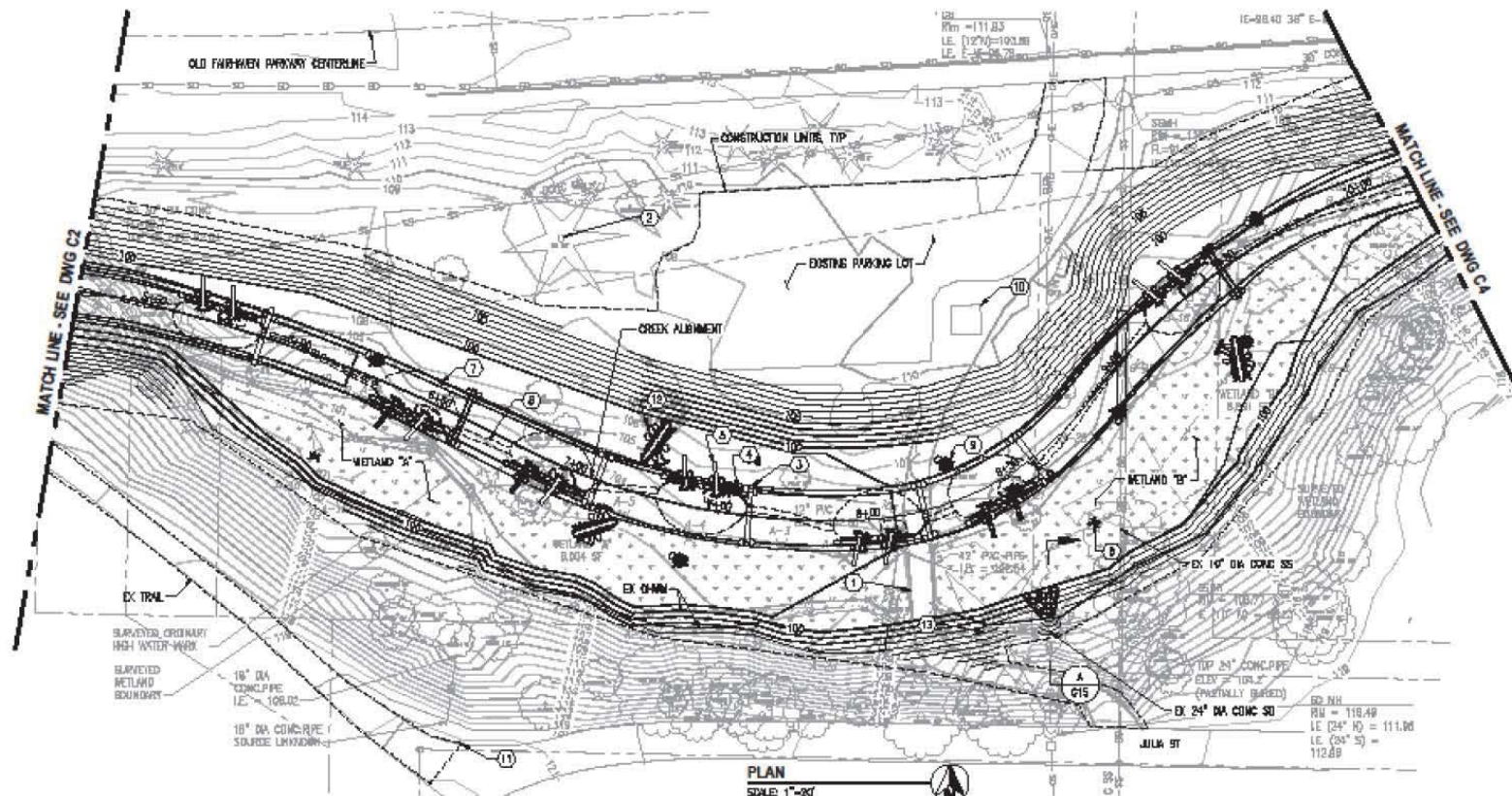
1. SEE SHEET C17 FOR BOULDER PLACEMENT FOR STREAMBED
MIX 1 AND 2 REACHES.
2. THE APPROPRIATE EXISTING GRADE AT PROFILE IS ALONG
THE NEW CHANNEL CENTERLINE.
3. TREES TO BE REMOVED SHALL BE TAGGED PRIOR TO
CLEARING AND GRUBBING.

KEYED NOTES

- (1) TUNNEL OUTLET. SEE SHEET 54.
- (2) PROTECT EXISTING TREE.
- (3) TIE LBR. SEE SHEET 010.
- (4) EXISTING BLOCK RETAINING WALL. SEE SHEET 52.
- (5) ADJUST EX. ISBM HEIGHT TO MATCH GRADE.
- (6) RESTORE TYP. PER CITY OF BELLINGHAM STD PLAN MS-10201.
- (7) PESTIFIDE INVA. PER CITY OF BELLINGHAM STD PLAN MS-1025.
- (8) LBR JAW. SEE SHEET 014.
- (9) REMOVE APPROX. 210 LF EX. CONCRETE SACK WALL ALONG SOUTH SIDE OF EXISTING CHANNEL.
- (10) BURY IN PLACE APPROX. 230 LF EX. CONCRETE SACK WALL ALONG NORTH SIDE OF EXISTING CHANNEL. SELECTIVELY REMOVE APPROX. 10 LF TO EACH SIDE OF EX. 36" CONC. SD PIPE OUTFALL AND APPROX. 20 LF AT EASTERN END OF EX. CONC. SACK WALL. PROTECT AND PRESERVE EX. ALDER TREES ALONG TOP OF WALL.
- (11) TREE TO BE REMOVED ON SITE.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 83	
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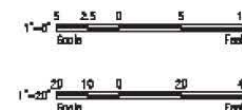


GENERAL NOTES

1. LOGS AND ROCKWALLS TO BE PLACED AS SHOWN AND AS DIRECTED BY ENGINEER.
2. SEE SHEET C17 FOR BOLLARD PLACEMENT FOR STREAMBED W/1 1/2" DIA.
3. POOLS AND THALES TO BE LOCATED APPROXIMATELY AS SHOWN. PLACES TO BE LOCATED BY ENGINEER. THALES TO BE LOCATED WITHIN THE LOW FLOW CHANNEL, AS SHOWN. DRAINAGE PLANT TO THE DEEPEST PORTION OF THE POOLS.
4. THE APPROXIMATE EXISTING GRADE AT PROFILE IS ALONG THE NEW CHANNEL CENTERLINE.
5. TREES TO BE USED SHALL BE THINNED PRIOR TO CLEARING AND DRIPPING.

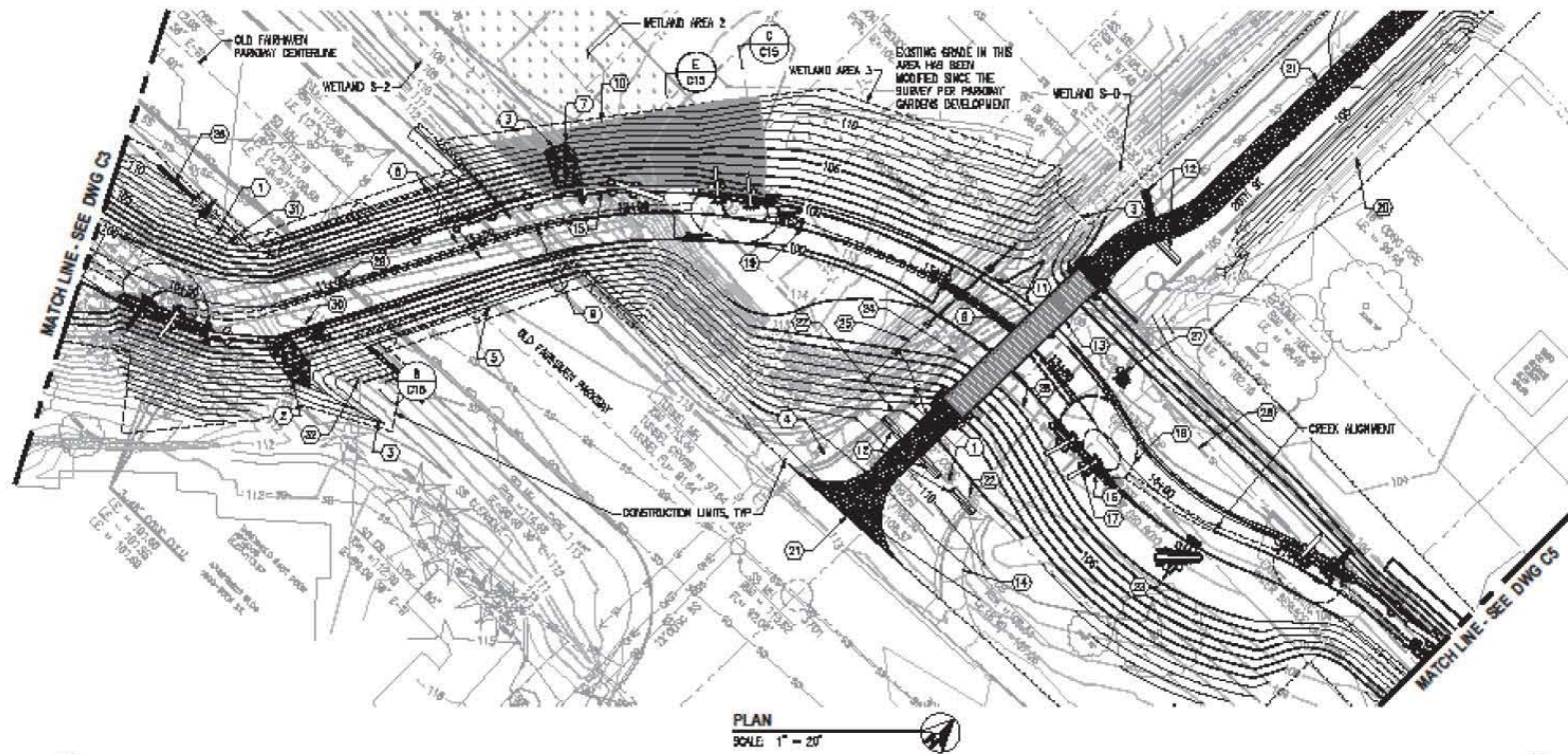
KEYED NOTES

- (1) REMOVE EXISTING BRIDGE, GULLY, AND PATHWAY FROM PARKING LOT TO EDGE OF SIDEWALK ON JULIA STREET.
- (2) PROTECT EX TREE.
- (3) BACKFILLER LOG, TIP, SEE SHEET C13.
- (4) POOL TOE LOGS, TIP, SEE SHEET C13.
- (5) ROSEMENT LOG, TIP, SEE SHEET C13.
- (6) STAMORIE SNAG, TIP, SEE SHEET C14.
- (7) POOL TYPE 1, TIP, SEE SHEET C14.
- (8) THALWEG, TIP, SEE SHEET C7.
- (9) ROOTING, TIP, SEE SHEET C14.
- (10) REMOVE AND REPLACE PAVING TRAIL WITH SAME OR NEAR.
- (11) RESTORE TRAIL PER CITY OF BELLINGHAM STD PLAN MB-1005.
- (12) LOG PAIR, SEE SHEET C14.
- (13) ROUSE TREE ON-SITE.



<table><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr><tr><td>5</td><td>6</td></tr><tr><td>7</td><td>8</td></tr><tr><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td></tr></table>		1	2	3	4	5	6	7	8	9	10	11	12	PROJECT NUMBER: <u>1000</u> REVISION NUMBER: <u>01</u> DATE: <u>01/01/00</u>	PROJECT LOCATION: <u>1000</u> CITY: <u>1000</u> COUNTY: <u>1000</u>	CITY OF BELLINGHAM, WASHINGTON PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION	SAIC 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000	DATUM 1000 1000	Job No. <u>1000</u> Date <u>1000</u> Field No. <u>1000</u>	PADDEN CREEK DAYLIGHTING PROJECT DAYLIGHTED CREEK PLAN AND PROFILE, SHEET 2 OF 5	SHEET 1 OF 2	DRAWING C3
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3	4																					
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9	10																					
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Note: Refer to 3-1/2" x 5-1/2" plan view in the city of Bellingham, Washington, for project location and highlighting project location on map and plan view 3 of 5.

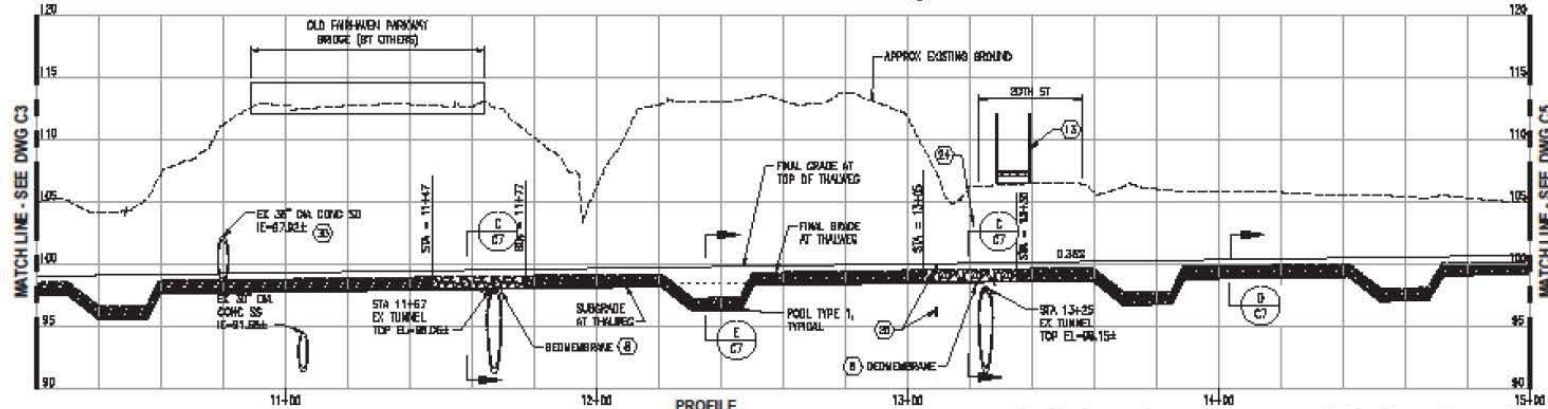


GENERAL NOTES

- LOGS AND ROOTINGS TO BE PLACED AS SHOWN ON PLANS AND AS DIRECTED BY THE ENGINEER.
- POOLS AND THALES TO BE LOCATED APPROXIMATELY AS SHOWN ON PLAN AND AS DIRECTED BY ENGINEER. THALES TO MEANDER WITHIN THE LOW FLOW CHANNEL AS SHOWN DIRECTING FLOW TO THE DEEPEST PORTION OF THE POOLS.
- THE APPROXIMATE EXISTING GRADE AT PROFILE IS ALONG THE NEW CHANNEL CENTERLINE.
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KEYED NOTES

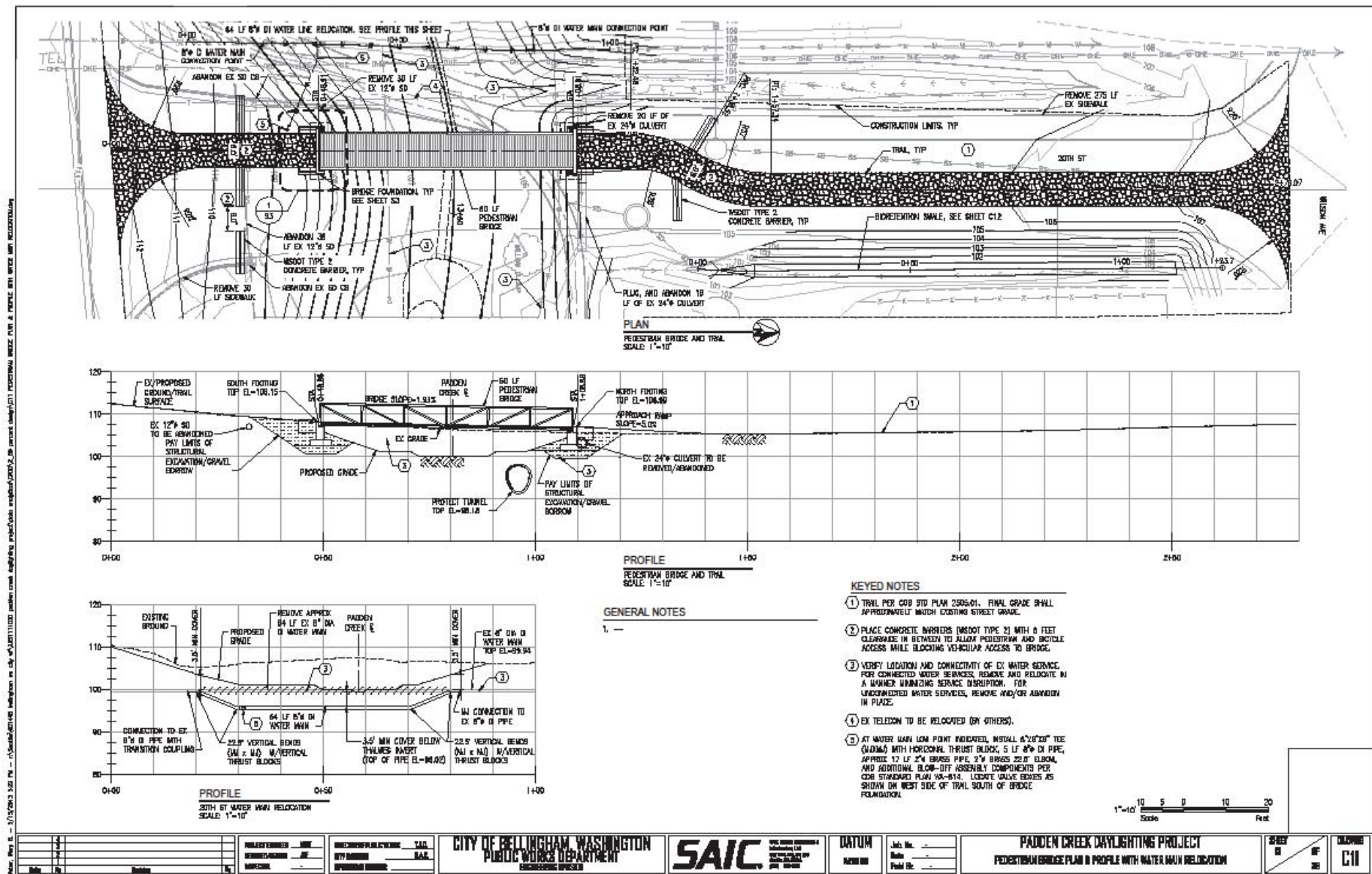
- PLUG EX SD PIPE WITH CONCRETE.
- 8" BY 16" BY 1" THICK QUARRY SPALLS.
- CONNECT EXISTING DRAINAGE SHALE TO CHANNEL.
- REMOVE EXISTING SIDEWALK. SEE SHEET C11.
- CHANNEL CONSTRUCTION UNDER BRIDGE THIS PROJECT. BRIDGE AND RETAINING WALLS BY OTHERS.
- REMOVE THREE (3) EX 48" DIA CONIC CULVERTS, APPROX 141 LF EACH.
- 8" BY 16" BY 1" THICK QUARRY SPALLS.
- PLACE GEOMEMBRANE OVER TOP OF TUNNEL TO PREVENT POTENTIAL PAVING OF TUNNEL FROM CHANNEL LINING. SEE DETAIL X, SHEET X.
- EXISTING TUNNEL CROSSES TWO (2) LOCATIONS.
- COMPACTED TILL LINER TO PRESERVE EX WETLAND HYDROLOGY.
- RELOCATE EX UTILITY POLE (BY OTHERS).
- CONCRETE BARRIER, MSDOT TYPE 2, TYP. SEE SHEET C11.
- PEDESTRIAN BRIDGE. SEE SHEET C11.
- REMOVE EX SIDEWALK. SEE SHEET C11.
- TEE LOG, TYP. SEE SHEET C13.
- POOL TEE LOGS, TYP. SEE SHEET C13.
- REINFORCEMENT LOG, TYP. SEE SHEET C13.
- POOL TYPE 1, TYP. SEE SHEET C7.
- THALES, TYP. SEE SHEET C7.
- RETENTION SHALE, SEE SHEET C12.
- TRAIL. SEE SHEET C11.
- ABANDON EXISTING CR.
- LOG PILE, TYP. SEE SHEET C14.
- EX TELECOM CONDUIT TO BE RELOCATED BY OTHERS. SIZE AND DEPTH UNKNOWN.
- EX 8" DIA IN WATER MAIN TO BE RELOCATED. SEE DETAIL ST WATER MAIN RELOCATION PROFILE, SHEET C11.
- EXTEND HEADWALL. SEE SHEET X.
- ROOTING, TYP. SEE SHEET C14.
- EX WATER SERVICE. SEE SHEET C11.
- REMOVE APPROX 37 LF ABANDONED 24" DIA CONIC SOL.
- MODIFY EX 36" SD TO CREATE OUTFALL TO CHANNEL. SEE SECTION B, SHEET C10.
- REMOVE EX DB TYPE 2 48" DIA.
- ADJUST EX SD DB TYPE 2 60" HEIGHT TO MATCH GRADE.



DATE BY CHKD DATE BY CHKD		PROJECT NAME PROJECT NO.	CITY OF BELLINGHAM, WASHINGTON PUBLIC WORKS DEPARTMENT	SAIC SAIC PROJECT NO.	DATUM AS SHOWN	Job No. Drawn By Field No.	PADDEN CREEK DAYLIGHTING PROJECT DAYLIGHTED CREEK PLAN AND PROFILE, SHEET 3 OF 5	SHEET 1 OF 5	DATE 1 20	DATE 1 20	DATE 1 20
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18

20th Street Footbridge Detail



Stabilization/Habitat



Stabilization/Habitat



Next steps

- Necessary property purchases and easements
- Funding opportunities
- Utility relocations
- Consensus of regulatory agencies regarding a final plan
- Permanent vehicle closure of 20th Street

Additional challenges

- Appropriate buffer
- Maintenance
- Public access
- Education component
- Fish habitat design/WDFW
- Check final design for consistency with Happy Valley Neighborhood Plan

Schedule

- WSDOT bridge construction (Start 2013)
- Finalize the creek design (Late 2013)
- All easements in place
- Regulatory permitting
- Secure final funding
- Continue communicating with stakeholders
- Construction in 2015

Stream Walk

What will it look like?



Padden Creek Lagoon

























Confluence of Padden and Connelly Creeks







30th and Old Fairhaven Parkway















Lake Padden at Outlet

Questions?



City of
Bellingham

Padden Creek Daylighting

Presented by:

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Bill Reilly, Stormwater Manager

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City of
Bellingham