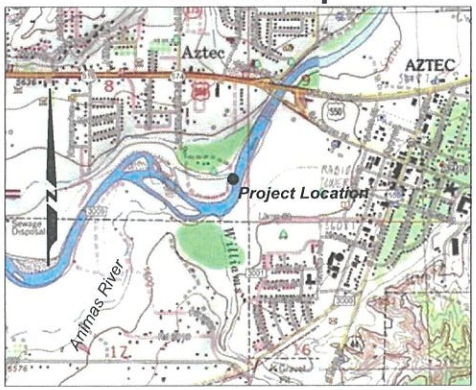
ATTACHMENT #1

Construction Plans for the Rio de Animas Park Bank Stabilization and River Access Project Animas River, City of Aztec, New Mexico

prepared for:
City of Aztec
303 S. Ash, Aztec, NM 87410

Location Map



Owners Statement
These Plans have been discussed with me and I am in agreement with its design and materials.

Authorized City of Aztec Representative _____ Date _____

Sheet Index

1	Cover
2	Existing Site
3	Proposed Site
4	Long. Profile
5	Cross Sections
6	J-hook & Bank Step Rock Details
7	River Ingress & Rock Spec's
8	General Notes
9	Structure Maintenance

Quantity Estimates

Structure Rock (angular)	60 rock
Splash Rock (angular)	26 rock
Bank Footer Rock (angular)	17 rock
Bank Step Rock (round)	30 rock
Excavation & Placement	200 CY

Utilities Statement
I realize that as the project owner, I and/or the Contractor I hire, may be liable for any damage to utilities during construction. Basin Hydrology, Inc. makes no representation that any utilities, if any, shown are exactly located or that all utilities present are shown.

Authorized City of Aztec Representative _____ Date _____

The Contractor shall provide the City of Aztec and Basin Hydrology, Inc. with a New Mexico 811 ticket number prior to start of any site disturbance.

New Mexico 811 Ticket Number _____
Call New Mexico 811 (811) at least 2 business days in Advance of any digging, grading or excavation for the marking of underground utilities.

Cover

DATE: 7/22/2021 City of Aztec RSP 10-2020.dwg

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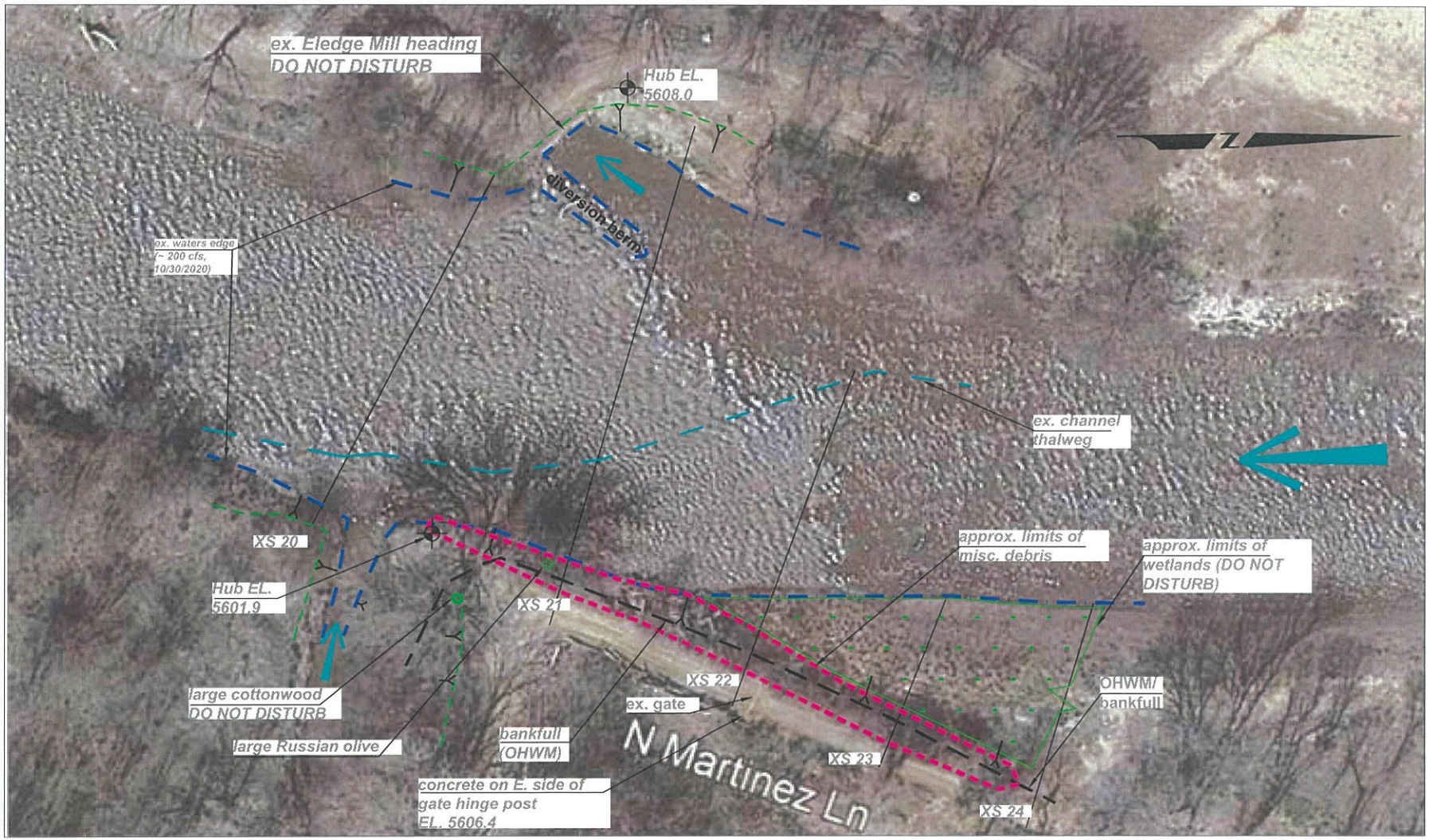
river, watershed & wetland studies
2340 CR 203 Durango, CO 81301
970-903-0366

City of Aztec – Animas River
Rio de Animas Park Site
River Stewardship Project
Lat. 36.83069, Long. -107.99612
City of Aztec, San Juan County, New Mexico



Aerial image date: 4/16/2019

DATE: 7/22/2021 City of Aztec RSP 10-2020.dwg

Existing Site

40 20 0 40 80 120

SCALE IN FEET

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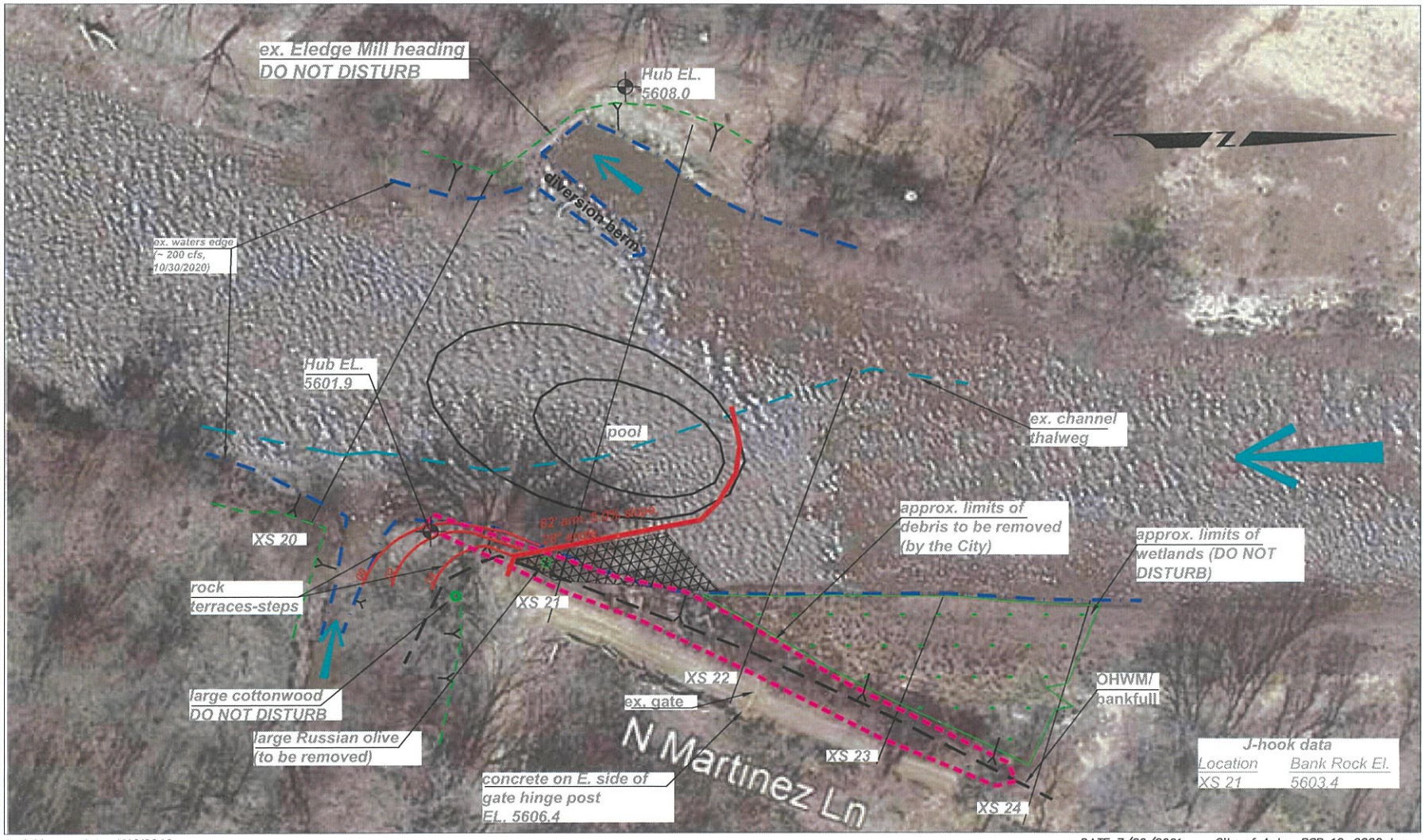

Proposed Site

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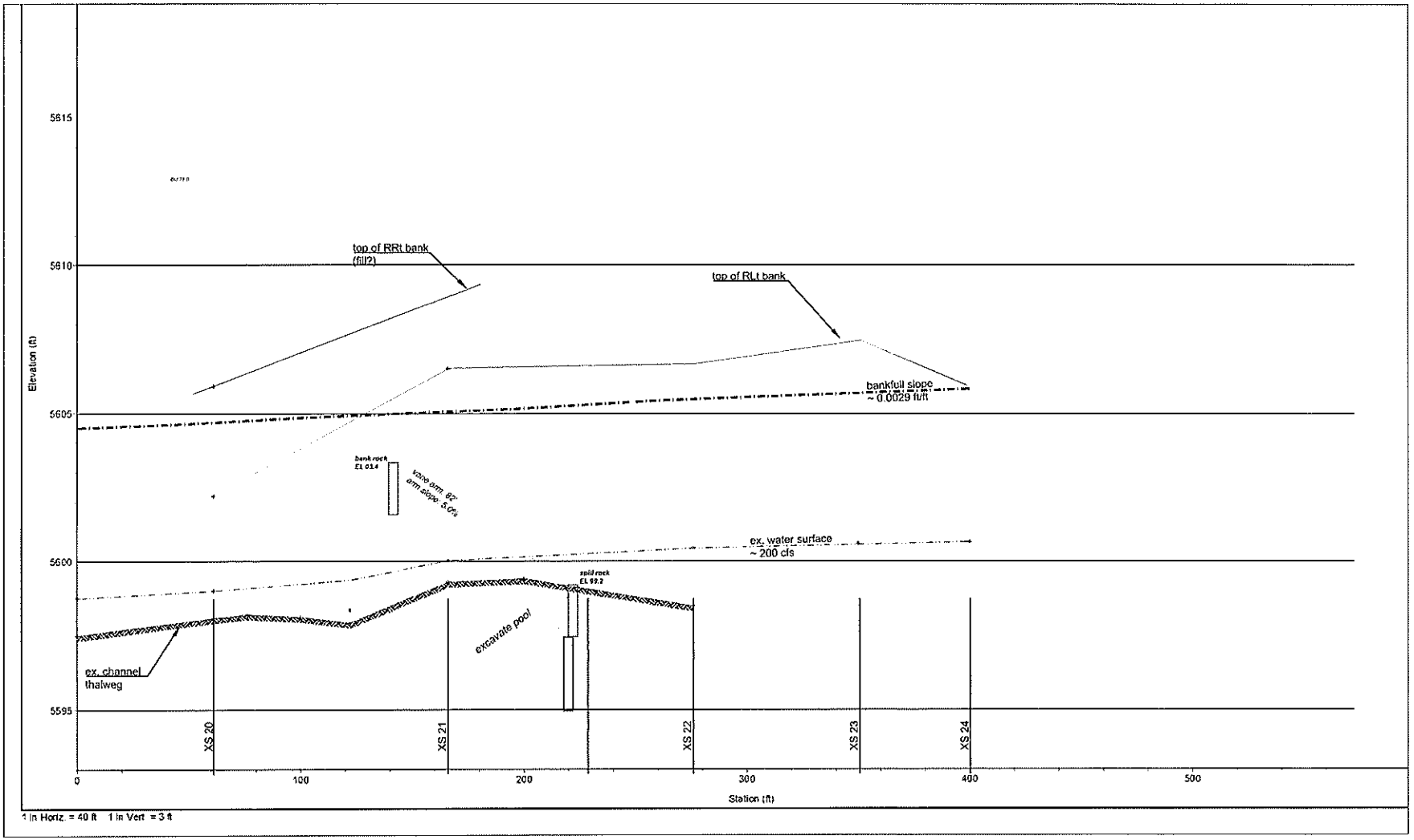
River Stewardship Project

Lat. 36.83069, Long. -107.99612

City of Aztec, San Juan County, New Mexico



Longitudinal Profile

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scale as shown

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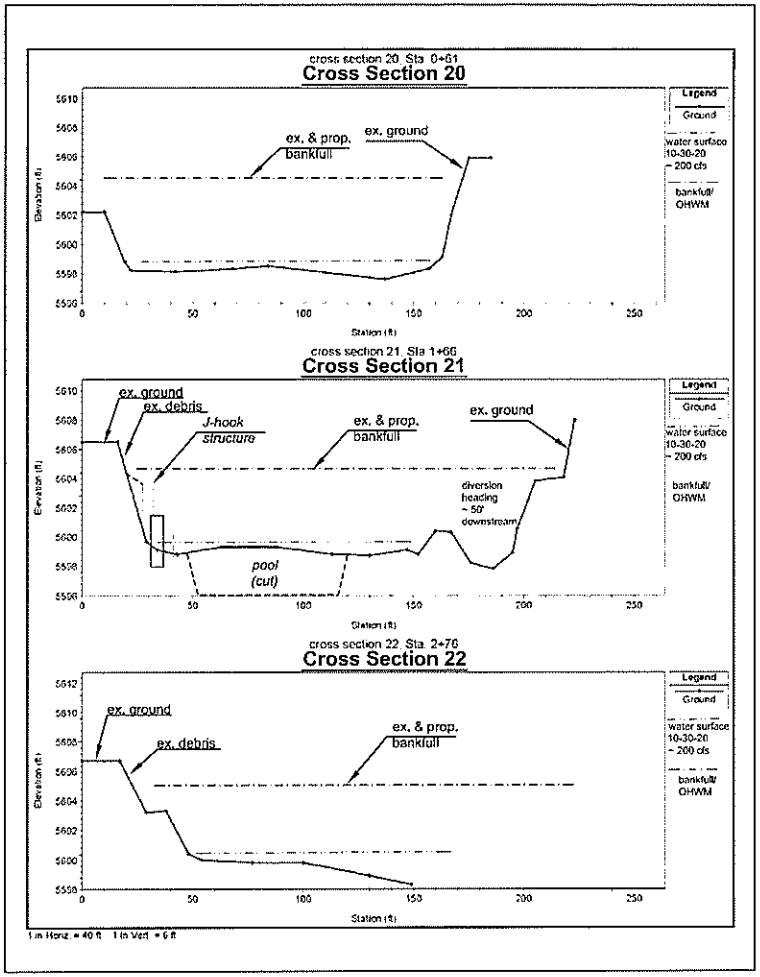

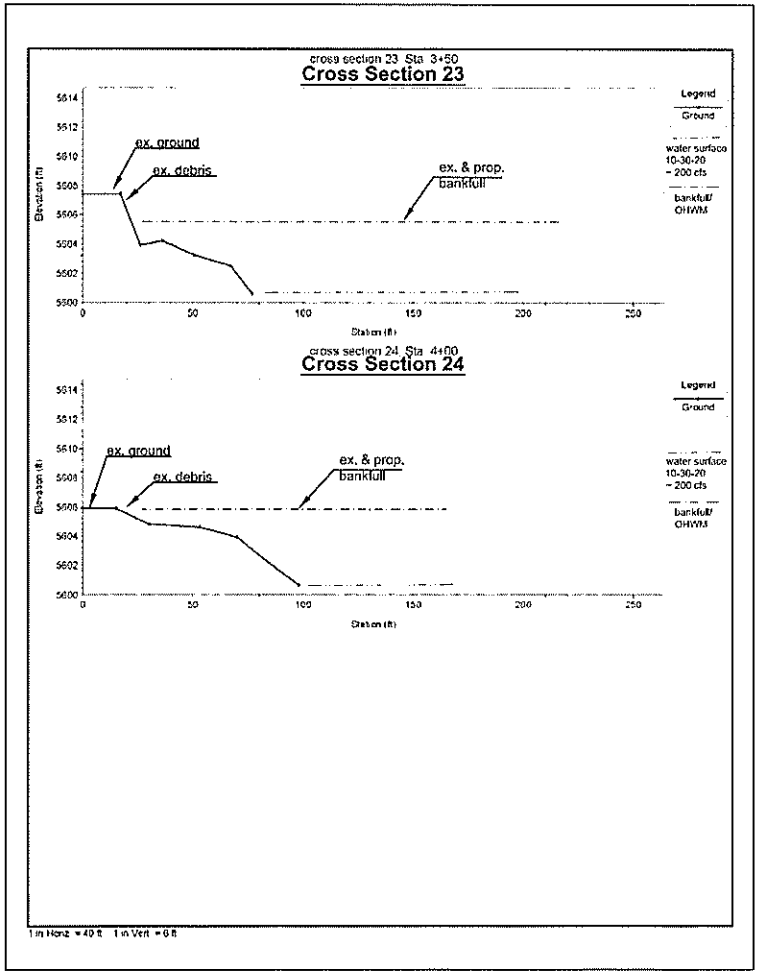

Cross Sections 20 - 24

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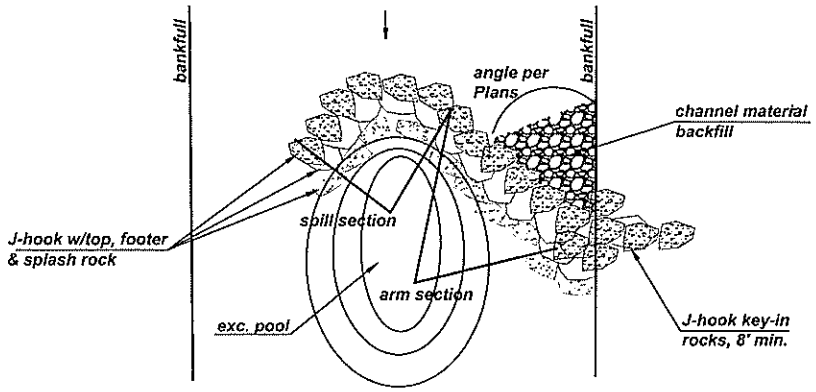
J-hook & Bank Step Rock Detail

Plan View
nts



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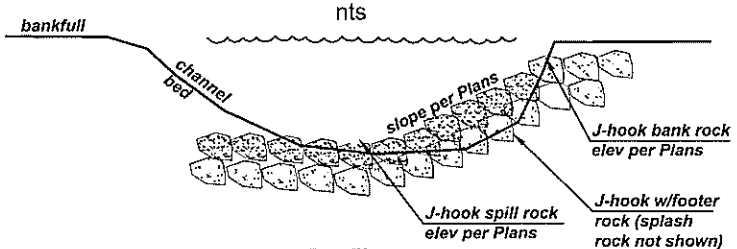

Profile
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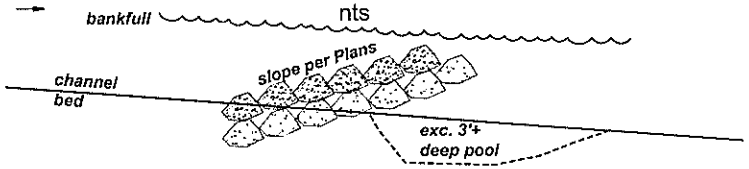
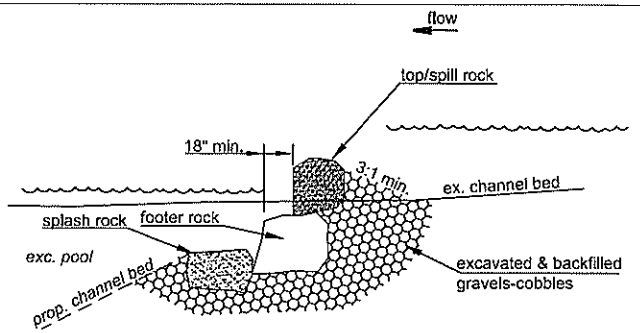


J-hook Detail



NOTE: *A void greater than 5" diameter (or ~ 4.5"x4.5") on the upstream face of a rock structure, especially top/spillrocks, shall be chinked with rock to greatly reduce the size of the void prior to backfilling.*

J-hook Top-Footer-Splash Rock
nts

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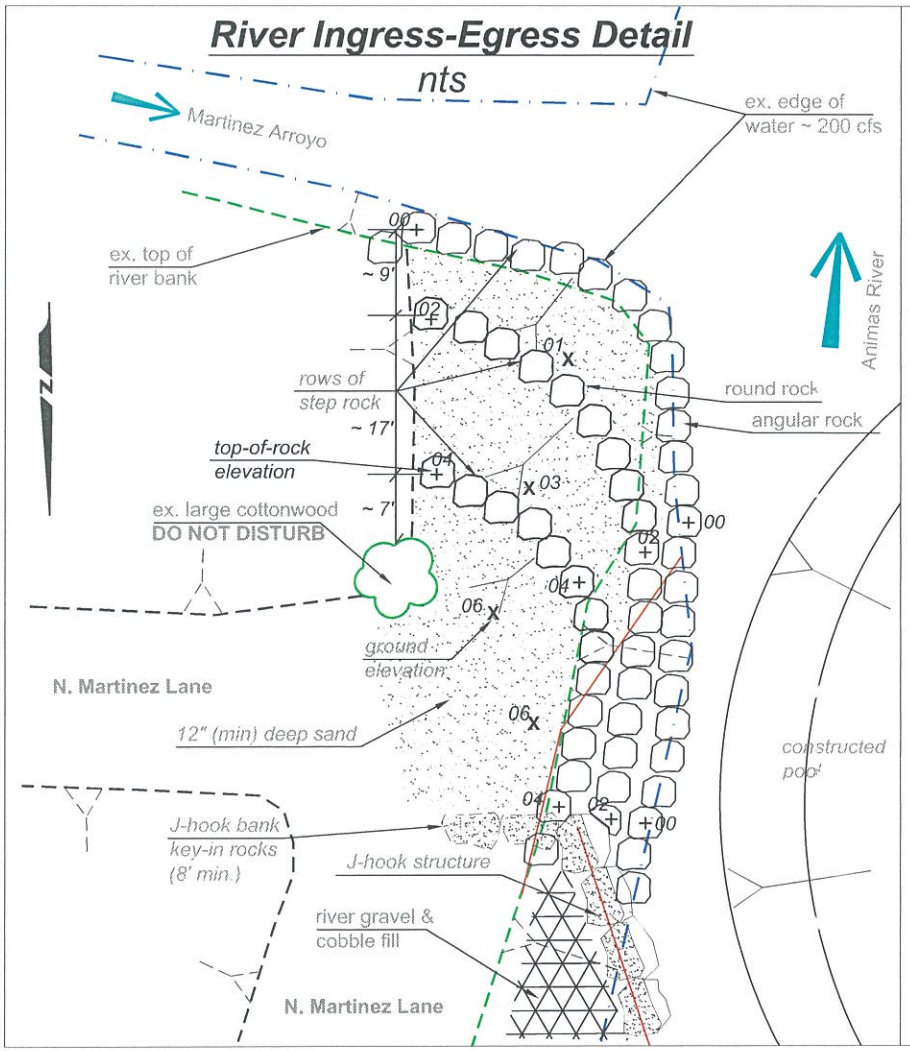
River Ingress-Egress Detail

nts



J-hook Specifications

1. The J-hook structure shall be constructed using the elevations and dimensions shown on these plans and as directed by Basin Hydrology, Inc.

2. J-hook rock shall be selected and installed set to create a uniform slope an elevation and contain no gaps between top rocks.

3. Excavated channel bed materials (fill) shall be used as backfill between the J-hook arm and the bank. Compacted fill shall transition from the top of the structure arm rock to the adjacent bank to create an ineffective flow area.

4. The J-hook shall be keyed into the bank a minimum of 8' behind the bank rock and at the "bank rock" elevation shown on the Plans.

5. At the end of the spill section of the J-hook, 3-4 rocks (with footers) shall be installed perpendicular to the channel flow direction and at the same spill rock elevation. Some of these rocks may be below the proposed channel bed elevations.

Structure Rock Specifications

Structure Rock

1. All rock shall be angular & durable; no round rock.

2. All rock shall have a specific gravity of 2.29 or higher.

3. If the Contractor purchases the rock, the Contractor shall provide the City with the pit location and contact information. ***No none local rock is suitable for this application.***

4. The majority of the rock shall be 5' long, 3.5' wide and 2.5' to 4' thick. The minimum size shall be 4' long, 3' wide and 1.5' thick.

5. Structure rock shall have a relatively smooth surface along its long and wide axis for stacking and to create a smooth spill surface.

Footer Rock

1. Footer rocks are required to support every top rock.

2. Footer rock size shall be larger than its top rock for scour protection and mass.

3. Footer rocks shall extend downstream of the top rock a minimum of 18".

Top Rock

1. Top rocks shall rest on approximately half of the upstream end of the footer rock with the balance of the top rock setting on compacted backfills just upstream of the footer so that approx. 18" of the footer rock is exposed.

2. Each top rock shall be set tight against the adjacent top rocks. No gaps shall occur in between the top rocks.

3. Tops rock shall be set so there is a smooth transition from one top rock to the next (i.e., no large elevation differences).

Splash Rock

1. Splash rock shall be angular, durable rock; no round rock.

2. Splash rock shall be ~ 3' long, 3' wide and 1.5' thick with up to - 0.5' variations in length and width.

3. Splash rock shall be set along and just below the top elevation of the footer rocks along the length of the structure.

4. Splash rock shall be placed after footer rocks have been backfilled.

5. Splash rock shall be tight against footer rocks and against each other, as practical.

Backfill

1. After each footer is placed, compacted backfill shall be placed to fill voids left by footer installation.

2. Fill shall also be placed on the upstream side of the top rock to create a 3:1 slope (min.) and compacted.

River Ingress-Egress

1. Single layers of rock shall be used to construct the rows of step rocks in the access area using "splash rock" size rock.

2. **Round boulders** in the 18" to 30" diameter size may be used to construct the rows of step rocks.

3. The top surface of the ingress-egress area shall be covered with City-provided sand and compacted in the identified areas to a min. depth of 12". Grading of the ex. site may be necessary to accommodate the 12" min. sand depth at the specified elevations.

4. The sand material shall slope from the base of the upslope row of rocks to just below the top of the downslope row of rocks.

River Ingress & Rock Spec's

DATE: 7/22/2021 City of Aztec RSP 10-2020.dwg

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City of Aztec – Animas River
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City of Aztec, San Juan County, New Mexico

Project Plans

1. These Plans are for the installation of an in-channel rock structures (J-hook & bank "step rocks") and bank grading and rock placement to construct a river ingress-egress access point to be performed by the construction contractor (Contractor).

2. Not shown on the Plans but the Contractor is required to perform site cleanup and smooth grading of project-disturbed areas.

Basin Hydrology, Inc Role

1. Basin Hydrology, Inc. (BHI) will provide construction oversight, construction staking, and grade checking for the project.

2. BHI will ensure the Contractor complies with any Contractor-provided environmental requirements of the project (from US Army Corps of Engineers & NM Environment Dept) .

Construction Contractor

1. The Contractor is required to provide the appropriately sized excavator to implement work proposed by these Plans.

2. The Contractor is required to provide highly skilled & experienced excavator operator as BHI will be working closely with, and in close proximity to, the excavator.

3. The Contractor is required to comply with all issued Federal, State and City of Aztec (City) permit requirements as well as any NEPA requirements; all of which will be provided to Contractors during the Bidding process.

4. It is the Contractor's responsibility to:
   a. **power wash** all equipment prior to site delivery,
   b. inspect their equipment daily for fluid leaks,
   c. fuel (including fuel storage) and service equipment at least 100 ft. from the river and irrigation ditch, and
   d. properly dispose of all Contractor-generated refuse (i.e., trash, lube cans, cigarette butts, etc.).

General Notes

1. Elevation benchmarks are provided on Sheets 2 and 3. These benchmarks as the basis for all project feature elevations.

2. Channel elevations may be slightly different that shown herein since surveys were completed in the fall of 2020. Depending upon actual elevations encountered during construction, minor modifications to these Plans may be required.

3. Placement of channel-excavated materials has the following use priority:
   a. backfilling around and upstream of the J-hook structure, and
   b. as needed for fill between and along bank step rocks, and
   c. other areas as directed by BHI.

Any remaining excavated material will be stockpiled onsite at a City-approved location for removal by the City.

4. Constructed fill slopes shall be a minimum of 3:1.

5. Where project operations require the removal of sod and-or willow mats (if present) for the purpose of feature installation or to avoid significant damage during construction simply due to its location, these mats shall be collected using the excavator and salvaged for reuse. **Mat thickness shall be 12" minimum, if practical.** Mats shall be temporary placed with roots down and shall be keep moist if stockpiled more than 5 days.

6. The Contractor is required to implement the appropriate measures to avoid unnecessary soil and vegetation disturbances (i.e., the Contractor is expected to minimize site disturbances) and is required to restore the grades and elevations of disturbed areas.

7. The City will remove as much concrete and other debris as is feasible along the south bank of the project prior to site construction. If the Contractor encounters additional that needs to be removed, the Contractor will stockpile this material for disposal by the City.

8. The construction of this project s to occur during low flow conditions in the river, ideally less than 100 cfs as measured at the USGS gaging station "Animas River below Aztec, NM". Flows exceeding this discharge could result in challenging construction conditions.

Debris Removal & Revegetation

1. The City shall remove as much of the debris as is possible from within the identified area prior to construction of the project.

2. The City shall take care to remove only debris (e.g., concrete, metal, etc.) while minimizing site and vegetation disturbance, soil removal and vegetation removal.

3. During debris removal, the City shall promptly return displaced soil and vegetation to any voids left by debris removal. If debris removal leaves a large hole or void, the City shall backfill hole/voids with soil material stockpile on site (See Item 4 below). Only **light** compaction of any replaced soils is required.

4. An existing stockpile of soil material is located on the south side of the Martinez Arroyo just west of where Martinez Lane crosses the arroyo. Prior to using this material, **the top 12" of soil and weedy vegetation shall be removed from the stockpile** to minimize the spread of weeds. Only the underlying soil material shall be used to fill holes and voids within the debris removal area.

5. The goal of filling any holes or voids is to restore the grades and elevations of a debris removal site to match adjacent ground so that vegetation can reestablish itself and that post-construction plantings can occur.

General Notes

DATE: 7/22/2021 *City of Aztec RSP 10-2020.dwg*

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Lat. 36.83069, Long. -107.99612
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Responsibility of the City of Aztec

Rock structures can sometimes require a moderate degree of maintenance, especially during the establishment period. These structures must receive regular and timely maintenance to continue to function properly. Failure to provide maintenance in a timely manner can result in complete failure of the structure. These structures modify the hydraulics of the water course. These modified hydraulics can result in changes to the channel. As such, structures can require periodic maintenance. In some cases, additional modifications may be required to adequately protect the structure. Items to help with a maintenance program include:

1. Stockpile a quantity of appropriately sized rock at the site or other convenient location to be used in the event a repair is needed.

2. Check structure(s) regularly during and after the first major flow event following installation. Any erosion occurring around the structure(s) should be evaluated and repaired as needed. Some corrective action may be required during the high flow event.

3. After a high flow recedes, check the structure(s) for signs of damage. Pay particular attention to missing or displaced rocks, bank erosion, and excessive buildup of sediment or other debris.

4. Reset or replace missing or dislodged rocks with properly sized & material.

5. Check the adjacent banks for signs of excessive erosion that may require a corrective measure(s).

6. Remove large debris that collects on the structure(s) or in the channel adjacent to the structure(s). Significant debris accumulation can result in the development of bars or adverse hydraulics that can negatively affect the channel and structure.

7. Take extreme care when excavating accumulated debris or sediment near a structures to avoid dislodging structure rocks. Care shall also be taken to ensure that any excavation does not disturb the supporting foundation of any structures. The supporting foundation can extend for a relatively long distance from the structure.

8. When ~ 20% or more of the rock of a given structure needs to be reset, it may indicate the structure needs to be rebuilt. In such case, a professional experienced with the design and construction of riverine structures should be consulted in order to determine the appropriate course of corrective action.

9. In-channel grading activities associated with the Elledge Mill ditch, which are beyond the control of the designer or the City of Aztec, can result in excessive sediment migration downstream into the project reach. Excessive sediment can lead to filling of constructed pools and other in-channel deposition which can create bank erosion, mid or lateral bar development, etc. Site monitoring after high flow events is necessary to identify if in-channel deposition is occurring and what the impact is on the project reach.

10. If obvious signs of in-channel sedimentation are observed, it may be necessary to mechanically remove the material if the material is creating an adverse affect to the channel and banks. If excessive sedimenation is occurring, a experienced riverine professional should be consulted to determine the appropriate course of corrective action.

Maintenance Plan

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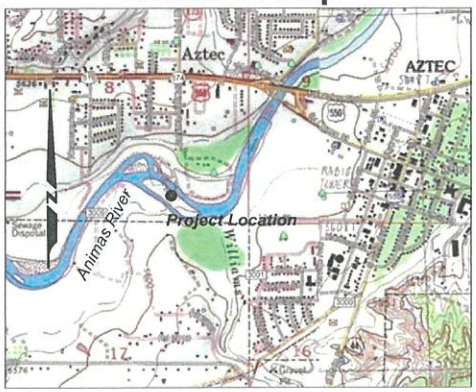
City of Aztec, San Juan County, New Mexico

ATTACHMENT #2

Construction Plans for the Riverside Park River Stabilization and Enhancement Project Animas River, City of Aztec, New Mexico

prepared for:
City of Aztec
303 S. Ash, Aztec, NM 87410

Location Map



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Authorized City of Aztec Representative _____ Date _____

Sheet Index

1	Cover
2	Existing Site
3	Proposed Site
4	Long. Profile
5	Cross Sections 1-6
6	Cross Sections 7/8 & J-hook Detail
7	Details & Rock Specifications
8	General Notes
9	Monitoring & Maintenance Plan

Quantity Estimates

Structure Rock (angular)	64 rock
Splash Rock (angular)	28 rock
Bank Footer Rock (angular)	52 rock
Bank Step Rock (angular)	100 rock
Excavation & Placement	350 CY
Sand Bank Fill	100 CY

Utilities Statement
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New Mexico 811 Ticket Number _____
Call New Mexico 811 (811) at least 2 business days in Advance of any digging, grading or excavation for the marking of underground utilities.

Cover

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City of Aztec – Animas River
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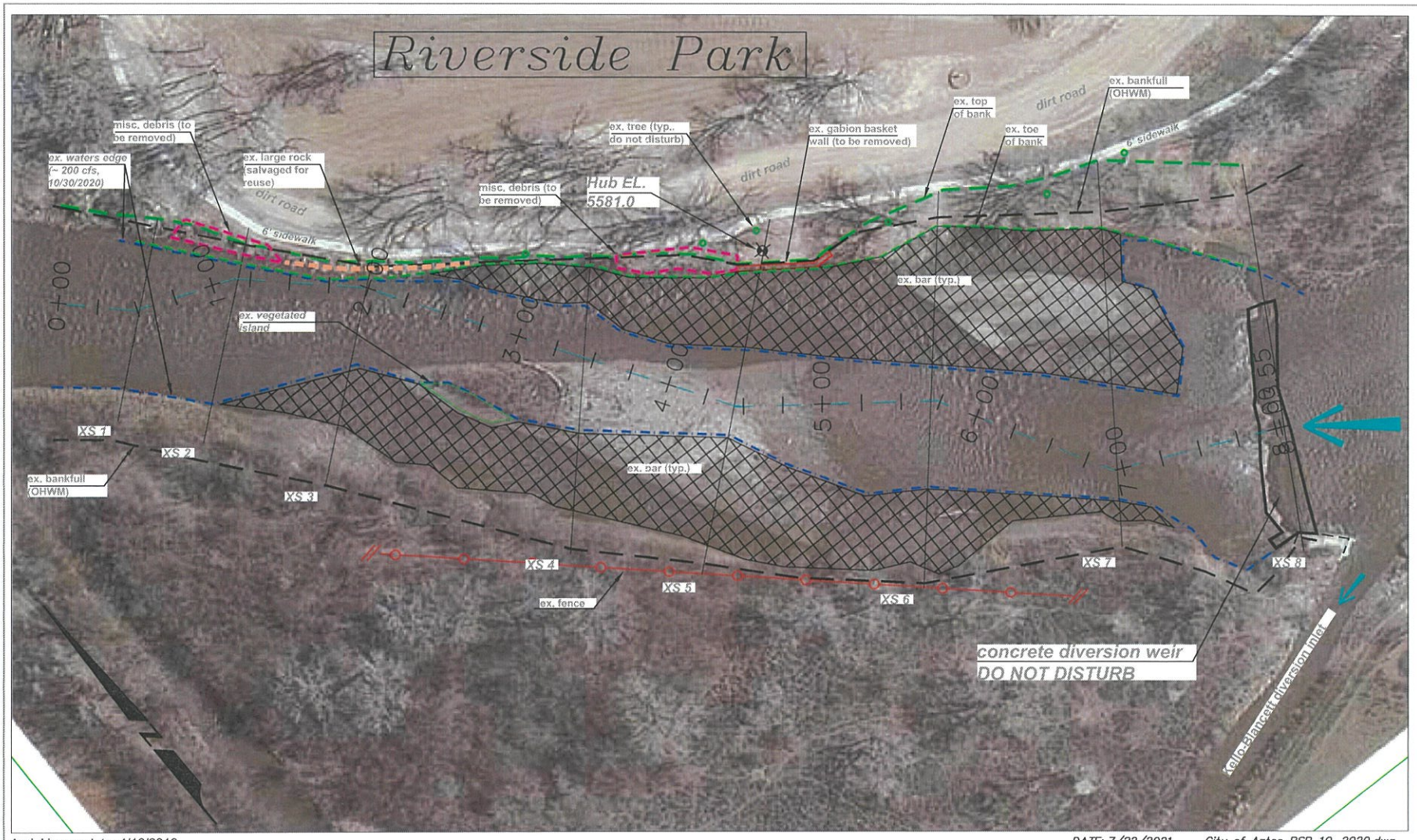

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Existing Site

60 30 0 60 120 180

SCALE IN FEET

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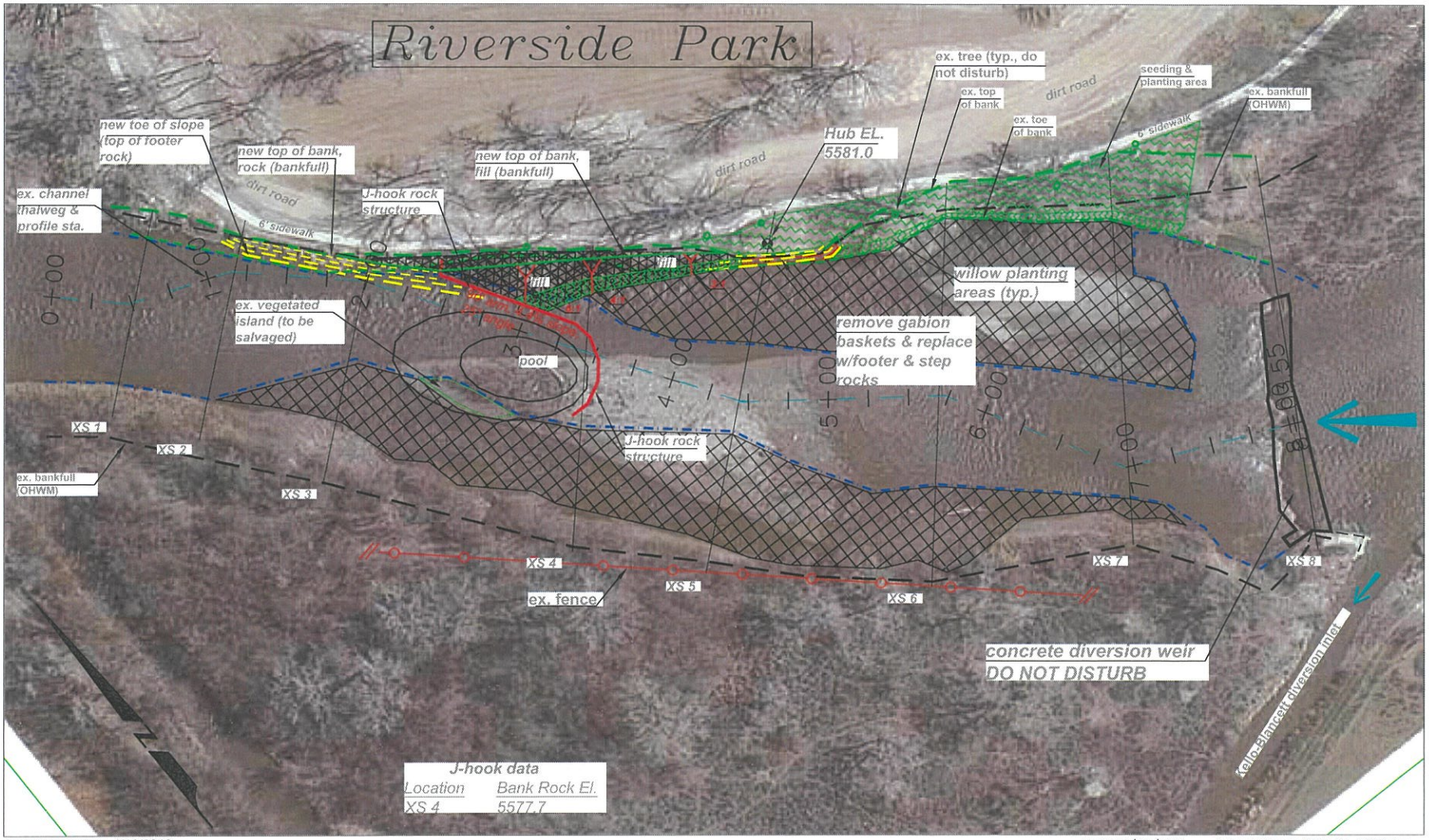

Proposed Site

Aerial image date: 4/16/2019

DATE: 7/22/2021 City of Aztec RSP 10-2020.dwg

60 30 0 60 120 180

SCALE IN FEET

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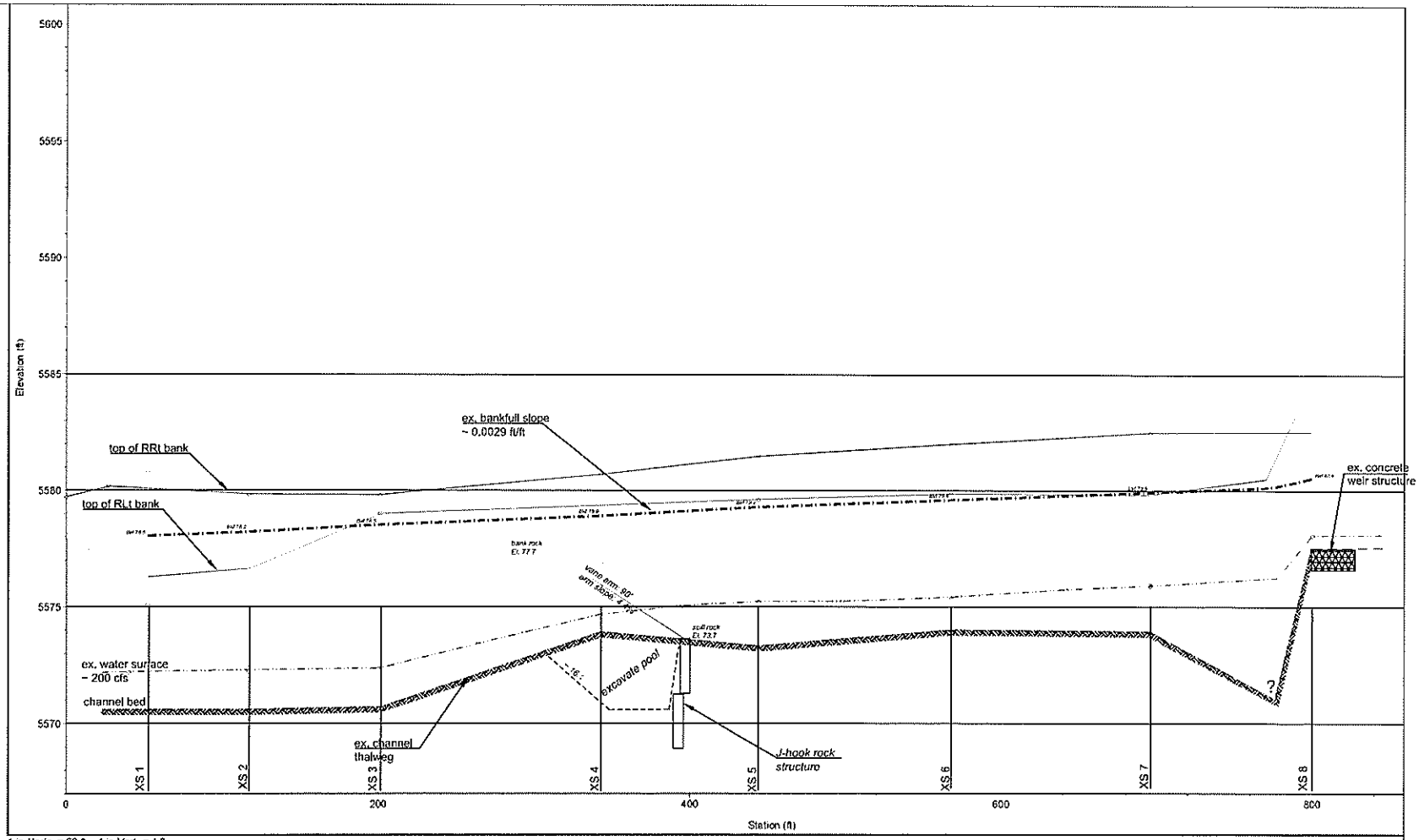

Longitudinal Profile

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scale as shown

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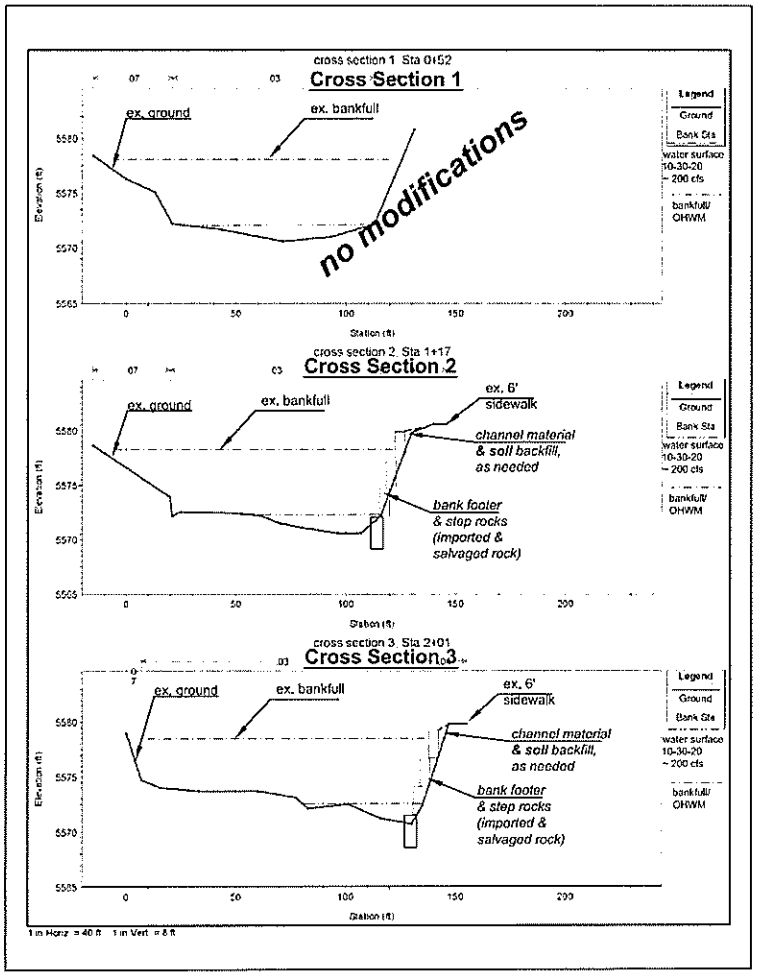

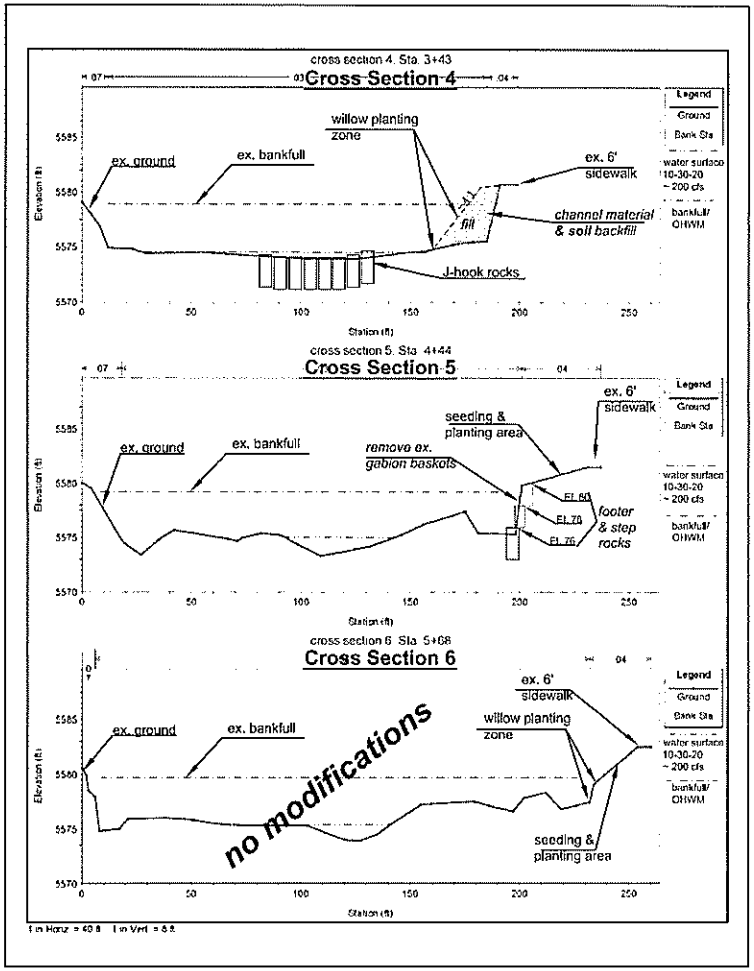

Cross Sections 1 - 6

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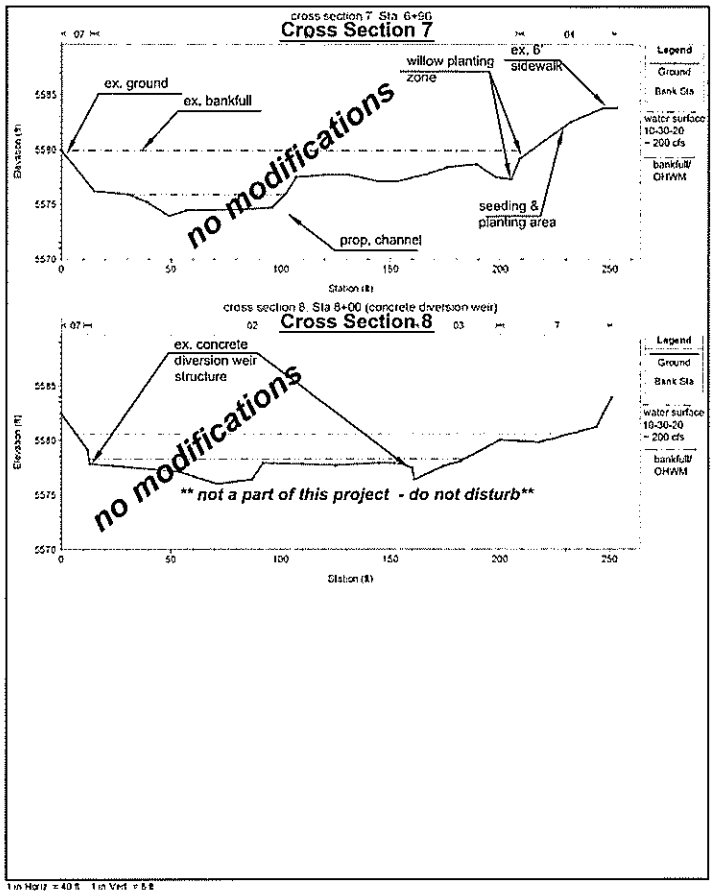
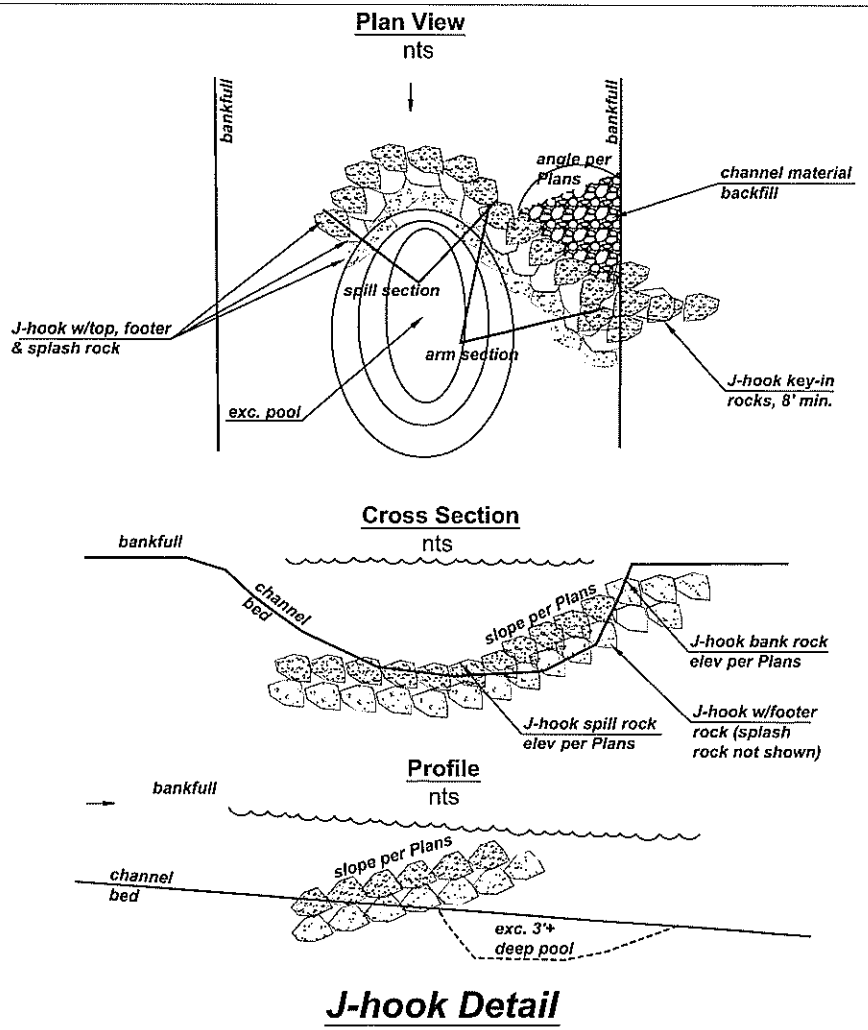
Cross Sections 7/8 & J-hook Detail





J-hook Detail

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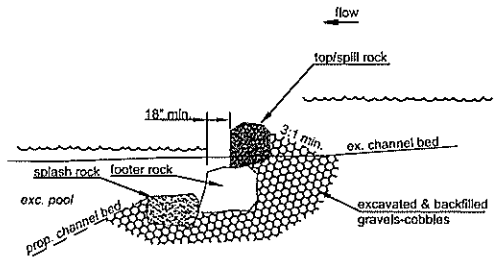
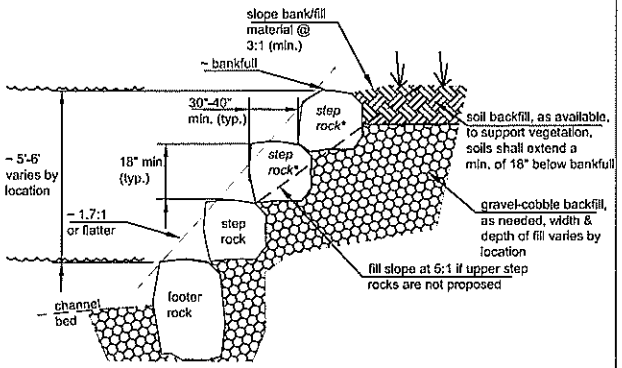


NOTE: A void greater than 5" diameter (or ~ 4.5"x4.5") on the upstream face of a rock structure, especially top/spillrocks, shall be chinked with rock to greatly reduce the size of the void prior to backfilling.

J-hook Top-Footer-Splash Rock

nts



Bank Step/Stacked Rock Wall

nts

J-hook Specifications

1. The J-hook structure shall be constructed using the elevations and dimensions shown on these plans and as directed by Basin Hydrology, Inc.

2. J-hook rock shall be selected and installed set to create a uniform slope an elevation and contain no gaps between top rocks.

3. Excavated channel bed materials (fill) shall be used as backfill between the J-hook arm and the bank. Compacted fill shall transition from the top of the structure arm rock to the adjacent bank to create an ineffective flow area.

4. J-hooks shall be keyed into the bank a minimum of 8' behind the bank rock and at the "bank rock" elevation shown on the Plans.

5. At the end of the spill section of the J-hook, 3-4 rocks (with footers) shall be installed perpendicular to the channel flow direction and at the same spill rock elevation. Some of these rocks may be below the proposed channel bed elevations.

Rock Specifications

Structure Rock

1. All rock shall be angular & durable; no round rock.

2. All rock shall have a specific gravity of 2.29 or higher.

3. If the Contractor purchases the rock, the Contractor shall provide the City with the pit location and contact information.

4. The majority of the rock shall be 5' long, 3.5' wide and 2.5' to 4' thick (1.7 to 2.2 CY). The minimum size shall be 4' long, 3' wide and 1.5' thick (very limited number).

5. Structure rock shall have a relatively smooth surface along its long and wide axis for stacking and to create a smooth spill surface.

Footer Rock

1. Footer rocks are required to support every top rock.

2. Footer rock size shall be larger than its top rock for scour protection and mass.

3. Footer rocks shall extend downstream of the top rock a minimum of 18", to the extent practical.

Top Rock

1. Top rocks shall rest on the footer rock so that a minimum of 18" of the footer extends downstream of the top rock face, as practical. The remainder of the top rock shall rest on compacted backfills just upstream of the footer.

2. Each top rock shall be set tight against the adjacent top rocks. No gaps shall occur in between the top rocks.

3. Tops rock shall be set so there is a smooth transition from one top rock to the next (i.e., no large elevation differences).

Splash Rock

1. Splash rock shall be angular, durable rock; no round rock.

2. Splash rock shall be ~ 3' long, 3' wide and 1.5' thick with up to ~ 0.5' variations in length and width.

3. Splash rock shall be set along and just below the top elevation of the footer rocks along the length of the structure.

4. Splash rock shall be placed after footer rocks have been backfilled.

5. Splash rock shall be tight against footer rocks and against each other, as practical.

Backfill

1. After each footer is placed, compacted backfill shall be placed to fill voids left by footer installation.

2. Fill shall also be placed on the upstream side of the top rock to create a 3:1 slope (min.) and compacted.

Bank Backfill Upstream of J-hook Specifications

1. Backfill located on the bank upstream of the J-hook shall be a mix of excavated channel materials and sand to loam soils (no silt or clay dominant soils).

2. The City will provide & stockpile the soils for this mix.

2. The Contractor shall mix the soils with excavated channel materials to create a uniform mixture. Mixing can occur in-situ.

3. The Contractor shall lightly compact the mixture using the excavator bucket in lifts no greater than ~ 12" in thickness.

4. The vegetated island shall be salvaged intact, to the extent practical, and placed along the lowest elevations of the identified backfill area upstream of the J-hook.

Details & Rock Specifications

DATE: 7/22/2021 City of Aztec RSP 10-2020.dwg

BASIN HYDROLOGY, INC.
river, watershed & wetland studies
2340 CR 203 Durango, CO 81301
970-903-0366

City of Aztec – Animas River
Riverside Park Site
River Stewardship Project
Lat. 36.8206, Long. -108.0091
City of Aztec, San Juan County, New Mexico

Project Plans

1. These Plans are for the installation of the in-channel rock structures (J-hook & bank "step rocks") limited bank filling/grading and pool excavation to be performed by the construction contractor (Contractor).

2. Not shown on the Plans but the Contractor is required to perform site cleanup and smooth grading of project-disturbed areas. The City will cleanup rock and soil staging areas.

Basin Hydrology, Inc Role

1. Basin Hydrology, Inc. (BHI) will provide construction oversight, construction staking, and grade checking for the project.

2. BHI will ensure the Contractor complies with any Contractor-provided environmental requirements of the project (from US Army Corps of Engineers & NM Environment Dept).

Construction Contractor

1. The Contractor is required to provide the appropriately sized excavator to implement work proposed by these Plans.

2. The Contractor is required to provide a highly skilled & experienced excavator operators as BHI will be working closely with, and in close proximity to, the excavator.

3. The Contractor is required to comply with all issued Federal, State and City of Aztec (City) permit requirements as well as any NEPA requirements; all of which will be provided to Contractors during the Bidding process.

4. It is the Contractor's responsibility to:
   a. **power wash** all equipment prior to site delivery,
   b. inspect their equipment daily for fluid leaks,
   c. fuel (including fuel storage) and service equipment at least 100 ft. from the river and irrigation ditch, and
   d. properly dispose of all Contractor-generated refuse (i.e., trash, lube cans, cigarette butts, etc.).

General Notes

1. Elevation benchmarks are provided on Sheets 2 and 3. These benchmarks as the basis for all project feature elevations.

2. Channel elevations may be slightly different that shown herein since surveys were completed in the fall of 2020 the Kello-Blancett ditch pushup dam was present immediately upstream of the project. Depending upon actual elevations encountered during construction, minor modifications to these Plans may be required.

3. Placement of channel-excavated materials has the following use priority:
   a. backfilling around and upstream of the J-hook structure, and
   b. along the north bank between the existing sidewalk and the bank step rocks.

4. Constructed fill slopes shall be 3 (h):1 (v) or flatter.

5. Where project operations require the removal of sod and-or willow mats (e.g., vegetated island) for the purpose of feature installation or to avoid significant damage during construction simply due to its location, mats shall be collected using the excavator or front end loader and salvaged for reuse. **Mat thickness shall be 12" minimum, if possible.** Mats shall be temporary placed with roots down and shall be keep moist if stockpiled more than 5 days.

6. The Contractor is required to implement the appropriate measures to avoid unnecessary soil and vegetation disturbances (i.e., the Contractor is expected to minimize site disturbances) and is required to restore the grades and elevations of disturbed areas.

7. The City will construct a temporary equipment access over the sidewalk that will be used for daily equipment ingress-egress between the staging area and the river.

8. The Contractor is required to take the necessary steps and precautions to avoid any impacts to the sidewalk immediately adjacent to the project. It is the Contractor's responsibility to replace any broken sidewalk sections that it cracked or broke beyond the temporary equipment crossing at no cost to the Project.

9. The City will cut the cable that separates the river-side sidewalk from the adjacent dirt road loop in order for the Contractor to access the river. The City will also reconnect the cable after construction is completed.

10. The City will remove as much concrete and other debris as is feasible along the north bank of the project prior to site construction. If the Contractor encounters concrete debris that cannot be easily buried within identified fill areas (as determined by BHI), the Contractor will stockpile this material for disposal by the City.

11. Construction of this project is to occur during low flow conditions in the river, ideally less than 100 cfs as measured at the USGS gaging station "Animas River below Aztec, NM". Flows exceeding this discharge could result in challenging construction conditions.

12. The Contractor will be responsible for restoring grades and elevations (as needed) of the staging area and creating a pile of any remaining boulders and rock chips (two separate piles). The City will be responsible for removing this material from the site.

General Notes

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Responsibility of the City of Aztec

Rock structures can sometimes require a moderate degree of maintenance, especially during the establishment period. These structures must receive regular and timely maintenance to continue to function properly. Failure to provide maintenance in a timely manner can result in complete failure of the structure. These structures modify the hydraulics of the water course. These modified hydraulics can result in changes to the channel. As such, structures can require periodic maintenance. In some cases, additional modifications may be required to adequately protect the structure. Items to help with a maintenance program include:

1. Stockpile a quantity of appropriately sized rock at the site or other convenient location to be used in the event a repair is needed.

2. Check structure(s) regularly during and after the first major flow event following installation. Any erosion occurring around the structure(s) should be evaluated and repaired as needed. Some corrective action may be required during the high flow event.

3. After a high flow recedes, check the structure(s) for signs of damage. Pay particular attention to missing or displaced rocks, bank erosion, and excessive buildup of sediment and debris.

4. Reset or replace missing or dislodged rocks with properly sized & material.

5. Check the adjacent banks for signs of excessive erosion that may require a corrective measure(s).

6. Remove large debris that collects on the structure(s) or in the channel adjacent to the structure(s). Significant debris accumulation can result in the development of bars or adverse hydraulics that can negatively affect the channel and structure.

7. Take extreme care when excavating accumulated debris or sediment near a structures to avoid dislodging structure rocks. Care shall also be taken to ensure that any excavation does not disturb the supporting foundation of any structures. The supporting foundation can extend for a relatively long distance from the structure.

8. When ~ 20% or more of the rock of a given structure needs to be reset, it may indicate the structure needs to be rebuilt. In such case, a professional experienced with the design and construction of riverine structures should be consulted in order to determine the appropriate course of corrective action.

9. In-channel grading activities associated with the Kello-Blancett ditch, which are beyond the control of the designer or the City of Aztec, can result in excessive sediment migration downstream into the project reach. Excessive sediment can lead to filling of constructed pools and other in-channel deposition which can create bank erosion, mid or lateral bar development, etc. Site monitoring after high flow events is necessary to identify if in-channel deposition is occurring and what the impact is on the project reach and its constructed features.

10. If obvious signs of in-channel sedimentation are observed, it may be necessary to mechanically remove the material if the materia is creating an adverse affect to the channel and banks. If excessive sedimenation is occurring, an experienced riverine professional should be consulted to determine the appropriate course of corrective action.

Monitoring & Maintenance Plan

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