City of Sidney, MT
Park and Recreation Committee Meeting 1-24-24
January 24, 2024 5:30 PM
115 2nd Street SE |Sidney, MT 59270

The City Council meetings are open to the public attending in person, with masks encouraged when social distancing cannot be accomplished. If the public does not wish to participate in person, they are also invited to participate via a Zoom meeting. You can participate via phone:

Meeting ID: 713 080 5898 Passcode: 4332809 Call: 1-346-248-7799

1. New Business

   a. Moose Park- use as back-up field for college games

   b. Svarre Pool- swim team dock

INTERSTATE ENGINEERING
Professionals You Need, People You Trust.

January 9, 2024

City of Sidney
Parks and Recreation Committee

RE: Sidney Tiger Sharks
Svarre Municipal Pool Permanent Bulkhead
Engineering Commentary from 8-29-23 Meeting
ie# WR22-04-097

All,

Interstate Engineering's Pool, Aquatics and Recreation (PAR) Group and Structural Group have reviewed the general statements and questions posed during the City of Sidney's Park and Recreation Committee Meeting held on August 29, 2023 at 5:15pm relating to a future permanent bulkhead at the Svarre Municipal Pool. The preliminary plan sheet for a permanent bulkhead that was presented to the committee along with notes from the aforementioned committee meeting are enclosed as Attachment #1 and Attachment #2, respectively.

For clarification, those statements and questions from the committee meeting requiring input from Interstate Engineering are restated in **bold**. Our responses follow in *italics*.

1. **Will lap swimming still be available with a permanent bulkhead?**
   Yes, lap swimming will still be available with a permanent bulkhead. Depending on the how the Pool is operated, there will essentially be two (2) 25-meter lap swim area. One 25-meter lap swim area on the north side of the permanent bulkhead and one ~25-meter lap swim area on the south side of the permanent bulkhead. Please refer to Attachment #1.

2. **The Committee has concerns with the weight of the permanent Bulkhead.**
   a. **Can a structural analysis be performed on the permanent design with the existing slab and subgrade ahead of a council decision?**
      Yes. Please see Attachment #3.
   b. **The Committee does not want to take an unnecessary risk with the permanent design that could lead to substantial repairs in the future that the City would have to pay to fix.**
      There are always risks when working with unknowns; however, the structural analysis was completed using the soil classifications published within the geotechnical investigation completed on January 17, 1991 by Braun Engineering. Please refer to Attachment #4. The investigation was performed for the design of the original pool facilities.

      Without destructive testing/exploration, the material properties of the soil below the pool floor are unknown. Destructive testing/exploration can be done if requested by the Council; however, this style of testing/exploration may generate additional risks that can compromise the integrity of the existing pool floor.

c. Is there a chance that any gravel under the slab is gone now?

The pool floor was constructed on unexcavated/undisturbed earth. Refer to Pool Cross Section 1/P3 within Attachment #5.

There is no piping under the pool floor that could have broken and cavitated the slab.

Without destructive testing/exploration, the material properties of the soil below the pool floor are unknown. Destructive testing/exploration can be done if requested by the Council; however, this style of testing/exploration may generate additional risks that can compromise the integrity of the existing pool floor.

d. Can actions such as mud jacking be performed ahead of the permanent bulkhead to increase slab performance? What about after the permanent bulkhead is constructed and the slab begins to show signs of distress?

If structural issues are not present in the existing pool tank, we do not recommend performing any preventative maintenance such as mud jacking.

Depending on the type of structural issue present in the pool tank after a permanent bulkhead is constructed, mud jacking is one option that can be performed to mitigate settlement. If issues arise in the existing pool tank, we recommend every issue be analyzed and the available remedies be vetted before a method is chosen.

3. If the permanent bulkhead results in cracks in the floor or wall, what are the options for repair?

Any new cracks formed after a permanent bulkhead was installed would be treated the same as if cracks formed without a permanent bulkhead. We recommend cracks be filled with Sikaflex. If a crack is leaking a substantial amount of water, then a PVC liner may be necessary to make the pool watertight again.

a. What would a catastrophic failure look like that would cause the pool to be shut down temporarily or permanently? And what is the risk?

The bulkhead walls fall apart and crumbles to the bottom of the pool. Risk = very low

The bulkhead breaks the concrete floor, and the pool loses a substantial amount of water. Risk = very low

4. Is the current pool leaking? What is causing the leak and what is the best practice to fix / mitigate the leak if one exists or is discovered in the future?

We have not heard of any leak. But if one exists, we recommend taking steps to isolate the problem. Steps:

1. *Plug the main drainpipes, fill the tank to below the transition from concrete wall to gutters, and observe water levels. If water levels remain steady, move on to the next step. If losing water, then there's likely cracks that are leaking.*
2. *Pull the plugs in the main drainpipe and observe water levels. If water levels remain steady, move on to the next step. If losing water, then there's likely a hydrostatic relief vale leaking or a pipe leaking.*
3. *Plug the stainless-steel gutter outlet pipe(s), fill the gutter full of water, and observe water levels. If water levels remain steady, move on to the next step. If losing water, then there's likely a failing weld in the gutter.*

4. *Fill the pool water level up to normal water level and observe water levels. If losing water, then it's likely leaking at the transition from the wall to the gutter.*

a. Would a permanent bulkhead increase this possibility?

The only increase probability would be cracking in the floor. See Attachment #3 for results of the structural analysis. The existing floor slab of the pool is structurally adequate to support a permanent bulkhead and associated loading.

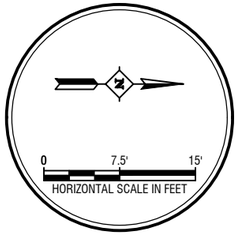
If you have any questions, please don't hesitate to call me at (406) 433.5617 or email me at Jordan.Mayer@InterstateEng.com. Interstate Engineering and the Sidney Swim Team respectfully request another Parks and Recreation Committee Meeting in late January / early February to discuss these findings and address any other comments, questions, or concerns from the Committee. We are hopeful to identify a solution that benefits both the City and Swim Team for the next 20+ years.

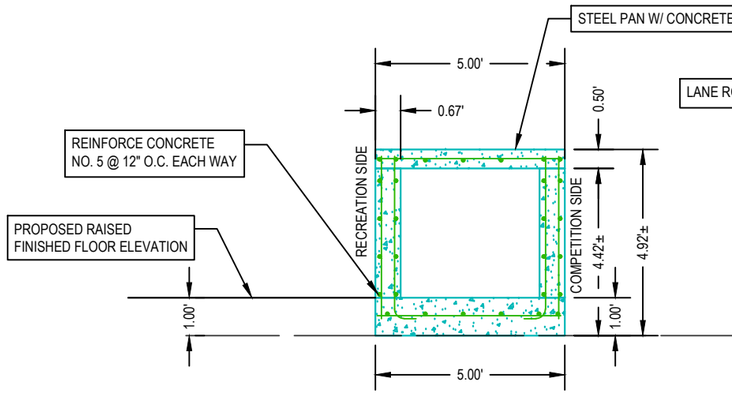
Respectfully,
INTERSTATE ENGINEERING, INC.

Jordan Mayer, P.E.	Kaden Bedwell, EI	Teaguean Knudsen, P.E.
Sidney Office Manager	PAR Group Leader	Structural Group Leader

Enclosures:
Attachment #1: SIDNEY_POOL_CONCRETE_BULKHEAD-07_31_23
Attachment #2: Jordan Mayer Email 8/30/2023 @ 11:10AM; RE: Park & Rec Committee 8-29-23 at 5:15pm
Attachment #3: WR2204097 Sidney Pool Bulkhead-Pool Floor Analysis
Attachment #4: Braun Engineering Testing Geotechnical Investigation 1/17/1991
Attachment #5: Svarre Municipal Pool Plans 4/15/1991

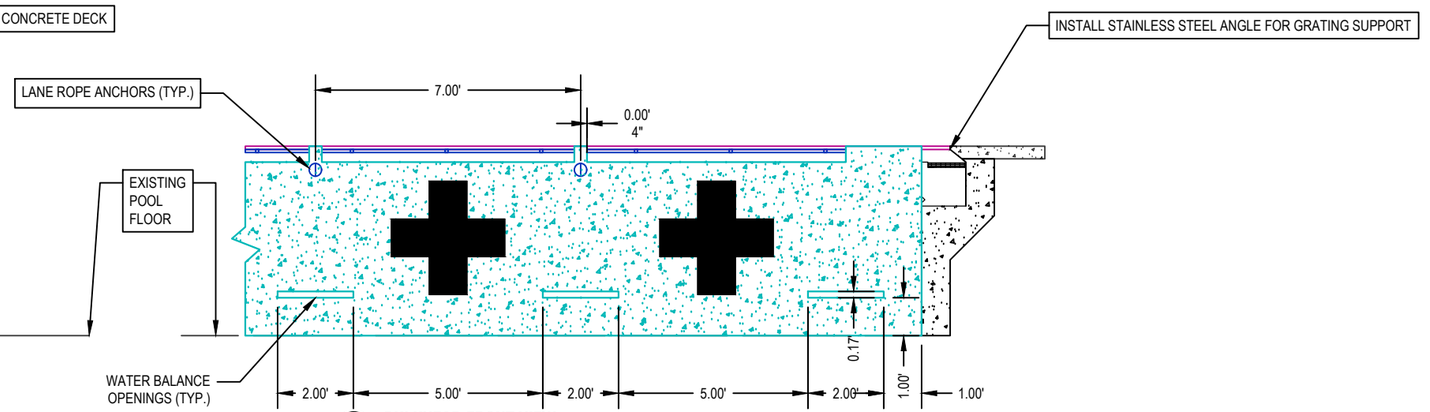
X:\2022\WR\04\WR22-04-097-Sidney Swim Team Bulkhead\70_ENG_DESIGN\8-29-23 Committee Follow Up Report\20240109_Sidney PR Comm QA.docx





A C-1 **BULKHEAD CROSS SECTION**

Scale: 1" = 4'



B C-1 **BULKHEAD FRONT VIEW**

Scale: 1" = 4'

Rev No	Date	By	Description

SIDNEY SWIMMING POOL BULKHEAD OPTIONS
CITY OF SIDNEY
SIDNEY, MT

CONCRETE BULKHEAD

Project No: WR22-06-108
Date: 05/17/2023
Surveyed By: ——
Designed By: SRS
Drawn By: ——
Checked By: ——

Interstate Engineering
2177 Lincoln Ave SE
PO Box 648
Sidney, MT 59270
(406) 433.5617
www.interstateeng.com

INTERSTATE ENGINEERING
Professionals you need, people you trust.

SECTION
C

1
SHEET NO.

X:\2022\WR\06\WR22-06-108-Sidney_Swim_Bulkhead\20_CADD_WR2206108\SIDNEY_POOL_CONCRETE_BULKHEAD.dwg 7/31/2023

Attachment #2

Jordan Mayer

From: Jordan Mayer
Sent: Wednesday, August 30, 2023 11:10 AM
To: Jessie Redfield; Tami Christensen (tricntyadm@midrivers.com); Tami Christensen; Kali Godfrey; Frank DiFonzo; Rick Norby; Jeff Hintz
Cc: Nick Kallem; Brian Milne; Kaden Bedwell; Peter Erickson
Subject: RE: Park & Rec Committee 8-29-23 at 5:15pm

All,

Below are my notes from the meeting yesterday. **Please let me know if you have anything to revise, add or delete by the end of the day Friday, September 1st**.

The blue text I feel is best suited to be answered by the City. The black text is general statements. IEI will provide comment on the green text.

- There was a general consensus that the pool and bath house is in good shape and will last another 20+ years.
- Committee wants to make sure that the decision of temporary v. permanent takes into account all users of the pool and not just the swim team.
- Will lap swimming still be available with a permanent bulkhead?
- Is there any data that shows the amount and type of current pool users within the last 1-3 years?
    - Adult lap swimmers
    - Adult exercise
    - Swim team
    - Youth swim
    - Swimming lessons
    - Other?
- Committee has concern with the weight of the permanent bulkhead.
    - Can a structural analysis be performed on the permanent design with the existing slab & subgrade ahead of a council decision?
    - Committee does not want to take an unnecessary risk with the permanent design that could lead to substantial repairs in the future that the City would have to pay to fix.
    - Is there a chance that any gravel under the slab is gone now?
    - Can actions such as mud jacking be performed ahead of the permanent bulkhead to increase slab performance
        - What about after the permanent bulkhead is constructed and the slab begins to show signs of distress?
- If the permanent bulkhead results in cracks in the floor or wall, what are the options for repair?
    - What would a catastrophic failure look like that would cause the pool to be shut down temporarily or permanently? And what is the risk?
- Is the current pool leaking? What is causing the leak and what is the best practice to fix / mitigate the leak if existing or if one is discovered in the future?
    - Would a permanent bulkhead increase this possibility?
- Are there any other costs or responsibilities that the City will incur as a result of the permanent bulkhead?
    - Additional life guard chair
    - New blankets
    - Other?
- The committee would like to take the raising of the pool out of the decision

- There was a general consensus that construction of a permanent bulkhead would be best to start after swimming lessons are completed (generally around fair time)
    - There is uncertainty every year that the pool is able to start-up without a hitch without taking any construction into consideration.

The committee recommended to the council on September 5th for the swim team to use the existing temporary bulkhead for the 2024 swim season and state meet, to increase the funding from the Oil and Gas revenue to the swimming pool CIP this budget year from $75,000 to $145,000 to cover the cost of painting the pool and raising the pool, and put the decision on hold between temporary and permanent bulkhead until more information is presented by IEI.

Thanks!

Jordan Mayer
Project Engineer | Office Manager
Interstate Engineering

From: Jessie Redfield <clerktreasurer@cityofsidneymt.com>
Sent: Monday, August 28, 2023 9:27 AM
To: Tami Christensen (tricntyadm@midrivers.com) <tricntyadm@midrivers.com>; Tami Christensen <council2ward3@cityofsidneymt.com>; Kali Godfrey <council2ward2@cityofsidneymt.com>; Frank DiFonzo <council1ward3@cityofsidneymt.com>; Rick Norby <mayor@cityofsidneymt.com>; Jeff Hintz <publicworks@cityofsidneymt.com>
Cc: Nick Kallem <poolmanager@cityofsidneymt.com>; Jordan Mayer <Jordan.Mayer@interstateeng.com>
Subject: Park & Rec Committee 8-29-23 at 5:15pm

Here is your reminder that we do have a Park & Rec Committee meeting tomorrow night pertaining to the pool dock at 5:15pm.

You can find the agenda and packet at the address below (same agenda packet items as was in the council packet).

https://cityofsidneymt.com/meetings

Jessica Chamberlin
City Clerk/Treasurer
115 2nd St SE
Sidney, MT 59270
(406)433-2809

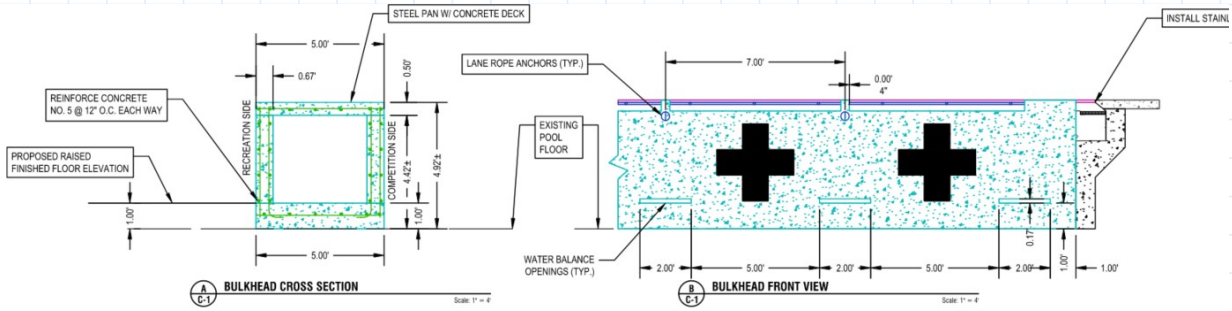
Sidney Bulkhead Structure Analysis
City of Sidney, MT

Prepared For: Jordan Mayer, PE
Prepared By: Teaguean Knudsen, PE
Project #: WR22-04-097

1. Project Assumptions and Loading

- The center cavity will fill up with water from the water balance openings so in theory we should have equal lateral loads on all sides of the walls with the exception of the force from the swimmers pushing off and the force of wakes created by swimmers. We recommend water balance openings near the operating level of the pool to help dissipate these wake forces.
- Our assumption is that this rectangular mass of concrete filled with water will provide enough resistance due to its own deadload to withstand the overturning and sliding forces from the swimmers. We have determined a conservative overturning force needed to overturn the bulkhead wall. Our calculation ignores the resistance provided by the body of water.
- Determination of forces from swimmers pushing off the bulkhead and the force of swimming pool waves is beyond the scope of this project.
- There will be some live load from people walking on the bulkhead, assuming 100 psf would be slightly conservative.
- The 1' thick x 5' wide base slab will create a rigid matt and distribute the load equally across its area.
- The pool depth in this location is approximately 5'.
- The bulkhead will be constructed while the pool is empty.

$LL := 100\ psf$ .....Live Load Applied to Top of Bulkhead



$TOP_{TH} := 6\ in$ $Bulkhead_W := 5\ ft$ $BOT_{TH} := 12\ in$ $WALL_{TH} := 8\ in$

$Bulkhead_L := 60\ ft$ $WALL_H := 3.5\ ft$

Professionals you need, people you trust
P.O. Box 2236 • 202 13th Street West • Williston, ND 58802-2236 • P: 701-774-3637 • F: 701-774-3638 • www.interstateeng.com
Offices in: North Dakota • Montana • Minnesota • South Dakota • Wyoming

$TOP_{DL} := TOP_{TH} \cdot Bulkhead_W \cdot Bulkhead_L \cdot 150\ pcf = 22500\ lbf$

$WALLS_{DL} := WALL_{TH} \cdot WALL_H \cdot Bulkhead_L \cdot 2 \cdot 150\ pcf = 42000\ lbf$

$BOT_{DL} := 1\ ft \cdot Bulkhead_W \cdot Bulkhead_L \cdot 150\ pcf = 45000\ lbf$

$AREA_{Base} := 5\ ft \cdot 60\ ft$

$DL := \frac{TOP_{DL} + WALLS_{DL} + BOT_{DL}}{AREA_{Base}} = 365\ psf$ .....Dead Load of Concrete

$Density_{Water} := 62.4\ pcf$

$Water_W := Bulkhead_W - (2 \cdot WALL_{TH}) = 3.667\ ft$

$Water_H := WALL_H = 3.5\ ft$

$HL := Density_{Water} \cdot Water_H = 218.4\ psf$ .....Hydrostatic Load of Water

Assumed Soil Properties

$k := 50\ pci = 86400\ pcf$

Subgrade Modulus[k/ft^3]	Allowable Bearing[ksf]
86.4	1.5

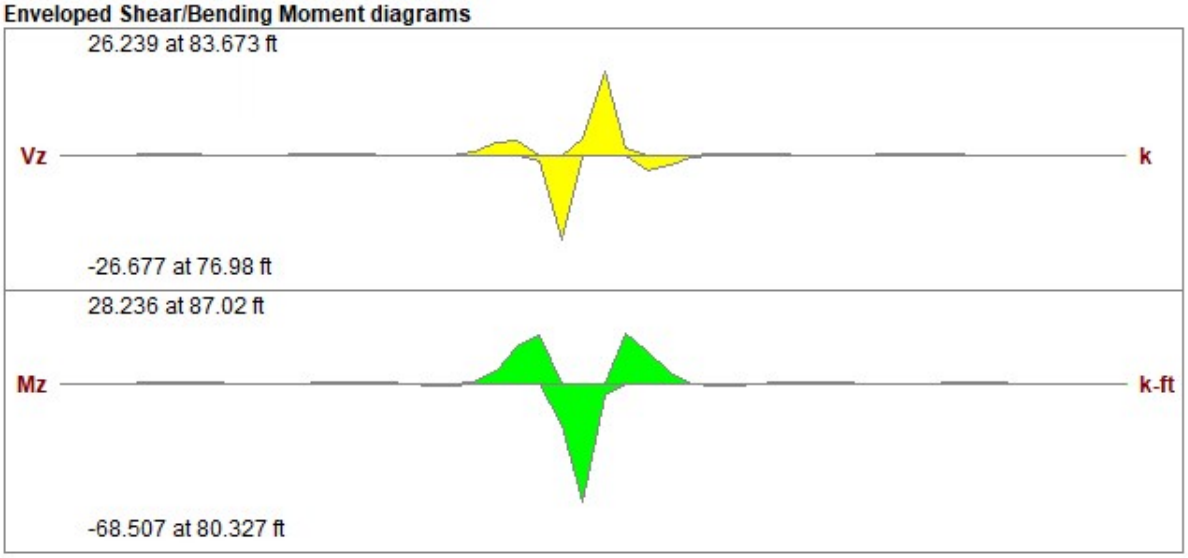
Professionals you need, people you trust
P.O. Box 2236• 202 13th Street West • Williston, ND 58802-2236 • P: 701-774-3637 • F: 701-774-3638• www.interstateeng.com
Offices in: North Dakota • Montana • Minnesota • South Dakota• Wyoming

2. Shear and Bending Analysis

Company	: IEI		Oct 12, 2023
Designer	: TMK		12:47 PM
Job Number	: WR22-04-097		Checked By: SRS/AS
Model Name	: Sidney Pool Analysis		

Strip:	DS1	Max Top bar Spac.:	18 in	Stress Block:	Rectangular
Material:	Conc4000NW	Min Top bar Spac.:	3 in	Rebar Orientation:	0
Strip Width:	720 in	Max Bot bar Spac.:	9 in	Rebar Spacing Inc:	2 in
Total Cuts:	50	Min Bot bar Spac.:	9 in	Design Rule:	Typical

Enveloped Shear/Bending Moment diagrams

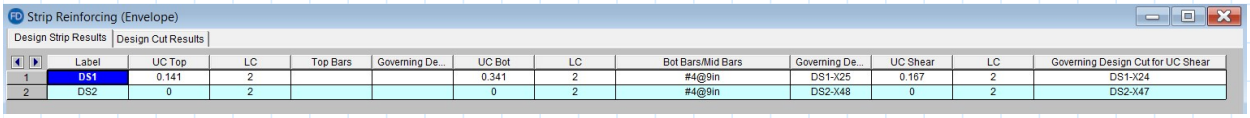


ACI 318-19 Code Check

Top Bending Check	0.141	Bot Bending Check	0.341	1 Way Shear Check	0.167
Gov Mu Top	28.236 k-ft	Gov Mu Bot	-68.507 k-ft	Gov Vu	26.677 k
phi*Mn Top	200.759 k-ft	phi*Mn Bot	200.759 k-ft	phi*Vn	159.461 k
Governing Cut	DS1-X27	Governing Cut	DS1-X25	Governing Cut	DS1-X24
Governing LC	2	Governing LC	2	Governing LC	2
Tension Bar Fy	60 ksi	Concrete Weight	0.145 k/ft^3		
Shear Bar Fy	60 ksi	λ	1		
F'c	4 ksi	E_Concrete	3644 ksi		
Flex. Rebar Set	ASTM A615	Rho Mid Prvd	0.00736		
		Prvd Mid Bar Spac.	#4@9in		

Bending Steel Reqd/Prvd, Units: in^2)

Cut Label	Top As Reqd	Top As Prvd	Mid As Reqd	Mid As Prvd	Rho Reqd(T/S)	Rho Reqd(Flex)	Rho Prvd(Gross)
DS1-X27	NA	NA	2.11	15.904	0.00180	0.00180	0.00368
DS1-X25	NA	NA	5.184	15.904	0.00180	0.00180	0.00368

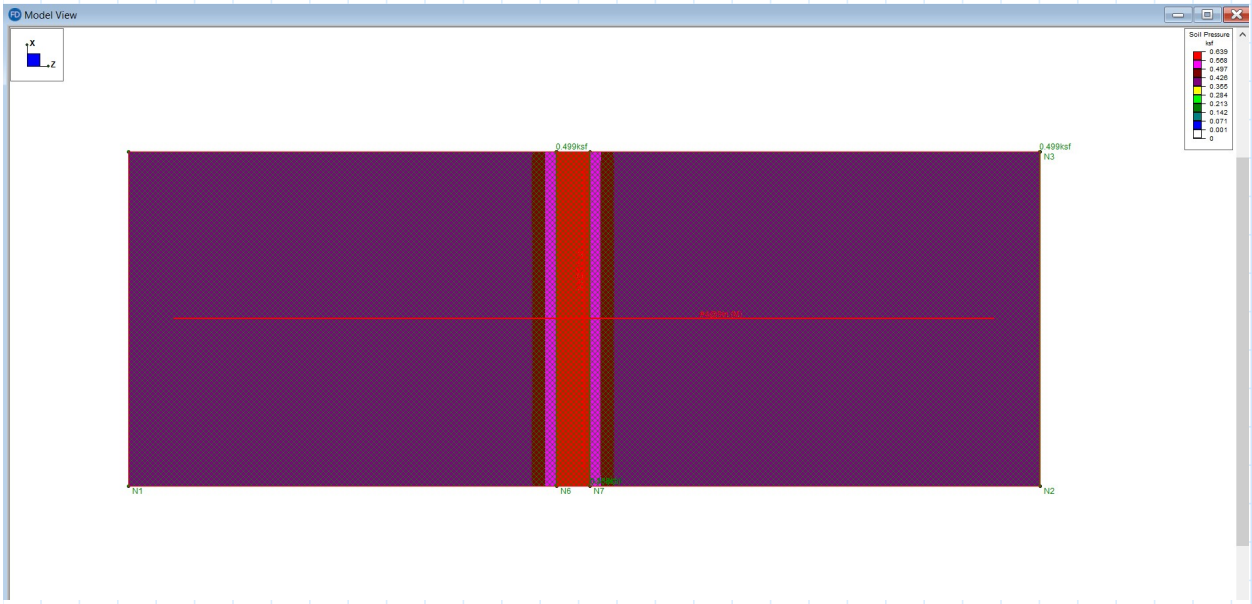

Strip Reinforcing (Envelope)

Design Strip Results | Design Cut Results

	Label	UC Top	LC	Top Bars	Governing De...	UC Bot	LC	Bot Bars/Mid Bars	Governing De...	UC Shear	LC	Governing Design Cut for UC Shear
1	DS1	0.141	2			0.341	2	#4@9in	DS1-X25	0.167	2	DS1-X24
2	DS2	0	2			0	2	#4@9in	DS2-X48	0	2	DS2-X47

Professionals you need, people you trust
P.O. Box 2236 • 202 13th Street West • Williston, ND 58802-2236 • P: 701-774-3637 • F: 701-774-3638 • www.interstateeng.com
Offices in: North Dakota • Montana • Minnesota • South Dakota • Wyoming

3. Bearing Pressure Analysis



4. Basic Overturning Analysis

$$ResistingMoment := \frac{(DL \cdot 1\ ft) \cdot Bulkhead_W{}^2}{2} = 4.563\ kip \cdot ft$$

- Determine Uniform Load on Wall Needed to Equal Resisting Moment

$$ResistingMoment = 4.563\ kip \cdot ft \qquad L := 5\ ft$$

$$w := OverturningMoment = \frac{w \cdot L^2}{2} \cdot 1\ ft \xrightarrow{solve,\ w} \frac{2 \cdot OverturningMoment}{25 \cdot ft \cdot ft^2}$$

$$OverturningMoment := ResistingMoment$$

$$w := \frac{2 \cdot OverturningMoment}{25 \cdot ft \cdot ft^2} = 365\ psf$$

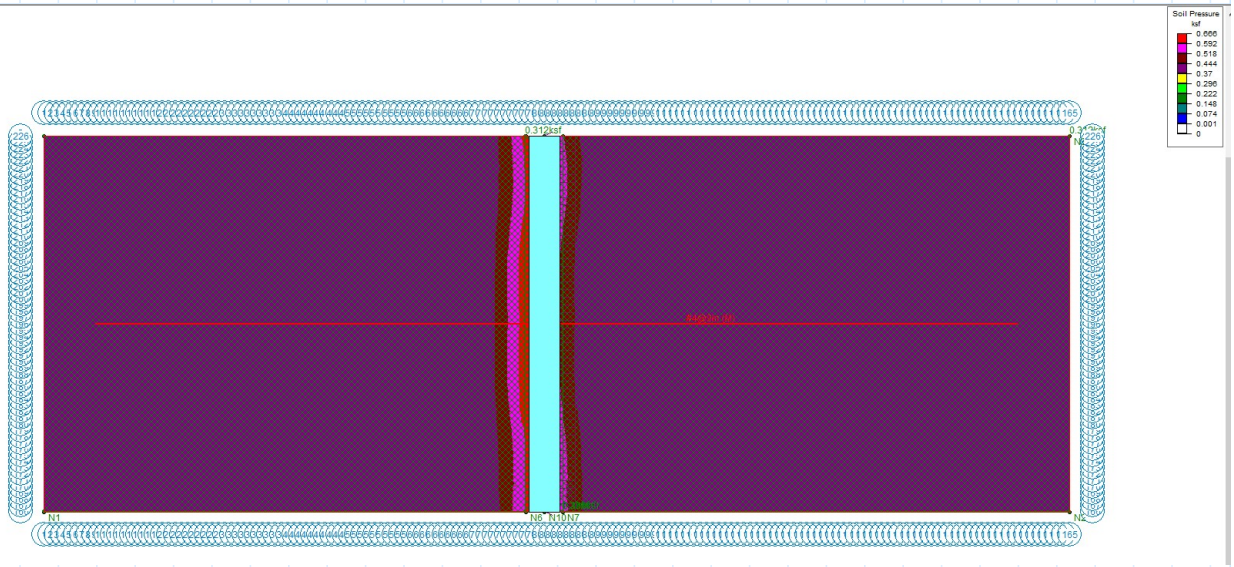
$$EqualLineLoad := \frac{ResistingMoment}{L} \cdot \frac{1}{ft} = 912.5\ plf$$

Professionals you need, people you trust

P.O. Box 2236 • 202 13th Street West • Williston, ND 58802-2236 • P: 701-774-3637 • F: 701-774-3638 • www.interstateeng.com

Offices in: North Dakota • Montana • Minnesota • South Dakota • Wyoming

- Overturning Analysis with Respect to Soil Pressures



The above bearing pressure graphic displays the bearing pressure results from an applied vertical live load of 100 psf and a lateral live load of 900 plf applied along the top of the bulkhead wall. The moment created by the 900 plf lateral live load at the top of the wall equates to a 360 psf uniform load applied along the full height of the wall. Fluid pressure from the pool filled to a depth of 5' is also included in the analysis.

5. Summary & Recommendation

- Based on the above assumptions and calculations, the existing floor slab of the pool is structurally adequate to support the bulkhead structure and associated loading.
- Our design is limited to the best information available of the existing pool floor construction and soils that support the slab. Due to the limited information of the soil characteristics from the original construction geotechnical report, there is risk that a local soil failure could result in damage to the concrete pool floor. However, our analysis is based upon conservative loads and conservative estimates of bearing capacity and subgrade modulus soil properties that have been estimated using the available geotechnical report. The results show a low utilization of the total strength of the concrete. Thus, we believe it is unlikely the additional of the bulkhead will negatively impact the existing concrete pool structure.
- The most conservative allowable bearing capacity provided in the geotechnical report is 1/3 tons per square foot = 666.7 psf. Based on this maximum allowable bearing capacity, our calculations and model show the maximum live load on top of the bulkhead and lateral force along the face of the bulkhead is equal to 100 psf and 360 psf, respectively.
- If any of the project assumptions are incorrect or if further information becomes available, Interstate Engineering should be contacted to review the design.

Professionals you need, people you trust
P.O. Box 2236 • 202 13th Street West • Williston, ND 58802-2236 • P: 701-774-3637 • F: 701-774-3638 • www.interstateeng.com
Offices in: North Dakota • Montana • Minnesota • South Dakota • Wyoming

B. RESULTS:

B.1. Logs: Log of Boring sheets indicating the depths and identifications of the various soil strata, the penetration resistances, laboratory test data and water level information are attached. It should be noted that the depths shown as boundaries between the strata are only approximate. The actual changes may be transitions and the depths of the changes likely vary horizontally.

B.2. Site Conditions: The site is located in Sidney, Montana, in the southwest quandrant of the intersection of 7th Avenue and 6th Street. The site is relatively flat and is partially covered with concrete and asphalt. It was previously a maintenance yard for the city.

B.3. Soils Encountered: Up to 1 foot of asphaltic concrete and gravel base or Portland cement concrete was encountered at all of the borings except boring ST-1W. Beneath the surfacing material, borings ST-1W, ST-2, ST-5 and ST-6 encountered medium to stiff silty clay or clayey gravel fill to depths of 3 1/2 to 5 1/2 feet underlain by soft to medium clayey sand to sandy/silty clay fine alluvium. In borings ST-3 and ST-4, natural sandy/silty clay was encountered immediately beneath the asphalt and gravel base. Fuel odors were noticed in borings ST-3 and ST-4. These strata are described in more detail below.

B.3.a. Fill: About one foot of 1-minus sandy gravel/gravel base was encountered in borings ST-4 and ST-6. Silty clay fill was encountered to depths of 3 1/2 to 5 1/2 feet in borings ST-1W, ST-2 and ST-6. Clayey gravel fill was encountered to a depth of 3 1/2 feet in boring ST-5. Penetration resistances ranged from 7 to 15 blows per foot (BPF). Pocket penetrometer strengths ranged from 1 1/2 to over 4 1/2 tons per square foot (tsf). These values indicated the silty clay/clayey gravel fill was medium to stiff in consistency.

B.3.b. Fine Alluvium: The fine alluvium consisted of clayey silt to sandy/silty clay. Penetration resistances ranged from 3 to 8 BPF and penetrometer strengths ranged from a 3 1/2 down to 1/3 tsf. These values indicated the fine alluvium was medium to soft in consistency. It was generally wetter and softer below depths of about 8 to 9 feet than it was above those depths.

B.4. Groundwater Measurements: Groundwater was observed at a depth of 18 feet in Boring ST-3. This depth corresponds to a elevation of 28 1/2 feet on the assumed datum. It should be noted, however, that the time of observation was very short and that several days may be required for groundwater to stabilize in a bore hole in clay soils. Groundwater was not observed to a depth of 15

feet in the well installed in boring ST-1W when checked 32 days after completion.

Seasonal and annual fluctuations of the groundwater table occur due to variations in rainfall, irrigation, snow melt and other factors not evident at the time of the investigation. It appears that these fluctuations may affect the design, construction and performance of the proposed swimming pool.

B.5. Laboratory Tests: The results of the laboratory tests are presented on the boring logs and the attached consolidation test graphs. The results are summarized below.

B.5.a. Moisture Contents: The moisture contents of the samples tested ranged from 22.2% to 22.6%. The average value was 22.4%. These are relatively high moisture contents for silty clays.

B.5.b. Dry Densities: The dry densities of the samples tested ranged from 81.5 pounds per cubic foot (pcf) to 97.7 pcf. The average value was 89.6 pcf. These are low to average values for silty clays.

B.5.c. Consolidation/Collapse: The result of the consolidation test performed on the moist thin-walled tube sample from boring

ST-4 is shown on the attached graph. The sample collapsed about 4% when it was inundated under a load of 1000 psf. This is a moderate to high value. Compression under a load increase of 1000 psf was about 9%. This is a high value.

The result of the consolidation test performed on the wet thin-walled tube sample from boring ST-5 is shown on the attached graph. The sample collapsed only about 1% when it was inundated under a load of 1000 psf. This is a relatively small value. Compression under a load increase of 1000 psf was about 3%. This is a moderate value.

D. CONSTRUCTION:

D.1. Excavation: It is our opinion that the soils encountered by the borings can be excavated with a backhoe or front end loader. However, rubber-tired equipment likely will not be able to work in the bottoms of the footing and pool subexcavations due to the soft and wet nature of the silty clay. The borings indicate that the silty clay soils in the sidewalls of the excavations will be Type B soils under Department of Labor Occupational Safety and Health Administration (OSHA) guidelines.

D.2. Observations: We recommend that footing, slab and pool subexcavation subgrades be observed by a geotechnical engineer or an engineering technician under the direction of a geotechnical engineer to evaluate if the subgrade soils are similar to those encountered by the borings.

D.3. Moisture Conditioning: Site soils which will be excavated and reused as backfills and fills appeared to be at or wet of optimum. We anticipate it will be necessary to dry some of these soils to achieve a moisture content near or slightly above optimum.

D.4. Testing: We recommend density tests of fills and backfills placed beneath footings, slabs and pools. Samples of proposed

backfill and fill materials should be submitted to our testing laboratory at least 3 days prior to placement on the site for evaluation and determination of the optimum moisture content and maximum dry density.

We recommend slump, air content and strength tests on Portland cement concrete.

E. GENERAL REMARKS:

E.1. Basis of Recommendations: The analysis and recommendations submitted in this report are based upon six soil borings performed at the locations indicated on the attached sketch. Variations likely occur between these borings, the nature and extent of which may not become evident until construction. If variations are encountered, it may be necessary to make a re-evaluation of the recommendations of this report after performing on-site observations during the construction and noting the characteristics of any variations. Such variations may result in additional foundation costs and it is suggested that a contingency be provided for this purpose.

E.2. Review of Plans and Specifications: This report is based on the preliminary design of the proposed structure as submitted to us for the preparation of this report. Because only limited amount of information was available, a number of assumptions were necessary to permit us to make recommendations. It is recommended that we be retained to review the final design and specifications to determine whether those assumptions were correct and whether any change in concept may have had any effect on the validity of our recommendations, and whether our recommendations have been implemented in the design and specifications. If we are not per-

mitted to make this recommended review, we will not be liable for losses arising out of such design changes, or misinterpretation or misapplication of our recommendations.

E.3. Observation and Testing: It is recommended that we be retained to develop and perform the necessary observation and testing program for the excavation and foundations phases of the project to: (1) permit correlation of the soil data used in this report with actual soil conditions encountered during construction, (2) provide continuing professional responsibility for the concepts contemplated in this report and (3) promote conformance to the plans and specifications.

If others perform the recommended observations and/or testing of construction, professional responsibility becomes divided since in doing so, they assume responsibility for verifying that the soil conditions throughout the construction areas are similar to those encountered in the borings or recognizing variations which would require a change in recommendations.

E.4. Groundwater: Water level readings have been made in the borings at the times and under conditions stated on the boring logs. This data has been reviewed and interpretations made in the

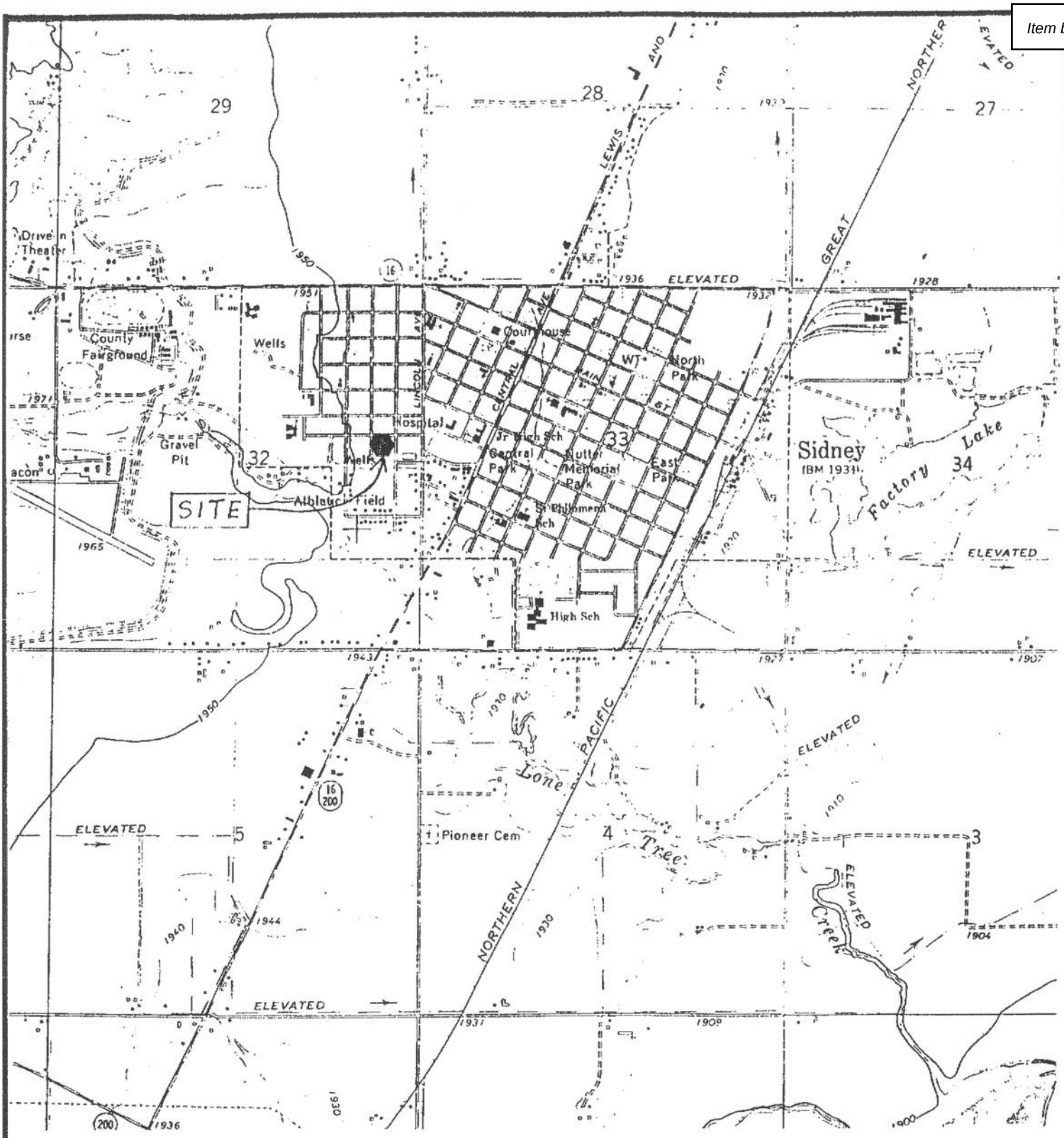
text of this report. However, it must be noted that the period of observation was relatively short and that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, irrigation, snow melt, pumping and other factors not evident at the time measurements were made and reported herein. Design drawings and specifications and construction planning should recognize the possibilities of variations.

E.5. Standard of Care: Services performed by the geotechnical and material engineers for this project have been conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. This is our professional responsibility. No warranty, expressed or implied, is made.

E.6. Professional Certification: I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Montana.

John S. Anevski

John S. Anevski, P.E.
Registration Number 10068PE
Date: January 17, 1991

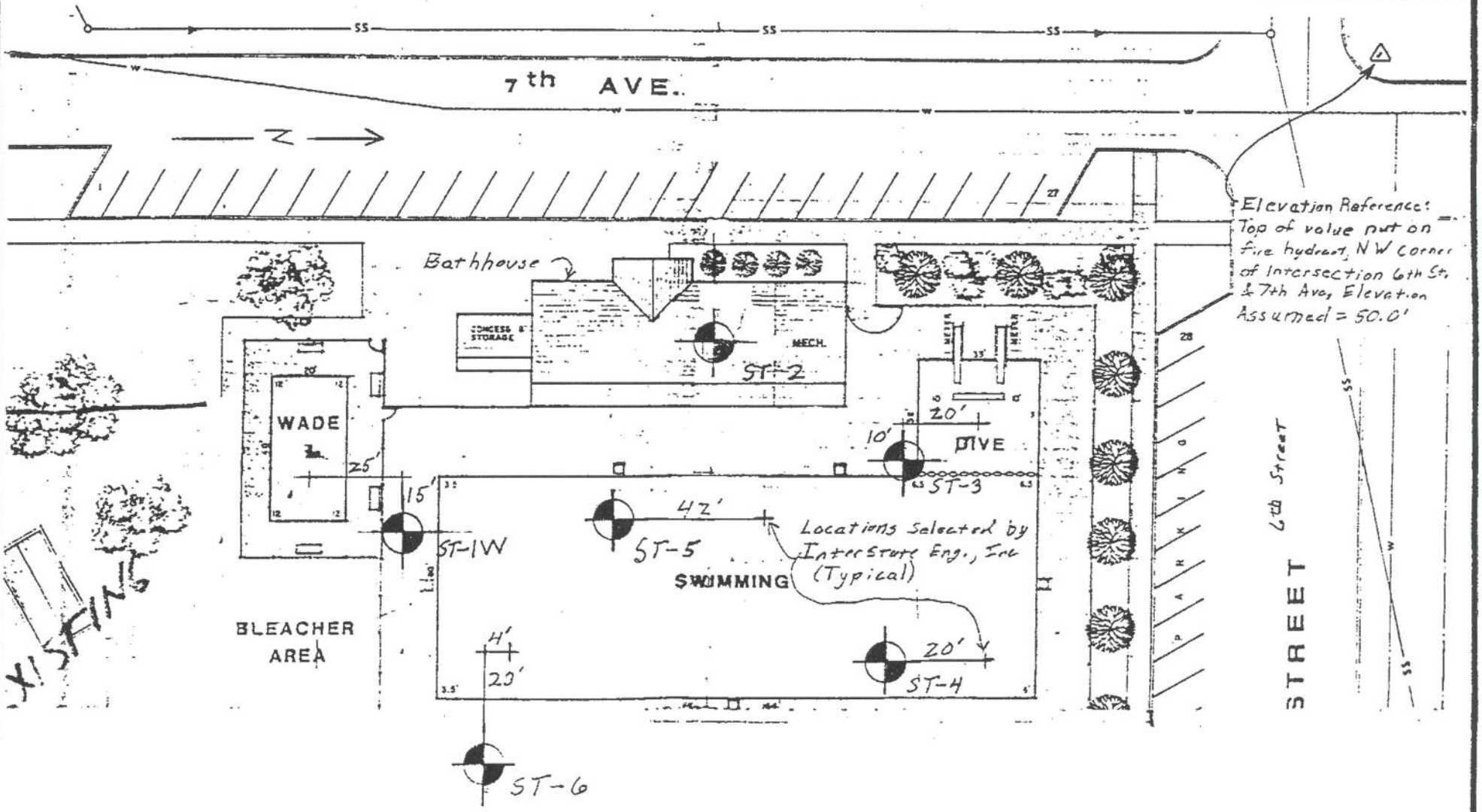


SITE LOCATION SKETCH

BRAUN

B90-259 GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT
I.E. #S90-60

Date:	Revised:	Drawn:	Scale:
1/14/91	JSA	USGS	1"=2000'



BORING LOCATION SKETCH

BRAUN

B90-259 GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT
I.E. #S90-60

Date:	1/14/91
Revised:	JSA
Drawn:	IE
Scale:	1"=40'

LOG OF BORING

BRAUN ENGINEERING TESTING

PROJECT: B90-259

GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT

BORING: ST-1W

LOCATION:
Wading Pool

DATE: 12/14/90

SCALE: 1" = 3'

(See Report and Standard Plates for evaluation and descriptive terminology.)

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	qp*	Tests or Notes
46.1	0.0	CL	FILL: Silty Clay, low to medium plasticity, a little sand, brown, slightly moist, medium to rather stiff.	7		2 1/2	Elevation Reference: Top of valve nut on fire hydrant, NW corner of Intersection 6th Street & 7th Avenue, Elevation assumed = 50.0'
				10		4 1/2+	
42.6	3.5	ML	CLAYEY SILT, slightly plastic, pale brown, moist, medium. (fine alluvium)	6			
40.1	6.0	CL	SILTY CLAY, medium plasticity, pale brown, moist, rather soft. (fine alluvium)	5		1/2	
			-wet below 9'	4		1/2	
				5		1/2	
30.6	15.5			4		1/2	
			END OF BORING				

Water level not encountered with 14' of hollow-stem auger in the ground.

A 1 1/4" diameter PVC monitoring well with a screen from 10 to 15 feet was left in this boring.

Water not observed to a depth of 15 feet in well on January 15, 1991.

*qp=pocket penetrometer estimate of unconfined compressive strength, tons per square foot.

LOG OF BORING

BRAUN ENGINEERING TESTING

PROJECT: B90-259

GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT

Boring: ST-2

LOCATION:
Bathhouse

DATE: 12/14/90

SCALE: 1" = 3'

(See Report and Standard Plates for evaluation and descriptive terminology.)

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	qp	Tests or Notes
47.3	0.0		Portland Cement Concrete				
46.3	1.0	CL	FILL: Silty Clay, medium plasticity, trace sand and wood, olive gray, moist, medium to stiff.	15		4 1/2+	
				8		1 1/2	
41.8	5.5	CL	SILTY CLAY, medium plasticity, trace sand, olive brown, with some gray zones, wet, rather soft to medium. (fine alluvium)	TW-1		1 1/2	
				8		1/2	
				4		1/2	
36.3	11.0	CL	SILTY CLAY, low plasticity, trace sand, gray to brown, wet, rather soft. (fine alluvium)	4		1	
				4		1/2	
31.8	15.5		END OF BORING				

Water level not encountered with 14' of hollow-stem auger in the ground.

Water level not encountered to dry cave-in depth of 8' immediately after withdrawal of auger.

LOG OF BORING

BRAUN ENGINEERING TESTING

PROJECT: B90-259

GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT

Boring: ST-4

LOCATION:
NE Corner of Pool, 20'S of Marked Location

DATE: 12/14/90

SCALE: 1" = 3'

(See Report and Standard Plates for evaluation and descriptive terminology.)

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	qp	Tests or Notes
46.3	0.0						
46.1	0.2		Asphaltic Concrete				
45.3	1.0		FILL: 1" minus Sandy Gravel Base				
		CL	SILTY CLAY, low plasticity, fuel odor, gray, moist, medium. (fine alluvium)	8		3 1/2	
42.8	3.5	CL	SILTY CLAY, medium plasticity, fuel odor, sand lenses (fine grained), gray to olive brown, moist, rather soft to medium. (fine alluvium)	8		3 1/2	
				TW-5		2 1/2	
				5		1	
			-wet below 9'	6		1/2	
				5		1/2	
				4		1/2	
30.8	15.5		END OF BORING				

Water level not encountered with 14' of hollow-stem auger in the ground.

Water level not encountered to dry cave-in depth of 11 1/2' immediately after withdrawal of auger.

LOG OF BORING

BRAUN ENGINEERING TESTING

PROJECT: B90-259

GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT

Boring: ST-5

LOCATION:
Pool

DATE: 12/14/90

SCALE: 1" = 3'

(See Report and Standard Plates for evaluation and descriptive terminology.)

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	qp	Tests or Notes
46.5	0.0						
46.3	0.2	GC	Asphaltic Concrete				
			FILL: Clayey Gravel, low plasticity, trace brick, brown, rather dry, stiff.	15		4 1/2+	
43.0	3.5	ML	CLAYEY SILT, slightly plastic, pale brown, moist, rather soft to medium. (fine alluvium)	4		1 1/2	
				TW-3		1 1/2	
40.0	6.5	CL	SILTY CLAY, medium plasticity, pale brown, moist to wet, rather soft to medium. (fine alluvium)	5		1 1/2	
				TW-4		1/2	
				6		1 1/2	
				5		1/2	
31.0	15.5			5		1	
			END OF BORING				

Water level not encountered with 14' of hollow-stem auger in the ground.

Water level not encountered to dry cave-in depth of 11.7' immediately after withdrawal of auger.

LOG OF BORING

BRAUN ENGINEERING TESTING

PROJECT: B90-259

GEOTECHNICAL INVESTIGATION
Proposed Swimming Pool
Sidney, MT

Boring: ST-6

LOCATION:
SW Corner of Pool

DATE: 12/14/90

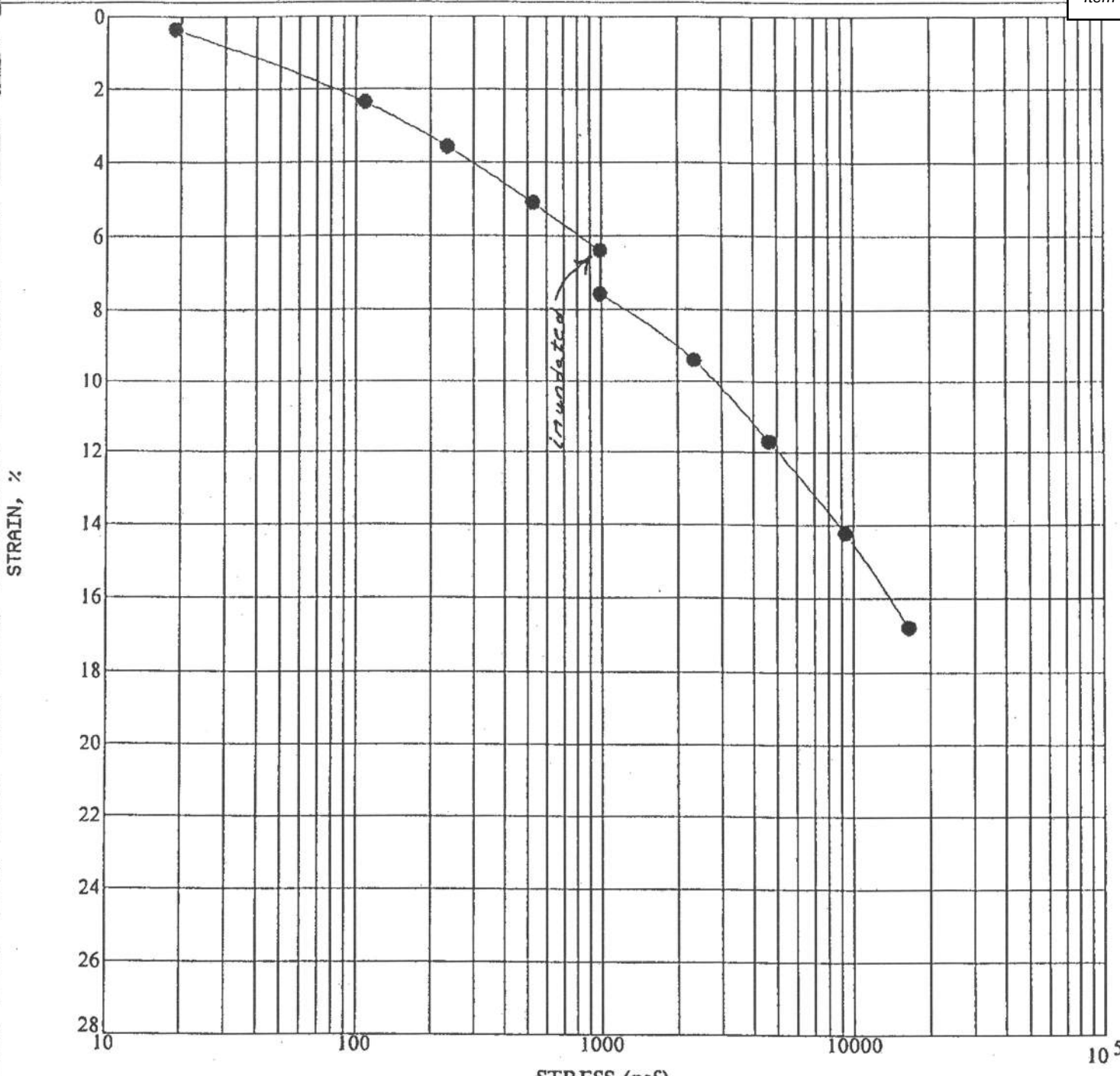
SCALE: 1" = 3'

(See Report and Standard Plates for evaluation and descriptive terminology.)

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	qp	Tests or Notes
46.6	0.0						
46.4	0.2		Asphaltic Concrete				
45.6	1.0		FILL: 1" Minus Gravel Base				
		CL	FILL: Silty Clay, medium plasticity, trace sand, brown, slightly moist, stiff.	14		2 1/2	
43.1	3.5						
		ML	CLAYEY SILT, slightly plastic, dark brown, slightly moist, rather soft. (fine alluvium)	4		3 1/2	
41.1	5.5						
		CL	SILTY CLAY, medium plasticity, pale brown, moist, soft to medium. (fine alluvium)	TW-2		2	
				5		1	
				5		1/2	
				7		1	
			-wet below 14'	3		1/2	
31.1	15.5						
			END OF BORING				

Water level not encountered with 14' of hollow-stem auger in the ground.

Water level not encountered to dry cave-in depth of 10 1/2' immediately after withdrawal of auger.



INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE CONTENT (%)
97.7	22.2

LEGEND: ● BORING: ST-5 SAMPLE: TW-4 DEPTH: 8 1/2 - 9 1/2'

Soil Description: SILTY CLAY, medium plasticity, pale brown, wet, rather soft. (CL)

January 1991

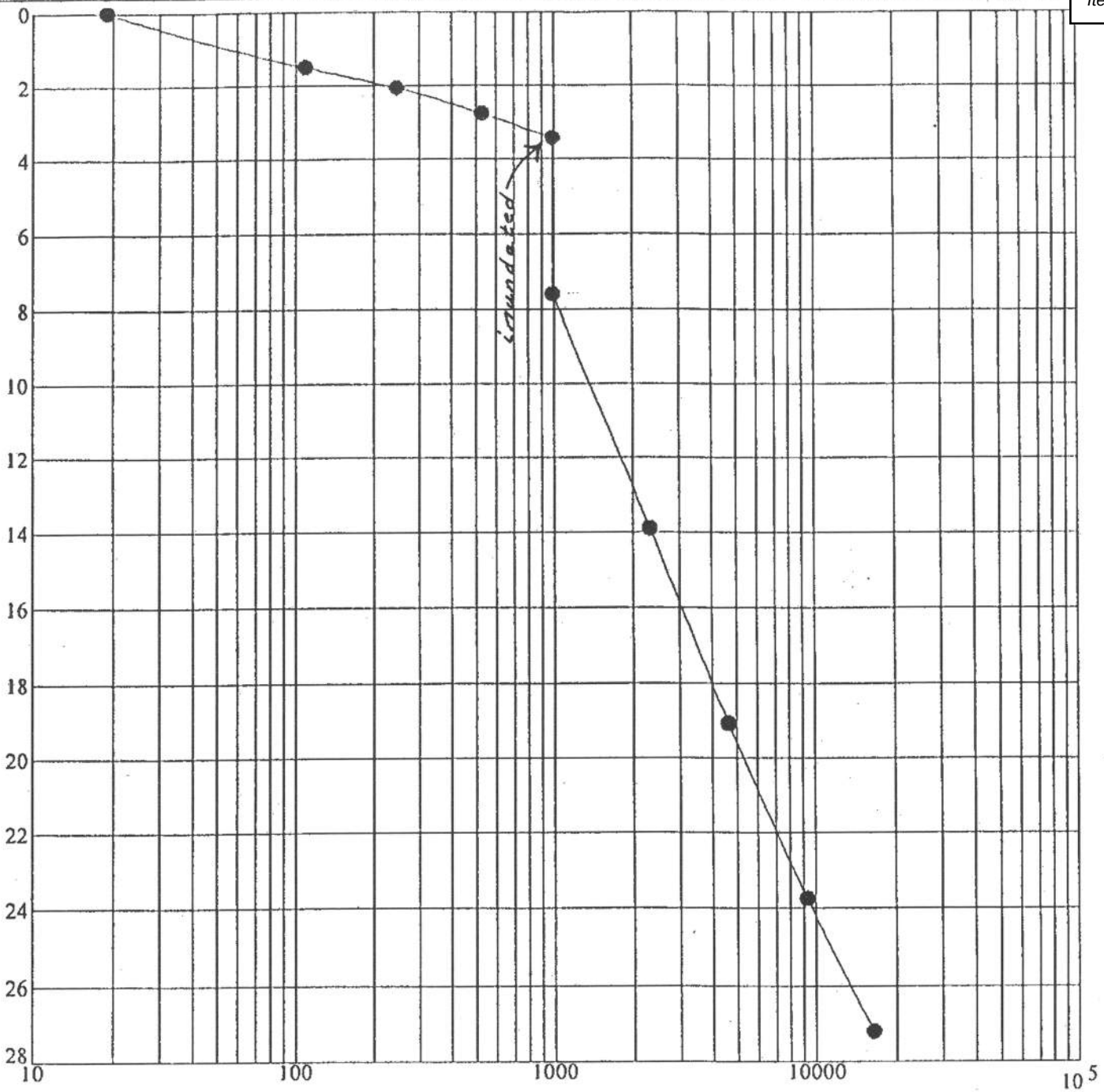
BRAUN INTERTEC

Braun Intertec Engineering, Billings, Montana (406) 652-3930

Proposed Swimming Pool - Sidney, MT.

CONSOLIDATION TEST

PROJECT: B90



INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE CONTENT (%)
81.5	22.6

EGEND: ● BORING: ST-4 SAMPLE: TW-5 DEPTH: 5 1/2 - 6 1/2'

oil Description: SILTY CLAY, medium plasticity, fuel odor, olive brown, rather soft to medium. (CL)

January 1991

IRAUN
NTERTEC

Proposed Swimming Pool - Sidney, MT.

CONSOLIDATION TEST

Braun Intertec Engineering, Billings, Montana (406) 652-3930

PROJECT: B90-2

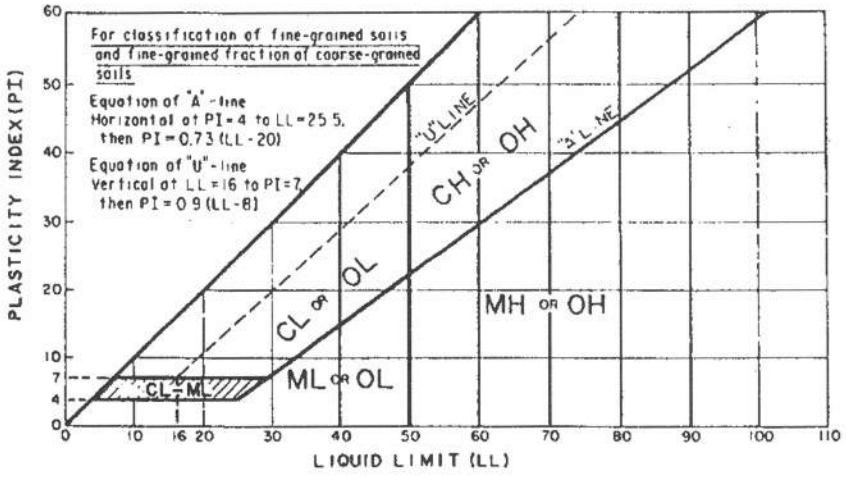
Descriptive Terminology

Designation D 2487 — 83

Standard Test Method for CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS [a]				SOIL CLASSIFICATION	
				GROUP SYMBOL	GROUP NAME [b]
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines [c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [e]	GW	Well-graded gravel [f]
			$C_u < 4$ and/or $1 > C_c > 3$ [e]	GP	Poorly graded gravel [f]
		GRAVELS WITH FINES More than 12% fines [c]	Fines classify as ML or MH	GM	Silty gravel [f,g,h]
			Fines classify as CL or CH	GC	Clayey gravel [f,g,h]
	SANDS 50% or more of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5% fines [d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [e]	SW	Well-graded sand [i]
			$C_u < 6$ and/or $1 > C_c > 3$ [e]	SP	Poorly graded sand [i]
		SANDS WITH FINES More than 12% fines [d]	Fines classify as ML or MH	SM	Silty sand [g,h,i]
			Fines classify as CL or CH	SC	Clayey sand [g,h,i]
FINE-GRAINED SOILS 50% or more passed the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line [j]	CL	Lean clay [k,l,m]
			PI < 4 or plots below "A" line [j]	ML	Silt [k,l,m]
		organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OL	Organic clay [k,l,m,n] Organic silt [k,l,m,o]
	SILTS AND CLAYS Liquid limit 50% or more	inorganic	PI plots on or above "A" line	CH	Fat clay [k,l,m]
			PI plots below "A" line	MH	Elastic silt [k,l,m]
		organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OH	Organic clay [k,l,m,p] Organic silt [k,l,m,q]
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

a. Based on the material passing the 3-in (75-mm) sieve.
b. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name.
c. Gravels with 5 to 12% fines require dual symbols
   GW-GM well graded gravel with silt
   GW-GC well graded gravel with clay
   GP-GM poorly graded gravel with silt
   GP-GC poorly graded gravel with clay
d. Sands with 5 to 12% fines require dual symbols
   SW-SM well graded sand with silt
   SW-SC well graded sand with clay
   SP-SM poorly graded sand with silt
   SP-SC poorly graded sand with clay
e. $C_u = D_{60}/D_{10}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
f. If soil contains $\geq$ 15% sand, add "with sand" to group name.
g. If fines classify as CL-ML, use dual symbol GC-GM, SC-SM.
h. If fines are organic, add "with organic fines" to group name.
i. If soil contains $\geq$ 15% gravel, add "with gravel" to group name.
j. If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
k. If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant.
l. If soil contains $\geq$ 30% plus No. 200, predominantly sand, add "sandy" to group name.
m. If soil contains $\geq$ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
n. PI $\geq$ 4 and plots on or above "A" line.
o. PI $<$ 4 or plots below "A" line.
p. PI plots on or above "A" line.
q. PI plots below "A" line.



LABORATORY TESTS

DD	Dry Density, pcf	OC	Organic Content, %
WD	Wet Density, pcf	S	Percent of Saturation, %
MC	Natural Moisture Content, %	SG	Specific Gravity
LL	Liquid Limit, %	C	Cohesion
PL	Plastic Limit, %	Ø	Angle of Internal Friction
PI	Plasticity Index, %	qu	Unconfined Compressive Strength

PARTICLE SIZE IDENTIFICATION

Boulders	over 12"
Cobbles	3" to 12"
Gravel	
Coarse	¾" — 3"
Fine	No. 4 — ¾"
Sand	
Coarse	No. 4 — No. 10
Medium	No. 10 — No. 40
Fine	No. 40 — No. 200
Silt	No. 200 — .005 mm
Clay	less than .005 mm

RELATIVE DENSITY OF COHESIONLESS SOILS

very loose	0 — 4 BPF
loose	5 — 10 BPF
medium dense	11 — 30 BPF
dense	31 — 50 BPF
very dense	50+ BPF

CONSISTENCY OF COHESIVE SOILS

very soft	0 — 1 BPF
soft	2 — 3 BPF
rather soft	4 — 5 BPF
medium	6 — 8 BPF
rather stiff	9 — 12 BPF
stiff	13 — 16 BPF
very stiff	17 — 30 BPF
hard	30+ BPF

DRILLING NOTES

Standard penetration test borings were advanced by 3¼" or 6¼" I.D. hollow-stem augers unless noted otherwise. Jetting water was used to clean out auger prior to sampling only where indicated on logs. Standard penetration test borings are designated by the prefix "ST" (Split Tube).

Power auger borings were advanced by 4" or 6" diameter, continuous-flite, solid stem augers. Soil classification and strain depths are inferred from disturbed samples augered to the surface and are therefore somewhat approximate. Power auger borings are designated by the prefix "B".

Hand probings were advanced manually with a 1¼" diameter probe and are limited to the depth from which the probe can be manually withdrawn. Hand probings are indicated by the prefix "H".

SAMPLING — All samples are taken with the standard 2" O.D. split tube sampler, except where noted. TW indicates thin-wall (undisturbed) sample.

BPF — Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler is set 6" into undisturbed soil below the hollow-stem auger. Driving resistances are then counted for second and third 6" increments and added to get BPF. Where they differ significantly, they are reported in the following form — 2/12 for the second and third 6" increments respectively.

WH — WH indicates that sampler penetrated soil under weight of hammer and rods alone, driving not required.

NOTE — All tests run in accordance with applicable ASTM standards.

Attachment #5

CONSTRUCTION PLANS

FOR

SIDNEY PUBLIC SWIMMING POOL

SIDNEY, MONTANA

1991

PLAN INDEX

SITE PLAN ——— S1

BATHHOUSE PLANS

SYMBOLS – LEGENDS – GENERAL NOTES ——— A1
FLOOR PLAN AND FOUNDATION PLAN ——— A2
BUILDING SECTIONS ——— A3
ELEVATIONS (Exterior & Interior) AND DETAILS ——— A4
WALL SECTIONS AND DETAILS ——— A5
MECHANICAL ——— M1
LIGHTING PLAN ——— E1
POWER AND SYSTEMS PLAN ——— E2
SITE PLAN (Exterior Lighting & Receptacles) – BONDING – DETAILS E3

POOL PLANS

POOL AND DECK PLAN ——— P1
POOL AND DECK EQUIPMENT PLAN ——— P2
POOL SECTIONS – UNDERDRAIN PLAN – DETAILS ——— P3
POOL SECTIONS AND DETAILS ——— P4
WADING POOL – FILTER – EQUIPMENT RM. PLANS AND DETAILS ——— P5
DETAILS AND SCHEDULES ——— P6

CITY COUNCIL

MAYOR	HAROLD MERCER
COUNCILMAN	DUANE STICKNEY
COUNCILMAN	CAL ORAW
COUNCILMAN	RICHARD HOBBS
COUNCILMAN	WILLIAM BARBER
COUNCILMAN	WAYNE SWIGART
COUNCILMAN	DON YADON
CITY CLERK	ETHEL SOBOLIK
DIRECTOR OF PUBLIC WORKS	TERRY MELDAHL

interstate engineering, inc.

ENGINEERING SURVEYING PLANNING

NOTE 1 LOCATE EXISTING SAS LINE. CONSTRUCT NEW 4' DIA. MANHOLE ON EXISTING LINE. FIELD VERIFY FINAL ELEVATIONS. NORTH INV. 91.64, EAST INV. 91.70,RIM 95.8. SECTION 800 WORK.

NOTE 2 CONSTRUCT NEW 5' DIA HOLDING MANHOLE. EAST INV. 91.74, WEST INV. 4"-91.70 & 8"-94.0, RIM 95.8. SECTION 800 WORK.

NOTE 3 CONSTRUCT 8" SAS WASTE LINE FROM IN-HOUSE SUMP TO 5' MANHOLE WITH 0.45 SLOPE. REPLACE ASPHALT SURFACE. SECTION 800 WORK.

NOTE 4 CONTINUE INSTALLATION OF 4" SAS DOMESTIC WASTE LINE 5' OUT FROM BUILDING AND CONNECT TO 8" SAS LINE. SECTION 800 WORK.

NOTE 5 4" SAS DOMESTIC WASTE LINE OUT 5' FROM BUILDING . DIVISION 15 WORK. SEE MECHANICAL PLAN SHEET M1.

NOTE 6 DRAIN AND LIFT MANHOLE. SEE SHEET P1 FOR INCOMING AND OUTGOING LINES. SECTION 800 WORK.

NOTE 7 6" WASTE LINE TO SAS. SECTION 800 WORK.

NOTE 8 6" UNDERDRAIN SYSTEM. SECTION 702 WORK. SEE PLAN SHEET P1 AND P3.

NOTE 9 LOCATE EXISTING WATERMAIN. INSTALL TEE FITTING, 2" CURB STOP, BOX AND RISER AND NEW 2" PVC WATER SERVICE LINE TO WITHIN 5' OF BUILDING. SECTION 800 WORK.

NOTE 10 4" WATER SERVICE LINE 5' OUT FROM BUILDING THEN INTO THE BUILDING FOR INTERIOR PLUMBING. DIVISION 15 WORK. SEE MECHANICAL PLAN SHEET M1.

NOTE 11 UNDERGROUND WADING POOL RECIRCULATION LINES. SEE PLAN SHEETS P1 AND P5 FOR CONTINUATION. SECTION 1305 WORK.

NOTE 12 REMOVE EXISTING CURB AND GUTTER AND REPLACE WITH GRAVEL. MAKE SMOOTH TRANSITION FROM EXISTING PAVEMENT TO GRAVEL. SECTION 702 WORK.

NOTE 13 INSTALL 66" X 72" CONCRETE PAD FOR TRANSFORMER. COORDINATE WITH MDU. SECTION 702 WORK.

WATER TREATMENT BUILDING

LOADING RAMP

CONSTRUCTION LIMITS

BUILDING TO BE REMOVED BY CITY

T.O.C. 97.0

NEW CONC. DRIVEWAY

CONSTRUCT 336 LF NEW CURB AND GUTTER SURROUNDING ISLAND. SECTION 702 WORK.

RIM ELEV. 95.56
INV. ELEV. 92.36

RIM ELEV. 96.82
INV. ELEV. 91.17

BENCH MARK ELEV. 100.00
IS TOP OF HYDRANT
AT INTERSECTION OF
7th AVE. AND 6th STREET

T.O.C. 96.9

T.O.C. 96.50

T.O.C. 96.6

CONSTRUCT APPROX. 70 L.F. OF NEW CURB AND GUTTER FOR WIDTH OF EXISTING DRIVE SECTION 702 WORK.

REMOVE 20 LF EXISTING CURB AND GUTTER AND REPLACE WITH DROP CURB.

6" CONCRETE DRIVE SURFACE

CONSTRUCT 120 LF NEW CURB AND GUTTER SURROUNDING ISLAND. SECTION 702 WORK.

T.O.CONC. 96.36

F.G. 96.4

SUMP

BATHHOUSE
FINISHED FLOOR ELEV.
SHALL BE 97.0

WADING POOL

DIVING

SWIMMING POOL

ELEV. 97.0 (TYPICAL FOR FINISH DECK SURFACE AT ALL CORNERS OF POOL.)

BORING ST-1W

BORING ST-2

BORING ST-3

BORING ST-4

BORING ST-5

BORING ST-6

NOTE: EXISTING POOL TO BE USED DURING 1991 SWIM SEASON. WORK TO BE SCHEDULED TO MINIMIZE CONFLICT.

EXISTING POOL FOUNDATION

4' SIDEWALK

CONSTRUCTION LIMITS

EXACT LOCATION OF THIS EXISTING EAST/WEST WATERLINE IS UNKNOWN. IS CURRENTLY SHOWN IN APPROXIMATE LOCATION. LINE TO BE ABANDONED, CAN BE LEFT IN PLACE.

EXISTING GATE VALVE. EXCAVATE AND REMOVE GATE VALVE. PLUG EXISTING TEE AND ABANDON SOUTH BOUND WATERLINE. SECTION 800 WORK.

CONSTRUCT APPROX. 20 L.F. OF NEW CONC. CURB AND GUTTER FOR WIDTH OF EXISTING DRIVE. SECTION 702 WORK.

CONSTRUCT NEW 5' WIDE X 4"THICK CONCRETE SIDEWALK. SECTION 702 WORK.

EXISTING NORTH/SOUTH NATURAL GAS LINE. LOCAL UTILITY COMPANY WILL LOCATE LINE, TAP LINE, AND INSTALL NEW GAS SERVICE LINE TO THE BATHHOUSE IN APPROX. ROUTE INDICATED. CONTRACTOR SHALL COORDINATE THE WORK WITH THE UTILITY COMPANY.

INSTALL YARD HOSE HYDRANT FLUSH WITH DECK. SECTION 800 WORK.

INSTALL 1" COPPER SERVICE LINE TO HOSE HYDRANT

RIM ELEV. 96.25
INV. ELEV. 90.40

UNDERGROUND ELECTRICAL SERVICE TO BE DONE BY MDU TO THE TRANSFORMER. SERVICE FROM TRANSFORMER TO BUILDING UP TO CONTRACTOR. SEE DIVISION 1600 ELECTRICAL.

RIM ELEV. 95.62
INV. ELEV. 90.22

LOCATE EXISTING EAST/WEST WATERLINE.
INSTALL TEE FITTING AND CONSTRUCT 185 L.F. OF NEW 2" PVC WATERLINE TO THE SOUTH. MINIMUM BURY SHALL BE 8'-0". SECTION 800 WORK.

INSTALL FITTING FOR FIRE HOSE CONNECTION FOR PERIODIC LINE FLUSHING. SECTION 800 WORK.

LOCATE THE THREE (3) EXISTING WATER SERVICE LINES DURING INSTALLATION OF NEW 2" PVC LINE. RECONNECT EACH SERVICE LINE INTO THE NEW 2" PVC LINE. INSTALL CORPORATION COCK ON EACH SERVICE LINE. ABANDON REMAINING SERVICE LINES TO THE WEST. SECTION 800 WORK. SCHEDULING AT WORK TO BE COORDINATED WITH CITY WATER SUPERINTENDENT.

INSTALL 2" CURB STOP, BOX AND RISER ON NEW 2" PVC WATERLINE. SECTION 800 WORK.

REMOVE AND REPLACE 35 LF ASPHALT SURFACING.

7th STREET

6th STREET

SITE PLAN

Revision No.	Date	By	Description

SITE PLAN SWIMMING POOL COMPLEX
SIDNEY, MONTANA

Project No. S90-60
Date 4/15/91

Drawn By H.T.E.
Checked By B.R.M.

interstate engineering, inc.
Engineering - Surveying - Planning

S-1
SHEET NO.

general notes:

General provisions and specifications apply to these drawings.

The Contractor shall do all work shown in compliance with the plans. Any variation found during construction due to actual field conditions which affect the construction shall be reported to the Architect / Engineer.

All work is to be done in strict accordance with Federal, State, and Local codes/ordinances.

Contractor is to reference all sheets of the drawings for locations of items and coordinate the installation of all items.

Contractor is to reference the specifications for additional schedules and sizing requirements.

Contractor shall verify all existing conditions and dimensions including but not limited to existing utilities, site dimensions (including property lines) and other site conditions prior to bidding and beginning work.

Caution! – Contractor to extreme care during demolition, excavating, trenching, cutting/patching to avoid utility lines. Locations indicated are approximate – verify with local officals

Heavy trucks may be driven over existing concrete walks only with proper ramps, planking and protection. Contractor shall be responsible of any damage to existing concrete slabs, and shall repair or replace concrete sidewalks and install new walks as required by damage during construction.

Contractor shall repair all existing construction damaged during construction to match existing at no additional cost.

All connection details are suggested means–alternate propcsals within code may be considered.

Frame partition dimensions are generally to center of wall and of nominal wall thicknesses. Dimensions to masonry/concrete partitions are generally to face of material.

All materials not furnished by the Owner shall be supplied by the Contractor, including all anchors, fasteners, sealants, trim and touch up as required for complete installation.

Contractor is responsible for headers, frames, and other blockouts for mechanical and electrical equipment. Refer to related drawings & specifications.

Provide additional members i.e.(joists, studs, blocking, anchors) as required to satisfy detailing and construction requirements.

All wood plates or blocking in contact with concrete, masonry, or ground moisture to be redwood or treated wood.

Footings to be placed on undisturbed soil.

Slope all finish grades away from building 1/2" per foot for 10 feet minimum.

All plumbing and ducts to be installed within building insulation.

All plumbing walls to be 6" nominal width minimum thickness.

special note:

The final building configuration may differ from these design documents due to the implications of code requirements, coordination of mechanical, electrical, structural systems, modifications by the occupants of the building and the need for on–site adjustments during the course of construction.

abbreviations:

A.B. – ANCHOR BOLT
ALT. – ALTERNATE
APPROX. – APPROXIMATELY
BD. – BOARD
BLDG. – BUILDING
CAB. – CABINET
C.J. – CONTROL JOINT
CMU – CONCRETE MASONRY UNIT
CONC. – CONCRETE
CONT. – CONTINUOUS
CONSTR. – CONSTRUCTION
D.S. – DOWN SPOUT
EA. – EACH
ELECT. – ELECTRICAL
ELEV. – ELEVATION
EXIST. – EXISTING
EXP. –EXPANSION
F.D. – FLOOR DRAIN
FDN. – FOUNDATION
F.E. – FIRE EXTINGUISHER
F.R.P. – FIBERGLASS REINFORCED PANEL
F.F. – FINISHED FLOOR
FIN. – FINISHED
FLR. – FLOORING
FTG. – FOOTING
G.B. –GYPSUM BOARD
HORIZ. – HORIZONTAL
H.M. – HOLLOW METAL
INSUL. – INSULATION
MANUF. – MANUFACTURER
MAX. – MAXIMUM
MECH. – MECHANICAL
MIN. – MINIMUM
MTL. – METAL
NO. – NUMBER
N.I.C. – NOT IN CONTRACT
O.C. – ON CENTER
O.S.C.I. – OWNER SUPPLIED CONTR. INSTALLED
PL. – PLATE
PLYWD. – PLYWOOD
R.O. – ROUGH OPENING
REQ'D – REQUIRED
SIM. – SIMILAR
SQ. – SQUARE
STO. – STORAGE
STL. – STEEL
T&G – TONGUE AND GROOVE
T.O.F. – TOP OF FOOTING
T.O.P. – TOP OF PLATE
T.O.W. – TOP OF WALL
TYP. – TYPICAL
V.B. – VAPOR BARRIER
VERT. – VERTICAL
W.C. – WATER CLOSET
W/ – WITH
WGB. – WATER RESISTANT GYPSUM BOARD
WWF. – WELDED WIRE FABRIC

symbols legend:

DETAIL
BUILDING SECTION
WALL SECTION
ROOM NAME & NUMBER (ROOM 101)
DOOR NUMBER
WINDOW NUMBER
REFERENCE ELEVATION (2'-8"x4'-8" T.O. PLATE 108'-0")
CENTER LINE
RATED WALL
SPOT ELEVATION (ELEV=EXIST / ELEV=NEW)
EXISTING CONTOUR
NEW CONTOUR
CONTRACT LIMITS
NORTH ARROW
GRID LINE
NEW CONSTRUCTION
VEGETATION
EXISTING CONSTRUCTION
ST — STORM SEWER
UGE — UNDERGROUND ELECTRICAL
T — TELEPHONE
W — WATER
SS — SANITARY SEWER
G — NATURAL GAS
P — OVERHEAD ELECTRICAL
CTV — CABLE TELEVISION

mat'l legend:

INDICATED	SYMBOL	DESCRIPTION
		CONCRETE
X		DIMENSIONAL LUMBER SECTION
		BLOCKING SECTION
		FINISH LUMBER SECTION
X		BATT OR BLANKET INSULATION
X		PLYWOOD
		GYPSUM BOARD
		C.M.U.
X		MASONRY (BRICK)
X		COMPACTED FILL
		UNDISTURBED SOIL
		COMPACTED GRAVEL FILL
X		STEEL

code data:

OCCUPANCY GROUP: A–3

TYPE OF CONSTRUCTION: V–N

LOCATION ON PROPERTY:
SEPARATION
NORTH: 40+
EAST: 40+
SOUTH: 40+
WEST: 40+

FLOOR AREA:
BASIC ALLOWABLE AREA: 6,000
TOTAL ALLOWABLE AREA: 12,000
ACTUAL AREA: 3,072

LEGAL:
EXISTING

PROPERTY ZONE:
PUBLIC

HEIGHT AND NUMBER OF STORIES:
HEIGHT ALLOWED: 40'
ACTUAL: 18'–6"
NO. OF STORIES ALLOWED: 1
ACTUAL: 1

OCCUPANT LOAD:
EXISTING: N/A
NEW: 61
TOTAL LOAD: 61

DESIGN LOADS:
SOIL BEARING: 1500 PSF
FLOOR : N/A
ROOF : 30 PSF
WIND : 20 PSF
SEISMIC : 3

THIS BUILDING HAS BEEN DESIGNED BASED UPON THE REQUIREMENTS OF THE1988 UNIFORM BUILDING CODE.

STATE OF MONTANA · JAMES L. BAUER · 883 · BILLINGS, MONT. · LICENSED ARCHITECT

Revison No.	Date	By	Description

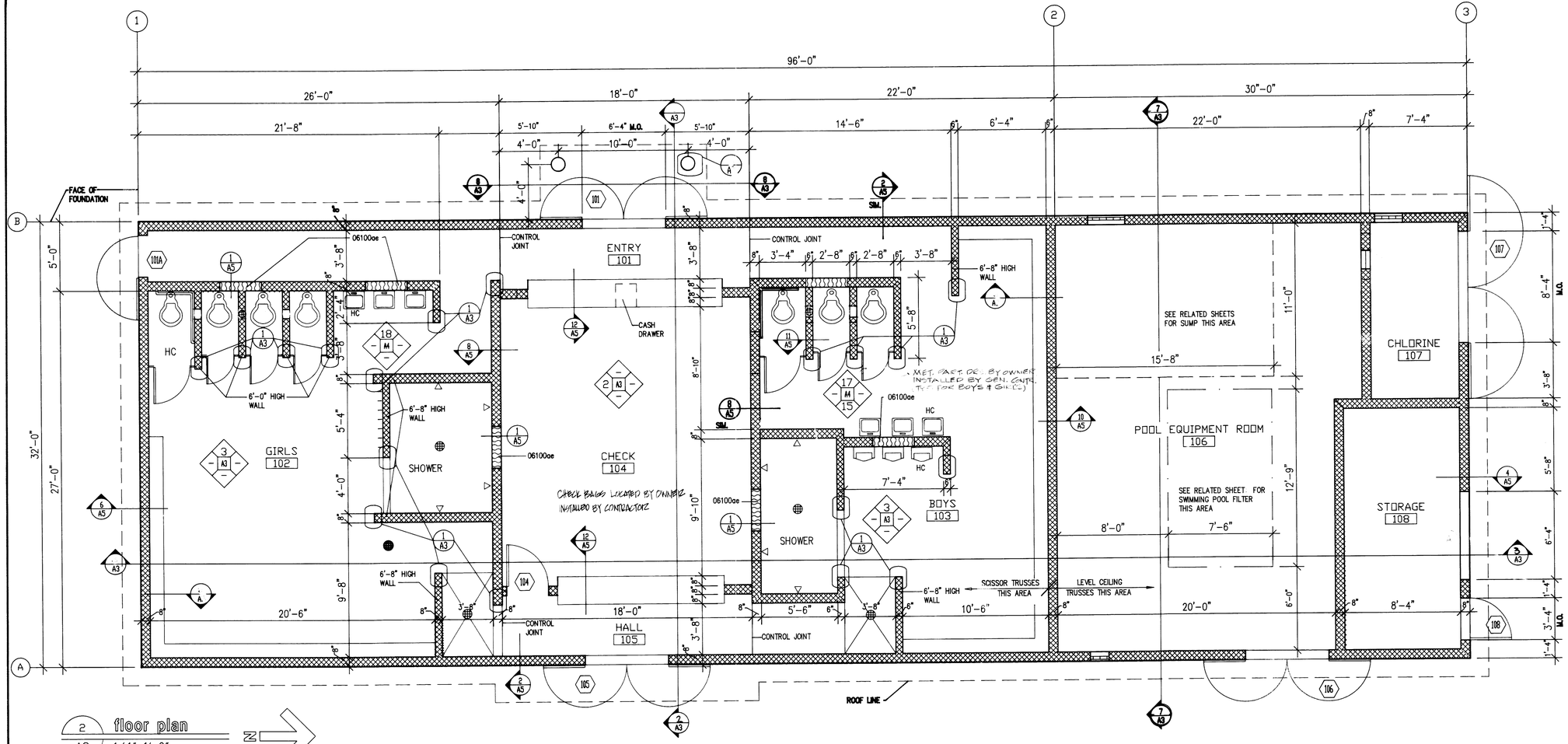
GENERAL NOTES, LEGEND AND DATA
SWIMMING POOL - SIDNEY, MONTANA
Drawn By KCB
Checked By JB
Project No. 390-150
Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

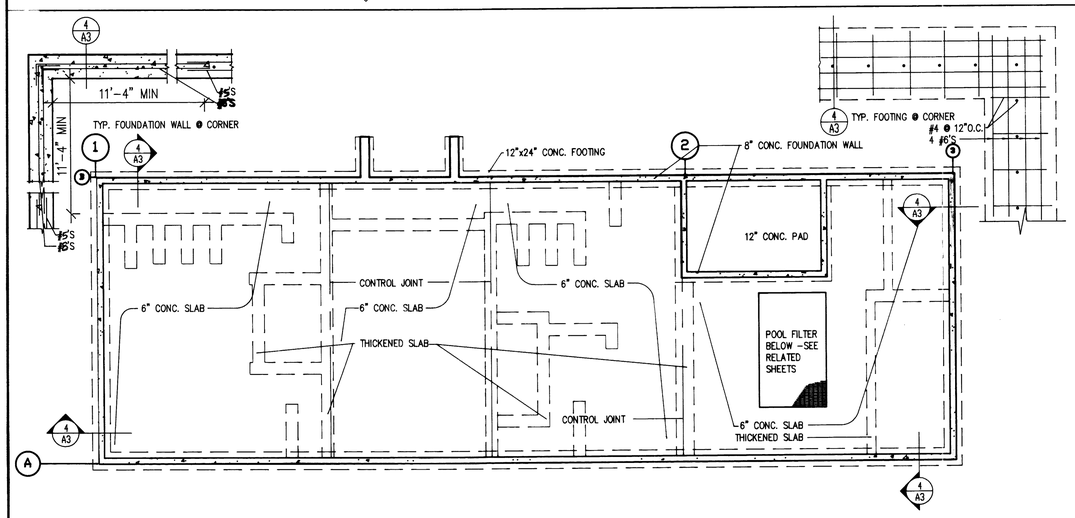
A1
SHEET NO.

141710

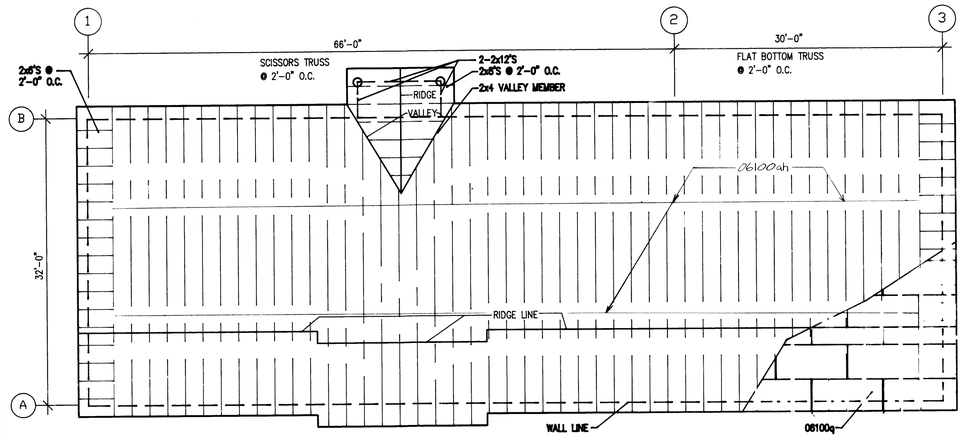
Item b.



2 floor plan
A2 / 1/4"=1'-0"



2 foundation plan
A2 1/8"=1'-0"



3 roof framing plan
A2 1/8"=1'-0"

DRAWINGS, GENERAL PROVISIONS AND SPECIFICATIONS OF CONTRACT APPLY TO WORK OF THIS DRAWING

MATERIAL KEYING LEGEND

DIV. 4 MASONRY
- 04200g 8" CMU
- 04200f 6" CMU

DIV. 5 METALS

DIV. 6 WOODS & PLASTICS
- 06100b 2x4'S @ 16" O.C.
- 06100g 1/2" PLYWOOD SHTG
- 06100q 5/8" PLYWD CDX
- 06100y 2x10
- 06100ae 2x8 PLUMBING WALL, 3'-0" WIDE (ADDED) - CONTINUOUS BRACING

DIV. 7 THERMAL & MOISTURE
- 07190a VAPOR BARRIER
- 07311a ROOFING
- 07460a MTL SIDING TRIM
- 07460b MTL SIDING
- 07460c MTL SOFFIT
- 07600a FLASHING

DIV. 10 SPECIALTIES
- 10500a 10" ALUMINUM SEAT
- 10500b 1-5/8" DIA. STEEL PEDISTAL

DIV. 15 MECHANICAL
- 15400a TOILET
- 15400b SINK
- 15400f FLOOR DRAIN

Revision No.	Description	Date	By

BATHHOUSE FLOOR PLAN & FOUNDATION PLAN

SWIMMING POOL - SIDNEY, MONTANA

Project No. 590-60

Date 4/15/91

Drawn By JCB

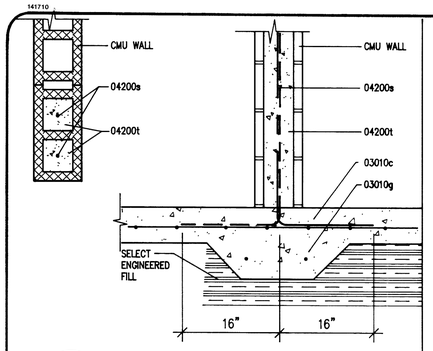
Checked By JLP

interstate engineering, inc.
Engineering - Surveying - Planning

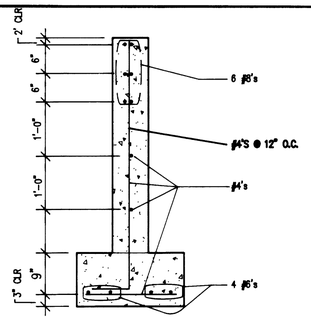
STATE OF MONTANA
JAMES L. BAUER
8831
BILLINGS, MONT.
LICENSED ARCHITECT

A2
SHEET NO.

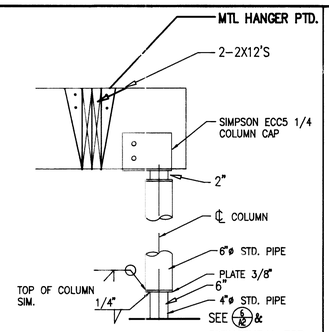
141710



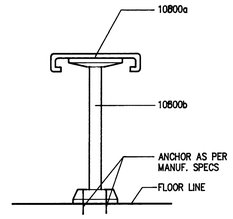
1 / A3 detail 1"=1'-0"



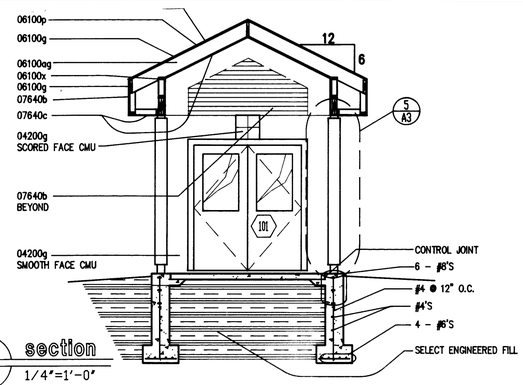
4 / A3 detail 3/4"=1'-0"



5 / A3 detail 3/4"=1'-0"



6 / A3 bench section 1-1/2"=1'-0"



8 / A3 section 1/4"=1'-0"

DRAWINGS, GENERAL PROVISIONS AND SPECIFICATIONS OF CONTRACT APPLY TO WORK OF THIS DRAWING.

MATERIAL KEYING LEGEND

DIV. 3 CONCRETE
- 03010c 3" CONC. SLAB W/ 6x6 10x10 W.W.M.
- 03010g THICKENED SLAB W/2 #4'S

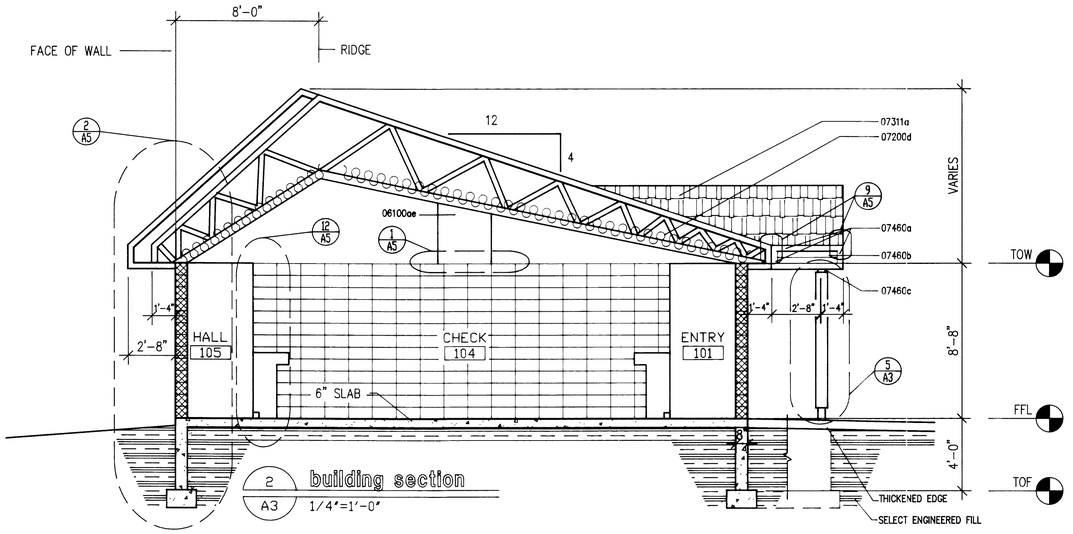
DIV. 4 MASONRY
- 04200g 8" CB 8" CMU
- 04200s #5 @ 16" VERTICAL REINFORCING FULL HEIGHT
- 04200t GROUT FULL

DIV. 6 WOODS & PLASTICS
- 06100g 1/2" PLYWOOD
- 06100p 15 # ASPHALT PAPER
- 06100x 2x4
- 06100ae 2x6 PLUMBING WALL, 3'-0" WIDE
- 06100ag 2x8 @ 2'-0" O.C.

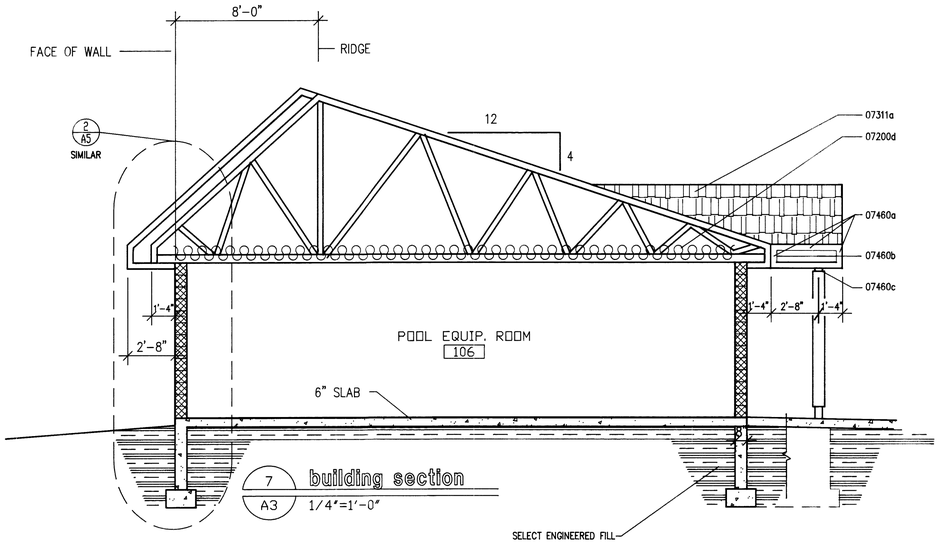
DIV. 7 THERMAL & MOISTURE
- 07200d R-42 INSULATION
- 07311a ROOFING
- 07460a METAL SIDING, TRIM
- 07460b METAL SIDING
- 07460c METAL SOFFIT

DIV. 10 SPECIALTIES
- 10800c TOWEL HOOKS
- 10800d GRAB BARS

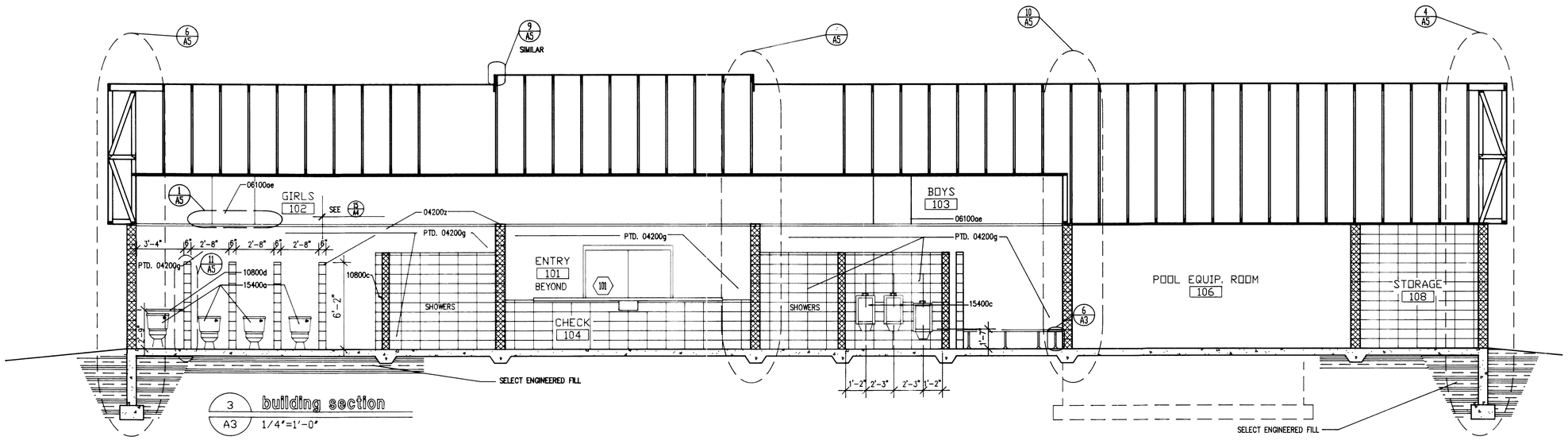
DIV. 15 MECHANICAL
- 15400a TOILET
- 15400d URINAL
- 15800g SHOWER BENCH (ALUM.)
- 15800h BENCH SUPPORT 3'-0" O.C. OR AS PER MANUF. RECOMMENDATION.



2 / A3 building section 1/4"=1'-0"



7 / A3 building section 1/4"=1'-0"



3 / A3 building section 1/4"=1'-0"

interstate engineering, inc.
Engineering - Surveying - Planning

BATHHOUSE BUILDING SECTIONS

SWIMMING POOL - SIDNEY, MONTANA

Project No. S90160

Date 4/15/31

Drawn By KP

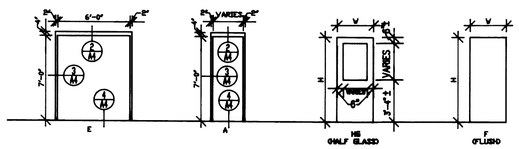
Checked By JP

Revision No.	Date	By	Description

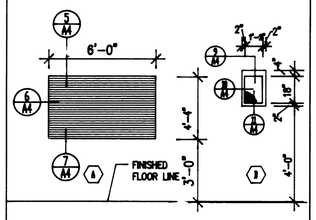
STATE OF MONTANA
JAMES L. BAHER
883
BILLINGS, MONT.
LICENSED ARCHITECT

A3
SHEET NO.

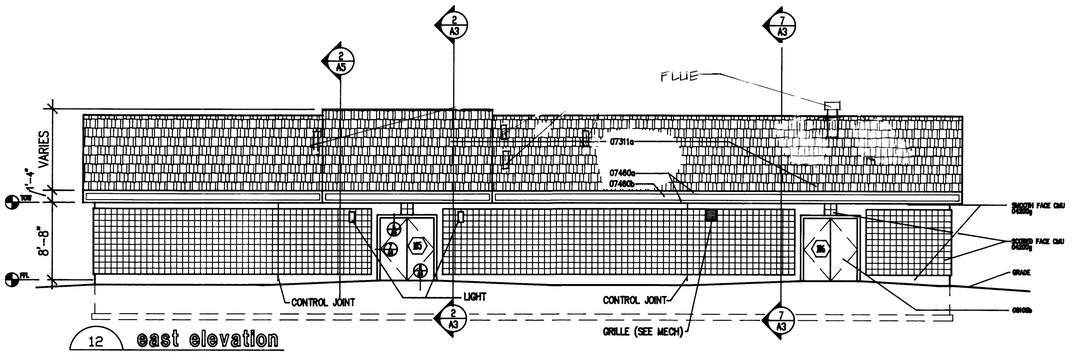
Item b.



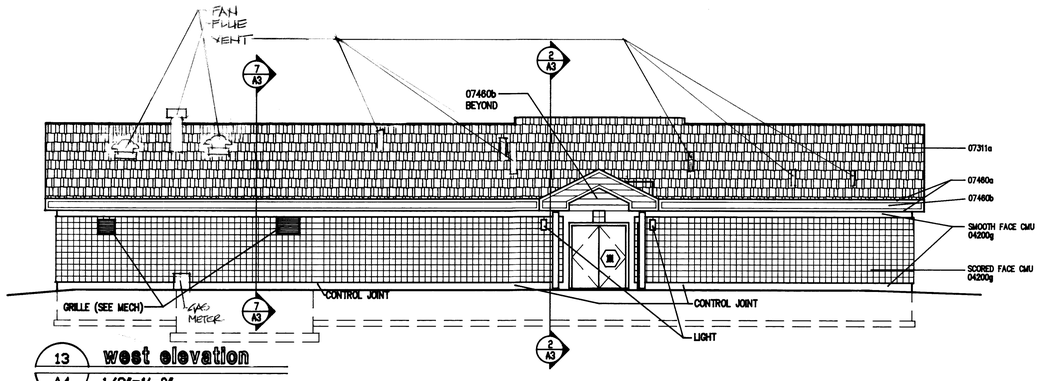
1 door frames & elevations
A4 N.T.S.



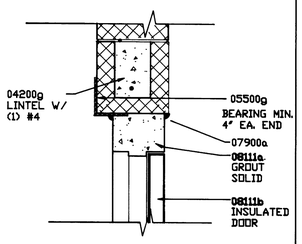
8 window types
A4 1/4"=1'-0"



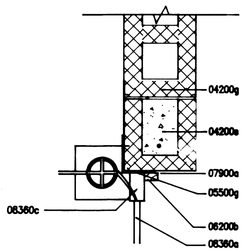
12 east elevation
A4 1/8"=1'-0"



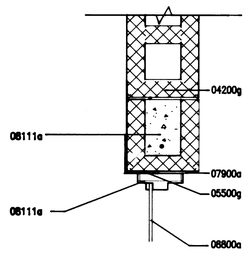
13 west elevation
A4 1/8"=1'-0"



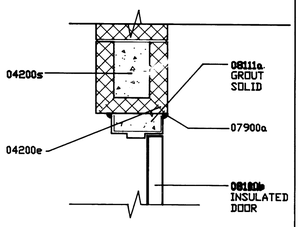
2 head
A4 1-1/2"=1'-0"



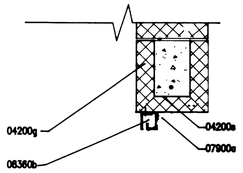
5 head
A4 1-1/2"=1'-0"



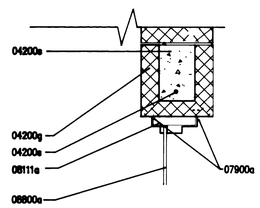
9 head
A4 1-1/2"=1'-0"



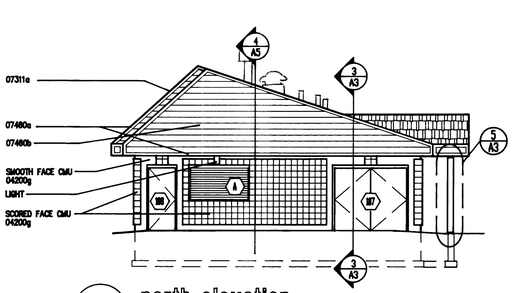
3 jamb
A4 1-1/2"=1'-0"



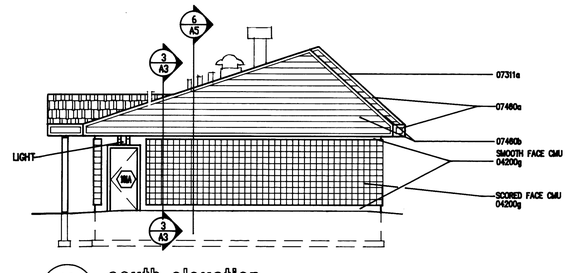
6 jamb
A4 1-1/2"=1'-0"



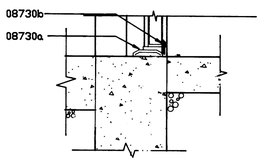
10 jamb
A4 1-1/2"=1'-0"



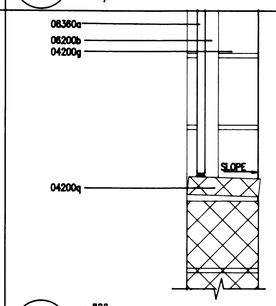
14 north elevation
A4 1/8"=1'-0"



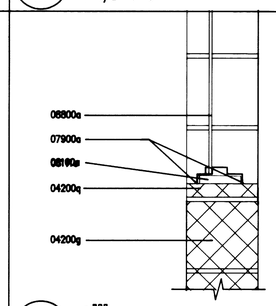
16 south elevation
A4 1/8"=1'-0"



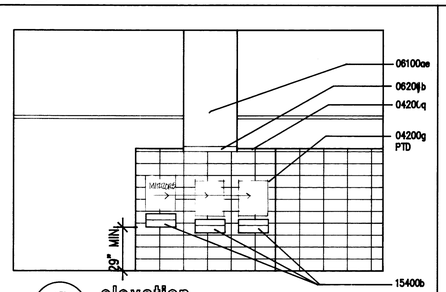
4 sill
A4 1-1/2"=1'-0"



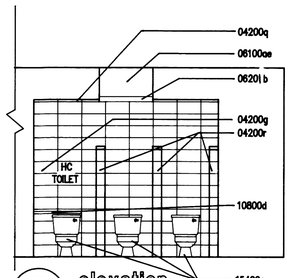
7 sill
A4 1-1/2=1'-0"



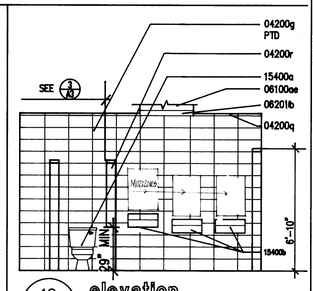
11 sill
A4 1-1/2=1'-0"



15 elevation
A4 1/4"=1'-0"



17 elevation
A4 1/4"=1'-0"



18 elevation
A4 1/4"=1'-0"

DRAWINGS, GENERAL PROVISIONS AND SPECIFICATIONS OF CONTRACT APPLY TO WORK OF THIS DRAWING.

MATERIAL KEYING LEGEND

DIV. 4 MASONRY
- 04200e BOND BEAM W /2 #5'S CONTIN.
- 04200g 8" CMU
- 04200p #4 DOWEL @ 18" O.C.
- 04200q 2" CMU CAP
- 04200r 6" CMU
- 04200s #6 FULL HEIGHT, GROUT FULL

DIV. 5 METALS
- 05500g 4x4x1/4" ANGLE
- 05500h 4x4x1/4" ANGLE BEARING 4" MINIMUM

DIV. 6 WOODS & PLASTICS
- 06100ae 2x6 PLUMBING WALL, 3'-0" WIDE RIPPED FOR FLUSH IT
- 08401b 1x4 CEDAR TRIM

DIV. 7 THERMAL & MOISTURE
- 07311a ROOFING
- 07460a MTL SIDING TRIM
- 07460b METAL SIDING
- 07900a SEALANT BOTH SIDES

DIV. 8 WINDOWS & DOORS
- 08111a H.M. FRAME
- 08111b DOOR
- 08360a ROLLING OVERHEAD DOOR
- 08360b SIDE BAR
- 08360c TOP BAR
- 08730a THRESHOLD
- 08730b DOOR SEAL
- 08800a WIRE MESH SAFETY GLASS

DIV. 10 SPECIALTIES
- 10800c TOWEL HOOKS
- 10800d GRAB BAR
- 10800e T.P. HOLDER
- 10800f TOILET PARTITION DOOR

DIV. 15 MECHANICAL
- 15400a TOILET
- 15400b SINK

Revision No.	Date	By	Description

BATHHOUSE ELEVATIONS EXT./INT. AND DETAILS

SWIMMING POOL - SIDNEY, MONTANA

Drawn By LJB | Project No. S90-60

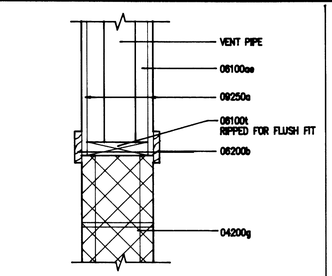
Checked By JLB | Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

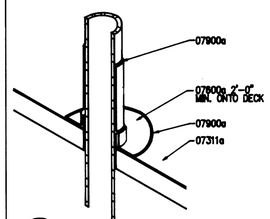
STATE OF MONTANA JAMES L. BAUER 883 BILLINGS, MONT. LICENSED ARCHITECT

A4
SHEET NO.

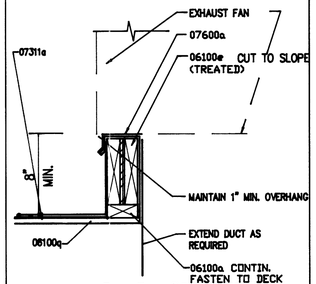
141710



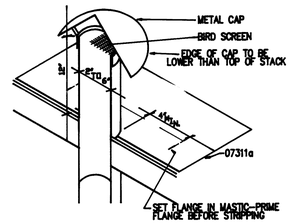
1 detail
A5 1-1/2"=1'-0"



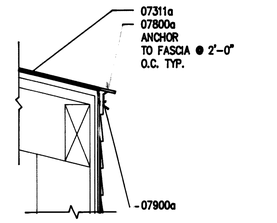
3 detail
A5 NTS



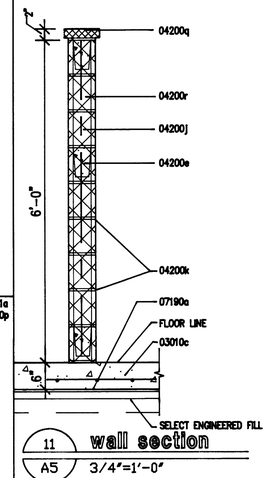
5 detail
A5 1 1/2"=1'-0"



7 detail
A5 NTS



9 edge detail
A5 1-1/2"=1'-0"



11 wall section
A5 3/4"=1'-0"

DRAWINGS, GENERAL PROVISIONS AND SPECIFICATIONS OF CONTRACT APPLY TO WORK OF THIS DRAWING.

MATERIAL KEYING LEGEND

DIV. 3 CONCRETE
- 03010c 6" CONC. SLAB W/ #4'S @ 18" O.C. BOTH WAYS
- 03010g THICKENED SLAB W/5 #5'S

DIV. 4 MASONRY
- 04200b FILL W/ GROUT
- 04200c #4 REBAR
- 04200e BOND BEAM W/2 #5'S CONTIN.
- 04200f LOOSE FILL INSULATION ALTERNATE
- 04200g 8" CMU
- 04200J #5 VERTICAL @ 4'-0" O.C. GROUTED FULL HEIGHT
- 04200k HORIZ. REINFORCING @ 16" O.C.
- 04200q 2" CMU CAP
- 04200r 6" CMU

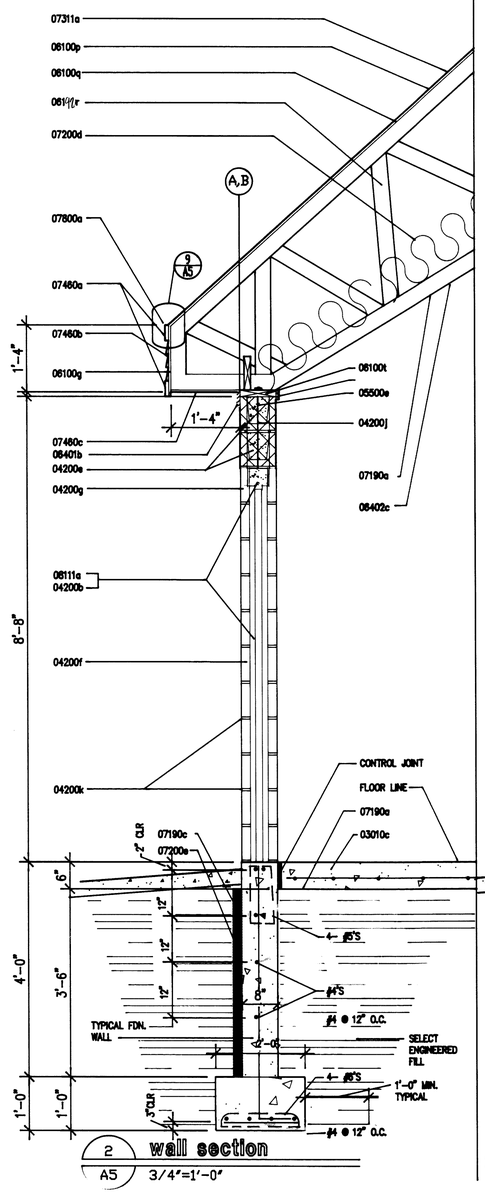
DIV. 5 METALS
- 05500e 1/2" DIA. A.B. @ 2'-0" O.C.

DIV. 6 WOODS & PLASTICS
- 06100a TREATED BOTTOM PLATE
- 06100e 2x HEADER W/ 1/2" PLYWOOD FILLER
- 06100g 1/2" PLYWOOD
- 06100q 5/8" PLYWD CDX
- 06100p 15# ASPHALT PAPER
- 061¹⁄₂r ROOF TRUSS
- 06100t TREATED 2x8 PLATE
- 06100v 3/4" PLYWOOD
- 06100x 2x4
- 06100y 2x6
- 06100ae 2x8 PLUMBING WALL, 3'-0" WIDE RIPPED FOR FLUSH FIT
- 06401a 1x2 TRIM
- 06402b 1x4 TRIM
- 06402c 1x8 T&G CEDAR ALTERNATE
- 06400k PLASTIC LAMINATE

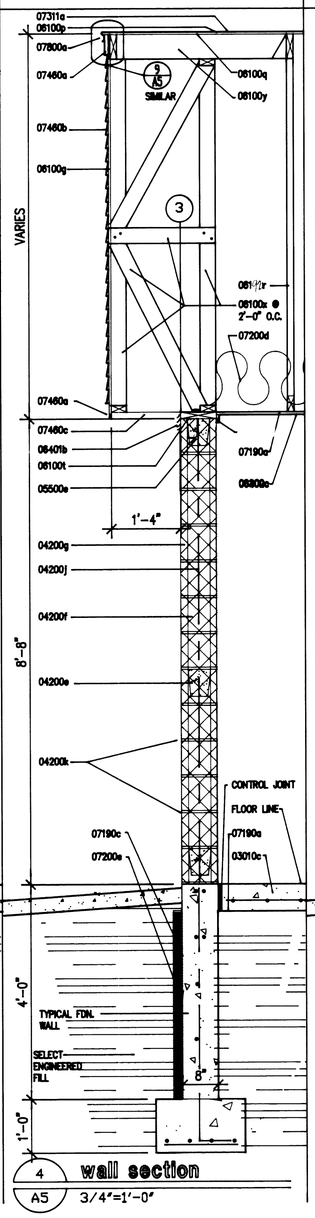
DIV. 7 THERMAL & MOISTURE
- 07190a VAPOR BARRIER
- 07190c DAMPPROOFING
- 07200d R-42 INSULATION ALTERNATE
- 07200e 2" RIGID INSULATION ALTERNATE
- 07311a ROOFING
- 07460a MTL SIDING TRIM
- 07460b METAL SIDING
- 07460c METAL SOFFIT
- 07800e FLASHING
- 07800a EDGE METAL
- 07900a SEALANT

DIV. 8 WINDOWS & DOORS
- 08111a H.M. FRAME

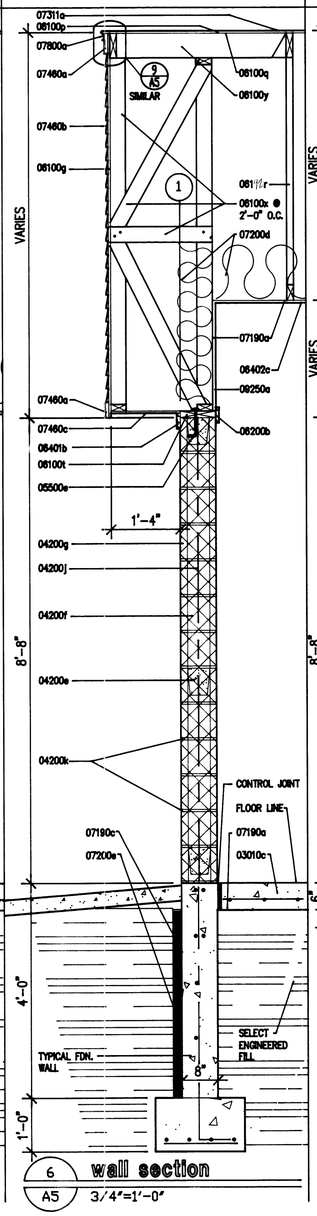
DIV. 9 FINISHES
- 09250a 5/8" CEMENTITIOUS BACKER BOARD



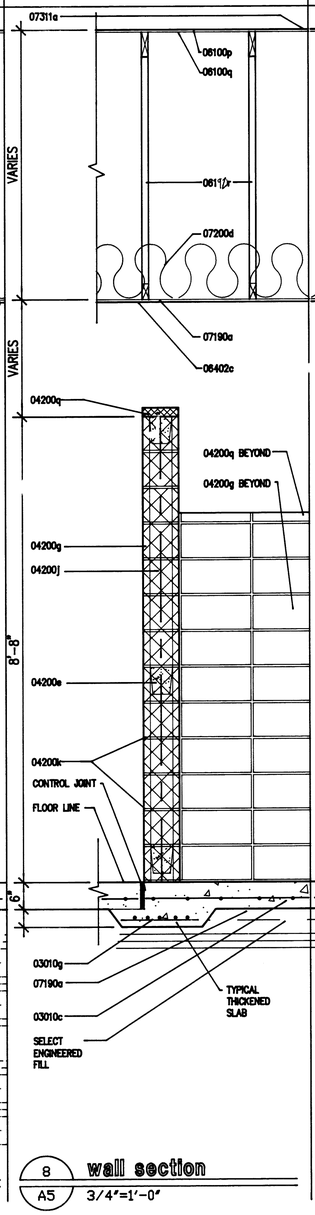
2 wall section
A5 3/4"=1'-0"



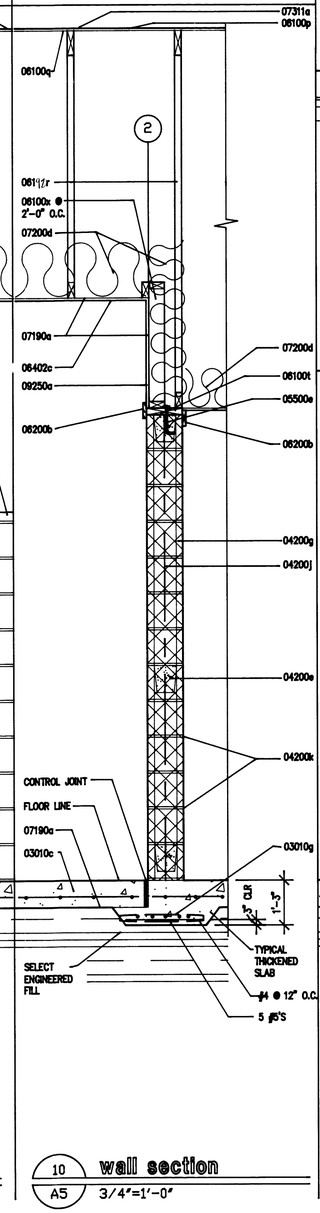
4 wall section
A5 3/4"=1'-0"



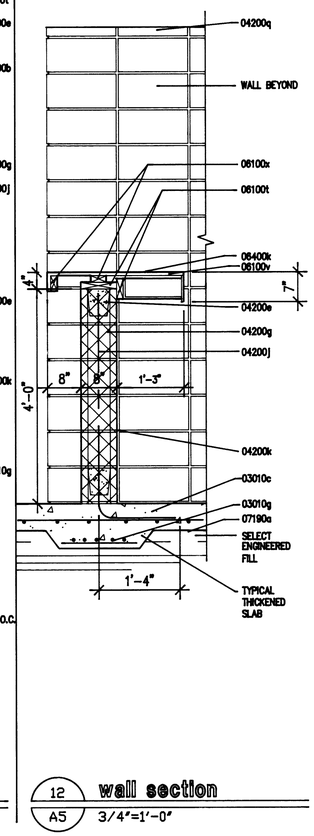
6 wall section
A5 3/4"=1'-0"



8 wall section
A5 3/4"=1'-0"



10 wall section
A5 3/4"=1'-0"



12 wall section
A5 3/4"=1'-0"

STATE OF MONTANA
JAMES L. BAUER
883
BILLINGS, MONT.
LICENSED ARCHITECT

Revision No.	Date	By	Description

BATHHOUSE WALL SECTIONS & DTLS.

SWIMMING POOL - SIDNEY, MONTANA

Drawn By LKB | Project No. 390-60
Checked By JLB | Date 4/15/91

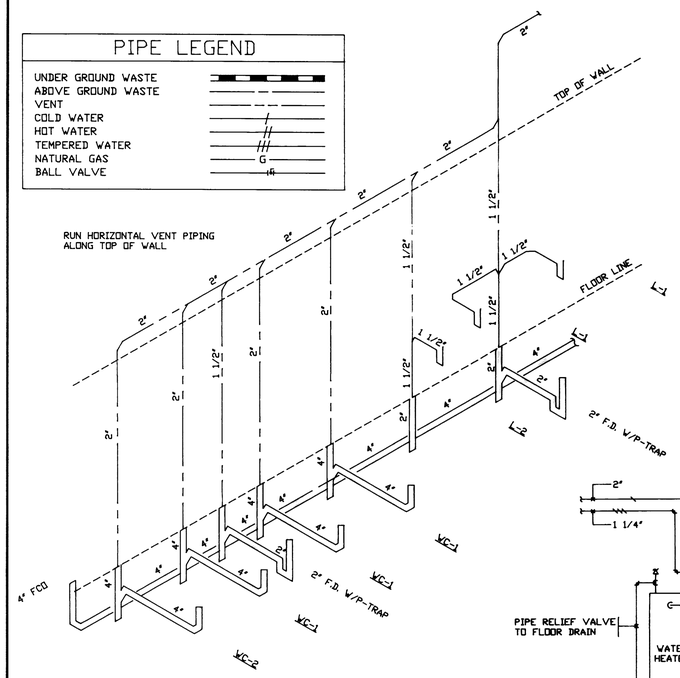
interstate engineering, inc.
Engineering - Surveying - Planning

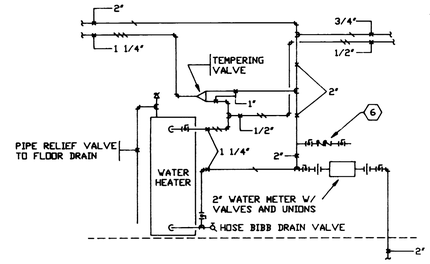
A5
SHEET NO.

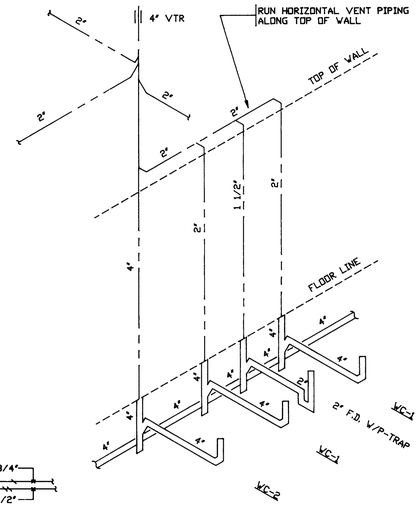
Item b.

PIPE LEGEND

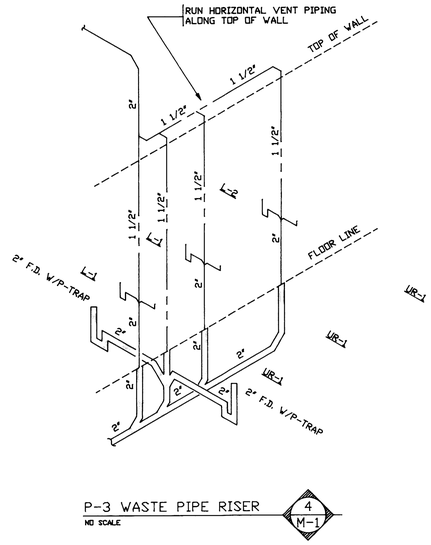
UNDER GROUND WASTE	
ABOVE GROUND WASTE	
VENT	
COLD WATER	
HOT WATER	
TEMPERED WATER	
NATURAL GAS	G
BALL VALVE	







P-2 WASTE PIPE RISER (3 / M-1)
NO SCALE



P-3 WASTE PIPE RISER (4 / M-1)
NO SCALE

TRANE FURNACE SCHEDULE	
MARK	F-1
MODEL NO.	THD080
CONFIGURATION	HORIZONTAL
BTU/HR INPUT	80,000
BTU/HR OUTPUT	64,000
CFM	1700
E.S.P.	.2"
SPEED TAP	HIGH
HP	1/3
ELECTRICAL	120-1-60
COIL ENCLOSURE	ND
SUBBASE	ND

FAN SCHEDULE		
MARK	EF-1	SF-1
TYPE	PRV	INLINE CABINET
MFG.	GREENHECK	GREENHECK
MODEL NO.	GB-120-4	CSP-165
CFM	675	680
S.P.	.375"	.375"
RPM	1725	1690
HP	1/4	FRAC
ELECTRICAL	120-1-60	120-1-60
CONTROL	BY E.C.	BY E.C.

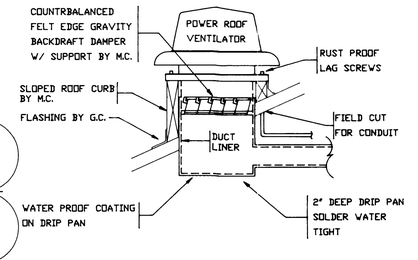
EF-1 SHALL HAVE HERESITE COATING.

GRILLE AND REGISTER SCHEDULE						
MARK	MFG.	MODEL	FUNCTION	SIZE	FINISH	NOTES
A	KRUEGER	580H	SUPPLY	20" x 6"	STANDARD	FRAME 128 W/OBD
B	KRUEGER	S580H	RETURN	24" x 24"	STANDARD	STANDARD FRAME

P-1 WASTE PIPE RISER (2 / M-1)
NO SCALE

WATER PIPING RISER (6 / M-1)
NO SCALE

MECHANICAL FLOOR PLAN (1 / M-1)
1/4" = 1'-0"



POWER ROOF VENTILATOR DETAIL (5 / M-1)
NO SCALE

KEYNOTES

1. M.C. TO CAP WASTE LINE 5'-0" FROM BUILDING FOR CONTINUATION BY OTHERS. VERIFY INVERT ELEVATIONS WITH OTHERS.
2. MOUNT COMBUSTION AIR SUPPLY FAN ON WALL. DUCT 18" x 7" FROM LOUVER TO FAN W/ MANUAL VOLUME DAMPER. DUCT 18" x 10" FROM FAN TO 12" AFF.
3. 2" WATER SERVICE TO 5'-0" FROM BUILDING BY OTHERS. M.C. TO EXTEND LINE FROM THERE INTO BUILDING.
4. COORDINATE WASTE WITH U.G. PIPE BY OTHERS THIS AREA.
5. ROUGH-IN FOR FUTURE SINK. RUN 2" VENT AND 2" VTR.
6. 1 1/2" POOL MAKE-UP WATER LINE W/ DOUBLE CHECK VALVE AND ISOLATION VALVES BY M.C. CONTINUATION BY OTHERS.
7. 12" x 12" DUCT W/ MANUAL DAMPER FROM JUST BELOW CEILING UP TO GRAVITY RELIEF UNIT BY GREENHECK.
8. 10" x 4" COMBUSTION AIR DUCT DOWN TO 12" AFF.
9. 2" FD WITHOUT P-TRAP PIPED TO SUMP.
10. HEATER BY OTHERS, M.C. TO CONNECT GAS PIPING AND CLASS 'B' VENT.
11. HEATER BY OTHERS, M.C. TO CONNECT GAS PIPING AND CLASS 'B' VENT.

MONTANA REGISTERED PROFESSIONAL ENGINEER — LON A. DREVESKRACHT — 8742

Revision No.	Description
Date	
By	

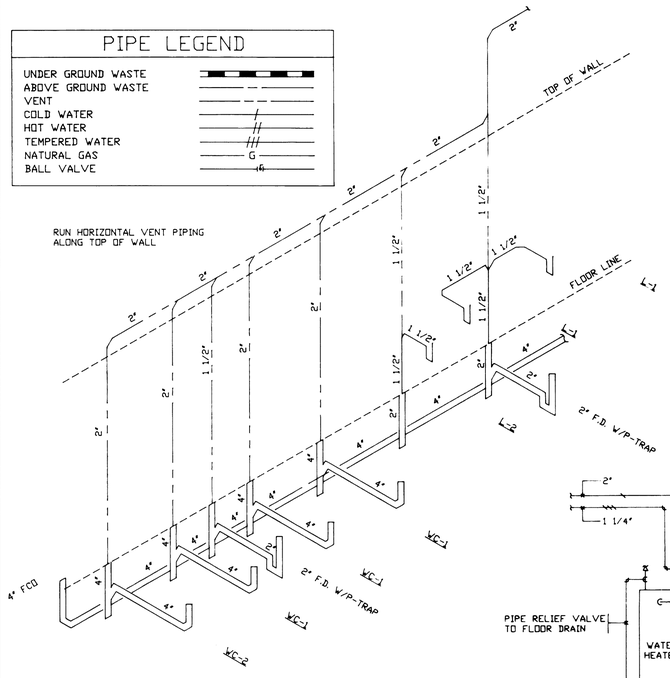
SWIMMING POOL
SIDNEY, MONTANA
MECHANICAL
Drawn By S.S.B. | Project No. 590-60
Checked By L.E.D. | Date 4/15/91

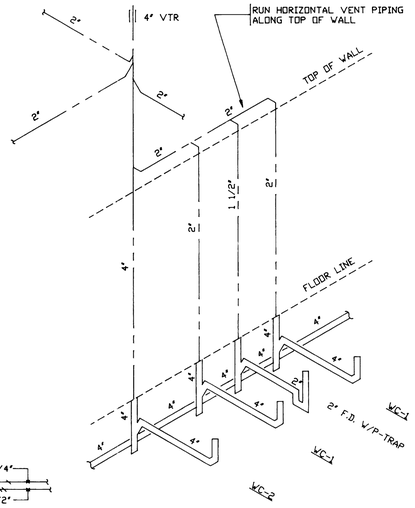
interstate engineering, inc.
Engineering - Surveying - Planning

M1
SHEET NO.

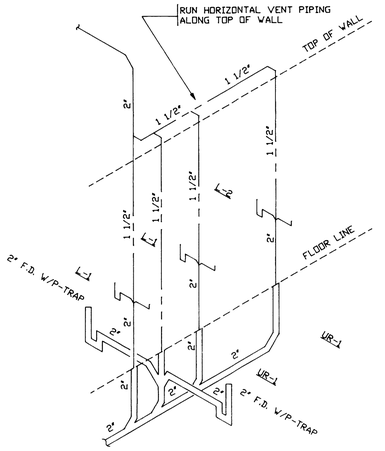
PIPE LEGEND

UNDER GROUND WASTE	
ABOVE GROUND WASTE	
VENT	
COLD WATER	C
HOT WATER	H
TEMPERED WATER	T
NATURAL GAS	G
BALL VALVE	





P-2 WASTE PIPE RISER (3 / M-1)
NO SCALE



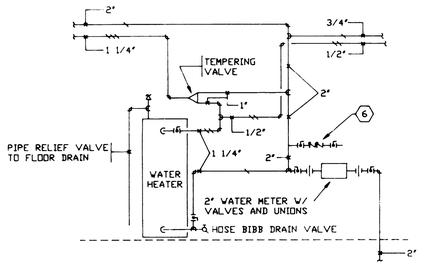
P-3 WASTE PIPE RISER (4 / M-1)
NO SCALE

TRANE FURNACE SCHEDULE	
MARK	F-1
MODEL NO.	THD080
CONFIGURATION	HORIZONTAL
BTU/HR INPUT	80,000
BTU/HR OUTPUT	64,000
CFM	1700
E.S.P.	.2"
SPEED TAP	HIGH
HP	1/3
ELECTRICAL	120-1-60
COIL ENCLOSURE	NO
SUBBASE	NO

FAN SCHEDULE		
MARK	EF-1	SF-1
TYPE	PRV	INLINE CABINET
MFG.	GREENHECK	GREENHECK
MODEL NO.	GB-120-4	CSP-165
CFM	675	680
S.P.	.375"	.375"
RPM	1725	1690
HP	1/4	FRAC
ELECTRICAL	120-1-60	120-1-60
CONTROL	BY E.C.	BY E.C.

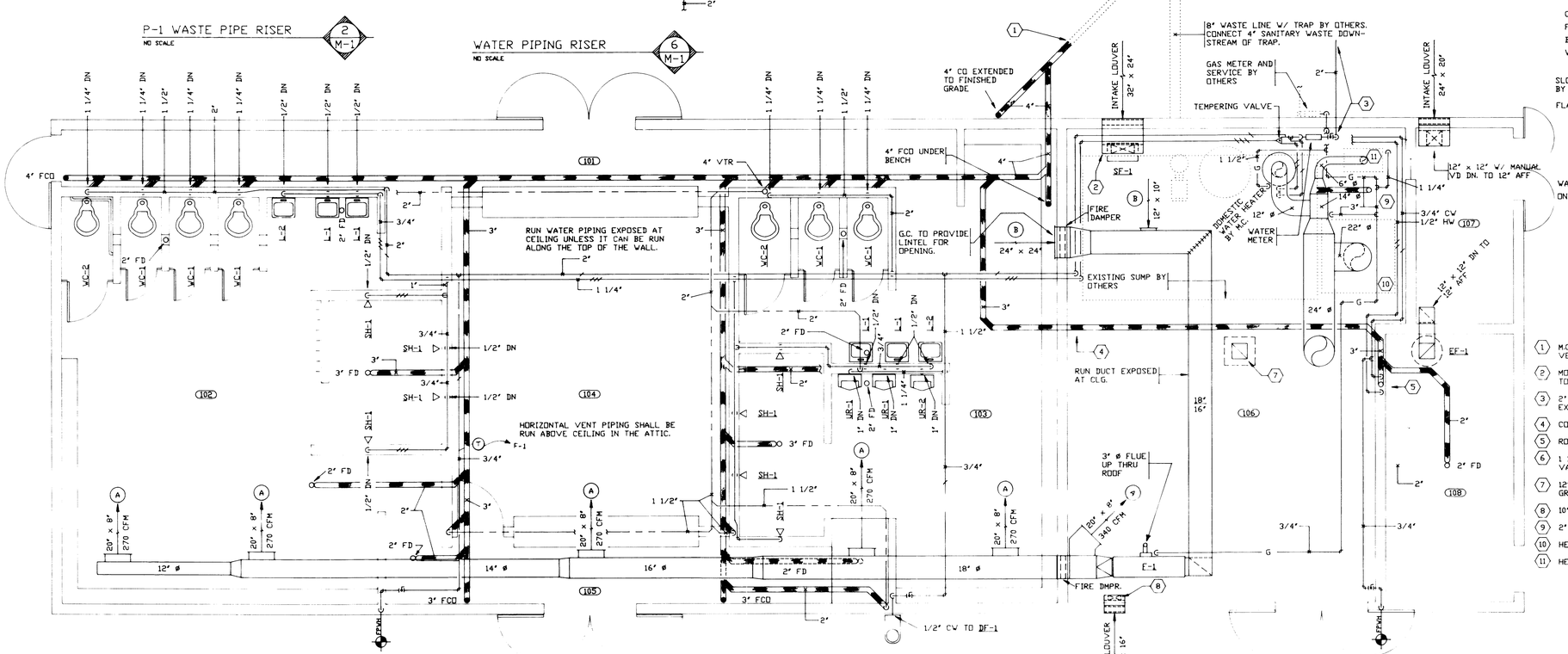
EF-1 SHALL HAVE HERESITE COATING.

GRILLE AND REGISTER SCHEDULE						
MARK	MFG.	MODEL	FUNCTION	SIZE	FINISH	NOTES
A	KRUEGER	580H	SUPPLY	20" x 6"	STANDARD	FRAME 12B W/OBD
B	KRUEGER	S580H	RETURN	24" x 24"	STANDARD	STANDARD FRAME

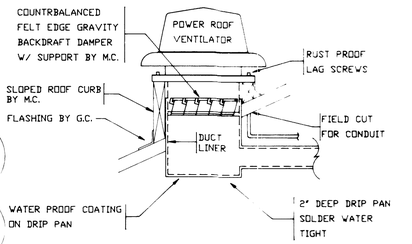


WATER PIPING RISER (6 / M-1)
NO SCALE

P-1 WASTE PIPE RISER (2 / M-1)
NO SCALE



MECHANICAL FLOOR PLAN (1 / M-1)
1/4" = 1'-0"



POWER ROOF VENTILATOR DETAIL (5 / M-1)
NO SCALE

KEYNOTES

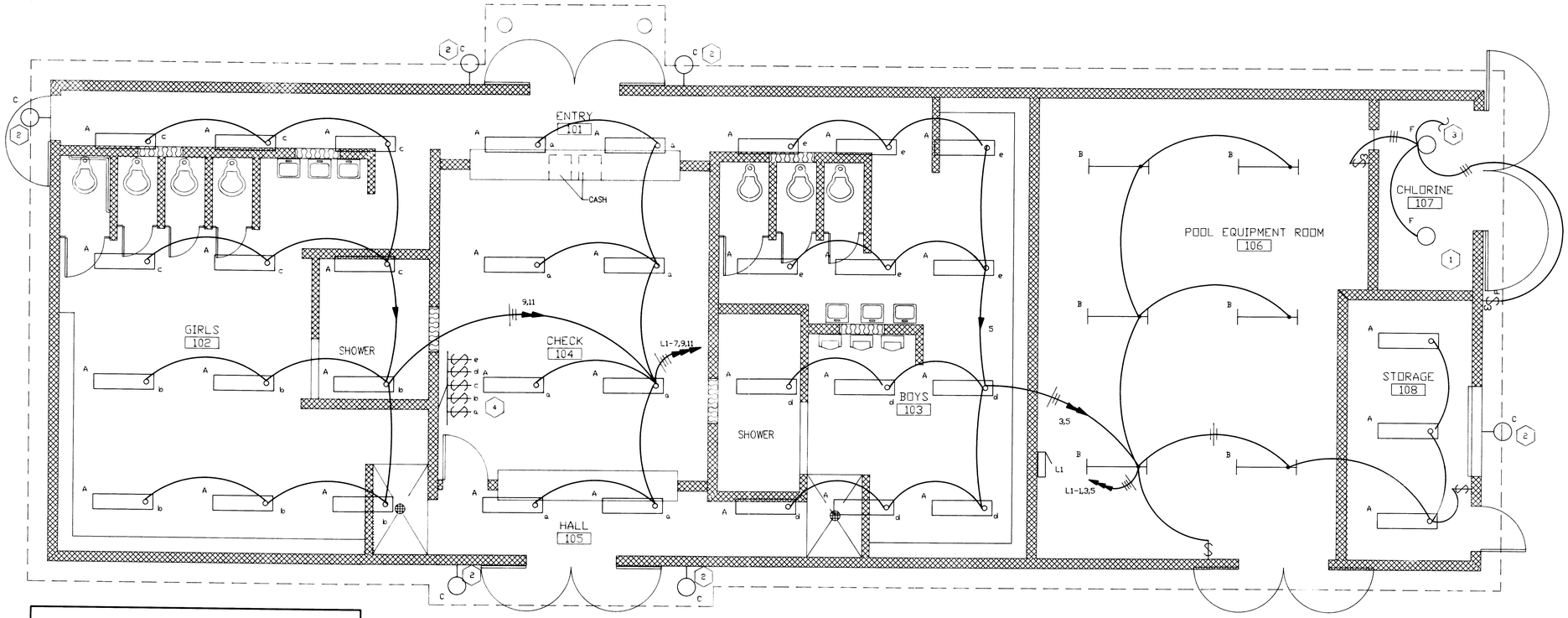
1. M.C. TO CAP WASTE LINE 5'-0" FROM BUILDING FOR CONTINUATION BY OTHERS. VERIFY INVERT ELEVATIONS WITH OTHERS.
2. MOUNT COMBUSTION AIR SUPPLY FAN ON WALL. DUCT 18" x 7" FROM LOUVER TO FAN W/ MANUAL VOLUME DAMPER. DUCT 18" x 10" FROM FAN TO 12" AFF.
3. 2" WATER SERVICE TO 5'-0" FROM BUILDING BY OTHERS. M.C. TO EXTEND LINE FROM THERE INTO BUILDING.
4. COORDINATE WASTE WITH U.G. PIPE BY OTHERS THIS AREA.
5. ROUGH-IN FOR FUTURE SINK. RUN 2" VENT AND 2" VTR.
6. 1 1/2" POOL MAKE-UP WATER LINE W/ DOUBLE CHECK VALVE AND ISOLATION VALVES BY M.C. CONTINUATION BY OTHERS.
7. 12" x 12" DUCT W/ MANUAL DAMPER FROM JUST BELOW CEILING UP TO GRAVITY RELIEF UNIT BY GREENHECK.
8. 10" x 4" COMBUSTION AIR DUCT DOWN TO 12" AFF.
9. 2" FD WITHOUT P-TRAP PIPED TO SUMP.
10. HEATER BY OTHERS, M.C. TO CONNECT GAS PIPING AND CLASS 'B' VENT.
11. HEATER BY OTHERS, M.C. TO CONNECT GAS PIPING AND CLASS 'B' VENT.

Revision No.	Description	Date	By

SWIMMING POOL
SIDNEY, MONTANA
MECHANICAL
Drawn By S.S.B
Checked By L.E.D
Project No. 590-60
Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

M1
SHEET NO.



STANDARD ELECTRICAL SYMBOLS

BASED ON ANSI Y32.9-1972

MOUNTING HEIGHT MEASUREMENTS SHALL BE MADE FROM FINISH FLOOR TO CENTER LINE OF OUTLET

SYMBOL	DESCRIPTION	MTG. HT.
	LIGHTING OUTLETS	
	CEILING INCANDESCENT OR H.I.D. TYPE A, CKT 1, SW a	
	WALL INCANDESCENT OR H.I.D.	SCHEDULED
	FLUORESCENT, SLASH INDICATES INSTANT STARTED, UNSWITCHED EM CKT.	
	BARE LAMP FLUORESCENT STRIP WITH WIRE GUARD.	
	EXIT SIGNAGE	
	EMERGENCY BATTERY UNIT	SCHEDULED
	REMOTE SEALED BEAM	SCHEDULED
PLH	PORCELAIN LAMPHOLDER, 100A LAMP	
J	JUNCTION BOX	
	RECEPTACLE OUTLETS	
	SINGLE, CKT 1	18"
	DUPLEX	18"
	DUPLEX - SPLIT WIRED	18"
	DUPLEX - GROUND FAULT CIRCUIT INTERRUPTER	18"
	SPECIAL CONFIGURATION, DESIGNATION REFERS TO SCHEDULE	SCHEDULED
18	MULTI-OUTLET ASSEMBLY, ARROWS EXTEND TO LIMIT OF INSTALLATION. SUBSCRIPT INDICATES SPACING OF OUTLETS	
C	CLOCK RECEPTACLE	82"
	DUPLEX RECEPTACLE - FLOOR MTD.	
	SWITCH OUTLETS	
$	SINGLE POLE	50"
$2	DOUBLE POLE	50"
$3	THREE-WAY	50"
$4	FOUR-WAY	50"
$K	KEY OPERATED	
	MOTOR - PROVIDE OVERLOAD UNIT AS REQ'D. TOGGLE ACCEPTABLE IF INTERNAL THERMAL PROTECTION INCLUDED. SWITCH NOT REQUIRED IF MOTOR ASSEMBLY HAS INTEGRAL DISCONNECTING MEANS.	
$P	PILOT HANDLE	50"
$T	TIME DELAY	50"
$D	DIMMER - 1000W UNLESS OTHERWISE INDICATED	50"
	GANGED SWITCHES - ARROW INDICATES MULTI-LEVEL SWITCHING	50"
	COMMUNICATION/DATA SYSTEM OUTLETS	
	TELEPHONE OUTLET	18"
	TELEPHONE OUTLET OR COMPUTER/VDT - FLOOR BOX	
	COMPUTER/VDT OUTLET	18"
	BELL	
	BUZZER	
	INTERCOM STATION	50"
	MICROPHONE OUTLET	18"
	TELEVISION OUTLET	18"
	VOLUME CONTROL	50"
	PUSH BUTTON	
	SPEAKER/BAFFLE/BACKBOX COMBINATION	CEILING
	CLOCK	84"
	MISCELLANEOUS	
	PLAN OR DETAIL NOTE	
	SPECIAL PURPOSE CONNECTION - AS REQUIRED BY EQUIPMENT MANUFACTURER. CO-ORDINATE W/ASSIGN-IN WITH SHOP DWG.	
	BRANCH CIRCUIT PANELBOARD. SHADED INDICATE FLUSH MOUNT	TOP 75"
	CONTROL PANEL	
	EXTERNALLY OPERATED DISCONNECT SWITCH	
	CONTROLLER OR RELAY	
	COMBINATION CONTROLLER AND DISCONNECTION MEANS	
1	MOTOR. DESIGNATION REFERS TO SCHEDULE	
2	EQUIPMENT DESIGNATION. SEE SCHEDULE	
3 E1-1	ELECTRIC HEAT TO SCALE. DESIGNATION REFER TO SCHEDULE. "T" INDICATES INTEGRAL THERMOSTAT.	
TE	THERMOSTAT-PROVIDED BY DIV. 16	58"
T	THERMOSTAT-FURNISHED BY DIV. 15, INSTALLED BY DIV. 16	58"
H	HUMIDISTAT-FURNISHED BY DIV. 15, INSTALLED BY DIV. 16	58"
P	POTENTIOMETER-FURNISHED BY DIV.15, INSTALLED BY DIV.16	58"
TS	TIME SWITCH	
PE	PHOTOELECTRIC SWITCH	

CIRCUITING

HOME RUN, MIN 3/4" C. ARROWS AND SUBSCRIPTS INDICATE NUMBER AND IDENTIFICATION OF CIRCUITS.

EMERGENCY, MIN 1/2" C.-#10 AWG.

TELEPHONE, MIN 3/4"C, HOME RUN TO TERMINAL BOARD.

TELEPHONE, MIN 3/4"C, STUB INTO CEILING SPACE

LOW VOLTAGE, MIN 1/2"C.-#14 AWG AS REQ'D.

SPECIAL SYSTEMS, MIN 3/4"C. PROVIDE CONDUCTORS AS REQ'D BY MANUFACTURER. SUBSCRIPT INDICATES SYSTEM. SEE STANDARD ABBREVIATIONS.

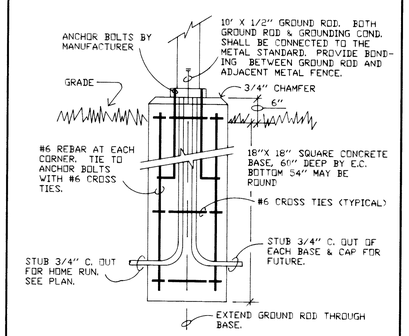
STANDARD ABBREVIATIONS

AC	ABOVE COUNTER (MIN 4" ABOVE BACKSPLASH)	IL	INTERLOCK
AFF	ABOVE FINISH FLOOR	LV	LOW VOLTAGE
AFG	ABOVE FINISH GRADE	MC	MECHANICAL CONTRACTOR
AHU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPACITY
ATC	AUTOMATIC TEMPERATURE CONTROL	NC	NURSES CALL
BOF	BOTTOM OF FIXTURE	P	PAGING/BACKGROUND MUSIC
CKT	CIRCUIT	PA	PUBLIC ADDRESS
CP	CONTROL PANEL	PRV	POWER ROOF VENTILATOR
CU	CONDENSING UNIT	RF	RELIEF FAN
CUH	CABINET UNIT HEATER	RGSC	RIGID GALVANIZED STEEL CONDUIT
DT	DUST TIGHT	RT	RAIN-TIGHT
EC	ELECTRICAL CONTRACTOR	RTU	ROOFTOP UNIT
EF	EXHAUST FAN	S	SPEAKER
EM	EMERGENCY	SD	SEE DETAIL
EP	EXPLOSION PROOF	SS	SINGLE SUSPENSION
EVC	ELECTRIC WATER COOLER	SW	SWITCH
EVH	ELECTRIC WATER HANDLER	TOP	TOP OF PANEL
F	FUSES	T	TELEPHONE
FLA	FULL LOAD AMPERES	TTB	TELEPHONE TERMINAL BOARD
FA	FIRE ALARM	VDT	VIDEO DISPLAY TERMINAL
FACP	FIRE ALARM CONTROL PANEL	VT	VAPOR TIGHT
FVNR	FULL VOLTAGE NON REVERSING	W	WALL MTD. (CKT. AFF.)
FVR	FULL VOLTAGE REVERSING	WP	WEATHERPROOF
IC	INTERCOM	WT	WATER TIGHT
		WM	WIREMOLD

SPECIAL ABBREVIATIONS PECULIAR TO THIS PROJECT

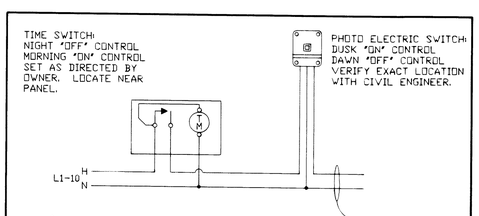
PC POOL CONTRACTOR

WPL WEATHERPROOF LOCKING



2 / E1 POST LIGHT BASE DETAIL

NO SCALE



3 / E1 EXTERIOR LIGHTING CONTROL

NO SCALE

1 / E1 LIGHTING PLAN

1/4"=1'-0"

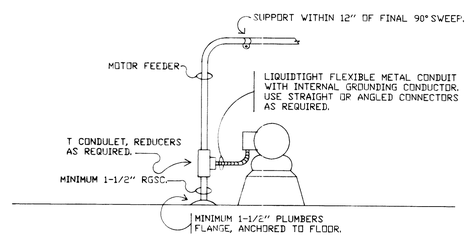
N

NOTES: DETAIL 1/E1

1. KEEP WALL PENETRATIONS TO MINIMUM. AT ALL WALL PENETRATIONS, PROVIDE TYPE "LB" PVC ACCESS FITTING CARLON #E986D, PACKED TIGHT WITH DUX-SEAL TO PRECLUDE CHLORINE VAPOR TRAVELING THROUGH RACEWAY SYSTEM. PACK AREA AROUND CONDUIT PENETRATION WITH DAKUM AND SEAL WITH NON-SHRINKING GROUT FOR EFFECTIVE SEAL. ALL RACEWAY IN CHLORINE ROOM TO BE 1/2" SCHEDULE 40 PVC, SURFACE MOUNTED AND SUPPORTED EVERY 2'-0" WITH PVC COATED STRAPS, CARLON #E975DX.
2. SD 3/E1
3. SD 1/E2
4. ENGRAVE PLATE AS DIRECTED BY OWNER.

NOTES:

1. SIZE ALL MATERIAL AS REQUIRED.
2. USE WHERE SLAB FEED IMPRACTICAL.



4 / E1 MOTOR CONNECTION DETAIL

NO SCALE

FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NO.	LAMPS NO.	LAMPS TYPE	FINISH	MOUNTING	REMARKS
A	DAYBRITE (NOTE 1)	CA-7244-4	4	34WF40	STANDARD	SURFACE MTD. TO EXPOSED JOIST OR FINISHED CEILING AS REQUIRED.	4' STANDARD SURFACE WRAP W/ WHITE END CAPS. 120 VOLTS.
B	DAYBRITE (NOTE 1)	T-240	2	34WF40	STANDARD	CEILING, CHAIN HANG HIGH AS POSSIBLE.	4' STANDARD STRIP, LOCATE AS REQUIRED BY DUCTWORK. 120 VOLTS.
C	DAYBRITE (NOTE 1)	DLB70HS12H	1	S62MF-70	BRONZE	WALL,HIGH AS POSSIBLE	HPS WALL PACK WITH VANDAL-PROOF POLY-CARBONATE HOUSING & LENS AND HIGH POWER FACTOR BALLAST. 120 VOLTS.
D	DAYBRITE (NOTE 1)	QF-1500-20	1	Q1500T3/CL 208	BRONZE	POLE SD2/E1	DIE CAST ALUMINUM HOUSING, MOUNTED ON 24' STRAIGHT STEEL POLE. TWO OR THREE FIXTURES AS REQUIRED PER POLE. POLE MANUFACTURER, LYTE POLES INC. #101-4011-24 W/ PTF & WTM MOUNT'G BRACKETS. SEE ALT. E1. 208 VOLTS.
E							NOT USED.
F	MCGILL	601	1	100WA19	STANDARD	SAME AS A	CORROSION RESISTANT SEALED FIXTURE FOR CHLORINE ROOM. 120 VOLTS.

NOTES

1. CONTINGENT UPON MEET'G ALL SPECIFICATIONS THE FOLLOWING FIXTURE MANUFACTURERS ARE ACCEPTABLE FOR BIDDING.

   COLUMBIA, HUBBELL, LITHONIA & WILLIAMS

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA

LIGHTING PLAN

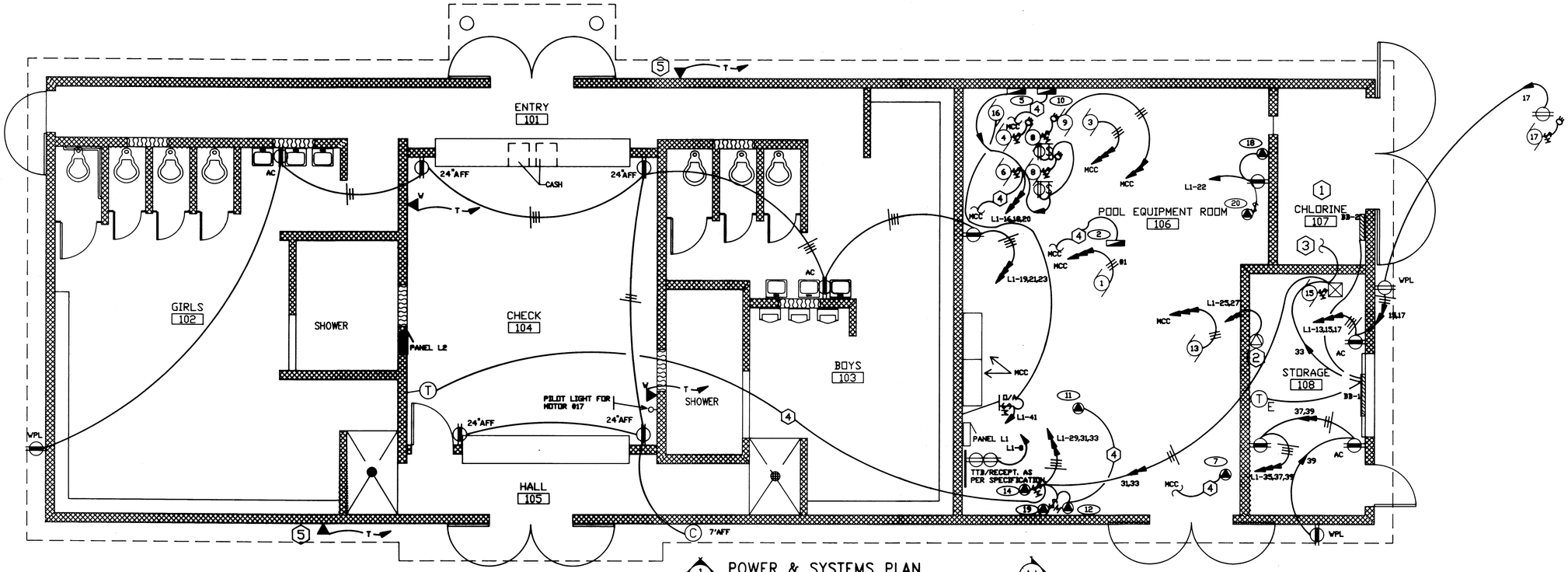
Project No. S90-60
Date 4/15/91
Drawn By M.E.D.
Checked By G.R.D.

interstate engineering, inc.
Engineering - Surveying - Planning

E1
SHEET NO.

141710

Item b.



1 E2 POWER & SYSTEMS PLAN

1/4"=1'-0"

N

NOTES: DETAIL 1/E2

1. SD 1/E1 NOTE 1.
2. PROVIDE RECEPTACLE WITH RATING/CONFIGURATION, TO MATCH OWNER FURNISHED EQUIPMENT. VERIFY EXACT RECEPTACLE LOCATION WITH OWNER.
3. LIGHTING AND EXHAUST FAN CONTROL, SD 1/E1.
4. CONTROL WIRING/CONNECTIONS AS PER MANUFACTURERS INSTRUCTIONS.
5. VERIFY EXACT PAY PHONE LOCATION WITH OWNER.

MOTOR & EQUIPMENT SCHEDULE

DESIG.	EQUIPMENT SERVED	CHARACTERISTICS HP	VOLT	PHASE	DISCONNECT (BY EC)	CONTROLLER (BY EC)	CONTROL INITIATING DEVICE DEVICE	FURN	MTD	REMARKS
1	RECIRC. PUMP (SWIMMING POOL)	30	208	3	INC W/STARTER	FVNR COMB 4	EQUIP #2	PC	PC	CONTROL WIRING/CONNECTIONS AS PER MANUFACTURERS INSTRUCTIONS. PROVIDE 3 PHASE POWER MONITOR AS PER SPECIFICATION.
2	FILTER AIR RELEASE & VACUMM CONTROL PANEL. (FARVCP).	-	115	1	NR	NR	-	-	-	
3	RECIRC. PUMP (WADING POOL)	3	208	3	INC W/STARTER	FVNR COMB 1	STOP/START PUSHBUTTONS	EC	EC	PROVIDE 3 PHASE POWER MONITOR AS PER SPECIFICATION.
4	SODA ASH FEED PUMP	FRAC.	115	1	CORD & PLUG	MANUAL AS REQ'D	EQUIP. #5	PC	EC	
5	PH CONTROLLER	-	115	1	NR	NR	-	-	-	
6	SODA ASH FEED PUMP (EXIST'G).	FRAC.	115	1	INC W/STARTER	TOGGLE OR MANUAL AS REQ'D	EQUIP. #7	OWNER	PC	
7	PH & CHLORINE CONTROLLER	-	115	1	NR	NR	-	-	-	
8	MIXER MOTOR	FRAC.	115	1	CORD & PLUG	MANUAL AS REQ'D	SWITCHED RECEPTACLE	EC	EC	
9	CHLOR. BOOSTER PUMP	3/4	208	3	INC W/STARTER	FVNR COMB 1	EQUIP. #10	PC	PC	
10	CHLOR. CONTROL.	-	115	1	NR	NR	-	-	-	
11	SOLENOID VALVE	-	115	1	NR	NR	EQUIP #12	PC	PC	CONTROL WIRING/CONNECTIONS AS PER MANUFACTURERS INSTRUCTIONS.
12	WATER LEVEL CONTROL./SENS'G PROBE.	-	115	1	NR	NR	-	-	-	
13	BOOSTER PUMP (SWIMMING POOL)	1-1/2	208	3	INC W/STARTER	FVNR COMB 1	SAME AS MOTOR # 6			
14	FURNACE F-1	FRAC.	115	1	INC W/STARTER	TOGGLE OR MANUAL AS REQ'D	T-STAT	NC	EC	CONTROL WIRING/CONNECTIONS AS PER MANUFACTURERS INSTRUCTIONS.
15	EXHAUST FAN-1	FRAC.	115	1	INTEGRAL	MANUAL AS REQ'D	SEE REMARKS	EC	EC	SWITCH W/ LIGHTS IN RM. 107 PROVIDE 20/1 RELAY AS REQ'D.
16	SUPPLY FAN-1	FRAC.	115	1	CORD & PLUG	ON/AUTO SWITCH & MANUAL AS REQ'D	SEE REMARKS	EC	EC	LOCATE CONTROLLER ADJACENT TO PANEL. WIRE AUTO POSSITION SUCH THAT FAN WILL ENERGIZE WHEN ANY OF THE FOLLOWING EQUIPMENT IS OPERATING: WATER HTR, POOL HTR OR WADING POOL HTR.

MOTOR & EQUIPMENT SCHEDULE (CONTINUED)

DESIG.	EQUIPMENT SERVED	CHARACTERISTICS HP	VOLT	PHASE	DISCONNECT (BY EC)	CONTROLLER (BY EC)	CONTROL INITIATING DEVICE DEVICE	FURN	MTD	REMARKS
17	SUMP PUMP	FRAC.	115	1	CORD & PLUG	MANUAL AS REQ'D	INTEGRAL FL. SWITCH	-	-	PROVIDE SURFACE BELLBOX/RECEPT INSIDE SUMP PIT, NEAR GRADE LEVEL. EXTEND PVC CONDUIT TO UG WIRING AS REQUIRED. PROVIDE CONNECTION TO FL. SWITCH FOR PILOT LIGHT ANNUNCIATION IN RM. 104. PILOT LIGHT TO BE BRYANT #4907IR, AND LIT WHEN SUMP PUMP IS ENERGIZED. FLOAT CONNECTION CABLE FROM RECEPT. BOX TO BE SAME AS FACTORY CABLE TO MTR.
18	CHLORINE GAS DETECTOR	-	115	1	NR	NR	SENSOR	PC	EC	CONTROL WIRING/CONNECTIONS AS PER MANUFACTURERS INSTRUCTIONS.
19	DAMPER MOTOR	FRAC.	115	1	INC W/ STARTER	TOGGLE OR MANUAL AS REQ'D	IL W/ MOTOR #14			
20	POOL HEATER	-	115	1	INC W/ STARTER	TOGGLE				

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA

POWER AND SYSTEMS PLAN

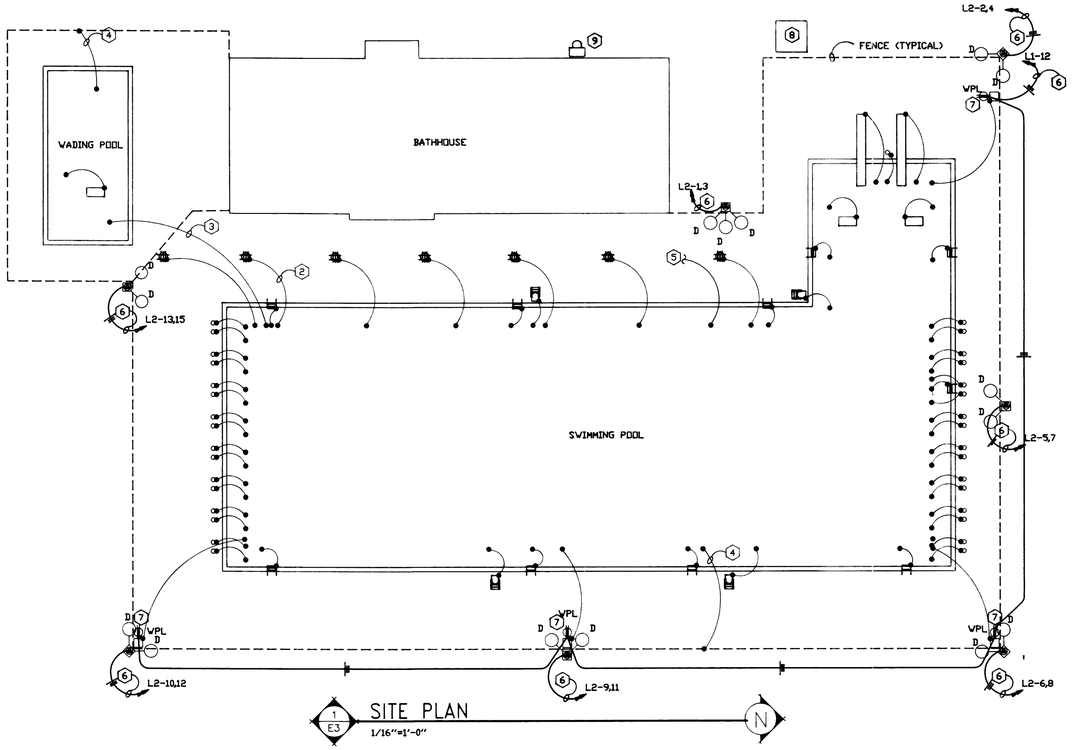
Drawn By ____ M.E.D. ____ Project No. 590-60
Checked By ____ G.R.D. ____ Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

MONTANA REGISTERED PROFESSIONAL ENGINEER GREGORY R. DEVER 7946E

E2

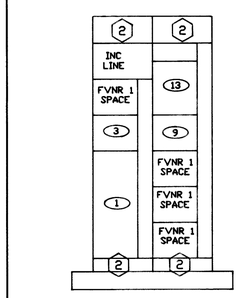
SHEET NO.



1 E3 SITE PLAN
1/16"=1'-0"

NOTES: DETAIL 1/E3

1. CONNECT ALL METALIC ITEMS SPECIFIED IN NEC SECTION 680-22a TO COMMON BONDING GRID (POOL REINFORCEMENT), AND IN ACCORDANCE WITH NEC SECTION 680-22b. ALL ALL BONDING SHALL BE MINIMUM #8 AWG. COPPER.
2. INDICATES POOL FITTINGS, CHAIRS, LADDERS, DIVING STRUCTURES, DRAINS, ETC. BONDED TO POOL REINFORCEMENT WITH #8 COPPER (TYPICAL). ALL BONDING FITTINGS TO BE BURNDY. PROVIDE REQUIRED BONDING FOR ALL METALIC ITEMS AS PER NOTE 1.
3. INDICATES SWIMMING POOL AND WADING POOL REINFORCEMENT, BONDED TO FORM COMMON GRID.
4. PROVIDE BONDING OF CHAIN LINK FENCE TO POOL REINFORCEMENT (TYPICAL).
5. PROVIDE BONDING OF ALL METAL PARTS FOR ELECTRIC EQUIPMENT ASSOCIATED WITH THE POOL WATER CIRCULATING SYSTEM, INCLUDING PUMP MOTORS.
6. SD 2/E3.
7. SD 3/E3.
8. SD 4/E3, NOTE 7.
9. SD 4/E3, NOTE 8

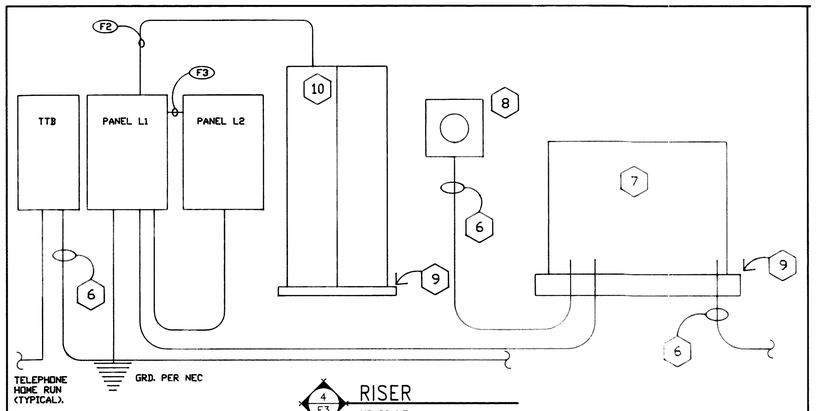


MCC SCHEDULE
SIEMENS MODEL 90

DESIG.	LOAD SERVED	TYPE	SIZE
1	RECIRC. PUMP (SWIMMING POOL)	FVNR	4
3	RECIRC. PUMP (SWIMMING POOL)	FVNR	1
9	CHLOR. BOOSTER PUMP	FVNR	1
13	BOOSTER PUMP (SWIMMING POOL)	FVNR	1

NOTES:
1. MCC EQUIPMENT NUMBERS CO-INCIDE WITH M&E SCHEDULE.
2. UNUSEABLE SPACE

5 E3 MCC ELEVATION
NO SCALE



4 E3 RISER
NO SCALE

FEEDER SCHEDULE

DESIGNATION	CONFIGURATION	REQUIRED AMPACITY	CONDUCTOR SIZE (NOTE 3) PHASE	NEUTRAL	EGC (NOTE 4)	CONDUIT
F1	3P4W	400	500 KCMIL	500 KCMIL	NR	4"
F2	3P4W	200	3/0	3/0	6	2"
F3	3P4W	100	1	1	8	1-1/4"

NOTES:
1. FEEDER RISERS ARE SCHEMATIC ONLY, AND NOT INTENDED TO INTER LUG ARRANGEMENTS.
2. SEE SPECIFICATION FOR GROUNDING REQUIREMENTS AND ALLOWABLE PVC USAGE.
3. CONDUCTORS SIZING BASED UPON 60 DEGREE TERMINATIONS FOR OVERCURRENT PROTECTIVE DEVICES RATED 100 AMPERES OR LESS, AND 75 DEGREE TERMINATIONS FOR RATINGS GREATER THAN 100 AMPERES, AS PER NEC TABLE 310-16 AND ASSOCIATED NOTES 8, 9, AND 10. IN NO CASE SHALL INDICATED SIZING BE DECREASED.
4. EQUIPMENT GROUNDING CONDUCTOR.
5. UTILITY COMPANY ADVISES AVAILABLE FAULT CURRENT AT SECONDARY TERMINALS OF THEIR TRANSFORMER 16,014 AMPERES. SIZE INTERRUPTING RATINGS OF ALL DOWNSTREAM DEVICES IN ACCORDANCES WITH AVAILABLE FAULT CURRENT AS PER NEC 110-9. UL-REGOGNIZED SERIES RATINGS ACCEPTABLE.
6. CONDUIT BY EC , WIRING BY UTILITY COMPANY. COORDINATE REQUIREMENTS WITH UTILITY CO.
7. UTILITY COMPANY TRANSFORMER. SD 1/E3 FOR PROPOSED LOCATION. COORDINATE EXACT LOCATION WITH UTILITY COMPANY.
8. METER SOCKET BY EC. METER BY UTILITY COMPANY. SD 1/E3 FOR PROPOSED LOCATION COORDINATE EXACT LOCATION WITH UTILITY COMPANY.
9. PAD BY GC. EC. TO COORDINATE SIZE LOCATION AND REQUIREMENTS. SEE SPECIFICATION.
10. SD 5/E3.

PANEL L1 SCHEDULE
120 /208 VOLTS 3Ø 4W 400 A. MCB SURFACE MOUNTED
SIEMENS CDP-7

CIRCUIT DESCRIPTION	POLES	AMPS	CKT	Ø	CKT	AMPS	POLES	CIRCUIT DESCRIPTION
LIGHTING	1	20	1	A	2	200	3	MCC
LIGHTING	1	20	3	B	4	-	-	MCC
LIGHTING	1	20	5	C	6	-	-	MCC
LIGHTING	1	20	7	A	8	20	1	TTB RECEPTS.
LIGHTING	1	20	9	B	10	20	1	SPARE
LIGHTING	1	20	11	C	12	20	1	EXTERIOR RECEPTS.
RECEPTACLES	1	20	13	A	14	20	1	SPARE
RECEPTACLES	1	20	15	B	16	20	1	MOTOR # 6
MOTOR # 17	1	20	17	C	18	20	1	MOTOR # 8'S
RECEPTACLES	1	20	19	A	20	20	1	MOTOR # 5/4
RECEPTACLES	1	20	21	B	22	1	20	MOTOR #18/RECEPT.
RECEPTACLES	1	20	23	C	24	100	3	PANEL L2
OWNER FURNISHED EQUIP.	2	30	25	A	26	-	-	PANEL L2
OWNER FURNISHED EQUIP.	-	-	27	B	28	-	-	PANEL L2
MOTOR # 14	1	20	29	C	30	20	1	SPARE
MOTOR # 15	1	20	31	A	32	20	1	SPARE
HEATERS	1	20	33	B	34	20	1	SPARE
RECEPTACLES	1	20	35	C	36			SPACE
RECEPTACLES	1	20	37	A	38			SPACE
RECEPTACLES	1	20	39	B	40			SPACE
MOTOR # 16	1	20	41	C	42			SPACE

PANEL L2 SCHEDULE
120 /208 VOLTS 3Ø 4W 100 A. MCB FLUSH MOUNTEI
SIEMENS CDP-7

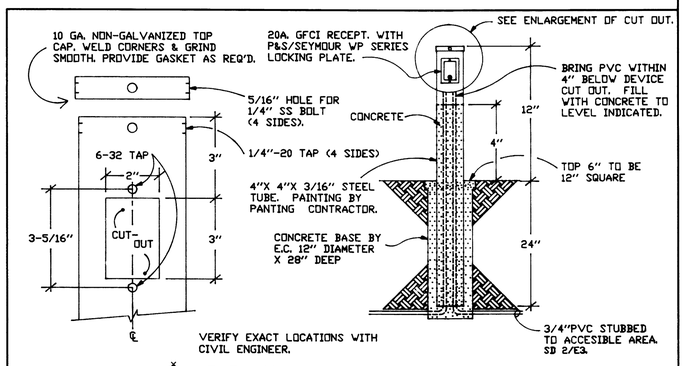
CIRCUIT DESCRIPTION	POLES	AMPS	CKT	Ø	CKT	AMPS	POLES	CIRCUIT DESCRIPTION
EXTERIOR LIGHTING	2	30	1	A	2	30	2	EXTERIOR LIGHTING
EXTERIOR LIGHTING	-	-	3	B	4	-	-	EXTERIOR LIGHTING
EXTERIOR LIGHTING	2	30	5	C	6	30	2	EXTERIOR LIGHTING
EXTERIOR LIGHTING	-	-	7	A	8	-	-	EXTERIOR LIGHTING
EXTERIOR LIGHTING	2	30	9	B	10	30	2	EXTERIOR LIGHTING
EXTERIOR LIGHTING	-	-	11	C	12	-	-	EXTERIOR LIGHTING
EXTERIOR LIGHTING	2	30	13	A	14			SPACE
EXTERIOR LIGHTING	-	-	15	B	16			SPACE
SPACE			17	C	18			SPACE

ELECTRIC HEAT SCHEDULE

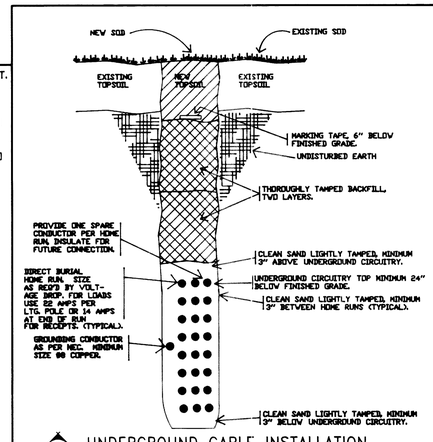
TYPE	MANUFACTURER	CATALOG NO.	WATTAGE	VOLTAGE	REMARKS
BB-1	BERKO	BKDC-2543	750	120	3' BASEBOARD WITH REMOTE T-STAT, MODEL # M7-D.
BB-2	BERKO	PHT-500A	500	120	UTILITY HEATER WITH INTEGRAL T-STAT & BUILT IN FREEZE PROTECTION.

NOTES
1. CONTINGENT UPON MEET'G ALL SPECIFICATIONS THE FOLLOWING HEATER MANUFACTURERS ARE ACCEPTABLE FOR BIDDING.

CHROMOLUX
ELECTROMODE
RAYWALL



3 E3 EXTERIOR RECEPTACLE PEDESTAL
NO SCALE



2 E3 UNDERGROUND CABLE INSTALLATION
NO SCALE

MONTANA
GREGORY R. DEXTER
17346E
REGISTERED PROFESSIONAL ENGINEER

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA

SITE PLAN (Ext. Lighting & Recep) BONDING - DETAILS

Drawn By M.E.D. Project No. 390-60
Checked By G.R.D. Date 4/15/91

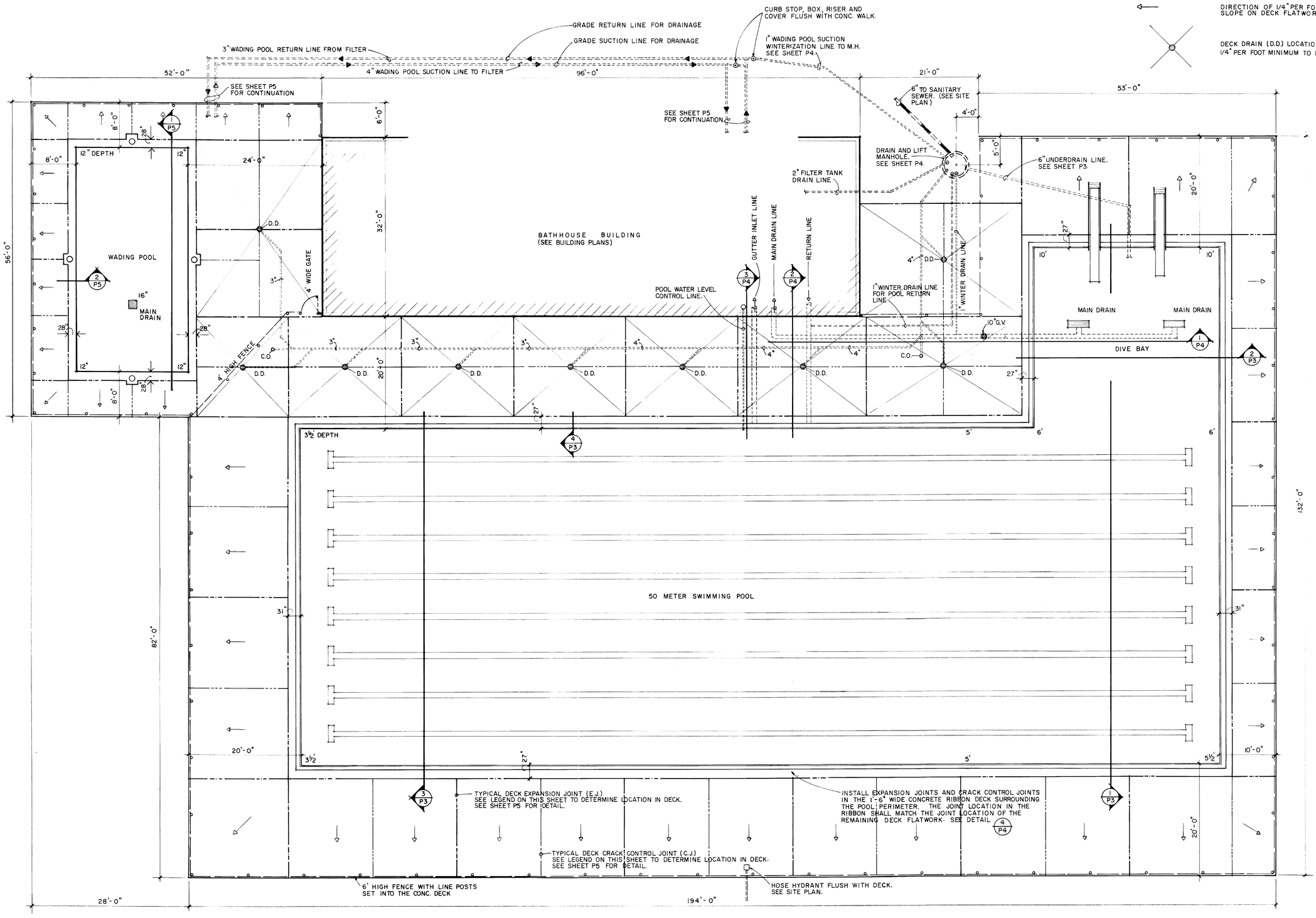
interstate engineering, inc.
Engineering - Surveying - Planning

E3
SHEET NO.

Item b.

LEGEND

- DECK EXPANSION JOINT (E.J.)
- DECK CRACK CONTROL JOINT (C.J.)
- DIRECTION OF 1/4" PER FOOT MINIMUM SLOPE ON DECK FLATWORK.
- DECK DRAIN (D.D.) LOCATION. SLOPE DECK 1/4" PER FOOT MINIMUM TO DECK DRAIN.



POOL AND DECK PLAN

1/8"= 1'-0"

NORTH

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA

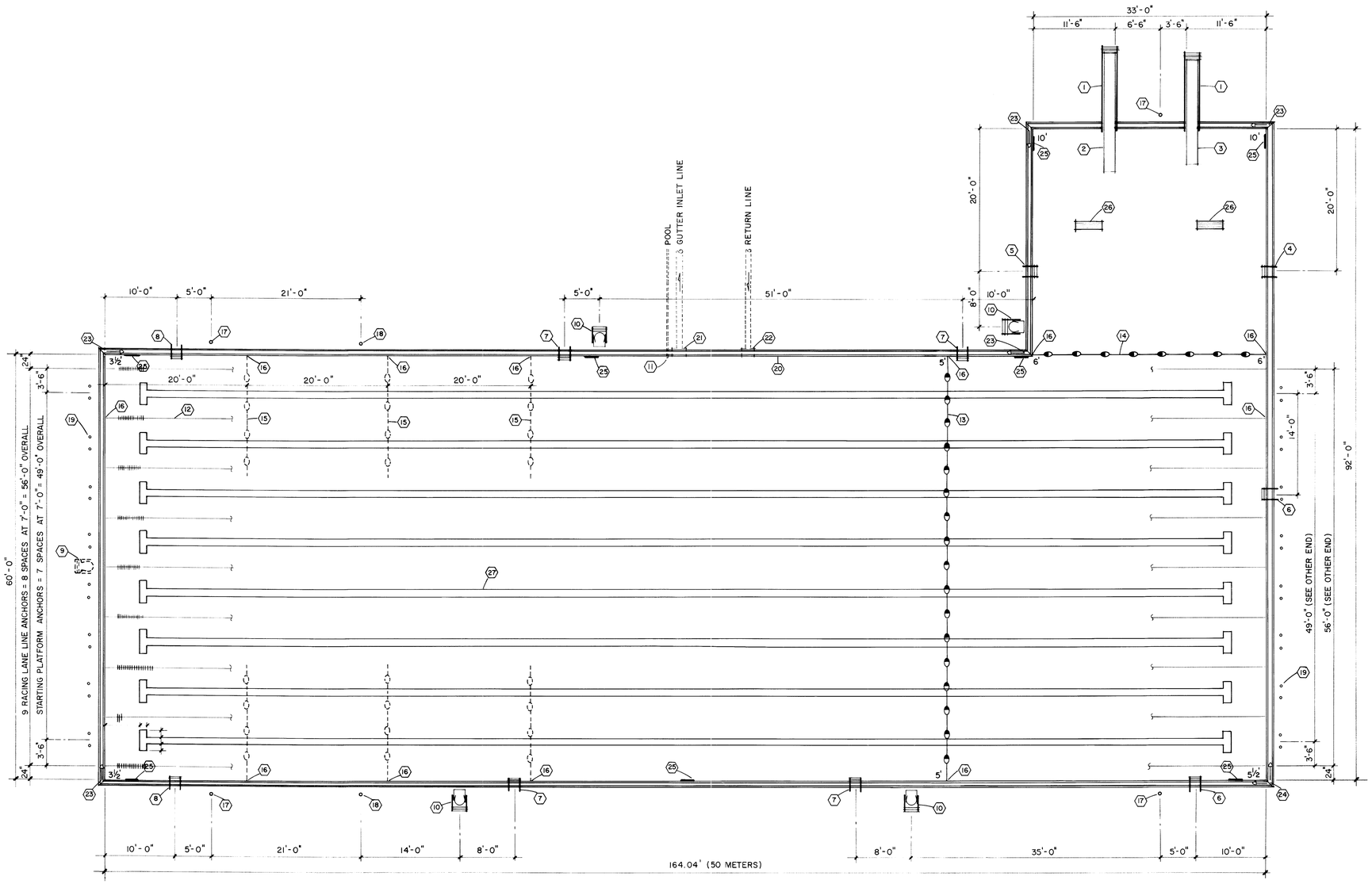
POOL AND DECK PLAN

Drawn By D.C.M. Project No. 590-60
Checked By D.C.M. B.R.M. Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

P1
SHEET NO.

141710



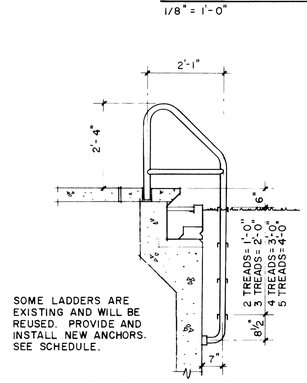
DECK & POOL EQUIPMENT ITEM LIST

ITEM	QTY.	DESCRIPTION	REMARKS
1	2	One Meter Diving Tower	
2	1	16' Aluminum Diving Board	Reuse Existing
3	1	14' Aluminum Diving Board	Reuse Existing
4	1	5 Tread S.S. Ladder	Reuse Existing (.145" Wall Thk.)
5	1	4 Tread S.S. Ladder	
6	2	3 Tread S.S. Ladder	Reuse Existing (.145" Wall Thk.)
7	4	3 Tread S.S. Ladder	
8	2	2 Tread S.S. Ladder	Reuse Existing (.145" Wall Thk.)
NOTE: New and existing ladders shall be fitted with internally mounted rubber bumpers. Provide and install new anchor sockets and escutcheon plates for all ladders.			
9	1	Portable Lifeguard Chair	
10	4	Fixed Lifeguard Chair	
NOTE: Reuse three (3) existing lifeguard chair umbrellas. Refer to Alternates for additional umbrellas.			
11	1	Pool Water Level Control Inlet	
12	9	Racing Lane Lines	Furnished by Owner
13	1	60' Floating Safety Line	Furnished by Owner
14	1	33' Floating Safety Line	Furnished by Owner
15	3	60' Floating Safety Line	Furnished by Owner
16	28	Floating Line Cup Anchors	Constructed Internally With S.S. Gutter Face
17	4	Stanchion Socket w/Flush Cap	For Existing Recall Stanchions
18	2	Stanchion Socket w/Flush Cap	For Existing Backstroke Marker Stanchion
19	32	Racing Platform Anchor w/Flush Plug	Two (2) Req./Platform
20		Stainless Steel Perimeter Gutter	With PVC Grate
21	1	S.S. Gutter Inlet Convertor Box	
22	1	S.S. Gutter Return Convertor Box	
23	5	One (1) Way Jet Wash	Mounted Internally in Gutter
24	1	Two (2) Way Jet Wash	Mounted Internally in Gutter
25		Metering Type Surge Weir	
NOTE: Exact placement and quantity of surge weirs shall be determined by the gutter system manufacturer and properly shown on manufacturer's drawings prior to gutter fabrication and field assembly.			
26	2	Main Drains	
27	8	Painted on (Black) Racing Lane Marker	Shall Include End Wall Targets

DECK AND POOL EQUIPMENT PLAN

1/8" = 1'-0"

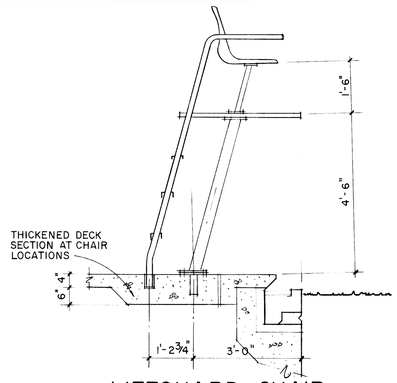
NORTH



SOME LADDERS ARE EXISTING AND WILL BE REUSED. PROVIDE AND INSTALL NEW ANCHORS. SEE SCHEDULE.

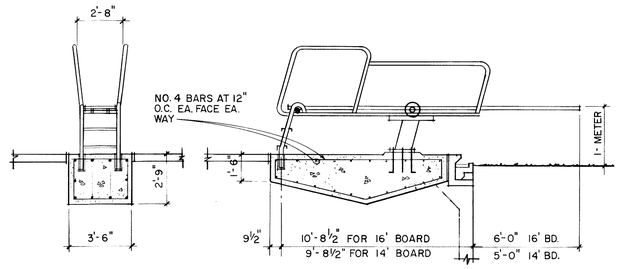
POOL LADDER

1/2" = 1'-0"



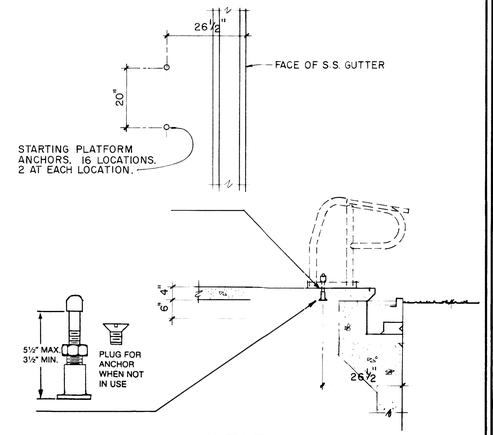
LIFEGUARD CHAIR

1/2" = 1'-0"



ONE METER DIVE TOWER

1/4" = 1'-0"



STARTING PLATFORM

1/2" = 1'-0"

STARTING PLATFORMS ARE EXISTING AND WILL BE REUSED. PROVIDE AND INSTALL NEW ANCHORS AT POOL ENDS AS SHOWN.

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA

POOL AND DECK EQUIPMENT PLAN

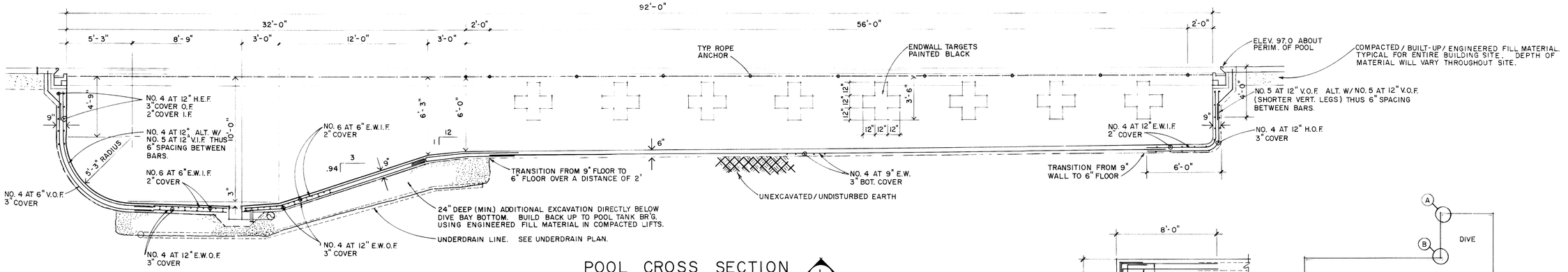
Drawn By D.C.M. Project No. S90-60
Checked By D.C.M. B.R.M. Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

P2
SHEET NO.

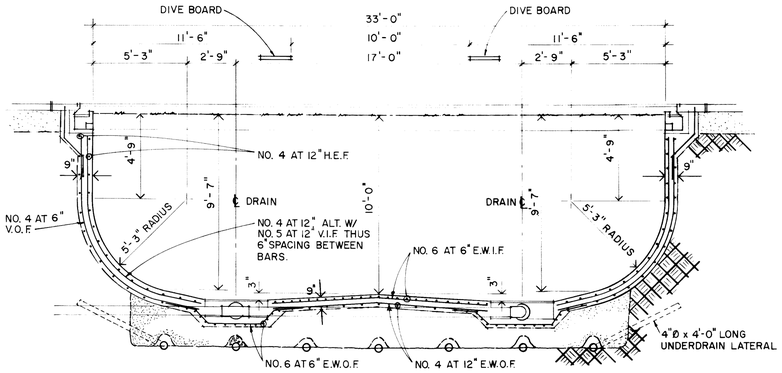
Item b.

45

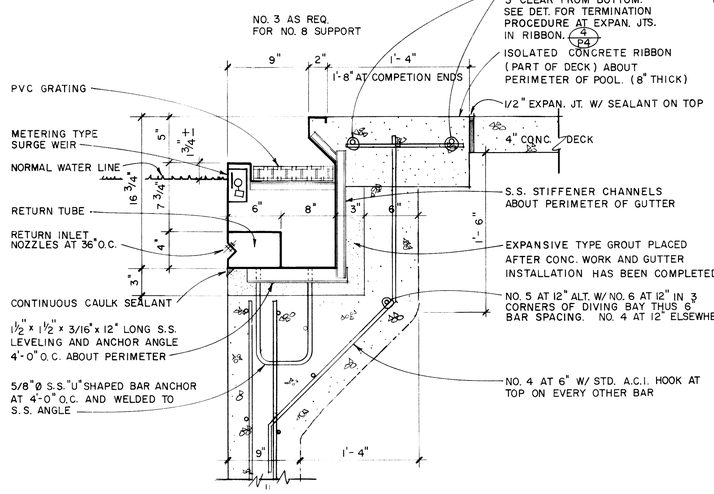


POOL CROSS SECTION (1/P3) 1/4" = 1'-0"

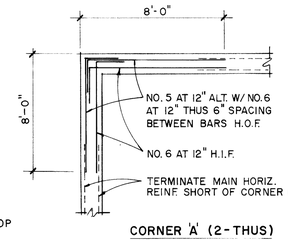
NOTE:
NOT ALL HORIZONTAL REINF. IS SHOWN IN ORDER TO PRESERVE CLARITY.



POOL CROSS SECTION (2/P3) 1/4" = 1'-0"

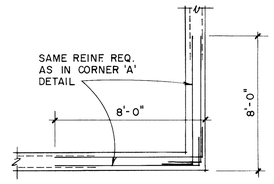


S.S. GUTTER SECTION (4/P3) 1½" = 1'-0"

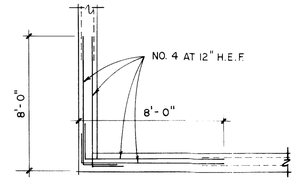


CORNER 'A' (2-THUS)
DIVE BAY

POOL CORNER PLAN N.T.S. NORTH



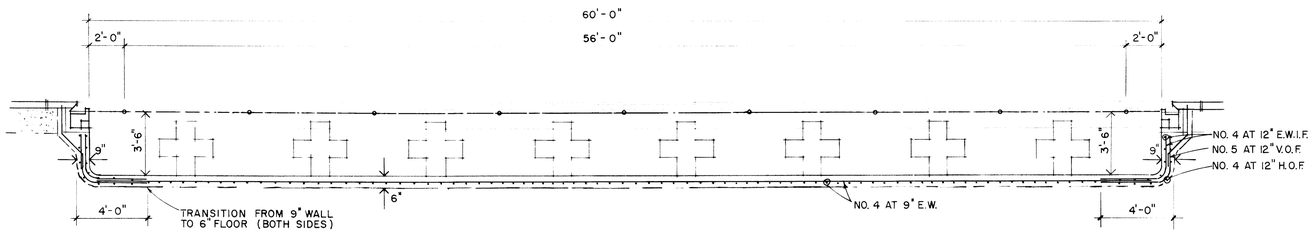
CORNER 'B' (1-THUS)
DIVE BAY & SWIM



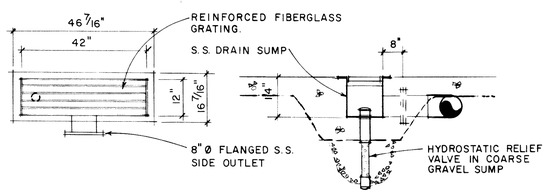
CORNER 'C' (3-THUS)
SWIM

NOTE: MAIN HORIZ. AND VERT. REINF. NOT SHOWN IN DETAILS TO PRESERVE CLARITY. HOOKS ON CORNER BARS TO BE STANDARD AS PER A.C.I. REQ.

POOL CORNER REINF. DETAILS
N.T.S.



POOL CROSS SECTION (3/P3) 1/4" = 1'-0"



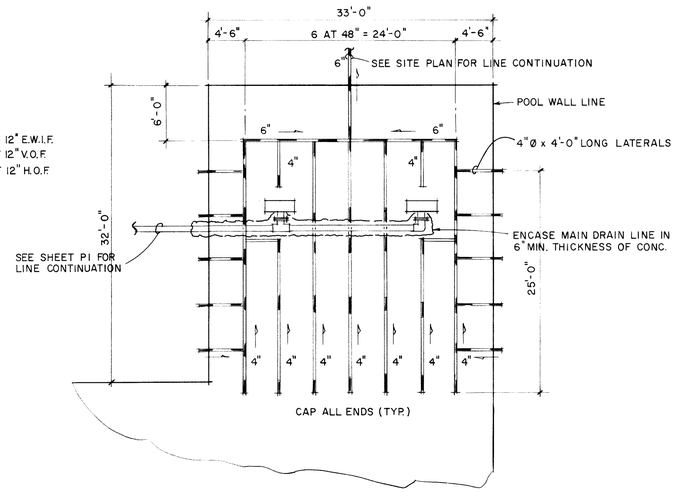
MAIN DRAIN DETAILS
1/2" = 1'-0"

ABBREVIATIONS

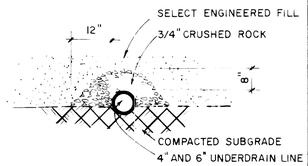
E.W.I.F.	Each Way Inside Face
E.W.O.F.	Each Way Outside Face
H.E.F.	Horizontal Each Face
V.E.F.	Vertical Each Face
V.I.F.	Vertical Inside Face
V.O.F.	Vertical Outside Face
H.O.F.	Horizontal Outside Face
H.I.F.	Horizontal Inside Face
E.W.	Each Way

CONCRETE COVER NOTES:

3" On Concrete Deposited Against Earth (I.F.)
2" On Concrete That Has Exposed Face (O.F.)



POOL UNDERDRAIN PLAN
1/8" = 1'-0"



DRAINTILE DETAIL
N.T.S.

Revision No.	Date	By	Description

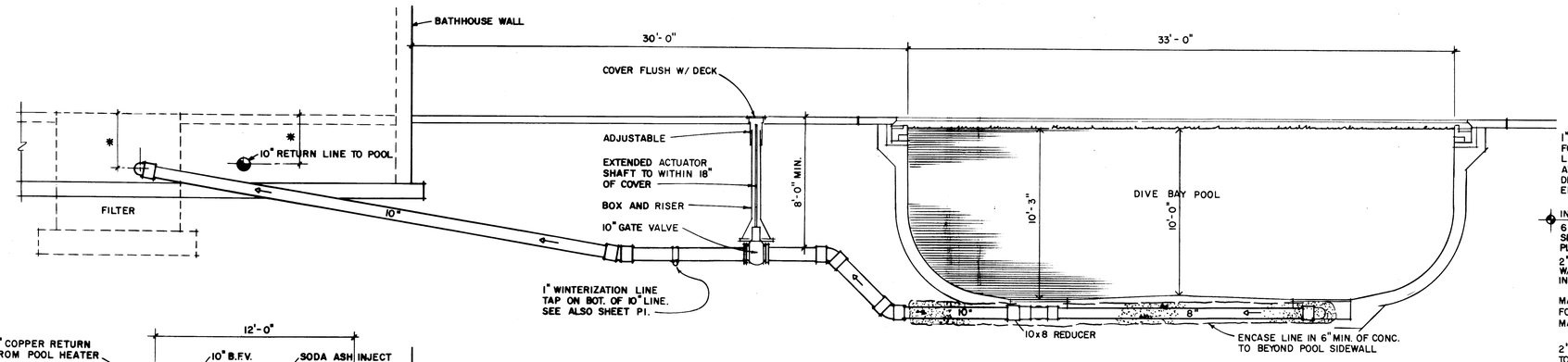
SWIMMING POOL
SIDNEY, MONTANA

POOL SECTIONS - UNDERDRAIN PLAN - DETAILS

Project No. S90-60
Date 4/15/91
Drawn By D.C.M.
Checked By D.C.M. B.R.M.

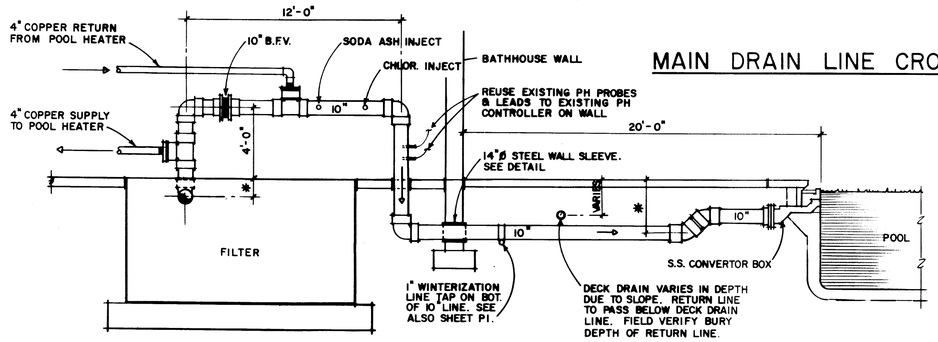
interstate engineering, inc.
Engineering - Surveying - Planning

P3
SHEET NO.



MAIN DRAIN LINE CROSS SECTION

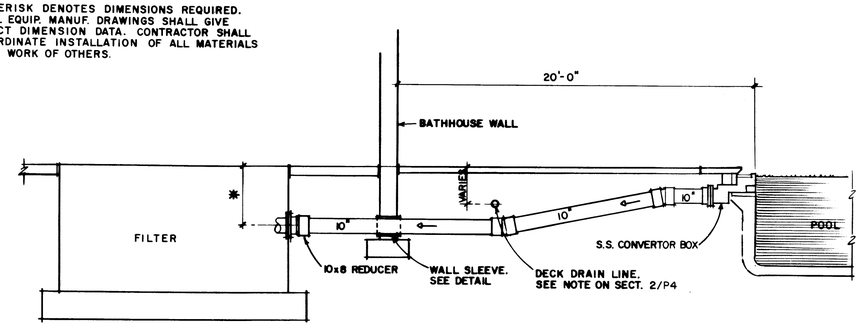
1/4" = 1'-0" (1/P4)



RETURN LINE CROSS SECTION

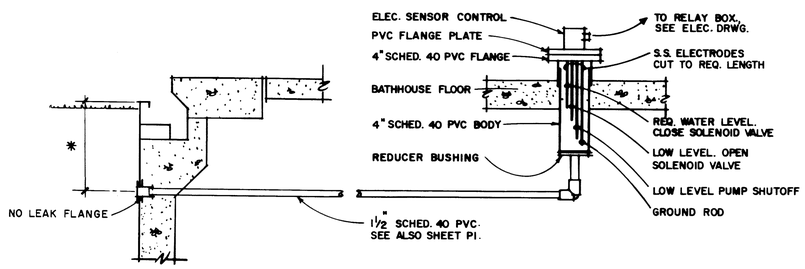
1/4" = 1'-0" (2/P4)

✱ ASTERISK DENOTES DIMENSIONS REQUIRED. POOL EQUIP. MANUF. DRAWINGS SHALL GIVE EXACT DIMENSION DATA. CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL MATERIALS AND WORK OF OTHERS.



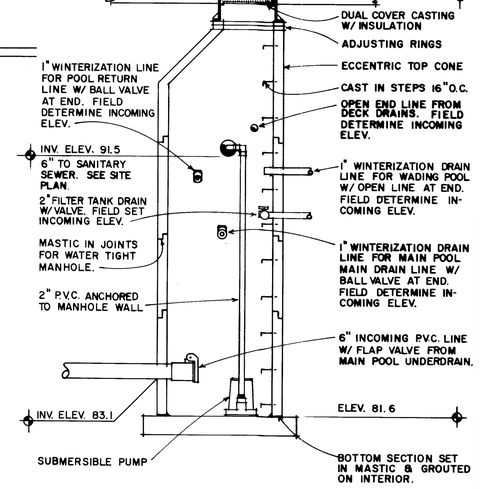
GUTTER INLET LINE CROSS SECTION

1/4" = 1'-0" (3/P4)



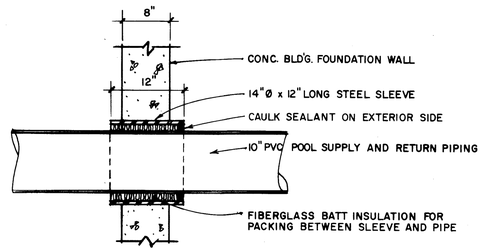
WATER LEVEL CONTROL DETAIL

N.T.S.



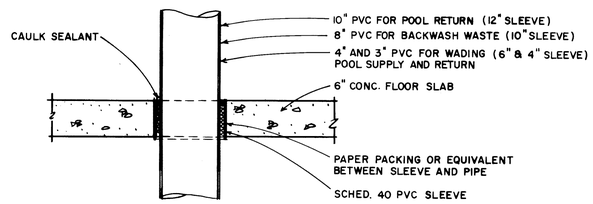
DRAIN & LIFT MANHOLE DETAIL

3/8" = 1'-0"



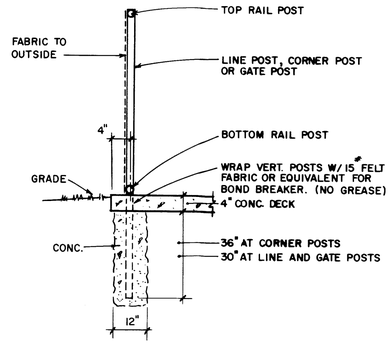
WALL SLEEVE DETAIL

1" = 1'-0"



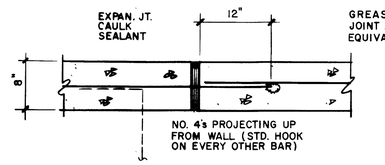
FLOOR SLEEVE DETAIL

1" = 1'-0"



FENCE DETAIL

N.T.S.



EXPANSION JOINT DETAIL IN ISOLATED RIBBON SLAB

1" = 1'-0" (4/P4)

Revision No.	Date	By	Description

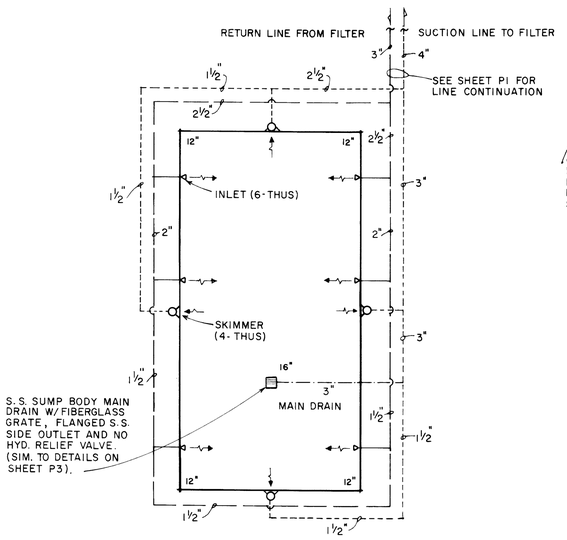
SWIMMING POOL
SIDNEY, MONTANA

POOL SECTIONS AND DETAILS

Drawn By D.C.M. | Project No. S90-60
Checked By D.C.M. | B.R.M. | Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

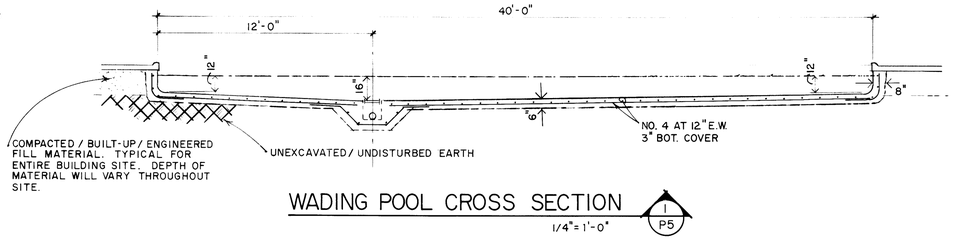
P4
SHEET NO.



WADING POOL PIPING PLAN

1/8" = 1'-0"

NORTH



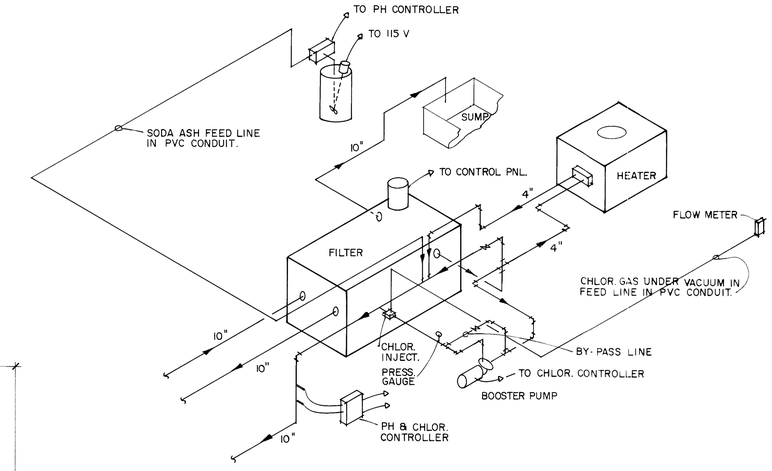
WADING POOL CROSS SECTION

1/4" = 1'-0"

P5

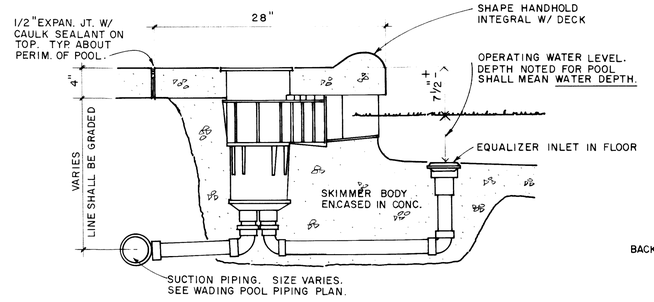
WADING POOL RECIRCULATION AND FILTRATION PIPING NOTES:

The placement of the equipment as shown on the plan is general. The supply and return lines shall enter through the floor as shown however the location is also general. Responsibility for the final placement of all equipment associated with the recirculation and filtration system rests with the Contractor. All lines shall have isolation valves. A by-pass line shall be incorporated with the booster pump piping. A throttling valve shall be placed in the by-pass line. A pressure gauge shall be installed on the downstream side of the booster pump. The filter return line shall have a flow meter attached. The points for soda ash and chlorine feed shall be determined in the field. A line for backwash waste shall be directed to the underfloor sump. Makeup water for the wading pool shall be from wall hydrant.



PIPING SCHEMATIC

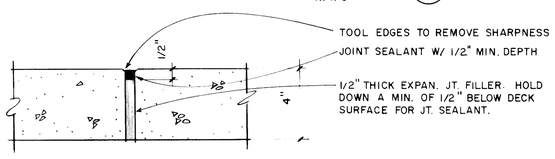
N.T.S.



WADING POOL SKIMMER DETAIL

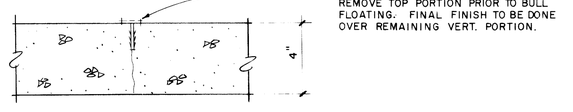
2 P5

N. T. S.



DECK EXPAN. JT. DET. (E.J.)

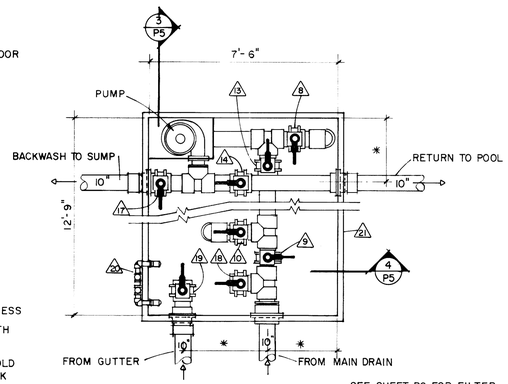
3" = 1'-0"



DECK CONTROL JT. DET. (C.J.)

3" = 1'-0"

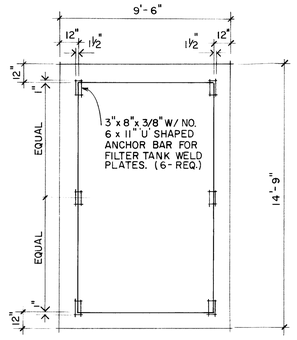
✱ ASTERISK DENOTES DIMENSIONS REQUIRED. POOL EQUIP. MANUF. DRAWINGS SHALL GIVE EXACT DIMENSION DATA. CONTRACTOR SHALL COORDINATE INSTALLATION OF MATERIALS AND WORK BY OTHERS.



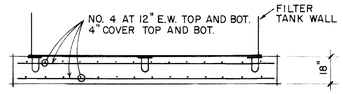
FILTER PLAN

N.T.S.

SEE SHEET P6 FOR FILTER EQUIPMENT LISTING.



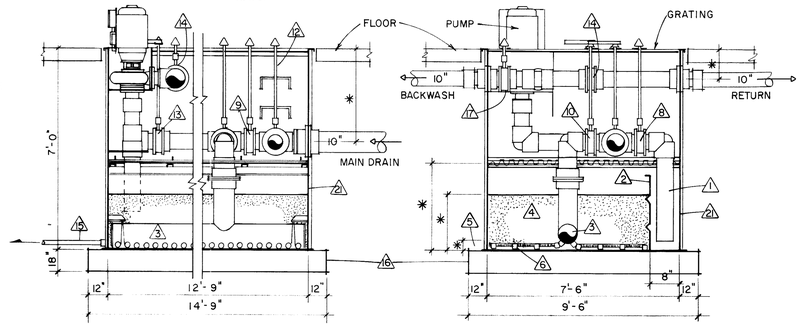
PLAN



SECTION

FILTER PAD

NOTE:
FILTER PAD DIMENSIONS MUST BE VERIFIED BY FILTER MANUF.



FILTER SECTION

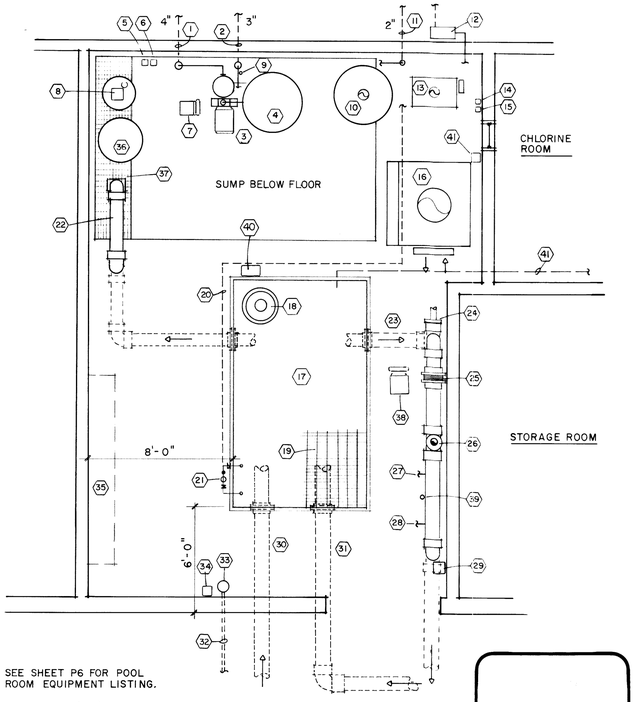
3 P5

N.T.S.

FILTER SECTION

4 P5

N.T.S.



SEE SHEET P6 FOR POOL ROOM EQUIPMENT LISTING.

NORTH

POOL EQUIPMENT ROOM PLAN

1/4" = 1'-0"

Revision No.	Date	By	Description

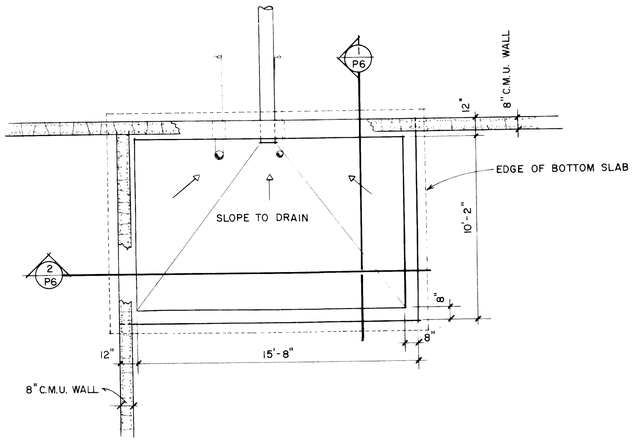
SWIMMING POOL
SIDNEY, MONTANA

WADING POOL PIPING PLAN - FILTER PLAN - POOL EQUIP. ROOM PLAN & DETAILS

Drawn By D.C.M. | Project No. 390-60
Checked By D.C.M. B.R.M. | Date 4/15/91

interstate engineering, inc.
Engineering - Surveying - Planning

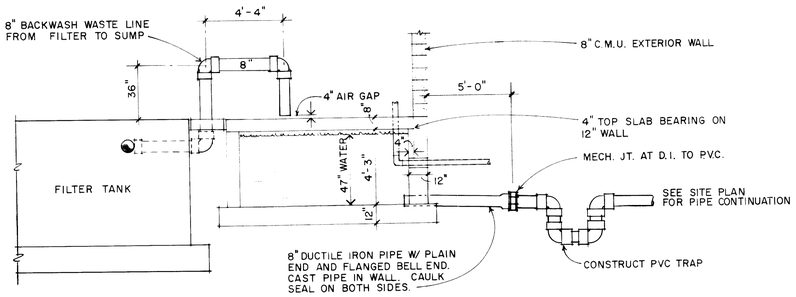
P5
SHEET NO.



BACKWASH WASTE SUMP PLAN

1/4" = 1'-0"

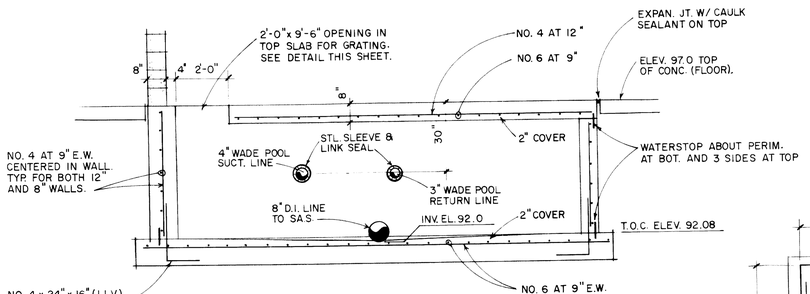
NORTH



SUMP SECTION

1/4" = 1'-0"

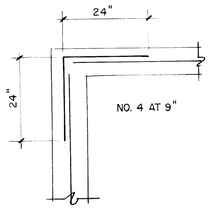
1 P6



SUMP SECTION

3/8" = 1'-0"

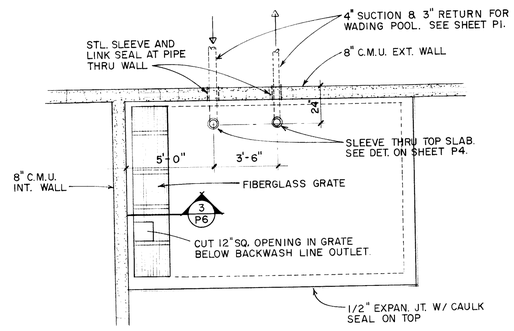
2 P6



SUMP CORNER REINF.

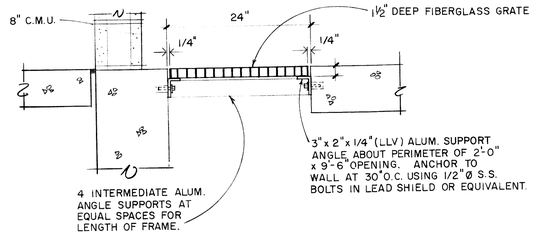
SWIMMING POOL FILTER ITEM LIST

ITEM	DESCRIPTION	REMARKS
1	10" Backwash Suction	
2	Backwash Trough	Filter Cycle
3	10" Suction Header	
4	Sand Media	
5	Gravel Media	
6	2" Underdrain Laterals	
7	Fiberglass Equalization Screen	
8	Backwash Trough Valve	
9	Backwash Influent Valve	
10	Underdrain Control Valve	
11	Pump Suction Connection	
12	Extended Valve Actuators and Handles	Typical for all Valves
13	Suction Header Valve	
14	Return to Pool Valve	
15	Filter Tank Drain	Route to Drain and Lift Manhole
16	Concrete Filter Pad	
17	Pump Backwash to Waste Valve	
18	Main Drain Valve	
20	Perimeter (Gutter) Overflow Valve	
21	Pool Water Make-up Supply Manifold	With Solenoid Valve and Isolation Valves
22	S.S. Filter Tank	



BACKWASH SUMP TOP VIEW

1/4" = 1'-0"



GRATING SECTION

1" = 1'-0"

3 P6

POOL EQUIPMENT ROOM ITEM LIST

ITEM	DESCRIPTION	REMARKS
1	4" Suction Line From Wading Pool	
2	3" Return Line to Wading Pool	
3	3 HP, 208V/3ph/60 hz Wading Pool Recirculation Pump w/Integral Strainer	2" Suction/2" Discharge
4	Floor Mounted High Rate Sand Wading Pool Filter	2" Bulkhead Fittings
5	Eye Level, Wall Mounted, PH Controller for Wading Pool	Controls Soda Ash Feed Pump Start/Stop
6	Eye Level, Wall Mounted, Chlorine Controller for Wading Pool	Controls Chlorine Booster Pump Start/Stop
7	3/4 HP, 208V, 3 ph/60 hz Chlorine Booster Pump for Wading Pool	1½" Suction/1" Discharge (Construct Integral By-Pass Line)
8	Soda Ash Container, Feed Pump and Mixer for Wading Pool	
9	Flow Rate Indicator for Wading Pool	On Filter Return Line to Pool
10	Domestic Use Hot Water Heater	Refer to Mechanical Plans for Gas Piping and Venting
11	Water Service Line into Building	See Site Plan and Mechanical Plan for In-House Continuation
12	Gas Meter by Utility Company	See Site Plan and Mechanical Plan for In-House Continuation
13	Water Heater for Wading Pool	2" Bulkhead Fittings for Copper Pipe Plumbing. See Mechanical Plan for Gas Piping and Venting.
14	Eye Level, Wall Mount, Chlorine Flow Meter for Wading Pool	
15	Eye Level, Wall Mount, Chlorine Flow Meter for Swimming Pool	Reuse Existing
16	Water Heater for Swimming Pool	4" Bulkhead Fittings for Copper Pipe Plumbing. See Mechanical Plan for Gas Piping and Venting.
17	Recessed, Vacuum Sand Compact (VSC) Swimming Pool Filter	
18	30 HP, 208V /3 ph/60 hz Swimming Pool Recirculation Pump	Furnished w/Filter
19	PVC Filter Grating at Floor Level	
20	1½" Swimming Pool Make-up Water Supply Line Below Floor	Tap for Supply Shall be Made on Downstream Side of Water Meter
21	Make-up Water Supply Manifold w/Elec. Solenoid and Isolation Ball Valves	Solenoid Open/Close Controlled by Water Level Controller
22	8" Backwash Waste Line to Sump	Terminate 4" Above Grate for Required Air Gap
23	10" Swimming Pool Return Line	
24	Fitting in 10" Line to Allow Copper Pool Heater Supply Piping	
25	10" Butterfly Valve w/ Handwheel Operator	
26	Fitting in 10" Line to Allow Copper Pool Heater Return Piping	
27	Soda Ash Feed Point	
28	Chlorine Feed Point	Reuse Existing Injector
29	Eye Level, Wall Mounted, Chemical Controller for PH and Chlorine	Reuse Existing Controller for Start/Stop of Soda Ash Feed Pump and Chlorine Booster Pump
30	10" Inlet Line from Gutter to Filter	Gravity Flow
31	10" Inlet Line from Swimming Pool Main Drains	Under Suction
32	1½" Water Level Control Line	Beneath Deck
33	Swimming Pool Water Level Sensor	Recessed in Floor
34	Wall Mounted Relay Box for Level Controller	Controls Solenoid Open/Close on Make-up Water Supply Manifold
35	Space Reserved for Electrical Switchgear	See Electrical Drawings
36	Soda Ash Container, Feed Pump and Mixer for Swimming Pool	Reuse Existing
37	Grating Over Sump Opening	Flush w/ Floor
38	1½ HP, 208/230V/3 ph/60 hz Chlorinator Booster Pump	Reuse Existing. Provide all New Piping.
39	Flow Rate Indicator	On 10" Return Line
40	Filter Air Release and Vacuum Control Panel	115V Elec. Required. Interlock to Recirculation Pump Motor Starter. See Electrical Drawings.
41	2" Filter Tank Drain Line	Slope to Drain and Lift Manhole. See Sheet P4.
42	Chlorine Leak Detector	Wall Mounted at Eye Level with Sensing Probe Wall Mounted on the Interior of the Chlorine Room.

Item b.

Revision No.	Date	By	Description

SWIMMING POOL
SIDNEY, MONTANA
DETAILS AND SCHEDULES
Project No. 590-60
Date 4/15/91
Drawn By D.C.M.
Checked By D.C.M. B.R.M.

interstate engineering, inc.
Engineering - Surveying - Planning

P6
SHEET NO.